CH 1950

MINIMERPOLIS COLLEGE OF ART E DECTER I MEARY

ARCHITECTURAL FORUM THE MAGAZINE OF BUILDING

THE CURTAIN WALL



Beautiful, hard, strongly resistant to wear, easy-to-clean Suntile CAMARGOS in Christ the King School, Dallas. Architect: Edward J. Schulte, Cincinnati. Assoc. Arch.: M. C. Kleuser, Dallas. Gen'l Contractor: Cowdin Bros., Dallas. Authorized Suntile Dealer: J. Desco & Son, Dallas. Here's a new "3 R's" your clients are always pleased to learn about—"3 R's" that will teach them valuable lessons about lasting beauty and economy in school interiors.

The subject is not complicated. You simply insist on these "3 R's" when you're choosing tile:

Radiant : beauty-bright Color-Balanced Suntile makes it wonderfully easy to achieve the exact color effects desired for every part of the school. There's a rainbow's range of harmonious colors to choose from—radiant colors, soft, subdued colors, colors that improve lighting and aid vision, colors you can get only with Suntile.

Rugged: hard wearing Suntile gives you walls and floors with a fadeless, stainless finish. You can put Suntile in classrooms, corridors, cafeterias—any place where there's heavy traffic and hard wear. A stroke of a damp cloth is all the maintenance required to keep it clean.

Real clay: this is the reason for Suntile's beauty and durability. These qualities are *fired* in ... permanently.

Suntile carries this quality right through to the guaranteed installation, too. Every job is performed by an Authorized Suntile Dealer, a craftsman who's been specially trained to give you those "3 R's" every time. He can be a big help to you in planning almost any kind of interior. Why not call on him now? See your classified telephone directory, or write us for his name. We shall be happy to serve you.

IDEAL FOR

schools hospitals stores

public buildings industrial plants residences



GET THIS EXCITING NEW COLOR PALETTE FOLDER!

Created under the direction of Faber Birren, leading color authority. 22 attractive 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. AF-3, The Cambridge Tile Mfg. Co., Cincinnati 15, Ohio.

WAREHOUSES

The Cambridge Tile Mfg. Co. 470 Alabama St. San Francisco 10, California The Cambridge Tile Mfg. Co. 941 N. Citrus Ave. Los Angeles 38, California



SUNTILE OFFERS YOU BOTH . BETTER TILE . BETTER INSTALLATION



Automatic low-cost heat that helps sell low-cost homes

Coleman Floor Furnace

Here's the way to keep construction costs low and yet be sure of the best in heating equipment. The Coleman Floor Furnace is the modern heating unit designed especially for low-cost homes. It needs no basement, no air ducts, no expensive plumbing. Installation is quick, simple and low-cost. Coleman engineering reputation backs these heaters, insures user satisfaction... The Coleman Company, Inc., Wichita 1, Kansas.



Coleman's Space-saving Shalloflow for Gas and LP-gas

Fits in floor, extends only 22%" below and is floodproof to 19" below. It's a small-size furnace with bigfurnace heat production.

Coleman's High-performance Water Heaters

Fully automatic. Gas, Oil and LP-gas models. Fully insulated and rustresisting. 20- to 45-gallon capacities with fast recovery rate. Beautifully finished, incorporating the latest Coleman advancements for fast, lowcost hot-water service.



DUAL WALL model sets beneath wall to heat two rooms, uses no living space.



FLAT REGISTER model makes and moves heat through three to five rooms.

Available for Gas, Oil, LP-gas. Coleman Floor Furnaces are made for all these fuels. Not an adaptation but a complete engineering job throughout for each. Coleman Floor Furnaces meet building code requirements and FHA specifications. Finest automatic heating. In sizes from 25,000 to 70,000 per hour BTU. Models for flat register and dual wall installations. The Coleman name helps sell Coleman equipped houses. Use coupon to request catalog of all models with specifications.

little with a CO/C	<u>man</u> _	manut heating	facturer of i g equipmen
The Coleman Company, Inc., De	pt. AF-750, W	ichita 1, K	ansas
Coleman Floor Furnaces	5	tate who	ther
	Gas	II OII	LP-ga
Coleman Water Heaters		- transferrer	
Coleman Water Heaters			
Coleman Water Heaters Name Street		-	



Bruce Ranch Plank Floors

A HEW. POPULAR ADAPTATION OF RANDOM-WIDTH DAK FLOORS

INSTALLED

SECTION 13g IN ARCHITECTURAL FILE

SECTION 21 IN BUILDERS FILE

AND YOU'LL FIND THE MOST HELPFUL DATA EVER PUBLISHED ON HARDWOOD FLOORS

Bruce Hardwood Floors

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



Mail coupon for an extra copy for your files

E. L. Bruce Co. Memphis 1, Tenn.

Send us a copy of your new 4-color data file on Bruce Hardwood Floors.

Name		1
Firm	A	
Address		

Published by TIME Incorporated

ARCHITECTURAL

CUF

CAR

PAL

FAC

RAI

SW

HOL

ME

BUI

EDITOR-IN-CH4EF......Henry R. Luce PRESIDENT......Roy E. Larsen

EDITORIAL DIRECTORJohn Shaw Billings

Architectural FORUM

EDITOR AND PUBLISHER P. I. Prentice

> EXECUTIVE EDITOR Joseph C. Hazen, Jr.

ARCHITECTURAL EDITOR Douglas Haskell

> ART DIRECTOR Paul Grotz

ASSOCIATES: Eleanor Bittermann (Research), Louise Cooper, Wilson Dizard, Sighle Kennedy, George Koether, Walter McQuade, Harry J. Middleton, Mary McClure Sanders, Richard Saunders (Washington), Chloethiel Woodard Smith (South America), Madelaine Thatcher. ASSISTANTS: Rosalind Klein Berlin, Linn Ericson, Marilyn Grayboff, Mary Jane Lighthown, Alice O'Connor, Nina Rabinowitz, Amnon Rubinstein.

CONSULTANTS: Miles L. Colean, Ruth Goodhue, Henry Wright.

GENERAL MANAGER: Robert W. Chasteney, Jr. MARKET RESEARCH DIRECTOR: Arthur S. Goldman. CIRCULATION MANAGER: Walter F. Grueninger. PRODUCTION MANAGER: Lawrence W. Mester.

> ADVERTISING DIRECTOR George P. Shutt

The Architectural FORUM is published monthly by TIME Inc., 350 Fifth Ave., N. Y. 1, N. Y. Subscriptions may be sent to 540 North Michigan Avenue, Chicago 11, III. Address all editorial correspondence to 350 Fifth Ave., N. Y. 1, N. Y. Yearly subscription payable in advance. To individuals or firms (and their employes) engaged in Building-design, construction, finance, realty; material distribution, production or manufacture; government agencies and supervisory employes; commercial and industrial organizations with a building program and their executives; teachers and students of Architecture and Engineering; professional clubs, societies and trade suscientions connected with the building industry; advertisers and publishers: USA, Possessions and Canada, \$5.50; Pan American Union and the Philippines, \$9.00; Overseas countries, \$12.00. To those not connected with the Building Industry; USA, \$11.00. Foreign, \$17.50. Single copies, if available, \$2. All copies mailed flat. Copyright under International Copyright Convention. All rights reserved under the Pan American Copyright Convention. Entered as Second Class Matter July 17, 1944 at the Post Ofice at New York, N. Y., under the act of March 3, 1879. Copyright 1950 by TIME Inc.

TIME INC. also publishes TIME, LIFE and FORTUNE. Chairman, Maurice T. Moore; President, Roy E. Larsen; Executive Vice President and Treasurer, Charles L. Stillman; Executive Vice President for Publishing, Howard Black; Vice Presidents, Allen Grover, Andrew Heiskell, C. D. Jackson, J. A. Linen, P. I. Prentice; Vice President and Secretary, D. W. Brumbaugh; Comptroller and Assistant Secretary, A. W. Carlson; Circulation Director, F. DeW. Pratt; Producer, THE MARCH of TIME, Richard de Rochemont.

VOLUME 92, NUMBER 3

1	Th	PA	
	K		
	D	r,	
V	U	1	

NEWS	9
NAHB CONVENTION	14
BEHIND THE BLUEPRINTS	24
LETTERS	28
TAIN WALLS	81
A detailed description and cost analysis of all the various means of curtain wall construction, including promising new methods and materials.	
IBE HILTON HOTEL	97
A lavish building with a human scale and with every room angled to the sea view, this is an outstanding example of resort hotel design.	
ACE HOTEL REMODELING	106
A San Francisco landmark is modernized.	
TORY IN A STOCK ROOM	ш
Lincoln Electric's new plant is designed to cut indirect costs, will pay for itself many times.	
IK ANNEX	116
Federal Reserve Bank in Detroit uses marble for a curtain wall, harmonizes contemporary design with neoclassic facade of its present home.	
TZERLAND BUILDS	119
Preview of an important new book which documents the influ- ence of native architecture on contemporary design, and a port- folio of new Swiss buildings: apartments, schools, stadium, bath house.	
ISES	126
San Francisco house with landscaping to provide a picture worth seeing Inexpensive mill construction and a simple L-plan are combined in a handsome Seattle residence Unusual ventilation is built into a small home in Princeton.	
RCHANT HOUSEBUILDING	132
A \$4,999 price tag and extra kitchen equipment at \$1 per item per month make sales easy for a big Seattle project block houses in the heart of the lumber country.	
LDING REPORTER	135
Good planning in Equitable Life's big New York City apartment project, a scheme by which railroads can replace old stations for free, a heliport, a new idea in concrete arch construction, and the boom in modern furniture.	

ru

MAGAZINE OF BUILDING

REVIEWS 152 PRODUCT NEWS 194 TECHNICAL LITERATURE 236

a bar doubt a set at

Cover design by Amnon Rubinstein





HERE'S VALUABLE INFORMATION TO KEEP ON HAND!

Indispensable working equipment for your desk...this handy piece of literature tells you all about Aetna 1-Piece Steel Door Frames, gives clear specifications and installation details to help simplify one important problem of house design. Send for this Aetna "Work Sheet" now...without obligation.





AETNA STEE	L PRODUCTS CORPORATION
61 Broad	way, New York 6, New York
Gentlemen:	
Please send	me free FR door frame literature.
lame	Position
Company	and a second statement of
ddress	The second se
	ATI O

AETNA STEEL PRODUCTS CORPORATION

MANUFACTURERS OF STANDARDIZED STEEL DOORS AND FRAMES FOR HOUSING UNITS.

FABRICATORS OF QUALITY HOLLOW METAL PRODUCTS FOR SCHOOLS, HOSPITALS, OFFICE BUILDINGS, ETC.





AND ONLY

WESTINGHOUSE

CAN GIVE YOU

HERMETICALLY-SEALED COMPRESSORS UP TO 100 hp. ... 17 YEARS EXPERIENCE

In 1933, Westinghouse pioneered the hermeticallysealed compressor design for air conditioning. In one step, it eliminated belts, pulleys and shaft seal refrigerant leaks - and reduced size, weight and vibration.

For the past 17 years, this successful principle has been continually improved, refined, modernizedand copied.

When you consider air conditioning, any applica-

tion from a "package" unit to a complete system, choose Westinghouse because at its heart is a compressor hermetically sealed in steel. This is still your greatest single guarantee-above any written guarantee-that Westinghouse Air Conditioning will give you the longest, most dependable, trouble-free service.

YOU CAN BE SURE ... IF IT'S estinghouse T-80178

First to introduce HERMETICALLY-SEALED **COMPRESSORS IN** AIR CONDITIONING







It's attractive, it's versatile,



There is no flooring material that makes as attractive or as versatile a floor as oak. Nor is there a flooring material that will give the home owner the lifetime service of easy upkeep that can be even compared to oak flooring. It's no wonder then that 85% of all prospective home buyers want oak flooring in their next home.

Yes, home buyers look at the flooring material the minute they step inside a new house. If they see oak floors, they are going to be put into a frame of mind that will make them want to look further at the other splendid features of your house.

From the view of anyone connected with home building—the architect, the builder, and especially the home buyer—it makes good sense to put oak flooring in homes of every style and in all price ranges. *See our catalog in Sweets*.

DEPT. 7-3. 814 STERICK BUILDING • MEMPHIS 3, TENNESSEE

OAK, THE FLOORING THAT HAS EVERYTHING EVERYONE WANTS



Residence of Harry L. Magee. Architects, Berninger, Haag & d'Entremont; builder, Percy Swank

CASEMENT WINDOWS PERFORMING PERFECTLY IN EVERY SEASON, IN ANY WEATHER



ANY CASEMENT WINDOW is only as good as its operator. The operator is the control tower of the window's flight. It must secure it instantly, rigidly, in any position desired. It must respond to the touch of a finger. Being an interior fixture, the operator must be graceful; having to live a lifetime of twists and turns, it must have guts.

That's why architects, builders, contractors, casement manufacturers, building material dealers, hardware jobbers and dealers specify, use and carry the Getty line. That's why Getty operators are found on more casement windows than all other operators combined.

Write for our descriptive brochure F. It contains complete information on our three operators (internal gear, external gear, horizontal drive) and our specialty hardware for every type of wood and metal casement.

& Co., Inc.

PHILADELPHIA 40, PA.

3348 NORTH 10th STREET

NATIONAL "GOOD AMERICAN HOME" PROGRAM Features Kelvinator Kitchens Exclusively ...

DRAWS OVER 30,000 ON **OPENING DAY IN DETROIT!**



Featured exclusively in the "Good American Home" Program, this typical Kelvinator Kitchen is summed up by one prominent Detroit builder who says it "gives my \$8,300 home that \$15,000 look." For beautiful kitchen layouts that fit suggested "Good American Home" designs, write to Dept. AF, Kelvinator, Division of Nash-Kelvinator Corporation, Detroit 32, Michigan.

Sensational Sales Reported from First Day!

"Terrific!" "Unheard-of!" That's what members of the Detroit Builders' Association said as they saw 30,000 Detroiters, representing home-hungry America, brave bad weather for the first showing of low-cost homes in the new "Good American Home" Program on Sunday, Jan. 22. The results wrote history. People moved two-abreast in blocklong lines the entire afternoon, looking-asking-and many buying on the spot! Builders tallied up prospects and sales they had not dreamed possible. Never before had Detroit builders seen such a response to a home-selling program.

Watch in your town for this program, sponsored nationally by the National Retail Lumber Dealers Association, the United States Savings and Loan League. You'll see it spearheaded by press, radio and television publicity, proving to America's vast market of non-home owners, with actual dollars-and-cents figures, that "It's Easy To Own A Good American Home!"

LOOK WHAT BUILDERS SAY OF THE AMAZING RESULTS!



"Such crowds were never dreamed of. Our sales far exceeded all estimations. And I'm certainly proud to have Kelvinator Kitchens in my homes." JOHN D. HARRISON



"The Kelvinator Kitchen was a big attraction, re-ceived such fine comment from persons visiting my demonstration home that I'm all set to feature your equipment in future homes HOWARD LEACH



"The Kelvinator Kitchen gives my \$8,300 home that \$15,000 look." RODNEY M. LOCKWOOD



"I've just never seen anything to equal that Open-ing Day. The way on-thespot purchases mounted was absolutely unique and inspiring." JOHN WEINHART



"Over 22,000 people visited our demonstration home in the first week-special interest was shown in the Kelvinator Kitchen. It has great appeal and is very impressive." JOSEPH LAWRY

SIAST TO OWN A GOOD NM

TIE IN WITH THIS PROGRAM WHEN IT COMES TO YOUR TOWN!







BUILDING SETS RECORD PACE-housing boom continues, but with caution

Despite the coal crisis, the H-bomb, an unpredictable Congress and the threat of rising unemployment, building boomed on, pointing straight for another peak year. January's whopping \$1.5 billion worth of work put in place (16 per cent over last year) set a record for the month. February was almost as good, \$1.4 billion. With public construction for the first two months up 24 per cent and private institutional building up 124 per cent, the Associated General Contractors hazarded the guess that 1950 might prove to be an even better building year than 1949. Home-builders, however, were not too sure. Even though housing led the boom (\$650 million volume, comprising nearly 60 per cent of all private construction in January and \$600 million, or 55 per cent of total private outlays in February) and even though January housing starts hit 80,000—an all-time high and 60 per cent above last year—home-builders who had their hands full with business also had their heads filled with worries.

Hands full with business. Good weather, easy credit—and a buying surge based on the growing belief that today's house might be worth more than tomorrow's dollar all helped ring up early 1950's phenomenal record. Optimistic reports were piling in:

Atlanta: Building of high-priced homes continues. Several architects are planning houses costing from \$40,000 up.

Chicago: Off to a flying start. January permits for 2,531 housing units valued at \$21.3 million were almost triple the 970 units (\$7.8 million) for January, 1949.

Cleveland: Realtors are enjoying the busiest winter they can remember. The usual winter slow-down in used-house sales has only touched dealers in homes above \$20,000.

Detroit: Still not caught up with the heavy postwar demand. Most builders are sold out far ahead of construction crews. All big builders have 500-1,000 unit projects ready to go (at \$8,000-\$12,000) and even this production will not satisfy the market.

Denver: Boom continues to be a ripsnorting affair. January's permits were \$4 million, double last January's \$2 million. Outlook is for continued heavy residential building.

Los Angeles: Houses being built and sold like hot cakes. Biltmore homes has five projects totaling more than 5,000 houses and \$15 million underway or planned for 1950. At Lakewood Park, near Longbeach, Biltmore and Aetna Life are putting \$8.8 million into land for a 3,375 acre development. First unit will be 2,100 homes representing a total investment of \$21 million.

San Francisco: Building permits jumped 138 per cent over January last year. New tracts and subdivisions continue to spring up. "You show them a \$7,500-\$8,500 house and they ask if you have anything better." Heads filled with worries. Could the boom go on through 1950? Not all the news was good. Some signs prompted caution. In San Francisco Builder Bohannon had to cut the initial rental level on some of his new garden apartments (at one time, it was reported, he had a 38 per cent vacancy). In Baltimore, apartments were such a glut on the market that one edge-of-the-city developer offered free station wagon shuttle service to the nearest department store as an inducement to prospective tenants.

The market was getting tougher. Homebuilders had the know-how, but they looked anxiously at other requisites: 1) land, 2) labor, 3) capital.

In San Francisco land costs were at an all-time high. In Detroit, which expanded so rapidly during the war, most new lots were on "raw" land, so builders would have to supply improvements whose costs would have to be passed on to purchasers. New ordinances plagued builders, too. Detroit set a new 42-ft. minimum on lots and nearby Dearborn pegged its minimum at 50 ft. Result: builders would get less lots per acre, would be forced to hike prices.

BOOMING CONSTRUCTION CLASSIFICATIONS

Building types which in January-February, 1950, registered more than 10 per cent increase over the first two months of 1949 (millions of dollars) Type of construction 1950 1949 Gain

Private:			
Residential (excl. farm)	1,250	875	+43%
Religious	57	51	+12
Hospital & institutional.	47	21	+124
Public:			
Residential	48	16	+200
Educational	152	120	+27
Hospital & institutional.	80	55	+45
Military & naval	19	14	+36
Conservation & develop	93	79	+18
Joint estimates: Dept. of C	omme	rce an	d Dept.

of Labor.

The influx of population into suburban counties was straining local governments to provide necessary streets, sewers, schools and other services. The housing boom could be badly bent if these counties decided to rezone (requiring larger lots so there would be fewer people per acre) or forced builders to pay for all improvements.

The labor problem might become even more vexing. Last month the International Association of Machinists showed why. In its weekly newspaper (2 million circulation) the I.A.M. blasted Congress with an open letter—a blunt threat to hike wage demands if rent controls were not renewed before June 30.

Mounting on-site labor costs would be hard enough to control. But increased labor costs buried in material prices would be even more beyond builders' control. And all signs pointed to higher material prices.

Capital, however, was the builders' biggest worry. If, as they hoped, cooperative housing were defeated in Congress, FHA's Titles I and II might be left to lapse (see *Washington*). That was the builders' biggest worry.

WASHINGTON

LAPSE IN FHA beclouds Spring building as Congress extends co-op hearings

With FHA's Title I insurance funds expiring March 1, and Title II funds headed for depletion a week later, home builders hesitated as they looked ahead to Spring.

Title I loans (for modernization and repair) had been running at a rate of \$50 million a month, and under Title II, FHA was handling some 25 per cent of all one to four-family houses being built. Without prompt action by the Congress, building's Spring blossom might be nipped in the bud.

Crux of the delay was Congress' willingness to wrap FHA extensions in one package with the administration's latest housing scheme—federally-financed aid to nonprofit cooperatives.

By insisting on passage of all housing legislation in one bill, the administration, it appeared, was using the carrot and the stick. The carrot was \$500 million in modernization loans under Title I and \$2.7 billion in small home mortgage insurance under Title II. The stick was the \$2 billion plus co-op housing plan, which had been as roundly damned by home-builders, realtors and business groups as it had been praised by public housers, veterans and Big Labor.

Pressure against the controversial co-op provision would cease, its advocates hoped,



AIR SHOCK WAVE which follows a blast has three different phases: 1) abrupt rise in pressure, which takes place immediately; 2) gradually decreasing pressure, lasting for about a second; 3) suction phase characterized by a decrease below normal atmospheric pressure which lasts for several seconds.

DAMAGE RANGE: 2 mile radius (outer circle) superimposed on air photo of New Haven, Conn. (pop.: 352,000) shows area which would be severely damaged in atomic bombing. Damage within one mile radius (inner circle) would be particularly severe. For details, see table, right.



ATOMIC BOMBING would bring severe structure damage in 2 mile radius

Ever since Hiroshima, scientists have chronicled the effects of atomic blast on human beings. Last month, the Atomic Energy Commission gave the first official indication of the effects of such a blast on Building. From its studies of Hiroshima and Nagasaki construction, AEC deduced that the qualities which permit a building to withstand normal bombing and earthquakes (shape, strength, number of openings which can relieve pressure) also apply roughly to the outward and inward pressures (see illustration, left) which follow a blast of a "nominal atomic bomb releasing energy equivalent to about 20,000 tons of T.N.T." Drawing on the Japanese experience, AEC thought a few generalizations could be applied to the atomic resistance ability of U. S. buildings: multistory reinforced concrete buildings which "generally suffered remarkably little damage" in Japan, because they had been designed to resist earthquakes, would be "generally less resistant" in the U. S., where they are designed to withstand wind load only; tall buildings having "heavy steel frames and a long period of vibration" should "withstand the effect of blast very well;" blast damage area to wood frame houses probably "would not exceed 7,500 ft 11

Overlaying AEC's table of destruction (below) on New Haven, Conn. (lower, left) gives a rough idea of the structural damage a "nominal" atomic bomb would bring if dropped on the heart of a typical U. S. city.

Radius of I mile (inner circle): from point of detonation:

1,000-2,000 ft. — Decks of steel plate girder bridge shift laterally. Mass distortion of heavy steel frame buildings; loss of roofs and panels.

2,000-3,000 ff. — Collapse of reinforced concrete building (10 in. walls, 6 ft. floor). Limit of severe structural damage to earthquake-resistant reinforced concrete buildings. Virtually complete destruction of all buildings, other than reinforced concrete assismic design.

3,000-4,000 ft. — 18 in. brick walls completely destroyed. Reinforced concrete smoke stack with 8 in. walls overturned.

4,000-5,000 ft. — Collapse of light concrete buildings. Mass distortion of frame of steel frame building. Brick walls (12 in.) severely cracked.

Radius of 2 miles (outer circle):

5,000-6,000 ft. — Complete destruction of multistory brick building. Destruction of electrical installations and trolley cars. Severe structural damage to steel frame building. Brick walls (9 in.) moderately cracked. Severe damage to entire area.

6,000-7,000 ft. — Roof tiles melted by heat. Structural damage to multistory brick buildings.

7,000-8,000 ft. — Severe damage to homes, heavy damage to window frames and doors, foliage scorched by radiant heat.

8,000-9,000 ft. — Moderate damage to area. Heavy plaster damage.

9,000-2 mi. — Blast damage to majority of homes. Severe fire damage possible. Flash ignition of dry combustible materials. Partial damage to structures in area.

Beyond 2 miles — Up to 12,000 ft., AEC recorded: Damage of roof and wall covering on steel frame building, light damage to window frames and doors, moderate plaster damage, complete window damage.

Limit of Light Damage: 8 miles.

as soon as the private building industry realized what it stood to loose without a functioning Title I and II. Said Senator Sparkman: "There is no need of having a lapse of FHA, especially when the people who are most anxious about keeping FHA going are themselves mainly responsible for holding up the overall bill."

The real delay. The people who were "most anxious about keeping FHA going" were, presumably, the home-builders, realtors and mortgage bankers. To credit them with "holding up the bill" seemed slightly fantastic in view of their failure to sway Congress to their way of thinking on public housing or rent control.

The real delay, thought builders, might better be attributed to the serious doubts held by members of the House and Senate Banking committees.

The House Committee-first by a vote of 11-4 and then by a second vote of 13-9had voted out the bill pretty much as the co-op housing lobby had wanted it, including creation of a constituent agency of HHFA to run the co-op program instead of setting it up directly under Administrator Foley, whom co-op zealots looked upon as "too conservative." But an early vote on the House floor looked doubtful, since the bill would have to overcome a big hurdle in the Rules Committee which was dominated by a Dixiecrat and Republican coalition to whom co-op housing was anathema. It was to the Senate that co-op enthusiasts would have to look for action.

Senate modifies bill. The Senate, however, reported out its bill in drastically modified form. After hearing Federal Reserve Board Chairman Thomas McCabe object to the bill's inflationary potential, the committee paused to take a second look, came up with a substitute, drafted by Senator Tobey (R). in which co-op housing would be implemented by the tried and proven methods of FHA insurance. Tobey's bill scrapped the whole idea of a new government corporation and the low interest debentures that went with it. His substitute came within one vote of adoption. At the last minute another Republican, Senator Flanders of Vermont, switched over and voted it down. Then Senators Maybank and Sparkman went to bat for the original co-op scheme.

To still the qualms of Federal Reserve Chairman McCabe, they reduced the inflation hazard by cutting the programs in two. Title I was cut from \$500 million to \$250 million, the small homes program from \$2.75 billion to only \$1 billion, the new co-op program from \$2 billion to \$1 billion. If the bill had been inflationary, the reasoning went, it would now be only half as inflationary.

Strange gimmick. Strangest of all "antiinflation" devices to which the Committee resorted was the replacement of government-guaranteed debentures with bonds *not* guaranteed by the government. But there was a catch. In the event there should be a default on any of the bonds thus issued, the holder would have them replaced by *new* debentures of the co-op corporation which *would* be fully guaranteed both as to interest and principle.

This queer financial gimmick, admitted Senator Sparkman, might result in co-op housing paying a slightly higher interest rate than originally planned, perhaps as high as 3¹/₄ per cent.

The Maybank-Sparkman version passed with no one asking why the measure would not be just as inflationary with the government guaranteeing the bonds in the second instance.

The Senate bill—which still provided for direct loans to veterans at 4 per cent—and elimination of the combination FHA-VA loan (see page 13)—might, conceivably, pass. But with the House Rules committee blocking passage in the lower chamber, home-building might enter the spring season without benefit of Titles I and II. Senator Maybank saw no need for temporary extension: if builders felt they were going to be hurt by a brief lapse, they should stop trying to delay the whole bill. The administration continued to rely upon the carrot and the stick.

LUSTRON FORECLOSURE leaves RFC seeking exit from \$30 million loss

Last month the government wrote finis to its biggest and costlier venture yet into the field of private housing construction. RFC, after weeks of hesitation and saddled with a loss of \$30 million, started foreclosure proceedings against Lustron Corp.

At one time, Lustron's steel prefab had seemed to the government a bright promise to the country's housing problem—bright enough to be polished up with \$37.5 million worth of loans. RFC's disillusion was slow in coming. But two months ago, with Lustron still 11 units a day behind breakeven schedule and still hungry for federal funds, RFC suggested a reorganization, was angered by Lustron's feeble reorganizing attempts. As it announced foreclosure, RFC sadly insisted it had never wanted to wash up the whole Lustron experiment, but was left no other course by Lustron's "uncooperative" attitude.

At month's end, the government was groping for a way to get out with more than the \$7 million it could recover in a forced sale of equipment and machinery. It might, according to one widely circulated rumor, sell out to Republic Steel. That story was promptly scotched. Then another rumor started making the rounds of Washington: Fruehauf Trailer of Detroit was interested, might take Lustron over. The House Banking Committee had another suggestion: it thought the government might be able to build houses for the armed forces.

MILITARY HOUSING may get built through revised Wherry Bill

Military housing was getting the congressional eye elsewhere. The Wherry Bill to provide privately built rental housing for military personnel (by granting 90 per cent FHA insurance on military reservations) had been a flop right from the beginning. Builders had two main complaints: they could not stretch their equities with writeups of land costs (since the land was leased from the military), and the military authorities tried to hold rents down to what builders considered unreasonable levels. In the six months of the Wherry Bill's operation, FHA had issued commitments for little more than 3,000 units. So last month the Senate authorized (as part of a \$500 million bill to construct military installations) the federal construction of 7,500 houses, on military land, at an average \$14,750 each (shaved from a proposed \$16,500 by Sen. Paul Douglas), and a limitation of 1,080 sq. ft. per unit.

The Department of Defense was reportedly nursing a proposal which would permit builders to build and operate rental projects on military land, without FHA mortgage insurance, but with the armed service involved making up the difference between actual rent collections and the amount required to run the project at a reasonable profit.

DESIGN

LIFE TERMER plans houses

Carl Watson, 41-year-old life termer at the Iowa State Penitentiary in Fort Madison, started reading FORUM in 1943. With talent, and plenty of time for study, he took up architectural drawing, made his first complete drawing a year later. Two of his houses have been built and a third is under construction.

11

NEWS

STATE FIRE CODE readied by Illinois

Spurred by the disastrous St. Anthony's hospital holocaust which claimed 75 lives at Effingham last April, Illinois' Fire Marshall, Pat Kelly, has drafted a fire code which, if adopted in April, will make Illinois the third state having a fire code.

Kelly's code calls for fire walls to provide refuge areas on each floor of large hospitals. Fire detection, alarm and control apparatus would be required in multistory buildings. Stairways and open shafts in present structures would have to be enclosed within three years.

The state code is more liberal than the Chicago code in flame spread ratings for interior finishes and in use of drywall for small homes. It would not replace, but would supplement local codes.

MARKET

INDUSTRIAL BUILDING perks up. It may mean nothing, it could mean everything

Little noticed in all the hullabaloo about January's housing starts, private industrial building rose slightly (up to \$69 million from December's \$68 million, up to \$70 million in February). True, the increase was hardly more than one per cent, but the interesting fact about it was this: it was the first consecutive two-month upturn in four years (since the beginning of the big postwar industrial building boom).

The figures bore out what local reports had been hinting. In Chicago, during January, for example, more than \$22 million went into plant construction, more than three times last year's total and a record for the month.

For many months most business prophets had been predicting a further drop in plant construction this year (the Department of Commerce guessed it would fall 26 per cent). It was too early to revise their estimates, but the turning trend, and reports of new plants scheduled to come, foreshadowed a possible, if not probable, volume that might exceed earlier predictions.

Why was the possibility important? Home-building could contribute mightily to prosperous times, but it could not, very long, sustain the basic U. S. economy. For homes, though they are capital assets, do not produce *new* capital. Factories do. And it is new capital that keeps a nation strong.

ECONOMY

SEEKING SECURITY, we may lose itsay economists

Stern warnings went out to the nation last month. Dr. Edwin G. Nourse prophesied that a "pie in the sky" philosophy would lead to "strain and possible breakdown" of the U. S. economy by 1951.

Dr. John Clark, one of the two remaining Members of the President's Council of Economic Advisers, glumly warned that the coal strike could upset the Council's recent forecast for good business in 1950.

Director of the U. S. Department of Labor's Bureau of Apprenticeship, W. F. Patterson, had the gloomiest prediction of all. Said he: "The skilled labor supply of this nation is not being replenished at a rate fast enough to meet the demands of industry."

Labor's love lost? Would there be a shortage of labor in the building industry? No, said the statistics. In the first four months of last year, when building was in a slump, construction employment ran above the same months in 1948. After May of '49, as building began to boom, construction employment fell below the levels of 1948. By the end of last year employment in the building trades was 65,000 below 1948 yet building volume was considerably higher. This looked like proof of greater productivity.

It was, and builders, in some areas, were still lavish in praise of labor. In Atlanta, they said, bricklayers are now doing better than 800 a day compared to 400-500 during the war. But in most cities builders were worried.

St. Louis carpenters had just wangled a vacation allowance giving them 52 weeks of pay (at 1949's rate of \$2.20) for 50 weeks of work in 1950. In San Francisco, Milton Morris, Executive vice president of the Associated Home Builders, said that increases in wages about canceled increases in productivity. In Detroit labor is expected to ask for another 10 cent hourly boost this month and bricklayers were rumored demanding 12 cents.

January's extraordinary building volume dropped, seasonally, 7 per cent below December, but construction employment fell less than 5 per cent. Because of inconsistencies in coverage the data are not conclusive. But they are indicative, they point to a possible lessening of productivity. Builders feared that strong labor demand forced by the private housing boom, and intensified by the pressure of public housing and public works construction, may soak up enough workers to reduce the feeling of competition, make workers slow up, reduce their efficiency and increase labor costs even more. This would put the heat on small builders.

In Detroit, the builders' association reported a high casualty rate among small builders even at this early stage. With labor's spring demands, it appeared that only large scale builders could meet the higher costs, that many small builders would be forced out of business.

HIGHER PRICES result from booming demand, lessened supply

Last month rising prices impelled one Pittsburgh builder to raise the tag on his houses by \$100. In Detroit another builder raised his \$200.

Builders could blame the weather and the government for most of the rise in the cost of materials. Freezing cold in the Northwest stymied lumber output precisely when mild weather in the rest of the country brought greater demand. By early February West Coast Douglas fir 8 ft. 2 x 4's had risen from December's \$45 per thousand to \$53. At month's end they were \$62.

Prices of Southern pine rose too, by \$3 to \$5 per thousand, largely because of the new law raising minimum wages to 75 cents an hour. Even at the new prices many southern mills found it wouldn't pay to produce. One southern lumber company reported that 22 mills had closed down in Alabama alone.

The pressure on lumber prices was shown in the mid-February report of 417 mills to the *National Lumber Trade Barometer*, quoting shipments at some 20 per cent above output and orders exceeding production by almost 50 per cent.

Among the metals, steel prices alone seemed likely to rise, the result of stoppages caused by the coal strike. Copper, lead and zinc were unchanged from last month. Tin —on which the RFC had lost \$18.5 million —was down another half cent to 741/2.

Engineering News-Record's building cost index crept up another quarter of a point to 356.48, (against a 1926 index base of 192.70) nearing the all-time high of 357.07 reached in October, 1948.

HOME FINANCE FOR THE VETERAN approaches dangerous crossroads as Congress considers changing FHA and VA programs. Industry leaders plump for combined FHA-VA mortgage to maintain volume of house building

If Congress gives the axe to the combination FHA-VA loan—Section 505(a) of the Servicemen's Readjustment Act of 1944 as the Sparkman Act proposes, and if some other workable substitute is not adopted, almost 50 per cent of all the houses planned for U. S. veterans during 1950 will not be built. In other words, the veteran market group which accounts for 20 per cent of the total new house market will be sliced in half. Moreover, this 505(a) half includes most of the better veterans' housing, that built for \$10,000 and over.

The congressmen who wish to eliminate 505(a) maintain these houses *will* be built. They take the private housebuilding industry's word for it that they cannot be built under the straight VA program (Section 501) as it now stands, but they think the job could be done under a liberalized 501. Last month, as the axe hovered in congressional hands, there were four liberalizing plans abrewing. The industry examined them carefully:

1. Permission for VA to guarantee 60 per cent (instead of the present 50 per cent) of a veteran's mortgage, up to a maximum of \$7,500 (instead of the present \$4,000). The lenders would welcome the greater guarantee. (Since VA's guarantee, unlike FHA's insurance, applies to the top part of a loan, lenders would, in effect, be assured total protection on a \$12,500 home loan.) But there was one great objection: builders would still be unable to get a free flow of construction money. Construction money is readily granted only when FHA makes a commitment, for FHA's commitment is firm -it will back up its mortgage insurance as soon as the house is built. VA will back up its guarantee only when a buyer for the property is found; banks are notoriously reluctant to grant a builder construction money under this operation without first receiving a premium for their troubles. To get construction loans on houses financed under Section 501, builders in some parts of the country - notably the West Coast-were last month paying premiums as high as six points. The \$300 a builder would thus have to pay to get a \$5,000 loan is, of course, passed on to the customer.

2. Permission for FHA to make commitments, at a charge, on houses financed through VA. This would open the way to construction loans, but the \$75 commitment charge FHA said it would have to make would impose a sizeable burden on any builder contemplating large-scale operations.

3. Permission for VA to issue firm commitments. Some industry groups looked with favor on this proposal. It would, as Thomas P. Coogan, first vice president of the National Association of Home Builders, pointed out, "reduce the conflict between FHA commitment and VA financing". But its one great difficulty was obvious: if a veteran-buyer were not found, VA would be forced to take over the property itself.

4. While none of these proposals, the industry felt, would do the job that 505(a) had done, there was one other proposal which brought sharp attention: permission for FHA to insure loans 100 per cent to veterans at 4 per cent interest, with no mortgage insurance premium.

Persuasive arguments. The idea of keeping all government mortgage insurance authority under one roof made sense to Bernard Baruch when he recommended to General Omar Bradley in 1945 that FHA handle all government mortgages. It made sense more recently to the Hoover Commission, which picked up and elaborated on the old Baruch report. It makes sense now to HHFAdministrator Raymond Foley and FHA Commissioner Franklin Richards, who last month had some persuasive arguments for transferring VA's insurance authority to FHA: it would eliminate the duplication of 505(a) and also lighten the loan on the Federal National Mortgage Association, the government's secondary mortgage market, which is stuffing itself with unwanted 501's. (Most 505(a) loans stay out of FNMA because the 41/2 per cent interest rate on the FHA portion of the loan makes it attractive to private lenders.)

The plan envisioned by Richards and Foley, and backed by an impressive number of big bankers and builders, would retain (and improve on) the virtues of 505(a) as



well as eliminate its greatest fault. Even the mortgage bankers' historic objection to 4 per cent loans would disappear in the face of total guarantee. FHA would impose a set of construction standards modeled after its regular standards but would incorporate one VA approach dear to the housebuilder's heart: appraisal based on current cost, rather than long range value. (The industry was well aware that VA appraisals are more political than business-like; but it knew too that VA's appraisal system had been-and would continue to be-one of the significant contributing factors to the sustained high volume of construction.) FHA would create a new title to handle this new insurance. VA would certify a veteran's loan eligibility and perhaps pay-from its existing reserves -FHA losses. (An alternative: losses to be paid directly from the Treasury.)

Enthusiasm and caution. To many this seemed-in terms of economy both to the government and the builder-a more attractive plan than 505(a). Stanley M. Stalford, crack New Jersey mortgage banker and one of the nation's leading FHA mortgage specialists (last year's business: \$49 million), who helped Baruch prepare his 1945 report, said that by "eliminating delays and effecting prompter settlement of loans," it would "permit the builder to have his working capital freed and the veteran to move into his house faster." Another mortgage banker estimated the proposal would save the government 60 per cent of the amount of money VA now spends in its mortgage insurance program.

But some in the industry were cautious. The Home Builders, particularly, who in many ways stood to benefit from the existence of two rival government organizations, feared granting FHA a "monopoly" on government insurance. (Countered one executive of a large life insurance company: "Of course FHA could get all powerful. But what's the difference? Are two divisions of government better than one?") The U. S. Savings & Loan League, which has never liked FHA, was not eager to give it any more authority than it already has. (USSLL General Counsel Horace Russell said he would prefer to see "four competing government organizations rather than one; competition makes for better service.") The loudest dissenter of all was technically not a member of the housebuilding industry, but nonetheless a most forceful member of any conference on veterans' housing-

(Continued on page 18)

HOME BUILDERS in convention ponder new mark

Two insistent voices of demand cut sharply through the 6th annual convention of the National Association of Home Builders in Chicago last month. The first was one with which the house builder was well familiar: the market demand. He had heard it change several times already—in tone and in context—in his postwar operations, and each time he had faced up to it. Now he heard it change once more, and in convention sessions he acknowledged its unmistakable message: the demand for houses has changed to a demand for *better* houses.

The second was a new type of demand on the private builder, and one which he had become aware of only after it had built up and gathered in force over years of misrepresentation of the industry's backbreaking effort to crack the nation's swollen, war-born housing shortage. It was a demand that the builder now tell his side of the story of American home building to the American people.

NAHB, the only effective medium through which the private builder's voice could be heard, had been forced to watch an incredible postwar spectacle: the builder, despite his record postwar construction of 3.5 million new houses and apartment units, was still held suspect by a public fed on a steady distrust of private opera-



CONVENTION DELEGATES approved resolutions call-

ing for 1) retention of 505(a) loan insurance; 2) defeat



NEW PRESIDENT Thomas P. Coogan's chief fight has been for favorable mortgage finance.



PAST PRESIDENT Edward Carr, Washington, D. C., with HHFA Research Director Richard Ratcliffe.



RETIRING PRESIDENT Rodney Lockwood, Detroit, (right) with Richard H. Brown, Birmingham.



NEWLY ELECTED First Vice President W. P. Atkinson, Oklahoma City, with Fred Larivee, Newark, N. J.

OTHER NEW OFFICERS: Below, Secretary Joseph Haverstick, Dayton; Second Vice President Alan E. Brockbank, Salt Lake City. Extreme right, next page, Treasurer Nathan Manilow, Chicago.







GLUM DELEGATES (right) hear Real Estate Economist James C. Downs, Jr., backed by chart showing "exhaustion of backlog of unfilled demand," predict "sharp market drop" in late '50.



ids, decide to tell their story to the people with a \$250,000 public relations program

tions. But saddled with a piddling public relations budget (last year's: \$28,000), NAHB had hardly been able to raise a protesting voice. Clearly it was time, the builders felt, to sing out.

When Los Angeles Builder Fritz Burns proposed the method—a fund big enough to "tell the American people about the job the housebuilders are doing"—the delegates roared their approval. The fund—NAHB hopes for \$250,000—will be voluntarily contributed (assessment was ruled out) and will not be used politically. Said President Elect Thomas P. Coogan: "We don't propose to fight anything with this fund. We've been fighting public housing for many years without much luck."

Just how it would be used was still not clear; the association's directors had not decided. But it would at least give force to the builder's long-stilled voice, and that was what he wanted—and badly needed.

Having disposed of this demand, the builder turned, relieved, back to the first, for here he was on familiar ground—not necessarily safe ground, or easily traveled, for it contained many challenges the builder had not yet had to meet; but at least he was familiar with the overall challenge of the market. Realistically, he admitted the market change characterized by Retiring President Rodney Lockwood: "The desperate need for shelter has been pretty well satisfied in most communities. Now the people who are buying houses are looking for much more than mere shelter—they are looking for good homes . . . We will have to stimulate and incite the desire of more people, not for just shelter, but for *better* shelter—not for just a new house, but for a *better* new house."

The builders had begun to batten down the hatches for the onslaught of the new "buyer's market" at their annual convention a year ago (FORUM, Mar. '49). They were facing then the second circle of the postwar market, when the challenge was to reduce house costs. Since that time, by steadily shaving square footage and profits, they had managed to push the average price of a new house down to \$8,000.

Now they had reached the bottom on cost reduction. (Said Burns: "Next year's house will be no cheaper. "We will do well to keep it at the same price.") And they had also reached the market's third circle: a market not the least bit desperate, but willing to buy if it could find a good buy. This new market would want a house no more expensive than 1949's, and certainly no smaller, but one, for all that, of better quality—a house, in Lockwood's words, of "better design, better arrangement, and superior treatment." The builder's chances of matching last year's construction record of 1 million new houses rested squarely on his ability to meet that demand.

Could he do it? If there was any one worry which transcended his harried anxiety over government interference, it was this. And the answer, he sensed, was inherent in the challenge as Lockwood had framed it. Lockwood's phrase better design rang like a keynote through the convention area. It was sounded from almost every platform. It dominated the majority of discussion groups, both formal and informal.

It raised the clinic on design to the convention's most important and best attended, and revealed clearly the builder's growing willingness to consider the synonymity between "better design" and "contemporary design." The area of agreement among the panel members was so great that there was little room for argument. (Only Chicago's conservative Joseph Merrion defended traditional design in general, and in particular, the pictureless picture window at the front of the house.)

And the builders in the audience, who had long since adapted such contemporary principles as the open plan, listened respectfully to the panel experts tell them it was



VATE FINANCE representatives L. Douglas Meredith, National e Insurance Co. of Vt., and Horace Russell, U. S. Savings & Loan ague Counsel, are separated by Baltimore Builders William Rogers I Charles Spielman from Government Representatives Raymond ey, HHFAdministrator, and Franklin Richards, FHA Commisner. Foley called for considerable increase in "size of the small nomy house."



Photos: 1, 2, Bert Shepard; 3, Oscar & Associates; others, Arthur E. Haug

CORRIDOR CONFERENCE: NAHB Public Relations Chief Walton Onslow; E. M. Spiegel, Passaic, N. J.; Maurice Robinson, Detroit; NAHB Executive Vice President Frank Cortright.

BUILDING CODE committee members: John Weinhart, Detroit; Chairman Luther Boggs, Atlanta; Charles Smith, Chicago; Bert Westover, Indianapolis; Joseph Wolff, Detroit; L. Glen Shields, Chicago.





VISITOR Herbert Nelson, of National Association of Real Estate Boards, in informal discussion with Fritz Burns, Los Angeles; Robert A. Bready, Baltimore; Waverly Taylor, Washington, D. C.



NAHB CONVENTION highlights better design, sales and new products

high time to adopt others. FORUM'S Douglas Haskell assailed the builder's tendencies to pack a "collection of features" into his houses without considering that "quality also means the best possible use of space for modern living," and to "overrate the need for kitchen efficiency and underrate the importance of convenience." Long Island Prefabricator Cy Williams sounded two other distinct sins of the small house: lack of "adequate storage space and a workable play area." Builder Earl ("Flat Top") Smith, of Berkely, Calif., deplored the industry's "holier-than-thou attitude toward change." Said he: "We are underestimating the intelligence of the buyer," and he cited his own experiences to prove it. Despite the active resistance of local mortgage bankers and the FHA, he built his first modern house 21/2 years ago. It sold before completion, nine orders were placed for duplicates, and Smith has built nothing but flat tops since. Whereas he only built 40 houses a year before his switch to modern, this year he will build 1,000, and 450 of these have already been sold.

Since better design was to be a heavy enough challenge, it was fortunate for the builder that some of the worries which beset him at last year's convention had

been removed. Financing, for instance, was not the headache it was a year ago. There was plenty of mortgage money around, and it was getting cheaper all the time. During 1950, however, the builder had found no aspirin big enough to dissolve the headache completely. Easy financing was still a phrase rather than a reality in too many areas. And the builder's perennial worry about adequate funds for Fanny May remained, for, so far as he could see, his VAfinanced work in 1950, just as in 1949, would depend on Fanny May's secondary market. (One financial observer thought money would get cheap enough this year, however, to find lenders vying for 4 per cent GI loans.)

Nor could the builder find much relief in the government's curious "sedatives"—its threats to pamper cooperatives, and to eliminate the vital 505(a) loan (see p. 13), its passion for jerky, short term financing legislation instead of the long term financing the builder needed.

On these matters—and others—the government—and even other industry groups had shown themselves reluctant to listen to the men who build the nation's houses. But perhaps now, with his new-found voice, the builder could take his case to the people.



NEW PRODUCTS: Using Hollywood's tried and true cheesecake sales technique, Californian Joseph Schulte, behind revolving bar (above), holds special show to dramatize new building products...



A radiant glass heating panel . . .

Photos: 1, 2, Dean Vance; others, Arthur E. Haug





which turns inside out ...



.... a touch plate switch, which flicks lights by finger touch, and master panel, which controls all lights in house...

an automatic hammer (without cheesecake).





GIRL ARCHITECT Elizabeth Bell, Carnegie Tech student and first prize winner of a woman's design contest, shows her panel to Waldick, N. J., Builder David Zamore, first prize winner in large house development competition.



show. Above, Anne Demmino distributes to delegates samples of aluminum nails. Right, a lock salesman interests Builder Burke Miller, Kansas City.







AT FORUM PARTY: Left, Arthur Bohnen, Evanston, III.; Sterling Albert, Milwaukee; John Olson, Worcester, Mass. Above: Buffalo Builders Philip Flech, Harold Genrich, G. Lawrence Mitchell, R. F. Eisenhardt, Oscar R. Giesecke, David M. Hannah.



There's more than

meets the eye in...

locks are exceptionally clean and attractive in appearance

... beautifully hand-finished in satin or polished chrome or brass, or satin bronze.

Architects find that KWIKSET's clean design and striking beauty enhance the appearance of both modern and traditional residences. Add to this KWIKSET's high quality, low price and ease of installation and there is little wonder why leading architects are specifying KWIKSET locks for every door on every house.

MATERIAL AND WORKMANSHIP UNCONDITIONALLY GUARANTEED

NOW S

17

MANUFACTURED BY CONTRACTOR DISTRIBUTORS POISTRIBUTORS POISTRIBUT



WEISTEEL HI-STILE FLUSH COMPARTMENTS

Latest design and building techniques, and newest materials, incorporated in the new Macy store in Kansas City, Mo., have made this "probably the finest down-town store in all the U.S.," in the opinion of some specialists. It is highly significant, therefore, that WeiSteel Hi-Stile Flush Compartments were chosen for all the toilet rooms! These compartments combine the fine appearance of smooth modern design with material and structural quality which has proved its worth through 40 years of service.

- Note the smooth lines of the flush doors, stiles and partitions, sanitary, and insulated against metallic sounds characteristic of many metal products.
- Edges of partitions, doors and wide stiles are bound and interlocked under tension with drawn molding which is welded at corners. Each edge is reinforced by three thicknesses of metal.
- Permanent uniform rigidity and strength throughout all units. Flush dividing partitions are tension-locked directly to stiles.
- Hardware, stile shoes, wall and headrail fittings combine ample strength with refinement of design.
- All steel parts are of prime furniture steel or Bonderized galvanized extra smooth steel as specified — finished in high baked synthetic enamel in any of 24 standard WeiSteel colors as selected.

WRITE NOW for new bulletin with details and specifications on WeiSteel Compartments for toilet, shower, dressing and similar enclosures.

HENRY WEIS MANUFACTURING CO., INC., 302 Weisway Bldg., Elkhart, Ind.

NEWS

the powerful American Legion. Jealously aware of the Veterans Administration's raison d'etre, and of its own considerable influence in VA, the Legion had been plugging righ along for the elimination of 505(a) in favo of straight VA loans. It was militantly prepared to defend VA against any further at tempt to rob it of its prerogatives. The Legion might eventually yield on other things (i hinted last month it might go along with an attempt to equalize the interest rates on VA and FHA loans provided the equalized rate stayed at 4 per cent for the time being), bu it made it pointedly clear that it would toler ate no tinkering with VA's physical structure

Industry's viewpoint. Against the Legion's dis sension, all other discussion was difficult, a best. For Congress, its election year ear keenly tuned to the biggest lobby in Washington, wa likely to hear little else.

If it wished to see a 1950 housing output approaching last year's however, Congres would be obliged to listen to the point of view of the private housebuilding industry. Las month that point of view was admittedly no too clear; the industry needed cohesion first o all in its attempt to make its wants and need known. But even through the cross current and local interests that fanned the discussion the point of view was there to be seen-anheard: a healthy production of veterans houses depends on 1) congressional adoption of the best substitute for 505(a) thus far ad vanced: a new title to permit FHA to insur veterans' loans 100 per cent at 4 per cent inter est, without insurance premiums and wit VA's liberal appraisal policies; or, if Con gress is unwilling to brave the America Legion's wrath, 2) Congressional retention o the combined FHA-VA mortgage.

Well-used tool. From the first, 505(a) was strangely inefficient-looking tool to be used i the efficient production of houses. But it wa the best tool that could be forged by an indus try trying desperately to catch up with way created demand but impeded by archaic nancing methods. Particularly in the larg metropolitan markets, many builders, lender and veteran-buyers found it a distinctly bett tool than 501; it became well-used. Last ye it hammered out half of all the veteral houses built. But its faults-as well as virtues-became well known to its users. L month, as the talk of eliminating it gi louder, the industry counted up again marks for and against 505(a). Credits:

(Continued on page 20)



He won a National Championship

...but you'll reap the benefit!

STRUCTURAL .

LAY · PRODU

CTS · INSTITUTE ·

THIS YOUNG MAN is Charles G. Adams of Conway, Ark.—one of 12,000 brickmason apprentices enrolled in a nation-wide training program being promoted by SCPI.

Recently these young men demonstrated their skill in a national bricklaying competition. A passing crowd of more than 300,000 at the finals in Cleveland, Ohio, saw Adams defeat the best apprentices from every state to become Champion Brickmason Apprentice.

His fine work, and that of all the other contestants, showed that this training program is getting real results—results that will make you and your customers "winners" for years to come.

Every time you design or build with structural clay this training program will pay you valuable dividends—in decreased building costs, efficient workmanship, quality construction and satisfied buyers.

These are the goals Charles Adams and his fellow apprentices are learning to work toward. These are also the goals of SCPI and the various educational, labor and government groups cooperating in this program.

We at SCPI think the excellent progress of the program to date is a healthy sign of a bright future for the building industry and for all of you associated with it.

MAIN OFFICE

STRUCTURAL CLAY PRODUCTS INSTITUTE

1520 18th Street, N. W., Washington 6, D. C.

regional offices to help you-STRUCTURAL CLAY PROD-UCTS INSTITUTE, 341 State Street, New Haven 10, Conn.; 1949 Grand Central Terminal, New York 17, N.Y.; 1518 Walnut Street, Philadelphia, Penna.; 306 Market Avenue, North, Canton, Ohio; 502 Benedum Trees Building, Pittsburgh 22, Penna.; 228 N. LaSalle Street, Chicago 1, Illinois; 1201/2 Welch Avenue, Ames, Iowa; 208 Kittredge Building, Denver 2, Colorado; 55 New Montgomery Street, San Francisco 5, Calif.; Central Building, Seattle 1, Washington. Clay Products Association of the Southwest, Littlefield Building, Austin, Texas; First National Building, Oklahoma City, Oklahoma.



Any building manager will tell you that keeping fixed costs down is one of his most important aims. Aside from taxes, maintenance costs and repairs are principal worries.

You can almost eliminate flooring repairs, and cut maintenance costs in half, by installing WRIGHT RUBBER TILE!

That half you save will go a long way towards paying taxes. Our correspondence files bulge with letters from satisfied customers who report that WRIGHT RUBBER TILE enables a single maintenance man to do the work of two — with less effort and reduced cost. Mopping with luke-warm water, plus occasional waxing and buffing is all the care needed. They are pleased with the way WRIGHT RUBBER TILE resists damage of all kinds—keeping its new appearance long after other floors have worn out. They appreciate the added safety that results from its resistance to fire.

But there are still other benefits you gain with WRIGHT RUBBER TILE, such as: very low cost per year (Wright floors have a life expectancy of 25, 50, even 100 years), quiet comfort, your choice of 21 dynamic colors, and enduring beauty.

Write for the new bulletin "Architects' Specifications" which gives complete information including colors and sizes available.

WRIGHT MANUFACTURING CO. 5204 Post Oak Road • Houston 5, Texas

GH

FLOORS OF DISTINCTION

WRIGHTEX—Soft Rubber Tile
 WRIGHTFLOR—Hard Surface Rubber Tile
 WRIGHT-ON-TOP Compression Cove Base

RUBBER

NEWS

 It has made home-purchase with no down payment available to more veterans, thereby creating a much bigger market.

2. As a 100 per cent insured mortgage for small houses (the big first mortgage is insured by FHA; the smaller second mortgage is guaranteed by VA), the lender is given almost full protection.

3. The FHA portion of the mortgage gives the lender a $4\frac{1}{2}$ per cent interest rate.

4. The FHA portion, giving the builder a firm commitment, enables him to get construction loans reasonably.

5. The VA portion of the mortgage (roughly 20 per cent) does not use up the veteran's total VA loan guarantee privilege

6. A veteran wanting a bigger and better house can usually finance it only through 505(a), since most 501 loans are made with the intent of selling them to FNMA, and FNMA cannot buy mortgages over \$10,000

Overall objection. Against these factors was one overall objection which could not be ig nored: the substantial cost of having two gov ernment agencies handle double appraisals double recordings, double title and lega fees. It is an added cost to both the veteran (which he pays either outright or in the hid den cost of the house) and to the government Long Island Builder Bill Levitt guessed rough ly that duplication in 505(a) adds \$150 to the price tag of his \$7,990 house.

It was a big objection, and it sat heavily or the industry's conscience. But, in spite of it for most of the industry the scales were stil tipped in favor of continuing 505(a). Fo more impressive than any of its virtues wa the one fact which had not changed in all th five years of postwar homebuilding: then exists no other legislative tool which could pu up the houses the U.S. had promised its vete ans. The industry's leaders had testified so emply to that. "The results of its elimination said Milton MacDonald, vice president of the Mortgage Bankers Association, "would be we nigh disastrous to the continued volume pr duction of housing under private enterpri due to the drying up of construction money ... Frank Cortright, executive vice president the National Association of Home Builde agreed unequivocally that it would "du tically reduce the volume of new homes of structed for veterans." Builders nodded emnly. The 50 per cent reduction in vetera houses would be drastic indeed.

DON'T BLAME YOUR PAINTING CONTRACTOR

You've often seen unsightly rust stains from metal sash on the adjacent brick and stone surfaces. You need never blame your painting contractor for unsightly stains caused by rust! You can prevent rust... and at no extra cost... simply by specifying RUST-OLEUM as the shop coat, primer and finish coat on all metal rust can attack.

But, specify Rust-Oleum in the first stages... when design, engineering and contracting take form... before actual delivery of material for the job. Rust-Oleum costs no more than quality material you may now be using... and is easy to apply at no added expense.

Rust-Oleum is tested and proved by a host of nationally known users. Rust-Oleum stops and prevents rust! RUST-OLEUM protects metal from rust with a tough, pliable film that dries to a firm finish. Rust-Oleum defies sun, rain, snow, salt air, smoke, fumes and other rust-producing conditions... and adds longer life wherever it is used. Girders, plates, stacks, gutters, roofs, tanks ... every metal surface can be protected surely, safely and economically with RUST-OLEUM.

Rust-Oleum becutifies as it protects because it is available in many attractive colors including aluminum and white. Rust-Oleum can be applied to already rusted surfaces with minimum preparation... it is not necessary to remove every appearance of rust!

So, take the sure way to stop rust. Specify Rust-Oleum on all rustable metal, inside or out. It costs less ALL WAYS to do the job right.

Rust-Oleum is stocked and sold by leading industrial distributors in all principal cities of the United States and Canada. See Sweets for complete catalog and nearest source of supply, or write us direct for complete information.

Architects, Engineers, Builders

If you have a client with a rust problem, and would like a free survey and recommendations, send his name and address on your business stationery. A qualified Factory Representative will arrange this FREE Service, and it includes a trial size of Rust-Oleum for specific test purposes. These's no obligation on your part. Write today. *Names on request

0

RUSTOLEU

RUST PREVENTIVE



2503 Oakton Street

RUST-OLEUM

Evanston, Illinois

.

CORPORATION

IF THERE EVER WAS A REASON FOR NOT **USING WALL TYPE FIXTURES, IT NO LONGER EXISTS!**

OF INSTALLING WALL TYPE CLOSETS IS THE EASY, FAST, SAFE WAY

NALL CLOSET FITTINGS

FOR WALL FIXTURES

J. A. ZURN MFG. CO

LUMBING DIVISION

THE WAY

NEW Zurn Catalog and Handbook No. 50 on Wall Closet Fittings and Carriers for Wall Type Fixtures

> The Zurn Way lifts fixtures up off the floor frees them from support of the wall. Both the floor and the fixture are more easily and quickly cleaned. Wall type toilet facilities are more sanitary and reduce maintenance cost.

Carrier Catalog and Handbook No. 50



HE NEW ZURN Carrier Catalog and Handbook No. 50 is the only complete and authoritative book on when, where and how to install wall type fixtures. It presents a whole new concept of wall type closets, and is virtually a manual for the specification, buying and installing of all types and makes of wall fixtures. Write for a copy now! You'll be needing it! No charge to architects, engineers and contractors.

The Zurn Way is the fast way; adjustments are easy; nothing is left to chance. Wall type closets installed in batteries or singly with Zurn Wall Closet Fittings provide all necessary drainage facilities up to the drainage line. Zurn Wall Closet Fittings are designed for any make of wall type closet.

*

+

J. A. ZURN MFG. CO. PLUMBING ERIE, PA., U.S.A. SALES OFFICES IN ALL PRINCIPAL CITIES

J. A. ZURN MFG. CO., PLUMBING DIVISION, ERI	E, PA., U. S.A.
Please send me the new Zurn "Carrier Catalog	and Handbook No. 50" for wall type fixtures.
Name and Title	Company
Street	City and State

BETH ISRAEL HOSPITAL, BOSTON Charles F. Wilinsky, M.D., Director and President-elect of the American Hospital Association This is the hospital as it now appears with its newly completed wing. One of more than 1100 hospitals using FABRON.

Volpe Construction Co., Inc., Gen'l Contr.



WILLIAM A. RILEY Curtin & Riley, Architects, Boston

Curtin & Riley is one of New England's leading architectural firms specializing in hospitals. Among their current projects are the following:

Veterans' HospitalWest Haven, Conn.
St. Elizabeth's HospitalBoston, Mass.
Albany Memorial HospitalAlbany, N.Y.
Woonsocket HospitalWoonsocket, R. I.
Mary Hitchcock Nurses Home, Hanover, N. H.
Bon Secours HospitalLawrence, Mass.
St. Vincent HospitalWorcester, Mass.
Sceva Speare HospitalPlymouth, N. H.
St. Luke's HospitalNew Bedford, Mass.
Brockton HospitalBrockton, Mass.
Marlborough HospitalMarlboro, Mass.
Lawrence Memorial Hospital, Medford, Mass.

Another Curtin & Riley hospital ... with <u>Fabron</u> Wall Coverings specified throughout!

177

ההנ

33

33

3

1 77

הה ה

TTT

11

ההה

Hinita

. .

111

F

FF

• Wherever maintenance costs must be kept low-in hospitals, college dormitories, hotels, etc.-substantial economies can be assured by the use of FABRON on walls and ceilings.

FABRON, the fabric-plastic-lacquer wall covering, far outlasts conventional finishes in beauty and serviceability . . . pays for itself many times over during its own life-time. Here are some of its advantages which have won many thousands of firm friends among architects and institutions all over the country.

Proven Durability. Fabron toughens with age . . . withstands hard usage. Installations applied ten years ago are still good for many more years of uninterrupted, trouble-free service.

Prevents Plaster Cracks. Fabron's sturdy fabric and plastic base conceals plaster blemishes . . . prevents cracks.

Sunfast and Washable. Fabron colors will not fade. Dirt and stains of all kinds are easily removed. And no matter how often it is washed, Fabron retains its fresh, attractive appearance.

Prevents Fire Spread. Tested and listed by Underwriters' Laboratories, sponsored by National Board of Fire Underwriters.

Low Initial Cost. Despite Fabron's long-term advantages, its initial cost in new construction need be little, if at all, higher than that of a good, three-coat paint treatment.

Underwriters' Laboratories, Inc. National Board of Fire Underwriters

FREDERIC BLANK & CO., INC. • Est. 1913 • 230 PARK AVE., NEW YORK 17, N.Y. Represented in Canada by The Robert Simpson Company Limited - Special Contract Division



• More than 160 Fabron patterns, colors and textures-<u>styled</u> especially for institutional needs-permit decorative latitude impossible to achieve with conventional finishes. Why not let our Advisory Department acquaint you with our free estimating, decorative and specification aids? Write today!

the fabric-plastic-lacquer wall covering for institutions.



To the building industry, R. I. W. protective products have been synonymous with outstanding results for over one hundred years. Leading architects and builders know that the scientifically compounded ingredients in the R. I. W. line account for their superior ability in safeguarding all types of surfaces against the deterioration of time and weather. Give your next project this top-quality protection by specifying R. I. W .- made by Toch Bros

> The buildings shown are just a few of the many outstanding structures which comprise Toch City. Many such buildings have been protected through the years by R. I. W. products:

FLOOR TREATMENTS

PROTECTIVE COATINGS

TECHNICAL PAINTS

TOCH BROTHERS, INC.

BEHIND THE BLUEPRINTS



The Caribe Hilton Hotel (p. 97), lush addition to the already lavish Puerto Rican landscape, is a product of the design talents of **TORO**, **FERRER** & **TORREGROSA** (r.), local architects, and **WARNER**-**LEEDS** (l.) of New York. The Puerto Rican trio Osvaldo Toro, Miguel Ferrer, Jr., and Luis Torregrosa, organized the present firm in 1945 All three are in their mid-thirties, were born in Puerto Rico and hold technical degrees from New York universities, Toro and Ferrer in architecture, Torregrosa in engineering. The New Yorkers, Charles H. Warner and Harold Leeds have had their own architectural office since early 1947.





Forty year old architect FRANCIS J. MCCARTHY was born in Sydney, Australia, soon came to the U. S. with his American parents. He attended Stanford University, worked for several architects, including William Wurster, and opened his own San Francisco office in 1938. His postwar practice has been varied, encompassing residen tial, industrial and commercial work, including the interesting Palace Hotel remodeling (p. 106)

G. E. KIDDER SMITH'S exotic career has centered alternately, in Syria, Brazil, Scandinavia and Switzerland. A Princeton-trained architect, he was sent by his Alma Mater on a Syrian expedition in 1938. A year later, he was off to Sweder and in 1942 he went to Brazil for the Museum of Modern Art to do *Brazil Builds*. A 1946 Guggen heim Fellowship resulted in his latest, *Switzerland Builds* (p. 121). Companion pieces or Sweden and the Mediterranean Region will follow later.

The refreshing departure from "post office federal" in the de sign of Detroit's forthcoming Federal Reserve Building (p 118), is largely the work of JOSEPH W. LEINWEBER (c.)

MINORU YAMASAKI (r.), and LEO J. HOSMAN (r.) Employed in the early design stages by Smith Hinchman & Grylls, the first two are now officers of a new organization, Leinweber, Yamasaki & Hellmuth, and are consultants to their old firm on the Federal Reserve project. Leinweber is a graduate of Carnegie Tech. Yamasaki's former employers form a veritable "Who's Who in Archi tecture." Hosman is vice-president of Smith Hinchman & Grylls.

A member of the building fraternity on severa counts, J. L. CARROLL is a Seattle mortgage lender, property manager and merchant builden His depression-born (1932) mortgage loan institution, Carroll, Hedlund & Associates, writes ap proximately \$15 million in mortgages each year also services over \$40 million more for four lead ing U. S. life insurance companies. Mountlak Terrace is a recent Carroll venture (p. 132).





DAIRY PRODUCTS



There's a shape size, type and color Facing Tile for every job!

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 AF-3, for our new catalog 50-C.

FACING TILE INSTITUTE

1520 18th Street, N. W., Washington 6, D. C.



INDUSTRIAL PLANTS





DRUGS AND CHEMICALS







10 GOOD NAMES TO KNOW

BELDEN BRICK CO. Canton, Ohio CONTINENTAL CLAY PRODUCTS CO. Kittanning, Pennsylvania CHARLESTON CLAY PRODUCTS CO. Charleston 22, West Virginia HANLEY CO. New York 17, New York HYDRAULIC PRESS BRICK CO. Indianapolis, Indiana MAPLETON CLAY PRODUCTS CO. Canton, Ohio METROPOLITAN BRICK, INC. Canton, Ohio NATIONAL FIREPROOFING CORP. Pittsburgh 12, Pennsylvania STARK CERAMICS, INC. Canton, Ohio WEST VIRGINIA BRICK CO.

Charleston, West Virginia



<u>AS IMPORTANT AS</u> The Building Itself



60 70 80

Edina-Morningside Junior-Senior High School Lang & Raugland, Architects and Engineers J. McClure Kelly & Co., Heating Contractors Minneapolis, Minnesota

WE have exaggerated the size of this room thermostat to indicate its importance. Because nowhere is personal comfort more important than in the school room. Today school administrators throughout America are insuring the health and working efficiency of teachers and students by installing advanced Honeywell controls in their modern schools.

Whether you are interested in schools, business estab-

lishments or homes, make sure that your heating, ventilating and air conditioning systems are *controlled* by Honeywell. Contact the Honeywell branch office in your city or mail the coupon for free booklet— "Automatic Controls for the Modern School"—A.I.A. file No. 30E.



ROOM THERMOSTAT The Symbol of Modern Temperature Control

2601 Fourth Avenue South	Minneapolis 8, Minnesota		MII	NNEA	POI	
Please send free copy of	"Automatic Controls for the Modern School."		11	nav	TYTT	
Name	Title					
Name of Co						
Address						
		FIR	ST	INC	ON	TROL

77 BRANCHES FROM COAST TO COAST WITH SUBSIDIARY COMPANIES IN: TORONTO . LONDON . STOCKHOLM . AMSTERDAM . BRUSSELS . ZURICH . MEXICO CITY



A total of 2200 Roddiscraft Solid-Core Flush Veneered Doors are in use at the United States Navy Medical Center in Bethesda, Maryland. Roddiscraft Solid-Core Flush Veneered Doors are included in the permanent equipment of the modern Mercy Hospital in Rockville Centre, New York. The new building of the Nassau Hospital, Mineola, New York, has Roddiscraft Solid-Core Flush Veneered Doors throughout.

Roddiscraft

SOLID-CORE FLUSH VENEERED DOORS PROVED IN HOSPITAL SERVICE

5 reasons why it pays to include these quality doors in your hospital construction plans



Identification and Guarantee — All Roddiscraft Solid-Core Flush Veneered Doors are guaranteed without qualification as to workmanship and materials. Inserted in the hinge rail of every door is a red, white, and blue dowel which permanently identifies the door.



Resistance to Abuse—Roddiscraft Solid-Core Flush Veneered Doors easily withstand the punishment of heavy hospital duty. The entire door assembly is welded into a solid unit—permanently punctureproof, waterproof, and resistant to decay.

Standard Thickness Face Veneers— Roddiscraft Standard Construction is a feature which adds to the durability of these Flush Veneered Doors. The Roddiscraft method utilizes Standard Thickness Face Veneers—as opposed to ¹/₈" and thicker veneers. Less moisture penetration — greater durability.

Sound Resistance—The high resistance of Roddiscraft solid-core construction to the passage of sound has been established by independently conducted laboratory tests. The standard 1³/₄" Roddiscraft Solid-Core Flush Veneered Door develops an average sound transmission loss of 30.9 decibels.

Fire Resistance—One reason why Roddiscraft Solid-Core Flush Veneered Doors are ideal for hospitals is their exceptional resistance to fire. This fact has been established by independent laboratories, where standard Roddiscraft doors exceeded the 40-minute fire test. Both from the standpoint of utility and safety, Roddiscraft Solid-Core Flush Veneered Doors measure up to the stringent requirements of hospital planners. The service record of these exceptional doors stands as proof in itself. Every day—in new hospitals and old — Roddiscraft Solid-Core Flush Veneered Doors are providing dependable, satisfactory service. It's no wonder that more and more hospitals are turning to Roddiscraft for their doors.

Write for book —"An Open and Shut Case for the Finest Flush Doors" — giving complete details and specifications of the Roddiscraft Door line.



Cambridge, Mass. Charlotte, N. C. Chicago, III. Cincinnati, Ohio Dallas, Texos Detroit, Mich. Warehouses in Houston, Texas Kansas City, Kansas L. I. City, N. Y. Los Angeles, Calif. Louisville, Ky. Marshfield, Wis. Milwaukee, Wis.

New York, N. Y. Port Newark, N. J. Philadelphia, Pa. St. Louis, Mo. San Antonio, Texas San Francisco, Calif.









THE SENATOR HAS A CERTAIN AIR ABOUT HIM

Elected representatives of the people get just as hot as anyone else during Washington summers. The problem in the remodeling of the U.S. Capitol Building* was to prevent this discomfort for senators and representatives during Congressional sessions.

The Capitol architect called in a leading consulting engineer, who designed the air conditioning system. Trane equipment was installed to meet the rigid specifications and Washington's humid heat and damp cold.

Today, Congressional sessions are cool... at least, atmospherically. And another problem was solved by the same equipment which makes air more comfortable, usable, efficient, in thousands of offices, stores, plants, homes.

If you have an air conditioning problem – remember Trane. The House of Weather Magic knows how to warm air, cool it, dry it, humidify it, clean it, or move it. Your local Trane office will be glad to work with you on any of your projects.

SKYSCRAPER AIR CONDITIONING. In addition to the type of air conditioning equipment required for large areas such as the Capitol Building, Trane also manufactures UniTrane under-window air conditioners for office buildings, hotels and other structures which are made up of many small rooms or offices.

Occupying but little more space than an old-fashioned radiator, these new units heat, cool, remove excess moisture, filter, and circulate air-provide individual room control. Write for "Merely a Matter of Air."

HEAT FOR THE HOME. Write for "How to Live in June All Winter," containing facts about quick-heating, space-saving, economical Trane Convectors.

*Architect: David Lynn, Architect of the Capitol. Consulting Engineer: Charles S. Leopold. General Contractor: Consolidated Engineering Co., Inc. Air Conditioning Contractor: Mehring & Hanson Company.

> THE TRANE COMPANY, LA CROSSE, WISCONSIN EASTERN MFG. DIVISION SCRANTON, PA. TRANE COMPANY OF CANADA, LTD. TORONTO



MANUFACTURING ENGINEERS OF HEATING AND AIR CONDITIONING EQUIPMENT . OFFICES IN 75 CITIES

LETTERS

UPSIDE DOWN EGG

Forum:

In your December issue I was very pleased to find your article "Shell Concrete" in which you use "a recent chicken egg" as an illustration.

The reason I was pleased to see this is because in my office I am using the egg as a symbol of form, displayed on a wall panel (along with an other unchangeable form, the cross, our slogar "Two plus two equals four," and a quotation from Albert Einstein: "It is a language of proportion which makes evil complicated, and good, sim ple").

But I would like to find out whether you ar ahead of me or whether it is a misprint that th egg is up-side-down on page 106. If there is reason, I am eager to know, as I am always will ing to learn.

The whole issue, mostly the churches, is swell job. Congratulations.

> GEORGE FARKAS Miami Beach, Fl

• Observant reader Farkas has but little to learn fro FORUM'S up-side-down egg at the conclusion of the shell concrete article. It was no misprint; but, rathe a playful synonym for the words "the end."—ED.

MEMORIAL BY VETS

Forum:

I have observed the designs for the Worl War II Memorials (Jan. '49), and I am unab to suppress myself.

I feel that a great wrong has been done that these memorials were not handled by a cor petition, in which only architects who served the services could compete.

Certainly only those who were a part of the war should have been given the opportunity design memorials, and certainly only those where a part of the war could understand and grasp the significance of what they mean.

> CALEB HORNBOSTEL, Archite New York, N. Y.

ETHICS, NOT BURLAP BAGS

Forum:

There is one important aspect of architectu which every architectural magazine seems to i nore today—ethics....

In the field of monumental architecture, loo at the United Nations Buildings in New You City, designed by the cream of the architectur profession. Do these buildings express the *ide* of the United Nations? Do they radiate peaand freedom? Do they express the *spirit* of lo and friendship among nations? Or do they m ror... what may go on inside them: hard ba gaining, intrigues, frustration. ... Ethical speaking, the United Nations Building group at best a burlap bag. Let us not forget that arch

(Continued on page 32)

How to choose materials for sound conditioning in schools

Noise-quieting efficiency is not the only factor to consider when selecting acoustical ceiling materials for schools. Other factors, such as cost, fire resistance, appearance, moisture resistance, and insulation value are also important. Since these factors vary in importance in different school areas, it is often advisable to select materials which best meet the requirements of an individual area.

Noise reduction versus cost. In the gymnasium and lunch room, high sound absorption is vital. Armstrong's Arrestone, an enameled metal pan unit with a noise-reduction coefficient of .85, is recommended for these areas. In classrooms, corridors, the library, and the music room, cost should be considered as well as efficiency since these areas comprise a large portion of the school's total ceiling space. Armstrong's Cushiontone is best suited to these areas, being both efficient (.75) and economical.

Installation methods affect cost. When acoustical materials can simply be cemented to the existing ceiling surface, and labor costs are held down, the total cost is comparatively low. Under normal conditions, all Armstrong materials can be applied directly in this manner except Arrestone, which is mechanically suspended on metal runners.

Lowest in total cost is Cushiontone; next, Travertone; then, Corkoustic; and highest, Arrestone.

Where unusual ceiling beauty is desired—in offices, the auditorium, or the foyer—Travertone is recommended for its attractive fissured surface. Armstrong's Corkoustic also has high decorative value. All the Armstrong materials have a smooth, white painted finish both on face and beveled edges.

Fire resistance is required of acoustical materials by many city building codes. Two of the Armstrong materials are incombustible: Arrestone, a metal pan unit with a mineral wool sound-absorbing pad; and Travertone, mineral wool in tile form. Standard Cushiontone can be obtained with a special fireretardant paint finish.

In high moisture areas—the kitchen, swimming pool, and locker rooms—the acoustical ceiling must be highly moisture resistant. Only Corkoustic is recommended, because of its extremely low-density cork structure.

In one-story buildings or on top floors, heat loss is an important consideration. Corkoustic, with a thermal conductance of only 0.18 B.T.U., offers unusually high insulation value.

All the Armstrong materials offer high light reflection, good thermal insulation, and are easy to maintain. For full details and assistance in making the proper

selection, consult your Armstrong acoustical contractor or write Armstrong Cork Company, 5403 Stevens Street, Lancaster, Pennsylvania.





ARRESTONE® highest efficiency ease of maintenance fire safety

CORKOUSTIC® moisture resistance beauty

TRAVERTONE* beauty fire safety

CUSHIONTONE® low cost efficiency

Most acoustical materials have one or more specialized characteristics, such as high efficiency, low cost, ease of maintenance, beauty, resistance to extreme humidity, or fire safety. Proper selection depends upon their ability to meet the most important requirements for each school area.

*TRADE-MARK REGISTRATION PENDING

ARMSTRONG'S ACOUSTICAL MATERIALS



Front view showing main entrance of the \$5,250,000 Hermann Hospital. Franzheim, Hedrik and Lindsley, architects.

KOHLER Plumbing Fixtures in Houston's new HERMANN HOSPITAL

Equipped with the finest modern facilities for combatting sickness and suffering, the new Hermann Hospital building at Houston, Texas, is an impressive unit in the projected one-hundred-million-dollar Texas Medical Center. As in many other leading hospitals, clinics and sanitariums throughout the nation, Kohler hospital plumbing fixtures and fittings are used.

Kohler fixtures are safe, sanitary and durable. The surfaces are glass-hard, non-absorbent, easy-to-clean. The smooth, reliable functioning of Kohler chromium-plated brass fittings is the result of competent engineering backed by long experience. Removable units contribute to ease and economy of maintenance. Both fixtures and fittings conform to the plumbing codes of all states, and their designs embody recommendations by leading surgeons.

When preparing hospital specifications, send for our complete Hospital Catalog. You'll find it convenient for reference, with descriptions and illustrations of the entire Kohler hospital line. Kohler Co., Dept. 7-P, Kohler, Wisconsin. Established 1873.



KOHLER OF KOHLER

Tyrrell vitreous china flushing rim service sink, 20 x 20". Height 20". (K-5160-A).



Example of Kohler plumbing installation in Hermann Hospital. Shown are the Rockwell vitreous china siphon jet closet (K-3800-ET), and the Greenwich lavatory (K-1955-C).



Cosmopolitan recess enameled iron built-in bath, with shower and bath fitting, diverter spout, shower head and pop-up drain. (K-525-A).

PLUMBING FIXTURES . HEATING EQUIPMENT . ELECTRIC PLANTS . AIR-COOLED ENGINES

30

A NATION-WIDE NETWORK OF FACTORY-AUTHORIZED SERVICE

. . . Another Reason Why You Get A Greater Return From Your Investment In A Cleaver-Brooks Steam Boiler



Nothing is more important than dependable operation of your steam boiler — vital to such operation is proper maintenance and service.

Cleaver-Brooks steam boiler service facilities are national — through factory-trained and authorized service organizations. Service begins with starting of your new boiler. It is placed in operation and fully tested under load by Cleaver-Brooks service-representatives. Your operators are trained in operation, care and maintenance.

Burn the available fuel in your area — gas or oil — with equal efficiency: Through their high heat transfer CleaverBrooks boilers operate at a guaranteed efficiency of 80% from full load down to 30% of rating, burning gas, oil, or combination gas and oil. No high or costly stacks (a simple roof vent carries off combustion gases)—no special foundations needed. Fit low head-room areas — provide quick steaming, flexible operation to meet fluctuating loads — eliminate ash handling. Cleaver-Brooks boilers fully meet all codes available in sizes 15 to 500 H.P. — 15 to 200 P.S.I. Write for new, just published catalog.

CLEAVER-BROOKS COMPANY 333 East Keefe Avenue, Milwaukee 12, Wisconsin



NEW — The Cleaver-Brooks steam boiler Catalog—interesting—informative—beautifully illustrated. Write—on your business letterbead for your copy.

STEAM BOILERS

Solidian 31

could build vault doors

SO EASY AND INEXPENSIVE



Many exclusive features for low-cost installation in the Mosler non-grout Vault Door prove to architects and builders the value of Mosler's 100 years' experience. Mosler doors simply clamp on inside of vault wall. No floor pit with wet cement required for setting. No patching or refinishing after door is installed ... They carry the Underwriters' Laboratories, Inc. ½ to 6 hour fire labels. Special relocking device saves 10% on burglary insurance premiums.

For Modern Home Protection ... MOSLER HOME SAFES

This popular closet or wall safe is also easy and economical to install. Offers protection for family papers and valuables at a modest price – a good, sensible suggestion an architect or builder can make to a new home owner. Available in a variety of sizes to fit any requirement. Inquiries are invited on the complete line of internationally famous Mosler record and cash protective equipment.



Mosler Safe a The Main Office: 320 Fifth Avenue --- FILL OUT AND MAIL-TODAY! New York 1, N. Y. ealers in principal cities Factories: Hamilton, O. The Mosler Safe Co., Dept. AF 320 Fifth Ave., New York 1, N.Y. Largest Builders of Safes and Vaults in the World Please send me your free booklet "Mosler Safes and Name..... Business Address. Zone City. ... State. Builders of the U.S. Gold Storage Vault Doors at Fort Knox, Ky See our exhibit at the Architects Samples Bldg., 101 Park Avenue, New York City

LETTERS

tecture is more than the creation of building that are satisfactory from the points of view of structure and esthetics. Buildings without sou and meaning can never be masterpieces of arch tecture.

Take a look at the designs submitted in th Jefferson Memorial competition for St. Loui There again was a grand opportunity for arch tects to come up with something more than th pretty picture of a functionally designed build ing. The spirit of Thomas Jefferson was to h expressed architecturally, a difficult but challeng ing task. We know only too well how much th spirit means to us and how much of it is sti alive in a great many Americans. However, th designs exhibited are testimony to the effect that the spirit of Thomas Jefferson among conten porary architects is dead. Even if we are to small to quite grasp the significance of this grea man as a formulator of human rights and r sponsibilities, we, as architects, should at least be able to recognize honesty and truth in Mont cello or the University of Virginia. In the memo rial designs I have seen, this honesty and trut were absent. They were replaced by salesman ship of cheap esthetic tricks a la world's fair. S we found Thomas Jefferson translated thus Magnanimity = height in feet; Beauty = sex shapes; Freedom=radio station; the People= 6,000 cars and 200 buses; National Heritage= so many cubic feet of museum.

To be fair, the architect can hardly be blamed Our life today has become so distorted that w not only *expect* to be sold something, but w *want* to be sold something....

The days of "Form Follows Function" ar over. Today, let us say: Ethics First.

The only place where we can see traces of ethics in building seems to be in residential architecture. Here we find a good many houses that are not only pleasant to look at and comfortable to live in but that also spell honesty.... Some body once compared a good small house with folksong. I cannot think of a better comparison because folksongs are honest too, and they are just as great.

Now, while we are able to create folksongs where are our symphonies? A folksong played over and over again and louder and louder doe not give us a symphony, although this is exactly what many architects are trying to do today.

> BERNARD WAGNER Washington, D. C.

PITTSBURGH'S TRIANGLE

Forum:

I was particularly interested in the material or Pittsburgh (Nov. '49) which brought back fond memories of some ten or twelve years ago when I worked on sketches for this area in collaboration with Harland Bartholomew & Associates o St. Louis and Janssen & Cocken of Pittsburgh.

I was moved to dig out our old files on this (Continued on page 36)



REVERE-SIMPLEX REGLET SYSTEM For Waterproofing Spandrel Beams

• The Revere-Simplex Reglet System is an economical and efficient method of flashing spandrel beams and column faces with enduring copper. This system offers the following advantages:

Affords greater moisture protection for the building.

Eliminates the necessity of flashing the entire face of each spandrel beam. In that way, it not only avoids interference with wall ties, stone anchors, angle bolts, etc., but also insures substantial economies through a large saving in flashing material.

Diverts all seepage to the exterior wall face, and prevents rusting of the steel work.

Is based upon the use of the Revere-Simplex Reglet, which is a simple, practical, easily installed receiving device for securing metal flashings in concrete. This patented reglet provides a permanent watertight connection between concrete and copper flashing, for all concrete surfaces.

The Revere-Simplex Reglet not only overcomes installation difficulties experienced with ordinary "open slot" metal reglets, but provides a substantial saving in cost as well. This is due to its many exclusive features, all of which cut down installation time and insure a superior flashing installation. Write today for your copy of the new 6-page folder which describes the Revere-Simplex Reglet System. This folder includes short form specifications for the Revere-Simplex Reglet System and detail drawings showing where and how copper waterproofing should be used below the roof line.

Revere products now available through Revere Distributors include: Sheet and Roll Copper for roofing, gutters, flashing, etc.; Lead-Coated Copper; Revere-Keystone Thru-Wall Flashing; Revere-Simplex Reglet and Reglet Insert Flashing; Revere-Keystone Vertical Ribbed Siding. A Revere Technical Advisor will always be glad to consult with you without obligation.



COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801 230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. Sales Offices in Principal Cities, Distributors Everywhere.

Copper Makes Common Sense



he completely flexible Sylvania fixture... Sylvania fixture under quickly installed under the old ceiling. The adjustable Hanger Strap unit. 3. The non-stalic, aluminum 3. The non-stalic, aluminum 3. The non-stalic, aluminum ar painting. Easily put in place and leveled from below.

JUST 3 SIMPLE PARTS

FROM dark storage space to bright, attractive offices . . . at amazing speed and low cost...that's part of the important performance story as told by Sylvania "Flexi-Module" Luminous Ceiling.

This attractive louvered ceiling

SYLVANA

is also a modern lighting system ... offering your clients the very latest lighting techniques for better vision, better working conditions.

Transform

And it's installed at a low cost that is sure to win more bids and more business for you.

FLUORESCENT LAMPS, FIXTURES, SIGN TUBING, WIRING DEVICES; LIGHT BULBS; PHOTOLAMPS; RADIO TUBES; CATHODE RAY TUBES; ELECTRONIC DEVICES
torage Space into Bright Modern Offices..

Easily ...

Economical to Install and Maintain

The Sylvania "Flexi-Module" system is easy and economical to install. The Sylvania fluorescent fixtures are quickly hung on the original ceiling or overhead supports.

The uniformly sized modules (32"x 32") are then attached to and suspended by adjustable hanger straps, and quickly leveled from below with a screw driver. And that's all! No costly buried-in-concrete construction. Telephone and electrical wiring...even air-conditioning ducts are safely suspended in the space between the modules and the old ceiling.

New Beauty ... Flexible, too

You'll like the surprising variety of lovely ceiling lighting effects now obtainable with Sylvania's "Flexi-Module" system.

For example, you can design an attractive ceiling from conventional type louvers interspersed with opaque panels. Or, you can use luminous panels and plastic panels. You'll achieve new startling effects in which interior lighting appears as natural as out-of-doors...without obvious fixtures and ugly wiring.

Flexible, too. Any fixture can be easily relocated, and easily serviced. And each unit can be wired for individual control.

For New Construction or Remodeling

Include this latest lighting technique in your present building plans. Ideal for stores, and office buildings. Wonderful for remodeling jobs, and for converting extra warehouse or factory space into bright, modern offices or display rooms.

The coupon brings you full information and new illustrated literature. Mail it today!

 \mathbf{H}

Economically

Where plans call for recessed lighting SYLVANIA TROFFER UNITS

Here are two of Sylvania's most popular Troffer Units: — the louvered for directional downward lighting, and the glass-shielded for well diffused, shadowless lighting.

These units will provide almost any desired lighting levels...from subdued "atmospheric" effects for conference and reception rooms, to the highest levels required for sustained and exacting seeing tasks.

Each unit is available in 4-foot lengths containing 1, 2, or 3, 40-watt lamps. Also in 8-foot lengths containing 2, 4, or 6, 40-watt lamps.



LETTERS

project and found a rendering which I made in connection with it (see cut).



Golden Triangle plan 1940 . . .



. . . and today

I thought you might be interested in seeing the similarity of thinking between our scheme and that which has now been adopted.

KENNETH E. WISCHMEYER, Architect St. Louis, Mo.

BONES VS. CAVITY

Forum:

Let's face it! What has Mies van der Rohe's Promonotory (Jan. '49) to offer the apartment dweller that is extra, or even attractive? The exterior? As Louis Sullivan said, "The character of the soul shows, and no living spirit is discernible." The interior? Same old cabbage-smell corridors; same cells. Zeckendorf (who in infancy was frightened by a pie, chiffon variety?) can give more living, though hardly more esthetics.

Nope, Mies van der Rohe should stick to loft loft buildings and not apartment loft buildings. To become so engrossed with "the bones" (Genther's "return to the first principles of building" is not a compliment) that the form of the cavity is forgotten is senseless.

> CHARLES R. SULLIVAN, Los Angeles, Calif.

Forum:

The January issue on apartments was nothing less than an intellectual experience for me.

Most refreshing is Mies van der Rohe's pure solution as against the usual reduction of apartment design to "a few tricks like the corner case-

(Continued on page 40)

The <u>only</u> fan with the ILG Self-Cooled Motor!



FOR EXHAUST FAN DUTY

- CERTIFIED RATINGS...
- DIRECT-DRIVE
- J ELECTRICALLY BALANCED FAN WHEEL
- SCIENTIFICALLY STREAMLINED
- "ONE-NAME-PLATE" RESPONSIBILITY

Built like a fine watch!

It gives you the low operating cost of an open type motor with the protection of a fully-enclosed motor! You save 5% to 10%on power costs. The motor never "gums up", requires minimum maintenance, adds to long life of the entire unit. No wonder engineers, architects and contractors name ILG Self-Cooled Motor Propeller Fans their first choice year after year in independent surveys. They know that ILG quality *pays-off in performance*. For complete information, call nearby branch office or send coupon for FREE Propeller Fan Catalog.

GET FREE PROPELLER FAN CATALOG!

ILG ELECTRIC VENTILATING COMPANY 2899 North Crawford Avenue, Chicago 41, Illinois Offices in more than 40 Principal Cities Please send me FREE copy of Propeller Fan Catalog No. 148 Company Name Executive's Name_ Zone City State

New STANDARDIZED Building-type Switchboards

Cut Planning Time

Switchboard planning for offices and other commercial-type buildings is greatly simplified with the NEW Westinghouse *Standardized* Building-type Switchboard.

Unitized construction eliminates special design problems . . . yet their complete flexibility gives you all the advantages of "custom built" units.

Factory-assembled, wired and tested, they may be shipped as a single unit and quickly placed in service. However, if desired, they can be shipped as individual units and quickly reassembled on the job.

They are specifically designed to feature lowcost circuit breaker protection by means of Westinghouse nofuze "De-ion" type AB circuit breakers for ratings through 600 amperes. For ratings above 600 amps, Westinghouse type DA breakers are used. Get the complete story. Call your nearest Westinghouse office or write for D. B. 30-990, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-40380









Wheeling Bar-X-Lath With solid steel ribs



Wheeling Flat Rib

Metal Lath



Wheeling 3/8" and 3/4" Rib Lath

WHEELING OFFERS THE ARCHITECT A COMPLETE QUALITY STEEL BUILDING PRODUCT 0F LINE



Wheeling Corner Lath An improved cornerite



Wheeling Strip Lath For strengthening joints



Wheeling **Bar-Z-Partitions** Studs, track, and Shoes



Wheeling Cold **Rolled Channels**

WHEELING PRODUCTS ARE QUICKLY AVAILABLE FROM 15 CONVENIES



Wheeling Straight and **Curved Point Base Screed**



Wheeling Metal **Picture Mould**

Wheeling Bull Nose Bead

Wheeling Casings and Corner Grounds

WRITE FOR DESCRIPTIVE LITERATURE COVERING PRODUCT



Wheeling Flattened **Expanded Metal**



Wheeling Anti-Skid, **Expanded Metal**



part of the skyline





Wheeling Combination Lath. Diamond or Bar-X-Lath

Wheeling Arch Lath For extra fire resistance

URING the past 60 years leading architects and builders have learned that it pays to back up good design and good workmanship with products bearing the famous Wheeling Red Label. That is why, today, Wheeling is part of the skyline in thousands of cities, towns, villages and across the country. For quality products-turn to Wheeling.

SOUNDLY DESIGNED ON THE BASIS OF YEARS OF RESEARCH AND EXPERIENCE HAS BEEN









Wheeling Stucco **Binder Mesh**

Wheeling Expansion **Corner Bead**

Wheeling Flat Apron Corner Bead

Wheeling Scallop Edge Corner Bead

POINTS AND LEADING BUILDING MATERIAL DEALERS EVERYWHERE



Wheeling Ashpit and

Clean-out Doors



Wheeling Coal Doors



Wheeling Tri-Rib Roof Deck



Wheeling Expanded Metal

FOR SATISFACTION TURN TO WHEELING IAL INFORMATION

ING CORRUGATING COMPA

BUILDING MATERIAL DIVISION

WHEELING, WEST VIRGINIA

ATLANTA

BOSTON LOUISVILLE MINNEAPOLIS

BHFFAI O CHICAGO

NEW ON FANS

CLEVELAND

COLUMBUS I ADEL PHIA

DETROIT

RICHMOND

KANSAS CITY ST. LOUIS



A shower unit designed for Built-in installation in bathrooms

At last . . . a moderately priced shower unit expressly created for recessed installation . . . the only prefabricated metal shower cabinet that provides for continuity of the bathroom wall material. By the elimination of all apparent cracks or joints it becomes an integral part of the structure rather than merely a fixture.

The result is a rich, ultra-smart, custom-built appearance. Yet, the installed cost is considerably less than that of a built-up tile shower. It makes a permanently water-tight installation, will not crack and develop leaks with settling of the building, as often occurs when mortar joints are depended upon for water-tightness.

Reversible side panels, valves can be installed on either side without drilling on the job.

Size 36" x 36" x 80"—Bonderized galvanized steel walls with baked-on synthetic white enamel—will not rust. Precast terrazzo receptor. Clean interior, no screws or projecting fastenings to mar the bright white smooth enamel finish.

FIAT METAL MANUFACTURING COMPANY



Three Manufacturing Plants (Chicago area plant) Franklin Park, III. Long Island City 1, N. Y. Los Angeles 33, Calif.

In Canada: Fiat showers are made by Porcelain and Metal Products, Ltd., Orillia, Ontario

LETTERS

ment window, the jazzed-up lobby, and back-to back plumbing."

Your presentation of the Zeckendorf-Pei'a apartment helix will pave the road towards new and more efficient construction systems. Let's hear more about buildings constructed in any thing but the classical "post and lintel" or "col umn and beam" system!

> BORIS BARRY CITRON, Designer New York, N. Y.

Forum:

I congratulate you on what I consider the best issue on apartment buildings the FORUM has ever put out, ...

> REGINALD R. ISAACS, Planning Director Michael Reese Hospital Chicago, Ill.

FHA'S 608 DEBUNKED

Forum:

The article "FHA's Impact on the Financing and Design of Apartments" (Jan. '50) was read with a great deal of interest. . . . It is stimulating to those of us engaged in real estate and insurance appraisal work, and I look forward to many more of a similar nature.

> JOHN DANKO Manager of Insurance Central Savings Bank New York, N. Y.

Forum:

... So glad you debunked FHA 608. ...

OTTO T. MALLERY Philadelphia, Pa.

Forum:

FORUM'S January issue on apartment developments and rental housing is excellent and deserves commendation. Your article on FHA's rental housing program was excellent. It hit most of the vital issues and certainly gave needed emphasis to the lack of imagination and real leadership in architecture and planning and to the financial aspects of that program which deserve extended public consideration.

I hope that you will not let the matter die with this one issue but will continue to work this topic over until Congress and the industry come up with some better proposals which can lead to the production of a needed volume of rental housing without the deplorable effects of the present program. In this connection I would like to make one suggestion. FHA is insuring annually some two and a half billion dollars worth of housing developments. There is no reason on earth why two or three per cent of that insurance volume should not be devoted frankly to experimental developments. Thousands of new ideas are being produced annually by architects, engineers and building material manufacturers. Most of these experiments cannot be proven until they are actually tried in houses and apartments. The FHA's (Continued on page 44)



Remarks: J&L STEEL JUNIOR BEAMS solve unique design problem AT LOW COST

At the Horace Mann School in Warren, Ohio, J&L Junior Beams have again demonstrated that they can do a better job in unusual applications, as well as in ordinary styles of buildings.

Notched over lintel beams and cantilevered three feet beyond the outside walls, J&L Junior Beams support not only the roof but also an attractive permanent sun shield over classroom window walls.

Because of their versatility and adaptability, J&L Junior Beams go far towards meeting the demands of today's builders. They cost less to buy and less to erect. At Horace Mann, Warren Engineering Company, who erected the school, assisted by J. A. McMahon, Ltd., Niles, Ohio steel fabricators, has found that lightweight, 12" Junior Beams, 30 ft. long, may be easily raised, placed and bolted directly into place by three men with the aid of only a handoperated winch.

This means dollars saved—through speed of erection, elimination of secondary operations, and ease of handling. Yet in light structures, J&L Junior Beams often offer all the advantages of heavier structural members.

Junior Beams, made *exclusively* by J&L, are the lightest weight hot-rolled steel beams available.

In schools, office buildings, apartments, residences, industrial buildings, hospitals, and other light occupancy structures, J&L Steel Junior Beams offer the *modern* builder many advantages. They are economical . . . fire-safe . . . rigid . . . shrink-proof . . . termite proof

JONES & LAUGHLIN STEEL CORPORATION

From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY and JALLOY (hi-tensile steels). PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT"WIRE ROPE • COAL CHEMICALS ... easy to install ... low in maintenance ... and are permanent.

ARCHITECTS . BUILDERS . CONTRACTORS

It will be worth your while to follow the lead of Arthur F. Sidells, architect for the Horace Mann School, Warren S. Holmes, consulting architect, and William C. Fisher, structural engineer on the job. Send for descriptive literature and engineering data on J&L Steel Junior Beams and J&L Junior Beam floors.

USE THE COUPON

Give your kitchens more powerf

with the Revolutionary









The \$6500-\$10,000 house

Space-saving "minimum" Selecta-Range has deluxe features, "Convenience-Level" cooking at low cost!

The \$10,000-\$15,000 house

Larger work areas, increased storage capacity, amazing flexibility add new appeal to Selecta-Range kitchens!

The \$15,000 and up house

Built in "Convenience-Level" cooking and expandable feature provide the ultimate in modern kitchen planning.



UNIVERSA

Minimum Select-a-Range "economy" arrangeme provides complete cooking facilities in compact spa at lowest cost... oven can be right or left, with or wi out drawers to solve difficult space problems!

OVER 25 Select-a-Range VARIATIONS FROM 3 BASIC UNITS!

SELECT-A-RANGE gives you new freedom to design striking modern kitchens for houses of every price range. These three basic modular units can easily and quickly be combined into more than 25 different arrangements. Each unit is complete in itself so that it can be installed separately. Or they can be fitted together in combination . . . with one or more ovens, right or left hand, installed at the "Convenience-Level" your client selects. Select-a-Range versatility meets every cooking requirement . . . large or small.

QUALITY AND VALUE

SINCE 1842



EXTRA-LARGE OVEN - onepiece porcelain interior, Thermostat control, Push-button pre-heat. Automatic Timer controls oven. Minit-Minder keeps track of time for any cooking operation from 1 to 60 min.

Centennial Anniversary Presentation



PLATFORM SURFACE UNIT -four fast-heating "Monotube" Thrift Units-swiveled for quick, easy cleaning and seven-heat control switches.



STORAGE DRAWER - extraheavy gauge steel, high-baked enamel inside and out, brass runners.



select-a-Kange



Exciting new and different appeal is created in "separated" arrangements ... Select-a-Range can be uilt in anywhere ... extra storage drawers provide uch desired additional storage space! ³"Built-in" arrangements permit maximum flexibility in planning, with unlimited variation to fill every cooking requirement . . . here is the ultimate in home owner appeal achieved at new low cost!

Only *Select-a-Range* has the dramatic no-stoop Convenience-Level" oven!

For years, women all over the country have wanted "Convenience-Level" cooking . . . a range designed to eliminate stooping and bending over a low oven.

Now, for the first time, you can give your clients the kind of kitchen they want . . . with "Convenience-Level" cooking. The height of the Select-a-Range oven can be easily set to fit the user . . . by adding or subtracting storage drawers under the oven or by building the oven into a wall or cabinet at the desired height. Here's something new . . . something different . . . something women want . . . to help sell the house. And it's exclusively Universal!



A special booklet of Universal Select-a-Range kitchen designs created in full color by Royal Barry Wills has been prepared for the building profession. For your complimentary copy, write to Dept. B-D, Landers, Frary and Clark, New Britain, Connecticut.





DI-LON Wallpaper Extraordinary

truly captures and faithfully reproduces the natural beauties that are about us continually. Marbles, rich wood grains, leathers and many other unusually attractive colors and patterns can add to the character and beauty of any home or office, public building or institution. DI-LON is practical and economical too. It is sunfast and washable. Unlimited opportunities for architects and decorators to work up new interiors.

DI-LON Wallpaper for Homes, Offices, Industrial Plants and Institutions.

Write for descriptive literature and name of nearest supplier.

COMPANY

CLEVELAND 12, OHIO

DI-NOC

1700 LONDON ROAD



LETTERS

attitude has always been that it could not insur anything experimental until after it has been used in actual construction. The reverse should be the case. Two or three per cent of FHA' insurance volume could be devoted to frankly experimental types of construction, planning and architecture without any impact on its mortgag insurance funds at all. The FHA Act itself wa established to improve housing standards. Under the terms of the Housing Act of 1949 the Con gress called upon the Housing Agency and all o its constituents to devote their efforts to improv ing methods of construction and of design to the development of better neighborhoods. Thus ther seems to be strong legislative justification fo establishing a minimum quota of experimenta projects under the FHA insurance program. . .

It seems to me that FHA's mortgage insurance program for single detached housing deserves the same kind of critical analysis. Last year's economy house program had the effect of reduc ing housing standards in this country below the levels adopted by our ancestors when houses had to be chopped out of the wilderness. A great quantity of FHA insured houses are so small as to be psychologically oppressive and financially the worst kind of investment and risk. The land planning standards which FHA pioneered during the thirties have simply disappeared from the FHA scene....

> WILLIAM L. C. WHEATON Associate Professor of Regional Planning Harvard University Cambridge, Mass.

REQUEST

Forum:

Please send me any information you might have concerning architecture.

> C. R. DIETZ Brooklyn, N. Y

• Anything else?-En.

MODERN CHURCHES

Forum:

I didn't think it possible to cram so much ignorance, misinformation, and bad taste into one article. However, FORUM has succeeded in its December article on churches. Congratulations!

> REV. RICHARD J. KEARNEY Saint Raymond Peñafort Church Philadelphia, Pa.

Forum:

Your church number should have a good influence on present-day church design. ARTHUR T. BROWN, Architect Tueson, Ariz.

Forum:

I take issue with the following lines in your otherwise excellent December article on churches: "More than any other contemporary form, arch construction requires the greatest skill

(Continued on page 48)

4911

HAUSERMAN MOVABLE STEEL INTERIORS

Designed for ...



MODERN MERCHANDISING calls for pleasant, efficient surroundings in sales and service departments. And like the Arrowhead Oldsmobile Company in Chicago, many businesses are meeting this requisite with Hauserman *Movable* Steel Interiors.

Many styles and types of Hauserman Steel Interiors are available to meet sales and service department needs in businesses of every size. There are matching accessories for every specific requirement. What's more, these handsome interiors can be quickly, easily moved, and all units can be reused again and again without affecting their original beauty and efficiency.

Why not learn all the advantages and economies of Hauserman *Movable* Steel Interiors? You can get all the facts from the Hauserman office or representative nearby or by contacting *The E. F.*

Hauserman Co., 6760 Grant Ave., Cleveland 5, Obio. Or if you prefer, write for our fully illustrated, 60page catalog.



Organized for Service Nationally Since 1913



Partitions • Wainscot Railings • Acoustical Ceilings Complete Accessories



when you specify Curtis Cabinets!

If Mrs. Homeowner prefers shell pink,

sage green or powder blue in her kitchen

cabinets, she can have what she wants-

when you specify Curtis wood cabinets.

For these sturdy, lifetime-lasting cabinets

are finished two coats at the factory-

ready to paint in the color of the owner's

choice. Colors can be changed at will,

Curtis cabinets arrive on the job in

dustproof cartons-ready to fit together,

quickly and easily, into any size or shape

of kitchen. Built like fine furniture, these cabinets have modern refinements and

conveniences-easy-sliding drawers-



A Curtis "cabinet wall" will insure ample storage space in the home. These standard Curtis Units will find a useful place in storeroom, laundry, sewing room, rumpus room, nursery, ball or bathroom.



quickly and inexpensively.

Curtis makes a complete line of architectural woodwork for the modern home. Make your next house "all Curtis." greater storage space—special cabinet units that fit "around a corner"—expert machining and workmanship—a place for everything! Hardware is furnished for each unit.

Curtis cabinets have a wide range of use in schools, church kitchens, laboratories, libraries, hospitals, laundries and clubs. Domestic science departments in schools and colleges find Curtis cabinets an aid to better teaching.

For true kitchen flexibility—in colors and arrangement—specify Curtis wood cabinets.

Curtis Companies Service Bureau AF-3K Curtis Building Clinton, Iowa
Gentlemen: Please send me literature on Curtis kitchen cabinets and other Curtis Woodwork.
I am architect contractor prospective home builder student. (Please check above)
Name
Address
CityState

Insulite^{*} Bildrite Sheathing Offers

222% More Insulating Value than Wood Sheathing....

SULTE BILDRIT

ATHA

ONE LAYER OF INSULITE SHEATHING EQUALS TWO LAYERS OF WOOD SHEATHING

> T'S 10° below zero in that laboratory "cold room." On the other side of the test panel it's 70° above zero—average room temperature. This was a test to re-create actual living conditions in an average home. We wanted to compare the insulating value of INSULITE Sheathing and wood sheathing.

HERE'S WHAT THE LABORATORY REPORTED

Delicate instruments measured the heat flow through the materials from the "warm room" side to the "cold room" side. INSULITE performed an amazing insulating job! Here are the facts:

- INSULITE resisted heat loss better than twice as well as wood.
- Engineers call this the "k" factor, and the "k" factor of INSULITE was 222% better than that of wood.
- One layer of INSULITE (²⁵/₃₂" Bildrite Sheathing) provided more insulating value than 2 layers of wood sheathing.
- Besides double the insulating value, Bildrite also gives you double the bracing strength of wood sheathing horizontally applied. It's water-proofed throughout every fiber protected.

THAT'S WHY INSULITE builds better-gives more for the money. Warmer homes in winter, cooler homes in summer. Specify Double-Duty INSULITE.

Refer to Sweet's File, Architectural Section 10a/9

3-50



COMPARATIVE

INSULATING VALUE



Startlingly different — an entirely new conception — Fleetlite is the window you have been demanding for years. Engineered and built as a complete packaged window, Fleetlite provides frame, sash, storm sash and screen as an integral unit, easily installed at one time. Home owners like the selfstoring convenience of FLEETLITE its economy, its beauty, its permanence. Already installed in thousands of homes throughout U.S. and Canada.

"What people are looking for," says Builder.



Enclosed is an order for Fleetlite windows for an additional group of homes which I am starting in the early spring.

After using your windows in all of my building during 1949, I can truthfully say that the fact that I was featuring your windows accounted for a ready market for my homes and advance orders extending into 1950.

Tor a ready market for my nomes and advance orders extending into 1950. It may interest you to know that recently I had one of these houses open for inspection for one day, and at that time, took orders for twelve additional homes, all to be equipped with your windows. As a result I am convinced that the new design features of Fleetlite Windows are what people are looking for even in low-cost homes, and I am therefore planning on using your products exclusively during the coming year. Many thanks for your good cooperation and prompt service.

Val F. Hermann Hamburg, N. Y.

Write today, for full details or see your distributor. Made by

FLEET OF AMERICA, INC.

	71 -10.1	
1	VectViles	
1-	and here .	
1	AMERICA'S Timest WINDOW	
-		 8

116 PEARL STREET BUFFALO, N.Y.

LETTERS

in handling. Nothing is quite so unwieldly as the poorly proportioned arch. But while the parabolic version would theoretically seem the most natural for church design, there remains to be built a church in which this form has been gracefully or subtly adapted." (Italics mine.)

The Church of Saint Francis of Pampulha at Belo Horizonte, Minas Gerais, Brazil (see cut)



Niemeyer's church

by Oscar Niemeyer Soares Filho, foremost architect of Latin America, though unconsecrated for political reasons (and perhaps ignored by FORUM for the same reason), was published by LIFE, which noted: "the Brazilians are so proud of its artistic merits that it is now a national monument." This building employs the parabolic form with such a measure of success that *Holiday* magazine not only recognized it as "the world's most modern church" but it has definitely set a trend as evidenced on pages 65 and 66 of the FORUM's December issue.

> ANTONIO P. DE ALBUQUERQUE, Architect School of Engineering and Architecture University of Kansas Lawrence, Kan.

 FORUM'S church round-up might also have included one of the remarkably handsome parabolic churches in Germany by Dominikus Boehm and one of the fine Italian examples, all of which have, incidentally, been dedicated without a tremor.

Regarding his design of the Church of St. Franci of Pampulha, Architect Niemeyer has stated, "To design a church has been a rather perplexing problem for modern architects. Usually the tendency has been to adapt the old and well-known styles. In fact, ther seems to be a timidity about departing from the con ventional. We, however, have tried to proceed mor freely, adopting a solution based on the program sub mitted to us and on the possibilities offered by new construction methods.

"The roof takes the form of a parabolic dome whic satisfies the needs of the interior very well and is the natural solution suggested by concrete. The be tower, the marquee, the painted tiles, the mosaics is color, and the granite surface all contribute towar the ensemble."—ED.

ERRATA

• FORUM regrets that this department in Januar erroneously referred to Talbot Hamlin as Dean Columbia University's School of Architecture. A tually, Hamlin is Professor of Architecture; Leopo Arnaud is the Dean.—ED.



FORMICA FITS ANY FASHION

Decorative themes in kitchens may change from home to home. But beautiful hard working Formica fits them all.

Formica helps sell the rooms that sell the house. Colorful Formica surfaces wipe clean with a damp cloth, never need painting or refinishing. Alcohol, boiling water, fruit juices, mild acids and alkalies fail to dim its lasting luster.

In every style and kind of kitchen home makers are asking for Formica by name and looking for its famous label. Write for new color literature of idea stimulating uses for Formica in the home. Formica, 4631 Spring Grove Ave., Cincinnati 32, Ohio.

Look under "Plastics" in your Classified phone book for the name of a local Formica fabricator.



New 16 MM color sound movie "Living With Formica" pictures uses and how it is made. Available now for group showings. Write for film.





EARGENT

SHAMROCK HOTEL Houston, Texas • INTEGRAI by Sargent • OWNER: Glenn McCarthy • ARCHI Wyatt C. Hendrick • HARDWARE SUPPLIER: Peder and Steel Company • CONSTRUCTION MANAC Stone & Webster Engineering Corporation, Tille Construction Company



is the only lock of its kind

Sargent's Integralock is unique. 30% ewer parts. 50% smaller lock case. Chops 75% ff installation time and costs less.

No other lockset with full functions can atch the Integralock for simple design, troubleee service and lockfitting time savings. Not are claims, these are job-proven facts about ntegralock . . a rugged Lockset that continues o stand up against rough day-in, day-out andling on thousands of installations including schools, hospitals, all types of commercial and public buildings, and fine residences.

The result of ten years of engineering and design study, the Integralock offers in one simple, maintenance-free mechanism all the advantages of the older Mortise and Unit Locks plus those advantages mentioned above. And mass production techniques make it available at less cost than its pre-war predecessors.

You can give your clients better locks at less cost on the buildings you are now designing by using Integralocks.

utility 11 locking functions, keyhole in the knob
beauty round or square roses, sleek knobs, variety of finishes
security 5 or 6 pin cylinder locks, knob shear pin safety unit
service factory-sealed all brass and steel mechanism, compact for quick mortise and assembly



Your nearest Sargent distributor can supply you with Integralock data. Write us for his name.



William 'Bill' Patrick, special sales representative • 383 Talbot St., London, Ontario, Canada





IN AMERICA'S **TOP MAGAZINES!**

SATURDAY EVENING POST



America's foremost advertising medium. Reaching over 4,000,000 "able to buy" -your potential customers for automatic control sales!

BETTER HOMES AND GARDENS



Reaching an audience of over 3,000,000 people vitally interested in matters of home comfort and improvement. A natural market for the best in automatic heating controls!

DETROIT

ing home and industry American-Standard + American Blower + Church Seats + Detroit Lubricator + Kewanee Boillers + Ross heater + Tonawanda irc

DETROIT'S aggressive new national advertising campaign will make the American public keenly aware of the vital importance of proper heat control and add impetus to the ever increasing demand for DETROIT Certified Controls. Furthermore, when you specify DETROIT, your clients' assurance of complete heating



5900 TRUMBULL AVE., DETROIT 8. MICHIGAN Division of AMERICAN RADIATOR & Standard Sanitary conformation Canadian Representatives: RAILWAY & ENGINEERING SPECIALTIES, LTD.-Montreal, Toronto, Winnipeg satisfaction is backed by a trained nationwide sales and service organization.

So specify DETROIT Controls on all your jobs-it's a sure way to give your clients the ultimate in heating control performance! For complete information on DETROIT'S amazing Timed Cycling Room Thermostat-"the thermostat with a brain"-and the complete line of DETROIT heating controls, write today for Form No. 1515 and Bulletin No. 227.

DETROIT HEATING AND REFRIGERATION CONTROLS . ENGINE SAFETY CONTROLS . FLOAT VALVES AND OIL BURNER EQUIP-MENT . DETROIT EXPANSION VALVES AND REFRIGERATION ACCESSORIES . STATIONARY AND LOCOMOTIVE LUBRICATORS

Get Positive Protection Against OVER and UNDER Heating

Protect Your Family's Health!

DETROIT CERTIFIED CONTROLS

... AND GET THE THERMOSTAT WITH A BA



Plastic-Asbestos Flexachrome



Flooring specifications for hospital x-ray rooms were extremely troublesome... until Flexachrome* provided a simple solution to this complex problem. Its unusual versatility makes Flexachrome suitable for many other flooring needs, too.

Because it's truly greaseproof, you can use Flexachrome in kitchens, dining areas, compounding rooms...anywhere grease creates a problem.

Cost-per-square-foot-per-year is a surprisingly low figure. One reason for this is quick, easy installation. (The unusual flexibility of the tile allows a firm, fast, permanent

bond to the sub-floor.) Another is Flexachrome's extraordinary durability. A third is simple, economical maintenance. Flexachrome retains its brilliant beauty under most rigorous service merely with daily sweeping to remove loose dirt, periodic washing and water-waxing (if desired). And what scope you have in design! The individual tiles can be laid in an almost endless variety of patterns. Functional designs influence traffic, identify departments, enhance safety. Decorative motifs add striking individual beauty to interiors. Custom-cut inserts create truly unique floors.

Flexachrome is unsurpassed for color, too. 33 rich, vivid colors enable you to carry out any decorative mood you wish... gay and bright, or dignified and subdued.

You'll want complete information on



Flexachrome, it's yours for the asking. Write us: THE TILE-TEX DIVISION, The Flintkote Company, Dept. H, 1234 McKinley St., Chicago Heights, Ill.

> Other Tile-Tex Flooring Products include: Mura-Tex* Plastic-Asbestos Wall Tile; Tuff-Tex* Heavy Duty Greaseproof Industrial Tile; Tile-Tex*... the Quality Asphalt Tile.

*REGISTERED TRADEMARK, THE FLINTKOTE COMPANY



We streamlined

the door closer to make



a modern pecoration

Here is a door closer that you'll be happy to recommend for appearance as well as utility. The new YALE COMPACT DOOR CLOSER

> represents the modern concept of economy of size, minimum of detail and smoothness. We've reduced the bulk 36%, simplified the detail and eliminated the bulges. Even the brackets have been modernized. *Rotary piston checking* improves efficiency while making the new beauty possible. It gives an even circular stroke; continuous checking action, with simple two-speed closing adjustment. Leading builder's supply dealers are displaying the YALE COMPACT DOOR CLOSER. See it—specify it.



compact door closer More Beauty Smaller Size Equal Power Smoother Action Same Price

FREE: Literature illustrating simple operating method, famous YALE workmanship, "hold-open" device, etc. Mail coupon now.

YALE

	1.5
THE YALE & TOWNE MFG. CO. STAMFORD, CONN.	
Please send me free 2-page description and "The Inside Story" on YALE COMPACT DOOR CLOSER.	
Name	
Company	
Address	-
CityState	
and the second	

THE CURTAIN WALL

II ANNI THEFT ----THE 1838 5234 su: ------1111 1111

pages of this issue of the FORUM have reviewed and brough of the curtain wall o more people advertisin clusively to products which apply prints of the

to se

FORUM

THE CURTAIN WALL

New!- KAYLO LAMINATED PANELS Provide Finished Walls





FOR CURTAIN-WALLS OR INTERIOR PARTITIONS, new Kaylo Laminated Panels represent a significant development in the building field. Available with a number of different facings, they alone provide this important combination of advantages:

- Insulating Value—Two-inch panels have better insulating value than 16 inches of solid concrete.
- Fire Protection The Kaylo core is incombustible. Installed with proper joint systems, Kaylo Laminated Panels (with cement-asbestos, steel, aluminum or Monel facings) meet A.S.T.M. one-hour fire standards.
- Permanence The inorganic Kaylo core is rot-proof, vermin-proof and insoluble in water.
- Structural Strength—Kaylo Laminated Panels have great strength and dimensional stability. Facing and core are securely bonded with waterproof adhesives.
- **Easy Erection**—The lightweight panels (weighing only 6 lbs. psf) are easy to handle and move into place; can be sawed, nailed or bored with standard tools.

Kaylo Laminated Panels provide better walls, reduced building load and easier erection for nearly every type of building. Investigate now.

Kaylo Laminated Panels Available with a Variety of Facings CEMENT-ASBESTOS PORCELAIN ENAMEL WOOD VENEER ALUMINUM STEEL PLASTICS ZINC-COATED STEEL STAINLESS STEEL MONEL Kaylo Laminated Panels with cement-asbestos facing are being produced by Owens-Illinois. Other manufacturers are using inorganic Kaylo cores for laminates with: steel, aluminum, porcelain enamel, zinc-coated steel, stainless steel, Monel, plastics and wood veneer.

The core material for Kaylo Laminated Panels is a remarkable new chemical composition which is completely inorganic, incombustible, rot-proof and undamageable by water. Other Kaylo products include: wood-faced and metal-faced firedoors; insulating roof tile; heat insulating block, and pipe insulation.



inels.

....

. . . .

ED PANELS send	Coupon Sample and rature
S GLASS COMPANY n • Toledo 1, Ohio • Boston • Buffale • Chicago • Cincinnati • iliadelphia • Pittsburgh • St. Louis • Toledo • Wi	Dallas CITY

BRAIR AT

Kaylo Divisio

OWENS-ILLINOI

SALES OFFICES AT: Atlanta Minneapolis • New York • P

Robertson Q-Panels on tower and buildings at Federal Telecommunications Laboratories, Inc., Nutley, N.J. Giffels & Vallet and L. Rossetti, Architects and Engineers. Geo. A. Fuller Co., Contractor.





Robertson Q-Panels on the Riverton Station of Northern Virginia Power Co., Riverton, Va. Sanderson & Porter, Engineers and Builders. Chapman, Evans & Delahanty, Consulting Architects.

Your cue to modern curtain-wall construction ... ROBERTSON Q-PANELS

Shown here are a few of the many hundreds of Robertson Q-Panel installations on buildings throughout the country. More than 15 years of experience and research have developed the Q-Panel into a modern thin-wall of great architectural usefulness and beauty. Here are a few quick facts about Q-Panels . . .



2403 FARMERS BANK BLDG.

MATERIALS-Metallic Coated Steel, Galbestos, Stainless Steel, Alu-minum. On both sides or in combination.

SIZE-2'0" standard width. Lengths up to 25' 0" depending on material

WEIGHT-3 lbs. per sq. ft. in aluminum-6 lbs. per sq. ft. in steel. INSULATION VALUE—Superior to 12" of masonry with furred plaster. U-Factor—.14 B. T. U. in aluminum—.18 B. T. U. in steel.

STRENGTH-Great strength permits widest spacing of horizontal supports to meet any required wind load.

Write for complete details.

H. H. ROBERTSON COMPANY

(ASSIGNATION



obertson Q-Panels on the Country Life Press of Doubleday & Co., Garden City, Long Island, N.Y. Designed by I Lindeberg. Built by Geo. A. Fuller Co. BELOW—One of a series of excellent small buildings designed by obert O. Biering for the Houston Power and Lighting Co., Houston, Texas. Walls are Robertson Q-Panels.





Robertson Q-Panels on the Wilgoos Laboratory of the Pratt & Whitney Division of United Aircraft Co , Hartford, Conn. Designed by Albert Kahn Associated Architects & Engineers, Inc. Built by Turner Construction Co.



Robertson Q-Panels on the striking new office building at the General Electric Turbine Flant at Schenectady, N.Y. Stone & Webster Engineering

VERSATILE ZONOLITE* AGGREGATES Proved Indispensable in TODAY'S LIGHTWEIGHT BUILDING FIRE PROOFING

Unique Characteristics Provide Manifold Usefulness

FOR MODERN CURTAIN WALLS, Zonolite* Vermiculite concrete can be employed as a back-up with all types of facing materials, providing extreme reductions of weight and bulk. Three inches of Zonolite concrete permitting fire-safety equivalent to 8" of brick, yet weighs only 1/3 as much. Its thermal insulation value far exceeds that of brick or regular concrete.

WALLS - CEILINGS - FIREPROOFING: Up to 66% of dead weight in a building can be eliminated when Zonolite plaster is used for walls and ceilings and for fireproofing structural members. Zonolite Plaster Aggregate used in lieu of sand for suspended ceilings or partition walls and in place of conventional fireproofing for columns and beams permits the use of much lighter steel

ROOFS CEILINGS & WALLS

Illustrated above (upper) the use of Zonolite concrete for the roof deck and (lower) of Zonolite plaster for walls and suspended ceilings. Combinations of 2" vermiculite concrete topping with a 1" vermiculite suspended ceiling over face of metal lath have received a 4-hr. fire-rating from Underwriters' Laboratories.

members at correspondingly lower costs. Furthermore, Zonolite vermiculite aggregate is substantially cheaper to handle and store than the sand it replaces.

A sledge hammer blow merely dents Zonolite plaster and it won't chip when nails are driven into it. Plasterers prefer it, too, because of its lighter weight, easier spreading and fewer droppings.

FIRE-SAFE FLOORS & ROOFS: In short span roof decks, and in various types of floor construction, Zonolite vermiculite concrete unites superior insulation and fire safety with structural material-all applied in one operation. This same concreteonly 1/5 the weight of "ordinary" concretecan be poured as permanent insulation fill over any existing roof.





B

1000

STRUCTURAL STEEL

An estimated 5,000,000 lbs. of dead weight were eliminated in the construction of a 35-story bank building by the use of Zonolite concrete floors, suspended Zonolite plaster ceilings and the use of Zonolite plaster for fireproofing structural steel members as shown above. Savings effected by weight reduction more than paid for the extra firesafety and thermal insulation which Zonolite aggregates made possible.

In recent Underwriters' Laboratories tests, col-umns fireproofed with Zonolite Plaster as pictured above were awarded a 4-hour rating for 11/2" of plaster and 3 hours for 1" thickness. The saving in weight (see inset) as compared with solid concrete fireproofing is obvious.

FULL COOPERATION OFFERED

The uses of Zonolite concrete and plaster shown herewith will undoubtedly suggest many other possible applications such as their use in the new curtain wall construction. Mail the coupon today for a special file of useful reference material, or write us for information on your specific problems.

2	ZONOLITE COMPANY Dept. AF-30, 135 S. La Salle St. Chicago 3, Illinois	
	ZONOLITE COMPANY-Dept. AF-30 135 S. LaSalle St., Chicago 3, Ill.	
	Please mail me special file of reference material on use of Zonolite vermiculite aggregates in plaster and concrete.	
	Name	
	Address	
	City & Zone	

a better basic concept of sandwich construction

To modern techniques in curtain wall construction, Crucible has added a fundamental advantage — *design freedom*, unhampered by the restrictions of standard-sized sandwiches. Now you may apply Crucible design to the floor, window or structural effect of *your* choosing. Moreover, this particular method of construction means no thermal short circuit!

Crucible's contribution to the use of stainless steel in curtain wall construction is continuing evidence of a half century of specialty steel leadership. Our staff of architectural advisers, pioneers in this field, can demonstrate the many advantages of Crucible Stainless in curtain wall construction. Investigate now! One call from you puts this experience at your service.

CRUCIBLE STEEL COMPANY OF AMERICA, Chrysler Building, New York 17, N. Y.

PURPOSE

first name in special purpose steels

ESS SHEET

SPECIA

Stainless steel weathers better than any other material, and since Crucible Stainless Steel is uniform in analysis, gauge and finish you can expect maximum service even under severe abuse. It's easy to work with Crucible Stainless...enjoy its flexibility design-wise!

hot and cold rolled

ALLOY .

MACHINER

TOOL

TEELS



- 2. SPANDREL PANELS HUNG AND BOLTED
- TO ANGLES. 3. PIER PANELS HUNG AND BOLTED TO
- ANGLES.
- 4. WINDOW AND MULLION PANELS BOLTED TO SPANDREL PANELS.

THE CURTAIN WALI

For Multi-Story Buildings Insulated Curtain Wall Panels

faced with Republic Enduro Stainless Steel

Here they are—after years of designing, engineering and testing by Republic engineers and metallurgists—practical insulated steel curtain wall panels. They're an actuality—not merely an idea field-proved by Republic's subsidiary, Truscon Steel Company, in panels fabricated by them and applied to their new Baltimore office and warehouse.

Two steel facings enclose lightweight slabs of insulation. The outer facing of time-defying Republic ENDURO Stainless Steel can be formed to meet specific architectural requirements, and to provide stiffness and ventilation within the panel.

The inner facing of Republic Electro Paintlok is formed into pans spot-welded together to provide the structural part of the panel. The excellent paint adherence of this material makes it suitable as a finished wall—or it may serve as the base for various finishing materials.

The type of insulating material is determined by the required fire rating – with the test range at present up to $2\frac{1}{2}$ hours. Depending upon panel thickness and material used, the "U" factor varies from .076 to .208.

Note these advantages:

1. LIGHT WEIGHT—Panels weigh from 6 to 10 pounds per square foot depending upon thickness and insulation. Possible reduction of wall weight from 150 to 10 pounds per square foot with only 1/15 the weight on skeleton frame and foundation.

2. ADDED FLOOR AREA —A 5-inch thick panel takes the place of a 14-inch masonry wall. As much as 3⁄4 square foot of rentable floor space can be gained for each linear foot of exterior wall on each floor.

3. FAST, ECONOMICAL CONSTRUCTION—Shop preparation of panels means fast, accurate fit. Panels are attached to continuous structural angles fastened to the structural skeleton. Provision for vertical and horizontal adjustment assures accurate alignment.

Would you like to know more about this modern type of construction and how you can apply it to multi-story buildings? Republic engineers and metallurgists are ready to bring you their unequalled experience in curtain wall design and construction . . . Write us.

REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio GENERAL OFFICES • CLEVELAND 1, OHIO Export Department: Chrysler Building, New York 17, New York



RUST-RESISTANT • CORROSION-RESISTANT • HEAT-RESISTANT • ATTRACTIVE • SANITARY • EASY TO CLEAN EASY TO FABRICATE • STRONG • LONG-LASTING • LOW IN END COST • What more can be desired in a material?



Curtain wall panels—shown here on a partially-completed building—utilize the beauty, high strength and ease of cleaning of ENDURO Stainless Steel, as well as its great resistance to rust, corrosion and heat.

* *

Lightweight, easy-to-handle panels can be erected rapidly, even in freezing weather.





Stone and Webster Engineering Co., Boston-Architects and Builders Allegbeny Metal wall panels fabricated by H. H. Robertson Co., Pittsburgh

strikes the modern stainless note with ALLEGHENY METAL

Write for your copy of "STAINLESS STEEL CURTAIN WALLS...

Progress Report on Methods"

Here's a brand-new technical brochure for architects and designers—the last word on the revolutionary structural development of stainless steel "sandwich" panels. Presents all the data available to date on leading types of panels their construction, installation, etc., for your information and selection.

> ADDRESS DEPT. AF-3

The 4-story, 460-foot long office building that fronts GE's new turbine plant in Schenectady is an architectural first. The walls are 3-inch thick insulated stainless steel panels instead of the usual masonry ... and no departure from old, time-worn methods was ever better justified.

Beside the obvious advantages of lustrous beauty and lifetime resistance to atmospheric corrosion, the use of stainless walls meant increased floor space, speedier construction, lower erection costs, and big savings in maintenance and depreciation costs. Insulating qualities were superior to a 12" plastered masonry wall. Weight was so much less that four stories could be placed on structural steel and foundations designed originally for three floors in masonry. Cold-weather construction problems were eliminated, and working conditions were safer and cleaner due to the virtual elimination of material elevators, scaffolding and forms.

Where can you use Allegheny Metal to similar advantage? Let our Technical Staff help you.



Nation's Leading Producer of Stainless Steels in All Forms

ALLEGHENY METAL is stocked by all Joseph T. Ryerson & Son, Inc. warehouses

THE CURTAIN WALL



Here's a handsome, permanent panel for wall construction

Armco STEELOX, long used as a basic building material, now is available in Armco Stainless Steel for wall construction.

The strong, light, easily erected wall panels can be obtained in module widths and offer great flexibility in designing walls for all types of buildings—large and small. Full architectural freedom is assured by self-framing STEELOX panels, which respond to horizontal or vertical treatment, as shown. Insulation and interior wall combinations are easily made with standard materials. Batts, rigid board, light-weight concrete slabs or insulating plasters can be used conventionally to meet individual requirements. The exterior surface of the panels is a soft, smooth, satin-finish stainless steel—pleasing to the eye and as enduring as it is beautiful. Stainless steel is well known for its great strength and corrosion resistance. It has the further advantage of being easy to clean and keep clean. With Patented Armco Stainless STEELOX, architects and builders are assured of long life, proved construction and sound engineering. Write and outline your problem or interest today.

ARMCO STEEL CORPORATION



981 CURTIS STREET, MIDDLETOWN, OHIO . PLANTS AND SALES OFFICES FROM COAST TO COAST . THE ARMCO INTERNATIONAL CORPORATION, WORLD-WIDE

and now-steel curtai





URING the past few years we have accumulated a vast store of inforion on this advanced type of exterior construction that promises mateimprovements over present convenal multi-story building practice.

lere are facts and data carefully nered from many sources that will you clarify your thinking on the parative merits and future possibiliof thin, lightweight curtain walls in ch handsome, non-weathering, firestant and durable U.S.S Stainless el panels provide a unique combinaof permanence and low maintenance n greater ease and greater economy of struction.

et us show you how these large-size, ly-handled, easily-fitted curtain wall els of U·S·S Stainless Steel can reduce site labor costs and simplify and ed up erection . . . how readily these els can be adapted to both vertical horizontal designs . . . how ideally nless Steel pilaster sections can be

combined with colorful spandrels of porcelain-enameled steel to produce an infinite variety of attractive wall treatments.

Let us calculate for you the potential economies of such construction-how its . lighter weight can reduce costs by reducing the tremendous loads of present exterior walls on steel skeleton and foundations . . . how its thinner section will save space to provide additional rentable area . . . how it will save money by minimizing upkeep and cleaning costs. Learn, too, how recent and contemplated changes in building codes are paving the way for an ever-widening use of such construction.

These pertinent facts and many more which are essential for a better understanding of this important development are yours for the asking. Write us and tell us what you want to know, or better still, have one of our development engineers call in person to discuss this matter with you.



AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO - CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO COLUMBIA STEEL COMPANY, SAN FRANCISCO - NATIONAL TUBE COMPANY, PITTSBURGH - TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST - UNITED STATES STEEL EXPORT COMPANY, NEW YORK



EXTERIOR METAL PANELS FOR MULTI-STORIED BUILDINGS



TYPICAL SECTION AT FLOOR LEVEL

U-S-S STAINLESS AND PORCELAIN-ENAMELED STEEL combined in lightweight, permanently good looking panels like this, provide a curtain wall that saves weight and space, that speeds up erection, that can be kept clean and weather-tight at minimum cost. The Stainless Steel sections can be produced in a variety of attractive contours, fluted, formed or corrugated, and in all architectural finishes. Porcelain-enameled steel sections can be obtained in any color and in any finish and texture desired. These all-steel panels, produced to exact dimensions, can be fabricated in units, one, two or even three stories long, and up to 96 inches wide. All attachments to the building frame are simple and differ only slightly from conventional methods.





NEW ACCOUNTS

You can

bank on STAINLESS STEEL

at the Pelham Parkway Branch of The Bronx Savings Bank (Hubert E. Reeves, Architect)

The proven low maintenance cost of stainless steel was a primary reason for its selection for application in the Pelham Parkway Branch of The Bronx Savings Bank.

In this gem of a neighborhood bank, the stainless steel, buffed to a satin finish, gives a pleasing and luxurious appearance.

Stainless steel is also outstanding for its adaptability to architectural forms for both exterior and interior applications, including such a wide variety as curtain walls, window frames, grill doors, ornamental trimmings, and even tiny screws.

To insure the production of consistently high grade stainless steel, the use of ferro chromium of dependable quality and precise analysis is of prime importance. Vancoram Brand Ferro Chromium, made by closely controlled processing methods from carefully selected raw materials, fills these requirements. Low-carbon grades for the manufacture of stainless steel are supplied with a carbon content from 0.06% max. to 2.00% max., all containing from 67% to 72% chromium.

If you have a technical problem involving the making, treatment, fabrication, properties, or performance of stainless steel, our metallurgical engineers will be glad to help you solve it.

VANADIUM CORPORATION OF AMERICA +20 LEXINGTON AVENUE, NEW YORK 17, N. Y. • DETROIT • CHICAGO • CLEVELAND • PITTSBURGH





A COMPLETE ALUMINUM SERVICE

ARCHITECTS AND FABRICATORS

HIS complete aluminum service, from mine to you, is as near as your phone. And remember, bright, enduring Reynolds Architectural Aluminum costs less than any of the modern architectural metals. So, whatever your needs, large or small, just call the nearby Reynolds Sales Office listed under "Aluminum" in your classified telephone directory. They can tell you where many of the items may be obtained from local warehouse stock. If it's a fabricated aluminum product they will be glad to recommend the names of dependable suppliers. In any case, when it's aluminum for architectural use, ask Reynolds.

Write for the Reynolds Architectural Aluminum folio. Contains technical data on the complete range of materials and engineering drawings for direct tracing.

REYNOLDS METALS COMPANY Aluminum Division 2528 SOUTH THIRD STREET • LOUISVILLE 1, KY.











EXTRUDED SHAPES*

THE CURTAIN WALL

Reynolds standard extrusions include thresholds, jambs, sills, copings, etc., many of which are locally warehoused. Special designs can be produced to meet building schedules.

TUBULAR PRODUCTS

A full line of aluminum tubing in local warehouse stock. Special shapes fabricated to order.

SHEET*

A complete selection of aluminum sheet in plain, corrugated, embossed and perforated designs.

STRUCTURALS

Rolled aluminum structurals such as angles, H beams, I beams and many forms of rod and bar stock.

ORNAMENTAL CASTINGS

Any type of ornamental casting produced to specification by independent foundries from Reynolds Aluminum pig and ingot.

OTHER ALUMINUM BUILDING MATERIALS – Alumi-Drome (prefabricated utility building), Gutters, Downspouts, Reflective Insulation, Roofing and Siding, Built-up Roofing, Windows. Address requests for information to Reynolds Metals Company, Building Products Division, 2019 South Ninth Street, Louisville 1, Kentucky.

***IDEALLY SUITED TO MODERN CURTAIN WALL CONSTRUCTION**







irst in building Curtain-Wall Hotels on Wheels"

Again first-Pullman-Standard is pioneering in the fabrication of stainless steel and aluminum for the curtain-wall buildings of tomorrow.

1

America's most famous streamliners, built by Pullman-Standard, are traveling demonstrations of experience and facilities which now can be directly applied in a new and spectacular field-the use of die-formed metal panels and spandrels in curtain-wall building construction.

Pullman-Standard has already entered into discus-

sions of designs and specifications with a number of architects, builders, owners, and metal producersaimed at the development of the best and most economical methods of fabrication, assembly, and erection. One large-scale project, involving metal panels for a building exterior, has already been undertaken.

These developments at Pullman-Standard are backed by eighty-three years of service to the American economy. Architects, builders, and owners are invited to use the services of Pullman-Standard's engineers . . . at any stage of their planning.

Mellon-U. S. Steel Building, Pittsburgh Harrison & Abramovitz, Architects; Turner Construction Co., General Contractor.

Stainless steel spandrels and trim by Pullman-Standard

Pullman-Standard CAR MANUFACTURING COMPANY

79 E. ADAMS ST., CHICAGO 3 . 52 VANDERBILT AVE., NEW YORK 17

THE CURTAIN WALL



DETROIT BRANCH FEDERAL RESERVE BANK OF CHICAGO

1927

Original smaller building of traditional design employing Coorgia Marble. Architests: Graham, Anderson, Probst and White — Chicago. Contractor: Walbridge-Aldinger Company-

1950

Addition now being built fea turing Georgia Marble in Cur tain Wall Construction. Archit teets: Smith, Hinchman and Grylls-Detroit. Contractor: O W. Burke Company-Detroit 0.

Demonstrating versatile GEORGIA MARBLE in the exciting New Technique of CURTAIN WALL CONSTRUCTION

That Georgia Marble is thoroughly adaptable to contemporary design is evidenced by its application in Curtain Wall Construction in the Detroit Branch of the Federal Reserve Bank of Chicago. A preview of this construction is editorially featured in detail in this issue of Architectural FORUM. As a modern material, versatile Georgia Marble lends the same dignity, beauty and permanence as when used in buildings of traditional design.

In the project illustrated above Georgia Marble was specified in both the original building erected in 1927 and in the addition now under construction.

Thus in the span of 23 years, Georgia Marble has been twice employed and demonstrates its flexibility for use in both contemporary and traditional type of design.

The GEORGIA MARBLE COMPANY of Tate Ga.

We invite inquiries to any of our Sales and Service Offices listed here, concerning the use of Georgia Marble in any type construction.

SALES AND SERVICE OFFICES:

Cleveland, O. Philadelphia, Pa. New York, N. Y. Brighton, Mass. Rochester, N. Y. Washington, D. C. Atlanta, Ga. Chicago, Ill.

63



AS IN THIS PROJECT, DESIGNED FOR CLEVELAND

PROSPECT

This building may never be built . . . that is, exactly as shown here. It is an architect's *dream*, for one of several sites in downtown Cleveland . . . but a dream based on *proven* principles of modern, lightweightskyscraper construction and the *proven* performance characteristics of today's finer Porcelain enamel.

Light in weight, fire-resistant, absurdly low in maintenance cost and easily erected, LIFETIME PORCE-LAIN ENAMEL panels bring color, distinction and life to a building. They give building professionals, for the first time, complete freedom of design and color in creating modern curtain-wall structures.

Modern Architectural Porcelain enamel is now

available in a rich semi-matte finish, and in a wide range of colors, from pastels to deep hues. It is easily *fabricated*, to specific specifications. It is easily *insulated*, in pan or panel form. Its *installation* in curtainwall construction is entirely practical—and new, possibly even better application techniques are being studied right now.

While we of *Ferro Enamel* do not profess to know all the answers on curtain-wall construction, we can give you the latest and most authentic information on Architectural Porcelain enamel and its use in this field. Write for your copy of "*Porcelain enamel* and its use in *Curtain-wall Construction*".

Ferro Enamel Corporation does no fabricating of steel, but as a leading supplier of raw materials, is constantly pioneering new products, new processes and new end-uses for Porcelain enamel.

FERRO ENAMEL CORPORATION

4150 East 56th Street

Cleveland 5, Ohio


65

14.45

PROFITS PLUS with G.P.C. PUMICE!



GENERAL PETROLEUM BUILDING*, LOS ANGELES, CALIFORNIA WURDEMAN & BECKET, ARCHITECTS. 13,100 TONS OF DEAD-WEIGHT ELIMINATED BY USE OF LIGHTWEIGHT AGGREGATES.



PRUDENTIAL BUILDING*, LOS ANGELES, CALIFORNIA. WUR-DEMAN & BECKET, ARCHITECTS. 15,600 TONS OF DEADWEIGHT WERE ELIMINATED BY USE OF LIGHTWEIGHT AGGREGATES.

* Pumice aggregates for these buildings supplied by Desert Materials Co., Inc., Los Angeles, California.

28,700 **Tons of Deadweight** SAVED with lightweight **Pumice Aggregate**

28,700 tons of steel and other building materials translated into dollars represent a very handsome profit to the owners of these two buildings, made possible by the use of lightweight aggregates. The same thing can be done in every other city in this type of construction with GPC Pumice. Architects and engineers who design around the multiple characteristics of GPC Pumice are sure to achieve weight-saving, space-saving, and a reduction in the operating cost of a building.

GPC PUMICE CONCRETE Features

- · low weight-to-strength-ratio
- passes 4-hour fire test
- low-cost fireproofing for steel
- unusual shock resistance
- an excellent insulator eliminates furring out
- high acoustical values sound transmission reduced 50%

Here is a summary of tests on GPC Pumice made by a U.S. Government unit:

Cement Sacks	Actual Compressive	Weig	ht per foot	Thermal "k"	Insulation 8" wall
Cu. yd.	Strength PSI	Wet	Dry	Factor	"U" Factor
3.00 3.50	690 1.000	77 78	54 55	1.42	.156
4.11 5.00	1,700 2,230	78 82	57 60	$1.64 \\ 1.67$.177 .180
6.97	2,780	89	65	1.67	.180

Write for booklet "DESIGN WITH GPC PUMICE"

General Pumice Cor 70 East 45th Street New York 17, N.Y.

Sante Fe, New Mexico

P. O. Box 1445

Facing and bulkheads of Alberene Serpentine. Cord Building, Beverly Hills, Calif. Architect — Burton L. Schutt

Distinctive, Durable, Dollar-Saving



Veneers or Panels of ALBERENE Stone

Mullions of Alberene Tremolite. U. S. Dept. of Agriculture Regional Laboratory, Wyndmoor, Pa. Architects — U. S. Dept. of Agriculture

> When you're planning thin veneers on masonry backing or panels set in frames, here are the advantages you can count on from Alberene Stone, thanks to its unique combination of natural properties –

EWELERS

ESTHER'

• It's economical. It can be cut into thin sections $-\frac{7}{8}$ and $1\frac{1}{4}$ " are the usual, practical thicknesses. That means money saved for your client... greater flexibility in design for you – for example, it permits greater depth of reveal in spandrel sections. Alberene Stone is reasonable in price and free of maintenance expense for the life of the building.

• It's attractive. With two types of stone to choose from – Regular blue-grey soapstone and Virginia Black Serpentine – you can get a range of dark tones from grey through blue-grey, blue-black, to black. The Regular grade takes a fine honed finish and acquires an interesting, antiquebronze effect over a period of time. The Serpentine takes and retains a high polish.

• It's durable. Alberene Stone's moisture-proof surface doesn't chip, scale, or split – it *always* looks good. Installations of Alberene Serpentine made over a decade ago show no deterioration of polish, are still richly handsome in appearance.

We'll be glad to send you a set of samples, conveniently boxed, showing the range of stones available from our quarries. Just write to -

ALBERENE STONE CORPORATION OF VIRGINIA

419 Fourth Avenue, New York 16, N.Y. Offices in Principal Cities

Facing and paneling of Alberene Serpentine. Station KYW, NBC, Philadelphia, Pa. Architects — Tilden & Pepper



PERMALITE (Perlite): an ideal lightweight building material effects important economies under new curtain wall building codes. Many uses of Permalite^{*} . . . including its application as an outstanding curtai wall material . . . are presented here by one of the major producers of perlite aggregates.

FINANCIAL AND REAL ESTATE INTERESTS are thoroughly studying the use of Permalite in new construction planning as it becomes evident that a dead load-live load ratio as low as 1:1 for an *ideal* low cost, lightweight building is now considered possible through extensive application of this versatile lightweight material.

POSSIBLE SAVINGS OF 80% in dead load for ideal lightweight building.

The many combined uses of Permalite in lightweight building construction result in important savings in structural steel and foundations and make possible a permanent fireproof, lightweight, insulated building with a dead load to live load ratio as low as 1:1.

An ideal lightweight building is possible through the *combined* 5-step use of Permalite as follows:

FIREPROOFING

Step 1) Lightweight Permalite plaster—speedily applied—for fireproofing of all structural steel. This replaces the slow, costly imbedding of structural steel in heavy concrete, at present in use.

CURTAIN WALLS

Step 2) Thin, light Permalite concrete curtain walls (blocks, slabs or monolithic)—easily formed and erected to replace heavy, thick masonry, much more costly erected, in general use today.

FLOORS AND ROOFS

Step 3) Lightweight Permalite concrete used in roofs and floors over lightweight steel decking to replace heavy reinforced concrete in conventional construction.

PLASTER

Step 4) Lightweight Permalite plaster—more crack resistant than sanded plaster —replaces sand plaster at less than half its weight.

ELEVATOR SHAFTS AND STAIR WELLS

Step 5) Thin, light Permalite plaster partitions-used for vertical fireproofing such as elevator shafts, stair wells and corridors to replace thick heavy masonry.

These many individual weight savings in construction added together plus appreciable savings in erection time, result in amazingly lower construction costs; i.e. *lower initial building investment*. And the thinner wall sections under steps 1, 2, 4 and 5 will result in increased rental areas; i.e. *more revenue space*.

It can be said that the use of Permalite is as important a development in building history as the original use of structural steel to replace load-bearing walls.

PERMALITE OFFERS FIREPROOFING AT LOWER COST. Full scale fire tests in accordance with A.S.T.M. E-119 have been made at

Underwriters' Laboratories, Bureau of Standards and many Univer-

Series of photographs taken at Underwriters' Laboratories before and after actual tests, given (1) technique of Permalite plaster fireproofing, (2) fireproofed column before test, (3) fireproofed column after test.



sities. From these various fire tests, recommendations can be made for the use of Permalite in various applications, such as: Steel columns, 2, 3, 4 hours; Steel floors and suspended ceilings, 3, 4 hours; Solid interior partitions, 1, 1½, 2 hours; Exterior walls (curtain walls), 1, 2, 3, 4 hours; Hollow interior partitions, 1, 2, 3 hours.



(Advertisemen

Fire tests conducted by Underwriters' Labs. Inc. as described in U.L. Rep. No. 2993, cover a steel floor assembly made up of 2 in. Permalite concrete fill cellular steel decking, supported on steel beams with a suspended ceiling of 1 Permalite plaster on metal lath. This construction received a 4-hour rating.

18,000 precast Permalite concrete blocks were used as a thin, lightweight curtain wall (4-hour fire rating) in the Employers Casualty Building of Dallas, Texas. Architect: George Dahl; General Contractor: James Stewart & Company, Inc.



Permalite is included in the Underwriters' Labs. Inc. List of Inspected Fire Protection Equipment and Materials under classification Plaster Aggregates.

* Reg. U.S. Pat. Off.

As a service to the readers of Architectural Forum, GREAT LAKES CARBON CORPORATION will make available complete information on Permalite plaster and concrete aggregates, their multiple applications and all test results to date. The Product Engineering Department, Architectural Sales Department and extensive research facilities are available to assist your staff in the actual design of a low cost, lightweight building or other applications of Permalite. Requests should be made to Dept. FM, Building Products Division, Great Lakes Carbon Corporation, 18 East 48th Street, New York 17, N, Y.



Permalite plaster aggregate was used to fireproof the structural steel roof suppor in both the Senate and House Chambers of the Capitol Building, Washington, D. Architect of the Capitol Building—David Lynn. General Contractor—Consolidat Engineering Co. Plastering Contractor—McNulty Brothers.

15

for INDUSTRIAL and COMMERCIAL BUILDINGS ALUMINUM, STAINLESS or GALVANIZED STEEL



THER.C.MAHONCOMPANY Detroit 11, Michigan • Western Sales Division, Chicago 4, Illinois Representatives in all Principal Cities Manufacturers of Insulated Metal Walls; Steel Deck for Roofs, Ceilings, Floors, and Partitions; Rolling Steel Doors, Grilles and Underwriter's Labeled Rolling Steel Doors and Fire Shutters.

asson rower rian, built of Minol, N.D., for Northern States Power Co. Mahon Insulated Metal Walls with Stainless Steel Exterior Plates and Stainless Steel Flashing used throughout. Pianeer Service & Engineering, Chicago, Architects & Engineers.

SUL

design-strengthened... STAINLESS RIGIDIZED METAL®

(AISI #302-etc.)

Pattern #5WL

Pattern #1CS

ST.

SALES OFFICES IN PRINCIPAL CITIES

Actual fullsize mockup of Stainless Rigidized Metal curtain wall.

Design-strengthened for maximum strength-weight ratios. **Textured** for interesting surfaces. This combination provides panel surfaces that (1) follow the natural lines of expansion and contraction (2) eliminate distortion tnd objectionable glare.

Rigidized Metal is available in many designs and in any ferrous or non-ferrous metal... in wide sheets...solid or perforated...coils or cut lengths.



U. S. & Foreign Patents

3, N.Y.

BUFFALO



659

OHIO

CORRUGATED TRANSITE *... for Curtain Walls

*Transite is a registered Johns-Manville trade mark



The United Illuminating Co., New Haven, Conn.; Westcott and Mapes, architects and engineers

Asbestos Corrugated Transite reduces load-bearing factor 83% on new power plant addition! Transite sheets give attractive, streamlined appearance... and they can't rot, rust, or burn.



• Here's a case in which a unique form of asbestos wall construction solved a tough building problem.

The addition planned was to be almost twice the height of the original building, yet where the two joined, existing foundations were to be used. This meant that the new bearing wall with all its extra height should weigh no more than the old wall.

After careful study, it was decided to use the Johns-Manville Industrial Curtain Wall, a system of dry wall construction which combines J-M Corrugated Asbestos Transite with J-M Transitop (Insulating Board faced with Flexboard). This type of construction, compared with solid masonry, reduced the load-bearing factor from 120 to 20 pounds per square foot! It also provided fire protection, insulation, and permitted the use of less extensive pilings and foundations for the rest of the building.

Architects and engineers are constantly discovering new uses for J-M Corrugated Asbestos Transite, not the least of which is its surprisingly effective function in attractive, modern design.

Send for new brochure which may help you on your next project. Johns-Manville, Box 290, New York 16, N. Y.



Here's why more architects are recommending **MONEL**

Where fastenings must not fail

CURTAIN WALL PANEL CLIPS

Glasiron porcelain-enam eled panels are free of the threat of stains caused by attachment clips that rust. Wolverine Porcelain Enameling Co., Detroit, uses clips of Inconel, a companion metal to Monel. No harm is done if protective enamel is fractured during installation. Monel and Inconel do not rust. They resist corrosion. High ductility permits rapid adjustment to framing. (Inset) Keith O'Brien Dept. Store, Salt Lake City, Utah, paneled with Glasiron.



ANCHORING BRICKWORK



Keystone-shaped end of strong, corrosion-resistant Monel brick anchor fits into Monel channel embedded in framework column of New Jersey Bell Telephone Co. building, Atlantic City, N. J. Installation by M. B. Markland Construction Co., Atlantic City, N. J. Brick anchors manufactured by Conver Steel Products Co., New York, N. Y.

SECURING FACADES

Ceramic Veneer exterior of Pacific Telephone and Telegraph Co. building, Oakland, Cal., is anchored to wall with 3/16" dia. soft temper Monel wire. Architects: Harry A. Thomsen, Aleck L. Wilson, San Francisco. General contractor: Dinwiddie Construction Co., San Francisco. Made by Gladding, McBean & Co., of the same city, Ceramic Veneer is a machine made terra cotta, available in colorful, economical exteriors.



Monel has three outstanding characteristics that make it today's choice for tie wires and brick anchors.

It is strong. It is ductile. And it is corrosion-resistant.

Let's take them separately and see what these properties mean to your clients.

Monel[®] tie wire, for example, in the .047" diameter suggested for suspended ceilings, has a tensile strength of approximately 66,500 pounds per square inch. Accordingly, there is no need for such uneconomical operations as four-inch spacing and double-looping.

For most jobs, wire mesh and expanded metal lath can be safely secured with Monel ties single-looped and spaced at *six-inch* intervals. Result: lower cost... safe suspensions ... and fast installation.

First chance you get, watch one of these installations. See for yourself how ductile Monel tie wire is, how easily workers thread it into position, then bend and twist it to a snug fit. There's no breakage, no waste.

Notice, too, that nothing flakes off when Monel tie wires or brick anchors are bent. That's because Monel is *solid* metal. It has no coating, no surface protection of any kind. And it needs none, because it cannot rust. Corrosion-resistant all the way through, Monel stands up against the action of alkalis, salts and acids in plaster, lime and other materials. *Wet plaster, between-wall condensation and limebearing seepage make no headway against Monel.*

Suggested specifications for most of the common uses of Monel tie wire have been put into a convenient "file size" folder that is yours for the asking. Write today for your copy of *Monel Tie Wire*. With it, we'll also send actual samples of Monel tie wire and another versatile material, INCO'S Monel Roofing Sheet.

THE INTERNATIONAL NICKEL COMPANY, INC. ENGLEM OF SERVICE 67 Wall Street, New York 5, N. Y.

MONEL[®]... for the life of the building

ANACONDA Wall Panels

for metal-clad

curtain wall construction

d to Architects

aconda offers architects several useful methods providing good-looking and durable metal "skins" buildings of curtain wall construction; organized to adapt these methods to specific hitectural concepts; and can supply appropriate oper, Everdur*, nickel silver and other copper-base nels for carrying out such ideas practically.

eatherproof — Easily Installed

-rusting property and general high resistance corrosion. Advantages to the installer, too, are vided. Among these is an ingenious feature which ilitates making water-tight joints, without solder calking, and which adequately allows for expansion contraction. Panels with specified die-pressed crimped designs can be furnished if desired.

autiful and Lasting

haracteristic of ANACONDA Copper Panels which strongly beals to the imaginative architect, building owner I city planner is the "changing landscape" effect ch naturally occurs as the copper panels gradually other and acquire their final, beautiful and manent patina.



ANACONDA Wall Panels are weatherproof and easy to install.

For further information: write to The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

for modern construction **ANACONDA**[®]

COPPER WALL PANELS

THESE WALL

Nylon Throwing Mill, Duplan Corporation, Winston-Salem, North Carolina. Lacy, Atherton & Davis, Architects & Engineers. Alcoa Aluminum used for exterior walls, window sash, doors, copings and ventilation louvers.



Typical wall section showing method of attaching wall panels in Duplan Corp. mill.

Insulated aluminum wall panels weigh approximately 7 lbs. per square foot, can be erected in fair or freezing weather. Insulation factor is equal to a foot of masonry wall.



EFLECT THE FUTURE ...



Standing bright and clean in the hills of North Carolina is further proof of aluminum's place as a basic building material. This building functions as efficiently as it looks. Its walls, sheathed in rugged Alcoa Aluminum, help to maintain rigid temperature and humidity control for continuous-flow production of nylon. Use of Alcoa Aluminum helped to speed the construction; will further repay the owners by keeping maintenance costs at a minimum.

Today, in every part of the country, you will see gleaming, modern, aluminum-clad buildings. Aluminum has come of age as a building material, for it best combines workability, strength, weather resistance, lightness, economy and long life.

Alcoa offers building planners a fund of aluminum knowledge unmatched anywhere in the world. For a forward look at aluminum's place in the building world, ask to see the film or book, "The Davenport Story".

Call or write your nearby Alcoa Sales Office or ALUMINUM COMPANY OF AMERICA, 1887C Gulf Building, Pittsburgh 19, Pa.



Held top and bottom by angle girts, aluminum-faced panels are quickly, easily installed. They combine good appearance with freedom from painting and maintenance. Aluminum-faced wall panels are supplied by several manufacturers. Standard widths. Lengths as specified. Lighter weight simplifies design, speeds construction.







Adlake aluminum windows are ideally suited to curtain wall construction

Although designed for a lifetime of service in *any* building, modern or traditional, Adlake Aluminum Windows are a "natural" for curtain wall installations. Built of lightweight aluminum, they do away with the cost of painting and maintenance, and keep their smart good looks and finger-tip control for the life of the building!

What's more, only Adlake Windows combine woven-pile weather stripping and serrated guides to assure minimum air infiltration. Adlake Windows never warp, swell, rot, rattle or stick, and installation is amazingly simple: you can complete all exterior work first and then simply set the window in place!

For complete information, please drop us a card today. Address The Adams & Westlake Company, 1101 N. Michigan, Elkhart, Indiana. No obligation, of course.





Established 1857 • ELKHART, INDIANA • New York • Chicago

ow To Make An *Insulation Expert* Out Of A Cost Accountant!

Once he figures the total cost of an Ultralite job, you can be sure he'll know that Ultralite is the best thermal and acoustical insulation buy. First show him a sample of lightweight fire-safe Ultralite. Tell him about Ultralite's long, soft glass textile fibers imparting dimensional stability. Show him how you can bend it, squeeze it, pound it and still have it spring back to shape and hold that shape. Then tell him how easy and pleasant it is to install. Long before he adds in the last item, he'll *know* that Ultralite costs much, much less—as much as 3c to 20c per square foot less, depending upon application.

You'll Want to Figure on Ultralite's Light Weight

Yes, Ultralite is available in densities as low as .75 lbs. per cubic foot. When weight is a factor, it's the ideal insulation.

FREE Engineering Service

Know how Ultralite can be adapted to "curtain wall" types of construction. Call in a Gustin-Bacon insulation engineer for consultation. A letter outlining your problems will bring immediate assistance. There's no obligation, of course.

USTIN · BACO

THE DIMENSIONALLY STABLE LIGHTWEEHT INSULATION

NUFACTURING IMPROVED GLASS FIBER INSULATION: weight • Dimensionally Stable • Vibration-Proof ssant to Handle • Fireproof • Rotproof • Odor, wre, Vermin and Rodent Resistant • Permanent

GUSTIN-BACON MANUFACTURING CO.

KANSAS CITY, MISSOURI

BRANCHES: New York, Chicago, Philadelphia, San Francisco, Los Angeles, Houston, Tulsa, Ft. Worth "Distributors Conveniently Located Throughout the U.S."

Coming Next Month ... THE SMALL HOUSE

From a long line of distinguished ancestors -

- In 1935 FORUM gave the building industry its first comprehensive review of the modern approach to small house planning – and for the first time in publishing history a monthly magazine was reprinted twice after its original edition.
- In 1936 FORUM proved to a depression-minded public that good houses could be built for \$5,000 and less – and Simon and Schuster picked up the evidence to make a national best-seller out of "THE 1936 BOOK OF SMALL HOUSES."
- In 1942 FORUM anticipated the post-war boom, detailed to a waiting industry the new planning ideas, new construction techniques, new building materials which could be put to work the day after victory—and when building began again FORUM's ideas became houses.
- In 1949 FORUM recognized the builder house as the most compelling force in the industry, rounded up the best examples, analyzed every step in the merchant builder's operations—and at once became the standard reference manual for every industry leader concerned with the residential market.

 Next FORUM's Special Reference Number on THE SMALL
 Month HOUSE addresses itself to the 5½ billion dollar question: HOW CAN WE GET BETTER QUALITY AND BETTER DESIGN INTO THE LOW-COST HOUSE? Don't miss it!

MAGAZINE OF BUILDING

540 North Michigan Avenue, Chicago 11, Illinois

ARCHITECTURAL



See our catalog in Sweets NORTON COMPANY Worcester 6, Mass.



FLINTKOTE! STYLED BY STRIKING

STRI-TEX...Dramatic, New Asbestos-Cement Siding ... is another long step ahead in Flintkote Product Development

Designers, Builders and Homeowners have been waiting a long time for a sidewall material such as Stri-Tex. Here's a sensational new development that combines the time-proven durability of Asbestos-Cement Sidings with striking, colorful eye-appeal that matches the most expensive and beautiful sidewall coverings. Currently being produced in Brown, Green and Gray ... other new colors will soon be available.

Use Stri-Tex for new construction . . . or apply it quickly and easily right over old sidewalls during remodeling. Wherever it's used, the soft, textured beauty of the striated design adds unique beauty to any building.

Here's another opportunity to get out in front with Flintkote! Don't fail to get complete information on this spectacular new siding product. A note will bring you full details.

THE FLINTKOTE COMPANY, Building Materials Division, 30 Rockefeller Plaza, New York 20, N.Y.



Stri-Tex gives you all the well-known advantages of Asbestos-Cement Siding, combined with beauty to please even the most exacting of today's discriminating homeowners. FIREPROOF

TERMITE- AND VERMIN-PROOF

ROT AND DECAY PROOF NO PAINTING MAINTENANCE



Thin, lightweight CURTAIN WALLS

TOL

the long overdue counterpart of the structural steel frame, are rapidly emerging as the prime development of this era of skyscraper construction

by ROBERT L. DAVISON* presentation by HENRY WRIGHT**



There is nothing new in the idea of the curtain wall. Without curtain walls, skyscrapers would have been impossible. The last tall building with self supporting walls was the 16-story Monadnock Building (Chicago, 1893), in which the walls reached a thickness of 15 ft. at the base, this being the amount of masonry needed to support the crushing weight of the superimposed masonry. After this, those who wanted to push their structures more than six or eight stories into the air have supported the walls first on cast iron columns, and later on steel columns, which can be depended upon to carry some 50 times the weight that can safely be imposed on the same cross section of masonry piers. In such buildings the walls have become a mere appendage—an appendage which rarely supports even its own weight for more than a single story, and never for more than two or three floors.

Thus the appellation "curtain walls." The term has also been applied to other nonstructural walls such as a false wall within an enclosing foundation, but its most common use has been to describe the facing and enclosure of the structural steel "cage" which supports the entire weight of the modern multistoried building.

As such, the term is only partly apt, since the kind of curtain in which most tall buildings have been draped is a substantial sandwich of 12 in. of masonry materials, or 10 in. of masonry and metal, plus furring, weighing somewhere between 100 and 175 lbs. per sq. ft. of surface area. In the case of a building as large as the Empire State Building, this ponderous shroud has a total weight upwards of 30,000 tons, all of which is added to the loads which must be borne by the structural steel columns and column footings.

What is new is that the building codes of New York and other major cities—which were the factor that forced the architects of the Empire State Building and other skyscrapers to load the building frames with all this dead weight—are beginning to recognize that much of this masonry is unnecessary, and that many materials, including masonry, can be used to form thinner, lighter curtain walls capable of all the functions such an enclosure is called upon to perform. In a sense most building codes have always recognized this fact by permitting ordinary windows to occupy up to 100 per cent of the wall area—thus discriminating in favor of curtain walls of glass, and giving a decisive push to designs such as that of the new U.N. Secretariat, (page 81), which—legally speaking—has no outside "walls" at all on its east and west flanks, only windows which extend uninterruptedly from column to column and floor to floor. (The fact that on each floor, immediately behind the glass of the lower part of the "window" there is a parapet 2½ ft. high consisting of 1 in. of asbestos insulation and 4 in. of solid cinder block, is legally significant only so far as the inside of the building is concerned; the parapet is designed to meet fire regulations, but in one direction only.)

This basic building-code inconsistency, revealed on a striking scale by the U.N. Secretariat and on a smaller scale by innumerable smaller structures with all-glass facades scattered through our cities, is embodied in all of our municipal codes and remains unresolved, continuing the Alice-in-Wonderland situation in which one part of an office-building wall (which may be all of it) is permitted under one set of standards, while another part, distinguishable mainly by a different name from the first, must meet more stringent standards. What has changed is that the second set of standards, under the new performance-type codes which have been pushed through in most large cities, has been sufficiently relaxed to close somewhat the gap between the two and to permit the use of lighter, thinner curtain walls than were hitherto possible. This has been done without dictating the types of material to be employed.

NEW YORK, one of the cities which formerly required the walls of multistory office buildings of Class I (fireproof) construction to be 8 in. of solid masonry and to resist a 4 hr. fire test (twin requirements which effectively bar thin curtain walls) now will accept nonbearing panel walls of any thickness so long as they will pass a 2 hr. fire test plus the tests for lateral strength. This is by code, but use of curtain walls has been delayed because, until recently, a simultaneous fire and load test procedure, not required by code, were requested by New York's Board of Standards & Appeals. According to Bernard J. Gillroy, Commissioner, Department of Housing & Building in New York, the fire test must be met only from inside sole fire requirement for outside is incombustibility.

CHICAGO's new code (approved December 1949) is most recent of performance codes of big U. S. cities, and has no specified thickness requirement for curtain walls. The general fire-rating of 2 hrs. is dropped to 1 hr. for the outside of exterior walls more than 30 ft. from another building area and 3 hrs. for inside exposure of exterior walls.

PITTSBURGH's 1947 code now accepts curtain walls of any thickness if they pass strength tests and get fire ratings of 2 hrs. (1 hr. if approved by Board of Standards & Appeals).

CLEVELAND's brand new code (June 1949) also accepts 1 or 2 hr. fire-rated curtain walls, depending on set back. No minimum thickness requirement.

LOS ANGELES—Spandrel walls fronting on streets may be constructed of any incombustible materials in Type I buildings. Curtain walls on property line exposures may be of 2 hr. fire resistive construction where the exposure hazard is light.

ST. LOUIS is an example of the numerous cities still

hampered by the old requirement of 12 in. of masonry, which inhibits efficient curtain wall construction But a new bill backed by the Building Department and now before the Board of Aldermen will allow sufficiently strong sandwich panels composed of 22 gauge metal, as sheathing for 2 in. of incombustible insulation, for exposures 40 ft. clear, in the center of the city. Actual fire rating on these probably will be about ³/₄ hr.; connectors must have a 1 hr. rating.

Important in the national code picture—and about to become more important—are the model codes drawn up by several national groups. The National Bureau of Standards recommends an exterior wall fire resistance of 1 to 2 hrs., depending on exposure. Based or combustible contents of the building's interior, fire resistance would be 2 hrs. Next month, the new Basic Code of the Building Officials Conference of America will be published, and sections of it have already beer adopted into several local codes. Significantly, this performance-type code will have no thickness require ment for curtain panel walls. Fire test will be 2 hrs (interior) and from ³/₄ hr. to 2 hrs. (exterior) depend ing on exposure.

The Uniform Building Code of the **Pacific Coas Building Officials Conference** calls for 1 hr. fire resis tance where unprotected openings are permitted, and 2 hr. fire resistive walls where fire protection of open ings is required. Thickness requirement: none.

Southern Standard Code allows any noncombusti ble curtain, no thickness stated, which will meet a 2 hi test where the wall fronts on a street or other publi place, and 3 hrs. otherwise.

National Building Code (recommended by National Board of Fire Underwriters) still demands wall pane that will meet a 4 hr. test, but does not require mason or any other specific material.

As both a result and a cause of these code changes, and in response to the demand of progressiv architects, builders and building owners for thinner, weight-saving curtain walls, many of the produce of building materials have initiated the necessary research and development work to produce curta wall systems capable of meeting the new code requirements—and, almost as important, the Herculean task of convincing city building officials all over the country that code requirements have been met.

Aluminum Company of America, basing itself on long experience with cast aluminum spandrels (which until recently had to be used as a decorative facing for 8 or 12 in. of masonry), has given a great deal of attention to the development of thin, fire-resistant back-up materials for panels of cast, sheet, and most recently extruded aluminum. Steel companies, whose products enjoyed wide wartime usage for insulated panel walls for industrial plants and other non-code construction, have been equally active in their efforts to develop methods of rendering steel panels suitable for use in multistoried buildings and capable of meeting code requirements. (Companies now doing active development and promotion work in this field include such steel company giants as Allegheny Ludlum, Armco, Carnegie-Illinois, Crucible and Republic.) - In addition, the major steel companies now making stainless steel have recently sponsored Stainless Steel Producers with headquarters at the American Iron & Steel Institute to undertake promotion of stainless steel in building, with particular emphasis on curtain walls. Among copper producer, American Brass has developed a curtain wall design, and in the field of back-up materials Pittsburgh-Corning (Foamglas), Owens-Illinois (Kaylo Division), Great Lakes Carbon (Perlite Division) and U. S. Gypsum, Zonolite, Johns-Manville, are all carrying on research and development work. Fabricators who have been manufacturing and selling curtain walls, largely in non-code areas, include H. H. Robertson, R. C. Mahon, Detroit Steel Products and The Cemenstone Corp., with Pullman Standard now entering the field. Thus the curtain wall idea has a roster of sponsors of which the present list is necessarily incomplete, for it is beginning to read like a Who's-Who of the building materials field.

WHY CURTAIN WALLS?

The diagrams at the right show the reasoning behind all this excitement—the two big reasons why thin curtain walls make sense. Both reasons are economic: thinner walls, it is claimed, can save on construction cost and at the same time increase revenue—buttressing the profit column from both sides. Cost savings may be entirely in the structural frame, due to decreased weight, or in the wall as well, since the thinner wall may be cheaper to build—foot for foot—than conventional masonry. In a tall enough building, on the other hand, weight savings from use of lightweight back-up material will pay for the increased thermal insulation necessary for the thinner wall. In a 20 story building these savings run about \$4 per lin. ft. of wall per floor, or enough to compensate for a difference of 60 cents a sq. ft. in the cost of a 6 ft. 9 in. high spandrel wall.

The increased revenue from the increased space which results from thinner walls is of greater relative importance, but requires careful statement to be convincing. It is sometimes argued, for example, that this advantage is illusionary, since "the few inches of space added to each office would not result in increased rents." As a matter of fact, under the standard methods used for computing office rentals, it would; but this is not the point. The point is, that in a building designed on the basis of thinner walls, maximum advantage would be taken of the added space, in whatever way made the most sense. Since such buildings are normally built out to the last inch of available space, this would most frequently take the form of increasing the rentable area; if this were not done, then the thinner walls would result in a smaller building and therefore lowered costs. With the average cost of office building construction above the first floor, including the prorated cost of land, running over \$27 per sq. ft. of floor (1948), the value of the space saved or added for each 4 in. reduction in wall thickness is \$9 per lin. ft. of wall per floor, or \$18 per ft. for a reduction from a 12 in. wall to one 4 in. thick.

A third advantage to be gained from thin curtain walls in some instances is increased thermal insulation, with corresponding savings in heating costs. So long as the basic factor determining the



SPACE SAVING resulting from thin curtain wall construction as illustrated by a comparison between the typical wall section in Rockefeller Center, as actually built (left) and as it would work out with a thin curtain wall. Reduced thickness would add 2.62 per cent rentable area.

design of such walls remains a matter of meeting fire regulations, this insulation is not likely to be realized to an important degree, since there is a conflict between the properties which make for good thermal insulation, in the ordinary sense, and resistance to the typical fire test. Where arbitrary code regulations need not be considered, however, this advantage can be realized. Many of the insulating materials suitable for thin curtain wall construction are more than 15 times as effective as thermal insulators than ordinary masonry, and it is no trick at all to put together a 4 in. wall with twice the insulation value of 12 in. of brick by incorporating such materials. The value of the resulting fuel saving is likely to be on the order of 2 cents per sq. ft. of wall per heating season, or as much as 50 to 75 cents over the life of the building. This is more than sufficient to pay for any added cost of the insulation, but of no great economic significance relative to the other costs involved in the curtain wall picture, unless the increased comfort, increased usability of space, and ease of heating resulting from the insulation are assigned economic value.

THE PROBLEM

The principal forces which the curtain wall is called upon to resist, under code conditions, are the legal powers wielded by building commissioners. Of course, the curtain wall must exclude the elements, provide reasonable security against unauthorized entrance to the building, conserve or exclude heat, according to the season, let in daylight, etc.-do all of the things that a wall is normally called upon to do except hold up the floors and roof. But the decisive forces which determine its design are wind and fire-wind and fire not in their real form, but in their fictionalized form as embodied in building codes. Thus while the actual wind load might vary widely according to the position of the wall in the building, its height, aerodynamic shape, etc., etc., the design wind load is a uniform pressure of so many pounds per sq. ft .-- usually 30 lbs .-- acting uniformly over the entire wall and window area. The need for fire protection, on the other hand, is assumed to stop quite magically at the window sill and jambs-the fire raging furiously below and beyond these points but nonexistent above and within them.

The basic theory of such fire protection is that of protecting the interior of the building, and its contents, from fires of external origin. This is generally broadened to include the function of containing a fire which originates within the building as well, but many codes are not clear as to whether or not this is required, and the point is entirely academic, since in any event the presence of window openings would prevent the wall from actually performing either function. To meet both requirements, the construction of the curtain wall must be such that one surface will not exceed an average rise of 250° F. within two hours after application of a certain amount of heat—equivalent to a raging fire—to the opposite surface.

Since a loading of 30 lbs. per sq. ft. is equivalent to that normally used as a roof load for light structures, and since the portion of the load acting upon the window area must be added to that acting directly upon the wall, this means that the curtain wall must possess a



fairly high degree of strength, both within each unit of surface area, and as a membrane attached to the structure of the building. Assuming the typical office-building frame, the diagrams below illustrate the various ways in which the required strength can be achieved. For the sake of simplicity, they are based on the further assumption that the basic material of the wall (either the facing or the back-up material, or both together) is capable in itself of spanning 2 or 3 ft. under the required loading, but requires additional stiffening at about this interval to resist the cumulative effect of the wind load on the wall panel as a whole and the load transferred from the window surface. Each of the methods shown assumes complete neutrality of the curtain wall so far as the structure of the building is concerned; a fourth type would be one in which the curtain wall panel took the place of the regular spandrel beam, becoming a part of the structure of the building and utilizing the full height from window head to window sill to perform this structural function.



CANTILEVER

This solution takes advantage of the fact that in most multistoried buildings the depth of the structural spandrel-beam is relatively great, and the height of the wall beneath the window relatively small. By fastening stanchions—or the panel itself, provided it has the necessary stiffness—to the top and bottom of the spandrel beam, sufficient strength is developed to resist the inward thrust of the wind pressure on the wall and the window above. The cantilever method is understandably popular for ribbonwindow buildings.

FLOOR TO FLOOR

Simplest of all methods is that of applying continuous studs to the face of the building frame which span the space between floors like simple beams. Chief disadvantage of this method, of course, is that the studs must be incorporated in the fenestration above the spandrel, but, depending on the type of window used, this can also be a virtue, as when the windows require such stiffening in any event. For the windowless building, or one with few and relatively small openings, this method is unquestionably the most feasible.

COLUMN TO COLUMN

Most logical of all methods where continuous radiator enclosures are to be used is a system of horizontal girts spanning between the columns at the level of the window sills and heads. While the upper member—that at the window sill must posses considerable stiffness when columns are widely spaced the opportunity exists to give this member considerable width by using it as ar inside sill over the normal radiator enclosure The column-to-column solution leads naturally to the next logical step: use of the curtain wal panel as a spandrel beam.

FACING MATERIALS

To date, most of the interest in lightweight curtain wall construction has centered around metal-faced walls and panels — most notably, panels faced with aluminum in cast, sheet or extruded form and steel, particularly stainless steel. Copper-faced panels have also been tried out experimentally. Porcelain enamel on steel, and porcelain enamel on aluminum, both obvious contenders because of their extensive use as a facing for masonry walls, and potentially low in cost have yet to enter the field with a developed system of curtain wall construction meeting the codes but will undoubtedly do so.

Appropriate facing materials for thin curtain walls are by no means limited to the metals, however. They include all of the basic types of conventional facing materials; metals, ceramics, vitreous materials and stone. (Two of the first large buildings to employ thin, lightweight walls—the General Petroleum Building in Los Angeles and the Federal Reserve Bank Annex in Detroit—are faced respectively, with terra cotta tile and marble.) The basic requirements remain the same as for any wall facing: durability, resistance to the elements, good appearance, etc., plus the added premium which the curtain wall approach puts on lighter weight and lack of bulk.

In respect to fire resistance, an aluminum facing is rated as "incombustible" but melts at 1215° F. It meets codes satisfied with incombustibility of wall facings but where fire-tests are demanded it requires a more strongly reinforced back-up than, for example, stainless steel or porcelain enamel steel, which are capable of withstanding the fire and contributing to the strength and impermeability of the wall. The bulkier facing materials, such as brick and terra cotta, have the advantage of combining the properties of a facing with some of those usually supplied by the back-up.

The variety of facing materials used for thin curtain walls will probably be greater than the variety used in conventional walls, with the color possibilities of porcelain enamel and structural glass vying with the texture of brick and stone, the ease of fabrication of aluminum, and the strength and fire resistance of stainless steel.

METALS

Fluted aluminum piers



STONE Marble slab inserts





VITREOUS Porcelain enameled panels

"Dick" Whittingto



CERAMICS Terra cotta tile spandrels

FACING MATERIALS		APPEARA	NCE			PERFO	RMANCE	COST
	Color			Surface				
	Retains color	Choice of color	Choice of pattern	Shows oil canning	Shows glare	Weathering	Resistance to fire test	
ALUMINUM Type: Cast	A ALALAN A	and the state of the	Yes	No	Slight	Good	Fails	High
Extruded			Yes	No	Slight	Good	Fails	Medium
Sheet, flat			No	Yes	Slight	Fair	Fails	Low
Sheet, textured			Yes	No	No	Fair	Fails	Low
Finish: Natural	No	No			No	Fair		Medium
Alumilited	10 Yrs.	No			Slight	Good		Added
Porcelain enameled	Yes	Yes			Except white	Very Good		High
COPPER Type: Sheet, flat	Shi Shi Shi Shi		No	Yes	No	Good	Fair	Medium
Sheet, textured			Yes	No	No	Good	Fair	Medium
Finish: Natural	No	Patina			No	Good		Medium
Lacquer	10 Yrs.	No			No	Good		Medium
CARBON STEEL	No	No	Varies	Varies	No	Poor	Poor	Minimum
PORCELAIN ENAMELED STEEL, flat Sheet with factory-applied	Yes	Yes	No	Varies	Slight	Very Good	Fair	Medium
concrete backing	Yes	Yes	No	No	Varies	Very Good	Fair	High
STAINLESS STEEL Type: Sheet, flat			No	Yes	Varies	Very Good	Very Good	Medium
Sheet, textured			Yes	No	No	Very Good	Very Good	Medium
Finish: Bright	Yes	No			Yes	Very Good		
Dull	No	No			No	Very Good		
CEMENT ASBESTOS	Yes	No	No	No	No	Fair	Very Good	Low
GLASS Type: Plain, transparent	Yes	No	No	No	Yes	Very Good	Fails	Medium
Wire	Yes	Limited	Limited	No	Varies	Very Good	Poor	Medium
Structural opaque	Yes	Yes	Limited	No	Varies	Very Good	Fails	High
Finish: Flat	Yes	Limited	No	No	Yes			
Textured	Yes	Limited	Limited	No	Varies			
MASONRY FACING 2" THICK			A STREET			A ALL AND A		
Precast Concrete	Yes	Yes	Yes	No	No	Good	Good	Medium plus
Reinforced Brick	Yes	Limited	Limited	No	No	Very Good	Good	Medium
Terra cotta	Yes	Yes	Yes	No	No	Good	Good	Medium-high
Limestone	Yes	No	Yes	No	No	Good	Fair	Medium
Granite	Yes	Limited	Yes	No	No	Very Good	Fair	High
Marble	Yes	Limited	Yes	No	No	Good	Fair	Medium
Soapstone	Yes	Limited	Yes	No	No	Very Good	Very Good	Medium

COSTS thickness and other properties of typical curtain wall construction systems, broken down by components

Since most of the advantages of thin, lightweight curtain walls hinge on the economics of construction costs and rental values, it is essential that architects, engineers and building owners who are contemplating the use of such walls have accurate information on the relative cost of various systems and comparative costs of conventional construction. Such comparisons, to be really reliable, must be made on the basis of actual prices for a given building, to be built in a given place at a given time. As a general guide to such comparisons, however, and in order to establish the broad outlines of the problem, the FORUM retained the Construction Survey Co. of New York, leading estimators, to prepare the cost estimates of various types of wall construction shown on this and the following two pages.

The portion of the table immediately adjoining, and on the facing page, shows the cost of the various elements used in thin curtain wall construction of various types-facing materials, erection, attachments, etc. Subtotals are shown for walls which, while complete in other respects, are not designed to meet a 2 hr. fire test, and on the right-hand portion of the chart the cost of the necessary back-up materials which must be added to produce a wall capable of withstanding such a test, the cost of the structure to support the wall, and the thermal insulating value achieved. On the following page these costs are summarized into total construction cost, "rental value cost" -the capitalized cost of the space the wall occupies- and "total economic cost"-the sum of first two figures.

Although these estimates have been checked by some of the leading authorities in the office building field, it must be borne in mind that the prices of each of the elements involved will inevitably vary in different parts of the country, and may vary in their relationship to one another as well as going up or down at different times in the building cycle.

To simplify comparisons, the FORUM'S figures are based on a curtain wall cantilevered from the face of the spandrel beam (see page 84), with the height of the wall from window head to window sill taken at 6 ft. 9 in. It has also been assumed, for the purposes of the cost study, that the space between one such spandrel wall and the one above will be filled by a continuous band of windows, and that the inside surface of the wall would not require finish for esthetic reasons since it would probably be covered by a continuous convector cabinet or air-conditioning cabinet (there is allowance for finish, however, on the inside surface of the wall between the head of the window and the ceiling). Prices in all cases are per lineal foot of spandrel wall 6 ft. 9 in. high.







	DESCRI	PTION	FACING					
	Thickness	//1.//	Face Material F.O.B. Site	Hardware for Attach. or Frame	Wind Head Sill	ow &		
METAL PANELS	Wall	BTU.	\$	\$	\$			
Cast Aluminum	4''	.15	16.88	2.50	With F	ace		
Cast Aluminum 2 hr. F. T.	61/2"	.39	16.88	2.50	"	"		
Sheet or Extr. Aluminum	41⁄2″	.30	5.66	2.50	"	"		
Porcel. Enamel Steel	41/2"	.16	8.44	2.50	"	"		
Stainless Steel	2"	.15	7.28	2.50	"	"		
Stainless Steel 2 hr. F. T.	4"	.22	7.28	2.50	"	"		
Copper	7"	.22	6.75	3.50	"	"		
Stainless Steel & Concrete	4"	.12	3.38	2.00		"		
Stainless Steel, Concrete & Glass Sandwich	4"	.12	3.38	2.00	"	"		
GLASS WALL 1/4 in, Wire Glass	2″	1.13	8.44	6.75	-			
Reinf. Brick Masonry	41/2"	.32	10.13	3.35	2.5	0		
Precast Concrete	4''	.32	16.88	2.00	-			
2 in. Limestone	4"	.32	13.50	3.35	2.5	0		
2 in. Granite	4"	.32	20.25	3.35	2.50	0		
2 in. Marble	4''	.32	16.88	3.35	2.5	0		
2+2 in. Terra Cotta	6"	.32	24.30	3.35	2.5	0		

MASONRY, METAL VENEERS with 8" Back-up

4 in. Face Brick	13"	.34	3.38	-	5.25
4 in. Granite Veneer	13″	.35	30.38	-	5.25
4 in. Limestone Veneer	13''	.35	20.25	-	5.25
4 in. Terra Cotta	13″	.28	20.25	-	5.25
4 in. Cast Stone	13″	.35	10.13	-	3.25
Cast Aluminum	13''	.30	16.88	-	2.50
Sheet or Extr. Aluminum	11"	.26	6.75	-	2.50
Porcel. Enamel Steel	11"	.30	8.44	-	2.50
Stainless Steel	9"	.19	7.28	-	2.80

includes plaster at ceiling at 23 cems per second (2) light weight concrete (3) concrete sandwich (4) does not meet 2 hr, fire test (5) does not meet 2 hr, fire test without furring, lath and plaster

FA	CING				BACK-UP			
rec-	Subtotal Face in Place	Thermal Insula- tion	Steel Inside Face	4" Cinder Block Back-Up ⁽¹⁾	Stl. Reinf. for Alum. Wall	Furring, Lathing, Plaster 8	Waterprf. Calking Dampprf.	Total Cost 2 hr. F. T.
\$	\$	\$	\$	\$	\$	\$	\$	\$
4.39	23.77	2.50	.75	-		-	- 2	27.02(4)
4.39	23.77	-	-	2.23	1.50	-	.71 2	7.73
2.70	10.86	.30	-	2.23	1.50	-	- 1	4.89
2.70	13.64	2.03	4.05		- *	2.08	.71 2	22.51 (5)
2.70	12.48	2.03	.75		-	-	- 1	5.26(4)
2.70	12.48	-	-	2.23		-	.71 1	5.42
3.38	13.63	-	-	2.23	-	-	- 1	5.86
3.38	8.76	-	-	10.13(2)	-	-	.71 1	19.60
.38	8.76	2.03	-	11.25(3)	-	-	.71 :	22.75
.06	20.25	-	-	-	-	-	- :	20.25 (4)
.06	21.04	-	-	-		2.08	.71 :	23.83
.75	25.63	-	-	-	-	2.08	.71 :	28.42
.75	26.10	-	-	-	-	2.08	.71 :	28.89
.75	32.85	- 1	-		-	2.08	.71	35.64
.75	29.48	-	-	-	-	2.08	.71	32.27
.75	36.90	-	-	-	-	2.08	.71	39.69
		1		8" Block				
3.38	12.01	.30	-	2.88	-	-	1.59	17.01
.75	42.38	.30	-	2.88	-	-	1.59	47.38
5.75	32.25	.30	-	2.88		-	1.59	37.25
.75	32.25	.30	-	2.88	-	-	1.59	37.25
.75	20.13	.30	-	2.88	-	-	.71	24.25
.39	23.77	_	-	2.88		-	.71	27.59
.36	11.61		-	2.88		-	.71	15.43
.70	13.64	_	-	2.88		-	.71	17.46
.13	14.21		_	2.88	_	_	.71	18.03

TOTAL COSTS for conventional and thin walls show that space saving has greatest effect on "economic cost"

	A	B ⁽¹⁾	C ⁽²⁾	D ⁽³⁾		
	Total Cost 2 hr. F. T.	Spandrel, Beam & Column	Rent Value Cost	Capital- ized heat loss	Total Economic Cost	
METAL PANELS	\$	\$	\$	\$	\$	ABDC
Cast Aluminum	27.02(4)	10.00	13.33	.23	50.58	
Cast Aluminum 2 hr. F. T.	27.73	10.00	21.50	.59	60.30	
Sheet or Extr. Aluminum	14.89	10.00	15.00	.45	40.34	······································
Porcel. Enamel Steel	22.51(5)	10.00	13.33	.24	46.08 °	(//////200000000
Stainless Steel	15.26(4)	10.00	6.67	.23	32.16	
Stainless Steel 2 hr. F. T.	15.42	10.00	15.00	.33	40.75	
Copper	15.86	10.00	23.33	.33	49.52	
Stainless Steel & Concrete	19.60	10.00	13.33	.18	43.01	
Stainless Steel, Concrete & Glass Sandwich	22.75	10.00	13.33	.18	46.26	
GLASS WALL						
¼ in. Wire Glass	20.25	10.00	6.67	1.70	38.62	
MASONRY SLABS						
Reinf. Brick Masonry	23.83	12.00	16.66	.48	52.97	
Precast Concrete	28.42	12.00	13.33	.48	54.23	
2 in. Limestone	28.89	12.00	13.33	.48	54.70	
2 in. Granite	35.64	12.00	13.33	.48	61.45	
2 in. Marble	32.27	12.00	13.33	.48	58.08	
2+2 in. Terra Cotta	39.69	12.00	20.00	.48	72.17	
	VENICEDC					
MAJONKI, METAL	TALERS	win o ba	ск-ир		74.05	
4 in. Face Brick	17.01	14.00	43.33	.51	/4.85	
4 in. Granite Veneer	47.38	14.00	43.33	.53	105.24	
4 in. Limestone Veneer	37.25	14.00	43.33	.53	95.11	
4 in. Terra Cotta	37.25	14.00	43.33	.42	95.00	///////////////////////////////////////
4 in. Cast Stone	24.25	14.00	43.33	.53	82.11	
Cast Aluminum	27.59	14.00	43.33	.45	85.37	
Sheet or Extr. Aluminum	15.43	T4.00	36.66	.39	66.48	
Porcel. Enamel Steel	17.46	14.00	36.66	.45	67.57	///////////////////////////////////////
Stainless Steel	18.03	14.00	30.00	.29	62.32	

(1) Allowance is made for the reduced cost of the structural steel frame in the case of the lighter walls. The figures used are based on a 20-story building with 25 ft. column spacing, and work out to \$10 per lin. ft. of wall for the lighter walls and \$14 per lin. ft. for the heavier walls.

(2) The "rental value cost" of each of the walls was computed as follows: the rental value of the floor space occupied by the wall was taken as \$4 a sq. ft. per year—a realistic current figure—and this was capitalized by multiplying by 10 years, giving \$40 per sq. ft. as the capitalized value of rentable space. On this basis, the space occupied by a 12 in. wall has a capitalized value of \$40 per lin. ft., the space occupied by a wall 3 in. thick only \$10. (3) To show the effect of added heating costs, particularly in the case of the all-glass wall, an amount has been added to the economic cost of each of the walls corresponding to the average office building heating cost (in New York City) for a ten year period using steam supplied from a central source (4) Does not meet 2 hr. fire test.

(5) Does not meet 2 hr. fire test without furring lath and plaster.

BACK-UP MATERIALS

Nowhere is the stultifying effect of the building-code fire test more evident than in the selection of back-up materials for the thin curtain wall which must meet code requirements. The reason for this has already been mentioned: there is a basic conflict between the properties contributing to good thermal insulation at normal temperatures and those required to produce a material capable of meeting the fire test. If the fire danger were real, this might be accepted as inevitable; since, in the case of the modern office building wall, it is largely imaginary, and since the protection the wall affords, if needed, is canceled by the nonfireproof windows, it is especially unfortunate.

The origin of this conflict lies in a peculiar physical phenomenon which enables some masonry materials to slow down the rate of heat transfer from the side of the wall exposed to the fire to the opposite side, because of the quantity of heat needed to evaporate the moisture present in the material in chemical combination with its other constituents. Until all of this moisture has been converted into steam, the temperature of the inside surface of the wall-away from the fire-does not rise above 212°, and thus remains well within the limit specified by most codes, which is usually a 250° F. rise over room temperature. Even a comparatively small quantity of constituent moisture is sufficient to delay the rise in temperature of the inside surface. Good thermal insulation, on the other hand, depends in most instances upon entrapped air which, while capable of delaying heat flow, does not have the property of putting a top limit on the temperature rise of the inside surface. Thus a wall which affords good thermal insulation may not heat up as quickly on the inside as one containing entrapped moisture, but it will heat up steadily, and go beyond the 250° F. limit well before the end of the test period.

The other property which enables a back-up material to satisfy fire-test requirements is sheer mass, resulting in a high "heat capacity" -the expression of the quantity of heat needed to raise its temperature a given amount. It is high heat capacity, for example which enables a brick wall to meet code conditions. But, unless the wall is



CONTRASTING PERFORMANCE of basic types of back-up material under typical fire-test proceedure. Temperature of inside wall surface with water bearing material rises quickly to boiling point, then levels off until all water has been converted to steam.

separated from the inside of the building by insulation, this same property causes the brick wall to exert a drag on the heating system, making it slower to warm in the morning, and storing heat which may be given off needlessly at night.

Pound for pound, brick and other ceramic materials do not afford as much fire protection, as defined by the codes, as do the various forms of lightweight concrete and other cast materials such as gypsum block which frequently contain a good deal of water in chemical combination. At the other end of the scale the various forms of thermal insulation, being both light in weight and chemically dry are of least value, besides having the disadvantage of melting points, in most instances, that are below the temperatures to which they would be subjected in fire tests. For these reasons, it seems probable that the development of thin curtain walls to meet code conditions will center around the water-bearing materials, with perhaps the addition of a layer of thermal insulation, at least until these requirements are further modified.

ATERIAL	GEI	NERAL DATA	DATA ON 4 IN. CONCRETE BACK-UP									
	Agg Wt, per cu. ft. Ibs.	cost per cu. yd. at points shown (1)	Concrete Mix & Comp. Strength per sq. in.	Wt. per cu. ft. Ibs.	Wt. per sq. ft. Ibs.	"U" Factor	Fire Test	Cost in place (Incl. mortar or and reinforcin Blocks	in wall cement g) (2) Slab			
inders	40—50	\$1.50 to \$3.00 «t source	1c-2s-5ci or 1c-10ci 1100 lbs.	100-120	33—40	1.12	2 hr.	Mat20 Labor .20 Reinf65(3) \$1.05	None			
ag ag	40—60	\$2.50 to \$4.50 at source	1c-4.9 fines— 5.25 coarse 700 lbs.	100	25	.51	4 hr.	Mat26 Labor .20 Reinf65 \$1.11	None			
nale, Slate Clay Base	\$3.00 to \$5.00 at source	40—60	1c-3.4 fines	100	25	.75	4 hr.	Mat27 Labor .20 Reinf65 \$1.12	None			
umice	30—50	\$1 to \$4 at source St. Louis \$7.50 Chicago 8.00 Pitts. 11.00 New York 12.50	1c-14 (¾″′) 750 lbs. 1c-10 pumice 1000 lbs.	50 60	17 20	.23 .34	4 hr.	Mat34 Labor .20 Reinf65 \$1.19	Slab .85 Labor .40 \$1.25			
iatomite	28—40	\$19 at source St. Louis \$27.00 Chicago 26.00 Pitts. 34.00 New York 37.00	1c-6 (fines up to 3/8") 500/850 lbs.	55	18	.20	4 hr.	None	Slab 1.00 Labor .40 \$1.40			
erlite	5—20	New York \$10.80 Pitts. 12.00 (approx.)	1c-7 to 1c-12 (fines up to 3%") 800/1200 lbs.	55 40	18 13	.25 .19	4 hr.	Mat38 Labor .20 Reinf65 \$1.23	Slab .85 Labor .40 \$1.25			
ermiculite	6—12	\$9 to \$12 at various pts. in U. S.	1c-4 240 lbs. 1c-8 70 lbs.	30 22	10 7.4	.20 .16	4 hr.	As Concrete or p	laster			

Carloads or truckloads

Chart prepared by: R. H. McClure

Pittsburgh Fire-resistant attachment

SYSTEMS

Most of the thin curtain wall systems developed to date, and all of the ones shown on this page, which have the more-or-less official sponsorship of various companies, use metal for the outside facing, either stainless steel, aluminum, copper or carbon steel. Only about half were designed originally to meet city code conditions; the balance have either been adapted to meet the fire-test requirement, or are not designed for this purpose. Taken as a group, the systems shown are remarkable for the variety and ingenuity in which the various problems inherent in thin curtain wall design are solved. Further rapid evolution can be expected from continued development research.





ALLEGHENY LUDLUM

Facing and back-up: flanged, stain less steel panels, 2 in. deep, with fact tory-poured calcium hydrosilicate in sulation 2 in. thick. Inside finish: fur ring, lath and plaster or foil-backed plaster board and plaster to main tain stiffness of return edges of pane flanges and to meet fire test from inside.

Allegheny Ludlum Steel Corp., Pittsburgh, Po

rigid non-combustible insulation furring channels foil-backed gypsum lath plaster

REPUBLIC

Facing, back-up and inside finish: stainless steel face backed with ribreinforced panels of carbon steel with two-piece flanges to isolate front and back surfaces, and containing 2 in. of fire insulation. Metal panels form inside finish, may be painted direct.

Republic Steel Corp., Cleveland, Ohio.



Expected to meet 2-hour fire test.



ARMCO

Facing: flanged (vertical or horizo tal) self-framing stainless steel pane Principal feature is simple joint a connector system. Back-up: any so able fire insulation, 2 to 3 in. thi Inside finish: optional.

Armco Steel Corp., Middletown, Ohio.

ROBERTSON

Facing, insulation and inside finis fluted steel or aluminum panels, in. wide, backed with flanged ste plate enclosing $1\frac{1}{2}$ in. rigid gla fiber insulation. Inner and outer po els not in contact. Panels form insi finish, painted direct.

H. H. Robertson Co., Pittsburgh, Pa.

faced panels seoled Jouble glazing extruded dluminum facings a molds

U. S. PLYWOOD

Facing, insulation and inside finish: factory-fabricated panels with porcelain-enameled steel facings bonded to honey-comb insulating core. Inner and outer facings not in contact. Panels set in frame formed by insulated, extruded-aluminum column covers. Panel designed by Saarinen, Saarinen & Associates for General Motors Center, Detroit and engineered by U.S. Plywood Corp., New York.



Incombustible; not designed to meet fire test.





ALCOA

Facing: ribbed cast aluminum, lugs bolted to vertical angle stiffeners. Back-up: precast diatomaceous concrete, 4 in. thick. Inside finish: aluminum foil, 1/1,000 in. thick, cemented to back-up with bituminous cement, provides vapor barrier. Covered by continuous convector enclosure. Designed by Thomas K. Hendryx, architect, for Bradford, Pa. hospital and engineered by Aluminum Company of America, Pittsburgh, Penna.

ets 4-hour fire test.

MAHON

Facing, insulation and inside finish: spaced, flanged panels of carbon or stainless steel or aluminum, containing glass fiber insulation (no fireresisting back-up). Pans may be arranged as shown, with one set of flanges projecting, or with both sets of flanges turned in. Inner pan has factory applied finish.

The R. C. Mahon Co., Detroit, Mich.



Incombustible; not designed to meet fire test.





FENESTRA

Facing, insulation and inside finish: double, interlocking flanged panels of steel or aluminum (or combination of both), with panels separated by asphalt saturated felt to avoid throughwall contact, factory-inserted insulation; panels 3 in. thick. Panels can be used horizontally or vertically, available up to 14 ft. long.





Meets 4-hour fire test.

glass insulatio

1/4" "IB ag expanded metal channel



AMERICAN BRASS

3'-o" panel

Facing: ribbed copper panels, trimmed with extruded bronze, attached to tubular copper alloy frame. Back-up: gypsum block, 3 in. thick. Inside finish: plaster.

The American Brass Co., Waterbury, Conn.

3[°] gypsum apace between framing tubes gated copper sheel continuous cleats rennect facia to framing +borizontal members - 7-6 o.c. +borizontal members - 2-0° o.c.

Expected to meet 2-hour fire test.



CARNEGIE-ILLINOIS

Facing: stainless steel pans reinforced with horizontal carbon steel channels. Back-up and inside finish: optional. Sample illustrated shows steel panel back-up forming inside finish, cavity for optional insulation and/or fire protection to meet fire tests.

Carnegie-Illinois Steel Corp., Pittsburgh, Pa.



TECHNICAL PROBLEMS

Every radical change in construction method brings with it a host of new problems—or rather, old problems in new forms. The thin curtain wall is no exception. Internal condensation may be a problem, for example, in walls of all types. In many curtain walls, where the outside surface is formed of a vapor-impervious material such as metal, this problem becomes more acute than when the outer surface is relatively porous, as is true of masonry. The same is true of problems arising from expansion and contraction, moisture penetration, methods of erection, fastening and so on.

In an industry as wedded to empiricism as is building, new and untried methods have a special handicap, since new development must be guided, at least at first, by theory rather than by experience. Like Ceasar's wife, they must be above suspicion. Problems must be solved which are not even acknowledged to exist in the case of "accepted" materials.

Condensation

In the past 15 years, the problem of internal condensation in walls has received a great deal of attention, primarily because more efficient insulating materials, by lowering the "operating temperature" of the outer part of the construction, have made possible the condensation of moisture from within the building on the inside of the outer wall surfaces. It is now commonly conceded that insulated walls should be built with a vapor-impervious membrane on the warm side of the insulation, and ventilated on the cold side if possible. The first of the diagrams below shows the principles involved, as well as the theoretical relative vapor pressures on the two sides of the wall under winter heating conditions. With increased use of summer air conditioning, however, the question arises as to what should be done under conditions of summer cooling, when the warm side of the wall becomes the cold side, and vice-versa. This is illustrated in the second diagram.



As the arrows showing the relative vapor pressures indicate, the summer problem is not so great as is the winter problem; moreover, there is no danger of freezing, as is true in winter.

Where code requirements include the fire test, both problems are likely to be entirely academic, since it is unlikely that additional space will be sacrificed to thermal insulation once test requirements have been met, and consequently unlikely that

the curtain wall will be sufficiently well-insulated to create a condensation problem.

Where the wall is not designed to meet a fire test, on the other hand, it is very likely to contain enough thermal insulation to raise the question of internal condensation in winter, and with the likelihood of summer air conditioning in summer as well. These considerations have led at least one manufacturer of insulating materials to propose a curtain wall with a vapor barrier in the center, and layers of insulation on either side, as in the left-hand diagram below. In this solution, the outer layer of insulation is assumed to function with full efficiency in the winter, while the inner layer is relied upon to slow down the rate of heat transfer in summer. Another way of accomplishing the same purpose is shown in the right-hand diagram, which pictures a wall in which the insulation is contained in a vapor impervious wrapping on both sides. The trouble with this solution, of course, is that if the vaporproof wrapping fails at any point the entering moisture will be trapped and will thus accumulate until the insulation is thoroughly saturated. It thus



requires either a hermetically-sealed wall, or a type of insulation which is in itself impermeable to vapor throughout its structure.

One moral to be drawn from all this theory is the desirability of ventilating behind the outer surface of the wall, especially when the outer surface is metal, and thus vapor-impervious. It has been shown that such ventilation has little or no effect on the total insulating value of typical wall constructions, while providing a reliable guar antee against the harmful *accumulation* of condensed moisture within the wall. Carrying this principle still further, it may very well be that the ultimate solution of the condensation problem will be found in a wall structure that is vapor permeable throughout, although containing an *air*-tight barrier, and is thus able to "breathe" in both directions. This is the principle behind the use of roofer's felt under slate roofs, where it has been found to be the best method of over coming a severe condensation problem.

Moisture penetration

The desirability of ventilating behind the outer wall surface t provide an exit for condensed water vapor of internal origin is reinforced by a recently-developed theory regarding moisture penetration from the outside. Boiled down to its essence, this theory state that the principal reason why such water enters a vertical wall i pressure differences between the inside and the outside which ar the result of wind drawing air out through the cracks on the lee sid which must be replaced by air drawn in through the cracks on th windward side. Since, during a rain storm, the latter are covered b a film of water, the entering air brings water with it, causing leaks.

An easy way to avoid this difficulty, according to latest theories is to create a cavity to act as a sort of buffer state within the wal sufficiently open to the outside so that its pressure will rise to nearl the point of the outside pressure. In this method, shown in diagram



form on the right, the open ings to the outside are delil erately made large enough s that they cannot become cov ered by a water film, but an sheltered from direct rai drops and water runnin down the outer surface of th wall. Since it is a relativel easy matter to provide suc a cavity with weep holes let out any water which comes in, these are usual provided, thus incidental guarding against any conti gency which might arise

he water should refuse to comply with the suction theory on which he ventilation is based.

A good example of a wall designed in accordance with this heory is the aluminum faced curtain wall shown on page 91, in which the space formed by the ribs of the aluminum panels becomes such a ventilated "buffer state" between the outside and the inside, or, if you prefer, a vertical watercourse down which any water penerating the outer surface is led back to the outside. The big advanage of such a wall structure is that it does not require outside calking—a big expense in the case of tall office buildings—and permits a consistent design in which the already well established practice of applying spandrel waterproofing to the face of the spanhrel beam within the wall is tied in with an internal barrier unning from window head to window sill. It also combines very conveniently with many of the typical wall panels used in thin purtain wall construction.

Erection and fabrication

Most of the thin curtain walls developed to date consist at least in part of relatively precise, prefabricated units which must be compined with minimum tolerances and in accordance with a predeternined pattern. Since even a steel-frame building is still very far rom being a precision machine, this calls for considerable leeway n the attachment of such panel systems to the fireproofed frame. Various attachment devices have been devised which provide for as nuch as 2 in. variation (plus or minus 1 in.) both vertically and horizontally, between the panel system and its support, and some uch attachment is essential, at least in the case of metal panels which lo not provide for a cumulative adjustment in their assembly.



heoretically a back-up consisting of large sized precast units should how a considerable saving in labor over a back-up wall built of mall masonry units. Although such precast units have shown savngs in factory buildings and two-story housing projects specifically esigned for their use, cost figures from actual jobs do not indicate preponderant price advantage for precast slabs when these units ave to be reinforced to withstand a 30 lb. wind load. There are everal reasons why the costs and the prices obtained to date do not how the theoretical savings which might be expected of large units. he principal reason is probably that which applies to any new onstruction method: an allowance must be made, in the first intance, for unknown contingencies, educating the workmen, etc. ther reasons include the difficulty, in multistoried office buildngs, of handling large back-up units on construction elevators. ypsum, cinder or lightweight-aggregate blocks can be much more ficiently handled than large slabs under normal construction conitions. Another factor of considerable importance is the competion which exists between the suppliers of traditional materials hich helps to keep prices down, whereas slab production has not rogressed to the point where a standard product is produced by everal competing companies.

Reliable cost and price data seem to indicate that if a large-sized lightweight slab is to be used in conjunction with a surface material, it is more economical to combine the two at the plant, rather than have two separate erection operations. The purpose of the facing material, in such cases, is to give a waterproof, attractive surface to lightweight, permeable insulating concrete. The back-up furnishes the thermal and fire insulation, and may also provide the necessary stiffening in the case of aluminum which melts at fire-test temperatures. (In this case a layer of bitumen is provided between the aluminum and the concrete, to prevent a reaction between the two materials). Other possible facings include porcelain enamel, stainless steel, terra cotta and brick. Aside from lightweight concrete, there are several other possible approaches to the large-slab curtain wall unit. One, which may well have an important place in future thinwall construction, is a sandwich composed of noncorrosive metal face backed with 11/2 to 2 in. of concrete, 2 in. of thermal insulation, and 11/2 to 2 in. of concrete, with the inner and outer concrete layers connected by reinforcing webs. The thermal insulation used in this unit is foam glass, which has the advantage of being impermeable to vapor penetration from either side of the wall.

Another system, offering a compromise between the large-sized prefabricated slab and metal spandrels backed-up with conventional masonry, is a metal pan unit approximately 2 in. deep and 16 to 24 in. wide, extending vertically from window head to window sill, and filled with lightweight, semi-structural insulating material at the plant. The factory-poured fill may be calcium hydrosilicate, lightweight perlite concrete, or cement-bonded vermiculite. Pumice aggregate might also be used, but its high strength characteristics are not as important in this application as its fire-resisting qualities. There are still other lightweight concretes suitable for this purpose.

The function of such a filler is primarily to increase the fire resistance of the wall and secondarily to stiffen the metal pan units. With this type of construction, it is obvious that the inner edge of the metal pan will exceed the temperatures permitted under the regular fire test early in the test period, due to the high heat-conductivity of the metal. For this reason, such walls require an inner finish consisting of furring, lath and plaster (with the plaster containing wood fiber or lightweight aggregate to increase its fire-resistant properties) or fire resistant insulating board. The added cost of the lightweight panel fill, and the necessary furring, will each run about 30 cents per sq. ft.

Beating the law

So long as our building codes contain the basic inconsistency of permitting a nonfireproof window of any size, but requiring fireproof walls, this will provide a powerful incentive for making officebuilding walls entirely of glass, in the manner of the walls of the U.N. Secretariat. Another way in which this inconsistency may be turned to advantage is by employing the common-sense argument that since an overall window is permitted anyway, thin walls which are demonstrably safer than window glass should also be permitted. This argument was employed successfully in the case of the Federal Reserve Bank office building annex in Detroit (see p. 116). Here the walls consist of a facing of 11/2 in. of marble, backed with 2 in. of foam glass, held in a two-way steel channel frame attached to the outer face of the building frame. The inside surface of the wall, being covered by a convector cabinet, is left unfinished. This construction gives some idea of the thin curtain wall of the future, which should materialize just as soon as building departments in other cities decide to adopt the approach used in this instance in Detroit, and designers are free to devise the most rational, rather than the most expedient solution of the technical problems involved.

APPEARANCE

There is no inherent reason why thin curtain walls should look any different from the outside than many walls which employ the conventional back-up of 8 in. of masonry. Metal facings are already widely used for such conventional walls; conversely, thin walls can be constructed using conventional facing materials such as limestone, brick and terra cotta in new ways, but without affecting their exterior appearance.

Where the facing happens to be metal, the thin curtain wall presents certain problems which are common to all such uses of metal facing materials: problems involving the surface texture and profile of the metal face, avoidance of excessively shiny surfaces, "oil canning" etc. And, in common with other office building walls, thick or thin, it presents the problem of what sort of overall pattern is to be created: vertical or horizontal "stripes," a "plaid" having neither vertical nor horizontal emphasis, the smoothest possible surface. or one which expresses the steel-cage frame.

Since the trend in such designs, whatever pattern is striven for, is distinctly away from any effort to make the wall appear massive, and towards a true expression of its real nature as an enclosing membrane, there is no conflict between any of the various design approaches and the thin curtain wall—in fact, the thinner walls are what is being "expressed" whether or not they are actually being used. And even if this were not the case, it would still be possible to create, with a thin curtain wall surface, the visual illusion of massive piers so popular in the Twenties, with the same sacrifice of rentable space always associated with such effects, but with the same relative increase in rentable area for the thin wall over one of conventional thickness. Thus, so far as the overall effect of the thin curtain wall is concerned, the designer is presented with much the same problems, and free to employ the same solutions, as would be true with any other type of wall structure.

There are, of course, design opportunities above and beyond this. One of these is the opportunity to employ color, with the assurance of easy maintenance, which porcelain enamel and several other special finishes for metal panels afford. Another is in the use of decorative patterns and ornament, which, in the case of thin metal panels are functionally necessary to stiffen the surface and avoid "oil canning." One of the handsomest office buildings so far constructed—the Equitable Savings & Loan building in Portland, Ore., designed by Pietro Belluschi, employs a facing of contrasting cast and sheet aluminum panels to create a pattern which emphasizes the structural frame—in this instance reinforced concrete—and provides an ideal foil for the blue-green of the large panels of fixed heat-absorbing glass which constitute the fenestration.

The thing which the Equitable Building demonstrates with great clarity is that it is the imagination and skill of the architect, rather than the supposed limitations of any construction material or method, which determine the ultimate success or failure of such a design. It also shows in a very pure form how much can be accomplished through the avoidance of any visual symbols suggestive of weight, an objective which is, of course, highly appropriate to thin curtain wall construction.

Before this article went to press, FORUM submitted the text to various industry leaders—primarily producers and users of curtain wall materials—for their comments. Despite their understandable complaints that too little attention was paid to the materials and methods in which they have proprietary interests, practically all of these curtain wall experts endorsed heartily the article's underlying purpose and its broad conclusions.

A summary of their comments begins on the facing page.

STAINLESS STEEL



SURFACE TEXTURES for sheet metal facing materials eliminate shiny reflections and obviate "oil canning" effect (right).



Photos: Newman Schmi

MODEL AND MOCK-UP of propose new office building for Aluminur Company of America (Pittsburgh designed by Harrison & Abramovit in association with Altenhof Bown, Inc. and Mitchell & Ritchey Inc., show effect of stamped alum num sheet in inverted pyramid par tern.



TWO HANDSOME BUILDINGS of very different appearance which employ thin curtain walls are the Equitable Savings & Loan building (Portland, Ore.) (above), Pietro Belluschi, Architect, and the Alcoa Administration Building (Davenport lowa), Harrison & Abramovitz, Architects.



INDUSTRY'S COMMENT

Forum:

Thank you for giving me the opportunity to examine the text and tables of the article on curtain walls. The various collaborators on this thoughtful and somewhat all-embracing symposium on the subject are to be congratulated. They have succinctly stated the facts of the case and presented therewith useful tabulations to guide architect, engineer and financial interests in their preliminary thinking on prospective building projects.

Individuals and groups will, without question, find fault with some of the statements made and with tabulated figures and comments. I, too, would question certain specific sentences, comments and items, taken alone. However, the readers to whom this material is directed primarily will recognize it as an able and honest effort to present a general picture of a current particular problem.

For example . . . I would be inclined to approach conservatively the "building code" situation—advances are being made against older, unrealistic regulations, and building commissioners, in general, do take their responsibility for protecting lives and property seriously, as they properly should—Mother Nature and other not-completely-predictable factors do not always operate within charted minimums and maximums. Good safety factors are still good insurance, in my opinion. In reference to the commentary on the first diagram on page 92, it should be pointed out that a *non* "sufficiently well-insulated" curtain wall will, at times, have a wet interior surface, with consequent unsatisfactory effects.

The tabulation of various exterior facings as to Appearance, Performance and Cost is, I think, an over-simplified presentation of a great deal of information, which may mislead some too-casual readers into difficulty—to reduce comment to a word or two is an invitation to criticism.

> RICHARD A. BIGGS Director of Architectural Development Stainless Steel Division Crucible Steel Company of America New York, N. Y.

Forum:

We know that this article will prove of great value to all concerned and should result in more permanent easily maintained buildings.

In your discussion of building codes, why not stress the point that the building codes have been changed from 4 hr. exterior walls to 2 hr., wherever unprotected window openings are permitted and, in at least one city, Pittsburgh, the code reads, "1 hr. exterior walls are permissible if the opinion of the Board of Standards & Appeals is that no undue hazard is deemed to exist." Manufacturers of building materials are becoming vitally interested in the building codes of the country as attested by the number of tests performed by the Bureau of Standards and the Underwriters' Laboratories as well as the wide attendance at the Building Officials Conference of America—Basic Code meetings.

A study of past disasterous fires shows clearly that a properly fireproofed structural framework will come through a damaging fire despite the fact that from 25 to 50 per cent of the exterior walls were thin glass windows which lasted only a few minutes.

Under the subject of Why Curtain Wallsthere are a number of very important advantages in this type of construction which should not be overlooked:

During construction the minimizing of traffic problems for wall materials using lightweight large panels; elimination of wet construction; elimination of hundreds of miles of joints which are incipient points of failures from water absorption; the use of completely nonporous surfaces; steel surfaces permit no water absorption

... which adds unbalanced weight during rains; no problem of dust or dirt going through the wall, through the cracks or air spaces; no problems of chipped materials falling on by-passers; the elimination of calking costs; practical elimination of maintainance costs; presentation of a material to the building industries which can be easily cleaned, an additional sales advantage; extreme long life of stainless steel and porcelain enameled steel; these materials will be ideal for complete air conditioning and even pressurizing a building to entirely eliminate dirt and dust; the ease of erecting this type of construction will consume less time on the job thus saving money for the owner; steel walls do not store heat . . . the ease of calculating the strength of sections assists in design; the complete uniformity of materials available in steel assists in design and cost estimates.

In our opinion, too much space is given to the subject of rental costs. The real advantage of steel exteriors is not the small saving made in rental cost, but more particularly in the ease of construction and in the long trouble-free life of stainless steel and porcelain enameled walls.

CARL F. BLOCK Development Representative Carnegie-Illinois Steel Corp. Pittsburgh, Pa.

Forum:

The costs shown seem to be largely theoretical and, with the exception of the relatively few conventional types of constructions, apparently are not based upon construction experience. Certainly, the "rental value costs" of the walls are open to question and might be expected to vary greatly with different designs.

On the subject of costs, as well as building codes, I cannot concur with the broad generalization which the article makes. Frankly, the article impresses me as a studied effort to prove a preconceived conclusion: that thin panel walls are more suitable for use in skeleton frame construction than masonry walls. While it is quite possible that the occupancy and esthetic requirements of certain structures can best be met with thin panel walls, such use should, in my opinion, be based upon a study of the requirements for the individual structure, including costs, rather than upon broad generalities.

HARRY C. PLUMMER, Director Engineering and Technology Structural Clay Products Institute Washington, D. C.

Forum:

A wall is a wall is a wall. I am sure that Gertrude Stein never realized that the FORUM would amplify so fully on this subject.

May I congratulate you not only on the amplification but also on the manner in which you have so ably posed the problem. To put it mildly, I believe that you have "covered the waterfront" on this challenging problem and hope that it will stimulate architects, engineers, industry and building codes towards a concerted action "to do something about it."

Leaving out the 3 in. or 4 in. sandwich which I believe to be still in the stage of research, I do believe it possible to reduce the wall to 6 in. or 7 in. However, the convector or air conditioning unit is still a pretty deep affair using floor space so that perhaps it is up partly to the mechanical engineer (not mentioned in your article), to find more effective use for his equipment which uses space not only on the perimeter, but in the interior also. It is customary to rent space in office buildings with the tenant paying for fan room areas on the interior. Are not the convector and cooling areas under the window somewhat in the same category? I am, frankly, not too impressed with arguments of "rental value cost" in connection with wall thicknesses until these other factors can be solved too.

Why not concentrate on a wall panel which can sit on the sill as does a window and with the same legal status? Incidentally, this might solve the battle of too much or too little light. Why not let the tenant design his space by making an insulated panel inter-changeable with a window? It certainly could be easily handled architecturally. At the same time why not also concentrate on the spandrel using durable metal to resist fire and wind, along with some proven type of back-up?

May I again congratulate you on getting our backs up!

ROBERT ALLAN JACOBS Kahn & Jacobs, Architects New York, N. Y.

Forum:

The use of lightweight curtain walls can result in some indirect savings not explicit in your article. Curtain wall units of the sort under discussion lend themselves to a much greater degree of sub-assembly than is possible in standard types of construction; they permit the omission of wet materials and as a result hasten the completion time of a structure. The logistics involved in the transportation and storage of prefabricated units can be more orderly and more carefully calculated than for a combination of small, large and plastic materials.

If the time for constructing a building can be reduced, temporary financing costs can be reduced, collection of rents can be started at an earlier date and the builders can profit by more rapid turnover of labor and materials.

Cost of temporary financing of a 25-story office building, plus an earlier rental date, could amount to as much as \$4,000 per day.

EDWARD X. TUTTLE, Vice President Turner Construction Co. New York, N. Y.

Forum:

I am very well impressed with the presentation.

In this age of machines and metals it is wholly logical that the exterior surfaces of buildings, particularly those of skeleton frame construction, should be of metal. The chief obstacle to progress in that direction at the present time is the antiquated building code. By publishing an article on curtain wall construction, FORUM will awaken the architectural profession, the building industry, and building officials to this realization. What is more, it will also inspire the designer and inventor to work out details of construction for metal exterior wall coverings that will endure the service life of the building with ample strength and rigidity, being reasonably safe against fire and permanently storm tight. In addition, the facing will need to be free of unsightly buckling and the material must lend itself to a durable color treatment or to the application of color.

HENRY E. VOEGELI, Development Engineer The American Brass Co. Waterbury, Conn. Forum:

Your constructive article on panel wall construction should be helpful in calling attention to the need for rationalizing building code requirements that make outmoded procedures mandatory. One gets the impression, particularly from the latter part of the article, that modification of building code requirements is being advocated in order to favor or allow the use of certain materials. This approach is not too convincing; a building code must concern itself primarily with safety, not with broadening the use of materials, however desirable that may be costwise. The article would be more convincing if it were made clear that the severity of the potential fire hazard which prevails does not require the high degree of fire resistance specified for exterior walls by the early codes and that reduction in the code requirements-and in building costs-therefore can be affected with no real loss of fire safety Code requirements for walls are based on past practices in wall construction and a reluctance to depart from the past-not on actual hazards. I follows that through appropriate reduction in code requirements to make them consonant with actual fire hazards, materials now available, have ing desirable properties, would qualify for use. In the presentation of the article, the emphasis seems to be in the wrong place.

It is essential that spandrel or panel walls be adequately attached to the structural frame of a building so that there is no chance of their becoming detached during a fire. It is also de sirable that the spandrel or panel wall remain intact and prevent the passage of flame, but i is doubtful whether there is any need for limiting heat transmission to the 250° F. rise in temperature criterion of the standard ASTM Fire Test Specification. Possibly, a special standard for testing spandrels will have to be developed by the ASTM. I mentioned this possibility a meetings of ASTM Committee E-5 earlier this week in Pittsburgh. Heat will be transmitted through the glass window above the spandrel wall much more quickly than through the wall itself Manufacturers of spandrel walls are having difficulty in devising joints in spandrel walls that will meet the heat transmission limitation of the standard fire test without adding unduly to cost Paradoxically, this is a feature that is of minor importance so far as fire safety is concerned.

The basic fire-safety function of the exterior walls of a building is to prevent the entrance of fire from outside exposures. Fire protection authorities recognize today that relatively small distances of separation effect a substantial reduc tion in the severity of fire exposures. It would appear that spandrel walls of 1-hr., incombustible construction would afford reasonable fire safety in any locations where the building code permits windows to be installed. It, therefore, seems un desirable to give the impression that a 2-hr. re quirement is the proper one for spandrel walls That requirement represents the first step in rationalizing code provisions and in reducing the old 4-hr. requirement toward 1-hr., which proba bly will eventually become the standard require ment for nonload-bearing panel walls.

In discussing costs and construction advan tages, speed of erection is a factor that might be stressed. The erection of walls made up of mil lions of small masonry units—at increasing cos from year to year—merely for the purpose of pro viding shelter and a reasonable degree of fire protection, seems fantastic in this day and age.

B. L. WOOD, Consulting Enginee American Iron and Steel Institute New York, N. Y.



Photos: Ezra Stoller: Pictor

Spectacular luxury in the Caribbean-the Caribe Hilton Hotel at San Juan, Puerto Rico

Architecture and structural design: TORO, FERRER & TOR-REGROSA, San Juan, Puerto Rico • Interior design and architectural collaboration: WARNER-LEEDS, New York City (Project staff: Suzanne Sekey, Walker Field) • General contractors: GEORGE A. FULLER CO., New York City • Mechanical and electrical engineering: ZUMWALT & VINTHER, Dallas, Tex. • Landscape architecture: HUNTER RANDOLPH, San Juan, Puerto Rico.

View, above in color, is from behind encrusted wall of historic old fort near hotel; View left is fort from guest room.



Guests alight from automobiles under canopy, left. Walking through open lobby to registration desk, they shortly see windswept view of ocean past sinuous swimming pool, below.



This is the kind of hotel which should be built in Florida and California, but never has been.

The Caribe Hilton, in San Juan, Puerto Rico, has the color, texture, and finish demanded by Americans off to the semi-tropics—an atmosphere of relaxed daytime sunniness and, at night, drama dissipating out into a big southern sky. And constant, obvious luxury.

But whether most vacationists to Puerto Rico will recognize it or not, they will be getting this luxurious atmosphere in highly refined, inventive form in the Caribe Hilton. They will be getting their lavish atmosphere shorn of the pretense which usually accompanies it in the design of resort hotels—(most other hotels by the sea being built either in some pompous colonial style, charm-conditioned by a posh decorator, or in a kind of bleak Miami Beach moderne).

The primary success—and architectural lesson—in this structure is that such a building can be lavish and still retain a comfortable human scale. The Caribe Hilton has a very large area of public space for its 300 rooms—two entire public floors. But space is spread horizontally, not shot away in lofty high ceilinged spaces for the conventionally impressionable. The impression is of broad, windswept porches built expansively for the true luxury of use. The only high room is the sumptuous gambling casino, where after din the players stand as on the brilliantly lit bottom of a pool of da ness, and throw their pebbles on the vivid green, black, and g roulette boards.

The good climate of Puerto Rico has a temperature spread about 15° over the entire year. When it rains Puerto Ricans wait doorways; they know it will stop soon. Because of this, the grou floor of the Caribe Hilton is almost entirely open. The first door incoming guest comes to is the door of the elevator.

Upstairs, every guest gets a room with a balcony and a sea vi This neat trick was achieved on a site which does not really have sea exposures by setting the axis of the corridors roughly perpendi lar to the shore line and bending room partitions out to sea at outside walls, and also canting the glass walls that way. The tric even more successful than photographs and drawings on these pa indicate. Bedrooms are converted to sitting rooms by day.

The Caribe Hilton is not solely a resort hotel, however. I minutes by taxi from the business section of San Juan, it is built a for service to businessmen with interests in the Caribbean, and travelers stopping off on the long flight between the Americas.



iet court above is at north side of high central wing, at lobby level. Right, below, is view of central wing m south, second floor porch. At bottom, night scene in casino—gambling is legal on island.



t was put up, paid for (\$7,000,000), and is owned by the local itorial government of Puerto Rico through the Puerto Rico Indusl Development Co., a body formed eight years ago to help rescue island from its wretched financial status by developing local ustries and encouraging continental U.S. industry to establish ories there. The hotel is designed to be the basis for a tourist le from the states. New York is only 61/2 hours away by plane, the Caribbean islands are worrying Florida hotel operators as rivals. Early in the planning stages the young men of the develnent company interested the most famous U.S. hotel group in r Caribe hotel, and it became the Caribe Hilton, under the same aging parenthood as some of the most famous other hotels in U. S. (Waldorf-Astoria, Plaza, Mayflower, Town House, etc.). n sum, this building is more than just a gleaming tourist lure; s a job done to show visiting industrialists from the states what rto Rico can accomplish; plus a set of hotel rooms necessary to Juan. It is the signal of the island's awakened ambition.





Mahogany main stairway, with treads wrapped in carpeting, sits on polished concrete horse before a tall slab of black veined marble. Patterned terrazzo panel in lobby floor is repeated in miniature upstairs (see typical elevator lobby in color, next page). Wood fronting second floor elevators, right, is native capa prieto. Picture at bottom of page is first floor informal area near registration desk. Typical menus are beside it.



EMP DINI

DINING






Plans of first and second floor emphasize openness and great square footage given to public areas. Note consolidation of all kitchen and service areas near dining areas. Photograph of fourth floor elevator lobby is a good color clue to character of entire design. Each floor's elevator lobby wall has its own color (see diagram below), which is also imprinted on key tags for rooms on that floor. Furniture in elevator lobby is Puerto Rican product, designed by architect Henry Klumb. Wainscote rails are used frequently in design.

TORAGE







3





Spacious porch seen, left, from near entrance to hotel gives an idea of the openness of the first floor. In gambling casino, above, hanging lighting fixtures, assembled of stock components, fit crisply into the gaslit character of this exercise in stripped baroque. Right, Caribe Hilton plate and saucer.



Visitors who search for uniquely native character in this building will not find much of it. There is comparatively little that is Puerto Rican —some blinds in the handsome dining room (above), tile, china, a few chairs, a few feet of lumber, some furniture coverings, and the murals. Torro, Ferrer & Torregrossa, the architects, are native to Puerto Rico, but are young men—and this is a building for a *new* Puerto Rico, not the old.

The New York consultants, Warner Leeds, achieved a kind of abstracted native spirit in some of their interiors, notably in some of the floor tiles which they designed for manufacture in Puerto Rico. The richness and color which is a part of the Spanish tradition of the island appears in the tile, drawn out of its intricacy. Warner Leeds did the complete design job inside, including such details as china, uniforms and menus.

The Salon del Castillo is a particularly successful formal dining room, but it also was envisioned early in its design as an enclosed porch. It would not seem easy to arrange a marriage of these two diverse characters, but it was done marvelously. The result is a serenely beautiful room, with cheerful alive dignity.

The Puerto Rican Development Co., sponsors of the hotel, ha leased it to Hilton Hotels International Inc. for 20 years. Terms of t lease call for the development company to get 2/3 of the gross opering profit. The land acquisition story is unusual: These fourte acres were held on a deed from the federal government by a mnamed Baker who originally paid \$1, plus services. Such deeds ge erally run 99 years, but the government clerks, it is said, made error on this one and wrote it for 999 years, considerably beyond t life of many governments. A glance at the cost breakdown below w show what a happy error that was for Mr. Baker:

COST BREAKDOWN:	Land	\$400,0
(exclusive of fees)	Building	5,288,0
	Beach development, swimming pool, roads, walks, cabanas, etc	486,0
	Landscaping	60,0
	Furnishings	600,0



Left, typical corridor looking past elevator hall. Below, view of one room of luxurious suite at end of corridor, with long window overlooking sea. Bottom, view past bar into living room of smaller suite.



In a typical combination of the designers' imagination and practicality the only wood flooring in this hotel is used on the walls, in oak panels to diversify texture and, usually, back up a chaise lounge. Otherwise, permanent finish is the rule. Floors are native cement tile (the rug in presidential suite is the exception, not the rule) and walls are sand finish plaster. All horizontal furniture surfaces are scratch, alcohol and cigarette resistant, and all fabrics are washable.

PICAL FLOOR 10

30

50

Colors in corresponding rooms on the various floors are similar. A striking product of this scheme is the effect from outside the building made by the vivid curtains for the glass end walls. Vertical stripes of color carry through the eight floors of balconied exterior. This is especially arresting at night when the rooms are lighted behind the curtains.

Corridor plan shows the distribution of rooms and suites on a typical floor, and emphasizes again how the rooms are bent toward the sea view. The long corridors of the hotel are widened by small entrance lobbies for each pair of rooms, and at each of these an eggcrate lighting fixture is hung to interrupt the plane of the long narrow corridor ceiling (small photo, above).





On these two pages are elements and views of a typical guest room. Individually conditioned, the rooms have two different standard furniture arrangements, necessa by the dissimilar door positioning. Color view on this page is from near corridor of photo on opposite page shows room as seen from balcony. Floors are pale gray tile case goods and tables are designed by Warner-Leeds in mahogany with matched position top surfaces. Fixed lamps are used at bed, entrance, mirror, and chest. To desk-vanity, below, lifts to reveal mirror, and chest.

ENTRY

uggage rack

chest

desk-vonity

TERRACE



Rooms adjacent on each floor all have different color schemes (one is shown above, a second is indicated in plan below). The drape is the exterior key to the other colors in the room—drapes are matched vertically up the facades from floor to floor.

0

22



BATH

radiotelephone cabinet



计法



SECTION THROUGH PHONE BOX



Combined in bedside cabinet (left) by Warner Leeds are telephone and radio; fabric front is Puerto Rican. Bathroom, right, is lighted by three incandescent bulbs through frosted portholes in mirror surface, plus light leakage around edges. To right of bathroom door is top lift full length mirror.



CONSTRUCTION OUTLINE: Foundations reinforced concrete. Waterproofing — integral. Exterior walls — reinforced concrete or hollow tile plastered both sides; some stone veneered concrete or tile with terra cotta veneer, Federal Sea Board Terra Cotta Co., or wood facing. Interior partitions—principally hollow tile and cement plaster; some Transite, Johns-Manville Corp. and Carrara glass, Pittsburgh Plate Glass Co. Reinforcing steel—Bethlehem Steel Co. Ceilings—plaster, U. S. Gypsum Co., Steeltex lath, Pittsburgh Steel Co., Milcor moldings, Inland Steel Products Co. ROOFING —built-up; quarry tile on main block, Mosaic Tile Co. SHEET METAL WORK: Flashing lead coated copper. Ducts—galvanized iron. WINDOWS: Sash—wood, Sloane & Moller; pperable wood jalousies, Federico G. Villamil. .umite trim, Chicopee Mfg. Corp., Dalmo-Reguux aluminum hardware, Dalmo Continental, Inc. ilass (including Herculite doors and stair railing trim)—Pittsburgh Plate Glass Co. ELEVA-

TORS-Otis Elevator Co. Stair grilles-C. E. Halback & Co. FINISH FLOORINGS: Tile-Mosaicos Ramirez & Nieve, Hood Rubber Co., National Tile & Marble and Mosaic Tile Co. Carpeting—Creative Textiles Co. WALL COV-ERINGS—Mosaic Tile Co., David E. Kennedy, Armstrong Cork Co., The Standard Coated Products Div., Interchemical Corp., H. W. Wiggins & Sons and Richard E. Thibaut, Inc. FUR-NISHINGS-U. S. Plywood Corp., Sloane & Moller, C. E. Halback & Co., Van Keppel-Green, Dennett, Charles Tuteur, Hans Knoll Devon Associates, Treitel-Gratz, Jens Risom, Herman Miller, Hato Rey, Carrom Industries, Dunbar Furniture Co., Carlson Fedder, Fiber Textile Shops, Cabin Crafts, Bil-Art Studios, Hal Laski, Carre Waldron, Crane China Corp., Libbey-Owens-Ford Glass Co., Reed & Barton, International Silver Co., Angelica & Webber, Arundell Clarke. WOODWORK AND METAL TRIM-C. E. Halback & Co., Williamsburg Steel Products Co., Cornell Iron Works, Sloane & Moller, Hato Rey, Fairhurst Door Co. and U. S. Plywood Corp. and American Plywood Co. HARDWARE —Schlage Lock Co., Kirsch & Kroder Rubel, Stewart Hartshorn Co., Stanley Works, Yale & Towne Mfg. Co. and Metal Products Corp. PAINTS-Valentine Co. and Chapman Chemical Co. ELECTRICAL INSTALLATION: Wiringrigid conduit, General Electric Co. Fixtures Century Lighting Co., Gotham Lighting Co., Salterini, Kurt Versen Work-A-Lite, Holophane Co., Treitel-Gratz, General Electric Co. Special equipment-Western Electric Co. PLUMBING FIXTURES—American Radiator-Standard Sani-tary Corp. Cabinets — Charles Parker Co. KITCHEN EQUIPMENT-Albert Pick Co. AIR CONDITIONING-Carrier Corp. Boilers-Bige-low Boiler Corp. Oil burner-Combustion Equip-Todd Shipyard Corp. SPECIAL ment Div., EQUIPMENT: Mail chutes and boxes-Capitol Mail Chute Corp. Tennis fence-Anchor Post Fence Co. Murals-J. Torres Martino and Rosado Del Valle.

1999 - 2 40¹



PALACE HOTEL



1375 This was to be a hostelry unsurpassed in the world



1906 After the fire it was decided not to keep the shell



909 Kelham's balcony for parades, which had to be removed

1950 McCarthy is starting to turn the Palace around



-remodeling demonstrates contemporary architecture in harmony with the spirit of earlier styles

OFFICE OF FRANCIS JOSEPH McCARTHY, Architects* TAYLOR & GOERICKE, Contractors

In San Francisco's Palace, when a really grand banquet is put on for as many as 2,500 people, the hundred most favored guests find before them a complete service in 18-karat gold. For the Palace, though it has only 700 rooms, is one of the world's really great hotels. And the city in which it stands has a grand and gracious urbanity beyond that of any other big American town. Nearness to the Orient through the Golden Gate may contribute the levelheaded sense of continuity which everywhere qualifies the San Francisco progressive. Alone in the U. S., San Francisco's architects of today, even the young ones, consider that they belong to a generation which succeeds and precedes other generations. Among the best, none would wish to "wipe the slate clean" for his own new architectural revelation. Each would labor with might and main to contribute his full share in a joint venture which continues beyond him: the city.

Big Joe McCarthy is a younger man who has been called in by white-haired, oak-hearted Mrs. William B. Johnson in order step by step to "redo the Palace." He therefore has an unparalleled opportunity to show how contemporary architecture, without compromising itself, can yet harmonize with the spirit of its predecessors.

The first Palace was built in 1875, eight tall stories high, with 755 rooms, few of them less than 20 ft. square, on foundation walls 12 ft. thick; and beneath its huge central court was a reservoir of 650,000 gallons supplied by four artesian wells. (It is still there.) In the great Fire this was later to save the U. S. mint, though at the sacrifice of the hotel. The facade consisted of rank upon rank of those bay windows in which the area abounds and which, even more than the Bay itself, characterize the "Bay" Region. But the great feature was the carriage court, covered with glass at the very top, eight floors above the ground. Into it drove princes and presidents to adulation from tier upon tier of surrounding gallery.

In the post-fire Palace, this glass top was eventually dropped lower, now covers the Garden Court, surrounded by marble columns, lit by crystal chandeliers, where the carriage court once was. George Kelham who designed this present building was an Easterner, steeped in the Renaissance, who came out to supervise the work for Trowbridge & Livingston, but fell in love with San Francisco and stayed as an architect to the end of his life. With reluctance McCarthy had to pull down Kelham's balcony ("for seeing parades") that had ringed the top like a lighted fringe, for the supporting iron work had rusted out in the perpetual fogs. Then Joe did all kinds of chores in the guts of the structure and "at the back of the house," such as replacing miles of pipe, putting in standby compressors to prevent the possible loss of \$10,000 a day in food, redoing the elevators with new penthouses, remodeling the telephone room and the top offices.

All this and much more was well done, with full conscience and cooperation of the staff, and about it many stories can be told. Ye the real significance is not there. It began to unfold as the architec reached into the public areas, with an ever more certain hand. Thoug he seldom matched the vivacity of light racing over marble that we achieved in Kelham's style, the common denominator is in the soli worth of the materials, where all that says so is marble and all th glitters is gold; it is in the big generous scale, the largeness and uni of mood. Here the old and the new clasp hands warmly and deci they can get along. San Francisco says they can.

 Structural engineers for all alterations, H. J. Brunier • Mechanical Engineers various parts, Thomas B. Hunter, G. M. Simonson • Electrical Engineers, Chas. Von Bergen • Landscape Architects, Eckbo, Roylston & Williams • Mural Pai (Corner Room), Antonio Sotomayer.

Photos: Piggott Co., Mercer Photographs



... WHERE PRESIDENTS DROVE in dramatically, the glass roof has now been dropped down to the first level above the Garden Court Restaurant (photo right, above). "A building that is no longer the last word in style," says Mrs. Johnson, the Palace's owner, "depends on acquiring an atmosphere of its own." This thoroughbred atmosphere is the challenge which the new architect has been able to meet, in his own uncompromised contemporary idiom, in the 'Palace Corner" (photo, right).



GARDEN COURT RESTAURANT

PALACE CORNER



魏

Anthen .

Photos: Roger Sturtevant



It was in keeping with San Francisco's greater sophistication that a cocktail bar such as the "Palace Corner" should be placed at a front corner of the building, with large windows on the street, rather than buried in the back recesses. Owner and architect felt that the dark dim kind of lounge was a carryover from prohibition days. There would be more fun at a "sidewalk cafe." But the local fog drove it in from the sidewalk. To get service without crossing the lobby, the architect used dumb-waiters to the basement and borrowed space. Situated at the apex of the financial and shopping areas, the Palace serves 3,000 lunches a day, can serve 5,000 meals a day; 66 per cent of its ground floor is devoted to food and beverages. The Corner was soon taxed serving light lunches; and 75 per cent to 80 per cent of its patrons are served at tables, not at the bar (in reverse of the usual S.F. ratio). The various window openings were unified by grids (see photo at right). Since illumination to balance the daylight through the windows would be too bright for use at night, and night light alone would be too gloomy by day, a theatrical dimmer system is employed to provide a wide range of control by mood and hour.









NISHES AND EQUIPMENT: Interior partions-hollow tile, plaster on metal lath. Powder om and lavatory-Sanitas, Standard Coated oducts Div., Interchemical Corp. INSULA-ON-Owens-Corning Fiberglas Corp. GLASS FINISH Libbey-Owens-Ford Glass Co. OORING: Workroom - Linotile, Armstrong rk Co. Sales area-carpet, Mohawk Carpet ELEVATORS-Otis Elevator Co. Cabs-W. Tyler Co. DOORS-Dahlstrom Metallic Door Exterior glass door - Libbey-Owens-Ford ss Co. FURNISHINGS: Showcases-maple, rmica floors, Formica Co. Birch cases-U. S. Sloane. wood Corp. Bar stools-W. & J. bles-Dohrman Hotel Supply Co. PAINTS

P. Fuller Co. and Pratt & Lambert. HARD-ARE—Schlage Lock Co. ELECTRICAL IN-ALLATION: Wiring — conduit. Switches yant Electric Co. Fixtures—Kurt Versen and nchen & Goddard and Benjamin Electric Refrigerator bar fixture — Crouse-Hinds.

UMBING FIXTURES—American Radiatorndard Sanitary Corp. KITCHEN EQUIP-NT— Halbrook Merrill Co. LAUNDRY UIPMENT—U. S. Hoffman Machinery Corp. ATING UNITS—Vulcan Radiator Corp. AIR NDITIONING and REFRIGERATION EQUIP-NT—American Blower Corp., York Corp. and pidaire Corp.

SPECIAL REFRIGERATION keeps flowers fresh

The nearest thing to the existing rococo was McCarthy's redoing of the "Baldocchi" flower shop concession opposite the Palace desk, with the aid of Engineer G. M. Simonson. Through study and inspection, Simonson found that cut flowers thrive on temperatures within a 10° range between 40 and 50°, but the requirement of 85 per cent or higher relative humidity is vital and rigid. Again, air movement must be held to a minimum if wilting is to be avoided. So gravity coils, well baffled, replaced the blowers too frequently used by florists, since damage from excessive air movement would offset any advantage from compactness or easier mounting of blowers. For the sake of high humidity the coils were of generous size permitting a higher coil temperature. (The maximum 'split' or difference between coil temperature and temperature inside the case was set not to exceed 10°.) Each case was separately controlled, with cut-off switches as a precaution against freezing. The use of two air-cooled compressors (with auxiliary water cooling) instead of one gave a standby in case of emergency. And Freon 12 replaced the usual commercial refrigerants which damage flowers irreparably even in case of minute leakage. Because flowers must be seen in natural coloring, filament lamps were used, in half silvered tubular pattern, above a plastic louvered ceiling which, incidentally, did not impede air circulation to the cooling coils. And finally the architect incorporated the bulky gravity coils, plus the concealed lighting, plus the requirement of 2 in. insulation alternating with double glass all around, in cases which he made serviceable as well as attractive. Result: roses kept here a whole week were found as fresh as new ones from the market; a bigger stock could be maintained; and business increased 15 per cent against an average 10 per cent decline in the general area.





Well situated for terminals and business, the Palace will be reoriented toward shopping



One of the factors affecting the Palace has been the shift of the shopping district southward, and up the hill on Market Street, toward Union Square (see maps). And Mrs. Johnson, whose father, Senator Newlands, left San Francisco to develop Chevy Chase in Washington when San Francisco refused to get "big plans" from old Daniel Burnham, is not one to take a planning problem lying down. Based on the old carriage days, the Palace is approached today on New Montgomery Street, which is the side away from Union Square. To open a new entrance close to the southwest corner, which is toward the square, it will be necessary to do away with a string of existing spaces for stores, and connect up the whole area to the main lobby, in a big promenade parallel to the street. (See plan.) This is not silly, no matter how it sounds. Because of the huge crowds that congregate inside the hotel not only at every lunch time but in particular for special events such as conventions, speeches, banquets, such a space can be expected to fill up with people. And they will be in more leisurely movement than any sidewalk crowd, and protected from the weather as they look. And the added fact that the people of San Francisco are expected to accept a "big plan" at last, and vote this Spring for submerging the famous four street car tracks of Market Street under a surface park, will be just beautiful, and very fair indeed to the good old Palace.



Map shows how the new front will open a vista up Gea. Street toward Union Square.



A lobby extension with alcove stores will produce great revenue as well as new access.

FACTORY IN A STOCK ROOM

Lincoln Electric's new Cleveland plant is designed to cut indirect costs and pay for itself many times

THE AUSTIN CO., Engineers & Builders

Will there be a second wave of postwar industrial building now that the first postwar wave is on the ebb and factory construction is running 37 per cent below a year ago?

In the first four years after the war, American industry spent \$6.5 billion for new plants. In each of these years industrial construction ran far ahead of the prewar record of \$600 million and about half of 1942's wartime peak of \$3.7 billion. But too many of the plants erected right after the war were built for companies whose need for more space for more production to meet more demand was so pressing that they could not wait for the greater economies and efficiencies a truly postwar building plan might offer. The first postwar factories had much in common with the first postwar homes, which were rushed up to house veterans who might otherwise have slept perforce on park benches.

The pressing need for new plants for volume's sake has now been met. From now on new plants must justify themselves, not by the increased volume their added area makes possible, but by the increased economy and efficiency they offer.

The Lincoln Electric Plant described on these pages is an outstanding example of the kind of thinking that will make new plants pay for themselves, the kind of thinking that will set a new standard for the integration of better plant with better production, the kind of thinking which alone can sustain a high volume of industrial construction now that the first demand for room for added capacity has been met.

Austin's President George A. Bryant (left) and Client James Lincoln.



"Our new plant will pay for itself in so many ways that we ourselves don't know all the savings it will bring."

So says James F. ("Jim") Lincoln. His Lincoln Electric Co. already has a good plant, nothing fancy, but still well above average and quite big enough for 40 per cent more production. But for years he has been thinking up cost cutting ideas that only a particular kind of new building can make possible. That building is now being built outside Cleveland by the Austin Co. President George A. Bryant, of Austin, which has probably designed more industrial plants all over the world than any other builder, says it "reflects an entirely new concept of production."

Lincoln wanted a plant whose unobstructed floors would give him complete freedom to plan the most economical assembly lines and whose unobstructed height would let him use all the most economical new material handling equipment ("overhead handling will save us 20 per cent on floor space").

But, significantly, Lincoln calls his dream child "a great big stock room with manufacturing space right next to the stock." Its 17 acres will be seven acres bigger than the present plant, and almost every inch of the added seven acres will be used not for longer assembly lines but for more economical material handling and for more efficient storage *at the point* of use. The new building's complete flexibility should lead to substantial economies on the assembly line too, but these will be an extra dividend. The primary purpose of the \$8.6 million investment is to eliminate (not just control) as many as possible of the nonproductive labor costs which in most plants creep up as direct labor costs are brought down. Chief among the costs which Lincoln aims to wipe out are:

The cost of moving materials around inside the plant, now running 14 per cent of direct labor;

The set-up cost for switching machinery from one item to another, now running 6 per cent, largely for lack of space for duplicate machinery or to store parts after longer runs;

The cost of all the paper work and supervision needed to keep paper inventories. ("They're usually wrong anyhow.") In the new plant, with everything stored at the point of use, each worker can see for himself when he is running low on some part or material and "we'll have no more need of paper inventories than a corner grocery has." Already, in a mock-up trial in part of the present plant, on-the-spot storage and visual inventory have enabled Lincoln to transfer 34 persons to directly productive work who were formerly busy keeping records on paper or moving materials from storage to production. These 34 persons represent a saving of more than 25 per cent of all the indirect labor in that section of the plant.

None of the present 900-odd workers will lose their jobs through all this labor-saving in the new plant, for Lincoln believes welding is now reaching only a quarter of its market. He is preparing for a great increase in sales and production, with the fastest growing markets in the replacement of machinery castings with welded steel, in the replacement of rivets in structural steel buildings and as a maintenance on the farm, and in the home. (He has just brought out a farm welder that sells for \$169 and a home welder for \$45.) One reason for the new plant is to make room for this expansion. Another is to provide space for more complete integration.

Lincoln is an unreconstructed individualist and a production genius whose famous incentive pay system now combines the lowest labor costs in the electrical industry with the highest employee earnings (a fabulous \$6,000 plus per worker in 1949). His goal is to lower his labor costs (in 1929 dollars) another 10 per cent each and every year, and he and his employee-partners have now reduced their costs so low that they have taken over more than half the market.

Even before the war Lincoln decided he must have a new plant to get the full effect of his cost cutting-incentive pay program. His present factory is too long and too narrow, and it has a railroad siding only at one end. It is too low at the sides for traveling cranes to cut his handling costs. It has too many columns and other obstructions that interfere with production streamlining. It is too crowded to let him store more parts closer to the assembly point. In brief, it is always getting in the way, and so thinking and planning for the new plant has been made a top priority assignment for everyone at Lincoln, where the incentive pay-system takes even the sweepers into partnership and gets everyone suggesting new ways to do things better.

Not to be outdone, the Austin staff contributed several important new ideas too, including:

A special application of tempered air distribution that undercuts the cost of conventional air conditioning by more than 70 per cent.

• A handsome insulated steel and aluminum curtain wall (see page 114-115) 28 ft. high and more than half a mile long, cut months out of the construction schedule.

A tunnel running the whole 1,400 ft. length of the plant to get all toilets, locker rooms, generators and pedestrian traffic off the manufacturing floor and out of the way.

But the real pride of the Austin staff is that they were able to pick up all the ideas the Lincoln people threw at them (often at 7:30 a.m. planning conferences) and translate them economically into metal and masonry. For all its innovations the 17 acre plant will cost only \$8,500,000 plus \$140,000 for the 65 acre site. Lincoln expects to get several millions towards the new plant from the sale of his old one. All the rest will come out of his reserves.

Looking at the new windowless plant from the outside, no one will guess how many new ideas it embodies. Like most of Austin's new heavy industry buildings it is a vast, flat roofed, one-story structure, and despite the handsome aluminum facing President Bryant thinks "it's hard to make a big one story factory look very monumental."

From outside the most unusual feature is the complete disappearance of executive offices usually found in front. These have been hidden away in a two-story building 120 x 360 ft. right under the factory roof, with Jim Lincoln's own office at the exact center of everything—"just where it should be." But once inside the plant the new thinking is clearly visible. **Open space**—Except for the office block in the center, the entire space, $1,427 \ge 500$ ft., will be virtually unobstructed. All services are along the basement tunnel, and even the columns are spaced nine to the acre. From the office block 650 ft. to the west wall is open space to make welding machines. From the office block 650 ft. to the east wall is open space to make electrodes.

Expandability—When either half has to be enlarged the curtain wall at the end can just be moved further out, as it has been designed for maximum salvage. (Expansion space for the offices is provided by the second floor, which will not be needed at all for the present.)

Receiving dock—The entire north side more than a quarter of a mile long will be an unloading dock where trucks and freight cars deliver parts and materials almost to the exact spot where they will be used. There will be four entry points in the north wall for trucks, two for trains, so either can be unloaded inside the plant. Freight cars spotted initially by the railroad at any point can be readily moved along the receiving dock by electrical car pullers.

Shipping platform—The entire quarter-mile south side will be available for shipping purposes, so finished products can be stored and loaded on trains or trucks right at the end of the assembly lines. Forty feet or more alongside the tracks on both sides of the building will be usable for unloading and shipping needs.

Underpass entrance—Because of the railroad tracks inside the plant along both the north and south sides, the only pedestrian entrance will be through an underpass under the tracks from an entry building opposite the office block. The cafeteria and the school for welders will be located alongside this underpass.

Assembly lines in the welding machine half will run 400 ft. straight across the building from the receiving dock to the shipping platform. (Some will make finished machines; others will assemble parts.) The conveyors will follow the column lines 60 ft. apart, and the space between the lines will be used partly for on-the-spot storage (often on roller conveyors feeding the assembly lines), partly to make sub-assemblies at the exact point where they will be needed on the assembly line.

In the electrode plant (which has always been "closed" to visitors), coating the wire is a continuous process rather than an assembly line operation, with two-directional flow for which the basic pattern of the building is also well suited.

Materials handling-The research Austin did on materials handling for Lincoln was a major reason why Lazarus asked them to design and build the big store warehouse in Columbus. Many different types will be used, including a new double lift fork truck that will pile cases up to 15 ft. high and a new Lincoln-devised traveling hairpin that will run right under the roof of a truck to stack welding machines in the furthest corner. These two Lincoln specials will do much of the moving on the shipping side. On the receiving side and down the aisles between the assembly lines everything will be moved by suspended overhead cranes. This will make it easy to pile stock as high as 17 ft. It will also save all the floor space that would otherwise be needed for trucks and forklifts in the stock area so there will be only one narrow aisle, from 31/2 to 7 ft. wide, nea the center of each bay. There will be nine overhead cranes, a capable of traveling the length of the receiving platform and dow along any aisle.

Clearance—As in most 1950 factories, clearance under the truss will be 23 ft., to give operating space for the cranes over the talle machinery and to permit stock storage up to 17 ft.

Trusses-To speed construction, the Austin Co. carries weld H-section trusses 40, 50, 60, 70 and 80 ft. long in stock. PLANT LAYOUT. New Lincoln Electric plant, now only half roofed over, will look like this when completed. Diagram below indicates how the new plant will be laid out between two lines of railroad tracks inside the building, with the assembly lines running along the columns from unloading dock to loading platform with on-the-spot storage between the assembly lines. The executive offices will be housed in a central building hidden under the plant roof.



We want and the second se

PARTS STORAGE. Typical example of how on-thespot storage on roller conveyors feeding towards the assembly line has been worked out in the mock-up for the new building at the present Lincoln plant. Diagram at the far right shows the laybut of a typical bay in the new building with the ssembly line next to the columns and on-the-spot torage in between.





Floor loads—To give complete freedom to place heavy machinery or heavy stockpiles at any point, the entire factory floor will carry 1,000 lbs. per sq. ft.

Ventilation-Because of the high clearances and the truss space, full air conditioning on a volumetric basis would have required more power for cooling than is used by all the lights and machinery in the plant. The Austin Co. met this problem by a new approach to man-cooling which uses only a third as much power-a distribution system that releases tempered air under pressure only along the assembly lines where most of the men will be working. Outside air for this system is drawn in through the roof to a cooling and heating unit up in the truss space at the center of each aisle. Tempered air is distributed from ducts extending down the columns to a point 8 ft. above the floor. There, outlets direct the air toward the populated areas, where workers are enveloped in a "mound" of comfort, as the air sinks to the floor. From there it spreads into the stockpile areas between the assembly lines and is finally sucked out through the roof. Furnace areas in the electrode plant will be surrounded with metal curtains coming down within 8 ft. of the floor to trap the heat and the process dust at the source and exhaust them both before they get a chance to spread.

Lighting from three miles of fluorescent tubes with reflectors will also be focused on the assembly lines, with the two lighting lines in each aisle spaced 10 ft. out from the columns.

Exterior brickwork—The bottom 9 ft. of the walls will be brick with a limestone sill. "If we ran a metal curtain wall all the way to the ground, a bar of steel sticking out from the side of a freight car might gash it, and someone would be sure to say the wall was no good," Austin engineers observe, "but if a masonry wall is damaged, everyone will take it in his stride." Masonry was also carried to the roof at the corners to avoid the costly details in allmetal wall construction at such points.

The curtain wall (see diagram) will take the place of some 3,000,000 bricks. Austin expects the cost on this first installation will be about the same, but on subsequent installations will be substantially less. Its advantage here is to speed construction.

The wall is faced with rolled aluminum box sections $3\frac{1}{2}$ in. deep, 15 in. wide and 25 ft. high. The inner wall will be $1\frac{3}{4}$ in. steel panels. Between them will be 1 in. glass fiber insulation, acting as vapor barrier. The whole will be $6\frac{1}{2}$ in. thick and weigh $3\frac{3}{4}$ lbs. per sq. ft., with a heat transfer coefficient of .25 Btu., compared with .50 Btu. for an 8 in. solid brick wall. The open vents formed by the box-like sections will be open at the top to insure constant circulation of air and prevent moisture formation within the wall. The extruded aluminum coping will, in effect, be an awning to keep water from getting in while permitting air to pass out.

The wall is being secured entirely by arc welding and by studwelded fasteners. First, $\frac{3}{5}$ in threaded studs are spotted along girts welded to the frame at three levels (one at the sill line and two at the truss chords). The steel panels, prepunched to fit over the studs, are then welded to the girts. Next an additional girt with a fourth row of studs is welded to the steel, midway between the sill line and the trusses, to provide a fourth attachment for the aluminum. (Specially coated aluminum transition nuts are used to prevent galvanic action between the two metals.) The insulation is applied next and is held in place by 10-gauge headless welding pins, which are stud welded to the steel panels and capped with speed clips.

After application of the insulation, the prepunched aluminum panels are placed over the protruding studs. To allow for the greater expansion of aluminum, the outside panels are firmly attached only at the mid-point, and their excess movement is allowed to slide on aluminum shoulders formed on the transition nuts.





CURTAIN WALL. Steel interior panels 25 ft. high are welded to steel girt on brick wall and at two points to the roof truss, then covered with glass insulation and aluminum exterior panels.



LIGHTING. Uneven spacing of fluorescent fixtures concentrates light on assembly lines.

FINISHES AND EQUIPMENT: Walls (side)aluminum and steel, Truscon Steel Co. and Aluminum Company of America. INSULATION (roof and wall)-Owens-Corning Fiberglas Corp. Uni-form panels-Universal Form Clamp Co. ROOFING-tar and felt, Koppers Co. Decksteel, Truscon Steel Co. DOORS-R. C. Mahon Co., Detroit Steel Products Co. and Lenderking Metal Products. STAIRS-steel, Republic Steel Corp. MATERIALS: Vitrified clay tile-Cleveland Builders Supply Co. Wire mesh-American Steel & Wire Co. Wire fence-Cyclone Fence Div., American Steel & Wire Co. PLUMBING FIXTURES: Metal toilet partitions-Sanymetal Products Co., Inc. Valves-Powell Co. and Walworth Co. HEATING: Boilers-Erie City Iron Works. Coal conveyor equipment-Planet Corp. Ash handling system-Chicago Fire Brick Co. Coal silos-Kalamazoo Tank & Silo Co. Unit heaters-Thermal Products Co. and American Blower Corp. Fans-Bishop Babcock Co. and American Blower Corp. Heating and cooling coils - Trane Co. Pumps-Goulds Pumps, Inc. Air compressor-Joy Mfg. Co. Controls-Bailey Meter Co. Synchronous motor starter-Electric Machinery Co.

Austin Co.



Nelson Stud Welding Div., Morton Gregory Corp.





BANK ANNEX Federal Reserve Ban

in Detroit uses marble for curtain wall, harmonizes con

temporary design with its existing neoclassic palace

LOCATION: Detroit, Mich. SMITH, HINCHMAN & GRYLLS, INC., Architects & Engineers MINORU YAMASAKI, Designer

Leinweber, Yamasaki & Hellmuth, a new architectural firm comprised of former staff members of Smith, Hinchman & Grylls, Inc., is now consulting on this project.





FORT STREET

A demonstration of new design and construction ideas might be least expected in an annex for a 23 year-old building—and a bank at that. But this annex to the Federal Reserve bank in Detroit breaks sharply with the design of its mother building yet is carefully related to it, hus spiking the dogma that any addition to an old building must match ts design. It is set back 30 ft. from the sidewalk on either front to make oom for attractive and welcome patches of greenery in the city's business district. And, in place of its mother's thick masonry-backed marble ide, the annex carries alternate bands of double insulating glass and hin curtain wall spandrels comprised of $1\frac{1}{2}$ in. sheets of marble backed only with 2 in. insulation.

Several choices were open to the Federal Reserve Bank of Chicago n expanding this Detroit branch office: 1) the extension could be an expensive duplication of the old neoclassic building which was built or the bank in 1927 from the plans of Graham, Anderson, Probst & White; 2) the old building could have its face lifted to blend with a conventional vertical treatment of the annex exterior (see sketch); or b) its shell could be left substantially as is with the new building's design related to it but otherwise free to exploit the site and 1950 contruction methods.

Fortunately, the branch bank's vice president and manager, E. C. Harris, as well as the designer, were enthusiastically in favor of the hird choice—a decision which, incidentally, saved the estimated 250,000 cost of refacing the old building. Under the accepted plan, he old building's penthouse is being lopped off to make room for a



roof-top recreation area for bank employees at the level of the new third floor. The two structures are further bound together by the extension of the existing spandrels into those of the annex. This produced an extra high ceilinged first floor which accommodates the monumental banking room required by the client.

By setting the columns 3 ft. back from the wall, lightness of the strip win-

lows and marble spandrel bands is emphasized to create a harmonius contrast with the old building's heavy vertical accents—a maserful composition of divergent elements enhanced by the set-back of he annex from the sidewalks.

Because of the narrow 95 ft. width of the annex and the setback of the exterior columns, its structural framing above the fourth floor s economically based on only three rows of columns about 33 ft. upart—one center row instead of the usual two (see plan). This rame can carry four additional expansion floors atop the eight now being erected.

The costliest innovation in the curtain wall is the steel "grid" or ramework, faced with stainless steel, into which the fixed window ash and marble slabs are inserted. The average square foot cost of he total curtain wall is about \$10.70, broken down as follows:

Marble	\$1.25	Glass\$	2.18
Steel grid	6.15	Plaster	.32
Calking	.005	Painting	.01
Insulation	.22	Convector fronts	.56

nese do not represent sq. ft. prices of the individual materials, only the cost of the amount used. For example the sq. ft. of double insulating glass, installed, is not \$2.18 but \$4.20.) a detailed study of the unique wall construction, see next page.











Switzerland Builds

Those who hold that contemporary design appeared suddenly-new and full-blown-like a bolt from the blue will be surprised at the contrary evidence in G. E. Kidder Smith's forthcoming book, Switzerland Builds.* Although the book is divided physically into two parts-historic and contemporary Swiss architecture-they are one, unified by a single theme; the reappearance in the best of the new buildings of design ideas evident in the best of the old buildings, improved and adapted to modern building materials, construction techniques and ways of living. Thus, the strip window which has become almost a trademark for contemporary architecture (photo below) is a mere perfection of the strip windows which appeared in Swiss houses 250 years ago (photo left). Similarly, the cantilevered stair treads which are used by many a contemporary architect were known to the medieval Swiss shepherds who set the ends of stone slabs into the exterior walls of their houses to form a simple ladder to the second floor. Even the "modern" curtain wall is nothing new to the Swiss who fabricated such panels of timber.

Switzerland Builds is a photographic essay on the nation's picturesque old and new architecture and the obvious relationship between the two—all set against the scenic grandeur of the country's rugged landscape. As such, it is a beautiful book; the author's expert photographs, several of them in full color, are works of art. It is also a useful book; its second part on contemporary architecture is packed with detailed presentations of outstanding buildings of all types, many of them hitherto unpublished, such as those shown on the following pages.

Destined to be an architectural best-seller, Switzerland Builds is briefly introduced by Professor Siegfried Giedion who competently sets the scene and tempo, extricating from Switzerland's history the underlying forces of its present political, economic and social structure. Architect-authorphotographer Smith competently takes up from there.

* Published by Albert Bonnier, New York City and Stockholm, 235 pp., 9 x 11 $\frac{1}{2}$ in., \$7.50.





Walk-up apartment units are slightly set back for better exposure. Aeschlimann & Baumgartner, Architects.



Low cost housing in Zurich features light, airy individual balconies. Otto Senn & Rudolph Mock, Architects.



Apartment block in Basel features large windows, recessed balconies. Otto Senn & Rudolph Mock, Architects.

APARTMENTS

Because of a sloping site, these privately built apartments in Zurich presented a knotty planning problem. All units needed sunlight and a view of the lake to the east. This was achieved by placing the apartments on the upper grade at right angles to a busy street bounding the western side of the property and by concentrating their service areas to the north. The houses on lower ground, nearer the lake, were oriented on a north-south axis, service areas facing west.

An interesting minor feature of the floor plan is the location of a maid's room at the head of each landing. This room can be used by either of the apartments on the floor and allows the maid complete privacy. Becherer & Frey, Architects.



ROW HOUSES

These cleverly planned row houses, also in Zurich, were built for low income occupancy. Typical of much native building, the ground floor is of masonry construction, the second of wood. For the latter, prefabricated panels of vertical boards were used and the second story walls were erected in a single working day. All major rooms, including the kitchen, face south with only a stair hall and laundry on the north. A full size basement takes care of all storage. (Note that there are no built-in closets). Adjoining each entrance is a small workshop. Heating is by means of a central wood or coal stove fed from the kitchen. Unit setbacks create a warm, sunny outdoor living area for each tenant. Aeschlimann & Baumgartner, Architects.







INDUSTRIAL SCHOOL

Located at Berne, this is the most recent and forward-looking of new Swiss educational buildings. Its trim white rectangle rising above the ground on piles, shows clearly the influence of the Swiss-born master, LeCorbusier. A covered walk con nects the school with a large already-existing machine shop (shown in elevation at left). The glass-enclosed entrance level (partially seen in the photo, upper left) serves as a student lounge and opens on a garden provided with lunch facilities. The roof, with a magnificent view of the city



and the Alpine foothills, is also reserved for student recreation; is unenclosed except for an art studio at the north end Corridors (see photo left) make maximum use of natura light, with glass panels along each side and window walls at the ends. Hans Brechbuhler, Architect.

UNIVERSITY CENTER

This is a new building at Basel designed around a beautiful old garden court. Like most Swiss school buildings, it reflects the principles of the famous Swiss pedagogue, Pestalozzi—the first to put forward the idea that schools should be as pleasant and informal as possible. Its one slight concession to the monumentality usually connected with university buildings is the use of marble veneer to cover its concrete frame. The three wings of the building—set to enclose the court and open on it—include a large entrance lounge, a library, auditorium and dining room, as well as lecture rooms of various sizes. Roland Rohn, Architect.











STADIUM

The exterior construction of this vast but unostentatious covered stadium at Zurich-Oerlikon is of reinforced concrete with brick in-fill. Although the interior covers 100,000 sq. ft., it is supported on only four steel columns resulting in extraordinarily good visibility and a great feeling of airiness.



These columns are spanned by 280 ft. steel trusses which support the roof. A dropped ceiling, hung from the roof, hides all but the lower part of the steel work. Though bicycle racing is the main event held in this stadium, the track (right) can be removed and replaced with seats, or the floor can be entirely cleared for exhibition purposes. Karl Egender, Architect.

BATHING PAVILLION

Built as part of the rehabilitation program for the north shore of Lake Geneva this 700 ft. bathing pavillion in Lausanne appears neither ponderous nor overwhelming. Its boldly cantilevered balconies and planted roof do much to soften and break up the huge scale. A circular entrance foyer facing the town contains admission gates, check rooms and offices at ground level with a restaurant above overlooking the beach and lake. At the far end a 50 meter Olympic swimming pool is quickly identified by its bold, free, concrete and metal diving tower (far right). Marc Piccard, Architect.







eresetteks fil





Imaginative use of glass and planting permits big picture window

HOUSES

LOCATION: Los Angeles J. R. DAVIDSON, Designer

Too often builders trying to be contemporary use large glass areas for "picture windows" without realizing that the "picture" outside must be at least as good as the window is or the result will be a loss. The glass, which looks like such a "feature" in a preliminary drawing, is invisible, and what actually shows through many a large and expensive sheet of it is a dirty street or the neighbor hanging out her wash.

In planning his own house, Designer Davidson faced a severe test because the neighborhood was drab. Yet no matter which way one looks out of Davidson's windows and glass walls, the view is not only acceptable but charming. In his hands, glass as a building material was a plus, because he took care to create not only the glass window but the view that was to go with it.

This began with the landscaping and the way the house was placed. The social life of the family is centered in a living room which is united by a floor-to-ceiling glass wall with a sizable outdoor living terrace. This terrace is so arranged that a thickly planted grove of evergreen eucalyptus trees on the property line acts as a permanent distant screen. Where the trees end, the screening is continued by shrubbery and a tall cedar fence. Closer by, directly behind the glass



wall, rhododendrons and other plants seen through the glass giv a sense of enclosure—with an interruption which marks the big glas sliding door. Consequently the "glass wall" of the living room is b far the richest and most interesting wall in the house. Its tapestry i a living one. It has distance and sunlight and the shimmer of grow ing things. It has privacy and protection too.

On the side away from the living terrace the house and a studi fold themselves around a patio to form another, more private outdoo family space. (As a further refinement, within this larger court is still smaller sub-patio, entirely private to the lady of the house.) Al windows facing this family court are high and screened, serving fo light but not for view, so that two-way privacy may be maintained.





A solid wall (at top in photo and at right in plan) protects the house from the outside drab world. Entering, the visitor finds himself in the family court, where windows are still kept discreetly high. But as he enters the living room, there bursts upon him, through the living room's glass wall, the lush terrace view seen in the large photograph. Ultimately he comes out onto the living terrace (left), which is sursounded by a soft screen of planting as effective for privacy as the first solid wall.

Marchander Ville

和教育的 网络



The use of high windows in the living room, on the side toward the private inner patio, increases wall space available for furniture. The flat walls and smooth rubber floor are in cool contrast with the lush view toward the terrace on the opposite side (photo below). The irregular shape of the room is not arbitrary, but opens the room wider to the terrace. Dining is possible under three conditions: indoors in the breakfast room, semi-indoors in the living-dining room, or under shelter out of doors (see plan).





CONSTRUCTION OUTLINE: Foundation—reinforced concre-Exterior walls—stucco on wire lath, felt paper, button lath a plaster. Lath—Schumacher & Co. ROOFING—built-up, Paraff Co.'s. INSULATION—Kimsul, Kimberly-Clark Corp. SHE METAL WORK—Aluminum Company of America. WINDOW Sash—steel, Ceco Steel Products Corp. Glass—Libbey-Owens-F Glass Co. FINISH FLOORING—asphalt tile, Armstrong Cork PAINTS—Sherwin Williams Co. DOORS—Rezo, Paine Lumber O Ltd. Garage door—Coffee Overhead Door Co. HARDWARE—S gent & Co. ELECTRICAL FIXTURES—Hollywood Lighting F ture Co. and General Lighting Co. KITCHEN EQUIPMEN Range—Thermador Electric Corp. Refrigerator—Westingho Electric Corp. Dishwasher—Kaiser Fleetwings Corp. Fan—Pr; & Co. BATHROOM EQUIPMENT—American Radiator-Stand Sanitary Corp. Cabinets—Pryne & Co. HEATING—hot water ra ant panel system. Boiler—Crane Co. Valves—Sarco Co. Wa heater—Mission Water Heater Co.



ade is yet another way of enhancing glass used as a screen.) ivacy is the product of two high walls and a woven rustic fence vered with vines. The floor of the patio is patterned of cinder ock, cast at the site in three sizes, as is the living terrace on the her side of the house. The house cost \$26,000.



Mill construction is combined with a simple L-shaped plan to pro duce an economical yet handsome house

LOCATION: Seattle, Wash. YOUNG & RICHARDSON, Architects MORSE & McCORMACK, Contractors

This handsome house has construction reduced to the very minimum. Erected where big timbers are cheap, the walls are nothing but selected vertical planks of 2 x 6 in. matched fir. Along with the posts in the window walls, these planks act as bearing walls supporting the roof. In the mild climate of Seattle they provide their own insulation; and they need no additional surfacing materials inside or out. The same heavy planks form the simple ceiling with a few big beams and long purlins. The materials cost per square foot of plain wall would be under 30 cents at New York prices, compared to better than 60 cents for a conventional stud wall lined inside with $\frac{1}{4}$ in. plywood and outside with $\frac{1}{2}$ in. sheathing and cedar siding. For contrast the architect used brick cavity construction in the end walls.

The chimney is cleverly placed where three roof ridges meet, partly to mask their offsets in height and width, partly to eliminate cricks and let all water flow downward freely.

Planning is highly sensible. The bedroom wing is isolated, yet all rooms face the terrace with its handsome view toward a lake, and only high windows open to the automobile court. Especially noteworthy is the placing of the kitchen between the dining area and the playroom so the mother can watch the children. And the playroom in turn opens out to the carport, giving the children additional open play space under shelter.

CONSTRUCTION OUTLINE: Exterior walls—kiln dried T & G fir, primed, pigmented and oiled and wiped leaving natural color. ROOFING—cedar shingles. INSULATION—Celotex Corp. WINDOWS: Glass—plate or crystal sheet. FINISH FLOORING: Main rooms—carpet. Kitchen and bathroom— Tiletex, The Tile-Tex Div., The Flintkote Co. WALL COVERINGS: Kitchen (above counters)—Formica, Formica Co. ELECTRICAL INSTALLATION: Switches—General Electric Co. Ventilating fan—West Wind Blower Corp. BATHROOM EQUIPMENT—American Radiator-Standard Sanitary Corp. HEATING—hot water radiant system. Boiler—U. S. Radiator Corp. Oil burner—Petroleum Heat & Power Corp. Controls—Hoffman Specialty Co.







Cost breakdown

\$231
651
2,064
1,374
2,367
2,067
673
1,815
3,442

Electric wiring & fixtures Plastering Finish, including casework Misc., floor covering, finish ha ware, painting Overhead & labor, taxes, insura and permits Contractor's fee



couvered openings under fixed glass areas provide or ventilation. Extension of the glazing up into the able end, protected under wide overhang, gives the ouse a spacious sense of being wide open to nature n a mild climate. Carpeting over the entire paneleated floor adds a warm texture. Basementless, the ouse has extra rooms for storage.





\$4,999 BUILDER'S HOUSE includes

good design in its budget. Also featured: low cost masonry construction, an aggressive program selling not only houses but a kitchen full of extra equipment

> LOCATION: Seattle, Wash. W. A. WOLLANDER, Architect CARROLL, HEDLUND & ASSOCIATES, Builders

Concrete block construction at \$7.09 per sq. ft. spotlights this 1,000-house development in the heart of the Northwest lumber country. Side lights: a bargain counter sales tag of \$4,999, a highly standardized yet attractive house design and a merchandising program which includes a dishwasher and sink in the basic package mortgage and a list of extra appliances at only \$1 each per month.

Sponsored by Carroll, Hedlund & Associates, a Seattle mortgage loan firm, Mountlake subdivision's 683 sq. ft. two-bedroom units match their attractive price tags with attractive exteriors. Although the exterior walls and interior layout are uniform throughout the project, Architect W. A. Wollander has achieved an uncommon amount of variety with a dozen assorted roof lines (pictures right). Further interest is added to the houses by siting them at different grades on curved streets, by exterior color variations and, finally, by the use of simple wooden trellises and fences to give the houses a longer, lower appearance. The overall result: a welcome change from the plucked-chicken appearance of most minimum-cost subdivisions.

Intelligent interior layout makes the most of 32×21 ft. dimensions. Particularly good is the arrangement of the livingdining area with its openness from front to rear. The kitchen is small but with enough wall space to take all the necessary cooking and laundry equipment. The most serious space deficiency is in closets and other storage areas.

In their present project for the under \$5,000 market, the builders have drawn upon their experience in constructing 1,500 similar concrete-block units since the end of the war. They started with masonry block construction in 1946 to bypass the lumber shortage, have stayed with it ever since. The firm has also stayed with the low cost market, restricting all its operations to the under \$8,000 market. The Mountlake houses are merely stripped down versions of the earlier models, but retain such quality features as steel casement windows, aluminum flashing and heavy-grade red cedar roofs.

Aside from this experience factor, the Mountlake budget was kept slim by a double-check on the cost of every construction material and operation. The only break the builders got in totaling up their costs was in their land buying. The first 50-acre section of the subdivision is built on a tract that had been graded for an airport that was never built and was bought for about \$1,000 an acre. Reason for the low price: its location, 13 miles from downtown Seattle. The tract was improved streets, fire hydrants, water lines and storm sewers—for \$40,000.

Construction economies. Other economies were not as easy. The essential simplicity of their wall construction was the most important. Exterior walls are 8 in. x 8 in. x 16 in. concrete block with a 1 in. furring strip to which is attached the interior wallboard. Erection of the walls is speeded by the fact that *(Continued on page 140)*





Site slopes down from the north, permitting different grades to add variety to the standardized houses. Site plan also features large blocks with curved streets, a strategically-located shopping center on main highway to Seattle.

CONSTRUCTION OUTLINE: Foundations - concrete. Kenmore Building Materials, Inc. Exterior walls-Darex concrete block, Layrite Concrete Products, 1/2 in. plasterboard on 1 x 4 in. strips, U. S. Gypsum Co., on 8 in. concrete block. SHEET METAL WORK: Flashing-alumi-num, Kaiser Aluminum & Chemical Sales Corp. WIN-DOWS: Sash-Steel casement, Fentron Steel Co. Glass-Pennvernon, Pittsburgh Plate Glass Co. Weatherstrip ping-W. J. Dennis Co. FINISH FLOORING-Kentile, David E. Kennedy, Inc. WALL COVERINGS-plaster board, U. S. Gypsum Co. TRIM AND CABINETS--steel Mullins Mfg. Corp. Div. of Youngstown Steel Co. and West ern Metal Craft. DOORS-Hough Shade Co. HARD-WARE-Kwikset Lock, Inc. ELECTRICAL INSTALLA-TION: Wiring system-Romex, General Cable Corp. Switches-Bryant Electric Co. KITCHEN EQUIPMENT Ranges and refrigerators-General Electric Co., Hotpoint, Inc. and Westinghouse Electric Corp. Cabinets-Mullins Mfg. Div. of Youngstown Steel Co. LAUNDRY EQUIP-MENT: Sinks and washing machines-General Electric Co., Westinghouse Electric Corp. and Hotpoint, Inc. Driers -General Electric Co., Bendix Home Appliances, Inc. and Westinghouse Electric Corp. BATHROOM FIXTURES-Alamo Mfg. Co., and Alianceware Co. HEATINGfired, Evans Heating Appliance Products Co.





House plan, above, shows expansion possibilities with extra bedroom on one side, garage on other, as suggested by the builder in stock expansion plans given to all Mountlake housebuyers. Better arrangement might be to reverse garage and extra bedroom so that one of existing bedrooms is not used as a pass-through to the extension. Houses pictured at right show variety achieved by roof changes, trellises and fences. Landscaping of the houses was done by tenants with plants supplied by builder. This is the only provision for landscaping in builder's budget.

Cost Breakdown

Survey	\$40
Carpenter & misc. labor	750
Excavation & backfill	50
Brickwork & fireplace	320
Lumber, rough, finish & siding	315
Millwork, interior & exterior	321
Concrete work	236
Plumbing trenches and drain tile	20
Plastering	312
Floors (wood) including finish	85
Hardware, finish, and range	50
Electric wiring & fixtures	115
Plumbing	520
Painting	150

Roof-labor and material	135
Septic tank	160
Water connection	50
Taxes	100
Loan costs	194
Lot (including water line, grading,	
oil, gravel & rock)	450
Overhead	195
Architect's fee	30
Profit	136
Advertising & selling expense	265

Total \$4,999





Photos: Webster & Stevens



Designed for easy natural ventilation, this house is cool in summe

This house of cinder block has a quite unusual roof. It has full-length attic ventilators like those of a barn. Air admitted under the eaves rises as it heats up and is exhausted at the ridge with the effect of cooling the entire house. (Even during hot spells the air inside the house has been found 10 to 14° cooler than air outside.) In winter the ridge ventilators are nailed shut and only the eaves ventilators are left open. A ridge beam which also runs the full length of the roof relieves the attic of the usual clutter of trusses at the same time that it relieves the partitions below from the duty of supporting the roof. It is carried on lally columns spotted through the center of the house. The only disadvantage is that any rearrangement of rooms would have to take account of the lally columns, which are now buried in partitions. But the client has already taken advantage of his clear attic to put in an extra bedroom and bath, which he reaches by a retractable ladder stair. Cost: about \$1.05 per cu. ft.



Kitchen wing (above) is directly accessible to the street, but a covered walk and concrete block wall (photo, lower r.) cut off the undesirable street view from the living rooms. Windows are double insulating glass fixed in place, with wooden ventilating doors, hinged to open inward, set behind the louvers below the windows.



LOCATION: Princeton, N. J. KENNETH KASSLER, Architect L. C. BOWERS & SONS, Contractor

CONSTRUCTION OUTLINE: Exterior walls-8 in. c der block, cement stucco, furring, Celotex Corp. insulati board; inside-plaster. INSULATION-Celotex Co FIREPLACE: Damper-H. W. Covert Co. WINDOW Sash - cypress. Glass - Libbey-Owens-Ford Glass STAIRS (attic)-Bessler Disappearing Stair Co. FINIS FLOORING: Kitchen and bathrooms - linoleum t Armstrong Cork Co. PAINTS-L. Sonneborn Sons, Il and Breinig Bros. GARAGE DOORS-General Doo HARDWARE-Schlage Lock Co. ELECTRIC Corp. Dishwasher-General Electric Co. Cabinets-Bailey M work Co. BATHROOM EQUIPMENT-Crane Co. HEA ING-hot water, radiant system. Boiler-Kewanee Bol Corp. Valves—H. A. Sarcotherm Corp. Minneapolis Honeywell Regulator Co. Regulato







BUILDING REPORTER

liport

e columns on the municipal bus terminal abuilding in w York City are now being stiffened to support a helicopter ding field above its rooftop parking lot. This heliport uld permit the shuttling of airline passengers between the d-town bus terminal and outlying airports via 40 passenger, 000 lb. helicopters of the future. Tentative plans call for 150 x 200 ft. landing area and two 50 x 100 ft. parking as for one helicopter each. Such a "field" of lightweight pregate concrete will require 500 tons of supporting strucal steel (about 35 lbs. per sq. ft.) and cost some \$400,000, dusive of mechanical equipment, such as moving stairs.

The Civil Aeronautics Board is currently considering New rk City's petition for approval of mid-city helicopter vice.

w plan for vertical apartments

nprised of nine identical cream-colored brick buildings, Equitable Life's new "Fordham Hill" stands out among w York City's new apartment projects. In the first place, 14-16 story buildings are crowded atop one of the Bronx s. Other outstanding features are seen mainly in the ldings' unusual plan which accommodates eight apartnts per floor: 1) Bedrooms occupy the preferred corner osures usually reserved for living rooms and eight extra ners were added to the building to give every bedroom ss ventilation. 2) As a result of a preference poll among uitable women workers, kitchens are located deep within apartments, get only a second-hand view out of the big ng room windows. 3) Divided, two-passenger bathrooms all two-bedroom apartments-with a lavatory in each half. Sliding kitchen and closet doors. 5) A row of four winvs in every living room. 6) A metal panel on the outside the wall between pairs of living room windows-a design periment of questionable success.

Rents range from \$105 to \$133 for one-bedroom units, m \$135 to \$171 for two bedrooms, including utilities t excluding dogs.

chitects: Leonard Schultze & Associates.

ilders: Starrett Brothers & Eken.

dern furniture boom

step with the increasing trend toward contemporary architure, makers of modern furniture are riding a boom.

Within three days last month Hans Knoll Associates in w York booked two orders for \$350,000 of furniture—one a new hotel in Central America, the other for a group of iversity buildings.

Sales by Pascoe-New York, Inc., which recently furnished g parts of the Golden Strand Hotel in Miami Beach and the apont Plaza in Washington, are running 75 per cent ahead 1949.

President D. J. Depree of Herman Miller Furniture Co. ppily reports "the greatest in its history" with the last arter sales in 1949 running 24 per cent ahead of 1948's al quarter.

ens Risom Design, Inc., among whose clients is the Caribe lton Hotel (p. 97), is 10 per cent ahead of last year, which is 10 per cent better than 1948.



Equitable's Fordham Hill



135

▶ Thonet Brothers, Inc., who helped furnish Cincinnati's Trace Plaza Hotel, did 40-50 per cent more business last y than in 1948, and their boom continues.



New Haven's free station



Woolworth's marble palace



Syracuse's concrete arch

▶ Says Mengel Co.'s C. G. M row: "Modern furniture is of tinually earning an increas amount of our production."

▶ Edgewood Furniture Co., wh produces furniture designed William Armbruster, reports 30 per cent increase in sa Comments Armbruster: "Mod furniture has come into its ow

FORUM'S telegraphic sur of modern furniture makers seems to back up this boast.

Free railroad station

Of interest to every debt-ridden railroad in the country is New York, New Haven & Hartford's new-found formula rebuilding its old stations: sell the existing station prope for redevelopment as a shopping center built around a station which will be provided cost-free and rent-free to railroad.

The first such station-shopping center—a \$2 million pro —will soon replace the New Haven's old commuter stat on the New-York-bound side of the tracks in suburban Vernon, N. Y. Preliminary plans by Architects Boak & R provide for 35 shops of various sizes, a 600-seat theater department store and, of course, a railroad ticket office a waiting room. Atop the building will be a parking lot for convenience of commuters and shoppers alike.

The pioneering development was negotiated by Cushn & Wakefield, Inc., whose President, J. Clydesdale Cushm heads the National Association of Building Owners & M agers. It will be built by Schein-Cohen Construction Corp

Marble palace for the five and dime

Woolworth's, which has long since raised its prices above historic five-and-ten levels, has just finished in Houston, Te a new store whose costs defy measurement in nickles a dimes. For a choice downtown lot near the Rice Hotel, Wo worth paid \$3 million (about \$2,000 a front inch) and th erected a marble-faced palace, in the slot-window manner the early thirties (see photo), which cost another \$8 milli Architect: Kenneth Franzheim.

Low arched auditorium

Engineers Ammann & Whitney claim substantial savings their design for the Onondaga Memorial Auditorium i abuilding in Syracuse. In the first place, the light shell of crete roof is placed at the neutral axis of the support arch ribs (not above or below the ribs) which permits light construction and reduces thrust. Secondly, the shell re on supports which are cantilevered out over the seats. T reduction of the span permits foundations and other suppo ing members to be of smaller sizes (thrust varies as square of the roof arch span) and footing problems simplified by the shift in the dead load line closer to building line. Moreover, the building's cubage is cons erably reduced by the lower average height of the roof. these factors contribute to a reduction of 20-30 per cent structural costs. Edgarton & Edgarton, architects. W. O'Neil Construction Co., contractors.
Built with the Care You Build a Fine Home

...yet at no extra cost





Nationwide sales and installation service. See your classified telephone directory for names and addresses of Ro-Way Distributors.



There's a Rollay for every Doorway! Ro-Way Overhead Type Doors keep their "good looks." They are designed and built to stand up in service that is rougher and tougher than any other part of the house.

First, Ro-Way Doors are Overhead Type. That means they won't freeze shut ... snow drifts can't keep them from opening easily ... frost-raised floors can't jam them ... winds can't blow them off or bang them shut. They operate smoothly and easily, even if jambs become moisture-swollen. They roll up—in and overhead—out of the way.

The inner surface is never exposed to weather. The outer surface is protected from rust streaks, because all Ro-Way hardware is Parkerized after fabrication. All panels are of fine quality three-ply Douglas Fir Plywood. All door sections are glued—then doweled with steel—not wood.

Ro-Way tracks are made in our own plant. So, too, are the Ro-Way ball bearing track rollers with "double-thick tread." Springs are made by Ro-Way, too—each one power-metered to the weight of the door it will operate.

That's how we build Ro-Way Doors with the care you build a fine home. That's why Ro-Way Overhead Type Doors look better longer—yet cost no more.

> For residential, commercial and industrial doors, specify Ro-Way Overhead Type Doors.

ROWE MANUFACTURING COMPANY 965 Holton Street Galesburg, Illinois, U. S. A.

THLC-280

Surface-Mounted THLC Fixture

Chievement in LUXURY lighting

Here's a lighting fixture that emphatically proves: the secret of attaining the grand manner begins at the ceiling. A ceiling studded with Leader's luxury lighting fixture—the THLC—produces an atmospheric charm that apparently comes out of nowhere. Here is extreme beauty and quality illumination. In generous $14\frac{7}{16}$ " width, with a smart, curved, light-diffusing Holophane* Controlens to handsomely shield two, three or four standard 48" 40-watt lamps, or Slimline lamps in various lengths up to 8 ft.

THLC SPECIFICATIONS

Housing and channel of heavy-gauge steel. Exterior finished in aluminum gray baked synthetic enamel, interior in white, high-gloss baked enamel. Furnished with curved type Holophane* Controlens (hinged for easy servicing) and curved type glass Controlens at top of exterior. Wired units include UL and ETL approved sockets and high p.f. 2-lamp ballasts, type FS easily replaceable starters. 110-125 volts, 60 cycle A.C. Other voltages and instant-start operation available on request.

LEADER ELECTRIC COMPANY

3500 North Kedzie Avenue • Chicago 18, Illinois Leader Electric Western—800 One Hundredth Ave., Oakland 3, Cal.

COMPANION SPOTLIGHT OPTIONALLY AVAILABLE

For use between THLC units in continuous runs, or at ends of run. Furnished with chrome-plated ball and ring assembly affording adjustment of 360° horizontal and 25° from vertical in any direction . . . or with flat Holophane* glass lens.

Sold and installed only by the better electrical wholesalers and contractors

*Copyright Holophane Co.

Avoid foundation risks



Gow subsoil investigations are insurance against costly foundation errors, especially when the borings are made before the site is purchased.

Usually, Gow exploratory borings are sufficient for ordinary foundation investigations. If special samples are required for laboratory analysis, our Gow Division is equipped to secure such samples, either by the Shelby-tube method, or with other types of samplers. Where necessary, rock cores are recovered by diamond drilling.

The report you receive from our Gow Division is complete and authoritative and will furnish the basis for sound engineering decisions.

THE SCOPE OF RAYMOND'S ACTIVITIES includes, in addition to borings for soil investigation, every recognized type of foundation construction—concrete, composite, precast, steel, pipe and wood piles. Also caissons, underpinning, construction involving shore protection, shipbuilding facilities, harbor and river improvements, and cement mortar lining of pipes by the Centriline Corporation, a Raymond subsidiary.



CONCRETE PILE CO. 140 Cedar Street, New York 6, N. Y.

BRANCH OFFICES:

Boston • Syracuse • Philadelphia • Baltimore Washington • Pittsburgh • Atlanta • Miami Houston • Kansas City • St.Louis • Cleveland Chicago • Detroit • Salt Lake City • Portland San Francisco • Oakland • Los Angeles and principal cities in Latin America YELLOW CLAY 30 30 MEDIUM BLUE CLAY

GRAVEL

FILL

MEDIUM

BLUE

STIFF

28

14

32

REFUSAL - LEDGE ROCK OR BOULDER

> Figures in right hand column indicate number of blows required to drive sampling pipe one foot, using 140 lb. weight falling 30 inches.







When you install Clow "IPS" Cast Iron Pipe for drain lines inside or outside of buildings imbedded in walls or exposed, you're making an installation that will endure a century and more of service.

For ALL types of construction, use Clow "IPS" pipe for waste lines and vent stacks, for draining rainwater from roof areas, and for long runs of suspended sewer handling waterborne waste (hot or cold) from plant or laboratory operations, etc. Clow "IPS" pipe (A), (B) and (C) is cast in 18-foot lengths and in sizes 3, 4, 5, 6, 8 and 10 inches. Can be furnished cut to your exact specifications or in full lengths for cutting and fitting on the job.

In sizes, 4, 6 and 8-inch, Clow "IPS" pipe (D) is available in 18-foot lengths with integral calking bell on one end and other end plain. Use it for underground lines between building and street sewer or septic tank. It joins up with soil or tile pipe bells, and plain ends can be threaded for use with drainage fittings.

Write for illustrated, descriptive literature TODAY.



WHOLESALERS OF PLUMBING AND HEATING SUPPLIES . Publishers of the CLOW BULLETIN

Builder's house

(Continued from page 132)



the location of the windows and doors for each house is identical and one of the house's four sides has no openings.

Carroll, Hedlund & Associates do most of their own building (through a subsidiary, Budge Homes Inc.), owns all of the heavy equipmen used. The only subcontracts are plumbing, elec trical, painting and asphalt-tile application. In constructing its houses, the firm has re-enacted the now-familiar story of assembly-line operation but with some special twists. Materials are stored in a site warehouse where they are loaded or small, two-wheeled trailers pulled by jeeps.

The Mountlake operation is geared to a 39 man-hour per house schedule, not counting th subcontracts. Key to this low figure, says vic president and construction boss Albert La Pierre is careful attention to site labor costs. "We ar fortunate," he points out, "in having kept th same crew of men, who have already built 1,50 houses for us, since the end of the war. It is a all-union operation with no gimmicks except th fact that we have broken down our various build ing operations so that they can be carried out i the quickest time with the fewest number of mer We found out early that this business about ineffi cient labor is more a problem of bad planning b the builder than laziness of the men."

The houses are built in six operations, eac with a separate labor crew. The man-hour break down for each operation is: masonry—56 hours carpentry and roof—130 hours, dry wall—4 hours, finish carpentry—24 hours, miscellaneou —140 hours. Subcontracting work, the sixth op eration, is planned so that it fits into this sched ule without slowing up the pace. The man-hou schedule for subcontractors is 100 hours, makin a total of 490 man hours for a finished house.

Backing up this construction operation is materials procurement program where the enphasis is on carload lot buying to take advantag of both bulk discounts and lower handling cost. The warehouse at Mountlake is a substantis cinder-block building located on the main high way. When the last material is moved out some time this month, the building will be turned int the first unit of the project's shopping center. This two-for-the-price-of-one operation is typics of the kind of planning that supplements the

(Continued on page 144)

These Four Specialists Can Fill Almost Any Opening

No matter what your requirement . . . no matter what your budget . . . chances are a Weldwood Door can meet your needs for standard closures.

THE WELDWOOD FIRE DOOR



Here is the only wood-faced fire door on the market that carries the Underwriters' Laboratories Class B label. Architects everywhere are welcoming the opportunity to combine absolute fire protection with the striking decorative beauty available through the wide variety of hardwood faces that can be had with this modern door.

Standard faces are beautiful birch veneer. Other faces in domestic and imported hardwoods on special order.

The Weldwood Fire Door is durable ... dimensionally stable ... light in weight ... vermin and decay proof.

And the moderate cost indicates that hospitals, schools, institu-tions, offices and apartment build-ings cannot afford to be without the low-cost protection of this modern fire door.



WELDWOOD STANDARD MINERAL CORE DOOR

The solid mineral core of this newly developed type of standard door, plus the waterproof phe-nolic bond gives you a durable, versatile door that can be used either for interior or exterior openings.

When you specify the Weld-wood Mineral Core Door you get a combination of advantages hard beat. Maximum dimensional to stability-this door is guaranteed against swelling and sticking in summer...or shrinking and rattling in winter. Increased utility through light weight. Increased durability because of waterproof construction.

And you can get this modern closure in a wide variety of light and louver openings, including circular, rectangular and divided lights, factory-prepared, ready for glazing.



WELDWOOD LUMBER STAVED CORE DOOR

Unusual versatility makes this new addition to the Weldwood line a favorite with architects every-where. Because of its solid lumber staved core construction, the door can be hung from either side. Hardware is easily installed in any standard or custom position. Lights and louvers may be cut on the job.

Dimensional stability is unusually great because of special core construction and built-up rails and edge banding.

This lumber core door is available in a wide variety of standard sizes and many strikingly beautiful face veneers in domestic or imported hardwoods.

MENGEL HARDWOOD HOLLOW CORE FLUSH DOORS

Meet low cost requirements with this high quality door that combines beauty, durability and economy. Designers of homes, offices and public buildings of all kinds have specified this popular door for years to meet requirements that called for distinctive appearance and dependwithin even modest budgets. The rigid, grid-constructed core and dovetailed wedge-



locked joints on stiles and rails give the Mengel Door exceptional dimensional stability.

All United States Plywood warehouses have all types of flush doors in stock. You can obtain delivery in all parts of the country.

Complete specifications and product information on these and other Weldwood Doors are listed in Sweets' Catalog or are available in special literature which will be mailed to you upon request.

UNITED STATES PLYWOOD CORPORATION

55 West 44th Street, New York 18, N.Y.

Distributing units in Albany, Baltimore, Boston, Brooklyn, Buffalo, Chi-cago, Cincinnati, Cleveland, Detroit, Fresno, Glendale, Hartford, High Point, Indianapolis, New Hyde Park (L. I., N.Y.), Los Angeles, Mil-waukee, Newark, New York, Oakland, Philadelphia, Pittsburgh, Portland, Ore., Richmond, Rochester, San Francisco, Seattle, Spokane, St. Paul,

Washington, D. C. Also U. S.-Mengel Plywoods, Inc., distributing units in Atlanta, Birmingham, Dallas, Houston, Jacksonville, Kansas City, Kans., Louisville, Memphis, New Orleans, San Antonio, St. Louis, Tampa. In Canada: United States Plywood of Canada, Limited, Toronto. Send inquiries to nearest point.



again RUBEROID brings you the crowning achievement in the field of asbestos siding

TRAM

S BACK!

Yes... that deluxe asbestos siding ... Ruberoid Vitramic ... is again in production. A wartime casualty because of shortages of scarce materials and manpower, Vitramic needs no introduction to the hundreds of dealers who sold this finer siding in prewar years ... and created a silent salesman with every job applied!

Every siding prospect who is willing to pay a little more for the best becomes an enthusiastic Vitramic buyer when you demonstrate the outstanding advantages of the hard, smooth, vitreous-ceramic surface that stays brighter and cleaner through years of weather-defying service. Yes ... you can do a real job of *selling* the qualities of Vitramic over any other siding because your customer can *see* the difference in the very convincing demonstrations you are able to make right before his eyes. You can show him *why* and *how* it resists dirt, grime and soot . . . and *what* Vitramic gives him that no other siding can match.

The new Vitramic is better than ever . . . the result of more than ten years of Ruberoid research and development. With competition getting keener . . . this finer asbestos siding provides the extra value your customers are seeking. Whether on new homes or old, Vitramic truly represents the last word in performance . . . the crowning achievement in asbestos siding.

For easier sales ... for bigger profits ... for the utmost in customer satisfaction, play up Vitramic in your sales and advertising programs ... and watch how quickly your siding business will benefit from this better-than-ever Ruberoid exclusive-feature product.

GIVE YOUR CUSTOMERS MORE FOR THEIR BUILDING DOLLAR WITH RUBEROID

VITRAMIC ASBESTOS-CEMENT SIDING

The RUBEROID Co.

BUILDING MATERIALS FOR HOME, FARM AND INDUSTRY Executive Offices: 500 Fifth Ave., New York 18, N. Y.

Sales Offices: BALTIMORE, MD. . BOUND BROOK, N. J. . CMICAGO, ILL. . DALLAS, TEXAS . ERIE, PENN. . MINNEAPOLIS, MINN. MILLIS, MASS. . MOBILE, ALA.





Business is on the carpet, and carpet is our business

You want to give your clients the carpet best suited to their needs, at the price best suited to their budgets. The man to help you do so is the Alexander Smith-Masland carpet contractor in your city. This carpet specialist will show you the newest colors and patterns. He will tell you what wear your client can expect from different qualities and weaves. He will estimate the cost of any type of commercial installation. Let him help you. Better call him, today.

Alexander Smith and C.H.Masland

C O N T R A C T C A R P E T S 295 FIFTH AVENUE, N. Y. 16, N. Y.



When you plan the building of a new home or the modernization of an old kitchen, you can be sure that you will please your clients, if you consider these three important features:

- **Beauty**.... because the housewife wants the hours she spends in her kitchen to be in cheerful, colorful surroundings.
- Utility.... because she wants the kitchen to be sanitary in order to reduce kitchen drudgery to a minimum.
- **Durability**. because she wants her investment to give her a lifetime of service and satisfaction.

Just Line Radiiluxe **Custom Built Stainless Steel**

Cabinet Sinks and Tops

give her all these advantages. In addition, they harmonize perfectly with any color and decoration scheme and add the final touch of elegance and refinement to any modern kitchen.

Note these Exclusive JUST Radiiluxe Features:

- Custom Built to meet every Personal Taste
- Patented In-Built Anti-Splash Rim in bowls
- Patented Double Pitched Drainboards
- Seamless Electrically Welded Construction
- Rounded Corners in Sink Bowls
- Die Formed Raised Edges
- U-Type Steel Reinforcing Channels under Drainboards

Sound Deadened Drainboards and Bowls

Write today for Illustrated Literature F-3 and Name of Nearest Factory Representative



Builder's house

(Continued from page 140)

builders' small profit on their house sales. By leasing their "warehouse" shopping center, they can, within a few years, match their total housesales profit.

VA financing. Like many another economyhouse project, Mountlake by-passes FHA financing for the more favorable terms of VA's 501 loan-guarantee program. All but three of the first 205 houses sold were financed under GI, 24year loan plans. The mortgages were made by Western Life Insurance Co. of Helena, Mont. and by Mutual Benefit Life of Newark, N. J. Western Life also supplied the construction money. The builders were able to get a full \$5,000 VA appraisal for their houses, plus a quick processing of their 4 per cent loans. The down-payment for a veteran buying at Mountlake is \$112. The monthly carrying charge is \$33. This breaks down to: \$27 principal and interest, \$5 taxes and \$1 insurance.

Merchandising with equipment. Supplementing this basic financing, an expandible package mortgage system stimulates sales. A kitchen-full of extra equipment may be financed under the mortgage. A refrigerator, washing machine, range and clothes drier can be tucked into a Mountlake mortgage for \$8.50 down and \$1 per appliance added to the monthly carrying charges. This gives the builder the kind of flexibility he needs in applying the package mortgage principle to low income needs. The terms, of course, are disarmingly attractive; 700 appliances have been sold (at a profit) to buyers of the first 205 houses.

This package-mortgage merchandising is only part of the Mountlake selling program. From past experience, it was known that low cost houses do not sell themselves automatically. There were two reasons for this. First, the houses are pitched to a lower-middle income market which, up to now, had convinced itself that it could not afford a house. A selling job had to be done to show them that this was not the case. Secondly, this potential market had also to be convinced that, despite its price, the Mountlake house was well built. This called for another selling job. Carroll, Hedlund approached both these merchandising problems with an advertising selling budget almost double that of its estimated net profit. (See cost break down, p. 133). Advertising Manager James Scott decided to put the merchandising emphasis on the house's durability rather than price. Biggest sales resistance at Mountlake came from the prospective buyer's reluctance to purchase a house which might be too small for his needs. To counteract this, salesmen point out that every housebuyer is given a set of plans "for your larger house" with an added garage and a third bedroom. On the strength of this and similar aggressive salesmanship, the subdivision was sold out quickly. With the first group of its \$4,999 houses near completion, Carroll, Hedlund & Associates will continue their operation on an 800-lot adjoining tract.



THEIR HOUSE IS WHAT THEY MAKE IT

Big estate or little cottage, owner-builders design their houses exactly as they want them. Personalized projects ... because here are the people who plan ahead-of-the-blueprint stage. For the touch of a bath-dressing room with enormous closets. For all the important "extras" that owner-builders ask for in made-to-order houses. Reach these owner-builders through House & Garden... their authority... and your guide to extra sales. They know specifically what they want... and have the power to specify your product.



FOR LEAKPROOF, TROUBLE-FREE PIPE RUNS

Cut-a-way view of a Walseal Tee showing eing of silver brazed alloy, and completed Silbraz joint.

Specify Walseal* Products

On all types of piping jobs where Type "B" copper or red brass pipe is used, trouble can be avoided by installing Silbraz* joints – made with Walseal valves, fittings and flanges.

Threadless, patented Silbraz joints are silver brazed (not soft soldered) pipe joints that are leakproof, trouble-free — permanent ... connections that will not creep or pull apart; that literally join with the piping system to form a "one-piece pipe line". Thus, these modern joints eliminate the need for maintenance and costly repairs — especially important where lowered operating costs are imperative.

For complete details on the modern Silbraz joint, made with Walseal products, write for a copy of Walworth Circular 84.

Patented - Reg. U. S. Patent Office.



Recommended for

Hot and Celd Water Circulating Systems

Boiler Feed Lines

Steam Return Lines

Condensate Lines

Low and High Pressure Air Systems

Lubricating Oil Circulate ing Systems

Industrial Gas Piping

Solvent and Vacuum Piping Systems

STANDARD OIL COMPANY OF CALIFORNIA

adds new wing

THOMSEN & WILSON, ARCHITECTS, SAN FRANCISCO SWINERTON & WALBERG, GENERAL CONTRACTORS

integrates unusual traffic flow with OTIS AUTOTRONIC ELEVATORING

12

An extremely versatile <u>electronically supervised</u> system will provide the fastest, most efficient elevator service ever devised, for the new wing of the Standard Oil Company of California Home Office Building in San Francisco. Otis AUTOTRONIC Traffic-Timed ELEVATORING will provide 5-car local service between the main and 17th floors; call service to the basement garage; call service from the 17th to 22nd floors; and heavy noontime service to the 20th floor cafeteria. At the same time, it will maintain normal service to all other floors in the new wing and closely integrated service with the newly modernized 8-car installation that serves the main section of the building. 2,600 tenants will be served by these two installations. Complex as this traffic flow may seem, it can still be handled with maximum efficiency by the <u>6</u> traffic programs that form the basis of Otis AUTOTRONIC ELEVATORING. This versatility of operation — which has been applied to a wide range of traffic patterns in 43 new and modernized office buildings, hotels, banks and department stores—is explained in Otis Booklet B-721-A. Otis Elevator Company, 260 11th Avenue, New York 1, N. Y.

> AUTOTRONIC traffic-timed ELEVATORING





Specified SONNEBORN PRODUCTS give

stronger concrete

at

- better rust prevention
- protection from dampness

Erected on one of New York's most valuable and bistorical properties...with every modern convenience... America's newest skyscraper had to have the finest construction and materials available! That is why so many Sonneborn products were specified!

HOW SPECIFIED SONNEBORN PRODUCTS WERE USED FOR WATERPROOFING, CONCRETE TREATMENT AND RUST PREVENTION

Hydrocide Mastic All exterior walls were dampproofed with a single coating of Hydrocide Mastic, applied on the interior side of these walls. Observers noted the ease and speed with which Hydrocide Mastic was trowelled on. Since New York's extremes of heat and cold do not make Hydrocide Mastic brittle or runny, weather is not expected to affect the building's dampproofness.

Trimix The foundation concrete was given extra compressive strength and resistance to water penetration, by adding Trimix during mixing. Less water was needed, so a denser concrete resulted. The extra workability of the

For further information on any waterproofing, concrete-treatment or rustproofing problems or products, see your local Sonneborn Man...or write direct. Trimix-treated concrete speeded pouring, especially where the concrete was chuted. Trimix was also used in the floor topping, as an integral hardener and densifier.

S.R.P. As specified by the architect, all structural steel was protected from rust by a primer coat of S.R.P. (Sure *Rust Prevention*). This was sprayed on at the Bethlehem, Pa., plant of Bethlehem Steel Corp. The elasticity and toughness of S.R.P. also helped prevent corrosion of the steel while it was being encased in masonry.

BUILDING PRODUCTS DIVISION L. SONNEBORN SONS, INC. 80 EIGHTH AVENUE • NEW YORK II, N. Y.

"HYDROCIDE", "TRIMIX" AND S.R.P. ARE SONNEBORN TRADE MARKS, REGISTERED AT THE U.S. PATENT OFFICE





It is common knowledge that in the event of fire, elevator shaftways with inflammable oil and grease, act like flues and are the greatest factor in the rapid spread of fire. Dry rails and shaftways are the modern and only proper way of elevator

operation. Modernize your elevators, save life, property and money.

RESULTS HAVE BEEN AMAZING !!! ELSCO ROLLER GUIDES PAY FOR THEMSELVES

C. With Elsco Safety Roller Guides, hatchways no longer need con- C Elsco Roller Guides solve the problem of badly aligned rails and stant cleaning to remove inflammable grease, dirt, fuzz and filth. There is a large savings in labor costs.

I

Tests on a variety of elevators under a multitude of conditions. indicate a savings in electric current of between 24% and 44%, and since elevators consume the largest amount of electricity in buildings, the amount of k.w.h. savings is tremendous. Elsco Roller Guides are an anti-friction device.

unbalanced conditions, often saving the cost of new, or costly realignment of old rails. Elsco Guides roll and do not slide. Elsco Guides contain stabilizing springs.

d. Because of dry rails, emergency safety jaws hold better in the event of accident.

e. Elsco Roller Guides give a smooth, gliding ride.

Elsco Safety Roller Guides have been in successful operation since 1941. They have been approved unanimously by the Board of Standards and Appeals of N.Y.C. up to 1200 f.p.m.

They are adaptable to passenger and freight elevators regardless of capacity or speed, space permitting. They have been installed in leading buildings from coast to coast,

and abroad. They are the only safety roller guide with oscillation, traction

and knee action. The yoke affixed between the wheels provides a maximum of safety.

YOU OWE IT TO YOUR BUILDING TO INSTALL THE NEW ELSCO SAFETY ROLLER GUIDES

(Patented and trade mark registered)

For further information inquire of your dealer or

ELEVATOR SAFETY CORPORATION 165 Broadway, New York 6, N. Y. SAFETY WITH SAVINGS



"A real advancement in window screening, easy to handle and install, and architecturally sound.

Harold Straus, Sec'y Harris Contr. Corp., Brooklyn, N.Y.

DURALL ALUMINUM TENSION SCREENS



Home owners and builders who know Durall are saying all the things you read above, and more!

With its first introduction, this remarkable new kind of window screen captured the imagination—and appealed to the good sense and pocketbooks —of home owners and builders alike. Over 2,000,000 are in use today!

FREE BOOKLET! Get our special, free Durall booklet, showing complete specifications and prices—for your A.I.A. Files. Write today, Dept. AF-3. See Durall at your building supply dealer's.



NEW YORK WIRE CLOTH COMPANY · 445 PARK AVENUE, NEW YORK 22, N.Y.



"Visual Education of Architects" (seen above as it appeared in M.I.T.'s lofty central hall) traces the experiments of Georgy Kepes and his students in what the eye actually sees in structure. Photographs, compositions in color and black and white, and small three-dimensional models make up this traveling exhibit.





Texture, an important aspect of every building, is modified by distance—an architect should be aware of all the textural possibilities in his design.

Glass is a structural material of almost unlimited possibilities today. At right student compositions portray the various visual effects of translucent sheets.





Joining several materials is an everyday problem; student photographs (above) record various window and wall combinations,



REVIEWS

M.I.T. EXPLORES SIGHT AND STRUCTURE

The laws of vision, points out Georgy Kepe are as varied and as inevitable as the laws of engineering—and just as necessary for the production of successful building. Visual Education for Architects, an exhibit prepare by Kepes and his students at the Department of Visual Design in Massachusetts Institute of Technology, delineates the part played he visual elements—line, shape, texture and color —in illuminating structural design.

His thesis is hardly new but it is explore with brilliant consistency. The basic prince ples of organized structure—balance, equ librium, tension, rhythm, proportion, scalharmony—reveal themselves first and more fully through the eye. Unless, therefore, the laws of vision are brought into accord with the laws of structure, the most important fer ture of a building design—intelligibility destroyed or at least diminished.



A series of student experiments illustrate some steps in achieving the visual expression of structure. They probe visual qualities of materials—wood, stone, metal and glass; the reactions of these materials to various tools the effects of light, color and pattern in modfying and accentuating their form and size the study of natural forms with their characteristics in motion and at rest. All exercises aim at a single object—to develop "thdiscipline of visual thinking." Such disciplin and sensitivity rather than formulae, Kepe believes, can bring life to our great and stil expanding store of structural knowledge.

After a brief preliminary showing at M.I.T the exhibit will be on view at the University of Minnesota, which sponsored preparation of the show and underwrote its expense. Later, i will be loaned to colleges and art institutes throughout the country.—S.K.

(Continued on page 158)





CARIBE HILTON HOTEL, San Juan, Puerto Rico - Supervising architects—Toro, Ferrer, and Torregroso, San Juan - Interiors and decorations—Warner-Leeds, New York - General contractors—George A. Fuller Company of Puerto Rico - Consulting mechanical engineer—Zumwalt & Vinther, Dallas - Consultants on operational layout—Horwath & Horwath; Harris, Kerr, Forster & Co.

The "showcase" of the Caribbean is air conditioned by Carrier



EVERY GUEST in each of the more than 300 rooms and suites may dial the weather he prefers. The Carrier Conduit Weathermaster System with its individual temperature control fills the order from the central air conditioning plant.



This is the new Caribe Hilton. Located in San Juan, Puerto Rico, this new luxury hotel plays an important part in the over-all development of the island's economy. It was designed to be the "showcase" of

the Caribbean. Significantly, it is completely air

conditioned by Carrier.

FOR DINING or dancing in the Caribar, Salon de Castillo and Club Caribe, comfort is made-to-order by Carrier Weathermakers. The refrigerating and ventilating equipment, too, is supplied by Carrier.



AIR CONDITIONING . REFRIGERATION . INDUSTRIAL HEATING

YOU CAN BE SURE .. IF IT'S Westinghouse

the greatest advancement in "PLUG IN" control center design

A CONTINUOUS

VERTICAL WIRING TROUGH

for unmatched

wiring convenience

It takes a continuous, vertical wiring trough to make a control center *really* easy to wire. And that's exactly what you get in the new Westinghouse design.

Several new design achievements contribute to this important feature.

Removable side baffles in each starter unit simply slide out to provide free access from wiring trough to terminal boards. Baffle grills are notched to clear outgoing leads.

Removable support bars between the starter units are easily released by slight pressure to the left. This eliminates the tedious job of fishing wires through blind spaces.

By removing side baffles and support bars you create a *continuous* wiring trough—unobstructed from top to bottom—providing ample hand room for an easier, faster wiring job.

Consider all the advantages of this new control center!

New, Magna-Grip "plug-in" connectors for greater operating simplicity; standardized, modular dimensions for unmatched flexibility; interlocking handles and "tilt position" disconnect for extra safety. These are random examples. The complete story is in Booklet B-4213. For your copy write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-21540



UNEQUALED IN

APPEARANCE... PERFORMANCE... REDUCED YEARLY COSTS...

×



By every standard, here is the ideal all-metal awning for commercial, institutional, and industrial buildings. Hundreds of installations have conclusively proved its durability, dependability, and economy.

Engineered for long life — precision-made for trouble-free performance—it operates smoothly year after year. By minimizing annual costs and fire hazards, the Kawneer Awning is an important investment in long-range economy and reduced replacement expenses.

Light weight is combined with the structural strength to withstand hard usage and severe climate. Hard surfaced aluminum slats are carefully formed, and positive locking prevents leakage. Easy extension is provided by lateral-hinged arms of sturdy pipe with heavy cast-iron elbows.

This handsome awning meets the highest standards of modern design. Its striking, rich appearance will add distinction to any facade, and its satiny lustrous finish reduces glare.

Furnished as completely assembled package units, Kawneer Awnings are ready for immediate erection. They can be obtained with concealed boxes or with hoods for surface application.

Widths up to 18 feet and roofs up to 8 feet are provided as individual units. When widths of more than 18 feet are required, multiple units are used. For detailed information, write 204 North Front St., Niles, Mich.; or 2564 8th St., Berkeley, Cal.

ARCHITECTURAL METAL PRODUCTS Store Front Metals · Aluminum Roll-Type Awnings Modern Entrances · Aluminum Facing Materials

dirate 12 1. 200



REVIEWS

PRIZE-WINNING FURNITURE IS REVEALED

Results of the \$30,000 competition sponsored by the Design Project Inc. of New York's Museum of Modern Art were shown in Chicago this month. Winning designs, which had



Cushioned chair by Charles Pratt (above) is \$30 (all prices are ap-

Plastic armchair by Charles Eames (upper right) is \$32.50.

proximate).







been expected to break new ground in the low cost furniture field, were—frankly—a disappointment. Charles Eames presents a variation of his body-curved chair in plastic; Donald Knorr, a flat curved seat of sheet metal; Charles Pratt, a pneumatic-cushioned substitute for upholstery. The only storage group is that by an English team, Robin Day and Clive Latimer. Economically, as well as design-wise, the results (shown and priced above) are sadly short of spectacular.—S.K. (Continued on page 162)



tedder.

edders Fedders Wall Radiation provides new lower costs...easier

and greater space-saving installations...lighter weight ..

easier handling ... easier stocking.

TYPE EM ENCLOSURE fabricated from expanded metal.

Increased efficiency of transferring heat is assured by the pattern stamped in the fins which creates a turbulent scrubbing action of airflow against fins. This die-formed pattern

also produces greater fin strength. Three styles of enclosures are available as illustrated.

Fedders Wall Radiation for steam and hot water lines is available in lengths from 2 to 12 feet in 6 inch increments. 38 and 50 fins per foot on 1¼ inch tube and 24 fins per foot on 2 inch tubes. Write for catalog WR-C1 TODAY. FEDDERS-QUIGAN CORPORATI

BUFFALO 7, N.Y.

TYPE FT ENCLOSURE having flat top with die-cut grille.

TYPE ST ENCLOSURE having sloping top with die-formed louvered grille.









The Cycle of Contentment in Our Surroundings is Ever Changing

In widely-separated areas of the United States, these modern homes testify to the substantial quality and beauty offered the owner when THOROSEAL is used for exterior masonry protection.

THOROSEAL, to fill and seal masonry surfaces of brick, tile, manufactured block, stucco, adobe or poured concrete,

and

OUICKSEAL, in many beautiful tints, to finish off the surface.

The attractiveness of home, office, factory, warehouse, farm or commercial structure of any type is in its adaptability to change. QUICKSEAL (finish coat), in selected color tints, offers many desirable changes.

When **VaBar** is used as plaster bond on interior masonry surfaces of all exterior masonry walls, satisfaction and assurance of protection to interior plaster and painted surfaces are guaranteed.

For The THORO System Guide, for the designer and specification writer, consult WATERPROOFING section of 1950 Sweet's Architectural Catalog, 9a/18,

OR

Write for our 20 page brochure, pictorially describing masonry problems, and specification writer's wall chart.



Standard Dry Wall Products BOX X. NEW EAGLE, PENNA.

for appearance...

Simple, unobtrusive design blends with any architectural treatment.

for performance



Adjustment features insure positive control of air movement.

... adjustable air diffusers help solve problems of both form and function.

FREE HANDBOOK – Send for FREE copy of new handbook on air diffusion. Complete information on Kno-Draft Adjustable Diffusers and all necessary engineering data to help you create "custom-made" air patterns. Just fill in and mail the coupon.

W. B.	CONNOR ENGINEERING CORP.
Air D	iffusion • Air Purification • Air Recovery
112 East	32nd Street CONNOR New York 16, N.Y.
IN CANADA:	Douglas Engineering Co., Ltd., 190 Murray Street, Montreal 3, P. Q.

Dept. T-60. 112 East 32	nd Street, New York 16, New York
Please send my FRE	E copy of the new Kno-Draft Hand- Diffusers.
vame	
Position	
ompany	
treet	
City	ZoneState





LOCKWOO



Designed to render assistance to architects where an Architectural Hardware Consultant is not readily available. Employs a new, practical and greatly simplified approach in 24 pages — the "5 STEPS" — a "TYPICAL SPECIFI-CATION" — product illustration and description — "TABLES" of typical openings in various building types, with recommended finishing hardware equipment. See it, study it, you'll find it surprisingly simple, complete and useful. L-50

STEP 1. General Conditions, to lay the groundwork and fix responsibility.

and herein shows herein there are

- STEP 2. Design, providing a brief but clear and complete guide to design types for each portion of the building.
- STEP 3. Selection of Finish, now simplified by means of a table and designating symbols.
- STEP 4. Types of Buildings: Commercial, Schocls, Hospitals, etc., with heavy duty and standard locks, butts or hinges and supplemental items in simple tabular form.
- STEP 5. Windows, showing types and grades of sash fasteners and lifts.



LOCKWOOD HARDWARE MANUFACTURING CO. Division Independent Lock Company • Fitchburg, Massachusetts

REVIEWS

THE NEW REGIONAL PATTERN. By L. Hilber seimer. Theobald Press. Chicago, III. 197 pp. IIIu 8 x 11. \$5.50.

The two charts at right sum up the message of The New Regional Pattern. The first depic present concentration of industries in easter U. S.-a section of overcrowded and pollute cities; of depleted forests and eroded soil; uprooted farmers and unemployed worker The second chart shows Ludwig Hilberseimer suggestion as to how these evils can be avoi ed. Rivers and waterways are fully use Cities have gradually spread out to form series of self-sufficient units (about 25,00 people in each) which simultaneously fost industry and agriculture. Land, human healt and industry all benefit by the change. Is suc a transformation possible? This book sets or to prove-historically, economically, socilogically and structurally-that it is not on possible, but sound and imperative.

The author is no neophyte at planning. H was founder of the department of City Plan ning in Germany's famous Bauhaus and sind 1938 has been Professor of that subject at th Illinois Institute of Technology. This late book (companion to an earlier volume, Th New City) investigates the soil from which every city springs-the region. In presentin his theories, Hilberseimer does not overin dulge in dogma. "The diagrams presente here . . .", he says, "are outlines of possibl solutions. Their main usefulness may be start a discussion about local and regiona traffic problems . . . Planning is an all-compre hensive task which requires a clear theoretica approach."

At the root of today's troubles Hilber seimer finds the tendency to overlook the in evitable operation of regional laws. In con trast to man-made "organized" territories lik states, the region is a natural organ-"some thing which can live and support life . . . and interrelated part of a country, a natural unit self-containing by reason of geographical ad vantages, natural resources and soil conditions natural and man-made transportation routes. Industrial practice has ignored these regiona wholes and used only their most evident ad vantages to enrich larger, artificial, wholes The rich forests of North Lake States supplied 35 per cent of the nation's greatest lumber from 1870-1920. Today the exhausted soil of the region forms one of the poorest sections of the whole country. Rich central plains, de voted entirely to corn, have already resulted in a dust bowl and seem on their way to becoming a central desert. In devoting the lands of the (Continued on page 166)

BNT WORRY...IT'S LILE

Wet umbrella or forgetful puppy . . . there's no staining or fade mark to worry about when floors are surfaced with Genuine Clay Tile. Show your clients how the rich fired-in decorator colors will lend warmth to foyer, kitchen, utility room . . . eliminate the drudgery of scrubbing, waxing and refinishing that is necessary for old-fashioned floor and wall surfaces. Moreover, you have a strong selling point in the long-range economies of Genuine Clay Tile. Available *now* in a wide variety of colors, sizes and patterns.

> The Tile Council of America, Room 3401: 10 East 40th Street, New York 16, New York. Room 433: 727 West Seventh Street, Los Angeles, California.

PARTICIPATING COMPANIES:

American Encaustic Tiling Co. Angeleno Tile 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 Murray 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.

IE MODERN STYLE IS CLAY TILE

These high-quality, low-co





SUPER MARKET. Fenestra Entrance Doors, Frames and Hardware in Eberhard's Super Market, Grand Rapids, Michigan. A fitting entrance to a modern store... and tough enough to take years of constant use. Architect: Wilfred P. McLaughlin, Grand Rapids, Mich. Contractor: George Datema & Sons Builders, Inc., Grand Rapids.

OUTONLY

- SCHOOL. Two of the 135 Fenestra Hollow Metal Doors, Frames and Hardware used throughout the Robert N. Mandeville High School at Flint, Michigan. These sturdy doors can take a beating from hurrying kids... and come up smiling. They can't be carved or splintered —an occasional coat of paint is all they need to look like new. And, of course, they are firesafe. Attractive, ribbed glass in upper panels provides privacy. Architect: Bennett & Straight, Dearborn, Mich. Contractor: Karl B. Foster, Flint, Mich.
- **OFFICE.** Entrance of J. A. Folger & Company is made distinctive and inviting by these handsome Fenestra Hollow Metal Doors. Entrance doors are like a handclasp—they make an important first impression... a lasting impression. Engineer: Robert J. Cummins



DOOR

oors take the toughest treatment..

.. and still look like new!

In and out . . . out and in . . . all day long. A super-market seething with shoppers. School kids opening classroom doors with their feet. A stadium entrance jammed with jostling crowds. That's *tough* treatment! And that's one of the reasons why Fenestra* Hollow Metal Doors were selected for those spots. These attractive, insulated doors won't sag, warp, swell, shrink, or splinter . . . a fresh coat of paint makes them look like new.

Some of the Other Reasons:

High Quality	Fenestra Hollow Metal Doors are carefully made by craftsmen long skilled in steel fabrication. Each door comes wrapped to protect the gleaming finish.
Low First Cost	Because these doors are standardized, they can be produced in great volume for maximum manufacturing efficiency.
Complete Unit	Door, strong steel frame and shining hardware, designed as an attractive unit, ready to install.
Low Installation Cost	Mortising, drilling, tapping and prime painting are all done <i>at the factory</i> . Installation takes just four steps: Bolt the strong steel frame together. Attach frame to floor and anchor to walls. Screw on template locks and hinges. Hang the door.
Delivery in 2 to 3 Weeks	Action is taken promptly upon receipt of your order. Local stocks can usually deliver immediately.
	Fenestra Doors with the Underwriters' B Label are also available See Sweet's

Fenestra Doors with the Underwriters' B Label are also available. See Sweet's Architectural File, Section 16a/8, call your Fenestra representative (listed in the yellow pages of your telephone directory) or mail the coupon.

I

*Trade Mark



STADIUM. Through these Fenestra Doors of the Stadium in Grand Rapids, Michigan, go thousands of hurrying people every weekend. What harder use can doors have? Yet they look like new—and will, for years of weekends to come. Architect: Wilfred P. Mclaughlin, Grand Rapids, Mich. Contractor: George Datema & Sons Builders, Inc., Grand Rapids.

NDOWS · PANELS

251 East Gr Detroit 11, N	and Blvd., Iichigan		
Please send Iollow Meta	d me full inform d Doors.	ation on the new Fe	nestra
Name			
Company	15 p. 13 3		1.1.2
Address	min-good point	fighter (199.40



WHAT'S BETWEEN that NEW basement and ground water?

Only a few inches of wall separate the new basements you build from their greatest enemy ... ground water! Upon the sound construction of that narrow wall depends the future of the home. Properly constructed with Medusa Waterproofed Gray Portland Cement*, the foundation will always ward off ground water, protecting the home owner against the expense and trouble of a damp or wet basement!

It costs so little, yet means so much, to build lastingly dry construction. Specify Medusa Waterproofed Gray Portland Cement in mortar and poured concrete for foundations. Use this water repelling cement for an outside plaster coating whenever walls are made of masonry construction. This original waterproofed cement contains a stearate waterproofing which repels all water at the surface of concrete. The booklets, "How to Waterproof Concrete, Stucco, and Masonry" and "A Discussion of Integral Waterproofing," contain complete data on waterproof construction. Mail coupon.



MEDUSA PORTLAND CEMENT CO. 1013-2 MIDLAND BUILDING . CLEVELAND 15, OHIO

Gentlemen: Please send me a copy of the free booklets, "How to Waterproof Concrete, Stucco, and Masonry" and "A Discussion of Integral Waterproofing."

REVIEWS

south to steady cotton growing, planters ha not only effectively exhausted the land, but uprooting trees have permitted the Mississip River to sweep huge quantities of rich ear into the Gulf of Mexico. Most dramat example of cumulative regional unbalance even now at work in California. The ferti San Joaquin valley encouraged farmers to ai at more intensive crops than the amount rainfall permitted. Irrigation on a mammo scale was introduced from wells formed by t water of mountain snows. In addition, rich swamp land around the river was drain to extend these productive fields. Recently the results have become apparent. Not on is the water of underground stores near pletion, but the river, which formerly mea dered through the swamps depositing rich u land soil, now races right out to the sea. Ev worse, the drained land has now settled belo sea level, so that at high tide the salt wat backs up and is poisoning the valley basin.

This destructive interaction between mala justed land and ocean areas finds a paral in the economic maladjustment of our citi and farms. "The cities can no longer abso the people who are unemployed on the farm Neither can the farms absorb the people will are unemployed in the cities." An indecisi ebb and flow of movement between the ty areas creates chaos in both. It produces o cities of overcrowded slums and vacant lotsnearly one-third of privately-owned city lan is currently unusable, points out the Urba Land Institute. "The trend toward decentra ization," adds Hilberseimer, "is beyond of power to stem or to prevent. It is therefor of vital importance to direct (it) to a go end . . . A new kind of planning and zoning needed, one which is able to determi where and what could or should be built."

As a basis for this kind of planning, he e visions a society which will not depend for living on either agriculture or industry alor Taking the varying resources of each region as a whole, he proposes comprehensive su veys to determine what combination of the tw will best answer its needs. All units will ha a variety of resources: heavy industry, light dustry, commerce, homes, gardens and farm Each family will be able to supplement industrial wage by work on its own or near subsistence farms. These farms and parks w not only provide food, but will improve a and climate. No less an individualist the Henry Ford is quoted to back Hilberseime denunciation of regional specialization: "W a steer raised in Texas should be brought (Continued on page 172)

PLEXIGLAS – Lets in the Light Keeps out the Glare



Sun glare becomes soft, eye-easing light—pleasant to work or read by—when it's screened with translucent PLEXIGLAS glazing. PLEXIGLAS diffuses artificial or natural light perfectly —lets you see clearly without eyestrain.

In glazing, lighting and a score of other applications, architects are turning more and more to PLEXIGLAS. You'll find this adaptable acrylic plastic in weatherproof, translucent skylights and clerestory panels for daylight admission—in shatter-resistant glazing around curved corners—in wall-to-wall luminous ceilings—entire store fronts—translucent and transparent panels and screens of all kinds. And this is only the beginning of the list.

If you want to know the full range of PLEXIGLAS possibilities, send now for our newest booklet —PLEXIGLAS for Architecture. It gives complete technical data on this light, strong, workable *Outdoor Plastic*, shows actual installations, suggests uses. Write today on your business letterhead. Ask for samples of plain, corrugated or patterned PLEXIGLAS, clear or in colors.

CHEMICALS FOR INDUSTRY



SEND TODAY FOR YOUR FREE COPY plus samples of Plexiglas

PLEXICLAS is a trade-mark, Reg. U.S. Pat. Off. and in principal foreign countries.

Canadian Distributor: Crystal Glass & Plastics, Ltd., 282 St. Helens Avenue, Toronto, Ont.





with "Modernfold" doors

Rooms do double duty with "Modernfold" doors. By folding them against the walls, the entire area is usable as one unit. Close them and you have private rooms for separate functions. And their efficiency doesn't stop there. Use small "Modernfold" doors in normal openings instead of swinging doors. Their accordion-like action will save you up to six square feet per opening.

Remember, a "Modernfold" door is not a curtain but a strong, durable folding door. Its sturdy metal frame is a firm foundation for beautiful, flame-resistant, washable plastic fabrics. Available in a variety of colors to match any color scheme. Mail coupon for full details, or look in your telephone book under "Doors" for the name of our installing distributor.

"Modernfold" doors are priced from \$26.00 (F.O.B. New Castle) and ap. NEW CASTLE PRODUCTS, New Castle, Ind. In Canada: Raymond Manufacturing Company, Itd., Montreal, Quebec New Castle Products P. O. Box 801, New Castle, Ind. Gentlemen: Please send me your architects' catalog giving full details on "Modernfold" doors. Name. School. Address.

Imagine this FLOOR in Radiant Moultile Colors



This attractive floor suggests the endless variety of original designs which can be achieved with Moultile's individually laid tiles. Pictured here is one of several patterns designed by Haxby, Bissel & Belair, Architects, for the Fern Hill School, St. Louis Park, Minn.

Even without the benefit of color, this photograph reveals much of the eye-captivating beauty of Thos. Moulding Moultile floors. It suggests the clarity of tone, the pleasing variegated effect of Moultile's crisp, clear veining. Now let your mind's eye supply the colors, as deep, rich and clear as a rainbow. Then you'll know why so many architects prefer to design their floors in Moultile! Moultile is as practical as it is beautiful. It is quiet, nonslippery, comfortably buoyant underfoot . . . and practically impervious to ordinary wear. With all its advantages, Moultile is low in original cost and most economical when figured on a cost-per-year basis. Moultile and the wide range of other Thos. Moulding Floor Materials lend themselves to virtually every flooring need. Moreover, Thos. Moulding is prepared to make special colors, or to modify standard materials for special floor requirements. Architects are invited to submit unusual floor problems to: THOS. MOULDING FLOOR MFG. CO., 165 W. Wacker Drive, Dept. AF-3, Chicago 1,



III.

Micarta tops 'em All !

NEWER COLORS

Only Micarta has the 9 new Decorator Colors selected by a national jury of leading architects — the smart off-shades preferred today.

BETTER FINISHES

Only Micarta offers *both* satin and glossy in a true finish . . . the satin is built-in, not just a glossy finish rubbed down.

THE "BEAUTYMASK"

Only Micarta is covered by a strong manila sheet protecting the surface while work is done — until ready for use.

PANELS ON WATERPROOF PLYWOOD

Only Micarta's $\frac{7}{8}''$ and $\frac{14}{4}''$ panels offer the plastic laminate bonded with waterproof resorcinol glue on waterproof Weldwood plywood.

BETTER SIZES

Micarta offers sizes up to 48" x 96" — thus often providing greater economy and covering larger areas with fewer seams.

> Micarta equals or exceeds the standards of National Electrical Manufacturers' Association.

Check MICARTA



MICARTA is manufactured by WESTINGHOUSE and sold, for decorative purposes only, by

UNITED STATES PLYWOOD CORPORATION.

MORE COLORS

Micarta is offered in 40 colors and patterns, including solid colors, decorator effects, patterns and Truwoods.

MORE STAIN RESISTANT

Micarta can't be stained or discolored by boiling water, milk, grease, food products, fruit juices, household cleansers, detergents, barber and beauty shop materials, even nail polish and nail polish remover.

MORE "ABUSABLE"

Micarta dares you to chip, dent or scratch it. Test it with heavy glasses, cups, silverware, kitchen utensils, and even pots and pans.

CIGARETTE PROOF

Standard Micarta is remarkably resistant to cigarette burns; the cigarette-proof grade is guaranteed against cigarette damage.

YOURSELF SEND FOR FREE SAMPLE

UNITED STATES PL 55 West 44th Street, New	YWOOD CORPORATION York 18, N.Y. A. F. 3-50
I want to check Micarta n please send me a FREE	nyself. Without any obligation, sample.
NAME	TITLE
COMPANY	
ADDRESS	
СІТҮ	STATE





This is Armstrong's Linoleum

The unusual combination of beauty, durability, and moderate cost offered by Armstrong's Linoleum has made this floor the choice for countless

thousands of stores, offices, and public buildings. Popular for many years, it is still a truly modern flooring. Manufacturing improvements have added to its serviceability, increased its beauty, made it easier to clean.

There's almost no limit to the custom designs that can be worked out in a floor of

Armstrong's Linoleum. There are six types from which to choose-Plain, Jaspé, Marbelle®, Spatter, Straight Line Inlaid, and Embossed Inlaid. Colors and types can be combined to achieve any desired decorative effect.

Armstrong's Linoleum is made in three gauges: Heavy (1/8"), Standard (3/32"), Light (5/64"). It is not indented by furniture loads up to 75 lbs. per sq. in. This flooring can be specified for both conventional and radiant-heated suspended subfloors.

This is Armstrong's Asphalt Tile

When clients' budgets are limited, Armstrong's Asphalt Tile is the ideal flooring choice. Low in first cost, it's a durable floor that's also economical to



maintain. Installed tile by tile, there's almost no limit to the variety of designs and color combinations that can be created.

Unharmed by alkaline moisture, Armstrong's Asphalt Tile can be used in basements or on concrete floor slabs in direct contact with the ground. It per-

forms satisfactorily over radiant-heated subfloors. Made in regular and greaseproof types and in two thicknesses—1/8'' and 3/16'', both types and gauges can be installed on wood or concrete floors.

For additional data on Armstrong's Resilient Floors-Linoleum, Asphalt Tile, Arlon Tile, Linotile®, Rubber Tile, and Cork Tile - consult Sweet's Architectural File, Section Number 13e, Catalog Number 2. For samples and specifications, as well as help in solving unusual flooring problems, write to any Armstrong District Office or directly to the Armstrong Cork Company, Floor Division, 2603 State St., Lancaster, Pennsylvania.



ANOTHER BUILDING OF PROMINENCE SLOAN EQUIPPED

Caribe Hilton.

NE OF THE FINEST HOTELS EVER CONCEIVED

its Royal Quiet-Flush Valves were selected for this fine hotel.

which extends into the luxurious lobby. Every guest room is "the best one," individualized in decor and furnishings. Each has its own air conditioning, and a private balcony affording a magnificent view of the unbelievably blue sea. Throughout, from the garden floor to the sun roofs, perfection

was the goal. Thus SLOAN is justifiably proud that

having fifty rooms or more.

in two out of three of the nation's hotels

Significantly, Sloan Flush Valves are in service

TORO, FERRER & TORREGROSA, San Juan Architects

WARNER-LEEDS, New York Archilectural and Decorating Consultants GEORGE A. FULLER CO., San Juan

General and Plumbing Contractors

SAN MIGUEL & CIA., San Juan Plumbing Wholesalers

more SLOAN HUSh VALVES

are sold than all other makes combined

SLOAN VALVE COMPANY . CHICAGO . ILLINOIS

REVIEWS



Typical Hilberseimer city (above) is set in a segment to avoid smoke carried by prevailing winds.

Chicago and then served in Boston is a question that cannot be answered as long as all the steers Boston needs could be raised near Boston. The centralization of food manufacturing industries, entailing enormous costs for transportation and organization, is too wasteful long to continue in a developed community."

Text as well as charts in the New Regional Pattern show how this scheme can be adapted



How to achieve the privacy of partitioned offices without loss of appearance or the brightness derived from borrowed light.

THE SOLUTION:

Mississippi Glass Company's STRUCTURAL CORRU-GATED GLASS (Maximum sheet size, 50 inches x 144 inches)

RESULT:

Modern design combined with luxurious simplicity. A friendly atmosphere for visitors and employees alike . . . privacy with-out that "closed-in" feeling. Truly, a shining example of the prominent place which glass has attained in modern office interiors.

This is just one of many cases solved by STRUCTURAL CORRUGATED GLASS. Write for catalog, "Structural Corrugated and Structuralite Glass by Mississippi." Contains suggested applications, photographs and installation data.

Structural Corrugated Glass and its companion product, Structuralite, are just two of over 30 outstanding patterns by Mississippi with varying degrees of obscurity and surface finishes to meet every industrial, commercial and residential requirement.

For further data, see Sweets' File or contact your nearby distributor of quality glass. Samples gladly furnished on request.

ORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

ass company SAINT LOUIS 7, MO. NEW YORK . CHICAGO . FULLERTON, CAL.

to a variety of sites and needs. Although the author does not come to grips with the inevitable problem of how to break the costly web of present city systems, his book presents a broad and needed look at the course that future planning should take-and the constructive part it can play in solving economic and social problems. Moreover, Ludwig Hilberseimer faces up to one aspect of the planning problem which is very often avoided-the extent to which true progress must depend on personal and public responsibility far beyond the everyday brand of "enlightened selfinterest." He says: "The future seems often to be wholly dependent on technical and economic solutions. But the problems we must solve are basically ethical. The interdependence of the individual and society is based not solely on technical and economic considerations, important as they are, but on a moral and ethical concept."

He gives a challenging reply to those who waive aside all proposals as unrealistic and Utopian. "It is rather unrealistic and Utopian to presume," he remarks, "that evils continue without consequences."-S.K.

A PATTERN FOR HOSPITAL CARE- Final Report of the New York State Hospital Study. By Ell Ginzberg. Columbia University Press, Morningside Heights, New York, N. Y. 368 pp. 6 x 9. \$4.50.

"How about our hospitals?" was one of the more important questions that forced itself on New York State officials after the war. In spite of the fact that in 1948 the state could boast 543 hospitals in its territory, not counting 14 Federal ones, and that in that year alone it spent \$392 million on hospital care (16.5 per cent of the nation's total) its service was still criticized as inadequate. What were the reasons? Were more hospitals needed, or were present facilities mismanaged? If more hospitals were necessary, what types should get preference? What size should new hospitals be? Where should they be located?

To find the answers to these questions an investigating Commission was set up-a coalition of state officials and experts impartially chosen by Columbia University. All state hospitals-municipal, voluntary and private as well as those directly under state supervision -were included in its survey. For the sake of comparison, consultations were made with key hospitals all over the country. This tightly packed volume is the result of a year's research by the group-the Joint Hospital Survey and Planning Commission. Their findings have certainly far more than state wide interest. A Pattern for Hospital Care is a close tracing (Continued on page 176)


solve *quality* problems...







(Left) Interior and exterior views of Truscon Series 138 Double-Hung Steel Windows in North Street School, Hagerstown, Maryland. A. J. Klinkhart, Architect. N. S. Early & Son, General Contractor. Top photo shows window with sill ventilator. Bottom photo also shows Truscon Donovan Steel Windows used in school gymnasium.

Truscon Series 138 Double-Hung Steel Windows in Park Lake Apartments, Hempstead, Long Island, New York. Samuel Paul Associates, Jamaica, New York, Architects, Sol G. Atlas, Great Neck, New York, Contractor.



Details of the complete line of Truscon Steel Windows, Residential Interior and Industrial Doors are shown in Sweet's Catalog for 1950.

with economy prices

The Truscon Series 138 Double-Hung Window has a high-style appearance with a commonsense price. It is so smart, so sensible, so dollar-saving that in standard designs it may be used with a generous hand in any size or type of residential structure. The sill-vent design is particularly adaptable for use in schools. Sash members are of welded tubular construction. Long, quiet, trouble-free action assured by motor-type spring balances with tapes of Republic Enduro Stainless Steel. Complete factory weatherstripping in stainless steel. Modular standards. Wide range of types and sizes offers unusual design opportunity.

Free illustrated literature on request.





AMERICAN-Standard

ce Heating and Plu

YOUR TOWN, U.S.A. Phone OOD nbing Co.

HOOD

70

3

2

PR

70

ROBIN

RO

JOHN



Shades of Robin Hood!

RO

TLE

OA

us.

AL

0

Z

D

4

123

I

D

ECHLES

HE

N N "

Z

0

œ

4

\$

Ω

N A I

GOODM

m

0

0

0

N

02

u T

S

WILL

7

£

Z

-

8

0

x

SCAR

ening to Sherwood Forest

N this Sherwood Forest, a residential subdivision of Memphis, Tennessee, there's a buzz of activity these days. ere, smart, modern homes—some still in the process of onstruction—line the streets which bear the names of such gendary characters as Robin Hood, Friar Tuck and Little ohn. But these quaint street names are about the only conection with the Sherwood Forest of old . . . for this new sidential district is as modern as tomorrow. All houses ave central heating. And, naturally, they are equipped with e latest features and conveniences . . . including both merican-Standard Heating Equipment and Plumbing Fixres.

The idea for the development of Sherwood Forest was conived by builder Herbert W. Morton. The subdivision conins 568 lots, laid out on contours to preserve as much as possible of the hardwood forest. The cheerful, distinctive puses were built to market for a maximum price of \$12,000. In 1946 and 1947, 156 houses were built in Sherwood prest. These were single family units of brick veneer or frame construction and were sold for prices ranging from \$10,000.00 to \$12,000.00. During 1948 Mr. Morton built and sold 40 additional units in this same price range. In 1949, 156 houses were erected on some of the remaining lots and sold for prices ranging from \$6,500.00 to \$10,000.00.

As Mr. Morton says, American-Standard Heating Equipment and Plumbing Fixtures were an important factor in creating the enthusiastic demand for the Sherwood Forest homes.

The outstanding quality of American-Standard products, backed by strong, consistent advertising, has created a public acceptance throughout the country. You will create satisfied customers when you install American-Standard products in the structures *you* build or remodel. Whatever the type or the size of the project, you will find just the heating equipment and plumbing fixtures you need in the complete American-Standard line. Ask your Heating and Plumbing Contractor for details. **American Radiator & Standard Sanitary Corporation**, P. O. Box 1226, Pittsburgh 30, Pennsylvania.



AMERICAN-STANDARD · AMERICAN BLOWER · CHURCH SEATS · DETROIT LUBRICATOR · KEWANEE BOILERS · ROSS HEATER · TONAWANDA IRON

First in heating ... first in plumbing

Decorate with VARLAR Stainproof Wall Covering ... and you can <u>"redecorate"</u> with soap and water year in and year out! CRAYON MERCUROCHROME HOT GREASE

SHOE POLISH

NOW, at last, a wall covering as beau-tiful as the most beautiful wallprver-yet washes like tile! It's amazing new Varlar Stainproof Wall Covering! Even hot grease won't stain it! N steam, water, hair oil or mercuro mar its lasting beauty. Even li crayons, India ink, salad oil an polish wash right off-with plai and water! Resists fire, bacter vermin too!

Over 100 Beautiful Style Yes, Varlar is a remarkable sc

vering!	choice of over 100 decorator-approved
for will	styles-in smart, colorful florals, plaids,
chrome	geometrics, pictorials, stripes, tiles, two-
pstick,	tone tints and solid pastels.
d shoe	Truly, Varlar is amazing! Send for
n soap	your free sample today, and see how
ia and	lovely, how stainproof, how washable it is!
\$	*Rigid laboratory tests show that Varlar STILL looks "brand new" after 25,000 washings!
ientific	
st fea-	EDE

INDIA INK

Washes Like Tile ...

Cuts Decorating Costs!

orate" any time you want-with ordi-

nary soap and water-without any ex-

pense, any muss, any loss of time! Your

discovery combining all of the be tures of all previous wall coverings. It MPLE hangs as easily as wallpaper and stays new looking for years*! You can "redec-Varlar, Inc., Dept. AF-3 Merchandise Mart, Chicago 54 Send me my free sample of Varlar. Bet I can stain it! Name Address. City. Zone. State

REVIEWS

of the demands made by today's physical ill

The greatest need in our present hospit pattern is for adequate mental and tubercula care. State facilities for the 80,000 mental ill patients are already overtaxed by 20 p cent. Of the 80,000 existing beds, 12,000 hav been condemned as obsolete (mostly nonfir resistive). Moreover, at least 11,000 more p tients must be expected to swell the population of these institutions in the next five years. Y present plans show no hope of relief. On the contrary, only 5,000 new beds have bee scheduled; only 1,000 obsolete ones replace

The state of tubercular care, mostly und municipal authority, is just as inadequate. A though a survey in 1945 showed that 57,00 new beds were needed and that 12,700 of the existing ones were obsolete, only 4,000 ne beds have been added and only 600 obsole beds have been replaced. Of all cities, Ne York makes the worst showing in tubercul care: with 3,000 beds available, 2,700 a obsolete. A sizable step towards correction already underway there. Forty million do lars worth of construction is going up, and bill asking for the allotment of \$150 millio more is now before the city council.

Such action, however, is rather a catching up on past lapses than a forward step in th future. The survey corroborates the feelingmore and more recognized in medical circlesthat a fundamental shift of emphasis is ne cessary. Everything points to the fact th medicine must be preventive rather than rem dial. Disease must be stopped before or soon as it starts. This complete change medicine cannot help but make itself felt every aspect of hospital design, management and finance.

To begin with finance, which underpins th other factors: If hospitals are to function properly, the large proportion of the people wh can afford to pay for medical care (85 pe cent) must be induced to do so. Only 57 pe cent of the people are now enrolled in volu tary forms of health insurance (Blue Cros and Blue Shield are the best known)-no nearly enough to provide a secure basis. More over, present systems of insurance rarely cove diagnosis or clinical treatment, and thus ac ually encourage people to let treatment waita procedure bad not only for the patient bu ultimately for the hospital system. The report points out-"It is always less expensiv to care for a patient while he is ambulator than to treat the same patient in a hospital bed . . . Expansion of services to ambulator patients will promote the treatment of patient at an earlier stage of their illness, which wi

(Continued on page 182)



How an office was designed, decorated and lighted to achieve reflectances, brightnesses and brightness ratios meeting or bettering (except in one instance: the reflectance of the floor covering is too low) all requirements of I.E.S. Recommended Practice of Office Lighting is told in detail in this 8 Page Engineering Survey by an independent consulting illuminating engineer. Write for your copy to THE F. W. WAKEFIELD BRASS COMPANY, VERMILION, OHIO.





STAR INSTALLATION The office described in the Engineering Survey is lighted by 4 continuous rows of Wakefield STARS, each

luminaire containing four 4500° white slimline fluorescent lamps 72 inches long. Taken from the Survey is this view looking vertically upward from underneath a luminaire. The Survey says: "This is the brightness pattern that would be reflected by a glossy desk top located under the luminaire. The low brightnesses and brightness ratios found here prove that reflected glare is not a problem in this office." The STAR has a luminous, indirect plastic reflector which slides in and out like a drawer.



Let General Electric help

WHY NOT CAPITALIZE ON SUCCESSES SUCH AS THESE?

A builder in Massachusetts reports: "Sold 125 G-E equipped houses in 10 days!"

From Maryland: "Sold 44 G-E equipped homes from 1 sample in 1 day!"

From Colorado: "Sold 54 G-E equipped homes the first week end!"

Why not follow the success pattern of these builders?

When you equip your houses with the General Electric Kitchen-Laundry you *pre-sell* your houses.

You give customers what they want-homes designed for better living . . . scientifically designed kitchens that take much of the drudgery out of housework.

And, you know General Electric's reputation for *fine* products. General Electric appliances are the *preferred* brand of so many, many people.

As little as \$4.80 extra

You can include General Electric living in your houses for as little as \$4.80 a month extra when the G-E "Kitchen Package" is included in the long-term realty mortgage!

Furthermore, the economical operation, low maintenance and long life of General Electric appliances may offset the slight increase in monthly payments.



ONLY \$9990! "A low-cost luxury home with fully equipped General Electric Kitchen worthy of a \$30,000 home!" That's how Messrs. Brisker and Campitelli described their Kensington Estates houses. Included in the kitchen is a G-E family-size refrigerator . . . G-E electric range for automatic cooking . . . G-E sink and electric dishwasher . . . and G-E Disposall® food-waste Unit and storage cabinets. No wonder 250 of these General Electric equipped houses were sold in just 10 days!

sell your houses faster!

From all over the country come enthusiastic builder success stories such as this one ...

"SOLD 250 G-E **EQUIPPED HOUSES IN 10 DAYS!"**

Here's what Mr. NATHAN BRISKER, President, and A. CAMPITELLI, Secretary of Kensington Estates, Inc., Brentwood, Md., say:

"We consider our 'Kensington Estates' housing project a huge success. The sale of approximately two hundred and fifty houses in ten days was an attainment far beyond our fondest hopes.

"It is our opinion that the phenomenal success of this project was due to a soundly built house well planned, good financing and the better living built into the homes in the form of the complete General Electric Kitchen.

"We think the public deserves better living in the lower price home as much or probably more than in the more expensive home.

"We want to extend our appreciation to you and the men from the Potomac Electric Power Company for your help and co-operation in manning the houses and demonstrating the G-E Kitchen to the thousands of people who visited these homes."

A COMPLETE MERCHANDISING PROGRAM FOR YOU!

General Electric-the world's largest electrical manufacturer -offers you all these advantages:

• Tested merchandising programs that have helped so many other builders enjoy phenomenal sales results.

• General Electric is the brand of electrical appliances that people prefer to all others.

• Assistance in designing and improving kitchens and layouts for your houses.

· One source of supply for matched equipment-everything but the linoleum and paint.

• Fewer headaches. G-E equipment is world-famous for its dependability.

GET COMPLETE FACTS about the General Electric "Kitchen Package" through your local General Electric distributor, or write to the Home Bureau, General Electric Company, Bridgeport 2, Connecticut.

You can put your confidence in-



179





ANDERSEN

HARMONY IN WOOD: Beautiful wood windows blend with wood paneling in this Wisconsin home. And wood gives a hidden beauty to these Andersen Casement Window Units—insulating qualities which no one appreciates more than architects and builders.

The low thermal conductivity of wood combats the vexing problem of condensation in a climate that often hits 10 below zero, and helps these Andersen windows to function simultaneously as windows and as a wall. They are truly a WINDOWALL that opens a view and admits light and air, yet all the while acts as a weathertight wall that shuts out cold, dust and moisture.

Specification data on ANDERSEN WINDOWALLS is in Sweet's Architectural and Builders' Catalogs, or will be sent by us upon request. See your local lumber or millwork dealer for further information.

The new Andersen WINDOWALL Tracing Detail File will be sent at no charge to architects and designers making request for it. *TRADEMARK OF ANDERSEN CORPORATION

Andersen Corporation

Bramble Exchange, Cincinnati Suburban Telephone Company, Cincinnati, Ohio. The interesting mortar-joint pattern is effected by the use of two sizes of Insulux Glass Block, Pattern Nos. 216 and 416. Insulux is made in a variety of designs, in three sizes.

RCHITECTS: HARRY HAKE AND HARRY HAKE, JR., CINCINNATI, OHIO

Functional daylighting ... and design:

Imaginative use of Insulux Glass Block combines functional daylighting with attractive appearance. In this building, Insulux provides ample daylight and helps protect delicate telephone circuits from the ravages of dust, dirt and moisture.

Insulux Glass Block is a versatile building material. It transmits light, insulates, and reduces transmission of noise. Unusually easy to maintain, it never requires paint and is free from rot, rust and corrosion.

For technical data and installation details, consult GLASS section of Sweet's Architectural Catalog, or write Dept. G-102, American Structural Products Company, P.O. Box 1035, Toledo 1, Ohio.





Specify a TEMCO Gas Floor Furnace!

In addition to the obvious cost reducing advantages of floor furnace heat, consider these TEM CO features before you specify a heating system.

- TEMCO has Rust Proof Burner Ports
- TEMCO has Porcelain Heat Chamber
- TEMCO has Shallow Construction (251/2" overall)
- TEMCO has Triple Coated Outer Jacket
- TEMCO offers Completely Automatic Heat

Your clients know the TEMCO reputation - know a TEMCO costs less to buy . . . less to install . . . less to operate.



help raise the level of medical care as well as to lower its costs." The alternative to voluntary increase of payment is quietly but deliberately faced: "If at the end of several years the target figure of 85 per cent has not been approximated, or the major improvements in the coverage of the insurance have not been accomplished, the public must consider the advantages of adopting a compulsory hospital insurance which can be integrated with the existing patterns of workmen's compensation and cash sickness insurance."

Future trends in hospital design and management are closely bound together. Small hospitals, it is conceded, are out. They cannot afford to provide adequate equipment; they cannot make adequate use of (or adequate recompense for) a skilled administrative staff. This change will mean a departure from the present set-up where 55 per cent of hospitals care for only 17 per cent of patients—providing less than the suggested hospital minimum of 100 beds apiece. Small hospitals have proved not only more expensive individually, but they endanger the precarious economy of the whole system.

Clinics for diagnosis and treatment (not free but at least partially covered by prepaid insurance) should be attached to every hospital. One such institution has been successfully operated for some years through staff doctors at Mt. Sinai hospital. Such clinics will be of especial help in the care of mental diseases. For this reason the commission recommends a surprising change in the siting of mental hospitals. It suggests that they should be placed either in or near cities where the attached clinic can serve not only for diagnosis but for the far-too-neglected field of rehabilitation. This location would also relieve the crucial problem of getting sufficient and welltrained personnel. Such personnel has been understandably reluctant to accept posts in out-of-the-way hospitals which cut them off from all social and professional interests.

A Pattern for Hospital Care is a clear and careful report supplying valuable data on the varied administrative demands of the hospital world.—S.K.

KITCHEN PLANNING FOR QUANTITY FOOD SERVICE. By Arthur W. Dana. Harper & Brothers, Publishers, 49 E. 33rd St., New York, N. Y. 299 pp. Illus. 6 x 101/2. \$5.

Few kitchen designers or restaurant men produce really workable plans, says Arthur Dana—who has had wide experience in both fields. Designers usually fail through lack of

(Continued on page 188)



Where space limitations or service needs require an electric dumb waiter installed under a counter . . . in a back bar . . . or in a cabinet — in drug stores, groceries, markets, restaurants, cafeterias, soda fountains -the Sedgwick Under-Counter Roto-Waiter provides the ideal solution. The unique rotodrive principle eliminates the possibility of overtravel and allows every inch of available height to be used safely. The outfit is self-contained, requiring fastening-but no support at the upper floor level. Its compact machine, occupying but a minimum of space in the basement, is placed at the side of the equipment, where it is easily accessable for inspection and lubrication and where it will not be subject to the service disorders so often caused by accumulated dirt, spillage or drainage.





Car Travels to One Inch Beneath Underside of Counter...Safely Plan, shown above, shows stand ard Under-Counter Roto-Waite with car 24" x 24", 150 lbs capacity. Also built specially in greater capacities with cars up to 36" x 36". The height of the car is, of course, dependent on the clear height available under the courter.

COMPLETE SEDGWICK LINE MEETS EVERY REQUIREMENT

In addition to the Sedgwick Under-Counter, and regular two-stop Roto-Waiters, Sedgwick also builds Multi-Stop Electric Traction Dumb Waiters for three or more landings — with a wide selection of specially engineered control equipment and signal systems to suit individual needs. Other Sedgwick Dumb Waiters — including both electrically and manually operated types — are likewise available in a wide range of sizes and capacities. Steel towers and enclosures can be supplied where desirable. Specify, too, Sedgwick Steel Dumb Waiter Doors for complete satisfaction.



How You Can Save Time on Air Conditioning Jobs!

It takes no more than a telephone call to your nearest York District office to bring a York-trained air conditioning and refrigeration engineer to your deskside. He's an experienced engineer, fully qualified to help slash hours of drudgery from your preliminary planning, cost and analysis work, and installation chores. His technical assistance is "guaranteed" by data files covering thousands of successful York-equipped installations in every type of business and industry. He can tell you, too, about York's Certified Maintenance Plan ... a unique service that assures continuous efficiency, relieves you of time-consuming post-installation responsibility.

"See Your Architect, Engineer, Contractor, First"

York believes in channeling contract work through you ... and York gives you unequaled support in providing the finest central station systems possible . . .

- a complete line of equipment
- competitive prices
- accurate, dependable product ratings
- technical assistance based on "case histories"
- cooperation with architects, engineers, and contractors
- practical help from York-trained engineers
- a national organization
- continuous product research and
- development certified maintenance

York offers a complete line of air conditioning and refrigeration products backed by seventy-five years of fruitful research and acknowledged public acceptance. Each York product is designed to be-and has proved to be-a cost-cutter and service-improver wherever installed. A promise from the past, for the present and future, of better, more efficient service for your clients. If you have any air conditioning or refrigeration work on the board, call your nearest York District Office. See how the York-trained engineer can help fractionalize detail work. See how profitably his wide-range technical experience dovetails with your requirements for any type of installation. No obligation, of course. York Corporation, York, Penn.



PIONEERS IN INVENTION AND DEVELOPMENT SINCE 1874

kigeration and Air Conditioning

BUSINESS IS IMPROVING YOUR BUSINESS



CRAANE

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

MORRISON Opens the Door to OVERHEAD DOOR Satisfaction !



The Semsational New

The Four-Sectional, All-Steel, Overhead Residential Garage

it costs less to buy! it costs less to ship and store! it costs less to install! and it's Four-Sectional!

BUILDERS!

The MORRISON Roly-Door needs Minimum Field Assembly!

Everything that can be predetermined is fixed to the door at the factory! All brackets and hinging are permanently welded or riveted! Easier to install—in less time!

ARCHITECTS!

The MORRISON Roly-Door conforms to all building code specifications . . . Because it operates completely within garage, it does not operate through the jambs. Installation is self-contained; settling, shifting, sagging, or out-of-square building conditions cannot interfere with its "TOUCH 'N' GO" operation. It requires no air rights (it can be installed on lot line openings), and it conforms to nationwide building code specifications.

DISTRIBUTORS!

Franchises for a few choice territories are still available. Write in detail!

... the New MORRISON Roly-Door Four-Sectional All-Steel Overhead Residential Garage Door is the first and the only Residential OVER-HEAD DOOR in the world with *every* wanted feature! It has everything — and it's the only overhead residential garage door that has everything!

Door"

* Patent Pending

A New Low Price for a Quality Door!

(Please Read this Twice — it's the most sensational price news in the home-building industry in years!)

Because of its exclusive method of manufacture, the MORRISON Four-Sectional, All-Steel Residential Garage DOOR can be <u>sold and in-</u> <u>stalled for as low as \$60, depending on geographical location and</u> installation conditions!



TO BE TRULY MODERN A BUILDING MUST BE AIR CONDITIONED

Chrysler Airtemp MAGIC CHEF'S NEW HOME

Architect: Harris Armstrong —Builder: Gamble Construction Co.—Air Conditioning Design: Ferris & Hamig—Installing Contractor: Sodemann Heat & Power Co.



A typical Chrysler Airtemp water cooling unit ... Automatic capacity control ... compact ... vibrationless ... direct connected ... no foundations required ... dynamically balanced ... can be shipped completely assembled.

AIRTEMP DIVISION OF CHRYSLER CORPORATION, Dayton 1, Ohio We would like the complete story of Chrysler Airtemp service and products.

THREE 50-TON CHRYSLER AIRTEMP RADIAL COMPRESSORS CONDITION THE AIR IN THIS FUNCTIONAL OFFICE BUILDING

Iluqia Chaf

Modern architecture—with its keynote of sleek beauty combined with efficiency and personal comfort—demands a specialized approach to construction problems. That's why so many architects and builders rely on Chrysler Airtemp equipment and services when planning heating and cooling installations.

Since Chrysler Airtemp builds *three* basic air conditioning systems, we can provide the *best* type to fit each job . . . And, through regional offices, contractors and dealers, Chrysler Airtemp offers the counsel of highly trained engineers. These air conditioning specialists can guide you in selecting the most efficient system for your requirements.

When desired, Airtemp Construction Corporation—wholly owned subsidiary of Chrysler Corporation—will assume entire responsibility and follow your project through from specification to completed installation. Mail coupon today for further information.

AIR CONDITIONING . HEATING . COMMERCIAL REFRIGERATION

BASIC SYSTEMS TO MEET EVERY
 AIR CONDITIONING NEED –

Matt Address



Ocker Hill Power Station

THE HOPE'S LOK'D BAR FACTORY SASH recently installed in this Power Station building are made to special size and layout. Their height, 63', 0", is indicated by the size of the figure in the lower right foreground. The mullions are 10 gauge pressed steel reinforced by structural members. Hope's LOK'D BAR Catalog describes, with full-scale drawings, the exclusive principle of their design, and Hope's Engineering Department will be glad to submit details for similar installations on request.

HOPE'S WINDOWS, INC., Jamestown, N.Y.

THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE'S WINDOWS



• For up-to-the-minute heating in stores, offices and factories get the New Reznor 1950 heater . . . now coming off the production lines. Automatic, gas-fired and clean, they also give low-cost heat for large and small areas. Reznors are the world's biggest selling gas unit heaters. Refer to your phone book or write.

Gas Unit Heaters Since 1888

REZNOR MANUFACTURING COMPANY 20 Union St. - Mercer, Penna.

REVIEWS

how much layout and space affect their basic aims—satisfactory working conditions, efficient production, quick service. His discussion considers the needs of formal and specialized restaurants, cafeterias, snack bars and serving counters, as well as dining rooms for industrial institutions. He also gives a valuable chapter on hospital kitchens.

Designing a financially successful restaurant is far more than a matter of decoration. Key to achievement in the field is a true balance between kitchen and seating areas. "Better to have the customers wait outside than inside" was the watchword of E. M. Statler in determining the number of seats accommodated by his restaurants. Although 60 per cent of seating area to 40 per cent kitchen space is a good rough proportion, is is really only a starting point. Factors just as influential in determining relative size of the areas are: the proposed menu, the type of service and the rate of turnover.

Kitchen area must be planned with even more precision than seating space. This is, as James Warren of *Hotel Management* points out in the Introduction, "the most complicated of all institutional departments—and the most costly." It should be planned from the portion size up. The serving of a 4 oz. portion of meat, for instance, requires 33 per cent more storage space than does a 3 oz. portion.

Inadequate space allowance for weighing and checking incoming supplies can mean surprising loss. Not only to prevent waste but to ensure a reputation for good food, this elementary procedure must be generously provided for. Good kitchen lighting not only saves eyesight and strain, it cuts down on bills for broken crockery and makes for cleaner dishwashing. Good acoustics not only create a better atmosphere, they prevent misunderstood orders. Since hot flavorful food is the allimportant end product, counters for supplying such dishes should be placed nearest the dining room—nothing must slow their route to the table.

The supplement with a model floor plan for a hotel dining room as well as one for a complicated roadside restaurant (with dining room, barbecue pit and quick lunch counter) illustrates the book's principles in action. One disillusioning point: although Dana has earlier shown the logic of setting up service counters in multiples of 8-10 units (the maximum number that one attendant can serve) his own model counter has 21 seats—design mystery of the month!—S.K. POrex slabs are used for floors, roofs and acoustical purposes. They are especially recommended for furring and insulating walls. They save so much fuel that the reduced heating plant cost will practically pay for their installation. After this the fuel bill is reduced by one third or more.

REX

POrex has the following distinguishing features:

- Lightweight 28 lbs. per cu. ft.
- Practically Incombustible
- Moisture Proof
- Frost Proof
- Good Heat Insulation

POrex slabs are made in sizes 24" wide x 96" long x 1", 134", 3" and 4".





GET STARTED WITH Stainless IN '50



include Snaptite Eaves Trough; "K" Gutter; Plain Round, Corrugated Round and Corrugated Square Conductor Pipe; Ridge Roll; Flashing; Roll Valley; plus a complete line of all necessary fittings. All are made of 28-gauge Republic ENDURO Stainless Steel, type 301, No. 2 Satin finish.





Residences and commercial buildings protected by Berger Roof Drainage Products of ENDURO Stainless Steel are ready for a lifetime of weather.

Berger ENDURO Drainage Systems are stronger and more attractive than ordinary systems. They will not rust or tarnish, and are unaffected by corrosive industrial atmospheres. They stand up under heavy loads of ice and snow. Severe temperature changes won't crack or buckle them. They resist abrasion and denting, do not bleed or discolor paint, require no maintenance and save your clients' money.

Jobbers can supply Berger Roof Drainage Products made of Republic ENDURO Stainless Steel-and competent roofing contractors are familiar with working them. Both will help you get started with stainless in '50.

Rit.

Like more information for your files? Just write:



- WIREWAY COVER Easily installed or removed. Snops on and off of chassis.
- CHASSIS—Heavy gauge steel, die-formed and press-welded. Finished in tough HOT-BONDED SUPER WHITE enamel. 22 knockouts; slots and holes for quick, lawest-cost installation.
- 3. ENCLOSURE Frame and decarative end plates of steel, die-formed and welded. "V-shaped" center louver of Alzak aluminum for greater efficiency. Lateral louvers interlocked to frame for exfreme rigiditys Ribbed diffuse glass side panels.
- BALLAST E. T. L. Certified HPF ballast o finest-quality component part that gives you tanger tamp life and economical performance.
- 5. SOCKETS Sturdy, resilient sackets seat lamp pins firmly. Makes changing lamps quicker and easier.
- 5. STARTERS —E. T. L. opproved, NO-BLINK type starters protect the ballast, insure quick lamp starting.

THE DAY-BRITE "VIZ-AID" PUTS ITS PARTS ON THE TABLE

Judge a book by its cover? Judge a lighting fixture by its appearance alone? No! Not if you want to be sure — *dead sure* — that the fixture you select will give you years of trouble-free, economical performance.

It's insides—*quality insides*—plus expert engineering, sturdy construction, durable finish and low-cost maintenance features that make the "Viz-Aid" such an outstanding value. Compare



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 Day-Brite "VIZ-AID"—available for two 40-watt lamps, two 85-watt lamps and four 40-watt lamps.



MUCH lower upkeep cost!*

Sound So

A

Servel's record for rock-bottom maintenance costs figured strongly in the choice of 289 Gas Refrigerators for the Gardencrest Apartments, Waltham, Mass.

Maintenance costs on Servel Gas Refrigerators are lower than they are on motor-driven types—and what's more, they *stay* low year in, year out. That's the experience of managers of apartments and housing projects from coast to coast.

It's because Servel's *exclusive* freezing system operates without a single moving part. There are no pistons, no valves, no pumps. No motor to wear. No machinery to break down. Instead, a tiny gas flame does all the work.

As a result, owners enjoy a minimum of trouble and expense. Writes one apartment operator"Since installing Servels, I've just about forgotten that I even have refrigerators in the building."

Twenty years ahead of its time, Servel's different principle of refrigeration accounts also for its other big advantages—*permanent silence* and *longer-lasting dependability*. And today, the new 1950 Servel—brilliantly styled by the well-knownWalterDorwinTeague —brings tenants and owners the last word in modern refrigerator design, inside and out. For details on the latest models, consult Sweet's or write to Servel, Inc., Evansville 20, Ind.

*For example-

MOBILE, ALA. "After nine years, our 398 Servels cost only 1¢ a month per unit for upkeep." PHILADELPHIA, PA. "Exceptionally low maintenance cost over a period of nineteen years."

Generican Kitchens Put A Valuable "Seal of Approval" on Your Homes!



50

[a]

Flexible American Kitchens Units Save You Both Time and Work...And Often Cost Less Than Wood Cabinets!

You save work—and your clients save money—when you specify styled-in-steel American Kitchens!

You can save hours of tedious planning, because the wide range of sizes of American Kitchens sinks and cabinets, plus big selection of accessories, makes it possible for you to plan a "custom" kitchen—complete with colored counters—in a minimum of time.

And you can give clients the added beauty and convenience of a famous American Kitchen at actually *less* cost per running foot than comparable quality *wood* cabinets! In fact, American Kitchens are priced to fit the budgets for even your low-cost homes! Sink fronts, flat rim sinks, continuous tops are available!



Send for our new 1950 Architects File and see for yourself all of American Kitchens many exclusive advantages! Just mail coupon below.

SPECIAL ECONOMY SINKS

The country's lowest price for this high quality. 4 models—42", 48", 54", 66" (twin bowl). Same quality as deluxe styles, but without accessories.



FREE-NEW 1950 ARCHITECTS FILE

American Central Division, Dept. AF-3 AVCO Manufacturing Corp., Connersville, Indiana

Please have my nearest American Kitchens supplier furnish me—without charge or obligation—your new Architects File, complete with specifications and roughing-in diagrams.

County___

Name ______ Address

City____

_____State_



For Sparkling Cleanliness ... and Low Upkeep Specify VITROLITE Walls

You solve major problems in maintenance when you specify walls of *Vitrolite**. *Vitrolite* is glass paneling. It's ideal for washroom walls, stiles and partitions

... for lobbies, corridors, kitchens. Its mirror-smooth surface cannot absorb germs and moisture. Quick cleaning with water or window cleaner keeps it sparkling. Even pen, pencil and crayon marks whisk right off.

Another big economy for your clients . . . *Vitrolite* walls never need painting or refinishing. *Vitrolite* will not craze, warp, swell or fade. It sparkles like new for life. And its twelve correlated colors permit distinctive decorative effects.

In planning office, industrial or public buildings, you can count on *Vitrolite* to meet modern demands for maintenance economy, cleanliness, beauty. Your L·O·F Glass Distributor can supply more data. Or write for our architects' book on *Vitrolite*.



VITROLITE

Ease of maintenance is of prime importance in a building as large as the new home of the John Hancock Mutual Life Insurance Co., Boston, Mass. To keep washrooms sanitary at minimum expense, Vitrolite was installed in all toilet, shower and dressing rooms. Architects: Cram & Ferguson, Boston.

Choose from these Correlated Colors

- Cadet Blue Peach
- Sky Blue
 Alamo Tan
- Dark Gray
 Mahogany
- Light Gray Red
- Cactus Green
 Black
- Jade
 White

MADE BY LIBBEY-OWENS-FORD GLASS COMPANY 5235 Nicholas Building, Toledo 3, Ohio



ance; there is no involved repair operation in his kitchen. **OYOU CAN'T DO BETTER THAN TO SPECIFY** NATIONAL DISPOSERS - Nationals meet

every requirement from the first planning stage on ... every requirement of the architect, contractor, apartment and home owner.

It will pay you to get complete details now . . write for "Architect's File" including National Disposer specification sheets and installation data. Address: Dept.-2, Plumbing Equipment Div., The National Rubber Machinery Co., Akron 8, Ohio. Made by National Rubber Machinery Company for over 40 years designers and builders of precision processing machinery.



HOLLOW CLAY TILE FLOOR doubles as maintenance-free duct work for heating system.

Warm air circulating through RadianTile transforms the attractive finished flooring into an efficient radiant panel. First used by Architect George Keck, this ingeniously simple floorradiator is now commercially available from several member manufacturers of the Clay Products Association. Its installed price in the Midwest (with local labor) is about \$1.55 per sq. ft.

In the RadianTile heating method, four forms of hollow tile are utilized: both closed and perforated supply/return ducts; and tri-channeled blocks (113% in. sq.) with closed and open bottoms. To prevent mortar from falling inside the blocks, special metal sleeves connect the channels. These components are arranged in proper sequence in a closed system to fit almost any floor plan of a one-story structure-simple or involved. Able to withstand crushing loads of 700 lbs. per sg. in., RadianTile may be laid as an unobstructed slab; and heavy partitions, fireplaces and grand piano placed on the finished floor.

Installation details are presented clearly by Clay Products Association in their booklet, RadianTile. In operation, the heating unit forces warm air into the closed supply ducts beneath the floor. At the location to be heated, the air travels up through perforated ducts into the open-bottomed blocks and flows through the floor via the continuous channels formed by the closed-bottom blocks laid end to end. It then enters the return ducts, is drawn again into the furnace to be reheated and recirculated in the cycle. No cold air leaks in and the only heat "lost" is that dissipated to the blocks for warming the building. Floor surface temperature need not exceed 90° F. and the system may be controlled thermostatically. The heat produced is the clean healthy uniform heat of the radiant type. Lag, a bugaboo in massive floor panels, is not so noticeable in RadianTile where the heaviest dimension is 3/4 in.

Besides serving as an ideal radiator, the hard moistureproof and verminproof surfaces work to-



gether with the air spaces as insulation from the ground, even when the heating system is not in use. The tiles are guaranteed against corrosion, rust and rot. About the only maintenance they require is an occasional waxing.

Licensing Agent: Clay Products Assn., 100 N. La Salle St., Chicago, Ill.

(Continued on page 200)

194 Architectural FORUM March 1950



ARCHITECTS ENGINEERS CONTRACTORS BUILDERS



2 THROUGH 7 1/2 TON UNITS



10 AND 15 TON

R50-1

EVAPORATIVE CONDENSING UNITS, COOL-ING TOWERS AND AIR HANDLING UNITS

- Because . . . Curtis equipment has an earned reputation for performance that is second to none in the industry
 - Curtis units are built by a company with over 96 Years of Successful Manufacturing Experience

AROUND

Se Sure

Decifications

hild Your

- Competitively priced, Curtis units operate economically are easily serviced
- Engineering help is provided (if needed) by Curtis Engineers
- New additions to the Curtis line provide the correct size and type for any installation,

assuring economy . . . and Your clients will be pleased with the quiet reliable performance of Curtis Equipment.

uptis

Guertia REFRIGERATING MACHINE DIVISION of Curtis Manufacturing Company 1914 Kienlen Ave. • St. Louis 20, Missouri 96 Years' of Successful Manufacturing See the Guntis Catalog in Sweet's 1950 Architectural File



2



• Home owners like the comfort and convenience of self-insulating windows. They enjoy freedom from bothering with storm sash spring and fall. *Thermopane** all through the house gives them what they want. It adds salability, creates long-lasting satisfaction with the home.

Fifteen companies now manufacture **aluminum** casement and double-hung windows to accomodate *Thermopane*. Ten manufacturers make casement and double-hung **steel** windows for *Thermopane*. Eight manufacturers have standard **wood** windows available in both double-hung and casement styles for *Thermopane*. Many local sash houses regularly fabricate to order double-hung and casement wood windows as well as framing for inexpensive window walls. Write for a list of *Thermopane* window manufacturers.

Thermopane is made in more than 80 standard sizes for all types of sash—wood and metal. Contact sash suppliers for information on types and sizes available. Write for a list of standard sizes of Thermopane units, or see your L·O·F Glass Distributor.

anes of Glass

et of Dry Ai

tic Seal

al-to-Glass)

Casement windows — Thermopane is a simple answer to the problem of insulating them. The entire sash is operated at will because *Thermopane* is glazed into it.

Double-hung windows — there are 28 standard-sized *Thermopane* units to fit the most commonly-used dimensions of this type of sash.

Window walls and picture windows—Thermopane units are available in sizes to fit standard wood, steel and aluminum picture windows.





hermopane

MADE ONLY BY LIBBEY · OWENS · FORD GLASS COMPANY 3735 Nicholas Building, Toledo 3, Ohio

FOR BETTER VISION SPECIFY THERMOPANE MADE WITH POLISHED PLATE GLASS

d --

Windsor Village is one of the nation's outstanding rental housing projects. To help produce more desirable homes at no increase in cost-homes that would more than meet today's exacting standards of living-the L & L Building Corporation equipped each of the 540 units with a Hotpoint Range and a Hotpoint Refrigerator.

Another Major Housing Project

Selects Hotpoint Appliances

Similar preference for Hotpoint products is being expressed in scores of communities and building projects throughout the country. Whether you are a large or small operator -whether you plan to build or remodelapartments or homes-the wide acceptance of the Hotpoint name—the exclusive features and proven quality of Hotpoint products will serve as a plus value from the viewpoint of either buyers or renters.

Moreover, Hotpoint is equipped to give you much helpful information in home appliance arrangement and economy. Write today for free-of-charge literature and full specifications on the entire Hotpoint line-every major unit for the complete electric kitchen and home laundry.

RANGES • REFRIGERATORS • DISHWASHERS • DISPOSALLS® WATER HEATERS . FOOD FREEZERS . AUTOMATIC WASHERS . CLOTHES DRYERS . ROTARY IRONERS . CABINETS

Windsor Village

Indianapolis, Ind.

"Prior to the construction of these projects we had used Hotpoint appliances in other projects and were well pleased with their performance. Our past experience together with the increased ease of renting our units to a public which has come to accept Hotpoint appliances as the highest standard of quality led us to use these appliances again in our rental housing projects."

Very truly yours, L AND L BUILDING CORPORATION

Ginger, Secretary

5600 West Taylor Street, Chicago 44, Illinois

(A General Electric Affiliate)

totpoint INC.



PC GLASS BLOCKS complement any architectural plan. Whether in a large structure, like this new generating station of the Potomac Electric Power Co., Alexandria, Va., or in a small home, PC Glass Blocks provide many decorative and utilitarian advantages. They admit plenty of daylight, yet shut out distracting views. They cut heating and air-conditioning costs, because of their superior insulating properties. They eliminate many maintenance problems, since they rarely need repairs or replacements. They lessen eye fatigue among workers. Engineers and Constructors: Stone & Webster Engineering Corp., Boston, Mass.



AT THE NEW PASTEURIZING and bottling plant of the Carnation Company, Houston, Texas, PC Glass Blocks exclude dust and dirt from the processing area. Panels of PC Glass Blocks appeal to your clients for many reasons. One is their ease of cleaning. The entire panel can be cleaned as a unit by wiping with a damp cloth, or by using a hose and longhandled brush. There's no expensive washing of small, individual panes. Architects: Finger and Rustay, Houston, Texas.



CONSTRUCTION

PC Glass Blocks are "The Mark of a Modern Building"



IN THIS DINING ROOM, PC Glass Blocks make family meals more delightful. The light is cheerful and softly diffused. And, being non-transparent, prying eyes can't see into the room. From the outside, glass blocks highlight the beauty of the home. At night, too, the light streaming through them from the inside, adds sparkle to the dwelling.

IT'S HOLLOW! All PC Glass Blocks are hollow. They are made of two pieces of formed glass, fused together, enclosing a partial vacuum. Thus, each block is an insulating unit. Various outer patterns and inner contours enable the single cavity blocks to admit plenty of daylight; to direct, divert or diffuse light to areas remote from openings. Double cavity blocks, in which a fibrous glass screen is inserted between the halves of the block, assure additional light diffusion and insulation. Because of their architectural adaptability . . . because they "make the most of daylight," PC Glass Blocks are specified by America's outstanding architects.

Pittsburgh Corning Corporation B-30, 307 Fourth Avenue Pittsburgh 22, Pa. Without obligation on my part, please send me your FREE booklets on the use of PC Glass Blocks for all kinds of construction. Nam The mark of a modern building

BY W. P. FULLER & CO. ON THE PACIFIC COAST, AND BY HOBBS GLASS LTD. IN CANADA

199





Jight, Bright Colors



Turn an Azrock or Azphlex tile over, and you'll find the same rich, clear colors on the bottom that there are on the top... because the topquality pigments in these fine asphalt tiles go all the way through. There is never any dimming or wearing away of colors in Azrock or Azphlex floors... years of steady pedestrian traffic can't mar them if they receive even elementary care. Their beauty is lifetime tough.

Standard Azrock and premium-quality Azphlex offer a wide range of colors, solid and marbelized — and Azphlex offers, in addition unparalleled resistance to greases... to indentation... to climatic heat and cold.

- Get the facts look at and test samples and you'll see why Azrock and Azphlex are tops when it comes to flooring!
- Contact your AZROCK-AZPHLEX dealer, or write direct to Dept. A for complete, illustrated information about these outstanding tiles.

WALDE ROCK ASPHALT CO. Makers of AZROCK and AZPHLEX Asphalt Tile FROST BANK BLDG. SAN ANTONIO, TEXAS

PRODUCT NEWS

CORRUGATED TRANSLUCENT PLASTIC is decorative, useful building material.

Corrulux is a strong, attractive paneling made of glass fibers imbedded in polvester resins. It is molded in lengths and widths to correspond with standard corrugated metal or asbestos-on 11/4 and 21/2 in. shallow and deep centers and 4.2 in. deep-as well as other shapes, such as curvatures for Quonset-type buildings. Transmitting light but safeguarding privacy, the material makes handsome interior partitions, shower stalls, etc. It is also structually adaptable to exterior use because of its lightweight shatterproof qualities, and, because of its soft translucency, excellent as skylighting. It nests with other corrugated roofing, and so may be interchanged with sections on existing buildings. Handling is simple. Corrulux may be cut with saws or abrasive wheels, nailed, bolted or drilled like other roofing and siding. It will not sag or buckle and is impervious to mildew, humidity, sunlight and most industrial fumes. Installed costs range from \$1 to \$1.25 per sq. ft. Standard shades are: soft green, forest green, a light ivory, coral and sunlight yellow. Other colors are available on order.

Manufacturer: Corrulux Corp. Box 6524, Houston 5, Texas.

CERAMIC TILE can be massed produced in any original design at moderate cost.

Glazed and fired in a process which permits the architect and builder to obtain exactly the color and pattern tile they desire-and at mass-produced prices-Cera-Tile has unique, largely unexplored possibilities. Instead of separate firings for each color (required in most other techniques of tile fabrication) all the glaze is applied on the bisque before the single baking. Colors are blended during the firing, the heat acting as palette knife. Flow is controlled so that measured amounts of blue and yellow become the identical shade of green for tile after tile. (Richard Harlan, developer of the process, has noted that a tile-faced wall for a Rio de Janiero public building took a year to hand decorate. He claims the same job by the Cera-Tile method would take two days.) Cost of stock patterns is \$2 per sq. ft. plus packing and shipping charges. Custom de-



signs run slightly higher, depending upon the complexity and scope of the pattern. The firm challenges architects to submit designs it cannot produce — from abstract murals to repetitive: (Continued on page 206)



"Home-Like Look"

Perkins & Will, architects Hedrich-Blessing, photos

Ceco Steel Joist Construction achieves **Informal Residential Design**

One of the new concepts of school construction comes under the high sounding term of "optimum psychological environment." Actually, it is quite simple-it's just making the school seem less formidable, less like an institution, more like home. This informal residential character was achieved by Perkins & Will, Chicago architects, in designing the Blythe Park School, Riverside, Illinois. Here, Ceco steel joists were used to

provide large square "flexible" classrooms (30 square feet per pupil). Wide span areas were obtained-also unobstructed floor space and neat trim ceilings, yet there was no sacrifice of strength and safety in construction. The result, a pleasant home-like structure-a child centered school-modern-functional, beautiful too. Steel joists are light, easy to install, self centering. Ducts, wiring, piping are concealed. Cost is low.

CECO STEEL PRODUCTS CORPORATION



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

In construction products CECO ENGINEERING makes the big difference.



Hipport or Appliance STORE

JANITROL UNIT HEATERS



Small Janitrol Unit Heater provides clean automatic heating for customers' comfort in Ciaciunati appliance store. Installation is typical of hundreds made in this city by the A. H. Gerdsen Company.

UNIT HEATERS provide the advantages of clean, automatic gas heat at low installation cost

First question, on heating plans, like everything else these days is usually ... "What's the cost?"

While heating costs include much more than the original installation because of fuel consumption, combustion efficiency, flexibility, maintenance and other factors... a properly engineered installation of Janitrol Unit Heaters will usually meet all requirements and cut costs.

Whether it's a huge building requiring several million BTU/hr. or the corner store with a single Janitrol Unit Heater, installations are made without the expense of installing extensive duct work.

With unit heaters, heat is directed *where* it's needed and *only* when it's needed, an important factor in operating economy.

If building plans call for air conditioning, specially designed Janitrol Gas-Fired Unit Heaters can be quickly installed in the air conditioning duct work. This eliminates duplicating duct work, pipes and blowers, for summer air-conditioning and winter heating use the same distributing system. In hundreds of stores, restaurants, offices, etc. these Janitrol installations conserve valuable space and have proved both practical and economical.

SURFACE COMBUSTION CORPORATION



Janitrol Unit Heaters equipped for natural, manufactured or L-P gases, range in capacity from 50,000 to 450,000 B.t.u. per hour input ratings. Suspended and floor models, and types for filtered air comprise the complete line for every commercial and industrial heating requirement.

Above: partial view of Moisant International Airport, New Orleans. Air line passengers benefit from both air ventilating and heating. Janitrol Unit Heaters installed by American Heating and Plumbing Company.

+

Write today

for your A.I.A. File Folder on Commercial & Industrial Heating. It's a practical guide on the selection and installation of unit heaters to meet a wide range of heating requirements.

1.

OHIO

TOLEDO

202 Architectural FORUM March 1950



A NEW DEVELOPMENT IN MOVABLE WALLS

Asbestos Panels "INTEGRALLY COLORED" at the Factory

Cutaway of typical J-M Movable Wall construction. The 7/16"-thick asbestos panels, on patented steel studding, are available in a light green and light tan. NOTE HOW THE COLOR GOES ALL THE WAY THROUGH EACH PANEL!

No more painting. No more redecorating maintenance.

In the world's largest laboratory devoted to the improvement of building materials, Johns-Manville scientists have perfected a process for introducing inorganic pigments as an integral part of the asbestos panels used in J-M Movable Walls,

As a result, these beautifullytextured, fireproof panels now come pre-colored.

What's more, you'll have the advantage of "integral coloring," with the color going all the way through each panel, so that it will never wear off. Your walls will have that "firstday newness" every day for years and years to come!

By eliminating painting and decorating expense, these new Transitone* Movable Walls will help you to meet your wall and partition requirements economically.

Transitone panels are hung on steel studs, forming a 4" double-faced partition. Also used as interior finish for the outside walls. Lighter than ever, they are readily installed or relocated. For details or an estimate, write Johns-Manville, Box 290, New York 16, New York. *Reg. U. S. Pat. Off.



MOVABLE WALLS with asbestos panels colored all the way through

One of many full color illustrations in The Color Book Of Tile. See color schemes, alternate patterns, bathroom accessories, inserts, decorative tiles.



SEE it ... in



IN THE NEW COLOR BOOK OF

Here now, ready for big and little home planning, are complete bathroom, kitchen, and game room installations in American-Olean's Color Book of Tile. Here are full color illustrations in easy-to-use form. Tile selections of all kinds are conveniently arranged . . . offer side-by-side comparison of alternate color and pattern choices.

American-Olean's Color Book of Tile lets your clients visualize the finished installation . . . lets you plan it by simply copying a 42 word specification (you can choose colors later) . . . helps the tile contractor satisfy you and your client with exact follow-through of your specifications.

Use The Color Book of Tile for every job. See how easy, how time saving, how sure, specifying tile can be.

American-Olean Tile Company Executive Offices 900 Kenilworth Ave., Lansdale, Pennsylvania

TO EVERY Free ARCHITECT American-Olean Color Book of Tile The most complete, most helpful

The most complete, most helpful tile book ever produced. 100 pages, including 30 full color plates of typical installations, also color charts of wall and floor tile, trim, and hand-decorated inserts. Full architectural data and ready-to-use specifications. If you do not have a copy, or if you need another, write us at once.



DESIGNED in the form of a giant "U", this new \$3,000,000 structure, in downtown Chicago, contains the offices and plant of The Florsheim Shoe Company. Abundant natural daylight is assured on four sides of the five factory floors.

Occupying one-half of a city block, the new plant consists of over 300,000 square feet of factory and office space. Located just west of Chicago's busy loop district, the building is convenient to all forms of city transportation and several nearby railway terminals.

The interior painting of this imposing industrial plant involved the use of especially-selected Pratt & Lambert wall coatings and enamels, chosen not only for their decorative qualities, but also for their durability.

The Pratt & Lambert Architectural Service Department offers practical assistance to architects everywhere, in planning authoritative decoration.

PRATT & LAMBERT-INC., Paint & Varnish Makers NEW YORK · BUFFALO · CHICAGO · FORT ERIE, ONT.

Save the surface and you save all!

NEW HOME OF THE FLORSHEIM SHOE COMPANY, CHICAGO SHAW, METZ & DOLIO, Architects, Chicago · CAMPBELL-LOWRY-LAUTERMILCH CORPORATION, General Contractor, Chicago · ARTHUR M. GELDEN CO., Painting Contractor, Chicago.



Photos, Hedrich-Blessing Studio



General view of sales and executive office wing. Steel partitions are used throughout; the entire office floor is in asphalt tile; ceilings are soundproofed. Illumination is provided by means of daylight fluorescent through

louvered fixtures. The entire office area is air-conditioned.



The block-long line of upper leather cutters, with die cases conveniently at hand, close to the upper leather source. Such conditions assure maximum speed, efficiency, quality production.





One of the two men's sample rooms in the new plant. It provides ample room for the display of the full Florsheim line of approximately 450 different individual shoe styles.

PRATT & LAMBERT PAINT AND VARN



jalousies give every room a new "outlook" by providing a completely unobstructed view . . . and a free flow of air. Louvers may be of clear glass for vision, or obscure glass for privacy. When louvers are closed, they provide protection against inclement weather. Louvers are bracket-mounted in weather-proof frames. They are weather-stripped, and tightly held to prevent rattle, yet easily removable. Smooth, positive control is provided by the Win-Dor bronze worm-gear Operator and hardware-famous for over 40 years. Inside screens are used, with operation thru-the-screen. Win-Dor Approved jalousies are available in any height on 4" slat-centers. Jalousies compare favorably in cost with typical window installation.

> See Sweet's File $\frac{19c}{3}$ for specifications, or write direct to:

The Casement Hardware Co. 406 N. Wood St., Dept. H, Chicago 22, Illinois

Territories still open for distributors and dealers. Write for full information now!

PRODUCT NEWS

mosaic effects. For large orders, the cost is little more for an original scheme than for monocolored ceramic tile. Matt, gloss and textured finishes are available in standard sizes: 41/2 in. sq., 6 in. sq. and 6 x 9 in. Like other tiles, Cera-Tiles are washable and permanent. The product has definite design implications for contemporary architecture beyond the traditional usage in bathrooms, kitchens and subway stations

Manufacturer: Pacific Tile & Porcelain Co., 832 N. Cole Ave., Los Angeles 38, Calif.

SELF-STORING SCREEN is automatically raised as window is opened.

The Screen-o-matic provides economical yearround window screening for residential and institutional applications. As the window is raised and lowered the plastic screen mounted on the sash unrolls and rolls.

All principal partshousing, tracks and sill strip-are aluminum, and steel accessories are plated to make the entire unit rust resistant. The tube upon which the screen rolls inside the housing contains a sealed oil-tempered spring.



Washing windows from the inside may be accomplished by merely releasing the sill strip. Screeno-matics require no painting and are guaranteed to be free from material defect. Retail prices range from \$3.90 for the 18 in. width to \$8.50 for the 50 in. Length in all sizes is about 28 in.

Manufacturer: Lockhart Mfg. Corp., 6350 E. Davison Ave., Detroit 12, Mich.

PLASTIC WINDOW SHADES are long-lived, can be sponged clean.

Resistant to moisture, flame, fading and shrinking, Plastishades are

priced considerably below quality fabric shades. Made of special vinyl plastic film these smooth surfaced window shades hold their good looks. They cannot ravel, will not tear or puncture in even severe use. Grease,



ink and other stubborn stains are said to be removed easily with soap and water. Stock shades are made in 36, 42, and 48 in. widths and in 6 and 7 ft. lengths. Made-to-measure shades are produced in widths up to 48 in, and lengths up to 9 ft. The translucent light colored shades, ivory and white, soften sunlight entering the room. Plastishades are available also in tan and a lustrous green. Retail price for the 3 x 6 ft. shade ranges from \$1.59 to \$1.79.

Manufacturer: Charles W. Breneman Co., 2045

(Continued on page 210)

Reading Rd., Cincinnati, Ohio.



HERE ARE 20 WAYS TO SPECIFY or RECOMMEND SISALKRAFT PRODUCTS FOR QUALITY CONSTRUCTION AT LOW COST WATERPROOF AIR-TIGHT



SPECIFY SISALKRAFT

- 1-As Sheathing-Paper

- 1 As Sheathing-Paper
 2 As a Moisture-Vapor Barrier
 3 For Flashing Door and Window Openings
 4 Over Subfill, Under All Concrete Slabs
 5 For Covering Concrete (Curing and Protection)
 6 Under All Finished Flooring
- As Protective Covering over all finished floors, stairways, trim, matble-work, etc.
 8-For Frost Protection of concrete and masonry 9-As a Dry-Sheet under Stucco

ALSO RECOMMEND SISALKRAFT

10-As Weather-Protection "Tarps" over lumber, brick, cement, aggregate, masonry, etc.
 11-As Protective "Tarps" over Machinery and

- Equipment
- 12-For Closing-in, Temporary Partitions, Con-struction Job Offices, etc.

SPECIFY SISALATION

- 13-As Combined Sidewall Insulation and Vapor-
- 14-As Ceiling Insulation
- 15-Under Floors
- 16-With SISALKRAFT, for Insulated Dry Walls 17-For Single-Wall Construction
- ALSO RECOMMEND SISALATION 18-For Lining Attics, Basements and "Unfinished" Rooms

SPECIFY COPPER ARMORED SISALKRAFT

-As Concealed Flashing, Dampcoursing, etc. 20-For Shower Stall Waterproofing, etc. and many other uses

WRITE FOR FREE SPECIFICATION PORTFOLIO

	STSALKRAT	-	manne	1
	Since and State	1	1.5530	
		E America	line.	11
100	anter and	10	SPECIFICATION SHE	-
-	13	SAMPLES		-
	MAIL TH	HIS COUP	ON TODAY	
Th: 205	SISALKRAFT	T Co., Dept.	AF3	
Ple	ase send Speci	fleation Por	tfolio and samp	les to
	and a pro-			
Na	me			
Fir	m Name		*****	
Ad	dress			
Cit	y & State			
N	I am 🗆 Ar	chitect 🔲 C	contractor 🔲 De	aler
P.	Jeur ci	CALVE	NET CO	a ser l
-	THE SI	SALK	CAFI CO	
6	iicago 6 • Ne	w York 17	• San Franci	sco 5
2.00				





Specify Beautiful THEMETILE



• No other rubber tile gives you these colorful, low-cost, decorative inserts to add individual distinction to each floor design. ThemeTile helps you provide unusual, custom-designed decorating themes for ideal installations in homes, lobbies, restaurants and office foyers. *Rubber Tile by the makers of Kentile* offers you attractive Feature Strips, too, and beautifully clear, harmonized colors for added effectiveness.

Keep samples of this outstanding Rubber Tile on hand. You can recommend it to your clients for its practical advantages of longer wear, resistance to soil, easier maintenance. Dirt and moisture cannot penetrate its smooth, non-porous surface. It resists chipping, cracking, marring...does not support combustion. Rubber Tile by the makers of Kentile will not dry out and become brittle...keeps its beauty through years of use even under heaviest foot traffic.

Only Available in this Rubber Tile

DAVID E. KENNEDY, INC.

58 Second Avenue, Brooklyn 15, New York • Kentile • Kencork • Rubber Tile







Glued Laminated Beams

Buildings of moderately wide span are erected quickly and economically using glued laminated beams from Timber Structures, Inc. Formed of structural quality kiln dried material welded together under pressure with permanent glues, these members will never shrink, check, twist or warp. Beams of dimensions like those above are highly fire resistive.

When sanded and finished and left exposed, glued laminated beams add a beautiful architectural effect. Cambered and tapered, they frequently are used as primary structural roof members. For complete information on glued laminated beams and other structural members see the Timber Structures office nearest you, or write directly to...


Mr. Apartment-House Owner:

ARE YOU LOSING 25% TO 50% OF YOUR WATER-HEATING DOLLAR?

Inefficient water-heating equipment wastes 25% to 50% of your dollars that go for providing hot water . . . and your old equipment probably does not give your tenants hot water at all times.

Here are ways to cut costs!

And if you are heating water with coal or oil, you're paying higher fuel prices.

Because there have been *little* or no increases in gas rates, you save money in at least two ways with an A. O. Smith *Burkay* Volume-Flow Gas Water Heater: fuel cost is *lower*... efficiency is *bigher*.

You also get rid of dust, soot, ashes, and excess furnace-room heat.

For the largest apartment, or the smallest, the A. O. Smith *Burkay* will give you better hotwater service at lower cost.

Write today to A. O. Smith Corp., Dept. AF-350, Toledo 7, for Bulletin SPH-926A which explains how you can save water-heating money.

. .



Model 417

10.000 BTU

Model 617

95,000 BTU

A. O. Smith Corporation • New York 17 • Chicago 4 • Houston 2 • Seattle 1 • Los Angeles 14 • International Division: Milwaukee

PRODUCT NEWS Image: Constrained state state

Control Color-Bring out the Natural Beauty of Wood!



BLONDE WOOD FINISHES

You can achieve striking effects with PEN-CHROME. Ten modern tints help you control the natural color of any woodwork or paneling—to keep it in harmony with any color scheme. Finish coat seals the surface and dries to a soft, rich, waxlike waterproof finish—revealing the grain and natural beauty of wood.

Use Pen-Chrome for commercial, industrial and residential work. It's economical! See your nearest O'Brien Dealer or write the O'Brien Corporation, South Bend 21, Indiana, today for free sample panel and further details on Pen-Chrome Blonde Wood Finishes.

> 10 TINTS—Sandalwood—Bleached Mahogany—Driftwood—Platinum— Blonde—Maple—Light Oak—Dark Oak—American Walnut—Mahogany.

 ACTUAL WOOD SAMPLE—showing color effects produced by 10 Pen-Chrome tints on birch panel, 2¹/₂" x 20¹/₂" FREE to architects and decorators.



ALUMINUM SIDING for residential construction has baked paint coat.

Sprayed with white, cream or gray paint at the factory and baked, Kaiser's aluminum clapboard siding has a durable semi-gloss finish with a life expectancy said to be several times that of good house paint. Besides its nonrusting and high reflective insulating qualities, the building ma terial boasts several recent design improvements (1) wider flange at top edge for added contact at joint; (2) flattened upper half for more direct wall contact; (3) deepened joint housing to facilitate installation; (4) a more sharply defined shadow line; (5) curved lower section to preven buckling; (6) slots situated closer to lower edge for easier nailing, and edge itself rolled for safe handling by workmen.

Course width, as formerly, is 7% in. with a weather exposure of 6% in. The siding is available in 10, 12, 14 and 16 ft. lengths in two thick nesses of tough aluminum alloy—.030 gauge (FHA approved for new construction) and .025 gauge (for remodeling). Cost per square to builders is about \$30 for the heavier gauge, \$26 for the lighter. Paint is provided for touching up any marring caused during installation. Siding with a zinc chromate prime will continue to be marketed for those who wish to paint in other than the neutral prefinished shades.

Manufacturer: Kaiser Aluminum & Chemical Sales, Inc. 1924 Broadway, Oakland 12, Calif.

NEW TIE FOR VENEER WALL has rust resistant copper coating over steel core.

Borrowing crimps from the all-efficient hairpin, the Copperweld V-Lok Tie holds brick veneer securely, its V-shaped prongs spreading the strain in two directions. As protection against rust without sacrifice of strength, a thick copper plating is inseparably welded to the alloy steel cores of both the wire prongs and nail which together make up the wall tie. Thus, unaffected by moisture and chemical action of mortar, the V-Lok anchors firmly in the mortar, resisting physical stresses with the strength of steel for the life of



the wall. Prongs are round wire; the tie has no sharp edges to injure installer's hands. Retail price for a carton containing 1,000 wires and 1,000 nails is \$20. The V-Lok Tie meets specifications of the American Standard Building Code. *Manufacturer:* Copperweld Steel Co., Glassport, Pa.

(Continued on page 214)

You've never seen a window that closes so tight!

AUTO-LOK the weatherstripped Aluminum Awning Window

Never in window history has there been a window that offers a greater degree of closure than the amazing AUTO-LOK Aluminum Awning Window.

Now you can give your clients all the natural advantages of awning window design: vents that open to almost 90 degrees, protection from rain with window open, vents that drop down for easy cleaning from the inside, PLUS *positive protection against all climatic extremes!*

AUTO-LOK Aluminum Awning Windows are being specified and used successfully throughout the country, for every type of architecture: residential, schools, hospitals, and institutions.

Unlike other awning windows, Auto-Lok's patented hardware makes it possible to close the vents tight enough and keep them closed, tight enough to make weatherstripping effective. Double metal-to-metal contact, factory-installed lifetime weatherstripping and this remarkable closing action, actually "Seals Auto-Lok Like A Refrigerator!"

But don't take our word for it! Ask your nearest Auto-Lok representative to show you the "Tattle Tale Demonstrator"...convincing and undeniable proof that Auto-Lok is the tightest closing window ever produced.

Consult SWEETS for full details, or contact your Auto-Lok representative (name on request). Write Department No. F-2, LUDMAN CORPORATION, P. O. Box No. 4541, MIAMI, FLORIDA.



THE *Witimate* IN AWNING WINDOWS ENGINEERED FOR LEADERSHIP BY LUDMAN CORPORATION, OPA LOCKA, FLORIDA it's sealed like a refrigerator





Blo-Jan* IS superio

IN THE KITCHEN-Blo-Fan installs over the range, where it will whisk out steam, grease, and cooking odors as they rise before they spread.



IN THE BATH-Blo-Fan quickly expels steam from the bathroom-avoids foggy mirrors and steam-streaked wallsthe air stays crisp and fresh.



FAN-75% of the air moved by a breeze fan is thrown from the blade tips. The center is weak when it meets resistance. A fan delivers vol-ume, but it lacks power.



A BLOWER draws a smaller amount of air into the vortex, discharging it with great velocity, thus overcoming resistance. A blower delivers power, but it lacks volume.



Blo-Fan combines the volof a blower. The fan blades feed the vortex of the blower so the vanes are fully loaded. That's why Blo-Fan delivers more air with more power.



IN THE GAME ROOM-Blo-Fan eliminates tobacco and other odors by removing stale air before it contaminates the drapes and furnishings. No morning-Spot Ventilation at the point of Air Pollution after odors.



IN THE LAUNDRY-In any weather Blo-Fan keeps the laundry clear and fresh. Steam is expelled before it spreads, windows do not fog ... air is kept dry and crisp.

Manufacturers of PRY-LITES

... the modern recessed lighting fixtures with snap-on fronts.

Factories: Pomona, California; Newark, New Jersey Warehouses: Los Angeles, San Francisco, Chicago Stocked by more than 500 wholesalers in more than 350 cities

Pryne & Co., Inc. Box AF, Pomona, California



Authenticated by... LUDOWICITILE

The Roofs of Williamsburg..

Roof of the reconstructed Colonial Capitol of Williamsburg Architects: Perry, Shaw and Hepburn - Photographer: F. S. Lincoln



When architectural authenticity, classical beauty and enduring protection are important, Ludowici Shingle Tile is your best choice for a Georgian or Colonial house. That's why it was selected for some of the important buildings of the Williamsburg restoration! Its soft colorings and non-reflecting textures duplicate faithfully the age-mellowed loveliness of the original roofing materials.

Made of hard burned shale, Ludowici Tile provides a fireproof, weatherproof roof that is ever-enduring, never-fading. Ludowici Tile roofs are within range of more building budgets than you might think. Let us help you with your plans or specifications today.

LUDOWICI-CELADON Co. 104 So. Michigan Ave., Chicago 3, 111. New York 17, N.Y. Washington 5, D.C. Cleveland 20, Ohio 565 Fifth Avenue 740–15th Street, N.W. 12728 Woodland Av.

SECTIONAL STEEL GARAGE DOOR is plan assembled, prefinished in neutral gray.

This new overhead type residential garage doo constructed of rugged rolled steel costs less than \$50 installed—a price made possible by its prefinishing at the factory in a gray baked-on paint and its packaging complete with all necessary accessories. Fitting includes rubber strip a bottom; hangers; brackets; cadmium plated screws, nuts and bolts.

Although fabricated for a standard 8×7 for opening—where it uses only 5 in. of headroom it may be used in a 6×6 ft. opening having the standard 12 in. allowance. Installation is quite easy: tracks are rigged up, door sections dropped in place with rollers inserted, pivot points of adjoining pieces snapped, and the counterbal anced springs connected. No holes have to be drilled or hinges applied. The cylindrical latel lock may be keyed from either side. Because parts move on ball-bearings, the door opens a a finger touch. Working is completely within the garage—neither snow nor sleet nor autumn leaves can interfere with its operation.

Manufacturer: Morrison Steel Products, Inc Door Div., Buffalo, N. Y.

ELECTRICAL OUTLET STRIP has grounded receptacles.

Providing a spread of electrical outlets at either 6 or 18 in. intervals, the new Plug-In Strip Type CF2-G assembly offers industries, hospital schools and home owners the opportunity of plug ging in grounded or ungrounded portable elec trical equipment in every receptacle. Basic con struction and fittings of the standard Plug-Ir Strip have not been changed. However, a third slot has been added to each receptacle, and be neath this aperature is a copper insert securely mounted to the multi-outlet's steel base. This assures a positive grounding facility. To achieve a thoroughly grounded electrical system, however, the strip must be installed with a positive ground to the earth. Either the conventional two blade or three blade grounding plugs may be inserted in the outlets. Underwriters' approved, the new



model costs contractors about 60 cents per ft. It may be purchased in 6 ft. lengths and cut anywhere between receptacles to fit the job. Its satin gray finish can be left as is or painted to match interior trim.

Manufacturer: National Electric Products Corp., Chamber of Commerce Bldg., Pittsburgh, Pa. (Continued on page 218)

Strength plus Moisture Barrier with **Pittsburgh Steeltex for Stucco**

You get positive reinforcement with Pittsburgh Steeltex for Stucco through embedment of the welded wire fabric in the mix. The square mesh of galvanized, cold drawn steel wire provides resistance to strain from any direction. In addition the double ply backing guards against moisture penetration and minimizes stucco cracking —protects the beauty of the finished job—reduces maintenance. Steeltex for Stucco is easily applied direct to studs or over wood sheathing in one operation. Steeltex is used to advantage both in new construction and the modernization of old structures. For more information on how Pittsburgh Steeltex for Stucco can be used to give you strong reinforcing for economical construction write Dept. AF for bulletin DS 131 or see our catalog in Sweets.

PITTSBURGH STEEL PRODUCTS COMPANY A Subsidiary of Pittsburgh Steel Company Pittsburgh 30, Pa.





MicroRold extra light gauge STAINLESS STEEL SHEETS are New!

Because of MicroRold's production technique, the use of light gauge stainless steel is no longer limited to narrow widths. We are supplying sheets up to 36" wide as light as .010" in thickness and sheets 30" wide as light as .005" with amazing uniformity of gauge.

Stainless steel is used primarily for corrosion-resistance, strength-weight ratio, appearance, and economy of maintenance. Where structural values are dependent on other factors, lighter gauge stainless can be used to a distinct advantage while maintaining all other properties.

The cost per square foot of cold-rolled stainless steel sheets reduces in proportion to thickness. For example, the price of sheets .015" thick is approximately 50% less than sheets .037". Why not make use of the exclusive advantages offered by MicroRold extra light gauge.



Startling!!... Revolutionary!

Living room in Fresh Meadows Housing Project, showing "Metro" convector. "Metro" piping is concealed behind draperies.

Single-riser provides an uninterrupted path for flow of steam from top to bottom of building. A coninuous pipe passes down through overlying rooms... is offset in each room into a convector or baseboard.

the single-riser heating system!

- Eliminates traps and valves in occupied quarters. Only trap is at bottom of riser in basement.
- Eliminates all radiator branches.
- Eliminates furring of walls.
- · Permits pre-cutting risers, all one size, in shop.
- Benefits contractors, owners and tenants.

Economical to install, operate and maintain ... "Metro" piping with Vari-Vac* control is the proved heating system selected for large-scale housing projects financed by The Metropolitan, Equitable, and New York Life Insurance Companies.

"Metro" keeps fuel bills at a minimum. Heat supply and demand are always in perfect balance because steam temperature is automatically regulated according to outside weather. In addition, damper controls permit individual room heat regulation. Dunham Vari-Vac Heating ... the system that makes "Metro" possible ... cuts fuel costs up to 40%—A Dunham Vari-Vac Differential Heating System is adaptable to any size structure ... old construction as well as new. A Dunham Sales Engineer can quickly tell which of seven different Vari-Vac systems you'll want to specify.

SEND FOR FREE BULLETIN

Write today for your free copy of Bulletin 643, giving complete information about economical "Metro" piping. C. A. Dunham Co., 400 W. Madison St., Chicago 6, Ill. In Canada: C. A. Dunham Co. Ltd., Toronto. In England: C. A. Dunham Co., Ltd., London. *Variable Vacuum



CONVECTOR RADIATION, BASEBOARD RADIATION

UNIT HEATERS



TRAPS, VALVES, PUMPS





FLEXWOOD SETTING... for "Jewels by Trifari"

Beauty . . . distinction . . . durability . . . these were among the requirements called for in the main display room of the famous New York jeweler, Trifari, Krussman & Fishel, Inc.

The above photograph shows how architects Kahn & Jacobs met these specifications with walls of striking Satinwood Flexwood. The bamboo color of the Satinwood is a perfect complement to the jade green appointments.

You'll find the smooth beauty of Flexwood* enhances any good basic design,



modern or traditional . . . over curved surfaces or flat.

And it's durable! Real wood, in its most architecturally versatile form. Thin veneers of decorative hardwoods permanently bonded to flexible fabric backing.

Let us send you full information about this modern decorative material ... and how you can plan extensive renovations with a minimum of costly structural changes. Write for samples and illustrated folders today.

" REG. U. S. PAT. OFF

UNITED STATES PLYWOOD CORPORATION Dept. F, 55 West 44th Street, New York 18, N. Y.

Flexwood is manufactured and marketed jointly by United States Plywood Corporation and The Mengel Company.

PRODUCT NEWS

RESIDENCE COOLER air conditions average home at nominal cost.

Operating through the ductwork of a blower type warm air furnace, this air conditioner afford savings in installation. Designed to control tem perature, humidity, purity and movement of ai in the average six to eight room house, the L-31 model retails for under \$1,000. Air passe through permanent cleanable filters (where dust pollen, and other foreign matter are removed over four rows of copper cooling coils. It is the forced through the ducts by a large capacit centrifugal blower. The unit's 3 H.P. heavy duty compressor is of the reciprocating type. Dimen sions of the unit are 36 in. long x 23% in wide x 60 in. high. It has low and high pressur control and an automatic water regulating valve The cabinet is constructed of rust resistant stee and lined with rigid sound deadening insulation Manufacturer: Yates American Machine Co. General Refrigeration Div., Beloit, Wisc.

HUMIDIFIER extracts waste heat from stack to evaporate water.

The Vapomaster makes adequate moisture availa ble to steam or hot water heated homes. No dependent on air currents for operation, thi humidifier transforms into water vapor the wast heat that would be lost up the flue and discharge

it directly into the basement for natural diffusion through the house. Or, if desired, the moisture may be piped up to a small opening in the floor of the first



story. The unit itself consists of a cast alumi num chamber with external fins, a float chamber float valve, and water connection. Installed, the Vapomaster is mounted on an easily attached boot, its finned chamber projecting part way into the stack. In front of the aluminum chamber, outside the stack, is a well. Water is confined to the wet leg and, by adjustment of the valve, moisture is conducted to the dry le by eight Vapoglas plates. Heated by the alumi num fins, these plates evaporate the water slowly enough to be absorbed in the atmosphere of the house. Attachment to stack and connection to cold water lines is said to be quite simple. Re tail price is \$49.50 plus installation.

Manufacturer: Skuttle Mfg. Co., 4099 Beaufait Detroit 7, Mich.

DEMOUNTABLE ACOUSTICAL CEILING has hig sound absorption, low price tag.

In the Acousti-Line suspended ceiling, plain metal panels are stripped in for 20 per cent o the conventional wall to wall application o acoustical material. Easy hanging saves more than 10 per cent the usual cost of ceilings having the same efficiency. Installation is quick, clean (Continued on page 222)



Where Steel Pipe is first choice for Radiant Heating ...

"In the comfort of a valley, home can seem 'a dream come true'," a poet once said . . . and his words are a perfect description of many a modern American home development. For what can make for more happy living, when the chill winds of winter blow, than the snug warmth of new, radiant heated homes in "Comfort Valleys" everywhere?

Radiant Heating systems in such homes are at their best, of course, when installed with durable, adaptable, economical steel pipe. You see, steel pipe's proved service record in conventional hot water and steam heating systems over more than 60 years would, alone, entitle it to first consideration. But, more than that, the *specific* piping requirements of the popular new Radiant installations are met in *every* particular by steel pipe. It's readily formed, easily welded, imparts structural strength, and importantly, has the same co-efficient of expansion as concrete, plaster and masonry. It's lower in cost, too, and is made to outlast the useful life of the building.

Already, as in conventional heating, more steel pipe is used for Radiant Heating than any other!



The inherent characteristics of steel pipe are perfectly "matched" to the installation requirements of Radiant Heating.

COMMITTEE ON STEEL PIPE RESEARCH

OF AMERICAN IRON AND STEEL INSTITUTE 350 Fifth Avenue, New York 1, N.Y. SAYS MR. WETWALL, "I'll enjoy wetting and warping and mildewing every stud in this new house." SAYS MR. DRYWALL (alias Mr. Homasote), "You won't have the chance! I'll keep them dry and straight and the walls mildewfree, for the life of the house."

UKY WALL CONSTRUCTION

Why pay extra money for good quality, dry lumber and then soak it with water - by plastering?

With Dry Wall Construction the owner will never have cracked walls, falling ceilings or buckled floors. Dry Wall Construction is the modern, up-to-date, common sense and fast method – the greatest advance in 300 years of building construction.

For 32 years Homasote has been used for Dry Wall Construction – in millions of dollars of private homes. Since 1936 its use has been supported by intensive research costing more than \$500,000.

Dry Wall Construction – with Homasote Big Sheets – offers many major advantages . . . The average wall is covered with a single sheet; batten strips and unsightly wall joints are eliminated. In a single material you provide lasting insulation value and great structural strength.

Dry Wall Construction - with Homasote Big Sheets - means walls that are permanently crackproof, ideal for paper or paint, lending themselves to modern decorating effects, modern mouldings and trim.

Let us send you performance data and illustrated literature on Homasote and allied products.









HIGH DEPENDABILITY GREATER ECONOMY LESS MAINTENANCE

Built up to a quality—not down to a price. SHEPARD Elevators offer you high dependable service at low maintenance costs. For that new elevator you're planning or the old one you're modernizing — consult SHEPARD Engineers. Write for 58 page Elevator Planning Book.

THE SHEPARD ELEVATOR CO. 2440B Colerain Ave., Cincinnati 14, Ohio



Your "public" wants COLOR

BRIGGS Beautyware

gives them **COLOR** at the lowest price in history!

Briggs four exclusive decorator colors, plus white, now available in both porcelain enamel steel and vitreous china.

Briggs Manufacturing Company - 3001 Miller Ave., Detroit 11, Mich.

For the first time...customers can get the colored fixtures they want... at a price they can afford to pay. Briggs makes it possible! Offers first-quality fixtures in color for only 10% more* than the same stainproof, lightweight, precisionmade fixtures in white. Start featuring Briggs Beautyware colored plumbing fixtures, today ... and you can figure on quicker sales, bigger sales every day of the selling year!



Novo Design illustrated is used in this outstanding office building.

SCHLAGE[®]... first name in cylindrical locks

New York City's 488 Madison Avenue Building

A Schlage installation of heavy-duty cylindrical locks.

Architects: Emery Roth & Sons Owners and Builders: Uris Brothers.



Bayshore Blvd. San Francisco

SCHLAGE LOCK COMPANY Empire State Bldg. New York

YOUR ELECTRICAL DISTRIBUTION SYSTEM IS THE LIFELINE OF YOUR BUILDING -select it with care!

NEPCODUCT the standard system of convenience outlets in the floor

NEPCODUCT—An Efficient Electrical System That Fits Any Type of Floor Construction—

With these advantages-

For the Owner

Provides tenants with complete electric service—economically without routing concrete or cutting building structure.

Electric service outlets are at the floor surface—already threaded wherever needed.

Present and future tenants have all the electric service they will ever need. A real office space sales feature!

An electrical system that adds to the economic life of the building.

For the Tenant

Immediate availability of electric service at the floor surface. No wholesale interruption of office routine when additional service

routine when additional service outlets are needed. Less dirt, dust and expensive cutting and patching when service fittings are installed.

fittings are installed. Complete electric service regardless of office space or furniture

arrangements. Smartly modern service fittings (brass or aluminum) for all types of electrical requirements.

NEPCODUCT—An independent distribution system installed by electrical tradesmen.

For the Architect and Engineer

A simplified single-, double-, or triple-duct system that fits any type of floor construction. A system with a multiplicity of inexpensive outlets located at the surface of the concrete floor—ready for immediate use.

Outlets with a wide radius sweep for easy pulling of large telephone cables.

Reduces cost of electrical extensions and maintenance through easy accessibility of all electric services in one junction through a common handhole opening. If you are an architect or electrical engineer, let us send you this complete installation and service manual, with suggested specifications, layout details and installation views.



National Electric Products Corporation 1334 Chamber of Commerce Building Pittsburgh 19, Pennsylvania

Please send me your NEPCODUCT Electrical Distribution Manual.

	Sec.	
and the state		Clark Charles
		The second

Everything in wiring p	points to NE
Vational Elect	tric



MENGEL WALL CLOSETS -A New Concept of Storage!

MENGEL prefabricated wood wall closets are designed to be used as an integral part of your construction—either fitted against structural walls or as nonload-bearing partitions between rooms. In both cases, they give you several distinct advantages over conventional closet construction, at no increase in cost!

As the diagram indicates, they require 25-40% less floor space, because they do not have thick plaster-lath walls. . . . They provide additional "living area" outside the closet because their modern sliding doors eliminate the need for space required to swing the conventional door. . . . They



allow the housewife to make maximum, flexible use of every cubic foot of space *inside* the closet because they have a number of adjustable shelves, and clothes rods that are adjustable for height. . . . They save space in your *overall* floor-plan arrangement because they utilize every foot of area to the utmost.

Available in several styles and widths to fit the requirements of any job, Mengel Wall Closets comply with FHA requirements. Mengel Closet Fronts are also available for jobs not requiring completc wall closets. Mail the coupon today for complete information.

	Cabinet Division — Dept. AF-2 THE MENGEL COMPANY 1122 Dumesnil St., Louisville 1, Ky. Gentlemen: Please send me complete infor- mation about Mengel Wall Closets and Closet Fronts.
	Name
	Firm
	Street
1	City State

PRODUCT NEWS

and dry. All parts are attached mechanicall and, except for units cut to fit specific areas, ma be demounted for reuse in other areas. Both the mineral tile employed and all supporting members are incombustible. Individual tiles are removable in any part of the ceiling, permitting access to area above. The finished ceiling presents a strong linear pattern. It may be repainted many times without loss in sound absorption value.

Manufacturer: The Celotex Corp., 120 S. LaSall St., Chicago 3, Ill.

PORTABLE AIR METER accurately measure velocity, temperature, static pressure.

Architects, heating engineers and building con tractors will find the Anemotherm a valuable aid for adjusting and testing equipment used in heat ing, ventilating and air conditioning. Operating on self contained batteries, this lightweight in strument gives direct readings on air velocity air temperature and static pressure. Its probe consists of a heated nickel resistance which, when exposed to air stream, is cooled, changing its electrical characteristics. Thus air velocity i measured indirectly by its effect on the heat loss of the nickel wires. Attached to a long flexible cable, the small probe may be inserted into an air diffuser for neck readings. A wide velocity range of 10 to 5,000 fpm may be accurately measured. Even slight drafts can be detected. The instrument provides rapid response measurement of temperatures from 30° to 155° F. and static pressure may be read directly in inches of water from .05 to 10 positive and .05 to 4 negative. It is especially useful for determining



velocity and temperature of air confined in ducts, air current in free spaces and air entering or leaving through outlets and inlets. Sensitive and accurate, the Anemotherm provides a portable laboratory for work in the field.

Manufacturer: Anemostat Corp. of America, 10 E. 39th St., New York 16, N. Y. (Continued on page 226)

for tomorrow ORTABLE POWE

WITH PITTSBURGH PERMAFLE LIGHTING EQUIP.

Pittsburgh Permaflector Fluorescent and Incandescent Lighting Equipment is "years ahead" in sound engineering and construction; in design - with functional beauty adaptable to any type of installation; and in economy, ease of installation and ease of maintenance. These points of superiority benefit all who use lighting. Ask for complete details on how and why Pittsburgh Permaflector Lighting Equipment gives you the "light for tomorrow"-today!



MANUFACTURERS OF FLUORESCENT & INCANDESCENT LIGHTING EQUIPMENT Permaflector Lighting Engineers in All Principal Cities

TTSBURGH PERMAFLECTOR LIGHTING EQUIPMENT IS DISTRIBUTED BY BETTER

Independent Pner Chicag A. Epstein & So Marsh Flectric C



For a Picture Story a PLANNED LIGHT

Write and tell us whether interested in store, office school or other type of and a Bulletin covering the will be sent you promptly.

FLECTRICAL WHOLESALERS F



AN HEAR A PIN DROP

Not so long ago, they couldn't have heard a sales curve fall in the general hubbub of this office.

Today, the blessed balm of sound control has cut down the intake of aspirin, boosted the output of work. Today this open space is more productive than private offices—and a lot less expensive.

You who read the FORUM had a lot to do with this change.

In the buildings you design or construct or equip, in the building budgets you approve—the high cost of noise is no longer a threat; the inside space is no longer a waste.

But it took a lot of people to help you muffle the din.

- -first by manufacturing a product which could do the job for you
- -second by making it known that the product is yours for the buying
- -third by explaining its virtues so clearly that your vote for sound control was backed up by the men who share decisions with you.

The first of these three assignments was a production and engineering job. The others were advertising's job.

For just as you rely on FORUM'S editors to keep you up to date on new building ideas, so you can rely on FORUM'S advertisers to let you know when those ideas have been embodied in a new building product; to build acceptance for the product by stating its case repeatedly to all building professionals.

It's a good deal all around. Advertising is important to you because it helps you find new products, make the best possible use of old products, analyze competing products.

You are important to the advertiser, because you FORUM readers buy more building products than any other group in America.

And we're proud to be the medium which brings all of you together in an integrated effort to make every new building in America a better answer than its predecessors to the needs of the people it serves.



THE MAGAZINE OF BUILDING

PRODUCT NEWS



Architects: KIVETT and MYERS, of Kansas City, Mo.

everything's up to date at...

Macy's selected only the most modern equipment and furnishings available for its new Kansas City store . . . that's why they chose International Van Kannel Revolving Door entrances.

The beauty of International Van Kannel Revolving Doors helps make any store more attractive and adds prestige to any business . . . an irresistible invitation to customers to come in.

course

But the greatest value of revolving doors to Macy's, Kansas City, and many other department stores throughout the country, is their utility. Revolving doors cut heating and air conditioning costs up to 25% ... keep dust, noise, and drafts out ... and make more floor space "pay" space.

Write today for complete information . . . how International Van Kannel Revolving Doors pay for themselves . . . and build profits!

For the rest of the Macy's Kansas City Story, see the April issue of Stores magazine.



The Hydro-Miser cooling tower for air conditioning and refrigerating equipment features a wetted surface said to be capable of cutting water consumption as much as 95 per cent. This surface is comprised of a grid of electro-tinplated bronze wire screens. Each screen forms a slight angle so that water sprayed under pressure onto it clings to the mesh—as water sticks to a hosed screen door. Air, pulled in from the bottom of the tower by centrifugal fans in the top, travels on both sides of each screen, rapidly evaporating and cooling the water.

The gridwork is housed in a galvanized steel case and the entire unit may be removed for cleaning. Hydro-Miser units are compact, the 50 ton tower measuring 971/2 in. high, 62 in deep and 1161/2 in. wide. Single-drive models with pumps of three to 50 ton capacity, range in price from about \$972 to about \$3,700. Models designed for use outdoors are slighter higher. Merits claimed for the Larkin units are: a minimum salt deposit in the sump tank as a result of evaporation; hot dip galvanized tanks, far scrolls, wheels, frames and panels; and double drive motors which operate both the fans and pumps. Remote motor units are also available. Manufacturer: Larkin Coils, 519 Memoria Drive, S. E. Atlanta, Ga.

SQUARE BACK PLATE FOR AIR DIFFUSER fits in acoustical tile ceilings.

Joined integrally to the Kno-Draft air diffuser this lightweight metal panel has been designed for use with all standard acoustical tile ceilings The adaptation also serves to blend the diffuser unobstrusively into rectangular ceilings. The diffuser retains its features—adjustable angle of

air discharge, air volume control, etc. Cost of the 12 in. plate (for the manufacturer's diffusers with 4 to 5 in. neck diameters) is \$9.50; \$12 for the 24 in. plate (attached to diffusers with 6 to 11 in. neck measure-



ments); and \$17 for the 36 in. plate (for KD diffusers with neck diameters of 12 in. or more). *Manufacturer:* W. B. Connor Engineering Corp. 114 E. 32d St., New York 16, N. Y.

ROCKWOOL BATTS contain long interlocking fibers.

A more resilient insulation batt is the result achieved by Johns-Manville's process of manufacturing longer mineral fibers. Because of their springiness, 10 batts may be shipped in the same package that formerly held eight. For greater strength and as protection against sagging, fibers are oriented parallel to the long dimension of the (Continued on page 230) Specify the BIG range that's only 30" wide! The New FRIGIDAIRE "THRIFTY-30" Electric Range



Model RM-35 (with Cook-Master and Utensil Drawer)

The new model RM-30 electric range

A completely new idea in electric ranges, the Frigidaire "Thrifty-30" is perfectly sized to meet the particular demands of today's smaller kitchens. Only 30" wide, 43" high (without Cook-Master) and 27%" deep, it requires a minimum of kitchen space — yet has many of the desirable "big" cooking features of much more costly ranges. One of its chief appeals to homemakers and property owners is its amazingly low price!

Thrifty Giant Oven-biggest oven ever built in any household range! 6200 cubic inches of baking area-enough for 6 pies or a big holiday dinner. Extremely economical, it cooks more food with no more current. Oven stretches clear across the range-provides more space up front where things are easy to reach. One-piece oven -porcelain rust-proof finish inside and out. Sliding shelves adjust to 5 positions. Counterbalanced shelf-type door.

For complete, quick facts about this and other fine Frigidaire products for apartment kitchens and laundries, call your Frigidaire District Office or Dealer. Look for his name in Classified Phone Directory. Or write Frigidaire Division of General Motors, Dayton 1, Ohio. In Canada, Leaside 12, Ontario.

FRIGIDAIRE Makes a good building better!



New 5-Speed Radiantube Cooking. Units cook faster – use less current. 4 standard-size units – including an extra-big one. Tip up for easy cleaning.



New High-Speed, Waist-High Broiler gets steaks just right. Unit recessed in oven top-out of way. Porcelain broiling pan-easy to clean.



New Cook-Master (on Model RM-35) combines controls for automatic oven cooking, cooking top lamp, and kitchen clock. Gleaming chromium trim.



Ask for facts on these other Apartment Products by Frigidaire

Complete, quick facts about the compact, low-cost Frigidaire products shown below are yours for the asking. Get in touch with your Frigidaire Dealer.

Model AM-60 Refrigerator Low-priced, compact. 6 cu. ft. capacity with 11.7 sq. ft. of shelf area.



Model RK-3 Electric Range 21 inches wide – yet has all basic cooking facilities.

110	-		
L	-		
Ľ			
F	-	- 1	
L	-		
		- 1	6
-			

Model RM-27 Electric Range 40" wide, has many deluxe features – yet costs little.



Frigidaire Water Heaters 30- to 80-gallon capacity. Round and tabletop models.

1	-	
- 1		
-1		
- 1		

Frigidaire Kitchen

Cabinets Variety of types and sizes. Individual units – yet they give kitchens a custom-built look.



Frigidaire Kitchen Sinks

Single and double sink styles. Plenty of organized storage space.



Frigidaire Electric Dehumidifier

Removes moisture from air automatically. Dozens of uses. Powered by Meter-Miser.



Has exclusive Live-Water Action. Frigidaire Ironer and Electric Clothes Dryer are also available.





AVE AN "EAR" FOR HARMONIZING THE CARS WITH THE CALLS

electomatic can turn a loud clamor for <u>up</u> cars, a soft request for <u>down</u> cars or any of eir various combinations into the kind of close harmony that building managers love. electomatic's unique electrical brain records what it hears and matches the tone of the evator service to the tone of the tenant's demand—instantly and automatically.

the new era for elevators a tenant's call for a car never falls among the "deaf." Selectoatic continuously listens for each call . . . instantly answers each call . . . and automatically gulates the entire elevator bank so that it gives the most efficient service possible every inute of the day.

bur "starter" will no longer have to pace the lobby, in silent desperation, trying to figure at when to send which cars where. With Westinghouse Selectomatic Elevators, he can nile and take it easy at his most important job . . . directing traffic.

Selectomatic, an exclusive Westinghouse development, completely supersedes the revious accepted elevator standard—signal control.

ee and hear the complete story of Westinghouse Selectomatic—science's greatest achievenent in elevator transportation. Write on your letterhead and we'll gladly arrange a showing t no cost of our sound motion picture "Speeding Vertical Transportation With Selectomatic levators," Elevator Division, Dept. F-1, Westinghouse Electric Corp., Jersey City, N. J.

J-98568

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



PRODUCT NEWS

batt. These new batts also present a neat cut edge. Retail price is the same as for the manufacturer's previous batts—about 8 to 9 cents per sq. ft. They are available in 2 in. and full stud thicknesses.

Manufacturer: Johns-Manville, 22 E 40th St., New York 16, N. Y.

BABY BULLDOZER moves bulk materials.

Retailing at \$975, the Mighty Mouse is a 77 in. long bulldozer with hydraulic lifting system. Suitable for grading, light excavating, backfilling, uprooting trees and shrubs, towing and pushing.



it has a thrust power equal to its own 800 lb. weight and can easily lift 500 lb. with the same scoop-bulldozing attachment. Its size and simple foot and fingertip controls make it possible to maneuver the machine in close quarters, effecting savings in expensive hand labor. Its high traction caterpillar treads are self cleaning and its scoop is of $\frac{1}{8}$ in. all welded steel construction. Speed range is $\frac{1}{2}$ to 6 mph. forward and reverse. A specially designed tote wagon may be used to carry the Mighty Mouse to work and also can be attached to the rear of the bulldozer to serve as a dump wagon.

Manufacturer: Mead Specialties Co., 4114 N. Knox Ave., Chicago 41, Ill.

PLASTIC SLIDE RULE solves liquid flow problems.

The dimensional stability of a rigid vinyl plastic insures lasting accuracy in this slide rule for determining flow of liquids in commercial pipes and



smooth drawn tubing. It solves the Fanning equation and may be used to calculate the pressure drop, pipe diameter or rate of flow for any liquid with known viscosity and density. It is $10\frac{1}{2}$ in. long and $3\frac{3}{4}$ in. wide. Retail price is \$6. Distributor: C. J. Major, 2252 15th St., Wyandotte, Mich.

(Technical Literature, page 236)

Bilt-Well Products bring greater comforts to Indiana home owners at lower costs

17 11 11 11 1 1 1 1

Above picture shows a part of one of Indianapolis, Indiana's newest housing projects being equipped throughout with Superior Windows and other Bilt-Well Woodwork.

The General Contractors are Bohannon and Moore. Bilt-Well Woodwork is being furnished through Home Lumber Co., Danville, Ind., and supplied by Adams-Rogers, Indianapolis.



Other Bilt-Well Products are:

The Bilt-Well Line: Superior Unit Wood Windows • Exterior & Interior Doors • Entrances & Shutters • Clos-tite Casements • Carr-dor Garage Doors • Basement Unit Windows • Louvers & Gable Sash • Breakfast Nooks • Combination Doors • Screens & Storm Sash • Corner (China) Cabinets • Glidor Cabinets • Ironing Board Cabinets • Mantels & Telephone Cabinets • Multiple-Use & Linen Cabinets • Stair Parts.

Bilt-Well Storm Sash and Screen Units are optional equipment; an investment, however, that pays large dividends year after year.





SUPERIOR WINDOWS SAVE TIME AND MONEY ... they offer tremendous advantages in reducing building costs and in lowering maintenance expense.

SUPERIOR PATENTED WEATHERSTRIP... this is a completely weatherstripped unit. The exclusive jamb-liner equalizes all dimensional variations in the window and provides a weather-tight, snug fit at all times.

SUPERIOR WINDOWS ARE COUNTERBALANCED ... overhead spring balances, guaranteed for the life of the building,

overhead spring balances, guaranteed for the life of the building, insure easy, smooth sliding windows.

SUPERIORS ARE BUILT TO LAST... made of kiln-dried Ponderosa Pine with $1\frac{1}{8}''$ thick jambs and $1\frac{3}{4}''$ thick sills, all of which is chemically treated with a toxic water repellent preservative to insure excellent stability.

SUPERIOR WINDOWS ARE IDEAL... the sash can be installed and removed while plastering and painting (during construction prior to setting "inside stops") without damaging the weatherstrip.

SUPERIOR WINDOWS ARE DISTRIBUTED THROUGHOUT THE 37 EASTERN STATES BY RELIABLE BUILDING MATERIAL DEALERS

CARR, ADAMS & COLLIER COMPANY

Dubuque, Iowa



Long-lasting Lumite screens are woven of durable saran ... guaranteed never to rust, never to stain sills or sidewalls. They're completely unaffected by salt-air, smoke, rain or snow ... never need protective painting of any kind! That means years of care-free protection for your owners ... means complete owner satisfaction for you. Give Lumite screening, the low-cost extra—it's the ideal screening for every exterior use!

Sold by hardware, lumber, building supply wholesalers and screen manufacturers!

FACTS FOR ARCHITECTS AND BUILDERS

Effects of acids, alkalies and solvents—Essentially none.

Non-inflammable—But softens at about 240°F.

Tensile strength, ultimate (of filament)—Up to 40,000 lbs. per square inch.

Impact strength-Greater than

conventional screening, when adequately framed. Installation—Cut with ordinary

scissors. Fold cut edges under 1/2". Tack or staple the screening smoothly and evenly every 11/2". Because of inherent characteristics, LUMITE will gradually draw itself into a snug, firm fit.



LUMITE DIVISION, CHICOPEE MANUFACTURING CORP. OF GEORGIA, 47 WORTH STREET, NEW YORK 13, N.Y.



THE TYPE THAT MEETS YOUR NEED

You'll find Halsey Taylor fountains ideal for school and public building installations. There's a type to meet your requirements ... pedestal, wall, battery or cafeteria cooler!

The newest Halsey Taylor development, the Lo-Level Cooler for schools, is designed with the child in mind. Foot-pedal control permits filling glass with water while holding lunch-tray... the result, greater convenience, less confusion.

And of course, patented features to safeguard sanitation, are an integral part of Halsey Taylor design . . . in every model! Write

THE HALSEY W. TAYLOR CO., Warren, Ohio



HALSEY TAYLOR Fountains



CHICAGO NAVY PIER MARCH 28-31 1950 For designers, production men, sales executives, merchandise men and buyers in all industries and businesses. See all the latest advances in the world of plastics. See how to use plastics in all forms, old and new—to stimulate the sale of *your* products. Over 100 exhibits, showing materials, machines, finished products. Consult with the experts —they'll be there!

Guest Tickets: This exposition is not open to the public. Guest tickets are available free on request by writing (on your company letterhead) to —

THE SOCIETY OF THE PLASTICS INDUSTRY, INC. 295 MADISON AVENUE, NEW YORK 17, N. Y.



576 families live in this modern housing development in Queens, N. Y. The entire project is beated by a B & G Hydro-Flo System supplied by sixteen boilers in eight boiler rooms.

BELL & GOSSETT

Dept. BI-10, Morton Grove, III.

It is not just happenstance that the popularity of B & G Hydro-Flo Heating grows steadily, year after year. You find this *forced hot water system* in buildings of every size and character, simply because it offers completely outstanding advantages.

B & G Hydro-Flo Heating is amazingly economical in operation—delivers years of trouble-free service—and provides the kind of comfort obtainable only with controlled radiant heat. And B & G Hydro-Flo Heating is competitive in price with heating systems worthy of the name!

The close temperature regulation possible with *forced bot water* means that fuel is never wasted in supplying unnecessary heat. Indoor temperature is maintained by accurate controls at the comfort level, regardless of how sharply the weather changes. Whether radiators, convectors, baseboards or radiant panels are used, B & G Hydro-Flo Heating sets the pace for efficiency, low maintenance and comfort.

ompany

* Reg. U. S. Pat. Off.

Best for any kind of radiation



This modest residence enjoys the comforts of controlled radiant warmth from a B & G Hydro-Flo System.



The units required for B & G Hydro-Flo Heating are few and simple. They can be applied to any hot water beating boiler, whether oil, gas or stoker fired.



TWINDOW is made up of two or more panes of Pittsburgh Polished Plate Glass, with a scaled-in air space between them. When composed of two panes, it provides almost twice the insulating effectiveness of single-glazed windows. When three or more panes of glass make up the Twindow unit, even better insulation results. 45 standard picture window sizes are available for either wood or steel sash.

FOR HOMES, for buildings of all kinds, Twindow, Pittsburgh's window with built-in insulation, offers new latitude in window design. Twindow makes it possible to gain all the popular advantages of large windows, without sacrificing heating or airconditioning economy. Architect: Seymour Joseph, New York.

4 practical in recent

TODAY, STORE FRONTS try to make sure that passers-by won't pass them by. And they use large expanses of glass to achieve the desired attraction-power. Architects have proved to their satisfaction that Pittsburgh Glass Products can supply the beauty and appeal they demand in the execution of their store front designs. For example, Carrara Structural Glass, Herculite Doors, Pittsburgh Plate Glass and Pittco Metal make a wonderful team to help you create store fronts and interiors of distinction. Architect: Maurer & Maurer, South Bend, Indiana.

Packard



AT THE SUNNYBROOK HOSPITAL, Toronto, Canada, Pennvernon Window Glass was chosen to glaze the many windows involved. Being window glass at its best, Pennvernon has been found eminently satisfactory for applications of every kind. It has a degree of clarity, beauty and freedom from distortion exceptional in a sheet glass.

applications of GLASS construction



B

G

IN THIS SAME hospital, Carrara Structural Glass on washroom walls offers unique advantages. For Carrara is an ever-lasting material, distinctively beautiful, easy to keep clean and sparkling. It has a reflective, flawless surface. And it can be etched, sandblasted, laminated, fluted or bent for all kinds of original effects. Carrara is truly "the quality structural glass of infinite possibilities." Architects: Allward & Gouinlock, Toronto, Canada.

Your Sweet's Catalog File contains a complete listing and descriptions of Pittsburgh Glass Company products.

PLASTICS

M

0



CHEMICALS

G

BRUSHES

S

S

TECHNICAL LITERATURE



ALUMINUM. Designing with Aluminum Extrusions. Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky. 138 pp. 6 x 9 in.

Basic engineering principles that enable designers to use extruded aluminum shapes effectively are explained in this informative, liberally illustrated book. Eight basic kinds of sections evolved by the extrusion process are explained in detail with diagrams, charts and pictures of actual parts. Of special interest to architects and builders are the chapters on structural design con-

ECONOMICAL SAFE AND CLEAN

Specify Corruform

Economical Strength 100,000 p s i One quality, uniform standard.

Patented CORRUFORM is your guarantee for safe construction.



 SAFE—Light rigid sheets and attachments easily placed. A secure form for trades and concrete. No stretch or side pull on joists, beams or walls.



 ECONOMICAL—Light high-strength— 100,000 psi—steel to take construction abuse. No sag or material waste, concrete placed and finished by common practice on firm stable CORRUFORM.

HIGHEST STANDARD-LOWEST COST-Patented Tough-Temper Corruform for concrete in joist floors and roofs sets new standards of appearance and safety. Corruform permits material and labor savings sufficient to reach minimum-cost joist construction.



 CLEAN—No cleanup on floors below, no unsightly leakage, true and level. Bright decorative corrugated pattern for exposed ceilings, vinylprimed for painting, or galvanized.

CORRUFORM SPECIFICATION-Standard-weight Corruform with 2-3/16 inch wide 1/2 inch deep corrugations weighs .72 lbs. per sq. foot, has a guaranteed average strength of 100,000 psi and single-test minimum strength of 95,000 psi.



siderations, joint design (containing 39 different connection methods) and dimensional tolerances. Characteristics of aluminum itself, its fabrication properties, finishes and cost factors are discussed, and 16 tables present invaluable technical data.

ALUMINUM. Revere Aluminum Products. Revere Copper & Brass, Inc., 230 Park Ave., New York 17, New York. 18 pp. 81/2 x 11 in.

Pointing out the economies often effected by use of aluminum in place of a number of materials, this booklet contains descriptive information concerning the various forms in which aluminum is fabricated—from window and door sashes to radiator fins and light fixtures. Illustrations of products containing the manufacturer's aluminum alloys in extruded shapes, tube and sheet form are included as well as a chart listing properties of most wrought aluminum alloys.

CONCRETE. Lightweight Aggregate Concretes. Superintendent of Documents, U. S. Government Printing Office. Washington 25, D. C. $8 \times 10^{1/2}$ in. 28 pp. 20 cents.

Realizing the potentialities of low density concretes and the need for unbiased reliable technical facts on their suitability for dwelling construction, the Housing & Home Finance Agency sponsored an investigation of processed and natural inorganic materials currently marketed as lightweight aggregates. Tests were conducted by both the Bureau of Reclamation (Department of Interior) and National Bureau of Standards. Their findings, revealed in this book, should be helpful to designers, builders, as well as producers themselves. In addition to the aggregates commercially available at the time of the study, the Bureau of Standards furnished three others for experiment. Included in the program were shales or clays, slag, vermiculite, diatomaceous earth, perlite, pumice, scoria, and sintered fly ash. Investigations by both laboratories included tests on the materials' physical properties-crushing strength, absorption, unit weight, etc. Tests of concrete batches containing these aggregates covered compressive and transverse strength, shrinkage, thermal conductivity, weight per cubic foot, elasticity, and resistance to freezing and thawing. A two-page chart summarizes results of the study,

SPECIFICATIONS. Specification Index of Construction Items and Materials. Allen V. Rothermel, Camp Hill, Pa. 81/2 x 11 in. 69 pp. \$2.50.

Prepared especially for use by architects, engineers and specification writers, this directory should serve as an index to the maze of hard-toassemble information on thousands of building products. It lists alphabetically the materials most commonly used in construction, and tells where to find established specifications. The specifications indicated include those created by the American Society for Testing Materials, American Standards Association, Army, Navy, Federal Government, and publications of more than 30 associations and institutes.

(Continued on page 240)



FFERS NEW HEATING ECONOMIES FOR

MULTIPLE, DWELLINGS



RELIEVE OWNERS OF ALL HEATING PROBLEMS-GIVE TENANTS INDIVIDUAL HEAT CONTROL!

OIL HI-BOILERS - Combining oil burner, heating boiler, domestic water heater, expansion tank and complete automatic controls, these new units offer fully automatic heat plus unlimited hot water-occupy less than four square feet of floor space. Wall-Flame Burner.

OIL AND GAS LO-BOILERS Every wanted, needed feature for finest automatic heating is incorporated in these super-compact units. Completely factory-assembled and unitshipped. Two cabinet types; three heat exchanger types; choice of oil or gas burner.

OIL AND GAS HI-FURNACES Complete winter air conditioning equipment - including burner (oil or gas), furnace with radiator, blower and air filter-is here combined in one space-saving, fully-integrated unit. Choice of several return air locations.

KITCHEN-TYPE OIL BOILERS Finished in gleaming whitefor kitchen installation-these revolutionary units combine an oil burner, house-heating boiler, instantaneous water heater, expansion tank, circulating pump and automatic controls-in one cabinet.

Here's the modern, money-saving heat that is "Duty-Designed" specifically for your new "garden-type" multiple dwellings-Timken Silent Automatic Heat!

Whether you're using oil or gas, you save valuable spaceeven eliminate utility rooms - with these super-compact units. A fuel-thrifty Timken Silent Automatic in each apartment means pinpoint control of heating costs-frees owners from expense and responsibility-pleases tenants, too. This equipment is built to last as long as the house-cuts maintenance costs to the vanishing point.

Timken Silent Automatic units are priced in keeping with your construction costs. Write today for full details!

PLANTS AT: DETROIT AND JACKSON, MICH. . OSHKOSH, WIS. . UTICA, N. Y. . ASHTABULA AND KENTON, OHIO . NEW CASTLE, PA.







ers you ... this man of

Expert assistance in the selection and application of the right acoustical product for every Sound Conditioning job. He is your local distributor of Acousti-Celotex products-the nation's most complete, quality line of acoustical materials.

His Sound Conditioning skills reflect over 25 years of experience and hundreds of thousands of installations. His acoustical products have been tested and proved to meet every building code, specification and requirement.

For custom-made installations of lasting beauty and quiet, make sure to contact the man with the most widely used acoustical products ever developed, plus the most extensive experience in Sound Conditioning.

ACOUSTI-CELOTEX CANE FIBRE TILE

A lightweight, rigid unit, combining acoustical efficiency

actions and the entropy of the back) assure repeated paintability and ease of maintenance. Available in a variety of sound-absorbent ratings. Rot proof and vermin proof (patented Ferox process).

ACOUSTI-CELOTEX MINERAL TILE

Midecof mineral fibre, felted with a binder to form a rigid tile with a uni-versal rating of incombustibility. Perforated with small holes extending almost to the back of the tile, high acoustical absorption is pro-vided together with unrestricted paintability by either brush or spray method.

ACOUSTI-CELOTEX* FLAME RETARDING TILE



A cane fibre tile with

a flame retarding surface. This tile meets all requirements for Slow Burning rating as stipulated in Federal Specifications SS-A-118a. It may be washed or repainted without impairing its flame retarding charac-teristics-and without loss of sound absorbing capacity. Supplied in all sizes and thicknesses of regular cane fibre tile.

ACOUSTI-CELOTEX **FISSURETONE**

A totally new mineral fibre acoustical tile. Attractively styled to simulate

travertine, it beautifies any interior and effec-tively controls sound reverberation. Light-weight, rigid and incombustible, it is factoryfinished in a soft, flat white of high light-re-flection rating.

ACOUSTEEL* Combines a face of perforated steel with a rigid pad of sound absorbing

Sound absorbing Rock Wool to pro-vide excellent sound absorption, together with attractive appearance, durability and incom-bustibility. The exposed surface of perforated steel is finished in baked-on enamel. Acous-teel is paintable, washable, cleanable.

*Trade Marks Reg. U. S. Pat. Off.



HOSPITALS



OFFICES



Salutinto your SPECIFY

FOR YOUR OUT-SWUNG WOOD CASEMENT WINDOW INSTALLATIONS

The three Win-Dor devices shown below are the elements that help assure client satisfaction with your out-swung wood casement window installations. Each one performs a specific important function - and does it better! Together, they furnish the most satisfactory control that quality manufacture and the engineering experience of almost half a century can provide.

Win-Dor.

See Sweet's file $\frac{18b}{16}$ for details.

Series 48 "Snugger" Closer: Reaches out and pulls casement tight at top. Automatic closing and release. Furnished in steel or brass, with 6 or 8-lb. spring. Reversible.





Series 30 Wood Case-ment Operator (reversible): Permits close housing for trim detailing, and when concealed under stool, eliminates all hard-ware obstruction above it. Over-size 3/4" bronze worm, bronze bushing. Steel arm, channel, and integrated housing.

Ask Your Builders' Hardware Man

The Casement Hardware Co. 406 N. Wood St., Dept. E, Chicago 22, Illinois

TECHNICAL LITERATURE

INSULATION. Simplified Physics of Thermal Insulation. Infra Insulation, Inc., 10 Murray St., New York 7, N. Y. 44 pp. 81/2 x 11 in.

In simple graphic terms this recently revised and expanded edition presents a comprehensive treatment of thermal insulation. Allied topics such as heat and vapor transfer, radiation, convection, conduction and emissivity are included. Photographs and diagrams accompany the descriptions of mass fibrous and reflective insulation materials. Densities, weights, cubic contents and K, C, R, and U factors for all these materials are given and their relative merits are discussed for specific installations.

HEATING. B&G Monoflo Fittings. Bulletin CL-949. Bell & Gossett Co., 8200 N. Austin Ave., Morton Grove, III. 6 pp. 81/2 x 11 in.

The bulletin contains pertinent data on the manufacturer's cast iron and copper Monoflo fittings fabricated for use in forced hot water systems, and illustrates their proper application. Unique features of the Monoflo are itemized, and simplified rules for determining requirements for a small "one pipe" heating system are outlined.

TILE. The Color Book of Tile, American Olean Tile Co., Lansdale, Pa., 100 pp. 9 x 11 in.

A complete catalogue of the manufacturer's glazed and unglazed tile products, this volume suggests numerous color and pattern combinations. A novel spiral binding permits the planner to place any one of the 30 color plates of complete bathrooms and kitchens beside any of the eight folders on accessories and floor patternsnot only a convenient but also a stimulating arrangement.

CARPETING. Nye Wait-Carpeting for the Few. Nye-Wait Co., Inc., Auburn, N. Y. 22 pp. 13 x 71/2 in.

Those concerned with interior design (but not with small budgets) will find this full color catalogue of wool and nylon carpeting a useful aid. Limitless color choice obtainable because of the firm's custom order skein-dyeing service and the many "hand-carved" patterns are two premium advantages of these luxury products. Each step in the weaving process is illustrated in an interesting account of carpet construction.

WALL COVERING. Timbertone Structural Papers. Timbertone Decorative Co., Inc. 114 E. 32d St., New York 16, N. Y. 6 pp. 81/2 x 11 in.

For architects' and contractors' easy reference, the manufacturer has prepared a file folder with four samples of handsomely textured wall coverings-Oak, Fabriktone, Gold Oak and Pecky Cypress. A brochure contained in the folder pictures other Timbertone dimensional papers and gives complete specifications and price data. Described as sun-fast and washable, the papers are distinctly derivations, not simulations, of woods, fabrics, metals and stone. They are adaptable to many commercial and residential interiors.

This was the fire that couldn't happen!



THE CONSTRUCTION: FIREPROOF . . . FIRE INSURANCE: MAXIMUM . . FIRE WARNING SYSTEM: NONE. And today smoke and charred ruins are the only remaining marks of a hospital that "couldn't burn."

Scenes like this are tragic proof that when it comes to fire, passive measures aren't enough. Fires are bound to happen and your best safeguard is positive protection . . . check inspections 24 hours a day . . . a quick way of sounding an alarm . . . a sure method of getting help fast.

THAT'S WHERE COUCH FITS INTO YOUR PICTURE.

For Couch Fire Alarm Systems are on the job around the clock ready to help you avoid loss by getting action quickly. From among the many types that are made especially for hospitals, institutions and industrial plants, you're bound to find one right for your needs. Write today for Bulletin 116 for all details.



Private Telephones for Home and Office . . . Hospital Signaling Systems . . . Apartment House Telephones and Mailboxes . . . Fire Alarm Systems for Industrial Plants and Public Buildings.

MENGEL Solid-Core Flush Doors Expand INTERNALLY-But **NOT EXTERNALLY!**

Want the facts about a

REALLY STABLE

SOLID-CORE DOOR?

engel Solid-Core Flush Doors represent a radically new Standard of Stability. Their unique construction does not undertake the impossible job of preventing expansion and contraction caused by changes in humidity - it controls these forces to an extent hitherto unknown.

All Mengel solid hardwood core members are deeply slotted at frequent intervals both with and across the grain. These slots effectively absorb expansion and contraction. Thus the solid wood between the slots can expand and contract as the weather changes, without in any way affecting the stability of the door itself! Futhermore, Mengel's exclusive key-lock dovetails and waterproof hot-press phenolic bonding keep the entire assembly permanently tight. . . .

Get all the facts about Mengel Solid-Core Flush Doors-the really stable doors that co-operate with nature on the inside, ignore it on the outside! The coupon will bring you full information and specifications.



Wood expands under hu-midity, but expansion is absorbed by deep slots cut both with and across the grain. Note how the ex-pansion of the solid wood has closed the slots.



HUMIDITY

Dry atmosphere has shrunk the solid wood between the slots, thereby increasing the width of the slots, without changing the dimensions of the door itself.







THE MENGEL COMPANY Plywood Division, Dept. AF-6, Louisville 1, Ky.

Gentlemen: Please send me complete information, including specifications, on Mengel Solid-Core Flush Doors.

Name

Firm

Street City_

State.


and the second se		
and an and a second		
	The second s	
	The state of the second s	
	Construction of the second	
	And the second	
Providence and	多相關目標的	
No. of Contraction		
	AND ANTIPITIES ANTIPITIES ANTIPITIES	
		-
		Conception of the second

100 Park Avenue has installed



100 Park Avenue is the new, completely modern 36-story office building near Grand Central Terminal in New York City. Architects: Kahn & Jacobs.

venetian blinds of new Flexalum slats and vinyl plastic tape

only Flexalum offers all these advantages that cut maintenance costs:



WIPES CLEAN Dust doesn't linger on the nonporous aurface of new Flexalum viny I plastic tape" 1 A damp cloth whisks away dirt, grease, grime, sticky spots, stains. Costly labor hours saved!



SUN FAST The color is locked into Flexalum tape. Even the sun won't fade or discolor it. This sturdy plastic tape will look new for years. No more constant retaning!



WON'T SHRINK Flexalum vinyl plastic tape won't shrink or stretch. Flexalum slats won't rust. Costly moisture damage is eliminated!



SLATS SNAP BACK Bend them, abuse them, bear down with a vacuum tool ... these spring-tempered aluminum slats keep their shape. Replacement costs are cut drastically.



WON'T CHIP OR CRACK The permanent baked-on finish won't chip, crack or peel. Flexing won't harm it, either. Blinds of Flexalum stay newlooking ... save maintenance dollars.



LOOK FOR THIS MARK Be sure the blinds you buy carry the Flexalum" "visible-invisible" trade mark. Write for sample tape and slats. Make your own test of Flexalum's cost-saving features.

120 color combinations ... custom-made into venetian blinds by quality manufacturers and sold by leading retailers

spring-tempered aluminum slats - vinyl plastic tape

HUNTER DOUGLAS CORPORATION, RIVERSIDE, CALIFORNIA AND 150 BROADWAY, NEW YORK 7, N.Y.



PATENTED REVERSING ACTION alternates direction of shredding with each operation. This automatic "reversing action" doubles life of shredding elements, adds a unique self-sharpening feature, and assures long troublefree operation.

CONTINUOUS FEEDING: "Open-Drain" type operation permits food waste to be continuously fed through drain opening while unit is running... assures unlimited capacity, eliminates double-work required in reloading "locked-top" units for each operation.

AUTOMATIC WHIRLPOOL (caused by rotation of IN-SINK-ERATOR'S shredding elements) is a swift-swirling water motion around drain which keeps all waste quietly moving into unit... keeps strainer, drain and baffle clean.

TWO-WAY CLEANSING: Pumping impellers increase velocity and pressure through drains producing vigorous scouring effect . . . Patented Reversing Action makes this an efficient and thorough two-way action which ends soap and grease accumulation.

5 SAFETY BAFFLE of heat-and-acid resistant Neoprene prevents back-splash, shields opening, affords a cushioned connection at sink drain—eliminates metal-tometal contact—silences operation.

SIMPLE SELF-SERVICE: Two special features enable owner to overcome most operating problems and get years of trouble-free use with minimum need for outside service: (1) Self-Service wrench for relief of accidental jamming; and (2) Overload Protection which automatically "cuts out" when motor is under unusual strain—is easily reset when strain is relieved.

GLEAMING WHITE FINISH neatly trimmed in black adds to the beauty of any kitchen, while compact streamlined smoothness (with no projections to catch dirt and grime) means less cleaning. Simplicity of design permits easy, economical installation.





vent moisture and water damage . . . gives you two important benefits: I. ORIGINAL BEAUTY RETAINED — Invisible after application,

- Crystal does not change the color or surface texture . . . makes surfaces stainproof and prevents efflorescence.
- MATERIALS LAST LONGER Crystal repels water throughout entire depth of penetration . . . provides lasting protection to all man-made masonry and most natural stones.

ONE COAT OF CRYSTAL is all that's needed, applied at any temperature . . . saves money . . . saves time on the job!



The Eighth of a Series in the interest of more efficient use of steel .. a vital American resource.



Sound engineering design dictates efficient use of materials . . . so why waste every third bar?

> *IN EXCESS OF ASTM A305 REQUIREMENTS AND THE LATEST A.C.I. RECOMMENDATIONS.

ACLEDE STEEL COMPANY

St. Louis, Mo.



These beautifully modern fourroom homes in Teaneck, N. J., have a spacious attic where two additional bedrooms and bath may befurnished. The completelyequipped kitchen includes an automatic Electric Range because, as Mr. Williams says, "electric cooking is a part of modern living."

"In our experience," says builder Cy Williams,

Value Sells Houses ...

and that means up-to-the-minute features like the automatic electric range"



ELECTRIC RANGE SECTION - National Electrical Manufacturers Association, 155 East 44th Street, New York 17, N.Y. ADMIRAL - COOLERATOR - CROSLEY - FRIGIDAIRE - GENERAL ELECTRIC - GIBSON - HOTPOINT KELVINATOR - LEDO - MONARCH - NORGE - QUALITY - UNIVERSAL - WESTINGHOUSE "Our aim," says Mr. Williams, "is to provide real living well within the reach of home buyers. The sales of our Sun Ranch Homes show that we've accomplished this. People are quick to appreciate an economical house that includes features usually found only in more expensive homes including modern, automatic Electric Ranges."

The scientific U-shaped kitchen, like the rest of the house, has the most modern features. Its up-to-the-minute equipment includes a modern, automatic range, and — OF COURSE . . . IT'S ELECTRIC!







ALL THINGS CONSIDERED-INCLUDING TELEPHONE RACEWAYS



It's especially true in small homes—thoughtful details are often the strongest selling points. And built-in raceways for concealed telephone wiring are one feature sure to impress today's home buyer.

Installing telephone raceways is easy and inexpensive. Simply select the locations for telephone outlets in advance. A few lengths of pipe or flexible tubing, placed inside the walls during construction, will carry the wires to the outlets.

For all homes—large or small—your Bell Telephone Company will be glad to help you plan for modern telephone facilities. Just call your Telephone Business Office and ask for "Architects and Builders Service."



It's so easy to forget about AFTER-SERVICE - until, all-of-a-sudden you NEED it!

Buying an industrial door without the assurance of fast and efficient after-service is like buying "half-a-door." The package isn't complete without the service.

Crawford Marvel-Lift Doors probaby need less service than any other you can buy_yet, the nation-wide Crawford organization specializes in servicing industrial doors (all kinds) and gladly works nights and week-ends in emergencies.

That's because we look at the door business realistically. We know that any moving device is going to need adjust-



ment and replacement parts eventually. We know that when damage knocks a door out of commission it can tie up a whole department or an entire plant. And so, we know that every door we sell must be backed by good, fast service.

So, when you specify Crawford industrial doors and operators, your client gets the full package (1) a good product, (2) the finest door service in the country, (3) a clean-cut guarantee backed by a long-established, responsible organization. If you have an idea on how we can improve this set-up we'll be glad to hear from you.

Crawford makes wood sectional doors of all types up to 30' x 18' and heavy-duty hardware is available on sizes 8' x 8' and up. Call your local Crawford Door Sales Company (listed in your Yellow Pages under "Doors") or write us direct for any information you may need.





FROM COAST to COAST **IN-WALL TABLES and BENCHES** CUT SCHOOL BUILDING COSTS

Multiple use of space means economy. Hundreds of schools in cities from coast to coast now use and testity to the practical advantages of In-Wall installations—seat more students in less space, maintain better discipline, eliminate storage area.

Sturdy, welded, long-life metal construction, sanitary composition surfaces, oil-less bearing rubber casters.



Against wall models also available for re-modeling projects.

Consult Sweet's Catalog or write direct for complete details and name of nearest representative.

SCHIEBER

Manufacturing Co.

12738 Burt Road Detroit 23, Michigan



Sell Faster

Equipped with NORGE Appliances

Home buyers are more choosy now. They want more for their money. And they want a "packaged mortgage" so that they can pay the cost of necessary home appliances over a long period of time...the duration of their house mortgage. Builders everywhere find applianceequipped homes sell faster, easier.

WISE BUILDERS INSTALL NORGE! and with Good Reason!

You know that in practically every case it's the woman who chooses the home. You know that the kitchen is the big selling point. And the kitchen equipped with Norge appliances is a sure winner.

First, because Norge is a famous national brand. Every woman knows the Norge name. Every woman recognizes the value. And the husband knows that "Borg-Warner" stands for the best in engineering.

Second, individual Norge appliances sell themselves...and your house along with them. Their beauty lends glamour and drama. And each appliance is jam-packed with the features every homemaker wants.

And the builder himself finds that the Norge price is right.

So when you install Norge appliances, you add much more to the value of your house than the price of the appliances themselves. You assure yourself of faster-moving units...and greater profits.



NORGE REFRIGERATOR: One-piece, seamless, porcelain-lined interior. Recessed floor. Extra package shelf for small items and leftovers. Side freezer holds up to 17 lbs. of frozen foods. Glass fiber insulation. Adjustable leveling guides.

NORGE ELECTRIC RANGE: One 8" 2100-watt surface unit, two 5" 1250-watt surface units, plus deep-well cooker. Each unit is made up of two elements. Controlled by 7-speed switches. Glass fiber insulation. Family size oven. Stain-and-acid resisting Titanium porcelain. Appliance outlet.



For Detailed Information SEND COUPON TODAY!

NORGE Division, Borg-Warner Corporation, Dept. AF-2 Detroit 26, Michigan

Att.: Mr. S. J. McCarthy, Director of Contract Sales.

Please send me more information on the following appliances:

Refrigerator

Electric Range

Automatic Washer

Gas Range

Water Heaters

Home Heaters

where the standing and the standing of the

AMERICA'S FINEST HOME APPLIANCES - ENGINEERED BY BORG-WARNER

The advertising pages of FORUM are the recognized market place for those engaged in building. A house or any building could be built completely of products advertised in FORUM. While it is not possible to certify building products, it is possible to open these pages only to those manufacturers whose reputation merits confidence. This FORUM does.

Adams & Westlake Company, The	
	76
Aetna Steel Products Corporation	186
Alberene Stone Corporation	67 56
Aluminum Company of America (Alcoa)	4, 75
American Brass Company, The	192
American Iron & Steel Institute (Committee on Steel Pipe Research)	219 204
American Radiator & Standard Sanitary Corporation	175
American Structural Products Company	181 247
Andersen Corporation	180
Armco Steel Corporation	57
Armstrong Cork Company	1.92
Beautex Plaster Company	246
Bell & Gossett Company	233
Berger Manufacturing Division (<i>Kepuolic Steel Corporation</i>)	23
Borg-Warner Corporation (Norge Division)	249
Bruce, E. L., Co	2
Cabot, Samuel, Inc	246
Cambridge Tile Manufacturing Company, TheCov Carr. Adams & Collier Company	er II 231
Carrier Corporation	154
Ceco Steel Products Corporation	201
Celotex Corporation, The Chicopee Manufacturing Corporation	239 232
Chrysler Corporation (Airtemp Division)	186
Clow, James B., & Sons	140
Coleman Company, Inc., The	219
Connor, W. B., Engineering Corporation	$ \frac{161}{240} $
Crane Co.	184
Croft Steel Products, Inc.	220
Crucible Steel Company	53 46
Curtis Refrigerating Division (Curtis Mfg. Co.)	195
Dant & Russell Sales Co.	212
Day-Brite Lighting, Inc.	190 48D
Detroit Steel Products Company	1, 165
Di-Noc Company. The Dunham, C. A., Company	. 217
Plansten Statete Commention	150
Eljer Company	er III
Facing Tile Institute	25
Fedders-Quigan Corporation	159
Fiat Metal Manufacturing Company	40
Fleet of America, Inc	48 80
Flush Wall Radio Company	212
Frigidaire Division (General Motors Corporation)	
	227
General Electric Company 17	227
General Electric Company	227 3, 179 227
General Electric Company	3, 179 227 3, 179 227 66 63
General Electric Company	227 3, 179 227 66 63 7 236
General Electric Company	227 3, 179 227 66 63 7 236 8 77
General Electric Company	227 3, 179 227 66 63 7 236 68 77
General Electric Company	$\begin{array}{c} 1074\\ 227\\ 8, 179\\ 227\\ 66\\ 63\\ 7\\ 236\\ 68\\ 77\\ 158\end{array}$
General Electric Company	227 8, 179 227 66 63 77 236 68 77 236 68 77 158 153 45
General Electric Company	$\begin{array}{c} 1874\\ 227\\ 8, 179\\ 227\\ 66\\ 63\\ 7\\ 236\\ 68\\ 77\\ 158\\ 153\\ 450\\ 287\\ 287\\ 158\\ 153\\ 450\\ 287\\ 158\\ 153\\ 450\\ 287\\ 188\\ 188\\ 188\\ 188\\ 188\\ 188\\ 188\\ 1$
General Electric Company	1074 227 8, 179 227 66 63 7 236 68 77 236 68 77 158 153 455 2200 187 197
General Electric Company	1074 227 8, 179 227 66 63 77 236 68 77 236 68 77 158 220 187 145 220 187 145 243
General Electric Company	227 8, 179 227 66 63 7 236 68 77 236 68 77 158 153 45 220 157 145 220 197 145 243
General Electric Company	227 8, 179 227 66 63 63 7 236 68 77 158 158 158 158 158 2200 1877 145 243 243 243
General Electric Company	227 8, 179 227 66 63 63 77 2366 68 77 158 153 45 220 187 197 145 243 36 162 243
General Electric Company	227 8, 179 227 66 63 77 236 68 77 236 68 77 153 455 220 187 197 145 243 36 162 243 36 252 244 47
General Electric Company	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
General Electric Company	227 8, 179 227 66 63 77 236 68 77 158 45 250 187 145 243 36 162 243 244 472 224
General Electric Company	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
General Electric Company	$\begin{array}{c} 103.4\\ 227\\ 227\\ 36, 179\\ 226\\ 63\\ 77\\ 236\\ 68\\ 77\\ 236\\ 68\\ 77\\ 158\\ 250\\ 187\\ 197\\ 197\\ 145\\ 220\\ 187\\ 197\\ 224\\ 252\\ 252\\ 252\\ 252\\ 252\\ 252\\ 252$
General Electric Company	$\begin{array}{c} 13.4\\ 1.227\\ 2.227\\ 3.227\\ 6.6\\ 3.7\\ 2.236\\ 6.6\\ 7.7\\ 2.236\\ 6.6\\ 8.7\\ 7.\\ 153\\ 2.20\\ 1.53\\ 2.20\\ 1.45\\ 2.243\\ 1.45\\ 2.252\\ 2.522\\ 2.522\\ 2.25$
General Electric Company	$\begin{array}{c} 103.4\\ 227\\ 227\\ 8, 179\\ 226\\ 63\\ 7\\ 226\\ 68\\ 77\\ 236\\ 68\\ 77\\ 158\\ 220\\ 187\\ 145\\ 220\\ 145\\ 224\\ 224\\ 252\\ 252\\ 252\\ 252\\ 252\\ 2$
General Electric Company 17: General Motors Corporation (Frigidaire Division) 17: General Pumice Corp. General Pumice Corp. Georgia Marble Company, The Geoty, H. S. & Co., Inc. Granite City Steel Company Granite City Steel Company Great Lakes Carbon Corp. Gustin-Bacon Manufacturing Co. Hachmeister-Inc. Hager, C., & Sons Hinge Mfg. Co. Hauserman, E. F. Company, The Homasote Company Hope's Windows, Inc. Hotpoint, Inc. Hotpoint, Inc. House Garden Hunter Douglas Corporation Hadependent Lock Company Independent Lock Company (Lockwood Hardware Mfg. Co. Division) Inland Steel Products Company In-Sink-Erator Manufacturing Company Insertional Nickel, Inc., The International Nickel, Inc., The International Steel Company Jamestown Metal Corporation Jonnes & Laughlin Steel Corporation Jones & Laughlin Steel Corporation Jones & Laughlin Steel Corporation Just Manufacturing Company Instructuring Company Kawneer Co., The 15 Kayino Division (Owens-Hinois Glass Co.) Kelvinator Division (Nash-Kelvinator Corp.)	$\begin{array}{c} 227\\ 227\\ 8, 179\\ 227\\ 66\\ 3\\ 7\\ 226\\ 68\\ 77\\ 236\\ 68\\ 77\\ 236\\ 68\\ 77\\ 145\\ 220\\ 187\\ 145\\ 220\\ 145\\ 224\\ 224\\ 224\\ 224\\ 224\\ 224\\ 224\\ 2$
General Electric Company	$\begin{array}{c} 227\\ 227\\ 8, 179\\ 227\\ 66\\ 63\\ 7\\ 226\\ 68\\ 77\\ 236\\ 68\\ 77\\ 236\\ 68\\ 77\\ 145\\ 220\\ 187\\ 145\\ 224\\ 226\\ 2252\\ 244\\ 47\\ 72\\ 226\\ 228\\ 1203\\ 41\\ 144\\ 6, 157\\ 50\\ 8\\ 207\\ 251\\ \end{array}$
General Electric Company	$\begin{array}{c} 227\\ 227\\ 8, 179\\ 227\\ 66\\ 63\\ 7\\ 226\\ 68\\ 77\\ 236\\ 68\\ 77\\ 236\\ 68\\ 77\\ 145\\ 220\\ 145\\ 220\\ 145\\ 224\\ 224\\ 225\\ 224\\ 41\\ 77\\ 2226\\ 2251\\ 224\\ 41\\ 1203\\ 41\\ 144\\ 6, 157\\ 50\\ 207\\ 30\\ 30\\ 30\\ 30\\ 30\\ 30\\ 30\\ 30\\ 30\\ 30$

 Laclede Steel Company
 244

 Landers, Frary & Clark
 42, 43

 Lau Blower Company, The
 244

 Leader Electric Manufacturing Corporation
 138

 Libbey-Owens-Ford Glass Company
 193, 196

 Lockwood Hardware Mfg, Co. Division (Independent Lock Company)
 162

 Ludman Corporation
 211

 Ludowici-Celadon Company
 214

 Mahon, R. C., Company, The
 69

 Markel Electric Products, Inc.
 212

 Medusa Portland Cement Company
 166

 Mengel Company, The
 222, 241

 Minneapolis-Honeywell Regulator Company
 26

 Minnesota and Ontario Paper Company (Insulite Division)
 47

 Morrison Steel Products, Inc.
 185, 242

 Mosler Safe Co.
 32

 Thos. Moulding Floor Manufacturing Company
 168

 Nash-Kelvinator Corp. (Kelvinator Division)
 8

 National Electrical Manufacturers Association
 245

 National Electric Products Corporation
 221

 National Oak Flooring Manufacturers' Association
 6

 National System of Garage Ventilation, The
 194

 National System of Garage Ventilation, The
 151

 Nichols Wire & Aluminum Company
 242

 Norge Division (Borg-Warner Corporation)
 249

 Norton Co.
 79

 O'Brien Corporation, The
 79

 O'Brien Corporation, The
 210

 Ohio Can & Crown Company
 208

 Otis Elevator Company
 147

 Overhead Door Corporation
 Cover IV

 Owens-Illinois Glass Co. (Kaylo Division)
 50

 Paine Lumber Co.
 216

 Petko Industries, Inc. (Kwikset Locks, Inc.)
 17

 Pittsburgh Corning Corporation
 198, 199

 Pittsburgh Plate Glass Company
 234, 235

 Pittsburgh Reflector Company
 234, 235

 Pittsburgh Steel Products Company
 215

 Porete Mfg. Co.
 188

 Powers Regulator Co., The
 240

 Pratt & Lambert, Inc.
 205

 Pryne & Company, Inc.
 213

 Pullman-Standard Car Manufacturing Company
 62

 Raymond Concrete Pile Company
 139

 Republic Steel Corporation
 54,55

 Republic Steel Corporation (Berger Manufacturing Division)
 189

 Revere Copper and Brass, Inc.
 33

 Reynolds Metals Company
 61

 Rigidized Metals Corp.
 61

 Robertson, H. H., Company
 70

 Robertson, H. H., Company
 167

 Rowe Manufacturing Company
 167

 Rowe Manufacturing Company
 167

 Rowe Manufacturing Company
 142

 Ruberoid Corp.
 142

 Rust-Oleum Corporation
 21

 Sargent & Company
 48B, 48C

 Schlage Lock Co.
 248

 Sedgwick Machine Works, Inc.
 0pp. 221

 Sedgwick Machine Works, Inc.
 182

 Servel, Inc.
 191

 Shepard Elevator Company
 220

 Sisalkraft Co. The
 200

 Sisalkraft Co. The
 206

 Sonan Valve Company
 171

 Smith, Alexander-Masland, C. H.
 143

 Smith, A. O., Corporation
 203

 Society Of The Plastics Industry, Inc., The
 232

 Sonneborn, L., Sons, Inc.
 238

 Standard Dry Wall Products, Inc.
 144

 Surface Combustion Corporation
 202

 Sylvania Electric Products, Inc.
 34, 35

 Taxlor, Halzer W. Commun.
 34, 35

 Taylor, Halsey W., Company, The
 232

 Temco, Inc.
 182

 Tile Council of America
 163

 Tile-Tex Company, The
 0pp. 48D

 Timber Structures, Inc.
 208

 Timken Silent Automatic Division (The Timken-Detroit Axle Co.)
 237

 Trane Company, The
 24

 Trane Company, The
 24

 Trane Company, The
 24

 Truscon Steel Company
 173

 Wakefield Brass, F. W. Co., The
 177

 Walworth Company
 146

 Washington Steel Corporation
 216

 Weis, Henry, Mfg. Co., Inc.
 18

 Westinghouse Electric Corporation
 5, 37, 155, 229

 Wheeling Corrugating Company
 38, 39

 Wright Manufacturing Co.
 20

 Wurdack Chemical Co.
 244

 Wakefield Brass, F. W. Co., The Zonolite Company Zurn, J. A., Mfg. Co.



Selected by men who know!

• The fact that the Brotherhood of **Boilermakers selected Kewanee Steel Boilers** for their magnificent new building in Kansas City, Kansas, indicates that the men who make and know boilers best rely on Kewanee for dependable heat.

Building of the BOILERMAKERS BROTHERHOOD, Kansas City, Ka 3 Kewanee Firebox and 1 Kewanee Scottie Jr. "on the job"

EWAR



Milcor Metal Base for **Modern Interior Beauty**

-available in flush-base, projecting-base, adjustablebase, and removable-base types. 4-inch and 6-inch heights, in standard 10-ft. lengths. Made of durable 18-gauge galvanized steel.

Modern Beauty Begins at the Bottom



... with

Adjustable Base



Projecting Base

No. 601 Flush Base MilcoR Metal Base

Interior beauty today calls for functional design. Beauty, yes. But beauty that is efficient, clean, and fire-safe. That's why modern construction everywhere calls for Milcor Metal Base - the sleek and beautiful base trim that ties in to all the other products in the world's most complete line of fireproof building materials. Slots for grouting. With or without expanded metal plaster flanges. Full details in Sweet's. Or write for your free copy of new Milcor Manual. No obligation.

NLAND COMPANY PRODUCTS

Formerly Milcor Steel Company

4033 WEST BURNHAM STREET . MILWAUKEE 1, WISCONSIN Baltimore 24, Md., Buffalo 11, N.Y., Chicago 9, Ill., Cincinnati 25, Ohio, Cleveland 14, Ohio, Detroit 2, Mich., Kansas City 8, Mo., Los Angeles 23, Calif., New York 22, N.Y., Rochester 9, N.Y., St. Lavis 10, Ma.

NEW ELJER STREAM CONTROL NEW! ORDINARY STREAM **ELJER "No Splash" STREAM**

Another ELJER Extra at No Extra Charge



Here's the heart of Eljer's "No-Splash" Stream Control. It eliminates the annoyance of water splashing in a basin by effectively screening the

water flow to a soft, smooth, controlled stream. It's new ... inconspicuous ... another Eljer improvement ... another Eljer extra ... at no extra charge.

The Eljer "No-Splash" Stream Control will be furnished on the popular Martha Washington and LaSalle Vitreous China Lavatories, and on the Princeton Enameled Cast Iron Lavatory ... also on all B-9350-R and B-9359-R center-set lavatory fittings.

Remember, the first cost of Eljer Brass Goods is only a very few cents more than ordinary, cheap fittings . . . an insignificant factor in the total cost of even the lowest-priced house.

It will pay you to sell Eljer Quality Brass ... and when you install Eljer Plumbing Fixtures, be sure to use Eljer Brass Fittings. Clients do appreciate Eljer *extras*... like the "No-Splash" Stream Control. See your Eljer Distributor or write Eljer Co., Ford City, Pennsylvania.

It pays you, it pays us - because we specialize in Plumbing Fixtures and Brass



The trade mark of The "OVERHEAD DOOR," a symbol of quality, appears on every "OVERHEAD DOOR" lock handle. Like all hardware for the door, the handsome, chrome-plated lock handle functions perfectly and gives long lasting service. Its design permits a convenient, firm grip and the door, because of its expertly engineered counterbalancing device, lifts upward and out of the way with only a minimum of effort.

OVER HEAD DOOR CORP

CK HAND

A 11 7

HARTFORD

Symbol of

Any "OVERHEAD DOOR" may be manually or electrically operated, whether for residential, commercial, rural or industrial use. Specify this quality door . . . quality cuts costs!

TRACKS AND HARDWARE of Salt Spray Steel

THE

