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EMBER 1951 ARCHITECTURAL FORUM

THE MAGAZINE OF BUILDING

OCT 15 '51



New concrete techniques promise a whole new approach to building (p. 180)

1. *Lift slab*
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3. *Tilt-up*

The New American Barn (p. 214)

Year's best college buildings (p. 160)

1. *Panama University*
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How to sell 700 houses in 4 weeks (p. 206)

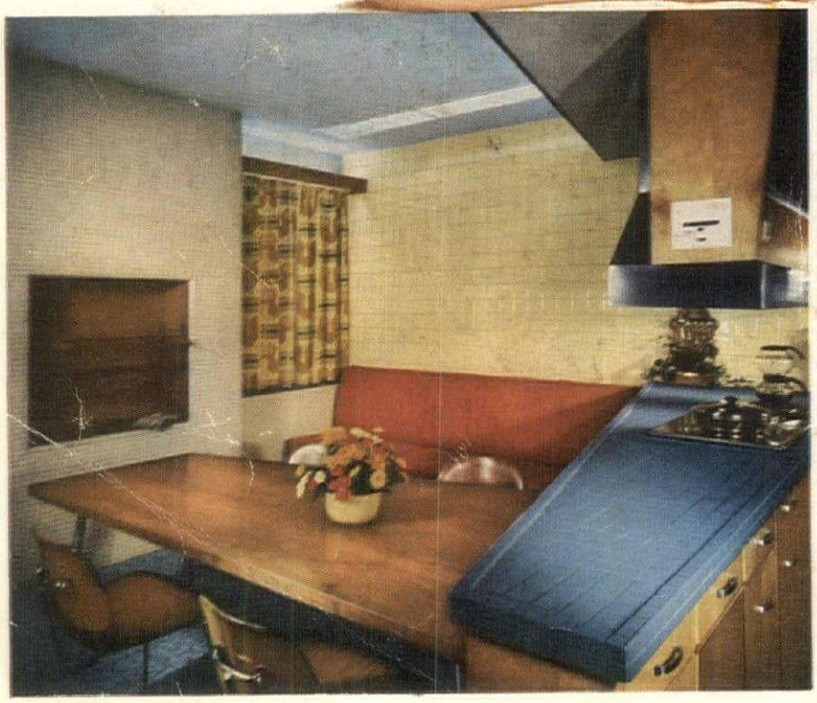
The best army architecture (p. 170)

1. *The Signal Corps' campus*
2. *Raymond & Rado's Guam Theater*

NPA joins the attack on waste (p. 159)

"This lovely room ...my kitchen?"







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ARCHITECTURAL FORUM **THE MAGAZINE OF BUILDING**

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Cover: Trinity College's dormitory; Photographer: Ulric Meisel, Photo Associates

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VOLUME 95, NUMBER 3

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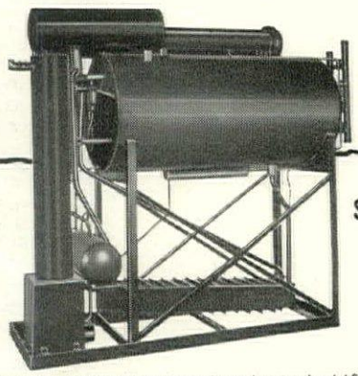

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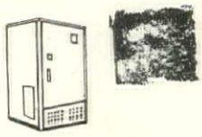

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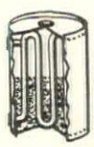

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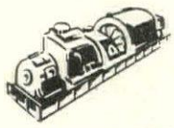

TURBINE EXHAUST STEAM



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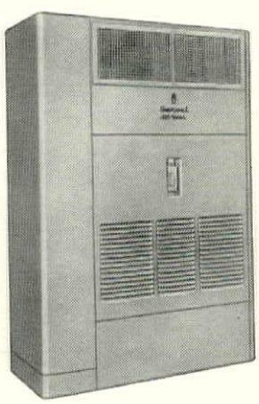

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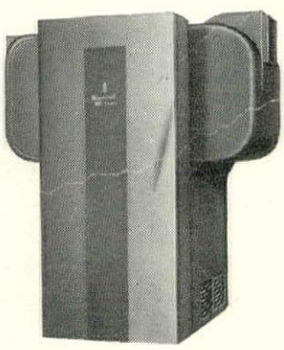

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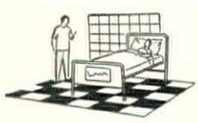
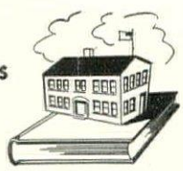




HOTELS

SCHOOLS





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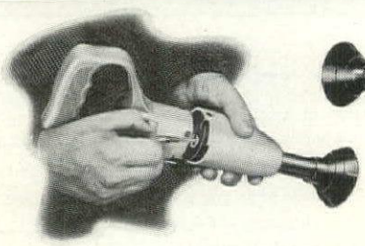
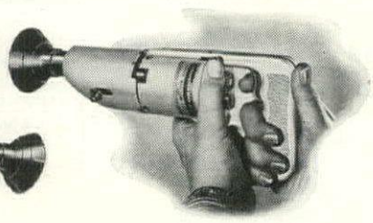
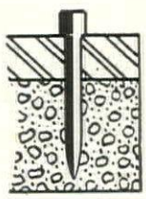


Simply hand-assemble stud and power cartridge, load as a unit in easy-to-open Remington Stud Driver, and close.



Then press loaded Stud Driver firmly against working surface, depress safety button, and pull trigger.



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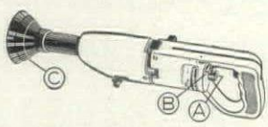

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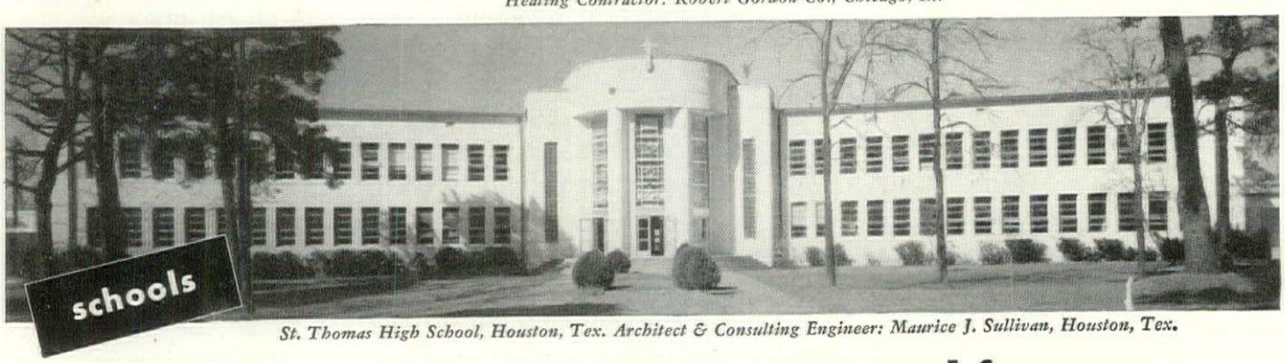

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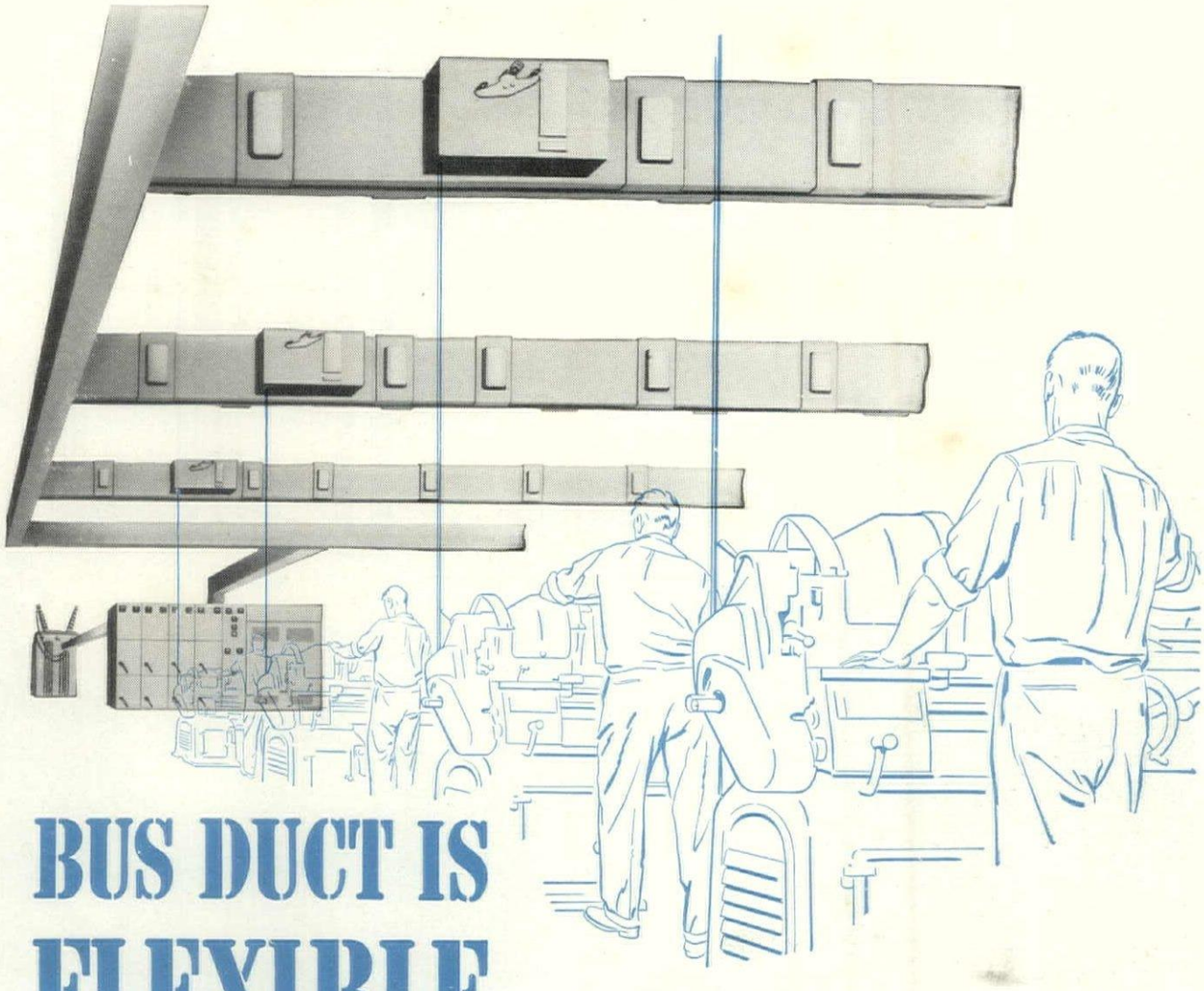

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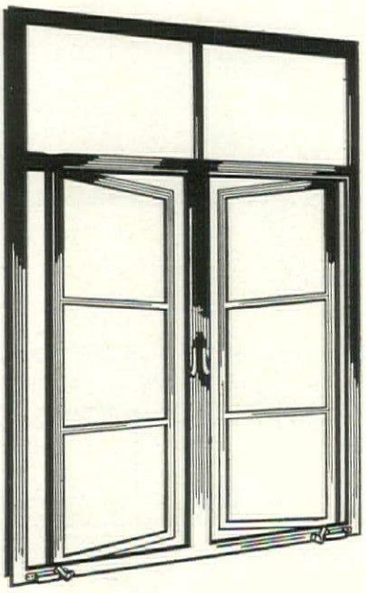



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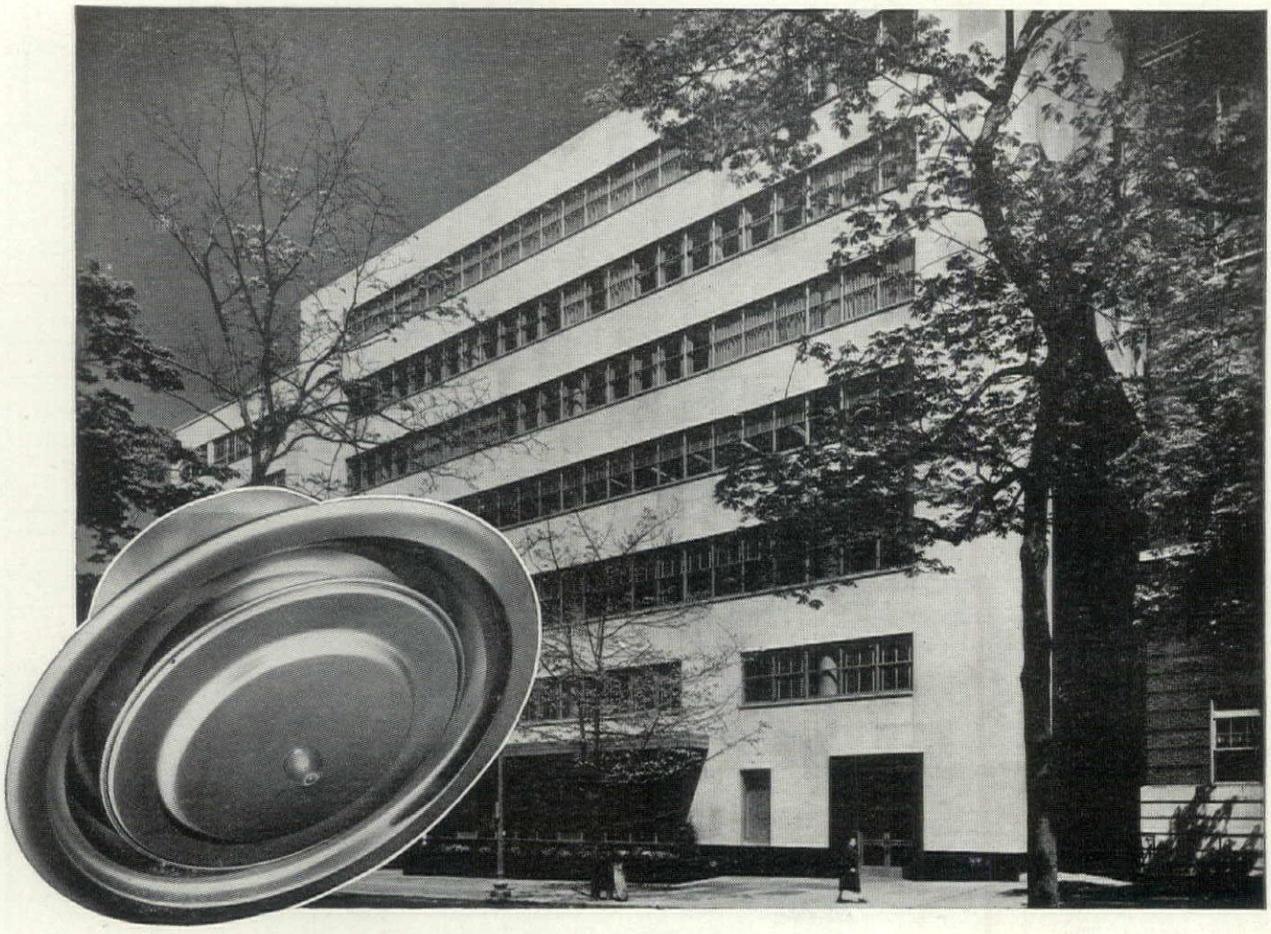

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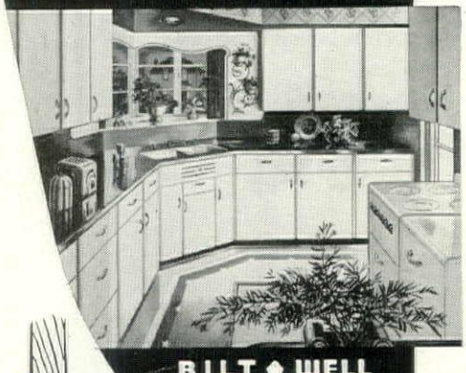
If you need cabinets to fit any room in the home that can be finished natural or enameled any color, SPECIFY Bilt-Well Nu-Style Cabinets.

Drawers are dovetailed. Standards are solid ¾" thick. Framework is mortised and tenoned and assembled with a high-grade glue. Standardized sectional units in graduated sizes. Made of thoroughly seasoned kiln-dried Ponderosa Pine—can be scribed or sawed; can be enameled any color, or finished natural. Carton packaged, completely machined and ready to be assembled.

Nu-Style Cabinets are one of the products in the famous Bilt-Well Line, nationally known for extra fine quality.

CARR, ADAMS & COLLIER CO.
DUBUQUE, IOWA

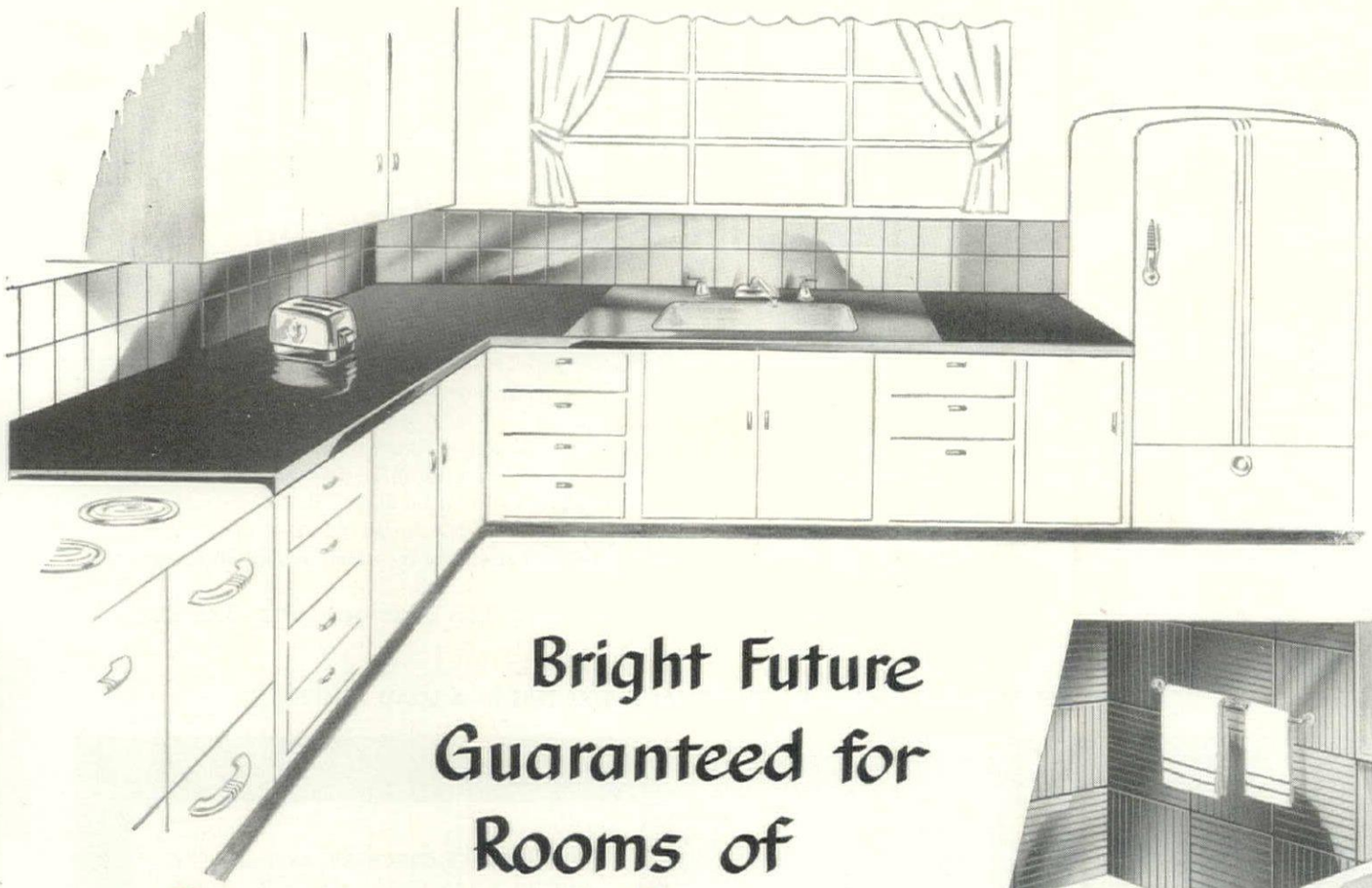
For further information see Sweet's Architectural & Builders' Files 17c-Ca, 5c- Ca, 24b- Ca. Details available to architects doing residential work in states east of the Rocky Mountains.



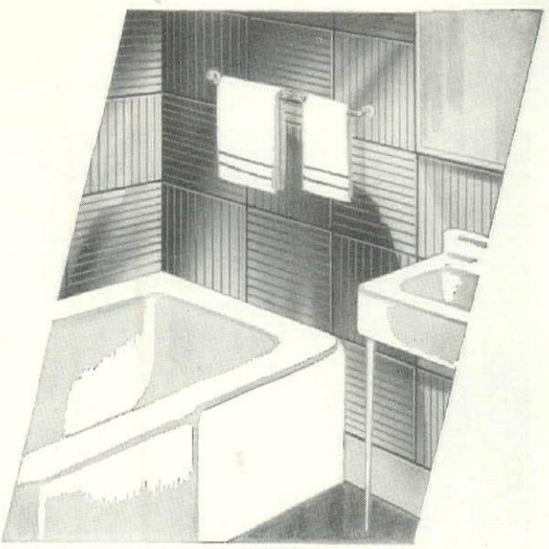
BILT-WELL WOOD WORK
REG. U. S. PAT. OFF.

The Bilt-Well Line

Basement Windows • Breakfast Nooks • Bilt-Well Storm Sash & Screen Unit • Carr-dor Garage Doors • Clos-tite Casements • Combination Doors & Storm Sash • Corner Cabinets • Corner Cabinets for Smaller Homes • Doors with Tempered Presdwood Panels • Front Entrances for the Smaller Type of Home • Front Entrances • Exterior Doors • Gable Sash & Louvers • Gli-dor Kitchen Cabinets • Interior Doors • Ironing Board Cabinets • Linen Cabinets • Medicine Cabinets • Mantels • Nu-Style Kitchen Cabinets • Screen Doors & Window Screens • Shutters • Stair Parts • Superior Windows • Telephone Cabinets • Utility Window



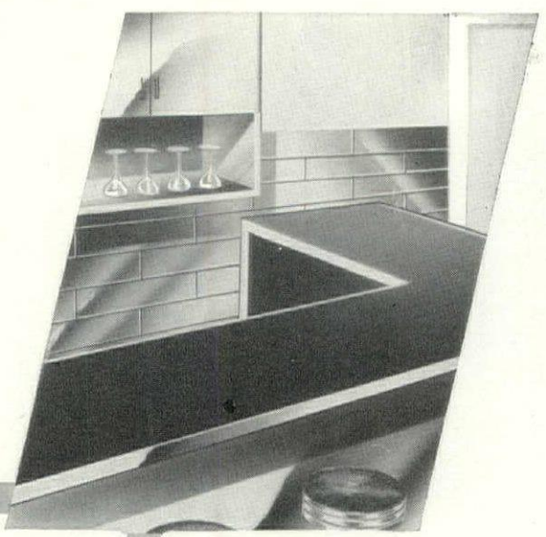
Bright Future Guaranteed for Rooms of Stainless Steel



You can expect functional beauty at its best when you specify stainless steel. Stainless—in either the mirror or satin finishes—has an inherent beauty found in no other building material. Like fine silver it improves with use.

But the beauty of stainless is only a part of the story. Stainless will not rust or corrode regardless of the dampness... fruit and vegetable acids, strong soaps and detergents can do no harm. Stainless has a hard, dense surface—no pores to grip dirt and grime—the stickiest substances can be wiped away with a damp cloth. And stainless is durable—it will outlast any other material. Wherever stainless is used, the kitchen, the play room or the bath, a bright future is assured.

At present our distribution is dictated by essential needs. In the future we will fill your need for stainless steel.



SHARONSTEEL

SHARON STEEL CORPORATION

Sharon, Pennsylvania

DISTRICT SALES OFFICES: Chicago, Ill., Cincinnati, O., Cleveland, O., Dayton, O., Detroit, Mich., Indianapolis, Ind., Milwaukee, Wis., New York, N. Y., Philadelphia, Penna., Rochester, N. Y., Los Angeles, Calif., San Francisco, Calif., Montreal, Que., Toronto, Ont.

STAINLESS STAYS NEW FOREVER

NEW LOW-COST LOAD CENTER

For the first time—panelboard construction at load center prices

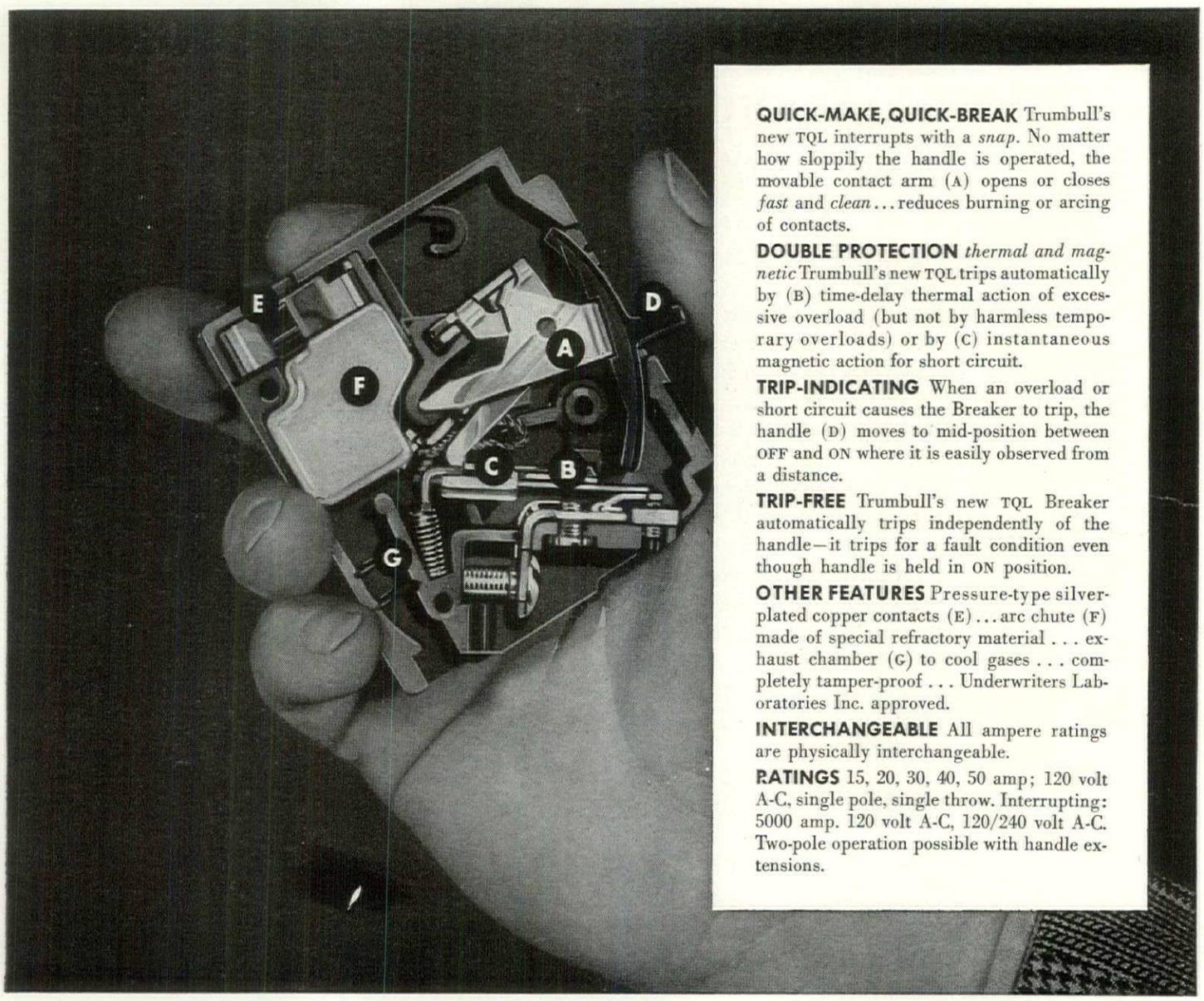
Yes, now you can have—for the same or even less cost than you've been paying—a choice of Load Centers for residential and commercial applications having features you've seen before only in high-priced industrial panelboards.

By means of adroit designing and the adoption of interchangeable components wherever possible, Trumbull has managed to create a superior product and at the same time achieve enough economies, by standardizing manufacturing, to give you more value for *less* cost.

For example, Trumbull's new TRUMBULLITE Load Centers incorporate for the first time plug-in quick-make, quick-break circuit breakers. These—and many other top-quality features—make TRUMBULLITE the unquestionable first choice for value among all Load Centers.

Write for new bulletin on TRUMBULLITE—TEB-12.

YOU'VE NEVER BEFORE SEEN A CIRCUIT BREAKER LIKE THIS IN A LOAD CENTER



QUICK-MAKE, QUICK-BREAK Trumbull's new TQL interrupts with a *snap*. No matter how sloppily the handle is operated, the movable contact arm (A) opens or closes *fast* and *clean*... reduces burning or arcing of contacts.

DOUBLE PROTECTION *thermal and magnetic* Trumbull's new TQL trips automatically by (B) time-delay thermal action of excessive overload (but not by harmless temporary overloads) or by (C) instantaneous magnetic action for short circuit.

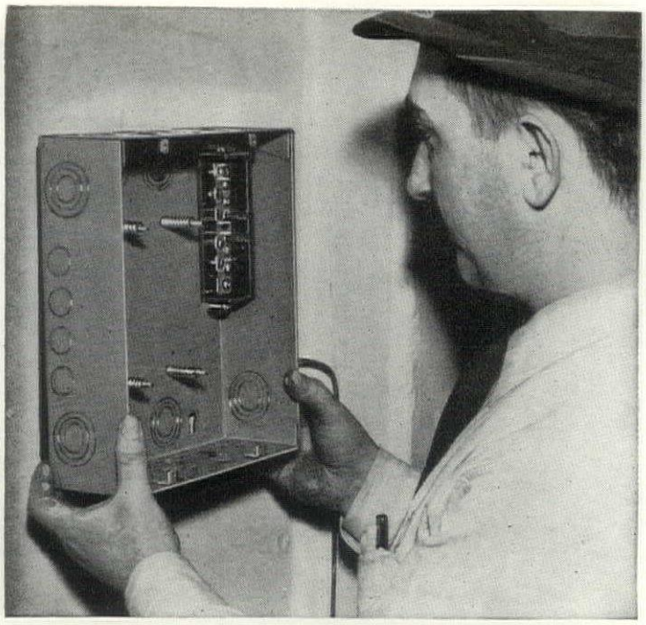
TRIP-INDICATING When an overload or short circuit causes the Breaker to trip, the handle (D) moves to mid-position between OFF and ON where it is easily observed from a distance.

TRIP-FREE Trumbull's new TQL Breaker automatically trips independently of the handle—it trips for a fault condition even though handle is held in ON position.

OTHER FEATURES Pressure-type silver-plated copper contacts (E)... arc chute (F) made of special refractory material... exhaust chamber (G) to cool gases... completely tamper-proof... Underwriters Laboratories Inc. approved.

INTERCHANGEABLE All ampere ratings are physically interchangeable.

RATINGS 15, 20, 30, 40, 50 amp; 120 volt A-C, single pole, single throw. Interrupting: 5000 amp. 120 volt A-C, 120/240 volt A-C. Two-pole operation possible with handle extensions.

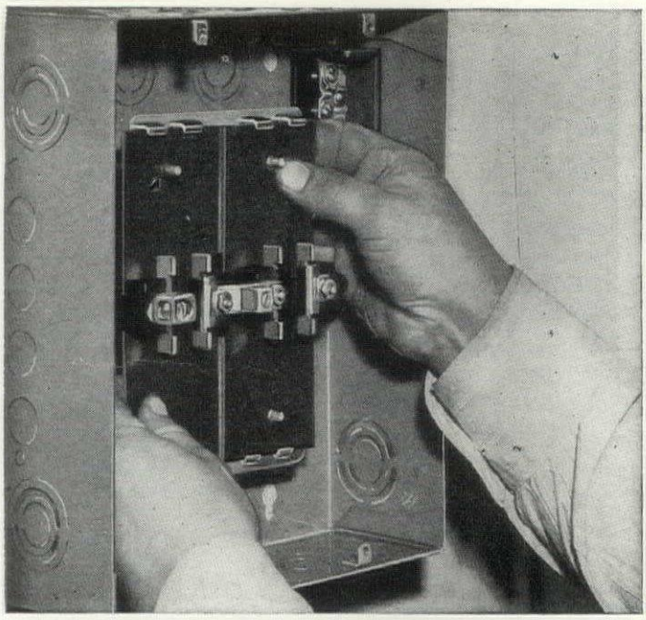


EASY MOUNTING With box mounted on wall, the four captive springs permit the interior to be mounted without the nuisance of screws (as shown below) and removed for ease in wiring. They also allow "lining up" of fronts regardless of uneven box installation. Note plenty of knockouts, solid groundable neutral.

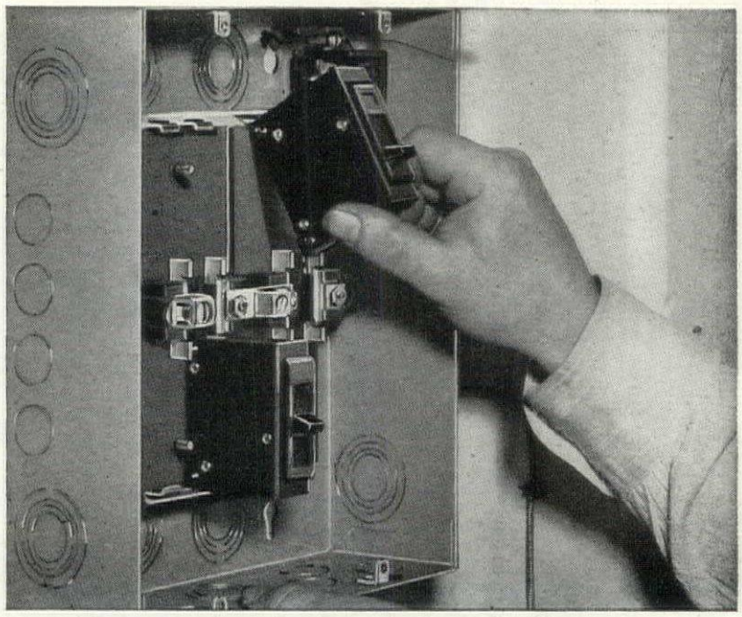


ATTRACTIVE APPEARANCE The front is fastened to box and interior by means of four screws. 12- through 20-circuit Load Centers are designed for sequence phasing—adjacent Breakers are on alternate phases. This unique design assures balanced loads. Breaker positioners and circuit numbers embossed on fronts. Note twist-outs.

SEE MORE REASONS why Trumbullite Load Centers give you more for your money



RUGGED BUSBARS AND STABS No porcelain insulators to break. Busbars and stabs are silver-plated copper for positive conductivity. Terminals are heavy-duty, silver-plated, solderless.



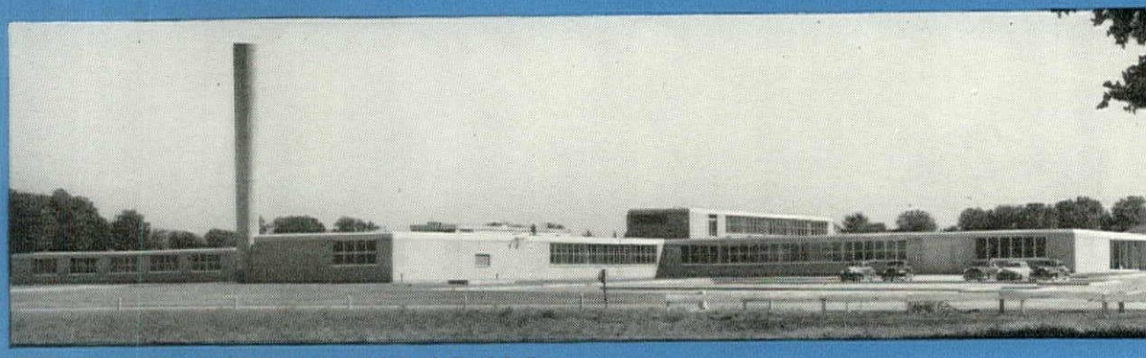
QUICK-IN, SURE-IN BREAKERS Pressure contacts engage stab assembly firmly. Anchor on back plate grasps recess on breaker. Inserting a breaker is as easy as plugging a lamp cord into a wall receptacle.

TRUMBULL (T) ELECTRIC

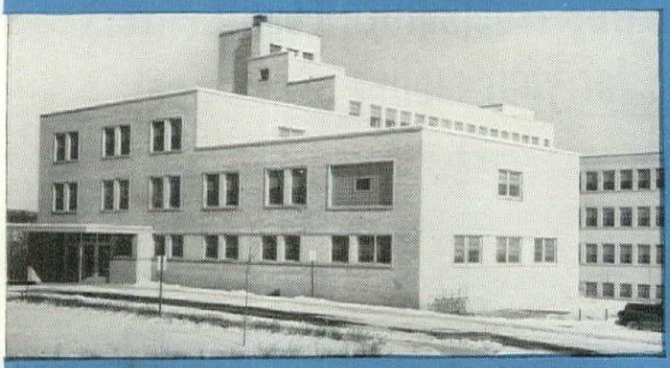
THE TRUMBULL ELECTRIC MANUFACTURING COMPANY

PLAINVILLE, CONN.

for design...for utility...for economy...



Northern Indiana Crippled Children's Hospital, South Bend, Indiana
Pohlmeyer & Pohlmeyer, Architects
Skidmore, Owings & Merrill, Assoc. Architects
Schumaker & Sons, Contractor



Maternity Hospital, Ann Arbor, Michigan
Lewis J. Sarvis, Architect
Bryant & Detweiler, Contractor



Harkness Memorial Hall, Columbia Presbyterian
Medical Center, New York City
Voorhees, Walker, Foley & Smith, Architects
Vermilya-Brown, Contractor



Baptist Hospital, Beaumont, Texas
Wyatt C. Hedrich, Architect
R. P. Farnsworth Co., Inc., Contractor



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aluminum windows

Yes, their combination of maintenance-free service, complete weather-tightness and handsome, modern appearance makes ADLAKE Aluminum Windows ideal for hospital installation.

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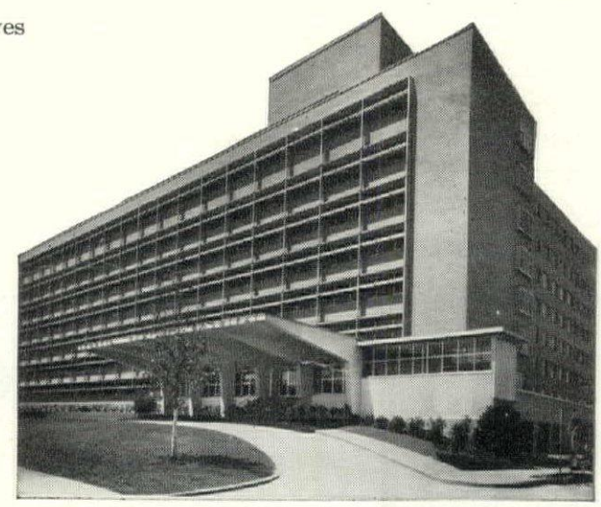
Find out how ADLAKE Windows will give better service, and save money for your clients! Drop a card to The Adams & Westlake Company, 1122 N. Michigan, Elkhart, Indiana. No obligation, of course.



Georgia Baptist Hospital, Atlanta, Georgia
Stevens and Wilkindon, Inc., Architects
Henry C. Beck Co., Contractor

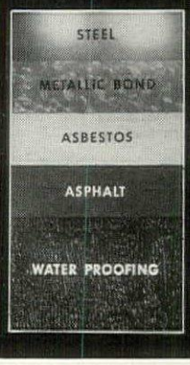
THE Adams & Westlake COMPANY

Established 1857—ELKHART, INDIANA—New York·Chicago

Adlake TRADE MARK

WALLS FOR A WIDE RANGE OF SPECIFICATIONS ...AND ALL QUICK!





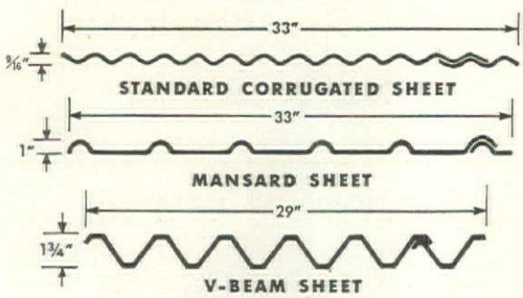
This is

GALBESTOS METAL

A steel sheet to which asbestos felt is metallically bonded. Then the felt is impregnated with asphalt and waterproofed. Tested and approved by Underwriters' Laboratories, Inc., Chicago, and by Associated Factory Mutual Fire Ins. Co., of Boston. Galbestos metal comes in maroon, black or aluminum color and is fabricated in various shapes. It has been architecturally well designed into thousands of installations all over the world.

• Galbestos metal for defense plant construction provides a wall resistant to fire, corrosion and blast. It can be well designed, worthy of permanent structures. It is maintenance-free. And, whether you want a mere skin, with or without insulation or panels, the Robertson method enables you to build faster with Galbestos metal than with any other material.

Available in these forms:



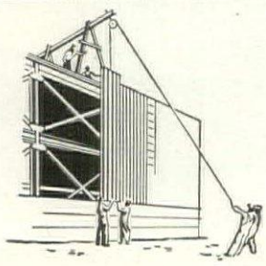
THE TOP-SPEED FASTENING METHOD

permits all fastening work from the outside, eliminates interior scaffolding. This new method permits erection crews to place twice as much material in the same time, with safety. Top-Speed Insulation is a Robertson method for applying insulation from the outside, before the Galbestos is fastened over it. This method also halves the time. It makes a good-looking job inside. Needs no painting.

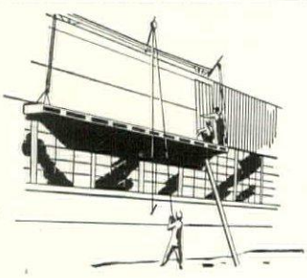


WRITE FOR COMPLETE LINE OF CATALOGS

1. GALBESTOS
2. TOP SPEED FASTENING
3. G-PANELS
4. Q-PANELS



Q-PANEL OR G-PANEL



Q-Panels are the famous Robertson factory-fabricated, insulated curtain wall. They are available in a variety of fluted metal surfaces. Available 2' wide, in lengths up to 25', lightweight, only 3¼" thick, but superior in insulation value to a 12" masonry wall with furred plaster. A small crew can erect a Q-Panel—50 sq. feet—in 9 minutes.

G-Panels are the field-assembled insulated curtain wall: a flat interior steel sheet with insulation, and a formed Galbestos metal exterior in one of the shapes shown above. This is recommended for attractive, economical industrial jobs where insulation is a requirement.

H. H. ROBERTSON CO.

2403 Farmers Bank Building
Pittsburgh 22, Pennsylvania

Offices in All Principal Cities in the U. S. A. and Canada

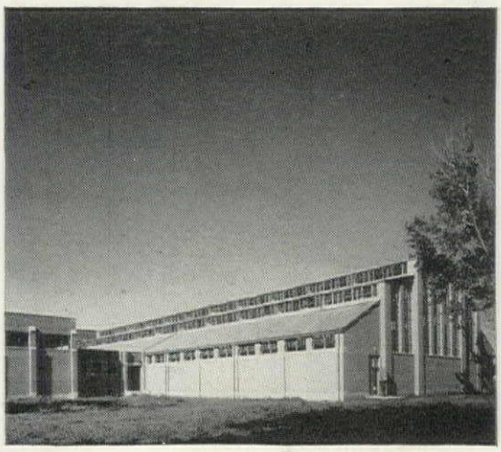
World-Wide Building Service

Building: EVANSTON TOWNSHIP HIGH SCHOOL—Evanston, Ill.
Architects and Engineers: Perkins & Will—Chicago
General Contractor: Peter Hamlin—Chicago
Gypsum Contractor: Anning Johnson—Chicago
Material: Approx. 54,000 sq. ft. of Fiberglas Insulating Form Board—1" thick.

Photos by Hedrich-Blessing Studio.







GET ALL 4 AT ONE PRICE

with FIBERGLAS* Insulating Form Board

for Gypsum and Lightweight Aggregate Roofs

FORM BOARD
ROOF INSULATION
NOISE REDUCTION
FIRE SAFETY

With conservation of fuel and the reduction of noise in industrial plants becoming increasingly important, you will want to specify this permanent Form Board for poured-in-place decks. New and unique in its multiple functions, it enables you to offer your clients substantial savings and many extra values. In Fiberglas Insulating Form Board, in addition to a permanent form, you obtain a non-combustible, acoustical treatment and an efficient roof insulation—all in one application.

For poured-in-place decks, the board—size 32"x48"x1"—is laid in place between subpurlins, normally spaced 32⅝" on center. The board will support the poured mix until it sets without additional support. Another advantage is that it does not rot, decay, swell or shrink, when exposed to moisture. The interior exposed surface has an interesting texture and may be spray painted after installation.

For complete specification information on Fiberglas Insulating Form Board see Sweet's Files—Architectural OR write us today for our A.I.A. File 37-B "Fiberglas Design Data". Owens-Corning Fiberglas Corporation, Dept. 67-I, Toledo 1, Ohio.

*Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of the Owens-Corning Fiberglas Corporation for a variety of products made of or with fibers of glass.

ONE PRICE FOR INSTALLATION AND MATERIAL BRINGS:

FORM BOARD—is quickly and easily handled, cut and installed by standard methods. Strong and light in weight, it is suitable for flat, curved or pitched roof framing.

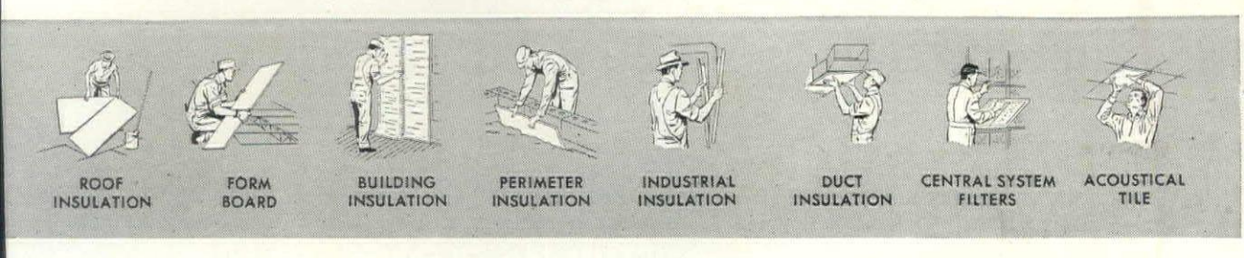
ROOF INSULATION—a deck composed of 2" of gypsum plus 1" of Fiberglas Form Board with a built-up roof offers a heat transmission (U) of .15 Btu/hr./sq. ft./°F.—exceptionally low.

ACOUSTICAL TREATMENT—Riverbank Laboratories' tests of Fiberglas Form Board with poured-in-place slabs show a noise reduction coefficient of .75—as good or better than many regular acoustical materials.

FIRE SAFETY—Fiberglas Form Board is non-combustible. The ageless fibers of glass neither burn nor support combustion.

OWENS-CORNING
FIBERGLAS
BUILDING MATERIALS

***WRITE FOR* FIBERGLAS DESIGN DATA**





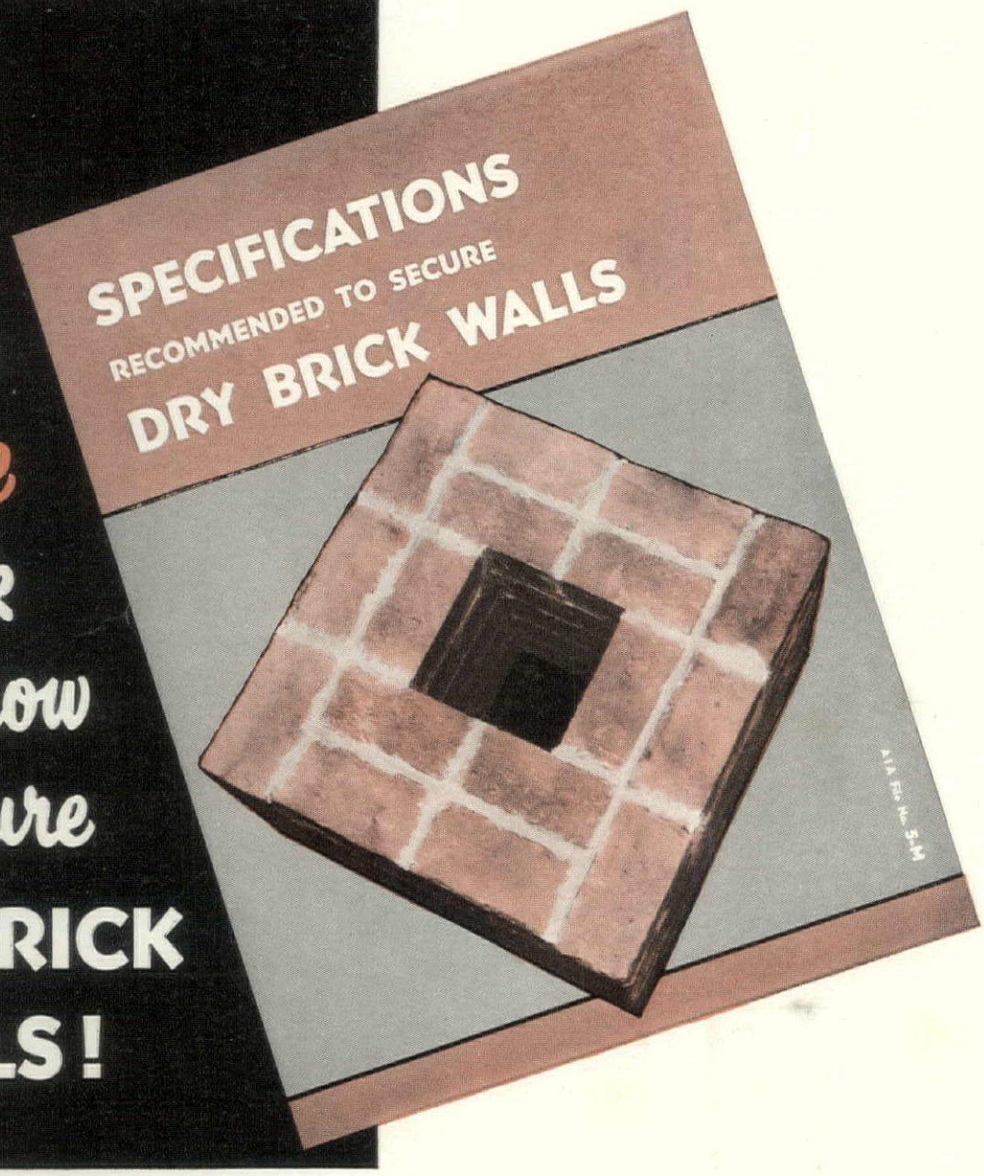


Shoes by Bonwit-Teller,

No other feature helps sell a house faster than a good Oak Floor

One important reason is that 85% of all prospective home owners want oak flooring in their next homes. National Oak Flooring Mfrs. Assn., Memphis 3, Tenn.

This Free book tells how to secure DRY BRICK WALLS!



Now the Louisville Cement Company has published another outstanding booklet, entitled *Specifications Recommended to Secure Dry Brick Walls.* This important pamphlet briefly interprets the exhaustive research carried on by many national authorities during the past twenty years. In 16 clearly-illustrated pages it describes the causes of leaky brick walls, explains how these causes may be avoided, and offers detailed specifications for the types of mortar, brick and workmanship required to secure dry brick walls.

This booklet is a sequel to *Type of Workmanship Recommended to Secure Dry Brick Walls,* a pamphlet which has been accepted by leading authorities as one of the most valuable works ever published on its subject. It is a 1951 Award Winner in the Class I competition sponsored jointly by the American Institute of Architects and the Producers' Council. It is used as a textbook in 232 colleges, high schools and trade schools.

Send for your free copy of this highly informative and interesting booklet, *today.* The coupon is for your convenience.

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Dept. 8
Second and Walnut Sts., Louisville 2, Kentucky

Gentlemen: Without cost or obligation, please send me a copy of *Specifications Recommended to Secure Dry Brick Walls.*

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Firm_____

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NOBODY GUESSES WHEN YOU USE . . .

WALSEAL*

FOR MAKING SILBRAZ* JOINTS



Cutaway view of a Walseal Tee showing: 1—factory-inserted ring of silver brazing alloy; 2—fillet of silver brazing alloy that appears upon completion of Silbraz joint; 3—cutaway view of the completed Silbraz joint showing that silver brazing alloy has flowed in both directions from the factory inserted ring.

When you see this fillet of alloy, and the fitting is Walseal you know that you have penetration because the alloy comes from the inside.

When you make Silbraz* joints in your brass, copper, or copper-nickel pipe lines with Walseal Valves, Fittings, or Flanges you know you have the right amount of the correct type of silver brazing alloy. The ring of Sil-Fos brazing alloy is factory-inserted in the ports of Walseal products at the time of manufacture.

No lost time or motion in handling the alloy . . . no difficulty in getting full penetration of the alloy regardless of the position of the valve or fitting . . . no guessing whether the joint is made right . . . the fillet of alloy that shows up when the Silbraz joint is completed, comes from the inside!! And, whether you've made the Silbraz joint yourself, or inspecting the work of another, you know that if the silver alloy fillet is visible, and the valve or fitting is Walseal, you have full penetration. That's why nobody guesses when you use Walseal!

Walseal products are backed by the reputation of the Walworth Company, manufacturers of valves and pipe fittings since 1842.

For full information regarding Silbraz joints made with Walseal products, write for Circular 84.

**Patented—Reg. U. S. Pat. Off.*

Recommended for

Hot and Cold Water Circulating Systems

Boiler Feed Lines

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Low and High Pressure Air Systems

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Make it "a one-piece pipe line" with WALSEAL

WALWORTH

valves and fittings

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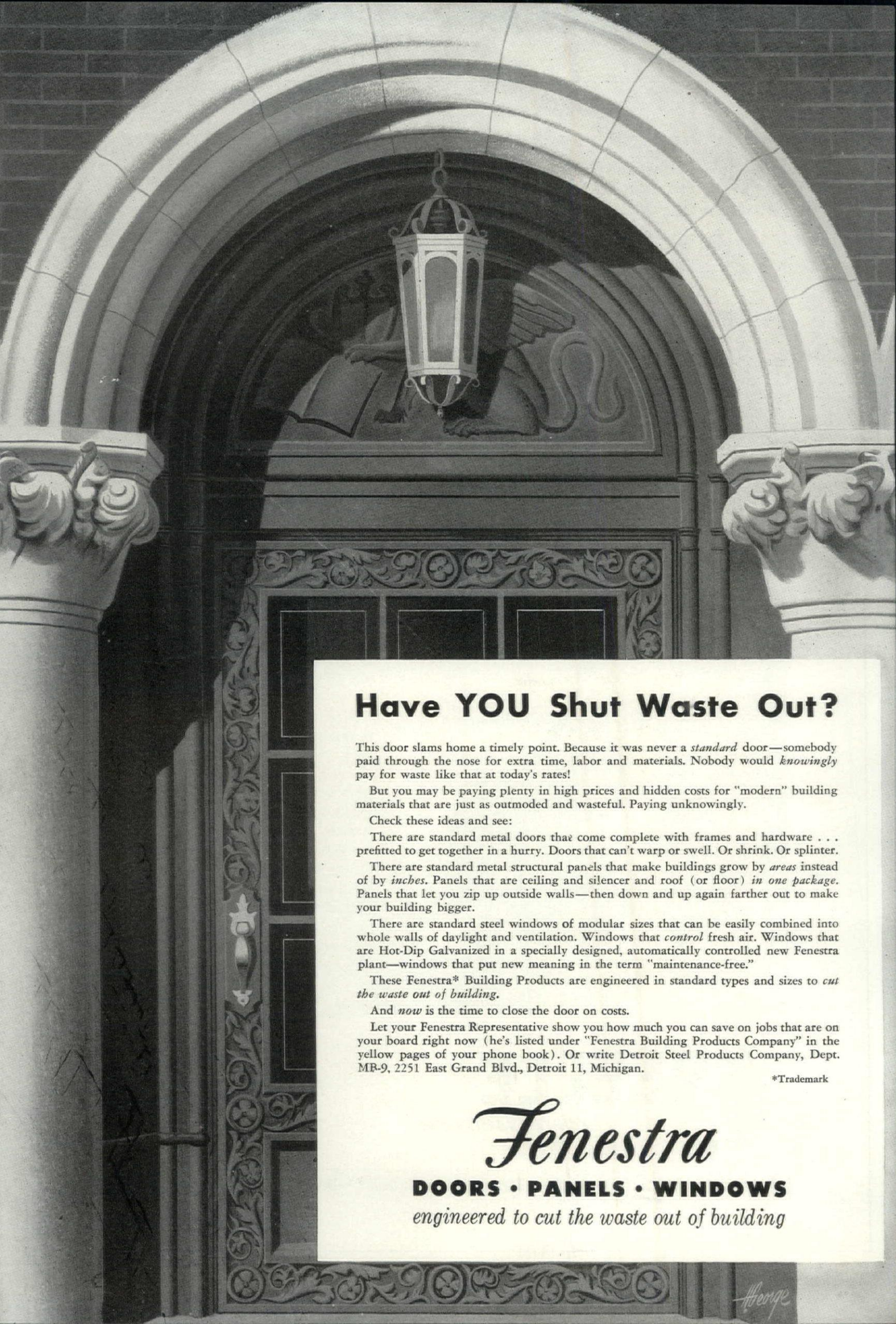
DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD



Have YOU Shut Waste Out?

This door slams home a timely point. Because it was never a *standard* door—somebody paid through the nose for extra time, labor and materials. Nobody would *knowingly* pay for waste like that at today's rates!

But you may be paying plenty in high prices and hidden costs for "modern" building materials that are just as outmoded and wasteful. Paying unknowingly.

Check these ideas and see:

There are standard metal doors that come complete with frames and hardware . . . prefitted to get together in a hurry. Doors that can't warp or swell. Or shrink. Or splinter.

There are standard metal structural panels that make buildings grow by *areas* instead of by *inches*. Panels that are ceiling and silencer and roof (or floor) *in one package*. Panels that let you zip up outside walls—then down and up again farther out to make your building bigger.

There are standard steel windows of modular sizes that can be easily combined into whole walls of daylight and ventilation. Windows that *control* fresh air. Windows that are Hot-Dip Galvanized in a specially designed, automatically controlled new Fenestra plant—windows that put new meaning in the term "maintenance-free."

These Fenestra* Building Products are engineered in standard types and sizes to *cut the waste out of building.*

And *now* is the time to close the door on costs.

Let your Fenestra Representative show you how much you can save on jobs that are on your board right now (he's listed under "Fenestra Building Products Company" in the yellow pages of your phone book). Or write Detroit Steel Products Company, Dept. MR-9, 2251 East Grand Blvd., Detroit 11, Michigan.

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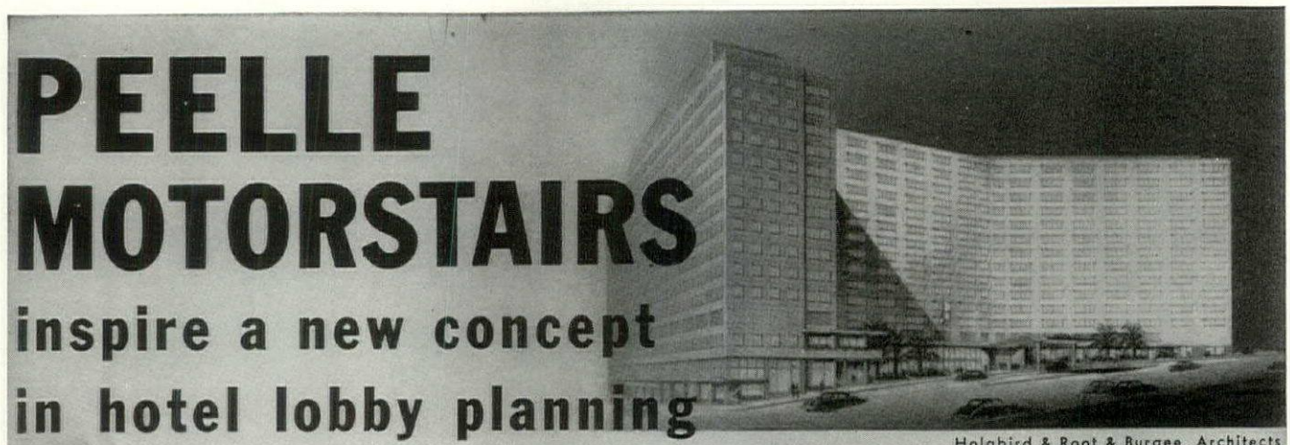
Fenestra

DOORS • PANELS • WINDOWS

engineered to cut the waste out of building

PEELLE MOTORSTAIRS

inspire a new concept in hotel lobby planning



Holabird & Root & Burgee, Architects
Wm. B. Tabler, Associate Architect
Robert E. McKee, General Contractor, Inc.



how **the lower floors of the new Los Angeles Statler were designed to yield peak income**

The main lobby of the new Statler Center was planned in accordance with the Statler policy of organizing floor space to bring in the highest possible revenue. By locating their main hotel lobby on the second level, and giving it street floor convenience with Peelle Motorstairs, the first level was made available for shops and other high-income rental space.

When hotel lobbies, main banking floors and certain other business activities are on street level floors, they needlessly occupy the most valuable space in a building. But, when Peelle Motorstairs serve a second floor operation, this street floor space is released for the production of greater revenue.

Peelle Motorstairs are supplying smooth, safe, trouble-free vertical transportation in modern buildings of many kinds in many cities. Their advanced operational concepts result in longer life and the lowest maintenance cost yet achieved in the moving stairway industry.

For further details, send for new folder PM-502.

"it's **PEELLE** *engineered"*

BETTER-ENGINEERED PRODUCTS FOR MORE THAN 45 YEARS

SEE OUR CATALOG IN SWEET'S

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What goes on in your clients' minds?

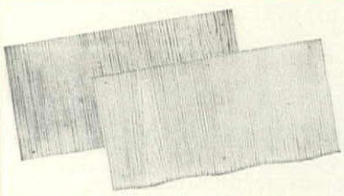


ASBESTONE SIDING SHINGLES

say, "Yes", to all three questions

Show your clients this check list of Asbestone benefits:

✔ Lifetime protection ✔ Lifetime beauty ✔ Fireproof ✔ Weatherproof, weather-tight ✔ Freedom from rot and corrosion
✔ Termite-proof ✔ Rodent-proof ✔ Insulating (saves fuel) ✔ Needs no paint ✔ No upkeep expense ✔ Long-range economy



ASBESTONE SIDING SHINGLES

Straight edge or Wavy edge

Finish: Deep wood-grain texture

Colors: White, Gray, Bufftone Blend, Greentone Blend

OTHER LIFETIME PRODUCTS MADE BY ASBESTONE

Asbestone Roofing Shingles
—designs and colors that sell on sight

Corrugated Roofing and Siding
—Standard "400" and Economy "250" weights

Asbestone Wallboard
—Utility and Flexible grades—for interior and exterior use

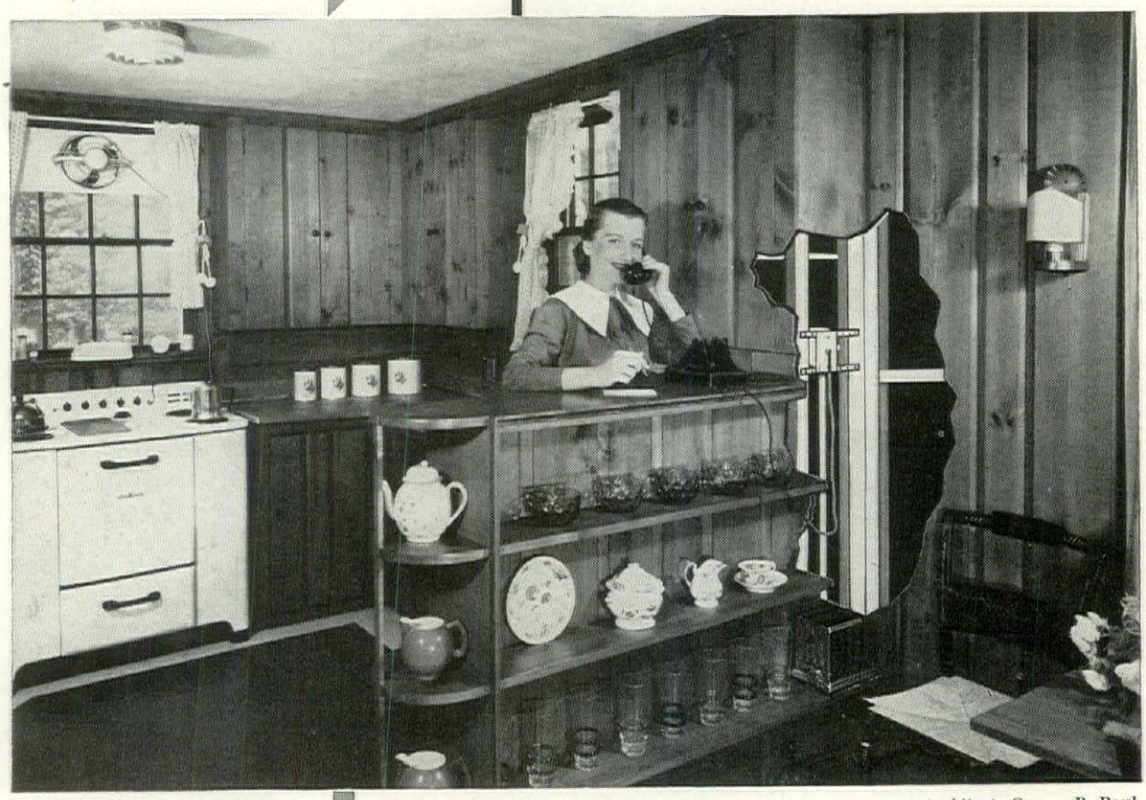
Specialists in Asbestos-Cement Building Products for over 25 years

ASBESTONE
CORPORATION

Asbestone Corporation
5387 Tchoupitoulas St., New Orleans, La.
Please send us free specification catalog and literature.

Name .....
Street .....
City ..... State .....

as fundamental as a kitchen sink...



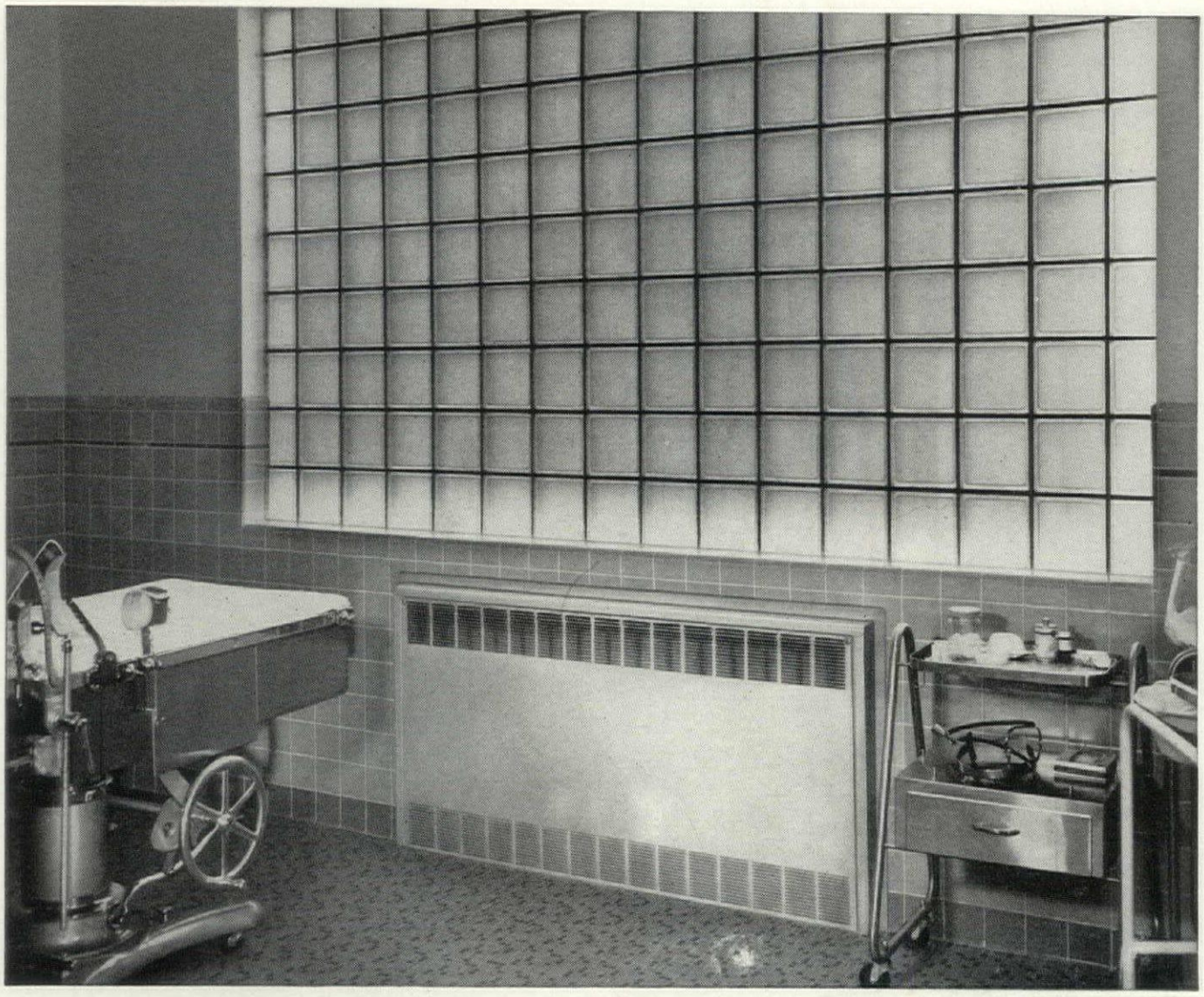
Architect: George R. Paul

A good plan is always better when it includes symbols for telephone outlets.

A kitchen without a sink? You'd never plan one that way. Functionally, homes without telephone raceways are incomplete, too. For conduit is your only guarantee that telephone wires can be concealed. One sure way to protect the beauty of walls and woodwork is to specify built-in telephone raceways whenever you plan a home.

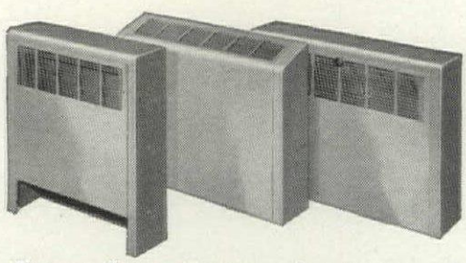
Your Bell Telephone Company will be glad to help you work out economical telephone conduit installations. Just call your nearest Business Office.

BELL TELEPHONE SYSTEM



FOR FAST, DEPENDABLE HEATING

...SPECIFY MODINE INSTITUTIONAL CONVECTORS



Choose from three enclosure types!

Type IF with upper grille and choice of lower opening or lower grille . . . for either recessed or free-standing installation. Type IS and IW for wall placement. Dampers for all enclosures optional at slight extra cost.

Here's even, healthful heat . . . low-cost, trouble-free service

More and more hospitals are standardizing on Modine Convectors because they're so dependable . . . give fast, even heat when you want it, *instantly*. Modines assure you all the advantages of steam or hot water heating . . . are economical to install and maintain.

Modines are smartly styled, too . . . complement any interior treatment. And if conservation of space is one of your problems, Modine Convectors may be recessed in the walls.

Send for new Modine convector catalog today



Modine

INSTITUTIONAL CONVECTORS

For complete details, call your Modine representative . . . listed in the classified section of your phone book. Or write direct. Modine Mfg. Co., 150 DeKoven Ave., Racine, Wis.

R-1103

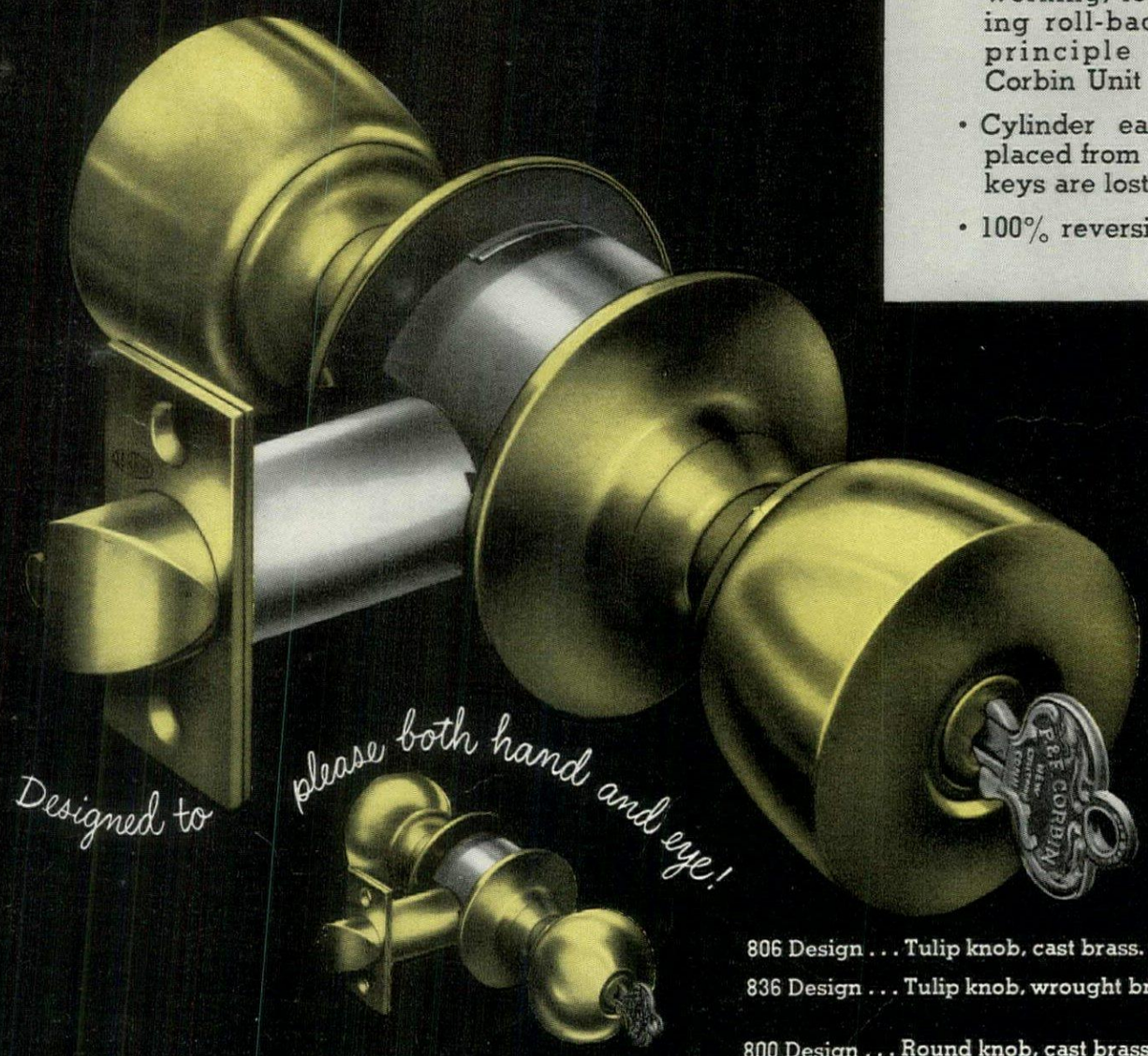
Now P. & F. Corbin offers you

CORBIN

CYLINDRICAL LOCKS

. . . with all these extra-quality features you've asked for . . . .

- 5/8 inch throw!
- The same smooth working, long-lasting roll-back latch principle as the Corbin Unit Lock!
- Cylinder easily replaced from inside if keys are lost!
- 100% reversible!



Designed to please both hand and eye!

806 Design . . . Tulip knob, cast brass.
836 Design . . . Tulip knob, wrought brass.

800 Design . . . Round knob, cast brass.
830 Design . . . Round knob, wrought brass.

Furnished in Polished Brass Finish.

Plus —

Compact heavy-duty construction throughout.

Master ring cylinder for greater protection and flexibility.

No screws in roses or knob shanks.

Adjustable for doors 1⅜ to 2 inches thick.

Extruded brass 5 pin tumbler standard; 6 pin tumbler for extended master key systems.

Seamless tubular knob shank with long bearing surface is specially designed for easy knob action and to prevent knobs from becoming wobbly.

Automatic deadlocks.

Fast 2-hole installation with same size holes for all functions.

CORBIN IS FIRST To offer you every major type of lock!

NOW, EVERY MAJOR TYPE of lock — unit locks, mortise locks, tubular locks and cylindrical locks — are available from one manufacturer: P. & F. Corbin. For the first time, you have complete freedom to select any of these different types of locks for the various parts of a building and yet have all locks master-keyed as needed and harmonious in design.

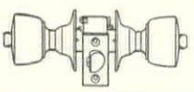
COMPLETE SPECIFICATIONS on the new Corbin Cylindrical Locks are now being mailed to architects, contractors and Corbin distributors in all parts of the United States. If you do not receive your copy soon, or if you would like additional copies, please let us know.

GOOD BUILDINGS DESERVE GOOD HARDWARE

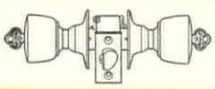
CORBIN

P. & F. CORBIN Division
The American Hardware Corporation
New Britain, Connecticut, U.S.A.

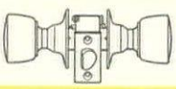
13 Most-used functions!



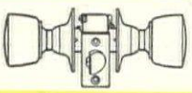
#400 — Communicating Door Lock — Either knob retracts latchbolt except when locked by turn-button in opposite knob.



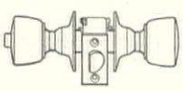
#402 — Communicating Door Lock — Either knob retracts latchbolt except when locked by key in opposite knob.



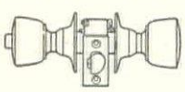
#410 — Passage Latch — Either knob retracts latchbolt at all times.



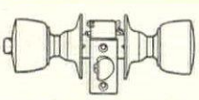
#415 — Exit Door Lock — Inside knob retracts latchbolt at all times. Outside knob is non-operative.



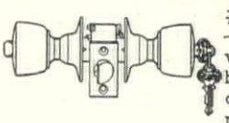
#420 — Bath or Bedroom Lock — Either knob retracts latchbolt except when outside knob is locked by push-button in inside knob. Turning inside knob, closing door or emergency key, nail, etc. in outside knob releases push-button.



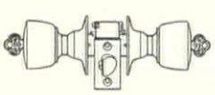
#441 — Inner Office or Bedroom Lock — Either knob retracts latchbolt except when outside knob is locked by push-button in inside knob. Turning inside knob or closing door releases push-button.



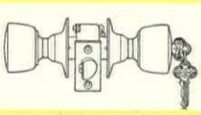
#444 — Exit Door Lock — Either knob retracts latchbolt except when outside knob is locked by turn-button in inside knob.



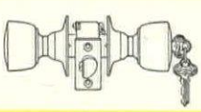
#451 — Exterior or Office Door Lock — Either knob retracts latchbolt except when outside knob is locked by turn-button in inside knob; then by key from outside until turn-button is manually released.



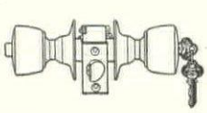
#454 — Apartment House Entrance or Office Building Lavatory Lock — Either knob retracts latchbolt except when outside knob is locked by key in inside knob; then by key from outside until unlocked by inside key.



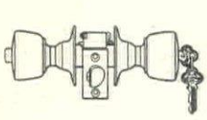
#455 — Classroom, Vestibule or Utility Room Lock — Either knob retracts latchbolt except when outside knob is locked by key in outside knob.



#457 — Storeroom, Utility Room or Exit Door Lock — Inside knob or key in outside knob retracts latchbolt at all times. Outside knob rigid.



#461 — Office Door Lock — Either knob retracts latchbolt except when outside knob is locked by push-button in inside knob; then by key from outside. Turning inside knob or outside key releases push-button; closing door does not release push-button.



#465 — Dormitory or Public Toilet Lock — Either knob retracts latchbolt except when outside knob is locked by push-button in inside knob or by key in outside knob. Push-button is automatically released by turning inside knob or outside key or by closing door; but when outside knob is locked by key, it remains locked until unlocked by key.



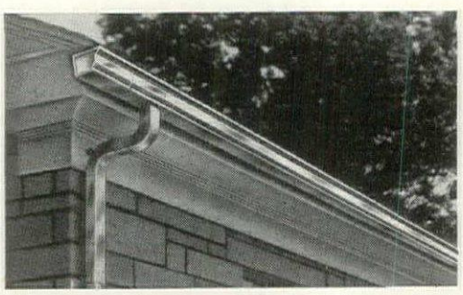
The Maintenance Man's Joy and the Homeowner's  Pride...

ALUMINUM

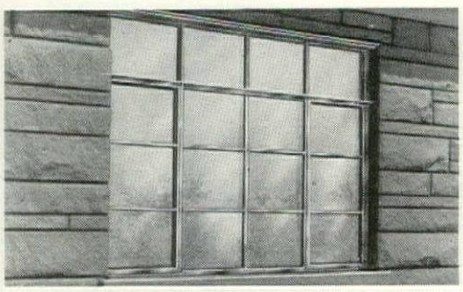
To industry, the decisive advantage of aluminum is measured in dollars and cents...low initial cost, low application cost, no painting, the practical elimination of maintenance.

To the homeowner, all this is important, too. But most appealing to his pride is the beauty of aluminum...expressing by the very modernity of its appearance the promise of trouble-free performance through the years. Gutters that add a softly gleaming trim to his house, that cannot stain the walls...windows that can never rust, warp or rot...these are *visible* improvements in aluminum. Aluminum insulation, though hidden in walls or ceiling, makes itself felt in summer and winter comfort. In some residential and many farm and commercial applications, aluminum roofing and siding is as handsome as it is efficient.

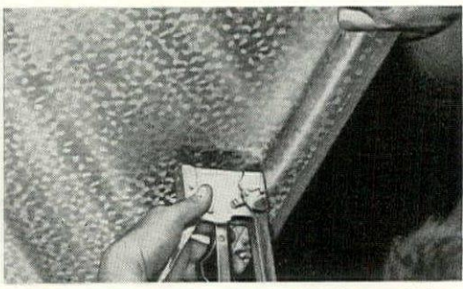
The advertisement reproduced on the facing page therefore has a message for *all* who are planning to build...and for their specifying architects. For literature please write to **Reynolds Metals Company,** Building Products Division, 2019 South Ninth St., Louisville 1, Ky.



REYNOLDS *Lifetime* ALUMINUM GUTTERS. Rustproof permanence at less than half the cost of other rustproof materials. 5" residential gutters in Ogee and Half-Round styles, smooth or stippled finish. Also 6" Industrial Half-Round.



REYNOLDS ALUMINUM WINDOWS. Residential Casement, Double-Hung, Fixed and Picture Windows outstanding for design and finish. Casement windows corner-welded for extra strength and weathertightness.



REYNOLDS ALUMINUM REFLECTIVE INSULATION. Embossed foil on one or both sides of kraft paper. Reflects up to 95% of radiant heat. Top-rated vapor barrier. In boxed rolls of 250 square feet, 25", 33" and 36" wide.

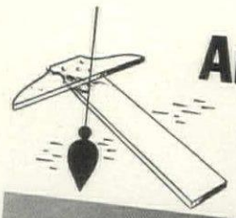
IF YOU SEE RUST YOU KNOW IT'S NOT ALUMINUM

REYNOLDS METALS

REYNOLDS *Lifetime* ALUMINUM BUILDING PRODUCTS

REYNOLDS

advertisement, which ap-
ed in an extensive list of
strial publications, prepares
plant owner and mainte-
ce man for the architect's
considered specification of
olds *Lifetime* Aluminum In-
rial Corrugated. Note that
rated orders receive priority
dling.



Architect-Engineer's choice for Beauty, Long Life, Low Maintenance



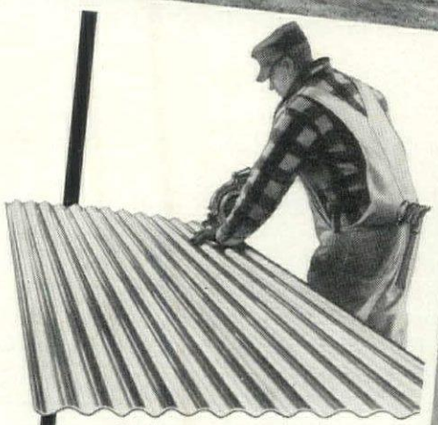
New warehouse—Ward Steel Co., North Cambridge, Mass.

When the Ward Steel Company of North Cambridge, Mass., undertook to build the most modern steel warehouse in New England, they called on Waghorne-Brown as designers and engineers. Waghorne-Brown specified rustproof, corrosion-resistant Reynolds *Lifetime* Aluminum Industrial Corrugated for siding. Their reasons were appearance, long life, low initial cost and low maintenance (no painting) plus great strength combined with light weight that saves money on framing (see specifications)

Aluminum's radiant heat reflectivity was another deciding factor. On walls or roof, it reduces inside summer temperatures and cuts winter fuel bills. An interesting detail in this building is the contrasting horizontal and vertical application, with aluminum corners and edging. For technical assistance and application details, call any Reynolds Office. Literature on request.

• Offices in principal cities... check your classified phone book for our Building Products listing, or write Reynolds Metals Company, Building Products Division, 2005 South Ninth St., Louisville 1, Ky.

Aluminum is required for planes and other military needs. Reynolds Lifetime Aluminum Industrial Corrugated is still produced, but the total supply is necessarily reduced. DO-rated orders receive priority handling.



Specifications for Reynolds *Lifetime* Aluminum Industrial Corrugated:

Thickness .032"
Corrugations 7/8" deep, 2-2/3" crown to crown
Uniform load support (roof) 80 p.s.f. on 4' purlin spacing
Uniform wind load capacity (siding) 20 p.s.f. on girt spacings up to 7'9"
Roofing width 35", coverage 32"
Siding width 33-3/4", coverage 32"
Lengths 5', 6', 7', 8', 9', 10', 11', 12'

REYNOLDS *Lifetime* ALUMINUM INDUSTRIAL CORRUGATED

ALUMINUM

Aluminum is required for planes and other military uses. Production continues on products shown... also on Reynolds *Lifetime* Aluminum Nails, and Flashing. Total supply, however, is necessarily reduced. Keep checking your supply sources.

GOW SOIL BORINGS

BY Raymond

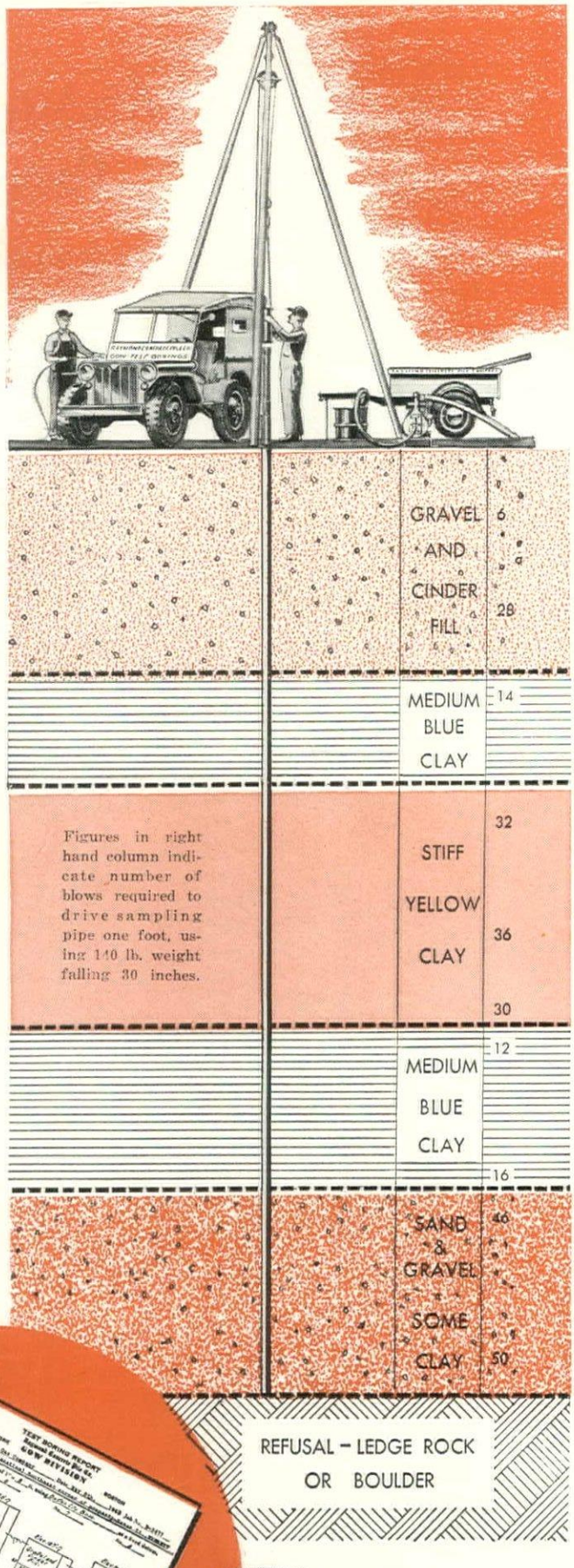
Carefully made soil investigations are of great value to Owners, Architects and Engineers in the selection of building sites and the determination of proper structural foundations.

Specify dependable Gow borings by Raymond and you will secure information that will supply the basis for sound engineering decisions.

Their low cost will surprise you.

• • •

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 oil and water pipe lines 4" to 144" in diameter by the Centriline Corporation, a Raymond subsidiary.



GOW DIVISION

Raymond

CONCRETE PILE CO.

140 Cedar Street, New York 6, N. Y.

BRANCH OFFICES:

Boston • Syracuse • Philadelphia • Baltimore
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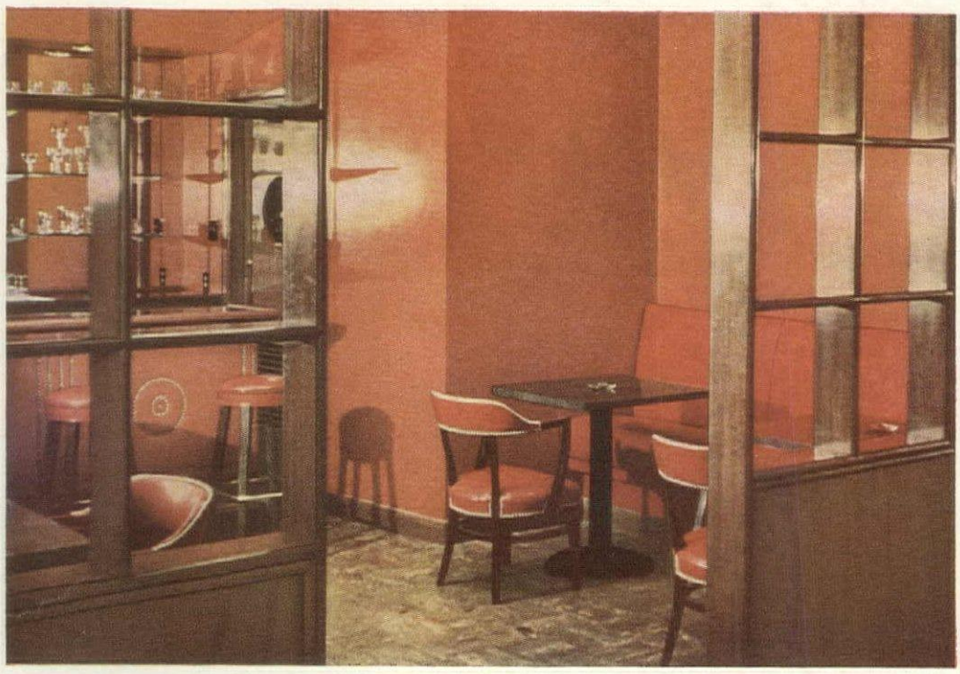
Houston • Kansas City • St. Louis • Cleveland
Chicago • Detroit • Salt Lake City • Portland
San Francisco • Oakland • Los Angeles
and principal cities in Latin America





Above: Special Tomato Red Kalistron covers walls and upholstered furniture in Bar of Engineers Club, Dallas, Texas. Arch.: Everett Welch.

Why this wall and furniture beauty

STAYS BEAUTIFUL . . . *practically forever*

When surfaces are covered with amazing Kalistron, their beauty is *permanently protected* against marring. For in Kalistron, magnificent colors are fused to the *underside* of clear Vinylite* sheeting. Since this undersurface can *never* be touched, Kalistron's guarded beauty stays "first-day" fresh, *year after year* . . . impervious to scuffing, scratching, scraping.

And Kalistron doesn't chip, peel or crack; it is waterproof; can be quickly cleaned with a damp cloth. It is easily installed on either flat or curved surfaces. With all these points of superiority, no wonder it won the latest Modern Plastics Award for furniture and interior decorating material.

Coupon will bring you, free, sample of Kalistron plus top-quality nail-file: see if you can mar Kalistron even with this file.

Kalistron
PAT. APPLIED FOR
←COLOR FUSED TO UNDERSIDE
PLASTIC COVERING MATERIAL

Distributed by: UNITED STATES PLYWOOD CORP., N. Y. C.
and by: DECO SALES, 408 Freylinghuysen Ave., Newark, N. J.
In Canada: PAUL COLLET & CO., LTD., MONTREAL

*T.M. COCO.

U. S. Plywood Corp., Dept. F-63
55 West 44th St., New York 18

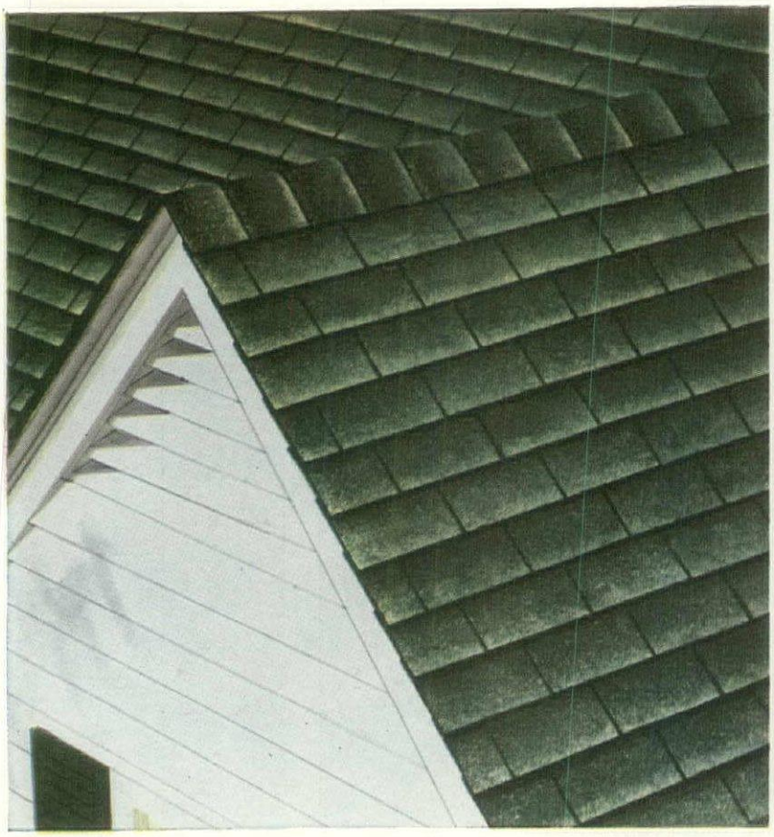
Please send me FREE Nail-File Test (swatch of Kalistron plus actual nail-file).

NAME_____

ADDRESS_____

_____

Color fused to underside of transparent vinyl sheet . . . backed by flocking



Fire-Chex Green Shadow Blend Roof Design*



Fire-Chex Brown Shadow Blend Roof Design**

Carey Fire -

Fire-Chex Red Shadow Blend Roof Design*

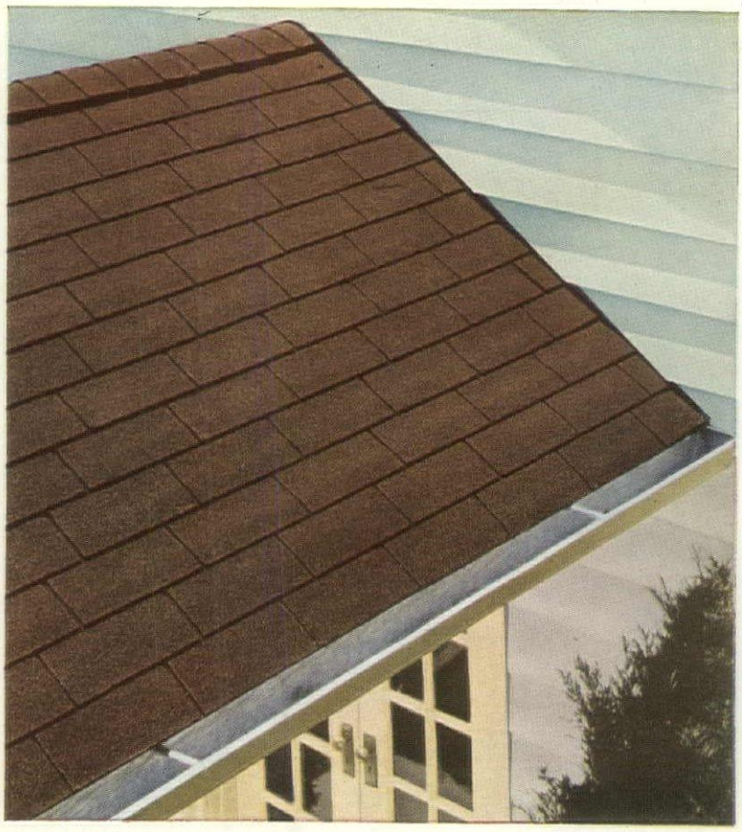


Fire-Chex Gray Shadow Blend Roof Design*





Fire-Chex Velvet Black



Fire-Chex Chocolate Brown

Chex Shingles

an achievement in protection and beauty . . . featuring these unequalled advantages:

CLASS A† Fire-Protection

YEARS LONGER Weather Protection

EXCLUSIVE Shadow Blend Designs

So much depends on your decision for roofing—fire safety, weather protection, beauty. That's why you'll want to consider the advantages of Carey Fire-Chex asbestos-plastic shingles for your next job.

Fire-Chex are the *only* shingles ever rated Class A† by Underwriters' Laboratories, Inc. This *highest* fire-protective rating was awarded Fire-Chex for their ability to deliver vital fire-protection, even when exposed to the heat and flames of a four-pound blazing wood brand!

What about *weather-protection?* Tested in regions of greatest weather severity, Fire-Chex outlasted all other types of roofing . . . were unaffected by scorching sun or sub-zero cold. They remained snugly anchored, resistant to rain, snow, sleet, wind and hail. No blistering, no warping, no curling!

You'll like the design opportunities exclusive with Fire-Chex, too! These exclusive shadow-blend roof designs—copyrighted as "works of art"—and handsome solid colors set new standards for color harmony and eye-filling beauty . . . "go well" with any style of architecture!

Fire-Chex asbestos-plastic shingles are made only by Carey. They have no equal, anywhere, for permanent fire-safety, weather-protection and beauty on buildings of all types. Write for complete information—or see your Carey dealer.

*Copyright 1949 **Copyright 1951
The Philip Carey Manufacturing Company
†Without asbestos underlayment

The Philip Carey Mfg. Company, Cincinnati 15, Ohio
In Canada: The Philip Carey Co., Ltd. Montreal 3, P. Q.

From the House of Carey—Fire-Chex Asbestos-Plastic Shingles • Bathroom Cabinets and Accessories • Fire-Guard Rock Wool Insulation • Ceramo Asbestos Cement Siding • Kitchen and Attic Ventilating Fans • Other Famous Products for Home, Farm and Industry

Carey



Photographs taken at *Sky Line Inn, Manchester, Vt.*, show "Kalistron" wall coverings and upholstery materials with colors fused to undersides for permanence and "depth." By United States Plywood Corp., 55 W. 44th St., New York 18, N. Y.

For Hard Duty ..and Soft Beauty

COVER WALLS · COVER FURNITURE WITH VINYLITE BRAND PLASTICS



Rich decorative effects in colorful "Kalistron" wall coverings that are made of VINYLITE Plastics are enhanced by appropriate, multicolor printed designs, in passenger cars of Great Northern Railway Co. Easily cleaned. Scuff-resistant. Do not crack, chip, or peel.

LOOKING FOR wall coverings and furniture upholstery with the maximum of colorful beauty and texture—plus durability that knocks maintenance costs practically out of the picture?

You'll find these qualities teamed up in exquisitely colored, scuff- and stain-resistant materials made of VINYLITE Brand Plastics!

Small wonder that they're chosen today for so many hotels, restaurants, hospitals, schools, public buildings, private homes! Study these combined advantages . . . consider what they mean in reduced maintenance costs *over the years:*

- **Washable, resisting strong alkalies and most strong acids**
- **Resistant to water, oils, greases, alcohol**
- **Unlimited range of fast colors and embossed designs**
- **Easily applied; never in need of refinishing**
- **Resistant to aging; resilient and strong**

Ask us for technical data and a list of representative suppliers of wall covering and upholstery materials made of VINYLITE Brand Plastics. Write Dept. HV-14.

Vinylite BRAND **PLASTICS**

TRADE MARK

BAKELITE COMPANY, *A Division of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N. Y.

MECHANICAL DESIGN FEATURES

EAVY-DUTY ONSTRUCTION

Seamless Tubular knob shank; full torsional strength of knob shank developed due to absence of longitudinal split. Double dog knob flange develops maximum strength between knob and knob shank. Phosphor bronze coil compression springs used throughout.

MPLIFIED ONSTRUCTION

Integrated design provides maximum number of lock functions with minimum number of different parts. Trouble-free operation assured through fewest possible number of parts in each lock.

RECISION MADE

Completely toleranced design insures uniform precision of parts.

EVERSIBLE ATCH

Minimum disassembly required to insure upright key. Reverse bevel condition easily met by simple operation of reversing knob.

ALL BEARING YLINDER

Famous Russwin 6 pin tumbler ball bearing principle utilized in all keyed functions. Only Russwins have the ball bearing cylinder.

EYS

Lifetime keys insured through use of 12% nickel alloy for all keys.

ASTER KEY

Locks can be furnished to any established Russwin master key system, regardless of complexity.

VERSIBLE YLINDER

Cylinder may be reversed by removal of one screw. This operation easily performed in field — insures against installation of lock with upside down pin chamber. This allows adequate drainage of cylinder pin holes and tends to prevent dirt accumulations.

ONGER LATCH OLT THROW

Full ⅝" latch bolt throw insures maximum security under the worst conditions of door shrinkage.

RIKE

Box strike insures full latch bolt engagement under all installation conditions, also armors against tampering with latch bolt when in position. 1¼" lip allows for maximum curve on lip of strike for easy latching.

YLES

Available in *MODERN STYLE:* "Cosmic" design (wrought metal), "Flare" design (cast metal) . . . *CONVENTIONAL STYLE:* "Haddam" design (wrought metal), "Bristol" design (cast metal).

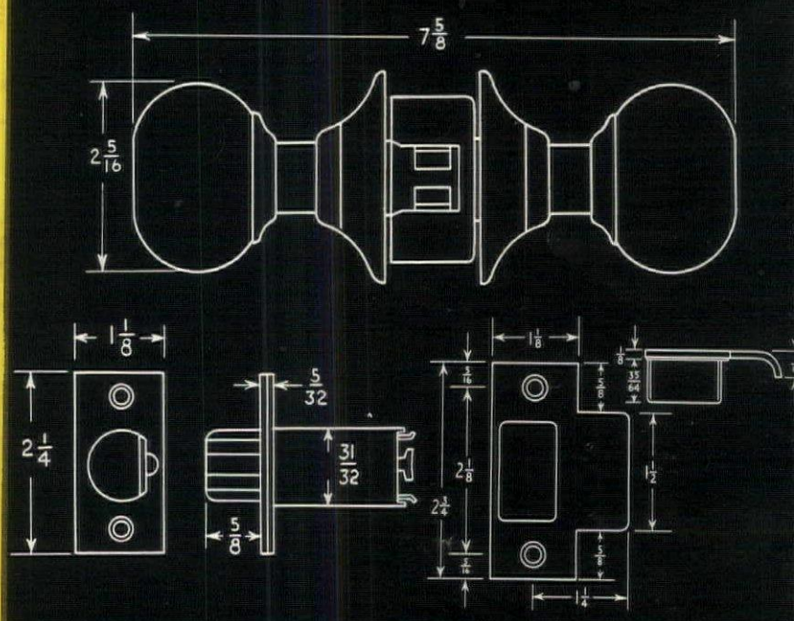
IISHES

Varied, extremely durable, typical Russwin Quality. See next page.

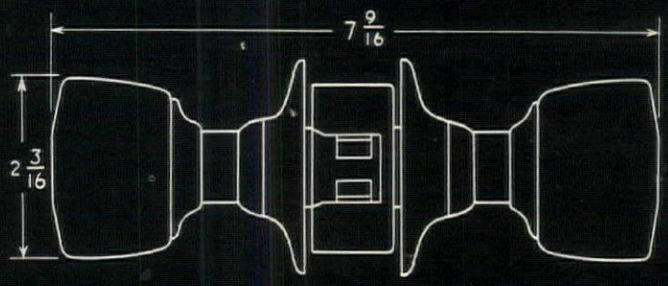
RUSSWIN®

HEAVY-DUTY CYLINDRICAL LOCKS

LOCK DIMENSIONS shown below are overall dimensions for Bristol and Haddam design. Latch and Box Strike dimensions shown are standard for all designs.



LOCK DIMENSIONS shown below are overall dimensions for the Cosmic and Flare designs.



FUNCTIONS

Russwin Heavy-Duty Locks are available in a wide variety of functions for many types of buildings. See following page.

INSTALLATION OF LOCK

Lock easily installed. Just drill 2 holes and mortise front in door. Rose screw adjusted to mark on shank for thickness of door. Inside knob twists into place; not necessary to line up with any component parts or use a tool which might scratch finish.

INTERCHANGEABLITY

Russwin heavy-duty cylindrical locks can be readily interchanged between doors or reversed to take care of changes in swing.

Handy Data on the new Russwin Heavy-Duty Cylindrical Lock Operations

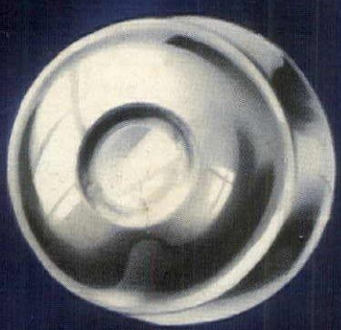
HARMONIZING DESIGNS AND FINISHES



"KEY-NOB" . . . Bristol or Haddam design . . . Finish, Dull Chromium



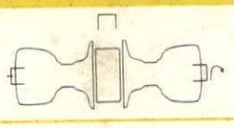
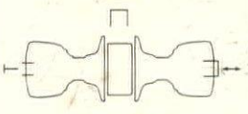
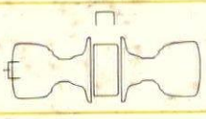
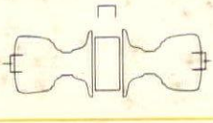
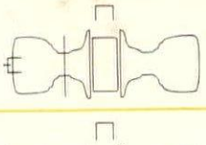
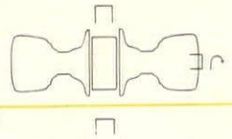
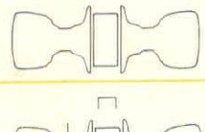
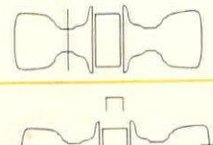
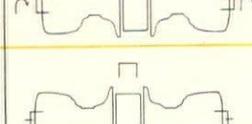
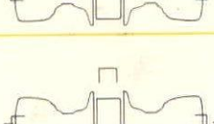
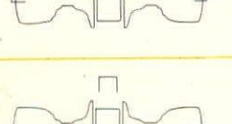
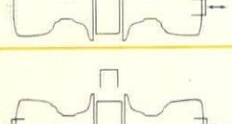
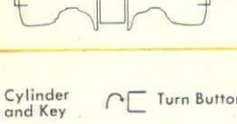
TURN BUTTON KNOB . . . Cosmic or Flare design . . . Finish, Polished Bronze

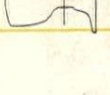


PLAIN KNOB . . . Bristol or Haddam design . . . Finish, Polished Chromium



PUSH BUTTON KNOB . . . Cosmic or Flare design . . . Finish, Polished Brass

RECOMMENDED FOR	LOCK NUMBER	LOCK OUTLINE	OPERATION
Residential Front and Rear Doors Office Doors	440		Latch bolt by knob each side. Insid always free. Turn button dead-locks knob. Cylinder retracts latch bolt wh side knob is locked. Dead locking lat
Bathrooms and Bedrooms	420		Latch bolt by knob each side. Insid always free. Push button dead locks knob. Push button released by turnin knob or closing door . . . also relea emergency key through outside knob.
Classroom, Vestibule and Utility Room Doors	440⅝		Latch bolt by knob each side. Insid always free. Outside knob dead lo key in outside knob. Dead locking l
Apartment House Entrance, Office Building and Corridor Doors	446½		Latch bolt by knob each side. Insid always free. Outside knob dead lo key in inside knob. Key in outside tracts latch bolt when outside knob i Dead locking latch.
Utility room, Storeroom and Exit Doors	452		Latch bolt by inside knob only. Outsi fixed. Latch bolt may be retracted by in outside knob. Dead locking latch.
Exit Doors	426		Latch bolt by knob either side. Tur locks or unlocks outside knob. Insi always free.
Passage Doors	410		Latch bolt by knob either side. E always free.
Exit Doors	414		Latch bolt by knob inside only. Ins always free. Outside knob fixed. D ing latch.
Communicating Hotel or Office Doors	428		Latch bolt by knob either side. Turn either knob locks or unlocks oppos Dead locking latch.
Cylinder Communicating Hotel or Office Doors	450½		Latch bolt by knob either side. Cy each knob locks or unlocks oppos Dead locking latch.
Dormitory Bedrooms and Public Rest Room Doors	453		Latch bolt by knob either side. Ins always free. Push button dead lock knob. Turning inside knob or clos releases push button. Cylinder relea button and dead locks outside kno locking latch.
Residential Bedroom and Inner Office Doors	422		Latch bolt by knob either side. Pu dead locks outer knob. Inside kno free. Turning inner knob or closing releases push button. Dead locking la
Office Doors	446		Latch bolt by knob each side. Pus dead locks outside knob. Inside kno free. Turning inside knob releases pus Cylinder retracts latch bolt and rele button. Dead locking latch.

SYMBOLS  Rigid Knob · Cylinder and Key · Turn Button · Emergency · Push Button

RUSSELL & ERWIN DIVISION

The American Hardware Corporation • New Britain, Conn.

Period Design Lock Trim
Unit Locks
Heavy Duty Cylindrical Locks
"Ten Strike" Mortise Locks
Tubular Locks
Colonial Hand Forged Iron Hardware
Entrance Door Sets
Cylinder and Bit Key Locks
Push Plates, Door Pulls, Push Bars
Fire Exit Bolts
Surface Door Closers
"400" Door Closers
Sash Hardware
Miscellaneous Hardwa



NEW High-Voltage Lighting Circuits FOR COMMERCIAL BUILDINGS

G-E Remote Control Permits More Economical Combined Power and Lighting Distribution System

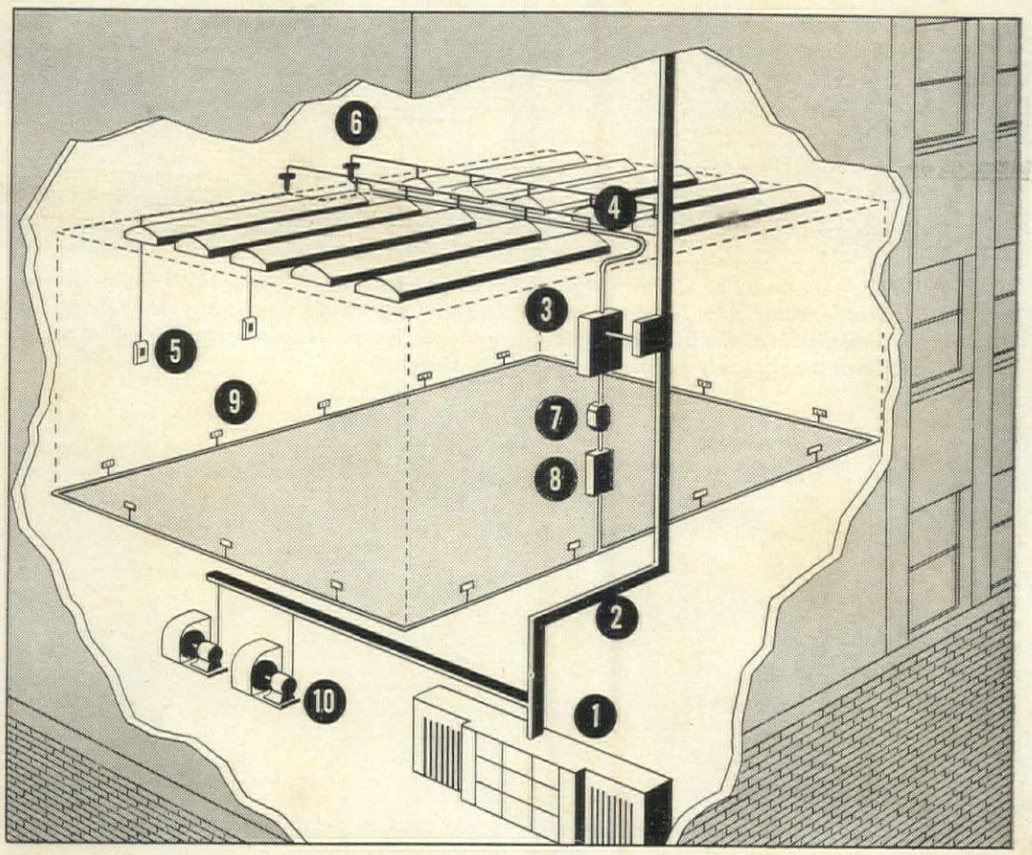
Here's a brand-new distribution-system development which provides outstanding savings to building owners and operators. Now, high-voltage lighting circuits—when safely controlled by G-E low-voltage remote control—can be used in commercial buildings.

Operating fluorescent lamps on 277-volt circuits means that economical 480Y/277-volt combined lighting and power distribution can be employed. Savings are two-fold: (1) much less conductor copper is needed, and (2) less-expensive 480-volt motors and power equipment can be used. In addition, G-E remote control itself adds flexibility, convenience, and economy to your lighting system.

Standard G-E equipment makes application easy. All components for 480Y/277-volt systems, from unit substations to fluorescent lamps, are available in the complete, dependable General Electric line.

General Electric Has The Complete Story

Your G-E representative is ready to supply you complete information. Ask him, or write for a detailed description of the new system together with a listing of the applicable equipment. It's all available in new bulletin GEA-5670. *General Electric Co., Schenectady 5, N. Y.*



Here's how the system fits a typical building—Power is received by 480Y/277-volt-secondary equipment ❶. Busway risers (or conduit and cable) ❷ carry the three-phase power to panelboards ❸ in the areas to be lighted. From the panelboards, 277-volt line-to-neutral lighting circuits ❹ are run throughout the area. G-E 24-volt remote control switches ❺ control these circuits through relays ❻ mounted near the lighting fixtures. A 480-120-volt transformer ❼ supplies power to the panelboard ❽ from which floor circuits ❾ are run to accommodate business machines, etc. The same distribution system supplies 480-volt line-to-line power to elevator and air-conditioning motors ❿.

GENERAL ELECTRIC

665-114

Take it from these SUCCESSFUL builders—

DEPEND ON KELVINATOR ELECTRIC KITCHENS TO ASSURE LOWER COSTS, HAPPIER TENANTS

The 245 kitchens in these two new projects will be great successes for both the tenants and the builders. Important reasons for this are the Kelvinator electric ranges and refrigerators installed in every apartment kitchen. Read below why these successful builders chose Kelvinator. Then, for full information on getting these benefits for *your* new projects, write to Dept. AF, Kelvinator, Division of Nash-Kelvinator Corporation, Detroit 32, Michigan.





Ross P. Hebb
Builder

Dan M. Narodick
Builder



"We're very proud of Queen Vista", Ross P. Hebb and Dan M. Narodick write regarding this Seattle, Washington, project, "and of the Kelvinator electric ranges and refrigerators we have installed in all the 85 apartments. On past experience we know that money will be saved and tenants completely satisfied by Kelvinator performance."

H. S. Greenwald
Builder





Credit where Credit's Due: *To give proper credit on the projects featured in our June ad, architects for the new Warwick Apartments, Atlantic City, and Duval Manor, Germantown, are Messrs. O'Shiver and Knopf. In this same ad, architects for the new Parkway House, Philadelphia, are Messrs. Roth and Fleisher.*

"160 units, to me, call for 160 Kelvinator electric ranges and 160 Kelvinator electric refrigerators", says H. S. Greenwald, prominent Chicago builder. "I know I can count on Kelvinator dependability to keep every family well satisfied, and to keep costs at a minimum."

Kelvinator

DIVISION OF NASH-KELVINATOR CORPORATION, DETROIT 32, MICHIGAN

REFRIGERATORS, RANGES, FREEZERS, WATER HEATERS, AIR DRIERS . . . *Electric, of course!*

Defense Housing Bill, Law at Last, Brings Threat of Permit System

The long awaited Defense Housing Bill, signed into law September 1 by Harry Truman, was a curious hodgepodge of last minute amendments and hasty compromises that evoked neither loud cheers nor pronounced squawks. Most industry spokesmen were relieved that the ordeal was over, thought that after eight months of fumbling, Congress had enacted a workable program. There were misgivings at the White House and at HHFA over the fact Congress had tinkered with credit controls. But two days after the President signed the bill into law, HHFA and the Federal Reserve extended the Congressional relaxation of Regulation X (see table). Congress eased the curbs only up to $12,000. The two agencies loosened credit restrictions considerably from $12,000 to $15,000 to narrow the sudden jump in down payments between $12,000 and $13,000. They also softened down payments about 5% from $15,000 to $25,000.

Permit threat. But the industry was warned: if a building orgy results, a tight permit system would be imposed as in World War II; there would be no more self-certification of controlled materials.

Members of the Congressional Conference Committee that wrote the final version of the legislation could see no reason for HHFA to get panicky over possible inflationary aspects. They recalled disclosures in closed-door sessions that HHFA's Foley had plans for softening credit curbs early this fall. "Maybe he is miffed because we beat him to the draw," said one.

Slow start. For builders, the important question was: When will the program swing into action? Prospects were discouraging. Even if HHFA broke all records in setting up administrative procedures, Congress would have to grind out implementing appropriations before wheels would turn. The trimmick was an overlooked clause in the act making it mandatory for the FHA to get an additional administrative budget approved before it could activate the new Title IX. This was to be the mainspring of the whole defense housing program. After an area gets a defense rating and HHFA has figured the volume and price range of housing required, private builders have 90 days to come in with acceptable applications. They *could* use Title II, also revived by the new act, which gave FHA $1¼ billion additional insurance authority for all phases of its program. But Title II provides less attractive financing for rental housing than Title IX. Both Congress and HHFA have made it clear they want most new housing for defense workers to be rental.

It would take Congress at least 30 days to vote money to administer Title IX. Besides, it would be asked to increase HHFA's housekeeping budget to carry out its defense assignments. It still would have to appropriate funds for direct spending set up by the Housing Act: $50 million for publicly financed housing for defense workers, $60 million for community facilities. At best, it would be early October before a defense housing program could start.

Administrative perils. Builders were apprehensive over the programming process, too. The convolutions that the Government planners go through not only take time but can also produce an entirely unrealistic appraisal of the need. A frequent criticism in Congress during the debate on the measure was that by making it difficult enough for private enterprise to function, the Government would pave the way for public housing.

As one House member put it: "We have raised the maximum for a basic two bedroom house to $9,000 with an additional $1,000 in high cost areas but there is nothing to stop Foley's boys from requiring the bulk of the housing in each designated place to carry much lower price tags." The bill's supporters pooh-poohed these fears by pointing out that Foley only had a piddling $50 million for direct Government construction. This could build only 5,000 or 6,000 units at best. At the speed the Public Housing Administration operates, it would be spring before any were started. Where permanent housing is built by the Government, Congress specified that it be sold as fast as possible after the emergency with the occupants having first preference as purchasers and veterans second. Tem-

RELAXED HOUSING CREDIT RULES

FHA AND CONVENTIONAL LOANS					VA LOANS				
	New Terms		Old Terms			New Terms		Old Terms	
Value	*Down payment*		*Down payment*		*Value*	*Down payment*		*Down payment*	
$ 5,000	10 %	$ 500	10 %	$ 500	$ 5,000	4 %	$ 200	5 %	$ 250
6,000	10	600	14.2	850	6,000	4	240	4.2	250
7,000	10	700	17.1	1,200	7,000	4	280	7.1	500
8,000	15	1,200	19.4	1,550	8,000	6	480	9.4	750
9,000	15	1,350	21.1	1,900	9,000	6	540	11.1	1,000
10,000	15	1,500	23.0	2,300	10,000	6	600	13.0	1,300
11,000	20	2,200	24.5	2,700	11,000	8	880	14.5	1,600
12,000	20	2,400	25.8	3,100	12,000	8	960	15.8	1,900
13,000	23.1	3,000	26.9	3,500	13,000	13.8	1,790	18.8	2,450
14,000	25.7	3,600	27.9	3,900	14,000	18.7	2,620	21.4	3,000
15,000	28.0	4,200	28.7	4,300	15,000	23.0	3,450	23.7	3,550
16,000	31.2	5,000	31.9	5,100	16,000	26.2	4,200	26.9	4,330
17,000	34.1	5,800	34.7	5,900	17,000	29.1	4,950	29.7	5,050
18,000	36.7	6,600	37.2	6,700	18,000	31.7	5,700	32.2	5,800
19,000	38.9	7,400	39.5	7,500	19,000	33.9	6,450	34.5	6,580
20,000	41.0	8,200	41.5	8,300	20,000	36.0	7,200	36.5	7,300
21,000	43.3	9,100	43.8	9,200	21,000	38.3	8,050	38.8	8,150
22,000	45.5	10,000	45.9	10,100	22,000	40.5	8,900	40.9	9,000
23,000	47.4	10,900	47.8	11,000	23,000	42.4	9,750	42.8	9,850
24,000	49.2	11,800	49.0	11,900	24,000	44.2	10,600	44.6	10,700
24,500	50.0	12,250	50.0	12,250	24,500	45.0	11,025	45.0	
25,000	50.0	12,500	50.0	12,500	25,000	45.0	11,250	50.0	12,500

LAST MONTH'S WASHINGTON DIARY

- *8/1 President Truman creates the Defense Materials Procurement Agency. Jess Larson named Administrator*
- *8/3 NPA places all construction under CMP beginning October 1, requiring permits on basis of consumption of critical materials (M-4A; CMP Reg. 6; CMP Reg. 3)*
- *8/7 NPAdministrator Manly Fleischmann announces 100% CMP, to include automobile and consumer durable goods*
- *8/14 House approves $5,678 million military construction program*
- *8/15 Petroleum Administration for Defense restricts use of natural gas in 15 states*
- *8/16 Defense Mobilizer Charles E. Wilson declares 60 day moratorium on granting of additional tax amortization certificates for industrial expansion*
- *8/20 NPA adds two more divisions to oversee construction: the Industrial Expansion Division, for some types of factory building, and the Water Resources Division for construction of ground surface water supply facilities*
- *8/20 President Truman approves emergency loan of 25,000 tons of copper from national stockpile to ease shortage*
- *9/1 President signs Defense Housing Bill*
- *9/4 HHFA and Federal Reserve Board ease Regulation X down payments on 1 to 4 family housing*
- *9/6 DPA exhorts building industry to increase waste-saving design, hints it may use CMP as whip if voluntary plan fails*

TERMS OF NEW DEFENSE HOUSING BILL

Type of Aid	*Limits*	*Terms*
RENTAL HOUSING IN CRITICAL DEFENSE AREAS AS DESIGNATED BY PRESIDENT		
Loans to builders of 1 to 4 family unit houses under section 903 of new Title *IX* of FHA. Builders must hold housing for rent for defense workers for such period as FHA Commissioner may require. This probably will be 30 days but may be longer.	90% mortgage on a house costing up to $9,000 ($10,000 in high cost areas) plus $1,080 each for third and fourth bedroom. Corresponding terms for 2, 3, and 4 family houses.	30 years and not to exceed 4½%. Rate expected to be current FHA maximum of 4¼%.
Loans to builders of multi-family housing for defense workers under section 908 of new Title *IX*. Builders required to certify upon completion whether or not mortgage exceed their costs. Builders profit may be included as a cost item.	90% of estimated value of completed project. Mortgage may not exceed $8,100 per family unit ($7,200 if number of rooms does not exceed four per family unit). $900 per family unit allowed in high cost areas. No mortgage may exceed $5 million.	32 years and 7 months; 4%.
FOR SALE HOUSING IN CRITICAL DEFENSE AREAS		
Regulation X and its FHA and VA counterparts suspended for *HHFA programmed* housing selling for $12,000 or less (also for construction of rental housing with rents to $85 per month).	Under Title *II* of FHA, loans available to owners on a basis of 90% of first 7,000 of long term value (percentage decreases on a sliding scale to 86% on an $11,000 house; 80% on a $12,000 house).	25 years; 4¼%.
Defense workers who are not veterans but wish to buy programmed housing qualify for benefits equal to the most liberal terms for veterans. For non-programmed housing, Regulation X relaxed only as President directs.	No down payment required. Veteran may buy a house costing $12,000 or less with full amount of VA guarantee which may not exceed 60% of loan.	30 years; 4%.
FAMILY HOUSING FOR MILITARY BASES OR AEC PLANT WORKERS		
Wherry Act (Title VIII of FHA) extended to June 30, 1952.	90% mortgages up to $8,100 per family unit (additional $900 allowed in high cost areas). Mortgage limit $5 million per project.	32 years, 7 months; 4%.
DIRECT GOVERNMENT CONSTRUCTION IN DEFENSE AREAS AND AROUND MILITARY BASES		
HHFA may put up temporary or permanent housing if acceptable applications are not forthcoming from private builders after 90 day period. $50 million authorized for such work.	Costs may not exceed $9,000, $10,000 and $11,000 for two, three and four bedroom units respectively plus an additional $1,000 in high cost areas. (50% more allowed in U.S. territories.)	HHFA required to fix fair rentals and to establish preferences for admission.
COMMUNITY FACILITY ASSISTANCE		
HHFA may make grants and loans to local governments for essential community services in defense areas, excluding schools. Total authorized: $60 million.	Assistance only available to extent localities unable to provide extra facilities made necessary by impact of defense activity.	Not specified.
SITE ACQUISITION ASSISTANCE		
Revolving fund of $10 million authorized to acquire housing sites around defense installations in isolated or semi-isolated areas to check land speculation.	Improved sites may be leased or sold to private builders.	Not specified.
PREFABRICATED HOUSING		
Production and distribution loans authorized to prefabricated housing firms already in business from new revolving fund of $15 million.	Loans may only be made where financing on reasonable terms is not otherwise available.	Not specified but previous rate of 5% and 5 to 7 year loan period will probably continue.
MORTGAGE FINANCING		
Federal National Mortgage Association permitted to issue advance commitments to buy mortgages on programmed housing in defense areas; also for housing in major disaster area and for Wherry Act projects. $200 million FNMA funds earmarked for this.	Commitments may only be made up to Dec. 31, 1951.	No fee may be imposed by originating lender in excess of 1%; or 2½% if advances are made during construction.

porary housing including trailers will be provided where only brief need is foreseen. The Department of Defense is counting on a large slice of the program to relieve slum conditions around its expanding military bases. To the extent the armed services drain away public housing funds, the Government's ability to intervene in purely defense-plant communities will dwindle. Insiders said the Pentagon wants at least half of this appropriation.

Advance takeouts. Another major problem was mortgage money (*see p. 48*). What would happen if builders did their part; came forth with plans for the required amount of housing in a designated community and then could not obtain financing? A partial answer was that Federal National Mortgage Association would come to the rescue to the extent of its ability. The act carried an amendment authorizing FNMA to issue advance commitments in defense areas and for Wherry Act housing. But only $200 million was reserved for the purpose. Moreover a cut off date of December 31 left too little time for builders and lenders to make much use of it. It was a cinch the Government would have to extend and expand Fanny May's secondary market facilities to finance defense housing in the volume needed.

Another possible stumbling block was the fact that some builders now thought the difference between the newly relaxed Regulation X inside and outside of critical areas was so small that few builders would care to expose themselves to the extra hazards of defense area construction. Congress suspended credit curbs entirely in defense areas, both for veterans and non-veterans. But this privilege was confined to programmed housing. Any housing in these areas beyond HHFA's schedule would only be entitled to non-defense area relaxation, unless HHFA rules otherwise.

What may prove to be a serious handicap in carrying out the program is that schools were stricken out of the community facility section before final passage. The House was adamant about this because the race and religious issues hovered over the debate. The House Education Committee will try to develop a substitute program for Federal aid to build schools in defense communities that would steer around these controversies. The trouble was that schools will be among the prime needs in most places. Significantly, a study by the Atomic Energy Commission had shown that in the two communities it operates, Oak Ridge, Tenn., and Richland, Wash., residents regard the quality of schools as more important than housing. The $60 million for other facilities will not go far, anyway. The Savannah River critical area could use half of it.

PRICES FALL on existing houses; new homes hold firm

Prices of old homes were slipping. In almost every big city across the country, Realtors said houses were selling for $1,000 to $3,000 less than a year ago. Big homes —the ones hit hardest by the price slide— usually suffered even bigger reductions. In Atlanta, a 16-year old house with 5 bedrooms, 3½ baths, went on the market at $27,500, finally sold last month for $19,000.

Sales off 5%. Chicago's largest real estate dealer, Baird & Warner, reported sales of residences in the first six months of 1951 dropped 4.7% below the same period last year. Real Estate Man M. J. Newmann reported one client asked $17,000 for a home. It sold for $15,000—"and I was lucky to get that." In exclusive Winnetka, the North Shore firm of Quinlan & Tyson had been offered $30,000 to $35,000 for a home last year. It recently sold for $26,000. In Cleveland, Realtor George E. Forbes noted: "There's a disposition to price things a little more realistically and listen to the merchants a little more. Prices are tempering." Added Realtor George Weitersen of Detroit: "The public is always slow to react to changes in the market, which means that homes are underpriced in a period of rising prices, and overpriced when the tide turns the other way." Reported C. H. Bell, executive secretary of the Houston Real Estate Board, "Most brokers are complaining that owners won't reduce their prices."

While conventionally-financed existing houses are free of Regulation X, the Federal Reserve voluntary credit restraints do apply, so bankers are under pressure to hold conventional loans for existing housing to the same limits. This also gives the house market a downward push.

New homes firm. Prices of new homes were generally holding firm despite the sales slump that began in late spring. (An exception was Atlanta, where the price of several homes was cut from $14,500 to $14,000.) The Philadelphia Home Builders' Association advised its members it was "not good business" to cut prices despite mounting sales resistance. Builders and Realtors were banking on the usual fall upswing in sales to pull them out of the woods. One hopeful sign: In over-built Dallas, sales picked up sharply during August.

Farm real estate prices zoomed. The Agriculture Department, which measures rural land values with the years 1912-14 as the base period, reported its index of farm prices reached a record 202 in July —17% above July 1950 and 5% above last March.



Rider & Keister

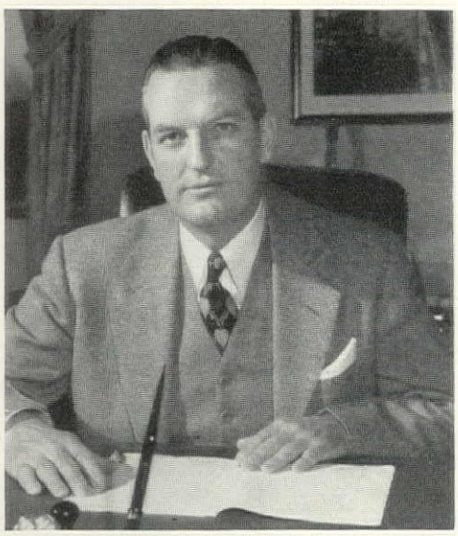
CONFUSED CONTRACTOR fires a question at NPA Attorney Henry M. Heymann (with glasses) as he explains how new construction controls work to meeting of 200 New Yorkers. Talk was part of NPA's biggest effort yet to sell CMP to the industry. Heymann or NPA Ass't General Counsel Richardson Bronson also addressed building groups in Boston, Chicago, San Francisco, Seattle and Denver during two weeks after the Aug. 3 order was issued.

Structural Steel Famine Confronts Defense Plants with Costly Delays

Impact of the new building controls (THE MAGAZINE OF BUILDING, August '51, p. 37) split the industry down the middle.

Homebuilding leaders generally shrugged. Said Atlanta's Roy Warren: "Regulation X is the fly in our ointment. M4A doesn't mean a thing to us." General contractors fumed. Typical reaction was that of Loy Duddleston, executive secretary of Houston AGC: "It's going to be the roughest thing you ever saw. We'll have to lock up, except for defense construction."

The alternative was envisaged by President Francis J. McCarthy of the Northern California AIA chapter. "It's going to be like prohibition: we'll build or else."



MATERIALS UMPIRE: As much as any one man in Washington, powerful, energetic Ralph S. Trigg will decide what industries get first claim on scarce metals in coming months. Trigg is new deputy DPAdministrator and chairman of its potent, little-publicized Requirements Committee, which doles out controlled materials to other government agencies to pass on to ultimate users. Trigg's background: chief of the Agriculture Department's gigantic production and marketing administration from 1948 until last March when Secretary Brannan ousted him because Trigg refused to let PMA grass roots committees be used to propagandize the Brannan plan.

Fourth structural steel quarter allotments confirmed big construction men's worst fears. NPA doled out these fractions of what the construction industry wanted for its first 3 months completely under the Controlled Materials Plan:

Type of Building	*Grant*
Armed services	100%
Aluminum plant expansion	100%
Iron & steel plant expansion	51%
Other industrial expansion (chemical, industrial equipment, electrical, electronics)	26%
Multi-family housing (HHFA)	50%
Commercial	11%

Defense plant shutdown. Smart contractors had seen the pinch on commercial building coming a few months off. The big surprise was the clampdown on factories mushrooming under the Government's quick tax write off program, itself suspended for 60 days when it became clear approvals were miles ahead of the country's steel producing capabilities.

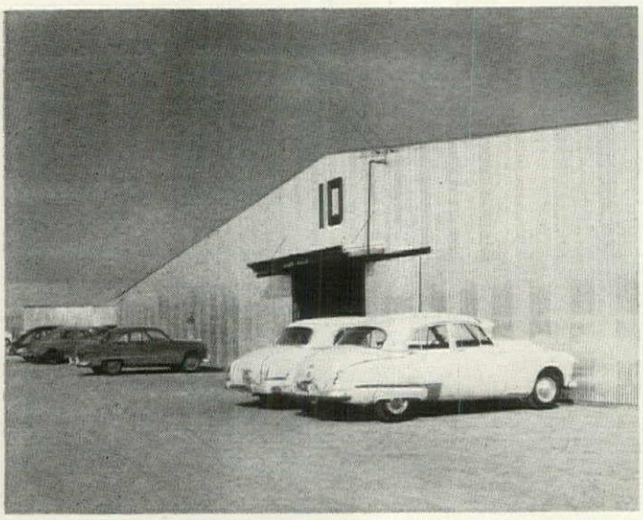
Estimated New York Contractor H. C. "Chan" Turner Jr.: "I expect several hundred million dollars worth of plant expansion will have to be halted. I have $20 million worth of industrial jobs myself that will have to mark time in the fourth quarter unless we get allocations we are not likely to get." Another major industrial builder reported his firm would have to suspend work on $20 million of prime defense plants in the fourth quarter unless unexpected steel was granted by NPA.

AGC President Glen W. Maxon snapped: "'The Government has taken away from the general contracting industry the ability to give public bodies and private investors in construction reasonable assurance that projects can be completed on schedule and at estimated costs." *(Continued on page 45)*

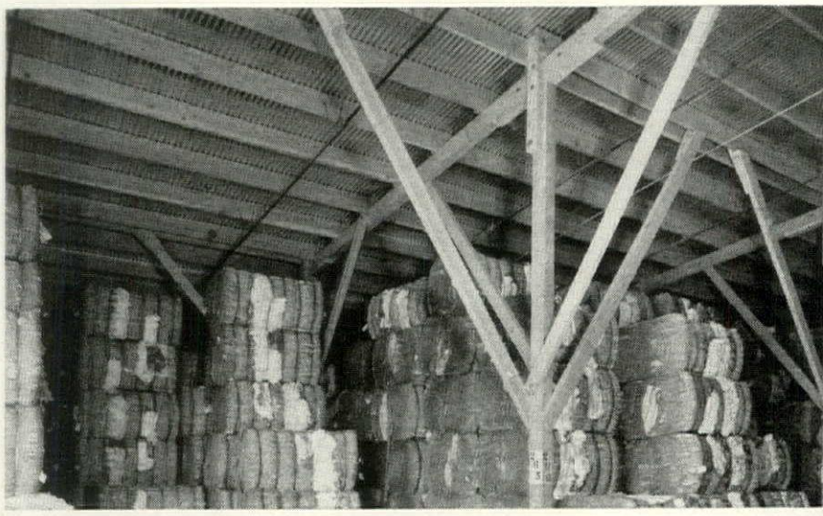


THESE TEN BUILDINGS of the Calcot Compress & Warehouse of the California Cotton Cooperative Association, Bakersfield, are entirely covered with Kaiser Aluminum corrugated roofing. One of the largest aluminum roofing installations in the nation, the buildings cover near 1,000,000 square feet. Each of the nine warehouses is 250′ x 158′. Th large building measures 800′ x 300′.

WHEN CAN YOU



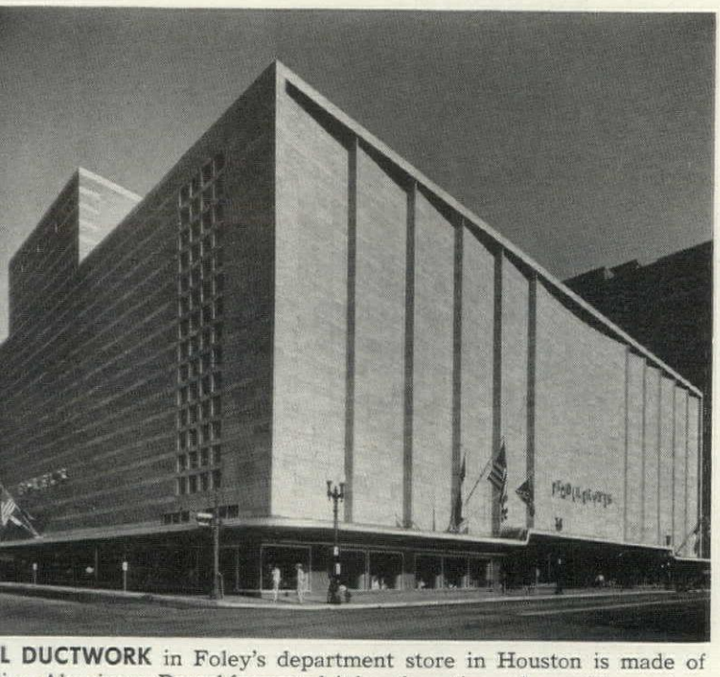
TEMPERATURES IN CALIFORNIA'S San Joaquin Valley often reach 110°. But inside the big cotton warehouses and compress building at Bakersfield it's 20° cooler during hot weather, and management estimates worker efficiency is 20 per cent greater —due to the reflectivity of Kaiser Aluminum Roofing.



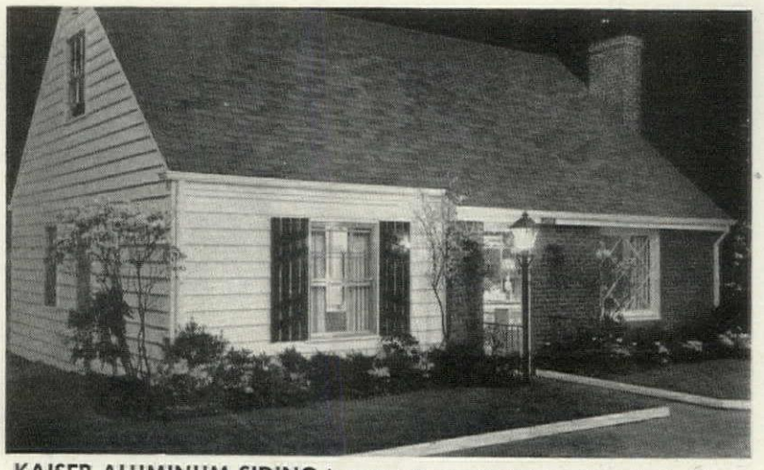
KAISER ALUMINUM ROOFING is unusually resistant to corrosion, never ne painting. The name "Kaiser Aluminum" stamped on every sheet assures trouble- service: It's *solid* aluminum—not clad or veneered. Sheets are light, easy to ha quickly applied—and don't require expensive, heavy supporting structures. Bec they're strong, no sheathing is needed.



KAISER ALUMINUM SHADE SCREENING on windows of this medical office building in Phoenix keeps interiors cooler during hot weather. Tiny louvers stop the sun's rays, screen out insects, but freely admit comfortable light and air. Kaiser Aluminum Shade Screening makes up for lack of roof overhang in helping to screen the sun.



L DUCTWORK in Foley's department store in Houston is made of iser Aluminum. Pound for pound, it has three times the working surface steel, is less wearing on shop equipment, can't spall. Can be fabricated ily on the jobsite and installed faster with less worker fatigue. Unulated, it delivers as much heat as insulated galvanized material!



KAISER ALUMINUM SIDING is *versatile* material; modern, but able to blend beautifully with traditional design. Installed under tension, the curved surface is rigid, sound-deadening, insulating. Pre-painting keeps first costs low—and maintenance costs are low because the lustrous enamel finish is baked on.

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iser Aluminum is helping to meet the needs of national curity—supplying vast amounts of aluminum to manuturers of defense items.

Thus, we can't *guarantee* that you'll readily find Kaiser uminum building products. But many dealers *have* en maintaining ample supplies—so ask for Kaiser uminum building products before you substitute!

You'll often find that you're able to give your clients the best: *Aluminum!*

Aluminum is the building material of the future

Building products made of Kaiser Aluminum offer exclusive advantages in design, beauty and quality. Representative applications shown here prove *today* that they're the building materials of the future!

For full information about Kaiser Aluminum building products—and for AIA files—write: Kaiser Aluminum & Chemical Sales, Inc., Oakland 12, California. Sales offices in principal cities.

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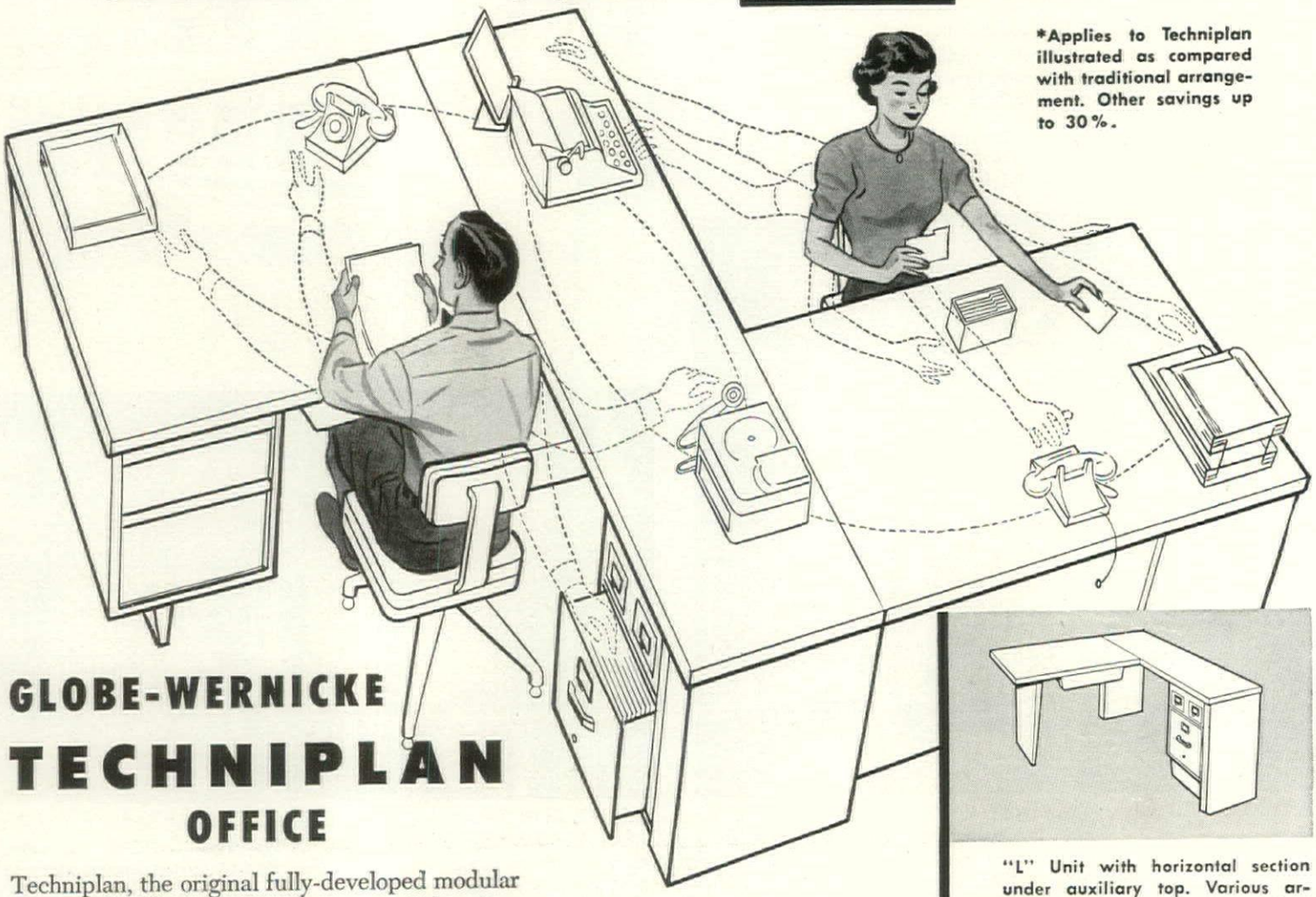
TECHNIPLAN OFFICE → *new* HIGH EFFICIENCY IN 18%* LESS FLOOR SPACE



*Applies to Techniplan illustrated as compared with traditional arrangement. Other savings up to 30%.

GLOBE-WERNICKE TECHNIPLAN OFFICE

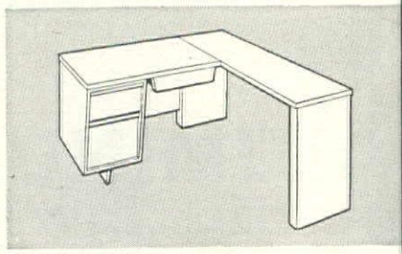
Techniplan, the original fully-developed modular system of office equipment, accomplishes two highly desirable results:

1. Reduces floor space by 18%* per worker without reducing work surface areas.
2. Provides for greater ease and speed in worker output.

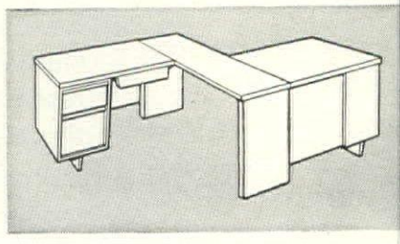
TECHNIPLAN uses interlocking, interchangeable units, offering hundreds of variations in arrangement—space utilization. Any desired combination of work facilities. Wasted out-of-reach areas are avoided.

TECHNIPLAN equipment is simple and tasteful in design for distinguished appearance. It can be installed a few units at a time, or the complete office. Rearrangement of the equipment is always easily and quickly made, to suit changing needs.

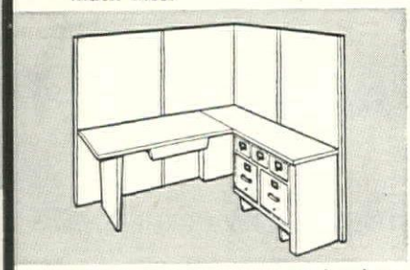
Get Techniplan information from your Globe-Wernicke dealer—listed in your classified phone directory under "Office Equipment-Furniture"—today!



Basic "L" unit—desk with pedestal and center drawer—auxiliary top with end supports.

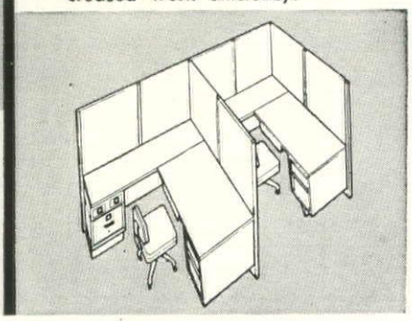


"L" Unit with horizontal section under auxiliary top. Various arrangements possible for letter files, map and drawing files and card index files.



Partitions for privacy—noise barriers—in full (66") or medium (48") height—in all-wood or combination wood and glass.

← Work station for two persons by the addition of desk unit gives economy of space and increased work efficiency.



Two Techniplan bays give semi-private work stations for two persons. Ideal for executive offices. Full height, all-wood partitions.



Engineering Specialists in Office Equipment, Systems, and Visible Records

Cincinnati 12, Ohio

In Boston, construction on Deaconess Hospital had already ground to a halt for ack of steel plates, ordered more than a ear ago. Priorities, belatedly granted, ould permit resumption in late fall.

Many architects were advising clients to efer construction. The vice president of ne of the nation's biggest building com-anies said bleakly: "Anyone is crazy to tart anything now." A big Chicago com-ercial and apartment management firm choed, "No one in his right mind would tart now on new construction of any size." cores of projects were pulled off the draft-ng boards. Sample: a $1½ million plant lanned by a Chicago electrical firm. A hevrolet dealer in Dallas held up start f a $1.5 million plant because of uncer-inty over reinforcing steel.

Deadline scramble. A minor rush de-eloped to beat the Oct. 1 deadline, after hich it's illegal for a project without a overnment allotment to receive controlled aterials above self-certifiable amounts. In tlanta, for example, one contractor broke round for a supermarket twice denied un-er old NPA rules.

A Chicago architect noted: "Everywhere ou turn, it's 'how fast can I push to get e work done?' Every going project is now fantastic risk. One of our apartment uildings, financed over a year ago and romised enough reinforcing steel for a oor a week, is actually receiving enough r one floor a month." Architect Harwood nith of Dallas, who is also a co-owner of new multiple unit apartment under con-ruction, said "The stop order has us sweat-g. We've got $500,000 tied up in the roject which is half built. If they make halt, we're out of luck."

In Detroit, Walter L. Couse, past presi-nt of AGC, pointed up a job NPA would mphasize more: waste saving (see p. 55). aid he: "Many firms are redesigning their bs to use less critical materials, more ncrete and laminated wood trusses, but ost prefer to wait until they are forced non-clearance of present plans."

'As ye sow...' Whatever else the new ntrols did, they sowed a bumper crop of nfusion. "We're quite aware of it. We gret it," Attorney Henry Heymann of PA's construction controls division told contractors' meeting in New York. No all part of the confusion was NPA's fault. rst, the wrong draft of the order got rinted and distributed to Washington news rvices. No sooner was the "right" draft f the Government presses than NPA dis-vered it contained a crucial typographical ror.

Efforts of contractors to get local guid-nce on details of the new system were warted by the Department of Commerce's stomary snail-paced distribution of NPA orders. In Miami, NPA officials Thompson V. Jones and Willard R. Burton had to confess to an Aug. 7 meeting of labor leaders, contractors and material dealers that they couldn't shed any light on the new rules announced four days earlier: they hadn't seen a copy. (The Builders Exchange manager gave them one.)

Volunteer enforcement added more confusion to the picture. In Cleveland, the city refused to issue permits for a $125,000 manufacturing plant until NPA approved. Yet steeel for the job had been bought in May, when no NPA approval was required. Now it was 75% fabricated.

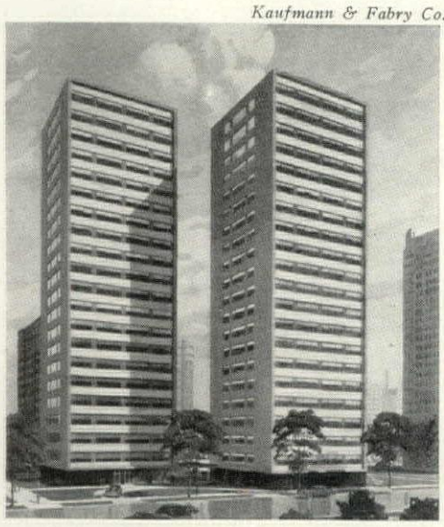
Ease curbs in mid-'52? The best that could be said was that the end of the steel pinch seemed to be in sight—provided no fresh international crisis raises armament goals. NPA officials said they hoped to be able to relax most of the controls "by mid-1952." Steel and aluminum, aircraft and tank plant expansion is scheduled to be completed by then. They are getting the lion's share of structural steel meanwhile. Aluminum too "probably will be available in adequate quantities for essential purposes by that time," forecast NPA Construction Materials Chief J. L. Haynes.

There was some talk in Washington circles that steel allotments for the first quarter of 1952 would be larger. But copper would be cut back hard—principally because of the strike by the Mine, Mill & Smelter Workers Union which shut off 95% of the nation's copper production. Said Mobilizer Wilson: "It couldn't have happened at a worse time."

Senator Urges: Tap $5.6 Billion Vets Insurance Fund for VA Mortgages

It began to look this month as if the impasse on VA mortgage loans might be cured by the same thing that caused it: politics. At 4%, a VA loan cannot compete with other investments when borrowers are willing to pay more. The Veterans Administration has clung stubbornly to the unworkable rate. So by last month there was virtually no private market left for VA home loans. Direct government loans to veterans had soared in the months after the Federal Reserve pulled the rug out from the mortgage market by unpegging government bonds. Last January VA made 1,241 direct loans. By June (when VA direct lending authority lapsed until President Truman signed the Defense Housing Bill) direct loans reached 4,000 a month. Most demand came from rural areas and small towns where mortgage money has never been plentiful. Busiest VA office in direct lending was Louisville, which covers all Kentucky. Runners up were offices for Alabama, Virginia, Mississippi and North Carolina in that order.

Kaufmann & Fabry Co.



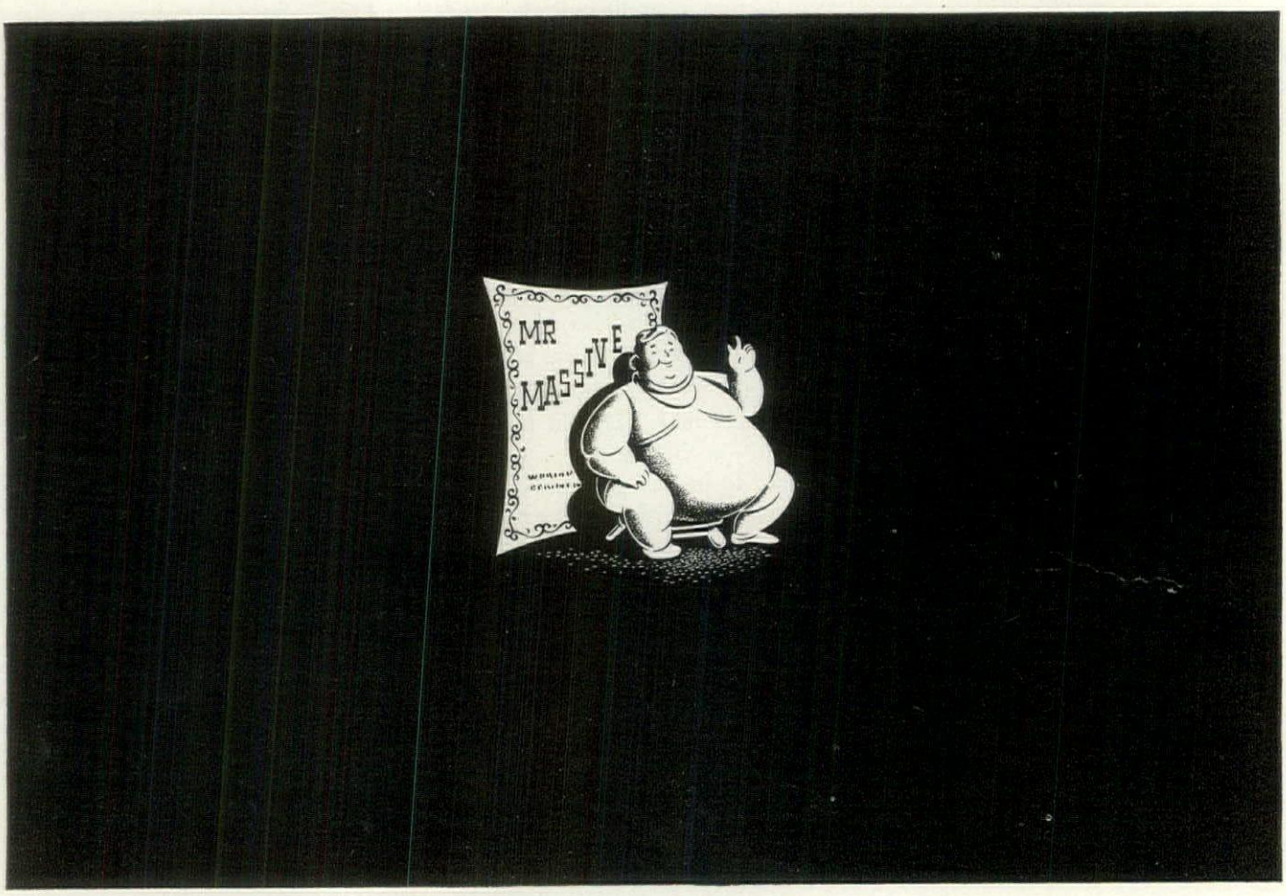
ARMY SKYSCRAPER: 22-story Wherry Act apartment rises in Chicago

Rising on Chicago's South Side last month under the Wherry Act was—of all things—a 22-story, 252-unit twin-towered apartment. Though many an apartment-hungry Chicagoan would consider it a luxury to be dealt in on the $2 million project, Lt. Gen. Stephen J. Chamberlin, Fifth Army commander, said he regarded it as a "low rent" venture to ease the tight housing situation for his headquarters staff of 2,000. Rents will range from $73.50 for efficiency units to $148.50 for 3-bedroom quarters. Builder and operator is bustling Herbert S. Greenwald, 36, who promoted the spectacular Promontory Apartments by Architect Mies Van der Rohe on Chicago's Lake Shore. Architect Ralph Epstein decided on twin towers to give more exposure, more compact layout. The buildings have flat plate floors, concrete ceilings, radiant heat, and stainless steel spandrels backed up with lightweight concrete.

For 4,000 direct loans a month, VA would need about $32 million. The new housing act lets VA re-loan money from repayments. But this only totals about $10 million a month. And a new bill to add $300 million to the revolving fund might not get far in Congress.

Insurance kitty. Into this stalemate, Sen. Burnet R. Maybank (D., S.C.) dropped a bombshell fused by his private brain trust: why not invest part of the $5.6 billion national service life insurance reserve fund in direct GI loans? By law, the reserve now buys only government bonds, gets a type yielding 3%. Mortgage loans, even after knocking off ½% for servicing, would yield 3½%. And the Treasury could save taxpayers about $40 million a year in interest. It can raise the same money

(Continued on page 48)



In this case, yes . . . *biggest is best!*

When it comes to the circus fat man, we'll admit biggest is best. But when it comes to the building of efficient, thrifty equipment for the handling and conditioning of air—here, we think, the size of the firm you deal with is less important than its engineering skill, its mechanical ability, its tools, facilities, equipment and the desire of its people to build the finest equipment in the field.

Though we haven't the biggest plant or the longest production line in the industry, we'll match our products against any being produced anywhere—for results delivered per unit of power and per dollar of investment.

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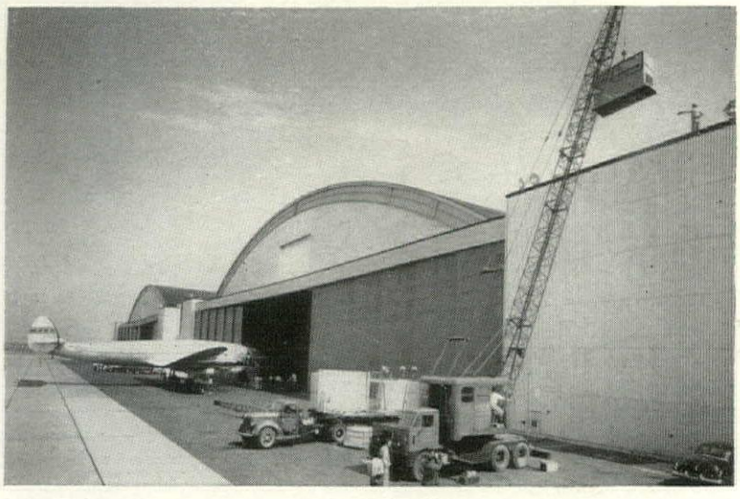
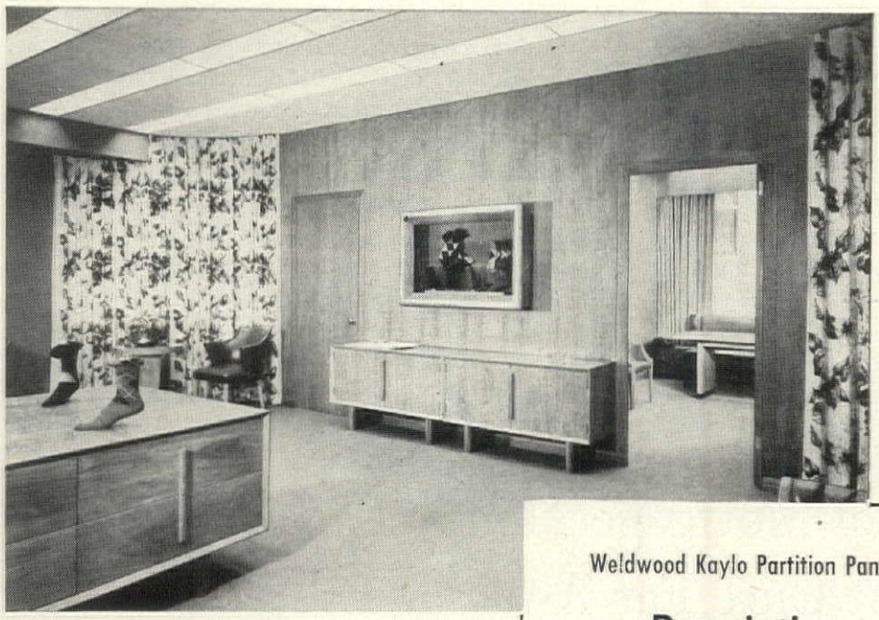


Weldwood Kaylo Partition Panels in a New York showroom, Radio City. Installation by John Hartell & Co.



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... made with a Kaylo* Core

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Weldwood Kaylo Partition Panels utilize the Kaylo core—a revolutionary new inert and incombustible core material . . . the same material used in the universally accepted Weldwood Fire Door which bears the Underwriters' Laboratories Label. They are made in 2 types—with either non-treated or fireproofed wood edge banding.

Weldwood Kaylo Partition Panels can be obtained with flush, architecturally clean faces of beautiful ash, avodire, birch, elm, gum, Korina, mahogany, oak, prima vera and walnut.

They can be easily finished in any number of ways to create the correct effect for any decorative plan. And they can be ordered with a different wood veneer on each side.

Send for complete information, specifications and sample.

*Reg. Trademark, Owens-Illinois Glass Co.

Weldwood Kaylo Partition Panels

Description

Face Veneers: Standard thickness, thoroughly kiln-dried and laid with grain at right angles to the grain of the crossbands. Both faces are smoothly belt sanded. Available in complete variety of decorative hardwoods.

Crossbands: Thoroughly kiln-dried hardwood 1/16" thick extending full width of the panel.

Edge Bands: Non-treated hardwood edge bands extend the full length with the end edge bands cut in between. Also available with fireproofed birch edge bands.

Core: Incombustible Kaylo material.

Adhesive: Waterproof Tego film phenolic resin glued by hot plate process.

Sizes: Available in all sizes up to and including 4′ x 8′ or 8′ x 4′. Stock thickness: 1¾″.

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that much cheaper from other sources. Reasoned Maybank: this plan would swell funds for direct loans beyond a possibility of exhaustion; the mortgages were protected by government guarantee nearly as binding as bonds. At first glance, mortgage bankers were aghast: such a scheme could well steal the VA 15 to 18% of the nation's total mortgage business in new homes which flows through private channels. After a closer look, smart mortgage lenders thought they saw a loophole: they could originate and service VA loans made possible by the insurance bonanza. (Up to now, the Veterans Administration has serviced its own direct mortgage loans. But going into the direct lending business on the vast lending scale Maybank contemplates would involve creation of an enormous new staff of bureaucrats. Congress probably would balk.)

Unsurprisingly, the Veterans of Foreign Wars, holding their 52nd annual encampment in Manhattan's Hotel Astor, promptly threw their potent political pressure behind Maybank's idea. The VFW made an all important stipulation: insurance money should be only a secondary market for VA loans "*made through private lenders.*" Mortgage lenders breathed easier.

With VA mortgage money virtually certain to remain nonexistent at 4%, Congress would find it hard to resist the Maybank scheme with an election year coming up.

Shortage of Mortgage Money Eases; Permanent Cure Far Away as Ever

Except for VA loans, the six-month-old mortgage pinch began to taper off this month. Numerous prophets had predicted it would, though few had been willing to pin themselves down to a date any more definite than "during the fall or spring." Even now, the crisis was not over, but signs multiplied rapidly that the swing was back to an easier flow of money:

▸ Dropping house starts had reduced demand for mortgage credit, though relaxation of Regulation X in the wake of the Defense Housing Act might reverse this trend and prolong the money problem.

▸ As happens in a war economy, savings of U. S. citizens were soaring. Department of Commerce figures put the annual rate at $21 billion during the second quarter of the year. That compared with a rate of $4 billion during the July-September buying wave last year after the Korea war broke out.

▸ Big lenders were beginning to digest the huge backlog of commitments left unexpectedly on their hands in March by the unpegging of government bonds which made it possible to sell bonds to invest in mortgages only at a loss. Big insurance lenders like Metropolitan and Mutual Life were buying more actively. In a few weeks, a lot of others seemed sure to hop on the bandwagon.

▸ The price of long term government bonds (non-bank victory 2½'s of 1972-1967) which skidded as low as 96¾ during the spring, rebounded to 98 21/32—although there were skeptics who said this was an artificial recovery because the Federal Reserve scares would-be sellers of any large block of bonds by asking "why are you unloading?"

Smiles. Across the nation, mortgage bankers and lenders now chorused optimism. Samples:

▸ "The situation is somewhat better," said President-elect Aubrey Costa of the Mortgage Bankers Association. "When the President signs the Defense Housing Bill I expect an immediate improvement because we will have a program with less tension in it."

▸ In Chicago, Stephen G. Cohn, vice-president of the 98-year-old Greenebaum Investment Co., reported a large east coast insurance company prophesied: "By December, we'll all be scrambling for business."

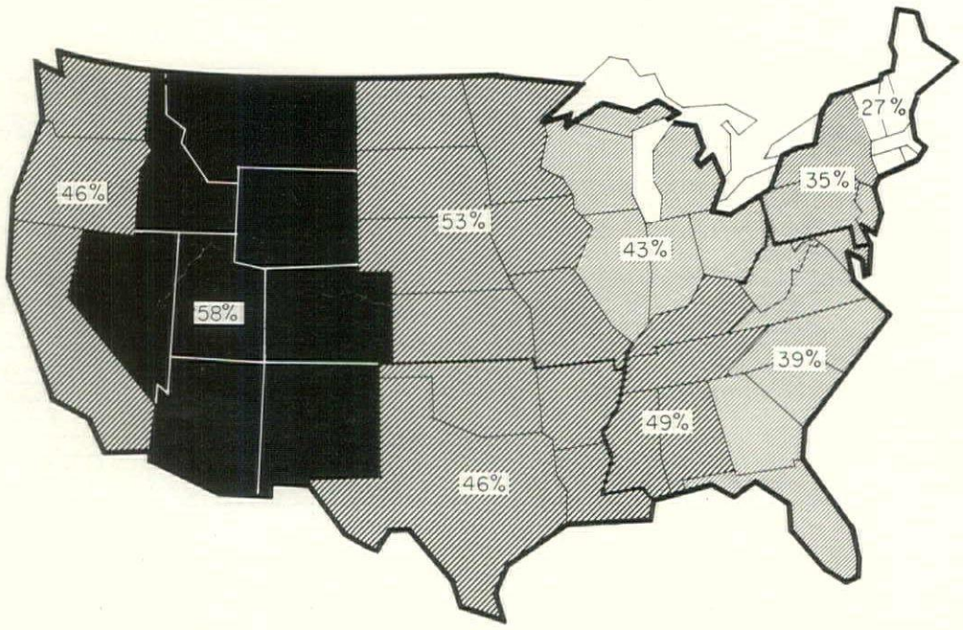
▸ In San Francisco, Western Mortgage Corp., local correspondent for Metropolitan Life, was preparing to underwrite a 30 house tract, their largest in four months. Observed cautious E. A. Mattison, executive vice-president of the Bank of America: "If there's a straw in the wind it's in the direction of more money."

▸ A Cleveland banker—more cheerful than most—reported: "There's a market developing. Recently we had to go down to 94 or 95 for commitments on FHA's. Now they're back to par and lenders are beginning to nibble. The insurance compaines are coming in but the big bankers in New York and Philadelphia aren't—yet. By the end of the year we'll be out of the mortgage woods entirely."

▸ Best evidence of all was offered by a big New York mortgage broker. His business volume for this year:

Jan:	$11 million	May:	4 million
Feb:	6 million	Jun:	2 million
Mar:	4 million	Jul:	2½ million
Apr:	3 million	Aug:	5 million

Little and Late. As is expectable in politics, now that the ailing mortgage market has begun to cure itself, more government agencies staged "rescue acts." The Reconstruction Finance Agency announced it will make real estate loans for "military and defense housing and housing in critical areas", though probably this will only be a $50 million trickle. Congress' effort to increase the flow of mortgage money to critical defense areas by giving the Federal National Mortgage Association power to make advance commitments (see page 40) fell afoul of administrative entanglements. Effective August 18, Fanny May announced it will buy only FHA and VA loans where originating lenders certify they were paid fees of no more than 1%, or 2½% if there was a construction loan besides the permanent mortgage. For FHA loans, this made little difference: FHA does not permit charges above 1 and 2½% anyway. But the Veterans Administration did. It permitted about 3% under optimum circumstances. Sample: lenders take a cut in a sales commission charged by a builder who has set up a separate real estate corporation.



DROP IN HOUSE STARTS produced by the mortgage pinch and credit restrictions has hit harder at money-shy areas west of the Appalachians than along the well-heeled Atlantic coast. These figures, compiled by the Bureau of Labor Statistics and presented here for the first time, dramatize the decline in privately-financed dwelling units authorized by permit in urban areas for June, compared with June a year ago. Among typical individual states, Pennsylvania showed a 23% drop, New York 36%, Illinois 41%, California 45%, Texas 51%, Oregon 57%, Alabama 64%, Wyoming 83%.

Grumbled Vice-President Dolph Zink of Eastern Mortgage Service Company in Philadelphia: "This makes it virtually impossible for a lender to sell loans to Fanny May." As usual, the new fee rule caught brokers with loans on hand they would not now be able to sell to Fanny May, the only important secondary market in the nation for VA loans. (In Atlanta, VA takeout commitments sank to 90. Chase National Bank in New York was charging 1% for the takeout commitments at 95. How, asked mortgage bankers, could they afford to close a loan without collecting a placement fee with a risk of a 6 point loss?)

On the other hand, if Fanny May had not limited fees it was exposed to a racket of the worst kind. Reason: Fanny May buys at par. If a lender can collect say 5% "fees", he really gets 5% for the use of his money for 60 days (or less if he can get a defense housing loan ready for Fanny May sooner than that). If a lender worked Fanny May every 60 days, he might get 30% in a year for just passing the buck to a government lending agency.

Future Market. Amid mobilization's demands for money to finance industrial expansion, most experts foresaw little chance of a drop in interest rates. One good bet seemed to be that after the commitment backlog is worked out during the fall there would be a lively market for FHA loans around 99. VA's, except for the possibility of rescue by the veterans' own life insurance fund, would only move at 97 or lower. That the Truman administration seemed determined to forbid. Easier credit terms for veterans spelled out by Congress in the new housing bill would be a farce unless Congress also cracked the whip over VA's mortgage rules.

Bankers knew, too, that nothing had yet been done to prevent mortgage crises from recurring. Not until savings balanced the demand for money, or until Government insured mortgages were freed from the shackles of fixed interest rates and fees to compete for what investment funds were available would the industry be free from its feast and famine tendencies.

10% WAGE BOOST ORDERED

The Construction Industry Stabilization Commission, the arm of the Wage Stabilization Board created to give special treatment to pay of 2,500,000 workers in the building industry, voted to permit construction wages to rise 10% above June 24, 1950 levels. Other workers still figure their 10% increases from mid-January 1950, but they are permitted cost of living adjustments on top of that. Construction workers are not.

Critical Housing Program Stymied as Planners Wrangle over New Setup

The floundering critical areas program ground to a complete halt last month. Congress, passing the new Defense Production Act, ruled that rent control must be imposed in critical areas. But of the 42 towns and cities already placed on the "critical" list because they need more defense housing, only 12 still remained under rent ceilings. Rather than stir up a certain storm by clamping rent control on the other 30 cities, defense mobilizers simply shut down the critical areas program. Long after Labor Day, top administration brass were still quarreling over how to proceed. The problem seemed to demand a Gordian solution. Some of the complexities:

- The Defense Housing Bill also creates means for declaring critical areas without provision for rent control but requiring suspension of Reg. X.
- The Defense Production Act gave Mobilizer Wilson and Defense Secretary Marshall joint power to designate critical areas. The Housing Act, however, vested this authority in President Truman.
- Thus, theoretically the administration might set up two sets of critical areas. Nobody was seriously proposing such a course, however. But how to keep the program in one package? HHFAdministrator Foley had one plan: let the President delegate *his* critical area authority to a new chairman of a critical areas committee who would have to be a table-thumping, knuckle-rapping high-ranker, probably from the top drawer Office of Defense Mobilization. Then, ODM and armed forces could work together on the problem.
- This, however, did not solve what to do about the 42 critical areas already named. If they were continued as critical areas and thus brought under rent control, real estate interests would scream. If they were not, then these areas would have to be removed from the list. In that case, builders would yell and run to their Congressmen. Besides, the Government would be in the curious position of acting to defeat its own aims.

Who does what? Among the top brass who had to figure out the new administrative setup, Arthur Flemming of ODM clashed with Economic Stabilizer Eric Johnston, Foley and Rent Stabilizer Tighe Woods over some of the details. Flemming, top mobilization manpower official, was urging (apparently successfully) that regional defense mobilization committees be given the job of fact-finding and recommending whether areas should be added to the critical housing list. The others felt this would only compound delay and result in inconsistent decisions. They wanted to give the critical areas committee in Washington more power and a new chairman, replacing able, youthful Ralph Kaul. Probable solution: Regional committees will have a voice, but the beefed-up Washington committee will make decisions.

So the argument wore on from weeks to a month—time that could not be made up. Meanwhile, the backlog of pending cases soared to 100, including six that the Kaul committee was ready to certify as critical when ODM ordered the freeze, and another 15 that were nearly ready for announcement. Among them: Morrisville, Pa., where U. S. Steel's $400 million Fairless plant was scheduled to begin partial operation in January.

Delay criticized. The Veterans of Foreign Wars, with their sights on only half the target, adopted an angry resolution denouncing the Defense Department for "dilatory tactics," demanding that critical areas be named forthwith to help provide better housing for servicemen.

Such potshots produced improvisations. ODM agreed to rubber stamp any critical areas sought by the Defense Department where military facilities were the only defense activity. This action would be taken under the rent control authority. First to be named would be Camp Cooke and Camp Roberts, Calif.; Ft. Leonard Wood, Mo.; Toole, Utah; Dover, Del.; Valdosta, Ga.; and Huntsville, Ala. For areas where the need is greatest (like Savannah River, Paducah, Ky.), Mobilizer Wilson ordered the Kaul committee to pass its findings up to ODM, where Manpower Boss Flemming can go over them with the Defense Department.

PRIOR OPINION on rent lids coaxes landlords to remodel

The town fathers of Lake Charles, La. (pop. 41,200), made the customary promise to the Air Force: "Sure, we'll see that 750 new houses are built for the boys at the Strategic Air Command base." That was last fall. By July, with airmen running out of their ears, Lake Charles folk found that only 20% of the promised housing was being built by local builders and realtors. One day, a Lake Charles delegation turned up at the Washington office of Housing Expediter Tighe Woods (now rent stabilizer), apparently, as Woods chuckles, "not knowing the housing expediter had nothing to do with expediting housing."

Smooth talk and ballyhoo. Woods went south for a look. He found, first, landlords so vexed at rent control they had shut up their apartments. He smooth-talked 100 holdout units back on the market. Second possibility was to persuade owners of Lake Charles' crop of old southern mansions to

(Continued on page 55)



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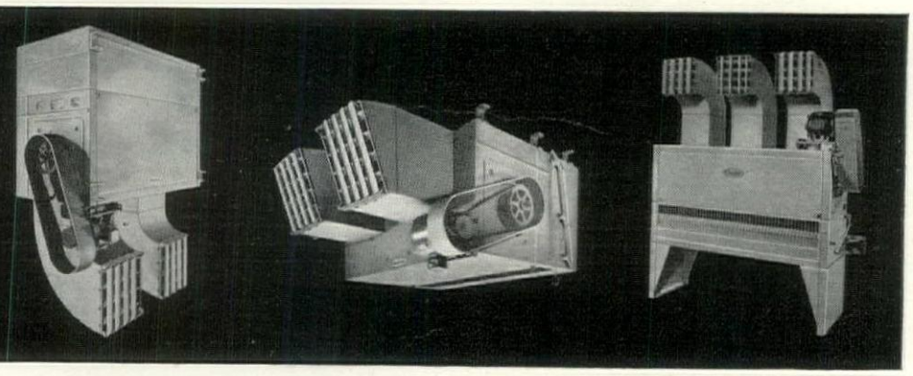

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carve them up into smaller units. But most of them balked in the well founded fear that converted units might be brought back under rent control (as they now will be if Lake Charles is declared a critical area under the Defense Production Act). Woods' solution was to order his local rent director to give such potential landlords a written (and thus legally binding) prior opinion on the rent ceiling that will be imposed if their reconverted units become subject to rent controls again. With the aid of a lively publicity campaign masterminded by Woods' aides, the gimmick clicked. Some 95 units, mostly financed under FHA Title I, were added to the Lake Charles housing inventory in a matter of weeks.

Kisses all around. Last month, Woods' improvisation was catching on fast. The Defense Department, belatedly awakening to its long neglected family housing crisis, called the plan to the attention of post commanders. The Veterans of Foreign Wars endorsed it. Even the National Association of Real Estate Boards, Woods' archfoe, grunted a muffled word of approval. Next town on Woods' list was Great Falls, Mont., where air base caused a housing shortage.

Optimist Woods hoped his prior opinion system might persuade homeowners to create 100,000 new housing units by remodeling in the nation's housing shy defense areas. At best, Woods admitted, his plan is only a stopgap measure. Lake Charles was still 450 homes shy on its promises to the Air Force. "I don't know what to do about that," said Woods.

MANUFACTURER PROFITS: gains outnumber declines this year

The net profits of 13 among the building industry's largest material and equipment manufacturers for the first half of 1951 reflected the jumbled pattern of rearmament. More than half reported income 10 to 130% above last year, despite soaring taxes, labor and materials costs. Reason: whopping sales increases. But nearly as many showed either no change or 10-20% declines in earnings despite rising sales. U.S. Steel profits dipped 10% on a sales jump of 21%. U.S. Gypsum sales climbed 23%, but profits fell 20%.

Company	*1950*	*1951*	*Change*
Celotex Corp.*	$680,874	$1,594,277	+134%
U.S. Plywood Corp.‡	4,458,699	8,951,272	+100%
Weyerhaeuser Timber Co.	11,545,296	22,463,559	+ 95%
Johns-Manville Corp.	10,100,687	12,593,038	+ 25%
Westinghouse Electric Corp.	27,206,707	31,564,000	+ 16%
American Radiator - Standard Sanitary Corp.	10,604,372	12,172,475	+ 14%
Owens-Illinois Glass Co.§	21,986,895	24,648,713	+ 12%
Flintkote Co.¶	3,123,007	3,139,602	....
Pittsburgh Plate Glass Co.	19,358,325	19,475,859	....
General Electric	77,444,992	70,325,616	— 9%
U.S. Steel Corp.	119,079,238	106,797,497	— 10%
Libbey-Owens-Ford Glass Co.	15,063,850	11,298,670	— 25%
U.S. Gypsum Co.	13,865,739	11,325,510	— 18%

* 6 months to Apr. 30. ‡ Year ending Apr. 30. § Year ending Jun. 30. ¶ 28 weeks to Jul. 15.

NPA joins the attack on building waste

The Federal defense agencies are at last acting on the waste-cutting recommendations of THE MAGAZINE OF BUILDING's Round Tables. Following are some of the encouraging actions already taken: the list begins on page 159:

Recommendation: *All of us, believing in a free economy, would far rather see Federal controls applied directly to save materials and manpower while permitting as much building as possible, rather than indirectly by reducing the volume of construction while permitting needless wastes to continue.*

Action: On August 3 building control orders issued by NPA put construction of one- to four-family homes solely on a materials consumption basis. Mr. Wilson has gone on record that: "To the extent that the amount of critical materials used in each unit is reduced, the total volume of housing construction can be increased."

Recommendation: *Since the chaos of local building codes is the greatest single cause of waste and over-design in building, the Government should ask the patriotic cooperation of every local Government in bringing its local building codes in line with the tested standard provisions of one or other of the national or regional standard codes.*

Action: DMB has requested general adoption of a code amendment waiving for the duration of the present emergency all code restrictions blocking the adoption of conservation standards recommended by NPA and, for the same purpose, HHFA has urged the adoption of a model emergency home building code which would permit great savings on critical materials.

Recommendation: *It would be a very real help if the Federal Government would adopt dimensional coordination on the 4" module . . . and issue instructions that from now on all buildings erected with Federal funds must be designed to take advantage of the savings offered by dimensional coordination.*

Action: First Government department to espouse modular coordination is the Navy. Said Admiral Jelley: "The Bureau of Yards & Docks, heartily endorses the principle of modular coordination. All personnel engaged in the design, planning, or procurement of materials for Navy construction are directed to cooperate to the fullest extent."

Recommendation: *Substantial steel savings could be achieved if (the Government) would work out satisfactory standards for roof and floor loading and invite patriotic cooperation of the various code authorities to permit these savings at once.*

Action: NPA has asked the American Standard Association to recommend such loading standards.

Recommendation: *Since the shortage of steel is particularly pressing, the Government should single out conservation in steel for special attention and . . . consider what increase in the allowable tensile strength of steel would be safe and proper for all buildings erected during the emergency.*

Action will be taken on this recommendation as soon as the loading standards are approved.

Recommendation: *Field welding of steel members is now forbidden by the codes in many communities, although its proponents claim that its wider use would reduce the amount of steel needed by as much as 10%. The Government should explore on what basis the various code authorities should be asked to relax their provisions on welding.*

Action: NPA has asked all communities to accept the AISC standards, which already approve welding. In addition, NPA has specifically called upon architects and engineers to recognize in their design "that in structural steel design appreciable tonnage savings are often possible through welding and arranging for continuity of design."

Recommendation: *During the emergency, critical materials should not be allocated to any project unless the owner certifies that his application asks for no more than is necessary under such conservation standards as the NPA may prescribe in furtherance of the waste elimination program.*

Action: ODM consultants are working on a plan requiring with each CMP-4C application a letter from the designer stating that the design is the most economical in its use of critical materials that can be devised for a safe, durable structure. Such a letter, signed by a registered engineer or architect, would be accepted as evidence that the project meets the best conservation standards. *(NEWS continued on page 60)*



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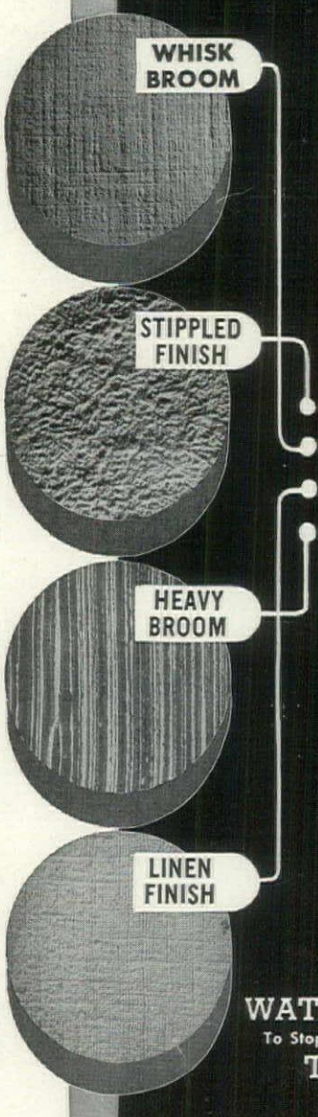

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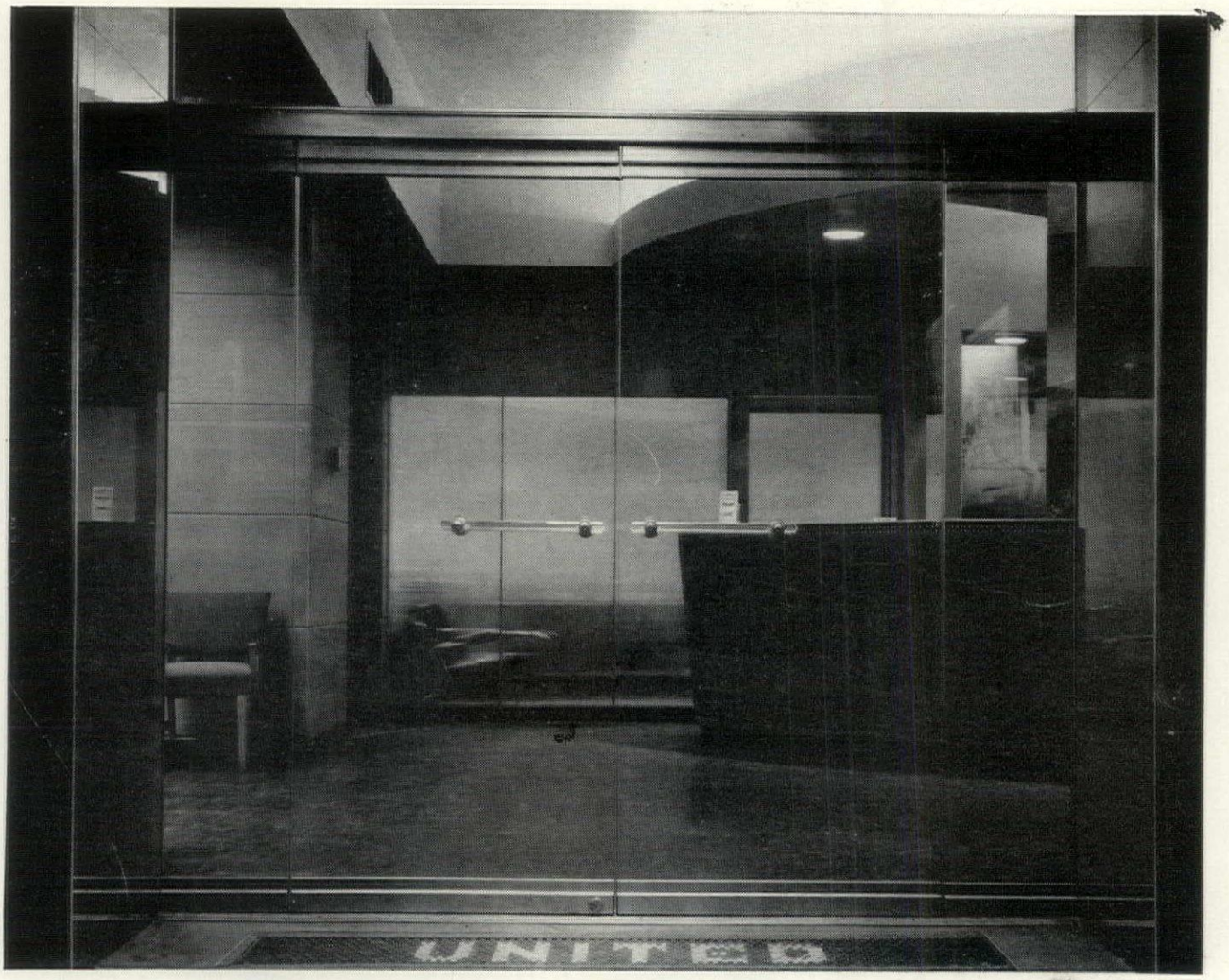

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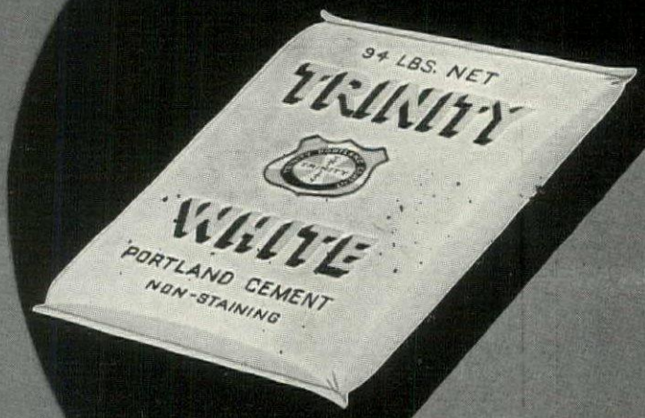

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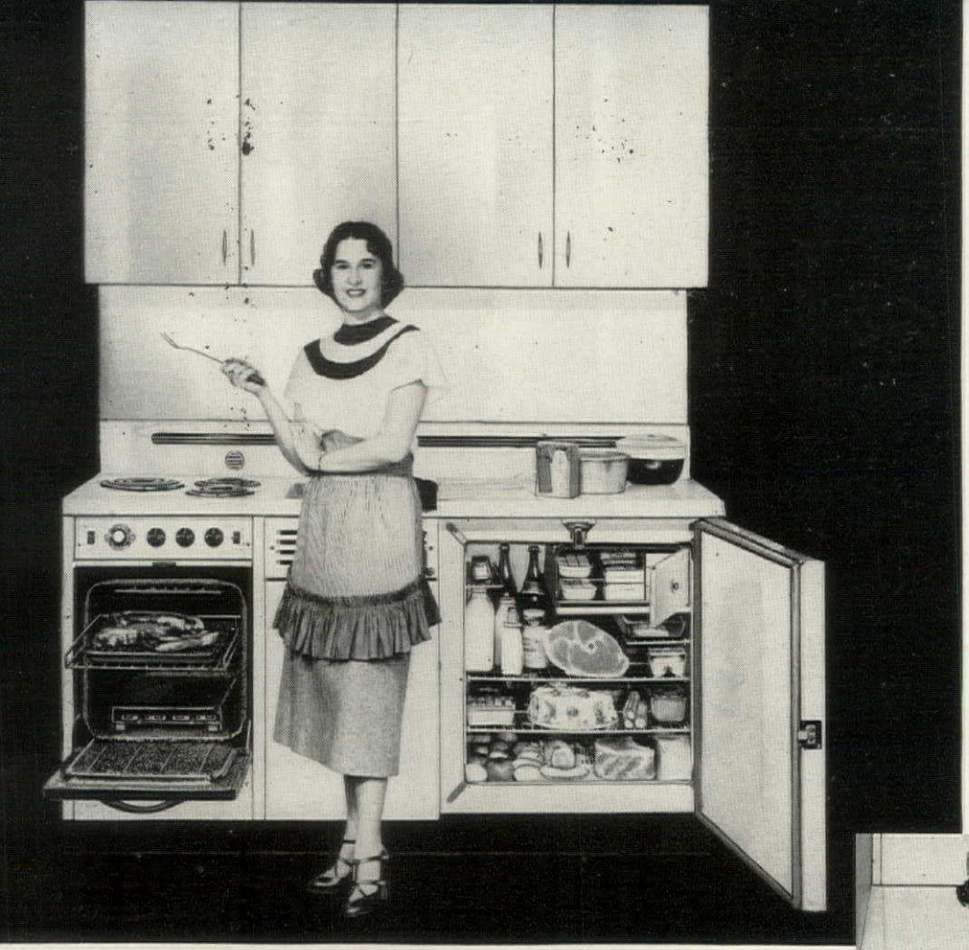

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Congress Clips BLS Housing Surveys; HHFA Seeks Defense Appropriation

For research on pigs, cows or insects, Congress is traditionally open-handed. Legislators respect the political potency of the farm bloc. No such sacrosanct status protected the Bureau of Labor Statistics' construction statistics division. For its size, building is probably the nation's most non-cohesive, inarticulate industry.

Passing the Independent Offices appropriation bill last month, Congress trimmed BLS from $655,000 to $412,000 for measuring housing. The effective cut was even stiffer, however, because the Senate insisted $90,000 be earmarked for a boondoggle study of foreign labor reports. This left BLS with less than half the money it spent in fiscal 1950-51. As a result, BLS figures on housing starts—more vital than ever because of credit restrictions—will lose much of their usefulness. H. E. "Pat" Riley, chief of BLS construction statistics, expects to abandon studies of lapsed permits, delays in starts after permits are issued, and other factors which increase the accuracy of BLS' widely-respected figures. While national housing starts figures will be continued, most area starts reports will die. Killed entirely will be all area estimates of costs and characteristics of new housing.

HHFA's appropriation fared little better. Congress whacked Administrator Foley's request for $5,615,000 operating money to $3,717,000. But Foley has a second chance. Both the Defense Production Act and Defense Housing Bill gave HHFA extensive jobs. Foley asked for $1,625,000 under the first, had not yet figured out how much he wanted under the second. With luck, HHFA might even be able to expand *its* research program a little.

NATURAL GAS expansion banned in 15 states; steel crisis blamed

After hearing home builders, gas appliance makers and utility firms wail for two months that the move would cause havoc, the Petroleum Administration for Defense ordered a slow down on the expanding use of natural gas for home heating in 15 eastern states and the District of Columbia. While the hue and cry was on, Congress had pulled the rug out from under PAD by writing an amendment into the new Defense Production Act. This allows a state public utilities commission to eliminate its state from the order by certifying to the President it is handling the situation. Five states promptly did so—Virginia, Maryland, West Virginia, Wisconsin and Ohio.

Reason for PAD's order was that steel was too scarce to permit the industry to continue expanding pipe lines from gas wells to market as fast as it would like. In the third quarter, for instance, the oil and gas industry was allocated just over half the line pipe PAD claims it needed. So the order prohibited most utilities for the next 12 months from taking on more than 1% as many new residential customers as they now serve.

For home builders, the order presented multiple ironies. Sample: the Washington Gas Light Co., serving 280,000 natural gas users in the District of Columbia and adjacent Maryland and Virginia, would be limited to a fraction of its normal expansion inside the capital (which will obey the order) but unfettered a few yards away in the two adjacent states (which won't). Normally, 60% of all new houses use gas heat. Even in its limping form the PAD order promised to alter the pattern of home heating in the northeastern U. S.

PUBLIC HOUSERS RAISE GOAL

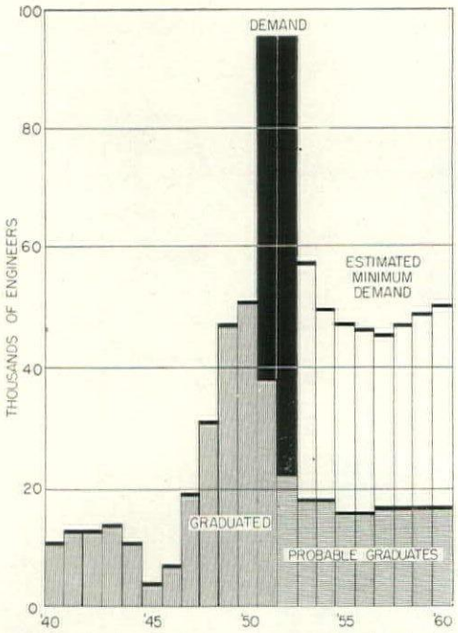
Cheered by success in their fight to keep 50,000 public housing units this year, public housers set their sights on a target for fiscal 1952-3 of 135,000 public housing units. Said Executive Vice President Lee F. Johnson of the National Housing Conference: "We look to PHA and HHFA . . . to make a strong fight."

NEW CONSTRUCTION ACTIVITY (expenditures in millions of dollars)

	August			1st 8 Months		
Type	*'50*	*'51*	*% Change*	*'50*	*'51*	*% Change*
PRIVATE						
Residential (nonfarm)	1322	1865	—10.8	7897	7140	+5.0
Industrial	91	184	+102.2	604	1244	+106.0
Commercial	114	107	—6.1	742	984	+32.6
TOTAL*	2090	2802	—5	13047	13701	+11.5
PUBLIC						
Industrial	19	96	+405.3	110	535	+386.4
Military	16	105	+556.3	78	502	+543.6
Residential	27	58	+114.8	226	361	+59.7
TOTAL*	727	937	+28.9	4431	5791	+30.7
GRAND TOTAL	2817	2802	—0.5	17478	19492	+11.5

U. S. construction is headed for an all time record year in dollar volume, probably $28 or $29 billion. Considering price increases, 1951 will probably be close to 1950's physical volume, despite the increasing bite of controls. Except for industrial building, most private construction had begun to wilt under the impact of defense. Public construction boomed more and more.

*Minor components are not shown in table, hence total exceeds sum of parts. Data from Depts. of Commerce and Labor.



ENGINEER SHORTAGE: errors of World War II plague mobilization

The country's suddenly-discovered shortage of engineers involves frightening risks for U.S. security, say the leaders of the nation's five engineering societies. This year alone, the nation needs 80,000 new civilian engineers and another 15,000 for the armed forces. Yet only 38,000 are graduating from college engineering courses. Next year the gap will be worse (*see chart*). As far ahead as 1960 educators foresee a probability that schools will produce less than half the engineers needed.

Civil engineers, figuring largely in construction, are not so scarce as other categories, but the building industry will feel the pinch too. The drought springs from the wartime folly of not letting student engineers complete their training. No other major power followed such a policy. In the U.S., not even the post war rush of veterans into engineering schools made up the war's four year deficit. Worse, early last year the Bureau of Labor Statistics, ignoring dwindling freshman enrollment in engineering schools, issued a widely circulated announcement that there was a growing *oversupply of engineers*. One result: before the war nearly 6% of boys graduating from high school entered engineering colleges. In the last two years the rate has sunk to 4.8%.

Counter-offensive. The 28th of this month in Pittsburgh, the Engineering Manpower Commission of the Engineer's Joint Council will begin a long overdue attack on the crisis. A hand-picked group of engineers, educators, industrialists will be urged to help 1) steer more youth into engineering and 2) persuade industry and the armed forces to stop wasting the technological manpower that gives the U.S. its most significant edge of power over Communism's superior numbers.

BUILDING COSTS on even keel, but increase seen for '52

For seven months, stable labor and building materials prices had kept the cost of construction on a plateau. BLS' building materials index dipped slightly in August, to its lowest mark since last December.

But it began to look as if prices and building costs would begin creeping up again after October 1. The new Defense Production Act killed chances of a $1 billion rollback in building materials prices. Moreover, economic stabilizers had hooked most wages (*see p. 49*) to the cost of living, thereby guaranteeing another shot of inflation for the U.S. economy. One guess, offered by Smith, Hinchman & Grylls Inc., Detroit architects and engineers, was that building costs (materials, plus labor, plus taxes, plus contingencies) would jump at least 10% and possibly 20% during the next two years.

MARKET TREND: Big Scale Builders Erect Third Of U.S. Homes, BLS Finds

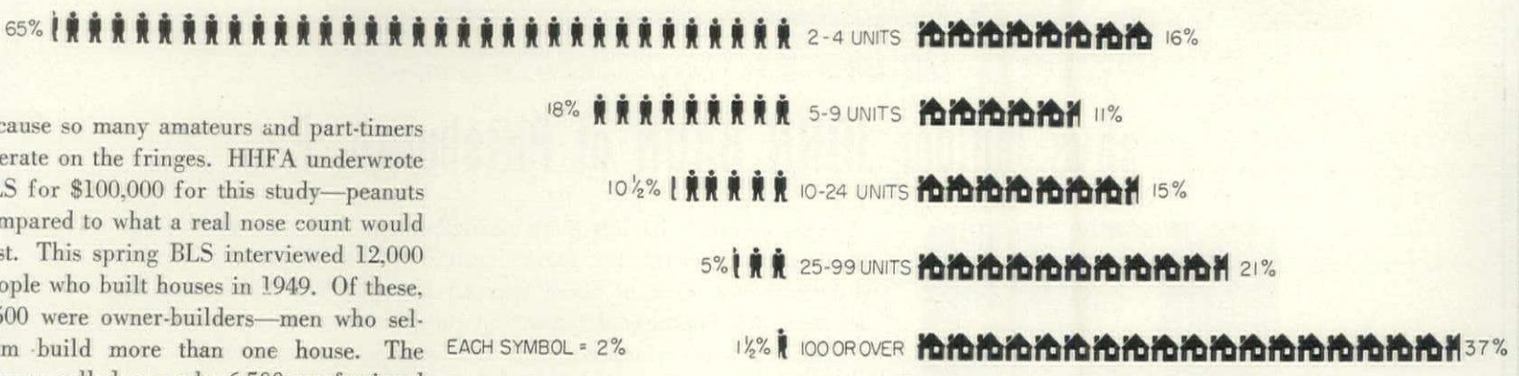
▸ *The 17% of U. S. professional builders who start 10 or more houses a year do 73% of the professional housing volume.*

▸ *Moreover, 980 professional builders (1.5% of the total) who start 100 or more houses a year account for 36.7% of the nation's 643,070 professionally built houses.*

A Bureau of Labor Statistics survey of privately financed non-farm housing built during 1949 disclosed this picture last month of concentration among the country's home producers. It pointed up again the oft-heard claim that to tap the biggest slice of the market with least cost, building material manufacturers should focus their sales effort on the few builders who operate on a big scale.

Measuring the sprawling home construction industry is always a tricky business because so many amateurs and part-timers operate on the fringes. HHFA underwrote BLS for $100,000 for this study—peanuts compared to what a real nose count would cost. This spring BLS interviewed 12,000 people who built houses in 1949. Of these, 5,500 were owner-builders—men who seldom build more than one house. The agency called on only 6,500 professional builders. Geographically, it fanned out over 29 metropolitan areas (where 70% of U. S. home building goes on) and 18 nonmetropolitan regions (which do only 30% of home building).

Questionable. Some of the findings raised eyebrows. BLS reported one third of the 988,000 privately financed nonfarm dwellings begun were erected by people who only built one house, such as owners, people doing their own physical construction, part-time builders. This finding did not jibe with other BLS studies, or obvious trends in the home construction industry like the rise of giant builders. In depression-clouded 1933, for instance, BLS found that people building just one house accounted for only 19% of homes. In 1941, it was 20.2%. Now, it was suddenly 33%. BLS offered no explanation for the change. Among Washington insiders, the word was that HHFA prodded the fact-gathering agency into doing a too hasty job of surveying the hard-to-count little builders; moreover that HHFA insisted on harping on the questionable finding in the formal announcement of the results despite objections by BLS officials. Counting in the one house builders, BLS reported the country's entire production of homes by amateurs and professionals stacks up like this:



*Distribution of all U. S. Home Builders**

Number	Per cent
319,440	83
43,800	11
11,760	3
6,700	2
3,240	1
680	less than ½
300	less than ½

Houses Produced

Size	Number	Per cent
1 unit	318,650	33
2-4 units	108,620	17
5-9 units	72,210	7
10-24 units	94,110	10
24-100 units	137,970	15
100-249 units	100,060	10
250 or more units	136,450	14

* In this case, anybody who took out a building permit.

In the true sense of the word, "builder" is not the term for the large group of producers who account for only one house a year. They are not in the business of building. To make a half-way decent net profit, say $3,000, a one-house builder would have to build only houses costing $30,000 or more. Actually, most builders (264,000) in the one house group are owners. The others (55,190) are craftsmen or subcontractors who build one house on speculation in off hours or handy men who build a house on commission or salary for the owner, plus a few active in non-residential construction who periodically step into the housing market.

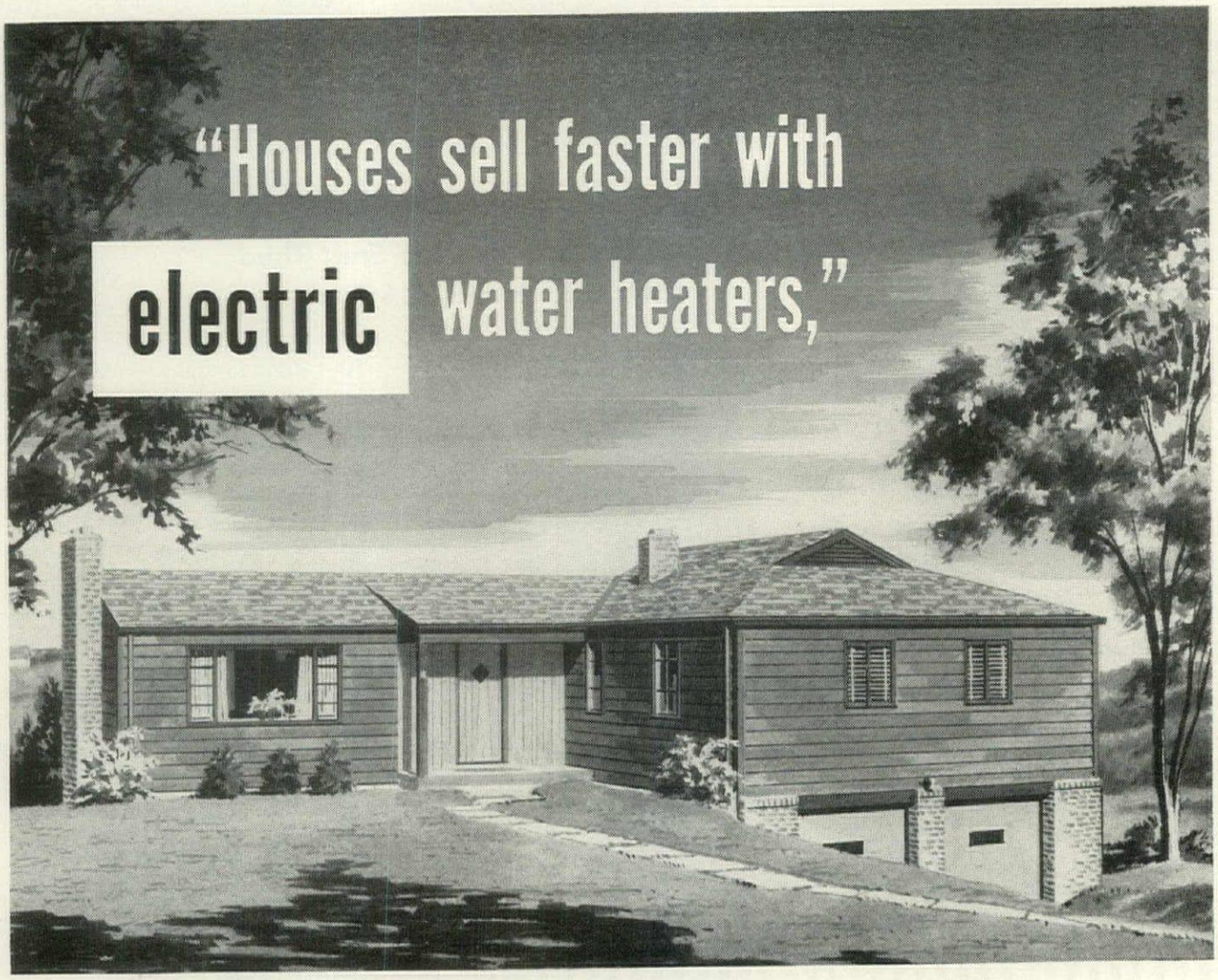
Other Measures. One reliable yardstick of who is really a professional builder is a man who pays social security taxes. The latest available social security figures, for the first quarter of 1948, list 56,799 general building contractors (by a fuzzy definition that lumps them with what the industry generally calls "builders") plus 4,000 speculative builders, promoters, realtors. This dovetails with BLS' finding that 63,910 building firms started two or more houses in 1949.

Among this truly professional slice of house-construction, BLS reported:

▸ 22,340 firms (35%) started 5 or more units, accounted for 83.7% of the houses built professionally.

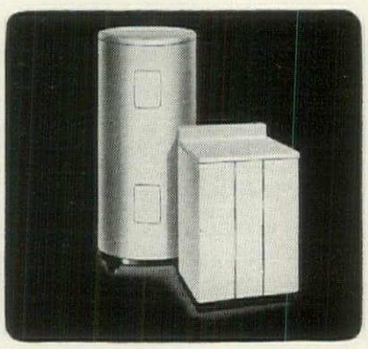
▸ 86% of professional activity took place in metropolitan areas, only 14% in nonmetropolitan regions.

▸ Operative builders — those who own or control the land they build on for sale or rent—accounted for 74% of the activity. Most of them were located in metropolitan areas. Even outside big cities, where custom builders outnumber them vastly, operative builders accounted for 50% of the starts. *(NEWS continued on page 68)*



Half the houses Mr. Baun produces are large homes built on contract. The others are built for sale in a lower cost bracket. But *all* feature modern electric living—and that includes *Electric* Water Heaters.

says builder JOHN BAUN of Pittsburgh, Pa.



"I experimented with adequate wiring back in 1947," says Mr. Baun! "It was so successful that I tried including the appliances for modern electric living. One of these was an Electric Water Heater. The demonstration home was sold within five minutes after it was opened."

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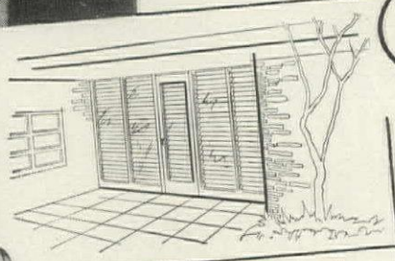

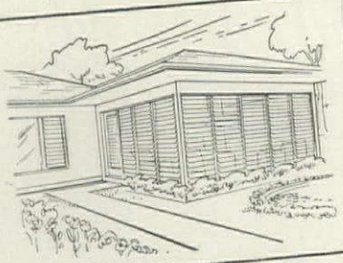

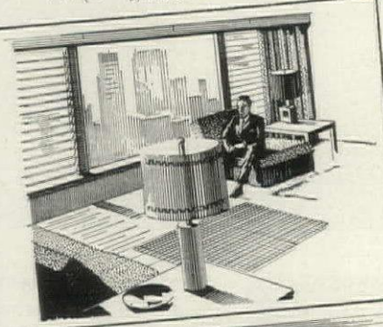





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Win-Dor approved Jalousies may be planned as window openings . . . as floor to ceiling, "walls that open" and may be adapted in much commercial and industrial architecture with unusual and highly satisfactory results for interior partitions.

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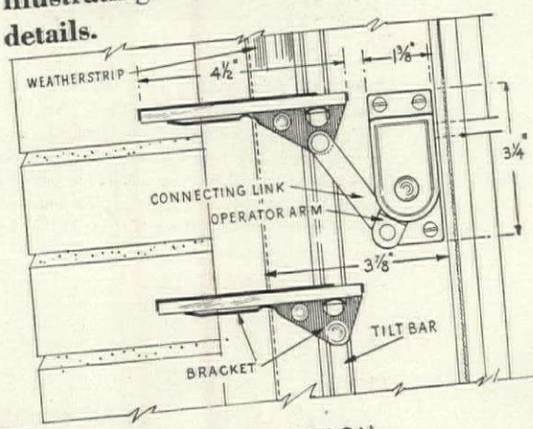

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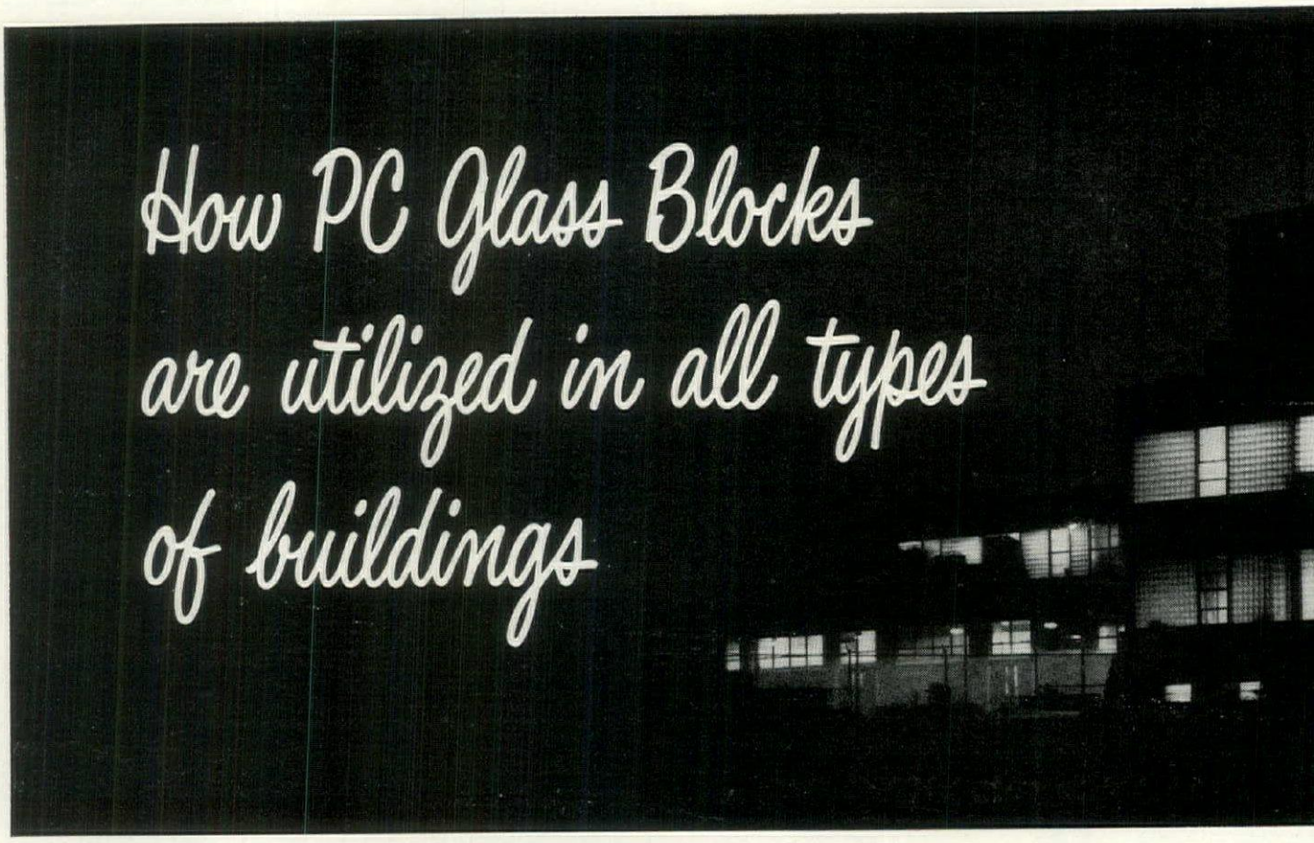
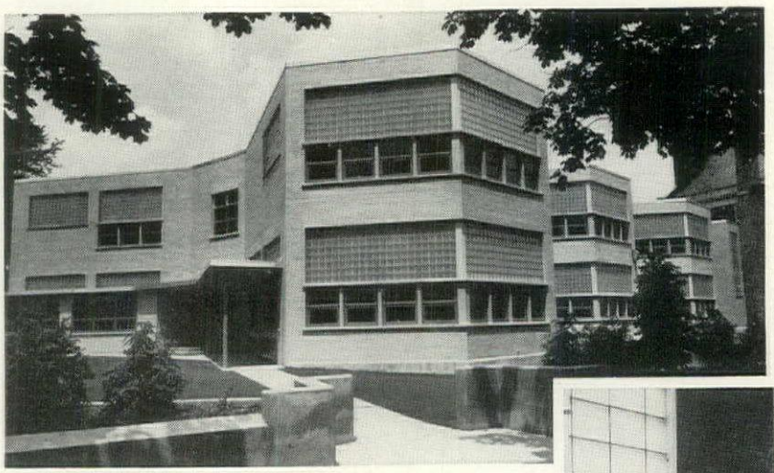
How PC Glass Blocks are utilized in all types of buildings

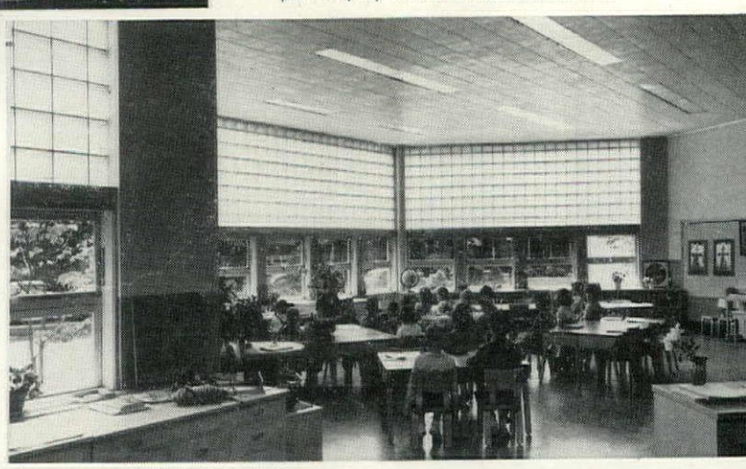




"PROTECTIVE LIGHTING" at night on surrounding yards is one of the many advantages afforded at the Murphy Paint Company Limited, Toronto, Ontario, Canada, by PC *Functional* Glass Blocks, used in the †PC Vision-Lighting Plan. And by day, these glass blocks admit floods of scientifically directed, diffused daylighting. They reduce excessive heat losses, lower fuel and maintenance costs, because they have more than twice the insulating value of ordinary single-glazed windows. And there's no periodic painting and puttying; no repairs or replacements. Architect: J. C. Meadowcroft, Montreal, Quebec, Canada.

†The PC Vision-Lighting Plan consists of orientation-keyed areas of PC Functional Glass Blocks—selected for sun or non-sun exposure—used with vision-ventilation areas as required. This plan is equally effective in modernization work.

THIS NEW ADDITION to the Stockton School, East Orange, New Jersey, employs PC Soft-Lite* Prism B 55 Glass Blocks in classrooms to "control" daylight and thus reduce eye-fatigue among pupils and teaching staffs. These interior and exterior views show how vision and ventilation openings of standard sash have been inserted in these glass block panels to permit both adequate ventilation and vision to the outside. Architect: Emil A. Schmidlin, East Orange, N. J.



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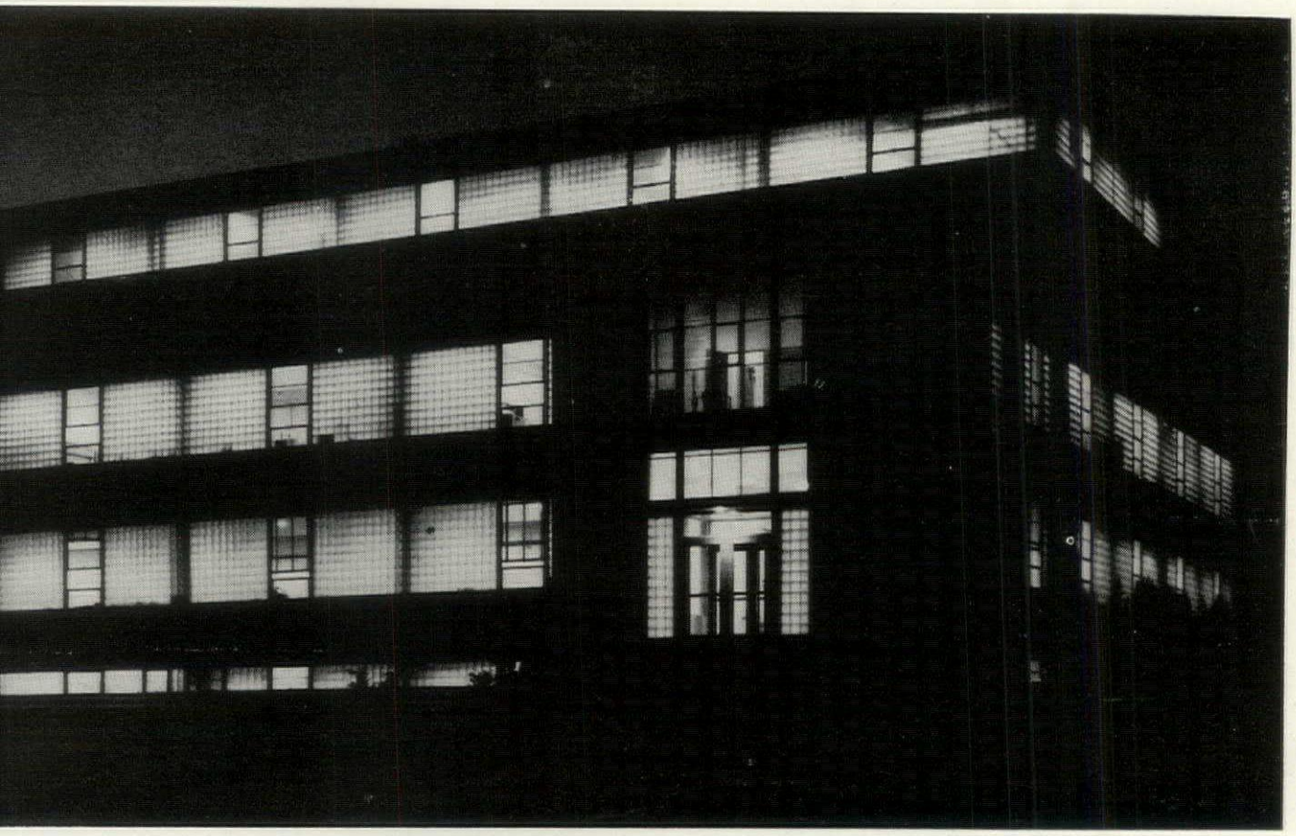
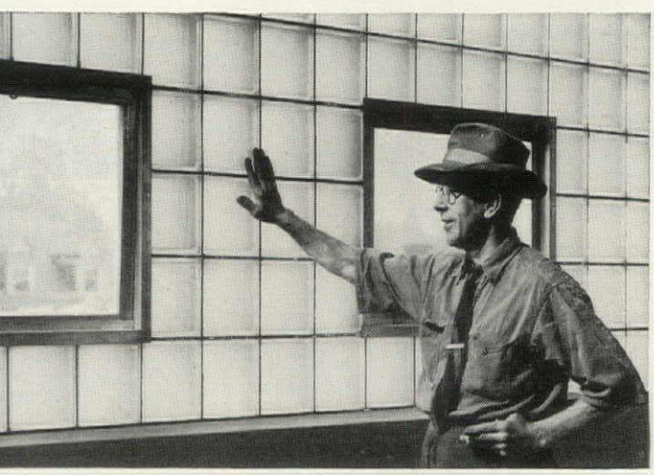
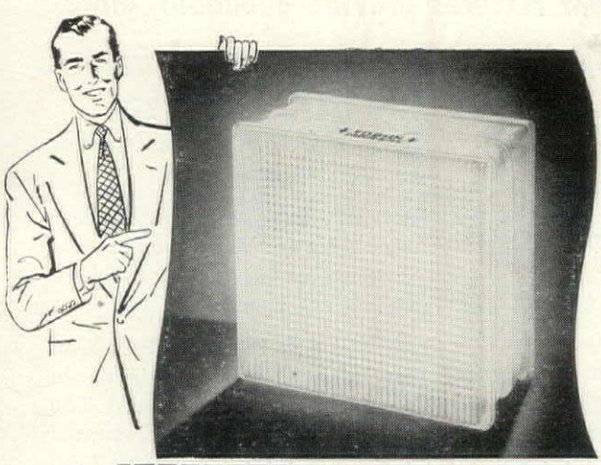




CONSTRUCTION SUPERINTENDENT Jim Hunt is shown here inspecting PC Glass Blocks installed in the new penthouse office space atop the Rockwell Manufacturing Company headquarters in Pittsburgh, Pa. Says Mr. Hunt: "These 'Clean-Easy Face Finish' blocks of Pittsburgh Corning really make a difference. You just use a stiff bristled scrubbing brush and excess mortar and mortar drippings come off like magic." Architects: Franklin, Douden & Associates, Pittsburgh, Pa.; General Contractor: O. H. Martin Co., Pittsburgh, Pa.



PC Glass Blocks are immediately available . . . no construction delays. And this includes PC *Functional* Glass Blocks, especially designed for precision work. These glass blocks contain such features as light-directing prisms on the interior faces of certain patterns, light-spreading corrugations on outside faces, a fibrous glass insert to diffuse still further the light transmitted by the block itself, and the PC Soft-Lite* Edge Treatment, which creates a better, more comfortable "eye-ease" panel appearance. The new "Clean-Easy Face Finish" prevents mortar and installation scum from adhering to the panels during construction, thereby reducing costs by cutting in half the time required for on-the-job cleaning. *T. M. Reg. applied for.

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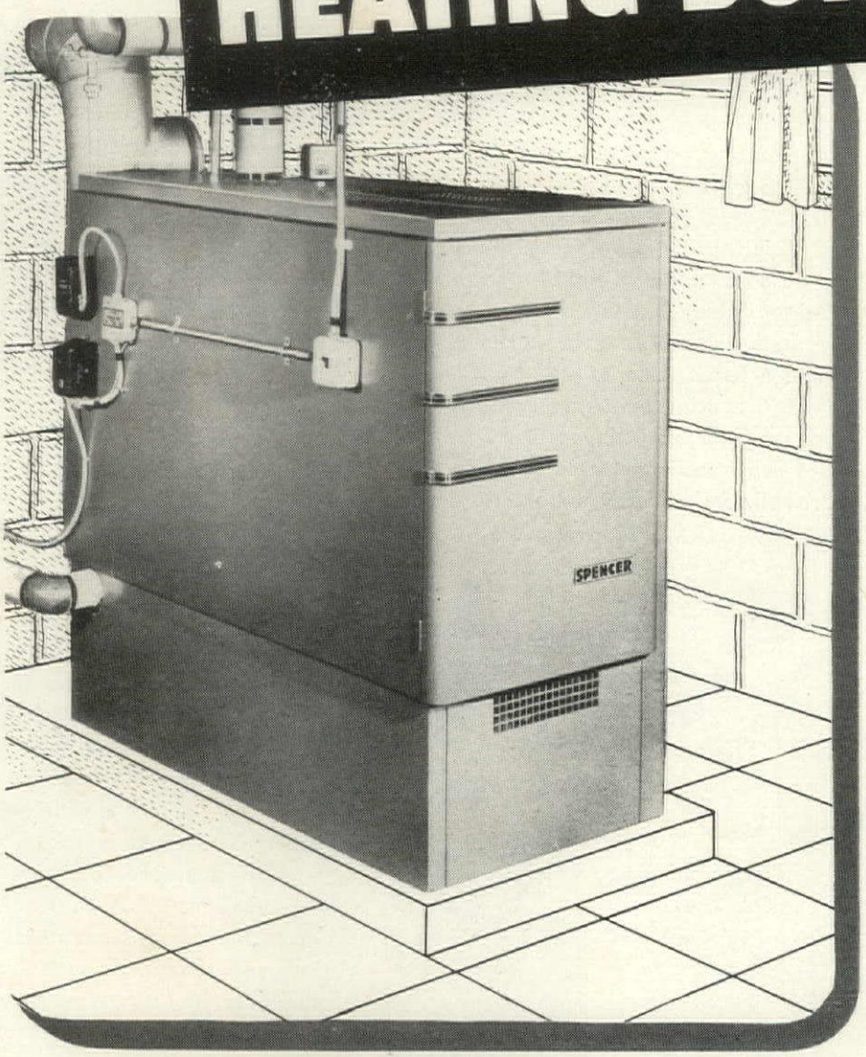

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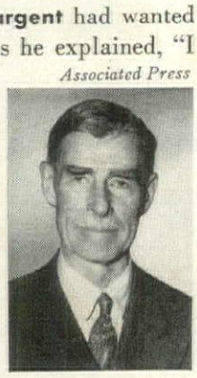
PEOPLE

Ever since he graduated from Yale in 1903, spry, slender **Ziegler Sargent** had wanted a masters degree, but, as he explained, "I was always too busy working to get it." This month, retiring at 69 as vice president and treasurer of his family's Sargent & Co., one of the nation's biggest makers of builders' hardware, Sargent will find time to start realizing his 48-year wish. Yale accepted him as a candidate for an M.A. in American history. Though he will be the oldest student at New Haven (older even than Yale professors who must retire at 68), Sargent planned to keep up a lifelong habit: he will ride the mile from his home to the campus on a bicycle.

Associated Press



Dr. Richard U. Ratcliff, 51, quit his $15,000 a year post as HHFA director of research to return to a less contentious life as a University of Wisconsin professor of economics. In his year in Washington, Ratcliffe plugged hard for research into marketing and economics of housing, but found most elements of the industry cold to such investigations by an agency with its own housing ax to grind. Official reason for Ratcliff's departure: Congressional appropriation cuts in his economic research.

Dr. Edward U. Condon, 49, target in 1948 of a red mud ball flung by ex-Rep. J. Parnell Thomas, resigned as $14,000-a-year director of the National Bureau of Standards to join Corning Glass Works as director of research. Scientific associates never took seriously the charge that Condon was "one of the weakest links in atomic security." Loyalty boards cleared him twice. Ex-Rep. Thomas has a new job, too. He became publisher of a chain of New Jersey weeklies after ending a prison term for defrauding the Government by padding pay rolls.

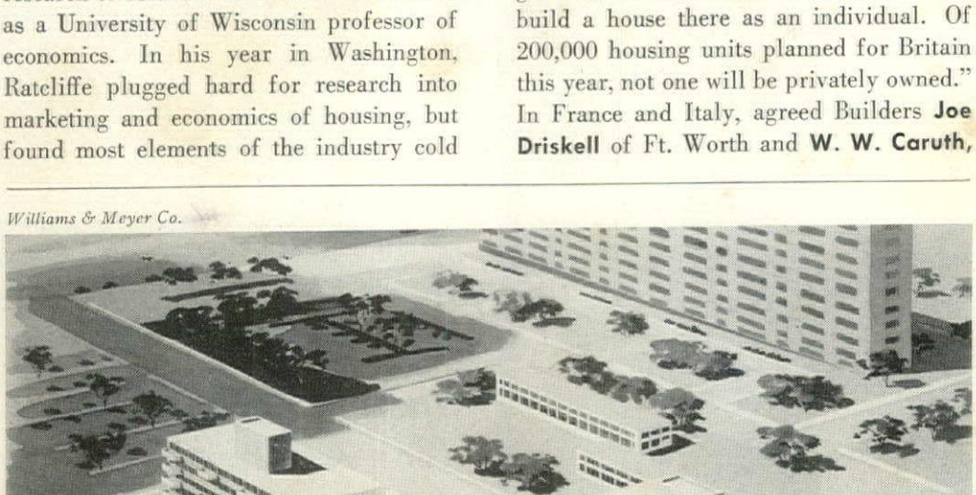
Three members of an NAHB committee, back in Manhattan from a survey of European housing, remarked tartly "we only learned what *not* to do." Britain, saddled with 37 years of rent control topped by five of Socialism, "is a lost nation in housing," said Chairman **Floyd Kimbrough,** hulking Jackson, Miss., builder. "They never will get back on their feet. It isn't possible to build a house there as an individual. Of 200,000 housing units planned for Britain this year, not one will be privately owned." In France and Italy, agreed Builders **Joe Driskell** of Ft. Worth and **W. W. Caruth, Jr.** of Dallas, the Continental version of private enterprise means that cartels control production and rig prices to protect investments, so housing needs are never met. Said Caruth: "capitalists there are content to let workers live in squalor rather than to increase production, lower costs and raise wages to make it possible for the worker to buy the product of his own labor as he does here. The way cartels operate gives Russia vast propaganda." Driskell forecast: "we'll never win against Communism (in France) as long as we have that . . . squeeze play on the worker."

Died: **Leonard Schultze,** 73, famed Manhattan architect and nephew of Lillian Russell, Aug. 25 in White Plains (N. Y.) Hospital, which his firm of Leonard Schultze & Associates designed. A lover of Beaux Arts design, Schultze once observed "every architect ought to go at least once a year to Paris. There is the greatest example of beauty in the world, because it's a city with a plan." Of Gotham, he snorted: "an attractive city before we started to develop it. Now the blame place is spectacular, even sensational." Although Leonard Schultze was responsible for a good share of New York's fabulous skyline, no one ever accused him of architectural sensationalism. He was Warren & Wetmore's chief of design for the Grand Central Terminal in 1903, and later designer of the attendant Biltmore, Ambassador and Commodore Hotels, six Park Avenue skyscrapers and the New York Central office building. His own firm designed such landmarks as the Waldorf-Astoria, Pierre, Sherry-Netherland and Park Lane Hotels in Manhattan, the Los Angeles Biltmore, the Breakers, Miami-Biltmore and Roney Plaza in Florida, and Metropolitan Life Insurance Company's tower apartments stateabuilding in Los Angeles and San Francisco.



Elected: **Donald C. Minard,** 48, as president of Trane Co., La Crosse, Wis., one of the U. S.'s big makers of air conditioning, heating and ventilating equipment. Minard succeeded Founder Reuben N. Trane, 64, who moved up to board chairman.

Williams & Meyer Co.



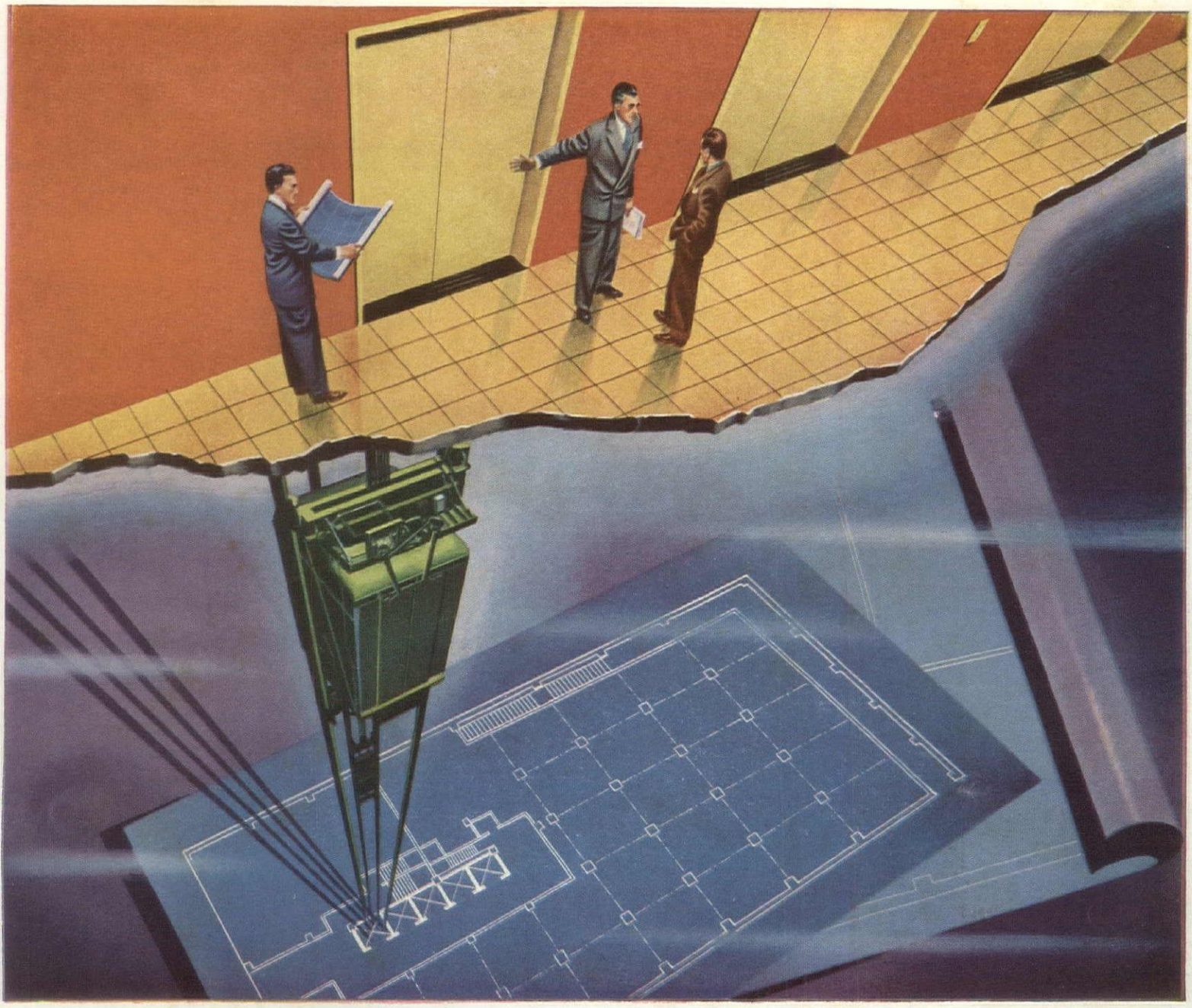
CHICAGO SLUM CLEARANCE to begin with 12-story apartments

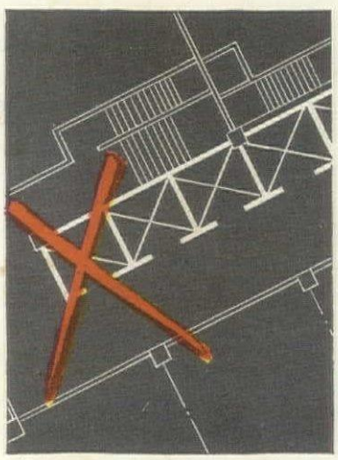
No. 1 problem in slum redevelopment — assembling the site, evicting slum inhabitants from their rookeries—has changed the timing of Chicago's first slum clearance project, "Lake Meadows." Orginally, New York Life Insurance Co. expected to begin replacing part of the stubble skyline of Chicago's South Side with two striking slab apartments, 23 stories high, a third of a mile long and only one apartment (23') thick (THE MAGAZINE OF BUILDING, Aug. '50, p. 98). But a year later, Chicago's land clearance commission has been able to buy only 87% of the site. Meanwhile, five Negro-owned insurance companies backed out of plans to finance supplementary apartments. Last month, New York Life took over this segment of "Lake Meadows," put it first on the construction schedule. Planned initially were two 12-story apartments on land beside the slab apartment site. The commission already has bought virtually all the shanties to be condemned. If the Government will allocate materials, construction is set for a spring start. Skidmore, Owings and Merrill's design calls for reinforced concrete, 238 units per $1,600,000 building.

SOLID SAVINGS

Reported the Federal Savings & Loan Insurance Corp.: in its 17-year life, it has bailed out only 36 savings and loan associations, at a cost of $5.2 million, or 3.6% of its income.

(NEWS continued on page 78)





AN ELEVATOR YOU'LL NEVER NEED

New elevator developments give planning engineers an opportunity to use fewer cars—*while actually improving elevator service!*

Take modernization. Even though a building's traffic hasn't changed, elevatoring has. It's faster. The magic of modern electronic supervision has greatly reduced passenger waiting time. Automatic car operation has reduced travel time. Fewer cars are needed.

In existing buildings, Otis planning engineers survey actual elevator traffic. For new buildings, they anticipate traffic patterns by studying a building's location, layout, expected usage, population. Then they evaluate all factors to determine the number of cars, their size, speed and controls—*using a background of experience that is unequalled anywhere!*

From management's viewpoint, careful elevator planning means the increased prestige of unexcelled elevator service, the income from recaptured or additional floor space, the economy of installing and operating fewer elevators.

Add Otis *elevator* planning to Otis *elevator* research, engineering, manufacturing, construction and service and you have the reasons why the Otis trade-mark is the symbol of the world's finest elevators and escalators. **Otis Elevator Company, 260 11th Ave., New York 1, N. Y.**

BETTER ELEVATORING IS THE BUSINESS OF

REG. U.S. PAT. OFF

Otis

have you examined the upkeep expectancy of

MOSAIC TILE ?

. . . a recent survey among building owners showed that Mosaic Tile costs 53.34% less to maintain each year than *any* other material used for office building floors.

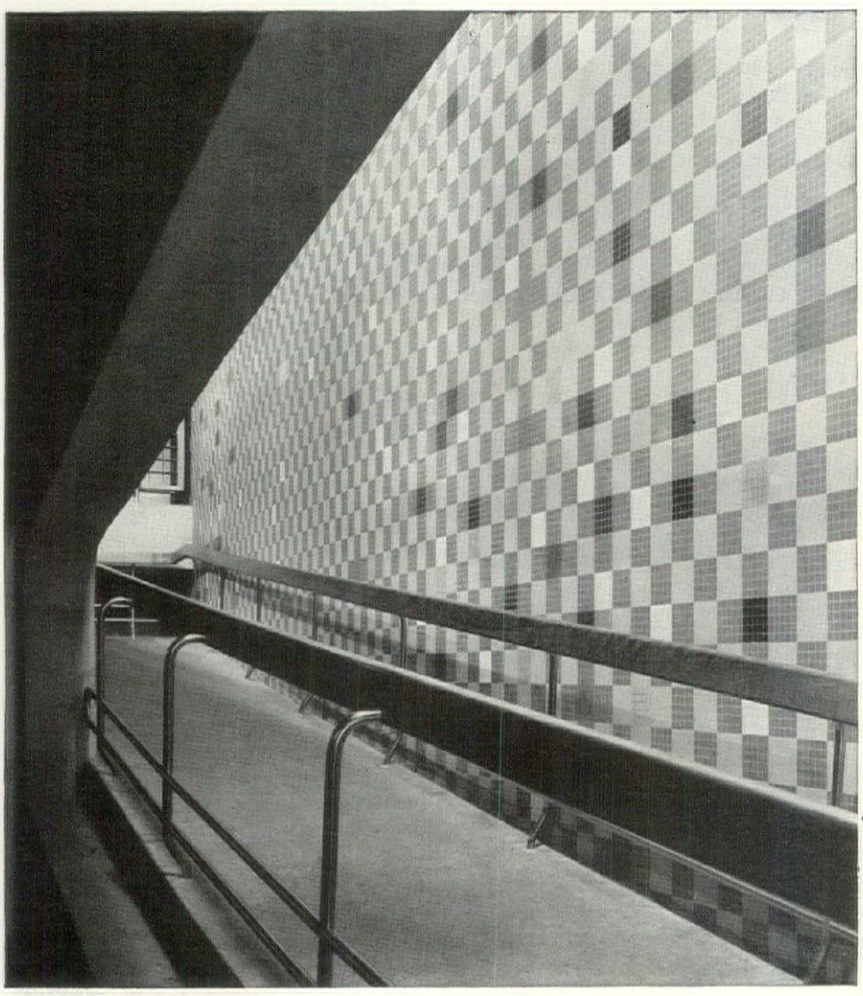
Every time you select ceramic Mosaic Tile for a floor or wall surface, you provide advantages other products have been trying to duplicate for years.

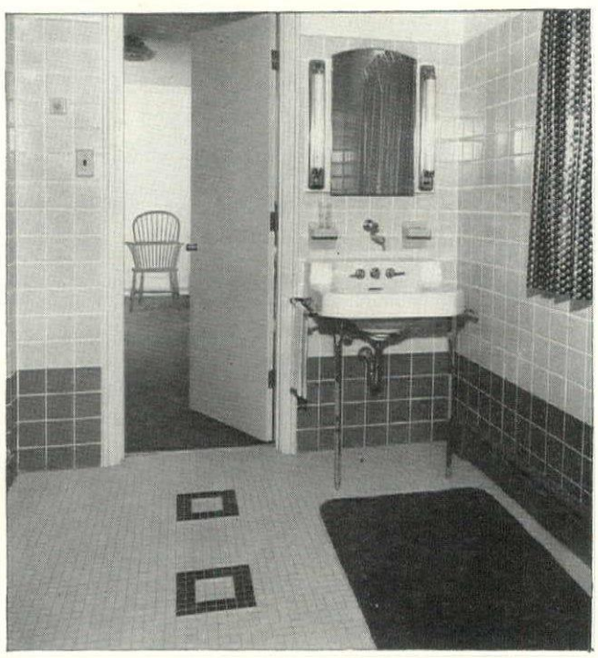
You get depth of color—beauty that doesn't wear off. You get dependable performance that lasts for many years. You provide what is probably the lowest cost of year-after-year maintenance you can find—as the figures mentioned above show.

For centuries ceramic tile has been lasting longer and wearing better than other materials. Isn't that record worth studying in this era of cost-conscious owners?

Mosaic maintains warehouses and showrooms across the nation for your convenience. Stop in the one nearest you. Or write Dept. 29-5, The Mosaic Tile Company, Zanesville, Ohio for a copy of our new ceramic Mosaic Tile Book—16 pages of full color!

look over these new MOSAIC jobs and patterns..





Don't overlook the outstanding, life-time protection against moisture and wear that only Mosaic Tile provides for bathrooms in homes and public buildings.

Floor, unglazed ceramic Mosaics, colors No. 28 light & dark. Wall is glazed Mosaic Tile.

.....This wall is a permanent inspiration. Its beauty can't fade. It is done in ceramic Mosaic Tile at Harvard University Graduate Center, Cambridge, Mass.

Unglazed ceramic Mosaics, 1" Squares in block design using Harmonitone colors.
The Architects Collaborative—Architects.
Walter Gropius—Job Captain.
Herbert Bayer—Designer.





Year after year this floor of ceramic Mosaic Tile keeps pace with the beauty and style of new models. Always easy to maintain—worth selecting for any floor in large or small area.

Granitex ® Mosaic Pattern No. 2180-H

.....Bathroom, Dobbs Ferry, N. Y., residence.
Velvetex Mosaic Vanity Top and Floor—Color No. 201.
Julius Gregory—Architect.

..... can't you see many wall and floor uses for them?

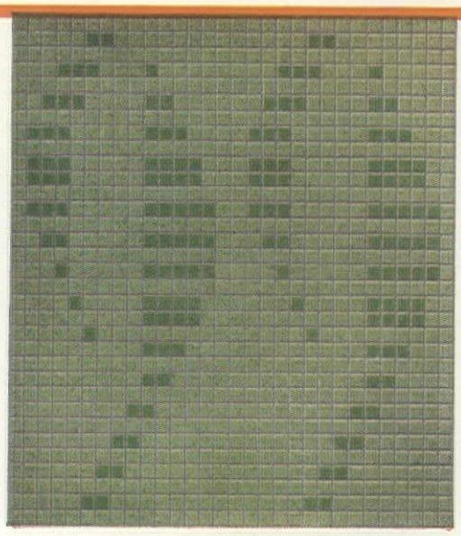
MOSAIC

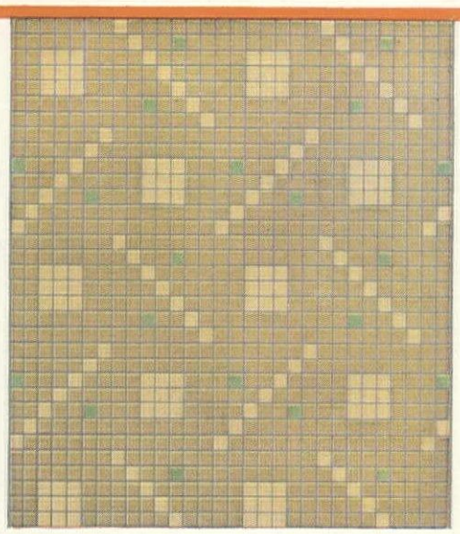
THE MOSAIC TILE COMPANY

Member — Tile Council of America

GENERAL OFFICES—ZANESVILLE, OHIO

OVER 4,000 TILE CONTRACTORS TO SERVE YOU

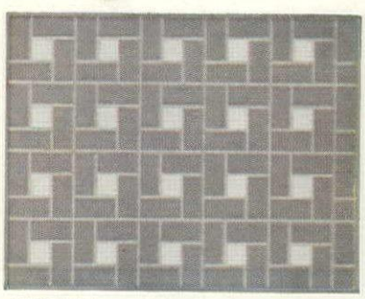




Pattern 2255-A, ¾" squares. Colors 201 and 14 Dark. ● *Pattern 2256-A, ¾" squares. Colors 28 light, 20 light and 16 light.*

Large areas require designs that are simple and open. These two new patterns in ceramic Mosaics suit wall and floor surfaces for large rooms. They are both available in many combination of colors from Mosaic's Harmonitone line.

This group of ceramic Mosaic patterns is exceedingly popular. They fill the demand for colorful, long-lasting floors in residential bathrooms and kitchens, as well as larger surfaces in commercial and institutional buildings.



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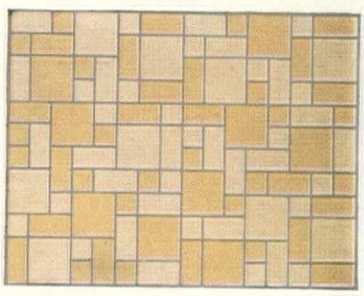

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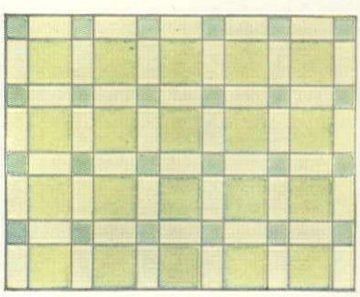

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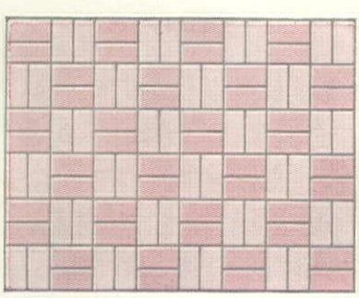

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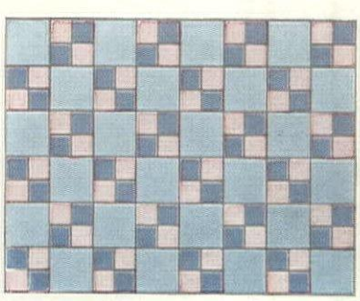

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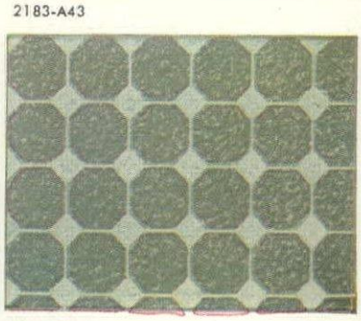


2210-A13



Reception Room, Miller and Burstein, Bridgeport, Conn.
Architect—Victor Civkin

How **FLEXWOOD SOLVED**

three **ARCHITECTURAL** *problems . . .*

PROBLEM: To specify material which would (1) enhance beauty of flat *and* curved surfaces, (2) create feeling of spaciousness, (3) continue flowing wall line completely around compound curve of desk's apron.

SOLUTION: Figured Teak Flexwood easily installed on indicated surfaces. Flush treatment lends room impression of added height. Rich color, magnificent character of wood produce handsome, impressive business interior.

SEND COUPON BELOW: See how Flexwood* helped solve 17 architectural problems.

flexwood

CHOICE WOOD IN FLEXIBLE SHEETS

United States Plywood Corporation
55 West 44th Street, N. Y. 18, N. Y.
In Canada: Paul Collet & Co., Ltd., Montreal

Flexwood is manufactured and marketed jointly by United States Plywood Corporation and The Mengel Company.

* Reg. U. S. Pat. Off.

← *Flat-Cut Walnut Flexwood.*

United States Plywood Corporation, Dept. W-9
55 West 44th Street, New York 18, N. Y.

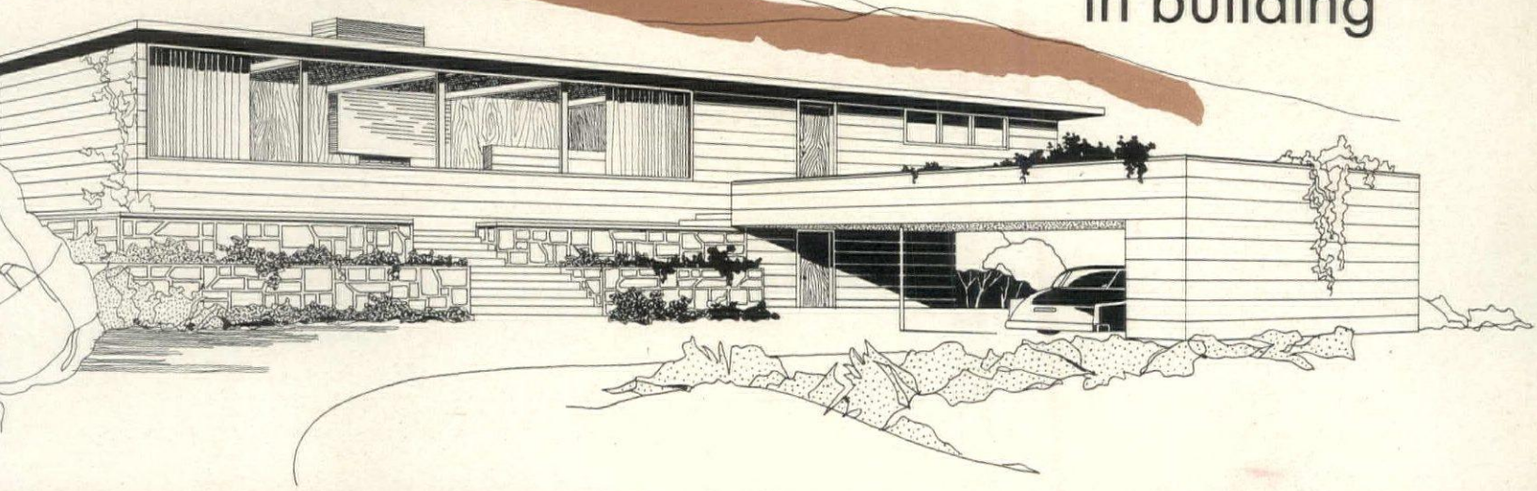
Please send me, without obligation, Flexwood's Case-History Book; shows how Flexwood helped solve 17 actual architectural problems.

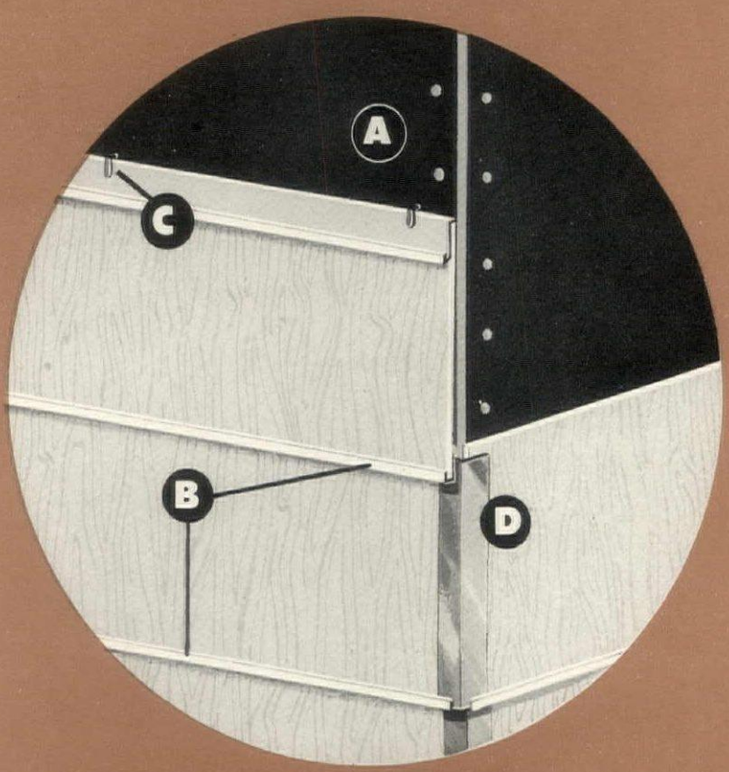
NAME_____

ADDRESS_____

United States Gypsum

what's new in building





NEW SHADOW-LOCK
Attachment System for exterior walls

Now, better exterior walls for less—more beauty, safety, too!

It's the new USG SHADOW-LOCK Attachment System featuring GLATEX* Asbestos Cement Siding "locked" in strong aluminum channels and corner pieces over USG* Gypsum Sheathing. Advantages include: high fire-resistance, great bracing strength; beautiful, deep shadow lines. Also fast erection: no furring strips; few nails, true self-alignment.

Fireproof USG Sheathing not only saves up to one-half on sidewall sheathing costs, but also minimizes wind infiltration, repels moisture.

GLATEX, which is 27 inches wide, applies faster than ever in this system. Its hard, vitreous-like, easy-to-clean surface never needs painting, lasts the lifetime of the house. Now available in Greentone, Browntone, Mist Gray, Satin White —colors most asked for by homeowners.

See at left how easily the SHADOW-LOCK System goes up!

A Nail USG Gypsum Sheathing directly to studs, with end joints staggered.

B Align first GLATEX course properly; place Shadow-Lock channel across top. Fit bottom edges of next shingle course into channel. Follow same procedure for each course.

C Secure channels to studs with new U.S.G. SHADOW-LOCK (Hook Head) nails.

D Apply corner pieces according to directions.

*T. M. Reg. U. S. Pat. Off.

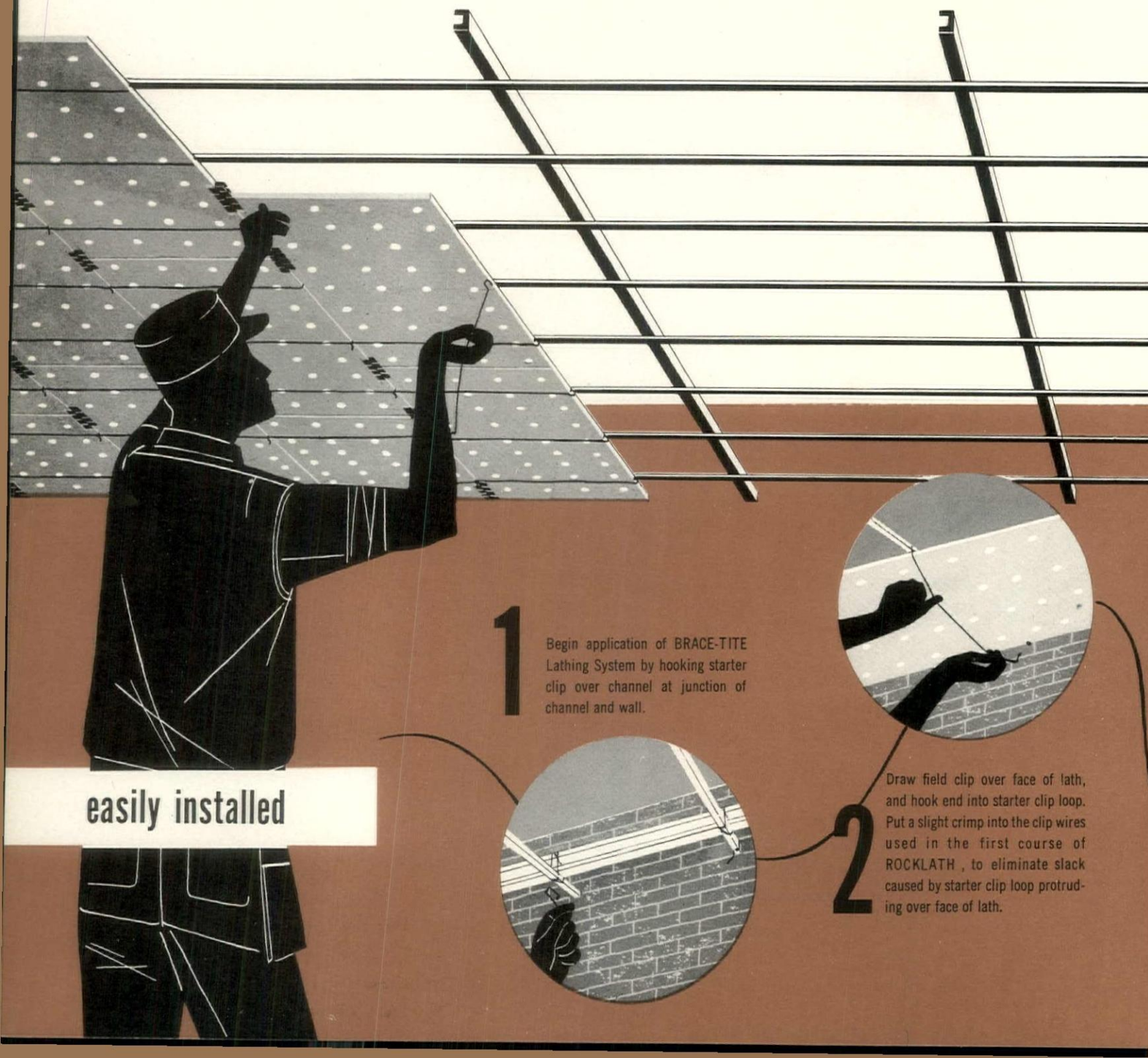
newly-improved

USG Reg. U.S. Pat. Off. UNITED STATES GYPSUM

BRACE-TITE lathing system

for suspended ceilings with ROCKLATH Plaster Base

T. M. Reg. U. S. Pat. Off.



easily installed

1 Begin application of BRACE-TITE Lathing System by hooking starter clip over channel at junction of channel and wall.

2 Draw field clip over face of lath, and hook end into starter clip loop. Put a slight crimp into the clip wires used in the first course of ROCKLATH, to eliminate slack caused by starter clip loop protruding over face of lath.

Here is a way to build strong, economical ceilings, adaptable to furred or suspended construction—with less plaster and less metal.

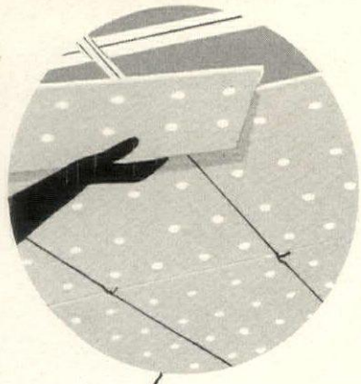
It's the BRACE-TITE Lathing System, using standard size ⅜" ROCKLATH Plaster Base (plain, perforated or insulating) attached to regular ¾" channels spaced up to 16" o.c. It assures great strength, safety, quick erection, many other advantages. Clips rigidly support the full width of ROCKLATH on every channel, and fasten joints firmly together.

Plaster is applied in normal two-coat or three-coat method, using sand, perlite or vermiculite as a base-coat aggregate. For a one hour fire rating below concrete or steel construction use Perforated ROCKLATH and gypsum plaster with perlite aggregate (100 lbs.: 2½ cu. ft.) plastered to a thickness of ⅝" including finish coat. Or, achieve a one and a half hour fire rating by plastering to a thickness of 1" (proportion 100 lbs.: 2 cu. ft.; 100 lbs.: 3 cu. ft.).

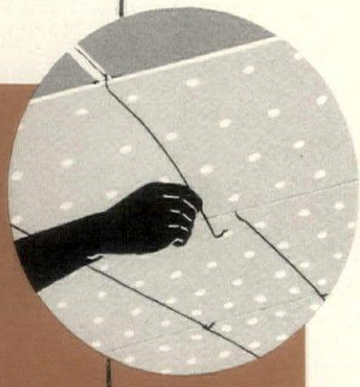
The BRACE-TITE System permits the wide choice of finishes shown at right. And remember, with the *complete* BRACE-TITE System, one manufacturer—United States Gypsum—is responsible for all materials.



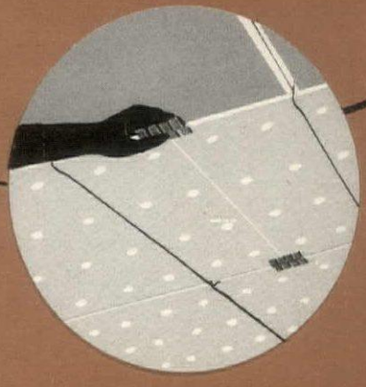
5 When last course does not require a full-width piece of ROCKLATH, cut lath to fit remaining space. Hook field clip over channel, insert it through loop of preceding clip, bend back and cut off excess length.



4 After first course, succeeding courses of ROCKLATH plaster base go on without crimping field clips. Simply hook clip over channel, carry it across face of lath, and insert hook into loop of preceding clip.



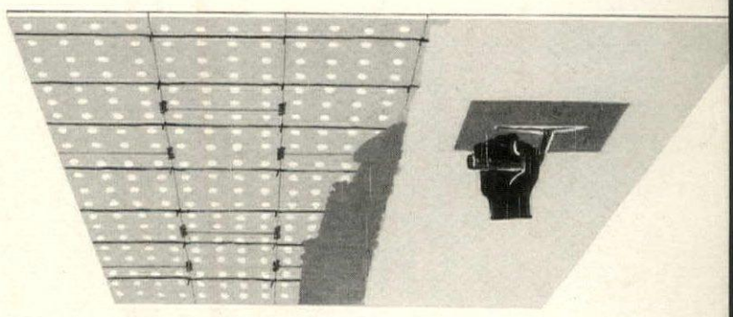
3 Stagger end joints of lath, so they fall between channels. Attach BRIDJOINT* clips on both sides of lath end joints, as shown, to give firm support.



*T. M. Reg. U. S. Pat. Off.

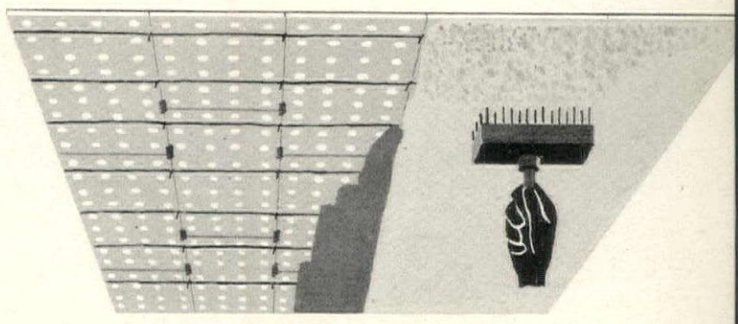
finish treatments

It's easy to apply any plaster or acoustical tile over suspended ceilings erected with the BRACE-TITE Lathing System



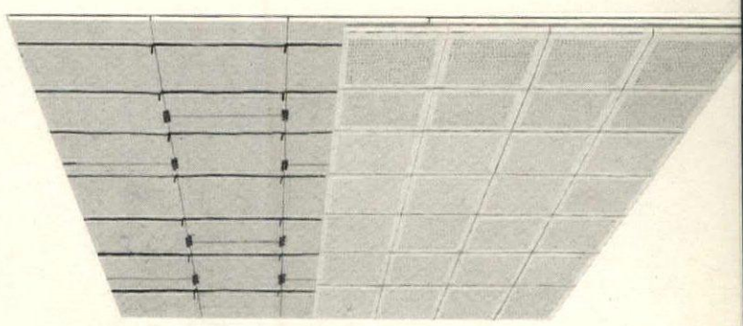
Regular Finish

Apply regular white coat finish over gypsum basecoat with sand, perlite or vermiculite aggregate.



Acoustical Plaster

RED TOP* Acoustical Plaster gives high fire resistance, and a .60 N.R.C. rating if stipple-perforated. Or .55 N.R.C., if stippled only. Improved paintability. Apply over a gypsum basecoat.



Acoustical Tile

AUDITONE* or ACOUSTONE* Acoustical Tile goes on quickly, evenly, with adhesive applied directly to lath. No furring strips or plaster necessary. Up to .70 N.R.C. ratings. May be painted repeatedly without material loss of acoustical efficiency.

For further information write:
Architects' Service Department,
United States Gypsum Co.,
300 West Adams Street, Chicago 6.

newly-improved

DRY-WALL finishing system

Spark-Perforated PERF-A-TAPE*... New Topping Cement... TEXTONE* and TEXOLITE* Paint Combination

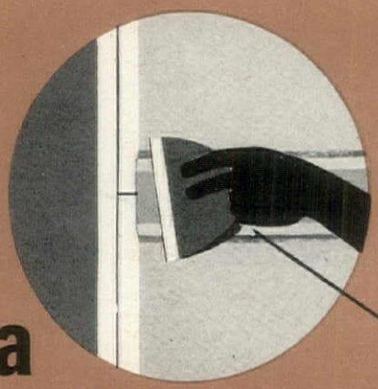
Smooth, strong, beautiful dry-wall interiors are now available with this complete finishing-decorating system:

New Spark-Perforated PERF-A-TAPE system for smoother joints, corners. No cement pimples; no show-through of perforation pattern.

New PERF-A-TAPE Topping Cement finishes joints quickly, easily, with a smooth finish ready for any decoration.

TEXTONE, a plastic texturing paint, combined with TEXOLITE Standard for color, gives walls a soft-textured finish. Fast-drying, one-coat application. Wide range of colors.

All of these products are made by United States Gypsum, makers of SHEETROCK* fireproof gypsum wallboard. When they are used, one manufacturer is responsible for all materials from the framing out, in this complete system.



a

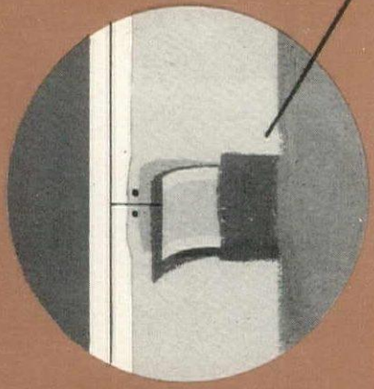
Spark-Perforated PERF-A-TAPE

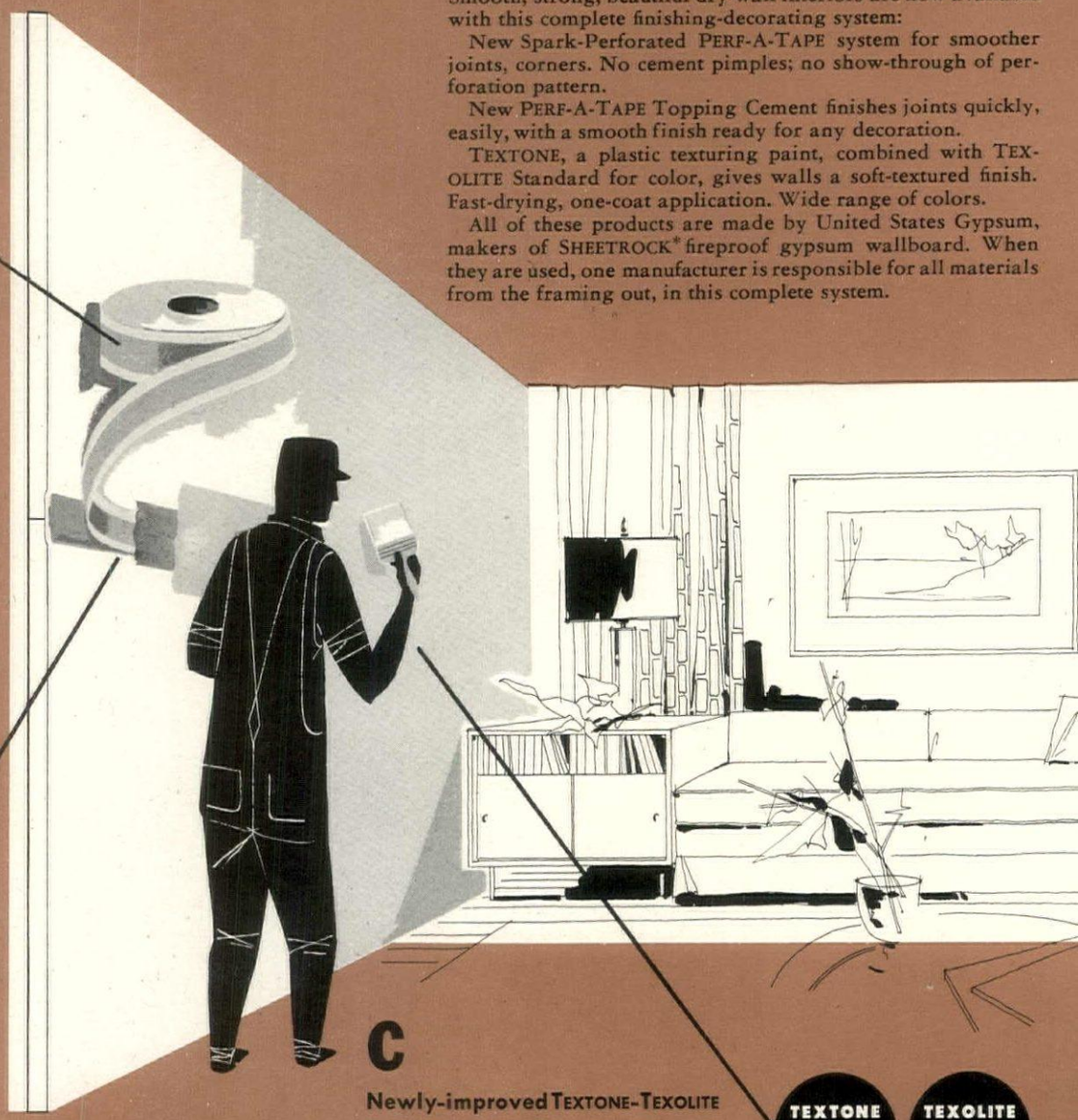
Embed Spark-Perforated Tape in a layer of PERF-A-TAPE Cement, placed in channels formed by recessed edges. After first coat is dry apply a second layer of this cement over joint, feathering out beyond channel shoulders.

b

New PERF-A-TAPE Topping Cement

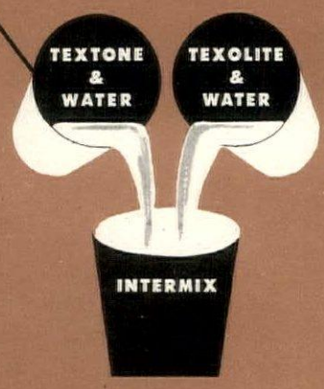
Next, apply a layer of easy-to-work PERF-A-TAPE Topping Cement and feather it out to a smooth finish. It has long life in the wet mix, and spreads on so easily that a skillful mechanic can practically eliminate the need for sanding.





c

Newly-improved TEXTONE-TEXOLITE Paint Combination. Finish the walls with beautiful tints of a wide selection of popular TEXOLITE colors. This economical inter-mix offers a range of textures from light stipple finish to rich, heavy texture, beautiful color—in one application. It's a combination of 5 pounds of TEXTONE, 3 quarts of TEXOLITE Standard paint, and 8 pints of water. Thin TEXOLITE Standard with 3 pints of water, mix 5 pints of water with TEXTONE. Inter-mix thoroughly, allow to stand at least 30 minutes, then apply.



*T. M. Reg. U. S. Pat. Off.

USG Reg. U.S. Pat. Off. UNITED STATES GYPSUM

For further information about products described in these pages, or on any of the hundreds of other USG products for building, consult your USG Architects' Service Representative. Or write: Architects' Service Department, United States Gypsum Company, 300 West Adams Street, Chicago 6.

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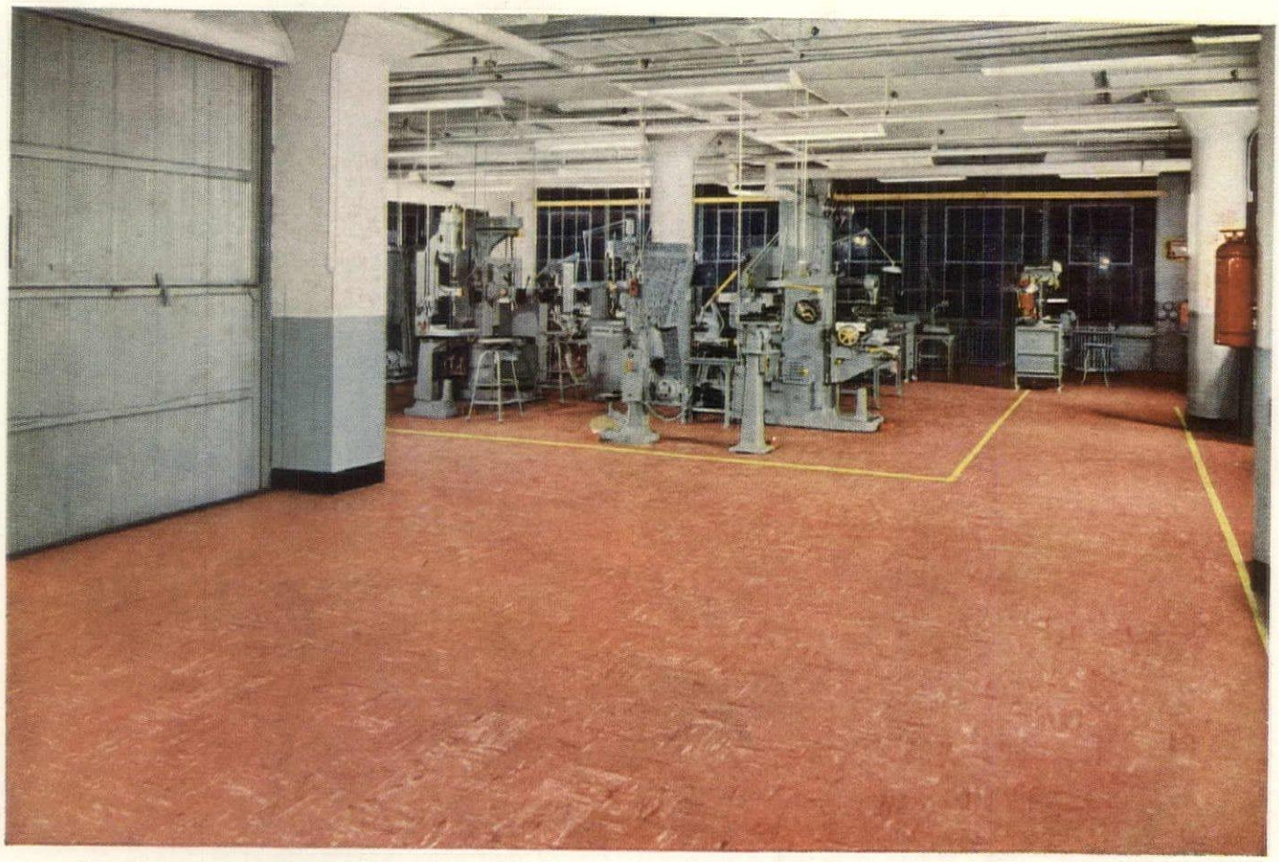




GET *Beauty in Working Clothes* ... GET *Tuff-Tex* GREASEPROOF INDUSTRIAL TILE

Quick, easy, fast... that's the installation story on Tuff-Tex, the attractive, unit-laid industrial floor. And, it more than lives up to its name. It is tough!

Every plant operator wants economy. Well, he gets it when he puts in a Tuff-Tex* floor . . . *three-way* economy.

Installation is quick. You don't tie-up space for long.

Put in *unit-laid* Tuff-Tex, and traffic travels over it in a few hours. Economical installation, plus moderate material prices mean *first cost is low.*

Maintenance is simple. Daily sweeping to remove loose dirt, periodic washing, water-waxing (if desired) . . . that's all. Repairs are quick and inexpensive because they can be limited to damaged tiles.
That lowers *operating cost.*

Tuff-Tex is highly grease-resistant (you can use it even in machining areas) and *so* tough it withstands constant traffic of heavy materials handling trucks with ease. That means *service life is exceptionally long.*

There's your *three-way economy* . . . low first cost, low operating cost, long service life. And, you get many other advantages in utility and appearance.

A Tuff-Tex floor is attractive. You have unusual versatility in design . . . either decorative or functional.

You can inlay your own trademark in the floor . . . or use the unit-laid feature of Tuff-Tex to outline traffic aisles, shipping areas, material bays, and the like.

Get this three-way economy... plus Tuff-Tex's other advantages... whether you're building a new plant or remodeling an existing building.

Your local Tile-Tex contractor will give you product data, samples and complete information on our design counsel and floor layout services... for the asking.

If he's not in the telephone book, write THE TILE-TEX DIVISION, The Flintkote Company, Dept. F, 1234 McKinley St., Chicago Heights, Ill.

Tile-Tex
GREASEPROOF INDUSTRIAL
FLOORS AND WALLS

*Registered Trademark, The Flintkote Company

an Open Letter —

to Builders East of the MISSISSIPPI

Would you like to make bigger profits? Would you like to gain prominence and dominance in the building market in your area? There is a well-proven plan to gain these objectives. It's the Peaseway Plan.

The Peaseway Plan adapts today's techniques to the building industry. It enables you to:

1. Build more homes faster
2. Turn over your capital more often
3. Reduce costs
4. Increase your profits
5. Offer homes designed for your prospect's needs
6. Obtain financing easily

Many Peaseway franchise builder-erectors have found that the Peaseway Plan has gained for them prominence and dominance in their market. Operating their own business and aided by the Peaseway Plan, they can now look forward to assured success.

PEASEWAY HOMES GO UP IN A HURRY. Instead of taking months to complete a house, you can do it in a few weeks. Your capital is turned over again and again.

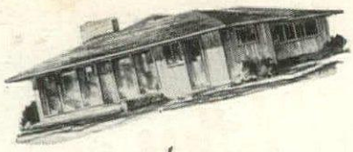
Peaseway homes reduce costs by eliminating much expensive hand work and on-site construction delays.

Peaseway homes sell rapidly—almost on sight, because, as a Peaseway franchise builder-erector, you have a design for every buyer.

AND NOW for the first time in the fabricated home field, you can offer CONTEMPORARY design homes conceived by the nation's leading architects. You can offer homes with 2, 3 or 4 bedrooms, to suit all needs, desires and pocketbooks. Peaseway homes are FHA approved.

A limited number of Pease franchises are open to builders east of the Mississippi. Each franchise is a valuable property, worthy of your most serious consideration.

We invite you to write—just a few lines on your letterhead— asking for the Peaseway Plan.



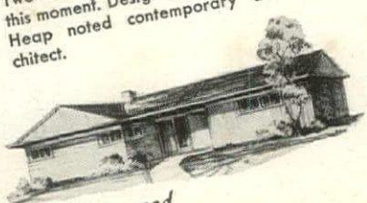
The Archwood

Four bedroom home. Another first in better housing by nationally known contemporary architect Oscar Stonorov—A.I.A.—A.I.P.



The Eastwood

Two bedroom home. Modern as this moment. Designed by Robison Heap noted contemporary architect.



The Crestwood

Three bedroom home for more and better living designed by Schwarz and West—A. I. A.

Write to: Room 901

PEASE WOODWORK COMPANY, INC.

CINCINNATI 23, OHIO

"In business in Cincinnati since 1893"

Peaseway homes

. . . first in better living.




THANKS to the enthusiastic acceptance of SOLID OLSONITE SEATS by ARCHITECTS and ENGINEERS MORE THAN 4000 SEATS PER DAY are being produced by OLSONITE.
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HOLLOW • NOT CONCAVE •
DIVISION • SWEDISH CRUCIBLE STEEL CO.
DETROIT 11, MICHIGAN

AMERICAN-Standard

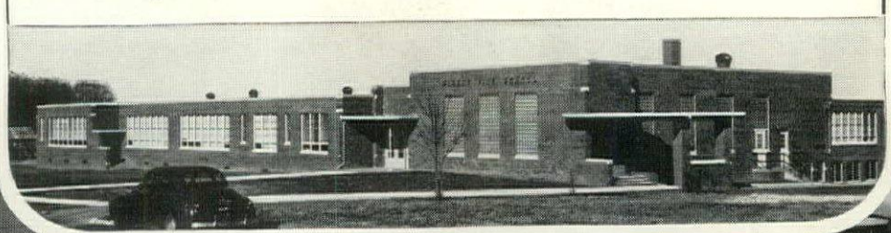
First in heating...first in plumbing



It's AMERICAN-Standard throughout for this new Fort Smith, Arkansas, school

● In keeping with its modern design, the Albert Pike School of Fort Smith, Arkansas, features the most modern heating and plumbing products available . . . handsomely styled, durably constructed American-Standard heating equipment and plumbing fixtures.

In school after school American-Standard products have earned a reputation for long life, easy and economical maintenance. When *you* build or remodel, ask your heating and plumbing contractor about American-Standard heating equipment and plumbing fixtures. There's a *complete line* to choose from.

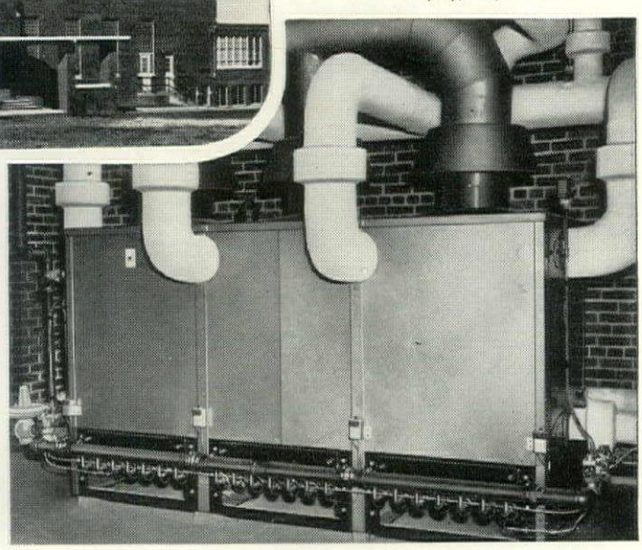


IT'S EASY TO KEEP this battery of sturdy Lucerne Lavatories bright and shiny . . . they're made of hard, smooth genuine vitreous china. The lustrous fixtures feature splash backs and deep, square bowls for protection of wall and surrounding area. And they're wall hung to make cleaning of floors easier.

• • •

ARCHITECTS:
Bassham & Wheeler, Fort Smith, Ark.
GENERAL CONTRACTOR:
Fraser Construction Company, Inc., Fort Smith
PLUMBING AND HEATING CONTRACTOR:
Bender Bros. Plumbing & Heating, Fort Smith
WHOLESALE DISTRIBUTOR:
Bruce Company, Inc., Fort Smith





DESIGNED FOR EASY ACCESS by students of all ages, these Chinal Urinals help eliminate unsanitary conditions in school washrooms. The genuine vitreous china construction assures long life under day-in and day-out service . . . with minimum upkeep. The smooth-surface fixtures are easy to clean . . . easy to keep clean.

ABUNDANT, AUTOMATIC HEAT is supplied throughout the Albert Pike School by this Standard Gas Boiler. It is equipped with precise, dependable controls which assure utmost safety and economy of operation. The carefully machined cast iron sections are gas tight. Jacket is heavily insulated to prevent excessive heat loss.

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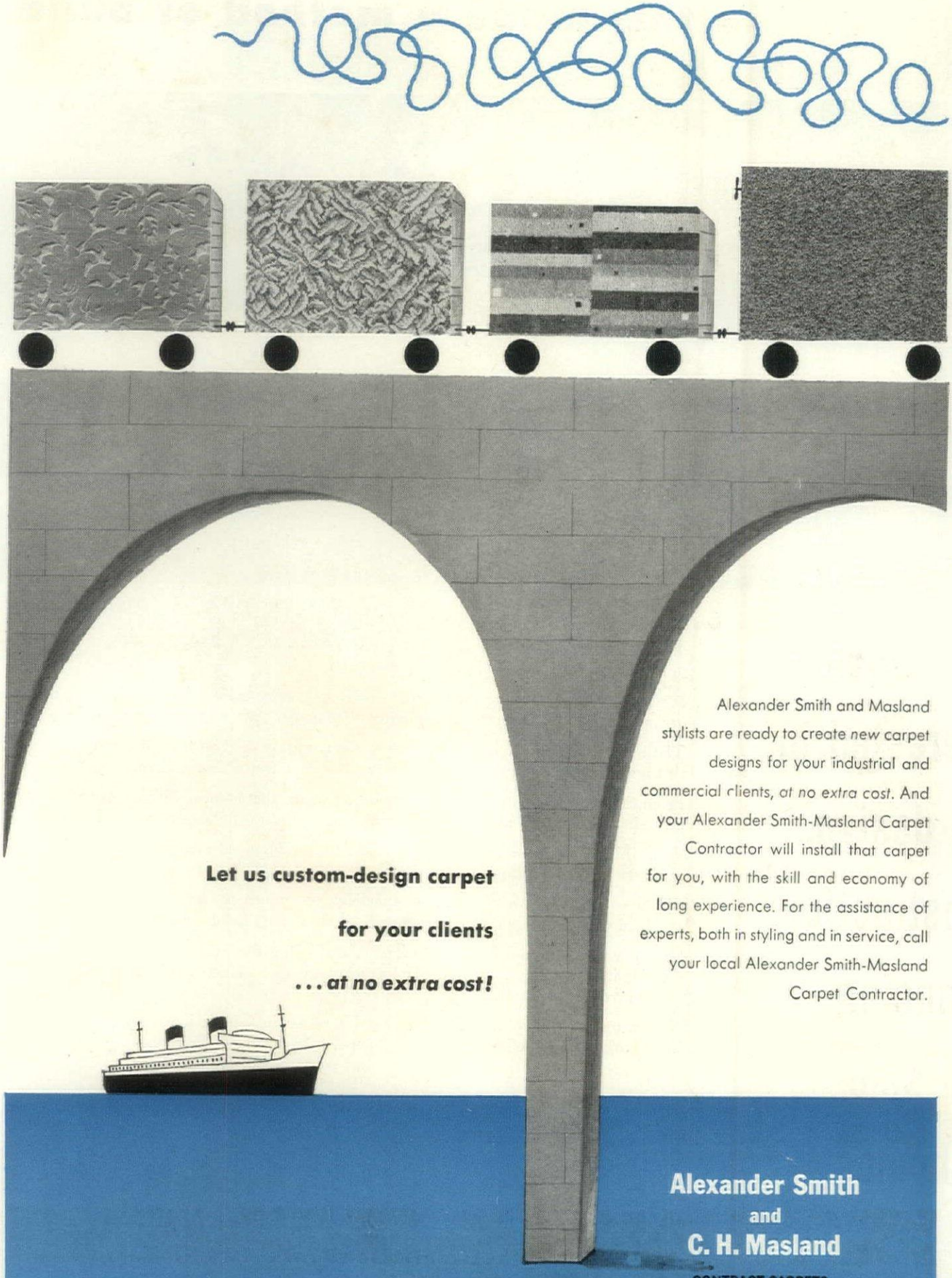

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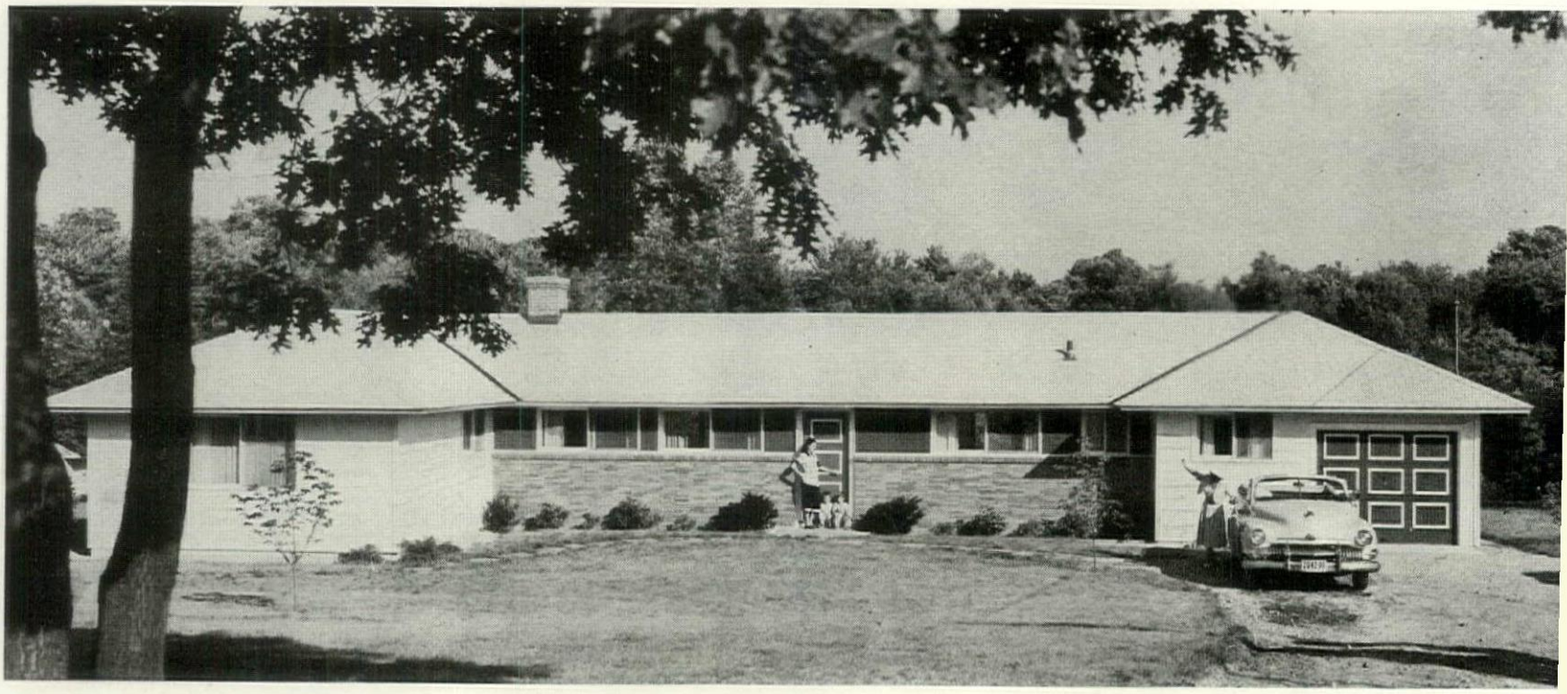
So many extra values

in this modern method of building!



for everyone interested in the design, construction, financing and sale of homes

Pictured above: Residence at Darien, Conn.
Builder: Arthur Olson, Inc.
Photo by Rodney McCay Morgan

PREFABRICATION is accepted everywhere today as a better, faster and more profitable way to build.

It was not always so. Once, the word "prefabrication" carried a connotation of quick, standardized packaged housing—unacceptable to builders, to owners and to financing agencies.

The reason prefabrication now commands the attention of everyone interested in building, is the fact that a way, a method, was found to *use prefabrication as it should be used.*

From the beginning, American Houses, Inc., realized that home building is essentially a local industry involving builder and architect, craftsman and laborer, supplier, realtor and financing agency.

From this premise evolved our present method of building—a method in which we sell prefabricated house parts to builders only.

But the "over-all" American Houses method goes much further. It includes the services of a sales and field staff on-the-job, cooperating with all the groups involved in the building.

Such a unified method provides "extra values"—for the architect planning a house, the builder erecting it, the family living in it, the financing agency backing it. It is a sound investment for all.

No matter what type of building you're interested in—single houses, large projects, defense housing, military housing—you can get the *greatest degree of flexibility* by using the product of American Houses, Inc.

Learn the full story of the American Houses' product, system and service. Write for our illustrated brochure, "Results Speak for Themselves." Please address your request to Dept. M-9.

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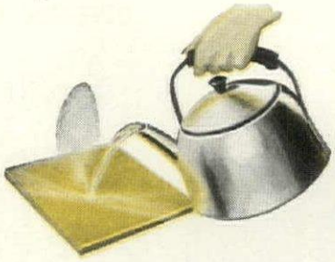
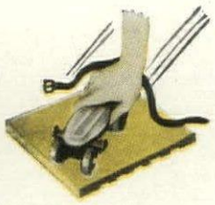


TILE IS WATERPROOF



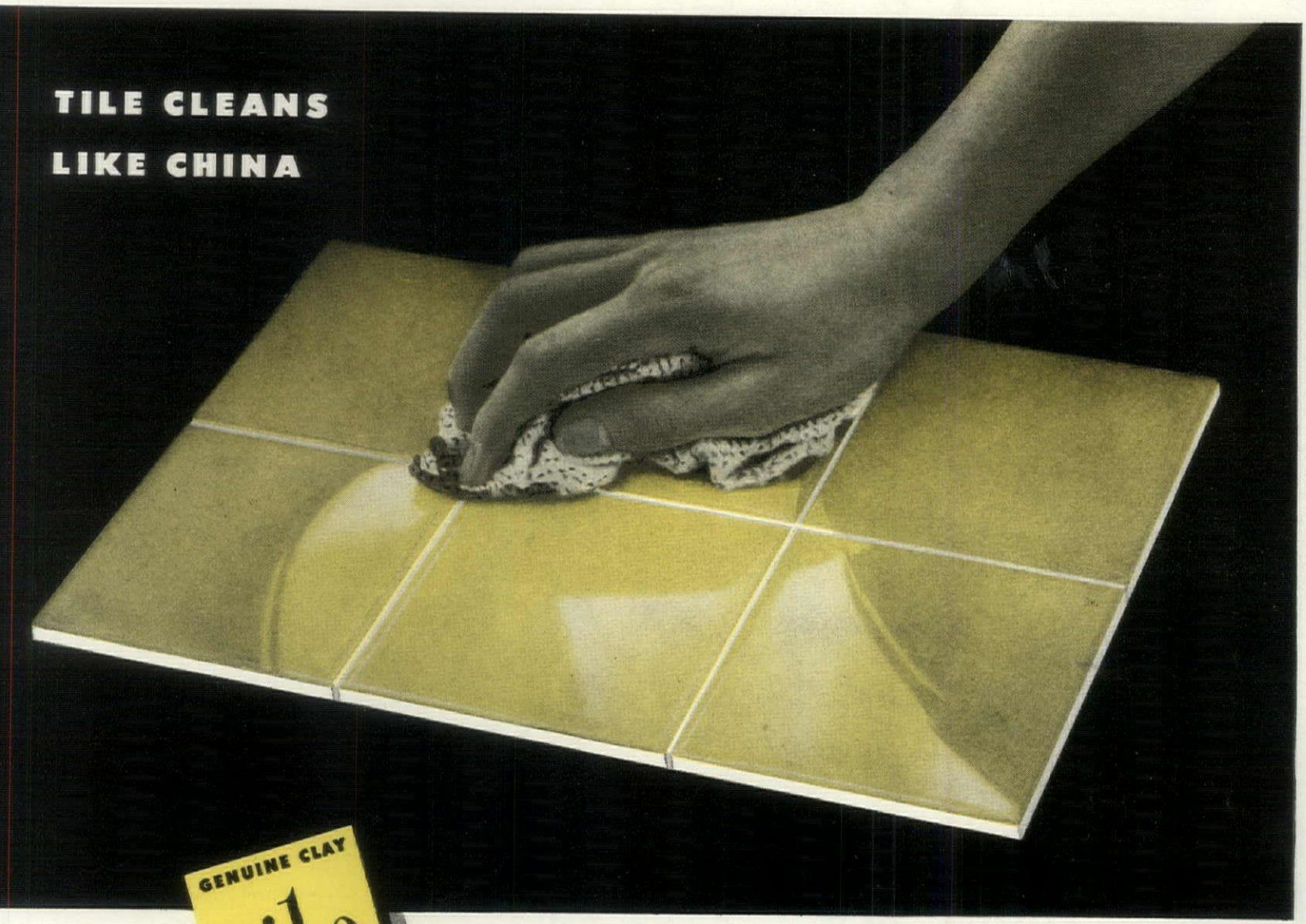
TILE DEFIES SCRATCHING



TILE IS FIREPROOF



TILE LASTS A LIFETIME



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Dirt doesn't lodge very easily on Genuine Clay Tile but when it does, a swish of the cloth wipes it off. Clay tile is equally resistant to water, staining and scratching—combating them all for a lifetime. Then, when you consider that clay tile is fireproof and fadeproof, you have an enduringly attractive building material that *can't be matched by any substitute.*

Have you considered the use of tile in the kitchen, utility room, powder room, or foyer? It is worth a fresh appraisal every time you design or build any type of building. Remember—whether it is for traditional or modern styling—tile is one of the most versatile materials you can use for distinctive color schemes.

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

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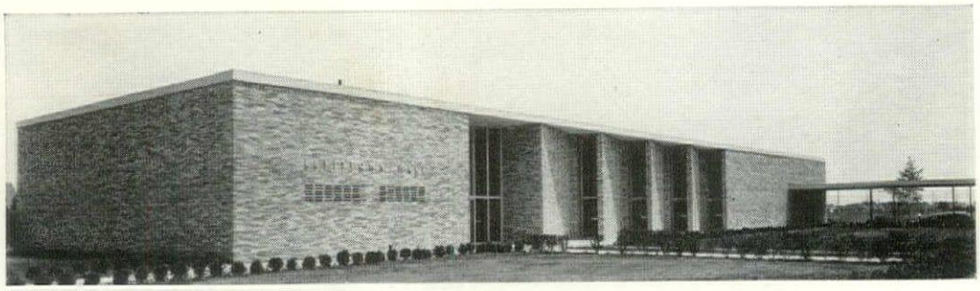
THE MODERN STYLE IS CLAY TILE

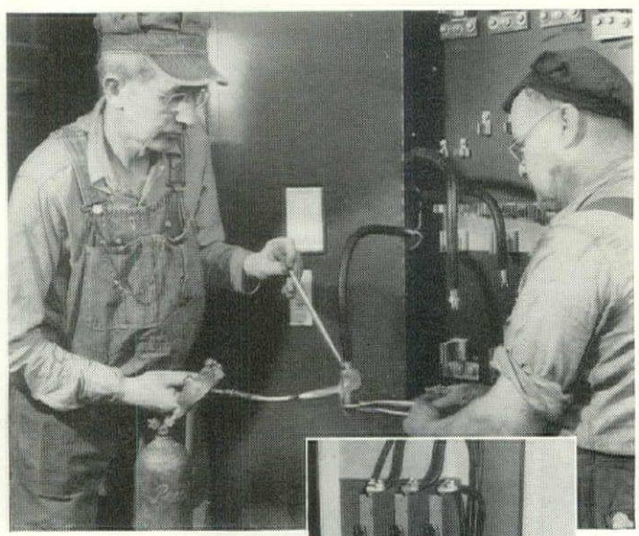


HANDSOME COMMUNITY CENTER enhances Long Island's Levittown

BUILDER WILLIAM J. LEVITT, nattily clad in bow tie, sport jacket & white flannels and flanked by such inevitable trappings as a television actress and a blinded war veteran, sliced an inevitable ribbon to open this $250,000 town hall Levitt & Sons, Inc. built for the 65,000 residents of Levittown on Long Island. The low-slung brick hall includes a 600 seat auditorium, an 18' x 28' kitchen, 100-seat meeting room, library, men's and women's lounge, movie projection balcony and covered walk leading to a nearby swimming pool. When attorneys can unravel the complexities of deeding a building to a community which lies in two townships and three unincorporated villages, Levitt will donate the hall to Levittown's people.

40% Saved on new wiring

At Stewart-Warner Electric's radio and television plant in Chicago, 4/0 Aluminum RH insulated conductor supplies 440-volt AC power for a new assembly line. Savings due to using Aluminum amounted to over 40% because of the cable's low initial cost and the easier, faster installation of the lighter-in-weight metal.



Electricians Howard Norton (left) and Al Iverson soldering aluminum connections at distribution panel. *Below:* Howard Norton, looking over completed job at panel said, "Aluminum is very satisfactory to install because of its lightness and workability . . ."



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Get prices both ways—in Alcoa Aluminum and in copper. See for yourself the worth-while savings possible when you plan wiring for production lines, new power feeders or improved wiring for higher capacities.

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DEFENSE DESIGNING

Small Architects Hit; Bi Firms Land Most Jobs

Among architects, mobilization was tendi to make the rich grow richer, the poor gr poorer.

Big firms were busier than ever with h pitals, schools, industrial and defense wo But in little offices and those struck by lective bans on building types, draftsm were being fired while principals moved smaller quarters, re-grouped professional scrambled for defense work.

Observed Dallas Architect Jay Ada whose firm converted 100% to defense signing: "Those who haven't shifted are r ning out of work. Those who have are b as the devil."

Architect Paul Thiry of Seattle, a reg loaded with work by Army Engineers, put finger on one reason for the seesaw pictu "There is a tendency in federal agencies give work to the big firm because the big can show an impressive chart of staff orga zation. They don't stop to think that a firm must keep busy and sometimes is loaded with work to do a job as well a small firm that expands to handle a job."

Some up, some down. In Atlanta, e some long established firms like Stevens Wilkinson, and William J. Chase & Associa were whacking payrolls. Stevens & Wil son sought more government work. Ch hoped to snag a share of Georgia's $20 m lion school building program.

Ralph Huszagh of Chicago, whose pr tice was mostly commercial building, repor "the restrictions are $7 million out of my right now." Harry Ervin, one of Denv largest architects, had 11 draftsmen work for him last December. Last month, he h four.

Manhattan's Skidmore, Owings & Mer could point to $30 million worth of build off its boards when Ford decided not to ahead with its office building in Dearb Mich. (THE MAGAZINE OF BUILDING, Dec. p. 102). But the firm of Voorhees, Wall Foley & Smith reported its designers "so b we're standing on our heads." Reisner & bahn of New York were scouting for dra men and engineers to expand a 60-man, th office organization. Dean Joseph D. Murphy Washington University School of Architect in St. Louis contended: "there is no (overa shortage of work for architects now. . . ."

(In one instance, it was not NPA, but Federal Reserve which proved to be the brake on a commercial job. A Los Ang builder lost a $500,000 hotel addition p

(Continued on page 80)

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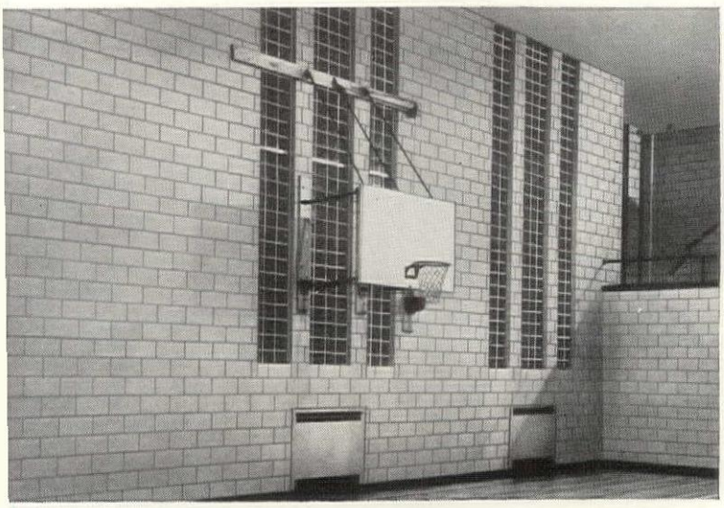

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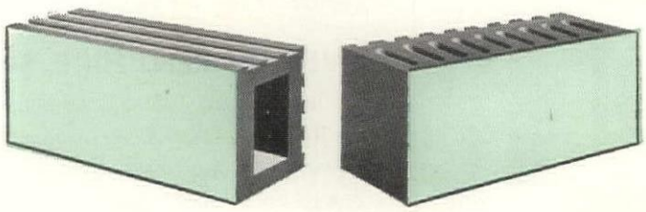

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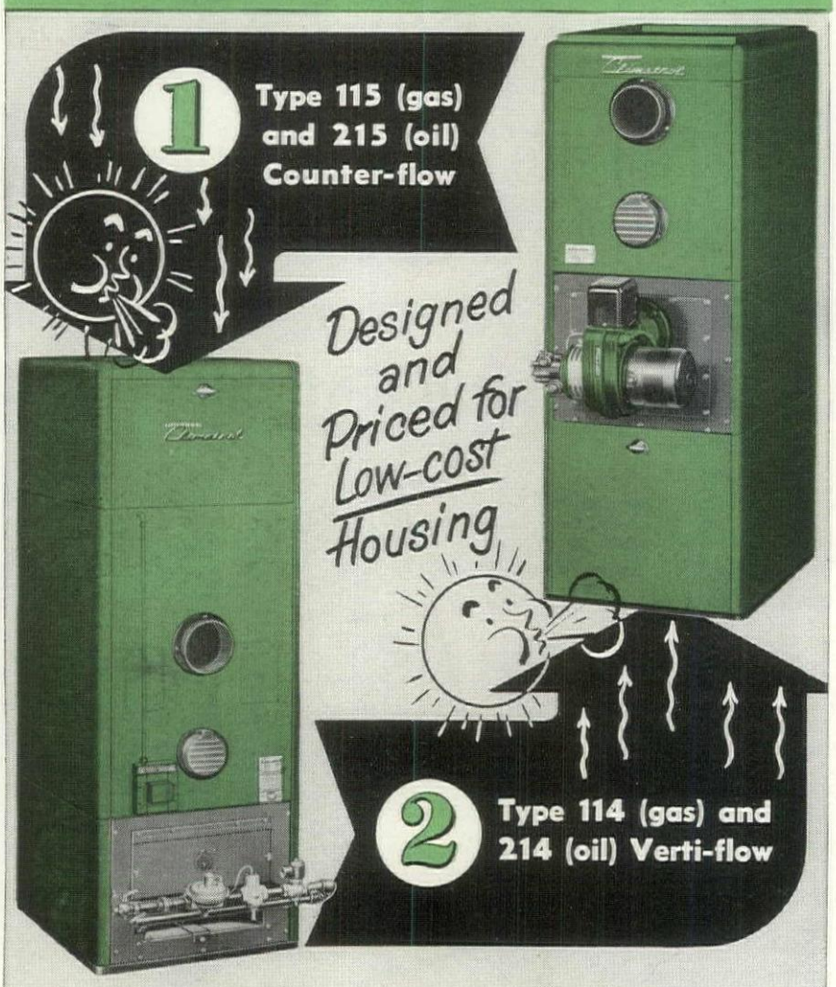


Here they are — the new counter-flow types 115 and 215 for perimeter heating or for any installation where discharged air can more economically be connected to bottom or lower part of furnace, and the types 114 and 214 for conventional basement, closet, and utility room installations. 110,000 Btu capacity in compact, space-saving design. Famous Mueller quality at a price that's right for your low-cost projects. Available for gas or oil — convertible by changing burners. Shipped assembled, and the types 115 and 215 are pre-wired for quick, low-cost installation. Designed for easy cleaning and inspection. The perfect answer to your heating problem! Write for complete details . . . *L. J. Mueller Furnace Company, 2021K W. Oklahoma Avenue, Milwaukee 15, Wisconsin.*

B-57

94th Anniversary

Mueller Climatrol

FOR GAS FOR OIL FOR COAL

ject, already approved by NPA, when the FRB refused to let the hotel man borrow what he needed.)

Recreational blues. It was no surprise that worst hit among architects were the 2% who specialized in recreational designing. Since construction had to be cut down somewhere to permit mobilization without wild inflation, the Government had banned all recreational building since mid-February. Patriotic architects had little quarrel with the decision not to build night clubs, race tracks or country clubs, but the pangs of readjustment were painful.

Cried a Boston theater designer: "I lost $ million in theater work and another millic (in remodeling design) when I advised m chain store clients to stop buying and rentir property for new stores. I may have to go o of business. I'm not going to spend the re of my life filling out forms." Luckier tha most were John & Drew Eberson of New Yo who landed an Air Force contract as technic consultants for production of documentar training, combat and public relations film In Minneapolis, Liebenberg & Kaplan, who work was 70% recreational, reduced its sta by one half. In San Francisco, Architect A. Cantin stopped plans for five theaters, t shopping centers, and one office buildi worth $3 million, fired three draftsmen, w looking for school and hospital work.

Worry talk. "The NPA rule has practica ly closed our office down," gloomed Lew Wilson of Los Angeles, who lost a milli dollars in indoor theater work and cancel "several times that in our four screen pate ed drive-in theater. We are trying to obta other work but NPA has stopped most co mercial work so our office will either have go into defense work or close down entire We're not large enough to take on large fense work."

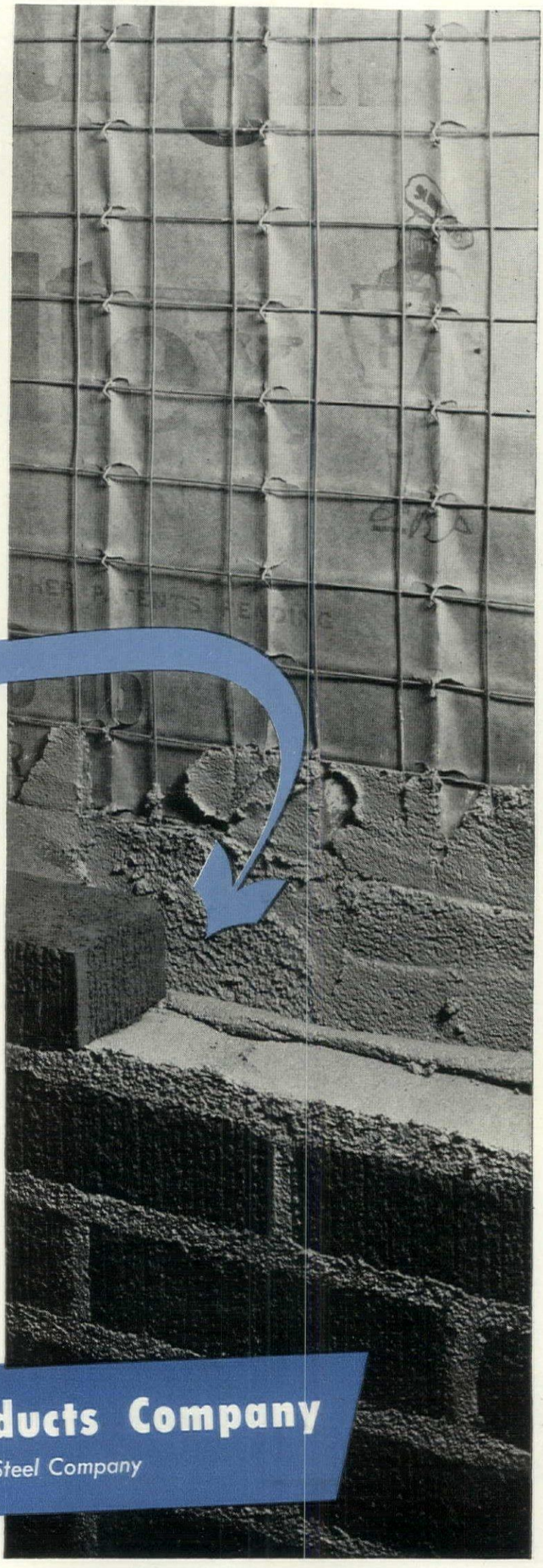
John J. McNamara of New York, wh practice was about 75% theaters, dance hal skating rinks, cut his staff from eight to fo and shifted into residential designing, "W were lucky to get NPA approval on one go sized job," he said, "but the rest of our wo consists of small remodelings under $5.0 involving painting, draperies, or carpetin I'm attempting to line up with some enginee to get Army work, but I don't hold mu hope for it materializing for another s months. These are rough days for architects

AVERAGE RENT HIKE: $6.25

During fiscal 1950-51, 87.6% of the U. landlords' 1,098,000 petitions for rent creases were approved, Rent Stabilizer Tig Woods announced. Average increase: $6.2 month, or 17.6%.

(NEWS continued on page 82)

Notice how Pittsburgh Steeltex builds a veneer wall into a single solid unit



You'll find that replacing standard sheathing with Pittsburgh Steeltex will give you the basic advantages of masonry veneer construction without including its disadvantages. The strong welded steel mesh bites into the continuous mortar bond behind the brick or stone veneer—thus providing greater mutual resistance against later settling and distortion. Furthermore, fire resistance is considerably increased due to the elimination of flue action normally found between masonry and sheathing. For further good reasons to specify Steeltex, see our catalog in Sweet's or write for our catalog D.S. 132, Dept. MB, Pittsburgh Steel Products Company, Grant Building, Pittsburgh 30, Pa.

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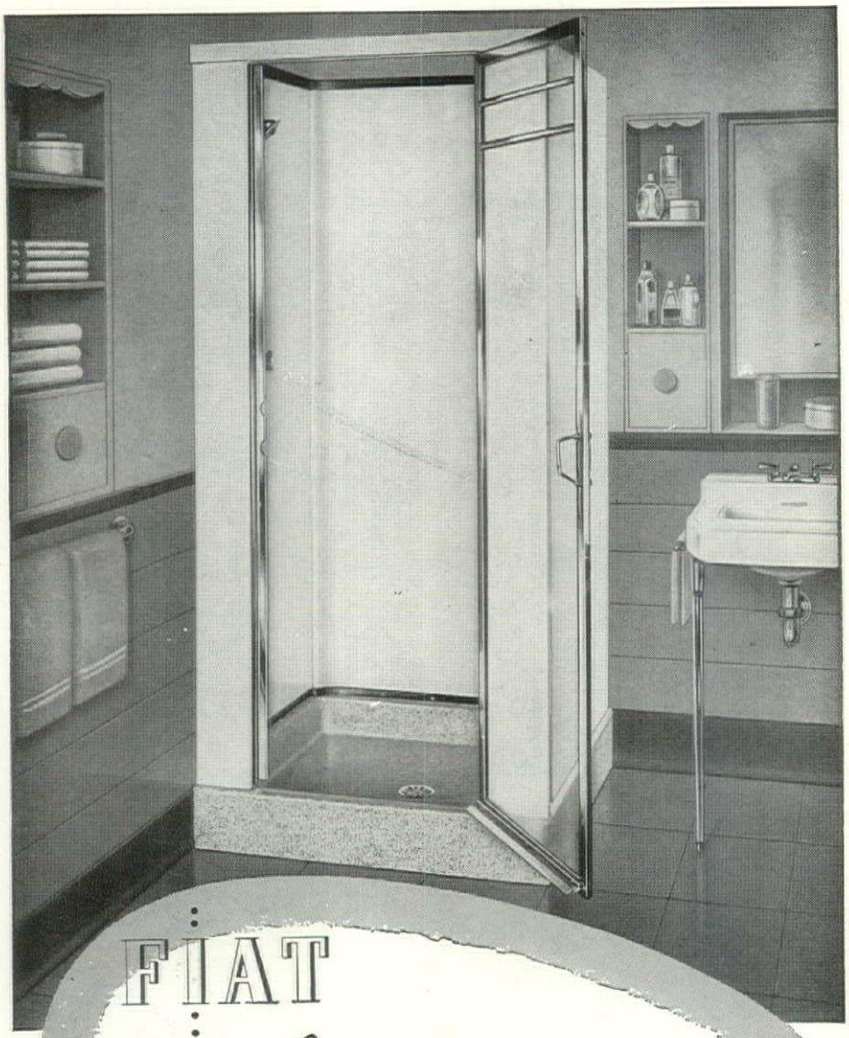

FIAT

Admiral . . . THE SHOWER CABINET WITH A VITREOUS PORCELAIN ENAMEL INTERIOR

The smooth, glass hard, vitreous porcelain interior surfaces of the Admiral Shower provide the ultimate in cleanliness and sanitation, they remain white and impervious to wear for a lifetime. Exterior of side and back panels are regularly finished with vitreous porcelain enamel ground coat, but can be furnished to match interior at small extra cost. Front stiles and head rail, bonderized, galvanized steel finished in white synthetic baked-on enamel. Receptor, deep type terrazzo made of black and white marble chips and white cement. Sizes 36" x 36" x 80" and 40" x 40" x 80". Illustration shows this shower equipped with a Fiat Dolphin heavily chromium plated glass door. The Admiral shower is suitable for high grade residential and institution installations.

Complete specifications in Sweets' Architectural Catalog File, or write any of the three Fiat plants for catalog.

FIAT

FIAT METAL MANUFACTURING CO.

Three complete plants

9301 Belmont Ave., Franklin Park, Ill.
Los Angeles 33, Calif. Long Island City 1, N. Y.

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

FEE FIXING: new Army scheme draws AIA wrath

The Army and the AIA were at it agai over fee fixing. This time, the architec got such strong backing from the Ame ican Society of Civil Engineers and th National Society of Professional Enginee that AIA Executive Director Edmund I Purves remarked "I never saw the thre groups so solidly united in my life."

Target of their joint wrath was an Arm proposal to figure its fees to architects an engineers merely by computing their cos of doing business (drafting, social secu ity, blueprinting, rent, office help), addin a percentage of that for "profit." AI objection: the scheme allows nothing f contingencies, nothing for know-how, abi ity or experience; yet the chief item bein purchased is brain power.

The Army proposal was contained in draft of a forthcoming technical manu presented to the professional societies b Maj. Gen. G. J. Nold, freshman depu chief of Army Engineers. Although Nav and Air Force brass joined the conferenc they kept mum about whether they ha similar plans up their sleeves.

On another point, the projected manu would represent a victory for the AIA. would specifically forbid letting architec (and engineers) bid against each other a fee basis.

ECA HOUSING team aids We pick house designs

The trouble sounded all too familiar. West Germany, postwar construction housing for workers was ailing. Amo other things, landlords found it too cost to build in the face of tight rent contro Besides, strict building codes hamper use of new materials. This month, t Economic Cooperation Administration w try to give German home building a sh in the arm. A five man team of U. housing experts, headed by Prof. Walt F. Bogner of Harvard's Graduate Scho of Design, is joining eight German exper in Frankfort to begin judging some 2 plans by German designers & builders f 6,000 housing units in 14 West Germ cities. Some winning plans will be bu by private enterprisers, some by the Bo Government. Most cities have offered fr sites. All must waive obstructive regul tions if they conflict with architects' blu prints. ECA chiefs hope the project th will demonstrate to Germans the value modern design and cost-cutting metho The German Government has earmarked million deutschmarks ($7,140,000) fr ECA counterpart funds to build its sha

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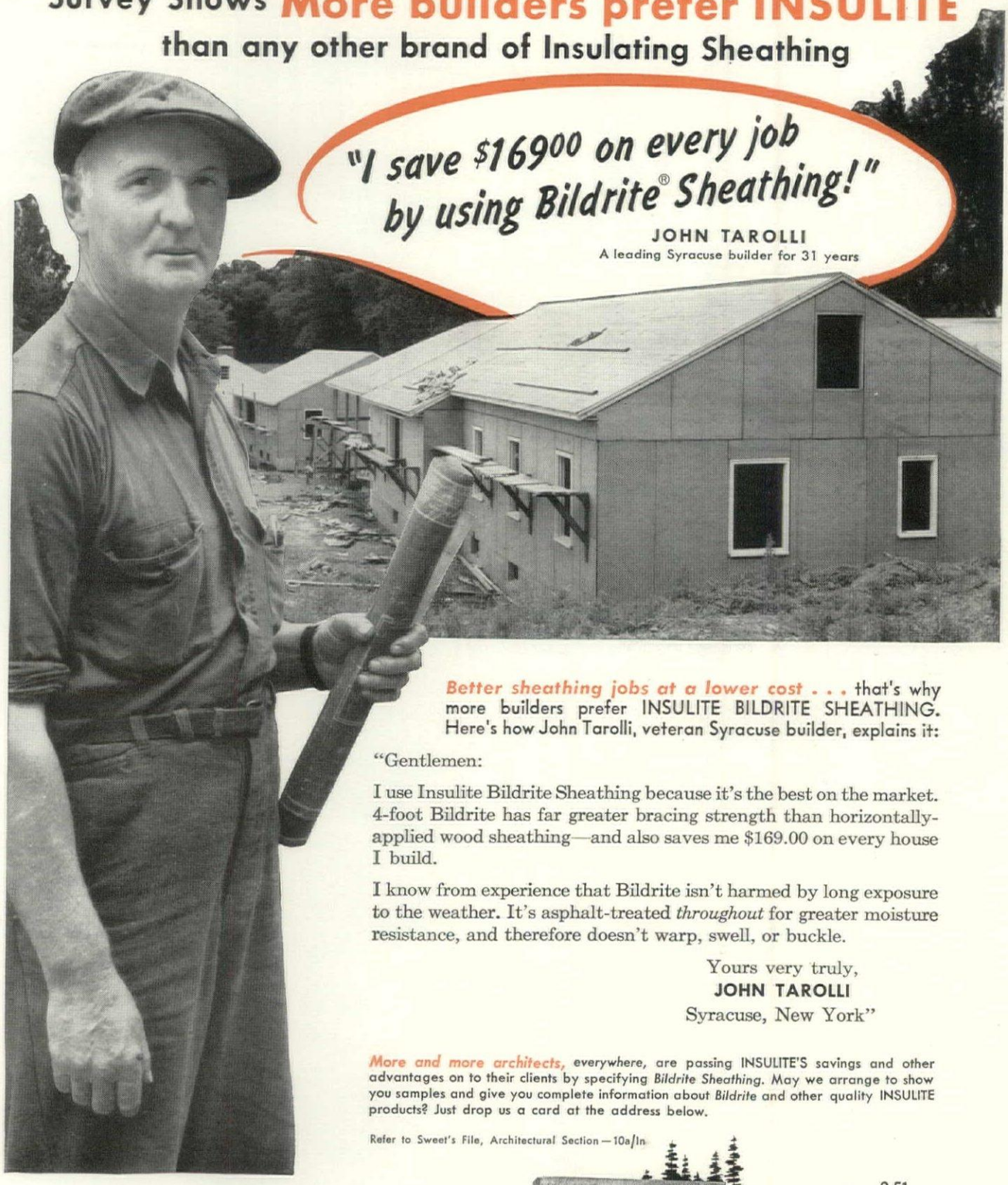

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"Gentlemen:

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I know from experience that Bildrite isn't harmed by long exposure to the weather. It's asphalt-treated *throughout* for greater moisture resistance, and therefore doesn't warp, swell, or buckle.

Yours very truly,
JOHN TAROLLI
Syracuse, New York"

More and more architects, everywhere, are passing INSULITE'S savings and other advantages on to their clients by specifying *Bildrite Sheathing.* May we arrange to show you samples and give you complete information about *Bildrite* and other quality INSULITE products? Just drop us a card at the address below.

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

9-51

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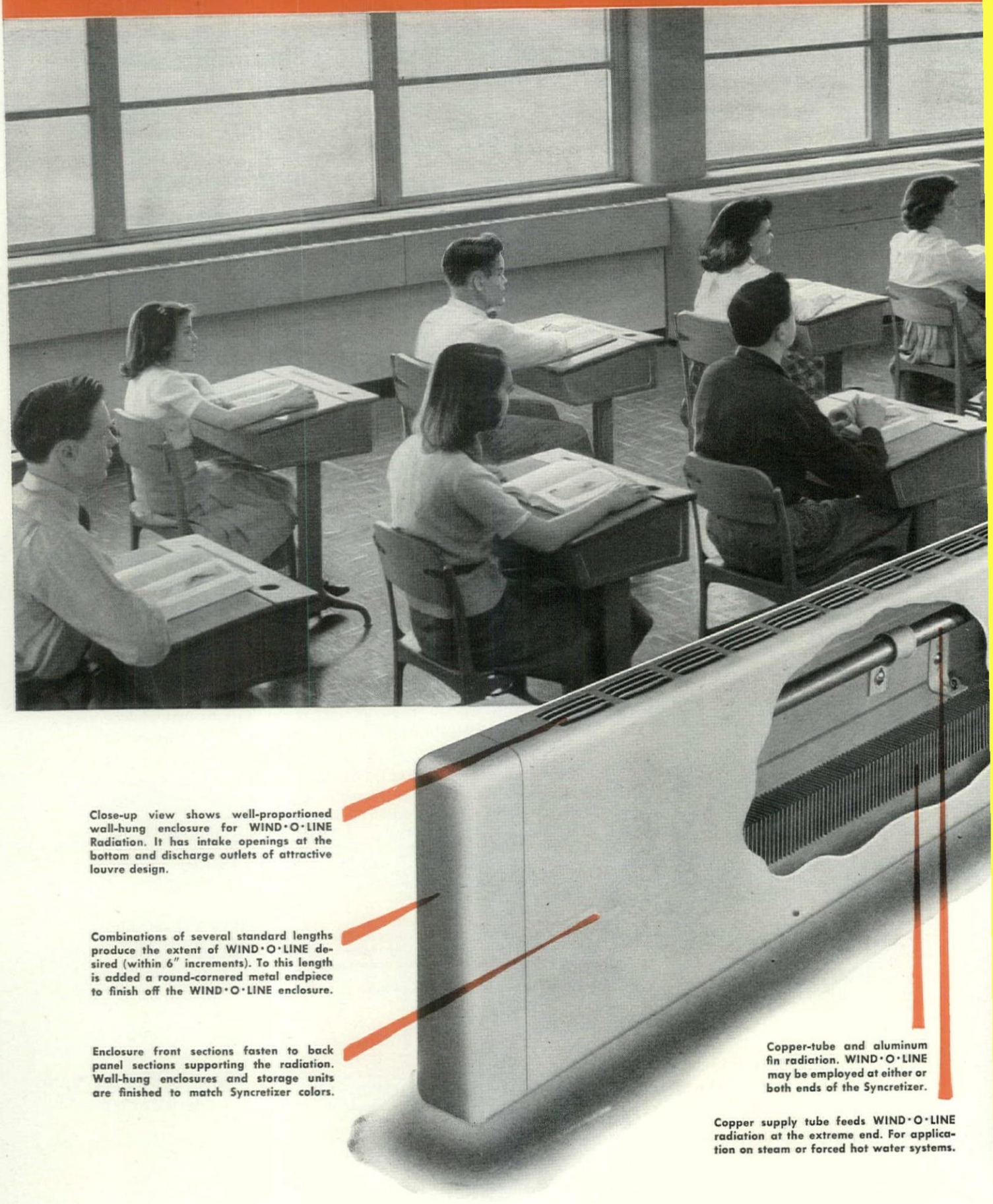
Answers the "WALL-OF-ICE" Problem . .

NESBITT SYNCRETIZER wit



Close-up view shows well-proportioned wall-hung enclosure for WIND·O·LINE Radiation. It has intake openings at the bottom and discharge outlets of attractive louvre design.

Combinations of several standard lengths produce the extent of WIND·O·LINE desired (within 6" increments). To this length is added a round-cornered metal endpiece to finish off the WIND·O·LINE enclosure.

Enclosure front sections fasten to back panel sections supporting the radiation. Wall-hung enclosures and storage units are finished to match Syncretizer colors.

Copper-tube and aluminum fin radiation. WIND·O·LINE may be employed at either or both ends of the Syncretizer.

Copper supply tube feeds WIND·O·LINE radiation at the extreme end. For application on steam or forced hot water systems.

WIND·O·LINE



ONLY NESBITT GIVES YOU THIS THERMAL BLANKET

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

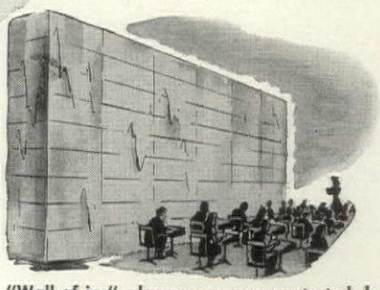
WIND·O·LINE Radiation achieves a positive result entirely unlike that attained by any other means of auxiliary heating. WIND·O·LINE is controlled in cycle with the Nesbitt Syncretizer to provide a blanket of heat at the sill line whenever heating is called for in the classroom. This heat warms the window downdraft and deflects it upward into the region above the heads of the room occupants.

WIND·O·LINE finned-tube radiation has been designed for two methods of integration with the Nesbitt Syncretizer: 1) *wall-hung* in its own casing; and 2) *recessed* in the storage cabinets of The Nesbitt Package.

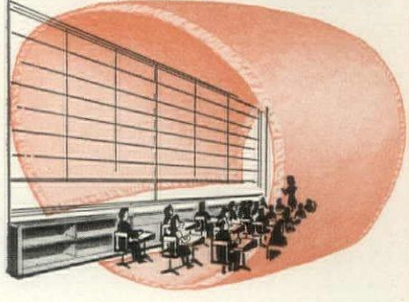
Wall-hung WIND·O·LINE is used with the free-standing Syncretizer. Its attractive casing is provided with air-intake openings at the bottom and discharge grilles at the top. Wall-hung WIND·O·LINE is installed just below the windows to extend from both ends of the Syncretizer unit ventilator for the full length of the sill, as pictured here.

As a component of The Nesbitt Package, WIND·O·LINE Radiation is concealed in a channel at the rear of the storage cabinets. The cabinets are provided with air-intake openings at the toe-space and attractive grilled outlets at the back of the display board.

For further information request Nesbitt Publication 264, or Engineering Data Publication 261, Section W.



"Wall-of-ice" classrooms are protected by the Nesbitt Syncretizer with WIND·O·LINE.



The Nesbitt Syncretizer

THE UNIT VENTILATOR THAT SETS A NEW STANDARD OF CLASSROOM COMFORT

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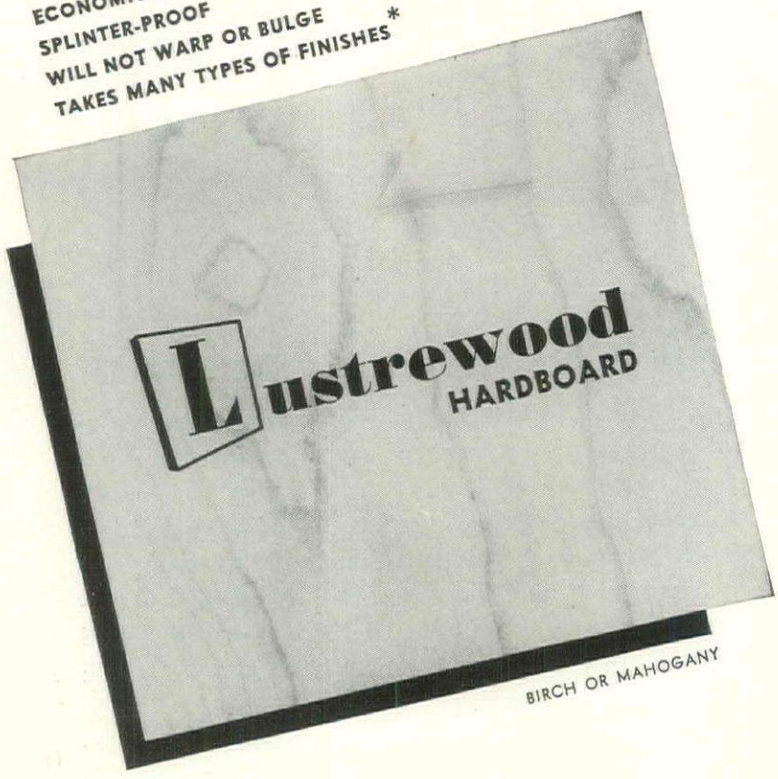
SOLD ALSO BY AMERICAN BLOWER CORPORATION

ECONOMICAL
SPLINTER-PROOF
WILL NOT WARP OR BULGE
TAKES MANY TYPES OF FINISHES*



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of Natural Wood Grains

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Breakfast Rooms
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HIGHLY WORKABLE
SAVES MONEY
SAVES TIME

correct dress for good construction

ASK YOUR LUMBER DEALER FOR
Lustrewood
GOOD BUSINESS FOR YOU

The LUSTREWOOD Process Company
in Bristol, Connecticut
Division of Frederick J. Raff Company

*See specifications

LETTERS—THE MORTGAGE CRISIS

• *The Round Table discussions of the mortgage crisis reported in the June and August issues have prompted many readers to express their agreement or disagreement with the Round Table experts (see letters, below). The dissenting viewpoint is presented most comprehensively by the U. S. Savings & Loan League's Executive Vice President, Morton Bodfish (letter, p. 98).*

Reader comment on other subjects begins on page 102. Particularly noteworthy are the comments of advertisers to this magazine's recently announced ceiling on advertising pages (same page) and Reader Ray Berry's observations concerning the design of contemporary churches in relation to pipe organ music (p. 116).—ED.

THE MORTGAGE CRISIS

Evidence of an emergency

Sirs:

Your Round Table report . . . is a fair size-up

The 4¼% gross FHA rate on Section 203 loans and the maximum 4% gross interest rate on GI loans are both unrealistic in the present market. . . . A change in these rates to 4½% would go a long way toward relieving the situation. Granted this change in rate would not cure the situation overnight but it would encourage life insurance companies to go back into the insured loan market.

MURRAY WATERS, *Vice President*
Aetna Life Insurance Co.
Hartford, Conn.

Sirs:

. . . During the past year we handled approximately $2 million in veterans loans and are now faced with no possible source of mortgage money, as well as having been cut off with approximately $500,000 of applications pending. . .

I am glad to see that your group is studying this problem and hope that some pressure can be brought in the proper places of government to effect the necessary changes in interest rates and keep the building industry and the mortgage market on an even keel.

W. H. MURRAY
Real Estate & Insurance
Modesto, Calif.

Sirs:

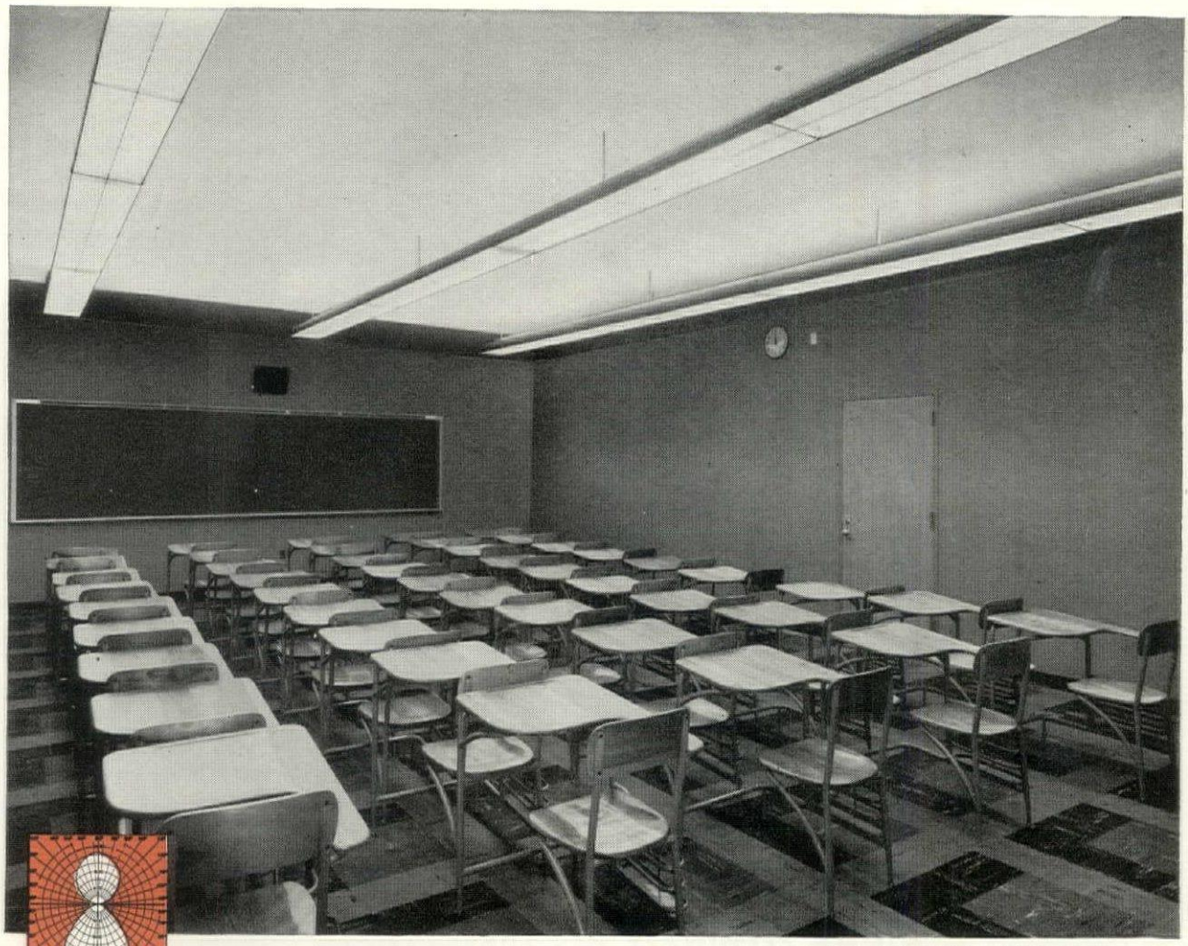
. . . A splendid presentation—the best I have seen anywhere on current conditions in the mortgage market.

B. W. HORNER, *Executive V. P.*
National Mortgage Co.
Memphis, Tenn.

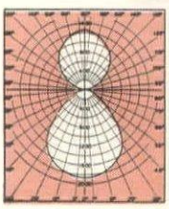
Sirs:

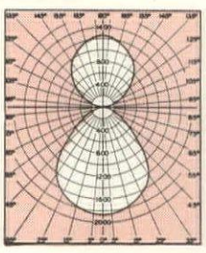
Congratulations! I wish that everyone who has any connection with the building of homes could and would read this report.

(Continued on page 88)



North Huntington High School, Irwin, Pennsylvania*
Architect: Sorber & Hoone; Elec. Engr.: W. F. Lenz;
Elec. Contr.: Reno Electric Co.





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*Utilizing "Monroe" 2-lamp Slimline Units mounted end-to-end; 25/35° shielding; 83% efficiency.

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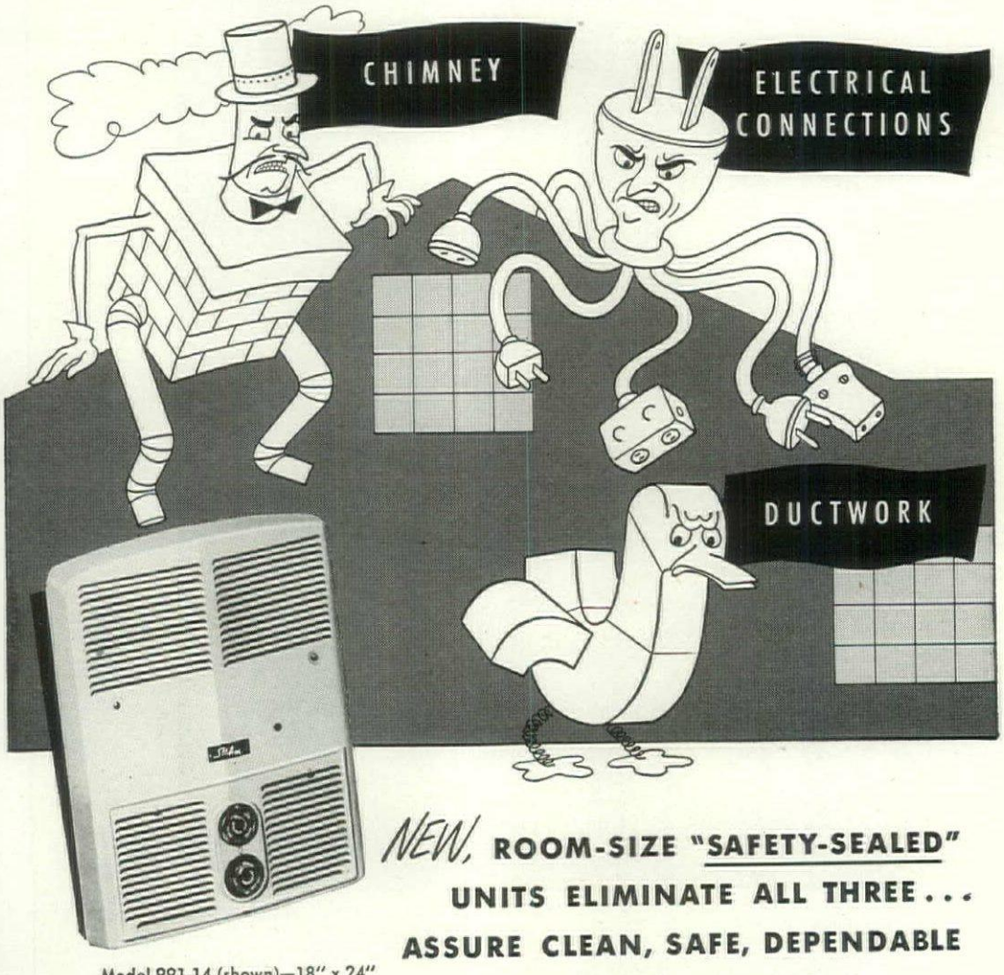
Permaflector Lighting Engineers in All Principal Cities

PITTSBURGH PERMAFLECTORS ARE DISTRIBUTED BY BETTER ELECTRICAL WHOLESALERS EVERYWHERE

Kick out these heating nuisances when you need to cut costs!



Model 991-14 (shown)—18" x 24"
Model 992-20—18" x 38½"

NEW, **ROOM-SIZE "SAFETY-SEALED" UNITS ELIMINATE ALL THREE . . . ASSURE CLEAN, SAFE, DEPENDABLE GAS HEAT FOR *LESS!***

***Here* you gain** all the advantages of central heating—without central heating cost. *Here* you gain big savings in chimney, ductwork and electrical costs—*for no chimneys, ductwork or electricity is required.* By burning gas in a sealed combustion chamber, then venting all combustion products outside after use, these compact units bring a degree of safety never possible before in gas heating. Bring you savings in floor space by eliminating the need for a utility room or central heating source.

Fully automatic, room-size units assure warm, steady, chill-chasing comfort. Free from drafts, free from "cold spots". Zone-controlled to suit individual room requirements. Installation—in any exterior wall of brick, wood or cement block construction is quick, easy, really low in cost.

Upkeep . . . maintenance? Always at a minimum. Trouble-free "Safety-Sealed" units have no moving parts to maintain or replace. Operate silently and dependably on either natural, manufactured or LP gas. All in all add up to a better heated, better designed, more saleable home.

Consider all these advantages . . . the real savings against rising building costs, greatly simplified heating plan, *plus* the added desirability of a heating system that completely solves moisture problems of combustion products in tightly insulated small homes. You'll want to specify and recommend "Safety-Sealed" gas heating on every job possible!

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Dept. K-91, 1514 Drover Street, Indianapolis 7, Ind.
Please send me specifications and complete details on "Safety-Sealed" Saf-Aire Gas Heating Units.

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LETTERS—THE MORTGAGE CRISIS

The need for allowing the home building industry to compete for credit on an equal basis is urgent, not only from the standpoint of preventing too great a drop in activity during the latter part of 1951 and 1952, but also because, once the industry loses its position of competing for the consumers' economic dollar, it will require a long time to regain it. . . .

J. C. TAYLOR, JR.
American Houses, Inc.
New York, N. Y.

Round Table goes to school

Sirs:

Your story on the mortgage crisis arrived in time for the Graduate School of Banking lecture and fitted into our course very nicely. . . .

To me the most significant part of the whole thing was the fact that here was an example of private enterprise doing something about a national problem without waiting for Government intervention. . . .

HOWARD B. SMITH, *Pres.*
The Middletown Savings Bank
Middletown, Conn.

Away with the government crutch

Sirs:

No doubt about it—we are flat on our back! Like dope addicts we were knocked out when the government "pop" ran out.

We all ate pretty well prior to these stimulants. I would like to see us "take the cure" and throw away the governmental crutch of VA loans, FNMA and, yes, even FHA and not get out of bed until we can walk on our own again.

All a policy of continually easing credit does is help us this year rob future years of prospective homeowners.

LOUIS REESE, JR.
Reese-King Realty Co.
Birmingham, Ala.

A central discount bank

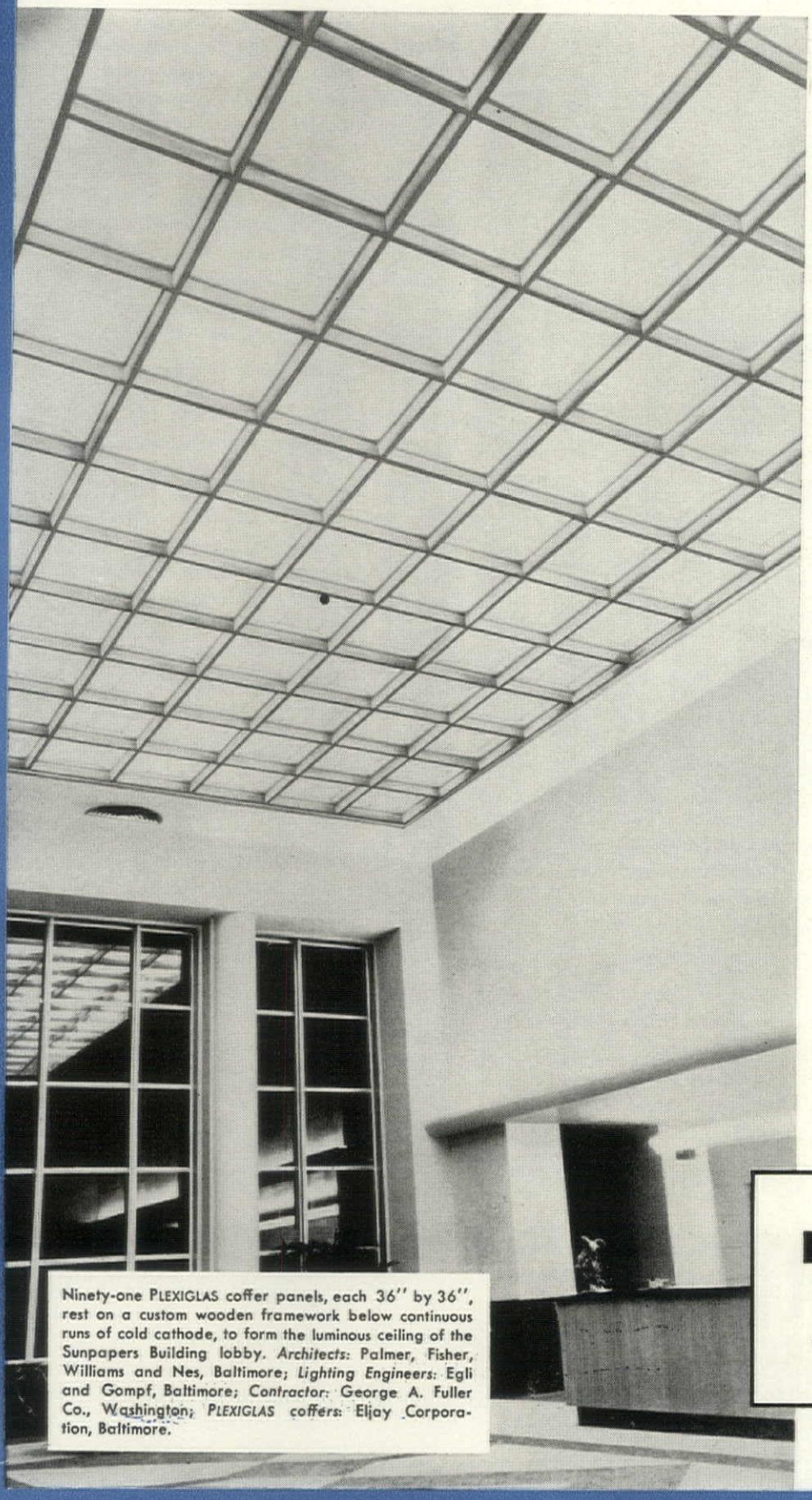
Sirs:

The suggestion by Mr. William A. Clarke, in the June Round Table report that the country needs a central discount bank for long-term credit was of great interest to me. As far back as 1927-28 my father advocated an agency of some type similar to the Federal Reserve, but capable of relieving the situation created by the burden on the money supply imposed by the mounting capital debt structure, just as the Federal Reserve had been created to relieve the similar short-term money stringencies caused by such short-term demands as the crop-moving season, etc. . . .

The principal difference between our idea and Mr. Clarke's is that he limits his application to the building mortgage field, whereas we feel that there is a need for a stabilizing factor for the entire capital structure of the country. The building industry probably represents the largest por

(Continued on page 90)

How a PLEXIGLAS Luminous Ceiling Solved a Design Problem



Ninety-one PLEXIGLAS coffer panels, each 36" by 36", rest on a custom wooden framework below continuous runs of cold cathode, to form the luminous ceiling of the Sunpapers Building lobby. *Architects:* Palmer, Fisher, Williams and Nes, Baltimore; *Lighting Engineers:* Egli and Gompf, Baltimore; *Contractor:* George A. Fuller Co., Washington; *PLEXIGLAS coffers:* Eljay Corporation, Baltimore.

Problem: To light this spacious, high-ceiling lobby of the new Sunpapers Building in Baltimore, and maintain its clean architectural design. Solution: A luminous ceiling of PLEXIGLAS acrylic plastic panels.

With PLEXIGLAS luminous ceilings, lighting becomes an architectural component, not a design afterthought. The white translucent diffusers — corrugated, flat, or formed into three-dimensional shapes—conceal lamps, ducts and pipes *completely*. Yet the output of the lighting source is utilized fully, due to high transmission efficiency. The luminous area overhead is the visible source of light—a lighting fixture as big as a room.

Other advantages: Complete, uniform diffusion; high illumination levels with low source brightness; control of brightness ratios; reduction of glare, shadows, and specular reflection to a minimum; the creation of a luminous environment. And the light weight and strength of PLEXIGLAS give freedom from breakage during installation and maintenance, and safety overhead in service.

Our new booklet—PLEXIGLAS LUMINOUS CEILINGS—outlines design considerations and presents case studies. Write for your copy today.

• A substantial volume of PLEXIGLAS production, now at record levels, is required for the defense mobilization program. The supply available for civilian applications is limited.

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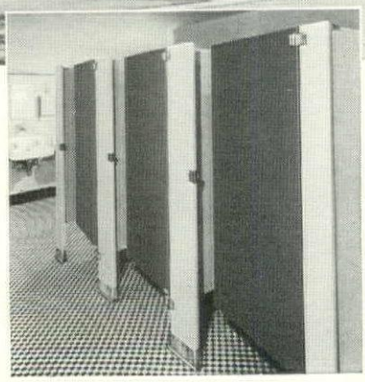
PROVED SANITATION
IN WEISART COMPARTMENTS



New Food Service Building, Indiana University Medical School. All toilet rooms are equipped with WeisArt compartments. Edward D. James, Architect. Eggers and Higgins, Supervising Architect. WeisArt Compartments have previously been installed in the University Administration building and dormitories.



of Bonderized, Galvanized Steel with High Baked Enamel Finish in Choice of 24 Colors

In their search for the very finest in appearance, sanitation and structural integrity, architects find a most satisfactory answer in WeisArt toilet compartments. These are the qualities which have led to the rapidly increasing choice of WeisArt for university, institutional, office and public buildings of every type.

Doors, stiles and partitions are of flush steel construction with edges locked and sealed. Bonderized, galvanized surface is smooth as furniture steel. Lustrous beauty of the smooth enameled surface is easily kept spotless and sanitary over long years of trouble-free service.

Write for specifications and information on colors available.

WEISART COMPARTMENTS

HENRY WEIS MFG. CO., INC.
902 Weisway Building, Elkhart, Indiana

tion of transactions within this capital structure, however.

It is held by some that the Federal Reserve as it now operates supplies the entire money market adequately, but this presents an unfortunate "tail-wagging-the-dog" situation, where the relatively small short-term credit system controls the money supply for the much larger long-term credit structure, in spite of the fact that the two are only loosely interrelated. There are often times when the supply of money, tied as it is to the commodity transactions alone, will make an abrupt plunge, while long-term transactions would conceivably be on a level or even rising plane. To make an illustration, it seems asinine that a person's plans to build a home should be restricted by a fluctuation in the automobile industry. . . .

JOHN FREDERICK DUGGAR III, *Architect*
Hope Hull, Ala.

Better lender-builder relations

Sirs:

One of the best results which may come from your Round Table will be a better understanding between lenders and builders of the money problems of our business, as considered from the two viewpoints. . . .

GEORGE S. METCALFE, *Pres.*
Roosevelt Federal Savings & Loan Assn.
St. Louis, Mo.

Trouble down South

Sirs:

I too am of the opinion that the credit curbs on housing penalize the South. . . .

A regional instead of a national credit control plan would be better. . . .

R. A. THOMPSON, JR., *Housing Secretary*
The Atlanta Urban League
Atlanta, Ga.

Sirs:

. . . You covered the situation thoroughly. . .

It would be a terrible thing for the South if the insurance companies did not come back into the FHA loan market.

FNMA should give prior commitments on individual firm FHA commitments, as banks here are afraid to close a loan and hold it for 60 days for fear FNMA might be out of business at that time.

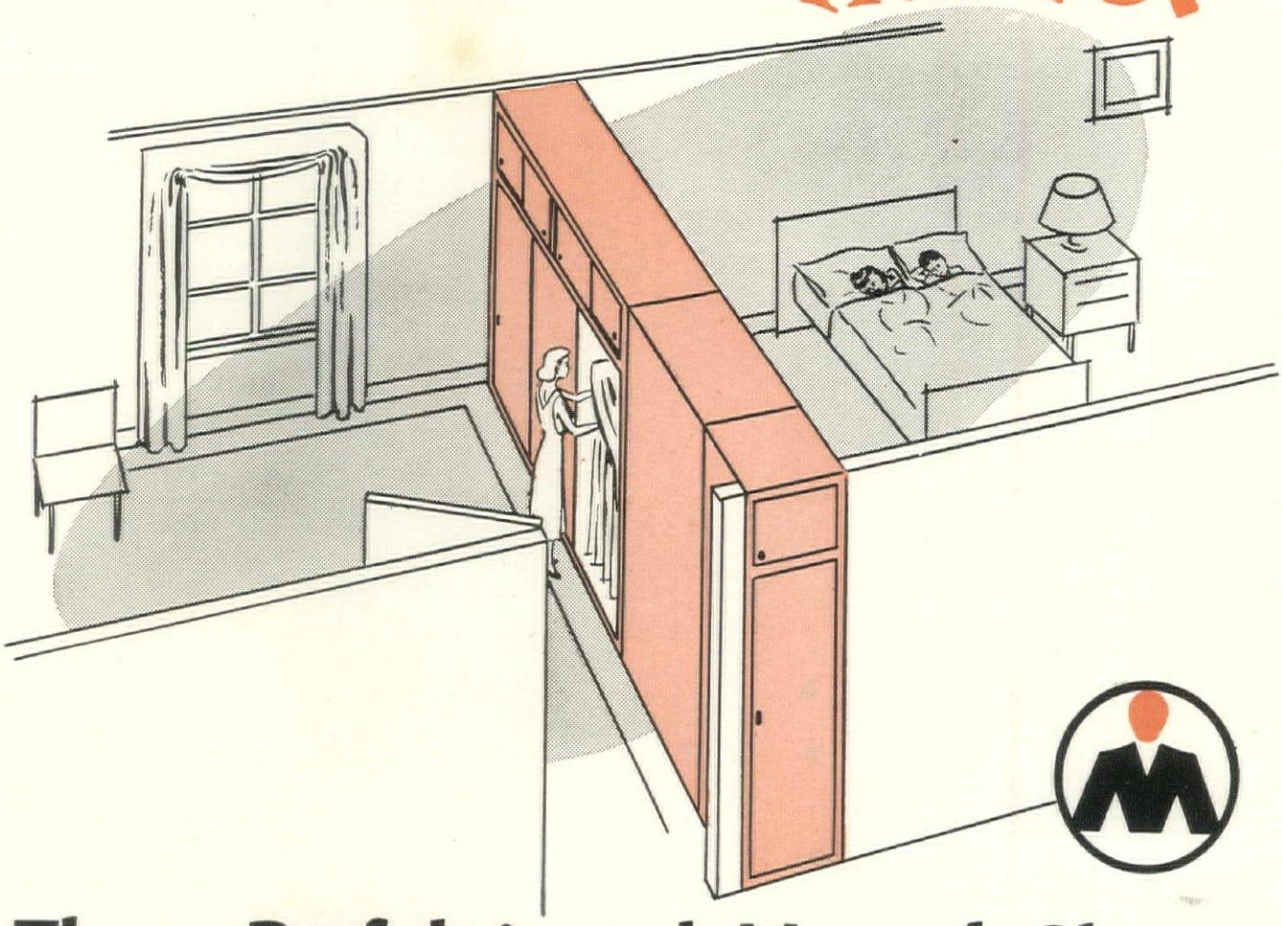
If the insurance companies do not start buying FHA loans again soon, it will give our socialistic Congressmen an opening to make direct government FHA loans like the VA is now doing.

FHA should be set up as a government corporation, not dependent upon Congress each year for authority and funds. This is one agency that operates at a profit.

L. E. CHASEY
Mortgage Loans
Lake Charles, La.

(Continued on page 92)

IT'S MENGEL *MAGIC!*



Three Prefabricated Mengel Closets Make a Sliding-Door WALL!

HUNDREDS of users have discovered the magic of Mengel Closet Walls — magic that enables you to provide bigger, better, more accessible storage areas, *at the cost of conventional closets alone.*

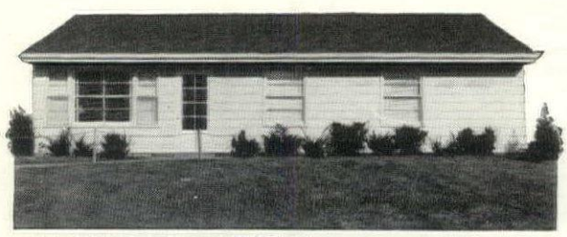
Pictured above are three prefabricated Mengel Closet Walls installed to form a room partition. Note how the back of each closet "doubles" as a wall for the adjoining room. Result — over 90 sq. ft. of wall space is created, without studding, lath, or plaster. Elimination of wood-stud construction increases closet space by 25-40% — and Mengel Closet Walls are designed to fully utilize every inch of their greater area.

Mengel Closet Walls are available in a variety of sizes and models, in natural Birch or prime coated for painting. They are completely prefabricated for fast assembly — shipped to the job K. D. with front frames and sliding doors assembled. Mail the coupon for complete specifications and data.

THE MENGEL COMPANY

Growers and processors of timber . . . manufacturers of fine furniture . . . veneers . . . plywood . . . flush doors . . . corrugated containers . . . kitchen cabinets and sliding-door wall closets . . . largest manufacturer of hardwood products in America.

Cabinet Division
Louisville 1, Kentucky



Prefabricated Mengel Wall Closets are one of the outstanding features in 544 homes being built by the Burton W. Duenke Building Company in St. Louis.

Cabinet Division — Dept. MB-9
THE MENGEL COMPANY
1122 Dumesnil St., Louisville 1, Ky.

Gentlemen: Please send me complete information about Mengel Closet Walls.

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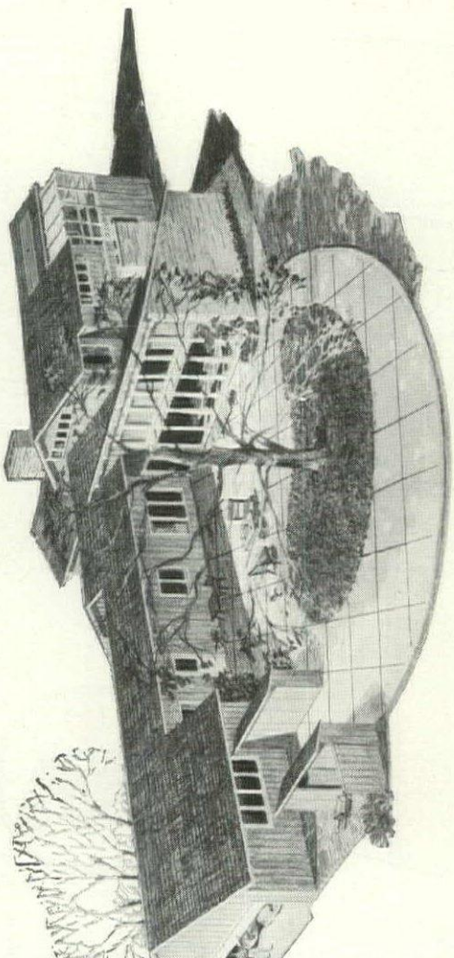
Firm.....

Street.....

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

SOSS Invisible **HINGES** STREAMLINED THE DOORS IN THIS MODEL HOME!



And the people talked and talked and said the nicest things about the house, the architect and the Soss Invisible Hinges.

These modern Soss Hinges eliminated unsightly, protruding hinge butts in this House Beautiful Home. They made it possible for the architect to create unusual, strikingly smart, fashionably flush interiors that fully reflected his own and his client's good taste.

You, too, will find "the hinge that hides itself" ideal for use with flush doors, kitchen cabinets, wall panels . . . and for making people comment upon your skill in modern design.

For complete information and FREE BLUE PRINT CATALOGUE write to:

SOSS MANUFACTURING COMPANY

21779 Hoover Road, Detroit 13, Michigan

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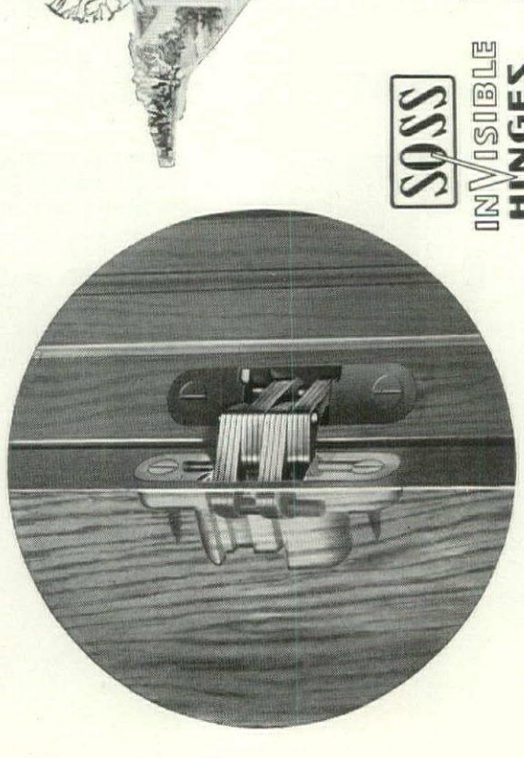


"the hinge that hides itself"

A. I. A. File No. 27-B-1

LETTERS—THE MORTGAGE CRISIS

Is FHA insurance worth the price?

Sirs:

I believe immediate relief can be provided . . by making conventional loans, i.e. non-FHA. Under Regulation X houses selling for $11,500 or more can carry a loan of only 75% or less of the selling price.

Is the insurance provided by an FHA loan necessary or worth the cost on a loan of 50% to 75%?

Conventional loans in this area can command an interest rate of 5% to 5¼%.

If the "new type of tenancy" mentioned in your article is to be maintained, pressure must be brought to bear on Congress to restore FHA to the status of an instrumentality "to promote the construction and sale of low-cost housing" and to eliminate it as a regulatory agency which it has become. I believe this can be done by allowing interest rate on loans, when originated and not during their life, to fluctuate with the money market or by allowing a more flexible discount rate, to be paid by the borrower or perhaps by a combination of the two. . . .

GENE ROUSE
North Hollywood, Calif.

Better houses would solve the problem

Sirs:

Has not the home building industry already fallen into the trap of over-reliance on Federal government aid? The extreme liberal credit terms available to builders and homeowners under FHA and VA contain, I suspect, substantial elements of government subsidy. If such were not the case, why would not private lending agencies, which we know are highly competitive, be willing to undertake such loan commitments without the government guarantees? The answer seems to be that such loans must be non-economic. The result has been in effect that the Federal government has facilitated the purchase of millions of homes which by your own standards are already antiquated in respect to both design and construction methods. Such reason leads directly to another observation:

We know that today there are cheaper ways to build better homes. One of your own Round Table discussions forcibly emphasized this point. If withdrawal of Federal subsidy to home building under FHA and VA will at this stage force the building industry to modernize design and methods, the end result must be all for the good. If design and construction methods can be sufficiently modernized to reduce the overall cost of homes 20% to 40%, it seems reasonable to hope that private lending agencies would then be willing to step into the breech and make the type of loan commitments which now they will make only with government guarantees. Perhaps a new era in the home building industry is dawning. . .

COLEMAN MORTON
Capital Research Co.
Los Angeles, Calif.

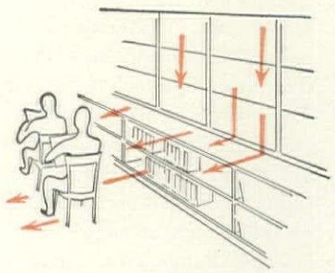
(Continued on page 94)

IT'S A COLD BEAR FACT

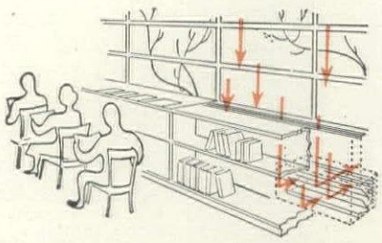


DRAFT | STOP will stop drafts

TRADE MARK



BAD WAY *for ventilation to function shows how chilling drafts threaten health of students. It isn't necessary any more.*



GOOD WAY *to solve the problem is illustrated by* DRAFT | STOP *which gets drafts at the start. Only Herman Nelson has* DRAFT | STOP.

STUDENTS shouldn't have to put up with polar atmosphere in a modern classroom. The new DRAFT | STOP System perfected by Herman Nelson eliminates drafts, helps reduce threat of colds and sickness; makes for more efficient study. Chilly air from the surface of cold window panes causes hazardous drafts. They can be injurious to health and are distractingly uncomfortable.

Today's large window areas in school classrooms make installation of the DRAFT | STOP System imperative. If you have responsibility for the construction of schools, you have the attending problem of proper equipment installations for good heating and ventilating. DRAFT | STOP is the right answer. For complete information write Dept. B-9.

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Division of **AMERICAN AIR FILTER COMPANY, INC.**

MOLINE, ILLINOIS







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

Plascor comes in 8½″, 11″, 17″ and 34″ square sheets, ⅛″ thick and in a full color range, with matching cove base available. It is laid in the conventional manner, over wood and concrete.

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

QUIET AND COMFORTABLE — Plascor is unusually quiet, and comfortable to walk upon. Its resin-dipped cork content makes it truly resilient. Ideal for hospitals, libraries or offices where quietness is a must. Plascor stills heel clackety-clack to a whisper . . . absorbs noise, cushions shock . . . lessens foot and leg discomfort.

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

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

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





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AKRON, OHIO • SINCE 1865 • MANUFACTURERS OF
CORROSION-RESISTANT MATERIALS AND EQUIPMENT

LETTERS—THE MORTGAGE CRISIS

The welcome day of reckoning

Sirs:

As a mortgage banker, we believed that a day of reckoning was due. It is here now. Our business will be healthier for its coming early enough to prevent really serious trouble. Sure it reduces our present volume of business, but we believe that most firms like ours have enough business on the books, created from the boom, to keep us busy through August and September. And by that time we expect to see the first signs of adjustment.

Reports of the life insurance companies show a larger than ever volume of new insurance is being written. That means more premiums than ever being paid. In our office we continue to have high prepayments of mortgages. All of that means more cash that must be invested by the insurance companies. We represent insurance companies. We know that they will *be buying* sound mortgages again in the near future.

We are not too worried now, except for one thing. We can't give any encouragement to real estate men or builders who want to sell to veterans, or to veterans who want to buy, on providing funds for GI loans. We are getting more requests for information about the direct Government loans to veterans. . . .

L. L. Freeman, *Pres.*
L. L. Freeman Inc.
Racine, Wis.

A blessing in disguise

Sirs:

The really acute areas of money shortage for insured loans are principally those which have had a rather spectacular growth in the past ten years. This growth has brought with it innumerable civic problems to the communities in question, many of which have had to be met by stop-gap methods. I refer to extensions of sewer and water, paving of streets, building of schools, providing of limited access highways to the periphery of the city, and so forth. Of necessity all of these things must lag behind new housing, but their planning must assume certain fundamental rates of continuance.

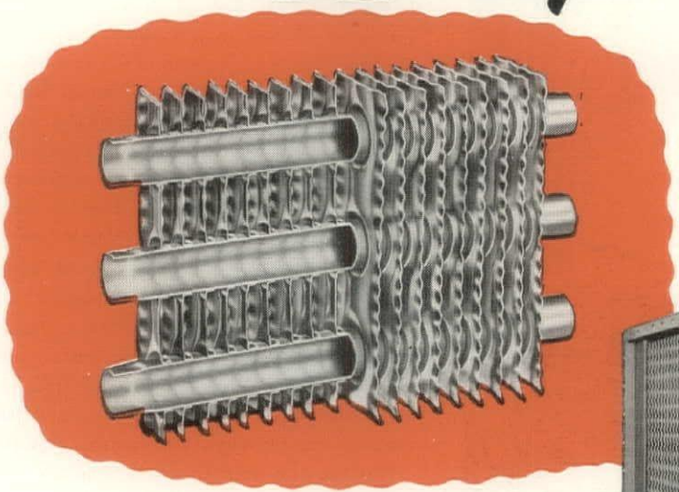
It is much sounder for the economics of these communities to have occasional periods of digestion than to have an uninterrupted building boom which continues to utmost length and then collapses. It is the history of growing communities that each period of intensive growth contains a certain percentage of marginal elements which gradually liquidate themselves and are eventually replaced with sounder elements.

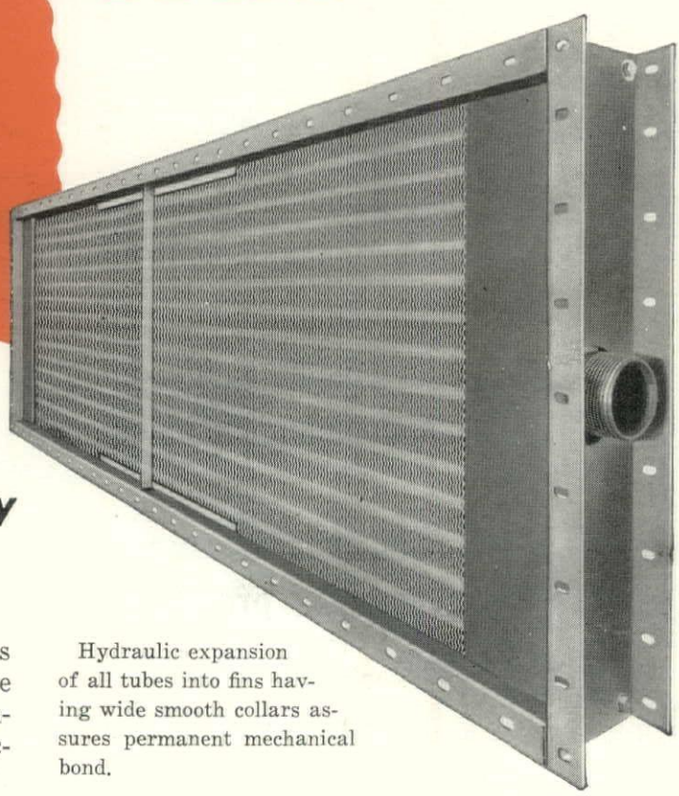
I am old fashioned enough to believe that the present hiatus is a blessing in disguise to some of the cities in California, Arizona, New Mexico, Texas and Florida.

Karl Maier, Jr., *Mgr., Residence Loans*
The Northwestern Mutual Life Insurance Co.
Milwaukee, Wis.

(Continued on page 96)

McQuay's NEW RIPPLE FIN COILS





. . . for heat transfer surface of higher efficiency and more durability!

Now, the new, improved Ripple-Fin makes McQuay Heating (blast) Coils even more rugged and efficient. Consider these advantages of the new Ripple-Fin Coil construction:

Easy to drain of condensed moisture . . . Water hang-up has been sharply reduced on coils requiring vertical (up) air flow.

Permit increased face velocities without danger of moisture carry-over from fin surface to air stream.

Give higher flexible strength with minimum air friction and cleaner operation.

Copper tube headers provide inherent flexibility to accommodate unequal contraction and expansion.

Hydraulic expansion of all tubes into fins having wide smooth collars assures permanent mechanical bond.

Intruded tube holes allow headers to flex and absorb uneven stresses.

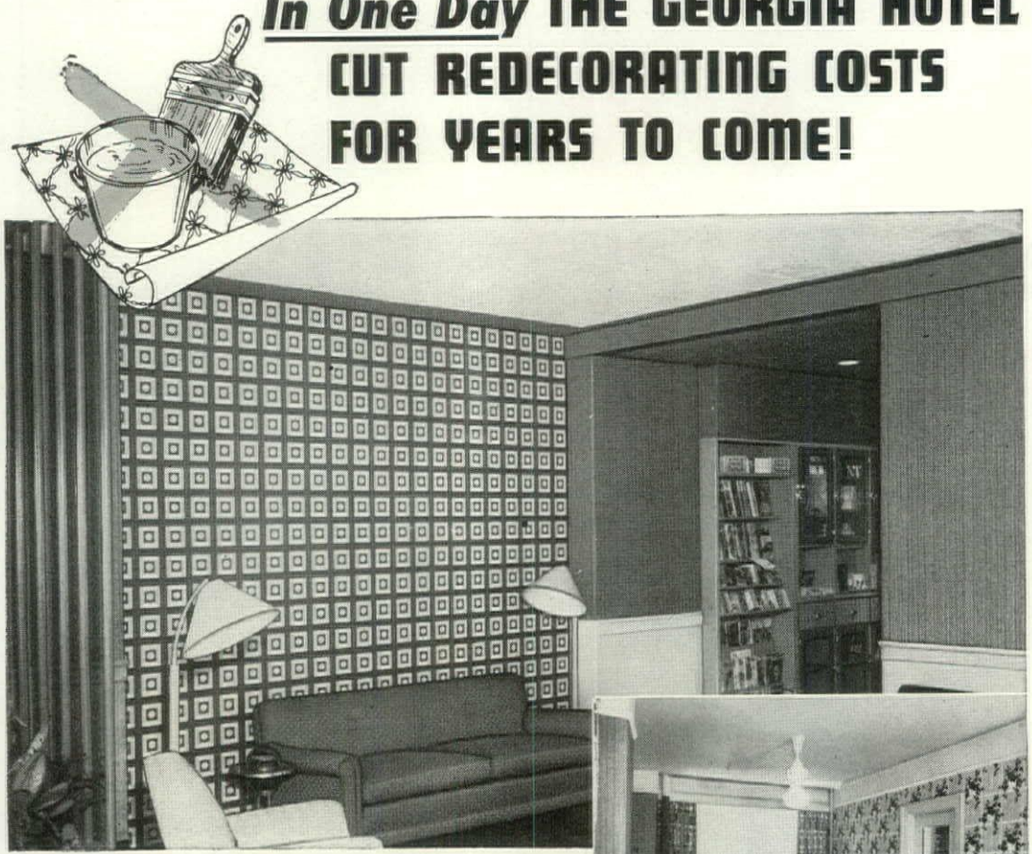
Available in a wide variety of styles and sizes. Both standard and special coils for steam, hot water, cold water, brine, direct expansion, refrigerant condensing, and other applications. Write, McQuay, Inc., 1609 Broadway St. N.E., Minneapolis 13, Minn. Representatives in all principal cities.

McQuay INC.

MAKE THE SEASONS COME TO YOU

HEATING • AIR CONDITIONING • REFRIGERATION

In One Day THE GEORGIA HOTEL CUT REDECORATING COSTS FOR YEARS TO COME!



Maintenance costs were cut for years ahead when the Georgia Hotel, Atlanta, Georgia—under the direction of Manager J. Wade Linder—recently chose Varlar for its 300 rooms, corridors, lobbies.

BUILDING EXECUTIVES EVERYWHERE DISCOVER THE ECONOMY OF DECORATING WITH

VARLAR *Stainproof Wall Covering*

Whenever a building is open to the public—whenever maintenance costs are an annual problem—whenever rooms "closed for redecoration" mean loss of income—that is the building that needs the beauty and economy of Varlar Stainproof Wall Covering. For beautiful Varlar washes with soap and water!

So simple, so quick, regular building cleaning personnel can do it. No skilled decorators are required—a room can be washed down in an hour or two—no need to close off income space for money-wasting redecoration time. Best of all, stains wash away with dirt and grime . . . even stubborn stains like hot grease, lipstick, indelible ink, Mercurochrome.

And Varlar—with its more than 150 charming patterns, is warm and welcoming, the perfect choice for hotel rooms or lobbies, corridors, offices, hospitals, restaurants, theaters. Find out today what Varlar can mean in new beauty—and welcome economy to you.

VARLAR

Stainproof Wall Covering

Merchandise Mart Plaza
Chicago 54, Illinois

Varlar, a division of United Wallpaper, Inc.
Dept. MB9, Merchandise Mart Plaza, Chicago 54, Ill.

Please send me immediately full information about Varlar and how it can solve my decorating and maintenance problems.

NAME_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

LETTERS—THE MORTGAGE CRISIS

Does easy house credit profit anyone?

Sirs:

What makes you think that there is any greater crisis in the mortgage loan market than there is in the market for railroad or public utility bonds, or for industrial preferred stocks?

The basic cause back of this apparent crisis is the fact that present demand for investment funds is greater than current savings. In this situation, someone's demand for investment funds must be denied unless our central banking authorities want to create additional funds for investment purposes through manufacturing bank credit, a process which has taken place already to such an extent during the last few years as to threaten the country with a ruinous inflation. . . .

Investment is running ahead of savings. It must be curtailed. In a free market, a rise in the interest rates is the method used to make this curtailment. Our governmental authorities in addition are helpful to curtail capital expenditures through allocations and priorities and through such credit restrictions as Regulation X. All of us who want to restrict the forces making for inflation should help in this process of curtailment. . . .

Is the situation in regard to house building so critical? . . . This rapid expansion in mortgage credit, made possible to a large extent by over-liberalization of rules governing VA and FHA loans, to a very large degree profited no one but the speculative builder. There is good reason for thinking that it worked to the detriment of the home buyer, through indirectly being one of the causes for the rapid increase in the price of houses, particularly in the lower price brackets. . . . The home buyer has received less for his money, the lender has poorer security for his loan and the principal beneficiary has been the speculative builder who has not been faring badly in the matter of profits during the past decade.

For the first five months of this year both life insurance companies and mutual savings banks have added to their mortgage holdings at a faster rate than for the same period a year earlier. The increase is roughly 3% more than it was in the first five months of 1950. I realize full well that this increase will not continue for the rest of the year, as there is always a lag of at least six months before a decline in building starts causes a decline in the closing of mortgages. . . .

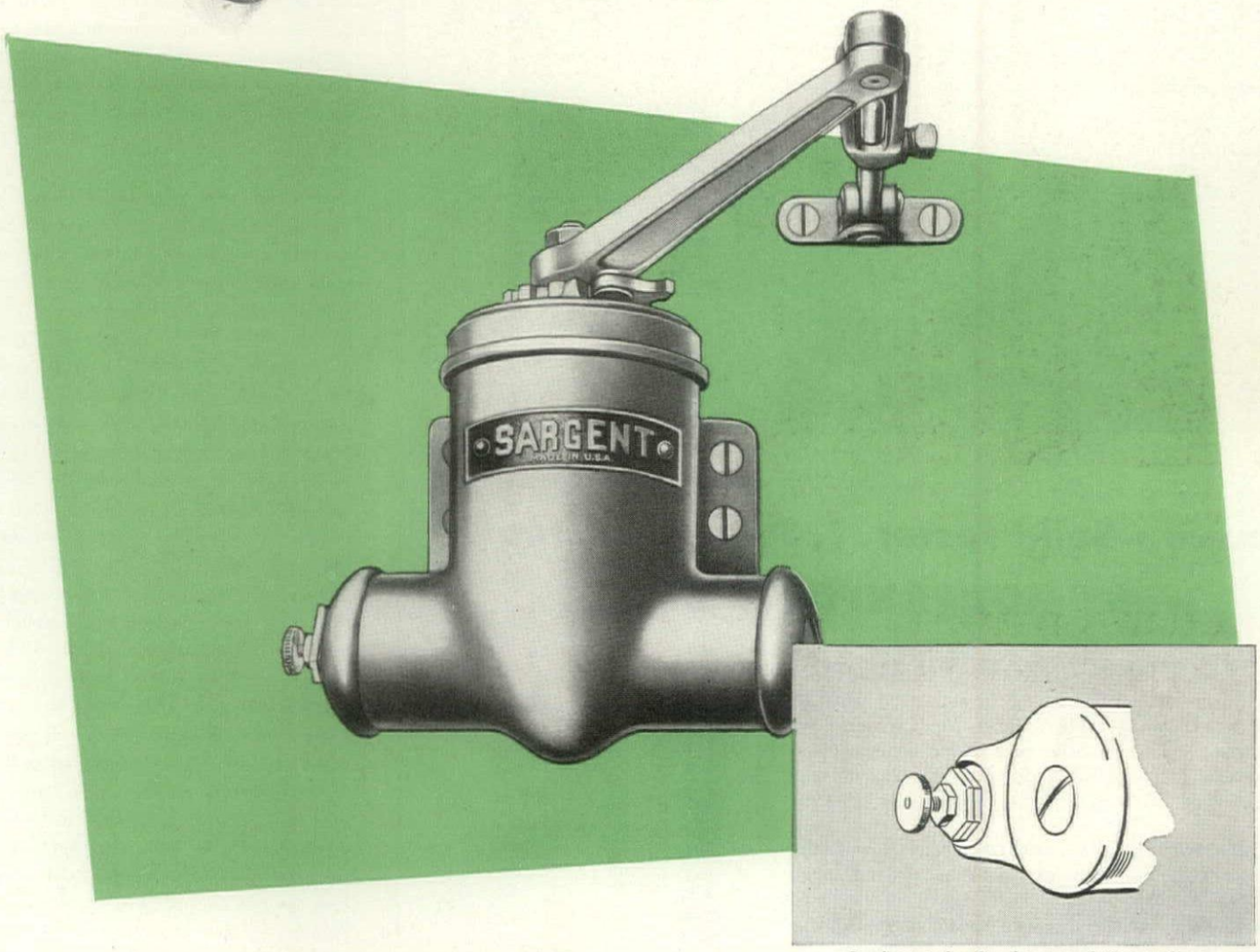
My primary interest in this question does not stem from the fact that I am interested in insurance company investments or in the profits of speculative builders, but rather because I have long been interested in ways and means of providing modest homes at prices which the majority of our people can afford to pay.

CLAUDE L. BENNER, *Pres.*
Continental American Life Insurance Co.
Wilmington, Del.

(Continued on page 98)



The Sargent Door Closer — a family stalwart



Dual control valve for any closing action

• One of the leaders in the Sargent family of builders hardware products is the Liquid Door Closer.

Universal application without changing parts. Double rack and pinion. Two-speed control and easy adjustment.

Nearly 50 years experience in the manufacture of closers make it the leader in the field.

Like our famous Integralocks, 4500 line locksets and exit bolts, there are none better.

For full details on this popularly-priced door closer that assures dependable performance for a lifetime, write Dept. 6J.

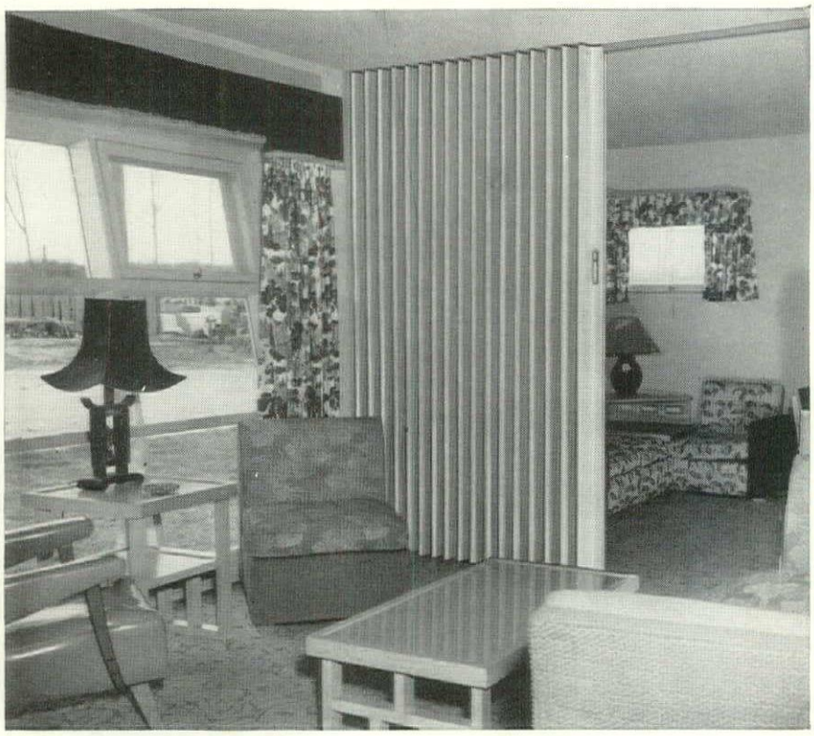
A better product by —

SARGENT®

Sargent and Company

New York NEW HAVEN, CONN. Chicago

Builders Hardware and Fine Tools since 1864



You can Build Faster . . . Sell Faster, too with "MODERNFOLD" Doors

You're looking into the living-bedroom combination of a home in Bucknell Manor, Fairfax County, Alexandria, Va. Clarence W. Gosnell, Inc., builder of 232 homes equipped with "Modernfold" doors, reports he was able to:

SELL FASTER because prospects liked the planned flexibility given them by one large "Modernfold" door. Folding it to the wall creates a massive 30-foot living room . . . unfolding it fully adds an extra bedroom. All this within a first floor area of *only 720 square feet!* Mr. Gosnell was able to:

BUILD FASTER because steel-framed, Vinyl-covered "Modernfold" doors are easy and economical to install. Far easier than a bearing partition; faster and no more expensive than conventional doors that require trimming, fitting, painting, and hardware. Mail the coupon for full details.



"MODERNFOLD" DOORS, in standard sizes, save more than 8 square feet of space that swinging doors waste. Virtually a must for compact apartment kitchens.

NEW CASTLE PRODUCTS
NEW CASTLE, INDIANA

Sold and Serviced Nationally

In Canada: Modernfold Doors, 1460 Bishop Street, Montreal

the doors that fold like an accordion

modernfold DOORS

by NEW CASTLE

New Castle Products
P.O. Box 801
New Castle, Indiana

Gentlemen:
Please send me full details on "Modernfold" doors.

Name_____

Address_____

City_____ County____ State____

COPYRIGHTED NEW CASTLE PRODUCTS, 1951

Savings and loan viewpoint

Sirs:

I do not feel that the major crisis in hom building which was talked about at the Roun Table (June & Aug. '51) has developed and cannot agree that a major disorganization of th home building industry will come early nex year. In fact, some of us expect 850,000 uni in 1952 although, naturally, there will be som lower volume and inconvenience to some larg builders who have been relying on the free an unlimited coinage of federal guarantees an nominal down payment loans to merchandis their houses even in a buoyant and scarci market.

It seems that those who have always soug Federal government credit and guarantees, nom nal and government-controlled interest rates an trick gadgets must face the fact that our countr is both arming itself and part of the rest of th world and is at war, that public policy require a cut-back to 850,000 units as contrasted wit the fantastic year 1950, that Regulation X an the Voluntary Credit Restraint program autho ized by Congress and now led by the Feder Reserve Board is achieving the results intende and that interest rates have risen from ½ to 1 depending upon the varying risk of investmen involved. . . .

You should face the rate situation in conne tion with the VA and FHA paper rather tha persist in your notion of "loading" home pu chasers with the cost of large discounts or larg originating fees. This probably will not be pe mitted and, if permitted, will not do the jo when your interest rate has changed substantiall

Mortgage recordings and commitments ind cate that there is a large and continuing flow mortgage funds and, therefore, we should n be alarmed if the government guarantee age cies are not operating at an all-time high volum Again, we are at war and cut-backs in hou building and restraint in credit is accepted pu lic policy and government activities and guara tees, including public housing, should be t examples and not the exception. Of course, i vestors should attempt to improve their servici methods and decrease their costs. Monthly pa ments of both taxes and insurance and princip and interest over a period of 20 years invol costs not encountered in buying government corporate bonds, and accounting and custom service takes competent personnel and involv executive and staff work time and records th cost money.

Why involve the interest rate on FHA for closure debentures as a matter of urgency an speed in this crisis, so-called? This is not a si nificant problem. Also, those who make a liv lihood from mortgage lending should accept an carry some of the risks. This seems to be esse tial to reasonable caution and judgment in ma ing long-term mortgage advances.

The suggestion that it's time to consider t "creation of a mortgage bank with more ac

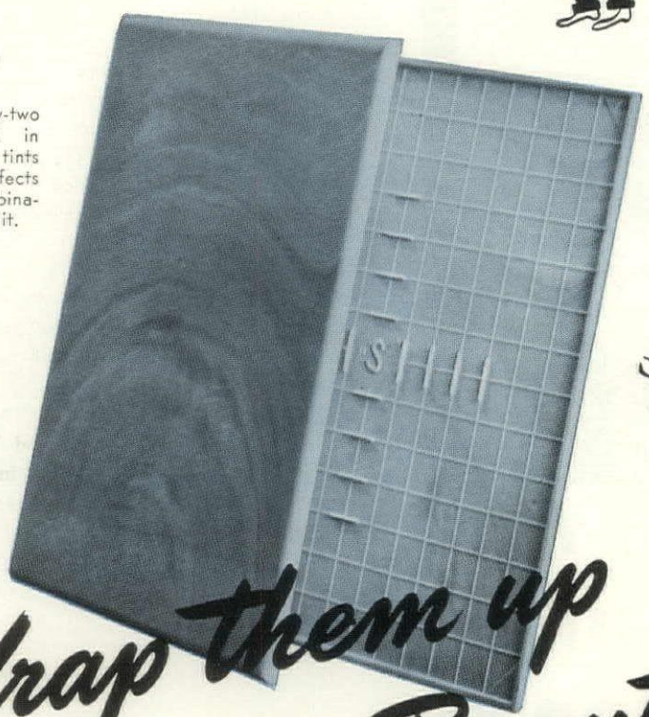
(Continued on page 100)



ompare! Twenty-two eautiful colors in astels, solids, tints nd mottled effects or design combinaons without limit.

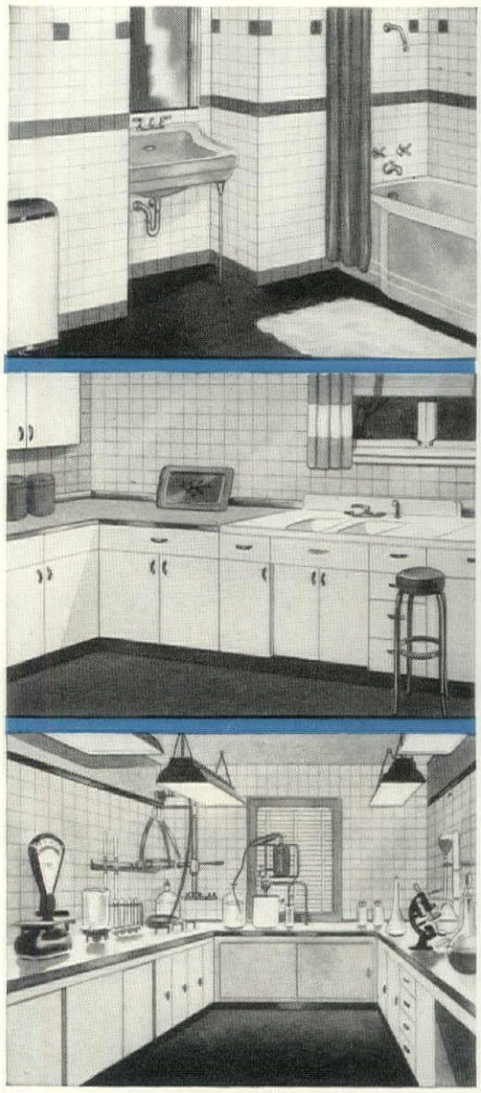
Compare! Stylon Plastic Wall Tiles are "Cushion-Edged" . . . a **true tile** design making grouting and cleaning easier.





Compare! Stylon Plastic Wall Tiles are designed with center supports eliminating "dishing" troubles forever.





Wrap them up in Beauty

WITH

Stylon PLASTIC TILE

COMPARE! And you'll wrap them up in Stylon beauty . . . Stylon Plastic Wall Tile represents the modern, economical way to face a wall for residential, commercial and industrial building or remodeling.

With twenty-two exciting colors, hundreds of decorative patterns are possible without duplication.

Include Stylon in your plans for Stylon Plastic Wall Tile has set new standards for practical beautification of walls, and presents a new concept of beauty, endurance and economy in wall facings. As an architect, builder or installer, you can now wrap up your plans in beauty that is lasting . . . enduring . . . economical . . . Specify Stylon Plastic Wall Tile.

ONLY STYLON HAS THE ROBOT-GRIP

Compare! Only Stylon Plastic Wall Tiles have the "Robot-Grip" . . . one hundred suction cups that firmly hold the tile in place for the life of the installation.

BEAUTIFICATION FOR THOSE WHO BUILD

Stylon Corporation
857 Commonwealth Avenue, Boston 15, Mass.
Gentlemen: Please rush me latest literature describing Stylon Medicine Cabinets, Plastic Wall Tile and China Accessories.

NAME.....

FIRM.....

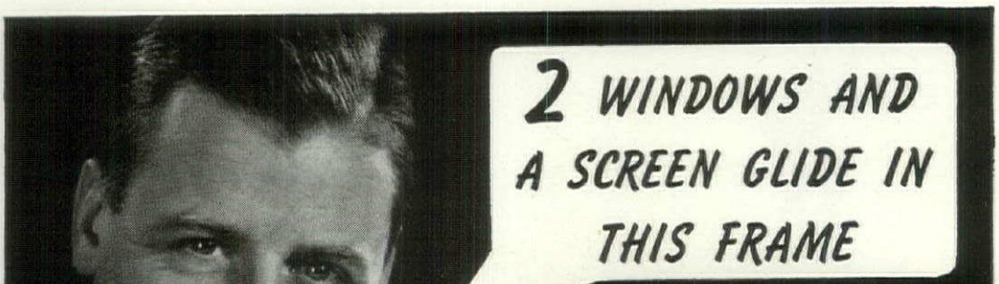
STREET.....

CITY.....STATE.....

POLYSTYRENE PLASTIC P WALL TILE

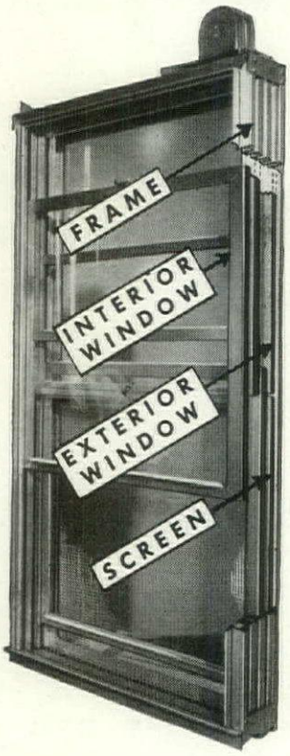
Stylon . . . backed by over 20 years experience in the Tile Business.

Stylon
CORPORATION
857 Commonwealth Ave.
Boston 16, Mass.



Save INSTALLATION TIME
WITH COMPLETE ALUMINUM
Fleetlite WINDOWS

★ All Seasons Windows for New Homes



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

Thousands of FLEETLITE windows have been installed in new homes throughout the United States and Canada. Builders are boasting about the easy installation and the spectacular selling advantage of FLEETLITE equipped homes. Home owners are delighted with the beauty, convenience and ever-lasting construction of FLEETLITE units. Eliminate storm sash. No storage problems, less dirt and dust, warmer winters and cooler summers. FLEETLITE features sell homes for you . . . spell comfort for your customers.

Write today for Complete Literature

Fleetlite
AMERICA'S Finest WINDOW

TERRITORIES OPEN FOR FULL TIME FACTORY REPRESENTATIVES.

As advertised in House Beautiful, House and Garden, Small Homes Guide, American Builder, Practical Builder and Magazine of Building.

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

LETTERS—THE MORTGAGE CRISIS

quate power to smooth out the flow of mortgag money" merits at least one passing comment The opportunity of business groups to use appro priate corporate devices to assemble savings an investment capital to employ in the mortgag field is, of course, proper and desirable if pres ent facilities are not adequate and if new o additional facilities can succeed and operat profitably. It should not be overlooked, howeve that most of the so-called "central mortgag bank proposals" that I have seen or heard dis cussed seem to boil down to arrangements t sell mortgages to what is, in reality, the goverr ment. I have not seen one of the proposals tha could work on an essentially private enterpris basis, assume its costs and risks and raise capita in the long-term bond market.

Broad suggestions have been made by th Round Table regarding the elimination of th FHA insurance charge after the mortgage ha been reduced to 60% and eliminating amortiz tion payments after the mortgage is reduced t 40% of the balance of the property. If FHA a business-like insurance operation and can a ford to carry the lower rate, that is probably d fensible. Certainly we should not depart fro the policy of getting homeowners clear out debt, however.

I still think that ⅔ of the mortgage cred of the country is in the form of conventiona loans and that builders and publishers who wa their business free from government competitio intervention, controls and ownership should d rect their thoughts primarily to helping develo a mortgage credit system with similar flexibilit enterprise and independence from public owne ship, government control and government a sumption of risks and losses.

MORTON BODFISH
Exec. Vice President
U. S. Savings & Loan Leagu
Chicago, Ill.

Sirs:

. . . The only practical solution is to provi a variable rate of interest on both the FHA an GI loans.

In our institution we have extended ourselv in the making of conventional loans with th idea that good loans might be hard to obta the latter part of the year.

THOMAS M. WHITE, *Secreta*
Citizens Federal Savings & Loan Association
Cleveland, Ohio

Sirs:

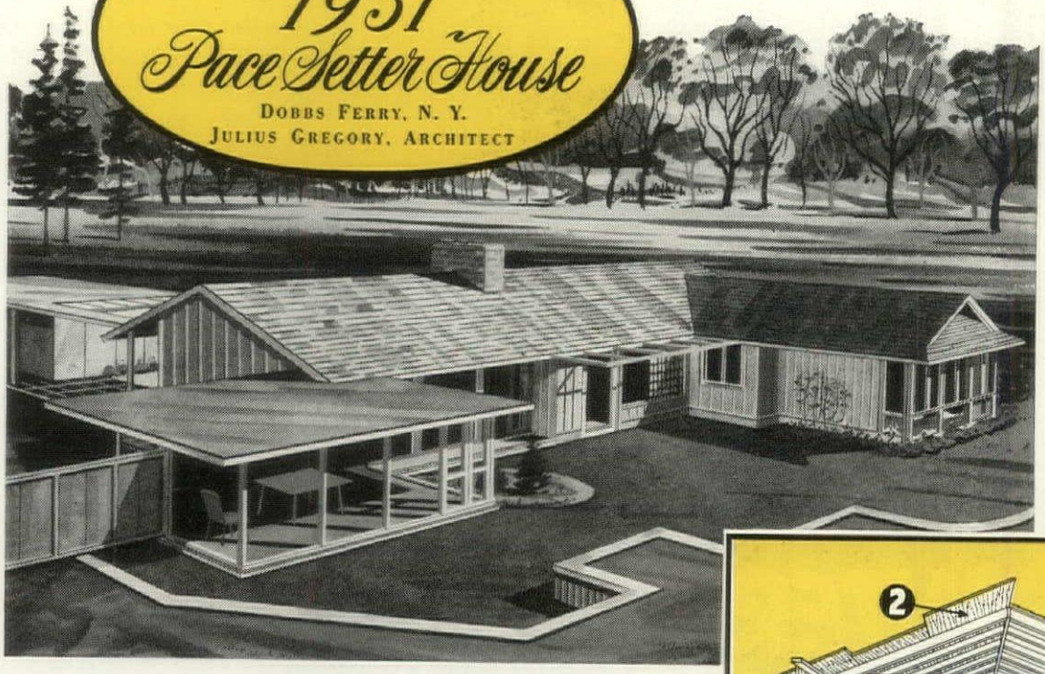
I don't believe that the mortgage crisis quite as bad as pictured. . . .

I realize that some sections of the country ar probably short of mortgage credit which I b lieve could easily be corrected by permitting rise of ½% in both the VA and FHA rate. . .

HARRY C. LINDQUIST, *Exec. V. P.*
Minnesota Federal Savings & Loan Assn
St. Paul, Minn.

(Continued on page 102)

House Beautiful's
1951
Pace Setter House
DOBBS FERRY, N. Y.
JULIUS GREGORY, ARCHITECT



Plywood Specified For Finest Construction

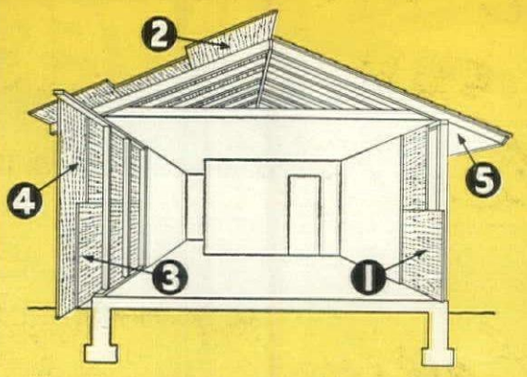
EACH YEAR *House Beautiful* builds a Pace Setter house which represents the ultimate in design, construction and use of materials. In the 1951 Pace Setter, Douglas fir plywood plays a major role.

Durable Exterior plywood creates the weather-wise board and batten siding . . . the smooth, flush soffits and breezeway ceilings.

For the important structural parts of the house, PlyScord was specified for strong, rigid wall sheathing . . . for roof decking . . . for firm, solid panel backing.

It's the finest construction money can buy—bar none!

®PlyScord is a registered grade-trademark identifying the sheathing grade of Interior-type plywood inspected by Douglas Fir Plywood Association (DFPA).



Five Pace-Setting Plywood Features Point the Way to Quality Construction

1. PANEL BACKING. PlyScord provides solid backing for paneling. Gives extra stiffness and strength needed to keep thinner, more expensive decorative paneling firm, rigid and flat. Permits freedom in arrangement of finish paneling.

2. ROOF SHEATHING. PlyScord roof deck was used for both sloping, shingled roof and flat, built-up roofs. Stronger yet lighter than conventional decking, PlyScord speeds construction, resists swelling and shrinking.

3. WALL SHEATHING. PlyScord is twice as strong and rigid as diagonal sheathing. Insulates. Protects against drafts. Speeds construction by over 25%.

4. EXTERIOR SIDING. Exterior plywood siding adds youthful richness. Will not puncture, sag or split. Bonded with waterproof adhesives, it lasts a housetime!

5. SOFFITS AND BREEZEWAY CEILINGS. Smooth, flat panels form texture contrast with siding. Unbroken by detracting lines and joints, plywood is ideal for gable ends, trim.



IDEA BOOKLET FOR YOU!

Now available is a special 12-page, full-color booklet "Ideas From The Pace Setter House." Ideal to help your clients crystallize their plans. For free copy write (USA only) Douglas Fir Plywood Association, Tacoma, Washington.

LARGE, LIGHT STRONG PANELS OF REAL WOOD



Douglas Fir Plywood

AMERICA'S BUSIEST BUILDING MATERIAL



plan to use

PITTSBURGH INTERLOCK PLASTIC WALL TILE

U.S. Pat. No. 2323417
Other Patents Pending



The ONLY Patented INTERLOCKING Plastic Wall Tile

Pittsburgh INTERLOCK in 22 latest decorators' colors fits all plans and specifications for walls of long-lasting beauty. Interlocking feature assures foolproof self-alignment, quicker installation and lower application costs! Accepted by U.S. Bureau of Standards and backed by Good Housekeeping Guaranty Seal. So when planning your next wall tile job, be sure to specify INTERLOCK!



POLYSTYRENE PLASTIC

Accepted by the U.S. Dept. of Commerce, Bureau of Standards

Write, phone or wire for complete details to Dept. AS

JONES & BROWN, INC.
National Distributors
439 Sixth Avenue • Pittsburgh 19, Pa.

LETTERS

YOUNG ARCHITECTS

Sirs:

. . . Congratulations on the June issue, which we found very refreshing and interesting.

Most of the articles, and the "Young Architects' Work" especially, had an outlook toward the future—a very stimulating one which we would like to see more often. Architecture does not consist only of facts, but of aims and dreams too.

I am in a position here at the University of Notre Dame, to measure the reaction of the youngest generation to your issues—this one got an enthusiastic one.

ALADAR OLGYAY
Department of Architecture
University of Notre Dame
Notre Dame, Ind.

Sirs:

I've never read so much nonsense on architecture so well reported.

FREDERICK KIESLER
New York, N. Y.

Sirs:

. . . I—and many co-students in architecture and urbanism—greatly appreciate your June number, about young architects. . . .

IONEL SCHEIN
Paris, France

Sirs:

. . . Enjoyed the June issue immensely—particularly the "cocoon" house, Ed Barne's mansion, the Arizona house—and "that office" of William Beckett. Also, the texts should be complimented! Whenever we have the time to read FORUM—oops, THE MAGAZINE OF BUILDING—we find that it is a real source of stimulating material!

JOHN C. CAMPBELL, *Architect*
San Francisco, Calif.

Sirs:

. . . We have received a large number of compliments on my building presented in your June issue. The thing which has surprised me is that the majority of the people are not those whom I would have expected to have seen THE MAGAZINE OF BUILDING. This further illustrates the varied audience, outside of the immediately concerned professions and trades, enjoyed by THE MAGAZINE OF BUILDING.

WILLIAM BECKETT, *Architect*
Los Angeles, Calif.

ADVERTISING CEILING

On July 27th we announced to all active and prospective advertisers that we felt, in justice to all, there should be a ceiling on the number of advertising pages which we can accept for any one issue. Our ambition is to publish a magazine with the best possible balance between editorial and advertising pages, in order to assure maximum reader interest.

(Continued on page 104)



The Control Center that OUTSMARTS ACCIDENTS

No longer is it necessary to expose personnel to "hot" buses or to sacrifice safety to gain accessibility to your control centers. Removal and replacement of Westinghouse Starter Units is safe and simple. "Magna-Grip" stab connectors simply "plug-in" to the power bus.

1 **To work on the panel,** starter unit may be withdrawn to a tilt-out disconnect position and locked. The unit is "dead"... completely disconnected from the power bus and self-supporting in this position. Protection is assured since it is impossible to reach around the starter unit and touch the bus.

2 **For work on the bench,** it is a simple matter to remove the complete starter unit. Note that the *unit door remains on the panel* so that it can be closed to guard the exposed bus. Rigid guide rails in the structure facilitate replacement of the starter unit. These rails align the starter and steer the "Magna-Grip" stab connectors into accurate contact with the power bus.

Westinghouse Control Centers offer still more points of safety.

For example:

Complete baffling to localize unusual arcing if faults occur.

Interrupting capacity of each starter not less than 15,000 rms amps.

Self-cooling construction for foolproof ventilation.

Sturdy structures that are self-supporting.

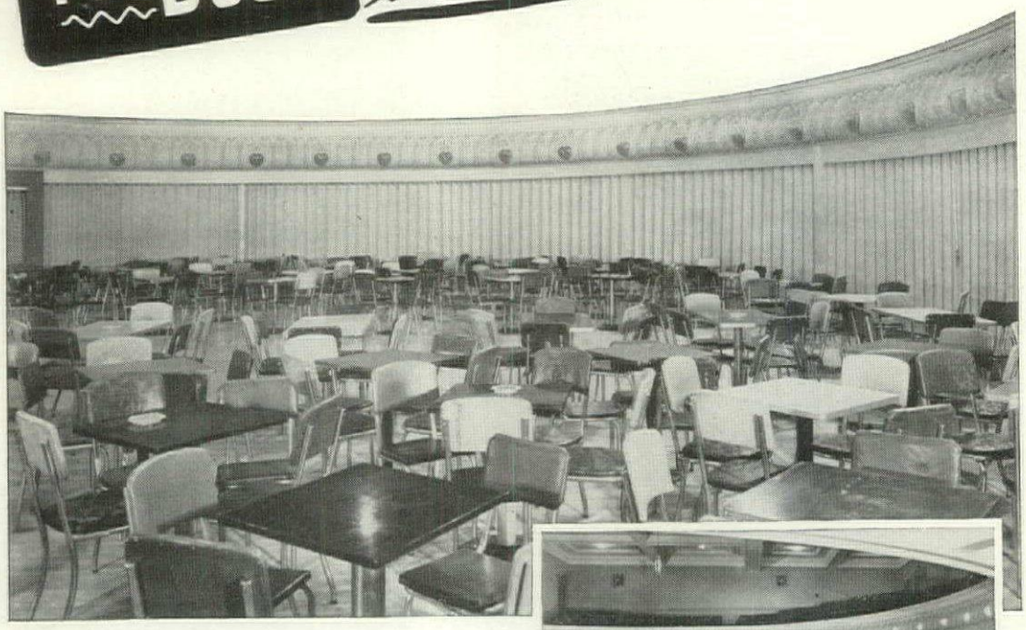
Get all the facts as presented in booklet B-4213 from Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna. J-27008

DESIGN TESTED AND VERIFIED IN THE Westinghouse HIGH POWER LABORATORY

YOU CAN BE SURE.. IF IT'S Westinghouse

CONTROL CENTERS

HOLCOMB & HOKE
FOLDOOR "takes" a 75 ft. curve



This FOLDOOR installation at Elks Lodge No. 11, Pittsburgh, Pa. is a typical example of how FOLDOOR gives flexibility of space in commercial use. The long bar, shown in background at right, is completely closed off by six FOLDOORS (see above) for complete dining room privacy.

FOLDOOR is your answer any time the problem concerns flexibility of space . . . finding more usable space in the same area . . . or achieving easy and economical division of rooms.

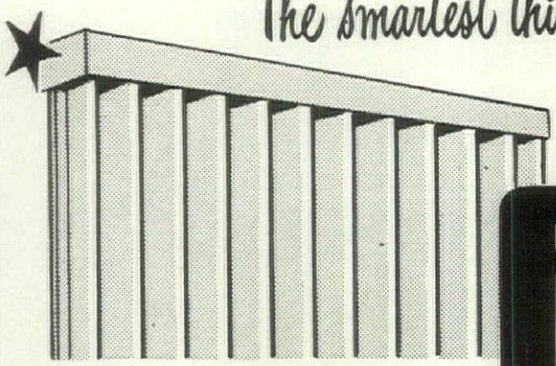
"The folding door with the cornice top" fits right into building and remodeling plans for business places, institutions and commercial establishments—for private homes as well.

Built with a sturdy frame of rust-resistant steel, FOLDOOR travels on a rugged, single piece, two-rail steel track. FOLDOOR occupies the least amount of "stack" space of any extensible door. Maximum thickness when pushed back onto itself is only 5½ inches.

FOLDOOR, manufactured in a wide range of sizes to fit practically any interior opening, comes in a variety of beautiful fabrics to harmonize with any color scheme. All fabrics are vinyl-coated, fire-resistant and can be easily washed with soap and warm water.

When you're considering folding doors, check the classified directory in your phone book for your local FOLDOOR installing distributor. Or write the factory.

The smartest thing in doors!



The famous FOLDOOR cornice top! Always identify FOLDOOR by this attractive cornice that gives it that *finished look*.

HOLCOMB & HOKE MFG. CO., INC.
1545 Van Buren St., Indianapolis 7, Ind.

HOLCOMB & HOKE
FOLDOOR

LETTERS

We announced, therefore, that beginning with the October issue there would be a limit of 225 pages of advertising in any one issue. The following letters resulted from this announcement.—ED.

Sirs:

After a few years in the advertising business it is hard to be prodded out of lethargy which seems to be a direct by-product of cynicism. However, your announcement is one for the book!

Without being too cynical about ulterior motives, I am inclined to believe that you are sincere in the business of keeping advertising space to a prescribed maximum. So, whether the factors of mailing weight, paper shortage or the out and out "gimmick" of good psychology has inaugurated the idea, permit me to congratulate you on this definitely appreciated move. Not only from my own standpoint, but those of my client and undoubtedly all of your other advertisers as well.

ART RUMRY
Engel Advertising Inc
Chicago, Ill.

Sirs:

Bravo!

M. F. HAUSERMAN, J
Adv. & Sales Prom. Mg
Gustin-Bacon Mfg. Co.
Kansas City, Mo.

AID FOR ZONERS

Sirs:

The article by Charles K. Agle, "A New Kin of Zoning" (July '51), is extremely well don and should serve as a very useful tool in formulating the thinking and intent of new and revise zoning ordinances. We, of the city planning sta in Milwaukee, have been studying the newly pr posed New York City zoning ordinance prepar tory to drawing up a new ordinance for the Ci of Milwaukee. The Agle article helps to clari many of the new features contained in the Ne York ordinance. . . .

FLORENCE SCHULSON, *Planning Analy*
City Planning Division
Milwaukee, Wis.

HELLO, AGAIN, MR. HADRIAN

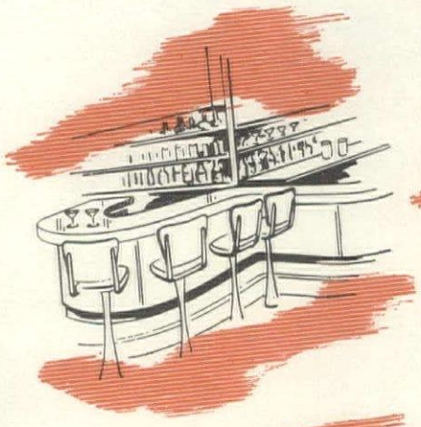
Sirs:

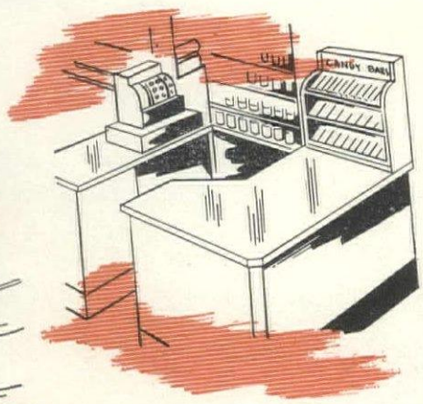
I would like first to thank you for the articl "Hello There, Mr. Hadrian," (July '51) a then, if you will allow me, I would like to ma a correction.

You say in my book *Mona Lisa's Mustach* "He sharply criticized the international style modern architecture which he thinks is a dege erate plot against the people." The first part correct—I did criticize the international style but I never analyzed it as "degenerate" or "plot against the people."

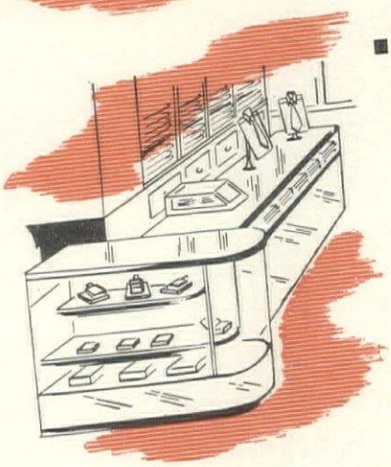
(Continued on page 108)

NEVAMAR®









. . . builds lasting beauty into any surface!

For the smallest remodeling job or the most gigantic new construction, NEVAMAR will play an important part in your plans. In rich patterns and decorator colors, it is suitable for residential building or commercial projects alike.

NEVAMAR is a high-pressure laminate . . . a prefinished surfacing material that never needs painting or refinishing. Beauty, color, durability—built right in!

NEVAMAR has triumphed over every laboratory and use test to which it has been subjected. Its qualities have been proven again and again in actual service. Get all the facts about NEVAMAR now.



Write For This Free Booklet

See actual photographs of NEVAMAR applications and learn how NEVAMAR can fit into your plans.

Pattern illustrated is Black Oak, one of the NEVAMAR wood grain patterns.

SOLE DISTRIBUTORS: THE NEVAMAR COMPANY, BALTIMORE-30, MD.

The NATIONAL *Plastic Products Company*

Manufacturers of Nevamar High-Pressure Laminates • **SARAN FILAMENTS.** Wynene Molded Products

ODENTON, MARYLAND • NEW YORK: EMPIRE STATE BUILDING • LOS ANGELES: 2252 EAST 37TH STREET

This is

NEVAMAR®

. . . a high-pressure laminate surface, designed for long life and lasting beauty. Nevamar is not affected by grease, alcohol, fruit acids, ammonia, bleach, ink or similar substances. It will not craze, crack or peel. Nevamar is resistant to cigarette burns and withstands boiling water. Nevamar may be cleaned with soap and water.

● To keep your Nevamar surface beautiful . . . Don't use abrasive cleansers. A protective pad should be used beneath hot vessels, electric toasters and similar appliances. Don't use your Nevamar surface as a cutting or chopping board.

The NATIONAL Plastic Products Co.
ODENTON, MD. • NEW YORK, N. Y. • LOS

REPLACEMENT OR REFUND OF MONEY IF NOT AS ADVERTISED THEREIN
Guaranteed by Good Housekeeping

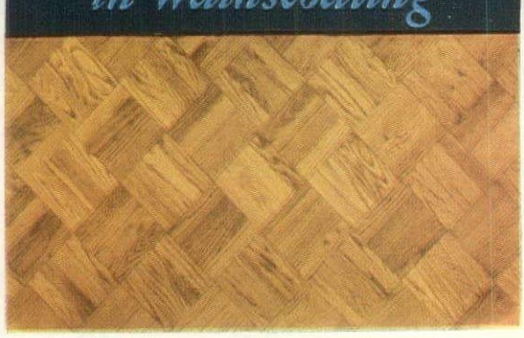
NEMA
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION • MEMBER •

Apartments floored with

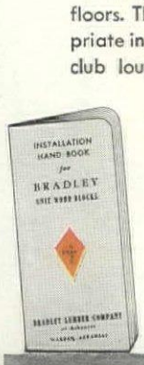
BRADLEY UNIT WOOD BLOCKS *win TENANTS!*



As An Innovation in Wainscoating



Bradley Blocks used as wainscoting provide a strikingly decorative complement to block floors. This adaptation is particularly appropriate in private offices and reception rooms, club lounges, restaurant dining rooms, etc.



**Also in Beech and Pecan. See complete specifications in Sweet's Architectural or Builders for 1951.

*For your copy of Bradley's Installation Manual, call our nearest distributor or address:

LANDLORDS are competing for tenants again and tenants are plenty choosy. Sure-fire appeal to their critical eyes are Bradley Unit Wood Blocks floors, because they're of beautiful Oak, America's first choice in hardwood floors, and because Bradley block design transforms the matchless beauty of Oak into smartly modern decor.

Produced for mastic or nail installation,* they provide a superb floor over new concrete subfloors at moderate laying cost; nailed over worn wood floors, they put fresh appeal and higher rental value into old buildings.

Bradley blocks are produced in all standard grades and sizes, finished or unfinished.** Tongued and grooved like strip flooring, they provide an integrated floor of exceptional endurance and low maintenance cost under all normal conditions of wear for apartments, homes, schools, business and public buildings.

BRADLEY

BRAND BRADLEY

LUMBER COMPANY of Arkansas • WARREN, ARKANSAS

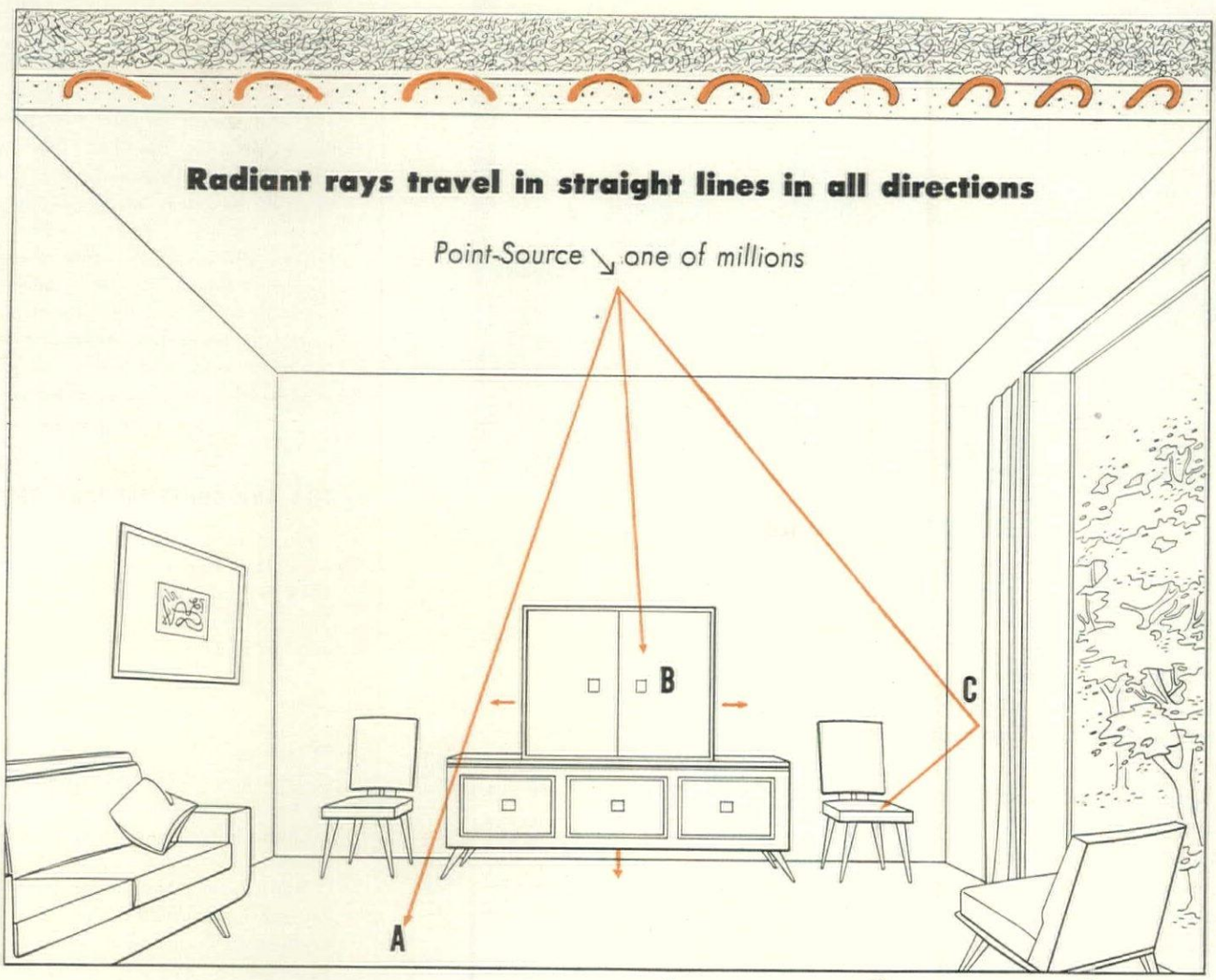
HOW TO EXPLAIN

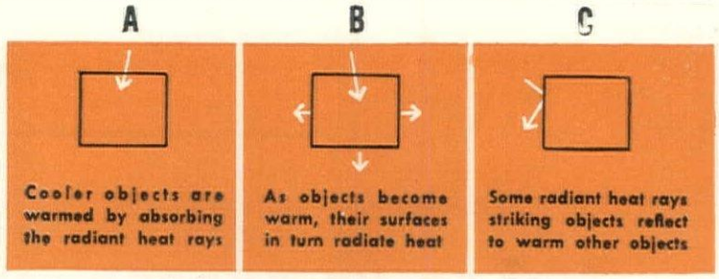
RADIANT PANEL HEATING

It works like rays of light

When you are asked how a radiant heating system warms a room, it may be simpler to explain if you think of the heat rays from radiant panels as being similar to light rays. The only difference is that they heat instead of illuminate every object they strike.

To simplify this illustration only a single point-source of heat is used. Actually, there are countless millions of such points on every radiant heating surface.





If you would like extra copies of this advertisement for your own use, we will gladly send them to you. Just let us know how many you would like. The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

6103

nothing serves like

ANACONDA®

COPPER TUBES

NOTE: The use of copper and copper alloys is now subject to the regulations of The National Production Authority.

QUIET
HOSPITAL
ZONE!

DO NOISY FLOORS
MAKE THIS SIGN A JOKE?



You get both sanitation and silence with
floors of WRIGHT RUBBER TILE!

Clattering footsteps and hollow echoes make a monkey out of many hospital signs like this—but *not* when floors are Wright Rubber Tile.

Wright Rubber Tile meets most exacting standards of sanitation. This non-porous flooring is the easiest of all materials to keep spotlessly clean and sanitary. Yet it also has a resistance that silences footsteps and stops noise before it starts.

These two qualities alone make Wright Rubber Tile the ideal floor covering for hospitals. But in addition, it is the longest wearing, most comfortable, most beautiful floor you can get.

Years of service in hundreds of hospitals back up every claim we make. Get the complete story and you will insist on Wright Rubber Tile for your next hospital job.

FREE SAMPLE KIT
FOR ARCHITECTS

Write today, on your letterhead, for a complete set of 4x4 samples of Wright Rubber Tile in 21 beautiful colors.

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

WRIGHT RUBBER TILE

2962

FLOORS OF DISTINCTION

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

LETTERS

One of the founding fathers of the intern tional style was Marinetti, the founder a leader of futurism. Marinetti himself claim that Fascism was futuristic and Mussolini, turn, described Marinetti as "the John the Ba tist" of the Fascist movement.

Though futurism, led by Marinetti, is only of the elements of the international style, it certainly a dubious one and as such I criticiz it—who wouldn't?

I would appreciate it so much if you wo make this correction.

T. H. ROBSJOHN-GIBBIN
New York, N. Y.

MISPLACED FLAT-TOP

Sirs:

The statement in your July issue that I the architect for the "Flat Top" house built Kansas City by Drummond is erroneous. I w to go on record as having absolutely nothing do with the house. In fact we have mentioned Builder Drummond the obvious disadvantages this house for our climate as against its origi intent in California. In spite of its popular price, the house has in some ways done ha to the cause of good modern architecture wh is in a critical situation in Kansas City. . .

DAVID BENTON RUNNELLS, *Archi*
Kansas City, Mo.

FHA AND CONTEMPORARY DESIGN

Sirs:

. . . How I did enjoy your blast at Los Ang FHA (April '51, p. 20). I have just tried failed to get my own home through their and finally gave it up. . . .

CHARLES R. SULLIV
Los Angeles, Calif.

Sirs:

Regarding the second of your series of arti on the FHA (in Miami) and its attitude tow modern design and construction, I am di pointed. . . .

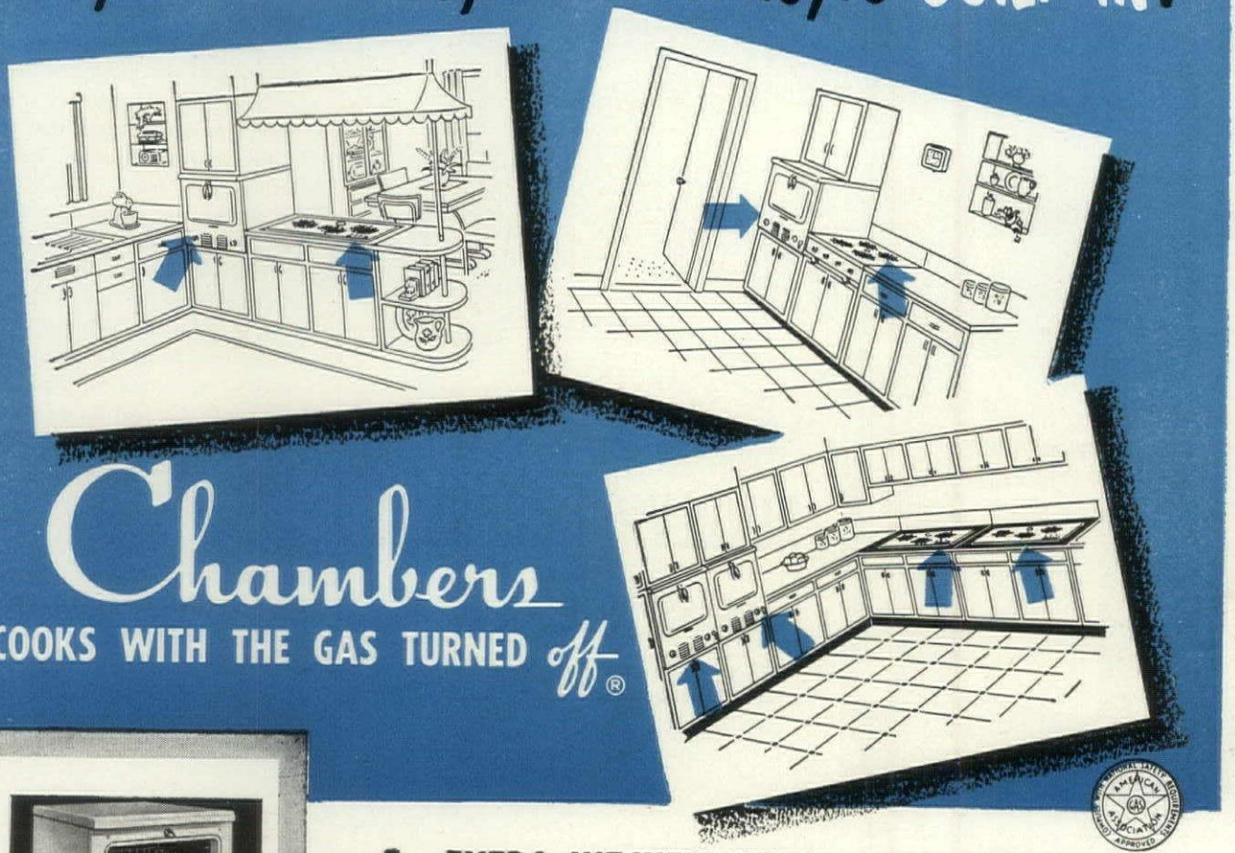
When houses have to be covered by FHA surance for from 20 to 30 years, it is no sim problem to decide what constitutes good de that will be a good insurance risk 30 y hence. . . .

As for project design, I believe time will p your crusade to scotch the past entirely and sign only in the current clichés will result in ordinary slums, but slums with a capital S. Row after row of so-called good modern is w than row after row of ordinary traditional. dividually, the modern is charming and ex lent, but in mass it becomes overpowering the extent of nausea.

Imagine what a project by FLLW would like on 60′ lots. Fine as the individual would be, the lack of a change of pace wo be disastrously monotonous; one would hav count from the corner to find his home, an lost and found department would have to

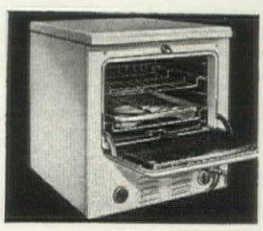
(Continued on page 110)

They're NEW...They're GAS...They're BUILT-IN!



Chambers

COOKS WITH THE GAS TURNED *off*®



"IN-A-WALL". Oven is heavily insulated—top, bottom, all sides—utilizing retained heat to "cook with the gas turned off." Its huge, family-size capacity accomodates up to 40 lbs. of roast. Beautifully finished in stainless steel, or stainless front with choice of seven beautiful kitchen decorator colors.



"IN-A-TOP" 3-Burner Drop-in with plated surface fits into a counter top or sink cabinet by providing opening of 18-1/2" x 33-5/8". Individual drip rings may be removed easily for quick cleaning. Also available with 4 burners.

GOOD DESIGN

25 YEARS

25 Year Guarantee on burners and cast oven bottom

For EXTRA KITCHEN SPACE...COUNTER-LEVEL COOKING...VERSATILITY IN PLANNING

NEW CHAMBERS BUILT-INS make the kitchen as truly distinctive as the home itself. Flexibility never available before in gas cooking equipment permits countless adaptations to individual design requirements. The Chambers IN-A-WALL Oven meets all the exacting safety requirements of the AMERICAN GAS ASSOCIATION. It may be fitted in only 24 inches of space, flush all around with wood or metal cabinets. Top burner units are available, either to drop into counters, or to fit atop base cabinets.

WAIST-HI COOKING CONVENIENCE, compact kitchen design, and Chambers World Famous Cooking Performance—that saves food, flavor, time, fuel and labor—these features make a powerful sales impact on today's homemakers. You can't go wrong when you recommend GAS . . . and you're doubly right when you specify Chambers Gas Built-Ins.

Originator and Master Builder of Insulated Ranges since 1910

NATIONALLY ADVERTISED House & Garden, House Beautiful, Small Homes Guide, Better Homes, Parents Magazine, Living for Young Homemakers

Send for A. I. A. Specification Sheet NOW!

Chambers Corp.,
Dept. AFT91, Shelbyville, Ind.

Gentlemen:

Please send me at once A. I. A. Specification Sheet and other material describing the new Chambers Built-In GAS Cooking Units.

I am an ( ) Architect ( ) Builder-Contractor ( ) Dealer

NAME .....

FIRM NAME .....

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CITY ..... ZONE ..... STATE .....

FOR ENTRANCE AFTER ENTRANCE... THE BEST ARCHITECTURAL RECOMMENDATION!



Illustrated is International's new, production-built Standard Model Revolving Door — most custom features at low budget price.

REVOLVING DOORS... "ALWAYS OPEN— ALWAYS CLOSED"

Multistory building entrances? The need for stopping stack draft alone makes revolving door entrances a necessity!

Retail Stores? Hotels? Banks? Restaurants? All these need revolving doors to provide for an unimpeded, two-way flow of traffic at all times . . . to seal out dirt, noise and drafts . . . to simplify heating and air-conditioning . . . to eliminate vestibule areas and make the most valuable space — right at the door — profit producing.

Thus, for entrance after entrance, there is only one logical architectural specification, only one prescription that can be depended upon to cure the problems presented by the entrance: revolving doors, the doors that are easiest to use, that are "always open — always closed."

Sent on request... a booklet you will find invaluable as a guide to entrance planning. Write for your free copy. For immediate information, consult the classified section of your telephone directory or see our catalog in Sweet's.

REVOLVING DOORS
INTERNATIONAL-VAN KANNEL

1853 EDGAR STREET EVANSVILLE 7, IND.

Periodic lubrication plus an annual check is the only maintenance required for years of service from a revolving door.

IN CANADA—International-Van Kannel Revolving doors are available through Eastern Steel Products, Ltd., in Toronto and Montreal.

LETTERS

maintained for the children. I believe FLLW is too smart to attempt a solution, and builder had better be wary of his imitators selling them on the idea. . . .

Any builder whose designs don't appeal to a least 50% of the market will not be in busines very long. *This is the crux of the problem.*

A few builders report that they build moder for personal satisfaction, but realize they ar limiting their potential sales to only the 10% who prefer contemporary. This percentage, c course, varies from city to city; in most of the it is much lower. Modern architecture, like no objective painting, may be the most intrinsic, bu does the public know it? And, if not, can build ers, lenders, and mortgage insurers afford th luxury of educating the public in a doubtful e periment? You had better reconsider before yo let go the bear's tail.

W. A. WOLLANDER, *Housing Consulta Tacoma, Wash.*

• We are not crusading for any style as such. W do believe today's new houses should be planned f today's living and today's best construction metho instead of imitating what was done before toda methods and materials were available. And we do think FHA should overdo its role as a restraini influence on the development of a better contemp rary house architecture.—ED.

20-TON 2 x 4's

Sirs:

In your Round Table report on Waste Building there appears a statement by Wal Voss of MIT to the effect that a 2 x 4, 2′ lo will sustain a 20-ton concentric loading. I wou be interested to know by what line of reas ing Mr. Voss arrives at this conclusion, sin the following figures show that under the ve best conditions the maximum load that such column could carry would be a little over tons. The Slenderness Ratio for this size colu is 24 divided by 1.63 which equals 14.8 a since this figure is greater than 11, this wo actually be an intermediate column. But, giv Mr. Voss the advantage of calling this a sh column, which it actually is not, and assu ing an extreme fiber stress of 1,750 psi which the highest value indicated in most refere books, the maximum allowable loading on t column would be determined by the cross s tional area times the extreme fiber stress, 5.89 x 1,750 = 10,160 lbs.—a little over 5 to which is a long way from the 20 tons possi as asserted by Mr. Voss.

B. S. GLASSMAN
The Stanbern Construction Washington, D. C.

• Mr. Voss' explanation appears below.—ED.

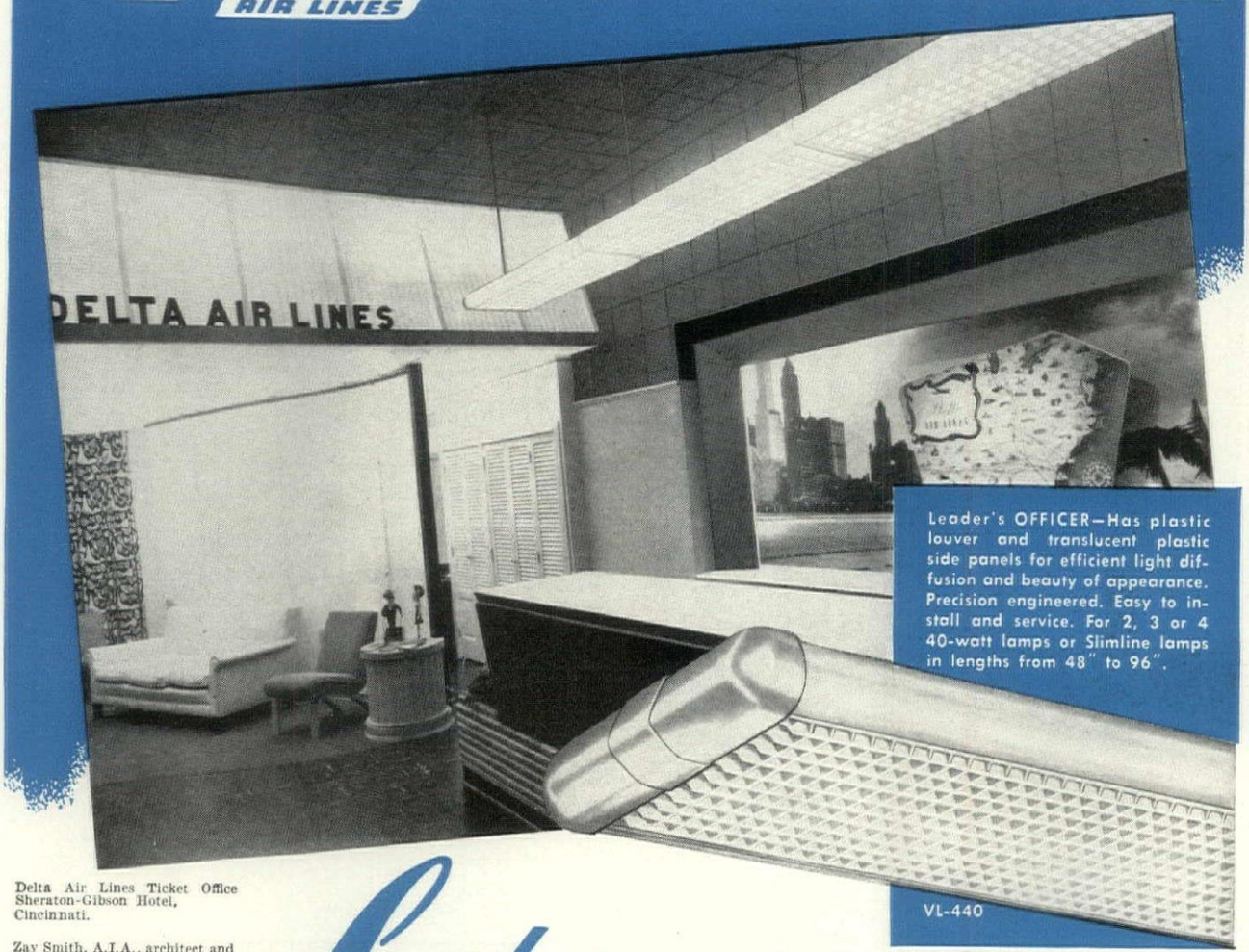
Sirs:

. . . I was making the point that we were giving wood structures the benefit of th strength and I was talking about the ques

(Continued on page 114)

Delta select Leader fixtures!

DELTA AIR LINES



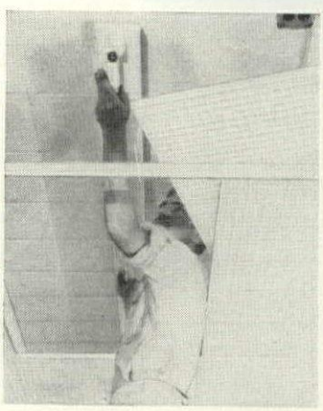
Leader's OFFICER—Has plastic louver and translucent plastic side panels for efficient light diffusion and beauty of appearance. Precision engineered. Easy to install and service. For 2, 3 or 4 40-watt lamps or Slimline lamps in lengths from 48" to 96".

VL-440

Delta Air Lines Ticket Office
Sheraton-Gibson Hotel,
Cincinnati.

Zay Smith, A.I.A., architect and designer; Fred L. Schille, general contractor; Becker Electric Co., electrical contractor. Fixtures furnished by the F. D Lawrence Electric Co.

Leader fixtures bring distinctive lighting to this new Cincinnati ticket office



LEADERALL moulded plastic ceiling grilles may be suspended at any desired height to form a rigid, level ceiling of light. Use with any type fluorescent fixtures. Do not interfere with air conditioning or sprinkler systems.

Delta Air Lines, in their search for the finest in illumination for their new ticket office in Cincinnati, chose Leader fixtures to provide: 1) optimum light for working surfaces; 2) soft border lighting; 3) spot-lighting; 4) even overall illumination with shielded light source.

The attractive lighting layout involves the use of a variety of Leader fixtures, including OFFICER fixtures, used over the ticket sales counter, and a LEADERALL louvered ceiling for pleasing overall lighting.

If you, like Delta, want the finest in fluorescent lighting, look to Leader . . . first!

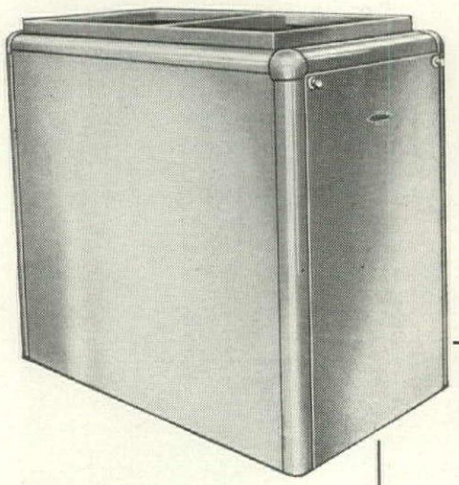
Sold and installed by the better electrical dealers and contractors

Leader — *America's No. 1 Lighting Equipment Manufacturer*

LEADER ELECTRIC COMPANY • 3500 North Kedzie Avenue • Chicago 18, Illinois

Leader Electric—Western: 800 One Hundredth Avenue, Oakland 3, California
Campbell-Leader, Ltd., Brantford, Ontario, Canada

DELCO-HEAT UNITS add extra selling value to the homes you build



The heating system of his new house is of major importance to every prospective home buyer. He wants a unit that will give him completely automatic, trouble-free and economical service—and he wants it at the lowest possible cost.

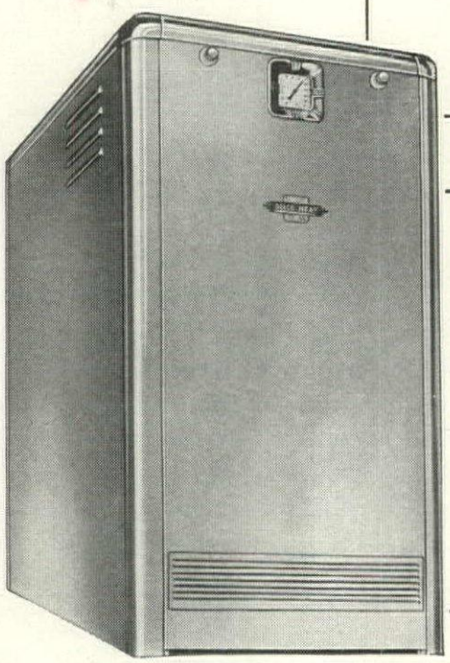
You can be sure you are giving your customer exactly what he wants by including Delco-Heat units in the homes you build . . . because they are General Motors products—because they are competitively priced—and because they are built for a lifetime of service.

The units shown below are only a part of the complete line of Delco-Heat automatic home heating equipment—a line that includes gas- and oil-fired units for all types of heating systems, and for homes of all sizes.

"DA" series Oil-Fired Conditionairs. Superior design, compactness and efficiency make these the most outstanding oil-fired, forced warm air furnaces available. The Multipath heat transfer systems are designed to give free and unobstructed flow of flue gases. The Conditionairs have the famous Delco-Heat Rotopower oil burners, powered by *Rigidframe* motors. Cabinets are of 20-gauge furniture steel, and are beautifully finished in Delco-Green enamel.

Model	Capacity	Firing Rate GPH	Blower		Dimensions		
	Btu per hour output (plenum)*		RPM	CFM**	Height Inches	Width Inches	Depth Inches
DA 85	85,000	.75	400-700	950	50	23.5	54.5
DA 100	100,000	1.0	400-700	1000	50	23.5	57.25
DA 125	125,000	1.15	400-700	1800	45	30	64.25
DA 1	150,000	1.5	400-700	2050	48.5	30	76.5
DA 2	200,000	1.9	400-700	2400	50	55.5	71

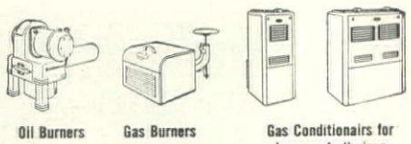
*On basement installations add 15% duct loss to net heat loss—compensate for unusual conditions. Unit and duct work installed within space heated does not require allowance for duct loss.
**Maximum delivery against unit resistance and 0.2" duct static pressure.



Oil-Fired Boilers. Top quality throughout these units makes them the finest oil-fired boilers obtainable for steam and hot water systems in homes of all sizes. Streamlined fins and water passages add to quicker heating. Cast iron boiler sections, of the wet base type, completely surround the hot combustion gases. Delco-Heat Rotopower oil burner, with *Rigidframe* motor, is flange-mounted inside access door. These oil-fired boilers come in 20-gauge furniture steel cabinets, and are beautifully finished in Delco-Green enamel.

Model	Capacity	Net*		Oil Burner	Dimensions		
	Btu per hour Output	Steam	Hot Water	Nozzle GPH	Height Inches	Width Inches	Depth Inches
DB 3	110,880	350	560	1.25	50-3/9	27	37-3/4
DB 4	160,080	505	808	1.65	50-3/8	27	43-3/4
DH 4	252,000	800	1290	2.4	54-1/16	33-1/4	49

*Net standing radiation including domestic hot water load.



Oil Burners Gas Burners Gas Conditionairs for homes of all sizes

GENERAL MOTORS DELCO-HEAT

Manufacturers of a complete line of automatic gas- and oil-fired home heating units, and electric water systems for farms and homes. For further information on Delco-Heat products write Dept. MB-28:

DELCO APPLIANCE DIVISION
General Motors Corporation
Rochester 1, New York

The greatest improvement ever made
in dry wall construction

FIRESTOP BESTWALL®

An exclusive CERTAIN-TEED development

ALL THE ADVANTAGES OF CONVENTIONAL GYPSUM WALLBOARD—*PLUS UP TO*

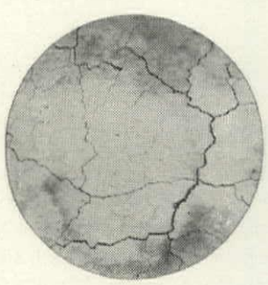
THREE TIMES THE FIRE RESISTANCE

FIRESTOP BESTWALL offers every advantage of ordinary gypsum wallboard, plus fire resistance *up to three times* as great. It is the only gypsum wallboard made under the Underwriters Laboratories' Reexamination Service. A single-layer application of 5/8" FIRESTOP BESTWALL has a 1 hour fire resistance rating *for walls and ceilings!*

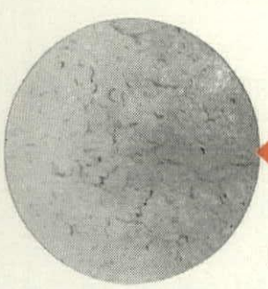
Now architects, builders and contractors can meet rigid municipal and State building code requirements as well as those of FHA and VA—for fire-resistant interior wall and ceiling construction in nearly any building.

The 5/8" FIRESTOP BESTWALL has greater structural strength and sound-deadening characteristics than ordinary gypsum wallboard, yet handles and cuts as easily.

Write today for our FIRESTOP BESTWALL Folder. It contains complete information and specifications on this remarkable Certain-teed gypsum development.



Unretouched photo showing a section of ordinary gypsum wallboard after it has been subjected to a fire temperature of 1,700°F. for 1 hour. Note the shrinkage cracks, characteristic of ordinary gypsum exposed to heat.



Under the same conditions, FIRESTOP BESTWALL shows no appreciable cracking, because its core is stabilized with incombustible fibers and unexpanded vermiculite, through an exclusive Certain-teed process.

THE CORE MAKES THE DIFFERENCE

AVAILABLE EVERYWHERE IN THE U.S.A.



Certain-teed BUILDING PRODUCTS

Certain-teed

REG. U.S. PAT. OFF.

Quality made Certain . . . Satisfaction Guaranteed

CERTAIN-TEED PRODUCTS CORPORATION

118 LANCASTER AVENUE, ARDMORE, PENNSYLVANIA

ASPHALT ROOFING · SHINGLES · SIDINGS
ASBESTOS CEMENT ROOFING AND SIDING SHINGLES
GYPSUM PLASTER · LATH · WALLBOARD · ROOF DECKS
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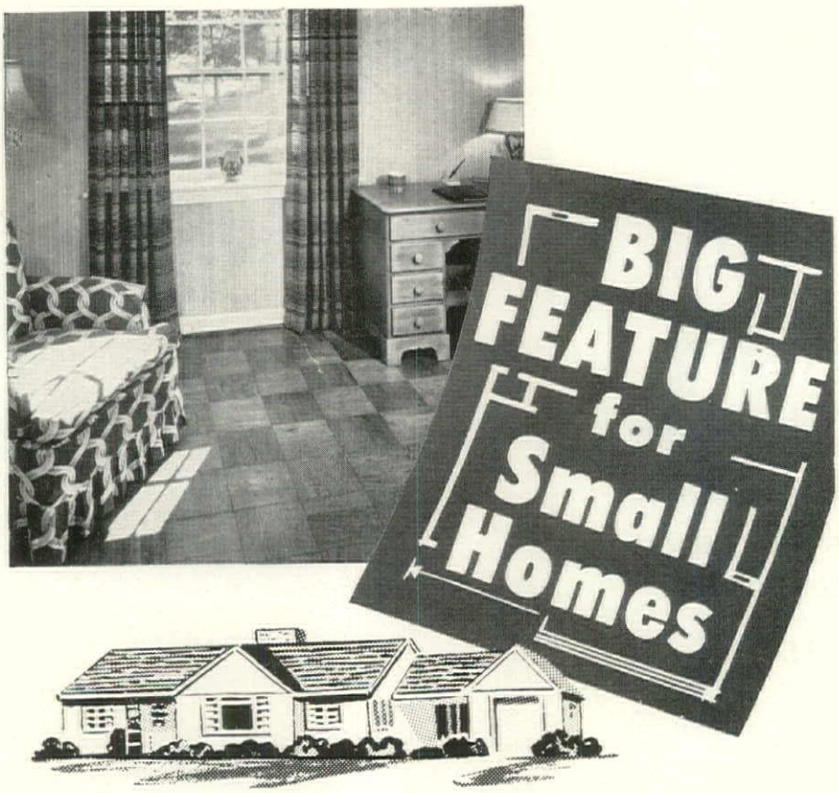


Warmth and Lasting Beauty of Parkay Hardwood Floors Within Reach of Every Building Budget



Give them floors that they can point to with pride—today or twenty years from now. Specify Parkay—the only genuine hardwood flooring in 3/16" thickness. It saves material without sacrificing wearing surface—permits use with other resilient floor materials without changing floor levels.

Parkay comes to the job ready-finished—an important time-and-money-saving feature. It is applied quickly with special Parkay Adhesive over any sound subsurface—cement or wood. Final result—beautiful, enduring hardwood floors that cost little or no more than ordinary strip finished on the job.

Parkay flooring made of choice American Oak, is offered in two styles—9" x 9" Tiles and 9"-wide Broadboard in random lengths. Both styles may be used for attractive wall paneling. Also available—Parkay Haddon Hall Pattern (basketweave) Flooring. For complete details see Sweet's Architectural File or write direct for free literature and sample. Parkay, Incorporated, Louisville 9, Ky.

PARKAY
READY-FINISHED HARDWOOD FOR FLOORS AND WALLS

LETTERS

of incipient failure when I said that a 2 x 4 2′ long would carry a 20-ton concentric load ing before crushing.

In the *Wood Handbook* published by the De partment of Agriculture (p. 50) the averag value for the three types of Douglas fir wit 12% moisture for maximum crushing strengt based upon 2 x 2″ sections, 30″ long was ap proximately 6,700 psi. Therefore, a 2 x 4 Douglas fir stick 2′ long, measuring nominall 1⅝ by 3⅝″, would carry a load at failure o 39,700 lbs., or approximately 20 tons. It is not question of allowable fiber stress. . . .

I was fully cognizant of the fact that a lon stud would not carry that load. I was merel emphasizing that an 8′, 2 x 4 stud would carr a great deal more load than is normally place on it in the average house.

If one applied the compression parallel to th grain at the proportional limit to each of thes types of Douglas fir with 12% moisture. th average allowable fiber stress would be 5.5 psi and show a load at the proportional lim of 32,800 lbs.

WALTER C. VOSS
Massachusetts Institute of Technolog
Cambridge, Mass.

HIGH COST PENALTY

Sirs:

In the February issue you praised the subd vision, Robert Morris Village, in Morristow N. J. . . .

It is probable that the project will be disco tinued with only 23 of the 250 houses erected. additional lots staked and a total of 75 acres f 105 houses on blueprint. These are well-d signed houses—and the blending of lots and va ety of orientation are successful devices. T owners like them and still more want them, b the costs are prohibitive. . . .

BARRY BENEPE
Morris Plains, N.

KUDOS

Sirs:

Your June issue with its Round Table rep on the Mortgage Crisis is of tremendous inter to me because I have just gone on the board the Century Federal Savings & Loan Associati

While I am about it, I also want to congra late you on the vitality and excitement of yo magazine. . . .

DOROTHY LIEBE
New York, N. Y.

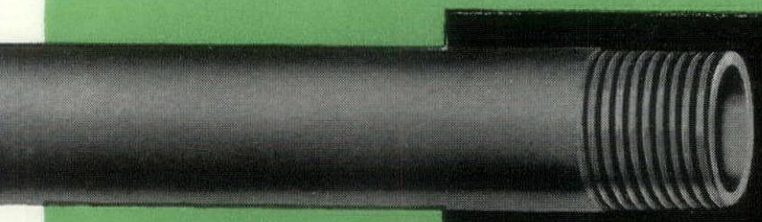
ERRATA

By a slip, the Public *Building* Administ tion was charged in the July issue (p. 61) w downing architects' fees—it was the Pub Housing Administration.—ED.

In the August issue the photographs Architects John Lyon Reid and Mil Pflueger (p. 102) were regrettably transpos —ED.

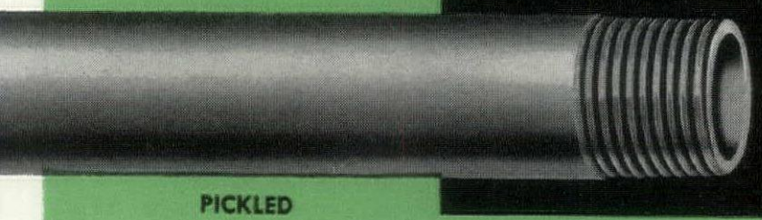
(Continued on page 116)

6 reasons Why NATIONAL ELECTRIC SHERARDUCT CONDUIT is better!



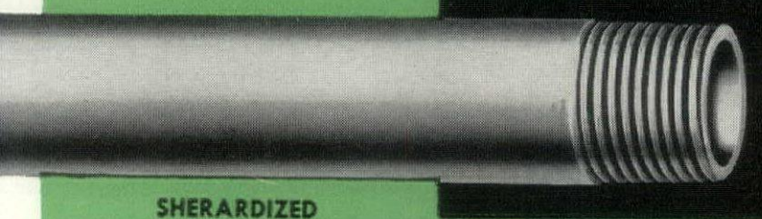
RAW PIPE

1. Made of "Spellerized" steel for easy bending and clean-cut threads.
2. Scale-free—inside and out.



PICKLED

3. All rust-forming impurities removed before SHERARDIZING.



SHERARDIZED

4. Zinc alloyed with the steel on all surfaces.



SHERARDIZED THREADS

5. All threads have the same zinc protection as the walls.



PROTECTED AGAINST ACIDS

6. Acid-resisting Shera-Solution baked into the pores for added protection.

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WIRING SYSTEMS
WIRES AND CABLES

Here's Why Smart Owners Say:

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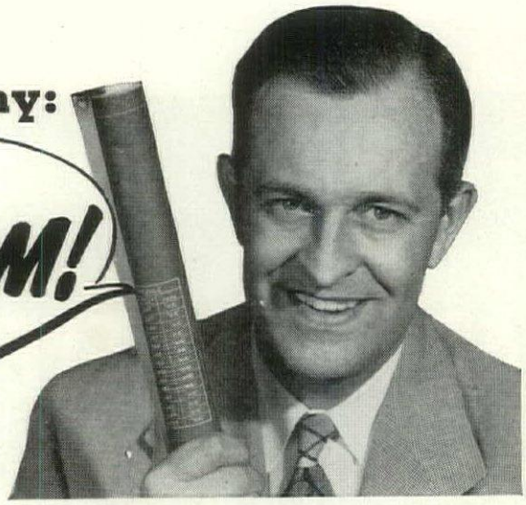


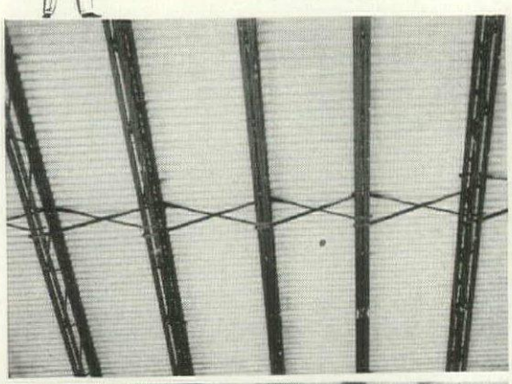
. . . the ONLY engineered form for light concrete floor and roof slabs, with *reliable strength* and *adequate safety* margin for normal construction loads!



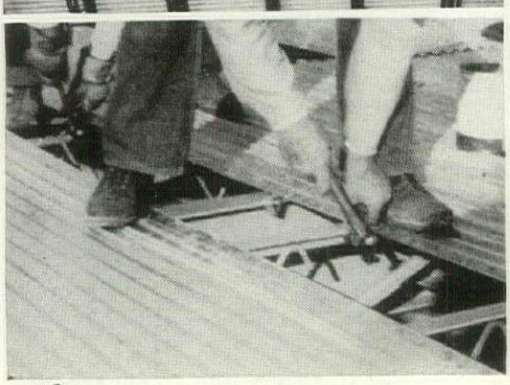
ATTRACTIVE, permanent Corruform is furnished galvanized and/or vinyl-primed (ready to paint) for exposed joist construction—or —in natural, black sheets for unexposed joist construction.

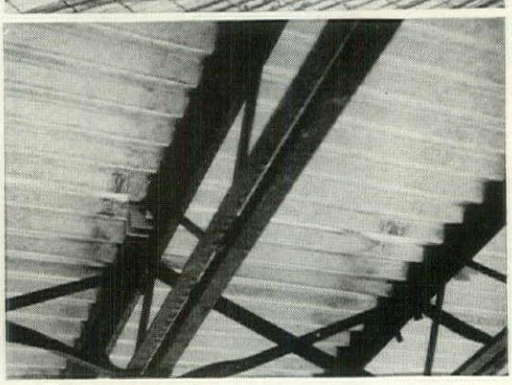


DURABLE Corruform is nearly twice as strong as ordinary steel of equal weight. It's an ideal vapor seal, too! With coated Corruform, insulating slabs serve better, last longer.











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SAFE Corruform provides an extra-tough, secure steel base for trades and concrete . . . a form which maintains structural principles and integrity, with no side pull on joists, beams or walls.

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CORRUFORM Tough-Tempered Steel

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LETTERS—CHURCH DESIGN FOR MUSI

Contemporary churches and pipe organs

Sirs:

As a recitalist and church musician as well a a frustrated architect, I note that there is regre in the minds of some organists and church mus cians that apparently little if any thought given by church authorities, organ builder architects and interior designers to the inte related effects of ecclesiastical architecture an design, and the various acoustical factors both the customarily used, and newly discovere construction materials and interior furnishing in churches, upon the sound and function of th pipe organ. On the other hand, there is appa ently equally little thought given by most orga builders upon the effect their organ designs pr duce in relation to these constructional an acoustical factors.

Church boards and others responsible for th design of ecclesiastical buildings erected tod are probably, in the main, a reactionary l Many organ builders are equally so. The i portance of the visual aspect of the church unquestioned, even including those misguid souls who firmly believe a church other th Gothic is not worshipful. There are doubtle those who shy away from contemporary desig materials and methods for no more valid reas than it has "never been done before."

THE MAGAZINE OF BUILDING, which I envious study regularly, has within the past year or presented contemporary church buildings, several leading architects, but almost none these churches, insofar as the pictures a drawings indicate to this lay mind, have cluded much thought as to the requirements pipe organ space. placement for best liturgi and musical use, integration of visual aspe into the architectural and "designal" whole, the effect of the construction materials and terior furnishings upon organ tone.

The church structure employing almost exc sively stone and glass as structural eleme has a vastly different acoustical premise fr that of the average non-sectarian Protest church in this country. The latter, unctiou over-stuffed with all manner of sound-absorbi interiors (carpets, pew cushions, acoustical pl ter, tile, etc.) is basically non-resonant. it would seem little thought or study by eit persons or factors involved has been gi toward a solution. Recitalists like myself cover that organ building firms, apparently w a desire of pleasing-the-customer-at-all-costs well as endeavoring to promote a pet theory two anent organ design and construction, ha permitted their instruments to be purchased a installed in buildings which are completely suited to the characteristic tonal designs these organs.

The so-called baroque organ of Bach's day its prototype in a church building today not nor can it sound as it did (and still do in the church of Bach's time. It did not mat whether the building were a vast cathedral o

(Continued on page 122)

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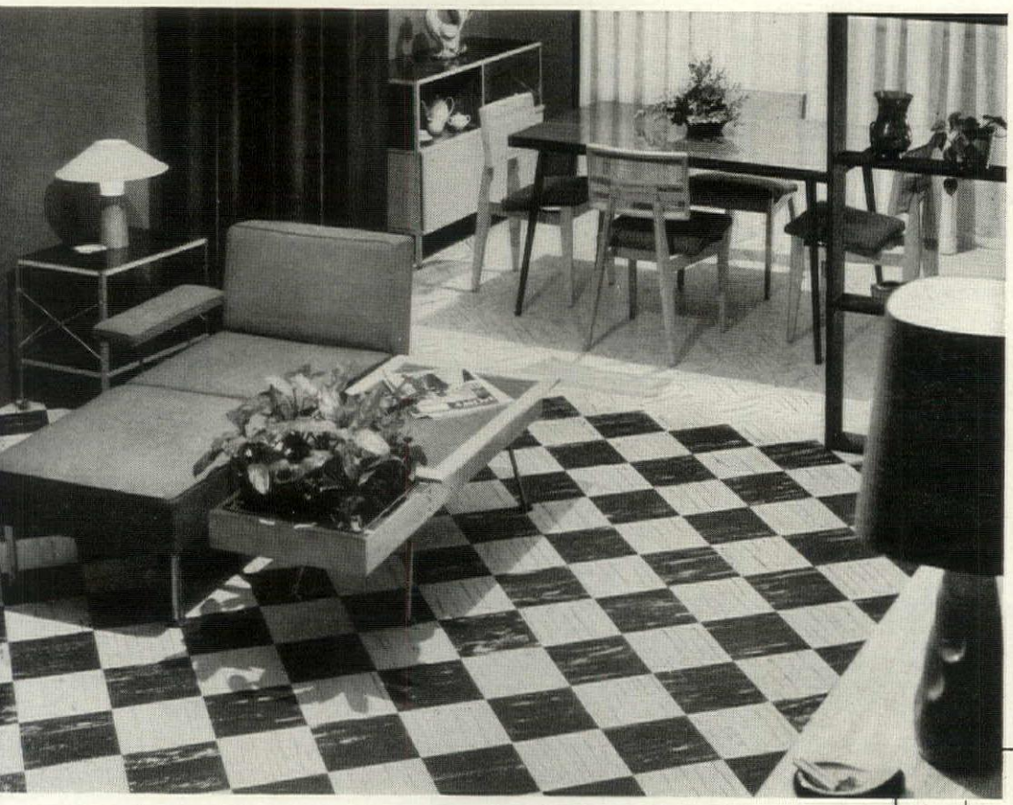
IDEAL FOR INSTALLATION OVER CONCRETE SLAB SUBFLOORS!

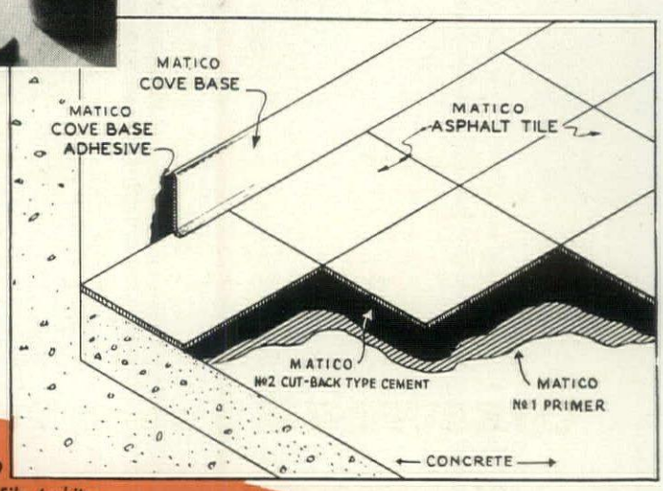


Whenever the need arises for economical, durable, colorful flooring, leading architects and builders select MATICO Asphalt Tile. Ideal for installation over concrete subfloors on, below or above grade, MATICO also assures lasting satisfaction and enduring beauty when installed over double-wood floors. In addition, MATICO is preferred for use in radiant-heated homes, because it permits the highest BTU output of any type floor covering.

MATICO is available in 27 lovely colors — including the new pastel "Petal Tones." It provides greater economy . . . gives long-lasting wear . . . installs easily, quickly . . . cleans with a minimum of effort . . . is resilient and comfortable underfoot. When next you select asphalt tile, be sure to consider the impressive advantages offered by MATICO Asphalt Tile Flooring.

HOW TO INSTALL MATICO OVER CONCRETE SUBFLOORS!

The floor shall be cleaned and steel-troweled to a smooth, regular surface — free from holes, scales or existing paint. Holes, cracks and other irregularities shall be filled and leveled smooth with MATICO Fast-Patch crack filler. On or below grade concrete floors shall be primed with MATICO #1 primer prior to spreading of MATICO #2 cutback type cement. (MATICO #3 Emulsion Cement may be used effectively for on or above grade installations, but it is not recommended for use below grade). MATICO shall not be installed over new concrete slabs until they have dried. In general, on grade or below grade concrete surfaces shall be allowed at least 30 days to dry and above grade concrete subfloors at least 14 days to dry.



GET TO KNOW MATICO

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Beauty and design in acoustical ceilings

While the ceiling is almost never used as a dominant element of interior design, it usually makes an important contribution to the over-all effect of the room. For this reason, appearance is often an important consideration in the selection of an acoustical material.

Architects and designers have discovered that the inherent "tile" form of acoustical materials does not impose serious limitations in adapting them to various interior designs. Many architects have proved, by imaginative use of acoustical materials, that they offer a wide degree of design flexibility. Leading manufacturers have done much to improve the appearance of acoustical materials. They have also broadened their lines to include more shapes and sizes and have offered new products designed specifically for decorative use.

TYPES OF ACOUSTICAL MATERIALS

Acoustical materials made in tile form fall into two general "appearance" groups—those with perforated surfaces and those with textured or "fissured" surfaces. Within the Armstrong Line there are three perforated materials and two with fissured surfaces.

Perforated Materials—Surface perforations are not, in most cases, a decorative disadvantage. Their size and arrangement, which is dictated by sound-absorption requirements, are usually such that they blend into the over-all effect of the ceiling and are not obtrusive. In a well-designed fiberboard material, like Armstrong's Cushiontone, the important appearance features are neatly drilled holes, uniform white color, and smoothness of the finish applied both to the surface and the bevelled edges. Perforated materials are most suitable for repeated painting without loss of acoustical efficiency. Armstrong's Arrestone, a metal pan type material, with a white baked enamel finish, is also available on special order to match any desired color.

Textured Materials—Materials with fissured or textured surfaces, like Armstrong's Travertone and Armstrong's Corkoustic are often selected for use in traditionally styled interiors or where the ceiling must contribute to a distinctive atmosphere. They are popular for use in churches, auditoriums, banks, and libraries and are often used for wall installations. Armstrong's Travertone is made with bevelled edges to accent the tile effect or with square edges, as illustrated at left, below, for a monolithic appearance.

SPECIAL DESIGN TREATMENTS

An interesting special effect can be created by combining square-edged Travertone in the 11/16″ thickness with bevelled-edged Travertone in the 13/16″ thickness. Such a treatment results in subtle high lights and shadows that can form many patterns.



Square-edged tiles of Armstrong's Travertone create a monolithic ceiling appearance, in the Hemphill-Wells Department Store, Lubbock, Texas. Architect: Haynes and Kirby. Acoustical Contractor: Williams-Moore Company.

SIZES AVAILABLE IN ARMSTRONG'S ACOUSTICAL MATERIALS

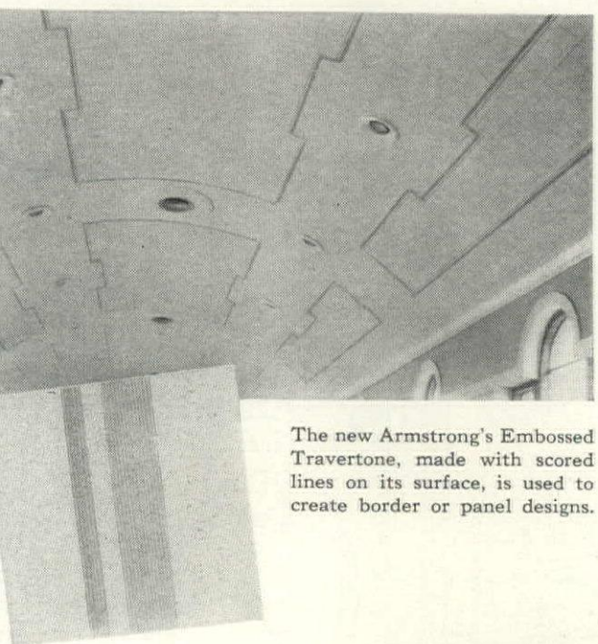
Cushiontone:	12″ x 1 12″ x 2 24″ x 2
Travertone:	6″ x 1 12″ x 1
Arrestone:	12″ x 2
Corkoustic:	6″ x 1 12″ x 1
Perforated Asbestos Board:	12″ x 1 12″ x 2 24″ x 2 24″ x 4

With some materials, special border tiles are available. Armstrong's Arrestone and Armstrong's Cushiontone, for example, are both available in plain, unperforated units for use in making borders or panels in the ceiling. A new addition to the Armstrong Line is "Embossed" Travertone, made with scored lines across its surface for use as a border or special-design material.

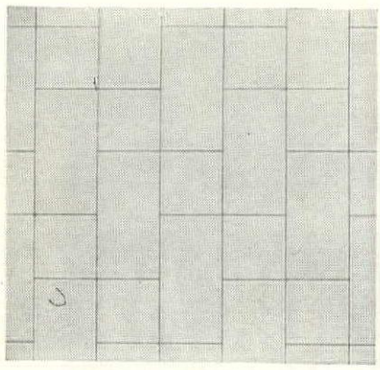
Even without use of special materials, a surprisingly wide variety of design treatments is possible with regular acoustical tiles. Some of these are illustrated at right. It should be borne in mind, however, that the more complex designs generally require slower, more careful workmanship in application.

OTHER CONSIDERATIONS

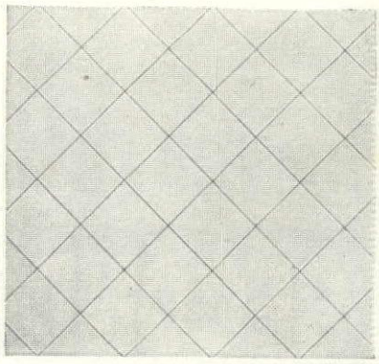
Appearance, although important, is only one consideration in selecting an acoustical material. Efficiency, cost, fire-safety, moisture resistance, and many other factors may influence your decision. Your Armstrong Acoustical Contractor is a valuable source of advice on these and many other sound-conditioning problems. He will be glad to help you in any way he can.



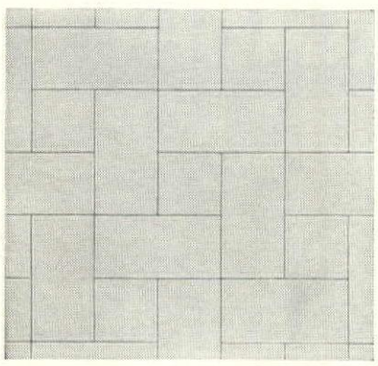
The new Armstrong's Embossed Travertone, made with scored lines on its surface, is used to create border or panel designs.



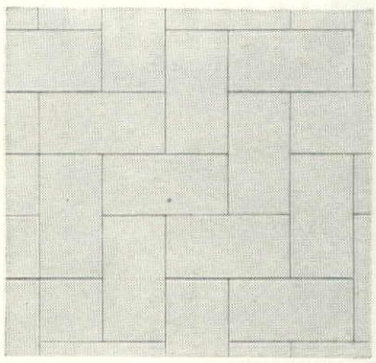
ALTERNATING ASHLAR



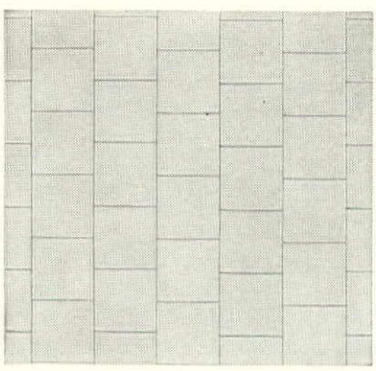
DIAGONAL



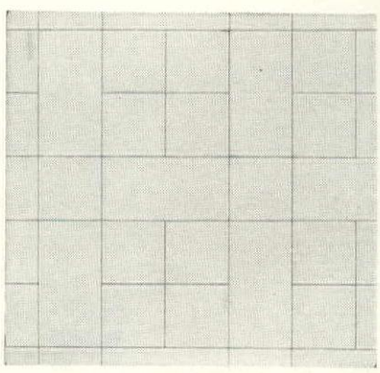
SQUARE BASKET WEAVE



SQUARE HERRINGBONE

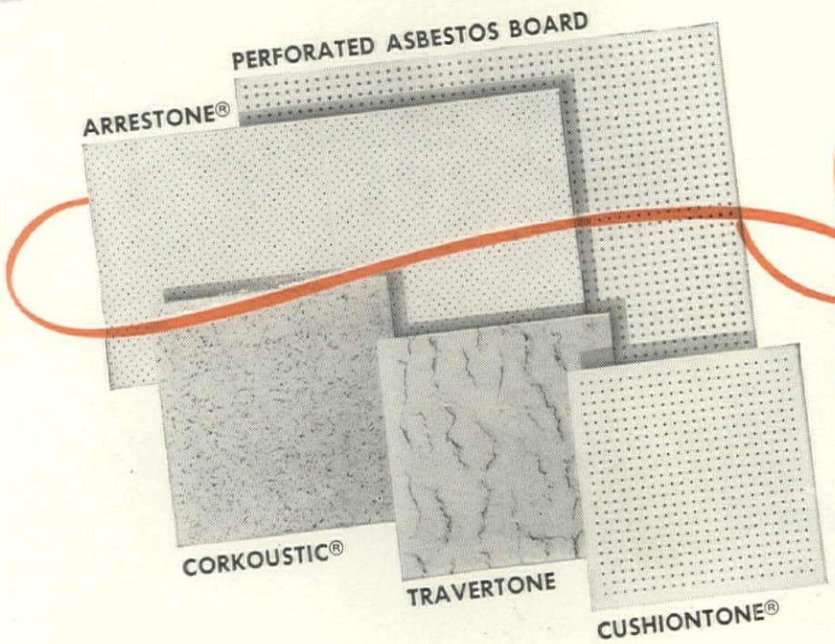


SQUARE ASHLAR



HOLLOW SQUARE

Here are several of the interesting effects which can be created with acoustical materials. In all of these, 12″ x 12″ and 12″ x 24″ tiles were used. Many other design treatments can be obtained with these and other sizes of acoustical tiles.

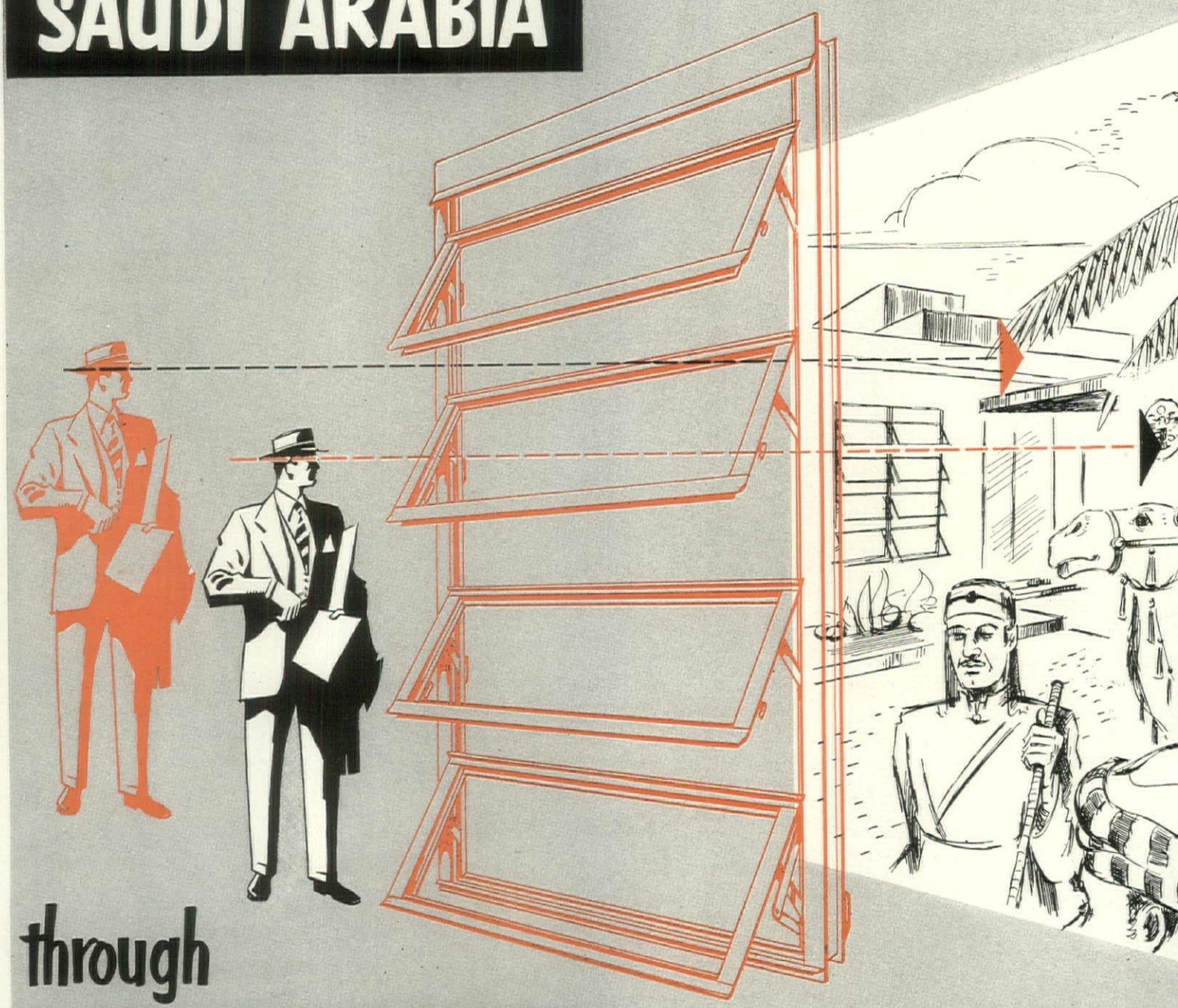


ARMSTRONG'S ACOUSTICAL MATERIALS

Free booklet, "How to Select an Acoustical Material," contains important facts about sound conditioning. Write to Armstrong Cork Company, 5409 Ocean Avenue, Lancaster, Pennsylvania.

how an Architect took a

SECOND LOOK AT SAUDI ARABIA



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The perfect windo

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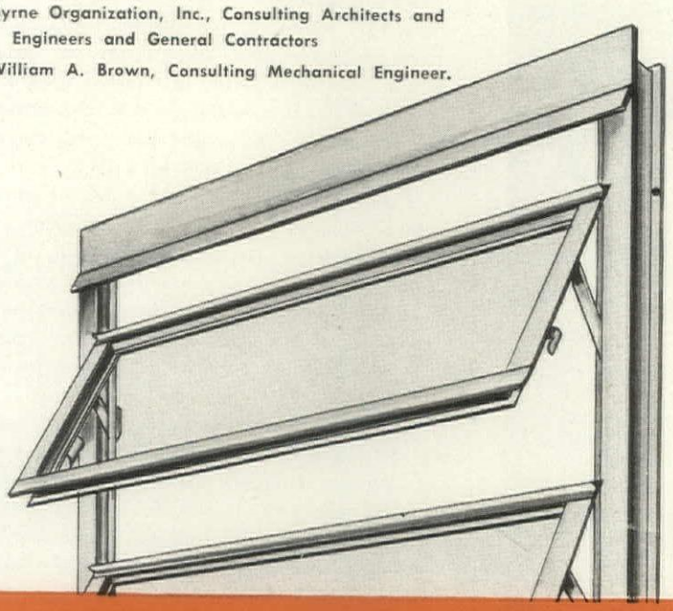
Leland W. King, Jr., Supervising Architect, F.B.O.
Byrne Organization, Inc., Consulting Architects and Engineers and General Contractors
William A. Brown, Consulting Mechanical Engineer.



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- Clean the outside from the inside.
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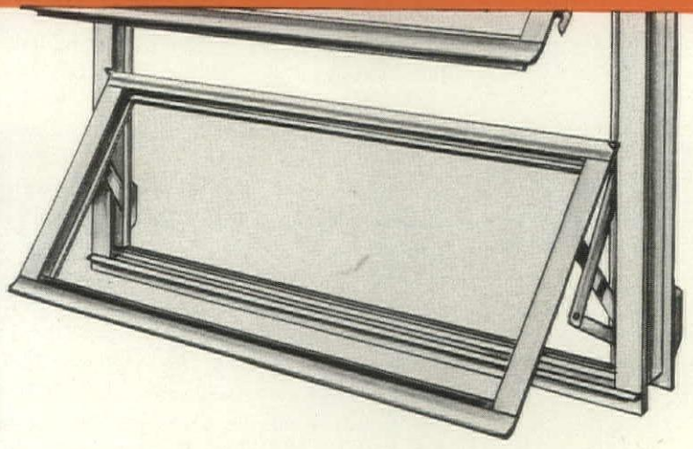

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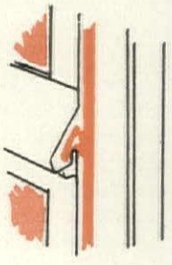
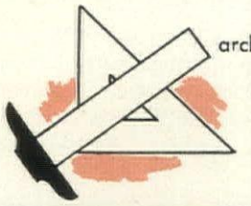
You really have to see how Auto-Lok's patented, precision hardware works (ask for "tattle-tale" demonstration). It automatically locks the vents at all four corners and with the elastomeric vinyl weatherstripping provides the tightest window closure known!



ENGINEERING COUNSEL



To supplement their own facilities, architects and designers are daily utilizing our staff's experience in fenestration problems. May we assist you?

For further details on Auto-Lok -- The Perfect Window -- see SWEET'S and, by all means, write for the name of your nearest distributor and a copy of the free booklet ***"WHAT IS IMPORTANT IN A WINDOW?"*** Address Dept. MB-9.

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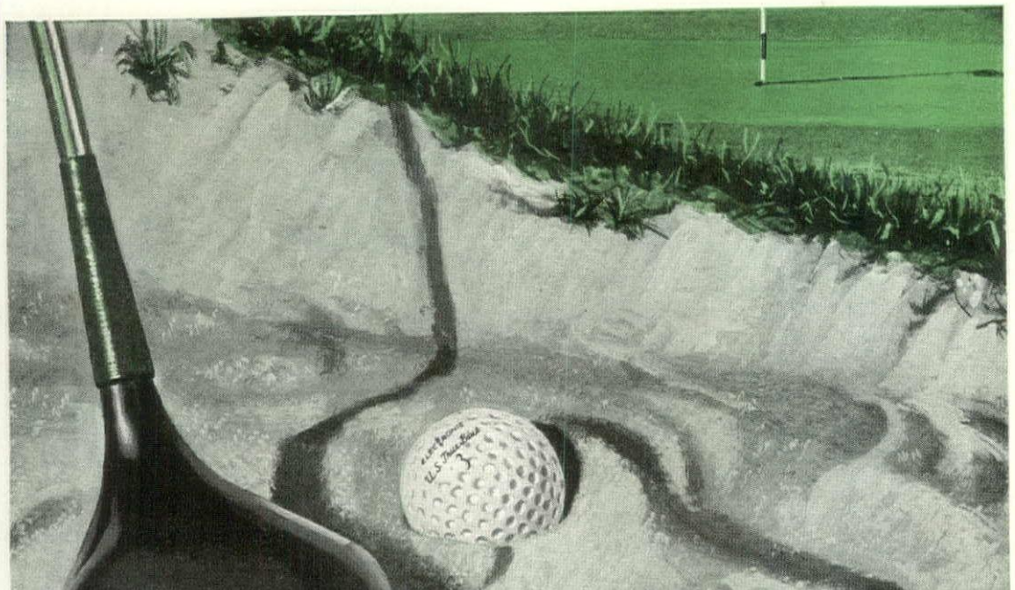

It's selection that makes the difference

. . . in golf As a golfer, you'd never think of playing with only a driver—you'd find it impossible, for instance, to play this trap shot without a sand blaster.

Instead, you carry a complete set of woods and irons designed to help you cope with different situations.

. . . in lighting It's the same way when you plan and specify a lighting installation. It's important to have a *wide selection* of lighting units and wiring supplies from which to choose—a selection that will guarantee a solution to any lighting problem that arises.

And, that's exactly why you'll find it helpful to check with Graybar whenever you plan a lighting layout. Because we distribute the nation's most complete selection of lamps and lighting units, we can provide detailed specifications, quotations, and delivery data on materials for any lighting application. You save valuable time . . . you get the benefit of impartial recommendations.

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Here's real help on lighting . . . via Graybar

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LETTERS—CHURCH DESIGN FOR MUSI

relatively small chapel in someone's palace, th basic space-and-tone concepts and materials use were pretty much the same. Today, the varianc in the acoustical factor in church constructio is enormous. It would seem that the only co sideration given to most church buildings acoustics is that for speech, with little if an thought being given to the types of music sounds customary in most denominations.

An article in the June 1951 issue of *Th Diapason*, a magazine devoted to the organ, music and musicians, by Robert Noehren of th University of Michigan, states that "even in t best churches of America, designed by su architects as Eliel Saarinen and Frank Llo Wright, no attempt has been made to combi the form and function of the organ. Very litt parallels the attempts made by European buil ers and architects to solve the problem of org design. At best the Europeans, Protestants a Catholics alike, have retained a sense for t historical importance of the organ and its lationship to the liturgy of the church." T writer of these words has made extensive stu of organ design in various countries under Gu genheim fellowships, and has in his excursio done a fine service toward furthering thoug upon contemporary organ design.

He further states that "except for the limit work of one or two organ builders, contempora organ design in America is in a state of inert In some instances historic traditional designs feebly imitated. More often the decorative e ments of the organ bear no relationship to instrument itself and constitute nothing m than an ordinary grille covering the speaki pipes, which are encased in a room or chamb out of sight. . . . The organ is a strong and spiring voice of the church. As a backgrou for worship the importance of the visual a musical elements of the organ should be emphasized by the church of today if it is capture once more the happy balance betwe art and religion that marked its strength medieval times."

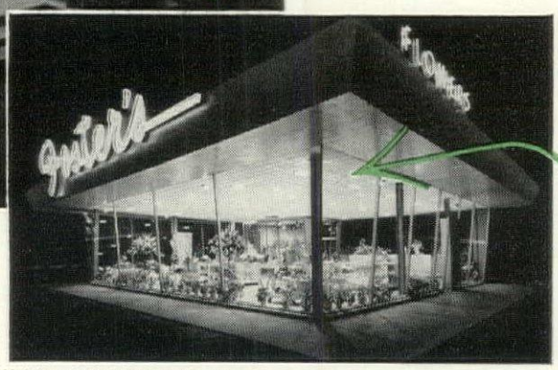
Admittedly, many American organ builders not fight to retain and maintain the rela integrity between the organ itself and its vis and musical aspects in the church buildi These builders could well, and relatively eas take a leaf from the architects who prem their designs on construction materials wh become their own decorative elements. T speaking pipes of the organ have surpass beauty in themselves and, with careful and tistic thought and planning, can form an tegrated facet of the over-all design and deco tive scheme of the church without loss to instrument's function or tonal capabilities.

Thus far comment has been with the p organ only in mind. To be completely fair, electronic organ must necessarily be includ The organist (or anyone else) who dismisses electronic organs with disdain is in the sa category with the person who likewise dismis TV. Electronics, in many guises and uses, i

(Continued on page 126)



We're Keeping This QUIET



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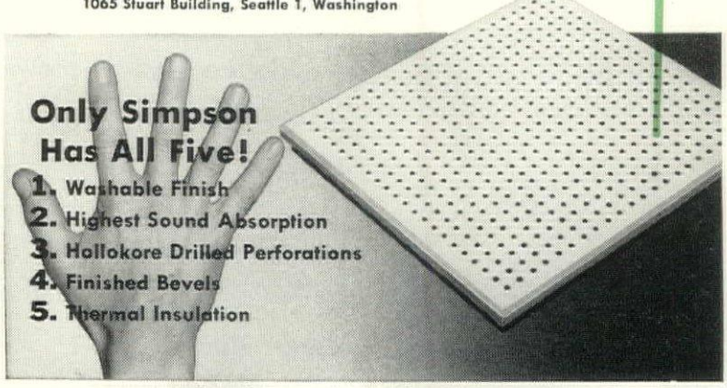

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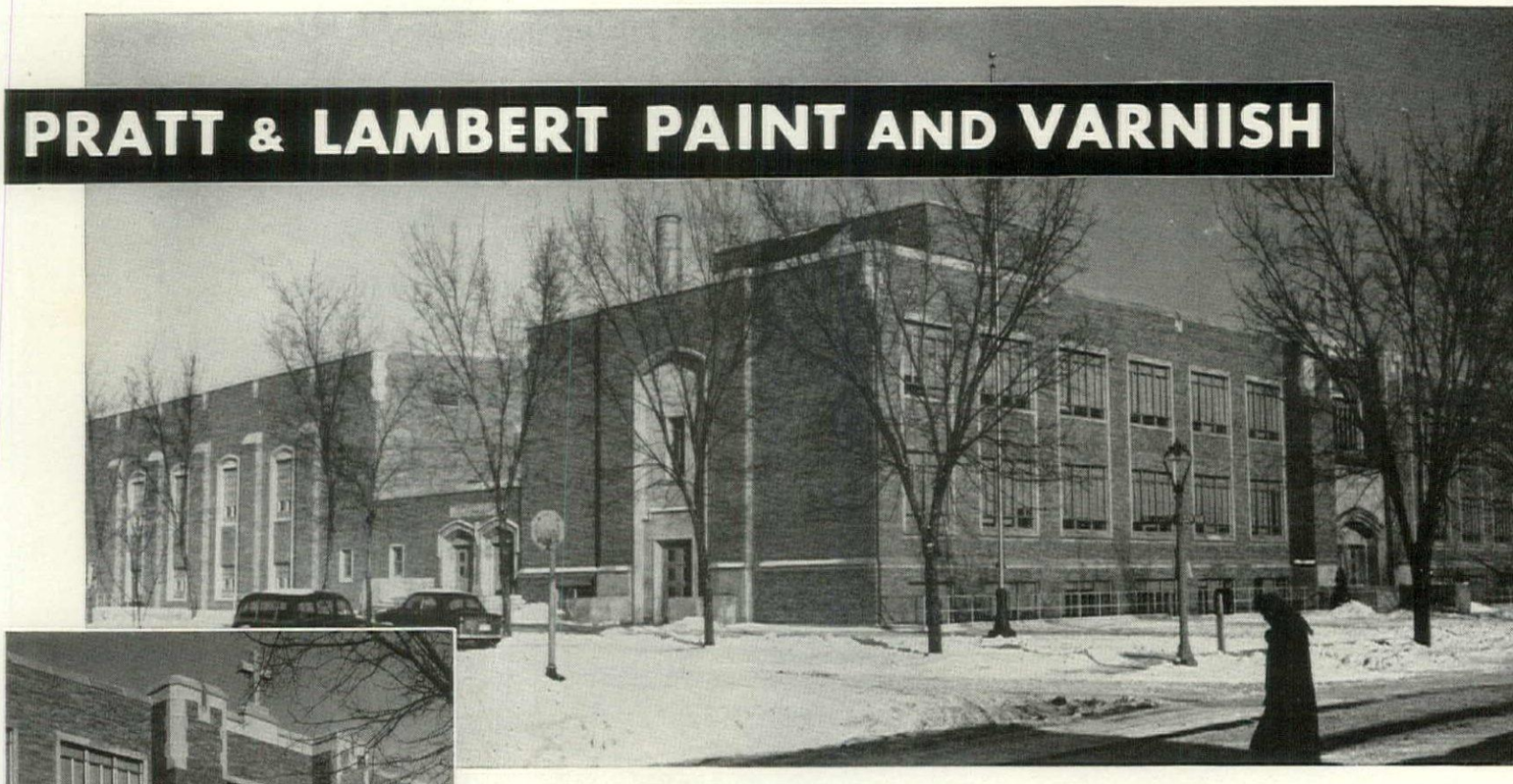



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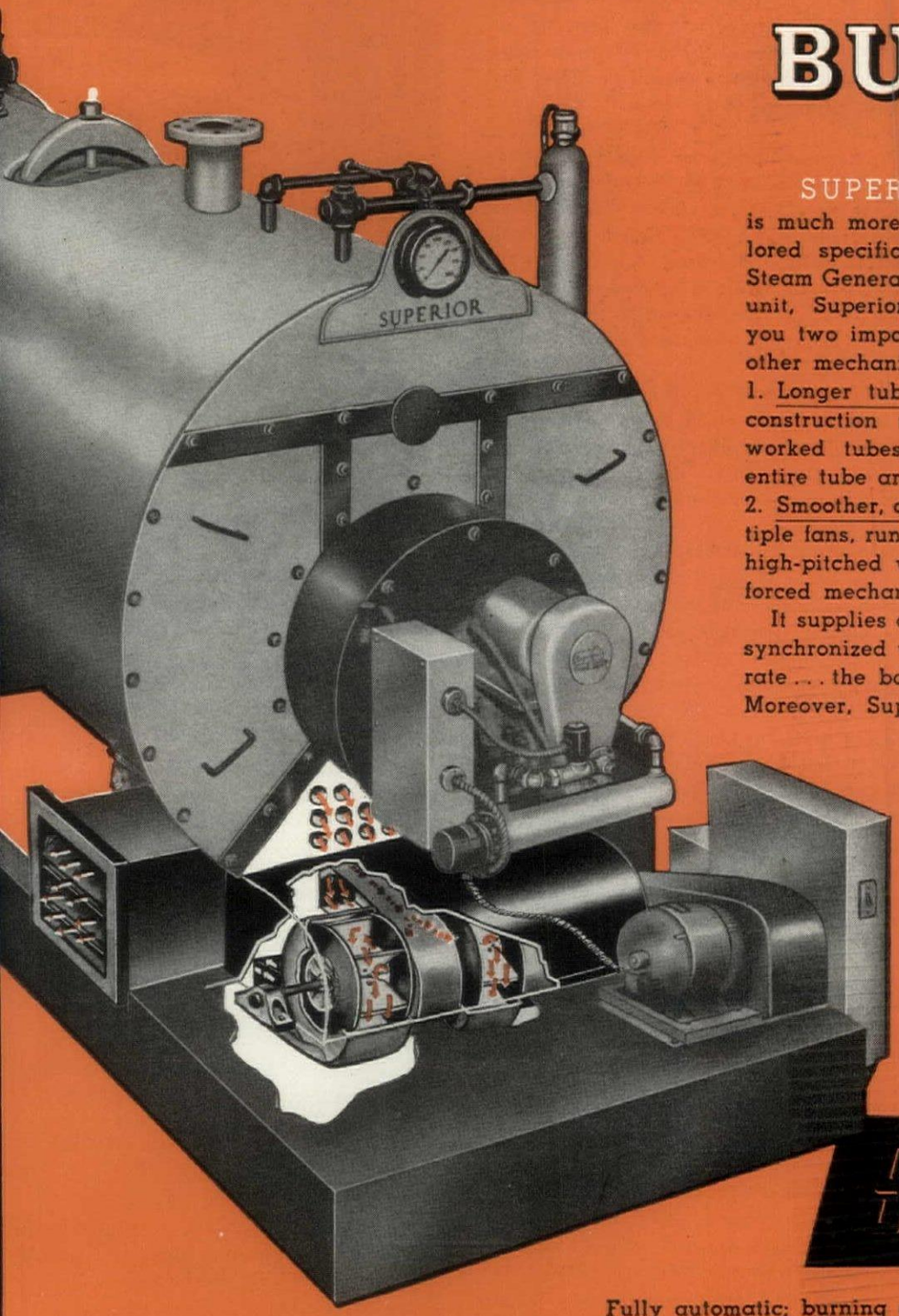

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LETTERS—CHURCH DESIGN FOR MUSIC

suspected, is here to stay and the field has a legitimate place in the scheme of today and tomorrow. Although the visual aspect of the electronic organ is non-existent (unless one wishes to integrate loud-speakers into a planned decorative scheme), the tonal aspect does remain and here the electronic builders have been and are remiss in not requiring that electronic organ installations are such to present the instrument to best advantage, both musically and liturgically.

The frequent open-forum round-table discussions of THE MAGAZINE OF BUILDING are invaluable. It would seem a similar discussion, the personnel of which were church authorities, architects, interior designers, organ builders and organists, could result in conclusions of inestimable value to those responsible for the vast amount of church building now going on in this country.

It would be good to ascertain if architects and decorators are at all interested. Such interest would at least dispel the frequently heard comment that architects are apparently intent upon destroying church organs by their seeming lack of knowledge of this aspect of church architecture! By the same token, it would be equally good to learn if pipe and electronic organ builders are sufficiently interested by indicating their willingness to take part in such a discussion. The writer believes church authorities would welcome such a project for in many instances they are quite "over a barrel" since they have practically nothing of proved value upon which to call when trying to "sell" intelligent ecclesiastical design. Surely THE MAGAZINE OF BUILDING could render a great service to somewhat diffident and no doubt puzzled group factors if such a discussion were made possible.

RAY BERRY, *Dean*
Colorado Springs Chapter
American Guild of Organists
Colorado Springs, Colo.

• Instead of the proposed round table (a project which we cannot presently consider) we invite church architects to comment on Reader Berry's provocative letter.—ED.

WURSTER ON CITY PLANNING

Sirs:

Your showing of the Eastgate Apartment House (May '51) was notable. However, it neglected giving much deserved credit to Burnham Kelly of the City and Regional Planning Department at MIT, who paved the way for the project becoming so integrally a part of MIT—both as to land and architectural services. City planning is so intertwined with architecture that I believe any owner-architect team for such a project should have a trained city planner as an equal member sharing in the profits. Free from the creative design aspect, he could well be the chairman.

WILLIAM W. WURSTER, *Dean*
School of Architecture
University of California
(formerly Dean of Architecture at MIT)

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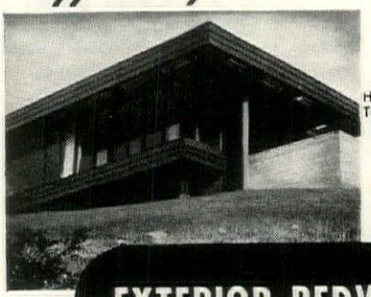

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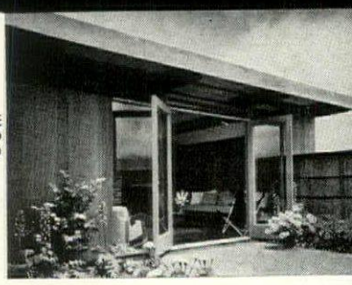

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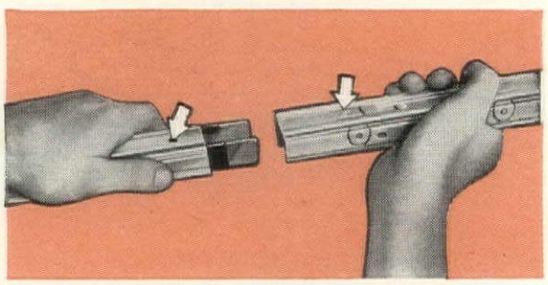

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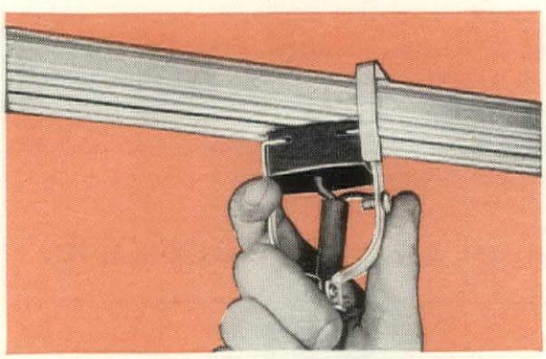

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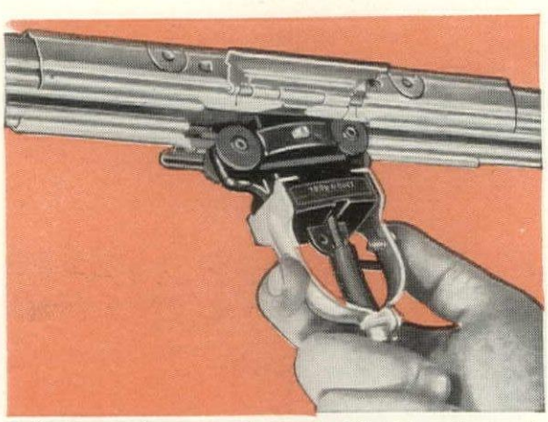

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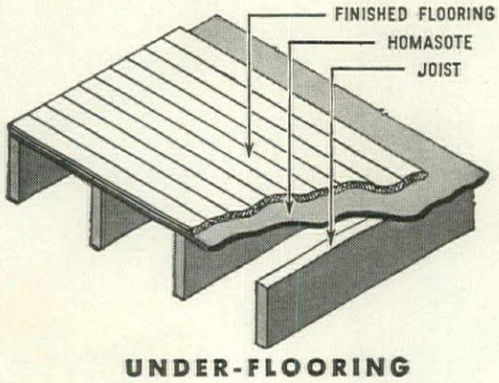
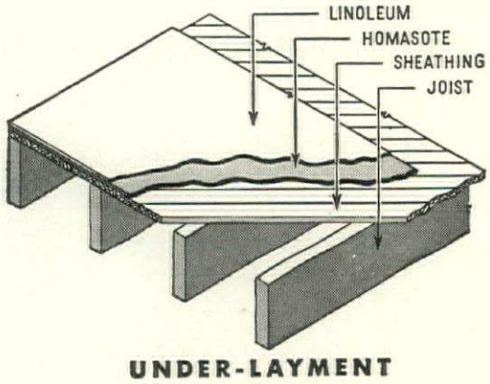


UNDER-FLOORING



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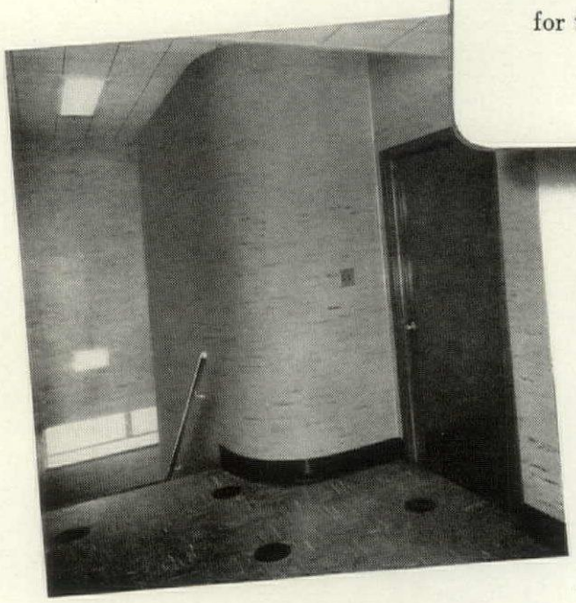

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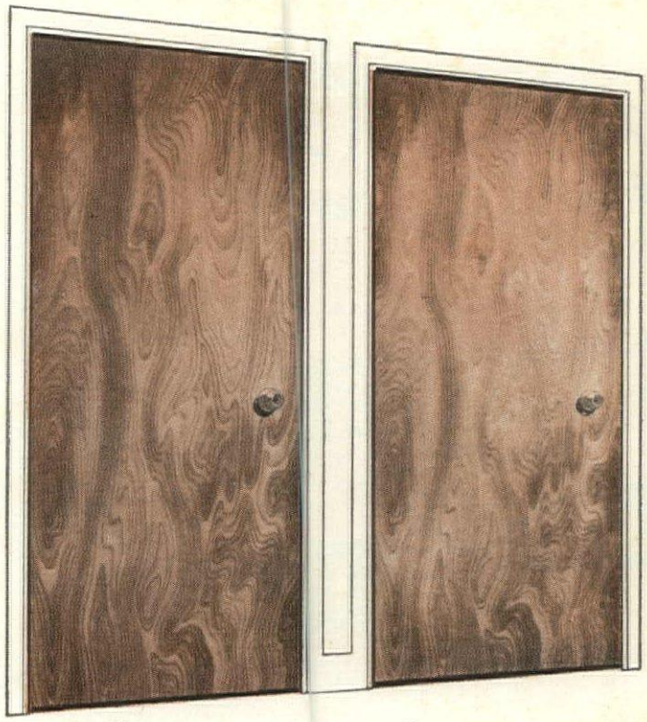

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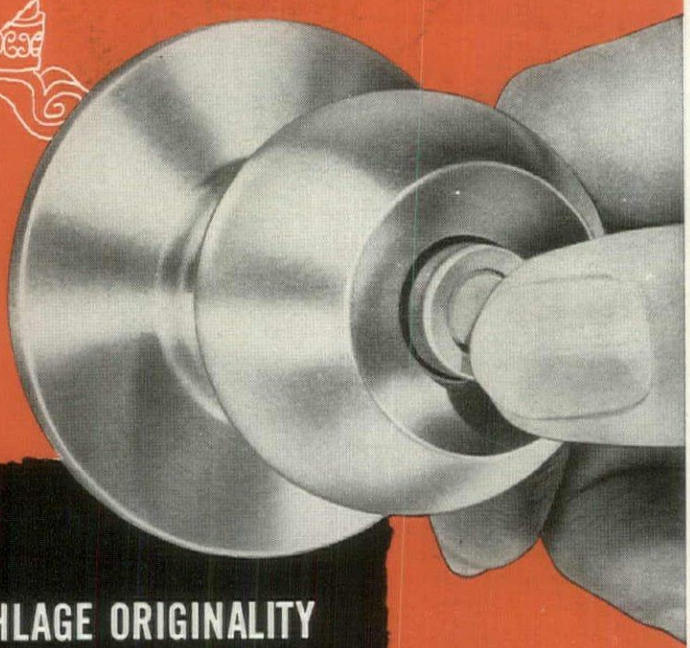

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Kelly and Gru
a busy archite
gineer combin
five offices in
York, New
and Massachu
Architect **B. SUMNER GRUZEN** and Engineer
A. KELLY are the firm's principals, while Eng
HUGH A. KELLY (no relation) is resident c
tant. MIT-trained Gruzen formed the cor
with Hugh A. Kelly in 1940. Paul A. Kelly
in 1945. New K & G design: the Signal
School (p. 170).




Partners **ANTONIN RAYMOND**
LADISLAV L. RADO were bo
Czechoslovakia, received arc
engineer degrees in Pragu
Frank Lloyd Wright disciple
mond went to Japan with the
master in 1920, worked ther
til 1938. In recent years he has had a New
office, with Rado since 1946. A Harvard
nus, Rado has practiced in Czechoslo
Boston and New York. Recent project: the
Theater (p. 172).



Peripatetic **PAUL THIRY** was born in Nor
aska, graduated from the University of
ington and Fontainebleau and has encircl
globe once, Europe three times. Ar
Thiry's well-rounded Seattle practice ru
gamut from fabric design to structural
ning, e.g. the handsome Washington Stat
lege Dormitory (p. 176).



Washington-born **HILYARD R. ROBINSO**
studied architecture at Columbia Universi
a 22-year old practice in the nation's c
Robinson's design portfolio includes mass
ing, schools and dormitories, e.g. the
planned Hampton Institute Building (p.



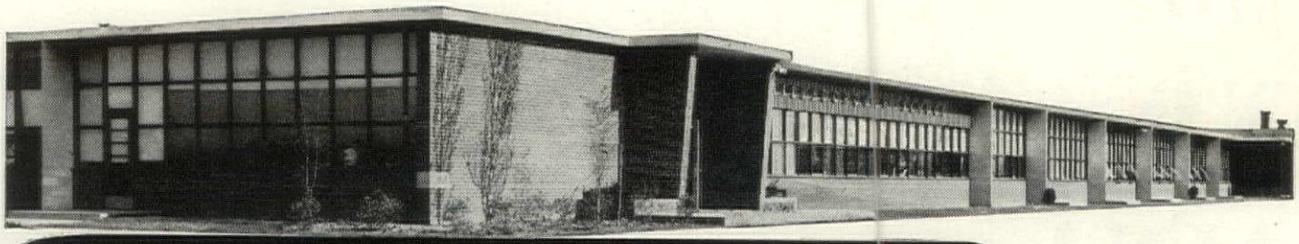


O'NEIL FORD,
LETT COCKE
HARVEY P.
are architect
Trinity Univ
daring new
slab" structures on a San Antonio hillt
180). Ford is well-known for modern
with a distinctly regional character
throughout his native Texas. Cocke has
ticed architecture in San Antonio for 24
Smith for 32.






Architects **FLOYD A. NARAMORE**, 72, **WILL**
BAIN, 55, **CLIFTON J. BRADY**, 57, and **PE**
JOHANSON, 41, designed Seattle's new sla
VA Hospital (p. 196). No newcomers
northwest scene, the first three have pr
in Seattle since the twenties, while Jo
made his debut in 1936.



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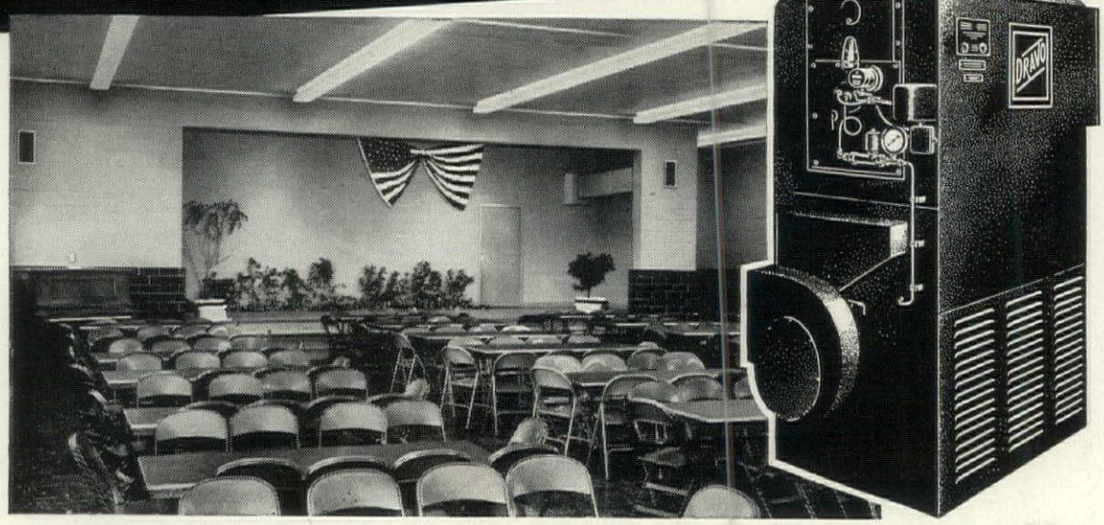

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Dravo "Counterflo" Space Heaters are ideal for heating and ventilating such school facilities as . . . gymnasiums . . . auditoriums . . . stadium rooms . . . libraries . . . cafeterias . . . book stores . . . locker rooms . . . field houses . . . school garages . . . indoor swimming pools . . . manual training shops . . . laundries . . . classrooms.

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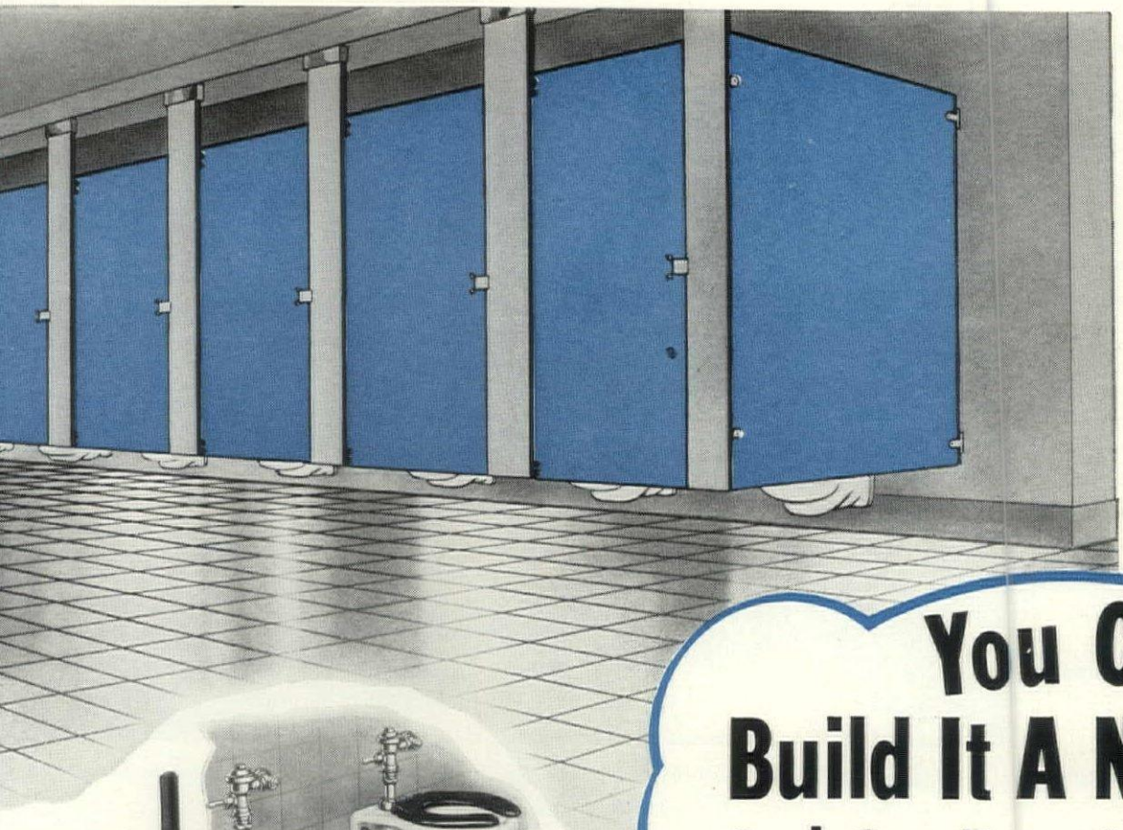



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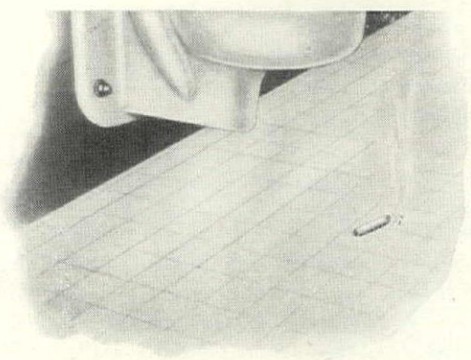
Immaculate cleanliness is no problem in toilet rooms with fixture-bare floors—where plumbing fixtures are off the floor, because there is nothing to interrupt the sweep of the broom and the swish of the mop. Fixture-bare floors reduce the day-by-day dollar cost of maintenance of cleanliness to an all-time low while lifting sanitation to a new high. Specify wall type plumbing fixtures—they give toilet rooms a roominess that is otherwise unobtainable.





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REVIEWS



Harvey Ingham Hall of Science, Drake University, Des Moines, Iowa. Saarinen, Swanson & Saarinen, Architects: Brooks-Borg, Associated Architects.

LABORATORY DESIGN. A National Research Council Report, edited by H. S. Coleman. Reinhold Publishing Co., New York, N. Y. 404 pp. 9" x 12". Illustrated. $12.

It is difficult to conceive how a better book than this one on laboratory design could have been prepared. The general excellence of this big, fully-illustrated book is a direct result of its long planning and careful preparation. It is the product of a "Committee on Design, Construction and Equipment of Laboratories" set up after the war by the National Research Council, which was a continuation of a much older committee in the same field.

Under the chairmanship of H. S. Coleman, Assistant Director of the Mellon Institute, who also served as editor, some 42 specialists contributed a chapter apiece. Together their material adds up to a gold mine of information for architects, engineers, college faculty members and the growing number of scientists and those in industry who share responsibility for research laboratories.

While only four chapters have been written by architects, the book may be all the more valuable to architects and engineers for that reason, because it presents the thinking of scientists with whom architects have to work. Only if the laboratory designer knows how his clients think and what they want can he achieve "the distinguishing characteristic of the contemporary laboratory architect, which is the practice of imaginative coordination."

The book is divided into four sections. Part 1 has seven chapters that deal with materials, facilities, services and equipment, including furniture, plumbing, lighting, power, ventilation and safety.

Part 2 covers ten phases of teaching laboratories including such subjects as site selection, general design characteristics, interiors an chapters devoted to several kinds of teachin laboratories such as analytical and organi chemistry, biochemical, chemical engineerin and metallographic laboratories.

Part 3 has 12 chapters on industrial labora tories with sections on such specialized subjec as animal rooms, constant-temperature-humidit rooms, high pressure laboratories, pilot plan operations and laboratories for electrochemistry A chapter of considerable interest is one on th design of laboratories for the handling of radio isotopes.

Part 4 has concise descriptions of 13 differen laboratories including five college facilities an such other laboratories as the Mellon Institut Bell Telephone, Johns Manville, Esso, B. Goodrich and several new governmental station

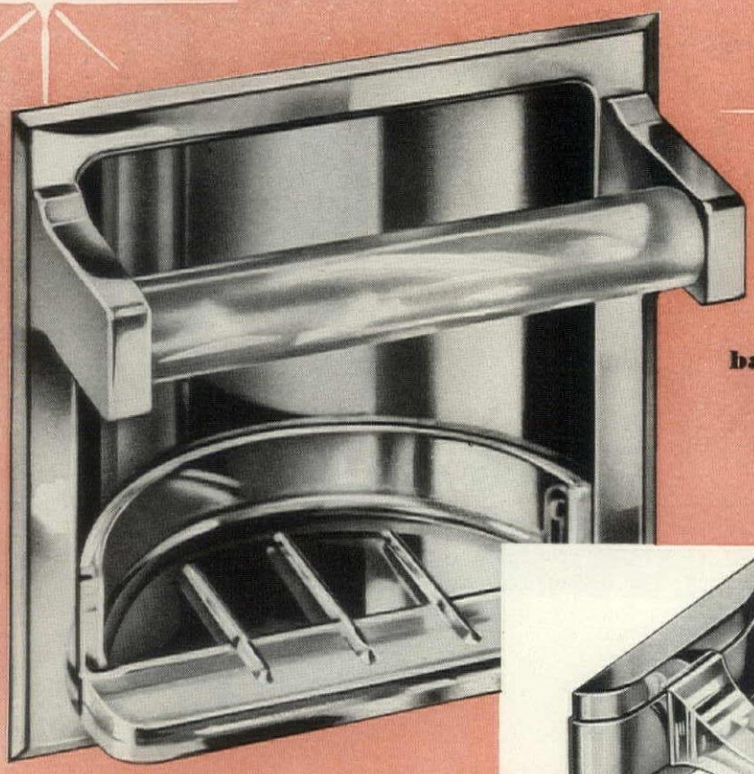
There is not always agreement among th experts but their differences make up one of th most interesting angles of the book. The 40 pages, with the excellent photographs and drav ings, form an extremely valuable example group journalism. The book is a credit to th Committee and to editor Coleman.—C.N.

MUSEUM BUILDINGS. Vol. I. By Laurence Va Coleman. The American Association of Museum Washington, D. C. 298 pp. 8½" x 11". Illustrated $10.

A great many museums, art centers and relate structures are going to be built in this countr during the next few years as civic center plan in different cities are realized. When this hap pens, Mr. Coleman's book will be invaluable t any architect trying to avoid the mistakes bad lighting, bad planning, inadequate storag and office space and lack of flexibility whic plague so many existing museums today.

(Continued on page 142)

BATHROOMS CAN HAVE THE BEST...



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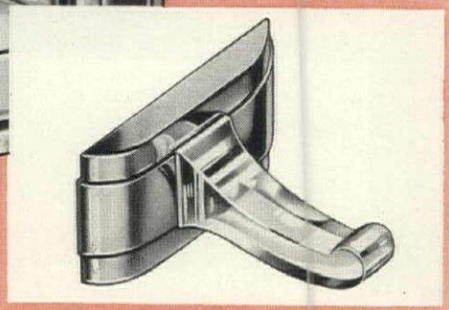

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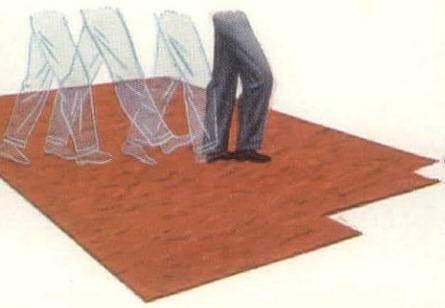

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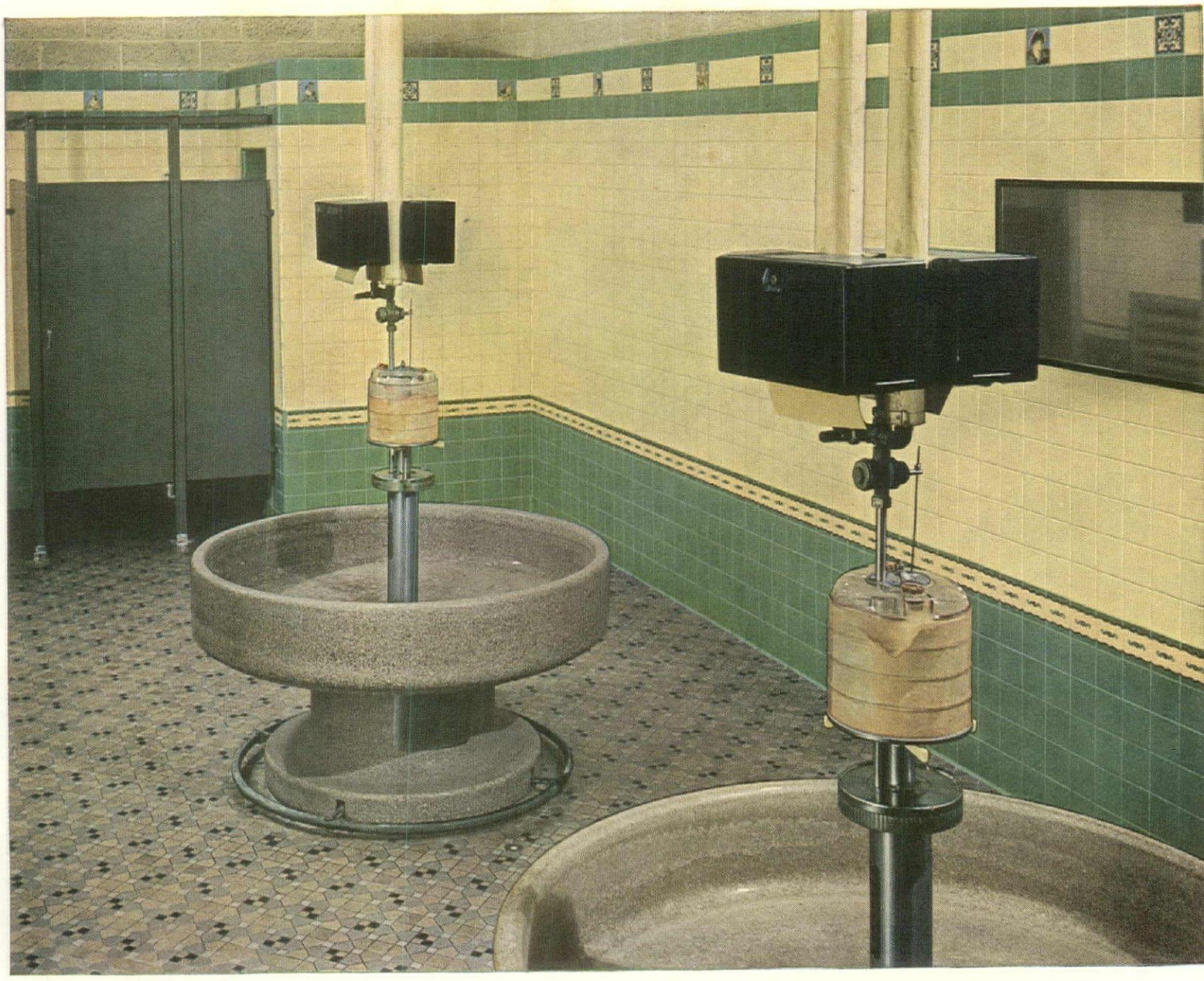

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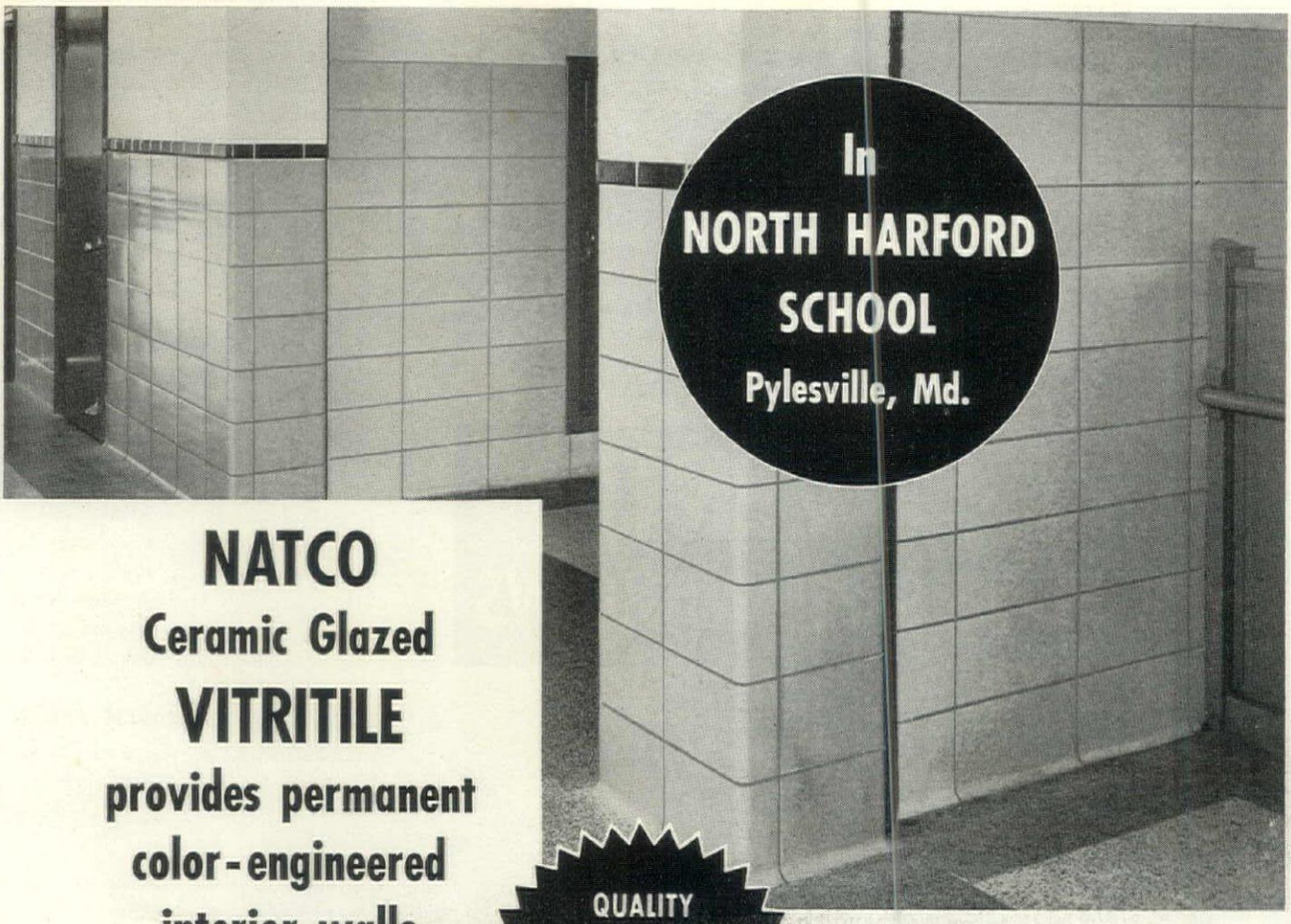

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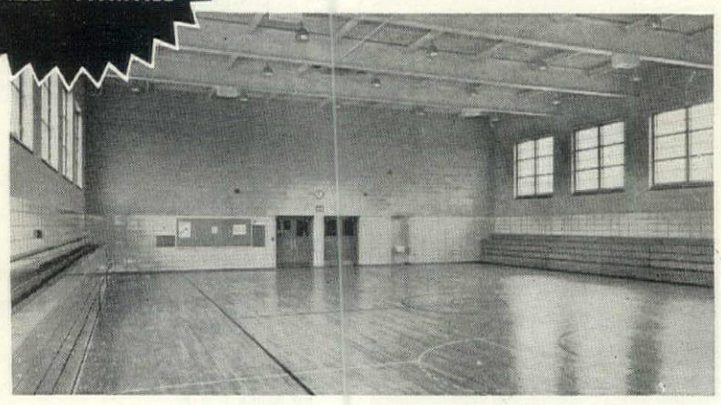
Two views of Natco Ceramic Glazed Vitritile, 8W series, block bond construction as used for wainscots in North Harford School, Pylesville, Md. Architects Palmer, Fisher, Williams and Nes; General Contractors, Davis Construction Company; Mason Contractor, Vincent Capitelle.



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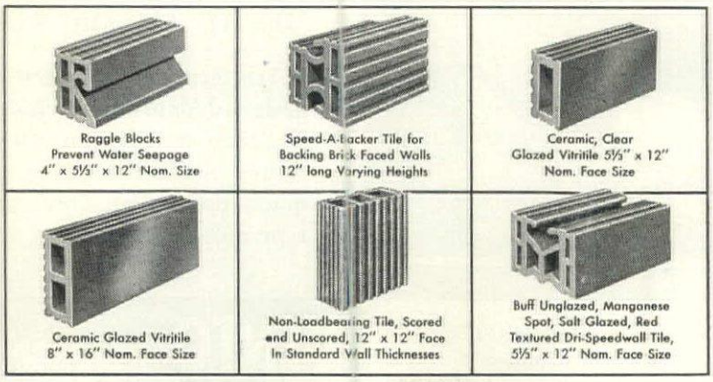

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In Standard Wall Thicknesses

Buff Unglazed, Manganese Spot, Salt Glazed, Red Textured Dri-Speedwall Tile,
5⅓" x 12" Nom. Face Size

This is the first volume in a planning study devoted to the subject. Two additional volumes are in preparation; they will contain drawings and photographs of the principal recent museum buildings and projects. Apart from suggesting ways of designing a museum from scratch, Mr. Coleman has included examples of remodeled museums that prove how much can be done to get more modern use out of the most inefficient and uninviting museum structures of the past. —P.B.

THE HOMES OF AMERICA. By Ernest Pickering. Thomas Y. Crowell Co., New York 16, N. Y. 280 pp. Illus. 6″ x 9″. $5.75.

This is an excellent book for the lay student of architecture—or for anyone in the industry who wants a compact, readable account of American home building from earliest colonial times to the present. Like all good architectural historians, Dean Pickering of the University of Cincinnati describes the growth and change of building styles against the background of the forces which shaped them. This is as much a brief history of American life as a biography of American houses.

Most of the book deals with the great houses of the U. S. past; the show places which are habitually visited by the garden clubs march through its pages in a sequence of more than 200 excellent plates. Only 20 pages are devoted to contemporary U. S. houses, and these, too, are in the luxury class. Though obviously sympathetic to the modern movement as it appears in big country houses by Wright, Wurster and Neutra, the author entirely neglects today's small house field. Yet it is precisely here that the industrial techniques implicit in good contemporary architecture promise to effect the greatest revolution in the American home.

Though good design and mass production have not yet been widely wedded in the low cost field there are now enough pace-setting examples to justify the inclusion of good houses for the average American in a book of this character.—B.P.

SIMPLIFIED MECHANICS AND STRENGTH OF MATERIALS. By Harry Parker, M. S. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16 N. Y. and Chapman & Hall, Ltd., London. 269 pp. 5″ x 8″. $4.

Prepared for the student who has not obtained a practical appreciation of mechanics or advanced mathematics. A working knowledge of algebra and arithmetic is sufficient to enable him to comprehend the mathematics involved in this volume.

This book has been written for use as a text book in courses in mechanics and strength of materials and for use by practical men interested in mechanics and construction. Because it is elementary, the material has been arranged so that it may be used for home study. For those who have had previous training it will serve as a refresher course in reviewing the most important of the basic principles of structural design.

THE PRACTICAL BOOK OF AMERICAN WALLPAPER. By Lois and William Katzenbach. J. B. Lippincott Co., Philadelphia, Pa. 136 pp. 8½″ x 11″. Illus. $10.

The recent history of wallpaper in this country, with 141 halftone plates and 12 samples of actual wallpaper.

ROMAN SOURCES OF CHRISTIAN ART. By Emerson H. Swift. Columbia University Press, 2960 Broadway, New York 27, N. Y. 9½″ x 12½″. Illus. $10.

The author challenges the theory, popular in the field of art history for the last half century, that oriental factors were dominant in the formation of style in medieval Christian art, architecture, and decoration. He contends that the art of the Western Roman Empire was far more influential, and he marshals impressive evidence for his case.

(Continued on page 145)

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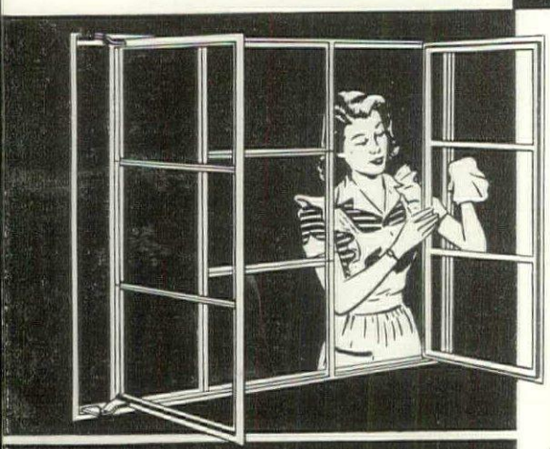

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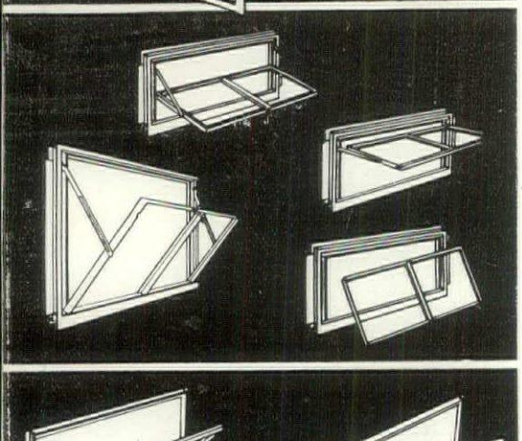
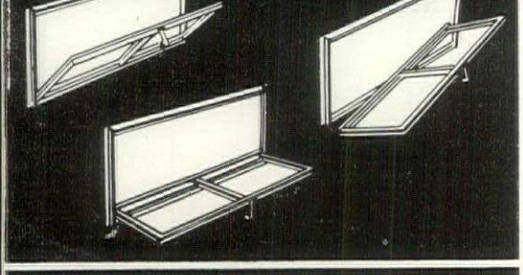
Extension type hinges, gracefully designed Roto or Lever type operators and positive cam action locking handles, allowing ventilator adjustment without screen removal. Available in all standard types and sizes.



VENTO
"CHAMPION" BASEMENT WINDOWS

Three ventilation openings and sash removal. Double contact with leakproof watershed sill. 14 gauge electrically welded frame, fins welded to jambs for quick installation. Three standard sizes, putty or puttyless glazing.



VENTO
"THRIFTY" BASEMENT WINDOWS

A real economy window especially designed for lower cost housing. Two position ventilation and easy sash removal. Fin flanges at jambs for quick installation. Three sizes, putty type only.

MEMBER METAL WINDOW INSTITUTE

See our catalog in Sweet's Architectural 17b/Ve. Write us for full information and name of nearest distributor, also facts about Vento utility and barn windows and Vento steel lintels for cost-saving concrete block and brick construction.

VENTO STEEL PRODUCTS CO. INC.
256 Colorado Ave. Buffalo 15, N. Y.













No limit to your markets for beautiful kitchens

made with

MASONITE HARDBOARDS



Maybe it's the kitchen of the new 1952 demonstration home you are proudly showing your prospects. Then again, it could be an old 1900 kitchen you have brought up to date. In model homes or remodeled homes, Masonite Hardboards offer you unlimited possibilities.

These smooth, rigid, all-wood panels go up quickly. They're highly resistant to moisture and they are an ideal base for paint or enamel.

In cabinets of all kinds, you'll find Masonite Hardboards offering strong, lasting resistance to denting and twisting.

They make low-cost, easy-to-fit counter fronts and tops, soffits, valances and other kitchen refinements.

Available at your building materials dealer.

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Box 777, Chicago 90, Illinois
Please send me additional information:

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Name.....

Street.....

City..... *Zone*..... *State*.....

MASONITE® **CORPORATION**
BOX 777, CHICAGO 90, ILLINOIS

"Masonite" signifies that Masonite Corporation is the source of the product



What supoib taste! For help with the temperature control they consulted Honeywell!

We doubt that cartoonist Larry Reynolds' character, Butch, knows the difference between a stud and a joist.

But he certainly has one mighty sound idea.

Honeywell *can* help architects and their heating engineers provide the proper thermal environment for any client – anywhere–in any kind of structure. We have a lot of well informed control engineers–in our 91 different offices–who are experienced in doing just that. And we have a lot of literature that's yours for the asking–on the automatic control of heating, ventilating and air conditioning.

So, why not *talk to Honeywell?* Why not *write to Honeywell* about *your* control problem? And why not do it *now?*

* * *

For information on how to solve the heating control problem in hospitals, see the column across the page.

MINNEAPOLIS
Honeywell

First in Controls

REVIEWS

THE CITY OF LONDON, A Record of Destruction and Survival. Prepared under the directions of the Improvements and Town Planning Committee of the Corporation of London. The Architectural Press, 13, Queen Anne's Gate, S.W. 1, London. 323 pp. 7½" x 9½". Illus. 25 shillings.

This is the story of the development of the City of London from Roman times to the present day, and includes a series of brilliant and hitherto unpublished photographs of the 1940-5 bomb damage when a third of the city was destroyed, when 20 of Wren's City churches were ruined and dramatic new views of St. Paul's were revealed over the wastes of rubble. The proposals for the area's reconstruction are shown in full detail. Over 360 photographs, engravings and maps, 40 of which are in color.

NINETEENTH CENTURY ARCHITECTURE IN BRITAIN. By Reginald Turnor. B. T. Batsford, Ltd., London. 111 pp. 6" x 9". Illus. $4.75.

A survey of the checkered course of British architecture from Regency times to the beginning of the present century. During these 300 years the building arts descended from the order and decency of traditional Georgian design to a tastelessness and anarchy which reached its lowest point about the time of the Great Exhibition. The book will appeal to everyone who is fascinated by the history of taste in Regency and Victorian times. The author is primarily concerned to understand how architecture came to take the "wrong turning" and he believes that the explanation lies mainly in the Victorian application of moral standards to esthetic and practical questions.

A REVIEW OF THE PROPOSALS FOR REZONING NEW YORK CITY. Edited and designed by Baker-Funaro. New York Chapter, American Institute of Architects, N. Y. 9½" x 7½".

A simplified analysis of the proposed new zoning resolution for New York City (THE MAGAZINE OF BUILDING, Sept. '50, p. 122).

FARMHOUSE PLANNING IN NEW YORK STATE. By Grace Morin. N. Y. State College of Home Economics, Cornell University, Ithaca, N. Y. 8½" x 11".

A list of farm housing requirements and a group of experimental farmhouse designs based on authoritative rural housing data.

HOW TO BUILD FENCES AND GATES. Lane Publishing Co., 576 Sacramento Street, San Francisco, Calif. 96 pp. 8" x 11". Illus. $1.50.

This new book contains 266 photos and drawings showing the advantages and disadvantages of some 200 kinds of fences, from the solid glass, view-saving windbreak type to the single wire cattle enclosure.

(Continued on page 148)

Personalized 8¾" x 9" reproductions of this Larry Reynolds cartoon are available upon request.



What supoib taste! For help with the temperature control they consulted (your firm name).

For help with any control problem, talk to Honeywell!

Heating a hospital, for instance . . .



Here's an excellent way to help make sure the hospital you work on today will meet the needs of tomorrow: *Equip it with Honeywell Individual Room Temperature Control.*

The trend indicates it will soon be routine medical practice to give each patient the *exact* room temperature he needs to get well fastest. This means, of course, that Individual Room Temperature Control will soon be a "must" in the modern hospital—because no other system can compensate as well for varying effects of wind, sun, open windows and variations in internal load.

Thus, it's just sound planning to install Honeywell Individual Room Temperature Control when a hospital is being built. Doing it later, as a modernization project, is sure to cost your client more money.

So the next time you design a new hospital, be sure to specify Honeywell Individual Room Temperature Control.

For full facts about this system—and about the special Honeywell thermostat designed to meet a hospital's special needs—mail the coupon below today.

☐ Please send me complete details on Individual Room Temperature Control for hospitals.

☐ Please send me a personalized reproduction of the Reynolds cartoon.

Name_____ Firm Name_____

Address_____ City_____ Zone____ State_____

Send this coupon today to Dept. MB-9-158, Minneapolis 8, Minnesota

MINNEAPOLIS **Honeywell**

First in Controls

NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

SAVES $68,522 . . . CUTS ERECTION TIME IN HALF
. . . ELIMINATES DISTURBANCE

Industrial Construction. On the publishing plant for the Baltimore Sun, the bid on riveted construction was $551,508 . . . welded construction only $482,986, saving $68,522. Structural weight was cut 7%.

Telephone Exchange. The framework for the Associated Telephone Company, West Los Angeles, California, was erected in half the time . . . steel tonnage 18% less than riveted construction. Welding also eliminated vibration and disturbance to $2,000,000 worth of delicate instruments.

School Building for Fenn College, Cleveland, Ohio. 130 ton steel structure was bolted, guyed and made ready for welding in 5 days . . . field welded by 2 men in 10 days.

New 9th Edition "The Procedure Handbook of Arc Welding Design and Practice." Has 1200 pages and 1300 illustrations. Complete section of 365 pages on Designing of Arc Welded Structures. Price only $2.00 postpaid in U.S.A.; $2.50 elsewhere.

Beam-to-Column Connection *story Fenn used on three College Mechanical Photo neering Building, shows welders completing column splices.*

Typical Open Box Column, *one of 14 shop fabricated for Associated Telephone Co. exchange, West Los Angeles, California.*

the ACTUAL

Riveted Seat *for 45,000# load. Has 6" x 4" x ⅜" seat angle, a ⅜" filler, a 3" x 3" x ⅜" stiffener angle 12" long and 8-¾" rivets.*

increasing the YIELD

Welded Seat *requires only 3" piece of 6½" T and 15 inches of ⅜" fillet weld.*

the IMMENSIT
of the POSSIB
turns out to be a
Saving in Steel of 7%

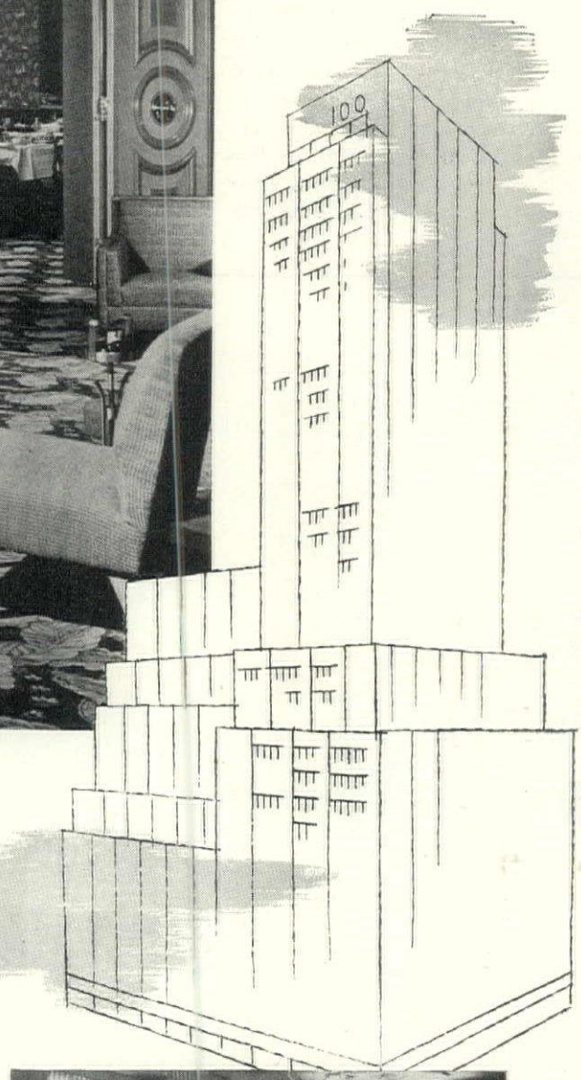
LEARN HOW WELDIN
SIMPLIFIES STRUCTURAL DE

Send for Studies in Structural Arc Welding, write Dept. 353,

THE LINCOLN ELECTRIC COMPANY
CLEVELAND 1, OHIO



With deep-piled Gulistan carpet wall to wall, The Brass Rail Restaurant in midtown Manhattan caters to the crowds in sophisticated style and beauty. Restaurant interior by Louis Allen Abramson. Gulistan carpet executed by John McCagney.



HEAVY TRAFFIC EXPECTED

Lunchtime at 100 Park Avenue finds hungry New Yorkers pouring into the newest of The Brass Rail restaurants. This rapid turnover in a restaurant streamlined for maximum efficiency means extra duty for the carpet—yet patrons expect an atmosphere of luxury underfoot. And because Gulistan carpet meets these strict requirements beautifully, Gulistan carpet was specified.

Across the country, restaurants, theatres, hotels, banks and offices are building prestige and increasing business with smart decor based on Gulistan carpet. Gulistan carpet is *the* choice for you—in *your* business or in your home. Inquire today!



For emphasis, Gulistan carpet in the dining room repeats the pattern of the lounge—in a contrasting color.

SEE YOUR

GULISTAN CARPET DEALER

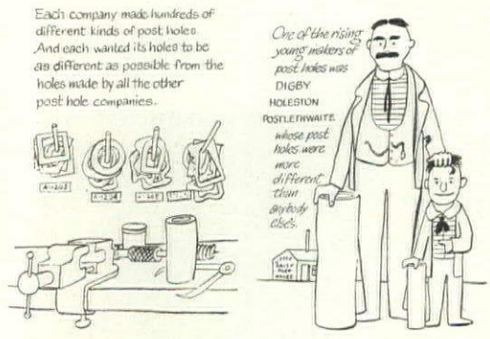
or write to Contract Division, A. & M. Karagneusian, Inc., 295 Fifth Ave., New York 16, N.Y.

Woven on power looms in the U. S. A.

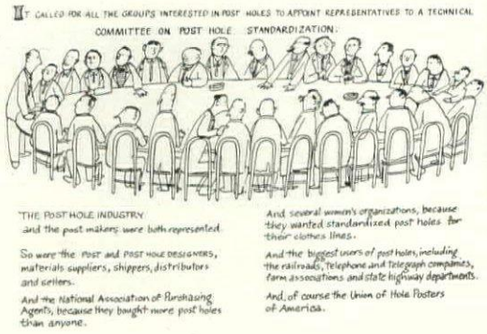
TECHNICAL LITERATURE

STANDARDIZATION. The Strange Case of the Seven Sided Post Hole. American Standards Assn., 70 E. 45th St., New York, N. Y. 16 pp. 5 x 8".

The fact that the standardized six-sided post hole would not roll off tables was but one of the many benefits that were to accrue from the conference of Post Hole Manufacturers called by the association's president, Digby Holeston Postlethwaite. For out of that round table conducted in this book by ingenuously drawn line figures with acumen and common sense, came an Aesopian lesson in cooperative enterprise



With tongue in cheek and heart on sleeve, the American Standards Association presents a charming argument for standardized production in "The Strange Case of the Seven Sided Post Hole."



worthy of note by three-dimensional manufacturers and the building industry. The creation of *The American Standard Specifications for Lap Welded, Butt Welded, and Seamless Post Holes* was not, alas, to be the final denouement. What *did* happen when the Government engineers who were about to order millions of post holes for defense decided that they needed *seven* sided post holes is for the reader to uncover. Although lighthearted, this treatment of the American Standards Association's battle for national standards has the sincerity of an impressively documented treatise. Its humor is at once sardonic and poignant. It is a charming and, let us hope, irresistible appeal. (P.S. A post hole is naturally, a hole for a post.)

METAL ROOFS. How to Paint Follansbee Terne Metal Roofs. Follansbee Steel Corp., Pittsburgh, Pa. 8 pp. 8½ x 11".

The importance of exterior color in new building and renovation work is stressed in this recent booklet. A two-page spread shows the same house treated with five different color combinations, all taken from the company's standard paint line. A good portion of the publication deals with the procedure for painting a new terne metal roof (steel strip coated with a tin-lead alloy), or refinishing an old one. Recommendations of 37 paint manufacturers for primer and finish coats on terne roofs are listed on the back cover.

GARAGE DOORS. Canopy Type Garage Doors. Strand Garage Door Div., Detroit Steel Products Co., 3111 Griffin St., Detroit 11, Mich. 4 pp. 8½ x 11".

Clearly illustrated with photographs and diagrams, the folder tells how to install the company's new 9 x 7′ canopy-type steel garage door and hardware.

TRANSFORMERS. Ignition Transformers for Automatic Heating Equipment, Bulletin GEA-5599. General Electric, Schenectady 5, N. Y. 8 pp. 8½ x 11".

Covering ignition transformers for domestic type automatic oil and gas fired heating equipment, this brochure describes the construction features of the company's SM (standardized manufacture) models and discusses the advantage of built-in two-way self-shielding, which is said to suppress radio and television interference. Accompanying the text are outline dimension drawings.

(Continued on page 150)



NEW *Terrazzo* CATALOGUE NOW AVAILABLE

Makes Architect's Job Easier By Showing:

- 100 Terrazzo Color Plates
- Typical Installations
- Architectural Details
- Specifications for Grounded Grilles, Radiant Heating, Non-Slip, and Outdoor Installations

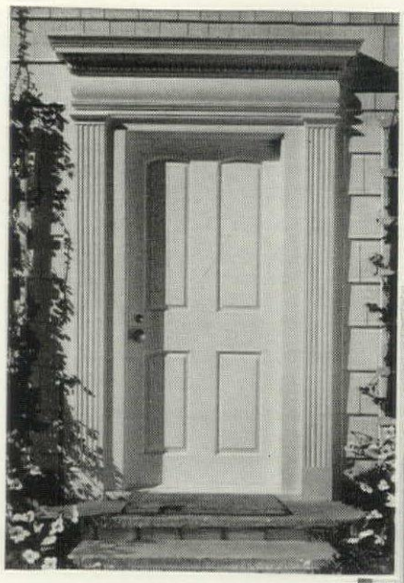
NOW YOU CAN HELP your clients visualize the enduring beauty of TERRAZZO. Handsome new 136-page loose-leaf *Catalogue and Design Book* shows color plates of many of the infinite combinations of color and patterns available in marble-hard, concrete-durable TERRAZZO; provides illustrations of typical installations; offers architectural data on tested methods of installation and maintenance; presents in one compact, easy-to-file volume a wealth of material you'll want to keep at your finger-tips. Order your copy at once—directly from the Association, or from your local Association member. Price: $10.

THE NATIONAL TERRAZZO AND MOSAIC ASSOCIATION, INC.

711 14th Street, N.W. Dept. B Washington 5, D. C.

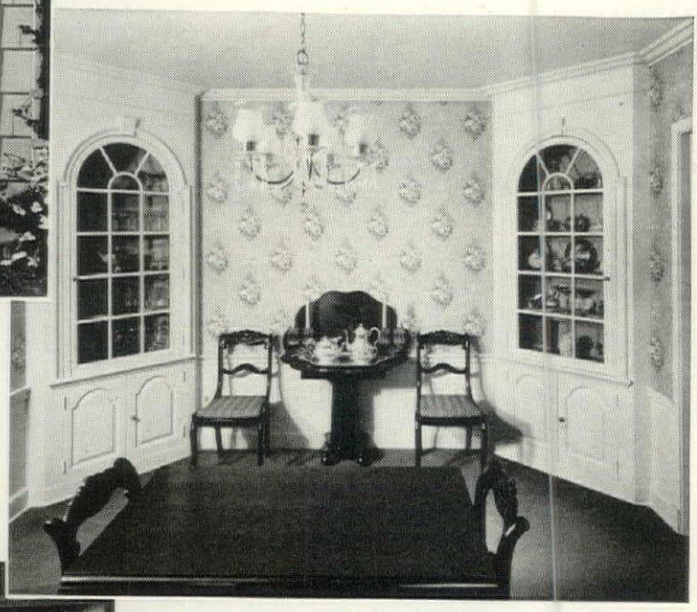
How to Catch an Eye
(and/or) a Sale





Whether you're designing a house for an individual owner—or building houses to sell—a sure way to catch a prospective owner's approving eye is to use Curtis Woodwork. More plainly than in words, Curtis Woodwork says: "This is a quality house built for a lifetime of comfortable, happy living." Yet Curtis' large production of Architectural Woodwork enables you to get this effect at very reasonable cost. For instance—

A Curtis entrance design which recalls many doorways to be found in the New England area. The entablature with its bowed face, dentil course, and pilaster beading, all contribute to the beauty of an entrance that is suitable for most any type home. Curtis Entrance C-1730 —Door C-1040.





This Curtis mantel fits gracefully into a traditional or modern interior. It is pictured here in a beautiful Ranch Style home. Curtis mantels, like all Curtis Woodwork, are made with the skilled craftsmanship used for fine furniture. This is Curtis Design C-6055 — one of several styles.

Formal and dignified is this very beautiful Curtis cabinet—often used in pairs as here. It is made for corner use only and is shipped completely assembled. This is Design C-6505. Curtis makes cabinets in all styles and sizes and priced to meet every budget.

You'll want illustrated literature describing Curtis Woodwork and Silentite Windows for your files. Just mail the coupon!

1866 CURTIS WOODWORK

Curtis makes a complete line of architectural woodwork and kitchen cabinets for the modern home. Make your next house "all Curtis."

Curtis Companies Service Bureau
MB-9W Curtis Building
Clinton, Iowa

Gentlemen: Please send me literature on Curtis Architectural Woodwork.

I am ( ) Architect ( ) Contractor ( ) Prospective Home Builder ( ) Student. (Please check above.)

Name.....

Address.....

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

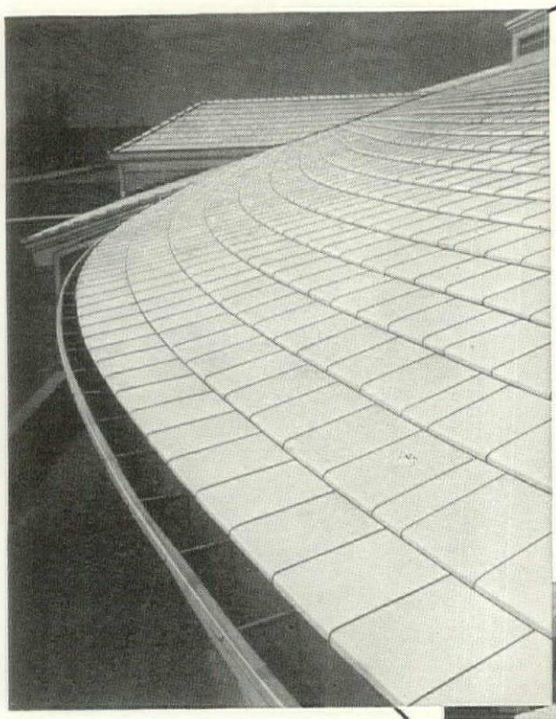
AIR CONDITIONING. CenTraVac, Bulletin DS-399. 42 pp. 8½ x 11". Custom-Air, Bulletin DS-369. 36 pp. 8½ x 11". UniTrane, Bulletin DS-420. The Trane Co., La Crosse, Wis.

Engineers who design comfort and process air conditioning systems are given full capacity and specification details on Trane's centrifugal refrigeration units in the first of these new booklets. In it is described the CenTraVac, a water chiller in the medium horsepower range which has an automatic control that assures efficient operation from 100% to about 10% of rated capacity. In addition to diagrams, photos and charts, the publication presents roughing-in dimensions and an outline of the CenTraVac's operating cycle, and lubrication, purge and control systems.

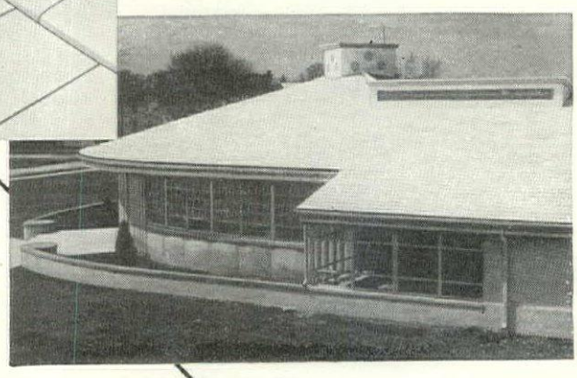
Full technical data for laying out year-round air conditioning for offices, hotels, and other multi-room structures is contained in the second brochure. The Custom-Air system described is said to assure optimum control of humidity and temperature in the spring and fall seasons as well as summer and winter. This is accomplished by separating control of moisture and ventilation air for the entire system from the temperature control for individual rooms so that the occupant can regulate temperature to his taste without affecting the ventilation and humidity conditions established for the entire building.

Selection and operating information on the new one-circuit UniTrane for multi-room air conditioning systems is found in the third publication. Engineers are given a step-by-step outline for designing complete systems as well as installation and control data.

Ludowici Tile Roof on modern school



THE LUDOWICI white tile roof on this new school is unusually pleasing against the verdant green of the land or the warm colors of the seasons. It will last long and shelter many generations of children. It will require no maintenance and because it is tile, and imperishable, it has all the elements of protection. This beauty and economy is available for many kinds of roofs.



Tilton Grade School, Rochelle, Ill. Raymond A. Orput, Architect, Rockford, Ill.

Roof is laid with Ludowici *light-weight* smooth white interlocking shingle tiles.

LUDOWICI-CELADON COMPANY

104 South Michigan Avenue, Chicago 3, Illinois

New York 17, New York
565 Fifth Avenue

Washington 5, D. C.
740 15th Street, N. W.

Cleveland 20, Ohio
12734 Woodland Avenue

NOTE: Full information is available to architects and builders about all of the colors, surfaces and patterns of Ludowici tile. We will be glad to furnish samples, details, specifications and architectural service on request.

AIR CONDITIONING. CLS Seal-Less Refrigeratio Compressors. DB 101-110. Westinghouse Electri Corp., Sturtevant Div., 200 Readville St., Hyd Park, Boston 36, Mass. 8 pp. 8½ x 11".

Construction features and complete specifica tions for Westinghouse's 2, 3, 5, and 7½ h.p hermetically sealed refrigeration compressor and condensing units are given in this well illus trated bulletin.

STORE MODERNIZATION. How to Give You Store the Look That Sells. Pittsburgh Plate Glas Co., Glass Advertising Dept., 632 Duquesne Wa Pittsburgh 22, Pa. 32 pp. 8½ x 11".

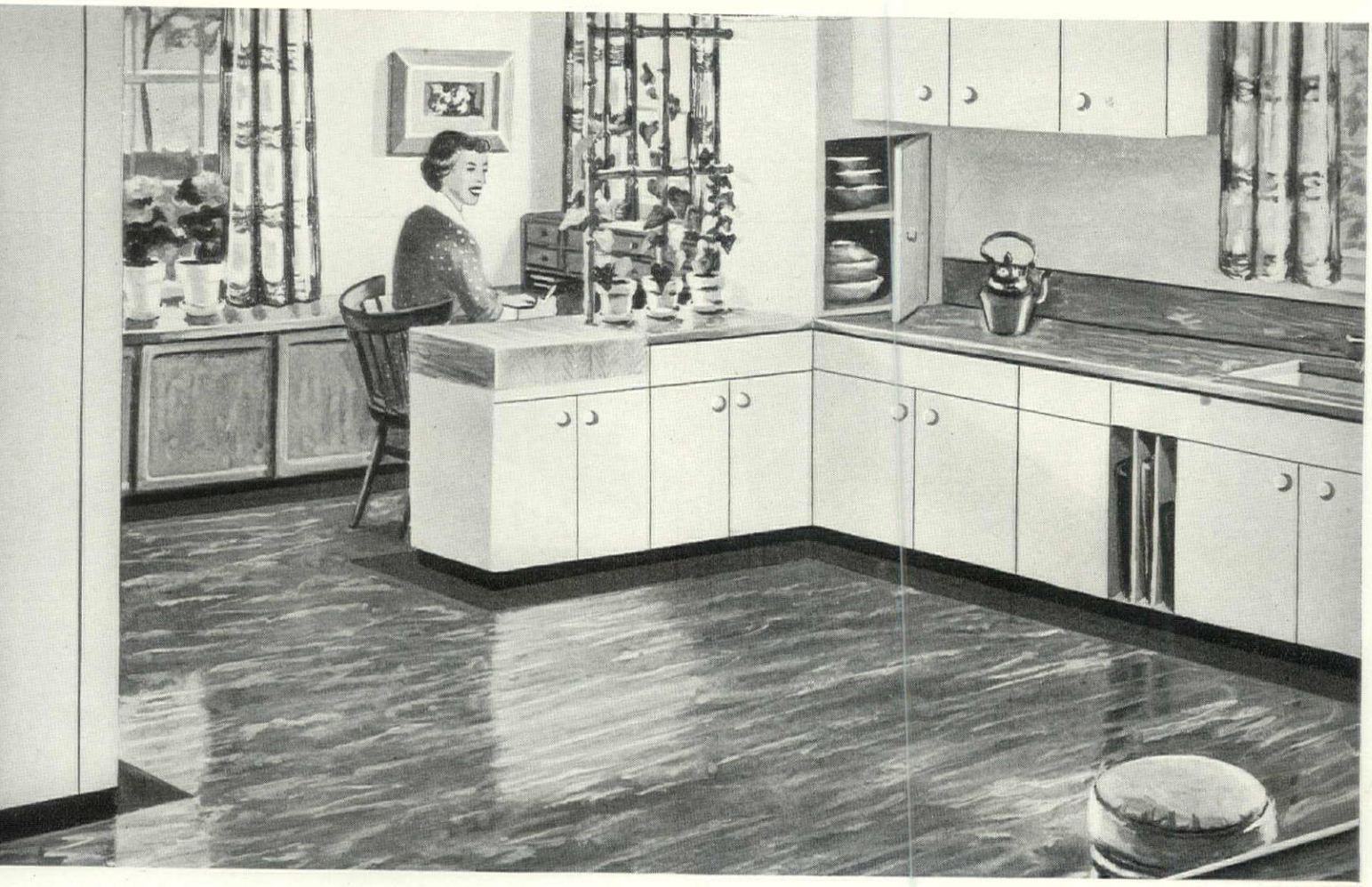
Emphasizing open vision store fronts, *How Give Your Store the Look That Sells* presen useful installation data and good illustrations store modernization jobs. It covers many field of retailing, showing merchants the custome appeal and other practical aspects of contemp rary design. Also treated are examples of grou remodeling projects. The last section of th brochure describes and pictures several Pitt burgh products applicable to store architectur glass doors, glass block, mirrors, insulatin glass, and Carrara glass.

WINDOWS. Fenestra Hot-Dip Galvanizing. Detro Steel Products Co., Advertising Dept., 3111 Griff St., Detroit 11, Mich. 12 pp. 8½ x 11".

The makers of Fenestra steel windows expla pictorially their method of hot-dip galvanizin This process for coating steel with zinc is sa to increase the strength and weatherability the finished window sash.

INSULATION. Foamglas Insulation for Piping an Process Equipment. Pittsburgh Corning Corp., 30 Fourth Ave., Pittsburgh 22, Pa. 24 pp. 8½ x 11

Flexibility in on-the-job fabricating, incombust bility, durability and resistance to acids are som of the merits noted for Foamglas in this attra tively handled booklet. Following a list of th cellular glass insulation's properties is usefu technical data on typical hot, intermediate, an cold piping applications. Tables show sizes an shapes of the material available, and give recom mended shapes and thicknesses for various use



On Kitchen Floors—On Kitchen Cabinets

Wingfoot Vinyl Builds Contractors' Reputations

(SHEET or TILE)

DEVELOPED by Goodyear, Wingfoot Vinyl Flooring has a wonderfully warm, rich, easy-to-live-with character that wins clients' approval instantly.

Called "*the world's most beautiful flooring*," Wingfoot Vinyl retains its brand-new beauty after years of service. For its lovely colors are built right into the wearing surface. They won't fade, "walk off," scrub off. Your clients will like that!

Wingfoot Vinyl is particularly ideal for custom-built kitchen cabinets of your own design. Many leading kitchen cabinet manufacturers use Wingfoot Vinyl on counter tops.

New Modern Colors and Everlasting Beauty

Styled exclusively for Goodyear by Raymond Loewy Associates, Wingfoot Vinyl comes in a wide range of superb, correlated shades, either solid or tone-on-tone. In either traditional or modern settings they blend beautifully with fabrics, draperies, any room decoration.

Requires So Little Care!

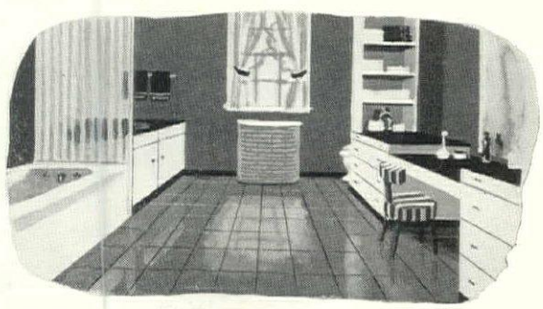
Your client will welcome the news that Wingfoot Vinyl is resistant to the action of greases, fats, oils, mild acids, commercial cleansers. They'll be glad to hear it. Remind them, too, that Wingfoot Vinyl, "the world's most beautiful flooring," *stays* that way year after year with a minimum of care. And that this remarkable wall-to-wall floor covering costs less than carpeting. Much less!

See Wingfoot Vinyl today—in either sheet or tile—at your flooring contractors' or dealers' showrooms. For specification data, write direct to Goodyear, Flooring Department, Akron 16, Ohio.

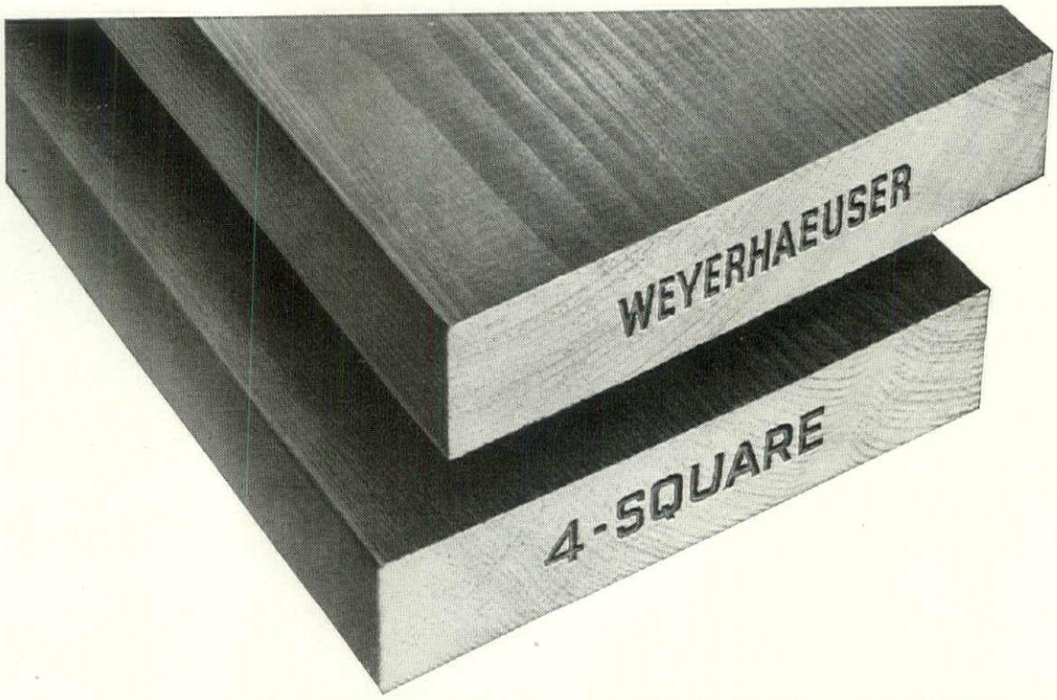
WINGFOOT *Vinyl* FLOORING { SHEET and TILE

by GOODYEAR

gfoot—T.M. The Goodyear Tire & Rubber Company, Akron, Ohio.



"THE WORLD'S MOST BEAUTIFUL FLOORING" *is easily installed, lends itself readily to personalized floors of your own original design.*

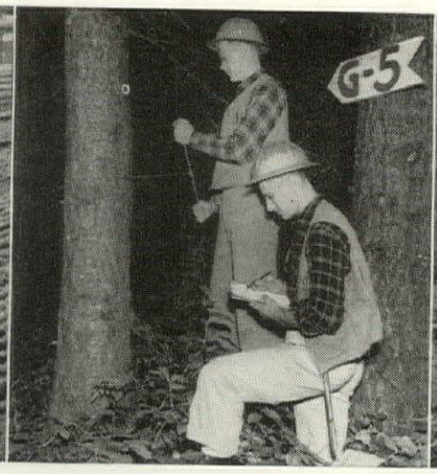


THIS BRAND NAME ON LUMBER MEANS . .

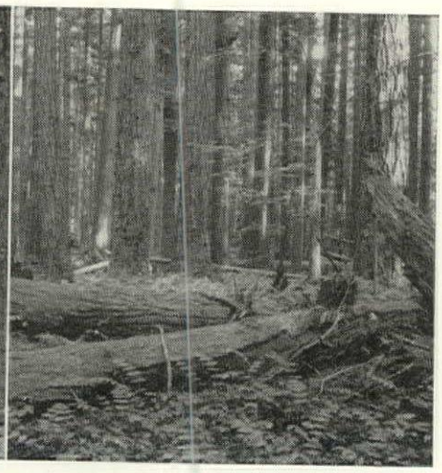




Certified superseedlings get a strong, sturdy start in tree nursery before being transplanted.



Intensive research to make tree crops better is a never-ending task with Weyerhaeuser forestry experts.



Side by side, growth and death. Planned, scientific tree farming helps to prevent this needless waste.

Scientific Harvesting of Fine Timber Stands

To the men of Weyerhaeuser, it is necessary to see BOTH the forest and the trees as part of the job of producing good quality lumber on a continuing basis.

Progressive forest management, as practiced by Weyerhaeuser, is based on a policy of permanent mill operations within prescribed timber areas. In this program, the timber harvest for each year is prudently scheduled.

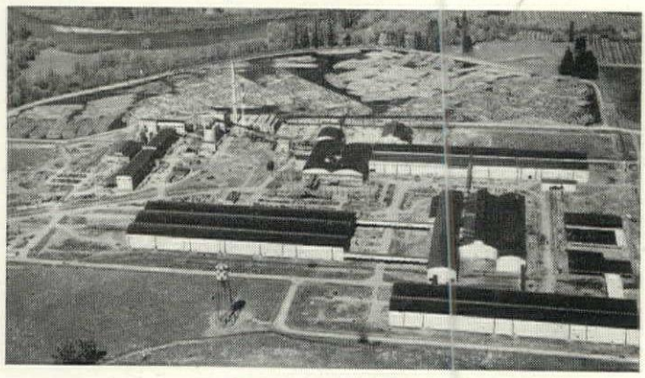
There are two methods of harvesting mature timber . . . block logging and selective logging. Block logging is clear logging of mature trees. Islands of seed trees are left to re-seed the cutover blocks. This returns the land to productive utility with trees of uniform age.

In selective logging, certain trees are removed, leaving room for the development of young timber. The type of logging pursued depends upon the type and location of the forests involved. As a further means of re-stocking the forest lands, manual and mechanical planting of seedlings are employed where natural re-seeding does not take place.

Weyerhaeuser forest and mill practices have been constantly improved and modernized, always with the view of increasing the forest yield, and obtaining more usable products out of every tree.

A continuous supply of better quality lumber for present and future needs is the program behind every piece of lumber bearing the brand name "Weyerhaeuser 4-Square".

One of a series of advertisements defining the important factors contributing to the production of good lumber.



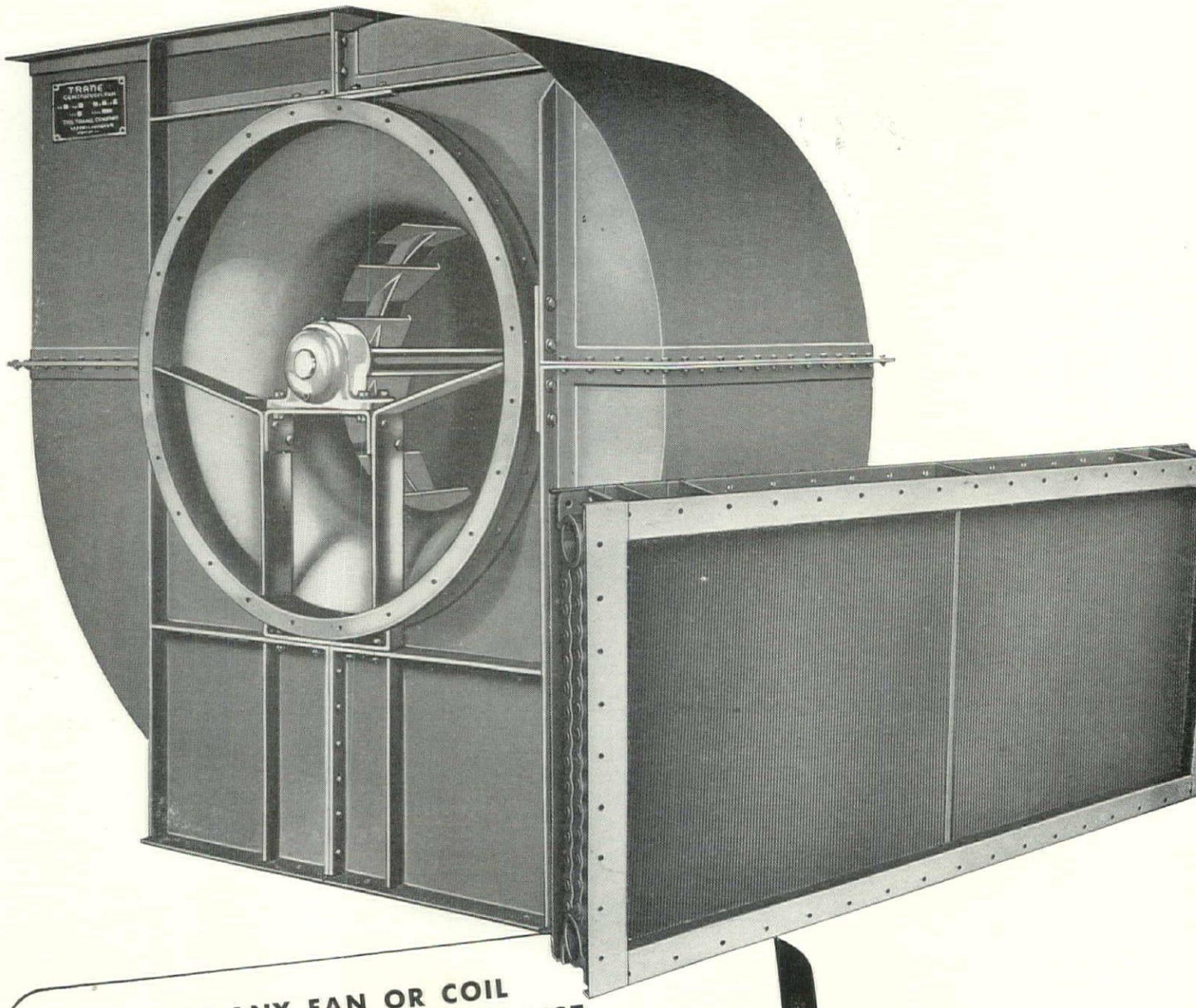
The Springfield, Oregon Mill

At mills located on the West Coast and Inland Empire, Weyerhaeuser 4-Square Lumber is produced in a range of products from Douglas Fir, Idaho White Pine, Ponderosa Pine, West Coast Hemlock, Western Red Cedar and related species.

Weyerhaeuser 4-Square Lumber and Services

WEYERHAEUSER SALES COMPANY • ST. PAUL 1, MINNESOTA

LESS HORSEPOWER AND



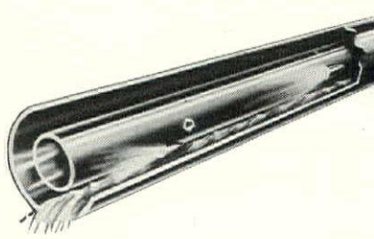
COMPARE ANY FAN OR COIL AGAINST THIS TRANE CHECK LIST

FANS

Feature	Trane	Fan A	Fan B
Chlorinated Rubber Enamel	X		
Formed Inlet Openings	X		
Uninterrupted Duct Collar	X		
Welded Construction (Large Fans)	X		
Lock Seam Construction (Small Fans)	X		
Full Capacity Fan Wheels	X		
Fan Blades as heavy as 7 gauge	X		

COILS

Feature	Trane	Coil A	Coil B
Kinetic Orifice	X		
Plate-Type Fin	X		
Dual-Fin Contact	X		
Mechanical Bond of Fin and Tube	X		
Bushed Tube to Header Joint	X		
Provision for Proper Tube Expansion	X		
Wide Coil Channels—2¼"	X		



THE KINETIC ORIFICE, the patented Tra
feature, releases steam in the direction
condensate flow in steam distributing tu
coils. Drainage of condensate is accelerate
Stratification and freezing is eliminated

MANUFACTURING ENGINEE

BETTER PERFORMANCE

WITH THIS TRANE CENTRAL SYSTEM COMBINATION

You get triple value when you combine Trane Centrifugal Fans and Trane Coils in a central system. You outstanding products loaded with exclusive features. u get the rugged construction that has made Trane nous. And you get the added advantages that come y when you combine matched products. *Together ine Centrifugal Fans and Trane Coils create a central tem that produces top performance with less horsewer than any similar combination.*

Here's why:

Thanks to modern design, the average horsepower uirements of Trane Fans is lowest in the industry. ne Coils with their streamlined bond of tube and flat te-like fin offer minimum resistance to air flow. Come a low horsepower fan and a low air friction coil and ver demands shrink accordingly. That means you get ater efficiency and lower operating costs.

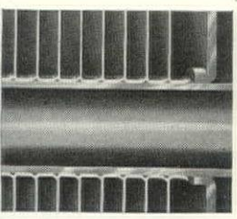
Rugged Construction for Consistent Performce—Then for long life and consistent performance, ne gives you rugged construction in both products. npare Trane Fan construction. Part for part, Trane s metal that is as heavy or heavier than any other nufacturer.

Trane Coils use extra heavy tubing. Coil supports are ally strong. The Trane fin-and-tube construction with its solderless mechanical bond is designed to last a lifetime.

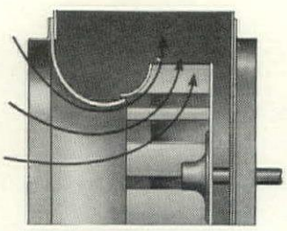
Lower Noise Level Fans—Besides low horsepower and heavier construction, other Trane Fan features include lower noise levels; more accurate fit and tolerance for consistent performance; chlorinated rubber base paint finish to prevent corrosion. Also featured is the uninterrupted collar for easy connection with duct work.

Coil Capacity Increased 15%—First in Trane Coil advantages is the kinetic orifice. This exclusive development in steam distributing tube coils increases capacity as much as 15%. Additional exclusive Trane features—six-step manufacture of fins to insure even heat flow—dual-fin contact that makes the fins an integral part of the tubes and speeds heat transfer—the guide flange assembly that permits expansion of the tubes for longer coil life.

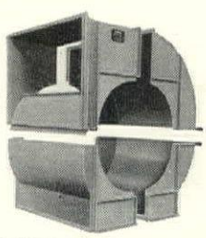
There's similar extra value when you combine other matched products from the complete Trane line of heating, cooling, ventilating and air conditioning equipment. Each product is studded with exclusive features, each offers more rugged construction. And when you combine them in complete systems you get added features such as the less horsepower better performance of Trane Fans and Coils.



UAL-FIN CONTACT is illusated in this cutaway section a Trane Coil. Collar of one is extended to next fin to rm uninterrupted surface r continuous flow of heat.



ACCURATELY STREAMLINED FAN INLET CONE makes possible even distribution of the air in the fan wheel without noisy turbulence—permits fan to operate at highest efficiency with lowest noise level.



SPLIT FAN HOUSING permits easier installation. On larger units, housings can be split on horizontal and vertical plane so fan parts can be moved through small openings and reassembled.

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Eastern Mfg. Division . . . Scranton, Pennsylvania
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Quick, comprehensive service on any G-E wiring material is yours. Just call your local G-E Construction Materials distributor. There is one in every major market area to give you service – where you need it – when you need it.

Remember, too, that at any G-E Construction Materials district office or at the G-E Construction Materials Division at Bridgeport, engineers and specialists are ready to help you on your wiring materials problems.

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1. Q. WHY ARE MORE MERCHANT BUILDERS FEATURING REMOTE CONTROL?

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2. Q. WHAT'S THE TWO-WAY PROTECTION OF 'G-E WHITE'?

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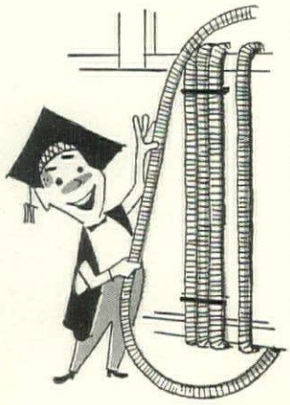

3. Q. DO YOU KNOW THIS WAY TO SPEED INSTALLATION?

A. By using G-E interlocked arm cable for distribution in industrial buildin you can cut installation time in half. Carr ing its own raceway, G-E interlocked arm cable can be laid up on tracks or over bean Its flexible steel armor allows the cable be bent around obstructions and protects t insulation against mechanical damage. G interlocked armor cable, with reliable G No. 1799 varnished-cambric insulation, m be your answer to today's demand for d pendable and speedy installations.

4. Q. DO YOU KNOW WHAT CABLE IS BUILT TO BEAT THE HEAT?

A. Famous G-E Deltabeston* cables, insulated with heat-beating asbestos, are your best bet for dependable service where operating temperatures run high. Specify Deltabeston cables wherever hot spots call for cable that's built to beat the heat.





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The chaos in construction controls —an open letter to NPA

Civilian construction is taking a worse beating than any other important industry from the way controls are being applied by NPA

Just how tough this beating is cannot yet be measured, for the confusion and complexity of NPA's construction control procedures provide their own brand of concealment. But the fact of the beating is obvious, and its cause is inherent in the very setup of NPA's control and allocation system. To wit:

1. Its controls on construction are almost uniquely detailed and involved;
2. The administration of these controls is scattered among 15 agencies;
3. In addition to all its direct controls, construction is also subject to many uncorrelated restrictions placed on the manufacture of equipment and other essential building components.

This situation cannot be cleared up until NPA creates a central coordinating agency for construction controls.

With each passing month the need for such an agency becomes clearer and more pressing—partly to give America's biggest industry a chance to present its case on an equal footing with other large industries like steel and oil and automotive, partly to work out a simpler system of allocation more in keeping with construction needs and realties.

Other industries have clear and clean-cut prohibitions and cut-backs

The automotive industry, for example, is denied the use of certain materials and suffers a definite proportionate cut-back on its use of other critical materials. But beyond that it is free to make its own decisions. It is not told how many or what kinds of units it may produce, nor how much material may be used in each unit. Nor is it subjected to a permit procedure every time it wishes to produce one more station wagon or one more convertible. The system under which it operates not only makes it relatively easy for the automobile industry to plead its case, but also makes it easy to measure with considerable accuracy the impact of the restrictions imposed.

The construction industry has no such chance

Every manufacturer of building equipment and appliances (the "B products") takes his special proportional cut-back on the use of basic metals. For these vital elements the reduction in the fourth quarter of 1951 represents close to 50% of the copper and aluminum and 40% of the steel used during the base period (first six months of 1950). By comparison the effective automotive cut-back is probably not over one-third.

On top of this cut-back on components the building industry has had to cope with a direct permit system so complex, so often changed, and so unrelated to the realities of the materials situation that after months of confusion it has had to be scrapped entirely in favor of a supposedly simpler method based on requirements for critical materials. Whether the new system will relieve many of the industry's headaches remains to be proved. There is no reason to hope it can clear up the confusions left by the old system overnight; no reason to hope it can assure its permit holders the materials they need; no reason to hope it will relieve the difficulties caused by scattering the administration of a per-unit permit system among 15 agencies.

The lesson of World War II

Today's mobilizers, allocaters, and controllers seem to have learned nothing from the experience of World War II. They are repeating the same mistakes in dealing with construction as if there were no record of failure to warn against their repetition. Of that record of failure historians* have said:

"Probably no phase of industrial and civilian mobilization was the subject of as much discussion and as consistently bad administration as was construction. . . ."

What construction needed was "a single administrative authority with power to integrate all construction with the rest of the...programs; to determine the construction claim on . . . scarce materials, in total and in its component parts; to approve or deny every significant project; and to enforce such conservation measures as it held necessary and feasible. This authority would have to strike through the organizational maze of conflicting interests and power-centers of the military agencies, special-interest federal agencies, WPB industry divisions, WPB materials divisions, and regional and local groups concerned about war and postwar repercussions.

"The cold logic of the situation demanded such a concentration of responsibility and authority. But the historical fact is that at no time during . . . the national emergency was control over construction integrated with other parts of the administration of war production. At no time was a comprehensive construction 'program' prepared for critical appraisal. At no time was authority centered at a single point."

* Wartime Construction Controls by David Novick, Melvin Anchen and W. C. Truptner. Columbia University Press.

As in World War II, split jurisdiction is at the root of the difficulty

When the Korean war broke out, construction leaders were determined that the mistakes of World War II should not be repeated. The Construction & Civic Development Department of the U.S. Chamber of Commerce, the AFofL Construction Trades Department and THE MAGAZINE OF BUILDING Round Table all urged NPA to create a single construction agency.

For a time the industry hoped this need would be filled by NPA's Construction Controls Division and later by its Facilities & Construction Bureau. But the hope was short-lived. Through ineffective administration of the Bureau and through the general looseness of the mobilization set-up, the possibility of a strong coordination was soon lost. Today the situation is pretty much the same as in World War II with a few names and initials changed. The Facilities Bureau has sunk to the bottom of the policy making heap. In practice it is now little more than one of the 15 claimant agencies among which construction requirements are dispersed. Here is the scatter diagram:

1. Department of Defense—military construction and all housing on military bases and reservations; stock piles of critical materials.
2. Department of the Army—Corps of Engineers civil construction projects (flood control, rivers and harbors, etc.).
3. Atomic Energy Commission—industrial and other construction for atomic energy projects.
4. Civil Defense Administration—emergency stock piles of building materials.
5. Federal Security Agency—schools, libraries, hospitals other than veterans' hospitals.
6. General Services Administration—federal buildings not elsewhere designated.
7. Veterans' Administration—veterans' hospitals.
8. Housing & Home Finance Agency—residential construction and repair (except on military or AEC establishments) and community facilities (except those under military, AEC, or Federal Security Agency jurisdiction).
9. Department of Agriculture—farm construction.
10. Department of the Interior—electric power and transmission projects; reclamation projects; construction on Indian reservations.
11. Petroleum Administrator for Defense—oil and gas drilling and pipe line construction.
12. Defense Transportation Administration — railway construction, including stations and bridges; port facilities.
13. Bureau of Public Roads—highway and street construction and maintenance.
14. Civil Aeronautics Administration—civil airport construction.
15. Facilities and Construction Bureau of NPA—industrial construction not directly owned by the government, water and sewage facilities, state and local public works not elsewhere designated, commercial buildings, religious buildings, social and recreational facilities.

It would be hard to divide construction control more thoroughly

Worse than that, many types of construction are themselves split among several advocates. Thus, hospital programs are divided among three agencies (Defense, Veterans and FSA), industrial construction among three (Defense, Atomic Energy and the Facilities Bureau), housing among two (Defense and HHFA).

Each claimant develops its own program and independently pleads its own case before the allotting authorities, who must listen also to claimants from all other types of activity. In this competition for favored treatment, each type of construction must vie not only with other industries, but with every other element of construction itself.

In the rough and tumble for priorities, whatever is most plausibly stated and most vigorously upheld is likely to obtain the greatest advantage. In such a contest, the voices of construction's 15 competing claimants are reduced to an indistinct clamor.

The need for effective coordination is urgent and immediate

The greatest pinch on construction is ahead, as some of NPA's miscalculations come to light and defense production demands are more vigorously felt.

Unless a coordination agency is now created, no equitable distribution of the materials supply can be assured; no adequate protection to civilian requirements can be provided; and, perhaps most important of all, no thoroughgoing program of materials conservation can be enforced.

NPA joins the attack on waste in building

The building industry's attack on waste is at last getting direct and effective help from the Federal defense agencies.

Most active in pushing this help are four members of various Round Tables conducted by THE MAGAZINE OF BUILDING—Charles E. Wilson, now Mobilization Director; Rear Admiral J. F. Jelley, head of the Navy Bureau of Yards & Docks; Howard Coonley, now Director of DPA's Conservation Division for all industries; and James Follin, now directly responsible for conservation in construction.

Action has now been taken on almost every Round Table recommendation calling on the defense agencies for help. (Outstanding exception: nothing has yet been done about the Round Table's No. 1 recommendation, the appointment of an over-all construction correlator—see page 157.)

To list all the ways in which Government is now putting pressure would be almost impossible, but here are some Round Table recommendations on which action is being taken:

Recommendation: *The most important part of all must now be played by ODM and DPA through the firm and enlightened use of their emergency powers, including specifically their power to allocate scarce materials only to projects for which state or local codes, ordinances, union regulations and financing requirements have been brought in line with a national program for minimizing waste of materials and manpower.*

Action: On September 6 NPA identified seven national codes as "sound standards." It then "recommended . . . suggested . . . and urged" builders who wish to "minimize delays" on their permits to take advantage of the material savings they offer. For example, "all plumbing work should be laid out and scheduled to use scarce materials not in excess of the requirements set forth in the proposed national plumbing code." Other national codes or standards given similar forceful backing: electrical, timber, reinforced concrete and three types of steel. Beyond this the American Standards Association has been asked to rush the development of national standards for masonry, excavations and foundations.

The September 6 order stopped short of compulsion, but a cryptic sentence added: "NPA is now considering an amendment to its Controlled Materials Plan Regulation 6 to incorporate these principles." Many thought this was a gobbledygook warning that if suggestion fails compulsion will not be far behind. Meanwhile NPA's purpose is clear. Said the *Engineering News Record:* "Construction applications will have a much better chance for approval if the projects are designed to use a minimum of controlled materials . . . you can ignore NPA's suggestions if you want to. That choice may delay you several months in starting construction."

Recommendation: *Wherever needed, funds should be made available to the Building Research Advisory Board (BRAB) to pursue additional research on construction economies and to coordinate private research.*

Action: DPA has allocated $50,000 to BRAB for such research, and BRAB has launched separate studies into ways of reducing waste in the building frame, the heating and cooling systems, the electrical system and the plumbing. BRAB will also study "codes and other restrictions prohibiting the use of technical standards with potentials for conservation."

Recommendation: *The Federal Government can make a very great contribution to the attack on waste in building by setting its own house in order and insisting that the same economy standards be practiced rigidly in all its own construction work. In the last war the Government set a shocking example of waste in building. Whatever standards are set for permanent private building this year should immediately be made the maximum standards for Government building whether for civilian or military use.*

It would be a real help if the Government would order a review of construction requirements laid down by its own bureaus with an idea to eliminating the most wasteful.

Action: The BRAB research will include a complete review of current practices in Federal construction (including military construction) looking to a series of recommendations to bring them in line with sound practice.

Recommendation: *It would be a very real help if the Federal Government would announce that from now on Federal construction will not conform to local requirements in excess of the least rigorous standard provisions of the nationally recognized codes.*

Action: NPA has asked the 17 Government agencies and departments connected with rearmament (including the Army, Navy and Air Force) to plan their construction in accordance with the same national standards recommended for private construction.

(Continued on page 55)

Mr. Wilson presses the attack

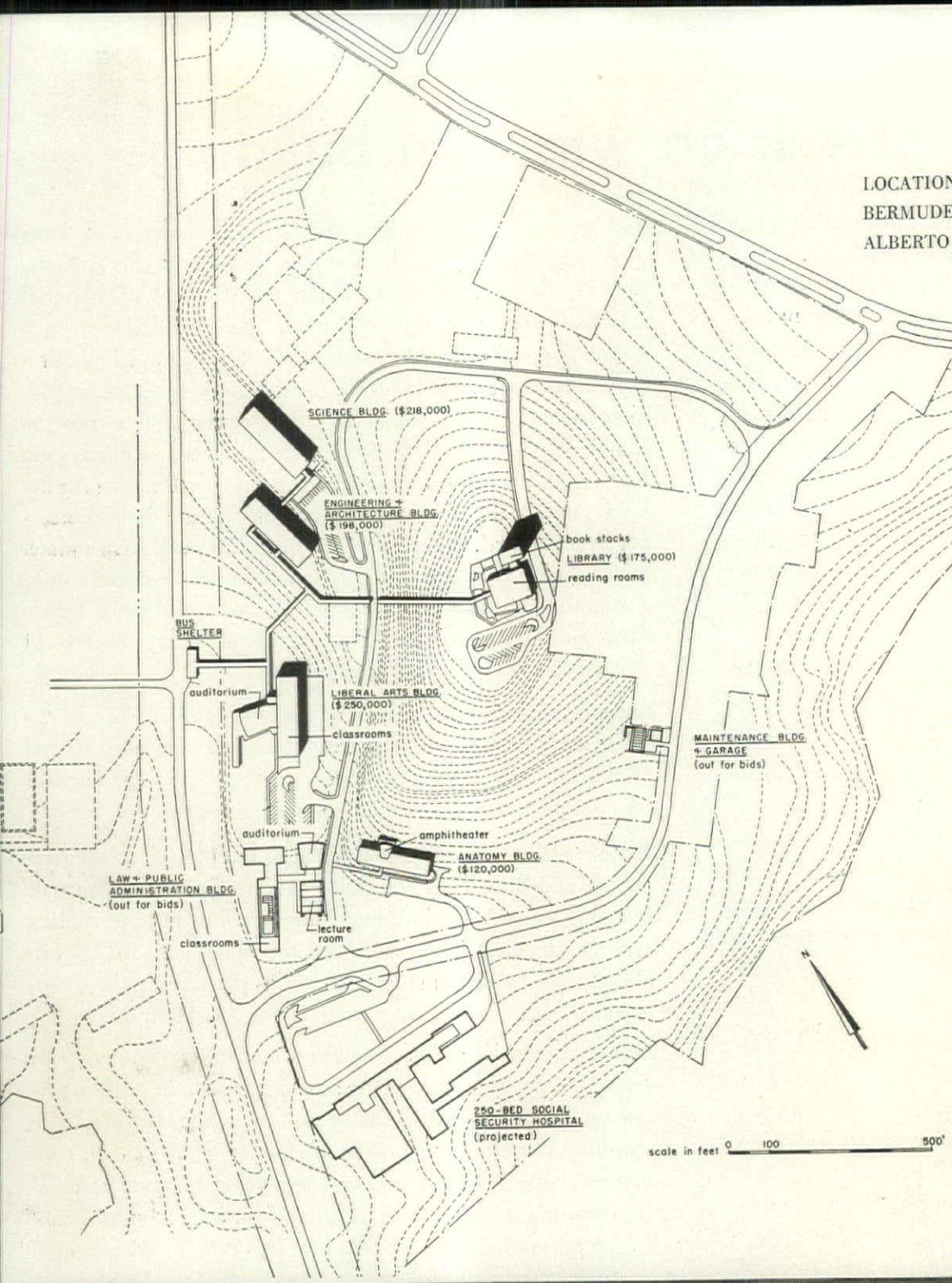
Perhaps the biggest reason the attack on waste in building is now getting effective backing from the defense agencies is the active interest of Mobilization Director Charles E. Wilson.

To Defense Production Administrator Manly Fleischmann he wrote: "I hope DPA will continue to push the work of conservation in construction and that you can expand the work in other areas in a vigorous fashion. This is a matter about which I feel strongly and an operation which I believe will be vigorously supported by both industry and labor.

"The success or failure of efforts to promote conservation could mean the difference in some areas between success or failure in military production and in others between maintaining or not maintaining a satisfactory volume of consumer goods production."

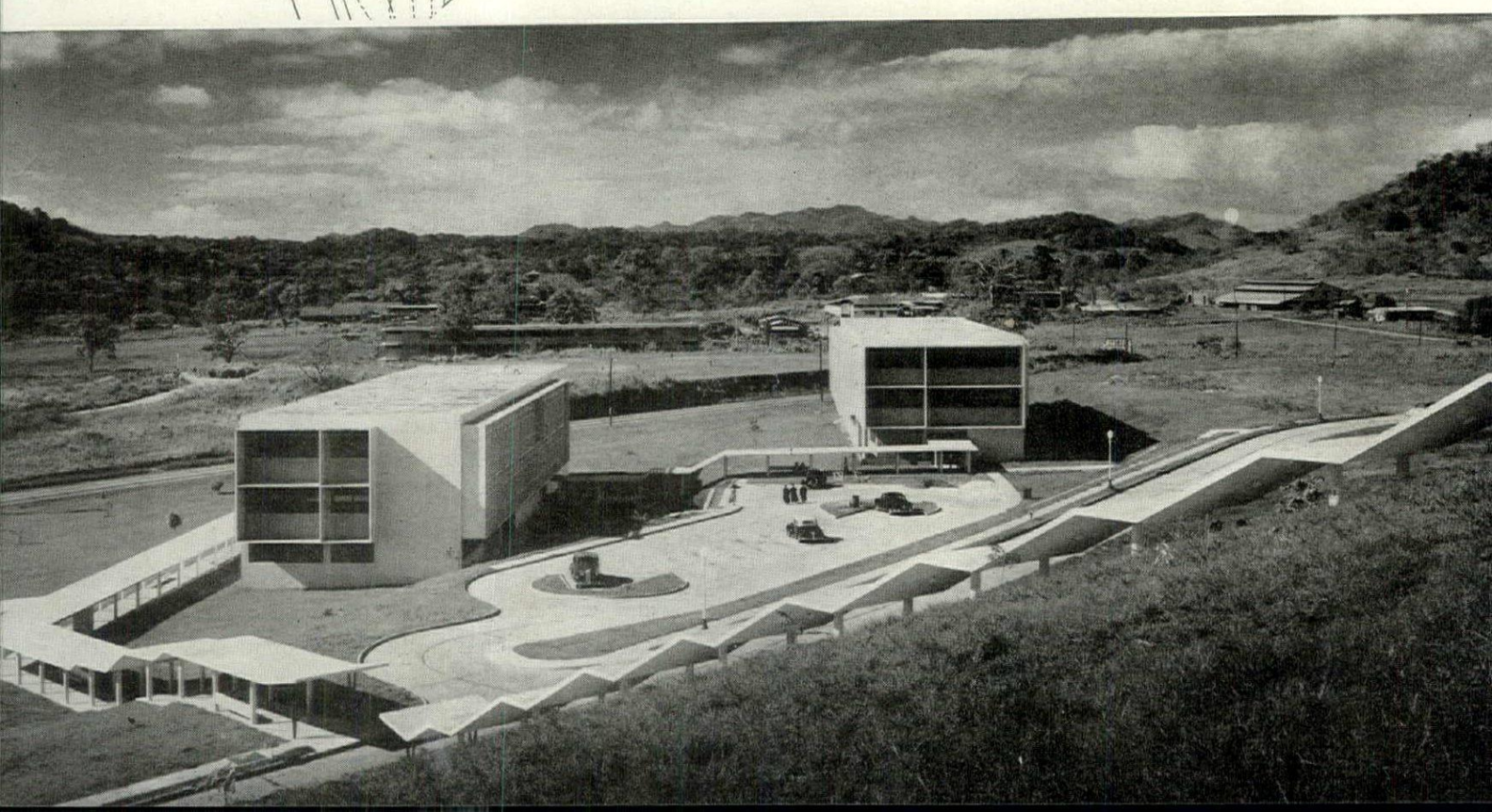
Mr. Wilson had previously reported to President Truman that: "The construction industry has shown particular initiative in pushing conservation measures." (See July '51 issue.)

LOCATION: Panama City, Panama
BERMUDEZ, DE ROUX & MENDEZ GUARDIA, Architects
ALBERTO DE ST. MALO, Structural Engineer



Five buildings have been completed to date: Science, Engineering and Architecture, Liberal Arts, Anatomy and Library. Three additional structures are to be built shortly: Law and Public Administration, Social Security Hospital (250 beds) and Maintenance and Garage.

The price Panama's students pay for the spacious layout of their 100-acre campus is long walks and occasional steep climbs under reinforced concrete canopies. One of these—a cheerfully undulating ribbon—runs uphill to the library tower.

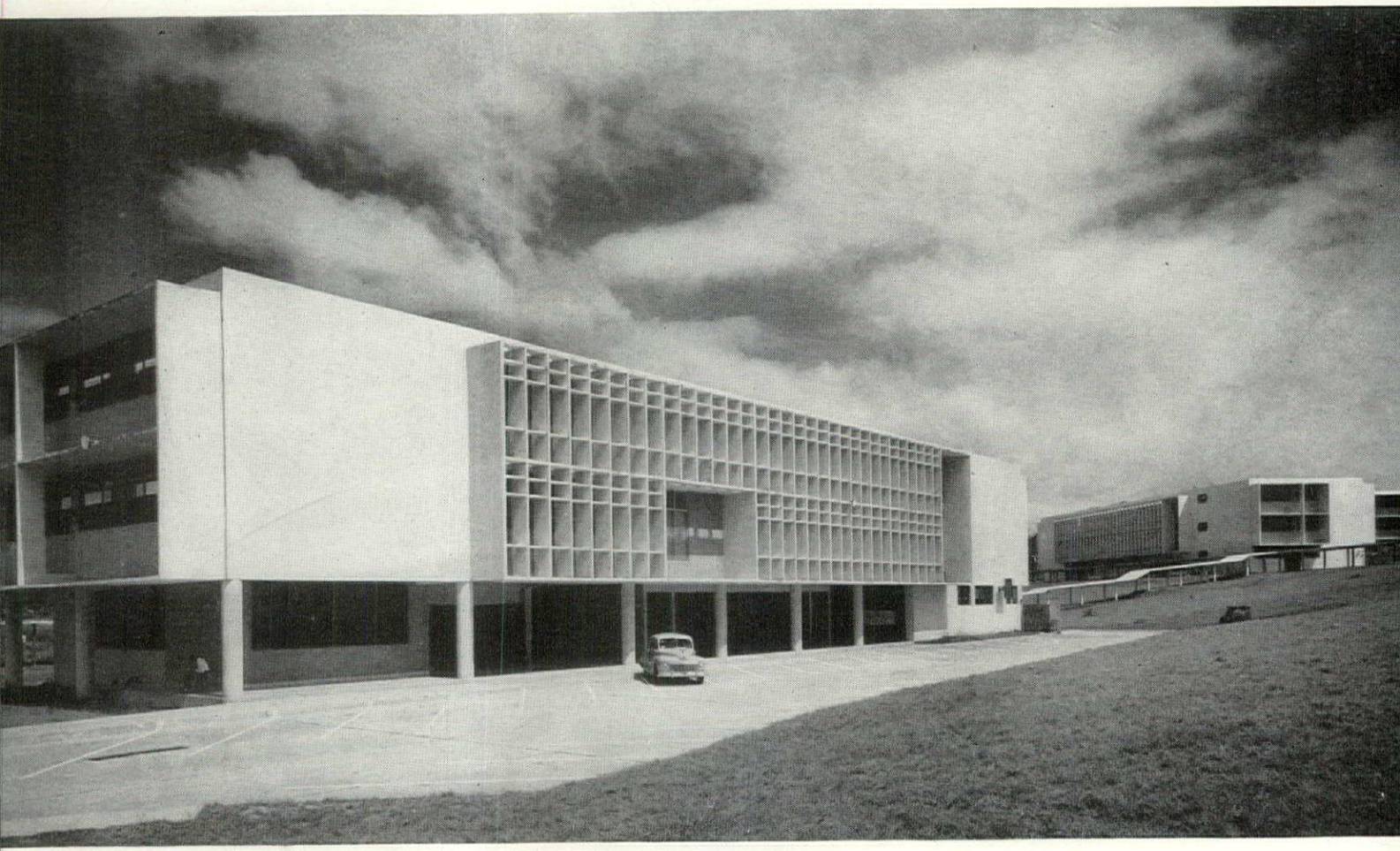




Photos: Ezra Stoller

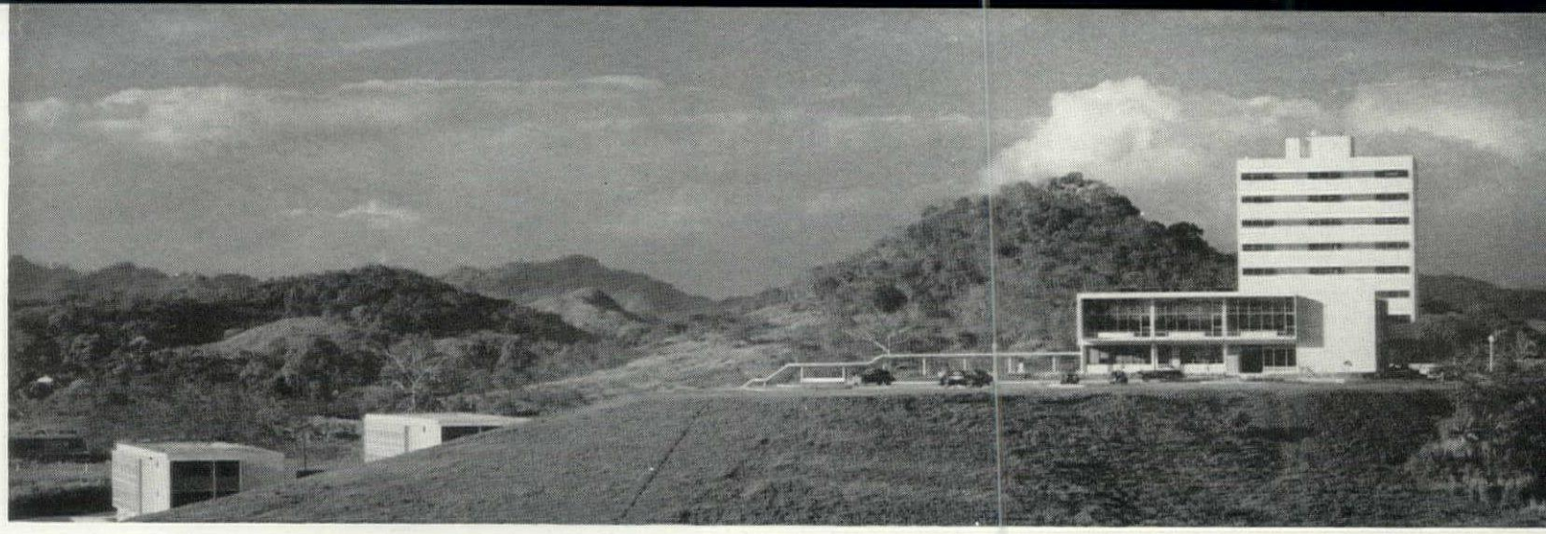
PANAMA UNIVERSITY planned like a modern Acropolis

This small modern "Acropolis" is a wonderful example of what a group of talented architects can do if (a) they have an exciting site to play with and know how to make the best use of it; (b) they have a chance to design a big project in one fell swoop instead of having to do it piecemeal; and (c) they are lucky enough to have a client who will accept crisp, sharply detailed and handsomely proportioned modern buildings and let *them* (rather than the traditional "Gothic") establish the character of a 20th Century university campus. Because Panama presented these three opportunities to a group of its best young architects, the new University of Panama is a lively and stimulating place of learning rather than a museum of past architectural styles.



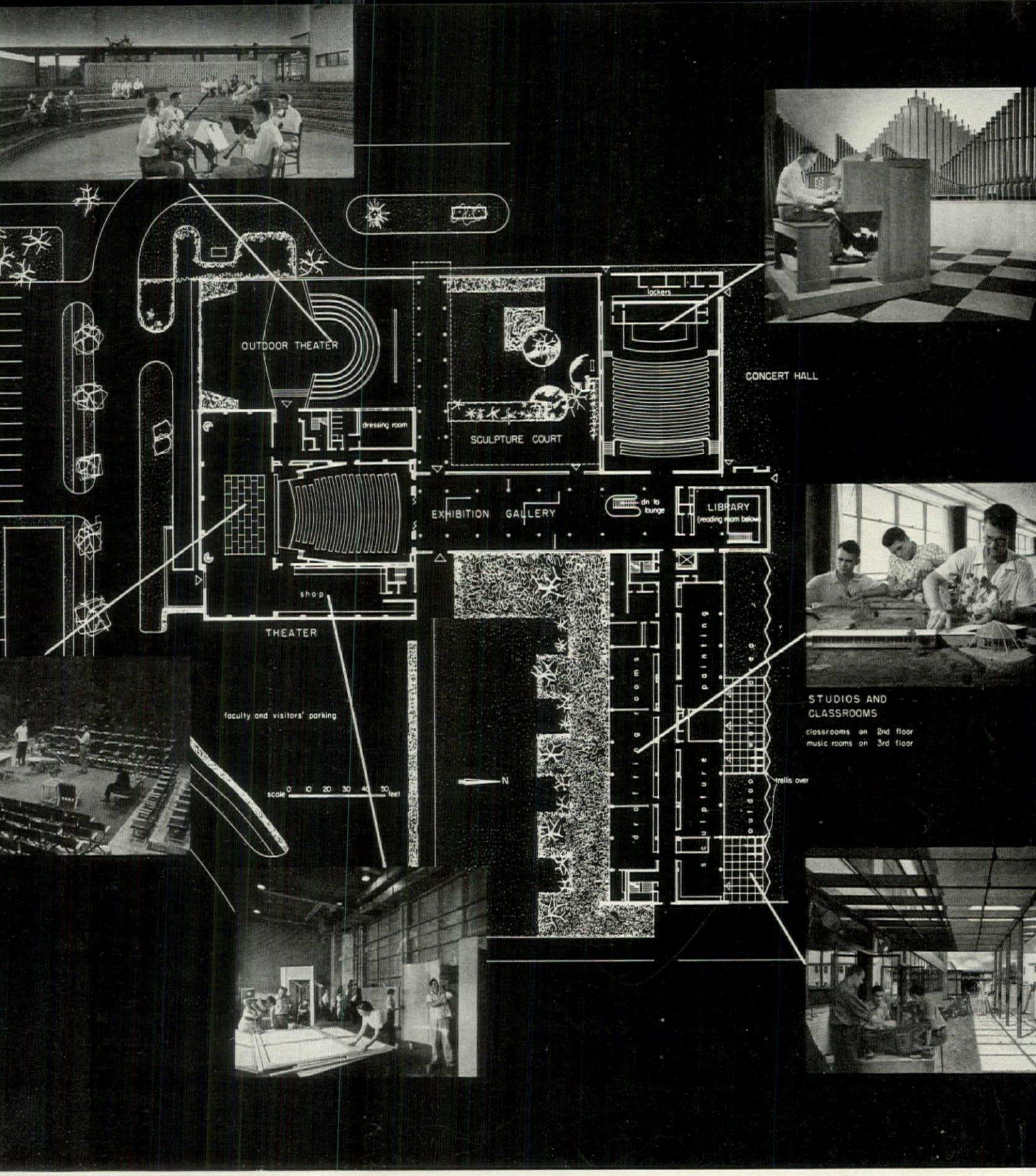
The "Acropolis" principle is to put your most important building in the most prominent position—on top of a hill, if possible—and let it be the rallying point for other structures. In past times such rallying points might have been temples, towers, cathedrals or royal palaces. On Panama's campus it is the library tower, the repository of scholarship, the symbol of learning. To give it greater prestige than the rest, it was faced with Italian travertine. Guarded by a tall statue of Cervantes, it is visible from all corners of the campus; like a lighthouse for ships at sea, an ever present landmark by which to get your bearings at a glance.

Because the whole campus was designed simultaneously, the architects were able to relate widely scattered buildings by repeating some striking motif again and again: One of these is a large egg-crate of *brises-soleil* set between stretches of blank wall (behind which the architects managed to find ways of concealing larger lecture rooms that, in turn, get their light from the narrow end facades.) Another motif is the sculptural device of taking a plain box and raising it up (in this case on stilts) against the blue sky—a device as familiar to the architects of the Acropolis, of San Gimignano and of the white New England church as it is to Le Corbusier. And, finally, there is the device of the concrete ribbon-canopies that thread their way all through the campus, uphill and down, from one building to the next. They act like a grid on a map, relating every part of the site to the whole.



The picture above gives some sense of the three-dimensional quality of the site plan. It might have been more practical to crowd all buildings on top of the hill, or to place them all around its foot. But by setting the tall tower on top of the hill and the low buildings farther down, the architects managed to emphasize (rather than play down) the handsome contours of their 100-acre site. And since the buildings are so similar in general character and detail, they relate effectively to each other across rolling lawns, create a whole series of varying space-sensations and of spatial surprises. There is never a dull moment on this kind of site—and what more can be asked of a place intended to stimulate, to excite and to stir the imagination?

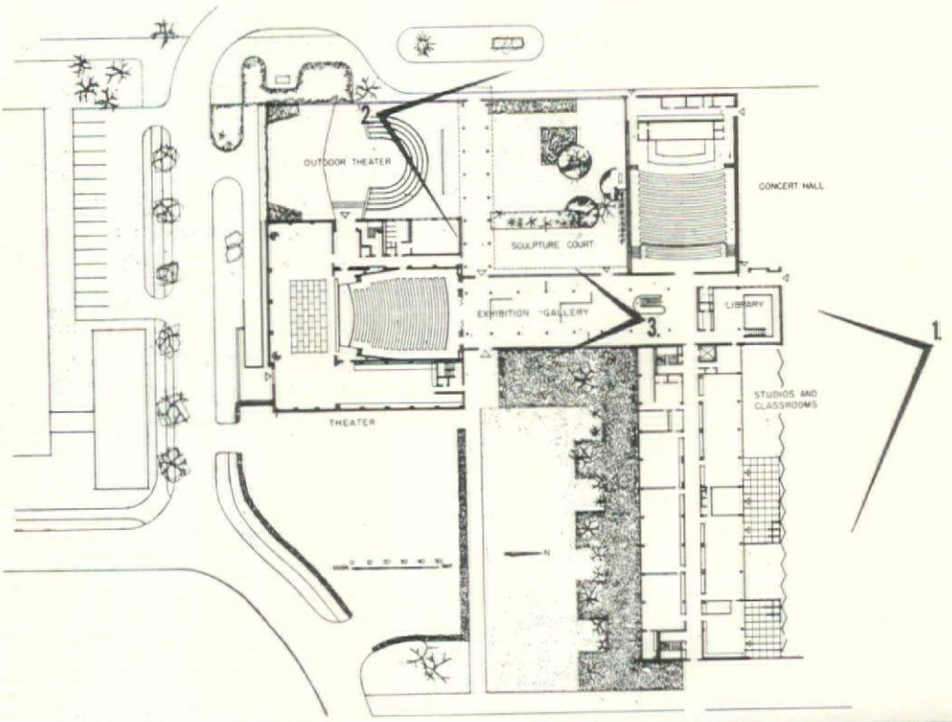




hotos: (above, center) Bob's Fayetteville; (others) Lionel Freedman.

LOCATION: Fayetteville, Ark.
EDWARD D. STONE and HARALSON & MOTT, Associated Architects
KARL J. HOLZINGER, Jr., Associate
EDWARD COLE, Theater Consultant
STANLEY McCANDLESS, Theater Lighting
SIDNEY K. WOLF, Acoustical Engineer
CHRISTOPHER TUNNARD, Landscape Architect
ALEXANDER CALDER and GWEN LUX, Sculptors
HARMON CONSTRUCTION CO., General Contractors

VIEW 1.


OUTDOOR THEATER
CONCERT HALL
SCULPTURE COURT
EXHIBITION GALLERY
LIBRARY
STUDIOS AND CLASSROOMS
THEATER
1
2
3
N

VIEW 2.

UNIVERSITY ART CENTER— Architect Stone's sure hand with countless details creates a harmonious home for seven arts under one Arkansas roof

"The most handsome public building in the State," said the *Arkansas Gazette*. "Superior to anything of its type in the South," added the Memphis *Commercial Appeal*. Despite the strong element in such statements of the good old booster spirit, even the most blasé visitor from New York is likely to catch some of it himself, agree that they are talking about the finest thing that has happened to Arkansas since the state sent Fulbright to Washington: the new $1 million Arts Center on the state university's campus in Fayetteville, a small town (pop. 12,000) in the Ozark Mountains.

In the eyes of a qualified architectural critic the Arts Center would stand out not by virtue of the most exciting new forms, or as an exposition of architectural creed or style, but as a group unique in its quiet beauty, serenely and fully achieved with occasional brilliant passages. These qualities put it ahead of any recent state university work that has come to light, puts it in a class with MIT and Harvard.

How the Arts Center came into being is the story of two men: The first is Dr. Lewis Webster Jones, 12th President of the university (Fulbright was its 10th,) one-time head of progressive, experimental Bennington College in Vermont; the second is architect Edward D. Stone, native of Fayetteville, who transformed Jones' concept into one of the finest college buildings in the U. S. The concept (according to Jones): "A workshop, a place where painting, sculpture, architecture, drama, music, and dance live and grow, and from which their civilizing influence spreads into our daily lives." Jones was sure he could get America's best painters, sculptors, musicians and philosophers to come up into the Ozarks and gather to teach under one and the same roof—if only he made the trip rewarding enough for them.

To make the trip rewarding, architect Stone planned a building with

- A 300-seat theater better equipped than most Broadway houses and convertible into a theater-in-the-round;
- A 250-seat concert hall with a specially constructed organ;
- A glass-enclosed exhibition gallery superior to most of those in New York's Museum of Modern Art (which Stone helped design in 1938;)
- A 10,000-book library with a magazine reading room in an open well below;
- A three-story classroom block containing (a) painting and sculpture workshops (incl. outdoor work areas,) (b) music rooms, (c) an architectural school and (d) combined offices and studios for the art faculty (another reason they like it in Fayetteville).



The cost, with all equipment, landscaping and fees included, was just 3% over the tight budget; the unit cost was 56 cents per cu. ft.—less than half that of a traditionally designed wing to the Engineering School built simultaneously on the other side of the campus.

Jones & Stone are delighted with the low cost of their favorite building; but what delights them even more is that, in the five months since its dedication, the Center has turned into a powerhouse of cultural activity. On a normal day, Dr. Jones can be seen enthusiastically conducting at least one tour of the Center for the benefit of any visitors he can lay his hands on: He will point out the rehearsals in the theater and concert hall, the stage sets being built in the large, well-equipped shops, the instrument practices held in the music room, the exhibitions in the spacious gallery.

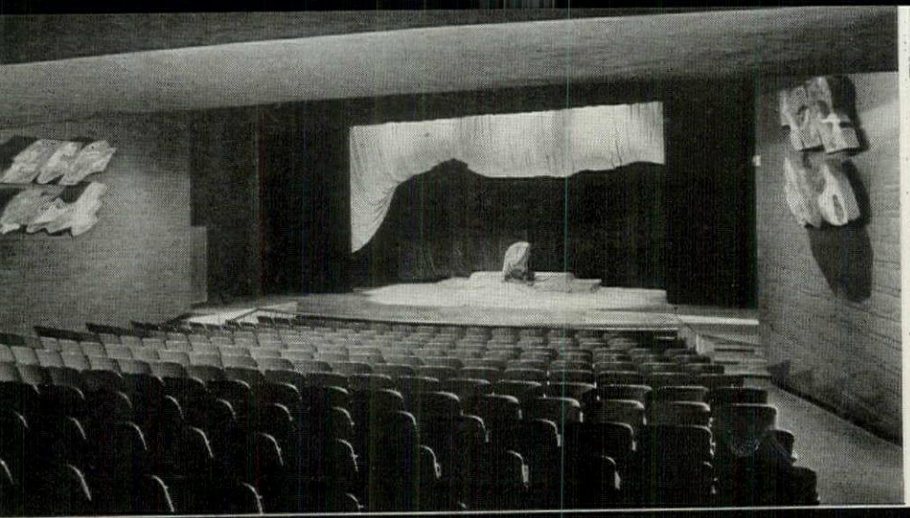
He may point out that the Arkansas farmer in his overalls, stopping



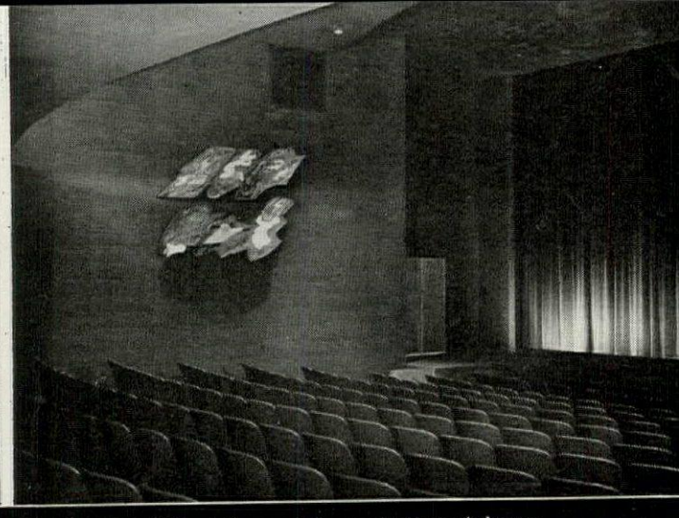
VIEW 3

off to look at a Picasso drawing on his way to the Agricultural Station, is getting to be a perfectly normal sight. "Its beauty," Dr. Jones may say about his Center (as he did at the dedication), "is also one of meaning; it proclaims the unity of the arts and their vitality and importance as active elements in contemporary life."

It is this meaning, this mood of the building which every visitor catches sooner or later. It is a mood created by spaciousness (or the illusion thereof;) by fine scale; by handsome colors (selected, in part, by Arts Center head Dave Durst;) by luxurious-looking details (such as the spangled fishnet ceiling in the concert hall, made of metal discs left over from the stamping of movie reels;) and by a generally easy-going handling of the architecture. There is no reaching for startling effects. The architect was at peace with his building, and the building is therefore at peace with the world.



View of 300-seat auditorium. Theater-in-the-round can be set up on oversize stage

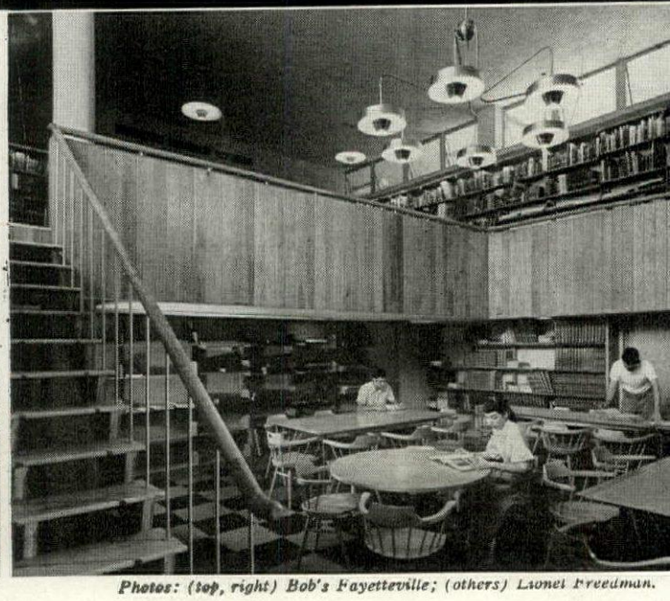


Close-up view of Gwen Lux sculpture near stage of theater

250-seat concert hall has "spangled fish net" ceiling, Calder mobiles along walls



Library well is for magazines and records; upstairs gallery for books



Photos: (top, right) Bob's Fayetteville; (others) Lionel Freedman.

Some of the devices Stone used are worth recounting: The spangled fishnet ceiling suspended beneath bar joists and lights is probably the handsomest trick in the bag. In the reddish setting of the concert hall, the silvery discs literally look like a million dollars. The different screening materials used inside and out are similarly successful: the perforated masonry walls around the amphitheater, the zigzag screens that shield the outdoor workshops, the vertical blinds in the exhibition gallery—all these create occasional surprise vistas, suggest some architectural mystery, a quality often lacking in more sober modern buildings. The use of the other arts (one of Stone's great interests) accounts for further pleasant surprises, like Gwen Lux' charming painted reliefs in the auditorium and Calder's mobiles in the concert hall; and before long, there will be a wealth of sculpture in the handsomely landscaped court to the west.

To the growing band of progressive Arkansawyers, however, the completion of the Arts Center was more than an artistic triumph; it brought them a sweet taste of first victory in the dramatic battle for better education in the State. It was less than two years ago that young Gov. Sid McMath lead an "education caravan" across Arkansas to dramatize the battle. It was then that the State ranked 47th in money

spent per capita on education, near to the bottom in literacy, school facilities, teachers' salaries. With the Arts Center an accomplished fact, men like McMath, Fulbright, Jones and Stone feel that the future looks bright: shortly after the Arts Center was finished, the State Legislature went ahead and voted a cigarette tax to finance the fabulous 600-bed hospital for the University's second campus at Little Rock by Stone, Erhart, Eichenbaum & Ranch (p. 90, July '50).

Much of the credit for this and other achievements must go to the educators and politicians who fought for them. But if Dr. Jones is right, and if the Center helps proclaim the importance of fine architecture "as an active element in contemporary life," then architect Stone, too, made an important contribution to his home town and his home state—for the proclamation is being heard clearly, far and wide.



ARMY SCHOOL

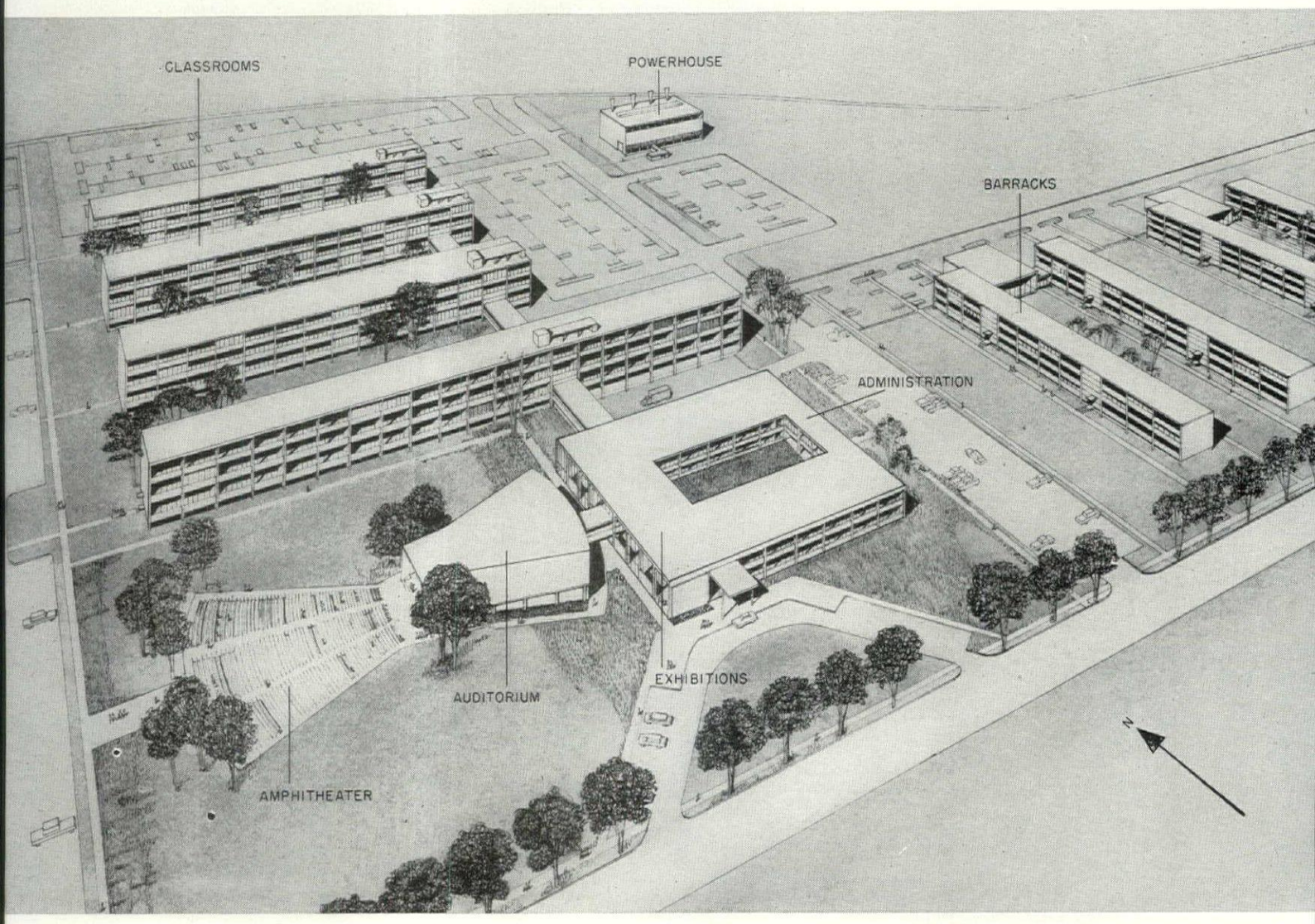
By departing from routine the Signal Corps gains a distinguished school and model barracks

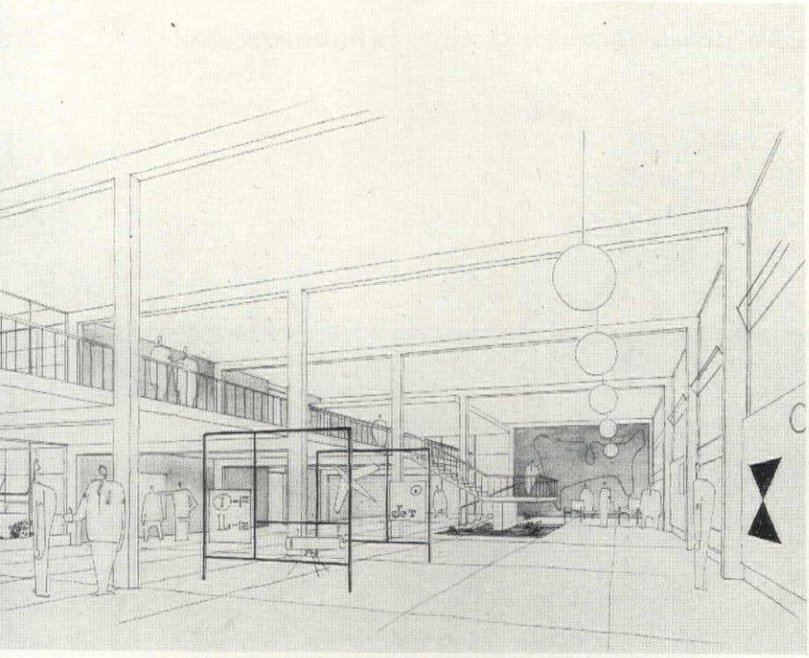
LOCATION: Ft. Monmouth, N. J.
KELLY & GRUZEN, Architects and Mechanical Engineers
WEISKOPF & PICKWORTH, Structural Engineers
GANGEMI, LEVINE & SHUMAVON, Site Engineers

It is high time architects stopped complaining about the Army's cut-and-dried building programs, its inflexible demands and specifications, its aversion to anything progressive and new.

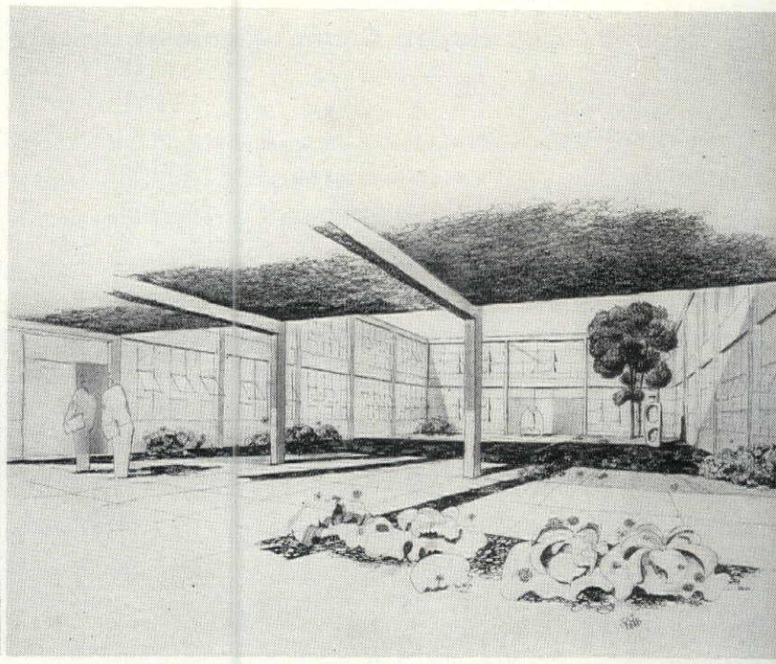
This 86-acre "campus" for the Signal Corps proves that it just isn't necessarily so. The pictures show that ingenuity, careful study and perseverance can give our armed forces a group of college buildings equal to the handsomest civilian equivalent—without overstepping the bounds of strict economy and general Army practice.

When the Signal Corps called in architects Kelly & Gruzen, its school facilities were located in dozens of shacks, converted barracks and tents scattered over Ft. Monmouth's 623 acres. Not only was the school inefficient and wasteful in time and energy; it was also plainly inadequate to cope with the Corps' rapid expansion into new fields and its vastly increased technological skills. What was needed was a top-notch "Institute of Technology" for 5,000 students, with the best laboratories,



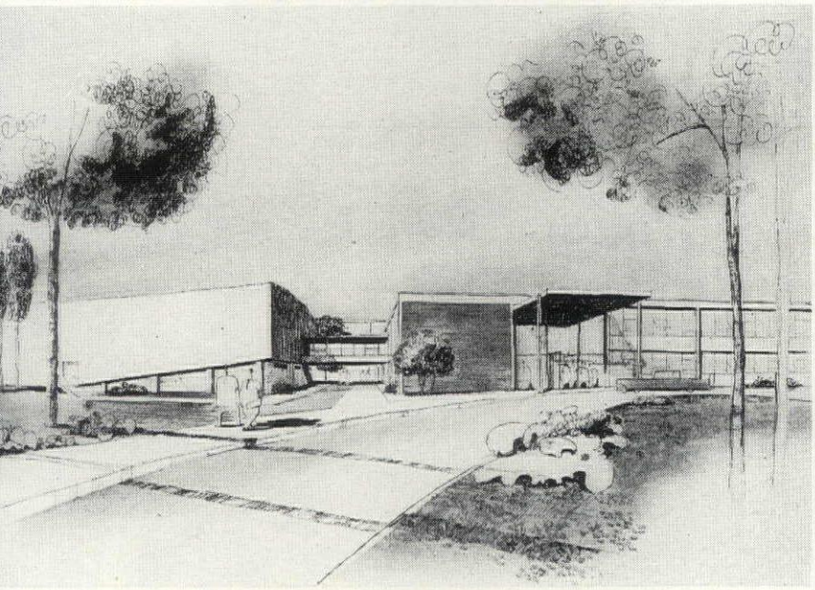


Two-story exhibition hall is in administration building

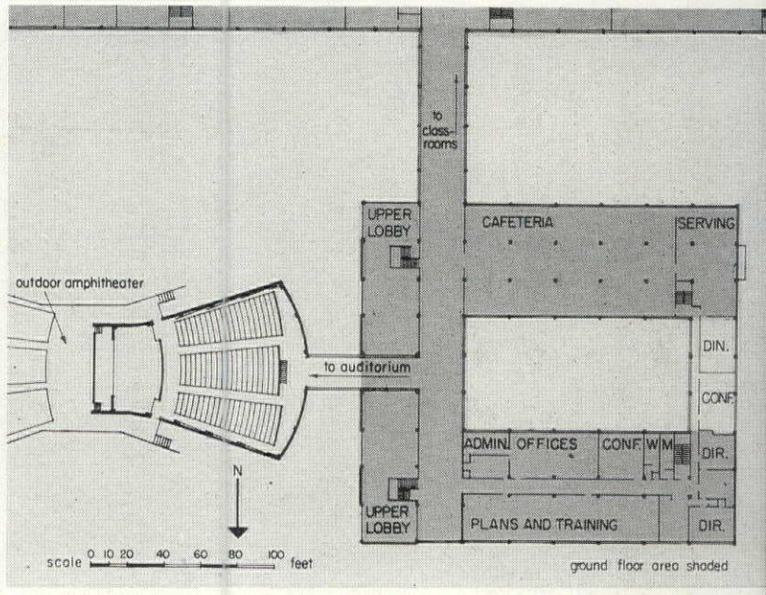


View into courtyard of administration building from the east

Picture below shows auditorium at left, administration at right



Plan of auditorium, exhibition hall and administration building



the best classrooms, the best dormitories and the best auditorium-administration center modern architecture could provide. For an estimated $15 million total, Kelly & Gruzen will give them just that—and will, in the process, do a great deal to re-establish the good name of their profession among hard-boiled and sometimes skeptical Army Engineers.

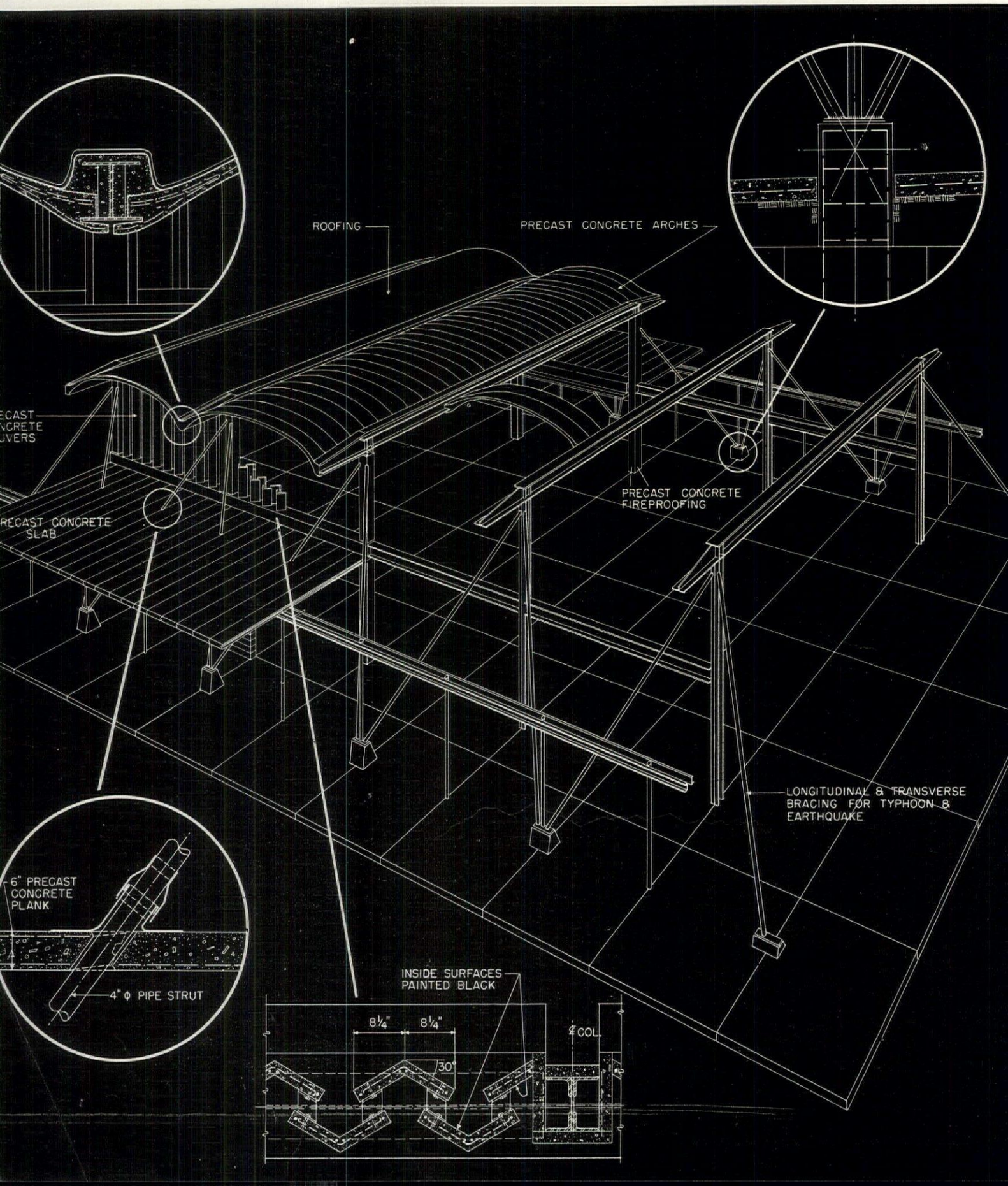
There is nothing fancy about the structures Kelly & Gruzen designed. All are framed in reinforced concrete set in 25′ bays. Spandrel beams are 4′ high and 9″ thick, project upwards above the floor slab line (rather than down) to form window sills high enough to back up laboratory benches and other tall equipment. Roofs will be flat; and concrete slabs will be 9″ thick and span the entire bay.

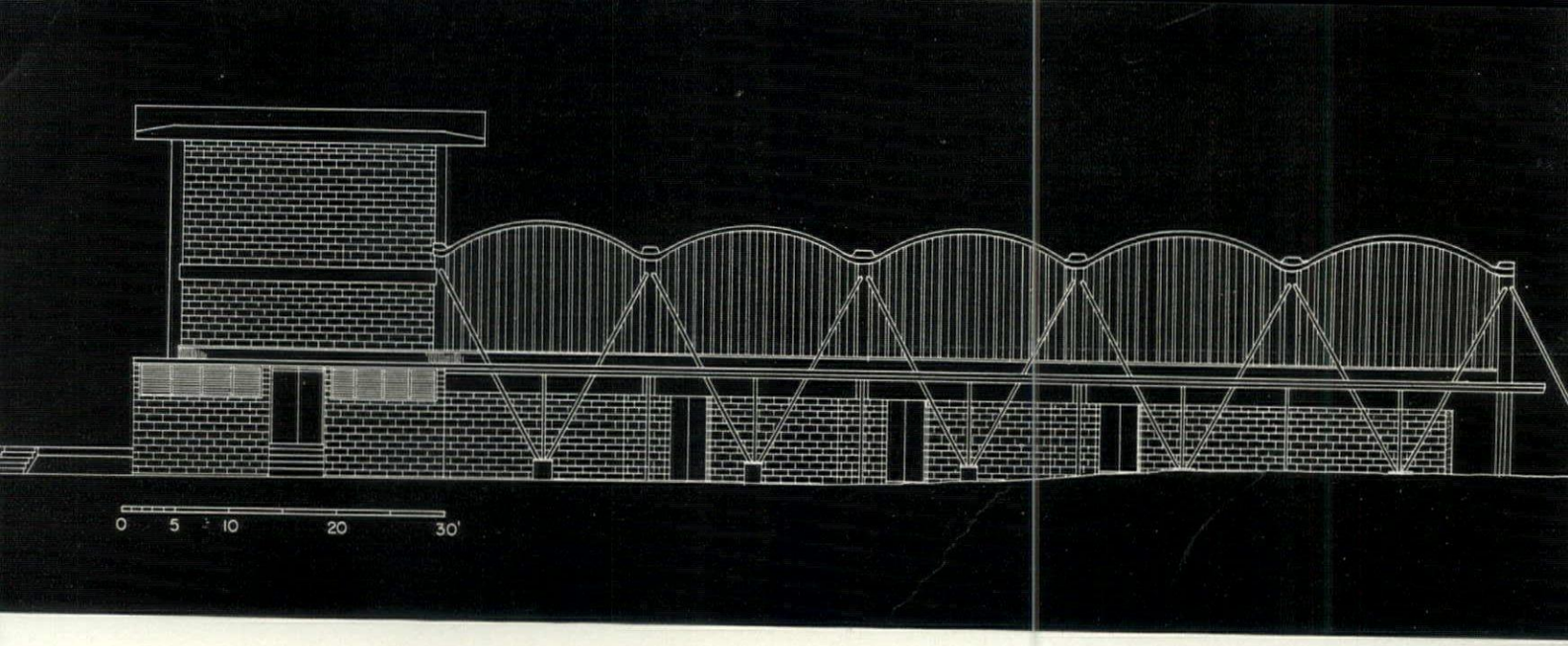
All concrete will be left exposed. As a result, the rhythm of the 25′ bay is repeated all through the Signal Corps campus, creates a high degree of order and coherence out of a complex architectural program. Whether the Signal Corps officers realized this or not, their pride in the Corps made them insist upon an architectural solution as handsome and clean-cut as the equipment they are trained to handle. The archi-

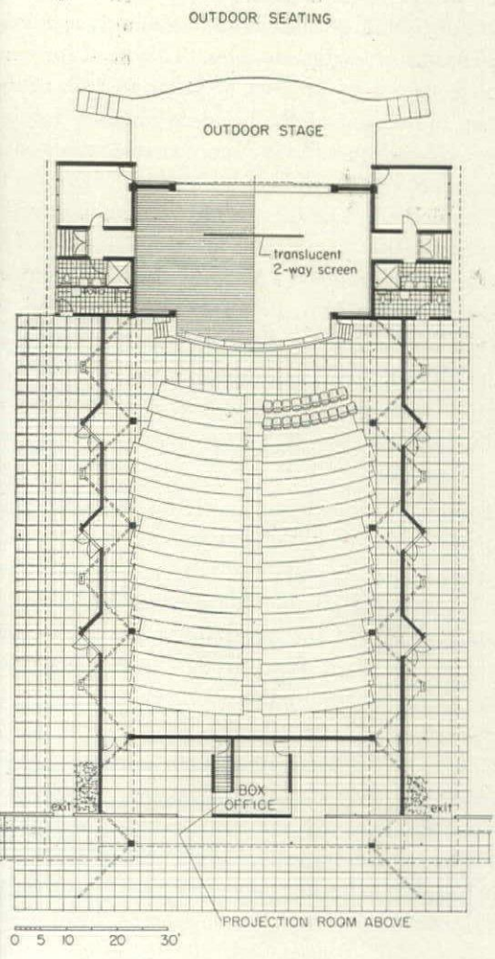
(Continued on page 228)

AIR FORCE THEATER—Engineered on a new principle for earthquake ridden Guam, it gains economy and grace through design refinement

LOCATION: Andersen Field, Guam, Marianas
ANTONIN RAYMOND & L.L. RADO, Architects
PAUL WEIDLINGER, Structural Engineer







It would be difficult to design a more graceful, a more handsome or a more functional tropical theater than this one. Its grace lies in the lightness of its structure; its beauty lies in its simplicity and in the quiet rhythm of its undulating roof; and its technical competence lies in the revolutionary manner in which its engineer (Paul Weidlinger) and its architects (Raymond & Rado) solved two problems that have long challenged builders throughout the Pacific area: The problems:

- How to resist earthquakes and hurricanes; and
- How to make a complicated building simple enough so that a handful of skilled workmen can erect it in a short time.

Tremors and Winds

The way to make a structure resist earthquakes and storms, engineer Weidlinger decided, is to build it of a series of completely independent parts—so that, in the unlikely event that one part should be damaged, the rest of the building will be unaffected. This is in direct opposition to the traditional view of how to earthquakeproof a building: Regular practice is to make the frame as rigid as possible—a good theory, except for the fact that, in a rigid structure, each bay helps support and stiffen the next, so that failure in one part may mean failure almost everywhere else. (A third, and admittedly intriguing theory has never been properly tested: To make the frame so completely elastic that it will give with earth tremors and hurricanes.)

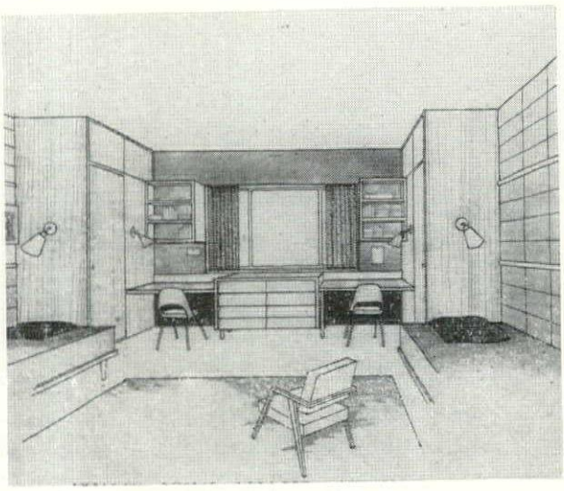
Weidlinger's idea, then, was to design a structure consisting of a series of autonomous frames, each capable of resisting shocks and storms all by itself without assistance from adjoining structural members. The typical, autonomous frame in Weidlinger's structure consists of a steel girder supported at each end on a tripod formed by one H- and two pipe columns (see drawing opposite). These tripods give their frame the stiffness it needs to resist horizontal pressures due to earth tremors or 120 m.p.h. hurricanes. Moreover, since adjoining tripods have one footing in common, they form something close to a parallel truss in the long direction of the structure—a fact which will further help to strengthen its resistance.

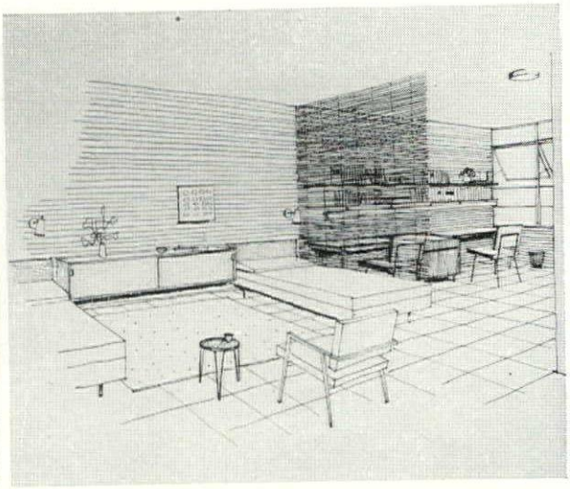
These frames are 20′ on centers, and the roof girders are bridged by thin, precast concrete vaults, a mere 3″ thick at the crown. The precast sections come in slices 2′ wide.

To provide an open, covered passage around the theater, there is an almost independent, secondary structure supporting a flat roof of concrete plank. The tripod pipes penetrate the low roof through a series of

(Continued on page 314)







DORMITORY ROOMS—Planning for maximum spaciousness with minimum space

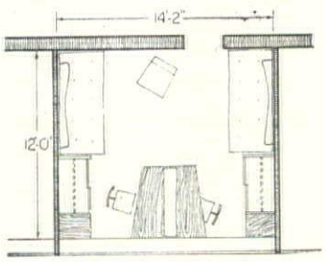


Fig. 1: *Thiry's first scheme. Abandoned because of poor study lighting, poor desk positions.*

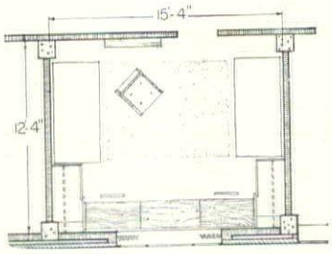


Fig. 2: *Robinson's scheme has better desk arrangement, better lighting, better social area.*

Dormitories—once a source of steady income for U.S. colleges—nov barely pay their way. High building and maintenance costs have cu out most of their profit; and architects must use every trick in the ba to make a minimum dormitory room as efficient and seemingly spaciou as the luxurious students' rooms of earlier decades. This need for con stant space pinching is of course a by-product of inflation and, at th same time, somewhat of an indictment of the building industry for be ing unable nowadays to provide adequate living space at reasonable cos

For costs-per-student are shockingly high in today's dormitory project with all the added facilities needed (like dining and recreation rooms architect Thiry spent almost $5,000 per girl at Washington State (p 176); and The Architects Collaborative (TAC), in their economica Harvard dorms (THE MAGAZINE OF BUILDING, Dec. '50) still had t spend more than $3,600 per student—a third as much as the cost of good two-bedroom builder's house, fully equipped and with a plot o land. Yet the average room rent for U.S. colleges and universities i still only $16.50 a month, with the use of all the elaborate facilitie thrown in free.

In the light of this economic contradiction in terms, the best thin an architect can do is to try and give his clients their money's wort although he can hardly hope to satisfy anything but the most minima requirements of space. To give Washington State its money's worth architect Paul Thiry undertook one of the most comprehensive studie ever made of the dormitory room plan, went through a whole stack o possible schemes, finally narrowed his double-room choices down t four:

His *first scheme* (Fig. 1) is a common dormitory solution (whic architect Hilyard Robinson—p. 178—chose for Hampton Institute— see Fig. 2). Its advantages are economy and simplicity; its disadvan tages are that (with facing desks) one student gets bad natural light, an the facing position seems too distracting for concentrated study anyway To counter this criticism, architect Robinson made most of his doubl rooms 1′ wider than Thiry's 14′-6″, placed both his closets up again the exterior wall, and strung his desks out along the windows betwee closets. This separated his living-sleeping area in back of the room fro the study area, but cut down his window width and may present studen with some glare problems if they study there in daytime. (Sinc few of them do, natural light conditions are not a decisive factor study-area planning.) TAC, at Harvard (Fig. 3) made the double roo

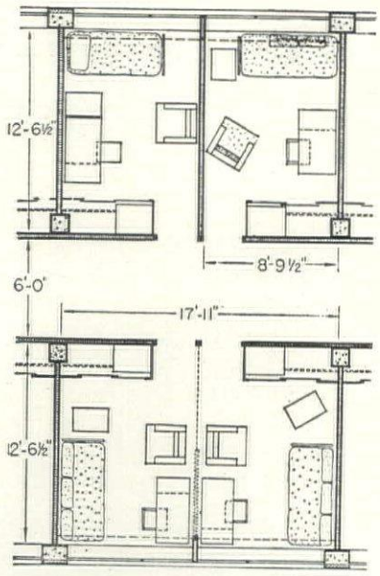


Fig. 3: *TAC's plans for Harvard are flexible, make conversion of doubles into singles a simple matter.*

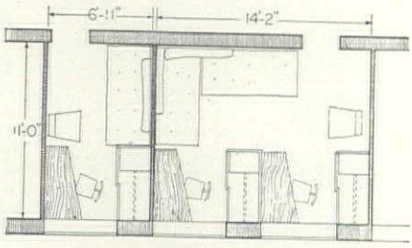


Fig. 4: *Thiry's second scheme solved many problems but turned each room into three cubicles.*

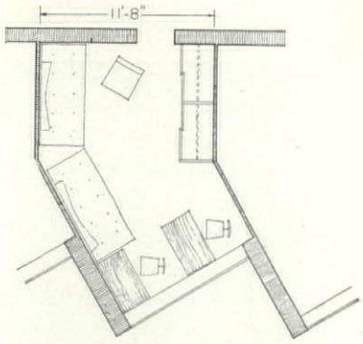


Fig. 5: *Thiry's third scheme helps orientation but produces awkward corners, possibly poor lighting of social area.*

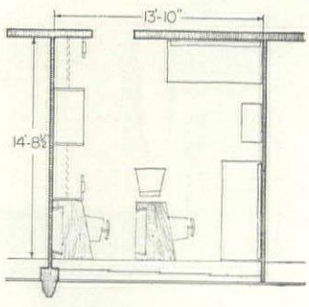


Fig. 6: *Thiry's final scheme (now under construction) has excellent study arrangement, well-planned social area. Sole drawback: It will be hard to convert into singles.*

almost 18′ wide, pushed closets back against the corridor wall and let students face each other across desks (separable by curtains). Evidently the daytime study and natural lighting factor did not seem too important to the architects.

Thiry's *second scheme* (Fig. 4) has one of the closets serving as a partition to create two small study-cubicles. Thiry feels that this turned his room into three minimum cells, created too severe a separation. On the other hand this layout permits a great deal of flexibility in the ratio between doubles and singles, since each double room can very easily be turned into two single rooms by putting up a 6′ long partition. Actually TAC achieved a similar flexibility in their simple unit without creating a cubicle effect along the windows.

The *third scheme* Thiry experimented with (Fig. 5) is a sawtooth arrangement that gives him good orientation and views, some added architectural interest but also a number of headaches over higher construction costs, irregular furniture shapes and so on. In Alvar Aalto's MIT dormitories (THE MAGAZINE OF BUILDING, Aug. '49) there are several such rooms; but their high cost would seem to make them poor prototypes in a field where economy is the motto.

Thiry's *final scheme* (the one he adopted—Fig. 6) has storage-walls between double rooms, desks separated to *suggest* cubicles without actually creating them, and a built-in light over the desk which permits one girl to work while the other sleeps. Its best feature is the arrangement of couches and tables to form a real living-room corner—something which none of the other schemes manages to achieve. This is an especially important point in a women's dorm; at Harvard and Hampton a good deal of the students' social life is expected to take place in the community rooms. Sole drawback in the Thiry scheme is its relative inflexibility: if ratios should ever change, converting doubles into singles will be a rather tough job.

The ratios of doubles to singles vary considerably between universities. At Harvard the ratio was about three doubles for every four singles —or, to put it another way, three Harvard men out of five preferred to share rooms. At Hampton, for reasons of simplicity, practically all rooms were designed as doubles and students are not given any choice. At Washington State the proportion is about half and half; apparently girls tend to be more sociable then men students. Apparently, too, the trend is toward more double rooms—both as a result of student preference and as teaching methods increasingly stress cooperation and adjustment to communal living.

For this reason alone the single room is no longer a very important problem; generally speaking, it just ends up as half a double room, since there is very little even the best architect can do with a 7′ or 8′ slice, 10′ or 12′ deep. But in the double room, a good designer can take 170 sq. ft. (or thereabouts) and make them do quadruple-duty: as two studies, as a bedroom for two, and as a comfortable and inviting living room in which to relax and entertain. On the following pages are some examples of how it is being done in the most recent dormitories planned for U.S. colleges and universities.

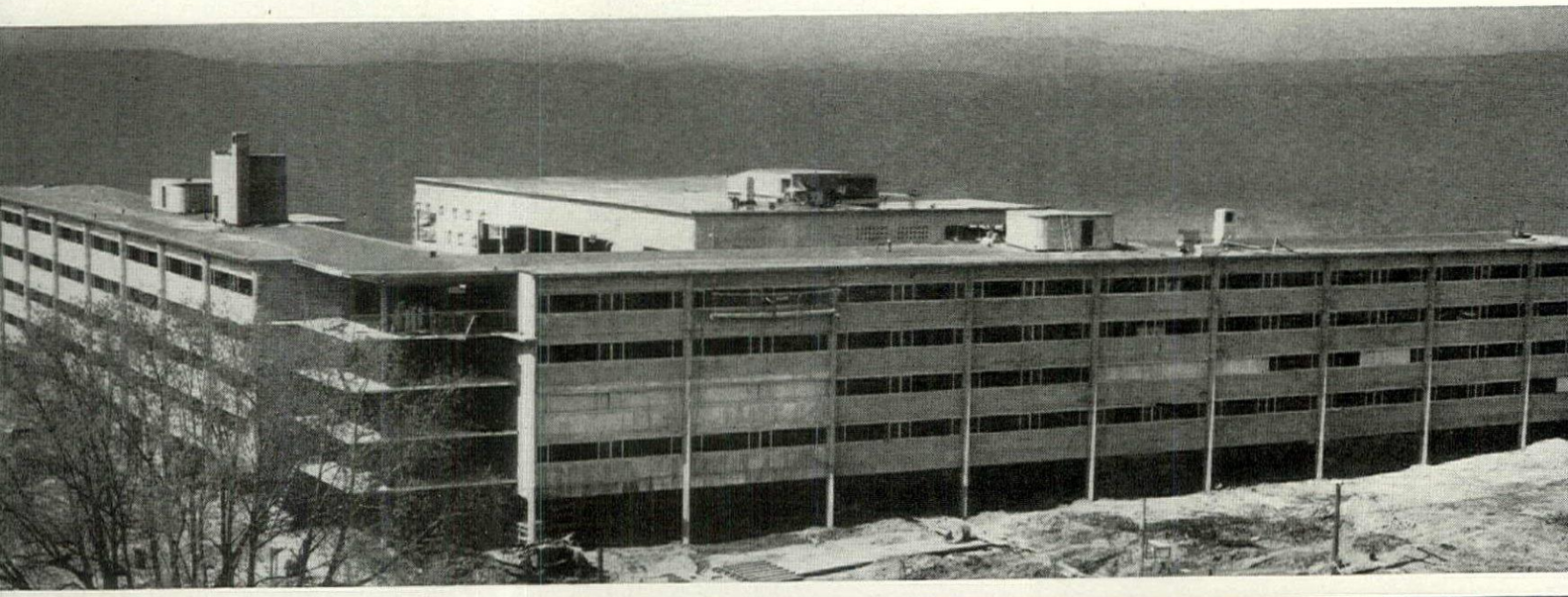
These recent dormitory plans are probably the best that can be produced under the circumstances. None of the architects involved can possibly defend the space standards in any but economic terms. Yet the future is not entirely black. In the dormitory planned for Trinity College (p. 180) the new and revolutionary structural system points the way toward larger living space. It may be that we shall never regain the old Ivy League dormitory standards in which two students generally shared a small apartment consisting of a 250 sq. ft. living room plus two 100 sq. ft. bedrooms—for, after all, those standards reflected a period when only the wealthier groups in our society could afford to send their sons to college. But if Thiry's kind of planning at Washington State, Robinson's kind of common sense at Hampton, and Ford's brilliant kind of construction at Trinity can ever be combined, we may regain a degree of spaciousness not too far removed from the luxury of several decades ago.

WOMEN'S DORMITORY—By putting it on stilts and manipulating

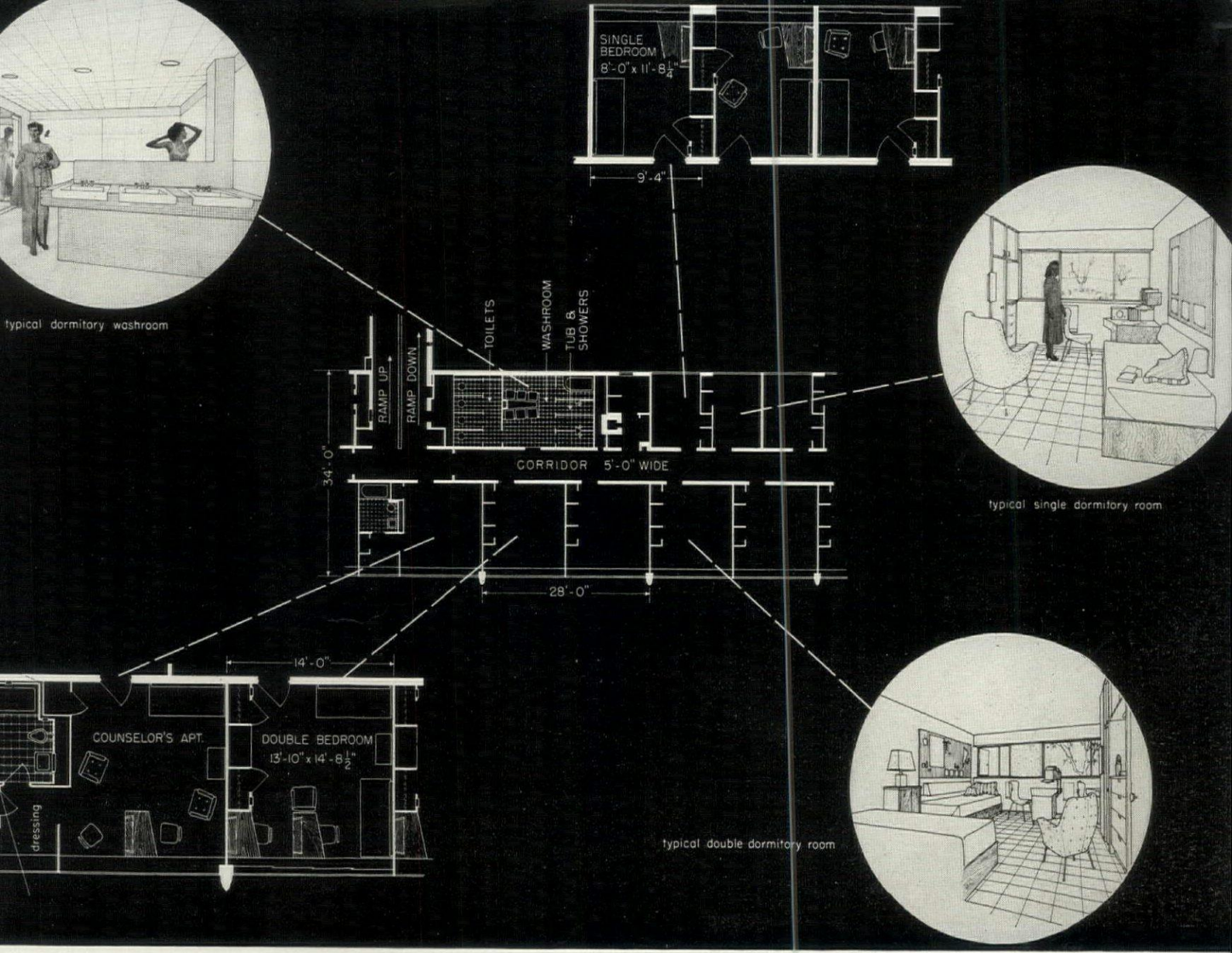
levels Architect Thiry wrings savings from a tough hilltop sit

LOCATION: Pullman, Wash.
PAUL THIRY, Architect
PHILIP KEENE, College Architect (Consultant)
SELMA STREIT, Consultant on College Food & Housing
SOUND CONSTRUCTION CO., General Contractors

W.S.C. Photo Ser







Many a college owns hillside sites wonderful for students to live on but difficult and expensive to build on. Through his new women's dormitories for Washington State University, architect Paul Thiry has shown how such colleges can convert hillside liabilities into assets.

He planned his group with the social building, including noisy dining room and lounges, isolated in a separate building on the crown of the hill. From the lobby-entrance he ran bridges to two quiet dormitory buildings on the brow of the hill. The bridges connect to ramps leading to the second and third floor levels of the four-story buildings. This arrangement gave Thiry the economy of four large floors under a single roof; yet retained the residential stair-climbing ease of two two-story buildings.

Thiry then solved his hillside foundation problem by more or less ignoring it. He raised his bottom floor well up off the ground, on isolated piers placed 28′ apart instead of a continuous foundation. (The ground between the piers was left undisturbed to prevent erosion.) This arrangement again increased pleasure in use, since every room had the privacy and view of a second story or better.

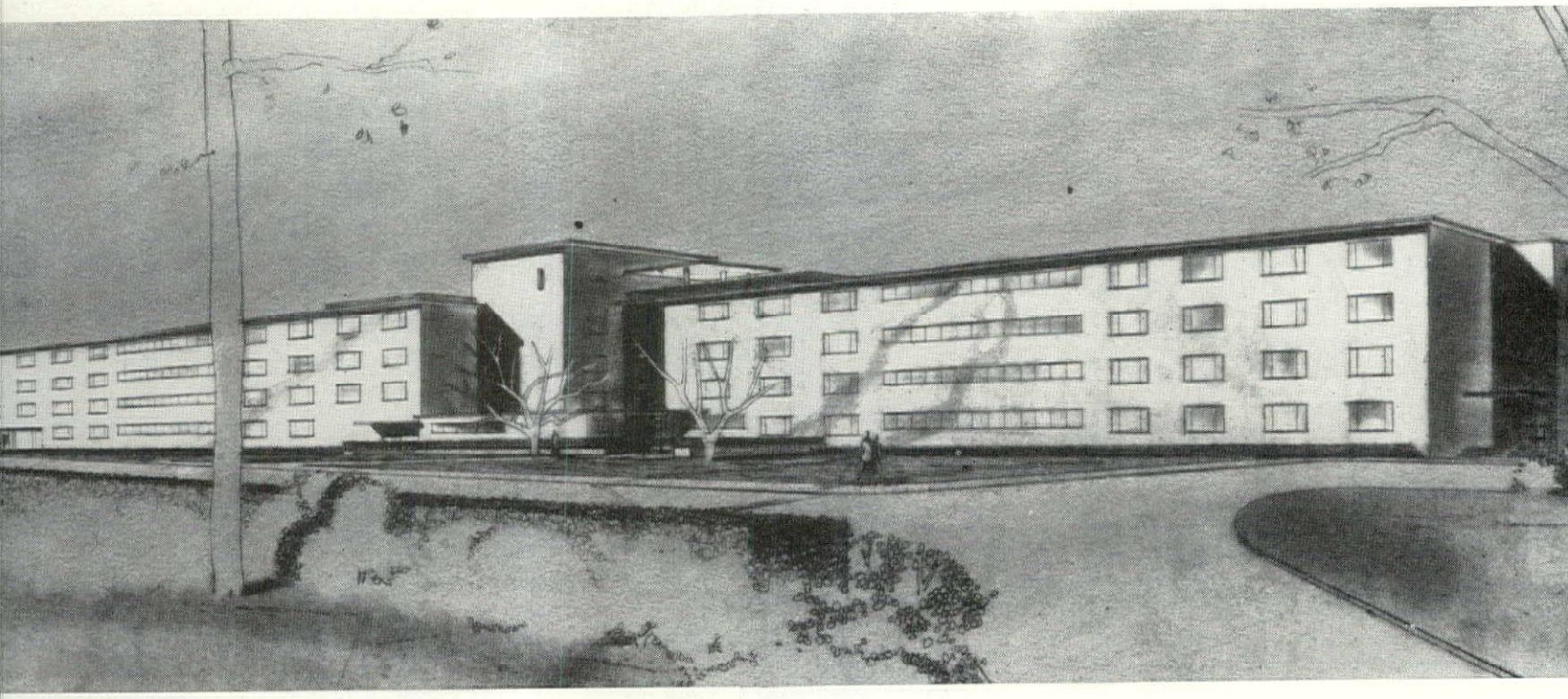
Then Thiry let his exterior wall columns project outward instead of inward, leaving a smooth interior wall and long uninterrupted horizontal heating runs for convectors.

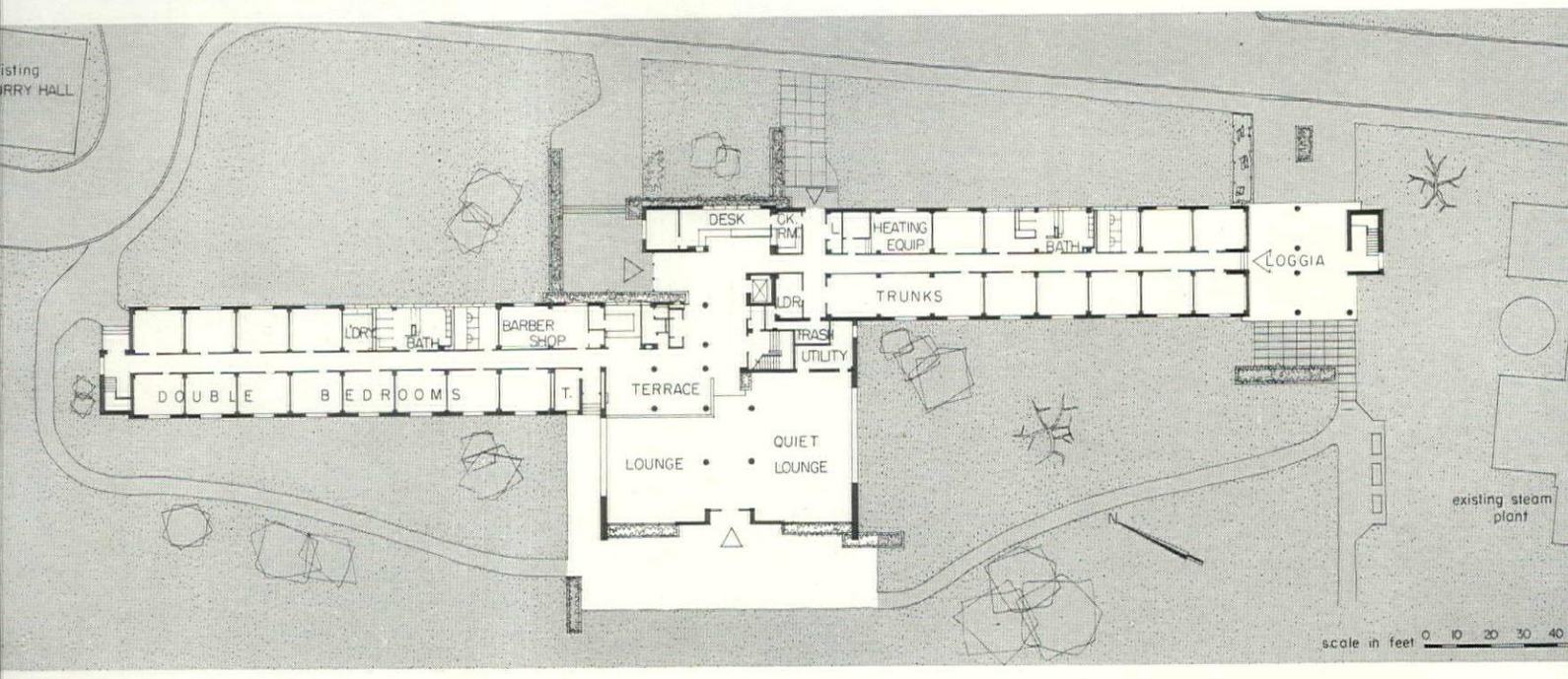
The planning complications that arise at a building angle Thiry sidestepped by leaving open terraces for sociability and "loafing."

Thiry's exciting room plans are fully described on pages 174 and 175.

The cost of a very complete facility, fully furnished and landscaped, will be $2 million, or $4,900 per girl.

MEN'S DORMITORY—A common sense building matches easy construction with easy operation and maintenance



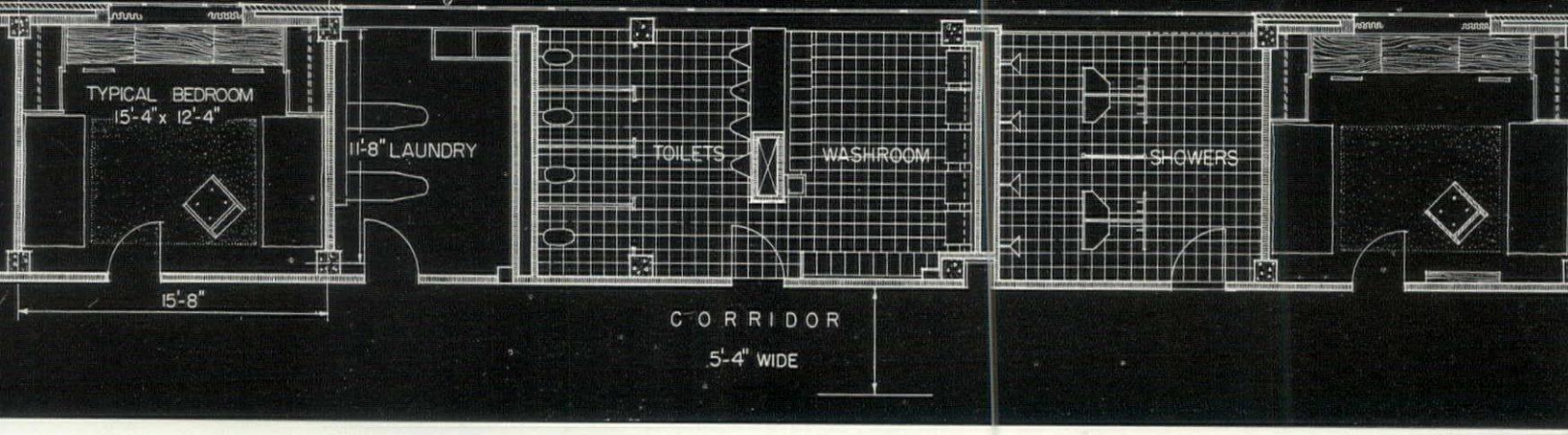


LOCATION: Hampton, Va.

HILYARD R. ROBINSON (Planning & Design) and WILLIAM H. MOSES (Supervision), Architects

J. DISTASIO & CO., Structural Engineers

LANIER & LEVY, Mechanical & Electrical Engineers



Architect Hilyard Robinson is not only a sensitive designer (see drawings on these pages); he is also a man of considerable common sense who knows a good deal about the building dollar. In his 257-men dormitory on the famed Negro campus in Virginia, he has demonstrated both qualities to a high degree.

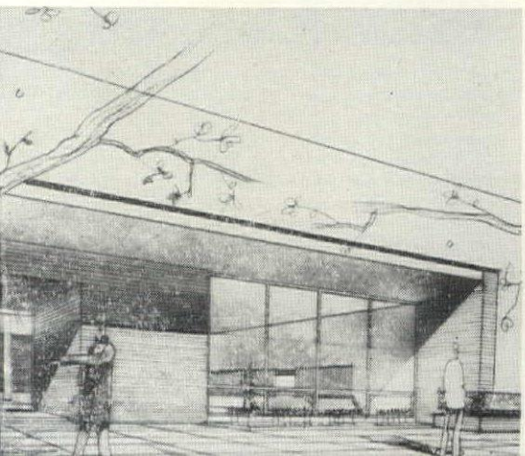
Indications are that this handsome dorm will be one of the cheapest of the year. Among the reasons Robinson expects low bids are that the building

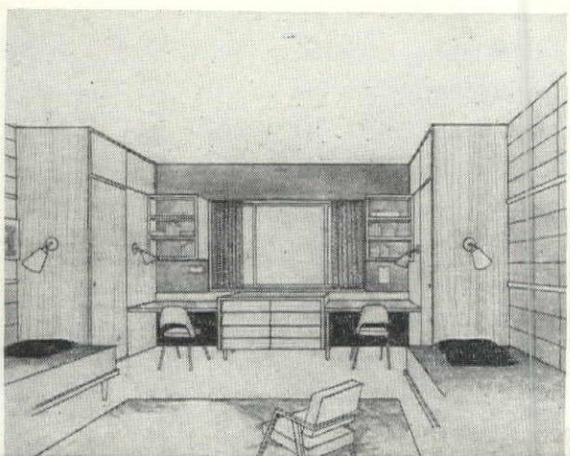
- has a 6″ flat slab construction (figured by concrete engineer DiStasio) which has helped eliminate plaster from all but 5% of interior surfaces;
- has all its pipes, wires, ducts, etc. so tightly consolidated that the low heating and plumbing bid surprised even Robinson himself;
- uses inexpensive, continuous slag blocks for interior partitions, counts on them to absorb a lot of sound; and
- employs a 6″ cinderblock back-up for its exterior brick faced cavity walls (in place of the usual 8″).

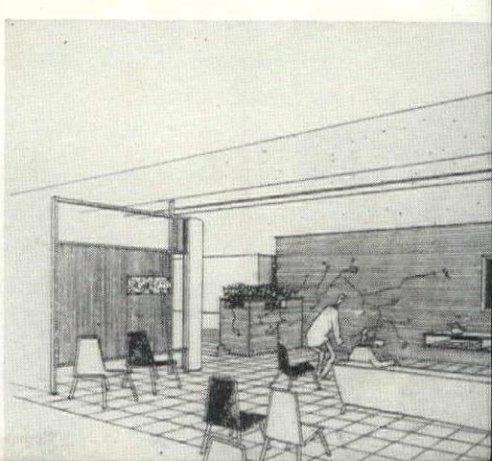
At the same time architect Robinson has tried to reduce future operating costs by installing a motorized switch on the ground floor which operates bathroom lights on a timing device. At a certain hour, the switch shuts off all but night lights, is expected to save the College a lot of current. To reduce heating costs, Robinson installed a balancing cock for the radiant heating system in each room at a cost of $30 per room, enabled occupants to cut down on heat if they want to.

Community facilities are located in the center of the building, include lounges on the ground floor, club and activities rooms on the upper floors, and two roof terraces accessible by elevator. This central circulation stack can be closed off from bedroom wings during parties.

Robinson likes the fine brick colors on Hampton's campus, will try to match some of the best exterior brickwork to be found in the country. This, together with the pleasantly informal fenestration, should give his building the quiet dignity and elegance so often found in good Scandinavian architecture.







TRINITY UNIVERSITY starts off a whole series of buildings erected by the "Youtz-Slick" LIFT-SLAB CONCRETE method, teaches cost-cutting industrialization of building



Down in sun-soaked Texas, the first new building for San Antonio's Trinity University is now complete. It is obviously handsome; it is also a landmark in the rapid industrialization of building.

Trinity's classroom-and-administration unit is the first full-sized structure erected by the new Youtz-Slick "lift-slab" operation, which treats whole floor slabs and roof slabs as if each were a hydraulic elevator pulled up on its own columns by pumps atop each column. (See small photos, right.) When the job started (June issue, '50) the Youtz-Slick method looked like a remarkable cost-saving structural invention; when the job was finished it looked even better, and as a result it is now spreading through southern Texas like a long-horn stampede.

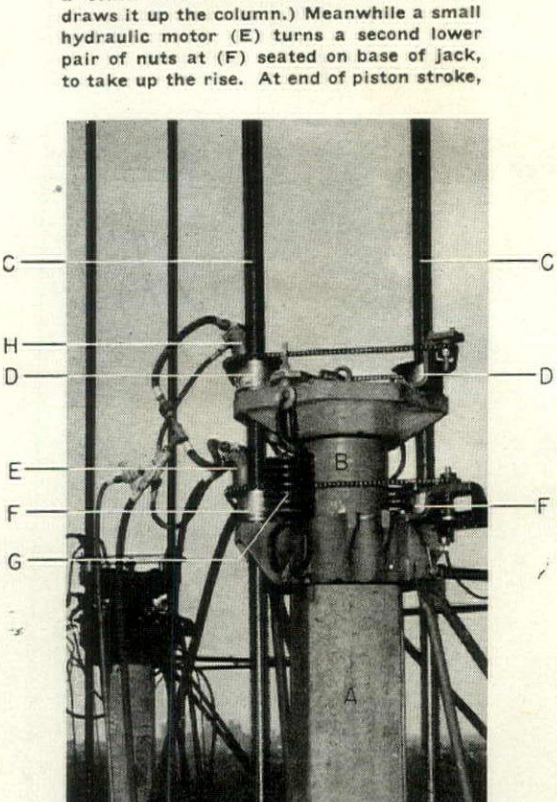
Already finished or well under way are 20 buildings including two industrial units (one of them at far-off Kansas City), two sizable stores, a school, a civic group, and a 200-unit housing project. The size of slabs lifted is increasing, and the successes now include a "12-column job" some 150′ x 50′—the size of a standard 5-room classroom wing with corridor, all lifted in one piece within one morning!

Yet a second visit to Texas following the first completions shows that calling the lift-slab a major advance in construction method is an understatement: its influence extends across the entire design and building operation. Many a structural invention that promised the sky has later been cut down to size by collateral problems involving planning or mechanics. The Youtz-Slick "lift-slab" on the contrary turns out to be not just a structural invention that can cut building costs by as much as one-third—perhaps its major importance lies in its contribution to all-around building correlation. Its happiest achievement has been that it pleased not only the structural engineer but all hands engaged on the building. Owners felt it was invented expressly to achieve major dollar savings; it seemed as important to architects for the simplicity and freedom it conferred on design as it did to engineers for the sake of efficiency; the mechanical trades felt as if it were made to order to expedite installation, eliminate hoisting and engender faultless accuracy of alignment; the general contractors were busily proclaiming readiness to engage on further jobs while cannily understating their cost savings so as not to raise competition.

Accordingly, Trinity's first class of students consisted of building professionals: to learn about slab lifting and about the achievement in building integration.

THE LIFT-SLAB METHOD

All slabs are poured atop one another on the concrete building platform at ground level, then lifted up along columns firmly set into footings, by means of hydraulic jacks sitting on column heads (A). Piston (B) is pumped upward, pushes threaded rods (C) straight up (no turning), gripping them by nuts (D). (Lower ends of long rods are threaded into a collar which is cast into the slab and draws it up the column.) Meanwhile a small hydraulic motor (E) turns a second lower pair of nuts at (F) seated on base of jack, to take up the rise. At end of piston stroke,



pressure is released, and spring (G) pulls piston head down again—rods are now being held in their new high position by nuts (F). As piston head descends, upper pair of nuts (D) is turned by small hydraulic motor (H) to follow the piston head down and to take a fresh "grip" on rods for another push. All jacks are synchonized by an operator who rides up on the slab with a control panel. Lugs are welded to columns under slab collars to hold them permanently.



sroom and administration building

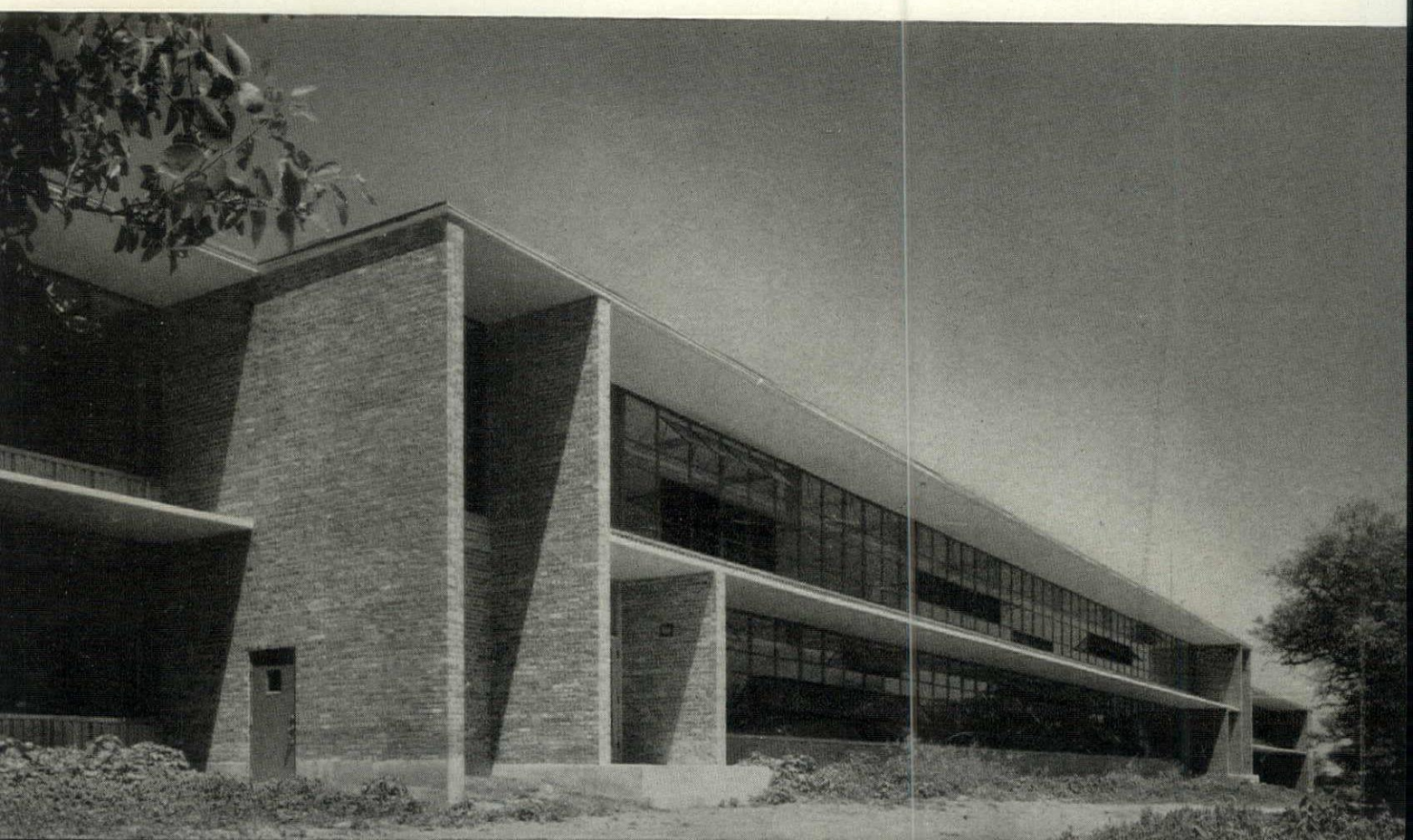
new "horizontal Gothic"

eisel



If an engineer could toss big roof slabs into the air on toothpicks, then the architect would have an unprecedented chance to play with gravity, make horizontal instead of vertical Gothic. He could make the great slabs seem visually to float—then under the floating slab he could play with space. Walls, supporting nothing, could be run either on the building line or anywhere behind it, run short or long, straight or curved, continuous or interrupted to fit any plan—or whim. The one thing the architect would have to watch out for would be the "toothpick" columns on about a 20 to 30′ grid.

The cause of architecture can be thankful that the first demonstration, Trinity University's classroom-and-administration building, was made by straightshooter O'Neil Ford. He was Presbyterian sober in taking no liberties of "open planning." But the play with gravity he did express. There have been modern "horizontal" buildings before, but none whose sheltering slabs sweep for such "miles" without apparent support—at once so widely overhanging, so smoothly unencumbered by any sign of a beam, so saucily thin. There have been continuous glass walls but none hung so expressively from above like a glass curtain—which this literally is. With brick end walls, the architects were conservative, ran them out to the ends of cantilevered roof slabs for security, though keeping them slab-thin.



Trinity's classroom and administration building (continued)

When James T. Stewart & Co., Inc. bid in Trinity's classroom building at $6.35 per sq. ft. (against a prevailing cost of around $10 for similar buildings) it was obvious that the lift-slab method was expected to cut costs. Now that this first building is completed, two questions come up: were the savings realized and did the new system work smoothly or were there kinks?

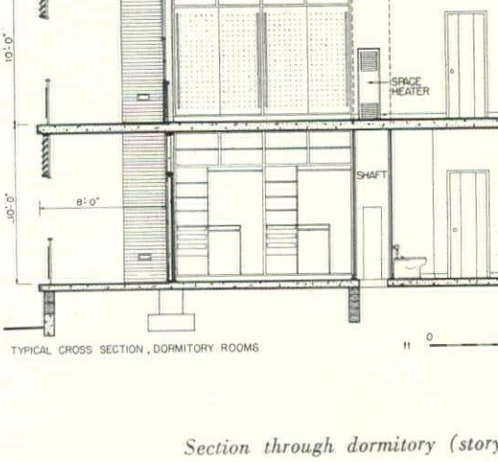
Stewart's report leaves no question that the savings were made. They estimate that $21,900 was saved on the concrete work over the cheapest cast-in-place construction of post and beam. They needed none of the usual vast overhead wooden formwork, used only five carpenters, saved an estimated $2,200 of the $21,900 by hoisting no concrete, pouring it all at grade, and another $1,000 or better by placing and tying the steel reinforcement at grade, too. On masonry they saved about $1,200 —because the work was all laid "straight," because the masons could all come on or off as they wished (and worked under cover), because the slabs spanned the openings, required no lintels. Steel sash were hung (even before masonry was set) on clips stud-bolted directly to slabs above, and there were no interrupting columns or walls: estimated saving, $1,000. Mechanical trades, too, could come and go independently of other trades. Since all slabs were cast on the ground like a stack of pancakes, the plumber could save by casting sleeve-holes through both floors at once, getting perfect alignment, and again by doing most of his work at grade. On this particular job, the electrician's savings came mainly from his being permitted to run conduits on the surface instead of burying them. The wide column spacing let the heating man put long convector runs in a recessed panel under windows. His estimated saving: $1,400; the electrician's, $1,200; the plumber's, $1,500. Heating installation cost only 36 cents per sq. ft.

These savings and other minor ones added to an estimated $28,500 on a $285,000 building; and if this 10% fails to explain a cost of $6.50 against $10, the rest must be credited to a) understandable understatement and b) enormous *design* simplifications through lift-slab.

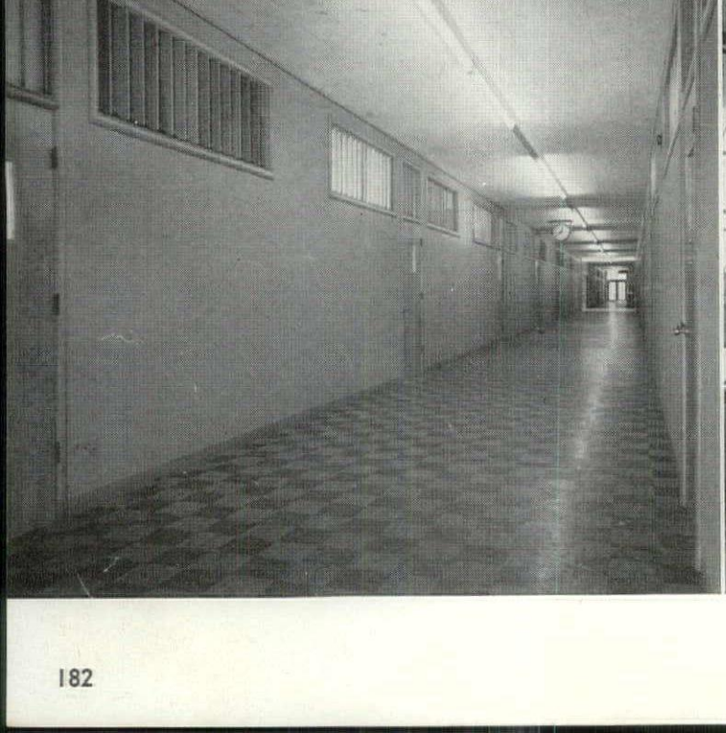
What did Stewart learn about lift-slabbing as such? Chiefly that slabs may deflect unless: 1) they are left at least 8 full days to cure; 2) the reinforced pattern is continuous over columns; 3) the slabs are reinforced against shear at collars.

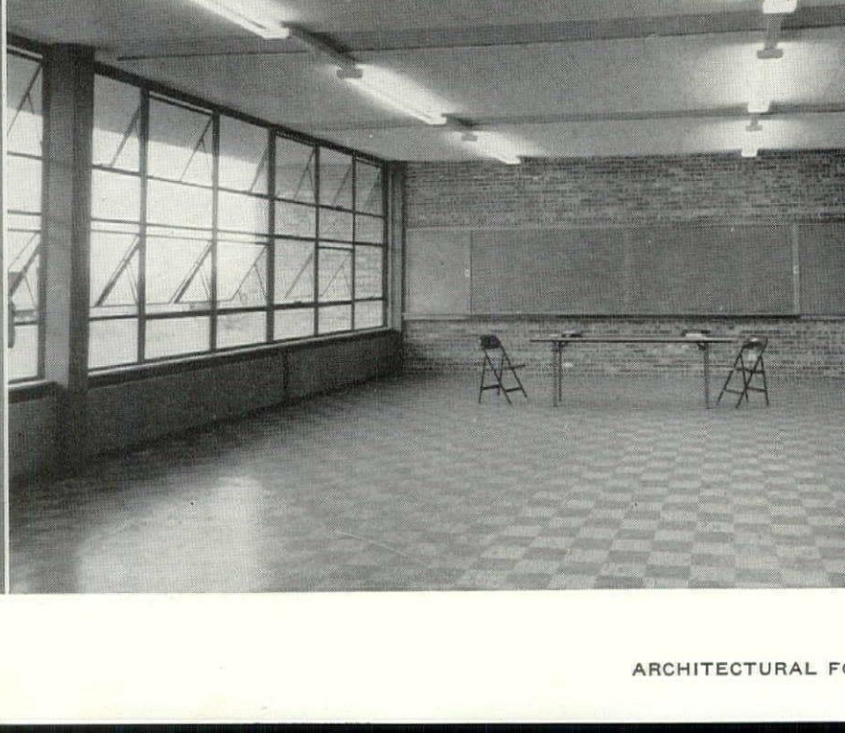
Nobody dropped any slabs; the worst that ever happened was a collar or two pulled up through inadequate curing or reinforcing.

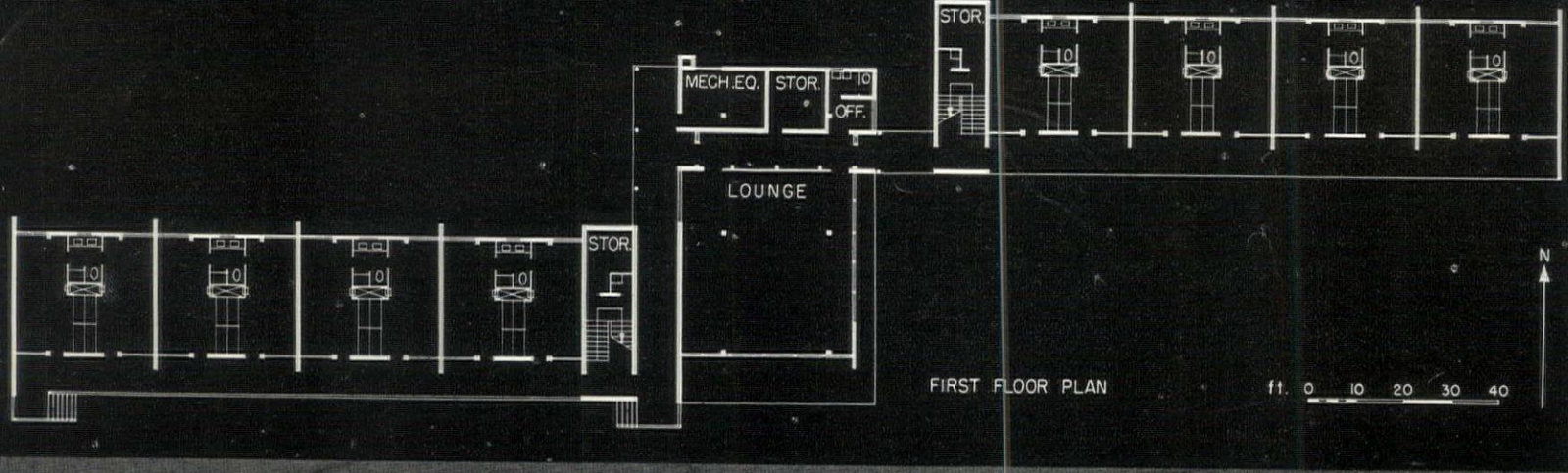
LOCATION: San Antonio, T
O'NEIL FORD, BARLETT CO
HARVEY P. SMITH, Arch
WILLIAM W. WURSTER, Consulting Arch
FRANK T. DROUGHT CO., Mech. & Struct. Engi
FRED N. SEVERUD, Consulting Eng
JAMES T. STEWART & CO., INC., General Contr

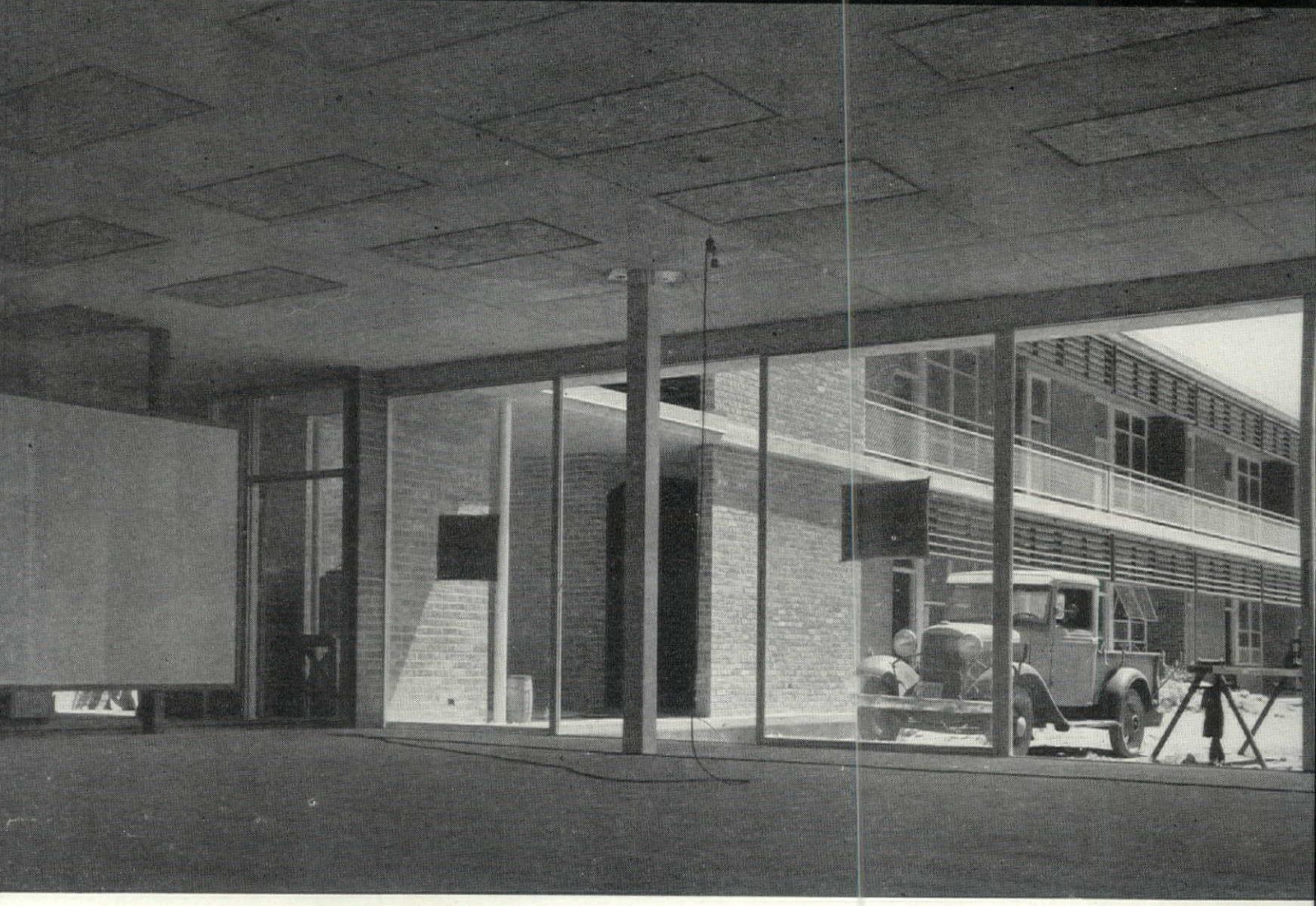


Section through dormitory (story page) shows 8' passage and porch, wide overhangs, shaft for p ing and space heaters. Operating ers in classroom building (below) mit breezes to go through. W frames are hung from ceiling; c tors are outside column depth, fo runs and a smooth outer wall. A panels are held back from wa eliminate cutting.









Ulric Meisel

Trinity's dormitory sets new low-cost record by lift-slab savings

C. W. MITCHELL, contractor
ARCHITECTS, see opp. page

Trinity's dormitory for men is remarkably planned —it actually takes account of Texas weather! So that south breezes may carry through rooms, these are in a single row, and the outdoor passage shades them from the south, with help from high louvers. Since rooms are only four in a row, through traffic is light, and the 8′ passage will be used as a cool study porch on hot evenings.

Like all Trinity's buildings, the dorms were designed with lift-slab construction specifically in mind. Each pair of rooms corresponds to one slab section; brick partitions act as stiffeners, come at slab joints. Most masonry is in simple straight panels; south window frames come down to the floor and panels beneath the window sill are painted a different gay color for each room. Where acoustical absorption was desired, sheets of glass fiber were laid out on the floor and cast into the bottom of the next slab, incidentally helping separate it from the slab below (see photo through the lounge —above). The many bathrooms, one to each pair of bedrooms, were a necessary accompaniment of the no-hallway system. Despite this, a 28,500 sq. ft. building for 64 men (if two were put in a room; 96 if three) cost $190,000—a record $6.80 per sq. ft. and $3,000 per student.

LIFT-SLAB HOUSING comes in cheaper than frame, embarrasses bureaucrats

That loud sound of chuckling comes from Corpus Christi. People are hearing how big redheaded architect Richard S. Colley "pinned back the ears" of Public Housing Administration officials in Washington. For more than a year PHAdministrator John Taylor Egan, himself an ex-architect, had been carrying on a campaign not of whispering but of shouting that PHA's high costs rose from "extravagant ideas" of architects. Meanwhile Egan's aides were riveting their rules into an ever tighter architectural coffin. But at Corpus Christi, Colley gave Egan *fireproof masonry housing, 200 units of it, for only 4% more than comparable cement-block and wood-frame buildings at nearby San Antonio—and less costly by one-third to taxpayers over the 40-year amortization period.*

Colley's accepted planes were suited to lift-slabbing, and understanding contractor C. C. Hinchberger came in with the low bid figured that way—at a record-breaking $6.35 per sq. ft., or only $5,700 per dwelling unit—excluding the site work which was unusually tough. By PHA's official method of computation the average room construction cost was $1,400, or better than 20% under PHA's $1,700 national average. And the plans were better than average—with shading overhangs (PHA lets 'em roast), through-ventilation for all living space, well-sized rooms.

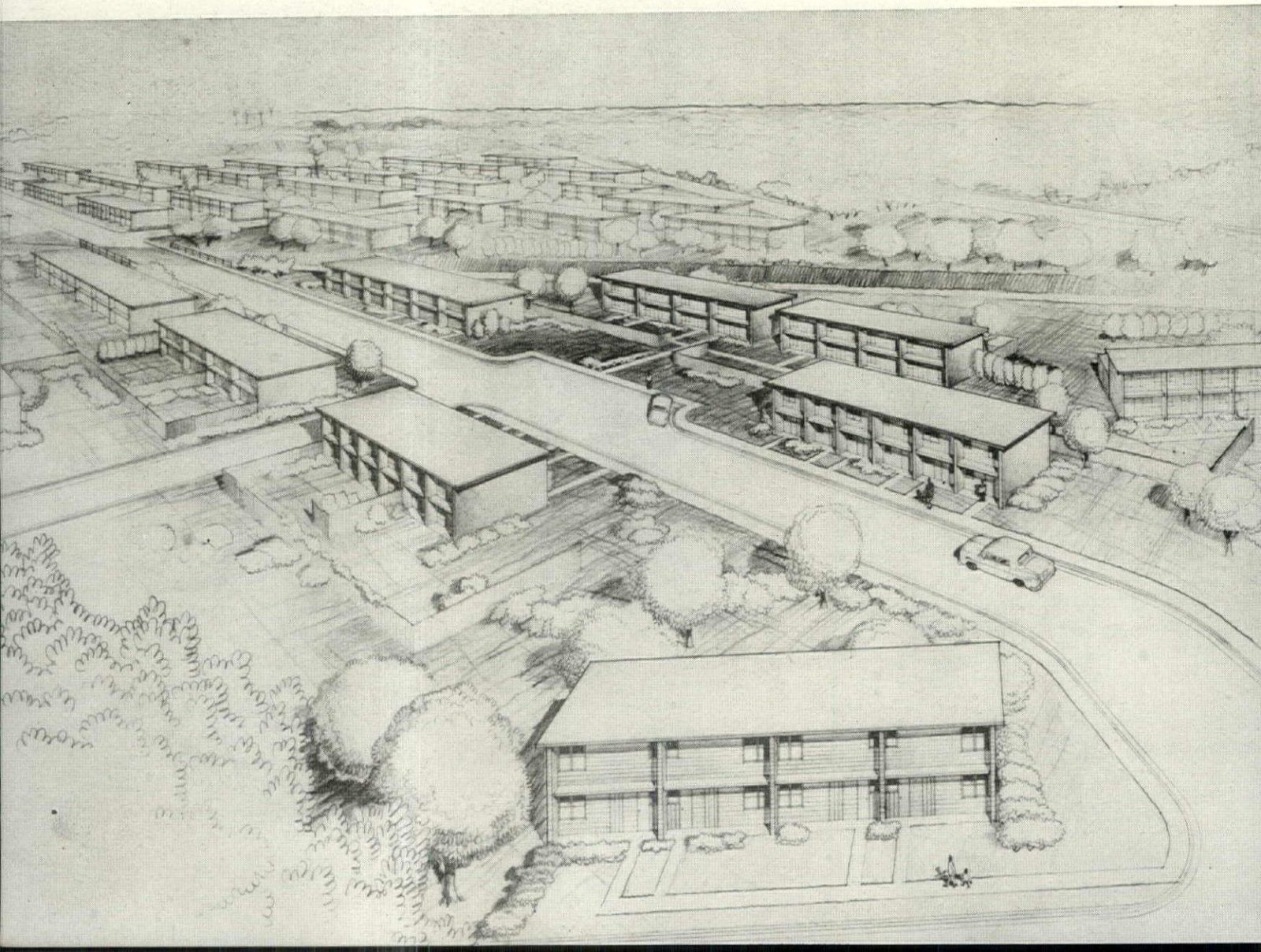
But some people seem not to learn. When nearby San Antonio got some lift-slab bids adding up to something like 8% more than wood frame on a similar 204-unit project, PHA permitted no further negotiations, insisted on wood frame, though *both* had been well under national average. How this increased ultimate cost to taxpayers is told on the next page.

LOCATION: Corpus Christi, Texas

RICHARD S. COLLEY, Architect

BLUCHER & NAISMITH, Structural Engineers

C. C. HINCHBERGER, General Contractor

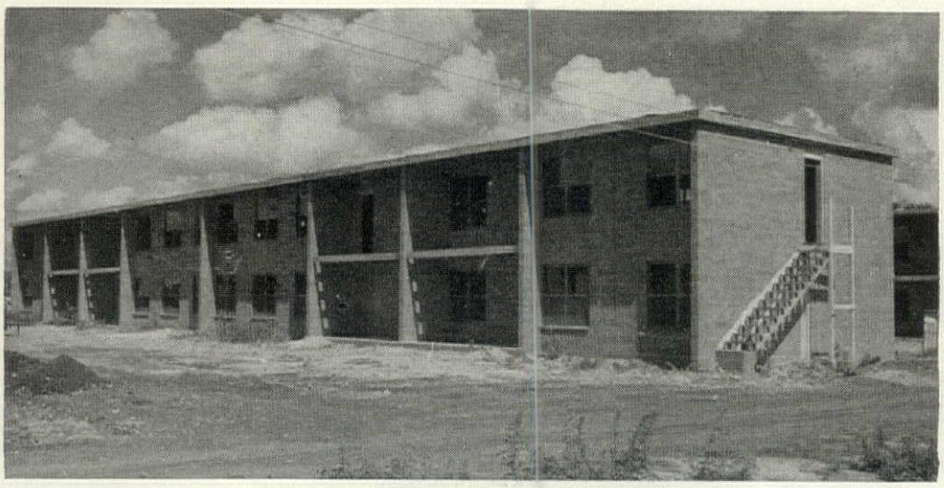


Ulric Meisel

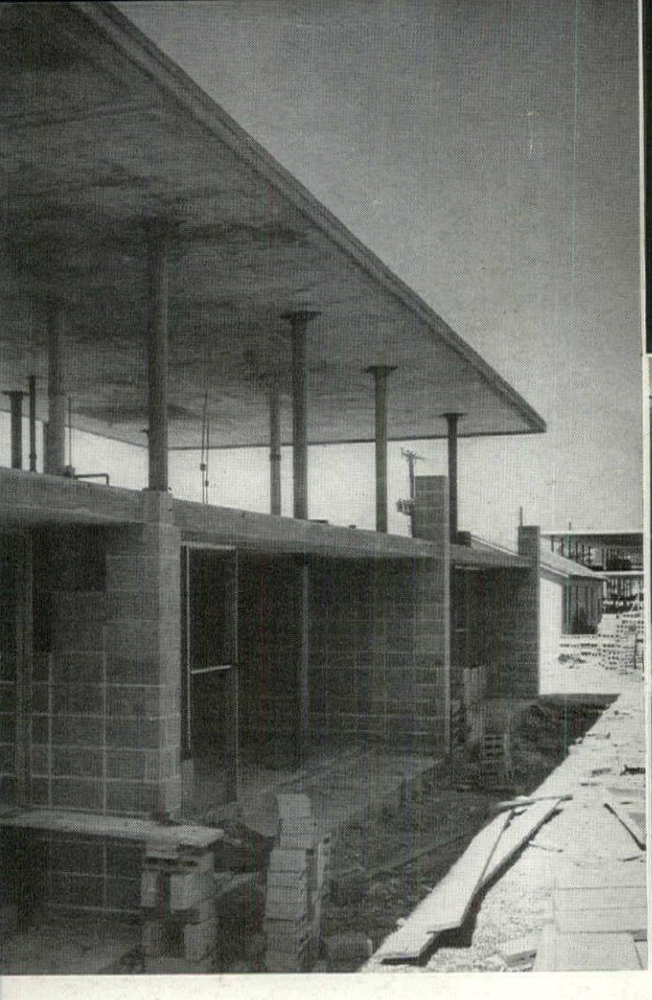
orpus Christi public housing

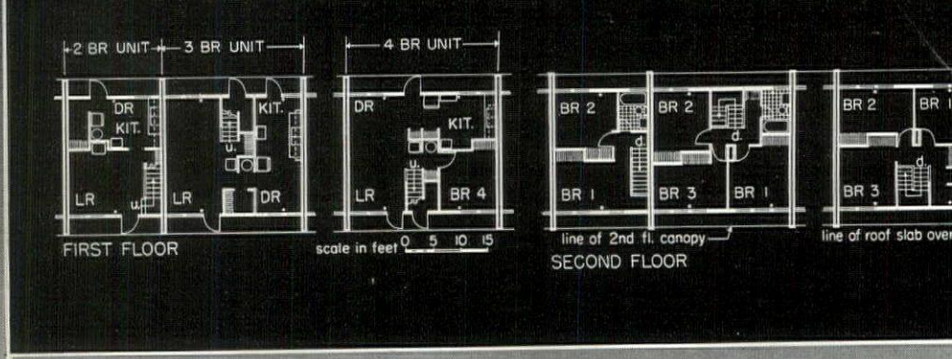
Maintenance and insurance are what make wood-frame and cement block construction come half again as high, over the 40-year amortization period, as fireproof lift-slab construction of roughly the same initial construction cost.

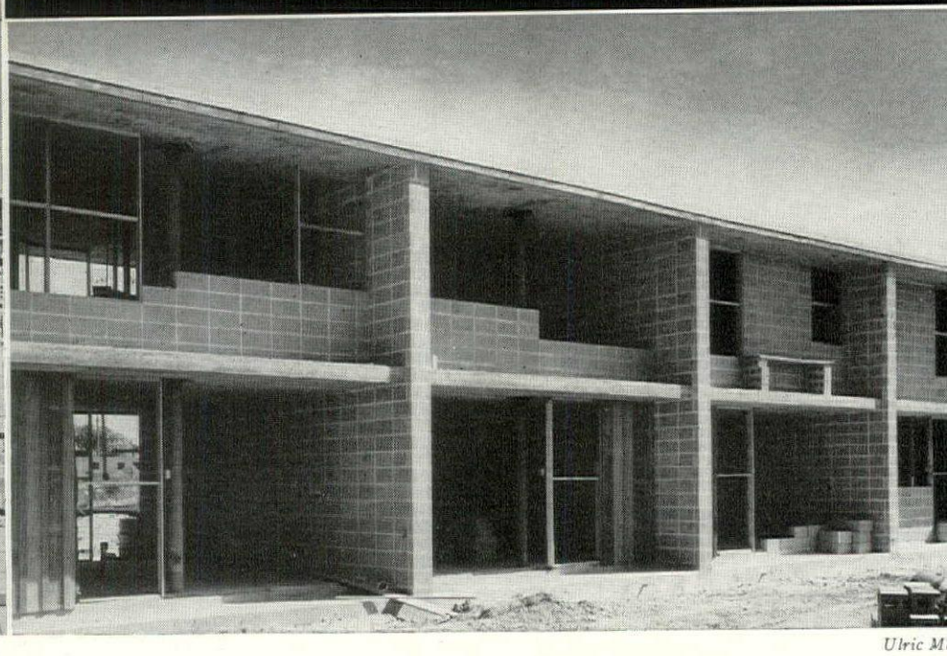
Assuming a $6,500 cost for lift-slab concrete (similar to Corpus Christi's above) and $6,000 for wood-frame (similar to San Antonio's below) and using rates given by the San Antonio Housing Authority, it figures like this: FRAME TYPE: *Insurance on $6,000 at 51 cents per hundred plus 26 cents per hundred for extended coverage for 40 years= $1,848. Maintenance at $144 per year for 40 years=$5,760. Total, $7,608.* FIREPROOF MASONRY TYPE: *Insurance on $6,500 at 4 cents per hundred plus another 4 cents extended coverage for 40 years=$104. Maintenance, $72 per year for 40 years=$2 880. Total, $2,984. Difference, $4,624 in favor of lift-slab.*



an Antonio public housing







Ulric M

Lift-slab methods at Corpus Christi were a fine example of building correlation

The chief lessons learned from Corpus Christi experience were those of building correlation. It began with the design. As the photos show, Architect Colley clearly separated the different building elements for separate operations. Once the 6″ roof slab and 7½″ second-floor slab were up, enclosure (under cover) was supremely easy. Non-load-bearing party walls are of cavity construction—4″ lightweight concrete block on either side of a 4″ air space, which incidentally permits easy venting. Exterior walls of 6″ block are set 6″ outside columns. (The remaining 3′ of each 28′ cantilevered slab projects beyond the wall to shade the windows.)

The engineers used lightweight concrete, found its slightly higher cost offset by the combination of less steel with easier setting (second story steel averaged 2.7 lb. per sq. ft. of slab, was placed for about $13 per ton as against a usual cost of $40 to $50 per ton) and the easier pouring of concrete (it runs at less slump). Though specified at 3,000 lb. strength, concrete actually tested as high as 4,750 lb. after 28 days—due to lower water content.

Placing of concrete cost only about 50 cents per yd. compared with the local average of $3 for placing regular concrete on the second floor.

On this job none of the expected obstacles were encountered when big openings for stairwells were left in the slab to be lifted.

The happiest man on the job was plumber George Stein. One of his greatest boons came out of an accidental discovery made on the second building on Trinity. There, instead of laying paper on each slab to separate the next one, it had been found possible to prevent bonding between slabs by simply covering the lower slab at the precisely right stage with paraffin-base curing compound, then dusting it with foundry-type talcum powder. The discovery was that chalk marks made on the powder were clearly transferred to the upper slab, showed up on the ceiling as perfect "carbon copies." This made it a "cinch" to secure dead-accurate vertical alignment not only of partitions but of mechanical and electrical risers. Then again Stein found he could prefabricate 75% of his assemblies, set them and his heavy bath tubs on the slab at grade and ride up with them during the lift to the second story, nonchalantly continuing to work at his connections. His labor bill was thus cut by about one-third.

By the time the Corpus Christi job was built, it became common practice, too, to set electrical conduits in slabs before casting rather than run them on the surface as Trinity first did (page 182).

All these collateral savings came from the same industrial principle of clearly separating functional operations, and again from happy interrelationships. Justifiably pleased, Architect Colley estimated the total savings at $2.50 to $3 per sq. ft.—one-third the cost of a conventional building.

SPEED cuts building overhead; COST of slab lifting analyzed

Dozens of other interesting experiences and observations have been collected on other lift-slab operations. Two high spots:

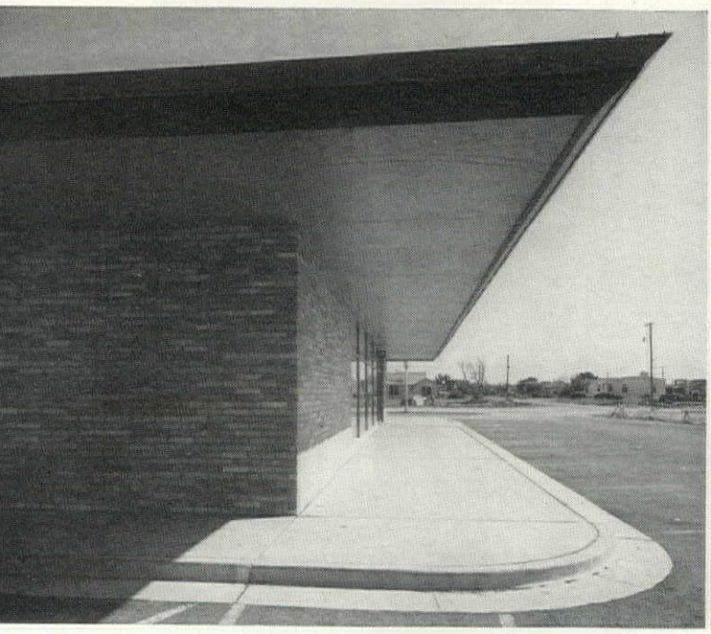
▸ Benefits of speed: On a mill by Ford and Rogers the contractor estimated that lift-slabbing cut building time from seven months to four. On this $150,000 job his overhead during the 4 months was about $10,000; in seven months it would have risen to between $15,000 and $16,000. "Think," said he, "of the joy of bankers on finding their investment earning money three months sooner."

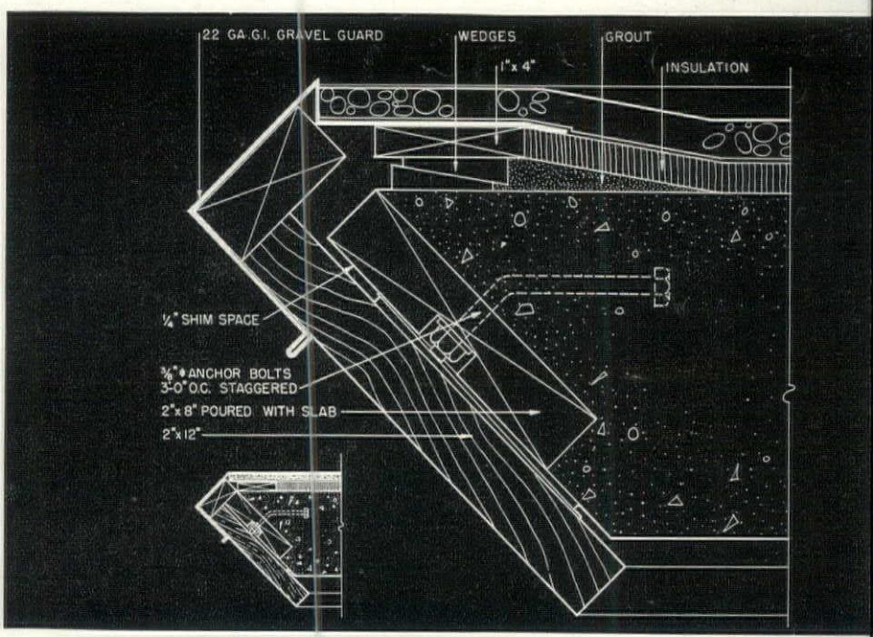
▸ Thicker slabs: On Colley's Chamber of Commerce building (below) lightweight slabs 10½" thick are being used for 25' spans. The increase in slab thickness puts more distance between top and bottom reinforcement, aids rigidity and alignment.

What about the cost of the slab-lift in itself? Southwest Research Institute, which originated and developed the process, now has four licensees lifting slabs in the U.S. and Canada. Although costs vary from job to job, the cost on a 73 x 356' two-story job gives an indication. The seven 47' x 73' roof slabs were lifted 22' and the seven second-story slabs 10¼'. This work required one operator, three helpers (a payroll of $10 per hr.) and their jacking equipment for 36 hours. Thus the labor cost for raising the slabs was only $360. Cost breakdown—7½" second-floor slab:

Columns in place	.10 per sq. ft.
Collars in place in slab	.07
Welding collars to columns	.02
Separating material	.02
Reinforcing in place	.40
Concrete (@ $14 per cu. yd.)	.32
Placing concrete	.02
Finishing concrete	.06
Lifting slab	.24
	$1.25 per sq. ft.

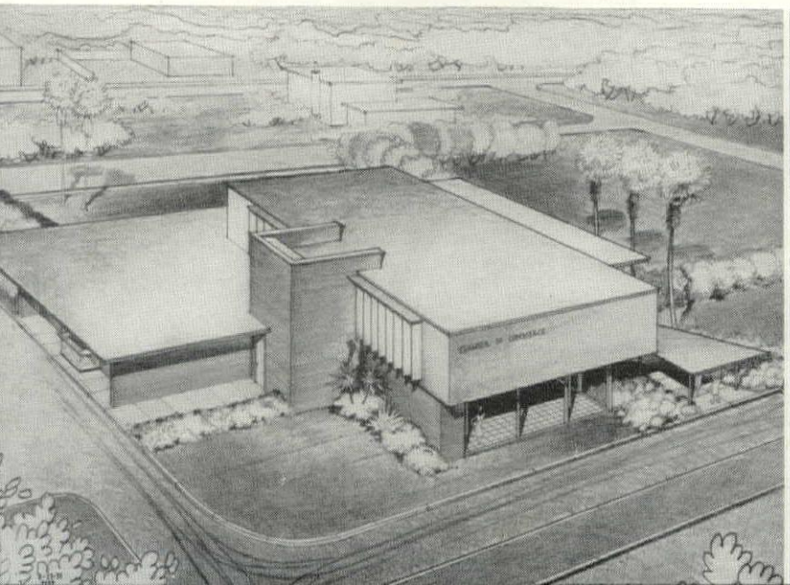
Ulric Meisel

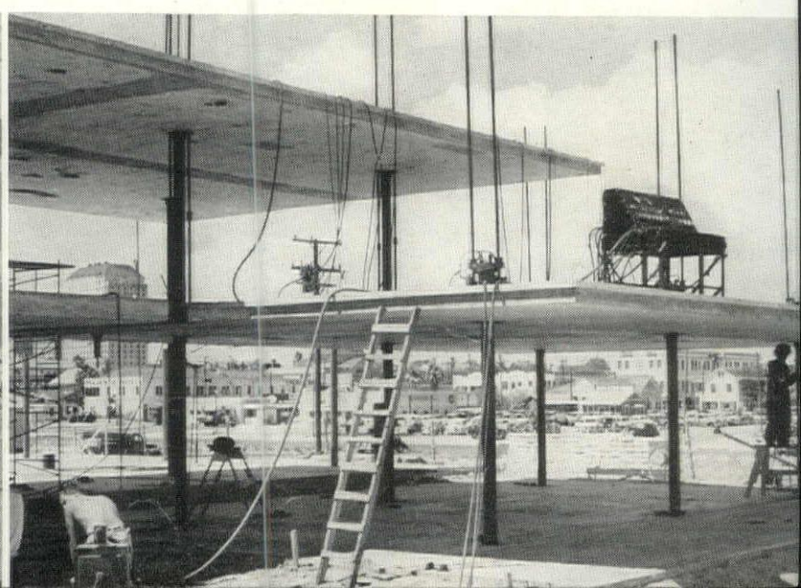




Cudd's fine supermarket in Corpus Christi was held back by high costs ($10 per sq. ft.) until Architect Colley designed it for lift slab, got a $6.50 bid from Contractor Guy Brazzleton. Sidewalk was used as a bottom form for the 10' overhang.

Architect Colley's Chamber of Commerce Building, also Corpus Christi, shows vertical branching of slabs at different levels on the same columns. Ingenious fascia detail permits wedges to keep alignment straight, hide slight slab deflections.





THE LIFT-SLAB FUTURE: arched slabs for 200′ spans, and costs halved again by prestressing?

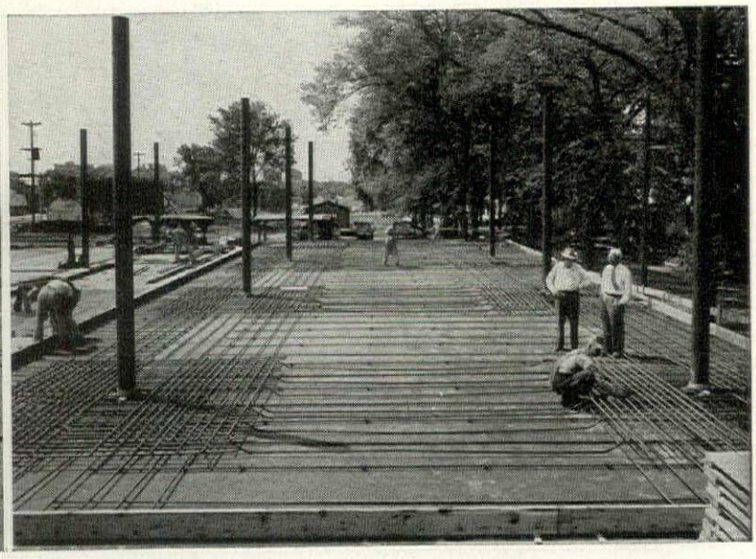
Every architect and builder connected with the lift-slab game has been busily speculating on the possibility of compounding savings by combining the lift-slab technique with pre-stressing (opposite).

Probably the most responsible speculation comes from famed Engineer Fred Severud, who has been consultant to Southwest from the beginning, has already set up for them a $6,000 testing apparatus.

Because of the big size of the slabs, Severud currently favors *post-tensioning* rather than pre-tensioning, proposes trying the Billner method. Reinforcing steel is allowed to bond with the concrete only at the ends, is coated so as to slip through the concrete in the middle part of the slab. After casting, the slab is forced apart and more concrete added to stress the steel. Because of the consequent increase in strength, Severud sees the ultimate possibility (not right away) of saving up to one-third of the steel, half the concrete.

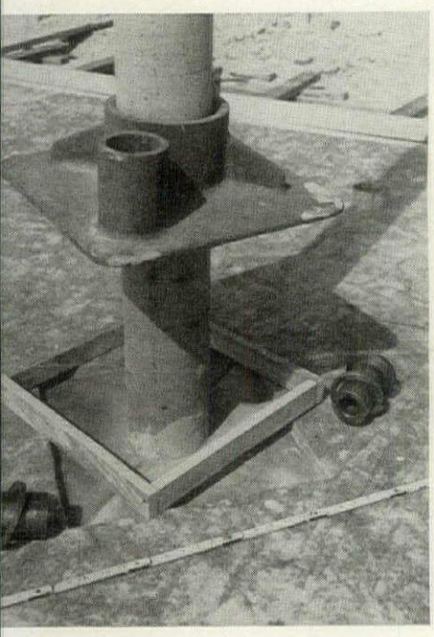
Severud's more spectacular proposal is to cast the crown and successive rings of a 200′ dome on the ground. He would then raise first the crown, after that the successive rings, by lift-slab technique, removing the columns after the completion—a marvelous way to put up the cheapest kind of huge airplane hangar fast!

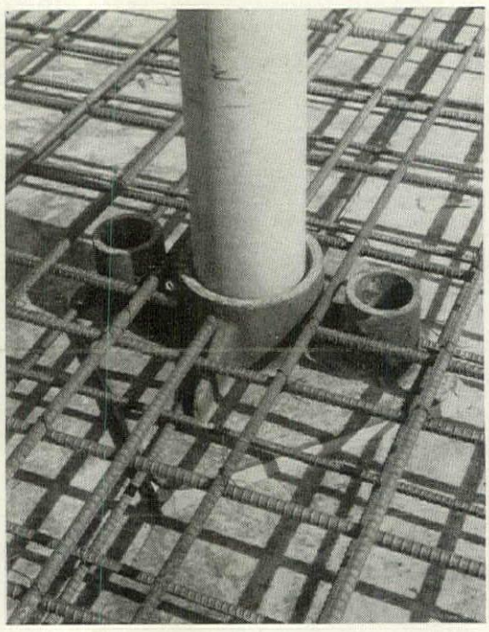


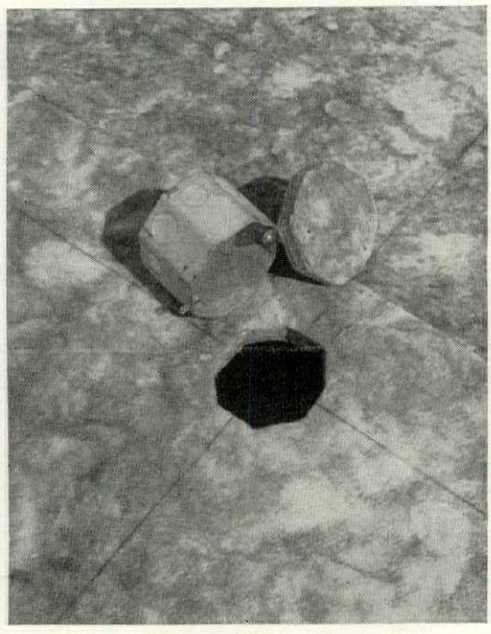


Far from Texas in Kansas City, Architects Kivett & Myers have designed a vast 232′ x 236′ warehouse for lift-slabbing. Photos suggest the great savings to be obtained by using road-laying machinery to cast slabs rapidly at grade. Note lift-slab reinforcing pattern.

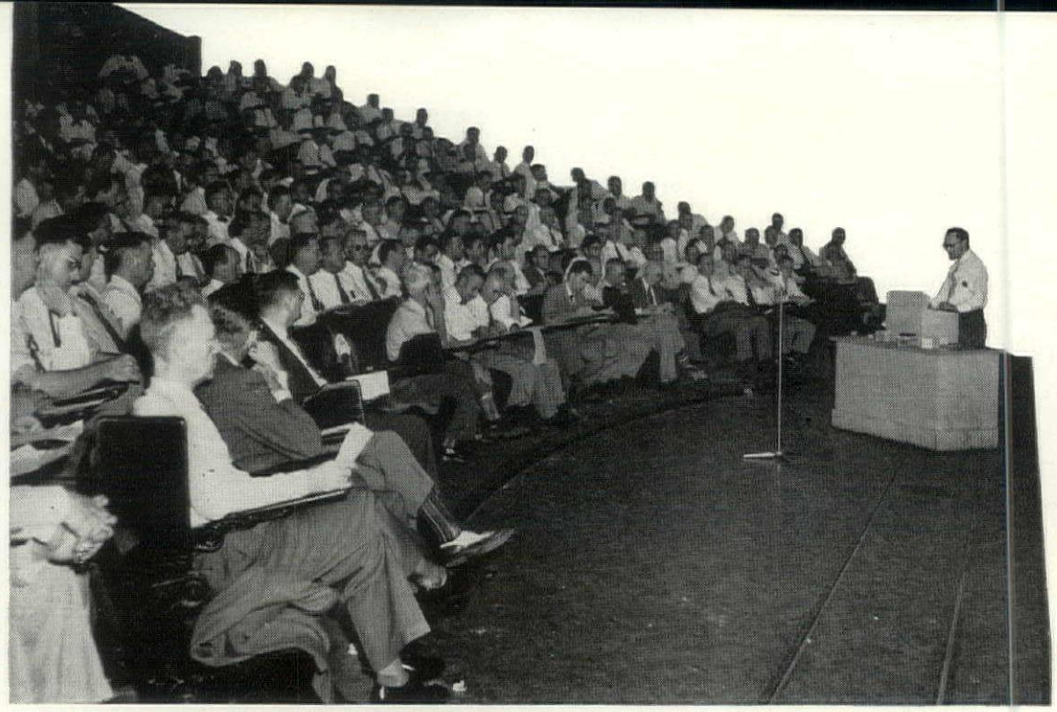
Photos: (above) L. D. Jones; (below) Fred Harding

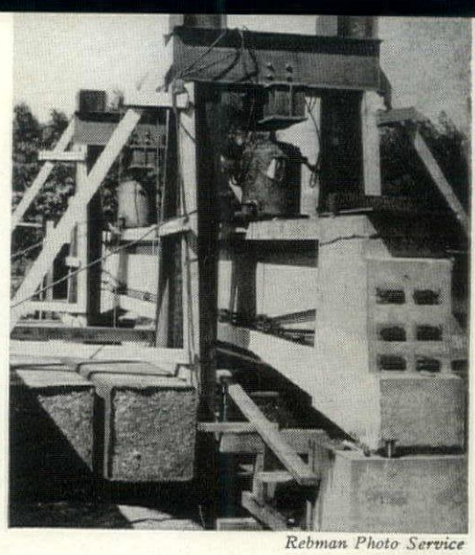






These photos show how sheets of glass fiber laid on casting platform can serve as separating medium between successive slabs, bonding with upper slab and rising as ceiling finish. Middle view shows reinforcing continued over lifting collar. Right: ceiling outlet ready.





Rebman Photo Service

Some 600 engineers, architects, builders and researchers in MIT's Huntington Hall (left) study and discuss the latest developments in prestressed concrete, such as The Austin Co.'s tests of a 40′ beam with prestressing wires exposed on either side of its web (above).

PRESTRESSED CONCRETE, on the threshold of widespread U.S. adoption, is pushed by its economy of materials, restrained by its need for simpler techniques and its lack of standards. MIT conference clears the way for progress

Even among the men who know concrete best there is sometimes amazement at what can be done with this bulky, brittle material when it is prestressed:

- A long thin slab becomes a springy diving board
- A 2 x 2″ pole 16′ long has the whip of a bamboo rod
- A 205′ diameter tank with a concrete dome contains a 30′ head of water
- A 96′ hollow pile with a 4″ concrete shell 36″ in diameter is lifted into the air and driven into the bottom of the Gulf of Mexico with 1,200 blows of a 10,000 lb. ram dropped 39″.
- A 60′ building or bridge girder can be deflected 20″ and still spring back into position.
- Rows of concrete block 20-60′ long with the joints buttered with mortar and prestressed are used for highway bridges and, even without mortar, are fabricated into panels for roof and wall construction.

These and other feats in concrete were demonstrated and discussed at the First U. S. Conference on Prestressed Concrete held last month at MIT*. There some 600 engineers, contractors and researchers from almost every state in the Union plus a few from Canada, South America and Europe assembled for a three-day round-up of all that is new in the growing field of prestressing. Three days and 48 lectures later (with but little time out for enjoying their quarters in Alvar Alto's new brick and reinforced concrete dormitory) the conferees packed up their notes and dispersed, taking with them the conviction, expressed by the conference's keynoter, Leo H. Corning of the Portland Cement Assn., that "historians of engineering progress will note this conference as an early milestone marking the beginning of a development of unusual significance to the construction industry."

Although the "papers" read before the conference covered all the many and varied aspects of prestressing—and sometimes from opposing points of view—two general areas of agreement were voiced by many of the speakers: 1) Before prestressing can get very far in the U.S., a design specification or code of practice must be developed and 2) the development of economical prestressing of structural members—particularly the smaller ones—will probably take place in fabricating plants where it may be combined with the labor saving economies of precasting and mass-production.

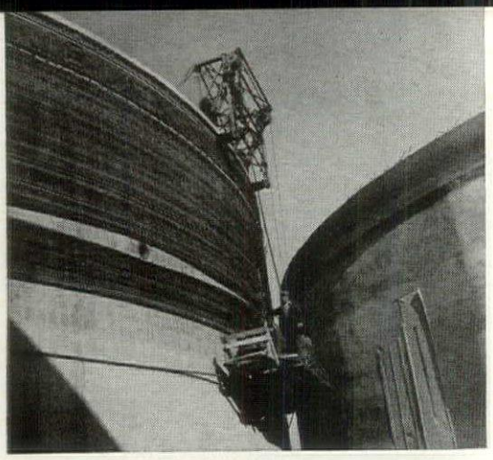
History

Although the idea of prestressing concrete was first introduced in the U.S. way back in 1888, not until the last few years has the construction industry seriously considered it as a means of reducing costs, circumventing periodic steel shortages and conserving natural resources. Meanwhile Europe, where steel has always been relatively scarce and expensive, has in the last 20 years developed prestressing to the point where today it is becoming a commonplace technique in building and bridge construction. Of the 50 prestressed concrete buildings and 75 bridges erected around the world since 1928, all but about a half dozen are outside the U.S.

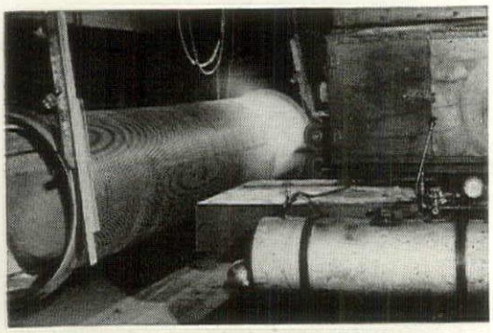
Definition

A row of square beads has considerable compressive strength, but no tensile strength. However, if the beads are strung on a rubber band which squeezes them together, the pre-

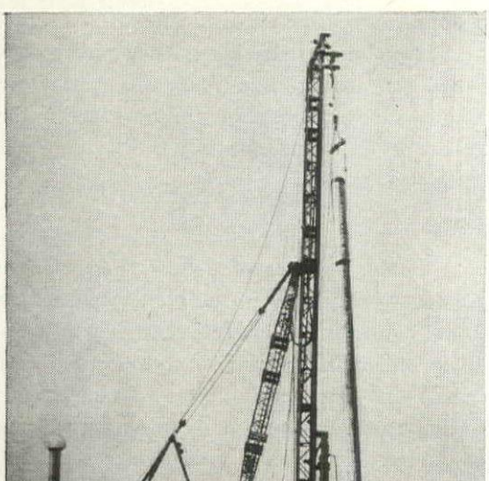
*Sponsors: MIT's Departments of Architecture, Building Engineering & Construction and Civil & Sanitary Engineering in conjunction with American Concrete Institute, American Institute of Architects, American Railway Engineering Association, American Society of Civil Engineers, Associated General Contractors of America and Portland Cement Association. Coordinator: MIT Professor M. J. Holley, Jr.



Tanks as big as 205′ in diameter are mechanically prestressed by a self-propelled "merry-go-round" device which stretches high tensile wire at speeds up to 9 mph. (Preload Corp.)



Sections of centrifugally cast 200 lb. pressure pipe, 16′ long and 36″ in diameter, are mechanically wound with 6 gauge wire on 0.63 centers (in the form of a helix) under a stress of 140,000 psi, then mechanically coated with ¾″ cement mortar. (Lock Joint Pipe Co.)



Hollow piles with a wall thickness of 4″ and a 36″ diameter are comprised of six 16′ centrifugally spun concrete sections, post-tensioned longitudinally into a 96′ unit. (Raymond Concrete Pile Co.)

stressed beads become a strong, flexible unit capable of supporting a relatively heavy lateral load. The addition of highly tensioned, high strength wire imparts to a concrete structural member the same elasticity and tensile strength, thus overcoming concrete's major disadvantage and adapting it to uses for which it is not inherently suited. With prestressing it is possible to design a structure so that all fibers in flexible members are under compression at all times under working loads and are thus prevented from cracking.

Method

Prestressing requires high grade steel wire capable of tensioning to 100,000 to 150,000 psi and strong (5,000-7,000 psi) high grade concrete with a low (2 in.) slump. The steel and concrete may be married in either of two kinds of ceremonies: 1) In *pretensioning* the concrete is poured around and bonded to the pretensioned wires; or 2) in *post-tensioning* the wires are usually threaded through channels cast into the concrete and are then tensioned, fixed at both ends and usually bonded by grouting. The former method lends itself readily to the mass production of units in a central precasting yard, while the latter is normally employed on the site for larger, heavier poured-in-place units like girders.

Advantages

Compared with ordinary 3,000 lb. concrete reinforced with mild steel rods, prestressed concrete boasts many advantages:

▸ Because it makes it possible to use efficiently recent improvements in the strength of concrete and steel which are wasted in reinforced concrete (in the latter, all concrete below the neutral axis is wasted), the required concrete and steel may be reduced by as much as 50% and 80%, respectively.

▸ Because it reduces the required depth of structural members and slabs, greater underclearances, slimmer lines and lower approaches are permitted in bridge design and smaller floor-to-floor heights are possible in building design.

▸ Because "full" prestressing can render concrete completely crackless under working load, it promotes durability — particularly under severe exposure as, for instance, in salt water piling, chemical storage tanks and raw sewage pipe.

▸ Because of its flexibility and resilience (cracks which occur at the working load in partially prestressed concrete disappear after unloading), the technique opens up to concrete a new field hitherto dominated by lumber, steel and other metals.

▸ Prestressing's ardent promoters would also claim "economy" as one of its most important advantages. But this has yet to be proved under the U.S. economy. To be sure, prestressing has saved money in Europe, but the ratio between the cost of labor and the cost of materials in Europe works to prestressing's advantage, while the opposite is true in the U.S. (The European steel worker must work eight weeks to earn the price of a ton of steel, but in the U.S. he can buy a ton with a single week's wages.) Thus, while prestressing's conservation of materials at the expense of labor may be its biggest advantage in the European economy, it could be one of the major obstacles to its rapid adoption in the U.S.



Typical of Europe's prestressed concrete achievements is the 165′ x 230′ Chevrolet Garage in Brussels, Belgium. It uses prestressed 66′ girders (59″ deep) and 44′ prestressed beams (39″ deep) to support the roof of hollow brick (prefabricated into slabs) and concrete skylight frames (cast in place). Few in number, the 20 x 20″ columns are of cast-in-place concrete. (Photo: Portland Cement Assn.)

Other obstacles:

▸ Most U.S. prestressing of bridge and building members is today done by off-shoots of foreign firms with patented foreign equipment for tensioning and fastening the wires which is often ill-adapted to the U.S. market.

▸ The construction operation on the early pioneering jobs in the U.S. has been fussy and has required more and closer supervision than reinforced concrete.

▸ Low-slump concrete is difficult to handle, particularly when it is poured into narrow forms obstructed by reinforcing rods and the chases for the tensioning wires.

▸ Most important obstacle is a lack of design criteria and specifications for prestressed concrete and the wide disagreement on such basic principles as the minimum safety factor. While for reinforced concrete safety factors are prescribed for the steel and concrete separately, because prestressed concrete is an entirely different breed of cat, a single safety factor for each structural unit would seem to be more appropriate.

U.S. outlook

Regardless of the current balance between prestressing's advantages and disadvantages, most conference delegates and all its speakers

foresee its increasing use in the U.S.—particularly in the prestressing of members precast in central plants where labor-saving production methods can most readily be developed. Three factors point in this direction:

1. Steel and, to a lesser extent, cement are presently scarce and the international situation indicates that the future is more apt to be characterized by periodic acute material shortages rather than by permanent plenty.

2. Ordinarily wasteful U.S. industry is gradually awakening to the fact the nation's resources are not inexhaustible and conservation is essential.

3. It is high time concrete construction was brought up-to-date. The cost of poured concrete has skyrocketed in recent years, while the cost of factory-made concrete block, in which the labor cost has been squeezed down to about 5% of the retail price, has remained steady. For example, Consulting Engineer R. H. Bryan of Nashville pointed out that the local price of pouring concrete in the superstructure of bridges has advanced 130% from an average of $24 per cu. yd. in 1936 to $55 today, while the price of concrete block has advanced only 10% from $17 to $18.70 per cu. yd. And both these price trends cover finished concrete products involving the same labor and materials. Bryan's explanation: "the operation of pouring concrete . . . is still much the same as it was 30 years ago, the most important innovations being the vibrator and rubber-tired wheelbarrow (laughter). . . . Fifteen years ago the average block machine was producing about 350 units per hour and required five men to operate efficiently. Today the average machine will produce 750 units per hour . . . and requires only three men."

Prestressing opens opportunities for U.S. engineers and contractors to apply to construction of large structural concrete members the same ingenuity and mechanical skill that has made the concrete block such an economical building material. While patented European equipment may continue to be used initially on some projects, the long-range future of prestressing in the U.S. depends on the development of simpler, faster equipment and techniques which will reduce markedly the amount of finicky and costly manual labor now required in the European methods of constructing prestressed bridge and building members.

Mechanized prestressing

Such mechanization of prestressing has already been developed to a high degree in the fields of concrete tanks and pipe and explains why in these two fields the U.S. is far ahead of Europe. There are today in North America some 700 large prestressed concrete tanks (of up to 11 million gal. capacity each) having a total capacity of more than 500 million gal. of water, chemicals, grains, oils, gasoline, sewage, etc. and 300,000′ of pressure pipe in diameters of 24″ to 84″. The concrete tank is prestressed with a self-propelled machine which travels round and round the tank (at speeds up to 9 mph), stretching behind it an evenly spaced wire helix tensioned to 140,000 psi which is later covered with a thin coat of pneumatic concrete. The economy of this type of tank construction lies in easy maintenance. Pipe prestressing has been similarly mechanized, except that in this case the pipe is revolved in the presence of stationery machinery. Its concrete shell is centrifugally cast inside a steel tube which is then wound with tensioned wire and coated with pneumatic concrete.

The dollar-and-cents implications of such mechanization became clear to the MIT conferees when Vice President Curzon Dobell of Preload Enterprises, Inc. pointed out that in his system of tank construction "it takes an average of 12 man-hours of labor to install one ton of prestressing wire while in the construction of the Walnut Lane Memorial Bridge in Philadelphia it took 152 man-hours." The first big prestressed bridge in the U.S., the Walnut Lane project employed a Belgian prestressing system.

The promise of interesting prestressed things-to-come is contained in these big concrete tanks: vehicular tunnels, for example, comprised of 300′ prestressed sections. "Preliminary designs and cost estimates are most encouraging," says Dobell, "and the same principles are being investigated for oil tankers and floating dry docks." Even closer to reality is a tank for the storage of liquid oxygen at -380° F. If the pilot tank now under construction lives up to expectations and accommodates the tremendous thermal contraction stresses occurring at this low temperature, it could lead to the storage of liquified gas (at -280° F.) in prestressed concrete tanks and thus do away with the huge ugly containers which now deface the outskirts of most every U.S. city. Due to the shrinkage of gas in the liquefying process, these tanks would only have to be 1/20 the size of existing tanks to hold the same capacity.

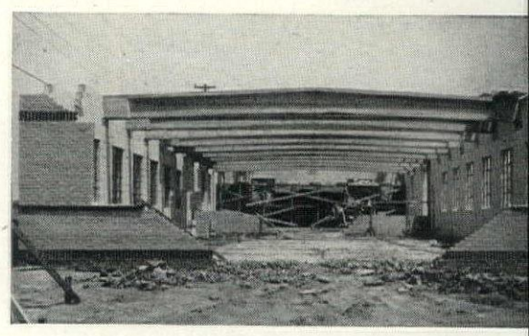
Prestressed block

The mechanization of prestressing will come gradually as U.S. engineers and contractors continue to experiment with its principles and adapt them to U.S. materials and methods. This experimentation is already well underway. Engineers Bryan and Dozier of Nashville, Tenn., have developed a way to prestress rows of "buttered" concrete block into beams up to 45′ long which they have laid atop stepped concrete block walls to form the seats of a stadium for the Fayetteville High School (at a saving of $7.35 per seat over reinforced concrete). They have laid the same beams side by side to form the structural slab for the floors and roofs of a two-story Nashville building and for a small Madison County road bridge.

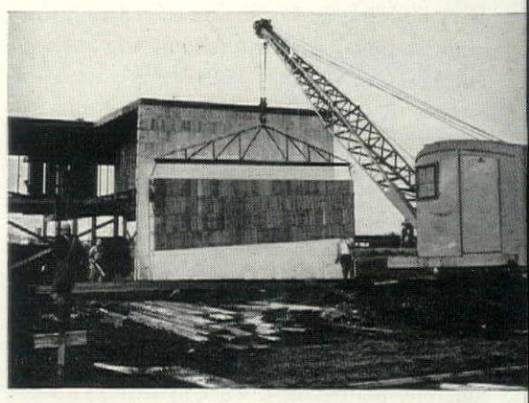
(Continued on page 192)



Pedestrian bridge spanning flood disposal channel in Arroyo Seco Park near Los Angeles is comprised of two 110′ long prestressed concrete girders 68″ deep with a 10″ thick web and 20″ wide flange. Before they were laterally tied together with a poured concrete deck, each girder was so limber it would flex under the weight of a man leaning against it. Even at that, the girders are admittedly overdesigned; they could be only 56″ deep with a 6″ web. (Prestressed Concrete Corp.)



New machine shop for Midwestern Geophysical Laboratories in Tulsa, Okla., is framed with factory fabricated prestressed girders 38′ 8″ long, 10′ on centers—see text, next page. (P. F. Blair & Sons, Contractors and Engineers; Beam design by Prestressed Concrete Corp. Photo by Dick Gray.)



Panels of mortar-less T and G concrete block held together with threaded steel reinforcing rods, nuts and washers are assembled in sizes up to 8 x 32′ by Basalt Rock Co. for use as floors or walls. This wall panel, being placed on timber framed structure, measures 5 x 20′, contains 160 block.

Consulting Engineers Clark, Johnson & Anderson of Pontiac, Mich., have built a similar bridge in Royal Oak—but have extended the span to 60′ using I-section block, 8″ long, 24″ deep, 16″ wide with a 2″ web, a 3″-deep top flange and a 2½″-deep bottom flange. The joints are poured rather than buttered. These block cost only $45 per yd. in place, compared with the local cost of $150 per yd. for 5,000 lb. concrete poured in place. Designed for a load of 120 lbs. per lin. ft., the bridge has failed to crack under 1½ design loads and deflected only 1¼″ under two design loads. Engineer Johnson told the MIT assembly that it is possible to build 80′ girders in this manner.

Building with blocks has been simplified further by Chief Engineer D. O. McCall of the Basalt Rock Co. which mass-produces girders and panels of block with neither mortar nor grouting and delivers them within 200 miles of its Napa, Calif. plant. Wall panels of tongue-and-groove block as big as 8 x 32′ have been used in two-story industrial buildings (see photo). To assure snug joints and square corners, all block are parallel ground mechanically before they are compressed together with the aid of threaded rods, end plates, nuts and a hand wrench. (Since the rods are tensioned relatively little—about 16,000psi—and probably lose much of this tension within a year, this technique cannot properly be termed prestressing.)

All three of these developments take advantage of the low cost of block and eliminate the worry of concrete shrinkage and the resultant loss of tension. Cured for 28 days the block have already shrunk before they are stressed.

Prestressing poured beams

On the other hand, some contractors have developed the prestressing of poured concrete to the point where it is competitive with customary building methods. One such firm is P. F. Blair & Sons, contractors and engineers of Tulsa, Okla., who have just completed a 15,000 sq. ft. prestressed office building and machine shop for Midwestern Geophysical Laboratories in Tulsa and are now building a prestressed elementary school. The former employs a combination of 30′ girders, 38′ 8″ beams, and 30′ joists. The larger members, used in a separate wing of the building (photo, p. 191) are 26″ deep at the center and taper to 24″. They are comprised of 5,000 lb. 2″ slump concrete, poured in a wooden form, vibrated externally and prestressed with 14 wires of 0.25″ diameter. Arranged in three groups and coated with an asphalt compound to prevent bonding, these wires are post-tensioned 2½″ with a 60-ton jack to an initial 145,000 psi. When all girders had been fabricated they were loaded on standard oil field pole trailers, moved to the job and erected by a half-yard crane.

Blair's school job calls for beams and girders 28′ to 50′ long and he assured his MIT audience that "even the 28′ girders, which are spaced at 18′ intervals, show a definite cost advantage over ordinary precast concrete, and were chosen for that reason. When used with precast concrete joists and lightweight roof slabs, they are also comparative in cost with steel bar joists and wood deck"

Prestressing's tempting possibilities are being explored by some of the nation's biggest builders (and more are likely to get the fever when the full transcript of the MIT proceedings is published). Raymond Concrete Pile Co. is prestressing 96′ long 36″ diameter hollow piles for the Gulf Coast oil industry (photo, p. 2). Without prestressing a concrete member of this length would be difficult to lift without buckling. On the basis of sheer length, Raymond has probably set the U.S. prestressing record to date. However, in a corridor rump session an engineer from Venezuela's Lake Maracaibo oil fields told of hollow piles, twice as long and twice as big around, cast on the beach, floated out into the lake, up-ended and driven into position—and they were merely reinforced, not prestressed. This engineer had come to the conference to learn about prestressing in an effort to save a few dollar's worth of steel and concrete on each of countless hundreds of piles his company will require in its ceaseless search for oil. (As in Europe, his labor costs are relatively low.)

Even more significant than the attendance of the Austin Co., leading industrial engineers and builders, at the conference was the fact that Austin's Vice Presidents J. K. Gannett and A. T. Waidelich were on the program to describe the tests of three big prestressed girders which Austin had completed the week before (see right and below). The reasoning behind the tests, according to Gannett: "Prestressed concrete seemed to offer better opportunities for overcoming the present material shortages than any other designs which had received consideration." While favorably impressed with the results of these tests, Austin is not yet convinced prestressed concrete is better than the structural steel for industrial building design. To wit: "field labor, exclusive of mechanical and electrical trades, will cost about twice as much as it would for a steel building . . . prestressed members weigh seven or eight times as much as their structural steel counterparts . . . heavier equipment is, therefore, required for erection purposes and it isn't practical to boom out for as great distances with these heavy loads . . . and will [today's] floors sustain the loads of the heavier equipment. . . ."

Equally as spectacular as Austin's experiments—but from a different viewpoint—is the concrete piling experiment disclosed at MIT by President Karl P. Billner of Philadelphia's Vacuum Concrete, Inc. He has prestressed a 16′ pile with ⅜″ wires threaded at both ends

(Continued on page 232)

CHARACTERISTICS AND TEST RESULTS
TWO PRESTRESSED CONCRETE BEAMS BUILT BY THE AUSTIN CO. *(see text, right)*

	40′ Beam	60′ Beam
SPAN	38′ 4½″	56′ 3″
CROSS-SECTION of Beam		
Depth	26″	40″
Top flange at mid-span	5″ x 18″	5″ x 30″
Web	5″	6″ widening to
Bottom flange	4″ x 12″	12″ for bottom 7″
WIRE (high carbon steel)		
Diameter	0.192″	0.192″
Ultimate strength (by test)	230,000 psi	230,000 psi
No. of strands	48	96
No. of cables	4	8
REINFORCING (mild steel)		
Stirrups	¼″ dia., 12″ o.c.	¼″ dia., 12″ o.c.
Longitudinal bars	12 @ ¼″	4 @ ⅜″, 8 @ ¼″
CONCRETE (high early strength)		
Strength by test	6,384 psi (16 days)	6,330 psi (7 days)
Slump	1½-3″ (2″ avge)	1½-3″ (2″ avge)
Aggregate	Limestone	Limestone
Mix	8 bag	8 bag
Vibration	exterior	exterior
PRESTRESSING (post tensioning)		
Method	Freyssinet	Freyssinet
Initial stress	140,000 psi	140,000 psi
Working stress	120,000 psi	120,000 psi
WEIGHT of Beam	6½ tons	16 tons
DESIGN LOAD	30,000 lbs.	50,000 lbs.
TEST DATA		
Load application	4th point (approx.)	3rd point (approx.)
Load at first crack	70,000 lbs.	100,000 lbs.
Intermediate deflection	2 7/16″ @ 99,000 lbs.	3 1/16″ @ 130,000 lbs.
Load at failure	142,000 lbs.	200,000 lbs. plus
Point of failure	center of span	point of load

PRESTRESSED CONCRETE BEAMS for industrial buildings, tested to destruction by Austin Co., demonstrate great strength

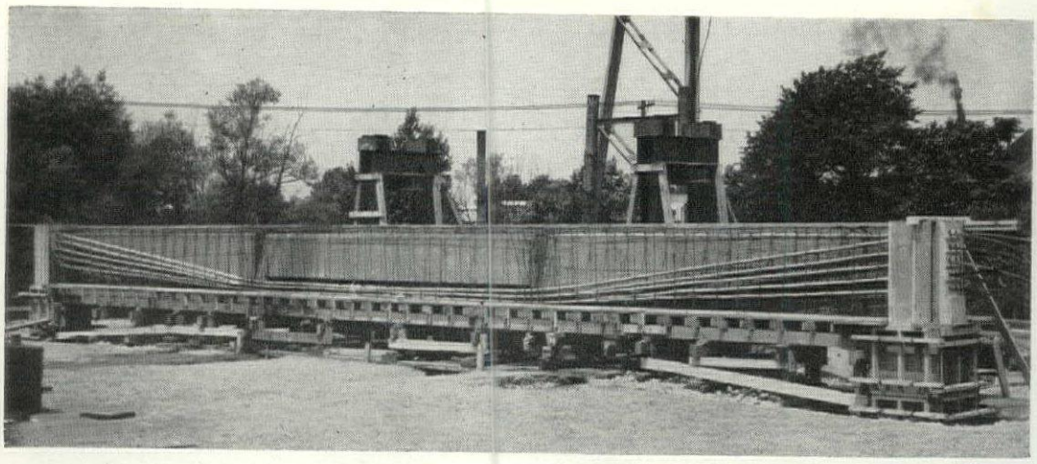
The pinch in structural steel has prompted The Austin Co., one of the leading industrial building and engineering firms in the U.S., to investigate the use of prestressed concrete as a substitute. Last month Austin completed the third step in this study by testing to destruction three huge prestressed concrete beams.

The first step in this investigation was Vice President J. K. Gannett's extensive first-hand inspection of European prestressing methods and accomplishments. The second step involved consultation with several U.S. firms specializing in prestressed concrete. They were asked to submit design data on a one-story building with 40 x 60′ column spacing —the pattern Austin has found most apt to meet the manufacturing layouts of its varied clients. Third step: testing two of the designs.

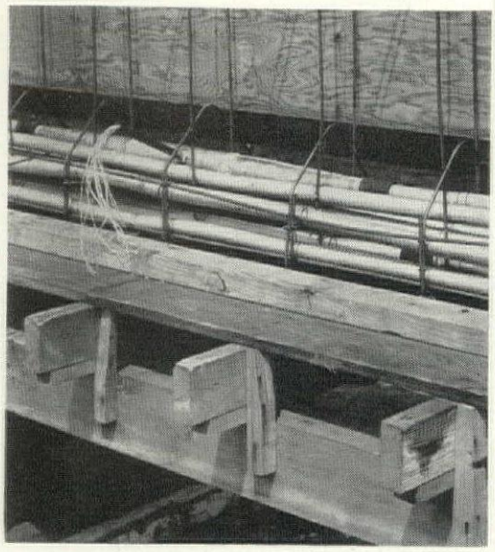
1. The first design was by Prestressed Concrete Corp. of Kansas City. For purposes of the test it called for the complete exposure of the tensioned wires on either side of the beam's web—see photo p. 189—in such a way that no support was given to the concrete between the load points. Designed for a 60,000 lb. load, the 40′ beam required 32 wires of 0.250″ diameter tensioned to a working load of 123,000 psi and anchored with upset button heads. No mild reinforcement was used except at the ends of the beams. Test loads (applied near the fourth point) produced the first crack at a total live load of 106,000 lbs. and crushed the top flange at 130,000 lbs.

2. The second system tested was that promoted by the Freyssinet Co. of New York City. As indicated by the photos, this beam was post-tensioned with wires threaded through 1″ flexible conduit cast in the concrete through which liquid grout was later forced under pressure. Two beams were tested; the bigger, designed for 50,000 psi, parted at 200,000 psi (see table, left, for details).

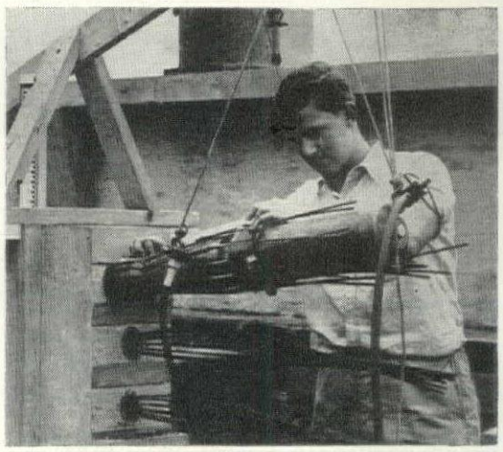
Regardless of how many such tests an observer witnesses, he is each time surprised at the strength of long, thin prestressed concrete members and flabbergasted at the magnitude of deflection they can withstand. Austin's engineers were no exception. While they are convinced of the strength and flexibility of prestressed concrete and are satisfied that it saves steel (the 60′ beam contained about 1,200 lbs. of steel compared with 4,000 lbs. for a comparable structural steel member), Austin engineers are nevertheless skeptical of its present economy even if mass produced and are concerned about its terrific weight (seven to eight times structural steel) and the consequent handling problems. If, however, steel becomes more scarce or expensive, the balance might swing in favor of prestressing.



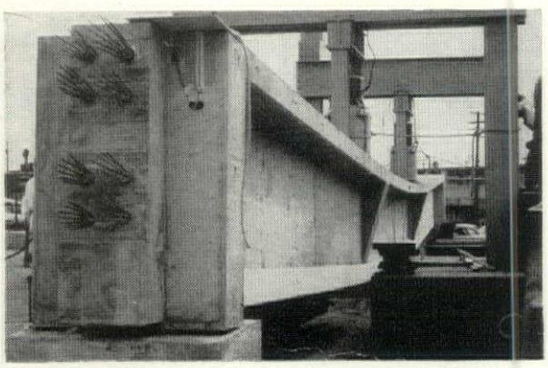
1. Austin's 60′ beam in process of construction: 1″ flexible metal conduit to contain wire cables is hung between precast tensioning blocks at either end and between lateral reinforcing stirrups. Beam is 40″ deep.



2. Close-up view inside the forming shows metal conduit and reinforcing in position at the bottom of the beam ready for the pouring of concrete. Projecting wires are connected with gauges which revealed the behavior of the beam.

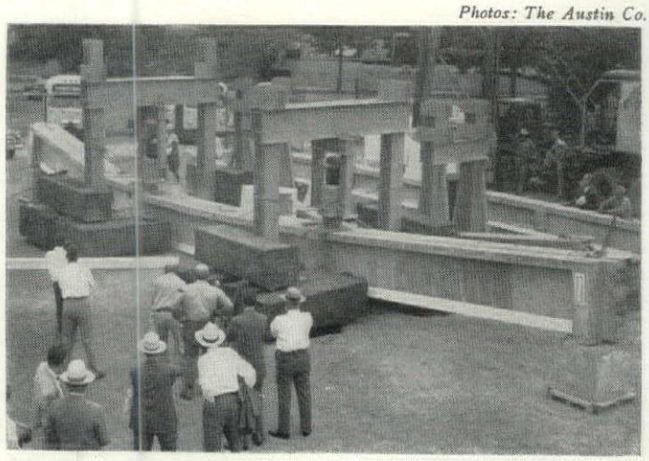


3. Cables at beam's end are tensioned to 140,000 psi by Freyssinet hydraulic jack, then anchored by conical wedges. Due to defects in the wires, three strands broke during the tensioning operations. This photo shows the 40′ beam; all others show the 60′ beam.



4. Under a load of 200,000 lbs. (four times the design load) beam deflects 22″. Some observers aptly called it "rubber concrete."

Photos: The Austin Co.



5. Upper flange of beam is crushed under far jack as load exceeds 200,000 lbs. As in the testing to destruction of two other beams, Austin found no evidence of broken wires.



PRECASTRUCTURAL CONCRETE—a new name covering new developments in the growing construction technique pioneered by tilt-up walls. It implies such large-scale devices as 20 x 20 ft., job-cast panels and 40-ton mobile cranes, yet is economical for the small builder. A review of recent developments from West Coast proving grounds—by Paul De Huff*

In the long contest for cost advantage between poured concrete and its competitive materials, precastructural concrete† is literally "getting up off the floor" to throw some telling cost-punches. Evidence of the rapidly spreading interest and activity in this economical type of construction can now be seen in job cast homes, schools, churches, libraries and particularly in long rows of industrial buildings, separately owned, individually designed, now rising in many a new defense development all over the Southwest, from California to Texas.

Unlike so many other recent building techniques, this concrete technique owes little to the laboratory. In the main it has been job-site conceived and developed, and on some 30 buildings on the Los Angeles' International Airport Industrial Tract, Frank A. Schilling and his backers have contributed many refinements and improvements and have stabilized their unit costs within a fraction of 1%—see cost breakdown.

As everyone in the industry knows, builders can seldom be attracted to any new scheme tasting of the academic or smelling of the laboratory. Yet an overflow attendance has followed the "courses" and discussion panels recently conducted by such precastructural pioneers as Consulting Engineer F. Thomas Collins of Los Angeles. With blackboard talks, photo slides, and motion pictures of actual jobs, these sessions are doing much to clear and classify job experience.

Costs and cost comparisons

As usual, actual audited costs are rarely divulged, but a composite of several cost-surveys, embracing unit bids, subcontract quotations, and actual job-cost records for several firms reveals a striking uniformity.

These cost records indicate that in 400 sq. ft. panels a 6″ precast concrete wall in place and structurally joined costs 20% to 25% less in the Pacific Southwest than an 8″ reinforced brick wall (quoted at $1.12 to $1.25 per sq. ft. measured on one side, including subcontract overhead and profit) and 16% to 18% less than mortar laid units of reinforced concrete.

Assuming the basic technique as generally recognized and understood, what has been happening to the old, primitive practice of "tilting up" one end of a wall panel? What has been improved, and how have these betterments increased the cost advantage of the technique over its competitors? As may be surmised, the technical improvements are not confined to any one operation. They are the sum of many refinements, reaching from compaction of the building site to the lacing or hinging of roof structures.

Compacting the fill

Probably born of the necessity for heavy-duty warehouse and factory floors, but equally essential to supporting the larger erection cranes now used, floor-fill compactions rating as high as 95% are now considered a must. Developing these high compactions, with exterior foundation walls already in place, proved an awkward and costly process until compacted fills were placed ahead of any structural concreting. Riding freely over the compaction's edge-berm, heavy earth-placing equipment reduces labor costs and, after the building floor slab has been laid (to serve temporarily as a casting platform) motorized road-blades trim off the berm to a nice and constant tolerance from exterior wall-lines. One has only to stack these mechanized cost-freedoms against the old, laborious hand-work earth costs to appreciate the savings achieved.

Refined and simplified forming

Forming for flat-poured precasts—long a spectacular departure from fully enclosed, in-place forming—has undergone refinements that do not, at once, meet the eye. One Northern California firm, operating far from its home plant, found the costs of "educating" local crews in form fabrication excessive and also ran into heavy costs from the frequent need of correcting finished forms to insure the close joinery tolerances required in assembly. Production consultants, observing that all precasts were fully detailed in advance for size, joinery, reinforcing and inserts, recommended that exact-dimension forming material lists should also be prepared. These lists, issued to nearby suppliers, produced ready-fit forming parts and elimi-

† Coined by its West Coast pioneers, the mouthful "precastructural" covers all kinds of big structural concrete members (usually wall sections) cast flat on the job (usually on the floor) and raised into position by one means or another (usually a crane).—Ed.

* A production engineer of San Francisco, Los Angeles and Portland with a background of practical experience in the construction field, Paul DeHuff was chief cost and methods engineer on the construction of the Army's $30 million Navajo Ordinance Depot and has developed numerous improvements in concrete construction. He is the author of various technical articles published in the industry press and co-author of California's contractor's license law.

nated all but the minimum of "discretionary" job labor time. Saved also was the occasional long-haul freight cost from the home plant to the job site.

Easily placed reinforcing

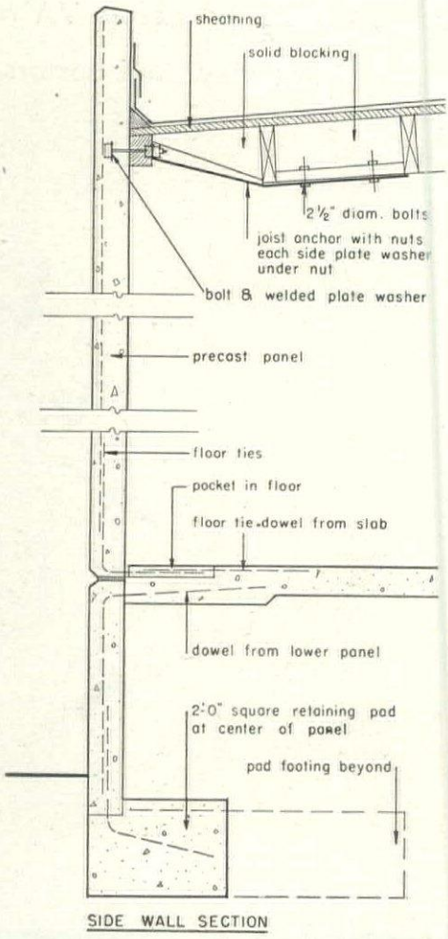
Highly economical innovations have recently been worked out on the form-members themselves. The old method of "threading" dowels through the edge forms made it necessary to wreck the forms in stripping. Now builders pre-rip their outside forms at

(Continued on page 236)

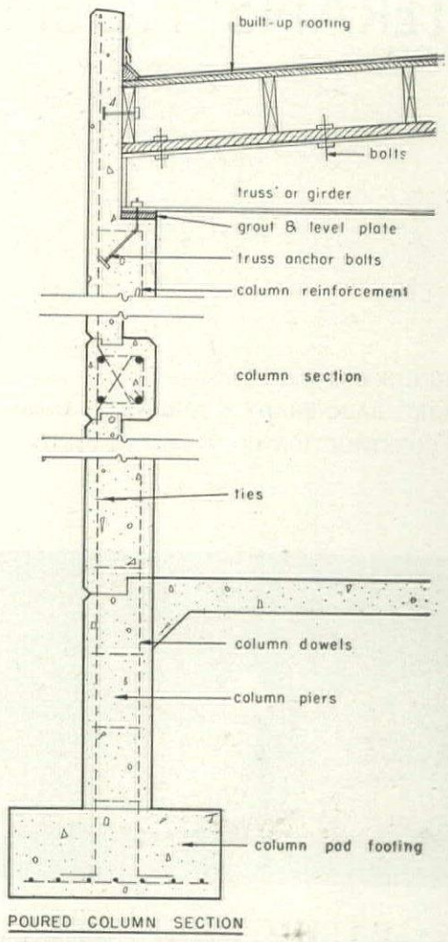
AVERAGE COST BREAKDOWN

Presented only as a general guide to cost experience the following average costs are based on 20 buidings of the western, or constant-section type of precastructural work. (Values are per sq. ft. of wall surface, one side, openings included. They exclude overhead and profit.)

Bond-breaking agent and application	$.010
Labor, including layout and foreman, to construct forms, place reinforcing and set imbedded inserts	.080
Imbedded inserts (bolts, anchors, etc.) materials	.023
Reinforcing steel material at $.065 per lb.	.089
Labor pouring concrete and finishing	.081
Concrete materials (at $10 per yd.)	.163
Curing of precasts, including materials	.005
Labor erecting precasts (average 400 sq. ft. each)	.020
Erection equipment and rigging gear (fully manned)	.039
Labor forming, reinforcing and pouring intermediate poured columns (20′ centers)	.120
Materials (forming, reinforcing and concrete) for intermediate poured columns (20′ centers)	.050
Total (per sq. ft. of wall and columns, openings included)	$.680



SIDE WALL SECTION



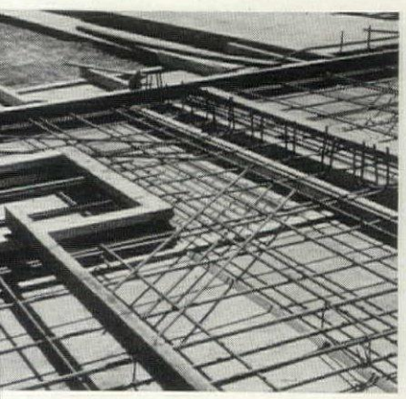
POURED COLUMN SECTION

Typical wall section (above left) for building with dock-high floor shows how various concrete elements are tied together with embedded reinforcing steel. Note how roof is secured to wall panels with joist anchors and bolts.

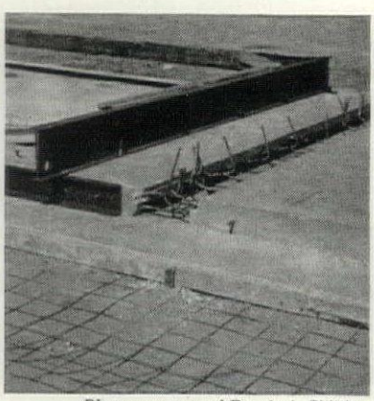
Typical section for poured-in-place column (right above) which serves as joint between panels and support for roof truss or girder. Note that panel reinforcing steel extends from wall panels into column, tying the three adjacent members together. Forming for this column is detailed on page 236. All detail drawings are based on precastructural procedures recommended by Engineer F. Thomas Collins.

Photo on opposite page shows placement of two-story panel in 26,000 sq. ft. Schamb's Market at Temple City, Calif., F. Thomas Collins, Engineer; Wohl-Calhoun, General Contractor.

Edge and window forming and reinforcing steel for a wall panel rest on the concrete floor.

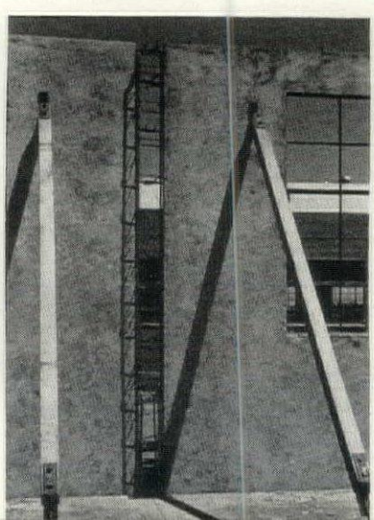


Reinforcing steel projects beyond prone wall panels, will later be embedded in column.

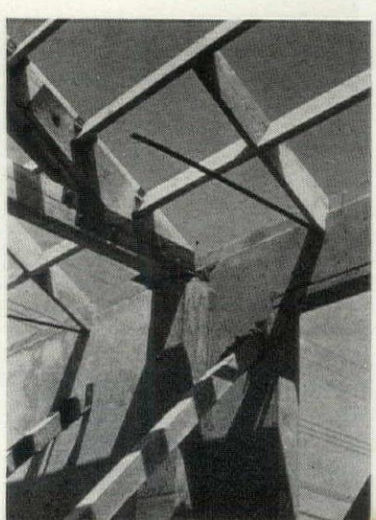


Photos courtesy of Frank A. Shilling

Wall panels, temporarily held erect by adjustable shoring timbers, are ready for column forming.



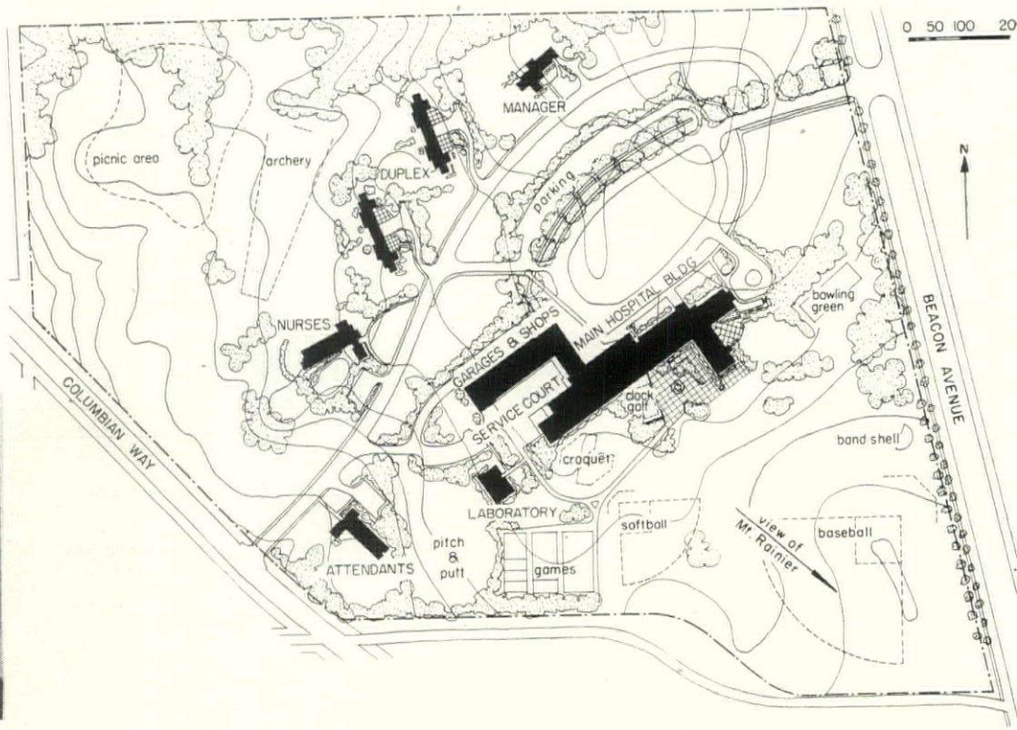
Truss resting on top of column supports light roofing purlins which complete the structure.

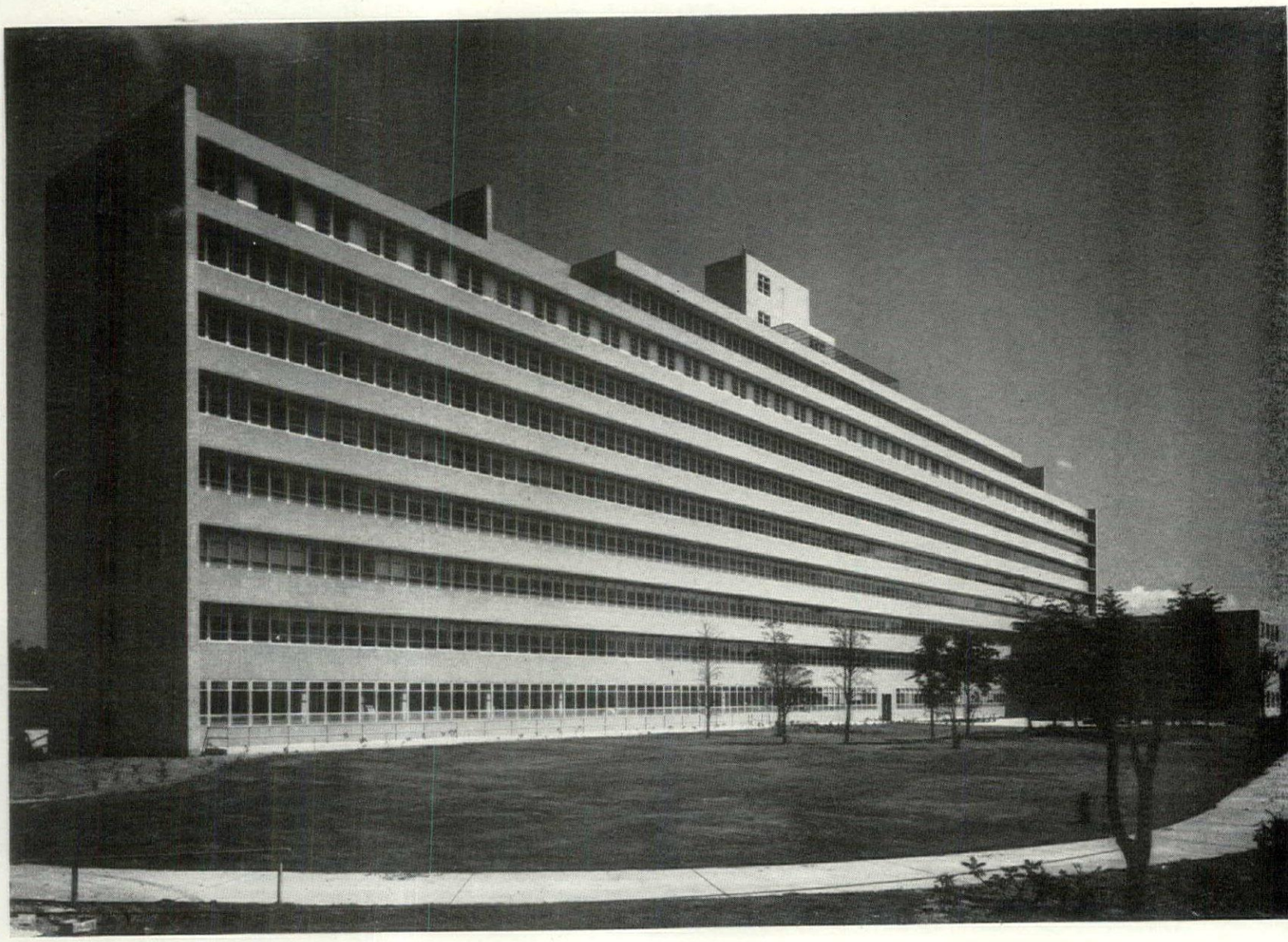


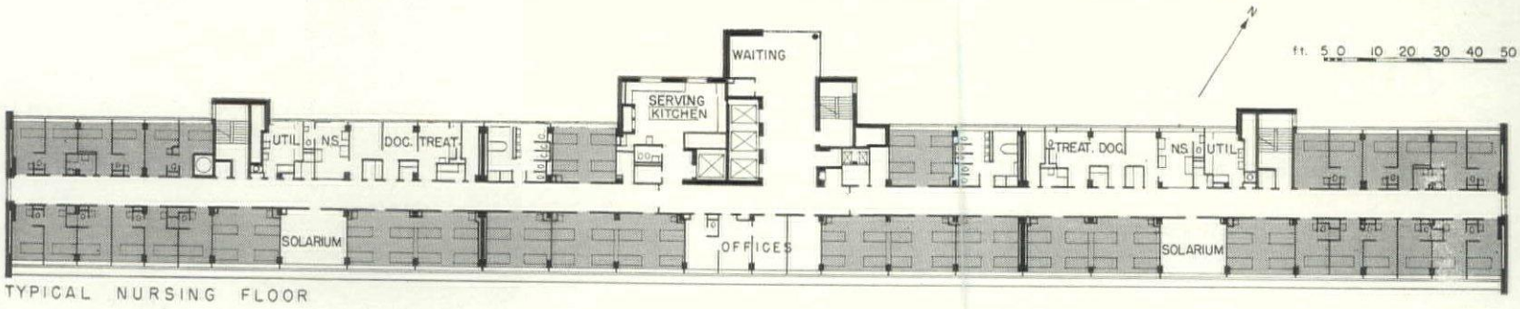
VETERANS' HOSPITAL—Designed before VA rules were frozen, it gives patients a fine view and doctors a good-looking workable institution

LOCATION: Seattle, Wash.
NARAMORE, BAIN, BRADY & JOHANSON, Architects
SOUND CONSTRUCTION CO., General Contractors



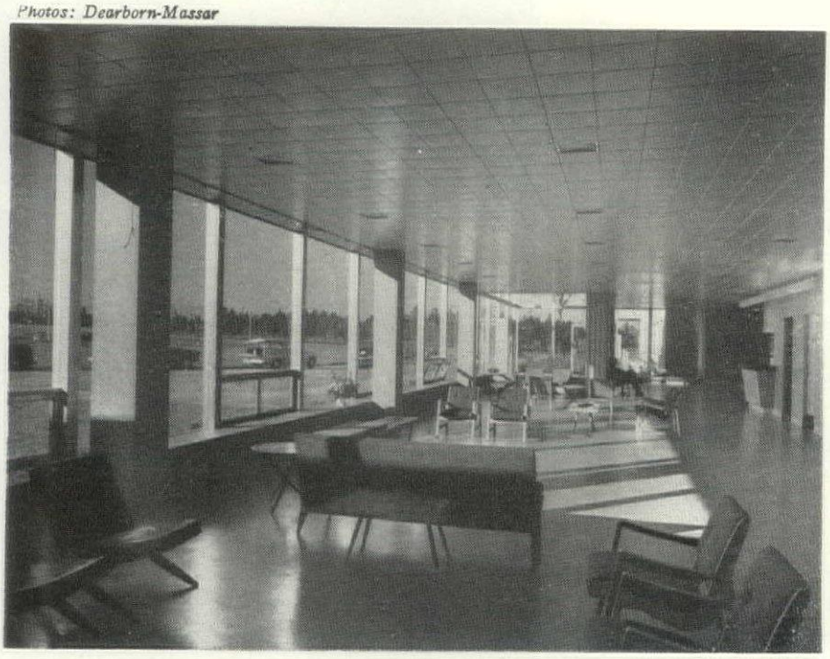


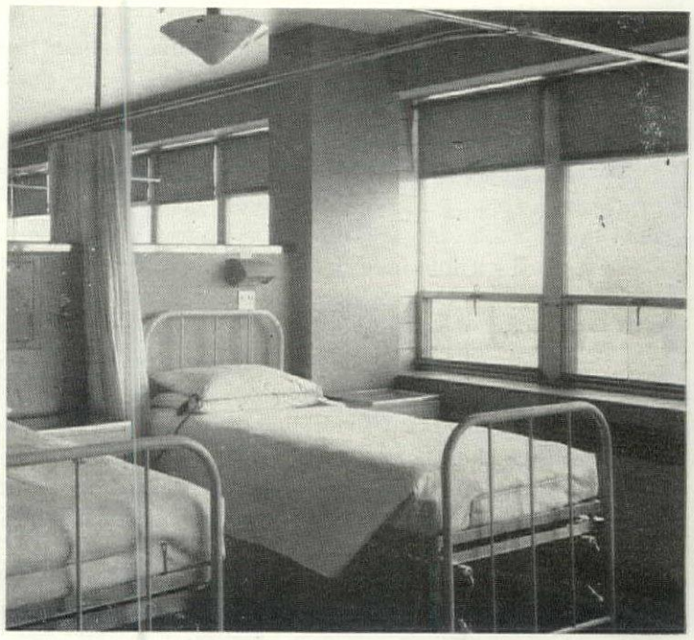




TYPICAL NURSING FLOOR

Photos: Dearborn-Massar





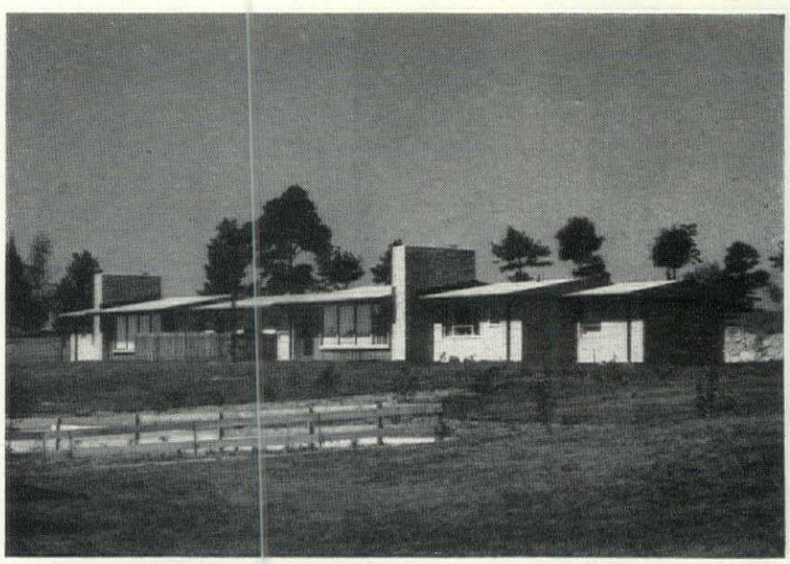
Setback of columns from spandrels accommodates horizontal heating pipes which up-feed to convectors, prevents interruption of continuous windows by vertical piping (above). Cheerful quality of main waiting room (left) sets the hospital's tone.

Seattle's sparkling new $8,000,000 veterans' hospital is a rarity in the giant VA building program—a sweeping, clean-lined slab structure which not only satisfies complex VA medical requirements, but adds a human touch in patient comforts. Launched before the VA bureaucracy ossified plan types, it shows what good architects can contribute to veterans' care when given a modicum of design freedom.

The architects' first concern was to take full advantage of a spectacular 43-acre hilltop site commanding a view southeast to snow-capped Mt. Ranier. Since only two nursing stations per 80-bed floor were required (half the 325 patients are ambulant), they were able to develop a straight line plan which puts most rooms on the side facing the best sunlight and view. Continuous windows shaded by wide, slim overhangs give patients full benefit of this outlook and accent the handsome spread of the building. Says architect Perry Johanson, "We considered all the typical X, Y, H and T shape plans, but felt that constricted shapes, large interior spaces and rooms looking out on other parts of the building would be a mistake on a site which calls for generous treatment."

A major improvement on nursing floors is the elimination of the depressing 16-bed wards which became standard in most hospitals designed later in the VA program. Largest wards have 8 beds, are subdivided into 4-bed sections by half-height partitions which provide a measure of privacy. Putting single-bed rooms at the ends of the building instead of in separate wings, as most subsequent VA hospitals were required to do, preserved the clean lines of the main slab.

Cost of buildings, exclusive of equipment, was $18,700 per bed —slightly under the high VA average.



Outlying staff residences are well removed from patients' side of hospital, have an informal country character. Ground-hugging duplex apartments (above) give staff families advantages of a private residential development.

MENTAL HOSPITAL

Its new psychiatric wing has a tonic effect and its design features a flexible checkerboard wall



Here is something new for mental hospitals—a bright, airy recreation and occupational therapy wing designed to bring neurotic patients of the Philadelphia Psychiatric Hospital back to normalcy faster. Says hospital consultant Isadore Rosenfield, "Every psychiatric institution needs a facility like this but very few now have more than a makeshift."

Frankly expressing just about the simplest and least expensive construction—lally columns, exposed open web steel joists, tongue and groove plank ceiling, built-up roof and unplastered cinder block partitions—Architect Louis Kahn not only created a lighthearted atmosphere, but held the construction cost of this big (178′ x 32′) wing down to $75,000. This is roughly $13 a sq. ft.; but with a 13′ ceiling throughout, cost per cu. ft. was only 97 cents. Total cost, including fees and all equipment, was $100,000 (1949 prices).

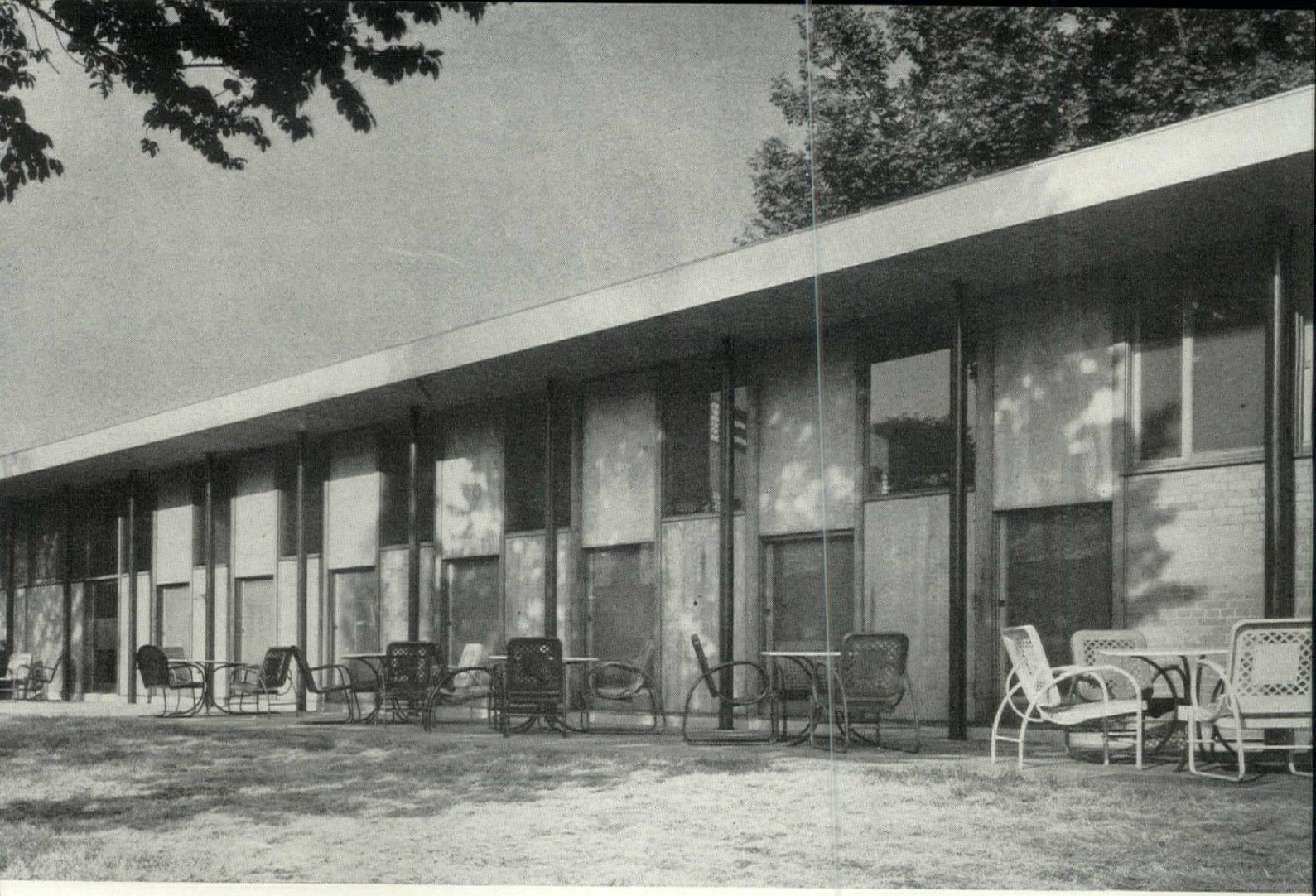
Most interesting innovation is the way Kahn achieved a country club look by adapting design ideas he had developed for luxurious country homes. The flexible window treatment of the big recreation room is derived from his Weiss house (THE MAGAZINE OF BUILDING, Sept. '50) which has a wall of double-hung floor-to-ceiling windows, each with one sash of glass and one of plywood. Here similar windows alternate with panels

Photos: Cortlandt V. D. Hubbard



LOCATION: Philadelphia, Pa.
LOUIS I. KAHN, Architect
ISADORE ROSENFIELD, Hospital Consultant

Head-high partitions and continuous 13′ ceiling give shops spacious, airy quality, facilitate control by supervisor. Noisy metal-working and typewriter rooms have full height partitions. Note clean detailing of ceiling and case work.





Combination of fluorescent strips beneath joists, adjustable ceiling spots and movable plywood window panels provides flexible control of lighting in multi-purpose room. Steel channels welded to joists carry roof load beyond curtain wall to lally columns under overhang.



consisting of fixed glass above and birch doors below. This checkerboard wall is merely a curtain; steel framing carries the roof load out to the row of lally columns beneath the overhang. Says Kahn, "A room which can quickly assume a different aspect for different functions is a psychological asset, because it satisfies a natural craving for variety. With the shutters up and doors open, the recreation area merges with the outdoor terrace. With the shutters down and the doors closed, patients see a paneled wall that gives a sense of security at night. Only the upper windows need drapes, and these are safely above the patients' reach."

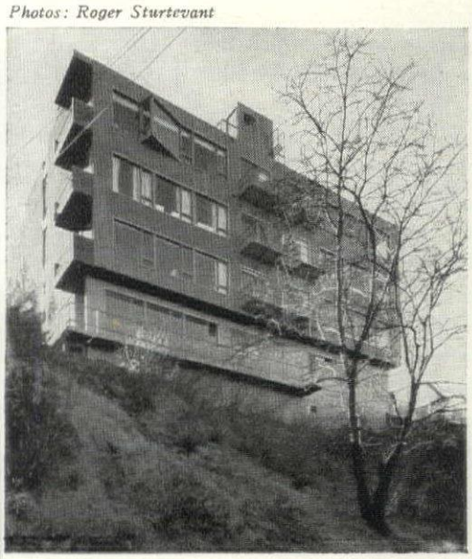
Kahn was able to provide large, lightly screened glass areas in both auditorium and handicraft shops because the hospital treats only relatively mild, curable neuroses and keeps patients under surveillance at all times. Windows were kept high in shops on the eastern side of the building (photo, left) to shut out the disturbing sights and sounds of an adjacent amusement park. (The wall-like shape of the building shields other elements of the hospital from the park.)

Though good lighting, clean detailing and the airy effect of the joist tracery above half-height partitions make all shops pleasant to work in, Architect Kahn winces at the green color scheme applied recently by hospital authorities, supposedly for its soothing effect. He first left cinder block partitions unpainted and created a festive ceiling by painting the compression and tension members of the joists with distinctive gay colors.



LOCATION: San Francisco
HENRY HILL, Designer
ELVIN STENDELL, General Contractor

Photos: Roger Sturtevant

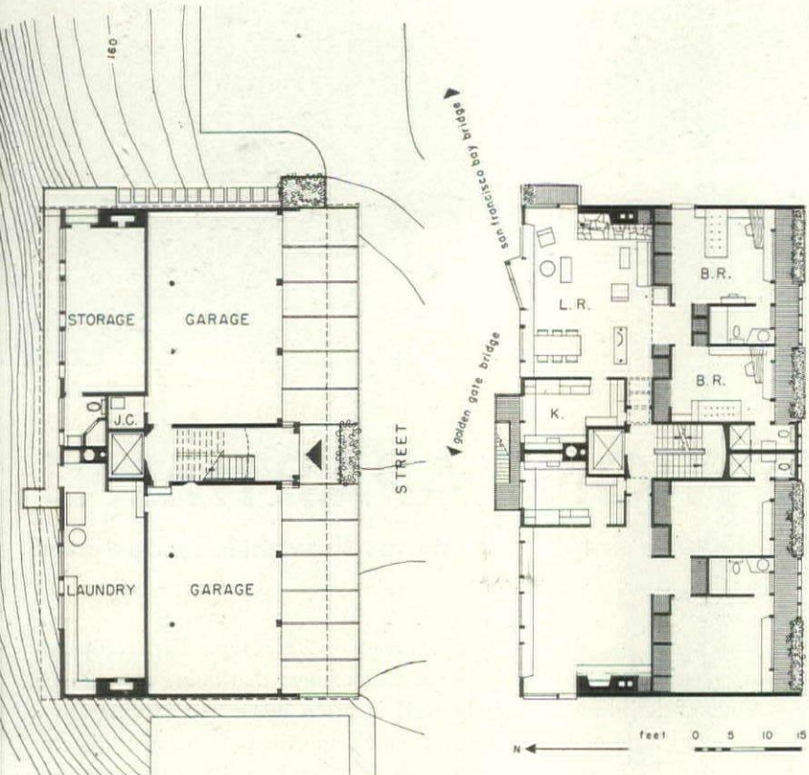


TWO FRONT APARTMENT

A lesson in charm through simple expedients thoughtfully designed

This charming three-story apartment on Telegraph Hill compactly demonstrates several quite important values: that doing an ordinary kind of building supremely well is often better than trying for a different kind of building; that the cheapest expedients (in this case wood and stucco) can create lush emotional wealth—the essence of architecture; that the same building can throw open a magnificent view and again shut off an undesirable one with a private Epicurean garden; and that a thoroughly "modern" building can be so arranged that occupants need take no monastic vows to live in a modern museum but can keep their dwellings deeply personal. That's quite a bit to be learned from one stucco-covered wooden box.

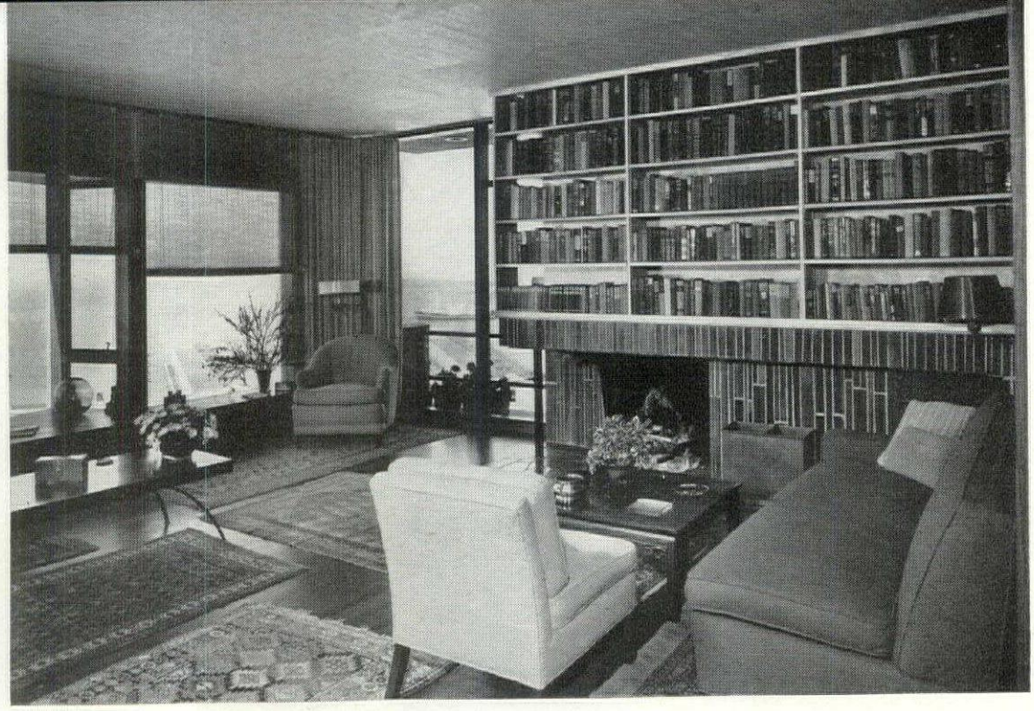




Views on these two pages show the wide-open living room window-wall through which the occupants can look downhill at San Francisco harbor, and the screened gallery off the bedrooms, where casual-looking planting boxes, obscure glass (or plywood) screens and wooden trellises are very carefully arranged to admit light and air yet block direct views into the privacy of the bedrooms from tall uphill neighboring buildings. And careful study of the plans will reveal thoughtful little details such as curtain pockets at one end of living rooms and the fire-escape service stair off the kitchens, the six car stalls, laundry and storage in the basement.

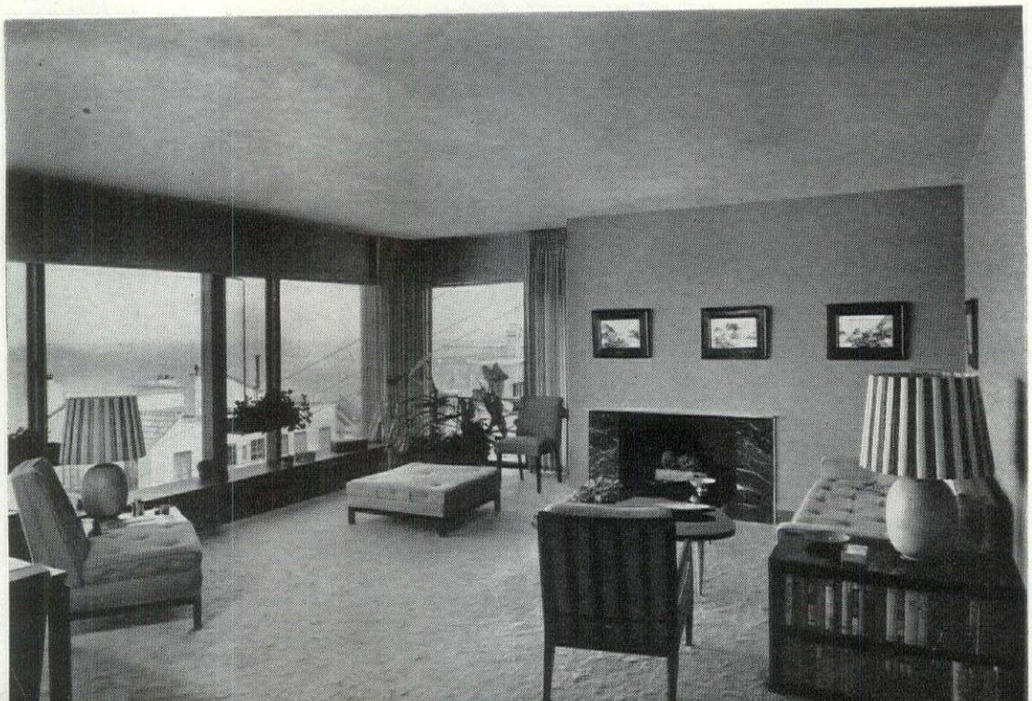
Owners of the building are three friends who formed a corporation, took the east stack of three apartments, sold the west three. Initial budget, including all architectural and engineering fees, was $125,000; architect Hill "popped his buttons with pride" because the final price, after adding $11,624 in requested and "not necessary" extras, was $129,660, equivalent to $7,000 less than the initial budget.

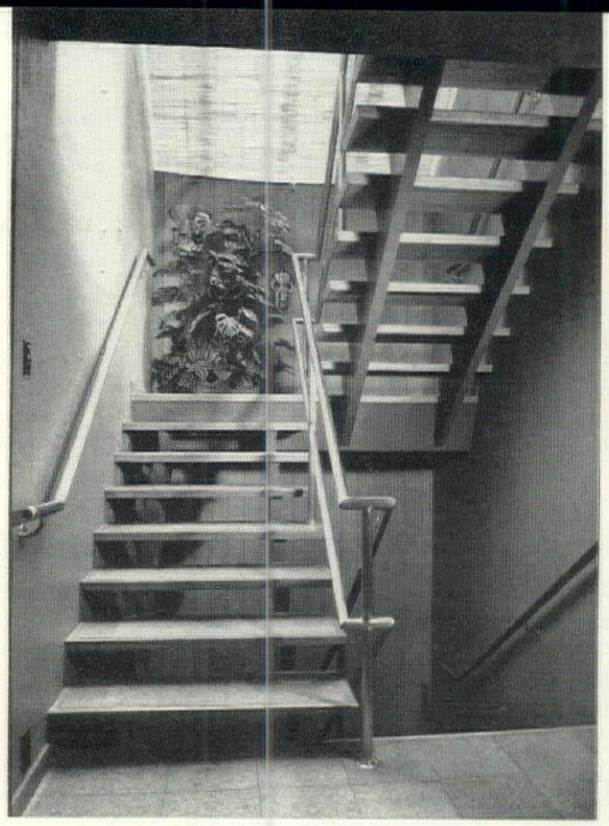




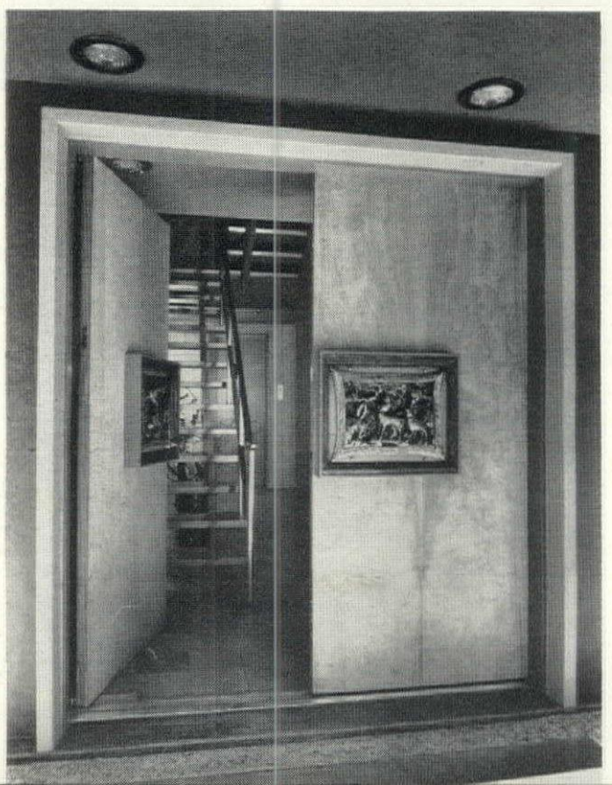


Matching living room views show how individually the three initiating owners were able to furnish their apartments. Top scheme with extensive cabinet work is by Designer Henry Hill; center room reflects the occupant's own ideas including Chinese screen and rococo mirror; at bottom, a simple room worked out with Industrial Designer Raymond Loewy and Architect Gardner Dailey.

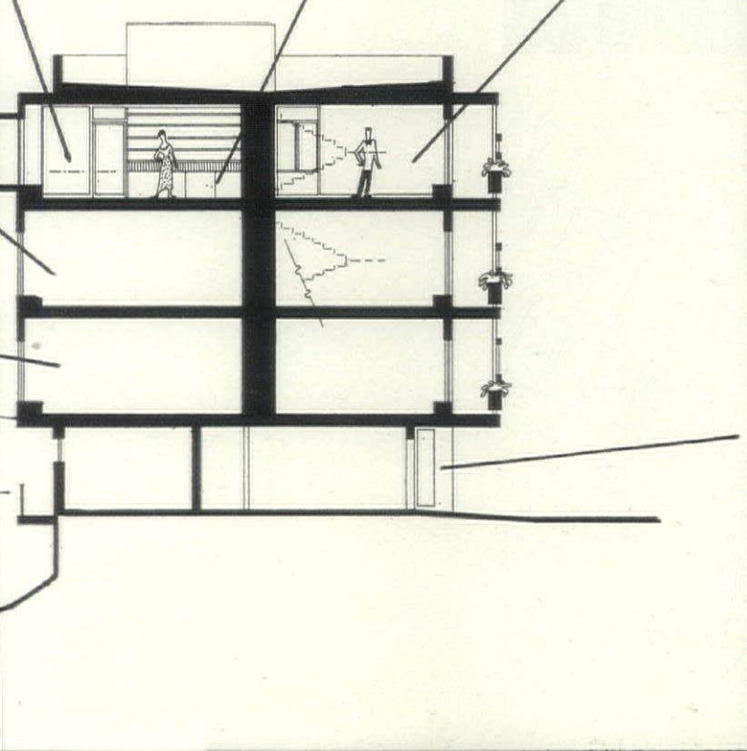






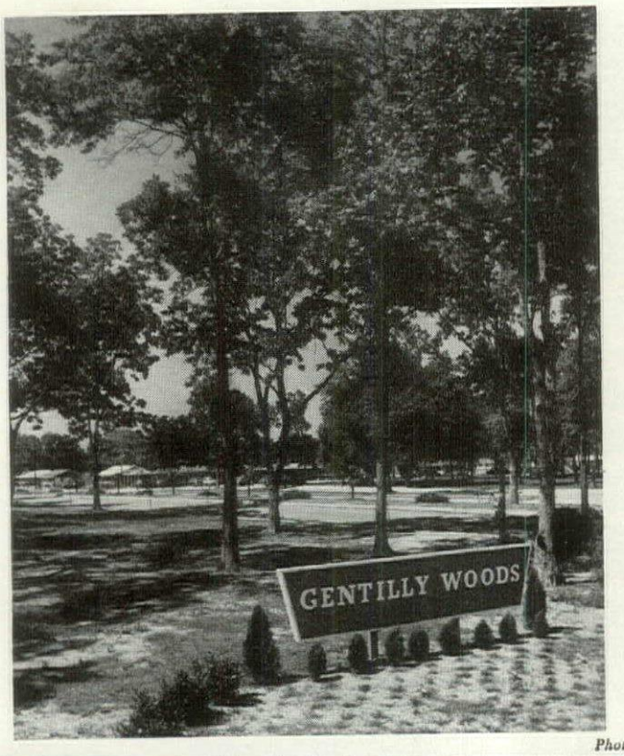


Domestic charm pervades the "public" hall. Top: open stair leads to glass-fenced terrace roof; center: garden terrace fits with "old-fashioned" bedroom; bottom: entrance door carries Henry Hill's trade-mark—a molded tray from Chinatown. Exterior is chiefly integrally colored stucco: walls of recessed first floor are coral, remainder chocolate, except south balcony recesses which are redwood siding stained olive green with matching plant box railing. Grille screens are mustard gold, soffits of balconies resawn pine stained gray gold.



700 SALES IN 4 WEEKS

national sales record with quality house design, aggressi



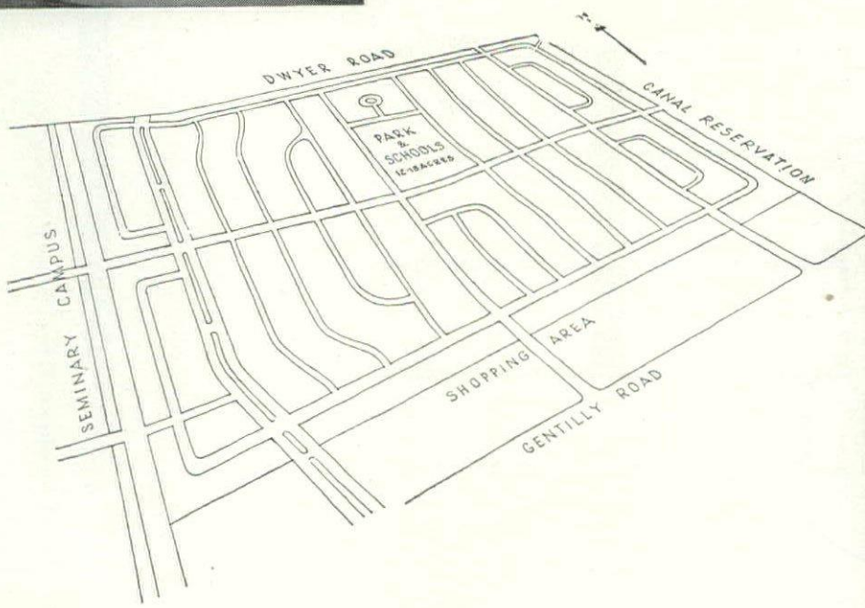
Photos (top): Leon Price; (below, r.) Photography Unlimited





Hamilton Crawford on the steps of h sales office. Upper left: dignified sig at property entrance and part of th future shopping center. Carefully pr served trees add beauty to project an will shade parked cars during the h summer months.

Some of the 25,000 people who inspected the model houses on opening day last June are pictured above. Right: the 306-acre tract is only 5 miles from downtown and lies next to a main boulevard. It is protected by a college at the left, city-owned property at the right, and by 200 acres at the rear which Crawford owns. Crawford's greatest potential money maker is the 42-acre shopping center on which construction will soon start. A market survey by Homer Hoyt anticipates $21 million gross sales for the center by 1960.



ımilton Crawford jolts New Orleans, sets

ɛrchandising and economical prefabrication

A new housing development has burst upon conservative ɔld New Orleans like a bombshell. Nothing like Gentilly Woods ever hit the city before, and neither home buyers ıor builders there will ever be the same again. In July ılone eager buyers signed up for 700 (nearly $8 million ɣorth) of its 1,423 projected houses to set what is undoubtdly the year's nation-wide sales record for a single month.

The man who dropped the bomb is 45-year-old Hamilton Crawford, a sawmill owner, prefabricator and merchant builder with fresh ideas on house design, construction and ɲerchandising. The best of his houses offer so much greater alue than the local average that his example will permaently raise the level of merchant-built housing in New Orleans.

At prices ranging from $8,200 to $13,000 he is providing rom $800 to $2,000 more per house than local buyers can et for the money from any other builder. He is offering ider lots, better screen porches, larger windows, wider verhangs, ventilated roofs, more storage, open floor plans, nack bars and other features that make for better living. ike the famed Levitts on Long Island, he has set a new local tandard by which to judge other builders' houses.

Much of the shock effect of Crawford's houses comes rom designs drawn by staff architect J. W. Leake. To housengry families used to development houses looking like ld-fashioned country schools, Crawford's 13 different ouses were eye-openers, indeed. Many of them—the most opular ones—have a fresh, contemporary flavor.

On opening day some 25,000 pop-eyed people swarmed ver the new project. They lined up to go through 31 model omes, seven of which were furnished. They crammed the les and exhibition hall to exclaim over the dozens of iny new gadgets that included everything from attic fans the latest electric ranges plus samples of all the materials at went into the houses. And for the skeptical, there were me 200 houses in various stages of construction that reealed how the prefabricated sections were put together.

With the unswerving sureness of government experts, HA officials had assured Crawford that most of his buyers ould take the lowest priced models of the most conservave design on the narrowest (50′) lots. To their amazeent, people bought the most expensive houses of the most ntemporary design and loaded them up with screen orches, carports and other extras. Instead of bulking up round $8,200 as predicted, the average sale was over 12,000!

espite high development costs . . .

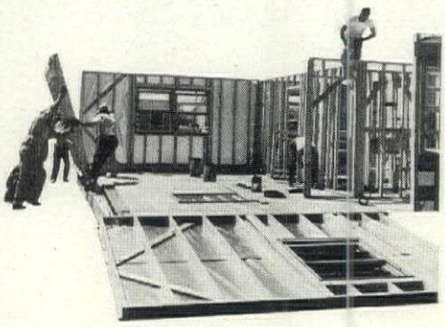
The values Crawford offers are much greater than an out-towner might judge from a quick appraisal of the acmpanying photographs, for the prices include land and evelopment costs that run from $2,000 to $4,000 per lot nd average around $3,200. Probably no other large singlemily housing project in the country is built on such exnsive land. New Orleans is unique because nearly the hole city is on low land with water only a few feet below rade and rain 120 days a year. A fabulously expensive etwork of sewers and drainage lines had to be installed.



PART 2: Public reaction to 13 model houses gives a wide lead to contemporary design (p. 209).



PART 3: Thorough merchandising plan is one reason for Crawford's record-breaking sales (p. 211).



PART 4: How Crawford builds houses with the aid of his lumber mill and prefabricating plant (p. 212).

Crawford is paying out over $4 million ($13,000 an acre) for sewers and drainage, of which $1.7 million will be repaid by the city over a seven-year period. The city is also spending $508,000 for paving.

While many a builder had looked longingly at Gentilly Woods in the past, the prospect of enormous land development costs kept a "For Sale" sign on the 306-acre tract for many years. Since 1942 Crawford himself had been eyeing the property—the last big tract within the city limits, only five miles from the City Hall. But the owners, Middle South Utilities, Inc., wanted one buyer for the whole piece and also held out for their price of $3,000 an acre. Last year Crawford got an option on it, approval from the City Council, a nod from FHA and VA, and went ahead with his purchase.

He hoped it would take only six months to get his show started, but it actually took 16. Because of the complex drainage and sewer situation, months of negotiations went on over street layout. Crawford had tried to get the best layout he could by having land expert Seward Mott draw the plan, but the city sewage and water board vetoed it, substituting their own ideas and a more old-fashioned pattern.

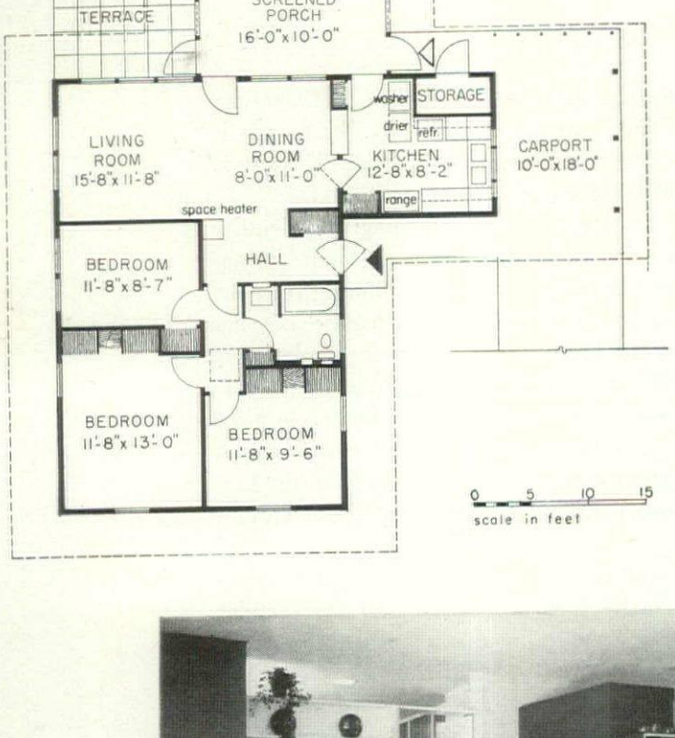
New York Life Insurance Co. agreed to buy mortgages on half the houses. A number of other firms took smaller

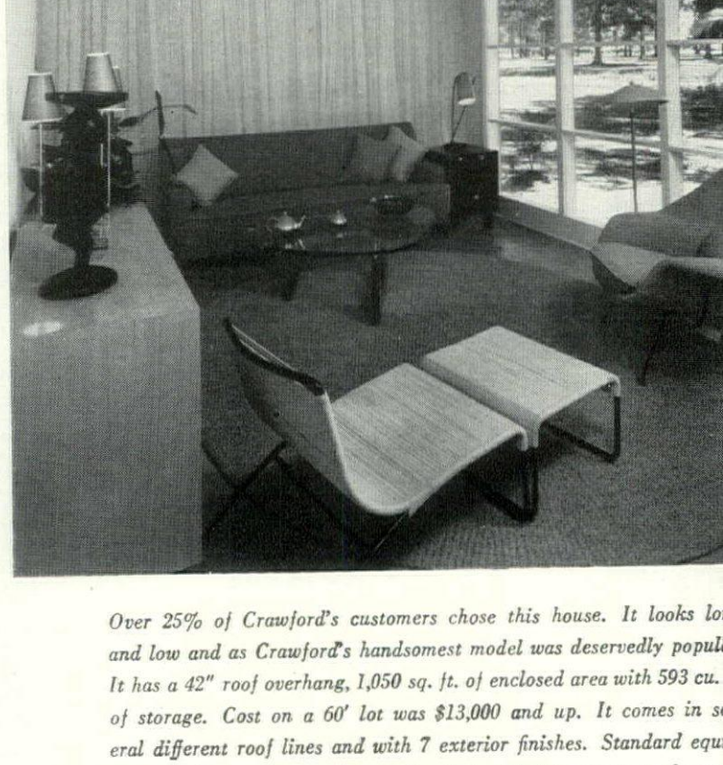
(Continued on page 262)

Photos: Leon Price; Ray Samuel, The Times-Picayune



Photos: Leon P







Over 25% of Crawford's customers chose this house. It looks lo and low and as Crawford's handsomest model was deservedly popul It has a 42" roof overhang, 1,050 sq. ft. of enclosed area with 593 cu. of storage. Cost on a 60' lot was $13,000 and up. It comes in s eral different roof lines and with 7 exterior finishes. Standard equ ment is the popular snack bar (in photo at left) screen porch, pav terrace, attic fan and Venetian blinds. Cedar shakes with some bri for exteriors ran far ahead of other materials in popularity.

eaction to Crawford's 13 model ouses puts modern out front

awford's first 750 sales offer the year's best public opinion ll on houses. With 13 basic model houses of different e, design and price to choose from and with the voters cking up their selections with substantial cash down pay-nts, the poll reveals several important trends.

In brief, New Orleans home buyers are most favorably pressed by contemporary design, low-pitched roofs, 60′ s, three-bedroom plans, wide roof overhangs, cedar shake eriors, large windows, screen porches, large storage spaces. The largest group of purchasers (more than 25%) wanted not the old-fashioned designs they had been seeing for ars—but the most contemporary house in the develop-nt—a one-story, three-bedroom house with long low lines d relatively neat detailing (photo, opposite). Because it s the largest (1,050 sq. ft.) it was also the most expen-e: $13,000 including a 60′ lot. Many people bought der lots.

The choice of this relatively expensive house among the basic designs offered in Crawford's showroom has the ne significance as if General Motors sold more Cadillacs n Buicks, more Buicks than Chevrolets. It shows that ny families making long-term investments are willing to y extra for more space and for better living.

e other preferred houses

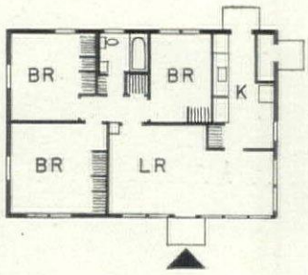
The next four most popular houses are illustrated at the ht, beginning at the top. In a close race each of the ond and third choice houses was preferred by about 15% the buyers. (Thus 55% of the families bought one of the t three houses.) Like the winner, the second-place house three bedrooms, but it is smaller (891 sq. ft.) and its ing area is an extension of the living room. Third place house with 890 sq. ft. but only two bedrooms, a smaller ng room but a separate dining room (a pair of doors ns the dining area to a screen porch, which costs an ra $400).

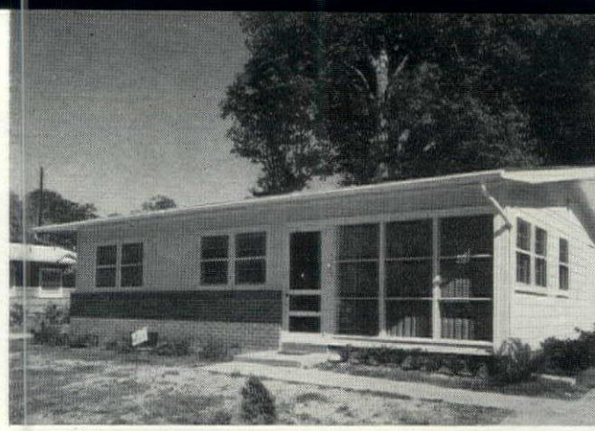
e preferred details

The buyer of any house had a choice of several exterior shes. Well in the lead was cedar shakes in combination h some brick. Second most popular was vertical, V-joint od siding with some brick work. Striated vertical pine s next, then horizontal wood siding, stucco, and asbestos ngles in that order. In exterior colors white was most pular. Green and gray were close second and third, then wn and yellow. For interior colors, 75% preferred paint paper (both cost the same).

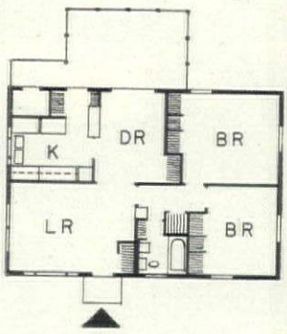
As to roofing materials, 40% chose either green asbestos ngles or built-up gravel. After green, the favorite colors re brown, black, white and red, in that order. White rble chips were popular and would have been chosen by re people if FHA and VA had given sufficient credit for increased cost.

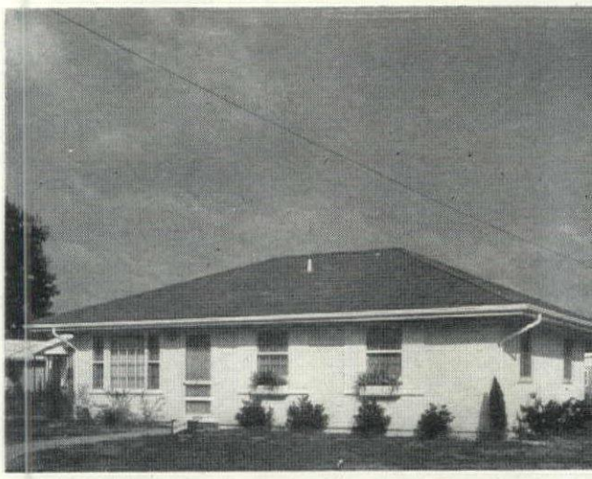
About 40% of the buyers were willing to spend from 36 to $400 extra (depending on house size) for wood ck flooring as compared with asphalt tile. In that mild mate, carports (at $450 to $850) were a 7-to-1 favorite r enclosed garages costing $750 to $825 extra. Breeze-ys at $275 extra were frequently demanded by purchasers o had lots wide enough to accommodate them.





Second place, with 15% buying it, is this 3 bedroom, 891 sq. ft. house at $8,150 to $8,500 with land. In contrast with the winner, big window here is in front.

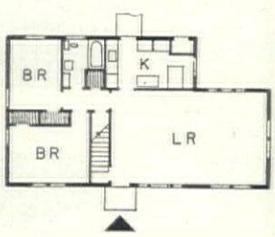




Third place, with almost 15% buying it, is this 890 sq. ft. model with 2 bedrooms, at $8,825 to $8,925. It has a dining room instead of a third bedroom.



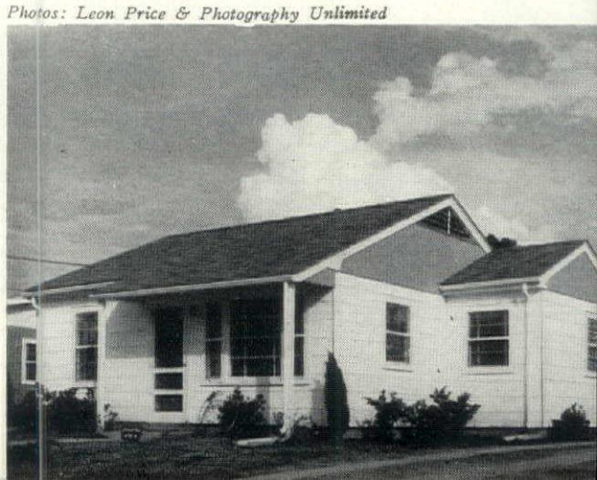
Fourth place was shared by this 754 sq. ft. house with expandable attic and another similar 1½ story model. Prices: $8,150 to $8,875. Some 8% bought them.

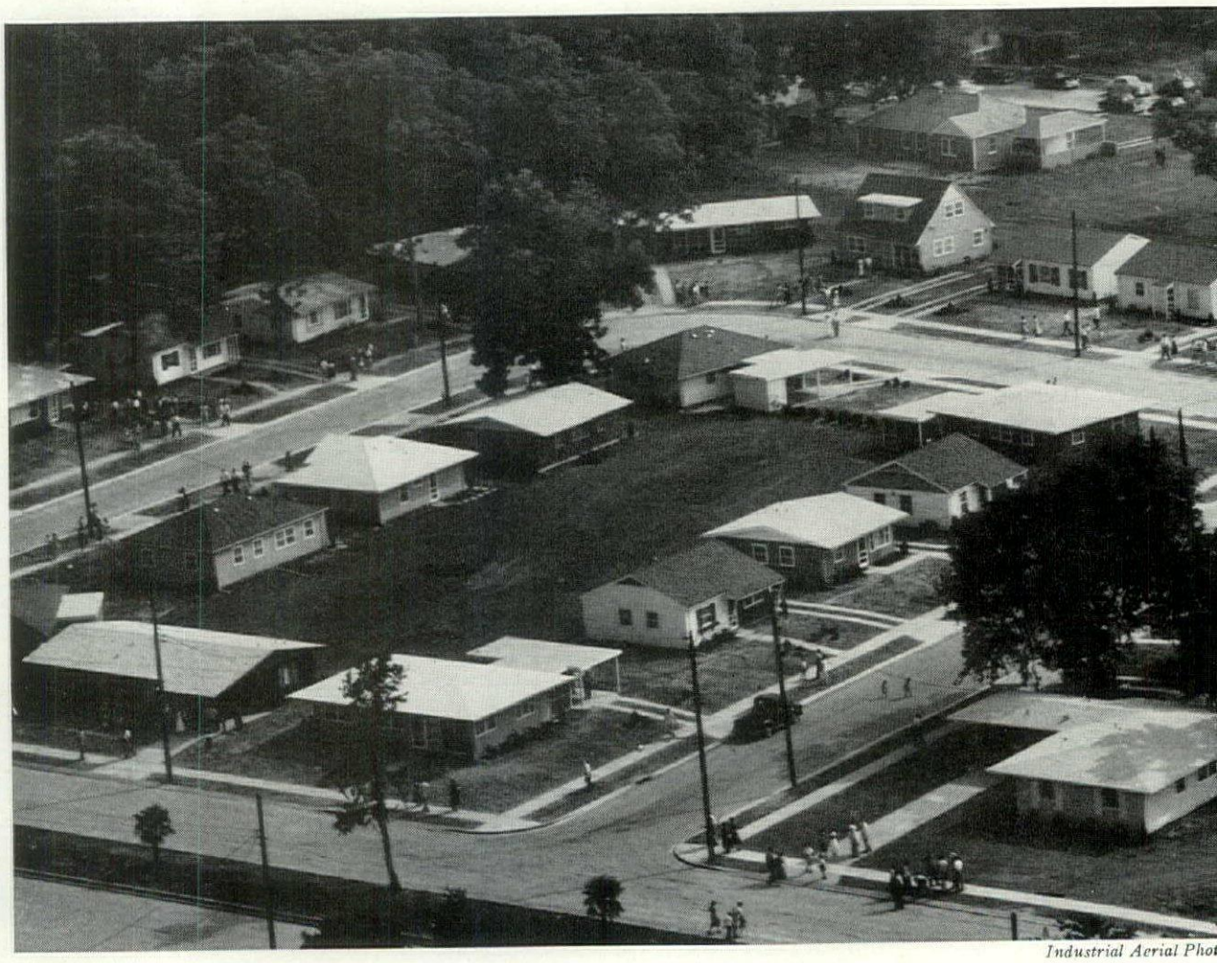


Fifth place (below) has fluctuated among several houses of which this 678 sq. ft. model at $6,650 to $7,100 is one. Less than 6% of buyers bought this house.

Photos: Leon Price & Photography Unlimited







Industrial Aerial Phot

Thorough merchandising plan is behind Crawford's record sales

"This was a $15 million deal, and far too big for us to take anything for granted," says Hamilton Crawford, in reviewing his sales campaign. "We had to act on the assumption that sales would be awfully tough."

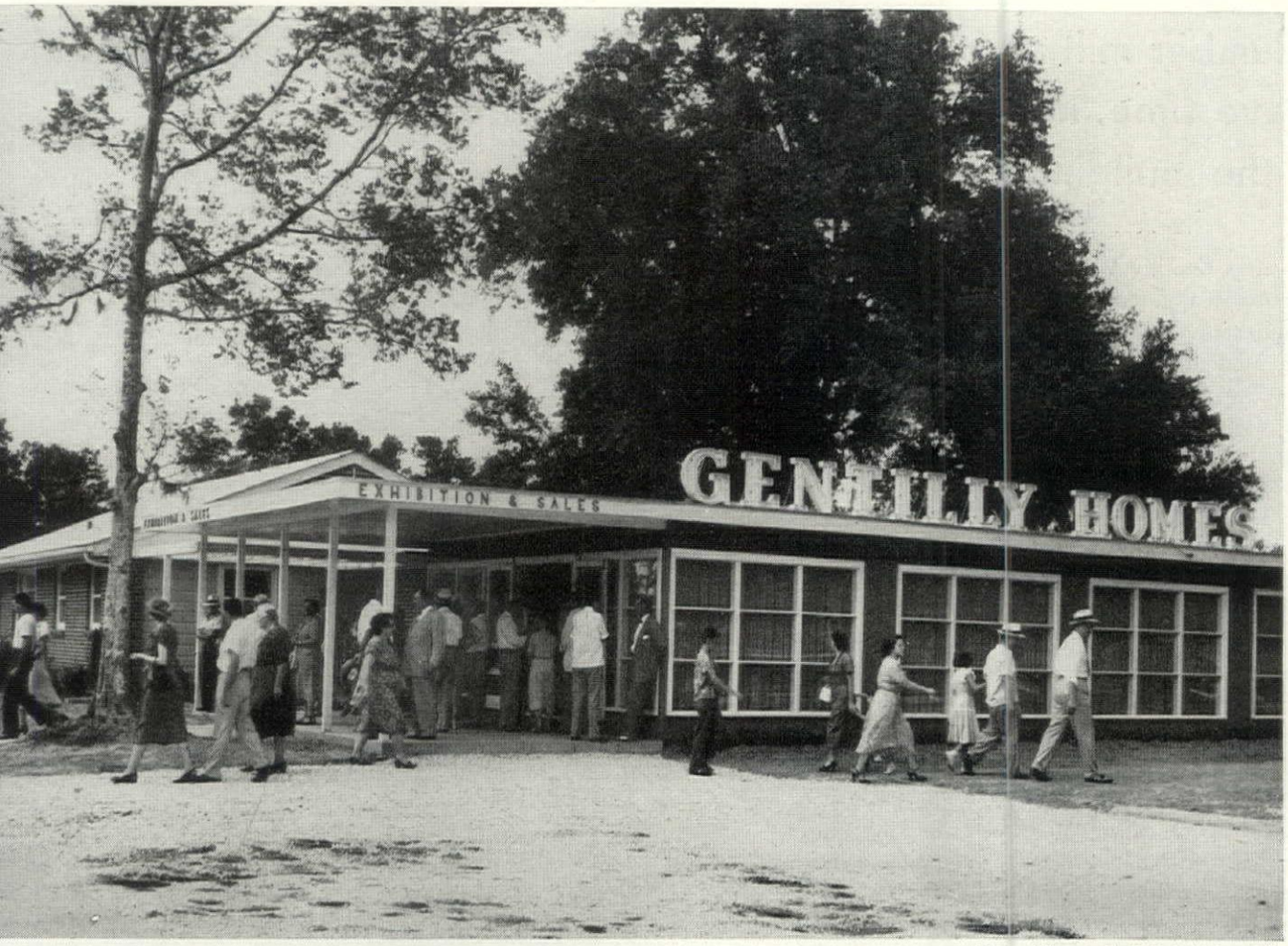
This conservative approach to merchandising explains why Crawford and his real estate sales manager, J. M. Powell, adopted every sales trick in the book and invented a few of their own. Specifically:

- They expanded and modernized their line of prefabricated houses by adding six new designs by Architect J. W. Leake, giving them 13 houses with 75 variations.
- They built on the site a 24 x 120′ sales and exhibition building in which they installed cut-away construction models and a full line of equipment used in the houses.
- They paid $8,000 for colored renderings of the house variations which were displayed in the exhibition building.
- They built on the site a substantial office to handle sales and, incidentally, to create an atmosphere of reliability.
- They trained a sales staff, hired 20 bright, attractive college boys and girls to work through the summer in the sales department and as hostesses. This group was thoroughly indoctrinated in the entire Crawford process by a trip through Crawford's lumber mill and prefabrication plant and by a training course.
- They built 31 houses close to the main entrance of their project (see photo) and got 200 more underway before they launched their advertising campaign.



Display of the 31 model houses (abou gave visitors a wide selection of house sign. Left: hostesses toured sawmill a factory to learn Crawford methods, la explained them to prospective buye below.





Photos: Photography Unlimited; Leon Price

hey completely furnished seven houses with the aid of acy's and Knoll in New York, Marshall Field in Chicago d several leading stores in New Orleans.

hey prepared a big parking area for visitors.

hey invited the newspaper writers, city and state officials preview the development.

hey gave taxi drivers special maps, locating the tract.

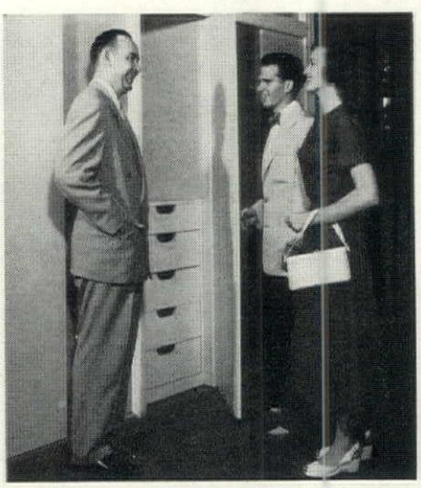
hen, they launched an advertising campaign that included ll page newspaper ads showing many photographs of yers looking at houses and radio time with recorded terviews with people who liked the houses.

The payoff was 25,000 visitors on the opening day and, ore important, 174 sales!

Since opening day, Sales Manager Powell has used only w-pressure methods. He lets people sell themselves. He ows he has good houses in a good location. And because pre-X commitments, down payments are attractively low, 700 to $1,200 for veterans, although some for non-vets n up to $4,500).

Among the most productive sales tools were a wide choice lots varying in size from 50 x 100′ to 70 x 110′ (plainly arked on a map) and in price from $2,000 to a few at ,000 plus a wide range of house designs, sizes and prices. prospective buyer could choose his house and then go ut and find a lot to suit his taste and pocketbook. "The 75 esign variations are a headache for the sales department, ut they pay off," says Powell.

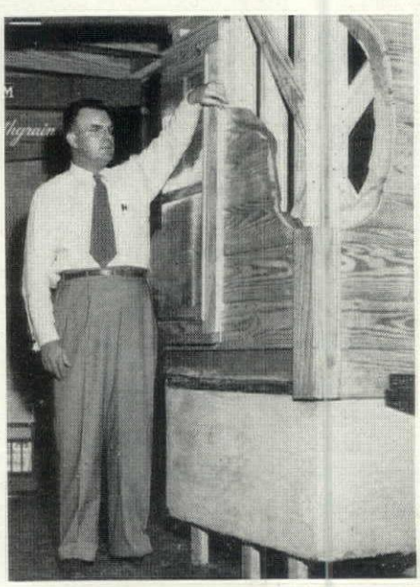
The 13 basic models and their variations completely pre-ude any possibility of Gentilly Woods looking like a "fac-ry-made" development. There are so many facades, roof nes and outside materials that the old idea that pre-bricated houses must look alike is completely forgotten.



Real estate sales manager J. M. Powell (left) shows two visitors a model house. Exhibition hall, above, and model houses were so well organized many prospects sold themselves.



As visitors entered the exhibition hall they were faced by array of colored renderings that overwhelmed them with variety of house models.



←

Homer Harris, v.p. in charge of construction, with a cutaway wall section, one of several such sales tools in the large exhibition hall.

Crawford's lumber mill and prefab plant save time, materials, money on the building site

Within two weeks after Gentilly Woods recovered from its smash-hit opening it was apparent that construction, not sales, might be the bottleneck. Salesmen had assured buyers that beginning in the autumn, some 120 families a month could move in.

This delivery rate of six houses a working day involves timing and coordination that go back through Crawford's prefabrication plant 90 miles away at Baton Rouge on to his sawmill another 90 miles farther north at Gloster, Miss. Both are wholly-owned by the Crawford Corp. and now practically the entire output of both ends up at Gentilly Woods. Crawford the builder is almost the exclusive customer these days of Crawford the sawmill owner and prefabricator. Exception: dealer sales manager Paul Walker still gets a few houses for the builders he has so carefully nurtured and who will keep the factory going after Gentilly Woods is completed. Production is from 6 to 8 houses a day on a 1-shift basis.

Boiled down to the briefest essentials, Crawford's 180 mile long production line consists of two main operations: the sawmill cuts to the specification of the fabricating plant, which in turn assembles prefabricated sections to fit into the Gentilly houses. In a sense, everything is custom order: so many parts for this house, so many for that.

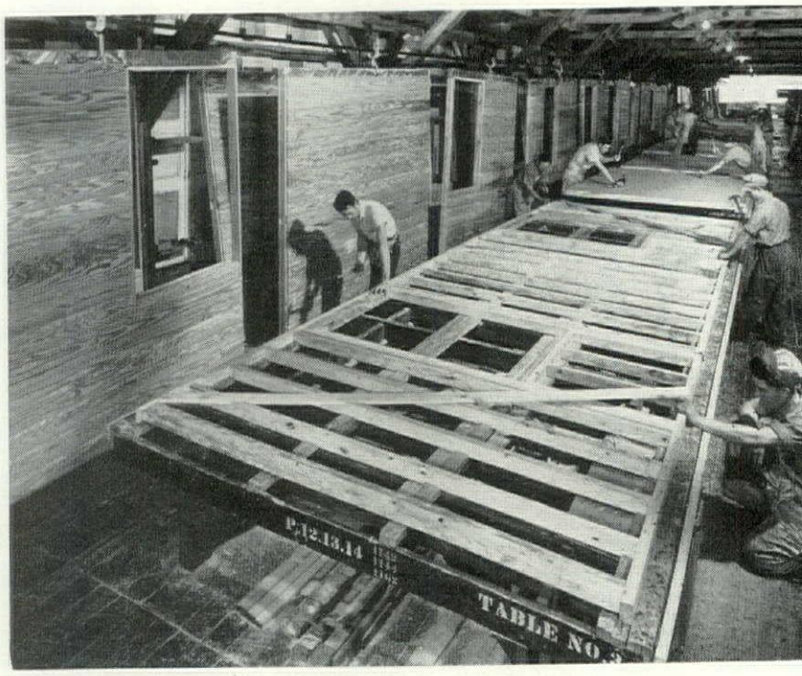
What Crawford the builder gets out of the deal is the same that the Klutznick-Manilow team gets at Park Forest, Ill. from its purchase of prefabricated sections from independent prefabricators: speed of finishing. Houses go up faster, are protected from the weather sooner and a lot more houses are finished with the same size field crews. Park Forest's construction boss Joe Goldman says he doesn't save money directly with the prefabs because he could build in the field as cheap as he buys—but he would need an enormous field crew, more foremen and there would be more headaches. Because time means money, he makes money by buying factory-made panels and pre-cut roofing members for the frame houses of their enormous development near Chicago.

But unlike Klutznick and Manilow, who do not want to own sawmills and prefabbing plants and who are willing to let others break their backs (and maybe their pocket books) by being lumber handlers, Crawford makes each part of his operations earn a profit. What the mill and the plant earn he doesn't say, but it would be surprising if it were less than 10%. This 10% is not included in the 9% profit he figures to make on each finished house, as the accompanying cost breakdown indicates.

On the trucks as they arrive from Baton Rouge are most of the "house package" items listed in the breakdown, except such things as paint, tile, heater and fan. Panels are hand-lifted off the truck in the order they will be used.

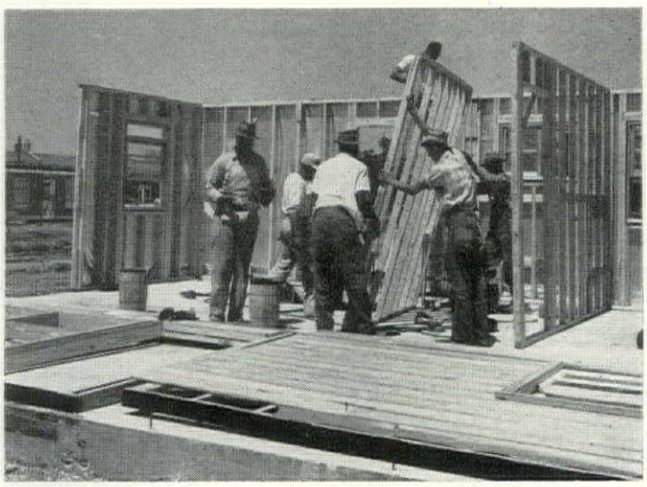
After the slab is ready, field crews take about eight hours to put up the walls, partitions and roof. If the house is to have wood siding, panels come with it already in place. Cedar shakes, asbestos shingles or striated siding are nailed on in the field. Roof panels come complete with sheathing (for a rectangular house there are eight such panels).

(Continued on page 266)

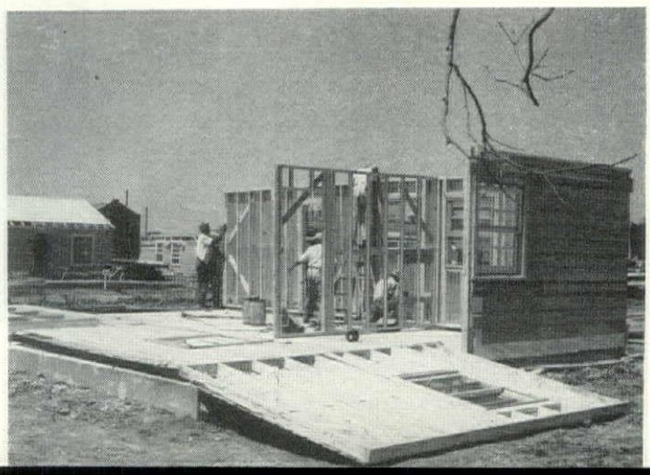


At Baton Rouge, panels for 8 houses a day are made on jigs, then everything for one house is loaded together on trailer. New Orleans is 90 miles away.



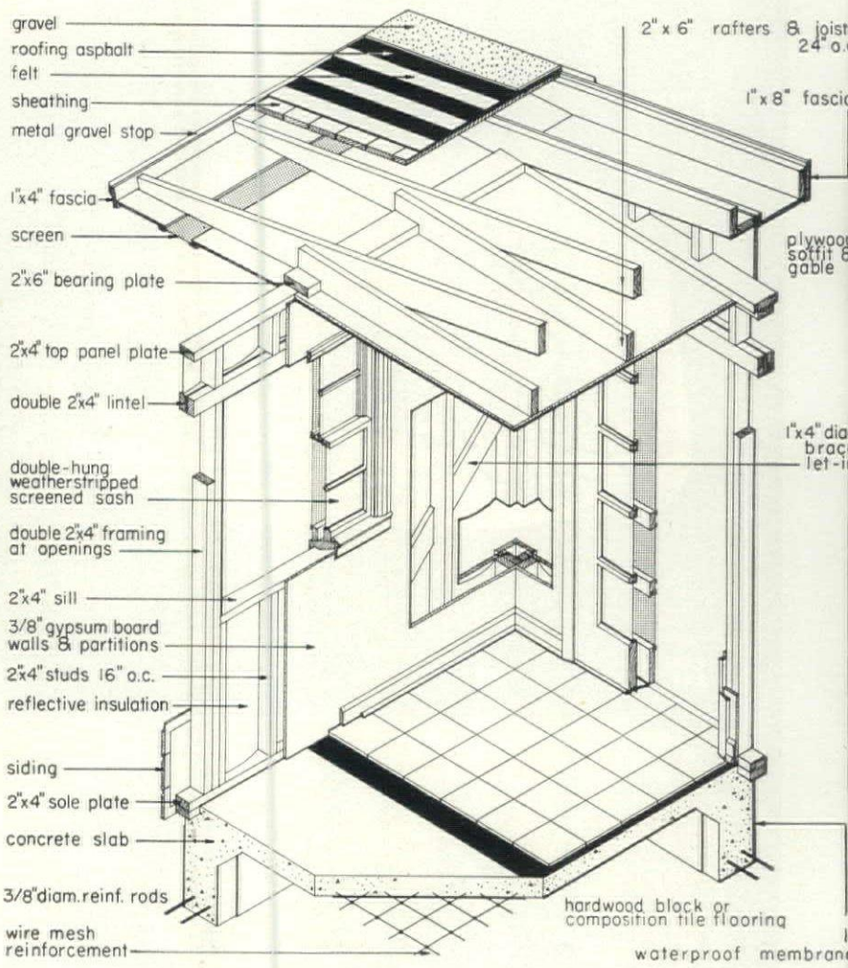


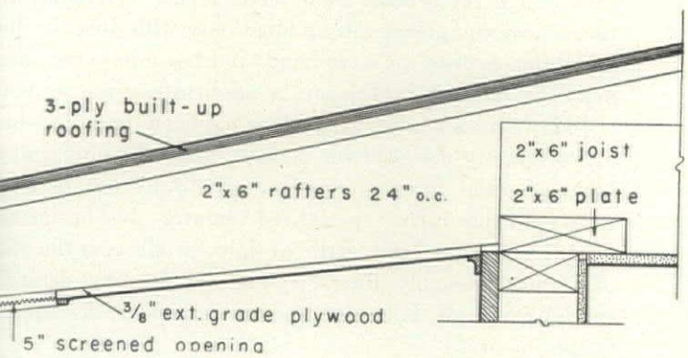
From the time the truck arrives, wall panels, interior partitions and roof are up in 8 hours. Everything fits, there is no measuring on the job, no wasted lumber.



Photos: Hedric Blessing, Ltd. Photography U limited & Ray Samuel—The Times-Picayune







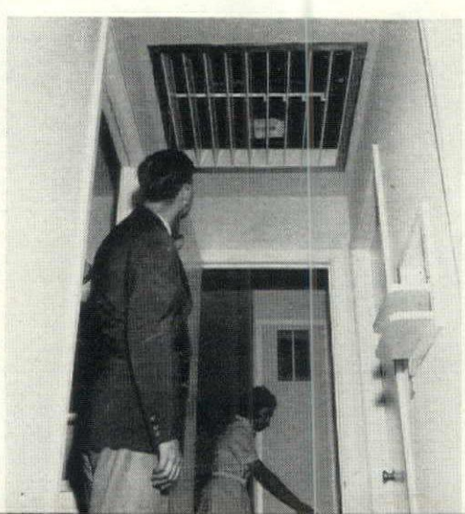


For more efficient ventilation a 5" screened soffit opening is carried around the house for exhausting air drawn up by the attic fan.

YPICAL PRICE BREAKDOWN

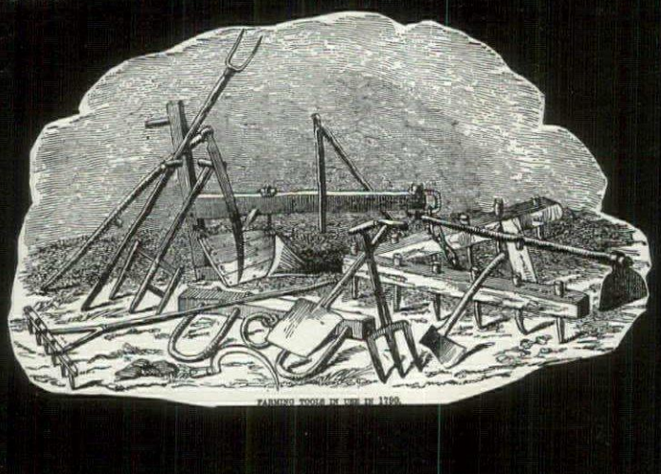
Based on an 890 sq. ft. house, selling for $8,822 (third popularity at Gentilly Woods—see p. 209), this price reakdown is typical of all Crawford houses. It includes creen porch but not carport or land.

efabricated House Package ..... Exterior and interior wall panels; roof panels; pre-cut joists, plates, ridge; roofing; cedar shakes; door units; millwork and trim; gypsum wallboard; cabinets and sink; weather stripping; hardware; screens and screen doors; bathroom tileboard; paint; asphalt tile; heating unit; attic fan.	42.4%
rpenter labor & common labor.....	11.0%
ayout, excavation and concrete.....	9.5%
umbing	8.5%
ectrical	2.3%
eating installation	.5%
oor tile installation	.5%
eet metal work	1.7%
inting and decorating	5.0%
ading and landscaping	1.3%
les and advertising	2.1%
neral overhead ..... Building permit, filing fee, inspection & financing, taxes, general insurance, office, miscellaneous, indirect labor.	5.2%
stomer's selection prerogative	1.0%
ofit	9.0%
	100.0%

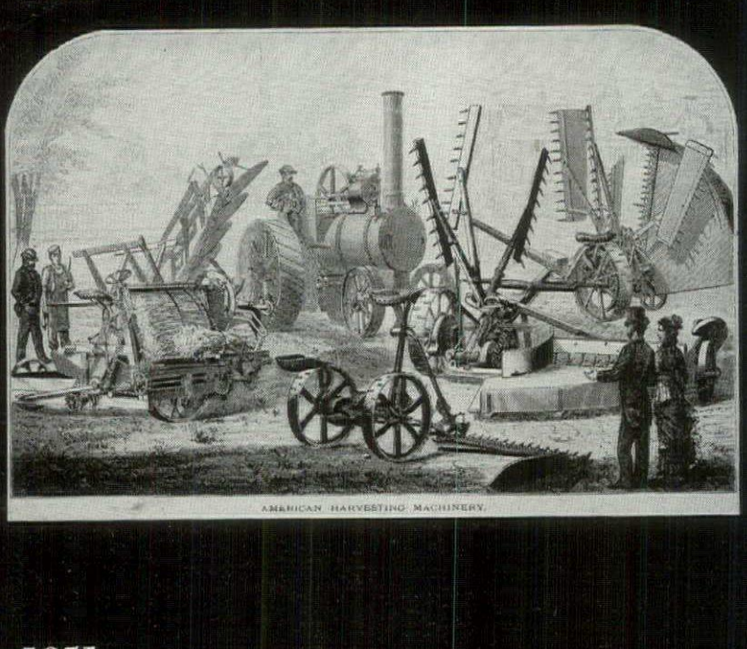


In New Orleans' hot, humid climate an attic fan is a sales feature and standard equipment in Crawford's houses.

1790



1896



AMERICAN HARVESTING MACHINERY

1951



Part II

THE AMERICA

By Mary Mix Foley

To sentimentalists the old fashioned barn will always b a symbol of fruitfulness, thrift and stability, a link wit the stout individualism of America's past. It calls up pleasant vision of the sweet-smelling hay mow, plow horse sweating in the June sun and warm milk dipped in a ti cup from a foaming pail. But to the farmer who tries t run a modern farm with the help of the traditional barn such nostalgia is beginning to wear thin.

The old red barn has become a hopelessly inefficient worl ing tool.

Past changes

Perhaps the most important factor outdating the co ventional barn is the mechanization of farm work. Th tractor, the combine, the milking machine and the electr motor add up to an agricultural revolution which has le barn design far behind. New labor saving techniques ar mechanical equipment can be fitted only with difficulty in a building evolved to serve hand- and horse-powered farm ing. The result is inefficiency or needless expense or bot

Today's mass market has further outdated the barn whi was originally designed for general, self-sufficient farmin Like industrial mass production, agriculture has in mar areas split into highly specialized ventures—big businesse turning out grain, fruit, cattle or dairy products at the sca of factory assembly lines. Specialized farming deman specialized barns, but as yet too few have been designed fit specific needs.

Scientific farming methods are another factor which mu be counted in planning the barn. Throughout nearly eve type of farming, methods of culture and processing a changing so rapidly that the barn built today may be obs lete within a few years. Solid structures, designed like t older barns to last for generations, are much too inflexib to fit the fluid present.

Most telling of all to the practising farmer is the d appearance of cheap local materials. Despite high lumb prices, many barns are still being built by local carpente in the wasteful pattern set by a seemingly inexhaustib supply of timber. But today such massive construction quires far too great a capital investment. There is even saying in some sections that no such barn can be paid f by the earnings of the farm until it has bankrupted tw owners and been bought far below cost by a third.

Future trends

These trends, which started slowly in the 19th Centur have gained real momentum in the past 20 years. But the is a new trend which has a very special meaning for ba design and which may become an important pattern America's over-all economic development. It is the clos integration of farming with manufacturing. Following idea of Henry Ford's, the automotive industries are beg ning to set up networks of regional factories—exploded sembly lines which penetrate deep into rural areas and fe into the cities. Farmers work in the factories in winter a on their land in summer. These "industrial corridors" of

Photos: Culver Services; FORTUNE; *U.S.D.A.*

BARN Today's barn is based on the assembly line, the electric motor and the interchangeable building part; two special designs for dairy and tobacco farms show how

ew hope of survivial to the small marginal farmer (who is ill in the majority throughout America) and they directly ontradict the trend toward mass production agriculture. ventually they may integrate city and country in a manner hich could never be accomplished by regional planning oards. But one thing is already a certainty: to part-time rmers the huge, expensive and space-wasting barn no nger makes any sense. And to the part-time factory worker, renches, power saws and standarized, interchangeable ilding parts are eminently sensible.

There is, of course, no single barn solution to the manifold problems of 20th Century farming. In a period of change it is also extremely difficult to design wisely for both today and tomorrow. But in general the problem of modern barn design is to produce cheap, specialized but flexible structures, engineered to cut working time and take advantage of industrial building materials. Without the help of prefabricated building parts, the goals set up may be impossible to achieve. But in the following pages, THE MAGAZINE OF BUILDING will examine three types of barns already in the process of rethinking and present some suggestions for their future development.

HE STORAGE SHED is modernized with recent structural improvements

e problem of storage buildings is essentially one of struce. On today's mechanized grain farm the horse barn is eady no more than a memory. The power center is now machine storage shed and repair shop, with separate naries or corn cribs scattered or grouped for greatest nvenience. Industry is already supplying prefabricated tal and frame structures which serve the special purposes machine shelter and crop storage. The plan of these ldings is simple and convenient, hardly to be improved on. But most of them are only derivations in metal or minated wood from older handcraft models. Many are l too costly, too permanent and too difficult to erect. The eat need is not for new plans, but for new structural tems which will provide the flexibility and economy necesy to keep pace with changing methods and markets.

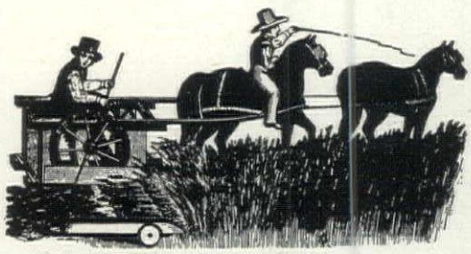
Such basic structural improvements are just beginning to pear. Three systems—one designed especially for farm ldings and two under study for adaptation to farm use—omise the low cost and flexibility required of today's barn.

e framing

e first is the "pole frame" system, an ingenious simplifican of traditional building methods. Upright timbers are into the ground without foundation or footings; roof and lls are simply nailed to the poles without studs or plates. prevent rotting, the poles are treated with penta or creoe under pressure. This system, costing only 60 cents to per sq. ft., can be used for almost any type of farm ucture, from storage buildings to dairy barns, and its nplicity allows expansion or adaptation to different farm enterprises at low cost.

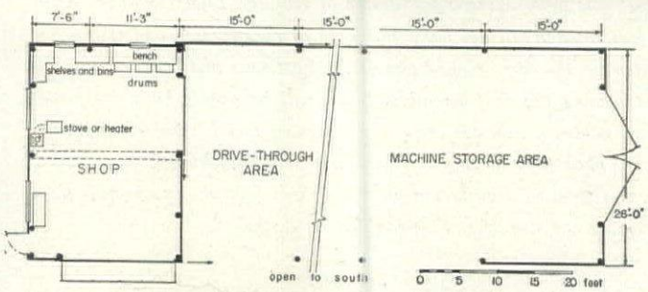
odesic dome

The second system of importance to farm building is a lliant new structural concept, based on geometry and npletely forsaking traditional building methods. It is ckminster Fuller's geodesic dome (THE MAGAZINE OF ILDING, Aug. '51). Designed in small, repetitive sections,

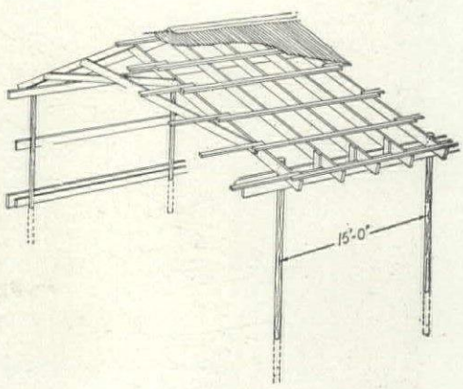


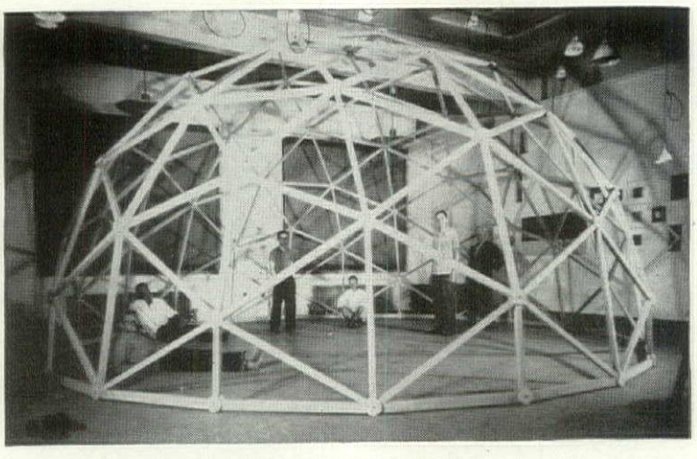
HARVESTING, 1851-1951. A combine reaps, threshes and bags grain for shipment.



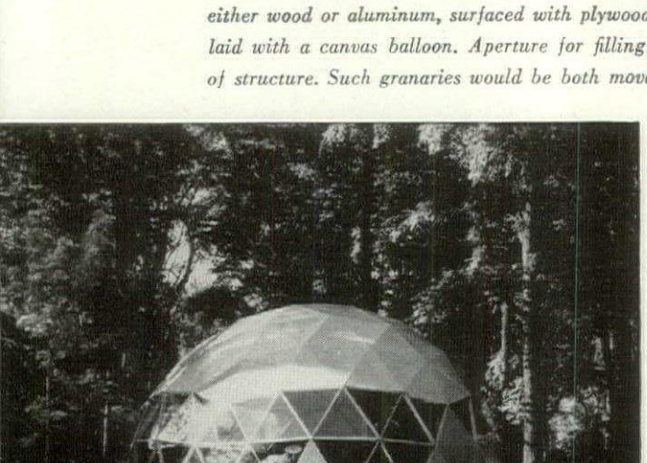


POLE FRAME CONSTRUCTION, developed by the Doane Agricultural Service, is shown here in machine shed application. System is so simple that untrained farm labor can erect entire building. Foundationless pole frame carries weight of structure and standard lengths of lumber are nailed directly to poles. Costs of material and labor are halved by eliminating notching, mortising, mitering and double wall and roof construction. Finish can be either wood or metal.





BUCKMINSTER FULLER'S GEODESIC DOME has been built by MIT students from $22 worth of lumber (above) and prefabricated in Canada as a vacation house (below). For use in crop storage, frame could be made of either wood or aluminum, surfaced with plywood or metal panels or underlaid with a canvas balloon. Aperture for filling would probably be at top of structure. Such granaries would be both movable and demountable.



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UNISTRUT SYSTEM is based on steel channel, nut, bolt and screw; can be erected with no other tools than a hacksaw and wrench. A continuous channel slot and standardized connectors permit easy demounting and rebuilding. For farm structures, roof assembly will be bolted to columns set in shallow post holes without foundation or footings. Buckling of the earth due to frost action will not harm this type of construction and if there is any settlement the farmer need merely readjust nuts and bolts on the columns supporting the roof assembly. Walls will be panels hung from roof edges and made of asbestos cement, corrugated metal, reinforced plastic, translucent glass fiber or canvas. A cheap machine shed might have canvas walls in storage area, translucent glass fiber in repair shop to provide light without expensive windows. Flooring can be earth.

the frame of this hemisphere can be made of either wood metal and filled between members with a variety of materia It need not wait for prefabrication, but can be made toc in any well-equipped machine shop. The modern farn who must be a mechanic to service his field equipment, co probably turn one out at home in his own machine rep shop. The dome is especially suited to crop storage, and c be fashioned with a roof aperture for filling by pneuma gun. Because of extremely light weight, it can be lifted and enlarged by adding more material at the bottom. number of small domes could also be placed convenient fields and moved to new areas each year to keep pace w rotation of crops. The cost is estimated at no more than per sq. ft.

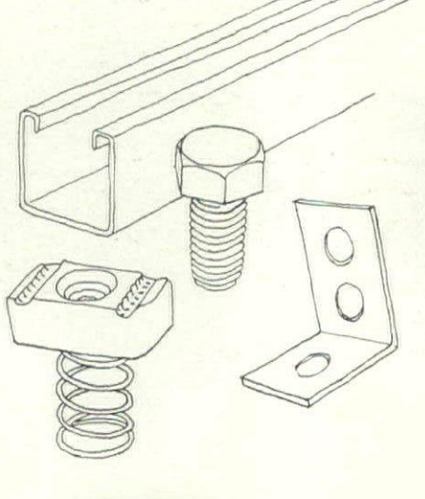
Unistrut system

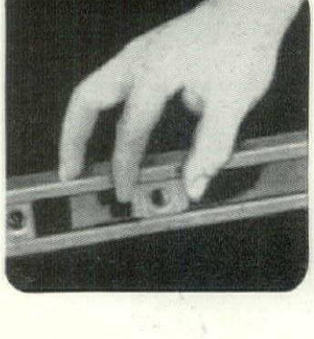
Perhaps most significant of all for a variety of farm u is the Unistrut system, developed first as an exhibition devi next adapted to inexpensive factory and school construct and now under study at the University of Michigan for in farm buildings. Its basic advantages are cheapness a flexibility; its design idea that of standardized, interchan able parts; its goal a kit of building materials, eas shipped, which both the small and large-scale farmer use to make machine storage sheds, cattle shelters, roads stands, poultry houses and other simple buildings.

The project is still in the experimental stage, but one i under investigation is a space-frame type of bolted r assembly supported on columns approximately 16′ ap This bay spacing can readily be compounded in any di tion. Column supports will also be made of multiple leng to allow different building heights and even a shed r Space underneath is enclosed simply by suspending pan (a variety of materials can be used) from the roof edges

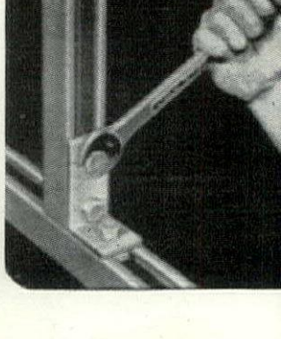
Because of easy assembly and dismantling, the farn could change his own Unistrut buildings at almost no to keep up with changes in his farming enterprise. Thus machine shed might be transformed into a cattle shelter several chicken coops. The farmer would not be tied to inflexible design, but could use his basic materials over over again in so many ways that his buildings could har become obsolete.

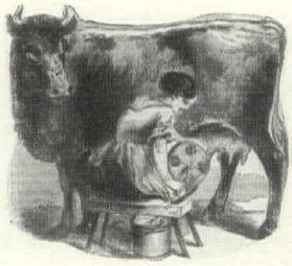
Structural systems of this sort are undoubtedly the ans to many farm building problems. Lightweight, movable re-usable buildings may well become the pattern for fut barn design. They have the prime advantages of cheapn adaptability, and ease of construction. Moreover, they suited to either specialized or general farming, on a la or a small scale. As well as any building can, they ans every foreseeable trend in America's agricultural devel ment.









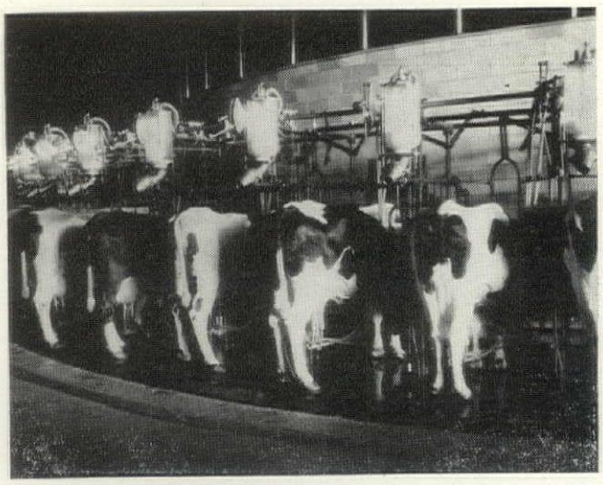


THE DAIRY BARN is now comprised of several loosely knit parts

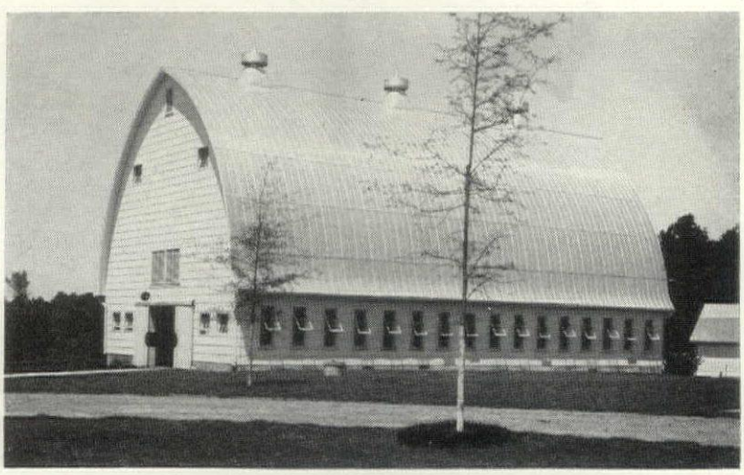
The problem of the dairy barn is essentially one of plan: labor saving devices and efficient herd handling must be the starting point for design. Today's large and expensive barns keep cows penned in stanchion rows, served by the farmer for milking, feeding and manure removal. They also pamper the cows with artificial heating. But the need to protect cows against cold and the wisdom of keeping them penned in one place are both being questioned by agriculturalists. University of Wisconsin tests show that cows given a minimum of shelter and allowed to wander indoors and out, even in the coldest weather, produce as much milk as those in conventional stanchion barns. Moreover, they escape almost all herd injuries and gain much more weight. Consequently Wisconsin and other agricultural colleges are beginning to recommend the loose housing system: essentially an unheated and un-insulated shed, open at the south side to allow free access to the barnyard. Its plan solves the two major problems of dairy farming—cost and the slavery of work.

Four distinct units are included in the loose housing barn. They are the lounging area with a hard clay floor covered by straw bedding and manure pack; the paved feeding area where chopped or baled hay can be consumed at will through a self-feeding fence; the milk plant which includes cooling room and a milking parlor (cows come in to the milker and out, assembly-line fashion); a fenced and paved yard.

This design has many advantages. It is cheap to build and, unlike most stanchion barns, can be held within the rent

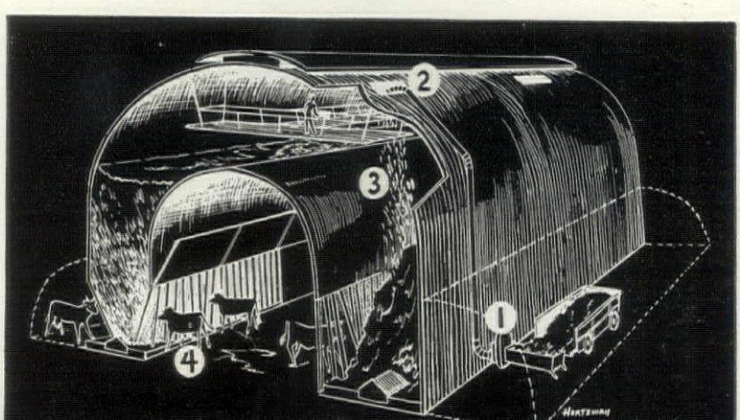


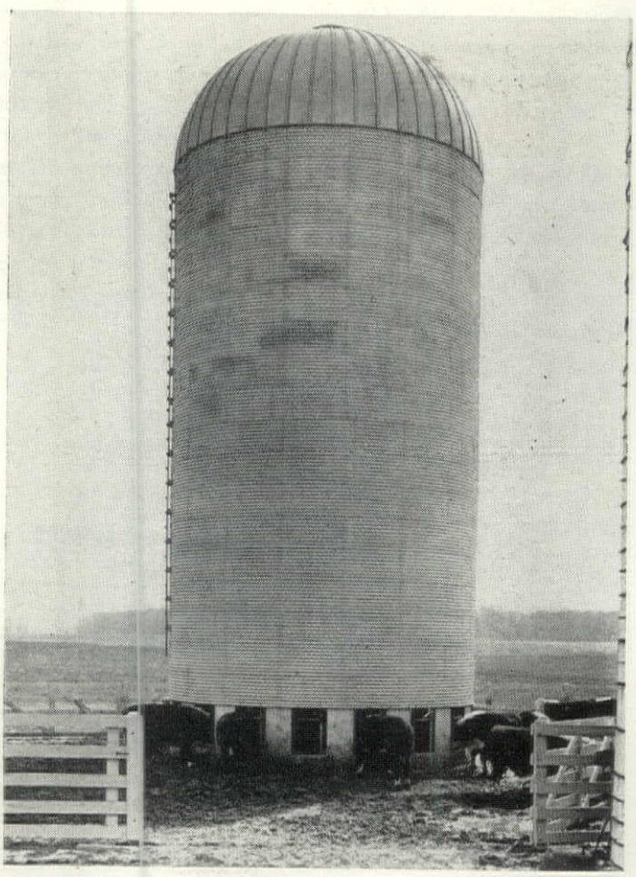
MILKING MACHINES, 1851-1951. Modern rotating platform washes, dries and milks 50 cows in one revolution of 12½ minutes. Milk empties by pipeline into cooling room after each rotation.



CONVENTIONAL STANCHION barn is framed with modern laminated wood rafters, but structural change does not produce new plan.

SELF-FEEDING BARN, an ingenious combination of Quonset shells, makes basic change in plan to save labor. It can be used for beef cattle or as the feeding area in a loose housing dairy complex. Chopped hay is blown into mow by pneumatic gun (1 & 2), slides down inner shell (3) to be eaten through movable fence (4). Almost no hand labor is required after hay is stored.





HAY SILO replaces the traditional hay mow. New device dries, stores and self-feeds in one structure. Metal walls have rain proof perforations for escape of fan-driven air which quick dries chopped hay.

Photos: Farm Journal and Progressive Farmer; Ewing Galloway.

which cows can afford to pay. This is no more than 10 per cent of the net yearly income capitalized at 5 per cent: usually $200 or possibly $300 per cow. The loose housing barn also cuts labor time in milking, feeding, bedding and cleaning the cows and in removing manure from the bedded area. Because of the open front, a mechanical manure spreader can be run directly into the shed. Moreover, although the feeding area must be cleaned daily, the lounge area, where most manure collects, is cleaned out only one to four times a year as manure is needed on the farm. Unlike the stanchion barn, this design is not limited to an exact number of cows and, to meet a large increase in herd size, it can be expanded at small expense.

Since the loose housing system is made up of four essentially self-contained units, such a cow barn can be built joined together or scattered, in whole or in part to suit different climates and different farming enterprises. For instance, southern dairying would require only the milk plant and the fenced yard, since cows there need no winter shelter and are beginning to be kept at pasture the year round. In some moderate climates, requiring the lounge shelter, it is feasible to eliminate the indoor feeding area, substituting a hay stack with self-feeding fence and a silo with ensilage trough in the outdoor yard. The open shed structure without the milk house is an excellent beef cattle or sheep barn in climates cold enough to require winter protection and feed.

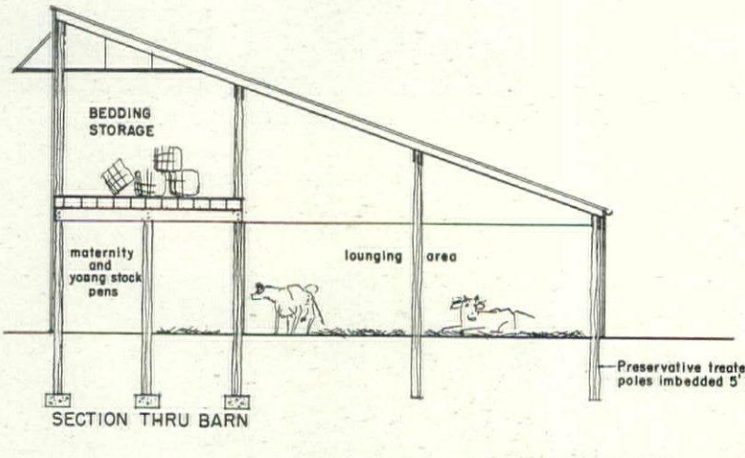
There are, of course, objections to the loose housing system. De-horning is a necessity with a loose herd and boss cows can be troublesome if sufficient feeding space is not provided. More bedding and more roughage are required than in a stanchion barn. The open shed is also a cold place in which to do winter chores. Even more important, some local milk authorities will not accept milk produced in these barns despite the fact that bacteria counts are no higher than those in milk from stanchion barns. This ruling is undoubtedly a reaction to the unconventional, and will disappear as the loose housing barn builds up a longer record of performance. However, opinion is still divided on the relative merits of the two systems and dairymen are also at work improving the stanchion barn. The invention of the gutter cleaner for quick, mechanical removal of manure from stanchion barns eliminates one argument in favor of loose housing. But cheapness, flexibility, and a labor saving plan are basic factors which give the loose housing barn a head start into the future.

LOOSE HOUSING DAIRY BARN

designed for THE MAGAZINE OF BUILDING by Designer Harold Esten*

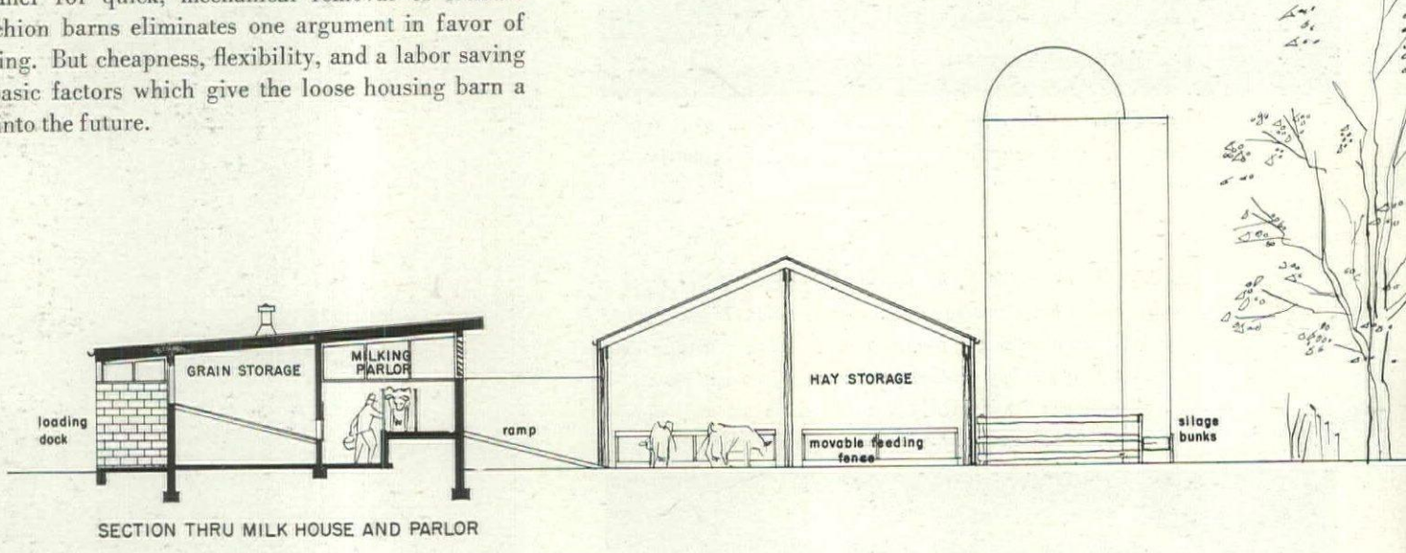
In this version of the loose housing system, lounge, feeding and milking areas are separate buildings, but this prototype scheme for 20 cows could be changed to an in-line plan, made larger or smaller to fit different climates and different herd sizes. In this "scattered" plan the buildings themselves act as windbreaks and fencing for the paved yard, and the silage trough also doubles as a fence Inexpensive pole frame construction is used, with bays 15 x 15' and a choice of metal or wood exterior sheathing. Concrete block is used for the milk house. Although an advanced design, this barn can be built today of available materials, with unskilled labor. No more economical system for housing and milking cows has yet been devised by agriculturists.

** Based on research from the University of Wisconsin and the U. S. Department of Agriculture.*



SECTION THRU BARN

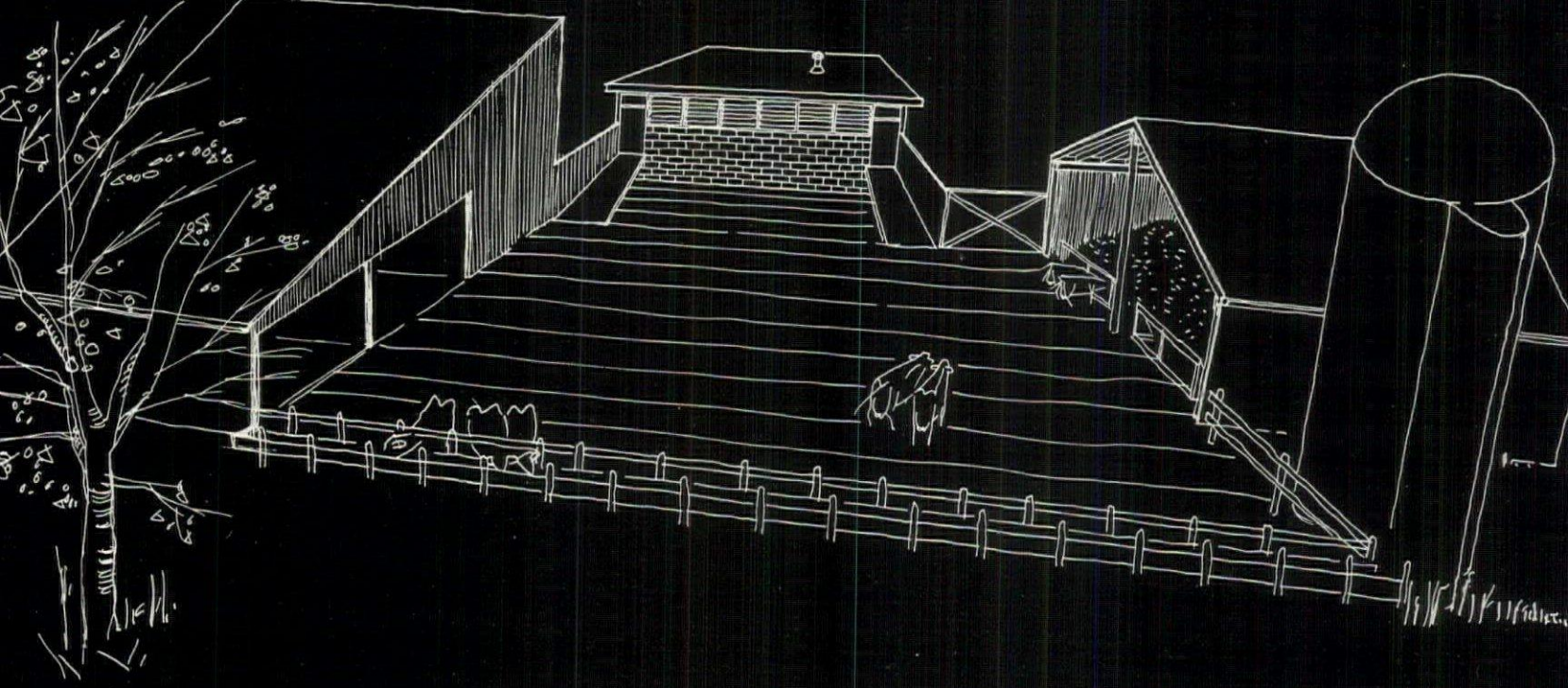
LOUNGING AREA is deep enough to provide good winter shelter despite open south side. Upper level bedding storage is convenient for tossing straw over lounge area, helps keep young stock warm. Because pole supports are widely spaced manure spreader can enter with ease.

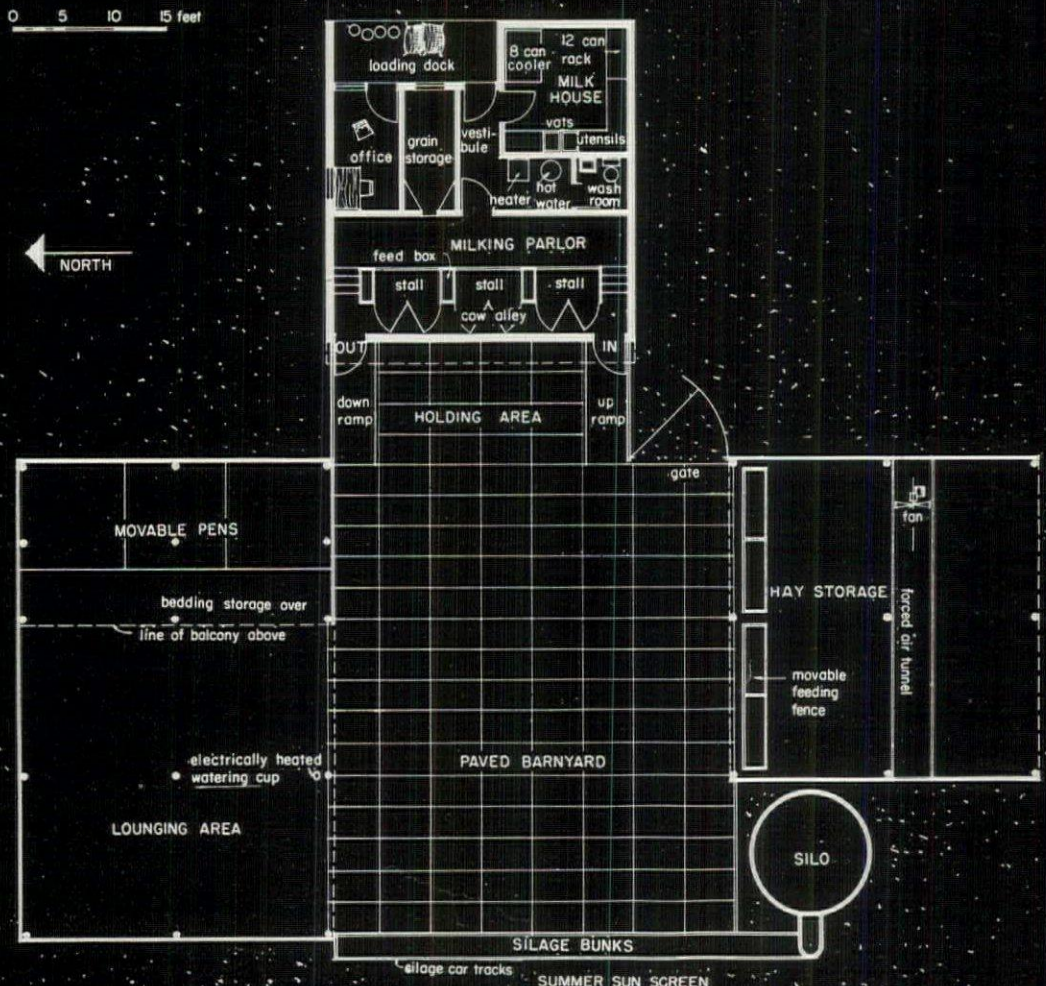


SECTION THRU MILK HOUSE AND PARLOR

MILK HOUSE is deigned for assembly line milking with pipeline machines carrying milk directly to cans in cooling room. Grain is fed during milking. Storage bin is filled from outside loading dock and grain travels by gravity to metering box in milker's pit.

FEEDING AREA is simply an open front building devoted to storage of chopped or baled hay. Self-feeding fence eliminates daily chore of hand forking, is moved back as cows consume hay. Outdoors in mild fall weather, cows by winter time have eaten their way under cover.




0 5 10 15 feet
loading dock
8 can cooler
12 can rack
MILK HOUSE
vats
utensils
office
grain storage
vesti-bule
heater
hot water
wash room
NORTH
feed box
MILKING PARLOR
stall
stall
stall
cow alley
OUT
IN
down ramp
HOLDING AREA
up ramp
gate
MOVABLE PENS
bedding storage over
line of balcony above
fan
HAY STORAGE
forced air tunnel
movable feeding fence
electrically heated watering cup
PAVED BARNYARD
LOUNGING AREA
SILO
SILAGE BUNKS
silage car tracks
SUMMER SUN SCREEN

TOBACCO BARN was designed for THE MAGAZINE OF BUILDING by Architect George Matsumo



OHIO TOBACCO SHED.

TOBACCO CURING, 1800-1951. Uncontrolled firing has been replaced by the dependable, automatic thermostat.



The problem of the tobacco curing shed is essentially one of controls. There are three types of curing—air, fire and flue curing—each requiring a different type of barn and each a delicate process in which a variation of temperature or humidity may mean a ruined or a second quality product. Of the three types, the flue-curing barn is most in need of redesigning.

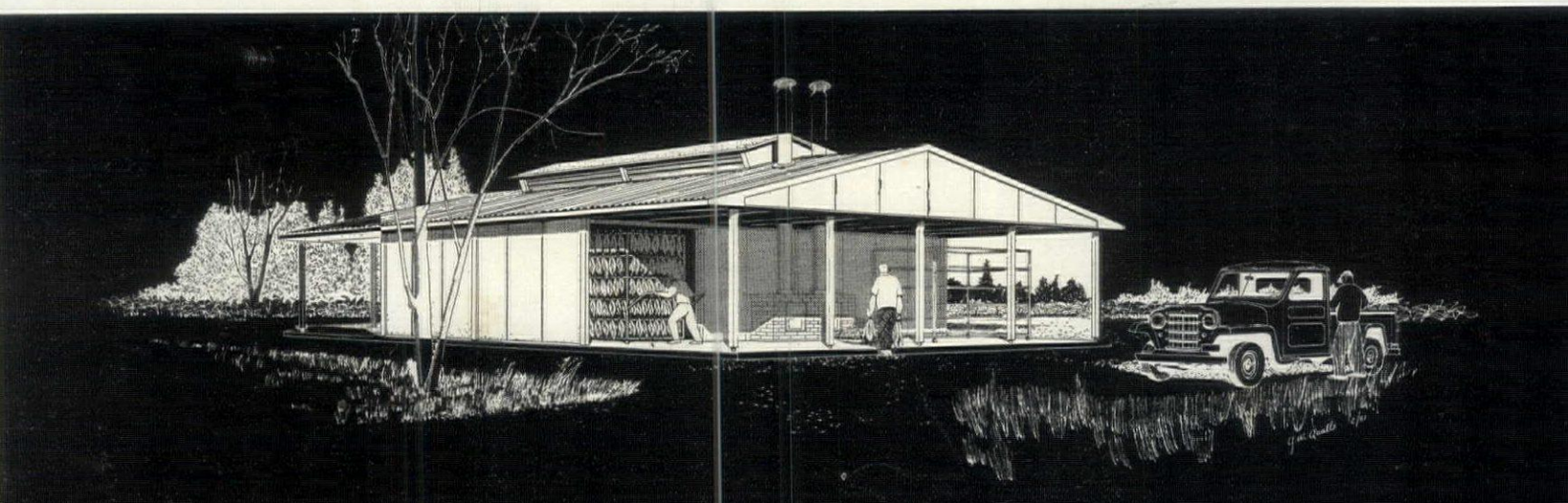
This system, which came into prominence with the development of Bright tobacco after the Civil War, placed the heating system (usually a wood fire) outside the shed, with flues distributing heat inside and carrying away smoke and fumes. Small, windowless log houses were the rule, built high and narrow with sticks of tobacco hung on joists up to the roof gable. Such primitive barns are still being built and used today though they are quite unreliable in curing and wasteful of labor. Because tobacco is cured in a four-day period with the one-chamber barn, extra help must be hired to fill the barn in one day and regular help must be idle between firings unless the farmer builds a series of barns to keep a continuous flow of work.

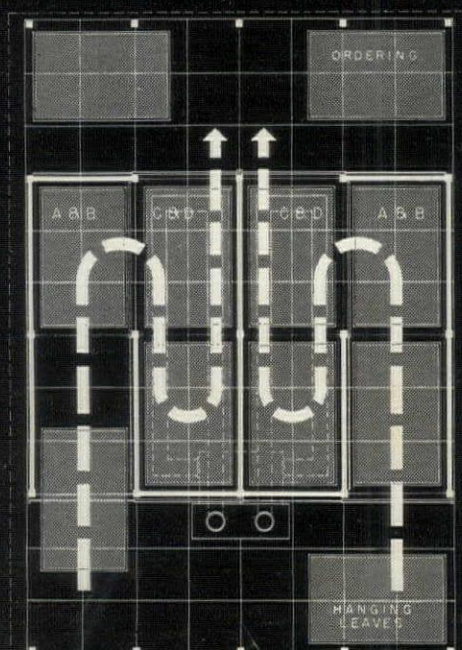
The new design shown here is a four-chamber barn, engineered to provide a continuous curing cycle during the six to ten week period of tobacco harvesting. Two racks are added each day and two removed. A small crew or possibly even the farmer's family can handle all the work and keep continuously employed. This barn provides four upgrad of temperature in the curing process, but requires therm static controls only in the chambers which handle tobacco critical high temperatures. The other chambers are warm to approximate correct temperatures by heat passage throu openings in the center partitions of the barn. Thus only small furnace is needed to serve all chambers. The exteri of the building is thoroughly insulated against heat loss, a automatic ventilators release moisture to keep humidity the proper level.

The barn is a low rectangle so the tobacco can be acco modate horizontally on movable racks. This requires mu less work than the conventional tall, narrow design whi involves laborious climbing to hang tobacco sticks on topmost joists. The low ceiling also provides even heat a a better cure.

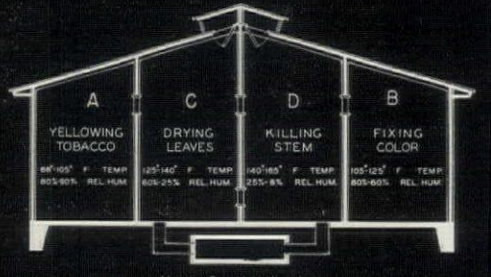
Although more expensive than the usual jerry-built str ture, this type of barn is worth the added cost. It assu quality tobacco production and top prices at the same ti that it cuts down the cost of sporadic farm labor at hi seasonal wages.

Like the other barns discussed in the preceding pages attains the goal of all good farm building design: to h produce a better crop more efficiently and at a cost balan by the earning power of the farm.

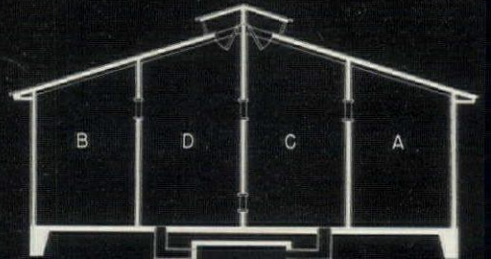




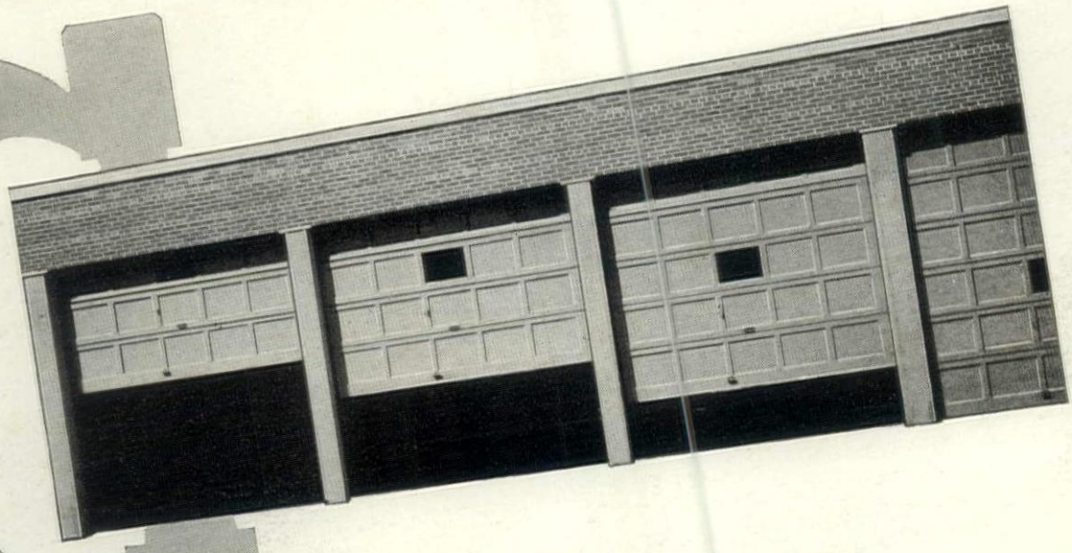
The four chamber curing barn (left) accommodates two carts of tobacco in each chamber. Tobacco remains in the outside chambers during first two stages of curing (A & B), moves to inner chambers for last stages (C & D). The temperature increases at each stage. However, each chamber shifts on alternate days from one to the other of its two stages of heat (see sections, right). With this system each chamber and its two carts of tobacco are always at a different curing stage, allowing continuous flow of tobacco: two carts in and two out each day. Thermostatic controls are used only in the interior chambers (C & D stages), with heat in the outer chambers (A & B stages) supplied through variable openings in the partitions. Accuracy is thus achieved at the critical period of curing, and heat changes in outer chambers are linked to those in the inner: B (hottest of the first two stages) always drawing heat from D (hottest of the last two) and A (coolest of the first two) drawing



first & third day



a Rō-Way is more than a door



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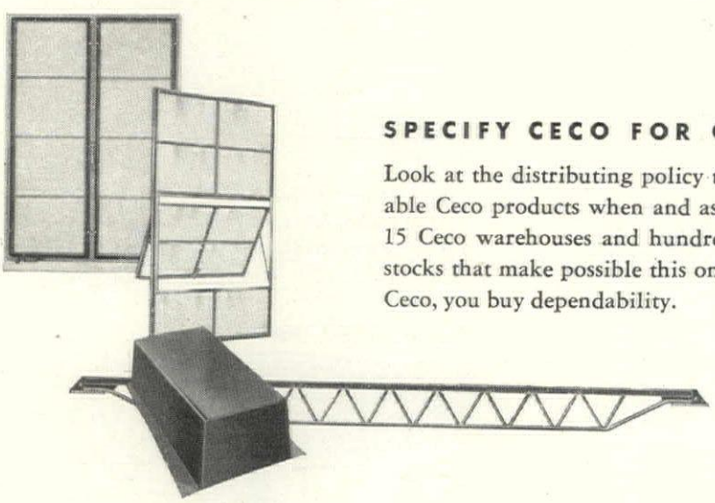

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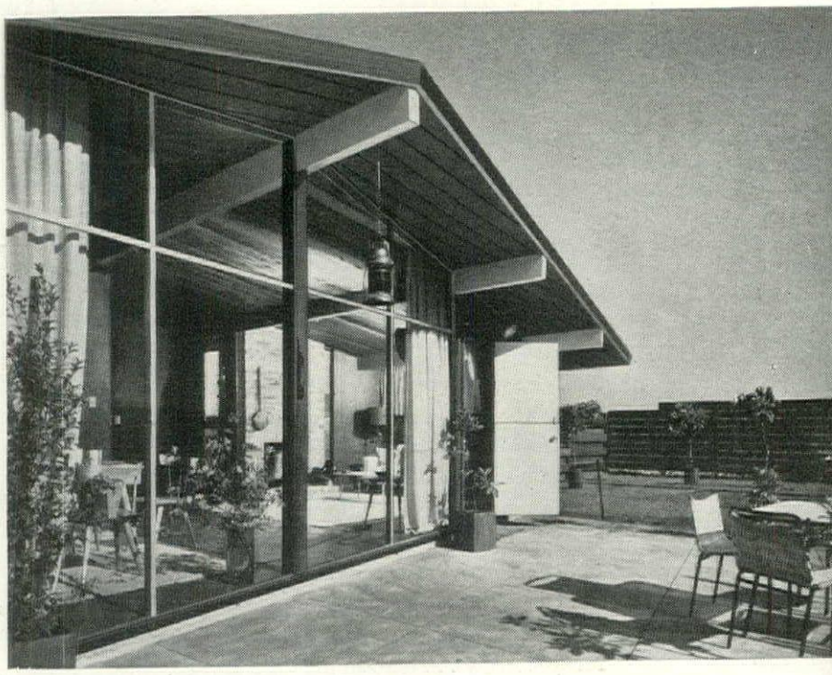
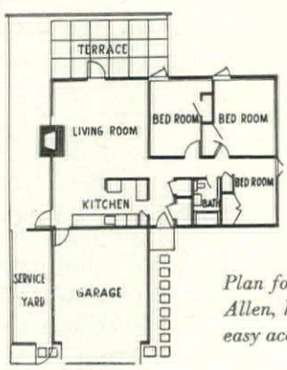


The most recent addition to Joseph Eichler's now-famous Fairmeadow subdivision is a new cooperative housing development in Palo Alto. This 303-dwelling project furthers builder Eichler's plan to bring low-cost, quality-built housing to the San Francisco Bay area. Taking advantage of Section 213 of the National Housing Act, whereby qualified groups can buy their houses with an unusually low initial payment and a long-term mortgage, builder Eichler is able to maintain his original premise—that low-cost housing is possible without sacrificing quality.

The quality, which Eichler and his architects have gone to great lengths to maintain, is exemplified by his selection of Frigidaire Appliances throughout the project. Each one of the 303 kitchens is equipped with a Frigidaire Refrigerator, Electric Range and Automatic Washer.

The choice of Frigidaire products for the Fairmeadow subdivision, and many similar projects, is proof of their desirability in *any* dwelling where quality construction and economy of operation are topmost considerations. Detailed information on any Frigidaire Household Appliance may be obtained for the asking. Call your Frigidaire Dealer—or the Frigidaire Distributor or Factory Branch that serves your area. See Frigidaire catalogs in Sweet's Files, or write Frigidaire Division of General Motors, Dayton 1, Ohio. In Canada, Leaside (Toronto 17), Ontario.

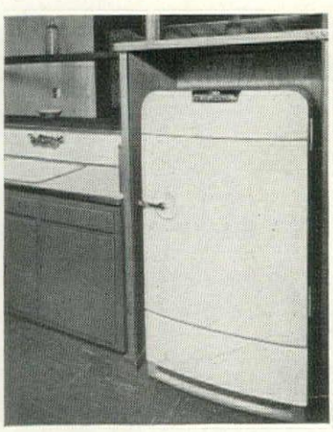
Frigidaire reserves the right to change specifications, or discontinue models, without notice.



Plan for Fairmeadow Homes, as designed by Anshen & Allen, has open living, dining and kitchen areas, with easy access to concrete patio. All models have fireplaces.



Frigidaire Automatic Washer and Frigidaire "Thrifty-30" Electric Range with Giant Oven, offer the utmost in space-saving convenience — the utmost in beauty and utility.



Frigidaire Refrigerators are standard equipment in all Fairmeadow Homes. Choice of America's No. 1 Refrigerator is further proof of Eichler's insistence on top-quality products.

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Vorhees, Walker, Foley and Smith, Architects

ARMSTRONG'S RUBBER TILE

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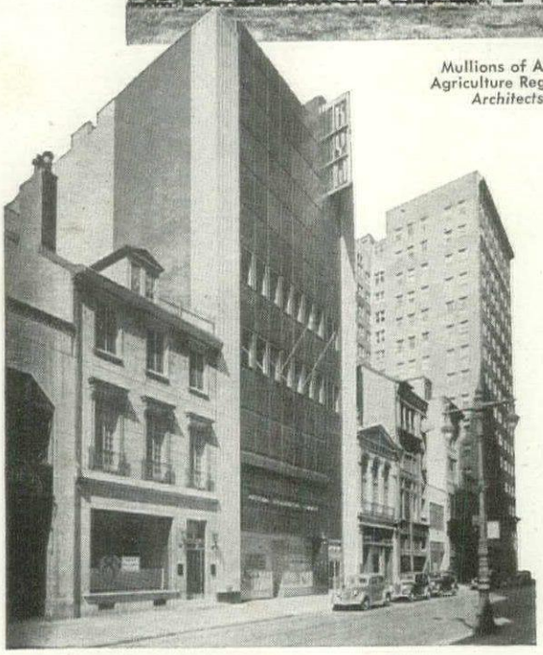
Facing and bulkheads of Alberene Serpentine.
Cord Building, Beverly Hills, Calif.
Architect — Burton L. Schutt

Distinctive, Durable, Dollar-Saving



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

Veneers or Panels of ALBERENE Stone



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



Spandrels of Alberene Serpentine. Continental Oil & Gas Building, Houston Texas.
Architect — Kenneth Franzheim

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 —

• **It's economical.** It can be cut into thin sections — 7/8 and 1¼" 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, antique-bronze 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.

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"Let's look in this window, Grandma...

the sidewalk's dry"



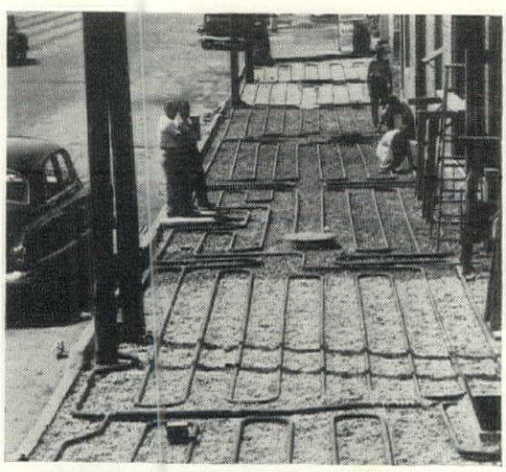
Steel Pipe is first choice for snow melting

There's an old saying that "business goes where it is invited and stays where it is well treated." Yes, the considerate ways of doing business are also the profitable ways! Successful business men know that thoughtfulness for the comfort and convenience of the customer helps ring cash registers as much as the price tag or quality of merchandise.

So, high on the list that "wins friends and influences people", along with such known sales builders as air conditioning, adequate parking, good lighting, and modern rest rooms, is *sidewalk and parking area snow melting!*

Steel Pipe is first choice for these installations. You see, Steel Pipe, as the hot water circulating system, has all the desirable working characteristics required for a successful snow melting system. That means durability, formability, weldability and suitability . . . plus maximum economy!

A free 48-page color booklet "Radiant Panel Heating with Steel Pipe" is now available to you. Write for a copy.



A typical sidewalk snow melting installation showing an effective layout of steel pipe coils.

Steel Pipe is First Choice

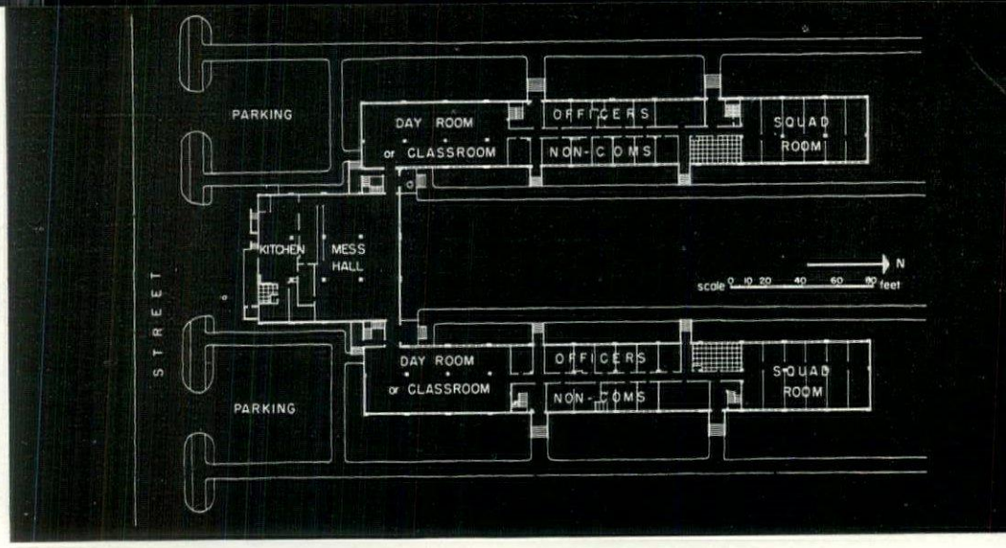
COMMITTEE ON STEEL PIPE RESEARCH

AMERICAN IRON AND STEEL INSTITUTE

350 Fifth Avenue, New York 1, N.Y.

(Continued on page 171)

tects had no trouble at all getting them to accept this crisp modern scheme. The officers had no precedent to go by, insisted only that their practical problems be solved and the structures meet the Army Engineers' specifications. The fine architectural setting they will get into the bargain is bound to pay off in higher troop morale, may well give the Army the kind of architectural precedent it is looking for. In any event, the school is an encouraging precedent in architect-Army relations.



NEW BARRACKS for Signal Corps at Fo

Monmouth sets future pattern for Army permanent construction

The diagrammatic plan shown above is of new barracks street recently developed by t Corps of Engineers, and incorporated by Kel & Gruzen in their new Signal Corps Scho Unlike the old Company Street, this unit really one continuous building, consisting two 3-story wings (sleeping quarters) and mess hall and kitchen that links them.

The structures will be standard in all n permanent posts the Army puts up. T U-shaped unit will accommodate 500 me most of them in "squad rooms." Non-co and officers will have semi-private or priva rooms, and there are ample provisions for d and classrooms.

Apart from the frankly exposed concre structure there are other advanced ideas these buildings that are a pleasant surprise an Army structure. The planning of the un for example, provides for parking along t perimeter of the U-shaped only, keeps the terior court protected for pedestrian traf Since there are narrow passage-links betwe sleeping quarters and mess hall, men can wa out toward the parking lots without troub

The reinforced concrete structure as dev oped by the Corps of Engineers guided Kel & Gruzen in the design of the rest of the S nal Corps School. Laid out in 25′ bays, t buildings are faced in concrete (where spa drels are required) or in exposed mason set into the structural frame.

Maintenance probably will be a costly ite and chances are that the unpainted, 3,500- concrete will not look very handsome for lon Here and there, Kelly & Gruzen have attempt to obtain better exterior finishes, as in the u turned spandrel beams (see text p. 171) whi are poured *after* floor slabs have hardened place; to produce a good joint between flo slab and spandrel, the architects let the spa drel project ¾″ beyond the edge of the sla thus drew a crisp "shadow-line" all along t length of the facades.

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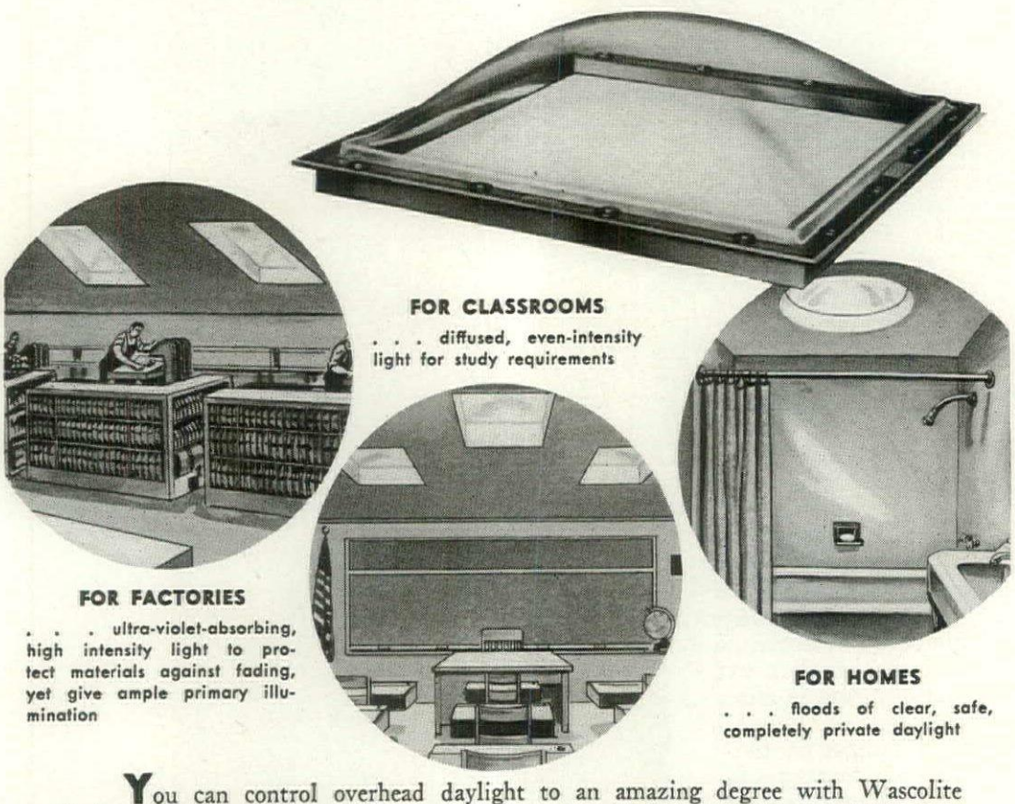

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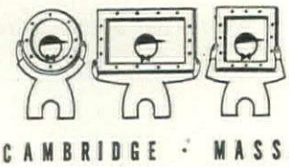

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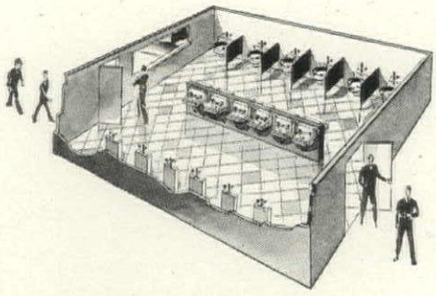

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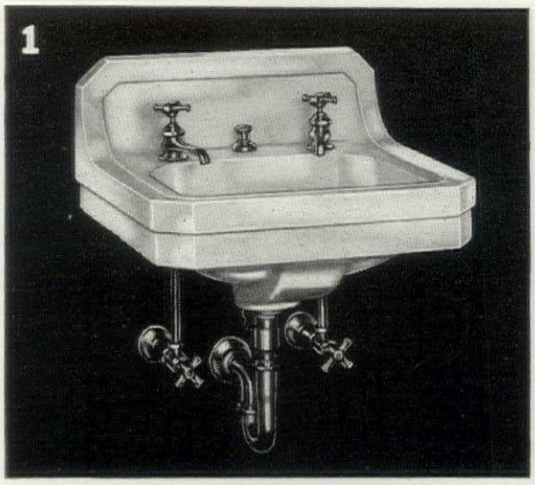

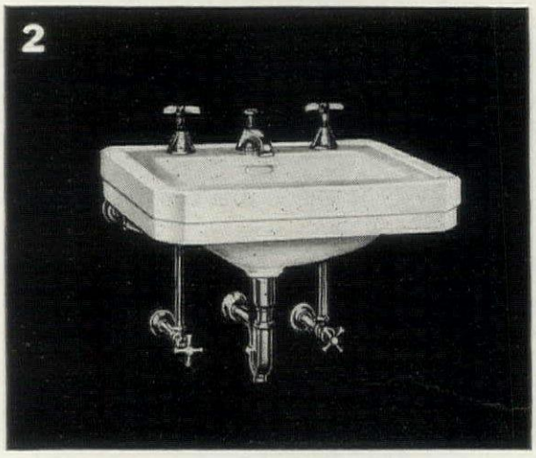

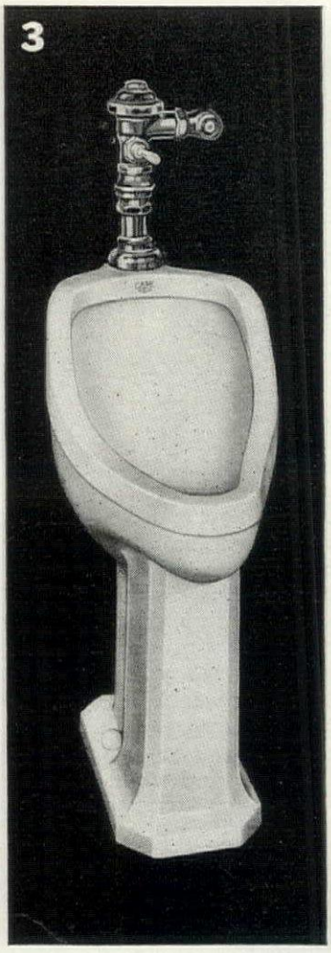



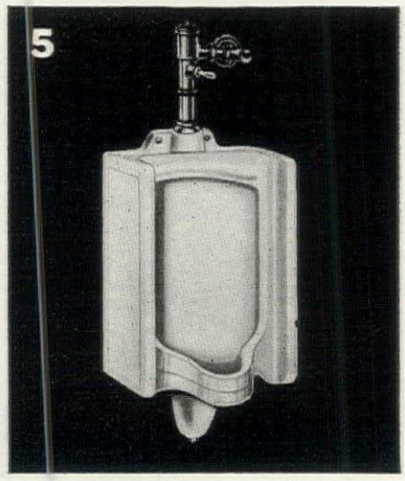

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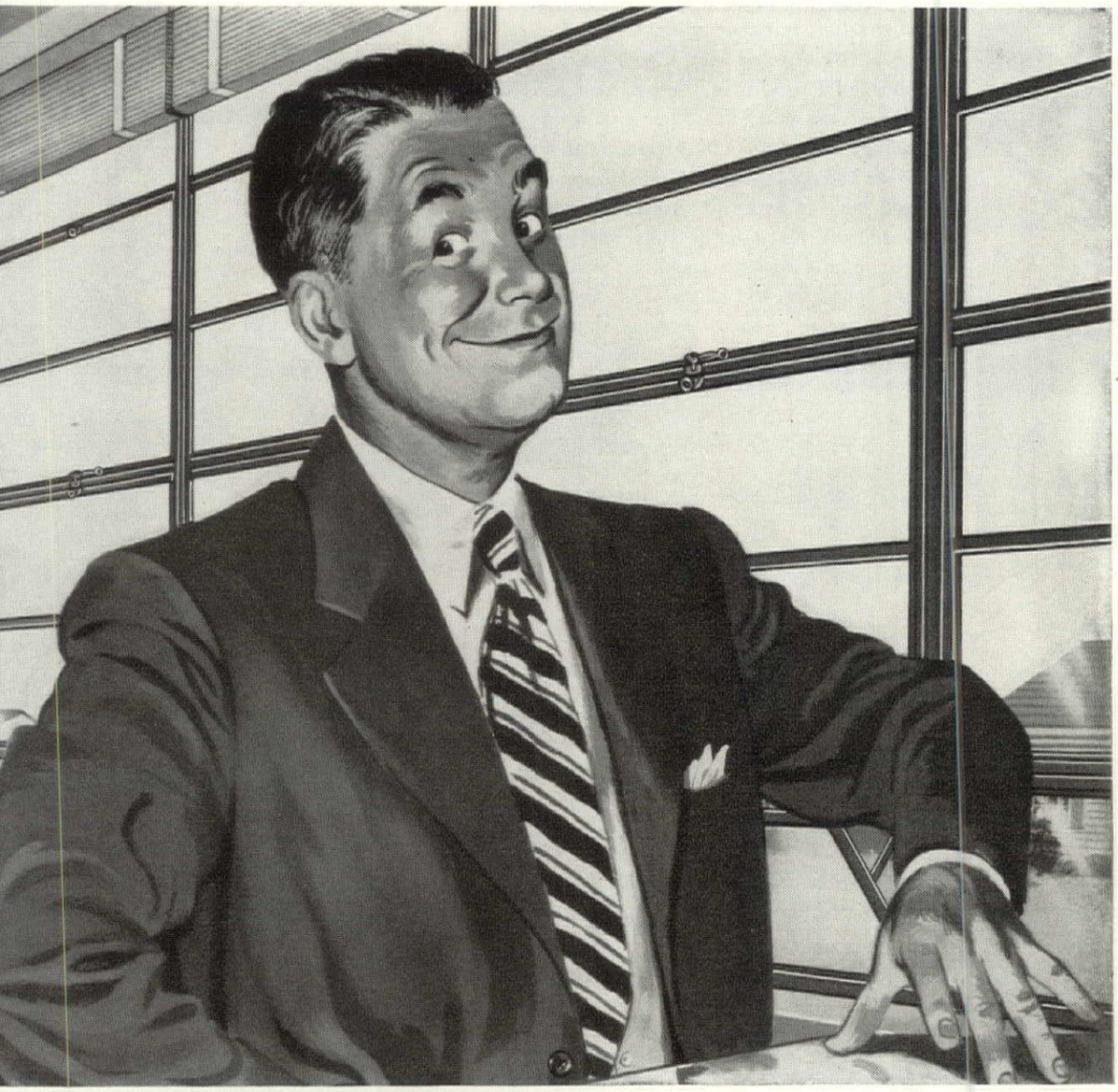

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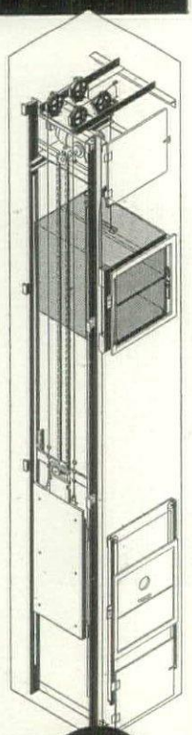

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PRESTRESSED CONCRETE

(Continued from page 193)

and sheathed in paper tubes. One end of each wire rod is screwed into a steel anchor plate embedded laterally in the concrete near the point of the pile; the other end is exposed from the driven end and threaded with a heavy washer and double nuts. After the concrete has cured, 600 amperes (40 volts) of electricity are shorted through the rods which expand with the heat thus generated and protrude further beyond the end of the pile. The nuts are then taken up, and the current shut off. On cooling, the wires contract, prestress the concrete and prepare the pile for driving. When the pile is in place and carrying its compressive load, the electrodes are again applied to the wires, and, with the application of a wrench to the locked nuts, the rods are unscrewed from the plate in the point of the pile and may be thus used over and over again.

Need for standards

Even more important than experimentation at this early stage in the U.S. development of prestressing is the immediate need for the establishment of uniform standards.

Said keynoter Corning of the Portland Cement Assn.: "The full economy of any type of construction is never realized until a design specification or code of practice is available for the guidance of designers. . . . A specification in its first draft should set up broad requirements which will insure safety without being unduly restrictive. Under no circumstances should such specification prescribe methods of construction which would stifle development."

The whole conference joined in Corning's plea, and at its closing session resolved that "it is now necessary to crystallize nomenclature and design criteria for prestressed concrete to avoid delay in acceptance of practical applications in construction, and it is therefore urged that the American Concrete Institute prepare as soon as possible a proposed standard for nomenclature and design in such general form that it will not restrict the development of various known and future methods and their applications to industry and construction."

Moreover, MIT's conference advisory committee has agreed to remain active. It will overwatch the development of prestressed concrete in the U.S. and plan additional conferences patterned after MIT's inspiring sessions whenever and wherever needed.

Thus, as the 63-year history of prestressed concrete in the U.S. rounded its first milestone, it seemed certain that future milestones would be passed more quickly—and it seemed likely that in the future even the milestones themselves would be made of prestressed concrete.

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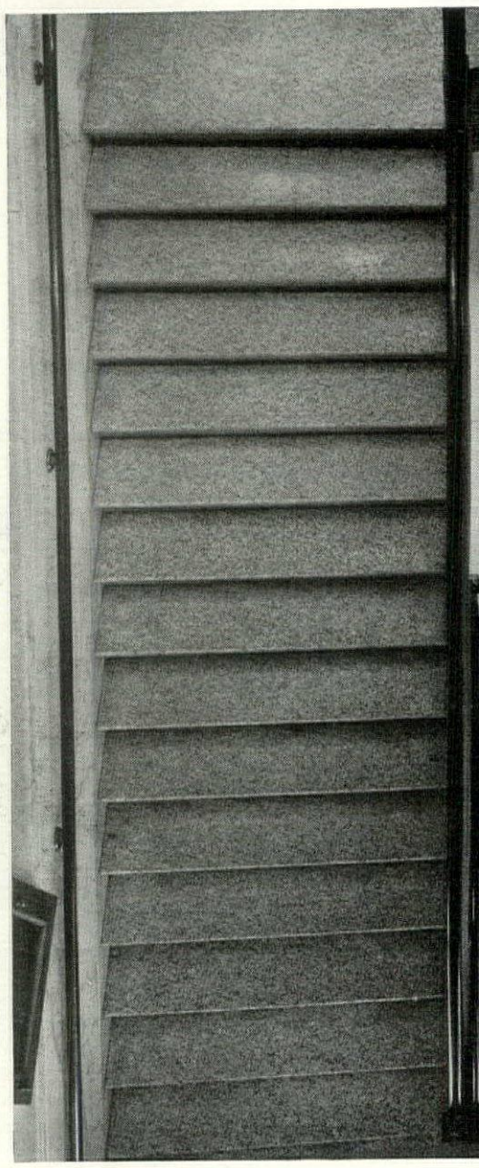

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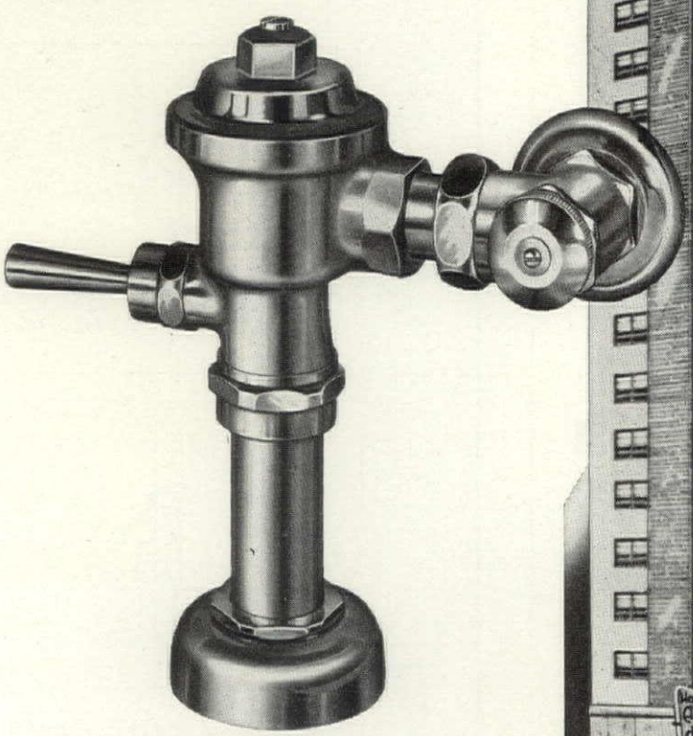
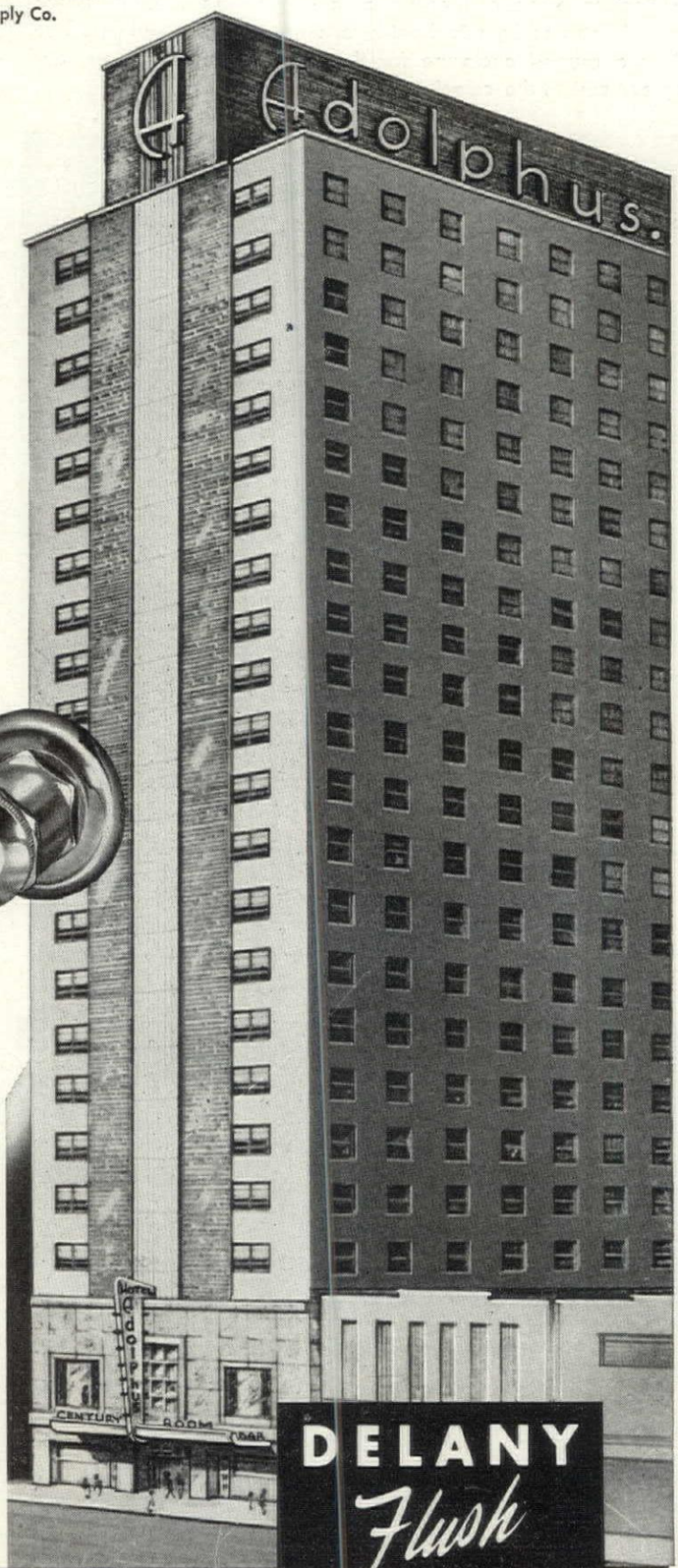




Under trying water conditions, an invaluable feature of all DELANY VALVES is the protected monel metal bypass shown at left. In this trouble-susceptible area in all flush valves, the use of monel precludes corrosion. Further real protection of the minute orifice against clogging by sand and debris is afforded by a fine mesh monel screen. It is sluiced clean with every flush, limiting the need for periodic dismantling and cleansing.



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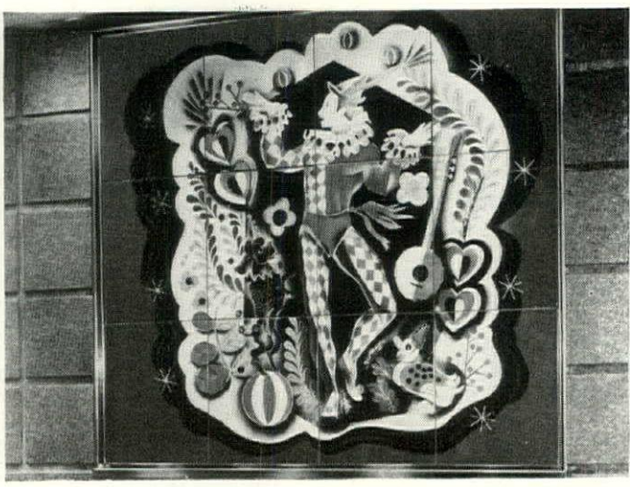
Artist: Edward Winter

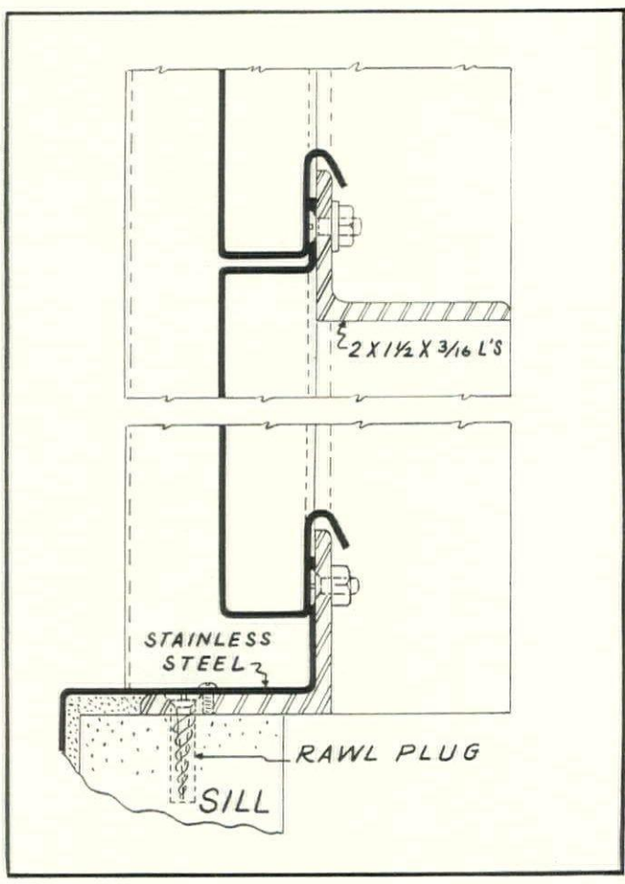
Cleveland, Ohio

The striking architectural effect of a combination of stainless steel and porcelain enamel is well illustrated by this theatre-restaurant front. A stainless steel doorway provides a rugged enclosure for the door-framing members, and adds a pleasing contrast to the colorful porcelain enameled murals.

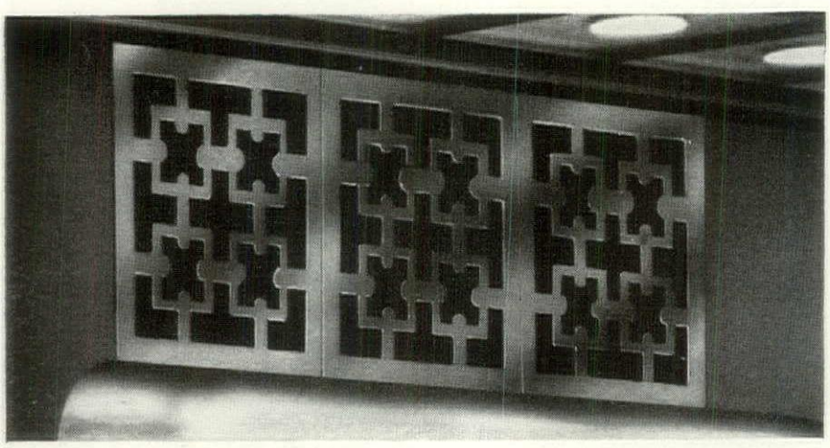




Vertical section through porcelain enameled panels showing the stainless steel base trim, panel joint and structural back-up. Note that panel is clipped at the bottom and fastened with a screw at the top.



The versatility of porcelain enamel on Armco Enameling Iron is illustrated in this grille above the door enclosure. Stainless steel clips are used to assure a durable attachment to the frame.



The use of Armco Stainless Steel is restricted now, and Armco Enameling Iron is in short supply. But here are some architectural applications you might wish to consider for the future: Curtain Wall Panels • Marquees • Signs • Restaurant Equipment and Fixtures • Stainless Steel Roofing and Roof Drainage. For detailed information see your Sweet's Catalog or write: Armco Steel Corporation, 4311 Curtis Street, Middletown, Ohio.

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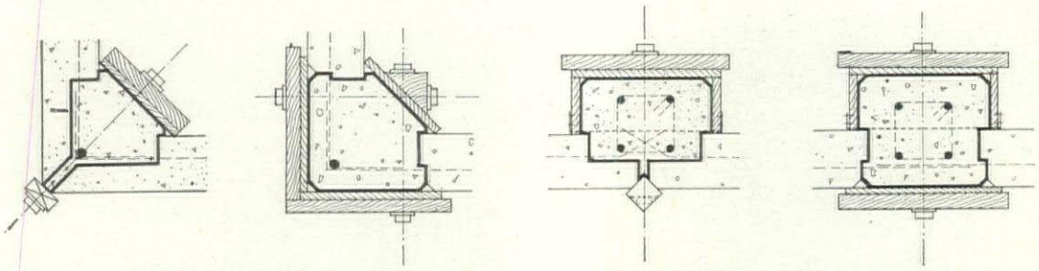
(Continued from page 195)



Forming for various types of poured columns. According to Precastructural Expert F. Thomas Collins, the fourth is preferred in earthquake areas. The third is more economical and has the added advantage of being more weatherproof. Corresponding corner columns are shown at the left.

their mid-width, drill them along the rip fo each reinforcing bar position, and—afte dropping the steel into place—lock the uppe half in place for concreting and screeding Cost records from this type of forming sho a saving in steel-placing of $25 per ton an a stripping and salvage gain of some 50% A companion advantage of this split-formin is the growing use of doweling steel as for ties (generally in wall slabs for poured join ery). A standard form-bolt clamp, slippe over the doweling and locked against th form face, gives the reinforcing double dut while casting.

Reinforcing this type of concrete differ little from standard reinforced concrete prac tice. The small additional amount of stee required to compensate the momentar stresses of early or "green" lifting and pos tioning is generally offset by the variou utilizations of the steel grillage as anchorag in precasting. Chief advantage to precast re inforcing is, of course, its ease of placemen as compared with the customarily crampe installation for conventional in-place formin

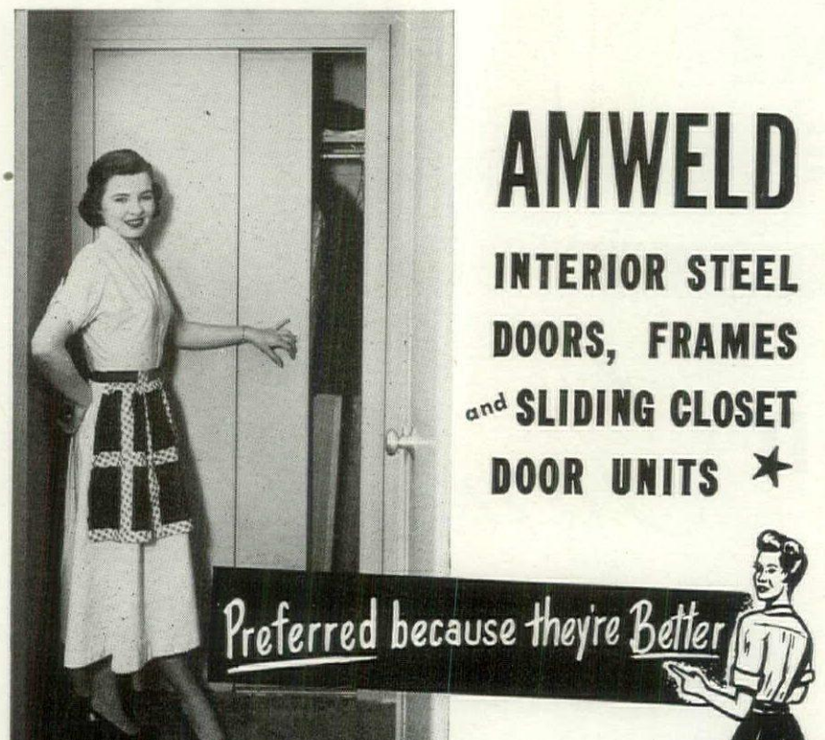
New screeding and finishing techniques

Striking-off or screeding a flat concret pour has always appeared the simplest o processes. Actually, however, with the low slump, high-density concrete and the wid reaches of most precasts, lightweight, hand operated screed boards or rods have a ten dency to "ride" the mass, thus losing the nic tolerances and uniformity of surface essentia to acceptable work. Now lightweight, me chanized screeding devices are being used o big projects whose quantity and repetitiv casting warrants the cost. Under this mechan ized screeding technique—borrowed bodil from the road builders—the unpredictabl costs of "grinding" down an obstinate, over thick pour are completely eliminated. Th mechanical screeders speed up the concreting screeding and finishing operations with con sequent savings in the whole constructio tempo.

Integral textures

In the face of what appears to be the ulti mate development in power finishing tech niques and tools, cost advantages in this phase of the work can only accrue indirectly from improvements in readying the cast for the finisher and insuring sufficient access to the work. To the architect, the engineer and the investor, however, the cost advantages of job cast concrete construction are very con siderable. With a wide range of finishes

(Continued on page 242)



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Lighting should help make merchandise look its best *besides* adding decor to the surroundings. That's why CORNING "Light-Weight" Lens Panels were specified for the new Brooklyn unit of Lane Bryant Stores.

Corning's new clear crystal glass assures high lighting efficiency. It transmits the true color of the light source—especially important where fine fabrics are displayed. Back surface fluting cuts down end and side luminaire brightness. Fresnel design lenses distribute light evenly.

CORNING Lens Panels add special beauty to any installation. Single panels available for fixture openings of varying lengths eliminate unsightly joints. This feature streamlines appearance, does away with light leakage, and permits more design flexibility. And these are the lightest weight lenses on the market today—weighing only 1½ lbs. per running foot (11 inches wide). This makes possible lighter, less expensive fixtures and lower shipping costs.

In fact, CORNING Lens Panels cost less all around—less to buy, less to install . . . less to clean. Find out more about CORNING "Light-Weight" Lens Panels and what they can do for you. Write for information today.

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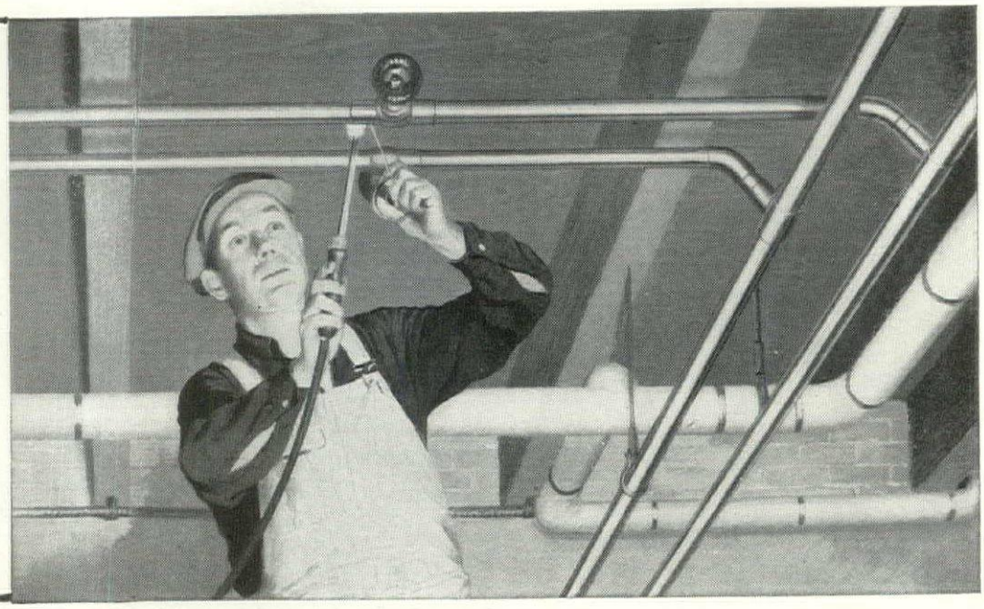
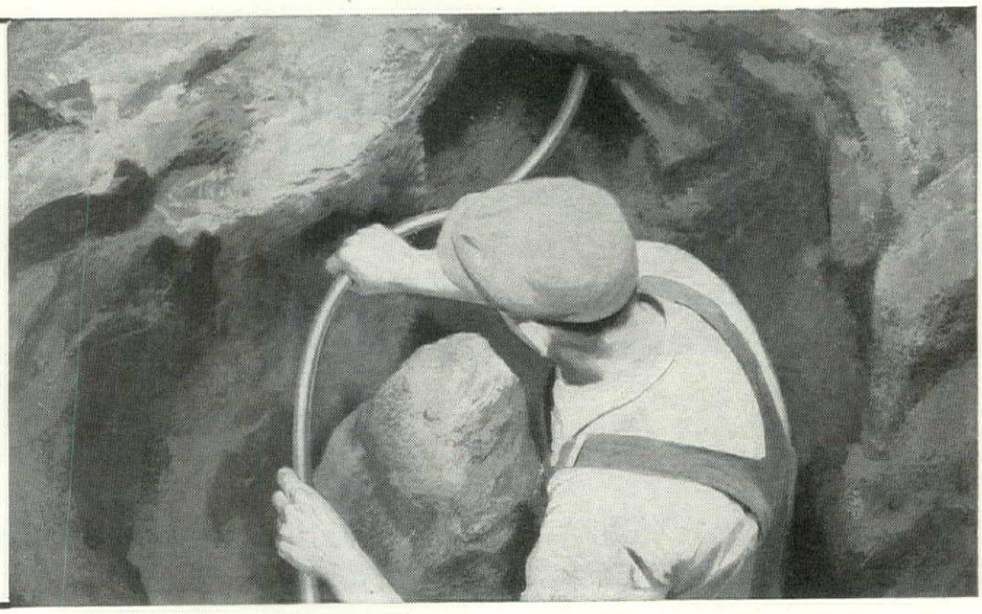
For domestic hot and cold water lines you can still use copper — non-rusting, highly resistant to corrosion!



LOW

The use of copper for underground service lines—another place where you need this hardy metal—is not prohibited by government regulations!



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Made from commercially pure copper, Chase Copper Water Tube is ideal for hot and cold water lines and underground piping.

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For underground installations use Type K, soft temper, Chase Copper Water Tube. It is ductile; can be bent around obstructions; moves with the earth until the fill settles. Long lengths up to 100 ft. in coils reduce the number of flared fitting connections to a minimum.

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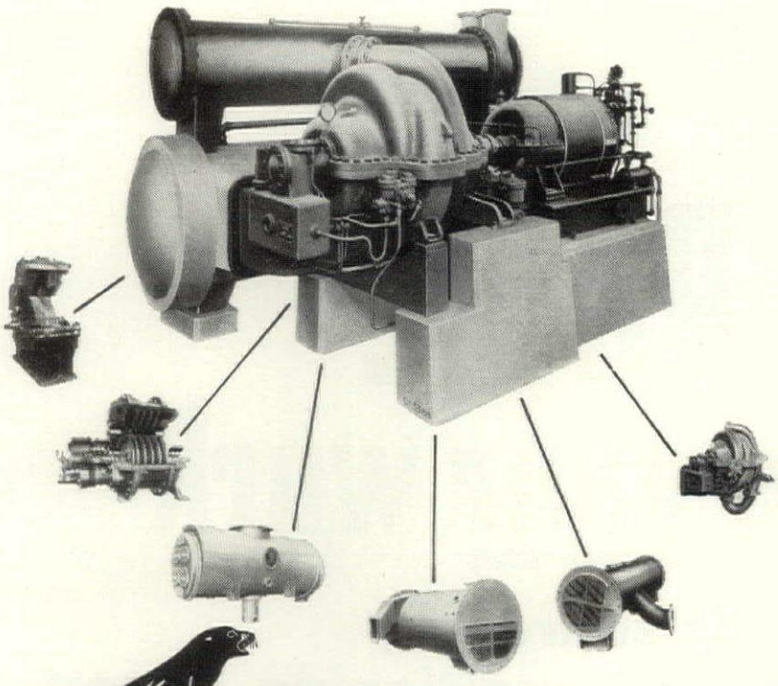

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in an installation of centrifugal refrigeration?

Worthington will "wrap up a package".

Unlike other manufacturers of air conditioning and refrigeration equipment, Worthington *makes*—not just assembles—all the major components for each installation.

Compressor, condenser, cooler and such drive equipment as steam turbines, steam condensers, motors, and step-up gears—are all made in Worthington's own plant—each carefully designed for balanced operation with its companion components.

So the builder and owner can place full responsibility on the one supplier —Worthington.

Worthington centrifugal systems are used with most refrigerants and for any process—chilling water, brine, chemicals, lubricating oils—for temperatures as low as minus 160 F, capacities from 150 to 2600 tons.

A typical Worthington compressor feature is the arrangement of the volute passages and impellers to counterbalance the radial and axial thrusts, respectively, in the various stages.

Write for Bulletin C-1100-B14 on Worthington centrifugal refrigeration.



Worthington room conditioners for both heating and cooling are built to operate with chilled water or direct expansion cooling, capacities from 350 to 600 cfm for under-window installation.

PACKAGE UNITS SELECTED TO COOL HUGE OFFICE BUILDING



This is an excellent example of how Worthington's complete line makes it possible to select exactly right equipment.

The new office building at 488 Madison Avenue, New York—home of many famous magazines and large industrial firms—is air conditioned primarily by package units, assisted by a Freon-12 reciprocating system with chilled water and steam coils.

Purpose of using package units in a big building like this is to provide for a variety of conditions imposed by both the building and the type of tenants: air conditioning needed only on top floors during certain seasons, difference in sun load on various sections, certain tenants working late hours but only with skeleton forces.

Second through 20th floors are handled by 38 Worthington 20 and 25 ton Package Air Conditioners, two per floor. Basement, first floor and top three floors are handled by two Worthington 75-ton Freon-12 compressors complete with condensers, pumps, water coolers and five central station units with chilled water and steam coils. Total capacity is 1050 tons.

Builders and owners: Uris Bros. Consulting engineer: Henry Oehrig. Air conditioning contractor: Raisler Corp. Architects: Emory Roth & Sons. All of New York.

RICE HOTEL MULTIPLIES COMFORT-COOLING WITHOUT REQUIRING MORE ROOM



Last year, Houston's Rice Hotel completed air conditioning its entire building, including a thousand guest rooms, dining rooms and meeting rooms, by installing three Worthington 600-ton centrifugal chilled water systems.

This equipment, utilizing Freon-11, replaced ammonia refrigeration equipment having a capacity of 350 tons, yet occupies no more space than formerly.

Worthington equipment was selected primarily because Worthington could provide 100% equipment of its own make. The compressors are driven by Worthington steam turbines and steam condensers.

Engineer: Reg. F. Taylor. Mechanical Contractor: Charles G. Heyne & Co. Architect: Kenneth Franzheim. All of Houston.

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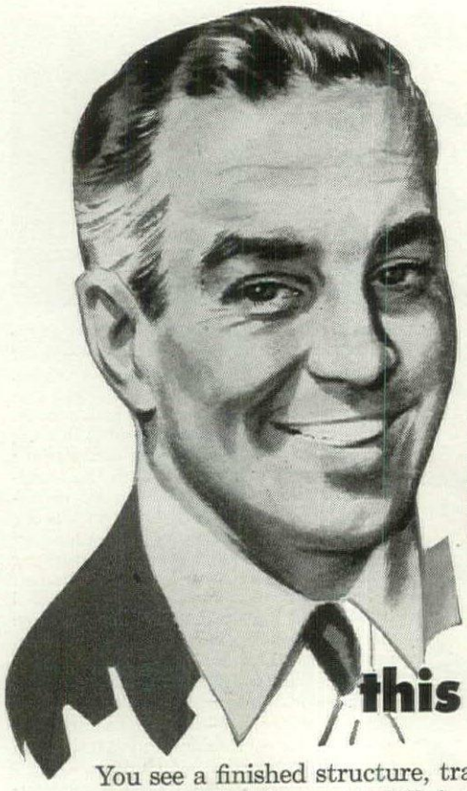

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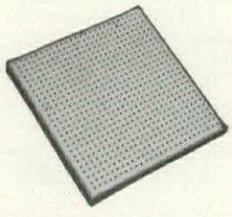

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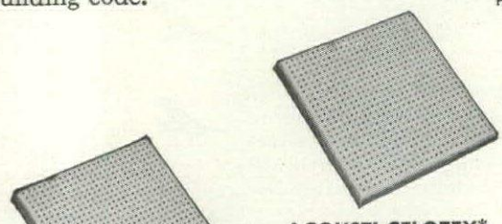

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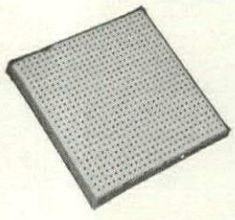
A lightweight, rigid unit, combining acoustical efficiency with a durable, smooth surface. Perforations (to within 1/8" of the back) assure repeated paintability, easy maintenance. Available in a variety of sound-absorbent ratings. Dry rot proofed by exclusive Ferox* process.



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Made of mineral fibre, felted with a binder to form a rigid tile with a universal rating of incombustibility. Perforated with small holes extending almost to the back, this tile provides high acoustical absorption plus unrestricted paintability by either brush or spray method.

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A cane fibre tile with a flame-resistant surface. This tile meets *Slow Burning* rating contained in Federal Specifications SS-A-118a. It may be washed with any commonly used solution, satisfactory for good quality oil-base paint finishes, without impairing its flame-resistant surface characteristics and without loss of sound-absorbing capacity. Repainting with Duo-Tex flame-retarding paint will maintain peak efficiency. Supplied in all sizes and thicknesses of regular cane tile.



ACOUSTI-CELOTEX FISSURETONE*

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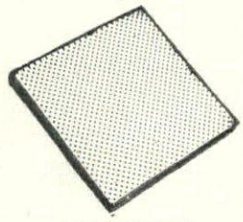

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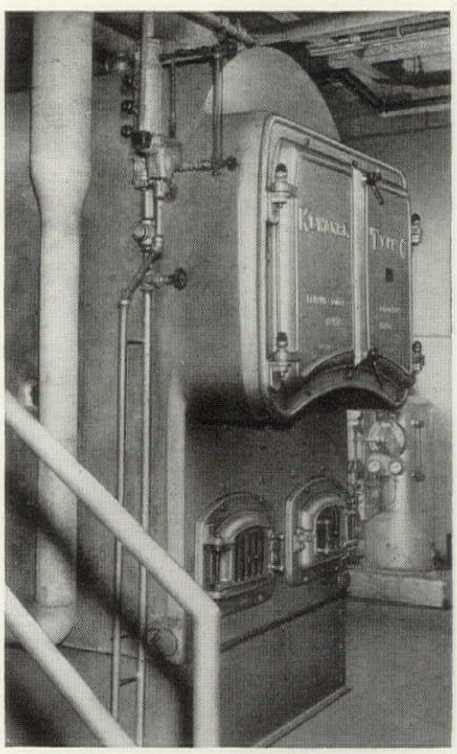

Designed by Carter E. Hewitt and Rudolph L. Kelly, architects with S. Alan Baird, Mechanical Engineer; a Kewanee Type "C" stoker fired from the rear, with a capacity of over 2 million Btu hourly, was installed by Peoria Piping & Equipment Co.

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readily controllable, the designer can achieve complete architectural satisfaction without the costs and delays customarily encountered with surface overlays and applied textures.

A variety of lifting techniques

The formidable problem of elevating and positioning large and sometimes complicated members has only recently found a reliable everyday solution. Gone now are the light-weight, often improvised cranes and riggings first employed in "tilting" or lifting one end or side of the large precast wall section. In their place have come 20 to 40-ton cranes of great mobility and versatility, rigged with the latest fastening gear and manned by crews thoroughly experienced in their peculiarities.

At first glance, the need for mechanized equipment to lift heavy precasts into place would seem to restrict their assembly to big builders. However, it must be remembered that postwar America, clear down to the most remote village, is well equipped with big, mobile cranes employed for every purpose from service-station tanking to steel frame erection. Most of them are available, complete with rigging and crews, at an established "association" rental, either by the hour or job.

On the Pacific Coast, where many big builders have their own crane rigs (often tied up on heavy engineering projects) both the big and the smaller operators commonly meet their intermittent needs in precast erection by employing one of the many crane services now well skilled in the technique, and available, fully operated, at such rates as the Los Angeles area's $17 per hour, for 40-ton cranes, including 30-mile-per-hour travel time to and from the site. Many a job has maximum lifts of only 10 to 15-tons each, thus permitting the use of lighter rigs at upwards of $14 per hour. Based on an average 8-hour day's erection of 20 panels (20′ x 20′) or 8,000 sq. ft. of wall, such rentals are easily absorbed in job costs.

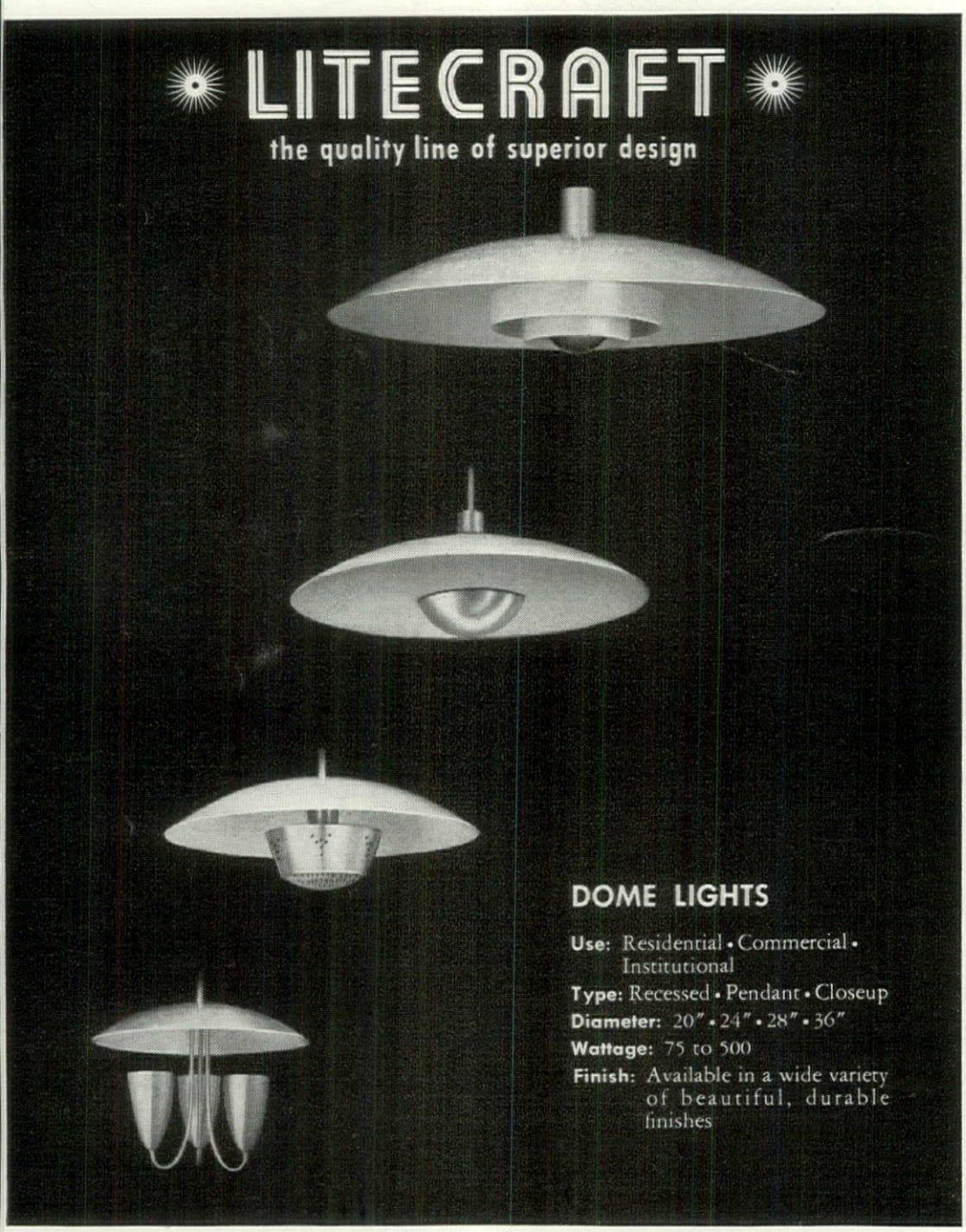
All this mobile erection equipment has ended yesterday's awkward, costly, and hazardous necessity of lifting large members from only one edge and thus "tilting" them into position. The modern crane, properly rigged and skillfully manned—the key to lowered costs and accelerated erection—has accounted for the spectacular growth in this type of concrete construction.

Lifting gear and attachments

Builder opinion and practice still varies widely on the point of attachment to the precast for lifting: Some favor the "point pick-up," others, the vacuum lift. The latter has the advantage of spreading the lifting stresses in a green precast and so makes a strong bid for work requiring reduced strains or the elimination of cast-in fastenings. Renting at from 9 cents to 12 cents per sq. ft. (one side) of lifted area in some West Coast metropolitan areas, the vacuum lift often prices itself out of the market, and some builders prefer the independence of their own pickup gear and the lesser costs reported from their point-pickup simplicities. The necessity of advance scheduling of vacuum pickup units and their frequent stand-by and travel charges are further objections.

The point-pickup advocates use a wide variety of attachments and lifting gear, and with them job ingenuity is rampant. With the minimum fastening elements used with a mobile heavy crane some builders develop erec-

(Continued on page 248)



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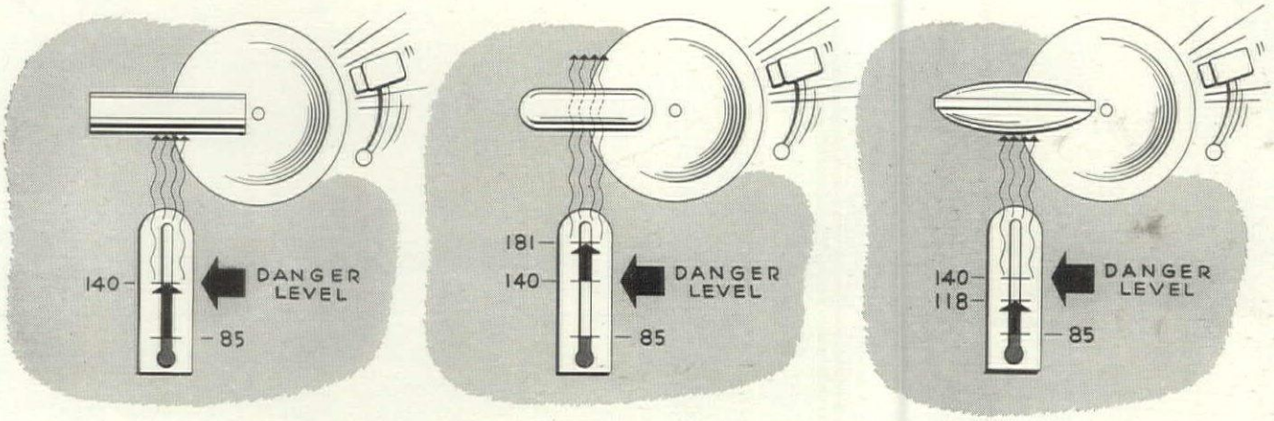

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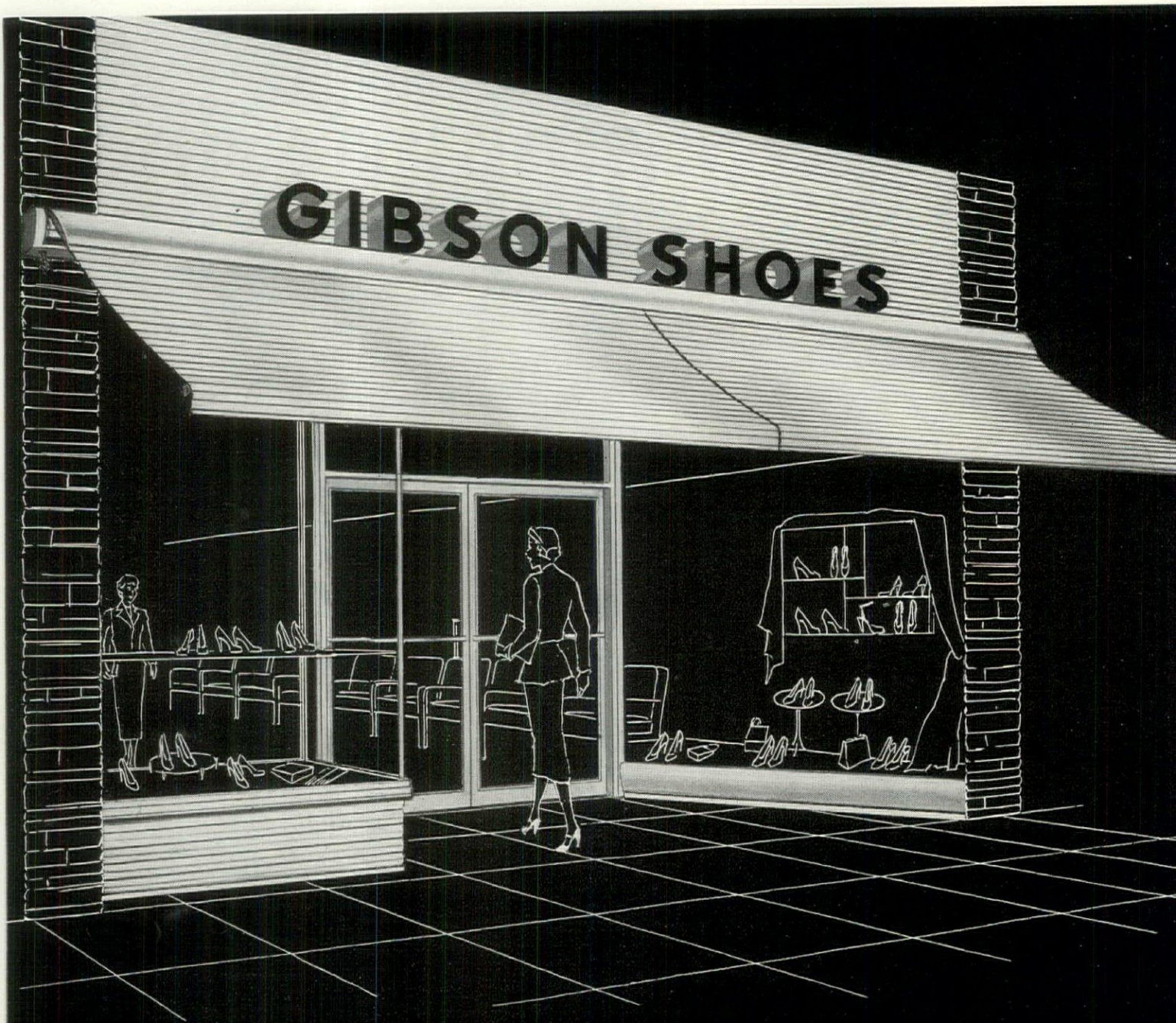

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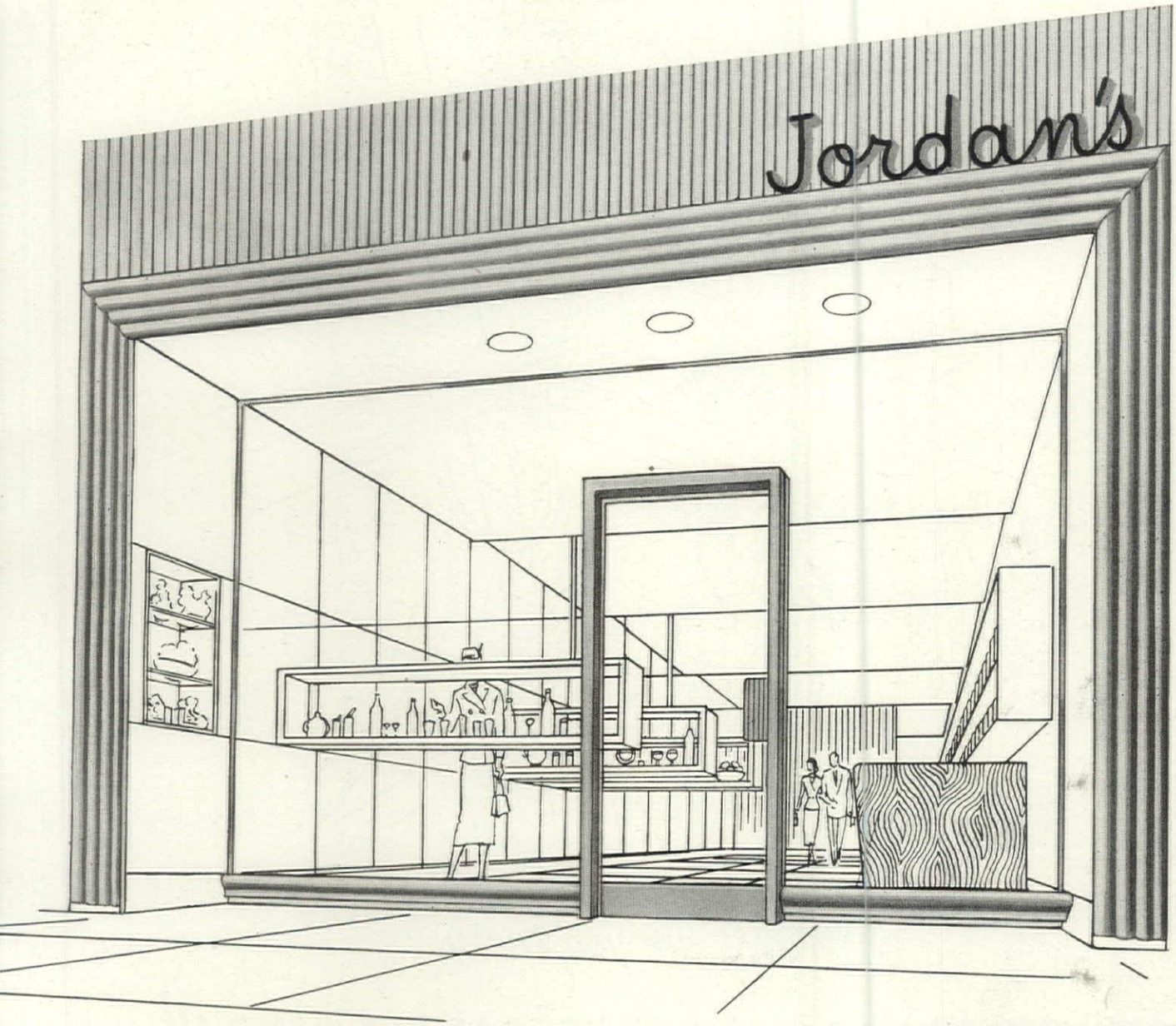

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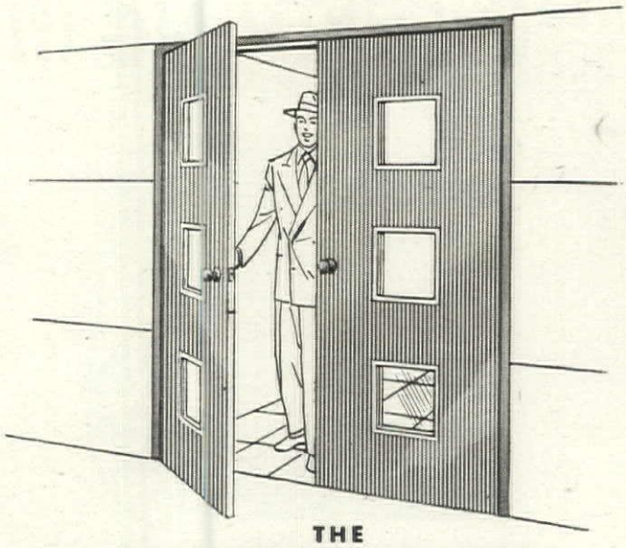

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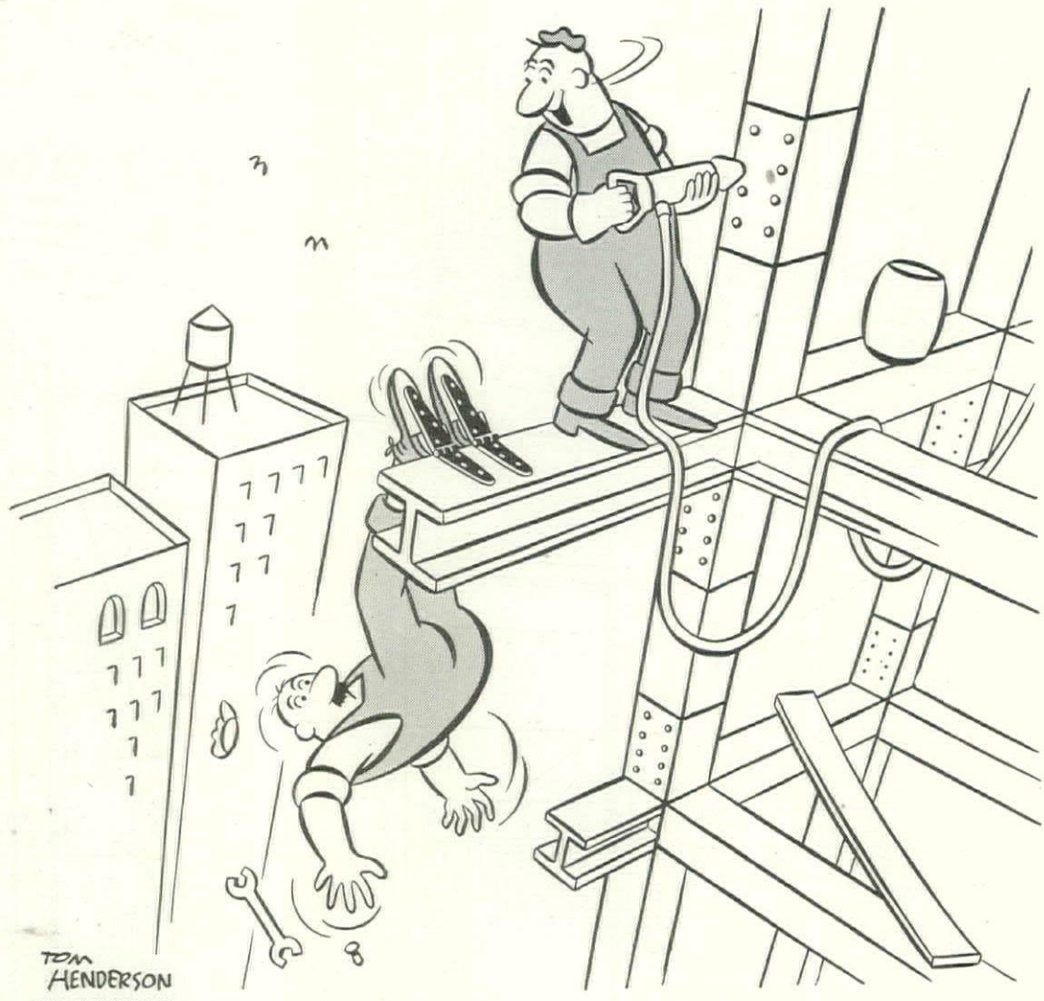

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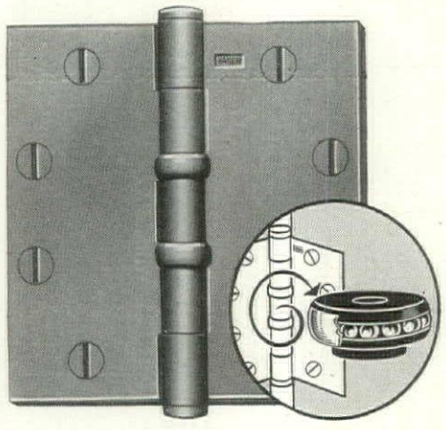

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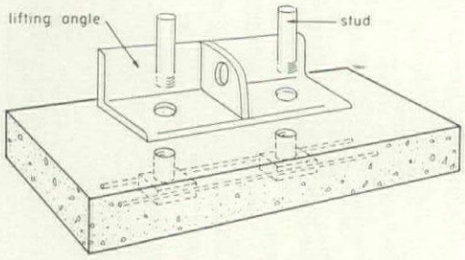

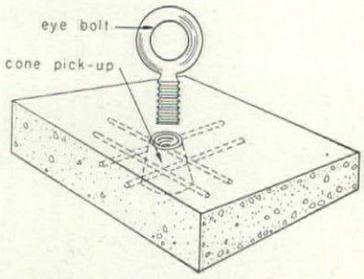

Economical pick-up attachments: left, greased studs holding lifting angle are removed and holes are plugged after panel is in place. Threaded nuts are welded to short rods for air chairge. Right, expendible conocial device secures eye bolt during lifting operation.

tion costs as low as 2 cents per sq. ft., but the rigidly strong-backed methods, employing extra-heavy steel shapes and special securing gear, approach the costs of vacuum lifting. Between these extremes are many methods and as many cost claims. Most builders agree—the most economical system is apt to be decided by individual job requirements, the availability of equipment and, most important, the job personnel know-how. It is in the elevating and positioning phase, moreover, that most builders expect to discover the greatest future improvements in both security and economy.

Imbedded inserts for lifting and structural fastenings—always a challenge wherever concrete is poured—have undergone constant experimentation, and there is now every evidence that job cast imbedments are still only in their infancy. Starting with the earlier, specially tooled devices, costing as much as $2 each, builder ingenuity has whittled this cost down to the use of standard pipe-hanger inserts, reinforced with short, welded steel cross-anchors, the whole costing about 50 cents each and expendable in the work.

Economical bracing

Further substantial savings have been attained with simpler temporary bracing. Since a plumbed, vertical building member requires little staying to maintain equilibrium until joinery is completed, the heavy, costly earlier-used bracing devices—often representing an original investment of about $75—are being replaced by 4 x 4″ wood struts, locked for length adjustment like an adjustable scaffold. Fitted with metal shoes to receive temporary bolting, these braces cost only a few dollars each.

Joinery and column casting

To the recently initiated, the joinery of job cast concrete wall sections appears the most precarious operation, but actually it is the simplest. All concrete joinery—whether poured or welded and packed—employs the basic reinforced concrete design principles, so it leaves narrow room for job ingenuity. Where joinery is extensive (as between columns and their adjoining wall panels) conventional column-forming methods are usually employed. Unbraced, uncollared column forms of this type are found to cost about half as much as the usual free-standing type. Self-leeching vacuum-pad forms are in limited use in some areas. They accelerate both forming and pouring, but unless the job is nicely geared to permit their full utilization,

(Continued on page 254)

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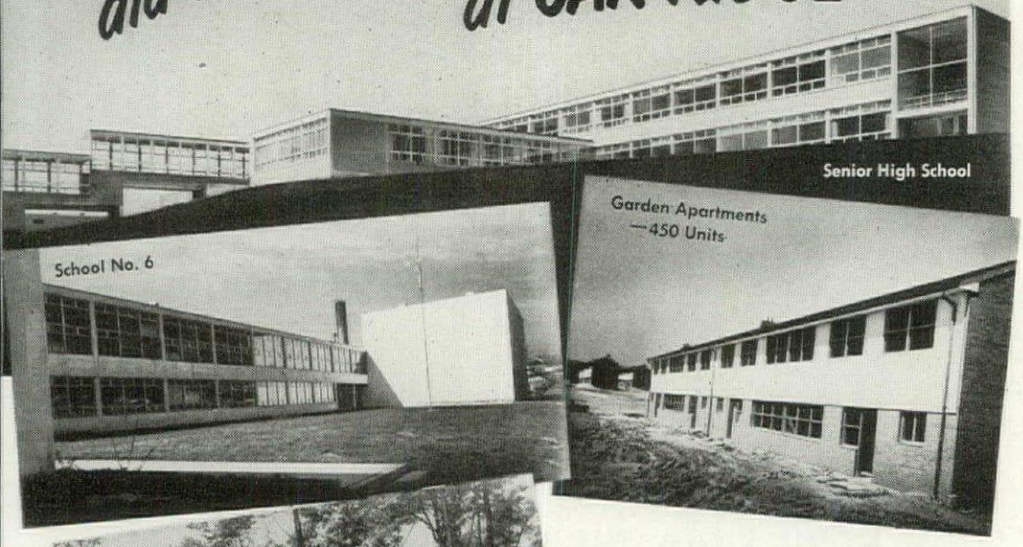
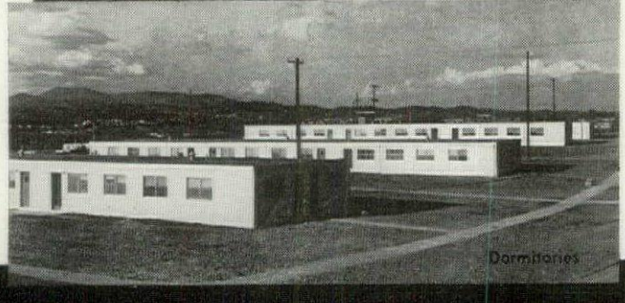


■ For economical comfort in living quarters, schools, etc., the U. S. Atomic Energy Commission at Oak Ridge, Tennessee and the architects and engineers, Skidmore, Owings and Merrill of New York, Chicago and San Francisco, depend upon many Fitzgibbons steel boilers. Fitzgibbons is proud of its selection for a service where only the best is good enough.



65th Anniversary
1886-1951

Fitzgibbons Boiler Company, Inc.
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Manufactured at: OSWEGO, N. Y.
Sales Branches in Principal Cities

Men who know boilers select Fitzgibbons



A.C.I. Building Code has been revised!

Now engineering designers can take full advantage of the steel savings and lower construction costs possible with the new A305 reinforcing bars. The American Concrete Institute has just recently revised its "Building Code Requirements for Reinforced Concrete" to utilize the improved bonding strength of the A305 bar. The new requirements permit higher bonding stresses with the A305 bar and practically eliminate hook anchorage. As a result, the revised code makes possible even more durable reinforced concrete structures at a lower cost.

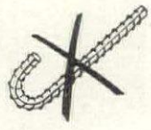
However, before you can share in these benefits, your local code must be changed to conform to the new A.C.I. standards. Take action now, to have your code modernized!

1. Higher Bonding Stresses Permitted



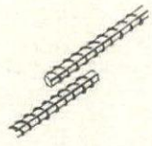
Because A305 bars have higher, more closely spaced lugs than older bars, they provide a greater bond between steel and concrete. The code was changed to permit use of this improved bond.

2. Hook Anchorage Eliminated



Because of higher bonding strength, the need for end hooks is eliminated in practically all cases, and steel and fabrication costs are reduced.

3. Lapping Reduced



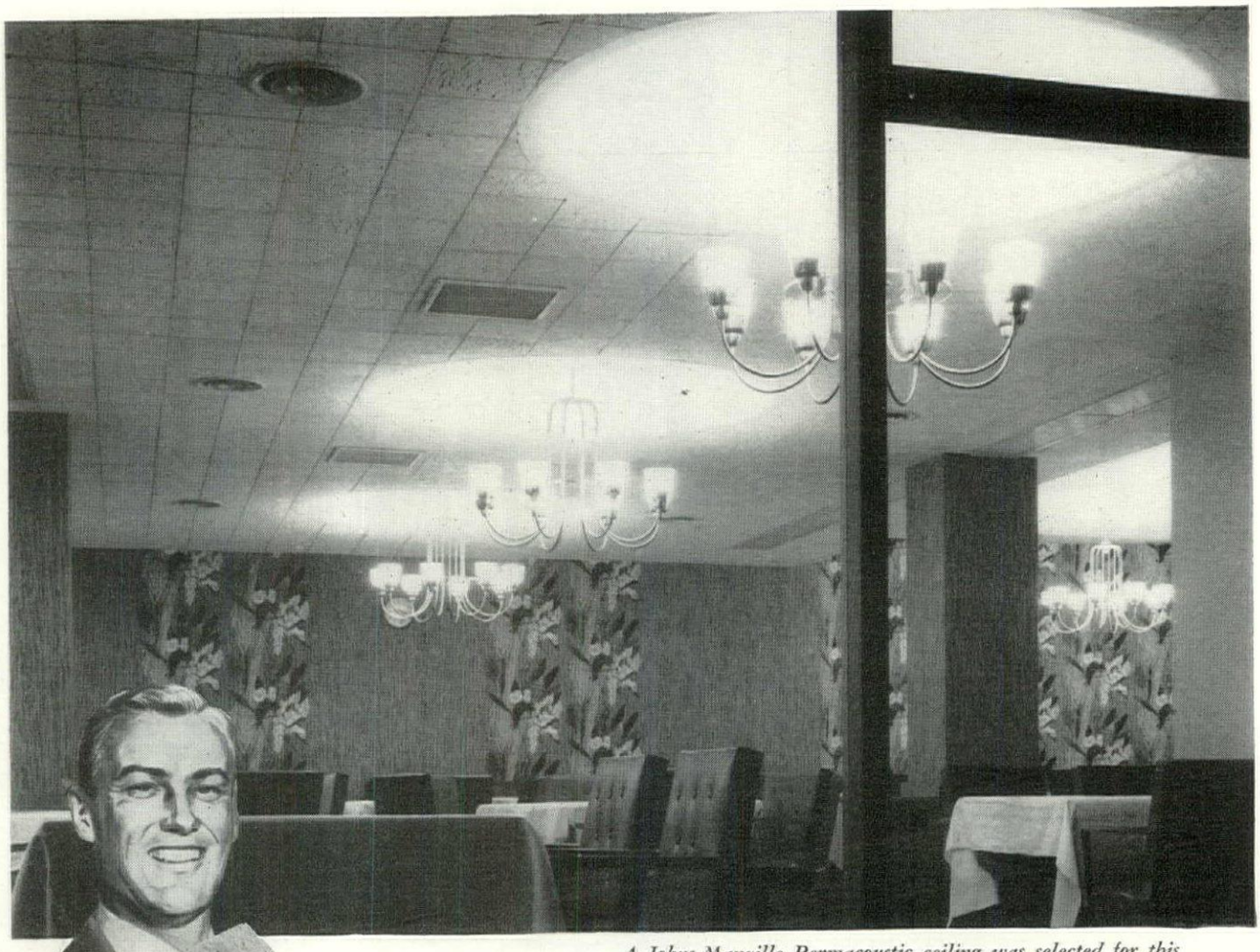
Higher bond strength also increases the efficiency of splices, reducing the steel required.



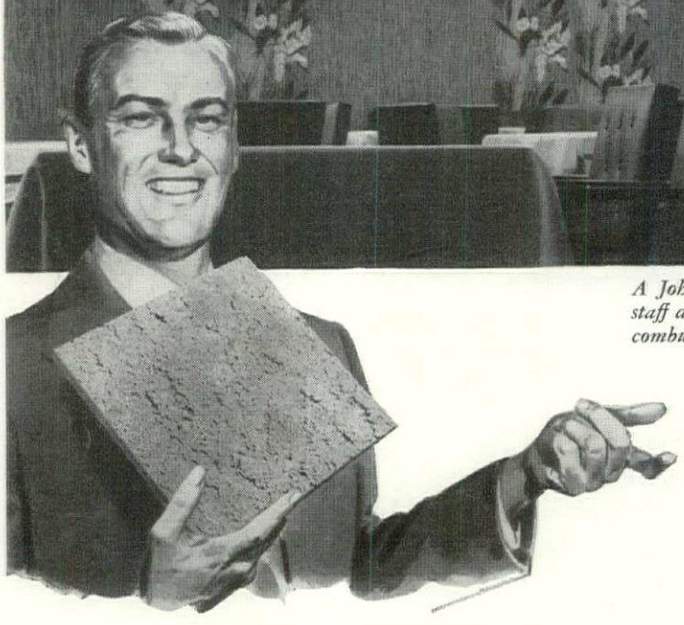
CONCRETE REINFORCING STEEL INSTITUTE

38 S. Dearborn St.
Chicago 3, Ill.

Does your local Code CONFORM?



A Johns-Manville Permacoustic ceiling was selected for this staff dining room because of its striking textured effect, its non-combustibility and its superior sound-absorbing qualities.



For an acoustical ceiling with architectural beauty specify PERMACOUSTIC*!

Johns-Manville Permacoustic Tile has an attractive, textured surface with great architectural appeal. The texture obtained by random fissures is distinctive and pleasing, avoids mechanical monotony.

Its rich appearance makes it ideal for those locations that call for a "special effect"—conference and reception rooms, executive offices, dining rooms, lobbies, auditoriums, etc.

Because Johns-Manville Permacoustic is made of non-critical materials you can include it in your plans for present and future construction without fear of shortages. Stocks are carried in all the principal cities of the United States and Canada.

Made of fireproof rock wool fibres, Permacoustic meets building codes which specify the use of non-combustible acoustical materials.

Permacoustic is available in popular sizes, can be installed by application to existing slabs or ceilings, or can be suspended by using a spline system of erection.

Other Johns-Manville acoustical ceilings, include *Fibretone**, a drilled fibreboard; *Sanacoustic**, perforated metal panels backed with a non-combustible, sound-absorbing element; and *Transite**, made of perforated fireproof asbestos.

For a free brochure, entitled "Sound Control," write to Johns-Manville, Box 158, New York 16, N. Y. In Canada, write 199 Bay St., Toronto 1, Ont.

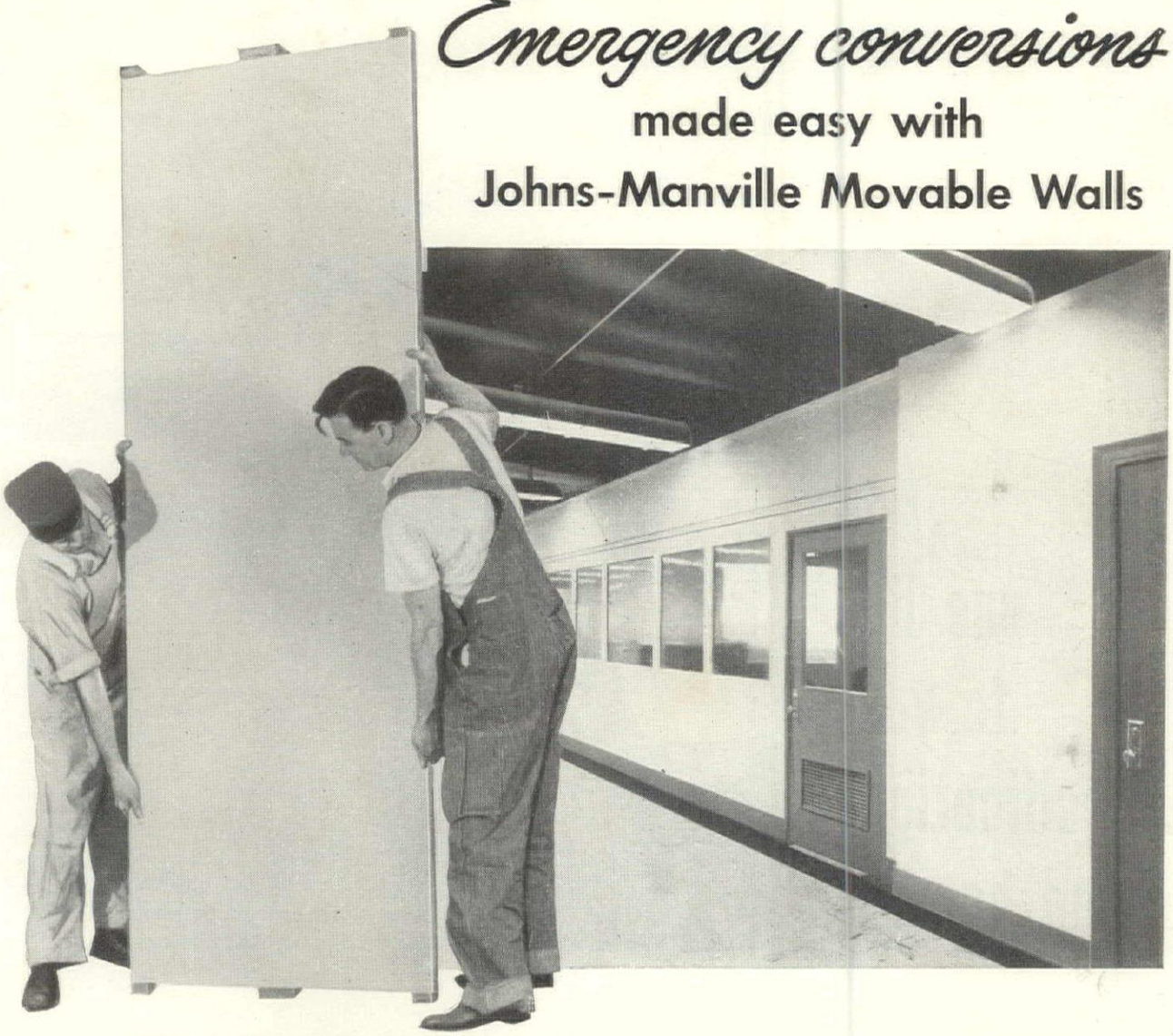
*Reg. U. S. Pat. Off.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville Acoustical Materials

Movable Walls—Terraflex and Asphalt Tile Floors—Corrugated Transite*—Flexstone* Built-Up Roofs—Etc.

Emergency conversions
made easy with
Johns-Manville Movable Walls



Because Johns-Manville Universal Movable Walls are made of non-critical defense materials, they give you complete freedom in planning of space arrangement in these days of expansion and change.

● Reallocation of existing space and partitioning of new space can be done easily and quickly with Johns-Manville Universal Movable Walls. Made of asbestos, these walls are ideally designed to help business and industry meet the space problems involved in the defense effort.

The flush panels have a clean, smooth surface that's hard to mar, easy to maintain, and will withstand shock and abuse. They're light, easy to erect and to relocate. The "dry wall" method of erection assures little or no interruption to regular routine.

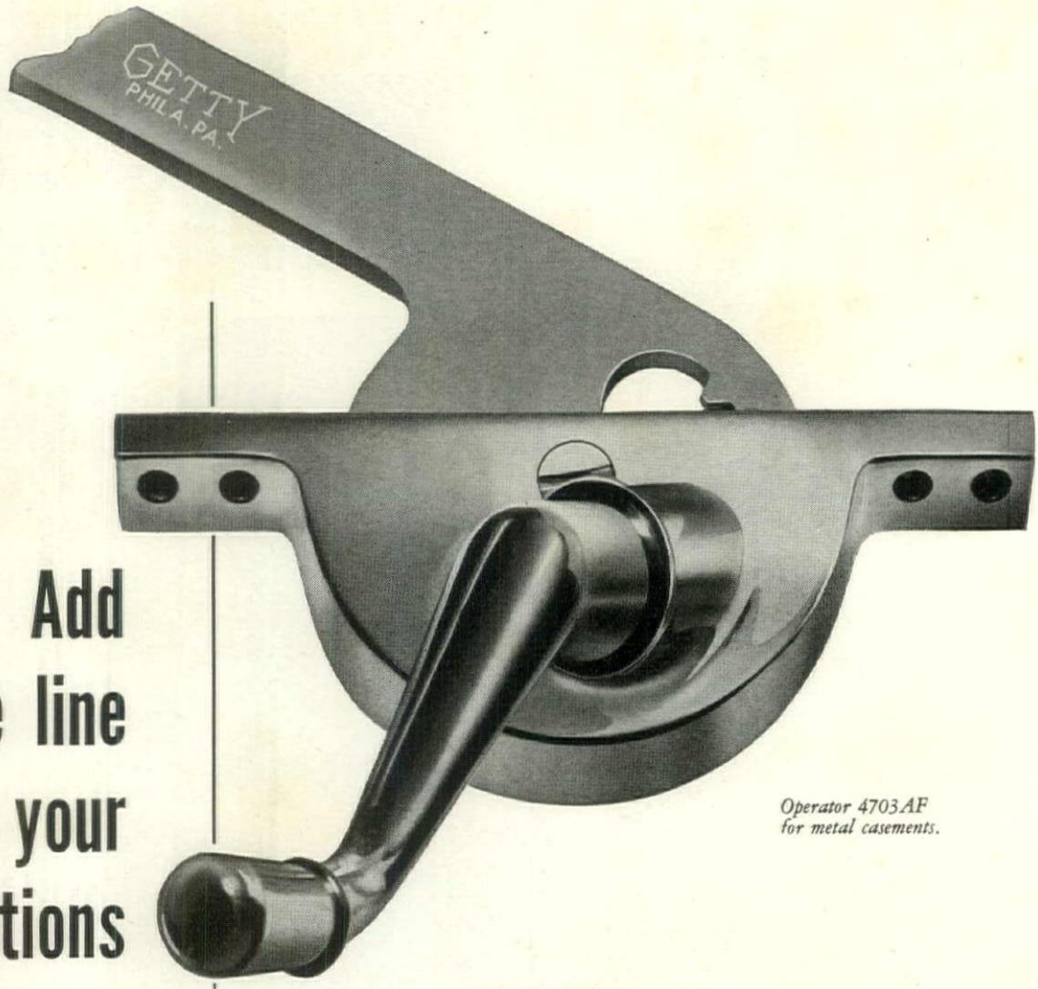
Johns-Manville Movable Walls may be used as ceiling-high or free-standing partitions. The complete wall, including doors, glazing and hardware, is installed by Johns-Manville's own construction crews and under the supervision of trained J-M engineers.

TRANSITONE Movable Walls—A recent and unique development of the Johns-Manville laboratories is the Transitone Movable Wall, with asbestos panels integrally colored. Non-fading pigments are blended into the asbestos fibres, thus eliminate the cost of periodic decorative treatment. The color goes all the way through each panel.

For details about J-M Movable Walls, consult your Sweet's Architectural File, or write Johns-Manville, Box 158, Dept. MB, New York 16, N.Y. In Canada, write 199 Bay Street, Toronto 1, Ontario.

JOHNS-MANVILLE JM PRODUCTS **Johns-Manville** ASBESTOS *Movable Walls*

INSTALLED NATIONALLY BY JOHNS-MANVILLE



Operator 4703AF for metal casements.

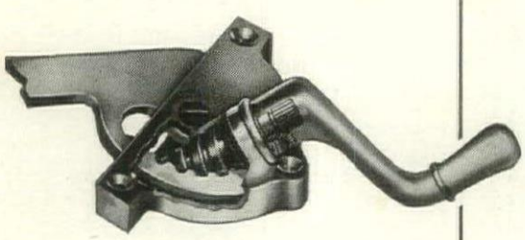
Add one line to your specifications and be sure

Why leave it to chance when you can have GETTY operators as original equipment on metal casements by simply adding one line to your specifications?

With any casement operator goes a big responsibility. As control tower of the window's flight, it must respond to the touch of a finger, lock securely at any opening, and withstand years of hard twists and turns. It's a man-sized job —a GETTY job.

GETTY Operator 4703AF is the only *internally* geared metal casement operator. This exclusive feature permits the entire length of the worm to be engaged at all times with the gear teeth—assuring "fingertip" control and a lifetime of faithful service.

That's why we ask architects and builders to add this small but significant phrase to their specifications and orders: *GETTY Operator 4703AF on all metal casement windows.*



Operator 4703W for wood casements —cutaway shows internal gearing.

see our CATALOG in SWEET'S FILE

H. S. GETTY & Co., Inc.

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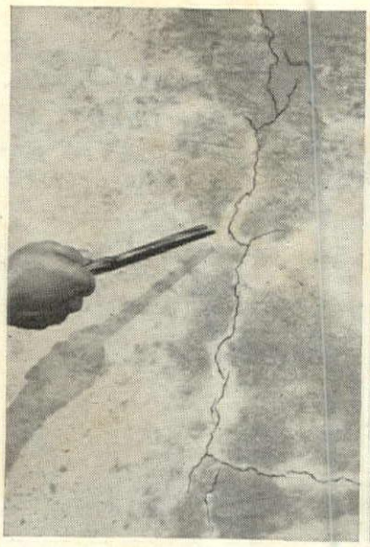
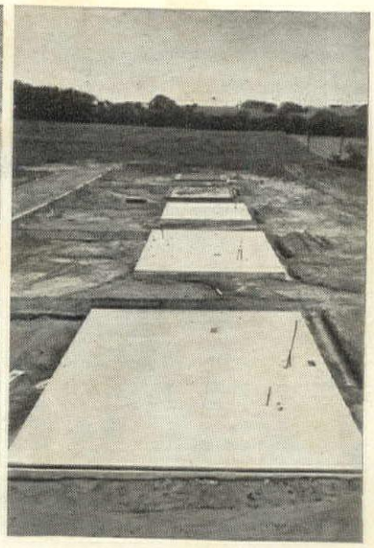
GETTY OPERATORS ARE FOUND ON MORE CASEMENT WINDOWS THAN ALL OTHER OPERATORS COMBINED

TWO BUILDING DEVELOPMENTS

TWO DIFFERENT TYPES OF SLABS ON GRADE

Two very different results!

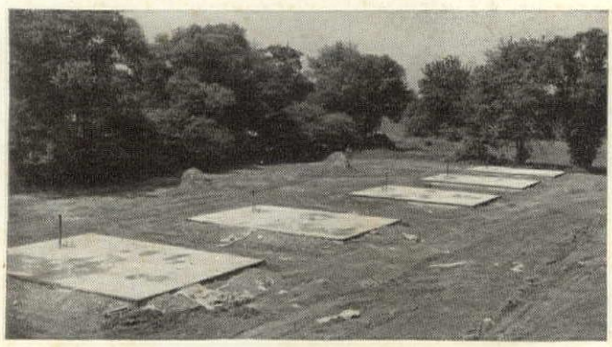




• This happened! On two adjacent real estate developments, concrete slabs were being poured in very hot weather. The two photos at the right tell the story of Development A. The photo below tells the story of Development B.

Six-man crews were used in both cases. On Development A the crew poured two slabs in a full working day. On Development B—four slabs *in half a day*. But that's not the whole story!

On Development B— where Nova-I.P.C methods were used



—the concrete developed no cracks or crazing such as in Development A. And when it rained the next day, the water stayed on top of the slabs.

It costs less to use Nova-I.P.C methods—than not to use them. There is only one water rise—which eliminates overtime. You use only bank-run sand and gravel under the slab —no membrane or washed gravel. And no paper covering for final curing! There will be no musty smell in any room or closet—the flooring and floor coverings will not rot out.

For slabs or dams, for cellars or pools, for any porous masonry surface—*wherever you want to keep water in or out* — there are fully tested Nova-I.P.C products and methods available.

We have the products, the know-how and the current case histories that will convince you. To get the full story, mail the coupon today!

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A wholly owned subsidiary of the Homasote Company, manufacturers of the oldest and strongest insulating-building board, Wood-textured and Striated panels.

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Send full details on NOVA-I.P.C Method of protecting buildings from the weather.

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their stand-by rental costs, including the vacuum generator, soon offset their apparent advantage.

Most critical-point joinery, as between columns and roof members, shows little cost variance. Embodying, generally, the weld development of steel continuity and the filling or "pocketing" of high-density concrete, these work items require only a skilled welder's attention and an unformed dry concrete pack or an application of cement gum mortar.

Pointing and patching of concrete casts, long an unsightly and often a costly operation in exposed work, is reduced to the absolute minimum in precastructural work. With both faces of the precast under complete control on the casting bed and under the finisher, with forming rigidly controlled and mass-density readily attainable, "touch-up" costs almost disappear.

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Polished Misco Wire Glass, highest achievement of the rolled glass manufacturer's art, combines the utmost in protection with modern beauty.



Polished Wire Glass by Mississippi, approved fire safeguard, helps prevent drafts . . . is effective in holding fires within bounds of origin.



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Records over the years conclusively demonstrate that Mississippi Wire Glass, approved fire retardant No. 32, is a dependable defense against the spread of fire. For over half a century architects and engineers have specified Mississippi Wire Glass . . . the original solid wire glass upon which the Underwriters' Standard was based in 1899 . . . the standard today by which all others are judged. Mississippi Wire Glass affords constant protection at minimum cost in windows, doors, transoms, skylights, fire escapes, vertical shafts, partitions, exterior walls and all other places where fire or breakage protection is required. Carried in stock by distributors of quality glass everywhere.

Where full vision is not required, obscure Mississippi Wire Glass is available with either hexagonal or Misco wire netting.

This Seal Identifies Mississippi Wire Glass

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WORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

Cost reduction through specialization

Specialization is gradually entering in th job cast field. Men, well seasoned and keen skilled in one and another phase of the wor have been leaving the general contractor payrolls to enter this new market as su contractor specialists. Already their busine ads are begining to dot the local constructio publications and directories. In such a cor petitive atmosphere informed builders expe an overall cost reduction in precastructur concrete construction, as skills multiply ar the earlier "shadow-boxing" of the job pro lems diminishes under guaranteed lump su or unit prices.

* * *

No report on job cast concrete would complete without a mentioning of the prob bilities in a recent U. S. Patent (N 2,531,576) purporting to cover (and th restrict) certain basic operations and tec niques. It implies the necessity of royal payments to the patentees. On the advice a Los Angeles patent law firm, the new formed Precast Concrete Association Southern California takes the position th job cast techniques have long been in t public domain and hence are not patentab The larger curing-cleavage-agent manufactu ers are taking the same stand, while no pu lic announcement of royalty requiremer has, as yet, been made. There is dou whether royalty charges can be sustained e cept in the purchase of proprietary items a devices, optional to the process.

* * *

Under their official slogan—"furthering the advan ment of prestressed and precast concrete"—a leadi group of Pacific Coast engineers and contractors h recently incorporated the non-profit "Precast Concr Association, Ltd.," with headquarters in San Gabri Calif.

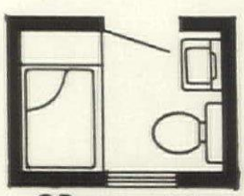
Headed by such well-known construction ind trialists as Harry H. Hilp (Barrett and Hilp, S Francisco big builders), William P. Neil (Pr William P. Neil Co., Ltd., large Los Angeles co tractors) and F. Thomas Collins, pioneering p castructural engineer of Los Angeles County, t aggressive new industry organization has well und way its by-lawed purpose of promoting the design a use of precast concrete building and constructi elements.

The Association's current projects include: forn tion of a San Francisco chapter—complete with struction-classes in precast techniques—and a fu scale, experimental and proving laboratory Southern California, sponsored in part by Riversi Portland Cement Co.

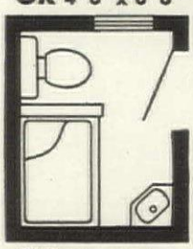
how small can a bathroom be?



OR 4' x 7'



OR 4' 6" x 6' 6"



OR 5' x 6' 3"

with the

CRANE Lahoma Bathtub

you can solve "minimum" bathroom problems in private homes, hotels and apartments, tourist courts—in fact, wherever space is at a premium. Made only by Crane, this unique bathtub measures only 31 x 42 inches with sides just 12 inches high. The bottom is flat for safety, and there is a built-in corner seat for comfort while foot, sponge or shower bathing.

The Crane *Lahoma* is made of *Duraclay* (genuine vitreous-glazed earthenware), the exclusive Crane all-ceramic material that hospital fixtures are made of. Its smooth, glistening surface is unaffected by household acid, stain, abrasion and thermal shock. Wipes clean with a damp cloth. *Dial-ese* controls operate with finger-tip pressure—help reduce wear and consequent dripping. Consult your Crane Branch or Crane Wholesaler.

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PLUMBING AND HEATING

1818 HOPE'S 1951

Lok'd Bar PROJECTED SASH



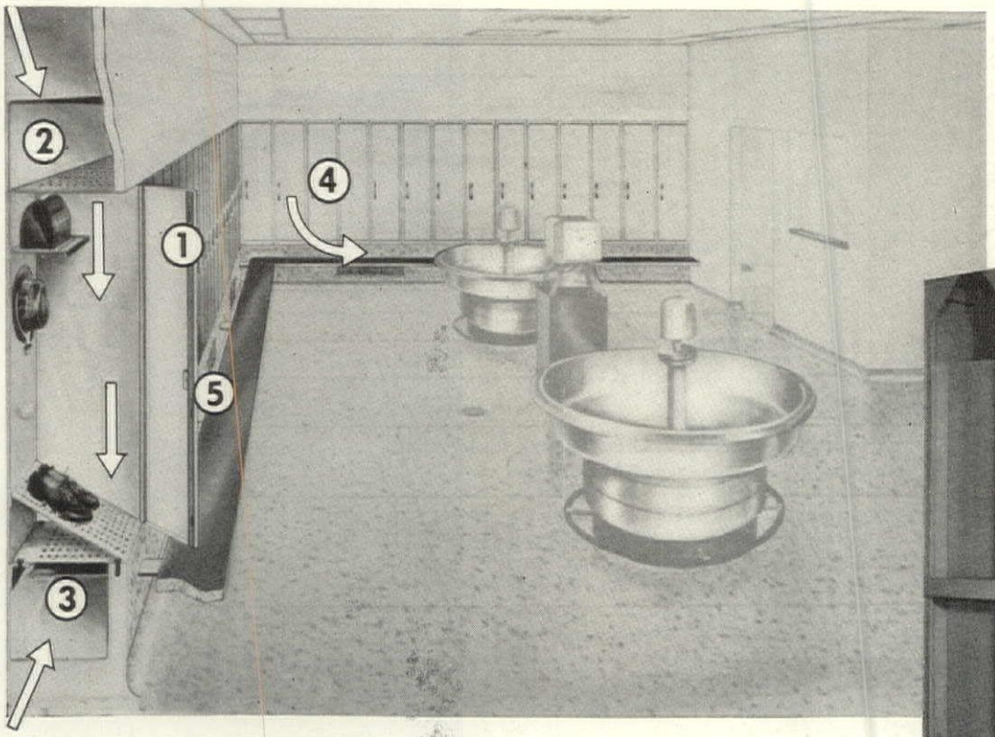
Drafting Room of "The Six Associates, Inc.", Asheville, N. C.

The clarity of detail in this photograph is evidence of the abundance of light on every board in this architectural drafting room. Fenestration is Hope's Lok'd Bar Sash in standard sizes. Projected ventilator sash are paired with stationary Lok'd Bar sash units of the same size. Natural, pleasing ventilation is fully adequate and easily controlled. Ventilators are screened with Hope's standard sliding wicket screens. The wickets, some of which are shown open in the photograph, give ready access to the window fasteners.

Unseen but none the less important is the extra strength and more permanent weathertightness contributed by Hope's Lok'd Bar Sash itself. Solid welded in corner construction, its ventilating sections are rolled in one piece with integral contact flanges. There are no applied linings to corrode or work loose with wear and tear. Lok'd Bar design and construction produces a window of equal life with the finest building. Write for the Lok'd Bar Catalog, No. 103M; it gives complete information with full-scale drawings of detail.

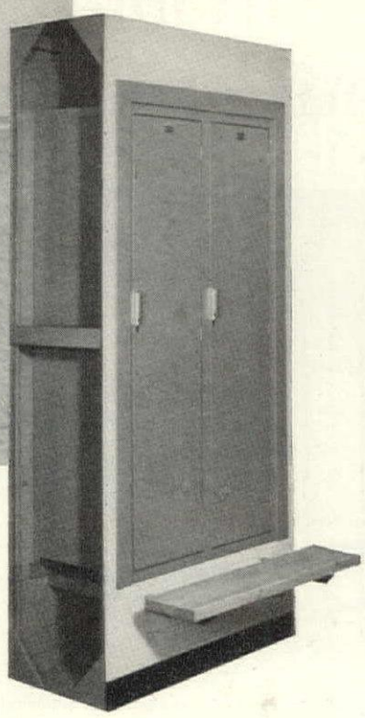
HOPE'S WINDOWS, INC., *Jamestown, N.Y.*

THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE'S WINDOWS



Check the features of these Scott-designed "AIRFLOW" lockers:

1. Solid doors allow no odors to enter or escape.
2. Top plenum through which fresh air enters.
3. Base plenum through which stale air is exhausted.
4. Exhaust vent in locker island base carries off humid stale air.
5. Benches supported from the island base for convenience in cleaning.



Something new in Locker Room Planning

NOW YOU CAN introduce self-contained ventilation into lockers without forcing stale air into employee locker rooms.

Your client knows it's good business to make his plant a pleasant, efficient place. Employee morale rises, absenteeism and costs are reduced. Odor-filled locker rooms have always been a plant problem area. To keep fresh air in these rooms, individually ventilated lockers are essential.

Developed by the Scott Washroom Advisory Service, new "AIRFLOW" lockers, equipped with solid doors, are designed to prevent unpleasant work clothing odors from escaping into the locker room area. Mechanical ventilation draws fresh air into each locker from the top plenum, forces stale air out the base plenum.

This is another example of the aid Scott Washroom Advisory Service Consultants offer to you who plan personal service rooms. This know-how gained from servicing more than half a million washrooms, is yours for the asking.

Contact Scott Washroom Advisory Service, Scott Paper Company, Chester, Penna.



Send for FREE Leaflet... "Plant Washroom Designing"

Washroom Advisory Service, Dept. L
Scott Paper Company
Chester, Pennsylvania

At no cost or obligation, please send me your study of personnel, traffic and maintenance problems, *"Plant Washroom Designing."*

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SCOTT

Symbol of Modern Washrooms

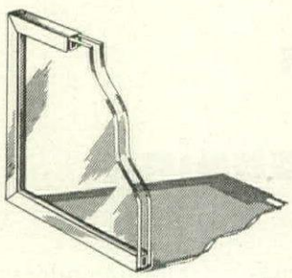
Trade Mark "Washroom Advisory Service" Reg. U. S. Pat. Off.

Pittsburgh Glass

offers wide latitude in design



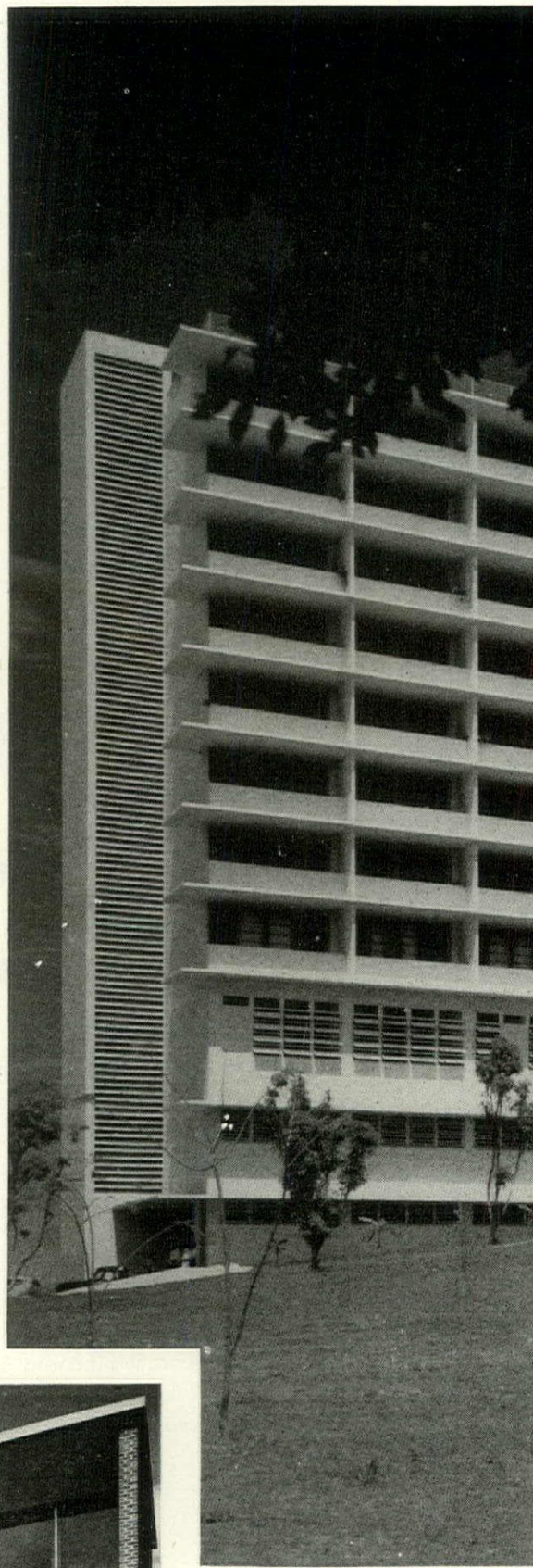
PITTSBURGH Polished Plate Glass and Twindow, Pittsburgh's window with built-in insulation, were effectively used in this new building of the United Engineering and Foundry Company, Pittsburgh, Pa. Twindow's insulating properties make it ideal for large expanses of glass. Cold spots and downdrafts are minimized. It reduces heating costs, decreases load on air-conditioning equipment, helps maintain desired temperature and humidity levels. Architects: Palmgreen, Patterson & Fleming, Pittsburgh, Pa.

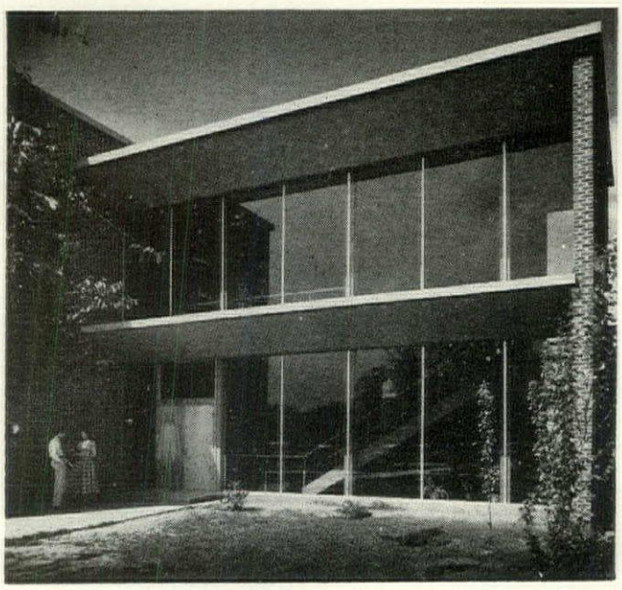


TWINDOW consists of two or more panes of Pittsburgh Polished Plate Glass, separated by hermetically-sealed air spaces. The entire unit is enclosed in a long-lasting, protective frame of stainless steel. Forty-seven standard Twindow sizes are available.



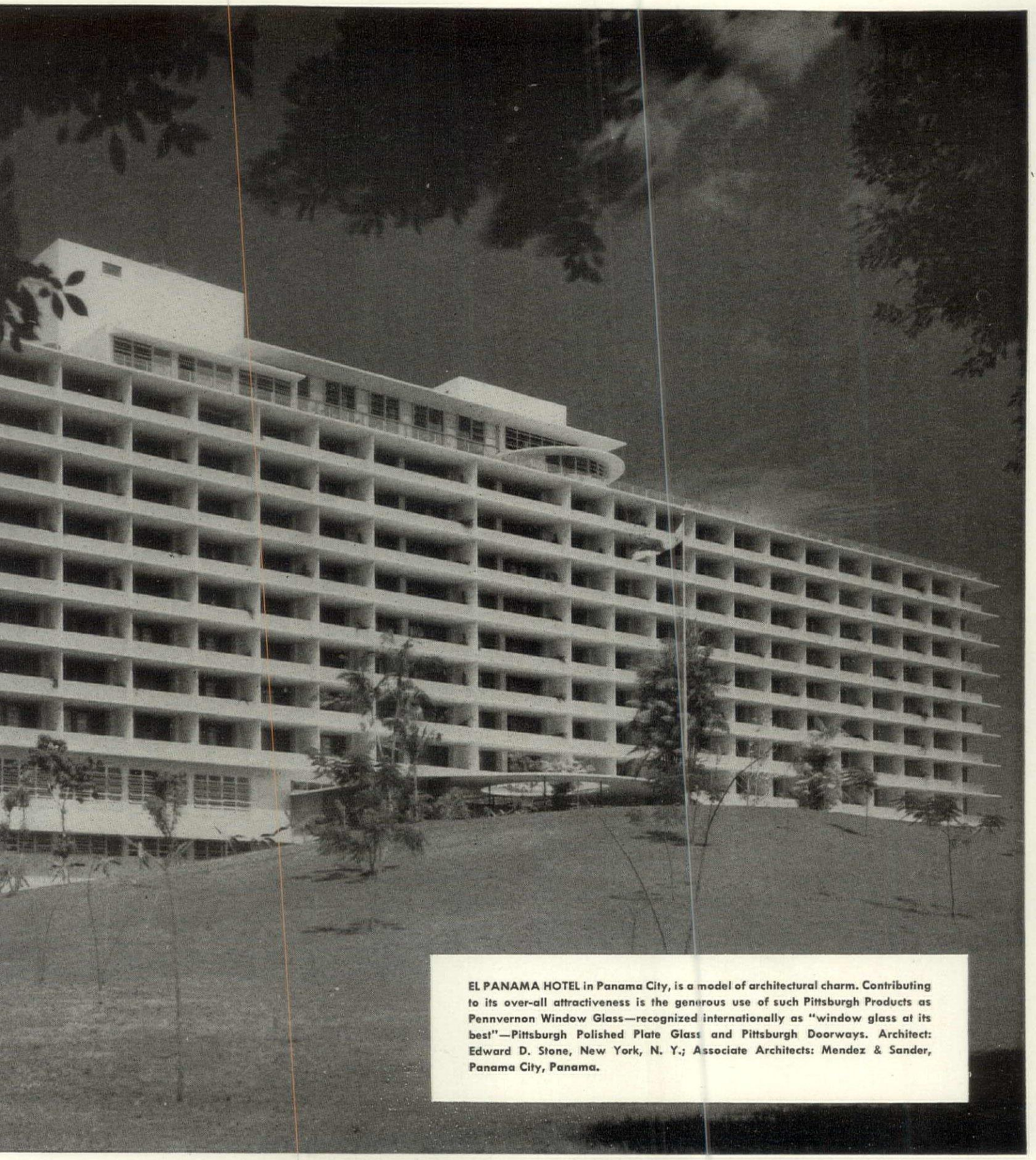
COLORFUL CARRARA Structural Glass adds beauty and utility throughout the home. It is perfect for walls, wainscots and ceilings of kitchens and bathrooms as well as for fireplace surrounds, shelves and window sills. In this kitchen Carrara Glass was used for the walls and ceiling. There are ten beautiful colors to choose from.





SOLEX, a heat-absorbing Plate Glass, was selected for glazing the windows of the Library and Administration Building of Cameron State College at Lawton, Oklahoma. Solex admits ample light into rooms, but keeps out much of the heat and brightness of the sun. It is particularly desirable for windows on the southern and western exposure of hospitals, hotels, office buildings, airport control towers, and in laboratories and warehouses. Architect: Paul Harris, Chickasha, Oklahoma.

PPG



EL PANAMA HOTEL in Panama City, is a model of architectural charm. Contributing to its over-all attractiveness is the generous use of such Pittsburgh Products as Pennvernon Window Glass—recognized internationally as "window glass at its best"—Pittsburgh Polished Plate Glass and Pittsburgh Doorways. Architect: Edward D. Stone, New York, N. Y.; Associate Architects: Mendez & Sander, Panama City, Panama.

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Your Sweet's Catalog File contains a complete listing and descriptions of Pittsburgh Plate Glass Company products.

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PITTSBURGH PLATE GLASS COMPANY



There never was a book like this because there never was a product like this. The Wakefield Ceiling is a completely integrated means of providing total luminous-acoustical environments, produced in accordance with your specifications at the Wakefield factory, shipped complete to the job and installed in its entirety by a Wakefield-licensed electrical contractor. To know about the Wakefield Ceiling you must read this book. A letter on your business stationery will bring you a copy, free of charge. Write to *The F. W. Wakefield Brass Company, Vermilion, Ohio.*

Wakefield Over-ALL Lighting





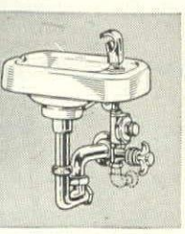
BROCKWAY *Wash Sink K-3210-A*

KOHLER FIXTURES

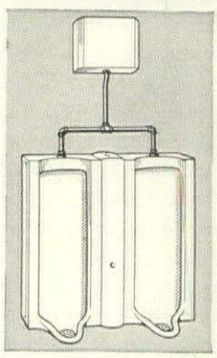
insure good service

In industrial plants, hotels, offices, stores, schools, hospitals, Kohler plumbing fixtures and fittings win public approval because of their appearance, efficient operation. They meet the requirements of owners, architects and engineers for lasting service, low-cost maintenance.

The Brockway wash sink, of acid-resisting enameled iron, is available in various lengths with 2, 3 or 4 faucets. It is economical, conserves space, contributes to convenience in industrial washrooms. The Edgebrook enameled iron wall-hanging drinking fountain has a self-closing control valve adjustable for continuous flow, automatic volume regulation, non-squirting bubbler head. Kohler vitreous china closets and urinals are practical in design, have glass-hard, sanitary surfaces. Send for catalog of fixtures for industrial and public buildings.



EDGEBROOK
K-5390-A



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K-4902



WELLWORTH
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ROCKWELL *K-3800-ET*



BROOKLANDS
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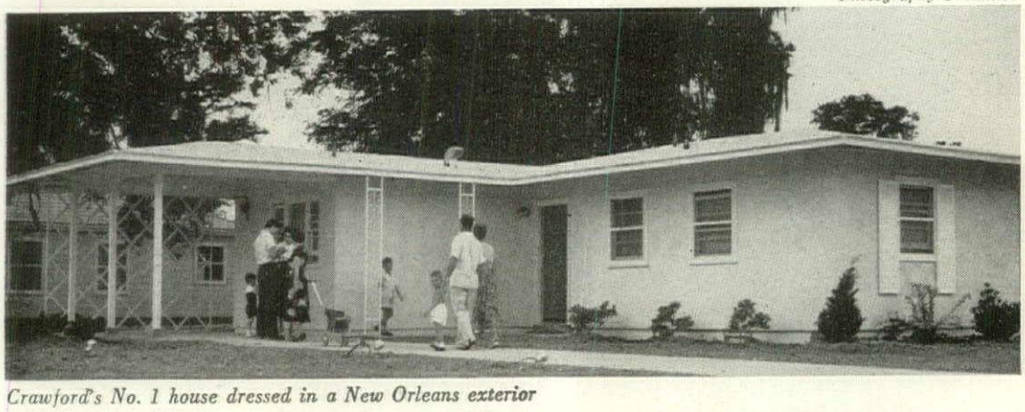
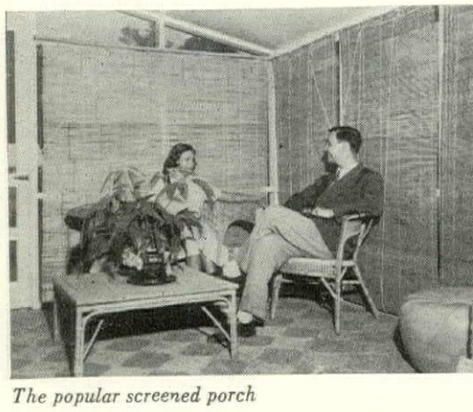
700 SALES IN 4 WEEKS

(Continued from page 207)

Photography Unlimited



Crawford's No. 1 house dressed in a New Orleans exterior



The popular screened porch

shares.* While all the 1,423 mortgages have n yet been placed, the development is not sche uled to be finished until next year and Crawfo is confident he will have placed the balance his mortgages by them. He had pre-X VA co mitments for all his houses and 500 pre-X FH commitments.

. . . And despite fellow builder opposition

There were the other usual problems in getti a big project started but most unpalatable Crawford was the stubborn opposition of group of rival builders. A "building indust committee" protested bitterly to city officials th Gentilly Woods would flood the market wi houses and would put other builders, subco tractors, suppliers and laborers out of busine Builders also tried to persuade FHA to shut commitments to Crawford.

At a noisy, all-day session before the Ne Orleans Commission Council there was mu opposition to the new development, including protest by the president of the local Hom Builders Association that it would immediate overbuild the area. Reform Mayor de Lesseps Morrison reminded the builders that they h previously appeared before him to prote against public housing and promised that p vate industry could meet the need. The May pointedly remarked that now, when someone private industry was at last trying to do a go job, the builders wanted to prevent that t He also recalled that a number of them in t past had hoped to develop Gentilly Woods b had been unable to get financing. Represent tives of FHA and the AFL stood behind Cra ford.

The Council voted unanimously to approve t new development and Mayor Morrison has sin told Crawford: "You are making a valuab contribution to the growth and development New Orleans and its housing needs, and yo presentation of homes is the best I have ev seen."

New Orleans may well be proud of Gentil Woods. It is the largest one-family house pro ect in the FHA's southeastern zone and is fa becoming a leading topic among builders ever where. As far away as New York City, builde asked to name the most interesting new develo ment in the country are likely to answer, "Ha you seen Crawford's project at New Orleans?



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Youngstown, Ohio

in Fire Protection--too!



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"Automatic" Pendant Sprinkler



The development of the "Automatic 400" **Ceiling Sprinkler** discounts the adage that you can't have beauty and fire protection too. For here is a sprinkler head that is designed to blend perfectly with the appointments of the most tastefully designed interior—finished in bronze or chrome, bright or satin, it projects less than one inch below the ceiling surface. Yet, regardless of its beauty, it's ready, willing and able to automatically extinguish fire whenever called upon to do so.

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IT DOESN'T MATTER . . . TO WALLS OF VITROLITE

Splash—water spots are on this wall. Swish—they're off. Nor can dirt, grease or germs get a grip on this mirror-smooth paneling of lustrous *Vitrolite** Glass. A once-in-a-while wipe with a damp cloth keeps it sparkling clean.

Moisture doesn't faze it. Nothing can craze it. It *can't* swell or warp or deteriorate! It will always look new because its deep-toned beauty goes all the way through.

Wherever modernness matters . . . where color, cleanliness and cost of maintenance count—consider *Vitrolite* carefully. You've probably seen it in hotel lobbies and washrooms (if you went into the kitchen, you'd probably find it there, too); in hospital corridors and operating rooms, schools, homes, office buildings.

Feel the smoothness of *Vitrolite* . . . the solid ruggedness. See the wide range of correlated colors (as a result of present heavy demand, all colors may not be immediately available). Call your Libbey·Owens·Ford Glass Distributor today and get complete *Vitrolite* data. Or write us. *®

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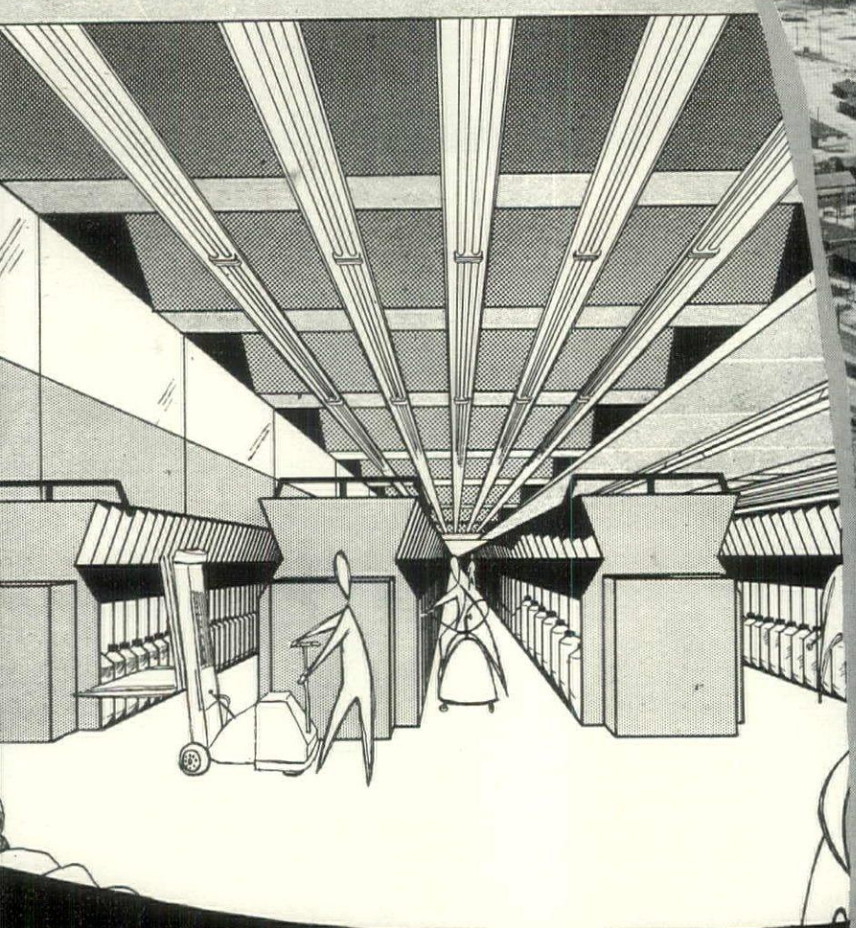
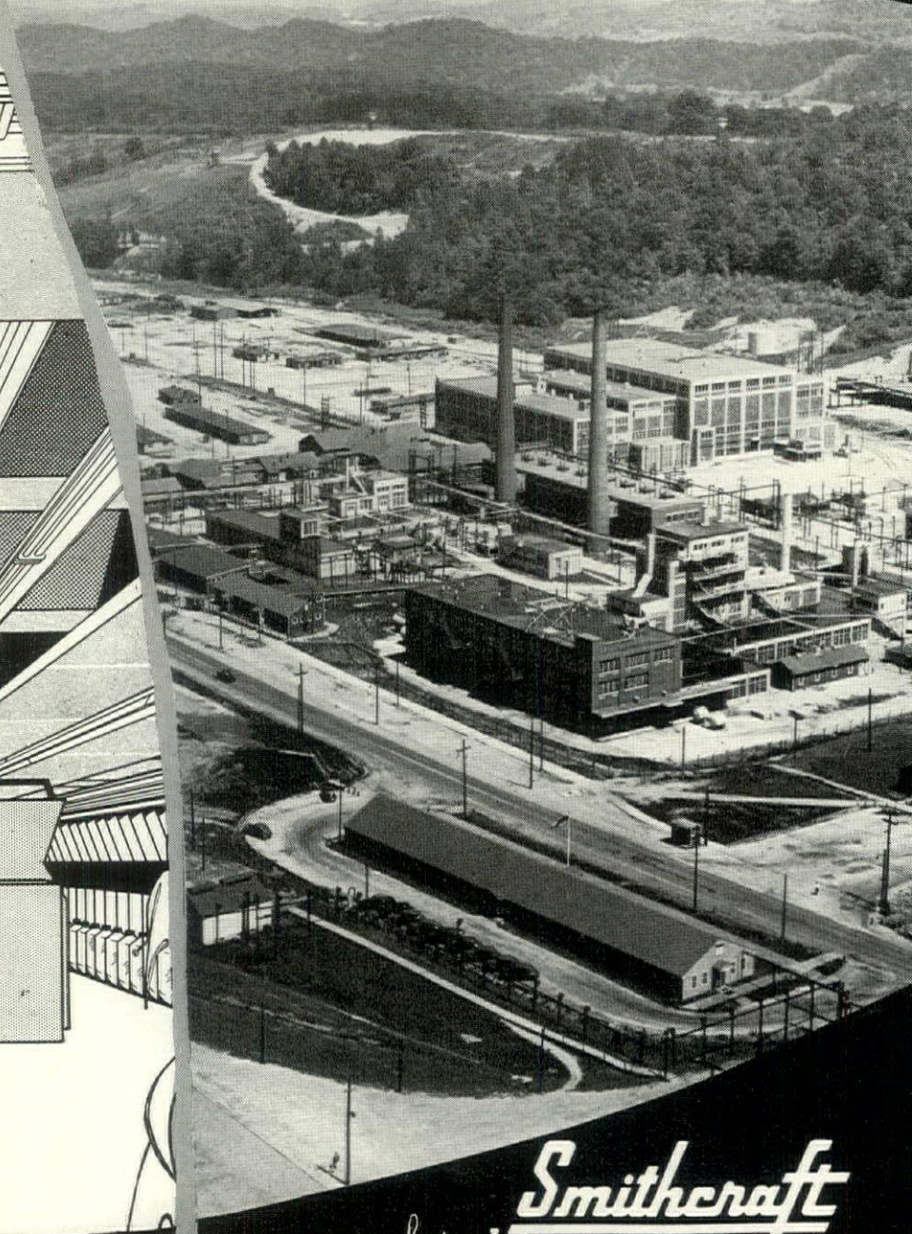
There's a reason, of course. We all know that there's more to good lighting than meets the eye . . . and that essential "more" is provided by Smithcraft's features of design and manufacture. These features assure ease of installation, ease of maintenance, and long-term trouble-free service, as well as unexcelled lighting performance.

We've compiled descriptive folders and specification sheets on every Smithcraft fluorescent fixture into a bound catalog that's yours for the asking. Write for your copy today. You'll see why "America's Finest Fluorescent Fixtures" are products of "Smithcraft".

. . . Textile mill . . . . . Oak Ridge Atomic Energy Project . . .





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LIGHTING DIVISION

CHELSEA 50 MASSACHUSETTS

Take the RIGHT TURN to improved "INDOOR HIGHWAYS"



VIA HAKO Asphalt Tile FLOORING



lasting durability
beautiful design

functional superiority
easy maintenance

NORTH, SOUTH, EAST, WEST. In more and more public and commercial buildings, where heavy foot traffic is a logical activity of everyday business, HAKO Asphalt Tile Flooring is proving its durability and ease of maintenance. The scuffing and abrasive action of thousands of feet can't wear off the color or wear in the dirt. The original colors and design are maintained through years of service. Only normal washing with mild soap, followed by a water emulsion no-rub wax, preserves HAKO Asphalt Tile Flooring's natural beauty and design.

An attractive floor surface is the welcoming hand at the door of a commercial establishment . . . in a store or office building it is a mark of character and dignity . . . an added reason why HAKO Asphalt Tile Flooring should be chosen. There is no speculation when the best is specified. Floor beauty . . . down*right* durability . . . easily installed precision square cut tiles . . . wide selection of colors . . . You are assured of these exclusive features when specifying HAKO Asphalt Tile Flooring.

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City..... Zone..... State.....

700 SALES IN 4 WEEKS

(Continued from page 212)





Crawford's high land and development costs (note big drainage ditch, far left) were offset by his economical prefabricated construction. This unfinished model house gave customers an opportunity to examine Crawford's construction methods.

Glazed windows are already in the panels, a is the insulation. Gables come in two section as one of the photos indicates. Joists are precut To save lumber, 2 x 3s are used for non-loa bearing interior partitions. From the time th panels arrive at the site, a house is finished i three weeks.

At the mill and factory everything possible i done to cut down waste. Almost the full lengt of every board is used. No piece longer than 4 is thrown away. Low-grade lumber is used fo boxes and crates. Lumber is constantly bein upgraded; number 2 common can be turned int a higher grade in many cases by cutting ou knots or other defects.

Scores of man-hours per house are saved be cause no one need measure anything. All th panels and the precut parts are made or cu on jigs.

A great advantage to the mill and factory com bination is that the mill serves as a warehous making it unnecessary for the factory to stor much material. It is in the position of a ver favored customer which can get what it want when it wants it.

Crawford's prefabrication process is a direc expression of his philosophy of working wit builders. "Our whole design principal," he ha said, "is that the house must be close to wha the builder knows and what he is familiar with We may be ultra-conservative in our ideas, bu we want to give the builder something he ca use."

How Crawford Corp. gets along with it dealer-builders is a separate story. In brief h provides them with a variety of help includin bookkeeping and financial arrangements tha have taken some builders out of the five-or-te houses-a-year class and moved them up into th 100 or 200 class. "We become their biggest sub contractor," says Crawford, "and because w buy and provide the bulk of the house, we giv the builder complete control over his purchase of all but $800 to $1,200 of hard-to-buy items We take the pain and grief out of his purchas ing. It is harder for a builder working with u to go broke, because it is easier for him to kee books and easier for him to know if he is mak ing a profit."

As to the future, Hamilton Crawford will b heard from again. He is one of the new crop o big merchant builders who believes they have responsibility to raise housing standards. H wants to do more than fill hundreds of acre with identical little boxes that make American apologetic to visiting foreigners. He knows h has to make a profit to stay in business, but h passes on some of his potential profits as dividend in better living to his buyers.

for roof or floor

fills

lightweight... insulating

Use concrete made with Waylite aggregate for roof or floor fills. Reduces deadweight. Has high thermal insulation and sound-deadening values. Incombustible. Easily placed, especially around pipes and conduits.

Waylite is a lightweight air-cell aggregate made by processing molten blast furnace slag. It is a uniform material that comes properly graded. Recommendations for its use are supported by a wealth of technical data and by widespread, successful use on various types of structures. Approved by Board of Standards and Appeals, New York City.

In addition to fills, Waylite aggregate makes lightweight structural concrete that saves as much as 35% deadweight and can be designed up to 4000 psi. See Sweet's for engineering data. For further information and quotations, address the Waylite Co., 105 W. Madison St., Chicago 2, or Box 30, Bethlehem, Pa.

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To Builders In or Near DEFENSE AREAS:

Meet Cost Limitations with National Homes!

OUR DEALERS ARE DOING IT

National Homes dealer-builders have a big advantage when Defense Area programs are announced. Our mass-produced, low cost, fine quality homes — on a turn key basis, without lot — range in price as follows:

Size of House	Average Cost Area	High Cost Area
2 BEDROOM	$6,950	$8,000
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Our two strategically located plants and efficient delivery system assure an ample supply of houses to meet any demand.

NATIONAL HOMES WILL SOLVE YOUR PROBLEM

— if you can't compete cost-wise under your present conventional building methods, National Homes can help YOU have a place in the Defense Area picture!

Even though we may have a dealer in your city, your inquiry is invited. Write, wire or phone us today—some excellent territories are open!

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National produced 11,111 homes in the fiscal year ending June 30 — an all-time record for the field. Our new 1952 models offer still greater values.

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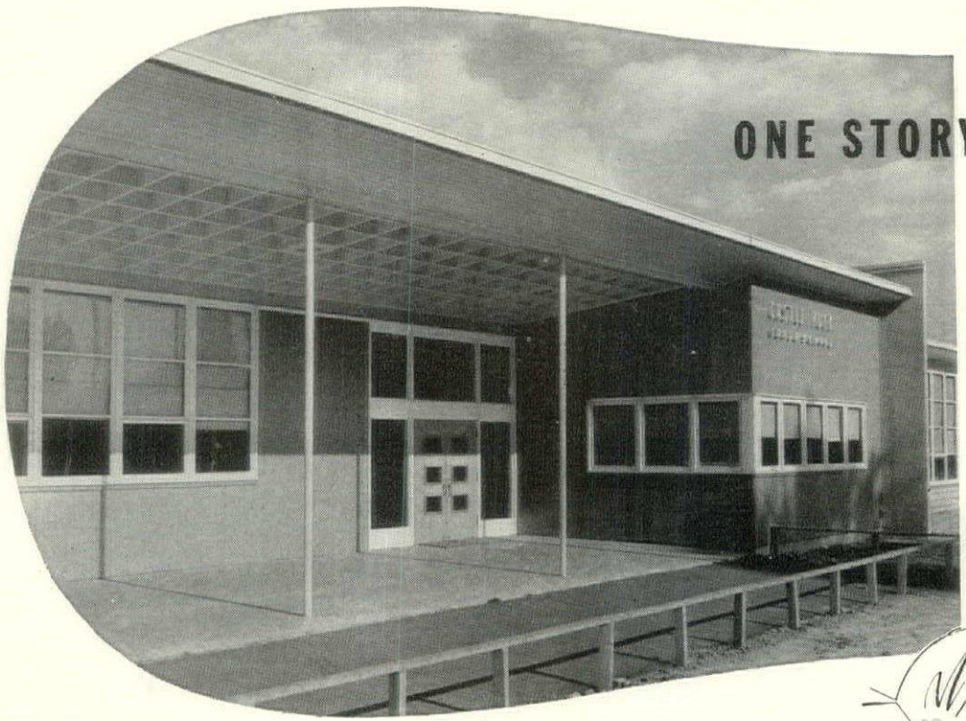
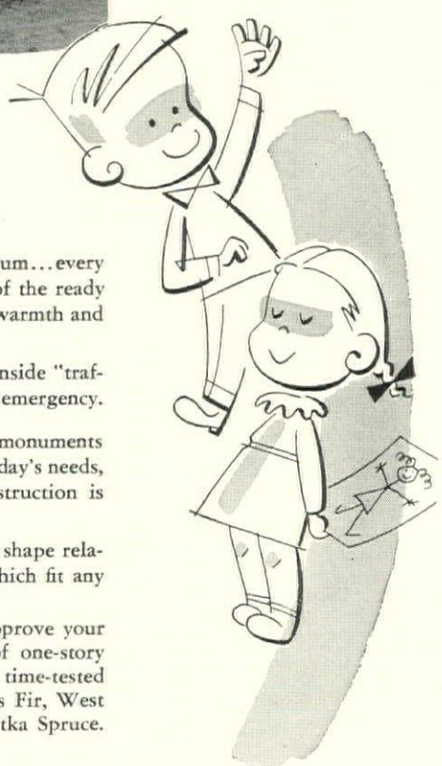


ONE STORY SCHOOLS OF WOOD

offer 4 distinct advantages!



Throughout the nation, modern, one-story schools of wood are answering the requirements of the rapidly expanding school population. Here are the reasons why:

1. Schools of Wood Are Functional. Classrooms, cafeteria, auditorium...every part of the school...can be easily planned for maximum efficiency because of the ready adaptability of wood construction. Both student and teacher appreciate the warmth and friendliness of wood.

2. Schools of Wood Are Safe. One-story construction allows better inside "traffic" control...all exits at ground level provide maximum safety in time of emergency.

3. Schools of Wood Are Practical. Schools are no longer expensive monuments which become outdated and obsolete. One-story schools can be planned for today's needs, easily enlarged or remodeled to fit future requirements. And wood construction is economical construction.

4. Schools of Wood Are Attractive. Latitude of design, pleasing shape relationships, and variety in choice of texture and color, result in structures which fit any community and setting.

Students, teachers and parents alike will approve your choice when you plan your next school of one-story wood construction. And for dependable time-tested wood specify West Coast Woods...Douglas Fir, West Coast Hemlock, Western Red Cedar and Sitka Spruce.

SEND FOR FREE BOOKLET

Beautifully illustrated in natural colors, this booklet, "Today's Better Schools Are Built of Wood", points out many different applications of wood in school construction. It tells how schools of wood help meet today's educational needs. Send coupon now for your free copy.



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Mechanical attachments for erecting acoustical tile

FASTER . . By actual test acoustical ceiling units can be installed quicker on Securitee Systems

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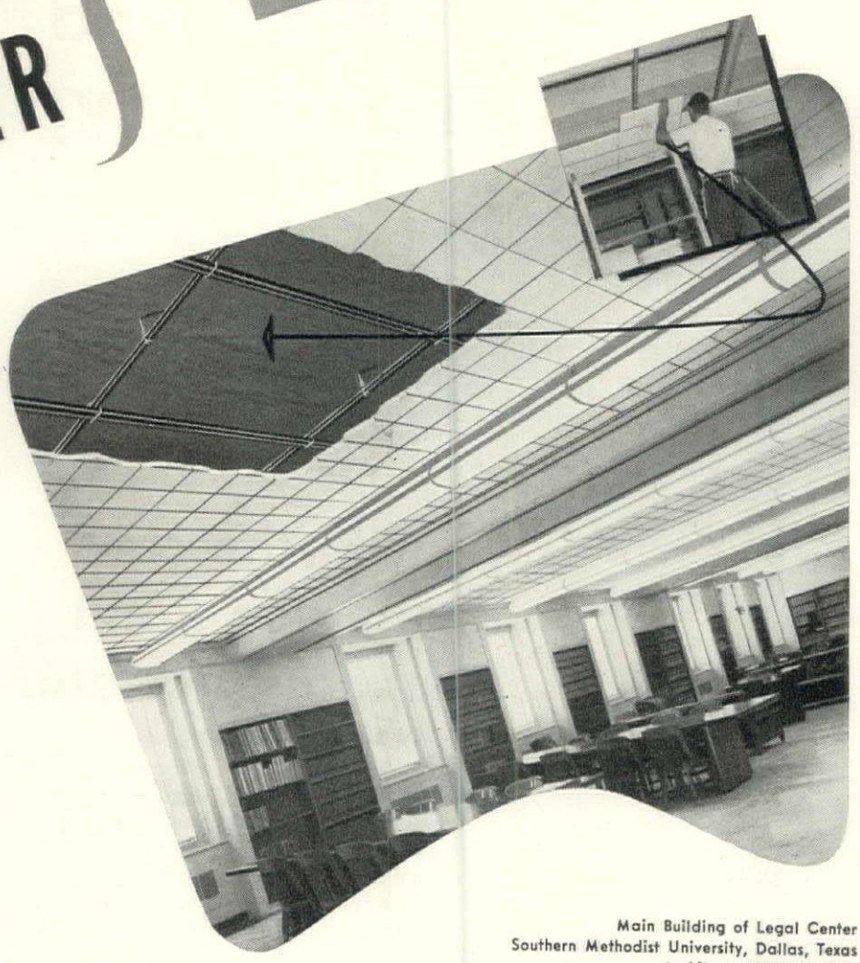
TRUER . . By actual tests acoustical ceiling units square up better over large areas and make possible a truer and more level ceiling when applied on Securitee Systems



Main Building of Legal Center
Southern Methodist University, Dallas, Texas
Architect—Mark Lemmon
General Contractor—Henger Construction Co.
Acoustical Contractor—Blue Diamond Co.

In addition, Securitee Systems allow easy access to piping or wiring, assure structural permanence and lasting safety by giving proper full length tee support to tile units at all times.

Learn more about this low cost efficient method, contact your local acoustical applicator or write direct.

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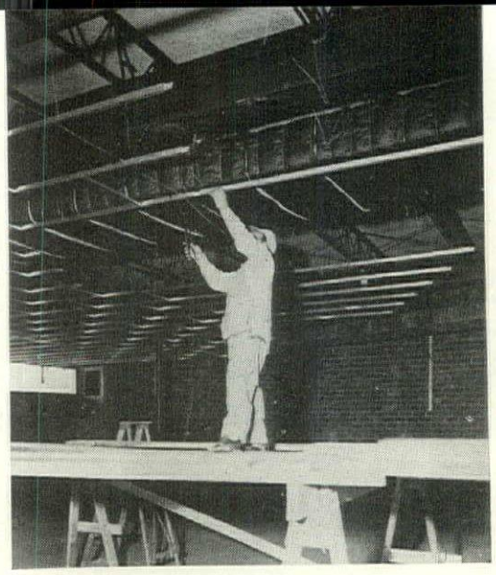
West Coast Distributor—**Cramer Company,** 125 Barneveld Ave., San Francisco, Calif.

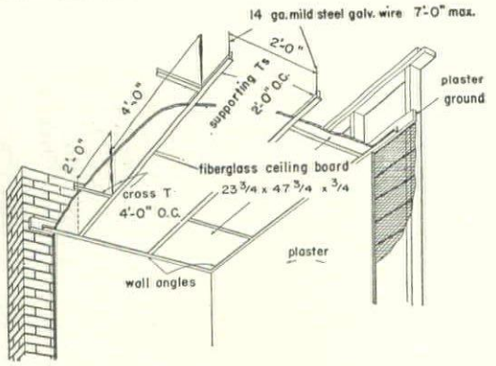
PRODUCT NEWS

SUSPENDED ACOUSTIC CEILING costs no more than regular plaster and metal lath

A noncombustible, thermally and acoustically efficient suspended ceiling can be constructed very reasonably with this new Fiberglas board. Hung on a grid of extruded aluminum T-sections, the system affords a durable, attractively finished ceiling at an installed cost of 50 to 65 cents per sq. ft.—about the same price as conventional nonacoustical plaster ceilings, and



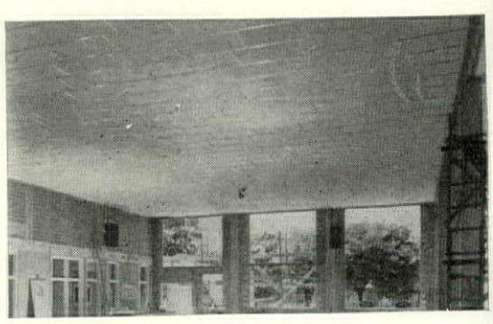
The flanger of the aluminum T-sections in the supporting grid form a neat outline pattern for the glass fiber acoustical ceiling boards.



about 25% less than other similar acoustical tile construction. Composed of glass fibers bonded together with a stable resin, the ceiling board is rigid and lightweight so that 2 x 4′ panels can be hung without sagging on less supporting members than are required for smaller tiles. Since the biggest part of the cost of this type of construction goes for hanging members and labor, use of the large lightweight board makes substantial savings possible on both. The finished ceiling's simple pattern of staggered rectangles is adaptable to large areas such as those in department stores, theaters and bowling alleys as well as to small offices and shops.

As for its physical properties, the ¾″ thick Fiberglas material has a noise reduction coefficient of .80 and sound absorption of .86 at a frequency of 512 cycles per second. It weighs about ½ lb. per sq. ft., and is said not to warp or buckle in humid weather or during extreme temperature conditions. Its low heat transmission coefficient of .25 Btu/ in./ hr./ sq. ft. at 75° F. is an important contributor toward economical operation of heating and air conditioning systems. The board may be cut easily and accurately with a knife to conform to irregular openings and for ceiling boundaries. Nonorganic, it holds no interest for termites, vermin or rodents. Neither will it give off or absorb odors.

Sanded and given one coat of white nonbridging resin paint at the factory, the board may be spray painted many times with any good water-based paint without decreasing its acoustical value. It can be cleaned with a vacuum cleaner. When it is necessary to reach utility lines above



the ceiling, single boards may be used as access panels by lifting them from the grid. For recessed lighting installations, boards may be replaced with sheet glass, plastic or eggcrate-type light diffusors.

Manufacturer: Fiberglas board—Owens-Corning Fiberglas Corp., Toledo, Ohio. *Alumi-Coustic suspension system*—Cupples Corp., 2650 S. Hanley Road, St. Louis, Mo.

(Continued on page 276)

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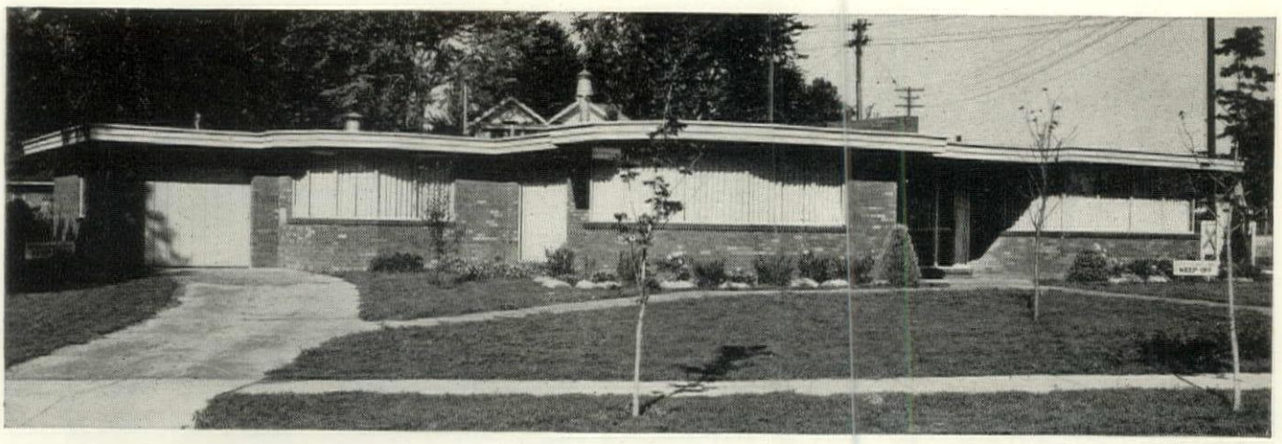
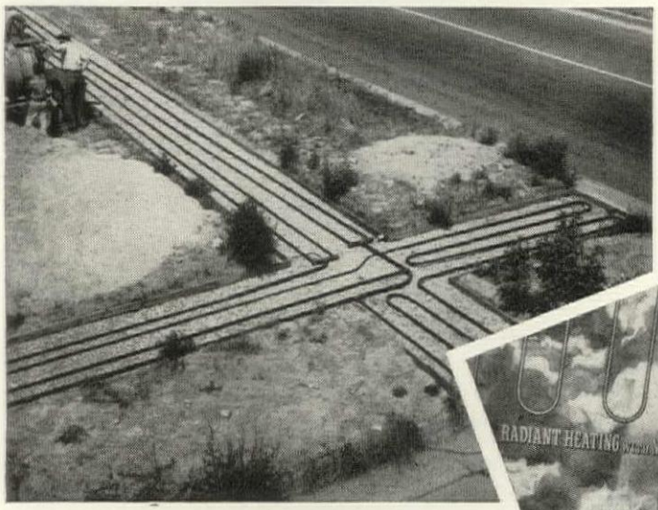


A mile of pipe for a mile-high house!







Contains data for estimating heat losses, designing coil systems for floor *and* ceiling installations, typical coil patterns, testing procedures, fitting resistances, insulating techniques, pipe data and heat transmission tables.

• "Sun-Age Homes"* are well-known in mile-high Denver. Windows are big (over 40% of wall area). Plenty of storage space is built-in. The functional design makes for easy living. And—

> **Radiant heating is an important selling feature of every Sun-Age Home. Not just the interior, but the driveway and sidewalks of the house are heated with 6000 feet of NATIONAL *Steel* Pipe—the standard pipe for hot-water heating for over 60 years.**

In the first 10 days that this sample home was displayed, over 8,000 adults visited it. *90%* of these people requested more information on radiant heating and snow melting. This intense public interest in the comfort and convenience of these systems has helped to sell a lot of Sun-Age Homes—just as it's helping to sell homes in every part of the country.

NATIONAL *Steel* Pipe is just the thing for an installation like this: It's economical. It's easy to weld. It's strong. Yet it's ductile enough to allow easy bending.

NATIONAL *Steel* Pipe has been widely used for radiant heating, so get the full particulars. This information is yours for the asking in our 48-page book, "Radiant Heating." Send the coupon now.

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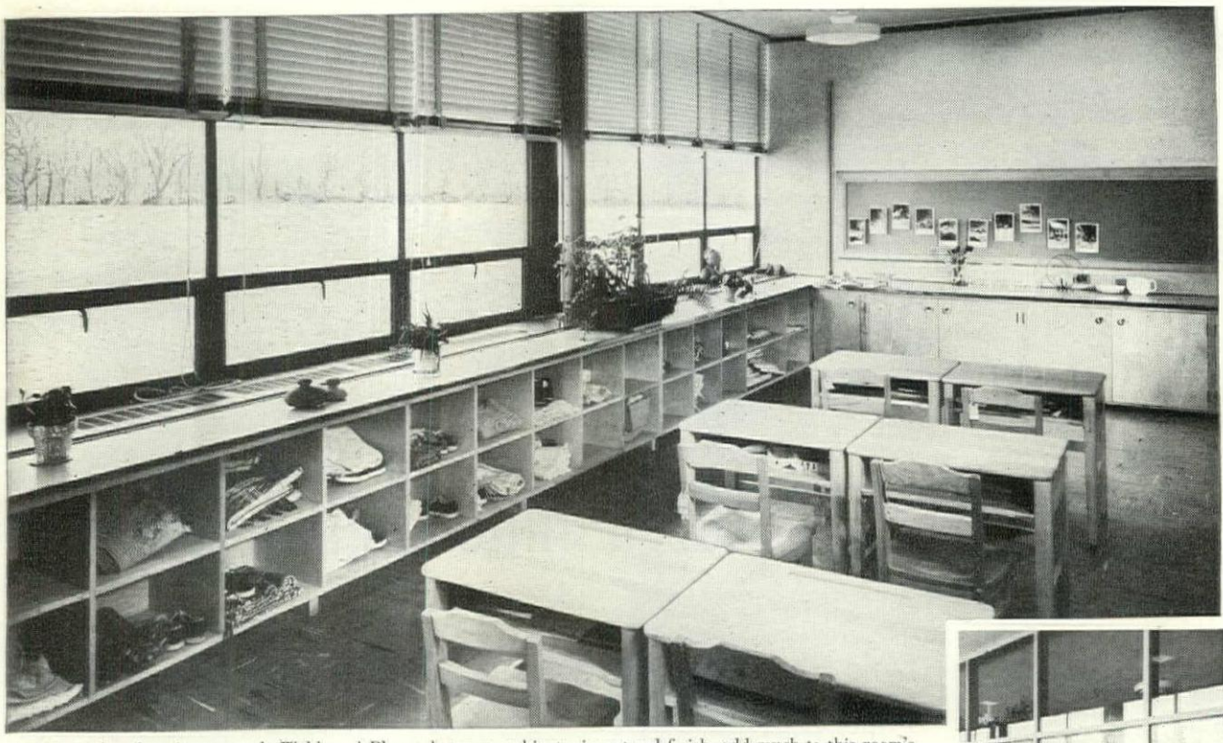
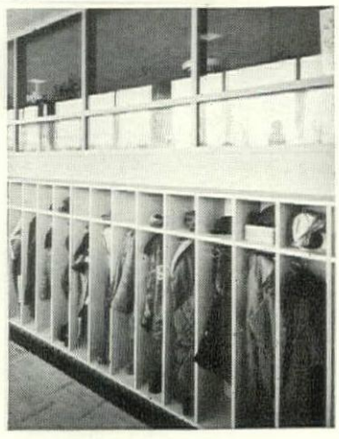
NATIONAL Steel PIPE

UNITED STATES STEEL

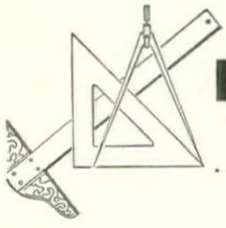


Handsome, knock-resistant maple Weldwood Plywood storage cabinets, in natural finish, add much to this room's attractiveness, yet achieve completely the functional end desired.



Open clothes closets lining both halls are of birch Weldwood, painted gray. This beautiful hardwood plywood is often given natural finish.

All architectural millwork is by Sanford Woodworking.



Planning a new school?

...or modernizing an old one?

Check these practical ideas from the new Greenville School in Scarsdale, N. Y.

Why are school architects making more and more use of Weldwood Plywood?

This Scarsdale school, designed by Moore & Hutchins, tells part, yet not all, of the story.

These architects selected Weldwood hardwoods for closets and cabinets. In this way, they created furniture which is "tops" in carefree service and also extremely attractive in appearance.

Built-ins are but one of the ways in which this genuine wood paneling is being used in school construction and remodeling.

With Weldwood, you can have classrooms, auditorium and corridors panelled in beautiful hardwoods at surprisingly low cost. And, once installed, Weldwood walls require virtually no maintenance . . . no periodic redecorating. Weldwood Plywood is guaranteed for the life of the building in which it is installed.

In new construction, Weldwood Plywood can be applied directly to the studding. For redecorating, the large panels go up fast and easily right over existing walls . . . even over cracked, unsightly plaster.

So, whether your plans deal with brand new schools or time-honored old ones, make sure that they call for a liberal use of Weldwood Plywood . . . the quality standard of the industry.

WELDWOOD Plywood

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UNITED STATES PLYWOOD CORPORATION New York 18, N. Y.

and **U. S.-MENGEL PLYWOODS, INC., Louisville 1, Ky.**

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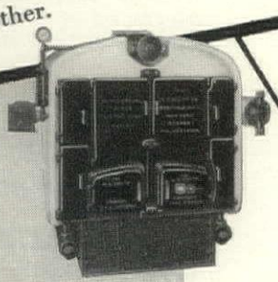
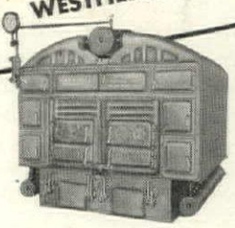
THE H. B. SMITH CO., INC. · WESTFIELD, MASS.



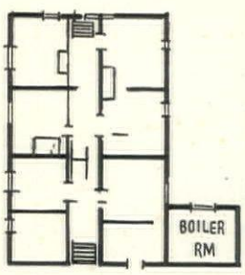


ECONOMY in DESIGN FEATURES



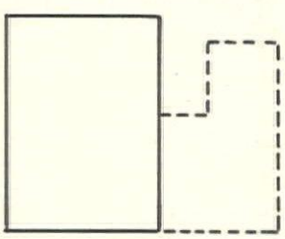
H. B. Smith *low-draft* cast iron boilers operate efficiently with the low chimneys which should identify modern school design. H. B. Smith "Mills" Boilers have exceptionally low draft loss. Hence lower chimneys can be used without the need for complicated induced draft mechanisms.

ECONOMY in CONSTRUCTION DETAIL



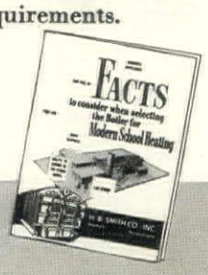
H. B. Smith sectional header-type boilers are compact units. The precision-machined parts are easily moved through conventional entrances for quick assembly on the site in small boiler rooms. No necessity for structural changes when replacing with H. B. Smith boilers.

ECONOMY in EXPANSION FACILITY



As the school is increased in size, it is not necessary to replace H. B. Smith boilers with complete new units. They are easily expansible by the addition of new sections to assume greater heating and hot water requirements.

FOR COMPLETE INFORMATION . . .
Write for the booklet "Facts to Consider When Selecting the Boiler for Modern School Heating," which contains authentic case histories.



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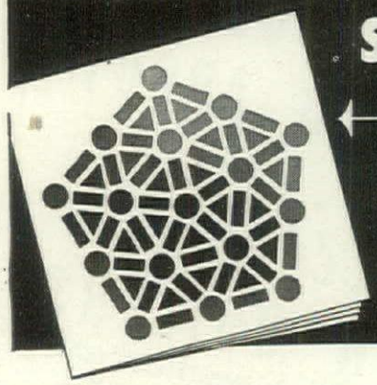
Martin-Senour COLOR COORDINATOR SYSTEM



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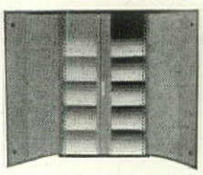
Martin-Senour, makers of fine quality Nu-Hue Paints, brings architects, designers and decorators a completely new and accurate tool for paint color selection and specification to solve any requirement!

UNLIKE ANYTHING EVER KNOWN BEFORE, this amazing new Color Coordinator System is the most helpful, practical color tool ever developed for professional use. Designed for maximum utility, this completely new system provides you with the most versatile range of easy-to-mix colors ever created. One spiral-bound set of Color Coordinator Charts gives you *complete* color command of a comprehensive color range that will solve every color requirement, satisfy every color desire!

PAINTED SAMPLES of all 497 colors are systematically "laid out" at 7 different value levels on the Color Coordinator Charts. Instantly, you can select a single color or an entire, balanced color scheme. And the "name" of each color is its own mixing formula!

SIMPLIFIED AND ACCURATE, this astonishing new system gives you *hundreds* of beautiful paint colors for any color harmony, contrast, or scheme you want to specify or use. From only 16 basic tinting colors in the *simplest* combinations, you get 497 different colors at 7 different value levels. And every beautiful color is quickly, *accurately* mixed by adding *equal parts* of only 1, 2, or 3 basic colors to the proper amount of white. No guesswork. No disappointments. Complete set of Coordinator Charts now $7.75 prepaid. Satisfaction guaranteed.



THE COLOR COORDINATOR DIRECTORY is a companion piece to the Coordinator Charts. Contains painted 3" x 5" cards of every Coordinator Color. $18.85 per Directory.

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PAINE REZO DOORS

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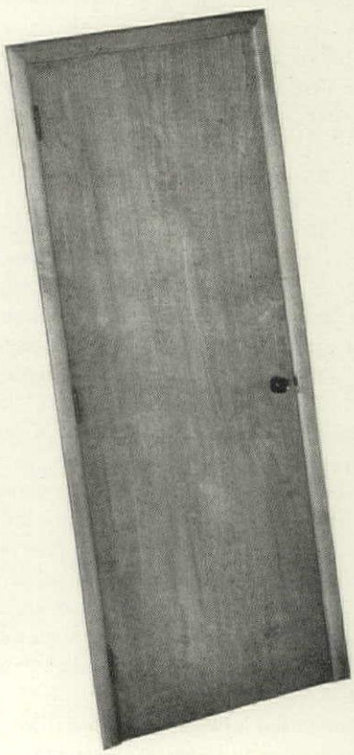
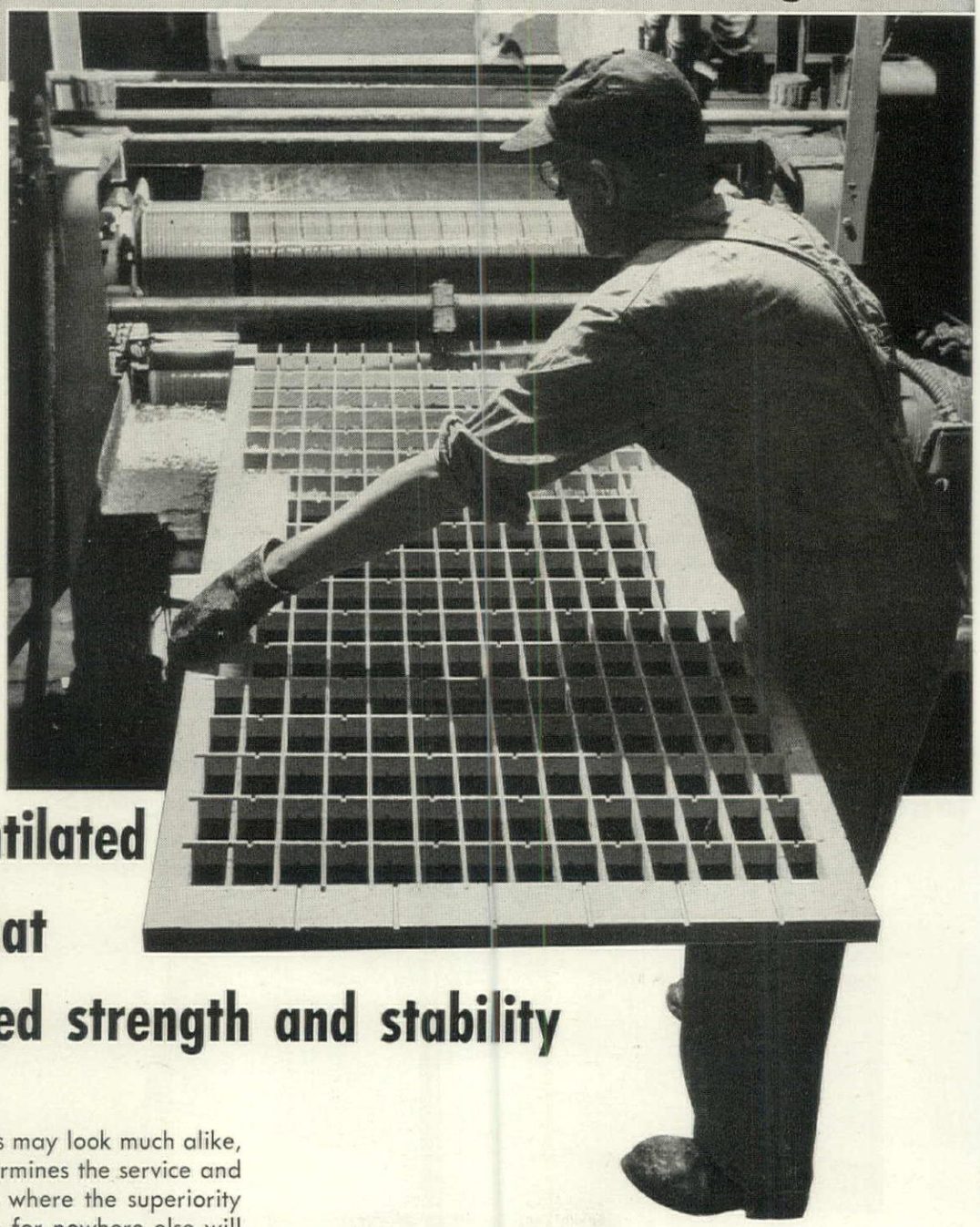
are *Unconditionally Guaranteed*

and here's what makes that guarantee good





the interlocking, ventilated all wood core that provides unduplicated strength and stability

On the surface, flush hollow core doors may look much alike, but it's what's beneath the face that determines the service and satisfaction that you can expect. Here's where the superiority of Paine Rezo doors is most pronounced; for nowhere else will you find equal dimensional stability, nor such lightness in weight combined with great structural strength.

For these reasons architects and contractors everywhere have installed more than four million Paine Rezo doors in buildings of every type. No other hollow core door has been so widely endorsed, so thoroughly time-proved. Remember, when you specify Paine Rezo doors your satisfaction, now and in the future, is *unconditionally guaranteed*.

See SWEET'S catalog—or write for an illustrated data bulletin.

Manufactured by the

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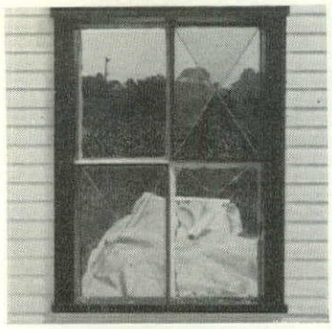
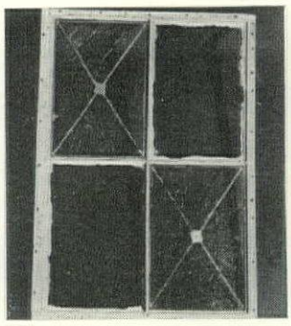
ESTABLISHED 1853

GLASS PLASTIC LAMINATE cuts explosion hazard of flying glass

Flexseal, a special window glass which minimizes the effects of explosive forces is now being made available to the building industry. Similar to the glazing used in aircraft, this laminate of glass and plastic virtually eliminates one of the great dangers of an explosion — flying glass. When normal atmospheric pressure are exceeded by a pressure wave or bomb blast, a window







In powerful explosion tests, Flexseal glazing opened on pattern and the glass remained intact while the double strength glass and plastic sheet were blown to pieces.

light glazed with Flexseal opens automatically by breaking into four triangles and folding inwards, thereby releasing the pressure on the window frame and preventing the glass from being blown into fragments. Until the windows can be replaced conveniently (usually many days after a disaster) the sections may be moved back in place and held together with putty, clay, a piece of adhesive tape or even a wad of gum.

Flexseal consists of three layers pressed together in a single unit: a sheet of glass on the outside, a middle sheet of partially segmented plastic, and an inside layer of four triangularly shaped pieces of glass, the central area edges of which align with the segmented edges of the plastic. The plastic extends beyond the glass into the window frame to serve as a hinge device, permitting the four sections to fold in when, during an explosion, the outer plate breaks along the lines of least resistance—the precut inside edges. Flexseal Bomb Glass windows tested by the manufacturer's research department are claimed to have worked successfully when subjected to forces greater than those previously revealed for the Hiroshima type atom bombs.

Although the bulk of the material available is being absorbed in military construction, production is being stepped up to cover general building requirements. In addition to its value in possible bomb explosion areas, Flexseal should prove useful as glazing and hoods in labs, arsenals, and other industries. Prices have not been established definitely but are estimated to be at least double that of ordinary glazing.

Manufacturer: Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh, Pa.

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Salt Lake Knit, pictured here, has *individuality* written all over it. And you make no compromise with individuality when you include Columbus Merchandise Display Units in store plans for your clients. These quality store fixtures are so varied in Styling . . . so flexible in arrangement that they always create a custom-crafted appearance. AND THIS IS IMPORTANT! Their cost is far less than you might think.

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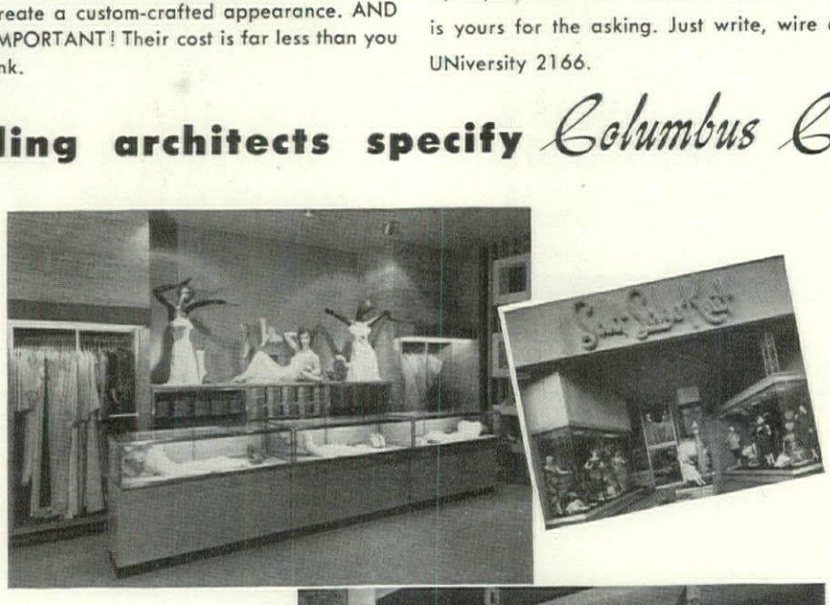

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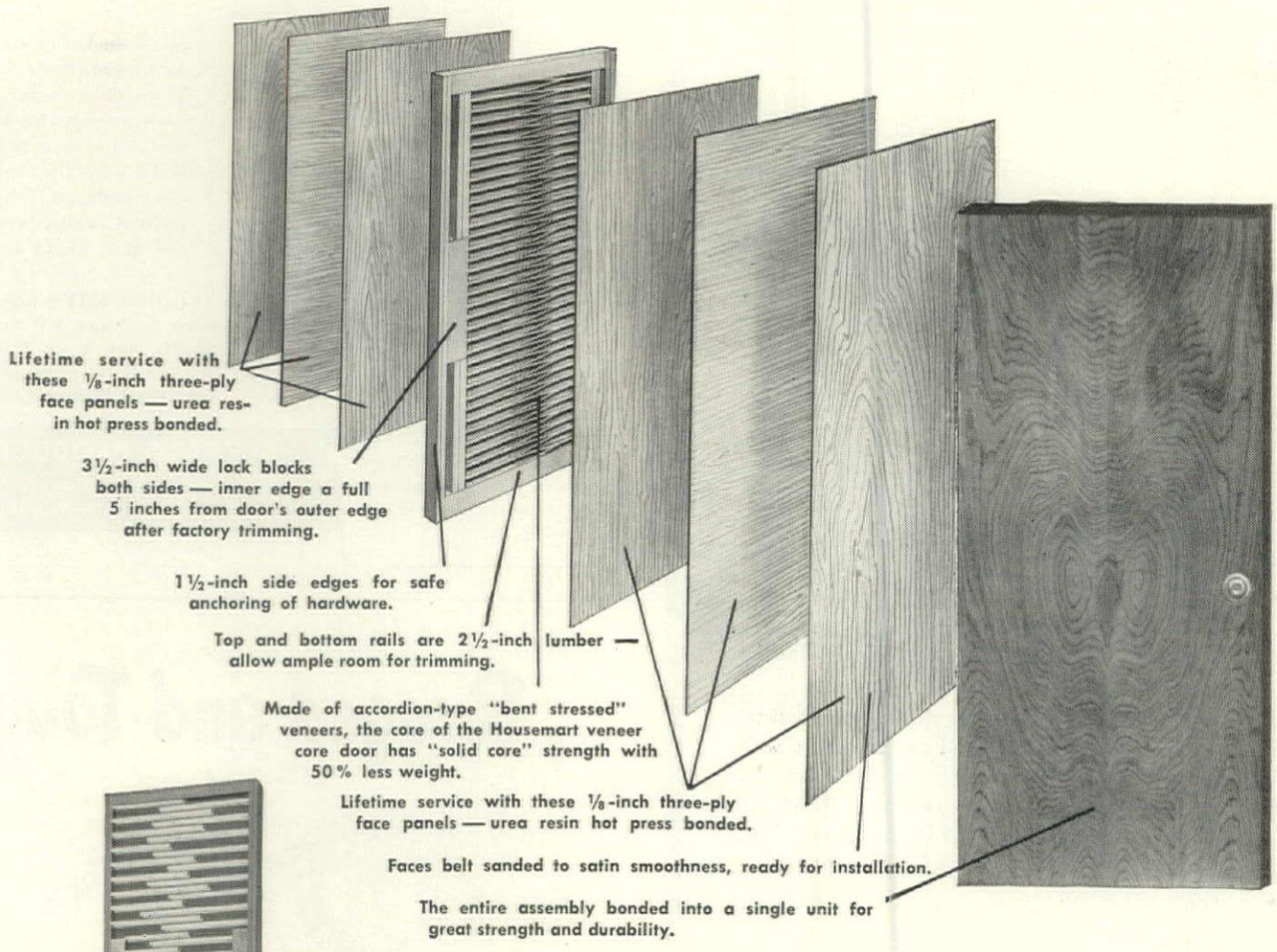
METALIZED CURTAIN reduces effects of atom bombing

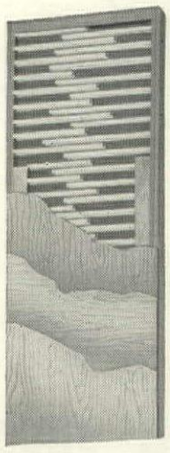
For the World War III worriers and the "just cautious," Strategic Products, Inc. has a mild bromide. Last month it put on the market the Clark bomb curtain which it said would help

(Continued on page 284)

inside reasons why Roddiscraft housemart

light-weight flush doors provide enduring beauty at modest cost





Specially machined blocks fluted for light weight and spaced to give maximum strength form the core of the Housemart Fluted Block Core Door, otherwise construction is similar to the veneer core door. A blue dowel identifies the Fluted Block Core door while a red dowel identifies the Veneer Core door.

for today's trend in residential construction

Seven ply construction gives Roddiscraft Housemart Hollow Core Doors greater strength, greater resistance to distortion and prevents core pattern showing through face veneers after finish has been applied.

The Roddiscraft Housemart Door is generously made throughout. Extra wide top and bottom rails allow for trimming — ample edge strips provide a firm foundation for hardware — lock blocks both sides with inner edge 5-inches from door's outer edge after factory trimming.

Designed and priced for homes and apartments, the Roddiscraft Housemart Door is a beauty with brawn in all types of installations.

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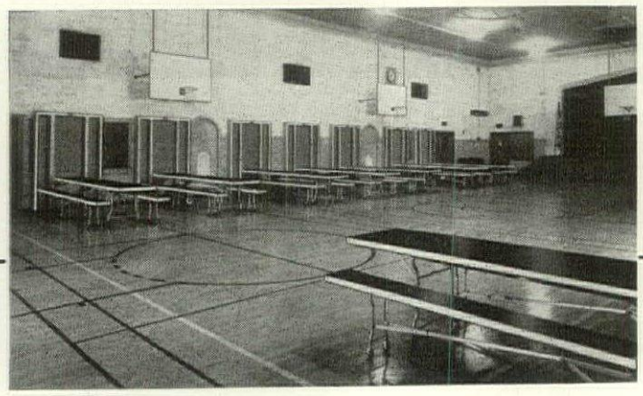

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160,000 KIFS used in this 20-floor building, 60 Sutton Place South, New York, N.Y. Architect: Arthur Weiser, General Contractor: Paul Tishman Co.

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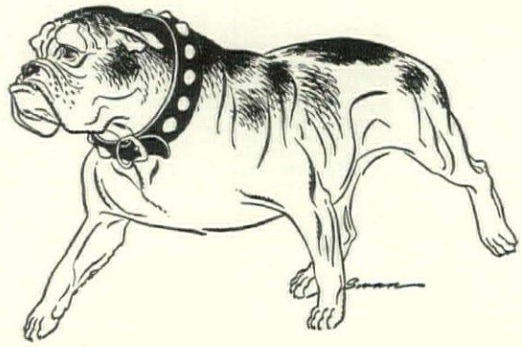

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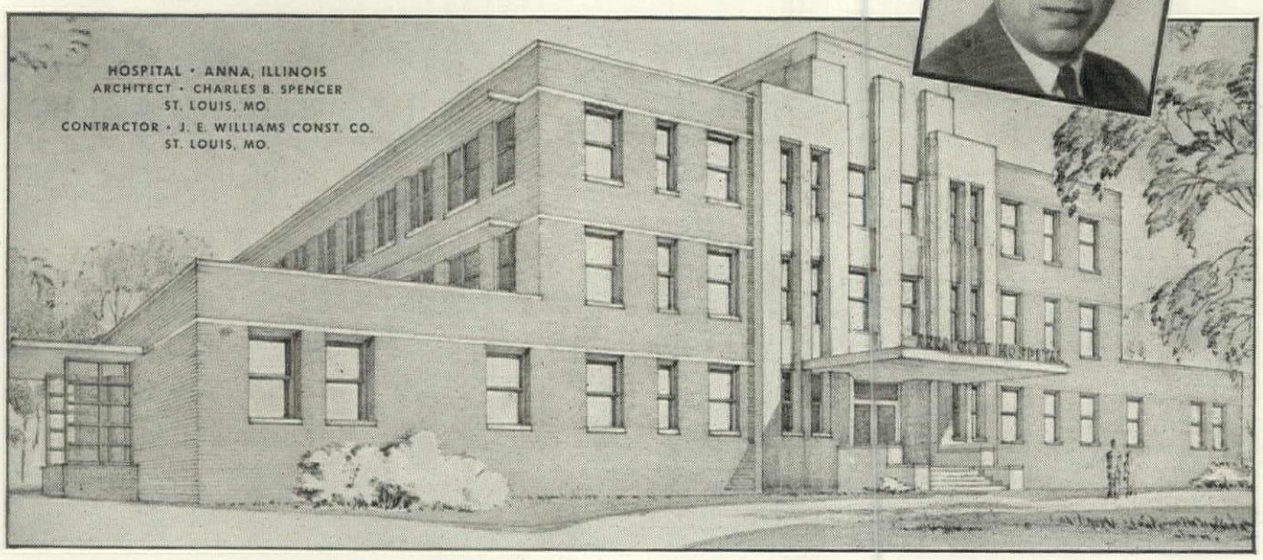
Writes Mr. L. W. Penn, Chief of Technical Services of the firm of Charles B. Spencer, St. Louis, Mo.



Mr. Penn, Chief of Technical Services for the firm of Charles B. Spencer, St. Louis, Mo., takes pride in selecting the proper trim for the buildings the firm designs. Mr. Penn knows that he can count on Knapp Products to meet his exacting requirements. Knapp is accustomed to handling metal trim specifications that demand the highest quality products—and have been for over half a century. They have continued to study every problem of design, quality and practical usability of their product.

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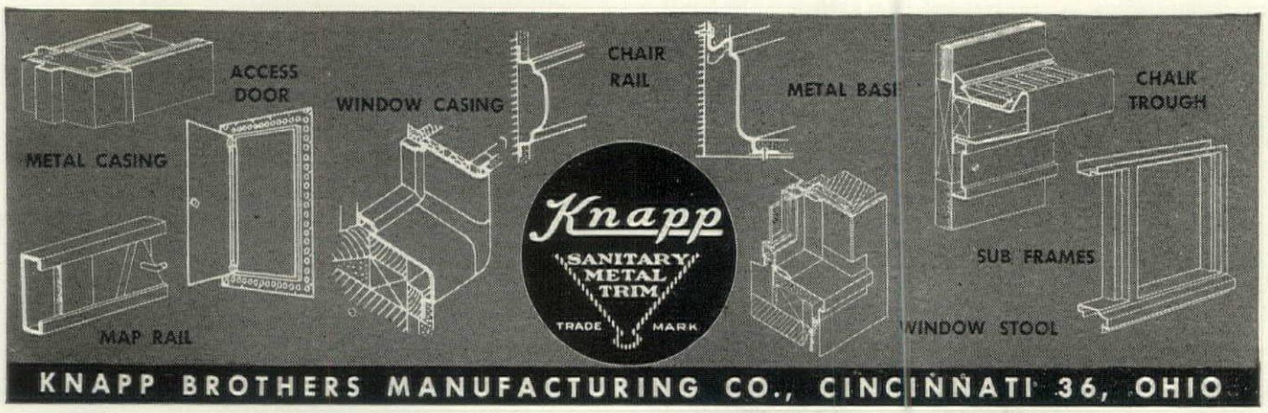

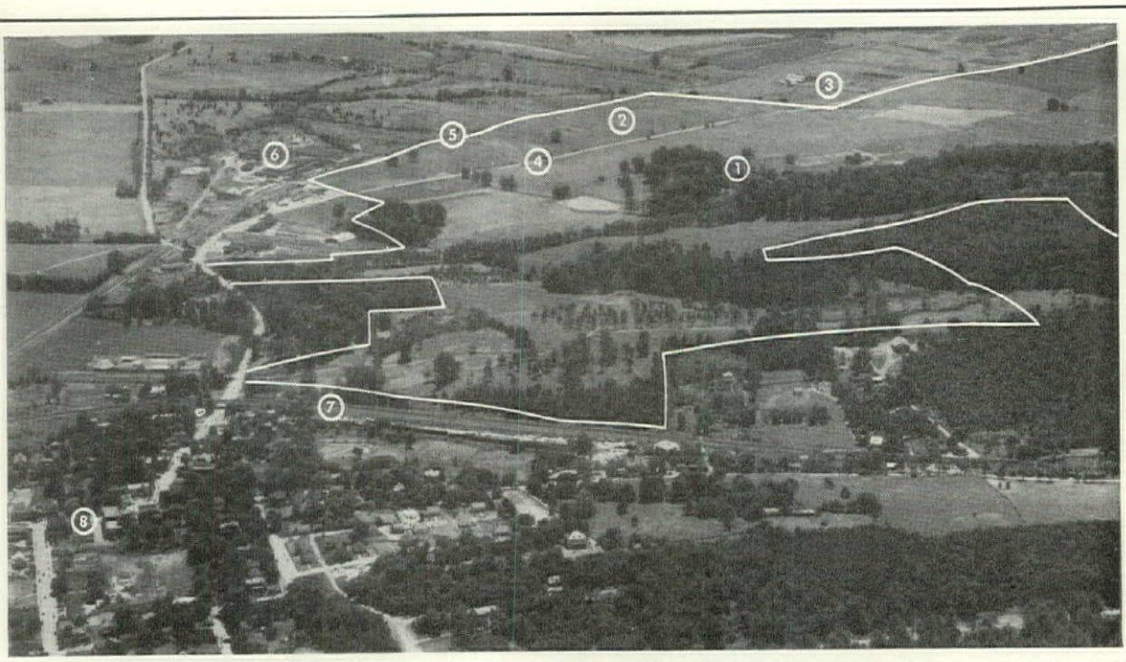

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500 Acres on U.S. 15—Adjacent to C & O and Southern Railroads

KEY TO PHOTO

LEGEND

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3 VA. AGRIC. EXP. STATION
4 U.S. HIGHWAY No. 15
5 C & O R.R.
6 VIRGINIA METAL PRODUCTS CO.
7 SOUTHERN R.R.
8 ORANGE, VA. — BUSINESS DISTRICT

MAYHURST, containing 500 acres, adjoins the corporate limits of Orange, Virginia, which has recently expanded its water and sewer capacity to serve a growing community. Because of the long frontage on U.S. Route 15, and a 38 acre tract situated between Route 15 and the Chesapeake and Ohio and Southern Railroads, Mayhurst offers industrial, business, and residential usages in addition to the fine cattle farm. The Virginia Metal Products Company across the Chesapeake and Ohio and Southern tracks employs up to 400 people.

Improvements: 1. An excellent thirty room, ten bath residence with high ceilings and large rooms, which has been converted into seven lovely dignified apartments. The residence, located on a high knoll, is surrounded by huge oaks, and a well maintained lawn of approximately two acres. The heat is by oil fired furnaces, and the water supply from the public water system of Orange. 2. Three cattle barns, a cattle washing shed, and machine shed. 3. Four tenant houses each with electricity and running water.

The farm is well watered by spring fed streams originating on the property, and two artificial lakes. The lakes were built under the supervision of the U. S. Soil Conservation Service, and are stocked with fish. Most of the soil is a deep productive clay which has been improved by generous applications of lime and fertilizer upon recommendation of the Soil Conservation Service. The farm program is a mechanized, beef, hay and grass operation with a carrying capacity of approximately 150 brood cows. This program is an efficient system which uses a minimum of labor, and conserves and improves the soil. The Orange substation of the Virginia Agriculture Experiment Station is just across Route 15, and because of similar soils and other conditions, research developments there are applicable to Mayhurst. This is a distinct advantage when agriculture is changing so rapidly.

The buildings are in "ship shape" condition, and the farm is constantly being improved. Should one desire to continue using the main residence as an income producing property, there are several outstanding sites with inspiring views of the Blue Ridge.

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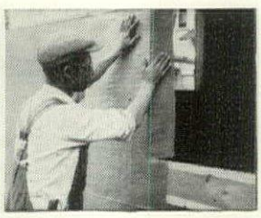

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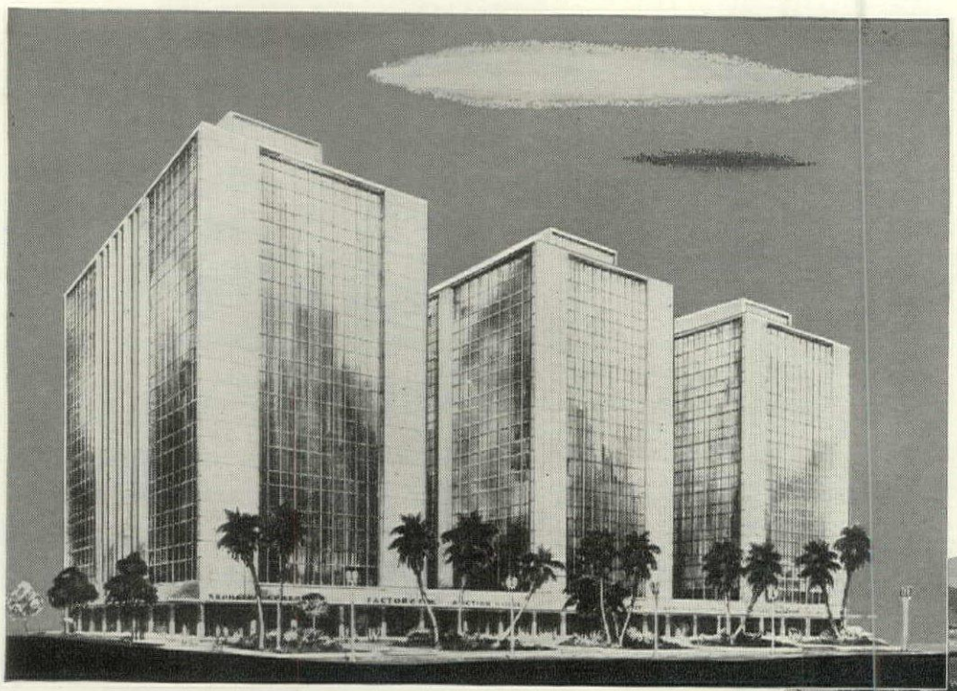

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architects

LESTER R. KELLY
mechanical engineer

C. L. PECK
general contractor

S. GLEN HICKMAN CO.
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CRANE COMPANY
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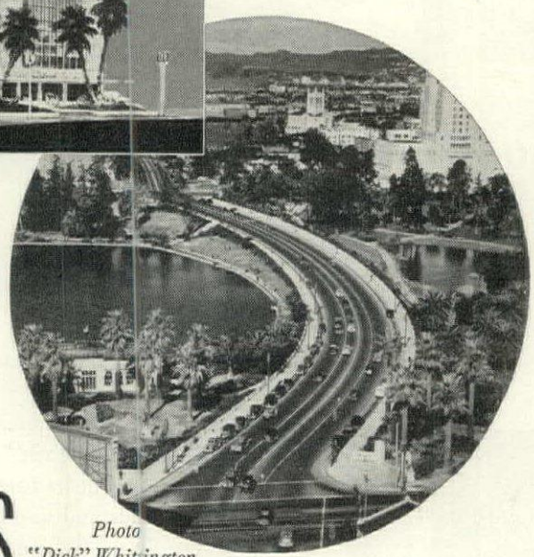

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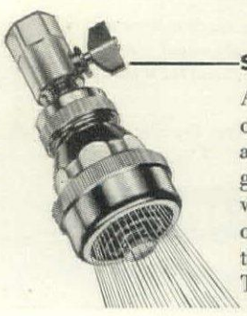

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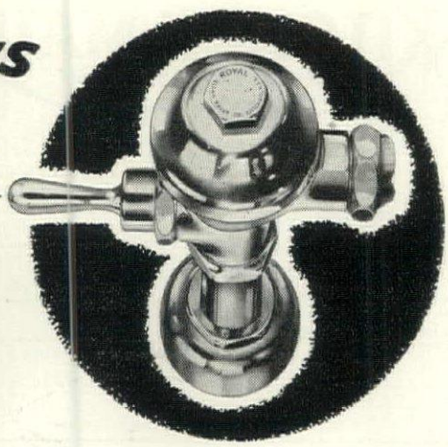


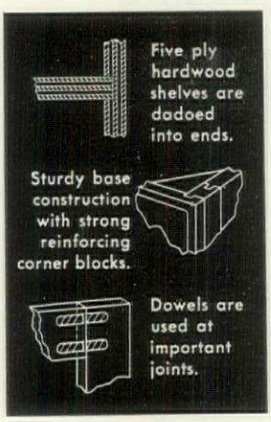


Wood finely fashioned



..does so much for a kitchen!

For a friendly, livable kitchen nothing quite takes the place of hardwood cabinets — their warmth and beauty, their permanence, their adaptability to home design and decoration. And in cabinets by Kitchen Maid you get wood at its best; selected hardwoods and wood compositions, finely fashioned and masterfully constructed by the nation's foremost wood cabinet maker. Kitchen Maid cabinets are in greater demand now than at any time in history. Their fine quality is recognized by builders everywhere. Choose them for the kitchens you plan or build. For free catalog showing plans and details, send coupon below.



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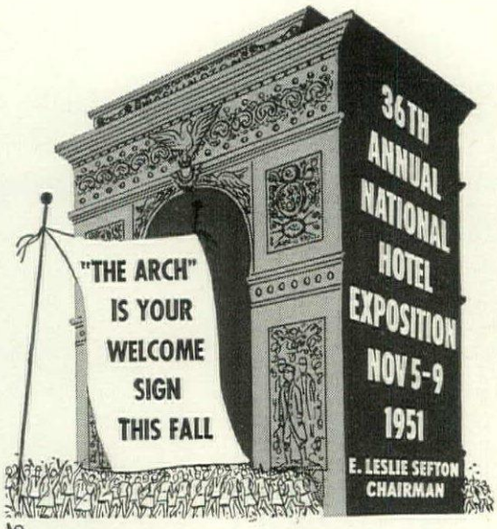

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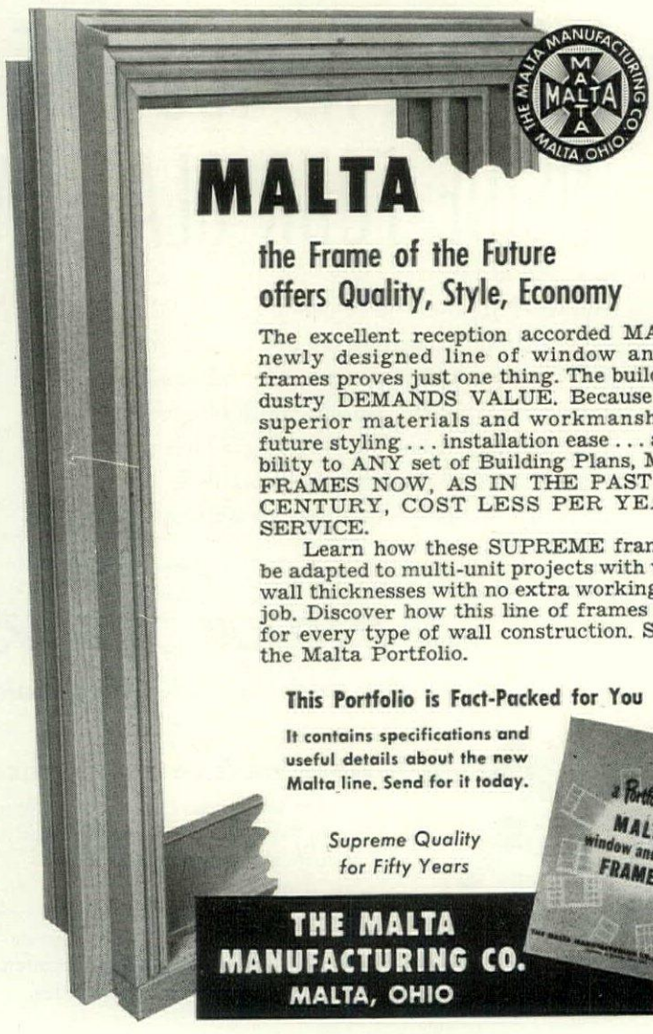

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the Frame of the Future offers Quality, Style, Economy

The excellent reception accorded MALTA'S newly designed line of window and door frames proves just one thing. The building industry DEMANDS VALUE. Because of the superior materials and workmanship . . . future styling . . . installation ease . . . adaptability to ANY set of Building Plans, MALTA FRAMES NOW, AS IN THE PAST HALF CENTURY, COST LESS PER YEAR OF SERVICE.

Learn how these SUPREME frames can be adapted to multi-unit projects with varying wall thicknesses with no extra working on the job. Discover how this line of frames is ideal for every type of wall construction. Send for the Malta Portfolio.

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It contains specifications and useful details about the new Malta line. Send for it today.

Supreme Quality for Fifty Years

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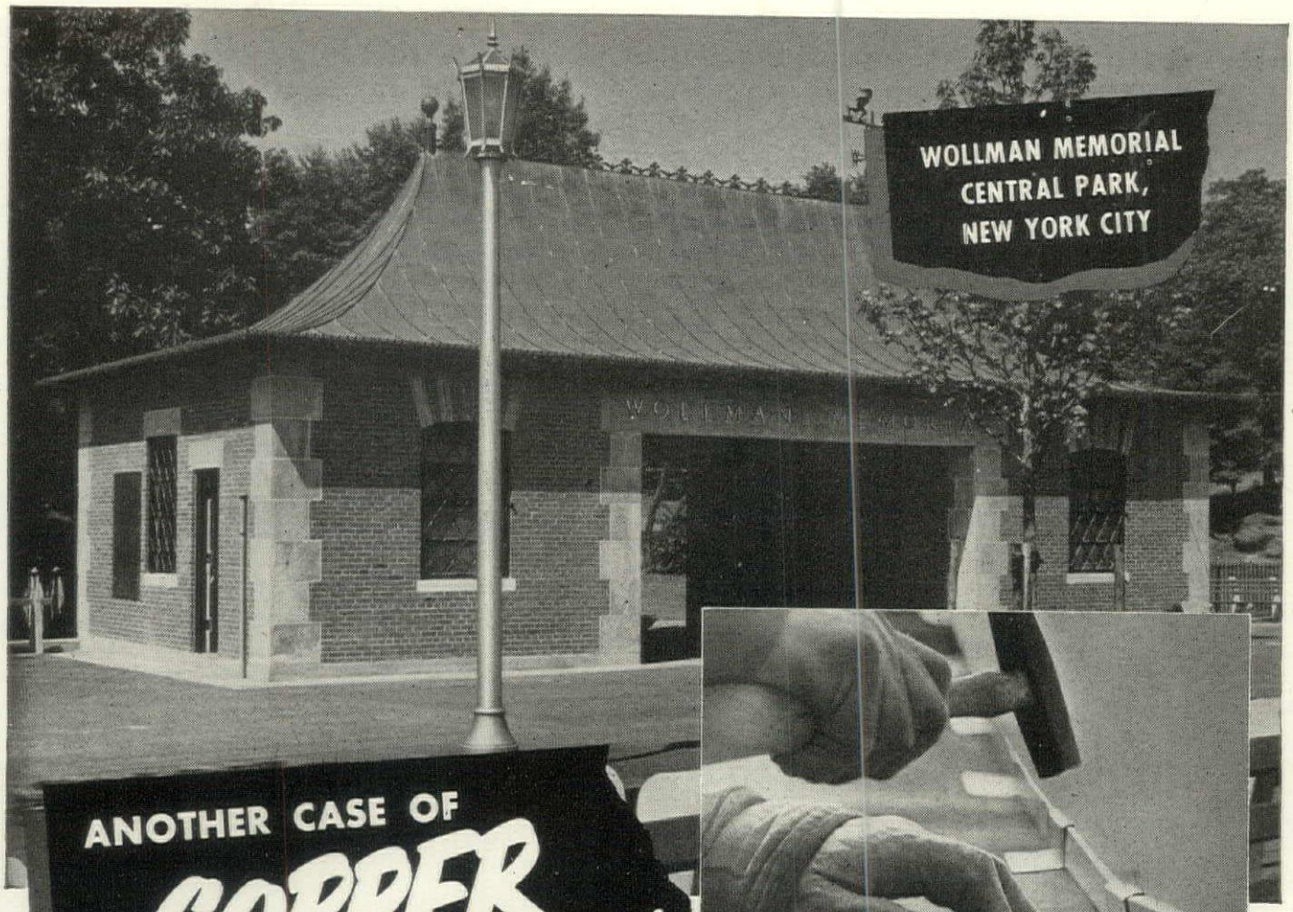
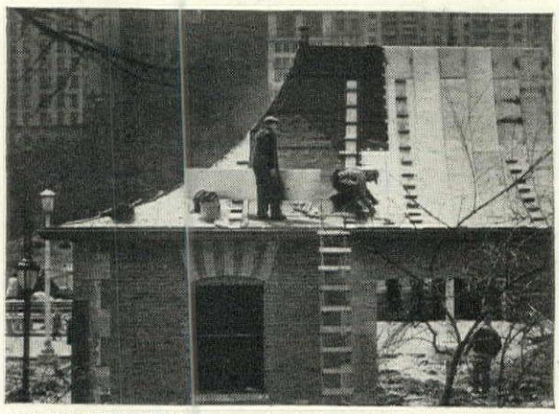


ANOTHER CASE OF COPPER *where it counts!*

COPPER SHEETS, *laid over building paper, are easily and permanently fastened to roof with copper cleats, two copper nails being used in each cleat. 20 oz. Revere Copper was used on the roof; frieze work, gutters and downspouts of the Wollman Memorial.*



NO MATTER WHAT *the style of the roof, Revere Copper Sheets can be made to conform to the desired shape easily and speedily. Aymar Embury II, Consulting Architect, and Embury & Lucas, both of New York, were the Architects. Sheet Metal Contractor—Standard Waterproofing Corp., N. Y. Distributor—Service Metal & Roofing Supply Corp., Brooklyn, N. Y.*

WHEN you are building to endure, that's when copper really counts. In fact, copper is ahead on many counts. Its lasting qualities have been proved down through the centuries. It requires little, if any, maintenance and when aged, adds a distinctive note to the building. Its salvage value is unusually high.

And because it is so readily worked, installing Revere Copper Sheets to fit the unusual contours of roofs; such as the one that covers the Wollman Memorial Building, Central Park, New York; is done easily and speedily when applied by an experienced contractor in accordance with Revere's recommended techniques. Gutters, downspouts and frieze work on this building also are Revere Copper.

Although copper, because of government regulations, cannot now be used for roofing, we use the Wollman Memorial installation as a means of reminding you of the merits of Revere Copper so that when copper once more is permitted for roofing you will again use it. Meantime remember, while limited, you can still get Revere Sheet, Strip and Roll Copper for flashing.

For through-wall applications, ask the Revere Distributor about Revere Keystone Thru-Wall Flashing.* He also will advise you of the availability of materials and put you in touch with Revere's Technical Advisory Service in the event you wish to discuss your technical problems.

**Patented*

REVERE 150th YEAR OF SERVICE TO AMERICA

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

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protect buildings occupants against many of the dangers of an atomic blast. Although Strategic did not claim it to be of much use against a direct hit, at distance of 8 miles to within 2,600 ft. from an explosion the window covering would offer effective protection against flying glass, radioactive dust and mist, blinding light from atomic rays, and fire. Waterproof and fire resistant, the curtain is made of a fabric metalized with molten lead and aluminum. It fits into a frame installed in the casement and is fastened to steel hooks on the frame by loops of high tensile strength cord. Zippers on the sides cut the make-ready time to about 45 seconds. When not in use, the curtain rolls up tightly against the upper part of the casement like a window shade, and may be concealed behind a cornice. Available at present for public buildings, and planned for general distribution later, the curtains will average about $25 to $30 per window.

Manufacturer: Strategic Products, Inc., 600 South Michigan Boulevard, Chicago 5, Ill.

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Guaranteed by Good Housekeeping

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- *Will not warp, crack or craze*
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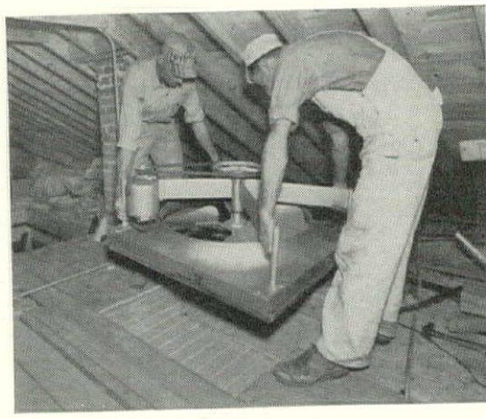
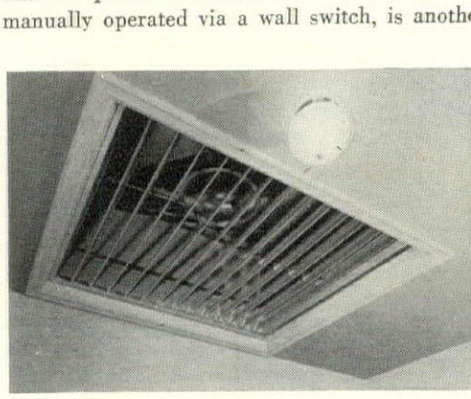
All the necessary parts for this efficient ventilator are shipped in two easily handled assemblies: the fan unit and the automatic shutter.



PACKAGE FAN made for attics with low head room and builders with low budgets

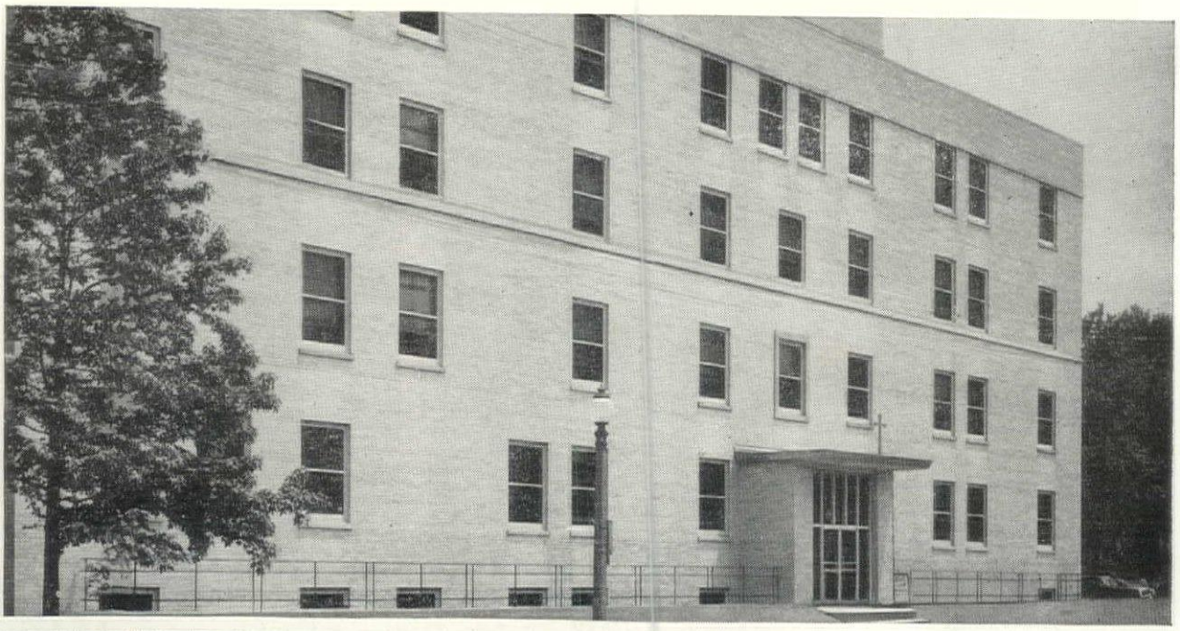
By installing an exhaust fan in the attic floo a builder can offer the small home buyer h weather comfort at a modest price. The late Robbins & Myers vertical discharge models hav high capacities but take little space, and a easy to install. They measure about 3′ squa and project only 17½″ above the attic floor, an so may be placed over narrow hallways and i low attics. In a new house, a fan can be fixe in place in less than an hour. A ceiling openin and adequate exhaust areas are the only prep rations necessary. Fan, motor and suction bo are all contained in one assembly that rests o the attic floor. A heavy rubber base acts as a air seal and cushion between the frame and th floor; no screws or bolts are needed to hold th unit in place. An automatic ceiling shutte manually operated via a wall switch, is anothe



feature of the R & M fan. The shutter is a tached to the wood frame of the ceiling and r quires no additional plastering or painting. Bo the shutter and trim are finished in ivory bake enamel. The fans are made with four air d livery capacities. All are said to be very qui in operation and demand little maintenance. R tail prices are $149.50 for the 4,750 CFM $169.50 for the 6,800 CFM, $199.50 for the 7,70 CFM and $219.50 for the 9,700 CFM capacitie

Manufacturer: Robbins & Myers, Inc., 387 Front St., Memphis, Tenn.

(Continued on page 290)





FIRMS ASSOCIATED with construction of Incarnate Word Hospital—Architect, Maguolo & Quick. Contractor, C. Rallo Contracting Co., Inc. Lumber furnished by Heitz Lumber Co. Wood penta-treated by Associated Wood Preservers, Inc.

• • • •

WHERE TO USE PENTA—Poles and cross-arms • Planks covering underground cables • Transformer platforms • Sills and plates • Joists and girders • Screeds and subflooring • Flooring • Roof planks • Platforms and decking • Posts and fences • Cooling towers • Millwork • Guardrails • Truck beds • Construction timbers.

Monsanto PENTA protects wood in hospital

Wood in the new Incarnate Word Hospital in St. Louis, Missouri, will last longer because it is protected by Monsanto Penta preservative. Thus penta preservative means lower maintenance costs. Wooden members in the structure which are pressure treated to retain six pounds of penta per cubic foot include: rough bucks, nailing blocks, flashing and roofing strips, all wood set in concrete or placed where moisture collects.

Monsanto Penta adds years of life to lumber by protecting it against attack by termites and other wood-boring insects . . . by preventing decay due to fungi. Penta is a stable chemical that gives lasting protection. It does not leach, and rain or ground water cannot wash it away.

Whether you use wood for complete buildings or only for structural parts, you can get longer service by treating with Monsanto Penta preservative. For details on the use of penta, for names of suppliers of penta-treated lumber or for addresses of firms that will custom-treat your lumber, contact the nearest Monsanto Sales Office or write MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1752-J South Second St., St. Louis 4, Missouri.

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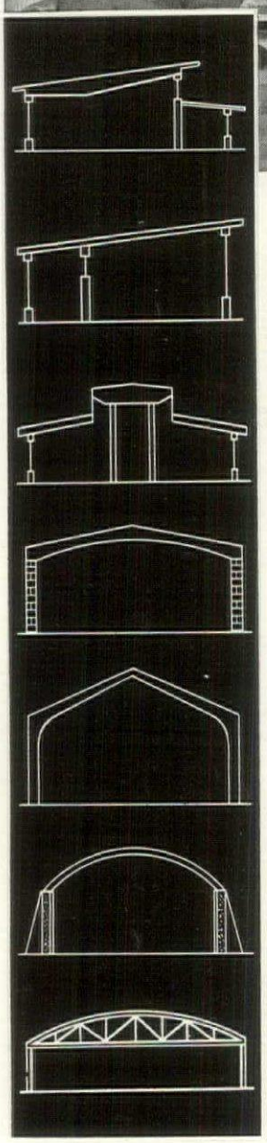
CHEMICALS AND PLASTICS

SERVING INDUSTRY . . . WHICH SERVES MANKIND



Library in elementary school at Shelby, Mississippi. Architect: R. W. Naef, Jackson, Mississippi.



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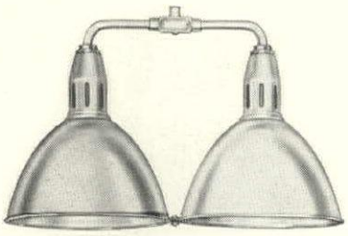
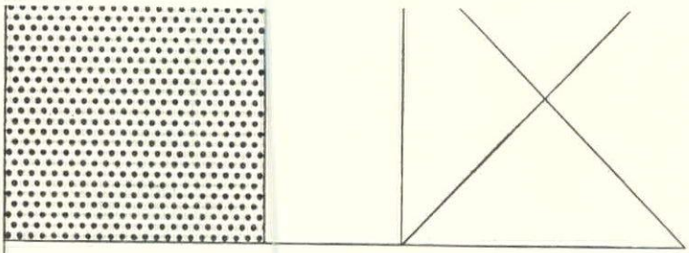
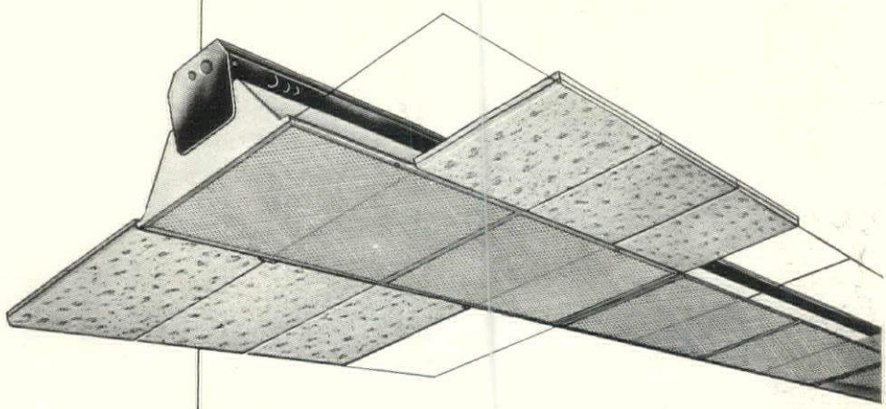
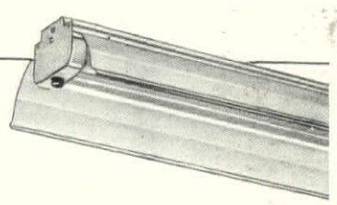






WHY MILLER RATES YOUR CONSIDERATION WHEN YOU ARE PLANNING LIGHTING





Because of experience — 107 years' pioneering and progress in GOOD Lighting. *Because of all-inclusive equipment* for the best use of all light-sources — Fluorescent, Incandescent and Mercury-vapor. *Because of wide acceptance* — America is dotted with Miller lighting installations in stores, offices, schools, factories, and public buildings. Miller Lighting Systems are built on an 8-Point QUALITY standard, designed to provide light of highest efficiency, and to give long satisfactory service. Engineering features make for easy installation and maintenance, and these make for LOW OVERALL COST (cost of equipment installation and maintenance). You can light with confidence the *proven* Miller way. Miller field engineers and distributors are conveniently located for nation-wide service.

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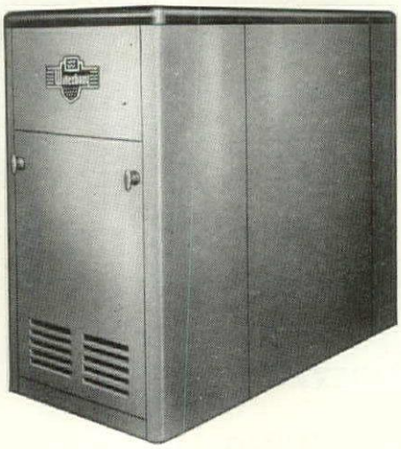

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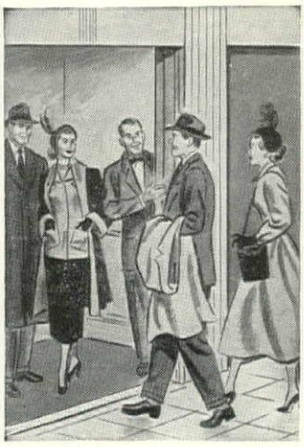

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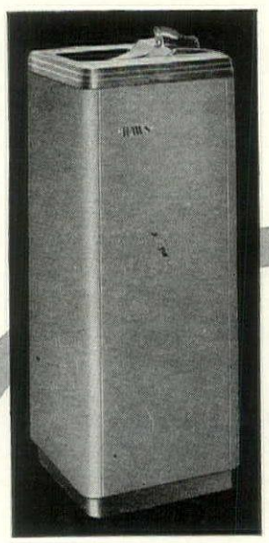

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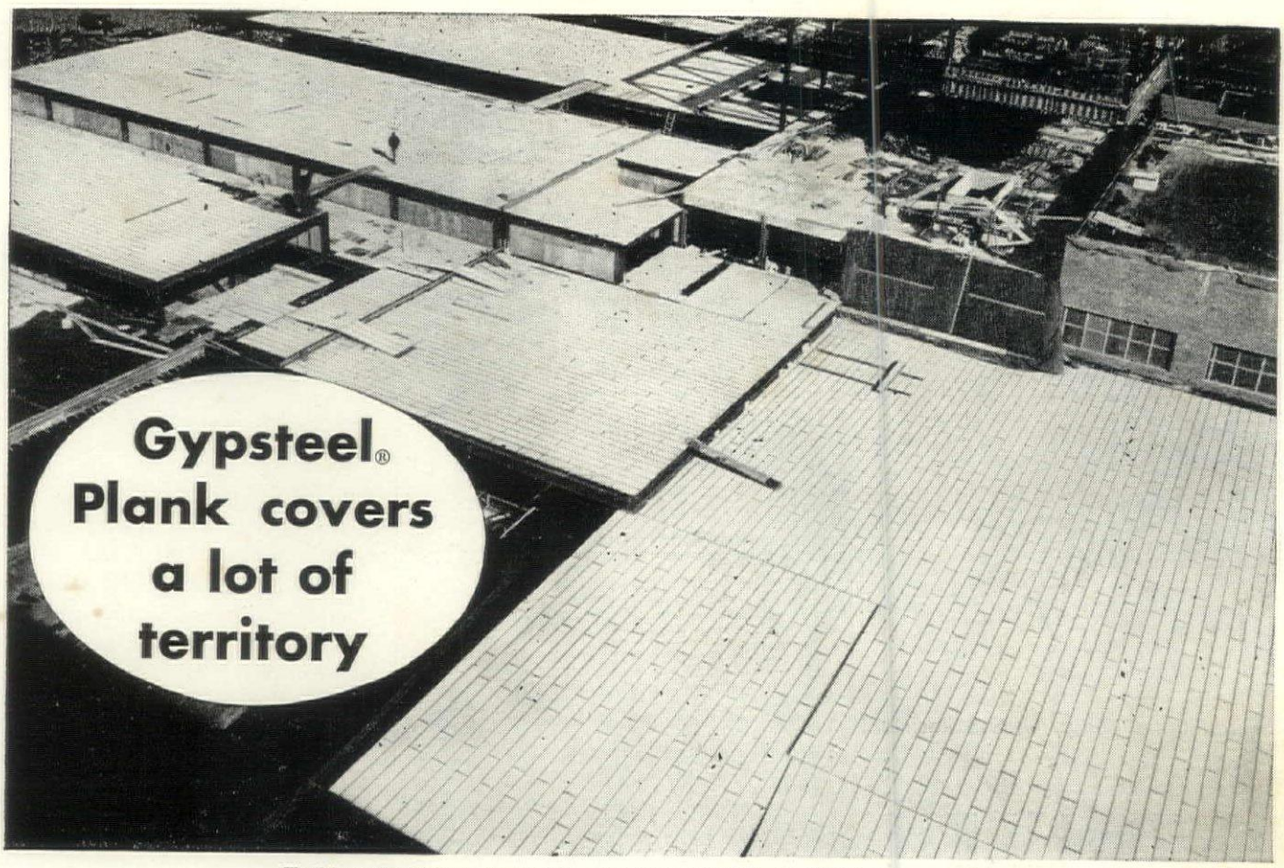


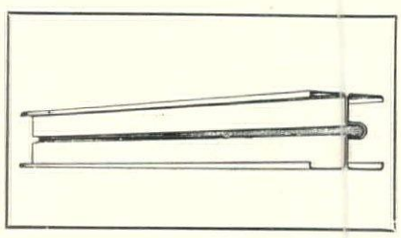
The Anheuser-Busch Brewery, Newark, N.J.—HARLEY, ELLINGTON and DAY, INC., Architects • GEORGE A. FULLER CO., General Contractor

Any way you look at it, CERTAIN-TEED's Gypsteel Plank makes an ideal roof deck. It is fireproof, light in weight (only 12 lb. per sq. ft.), strong (safe load, 75 lb. per sq. ft.; safety factor of 4) and has a high insulation value (2 in. equals 10 in. of cement).

Gypsteel Plank is a simplified form of precast construction. It requires no form work, mixing or pouring. It is tongued and grooved, and handles like lumber—easily sawed, cut, bored, resulting in minimum construction and labor costs.

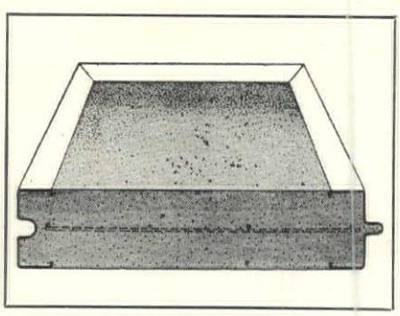
Gypsteel Plank is permanent—rot-, vermin- and termite-proof. And it makes an attractive ceiling, one that is easily painted.

Size of Gypsteel Plank, 2″ x 15″ x 10′.



Gypsteel's tough! 16 g. galvanized steel wire reinforces the highly compressed gypsum slab. Its frame is electrically welded steel, .032″ thick.

• • •



The tongued and grooved Gypsteel frames form a sinewy steel I-beam of calculable strength and flexibility. Joints can be safely broken between supports.

see our CATALOG in SWEET'S FILE ARCHITECTURAL

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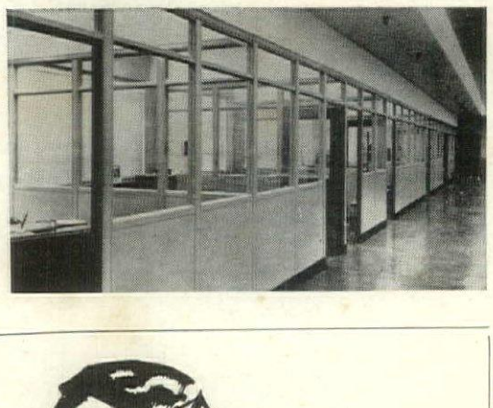
GYPSUM PLASTER • LATH • WALLBOARD • ROOF DECKS

ACOUSTICAL TILE INSULATION FIBERBOARD

PLASTIC-IMPREGNATED HONEYCOMB PANELS
used in new partition line

Old hand at movable partitions, the E. F. Hauserman Co. has worked up a new panel line which uses steel only for posts, bases, cornices, and lay-in wiring. The panels themselves—the bulk of the system—are made of a 3″ thick plastic-impregnated paper honeycomb (a construction process developed by the Chrysler Corp.) and are faced with durable composition





An asbestos board 3/16 thick, with a hard durable finish covers each side of the rigid honeycomb core of the panels

board. Called Korweld, the panels look very much like their metal forebearers and embody the same economic and flexible design features plus a few of their own. Not only can they be easily erected, dismantled, and interchanged, but they weigh less and have better sound absorption. When posts, base, cornice and top filler are packed with mineral wool, the partitions have an attenuation value of 40 decibels. As for fire resistance, the panels are equal to steel. Unlike many other composition products Korweld panels are said to have excellent dimensional stability. Weighing 4.6 lbs. per sq. ft., the will withstand a pushing pressure of 70 lbs. per sq. in. and an over-all pulling force of 500 lbs. Because the cores are sealed throughout during the plastic-welding process, moisture cannot seep in to cause warpage. All panel edges are metal-covered to prevent chipping and cracking. Two coats of mar-resistant baked enamel give the partitions a rich, lightly textured finish.

The price of a 20′ run of Korweld with one door, no windows, is about $550 for the 10′ high panels. Complete built-in wiring facilities, hardware, and installation ready for occupancy are included in the cost.

Manufacturer: E. F. Hauserman Co., Cleveland, Ohio.

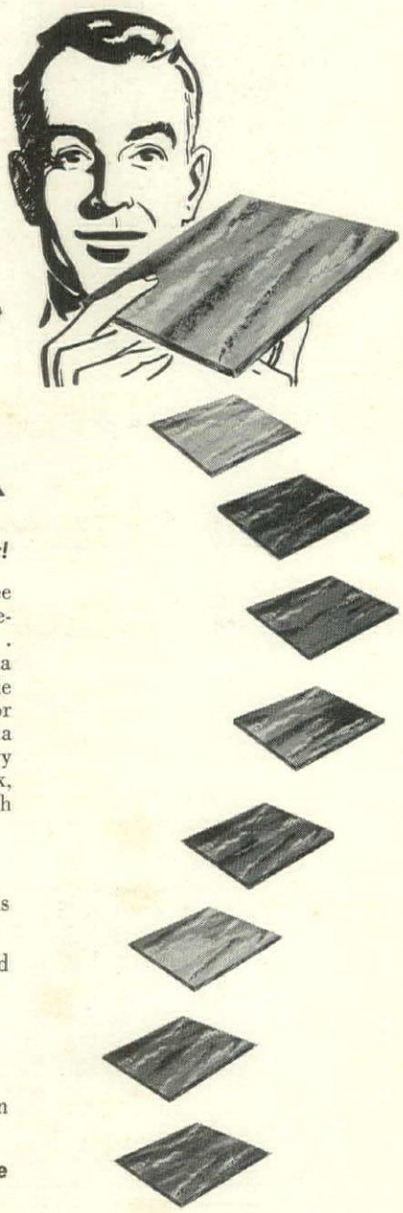
REFRIGERATOR RANGE COMBINATION
space saver for small kitchen

The Acme Dual-Purpose combines the conveniences of a compact counter-height refrigerator and a two burner electric range in a single kitchen appliance. The unit stands 3′ high, 27″ wide and 26½″ deep, and has a storage capacity of 5.8 cu. ft. It is suitable for small apartments, motels, and other installations where space is at a premium. Retail price for the combination unit is $297. Discounts are made available to builders on quantity orders.



Manufacturer: Acme National Refrigeration Co., 29-24 40th Ave., Long Island City, N. Y.

(Continued on page 294)



Better Colors
More Color Choice

With Premium Quality, Grease Resistant

AZPHLEX

ASPHALT TILE

Gives More Value for Your Flooring Dollar!

If you look at Azphlex Asphalt Tile and see its outstanding beauty . . . learn about its premium-quality, grease-resistant features . . . and *then* look at the price tag, you have a pleasant surprise in store! This superior tile is priced far lower than its quality and color range would suggest — actually costs just a few cents a square foot more than ordinary asphalt tile. We invite you to compare Azphlex, feature for feature — including price — with any other resilient floor covering.

Highly Resistant
to greases, fats, oils, soaps and compounds

Tough Surfaced
for increased resistance to indentation and abrasion

Wide Color Range
15 clear, permanent colors

Moderate Price
is only a few cents more a square foot than ordinary asphalt tile

For a floor that gives maximum service —look to AZPHLEX!

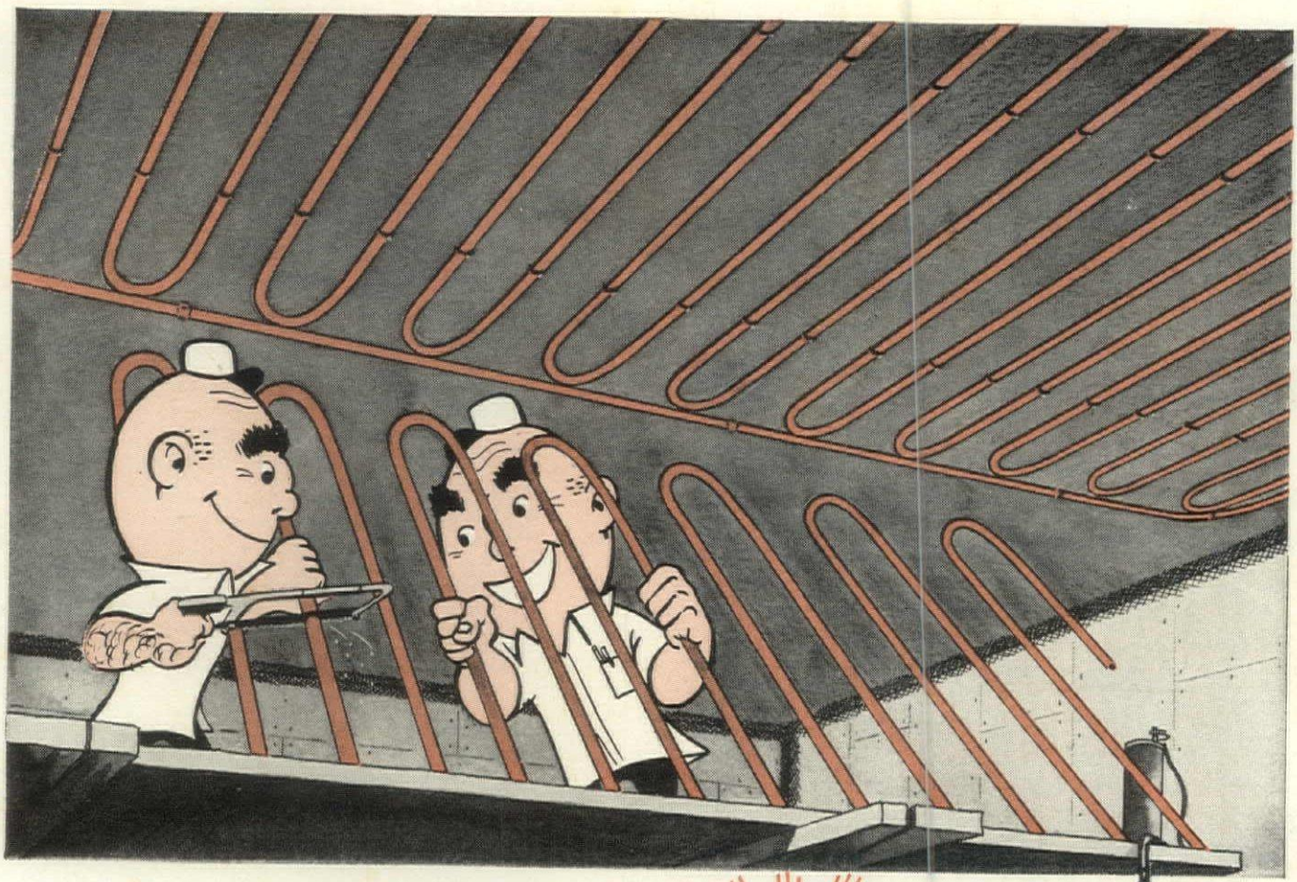
For complete information see or call your flooring dealer or contractor—or write to Dept A

AZROCK ASPHALT TILE
AZPHLEX ASPHALT TILE

COLORS AND SIZES SEE SWEETS' 1951 CATALOG FOR

UVALDE ROCK ASPHALT CO.

Makers of AZPHLEX and AZROCK Asphalt Tile
FROST BANK BLDG. • SAN ANTONIO, TEXAS



Bundyweld Tubing shines in better radiant heating systems

Shines in *on-the-site* fabrication, too.

Bundyweld is the only tubing double-walled from a single strip, with an exclusive beveled edge. It is copper-brazed, perfectly bonded through 360° of wall contact, into a solid-walled tube with thinner yet stronger walls. It is held to close tolerances.

Scale-free and smooth inside and out, Bundyweld arrives at the building site in twenty-foot lengths, with one end expanded if specified.

One man quickly bends grids on a simple wood or metal form and joins them by soft or silver soldering. Two men easily position the lightweight, rigid, joined grids. Bundyweld shines, too, in your radiant heating systems. It's extra sturdy with a margin of safety against leaks or bursts under normal pressure. Its thinner wall radiates heat faster for more effective performance. You can already see that Bundyweld offers many unique performance and fabrication advantages that mean time, work, and money saved. But there are more. Check *Sweet's Architectural File* for details. Or write us. ***Bundy Tubing Company, Detroit 14, Michigan.***

Bundyweld® Tubing

DOUBLE-WALLED FROM A SINGLE STRIP

WHY BUNDYWELD IS BETTER TUBING



Bundyweld starts as a single strip of basic metal, coated with a bonding metal. Then it's . . .



continuously rolled twice around laterally into a tube of uniform thickness, and



passed through a furnace. Bonding metal fuses with basic metal, presto—



Bundyweld . . . double-walled and brazed through 360° of wall contact.



NOTE the exclusive patented Bundyweld beveled edge, which affords a smoother joint, absence of bead and less chance for any leakage.



Whether you are planning or building one residence, a multi-unit development, an apartment, hospital, hotel or other structure, Wall-Tex fabric wall coverings are a sound investment in beautiful, durable decoration.

fabric *decoration adds value to every building!*

Investors, owners and tenants are all better satisfied when rooms and hallways are beautified and protected with Wall-Tex. The strong fabric guards against plaster cracks; the colors and finishes are safely washable.



Wall-Tex full color magazine advertising is telling the Wall-Tex story to *your* prospects right now. They know Wall-Tex is a highly serviceable wall covering, decorator styled, famous for enduring beauty, a money-saving investment.

WALL·TEX
fabric wall coverings

see our CATALOG in SWEET'S FILE ARCHITECTURAL

Send for new free Wall-Tex *File Folder*. Includes sample swatches. Shows range of recent applications; contains charts, technical data and factual information you need. Mail the coupon now!

Columbus Coated Fabrics Corporation
Dept. AF-91, Columbus 16, Ohio

Send your new free File Folder and sample swatches.

*name*_____

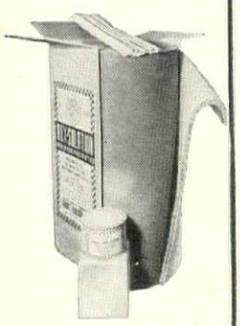
*address*_____

...here are the reasons why

Grant Wilson DUX-SULATION
(ASBESTOS PROTECTED)
is **BEST FOR DUCT INSULATION**



1. High thermal and acoustical insulating properties... K factor of .27 BTU and sound absorption approximately 61%. Integral, woven asbestos membrane.
2. Easy to handle, easy to install *correctly*, can't be crushed or cracked, springs back to original thickness if compressed. Supplied with special glue and tape, no "fasteners" needed.
3. Constant insulating values. Can't "powder", shift or sift; no thin spots, even at corners. No deterioration of any kind, no *change* of any kind.
4. Perfect adhesion, flexible, conforms to uneven surfaces. Can be installed in the shop and still withstand all necessary handling. Specifically engineered for duct application ONLY!



Inspect Dux-Sulation yourself!
Write Grant Wilson, Inc. 141 West Jackson Blvd., Dept. I Chicago 4, Illinois.



Grant Wilson inc.
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The answers to problems on sun control—in a small folder in your desk or brief case!

The Sun Angle Calculator—simple to use—really makes you expert in giving clients the amount of sun they want, where they want it, and when they want it.

Tells how to determine:

1. **Sun's position and penetration through windows**
2. **Dimensions and positions of shading devices**
3. **Width, height and length of shadows**
4. **Solar heat gain through windows**

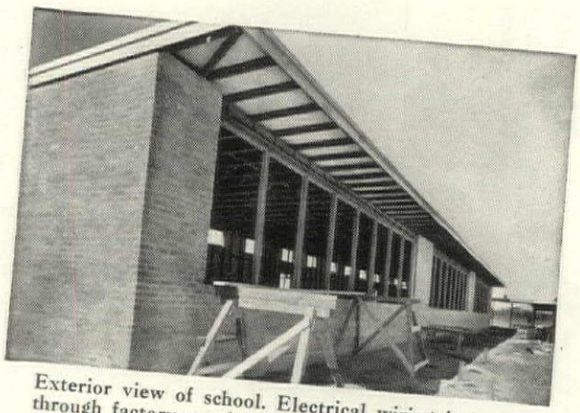
It works for latitudes 24° to 52° North—for walls facing *any* direction—for any day or hour of the year.

Developed by Libbey·Owens·Ford and prepared by Aeronautical Services, Inc., as an aid to architects and engineers. Available at $9.50. Since this is only a portion of actual cost of research and production, be sure your letterhead stating your profession accompanies your order and check. Libbey·Owens·Ford Glass Company, Dept. SP-291, Nicholas Building, Toledo 3, Ohio.

LOF GLASS **SUN ANGLE CALCULATO**

STRAN-STEEL FRAMING

FOR SCHOOLS



Exterior view of school. Electrical wiring is installed through factory-punched holes in frame members.

Here is what Benjamin Kenneth Wyatt, architect for the Robstown, Texas and other school buildings, says about Stran-Steel Framing:

"We have used Stran-Steel construction in several recent school buildings.

"Besides being most flexible for modern design, providing light cantilevered construction, thin window mullions used with collateral materials, economical suspended furring, Stran-Steel offers great rigidity with speed of erection for greater economy.

"Being able to nail to Stran-Steel Framing gives the economy of wood framing for dry wall construction (Knox School) also eliminates furring for metal lath (Robstown Schools) in plaster construction. Fire-safety and long life is of paramount importance in school building construction, and incombustible Stran-Steel framework meets both of these requirements."

Stran-Steel Framing makes it easy to design, easy to build BETTER BUILDINGS economically! If you are planning a school project, classrooms, or other type of construction, you can give your buildings a backbone of steel with Stran-Steel Framing.

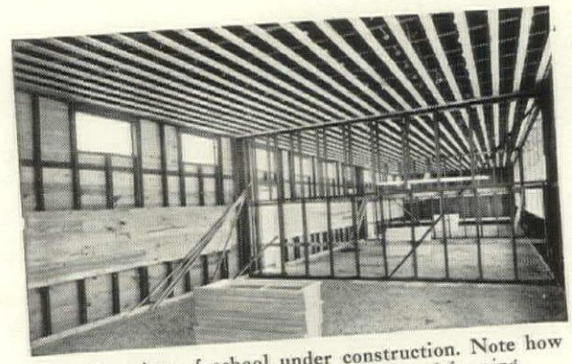
Complete literature and specifications data available upon request, or see Sweet's catalog service, architectural and builders files.

GREAT LAKES STEEL CORPORATION

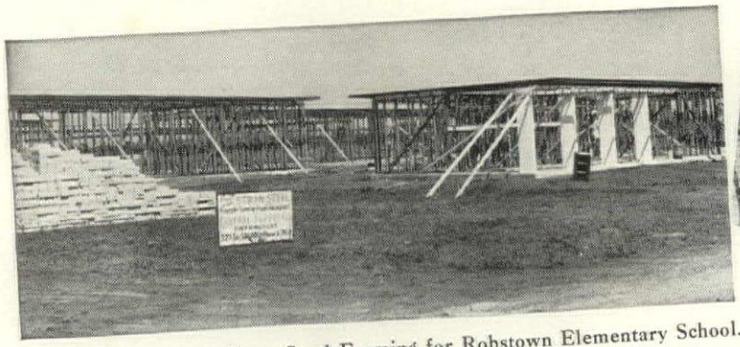
Stran-Steel Division — Ecorse, Detroit 29, Mich.

NATIONAL STEEL CORPORATION

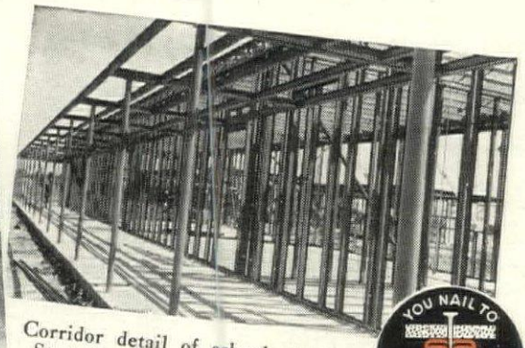
PRODUCER OF NAX HIGH-TENSILE STEEL



Interior view of school under construction. Note how wood collateral is nailed directly to metal framing.



Stran-Steel Framing for Robstown Elementary School.



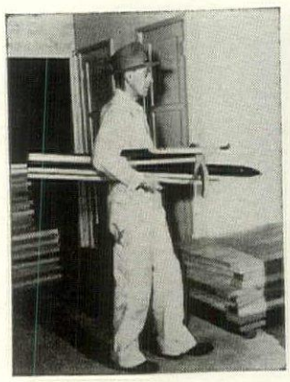
Corridor detail of school showing Stran-Steel Framing.

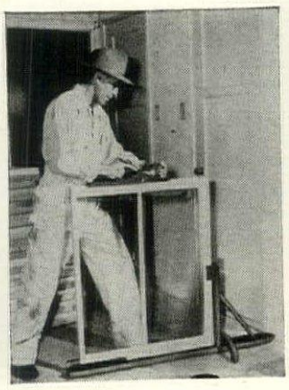
YOU NAIL TO STRAN-STEEL FRAMING

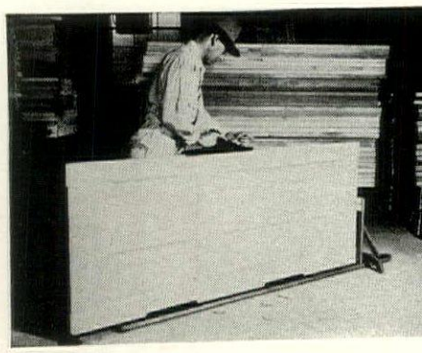
STRAN-STEEL REG. U. S. PAT. OFF.

PORTABLE DOOR JACK speeds carpentry on the job

Using the Adjusta-fold door jack on the job site, a carpenter can easily dress, handle, and mount the hinges for any standard door up to 8′ high. A pin in the center disconnects the jack so that it can also accommodate window sash, cupboard doors, shutters and storm sash. Measuring 7½′ fully extended and 18″ high, the device is made of 1″ thick waterproofed plywood. Compact and lightweight (11 lbs.), the jack can be used very narrow quarters, and is easily fold picked up and carried to another location. R ner guides along the spine, rubber grippers a bumper, and an adjustable clamp on the upri member are other convenient design details. T Adjusta-Fold sells for $17.50 prepaid.





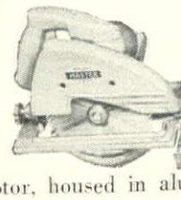


A convenient carpentry device in the fie the folding jack handles both windows a doors, and is easy to carry.

Manufacturer: E-Z Mark Tools, 3707 S. Rob son Blvd., Los Angeles, Calif.

PORTABLE CIRCULAR SAW has built-in be

The Ramsaw electric circular saw is equip with a 6¼″ blade which allows for cutt through 2″ stock on a 45° angle. A plastic w dow in the metal guard allows the user to the line of cut at all times, and a safety trig- ger in the handle will shut off the motor when the operator lifts his finger from the switch.



The Ramsaw's ¾ h.p. motor, housed in alu num, is placed at the left of the blade for ance and easier cutting. The built-in bevel depth adjustment are easily adjusted and a rate. The saw is priced at $46.95.

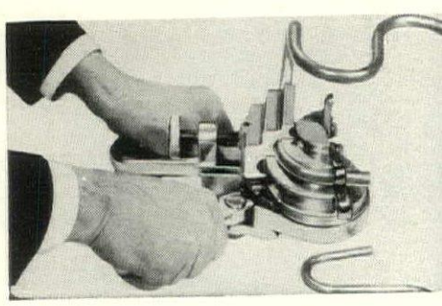
Manufacturer: Master Tape Co., 4531 N. con St., Chicago 40, Ill.

HAND TOOL bends light gauge tubing

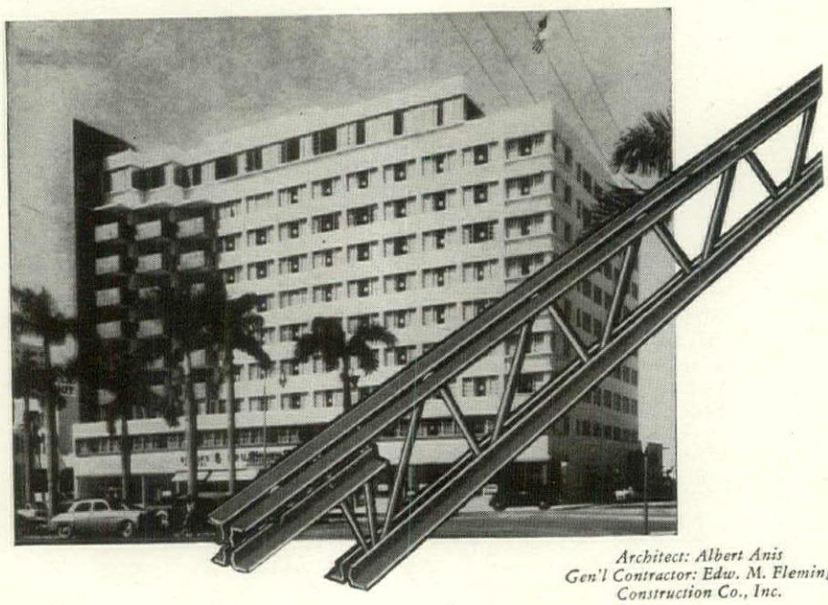
The Tal 3-in-1 Bender is an efficient little for making offsets and bends up to 180° in ½″, and ⅝″ copper, brass, steel and other gauge tubing. Made of strong lightweight m the instrument is easy to operate without a or other fixture. In the construction field, useful in refrigeration and air conditioning w and in bending radiant heat coils. Price is f.o.b. Milwaukee.

Manufacturer: Tal Bender, Inc., Milwauke Wis.

(Continued on page 298)



Beauty plus STRENGTH with LACLEDE STEEL JOISTS



Architect: Albert Anis
Gen'l Contractor: Edw. M. Fleming Construction Co., Inc.

Combining structural strength with design flexibility, Laclede steel joists played an important role in the construction of this modern new Biscayne Terrace Hotel in Miami, Florida.

Careful control of quality from open hearth to finished product in the modern Laclede mills is your assurance of dependable quality when you specify these Laclede construction steels:

Steel Joists • Welded Wire Fabric • Corrugated Centering • Multi-Rib Round Reinforcing Bars • Accessories
Spirals • Pipe and Conduit

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Producers of Steel for Industry and Construction
LACLEDE STEEL COMPANY
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now! MENGEL MAHOGANY Flush DOORS

Available at less than many Domestic Woods!



"Believe it or not"!—Mengel Flush Doors with faces of genuine African Mahogany can now be bought for less than comparable doors built with many conventional domestic woods!

Why? Because Mengel, drawing from its own vast logging concessions in the heart of Africa's Gold Coast, brings its fine Mahogany veneers to America in tremendous volume. Second, Mengel has the wood-working equipment and know-how to manufacture its top-quality doors *with mass-production economy and efficiency!*

Use the coupon to get full details about Mengel Mahogany Doors. Until you know the facts, you'll never appreciate the extra luxury, the extra *values* now immediately available for *any* kind of job.

THE MENGEL COMPANY
Plywood Division, Louisville 1, Ky.

Gentlemen: Please send me full information on Mengel Mahogany Flush Doors—Hollow Core and Stabilized Solid Core.

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The Mengel Company . . . America's largest manufacturers of hardwood products • growers and processors of timber • manufacturers of fine furniture • veneers • plywood • flush doors • corrugated containers • kitchen cabinets and wall closets

Waste Money on intercom phones? NEVER!



"Why in the world should I have another phone just for intercom, when my regular switchboard can handle the job?"

Famous last words these. Because actual experience proves (as you probably know) that switchboards doing double duty handling both outside and inside calls often double up from overwork. But with a Couch Private Phone System on the job, valuable outside lines are freed . . . unnecessary calls are kept at a minimum . . . and many regular phones used *only* for intercom, can be eliminated.

Best way to find out what a Couch Phone System can do for you is to write outlining your requirements.

Couch Systems available for 2 to 50 lines

Couch Autophone System . . . with simplified dialing 30 or 50 line systems . . . "one shot" dialing saves time, eliminates manually operated switchboard . . . simple, rugged, inexpensive.





Type 52

Wall handset with four buttons. Suitable for small selective signalling systems.

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Private telephones for home and office . . . hospital signaling systems . . . apartment house telephones and mail boxes . . . fire alarm systems for industrial plants and public buildings.

FOR

SIDING

THAT'S

WELL MANUFACTURED
THOROUGHLY SEASONED
CAREFULLY GRADED

BEFORE SHIPMENT

SPECIFY AND BUY

WESTERN PINES and **ASSOCIATED WOODS**

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Larch • Douglas Fir
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Incense Cedar
Engelmann Spruce
Lodgepole Pine

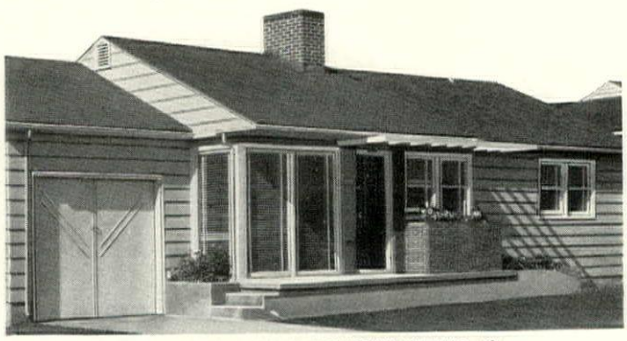
Wherever your building plans provide for wood exteriors you'll be sure of satisfaction if you buy Siding of Western Pines and Associated Woods from the Western Pine Region.

Lumber mills of the Western Pine Association maintain the highest standards of manufacturing and their products are carefully graded and seasoned prior to shipment.

Skilled handling and modern methods feature every step from forest to loaded car. Milling after seasoning assures precise, uniform sizes.

Seasoning is done at the mill in accordance with the most improved practices and under supervision of specially trained Association personnel.

Grading at all member mills is done under the Association's published rules and is constantly checked by the Association's grading bureau.



PONDEROSA PINE ECONOMY SIDING ◄

► WESTERN RED CEDAR SIDING



FOR INFORMATION on Siding, or any product of Woods from the Western Pine Region, set of grading rules, and list of member mills, write—

WESTERN PINE ASSOCIATION

Dept. 703-V, Yeon Building, Portland 4, Oregon

Love letters to a lamp!

the GUTH 4-ft. SLIMLINE



"Here's to GUTH 4-ft. Slimlines! They're more profitable to handle and easier to store than the long 8-ft. fixtures . . . and I have far less loss from breakage."

Lighting Wholesaler
Pittsburgh, Pa.



"I feel safer about specifying GUTH 4-ft. Slimlines. No more complaints from my clients because of the long, unwieldy 8-ft. lengths. Takes 50% less manpower to install and maintain."

Lighting Engineer
St. Petersburg, Fla.



"My clients are still praising me for suggesting convenient, *short* GUTH 4-ft. Slimlines. Gives them all the economy and functional advantage of Slimline lighting without the clumsy 8-ft. length."

Architect
Los Angeles, Cal.

Last year we started out with both 4- and 8-ft. slimline — and 4-ft. has won by a landslide! Sales have zoomed higher than anyone had expected. Lighting men everywhere have fallen in love with GUTH 4-ft. Slimline. Here's what some say:



4-Ft. Slimline now available in every 2- and 4-lamp fixture in the *entire GUTH line!* See your GUTH resident engineer, or write for Bulletin 871-K giving full details.

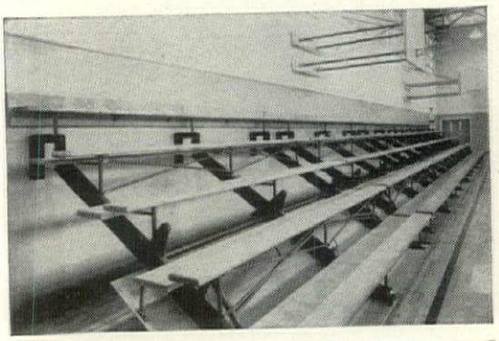
Guth LIGHTING

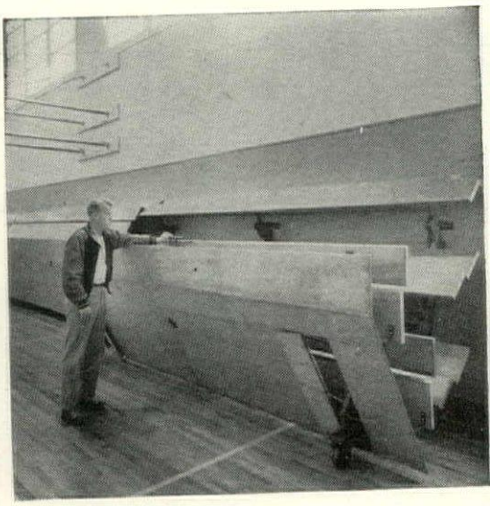
THE EDWIN F. GUTH COMPANY • ST. LOUIS 3, MISSOURI

Leaders in Lighting Since 1902

PRODUCT NEWS

One person can fold or open the compact bleacher



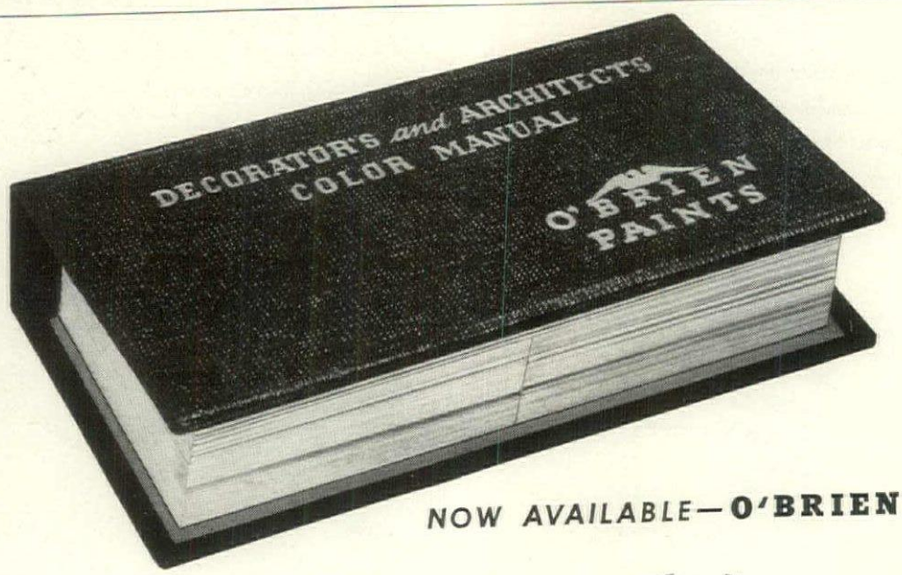


FOLDING BLEACHERS allow flexible use of valuable floor space

School architects and community planners who must make budgeted floor area work double time, have found folding bleachers to be a vital feature in multipurpose rooms. The Rollway model introduced recently by Beatty Safway Scaffold, Inc. should have appeal for both the designer and the safety engineer. Although the bleacher takes up only 2½′ of floor space when folded against the wall, the extended unit wil hold 30% more persons than a standard typ bleacher covering the same amount of area. Th new bleacher is constructed of welded tubula steel and has seat and floor boards of 2″ struc tural select Douglas fir, spaced to provide a back-to-back seating arrangement—enough dept between rows for occupants to sit comfortabl without sprawling limbs sideways. A bleache section about 6′ high and 9′ deep made up five rows 16′ long will provide sitting and breat ing space for about 55 people. The stands a built with few moving parts so that the enti assembly can be pulled out or folded back one man. The balance of the steel beam is sa to insure easy handling.

When people are in the grandstand, the tot weight is distributed at three points: at the wa by a double bolted hanger; at the front by lightweight plywood covered I-beam which pa allels the wall: and at the center, where t down weight causes a heavy piece of spri steel to engage a lineal sleeper with the flo The stress on the wall is thereby kept to minimum, and the even distribution of weig on the floor protects it from scars. Rollways a equipped with tamperproof integrated loc which secure them in open or closed positi The entire outer surface of the folded stand protected by neat ½″ plywood panels. Cost the Rollway bleachers, in the San Francis area, has averaged between $12 and $15 per se including fittings and installation.

Manufacturer: Beatty Safway Scaffold, Inc., S Francisco, Calif.



NOW AVAILABLE—O'BRIEN

Colors of the Year

Selected to harmonize with latest fabrics, draperies, floor coverings!



Handy, pocket size. Full-page 6″ x 3″ swatches, split for easy comparison.

Send for your copy of the new *O'Brien Color Manual* —or call your O'Brien dealer, today! Presents a full range of over 100 authentic, up-to-the-minute colors, developed by O'Brien Color Stylists, working with leading color authorities! Simple! Easy to use! Ends color matching headaches! Complete mixing instructions, where needed, assure exact color you specify. Use O'Brien Colors of 1951 this year for beautiful interiors. All colors made with O'Brien's Liquid Velvet, America's *Most Washable* flat: most colors, with Satin Finish and Interior Gloss. The O'Brien Corp., South Bend, Ind.; Baltimore, Md.

See O'Brien full color ad in September Better Homes & Gardens, Living, and October American Home.

THE O'BRIEN CORPORATION, Dept. A-9
South Bend 21, Indiana
Rush my copy of new O'Brien Color Manual for which I enclose $1.75.

Name_____

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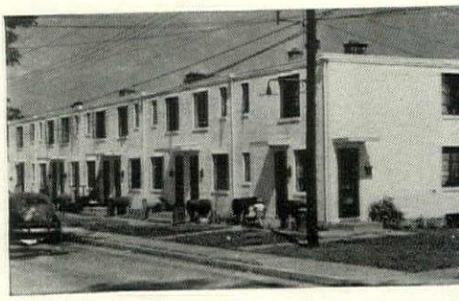
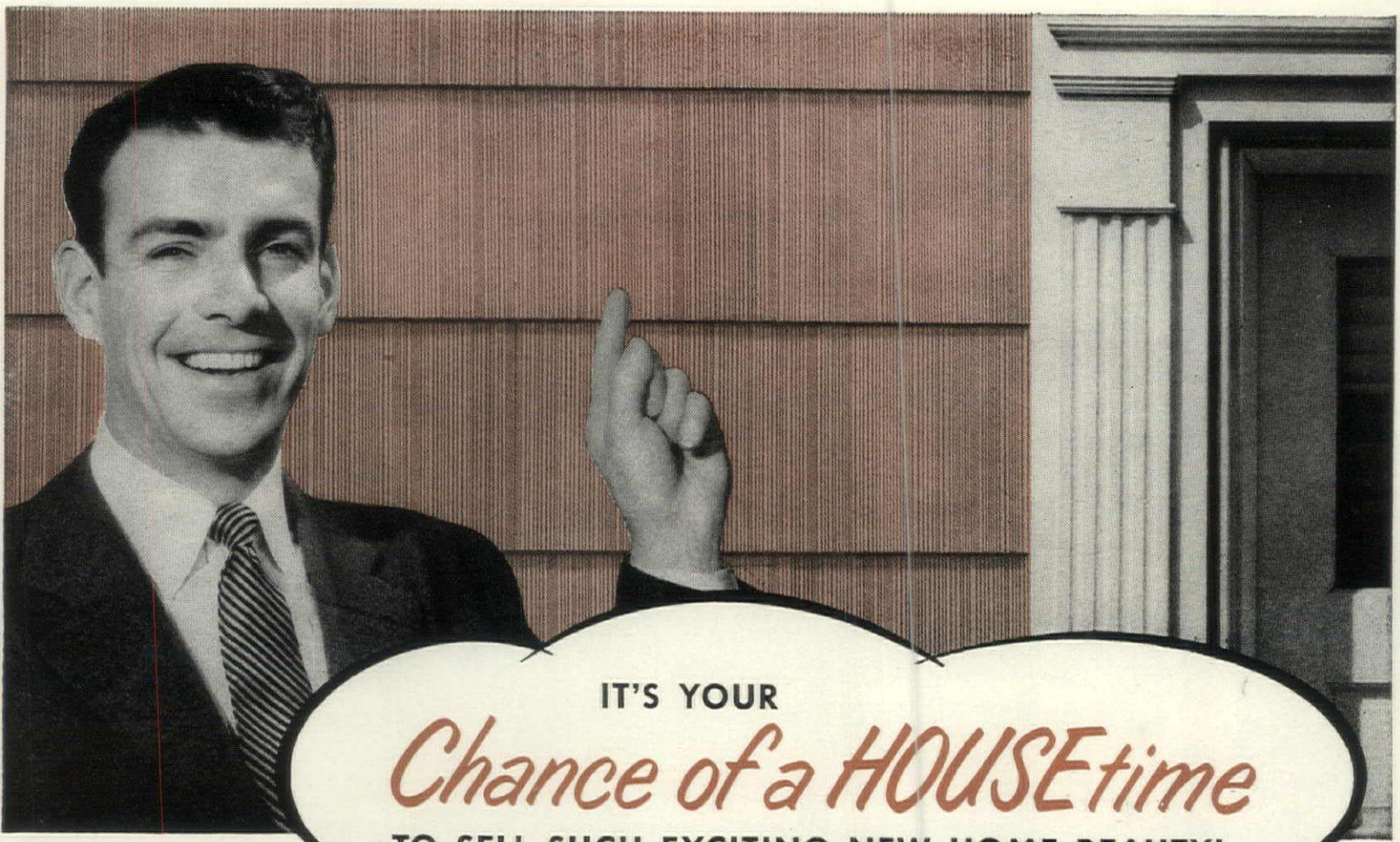
TOP QUALITY SINCE 1875



PLASTIC-BASED PAINT seals masonry w against ravages of moisture

Marvelite, a new paint based on a styrene em sion, is said to seal concrete and cinder bl walls against penetrating dampness, thus serv as a protective as well as decorative coat

(Continued on page 302)



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Chance of a HOUSEtime

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The up-to-date design of Ruberoid Color-Grained Siding* provides many new and exciting uses of color and the modern application of textured treatment for sidewalls. Color-Grained Siding is a significant advance in bringing custom-styled beauty not only to higher-priced homes but to low-budget houses as well.



COLOR BY BEATRICE WEST

● ***Decorator colors in two-toned effects,*** styled by Beatrice West, famous color consultant . . . choice of four warm color combinations . . . true "decorator" shades which color-style the home from the outside in.

● ***Exclusive Ruberoid Color-Grained*** process provides a deep textured effect, accented with light and dark tones of color . . . a bonus of unsurpassed beauty that appeals to architects, designers, builders, and home buyers alike.

● ***Color-Grained Siding*** has all the long-lasting, fireproof, maintenance-free virtues of asbestos-cement siding, with the color ingrained . . . it never needs paint. And it is backed by Good Housekeeping's Seal of Approval!

● ***Write today*** for complete details about Ruberoid Color-Grained Siding . . . the new concept in sidewall treatment that is styled right for today's trend, made right to assure sales in today's market.

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REPLACEMENT OR A REFUND OF MONEY
Guaranteed by Good Housekeeping
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MORE YEARS FOR YOUR DOLLAR WITH RUBEROID BUILDING MATERIALS

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AMERICA'S *Number 1* BUILDINGS USE

In the Crippled Children's Hospital and Clinic,

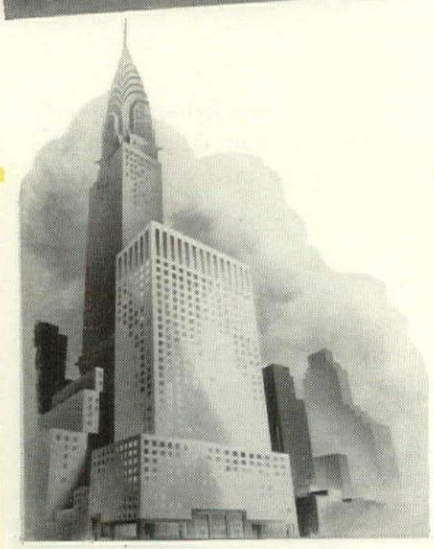
a building outstanding for its architecture as well as for the wonderful work it does, hundreds of YALE *locksets and door closers make this busy, new Birmingham building safer, quieter, more attractive—provides excellent "therapy" for the maintenance budget, too.*



Architects: Warren, Knight & Davis, Birmingham
Contractor: Day & Richardson, Birmingham
Hardware supplier: Moore-Handley, Birmingham

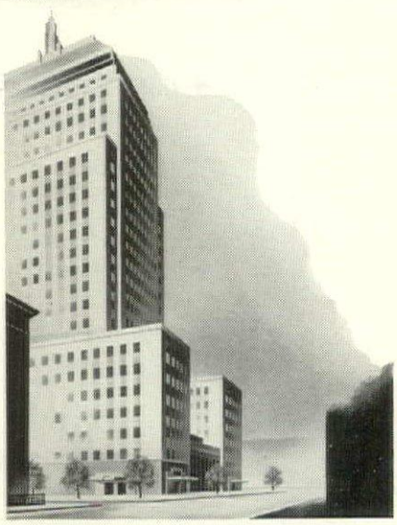
New Crippled Children's Hospital

CHRYSLER BUILDING EAST



The new Chrysler Building East. Like the famous Chrysler Building (in background) where YALE hardware has been in use for more than 20 years—this new Manhattan skyscraper will be equipped throughout with YALE.

JOHN HANCOCK BUILDING



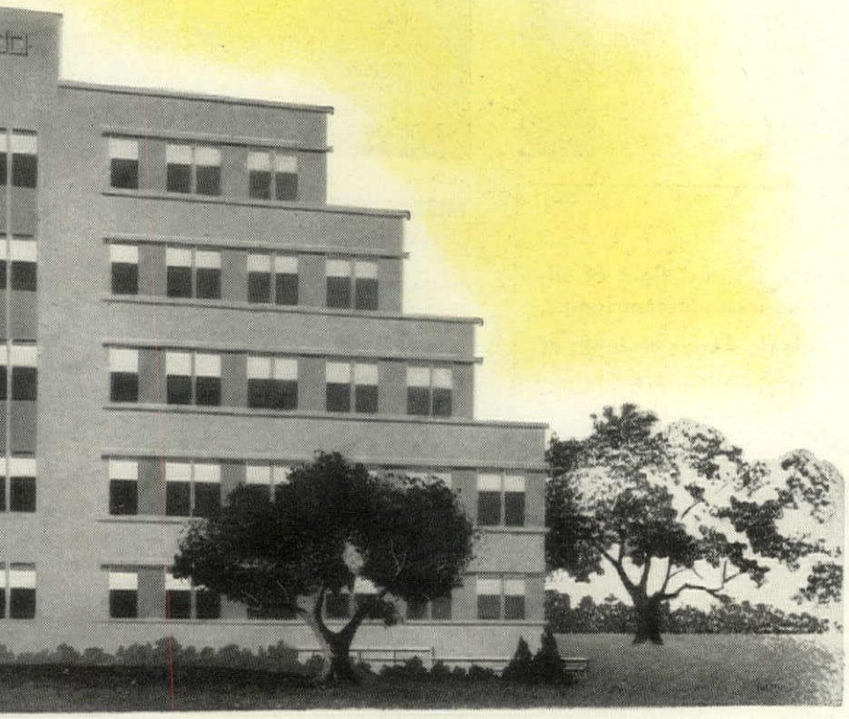
The John Hancock Building, beautiful new high-point on the Boston skyline. Excellent taste shows in every detail of the planning here. The hardware carries the name YALE, of course.

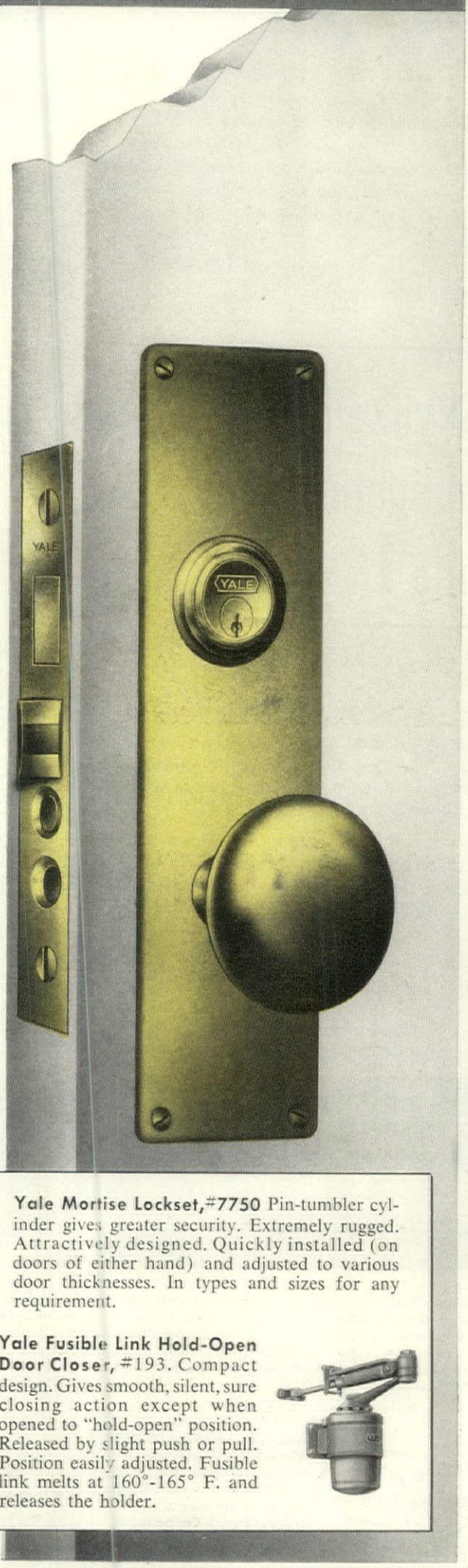
FARM MUTUAL BUILDING



The Farm Mutual Building, Columbus, Ohio. YALE hardware is the choice here, too. In this solid city block of impressive architecture, there'll be greater security at lower cost for years to come.

AMERICA'S *Number 1* HARDWARE





nd Clinic Chooses HARDWARE BY YALE

this is only one among dozens of important new buildings, all over the untry, where the extra value of YALE hardware has been recognized.

rely, this is a trend worth noting...and worth considering for e job you have on the board now.

ter all, this preference for YALE hardware, on job after job, hasn't just appened." It's the result of long years spent in engineering every minute tail of YALE hardware to maximum efficiency—and of long years spent our customers enjoying the excellent security, fine appearance and operating onomy we've built into our products.

t us show you how easily, and inexpensively, *you* can get these plus values every job. Just write The YALE & TOWNE Manufacturing Co., pt. S-69, Stamford, Conn. (In Canada, St. Catharines, Ont.)

YALE & TOWNE

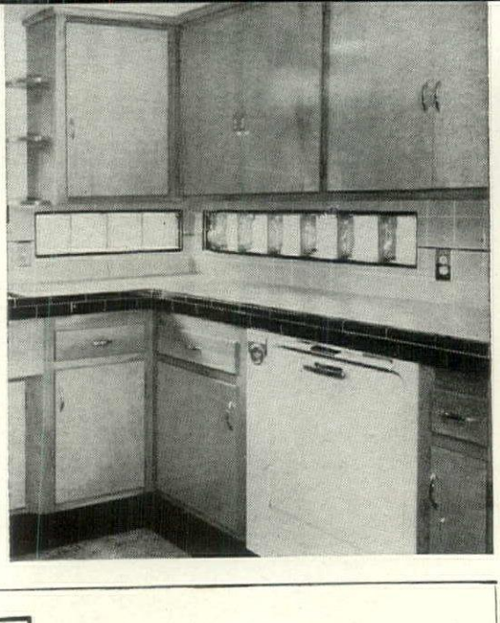
is a registered trade mark.

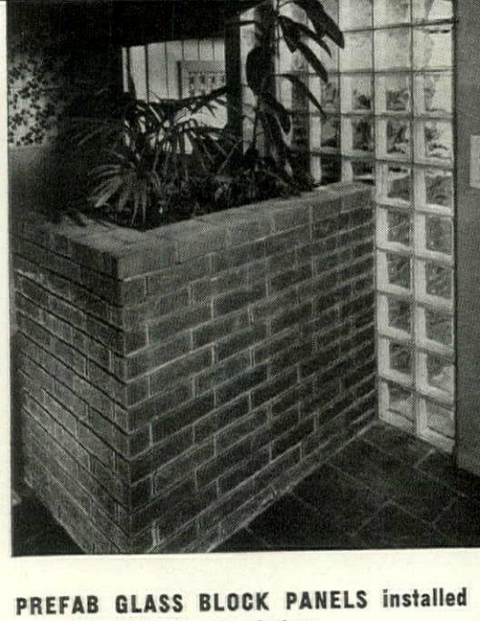
Yale Mortise Lockset, #7750 Pin-tumbler cylinder gives greater security. Extremely rugged. Attractively designed. Quickly installed (on doors of either hand) and adjusted to various door thicknesses. In types and sizes for any requirement.

Yale Fusible Link Hold-Open Door Closer, #193. Compact design. Gives smooth, silent, sure closing action except when opened to "hold-open" position. Released by slight push or pull. Position easily adjusted. Fusible link melts at 160°-165° F. and releases the holder.

Sprayed, brushed, or rolled on in two coats, the paint closes up the pores in the wall surface and dries to a form a tough finish claimed to outlast many conventional paints. In the housing project (photo page 298) Marvelite was applied to both the inside and outside walls. It is also practical for use on commercial masonry structures, and is available in a wide range of colors at $3.75 per gal. in 55 gal. drums.

Manufacturer: Marvelite Paint Co., 1237 Light St., Baltimore 30, Md.





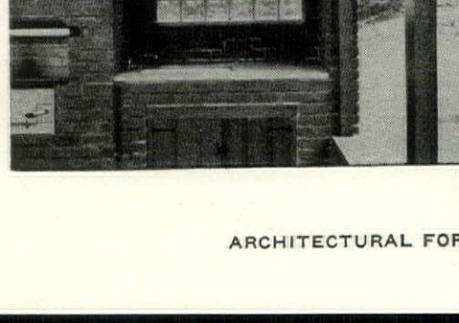
PREFAB GLASS BLOCK PANELS installed easily as ordinary window

Glass block is popular for many reasons: transmits light without conveying the visible acoustical goings-on from either side of the gla It holds in heat or keeps it out, as dictated the thermometer. Its neat pattern of sim squares may be integrated with many types structures. Installation does not always prov the desired happy ending, however. Alignm and clean pointing of the dainty cubes are pr lems, and labor is often expensive.

A cost cutting product for the builder a howeowner, Kastlux panels are prefabrica sections of glass block shipped ready to inst in wall openings provided for them. Framed 2 x 4's at the factory and held in proper ali ment by a jig assembly until the mortar beg to set in the ¼" precision joints, the panels n only to be leveled and nailed in place. A k lock groove holds the block firmly to the fra and also acts as a weather seal. Kastlux pan with metal anchors inserted in the joints, an disposable light wood shipping frame are a available for masonry buildings. Portland ment is used on all the standard panels beca of its strength and neutral appearance. Wh cement may be obtained, however, at no ad tional cost. Kastlux weighs about 18 lbs. sq. ft. over the entire panel area.

Standard panels of 6" block are made in arrangements up to 6 x 14 block. Price for largest panel is $88.25. A section of 5 x 10 block sells for $83.90, and a panel of 3 x 7 units is $80.60. All prices are f.o.b., Van N Calif. A 10% discount is available to build Assemblies are made for special installati such as shower stalls and sections with co block, panels with ventilator inserts, and pa for right angle installations.

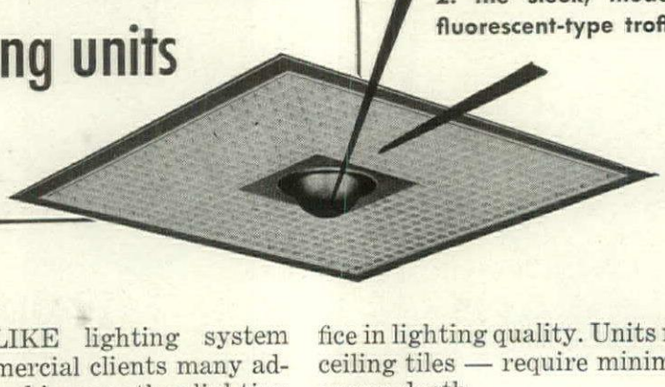
Manufacturer: T. Kirk Almroth Associa 14215 Oxnard St., Van Nuys, Calif.



Skylike® blends 2 types of lighting units into 1

1. the soft, indirect light of silvered-bowl incandescent lamps.

2. the sleek, modern look of fluorescent-type troffers.



Silvray's SKYLIKE lighting system offers your commercial clients many advantages not found in any other lighting system, yet uses only silvered-bowl incandescent lamps.

Designed along modular concepts for recessed or semi-recessed use, SKYLIKE fixtures may also be surface-mounted in old or remodeled interiors without sacrifice in lighting quality. Units fit 24" x 24" ceiling tiles — require minimum (7¾") recess depth.

SKYLIKE units cost only ½ to ⅓ as much as other equipment delivering comparable results. Ease of maintenance permits similar savings, for units can be relamped from the floor and require only an occasional cleaning with a damp cloth.

Here's *real* proof of SKYLIKE efficiency

These unretouched photographs demonstrate the versatility of the SKYLIKE louvered incandescent lighting system. In each case, the only light source used was that of the SKYLIKE units—note the soft, even distribution of light . . . the complete absence of glare, harsh shadows, and sharp light cut-off lines.



Photo by Milton Mann Studios

A unique SKYLIKE application is pictured here in the showroom of Irving A. Belking Furs in San Francisco, California.

Notice how architect Bernard J. Saboroff's gridwork of 1 x 6 pine serves to hide the unsightly high ceiling, as well as to support the patterned group of recessed Silvray SKYLIKE units.



Selected for warm color and ease of installation, surface-mounted SKYLIKE units replaced out-moded globe-type units in the remodernization of the Levy Brothers Store in Elizabeth, N. J.

Variable lamp sizes — from 150 to 500 watts — permit day-to-day changes in lighting intensities.

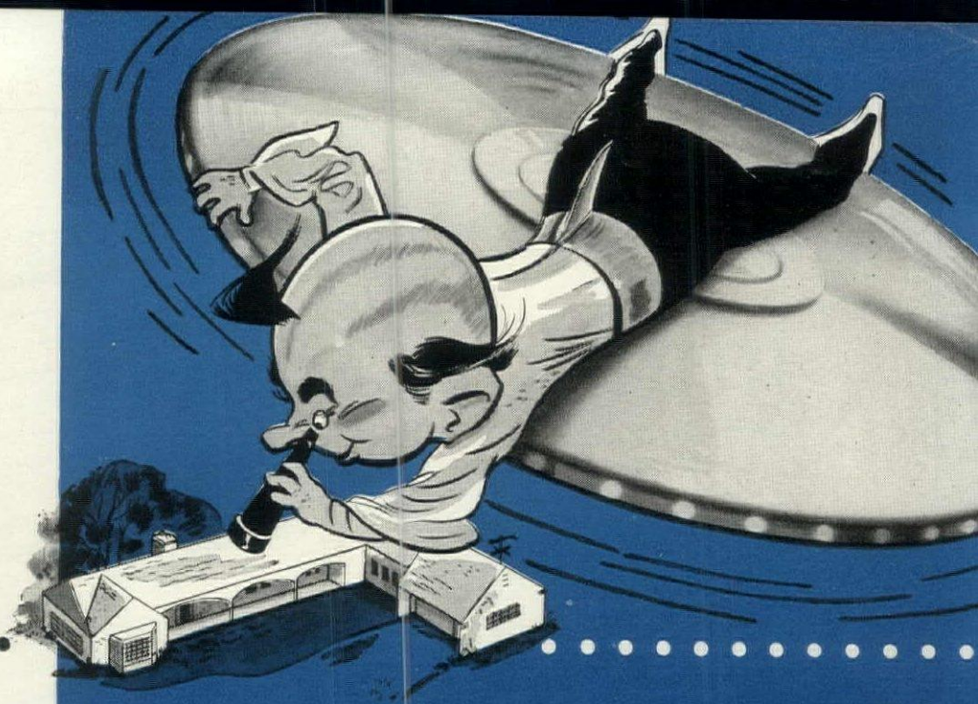
Distributed by GraybaR ELECTRIC COMPANY

Send for complete SKYLIKE information. A comprehensive booklet describing the Silvray SKYLIKE system is yours for the asking. To get your copy, write Graybar Electric Company, Inc., Graybar Building, New York 17, N. Y. **S17-139**

SILVRAY LIGHTING INC.

MAYBE A MAN FROM MARS

COULD SEE THE HIDDEN CONSTRUCTION OF YOUR HOME!



But . . . Customers Need Proof! Use

American Kitchens

to Prove Top Quality Construction Throughout!



Most customers have no way of judging the quality of internal construction. They don't have the X-ray eyes of a man from Mars—how can they recognize the built-in quality you feature?

Your prospects judge a house in terms of things they know . . . and they *know* a good kitchen from a cheap one! An American Kitchen spells high-quality . . . easily recognized . . . and prospects use it as a sort of measuring stick to judge the quality of the hidden construction as well.

It pays to feature American Kitchens. They are more economical because they give you more sales return per dollar, sell houses faster than any other brand. Builders from coast to coast use American Kitchens to add value to their homes. In addition, American Kitchens save money on labor costs because they are easy to install.

On your next project . . . feature American Kitchens and sell homes faster! Mail coupon at right today for free file.

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American KITCHENS

SELL HOMES FASTER

The high quality of American Kitchens is proof of the quality of the hidden materials all through the house.

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AVCO Manufacturing Corp., Connersville, Ind.

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announcing a new high in window treatments

the revolutionary all-*Flexalum*® blind

Never before...a blind so far *above* the rest in quality and beauty...so far *below* in cost of upkeep! Here's what the remarkable new all-Flexalum blind gives you:

9 important advantages:

- plastic tape wipes clean, won't fade, shrink, stretch
- spring-tempered aluminum slats snap back to shape, won't chip, peel, crack
- new plastic cords: easy to clean, won't fray!
- precision-built mechanism: easy-to-operate, lubricated for life
- unbreakable, noiseless tassels
- minimum cord travel eliminates fraying, or strain on mechanism
- slim, trim all-metal top bar
- cords locked in place, can't slip
- rigid tubular bottom bar

plus uniform quality in every blind...every time.

All parts are Flexalum: your assurance that every blind you buy... no matter *where*, no matter *when*...will be of the same superior quality.

Write for free 8-page catalogue containing complete details on all-Flexalum blind.

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Lighting matched to the job

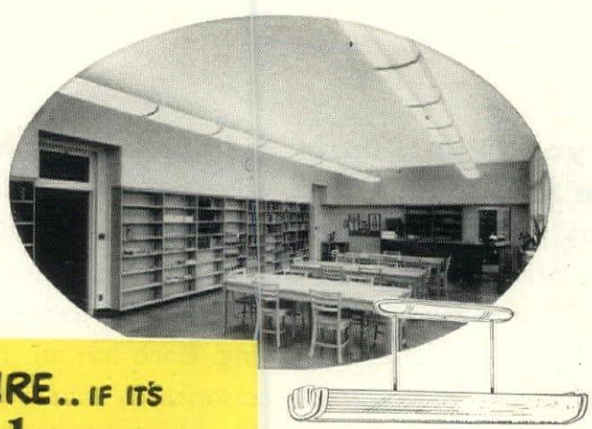
"BRIGHTNESS can be COMFORTABLE"

A California school for deaf children presented this problem: "To provide *comfortable* high-intensity lighting with freedom from shadows or glare."

Since the atmosphere was clean, a semi-indirect lighting system was recommended. Results: "60 to 82 footcandles on the desks . . . 43 on the chalkboards (after three months of continuous use.")

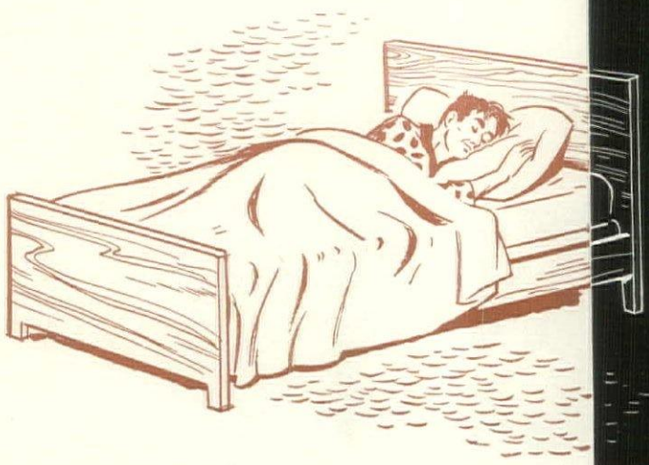
What's more, the diffusing plastic that was used is attractive, light, easy to handle and easy to clean.

Building lighting equipment that will meet any—and all—classroom requirements is our business. It will pay you to investigate our complete line. Get B-5254, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-04291



YOU CAN BE SURE.. IF IT'S
Westinghouse

PLANNED LIGHTING



YOU CAN ALWAYS SLEEP SOUNDLY WHEN YOUR BUILDINGS ARE EQUIPPED WITH...

• Soundest assurance of "The *Safe* Way Out" for everyone who populates the buildings you design or remodel is Von Duprin exit hardware. For when doors handling the heaviest daily traffic—or rarely used emergency doors—bear Von Duprin devices, exit is *safe, rapid, sure!*

Decade after decade, Von Duprin devices have proved this to be so—have functioned perfectly—dependably—with little or no maintenance.

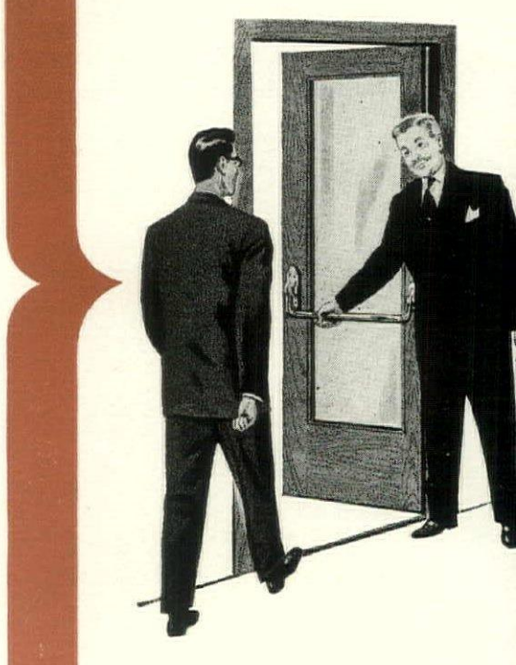
You will find that all Von Duprin devices are listed with Underwriters' Laboratories for accident hazard. And in Von Duprin's *complete* line, you will find a device for every type of exit—each handsomely designed to add to the beauty of your buildings.

Wherever people gather—in business and industrial structures . . . schools . . . public meeting places—provision for safe exit is all-important. Provide "The *Safe* Way Out" for all of the people in all of your buildings—specify *only* Von Duprin.

Let your Von Duprin Exit Engineer show you "The Safe Way Out!" Von Duprin Exit Engineers—factory representatives and contract hardware distributors—are located for your convenience in key cities across the nation. Each has the engineering and hardware experience to aid you in your exit planning. Each has all the facts on Von Duprin devices and accessories to save you time on specifications. Get acquainted with the Exit Engineer in *your* area—consult him on all of your exit problems. For his name, write:

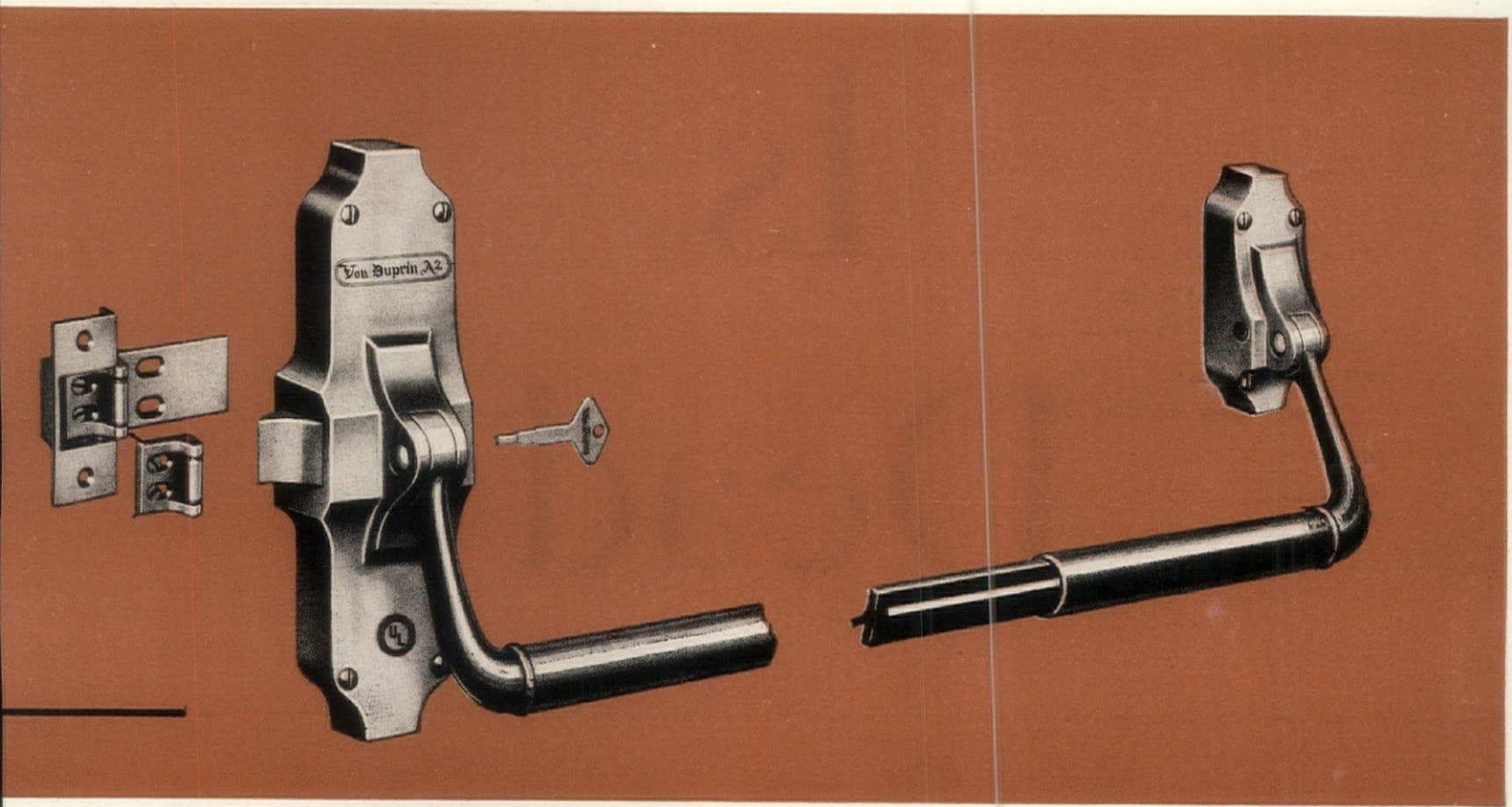
VONNEGUT HARDWARE CO.

VON DUPRIN DIVISION, INDIANAPOLIS 9, INDIANA



Von Duprin

Fire and Panic Exit Devices



FOR THE BEST IN RIM TYPE DEVICES —VON DUPRIN SUGGESTS THE A²

- Accepted as absolutely the finest rim type exit device available—incorporating every known refinement in materials, design, engineering, and workmanship.
- Drop-forged throughout—with architectural bronze exterior and bearing metal interior parts.
- Double acting crossbar is X-bar reinforced. Pressure either up or down will release latches.
- Dogging features at each end of crossbar have direct drive into lever arms. Double compression springs used throughout.
- The heavy pullman ¾" throw latch bolt, and the friction-free bronze roller of dual adjustable strike are both supported on monel metal axles.
- Sex bolts for wood, kalamein, or tin-clad doors.
- Safe—dependable—*always!*

FOR ACCIDENT HAZARD

The Tycoon Is Dead

. . . and FORTUNE, having written his history as part of the American business story, now leaves him respectfully in the museum of its back issues with the epitaph, "The Present was as far as he could go."

He was the product of his times — and he served them well. In an era of raw materials and people, he organized and built, guided by few rules save his own morality. He was an individual; and for the good that he did, look around you.

Today, his place has been taken, not by one but by many kinds of businessmen — just as brilliant, just as competitive — but moved by a philosophy and schooled in subjects the Tycoon never knew.

The mid-century businessman has had to go to school—in labor, in politics, in social welfare. The engineer's a businessman, the salesman's an economist; the research man knows advertising, the finance man knows law.

Today's businessman brings a new professional responsibility to his day-to-day problems. And because he measures himself more in what he does than in what he owns, industry, itself, has achieved a greater stature in the life and progress of the country.

All magazines have a particular editorial field, but the businessman's place in the world today has cast FORTUNE in a central and newly important role:

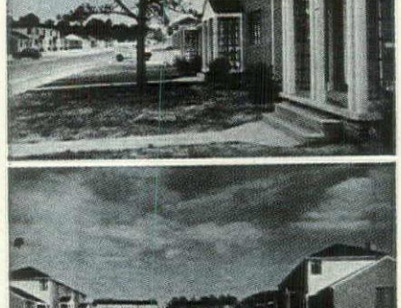
> *To be the magazine of the progressive man... to report for him the productive forces that must be organized for nothing less than the survival of free institutions... to assist in interests and responsibilities that are not only corporate but national and global.*

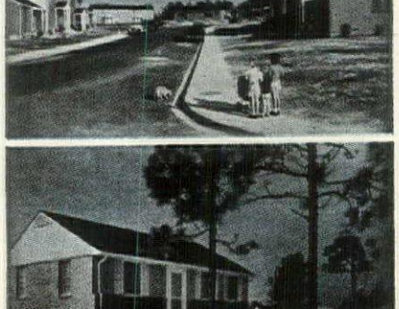
Reporting, analyzing, and frequently drawing conclusions, FORTUNE is an active participant in its readers' affairs — their preparation for the news that occurs tomorrow, next week, next month. Its ambition is best described in a recent tribute: "An example of what journalism can be when informed by wisdom and lit by hope."

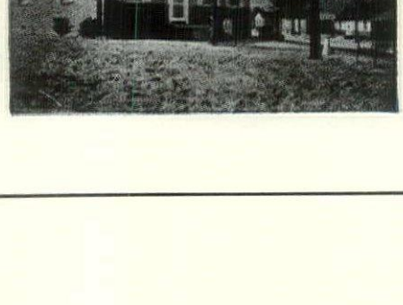
If FORTUNE succeeds in this, it will be in accord with the contemporary spirit of Industry itself.

FORTUNE









The Fort Bragg project is one of the first to be built under the Wherry Act. It consists of 1,000 dwelling units on 160 acres. The dwelling units ar all brick veneer and include one-story, three-bedroom, detached houses— and garden apartments containing two, four, five and six-family units.



The G-E Refrigerator holds 25% to 50% more sp than most old-type refrigerators now in use. Furth more, it's a thoroughly dependable refrigerator. Too more than 2,700,000 G-E Refrigerators with sea systems have been in use 10 years. Many as long as and 20 years and longer.

Here's military housing at its best

The new Military Housing project at Fort Bragg consists of 1,000 dwelling units . . . and each unit is equipped with dependable and economical General Electric appliances that lighten kitchen tasks.

No question about it: The families that live in military housing projects today want modern accommodations and conveniences.

They want the same worksaving electric appliances that they would enjoy while living in civilian communities.

They want dependable electric refrigeration. They want plenty of hot water, at all times, electrically heated.

They want to prepare their meals efficiently and quickly on electric ranges.

The families living in the new Military Housing project at Fort Bragg enjoy these advantages.

General Electric equipment has been chosen for each of the 1,000 dwellings. General Electric is the brand of electrical appliances that people prefer to all others.

Says Mr. W. H. Weaver, President
W. H. Weaver Construction Co., Inc.
Greensboro, North Carolina—

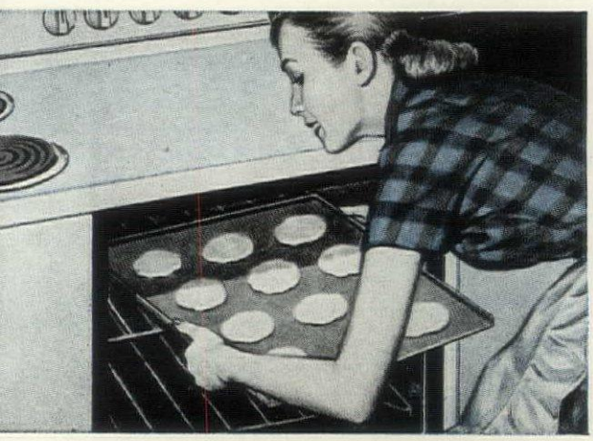
"Just a line to tell you how pleased we are about the General Electric Appliances at Fort Bragg.

"The services rendered us by your distributorship have been most valuable . . . not only at Fort Bragg, but in Greensboro and High Point as well.

"We know now, more than ever, that we can put our full confidence in General Electric products and services."

Home Bureau, General Electric Company, Bridgeport 2, Conn.

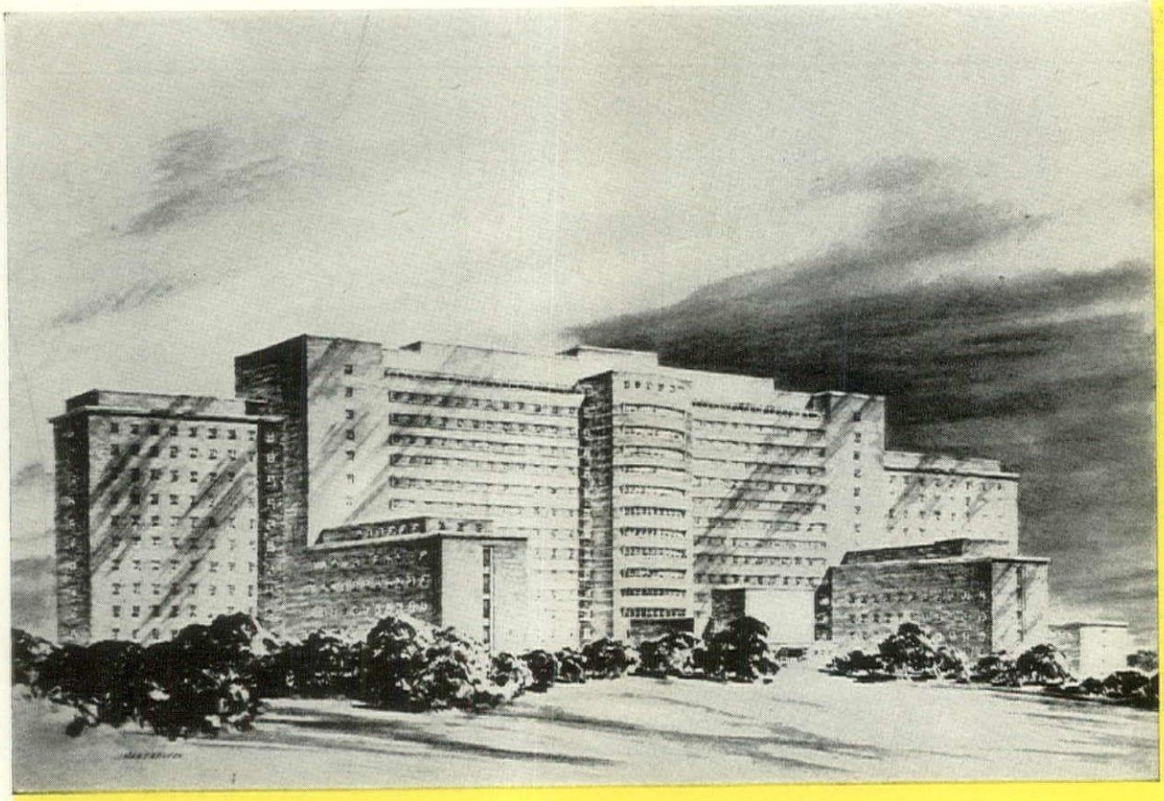
GENERAL ELECTRIC



Ask people about this General Electric Range, and they will tell you that the thing that pleases them most about it is its speed and cleanliness. Everything stays clean—with so little effort. Meals taste marvelous and they're fast and easy to get. The complete safety of this range also gives people real peace of mind.



General Electric Table-Top model installs easily anywhere. It's safe. No flame, no flues, no fumes. Underwriters' Laboratory approved. G-E Water Heaters are dependable, they stand up in service. Finished in gleaming-white synthetic enamel, with one-piece work-top of acid-resistant porcelain enamel for extra wear.



Clinical Research Center, National Institutes of Health

Designed and Supervised by Public Building Service, General Service Administration, for National Institutes of Health.

CONTRACTOR:
John McShain, Inc., Philadelphia, Pa.

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Lockwood Hdwe. Mfg. Co., Fitchburg, Mass.

Largest combination laboratory-hospital building of its kind in the United States. Designed in the shape of a Lorraine Cross, its central stem is 780 feet long by 84 feet wide and is flanked by six wings, each 54 feet long. The 14 story structure contains approximately 1,266,000 square feet of floor space and has a volume of 16,465,000 cubic feet. National Institutes of Health is the research arm of Public Health Service, Federal Security Agency.

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This Brand Name was Awarded the GOLDEN ANNIVERSARY CERTIFICATE by the BRAND NAMES FOUNDATION, INCORPORATED

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FINISHING HARDWARE

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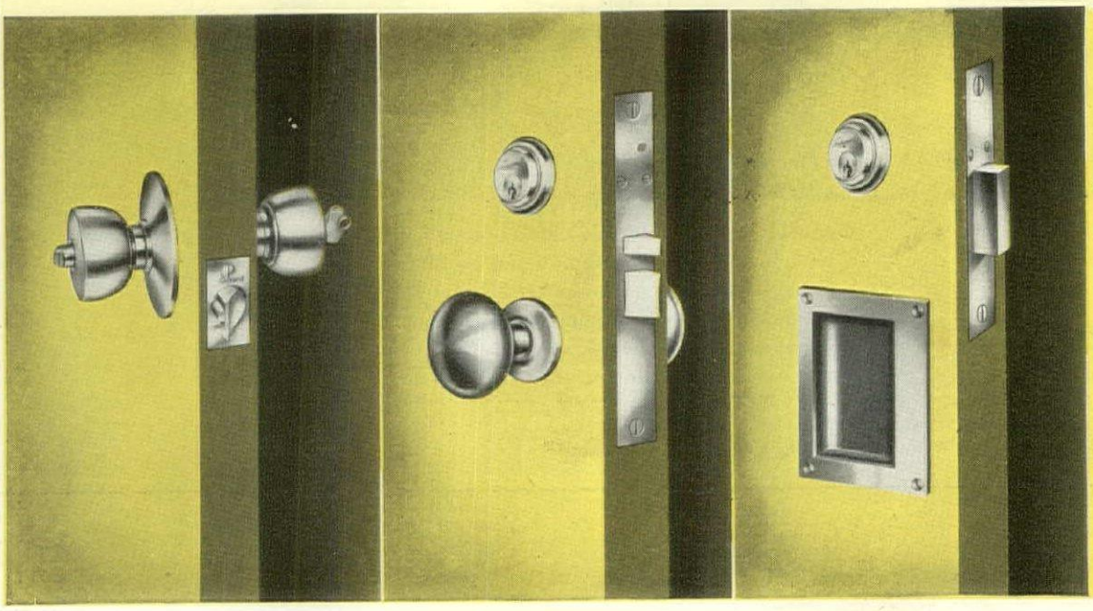
The following are a few of the Lockwood products especially



ILLUSTRATIONS
(left to right)

•

Lockwood's new Heavy Duty Key 'n Knob Set . . . made with functions for all installations.

•

Heavy Duty Standardized mortise cylinder lockset (5100 series) with concealed screw trim.

•

Heavy Duty Cylinder Deadlock with Flush Door Pull.

Veteran's Administration
Hospital,
Wilkes Barre, Pa.

ARCHITECTS:
Kelly & Gruzen,
New York City

CONTRACTOR:
Merritt-Chapman
& Scott Corporation,
New York City

FINISHING HARDWARE:
Lockwood Hdwe. Mfg. Co.,
Fitchburg, Mass.



see our CATALOG in SWEET'S FILE ARCHITECTURAL

Notable accomplishment of a 96 man team of architectural designers and specification writers in conception. A tribute to the diligent supervision of the Corps of Engineers in execution. Lockwood is justly proud of its part in furnishing the standard and specialized finishing hardware for this fine example of modern hospital construction. Lockwood — a name distinguished for 73 years of progressive service, has become a by-word for teamwork on the part of its dealers, the architectural profession and the construction industry.

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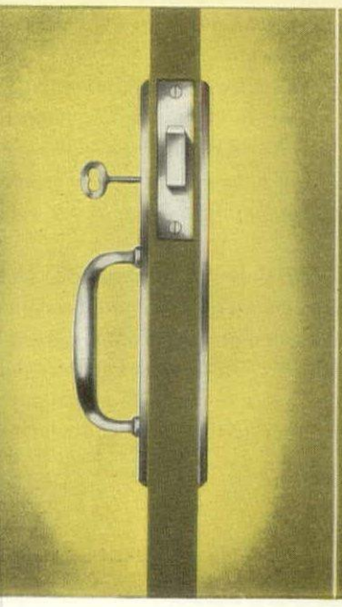
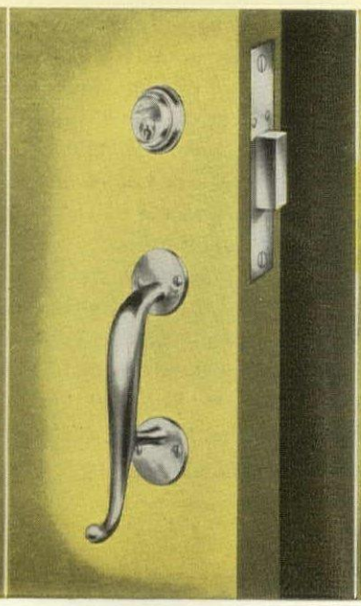
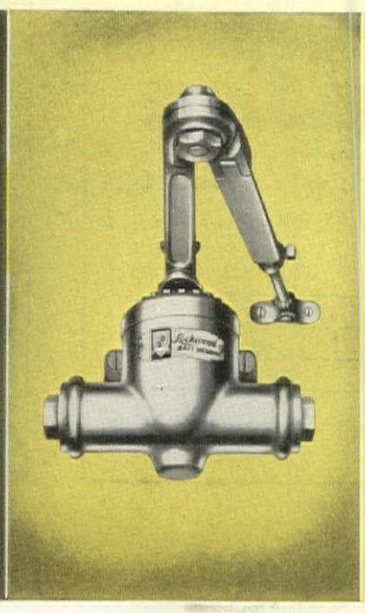
adaptable for use on the Nation's Modern Hospital Buildings.

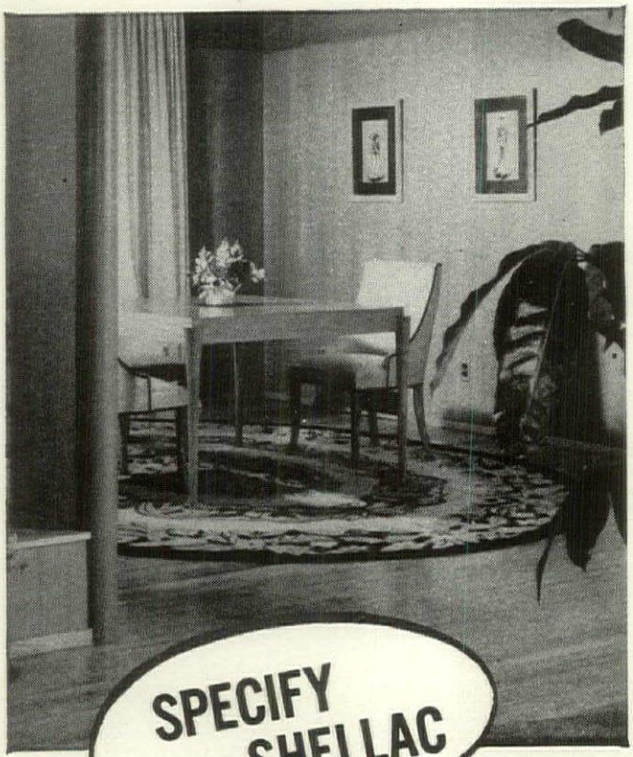






ILLUSTRATIONS
(left to right)

- Asylum Deadlock with Door Pull and Key outside, Push Plate only inside.
- Heavy Duty Cylinder Deadlock in combination with Arm Pull.
- Ball Bearing Door Closer with Automatic Hold-open Arm Attachment.



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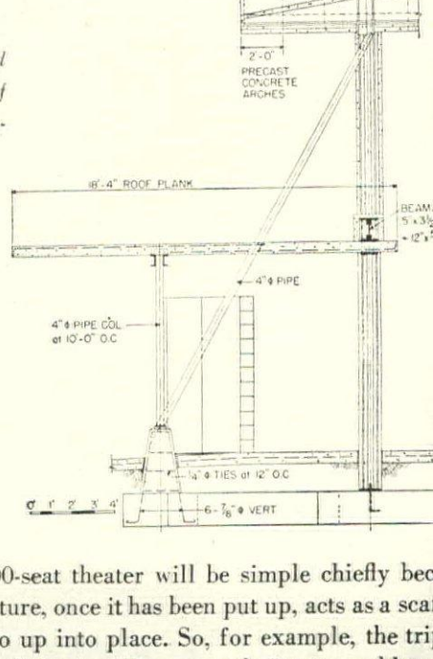
(Continued from page 173)

sleeves that permit each autonomous frame to move independe of the secondary structure.

Simplicity of assembly

Of equal importance in the design of a building for this isl aircraft carrier were considerations of prefabrication and sim city of assembly. The entire structure will be brought in by b erected under Raymond & Rado's supervision. Chances are parts will be fabricated in Japan; and since the Japanese use the lightest of rolled steel sections, all girders were designed t built up of very light steel plates.



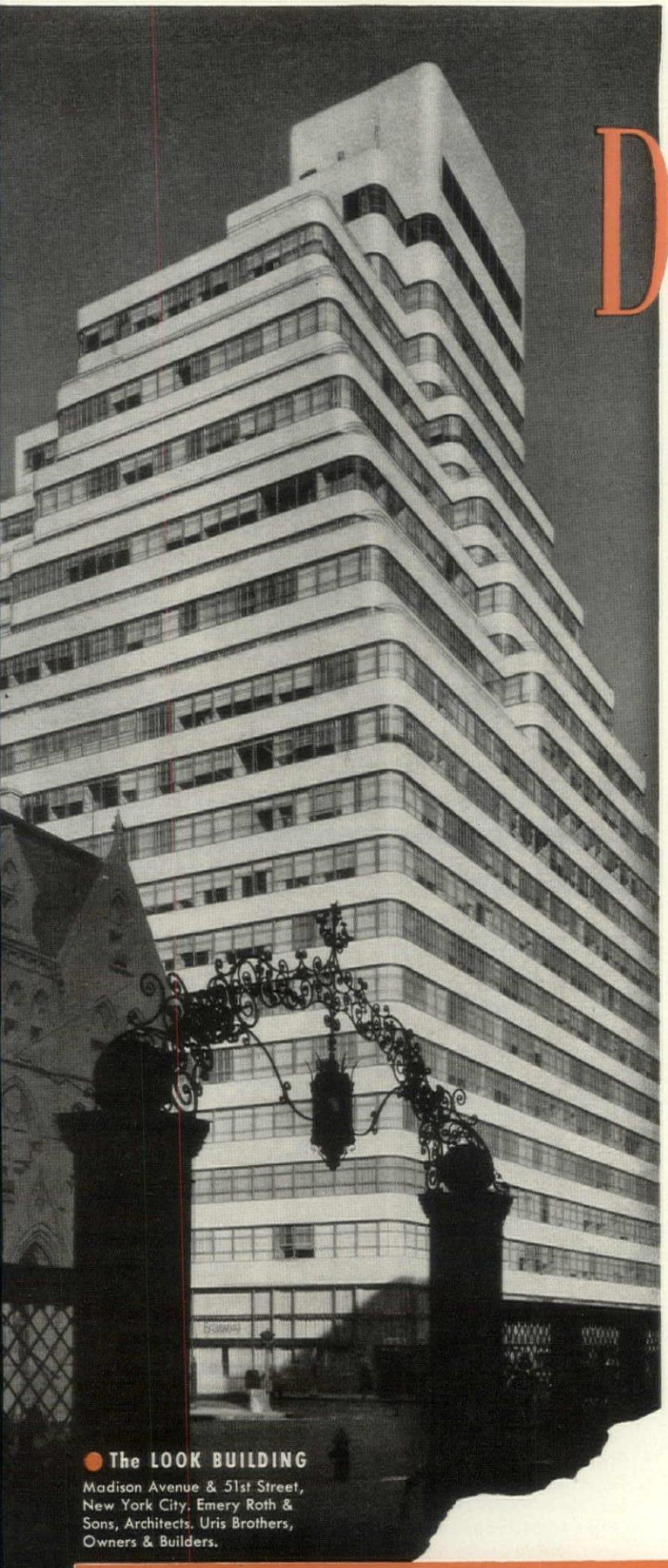
Section showing tripod structure and flat roof over passage around theater auditorium.

Erection of the 500-seat theater will be simple chiefly bec each part of the structure, once it has been put up, acts as a sca for the next one to go up into place. So, for example, the tri (which will be erected first) will serve as hoists to enable w men to lift the girders into position. When the girders have bolted to their tripods, sections of concrete vault are hoiste and slid into place between the bottom flanges of adjoining gir The flanges will be covered with grease for smoother sliding. field connections were made as simple possible, because sk building labor is at a premium on Guam.

The plan of the theater is almost as unusual as its structure accommodate as many servicemen as possible, the stage ca opened in two directions, serve an outdoor sitting area as we the enclosed auditorium. Once the men pass the box-office find themselves inside a fenced-off area, can sit down anyw behind the stage (or in the auditorium) to watch performa Movies are projected onto a translucent screen in the center o stage, can be seen from outdoors as well.

Tropical climate conditions called for a structure open t breezes; at the same time, however, Raymond & Rado want keep the interior dark at all times for daytime movie shows. solution is a system of interlocking *brises-soleil* whose inside faces are painted black to prevent daylight from being refl into the auditorium.

What type of clients did the Air Force officers make? The you can imagine, say the architects. They had no preconc notions, no set ideas. All they insisted on was economy, simpl and complete absence of frills. This is exactly what they wil in their new $120,000 theater—plus a very exciting structure shows what happens when you integrate top-notch engineering top-notch architecture.



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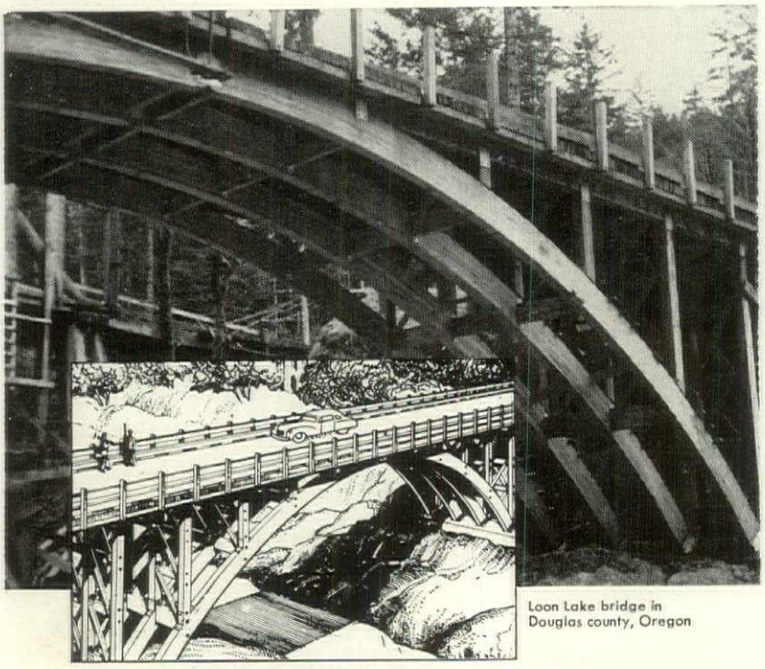

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modern bridge shows today's construction advantages of wood

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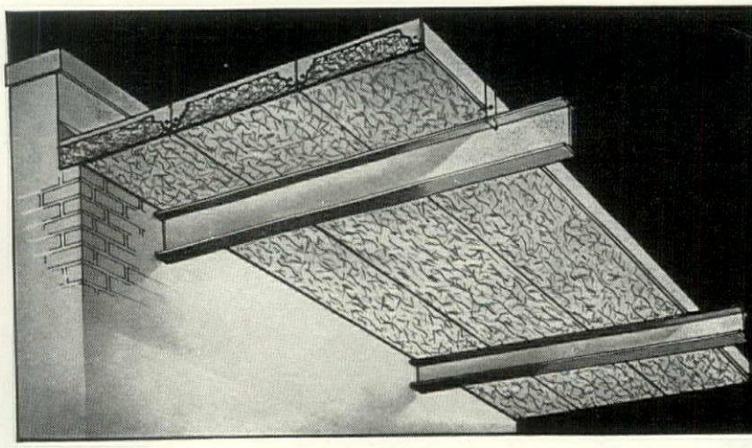

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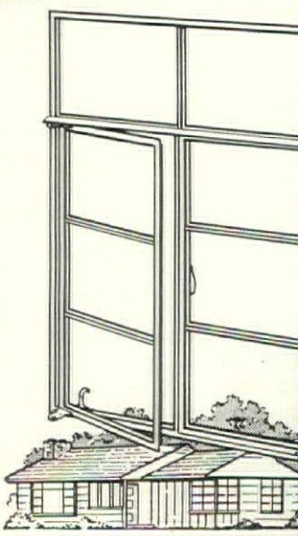

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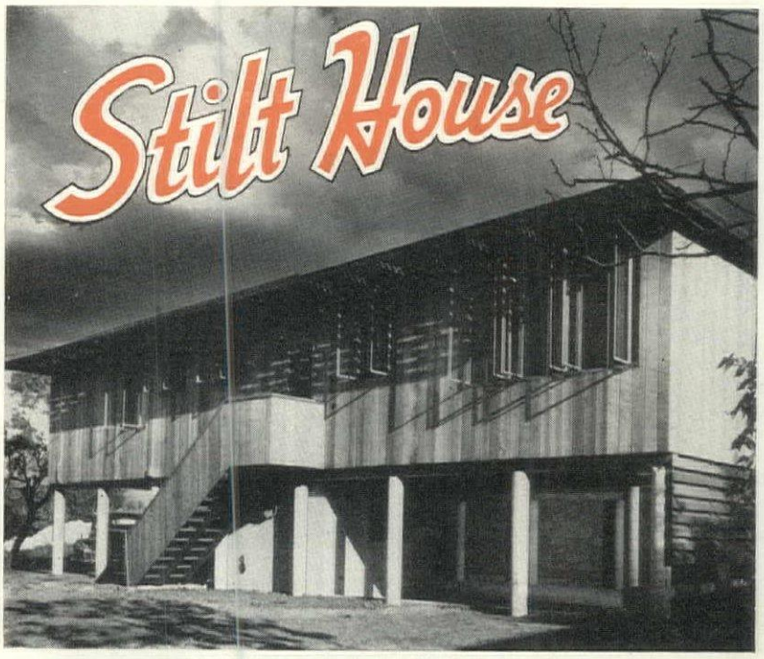

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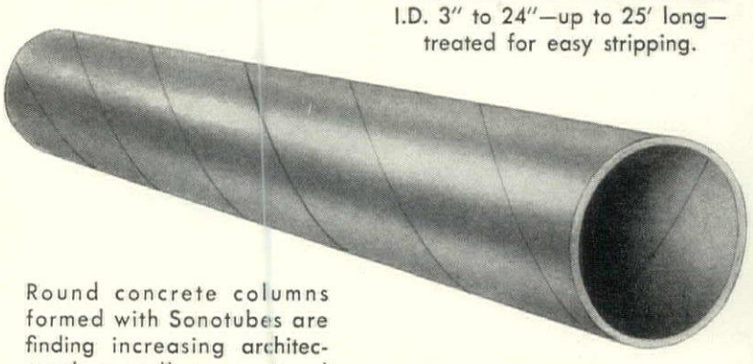

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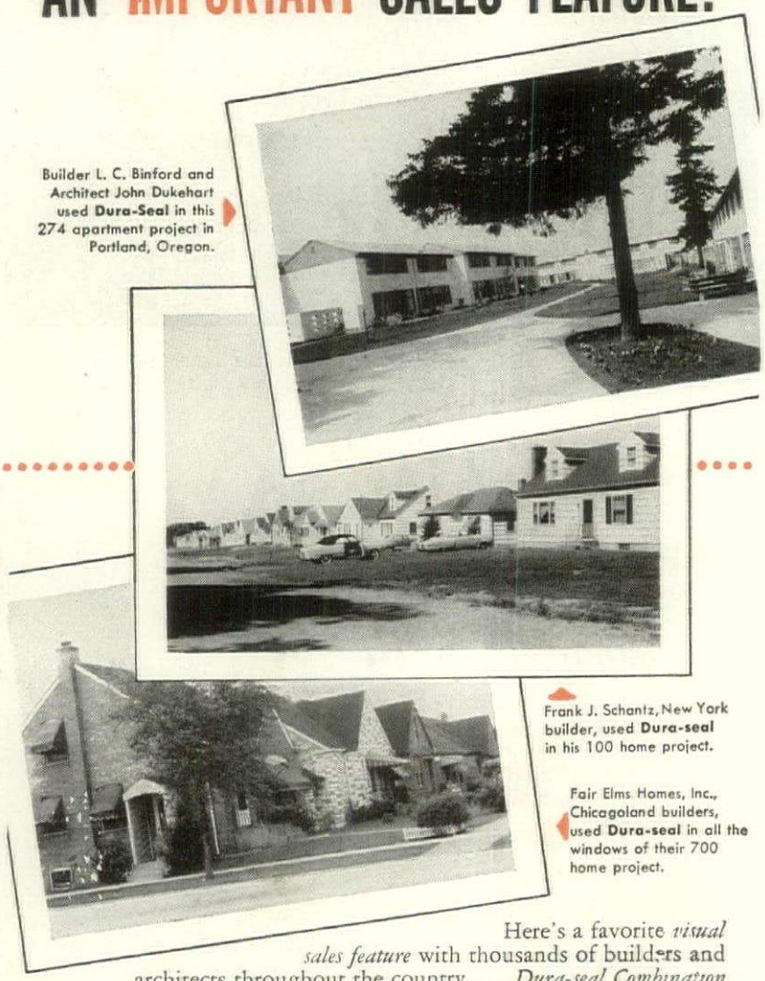

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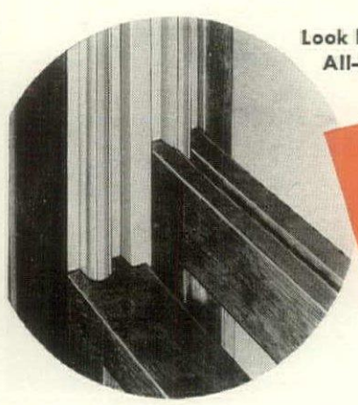

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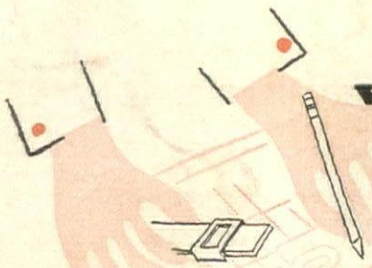

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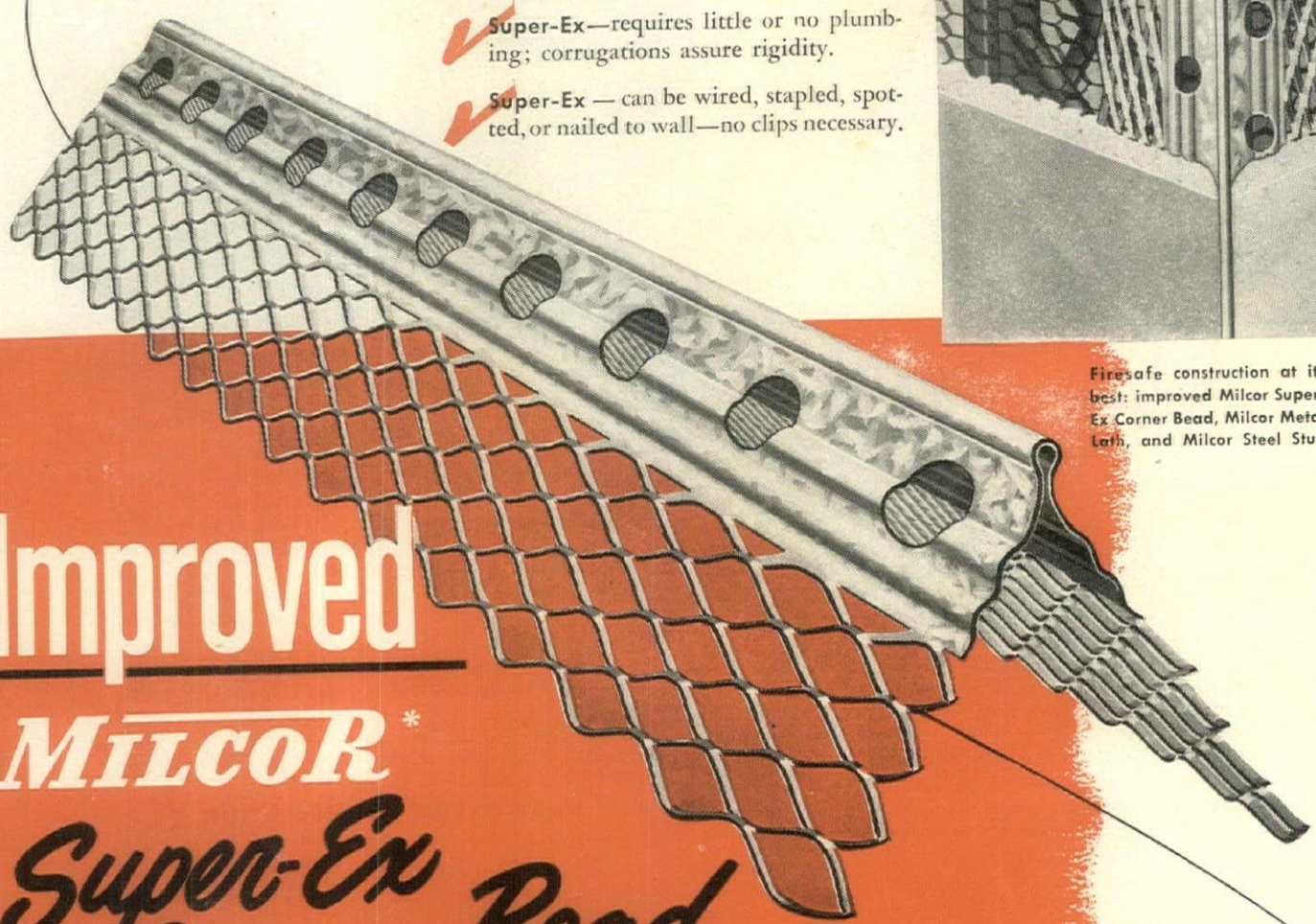


Super-Ex — provides strong, straight nose held true by two semi-solid flanges.

Super-Ex — combines expanded wing with solid sections. Note alternate perforations in solid portion — for better plaster key.

Super-Ex—requires little or no plumbing; corrugations assure rigidity.

Super-Ex — can be wired, stapled, spotted, or nailed to wall—no clips necessary.

Firesafe construction at its best: improved Milcor Super-Ex Corner Bead, Milcor Metal Lath, and Milcor Steel Stud

Improved MILCOR* Super-Ex Corner Bead

for longer plaster life, lasting plaster beauty

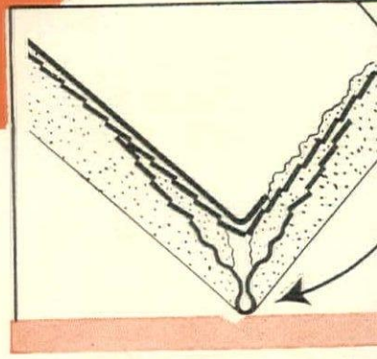
— now provides for greater depth of plaster adjacent to the bead — regardless of the plaster grounds!

Improved Super-Ex Corner Bead, with its exclusive design, combines the rigidity of a solid wing with the added plaster reinforcement of expanded metal.

Super-Ex wings are formed at a minimum angle of 60° (max. 70°) for spring fit on a 90° corner, and easy adaptability to specified plaster grounds, whether ¾", ⅝", or ½".

Milcor Super-Ex goes on fast . . . reduces erection costs . . . protects corners against cracking, chipping . . . assures straight, true-edge beauty.

Standardize on Super-Ex in your specifications.



Here's why Super-Ex corners are stron last longer: note greater depth of pla adjacent to bead area . . . spring fit w adapts easily to any specified deptl plaster ground — whether it be ¾", or ½" . . . and solid metal that pro corner at point of greatest strain.

*Reg. U. S. Pat. Off.

INLAND STEEL PRODUCTS COMPANY

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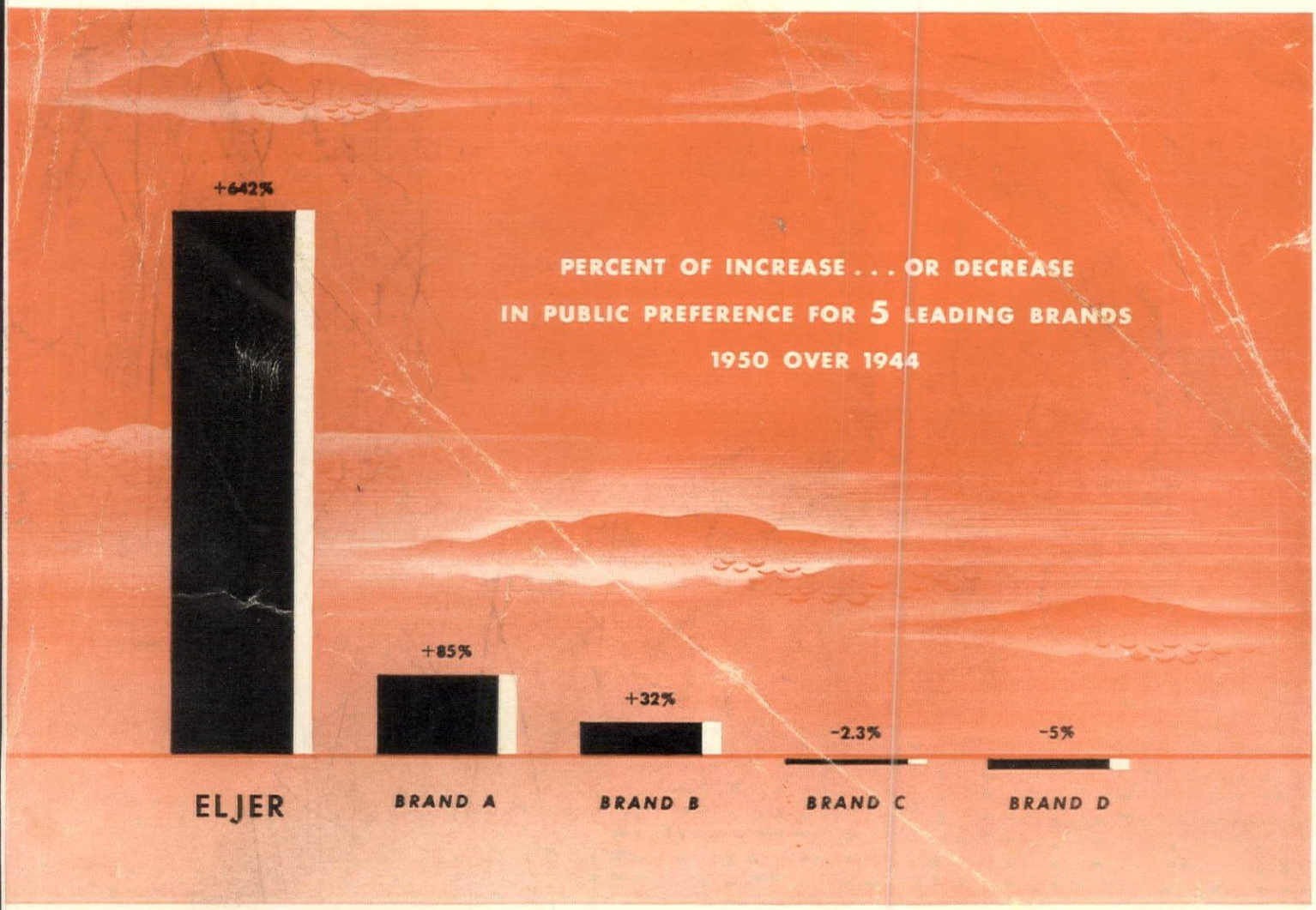

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THE INCREASING PREFERENCE FOR ELJER

Eljer's growth has been tremendous . . . and one of the reasons for it is that Eljer has consistently made the finest products on the market and has told the story of their style, quality and beauty to the American public in a dynamic, hard-hitting fashion.

And here is the proof: Every year since 1944 a leading national magazine has made an independent, extensive survey to determine the public's familiarity with and preference for five leading brands of plumbing fixtures.

The public's preference for Eljer Fixtures has increased an amazing 642%.

The public's familiarity with Eljer Fixtures has increased 336%.

In both categories Eljer led all the others by far.

The chart above shows to what extent the public's preference for Eljer has grown.

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It pays you, it pays us—because we specialize in Plumbing Fixtures and Brass

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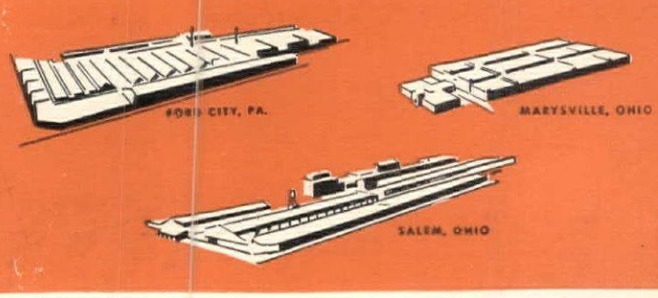

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