

NOVEMBER 1951

ARCHITECTURAL FORUM

THE MAGAZINE OF BUILDING

DOUBLE ISSUE

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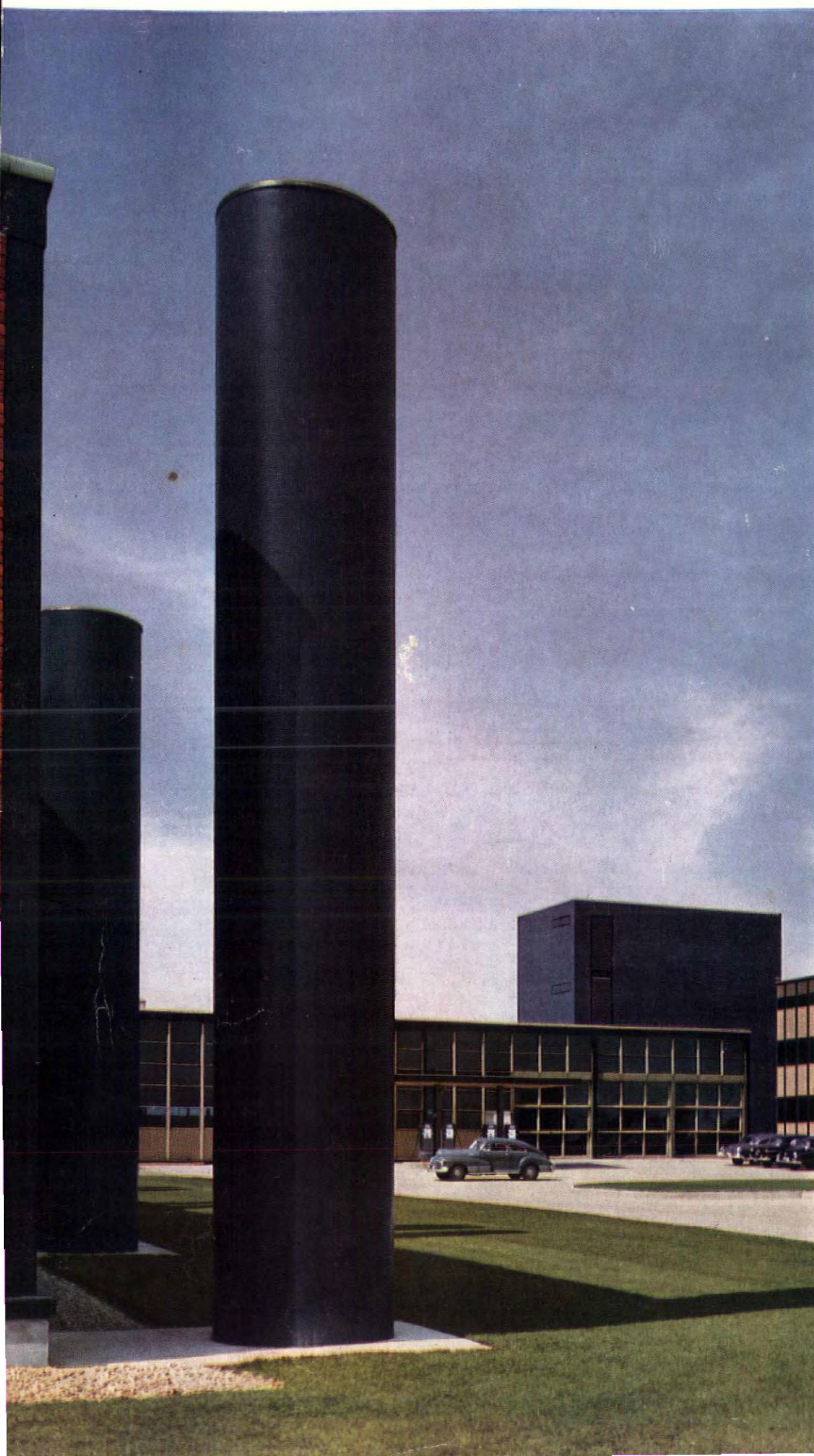
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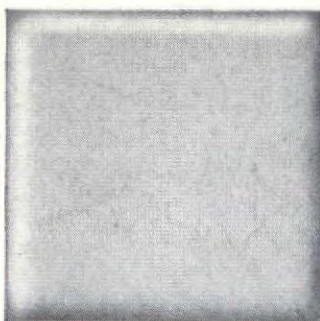
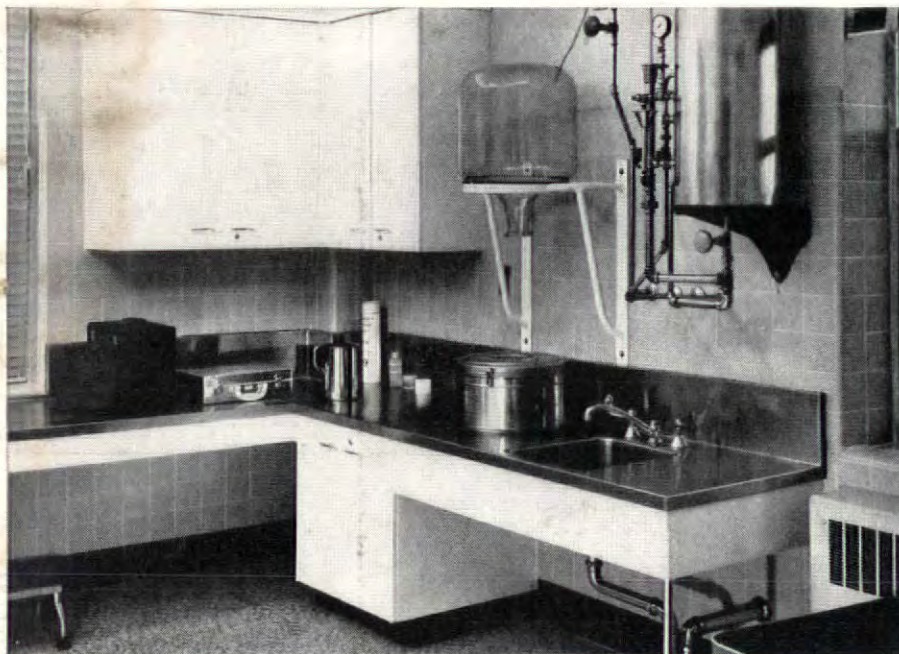
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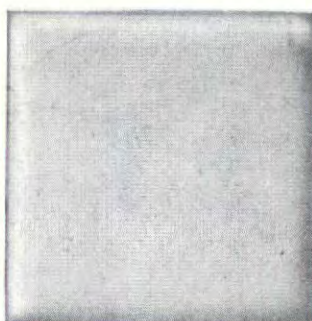


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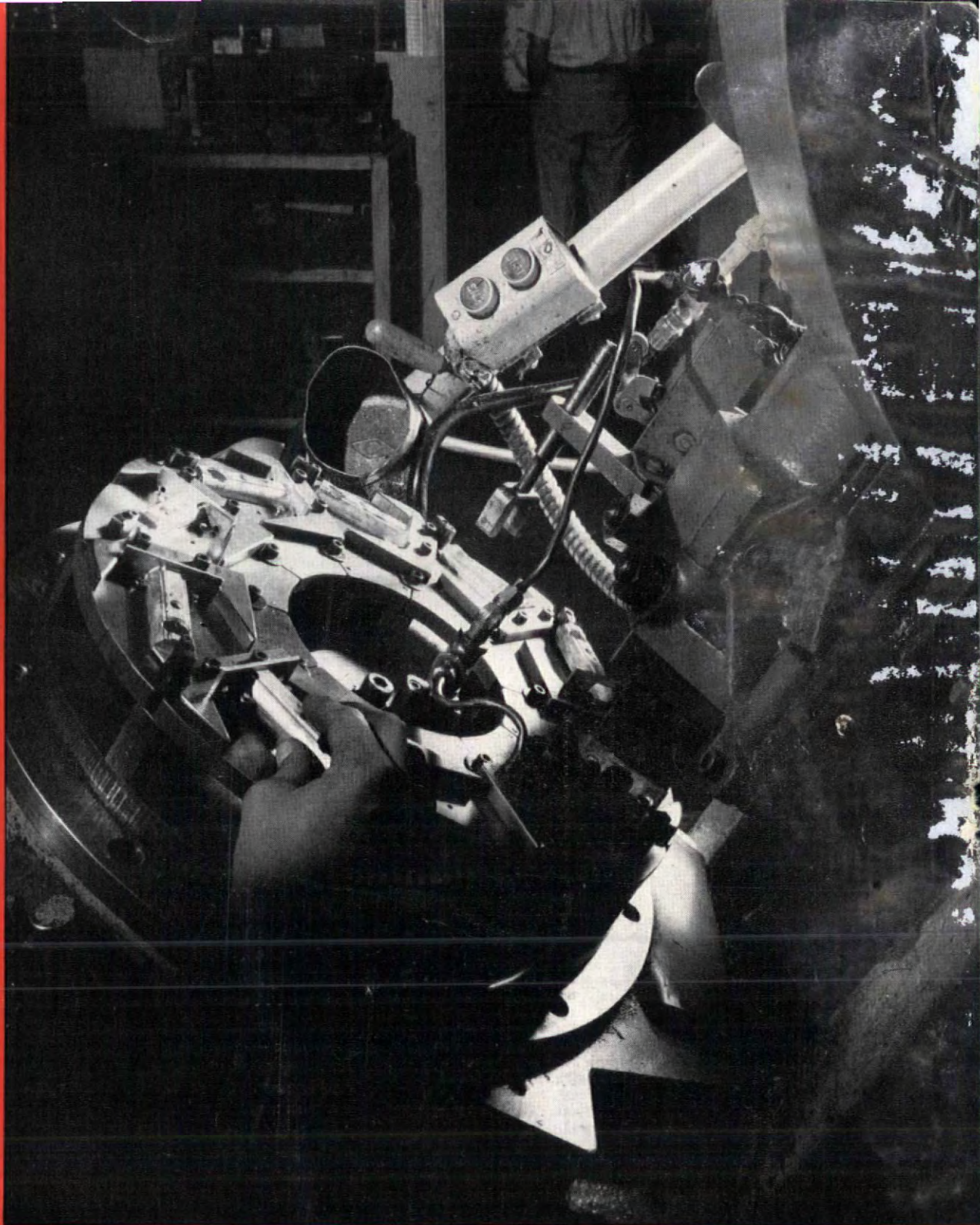
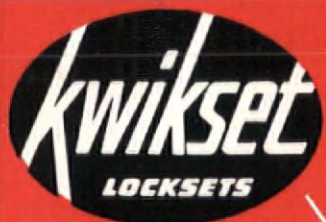
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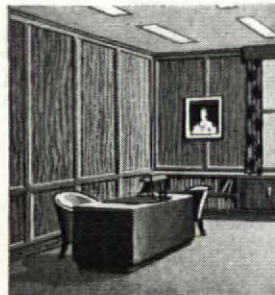
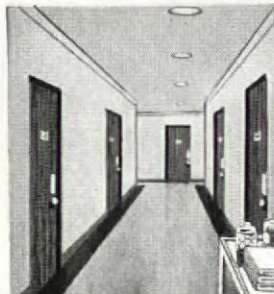
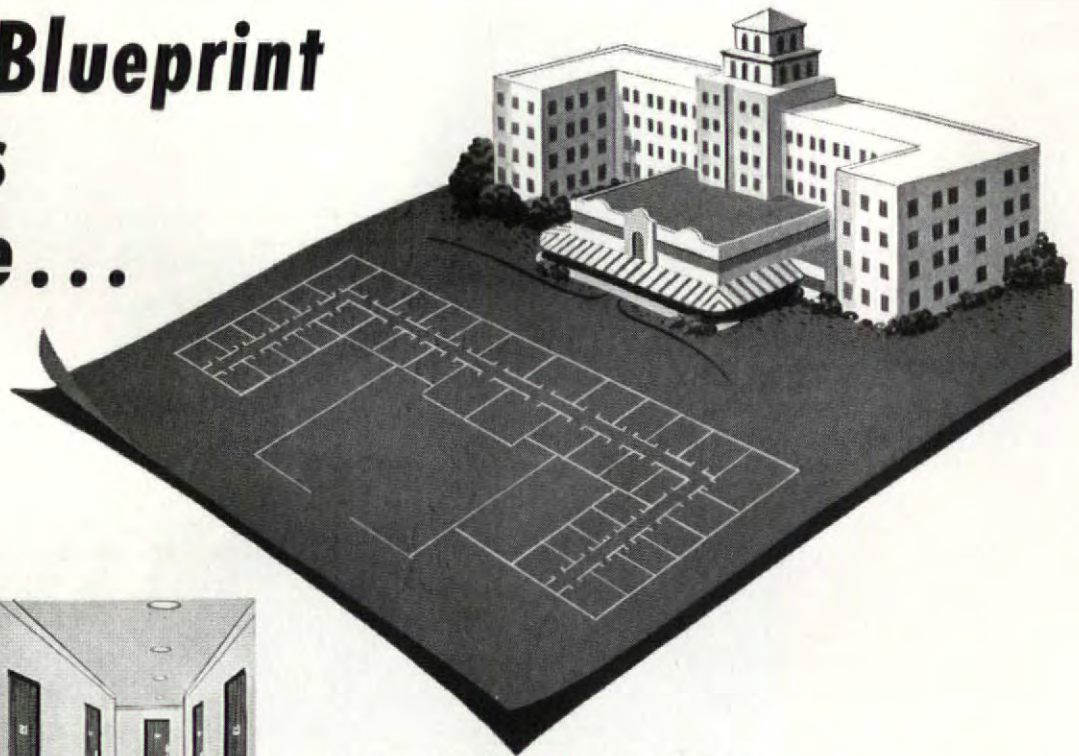
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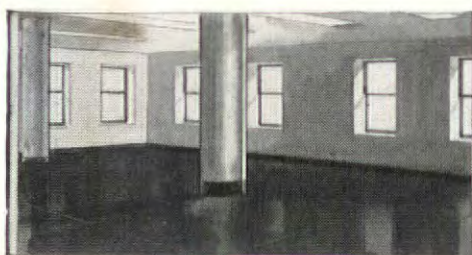
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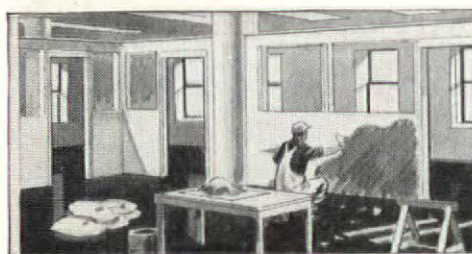
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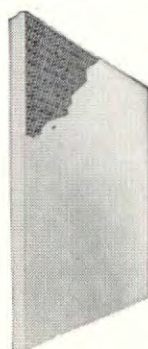


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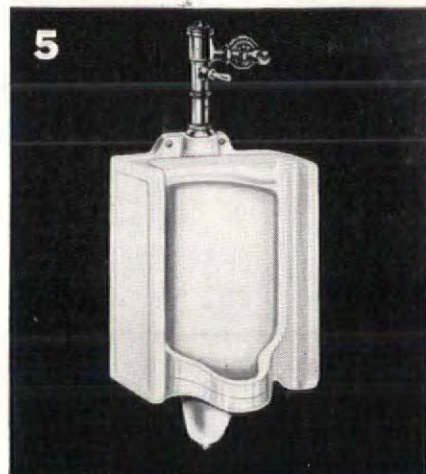
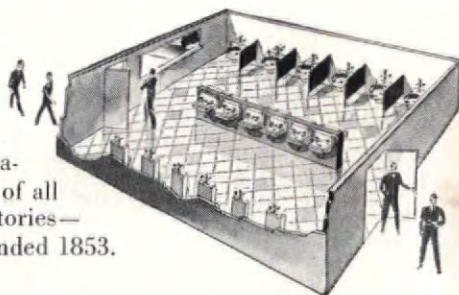
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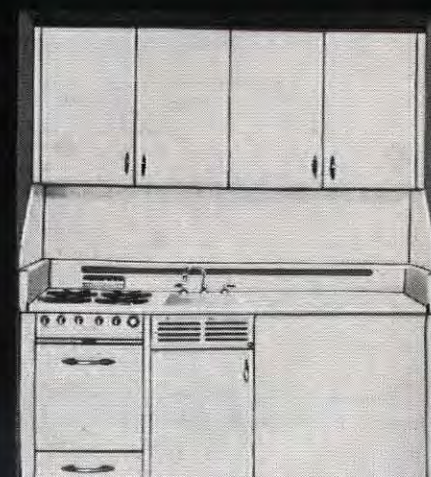
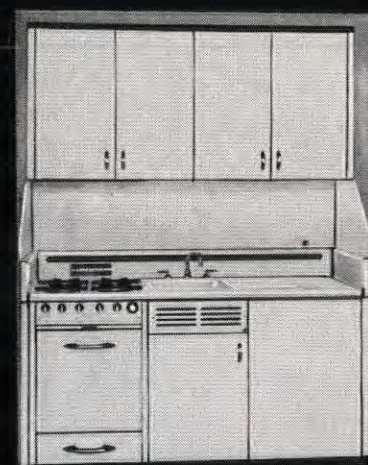
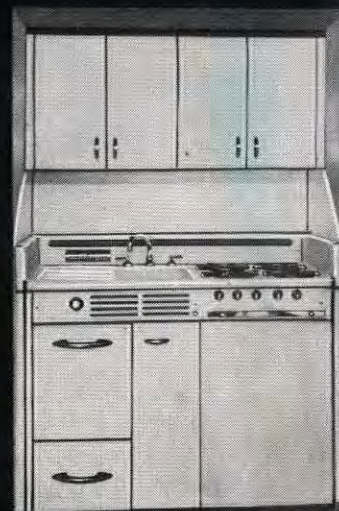
270 Dwyer Kitchens at 1400 Lake Shore Drive, Chicago.
Below: 183 Dwyer Kitchens in Harkness Memorial Hall,
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KITCHENS

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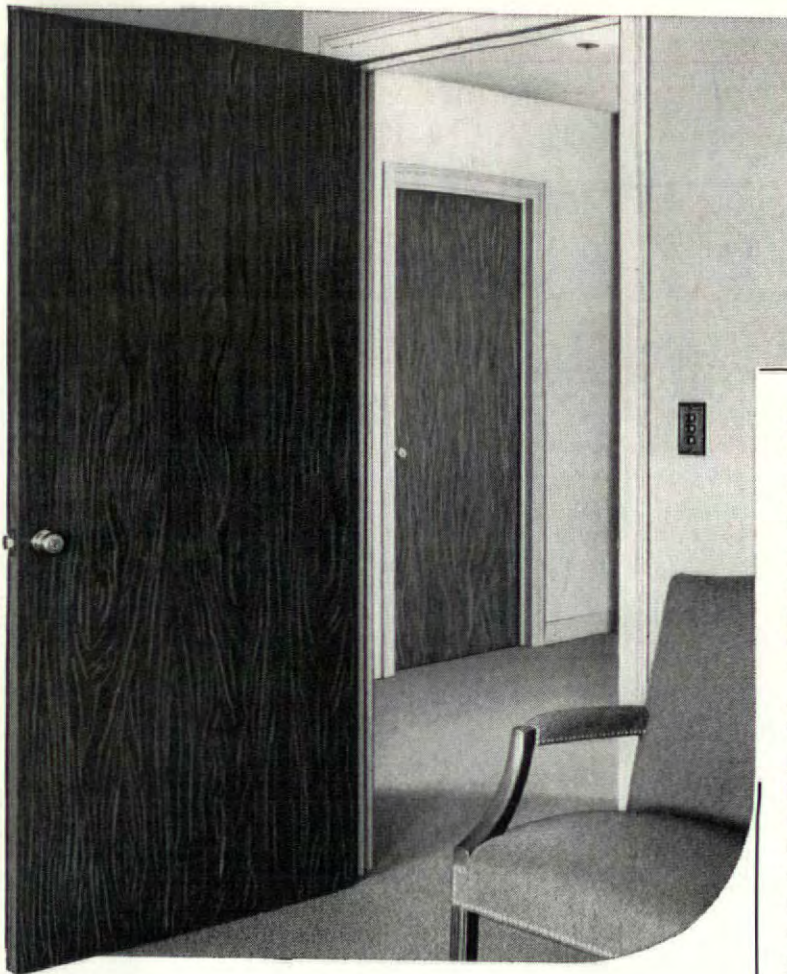
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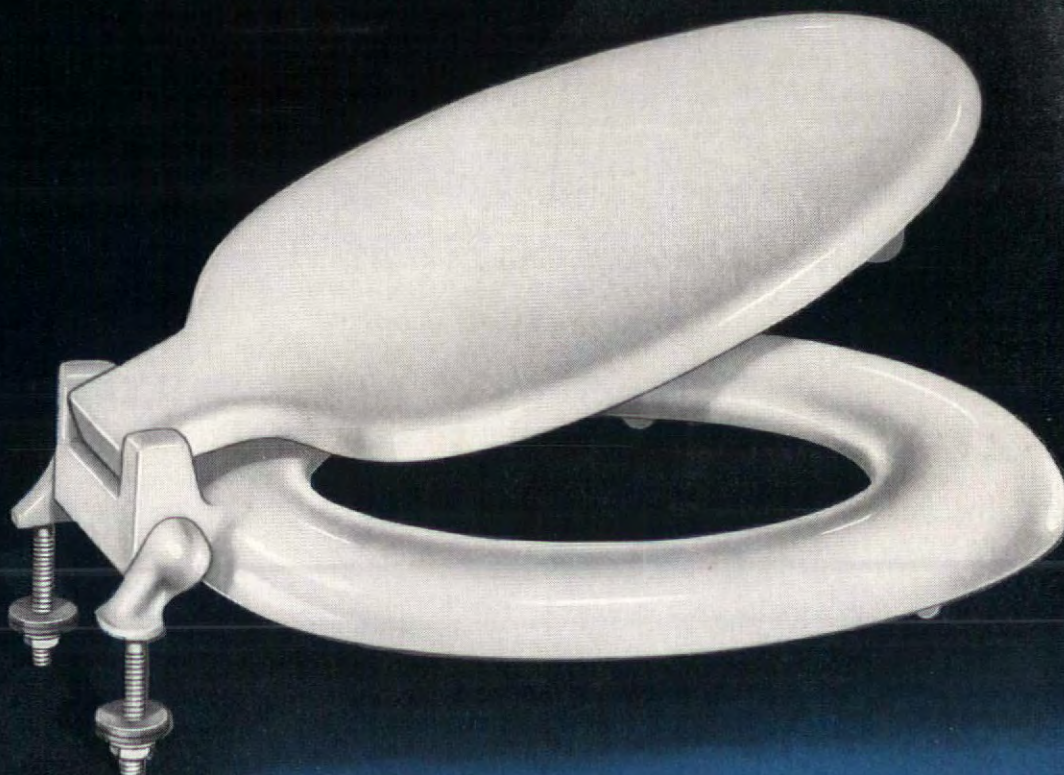
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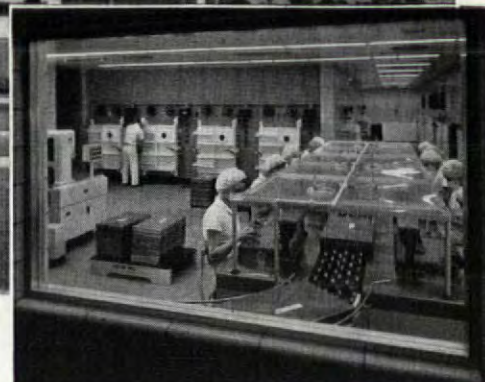
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This air-conditioned, 600-seat cafeteria has a two-tone terrazzo floor, plastered walls and an acoustical tile ceiling with recessed fluorescent lighting. Announcements and recorded music are transmitted over loud speakers.

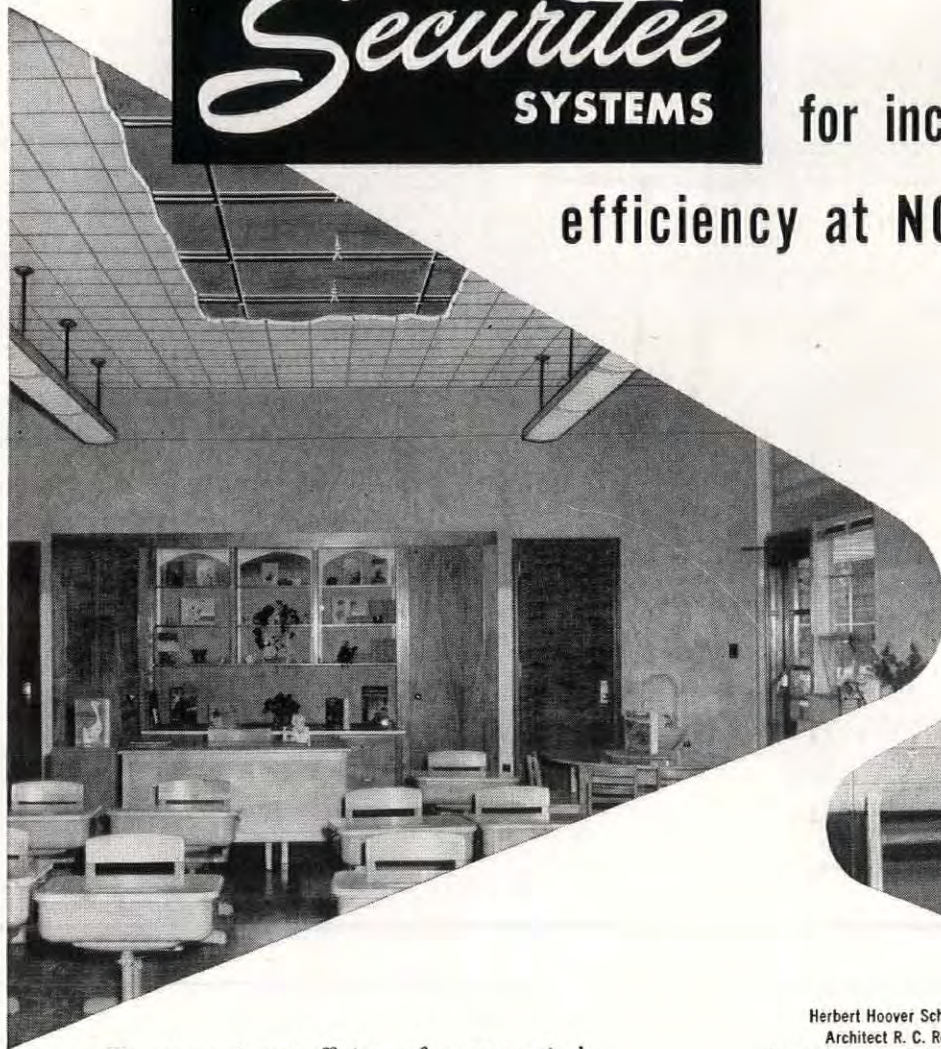


An employees' lounge adjoins the cafeteria. Besides reading matter, card tables, etc., there are other social facilities in the adjacent indoor recreation area. Picnic tables and garden furniture are also provided on terraces outside the lobby in warm weather, when hundreds of employees relax outdoors at noontime.

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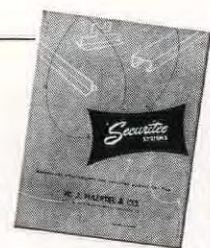


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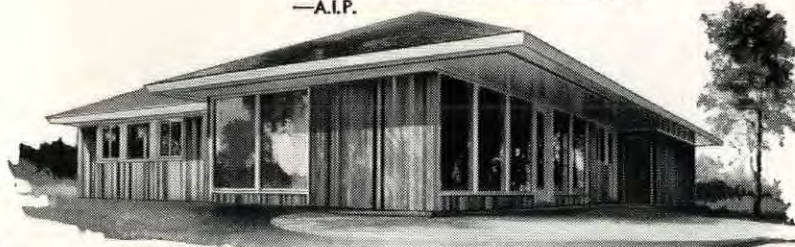


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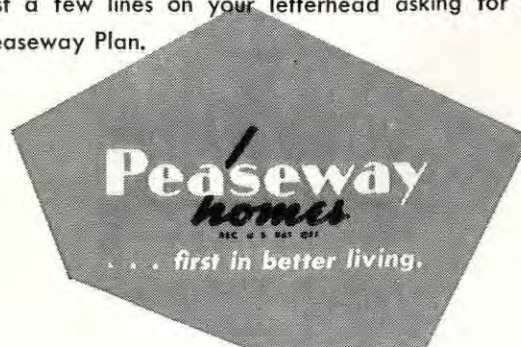
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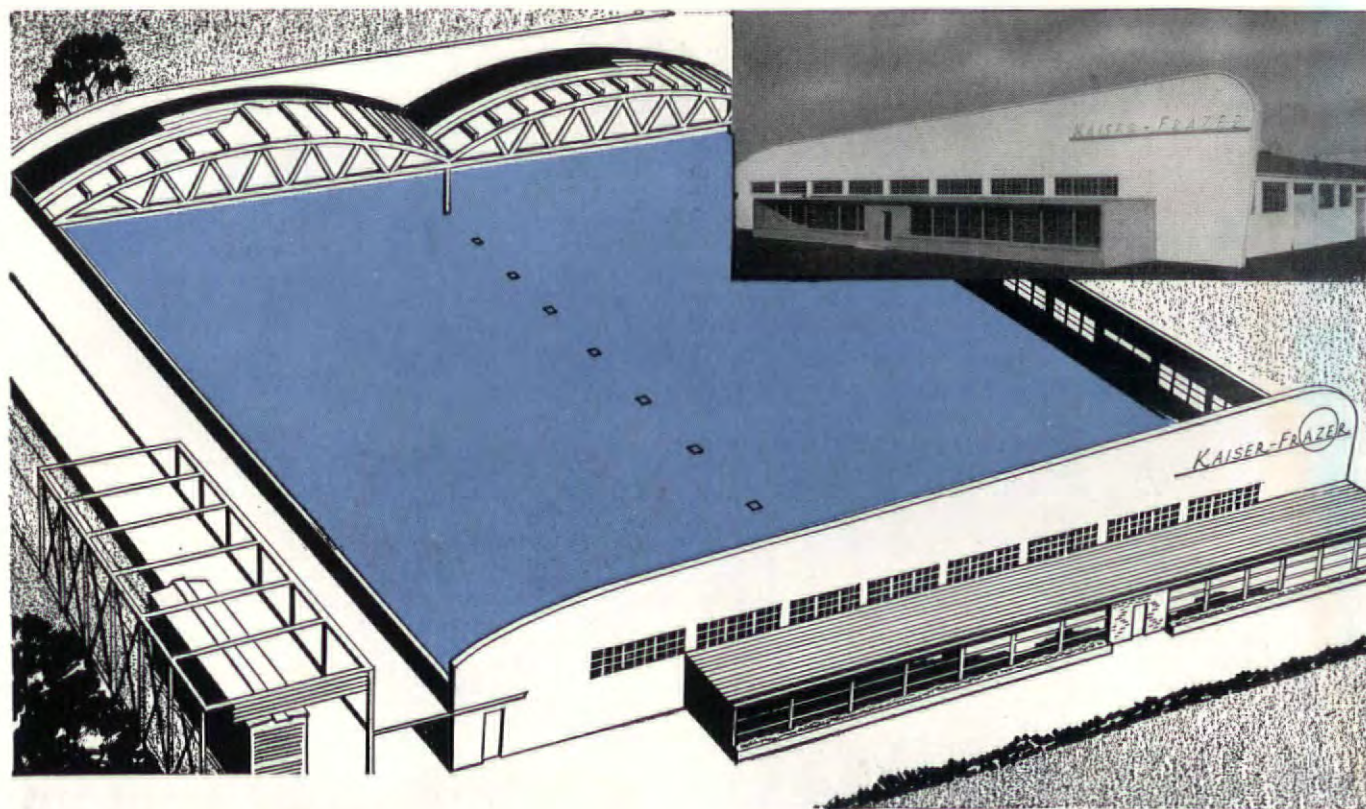
Our Peaseway Plan tells you how these "New-Design" homes can be yours to build on a franchise basis in your territory. It tells you, too, about the

complete line of Peaseway Homes you can offer—ranging from a 2-bedroom home of 691 square feet to the latest contemporary design home of 1410 square feet containing 4 bedrooms and 2 baths. Prices range from \$7,000 up. F.H.A. approved.

Many of our franchise builder-erectors aided by the Peaseway Plan have gained prominence and dominance in their market. You may be located in one of our recently opened territories, East of the Mississippi. We urge you to write at your earliest convenience . . . just a few lines on your letterhead asking for the Peaseway Plan.

WRITE TO:
PEASE WOODWORK COMPANY
ROOM 1101
CINCINNATI 23, OHIO
"In business in Cincinnati since 1893"





Clear Floor Space

...Primary working tool for efficient industrial production

Unrestricted space for continuous flow of mass production; room for efficient use of all kinds of materials handling equipment; flexibility for future expansion and production changes; freedom from costly maintenance — these qualities, provided through clear span trusses of Timber Structures, Inc., make the industrial plant building a truly effective production tool.

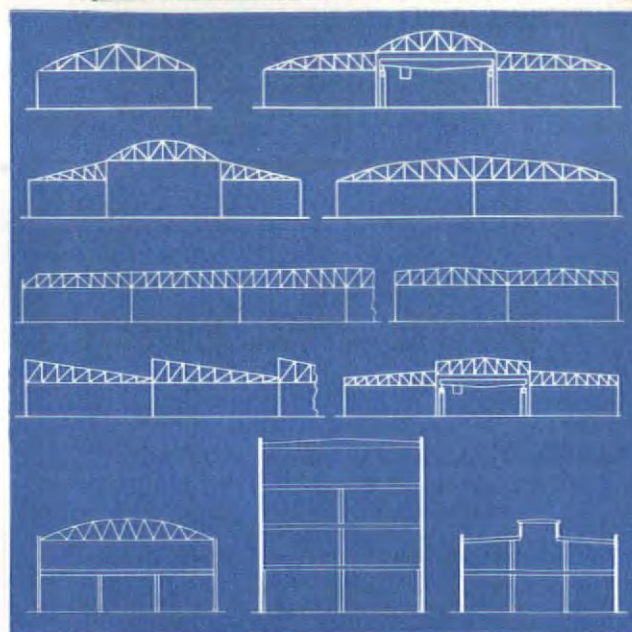
Variable Spans and Roof Contours

Trusses of Timber Structures, Inc., are available in both arched and flat types in spans up to 250 feet or more. As illustrated at the right, the roof lines of your industrial plant building may be arched, flat or sawtooth. Multiple spans are common, and balconies, mezzanines, hoists, monorail installations and heating units are easily provided for in design.

Heavy Timber Construction

For best results truss chords are glued laminated members, composed entirely of kiln dried material and "shop grown" to the exact shape and dimensions specified by the designer. Free from effects of seasoning, these trusses also qualify as heavy timber or mill type construction. With a centuries-old record for effective resistance to destruction by fire, this construction earns moderate insurance rates during the entire life of the building.

A new booklet, "Industrial Buildings", gives detailed information about engineered timber construction of permanent, functional industrial plant buildings. Get your copy from your nearest Timber Structures office, or fill in and mail the coupon.



TIMBER STRUCTURES, INC.

P. O. BOX 3782-B, PORTLAND 8, OREGON

Offices in New York; Chicago; Kansas City, Missouri;
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Architect Holabird, Root & Burgee
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remodel better with
Gold Bond**

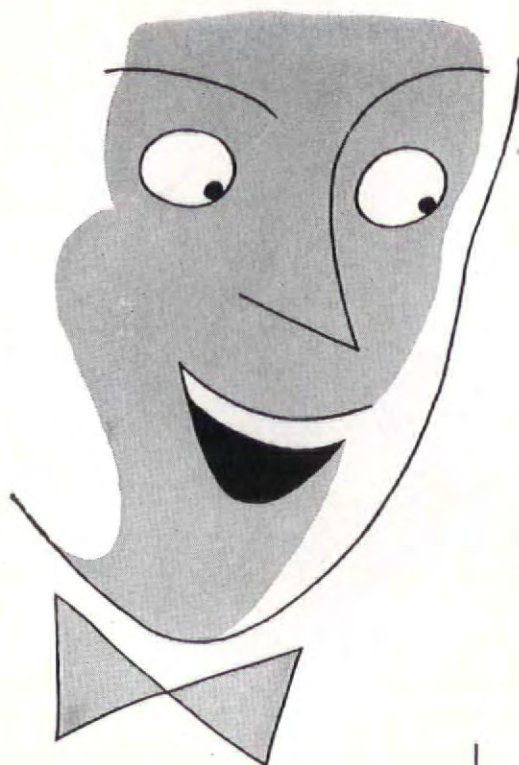
AN OUTSTANDING example of the striking Architecture of new Veterans' Hospitals is this recently completed building in Madison, Wisconsin. It is advanced in design, yet pleasing to the eye. The great window space and the full advantage taken of ground area, reflects careful planning and utilization of available space.

National Gypsum is proud to have supplied the major portion of the Metal Lath and Plasters used in this modern hospital.

Whether it's a home under \$10,000 or a hospital or office building costing many millions, there's a definite advantage to architect, builder and owner when Gold Bond Products are specified and used exclusively—eliminating divided responsibility. These building materials are made to work together, and the responsibility for their performance rests solely with one reputable manufacturer—National Gypsum Company. There are over 150 Gold Bond Products. Each one is fully described in Sweet's.

NATIONAL GYPSUM COMPANY • BUFFALO 2, NEW YORK

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



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you building into
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THESE F. P. FEATURES**

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Fabricated in any shape, form or section;
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Obtainable in such versatile textures as
"Terra Cotta," in Semi-matte or Gloss
finishes. Also our New "LEATHORCEL"
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Seaporcel porcelain metal is definitely permanent and supremely
good looking. Nothing can injure its original beauty.
As the years roll on you can be sure that Seaporcel* porcelain
will always be in style.

Used on exterior or for interior design Seaporcel is full of surprises.
It's such a versatile material to work with... adaptable
to almost any kind of architecture... almost limitless in design.

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28-24 Borden Ave., Long Island City 1, N. Y.
Complete A. F. of L. Metal Fabricating & Enameling Shop

Ladies Apparel Shop
Los Angeles, Calif.

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Fluted Columns — Fifth Avenue
Office Building, New York



Entire Theatre Facade
— Toledo, Ohio



Back wall, Front Counters
and columns — Jones Beach, N. Y.



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where
the
elements

are
at
their
worst



The dome of the Terminal Tower, Cleveland, Ohio, 614 feet above the sidewalk, takes a beating from wind, rain, boiling sun and subzero temperatures. The exposure to elements, beyond the endurance of most building materials, is protected with Thoroseal, as shown in above photograph.



Photograph on left shows how Bob Reynolds, of H. Reynolds Company, of Cleveland, Ohio, stands on extreme edge of hanging scaffold, 614 feet above sidewalk.

WATERPLUG
To Stop Leaks

THOROSEAL
To Seal Surface

QUICKSEAL
For Beautiful Finish

Get our new
20-PAGE BRO-
CHURE, with
designer's
guide. Pictorially de-
scribed, in detail
"HOW TO DO IT."



Standard Dry Wall Products
BOX X, NEW EAGLE, PENNSYLVANIA

INSULATED METAL WALLS

for INDUSTRIAL and COMMERCIAL BUILDINGS

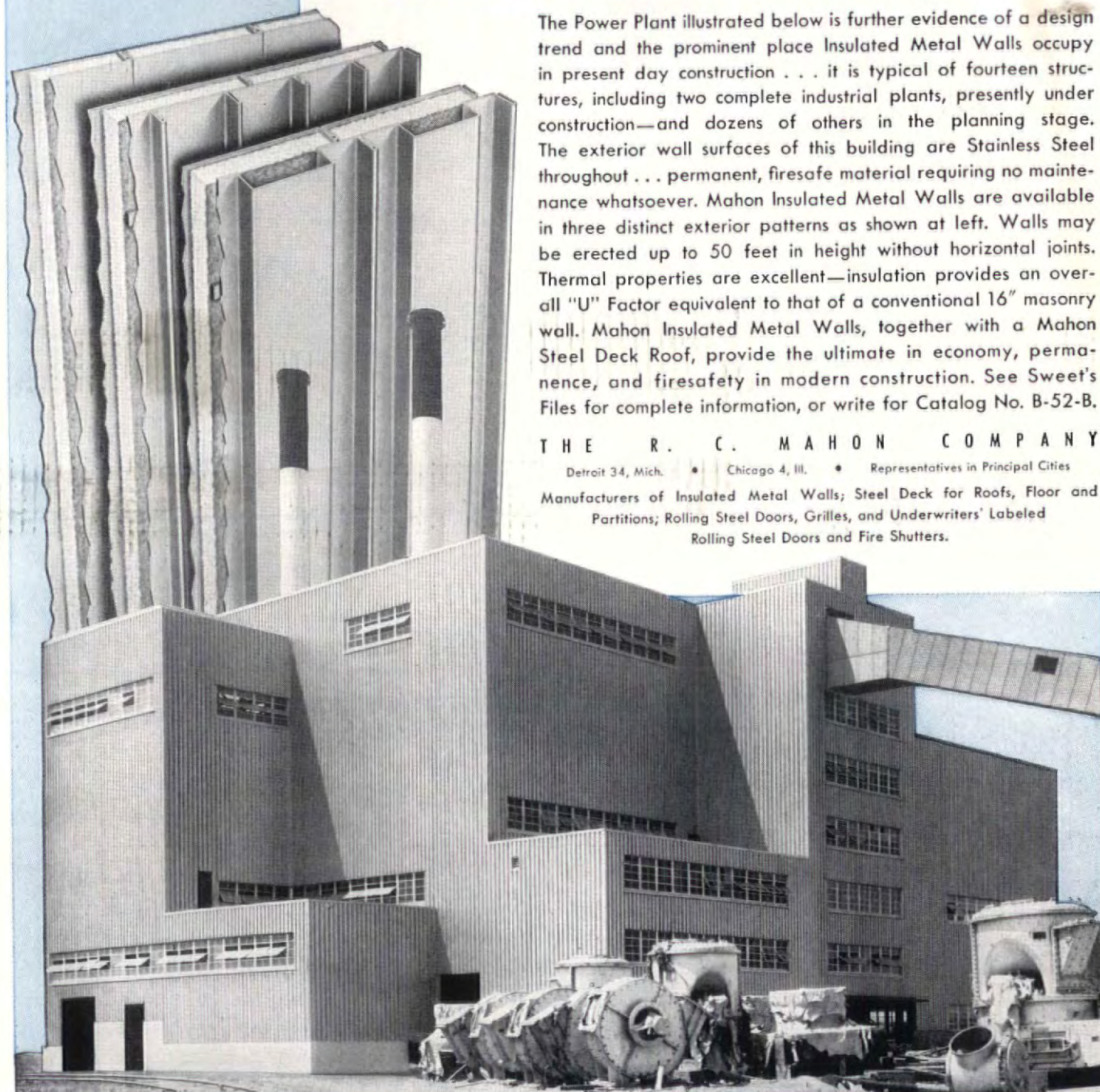
ALUMINUM, STAINLESS or GALVANIZED STEEL

The Power Plant illustrated below is further evidence of a design trend and the prominent place Insulated Metal Walls occupy in present day construction . . . it is typical of fourteen structures, including two complete industrial plants, presently under construction—and dozens of others in the planning stage. The exterior wall surfaces of this building are Stainless Steel throughout . . . permanent, firesafe material requiring no maintenance whatsoever. Mahon Insulated Metal Walls are available in three distinct exterior patterns as shown at left. Walls may be erected up to 50 feet in height without horizontal joints. Thermal properties are excellent—insulation provides an overall "U" Factor equivalent to that of a conventional 16" masonry wall. Mahon Insulated Metal Walls, together with a Mahon Steel Deck Roof, provide the ultimate in economy, permanence, and firesafety in modern construction. See Sweet's Files for complete information, or write for Catalog No. B-52-B.

THE R. C. MAHON COMPANY

Detroit 34, Mich. • Chicago 4, Ill. • Representatives in Principal Cities

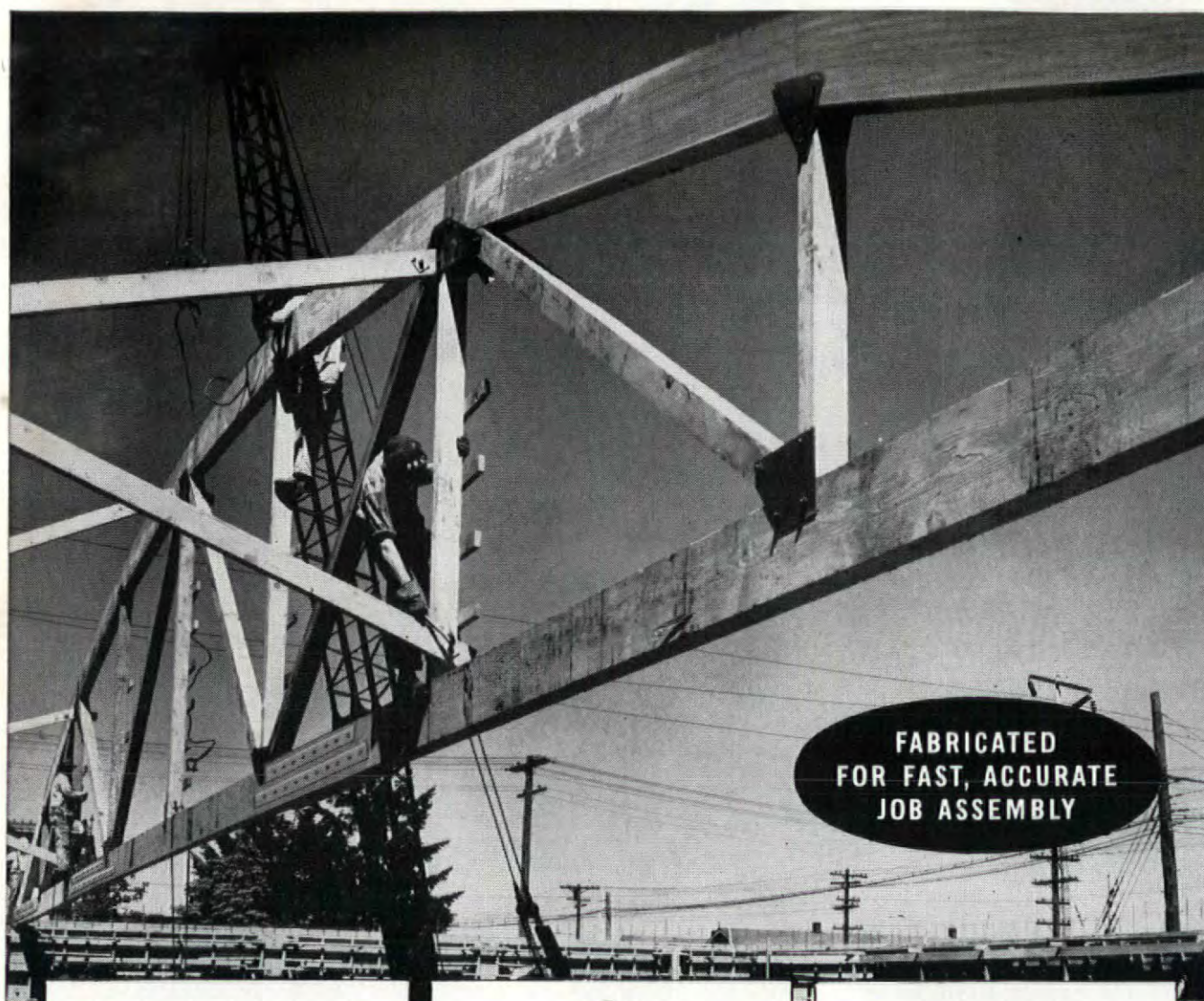
Manufacturers of Insulated Metal Walls; Steel Deck for Roofs, Floor and Partitions; Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.



Mahon Insulated Metal Wall Panels employed in construction of new Power Plant for Central Power Electric Cooperative, Inc., Vulture, N. D. Verne E. Alden Company, Chicago, Ill., Architects & Engineers, Rue Contracting Co., Fargo, N. D., Gen. Contr.

MAHON

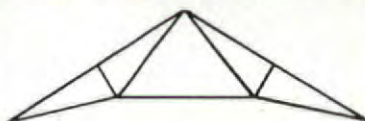
TIMBER TRUSSES...by Weyerhaeuser



**FABRICATED
FOR FAST, ACCURATE
JOB ASSEMBLY**



The standard Monocord Bowstring truss



Pitch Type heavy timber truss



Flat Top modified bowstring truss

WITH another surge of heavy construction in the offing . . . with probable shortages and delays of some materials, Monocord Timber Trusses and other heavy structural members of wood can be relied upon to complete current and future projects.

Weyerhaeuser has the timbers . . . the facilities . . . and the experience to fabricate timber structural members of the heavier type to meet the job

requirements . . . to deliver such members clearly marked for accurate assembly and fast erection.

With fabricated timbers builders can proceed with factories, warehouses, depots, training centers, bridges, docks . . . and other projects calling for heavy construction.

If you have projects involving such heavy structural members, write or wire our office for complete details.

Weyerhaeuser Sales Company

SAINT PAUL 1, MINNESOTA
NEWARK, NEW JERSEY • TACOMA, WASHINGTON

AMERICAN-Standard

First in heating...first in plumbing

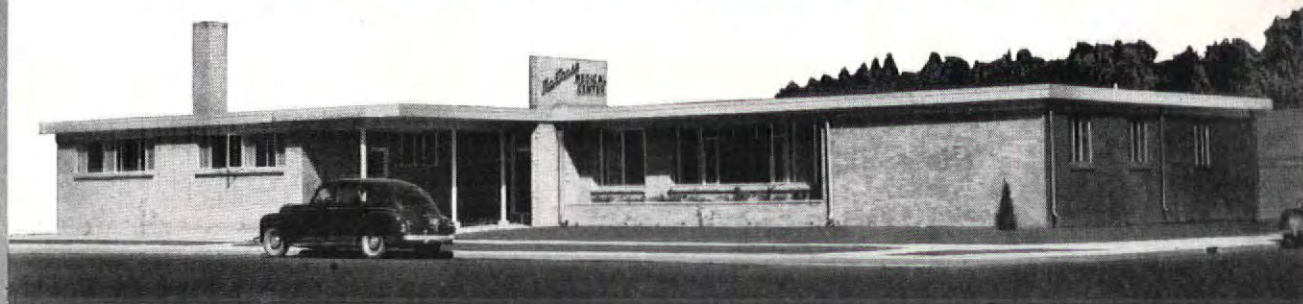
It's AMERICAN-Standard for both heating and plumbing at Montrose Medical Center

• The new Medical Center in Montrose, Colorado, followed the trend of outstanding institutions all over the country and installed American-Standard heating equipment and plumbing fixtures throughout.

American-Standard products meet the most rigid hospital requirements. They're designed to provide utmost comfort, safety and relaxation

of patients, utmost convenience in use by hospital personnel. And they're sturdily constructed, easy and economical to maintain.

Check the complete American-Standard line when you plan to build. Whether you're planning a hospital, home, school or large industrial building, you'll find the heating and plumbing products to fit your needs exactly.



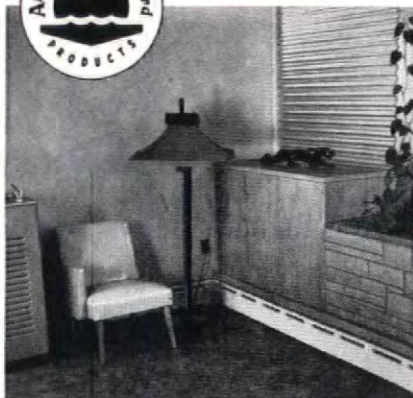
Architects: Fisher & Fisher, Denver, Colorado.

Heating engineer: Marshall & Johnson, Denver, Colorado.

General contractors: Marvin Gill, Montrose, Colorado.

Wholesale distributor: Biggs-Kurtz Co., Grand Junction, Colorado.

Heating and plumbing contractor: Lis & Anderson, Montrose, Colorado.



SMART, RADIANTRIM PANELS in the Montrose Medical Center lobby provide both superior heating comfort and outstanding good looks. Radiantrim Panels allow complete freedom of room decoration... the entire floor area is free. And the space-saving panels provide an even blanket of warmth, varying only slightly from floor to ceiling. Adaptable to either forced hot water or two-pipe steam heating system.



THE HEATING SYSTEM of the Montrose Medical Center is fired by this Exbrook Boiler, assuring an abundance of heat throughout the building. Designed for automatic firing with either coal or oil, the Exbrook is noted for its dependable fuel-saving operation. It is durably constructed of cast iron and has a smooth, Forge Red jacket which is heavily insulated to prevent heat loss.



THIS WASHROOM in a dental clinic of the Medical Center features a streamlined Marledge lavatory and a Madera water closet. Made of non-absorbent genuine vitreous china, they will retain their good looks indefinitely. The Marledge has a handy shelf back, built-in soap dishes, non-tarnishing Chromard fittings. The Madera's siphon jet water action assures thorough, quiet flushing.

American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pa.

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Andersen Casements, St. Paul, Minn., home, Norman Johnson, architect

FOR WALLS
OF GLASS... *Windowalls* **ANDERSEN***

More and more often architects are placing walls of glass where once there would have been walls of plaster and wood. And in today's glass wall, Andersen WINDOWALLS have their place. They

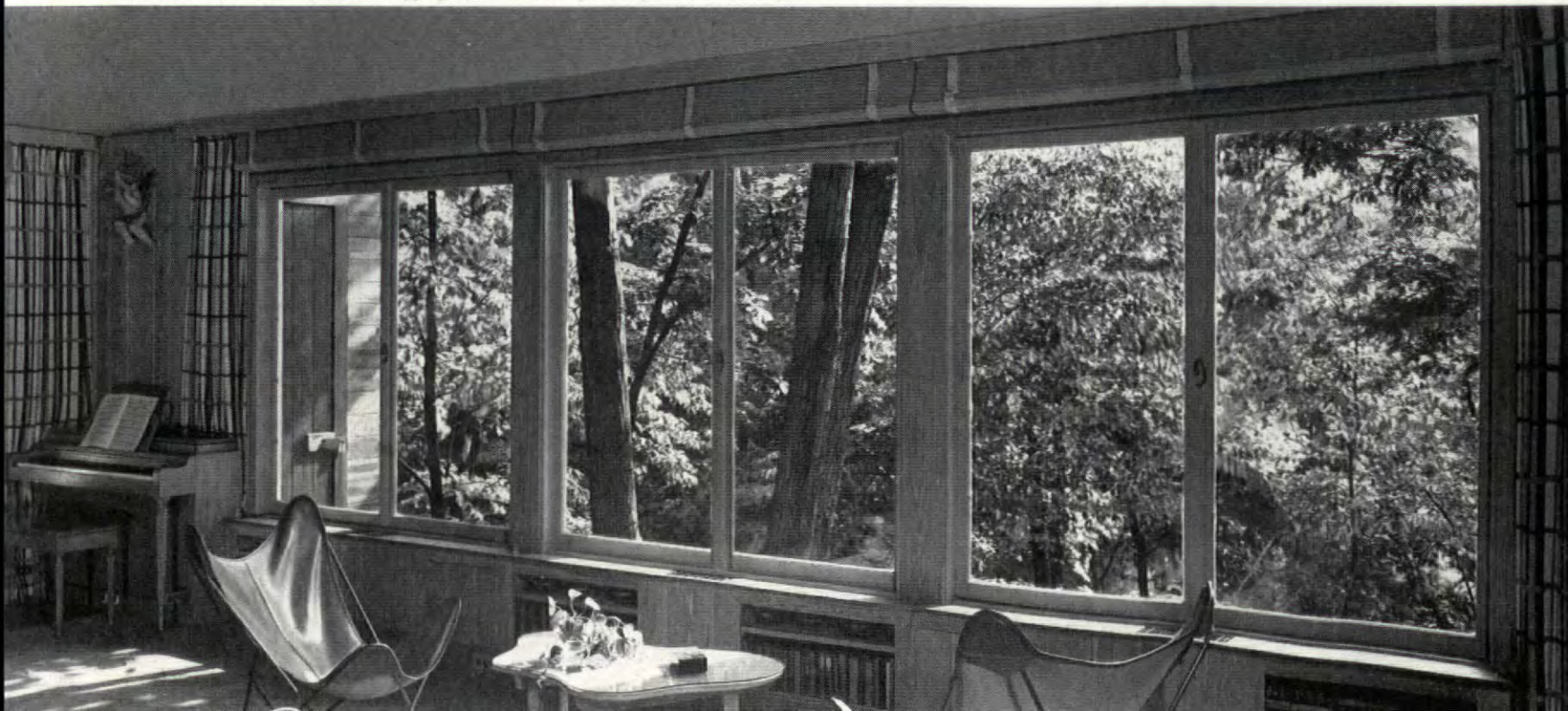
competently perform their dual function of window and wall. They breathe fresh air into the open plan, yet they seal out moisture and winter's cold. Both windows and walls, they are WINDOWALLS.

*TRADEMARK OF ANDERSEN CORPORATION

Andersen Corporation • BAYPORT, MINNESOTA
FAMOUS FOR COMPLETE **WOOD WINDOW UNITS**

Write for Detail Catalog or Tracing Detail File; or see Sweet's files for specification data. WINDOWALLS sold by millwork dealers.

Andersen Gliders—Home in Chappaqua, N. Y.—Joseph Douglas Weiss, architect





Look how the strong
welded mesh of
**Pittsburgh
Steeltex**
Floor Lath
assumes its proper
position in a
concrete slab

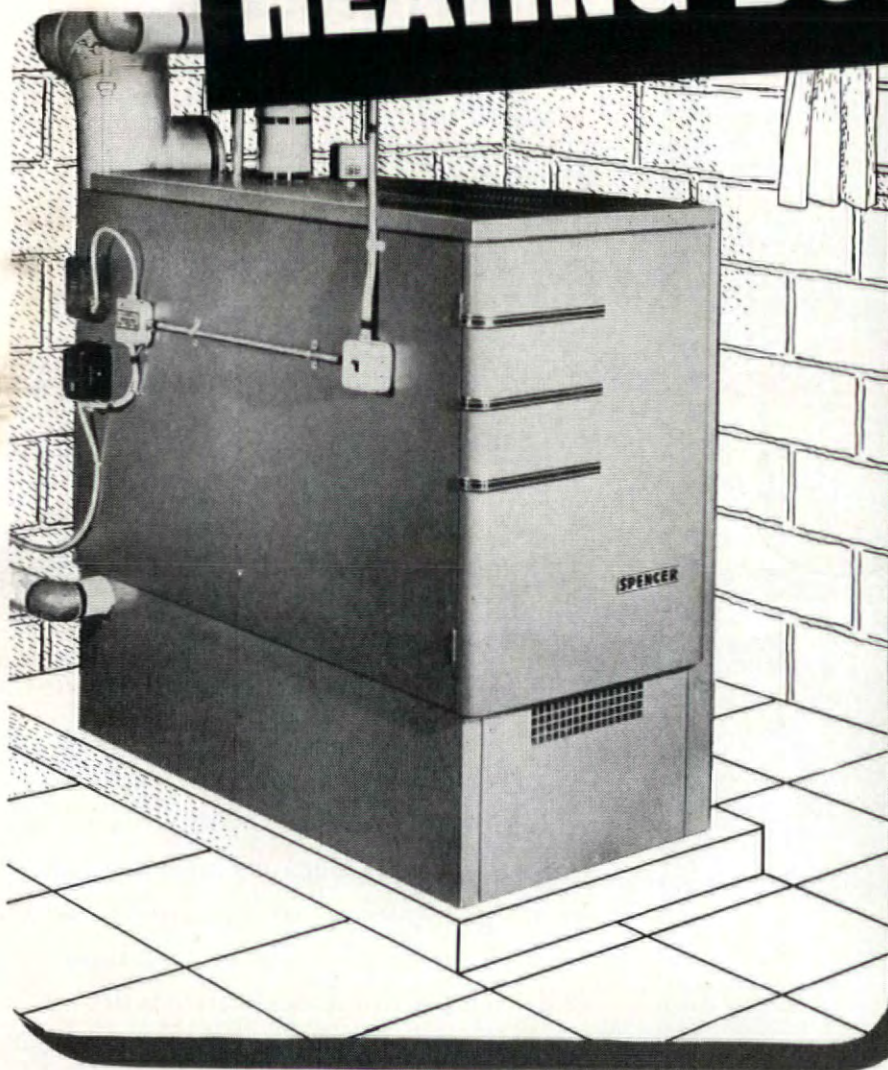
You can readily see why a slab poured over Pittsburgh Steeltex Floor Lath means a better, stronger floor. It is properly reinforced with embedded galvanized welded wire mesh and properly cured because moisture is retained by tough waterproof backing. Furthermore, construction costs can be cut since work may continue on the floor below while pouring is in progress. For further good reasons to specify Steeltex, see Sweet's or write for our catalog D.S. 133, Dept. MB, Pittsburgh Steel Products Co., Grant Bldg., Pittsburgh 30, Pa.

Pittsburgh Steel Products Company

A Subsidiary of Pittsburgh Steel Company

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THE QUALITY LINE OF
HEATING BOILERS



A popular model in one of the many Spencer Boiler series suitable for homes, apartments, and small commercial buildings. This type is available in capacities from 700 to 3000 square feet, steam.

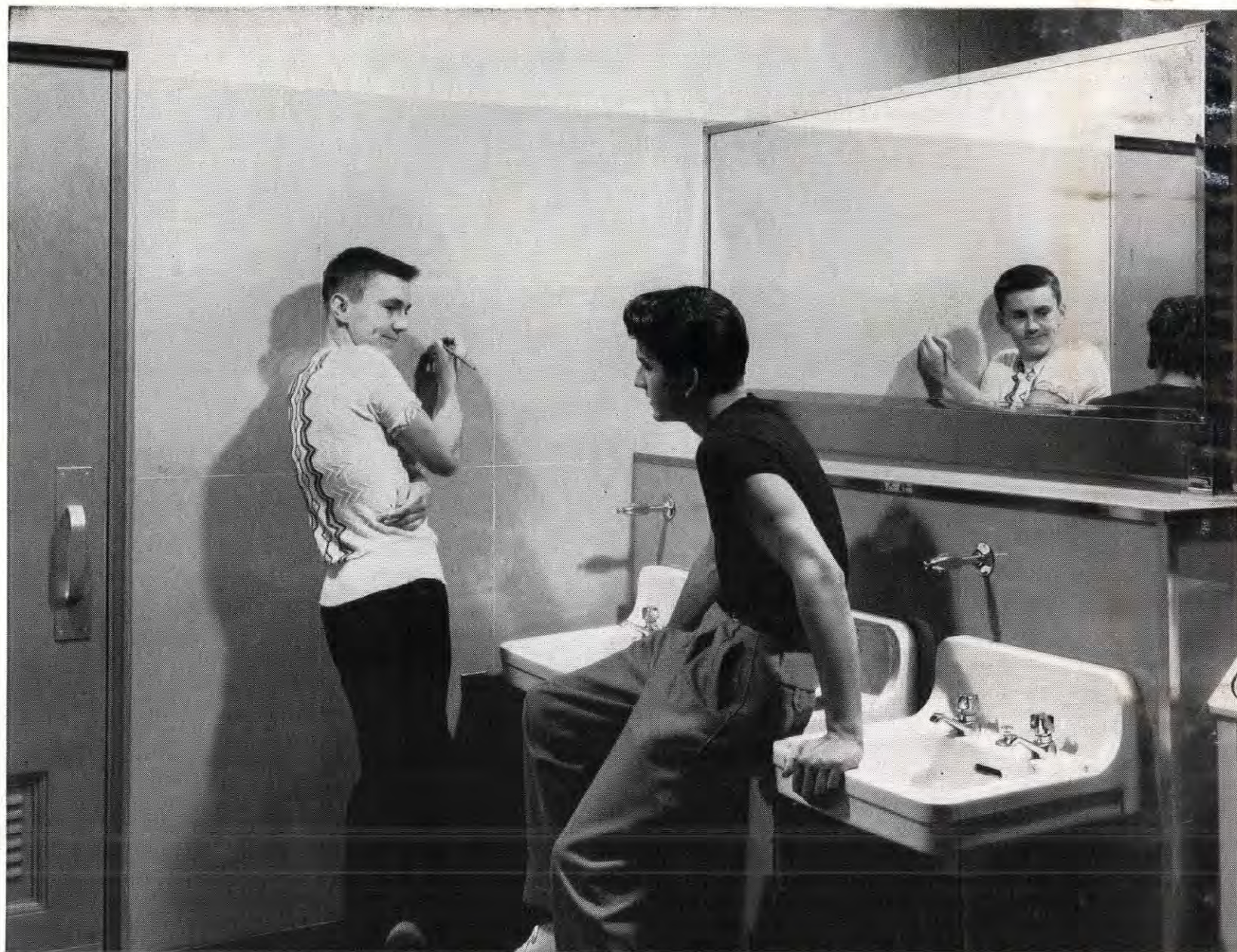
WRITE FOR SPENCER CATALOGUE TODAY.



***There is a Spencer
for every building,
for every fuel.***

Both cast iron and steel . . . a selection of 76 models . . . versatile, dependable, backed by more than sixty years of leadership . . . precision-engineered and manufactured to give superior, *guaranteed* service.





PRIVY POETS can't write on the smooth, hard wall of Vitrolite Glass paneling in Toledo's railroad terminal.

"Nuts! You can't even mark it..."

"This stuff is like tryin' to write on glass!"

You're absolutely right, Butch, because it *is* glass. That wall paneling is lustrous rich-looking *Vitrolite** . . . so smooth and hard that neither pencil nor crayon can mar it, neither dirt nor germs can get a grip on it. Moisture can't faze it. It can't warp or swell or deteriorate. And it will always look like new, because its deep-toned beauty goes all the way through.

"The only maintenance given our *Vitrolite* washroom walls in 23 years", wrote one building manager recently, "is an occasional wiping with a damp cloth".

You can see why *Vitrolite* is going in everywhere that rich modern beauty, color, cleanliness and costs count—railroad stations, hotel lobbies, washrooms, kitchens, restaurants, hospitals, schools, all kinds of buildings, all over the country.

Vitrolite looks better—for a lot longer.

Feel the smooth, ruggedness of *Vitrolite*—see the wide range of correlated colors (because of present heavy demand, all colors may not be immediately available). Call your L·O·F Glass Distributor today for full details on *Vitrolite*. Or write us. [®]

10 CORRELATED COLORS SUGGEST
DISTINCTIVE DECORATIVE IDEAS

SKY BLUE

LIGHT GRAY

JADE

RED

CADET BLUE

DARK GRAY

CACTUS GREEN

ALAMO TAN

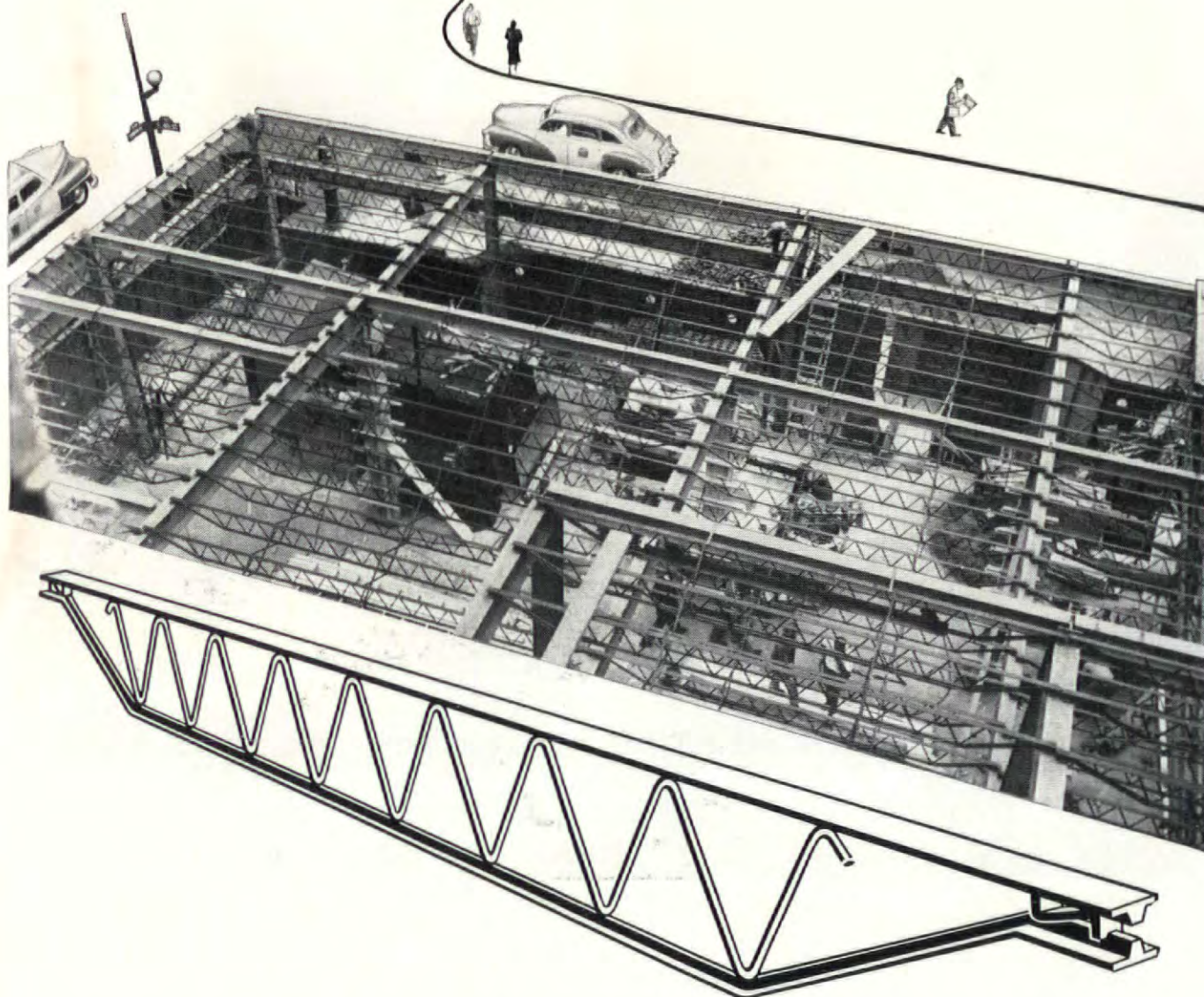
PLUS BLACK AND WHITE



VITROLITE

MADE BY
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47111 Nicholas Building, Toledo 3, Ohio

TRUSCON...a name you can **build** on



Truscon "O-T" Joists assure **better** light-weight floors

Despite their comparatively light weight, Truscon "O-T" Open Truss Steel Joists are extremely strong and rigid. They are ideal for floor and roof requirements in all types of buildings regardless of location. The cost in small structures is practically the same per square foot as that in skyscrapers. Fire-resistant construction is thus made available in many buildings where such construction would otherwise not be possible from the cost standpoint.

Features include: Great rigidity through integral welding of wide tee-shaped top and bottom chords and a strong, round continuous web member. High fire resistance. Simple to install, being completely shop fabricated and reaching the job ready for placing. Each joist is "place-marked," greatly simplifying and speeding construction.

Open web allows passage of pipes and conduits in any direction. See Truscon's complete catalog in "SWEET'S" for full information on all Truscon *Mark of Merit* Products.



TRUSCON® STEEL COMPANY Youngstown 1, Ohio
Subsidiary of Republic Steel Corporation



YOUR MOST PRACTICAL ANSWER IS RIC-WIL INSULATED PIPING SYSTEMS

Ric-wiL Prefabricated Insulated Piping provides several specific advantages to everyone engaged in planning, construction, and operation of structures requiring insulated piping distribution systems.

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Contractors benefit from exact pipe costs and field fabrication economies made possible by Ric-wiL prefabricated and sealed straight sections and accessories.

Owners and users profit from the high thermal efficiency and long maintenance-free operating life of Ric-wiL Systems, made possible by 40 years of experience exclusively in insulated piping.

These advantages and many others, including financial responsibility, make Ric-wiL your most practical answer to insulated piping problems.

At your request, the Ric-wiL representative nearest you will provide detailed technical information on your specific problems.

For full technical information on Ric-wiL Insulated Piping Systems, call or write the Ric-wiL office nearest you or Dept. 5-JA in Cleveland, Ohio.

RIC-WIL

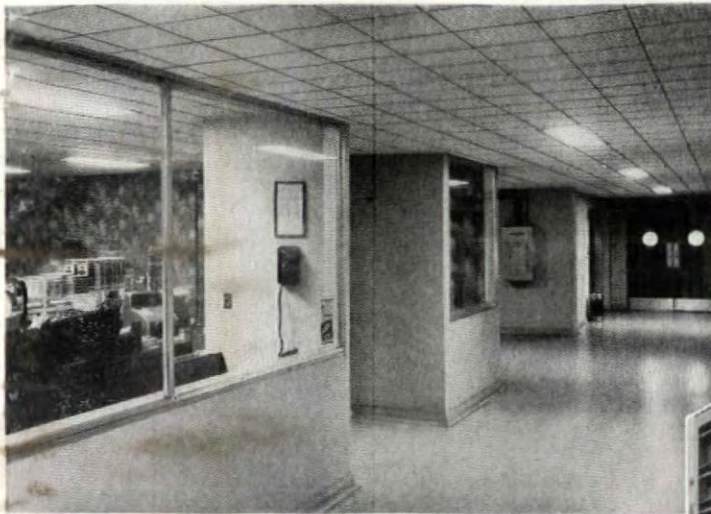
INSULATED PIPING SYSTEMS

OVERHEAD

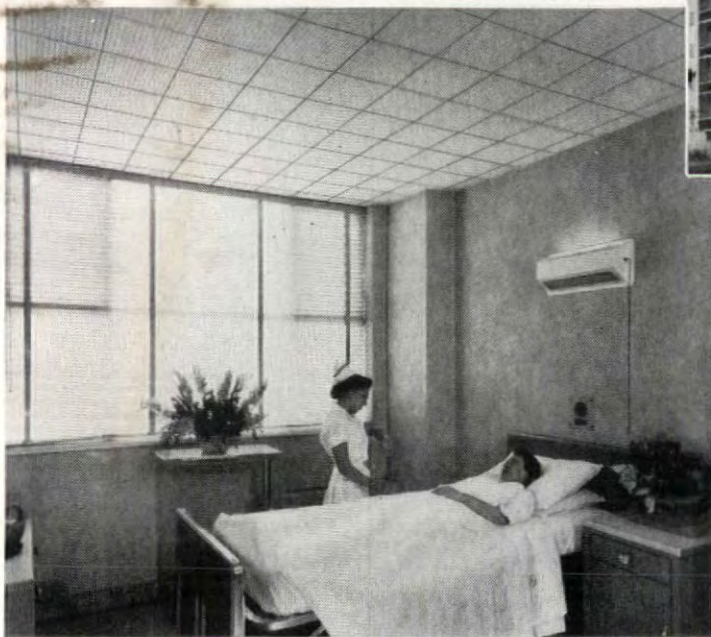
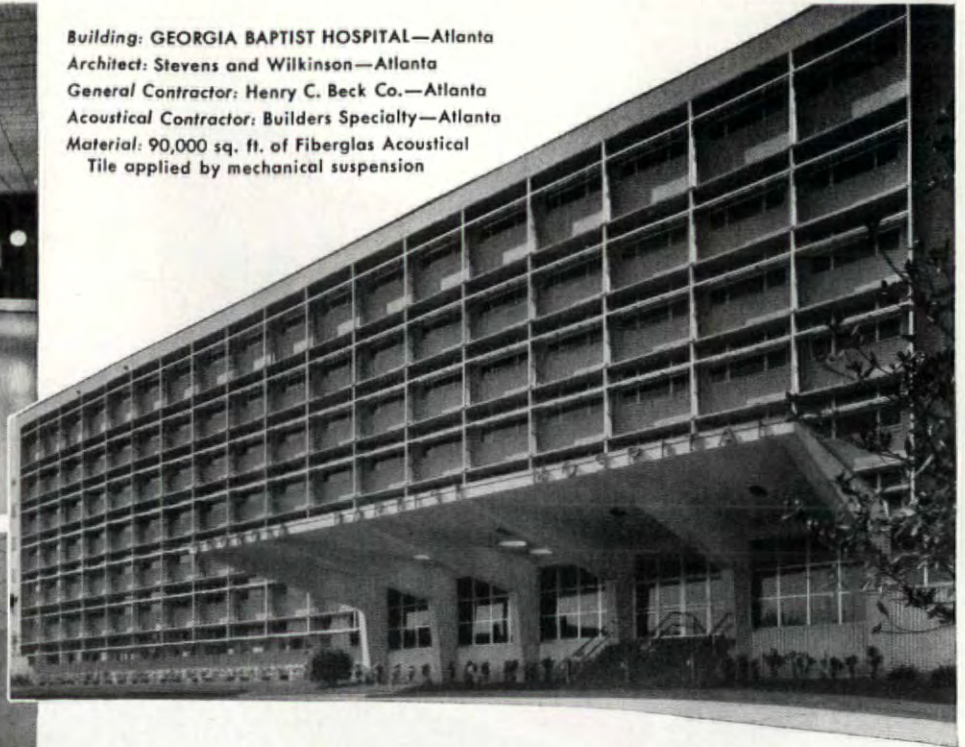
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FOR FORTY YEARS THE GREATEST NAME IN INSULATED PIPING SYSTEMS



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 Architect: Stevens and Wilkinson—Atlanta
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 Material: 90,000 sq. ft. of Fiberglas Acoustical
 Tile applied by mechanical suspension



DESIGN for Sanitary, Firesafe, Modern QUIET

Fiberglas* Acoustical Tile is specified more and more, especially where cleanliness and fire safety are musts. This low-cost, *incombustible* tile offers a unique combination of values:

- Fire Safe
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- Ease of Application
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- Dimensionally Stable
- High Insulation Value
- Low Cost

For complete specification information on Fiberglas Acoustical Tile, see Sweet's Files—Architectural, OR call your local Fiberglas acoustical contractor, listed in the yellow pages of the phone book.

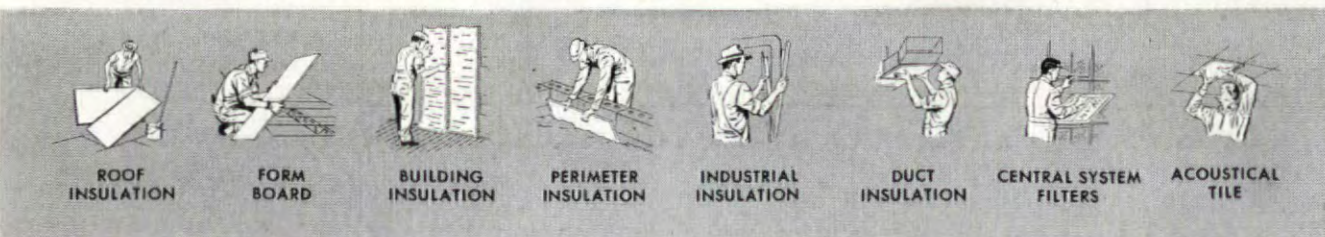
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STEEL BOILER
HEAT**

for homes of every size



**KEWANEE COTTAGE
BOILER**

Brings automatic hot water heat to small homes. A quality vertical tube type. Rated at 77,000 Btu or 510 sq. ft. of water radiation it carries overloads of 50% and more without loss of efficiency.

ROUND Type "R"

For oil, gas or coal . . . jacketed or un-jacketed. 79,000 to 216,000 Btu hourly; or 530 to 1440 sq. ft. water radiation. Like all Kewanees, it handles large overloads with full efficiency.



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For large homes and medium size buildings using any fuel. 178,000 to 720,000 Btu hourly or 740 to 3000 sq. ft. steam. 1180 to 4800 sq. ft. water.



KEWANEE

TYPE "R" STEEL BOILERS

● A dependable source of heat and a never failing supply of hot water for kitchen, laundry and bath, are so indispensable to health and comfort that no one can afford anything but the best. That means a Kewanee.

Kewanee Boilers are *economical to buy*, for their longer life spreads the initial cost over many extra years. They are *economical to operate* because of many fuel saving features which cut fuel costs every year.

Whether one chooses the Cottage, Round or Square-Heat type "R" Kewanee *leads the field*. Regardless of size or type all are built of the same staunch steel plate and in the same faultless manner as their famous big brothers which have heated America's finest big buildings for nearly a century.

**KEWANEE BOILER CORPORATION
KEWANEE, ILLINOIS**

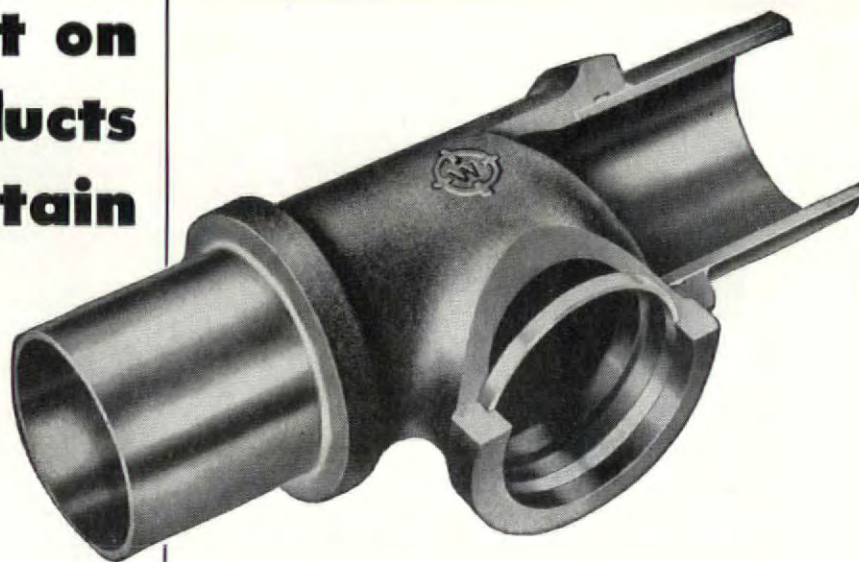
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Division of AMERICAN RADIATOR & Standard Sanitary Corporation

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BOILERS
OVER
80 YEARS**

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**DON'T BE SATISFIED
WITH HALF-WAY MEASURES...**

**insist on
Walseal® products
and be certain**



**— the FACTORY INSERTED Ring insures FULL PENETRATION
of the Silver Alloy . . . a perfect joint**

Today, contractors . . . builders . . . architects are using brazed connections, in ever increasing numbers on their brass and copper pipe runs. However, they must be certain that the correct brazing alloy is used; that the joint has penetration of alloy up the shoulder of the fitting.

That's why more and more are turning to Silbraz® joints made with Walseal valves, fittings and flanges which assure the proper amount of alloy with no waste. They know that the finished joint not only will withstand hydrostatic pressure, but it will also withstand terrific impact and vibration — in fact, no correctly made Silbraz joint has ever been known to creep or pull apart under any pressure,

shock, vibration or temperature which the pipe itself can withstand.

Furthermore, it is a relatively simple operation to make a Silbraz joint — no heavy scaffolding need be erected . . . just cut the pipe, flux, assemble, then braze, following the technique recommended by the Walworth Company. A silver brazing alloy — FACTORY INSERTED — in each port flows out when heated with the oxyacetylene torch, making a joint that is stronger than the pipe itself . . . a one-hand operation, with the mechanic out of the path of the deflected heat — at all times.

For full information about Silbraz joints made with Walseal products, write for Circular A-1.

WALWORTH
valves and fittings

60 EAST 42nd STREET, NEW YORK 17, N. Y.

J & L Junior Beams

SAVE 11¢ Per Square Foot

In Steel, Labor and Building Materials

AT BALTIMORE'S MARYLANDER APARTMENTS

J&L STEEL



The Marylander (above) is the joint effort of Victor Frankl, President of Baltimore Contractors, Incorporated, and J. H. Bodinger, President of The Marylander Apartments, Incorporated. Architect was Hal A. Miller of Baltimore.

A structural design using light-weight J&L Junior Beams continuously over three spans has been selected for floor and roof joists throughout Baltimore's new \$4,500,000 Marylander Apartments. The reason—comparative estimates for floor construction showed that *Junior Beams* effected a saving of more than 11¢ per square foot of floor area as compared to the nearest competitive floor system.

HERE'S HOW THE 11¢ PER SQUARE FOOT SAVING WAS MADE!

1. Lower costs on original material.
2. Lower erection costs due to longer lengths of Junior Beams. Less pieces to handle.
3. Lower costs for outside masonry due to reduced floor thickness—lower over-all height of the building. (The continuity of the Junior Beams effected a saving in floor height

due to the greater stiffness afforded by this type of design. Junior Beams are the lightest weight rolled structural section that can be so used.)

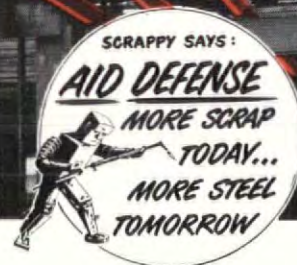
(The substantial saving on interior partitions, plumbing, utilities and miscellaneous items was not estimated.)

In addition the engineers' estimates comparing steel to reinforced concrete showed that the latter cost 19¢ per square foot of floor more than the steel design using Junior Beams.

In the final design the continuity made possible through the use of Junior Beams allowed a 60% reduction in the number of pieces to be positioned during erection—further

cut steel costs through the use of shallower depth Junior Beams. Labor costs were reduced because Junior Beams can be easily positioned and shipped direct from the shop to the job site without time consuming shop fabrication.

Why not take a tip from Engineering Counsel, G. E. Carlstrand who, collaborating with the firm of Candela & Resnick, New York, conceived and developed the idea of using Junior Beams' versatility and adaptability to obtain greater simplicity of framework design? Write today for descriptive literature and engineering data on J&L Junior Beams, the modern light-weight structural.



JONES & LAUGHLIN STEEL CORPORATION

401 Jones & Laughlin Building • Pittsburgh 30, Pennsylvania

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

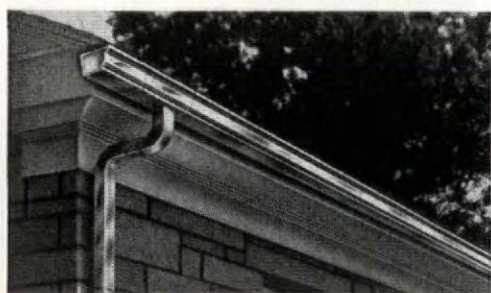


ALUMINUM

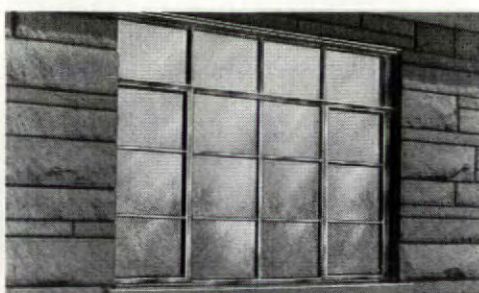
To industry, the decisive advantage of aluminum is measured in dollars and cents...low initial cost, low application cost, no painting, the practical elimination of maintenance.

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.

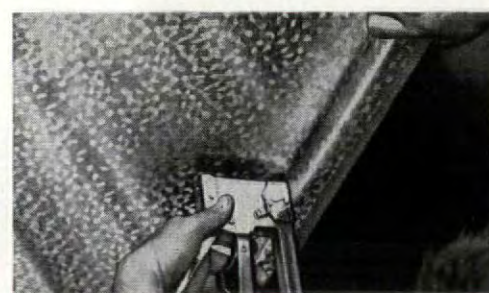
The advertisement reproduced on the facing page therefore has a message for *all* who are planning to build...and for their specifying architects. For literature please write to **Reynolds Metals Company**, Building Products Division, 2019 South Ninth St., Louisville 1, Ky.



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.

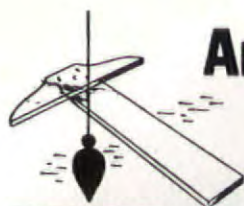


REYNOLDS ALUMINUM REFLECTIVE INSULATION. Embossed foil on one or both sides of kraft paper. Reflects up to 95% of radiant heat. Top-rated vapor barrier. In boxed rolls of 250 square feet, 25", 33" and 36" wide.

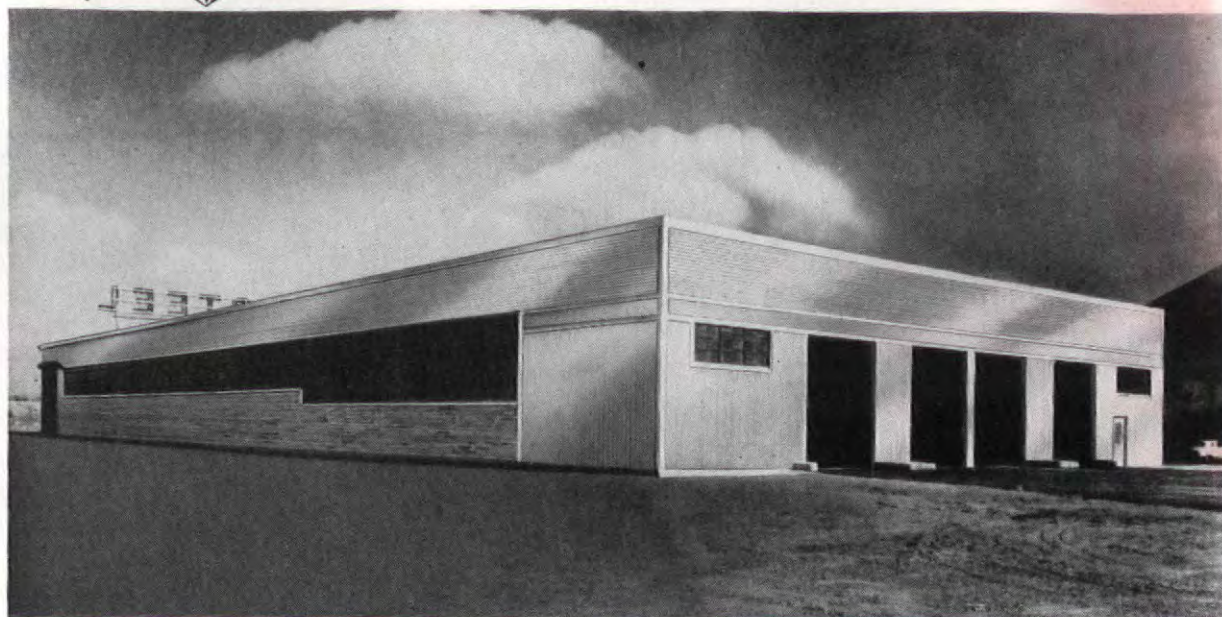


REYNOLDS

This advertisement, which appeared in an extensive list of industrial publications, prepares the plant owner and maintenance man for the architect's well considered specification of Reynolds Lifetime Aluminum Industrial Corrugated. Note that DO-rated orders receive priority handling.



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.

Compare
...with
any
other
sidewall
material!

MORE YEARS
FOR YOUR DOLLAR WITH
RUBEROID
BUILDING MATERIALS

RUBEROID

DECORATOR-
DESIGNED
ASBESTOS

Color-Grained Siding

Yes... compare... and you'll agree with other builders who say Color-Grained Siding is the most sensational sidewall development in years.

Color-Grained satisfies the desire for *authentic* exterior color styling and beauty... plus the cost-cutting economy of asbestos-cement siding. Here are the reasons why it has more sales appeal than any other siding you've ever seen:

Two-toned decorator colors—Styled by a famous color consultant in warm, natural color combinations, Color-Grained Siding brings a brand new conception of color treatment to home exteriors.

Custom-built texture—The exclusive Ruberoid Color-Grained process gives a truly natural appearance of expensive wood shakes. The "graining" is accented with light and dark color tones.

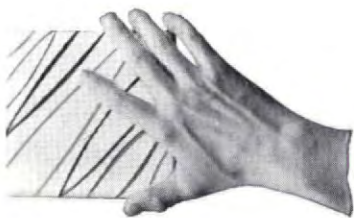
Permanent economy—Color-Grained asbestos siding can't rot, burn or rust...and never requires painting. Home buyers have been "pre-sold" on the fact that asbestos siding greatly reduces maintenance expense.

Color-Grained Siding makes it easier to sell homes... and more profitable. No description or illustration can do justice to Color-Grained Siding's colorful charm. Make sure you see samples at your Ruberoid dealer's right away, or send for free folder.



The **RUBEROID** Co.

500 Fifth Avenue, New York 18, N. Y.



now available
in glazed wall tile...
Mosaic's

Formfree Decorated Tile



An illustration of new Mosaic Formfree Decorated Tile at work. This lovely floor-to-ceiling fireplace is a striking feature of HOUSE BEAUTIFUL's 1951 Pacesetter House, Dobbs Ferry, N. Y. The floor is finished in time- and grime-defying Granitex® Mosaic pattern No. 1779-A3.

Last spring, Mosaic introduced "Formfree Patterns" in ceramic Mosaics—acclaimed by many architects to be a significant design contribution and a major step in making walls and floors of tile more interesting.

This fall, Mosaic again sets the pace in design thinking by introducing *Mosaic Formfree Decorated glazed wall tile*. Six decorated tile designs are offered . . . designs that permit the treatment of large or small vertical surfaces in a new and dramatic manner.

Whether designing a new building or supervising the modernization of an old one, yours will be a wise decision when you recommend Mosaic ceramic tile. No material, regardless of price, offers such beauty, such freedom from maintenance and lifetime wear. The colors won't fade off, rub off or scrub off. A mop, hose or damp cloth keeps tile sparkling clean. Bumps, thumps and hard use fail to harm its flint-like surface. *There is no material more durable, more beautiful or more satisfactory anywhere!*

For detailed information about Mosaic Formfree Decorated glazed wall tile and other Mosaic Tile, write for copies of "Floors of ceramic Mosaic Tile" and "Mosaic Formfree Decorated Tile." Address your request to Dept. 29-6, The Mosaic Tile Company, Zanesville, Ohio, or the Mosaic office nearest you. Of course, there's no obligation!



THE MOSAIC TILE COMPANY

(Member—Tile Council of America)

Offices, Factories, Showrooms and Warehouses
across the nation.

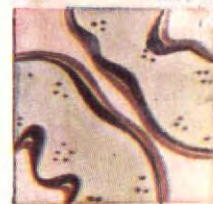
OVER 4000 TILE CONTRACTORS TO SERVE YOU

Sales offices:

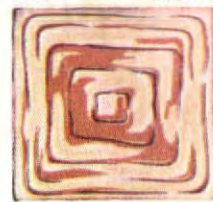
Atlanta • Boston • Chicago • Detroit • Los Angeles •
Little Rock • Miami • New York City • Philadelphia • Port-
land • Salt Lake City • San Francisco • Washington, D. C.



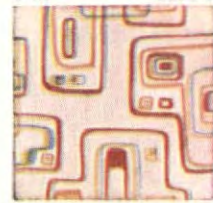
6"x6" 6030-A



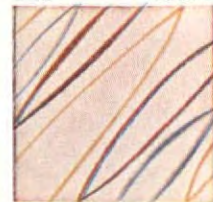
6"x6" 6051-A



6"x6" 6052-B



6"x6" 6053-B



6"x6" 6054-B



6"x6" 6055-A

REVOLUTIONIZES CONSTRUCTION FASTENING!



NEW

REMINGTON

MODEL 450

STUD DRIVER

Cartridge-powered tool fastens steel or wood to concrete or steel in seconds . . . no outside power source

Exhaustive tests prove the new cartridge-powered Remington Stud Driver to be the finest, speediest fastening system ever devised . . . easily sets as high as 5 studs per minute. No other equipment needed. Speeds work and cuts costs. The Model 450 Remington Stud Driver is made by Remington Arms Company, Inc., America's oldest and foremost sporting arms manufacturer. For detailed information and the name of your nearest distributor, fill out and mail the coupon below. There may be slight initial delays in delivery until production and distribution catch up with demand.

"If It's Remington—It's Right!"

Remington



MAIL THIS COUPON TODAY FOR FURTHER INFORMATION

Remington Arms Company, Inc.
Industrial Tool Division
935 Barnum Ave., Bridgeport 2, Connecticut

I am interested in obtaining detailed information on the Model 450 Remington Stud Driver.

Name

Firm

Position

Address

City State

LOOK AT THESE EXCEPTIONAL FEATURES

COMPACT AND PORTABLE — Weighs only 5½ pounds, ideal for scaffold, ladder, overhead work, inaccessible places. Comfortable to use in any position.

SPEED—One man can set up to 5 studs per minute, as much as 100 times faster than other methods. Sets stud at whatever depth is required up to 2¾ inches, depending on material.

ELIMINATES INVESTMENT IN OUTSIDE POWER —Self-powered. Especially useful in isolated places.

TRIPLE SAFE—Plainly visible red dot indicator shows when it's cocked; safety must be depressed before and during squeezing of main trigger; permanently attached safety shield must be compressed against work before Stud Driver will op-

erate. Trigger can't be accidentally tripped. Slight recoil. Low noise level.

WIDE VARIETY OF STUDS are available for every fastening job. Genuine Remington studs are trademarked for user's protection. Pull-out resistance as high as two tons in good concrete, depending on stud used. Cartridges are available in 5 power loads covering practically all fastening needs.

UNIQUE, FAST ASSEMBLY OF STUD AND CARTRIDGE—Tough plastic heel cap permits lightning assembly of any cartridge with any Remington stud, identifies powerload, protects head and thread of driven stud.

PRICE for Model 450 Remington Stud Driver complete in rugged steel carrying case—only \$119.50.

Speeds all these jobs . . . and many more

1. Hanging steel sash and door bucks to concrete and brick.
2. Anchoring wood plates to concrete floors and ceilings for setting partitions.
3. Fastening wood furring strips to concrete for attachment of metal lath.
4. Anchoring suspended ceilings, sprinkler systems and lighting fixtures to concrete.

5. Attaching conduit and panel boxes to steel and masonry.
6. Anchoring light machinery to concrete pads.
7. Erection of signs, awnings and venetian blinds on steel or masonry.
8. Hanging radiator housings to concrete or brick.



21
vinyl-bright
colors

-by the
YARD

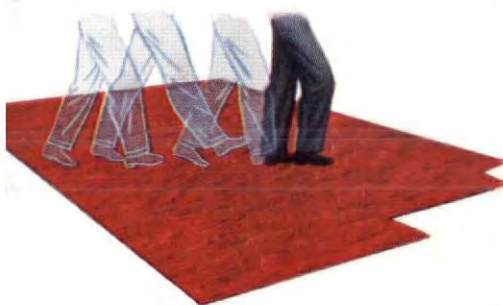
-by the
TILE

"greatest floor
development
in 40 years!"



cuts cleaning care

Flor-Ever is NON-POROUS—which means soil cannot grip into the extra-smooth surface and is wiped off *faster*, with *less effort*. No ordinary kitchen grease, oil or fat—whether animal, vegetable or mineral—can stain, soften or damage Flor-Ever.



sets new wear records

Using Vinylite clear through to the Permo-Seal back, Flor-Ever is amazingly resistant to abrasion and cannot be stained, discolored, softened or otherwise harmed by the harshest soaps, cleaners, detergents, chlorides or household bleaches.



creates new design standards

Flor-Ever offers 21 vinyl-bright colors by the YARD (in six widths) and by the TILE (9"x 9"), with 1" STRIPS in solid colors... providing new opportunities for unusual designing and color distinction.

If you are a practicing architect, designer or builder, we shall gladly deliver to you descriptive and technical material plus a complete set of samples, without obligating you in any way. Mail the coupon.

Flor-Ever®

MB-11-51

Vinylite plastic floor

Send for complete sample set

DELAWARE FLOOR PRODUCTS
division of Congoleum-Nairn, Inc.
295 5th Ave., New York 16, N. Y.

Please have your representative deliver a set of Flor-Ever color samples.

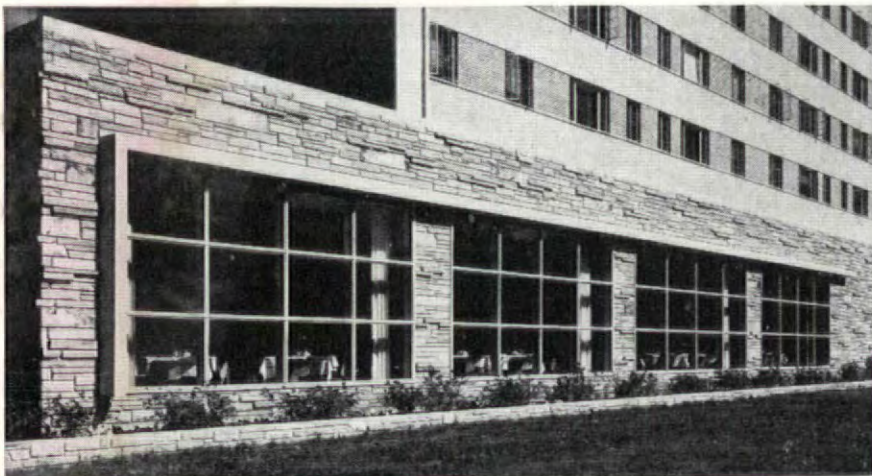
NAME _____

COMPANY _____

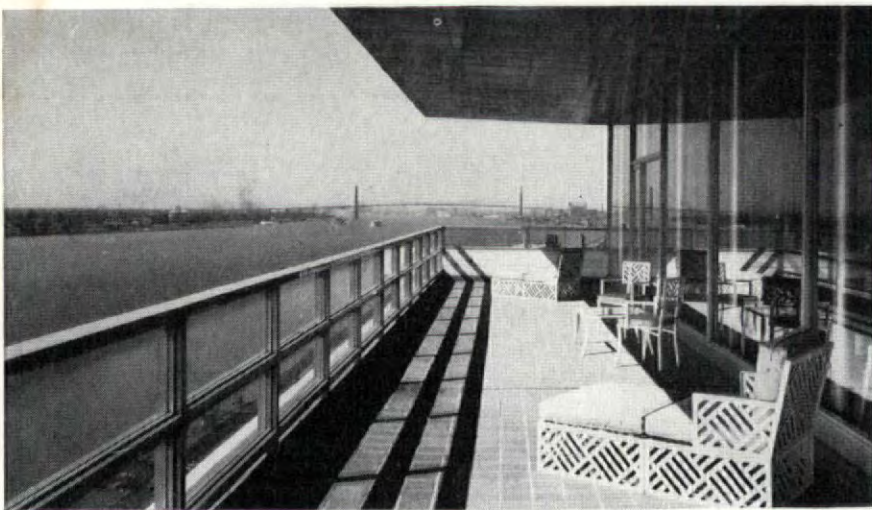
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CITY _____ STATE _____

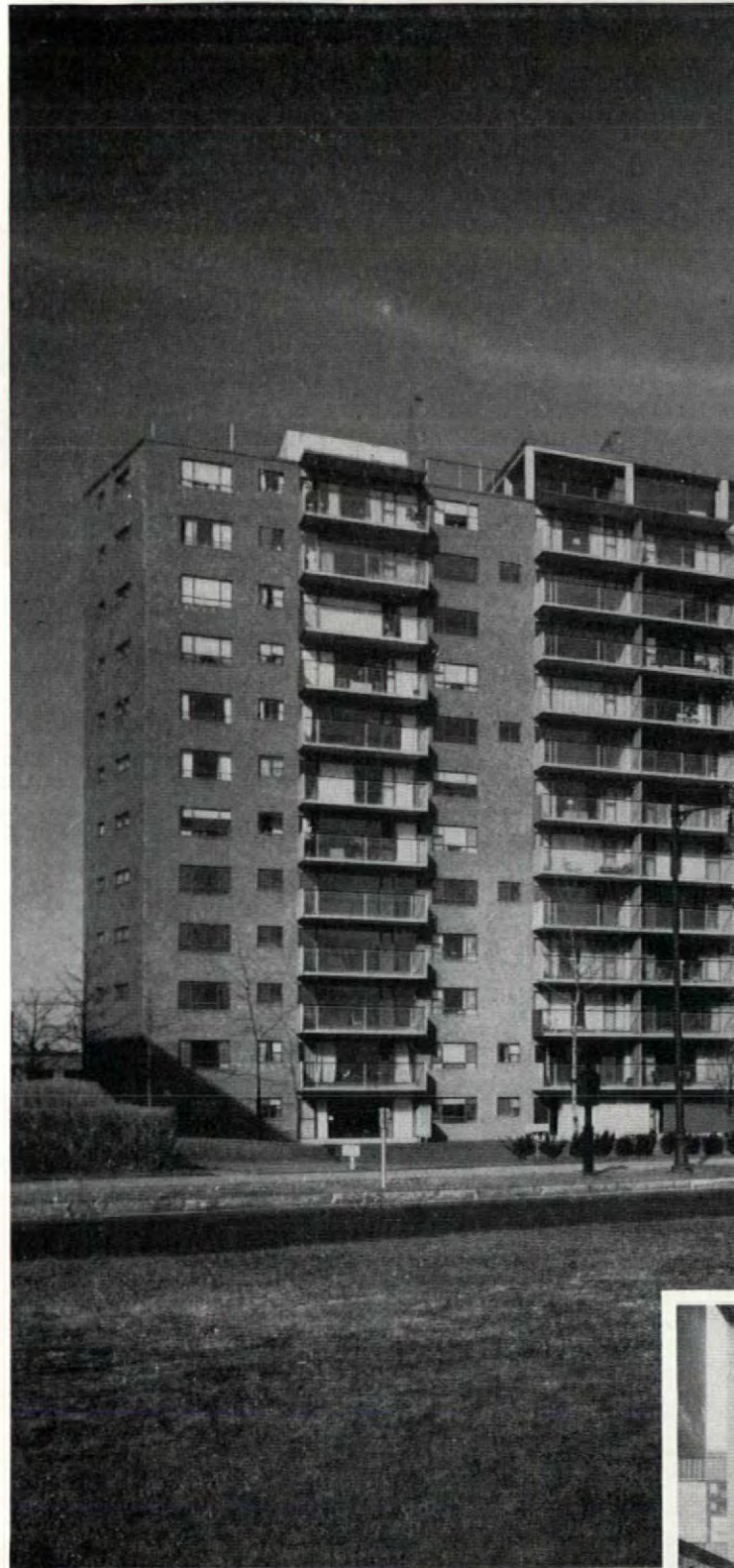
Examples of the adaptability of Pittsburgh Glass in commercial buildings



HERE'S A DETAIL of the Clemson House, Clemson, South Carolina. It shows the exterior view of the dining room wall in which Pittsburgh Polished Plate Glass has been adapted to create an interesting design effect. Pennvernion Window Glass—nationally recognized as "window glass at its best"—was extensively used for glazing. And Pittsburgh Mirrors were installed as an important feature of the interior decorative scheme. Architects: Lyles, Bissett, Carlisle & Wolff, Columbia, South Carolina.



AT THE NEW Veterans Memorial Building, Detroit, Michigan, Pittsburgh Polished Plate Glass, Herculite Doors, Pittco De Luxe Metal and Pittsburgh Mirrors combine in highlighting the architectural and decorative appeal of this impressive structure. Illustrated here is a detail of the sun deck, indicating how truly adaptable Pittsburgh Plate Glass is. Architects: Harley, Ellington & Day, Inc., Detroit, Michigan.



Your Sweet's Catalog File contains a complete listing of Pittsburgh Plate Glass Company products.





IN ALL TYPES of commercial, as well as industrial and public buildings, Pittsburgh Glass has proved its versatility and practicality. This apartment house in Cambridge, Mass., for example, utilizes to maximum effect such Pittsburgh Products as Twindow Insulating Units (on the south wing penthouse), Pittsburgh Doorways, Heavy Plate Glass in the lobby, $\frac{1}{2}$ " Herculite Glass stair rail (see inset), Pennvernion Window Glass, Pittco De Luxe Metal. Architects-Engineers for Eastgate Design Group: William Brown, Carl Koch, Robert W. Kennedy, Vernon De Mars and Ralph Rapson, Boston, Mass.

Design it better with **Pittsburgh Glass**

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY



*Above: Pastel green Kalistron covers wainscoting in Main Dining Room, Brown Univ., Providence, R. I.
Forest green Kalistron on service doors. Architects—Perry, Shaw & Hepburn.*

Why these **"HEAVY-TRAFFIC"** walls and doors **WON'T EVER SHOW WEAR...**

Walls, doors and other vulnerable areas enjoy rich, *permanently protected* beauty when covered with Kalistron. For Kalistron's lovely decorator colors are applied to *underside* of clear Vinylite sheeting. This undersurface never gets wear . . . so Kalistron's gleaming beauty is unchanging . . . year after year.

Like its serviceability, Kalistron's beauty is unique, too. For Kalistron color seen through clear, extra-strong Vinylite layer results in an amazing *depth of richness* completely different from anything you've ever seen.

Kalistron can't chip, peel or crack; it is waterproof; can be cleaned easily with a damp cloth. It won the latest Modern Plastics Award for furniture and interior decorating materials.

SEND COUPON BELOW for Kalistron sample and nail-file—free. See if you can injure Kalistron even with this file.

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

U. S. Plywood Corp., Dept. F-76
55 West 44th St., New York 18

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

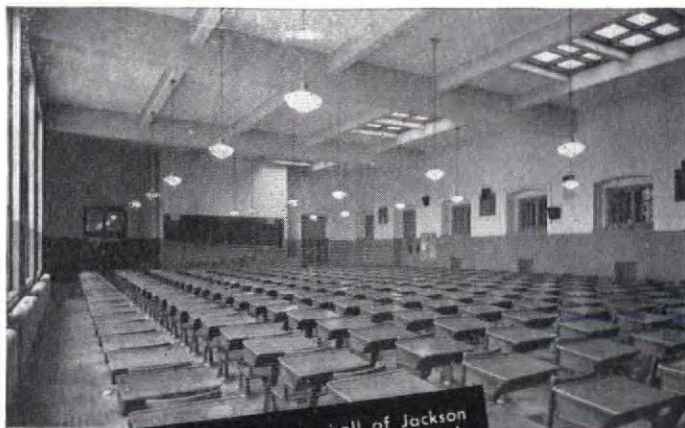
NAME _____

ADDRESS _____

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.

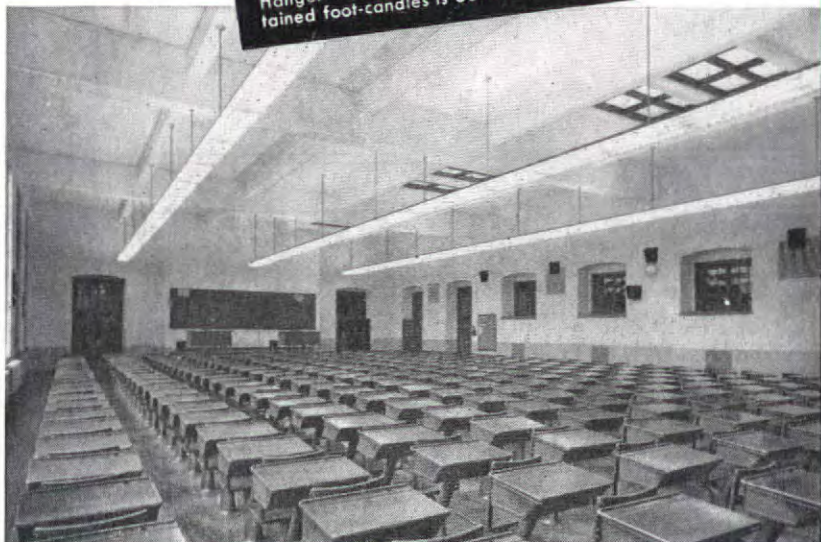
Color fused to
underside of
transparent vinyl
sheet . . . backed
by flocking

Another Fine Lighting Job



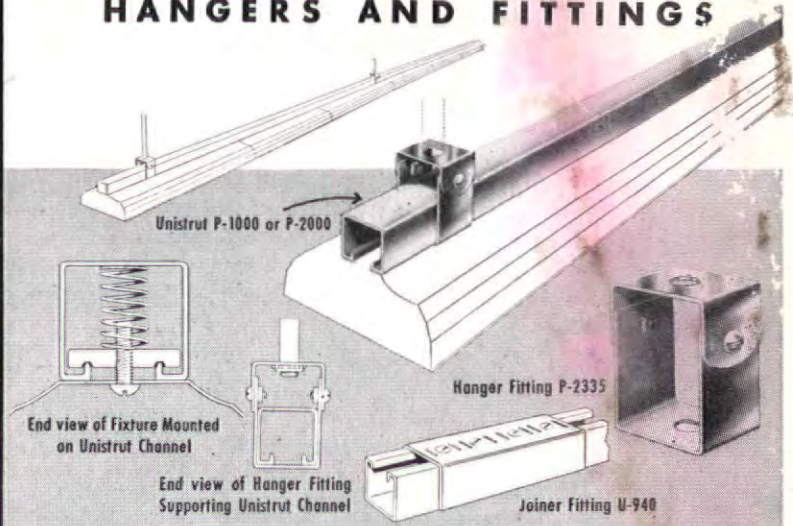
BEFORE VIEW of study hall of Jackson High School, Jackson, Michigan. Approximately 49 ft. by 83 ft. with 20 ft. ceiling. Twenty-one 16 in. opal glassware chain suspension fixtures with 200 watt lamps. Fixtures suspended 10 ft. above floor. Average illumination was 5 to 8 foot-candles.

AFTER VIEW of same study hall showing 4-lamp 40-watt fluorescent fixtures in continuous rows completely supported with Unistrut P-2000 channel and suspended 13 ft. above floor with 1/2 in. conduit stems, canopies and Unistrut Hanger Fitting P-2335. Average maintained foot-candles is 35-40.



Lighting recommendations by and photographs courtesy of Consumers Power Company, Jackson, Michigan.

SUPPORTED BY UNISTRUT® HANGERS AND FITTINGS



THE COMPLETELY MODERN METHOD of Hanging Fluorescent Fixtures gives you these Exclusive Advantages:

FEWER HANGER STEMS AND CANOPIES—UNISTRUT'S great channel strength permits wider spacing of stems—up to 15 feet apart if desired—for better appearing installation and obvious savings.

PERFECT ALIGNMENT—UNISTRUT channel is rigid, strong and perfectly straight—gives you true alignment of fixtures. Cleaning, re-lamping, or other servicing cannot disturb this alignment.

COMPLETELY FLEXIBLE—Stems or rods can be installed at any point along UNISTRUT channel. Overcomes possible ceiling irregularities or obstructions. Ideal for continuous runs or intermittent spacing of fixtures.

FASTER, EASIER INSTALLATION—UNISTRUT channel and fittings are attached to fixtures quickly and easily at normal working height or at suspension level. No drilling, no welding, 100% adjustable.

ADDED SAFETY—UNISTRUT assures the utmost safety of installation because an entire row of fixtures becomes a single integrated unit—added safety obtained by no other method.

SAVES TIME AND MONEY—Reduces number of canopy and stem sets used, lowers wiring and rewiring costs, eliminates drilling and welding costs, saves planning and installation time.

UNISTRUT APPROVED AS WIREWAY—UNISTRUT channel has been approved as a wireway by the department of electrical inspection in Chicago and 20 major cities throughout the country... additional proof of the versatility and all around practical usefulness of UNISTRUT.

WRITE TODAY FOR YOUR FREE COPY
OF NEW 78-PAGE CATALOG 700!



U. S. Patent Numbers
2327587 2329815 2345650
2363332 2380379 2405631
2541908 Other Patents Pending

Representatives and Warehouse Stocks in Principal Cities
Consult Your Telephone Directories

UNISTRUT PRODUCTS CO.
1013 W. Washington Blvd. Chicago 7, Illinois

UNISTRUT PRODUCTS CO.

1013 W. Washington Blvd., Chicago 7, Ill., Dept. F-11

Please send without obligation the items checked below:

☐ Catalog 700

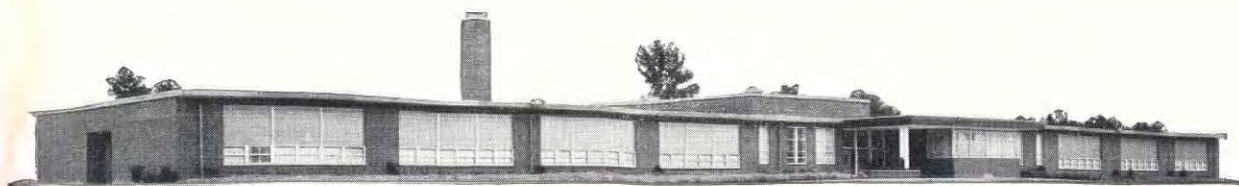
☐ Unistrut Sample

Name _____

Company _____

Address _____

City _____ Zone _____ State _____



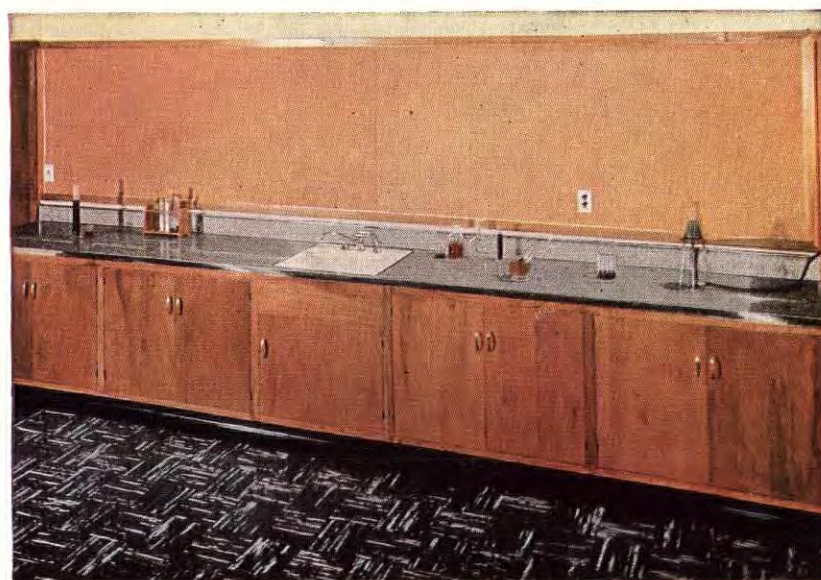
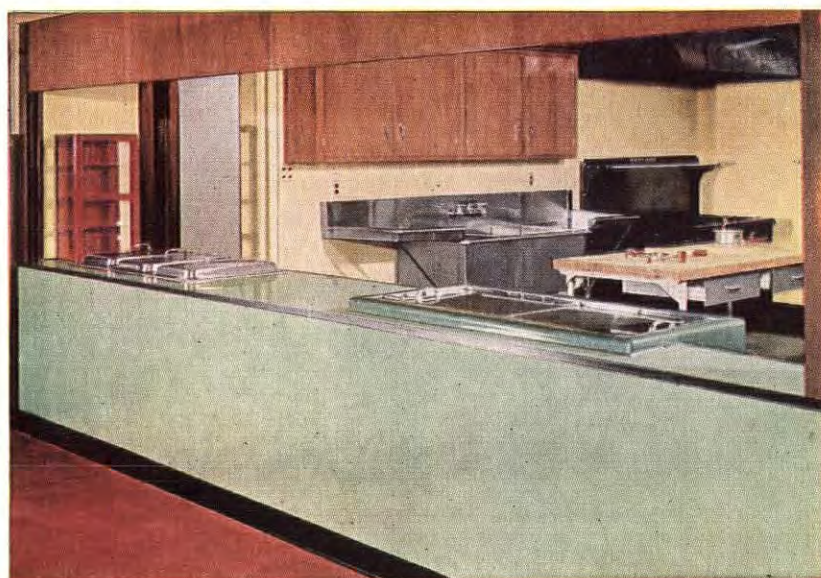
Specify **NEVAMAR**®

*and top any school surface
with beauty and durability*



It's sound planning and a wise investment to equip a modern school with NEVAMAR surfaces. For NEVAMAR provides colorful beauty, unusual durability and reduced maintenance costs. For this hard, pre-finished material shrugs off dirt and grease, needs little care, never needs refinishing or painting—an important consideration in school budgets. Use NEVAMAR on table surfaces in cafeterias and laboratories . . . as desk surfaces in classrooms, as wall panels in rest rooms and offices.

NEVAMAR is available in colors and patterns for every purpose. It will fit into your plans in numerous ways in creating interiors of lasting beauty. Get all the facts about NEVAMAR now.



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.

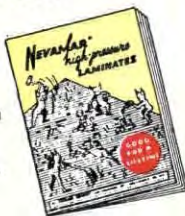
REPLACEMENT OR REFUND OF MONEY
Guaranteed by
Good Housekeeping
IF NOT AS ADVERTISED THEREIN

The NATIONAL Plastic Products Company
ODONTON, MD. • NEW YORK, N. Y. • LOS ANGELES, CALIF.



**Write For This
Free Booklet**

It gives
you all
essential
information
about
NEVAMAR.



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

The NATIONAL Plastic Products Company

Manufacturers of Nevamar Decorative and Industrial Laminates • SARAN FILAMENTS • WYNENE Molded Products

ODONTON, MARYLAND • NEW YORK EMPIRE STATE BUILDING • LOS ANGELES, 2252 EAST 37th STREET

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:

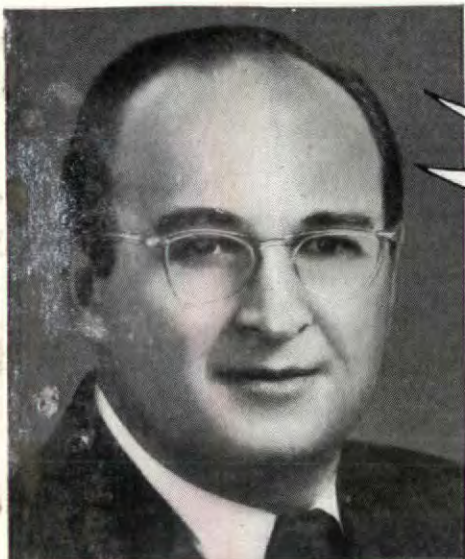
- plastic tape wipes clean, won't fade, shrink, stretch
- spring-tempered aluminum slats snap back to shape, won't chip, peel, crack
- new plastic cords: easy to clean, won't fray!
- precision-built mechanism: easy-to-operate, lubricated for life
- unbreakable, noiseless tassels
- minimum cord travel 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.

HUNTER DOUGLAS CORP., Riverside, California and 150 Broadway, New York 38, N. Y. • HUNTER DOUGLAS LIMITED, Montreal, Que.



Take it from this Successful builder—

Dr. Daniel Gevinson's new "Skyline" is studded with Kelvinator stars!

FIVE of America's largest cities point to the beauty and far-in-advance planning of big hotel-style apartments by Dr. Daniel Gevinson. His latest, the new "Skyline Apartments" in Syracuse, New York, embodies all the elegance and thoughtfulness that make his projects famous. He has chosen new Kelvinator Refrigerators for every kitchen—for reasons typical of his outlook on building:

"Why not carry out a 'better-living' scheme as far as providing better appliances?" says Dr. Gevinson. "I pur-

chased Kelvinators because they perform as beautifully as they look—and so faithfully that costs are kept to a minimum. Through long experience I know that our tenants' pleasure and satisfaction is assured with Kelvinator."

For your future projects, be prepared—by getting detailed information on how Kelvinators save money and satisfy tenants. Write to Dept. AF, Kelvinator, Division of Nash-Kelvinator Corporation, Detroit 32, Michigan.



John H. Graham, Architect Turner Construction Co., General Contractors

Enter the lobby of new Skyline Apartments in Syracuse, and a city's conveniences await your pleasure. Shops, services, cocktail lounge, dining

room, your car at hand. **Enter any of the 365 kitchens** at the Skyline—and you'll see a beautiful new Kelvinator Refrigerator.

Kelvinator

DIVISION OF NASH-KELVINATOR CORPORATION, DETROIT 32, MICHIGAN

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

Govt. Struggles to Cure CMP; Inflated Demand Chief Problem

CMP, a month and a half after it became fully effective, still had more kinks in it than a sailor has knots. DPA Administrator Manly Fleischmann, who five weeks ago cheerfully said the structural steel shortage would ease "after mid-1952," now said the pinch would last longer. His aides kept juggling the rules so often in a frantic effort to make CMP work that one Boston contractor exclaimed: "Government is moving the goal posts so fast we can never seem to find them."

The indexes showed controls had put brakes on the construction boom. The Commerce Department reported that dollar outlays for construction slumped during October because of "materials shortages" (see p. 44). The Bureau of Statistics found contract construction employment plunged 88,000 between August and September—largest August to September drop of any postwar year.

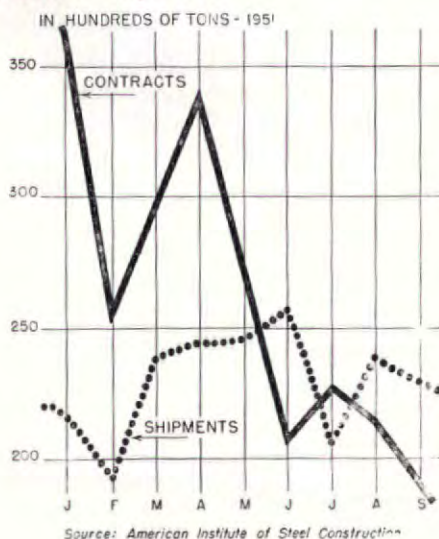
Such dislocations seemed strange. Why should construction dwindle amid tremendous pressure for more of it? One answer: from Aug. 3-Oct. 1, NPA experts let industry take a free grab at most materials. Foresighted would-be builders used the time to fill up their bins with what they needed for months to come, leaving others with immediate needs out in the cold.

Heckles & cries. It was open season on CMP. Steelmen, spearheaded by outspoken Eugene G. Grace, chairman of Bethlehem Steel Corp., shouted that controls were unnecessary with Korea and the defense program taking less than 15% of the '52 steel supply. Said Grace: "We can't see anything but overproduction, and soon, in steel."

Even in structural steel, said the head of the nation's No. 2 steel company, shipments were overtaking orders, which had declined steadily since April (see graph). Although structural steel fabricating plants are so expensive that the industry has not scheduled a single ton more of structural steel capacity amidst all its current expansion, most steelmen argued that supply will catch up with demand within a year; meanwhile, no one would be seriously hurt by lack of structurals, if NPA would stop rocking the boat. Grace grumbled that Bethlehem's structural output would probably decline soon.

Having damned CMP, steel men realistically admitted Government was unlikely to take its hands off until they are legally blasted off. So a top brass iron and steel

STRUCTURAL STEEL: Orders & Shipments



industry advisory committee* offered pointed advice to make CMP work:

1. Set up a "competent" staff inside DPA to wring the water out of demands of steel—military as well as civilian—and prevent ordering in advance of actual need. Steel men called this the "weakest link" in CMP. Fourth quarter "demands" for structural steel, for instance, were equal to 11.6 million tons a year, more than double the consumption during World War II's peak year: 1942. Specifically, one program asked for 185,000 tons of structural shapes, was allotted 78,000 tons—30% more than it ever used for the same purpose in any previous quarter. Said the committee: "There is no doubt that a great many of the jobs that made up the 185,000 tons requested were not ready and could not be made ready with respect to design, engineering, bills of materials, in time to be placed on the mills for 4th quarter rolling."

2. Revise CMP application forms to show actual use in tons of steel during preceding quarter, plus total tonnage inventory on hand. Currently, CMP applications show only dollar volume of shipments received in the past.

3. Crack down on military hoarding of steel. Said the committee: "Certain military contractors are accepting delivery of steel far in advance of actual need. Sometimes this is done

* Members: President Ben Fairless of U. S. Steel; Chairman Grace of Bethlehem; Edward L. Ryerson of Inland Steel Co.; John N. Marshall of Granite City Steel Co.; and W. H. Colvin, Jr., of Crucible Steel.

LAST MONTH'S WASHINGTON DIARY

- 10/12 NPA trims permissible manufacturers' inventories of aluminum from 60 to 45-day supply.
- 10/13 Army announces 90% completion of \$113 million camp repair program.
- 10/19 Dept. of Agriculture tightens rules for approval of food industry plant construction.
- 10/25 NPA reclassifies radio and TV broadcasting facilities from commercial to industrial category.
- 10/29 NPA forms 30-man committee to speed flow of nonferrous scrap.
- 10/29 DPA issues new list of basic materials and alternates, reports "copper supplies . . . almost dangerously short."
- 10/30 DPA postpones to Jan. 1 requirement of prior approval of new plant construction seeking fast tax write-offs.
- 10/31 DPA holds electrical manufacturers conservation meeting, learns fabricators are now reducing copper content of products 5-10%.
- 11/13 DPA discloses issuance of 4,384 certificates of necessity for rapid tax amortization since outset of program. Proposed investment: \$10 billion.

at the insistence of the military."

4. Trim over allotment of steel to 110% of supply (in the 2d quarter, Fleischmann announced, DPA will do this).

5. Revise certification orders to include a sworn statement that there were no duplicate orders.

Fleischmann and Mobilizer Wilson said they agreed "generally" with most of the recommendations, but up to mid-month DPA refused to tell in detail how they were being adopted.

Liars all? On balance, the evidence indicated controllers had bitten off more than they could chew—yet. As one economist saw it: "The CMP system compels lying. Each businessman figures the other one will overstate what he needs. So naturally everybody says he needs more steel than he really does. Fourth quarter 'requirements' were about 1.7 times the maximum possible steel supply. That is just the 'coefficient of prevarication.' If it were possible to deliver 70% more steel than the industry now does turn out, there wouldn't be manpower, plants or other materials to put it all to use. There is a good deal of sense in interpreting this thing according to human nature instead of amassing a lot of little figures."

Strong evidence steel men were right was the fact that Washington headquarters of the Associated General Contractors confessed almost none of its members was crying for materials' help. In Cleveland, Secretary H. R. Moorehouse of Arthur McKee Co. said "CMP is doing all right for us." MacDonald, Young & Nelson, Inc. of San Francisco reported: "Copper is tough and getting worse, but we've got \$20 million under construction and are going fine."

Defense plants and military construction were generally receiving materials with no more than occasional delays. But shutdowns harassed construction of schools, highways and public buildings by states and cities—most of whom engaged

IN THE NEWS

Among the next 29 pages, you'll find reports on these important developments:

- Texas builder offers \$3,000 house . . . p. 45
- Architect advisors quit PHA . . . p. 59
- NAHB tries to speed defense housing . . . p. 51
- Trouble ahead for self-certification? . . . p. 45
- New York State writes a building code . . . p. 47
- NAHO convention . . . p. 63
- List of critical defense areas . . . p. 55



DPA REQUIREMENTS COMMITTEE parcels out the nation's steel, copper and aluminum to claimant agencies, who redistribute to builders of specific projects. Big moguls of committee at head of table (l to r) are Glenn E. McLaughlin, director of DPA planning staff; Ralph S. Trigg, Requirements Committee chairman; Melvin L. Anshen, vice chairman; Merrill J. Collett, secretary.

in no materials stockpiling. A 14-city survey by *THE MAGAZINE OF BUILDING* uncovered these apparently typical cases.

► In Dallas, Architect Mark Lemmon, consultant to Dallas school district, reported "all our school projects have been slowed by late deliveries." Trinity University's library fell three months behind schedule.

► Near Pittsburgh, construction on the new \$2 million county hospital at Mayview was halted by material shortages.

► In St. Louis, Architect F. Ray Leimkuehler declared: "School projects totaling \$7½ million are being held up because we can't get CMP ratings from Washington. We've had to stop a \$115,000 school because we can't get copper tubing and plumbing items."

► In Houston, denial of a third quarter request for steel forced a month's layoff for steel erectors on Harris County's 8-story, \$9 million court house. Still no steel was in sight for the roof.

► In Evanston, Ill. Superintendent W. A. Marriott of R. C. Wieboldt Co. announced "we will have to shut down for three months waiting for steel" on Northwestern University's new athletic building.

► In Fairfax County, Va. irate School Superintendent W. T. Woodson demanded that county authorities stop issuing building permits to halt county growth and resulting overcrowding of schools he could not expand for lack of steel.

What galled educators most was the way commercial projects were continuing construction with far less trouble. In New York, for instance, contractors tearing down the old Ritz-Carlton hotel reported, "We hope to start construction of the office building (to rise on the same site) in six weeks. We have the necessary allocation for the first quarter of '52. So far it seems we will be able to finish with nothing more than reasonable delays."

Bribery charge. School Superintendent Melvin J. Homfeld of Menlo Park, California got mad enough when his request for structural steel was rejected to write Representative Jack Z. Anderson (R., Calif.) who read Homfeld's accusations into the *Congressional Record*: "The superintendent of the Aptos school district near Santa Cruz . . . told me that last night he was approached by telephone that for a specified amount of money an NPA approval could be had within hours. This is only one instance of numerous such stories. I cannot believe that they are all false."

When DPA announced its first quarter CMP allocations, schools were given only 38% of the 255,400 tons of steel the U. S. Office of Education said was needed. By DPA estimates, this would meet demands of elementary and secondary schools already begun, meet half the needs of colleges, leave 21,000 tons for urgent new starts. But DPA left dividing the steel among individual schools up to the Office of Education. If the office required that steel be used for classrooms, barred it from gymnasiums and auditoriums, said DPA, there would be enough to build nearly as many classrooms as this year, the all-time record. But seething school men took a quick look at the over-all figures, ran to Congress. After the House adopted a resolution urging more steel for school construction, Administrator Fleischmann said he would "review" steel allocations.

Emergency aid. Major trouble was that the U. S. Office of Education, staffed with ex-principals and academic theoreticians, had no technical experts who could even translate architectural plans into quantities of critical materials. As a stopgap, the AIA appropriated \$2,500 to hire a consultant to do this all-important job, because the Office of Education's budget could not be stretched to do so. But AIA President Glenn Stanton warned Congress that the Office of Education must have a competent technical staff if it continues to be one of the 18 claimant agencies scraping for controlled materials. The imp-

lication was plain the Office of Education so far had proven incompetent to present the case for schools.

Aluminum makers heckled CMP, too. President I. W. Wilson of Aluminum Co. of America, revealing that the aluminum shortage and government restrictions have caused Alcoa to cut back operations in many of its fabricating plants, said "so far, our experience with CMP has been a disappointment, despite the fact that many sincere people in the government have made an honest effort to make it work. Thousands of people are going to Washington to plead for aluminum, copper and steel, and some on a selfish basis. Congressmen interested in the welfare of their districts listen to these pleas and then go to the National Production Authority on behalf of their constituents to demand more material, even though many of these requests are not for defense purposes. No plan . . . could operate satisfactorily under such pressure."

IF CMP was going to work, more government-industry cooperation was needed.

BLACK MARKETS: NPA steps up its enforcement campaign

NPA began getting tougher about CMP enforcement. So far, the agency had relied on persuasion and education. For instance, there was the case of the man in New Orleans who ordered ten carloads of steel pipe under a DO 97 for "maintenance, repair and operations." NPA sleuths caught up with him before the pipe was shipped, "persuaded" him to cancel the order. But now, announced top NPA enforcement attorneys, the agency's 200 investigators would crack down, concentrate on reported diversions of structural steel. The agency said it will agree to no deals for guilty pleas and fines, will ask jail terms for convicted chiselers. Explained an aide: "Black markets could break CMP down. And belief that black markets exist is nearly as effective as their actual existence."

Many complaints, NPA disclosed, evaporate when investigators trace them down. Businessmen's alibi: "We often advertise

NEW CONSTRUCTION ACTIVITY (expenditures in millions of dollars)

Type	October			1st 10 months		
	'50	'51	% Change	'50	'51	% Change
PRIVATE						
Residential (nonfarm) . . .	\$1,247	933	-25.2	10,466	9,041	-13.6
Industrial	112	177	+58.0	817	1,663	+103.5
Commercial	136	83	-39.0	999	1,168	+16.9
TOTAL	2,025	1,789	-11.7	17,167	17,446	+1.6
PUBLIC						
Industrial	31	106	+241.9	164	744	+353.7
Military	28	127	+353.6	127	757	+496.1
Residential	30	69	+130.0	284	495	+74.3
TOTAL	748	903	+20.7	5,932	7,668	+29.3
GRAND TOTAL . . .	2,773	2,692	-2.9	23,099	25,114	+8.7

material we don't have to stimulate business. If I only offered what I have in my yard, I'd be out of business." Even so, NPA had 16 cases awaiting trial in New York, Texas, Chicago, California, New England and the Midwest. First to feel the enforcement whip was Delaware Ave. Holding Corp., Columbus (O.) contracting firm, which was held guilty by a hear-

ing commissioner of using 22 tons of structural steel in an office-warehouse at Buffalo after telling NPA it would substitute wood beams and masonry. NPA forbade Delaware Corp. to use any steel, copper or aluminum for 90 days. This was merely an administrative proceeding. The criminal cases were still being prepared for prosecution.

CMP Self-Certification for Housing May Face Drastic Changes, Officials Warn

Said a top NPA official last month: "We're worried about the copper take under housing self-certification. I feel something should be done. Many others do not agree. I think there will be no immediate changes, although I think there *ought* to be."

Controllors faced a dilemma over housing—so far the part of the building industry least saddled with controls. HHFA had relied on credit control *plus* materials controls to damp down building volume. But Congress had relaxed Regulation X. Now, Government economists were forecasting that 1952's volume will be nearly one million houses. That would not only breach Mobilizer Wilson's goal of 850,000, but Economic Stabilizer Eric Johnston wanted to whack the goal to 500,000 houses.

Bubble in the pipe. Government's chief worry, however, was that fourth and first quarter cuts in copper and aluminum allotments to building materials producers were so drastic that Director John L. Haynes of NPA's building materials division prophesied: "With this bubble in the pipe line, there is bound to be trouble, come spring." In the first quarter (until the Government dipped into its stockpile) hundreds of aluminum producers were scheduled to receive only 20% of the metal they used in 1950 and early '51. This could have spelled only one thing: convert or shut down. Copper producers were slashed to 50% of pre-Korea levels.

It was easy to say NPA should cut down the number of houses built, difficult to devise a way to do it. Controllors felt a complete permit system for housing was unthinkable. It would require millions of dollars and a small army to operate. So NPA was thinking about whittling down self-certification's limits (now 1,800 lbs. of steel, 35 lbs. of copper per house). One plan under study would limit the number of units a builder could start under self-certification, though it was hard to see what this would do except penalize the large and often more efficient operator.

Horse sense & aluminum. Some industry observers thought the controllors

were not giving the building industry credit for business horse sense. If there aren't enough bathtubs or doorknobs, would many builders plunge ahead, risk not being able to sell their product? Even if they did, would bankers lend them construction money? NAHB offered a terse piece of advice to its 23,300 members: "Don't start without copper and steel items in sight." Cracked one NPA man: "The hero of this show is the fellow who invents a way to make plumbing goods of aluminum. In late '52, we'll have ample supply. In copper, we're in long-term trouble."

AVERAGE FHA LOAN DROPS

Reported the FHA: the typical new dwelling under Sec. 203 was appraised at \$8,721 in 1948, \$8,502 in 1949, only \$8,286 in 1950.

BUILDING CODES: is poor administration the real villain?

How much of the building codes mess in the U. S. is primarily the result of negligible administration? The National Association of Home Builders was getting ready this month to begin a survey to find out. Explained NAHB Materials Expediter Leonard Haeger, who will direct the inquiry: "People seem to think there is magic in drafting a sound technical document. That is only half the battle. Bad administration can nullify a good code. Even a very bad code well administered can prove workable in some communities."

A pilot survey in New Brunswick, N. J. (pop. 40,000) revealed a lack of code administration which NAHB officials fear is duplicated in countless small towns across the nation:

▶ The New Brunswick code (an archaic specification code) was originally written in 1903. It was last amended in 1909!

▶ The one man building department disclaims responsibility for bringing the fact that the code has not been kept up to date to the attention of the city council.

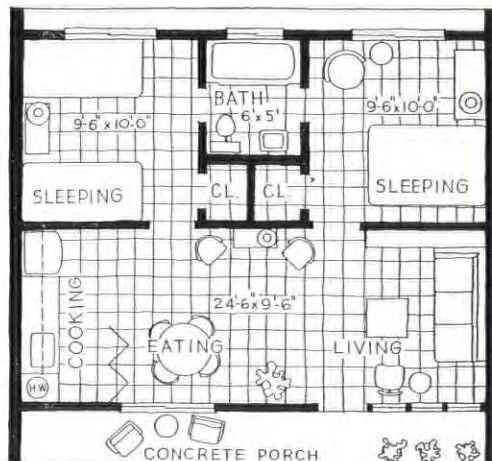
▶ While the building official felt he had discretion to accept new materials, he could not point to any specific authority to do so. Commented Haeger: "Since the authority was fuzzy, the mechanics of making decisions were even fuzzier. Fiber pipe, for example, might be approved orally for one

(Continued on page 47)



LOW COST HOUSE: Texas builders squeeze price down to \$3,000

This 550 sq. ft. house was being offered for \$3,000 (plus \$500 for the lot) in San Angelo, Tex., this month. Builders John Moss (left) and A. L. Turner (right) think it ought to give them some kind of low cost prize. No beauty architecturally, the house still should raise living standards of low income whites, Latin Americans, and Negroes, for whom it was designed. Cost savers include slab floors, solid masonry sidewalls and door jambs and window frames of 2 x 6 dimensional lumber. Lee Jones (center) of San Angelo Federal Savings and Loan Association expects to finance conventional mortgages on the first tract of 52 units with \$300 down payments, 10-year loans at 6%. That means monthly payments of \$46.40 the first three years and \$31.40 thereafter. Sen. Lyndon Johnson, whose Preparedness Committee has decried shacks around military camps, saw pilot house, enthused: "This is the beginning of what should be a revolution in housing development. I am amazed and thrilled."



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Waterbury
(Trains
office only)

man. But the next day another builder wanting to use it would have to go through the same routine all over again. With proper administration, a record would be kept of materials approvals."

► Yet this could hardly be blamed on the building official, whose \$3,600 annual budget had to cover not only his salary but all office expenses. Moreover, homes were rising in New Brunswick so fast he could not possibly inspect them all if he spent all day at it everyday.

► New Brunswick made no use of the professional

experts or laboratories at Rutgers University there for testing new materials.

► Appeals from building inspection decisions go to a Board of Adjustment appointed by the Mayor. Board members: two realtors, one building contractor, an oil distributor, an industrial employee, with no technical help.

If later returns followed the New Brunswick pattern, NAHB would expose a situation that communities would have little excuse for not fixing.

New York State Writes Performance Code at \$420,000 Cost; Use Is Optional

One of the nation's most expensive code-writing efforts reached a milestone this month. After spending two years and some \$420,000 at the job, New York State's Building Code Commission promulgated the first slice of a State Building Construction Code—for 1- and 2-family dwellings.

Most code experts—even the handful who thought the code contained errors and inconsistencies—agreed that the five code commissioners and paid staff of 32 had achieved a high mark of code-writing excellence. The commission concurs. As Commissioner William Lescaze puts it, "No other state has yet set up so well implemented a commission to write a state code."

Sound law. The state law which created the commission in April 1949 not only required a performance code but laid down a policy other states and cities could well follow: "Because it is essential that any such code be readily adaptable to changing conditions, detailed enactment of all the provisions of such a code by legislation is impracticable." Carrying the legislators' thinking a step further, the code commission held the one- and two-family code to 51 attractively printed pages (written in language understandable to a layman, set in type big enough to be read without a magnifying glass and bound in bright yellow covers). Details of what methods and materials are considered acceptable to meet the code's performance standards would be issued separately in a loose-leaf manual which the commission will keep revising constantly. The commission hopes to have the manual published by January 15th.

Sales job ahead. Biggest hurdle ahead will be persuading the state's 1,567 cities, towns and villages to adopt the code. The state code does not automatically go into effect. It must be adopted by each locality. Even then, the state code will not supercede local building codes already in existence (which cover communities with 85% of the state's population). It will



BUILDING CODE COMMISSION of New York watches as Vice Chairman George B. Cummings (seated) certifies adoption of 1 and 2-family code. Others: William Lescaze, New York City architect; Walker S. Lee, Rochester architect-engineer; Ralph A. Lehr, Buffalo attorney.

become, instead, a "legal alternative." Builders could construct under either. Said Commissioner Lescaze: "Our big enemy is inertia. We need help overcoming it." Once a community adopts the one- and two-family dwelling code, it commits itself legally to take the rest of the code commission's still unwrapped package: its multi-family dwelling code, and its comprehensive code.

Most dramatic usefulness of the code will be to towns too small to afford the expense of keeping their own code up to date. The New York State Code may be adopted by a cheap and simple resolution referring to it. The expense of legal printing—which might run into thousands of dollars—is eliminated. (New York State, however, still has no law permitting municipalities to adopt other codes by reference, a program which won the significant support of the United States Chamber of Commerce last month [Oct. '51 issue, p. 45].) Says Commissioner Lescaze: "I don't know how many times in the last few years building officials have told us, 'We haven't tried to do anything about our code lately because we're waiting for yours.'"

Eager beavers. The village of Shoreham in Suffolk County was so eager to adopt the state code it passed an adopting resolution before it was legally promulgated. Village trustees will have to vote again to make things legal. Before the

code was a fortnight old, the village of Mamaroneck embraced it enthusiastically. But in New York City, where the building code is so bad it became an issue in the campaign for president of the City Council, chances that the state code would gain enough support to force its acceptance seemed dim.

SAVING STEEL: school group gives figures on designs that do

While many school men fumed at reduced steel allocations for school building, the New York School Buildings Commission took a practical step to stretch the supply of controlled metals. Guided by a top-flight architectural committee headed by Henry Blatner of Albany, it issued a fact-packed, 21-page folder suggesting specific structural designs that save steel and copper. Sample lessons:

► **One story construction saves steel.** For a steel skeleton frame with open web joists, floor slabs laid on ground, precast gypsum plank roof deck on open web joists, 40 psf roof and classroom live loads and 100 psf corridor live loads: overall size 35' x 54' 4":

STEEL REQUIRED	ONE-STORY	TWO-STORY
	DESIGN tons	DESIGN tons
Roof—steel beams	5.03	2.73
open web joists. . . .	3.29	1.65
Floor—steel beams	None	3.11
open web joists. . . .	None	2.97
Columns & base plates..	1.96	2.24
Total	10.28 tons (100%)	12.52 tons (122%)

WEIGHT OF STEEL FRAMING PER SQ. FT.

5.4 lbs. 6.6 lbs.

► **Slab flooring saves both steel & money:** For a section of two 22' x 35' classrooms separated by an 8' 6" wide corridor, with design live loads of 100 psf in corridor and 50 psf in classrooms (based on Nov. '50 cost estimates by contractors in Albany and Buffalo):

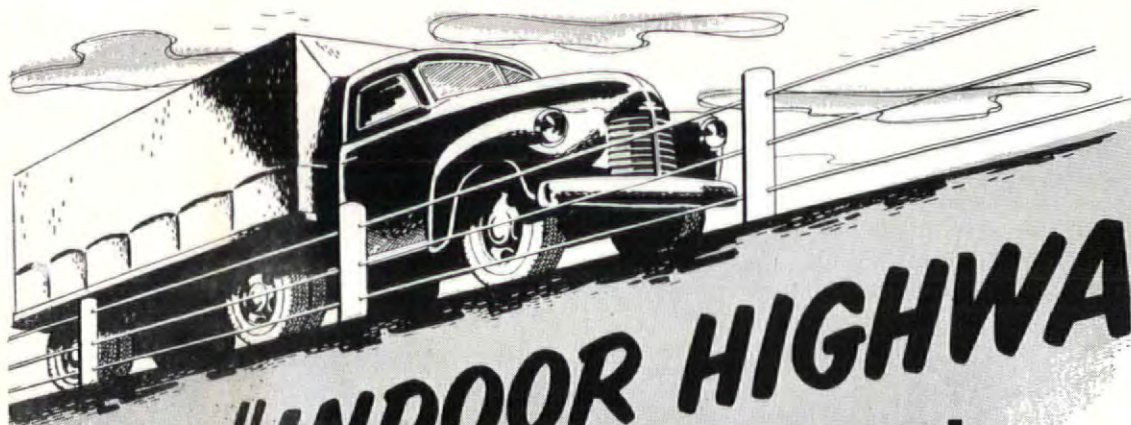
Slab over porous fill on ground:	
Steel required: 1,553 lbs.	
Cost: \$3,434	
Open web joists on bearing walls over crawl space:	
Steel required 9,437 lbs.	
Cost: \$4,603	
Open web joists on steel beams over crawl space:	
Steel required: 9,817 lbs.	
Cost: \$4,406	

The commission offered this advice to school boards who want schools built without dragging delays: set up a plan before bidding so unanticipated substitutions can be permitted after the award of contract or during construction; incorporate alternate methods of construction into the original drawings and specifications submitted for bid; choose flat sites on good bearing soil with handy utilities lines.

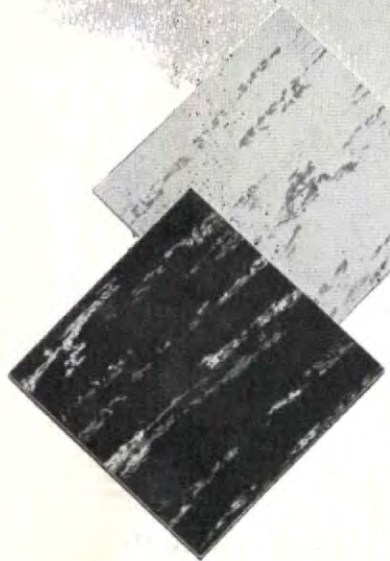
FHA TO RESTUDY MPRS

Late this month, NAHB and FHA technicians will sit down together for a long overdue review of FHA's bible, its minimum property requirements manual. Builders feel improved techniques and materials call for an overhaul of the big rule book.

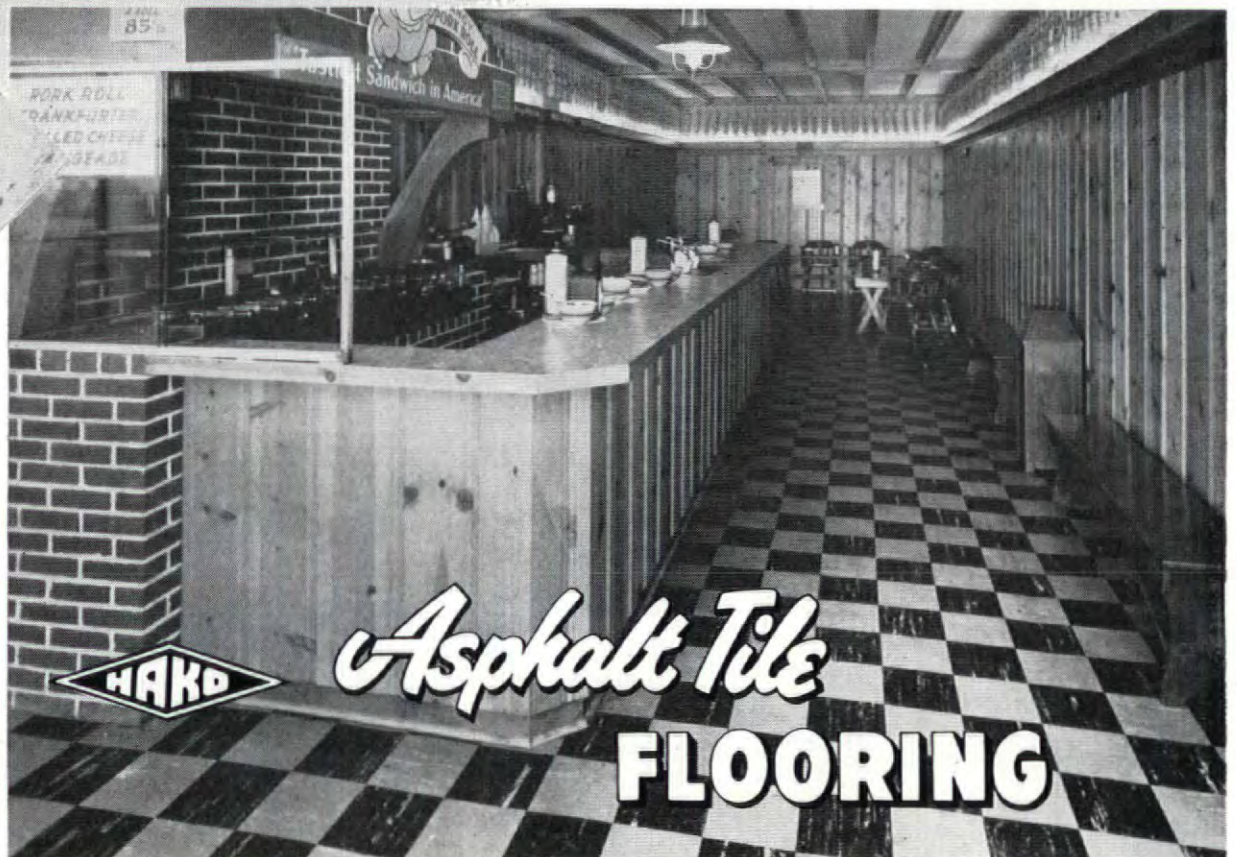
(NEWS continued on page 50)



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25

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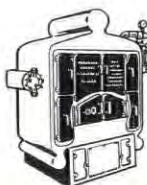


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44



34

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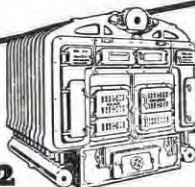


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42 and 60

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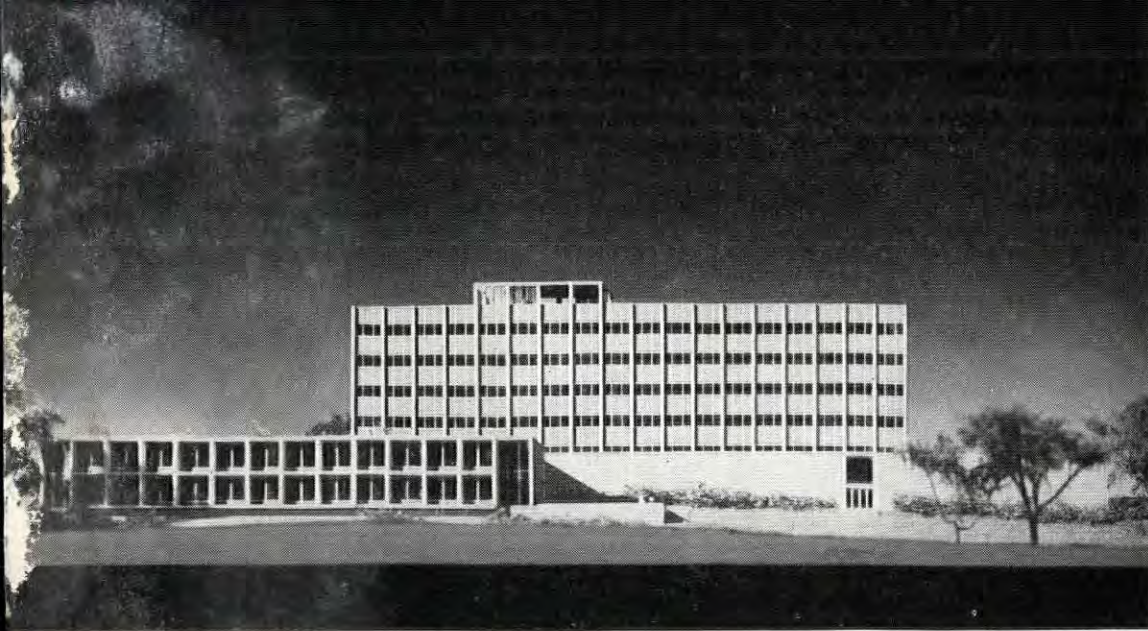
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Esra Stoller—Pictor

YALE UNIVERSITY'S new physics building group, designed by Architects Douglas Orr and Eero Saarinen & Associates, will give the New Haven campus a striking 6-story brick and glass administration laboratory, surrounded by lower classroom and laboratory buildings.



COLUMBIA UNIVERSITY'S engineering center, designed by Voorhees, Walker, Foley & Smith, will focus on this 14-story, 250,000 sq. ft. building of clean, functional simplicity. Project, for which funds drive is underway, is pet of Gen. Eisenhower, who is Columbia's president.

Mobilization Breeds Crop of Science Laboratories

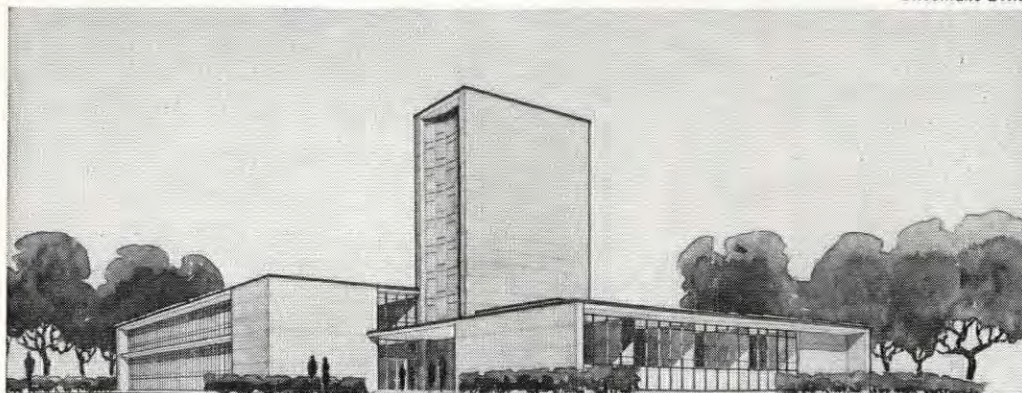
No less than war mobilization's appetite for engineers is its hunger for more and more research—both industrial and military. Construction of research laboratories and laboratories to teach the researchers booms accordingly. Symptomatic of the trend was a spurt of building plans revealed in mid-October. Items:

As soon as funds are raised, Yale University will erect a \$5 million physics building group (*above*) to gain space for the cumbersome apparatus of atomic investigation. Then the school expects to have room to do more research in matters like subatomic particles, cosmic rays, liquid helium and electromagnetic radiation.

In Houston, Rice Institute prepared to break ground for a \$200,000 high voltage laboratory (*below*) to house a 5½ million volt Van Der Graff accelerator furnished by the AEC for advanced research on basic phases of nuclear reactions.

Columbia University will build a \$22 million engineering center (*left*) on its Manhattan campus where Dean John R. Dunning hopes to turn out engineers "trained not only technologically but in the natural, social and political sciences and humanities." His theory: In today's technical society, engineers must run things; in the last 15 years, 40% of top management has come from the ranks of engineers.

Shoemaker-Stiles



RICE INSTITUTE'S high voltage laboratory, designed by Architects George and Abel B. Pierce of Houston, will house accelerator in 70' reinforced concrete tower with brick facing flanked by air-conditioned laboratories and offices. Wing at left will be added later.

ANTI-WASTE DRIVE: grass roots

hasn't heard of it, acts anyway

The Defense Production Administration's comprehensive recommendations for cutting some of the fabulous waste out of building (Sept. '51 issue, p. 159) went distressingly unnoticed by much of the nation's busy building industry. Said the vice president of one of New York's busiest general contracting firms: "Maybe I'm delinquent but I don't know about it at all." Charles Pregaldin, acting commissioner of building in St. Louis, admitted: "We are not too familiar with these suggestions."

In Pittsburgh, Executive Director William Hanna of the Home Builders Association said he never heard of the Government campaign. Neither had Builder Harold Sampson, who built 600 homes last year. Said Frank Burns, one of Denver's biggest builders of low-priced houses: "Frankly, we have heard very little about the Government anti-waste program—nothing specific at all. I think the thing needs a little more promotion."

Wood trusses, concrete beams. Among farsighted architects and housing officials there was more enlightenment about the Government's objectives. Architect Joseph Burgee of Chicago felt the Government program had produced "quite an impact on the industry as a whole and on architects in particular." Observed Architect B. Sumner Gruzen of New York: "Regardless of DPA recommendations, cutting out critical materials is the only sensible thing to do if architects want to stay within budgets and get the thing built." The New York City Housing Authority issued its designers a list of critical materials to be stricken from specifications four months ago. But the New York Housing and Building Department, on the verge of waiving a code requirement to permit wood furring instead of steel, changed its mind when suppliers reported steel furring in fairly good supply.

In Cleveland, Builder Maurice Fishman pointed out that, as usual, Government had its wires crossed. While DPA was beating the drums for design changes to save materials, FHA still insisted locally that builders use steel reinforced mesh in slab foundations, although "slabs on hard, deep bases haven't cracked;" the Veterans Administration was requiring metal soil pipe to sewers "instead of the vitreous pipe builders around here have always used."

Toothless. Even insiders admitted the government's campaign to conserve materials had no real teeth in it yet. And there was a large question how much steam it had, too. NPA efforts to promote the drive so far consisted chiefly of a quick cross-country speech tour by James

W. Follin, chairman of DPA's anti-waste sub committee for construction. Despite appeals for cooperation, DPA was not requiring claimant agencies who pass out allotments to screen designs and specifications for evidence of waste. However, as one NPA aide pointed out, most government men available for defense jobs wouldn't know how to strip blueprints intelligently, anyway. Most encouraging sign was that NPA advisory committees for industry after industry were voluntarily suggesting that government issue mandatory conservation and standardiza-

tion orders. In many cities, though DPA's campaign was barely known, the more convincing shortage of materials was bringing about the same result.

In Chicago, the Retail Lumber Dealers Association went on record opposing the suggestion of HHFA's anti-waste committee that the nominal 2" dimensional of 2 x 4 studs and joists (actually 1 5/8" after finishing) be reduced to 1 1/2" roughsawn to save lumber. Their complaint: dealers would have to stock both the old and new sizes; besides, many codes would bar the thinner dimension.

Builders Act to Speed Defense Housing; Title IX Rules Favor Low Cost Homes

NAHB showed signs of growing up. At its Atlantic City directors' meeting this month, listeners heard little talk about new favors the association might lobby out of Congress, much sincere discussion of various public services NAHB could perform.*

Most serious concern was voiced over the black eye private industry could get for the brewing scandal in defense housing. Precious little of the 48,530 houses programmed in 69 critical areas were yet started and although a good part of the blame could be laid to Congressional dallying over the Defense Housing Bill, the mortgage pinch, and administrative rules that didn't work, newspapers had begun bearing headlines like one in the *Miami Herald*: "Builders Strike Against Defense Housing."

Committee of 50. Hopefully, NAHB President Bill Atkinson named First V. P.

* For instance, NAHB leaders spent much time persuading one of the country's top-flight home-builders to agree to make the considerable financial sacrifice involved in accepting the post of assistant to the Secretary of Defense for Housing. (See Col. 2) Home builders believed that, at long last, they have persuaded administrator Foley to put a top-rank builder in a key position on his staff. Reason why NAHB is so interested: home-builders feel if they are to be blamed for failures of private housing, they should have a chance to help work out Government policies that will make failure less likely.

Other important developments of the Atlantic City meeting:

► President Atkinson suggested creation of a president-elect job to give NAHB's top officer more continuity of thinking, more fully trained leadership. A change in association by-laws would be required. Proposal may be laid before NAHB convention in January in Chicago.

► Top officials were reported as in agreement to urge the January convention to set up a past presidents council as a long-range planning group. It would meet about three times a year, take a burden off top officers who now are so busy coping with emergencies they feel short of time for thinking ahead.

► Directors appropriated \$5,000 for architectural plans for new Association headquarters in Washington. Proposed site (1623 L St.) would cost \$200,000, the building another \$250,000, but NAHB expects to rent ground floor for \$40,000 a year.

Alan Brockbank chairman of a committee of 50 builders to help break the bottlenecks in defense housing across the country. Announced NAHB: "The home-building industry has accepted the responsibility of erecting defense and military housing rapidly and is channelling its major effort in that direction." Under the NAHB plan, if local builders do not take up defense housing quotas within 60 days after HHFA announces them, then top-flight builders from elsewhere in the country will be alerted to move in during the last of the 90-day period before public housing may be called to do the job. What would NAHB do about spots like San Diego, where its own investigators had found rent ceilings set by HHFA too low to build under FHA property requirements? A builder delegation trooped up to HHFA administrator Foley's office, wrung from him a promise to re-study his rent ceilings.

Rules at last. Meanwhile, the administrative rules prerequisite to building under the liberalized terms of the Defense Housing Act (85% mortgages, suspension of credit curbs on program houses in critical areas were emerging at last. At mid-month, FHA completed its all-important regulations for Title IX mortgage insurance, the prospective main spring of defense housing. One rule looked especially encouraging to builders. It permitted the standards for bargain-basement housing under FHA Title I to be applied to Title IX as long as the mortgage did not exceed the \$4,750 top limit under Title I. Title I standards differ from other FHA standards chiefly on neighborhood requirements: FHA appraisers do not have to write down the value of a house so much if it is located near the gas works or too far from transportation. But lenders have shied away from Title I new construction loans because Title I acquired a stigma as the

repair and modernization mortgage. Builders hoped the same rosy rules called by the name of Title IX would smell sweeter to lenders. FHA's regulations were discreetly silent about the Congressional authority to add \$9 million to the \$81,000 basic mortgage ceiling in high-cost areas. The agency would wait until builders began complaining before it put the escalator clause to work. As of Nov. 13, FHA field offices were permitted to switch applications to Title IX, provided the house involved had not been started before the President signed the Defense Housing Act (Sept. 1).

Price freeze thaw. As soon as HHFA finished fly-specking its own rules for the Defense Housing Act (to be known as Credit Regulation 3), defense housing could get a real start. HHFA was writing a few new rules into CR-3 on its own motion. One would be a shortening of the five-year price freeze on houses built for sale under defense programming. Builders had built a big fire under Foley to thaw the freeze. Instead of approving applications for quotas of programmed defense housing on a first-come, first-serve basis, HHFA would switch to a priority system. Builders offering the best deals would get first crack at quotas, regardless of their order in line. HHFA planners explained items like these would now have high ratings: proximity to a defense plant, availability of utilities, equipment offered with the house (like automatic washers), willingness of the builder to rent rather than to sell.

Because Congress cut HHFA's budget to administer defense housing in half in almost every category, HHFA aides confessed privately they were worried how to cope with the work load ahead. Disconsolate Administrator Foley was inclined to feel that if he intervened with last-ditch public housing in any defense area, he would only be able to afford *temporary construction!*

WHERRY ACT trouble hinted as Pentagon eyes bid peddlers

Pentagon officials in charge of the Armed Forces' Family Housing Program were becoming increasingly concerned over irresponsible fly-by-nighters involved in Wherry Act projects. Problem No. 1: Instances where successful low-bidders on Wherry Act housing repeddled their commitments to builders after collecting a 5% (or bigger) cut. Problem No. 2: How to keep financially or technically unqualified fast-buck operators from messing up the bidding procedure. On one recent bid

(Continued on page 55)

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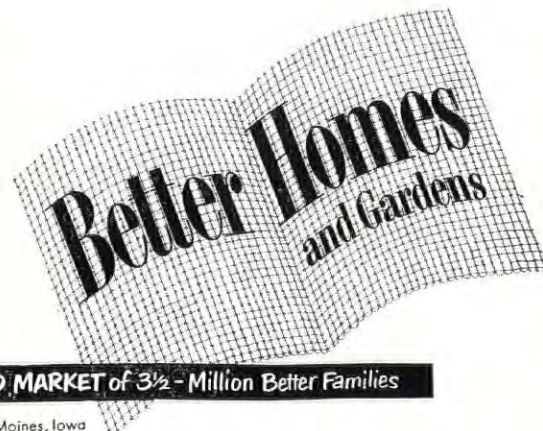
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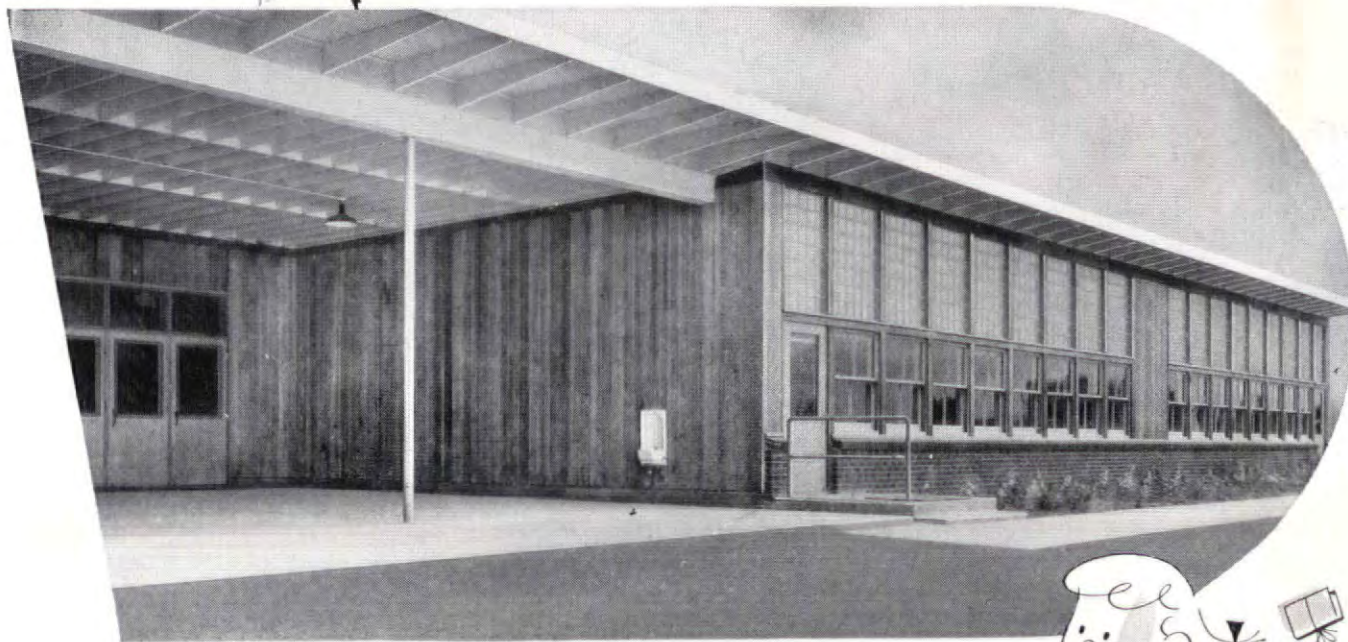
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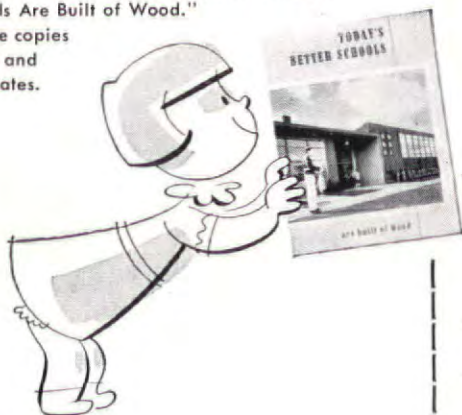
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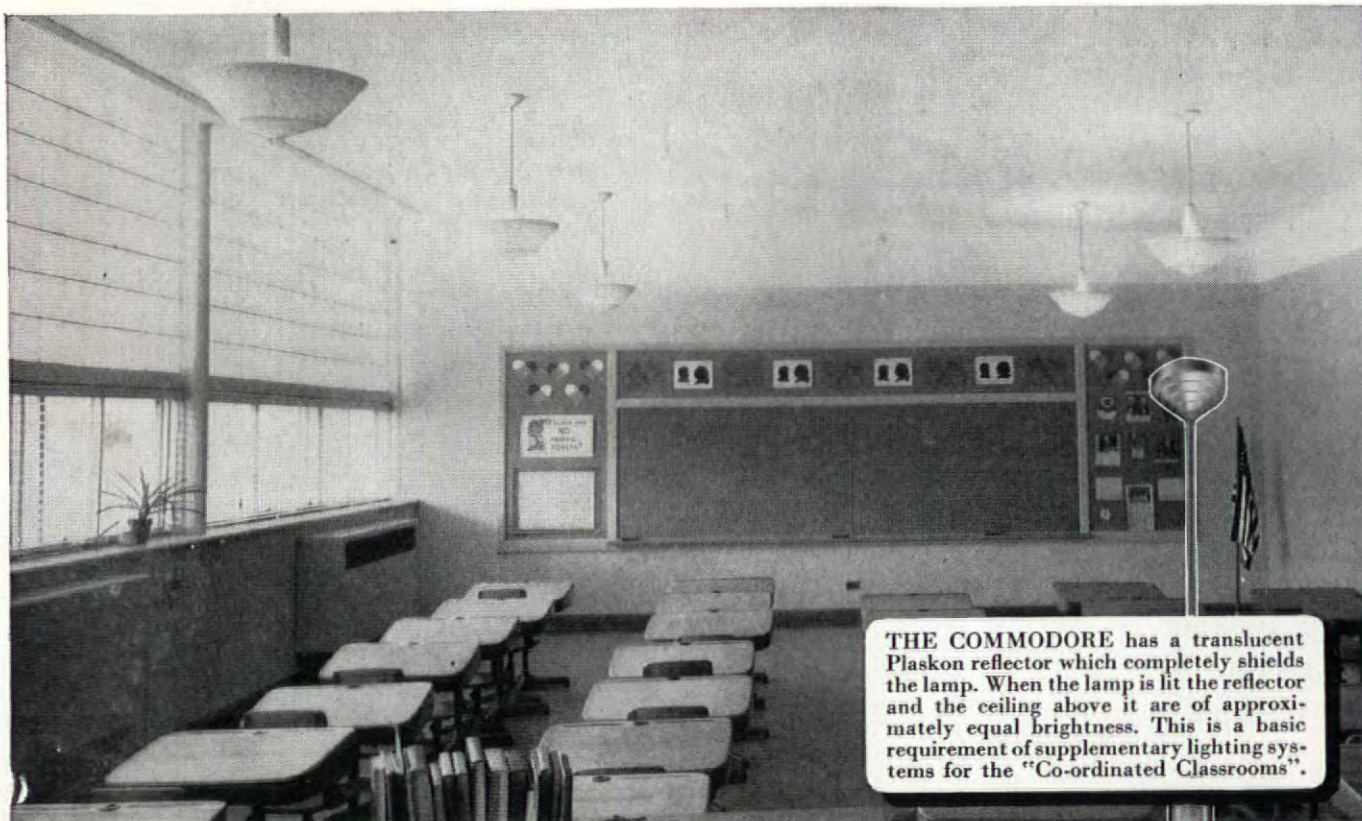
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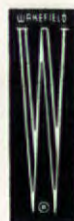
① Only a luminous indirect luminaire such as the Wakefield incandescent Commodore (or the Wakefield fluorescent Star) will provide smoothly distributed, well balanced light, free from glare and sharp brightness contrasts.

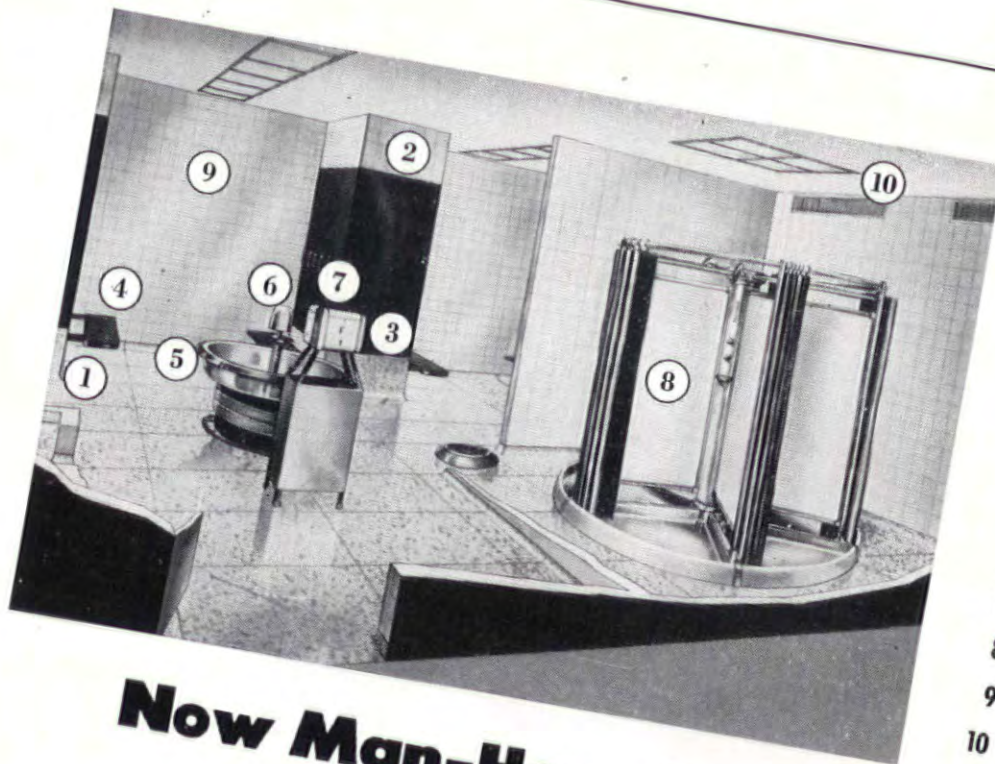
② Only a luminous indirect fixture such as the Wakefield Commodore (or Star) will create three-dimensional seeing conditions by making the ceiling the primary light source, with the fixture itself and the side walls becoming a secondary source.

We have prepared a new 20-page booklet dealing simply but comprehensively with the subject of modern classroom lighting. For your copy of "Supplementary Lighting for the Co-ordinated Classroom", write to The F.W. Wakefield Brass Company, Vermilion, Ohio.

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Contact Washroom Advisory Service, Scott Paper Company, Chester, Pa.

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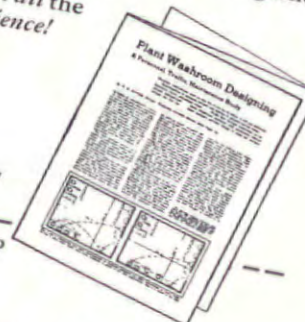
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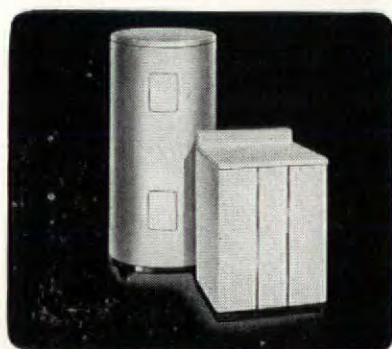


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Architect Advisers Quit PHA; Blast Agency for Stifling Design, Red Tape

In 1950, Commissioner John Taylor Egan of the Public Housing Administration appointed 16 leading figures in American architecture to an Architects' Advisory Committee. Objective: to get better architectural results in terms of pleasant though economical living conditions than the institutional look of post-depression public housing. For 18 months, however, Egan had not called the unpaid committee to meet, despite repeated suggestions. This month, 13 of the committeemen, including Chairman William W. Wurster, dean of University of California's architecture school, signed a mass letter of resignation.* They accused Egan and his aides of throttling imaginative design in public housing with senseless red tape, while publicly blaming architects for rising costs which were chiefly the fault of snail-paced staff work by PHA's own men.

Chairman Wurster took pains to note, "Our loyalty to the ideals of public housing is undiminished." He also pointedly sent copies of his complaint against Egan's way of doing things to Egan's boss, HHFA chief Ray Foley, and to Foley's boss, Harry Truman.

Complained the resignation letter:

In PHA, "a blind economy drive . . . has replaced prudence and good sense. At a time when you faced urgent cost problems requiring basic re-evaluation of policy and design standards, you ignored the committee of able, experienced and interested architects that you yourself had appointed to aid and advise you. . . .

"A subcommittee which met informally with you late 1950 issued a confidential report dated May 29, 1951. This was not even acknowledged, let alone acted upon.

"One action of PHA that the subcommittee strongly protested was the attitude of field officers ever since the issuance in the summer of 1950 of a 'blue book' which was thereafter taken not as a set of suggestions to architects but as a hard and fast bureaucratic guide.

"Reports have come in with distressing regularity from architects of top ability who believe that these rules have been used to choke off the substance of progress within economy, while pursuing its theoretic shadow.

"In some instances plans which drew bids actually lower have been rejected in insistence upon bureaucratic conformity to standards not higher but lower than those which creative imagination had achieved.

"It was consequently no surprise to us that the body of consultants to PHA should have resigned early in 1951, feeling that under the circumstances they were completely ineffectual.

* Signers: Chairman Wurster, Vice Chairman Douglas Haskell, Robert Woods Kennedy, Hugh Stubbins Jr., Louis Wetmore, Henry Churchill, Louis Kahn, Julian Whitteley, Marion Manley, John J. Rowland, George Fred Keck, O'Neil Ford, Vernon DeMars. Nonsigners: Richard Neutra, Wallace Teare, and Eero Saarinen. (Saarinen was in Europe.)

"And recently sincere architects have felt that they had additional positive grievances. The evidence has become unmistakable that you yourself, Mr. Egan, in conversation with senators, congressmen and others in authority, have laid major responsibility for rising costs at the door of 'architects' extravagant ideas.' In this way was singled out for censure the one profession which had modified its fees as a matter of public spirit and, through its various committees, tried to cooperate to the best of its ability. During this whole period the same architects were painfully aware that for every dime which might have been lost through the inadvertence or idealism of architects, dollars were lost through the rise of costs while projects were unmercifully delayed in PHA processing. Though the staff seemed to have inadequate time for this all-important work, there was never lack of time to issue floods of the most detailed bureaucratic instructions."

WAKE FOREST College puts new campus in 18th Century

After a detail of gardeners softened the hard-baked ground lest it strain a presidential shoulder, Harry Truman last month turned a ceremonial spadeful of earth for the new college campus which partisans of modern architecture mourn as one of their greatest defeats in years. Baptist Wake Forest College, moving 110 miles from its old campus near Raleigh, N.C. to the Winston-Salem, N.C. suburbs, thus began building its 20th Century, \$25 million campus in 18th Century colonial style.

Wake Forest was lured—despite protests from alumni and Baptists that the college was being tainted with tobacco money—by a \$12 million trust fund offered by the Zachary Smith Reynolds Foundation if the college would move to industrial Winston-Salem. Besides, Charles Babcock, a Reynolds in-law, put up a 350 acre site.

Conservative Wake Forest hired Manhattan Architect Jens Frederick Larson. No sooner were Architect Larson's plans for a modern plant encrusted in Georgian style revealed than an esthetic storm engulfed the project. Everybody from Lewis Mumford to Frank Lloyd Wright laid public cudgels on Larson's traditional approach. The *Winston-Salem Journal and Sentinel* polled 15 "of the nation's foremost architectural figures", reported "11 took a flat-footed stand in favor of the contemporary approach, two declined to be quoted, two did not reply." Imperturbably, Larson replied that the college wanted the "best architect in the college field so they chose me." He added: "I think it's damn poor ethics for other architects to 'crab' over the plans."

Wake Forest's decision to build a traditionalistic campus was not opposed by the North Carolina public. But most North Carolina architects remain cold. Remarked Dean Henry L. Kamphoefner of North Carolina State College's school of design: "Before construction begins, Wake Forest has chosen a place for itself in the architectural graveyard. However, when I discussed the plans for the new campus with Jens Larson, their architect, two years ago he assured me that this campus would be his 'magnum opus' and that it would rank as 'one of the greatest building projects of all time, comparable to the Pyramids, the Taj Mahal and the Parthenon.' What more should one, or Wake Forest, ask?"

EXAM BACKFIRES: all 20 flunk in Georgia architectural boards

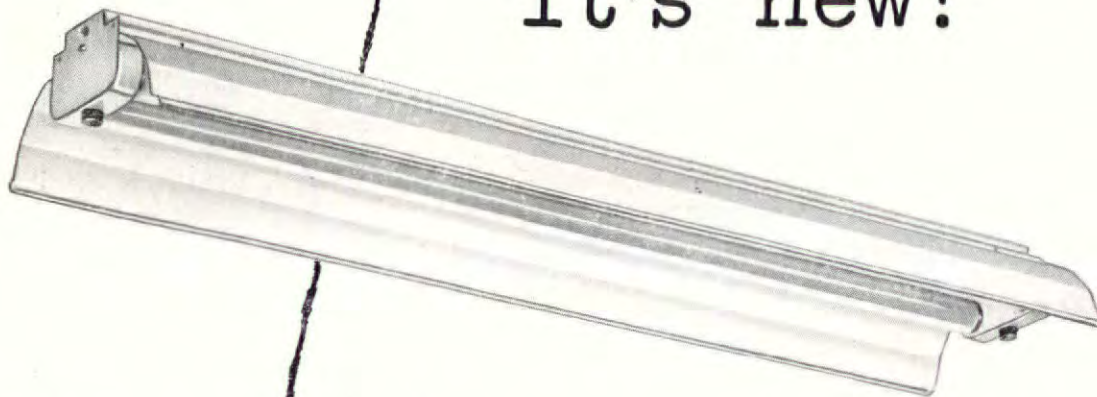
Last May, 20 students took the examination for registration certificates in architecture from Georgia's State Board of Architects. All 20 flunked. This put Georgia Tech on the spot; 17 of the flunkers were Georgia Tech students (not graduates) in architecture. When the results were made public Sept. 7, a rum-pus developed. Unsuccessful applicants claimed they were fouled by a key question demanding "obsolete" classical design for a high school auditorium-gymnasium and cafeteria with "features that will make the project modern in every respect as well as economical and practical in operation." President Blake R. Van Leer of Georgia Tech snorted: "Something must be wrong with an examination which flunks 100% of the applicants."

Last month, the State Board of Architects and the Georgia AIA Chapter went into a huddle with Harold Bush-Brown, head of Georgia Tech's architecture department, to analyze the muddle. They agreed the blame lay neither on the school nor the examination, but on Georgia law, which permits anyone 21 years old to take the registration exam whether or not he has ever studied architecture or had experience. Said AIA Chapter President Herbert Millkey after reading the examination: "These 20 men failed for reasons other than design. Any examination difficult enough to determine whether anyone is qualified to practice architecture is too difficult for undergraduates or recent graduates to pass."

Upshot: the Georgia AIA will press for reforms in both the board and examining procedure, anticipate success in their demands that the state 1) give AIA a voice in nominating the examining board; 2) adopt the examinations of the National Council of Architectural Registration Boards.

(NEWS continued on page 62)

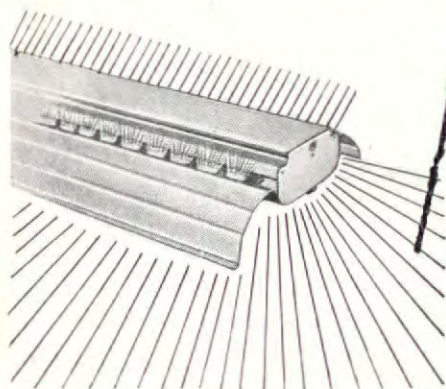
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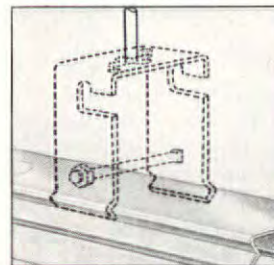
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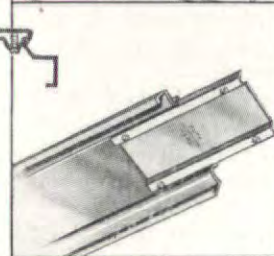
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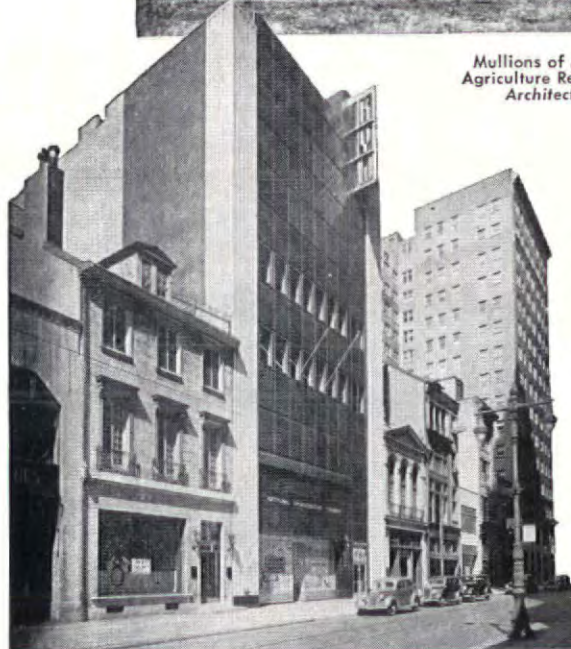
Facing and bulkheads of Alberene Serpentine.
Cord Building, Beverly Hills, Calif.
Architect — Burton L. Schutt



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Prefabrication Sales Boom: 5-10,000-Unit Increase Predicted by End of This Year

To prefabbers, sales prospects both for the immediate and long-range future seemed brighter than ever last month. At the fall meeting of the Prefabricated Home Manufacturers' Institute in Minneapolis, President John C. Taylor Jr. noted that while housing starts nationally dropped 23% from 1950 levels during the first nine months of this year, prefabbers kept their output up to the 1950 mark (35,000). Most of the 76 conferees from 31 prefabricating firms struck much the same note of optimism. PHMI Manager Harry Steidle forecast total 1951 prefab production of 60,000 or 65,000, compared to 55,000 last year.

In the defense housing market, prefab prospects looked especially good. Dr. Richard U. Ratcliff, back from HHFA to his old job as professor of land economics at the University of Wisconsin, pointed out prefabricators can move into new areas faster than on-site builders. Moreover, prefabricated houses are "ideally adaptable in size and price for emergency needs." Ratcliff, who knows as well as any man the inner workings of the machinery the government has to cope with defense housing demand, envisaged a "need" for 400,000 defense homes a year in '52 and '53 (half of them for military). But he added: "to be realistic, it is very doubtful if nearly that much emergency housing will be built. . . ." In public housing, a field prefabbers have just begun to crack, Ratcliff saw a sales "potential" of 100,000 to 200,000 of the 810,000 units authorized by the 1949 Housing Act.

Cheerful prophet. Over the next decade, optimist Ratcliff prophesied a "potential" demand for 1,450,000 new homes a year "a ringing challenge to the home builders and America." His figures:

Source	10-yr. need
New families	6,000,000
Fire, disaster replacement	400,000
Replacement of temporary units	300,000
Existing substandard homes	6,000,000
Will deteriorate	1,400,000

Anthony Lane



At prefab convention: F. W. Lang, Robert E. Ott, Harry H. Steidle, John C. Taylor, Jr., and Hart Anderson.

Half of Ratcliff's "demand" lay in replacing old homes. His explanation: Americans "are housing-conscious." Their "universal push toward ever-higher standards of living" will bring more replacement of poor housing than costly slum clearance ever can. And living standards will continue up because there are "fewer poor people and fewer rich people and more and more families who can afford decent housing." Besides, the future holds "reasonable prospects for continued prosperity," with "a beneficent government which no doubt will continue to underwrite mortgage risk and, in peaceful times, permit liberal terms of purchase," and "reduced costs which the prefabrication industry, more than any other branch of home building, can accomplish if it will continue to (improve) its industrial organization and business methods."

Because Professor Ratcliff thinks the "clear direction of the industrial revolution in housing" is toward "a complete, one-stop service in acquiring a home," he ventured that prefabbers could be producing half of America's homes in 10 years; in 20 years two-thirds.

RENT CONTROL: seesaw looms with recontrol, decontrol

When Congress provided for the re-control of rents in defense areas, it did not repeal authority in previous statutes permitting cities and states to decontrol themselves—the "local option" provision. There were predictions that a dizzy seesaw of decontrol and re-control might ensue. Last month, it began. Members of the Virginia State Legislature who had pushed through a rent control repealer a few years ago announced their intention of canceling Rent Stabilizer Tighe Woods' recent restoration of controls in the Norfolk-Portsmouth area. If they did, it was clear that Woods would promptly re-control it. Woods' attorneys, however, were convinced that the merry-go-round would then stop. After the localities had once exercised their option they could not do it again, said rent stabilizers.

TAX WRITE-OFF: government tidies up its administration

Up to now, the Defense Production Administration has been able to do little to carry out the Government's professed policy of dispersing new plants around outlying sections of cities as a target-scatter-

ing precaution. It has been nearly as impotent steering industrial expansion away from areas with labor or power shortages. One reason was administrative: Nearly every plant seeking rapid tax-amortization certificates was under way before the certificate could be approved.

With fast tax write-offs approved for \$7 billion worth of \$10 billion U.S. industry is investing in new plants, DPA finally got around to tidying up its machinery. It announced that, come January, companies must get the tax write-off certificate before construction begins. It set up a priority system for applications: machine tools, copper-lead-zinc ores, pig iron, sulphur, military weapons, basic aluminum, nitrogen, aviation gasoline, steel scrap, special aluminum extrusions—in that order. It appointed wiry James F. King, 44, an old hand at administrative trouble shooting, to take full-time charge of the program as deputy administrator for resources expansion. South Carolina-born, Harvard-schooled Jim King got into Government after a newspaper career



KING

(*Baltimore Sun*, *Baltimore Post*, *Washington News*), helped engineer the original consolidation of housing agencies under John Blandford, later was special assistant to the secretary of war.

King's problem will be to jockey factory builders into considering dispersal and decentralization as a "prime factor" in choosing sites without stirring up a storm of political protest. To Jim King, this means "we can't make it a must." Some labor leaders would like decentralization made a "must not." They claim Government has let industries march across the country to build new plants in nonunion areas while existing facilities in older sections stand idle. At the national CIO convention in Manhattan this month, United Auto Workers' Walter Reuther cried that duplicating plants were throwing hundreds of thousands of Americans out of work, costing taxpayers needless billions of dollars. The management reply is that many old plants are obsolete and in rebuilding it wants to go where power is cheaper. (For another management reply, see p. 77).

Appraising the picture at this month's 9th annual Ann Arbor Conference, Economist Seymour E. Harris of Harvard observed that political pressure will heavily undermine any decisive dispersion program by the government despite the supposed power conferred by controls.



Electric ranges and water coolers, automatic washers, dryers and garbage disposal units and other impressive gadgetry and equipment displayed for public housers at NAHO convention.

Dryers, Dishwashers Shown at NAHO Convention as Public Housing 'Musts'

Said one old public houser: "I thought for a minute I was in the wrong pew and crashing the gate at a home builders conference."

Judging by convention trappings public housing looked more and more like big business. Along the carpeted corridors of Washington's Statler Hotel last month, a record 54 manufacturers of building materials and equipment displayed their wares at the 18th annual convention of the National Association of Housing Officials. Newsmen noted that few of the exhibits gave any indication manufacturers were stressing economy or simplicity in their offerings for public housing. Commented the *Washington Star*: "Pastel-hued bathtubs, automatic garbage disposal units, automatic dishwashers, automatic laundries, clothes dryers, electric ranges, electric water coolers and others of the latest home gadgets and equipment have a place in government housing for low-income families, manufacturers of such items apparently believe."

Financial needle. Waspish Warren Jay Vinton, first assistant commissioner of the Public Housing Administration used his time at the podium to discuss financing the new tax exempt public housing bonds (see below), managed to say enough to infuriate New York investment syndicates who have bid on the two issues so far. Cried Vinton: "I would be less than frank if I did not say that we were bitterly disappointed at the prices which were bid for the first offering. We had done everything within reason which had been suggested by the prospective purchasers of the bonds to improve their marketability and facilitate their sale. Indeed, some of the provisions . . . had gone to the very limits of all reason . . . yet bids were received only from two very large



At NAHO displays: L. Walter Henslee, Raymond Foley and John Taylor Egan.

syndicates which, between them, appeared to exercise an almost monopolistic control of the bidding."

Vinton complained that the interest rates (1.98% to 2.125%) were too high for tax-

free securities backed by a government guarantee, that the bond dealers syndicate which bid low on most of the offerings, "discriminated unfairly" against cities in the West, Midwest and South whose credit ratings were shadier than the rest. Said Vinton: "This prejudice was wholly unjustified since the security of the bonds depends, not on the credit ratings of the respective cities, but on the uniform credit imparted to the bonds by Federal guarantee of local contributions. . . ."

'Bad names'. "Since calling a dog bad names eventually gives him a bad character, this . . . will eventually lead investors to conclude that the bonds of such authorities are actually less valuable than those issued by housing authorities whose cities enjoy higher credit ratings for their own municipal issues."

As president, NAHO elected Clarence G. Klein, administrator of the Pittsburgh Housing Authority. He succeeds L. Walter Henslee of Galveston.

HOUSING BONDS lag while rest of municipal market rises

Despite the harsh words hurled at them, underwriters demanded and got practically the same interest rate (2.05%) for October's second issue of tax-exempt public housing bonds as for the first issue in July (2.07%). Public housing securities appeared not to be sharing in the general strengthening of the market. Between the July issue of \$170 million and the October 23rd issue for \$156 million, average yields on high-grade municipal bonds dropped from 2.18% to 2.07%. With a gulp, PHA pronounced the new offering "somewhat better" than the first one.

(NEWS continued on page 67)

HOW NEW TAXES AFFECT BUILDING INDUSTRY

The new \$5 billion tax bill made major changes in levies affecting the building industry. Highlights:

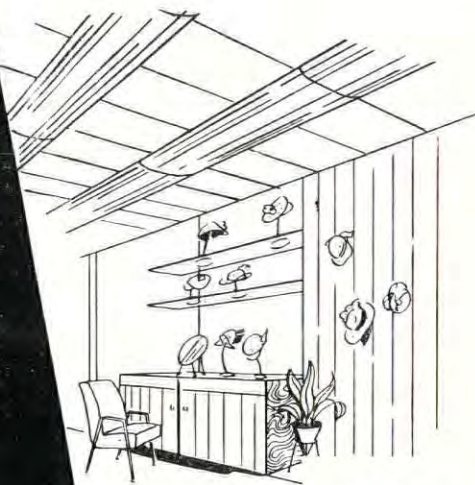
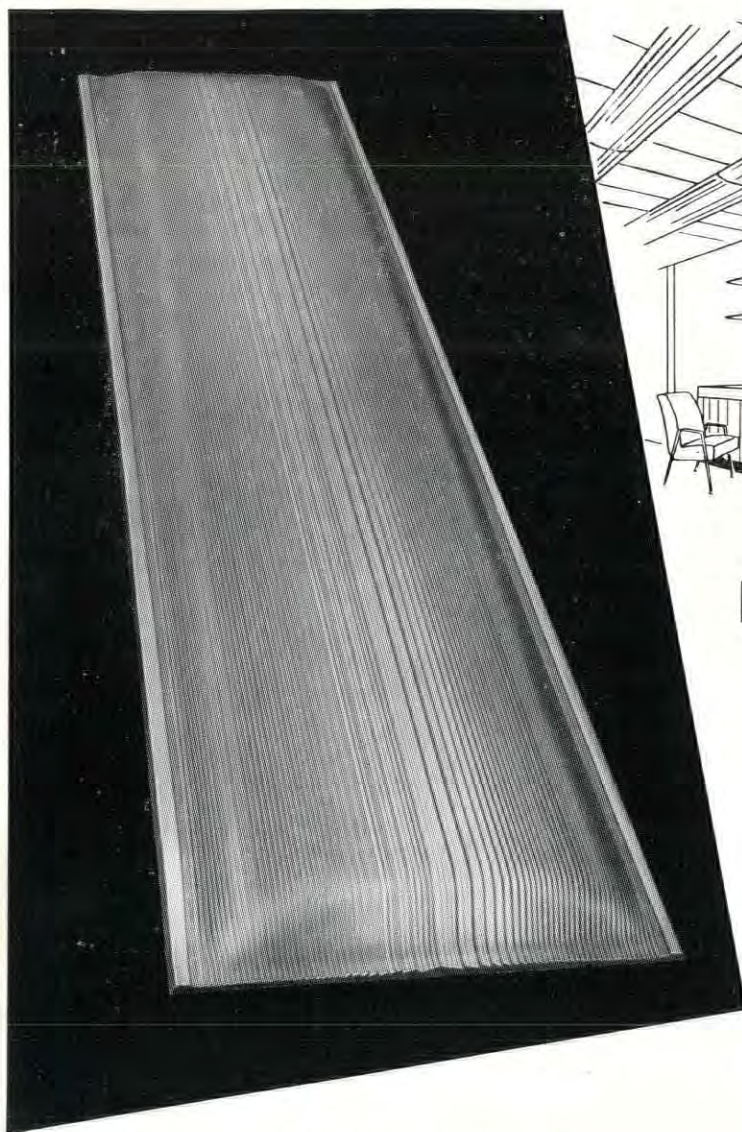
Home sellers. For the first time, capital gains from sale of a house became tax exempt if the profit is invested in a new house which is the seller's principal place of residence within a year. The concession represented victory for the National Association of Real Estate Boards in a six-year campaign. The tax exemption also applies retroactively. Thus gain on sale of an old house can be offset by purchase of a new one as much as a year before the sale. People building homes to order will have 18 months instead of a year for tax-free reinvestment. Estimated revenue loss: \$112 million.

Savings and loan. Mutual savings banks and savings and loan associations will be taxed at corporation rates after payments have been made to depositors and after reserves equal to 12% of deposits have been established. They will not be subject to excess profit tax, how-

ever. Since savings and loan reserves average considerably less than 10%, most institutions would not be hurt—yet. Some savings and loan men worried that the tax would spread a rate war already in progress in Atlanta, southern California and Chicago. Banks began studying whether to switch investments to tax-exempt securities yielding half as much as mortgages. Explained President George C. Johnson of Brooklyn Dime Savings Bank: "Since we would be taxed half the income on mortgages, it might work out that the securities would be a better bet since they do not have to be serviced, like mortgages." Estimated revenue gain: a drop-in-the-bucket \$18 million.

Household appliances. List of items taxed 10% at manufacturers' level lengthened to include clothes driers, door chimes, dehumidifiers, dish washers, floor polishers, food choppers, mangles, electric garbage disposal units, power lawn mowers. Gain: \$18 million.

House trailers. Present 7% tax repealed. Prospective loss: \$7 million.



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Fixture-length for
More Pleasing Appearance

Entirely new in the field of lensed enclosures is the new lightweight *single piece* Curved Lens Panel developed by Corning to complement the clean-lined styling of modern fluorescent fixtures. The pleasing appearance of its fixture-length panels of crystal-clear glass reflects the increasing importance of lighting glassware as an architectural element. The precise optical design in "water-white" crystal is a realization of the need for scientific control over the color and quality of the light produced. Open and closed end panels are available in four standard sizes, and consideration will be given to special lengths and widths. The coupon will give you complete information. Mail it today!



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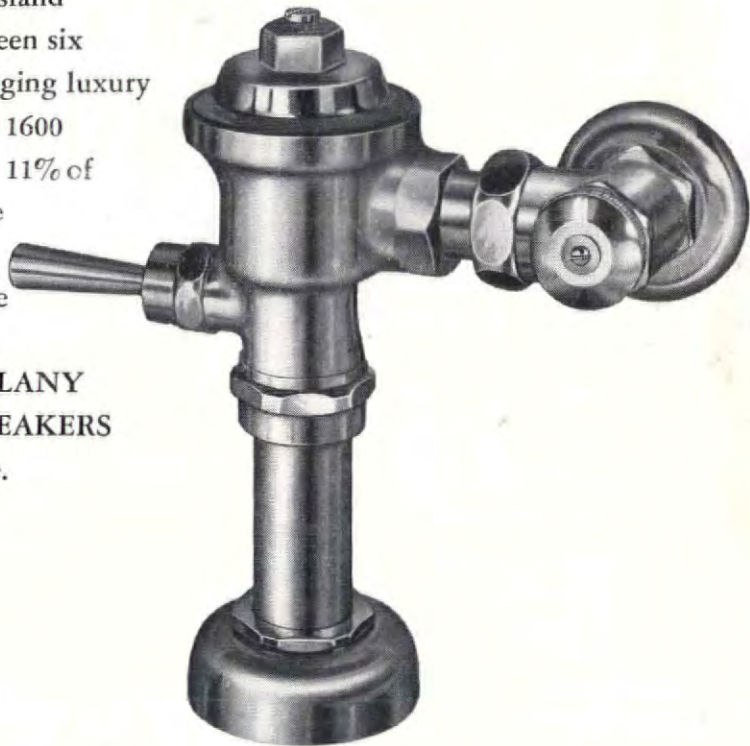
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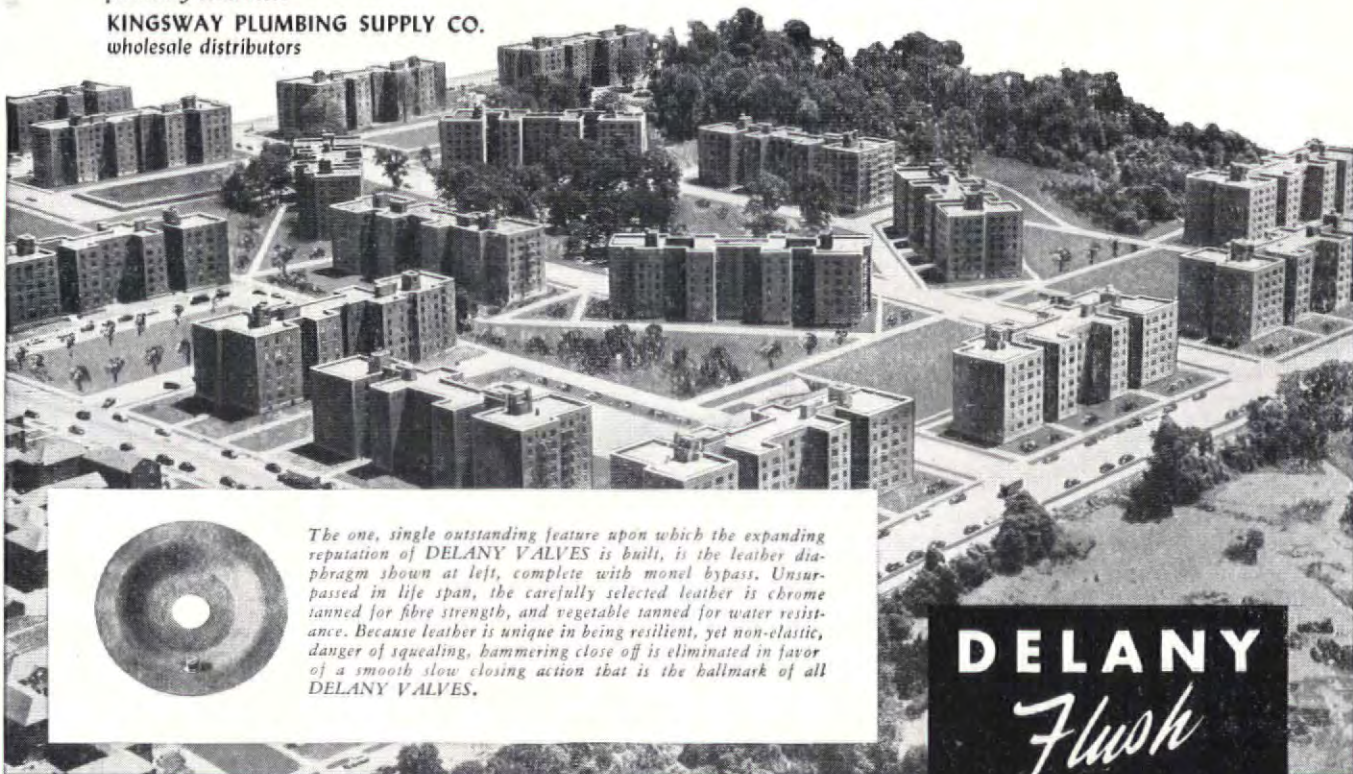


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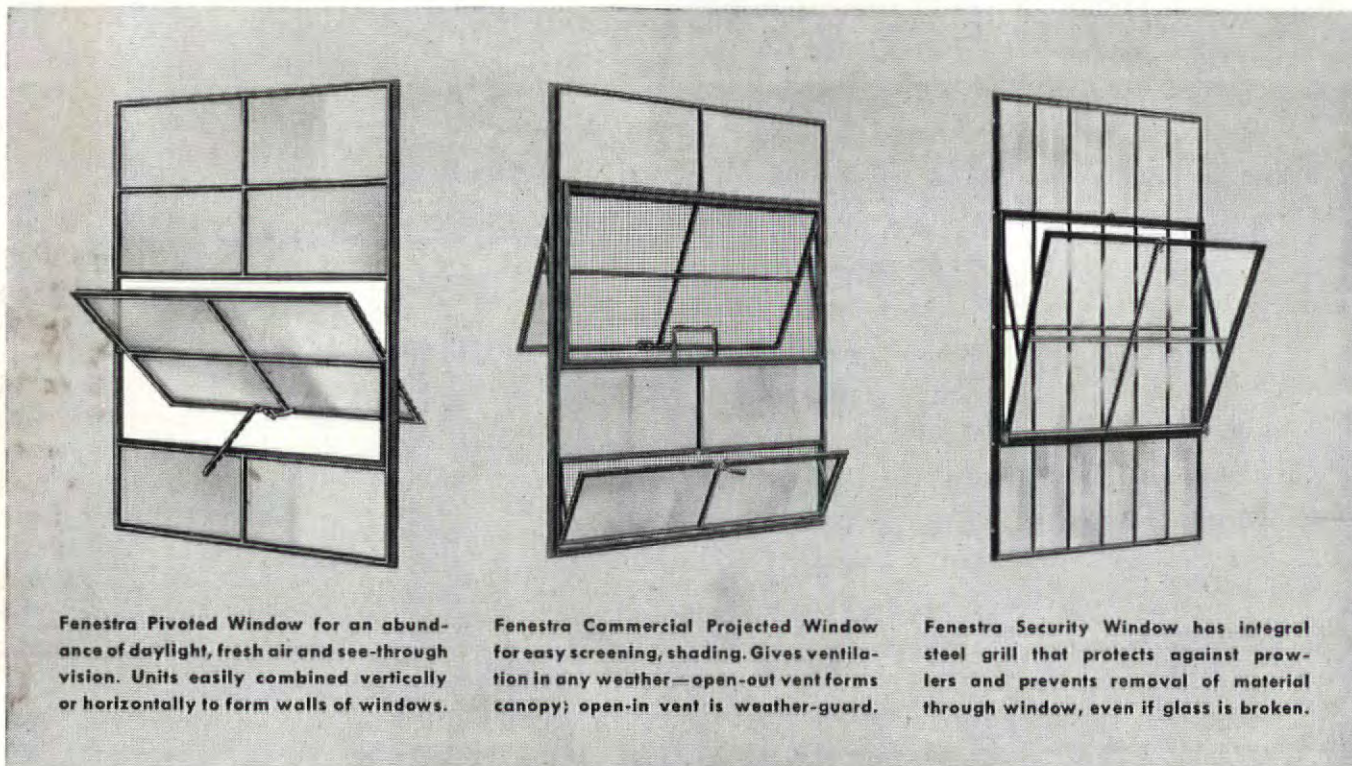
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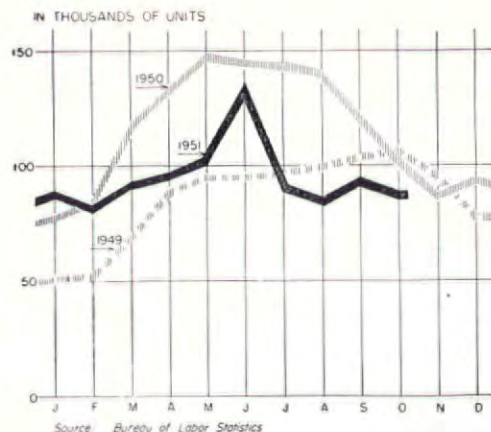
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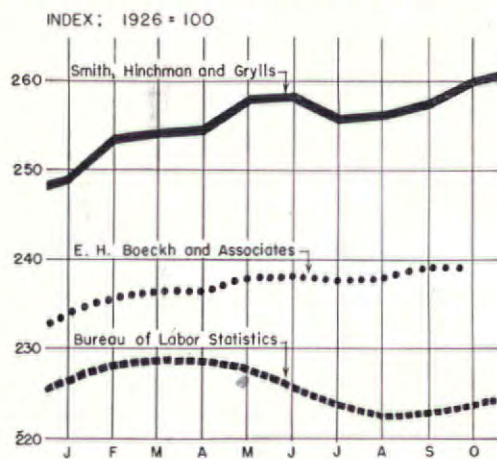
THE MONTH'S INDEXES

HOUSING STARTS



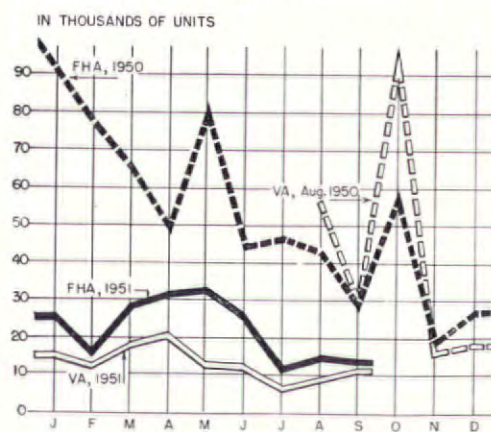
Dwelling units started Oct. '51 tallied 86,000, bringing the year's total to 942,500 and assuring a year-end record exceeding 1,000,000. Probable outcome: 1951 housing activity will outstrip 1949's, despite controls, to become the second highest in U. S. building history, ranking just behind 1950. Other autumn phenomena: home sales, which sagged listlessly all summer, have firmed up noticeably.

BUILDING AND MATERIALS COSTS



Overall building costs, as measured by Smith, Hinchman & Grylls and E. H. Boeckh, were at the year's peak, reflecting rising labor rates and renewed materials price increases, reported by Bureau of Labor Statistics. Contributing to current upward shift in materials costs is firming of lumber prices following this summer's dip.

FHA AND VA ACTIVITY



FHA applications and VA appraisal requests for 1950 and 1951 show dramatic impact of credit controls. In sharp relief is pre-Oct. 12 bulge, followed by sudden drop.

Legion Cold-shoulders Scheme for Investing NSLI Funds in VA Mortgages

On the last day of the Congressional session, Sen. Burnet R. Maybank (D., S.C.) introduced a bill to enact his scheme to permit 20% of the \$5.6 billion national service life insurance reserve fund to be invested in VA-guaranteed mortgages (Sept. '51 issue, p. 45). Congress will probably consider the measure next year.

So far, Maybank's plan had won little support even among groups that he expected would cheer loudest: veterans' organizations. The Veterans of Foreign Wars had endorsed the idea but with the important stipulation that the insurance fund be used only as a secondary market for VA loans "made through private lenders." At the American Legion convention in Miami Beach, the plan was squelched even before it came officially before the Legion's housing committee. One reason: mortgage bankers feel Maybank's scheme would open the flood gates to direct VA loans, doubt that 4% mortgages after servicing and administration would yield the life insurance fund more than the 3% it now earns from special government bonds.

They explained these facts of life to Larry Fenlon of Chicago, Chairman of the Legion's housing subcommittee, in advance of the convention.

Savings and loan opposition was indicated, too. Commented Norman Strunk, executive vice president of the U.S. Savings & Loan League: "It looks to us like another scheme essentially for direct lending by the government. We have never been enthusiastic about direct lending."

Surprisingly, the Legion's housing committee was the scene of an undercover struggle (also lost) to urge that the interest rate on GI loans be hiked from 4 to 4½%. With the pinch on mortgage funds continuing to ease, VA officials clearly would do no such thing. Indicating the trend, Builder John Bonforte of Colorado Springs last month reported selling VA loans at 99½ to one New York insurance company. At the fall management conference of the National Savings & Loan League in White Sulphur Springs, W. Va., delegates reported that interest rates on some conventional loans were dropping.

Edith Farnsworth Sues Mies

Legal stones were hurled last month over the glass house Ludwig Mies Van der Rohe designed for Dr. Edith B. Farnsworth on the banks of the Fox River near Plano, Ill. (Oct. issue '51).

Until recent months, as the *Chicago Tribune* noted, the head of Illinois Tech's school of architecture and his client, a Chicago physician, "were fast friends." Into her house, Mies poured five years of study, design, and painstaking supervision of construction, achieving unparalleled perfection of workmanship, precision of detail and pure simplicity of concept. But last July, he finally felt forced to sue for mechanics lien foreclosure in Kendall county circuit court in hope of recovering the money actually spent building what already has become a world renowned work of architecture, and for the costs incurred in assuming responsibilities usually undertaken by a contractor. Mies' suit set forth that Dr. Farnsworth had paid him only \$70,372 of the \$74,045 he actually spent, plus \$2,500 for supervision. He asked for the out-of-pocket \$3,673, plus \$15,000 architect's fees and \$9,500 more for supervisory services. Last month, Dr. Farnsworth filed an angry answer. She accused Architect Mies Van der Rohe of "fraud and deceit" on the basis that he "misled" her

into paying \$33,872 more for her house than the \$40,000 she alleged she set as her top limit when the house was started in April, 1949. She demanded her \$33,872 back, or an accounting of how it was spent.

The case was not yet set for trial, but Dr. Farnsworth retained a battery of three attorneys. A key point around which the trial should revolve will be the cardinal AIA tenet that architects do not guarantee costs of houses they design. Though the Farnsworth house cost \$25 per sq. ft. (not counting the bills and fees Mies still seeks to collect), the price of many another well-designed home has zoomed between the start and finish of its erection. While the Farnsworth house was being built, building costs rose about 50%.

PEOPLE

NAHB lost one of its top goodwill builders as big, blond Architect **Carl Lans** resigned as director of technical services, effective Feb. 1, to join Builder Earl Smith of El Cerrito, Calif. Another departure from the Washington scene was **Asa B. Groves**, who quit as chief of appraisal for the Veterans Administration to become a real estate broker in atom-booming Aiken, S. C.

(Continued on page 72)

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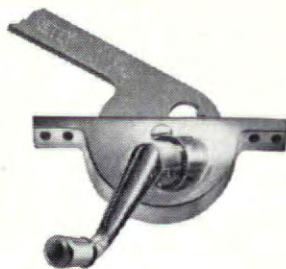
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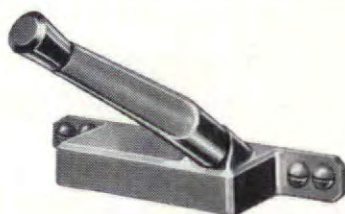
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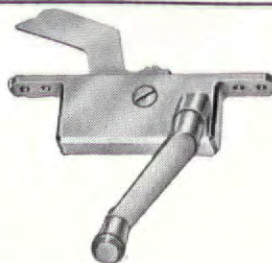
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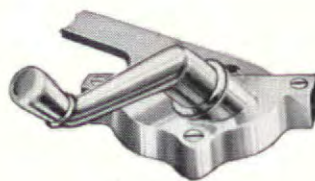
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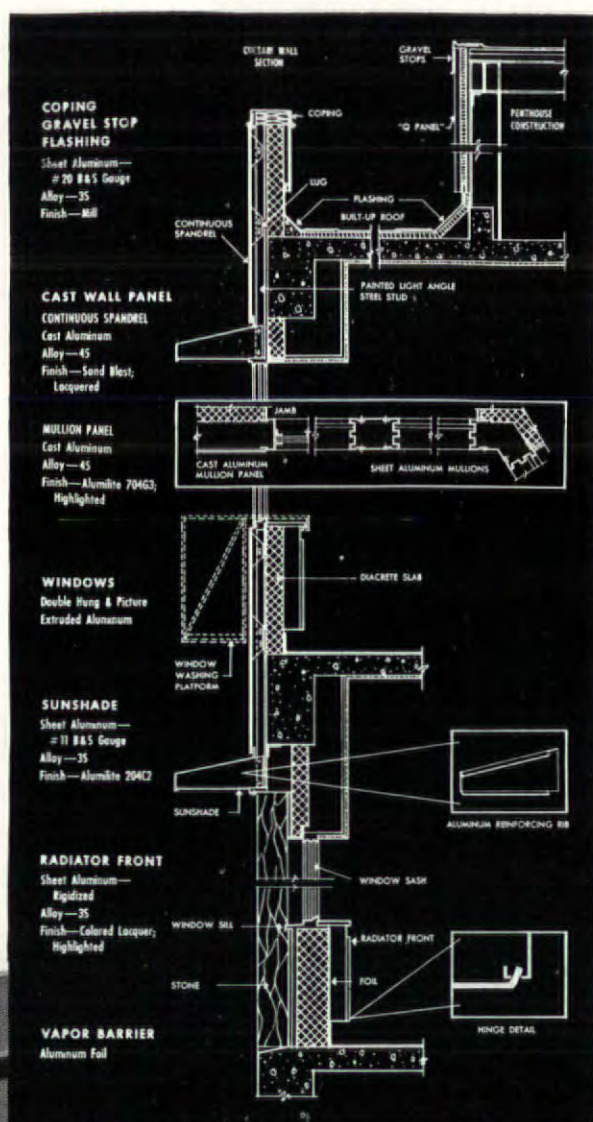


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Contractors. Alcoa Aluminum used
for wall panels, windows, sills, sun-
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And because the exterior walls, windows, sills, sunshade and copings are long-lasting, weather-resisting Alcoa Aluminum, exterior

painting costs were eliminated from the hospital's budget—forever.

Many of the aluminum application methods used here were pioneered by Alcoa. Today, although the supply of aluminum is limited by rearmament needs, Alcoa engineers are continuing to work with forward-looking architects on more efficient, more economical building for tomorrow. For information on any application of aluminum, call your nearby Alcoa sales office or write, ALUMINUM COMPANY OF AMERICA, 1887L Gulf Bldg., Pittsburgh 19, Pa.

ALCOA

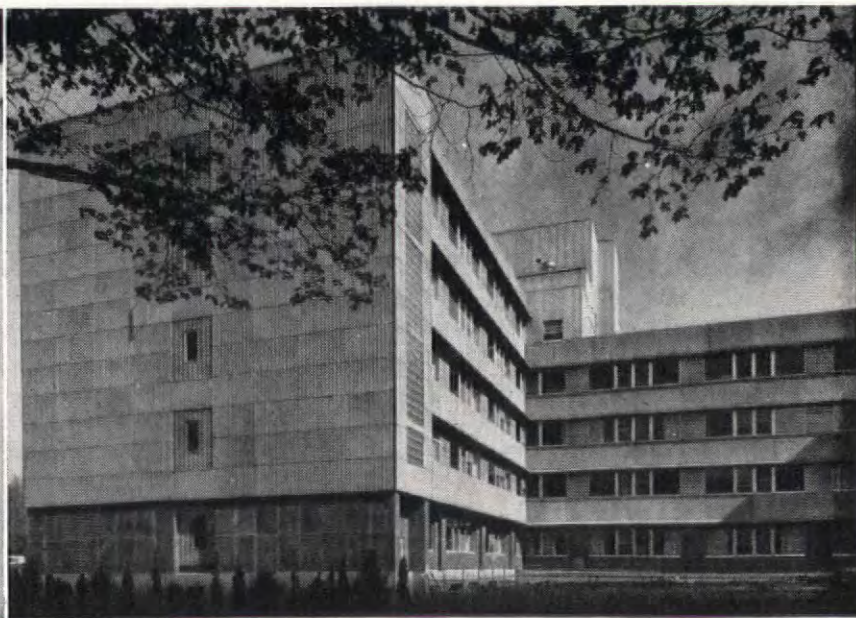
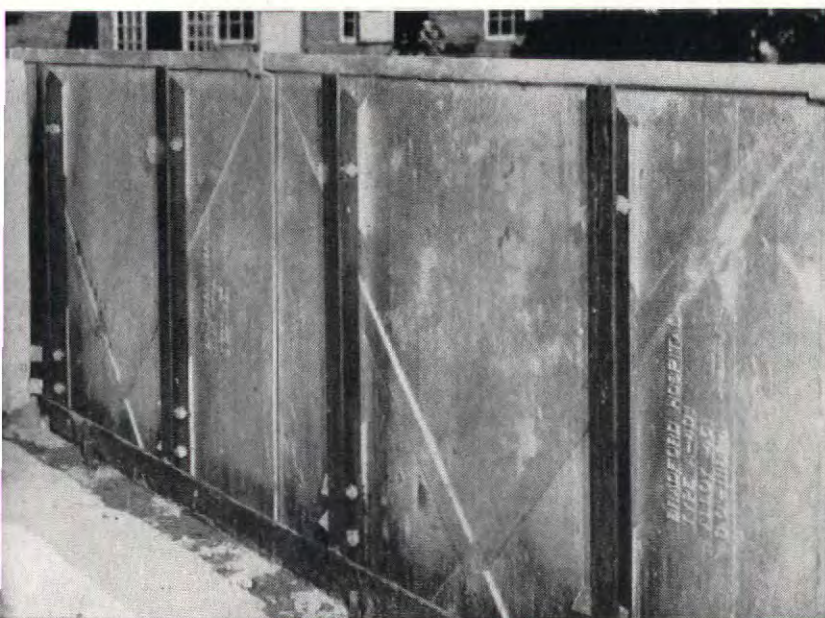
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ALUMINUM

Large, light (4 lbs. per sq. ft.) aluminum panels are installed easily by two men. Anchor lugs inside the panels are bolted to light, angle steel studs and wall is ready for backup.

The variety of finishes available with aluminum, permitted the designer to achieve variety and harmony by blending aluminum sheet, extrusions, and sandblasted and polished castings.



Genial, tireless **James J. Russell**, 65, succeeded **C. Donald Dallas**, retiring at 70 as board chairman of Revere Copper and Brass, leading non-ferrous metal fabricator (No. 2 for copper and brass, No. 4 for aluminum). Replacing Russell as president: **James M. Kennedy**, 52, formerly head of Revere's Rome Manufacturing Co. in upstate New York.



RUSSELL

A midnight airplane crash Oct. 6 near Lafayette, Ind., hospitalized President **James R. Price**, 40, and his brother, Vice President **George E. Price**, 35, of National Homes, biggest U. S. prefab firm. James

Price, last year's president of the Prefabricated Home Manufacturers' Institute, suffered a broken leg, thigh, lung and kidney puncture, and head concussion. He is not expected to walk for three months. George Price suffered burns and severe cuts. Three others of the party of seven, including the pilot of the company plane, were killed. **Ralph Shirmeyer**, Ft. Wayne, Ind., National Homes' dealer, was seriously hurt. **Carl Kettelhut**, an officer of National Homes, was slightly injured. The seven-man party was returning from a Canadian hunting trip.

Awards & Decorations: To **Harvey Wiley Corbett**, 78, senior architect of Rockefeller Center, went The Americas Award for 1951, recognizing his leadership in planning New York's future Avenue of the

Americas as symbol of inter-American friendship. For promoting understanding and cooperation between artists and architects, San Francisco Architect **Ernest Born** became the first recipient of the C. Valentine Kirby Fine Arts Award, given at the California Council of Architects' convention by the Artists Equity Association. The Society of Industrial Realtors chose U. S. Steel President **Benjamin F. Fairless**, 61, to receive its annual industrial award this month



BORN

at NAREB's Cincinnati convention. The American Standards Association, long in the forefront of the fight for waste-saving standardization of industrial components, gave its Howard Coonley medal to ex-President **Herbert Hoover**, 77, "for standards work he began in government more than 30 years ago."

Elected: **Ira S. Robbins**, 51, executive vice president of the New York Citizens Housing and Planning Council, as chairman of the board of National Housing Council; Industrial Designer **Russel Wright**, 46, who put modern pottery on the American dinner table, as president of the Society of Industrial Designers.



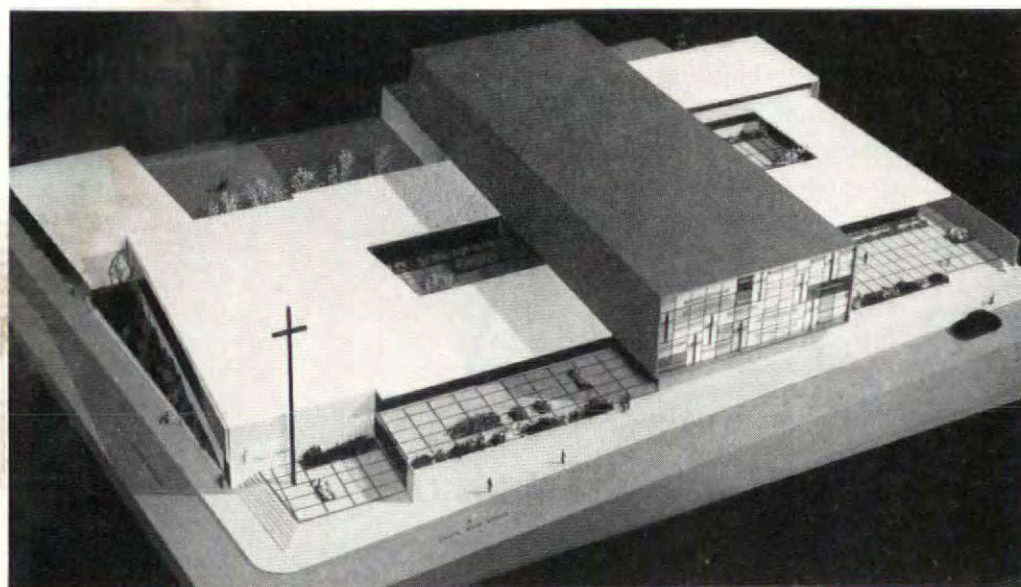
ROBBINS

Died: Architect **Walter C. DeGarmo**, 75, who introduced Mediterranean architecture to southeast Florida, Oct. 20 in a Miami hospital; Architect **John R. Rockart**, 79, Beauxartist who was associated with the late Cass Gilbert for 45 years and helped design such landmarks as the U. S. Supreme Court building and New York's Woolworth building, Oct. 13 in a Bronxville, N. Y., hospital; Engineer **Harry F. Miter**, 74, vice president and Cleveland district manager of the Austin Co., Oct. 5 in Cleveland; Contractor **Richard W. Bolling**, 72, brother in law of President Woodrow Wilson and builder of mansions and embassies in Washington, Oct. 18 at his Washington home.

Victor Gruen, 48, pudgy, Vienna-born architect of such merchandising milestones as Los Angeles' Milliron department store, again opened a New York office (closed dur-

(Continued on page 75)

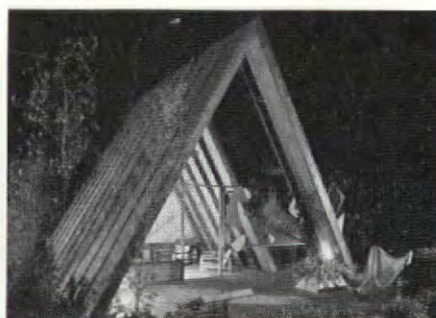
Photos: Pach Bros.; Tommy Lark; Ernest Braun; Affiliated Photo-Conway



Even as a model, Ciampi's Corpus Christi church got a fast start in the "most talked about" sweepstakes. FORTNIGHT, California TIME-style news magazine, called it a "dramatic experiment in fusing the values of ancient and modern architectural design." Landscaping will be by Lawrence Halprin, sculpture by Elio Benvenuto and Ernest Mundt.

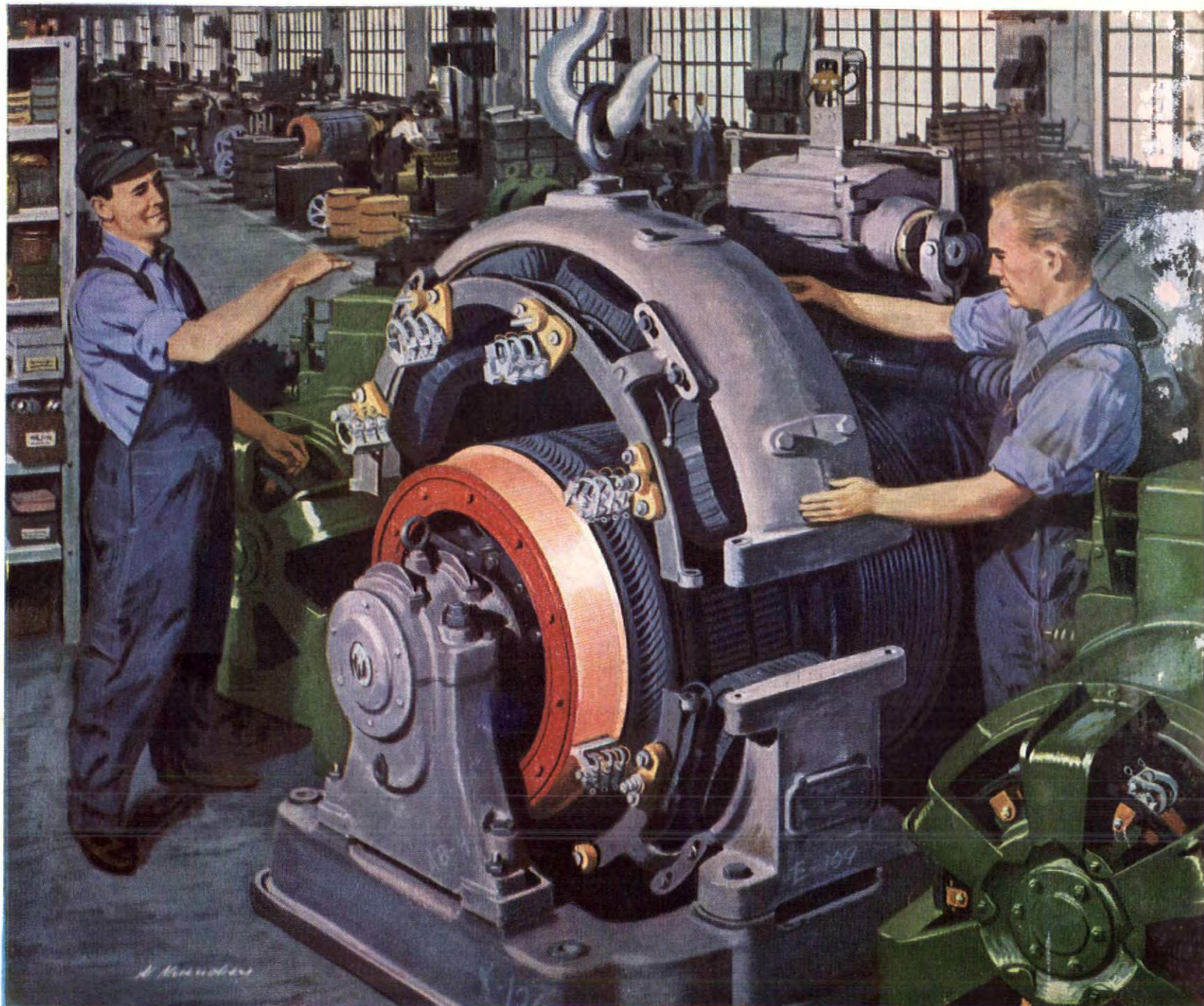
ARCHITECTURE EXHIBIT IS HIT OF ART FESTIVAL

A distinguished example of how architecture fused with fine art can capture public attention emerged last month in San Francisco. After the word got around that the AIA exhibit at the city's 5th annual Art Festival was a show-stopper, the crowd grew to record proportions. Before officials lost count of an estimated 50,000 people on the final day, they clocked 174,300 spectators through the doors of Maybeck's Palace of Fine Arts. To professionals, biggest news was the first disclosure of Mario Ciampi's plans for Corpus Christi Church, now being built on the west edge of San Francisco—a striking departure from the traditional taste of the Catholic Church. Wrote Critic Alfred Frankenstein in the *SF Chronicle*: "Architects have contributed to the show before, but never so fully and never with such challenging point."



Full-scale week-end cabin by Campbell & Wong delighted art lovers with remarkable integration of sculpture, ceramics, interior decoration and landscaping. John Campbell and two associates built it in a week for \$500. Rigid equilateral triangular 2 x 6's sheathed with waterproof wallboard form roof, spaced 2 x 3's the deck.





AN ELEVATOR MACHINE YOU'LL NEVER WEAR OUT

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—and for help with the temperature control, the architect talked to Honeywell!

It's plain to see cartoonist Sam Cobean's wacky characters have their own ideas on how to inspect a home.

But in *one* thing, at least, they're like everyone else—they place a high value on comfort. Moreover, they know you can't have real comfort without proper temperature control. And they're happy Honeywell was consulted on that.

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 more information on how the Honeywell organization can help you solve your control problems, see the column across the page.



MINNEAPOLIS
Honeywell

First in Controls

ing the last war), completing a coast-to-coast chain. He also took a bride (his second), Lazette van Houten, fashion editor of *Retailing Daily*.

Successors: **Dr. Henry T. Heald**, 46, the civil engineer who built Illinois Institute of Technology from a small school into one of the world's largest technology campi in his ten years as president, accepted the chancellorship of New York University, succeeding Harry W. Chase, retired. **Dr. Allen V. Astin**, 47, government researcher in proximity fuses, was appointed acting director of the National Bureau of Standards, succeeding Dr. Edward U. Condon, who resigned to become research chief of Corning Glass Corp. **William F. Raskob**, brother of the late financier John J. Raskob, was elected president of Empire State, Inc., which owns New York's Empire State Building, succeeding Lt. Gen. Hugh A. Drum, 72, who died Oct. 3.

Katherine Morrow Ford, architectural editor of *House & Garden*, joined Knoll Associates Inc., New York interior and textile designers, as public relations chief. Mrs. Ford, author of *The Modern House in America* and *The Design of Modern Interiors*, is a one-time executive director of the national educational group, Better Homes in America.



The New York chapter of the American Institute of Decorators held a two-day forum to thump the point (as Speaker **Gladys Miller** put it) that "decoration in America is no longer exclusively for people of wealth," got an earful of blunt comment from Architect **Robert Allan Jacobs**. Said he: "Why don't architects use decorators more frequently? To be frank, there are many architects who have had difficulty with decorators and, of course, the reverse is true, too." Jacobs cited the case of a home decorator who clung stubbornly to his original furniture arrangement with a fireplace, although the architectural plans were redrawn eight times and the chimney finally eliminated to cut costs. **William Pahlmann**, top-drawer Manhattan decorator (and Calvert "man of distinction"), suggested decorative schemes should match personalities. Sample: **Mrs. Billy Rose** (Eleanor Holm), "Good looking, vivacious, quick witted;" decor: flamboyantly-colored Louise Philippe Aubusson rug, turquoise walls, red velvet fabrics, French burl walnut table furniture."

(NEWS continued on page 77)

For help with any control problem, talk to **Honeywell**



Consult your nationwide "Honeywell Staff"

In planning schools, factories, offices and other large buildings no doubt you often run into this problem:

What's the best way to get coordinated technical help with a multitude of control systems—for temperature, ventilation, air conditioning, refrigeration, industrial process?

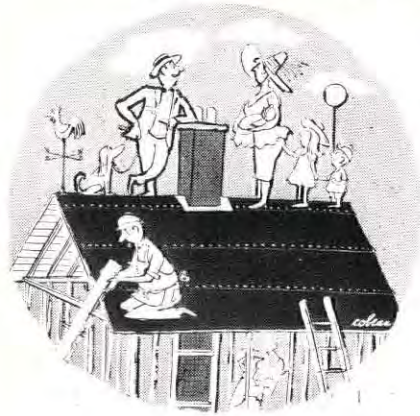
The answer is simple:

Call in your local Honeywell representative.

He can give you unbiased advice on types of equipment, because he has a complete line of controls—pneumatic, electric, electronic. And to help you meet special problems, he can bring in specialists from any of the 91 Honeywell offices.

And too, when you *standardize on Honeywell*, all control applications can be treated as one project. And you'll be designing an integrated system that can be periodically serviced and adjusted simply by consulting one company. The Honeywell service organization—with its wide scope and flexibility—is positive assurance that your controls will perform at maximum efficiency for a lifetime.

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Send for your personalized cartoon

...and for help with the temperature control,
we'll talk to (your firm name.)

For your personalized, free 8½" x 9" reproduction of this Cobean cartoon, write to Honeywell, Dept. MB-11-207, Minneapolis 8, Minnesota.



MINNEAPOLIS Honeywell

First in Controls



• Reception lounge of The Upson Company, Lockport, N.Y., after decorating according to COLOR DYNAMICS.

4 big advantages that PITTSBURGH COLOR DYNAMICS will give your offices ➡

- lessens eye fatigue
- stimulates concentration and improves efficiency and morale
- reduces absenteeism
- simplifies housekeeping problems

COLOR, used for decorative purposes in public and private office buildings has taken on new importance as its psychological and physical effect upon people has become increasingly evident.

● **There is no longer reason** why interiors of commercial structures should be painted in dreary and depressing monotonies. With Pittsburgh's system of COLOR DYNAMICS you can specify color arrangements that im-

prove the efficiency and morale of office workers.

● **Science has demonstrated** that colors stimulate and inspire, rest and relax, depress and fatigue. Pittsburgh has made use of this knowledge of the *energy in color* in developing COLOR DYNAMICS.

● **With this painting system** you choose the right colors for all types of offices in keeping with their purposes, their exposure to sunlight and

their natural and artificial lighting.

● **You lessen** eye-strain, stimulate concentration, promote comfort and cheerfulness. Because of the greater pride workers take in such surroundings, they take extra pains to keep their quarters neat and clean.

● **Why not discover** for yourself how you can create a whole new world of helpful color to bring new efficiency, energy and pleasure to those who occupy your buildings?

LET US MAKE A COLOR DYNAMICS ENGINEERING STUDY FOR YOU—FREE!

● For a complete explanation of COLOR DYNAMICS and what it can do for offices you are planning or erecting send for our *free* booklet containing many practical suggestions. Better still—we'll gladly make a color engineering study of the building, or any portion of it, *without cost or obligation*. Just call your nearest Pittsburgh Plate Glass Company branch and arrange to have one of our trained color experts see you at your convenience, or send coupon.

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P I T T S B U R G H P L A T E G L A S S C O M P A N Y

Dual Purpose Plants for War and Peace Proposed by G.M.

President Charles E. Wilson of General Motors Corp. thinks the U. S. cannot afford the waste and expense of building one set of plants for armaments and another for civilian goods. And yet, he told the American Ordnance Association last month in Cincinnati, this is just what the country is doing. Said "Engine Charlie": "The current emergency is again being met with emergency measures which are exorbitant in cost, disruptive to the civilian economy and may not be adequate in time." As Wilson sees it, the U. S. must have a "permanent national defense program" which would provide protection "for several generations if necessary." He would base it on "dual-purpose plants" usable for war production, for peacetime goods, or for a combination of both. Dual-purpose plants would end the frenzied building and later abandonment of war facilities. More important, they would avert the shocking loss of productive manhours caused by shifting to war output.

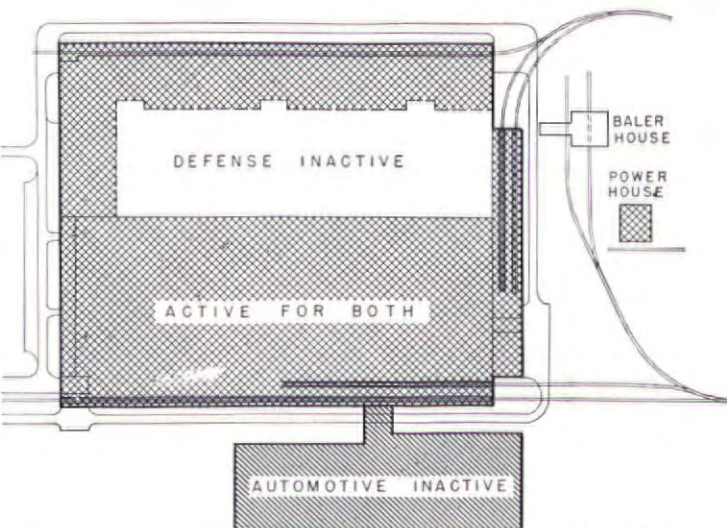
'The only solution.' Said the head of the world's largest manufacturing corporation: The difference in time required to meet an emergency with dual-purpose plants might well be more important than the final possible saving in cost or even the avoidance of dislocation of employment . . . The time it takes to go to war is . . . the time it takes to produce equipment and arms."

Wilson displayed drawings of two sample plants to "clearly indicate the large percentage of the plant area that could be used" for either or both war and peace output. One plant (*below*) could be used to produce jet engines and automobile body stampings. Equally useful for either peace or war would be offices, a second floor cafeteria and locker room, railroad sidings, power plants, maintenance department, parking lots, hospital, tool rooms. Engine test cells could only be used while the plant was making jet engines. Space, foundations and heavy presses used to make large stampings could only be used for auto output. But these areas, if idle, could be used to store light supporting equipment also made idle. Also feasible: a plant to assemble autos or planes.

Plan for action now. Wilson urged two specific steps:

► Congress should enact a law letting the Defense Dept. sign long-time contracts with industrial firms for custody and maintenance of excess parts of plants—thus letting no facilities rust to uselessness for lack of "competent custodians," letting manufactures maintain pilot lines to update their know-how in time of limited war production.

► DPA should use its accelerated tax-write off power to encourage dual-purpose plant construction. (NEWS continued on page 84)



DUAL-PURPOSE PLANT COULD BUILD JET ENGINES, AUTO BODY STAMPINGS

"first" on
2nd Avenue



G-E Textolite tops provide decorative, durable kitchen surfaces in the "Manhattan House" apartment development, owned and managed by the New York Life Insurance Company.

Textolite*
Plastics Tops

selected for vast
"Manhattan House" project

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Architects and builders appreciate the durability and beauty of G-E Textolite surfacing material—often specify it when surfacing requirements call for good looks plus long wear. This plastics surfacing is ideal for every need—tables, counters or wainscoting—in private kitchens or commercial installations.

FOR DETAILS see the G-E Textolite Catalog in Sweet's Architectural File . . . or mail the coupon below.

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K-2850-C, 19" x 17". Other sizes 20" x 18", 22" x 19"

HUDSON

Enameled Iron Lavatory in new, small size

Offered in addition to the larger sizes, the new Kohler enameled iron Hudson fills requirements for a compact, well-proportioned lavatory for homes, apartments, tourist courts, schools and other buildings. Practical features include a roomy basin, soap dish, compact mixer fitting with pop-up drain.

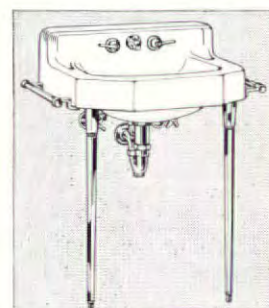
Line includes types for specific purposes

Kohler lavatories of enameled iron and vitreous china are available in a wide range of sizes and designs—with shelf, with back and for building-in. Surfaces are glass-hard, easy to clean. Kohler chromium-plated brass fittings are reliable—designed for the fixtures they serve.

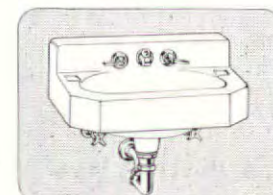
Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER

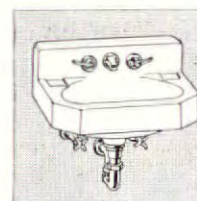
Enameled Iron Shelf Lavatories



Hampton K-2706-A.
19" x 17", and 22" x 19"

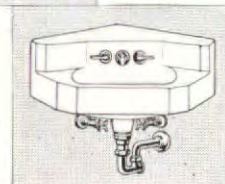


Taunton K-2730-A. In three
sizes, for narrow spaces.



Delton
K-2735-A.
For very
small
washrooms,
with chain
and stopper

Marston
K-2765-A.
16" x 16"
For corners.



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1818 HOPE'S 1951



Research Building, Massachusetts General Hospital, Boston, Mass.

Coolidge, Shepley, Bulfinch & Abbott—Architects

Turner Construction Company—Builders

Unusual interest in this façade is created by the use of HOPE'S Intermediate Projected Casements set in HOPE'S "Biltin" Ribbon Type Subframes, locating the windows beyond the face of the building wall. Interior partitions abut on the mullions. Complete information on HOPE'S "Biltin" Subframes is given in Hope's catalog No. 122A. Write for your copy.

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*Executive Office—Philip Morris and Co., Ltd., N. Y.
Architect: Kahn & Jacobs. Designer: Egmont Arons.*

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PROBLEM: To individualize executive interior with distinctively "different" wall covering. Material selected must combine dignity with unusual, dramatic beauty.

SOLUTION: Figured Ribbon Mahogany Flexwood in checkerboard design achieves brilliant, highly personalized decor. Floor to ceiling coverage and pleasant treatment of light soffit heighten Flexwood's extraordinary effectiveness. This interior awarded first prize in "Office of the Year" architectural competition.

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Please send me, without obligation, Flexwood's Case-History Book; shows
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LIGHT

SOUND

controlled with one efficient system

CURTIS



SYSTEM

The new Curtis Light and Sound Conditioning System offers an entirely new approach to LIGHTING and SOUND CONDITIONING problems. The system provides quality low-brightness illumination with acoustical treatment which eliminates excessive sound reflections and the annoyances and distractions which sound creates.

The Electrical System — Standard basic sections of the Underwriters' approved electrical portion of the Curtis System are supplied completely wired and packaged in 8" x 12" x 96" cartons. Each basic section covers a ceiling area of 256 square feet. Combining the basic sections with extension and wing sections makes it possible to provide quality low-brightness illumination and effective sound treatment.

The Sound System—The vertical baffles are constructed of highest quality acoustical material with a flame retarding, high reflectance washable finish. The baffles are positioned between the 8 foot, T-12, single pin fluorescent lamps to provide both recommended shielding and sound conditioning. Yes, the Curtis Light and Sound Conditioning System offers the finest in lighting and sound conditioning efficiency from the stand point of low initial cost, low installation cost, low operating cost and low maintenance cost.

A comprehensive bulletin, completely illustrated, will be available soon. Write Dept. K2-05 for your free copy.

CURTIS LIGHTING, INC.

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Name

Company

Address

City State



Cork: a versatile acoustical material

FOR many years, architects have recognized cork as a practical and beautiful construction material.

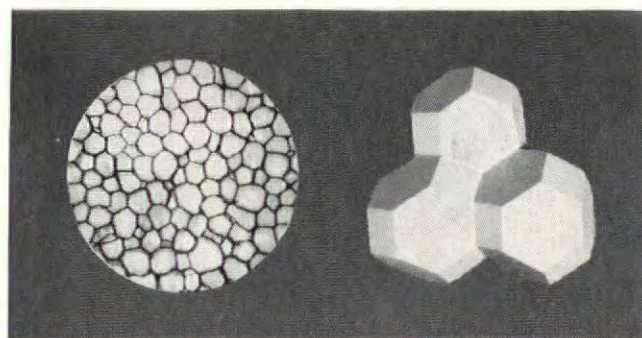
Millions of square feet have been used as floor and wall covering. Made into tiles of the proper density and thickness, cork becomes one of the most versatile of all acoustical materials with a truly remarkable combination of characteristics.

Fissures absorb noise

The countless fissures and crevices in the surface of cork acoustical tile do the work of sound absorbing. Armstrong's Corkoustic, the 100% cork acoustical material in the Armstrong Line, provides adequate absorption for the acoustical correction and noise-quieting requirements of most interiors.

Cork resists moisture

The remarkable moisture resistance of cork makes it an ideal material for use in many areas where other acoustical tiles would be likely to warp, decay, or lose their bond due to extreme moisture conditions. Corkoustic is ideally suited for swimming pools, commercial kitchens, hydrotherapy rooms, certain factory areas, and interiors that present moisture condensation problems. The cells that make up cork's unique structure have tough, moistureproof walls and are nested tightly together so that no moisture can pass between them.



Cork under the microscope (above, left) shows a unique structure of millions of tiny cells. These cells have tough walls that won't let moisture through, and each cell contains still air which gives cork high insulating properties. Enlarged cork cells (above, right) are perfect geometric shapes with 14 sides. They fit together so tightly that there's no space for moisture to pass between them.

Thermal insulation

The same cells that give cork its high moisture resistance also provide excellent insulating properties. Each cell contains still air which acts as a barrier to heat passage and keeps Corkoustic's thermal conductivity down to 0.26. For this reason, many architects specify cork acoustical tile for one-story buildings, top-floor ceilings of buildings, and suspended ceilings. It helps in maintaining even temperatures and permits heating and air-conditioning plants to operate more efficiently.

Distinctive appearance

Cork's beautifully textured surface has made it a popular interior decorating material. As an acoustical material, it is well suited for use in banks, libraries, restaurants, and a variety of other interiors where appearance, as well as sound absorption, is important. Two coats of white resin paint are applied to Armstrong's Corkoustic at the factory, giving it a high light reflection factor (80%). It is made in two sizes: 12" x 12" x 1 1/4" and 6" x 12" x 1 1/4".

Rated "slow burning"

Although direct exposure to flame will blacken and char its surface, cork burns so slowly that it usually tends to retard the spread of flames. The U. S. Bureau of Standards has classified Armstrong's Corkoustic as "slow burning," which permits its use in many areas where fire regulations prevail.



Cork is flexible

The cellular structure of cork gives it another advantage that's almost exclusive among acoustical materials: it is flexible enough to be bent around slightly curved surfaces, or kerfed to conform to sharper curves. This flexibility is especially important in buildings that have arched or vaulted ceilings, such as found in cathedrals of Gothic architecture. Corkoustic is easily installed by cementing to a firm existing surface.

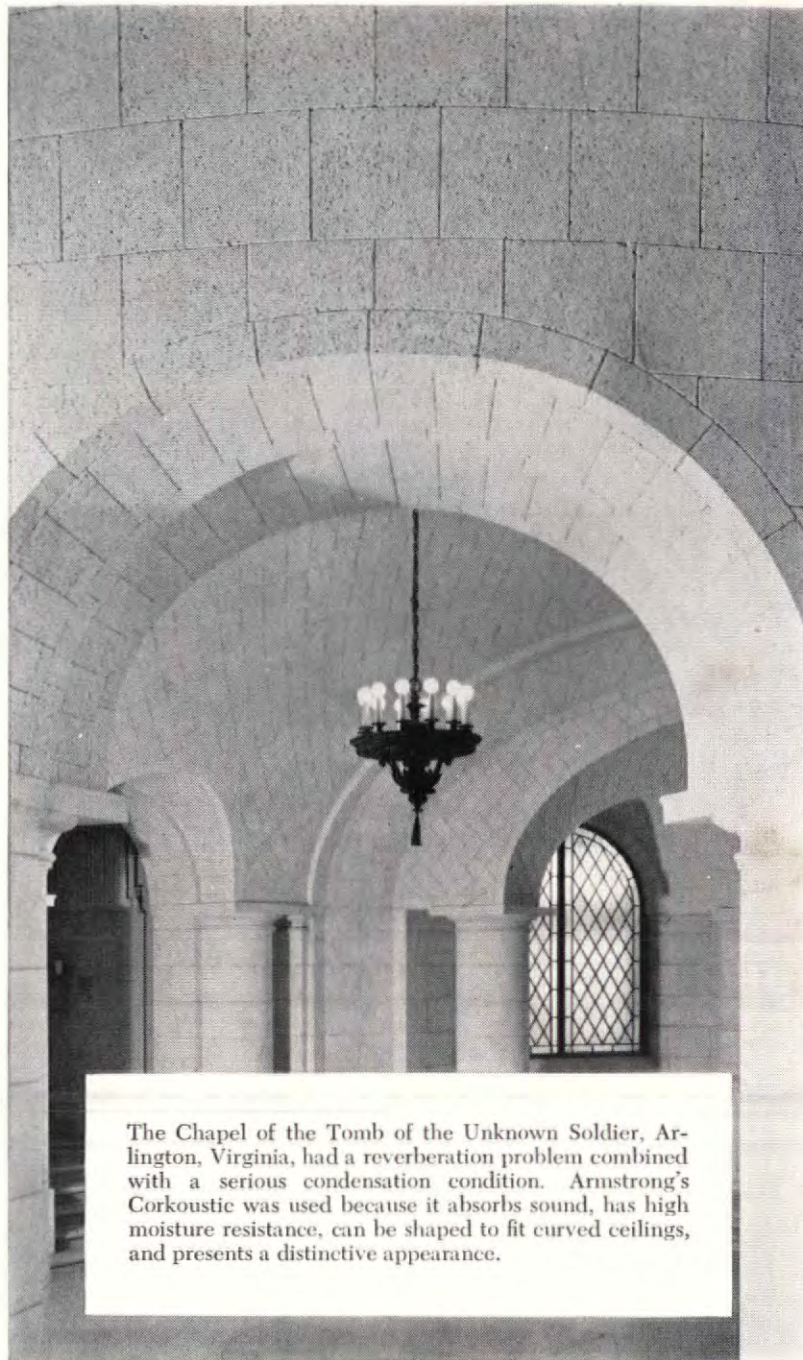


Corkoustic will bend, as shown above. This is an unusual advantage for an acoustical tile, making it a practical material to use even where ceilings are arched or vaulted as often found in Gothic architecture.

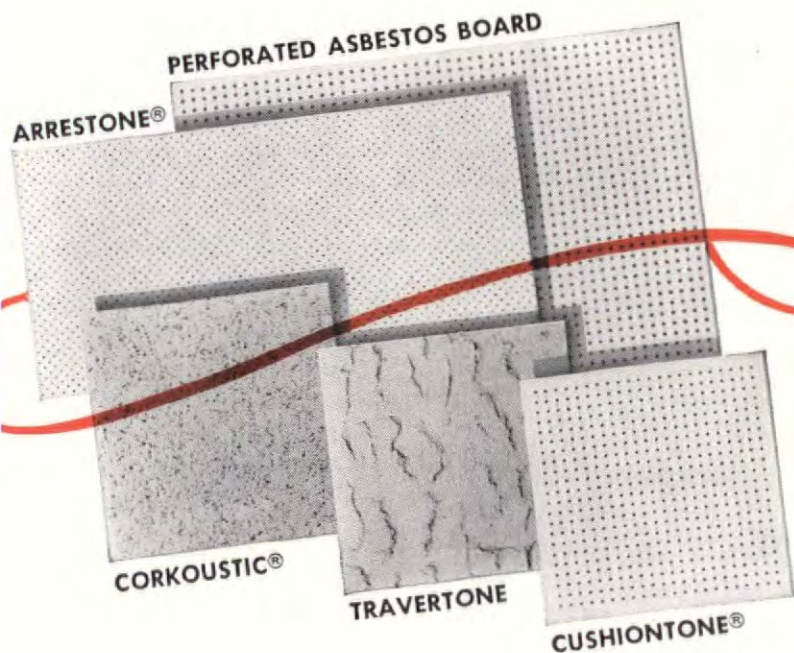
Your Armstrong Acoustical Contractor

He is an expert in the field of sound conditioning. He'll be glad to help you with any acoustical problem and give you full information on Corkoustic, as well as the other materials in the Armstrong Line.

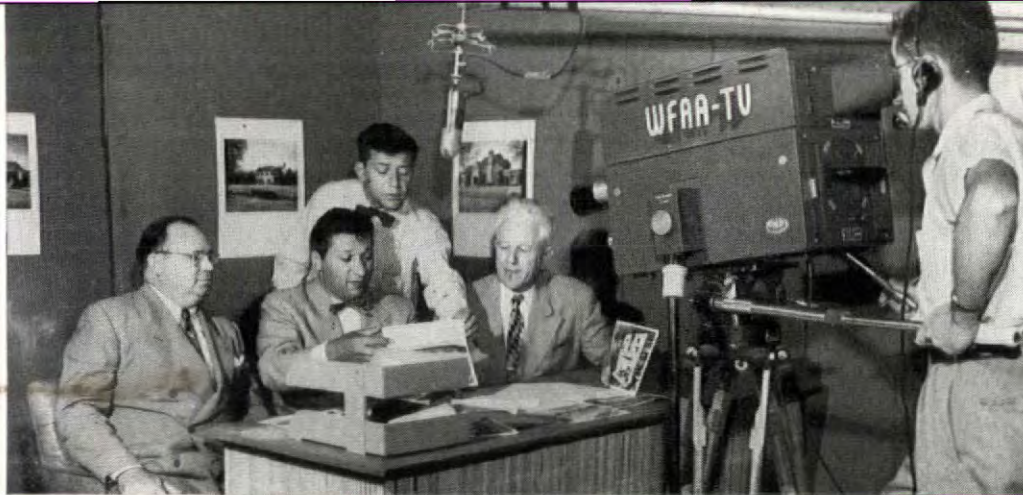
SEND FOR FREE BOOKLET, "How to Select an Acoustical Material," which answers many other questions about sound conditioning. Write Armstrong Cork Company, 5411 Stevens St., Lancaster, Pa.



The Chapel of the Tomb of the Unknown Soldier, Arlington, Virginia, had a reverberation problem combined with a serious condensation condition. Armstrong's Corkoustic was used because it absorbs sound, has high moisture resistance, can be shaped to fit curved ceilings, and presents a distinctive appearance.



**ARMSTRONG'S
ACOUSTICAL
MATERIALS**



DALLAS HOME BUILDERS' "Show of Homes," shown in rehearsal, blends movies of exteriors and interiors with live shots of models, photographs and sales talk by co-sponsors. Left to right: George Mixon, Michael M. Michelow, Edward E. Kash, and Charles R. Tips.

Architects, Builders Try Out Television

Television is scoring big gains as a local medium to sell houses and teach modern architecture.

Rising video use centers in middle-sized metropolitan areas away from centers of show talent. High TV time costs scare away most realtors and builders in spots like New York and Los Angeles, and the spread of coaxial and micro relay networks has pushed some sustaining programs off the air (like Architect Leon Brown's excellent AIA show in Washington).

In overbuilt Dallas, however, six builders got such response to an experimental one-hour film tour of six new homes (21 houses sold to interested viewers) that the Dallas Home Builders Association began a regular "Show of Homes" in mid-September (WFAA-TV, 2-3 p.m. Sundays). Enthuses President Ed Dicker of Allied Homes, Inc.: "The surprising thing was the immediate response. Before the program was off the air half an hour we had 25 telephone inquiries. We sold 7 homes." Each show costs \$900, or \$150 per sponsor. So the association is rotating sponsorship.

Community relations. In Boston, the realty firm of Town & Country found a Sunday noon half hour show resulted in a substantial increase in listings by impressed viewers. Filmed in advance, the program showed a nearby locality's points of scenic and historic interest, attractive neighborhoods, churches, schools and shopping districts, with a commentary dubbed in. Often, suburban mayors were glad to get in the act. Four or five houses for sale were included, usually with owners playing roles like greeting T & C salesmen. President John W. Dunnan delivered an institutional plug.

From the AIA viewpoint, TV has twin pitfalls. Says Frederick Gutheim, assistant to Executive Director Edmund Purves: "Architecture is a natural for daytime programs, but usually interior decoration wins out and architecture is left on the ropes. Night time architecture shows tend to degenerate into hobby shows." Despite this hazard, San Francisco architects do a big public relations job for contemporary design as regular guests on KRON-TV's afternoon women's programs. First Monday of each month, Bonnie Kever devotes part of "Design for Living" (2:30 to 3 p.m.) to an interview with an architect and his client who analyze floor plans and photographs for new ideas. Chit-chat Marjorie Trumbull (4 to 5 p.m.) discusses archi-

(NEWS continued on page 86)

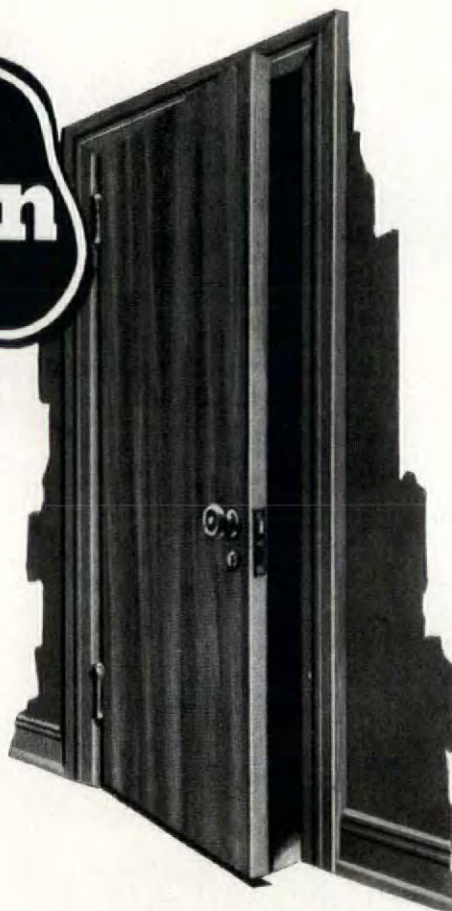
Coast to Coast, *Architects* Are Specifying... *Builders* Are Using

Thomason

FLUSH DOORS

(All-Wood Throughout)

The demand for these expertly and finely constructed flush doors has increased so rapidly that practically the entire production facilities of one of the two large plants of the THOMASON PLYWOOD CORPORATION in Fayetteville, North Carolina, are now devoted to the manufacture of THOMASON Flush Doors.



AVAILABLE WITH THESE FACE VENEERS

In addition to the Gumwood faced door that provides a satin-smooth surface for easy staining or painting, the THOMASON Flush Door comes faced with veneers of Mahogany, Walnut, Oak, Birch, Knotty Pine, Catalpa, or in any face veneer desired.

THERE ARE ALSO THOMASON FLUSH DOORS FOR EXTERIOR USE

Available either plain or with any one of five standard patterns of light opening. Or you may have the THOMASON Flush Door with a solid all-wood core, faced with all types of veneers.

SOLD ONLY THROUGH DISTRIBUTORS

Manufactured by...

THOMASON
PLYWOOD CORPORATION
FAYETTEVILLE • NORTH CAROLINA

Lighting matched to the job

quality and service are real tests of lighting

"To provide a lighting system that would look as good and operate as efficiently after use, as the day it was installed", was the problem of this Massachusetts classroom.

THESE RESULTS: A test was made after six months' use. "Average illumination on all desk surfaces—33 footcandles. It's a system we intend to use in all future renovations."

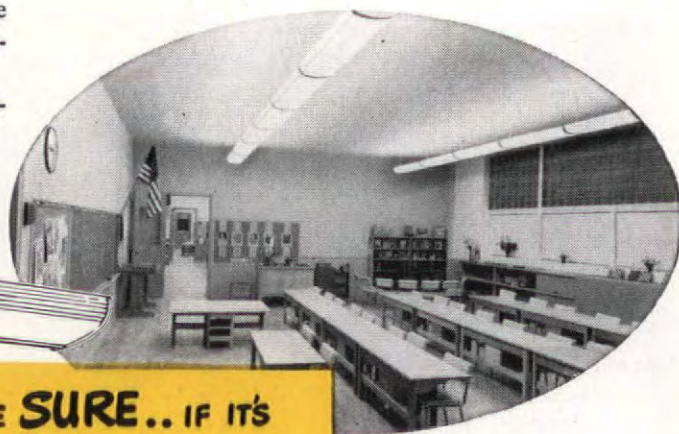
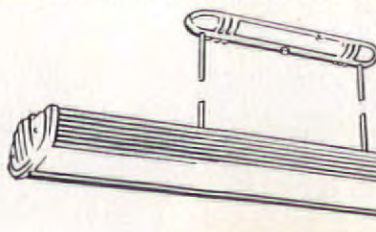
Westinghouse recommended a semi-indirect lighting system with plastic sides and shielding, because it could stand the CD luminaire test of time and provides the highest degree of quality illumination.

A six-year test shows that the chemically and di-

mensionally stable plastics used by Westinghouse retain their true color and shape.

You will want to see the full line of Westinghouse lighting equipment and appraise it in relation to your classroom problems. Send for B-5254, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-04290



YOU CAN BE **SURE**.. IF IT'S
Westinghouse

LIGHTING DIVISION
Edgewater Park, Cleveland



*Say goodbye to the
hard-to-get lead pan
for Tile Showers*

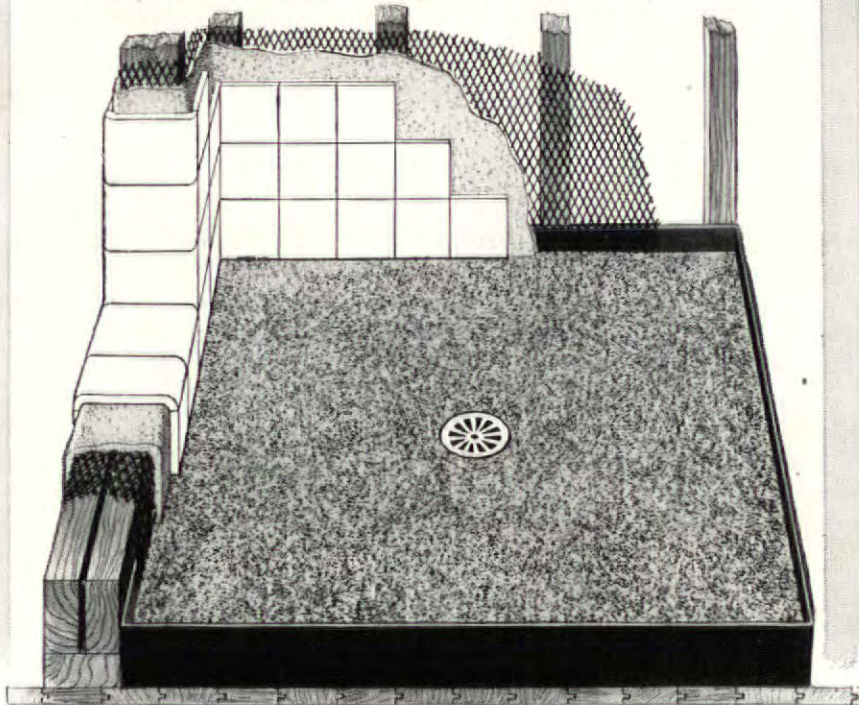
FIAT PRECAST TERRAZZO RECEPTORS



*I find Fiat precast receptors
make a definite saving
in building tile showers.*

**Save money . . . Save time . . .
Make a better tile shower floor**

One piece slab construction gives a lifetime leakproof floor.



**Available for prompt delivery
See your plumbing contractor**

STANDARD SIZES:

Square type 32" x 32" — 36" x 36" — 40" x 40"

Corner type 36" x 36" — 40" x 40"

The Fiat one piece precast receptor slab will not be affected by settlement of the building as would the old-fashioned "multi-

layer" construction of fill, lead pan, grout and tile. The rustproof metal receptor flange encases the tile walls making a leakproof connection.



FIAT METAL MANUFACTURING COMPANY

Three Complete Plants

9301 Belmont Avenue, Franklin Park, Illinois

Long Island City 1, N. Y.

Los Angeles 63, Calif.

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

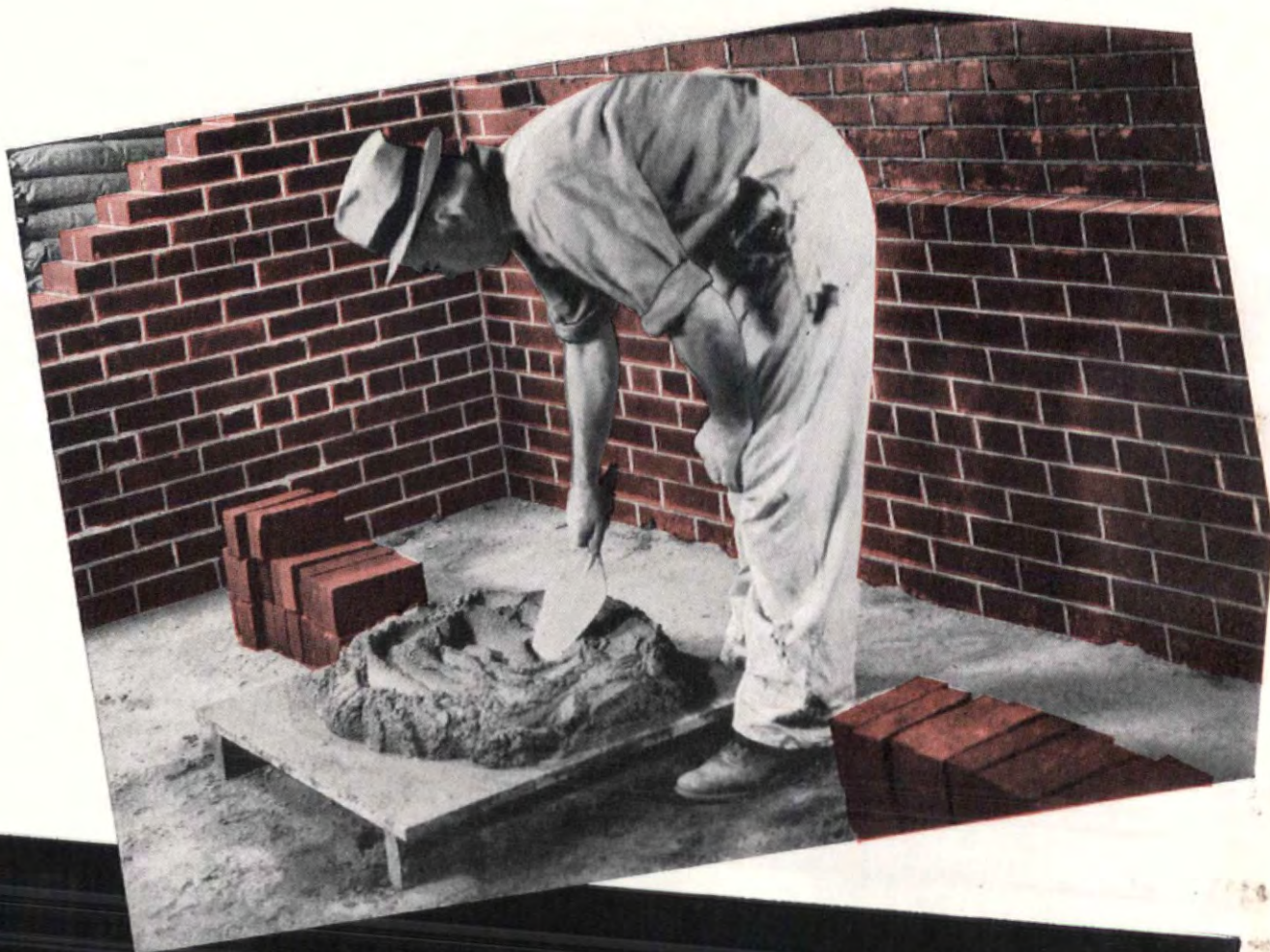
tectural questions with AIA-sponsored guests on Fridays. Sample topics: "is it possible to build workable add-on-to houses?", "how much training does a licensed architect have to have?", "how much does an architect really cost?" First interviewee, youthful Victor Abrahamson, was bowled over to draw 12 letters, two telegrams, a box of embroidered hankies.

Fix it with coat-hangers. A typical fixit show is sponsored by one lumber company in Chicago. Art Youngquist of *Science and Mechanics Monthly* teaches his audience how to make useful gadgets out of very little (his favorite material is coat-hangers) on "The Dr. Fixum Household Hospital" (WENR-TV, 10:30 to 11 p.m. Thursdays). The sponsor, Harvey Lumber Co., plugs everything from semi-finished homes to plumbing equipment.

On Seattle's Fidelity Savings & Loan Co. five minute weekly show, ordinary people are interviewed on subjects like "why are you having to build a home?" Carroll, Hedlund & Associates, takes its audience through new homes via film.

Roofs in the parlor. One of video's staunchest boosters is Paul White of White Roofing Co., in Atlanta: "I've tried church fans, song books, newspapers, movie shorts, telephone calls, radio, direct mail and now television. I'll take television. How else could you walk into somebody's living room with a sample roof under your arm?" Since June 1950, White has used only TV for advertising, allots 5% of his \$250,000 a year receipts to it. He began by sponsoring a 15 minute newscast, recently added a barbershop quartet. White finds it pays to give his shows a personal touch. After a WAGA-TV commentator reports on Korea, White shuffles before the camera with an easy, homey manner, tells why White Roofing Co. paint and roof jobs last so long. Often he brings along a Johns-Manville salesman to back him up. On Atlanta's streets, strangers "give me a nice smile and say hello," says he. "It's not that I want to show off my mug. But now they see Paul White, it means something when they start thinking about a new roof."

One firm which sticks with television in Manhattan is Mastic Acres, Inc., which plunks down \$1,300 a week—about a quarter of its advertising budget—for three 2-minute film spots depicting its 10,000 acre development of \$4,500 to \$10,000 summer homes in outer Long Island. Advertising Manager Joseph M. Connaughton picks his time carefully to follow programs he thinks his best prospects see. "Radio never did sell real estate," he observed recently, "but TV's different. We think it's been fairly successful." (NEWS continued on page 88)



BRIXMENT

is more plastic!

ONE of the most outstanding characteristics of Brixment is its plasticity. Its working qualities are comparable to those of lime putty. Because of this unusual plasticity, a bag of Brixment will carry three full cubic feet of sand, and still make good workable mortar. . . .

This exceptional workability makes it easy for the bricklayer to secure neat, clean brickwork, with the brick properly bedded and the joints well filled. The final result is a better job, at lower cost.



LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KENTUCKY



PRIZEWINNER: The Architectural League of New York gave its \$200 Birch Burdette Long prize for architectural rendering to Designer Robert Schwartz for this pencil and wash drawing of Ketchum, Gina & Sharp's Swifton Shopping Center. Judges praised the drawing's "realistic yet decorative character," said that Schwartz' "simple, direct and fresh technique brings out the detail and yet maintains the general character of the design." Schwartz, 27, a recent graduate from Columbia University's School of Architecture, is an associate of Architect Vincent Furno in a rendering business in New York. The shopping center—still on the drawing boards—will be built by Jonathan Woodner Co. in a Cincinnati suburb.

WASTE-SAVERS: NPA lauds electric appliance makers

Makers of electric appliances got a pat on the back from NPA last month for adopting "ingenious ways" to save scarce nickel. Nickel is the production bottleneck for items like toasters, waffle irons, coffee makers, irons, cake mixers, heating pads. No satisfactory substitute is known for resistance material in heating elements, alloys for springs, contact parts subject to red hot temperatures and plating to resist combined heat and abrasion. The U.S. imports all its nickel, mostly from Canada. Among the conservation practices cited by NPA:

► To save 3,500 pounds of nickel a month, an Illinois firm gave up plating nickel directly on steel. Instead, it begins with a light copper plating, adds a light nickel coat, tops it with chrome plate.

► A Connecticut manufacturer trimmed the nickel plate content of toaster shells, grill covers and bases by 35 to 50%.

► A small Chicago company expects to reduce its nickel needs 81% by conserving nickel in electroplating and stainless steel alloys, eliminating nickel as a foundation for chrome plating.

TITLE 608: only 1½% foreclosed since 1942

FHA totted up its bad guesses last month, found only 43 Title 608 projects gone sour out of the 6,650 insured since the Title was created in 1942. The flops comprise 6,290 units of the program's 432,000. Foreclosure rate: a low 1.5%. Two projects have already been resold, for 10% down, or 5% plus one-half of net income until the remaining 5% is paid up. Major cause for failure: over-anticipation of the market, especially in towns unaccustomed to mass rental housing.

ATOM TOWNS such headaches AEC hopes to sell them

Running the A-bomb plant towns of Oak Ridge, Tenn., and Richland, Wash., proved such a nuisance that Atomic Energy Commissioner T. K. Glennan said last month they account for "5% of our budget, but... 90% of our headaches." A year ago, the AEC called on four experts for advice on how to get the commission out of the housing business. The panel, headed by R. G. Scurry, handed the commission this advice: sell both towns to their residents, over a period of years; provide Federal subsidies to cover municipal deficits. The AEC said it would have the towns appraised, preparatory to sale.

HOMES ON WHEELS

Of the 41,000 trailers sold in the first 9 months of 1951, defense workers bought 68% and armed forces personnel bought 25%, reported the Trailer Coach Manufacturers Association. One American in 100 now lives in a trailer.

NEW... FACTUAL... COMPREHENSIVE... FIRE PROTECTION BOOKLET



ARCHITECTS • ENGINEERS • BUILDING OWNERS • MANAGEMENT

Here's a chance to get the full story on Engineered Fire Protection. 36 colorfully illustrated pages tell all you need to know about fire safety, including the economies of protecting your business... complete data on installation, operation and maintenance of "Automatic Sprinkler" devices and systems... *valuable information for your files!!* Use the handy coupon below to order your free copy of "The A-B-C of Fire Protection."

"AUTOMATIC" SPRINKLER CORP. OF AMERICA, YOUNGSTOWN 1, OHIO

"Automatic" Sprinkler

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Please accept my order for the new free booklet, "The A-B-C of FIRE PROTECTION"

Name _____ Position _____

Company _____ Address _____

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DIGNITY

is built in...



Laboratory Building, Sylvania Electric Company,
Bayside, L. I. John H. Eisele Co., Inc., Builder

when you use **HANLEY**
DURAGLAZE BRICK

The Sylvania Electric Company's Bayside, Long Island, laboratory displays the ultimate in impressiveness and good taste.

This edifice was awarded 1st Prize by the Queens Chamber of Commerce as the most beautiful building erected in Queens in 1948.

Used in the building of this laboratory was Hanley No. 623 Duraglaze Brick—a light specked shade of limestone grey especially suited for modern designs.

In the years to come, the Sylvania Laboratory, like all buildings constructed of Hanley Duraglaze Brick, will retain the beauty that earned it a first prize.

Hanley Duraglaze Brick—a superb premium-quality brick which will not stain or discolor—is also available in the following controlled shades:

HANLEY COMPANY

I N C O R P O R A T E D

101 PARK AVE., NEW YORK 17, N. Y.

MURRAY HILL 9-4134

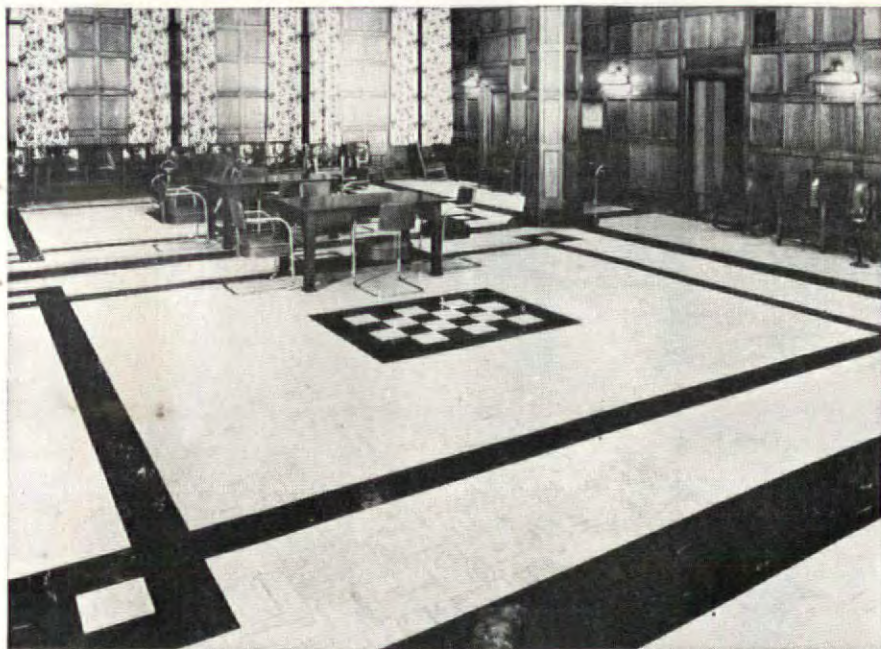


14545 Schaefer Highway, Detroit, Mich.

VERmont 7-3200

501 Pearl Grey
723 Pearl White—Light Speck
725 Pearl White—Medium Speck
824 Oyster Grey—Medium Speck

We welcome your inquiry for full information.



HOW WILL THIS FLOOR LOOK TWENTY YEARS FROM NOW?

That's a question you, as an architect, should ask yourself *before* you write specifications.

And you can be sure of the answer if you specify Wright Rubber Tile by name.

Why? Because hundreds of installations of Wright Rubber Tile have seen severe service for twenty to thirty years. They are still in service today, and they still look almost new.

Samples from some of these floors have been measured for wear, and these measurements indicate a life of at least a hundred years.

What greater proof could you want? No laboratory tests—no glib promises—can take the place of proof like this.

Your clients pay you to know—not to guess! Consider this proof the next time you specify a floor—and you will specify Wright Rubber Tile!

FREE SAMPLE KIT FOR ARCHITECTS

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

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



WRIGHT RUBBER TILE

FLOORS OF DISTINCTION

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

2963

LETTERS

CHAOS IN CONSTRUCTION CONTROLS

Sirs:

Your September editorial on "The Chaos in Construction Controls—An Open Letter to NPA" is to the point. I gave a copy of it to Kenneth Wischmeyer and Howard Eichenbaum who stopped in here on their way to the Portland meeting of the Board of AIA. What is covered in this editorial is the No. 1 problem on their agenda.

JOHN WELLBORN ROOT, *Architect*
Holabird & Root & Burgee
Chicago, Ill.

Sirs:

I heartily agree. . . .

O. M. WHIPPLE
Financial Vice President
The Mutual Life Insurance Co. of N. Y.
New York, N. Y.

Sirs:

Your September editorial is a very excellent job. Certainly nothing can be more ridiculous than the way the building industry has been split within the Government agencies to obtain approvals for control materials. Looking at this problem with a year or more experience behind me, I have come to the conclusion that it is very necessary that the building industry as a whole get together in some sort of unified council. Many of the components of such a council are already instituted and it only needs a strong push to get them together into an organization of their own.

I am going to propose at the next meeting of the Construction Committee of the Chamber of Commerce in Washington that some action be initiated so that we can go to Government officials and departments with much the same strength that the automotive industry employs through its major members. . . .

RALPH WALKER, *Architect*
Voorhees, Walker, Foley & Smith
New York, N. Y.

Sirs:

You have quite properly called the turn. I hope there will be some repercussions leading to the improvement of the situation.

WALTER C. VOSS
Dept. of Building, Engineering & Construction
Massachusetts Institute of Technology
Cambridge, Mass.

Sirs:

I would suggest that a copy of this be sent to every one of the Congressmen so that they also may know the chaos that presently exists in the construction industry, due to regulations, controls, laws, etc., etc.

ROBERT E. OTT, *General Manager*
Houses Division
Harnischfeger Corp.
Port Washington, Wisc.

(Continued on page 92)

hooose

“color-engineered” **FACING TILE** for the interiors you design and construct...



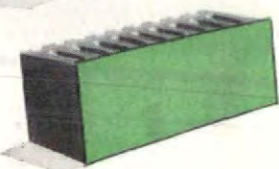
to increase production



raise morale



lower maintenance



aid lighting

Are you specifying scientifically developed colors — the right colors to help interiors accomplish their full purpose?

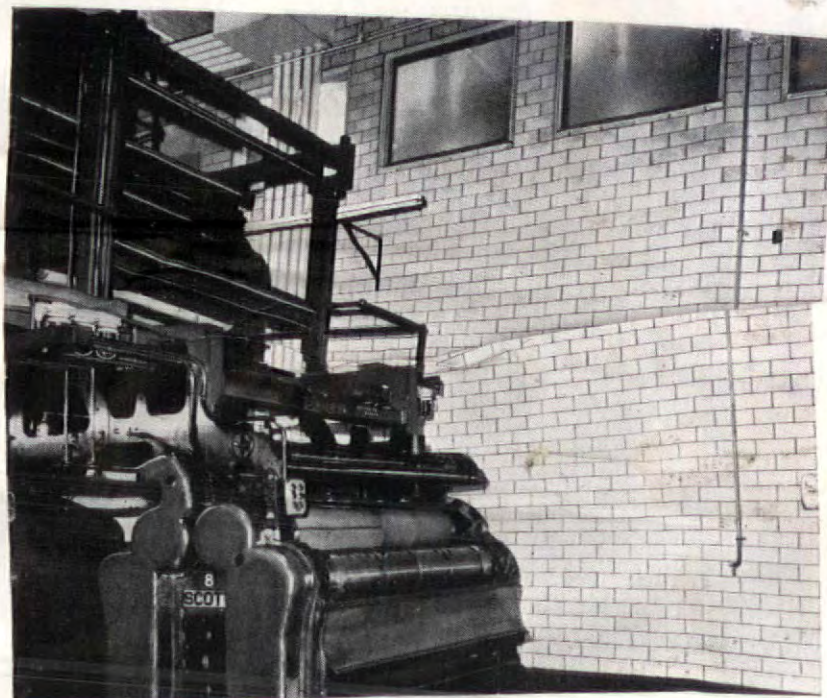
For schools, hospitals, public buildings, commercial and industrial buildings—color authorities say you should select color on a scientific basis.

You can do so with “color-engineered” Facing Tile. These colors have been scientifically selected and developed to help interiors accomplish their purpose.



Send for your free copy NOW

Learn what the right color can do for building interiors! Learn what are the right colors! Send for your copy of “The Scientific Approach to Color Specification.” It was written in collaboration with noted color authority, Faber Birren. It is yours upon request. Write Dept. MB-11 of the Institute.



Now, any building interior can have all the advantages of scientific color as well as all the outstanding building advantages of structural clay facing tile . . . resistance to wear and tear, durability, low-cost construction and maintenance. You build a permanent wall and a permanent functional finish in one operation.

In addition, clay is not a vital raw material. There is plenty available. By choosing Facing Tile you are conserving vital raw materials for essential military and civilian use . . . another reason for building with Facing Tile.

FACING TILE INSTITUTE

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



"takes" a 75 ft. curve



burgh, Pa. is a typical example of *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.



LETTERS

Sirs:

I wholly agree with the theme and of your letter to Mr. Fleischmann. We on a little spot in agreeing that we need a Government agency. It would be more if we could promulgate a trade of this necessary agency for a dozen or so second-hand. We probably would not get much credit trade-in however, due to too many sticky on the upholstery. . . .

CHARLES D. CLARK
Seward H. Mott Asso
Land Planning Consul
Washington, D. C.

Sirs:

I do not agree entirely. . . . A lot can be done in centralizing construction, but I believe this can be overdone. The law of diminishing returns begins to operate. If all construction were amalgamated under one agency, then the construction becomes an end within itself and not the operating purposes of the agency which should be paramount. . . .

However, I believe there is need for some centralization, but it should be very carefully studied with the prime aim of not injuring the primary objectives and operations of the individual agencies, by taking their construction away from them. . . .

J. S. BRADON
Major General, USA, Ret.
New York, N. Y.

Sirs:

. . . All you say is true, and I hope that your editorial will get results, because construction and housing, from the standpoint of controls, are in a mess.

The situation is a carry-over from peacetime operations. The Army, Navy and Air Corps, State Department and a handful of other agencies and departments require housing and have housing departments. Between these departments and FHA and PHA, there is really not even liaison; in fact, they compete with each other, with the result that our Government housing costs entirely too much and the administration of our housing agencies represents waste totaling millions.

I hope that somehow, somewhere we can arrive at the place where Government activity in housing is concentrated in one department or agency. . . . I cannot see why the difference in means by which our houses are paid for need be the basis for the creation of a lot of agencies.

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

Sirs:

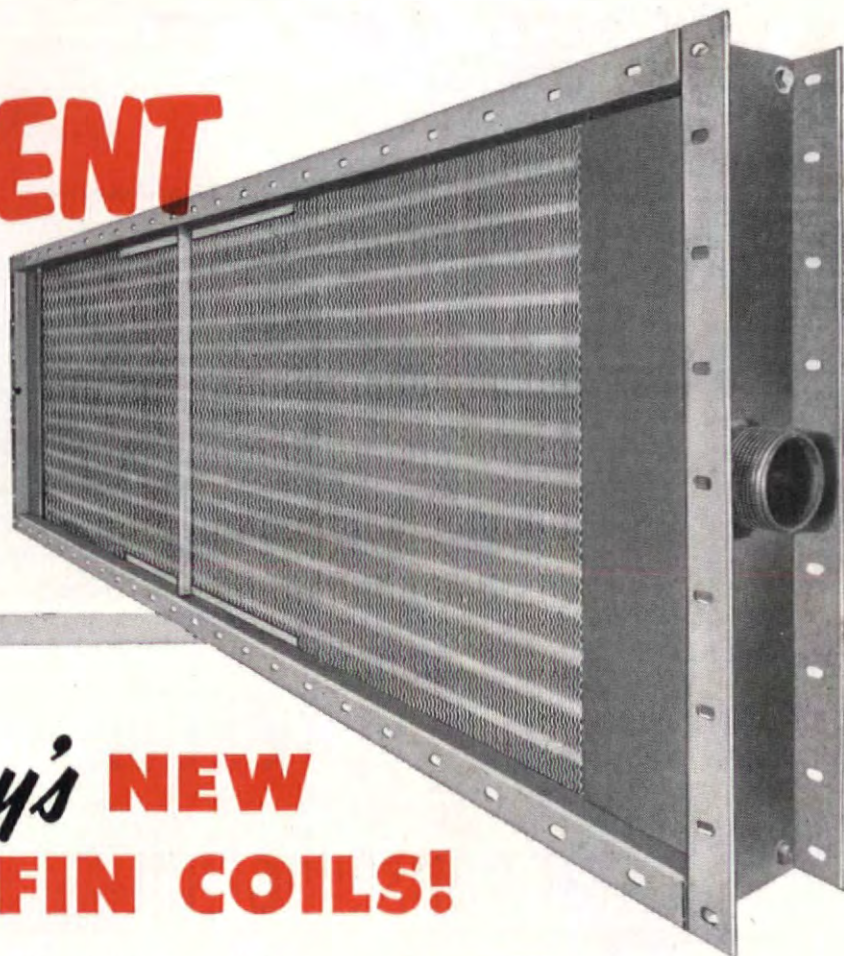
I thoroughly agree with you. As one observes the various agencies, all doing the same thing in a different way with no idea of central control, one wonders what it's all about. . . .

GEORGE B. UNDERWOOD, Pres.
Underwood Mortgage & Title Co.
Irvington, N. J.

(Continued on page 94)

DIFFERENT

*and
what a
difference!*



McQuay's **NEW** **RIPPLE-FIN COILS!**

McQuay's new ripple-fin surface is the product of years of research aimed at producing the ultimate in heat transfer for any weight of metal. High efficiency is assured by forcing the air to follow an ever-changing direction of flow in passing through the coil. Thus the air repeatedly contacts the coil surface to give maximum contact time, maximum contact velocity, and a resultant optimum heat transfer.

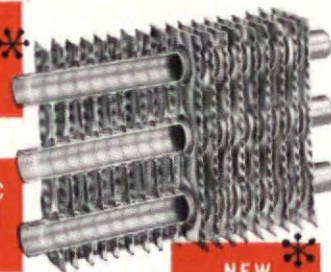
With this advance in design McQuay retains the staggered tube and the McQuay rippled edge features, so well known in the industry and which contribute greatly to higher heat transfer, construction ruggedness, and eye appeal.

McQuay heating (blast) coils are available in a wide variety of styles and sizes. Hot water, cold water, brine, direct expansion, and refrigerant condensing coils are also available for practically every type of application. Write McQuay Inc., 1609 Broadway St., N.E., Minneapolis 13, Minn. Representatives in all principal cities.

WIDE
FIN
COLLARS

HYDRAULIC
EXPANDED
TUBES

NEW
RIPPLE-
FINS



**EXCLUSIVELY YOURS
IN McQuay COILS!**

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HEATING • AIR CONDITIONING • REFRIGERATION

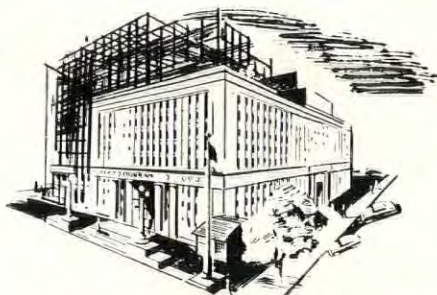




Defense plant expansion or reconversion



Hospital and laboratory construction



National, state, and local government building

4 aids to timely electrical specifications for essential construction

Today, with the emphasis on essential construction, it's vitally important for you to keep informed of changes in availability of electrical materials.

That's why you'll find it helpful to consult with Graybar while your job is still on the boards.

Though shortages are bound to occur, Graybar can assist you with accurate procurement information on electrical supplies for defense plants, schools, hospitals, and government buildings.

Take advantage of these 4 important Graybar aids to efficient job planning—they're services that can help you write "specs" that will avoid construction-site delays. The Graybar office near you will be glad to furnish whatever information you or your electrical contractor requires.

1 A nation-wide warehouse system that often anticipates and forestalls local shortages before they become critical.

2 The services of experienced Graybar Construction Specialists to assist you in solving out-of-the-ordinary problems . . . to help you select alternate methods and obtainable materials.

3 Complete catalog service on the more than 100,000 electrical items that Graybar distributes. Information from Graybar's own catalogs—plus those of over 200 leading electrical manufacturers—is immediately available to help you write job "specs".

4 Quotation service and delivery information available to you or your electrical contractor through your local Graybar Representative.

159-1311

Avoid electrical delays—
plan ahead... via

GraybaR

GRAYBAR ELECTRIC COMPANY, INC.
Executive Offices: Graybar Building, New York 17

IN OVER
100 PRINCIPAL CITIES

LETTERS

Sirs:

I agree with everything you say except I cannot bring myself to agree that we should have any additional "Coordinating Agencies." I think our whole trouble is that we have too many "Coordinating Agencies" and I can see no hope for any business until Government controls are removed entirely.

A. P. RICHARDS
Vice President and Treasurer
The Ohio Can & Crown Co.
Massillon, Ohio

Sirs:

In our work, we are supposed to be able to advise some of the designing engineers and architects on what they can and cannot do with certain materials, but frankly our opinions seem to be worthless in the face of the general confusion shown in NPA.

I sincerely hope that everyone interested in the construction industry directly or indirectly will back you in your complaint.

JOHN T. ROHDE
B-D-R Engineering Corp.
North Kansas City, Mo.

EVEN IN ROCK-RIBBED NEW ENGLAND

Sirs:

We submitted a design in the NAHB-FORUM House Design Competition. After the competition closed and the winners and some of your selected correspondence were published in THE MAGAZINE OF BUILDING, we were so aggravated by some of that correspondence that we got to work here in the New Haven area to see what we could prove.

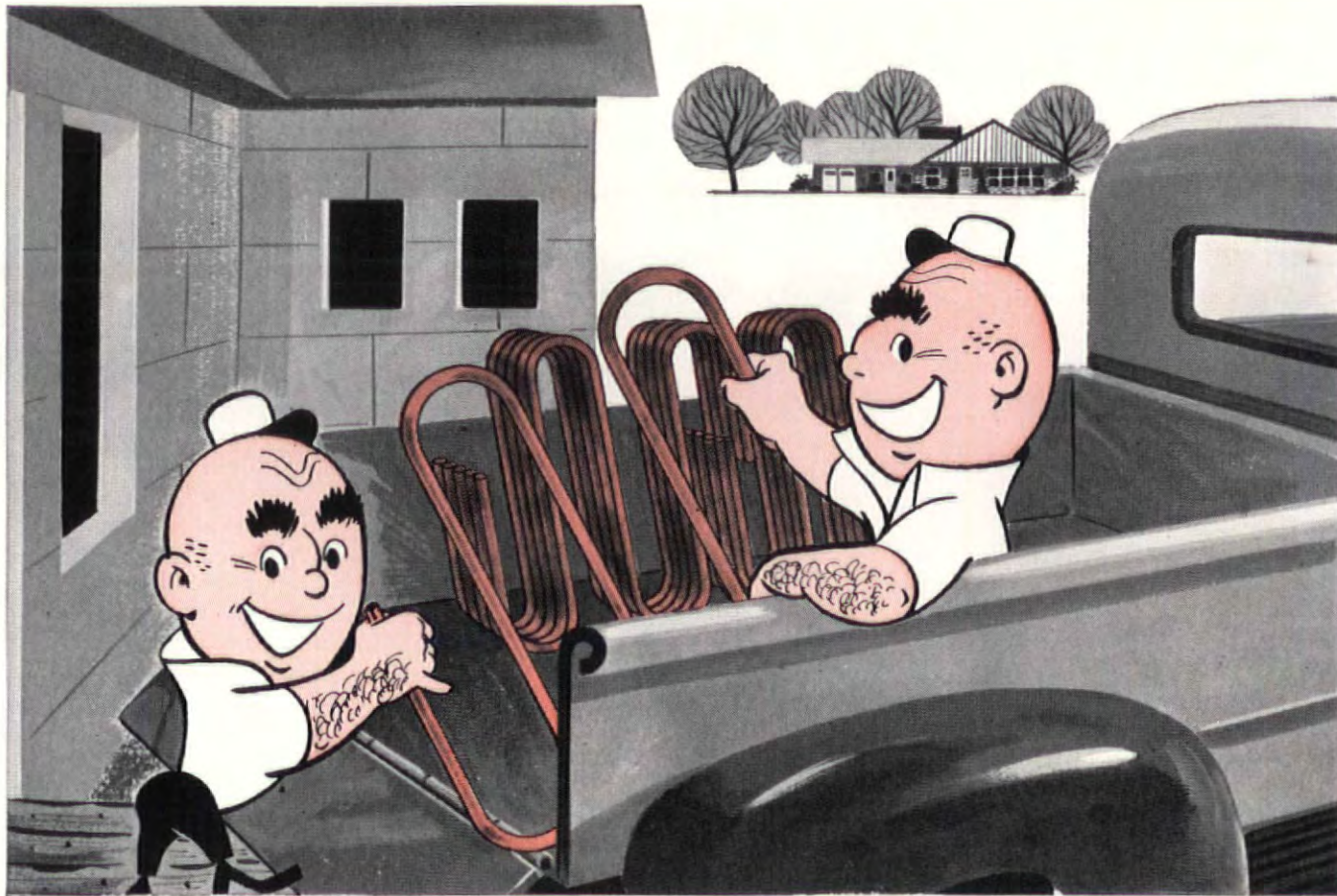
The correspondence to which I refer was from some of the builders who saw the winning designs and were repulsed by these expressions of progress. This same attitude was reflected in the opinions of local bankers, real estate men and builders. To find out once and for all who was right and who was wrong, we organized a group of builders here in New Haven, got some backing and obtained control of about 100 acres.

We simplified our design submitted for the competition, translated it into work drawings and went blindly ahead with construction. We have three units under construction. We've done no advertising, put up no signboards, and have had more buyers than houses to sell, and could be selling futures as far ahead as April. The reaction to the house has been extremely gratifying and thus far has borne out all our convictions. . . .

We have four variations on the roof system but the one which is most popular so far is the flat roof. We have written our own zoning ordinances, so to speak, for the area by the use of deed restrictions. We are developing a very unorthodox system of set-backs based entirely on correct orientation of the houses. . . .

The houses are being built to sell with a third of an acre of land in the \$10,000-\$11,000 bracket. So it looks as though even in rock-ribbed New

(Continued on page 96)



Better radiant heating systems start with Bundyweld Tubing

Bundyweld Tubing performs better in your systems, cuts waste, saves time in fabrication, too.

It stands alone, the only tubing double-walled from a single strip, with an exclusive beveled seam-edge. It's copper-brazed through 360° of wall contact into a smoother, stronger, solid-wall tube that spells leakproof, efficient radiant heating systems right from the start.

Bundyweld comes to you in twenty-foot lengths with

one end expanded if specified. It fabricates quickly, easily at your shop or building site. No kid-glove handling; it's ductile, yet extra-strong. One man easily forms Bundyweld on a simple bending fixture. Just two men quickly position the lightweight, rigid grids.

Get more detailed information on the *unique* radiant heating advantages that double-walled Bundyweld offers. Check your *Sweet's Architectural File* or write us now. **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.



SIZES UP
TO 5/8" O.D.

NOTE the exclusive patented Bundyweld beveled edge, which affords a smoother joint, absence of bead and less chance for any leakage.

WEISART

COMPARTMENTS

For Today's Fine Buildings



Partial view of exterior Lever Brothers Los Angeles plant. Welton Becket, Architect. Bechtel Corporation, Contractors.

One of the toilet rooms in the new office and factory of Lever Brothers in Los Angeles, all of which are equipped with WeisArt compartments.

**SMOOTH MODERN
LINES • LUSTROUS
FINISH IN CHOICE OF
24 COLORS...**

FOR THIS strikingly modern industrial structure designed by Welton Becket for Lever Brothers in Los Angeles — and for the new General Motors Technical Center, Detroit, designed by Eero Saarinen and Associates, the architects have chosen WeisArt Toilet Compartments.

These are but two of many such outstanding projects for which WeisArt compartments have been selected. This rapidly increasing use of WeisArt in today's fine buildings is striking proof that these compartments meet the most exacting standards in design and modern building techniques.

For fine appearance — for the utmost in sanitation — for color to harmonize with any decor — for engineered construction that assures long years of trouble-free service, specify WeisArt — *toilet compartments for today's fine buildings.*

Write for detailing data and complete chart of 24 colors.

HENRY WEIS MFG. CO., INC.
1102 Weisart Building, Elkhart, Indiana

LETTERS

England, you are right in backing contemporary design and we are sitting in the midst of the land of opportunity with innumerable customers just waiting for the chance to buy a low-cost contemporary house.

PETER POWERS HALE
New Haven, Conn.

WASTE IN APARTMENT BUILDING

Sirs:

There have been many suggestions as to how to join the attack on waste in building. One sure way of eliminating waste in materials and dollars is to plan efficiently. The 50% to 55% usable floor space in the multiple dwelling could be increased to 60% plus.

When a local code permits 20 construction rooms per floor per 3' wide stair and the plan shows only 16 construction rooms, the stair is 80% efficient. This is also true for the elevator, incinerator, standpipe, etc. The result is higher construction cost and higher room rent.

This waste occurs in both public and private building, notably in large-scale housing projects. By using the latest techniques in planning and construction, more and larger rooms will be gained in less building area and cube than the conventional plan and will save 10% to 15% in construction and maintenance costs. A gain to the builder, the tenant and the nation.

CHARLES HENRY SACKS, *Architect*
Brooklyn, N. Y.

LOGICAL CONTRACT

Sirs:

... The Eastgate contract form outlined in your May issue (p. 127) is about the best and most logical approach to a construction contract that we have seen or heard about.

HORACE BOLDING, *Purchasing Agent*
Braniff International Airways
Dallas, Tex.

INDUSTRIAL DECENTRALIZATION

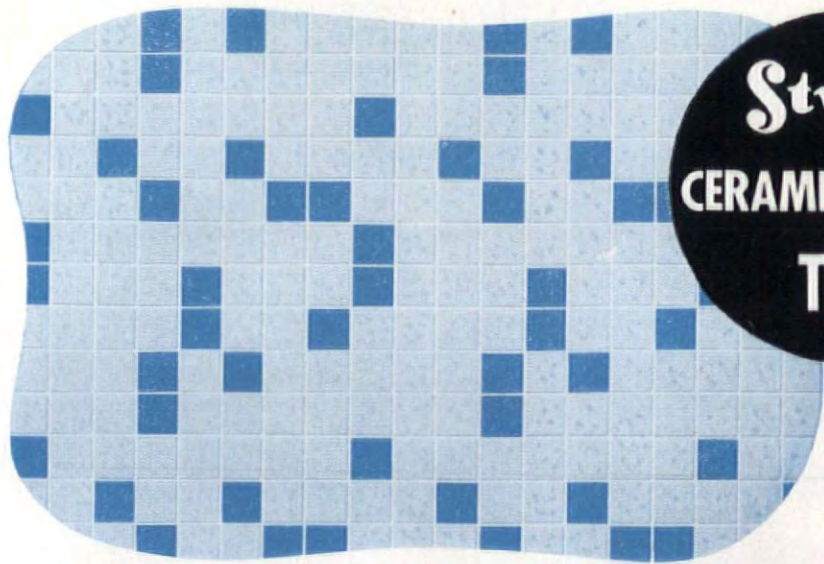
Sirs:

The article in the July issue on how General Electric is building small suburban plants and why ... was excellent in preparation, in the logic used and the facts that were presented. However, I found two things about the article which were not to my liking ...:

1. Repeated use was made of the phrase "satellite plants." Today big business is plagued with enough troubles without borrowing any of the language that in today's press is used to describe Joe Stalin's buddies. Someone had better devise a better description of GE's branch plants.

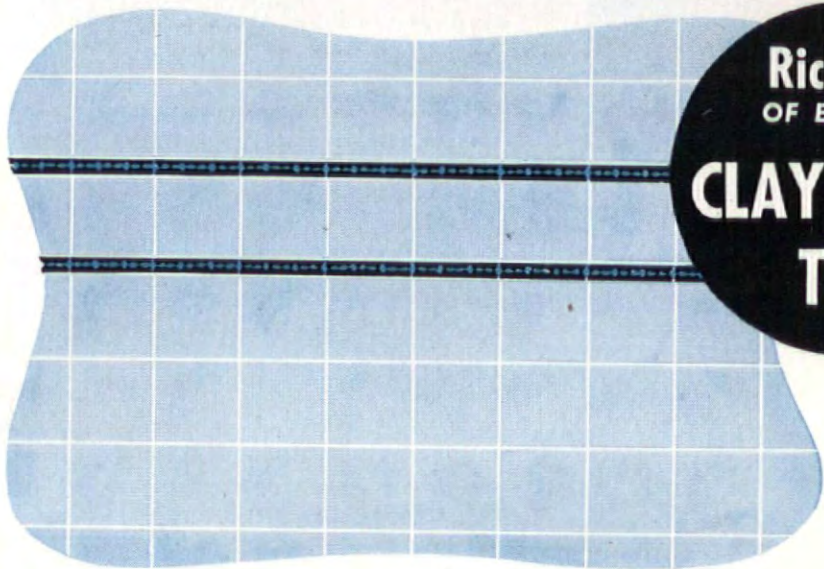
2. It is perhaps true that "electronics is not a business but a science"; however, the impact that a large plant makes on a small town or community when such a location is chosen might be considered from a scientific approach also.

(Continued on page 98)



Stylon
CERAMIC FLOOR
TILE

*Beautiful
Economical
Enduring*



**Richards
OF ENGLAND**
CLAY WALL
TILE



Preferred by

**ARCHITECTS
BUILDERS
INSTALLERS**

Here is a *new* concept of Beauty, Endurance, and Economy for the Architect, Builder, and Installer . . . for Stylon, and Richards of England, with their *combined facilities*, now bring you a *truly* modern line of Floor and Wall Tiles . . . *dazzling* with new true-tone colors, *delicate* tints and *exquisite* mottled effects . . . an array so *brilliant* and so *distinguished* that hundreds of new color and design combinations are now possible.

Whether the job is *big* or *small* . . . whether you have a project on the board for new *building* or *modernization* work, yours will be a *wise* decision to recommend Stylon and Richards of England. You can *assure* your clients of *Beauty* they can *see* . . . *Economy* they can *measure* . . . and *Endurance* they can *gauge*.

Stylon

CORPORATION

857 Commonwealth Avenue
Boston 15, Mass.

**BEAUTIFICATION
FOR
THOSE WHO BUILD**

Stylon Corporation
857 Commonwealth Avenue, Boston 15, Mass.
Gentlemen: Please rush me latest literature on Stylon and Richards of England.
Your Name
Firm's Name.....
Street
CityState



leaves PLASCOR unhurt

Acid spillage can play havoc with most laboratory floors. But if your lab floor is Plascor, you know you're safe. For this tough Tygon vinyl plastic floor tile is built to withstand acid and alkali attack.

But chemical resistance is only one of Plascor's outstanding advantages for laboratory floors. Plascor is so quiet you can hardly hear a footstep. Plascor's springy resilience takes fatigue out of standing leg muscles. Plascor is a safe floor to stand or walk upon—slip-resistant dry or wet. Plascor's "tight" surface makes for extra long life and amazingly easy maintenance.

Plascor is made of Tygon vinyl plastic and resin-impregnated cork, molded under heat and pressure into tiles 8½", 11", 17" or 34" square and ½" thick. It is made in eleven attractive colors with harmonizing feature strip and cove base. Plascor is installed like rubber or asphalt by Plascor franchised flooring contractors.

If you have a lab project on your board you'll want to obtain late up-to-date information on PLASCOR. Write Flooring Division, The U.S. Stoneware Co., Akron 9, Ohio.

PLASCOR

250C

THE TYGON VINYL-PLASTIC FLOOR TILE

LETTERS

Public relations is not mentioned in the article and it is evidently taken for granted that GE enjoys good public relations—such is not always the case with many industries and should not be taken for granted. . . .

J. D. WILSON

*E. I. du Pont de Nemours & Co.
Camden, S. C.*

Sirs:

. . . I congratulate the author. . . .

PAUL S. RANCK, *Pres. & Treas.*

*The Union Central Life Insurance Co.
New York, N. Y.*

Sirs:

I found the article on General Electric Co.'s program for suburban plants very interesting.

As more information is made available concerning the basic policies and reasons for the dispersion plan of various manufacturers . . . it helps the rest of us to properly evaluate our future plans for expansion.

W. E. WHITCOMB

*Eastman Kodak Co.
Rochester, N. Y.*

Sirs:

The article was absorbing, factual, well presented and a challenge to other large industrial companies. The article held my attention through an intriguing presentation of the facts of production without the usual fanfare of technicalities and copious statistics. . . .

The very fact that it has been possible for a \$2 billion (gross sales) company to decentralize its operations and still maintain efficiency of operation as to management and production is a challenge of which other large U. S. industrial companies would do well to take note.

Keep up the good editorial work.

J. C. SPENCER

*Aluminum Co. of America
Atlanta, Ga.*

NO T

Sirs:

The description of our work at Trinity College (Sept. '51) is extremely interesting, but the name of this company is not James T. Stewart & Co. Inc. . . .

JOHN J. MANNING, *Pres.*

*James Stewart & Co. Inc.
New York, N. Y.*

LOW COST DORMITORIES

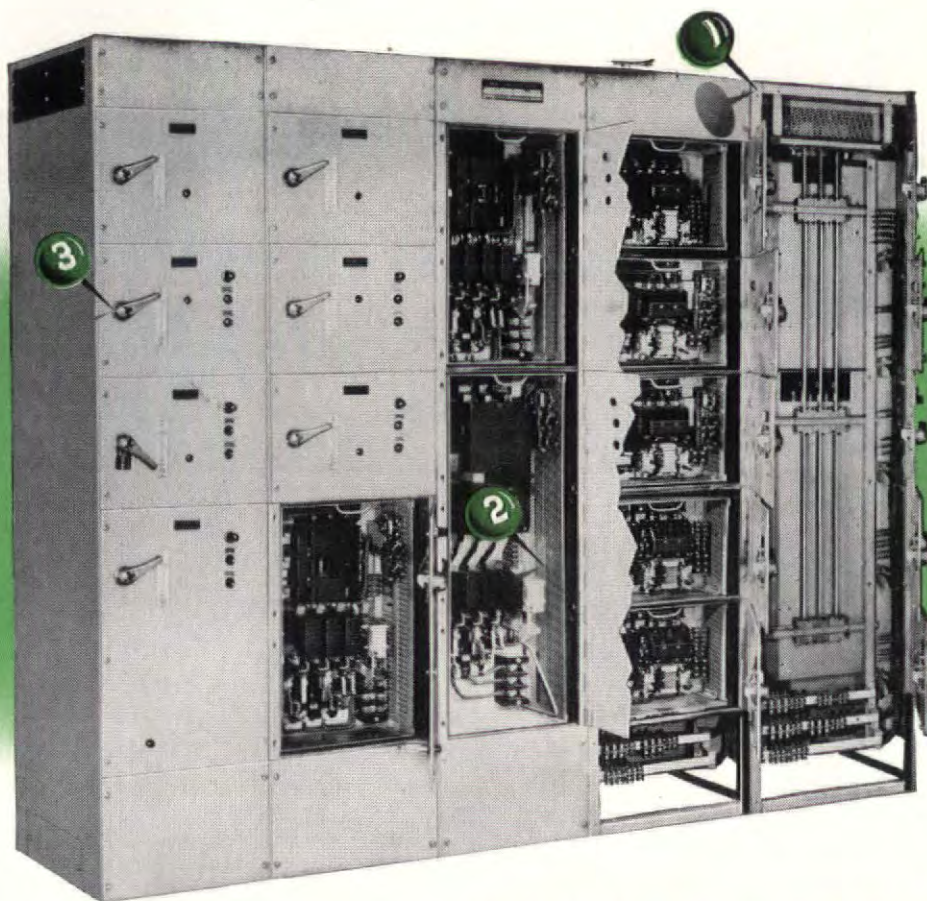
Sirs:

You did a customarily thorough job on several dormitories in the September issue. . . .

I was particularly interested in your statement "This need for constant space pinching is . . . somewhat of an indictment of the building industry for being unable nowadays to provide adequate living space at reasonable cost."




On this purely technical matter, your writer may not be acquainted with such successful

(Continued on page 102)



Everybody says **"WELL BUILT"**

And they really mean it when referring to Westinghouse Control Centers. Here you get top-quality construction which gives you all the advantages of centralized motor control... quality at every one of the following points:

-  **Sturdy, Self-Supporting, Tight Structures.** No need for angle iron or other bracing. No gaps or cracks to permit entrance of foreign objects. Interior is fully protected.
-  **Complete Baffling** localizes unusual arcing if faults occur. A short circuit in one starter unit cannot spread throughout the entire structure. Removable grill baffle on right side of each unit provides easy accessibility.
-  **Safety Doors,** with safety-interlocking handles, remain on the panel when the

starter unit is removed. Doors can be fastened closed over open space to prevent entrance by unauthorized personnel.

For further evidence of a "well-built" control center, check these features: self-cooling construction for foolproof ventilation, plug-in starter units, vertical and horizontal wiring troughs.

You get all these features and more, when you specify Westinghouse Control Centers. The complete story is contained in Booklet B-4213. For your copy, write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.
J-27009



YOU CAN BE SURE.. IF IT'S
Westinghouse

CONTROL CENTERS



you can always
be sure

Von Duprin

puts **QUALITY** first of all!

Consider the Von Duprin
A²—the very finest rim type
exit device. All drop-forge
bronze. Double-acting
crossbar—X-Bar reinforced!

● Decade after decade, Von Duprin has put *quality* first in the manufacture of fire and panic exit devices. Even now, with more and more materials going for defense, there will be no compromise in quality—or workmanship.

In view of the current material restrictions, you can expect a reasonable delay between the time your order is placed and when it is delivered. For this reason, we suggest you advise us of your needs as soon as they are anticipated. We will process each order as quickly as we can. *But we will never sacrifice safety, merely to satisfy speed!*

This is our promise to you . . . and with it, your assurance that every Von Duprin device will *always* provide rapid, dependable exit . . . "The Safe Way Out!"

Don't "bargain" in human life. Specify only Von Duprin.



FOR ACCIDENT HAZARD



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, IND.



new MATICO PARQUETRY

Patent Pending

tile flooring

IDEAL FOR INSTALLATION ON,
ABOVE OR BELOW GRADE!

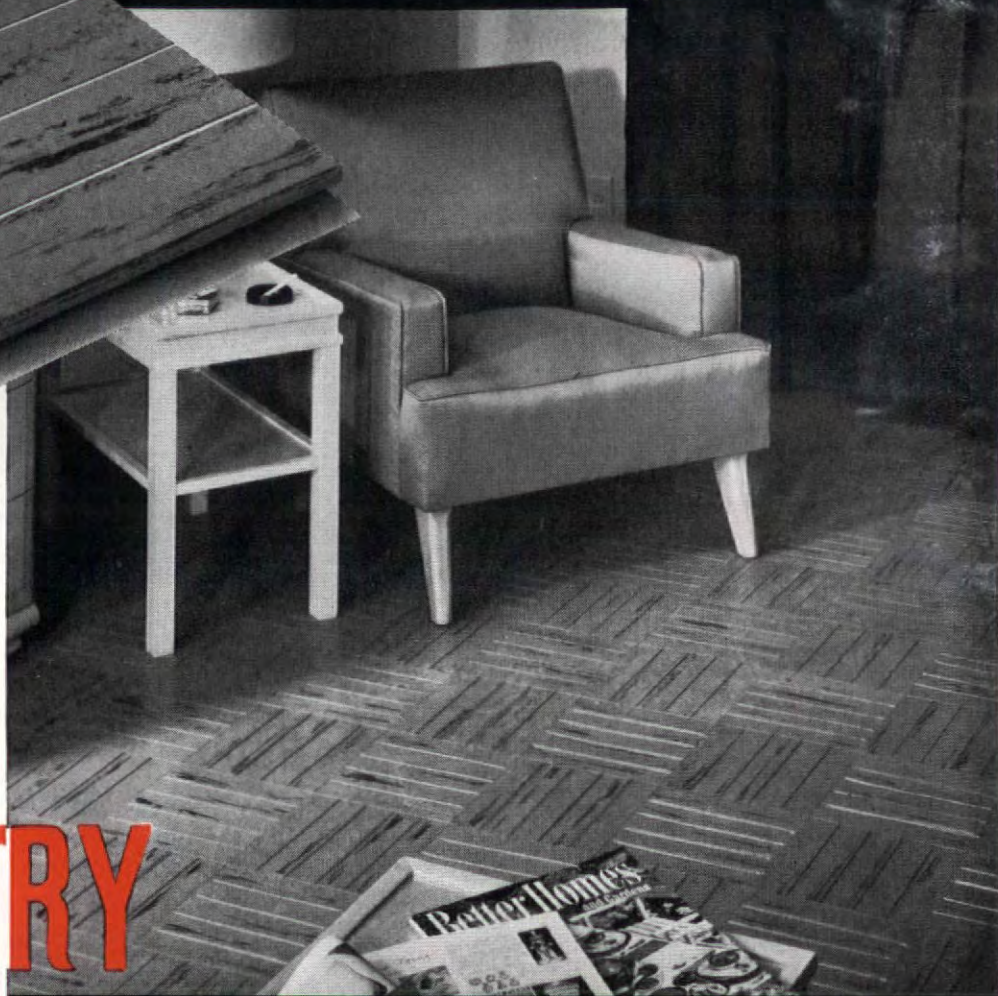


Get to know MATICO!

See our insert in
Sweet's Architectural File,
section 13g/MAS.

1A61

NOW the rich beauty of natural wood
in economical MATICO Asphalt Tile!



Model apartment in State House Apartments, Washington, D. C. • Builder: Jerry Maistico • Flooring Contractor: Associated Flooring Co., Inc.

For a floor that is both distinctively beautiful and truly economical, look to MATICO Parquetry Tile. MATICO Parquetry creates the luxurious effect of expensive, oak hardwood, parquetry flooring in low cost asphalt tile. It harmonizes readily with any decorative scheme or style of architecture, adds dignity to paneled rooms. You'll find MATICO Parquetry ideal for homes, office buildings, institutions and apartment houses. It assures years and years of wear . . . resists stains, scratches and water . . . is comfortably resilient underfoot . . . and may be installed on, above or below grade. Installation is both simple and fast, because Parquetry goes down tile by tile . . . comes in accurately-sized, precision-cut 9 x 9-inch squares. Be sure to consider MATICO Parquetry for your next job! Write for free samples of MATICO Parquetry on your business stationery!

Dept.
611

MASTIC TILE CORPORATION OF AMERICA

Member: Asphalt Tile Institute

Factories: Joliet, Ill. • Long Beach, Calif. • Newburgh, N. Y.

WORLD'S LARGEST PRODUCER OF ASPHALT TILE



... HANGARS

... PLANTS

**FOR ECONOMICAL HEAT
IN PLANT EXPANSION,
OR NEW BUILDINGS**

... BARRACKS



**Mueller
Climatron**

GAS-FIRED UNIT HEATERS

Type 150 Suspended Unit Heater — propeller fan type; 60,000 to 150,000 Btu capacities; shipped assembled and pre-wired. AGA and UL approved.

**Capacities and
Types for Every Job**



Blower Type 151 — Four sizes: 60,000 to 150,000 Btu input; all welded, horizontal design; AGA and UL approved. Shipped assembled and pre-wired.



Floor Type UH — nine sizes: from 180,000 to 540,000 Btu input in 45,000 increments; AGA approved. Easy to assemble and install.

FOR GAS **FOR OIL** **FOR COAL**

— save costs in many ways

For an independent heat source when plant expansion exceeds steam capacity, or for a compact, efficient heating system in new construction where time and costs are vital factors — the Mueller Climatron unit heater line supplies the perfect answer!

Here are a few of the many savings they offer:

- ✓ **Installation Cost is Low** — shipped pre-wired, completely assembled . . . just hang, connect to gas and power lines and vent. No special chimney needed.
- ✓ **Operating Cost is Low** — efficient horizontal design assures maximum heat extraction, minimum fuel costs.
- ✓ **Maintenance is Easy** — can be completely cleaned and serviced from below without lowering the unit.

When you think of space-heating think of Mueller Climatron. Capacities to fit any job you have. Write for complete information . . . **L. J. Mueller Furnace Co., 2020M W. Oklahoma Avenue, Milwaukee 15, Wis.**

B-56



Mueller Climatron

LETTERS

efforts as the "edge form" system. . . . A new use of an old material, this novel system has given institutions quick, inexpensive and permanent student housing.

You say ". . . Thiry spent almost \$5,000 per girl . . . and The Architects Collaborative . . . had to spend more than \$3,600 per student. . . ." On this financial matter . . . your writer made a rather limited foray into available statistics. Certainly the examples selected were not "economical" dormitories . . . nor do the figures indicate what service items they include.

Mittelbusher and Tourtelot, Chicago, did a Men's Residence Hall for McCormick Theological Seminary for \$8.92 per sq. ft., or \$1,600 per student. Architects' fees and the cost of furniture, much of which was specially designed by the architects, totaled an additional \$360 per student. . . .

Our own record reads \$1,322 in 1947, \$1,456.74 in 1948 and \$1,854.93 and \$2,044.14 in 1949. These cost-per-student figures include building construction, grading, extensive walks and roadways; the last two also include kitchen equipment, dining room furniture and draperies.

I wonder if your conclusion would not have been affected by a wider selection of cost data. . . .

WALKER O. CAIN, *Architect*
McKim, Mead & White
New York, N. Y.

• The New Hampton Institute dorms (also Sept. issue '51) promise to run McCormick Theological Seminary a close race on costs and is architecturally more subtle.—Ed.

SELLING SWING

Sirs:

We were very much interested in your article entitled "700 Sales in Four Weeks," (Sept. issue, p. 206).

Inasmuch as selling is becoming an important factor in our industry, and the article has such merit, all our builders should read it. . . .

Our compliments on your very fine magazine.

FRANK STEUDLEIN
Executive Vice President
Home Builders Association of Memphis
Memphis, Tenn.

LOWER TILT-UP COSTS

Sirs:

The September article about tilt-up construction (p. 194) is very harmful to us. . . . The Vacuum Concrete Lifter being one of my babies, I hope that the impression given in this story may be corrected. . . .

I know that our Pacific Coast representatives do not charge prices such as quoted by you ("9 to 12 cents per sq. ft.") for any fair-sized job. Our standard price for large-scale operation is 2 cents per sq. ft. for lifting. This price is now being paid by the Corbetta Construction Co. for the 760-unit housing development they are building at Great Lakes, Ill. Our price for the precasting of walls

(Continued on page 106)

Specify

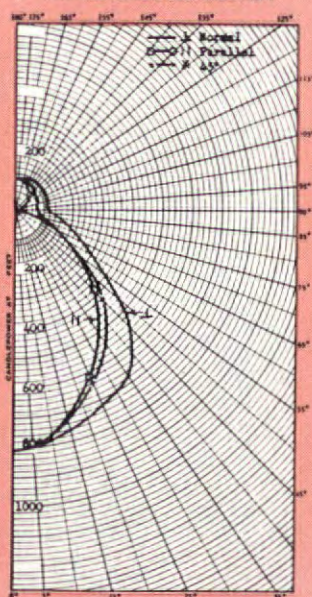
FLEUR-O-LIER

Coefficients of Utilization

LUMINAIRE DISTRIBUTION DATA					
MEAN VERTICAL					
ROOM HEIGHT FT.	ROOM WIDTH FT.	ROOM LENGTH FT.	ROOM HEIGHT FT.	ROOM WIDTH FT.	ROOM LENGTH FT.
180"	82.0	8	90"	43.0	60
170"	82.0	23	80"	35.0	109
160"	83.0	38	70"	30.0	171
150"	83.0	52	60"	26.0	259
140"	82.0	58	50"	23.0	339
130"	74.5	59	40"	20.0	355
120"	66.0	60	30"	17.0	301
110"	60.5	57	20"	14.0	209
100"	53.5	49	10"	8.5	77
90"	44.8	49	5"	4.5	23

These enable the specifier to select the proper unit for the job.

CANDLEPOWER DISTRIBUTION



A complete photometric test of the luminaire is provided.



The Fleur-O-Lier label identifies units that meet precise specifications and are ETL certified.

and know what lighting you'll get

It isn't necessary to *hope* you'll get satisfactory lighting from your fluorescent installation. Specify FLEUR-O-LIER equipment and you'll get these advantages:

1. FLEUR-O-LIER luminaires have been assigned a Fleur-O-Lier Index System rating by Electrical Testing Laboratories, Inc., after careful testing. This rating tells the exact illuminating characteristics of the unit. Complete photometric data and coefficients of utilization are provided.

You know what you're getting

2. FLEUR-O-LIER luminaires are certified by ETL to assure they meet rigid specifications covering mechanical and electrical features. They all use CERTIFIED BALLASTS and CERTIFIED STARTERS.

You know what you're getting

Free Booklet

Write for your free copy of the new booklet giving complete details of the Fleur-O-Lier Index System.

Ask also for Electrical Testing Laboratories' report on performance ratings assigned to the 300 Fleur-O-Lier fixtures.



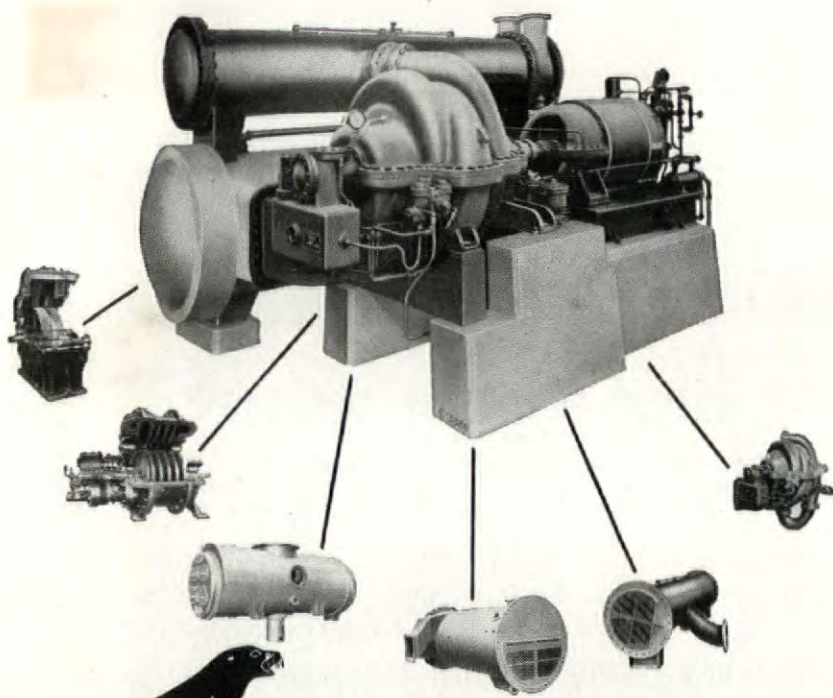
FLEUR-O-LIER

Manufacturers

2116 Keith Building

Cleveland 15, Ohio

Fleur-O-Lier is not the name of an individual manufacturer, but of a group of fixtures made by leading manufacturers. Participation in the Fleur-O-Lier program is open to any manufacturer who complies with Fleur-O-Lier requirements.



Where do you get

UNDIVIDED RESPONSIBILITY

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.

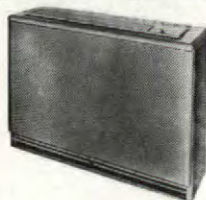
So the builder and owner can place full responsibility on the one supplier—Worthington.

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, ca-

pacities 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.



WORTHINGTON



AIR CONDITIONING AND REFRIGERATION

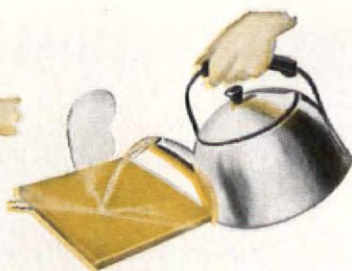
INVESTIGATE MORE WORTH WITH WORTHINGTON

Consult Classified Telephone Directory for nearest Worthington distributor. Worthington Pump and Machinery Corporation, Air Conditioning and Refrigeration Division, Harrison, N. J., specialists in air conditioning and refrigeration for more than 50 years.

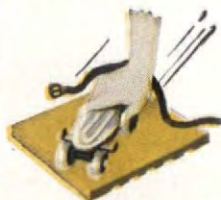
A.1.2



**TILE IS
FIREPROOF**



**TILE IS
WATERPROOF**



**TILE DEFIES
SCRATCHING**



**TILE CLEANS
LIKE CHINA**



**TILE LASTS
A LIFETIME**

TILE IS STAINPROOF



ONLY



DEFIES ALL SIX

No, spilling India ink on walls or floors is not a common occurrence. But what other wall or floor covering except Genuine Clay Tile could resist it so well? What other material can take a drenching with boiling water . . . stand up under knocks and scratches . . . and stay fade-proof and fireproof for a lifetime?

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

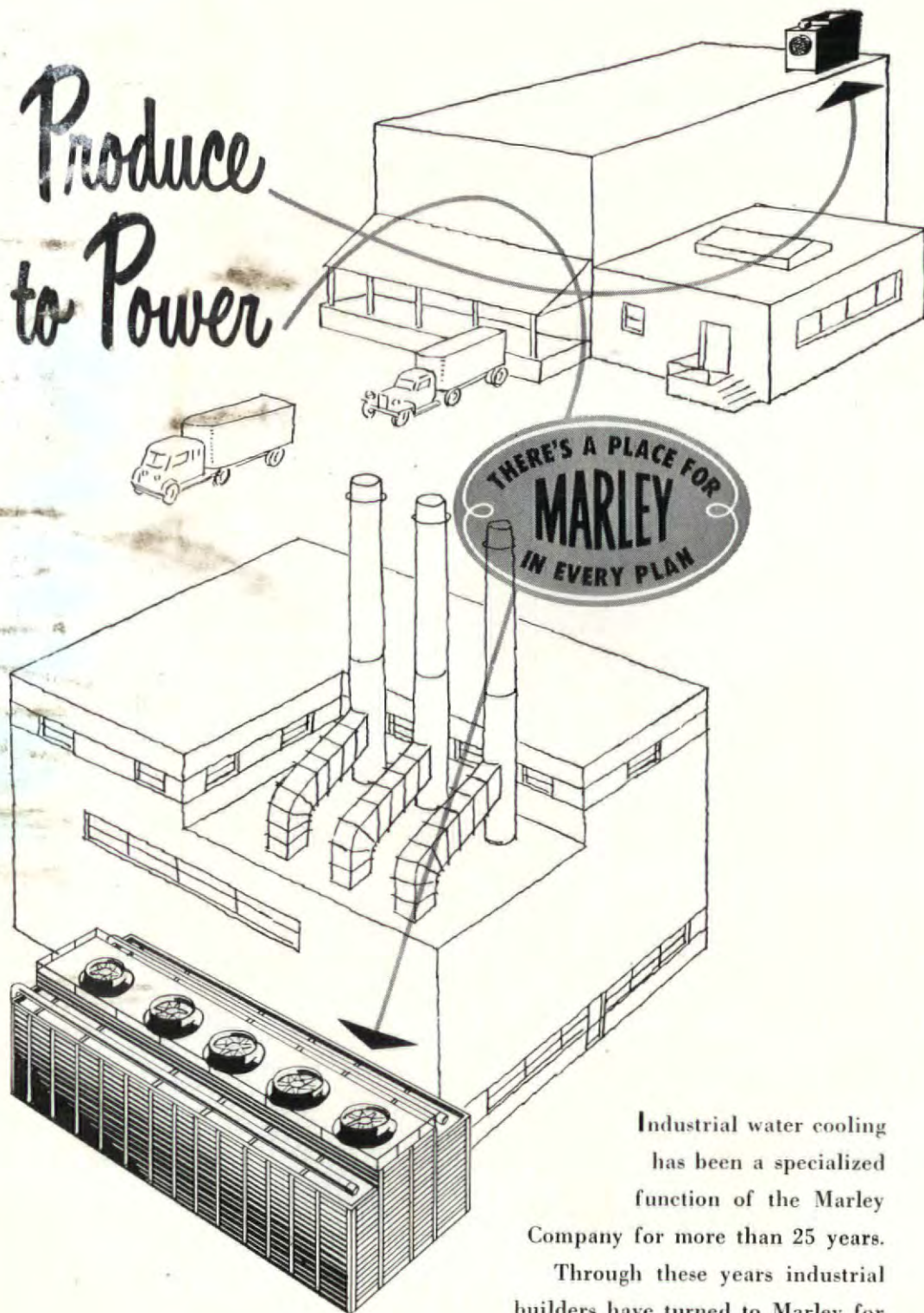
Tile Council of America, Room 3401, 10 East 40th St., New York 16, N. Y. or Room 433, 727 W. Seventh St., Los Angeles, Calif.

PARTICIPATING COMPANIES:

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

THE MODERN STYLE IS CLAY TILE

Produce to Power



Industrial water cooling
has been a specialized
function of the Marley
Company for more than 25 years.

Through these years industrial
builders have turned to Marley for
water cooling equipment with full confidence that Marley can
solve any water cooling problem presented. They know that in the
Marley line . . . the only complete line of water cooling towers
. . . they will find the proper equipment for the job at hand.

Whatever cooling range or water capacity is desired,
a Marley tower will fit the specification
accurately and economically.

In 46 cities there are Marley application engineers who
will gladly assist in selection and evaluation
of cooling towers. Their specialized training and
experience is at your disposal without obligation.

Producers of
DOUBLE-FLOW TOWERS
AQUATOWERS
VAIRFLO TOWERS
CONVENTIONAL TOWERS
DRICOOLES
NATURAL DRAFT TOWERS
SPRAY NOZZLES



The Marley Company, Inc.

Kansas City 5, Missouri

LETTERS

for the new Ford Motor Co. Tank Plant at Detroit is 5 cents per sq. ft. which includes both vacuum processing and vacuum lifting. . . . These are our standard prices for large-scale operations. Considering that no extra reinforcement is required and that with vacuum lifting the walls can be tilted up the morning after they are cast, we know that this is the most economical method of precast construction. . . .

K. P. BILLNER, *President*
Vacuum Concrete, Inc.
Philadelphia, Pa.

• The editors meant no harm to Inventor Billner's "baby," are glad to learn about the low-cost of vacuum processing big concrete jobs.—Ed.

86-MAN DESIGN TEAM

Sirs:

While I realize the space for your report on my design for the Lankenau Hospital (Aug. issue, '51, p. 134) was limited, I would like to credit our professional associates who helped in the research for and production of the project.

Most architects realize the tremendous "team" involved in planning a project of this magnitude and complexity, but I am certain that the layman would find it difficult to understand that at certain periods during the production of the documents, the architects, engineers and consultants numbered 86 men! . . .

Daniel E. Gay, a hospital administrator, and a member of the ACHA . . . did the research on site selection before the architect was retained. . . . Mr. Gay is the present Director of the Lankenau Hospital and arranged for my association with Dr. Donald Smelzer, a hospital consultant and a present Director of the Citizens' Hospital Planning Committee of Philadelphia; and Dr. Lucius Wilson, hospital consultant and Director of the Episcopal Hospital in Philadelphia. All of the stages of planning were cleared and studied with the help of these three consultants. . . .

I had a very helpful alliance in the mechanical and structural phases with consulting engineers: A. Ernest D'Ambly worked with my office in the planning of the plumbing, heating, ventilating, air conditioning and electrical equipment; Messrs. Ravell and Duncan were the structural consultants.

The firm of George Ewing, architects, are associated with me and have, from time to time, been helpful in the broad phases of the planning in connection with economics, zoning and in the preparation of the original presentation sketches.

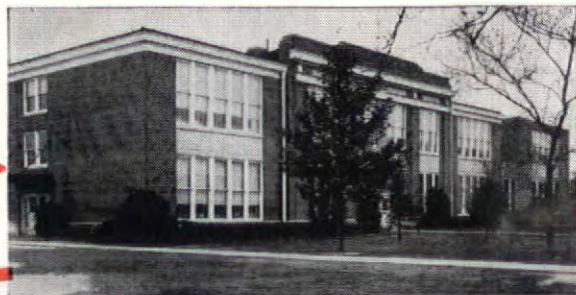
Harry Ahrens, who is associated with me in my office, was project manager. . . .

VINCENT G. KLING, *Architect*
Philadelphia, Pa.

ERRATA

The 22-story Wherry Act residential skyscraper for the Army in Chicago (Sept. issue, p. 45) was designed by A. Epstein & Sons, Inc., Engineers and Architects, not Ralph J. Epstein, who is the project engineer.—Ed.

BAYVIEW SCHOOL fuel bills cut in half



BY INSTALLATION OF NATIONAL COMMERCIAL STEEL BOILERS

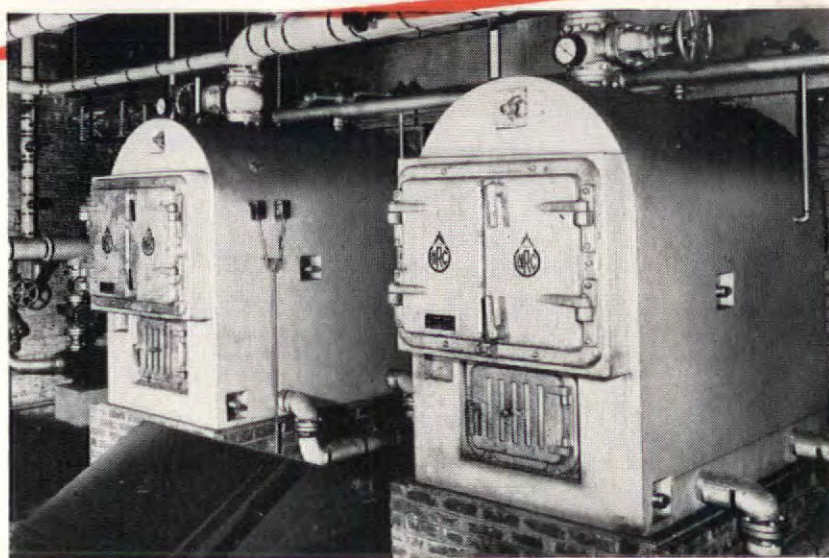
When a new addition to the Bayview Public School in Norfolk, Virginia, created a heating load too large for the ten year old boiler and warm air furnace, a new National automatic heating plant was suggested by the heating contractor to modernize the school's heating system.

Two stoker-fired, automatically-controlled National Commercial Steel Boilers were installed to replace the old hand-fired plant which was wasteful of fuel.

The new National Boilers were sized so that either one could handle 75% of the heating load, making it possible to use only one boiler in mild weather. National Art Radiators were also installed in the new classrooms.

The new National heating system, which has been in operation for the past two years, has been very satisfactory, according to the Director of Maintenance. Fuel bills are about one half of those formerly required even with the increased heating load.

Modernize with National Heating Products of quality and high efficiency. They are the best assurance of complete and lasting heating satisfaction.



Two National Commercial Steel Boilers, stoker-fired, installed in the basement of the enlarged Bayview School, Norfolk, Va. Coley & Petersen, Norfolk, Va., heating contractors.

OTHER PRODUCTS OF THE COMPLETE NATIONAL LINE



Cast iron National Heat Extractor boilers in sizes ranging in Net I-B-R Ratings from 170 to 10,300 sq. ft. of steam and from 270 to 16,480 sq. ft. of water.



National Steel Boilers in sizes ranging in SBI Net Ratings from 275 to 35,000 sq. ft. of steam and from 440 to 56,000 sq. ft. of water.



The new, all-in-one automatic National Packet Heating Unit for small homes, motels, diners and stores.



National Gas Boilers ranging in net ratings from 105 to 9,690 sq. ft. of steam and from 195 to 15,505 sq. ft. of water. A.G.A. approved for use with all gases.



National Art Baseboard



National Art & Aero Convectors



National Art Radiators



National Unit Heaters

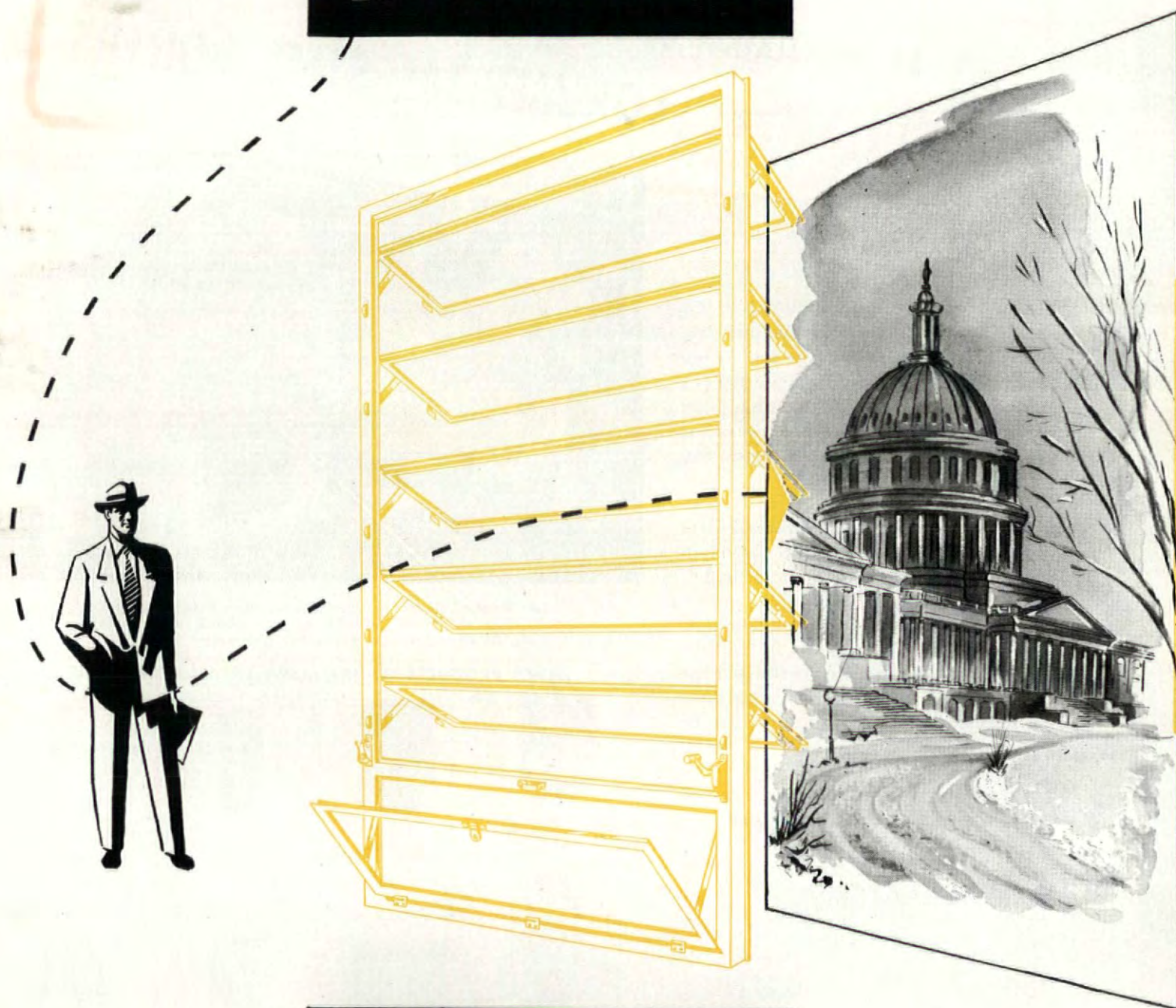
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THE NATIONAL RADIATOR COMPANY
JOHNSTOWN, PENNSYLVANIA

how an Architect

WHIPPED THE
WEATHER IN
WASHINGTON



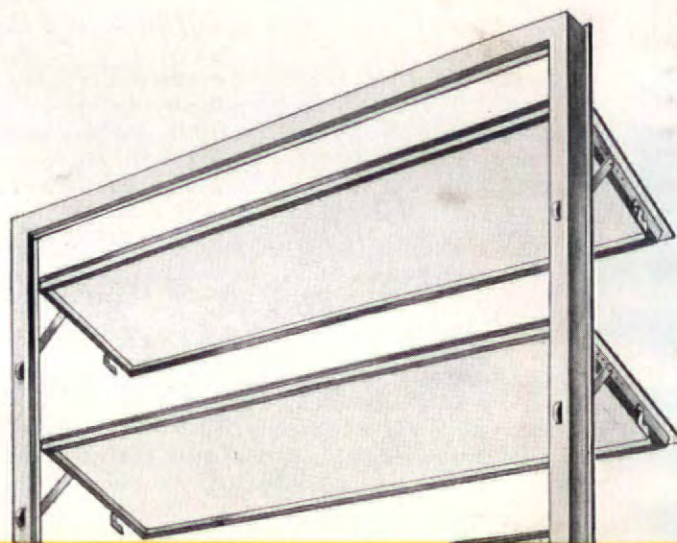
through

Auto-Lok
PATENTED

the perfect window

As any resident of the District will tell you, our nation's Capitol is no 'all-weather' paradise. Accordingly, in designing modern B'Nai Israel Synagogue* there, astute Architects Brandt & Waronoff looked first to Auto-Lok aluminum windows for basic, efficient and economic weather control. For here is a window -- The Perfect Window -- which opens widest, providing 100% draft-free ventilation, yet when closed is sealed like a refrigerator to reduce air infiltration to a minimum heretofore believed impossible. Auto-Lok's unrivaled tight closure means *real* savings in fuel and cooling costs. Left open, even when it's raining, it affords plentiful ventilation, yet keeps out the water... Actually, Auto-Lok is regarded as *The Perfect Window* because it alone combines the best features of all window types. For example, here are but a few of Auto-Lok's exclusive assets:

*Architects: Brandt & Waronoff, Washington, D. C.
Contractor: M. Cladny Construction Co., Washington, D. C.



- Tightest closing -- sealed like a refrigerator.
- Widest opening -- 100% ventilation.
- Ventilation -- even when it's raining.
- Finger-tip control -- as easy to open as to close.
- Automatic locking thwarts intruders -- vents cannot be worked loose or be jimmied.
- Draft-free ventilation -- air scooped in and upward.
- Delayed action opening -- 100% control of ventilation.
- Clean the outside from the inside.
- Removable inside screens and storm sash.
- Unobtrusive operator -- no interference with blinds, drapes, etc.
- Precision balanced hardware eliminates need for periodic adjustment; absolute minimum of maintenance.
- Skyscraper to cottage, Auto-Lok meets every requirement.

Auto-Lok
PATENTED
WINDOWS
aluminum or wood
SEALED LIKE A REFRIGERATOR

AMAZING AUTO-LOK HARDWARE

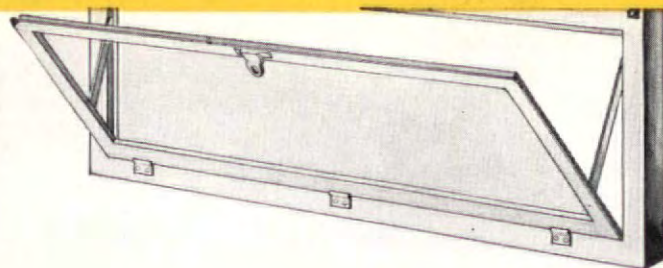
Exclusive, patented self-locking device automatically seals the window tight when closed. No extra pressure necessary. Every meeting surface is sealed by the elastomeric vinyl weatherstripping.



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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-11

TIGHTEST CLOSING WINDOW EVER MADE

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2. Q. WHAT IS AN EASY WAY TO SAVE TIME AND MATERIALS IN POWER CABLE INSTALLATIONS?

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A. The 480Y/277-volt, 3 phase, 4-wire distribution system for fluorescent-lighted office buildings provides great economy with savings up to 25% of the total electrical contract exclusive of fixtures. For the first time, 277-volt branch lighting circuits can be conveniently controlled from many points by using the G-E low-voltage remote-control system. The G-E relays installed at the fixture have an approved rating of 277 volts. Safe, economical 24-volt switches to control the 277-volt relays can be installed at many convenient locations at substantial savings in cost.

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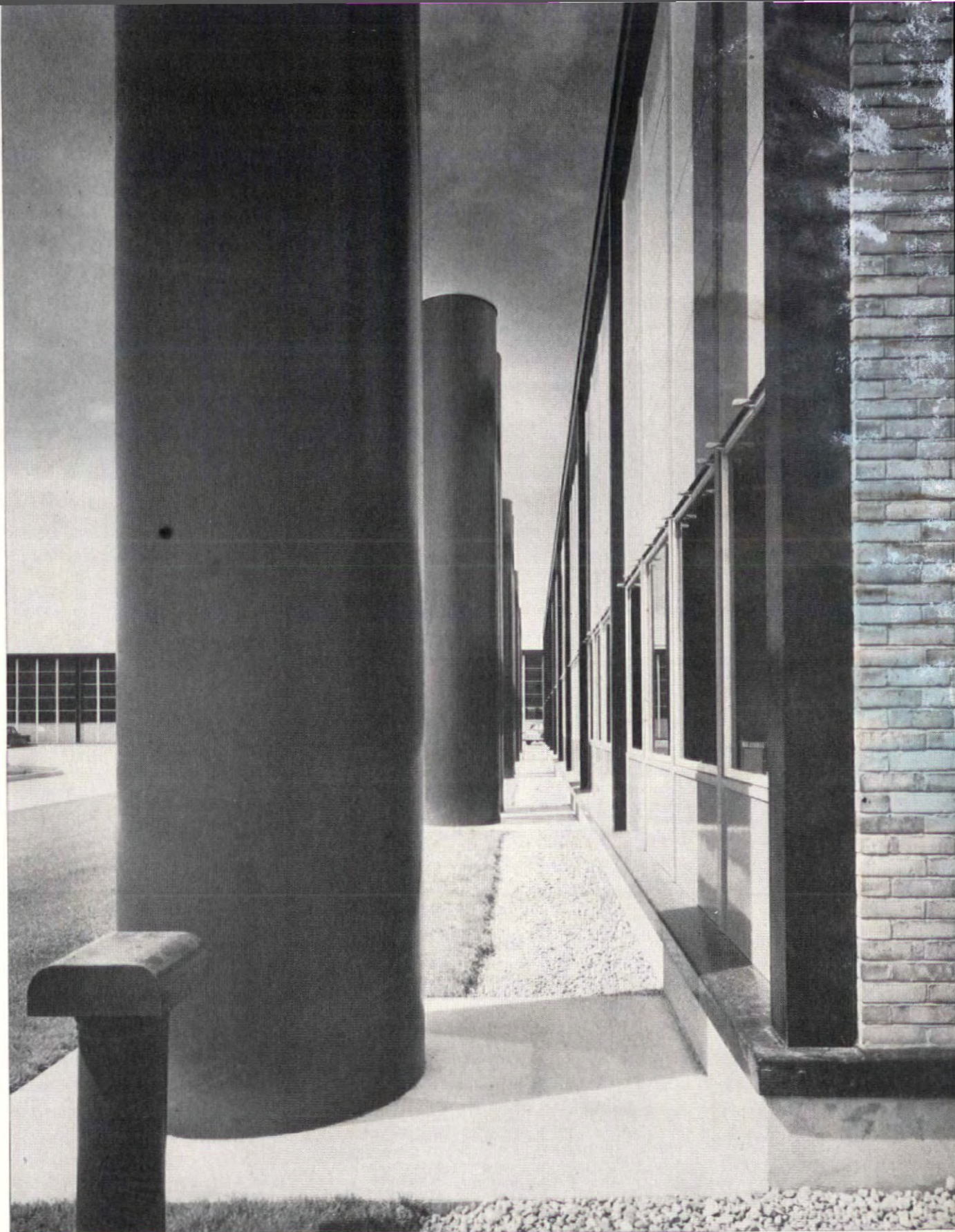


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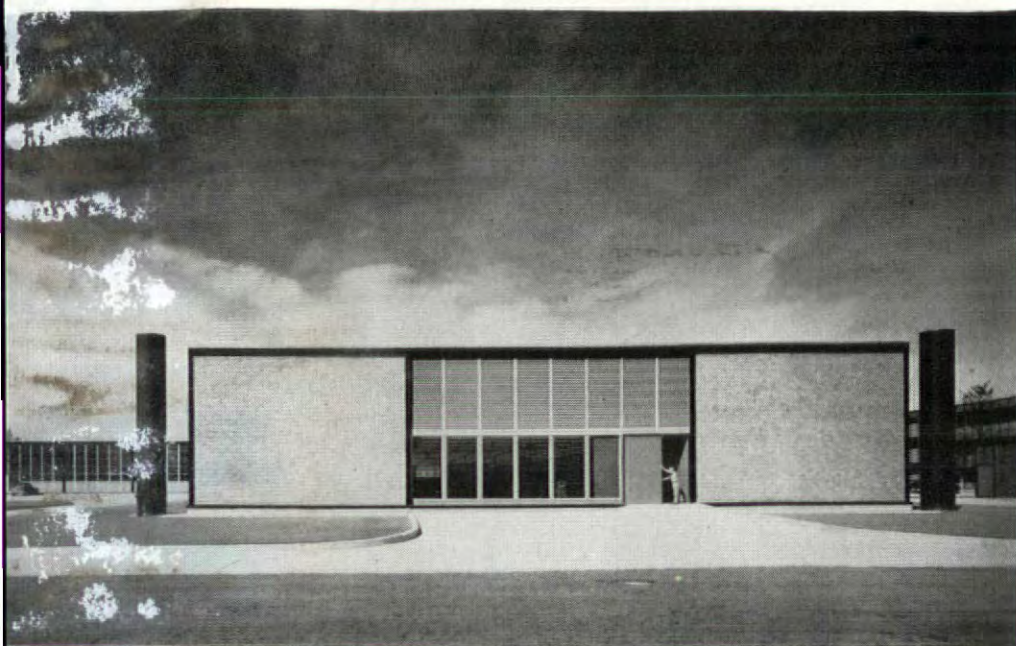
GENERAL  ELECTRIC



Photos: Ezra Stoller—Pictor

Monumental as the stone pylons in Egyptian hypostyle halls of 1300 B.C., the colonnades of blue black stacks which stand on either side of the new dynamometer building in the GM Technical Center are used to exhaust engine gases.

GENERAL MOTORS TECHNICAL CENTER



*The dynamometer building
for testing engines*



When you first see the buildings in the new General Motors Technical Center near Detroit (the first three of more to come) they don't look like buildings, as we know them. The group looks more like an exalted industrial product.

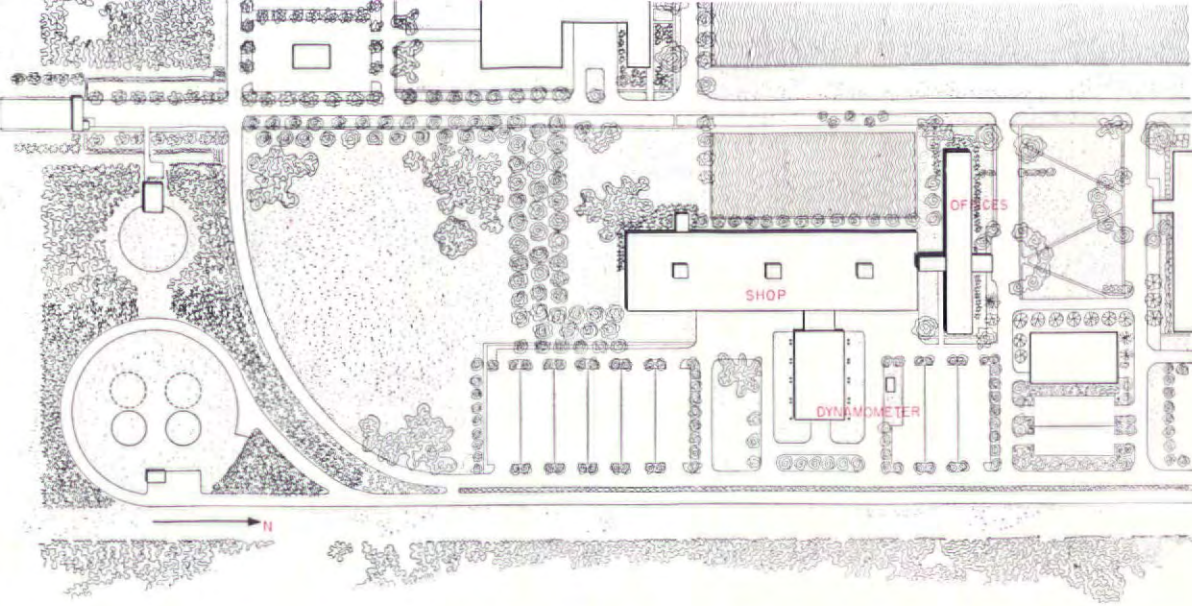
Outdoors, flashing walls of metal and glass and matte gray enamel are set off by panels of lustrous glazed brick charged with brilliant color. Indoors, the industrial parable is continued—all the environmental controls, the lighting, heating, cooling and acoustical mechanics, are gathered into one metal plane, the ceiling, and patterned for flexibility (see page 120).

But there is more than a mirror image of industry in the thrill of these buildings' presence. For in their bold, mature design General Motors has joined hands with architect Eero Saarinen to bring the research approach to building. These buildings were themselves treated as industrial projects. New materials like the wall panel were developed, new techniques like the air conditioning were worked out and everything was tested for months in full scale mockups as if it had been the 1955 Buick under design—a procedure as distant as the moon from customary building techniques.

What did Saarinen accomplish in giving final shape to all this industrial effort? He did the appropriate thing . . . he blazed an industrial trail into the no-man's-land of architecture which today lies between modern romanticism and the new classicism. He accomplished this by concentrating on two things: 1) Making the building work mechanically by integrating the disciplines of such matters as air conditioning and lighting with the classic pure shapes and expressive proportions of the structure. 2) Retaining the romantic heritage by using vivid hues and special glazes not seen since the heyday of the Persians. "If a large building today must be impersonal," he seems to have said, "let it at least have an exciting impersonality."

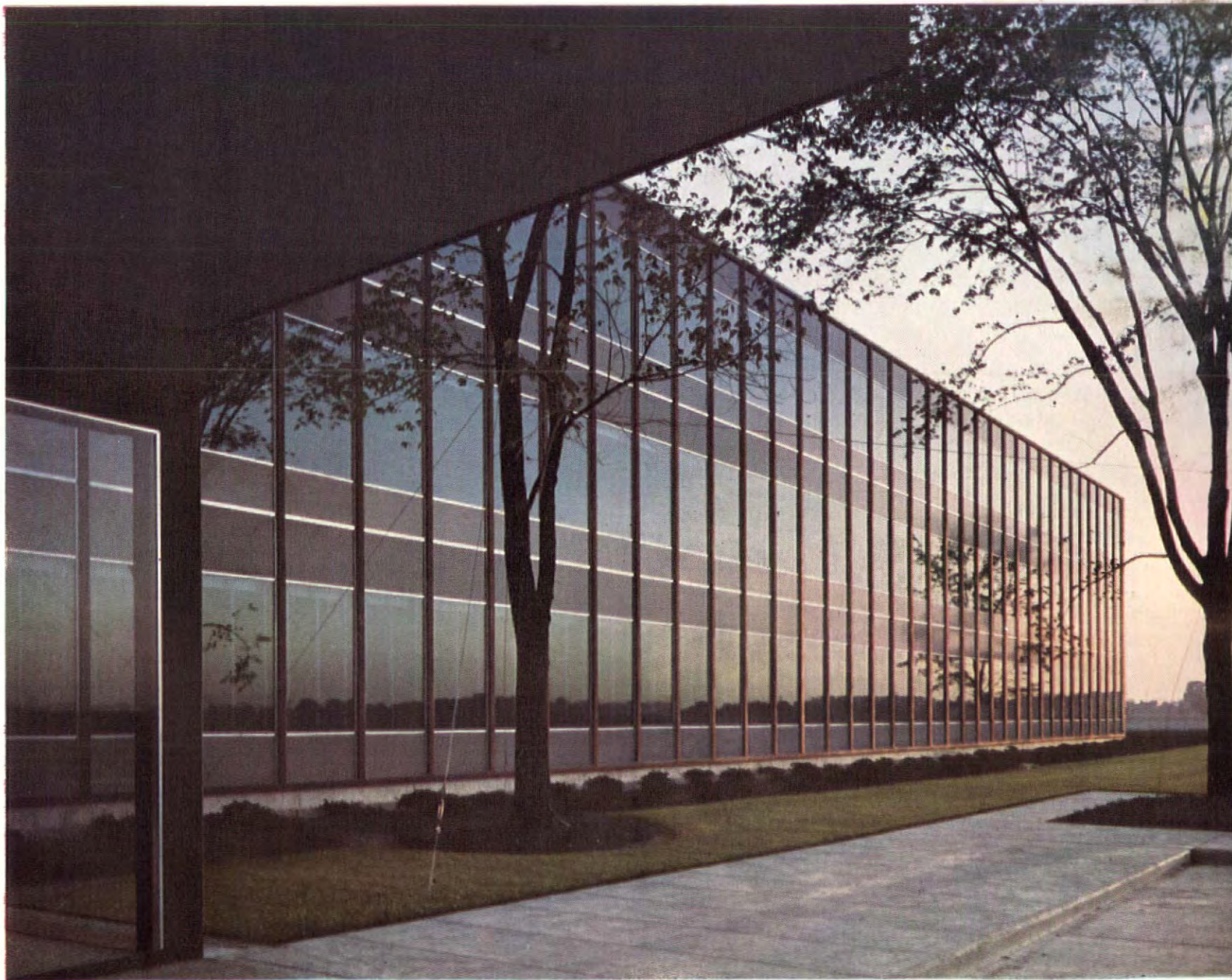
The office building and stretching behind it the shop building



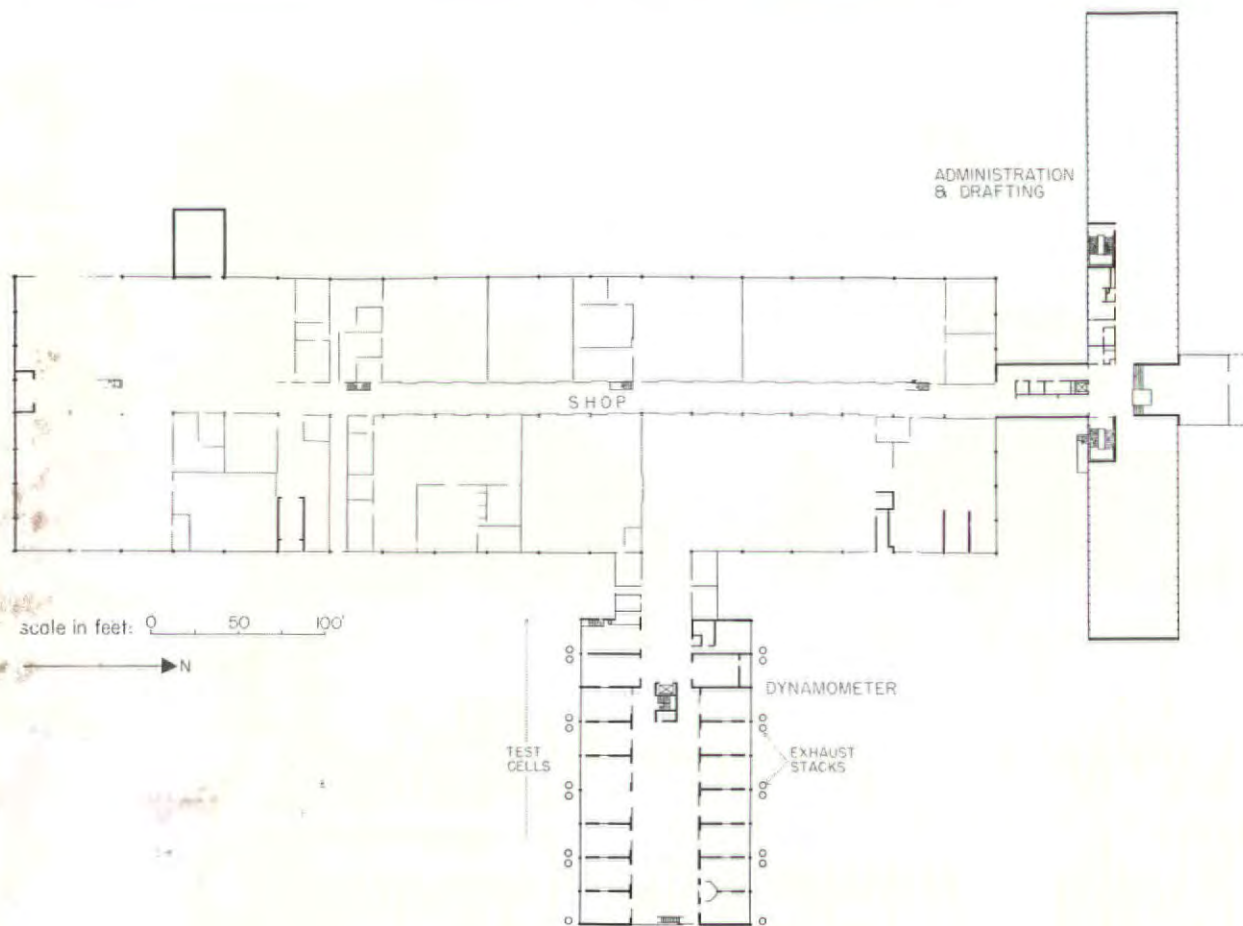


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BOLT, BERANEK & NEWMAN
Consultants on Acoustics

The plot plan. When landscaping is complete this industrial environment will be verdant



The brilliant face of the office building reflects a Detroit sunset and a machine age

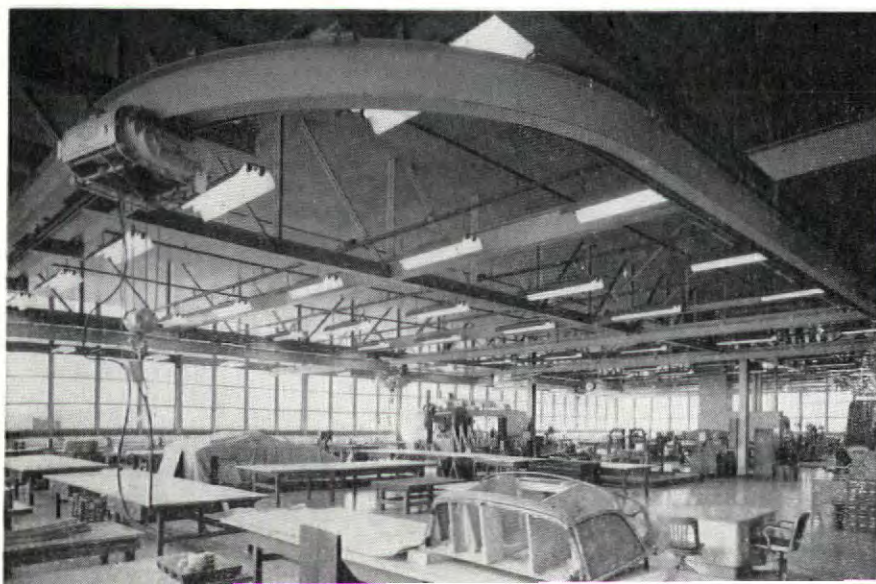


From around on the east side you get a better idea of the buildings as a group. In relation to the plan above, the color photo on the facing page was taken from near this type which you are reading—up a little closer to the end of the dynamometer building, peering around one of the exhaust stacks. In their grouping the buildings stick strictly to business, but when examples of this vivid new architecture are placed close together looking at each other, dramatic vistas come naturally.

The office building is linked to the shop by a massive blue service block (massive because it includes a freight elevator big enough to carry automobiles up to the drafting rooms, windowless because it houses mostly mechanical equipment). Then $2\frac{1}{4}$ acres of shop start, and sprout the dynamometer wing.

This shop building, the biggest part of the project, is in ways the simplest. That was the requirement: simple flexible space 20' high. To keep it uncomplicated, the 160' wide building's span is carried on steel trusses 80' long; there is but one row of columns down the center. The columns are 10" square, formed of two structural channels welded together, set 30' apart. Exterior walls are porcelain enamel-faced precast concrete panels up to 4'-6" and glass above. Departments inside the building are separated by partitions in 5' wide units 8' high, which are paper honeycomb cores with light gauge painted metal skins bonded to each face.

THE SHOP

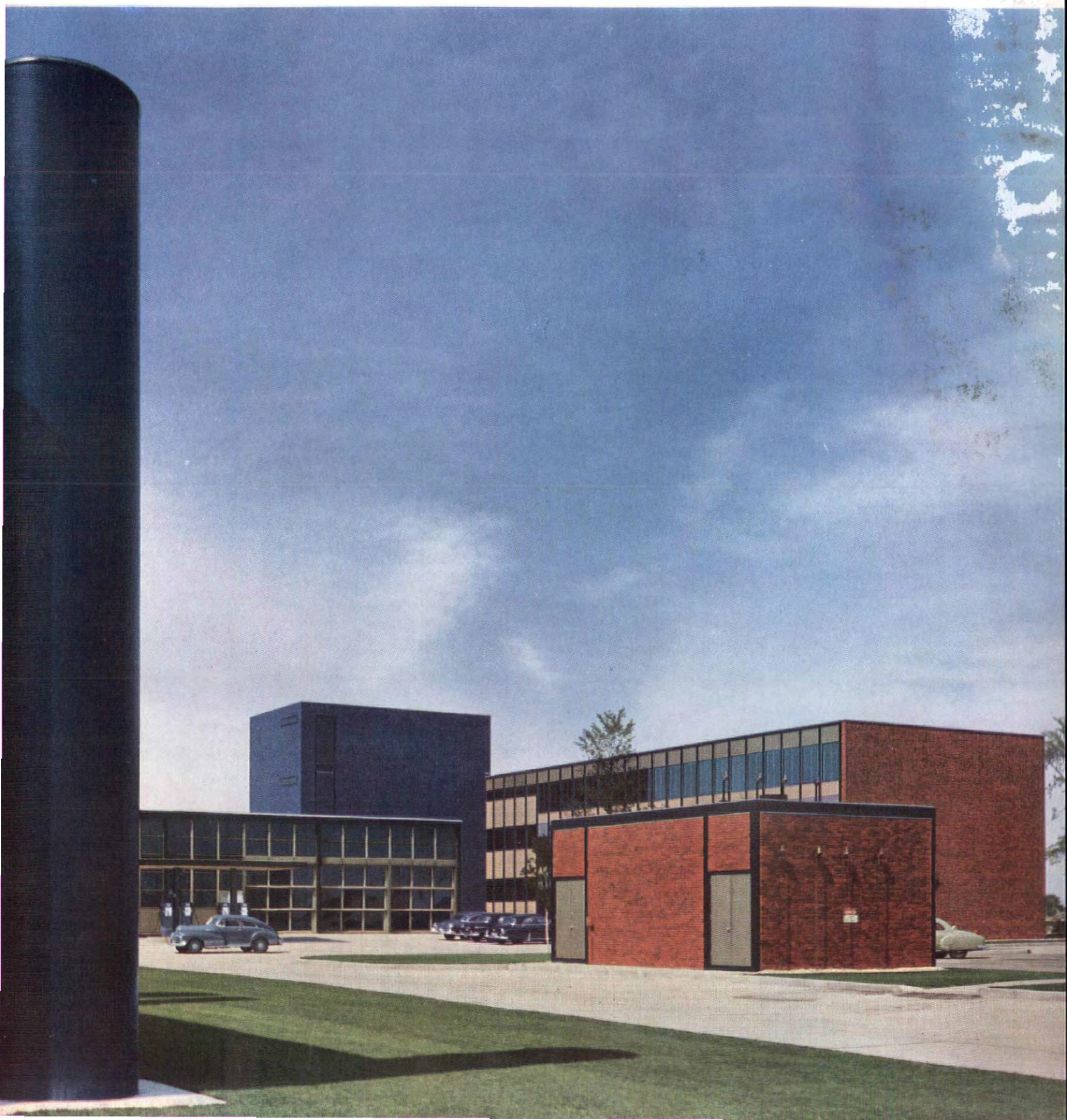


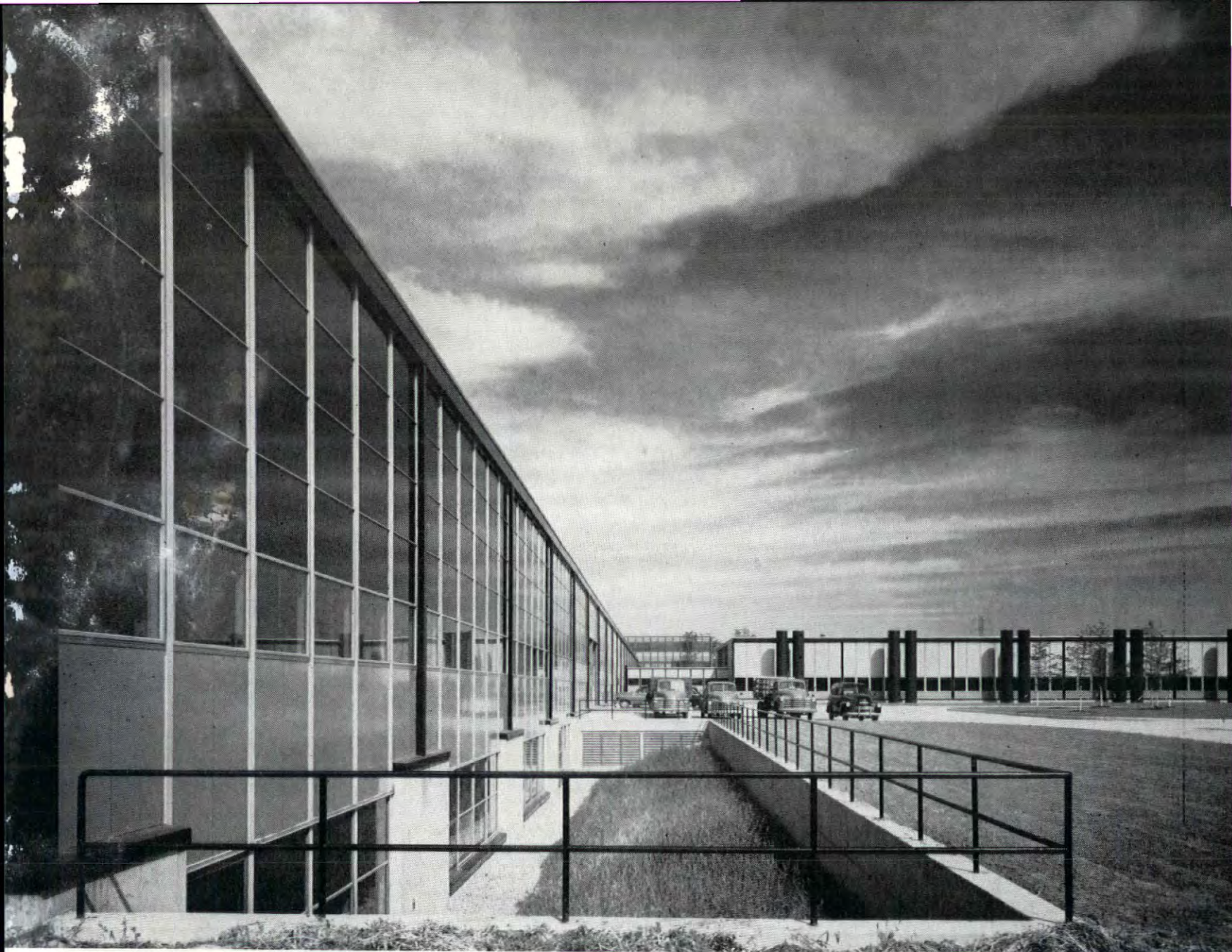
Corridor in basement is part of tunnel system which ultimately will connect all buildings in the Technical Center, a passage big enough to drive a car through. Toilets and locker rooms are also located in basement to retain openness and flexibility of floor above.

The 80' trusses carry not only the roof but overhead tracks. Lowest panes in shop windows are clear plate, heat absorbing glass. Above that is fixed glass: hammered heat absorbing panes, etched on one side. Window mullions are 6" structural steel H columns on 5' centers.

Blazing colors were baked on ceramic glazed sand molded Ohio shale brick in special high temperature kiln built for job and paid for by General Motors. Some of this brick is also used as indoors finish in cooler color.

Photos: Ezra Steiner-Pictor



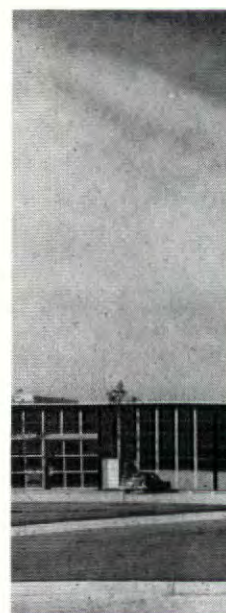


THE DYNAMOMETER BUILDING

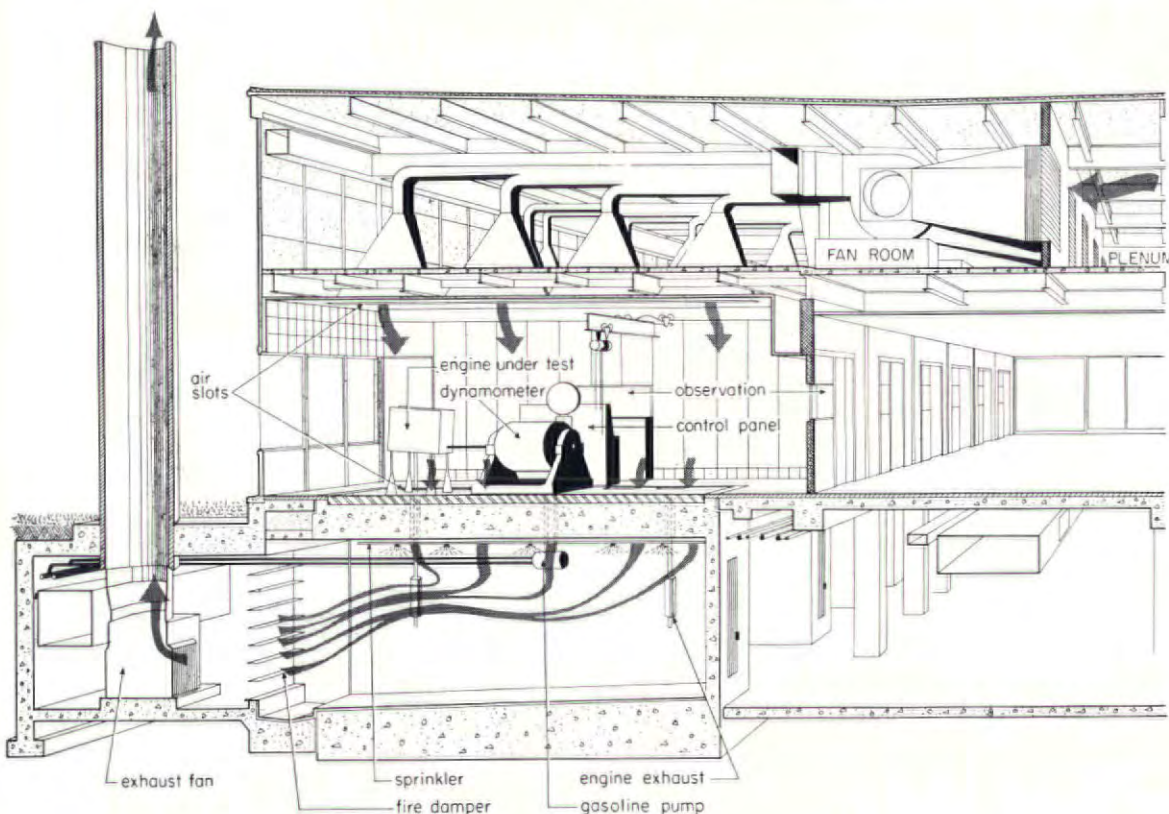
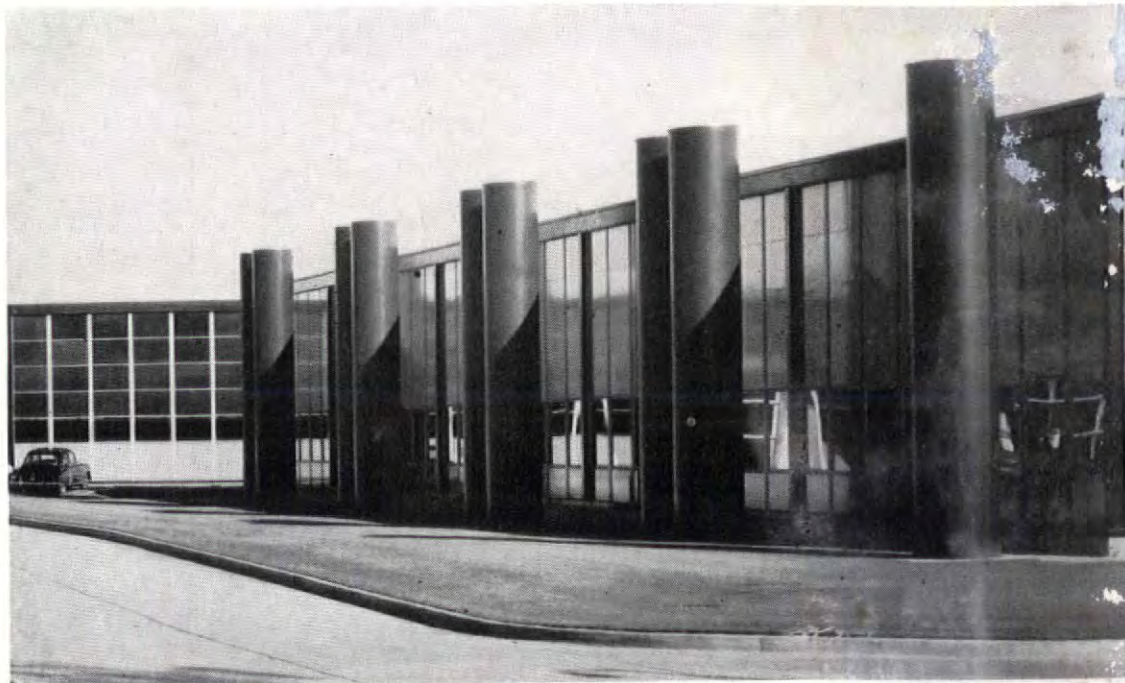
The long view down the shop building's lean wall is one of the vistas of a new industrial era which this group commands. You are looking now (in photo above) from the rear of the group, north toward one side of the dynamometer building, 320' away.

This spectacular structure is of highly specialized use. The main floor consists of a series of test rooms, principally for various types of engine and transmission workouts. The attic houses a powerful ventilating system (see section). In the basement are motor generator equipment, exhaust system and various supply lines—the heart and blood supply to the test room equipment up on the first floor.

Exterior side walls are porcelain enamel (on lightweight fireproof core), steel and glass. The continuous windows along the first floor are framed in heavy projected metal and open outward for emergency exit from the test cells. Indoors all structure, including partitions, is heavily built and acoustically treated to quiet the testing equipment's din.

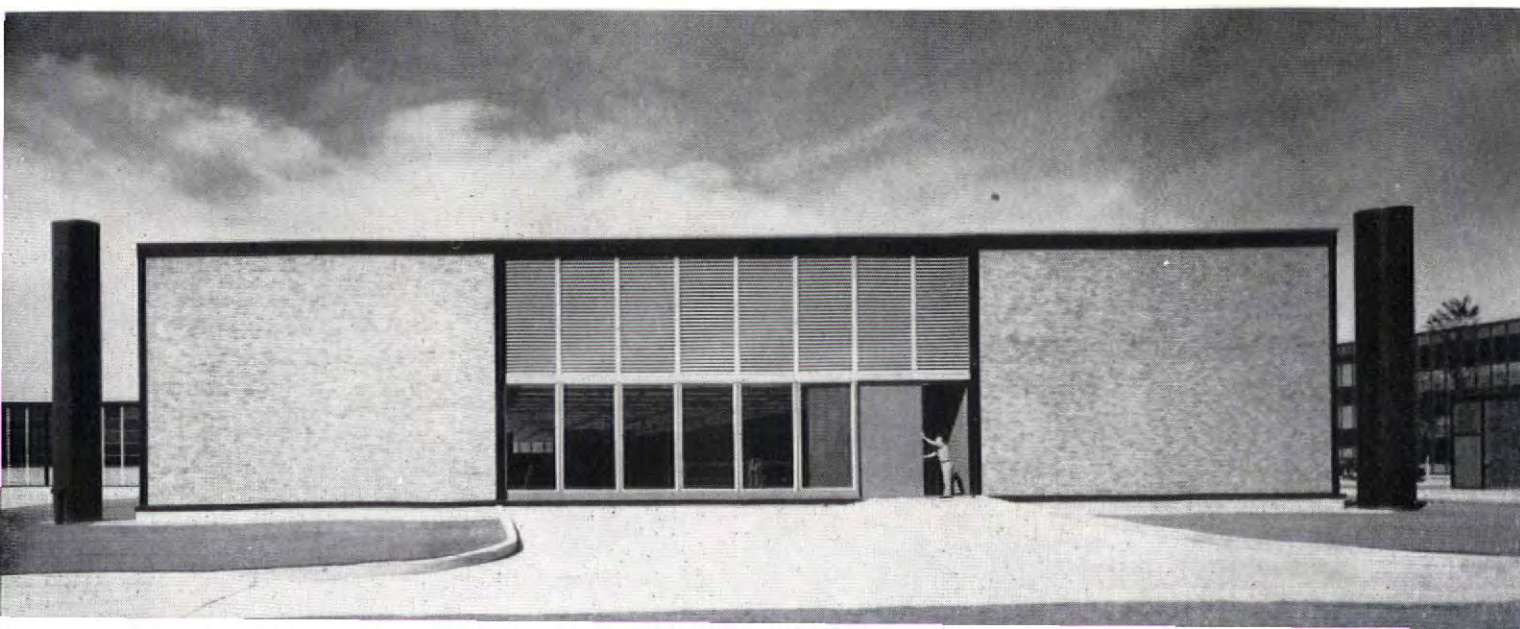


Strength confronts you when you come around the corner of the dynamometer building and see the exhaust stacks lined up in perspective. In rear: windows of shop building.

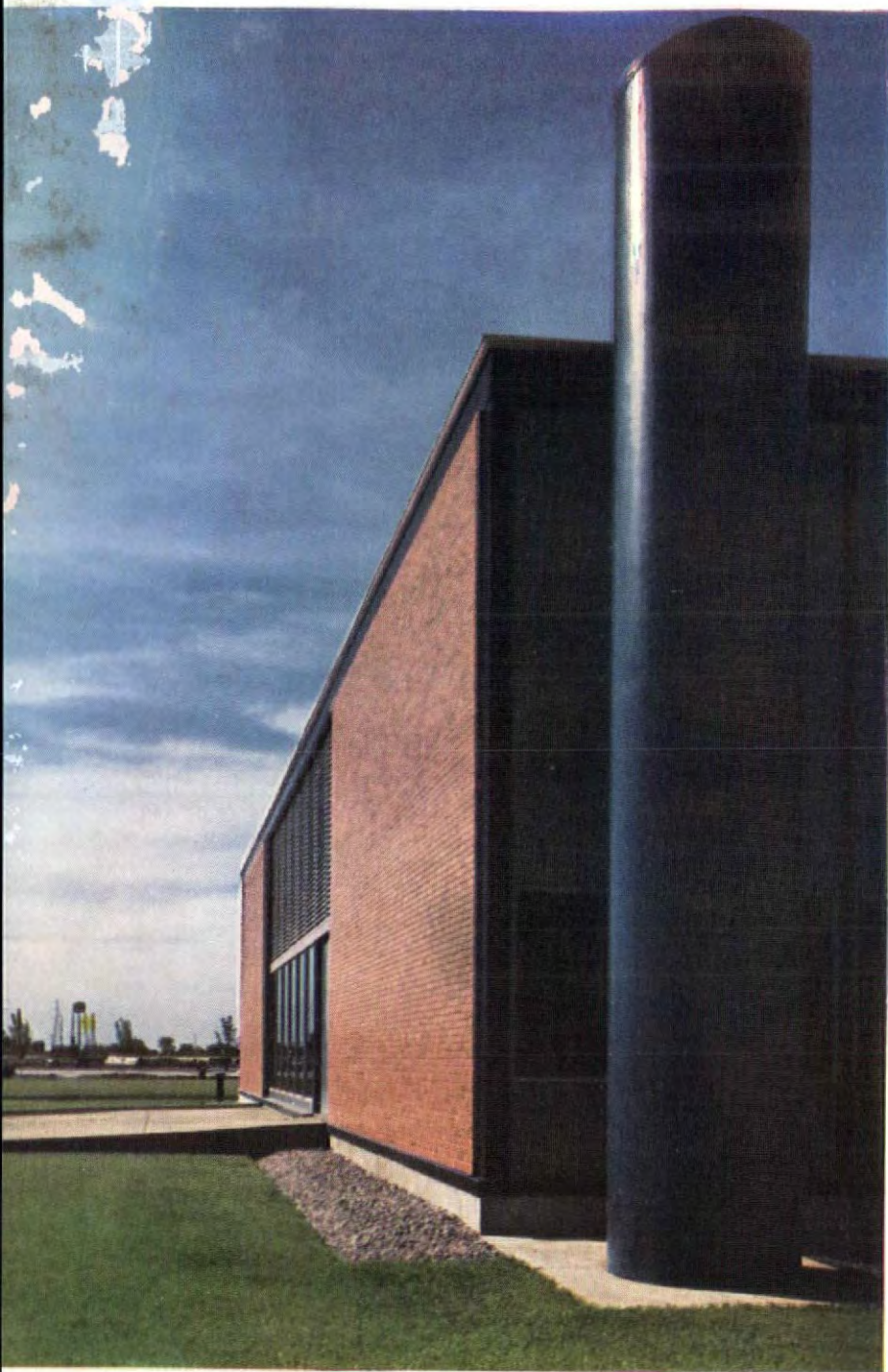


Ventilation is vertical. Fresh air supply is brought into plenum attic, then each test room's supply system pulls it through filters and blows it down into room through long narrow slots in ceiling, forming a curtain of fresh air between test operator and test equipment (which is often extremely hot). Air is exhausted along sides of dynamometer bed plate, then into bed plate foundation, together with engine exhaust, and is finally fanned up and out stacks. Separate heating and ventilating system takes over when tests are not being run.

Best profile in the group is the facade of the dynamometer building. Note here (and in photo top of page) how the soft sensuous curves of the curbs and grass boundaries are used to enrich the ascetic geometry of the buildings.



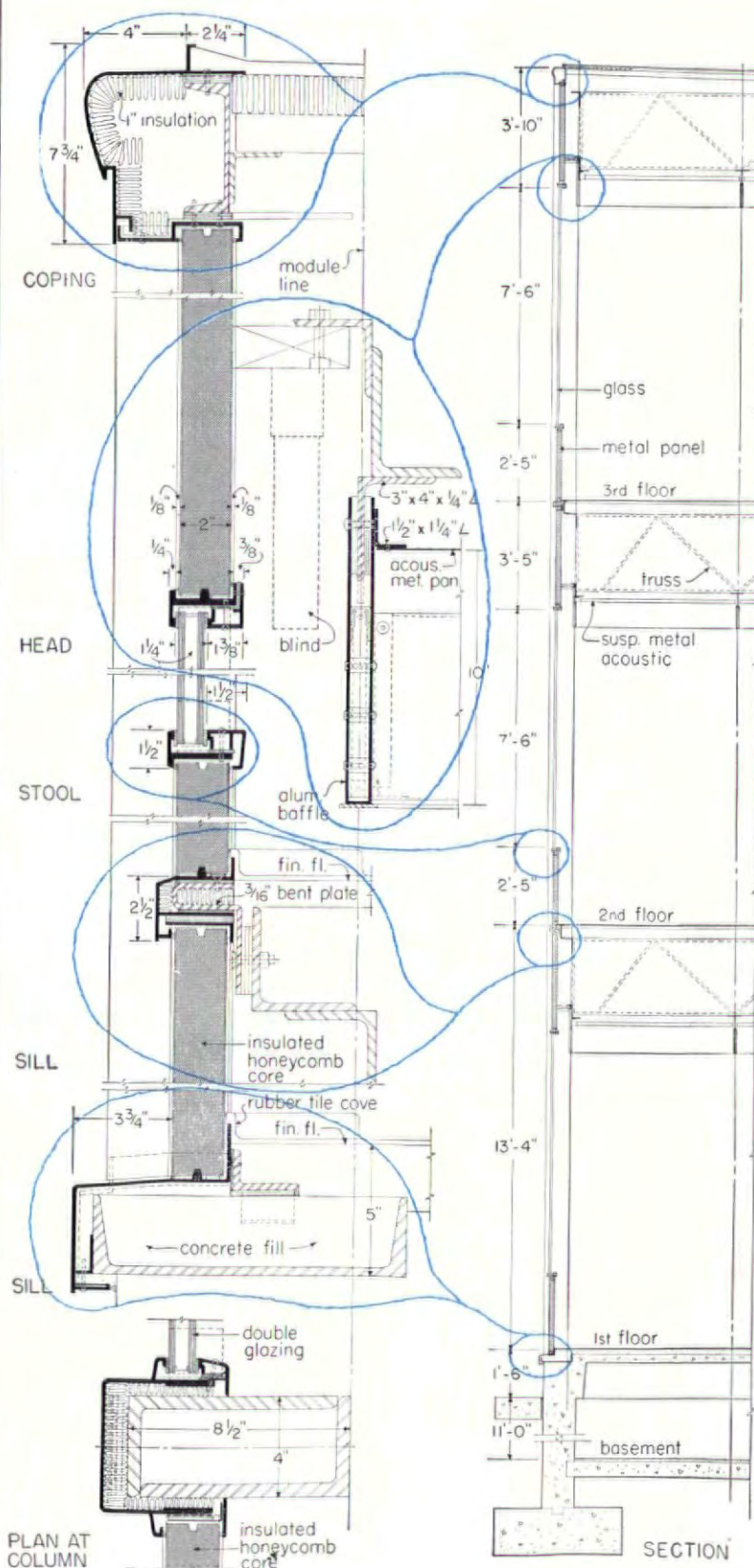
Dark end of dynamometer building is burned a mellow hue than brickwork of the office building (see next page) but has the same brilliant impervious gloss.



THE OFFICE BUILDING

A crystalline achievement in structural expression, this is also the most concentrated package of engineering in the group. The vertical supporting structure is 4" x 8 1/2" hollow steel columns 5' 2" on center in the plane of the exterior wall, with no interior columns. Acting as mullions as well as columns, these express the module observed throughout. Between the mullion-columns is an extraordinary metal-and-glass curtain.

THE WALL

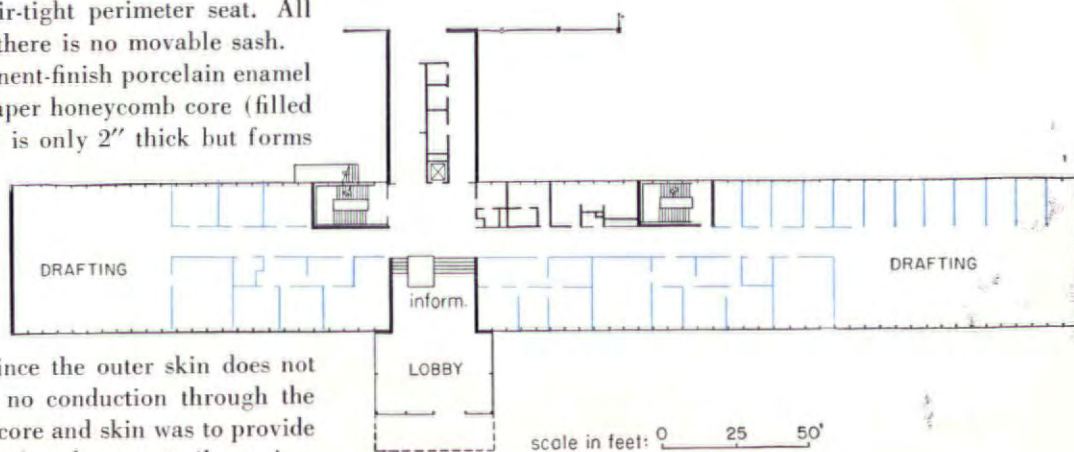




Pool is predecessor of other landscaping

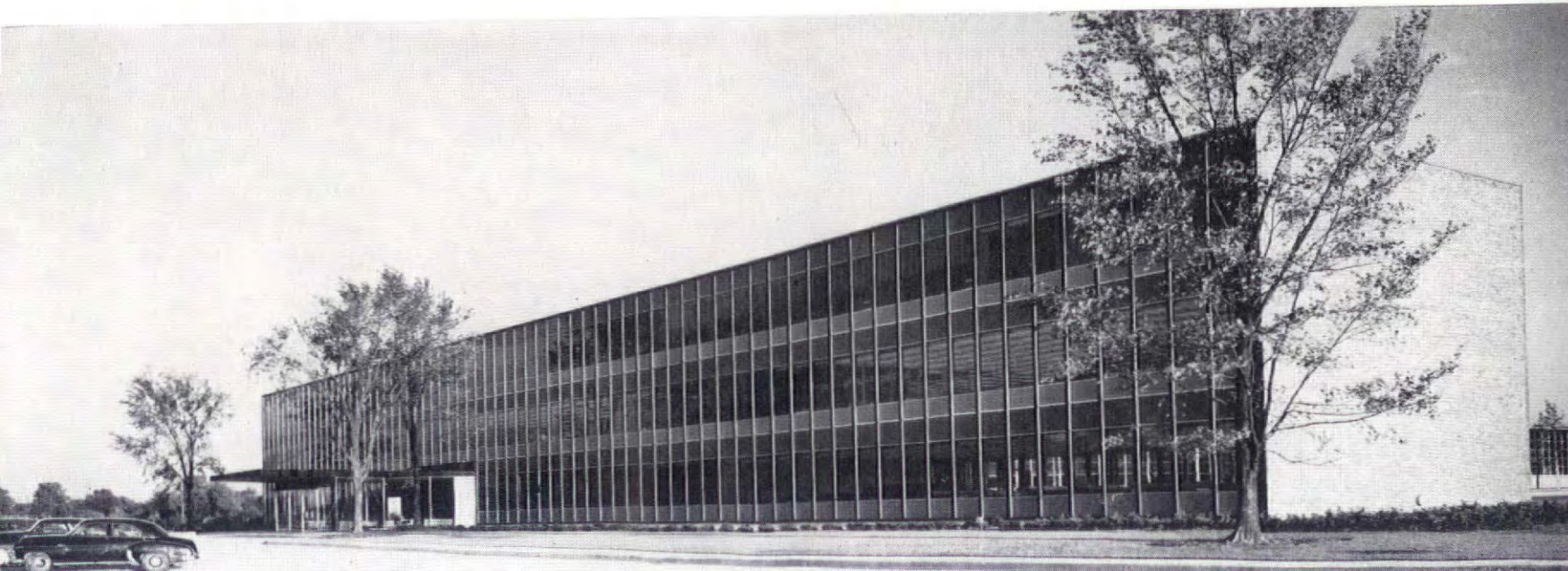
The glass is heat absorbing $\frac{1}{4}$ " plate on the exterior, and clear $\frac{1}{4}$ " plate on the interior, with a $\frac{1}{2}$ " air space and an air-tight perimeter seat. All windows throughout the building are the same; there is no movable sash.

The spandrel is a sandwich panel with a permanent-finish porcelain enamel steel skin completely bonded to a heavy Kraft paper honeycomb core (filled with granular insulation). The completed panel is only 2" thick but forms



the final finish on both interior and exterior; since the outer skin does not come into contact with the inner skin, there is no conduction through the metal. The object of the complete bond between core and skin was to provide a uniform grip over the entire surface of the metal and prevent oil canning.

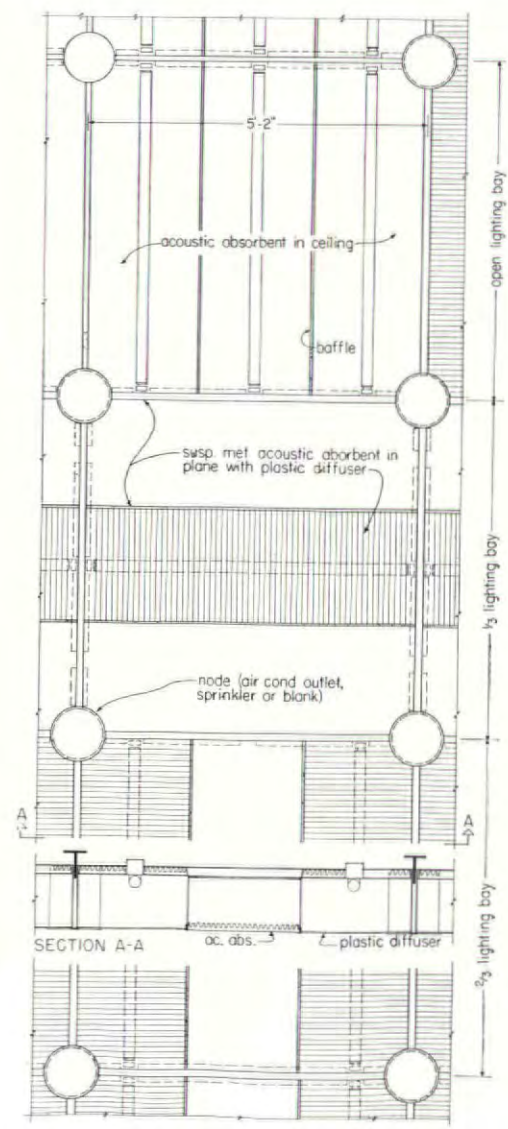
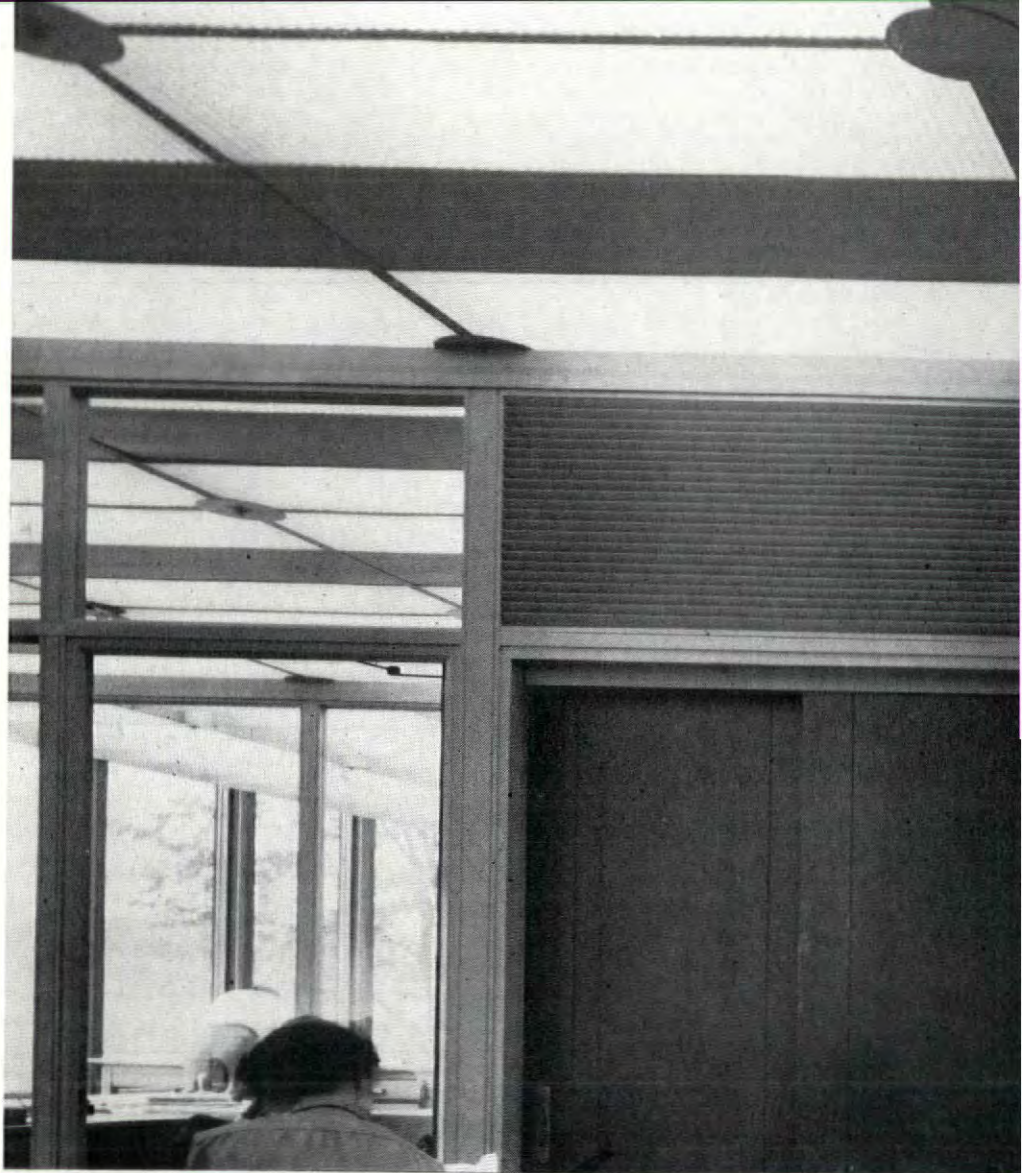
These panels were developed by Saarinen and a manufacturer who has since made them a standard product.

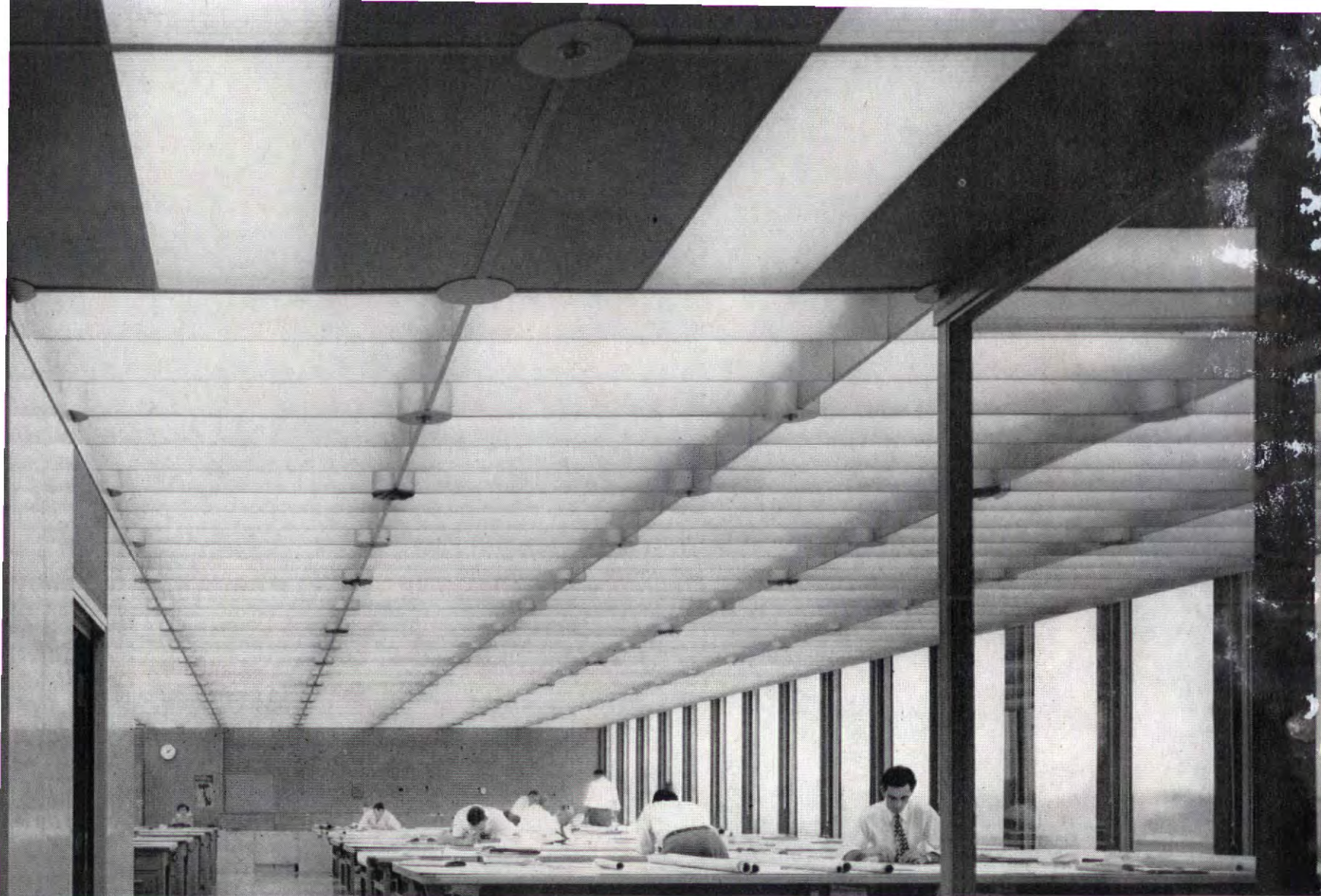


GM

THE CEILING

Endless number of lighting schemes can be made by shifting or changing standard panels.





In drafting room fluorescents are bare, elsewhere masked

Saarin added a dimension to the grid module by projecting it up on the ceiling of the office building. Photograph (above) and drawings (left) show how versatile this grid is for lighting—either direct or diffused. It also has other unseen values:

- ▶ It contains the acoustical absorbent material so essential in hard finished rooms for damping reverberation.
- ▶ It is the outlet for the high velocity air conditioning system,* spacing its jets in the nodes which occur at 5' 2" intersections of the ceiling grid.
- ▶ It holds a regular pattern of sprinkler heads in nodes at other 5' 2" intersections.
- ▶ It is ready to receive the uprights of the movable interior partitions (custom designed using standard partition parts) in sockets at nodes.
- ▶ It is supremely flexible. Most of the foregoing functions can easily be relocated within its sophisticated sweep.

Horizontal supporting structure of the building consists of triangular trusses which span the entire width (about 52'). There are no interior vertical structural supports above the first floor slab. Over this truss structure on each floor and the roof is standard lightweight steel decking and a concrete slab. Floors in offices and corridors are rubber tile made in a special color.

*For more complete coverage of this and other technical aspects of GM buildings, see July issue '49 and July and Sept. issues '50.

Structural columns match 5'-2" module of ceiling



GM

THE SUM: The uniformly high pitch of structural design and finish indoors and out is illustrated well by photographs on these pages, particularly by the stair landing (below) and an exterior (facing page). Here is precision in details without wasteful preciousness, perfection without pomp.

The advance platoon of the automobile industry, its research engineers, could hardly be housed in a more suitable environment than this strong intent design. It is a place for clear thinking. But in addition to the refined design (so tenaciously executed) and to the high civilization of the physical environment (so loaded with mechanical inventiveness which has been sophisticated and placed in context) there is the sum. Saarinen and his associates have helped the leading producer in the automotive field build an exciting signpost, a plea to all industry, and a proper symbol for research toward tomorrow.



Monumental chairs and tables in office building lobby were designed by Saarinen in collaboration with General Motors' styling section. Lobby floor is Roman travertine.



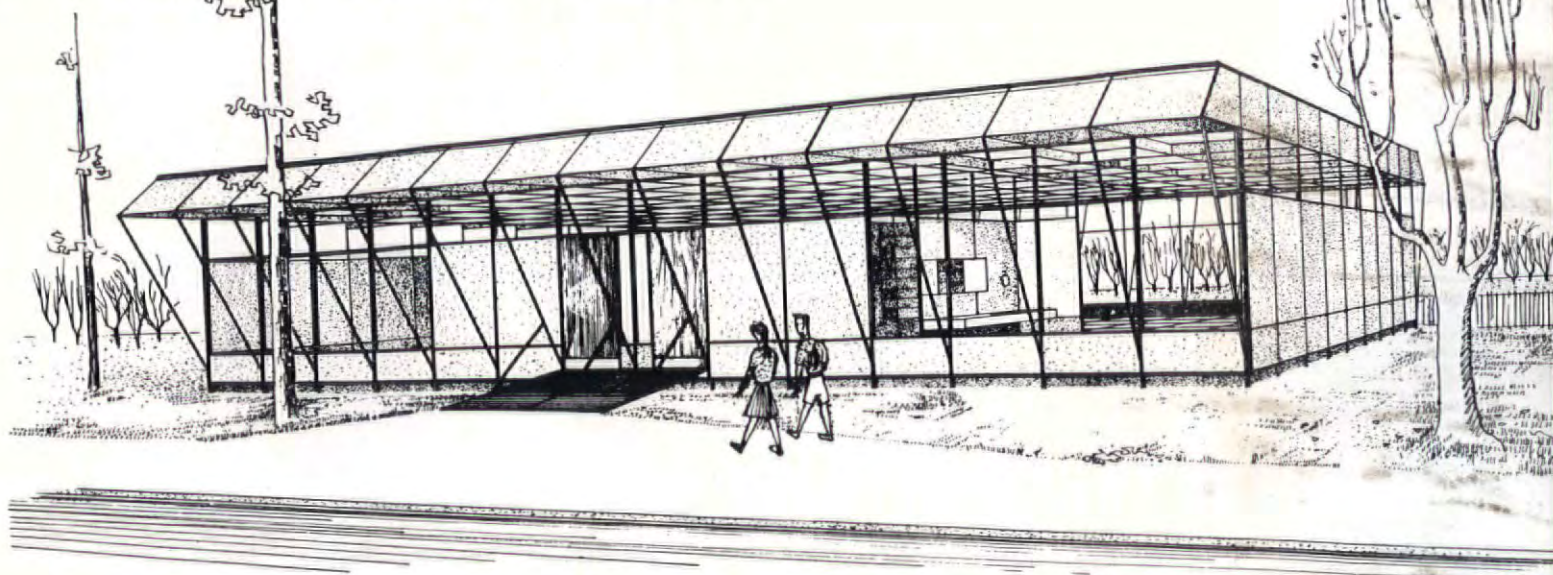
Stair landing in office building

Corner outside office building





INDUSTRIALIZED SCHOOL



Built like a big erector set, it is durable, flexible, 100% reusable

"A dynamic industrial society requires a flexible, demountable architecture. And this need is most evident in our schools."

Acting on this conviction, Professor C. Theodore Larson and his cohorts in architecture, engineering and education at the University of Michigan have developed what may be the best answer yet to the problem of school house obsolescence—a building which is even more industrialized than architect Soriano's steel house (p. 214), and just as handsome.

This proposed school can be quickly erected with simple tools to meet the emergency needs of fast-growing new neighborhoods; it can be enlarged or reduced in size merely by adding or subtracting basic parts; and most important, as the neighborhood grows older and child population shrinks, it can be rapidly taken down and re-erected elsewhere—with no loss of materials.

All this is made possible by an ingenious, economical structure of standard industrial materials assembled like an oversized erector set toy. It is based on the Unistrut system of steel framing which has been used until now mainly to make demountable storage racks, jigs, tables and other heavy-duty items for factories and warehouses. Unistrut members can be joined at any point by bolting standard connectors to spring locking nuts inserted anywhere in the continuous slots of the steel channels (sketch, below). No holes have to be drilled, and the only tool needed is a wrench.

To make the rest of the structure just as flexible and salvageable as the steel framing, the designers used equally durable, demountable materials throughout—panels of cement asbestos board, glass and plastic and glass fiber insulation. And to accommodate panels in stock 48" widths, they established a uniform bay spacing of exactly 49", allowing an extra inch for the steel framing joint. The overall structure can be altered simply by removing or adding bays, and interior partitions can be placed anywhere on the 49" grid.

Besides achieving plan flexibility and 100% salvage of materials, the designers gained other big advantages:

► No subassembly plant is need for prefabrication. All parts come precut to exact size and prefinished, require far less shipping space than conventional prefabricated building assemblies.

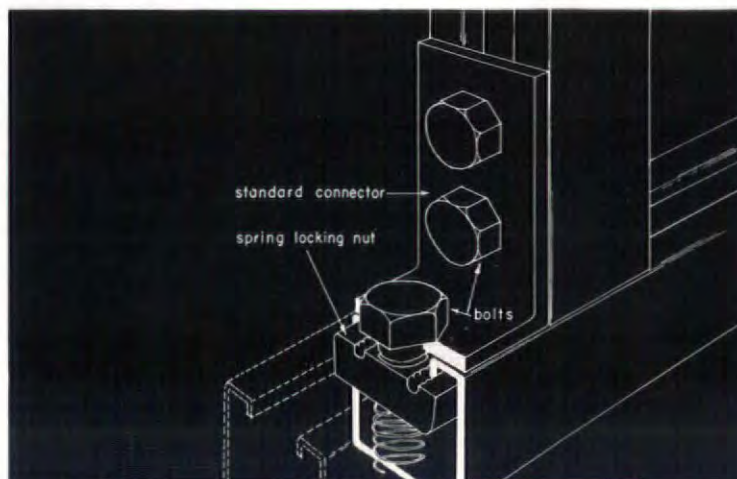
► Standardized parts and simple connections permit rapid erection by a small field crew, demand no new skills.

► Freezing weather causes no delays, because all construction is dry—steel wall posts resting on footing plates below the frost line form the foundation (p. 127).

► Steel members serve not only as structural framing but as wiring conduits, window frames and supports for lighting fixtures and other equipment (p. 127).

► Close control of environment is provided by the interchangeable glass and asbestos wall panels, by a translucent plastic ceiling and by a combined heating-ventilating system which uses underfloor space and roof space as plenums (p. 129).

Biggest advantage of this type structure is expected to be a great saving over conventional school house costs—figured in terms of the entire life of the building. Estimates based on a mock-up corner of the Unistrut school (photo, opposite) indicate that initial cost may not be much lower than that of conventional construction—about \$10.50 per sq. ft. with the framing accounting for roughly 15% of the total. But the big savings will be long-term savings—in easy maintenance (no painting is needed); in time, labor and materials for alterations; and in the undiminished salvage value of building parts for re-erection on a new site.



Most interesting structural features:

Foundations require no concrete work. Wall posts are bolted to footing plates placed in a trench dug below frost line around the perimeter of the building. Connecting sleeves permit adjustment for variations in grade.

Flooring. For ease in shipping, floor beams are made in halves which are spliced together on the site, fastened to opposing sidewall studs and linked by joists to form a 49" grid. Each point of grid intersection is supported by adjustable posts resting on footing plates, and two intermediate joists are added to each bay. Panels of cement asbestos board 4' sq. and 1/2" thick are laid over this frame and fastened with steel battens that snap into the open slots of the steel channels. Any type of 9" x 9" flooring tile may then be applied to form a 45" x 45" mosaic with 4" runner strips filling out the 49" grid. The floor will support 78 lbs. per sq. ft., may be reinforced with heavier beams and more joists.

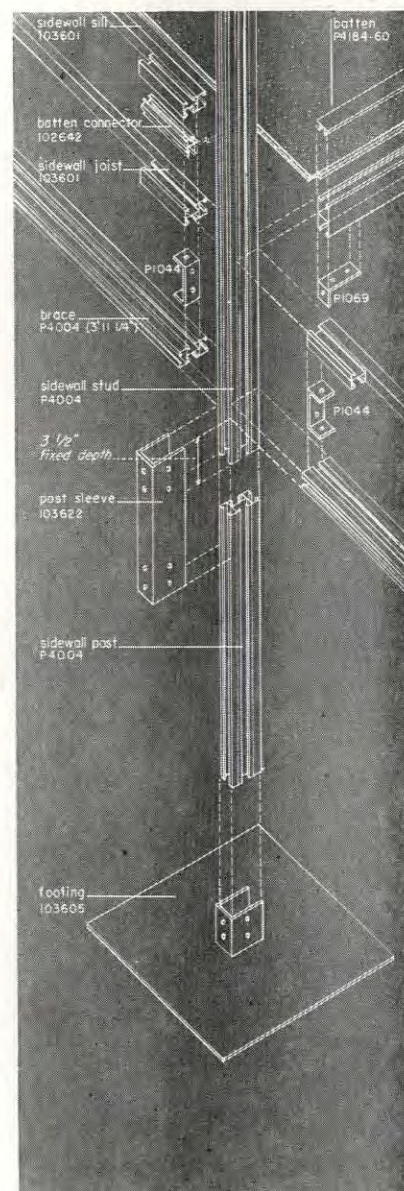
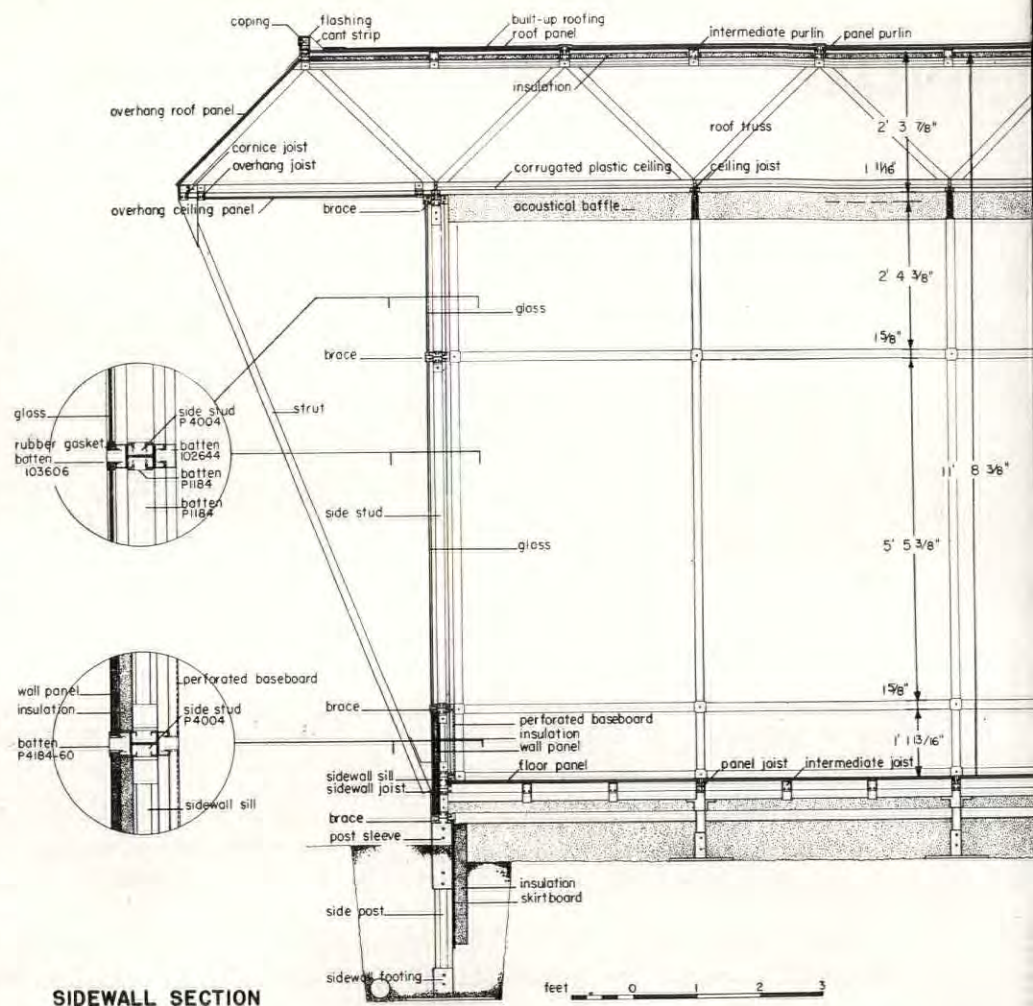
Underfloor space. Skirtboards of asbestos cement backed with insulation close off the space under the floor, permit it to be used as a plenum for the warm-air heating and ventilating system. Building paper or a skim coat of cement on the ground prevents dirt from entering the system.

Walls. Since sidewall studs carry the entire roof load down to foundation posts, other wall elements are merely a curtain against the weather. Wall panels are either 3/8" cement asbestos board or 1/4" glass filled out with rubber gaskets. They are fastened with steel battens that may be either snapped or screwed to both sides of studs, forming a 4" thick hollow wall with glass fiber insulation in the center. Though studs make a through-metal connection between indoors and outdoors, condensation is minimized by the air spaces created in spot-welding the channels which make up the studs.

Partitions may be placed on any line of the 49" grid and anchored to the floor framework below and to bottom chords of roof trusses or ceiling joists overhead. Cross-braces are attached to partition studs at door height and baseboard level, and panels are fastened with the same type batten used in exterior walls. Panels can be surfaced with cork or finished with a special green paint to form chalkboards. To prevent sound transmission between rooms, a double partition stud with connecting links only at top and bottom can be used.

Ceilings throughout are corrugated translucent plastic lighted from above by fluorescent fixtures. The open grid created by the lower chords of roof trusses and by ceiling joists (detail, opposite) forms a framework for 4' squares of plastic. The flat edges of each plastic sheet slip into the channel slots on each side of the truss chords, while the corrugated ends rest directly on the edges of the ceiling joists. To absorb sound in classrooms, a grid of mesh-enclosed glass fiber strips, 6" wide, and 1" thick is inserted in the slotted openings of the ceiling framework.

Entrances. Steel door bucks and sills welded or screwed to battens fit into the wall studs and cross-braces to form doorways. The inside floor level, only 1' above grade, is reached by steel ramps with open steel gratings which help to scrape mud off children's shoes.



ERECTION SCHEDULE

- 1 Remove topsoil, dig trenches
- 2 Erect outside wall footings
- 3 Erect floor supports
- 4 Assemble floor beams & joists
- 5 Erect side wall studs & braces
- 6 Install underfloor plumbing
- 7 Install skirt board materials
- 8 Install drains, refill trenches
- 9 Place building paper on ground
- 10 Install floor panels
- 11 Install lower sidewall panels
- 12 Erect roof trusses & ties
- 13 Erect side struts
- 14 Install roof panels
- 15 Install coping & flashing
- 16 Apply built-up roofing
- 17 Erect entrance ramps
- 18 Install sidewall materials
- 19 Install overhang panels
- 20 Erect end wall studs & braces
- 21 Install end wall materials
- 22 Erect partitions
- 23 Apply insulation under roof
- 24 Install heating system
- 25 Install lighting & wiring
- 26 Assemble translucent ceiling
- 27 Install acoustical baffles
- 28 Apply finish floor & moldings
- 29 Install plumbing fixtures
- 30 Install doors, racks, shelves

ROOF STRUCTURE

Welded steel roof trusses are made in two sections, spliced in the field, then anchored to side-wall studs and braced with purlins and joists fastened to top and bottom chords. Trusses project one module beyond side walls, forming sunshade for windows. Diagonal struts carry tension stresses from overhang to floor line, reduce steel required for studs and trusses by applying principle of the two-hinge arch. Top truss chords and purlins form a framework for 4' x 4' cement asbestos panels which are fastened with snap-on battens, sealed with tape at joints and topped with built-up roofing.

batten
P 4184-60

3/8" asbestos cement roof panel

panel purlin
P 4001

intermediate purlin
P 2000

panel purlin
P 4001

intermediate purlin
P 2000

panel purlin
P 4001

intermediate purlin
P 2000

cornice joist
P 4200 C

ceiling joist
103603

ceiling joist
103603

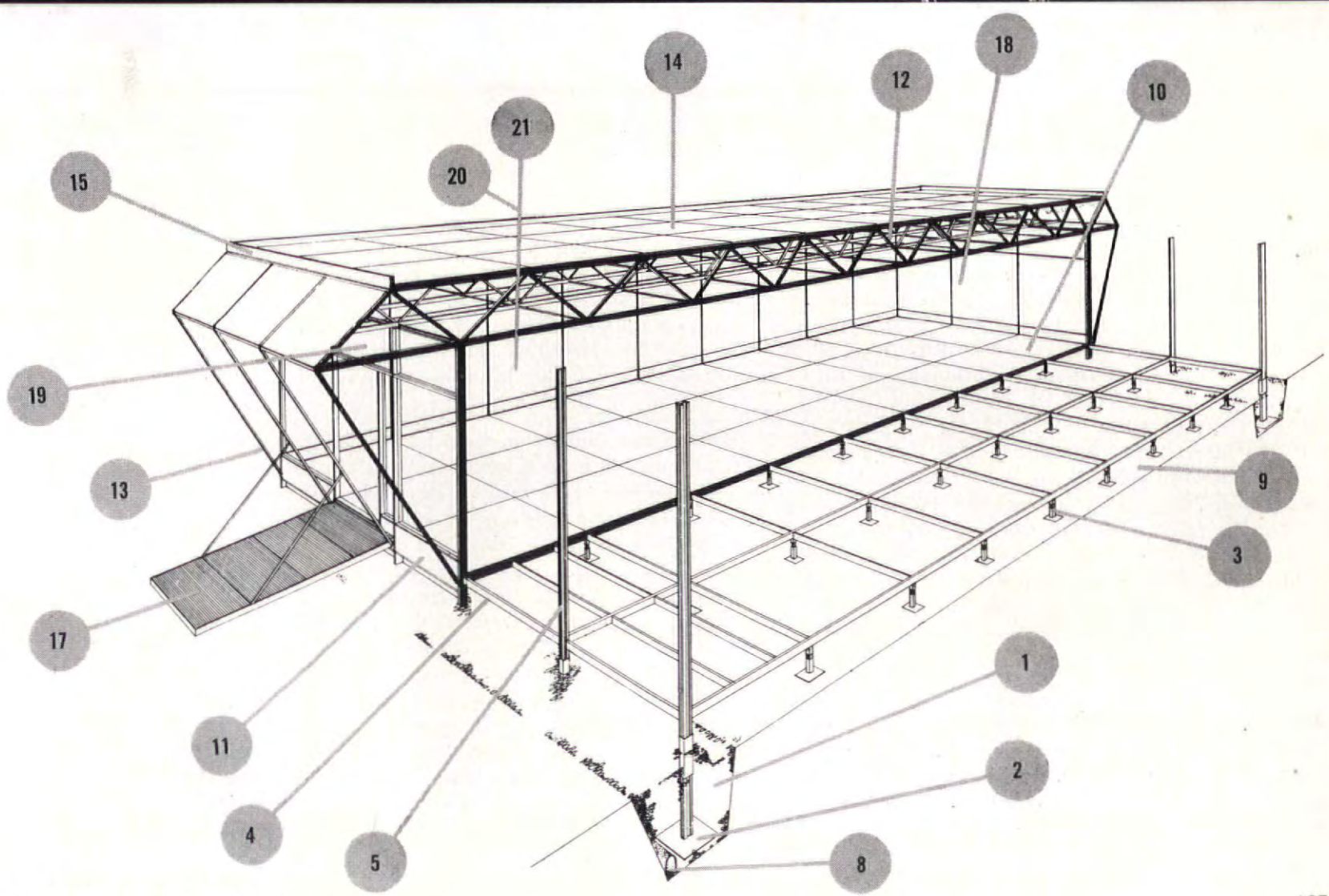
roof truss
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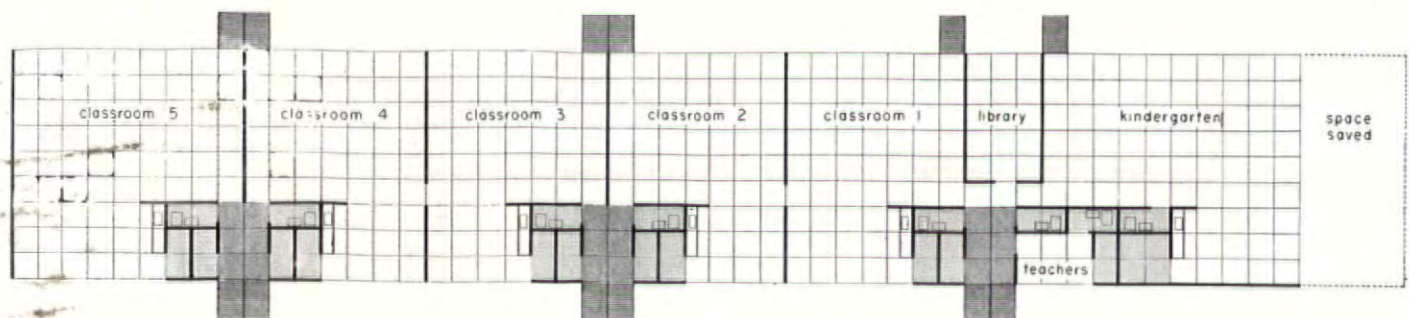
sidewall
stud
P 4004

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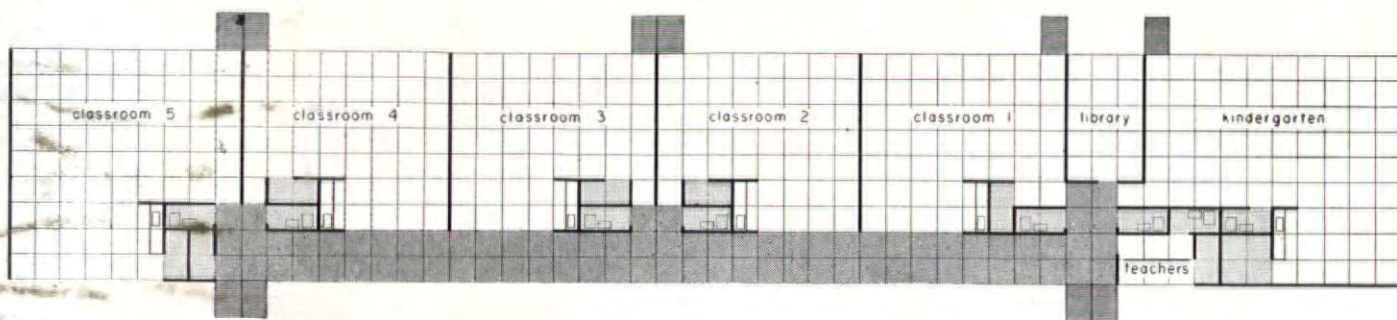
strut
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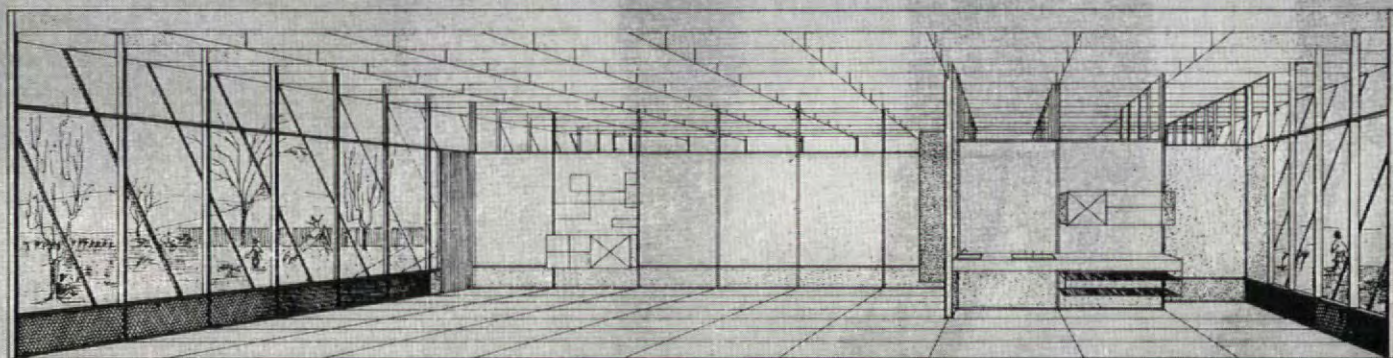




B



A



Plan variations. For maximum efficiency and flexibility of classroom layout, the designers recommend that the school be built nine modules wide to provide a clear span of 36'-5" from sidewall to sidewall. The length can be any number of bays required by local conditions. If necessary, the building can be widened by joining roof trusses together end to end and using intermediate column supports. Or, by linking classroom wings with passageway units, larger layouts can be developed for any site.

Plan A (above) shows how the 9-module width works out for a conventional sidewall corridor scheme. Included in the 7,776 sq. ft. area are a kindergarten, library, teacher's room and five classrooms, each with individual toilets.

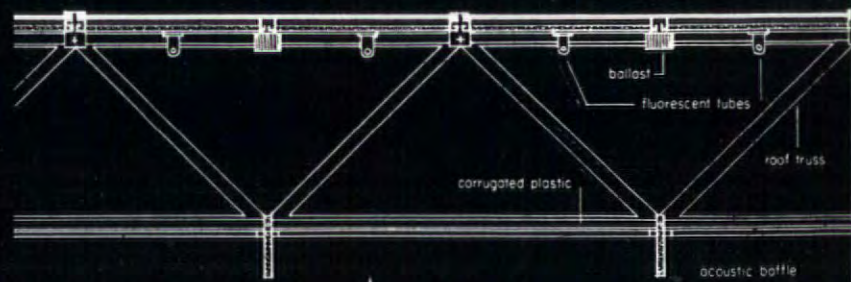
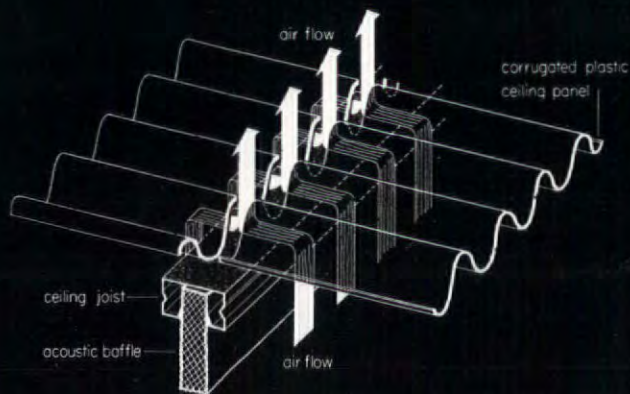
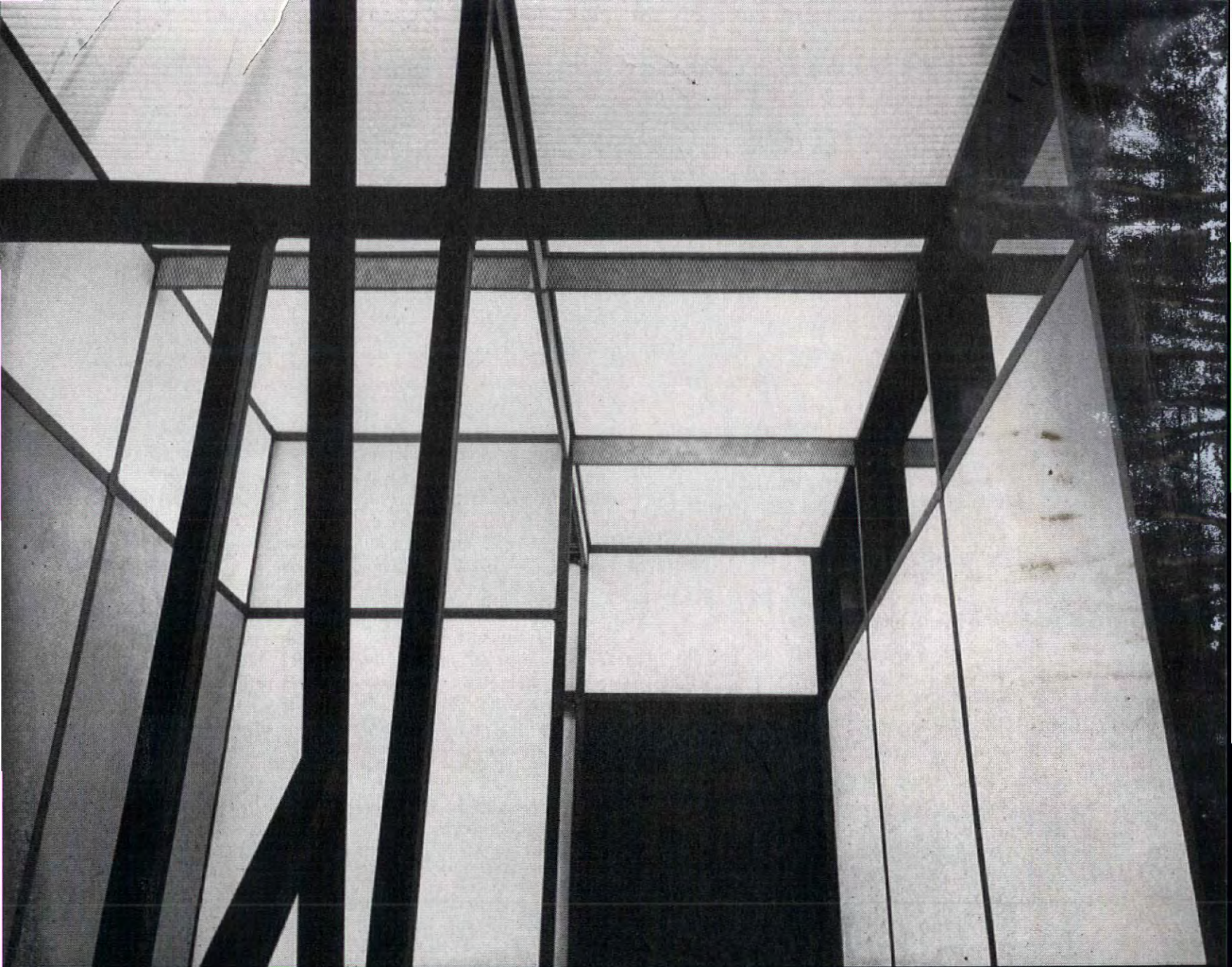
Plan B shows the advantages gained by providing separate lobbies for each pair of classrooms with a "concealed corridor" created by doors between rooms for occasional visitor or teacher traffic. The same facilities are provided in 576 less sq. ft., yet four classrooms become larger and added space for storage is gained. And with no outside corridor, each classroom gets more direct bilateral lighting.

Lighting. Glass panels on two sides of classrooms equal about 42% of the floor area, extend from ceilings to 13" above the floor for maximum daylighting. The 4' roof overhang on side walls helps reduce glare, and diffusing glass

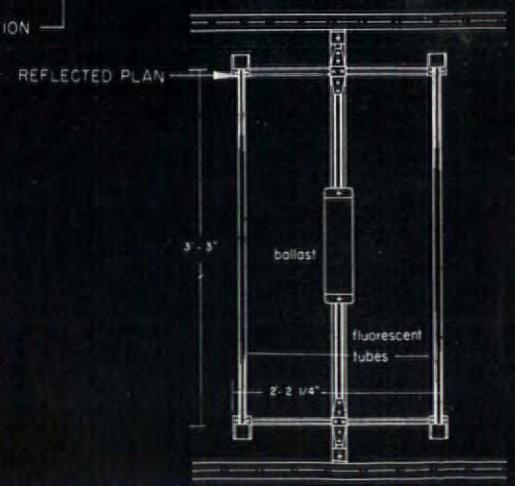
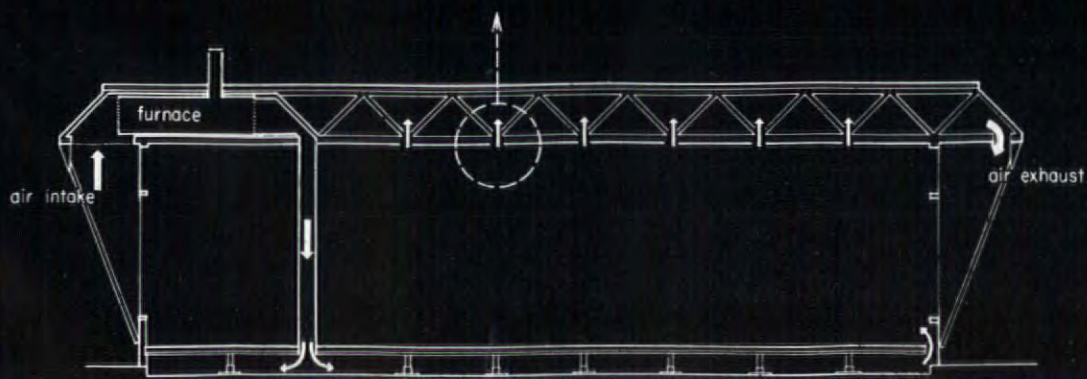
may be used in the upper section of end wall panels. To assure good lighting regardless of orientation and weather a pair of slim 42" fluorescent tubes on 24" centers is attached to the roof purlins above each 4' square of the translucent plastic ceiling (detail, right). With white-painted glass fiber insulation above the fixtures serving as a reflector, the uniformly luminous ceiling supplies 35 foot-candles at work level in classrooms.

Heating and ventilating. To permit flexibility in heating, the building is divided into zones containing only one or two classrooms. Each zone has its own independently controlled residential type furnace, which can be installed in the attic, above door height in the closet or in a separate utility room. A fan forces warm air through a duct into the underfloor plenum, where it creates a radiant heat effect in floors, then enters classrooms through perforated baseboards. The corrugations of the plastic ceiling panels vent the air to the attic plenum where part of it is recirculated while the rest is drawn outside by a fan (details, right).

Though windows with movable sash may be used, the designers favor fixed glass panels for closer control of ventilation. With fixed panes, the heating system fans can supply air in proper volume and velocity, and teachers do not have to open windows periodically.

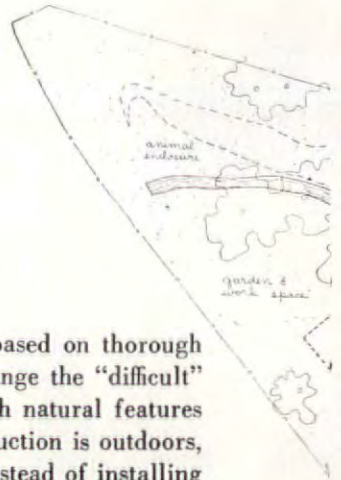


LIGHTING DETAILS : ROOF SECTION



DEMONSTRATION SCHOOL with factory-type roof

puts classes in top-lighted "bungalows" for ideal indoor-outdoor teaching



This charming demonstration school has just received a distinguished award by an equally distinguished jury in behalf of the Southern California and Pasadena AIA Chapters for buildings erected during the past five years. Serving UCLA's highly regarded School of Education, it teaches the following lessons:

1. Imaginative planning can convert such seeming site liabilities as a meandering stream, lush vegetation and steep contours into valuable teaching assets—without recourse to the bulldozer.

2. The added cost of putting each classroom in a separate wing is offset by big psychological gains—children feel more at home in their own "little house," enjoy a sense of intimacy despite the larger space needs of demonstration teaching.

3. Adapted to classrooms, the familiar monitor sash factory roof can provide good natural lighting for bigger floor areas, permit windows to be designed principally for view.

Architect Robert E. Alexander is especially proud of the fact that all planning decisions were made in close collaboration

with teachers and reflect a pooling of ideas based on thorough cooperative research. Key decision was to change the "difficult" 8-acre site as little as possible and use its rich natural features as teaching resources. (Over 50% of the instruction is outdoors, and the emphasis is on learning by doing.) Instead of installing a storm drain and filling in the small tree-bordered stream which traverses the property, the architect carried the school over it, made the stream itself a teaching center. For the youngsters it is a river, a harbor, a water source for miniature pioneer settlements and mining camps, a demonstration of water power and a place to study frogs and pollywogs.

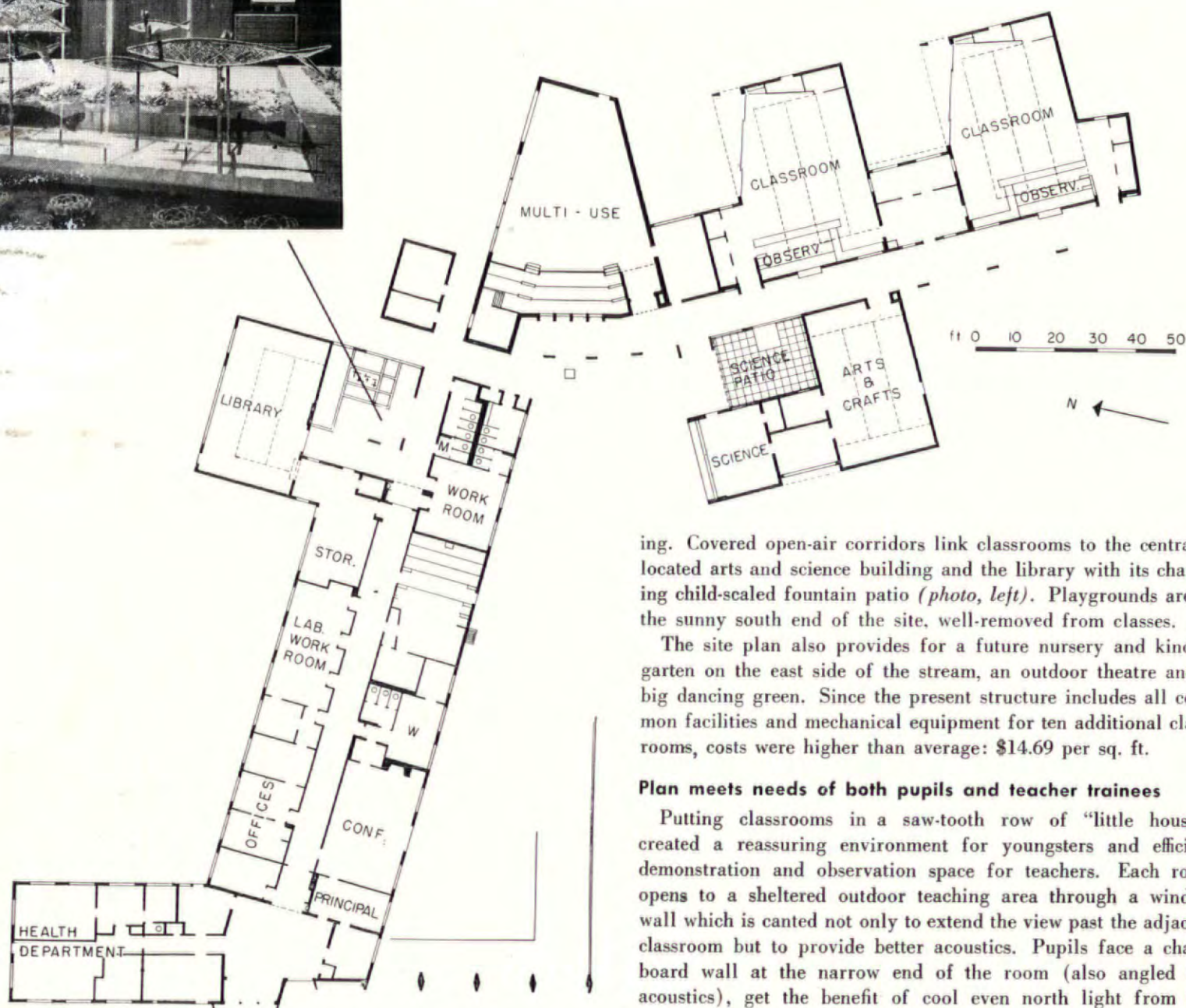
To give classroom wings privacy and room for future expansion, the architect put them on the far side of the stream, facing away from the street and the project areas in the stream bed. Pupils arrive at an off-street unloading area on the east side of the stream, cross over to classrooms on an open bridge or through the stream-spanning administration and research build-

Julius Shulman





Library patio is filled with sound of Sculptor Bernard Rosenthal's charming fish fountain.



Multi-purpose room for audio-visual education, teaching demonstrations and children's plays is at junction of classrooms wings, has angled walls and ceiling for good acoustics. Notable features of the administration-research wing: a room with a one-way screen for observation and a series of small laboratories which can be merged into one big room by folding partitions.

COST BREAKDOWN

Excavation and grading....	\$14,800	Lath and plaster	10,500
Form work	23,680	Glass and metal	3,250
Foundations and slabs....	15,600	Ceramic tile	2,500
Cement floors, walks and steps	11,600	Toilet partitions	1,100
Masonry, concrete piers and bond beams	30,300	Hardware	5,852
Reinforcing steel and mesh	13,750	Painting	6,319
Carpentry and millwork...	29,900	Plumbing, heating and ventilation	36,500
Wood floors and membrane	2,600	Electric	17,890
Metal doors and frames ..	15,000	Shades and screens.....	957
Steel windows	6,200	Asphalt tile	2,750
Louvers	5,800	Blackboards and tackboards	2,400
Structural and misc.	10,000	Steel cabinets	21,782
Roofing and sheet metal ..	8,700	Yard work	2,000
Insulation and cement asbestos board	10,400		
		Total	\$312,130

ing. Covered open-air corridors link classrooms to the centrally located arts and science building and the library with its charming child-scaled fountain patio (*photo, left*). Playgrounds are at the sunny south end of the site, well-removed from classes.

The site plan also provides for a future nursery and kindergarten on the east side of the stream, an outdoor theatre and a big dancing green. Since the present structure includes all common facilities and mechanical equipment for ten additional classrooms, costs were higher than average: \$14.69 per sq. ft.

Plan meets needs of both pupils and teacher trainees

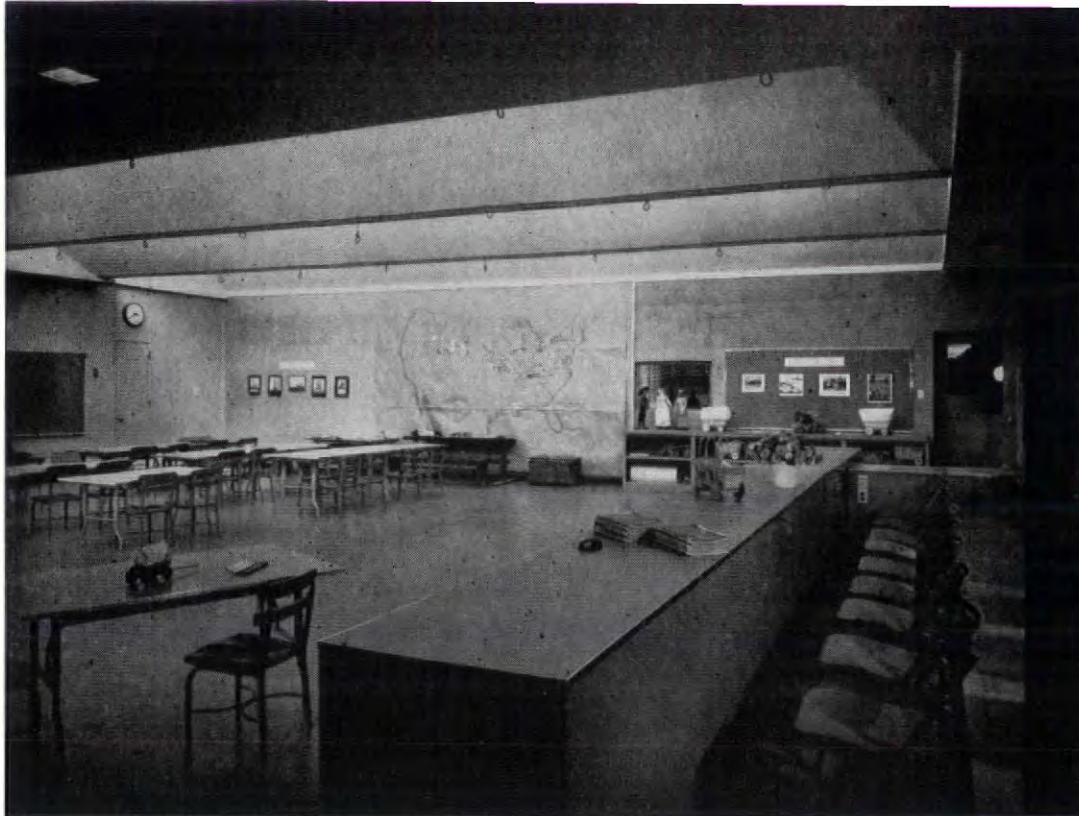
Putting classrooms in a saw-tooth row of "little houses" created a reassuring environment for youngsters and efficient demonstration and observation space for teachers. Each room opens to a sheltered outdoor teaching area through a window wall which is canted not only to extend the view past the adjacent classroom but to provide better acoustics. Pupils face a chalkboard wall at the narrow end of the room (also angled for acoustics), get the benefit of cool even north light from the window and the monitor sash overhead. The wider end accommodates a pupils' work center and a tiered platform for 50 observers. Between each pair of classrooms are offices and workrooms for supervising teachers and teacher trainees.

Factory-type roof produces good light for big areas

Roofing classrooms with monitor sash provided good natural light throughout an unusually large area (33' x 50') with little help from windows, freed large wall areas for work areas. This kind of top-lighting points to the possibility of even bigger floor areas with distant windows for view only.

But like other daylighting pioneers, Architect Alexander learned that skylights complicate electric lighting—light which a full ceiling would reflect is lost through the glass. His solution was a row of swiveled floodlights, fastened beneath the sash but focused on the sloping ceiling sections. (Section, right.)

The monitor roof is carried on light tubular steel trusses, has wood joists and sheathing with a perforated asbestos board ceiling and sheet aluminum covering. By installing the skylights perpendicular to the slanting roof planes instead of to the ground, the architect got a minimum of exposed surface, saved on both aluminum and glass.



View from classroom entrance (left) shows how monitor sash distributes cool, north light evenly throughout room. Observers' section is at right, behind movable storage counter. Note observation window in wall of supervisor's office.



View from northeast shows multi-purpose room with acoustically angled roof and walls and open-air dancing green (below). Beyond are classrooms with outdoor teaching areas.



Skylights face away from pupils and observers, are rarely seen from this angle. Flexible incandescent floods below sash are used at night to reflect light from ceiling planes (above).



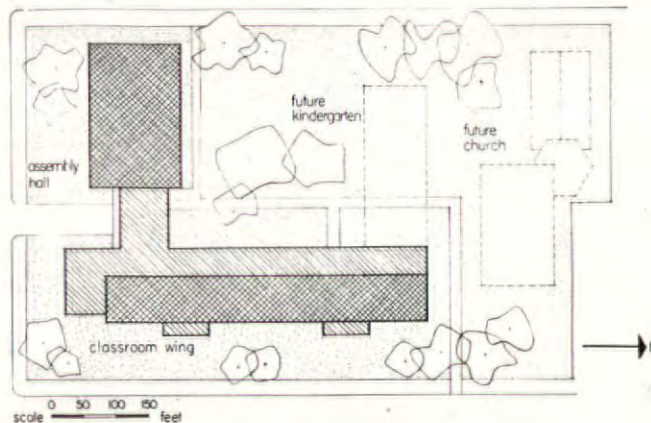
TWO-STORY SCHOOL

eliminates top-floor corridor, opens all classrooms to light and air on two sides

LOCATION: Berkeley, Mo.

HELLMUTH, YAMASAKI & LEINWEBER, INC., Architects

ALFRED ROTH, Associate Architect and Designer



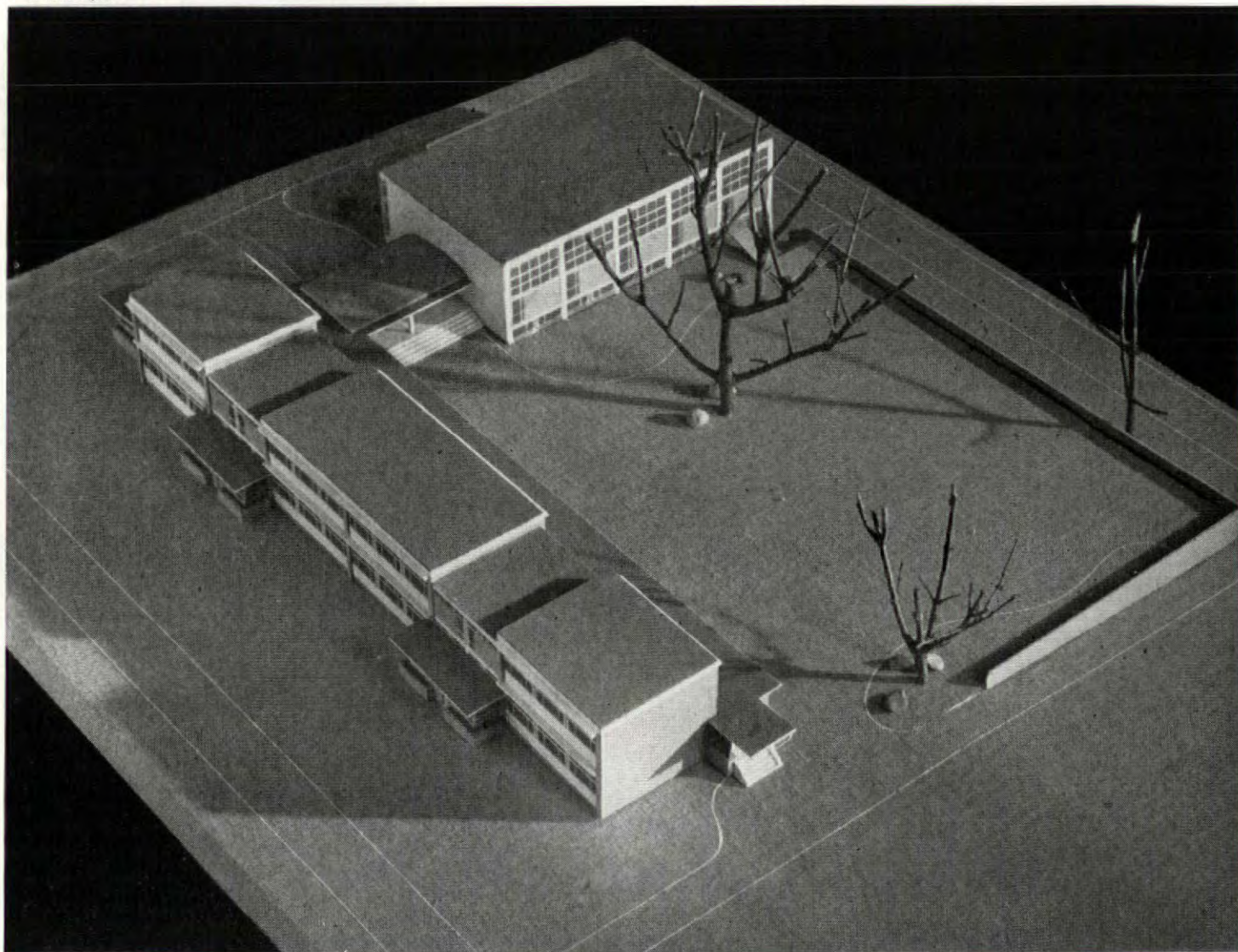
How can a two-story school provide one-story amenities? Top Swiss architect Alfred Roth's answer is to build classroom units like row apartments, with frequent stair halls replacing upstairs corridors.

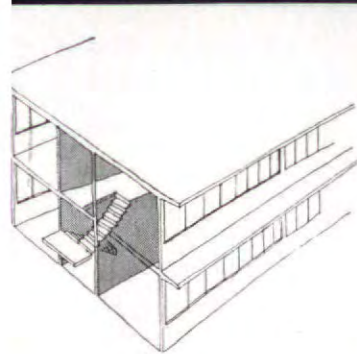
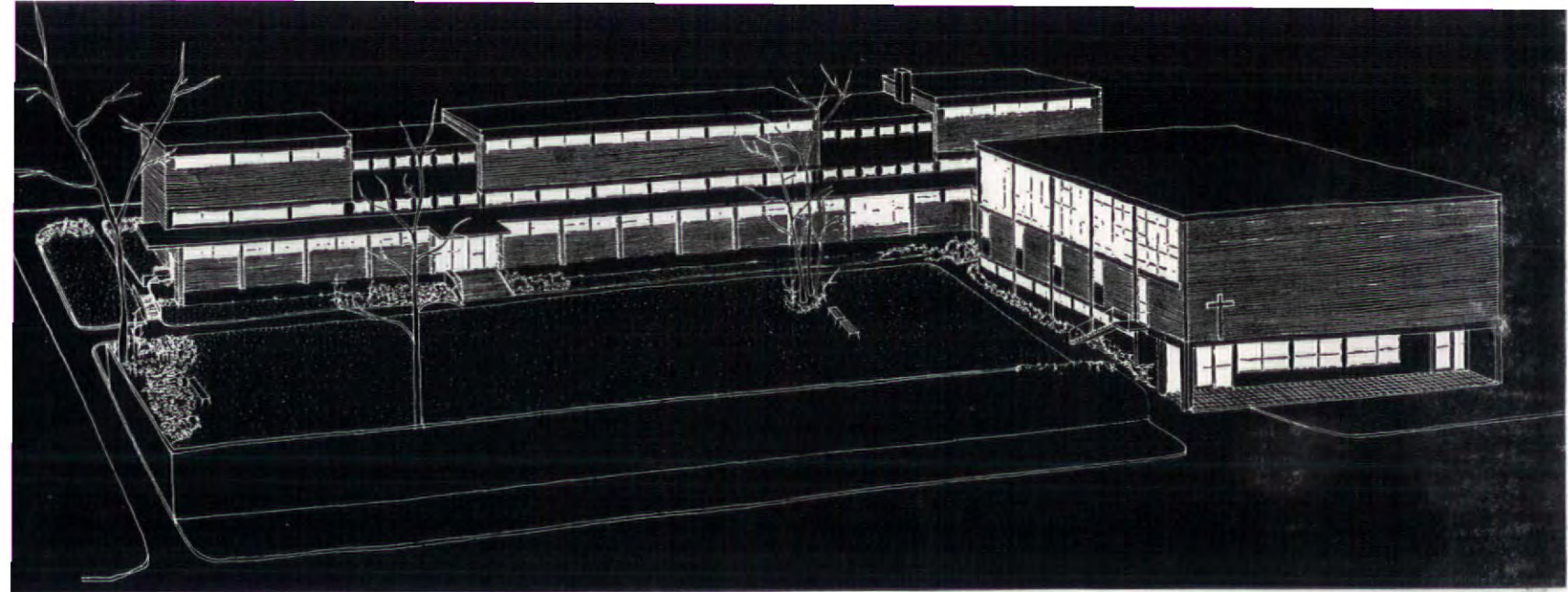
Roth developed this type plan nearly 20 years ago, saw it tested successfully in Switzerland in the Thirties (THE MAGAZINE OF BUILDING, Feb. '51), has now introduced it to the U. S. Here is his project for St. Louis' Holy Ghost Parish School, designed in association with Hellmuth, Yamasaki & Leinweber of that city.

By putting the school's eight classrooms in a two-story row subdivided by stair well sections between each pair of rooms, Roth gained these basic advantages:

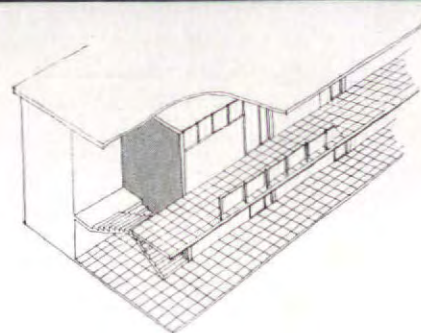
1. Land which would have been gobbled up by an ideal one-story plan was made available for the school's future expansion on a small suburban site. (Main classrooms and an assembly-cafeteria building are now under construction; kindergarten wing, rectory and church will be added later—plan, above.)
2. Eliminating the top-floor corridor freed the whole width of the building for upstairs classrooms, provided better bilateral lighting and through ventilation than most one-story schools can offer.
3. Stair halls decentralize traffic, control noise, serve as quick fire exits and create an informal, homelike atmosphere for their adjacent classrooms.

B. Mossbruffer

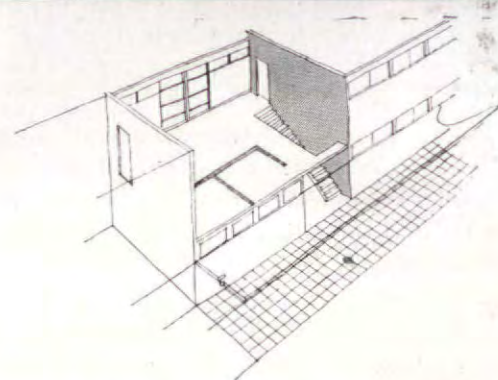




Conventional two-story plan is more compact than Roth's but overloads central corridors, has poor natural light and ventilation.



Though single-loaded open air corridors approximate ideal one-story school conditions, their use is limited to warm climates.



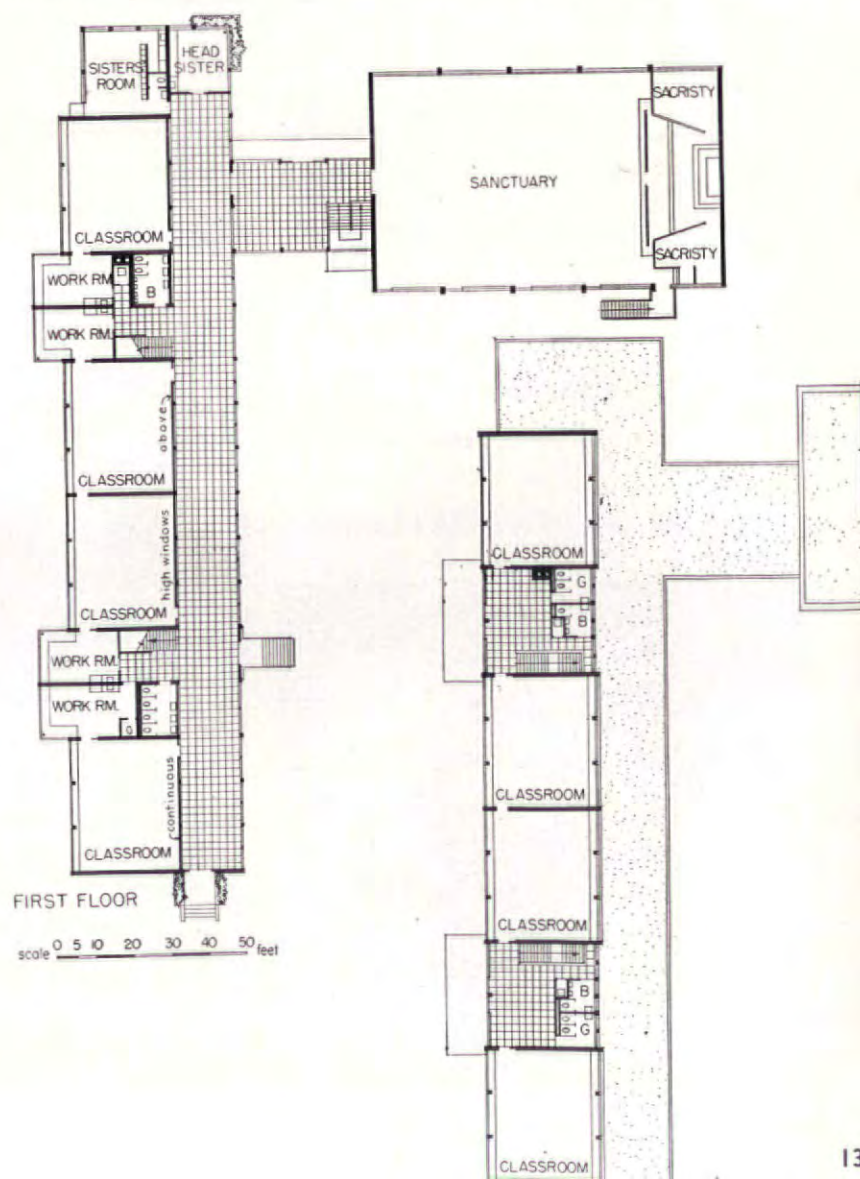
Roth's plan provides good classroom lighting on both floors, decentralizes traffic and noise, is adaptable to extremes of weather.

Each stair hall section also provides two 10 x 20' work-rooms for primary classrooms on the ground floor, an independent lobby and play space for second floor classrooms and an economical stack of convenient toilet facilities (plans, right). Stairways are linked on the ground floor by a single-loaded corridor extra wide (16') which can be merged with the assembly building's lobby to form a large space for recreation or exhibits.

Classrooms meet today's requirements for flexibility and good lighting. Their 27 x 33' area accommodates the informal furniture arrangements required by grade school pupils. Large strip windows on the east are shaded by overhangs; glass on the opposite side of classrooms is limited to ribbon strips to give balanced light without an overdose of the hot western sun. Bilateral lighting for ground-floor classrooms is provided by a strip window between the roof of the 8' high corridor and the 11' high classroom ceilings (rendering, above).

The slope of the site is exploited to provide a cafeteria beneath the assembly hall, easily accessible for community use either from the street or the lobby above. Pending completion of a new church on the north end of the site, this 400-seat hall will serve as the school's religious center.

The school's exterior is a direct expression of its structure—reinforced concrete frame with filler panels of brick, left unplastered inside. Interior partitions are light-colored glazed block; ceilings are acoustic tile. Floors are colored cement and asphalt tile; woodwork is natural finished oak and red pine. Contract cost of classrooms and assembly building is \$342,328, or \$11.73 per sq. ft.

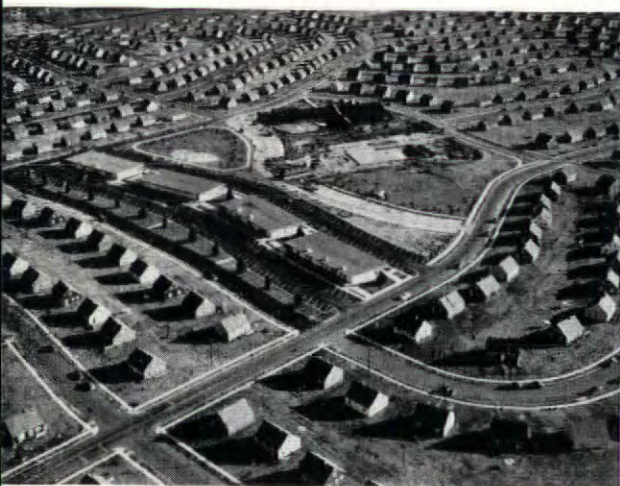




**Retailing's move to the suburbs . . .
New Framingham shopping center near Boston**



Industrial relocation . . . U. S. Steel's vast Fairless Works



The large-scale housebuilder . . . Levittown, L. I.



Our background of planning skill . . .

Greendale, Md.



The threat of atomic bombing . . . air-raid drill, New York City school

Photos: (above) N. Y. Herald Tribune—Ted Kell; International News Photos; (left) Thomas Airviews; Fairchild Aerial Surveys, Inc.

NEW TOWNS:

Industry's move to uncongested land outside the cities is bringing a planning dream to life. The new Bucks County steel town shows the pattern

New towns—communities held to a size where a man can know his neighbors and wrapped in green space where his children can safely play—have been a planner's dream for generations. This year, as the nation shook and roared in the mighty effort of rearmament, yesterday's dream began to look like the life-and-death reality of U. S. industrial expansion.

The dream could be seen in the new towns Big Steel's mining subsidiaries were building in the cold yellow plateaus of the Mesabi Range. It could be seen in the community American architects were laying out in the wilderness of British Columbia for the Aluminum Co. of Canada. It was just over the threshold for many a smaller U. S. industrialist who had picked up his plant and moved it out to the country only to find that his workers had no place to live, to shop or to educate their children. And, although it was bent to the limits of available time and money, it was probably seen clearest of all in the green valley of the Delaware River where U.S. Steel had shoved spinach and asparagus aside to put up a half-billion worth of blast furnaces, coke ovens, open hearth furnaces, blooming and rolling mills—the biggest integrated steel facility ever to be built at one time in the U. S.

U. S. Steel's great Fairless Works was the decisive new factor which the dream had always lacked before. When a few visionary planners and real estate men laid out the first American shape of the New Town 20 years ago—Sunnyside, Radburn, Baldwin Hills Village—the land hopefully earmarked for industrial location had never been used. Not even in housebuilder Nathan Manilow's postwar Park Forest, a town 27 miles from Chicago's Loop, had industry been persuaded to take up sites

But now, as industry moved to new locations in the big tide of decentralization, builders, planners and real estate men woke up to the fact that every essential element needed to make New Towns an economic reality was finally at hand. These were:

1. The big department store's move to the great new automobile trading areas outside the cities. Although the department stores only recently moved to the suburban market, big community builders like J. C. Nichols, Hugh Potter, and even the Metropolitan Life Insurance Co. long ago discovered that the big profit out of housebuilding comes from the shopping center built to serve all the new homeowners who have been brought out of the cities. This means that today's housebuilder has a big economic stake in producing a planned community, designed to support its own retail development, instead of yesterday's sprawling dormitory suburb.

2. The emergence of the large scale operative housebuilder. This enterpriser, the man who can put up thousands of houses at once and take the risk that they will be sold, has come to

dominate the housebuilding picture so completely that few of us remember that he wasn't here before World War II and FHA's liberalized credit aids. Before the operative housebuilder, nobody had the capital resources, the building organization and skill to move onto raw land and produce, almost overnight, communities complete with sewage and water systems, park and recreation space, schools, churches, stores.

3. A background of planning skill which showed—in the superblock, the greenbelt, the neighborhood unit—that it is economically possible to turn our back on the urban gridiron, with sudden death at every street crossing and buildings swollen to nightmare size.

4. The threat of atomic bombing. U. S. city dwellers could no longer blink the fact that they were living in the most dangerous spots on earth.

These were the forces that were bringing New Towns to life. They were not yet all acting together. In Paducah, in Aiken, in other, less spectacular areas feeling the first shock of industrialization, they seemed merely to confuse and cancel out each other. Elsewhere they were shaping a more promising pattern. This is the way it looked in the Delaware River Valley:

What planners call the "most explosive planning and building problem in the U. S." began quietly in the spring of 1949. That is when the Manor Real Estate Corp., a corporation formed by the Pennsylvania Railroad, began buying acreage in lower Bucks County, a semi-rural Pennsylvania area hitherto notable chiefly as the summer retreat of the New York literary and painting set. It was not until the end of 1950 that U. S. Steel, having acquired title to the 3,900-acre tract assembled by Manor, announced that it would build a \$400 million plant there.

When Big Steel decided to locate on a bend in the Delaware River where Venezuelan ore boats could dock, it launched an avalanche of development. By last month, three other major steel companies had bought sites in the area, such steel industry suppliers as General Refractories (fire brick) were pouring concrete for their plants, oil companies along the river had doubled and tripled their plans for expansion, a dozen manufacturers (including Kaiser Metal Products and Philco) had announced new plants, and daily rumors of new takers (including both Chrysler and General Motors who were said to be looking for assembly plant sites) had set off land speculation reaching far beyond Bucks County.

By the time the fabulous Long Island housebuilders, Levitt & Sons, arrived on the scene, agricultural land which only yesterday had found no takers at \$400 an acre had shot up to an average of \$2,000, with strategic parcels bringing much higher figures. John Galbreath, a Columbus real estate tycoon financially backed by U. S. Steel, had already acquired a 2,000-acre site five miles from the plant on which he planned to build about 4,000 prefabricated houses. McCloskey & Co., a Philadelphia contractor also alert to the size of the housebuilding market that would arise around the steel plant, was bidding against Levitt for land; a dozen smaller firms with two or three hundred houses in mind were in the market; ten big farm holders banded together, hired

a lawyer, promised each other they would sell as a package or not at all. The result: Levitt paid about \$2.5 million for his first 2,000 acres and an even higher figure for additional purchases which bring his total holdings to above 3,500 acres.

By this time Philadelphia newspapers were referring to the area as the "Ruhr of the Atlantic" and freely predicting that deepening of the Delaware River channel (which Army engineers are expected to undertake at a cost of \$10 million) would open world trade to the riverside plants and turn Trenton (an old town with a street pattern unchanged since Colonial times) into a deep water port rivaling Boston. Philadelphia real estate men were glowingly predicting that the area would some day be "built up solid from Newark to Pittsburgh," while the Philadelphia Housing Association, not so glowingly, alerted the Pennsylvania State Planning Board (of which leading Philadelphia Edward Hopkinson, Jr. is an influential member) to the same possibility. Even conservatives said population would grow by 100,000.

This was the backdrop against which the two housebuilding developments which will compose the new steel town proceeded. Realtor Galbreath was putting up Gunnison prefabs and by last month had 1,000 under roof, 115 occupied.

Levitt & Sons, whose tract borders the Galbreath holdings, planned a 3-year building program amounting to 16,000 houses. Last month Levitt had a team of engineers on the site studying water supply, drainage, sewage disposal and utility layout, and expected to start building houses by spring.

When the giants hit

When these big building wallops hit Bucks County, neither zoning ordinances, subdivision regulations nor an active planning commission existed. The county, a mixture of Philadelphia suburban development, summer homes and large commercial farms with canning plants here and there, had been controlled for decades by the Grundy wing of the Republican party, and could boast Mr. Grundy himself as a resident. Township governing bodies were part-time road commissioners. If the giant newcomers wanted to contact the local government, they had to seek out these men at their homes at night.

When Galbreath went to work, he was obliged to check neither his location, his site layout, nor his plans for development with any local government or planning body. This is no reflection on Galbreath, who had hired Seward Mott, the man who set up FHA's land-planning standards, to prepare a good site plan (see p. 140). But it does point to a condition that is uniform in all new development areas.

"Developments on this scale always strike in places not prepared for them," says James Mitchell, director of the University of Pennsylvania's Institute of Urban Studies, which is studying the Bucks County development under a research grant from HHFA. "The folks who have been running things are adjusted to a certain scale of activity and a face-to-face way of doing business. Then overnight they are called upon to deal with big new forces—U. S. Steel, Levitt, the steel workers' union, federal agencies. By the time they have awakened to what's going on, the physical pattern of their surroundings has been frozen for generations to come."

Although the Bucks County Planning Commission now has an executive director and some money to hire a staff, it has not yet adopted subdivision regulations. (Levitt, however, has filed a plan covering his first 400 units with the commission.) One result of the initial absence of interested local government resources is that the Galbreath and Levitt plans bear no relation to each other. Example: a road planned in Levittown as a 154' thruway bordered by a 20' greenstrip on each side has been handled as an interior street with houses fronting on it in the Galbreath development.

LEVITTOWN will grow from master blocks, have green belts

Levittown, Pa. will amount to about \$160 million worth of houses and at least \$25 million worth of factories, shopping centers and other buildings. It is hard to sense the scale of a housebuilding job of this magnitude. The bare figures give some idea of the capital risks Levitt & Son are assuming in their move onto raw land where they will have to provide, among other things, a \$3 million sewage disposal plant and a \$11½ million water supply system. They seem to be developing a planning imagination to match the scale of their undertaking, but have not yet taken the hurdle of varying the pattern of individual houses by providing other building types (low apartments, row houses, etc.)

Says Bill: "We'll be way ahead of even our ambitious Landia plan. We learned a lot on Long Island and every bit of our experience is going to be applied in the new town."

Says Designer Alfred: "On Long Island, we never knew from one year to the next how much more we could build so we never had an over-all master plan. Today we are taking the bull by the horns and saying—There will be at least three years of production. We are assuming these risks."

Levittown, Pa. will differ from Levittown, L. I. in these ways:

1. Complete contiguity of site. "We own enough land so that here nobody can come in and interrupt the character of our development."

2. Mixture of income levels. The first-year program calls for:

▶ 3,500 3-bedroom houses at \$9,990 on 70' lots (see Oct. '51)

▶ 1,500 smaller houses to rent for \$65 a month;

▶ 500 houses at \$17,000, start of a section like the Levitt's Roslyn country club district on Long Island.

3. Mixture of family age levels. There will be no great concentration of young veterans as in Levittown, L. I., and school population is expected to be only 0.9 children per family.

4. Clear definition of the neighborhood unit (not more than 400 families), bounded by curved local streets and natural landscape features (see diagram right).

5. Definition of the basic planning unit as the "master block"—a roughly mile square area bounded by 154' wide parkways (20' of greenbelt on each side) and composed of 1,400 houses.

6. No houses fronting on parkways. All will turn their backs on the greenbelt roads bounding the master block.

7. One elementary school as the center and focus of each master block, with swimming pool,* ball field, stadium, etc. This means that no child will have to walk more than ½ mile to school or cross any major road.

8. A single mile-long \$15 million shopping center, designed to attract major department stores. This is a big policy shift from Long Island, where the Levitts built seven "village green" local shopping centers focused around a supermarket and let outside promoters reap the big profits of developing the major shopping center including department stores along the turnpike frontage. In the new plan, supermarkets will be in the main shopping center. Says Alfred: "Thanks to the number of appliances in our house, the girls have three hours to kill every afternoon. They want to find some excitement and they prefer to do even their grocery shopping in the main retail district."

There will, however, be three or four necessity shopping centers in the interior of the property.

(These are only the highlights of a plan still in development, which will be presented in detail in a future issue.)

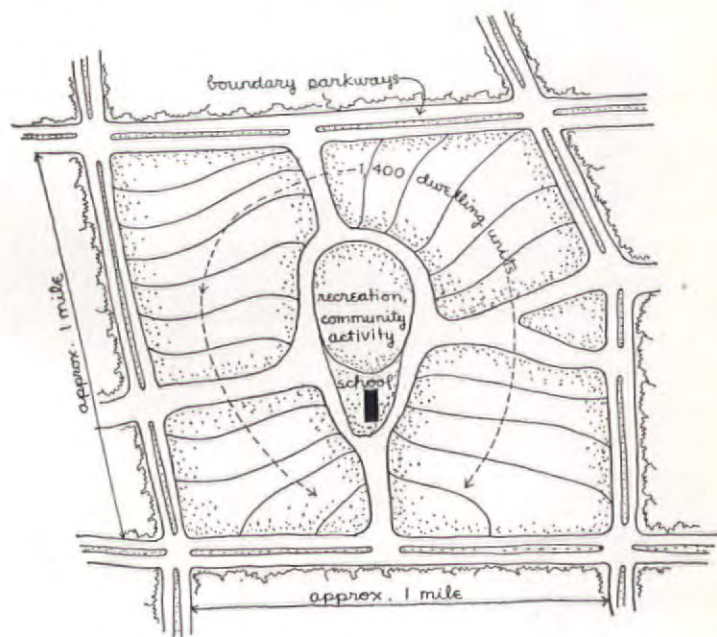
* In Levittown, Long Island, swimming pools were used as an inducement to draw people to the shopping centers. The Levitts have decided such inducement is unnecessary.

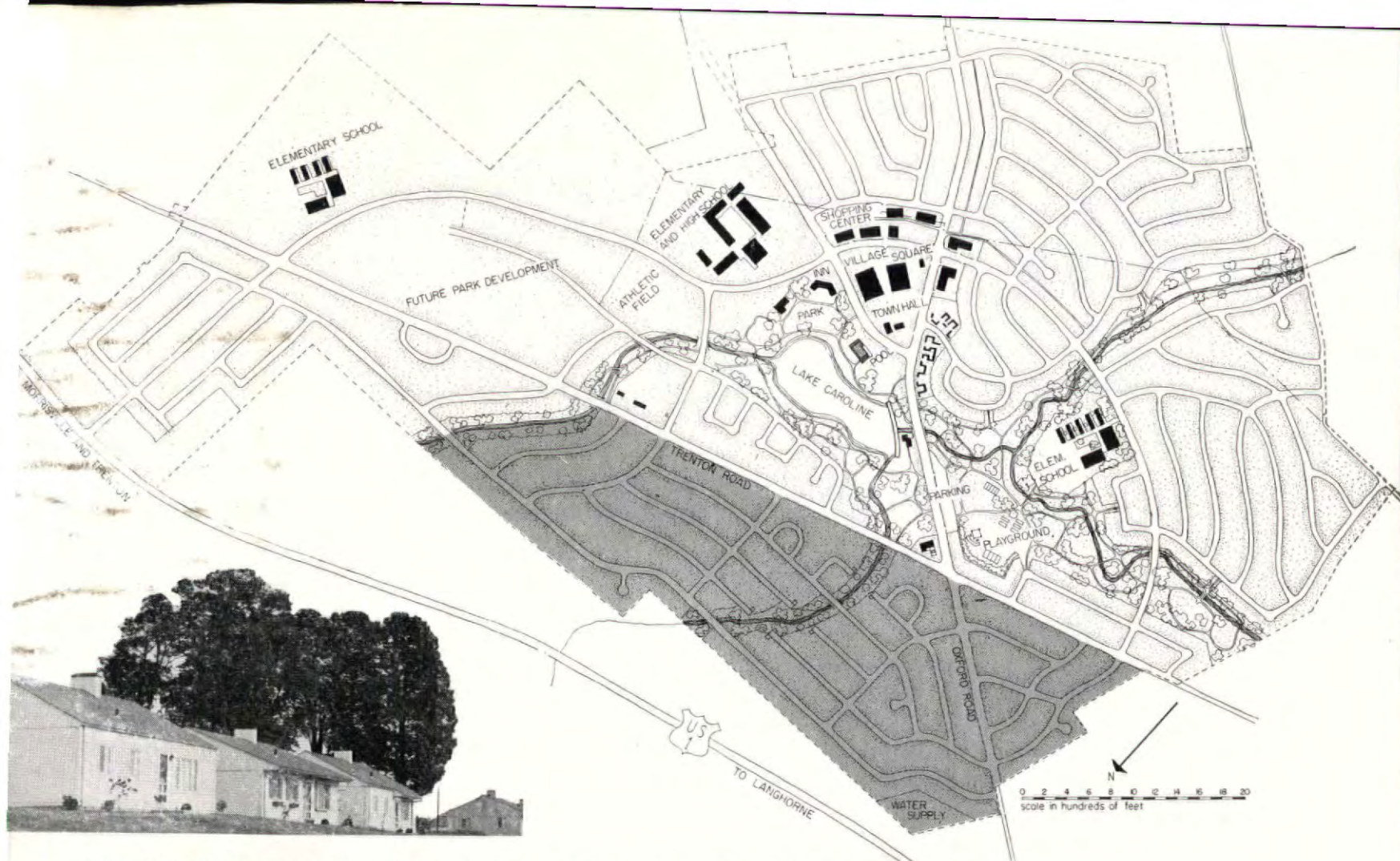


New town area is walled by railroads and federal highways. Map shows proposed relocation of U. S. 13 west of Pennsylvania RR main line. Levitt plans an industrial strip off this highway, separated from residential area by greenbelt and zoned for light industry. Mile-long shopping center will be next.

Levitt's plan uses old farm roads ("a traffic network tested by generations which we found marked off mile-square areas") to define his master block. These roads will be widened to parkways. Rough diagram (right) shows neighborhood units within master block.

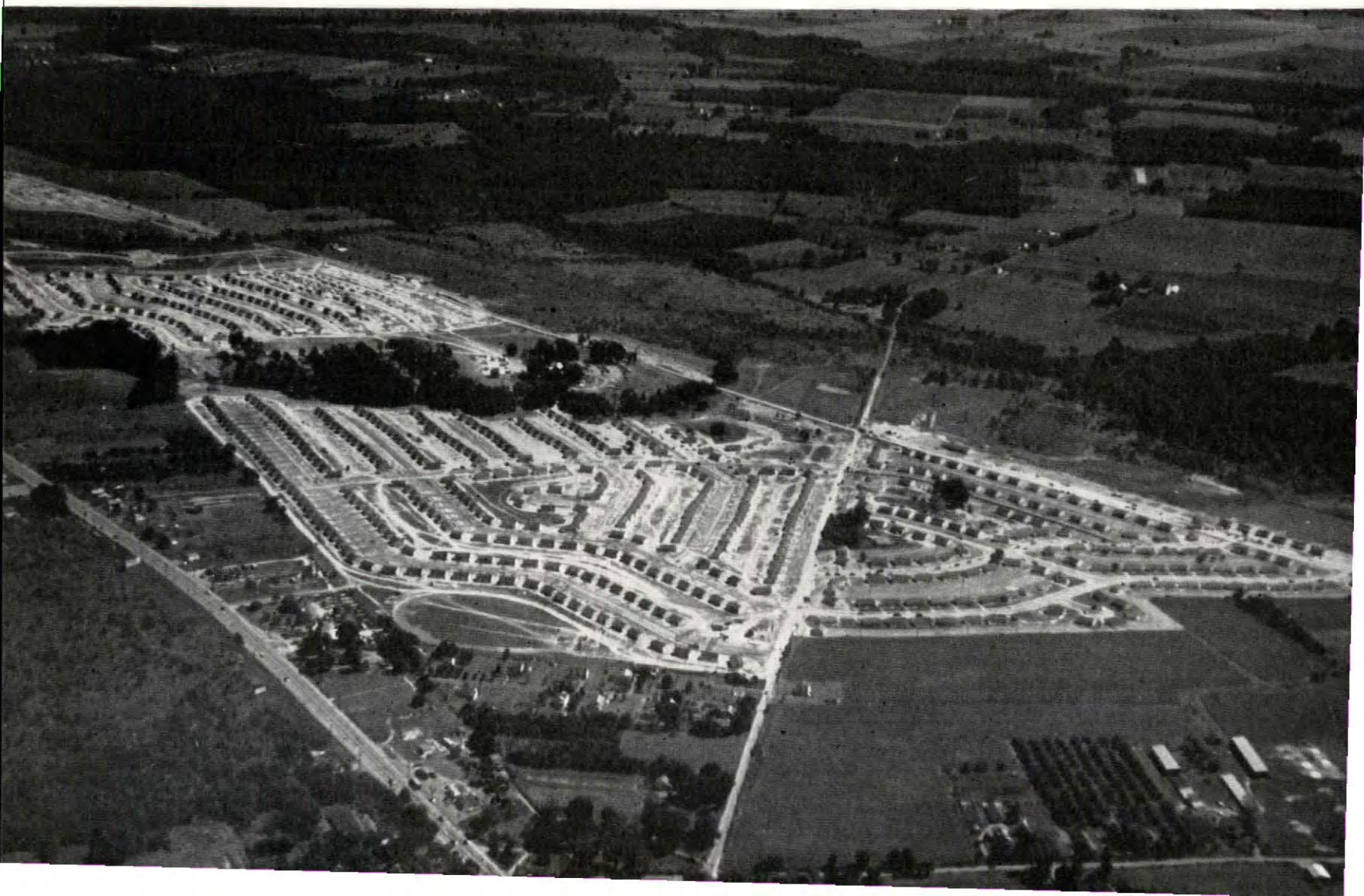
Designer Alfred Levitt is making every effort to give his community identity. But politically it will straddle two townships and a borough, each with its own tax rate and school system. The U. S. Steel plant is in Falls Township, and Galbreath has been careful to plan all his buildings within its boundaries. Surrounding townships, which will not share in the big tax increase in Falls, wonder how they can raise funds to provide the new schools, hospitals, roads the onrushing population will demand.





Fairless Hills site plan, with roads cut to fit the rolling contour of the land, shows separation of collector and local roads. Curvature of local roads is also expected to discourage traffic. Shaded area shows part already built,

visible in air view below. Low central portion of site, unsuitable for building, was exploited as drainage lake. Photo shows typical row of Gunnison prefab houses, sited on 60 ft. lots.



FAIRLESS HILLS has curved streets, central lake and park

Realtor John Galbreath chose two sides of a gently sloping valley as the site of Fairless Hills (named for U. S. Steel President Benjamin Fairless). This site provides natural drainage toward a low section in the center, which is being converted to a 17-acre lake at a cost of \$100,000. Some 15% of the site has been set aside as park space, bordering the lake and lacing throughout the plan. Fairless Hills lies five miles NW of the Fairless plant—within easy reach but not too close to its smoke stacks.

Land planner Seward Mott laid out a curved street pattern adapted to the rolling topography of the site and even plotted some street curves to save handsome stands of trees. The rolling land proved fairly easy to grade and added some variety to the rows of Gunnison prefabricated houses, sited with staggered setbacks. Houses put up so far are set about four to the acre and, despite the land plan exploiting natural contour, etc., demonstrate rather conclusively that a 38' wide house set in the middle of a 60' lot does not leave much elbow room.

Galbreath has discovered that the steel workers are less interested in his 2-bedroom minimum house (\$9,850 on a 60' lot) than in a 3-bedroom house priced around \$11,000 (the well-known Gunnison Coronado) on a 70' lot, and is increasing the number of the latter. He is also building a \$16,000 Gunnison house, which amounts to 1,152 sq. ft. plus a 2-car garage and connecting breezeway. (Anxious local residents were assured that design of the Gunnison prefabricated house "fits in with Bucks County architecture of 1870.") There will be at least 40 custom-built houses for steel plant executives, and about 100 units of rental housing in 2-story buildings. There is one all-steel demonstration house on the site, unidentifiable by eye from the standard Gunnison wood panel model. U. S. Steel has owned Gunnison since 1944 (a year when steel men were worrying about postwar surplus capacity) and an all-steel house would be on the market now if steel shortage had not intervened.

Galbreath donated several prefab houses for temporary use as schools. A state meeting of school principals visited the site last month and registered so much enthusiasm about the "homelike feeling" of these temporary classrooms that serious consideration is now being given to using small groups of Gunnison houses for elementary classrooms, placed to serve every 500 houses. "If they decide to do that," says Galbreath, "we could build the schools in four months and save \$2,000 per classroom."

Fairless Hills' biggest trouble last month was water. Three wells, drilled on an elevated NW section of the site produced a disappointingly low flow. Now Galbreath plans to sink wells at Tullytown, along the river, and pipe the water three miles back to the site. A sewage disposal plant is also planned to replace the septic tanks now in use. These utility developments will, however, take some time to complete, while 1,000 houses are already up.

Because Galbreath's Danherst Corp. had no problem finding construction money it was not necessary to seek advance FHA approval for mortgage insurance, thereby eliminating up to six months' delay. (U. S. Steel expects to start rolling steel January 1 and had to have houses ready for workers.) Houses are being temporarily rented, with option to buy. When permanent financing is arranged, it is expected to go through conventional channels with FHA insurance; the planners say FHA standards have been met.

The Fairless Hills shopping center is conservatively planned for 200,000 sq. ft. of store space. The Union Supply Co., U. S. Steel's store subsidiary, which carries everything from groceries to fur coats, will operate the main store of 50,000 sq. ft.

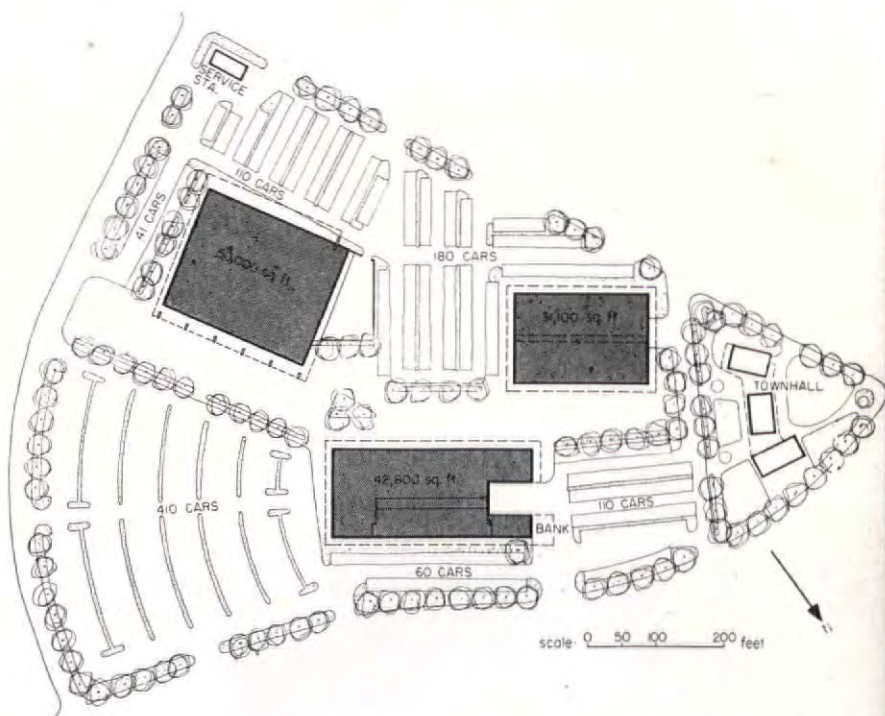


Business Week: Dick Wolters

Community builders consulting on shopping center plan are (l. to r.): Land planner Seward Mott, Boyd Barnard, J. W. York, Richard Seltzer, John Galbreath, U. L. I. staff member.

Last month Galbreath asked the Community Builders' Council of the Urban Land Institute to visit Fairless Hills and criticize his plans for the shopping center. The Council, whose members are top-bracket real estate men from all over the U. S. and pioneers in community and shopping center development, went over the plans minutely, while architects Tully & Hobbs, Columbus, listened attentively. Some of their recommendations:

- ▶ Shopping center area, now held to a tight triangle by three roads, should be increased for future expansion by relocating one road.
- ▶ Malls of 65-75' width. Most members thought Northgate's 48' mall oppressively narrow, but Richard Seltzer warned, "Malls can get too wide. People like crowds."
- ▶ Priority for a bowling alley in clear span space, acoustically treated (bowling is first choice sport among industrial workers). Hugh Potter: "An excellent investment; 11% of gross is what you want. And after you bowl, you get thirsty."



- ▶ Ample provision for small stores. Seward Mott: "Many women's apparel chains are finding they do better in stores of 1,000 to 2,000 sq. ft."
- ▶ Split major pullers up around the shopping mall for better circulation. C. J. Faherty (Metropolitan Life): "In big regional shopping centers, competitive lines are placed next to each other. In smaller centers, it is better to use them to pull traffic around."
- ▶ A drive-in bank. J. W. York: "At Cameron Village, 75% of bank business is done through the drive-in window."
- ▶ Have the tenant provide his own air conditioning by individual units. Foster Winter (J. L. Hudson): "In our Northland shopping center, chilled water will be piped to the tenant and sold on a metered basis."

INDUSTRY'S ROLE: yesterday's fears of "company" towns may be keeping plant owners from taking responsibility for setting a good pattern

A big fear helped set the pattern of development in Bucks County. This was the grim shape of yesterday's "company town," scene of some of the bloodiest battles in labor history. Like almost every other industry with experience in the matter, U. S. Steel has been anxious to avoid this target for labor strife and since the late Thirties has been using realtor John Galbreath* to get rid of its company towns. Galbreath has been buying towns from U. S. Steel and its subsidiaries (with the steel companies usually financing him by taking back a 5-year mortgage loan), renovating the houses, and selling them at easy terms to the occupants. In many cases, he has added additional houses, using, since the war, Gunnison prefabs. Thus when U. S. Steel wanted to get houses built in a hurry at its new plant, it asked Galbreath to come in and do the job. To get the houses ready in time, U. S. Steel advanced Galbreath's Danherst Corp. \$15 million to finance construction, but last month, evidently anxious to back even farther out of the company town picture, asked an insurance pension fund and two New York banks to take over the loan.

U. S. Steel's fears were not exaggerated. The big steelworkers' union, well acquainted with famed Aluminum City in Pittsburgh where architect Walter Gropius had designed rental row housing, was already looking into selling prices and asking that housing in both Galbreath and Levitt developments be held for rent. (Said Levitt: "It costs the occupant \$20 more a month to rent than to own.") Then there was the question of race. The union expected employment at the steel plant to be at least 7% Negro and, joined by national church and other reform groups, was insisting that Negroes be admitted to both developments on a nonsegregated basis.

Dozens of other expanding industries face the same di-

* Galbreath has also handled many other real estate transactions for U. S. Steel, and owns U. S. Steel's new Pittsburgh office building.

Pix: Alfred Eisenstaedt



Yesterday's company town is a grim memory

Today many manufacturers are building handsome houses for their employees, selling them at below-market prices. Photo shows one of some 130 houses being built by the Kroehler Mfg. Co. next to its plant at Naperville, Ill. Houses will range from \$13,500 to \$21,000.

lemma: how to get housing built for workers and yet avoid building a "company town"? Most seemed to be adopting the U. S. Steel pattern of encouraging the formation of an independent building corporation. Says the Inland Steel Co.: "We don't want the workers to be beholden to the company for anything." Inland, desperately pinched for housing within the tight boundaries of East Chicago-Indiana Harbor, has asked Chicago realtor James Downs to set up a corporation to build, own and rent some 2,900 new units, on land adjacent to its 200 Sunnyside houses, which Inland built back in 1918 and still own (these well-built six-room houses rent today for \$30 a month).

Inland asked Chicago architect Ralph Stoetzel, who designed famed Wheelwright, Ky., a town owned by Inland's coal mining subsidiary and widely hailed as an industry model, to study its current problem. Stoetzel designed 3-story walk-up apartments, but figured the cost would be 95 cents a cu. ft., calling for a rent of at least \$90 a month for a 3-room unit. Since this rent seemed too high, Stoetzel proposed instead single family prefab houses, ranging in price from \$9,500 to \$12,000, which the owning corporation will be asked to hold for rent.

Ralph Stoetzel's services to another client show an interesting variation of this pattern. International Rolling Mill Corp., now inside Chicago, has asked Stoetzel to design a new plant, to be located about 15 miles out, as well as housing for some 5,000 workers, plus a park and big shopping center. In this case, architect Stoetzel is handling negotiations with a major life insurance company for financing of both factory and town development, and will perform other services more usually rendered by the independent developer.

One of the paradoxes of the problem is that, in general, the closer the development comes to the stigmatized "company town" set-up, the better the pattern of physical development is likely to be. Case in point: two towns of over 1,000 units each being built by Reserve Mining Corp. at remote points in the Mesabi Range, where new processes of beneficiating low-grade ore are now underway. Reserve asked Chicago's Pace Associates for a plan representing the best in land use, got one with a loop road pattern and houses facing on a rear landscaped area. Reserve is also building apartment units, schools, recreation building, restaurant, clinic and shopping center. The company will sell houses below cost.

ALCOA, by contrast, although it is now planning housing in connection with three new plants* and already has put up houses at its big Davenport plant (these were aluminum, manufactured by Butler Bros.) tries to avoid identity as a

*At two of them, ALCOA secured the five-year tax write off to cover houses as well as the plant.



company town. It tries either to buy up vacant lots within an existing community or to leave vacant lots in its own project for future building. While this may produce a better social pattern, it obviously leaves something to be desired as a physical pattern.

No U. S. industrialist has as yet gone so far as the Aluminum Co. of Canada in setting a high standard of community development. Planning for a new town to be built in the wilderness of British Columbia, ALCAN asked four or five leading architectural firms to submit development schemes, finally chose the New York firm, Mayer & Whittlesey, and asked pioneer Clarence Stein to act as adviser. The Mayer-Whittlesey-Stein plan, now in early stages, promises to be a pace-setter for New Towns on the other side of the border. It might open the way for more realistic planning in these new industry-centered communities if the industries themselves would more realistically face some of their fears about "company towns." For, whether he likes it or not, the factory owner who has opened up a new location cannot escape the main burden of responsibility for the kind of community development that takes place around his plant. Merely by doing nothing at all, he can be charged with responsibility for creating a condition where small, unrelated housing developments with inadequate water and sewer supply systems will almost certainly take place.

Nor have workers been prone to make distinctions between company ownership and the independent developing and owning corporation. In Maplewood, La., for example, the Cities Service Refining Corp. during the last war asked John W. Harris Associates, a big New York industrial building firm, to build, own and rent a big housing development. When the workers decided the rents were too high, they struck the plant and the fact that John W. Harris was the owner of the houses did not persuade them to go back to work again.

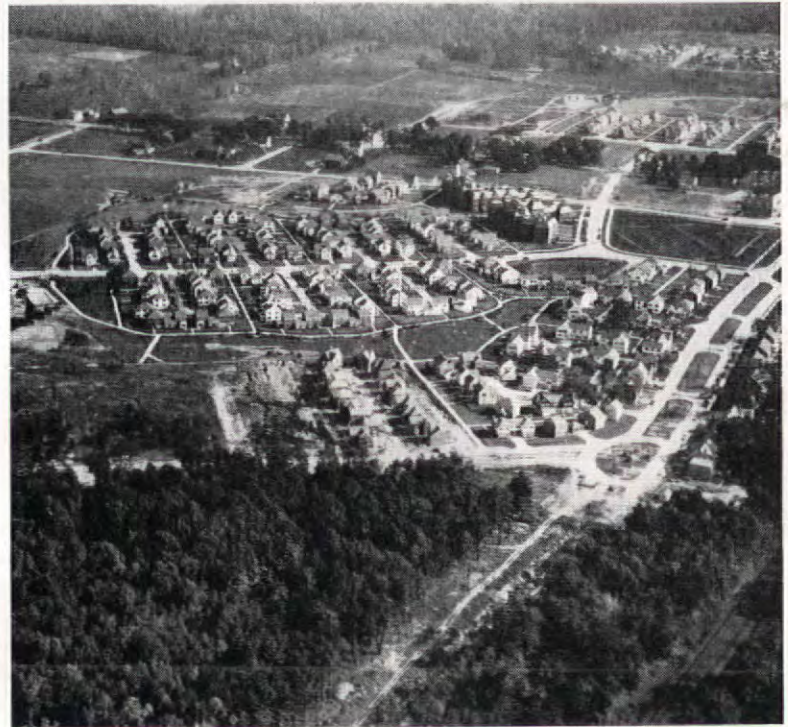
It might help for industry to separate its natural wish to avoid union entanglements (where houses are sold to workers upon completion most of these worries evaporate anyhow) from its reasonable desire to delegate responsibility for land development and construction to a responsible operative house-builder. A clearer view of its ultimate responsibility in the whole matter might, for example, persuade industry to be less self-conscious about offering the independent builder the interim financing and other aids he needs to produce a livable community (the better the community plan, the greater the initial investment required). Such company assistance programs ought to be carefully worked out and be free from any self-consciousness about the issue of "company towns."

Interim or construction financing which the industry will get back is one kind of aid. Even greater aids (which many industries today could pay for in 32-cent tax dollars) might in some cases be called for. The manufacturer might well absorb some land and land development costs, writing them off the books, thus giving the community builder a better chance to get house prices down to where FHA's Title IX maximum loan (\$8,100) will be close to 90 per cent financing. Such contributions to equity might also open up long-term, low-cost financing under FHA's old Sec. 213. Industry's wider view of its role in these new communities would make it possible to set up a pattern where several operative housebuilders could work together and shape their building to a comprehensive community plan.



Gottschö-Schleisner

Sunnyside, N. Y. was first experiment in dropping usual subdivision lot boundaries and pooling center of block as common green space. Commonly used space was legally owned by owners of row houses, also private gardens.



Charles F. Doherty

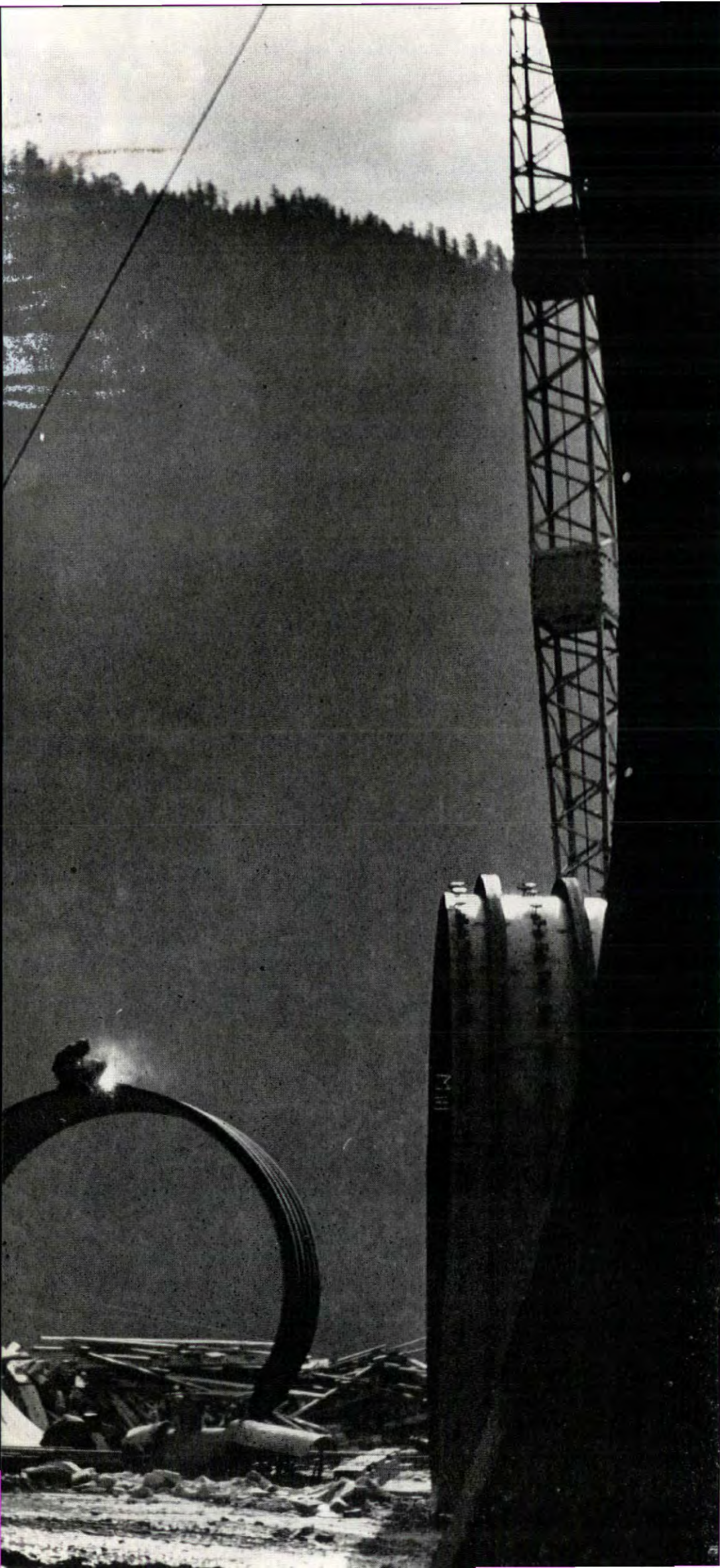
Radburn, N. J. replaced tight gridiron block by the superblock, was the first to show how pathways of people and automobiles could be completely separated. Children were safe on footpaths underpassing auto roads.



Today's planners of new towns might well turn back to look at some work done 20 years ago by Architect Clarence Stein (left). With the backing of Alexander Bing, a real estate pioneer, Clarence Stein and Architect Henry Wright laid out a pattern for community living which showed that the greenbelt, the superblock, and traffic-free neighborhoods can be built without prohibitive cost in land and in utility connections. Stein's gradually evolving revolution in land use is described in his book, "Toward New Towns in America," recently published by the University of Liverpool press.

Baldwin Hills Village, Los Angeles, was treated as one 80-acre superblock, with row houses set on garden courts and garages collected on garage courts. This plan pioneered the green-malled shopping center, free of auto traffic.





they are building

In the empty canyon of the Feather River in California, a new kind of forester was at work, wearing a mask and a steel helmet, splashing sparks against a silent backdrop of trees. He was welding together parts of a project destined to increase the U. S. electric power supply. But in the nation's haggard industrial cities the lights were on all night, spending the increase faster than it was made.

It was the same all over the continent this fall. As industrial production was pushed up and up, the signal everywhere was the tense, ascending hum of the high tension lines which bear the energy of industry, electricity. The new hunger demanded tremendous new expansion of the facilities of what is already the biggest power producing country in the world, and this meant a building boom in power plants.

How big a boom?

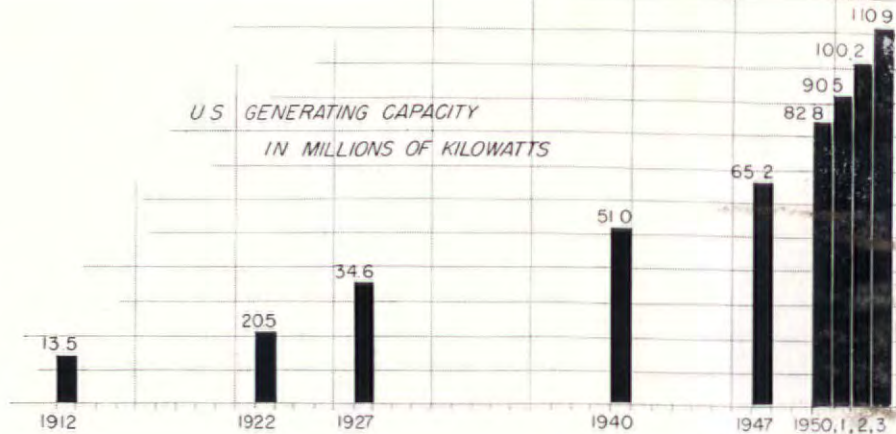
This big: At the hand of every industrial worker in the U.S. is 8 hp. (and the ratio of power to people is rising every day; in 1947 it was 7.2 hp. per worker). Of this 8 hp. 95% is electricity—which translated into kilowatts is 5.7 kw. Today a kilowatt of power production costs nearly \$200 and takes almost two years to build and house. By 1954, if the present proposed expansion is to be realized, the U.S. must have added more than 20 million kw to its muscles. By last month the Defense Production Administration had recognized the pinch by approving rapid tax amortization for 46% of 60 public utilities' expansion programs totaling nearly \$600 million.

The power plant does not appeal to the imaginations of most building men because it is usually put up by technicians whose greatest interest and proficiency is in the equipment inside, not the walls and the roof. The power plant is nevertheless a U.S. landmark—lurking in the early memory of all of us as tall lean walls of brick pierced by high seldom-washed windows with arched lintels, harboring strange, dangerous machines, if not architecture.

But this distinctive U.S. building type has recently acquired new character, as the photographs of new plants on the next few pages demonstrate. New materials and new techniques—and a demand for speed—are altering the image of power in the U.S. quietly but continuously.

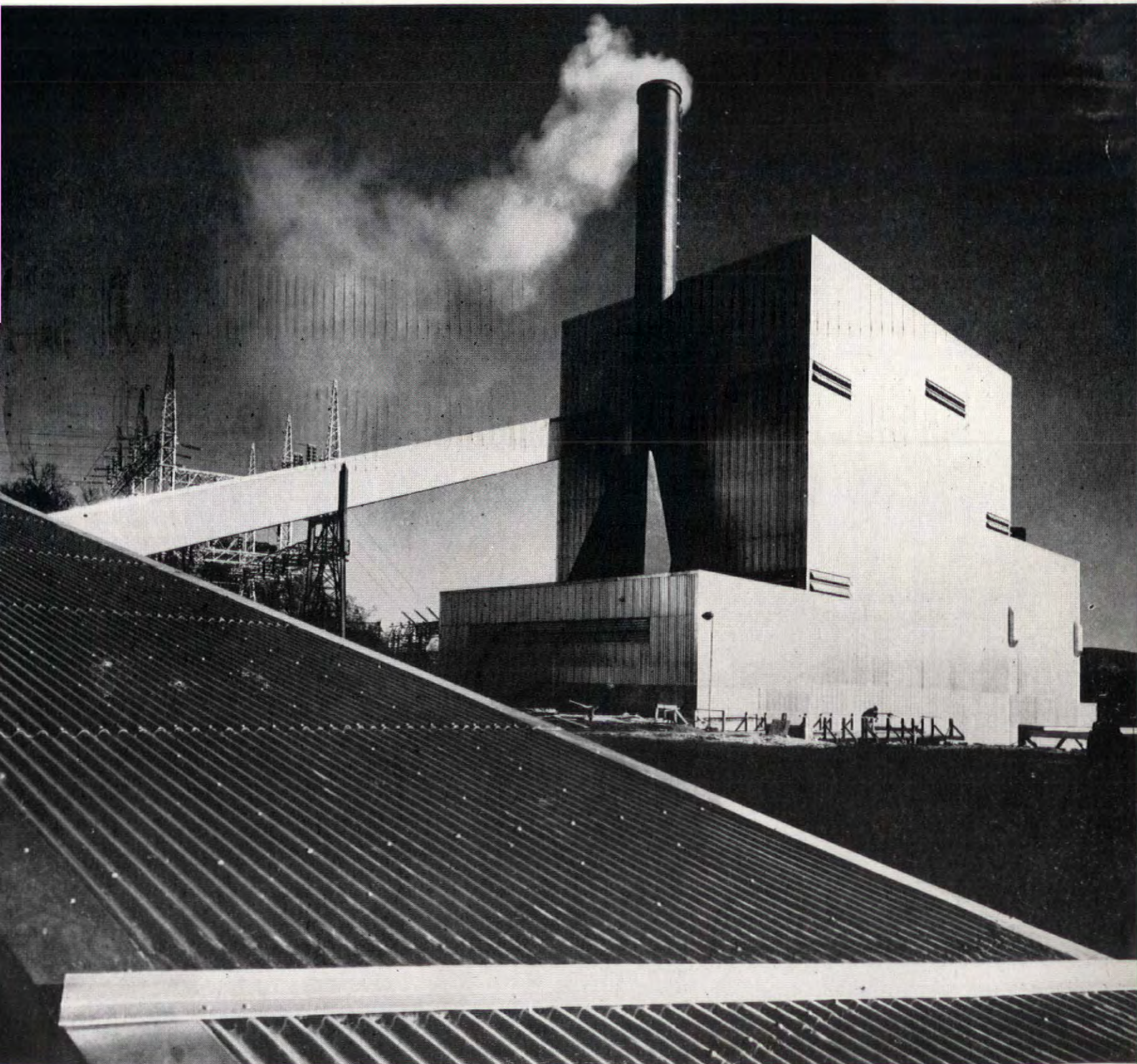
POWER

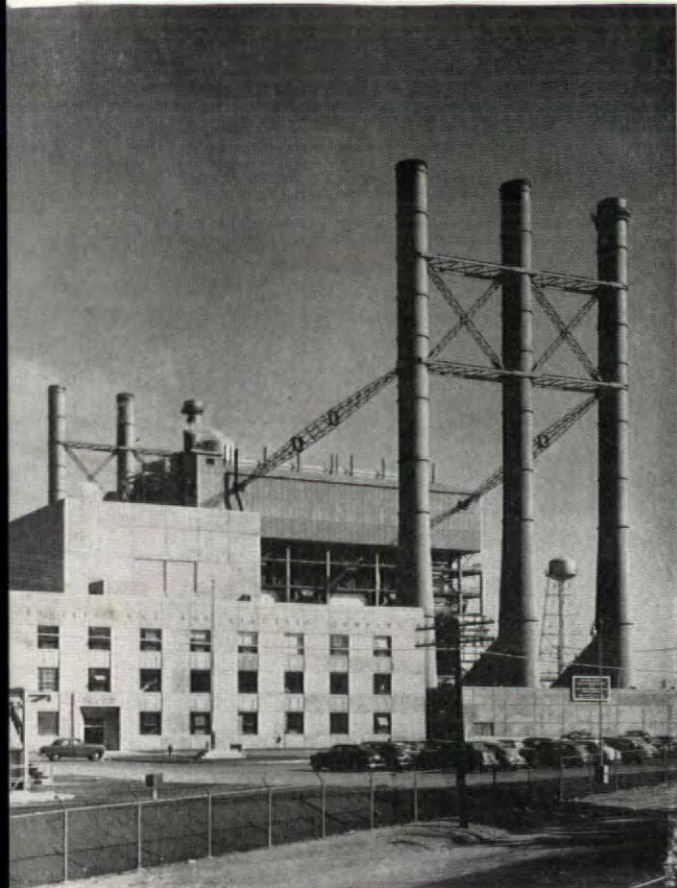
U S GENERATING CAPACITY
IN MILLIONS OF KILOWATTS



Not masonry but a metal sandwich wall encloses this new power plant of the Northern Virginia Power Co.

Sanderson & Porter, Engineer and Builder. Chapman, Evans & Delahanty, Consulting Architects.



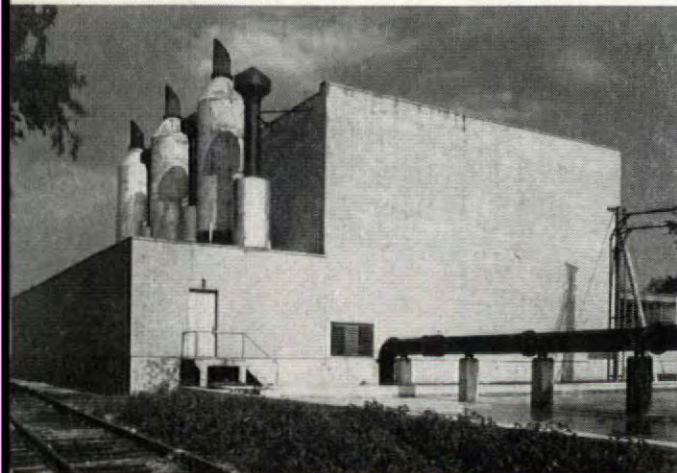


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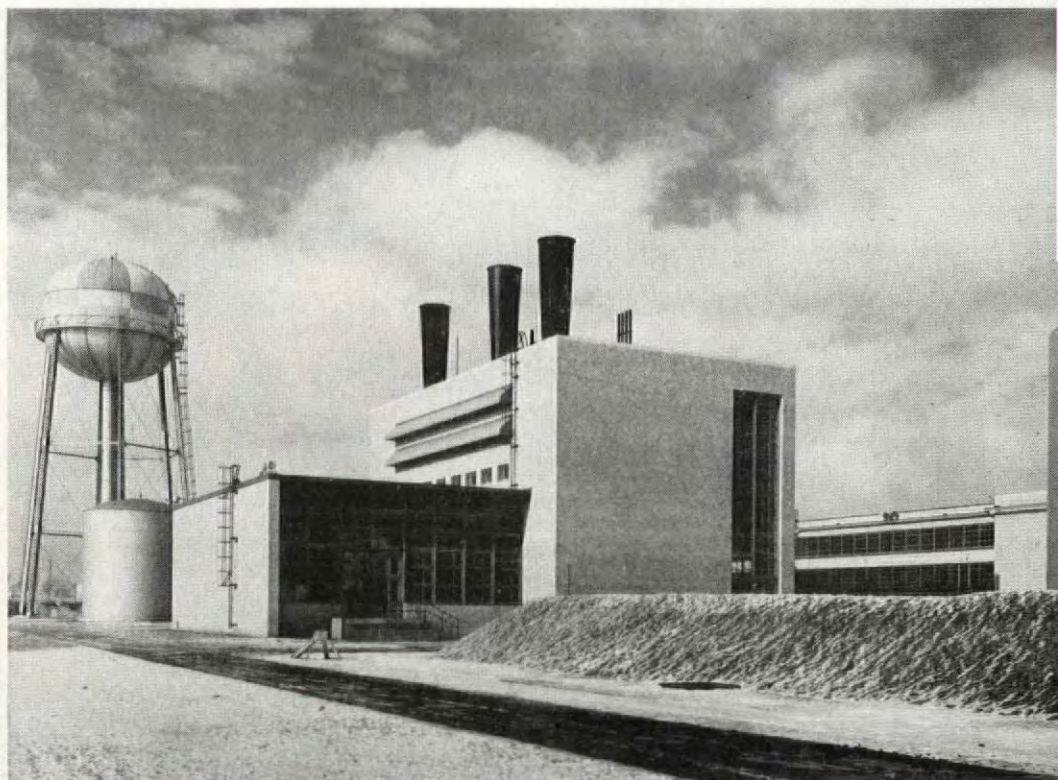
1) Moss Landing Steam Plant; Pacific Gas and Electric Company; Stone & Webster Eng. Corp.; 2) Lincoln-Mercury Division of Ford Motor Co., St. Louis; Albert Kahn Associated Architects & Engineers, Inc.; 3) Municipal Power Plant, Peabody, Mass.; Thomas Worcester Inc.; 4) Municipal Power Plant, Jamestown, N. Y.; the J. G. White Eng. Corp.; 5) Cutler Plant, Florida Power & Light Co.; Ebasco Services Inc.; 6) Texas Electric Service Plant, Fort Worth; Ebasco Services Inc.

Haskell

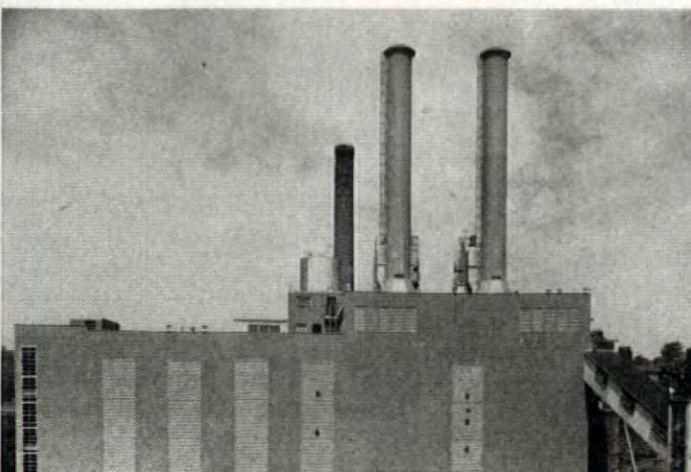
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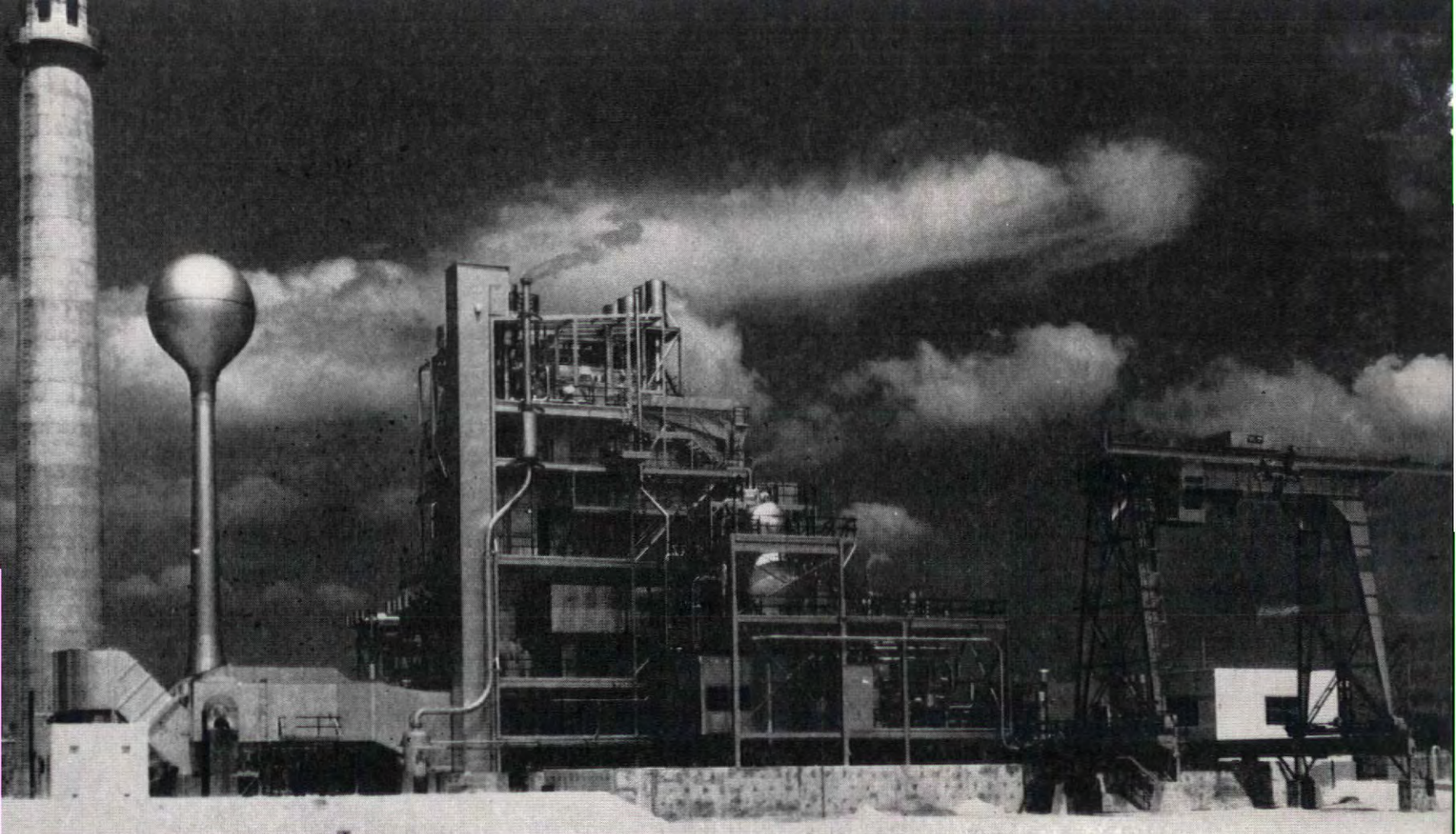
Today our electric power is generated by burning coal (47%), gas (12%), oil (9%), other fuels (3%), and by hydroelectric plants (29%). Tomorrow may be atomic, but power engineers are skeptical.

The biggest structural change in the housing of the equipment has been leaving out the walls of some new plants (facing page) not only in the warmer sections of the country but in the north too. A semi-outdoor plant is being built in Billings, Mont., for a temperature range which dips to 40° below zero.

Principal technological development to affect the power plant structure is the increase in steam pressures and temperatures (620% increase in 25 years from 250 lb. per sq. in. to 1,800 lb. per sq. in.) which enables constantly improving turbine performance. But to get these higher pressures, boilers must be bigger and higher, and this has pushed roof heights up. In some cases it has also been economical to combine the boiler steel with the building steel.

Other developments: Roofs are flat; stacks are lower because they don't have to rely on natural draft, but use induced draft fans. Windows are fewer and smaller, because illumination is frankly artificial—yesterday's high arched windows are gone in today's designs. Elevators are a fundamental part of the modern plant. Glazed tile construction is coming into use for both interior and exterior walls to keep down maintenance costs, and the lightweight sandwich panel is also a fast newcomer.

Bill Hedrich, Hedrich-Blessin

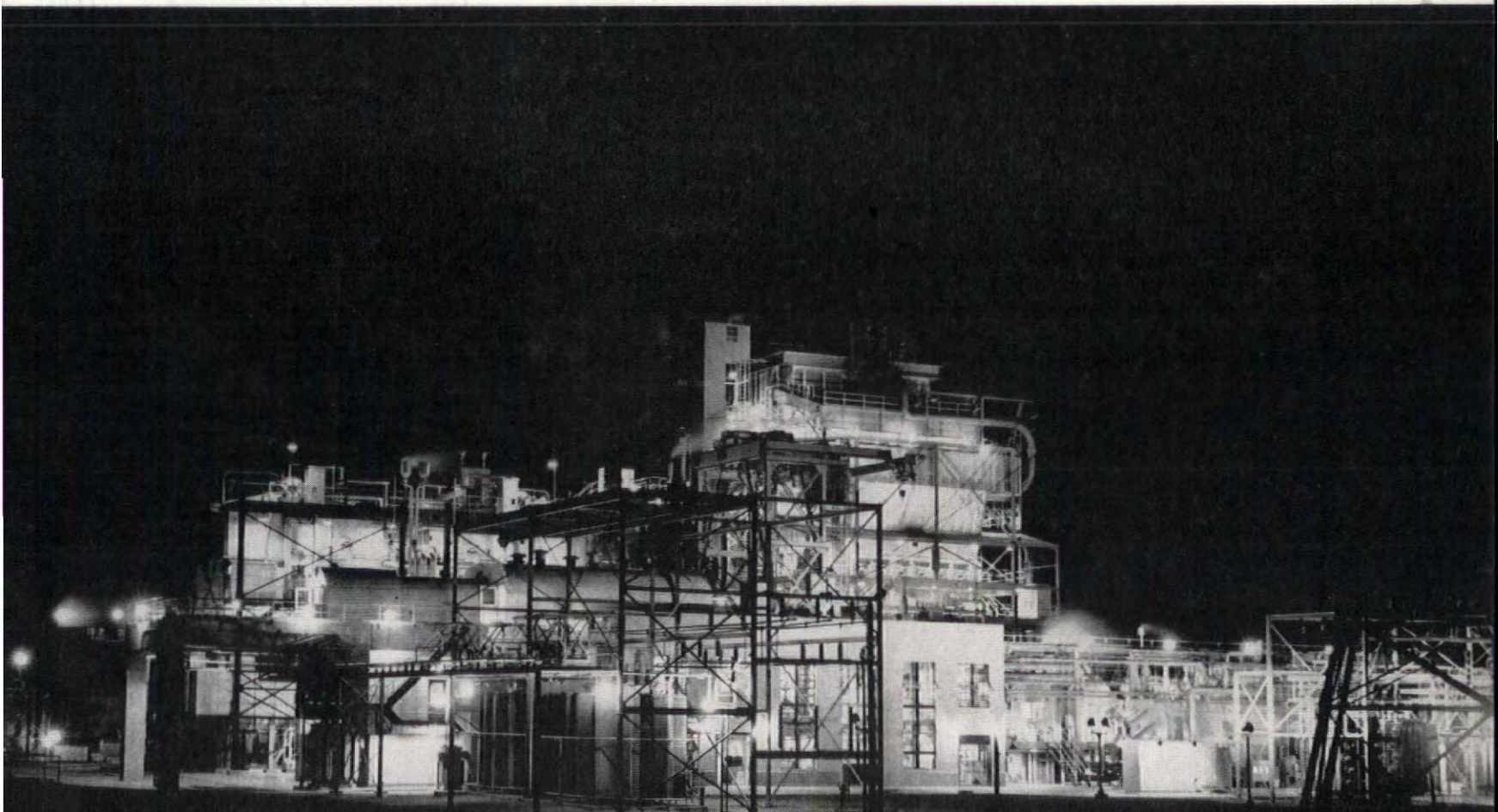


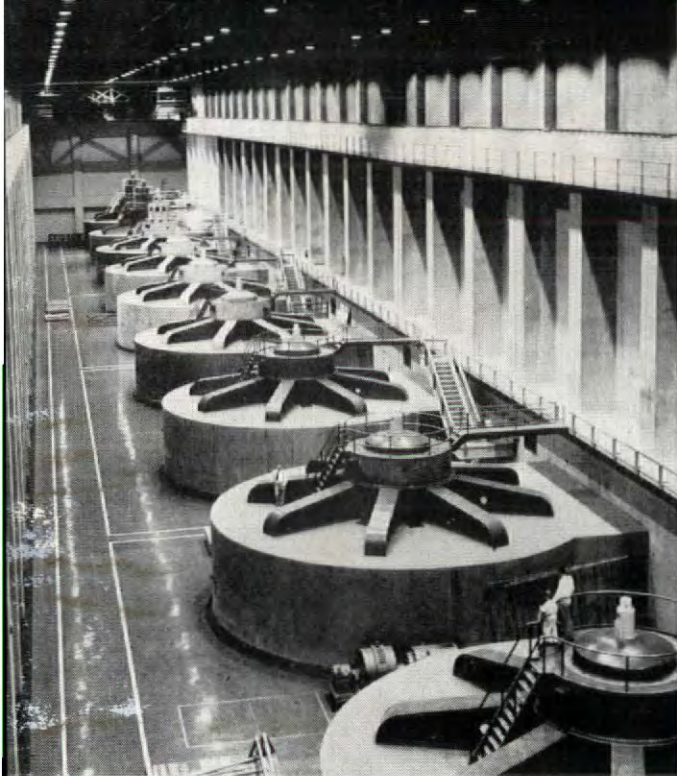
Le Corbusier, famed French architect, is more impressed by U.S. power plants than by most other buildings in this country. About Florida Power & Light's new outdoor installation in Miami (above) he wrote, "... It is typical of modern times and closes definitely the door to the horrors

of early construction. This liberal concept, so airy, so dynamic, so harmonious, produces a radiant architecture . . . this implacable and dynamic geometry harmonizes naturally with nature . . . light, brightness, softness and fluidity." Below, another outdoor plant, Fort Worth, Texas.

5.

6. *Tesca photo*



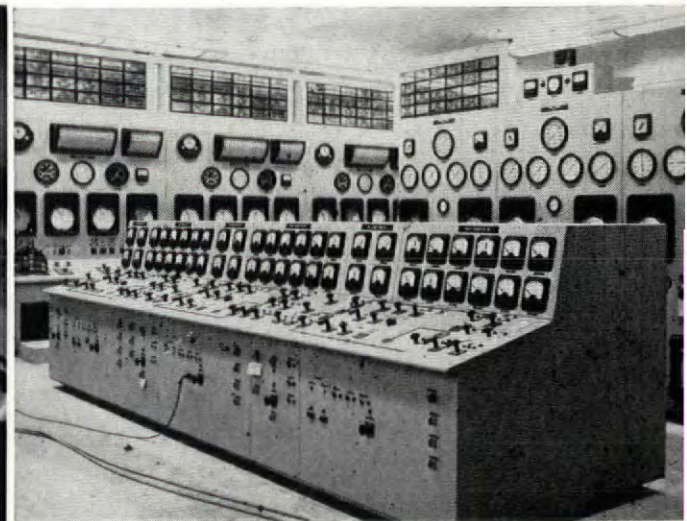
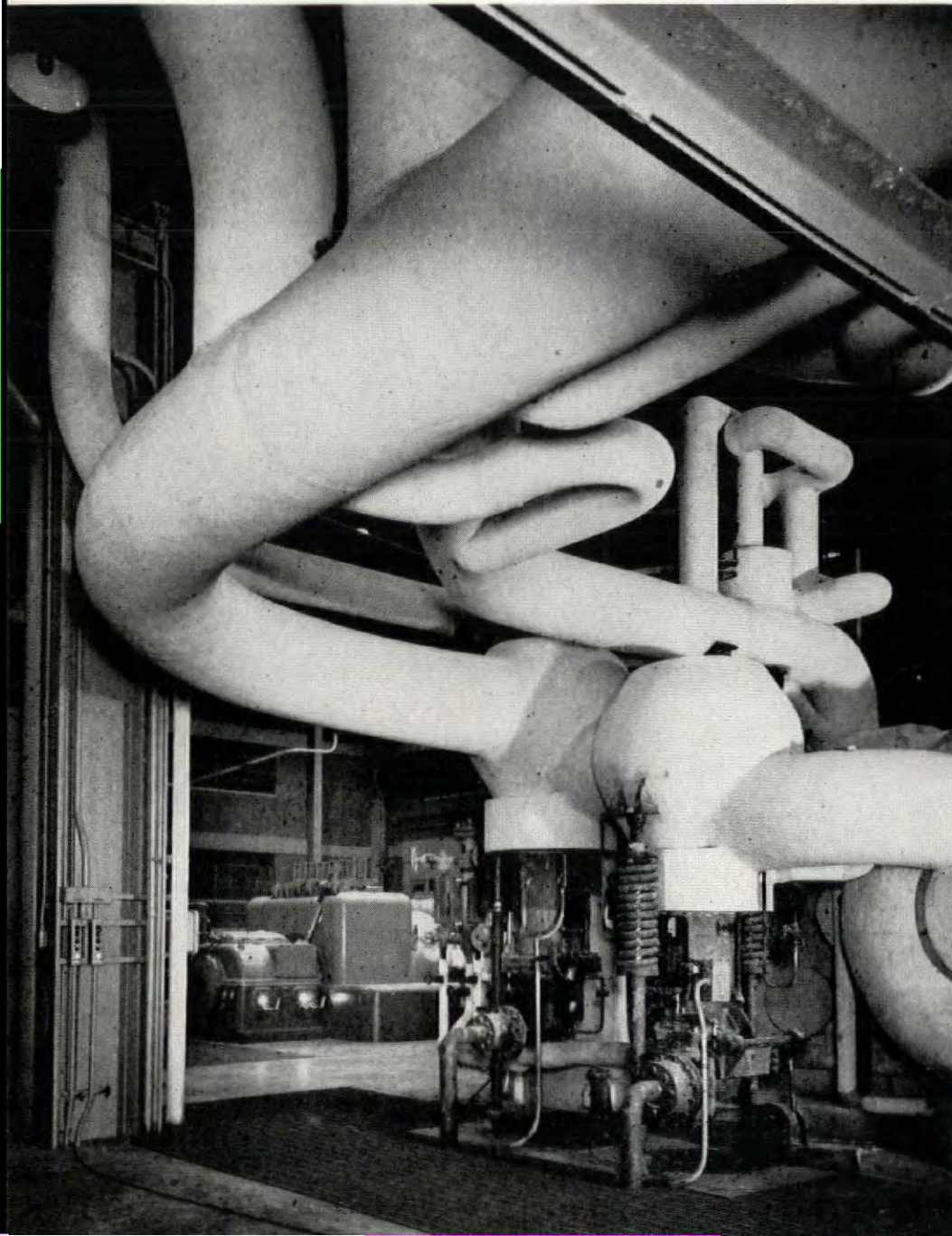


Bureau of Reclamation; Coulee Dam Wash.

1.

Turbines like these have blades which move at a speed as fast as 14 miles a minute, with clearances less than the thickness of a calling card. Structural chassis of the powerhouse has to be tremendous to hold them in precise position.

A. Thornton Gray



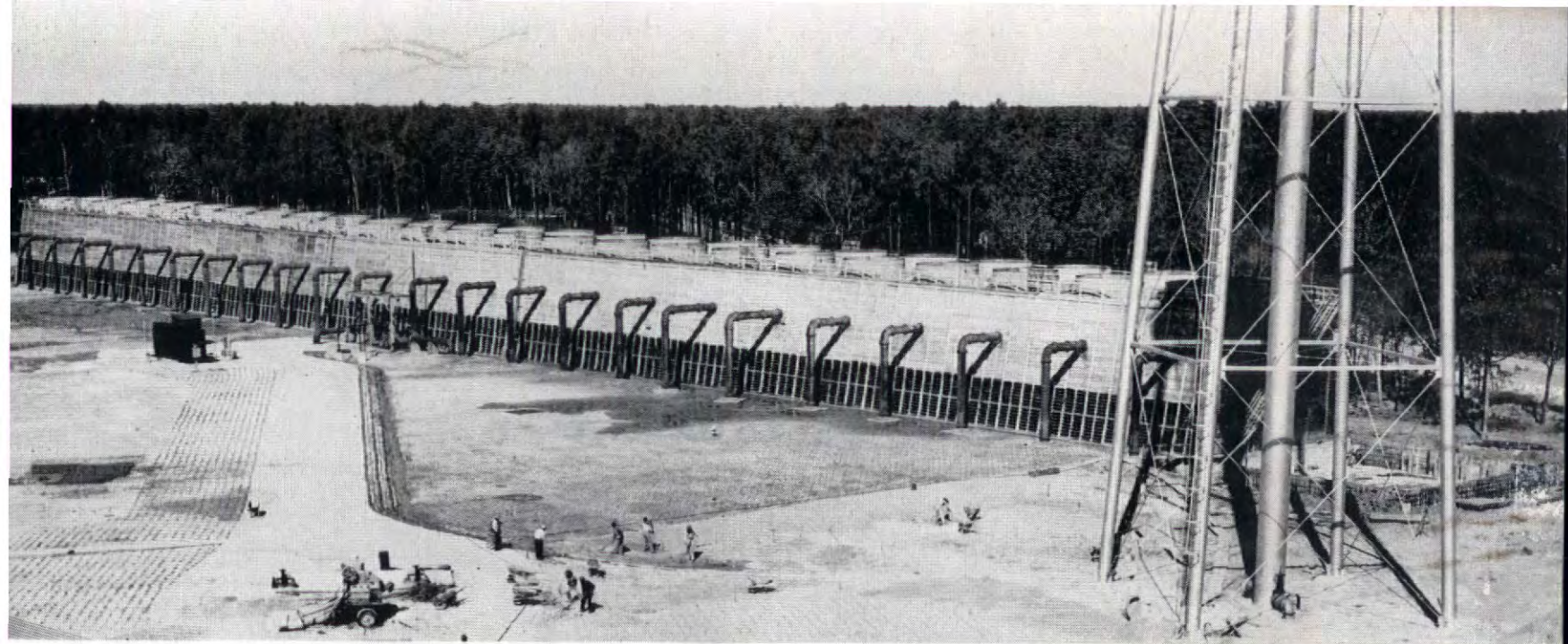
Brains of a power plant are in the carefully climated instrument room.

Bowels of a power plant are its insulated piping

Beauty of a power plant interior is in its ordered intricacy and precise power.

1) West Power House, Grand Coulee Dam; Bureau of Reclamation; 2) Contra Costa Steam Plant; Pacific Gas & Electric Co.; Bechtel Corp.; 3) Schiller Station, Public Service Co. of New Hampshire; Nepsco Services Inc.; 4) Greens Bayou Steam Electric Station; Houston Lighting & Power Co.; Ebasco Services Inc.; 5) New Departure Division, General Motors Corporation, Sandusky, Ohio; Albert Kahn Associated Architects and Engineers, Inc.

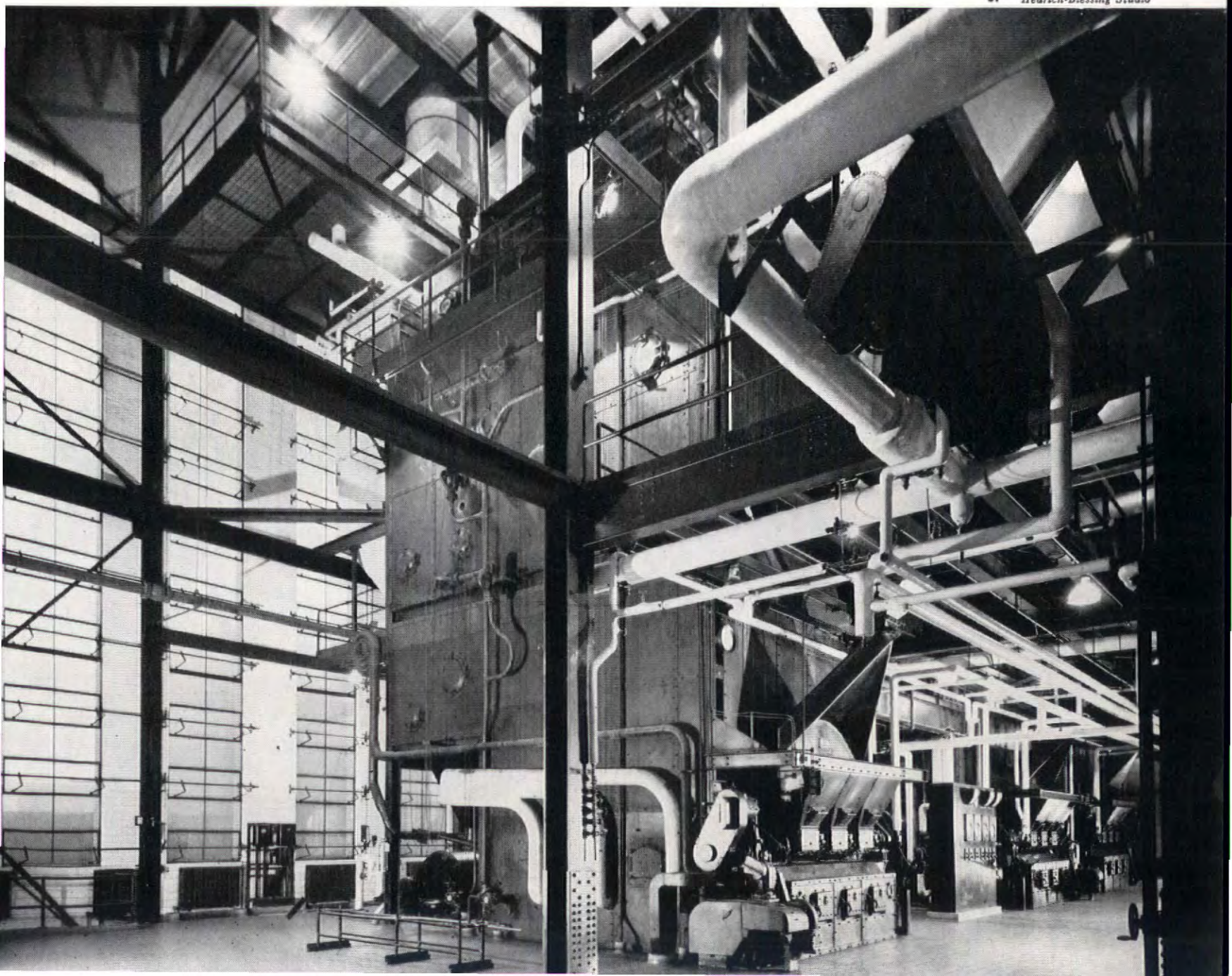
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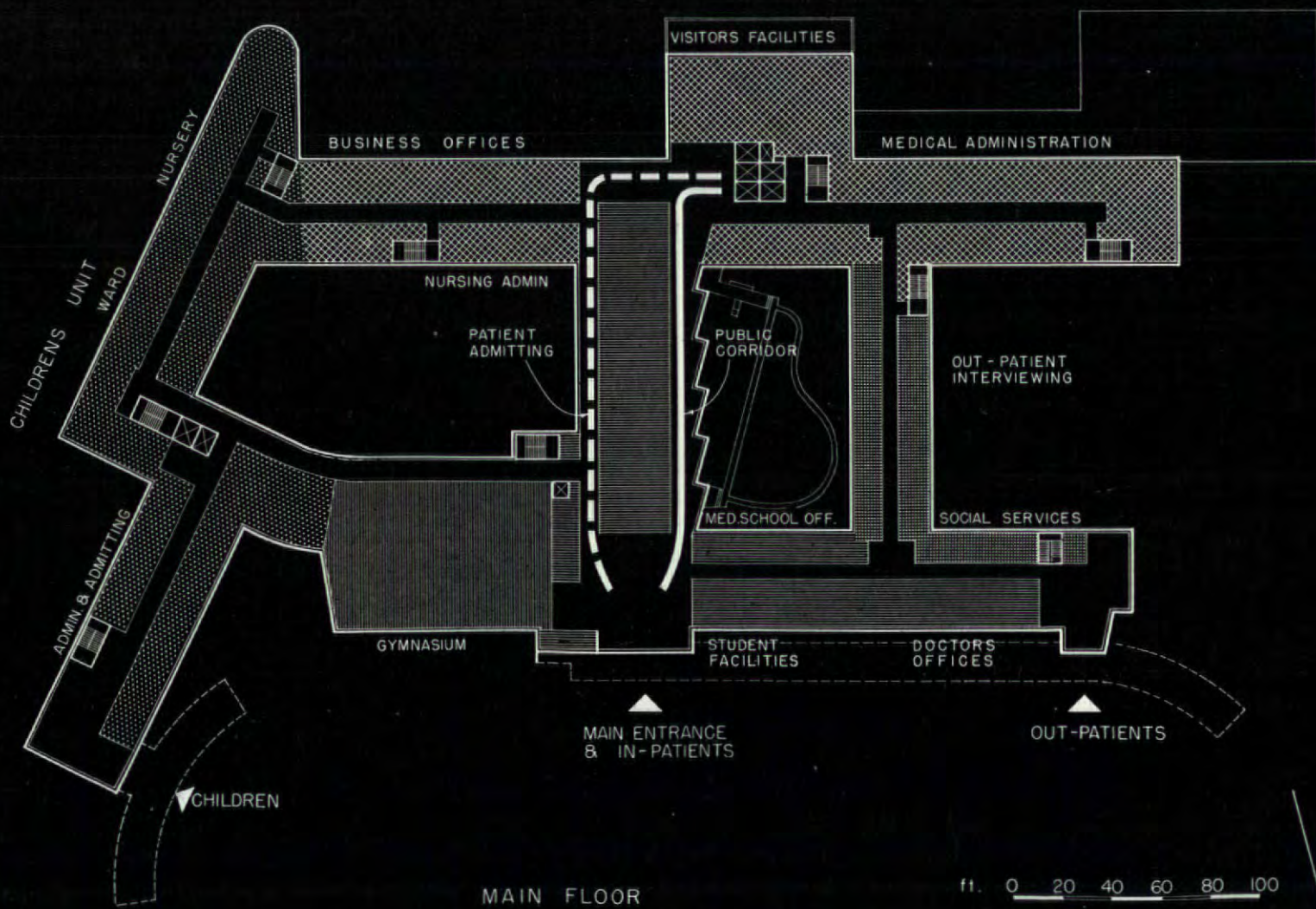
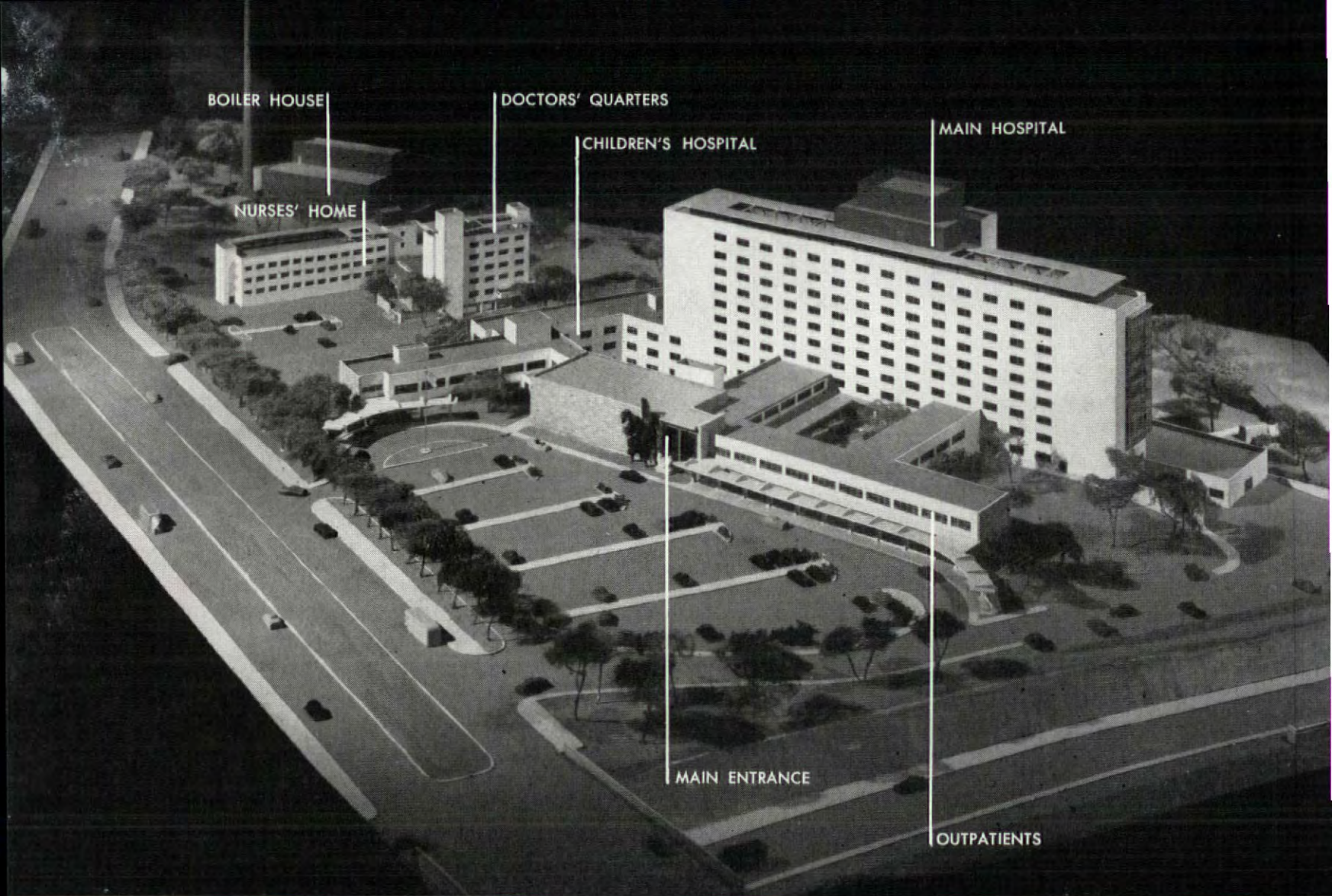


4.

Auxiliary buildings of power plants are not small. This reclining cooling tower for the Greens Bayou Station of Houston Lighting & Power Co. is 600' long and points up the fact that the ultimate capacity of most power plants—thermal and hydro-electric alike—depends on water. Even if it is not used for primary power, it must be present for condensing use.

5. Hedrich-Blessing Studio





BIG PSYCHIATRIC LABORATORY, designed to substitute healing

for asylum, will make good architecture part of the cure

LOCATION: Philadelphia, Pa.

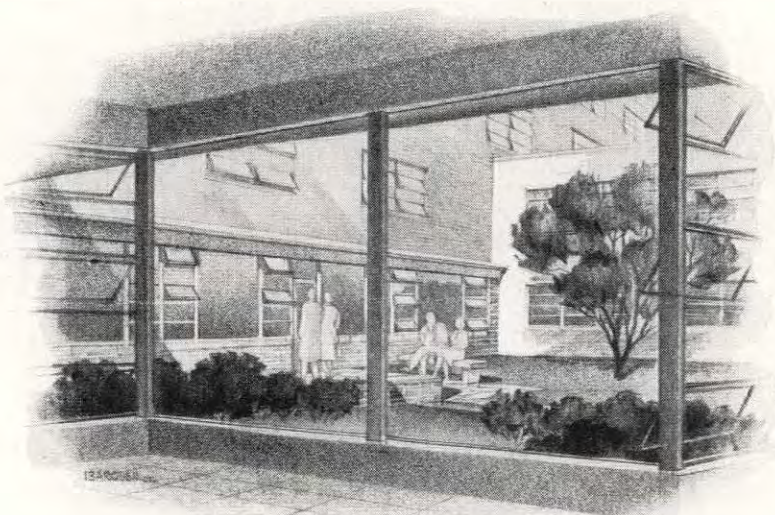
HARBESON, HOUGH, LIVINGSTON & LARSON and
HARRY STERNFELD, Associated Architects

DR. JOHN E. DAVIS, Medical Director and Planning Consultant

Pennsylvania's proposed Psychiatric Institute marks a big advance toward today's new goal of cure rather than custody for the mental patient. And though state hospitals exist to which mental patients are brought for study from other hospitals, this has been the first chance to plan such an institution from scratch and on a large scale (\$9 million) for just this purpose.

The Institute will not only bring patients from a wide area to leading psychiatrists—it will also bring psychiatry out of the woods and into close contact with other branches of medicine. Philadelphia's five medical schools will operate this combined hospital, research and training facility for the benefit of all types of students—both general practitioners and specialists.

← Photo: Cortlandt V. D. Hubbard



Visitors get a cheering first impression of the hospital as they pass through this glass-walled corridor overlooking the garden court between main entrance and nursing wing. Director's offices and outpatient interviewing rooms also look into this pleasant patio.

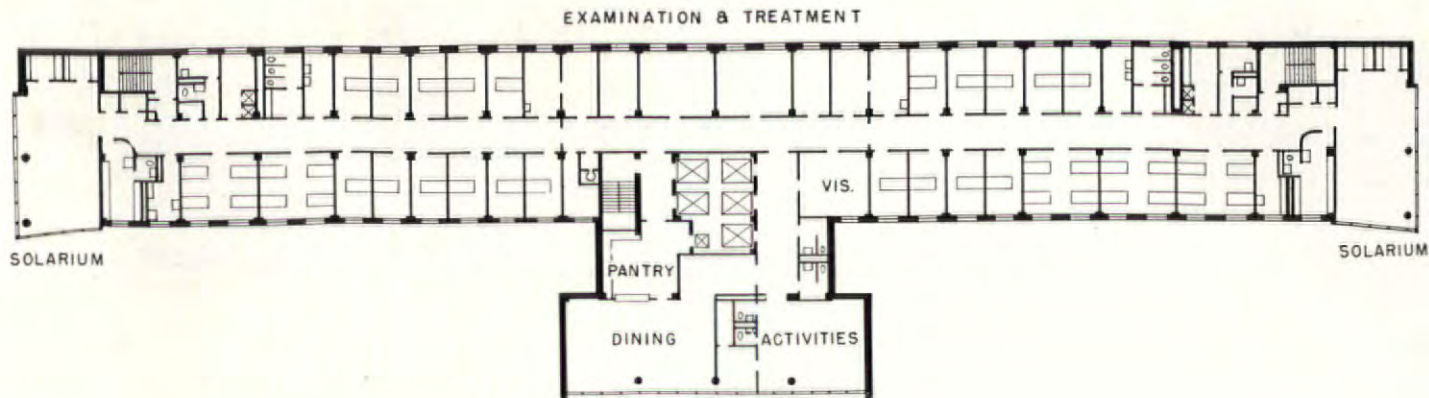
Designwise, the Institute is the complete antithesis of the prison-like mental asylum of the past. Its cheerful, spirit-lifting quality will be manifest the moment one enters. The two-story main lobby extends into a big interior garden court, bordered by a glass-walled corridor which takes visitors back to the main, 250-bed nursing wing. Adult inpatients get the benefit of this outlook too, since they use the same entrance. (There is no contagion problem and disturbed patients come in under a sedative.) Patients go from the lobby to the nursing section through a private admitting corridor which overlooks another pleasant court. Flanking the main nursing entrance are the two other major units of the hospital, each with separate access from the central parking area:

- (1) A unique children's wing containing 50 beds for inpatients ranging from nursery age to adolescence, a complete outpatient department, a day school and bright occupational and recreational therapy rooms.
- (2) An adult-outpatient department equipped to handle annually some 10,000 cases of mild neuroses and provide follow-up services for discharged patients—thereby forestalling hospitalization through early cure or periodic treatment.

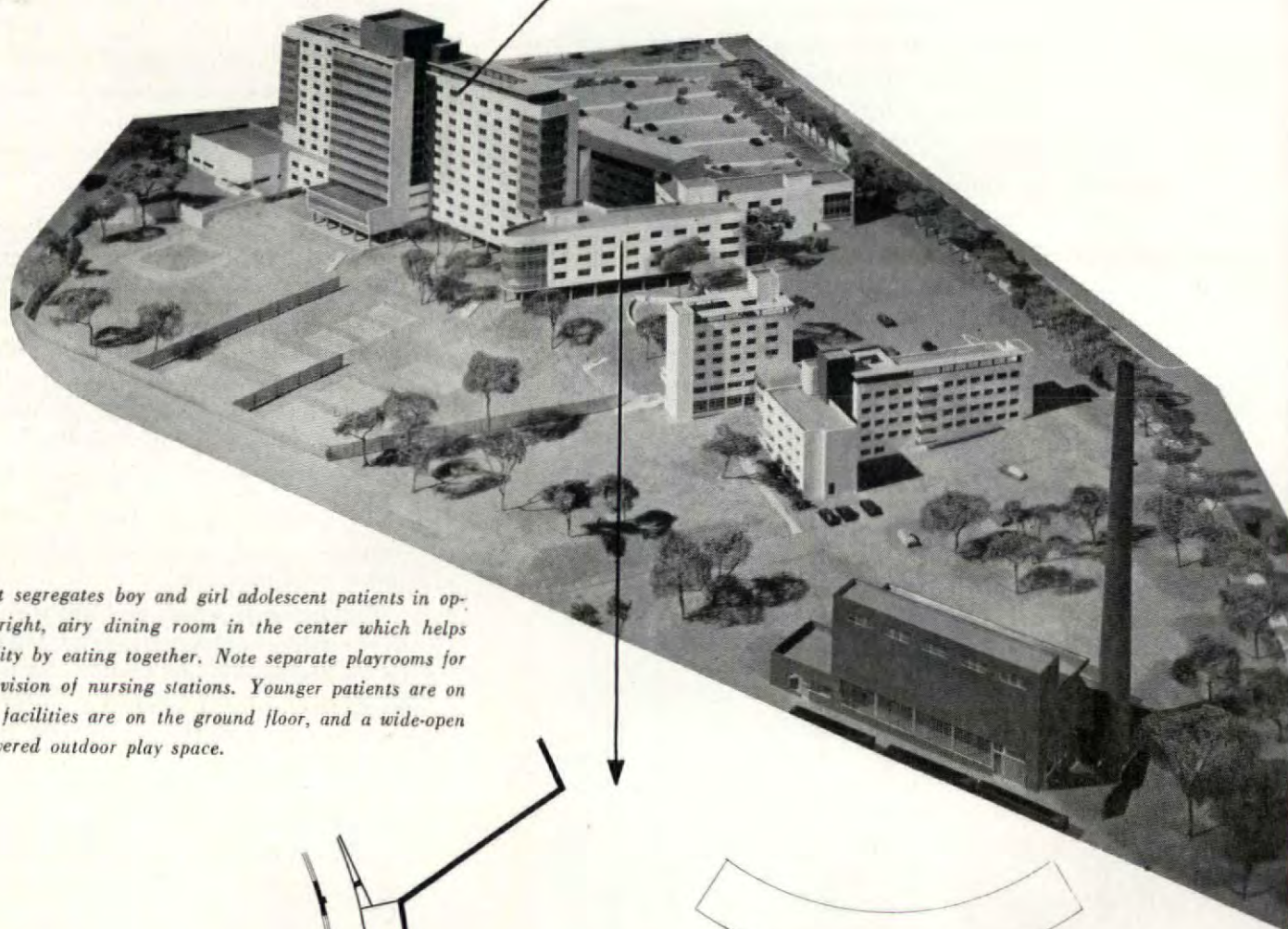
The Institute will also have its own power plant, shops, complete medical and service facilities and a doctors' and nurses' residence-school.

The architects' chief problem was to accommodate all these services in pleasantly-scaled buildings, yet leave room on the sloping 19-acre site for 350-car parking space and segregated outdoor recreation areas for each type of patient. Both to save land and get efficient vertical transport and supply, they stacked main nursing and service elements in a long, 12-story slab. But to counter the imposing effect of this tall mass, they placed it part way down the slope and separated it from the public approach by a long, low grouping of outpatient and children's facilities on a higher level. This left space on the sheltered southern portion of the site for play areas, freed the side nearest the street for parking space and direct access to the three public entrances.

In addition to the garden entrance court, the architects provided a quiet court for patients, formed by connecting links between the main building and the low outpatient and children's wings. To ventilate this court and provide covered outdoor recreation space, they carried the ends of the children's wing and the main nursing wing out over the slope on stilts. This wide-open ground floor will let the prevailing breeze sweep into the court for summer cooling. The court will be used mostly as a sheltered sunning place for older patients, will be separated from the open ground floor of the children's wing by light screening partitions.



Typical adult nursing floor plan shows how units on either side of central service core may be closed off or left open, depending on the type of patients. Each unit has 19-24 beds in single or 4-bed rooms, with most rooms facing south. Nursing stations at ends of corridor permit close control of solariums and corridor traffic. Separation of dining and activity rooms from rest of wing gives patients a complete change of scene and a view over outdoor recreation areas.



Top floor of children's unit segregates boy and girl adolescent patients in opposite wings, provides a bright, airy dining room in the center which helps patients regain social stability by eating together. Note separate playrooms for boys and girls under supervision of nursing stations. Younger patients are on the floor below, outpatient facilities are on the ground floor, and a wide-open basement floor provides covered outdoor play space.

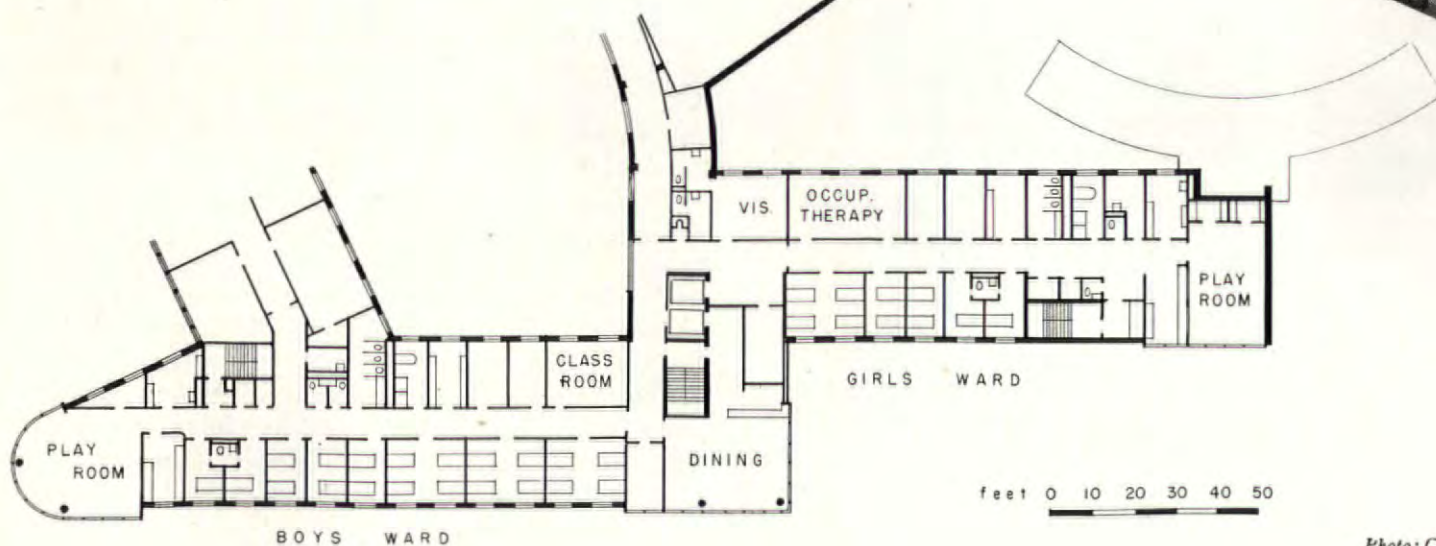


Photo: Cortlandt V. D. Hubbard

Adult nursing units: flexible, efficient

To permit flexibility in accommodating different types of patients, each of the six adult nursing floors has been given the same basic plan. On either side of the central service core is a 20-bed unit which can be closed off for disturbed patients or left open for quiet cases. Contrary to general hospital practice, nursing stations are located at the ends of the wing, next to big solariums where patients will spend much of their time. Stations also project into the corridor to command a view of all room entrances. Since visitors are always accompanied by staff members, a control point at elevators is not required.

Main feature of the central core is a T-shaped projecting wing containing patients' activity and dining rooms with continuous strip windows to catch the southern sun. This diversification of patient living areas is favored by psychiatrists, could be carried even further than it is here according to USPHS standards. Other notable elements of the core are separate off-the-corridor passenger and service elevators, a good-sized visitors' room, a classroom and a morale-building barber and beauty shop.

Normally, the two highest patient floors will serve as closed wards for disturbed cases, convenient to screened outdoor recreation space on the roof. As patients improve, they will be shifted to lower, less closely controlled floors and will use outdoor areas to the south of the building. (The two top floors are given over to research laboratories and an animal farm for behavior studies.)

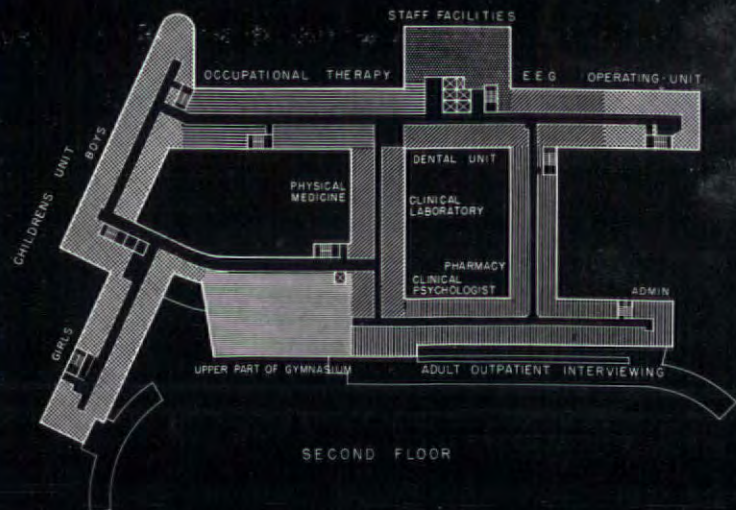
Since most patients will spend relatively little of the daytime in their rooms, the architects confined big glass areas on the nursing floors to the living and recreation spaces, used conventional-size double windows in patients' rooms. This not only provides relief from the strip-window pattern of solariums and living areas, but will save on detention screening, and is also expected to lower heating and maintenance costs. Larger windows in rooms would have required radiant heat below the sills as well as in floors.

Children's wing: a cheerful laboratory-school

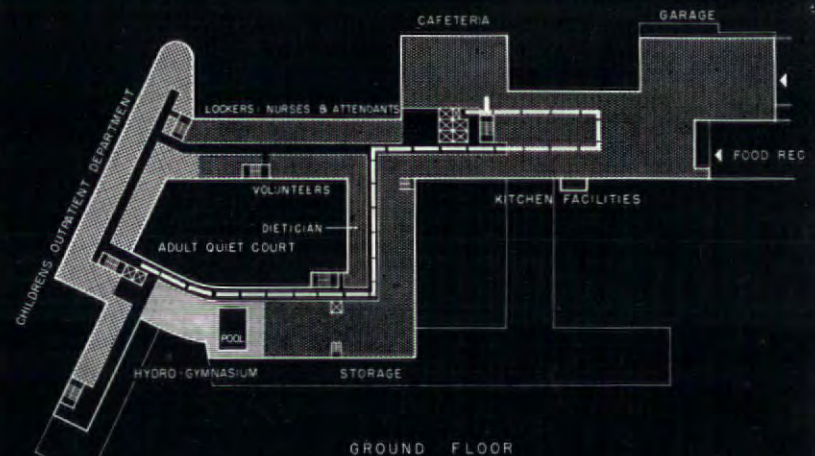
Main concern in planning the children's wing was to provide bright, airy recreation and therapy space. Key feature of each floor is a big, semi-circular playroom with strip windows looking south over the playgrounds. To capture maximum sunlight the architects curved this room, at the same time providing a stimulating variant to the predominantly rectangular shapes. And their offset corridor plan made it possible to put common-use classrooms, dining rooms and therapy rooms at the center of the wing and still get light and air from two sides. Interesting features include playrooms with one-way glass for unobserved study of young patients, well-separated wings for adolescent boys and girls, and a complete nursery unit for 2-year-olds.

In addition to the open space under the building, the children have their own play yard and pool just east of the unit. Though the outpatient department has the choice first floor space, nursery age patients on the floor above still have relatively easy access to the outdoors. Adolescent patients are on the top floor.

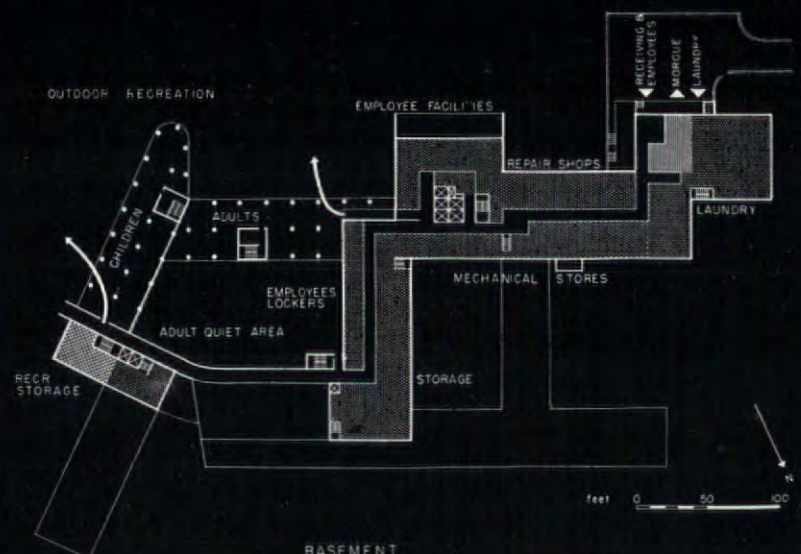
The children's wing is well segregated from the adult sections, but connecting wings provide through circulation for staff and supplies and contain facilities which may be used by either young or old patients—at different times. Among these are a combined gym-auditorium, a hydro-therapy pool and shops for arts and crafts.



Adjunct services, staff dining rooms and operating suites are concentrated on second floor. Therapy facilities in wings connecting the children's unit may be used by both old and young patients.

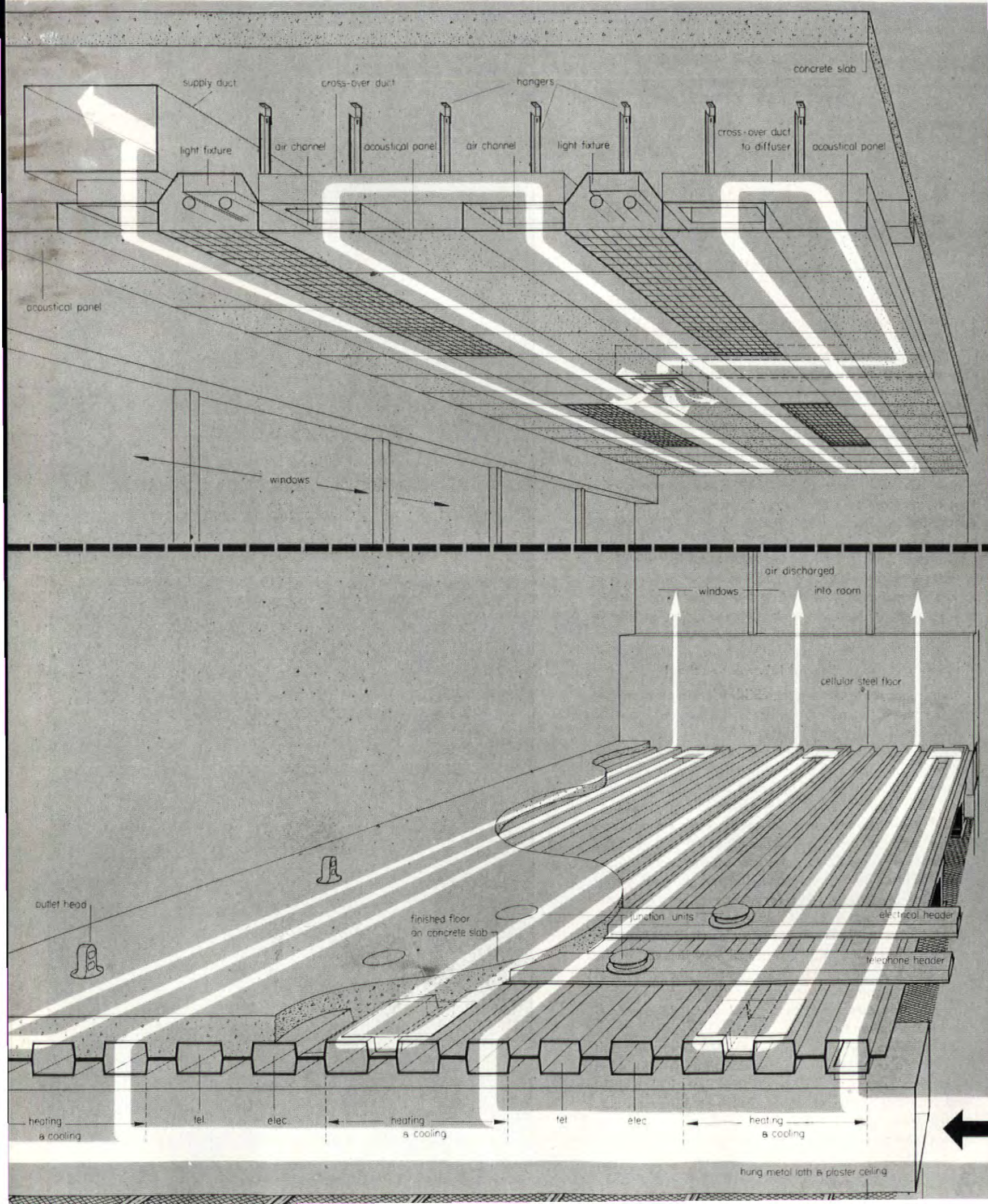


Ground floor plan shows food service circulation from receiving point through kitchen to vertical transport for heated electric carts. Note economical placement of kitchen over laundry.



Schematic basement plan shows how slope is exploited to provide covered recreation areas beneath the building, how linen supply flows between laundry and elevator banks.

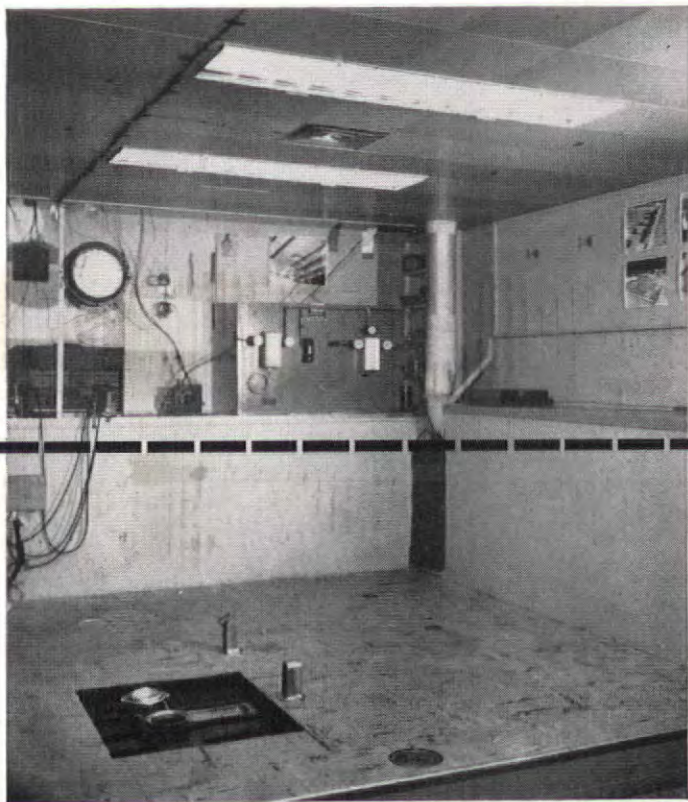
NEW HEATING-COOLING SYSTEM



circulates conditioned air through floor and ceiling before releasing it into room

Either a hung aluminum pan ceiling, or a cellular steel structural floor—or both—is the main heating and cooling element in this new heating and cooling system developed by John Dillon, Consulting Engineer, in New York.

Air is the only medium in this combined air-panel system. In winter, warm air is pumped through the cells of the cellular floor, or through the pans of the hung aluminum ceiling (or through both), where it warms the surfaces to an effective radiant temperature, before it is discharged into the room to complete the conditioning job. In summer chilled air follows the same paths. The problem of condensation necessitates no special solution in this system, since the air undergoes humidity adjustment before being released through the channels.



John D. Dillon

In test room engineers installed both pan ceiling and cellular floor and kept careful records with precise instruments during long trial run. (Portion of floor in lower left of photograph is glassed for visibility and access to cellular structural floor.) Essential to the success of this system is the high efficiency in heat gain of the panels. In summer, if gain of surfaces were low, they would not surrender much room heat to the river of air passing through the panels, so there would be little use in pumping air of particularly low temperature. It would be better to release higher temperature air in more conventional fashion—i.e., directly into room. In winter the converse would be true.

But both the steel cellular floor and the anodized aluminum pan ceiling have high efficiency and as a result air can be started through them in summer as much as 20° below the ultimate room temperature to be maintained. Panel floor covering in photograph above is asphalt tile, but tests are now under way on additional finish floorings.

Advantages of this system over most other conditioning systems are headed by cost:

▶ 40% less conditioned air is used than in a straight air system. The air can be started on its path at more extreme temperatures and so uses smaller ducts from the central source. In its trip through the radiant channels before being released into the room, it loses considerable heat in winter and gains it in summer, emerging into the room at comfortable temperatures.

▶ Since the cooling and heating functions are integrated into the fabric of the structure (the ceiling also does the lighting and acoustical absorbing job, and the cellular floor is used structurally and for electrical wiring runs), there is little waste of rentable area.

▶ Greater comfort than most other systems is also claimed by the developers of this system, on the basis of their study of a test room. Reasons: the combination of panel source and air source of comfort conditions is closest to nature.

Engineer Richard P. Goemann, head of the Dillon Co.'s heating and ventilating section, points out that this combined air-panel system is a very economical solution because it does not call for split sources or controls. He found that comfort conditions in his test room could be maintained at room temperatures as low as 67° F in summer, with the outside temperatures at 80° because the entire environment—not just the air around the occupant—was conditioned. Ceiling temperatures as low as 54° at a height of 6' 1" had little effect on comfort, but the floor temperature was uncomfortable for long occupancy below 61°. For cooling, supply air to the ceiling panels is keyed within a range of 50° and 60°, and to the floor panels within a range of 45° to 50°.

In using the ceiling alone, the air is discharged into the room through a diffuser which can be placed anywhere in the pan structure, which is manufactured by the Simplex Co. of New York. Only $\frac{1}{3}$ of the ceiling (see illustration facing page) is actually used as radiant channel, alternating with thirds of acoustical treatment, and lighting troughs. Observers however, found that almost all of the metal ceiling assumed approximately the same temperature by conduction from the radiant third. When both ceiling and floor are used, the air is run through the floor, then continued through the ceiling and discharged, again by diffuser. When only the floor is used air can be discharged near windows.

Choice of radiating surface depends upon the individual job, according to Goemann; if, for example, the structure is an office building and is going to be built with cellular steel flooring as part of the structure, it is reasonable to extend the use of this floor to heating and cooling. Remodeling jobs would likely all be with the Simplex ceiling, which needs only one hanger per 18 sq. ft. of ceiling surface, a depth of 4" from finished ceiling to underside of beams, and an additional 4" for cross-over channels between panel runs (see drawing).

Buildings near New York into which this system is going include a bank remodeling on Long Island, which will use the ceiling, and an office addition to a laboratory in Conn. by Philip Johnson, which will use the cellular floor manufactured by the H. H. Robertson Co.

DRY WALL

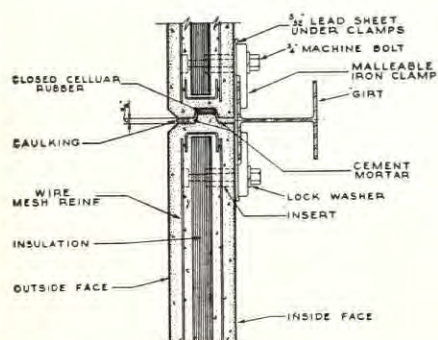
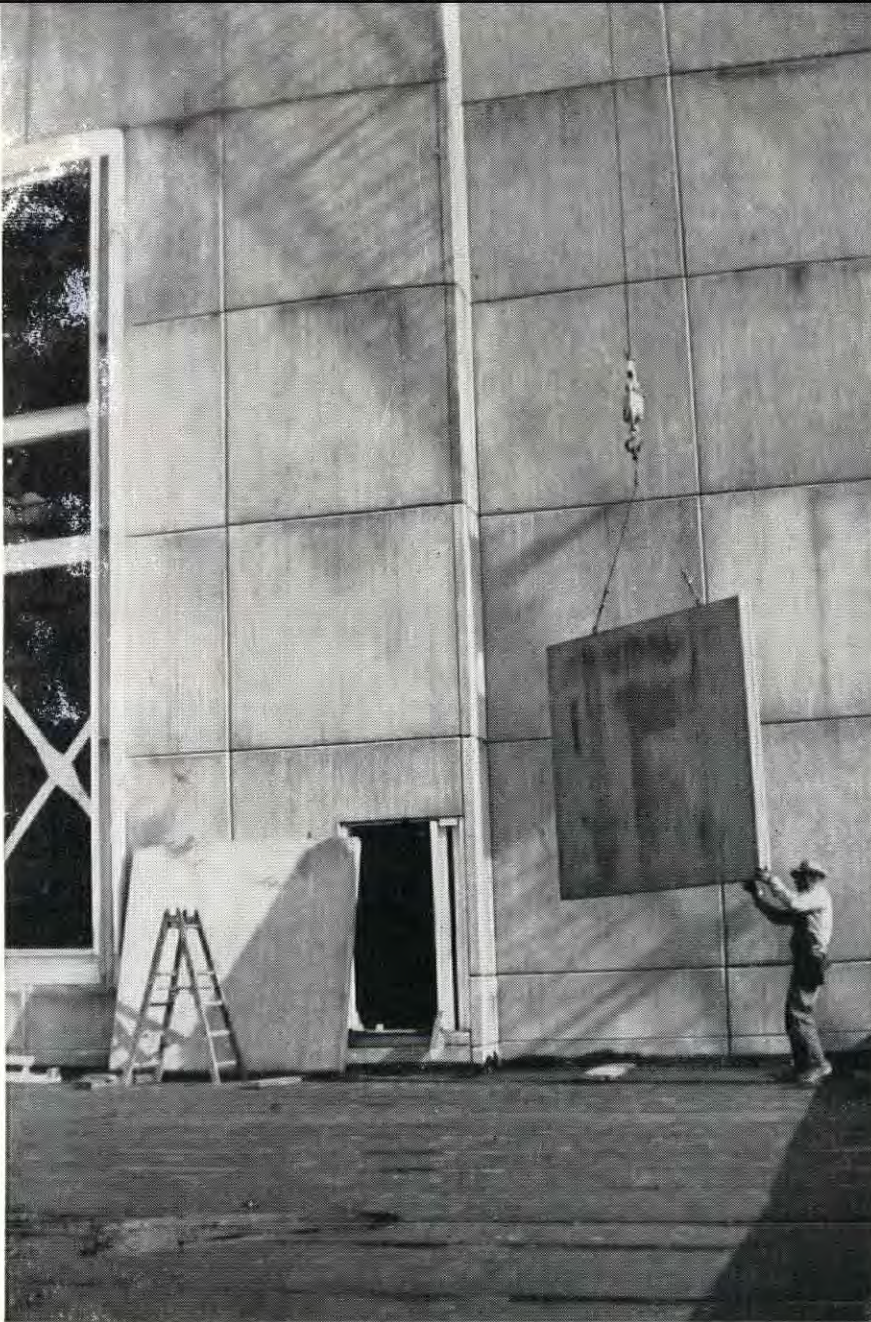
Eight foot square concrete sandwiches enclose a power plant at \$2 per sq. ft.

This is about the cheapest sandwich panel yet developed. It cost \$2.00 per sq. ft. erected, cut construction time to a minimum (an 11 man crew put up 2,000 sq. ft. per day) and offers better insulation than a 12" brick wall. Developed by Ford, Bacon & Davis, Engineers for Electro Metallurgical Co., a Division of Union Carbide & Carbon Corp., its first installation is in a power plant at Marietta, Ohio which ultimately will have 80,000 sq. ft. of wall surface.

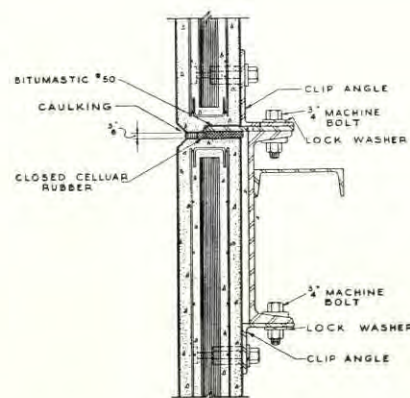
The meat in this sandwich is chemically mineralized wood chips with a cement binder. The bread is concrete, mixed 6 bags of High Early Portland cement to the cubic yard to minimize shrinkage and yet provide adequate density for weathering and durability; it is air entrained for an easily handled mix.

Good insulation is readily available

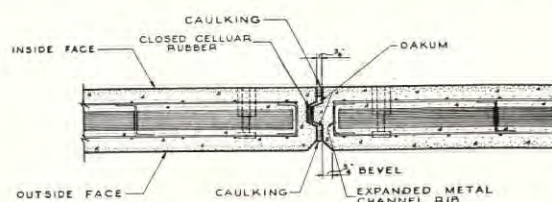
Panels measure 8' x 8' x 5" thick, and weigh 42 lb. per sq. The core of insulation comes in 1½" thick sheets, and was chosen more for its low cost, easy handling and fabrication features than for insulating value, though it is a good insulator. According to project engineer P. M. Grennan of Ford,



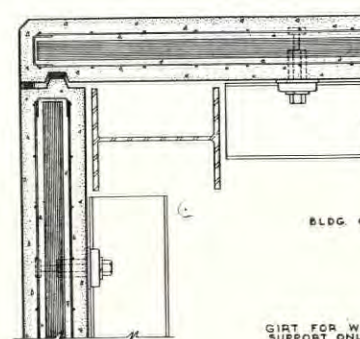
Horizontal joint at girt support



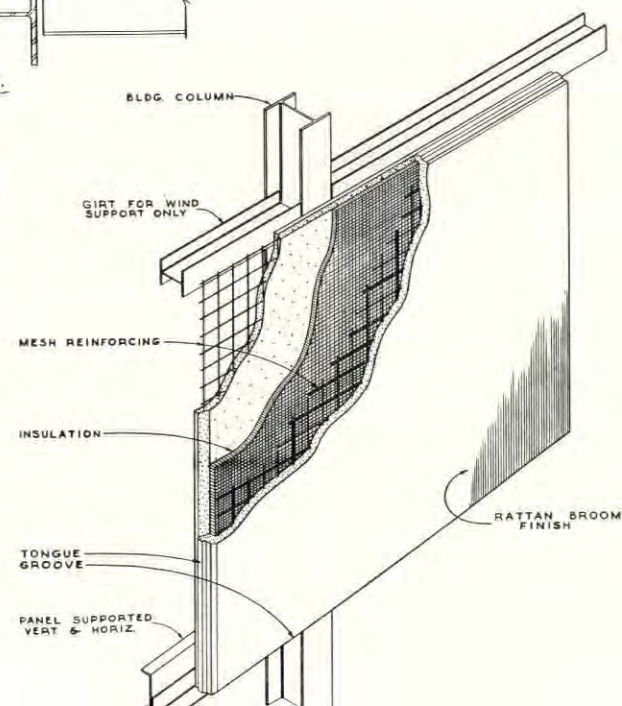
Support at horizontal joint



Vertical joint



Corner detail



The typical joint detail is tongue and groove on adjacent panels. This provides a water dam, and also facilitates erection because it makes the panels self aligning. To insure weather tightness, a continuous impervious cellular rubber strip 1 in. wide is placed at the center of all tongue and groove joints, cemented in place by a rubber adhesive. Joints are packed with oakum, primed, and then calked, making a multiple seal.

FOR INDUSTRIAL BUILDING

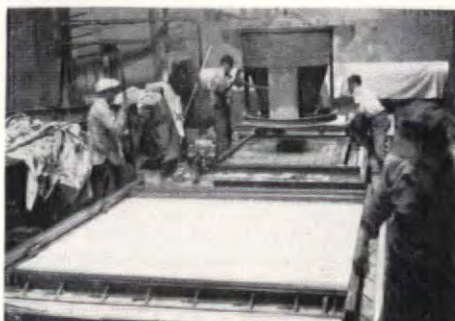
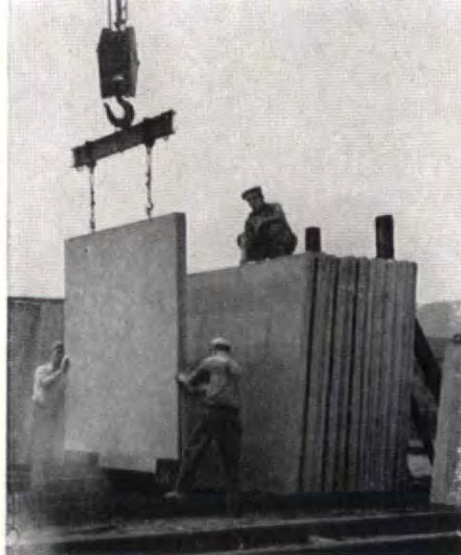
Bacon & Davis, suitable insulating materials were numerous enough to make choice on the basis of insulating efficiency only a nominal factor in the final selection. More telling, the wafers of chemically treated wood chips are cheap, easy to handle, make an incombustible filling, and have rough enough texture to offer the covering concrete a good bonding surface.

There is no applied vapor seal in the panel. The designers reasoned that this dense concrete was itself an inherent barrier to moisture penetration; since the wall panel does not include a ventilated air space, no depository for condensation is provided. The more critical probability of condensation on the inside surface of the wall is counteracted within reasonable limits by the resistance to thermal conductivity of the sandwich panel. The heat transmission coefficient for this 5" wall is 0.32.

. . At low cost

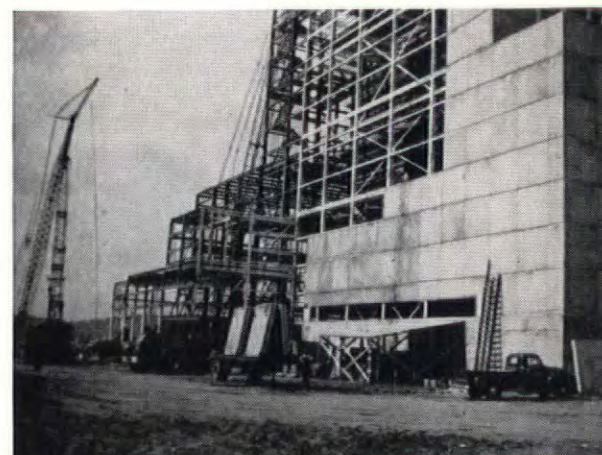
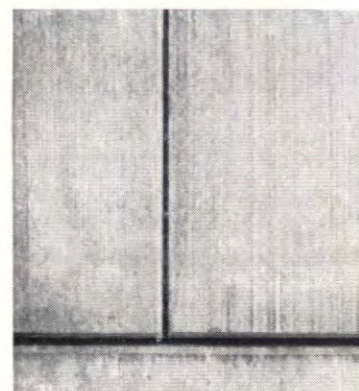
Engineer Grennan, who started investigating the design of this wall in 1948, estimates it to be at least \$1.50 per sq. ft. cheaper than the conventional 12" brick wall built around many power houses. His figures for the brick wall are \$3.50 to \$4 in place. The other choice considered was a combination 8" buff tile (outside) with 4" brick (inside) at an erected cost of \$2.50 to \$3 per sq. ft.

(Continued on page 166)

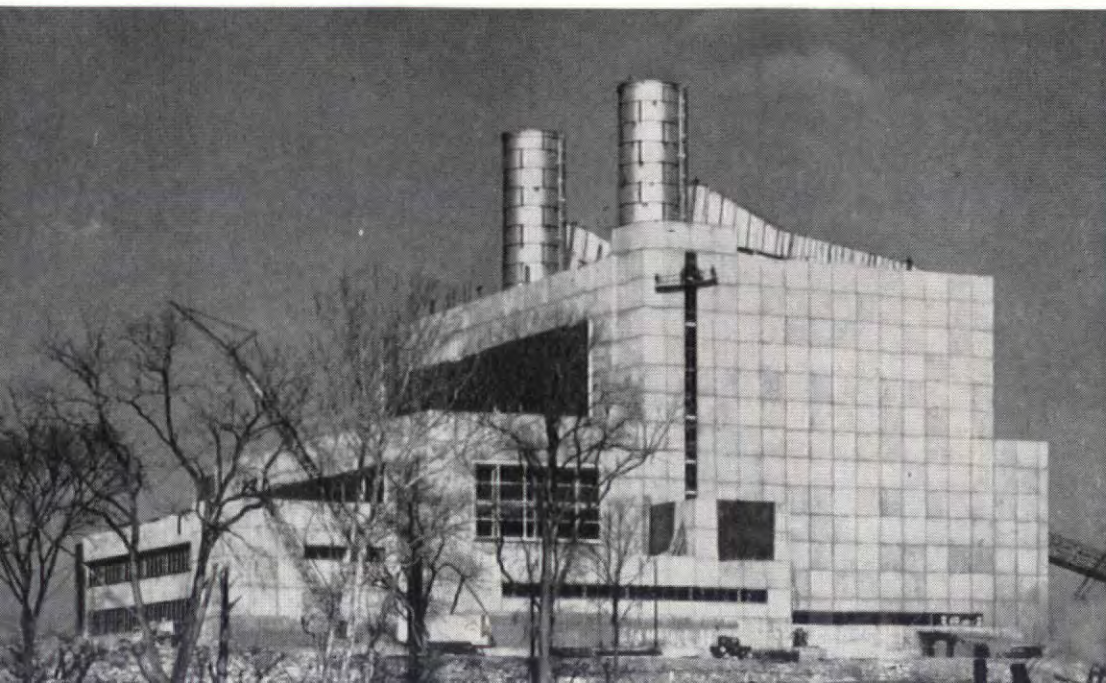


Open-topped forms are used and exposed surface of panels is kept moist while concrete is still setting. Panels can be lifted out of forms and stacked for curing a day after they have been poured. U-bars are cast into top of each panel for handling and erection.

Surface can be textured in numerous finishes. This one shows pattern of rattan broom pulled over form while concrete was still impressionable.



The structural steel frame of the power-house picks up the vertical load of these wall panels at every third course; the horizontal wind loads are taken by girts at each line of horizontal joints.



BLAST RESISTANT BUILDINGS with normal fenestration emerge from studies of Japanese

A-bomb damage and "strengthened core" design—by Ellery Husted & G. L. Schuyler*

For the atom age there is emerging a building design combining a normal exterior, adequate light and air for outside rooms and a blast-resistant interior of heavy shear-wall and roof construction designed for plastic yield. Within such a building occupants and essential facilities may be given a good degree of protection against atom bomb damage.

Since the end of World War II there has been considerable talk about the desirability of "dispersion" of important new facilities to be built in critical areas. Nevertheless an average of \$18 billion a year for the past four years has gone into new industrial buildings *without any consideration of dispersing them*. The idealists' hope for a thoroughly de-urbanized U. S. so scattered as to be almost indestructible by A-bomb warfare seems unlikely to be realized in our time. Meanwhile, important buildings will continue to be built in critical areas where a better than ordinary degree of blast resistance seems called for.

When American architects and engineers of the Strategic Bombing Survey first viewed the devastation at Hiroshima and Nagasaki, they were struck by the ability of reinforced concrete and heavy steel structures to withstand atomic blast. Close to Ground Zero such structures remained standing in a waste of ashes. In most cases, however, their *interiors* had been gutted through effects of fire and blast, operating via the exterior openings. Blast had flung glass, plaster and equipment in all directions. Fire had consumed all combustible contents. Analysis of these Japanese buildings indicated that, while they had survived *as structures*, they had failed *as shelters* owing to the vulnerability of their window openings.

With the aid of plastic deformation

First designs for U. S. A-bomb resistant buildings took the form of reinforced concrete framed structures without windows. It was early recognized that since buildings under A-bomb blast must be subjected to very high pressures, it would be impracticable to design them for response limited to their *elastic range*. It would be sufficient if a blasted building absorbed energy by *plastic deformation* to a point just short of its ultimate yield point. As long as it saved the lives of its occupants, unsightly distortion of the structure would be acceptable. Built-in safety factors required by current building codes to insure "return to normal" reaction of members would for economic reasons have to be abandoned in the atomic age.

With blast denied entry through wall openings, the horizontal impulsive loading on a wall is somewhat increased; but such increase in loading is by no means proportional to the increase in wall area produced by the elimination of openings. The additional weight of the windowless wall will increase its dynamic resistance, and omission of apertures will add greatly to the structural strength of the wall. From the *purely*

structural point of view, a reinforced concrete, windowless, framed structure (with good heavy roof) is the ideal building to resist blast.

A logical next step is to strengthen the exterior walls and roof and correspondingly lighten the internal frame. If a framed, windowless building is to be destroyed by a horizontal blast load, this can occur only if the walls shear off along a horizontal section just above the foundation; and such walls can be made amply strong, provided they do not dish in and collapse as diaphragms. Against such dishing action the floors and the floor frames will serve as horizontal beams transmitting loads from the front wall to the side walls and resisting the dishing and the caving in of all exterior walls.

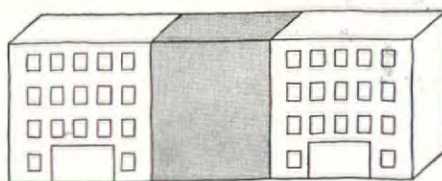
A simple rugged box

This over-simplified description of the framed, windowless structure's behavior under blast indicates a preference for something more like "monocoque" construction. In this type of design the frame is lightened, the floors are made only slightly stronger than required by their normal live loads, and the reduced internal strength is transferred to the exterior walls and roof. Such a "shear wall" structure is in effect, an extremely simple, rugged box designed to resist rupture, sliding and overturning. Because of the simpler form-work required, a building of this type is the cheapest structure for its strength and is preferable to the conventional framed structure.

But who will want to live in a windowless concrete box? It is true that solid walls cost less and need less upkeep than walls with windows, that modern illuminating and air conditioning make windows unnecessary, that windowless structures may be entirely satisfactory esthetically.

There is, nevertheless, a great consumer resistance to windowless buildings of many types—particularly hospitals. However, in all honesty, hospitals (or any other buildings) *with windows* can be made adequately safe through a variety of not too costly adaptation.

The windowless wing. One solution, if the building has several wings, is to construct one of the wings without windows, using shear-wall design, and in that wing concentrate as far as possible the essential utilities and facilities, the stairs and elevators. In this windowless wing,



the occupants of the other normally lighted and ventilated wings on each floor can take shelter as soon as they have warning.

The windowless story. A variation of the same conception is to construct the lower story (or stories) without windows. With this arrange-



ment, the occupants of upper stories can descend to the strong windowless portion to take shelter; and such shelter area is also accessible to people on the street.

The strengthened core. A still better solution seems available in a design which retains the normal quota of windows on the exterior, but provides a blast-resistant interior "core" constructed of heavy shear walls. This seems about



as far as it is possible to develop a conventional blast-resistant design for a building with normal fenestration.

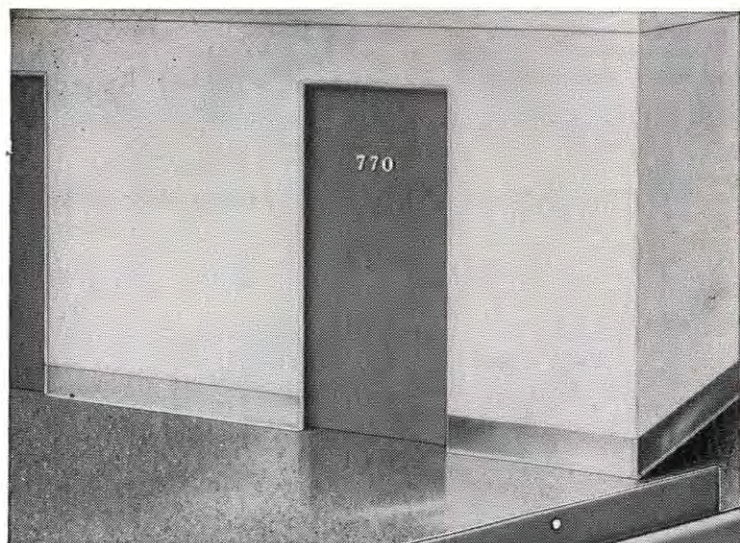
In such buildings, the windows are retained at the cost of considerable blast damage to the inside of the normally constructed portions outside the "core." Such damage should not, however, be invited by use of exterior curtain walls (which may disintegrate into missiles). Reinforced concrete panels (which may hold up well in spite of the entering blast) should replace curtain walls in all cases.

At the openings into the strong shear-wall portion of the building, blast-resistant doors or baffle arrangements may be used for excluding flying debris.

To facilitate the emergency rehabilitation of the conventionally constructed portions and make them quickly re-usable after an attack, wood "nailing strips" provided around window openings might be useful for attaching materials to keep out the weather where glass has been blown in; or, if money is available, some sort of "safety" window might initially be provided. In-swinging casements could be provided at all openings, designed to open automatically under blast pressures not strong enough to make flying glass a hazard.

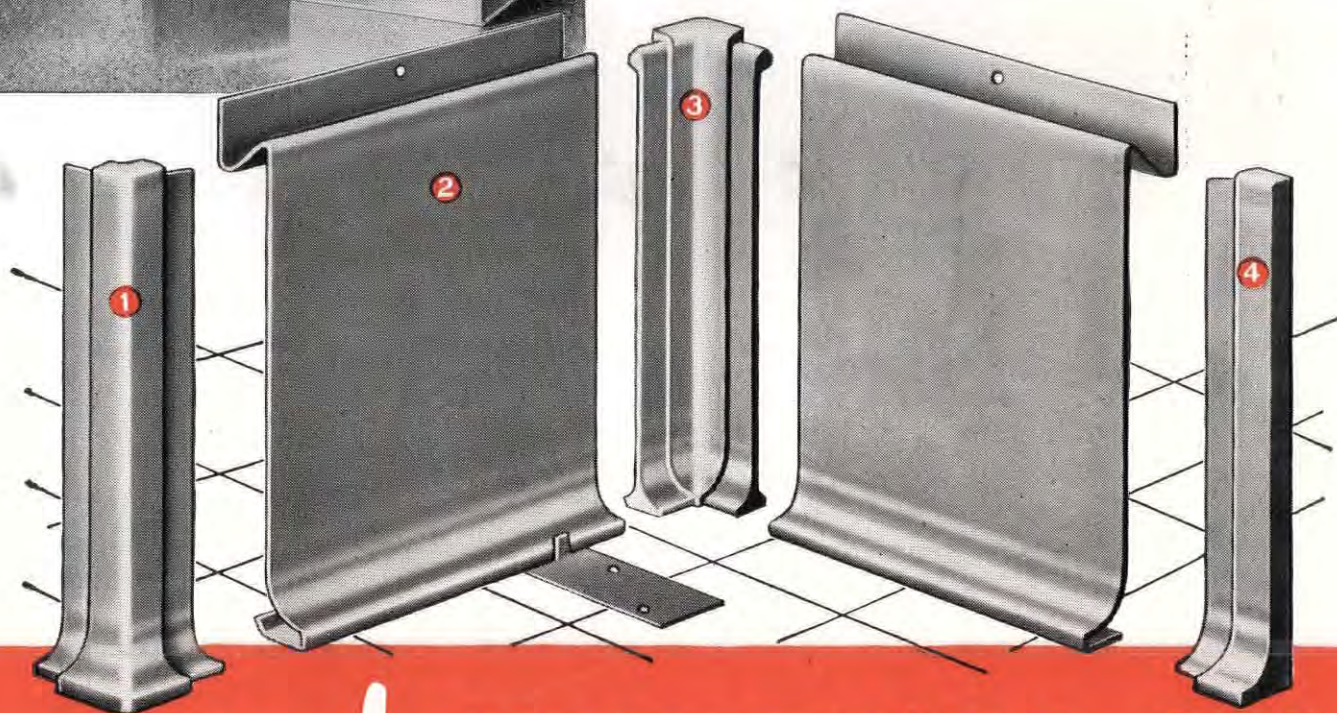
Under the guidance of the Federal Civil Defense Administration, a few Government hospitals in critical cities are being designed incorporating some of the design principles outlined above. Other "essential facilities" in critical areas may be expected to follow the lead.

* Architects Husted and Schuyler of Washington, D. C. are consultants to the Federal Civil Defense Administration.



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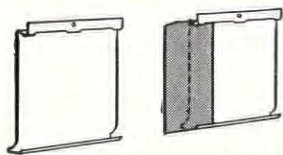
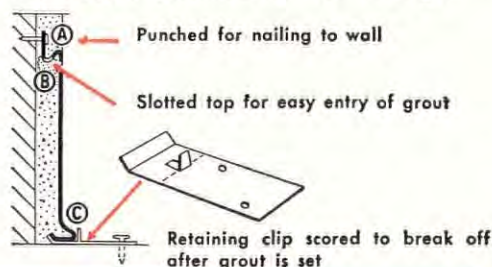


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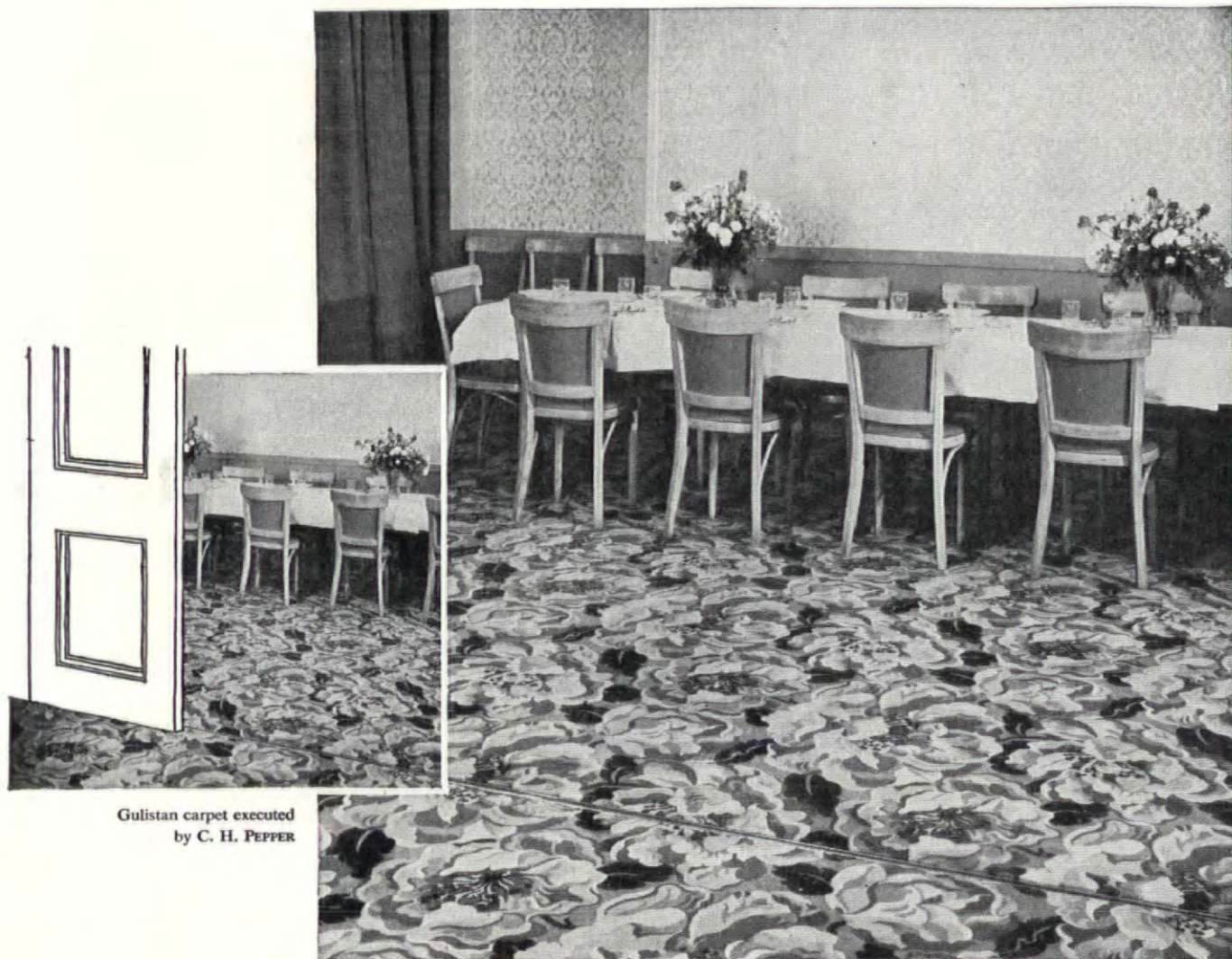
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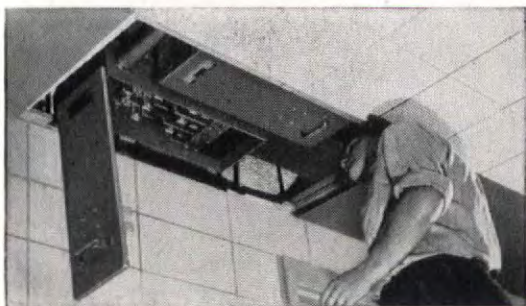
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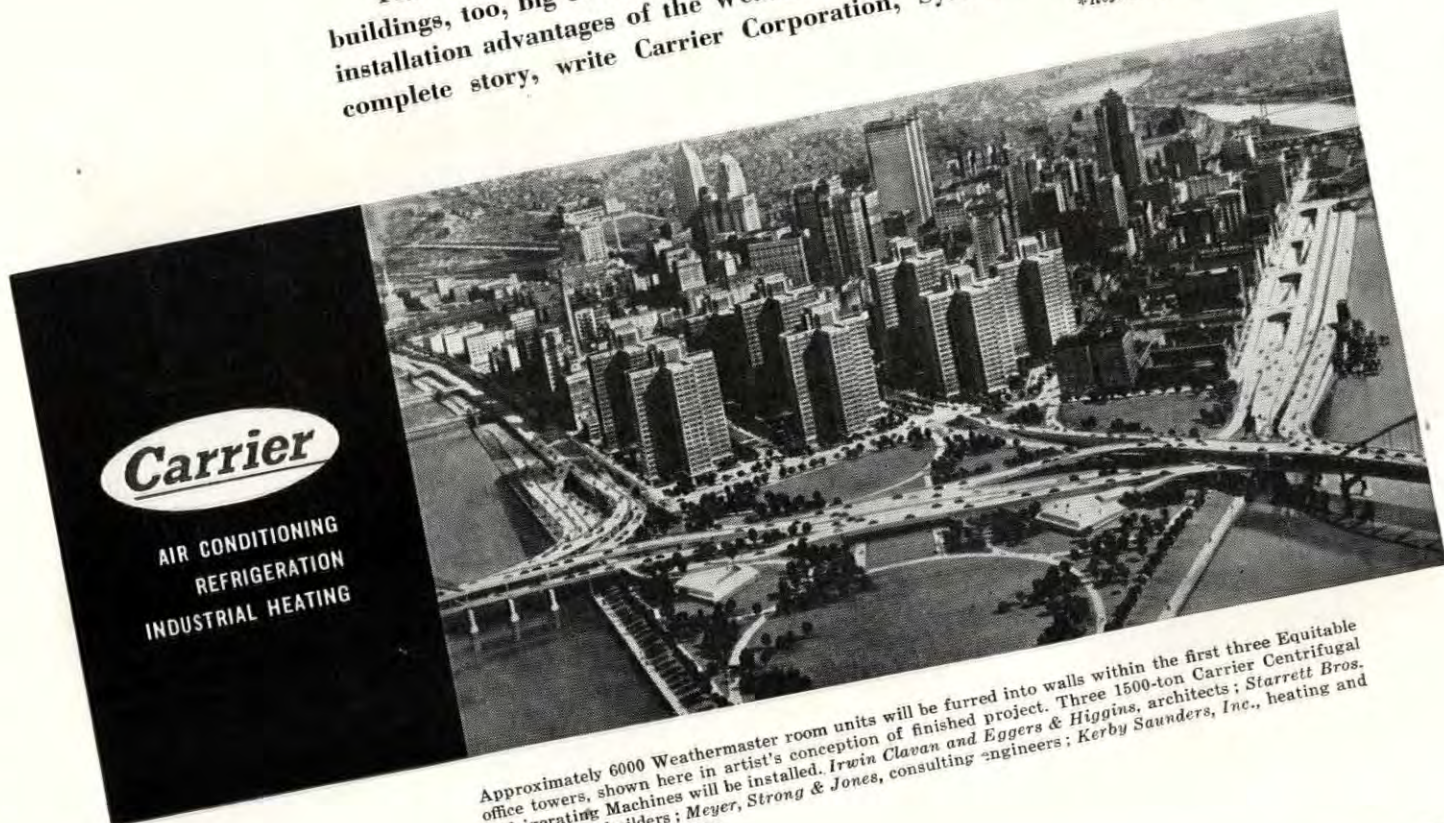
But look at this. In Pittsburgh, the first three giant office buildings of the Equitable Life Assurance Society's Golden Triangle development are to be completed next year. Two of the buildings will be 20 stories high. The third, 24 stories. And the air conditioning system has been designed so that *no mechanical equipment will be needed anywhere between the basement and the penthouse in any of the buildings. Think of the extra rentable space that'll mean.*

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Of course, Carrier's Conduit Weathermaster System does a lot more than save space. Does away with fans or motors in room units. Keeps all "nuts and bolts" together in one place, easy to service. And for supply ducts it uses small-diameter conduits, prefabricated so they'll slip together in jigtime.

Fine for big new projects, like Equitable Life. Fine for existing buildings, too, big or little. And, you'll want to know more about the installation advantages of the Weathermaster System, too. So, for the complete story, write Carrier Corporation, Syracuse 1, New York.

*Reg. U. S. Pat. Off.



Carrier

AIR CONDITIONING
REFRIGERATION
INDUSTRIAL HEATING

Approximately 6000 Weathermaster room units will be furred into walls within the first three Equitable office towers, shown here in artist's conception of finished project. Three 1500-ton Carrier Centrifugal Refrigerating Machines will be installed. *Irwin Clavan and Eggers & Higgins*, architects; *Starrett Bros. & Eken, Inc.*, builders; *Meyer, Strong & Jones*, consulting engineers; *Kerby Saunders, Inc.*, heating and air conditioning contractor.

ARCHITECTURAL FORUM



GOLEMON & ROLFE, ARCHITECTS

St. Frances Cabrini Hospital — Alexandria, La.
—an outstanding example of functional beauty
that can be achieved with Concrete
Joist Construction.

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Construction, which provides big savings these three ways:

1. SAVES MEN because less time and labor are required to provide open wood centering and form work.
2. SAVES MONEY by saving concrete... the "dead load" is kept to a minimum. Removable steelforms can be re-used, so only a small rental is charged.
3. SAVES MATERIAL because only a mini-

mum of critical steel is used. Less concrete is necessary than in other concrete floor constructions.

The result... a strong, flexible building capable of absorbing great strain. It's fire-resistive... **SAFE**; soundproof... **QUIET**, *Ceco*, originator of the Steelform method, is first in the field. So when concrete joist construction meets your need call on *Ceco*... the leader over all.



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Offices, warehouses and fabricating plants in principal cities

In construction products **CECO ENGINEERING** *makes the big difference*

INDUSTRIAL DRY WALL

(Continued from page 157)

The sandwich came out at \$2 per sq. ft. in the comparison, complete with calking—a net saving of almost 50% over the brick in first cost. Besides the lower direct costs, further advantages include: lower anticipated heating costs due to better insulation; quicker erection; less hard-to-get labor required; less scaffolding needed; less services for personnel (because of less labor); less interference with other construction operations.

Fabrication tolerances for the overall slab dimensions of the sandwich were sharp for this kind of work— $1/16''$ plus or minus. This accuracy was held by use of carefully maintained steel forms, plus frequent checking, and it paid off. Only 1% of the panels had to be discarded on the job. The panels were cast horizontally in open-top forms with 20 hrs. elapsed time before the forms were removed or they were handled. This was convenient

because it established a 24 hr. day-to-day casting cycle, based on previously tested compressive strength for the high early strength concrete. The determining factor in establishing this early strength value was the strain of tilting the 20-hr.-slabs from the horizontal into the vertical position for removal from the forms. Two U-bars were recessed and cast into the top edge of each panel for handling and erection.

The stiffener in each face of the sandwich is welded steel wire fabric, in flat sheets, not from rolls (in order to insure a uniform 1" fire protective concrete cover over the metal). The panel had to meet Ohio state building laws and was designed also with the tough codes of such cities as New York, Chicago, Detroit, and Cleveland in mind.

The internal reinforcing ribs of expanded metal in the panel serve as spacers for the standard width insulating sheets. Metal reglet inserts for roofing are cast into the inside faces of parapet panels. After the panels were cast, the forms were vibrated to compact the mix and eliminate surface air pockets. The exposed surface of the cast concrete was kept moist during the first 20 hrs. of the set at a temperature over 70° F. The first move after the 20 hr. period was into a steam room for another 48 hrs. of additional moist-curing before final yard storage.

Upholstering the form

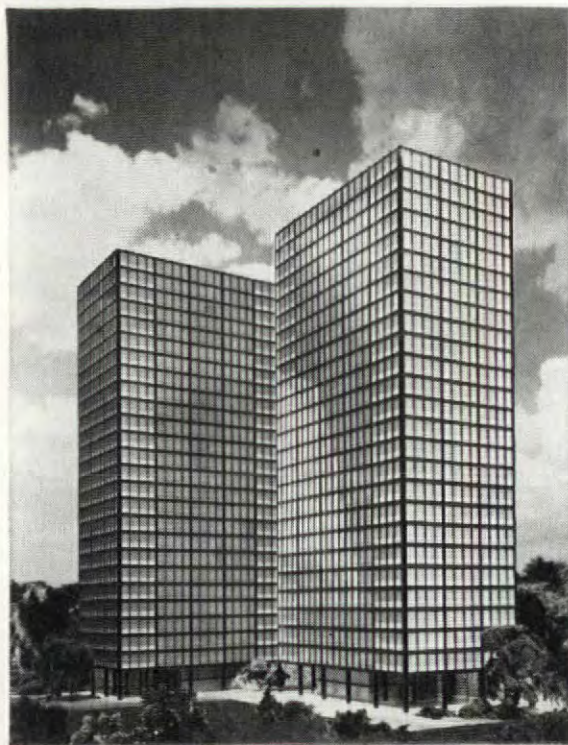
Finish for the interior face of the wall was created by lining the steel floor of the form with muslin. This finish is smooth but not slick, and will minimize reflection and furnish an excellent surface for painting.

Texture of the outside face was produced by drawing a rattan broom across the open top surface of the concrete in the sandwich mold. Result is a series of fine, uneven grooves which are placed vertically on the building.

The panels were fabricated in the shops of the Cemenstone Corp. at Neville Island, Pa. and transported to the building site in open trailer trucks to be lifted directly from the trucks with an erection crane and placed. Cemenstone used an erection crew of 11 men, including the foreman (one crane operator, one oiler, six iron workers, one mason, and only one laborer). Iron workers handled the placing and fastening while the mason placed cement mortar in those horizontal joints where one panel was bearing directly on the one below it. These mortar joints were raked on the exterior face to a depth of $3/4''$ and later calked like the other joints. Under normal conditions 2,000 sq. ft. of panels were erected in each 8-hr. day.

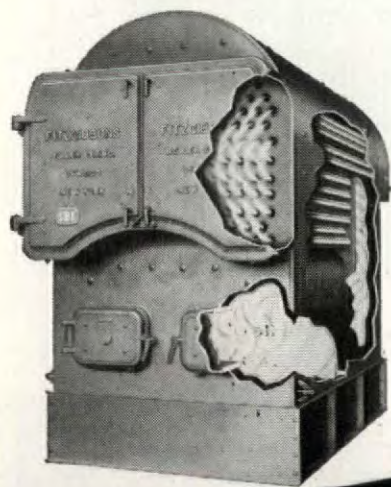
IN CHICAGO a Striking Building

The unusual and attractive construction of this new apartment building at 860 Lake Shore Drive, Chicago, posed a heating problem demanding the utmost in efficiency from the fuel consumed. The selection was Fitzgibbons steel boilers, in the safe assumption that these boilers would make every gallon of oil produce the maximum of heating comfort. Architects, heating engineers, builders know they run no risks with Fitzgibbons steel boilers.



Three Fitzgibbons 24,290 sq. ft. "D" Type boilers, oil-fired, heat this unusual glass and steel Chicago apartment building. Architects, Pace & Associates. Associate architects, Holsman, Holsman, Klekamp & Taylor. Designer, Ludwig Mies van der Rohe. Heating contractor, William A. Pope Company, Chicago.

Write for Bulletin B-11 Today

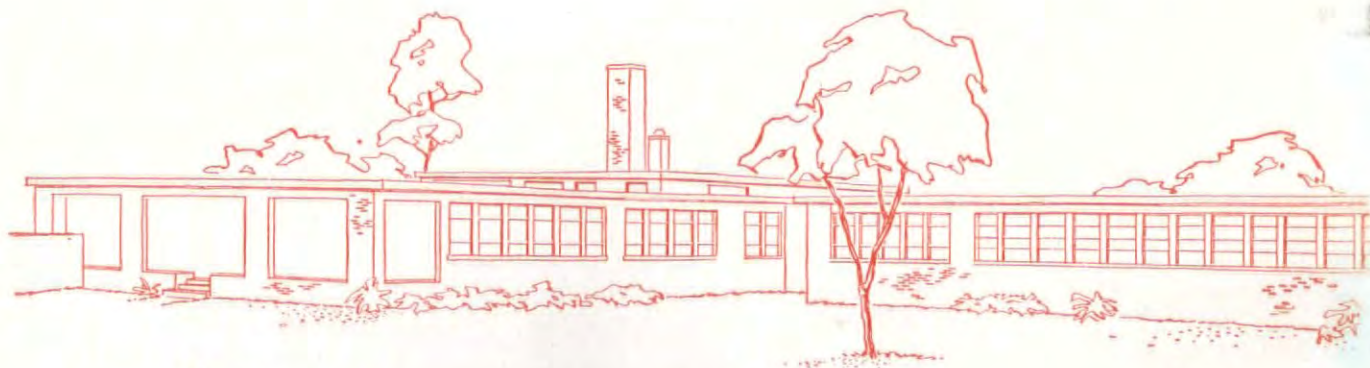


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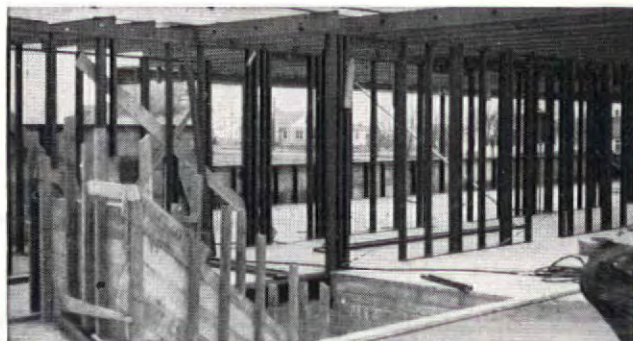
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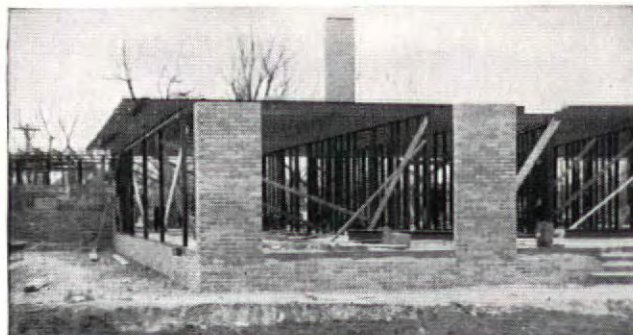


*Architect saves time and money
in new hospital construction with*

STRAN-STEEL® FRAMING



Interior view of Redfield (S.D.) hospital under construction. Stran-Steel framing comes pre-cut, pre-punched, treated with rust-inhibiting paint.



Exterior view of construction. Electrical wiring is installed through factory-punched holes in framing members.



Spick-and-span interior of the hospital shows how flush finishing of walls and doors lends convenience, promotes sanitation.

Architects are quick to recognize the many advantages of Stran-Steel *nailable* framing in commercial and industrial construction. Read what Mr. A. McWayne, of Perkins and McWayne, architects and engineers, Sioux Falls, S.D., says:

"We are well pleased with the Stran-Steel construction as incorporated in the hospital at Redfield, South Dakota . . . Stran-Steel offers many possible savings in time and cost of construction."

Mr. McWayne says that Stran-Steel framing permitted complete enclosure of the building to allow interior work to proceed before exterior completion. This means that sub-trades (electrical, plumbing and heating) were not held up waiting for bricklayers, concrete workers, etc., to finish their jobs. Man-hours were saved and costs held down.

If you are planning a school, hospital or industrial building, it will pay you to investigate Stran-Steel framing. Complete literature available on request, or see Sweet's catalog service, architectural ($\frac{3c}{6r}$) and builders' ($\frac{3a}{6r}$) files.

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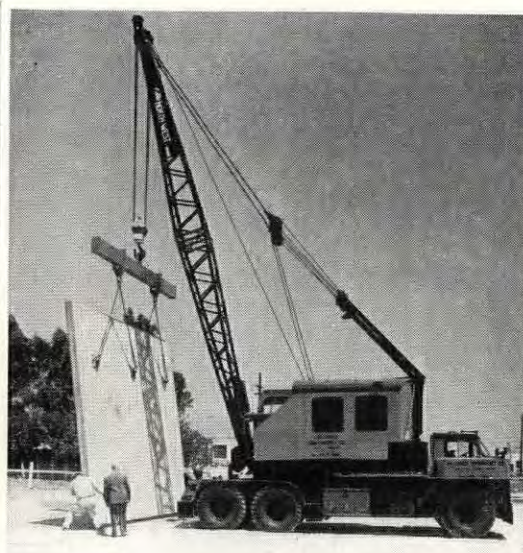
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In addition to the Sedgwick Multi-Stop Electric Traction Dumb Waiter, Sedgwick also builds the Roto-Waiter, designed especially for two-stop service—such as under-counter, back bar, or similar limited space installations. Other Sedgwick Dumb Waiters—including both electrically and manually operated types—are likewise available in a wide range of sizes and capacities. Steel towers and enclosures can be supplied where desirable. Specify, too, Sedgwick Steel Dumb Waiter Doors for complete satisfaction.

Write for Illustrated Booklet AF-12

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Capacity in lbs.	200	200	300	300	500	500
Speed in F.P.M.	50	100	50	100	50	100
Car Width	24"	24"	30"	30"	36"	36"
Car Depth	24"	24"	30"	30"	36"	36"
Car Height Inside	36"	36"	36"	36"	48"	48"
Clear Inside Hoistway Width	33"	33"	39"	39"	45"	45"
Clear Inside Hoistway Depth	29"	29"	35"	35"	41"	41"

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THE ULTIMATE IN ECONOMY — SINCE 1893



Brown Studio

CONCRETE WITHOUT STEEL

Precast wall panels 8" thick require no reinforcement, save critical materials and money.

—by Paul De Huff

Holding immediate significance as a device to offset the steel shortage and the long-range possibility of lowering costs, this precast concrete wall panel contains no reinforcing steel. A conventional panel of the same size would require 333 lbs. of steel. And, even though this 8" panel is 3" thicker than the conventional one and made of more carefully cured higher strength concrete (4,000 psi vs. 2,500 psi), its total unit cost is 2 cents less than the conventional panel's \$85 per sq. ft.

Ever since William P. Neil's construction boyhood, when he watched huge, slab "stones" lifted from deep quarry floors, he has been wondering how to duplicate nature's methods of making monoliths without benefit of reinforcing steel. Now the hard-hitting president of Los Angeles' William P. Neil Co., Ltd., one of the biggest producers of precast structural buildings, he seems about to realize his boyhood ambition.

Long conscious of the big gulf between nature's nicety of process in monolith formation and man's comparative laxity with his materials, Neil was well aware that large concrete precasts (which he still refers to as "stones") must have the utmost care in concrete control if they were ever to do without the "crutch" of steel reinforcing. With this conviction uppermost in their minds, he and his company's Chief Engineer, Robert F. Campbell, set about designing full-scale demonstration panels.

Starting with the concrete mix, they set for their target an ultimate strength of 4,000 psi—1,500 lbs. higher than the conventional construction requirement. Using a 6¼-sack cement ratio with a carefully graded aggregate ranging to 2½" rock, and a water-cement ratio of 5.0, they

(Continued on page 170)

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Give a gift that will bring fresh reminders of your Christmas thought every month in the year . . . a gift that reflects the interest you share with all your clients . . . a gift you can give with pride.

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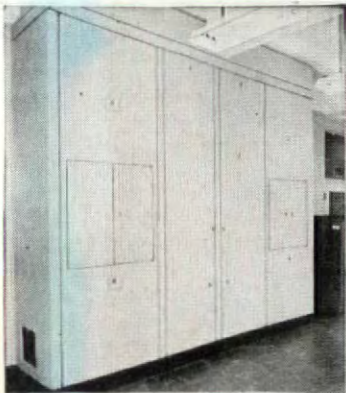
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Entrance Lobby
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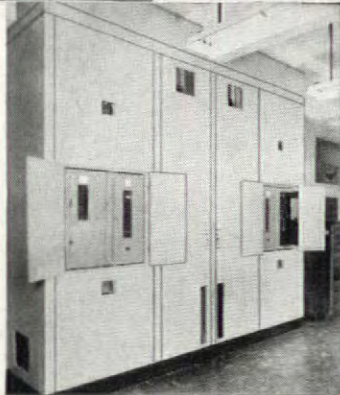
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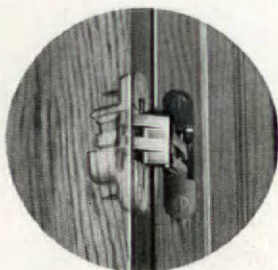


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CONCRETE WITHOUT STEEL

pour, they came up with a minimum-slump concrete.

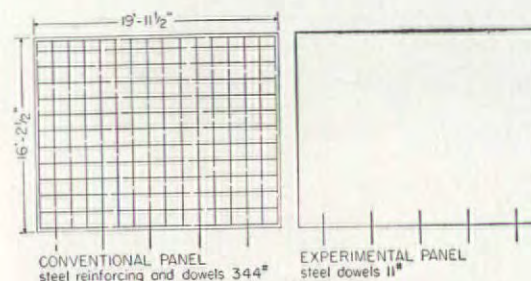
In search of the high rupture modulus they hoped to develop in tension, the Neil staff, working with the J. L. Peterson Testing Laboratories of Los Angeles, cast three 6" x 6" x 36" long "washo" test beams and three standard test cylinders, testing each to failure at intervals of 7, 14 and 28 days. The result was an invariable rupture modulus of 12% at each age interval.

With and without steel

Use of such a mix in large, 20' x 20' precast building-wall slabs or panels was the next step. There were several differences to be encountered between the conventionally reinforced, large concrete wall precast—commonly 5" to 6" thick—and the Neil conception of a "minimum steel" concrete panel:

1. 4,000 lb. concrete "figures" 38% "stronger" than 2,500 lb.
2. An improved concrete would greatly reduce—if not eliminate—the "minimum temperature and shrinkage steel" required under Chapter 26 of the Uniform Building Code.
3. In a conventionally reinforced, 6" thick, precast concrete slab, only the concrete to the bottom of the steel could be assumed to be working under the stresses imposed by lifting and erecting the cast, whereas in an unreinforced slab the full depth section could be considered "effective" under such conditions.
4. Thus, an 8" thick, unreinforced slab, for example, would have an 8" effective concrete section, as compared with the 2" effective depth of its 5" reinforced competitor.
5. The additional 3" slab thickness—as against the nominal 5"—should increase the concrete's own stress resistance by approximately ten times.
6. With today's know-how and erection facilities, a safety factor of 2 is adequate in lifting and positioning stress design.
7. To achieve maximum concrete strength, the mix must be meticulously designed, maintained

(Continued on page 172)

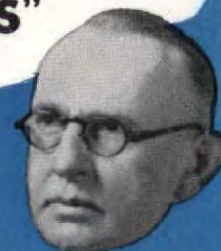


Conventional panel (left) requires 344 lbs. of steel to permit reduction in thickness to 5". Neil's experimental panel (right) is 8" thick and made of carefully cured high-strength concrete, thus requires no reinforcing steel. Dowels for anchoring purposes weigh 11 lbs.



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PUT OVER
SMALL-KITCHEN
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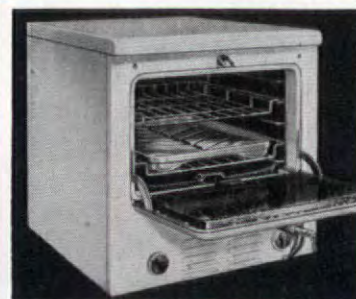
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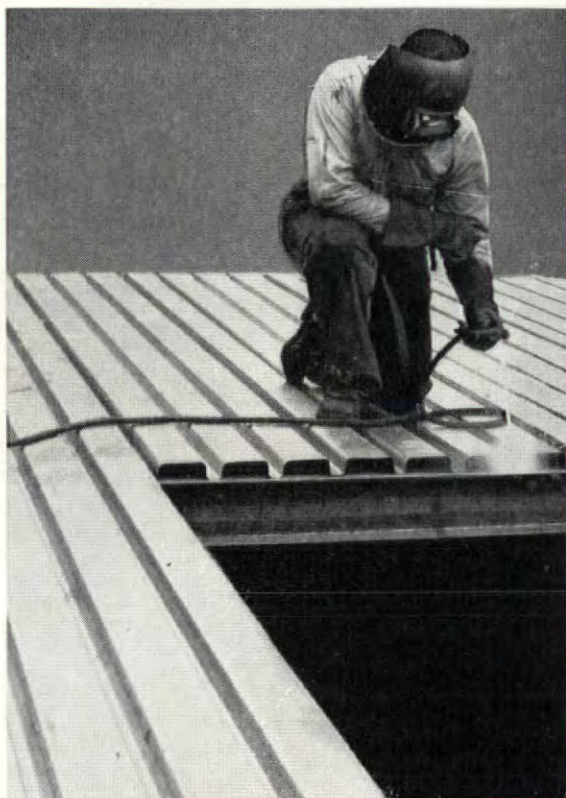
(relationship between rib and flat)
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CONCRETE WITHOUT STEEL

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With his mix established and his conclusions crystalized, Neil constructed a series of 20' x 20', 8" deep precasting forms on the pavement of one of his plants. A few days later, surrounded by invited building officials, engineers and industry representatives, these precasts-without-conventional-reinforcing were poured.

Without strong-backs and cracks

In the presence of a still larger gathering of building officialdom and the professions, the precast wall panels—then just 12 days old—were lifted and positioned with a heavy-duty crane, rigged for the conventional, imbedded-point pickup. Originally designed for "strong-backing" against deflection during the lifts, two of the precasts were elevated and placed without strong-backs and without showing any shrinkage or stressing checks during or after the operation.

Realizing that there could be nothing proprietary or patentable in this unusual development, Neil's sole motivation has been the eventual dissipation of the industry's traditional fear of unreinforced concrete in such applications and the demonstrating of a concrete which could far outperform its reinforced competitors in certain fields.

Before Neil's interests and those of the building industry will be served by this new technique, official recognition and acceptance will, of course, be necessary. To this end the Neil demonstrations were witnessed by such authorities as: Portland Cement Association, the local National Production Authority, the Los Angeles County's Chief Building Inspector, representatives of various local and national builder organizations, representatives of the building industry press and a half-dozen of the Southwest's best-known engineers and test-technicians, all of whom expressed satisfaction with the methods and results.

Toward code acceptance

Ahead of the Neil organization and the industry advocates of this new technique lie the slow, laborious procedures toward official building-code acceptance. But Neil, who has fathered many another significant concrete-casting improvement and whose firm has successfully handled the thousands of concrete tons built into the Navy's Hawthorne, Nev., ammunition depot and Mercury-Lincoln's huge Southwest assembly plant, has a way of getting things done, once his factual foundation is solid.

Those who have evaluated and studied the Neil "minimum steel" precasting technique believe that—in these years of critical steel supply and improving production-control in concrete—both Neil and the concrete industry are certain to benefit generously from this radical departure from the past.

Specify protection in mobilization construction

Typical uses of penta-treated wood

Wherever wood is used, penta treatment will give it longer life. The following table gives the amount in pounds of 5% penta solution in oil that a cubic foot of wood should retain for maximum protection.

	Humidity average to low	Humidity average high
Sills and plates	6	8
Joists and girders	6	8
Screeds and subflooring	6	8
Factory flooring	6	8
Roof plank	6	8
Platforms and decking	6	8
Posts and fences	6	8
Cooling towers	..	8-10
Sign material	6	8
Millwork	6	8
Highway guardrails	6	8
Railway cars	6	8
Bridge timbers	8	10-12
Utility poles	8	8-10
Crossarms	6	8

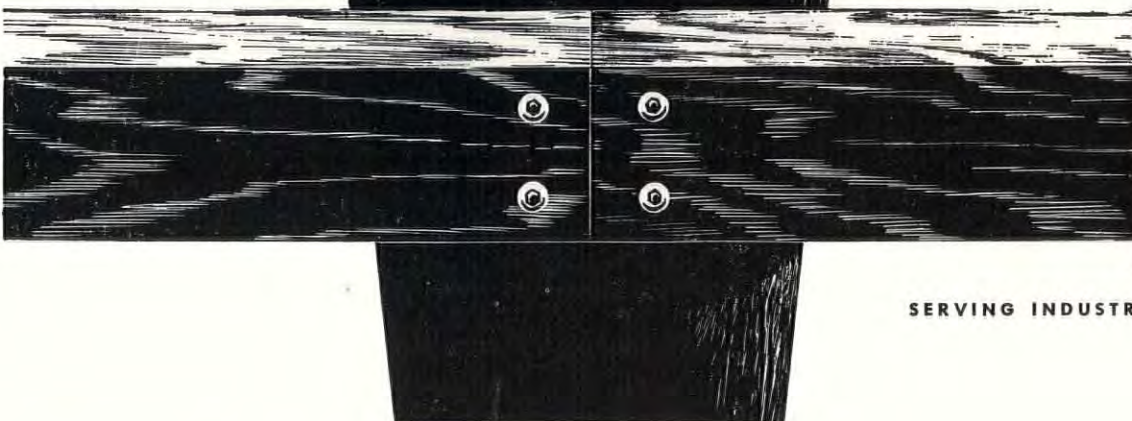
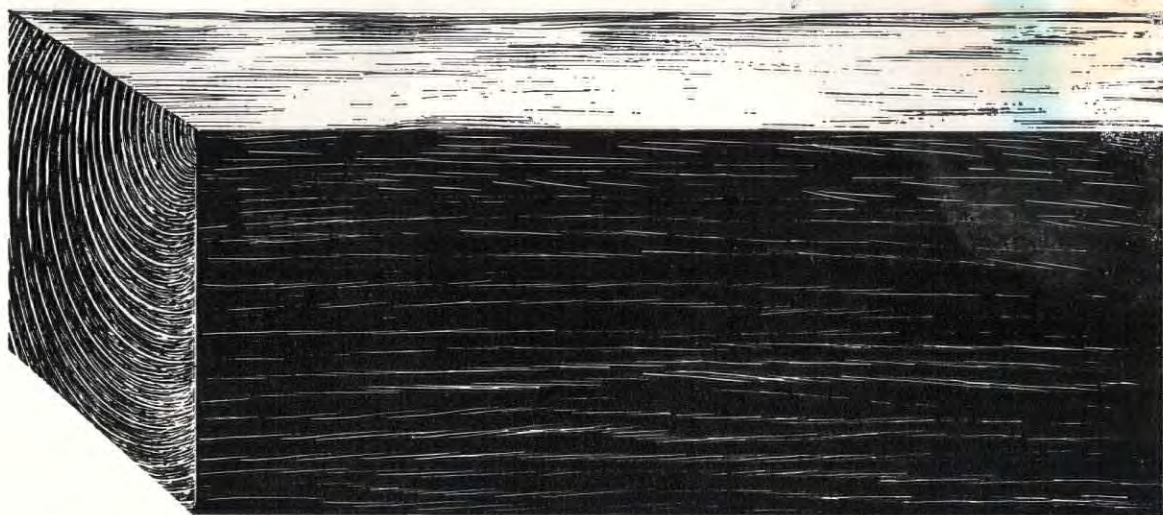
Note: Higher treatments are recommended where wood is to serve under severe conditions, such as in the tropics. Recommendations will be furnished on request.

Industrial construction for mobilization will give longer, more dependable service if you specify the *protection* of Monsanto Penta for the lumber you employ.

Monsanto Penta (pentachlorophenol) protects against termites and other wood-boring insects and controls decay caused by fungi. Treated with properly formulated Monsanto Penta, wood can be painted or varnished.

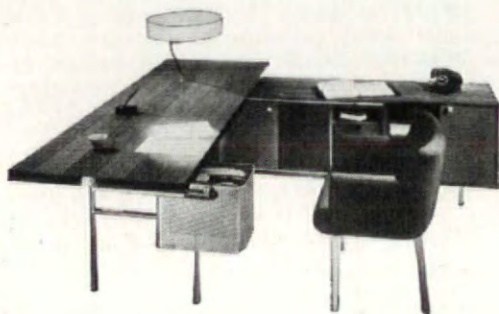
Write for details on *how to specify* penta treatment for lumber... for names of companies that can supply material treated with Monsanto Penta... for firms able to custom-treat your lumber... for brands of formulations with which you can do your own treating effectively. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri.

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Exhibitors' Building, Grand Rapids
8806 Beverly Blvd., Los Angeles

TWO MAGAZINES FOR BUILDING

Beginning in January 1952 THE MAGAZINE OF BUILDING will be published in two separate editions, one devoted to houses, the other to heavy buildings. Announcement of this decision (see October issue '51, p. 153) has been enthusiastically received. From the 2,500 letters received by mid-October, the following random excerpts are typical of the opinions expressed by architects, builders, mortgage bankers, realtors, material dealers and building owners and managers.

Sirs:

We are practically ecstatic about your new idea to publish two magazines for the industry, since no magazine of your caliber has previously been able to carry enough good houses and some of the mass magazines are all too chintzy. . . .

We assume that you will give good coverage to the problems of home design and building which heretofore have not been covered by other magazines—as has been your policy in the past. There is much to be done in the field, and a good round-table type magazine could help in many ways. . . .

We think it is a great step forward. Our one hope is that more people will be able to see it! We would even like to see it on the stands, in honest contradiction to the laced and loused-up little boxes one too frequently sees.

Best wishes for a great success.

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

Sirs:

. . . A very fine idea. I have always wanted to see more of the larger buildings presented than you have been able to do in the past.

JIM HATCHER, *Contractor*
Norman, Okla.

Sirs:

. . . An exciting announcement. . . .

JAMES C. DOWNS, JR.
Real Estate Research Corp.
Chicago, Ill.

Sirs:

I am so glad that you are publishing a magazine on houses. There has been a great vacuum where a good house magazine should be, and no house magazine published by an architecturally trained staff.

ROYAL BARRY WILLS, *Architect*
Boston, Mass.

Sirs:

The courageous move should prove to be advantageous from the point of view of your advertisers as well as your readers. . . .

JOHN BIGGERS, *President*
Libbey-Owens-Ford Glass Co.
Toledo, Ohio

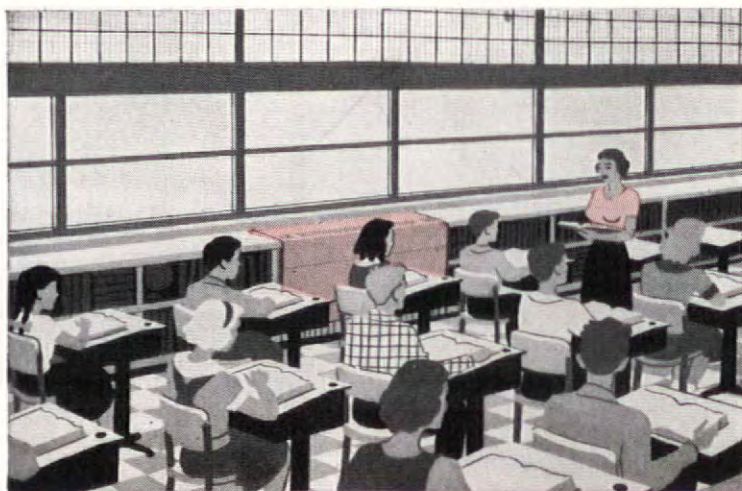
Sirs:

You have made your operations a tremendously important force in the building industry and I hope that you are now able to double your effectiveness.

JAMES W. ROUSE
The Moss-Rouse Co. (Mortgages)
Baltimore, Md.

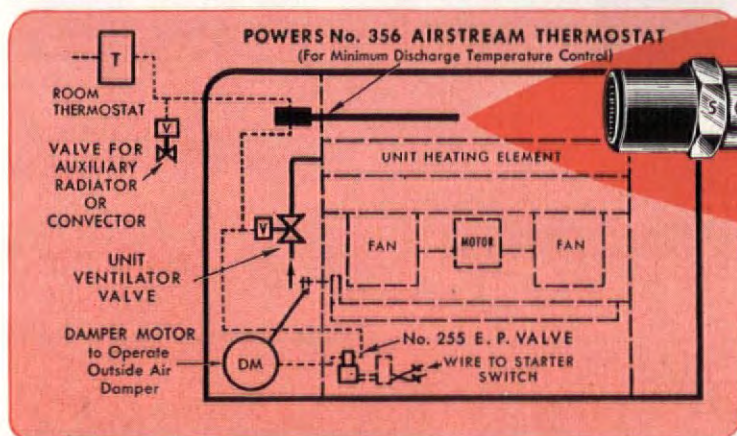
(Continued on page 176)

Better PERFORMANCE — Greater COMFORT



from the
most accurate
**UNIT VENTILATOR
CONTROL**
of them all

POWERS



**No. 356 LOW-LIMIT
AIRSTREAM THERMOSTAT**

A precision non-waste type instrument requiring no auxiliary devices to supplement its accurate low limit control of unit ventilator discharge temperatures.

POWERS Features that Give Better Control with Less Maintenance

Since unit ventilators operate on minimum discharge temperature much of the time it is imperative that an accurate and dependable low limit thermostat be used.

- Powers 2-line non-waste Airstream Thermostats have a graduated dial for ease of adjustment—also Adjustable Sensitivity for precise control.
- With its ingenious non-waste double air valve mechanism there is no continuous waste of compressed air. It is not a "leakstat".
- Once set for the proper temperature a Powers No. 356 Thermostat requires no re-adjustment—there are no fine restrictions to be serviced.

Compare the performance of Powers unit ventilator control with others. You too will prefer its greater simplicity, accuracy and dependability. Benefits: More comfortable classrooms and less maintenance than with more complicated systems.

Write for Bulletin 301-A5

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Mexico, D. F., Apartado 63 Bis. • Honolulu 3, Hawaii, P. O. 2755—450 Piikoi at Kona

POWERS ROOM
THERMOSTATS

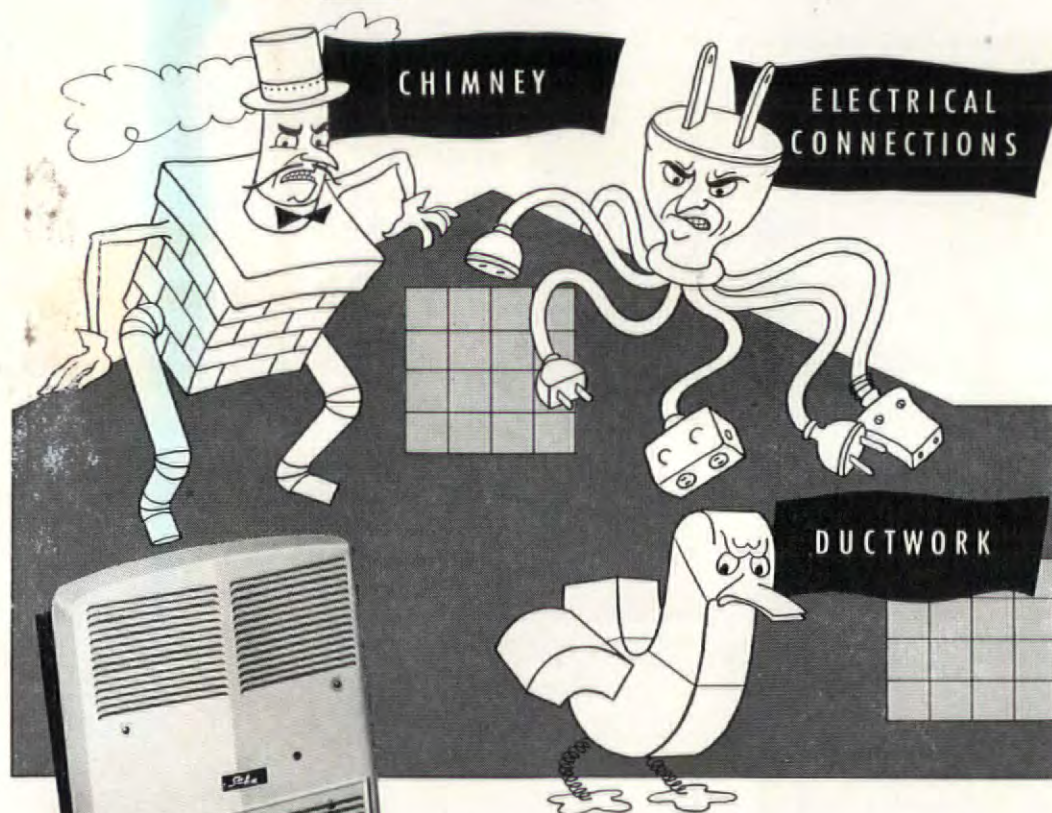


Above: Type D.
Left: Day-Nite Thermostat with Automatic Changeover.



(a66)

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



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

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

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!

Get the facts: Write now for complete free information and specifications on this latest development in modern gas heating. Clip and mail the coupon today.

STEWART *Safety Sealed* **WARNER**
DOMESTIC HEATING

MAIL COUPON TODAY!



Approved by American Gas Association. Also listed by Underwriters' Laboratories and accepted for Veterans' Housing and F.H.A. financing.

Stewart-Warner Corporation, South Wind Division
Dept. K-111, 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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City _____ Zone _____ State _____

TWO MAGAZINES FOR BUILDING

Sirs:

I am very much for it . . . but don't forget that more than half the house is the site.

RICHARD J. NEUTRA, *Architect*
Los Angeles, Calif.

Sirs:

I agree with you 100% that your magazine should be broken up into two sections. . . .

D. A. ROOT
Hebron Lumber Co.
Hebron, Ind.

Sirs:

This is another forward step by your magazine in the direction of keeping in step with developments within the industry.

E. R. RODGERS, *Director*
Home Planning Bureau
The J. L. Hudson Co.
Detroit, Mich.

Sirs:

There is no question that this split in publication will be of greater aid in our business.

W. S. MORGAN
Morgan Realty Company
Flint, Mich.

Sirs:

I do not hold with the idea that, if a certain amount of something is good, twice as much of that something is twice as good. . . .

THOMAS WILLIAMS, *Architect*
Washington, D. C.

Sirs:

Congratulations on your progress. I wish you every success. . . .

R. F. YOUNG
Farm Bureau Mutual Fire Insurance Co.
Columbus, Ohio

Sirs:

You will pardon, I hope, a restrained smile at the gyrations that have been exhibited in the past few months by your name changing binuclear magazine.

As a three-year-in-advance subscriber (your over-zealous salesman is to blame) I confess being taken aback at your individual handling of the "split-up" whereby the holdings of the investors in your paper are divided rather than increased in the more normal manner. Possibly this is an advance in publishing similar to that touted in architecture. Continued each few months, such a device could lead to a dozen magazines, one issue of each and then—pouf! we call the whole thing off.

Sufficient it is to say that I think your proposition highly unreasonable. . . .

Come what may, I am, very truly yours,
DONALD BARTHELME, *Architect*
Houston, Tex.

Sirs:

The magazine stands at the present are cluttered with all sorts of building magazines that

(Continued on page 178)

There's never been a door like it!

Even the hinges were made especially...

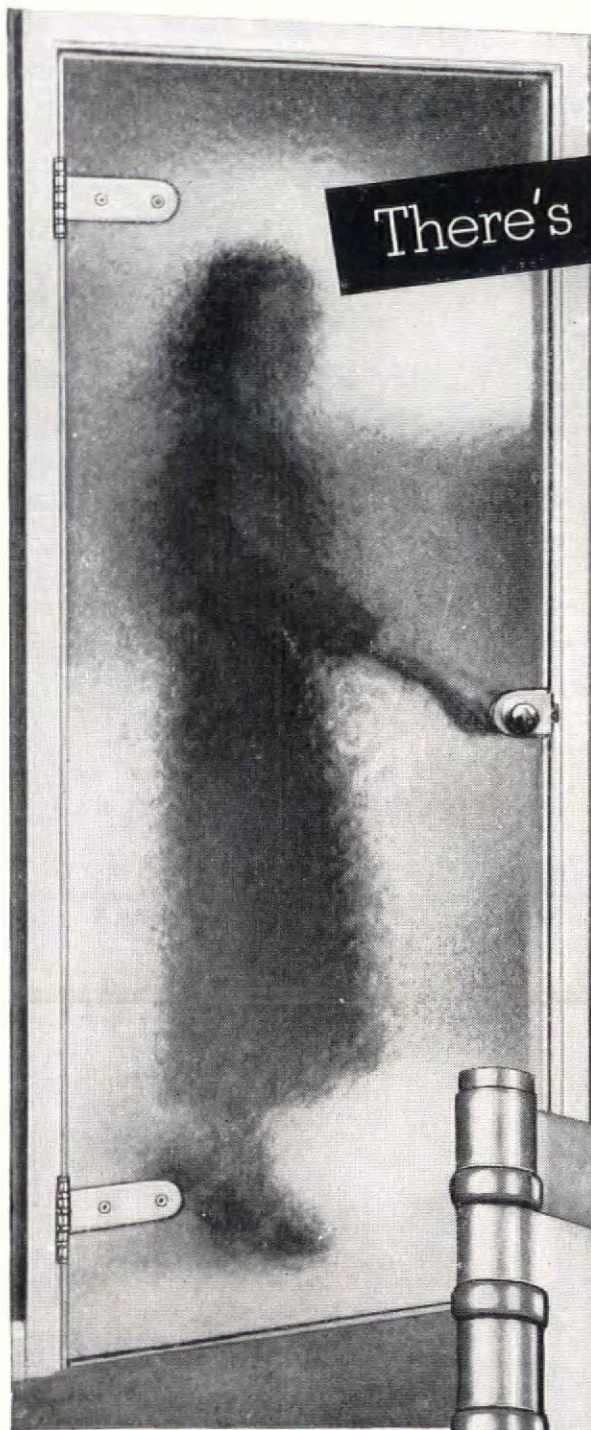
by **STANLEY**
for **BLUE RIDGE securit®**
INTERIOR GLASS DOORS

Here is a door so *new*, so modern and different, a hinge was designed especially for it! Blue Ridge *Securit* Interior Glass Doors swing on special Stanley Full Jeweled* Ball Bearing Hinges. Door comes complete with hinges and other selected hardware—a modern, harmoniously designed unit.

This association of the *oldest name in hardware* with the newest development in doors is not surprising. Leading architects specify Stanley Ball Bearing Hinges almost automatically today—to insure quiet, trouble-free door operation, and to hinge doors for the *life* of the building.

For full details about Blue Ridge *Securit* Interior Glass Doors, write or call your Libbey-Owens-Ford Glass Distributor. In selecting Stanley Hinges for any door, discuss your building plans with an Architectural Hardware Consultant. His specialized knowledge and training are at your service.

*Reg. U. S. Pat. Off.



↑ In offices, schools, hospitals, homes, all kinds of modern buildings, *Securit* Doors add distinction to a room . . . provide privacy, yet let in lots of light. $\frac{3}{8}$ " thick glass is tempered—really strong!

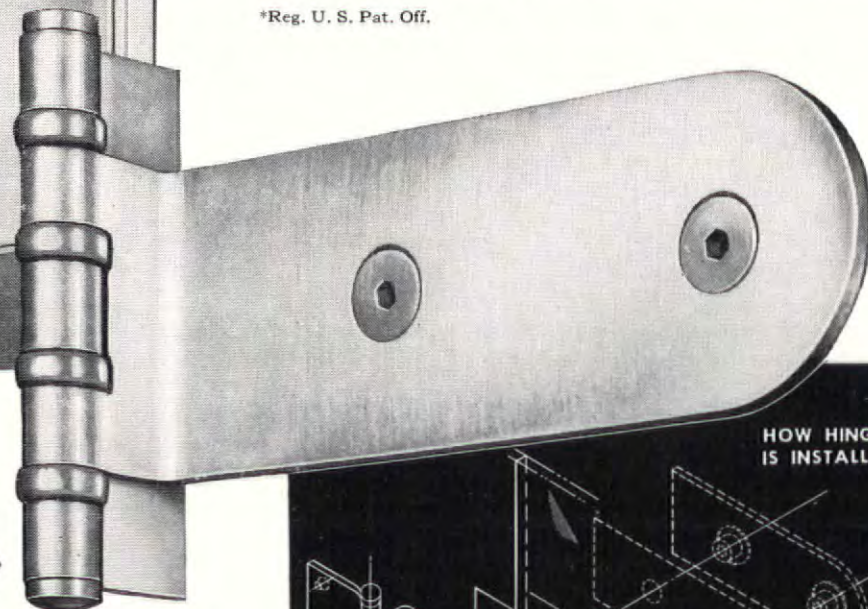
→ It's easy to open or close a *Securit* Door. The sturdy ball bearing hinges, made especially by Stanley, are true to the Stanley tradition of faultless operation.

THE STANLEY WORKS, NEW BRITAIN, CONNECTICUT

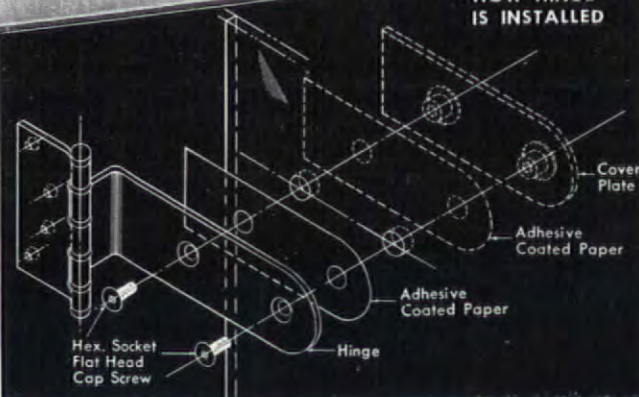
STANLEY

Reg. U.S. Pat. Off.

HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL



HOW HINGE IS INSTALLED





The One Sure Way to Make Stairs Non-slip — Use ALUNDUM Stair Tile!

For stairs that are always safe from the slipping hazard — even when wet — specify Alundum Non-slip Stair Tile.

Alundum is Norton Company's trade-mark for its aluminum oxide abrasive — the hard, tough abrasive that makes Alundum Stair Tile so wear resistant to even the most concentrated foot traffic.

Other Norton non-slip floor products are available for terrazzo and cement floors, stairs and ramps . . . and as non-slip ceramic mosaic tile. Catalog 1935-51 available on request.

See our catalog in Sweets (SA, SE)

NORTON COMPANY
Worcester 6, Massachusetts



*Making better products to make
other products better*

NON-SLIP FLOORS

TWO MAGAZINES FOR BUILDING

for the most part should be relegated to the ancient archives and I am incessantly confronted with their out-of-date plans that are not apropos present day progressive new designs, ideas and construction. I am sure you will fulfill the present-day interests.

MAX M. BLOCK, *Builder*
Independence, Mo.

Sirs:

All health to your two-story magazine. What are you going to do with influences from the house on bigger buildings and from bigger buildings on the house?

MINORU YAMASAKI, *Architect*
Detroit, Mich.

• We will have twice the space in which to cover this subject.—Ed.

Sirs:

Your new magazine on light construction can truly become a great help for merchandising and home construction. . . .

C. J. STUFFLEBAM
Connett Coal & Lumber Co.
St. Joseph, Mo.

Sirs:

I want the subscription to both these editions extended for the maximum number of years you will accept, whether three or five.

F. L. SMYRE, JR.
A. M. Smyre Manufacturing Co.
Gastonia, N. C.

Sirs:

I agree with you that it is high time that home building in America—this great new industry—has a magazine worthy of its importance.

I have sufficient faith in the publishers of TIME and LIFE to believe that your new publication will be of quality, with fine paper, fine printing and large pictures, many in four colors. . . .

G. M. WINWOOD, *Pres.*
Winwood and Co.
Springfield, Ohio

Sirs:

. . . A very good idea. . . . Both subjects can now be more fully treated and explored.

JAMES J. WEBB
Webb Construction Co.
Revere, Mass.

Sirs:

This is a bad idea. . . .

How to choose? You say you take for granted that I'm interested principally in houses. Why? Who told you? Because this is not so. . . .

I cannot choose one of your new magazines, because I am happy with the existing FORUM. . . .

No thank you very much, this will be the end of my subscription.

J. J. TERWEN
Leiden, Netherland

(Continued on page 182)



Profit with PREFABRICATION

Construction of prefabricated homes continues to show increases in its rate of gain compared with total home building. The swing is unmistakable. Find out how builders, lenders and realtors everywhere are learning that Prefabrication answers man-power and material shortages and why it is the economical, quick, permanent and profitable way to meet America's housing needs. For the complete story, write for FREE booklet, "Build better—build sooner"

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Profit with Prefabrication!



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Weather the storm with walls of steel



Metal sculpture, executed in Weirzin steel, demonstrates the exceptional workability of this easily fabricated metal.

Let them frolic, let them splash—no damage done. Not when your walls are safeguarded with sparkling, *water-safe* tiles of steel.

Like the other steel equipment in this bathroom—light fixtures, shower curtain rod, medicine cabinet, for instance—steel tile is decorative as well as durable . . . low in price and high in practicality.

That's because it *is* steel—America's most useful metal, America's greatest bargain metal. More than that, it is made of a steel particularly suited for the purpose—*Weirzin*, the electrolytically zinc-coated steel that resists heat, moisture, rust . . . that provides a wonderful base for paint . . . that protects the beauty it adds.

Steel is one of the most reasonable things you can buy . . . one of the greatest values you can obtain for your money. It's good business to make steel your standard—and save.

WEIRTON STEEL COMPANY
WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION



THE AUSTIN COMPANY'S
Flexible plant design...

UPJOHN

A black and white photograph of a modern industrial building at night. The building features a large, multi-paned glass facade that is brightly lit from within, creating a strong contrast with the dark exterior. Above the glass section, the word "UPJOHN" is displayed in large, bold, sans-serif capital letters. The building's design is characterized by clean lines and a prominent vertical element. In the foreground, there are dark, silhouetted bushes and a set of wide, shallow steps leading up to the entrance. The overall atmosphere is one of industrial elegance and modern architecture.

a production man's dream

The Upjohn Company's new 33 acre plant on a 1500 acre site, outside Kalamazoo, Michigan, is like a precision-engineered laboratory instrument. Here, mechanical building services are developed to a new level in the industrial building field. Here, they have provided for complete flexibility of future operations . . . with room to expand and install new machinery . . . the ability to convert quickly from one product to another.

This kind of assignment fascinated research-minded Austin engineers. Working closely with the Upjohn management, Austin engineers developed a warehouse-production-packaging setup that "accomplishes everything in one motion." Realizing the need for a simpler and less

expensive suspended ceiling, Austin also developed a revolutionary "integrated" ceiling,

where lighting fixtures are set in all-inclusive "troffer" beams. These beams serve as wiring raceways and eliminate all conduit. They also serve to eliminate framework used to support ceiling tile, duct work and sprinkler lines.

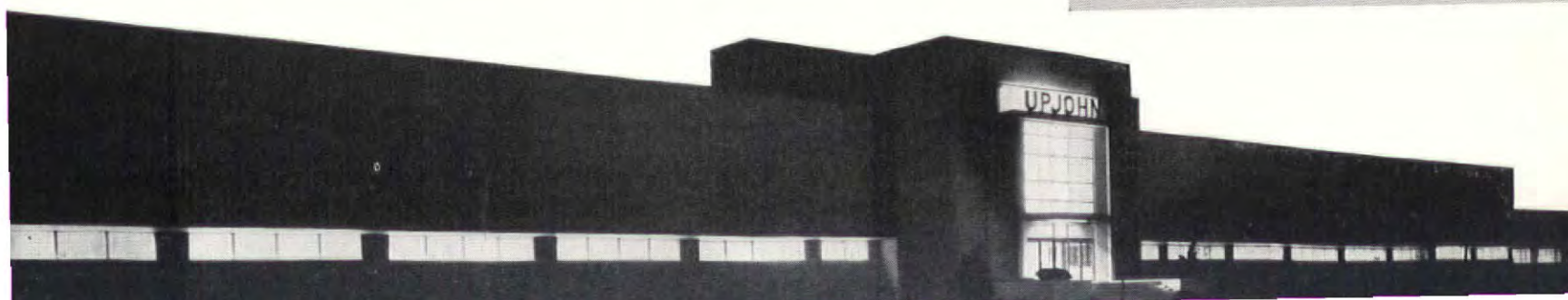
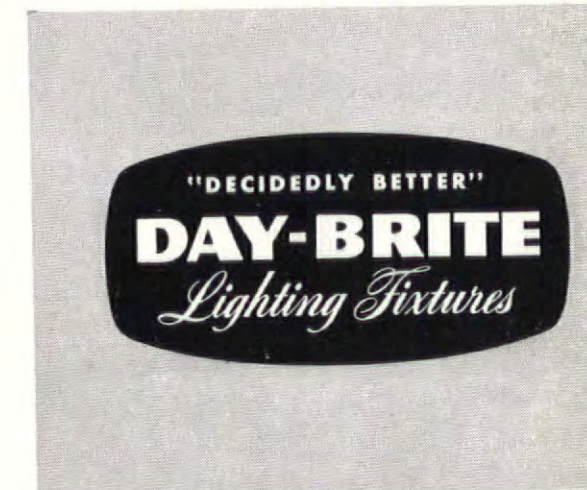
It is significant that The Austin Company, whose credo is "function must precede building plan," selected Day-Brite lighting fixtures to illuminate this ultra-modern factory. They realized that Day-Brite fixtures are functional in every way . . . providing the right kind and amount of modern light . . . providing the quality that means years of trouble-free service

. . . the lower installation, maintenance and operating costs that are important to the architect, the builder, the plant production man.

Day-Brite has designed a line of lighting fixtures which include the perfect answer to any building or industrial project . . . and every Day-Brite fixture sold is guaranteed to give stellar performance at reasonable cost. Do you know Day-Brite?

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

Austin's new "integrated" ceiling was developed under the direction of J. K. Gannett (right), Vice President in charge of Engineering and Research, for use in the new Upjohn plant.

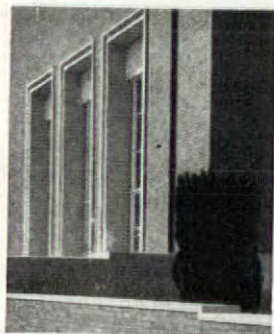


CABOT'S FOUNDATION COATING *means* DRY CELLARS



Cabot's Foundation Coating keeps cellars dry. Protects all types of below-grade foundations from the penetration of damaging moisture.

Cabot's Foundation Coating fills and seals the pores . . . keeps water out. It is a black, elastic coating that brushes on easily, spreads on far . . . repels termites because it's a coal-tar product. You'll find it economical and long-lasting.



**For Above-Grade
Masonry
Use
CABOT'S
CLEAR BRICK
OR CLEAR**

CEMENT WATERPROOFING

✓ **CHECK COUPON** — for samples and full information.

SAMUEL CABOT, INC.
1130 Oliver Bldg., Boston 9, Mass.
Please send information and
FREE samples:

Cabot's Foundation Coating ☐
Cabot's Clear Brick Waterproofing ☐
Cabot's Clear Cement Waterproofing ☐

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Address.....
City.....
State.....

SAMUEL CABOT, INC.

TWO MAGAZINES FOR BUILDING

Sirs:

It is wonderful your getting the houses out of the way into a special magazine so you can really concentrate on such things as progress in schools.

WILLIAM W. CAUDILL, *Architect*
College Station, Texas

Sirs:

Your idea of issuing a publication of fine houses is an excellent one; we need it very badly.

STANLEY GREEN
John Widdicomb Co.
Grand Rapids, Mich.

Sirs:

Congratulations on another great idea and accomplishment.

ALBERT BALCH, *Realtor & Builder*
Seattle, Wash.

Sirs:

Because our research interests cover the fields of commercial, industrial and institutional buildings as well as housing, we would like to have our subscription entered for both magazines. . . .

ROBERT B. TAYLOR
Director of Research
Structural Clay Products Research Foundation
Chicago, Ill.

Sirs:

We look forward with great anticipation to what you are going to do with two editions instead of one. That looks like the logical way to do it.

JOSEPH D. MURPHY, *Architect*
St. Louis, Mo.

Sirs:

I have enjoyed the previous editions very much and look forward to the new magazine on houses with pleasant anticipation.

J. P. WOYLE
Cunningham Drug Stores, Inc.
Detroit, Mich.

Sirs:

. . . Glad you are splitting THE MAGAZINE OF BUILDING into two publications. The sheer bulk was getting too massive. . . .

ROBERT CARROLL MAY, *Architect*
Hartford, Conn.

Sirs:

Congratulations. . . .

T. K. LEIMBACK, *Supt.*
Community General Hospital
Reading, Pa.

Sirs:

Congratulations for being the most intelligently progressive publishers in the field. Your round tables are invaluable; your make-up positively for today and tomorrow; your forthrightness a boon in an age of painfully slanted journalism. . . .

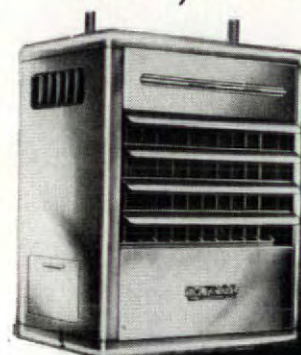
Best of luck to you on your expanded venture.

RAY BERRY, *Dean*
Colorado Springs Chapter
American Guild of Organists
Colorado Springs, Colo.

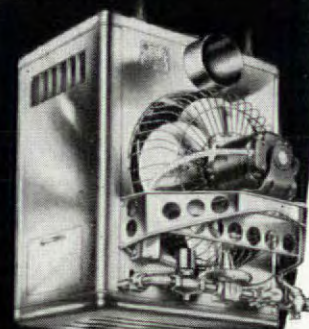
1 heater or 100

A compact, fully automatic heating unit fitting in design and utility to contemporary building. Range of BTU capacities for every need. Installation of multiple units provides sectional control of heat for added economy. Simplicity of installation reduces engineering problems and building expense. Refer to Sweet's Catalog File. Catalog U-50 and further information available upon request.

*Easily,
Quickly Installed*



Hung from ceiling
or mounted on floor



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AUTOMATIC GAS UNIT HEATER

World's largest selling
gas unit heater



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KENTILE, Inc. offers a complete flooring service for every flooring need

YOUR Kentile Flooring Contractor is available at all times to consult with you on residential, commercial or industrial flooring problems... whether new construction or the remodeling of existing facilities.

For instance, your Kentile Flooring Contractor can help you cut the costs of large-area installations... help you specify a flooring that will actually increase production; reduce industrial accidents. Perhaps you'd like full information on the wide differences between the various types of resilient floors... or you have a problem of choosing the floor that will most effectively resist greases and oils. For the answers to questions such as these, you will find your Kentile Flooring Contractor offers valuable assistance.

The following literature is available on request and is designed to aid in the specifying of floors and walls for residential, commercial or industrial building or remodeling.

- KENTILE:**
- ☐ Architects Specifications
 - ☐ 16 Page Catalog—includes four color photos of Kentile installations
 - ☐ Color Line folder
 - ☐ Kentile in Hospitals
 - ☐ Kentile in Schools
 - ☐ Recommended and Not Recommended Uses for Kentile
 - ☐ Special Kentile (Greaseproof) folder—showing full color line and typical installation.

- KENCORK:**
- ☐ Architects Specifications

- ☐ Recommended and Not Recommended Uses for Kencork
- ☐ Four page, four color folder showing Kencork installations
- ☐ About Cork — An Architect's Handbook on Kencork

- KENTILE RUBBER TILE:**
- ☐ Architects Specifications
 - ☐ Recommended and Not Recommended Uses for Kentile Rubber Tile
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Please write the Kentile, Inc. office nearest you.
In Canada—T. Eaton Co., Ltd.

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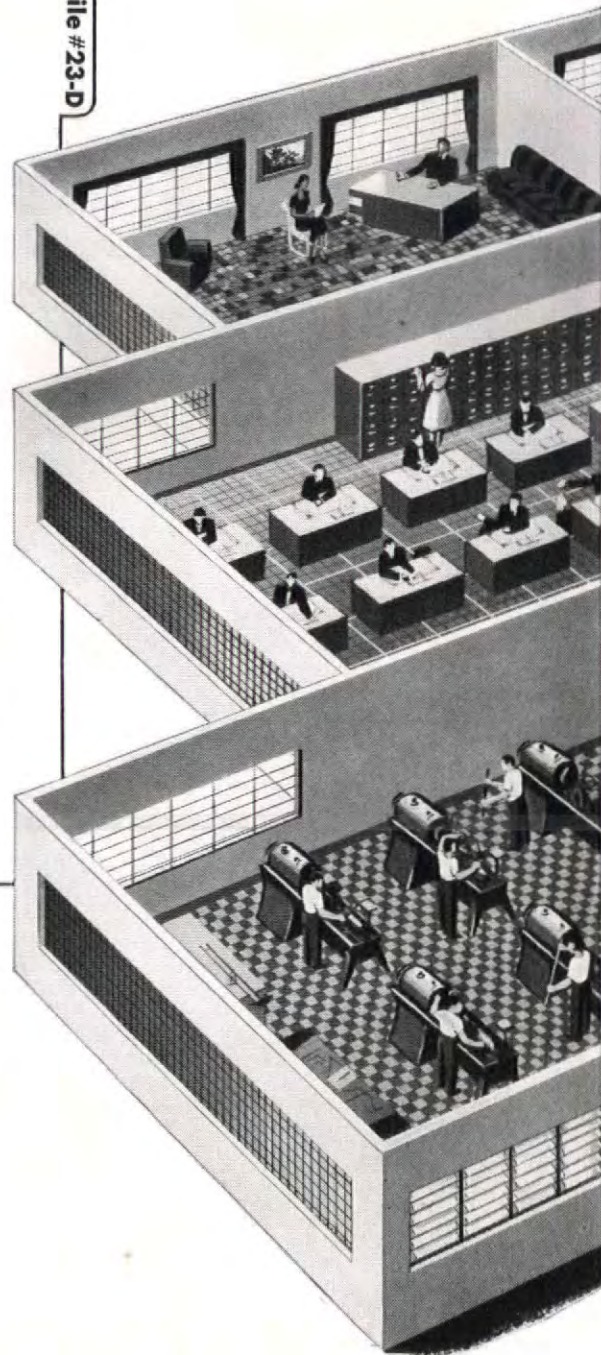


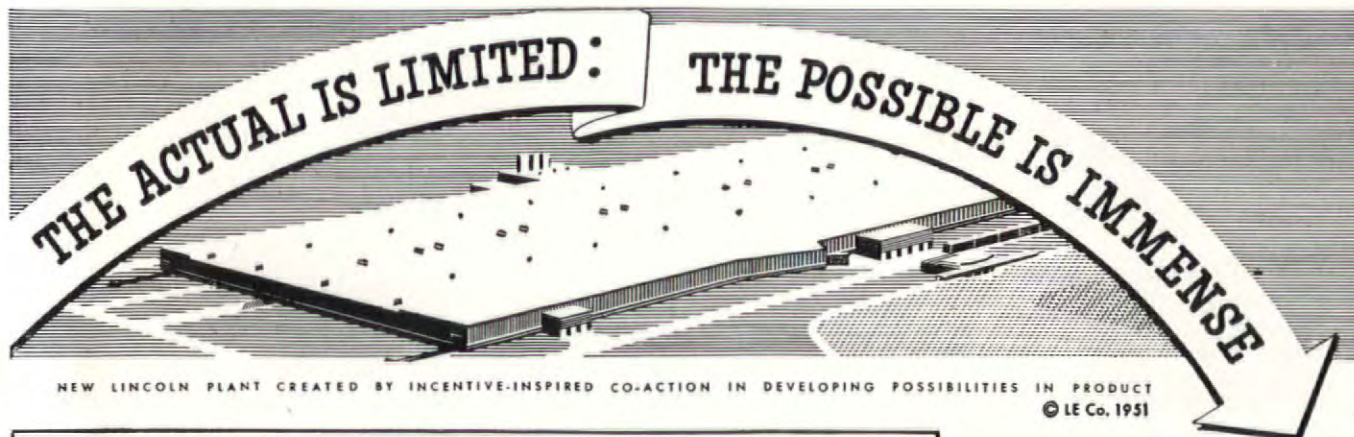
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A. I. A. File #23-D





WELDED DESIGN SAVES \$30,000 ON MULTI-STORY FRAMEWORK

By **Van Rensselaer P. Saxe**
Engineer
Baltimore, Maryland

IN the recent construction of the 14-story Broadview Apartment in Baltimore, Maryland, welded design saved an estimated \$30,000 over what the structure would have cost with riveted construction. By utilizing steel more efficiently, as made possible by welding, and eliminating butt plates and angles, steel requirements for the multiple story framework were cut from 2045 tons to 1960 tons . . . a net saving of 85 tons.

Designed as a rigid frame, beams, columns and girders were shop fabricated at low cost with fast, downhand welding techniques.

Field welds were so engineered as to permit field splices to be welded in downhand positions on most joints.

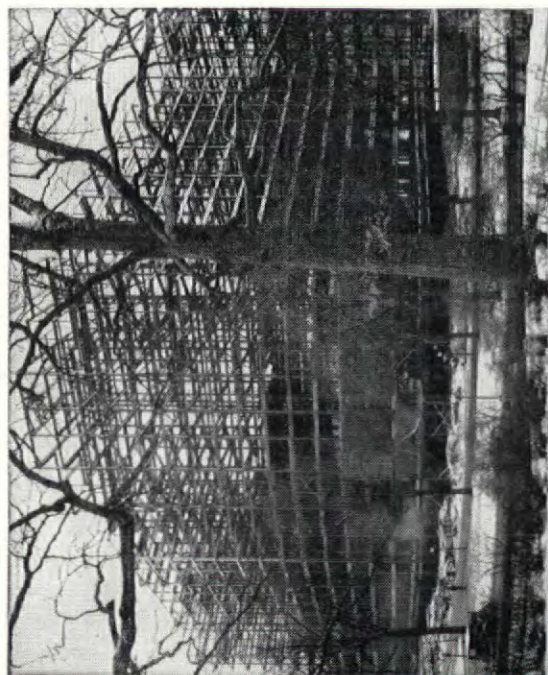


Fig. 3—1960 ton welded steel rigid framework for the 14-story Broadview Apartment, Baltimore, Maryland. Fabricators and Erectors: The Vulcan Rail and Construction Company, Baltimore, Maryland. Architects: Palmer, Fisher, Williams and Nes, Baltimore, Maryland.

WELDED DESIGN ALWAYS SAVES STEEL AND CUTS COST

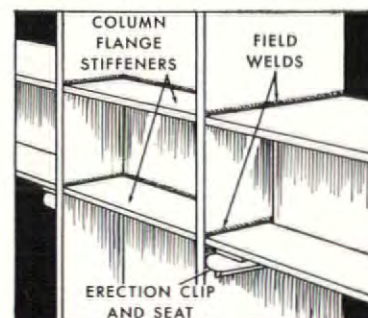


Fig. 1—Typical Beam-to-Column connection, simplified by welding, eliminates costly angles to speed erection.

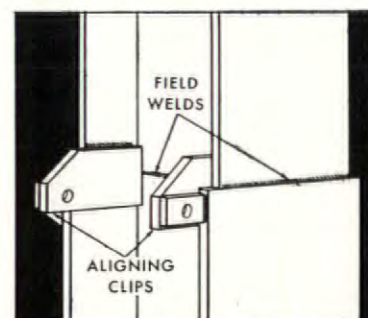


Fig. 2—Column Splice designed to facilitate simple field welding in downhand position.

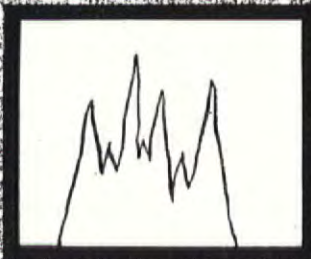
HERE IS PROOF

Studies in Structural Arc Welding are available to Engineers and Designers. Write on your letterhead to Dept. 354.

THE LINCOLN ELECTRIC COMPANY
CLEVELAND 17, OHIO



*as fundamental as
a chimney flue...*



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

Just as the flue is needed to carry smoke and soot out of the house, telephone raceways are needed to carry telephone wires out of sight to pre-planned outlets.

A small item, but it protects the beauty of walls and adds to the convenience of the owner. Thoughtful plans almost always include raceways and outlets for telephone wires. Your Bell Telephone Company will be glad to help you plan economical conduit installations. Just call your nearest Business Office.

BELL TELEPHONE SYSTEM





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 *Fibre-tone**, 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 Acoustical Materials

Movable Walls—Terraflex and Asphalt Tile Floors—Corrugated Transite*—Flexstone* Built-Up Roofs—Etc;



New Vinyl-Plastic Asbestos Floor Tile developed by Johns-Manville

Now you can have a more beautiful lifetime floor! Ideal for kitchens and cafeterias. Greaseproof, unharmed by strong soaps, easily kept spick-and-span.



● Terraflex, a development of Johns-Manville research, is entirely new and different. Its bright colors and rugged characteristics are obtained by blending beautiful, clear, vinyl resins with *indestructible asbestos*.

Unlike other resilient floorings, J-M Terraflex is unharmed by strong soaps and caustic cleaning solutions—cannot “wash out.” Requires no scrubbing, is not harmed by spilled oils and greases, moisture or dampness. Does not crack, curl, become loose or brittle, or shrink around edges. Does not become fuzzy or scratched, or lose its sheen from constant wear. Beautiful pastel colors keep their *first-day newness* for a lifetime.

The square tile-like units come in a wide range of marbled colors. See the J-M Approved Flooring Contractor in your area. He is listed in the classified phone book. Or write for our free brochure on Flooring. Johns-Manville, Box 158, New York 16, N. Y.

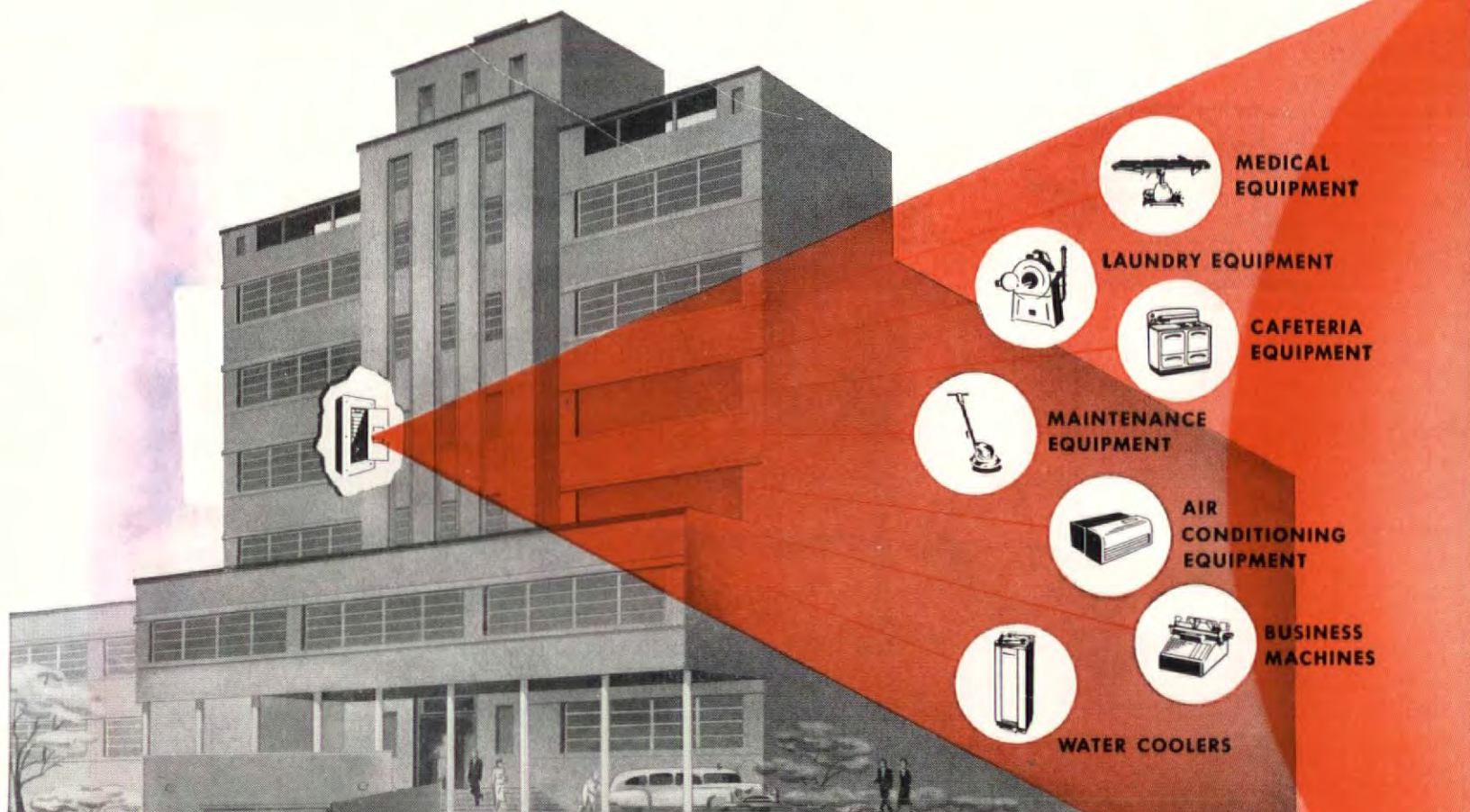


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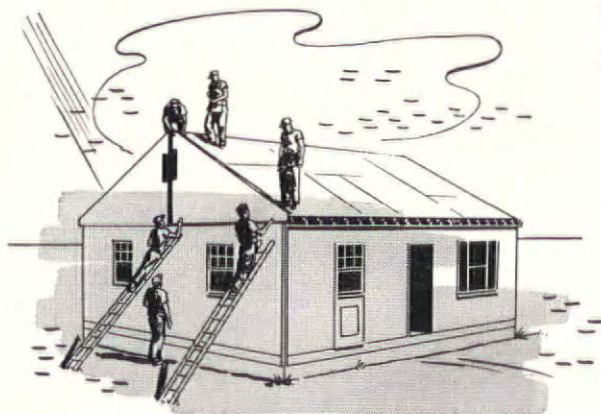


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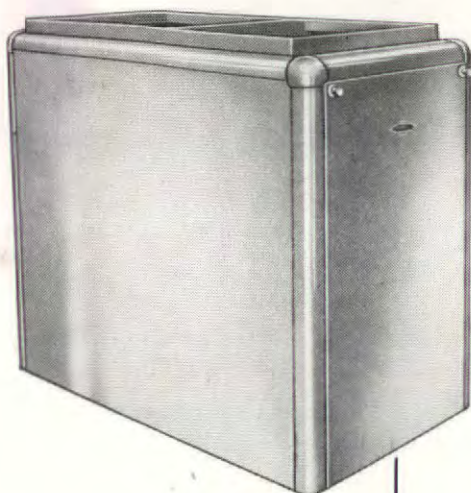
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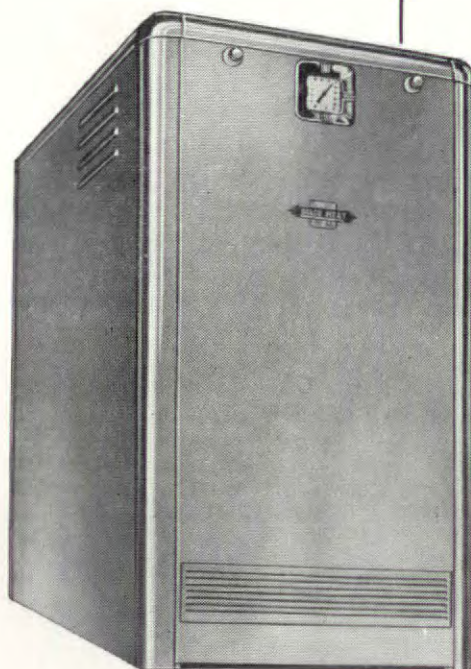
The units shown below are only a part of the complete line of Delco-Heat automatic home heating equipment—a line that includes gas- and oil-fired units for all types of heating systems, and for homes of all sizes.

"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.

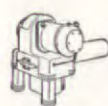


Oil-Fired Boilers. Top quality throughout these units makes them the finest oil-fired boilers obtainable for steam and hot water systems in homes of all sizes. Streamlined fins and water passages add to quicker heating. Cast iron boiler sections, of the wet base type, completely

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 Nozzle GPH	Dimensions		
	Btu per hour Output	Steam	Hot Water		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

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The panels are available in Micarta's entire range of colors and patterns, including the distinctive Decorator Colors and Truwoods.

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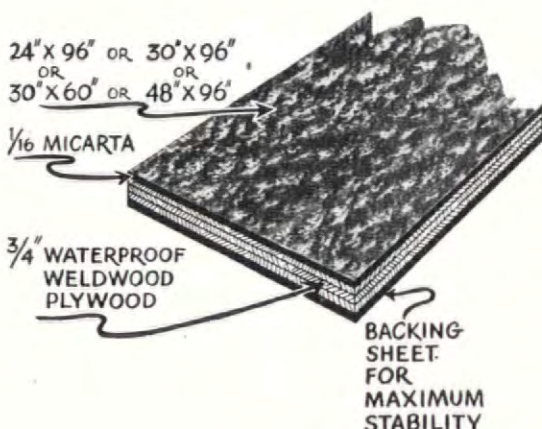
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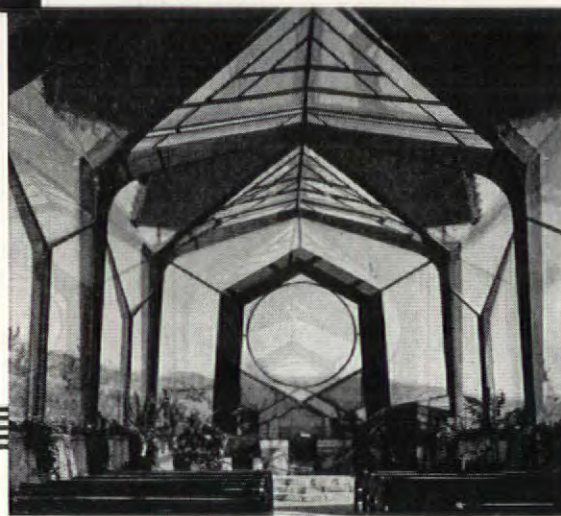
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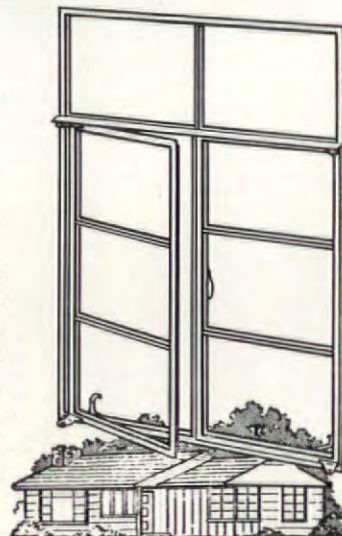
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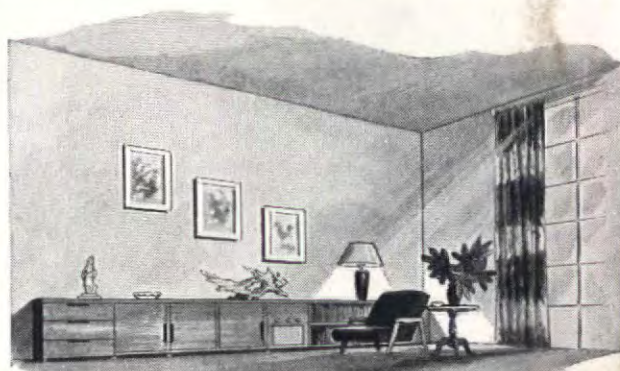
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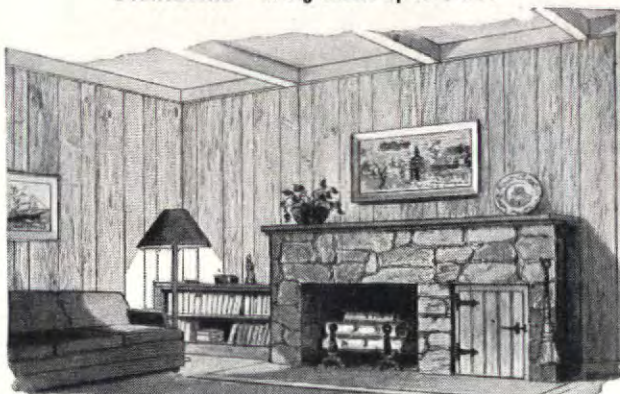
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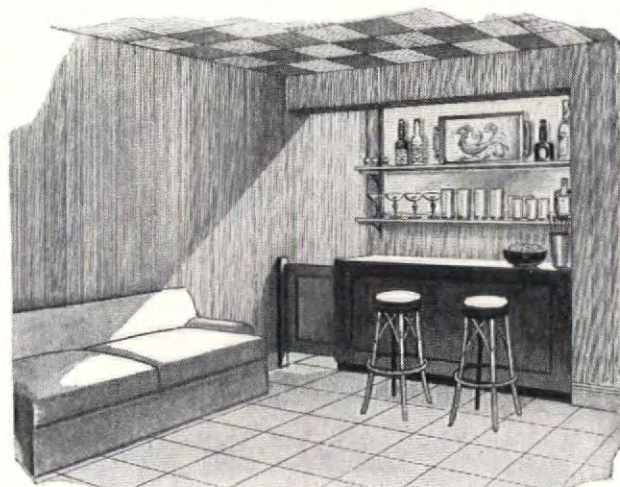
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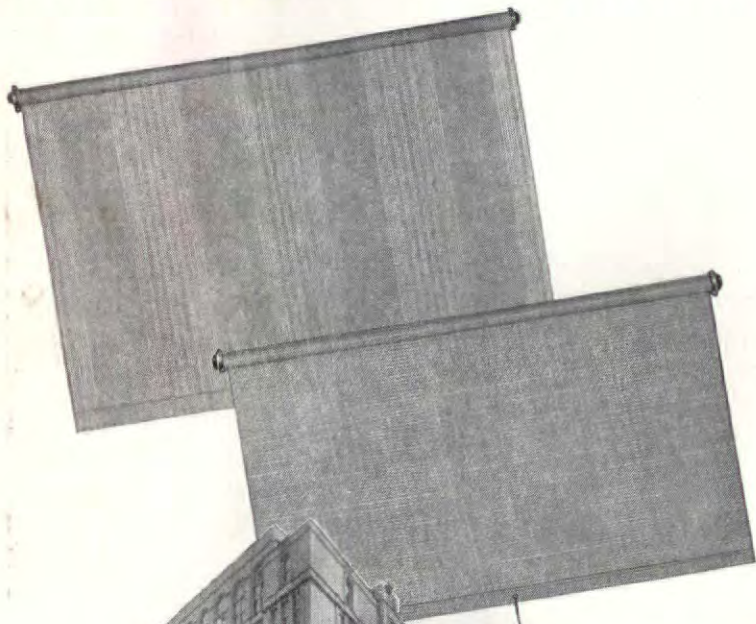
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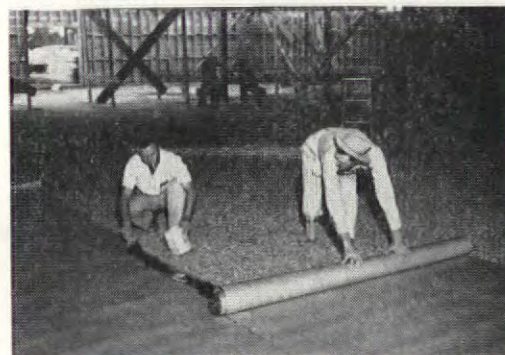
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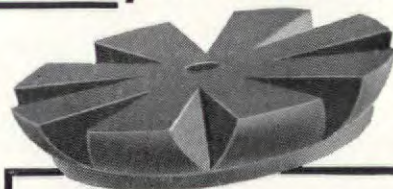
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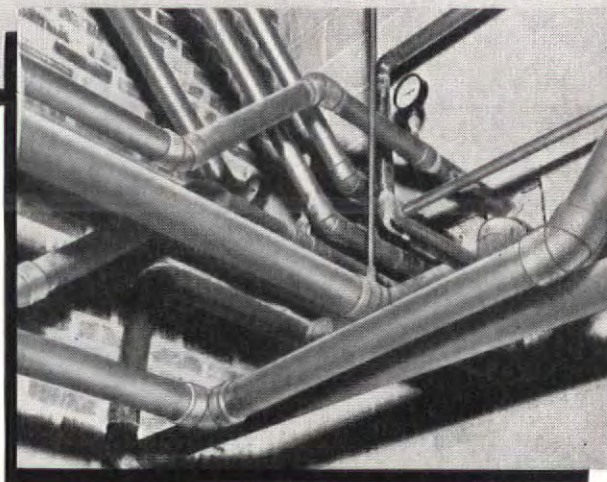
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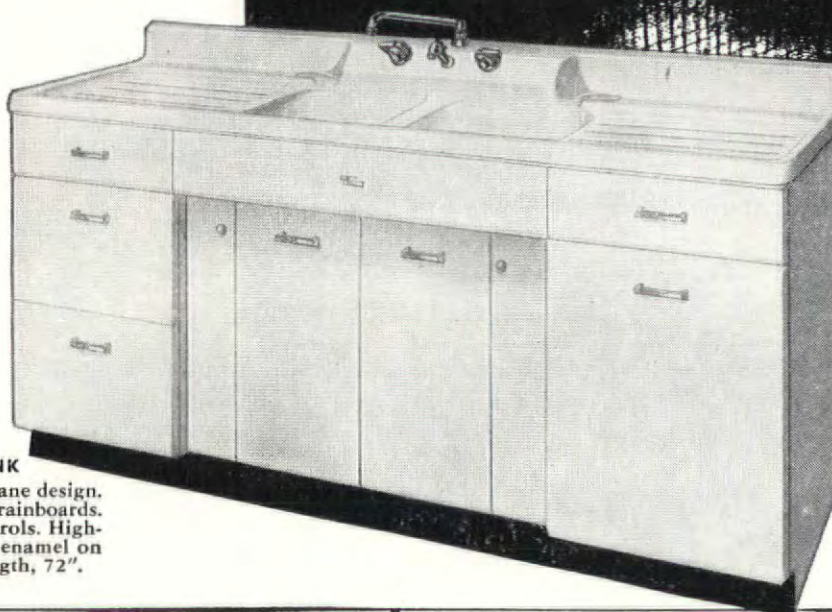
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LOWER COSTS through standard units sized to fit new standard dimensions

"At the present time the greatest hope of evolutionary cost reduction in the builder's house lies in the continued development of standard parts, with an increasing at Atlantic City November 3 and 4.* finishing . . . Assembly line methods at the site could then be used to maximum advantage."

So agreed all the members of the Collaborative AIA-NAHB Committees meeting at Atlantic City November 3 and 4*. To speed these savings they urged two steps as essential:

1. All builders' houses should conform in certain respects to standard and coordinated dimensions, so that various stock parts may be produced in few enough sizes and big enough quantities to permit the great savings of volume production.

2. Manufacturers should encourage this advance towards industrialization by quoting volume prices on certain standard sizes without waiting for the volume to develop. These volume prices would be substantially lower than the prices for odd sizes, since the market offered by dimensional coordination on close to a million homes a year might easily run into hundreds of thousands of units.

To encourage manufacturers to quote these volume prices, the AIA-NAHB Committees recommended that the National Association of Home Builders and THE MAGAZINE OF BUILDING should cooperate on an open-ended competition, awarding certificates of merit for standard parts volume-priced in the standard dimensions best suited to economical assembly line construction of builders' houses.

Dimensional standards

No new dimensional standards were proposed at this meeting. Instead, the Committees focused their attention on the unexploited possibilities of various standards already developed either by common practice or by their own agreement last spring (Apr. issue '51, page 103). Most important of these standard dimensions are:

- ▶ For prefabricated storage walls—the 8'3/8" ceiling height;
- ▶ For windows and window walls—the standard 16" stud spacing required by most codes;
- ▶ For prefabricated stair height—the 8'3/8" ceiling height plus an allowance for a floor laid over either 2" x 8" or 2" x 10" joists;
- ▶ For recessed cabinets—the 16" stud spacing;
- ▶ For door assemblies—the standard 8'3/8" ceiling height, the standard 6'8" door height, and the standard 2', 2'6", 2'8" and 3' door widths recommended by the Committees last spring;
- ▶ For bathrooms—the standard 5' x 7' or 5' x 8' now in general use;
- ▶ For kitchens—one wall 7' or 8' long, a standard set by the common practice of using one common wall between kitchen and bath;
- ▶ For prefabricated plumbing assemblies or manifolds—the standard 2' spacing between toilet drain and wash basin drain and the standard 2'4" spacing from wash basin drain and bath drain recommended by the Committees last spring.
- ▶ The 4" module was unanimously approved.

* Other news of the Atlantic City meeting appears on page 51.

"The greatest economies of standardization should lie in the two most expensive rooms in the house—the bath and the kitchen," the Committees said.

Biggest single saving would come from the general use of prefabricated plumb-

ing trees (which have enabled some builders to reduce their total plumbing labor to 45 minutes per bath), but the Committees were greatly intrigued by the possibilities of prefabricating the bathroom wall in sections.

Bathroom standardization

During the discussions it was suggested that the total wall cost for a tiled bathroom 5' x 8' may well run as high as \$450—including cost of wood framing, wall-board covering, tile, recessed fixtures and medicine cabinet, and taking into account the time lost fitting the plumbing into the studs. The Committees believed it might be possible to save half this cost if the following standards parts were available:

- ▶ A standard window assembly 5' long to fit between the studs and fill the entire width of the room high over the tub;
- ▶ A standard tile, porcelain enamel, or plastic panel ready for installation in one piece between tub and window;
- ▶ Similar standard panels ceiling high for each end of the tub, and similar standard panels (not necessarily ceiling-high) for the rest of the walls;
- ▶ A standard lavatory assembly which would incorporate medicine cabinet, towel storage, soap dish, toilet paper holder, tooth brush holder.

Discussing standard window and window wall assemblies to fit into the standard stud spacing, the Committees warned that in fixing their dimensions consideration must be given to whether or not the framing would be strong enough to do the work of the omitted studs. They also pointed out that many houses have a garden door next to the window wall and that no existing door can be so used without unnecessarily expensive detailing.

Prefabricated stairs

The Committees were particularly interested in the possibilities for prefabricated stairs opened up for the first time by the standardization on two basic floor-to-floor heights. They urged that, if possible, these prefabricated stairs should come complete with a non-skid plastic tread. The architects were intrigued by the thought that these prefabricated stairs could be molded in plywood.

Finally, the Committees warned that "dimensional tolerances for proper field installation must be observed with regard for the material used and the capacity of the workmen. Dimensional tolerances might be solved by coatings, sliding joints or seals."

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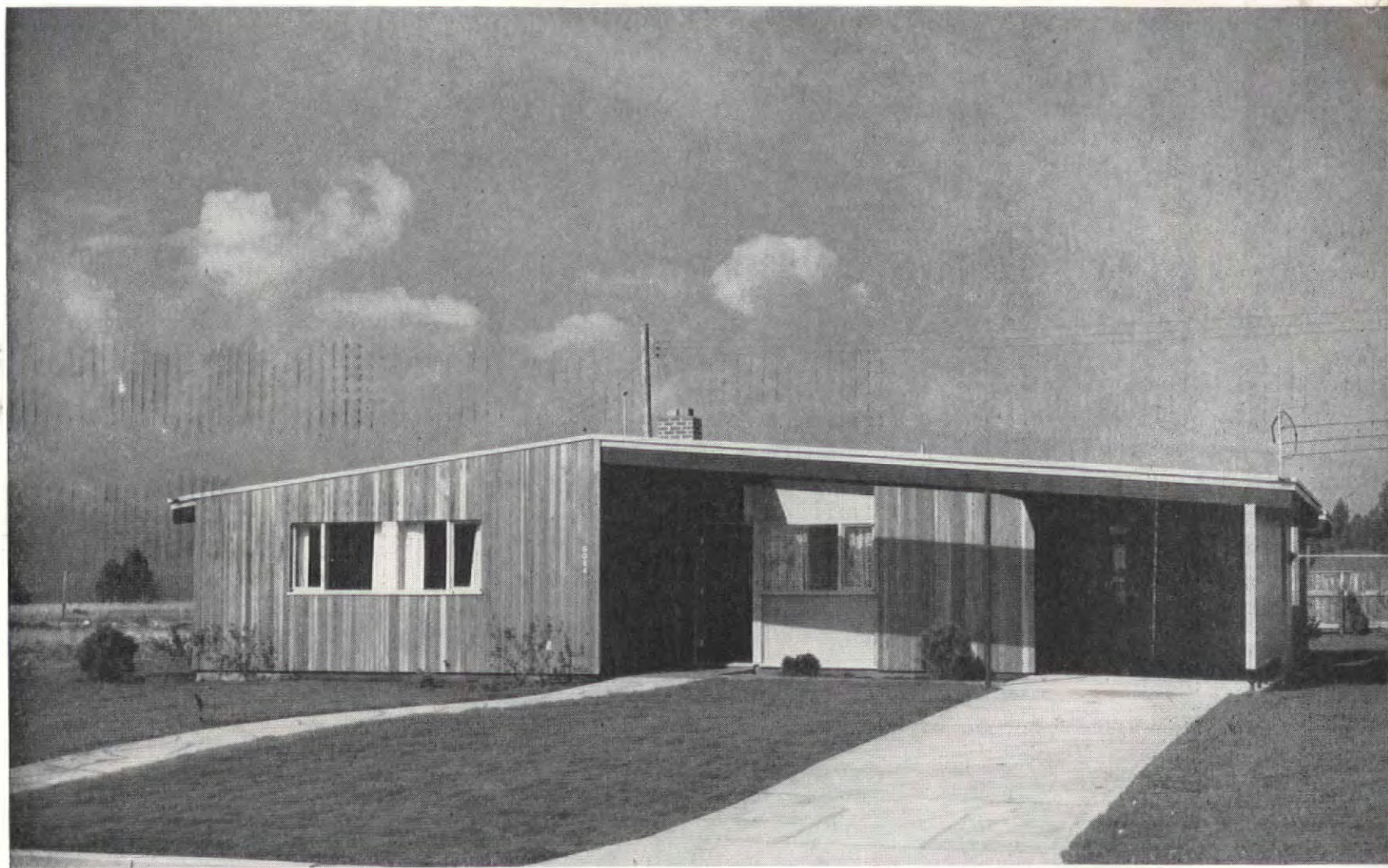
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PRIZE HOUSE—and how they liked it: an eager public votes for modern planning and old-fashioned fireplaces



LOCATION: Spokane, Wash.
BRUCE WALKER, Designer
ELMER NELSON, Builder



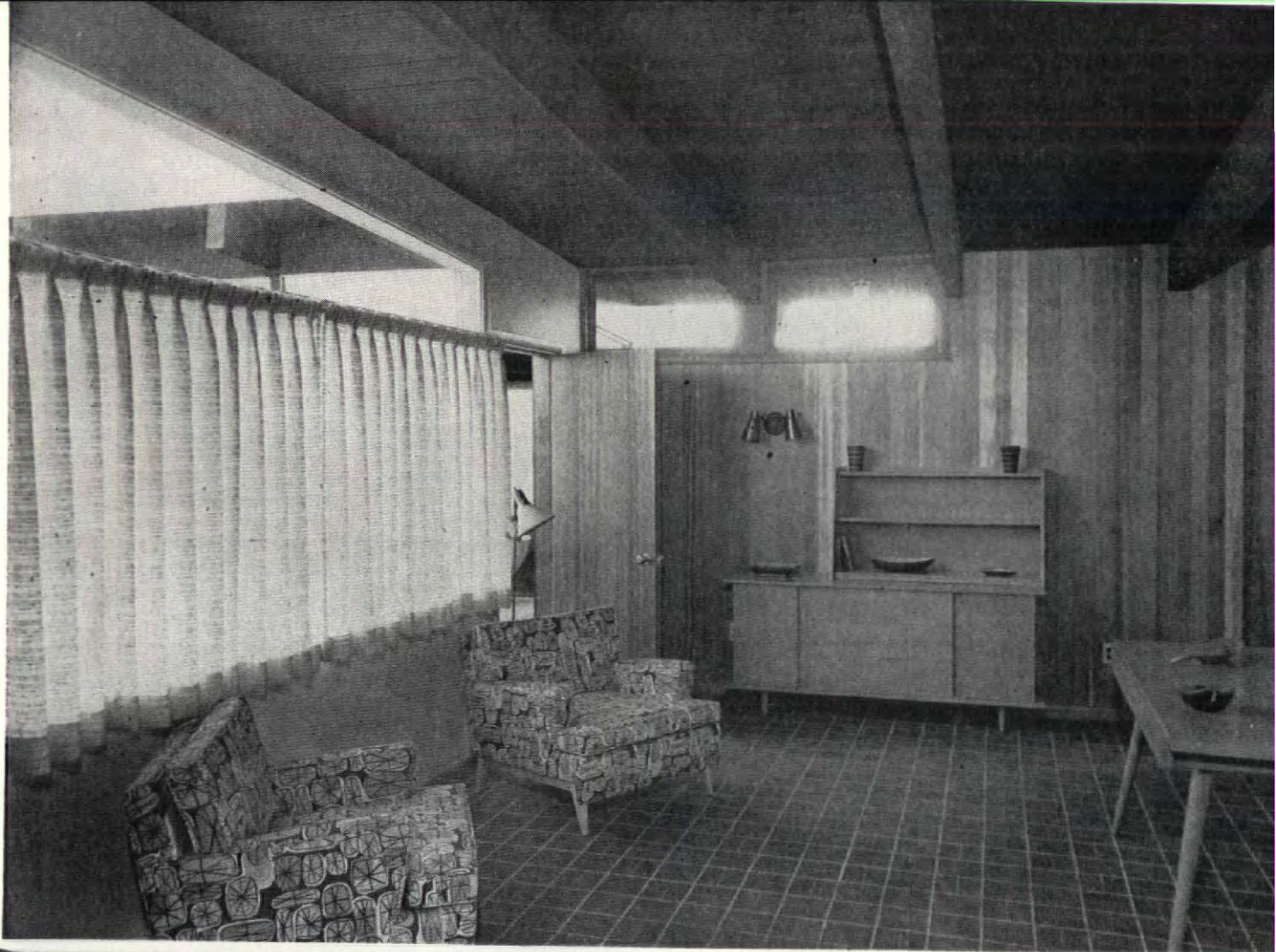
A jury of eight top-flight architects and builders picked this house by Bruce Walker as first prize-winner of 2,727 entries in the NAHB-FORUM House Design Competition (Mar. issue, '51). Now the almighty public has had *its* say.

During National Home Week, some 28,000 people went through a dressed-up version built by Elmer Nelson for the Home Builders Association in Spokane. The consensus, in favor: a perfect floor plan, good multi-purpose use of space, handsome built-ins and other interior refinements; against: the prefab fireplace ("What the hell is that, a television set?"), and the lack of eating space in the kitchen.

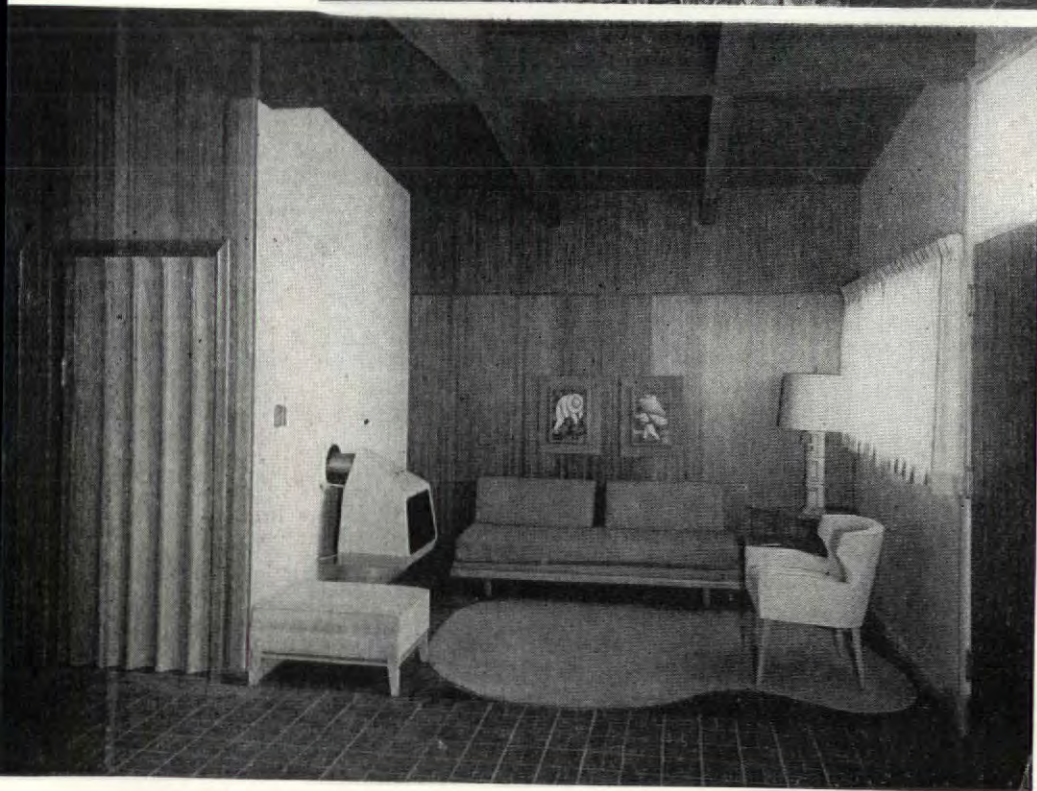
As the visitors poured through, it was obvious that, right or wrong and venturesome or conservative, they knew what they wanted. In general, women liked it better than men, young couples better than older couples, and all lookers warmed up to it more the longer they stayed.

Specifically, these points stirred up most interest:

- ▶ Floor plan made a big hit: "It makes the house feel so big," and "Ah—a living room that's not a passageway" and "The rooms are right where they ought to be."
- ▶ Convertibility of children's rooms into one big playroom, by means of modern folding partition, was happily noted by all mothers.
- ▶ Prefab fireplace was loudly razzed as looking like everything from a television set to a popcorn-popper. Apparently all men and most women want an honest-to-goodness, old-fashioned fireside by which they can visualize slippers and pipe.
- ▶ Lack of eating space in the kitchen was a bad fault: "Where do you feed the kids, and where do we eat breakfast?"
- ▶ Built-ins were considered beautiful, useful, necessary, but, as

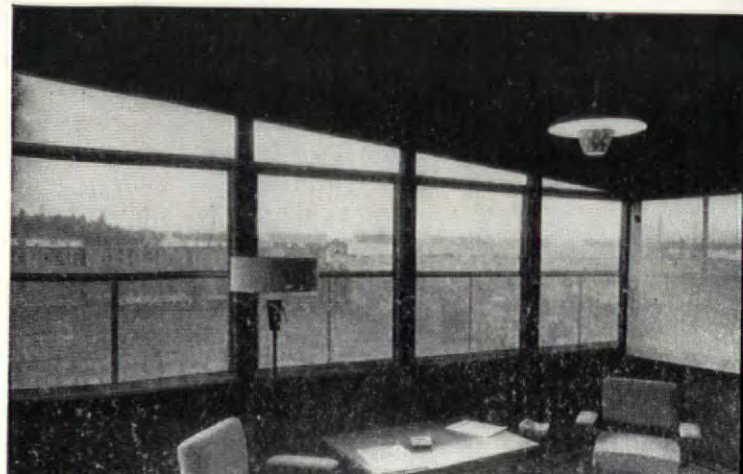


Living room all-purpose area above, has deluxe imported tile floor to withstand wear and tear of family activities, handsome tongue and groove cedar walls. Lighting fixtures (specially designed, handmade) and bleached mahogany furniture are simple Swedish modern. Most popular feature: enclosed porch, easily accessible from living room (via door shown above).



Conversation end of living area left, is a quiet alcove which may be used, too, as a bedroom for guests. Controversial feature: prefab fireplace was generally disliked as "not a place where I'd want to park my pipe and slippers."

Porch, made usable 8 months a year by enclosing with glass and plastic screens, was popular as "a real extra room" and "a fine play spot for the children on rainy days."



one young wife put it, "not worth their weight in solid mahogany." In other words, show-house ideas are best of all when made of budget-house materials.

► Porch for most-of-year use drew highly favorable comment as "practically an extra room." (Builders now feel they might well have installed heating, made it useful the year-round.)

► For a city with probably less than a dozen modern houses, Spokane residents took surprisingly well to the exterior: very few thought it too plain; many thought the vertical cedar siding handsome, the front entrance "nice and welcoming."

Having deliberately produced a show house, the builders were pleased at the furor—twice as many visitors as last year, and probably more than twice as much controversy—but convinced that Spokane is not yet ready for 100% modern. They are also aware that luxury items such as solid mahogany kitchen cabinets and feather-touch light switches do not fit the not-so-luxurious pocketbooks of people in the market for a small house. The original selling price of \$21,500, complete with carpeting, draperies and other show house fripperies, will no doubt have to come down several pegs.

Chief variations from Bruce Walker's original plan:

► Expanded 2' in length to add more living space to all-purpose room and allow for automatic clothes drier in kitchen. (Competition limited interior area to 1,000 sq. ft.; this, including carport and porch, has 1,550 sq. ft.)

► Added combination glass and plastic screens in aluminum frames to enclose porch, make it usable 8 months of year.

► Radiant heat, 1/2" steel tubing in well-insulated floor slab.

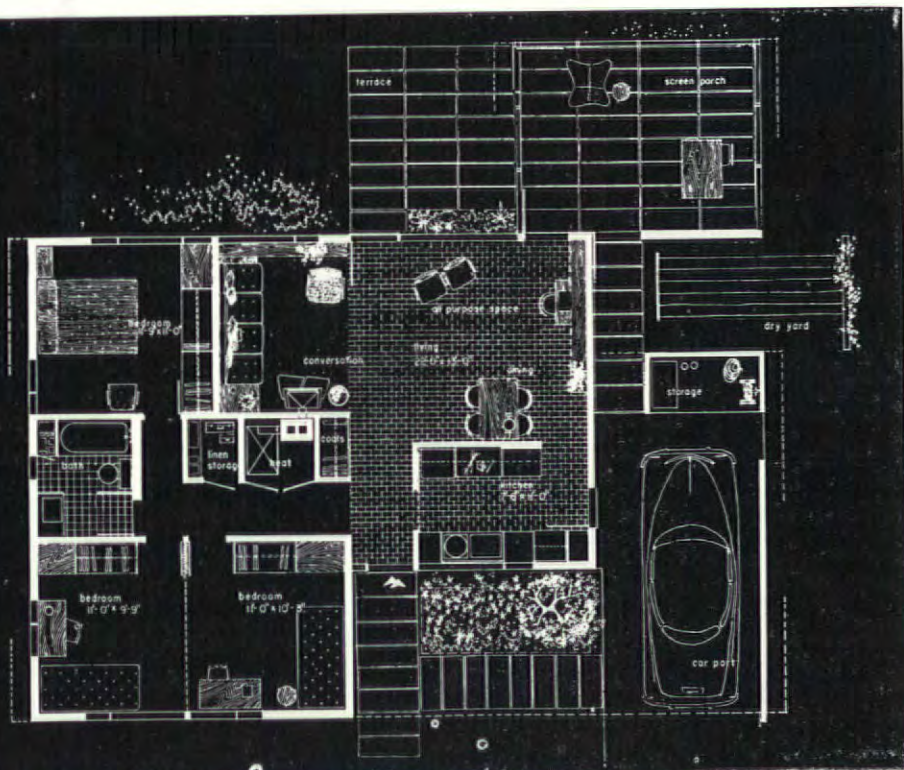
► Deluxe interior detail: natural solid mahogany built-ins; imported tile for floor in all-purpose living room; sliding doors in wardrobes and for partition between children's rooms; specially designed, handmade Swedish lighting fixtures; low-voltage wiring with multiple-switch panel in master bedroom to control lights throughout house.

Conclusion: Small house builders who feel they must tread lightly in the rarified atmosphere of pure modern will do well to make use of its most generally accepted features: open planning with large all-purpose room; built-in furniture and storage space to make every inch count; dual purpose convertibility; provision for outdoor living, with porch or terrace accessible from living room. They will also do well to note that mothers prefer the kitchen to the living room for administering pabulum and spinach, and that fathers want no new-fangled ideas on the hearth of their home.

COST, \$17,000, without show-house features
BREAKDOWN, in per cent

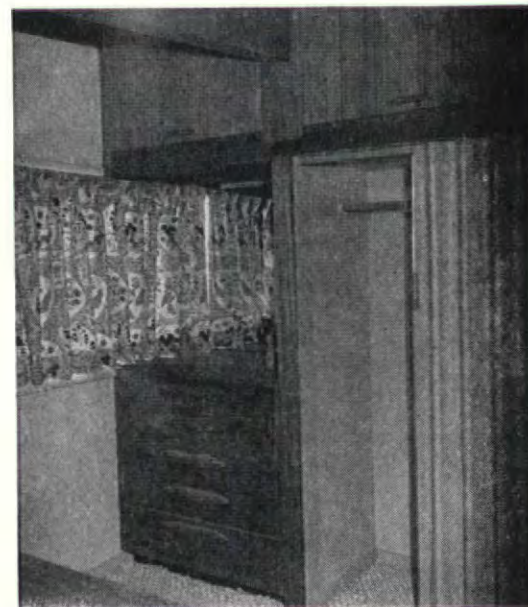
Survey, clearing, permits, excavation, sewer, water	3
Concrete and labor	4
Heating	6 1/3
Tile flooring	2 1/2
Plumbing	5 1/3
Lumber and millwork	25
Carpentry labor	24
Wiring and fixtures	4 1/3
Insulation	2 1/2
Fireplace & chimney	1 1/2
Drywall and taping	3
Hardware	1/2
Painting	4
General labor	2
Supervision	10
Labor taxes	2

100

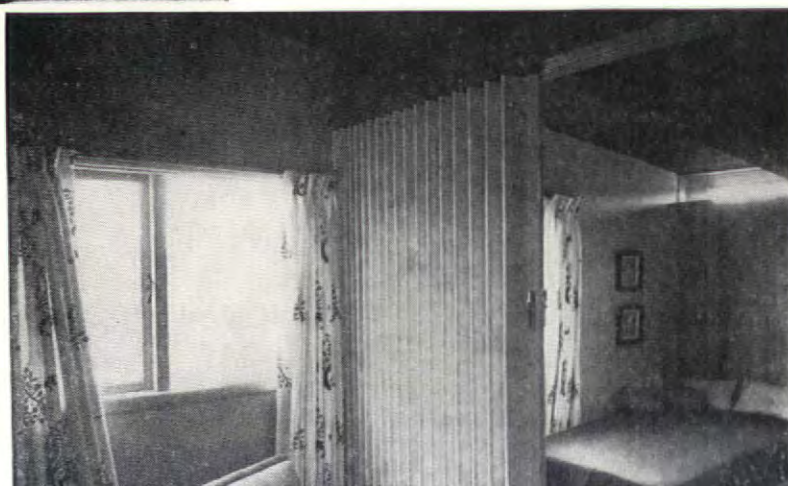


Bruce Walker's original floor plan was expanded 2' in length; otherwise left unchanged. Note dead-end living room, storage space in garage and built-ins in bedrooms, dual-purpose space, and close integration of utility, kitchen, garage.

Children's bedrooms, right, are divided by modern folding partition, may be opened up into one big playroom. Such dual-purpose convertibility of space is an asset of good modern planning, worth using in any style small house.



Master bedroom is chiefly distinguished by its handsome built-ins of natural solid mahogany. Closet doors, here and throughout house, are folding ones of colored plastic over steel frames.



VOLUME + DESIGN = A LOT OF HOUSE FOR \$12,000

Builder LaPierre brings economy to his big value-packed house by designing it for mass production, by maintaining production with a quick-selling small house at \$6,000

LOCATION: Seattle
W. A. WOLLANDER, Designer
BUDGET HOMES, INC., Builders
J. HASLETT BELL, Landscape Architect

This house is among the best values being offered for \$12,000 by any merchant builder in the country.

Its 1,632 sq. ft. of floor space (including 1-car garage), packed with sales features and placed on an 85' x 120' lot with plenty of trees, sells for only \$7.35 per sq. ft. It might well be used by other builders as a source of many cost-cutting ideas and a yardstick by which to measure their own products.

What does it take to offer a house like this for \$12,000? Says its builder, Albert LaPierre:

1. Volume. "You need a production line of at least 400 units to get it going." What makes LaPierre's \$12,000 home possible is the fact that his whole organization is geared up to mass producing low cost homes in the \$6,000-\$7,000 class—1,200 finished and another 700 under way.

2. Design. Like an automobile, every part has to be designed and detailed for the most economical quantity construction. For example: "The windows of this house had to be redesigned no less than 83 times before the right combination of good looks and assembly-line economy was found."

Designer Wollander and Builder LaPierre have pointed out clearly one way a builder can save money and offer a more livable house: careful planning *before* the house is built. Here are some examples of the construction simplifications they worked out together:

1. Windows. "It's old-fashioned to cut holes in a wall and then put in windows," explains the builder. "We made fenestration pay for itself by getting window walls at economical prices." More than half the front and rear elevations of the house are glass. There are just two sets of window sills and headers, a 39' strip in front, and a 46' strip at the rear, both running almost the full length of the house. Frames are made inexpensively at the company's own mill, trucked in sections to the site and set in place on top of the low walls (which are frame with a masonry veneer), where they act structurally to hold up the roof. Because these frames form the wall itself, they eliminate many of the parts that must be handled in conventional walls and stock windows.

For further economy and simplicity, windows are omitted completely on either end of the house.

2. Built-ins. Also preassembled at considerable savings are kitchen counter and cabinet units, bathroom dresser-washbasin units, wall-to-wall wardrobe closets. These are made at the shop and trucked in to the house in one piece.

3. Bearing walls. These were kept to a minimum by design.

The only interior bearing partitions flank the hall (see plan). This allows workmen to use big 4' x 12' sheets of plasterboard, and to continue with them right around the inside of the house without having to stop and cut for interior partitions. After the inside walls are finished, the wardrobe units can be installed, can be moved around later if the owner so desires.

4. Corners. Any corner costs money. The cost-consuming inside and outside corners in a conventional house of this size can add up to as many as 70 or 80; Wollander's floor plan, with its simple rectangular outline and absence of structural interior partitions brought the total down to 22.

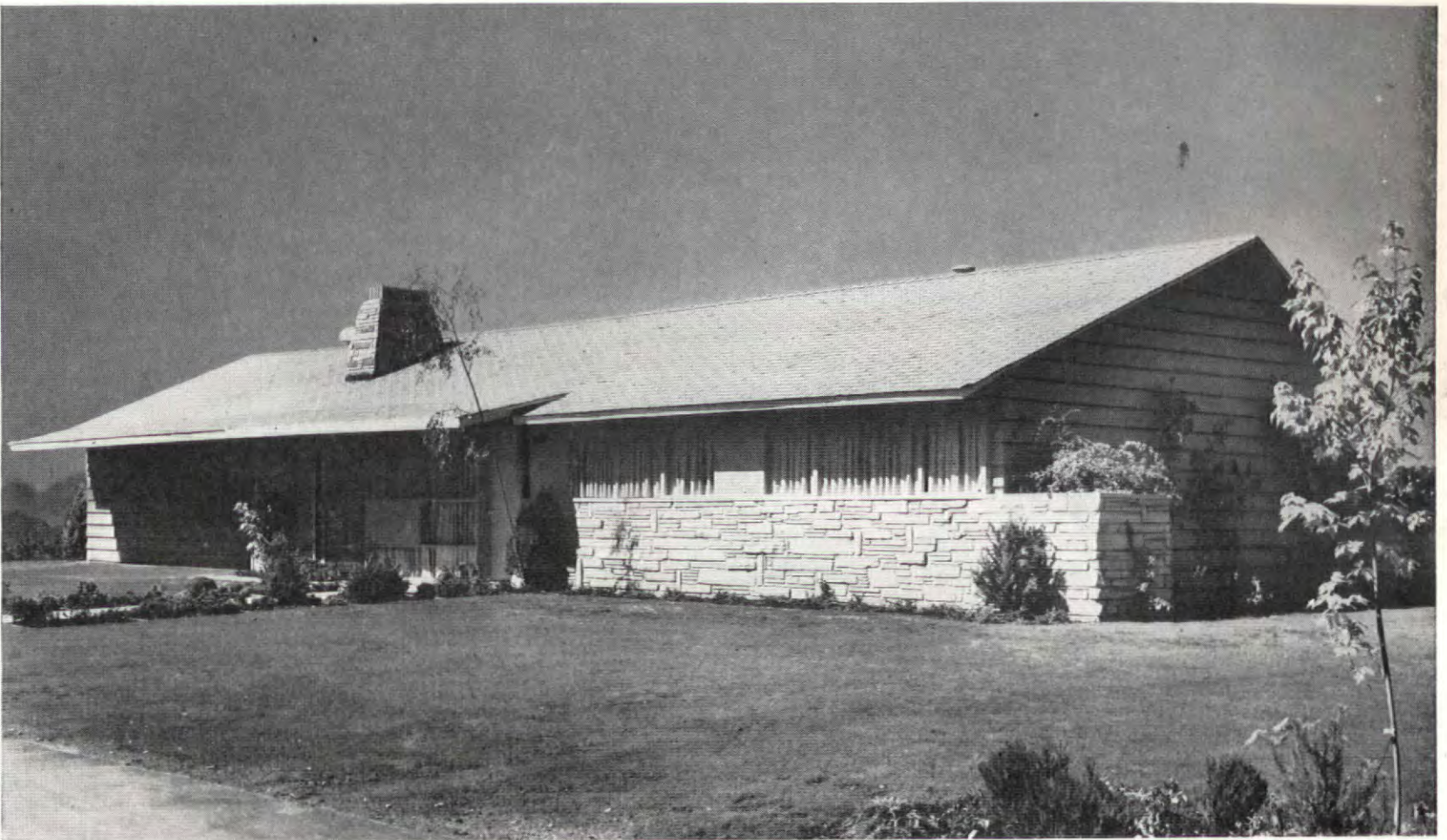
5. Storage space. The cheapest storage space in a house is the attic. This house takes advantage of this fact instead of adding extra storage areas on the ground. Ceilings are framed over garage and "family room" for the addition of a disappearing stair, and 2 x 6's are used instead of the usual 1 x 6's for rigidity under attic loads.

LaPierre's house, dubbed the "Season Master," comes in two versions: the \$12,000 model pictured here, and a basic \$9,999 edition of 1,078 sq. ft., the same house minus "family room" and garage.

The larger version sells at \$7.35 per gross sq. ft., including garage, improved 85' x 120' lot (\$1,500) and builder's profit (\$1,200). Thus the bare construction cost is probably close to \$5.50 per sq. ft. LaPierre expects to take a \$1,000 profit on the \$9,999 model, although none of this type has been built to date.

Thirty-one of the larger type have been started and sold in Mountlake Terrace, Budget Homes' 850-acre development 13 miles north of Seattle. LaPierre had to guarantee his designer \$25,000 in royalties at \$125 a house to get him to undertake all the work the design project required. It looks as though the guarantee will be met: at least 10% of the 800 homes now being started in Mountlake Terrace are of the "Season Master" type.

And other home builders from coast to coast are already buzzing about the design. Several have expressed interest in building it, in Honolulu, in Philadelphia, in Bellevue, Wash. One builder is reported planning to erect it in Colorado Springs



On the street side, the \$12,000 "Season Master" presents a long, low front elevation of glass and sandstone veneer, a trim, sharp-edged roof line with protective overhang.

Photos: Richards Studio

Front door and glass living room wall are included in a 16' x 6' 9" frame unit pre-assembled at shop. Wide 5' overhang shields the flagstone entry terrace; plywood panel swings out for ventilation.



Albert LaPierre, 46, president of Budget Homes, is a handsome, wavy-haired type with the energy, dash and one-a-minute ideas of a successful salesman. As a broker turned builder, he has put up some 3,000 homes since his mortgage firm went into business just after World War II, is now in the process of turning out 800 more.

Born in Canada, he came to the U. S. at the age of five, graduated from the University of Washington in 1928. After a dozen years with another Seattle broker, he joined Seattle's

THE BUILDER

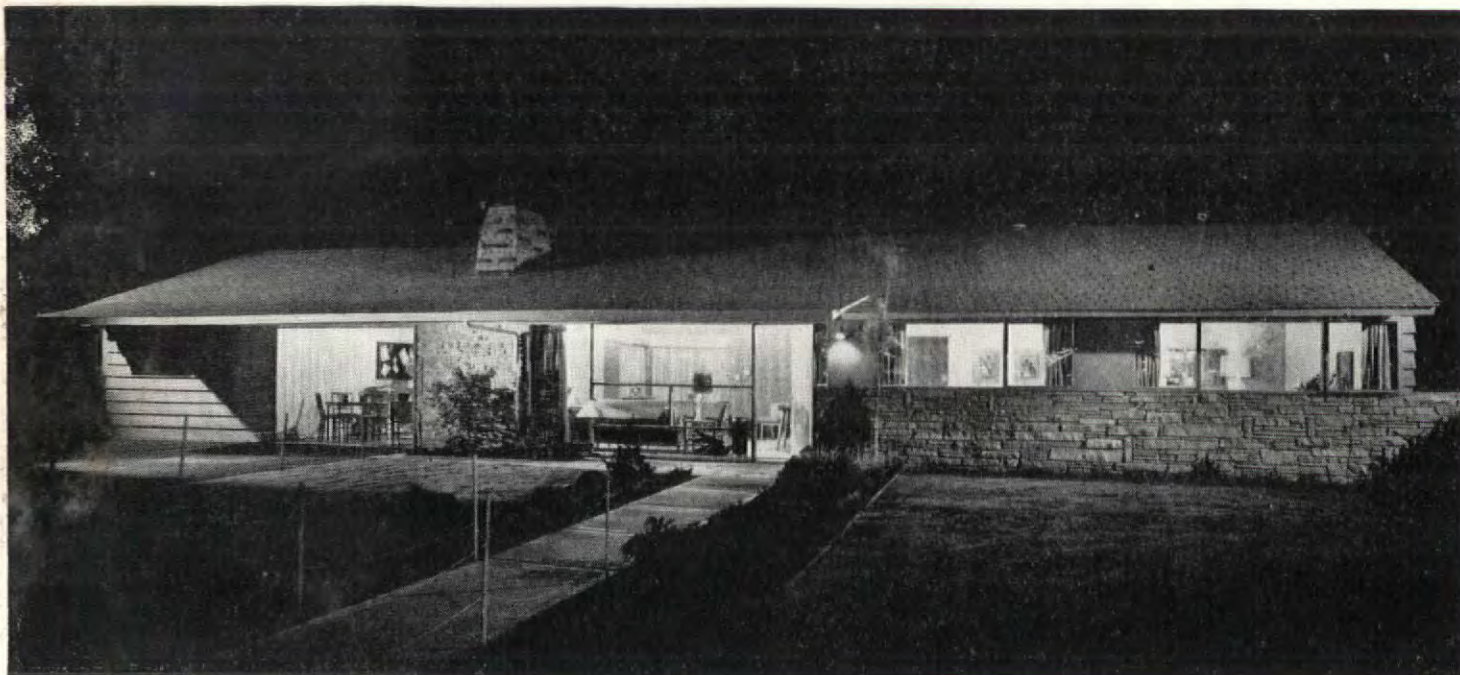
largest mortgage firm, Carroll, Hedlund & Associates in 1940 as a junior partner.

Just after the war, LaPierre helped liquidate 1,200 war workers' houses the firm had bought in a package. On four subsequent occasions the firm lost money on loans to builders, finally decided in 1946 they could do a better job and went into the home-building field themselves. LaPierre, as a vice president, was made president of the newly formed subsidiary, Budget Homes, and went to work on low-cost housing with a capital surplus of \$5,000. In five years he has upped that figure to \$500,000.

As a builder, he believes that many of building's ills usually attributed to labor are actually management's fault: "If we in Seattle are going to pay one of the highest wage scales in the country, we're certainly entitled to 100% efficiency. If we don't get efficiency, it's because the materials and tools aren't there and management isn't on the ball, planning the way it should."

LaPierre believes in the "American way of doing things." Two years ago when it seemed likely that Seattle would get a big batch of public housing, he and his friend and business rival Al Balch got together and with their fellow builders sparkplugged a campaign that defeated it. The Mayor and city officials had tentatively approved money to match Federal funds. LaPierre and Balch heard about it, raised some \$26,000 overnight and put on a big advertising campaign that rallied the public, forcing the Council to put it to a vote. Public housing was thrown out.





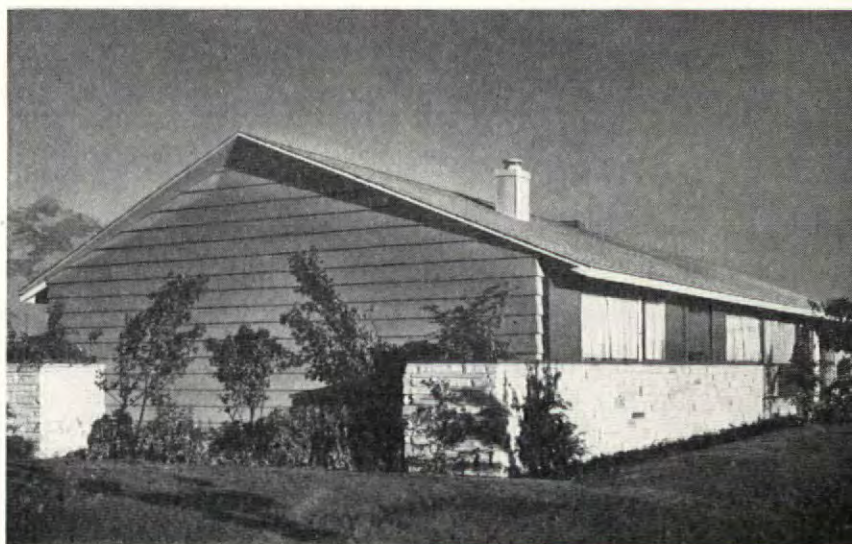
Night lighting shows up full use of glass: in bedrooms, right, living room, center. Sliding door of family room, left, is in open position. Below, windowless bedroom end has stone wall extended into plant boxes, cedar shiplap siding, a thin, tapered gable formed by plywood soffit, 1" x 2" fascia.

to sell for \$16,500. Says LaPierre: "I'm not Houdini. Other builders will probably have to charge as much as \$4,000 more than I do, but they could get their prices down too if they had mass production."

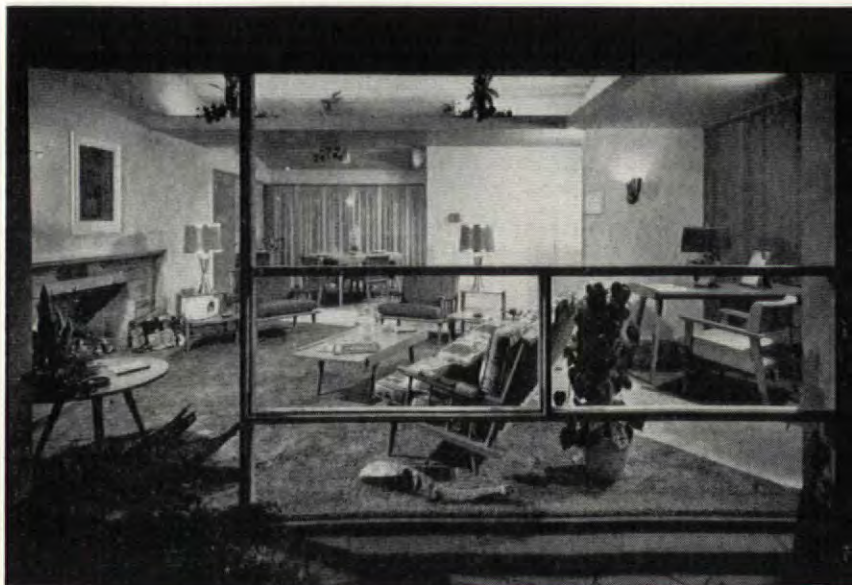
LaPierre keeps his costs down primarily by doing nearly everything himself, a system he calls "straight line production." He has only four subcontractors: plumbing, painting, wiring and asphalt paving. And he builds just as fast as he can (on his \$6,000-\$7,000 houses, 300 at a time, 58 days from start to finish). "Delays mean bad luck" is one of his slogans.

Some of his cost-cutting construction methods:

1. *Concrete.* The cost has been reduced from \$12 per cu. yd. to \$6 by putting in a \$150,000 pre-mixing plant of his own, buying a fleet of concrete trucks.
2. *Millwork.* The company has its own 80' x 280' mill shop and 30' x 200' lumber storage shed where it makes all the cabinets, frames, built-ins and trim, hauls them to site with a fleet of 46 four-wheel farm trailers and eight jeeps. This way the total cost of millwork for the big house has been cut from \$1,800 to \$813, including glass.
3. *Engineering.* This department has been in operation for six months now, saves on many phases of the work such as land planning and saving trees.
4. *Retail lumber yard.* The firm recently opened its own yard to buy direct from mills (saving a 5% broker's fee) and to sell leftover pieces from the jobs. Previously the high cost of labor had made this scrap prohibitive to salvage, so \$15,000 of it was burned every year. Now Budget Homes sells its odd lumber for about what it cost in the first place.
5. *Slab floors.* LaPierre decided hardwood floors were too expensive, caused trouble in Seattle's damp climate. He replaced them with concrete slabs and asphalt tile flooring, thinks he was the first builder in the area to do so.
6. *Dry walls.* A few years ago he felt plasterers were gouging the builders, overcharging and underworking. So he went to dry wall construction, hired his own men to do a good three-coat taping job (the most critical operation if the wall is to look right) at a low 90 cents per sq. ft. installed.



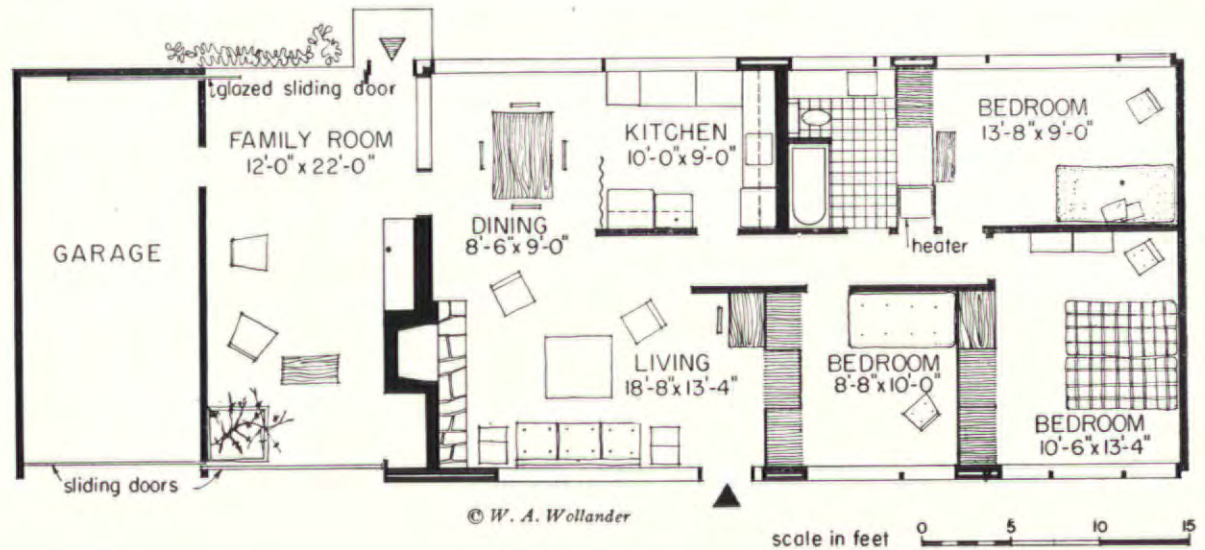
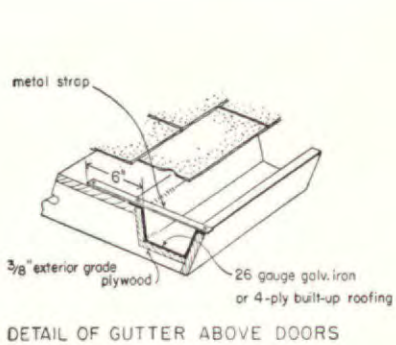
Front entry view, with plywood vent panel removed, shows L-shaped lighting cove in living room, dining area beyond. Two other mullion patterns are available.



Dining area has window wall, folding door to kitchen. Some models have this "cathedral ceiling" and suspended cove; others, a flat ceiling.



Big glass paneled door at back of house slides into garage at right, uniting family room with back terrace. Inside can be used as recreation room, studio, bedroom.



High strip window (3' 7" off floor) for privacy and one blank wall for furniture highlight the master bedroom.



Wall-to-wall bathroom window of obscure glass is part of 46' sill along back of house. Handsome shop-assembled built-in has counter, basin, storage cabinets, is suspended for "toe room."



7. *Heavy equipment.* A great believer in machines, LaPierre has \$200,000 worth, including graders, 17 cu. yd. trucks and a brand new \$39,500 Tornadoizer which moves earth around at 14 mph, seven times as fast as his old machines could do it. He is proud of the way he punches through his curvilinear streets, adjusting houses backward or forward on their lots to avoid taking out trees, a prime scenic asset. (As added insurance that the tract will look presentable, especially to prospects, he will not sell a house unless the buyer agrees to start spending \$150 on landscaping improvements of his own within 60 days after moving in.)

On the present site of operations, there are 850 acres, space for a goal of 3,500 homes. Raw, uncleared forest land bought in bulk costs \$750 to \$1,000 an acre, which Budget Homes improves to \$4,000 an acre, then divides into four lots with a final cost of around \$1,000 a lot for the \$6,000-\$7,000 homes. The firm carries \$250,000 of land at all times so it can keep a mile ahead of where it is actually building.

Another of LaPierre's trade "secrets" is:

8. *Mass purchasing.* Here is where materials buying on a grand scale for the little house had made the low cost of the big house possible. LaPierre buys 100,000 bd. ft. of rough-sawn cedar siding at a crack direct from the mill, at a low \$38 a thousand for 1½ x 10's. Part of this he uses for the two end walls of the large house, re-sawing the boards down the middle on a diagonal. This gives him twice as much lumber, which he nails up (with aluminum nails to avoid rust streaking) as shiplap siding. He leaves the surface rough-sawn and stains it for a permanent finish.

Plywood is obtained in carload lots, too, without going through a middleman, and the Arizona Kaibab stone used for masonry veneer on the large house (and parts of the small one) is purchased from the quarry direct. (Freight on the stone actually costs more than the stone itself.)

LaPierre takes advantage of discounts for large orders and cash payments all along the line. He buys 25 carloads of electrical appliances annually which he resells to his home buyers at a saving to them and a profit to him. Between the two types of houses in the project, he sells more electric equipment of this kind than the biggest store in Seattle—3¾ appliances per family. And if an owner buys a clothes dryer from him, he puts in \$18 worth of wiring free. (He doesn't like clothes poles in the development.)

Direct purchasing applies to heating and hardware, too, and the 216 lb. composition roof shingles. When LaPierre found that one-third of his doors were warping, he started buying large lots of birch slab doors with honeycomb interiors direct from Finland. At \$7 each, they are "about half the price of domestic doors" and don't warp at all.

Public relations with a punch

LaPierre's dealings with the public play a big part in the Budget Homes' success story. His key word for sales methods, like the rest of his operation, is "socko."

The firm runs nothing but full page display ads in the newspapers, the first priority on its list of media. Others, in descending order of use: occasional TV shows, brochures, homes shows and fairs, open houses, radio commercials, contests and classified ads. LaPierre, in line with his fight against public housing, sends tear sheets of his newspaper ads to each Senator and Congressman with a note: "This is the American way to house the American public."

LaPierre no longer closes a deal while the house is under construction. "Sell a house too early", he says, "and the buyer is continuously pestering the men on the production line for little changes in this and that."

A special arbiter, who has been given complete authority, accompanies each buyer around the house after it is finished, checking for flaws and recommending repairs to the company before actual delivery.

There are various promotion gimmicks: a large balloon floating over the sales office to attract attention, five attentive salesmen on the tract during the week, an extra salesman and hostesses at the model home on weekends. When it was found that parents were distracted from looking at houses when kids were around, a nursery was set up with attendants to take care of youngsters while their elders bought homes.

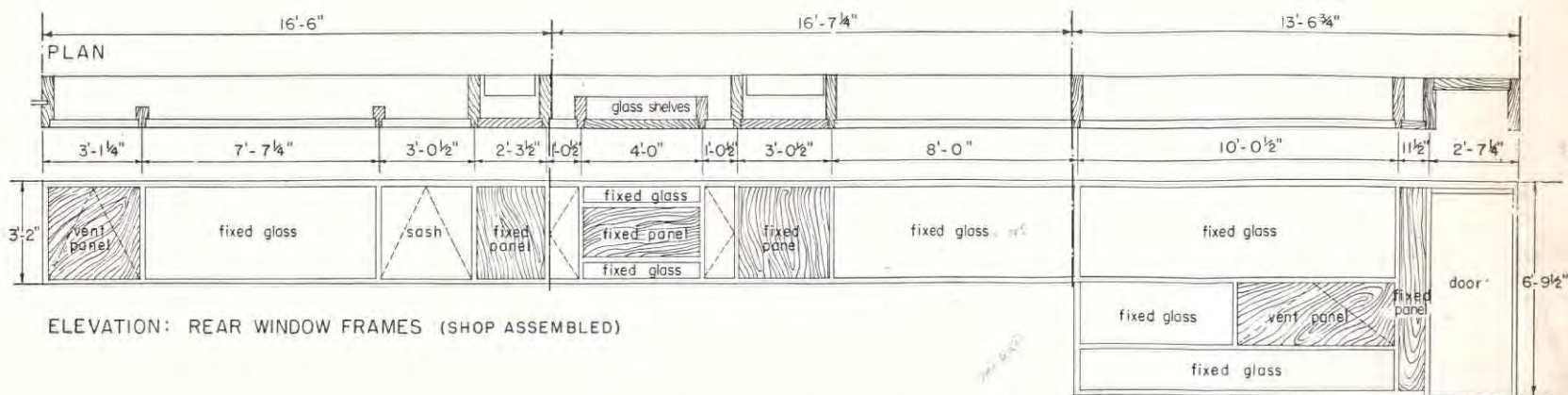
As a good will gesture and an introduction to his nearby shopping center, LaPierre gives each buyer some \$200 worth of certificates for free meals, movies, drugs, car washes and groceries. He also presents each owner with a leather folder in which he can keep copies of his deed and various forms of in-



LaPierre's newest piece of heavy equipment is this big \$39,500 Tornadoizer with which he clears and rough-grades his own land. It cruises at 14 mph.



Another item in the builder's \$200,000 collection of machinery: hydraulically-operated 17 cu. yd. dump trucks used for hauling gravel, sand and earth.



Long frame of glass and plywood panels (top) runs from rear bedroom at left to door of family room at right. Shop-made of heavy structural members, it is trucked to site, like wardrobe units (below).

surance. (Literature in the folder hints that Carroll, Hedlund & Associates handle all types of insurance.)

There are monthly contests among buyers to see who can collar the greatest number of new prospects for homes, contests for the best suggestions on how to improve the home itself.

All this and \$110,000 in past advertising seem to pay off: sales are easier now, and Budget Homes have a lower than average percentage of resales. The mortgage holder (Carroll, Hedlund) has not had a single case of 60-day delinquency on payments.

Budget Homes uses its parent organization, Carroll, Hedlund, as a "cushion" in much the same way that other home builders use a shopping center. Net profit on the small house is \$500, which breaks down into \$300 on the house and \$200 for the mortgage discount. Carroll, Hedlund picks up the latter, plus any insurance policies taken out by the owners, is now servicing \$50 million worth of mortgages.

LAPIERRE'S LOW COST HOME

It made the big house possible

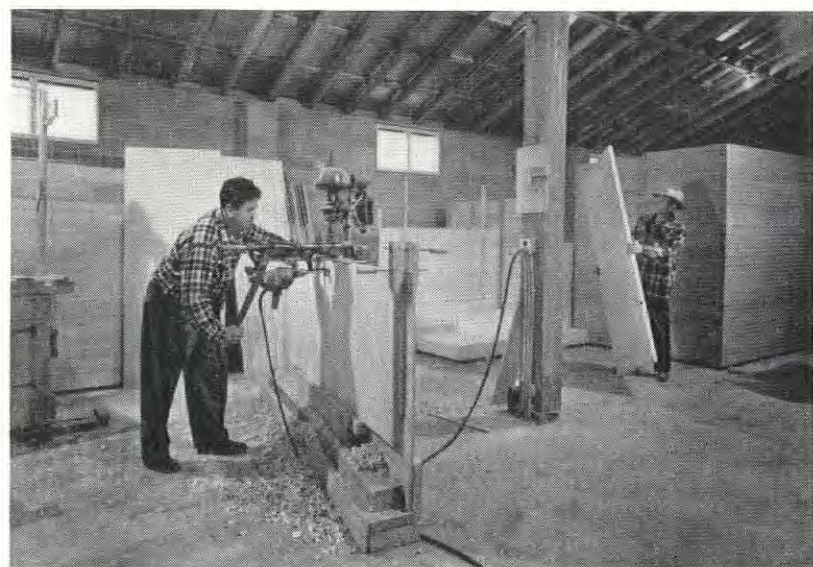
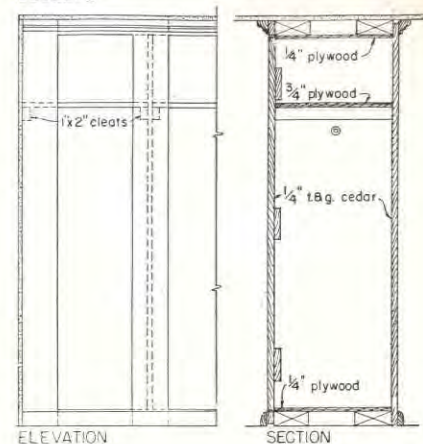
A spruced-up version of the \$4,999 model put on last year's market, the "Dura-Home" comes in two editions like its big younger brother, the "Season Master." The standard model sells for \$5,999, has 685 sq. ft. of floor space on an average lot of 65' x 125', set back 39' from the street. It comes in basic floor plan and reverse plan, and each owner gets a set of four expansion plans (see p. 207) suggesting ways to add a garage and extra bedrooms. (A surprising number of owners have already taken advantage of these to enlarge their homes.)

The deluxe model at \$6,400 is the same house on the same lot, with the addition of: domestic sidewalk, crushed-rock driveway and parking area (upping the lot cost from \$800 to \$1,000) and such refinements as back porch light and a shower. It has more kitchen cabinets, more wall tile in kitchen and bath, insulation in roof and walls, an interior paint job and both FHA and VA-insured financing. (The standard model has VA only.)

Closest competition other builders can offer in the area, are 700 sq. ft. houses for over \$7,000.

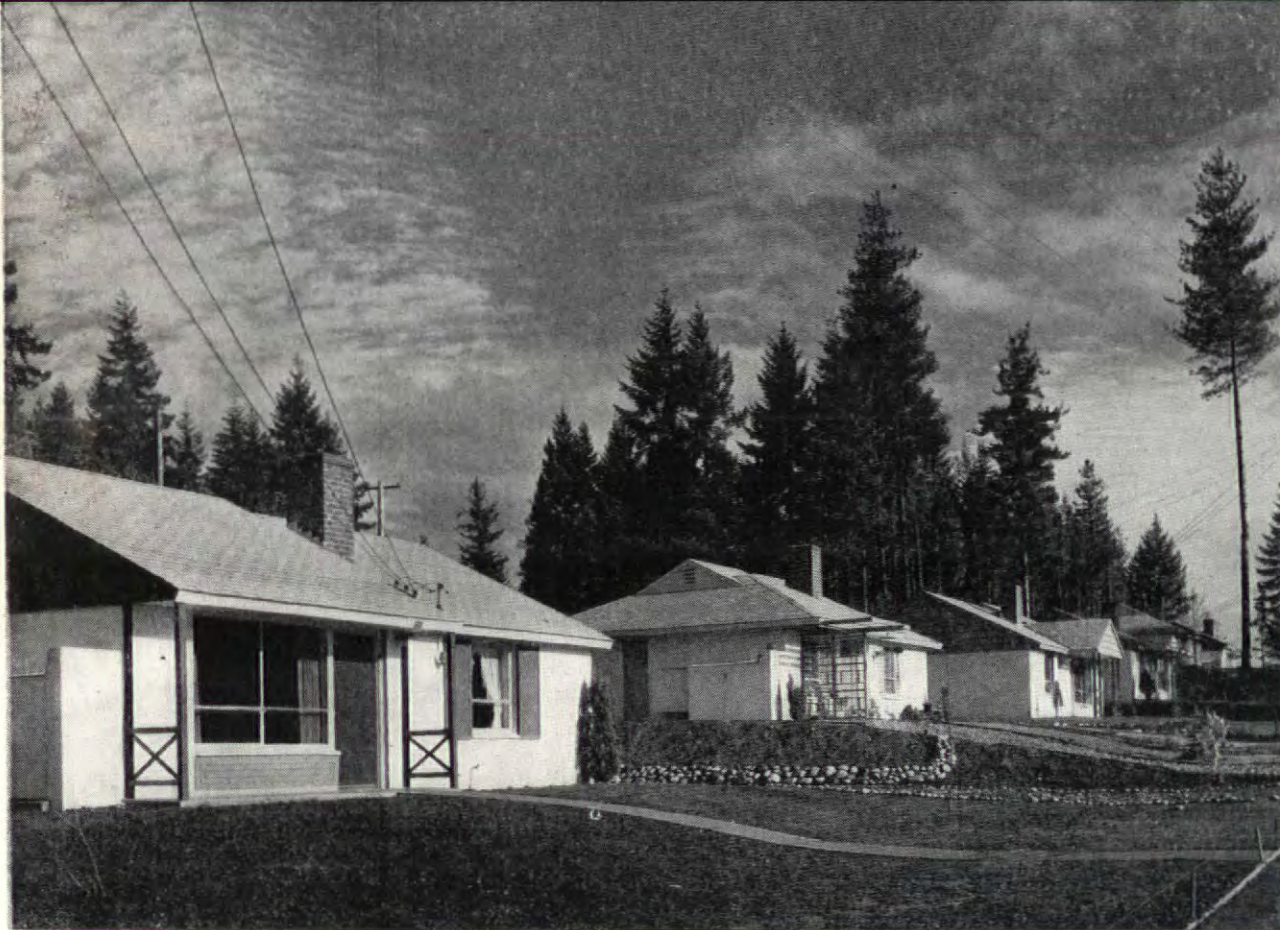
Lack of interior paint in the standard model is typical of LaPierre's ability to turn negative aspects into positive ones: he instructs salesmen to tell prospects the unpainted walls "give

CLOSETS



Workers at shop drill Finnish birch slab doors for hardware (above). Below, they pre-assemble kitchen cabinet units.





These \$5,999 homes in Mountlake Terrace are built on the same floor plan, vary in roof framing, color, window placement and "apple-crapple" (exterior ornamentation).

Model below is the same as those above with a gable in front. Unlike some tracts, this one carefully saves its main natural asset: trees.



you a chance to get exactly the color scheme you want. For only \$25 you can paint it yourself."

The basic houses comes in 13 exterior variations. This diversity is accomplished in four ways:

1. Different window placement.
2. Changes in roof lines; hips, gables and combinations.
3. Some 50 different color combinations prescribed by the designer.
4. "Apple-crapple."

"Apple-crapple" is LaPierre's own highly descriptive term for such frills as trellises, pagodas, flower boxes, shutters, porticos, etc., which doll up the houses at little extra cost and without interfering with his mass production technique. "In a more expensive house," he explains, "you call it 'applique,' but it's apple-crapple to me."

But, having paid his designer for these embellishments, LaPierre insists that the plans be followed to the letter, permits no fanciful on-site innovations by construction superintendents.

By purchasing most of the materials for the small house in bulk quantities, he has been able to use them in the big house at considerable saving. One material used solely for the small house is concrete block masonry. Several years ago when lumber was hard to get LaPierre switched to blocks, now takes the full production of one eight hour shift at Seattle's largest block factory. The 47 lb., 8" x 8" x 16" units are waterproofed at the plant, laid up at the rate of 300 per man-day at a cost of 33.5 cents a block and finished outside with two coats of paint (cement paint in summer, oil paint in winter).

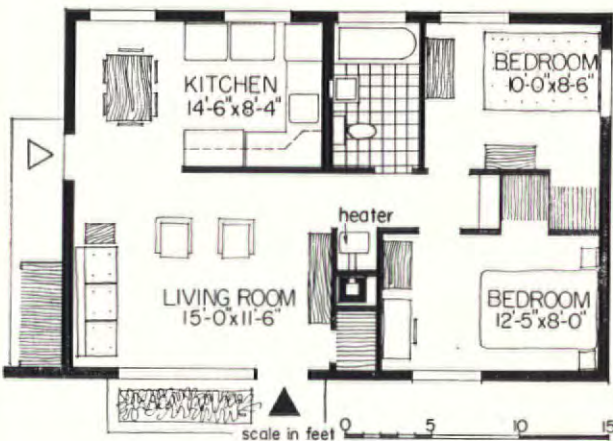
Inside, gypsum board is furred out from the block wall on 1" strips and, in the deluxe model, insulation is blown into the air space. Says LaPierre: "Block is faster than wood to put up, and it reduces the number of 'layers' in the conventional wall that slow construction and boost prices."

Typical living room shows dining nook in back off kitchen, service door which can lead to future garage. Interiors are plasterboard on concrete block, asphalt tile on slab.

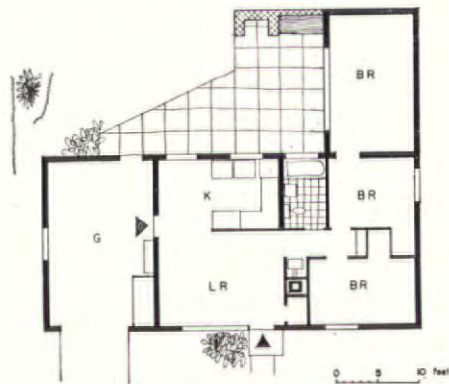
Basic plan for the small house is a 32' x 21' 4" rectangle with roughly the same placement of rooms as the \$12,000 model. Panel of stone hides heater from living room, gives effect of a fireplace.



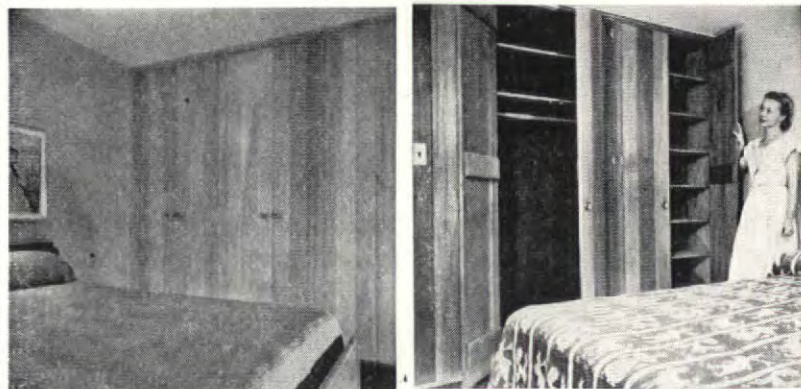
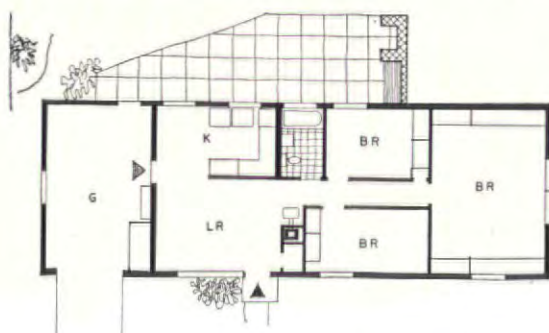
© W. A. Wollander



"Work-less" kitchen is compact unit open to dining nook, with former metal cabinets recently replaced by wooden ones. All appliances are sold to buyer at \$1 per month per item.



Two of four suggested expansion plans tack third bedroom on rear (inconvenient) or side (closets become hall).



Closet wall between bedrooms is of 1 x 4 T&G cedar planks (braced on doors by cross ties) with plywood shelves.

UP-FRONT GARAGE makes room for private out-door living,

becomes a design asset in builder's \$13,500 house

LOCATION: Palo Alto, Calif.
WARD THOMAS, Architect
STERN & PRICE, Builders

Rondal Partridge

Here is a builder's house that isn't ashamed of its garage.

On the contrary, it puts the garage right up front and takes advantage of its position there to get a better overall floor plan and a much better layout for outdoor living.

Most builder's houses would be better without the garage, which usually blocks off an end and two valuable corners, makes the living room a front-to-back passage between garage and bedrooms. As often as not this repository for Buicks, baby buggies and bric-a-brac is tacked on by the builder as a necessary evil and eventually becomes a burden to the livability of the house.

The "Forerunner," a three-bedroom, \$13,500 product currently being built south of San Francisco, turns a perennial liability into a positive asset. Its floor plan (1,200 sq. ft., plus another 400 in the garage) is essentially a square from which one quarter section, the garage, was removed towards the street, leaving behind it an inner court protected from both wind and witness; on three sides by the house and garage walls, and on the open side by a solid fence.

This sun pocket forms an attractive entrance garden, a pleasant and gradual transition from the bustle of the street to the privacy of the living room. A versatile enclosure, it serves as a sheltered spot for sunning, lounging or outdoor dining. And, with the addition of a low gate, it could double as a safe play yard for children.

Placing the garage frankly in front and detaching it from the house structure (it is tied only at one corner to the roof of the bedroom wing) cost them an extra \$300 per house for the fourth wall, the builders estimate.

And the narrow (53' x 116' average) lot forced the architect to abandon any garage-at-the-side plan in order to get his relatively large house on a relatively small site.

But the solution did give these added advantages:

► Two outdoor areas for nearly the price of one. Owners have a choice between inner court and standard rear yard for various activities.

► Fewer site planning worries. With two glass walls giving out on two yards, the house is practically guaranteed a southern exposure whichever way it is oriented on the lot. Built on either side of the street in almost any part of the country from California to Connecticut, Thomas' plan would assure the welcome warmth of winter sun.

► Bedrooms set well back from the street for privacy. (This, however, increased waste space in front of the house at the expense of a deep rear yard.)

► A garage as near as possible to the street (right up to the 25' setback line required by local code). This means lower costs for driveway paving, and in a colder climate, less snow-shoveling for the owner, too.

Inner court and rear yard, both made private as they are by house, garage and fencing, permitted the architect to open up the living room walls into picture windows—without providing every passerby with an intimate picture of the family's activities. And by giving the living room big



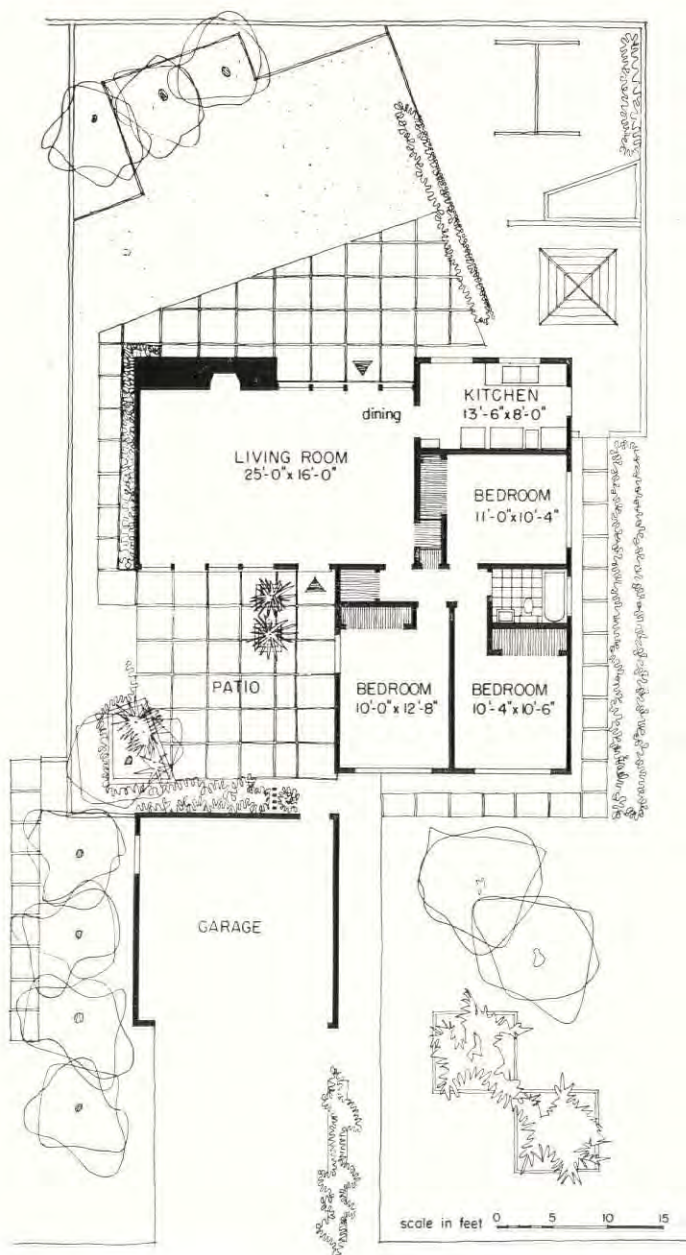
Entry walk from street through inner court is protected by 3' 6" overhang of bedroom-wing roof. Glass wall of living room looks out on private patio, gives interior added light and space.

windows both front and back, he added a bonus of spaciousness and light that makes the interior look larger than it really is.

Half of the 175 homes sold and completed or under construction in the development are of the Forerunner type, priced at \$13,500 including a \$2,250 improved lot. It is available in the plan at right, reverse plan and three elevations, totaling six variations. To round out the tract's range of sales appeal, Stern and Price are also building smaller three bedroom models tagged at \$10,750, a few two bedroom houses from \$10,500 to \$11,800. The builders report sales well ahead of starts, a good market and houses being finished at the rate of three a day, with an eventual goal of 234 units in the project.



From living room (above) owners have private view of enclosed patio through picture window, which borrows outdoor space to make the room seem larger. Solid fence and back of garage cut off neighbors and passersby.



View from dining nook just inside front door (above) is through another full glass area to rear yard (below), equipped for children's play and outdoor dining, with kitchen handy.



OPERATION "TRADE SECRET"

Top-flight home builders reveal how they deliver more house for less money and spread critical materials, recommend ways the industry can improve its products

"There are few builders' problems that some smart builder somewhere has not already solved."

Acting on this assumption, NAHB President W. P. "Bill" Atkinson picked 12 builders now offering outstanding values in the West and Southwest and invited them to a two-day meeting at his Midwest City pony farm on October 19 and 20 to let down their hair and divulge their trade secrets for the benefit of other builders.

This session was so successful that two other regional meetings have now been scheduled—one for the Middle West, one for the East—all leading up to a big national conference in Washington at which NAHB will discuss with Government officials ways to give the house buyer more for his money.

Last month's meeting produced 1) a series of recommendations for improving the low-cost house, 2) a list of ways to save critical materials, plus 3) at least one important "trade secret" per builder.

- How could home builders save 4¼ million lbs. of iron and steel in bath tubs annually?
- Where and how can builders "revolutionize small house living" with air conditioning?
- How do some builders cut door costs in half?
- Why should builders "put a Chevrolet body on a Cadillac chassis"?
- How many buyers want an expandable house plan?
- Can storage walls be cheaper than closets?
- Why is better cost analysis essential to better design?

Photos: LIFE—A. Y. Owen



D. C. (Dave) Slipper (l) representing Los Angeles' Fritz Burns seated with Denver's William Cook and Frank Burns study pictures of contemporary house designs.

Pampa's Richard Hughes (l) and San Antonio's James Burke seated at table ponder the problem of adapting the speaker's suggestions to their own building operations.



Rival Seattle builders Balch (l) and Albert LaPierre, seated at conference table, represented the booming Northwest. They operate in different price brackets, are not competitors.



At end of the "dry" two-day session Host Atkinson, a teetotaler, pours buttermilk for Seattle's Albert Balch. Other conferees (l to r), Leonard Haeger, William Smith and (standing) Wallace Johnson.

Conference participants:

ALBERT BALCH, Seattle
 JAMES BURKE, San Antonio
 FRANKLIN BURNS, Denver
 NED COLE, Austin
 DICK HUGHES, Pampa
 WALLACE JOHNSON, Memphis
 ALBERT LAPIERRE, Seattle
 TOM POORE, Midwest City
 DAVE SLIPHER, Los Angeles
 C. W. SMITH, Southwest Research Institute
 VERNON S. SMITH, Dallas
 W. P. ATKINSON, Midwest City, Okla.
 JOSEPH ORENDORFF, HHFA, Washington
 LEONARD G. HAEGER, NAHB

Recommendations

The 12 builders reached substantial agreement on these 12 recommendations for improving the small house:

A warranty for every house buyer. Reputable builders have always stood behind their houses but only a few have put a guarantee in writing. These leading builders were unanimous that an equitable warranty would 1) help sales, 2) cost good builders very little and 3) promote good will.

Better designs. "We all seem to agree," said Bill Atkinson at the end of the meetings, "that the buying public wants more contemporary design, with lower houses, wider overhangs, more windows, open floor plans and better arrangements for outdoor living. These features make for better living."

Less "apple crapple." Money spent for such expensive and unnecessary trimmings as false gables, bird houses, trellises and meaningless changes of materials on facades is wasted. It could much better be spent to provide more living area. Al LaPierre of Seattle gave the building industry a new term for the non-essentials: "apple crapple."

Better floor plans are a basic requirement. In the design of their homes all builders should insist on getting better circulation, more privacy, better integration of kitchen, front door and service door, less waste space. If possible, the house should be planned to seem bigger than it really is.

Fewer floor plans, more real variation. One good way to reduce costs would be to use fewer floor plans than FHA now requires in some areas. Changes in roof lines, window arrangement, garage location and color are more economical ways to avoid monotony.

Better storage space. One of the most effective ways of giving a better house for the money is to increase the storage space. Bulk space is not enough. Storage must be designed for family needs, and the same amount of space goes much farther if it is well planned. There must be shelves, drawers and compartments for various sizes of items, including baby carriages, children's outdoor toys, garden furniture and tools. If the garages are eliminated, adequate storage areas must be provided elsewhere to replace the garage area usually used for storage.

Shorter lots. Considerable money could be saved in low-cost house projects if the lot depth were shortened to 100'. Width is more important than depth, and the width of the lot should be geared to the width of the house. Shorter lots are a definite asset in areas where water is scarce or expensive or where families cannot afford to maintain rear lawns or gardens nicely.

More plans for future expansion. From 25% to 33% of the families who buy two-bedroom houses will add a third bedroom.

Builder Dick Hughes surveyed 2,100 families who had bought his houses four or five years ago and found that more than 700 had added a room. "A lot of them looked terrible," he said. "Now I plan my houses so they can be expanded and still look well." Jim Burke of San Antonio reported from 20% to 25% of his small-house buyers turn the garage into a bedroom or add a room. In Los Angeles, nearly 15% of families buying Fritz Burns' houses convert part of the "expansion garage" into a bedroom.

A good floor plan should not be warped out of shape to make it expandable; added bedrooms will have little value if too far from the bath.

Lower land development costs. Small-house costs could be cut by as much as 15% in some areas if municipal and county authorities did not force builders to "put a Cadillac chassis under a Chevrolet body." They usually require the same improvements for a \$6,000 house as for a \$50,000 house.

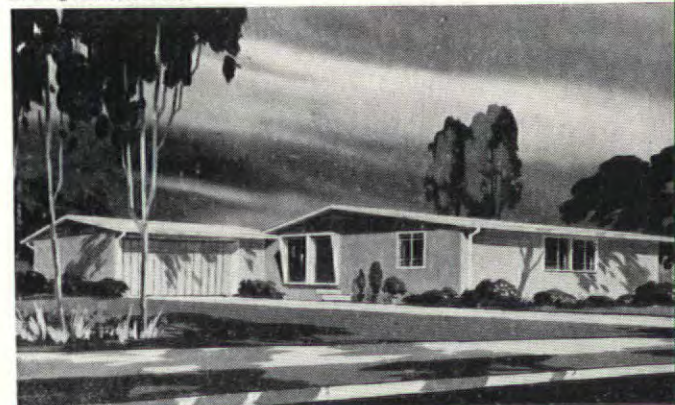
City and county officials regulate such items as street widths, sidewalks, curbs, gutters, paving, cast iron water mains, underground street drainage, manholes, hydrants and catch basins. Too many city engineers insist on "deluxe" utilities and street improvements. Many officials disregard topography in laying out streets, with the result that lots may end up way above or way below grade, forcing very expensive earth moving.

Better cost analysis systems. No builder can make progress in giving the public better houses unless he knows his costs accurately and day by day. "The builders holding back on new designs are the ones who don't know their costs," said Dave Slipher. "These builders stick to old-fashioned designs because

Richards



K. C. Uvale Associates



These three builders' houses were selected by the conference to demonstrate its conception of the kind of architecture builders everywhere should use: low horizontal lines, wide overhangs, many and large windows, no "apple crapple." All three examples represent an encouraging forward step toward contemporary design.

Leon Trice





Maynard L. Parker

Storage partitions with multiple compartments, such as this example, were suggested as one of best ways to improve livability of small houses.

How to make critical materials go farther

Defense Mobilizer Charles E. Wilson told the construction industry last June:

"To the extent that cuts are made in the use of critical materials per unit of construction, it should be possible to permit increases in the volume of construction".

Builders at the Atkinson Conference suggested these ways to make materials go farther and to pass on dollar savings to American families:

1. Moth-balling bath tubs with plastic cocoon can cut losses during construction from over 3½% to less than 1%, reports Dave Slipper, right-hand man to Fritz Burns of Los Angeles. The average big builder, despite all the care he can use, loses over 3% of his tubs due to accidental chipping during construction and has to throw damaged tubs on the junk heap. If manufacturers moth-balled all tubs for 850,000 houses the process could save 4¼ million lbs. of steel and iron annually, would cost only \$1.50 per tub.

2. Adoption of the new National Plumbing Code could save hundreds of pounds of metal per house in areas where old-fashioned codes require vast and needless quantities of iron, steel, copper and lead. Simplified plumbing is cheaper for two reasons: it uses less metal, requires less labor.

3. Thickness and strength of concrete slabs engineered for local soil conditions will save cement and reinforcing steel. It is a waste of both materials to install over-strength slabs. The Southwest Research Institute has designed a new slab for unstable soils that overcome weaknesses of conventional slabs.

4. Some builders are discontinuing slab construction to save reinforcing steel, are shifting to precast concrete piers to support floor beams.

5. Basementless houses save materials and money.

6. Garages can be eliminated in *low-cost houses* to save money and materials. But space should be provided for a future garage or carport.

7. Rough-cut lumber for framing: nearly 25% can be saved by using framing lumber rough-cut on two sides.

through trial and error they know the cost of such houses and can estimate their profit. But they can't figure costs of new houses."

More continuous operations. Buyer, builder and subcontractor benefit from continuous, non-stop building operations. Builders can save money by buying their land far ahead, by long-term planning, high-speed building and by assuring subcontractors of steady work. Overhead per house will be reduced. Mass purchasing can bring savings, and production per man is higher when work is continuous. "Delays bring back luck" is a slogan to many builders.

Closer adherence to the mortgage pattern. When there are shifts in Government mortgage regulations, builders in the low-price market should shift their prices to take advantage of favorable rates. Those who shift first often make the sales.

Photos: Dean Vannice



Spraying bath tubs with the Navy's protective "cocoon" reduced Builder Fritz Burns' losses from 3½% to 1%, costs only \$1.50 per tub. Plastic coating peels off easily.

8. In most housing developments, the use of long, "super blocks" with fewer cross streets (as recommended by the Urban Land Institute) can save considerable amounts of metal and concrete by producing more usable land per lineal foot of utilities.

9. More careful location of house on lot can save materials in utilities, driveways and domestic sidewalks.

10. Water mains of asbestos cement can replace cast iron; polyethylene and other plastic tubing materials can replace some metal pipes.

11. Metal gutters, downspouts and steel lintels can be eliminated.

12. Most metal flashing can be eliminated. Nonmetallic materials can be used except for flashing over windows.

13. Plastic insect screens can replace metal screens.

14. Nonmetallic covered electric wiring (approved by the National Electric Code) should be used wherever possible.

15. Nonmetallic leads should also be used for telephones.

16. Low-voltage wiring save 5-10 lbs. of copper per house.

17. Nonmetallic ducts can be used in warm-air heating.

18. Efficient insulation cuts heat loss, saves fuel, permits a smaller heating system.

19. A low-pitched roof, with the underside of the roof also serving as finished ceiling, saves framing, nails, straps and ceiling materials.

20. Open floor plans save materials by reducing the number of partitions.

Trade secrets revealed

Jim Burke, San Antonio, does long-range planning, lets his own people and all his subcontractors know his plans to keep up their enthusiasm and their production. He has shifted from slab to concrete piers to save steel reinforcing, uses a 6-man crew (instead of 2 men) to do roof sheathing to speed work and reduce unit costs. He builds fast, because speed is essential to reduce overhead. By prefabbing roof trusses and exterior wall panels, field work goes faster, takes less supervision. He considers it wise to spend money to get speed.

Ned Cole, Architect-builder of Austin, Texas, believes it is more economical to prefabricate the inside of the house than the outside. He reduces costs and gives big-house luxury to small houses by using a truss roof that permits prefabricated interior walls, storage space, built-in cabinets for living room, bed rooms, kitchen and bath. "In many instances, storage walls cost no more than the old-fashioned closets they replace," says Cole. Plasterboard walls and ceilings go up faster when they don't have to be cut and fitted around partitions. Prefabricated storage walls must have sufficient tolerances so that workmen need not do precision tailoring. Houses should be built in two weeks each (after the slab is poured) if electricians and plumbers do their share of the work on time.

Wallace Johnson, Memphis, follows advertisements in Sunday newspapers in all cities where he builds to keep account of apartment and house vacancies. He plans his houses so that all floor joists are the same length and he cuts them by the carload. He can shift room arrangement, getting several floor layouts from each plan at no additional expense. He keeps an elaborate cost-analysis system that lets him know construction cost and progress each day, runs a special school to teach his lead men how to operate the system. He keeps a loyal crew of men by such things as buying \$2,000 life insurance per man plus hospitalization after 6 months work.

Albert Balch is not Seattle's largest volume builder but tops the Seattle field in total dollar sales, gives much credit to his architects. He has watched public taste shift rapidly, tries to keep ahead with architect-designed houses. His basic construction theory is to use as much machinery as possible to overcome Seattle's high labor rates. He owns a wide variety of bulldozers, land-clearing and grading equipment, does his own concrete work. He usually builds a temporary road immediately behind his houses to let in lumber and equipment trucks. He has "all kinds of saws," believes sawing in front of a house is more economical than mill sawing. He is a mass buyer of everything he purchases, getting car load lots and enormous quantities of Swedish and Finnish doors that come by ship to Seattle.

Dick Hughes, Pampa, Texas builds in several west Texas communities, believes in getting in and out of towns fast to keep overhead low, travels fast himself with his own airplane. He has no subcontractors, operates through 22 corporations. His staff architect spends considerable time listening to prospective

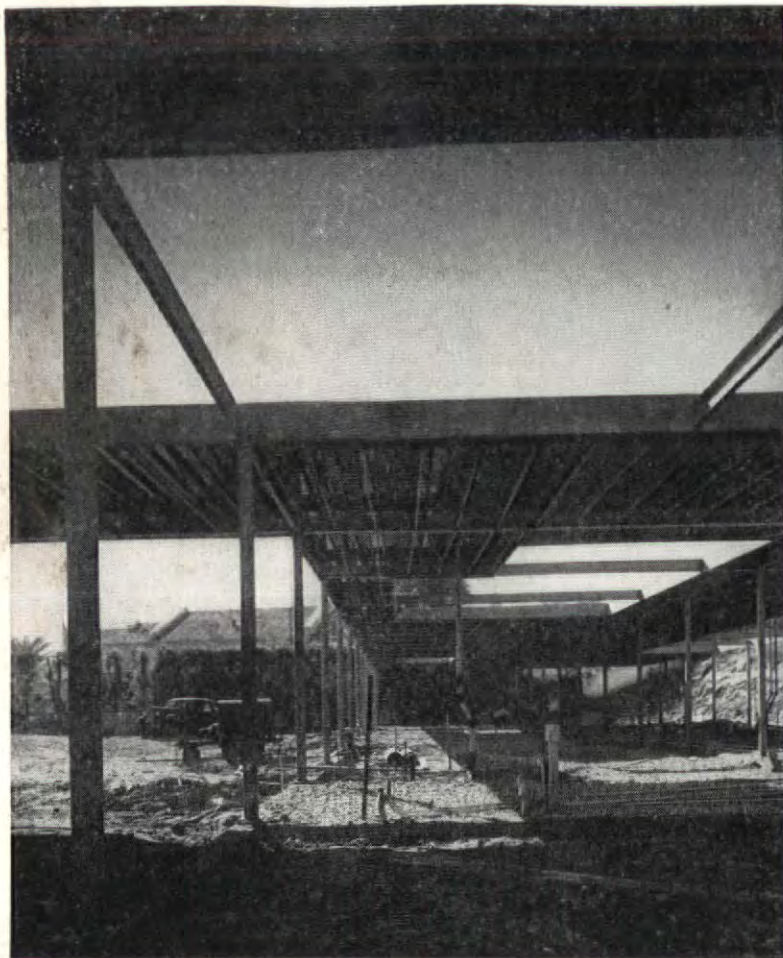
buyers' comments on Hughes' houses. He is a great believer in expandable houses. Hughes traveled all over the Southwest talking with builders about their cost systems, then installed one that divides total construction time by hours and lets him know each day where he stands. Hughes uses both newspapers and radio for advertising, frequently buys an interest in a radio station where he is building. His greatest accomplishment next year will be to put a \$1,000 combination heater-air conditioner in his \$10,000 houses. It will have 150,000 BTU heater capacity and 3 tons of cooling. It does not waste water, reuses it through a condenser. "In five years a house in the Southwest that has no air conditioning will be obsolete," says Hughes.

Albert LaPierre, Seattle, builds \$5,999 and \$9,999 houses which are the talk of the West Coast. He has brought business methods to house building, has all his own equipment including the latest earth-moving machines, does purchasing by car-load lots, is always looking for new ways and new materials. He has bought 8,000 Swedish and Finnish slab doors for which he pays \$6 and \$7, claims they are virtually warp-proof due to their double-honey comb system of internal bracing. For a full account of LaPierre's methods, see page 200.

Franklin Burns, Denver, believes that continuity is the basis of an economic operation. "Too many builders put up 25 or 50 houses, then stop operations while they find new land, then gradually get into production again. That is an expensive way to build," he says. In Denver his customers don't like slabs, are willing to pay \$1,000 more for a house with a basement. Like other big builders, Burns has a cost system that keeps him constantly informed about progress of each house, makes bottlenecks stand out immediately, points out trouble spots.

Vernon Smith, Dallas, reported that plumbing prices dropped \$150 per house overnight when the "Dick Hughes plumbing law" went into effect in Texas, which permitted master plumbers from one area to bid on jobs in another town. He keeps labor costs 20¢ per hour less than the average Dallas builder by hiring men who specialize in just one operation. He does considerable prefabbing in his millwork shop, saves about \$1.50 per door by fitting doors to frames in the shop.

Dave Slipher, of the Fritz Burns organization, Los Angeles, said he wanted to make it clear that because Burns had tried a form of prefabrication and given it up it did not mean that under other conditions or in other areas they might not return to it. The situation in Los Angeles today is such that big builders can subcontract many items cheaper than they can do them in their own shops. Many big subcontractors are hungry for work, adjust their prices to get business. Slipher's firm developed the bathtub cocoon process reported earlier in this article, gets other savings by mass purchasing, volume building. Fritz Burns also has an efficient cost system, believes that it is the basis for progress because a builder who doesn't know his costs will not dare to change his models for better ones. Burns' 1952 houses will be more contemporary in design than before.



Steel frame and roof deck seen from east

PREVIEW OF THE

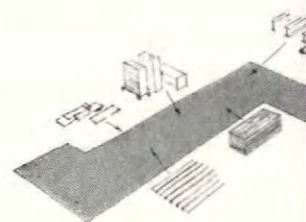
under a steel umbrella—a further step toward the

RAPHAEL S. SORIANO, Architect and Builder
LOCATION: Bel Air, Los Angeles, Calif.

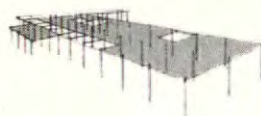
Perhaps more clearly than any other house in America, this "experimental" building by Architect Raphael Soriano demonstrates three major lines of advance in U.S. architecture and building:

1. This is an assembled house.

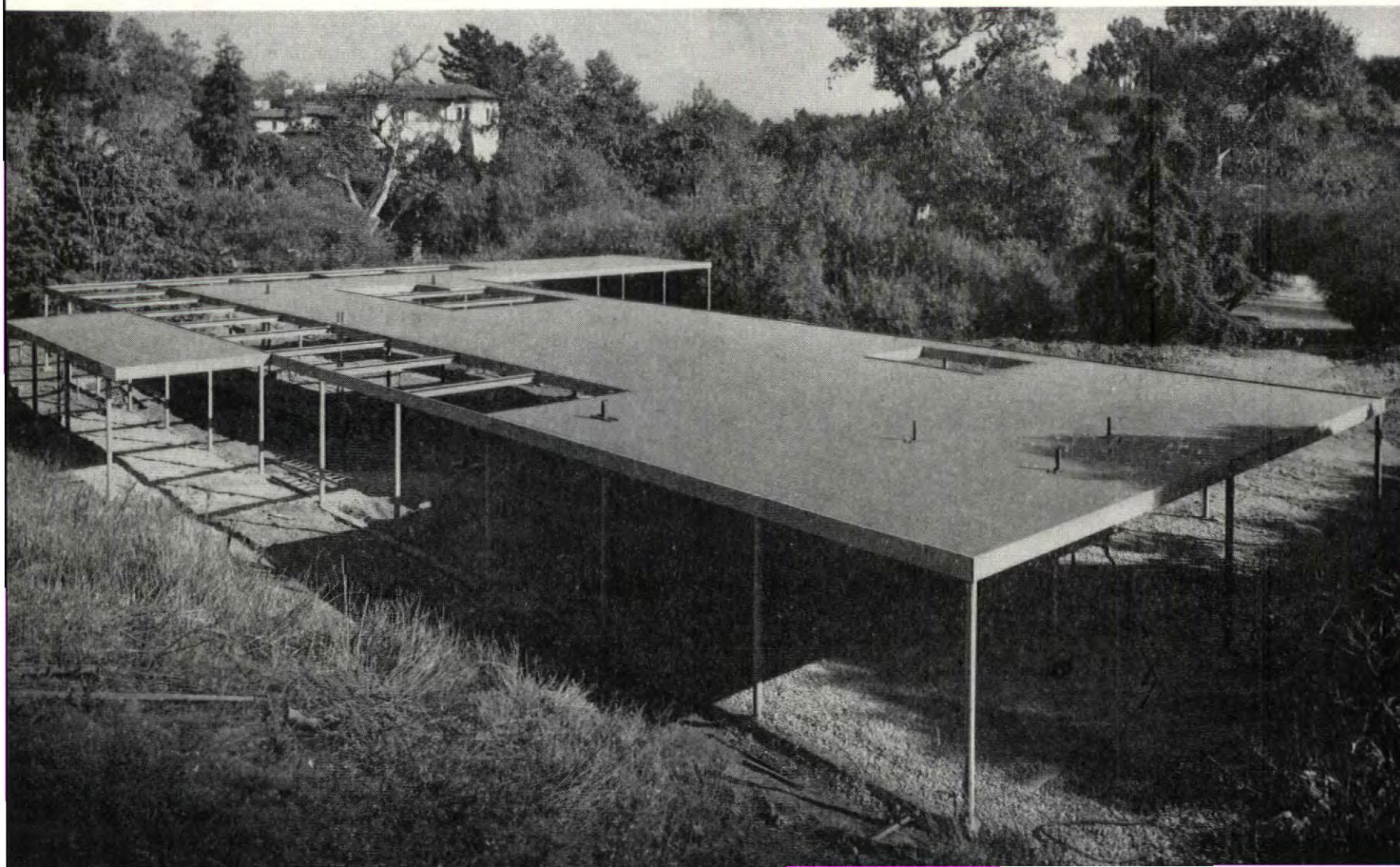
It was assembled out of prefabricated industrial parts—steel sections, storage walls, glass panels and sheets of corrugated plastic, among others. Except for the floor slab, almost every part was factory-built and trucked to the site ready-fitted for quick assembly.



2. This is a flexible house. All partitions (except those around toilets) can be moved around and regrouped as easily as furniture, to meet changing needs and conditions. The "partitions" are created solely with storage walls that were



Photos: Julius Shulman



FUTURE

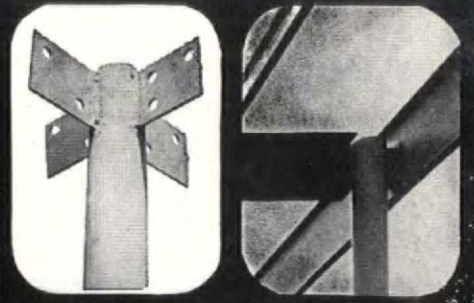
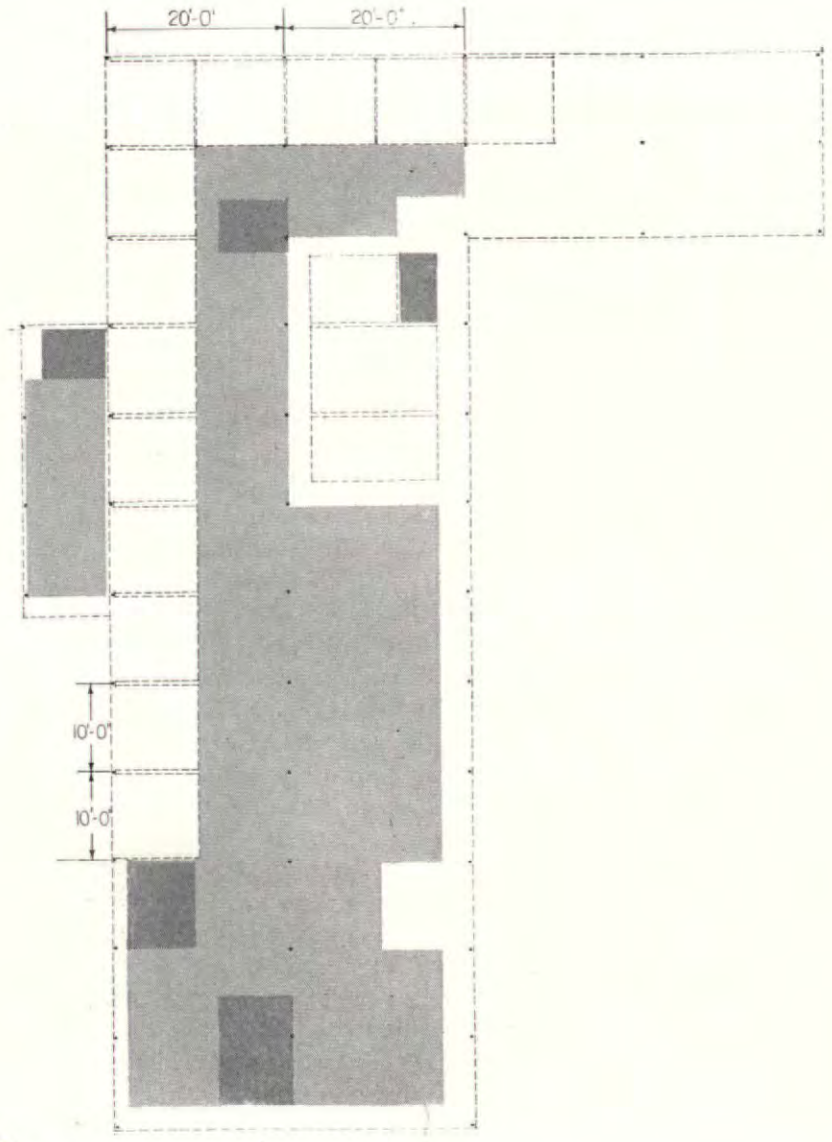
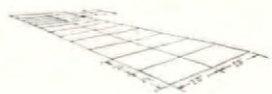
Experimental house is a flexible space

industrialization of home building

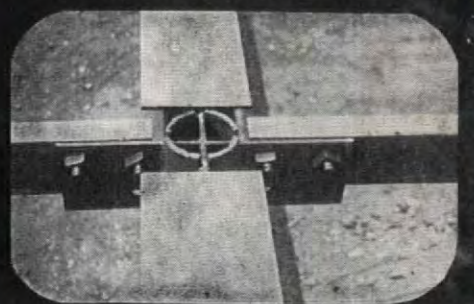
rolled into the house on dollies after the floor and ceiling had been finished.

3. This house is modular in design. Its 10' x 20' structural steel bays are just as important visually as they are physically. The pattern of the lally columns at regular intervals gives rhythm to the architecture, besides making possible the standardization of parts and the flexibility of plan.

Today these three features—industrialization, flexibility and modular order—are found only in a handful of custom-designed houses. Ten years from now they may well be found in half the houses in the U.S.—and the home building industry will be able to point to higher quality, lower costs and better living as a result. If this prophecy proves accurate, then Architect Soriano's house for Alexandra Curtis is a preview of the future, well worth studying by all those whose plans are big, long-range and bold.



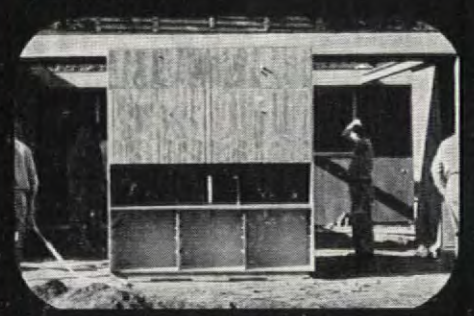
Erection of columns, I-beams and channels took 4 men and crane operator a total of



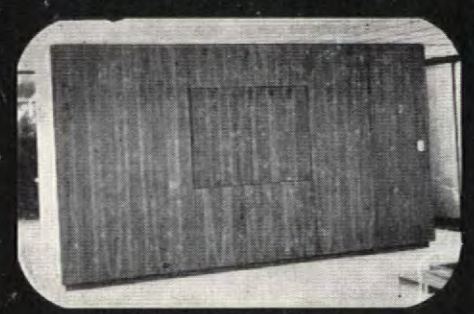
8-hours. Complete frame was bolted. Facia channels were added later.



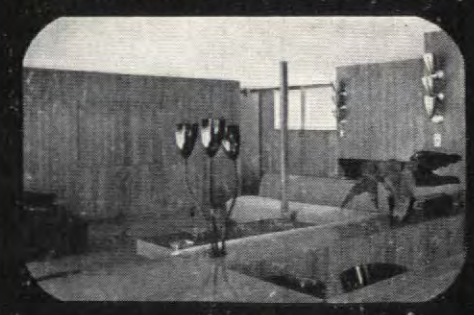
Complete steel deck was erected in 10-hours by 2 welders.



Prefabricated storage walls were rolled in on dollies.



Storage walls were designed in great variety of sizes and types within building module.



All storage units are in place. House is now complete (see next page).





Photos: Julius Shulman

Dark blue-gray steel facias, canary yellow columns and blue corrugated plastic screens (seen in the rear, to close off carport) are testimony to Soriano's excellent color sense

Steel umbrella

The first thing Architect Soriano did when he started out on his experiment was to order a great many industrial parts from a great many different factories. He ordered 49 $3\frac{1}{2}$ " lally columns, 8' long; 32 6" I-beams, 20' long; some 4" channels and 4,500 sq. ft. of $1\frac{1}{2}$ " deep, 18 gauge steel decking. He also ordered about \$3,500 worth of storage walls, about \$1,300 worth of glass, some sheets of corrugated plastic, of plywood, of gypsum board, and of $\frac{1}{2}$ " thick insulating cork. These items, together with all the other odds and ends that go into a building, were scheduled to arrive on the site in a steady flow.

This flow started the moment the column footings were in place. First to go up was the steel frame—lally columns, I-beams and channels. Four men and one crane operator put it up in 8 hrs. Next came the steel decking; two welders had it in place in 10 hrs. It took exactly 18 hrs. to put up a 4,500 sq. ft. steel umbrella—and thus give the other trades a protected place to work.

Facia channels (which had to be welded in place with great precision to assure a trim building silhouette) took longest of all to put up: a total of 76 man-hours were spent to do a perfect job. But while the facias were being welded in place, other men were busy pouring the floor slab with its electric conduits, glass fiber insulation and electric radiant heating system; and when the slab had been topped off with a $\frac{3}{16}$ " layer of cork, and the ceilings had been finished in gypsum board, the stage was set for the next major phase of the experiment.

Walls on wheels

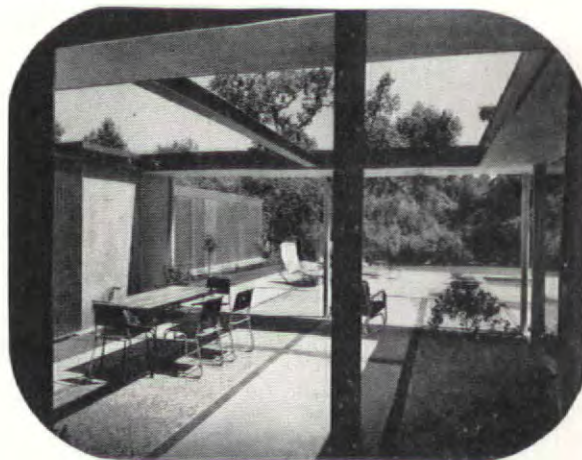
The next phase was to roll in the walls. Up to that point, the only fixed partitions in the house were those thrown around six toilets and bathrooms. They were not load-bearing, since the modular frame (together with footings and roof) had been designed to resist all stresses—including seismic and wind loads. The storage walls that now came in on dollies would not hold up any part of the structure, could (in theory) be set up anywhere to create the desired space separation, and rearranged at will if and when the owners' requirements changed.

Before the storage walls were brought in, the house was in effect one large room. When they had been installed (on wood bases) Architect Soriano had a house clearly divided into a dozen distinct areas. It took him just a week to set up his rooms. Electric and telephone conduits were brought up out of the slab, connected to outlets in the storage units. And floor-to-ceiling (8') doors were hung on the storage walls wherever added privacy was desired.

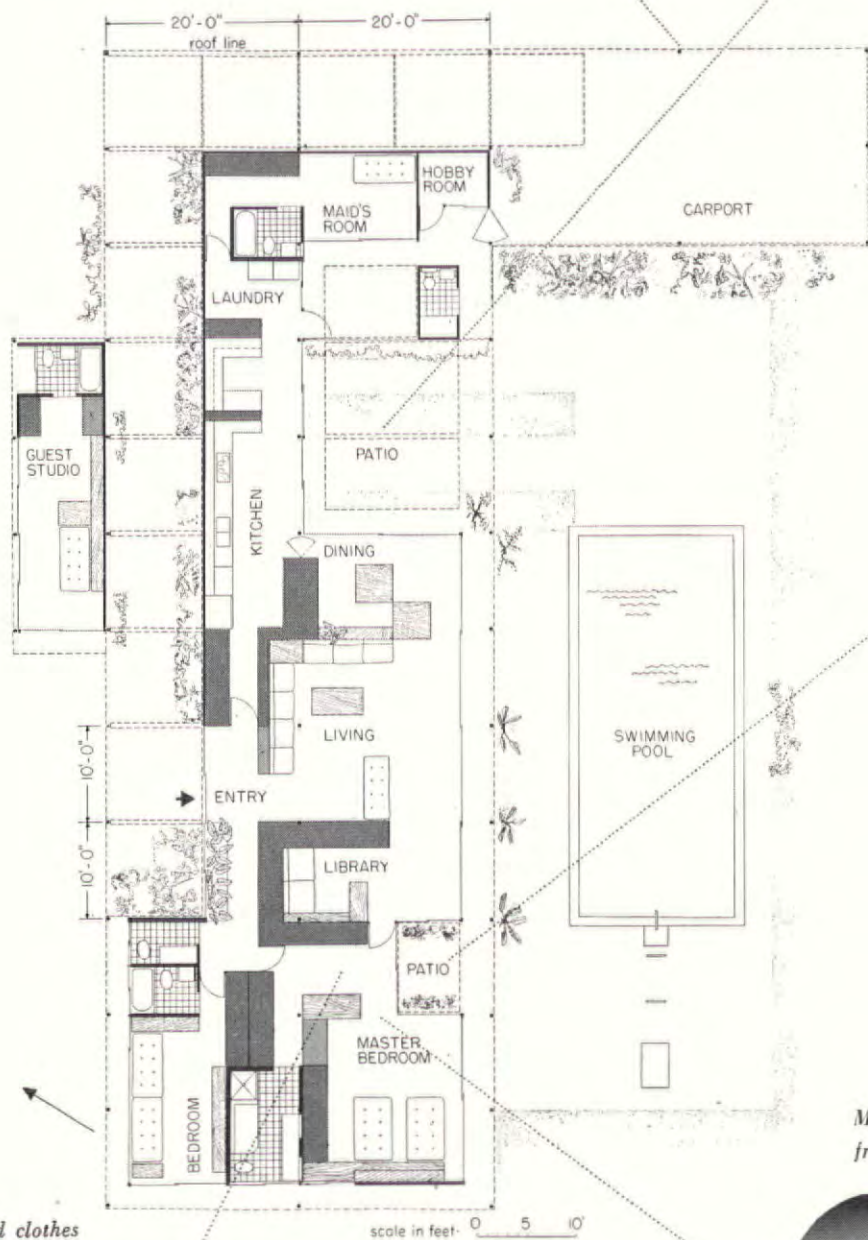
The rest of the job was simple: 8' x 10' sliding glass panels formed the exterior wall toward the garden side. They were framed in aluminum, and the installation of sliding frames cost \$2,500. Toward the entrance side, where more privacy was required, Soriano used smaller windows, closed off part of his house altogether with a light frame wall finished in insulating cork on plywood. To simplify waterproofing at window heads and roof soffits and to provide sun and glare protection, all exterior panels were set back from the facia line and thus protected by deep overhangs.



Carport at east end of house



Above two patios, Soriano omitted roof deck left I-beams to form trellis. This is dining patio.

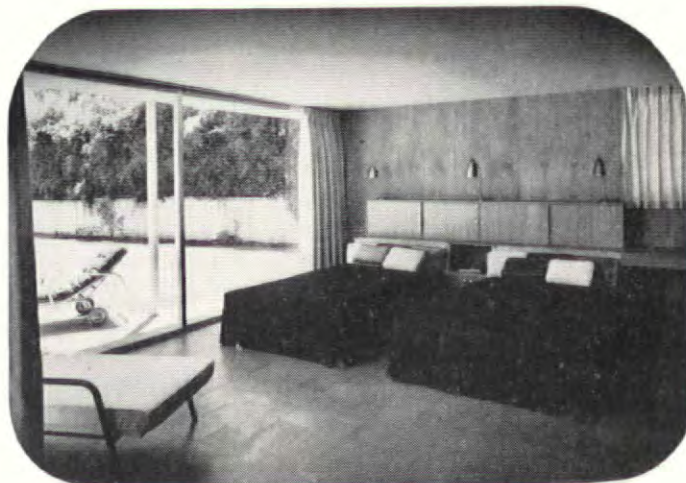


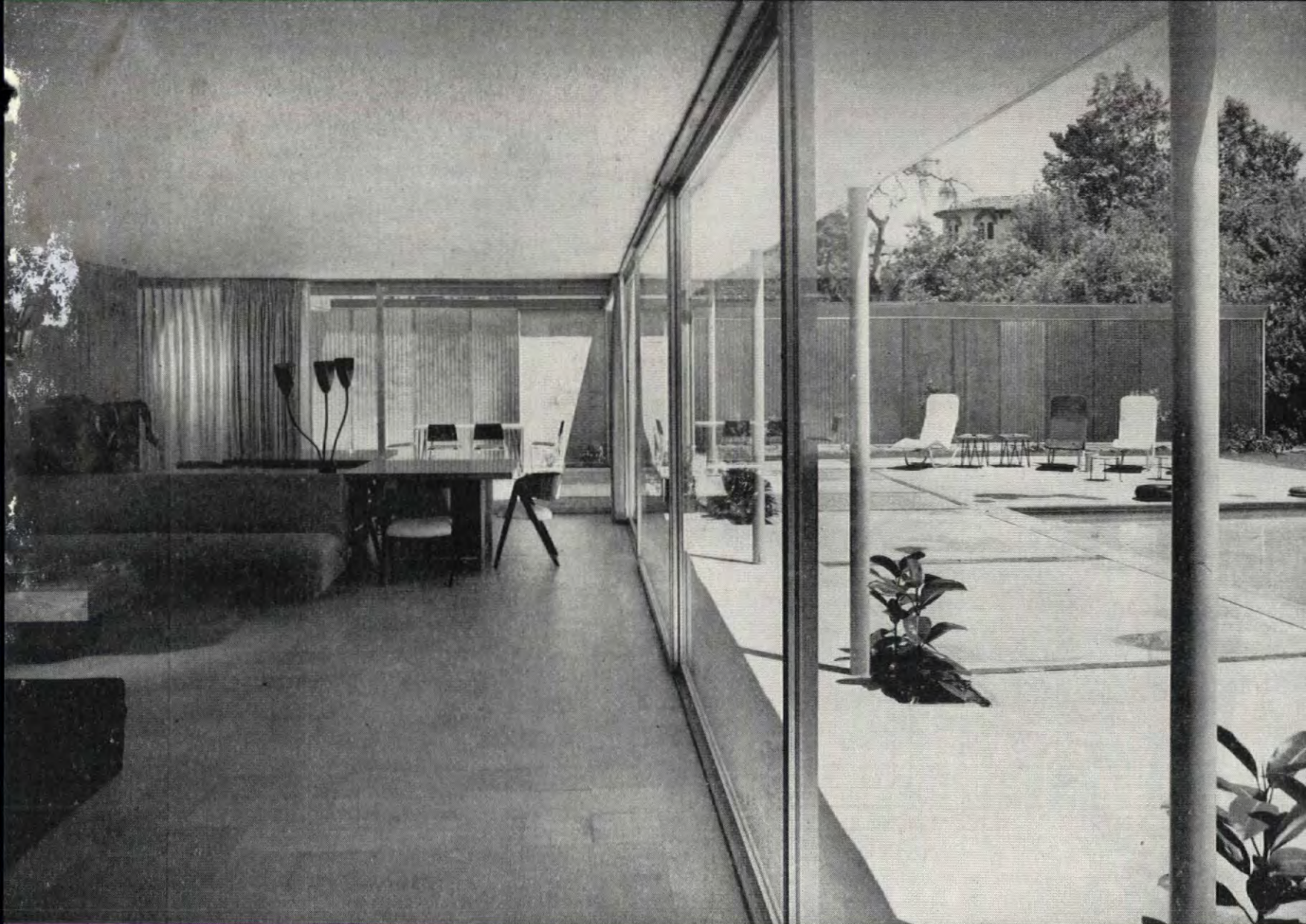
Smaller patio adjoins master bedroom

Dressing table and clothes storage in master bedroom.



Master bedroom has 8' x 10' sliding glass walls framed in aluminum.





Toward a new industry . . .

The kind of industrialized house Architect Soriano got could hardly have been produced in anything but steel. No other material will permit such working to close tolerances and such speed of erection. Actually, Soriano found that his steel frame complete with steel roof decking came to less than \$1 per sq. ft.—or 5% less than a similar lally-column structure supporting a more traditional wooden roof. But while this small, tangible saving might seem negligible, there are important *intangible* advantages to a steel house that cannot be measured in dollars and cents.

These are concerned with the increased per-man-hour efficiency of other trades working under the steel umbrella (which, as noted above, took only 18 hrs. to erect.) They are concerned, too, with the greater precision of steel—not only a practical asset where other parts of the building are prefabricated elsewhere and must fit perfectly when moved into place; but also an esthetic asset in the crisp and neat kind of architecture for which Soriano is famous. It is unfortunate that the advantages of steel construction are being driven home by men like Soriano and Eames (Sept. issue, '50) at the very time when steel in building is again becoming scarce; but since the points have been made so handsomely, architects and builders will remember them well when steel is again available.

. . . and toward a new flexibility

To the merchant builder, especially, Architect Raphael Soriano has a good many things to say. For while the merchant builder is

necessarily concerned with mass-production of buildings, he is also dealing with many hundreds of individual clients with different tastes and different needs. To him, therefore, the Curtis House is a demonstration of two factors once considered incompatible: Standardization and individual flexibility. From where Soriano sits, the house of the future will be a modular frame made up of standard parts, with movable walls that can be shifted as easily as furniture.

If that is the lesson of the Curtis House, Architect Soriano is still faced with one or two minor problems: First, he found that it was more practical to spray his ceiling with acoustic asbestos *after* the storage walls were in place—which tends, of course, to fix their location once and for all. Says Soriano: "We decided to bring cabinets in *first*—thus avoiding scratches and dents in the ceiling. With a plywood ceiling, this would not happen." Second, Soriano might have introduced a network of electric and telephone outlets throughout his floor slab to correspond to the modular grid—again an aid to future flexibility.

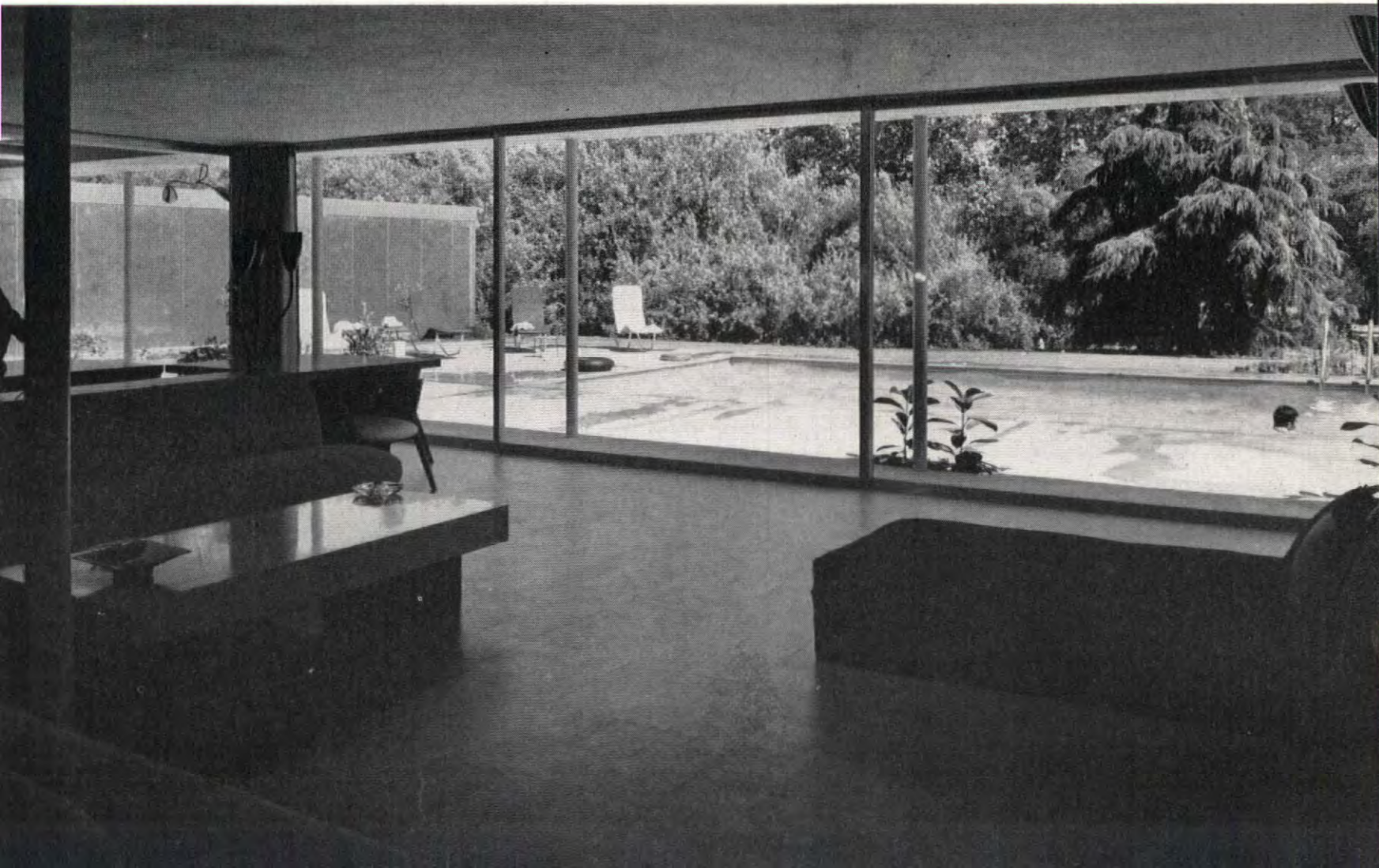
But apart from such minor refinements (which were omitted because the developed plan as it stood satisfied his client's program) the Curtis House is a remarkable demonstration of the most up-to-date building techniques. Admittedly, Soriano's umbrella is not as advanced as Buckminster Fuller's; but within the framework of American technology in 1951 (and, probably, for some years to come) the Curtis House is perhaps the finest industrial product that American home building can boast.

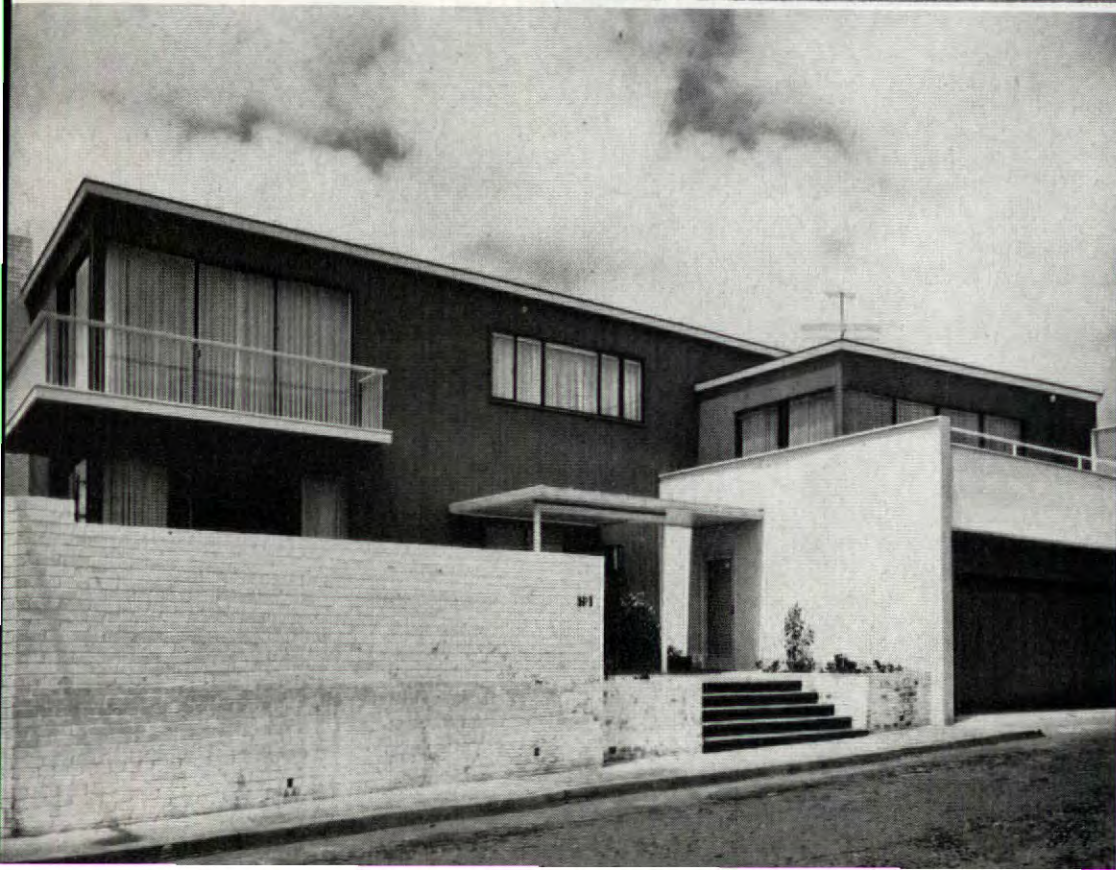
Pergola along entrance wall is covered with blue corrugated plastic sheets resting on I-beams. Planting beds are integral part of design, fit into structural module. Small guest house is at right. Wall panels along entrance side are faced with $\frac{1}{2}$ " insulating cork left in its natural color.



View across living room shows 8' x 10' sliding glass panels, swimming pool beyond. Carport with blue corrugated plastic screen is at left. Floor is of cork tile throughout, ceiling of acoustic asbestos sprayed on gypsum board.

Photos: Julius Shulman





The Sinton house is located on a corner lot, its small garden shielded by an 8' brick wall. Exterior finish is flush tongue-and-groove redwood, resawn and stained slate gray with diluted paint. Some wall areas were finished in cement plaster painted off-white to match color of brick walls. Balcony at left is outside master bedroom; play deck at right (over garage) adjoins children's playroom. Living room is shown in view above, dining room on opposite page.

LOCATION: San Francisco, Calif.

GARDNER A. DAILEY & ASSOCIATES, Architects

PETER SARTORIO, General Contractor

“What a very handsome conventional house,” said one critic after looking at Architect Gardner Dailey’s latest town house. *“What a very elegant house,”* said another. *Conventional—elegant—but entirely modern: these are the prime characteristics of this San Francisco residence by an architect who (according to still another observer) “does everything very well.”*

The way to do “everything very well” is to give everything a good deal of thought. Architect Dailey has given a good deal of thought to such problems as

- ▶ good plans for family living (realizing that privacy is as important to families as companionship, that “open, flowing spaces” are not always the answer;)
- ▶ unobtrusive backdrops for owners’ possessions (realizing that neutral rooms make fine settings especially for elaborate furnishings;)
- ▶ neat details—such as plain wall surfaces, simple and identical window openings, light sliding screens etc. (realizing that an elegant house is like an elegant suit: well-cut, well-proportioned and well-tailored;)
- ▶ and pleasant lighting (realizing that nothing is quite so dramatic and effective as the play of light and shade.)

No one of these is sufficient in itself to produce a good house. But employed together, by an artist of discrimination and taste, such devices as sound planning, plain building,

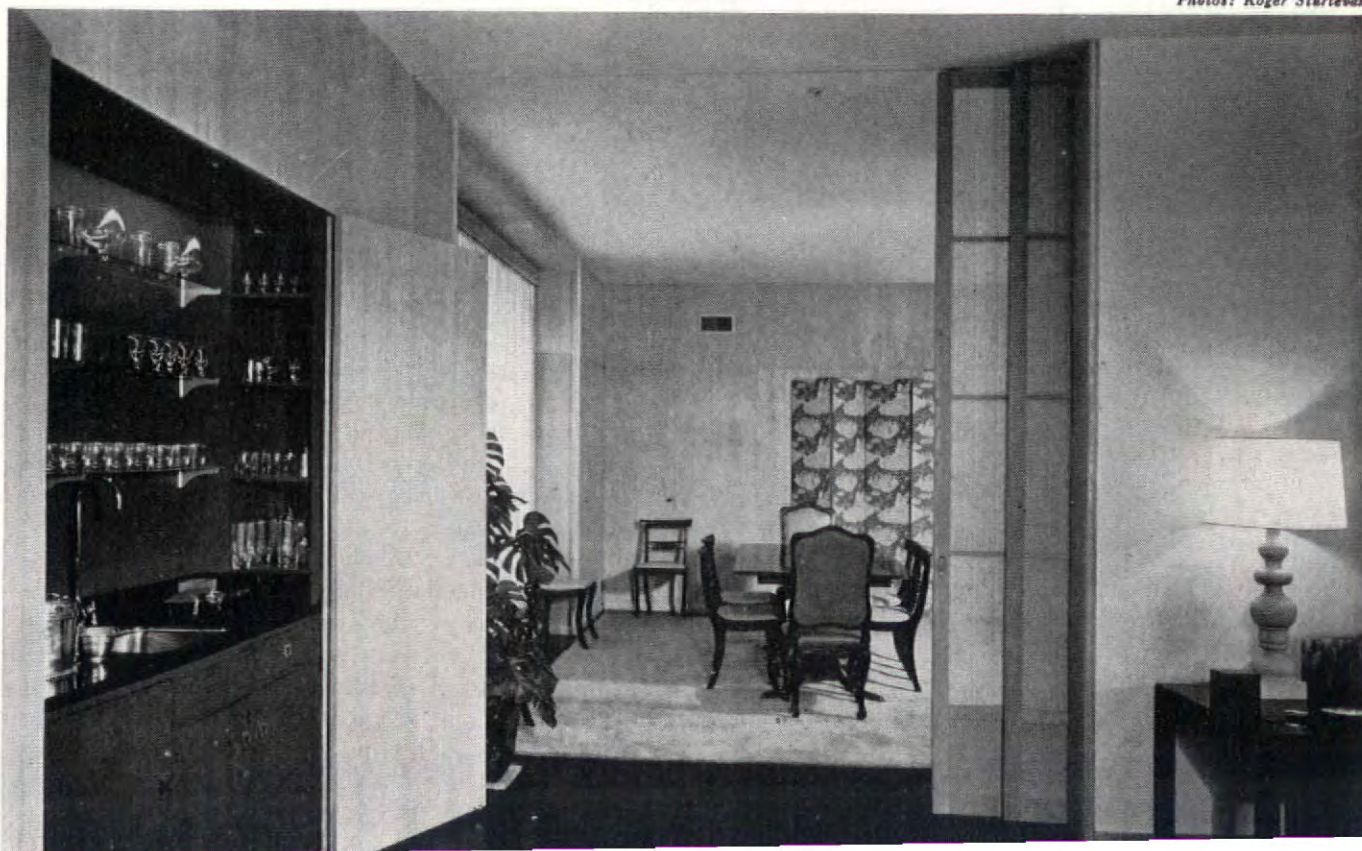
neat detailing and good lighting are likely to produce a job of unaffected elegance. That is exactly what happened here.

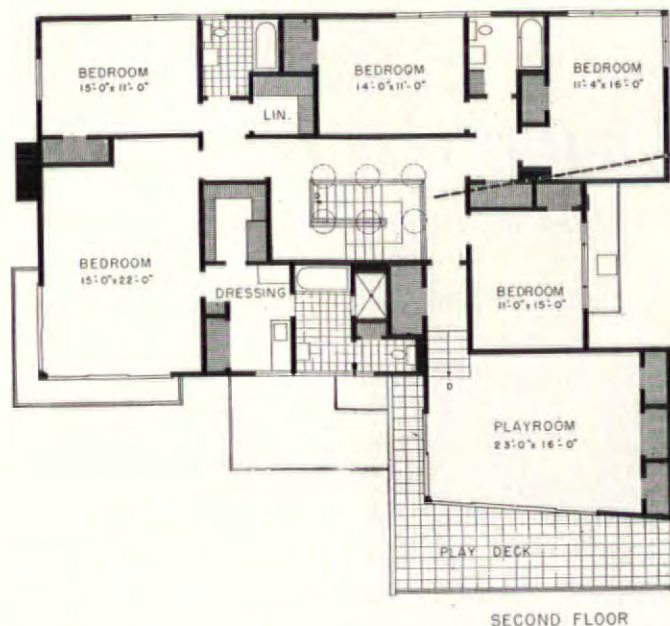
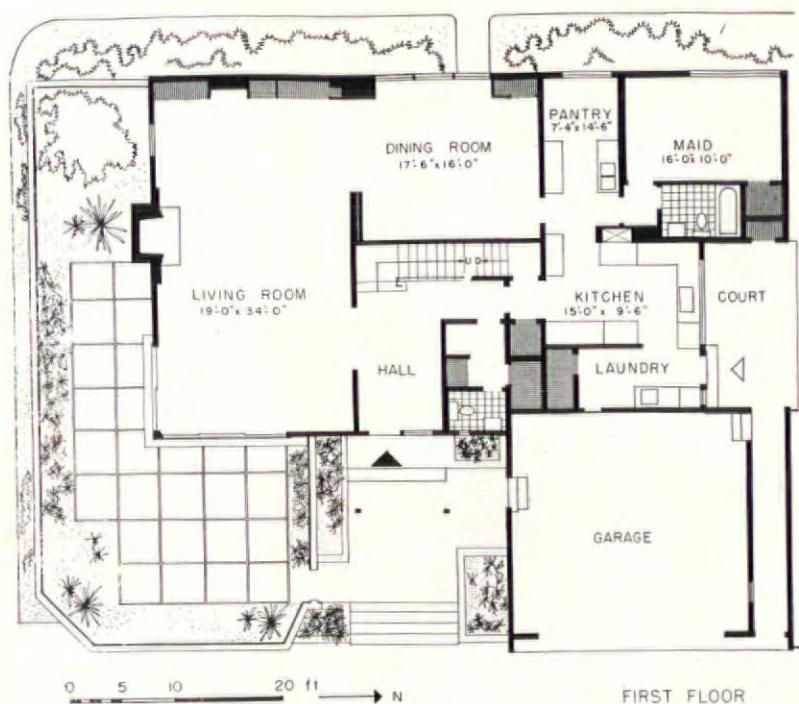
A family house with three children and a nurse badly needs doors. The Sinton house has about two dozen of them—flush panel doors that blend with the oak paneling; sliding screens (shojis) that respond to the slightest touch; radio-operated overhead garage doors that can be controlled from all the family cars; and steel-framed sliding glass panels that open the living areas to the decks, terraces and balconies.

Most of the interior doors open upon a central stair hall which (very traditionally) is the circulation-core of the rectangular plan. This stair hall is a stunning surprise: coming upon it in the very center of the house, most visitors would expect it to be dark or artificially lit. Instead, it is the most brilliant spot in the building; sunlight streams down into it through six plastic domes set into the roof—an installation which, according to Dailey, gives twice as much daylight as the usual skylight, is far less likely to wear out or leak.

Wherever you look, the detail is carefully thought out, unobtrusively executed. A light, L-shaped canopy protects the entrance door, is supported on a well-proportioned U-frame. Next to the entrance, a rectangular lighting fixture with a translucent glass reflecting back

Photos: Roger Sturtevant



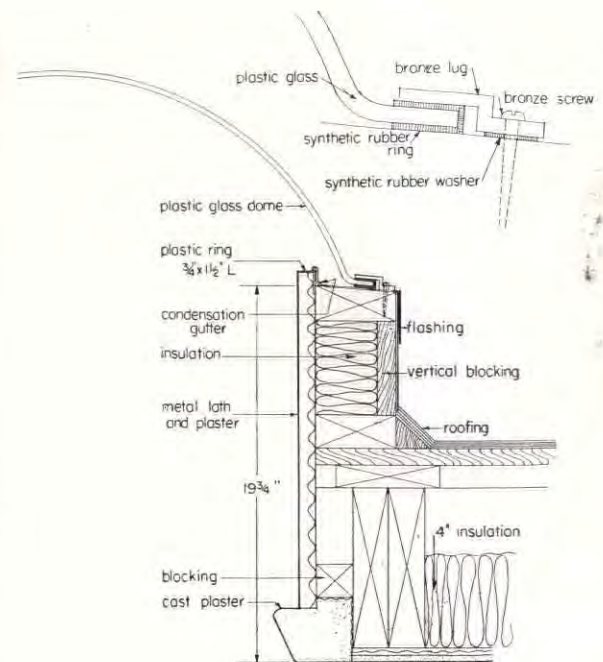


Plans show separate rooms compactly grouped around central stair hall. Note how Architect Dailey used bathrooms, storage walls, dressing rooms, etc., to insulate bedrooms against each other, further separated noisy playroom area by placing it a half-level below bedroom floor. Main entrance (right) shows neat canopy support, lighting fixture to one side. Latter has translucent glass reflecting back, serves also as lavatory window. Picture below shows sliding glass walls of living room, cantilevered balcony above.

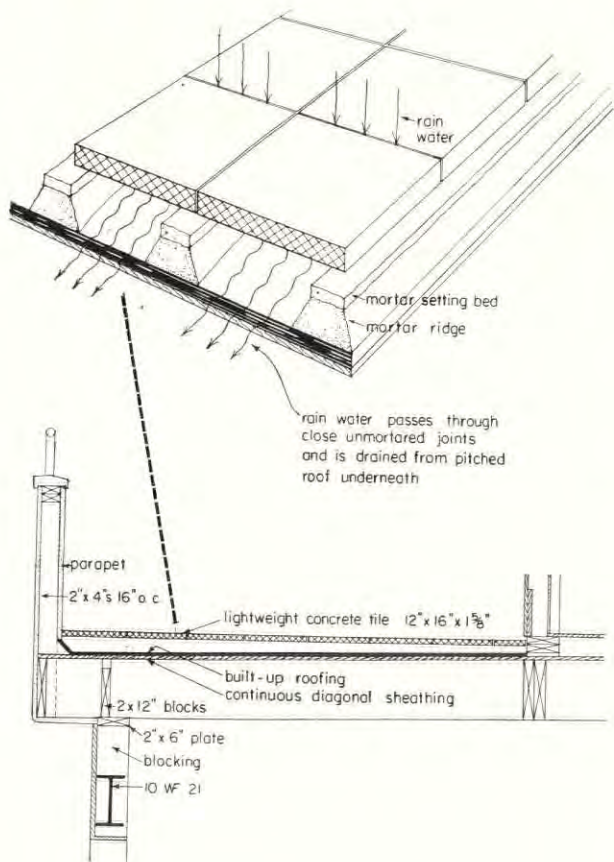


serves also as the lavatory window. Plywood paneling throughout the house has been smoothly welded together into plain, flat surfaces. Railings around balcony and stairs are supported on slim rods closely spaced—a refreshingly traditional solution to a problem that has spawned some of the most tortured and desperately “original” details in recent years. And the floor of the play deck (see detail) is a simple take-off from traditional Italian practice: concrete tiles set on mortar strips, with joints left open to permit the rain water to drain off to the actual roofing surface underneath.

Architect Dailey believes that modern architecture is beginning to settle down, will rediscover many devices tossed out in its first revolutionary exuberance. He is sure there is an art in the correct placing of a rectangular window in a plain wall surface; an art in creating a simple rhythm of identical windows, identical panels or identical cabinets; and an art in letting proportion, scale, elegant materials and natural light speak for you—without seeking dramatic and far-fetched effects. The Sinton house is a statement of Dailey's belief—and it is as good an argument for quiet and elegant distinction as the finest suit made in Saville Row.



Six plastic domes brilliantly light central stair hall, provide visual excitement in a part of house generally found to be dark and gloomy. Domes were set into synthetic rubber ring, held down with bronze lugs. Dailey believes he got twice as much light through domes as he would have had from usual skylights.

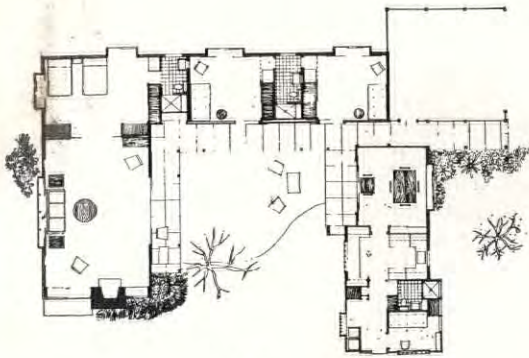


Detail of play deck (above) shows concrete tiles with open joints set on mortar ridges to permit rain water to drain off onto roofing surface. View of playroom is at right, shows play deck in the background.

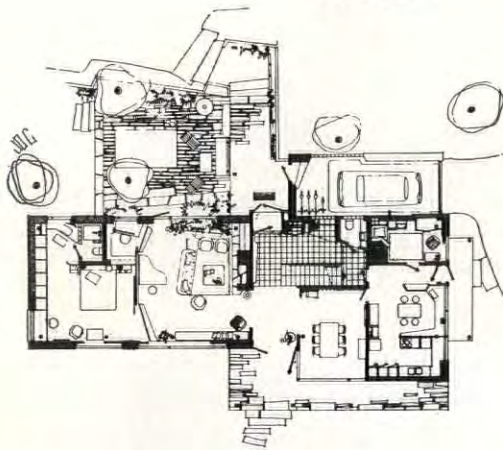


FOUR INFORMAL HOUSES

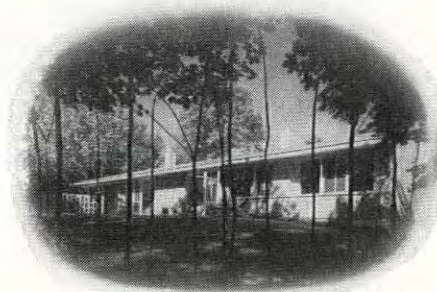
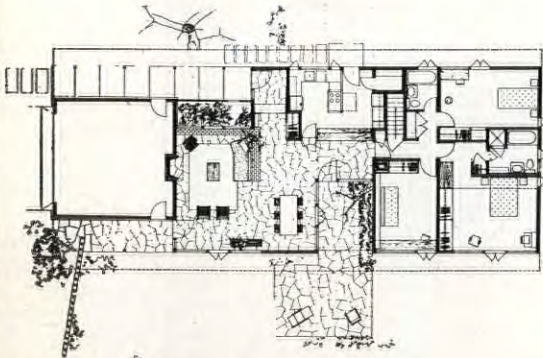
These four houses (described more fully on the next 10 pages) are located on a line 9,800 miles long that stretches almost half way around the earth from the tropics to the frozen north.



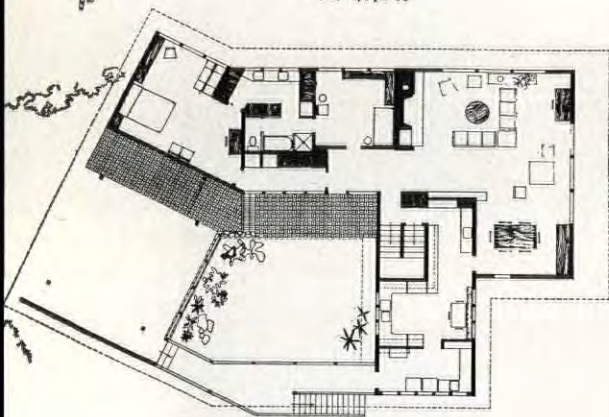
At the one end—in **Honolulu**—stands Architect **Vladimir Ossipoff's** light frame-and-glass building designed for a tropical climate and for year-round outdoor living in the mild Pacific breezes . . .



. . . at the other end—in **Kuusisaari, Finland**—stands Architect **Aarne Ervi's** own stone-walled house designed to keep out the cold coming down from the arctic circle . . .



. . . and between these extremes are two houses on the North American continent: Architect **Hugh Stubbins's** suburban residence in **Brookline, Mass.** . . .



. . . and Architect **Pietro Belluschi's** many-gabled house in **Portland, Ore.**

These four houses are half a world apart—geographically, climatically, culturally—and yet they are quite obviously brothers under the skin. They show the same unaffected way of building and of living; a way that is becoming increasingly popular all over the world. What exactly is this way of building? What are some of its characteristics?



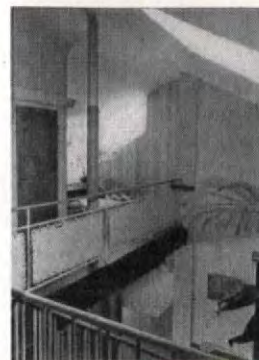
The most important is a general **air of informality**, achieved with **softer and more irregular architectural forms** (of the kind you tend to get with pitched roofs)

and achieved, also, with **traditional, local materials**.

Certain **handicraft motifs** are also used, especially in details. For example, Architect Ossipoff likes to use Japanese screens . . .

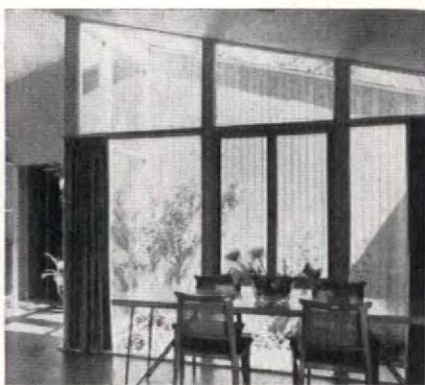


. . . Architects Stubbins and Ervi wrap their lally columns in rope or bamboo (to give them a softer "feel") and in the woodlands of the American Northwest, Architect Belluschi exploits wood and wood grain in all its varieties throughout his surface finishes.



Characteristic, too, is the **casual grouping of furniture** in the rooms, and the occasional use of traditional chairs and tables (often designs of peasant origin).

And, finally, these houses show a high degree of informality in their relationship to their natural setting. All four are planned around **garden courts** . . .



Photos: Roger Sturtevant; Honolulu Advertiser Photo; Ezra Stoller—Pictori; Nonsiainen; Kuvalpelvelu; FotoRoos; R. Wenham

. . . and the houses seem almost to have **grown out of the landscape** in which they were built (see opposite).

Enough house architecture in this manner is now being produced all over the world to indicate a very powerful trend. Within that trend there are many differences in emphasis, ranging all the way from Stubbins' and Belluschi's sophisticated precision to Ervi's romantic naturalism. But the underlying attitude is very similar; and, as the pictures on the following pages show, it produces a kind of building that is full of life and full of charm.



Roger Sturtevant

HILLTOP HOUSE CENTERED ON A COURT

is finished in the neat wood-building tradition of the American Northwest

PIETRO BELLUSCHI, Architect

J. C. ANDERSON, General Contractor

There is something very wonderful about centering a house on a court. The Romans knew it, the builders of the Middle Ages knew it, and Architect Pietro Belluschi knows it. A court does this for you: It gives you a small-scale landscape, a small-scale view, a private place in the sun that contrasts pleasantly with distant views and with the drama of the surrounding hills and valleys.

In the Moore House, Architect Belluschi has produced a pleasantly rambling building that makes the most of a tough hillside setting. Yet there is no false romanticism about it: His trim and smooth wood detailing is as elegant and neat as a fine piece of cabinet-work. His windows are set almost flush into the walls, and the edges of his shingled roofs are pared down to the slimmest possible lines. And though the plan appears somewhat angular, both exterior massing and interior spaces are exceedingly simple and plain.

Belluschi's chief problem was to catch the best possible views of distant mountain ranges. The L-shaped living room was designed to do just that. It is reached from the carport entrance through a covered passage along one side of the garden court. Having entered the house through this rather devious passage, a visitor is suddenly confronted by the drama of a glass-walled living area on the top of a little hill; and a strongly directional ceiling plane further emphasizes that drama.

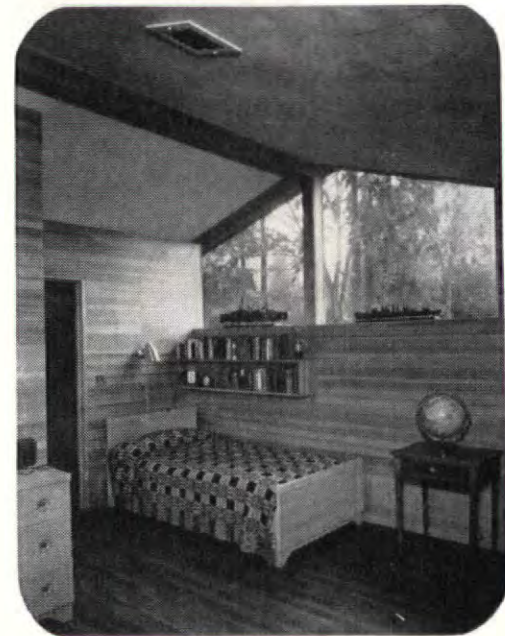
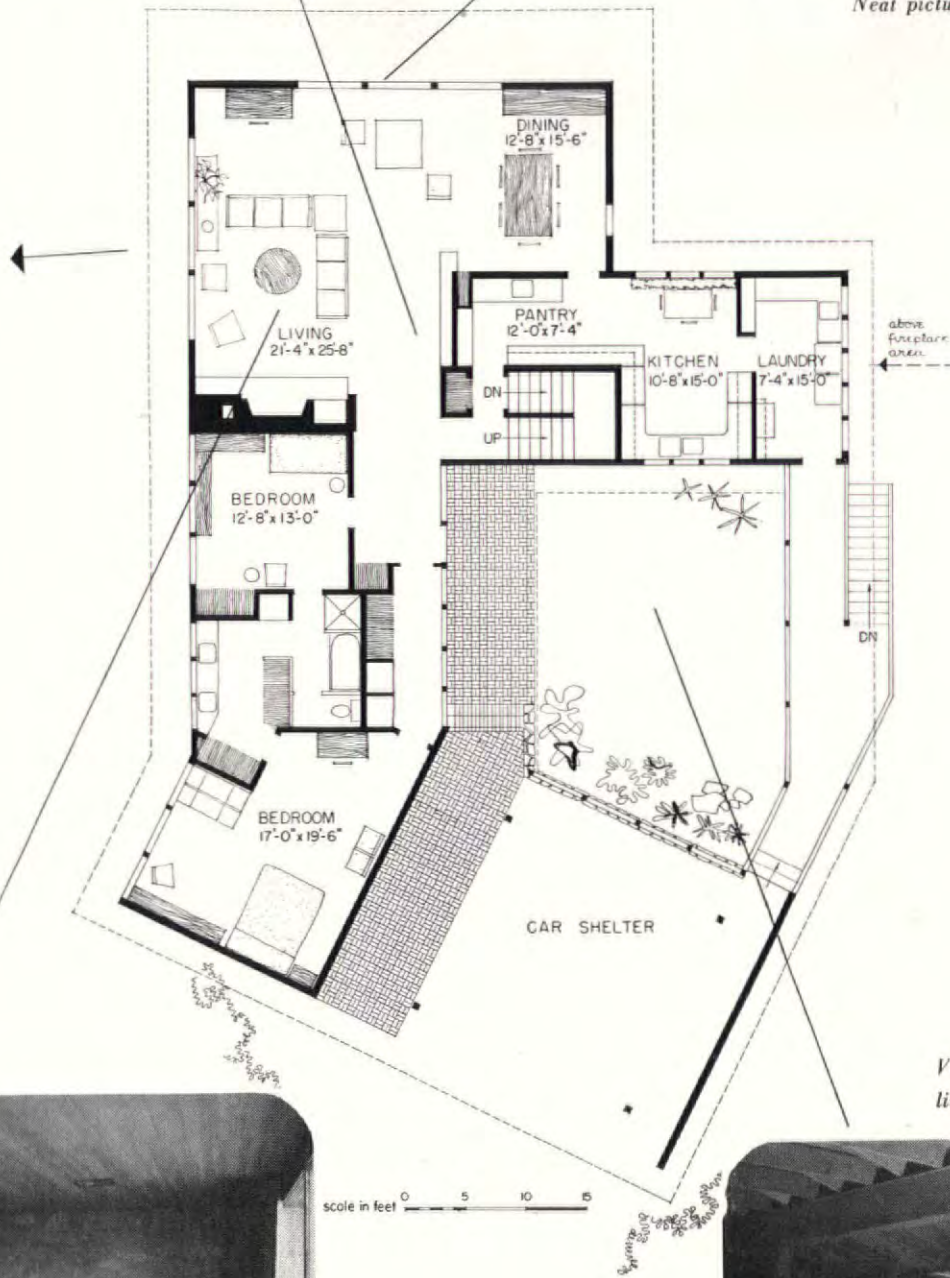
Architect Belluschi has made a special effort to turn bath and kitchen into something more than mere utilities. His bath is almost lavish: a two-room affair divided by a low closet and several screen-like partitions. His kitchen is spacious, colorful, its cabinets finished in wood veneers, the views through its windows exciting. This is a house for very good living.



View of living room and windows overlooking valley and distant mountains.



Neat picture window is set flush into eastern gable end



Upstairs bedroom over living room faces west and north.



Living room has large stone fireplace. Garden court is seen at left.



View from carport into garden court. Entrance to living area is to left, at end of covered passage.



Photos: R. Wenkam

U-SHAPED PLAN gives every room complete cross-ventilation

VLADIMIR OSSIPOFF, Architect
YAICHI SATO, General Contractor

This court-centered house was built right after the war on top of Maunalani Heights overlooking Honolulu, 1,000' above sea level. Very strong trade winds blow from the northeast, and at this elevation a house can be kept quite cool all year round. To make the best use of the trade winds, Architect Vladimir Ossipoff made his house only one room thick, introduced sliding windows on opposite sides of rooms to get complete cross-ventilation.

Actually, such ventilation is hardly needed during the winter months. Then the windows are kept closed, and circular vents drilled into the projecting window sills are opened to admit streams of cool air. A loose board with circular holes matching the vents can be slid back and forth to admit or shut off the cool air.

Throughout the house Architect Ossipoff has tried to recall

some of the Japanese motifs in building and decoration that are so common in the Islands. Doors are "shoji" type, windows are subdivided with thin mullion and muntin bars to suggest Japanese patterns. More organically Japanese in feeling is the handsome planting in the garden court: The spectacular trees (a local hardwood known as Koa) were on the site; but lawns, flower beds, paving have been painstakingly maintained by the owners who laid out their garden almost in miniature to give it a Japanese delicacy.

The house is of wood frame built on a cement floor slab. The exterior is redwood with a weathered finish, and the interior is largely of redwood plywood. The paving in the court is of local cinder brick, dark gray in color; and the roof is shingled. Architect Ossipoff believes that the cost today would be around \$12 per sq. ft.

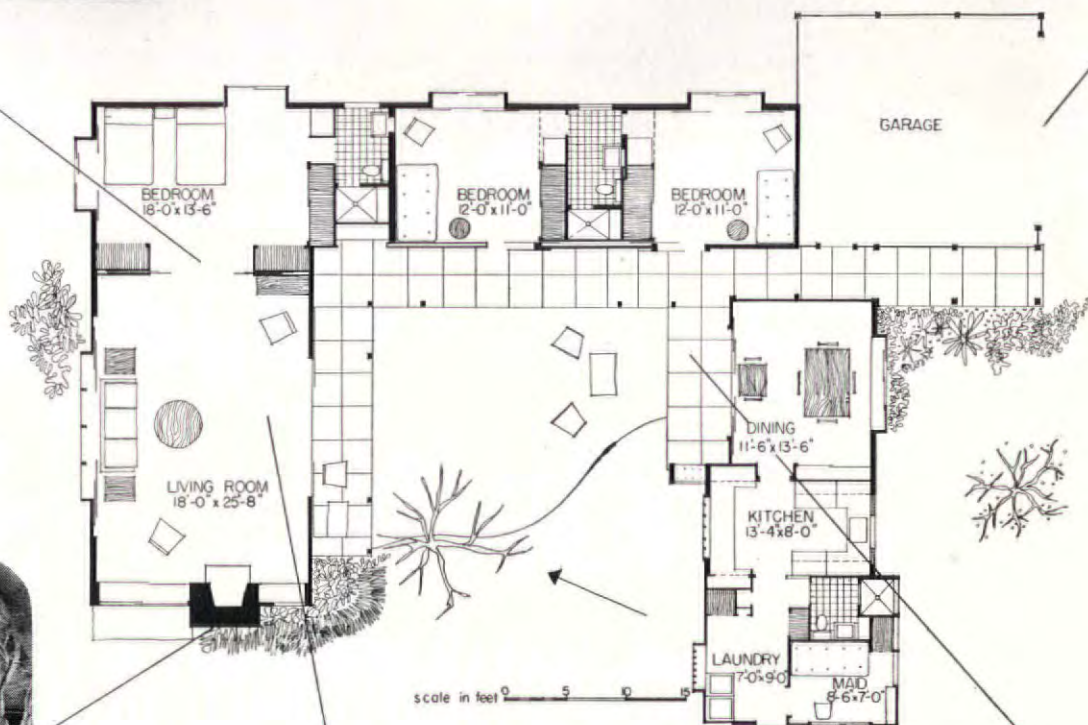


Master bedroom has sliding "shoji," opens into living area.

Main entrance is to the left of garage. Visitors pass through court before reaching living area.



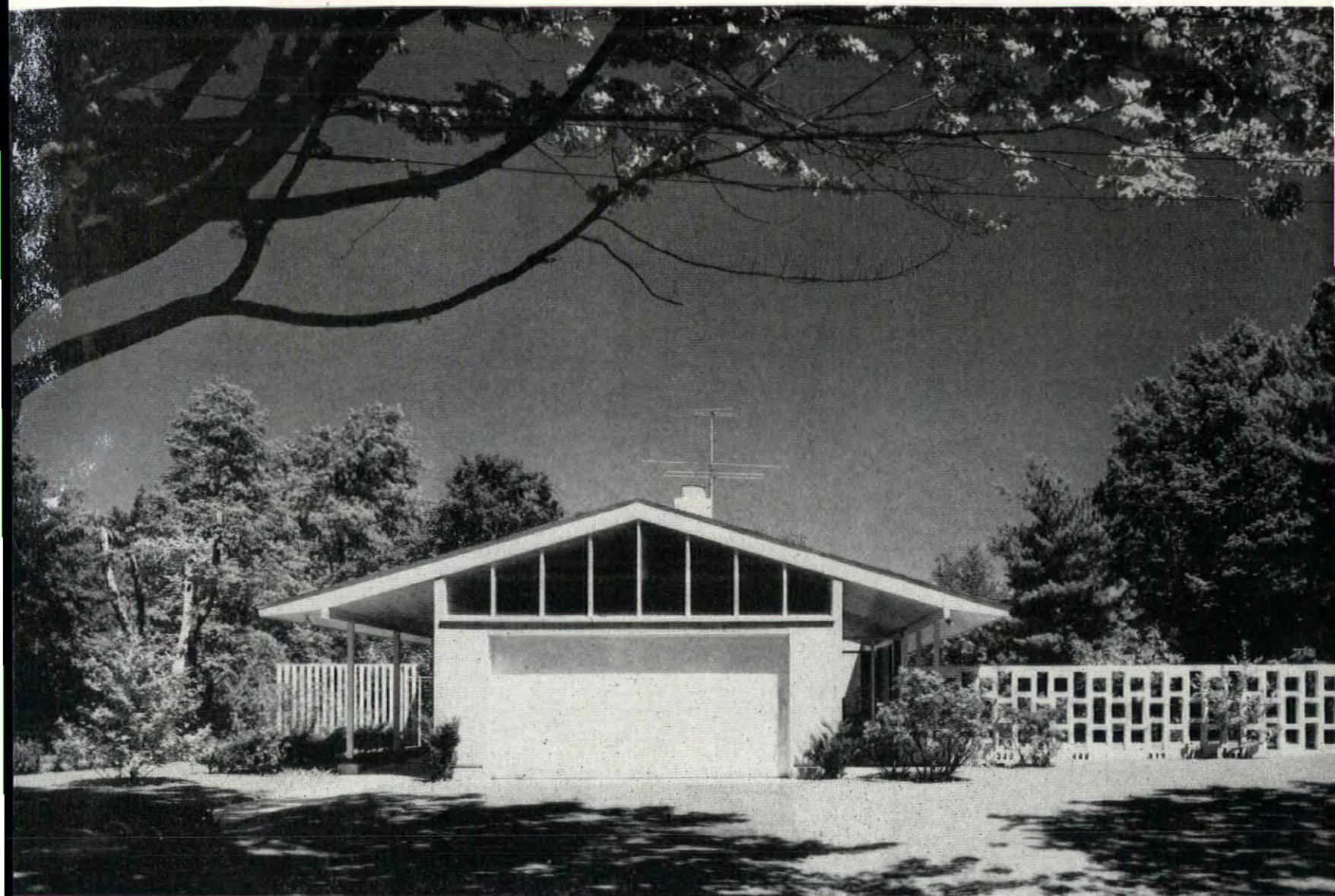
Gable end of living room roof with chimney. Note small-scale planting around house.



View into living room shows sliding screens and windows designed according to Japanese patterns.



Covered passage and main entrance in the rear. Dining room is at the right, part of service wing which also contains kitchen and maid's room.



Photos: Ezra Stoller-Pictor

MODERN VERSION OF LONG, SUBURBAN BUNGALOW of 1900's

substitutes garage for front porch, gains openness with privacy on a narrow lot

HUGH STUBBINS, JR., Architect
MRS. DAVID BARNES, Landscape Consultant
HANS TOBIASON, General Contractor

By translating the turn-of-the-century "bungalow" into a modern house, Architect Stubbins has transformed the kind of dwelling that the experts long have scorned—and that the people have equally loved.

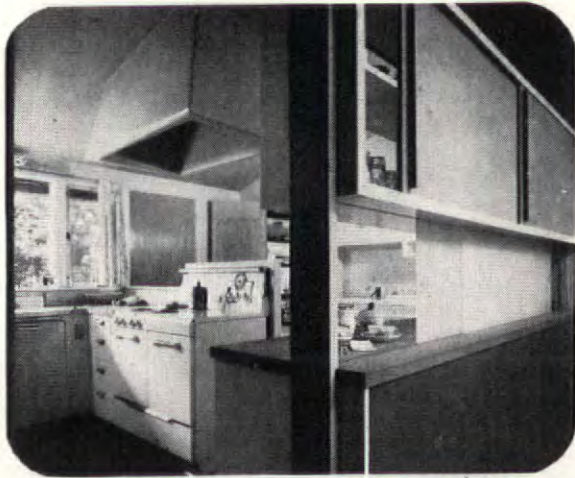
The "bungalow" was a long narrowish house on a deep narrow lot; its head or gable-end was to the street. The expert objection to it was that the bedrooms in the rear could be reached only by transversing the living space or a long dark hall; and again that most of the windows looked directly into those of the neighbors. The bungalow's popularity, despite all this, was based on the lower development costs and taxes of the shorter frontage and the cheap short-span framing made possible by the long house-rectangle with central hall.

Stubbins brilliantly retained the advantages, killed the objections.

In place of the front porch (the gregarious 1900's loved the street) he put a garage (as a barrier for the 1950's *against* the street). Yet Stubbins was too smart to offend staid Brookline with a "nubbin" garage out front. So he carried forward the full-width roof on posts which continued the side-wall line and produced a covered entrance on either side of modern architecture's most stately garage.

Again, instead of centering the house on the lot, Stubbins put it to one side, giving two of three bedrooms views across the lawn.

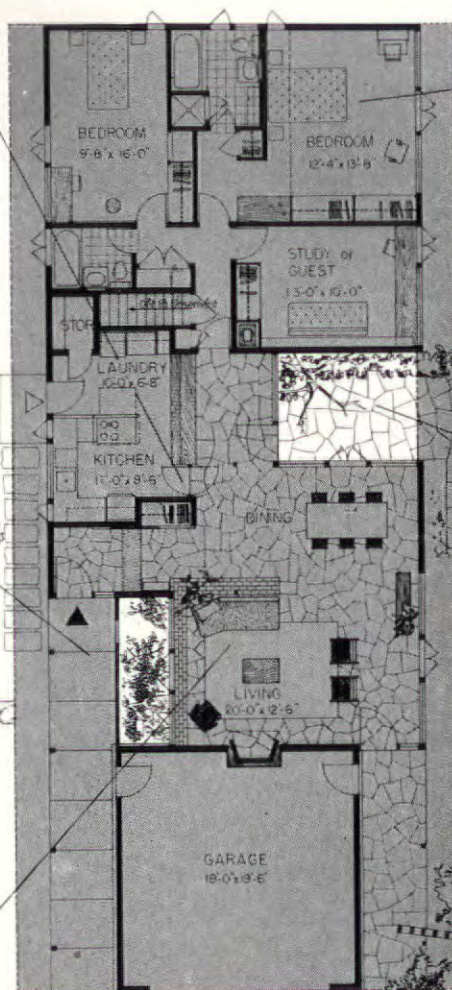
Cleverest trick of all was perhaps the pair of interior courts cut in through the roof. One of them, next to the entrance, shields the living room from the close neighbors with planting and obscure glass; the other, set between living room and bedrooms, lightens the once-dark bungalow passage, gives pro-



Kitchen (above) has pass-through counter toward 9' x 12' court which can be used for outdoor dining.



Master bedroom is shown at right, has its own bath.



Slot in roof (below) permits sunlight to reach small patio and living room.



Entrance (above) is on side of house. Corrugated glass screen hides smaller garden court seen from living room in picture below.



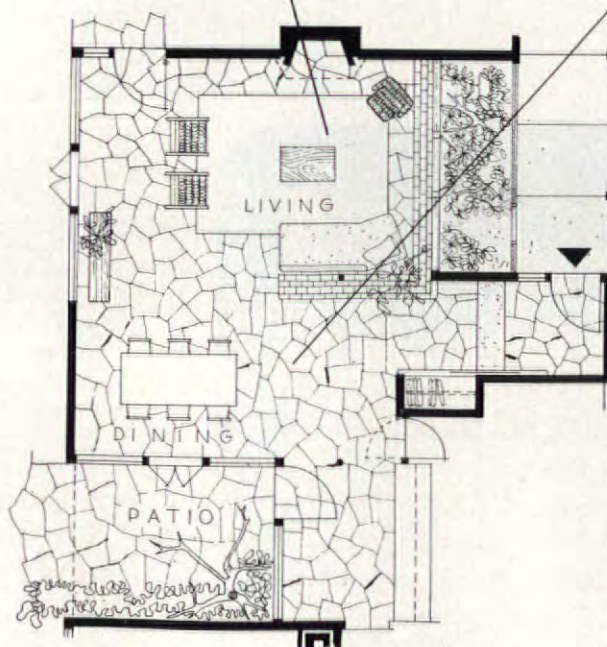
Plan shows garage facing street, rest of house arranged in daytime and nighttime zones separated by small patio and kitchen-core. Center ridge of pitched roof runs the long way of the plan.



Photos: Eava Stoller—Pictor

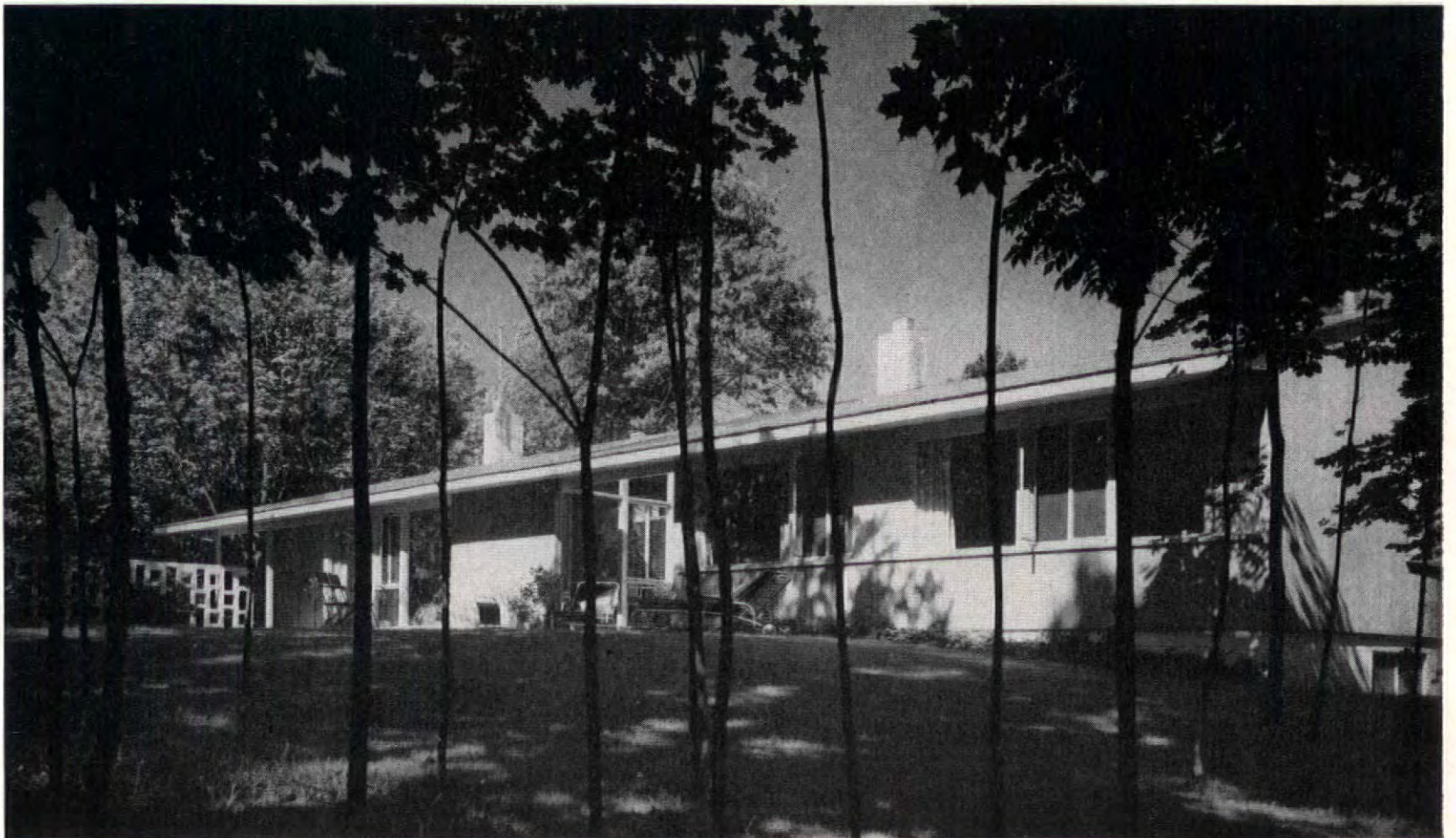
tection to yet another planting, yields a leafy two-way view to the housewife seated at work behind the pass-through in her kitchen.

Stubbins has enriched his house with cunning play of texture, pattern, contrasting surfaces. The exterior is narrow vertical redwood siding. The lawn is screened with a handsome, almost Chinese, grille of concrete blocks. Inside Stubbins has used slate flagging in the living room, a few touches of brickwork, more vertical siding, and—to set off these richer textures—some plain white plaster surfaces. Stove hood and fireplace hood are designed in gentle curves, a kind of interior sculpture. The lally columns supporting the center ridge of the roof are wrapped with rope; blinds of split bamboo filter the sunlight streaming into the living room.





View from fireplace toward kitchen, dining area and patio is shown above. East facade of house (below) faces existing house on neighboring lot, is screened by row of trees.





TRADITIONAL STONE AND TILE shelter this house against the harsh northern winters

AARNE ERVI, Architect and Owner

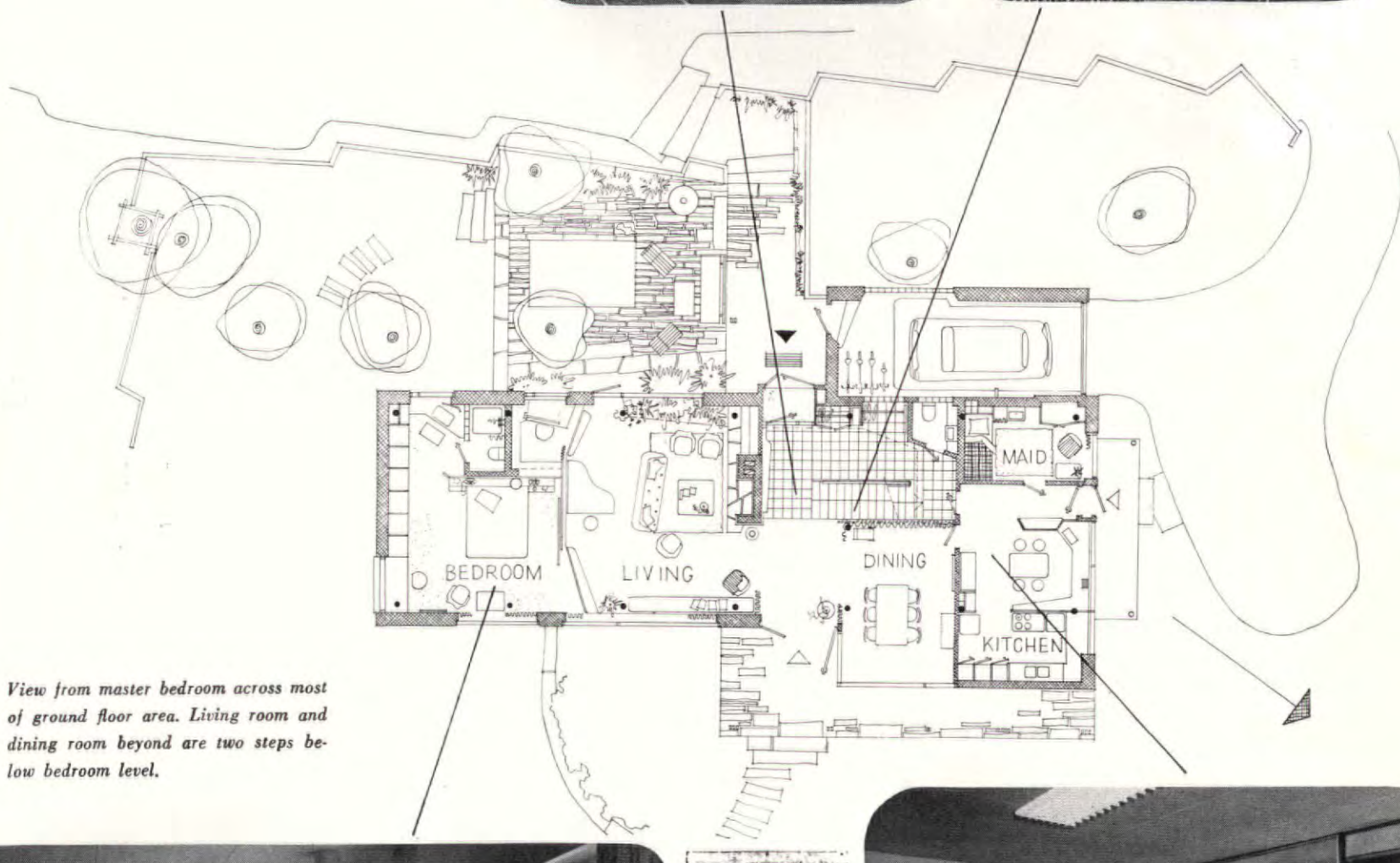
"The harsh climate during long winter months," says Architect Aarne Ervi, "makes many claims upon the builder in Finland. . . . Buildings must be very effectively sheltered against rain, must be able to carry great snow loads, and must above all be protected against severe cold."

In building this handsome house for himself on an island near Helsinki, Architect Ervi solved these problems with imagination and directness. To support the heavy snow loads, Ervi built a frame of steel lally columns (obtained from Finnish Army surplus), topped these with I-beams carrying lightweight concrete planks. His steeply pitched roof was finished in traditional, local tile. Radiant heating in the floor slab is electric.

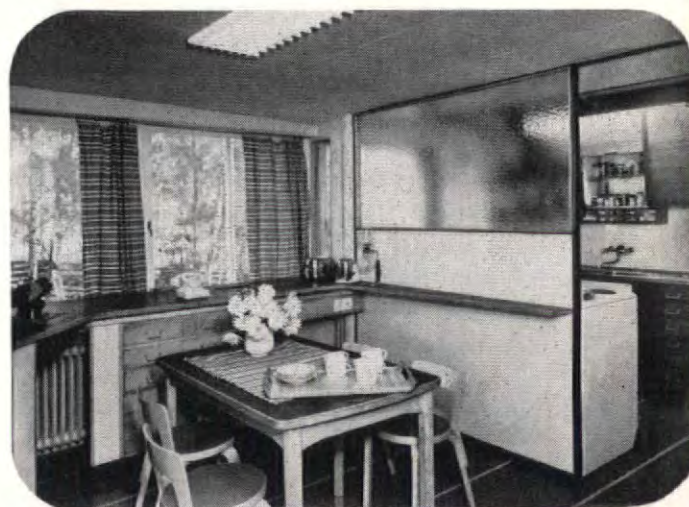
To tackle the problem of cold Ervi threw a light concrete wall around his steel frame, finished the concrete with a stone veneer on the outside. To emphasize the nonload-bearing character of his outside walls, Ervi kept the lally columns free of the protective walls, used the rhythm of regularly spaced columns to articulate his interior spaces.

These spaces are very open in plan, flow together and can be merged when sliding screens are drawn back. The best view is to the east; but since it seemed desirable to trap the afternoon sun, Ervi built a small patio on the west side, sheltered it against the wind by a high wall. Sitting in the patio, you can look straight through the house and get a view of the sea to the east.

Stair hall shows elegant, sophisticated detailing not unlike that used in some modern U.S. houses. But outer shell of house and plan arrangement is distinctly Finnish. In plan (below) note that ground floor is virtually one large room, subdivided only by movable screens and curtains.

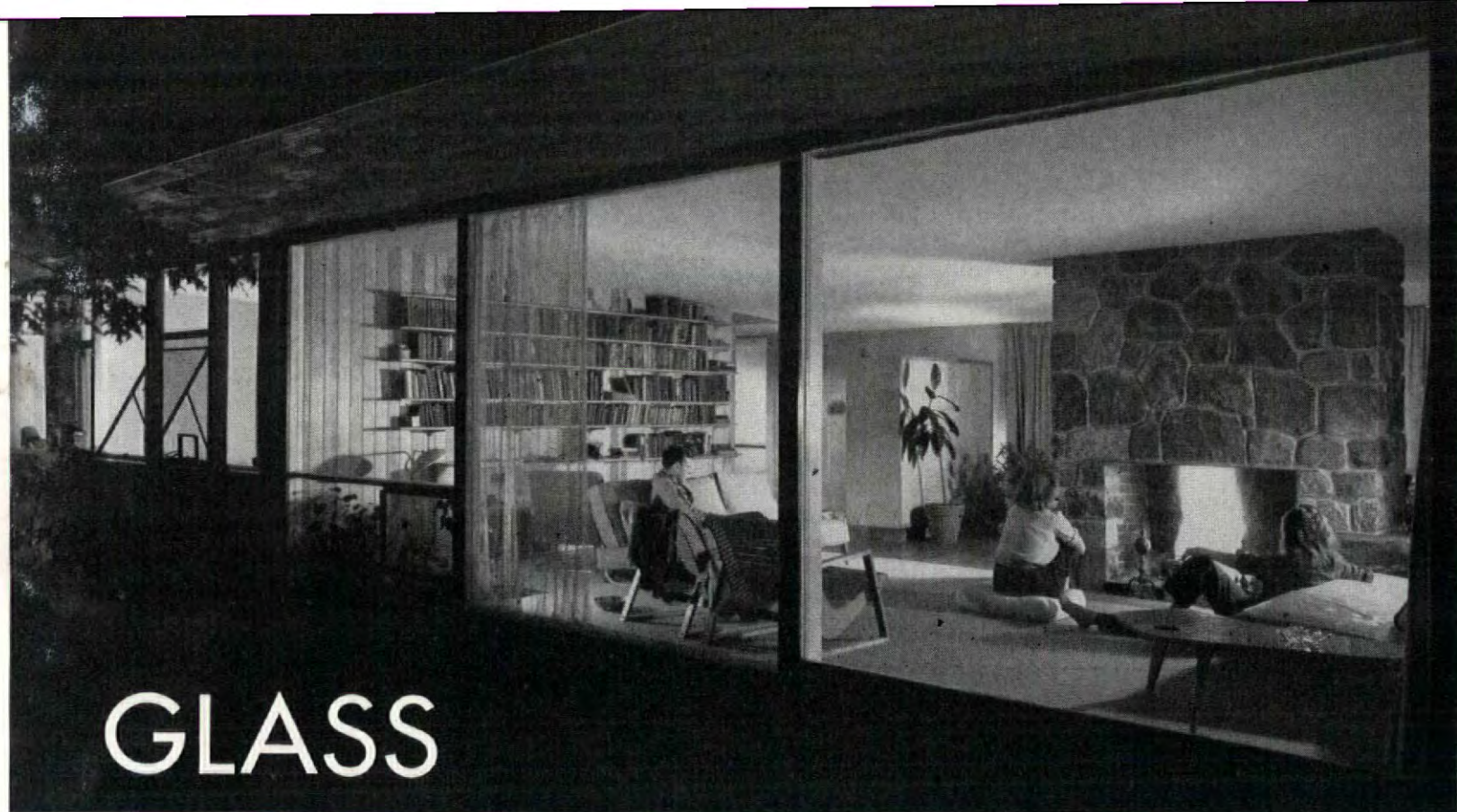


View from master bedroom across most of ground floor area. Living room and dining room beyond are two steps below bedroom level.



Kitchen has adjoining breakfast room. Ceilings on ground floor were finished with acoustic tile. Radiant heating coils are in concrete floor slab.

Photos: Nousiainen and Valokuva oy Kolmio



Ezra Stoller: Pictor

GLASS

Those who have used it most answer some important questions about its strength, installation, leakage, condensation and use in roof lighting

How much can a 1/4" plate glass window flex without breaking?

Answer: As much as 2" in a hurricane.

What do you do with condensation collected in a sill gutter?

Answer: Leave it alone.

Should a mitre joint be used to connect a sill strip and a stop?

Answer: Never.

Survey participants

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LIBBEY-OWENS-FORD GLASS CO.
PITTSBURGH PLATE GLASS CO.

Information as unorthodox as this comes from 15 architects noted for their long experience in the use of glass. For example, one has used 8' x 15' lights of plain, garden variety crystal and found it worked. Another used triple glazing to lick a condensation problem. Several have used flashing on the sill strip drawn up behind the glass to stop leakage. And all of them have kept abreast of the use of glass in residential construction today.

They know the pros and cons of casing mullions. Many of them are working extensively with skylights and several have taken a flyer in the direction of plastics as a glass substitute.

They work in such diverse places as Mississippi, Massachusetts, Illinois, New York and California and have experienced just about the whole range of climate found in the U. S.

The range of their experience covers a lot too. The strength of glass and how best to install it give them a running fight all the time. (For the most part, they win.) And the problems of condensation, leakage and infiltration have to be solved on every job.

In addition to the architects, their clients contributed information about how well the glass walls in their homes worked and whether they were having trouble maintaining them. Glass manufacturers and glass hardware holding companies also helped by contributing from their wide experience and research findings.

In short, this is an on-the-site story of glass used in today's houses. It is not definitive (no working story can be) and nobody offers any foolproof solutions. Even for men of long experience there are no sure-fire answers. Paul Schweikher summed up the general feeling when he said, "Each use of glass in each succeeding building has in one way or another been a special problem, for it has differed from its predecessor as well as from its counterpart in the work of others. Glass, except that it may be beautifully transparent, is a poor material. We do with it what we can."

The editors acknowledge the assistance of William J. McGinness, Professor of Architecture at Pratt Institute, in obtaining and organizing data for this article.

STRENGTH: in tension it depends on size and shape, but is not great; in elasticity it is better than steel

The obvious limitations of glass—its brittleness and poor showing either in tension or lateral compression—have not kept designers from using it extensively. As their experience has widened, they've been able to cope successfully with these limitations and have learned what factors are important in glass strength. Harris, after years of working with the fragile material, reports, "I am often surprised at the exhibition of toughness and flexibility in ordinary glass."

The outstanding structural virtue of glass is its elasticity, which is three times that of steel and about equal to the elasticity of aluminum. Examples of its ability to flex are numerous and some are truly amazing. Barnes, working in New York, designed a house with two 8' 6" x 15' panes which withstood the full force of the 1950 hurricane that struck the East Coast. He said, "These two panes were set in wood frames with wood stops. . . . At the peak of the storm the centers of these panes moved in and out a total of 2". The panes did not break."

Apparently this characteristic of glass is well understood by the architects, for not one case of breakage due solely to wind pressure was reported. Glass companies consider wind gusts among the causes of breakage, but in most cases qualify the statement by pointing to faulty installation or settling of the building. Libbey-Owens-Ford believes that "failure under unusual wind conditions occurs when the setting has become deficient due to building settling or shrinkage."

To design for wind pressure, the architects follow tables put out by glass companies (right above) or have an engineering check made. Most of the architects have successfully used out-size panes. Grossi installed a 17' 6" x 9' piece of 1/4" plate in a store; Barnes used a 13' 6" x 8' 6" light of 1/4" plate in a residence; and Schweikher and Elting have used 1/4" plate panes measuring 9' 6" x 13' 4".

Glass and hardware companies are on the conservative side in specifying maximum sizes. Says Kawneer, "Glass areas larger than certain practical limits are not strong enough in themselves to resist standard wind loads no matter how strong the supporting members at the edges may be."

To reduce the breakage of their product, glass companies make double-glazed units only up to certain sizes—sizes they feel can withstand high wind pressures.

Areas too large or too exposed to high winds for the safe use of 1/4" plate can be spanned by the use of thicker glass. Dailey solved the problem of glass specification for the Top of the Mark cocktail lounge in windy San Francisco's Mark Hopkins Hotel by calling for 1/2" plate.

Glass thinner than 1/4" plate is frequently used. Harris, working in California's relatively mild climate, reports, "Most of my jobs have been done with ordinary flat-drawn glass in walls. Both the jobs of mine which won prizes in Pittsburgh Glass Institute competitions . . . had only single strength B quality glass in them." Grossi in New York has used less than 1/4" plate and found it good. "I've used 7/32" sheet drawn or demi-glass in low cost houses instead of 1/4" plate. When this glass is used for windows other than the living room, it seems okay. I have it in my living room, too, and don't mind it."

The shape as well as the size of the glass affects its strength. A long narrow pane, for example, is stronger than a square pane of equal area, because the narrow pane transmits a wind load to a supporting member across a shorter distance. To get this advantage in large glass areas, Kawneer Co. suggests "reducing the width of individual lights of glass without changing the opening height."

Another and largely incalculable factor in the strength of

MAXIMUM GLASS SIZES (SQ. FT.) OF VARIOUS THICKNESSES IN RELATION TO

WIND VELOCITY AND PRESSURE

Wind Velocity mph	Wind Pressure lbs./sq. ft.	0.087" SS	0.118" DS	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"
30	4.5	35 †	64.5 †	72†	162	288	*244		
40	9.0	17.5†	32.25†	36†	81	144	225	*248	
55	13.5	11.6	21.5 †	24†	54	96	150	216	
65	18.0	8.7	16.1 †	18†	41	72	112	162	*244
80	27.0	5.8	10.85	12	27	48	75	108	192
100	45.0	3.5	6.45	7	16	29	45	65	115
120	63.0	2.5	4.6	5	11	20	32	46	82

SS—Single Strength DS—Double Strength * Maximum size available
† SS, DS and 1/8" glass, because of flexibility, should never be used in areas exceeding 12 sq. ft., and for the sake of appearance, areas used should not exceed 7 sq. ft. Source: Pittsburgh Plate Glass Co.

STONE: In a Greenwich, Conn. residence I installed a glass wall some 80' long and 18' high with the glass set in special aluminum sections. It faces Long Island Sound and is exposed to the storms coming from the east. This wall was designed for 100 mph plus winds and successfully survived the hurricane of 1950.

BYLES & WESTON: I have been specifying 3/16" crystal in sheets up to 5' x 8' as a fairly general low cost specification and have had no trouble with the glass. However, the glazing contractor needs a little advance warning on the size as he does not usually stock crystal in these sizes. . . . A major problem in "bringing the outdoors indoors" is that the possibility of handling large glass areas in such a clean manner makes people think glazed areas are openings which they try to walk through. The best solution to this problem is the introduction of a horizontal rail about 2' off the floor to act as a visual barrier but without losing any of the open feeling. We use this rail as a horizontal mullion in order to cut our glass size down enough to use crystal sheet.

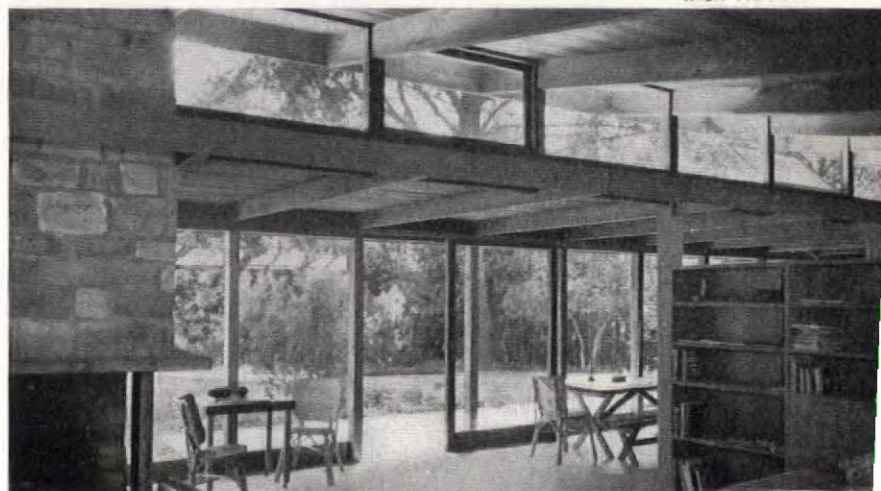
HARRIS: . . . no breakage except by absent-minded adults walking through the glass.

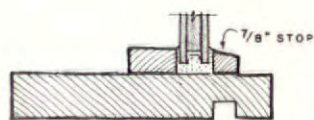
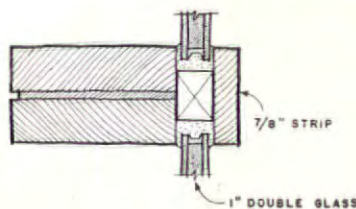
KECK: We do not use double glazing in ventilating or movable units. We once did, and had a few failures (warping, slamming, etc.) so we eliminated these failures by fixing the glass.

SCHWEIKHER: Whether or not irregular stresses are induced in double glazing we do not know, but we've set large double-glazed units with the utmost care and sometimes found them cracked within a day or two.

Window wall and clerestory by Hempel

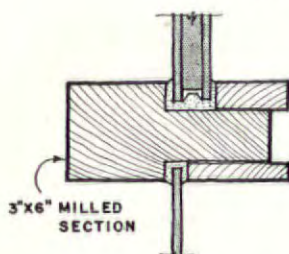
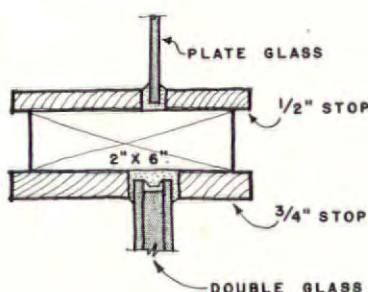
Roger Sturtevant





Simple installation details for double glazing developed by Keck. Note that mastic is used all around the embedded edge of the glass.

INSTALLATION: proper detailing of sills, mullions and holding hardware minimizes breakage and leak



Three solutions to the rabbet and strip problem by Breger & Salzman: (top to bottom) their simplest and their best mullion details and their typical sill with overhanging stop which forms a direct drip.



BARNES: Where mullions intersect each other or the frame, we have in all cases accepted the practice of the contractor for the exact detail. It seems best to use the detail with which the contractor or mill is familiar. Incidentally, we have never had an instance of the slightest failure at such connections. . . .

STUBBINS: The advantage of casing around mullions is that the structural member can be rough, scars and hammer marks can be covered and more waterproof arrangement at the sill is accomplished. The disadvantage is mainly the cost problem and also the mullion becomes a little larger. . . . How double-glazed unit sizes were ever arrived at is a mystery as they have no relation to standard window sizes and are very difficult to work in where fixed glass is installed alongside opening steel or aluminum vents.

Bevel in holding strip used by Dailey holds mastic and largely conceals it. To reduce leakage he prefers butt joint to mitre in joining the horizontal and vertical holding strips.

glass is internal stress which is unavoidably "built in" when the glass is formed and cooled. There is no way to calculate it. It sometimes causes breakage—particularly in double-glazed windows. Keck believes that the sealing of one pane with another in some cases causes these internal stresses to work in opposite directions. And when, for example, the sun suddenly hits a cold outer pane, the result can be fatal to the window.

But over the years, the experience of the architects and glass companies proves that the strength limitations of glass need not preclude its extensive use. The secret, if there is one, to the successful employment of this large, relatively fragile material appears to lie in the care taken to install it properly. Says Libbey-Owens-Ford, "Defective setting of glass is probably the most common cause for failure."

A careful check of the structure prior to glass installation to be certain the members receiving the glass are plumb, square and level will pay dividends. Pittsburgh Plate Glass eventually solved a chronic breakage problem in a store front by this means. Their report: "Examination of the wood framing on a store front where considerable breakage occurred disclosed the frame was out of plumb as much as $\frac{7}{8}$ ". This. . . put a severe warp in the glass making it sensitive to shock and vibration. . . .

In another case where breakage occurred, the sill was found to be bowed up a full $\frac{1}{2}$ " which crowded the glass in the center and did not provide sufficient grip at the sides. Resting large sheets of glass on "setting blocks" at the quarter points (see detail, p. 239) also reduces the possibility of such breakage.

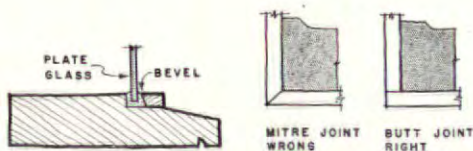
The problem in installing metal framed windows is to get a firm bite on the glass without applying too much pressure. If the grip is not firm, the pane rattles and the danger of breakage is increased.

Barnes notes "that glass cushioned in white lead in a wood frame is able to move without chattering whereas the normal store front, where frequently the glass is held in a metal frame, either holds the glass absolutely rigid without a cushion or else permits the glass to rattle slightly in the frame. In all cases ample tolerance should be allowed for a setting bed, both for leaking and for a cushioning effect."

The problem of getting a firm but cushioned hold on the edge of the glass when wood framing is used has been almost universally solved by the generous use of mastic. Other materials, however, can be used for cushioning. Overstreet reports the use of "either felt or a rubber stop placed between the edge of the glass and the material next to it to provide for glass expansion. . . ." In addition to cushioning the glass, mastic or such materials as Overstreet uses will also help prevent leakage.

The simplest and best details for sill, mullion, jamb and head used by the architects all show a reliance on mastic with plenty of room to let the glass move freely in the connection (see details).

The trouble, of course, with wood framing is the danger of warping that could break the glass. Hebbeln reported trouble in only one installation and that came from "improperly dried wood in the frame and careless joining."



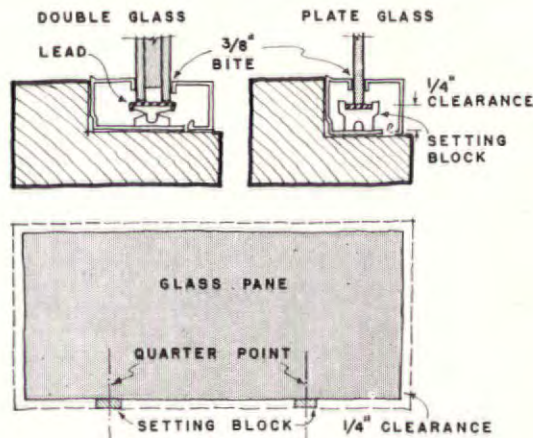
The design of mullions with large glass areas has taken on considerable importance. Some prefer casing them while others working toward an effect with rough natural textures leave them exposed. Byles and Weston report, "In our exposed structural system, we rabbet the exposed members to receive the glass and consequently use no casework. This is a less expensive operation."

On the other hand Barnes tells of the advantages in casing mullions. "Generally speaking we case the structure so it can be put up quickly with some tolerance and so that it can move as the house 'works in' without stressing the glass."

Whenever Barnes does not case mullions he writes very tight specifications for wood used in both the structure and window frame. Cased or uncased, the most satisfactory design seems to be to run the vertical mullion uninterrupted from sill to head and then butt-connect the horizontal divisions against the vertical member.

Breger-Salzman design their horizontal mullions for deflection but few of the architects subjected mullions to engineering tests. They have relied on their own and their builders' experience and report few failures.

Mullion designs, of course, are subject to requirements similar to those affecting sills, jambs and heads. Firmness of contact must be obtained without permitting the glass edge to bear on the structure. When these requirements are met, the danger of breakage is slight. Keck feels that "a properly set piece of glass, in a frame strong enough, with proper mastic and settlement allowances, should not break."



Hints from commercial practice: Store settings provide a firm but resilient and flexible grip with minimum contact. The pane has a 3/8" bite and a 1/4" clearance all around. Setting blocks of lead at the two quarter points have proved to be the best support. For double glass rocker type bases, lead topped, afford equal support to the two panes. Reports on breakage indicate that edge pressure is a common cause of failure. Double glass breaks much more frequently than plate. Leakage and condensation drain outward in these puttyless settings. The problem is how to achieve the advantages of this type of installation and maintain the lightness usually desirable in residential design.

RAYMOND & RADO: Mullion casing advantages: Casing protects mullions or other members from the weather. They give clean simple lines. With proper profiles they're easy to glaze, can be made watertight and add strength. Desired profiles can readily be obtained from the use of casings.

Disadvantages: If noncorrosive metal is not used, condensation may occur within casing, corroding it. Casings add expense and often add labor. They're hard to attach and integrate with the design.

LEAKAGE: solving the problem of water leaks and air infiltration has proved that the simplest construction is not the best

Water-leaking around large fixed glass areas and air infiltration are common problems in the extensive use of glass. About one out of four owners report water leakage and a correspondingly few mention air infiltration. Air infiltration, while rarely serious enough to produce discomfort, could be serious from an economic point of view since about a third to a fourth of the average room's heat loss is due to such infiltration.

The solution to leakage problems when they occur is not difficult but complete weatherproofing of the connection between glass and frame can be effected in the original design if the knowledge of experienced architects is applied.

Sufficient roof overhang wherever possible will reduce the danger of leakage and Grossi advises, "Keep glass outside of the sheathing line of the house." His results: no water leakage or air infiltration whatever.

In most cases the main points of water entry have been at the sill and where the sill meets a jamb or mullion. The architects all have given considerable thought to the design of these details and incorporate individual precautions as a matter of course.

Many have found that the simplest sill details are not necessarily the best for leakage prevention. For example, Keck says, "We recognize the difficulties of proper design for tightness and try to meet these problems, doing rather a better and complicated job than attempting to reach only simplicity."

Yet many details are surprisingly simple, and will work under conditions normally encountered. The root of the problem, according to Barnes, lies in the specifications for the glass setting! "Where we have had trouble, it can always be traced to improper installation. . . ."

To get such insurance against leakage, many of the architects have developed what for them have become standard details for fixed glass installation that take the possibility of leak-

HARRIS: It is a mistake always to use only the most perfect seal one can devise. Weather attack varies enormously with geography and exposure. Where gentle conditions prevail, one should simplify, economize, lighten and refine. One should always try to avoid the difficult condition, but when it is unavoidable, should choose a general character of design that allows more than enough room for all the boxing and flashing the most perfect seal and the most ordinary workman will require. . . . One of the most usual points of water leakage is between the sill and a penetrating solid mullion. But if sill pans are used and the edge let into saw cuts in the mullion, the addition of mastic and paint is sufficient to stop the water.

Window wall with ventilating panels by Breger & Salzman

Alexander Georges



GROSSI: In my house I covered the sill with copper on the outside and turned it up behind the glass and the outside cover piece of the mullion.

KECK: If frames are to be stained, infiltration is lessened by using calking compounds upon built-up sections; if painted, the pigmented paint closes hairline cracks.

DAILEY: Had we raised the interior floor $\frac{1}{2}$ " above the exterior floor, the $\frac{1}{2}$ " rise would have prevented the wind from pushing water up over it.

age and air infiltration into consideration—not as an afterthought, but as part of the design problem. Stubbins, for example, bevels the wood stops (*see detail*). This enlarges the space available for the caulking compound and he uses caulking generously. "A more expensive solution," he says, "would be to use a small plastic or rubber tube in place of the elastic caulking compound."

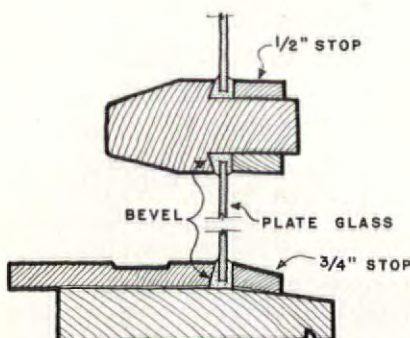
The trick of beveling the stop, and in some cases the sill strip, has been hit upon by others too and it works well.

The problem of the sill-jamb connection is appreciated by Dailey. "A mitred connection," he reports, "invites leakage; the best way to make that connection is to butt the stop against the jamb or mullion." (*See details p. 238*).

The majority employ backpainting and back puttying as standard operating procedure. If these precautions are felt to be insufficient, the sill is flashed and the flashing turned up behind the glass (*see details, opposite*).

All owners suffering from leakage reported its solution to be recaulking. In one case where leakage occurred through an aluminum setting resting on a concrete curb, Overstreet solved it by "using a caulking gun on the *inside* of the building between the aluminum sash and concrete curb."

CONDENSATION: a baffling condition is offset by relating the heating design to fenestration and by providing interior gutters



Bevel in sill and mullion rabbet by Stubbins secures mastic; interior gutter collects condensation.

Apparently it is impossible to predict whether or not there will be condensation in troublesome amounts. Owners living in areas having severe winter climatic conditions reported, in some cases, that surprisingly little condensation has bothered them; in others, for no known reason, condensation has been a problem—particularly where single thickness glass is used. Architects' findings show the same thing. Edward Stone, of New York City, says, "For reasons beyond our comprehension, we have not had condensation problems, even with single thickness glass." Yet Breger-Salzman of the same city reports, "Plate glass condenses a lot. So we have only used it with radiant systems."

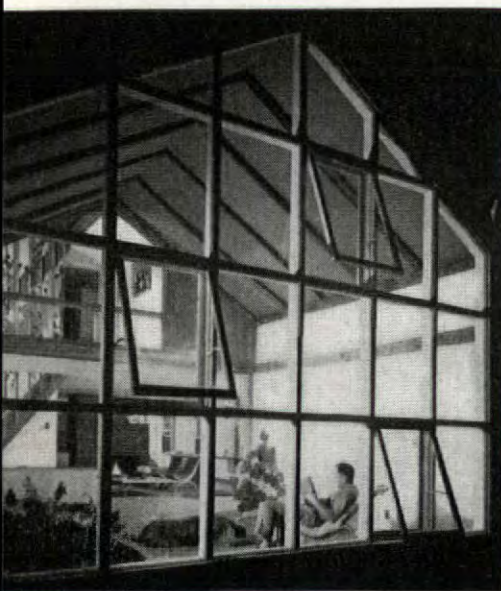
All the architects felt strongly that the type and layout of

Large glass installations by Hebbeln

. . . Dailey

. . . and Keck

Photos: Lionel Freedman—Pictor; Roger Sturtevant; Hedrich—Blessing Studio



heating systems employed had a great deal to do with the degree of condensation experienced. In forced air or convector systems, the strategic placement of registers has been found to reduce condensation to a great extent everywhere except in baths and kitchens where steam often clouds the windows for a short time. This strategic location is at the base of the windows. Placed there, the registers introduce a curtain of warm, dry air that flows upward over the window surface picking up any moisture that threatens to form on the surface. Stone likens this effect to the defroster action on car windshields.

The controlling factor in any heat system that depends on air movement for operation is the humidity of the air brought into the room. For humidity and the temperature of the glass (which in single thickness windows is nearly that of the outside temperature) determine whether or not there will be any condensation. With a 70° room temperature and 0° outside temperature, condensation occurs on single thickness $\frac{1}{4}$ " plate at a relative humidity of 15%. Keck has found that, "Heating systems that move air and *try to condition* give problems in condensation. Systems that do not move air, radiant for example, minimize it. In this cold country we recommend large glass areas in combination with radiant heat."

Whether installed in the floor, ceiling or wall, radiant heat is a favorite system with many experienced architects. Since it does not set up a strong air movement, large amounts of water vapor are not brought into contact with cold window surfaces. Even with radiant heat, however, some condensation has been reported. And, as in the forced air systems, heat introduced by the concentration of the heat coils near the base of the window is a favorite solution. Barnes has a ground rule on this: "In radiant floor heating jobs we double up on coil spacing under full height windows."

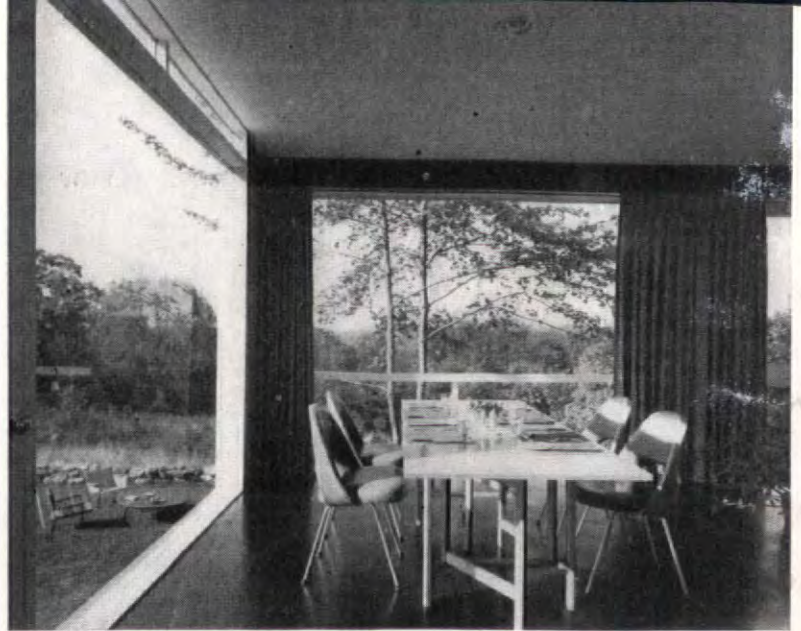
The use of double-glazed windows reduces condensation problems considerably. Only one owner reported condensation trouble with double glazing. Apparently the seal between the panes was defective because when the windows were replaced his troubles vanished. Condensation, under the temperature conditions given above, would not occur with double-glazed windows until the relative humidity reached 40%.

In baths and kitchens, however, the humidity often exceeds the dew point and moisture forms even on double glazing. The remedy recommended by Breger-Salzman is to ventilate, either by opening windows or using a small fan. For another and more unique solution, offered by Keck, see his comments at the right.

Where condensation itself cannot be eliminated because of cost considerations or unusual conditions, preparations to catch the run off moisture can be made to reduce its annoyance and possible damage to the house.

The most common precaution involves the design of some sort of gutter in the sill inside the glass. It may vary in elaborateness from a small groove, used by Overstreet, to Grossi's $\frac{3}{4}$ " x $\frac{3}{8}$ " aluminum channel recessed in the sill (see details). Commercial metal framed windows, sometimes used in residential work, often have drainage slots and channels built in with escape routes going to the outside.

In all cases it has been found that the problem of what to do with the water after collecting it in a channel is actually no problem at all. Evaporation has proved sufficient to take care of the run off moisture. If the house owner is impatient, he can use a rag to soak up the water. Weepholes, common in commercial construction, have been found superfluous for residential work. Stubbins reported, "I have worked out some details with weepholes . . . even with small brass tubes which either run outside or down in the wall to the ground, but this has proved to be quite expensive and unnecessary."



Corner window by Johansen

Diagrams

OVERSTREET: Any open flame heating system will give the worst condensation condition because it increases the humidity.

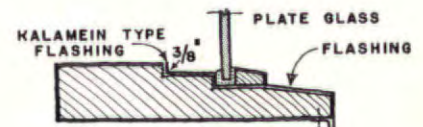
JOHANSEN: Don't pull drapes closed if by doing so you cut off warm air of room or heat supply from glass areas.

SCHWEIKHER: Radiant heat—radiator or panel—directed toward the glass appears to reduce the amount of condensation from what it would be if no radiation were to strike the surface.

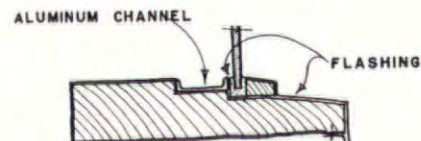
STUBBINS: All houses using any plaster or masonry will have condensation on the large glass areas for at least the first year. However, double glazing used throughout greatly minimizes the problem.

KECK: Sealed double glazing minimizes condensation. We have used triple glazing on some bathrooms and kitchens.

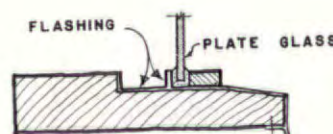
RAYMOND & RADO: There seems to be slightly less condensation with the actinic glasses.



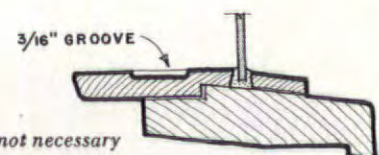
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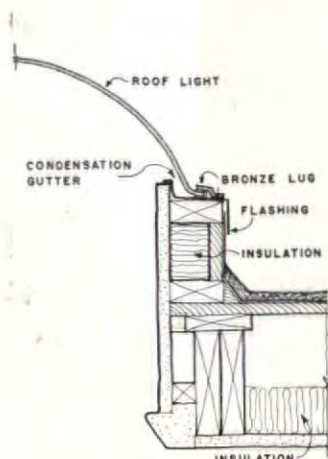
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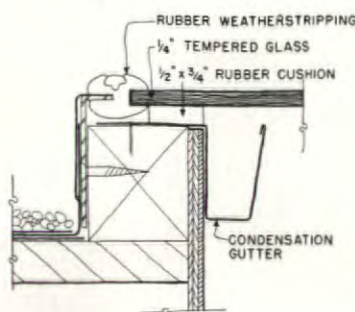
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Condensation gutters: weep holes are not necessary to remove water resulting from condensation. If caught in a groove it will evaporate before overflowing. Grossi (1 & 2) and Schweikher and Elting (3) combine the gutter with kalamein type flashing. A rounded sill groove (4) is standard with Stubbins. A good condensation gutter doubles as a catch for water when washing glass interiors with a squeegee.

SKYLIGHTS: glass in the roof has its own set of problems and a variety of solutions, including special glass and plastics



Depth of roof structure plus water-dam height on the roofside create space which collects warm humid air and condensation is generally troublesome. Interior gutters are helpful and work best when the glass has a definite slope. Johansen (detail above) reports that condensation inside of tempered glass away from the gutter does not drop off but will evaporate. Dailey (detail left) insulates to prevent condensation in the walls of the vertical well and catches the condensation from the dome in a small gutter.



Horizontal or sloping installation of glass brings up special conditions not found in ordinary vertical installation. A sloped window, for example, presents no particular installation problem (other than supporting it during the operation) but it does increase the load on the glass itself. The increased load comes from the weight of the glass and, in $\frac{1}{4}$ " plate or thicker sizes, is considerable. Mullions and stops designed for a sloped window should be able to support this added weight. Kawneer cautions, "The practice of sloping a plate out at the top causes sizeable addition to the deflection and stresses resulting from air pressures within (leeward effect) or recoil action when a direct gust of wind against the glass abates."

This "proceed with caution" note comes up again in recommendations from architects. Stone offers a reminder, "Horizontal and sloping glass picks up high heat loads and double glazing used in this manner is contrary to manufacturers' recommendations."

Both glass companies and designers feel that the weight of glass—a very dense material—presents a hazard from overhead, for if it shattered someone could be badly injured. For greater protection in a horizontal installation, tempered or wire glass has been used successfully. It is in fact the recommendation of Libbey-Owens-Ford and their experts further advise against the use of very large pieces of plate glass either horizontally or on a slope.

Its use, however, in skylights is growing. Hebbeln reports enthusiastically, "Always use skylights abundantly in all houses." In his experience, the greatest problem in their use is that of ventilating the interior of the skylight area. He has used clerestories and electric fans but is still searching for a more complete solution to the problem.

To get around the weight disadvantage glass and plastics have been tried. The general reaction is that plastics strains the budget and that many plastics have the disadvantages of being soft (which resulted in sagging), discoloring with age and scratching easily.

While skylights are a boon to interior rooms and provide excellent lighting they have their disadvantages too. Experience has shown that they gather dust and dirt quickly and at the same time are often inaccessible and difficult to clean. Waterproofing is quite a problem too. Johansen seals the glass into the frame with a rubber mold similar to that around auto windows. To protect against condensation, many of the architects provide a gutter in the skylight whether the glass is flat or dome-shaped (see detail).

Roof domes, generally speaking, present the same problems that skylights do. Ventilation of the concave space is, in fact, even more of a problem. However, despite their drawbacks, they are growing more popular. Says Keck, "We are using roof domes but our detailing will allow for an inside storm window if necessary."

Hebbeln successfully used surplus bomber turrets in the bath and dressing room of one house, reporting they gave "wonderfully bright light."

With all the experimentation going on in the use of glass, the chances are good that eventually more of its limitations will be circumvented and that some of them may even be eliminated through the development of new glasses. It is also entirely possible that advances in the plastics industry will produce a transparent material with the necessary characteristics for use in residential construction.

STUBBINS: The more nearly glass approaches the horizontal, the more critical the condensation problem becomes as water will probably drop directly from the glass.

HARRIS: I have used quite a lot of horizontal glass in the form of obscure glass ceilings for lighting, both natural and artificial. The glass has usually been in panes 36" x 36" . . . sometimes 36" x 72".

JOHANSEN: I have used tempered glass for horizontal glazing 48" x 108". It is stronger, safer, lighter and cheaper than the equivalent in plate.

BARNES: We are using tempered glass skylights extensively. Even in flat roofs we pitch the glass slightly so as to avoid puddles and, of course, always provide an ample condensation gutter. As far as I know, none of our skylights has leaked.

Plastic roof dome by Stubbins

Ezra Stoller: Pictor



**NEW CLASSIC DESIGN
NEW TAPER-TITE TRACK
NEW SEAL-A-MATIC HINGES**

Set a New standard of **Rō-Way** *beauty and performance*



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ROWE MANUFACTURING CO.
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You've always known Ro-Way Overhead Type Doors for their outstanding leadership in design, beauty, construction and performance.

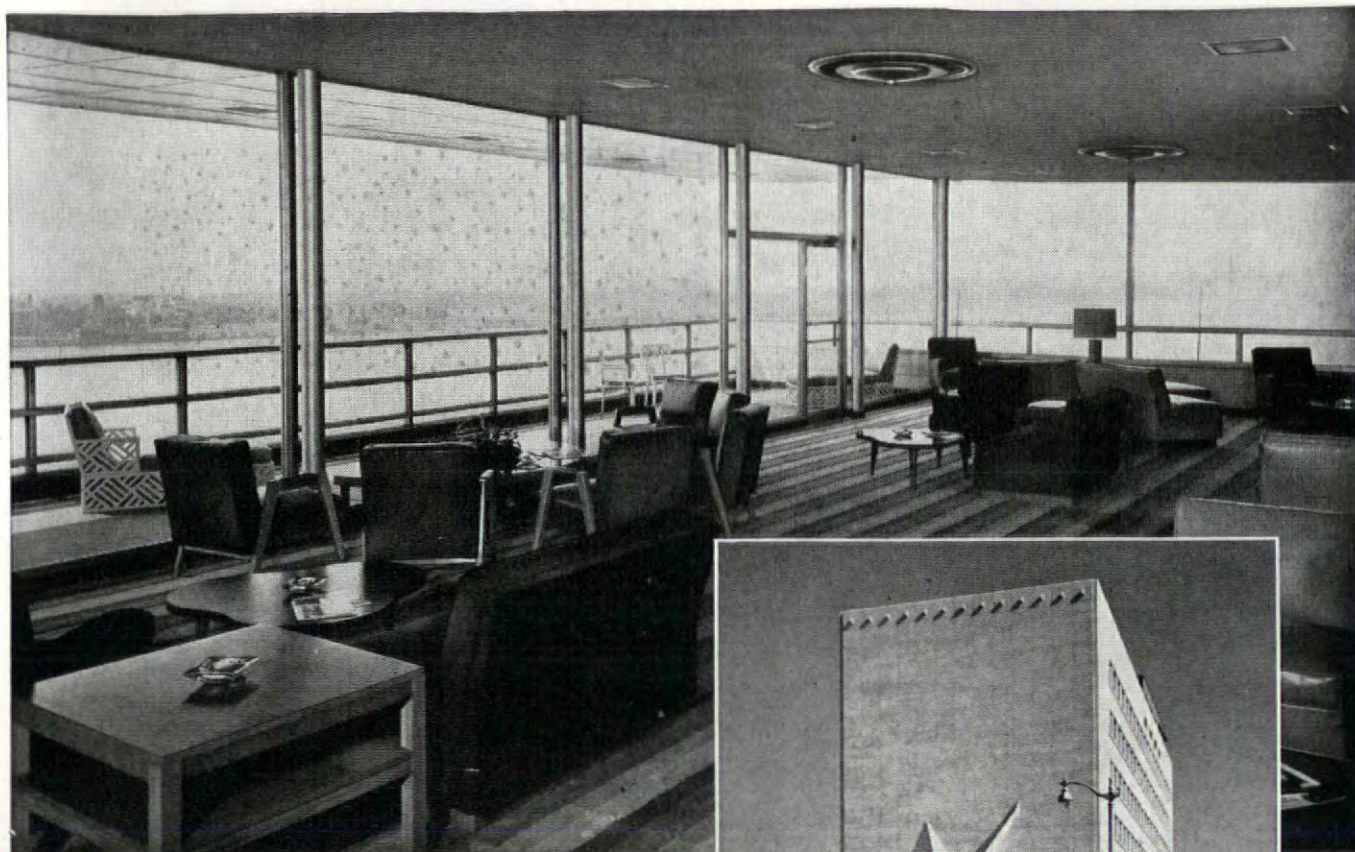
Now Ro-Way sets even higher standards—with the new *Classic* design residential garage door, Taper-Tite track and Seal-A-Matic hinges.

See how handsomely the 5-section, 2-panel width *Classic* blends with the ground hugging lines of the popular ranch style house. Note how it accentuates the rambling character, gives the impression of added size.

There's new *performance*, too—in Ro-Way's new Taper-Tite track and Seal-A-Matic hinges. Vertical tracks are inclined—taper away from the jambs at a pitch of $\frac{1}{4}$ " per door section. The new Seal-A-Matic hinges—an exclusive Ro-Way design of graduated height—guide the closing door tightly against side and head jambs for positive protection against the weather. On opening, the hinges instantly free the door from jambs to provide easy, frictionless operation. Now, more than ever, it pays to specify Ro-Way Overhead Type Doors for all residential installations.

Taper-Tite Track and Seal-A-Matic hinges also available on some models of commercial and industrial Ro-Way Doors.

there's a Ro-Way for every Doorway!



Simply beautiful kno-draft adjustable air diffusers

In their beautiful simplicity of line, Kno-Draft Adjustable Air Diffusers are grace notes for any decorative theme. But unless you just happened to look ceilingward, you might not ever notice them in the modern lounge above. Nor would they be more obtrusive in period surroundings.

Certainly, Kno-Draft Adjustable Air Diffusers will never call attention to themselves by discomforting the occupants of any room. All that their name implies, Kno-Draft Adjustable Air Diffusers circulate air gently and *without draft* . . . keep temperature uniform throughout the conditioned area. Air volume and flow pattern are adjustable *after* installation

TRADE MARK "KNO-DRAFT" REG. U. S. PAT. OFF.

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Danbury, Connecticut
Air Diffusion • Air Purification • Air Recovery
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190 Murray Street, Montreal 3, P. Q.



Lounge and exterior, Veterans Memorial Building, Detroit, Mich.
Architects and Engineers: Harley, Ellington & Day, Inc., Detroit, Mich.
General Contractors: Kuhne-Simmons Co., Inc., Detroit
Air Conditioning Contractors: American Refrigerating Co., Detroit

. . . thus simplifying the engineering of the job as well as providing flexible control to meet both present and future conditions.

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Dept. D-111, Danbury, Connecticut

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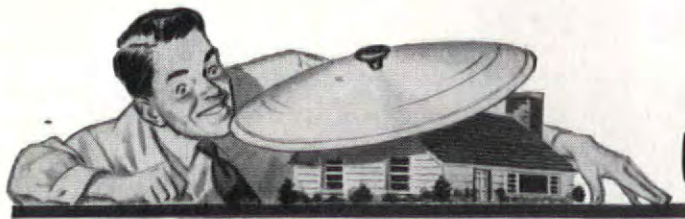
Position

Company

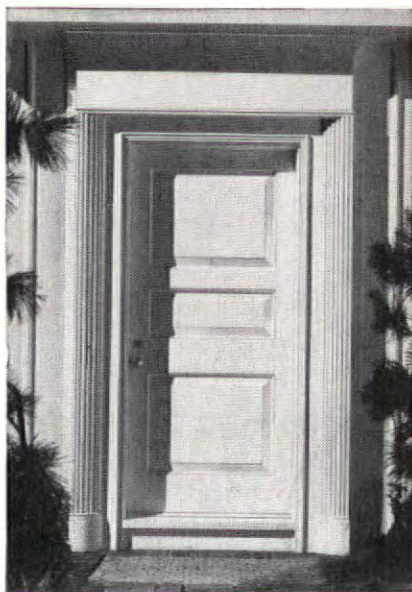
Street

City.....Zone.....State.....

How to raise value *WITHOUT* raising the "lid"!



Even when there's a definite "lid" on home building costs, you can still increase eye-appeal—salability. The answer is Curtis Woodwork. It adds the extra distinction that means extra value—at a cost that fits comfortably into a modest building budget. Here are the reasons why:



It's hard to believe that this beautifully proportioned Curtis entrance with its fine detailing is so reasonably priced. This design—No. C-1742—shows why Curtis entrances provide more for the money. Frame is of durable ponderosa pine with oak sill, and consists of cap, jambs, casings, pilasters, architraves, plain or threshold sill and apron.



There's no need to forego the charm of a well designed mantel—if you choose a Curtis design. This mantel—C-6074—is of Colonial origin, but differs decidedly from those of the eighteenth century, reflecting the changes of our modern living. It follows that trend, without sacrifice of beauty and detail. The bowed fascia accentuates its charm.



Distinguished storage space is easy to provide—at modest cost—with a Curtis cabinet like this. The fibrous composition molded "shellback" may be painted a different color than the cabinet. There are three scalloped and molded edged shelves above counter and one in lower compartment. Made only for corner installation. Design C-6515.

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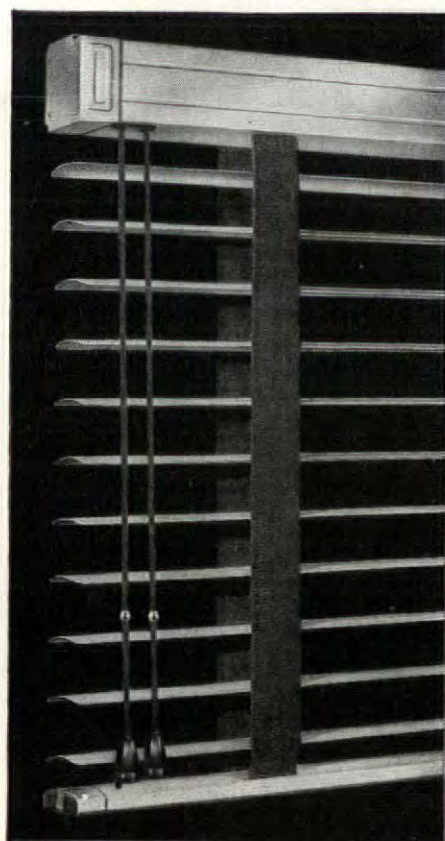
State of California Building, housing the Division of Highways, Department of Public Works in Civic Center, San Francisco. Equipped throughout with Venetians fitted with LEVOLOR de luxe metal heads and bottom bars. Division of Architecture, State of California, architects.

Serving a Metropolis...

served, in turn,
by Venetians made
with LEVOLOR
products

When it came to selecting Venetians for two of California's state buildings in San Francisco's Civic Center, specifications called for blinds equipped with LEVOLOR de luxe metal heads and bottom bars throughout both buildings.

What better endorsement of the long service, smartness of design and smooth operation that are built into parts produced by LEVOLOR!



Here are features that set LEVOLOR-built Venetians apart: smart, enclosed head that houses finest precision-built hardware; durable, springy plastic-coated metal slats; tape ends disappear in the sleek bottom bar. All are chip-, mar- and stain-resistant. And one gentle pull makes tilt-cords even, thanks to the LEVOLOR patented tilter mechanism.

See our catalog in Sweet's Architectural File, 19D-3A, and Sweet's File for Builders, 3E-5.



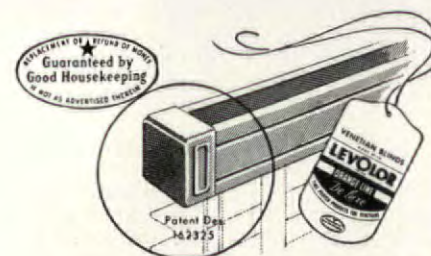
California State Building in Civic Center, San Francisco, recently re-equipped throughout with Venetians fitted with LEVOLOR de luxe metal heads and bottom bars. Division of Architecture, State of California, architects.

Send for your free copy of the LEVOLOR Architects Manual for Venetian Blinds (AIA 35-P-3) ... 16 pages giving you all the factual and visual assistance you need for any installation.

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Would you waste the money, the labor, the materials and the time to put anything as outmoded as fancy cornices on your buildings?

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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.

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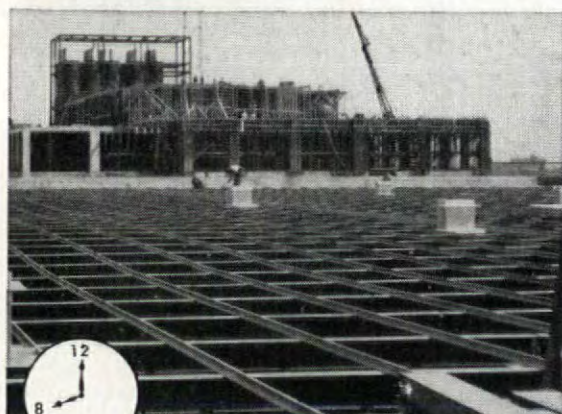
PANELS • DOORS • WINDOWS

engineered to cut the waste out of building

Speed—ON DECK....



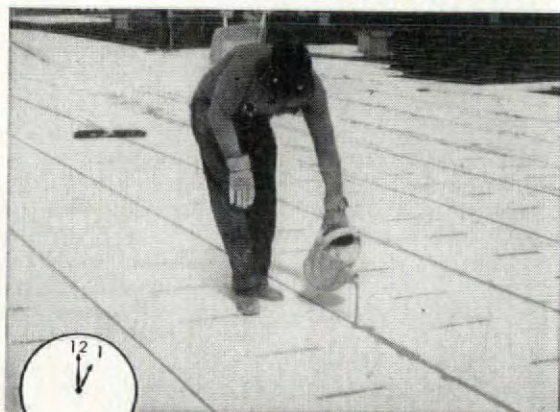
15,000 square feet of roof completed
in **8** hours with Kaylo Insulating Roof Tile



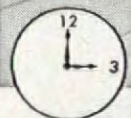
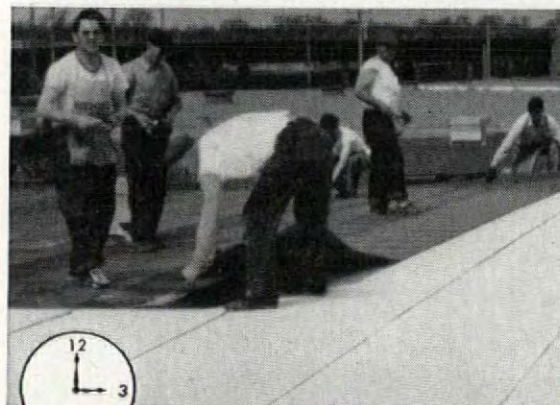
As work-day begins, steel sub-purlins are ready for the roof deck of Kaylo Insulating Roof Tile. Lightweight Kaylo Tile (only 5 lbs. per sq. ft.) permits the use of lighter and more economical structural members and foundations.



Placing of tile begun at 8 o'clock, is well under way by mid-morning. Kaylo Roof Tile—a hydrous calcium silicate, *not glass*—has billions of sub-microscopic air spaces giving it light weight and low thermal conductivity.



Grouting of end joints, including cleaning off excess grout, begun shortly after first tile were placed, is almost finished. Kaylo roof deck is incombustible; has more than adequate strength for typical roof loads.



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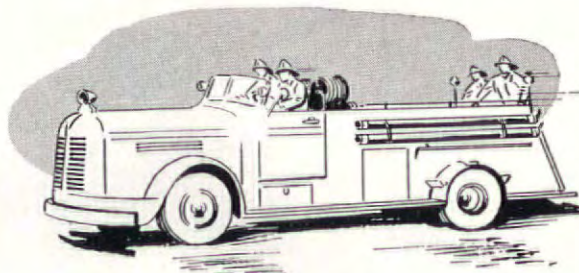
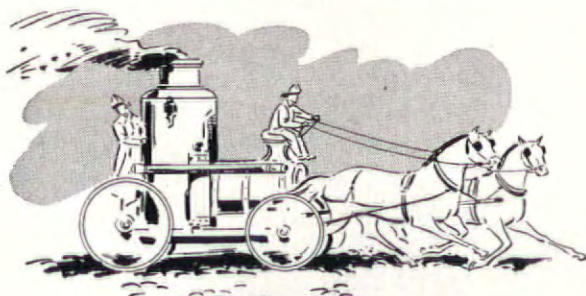
For complete details on Kaylo Insulating Roof Tile, write Dept. N-120, Owens-Illinois Glass Company, Kaylo Division, Toledo 1, Ohio.



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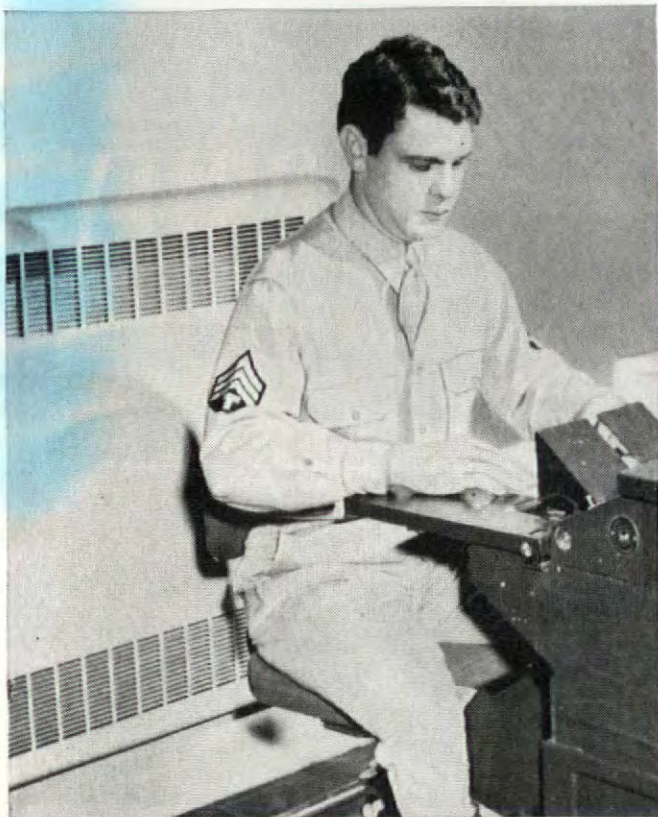
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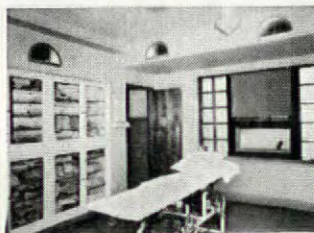
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DESIGN POLICY WITHIN INDUSTRY AS A RESPONSIBILITY OF HIGH-LEVEL MANAGEMENT.

By Arthur A. Houghton, Jr. Steuben Glass, Inc., Corning, N. Y. 8 1/2" x 10". 33 pp. Illus.

This handsome, interesting book is based on a paper delivered by the author at an international Congress of the Council of Industrial Design, held at the Royal College of Art in London in September 1951.

"Although," as the foreword points out, "the paper deals specifically with the development and

procedure of design within Corning Glass Works and its subsidiary company, Steuben Glass, Inc., the basic approach to industrial design and many of the procedures here outlined are generally applicable to other companies. The underlying concept of good design in glass, and the methods for its accomplishment, apply with equal validity to design in other materials."

Taken from the chapter on the organization of the design department, this excerpt sets the tone and tempo of the book: "We felt that good de-

sign was a fundamental source of satisfaction to all people. Whether or not the market is articulate, it reacts to design strongly, and we were willing to stake the future of our company on our belief that perfection in design would lead to increased sales and to a profitable business enterprise."

THE CITY OF LONDON, A Record of Destruction and Survival. By C. H. Holden and W. G. Holford. Shenval Press, London, through The British Book Center, 122 East 55th St., New York, N. Y. 341 pp. 7 1/2" x 9 1/2". Illustrated. \$5.50.

This is the biography of the City of London—its development from Roman times to the present day. The authors have also recorded by map and photograph the destruction wrought during the war and their proposals for reconstruction, which were presented to the Common Council in 1947. Amply illustrated with 360 photographs, engravings and maps, 40 in color, the book also presents a look at the London of the future.

A HISTORY OF RELIGIOUS ARCHITECTURE. By Ernest Short. W. W. Norton & Co., Inc., New York, N. Y. Third edition. 306 pp. 6 1/4" x 9". Illustrated. \$6.

An up-dated, revised edition of the 1925 book, *The House of God*, this encyclopaedic work documents the history of church design from the earliest religious buildings through the 19th Century revivals of the Classic and the Gothic in England and America, concluding with modern church buildings. The 65 illustrations and 19 plans are a pictorial review in themselves.

COUNTRY BUILDINGS. How to Appreciate Them and How to Sketch Them. By William R. Finch. Sir Isaac Pitman & Sons, Ltd., London, through The British Book Center, 122 East 55th St., New York, N. Y. 132 pp. 9" x 11 1/4". Illustrated. \$6.75.

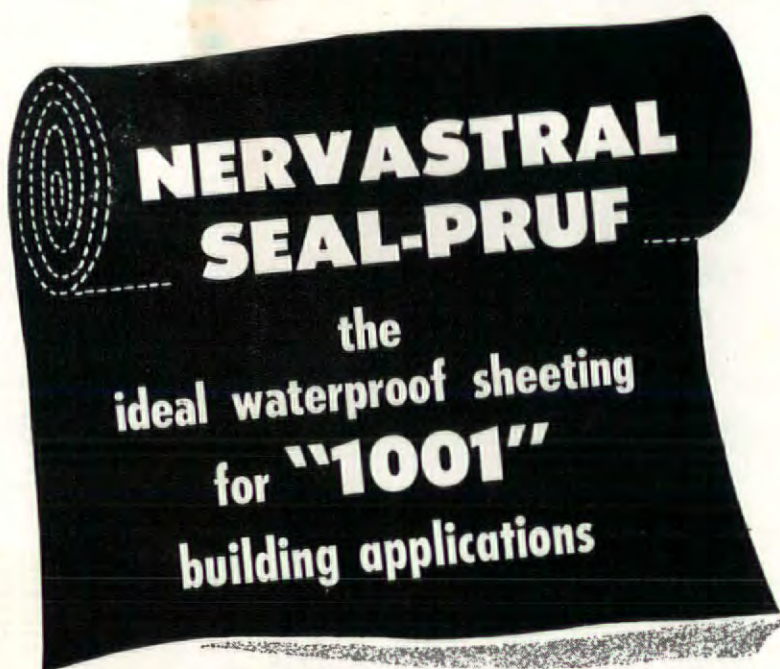
An easily read guide to sketching English-type cottages and farm buildings, this book goes a step further to include chapters on the principles of rural construction and the building materials involved. It will appeal mostly to artists, those whose hobby is drawing and perhaps architectural students and admirers of the English countryside.

THE FABRIC OF MODERN BUILDINGS. By E. G. Warland. Sir Isaac Pitman & Sons, Ltd., London, through The British Book Center, 122 East 55th St., New York, N. Y. 166 pp. 8 3/4" x 11 1/4". Illustrated. \$5.

This is another reprint of a book originally published in 1937. Its aim is to brief the reader on the principles of modern building construction in reinforced concrete, stone, brick and other materials.

THE ARCHITECTURE OF ANCIENT GREECE. By William Bell Dinsmoor. B. T. Batsford Ltd., 122 E. 55th St., New York 22, N. Y. 424 pp. 6 x 9 in. Illus. \$6.75.

A well-illustrated text book and history for the scholar and devotee of Doric, Ionic and Corinthian details.



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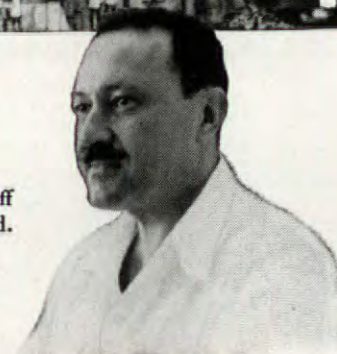
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*Architect—Vladimir Ossipoff
Contractor—E. E. Black, Ltd.*



When architect Ossipoff decided to use Q-Floors in the Hawaiian Life Building, he insured the building forever against electrical obsolescence. Using the steel cells of Q-Floor as his raceways for every type of electrical system, he can have an outlet on any six-inch area of the entire exposed floor. The installation of a new outlet, now or twenty years later, calls for only a few minutes' work—drill a small hole, fish the wires and install the fitting.

This saves a great deal of drafting room time because the outlets and partitions can be located after tenants move in.

The method of construction, however, is also modernized when Q-Floor is used. The steel units can be laid at the rate of 32 sq. ft. to the half minute. The floor goes up as fast as the framework and is used as a permanent working platform for all subcontractors. It also provides storage close to where the materials will be used. Time and money are saved as materials are handled only once.

The Q-Floor method eliminates the temporary materials used in old-fashioned construction; it is clean, dry and noncombustible; construction speed is not hampered by inclement or freezing weather. The biggest saving is in time—15 to 20% earlier completion date. This time represents a lot of money saved on labor, financing and by earlier occupancy.

There are now Q-Floor buildings in every important city and the records of their speedy erection make convincing and profitable reading.

WRITE FOR THE LATEST Q-FLOOR CATALOG with a list of Q-Floor buildings and their architects.

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

THE OLD WAY:
strong contrast
deep shadows



the
GUTH WYTE-LINER WAY:
low contrast
soft shadows

ALL POLAR BEAR WHITE — FOR BETTER SIGHT AND BETTER LIGHT



Here's a new idea in factory lighting to lift the eyestraining gloom off the ceiling:

ALL WHITE INSIDE—to reflect maximum light down and outward onto the working area.

ALL WHITE OUTSIDE—to reflect room light upward, brighten the ceiling and soften brightness contrast.

Easier to clean—reduces maintenance. Air-flow Channel circulates air currents for longer ballast life.

GUTH Wyte-Liners are made in 2 and 3 lamp sizes for conventional 40-watt lamps and for 4- and 8-ft. Slimline. May we send you our 16-page Catalog 48-K with complete details?

Guth **LIGHTING**

THE EDWIN F. GUTH COMPANY / ST. LOUIS 3, MISSOURI

Leaders in Lighting Since 1902



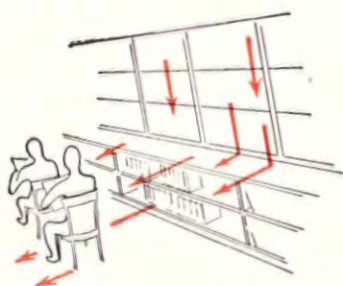
Oak's beauty, durability and economy is demanded
by 85% of all prospective homeowners

That's why architects and builders say that oak is the
only flooring that has everything everyone wants.
National Oak Flooring Mfrs. Assn., Memphis 3, Tenn.

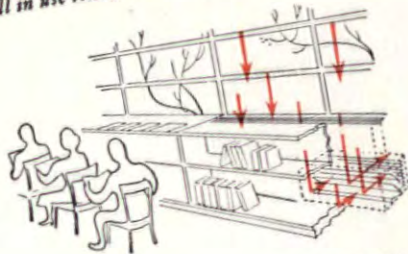
ARCTIC BLASTS HALF THE SCHOOL YEAR!



The **DRAFT|STOP** system traps drafts



OUTMODED METHODS of ventilation allow drafts and cold air to sweep into classroom. Temperatures vary throughout the day and in different sectors of the room. Such systems are still in use today and unnecessarily so.



MODERN METHOD—the DRAFT|STOP System engineered by Herman Nelson actually swallows down drafts yet introduces fresh air, heated to the correct comfort level.

SOME schools are still planned to allow invasion of Arctic chill. There's a sure cure, however. Before a draft can move into a classroom, before chill from large window areas can start the discomfort that distracts students from learning, they can be stopped. It is a revolutionary new principle. The DRAFT|STOP System, an exclusive development of Herman Nelson. DRAFT|STOP traps drafts at the source, doesn't allow them to sweep unhindered into the classroom.

This most modern of all heating and ventilating systems is ready for new schools or the classroom that must be modernized. For the benefit of students in the school where you have responsibility, investigate the definite advantages of DRAFT|STOP. Just write for new booklet explaining this proper temperature principle. Address Dept. B-11.



HERMAN NELSON
Division of AMERICAN AIR FILTER COMPANY, INC.
MOLINE, ILLINOIS

PRODUCT NEWS

NEW BUILDING PANEL has hardboard facing over plywood core

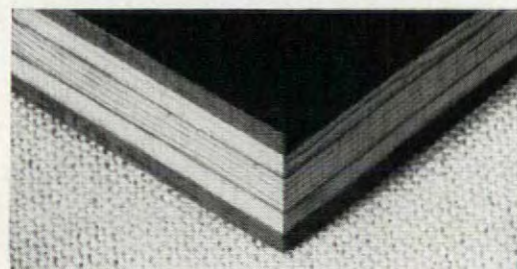
Plyron, a versatile construction material which combines plywood and composition hardboard, is now being produced by 10 West Coast manufacturers. Already used successfully in concrete forms, flooring, and cabinet craft, the new panel represents a significant advancement toward improved wood construction materials which more fully utilize forest resources. It is a relatively lightweight material which is also



Uses of the laminated board range from forms for smooth concrete to warp-resistant cabinet doors.



puncture and split proof. The plywood inner construction gives the panel strength and dimensional stability, and a smooth easily paintable surface is created by a thin tough sheet of compressed wood fibers. Because of the hardboard veneer and special bonding methods the core can be made from poor logs or wood waste not usable in plain plywood. A strong moisture resistant glue between each ply assures a durable bond. At present, Plyron is made in 4 x 8' sheets in $\frac{5}{8}$ " and $\frac{3}{4}$ " thicknesses. Costs are



about 20% higher than for comparable thicknesses of plywood sanded on both sides.

Information: Douglas Fir Plywood Assn., Tacoma 2, Wash.

Manufacturers: Aberdeen Plywood Corp., Aberdeen, Wash.; Associated Plywood Mills, Inc., Eugene, Ore.; Crescent Plywood Co., Crescent City, Calif.; Hardell Plywood Co., Olympia, Wash.; Industrial Plywood Corp., San Francisco, Cal.; Kalpine Plywood Co., Klamath Falls, Ore.; Multnomah Plywood Corp., Portland, Ore.; St. Paul & Tacoma Lumber Co., Tacoma, Wash.; Simpson Logging Co., Seattle, Wash.; and Western Veneer Co., Eugene, Ore.

PLASTIC LAMINATE produced in flat sheeting for building applications

Colored translucent plastic, currently achieving popularity in corrugated sheets for glazing, partitions, store fronts, and greenhouses, is now manufactured in easily applied flat panels called Alsynite Plasta-Glass. Like its rippled forerunner, the new sheeting is made of resins and glass fibers combined under heat and pressure. The resultant product is fire resistant, and will not crack, warp, sag, rot, or mildew. It is also said to be unaffected by humidity, salt water, sunlight, weather extremes, and to be resistant to mild acids.



(Continued on page 266)

*Premium Quality...
Grease Resistant*

AZPHLEX

ASPHALT TILE

gives floor beauty that's there to stay!

When you install floors of tough, grease-resistant, premium-quality AZPHLEX Asphalt Tile, you can look forward to many years of floor beauty—for the fine colors of AZPHLEX can never fade or wear away. AZPHLEX quality, like its color and its resistance to grease, fats, oils, alkalis, mild acids and alcohol, is through-and-through... the result of years of research to give you a premium-quality floor. Compare this remarkable tile with any other resilient floor covering. You'll be amazed at its superiority—and at its moderate price, too!

Highly Resistant

to greases, fats, oils, soaps and compounds

Tough Surfaced

for increased resistance to indentation and abrasion

Wide Color Range

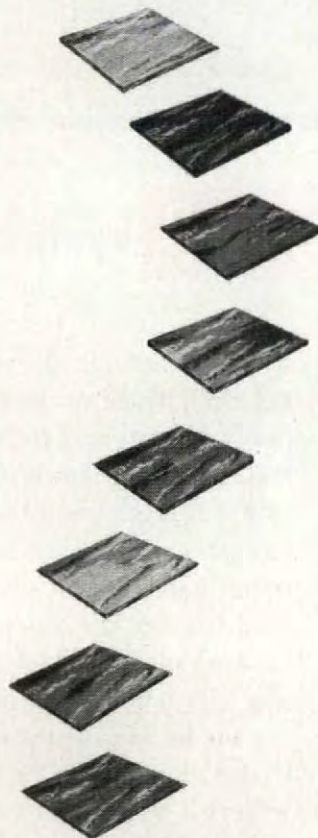
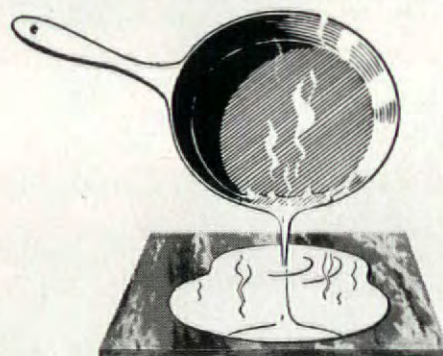
15 clear, permanent colors

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!

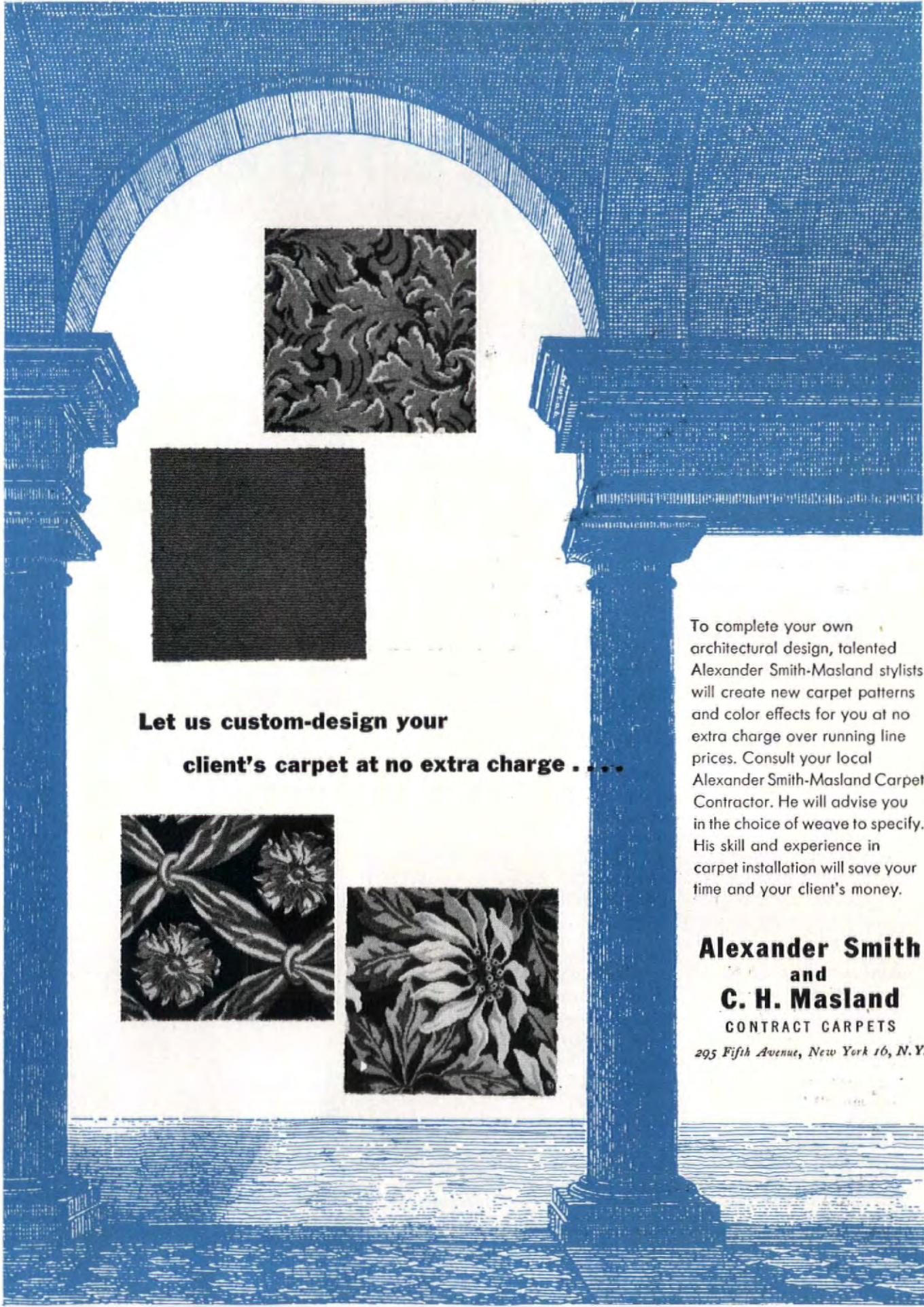
For complete information see or call your flooring dealer or contractor—or write to Dept A



SEE SWEETS' 1951
CATALOG FOR
COLORS AND SIZES

UVALDE ROCK ASPHALT CO.

Makers of AZPHLEX and AZROCK Asphalt Tile
FROST BANK BLDG. • SAN ANTONIO, TEXAS



**Let us custom-design your
client's carpet at no extra charge**

To complete your own architectural design, talented Alexander Smith-Masland stylists will create new carpet patterns and color effects for you at no extra charge over running line prices. Consult your local Alexander Smith-Masland Carpet Contractor. He will advise you in the choice of weave to specify. His skill and experience in carpet installation will save your time and your client's money.

**Alexander Smith
and
C. H. Masland**
CONTRACT CARPETS

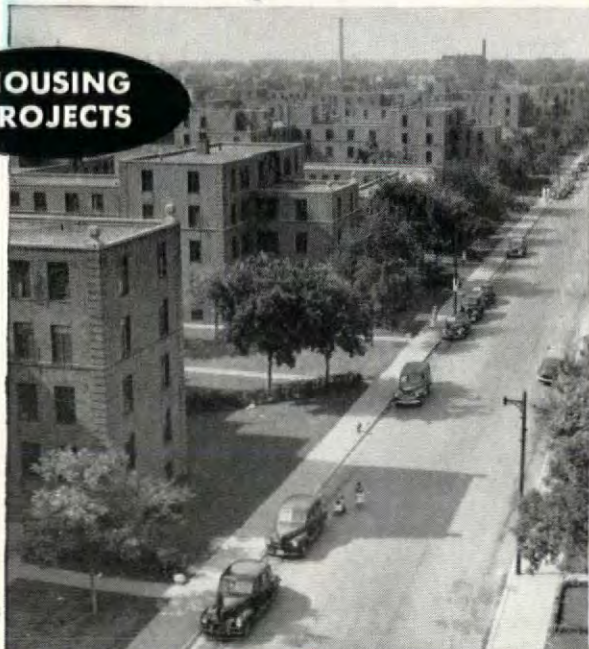
295 Fifth Avenue, New York 16, N. Y.

DUNHAM

vari-vac differential heating

Cuts fuel costs up to 40%

**HOUSING
PROJECTS**



*Julia C. Lathrop Homes, Chicago, Ill.
Architectural Director: Robert S. Degolyer, Chicago, Ill.*

**OFFICE
BUILDINGS**



*Medical-Dental Building, Seattle, Wash.
Architect: W. Henry Fey, Seattle, Wash.*

provides precision temperature control for every type—every size—building

Substantial Savings in Fuel Costs are assured with Dunham Vari-Vac* Differential Heating Systems. That's because outside weather and inside temperatures automatically control steam consumption. No more steam is ever used than is necessary.

Dunham Vari-Vac economizes with a "continuous" flow of steam at variable pressures and temperatures. In severe weather, Vari-Vac uses steam as "hot" as 218° F. In mild weather, smaller quantities of steam as "cool" as 135° F. are expanded to meet comfort needs.

Sized to Suit Your Needs...in New or Existing Buildings

Seven different systems are available, depending on the degree of control desired. Whichever system you specify—whether a simple, manually operated Basic Job or a fully automatic Supreme Installation—your client can be sure of maximum fuel economy and comfort...regardless of the size, type, age or location of his building.

**Variable Vacuum*

C. A. DUNHAM COMPANY

400 W. Madison Street, Chicago 6, Illinois

In Canada: C. A. Dunham Co., Ltd., Toronto • In England: C. A. Dunham Co., Ltd., London
Fin-Vector Radiation • Baseboard Radiation • Convactor Radiation • Vacuum Pumps
Condensation Pumps • Horizontal and Vertical Discharge Heaters • Traps • Valves



Instantaneous response
to outside weather
changes.



Convenience of cen-
tralized operation.



Automatic Compensa-
tion for heat loss.



Heat supply and
demand perfectly
balanced.

Send for Free Booklet 2101-5. Tells all you will need know about this amazing system—how it operates, how it may be fitted exactly to your clients' needs. Write for your copy.



**3 months old and making
safety switch history!**

BULLDOG VACU-BREAK MASTER SAFETY SWITCH

Now, one great line of 38 Bulldog Vacu-Break Master Switches fills all safety switch requirements! Type A switches . . . at C prices . . . are possible only by concentrating switch production on one sensible, simplified line. Just 38 switches . . . instead of hundreds . . . to save you time and effort wherever you specify or recommend safety switches.

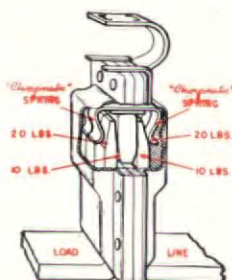


**A Type A Switch
at Type C prices!**

All the famous Bulldog features!

Exclusive Clampmatic Contacts!

"Clampmatic" is a method for obtaining extra and enduring contact pressure between switch jaws and blades. In ordinary switches, jaws exert about 10 lbs. pressure on blade. In Vacu-Break Switches, the Clampmatic spring augments this with 20 lbs. pressure on both "line" and "load" sides of jaws. Thus, Clampmatic provides a total of 30 lbs. of contact pressure between both sides of blade and jaw for "bolt-tight" contact.



Exclusive Vacu-Break Principle!

Dangerous arcs are quickly snuffed out by lack of oxygen in Bulldog's exclusive Vacu-Break arcing chamber. This eliminates excessive arcing which, in ordinary switches, causes burning, pitting and rapid deterioration of contacts. Thus, the Bulldog Vacu-Break chamber materially reduces switch maintenance.



Voidable Cover Interlock!

Interlock: With interlock pin at Hole A, cover cannot be opened unless switch is OFF. Cover must be fully closed to throw switch ON.

To void interlock: Simply push interlock up and insert interlock pin in Hole B. Switch can then be thrown ON or OFF with cover open or closed.

...including

- Quick-make and quick-break
- Anti-creepage corrugations on switch bases and arc chambers
- Solderless cable terminals (wire grips)
- Horsepower-rated
- Silver-surfaced current-carrying parts
- Spring-reinforced fuse grips
- Ample supply of concentric K.O.'s
- Generous wiring space in all switches



BULLDOG SCORES AGAIN!

Just 38 great Master Vacu-Break Switches replace hundreds of Type A, C and D safety switches.

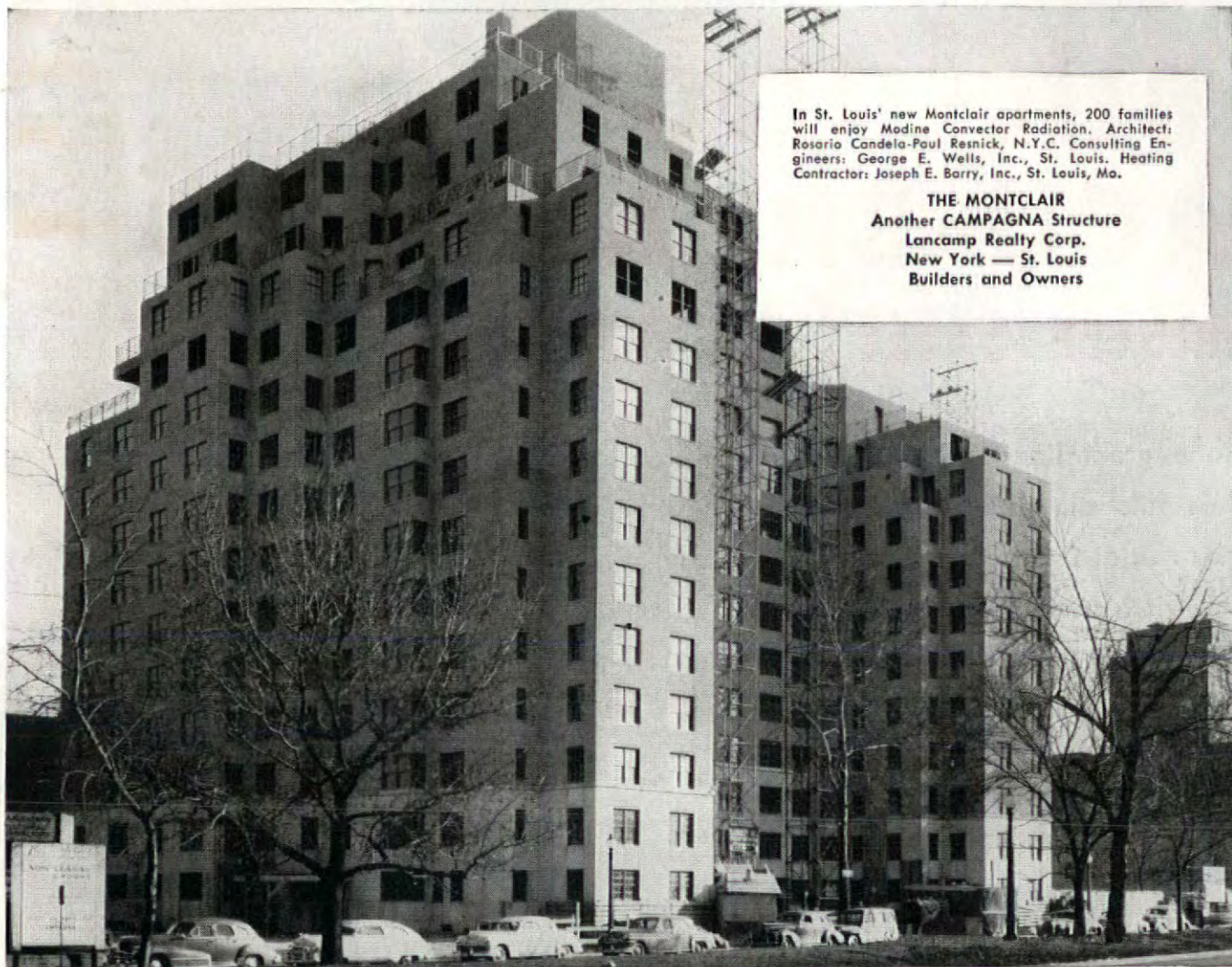
WRITE DEPT. 453-B FOR DESCRIPTIVE FOLDER
BULLDOG ELECTRIC PRODUCTS COMPANY
DETROIT 32, MICHIGAN • FIELD OFFICES IN ALL PRINCIPAL CITIES
IN CANADA: BULLDOG ELECTRIC PRODUCTS OF CANADA, LTD., TORONTO



BULLDOG

THE LEADER IN FLEXIBLE ELECTRICAL DISTRIBUTION

THE MONTCLAIR IN ST. LOUIS CHOOSES MODINE



In St. Louis' new Montclair apartments, 200 families will enjoy Modine Convactor Radiation. Architects: Rosario Candela-Paul Resnick, N.Y.C. Consulting Engineers: George E. Wells, Inc., St. Louis. Heating Contractor: Joseph E. Barry, Inc., St. Louis, Mo.

THE MONTCLAIR
Another CAMPAGNA Structure
Lancamp Realty Corp.
New York — St. Louis
Builders and Owners

AMERICA'S FINEST BUILDINGS USE AMERICA'S FINEST CONVECTORS



Modine Convectors come in three distinctive enclosures — Type F (shown) for free-standing or recessed installation, Types W and S for wall-hanging.

More and more Modine Convectors are being specified to meet the high standards of excellence demanded of modern heating equipment.

There are sound reasons for this popularity. Foremost is *quality*... proved by the universal acceptance which Modine Convectors have enjoyed among architects and engineers for more than twenty years.

With Modine, quality is no idle catchword. It's *real*... a result of sound engineering — highest grade materials — advanced manufacturing

techniques — skilled craftsmanship — and a rigid quality-control program.

To measure this quality, personally inspect a Modine Convactor on the job or in your office. Talk with owners. You'll find unmatched styling — superior enclosure and heating unit construction — longer life — and better heating performance.

Call your Modine representative listed in your classified phone book, or write Modine Mfg. Co., 1507 DeKoven Ave., Racine, Wis.

R-1114

Modine CONVECTORS

Must we depend on bravery?

Time and again we read of those who brave flames to save life and property from almost certain destruction.

These stories are heartwarming, for it takes courage of the highest order to walk through fire. Yet shouldn't we feel somewhat shamefaced too? . . . that we continue to count on such bravery, when we can and should *prevent* fire?

How much better to have fire automatically stopped *before* the fireman's life is risked, *before* the property is ruined. With Grinnell Automatic Sprinkler Systems fire can be checked at its source, wherever and whenever it may strike, with automatic certainty. And 70 years' experience prove Grinnell's reliability.



SEE THAT GRINNELL SPRINKLER HEADS ARE ON GUARD

In factories, hotels, hospitals, schools and theaters, there is a moral obligation upon architects and management to provide the utmost protection of life and property. For your own sake, be sure the lives and property for which you are responsible are protected with Grinnell automatic sprinkler heads—your assurance of positive automatic fire protection.

Grinnell Company, Inc., Providence, R. I.
Branch offices in principal cities.

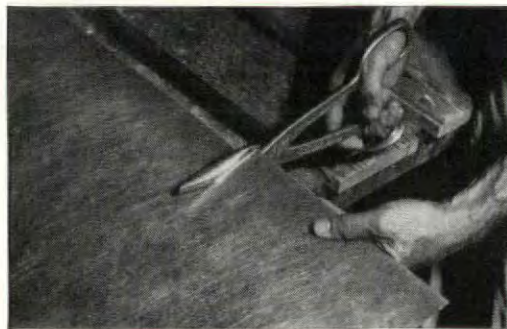
GRINNELL

FIRE PROTECTION SYSTEMS



PRODUCT NEWS

Shatterproof and an effective light diffuser, Plasta-Glass is suitable for industrial glazing and skylights. Commercial laboratory tests indicate that the Alsynite product permits only half as much heat transmission as glass, so that it effects fuel savings during winter, and contributes to cooler interiors in summer. Although priced at \$1.20 per sq. ft., the material's ease of handling, light weight—about 8 oz. per sq. ft.—and load strength combine to make it an economical design element. In fact, the installed



Colored transparent sheeting that can be sawed, drilled, cut with tin snips, and nailed, Plasta-Glass is economical for glazing and partitions.

cost is said to be from 30 to 80% less than other light transmitting materials. As simple to use as wood, Plasta-Glass may be cut with a power or hand saw or shears, or drilled. Nails, bolts, screws or mastic may be used for fastening. The material is available in rose, light green, leaf green, aqua, maize, and opal. *Manufacturer: Alsynite Co. of America, 4670 DeSoto St., San Diego, Calif.*

Why Build In WHITE ELEPHANTS?



Lightweight ZONOLITE® Plaster Aggregate Saves Dead Weight Handling

On an average house you easily save up to 10,000 pounds dead weight (the weight of several elephants) with the use of lightweight Zonolite Plaster Aggregate—used in plaster in place of sand.

Zonolite Aggregate, weighing only 1/12 as much as sand, saves time in plaster preparation and clean-up. In one recent multiple-story job, Zonolite plaster was instrumental in saving 86 days in construction time.

Zonolite plaster provides safer homes too, for it has attained fire ratings up to four times as great as sand plaster.

For Finest Homes, or Low Cost Housing, Peoria Plastering Team Uses ZONOLITE Plaster



Left to right: Ellis Hartseil, LeRoy Wallace, Everett Hartseil (contractor), Norman Hartseil, on a low-cost job with ZONOLITE. At right another Hartseil job—\$100,000 "finest" Peoria home with ZONOLITE plaster throughout. LET ZONOLITE VERMICULITE AGGREGATES save time and money on your next job. Write for details today.



Member of
Vermiculite Institute

Zonolite Co., Dept. AF 111
135 S. LaSalle St.
Chicago 3, Illinois

Please send complete specification material on Zonolite vermiculite Plaster Aggregate, including summary of fire tests.

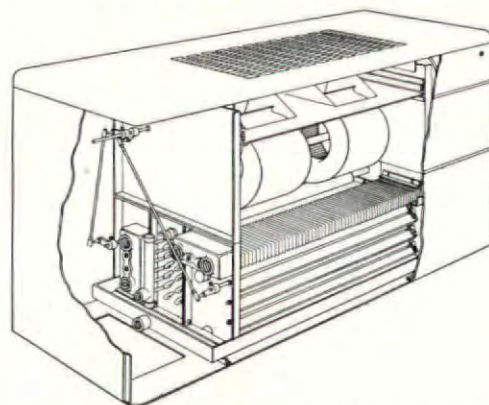
Name.....

Address.....

City.....Zone.....State.....

AIR CONDITIONER designed for safe use in hospital operating room

In the gaseous atmosphere of a surgery, a spark could mean—and often has meant—a disastrous explosion (see *Explosions in Operating Rooms*, Oct. issue, '50). Hospital planners may therefore welcome Trane's new operating room air conditioner. Engineered to meet exacting safety requirements the new unit provides complete temperature and humidity control, ventilation and filtering. It is equipped with an explosion-proof motor (class C ether) and all electrical wiring and switches conform with the recommendations of the National Electric Code for



applications in hazardous gas atmospheres.

Of course the comfort value of air conditioning to both doctor and patient cannot be minimized. In addition, it has been found that a closely controlled operating room humidity helps the patient maintain normal metabolism by regulating the amount of body fluids he loses by evaporation. A pneumatic control system on the new model maintains temperatures and humidities at the desired levels. When the fans are running, 100% outside air is processed. When the motor is shut off, a damper arrangement allows room air to enter the unit, pass over the heating coil and heat the room by convection.

Construction features of the conditioner include copper tubes and aluminum fins on both the heating and cooling coils, a removable front panel which permits easy access to the interior, and glass fiber blanket for thermal and sound insulation. All metal parts are bonderized before painting, and the unit is finished in a gray prime coat. Four sizes ranging from 200 to 800 cfm capacity are available.

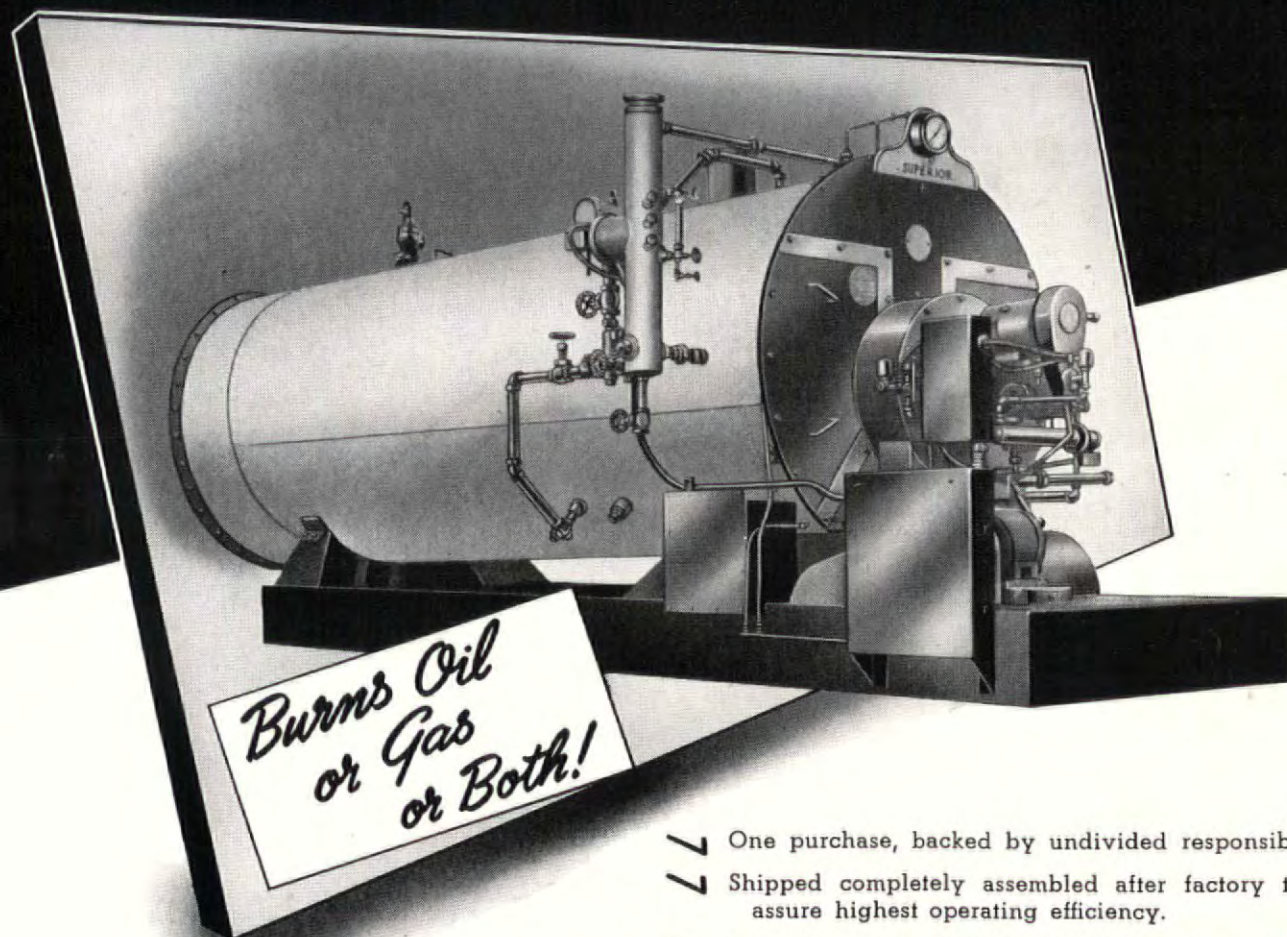
Manufacturer: The Trane Co., La Crosse, Wis.

(Continued on page 272)

HERE'S YOUR

Complete

STEAM PLANT



*Burns Oil
or Gas
or Both!*

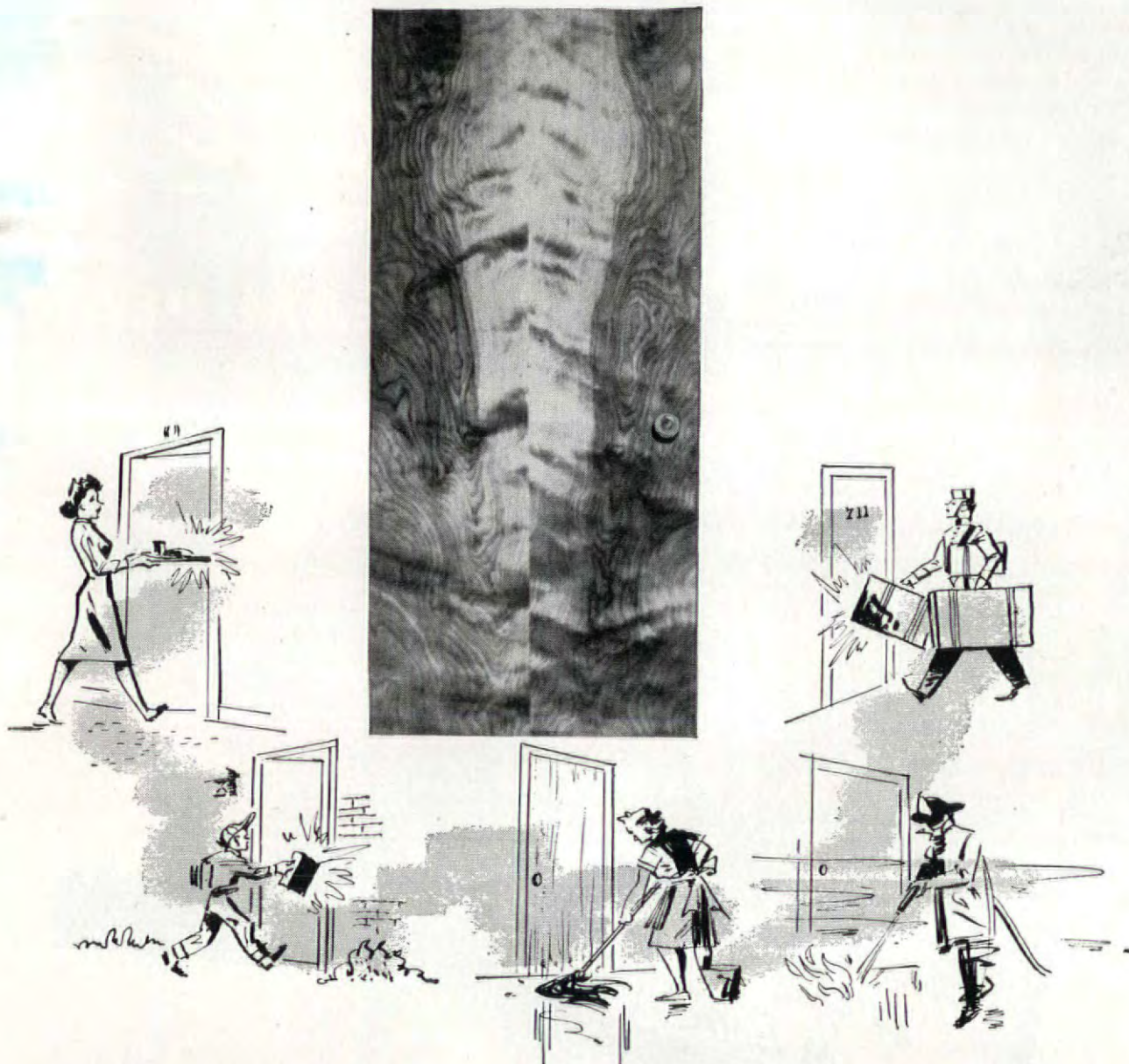
- ✓ One purchase, backed by undivided responsibility.
- ✓ Shipped completely assembled after factory tests to assure highest operating efficiency.
- ✓ More than 80% thermal efficiency guaranteed.
- ✓ 4-pass design provides 5 sq. ft. of heating surface per b.h.p.
- ✓ Induced draft fans which are built-in eliminate the need of an expensive chimney.
- ✓ Simple installation requires no special foundation.
- ✓ Clean, quiet operation.
- ✓ Heavy-duty, rugged construction assures long-lived dependability.
- ✓ Burner equipment to suit your fuel: gas, oil or both.
- ✓ 18 sizes from 20 to 600 b.h.p. for pressures up to 250 p.s.i., or for hot water heating.
- ✓ For complete details, write today for catalog 312.

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STEAM GENERATORS

SUPERIOR COMBUSTION INDUSTRIES, Inc.

Factory: Emmaus, Pa.

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Roddiscraft DOORS... face the facts of life

Doors lead a double life — they must be both decorative and durable. Roddiscraft Solid Core Flush Veneered Doors are constructed to resist abuse, water, fire — and wide variations in temperature and humidity. They are warmly beautiful, as only natural wood can be.

The engineering principles of plywood construction account for the great strength and durability of Roddiscraft doors. Standard thickness face veneers are bonded to 1/10" hardwood cross-bandings with fully waterproof phenolic resin glue . . . forming an assembly which when backed by the solid core, is very difficult to chip or split.

Standard thickness face veneers . . . 1/28" for most woods . . . stand up better to extremes of temperature and humidity. With the waterproof glue line so near the surface, shrinking and swelling of face veneers is practically eliminated . . . the formation of hairline cracks is prevented . . . permanent beauty is assured.

Where you need the best in beauty and durability, specify Roddiscraft Solid Core Flush Veneered Doors. See Sweet's Architectural File, Page $\frac{16C}{Ro}$ for complete specifications, including hollow core doors, X-ray doors and doors for added fire protection.

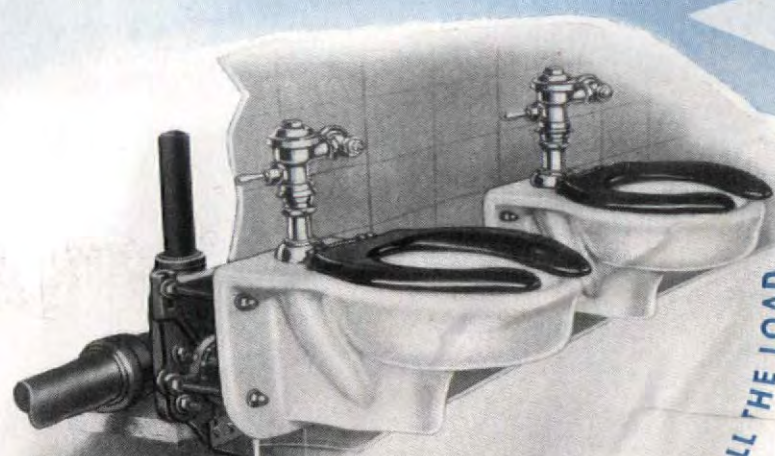
Roddiscraft

RODDIS PLYWOOD CORPORATION
Marshfield, Wisconsin

NATIONWIDE Roddiscraft WAREHOUSE SERVICE

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Now You Can Build A NEW WAY and Gain More Usable Floor Space



THE ZURN WAY RELIEVES THE WALL OF ALL THE LOAD

—floor space that is usually required for floor supported equipment, thick load-bearing walls and space-hogging closet fittings and drainage lines. You gain more space on the surface of every floor and enough space between floors in a ten-story building to provide an entire extra floor. The New Way reduces the use of building materials, eliminates the need for building labor and protects rest rooms against premature obsolescence. The New Way uses wall type plumbing fixtures installed the Zurn Way—the simple, fast, safe way to install wall type closets, lavatories, sinks and other fixtures. Zurn Wall Closet Fittings and Carriers lift sanitation to a new high and reduce maintenance of cleanliness to an all-time low. Insist on wall type plumbing fixtures and gain more usable floor space on every floor area in old and new factories, in hospitals and schools, in every type of building. Write for booklet entitled "You Can Build It (Cubic Foot of Building Space) For Less The New Way".

Fixture-Bare Floors Win Friends and Influence People

Yes, people in every walk of life because the immaculate cleanliness of fixture-bare floors arouses a sense of well-being and an incentive to cleanliness. Cleanliness and orderliness are universal in their appeal. Cleanliness is no problem in rest rooms where plumbing fixtures are off the floor because there is nothing to interrupt the sweep of the broom and the swish of the mop. Those who use such toilet rooms are moved to respect cleanliness and to help maintain it. Specify wall type plumbing fixtures—they reduce the cost of rest room maintenance and protect against premature obsolescence.



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

Sales Offices in All Principal Cities

Pre-eminent Manufacturer of Sanitary Products for the Protection of Human Health and Modern Structures.

Write for this booklet. It tells how "You Can Build It (Cubic Foot of Building Space) For Less The New Way".



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



Tuf-flex Doors in Toledo's Central Union Terminal

WHAT'S BEHIND THIS ENTRANCE?

Even more than you can see—which is plenty)! For many visitors this entrance is the *gate* and the *gauge* of the terminal, the railroads that use it, the city itself. That's why its clean, crisp, neat note of modernness and alertness is so important. It creates and leaves a good impression.

*Tuf-flex** Doors can help create the same impression of *your* building and its tenants . . . for you, the tenants and the tenants' *customers*. And that's invaluable.

For store owners, *Tuf-flex* Doors put the whole store in a showcase, and they're made especially

tough to take the traffic they build. They're $\frac{3}{4}$ "-thick plate glass, tempered to make it 3 to 5 times tougher than regular plate.

You get beautiful *Tuf-flex* Doors complete with bronze or aluminized fittings designed to take standard pivot hinges and other builders' hardware.

See the variety of *Tuf-flex* Door designs and hardware finishes . . . have your nearby Libbey-Owens-Ford Glass Distributor give you complete information. Or mail the coupon for our *Tuf-flex* Door book.

*®



TUF-FLEX

Tempered

Plate Glass DOORS

MADE ONLY BY LIBBEY-OWENS-FORD GLASS COMPANY
7491 Nicholas Building, Toledo 3, Ohio

Libbey • Owens • Ford Glass Company
73111 Nicholas Building, Toledo 3, Ohio

Please send me a copy of your book showing uses of
Tuf-flex Doors, as well as your installation detail folder.

Name _____

Company _____

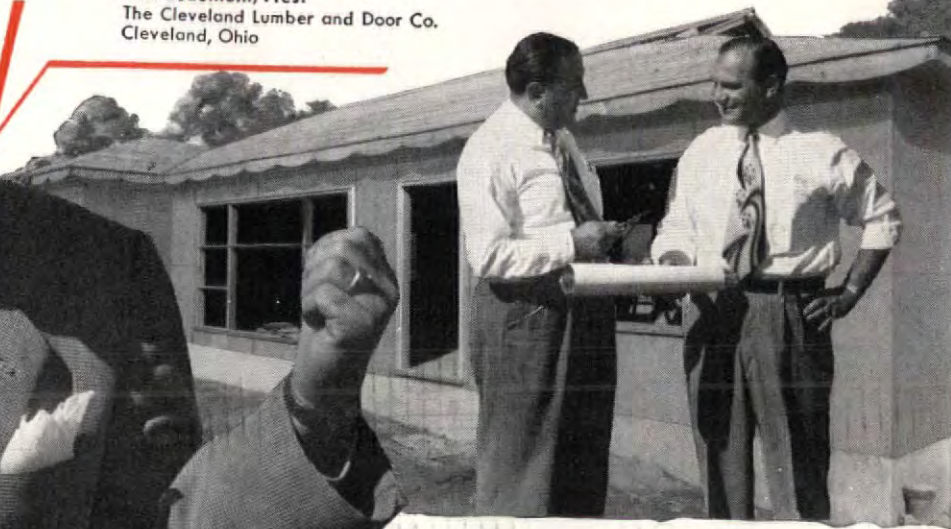
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INSULITE® Leadership in Cleveland...

Survey shows **DEALERS PREFER INSULITE 4 to 1**
over next leading brand of insulating sheathing

*"Many of my builder-customers
are saving up to \$100⁰⁰ per job
by using Bildrite® Sheathing!"*

Don Beaumont, Pres.
The Cleveland Lumber and Door Co.
Cleveland, Ohio



Builders: Al Azolino and
Charlie Delia, Lath-Rite Co.

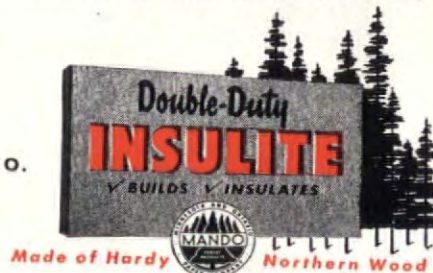
A recent impartial survey in Cleveland showed an overwhelming majority of dealers preferring **INSULITE BILDRITE SHEATHING**. The reason is builder demand... Cleveland builders are getting better jobs at a lower cost with **BILDRITE**. Here's how Don Beaumont, prominent Cleveland dealer, explains it:

"We sell many thousands of feet of **BILDRITE SHEATHING** because it gives our builder-contractor customers good structural insulation and still saves them approximately \$100.00 per job. For example, Al Azolino and Charlie Delia, two of my best builder-customers, have been saving \$80.36 on every house they build, using **BILDRITE** rather than horizontally-applied wood

sheathing. And, now they're going to save \$20.00 more by eliminating corner-bracing. **BILDRITE** was the first insulating sheathing to be accepted by F.H.A. for use *without* corner-bracing. Besides the dollars-and-cents saving, my customers like **BILDRITE** because it's waterproof throughout and is easy to cut and apply."

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.

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MINNESOTA AND ONTARIO PAPER CO.



MINNEAPOLIS 2, MINNESOTA

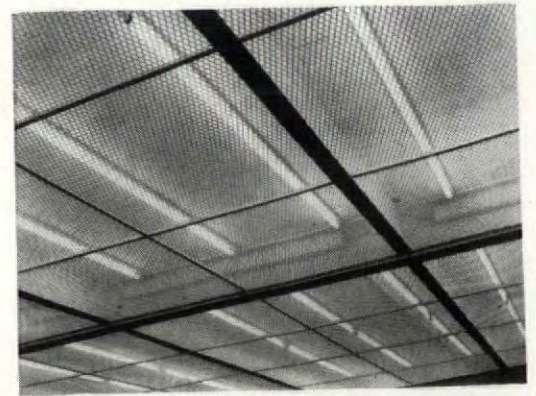
PRODUCT NEWS

EXPANDED METAL used for suspended ceiling panels

An economical means of masking unsightly ductwork and beams while providing effective light diffusion was employed by Illinois architect Carter E. Hewitt in the Topeka, Peoria & Western Railroad building. To create an attractive veil which would serve as a diffusor for the 8' slimline fluorescent tubes above, Hewitt designed a ceiling of $\frac{3}{4}$ " 9 gauge expanded metal in 4' panels suspended on a simple metal grid



Enameled panels of expanded metal make a crisp stairwell trim, and an inexpensive hung ceiling.



of 1" tees welded to junior beams 8' apart. Every part of the ceiling is accessible; any one of the 28 lb. sheets may be lifted and moved over to rest on an adjacent sheet. Total cost came to \$1.75 per sq. ft., installed and enameled. Expanded metal was also used as a decorative light break on the stairwell.

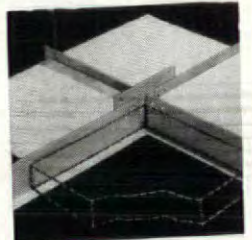
Manufacturer: Wheeling Corrugating Co., Wheeling, West. Va.

SUSPENDED CEILING SYSTEM has two basic parts for simple installation

Drive-Lok ceiling system has an integral locking feature which eliminates the need for nuts, rivets, bolts or special tools. The suspension method utilizes only two parts—a metal tee bar and one all-purpose metal clip for the entire assembly. The tee bars are hung on suspension wires from the building structure above to form a grid connected at intersections with the clip device. Rigid insulating panels are then laid in between the tees to complete the simple installation. The system is adaptable to almost any pattern—including squares, diagonal and basket weave, ashlar and diagonal—for all standard size panels from 16" to 48", in any thickness. Incombustible and lightweight—the grid weighs about $\frac{1}{2}$ lb. per sq. ft. in place and about $\frac{3}{4}$ lb. with ceiling panels inserted—Drive-Lok usually can be installed in buildings not originally designed for ceiling loads. Each panel is literally an attic scuttle, so that repair men can easily get to the ceiling area above. Installed cost of the system ranges from 55 to 65¢ per sq. ft. including grid, panels, wires and labor.

Manufacturer: Lok-Products Co., 4877 San Fernando Rd. West, Los Angeles 39, Calif.

(Continued on page 278)



Palm Desert, Calif.

Ft. McPherson, Ga.



Coast to Coast

THEY MAKE A HOME OUT OF ANY DWELLING



Pittsburgh, Pa.

AMWELD INTERIOR STEEL DOORS FRAMES and SLIDING CLOSET DOOR UNITS

Whether you're building on contract or to sell — AMWELD Interior Steel Doors, Frames, and Sliding Closet Door Units fill the need for million dollar projects as well as \$8,500 homes. They are made with these basic purposes in mind: (1) to be attractive, (2) to last a lifetime, and (3) to save money on every opening for the builder. These are but three reasons why AMWELD is becoming the "most asked for" door, frame and sliding closet door unit from coast to coast. Write us for more reasons, styles, sizes and complete specifications.

K-D UNITS, TOO! Sliding closet door units are also available in packaged, knocked-down form, complete with header, jambs, track, hardware, and installation print. Ideally suited for both new construction and remodeling.

AVAILABLE IMMEDIATELY

BUILDING PRODUCTS DIVISION

THE AMERICAN WELDING & MANUFACTURING CO.

330 DIETZ ROAD

WARREN, OHIO



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**

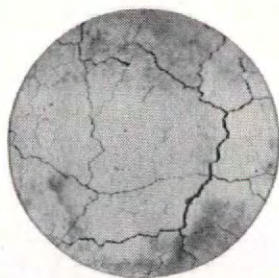
THREE TIMES THE FIRE RESISTANCE

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 $\frac{5}{8}$ " FIRESTOP BESTWALL has a 1 hour fire resistance rating *for walls and ceilings!*

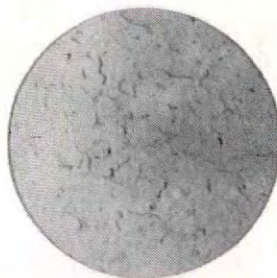
Now architects, builders and contractors can meet rigid municipal and State building code requirements as well as those of FHA and VA—for fire-resistant interior wall and ceiling construction in nearly any building.

The $\frac{5}{8}$ " 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

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Quality made Certain . . . Satisfaction Guaranteed

CERTAIN-TEED PRODUCTS CORPORATION

118 LANCASTER AVENUE, ARDMORE, PENNSYLVANIA

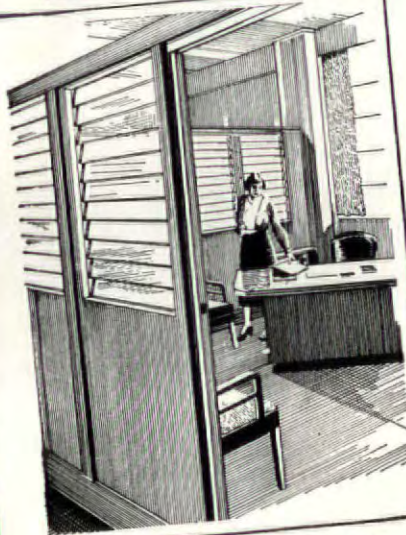
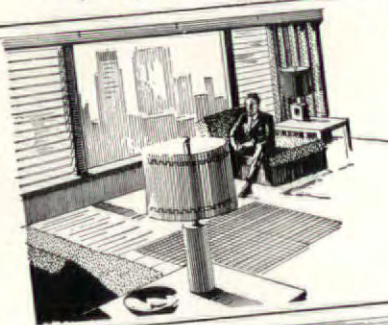
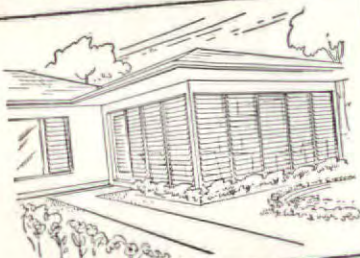
ASPHALT ROOFING • SHINGLES • SIDINGS
ASBESTOS CEMENT ROOFING AND SIDING SHINGLES
GYPSUM PLASTER • LATH • WALLBOARD • ROOF DECKS
ACOUSTICAL TILE INSULATION FIBERBOARD

design with jalousies

Win-Dor

APPROVED

JALOUSIES



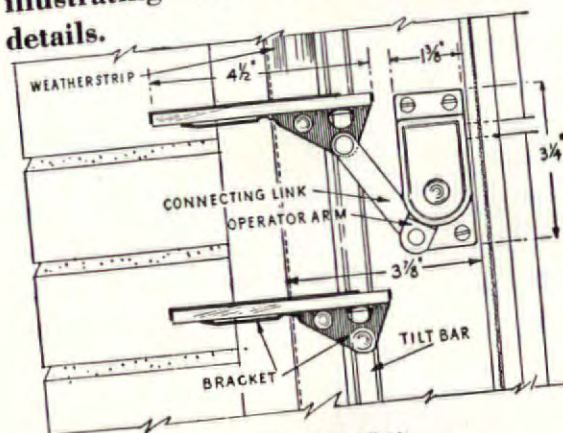
• Win-Dor approved Jalousies are ideal for contemporary architecture as they provide modern building design with an element that is both functional and beautiful.

This new conception of the use of adjustable louvers provides the imagination with unlimited possibilities.

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.

With clear or opaque glass slats which are snugly bracketed, yet easily removable and weatherstripped, Win-Dor approved Jalousies serve as remarkably convenient window openings providing full ventilation and full protection with automatic locking when closed.

We suggest you send for our circular illustrating varied installations and details.

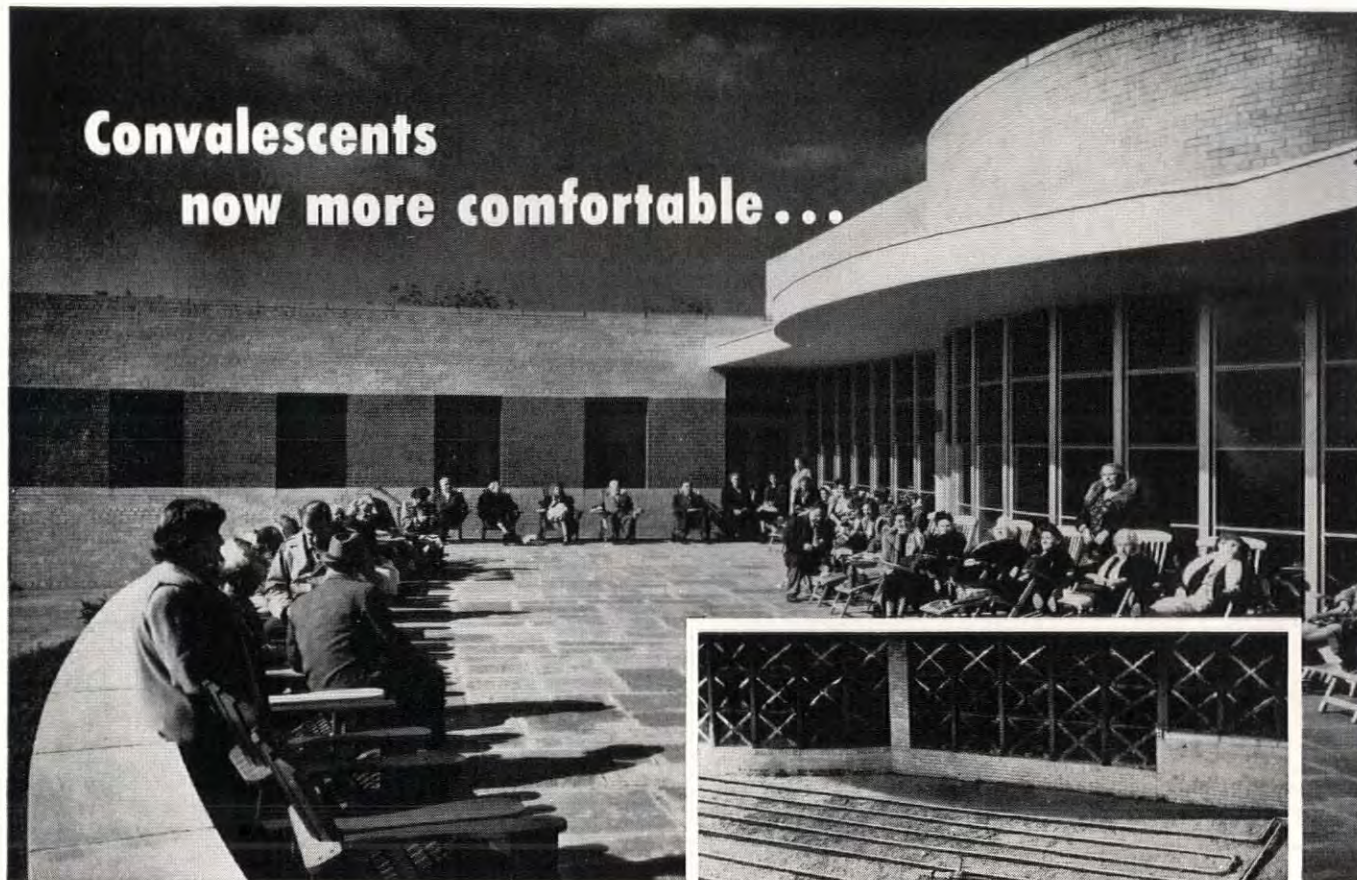


JAMB ELEVATION
SHOWING OPERATOR INSTALLATION WITH SLATS OPEN

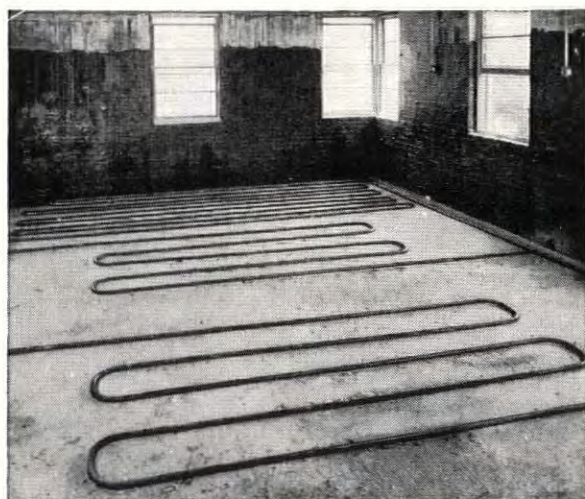
see our catalog in Sweet's
or write for complete details

THE CASEMENT HARDWARE CO., DEPT. E, 406 N. WOOD ST., CHICAGO 22, ILLINOIS

**Convalescents
now more comfortable...**



**with radiant heating
and snow melting**



• You'll look a long time before you find a building more ideally suited to the needs of the convalescent. It's the Brooklyn Jewish Home for Convalescents in Far Rockaway, N. Y.

They used 27 tons of National Steel Pipe for the radiant heating and snow melting installation. Every room has radiant heat—the ideal heating system for the aged and the ill.

To make full use of the terrace year round, a snow melting system was installed using National Steel Pipe. Now, patients can utilize the sun-bathed terrace in all but the very worst weather.

National Steel Pipe has been used for many radiant heating systems in homes, institutions and industrial plants. The pipe is made to the same rigid standards that have made National the preferred pipe for conventional heating for over 60 years.

If you have any questions regarding pipe for radiant heating or snow melting, make use of our wide experience. We think we'll be able to help you.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.

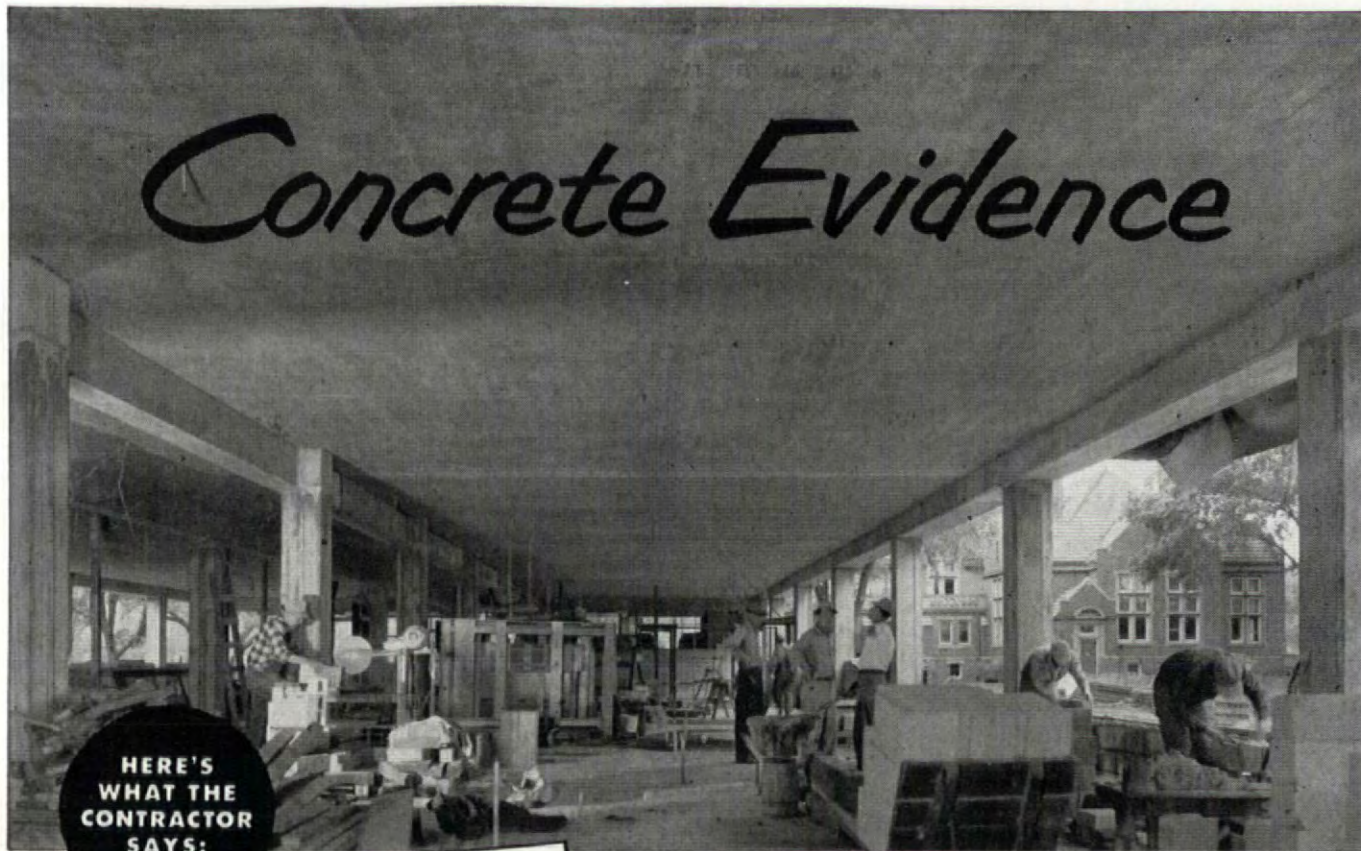
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK



NATIONAL Steel PIPE

UNITED STATES STEEL

Concrete Evidence



HERE'S
WHAT THE
CONTRACTOR
SAYS:

ADJUSTABLE JOIST CO.

Formwork Erected and Removed for
Reinforced Concrete Construction
85-

MINNEAPOLIS, MINNESOTA
2301 Taylor Tower - Room 2108

September 21, 1958

Masonite Corporation
111 W. Washington Street
Chicago, Illinois

ATTENTION: MR. T. D. GASKIN

Dear Tom:

We recently wound up another job using Masonite Concrete Form Presdwood. This was the Science Building at Hamline University, St. Paul, Minnesota. We made the forms for about 55,000 sq. ft. of exposed concrete on this job.

After the forms were removed, the surface was smooth and even, without any pattern or grain marks that had to be rubbed down.

But that isn't the only reason we like to use your material. It saves a lot of time and money. (Stop around some time and I'll show you some comparisons that will really surprise you.) Another thing is that we can use the forms over and over again.

As far as we are concerned, Masonite Concrete Form Presdwood is the best material on the market for forming smooth-surface concrete.

Yours very truly,
ADJUSTABLE JOIST CO.

By *R. F. Thrall*
President



MASONITE[®]
CORPORATION

BOX 777, CHICAGO 90, ILLINOIS

"Masonite" signifies that Masonite Corporation
is the source of the product

Hamline University Science Building, St. Paul, Minn. Architects:
Holabird & Root & Burgee. General Contractor: George J.
Grant Construction Co. Sub-Contractor: Adjustable Joist Co., Inc.

No "after work" when you use Masonite Concrete Form Presdwood

How much could you save if you didn't have to "rub down" the surface of concrete after pulling the forms?

You do away with such costly, time-consuming steps when you pour into forms of Masonite Concrete Form Presdwood[®]. It has no grain, no pattern . . . just a super-smooth, perfectly flat surface that leaves concrete ready to paint.

This is only one of many reasons why experienced contractors are using this low-cost form material. You get all these other advantages, too:

- Insures complete, uniform hydration. Absorbs practically no moisture.
- Saves form lumber costs. Needs no dressed and matched material.
- Easy to cut and fit with ordinary tools. Minimum waste.
- Can be curved for arches, columns, vaults, etc.
- Can be used again and again. Some contractors report more than twenty applications. High percentage of salvage.
- Won't split, splinter or crack. Won't flake or separate.
- Large 4 x 12-ft. panels are accurately cut. Cover large areas fast with minimum number of joints.

Interested? Get the complete story of this time and money-saving form material. Fill out and mail the coupon today.

MASONITE CORPORATION, Dept. AF 11
Box 777, Chicago 90, Illinois

Please send me your illustrated manual on Masonite Concrete Form Presdwood.

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Firm.....

Address.....

City and Zone.....State.....

STOP RUST WITH RUST-OLEUM

Effective, long-range *rust control* must start in the plans and specifications for any structure — particularly when iron and steel are important structural materials. Architects and builders find that RUST-OLEUM offers excellent protection — particularly in hidden or inaccessible areas where damaging rust conditions can breed unchecked.

It's particularly essential to safeguard the strength and usefulness of structural columns and beams, metal deck ceilings, crawl spaces and many other details of construction. These are readily damaged over the years where fumes, manufacturing processes and condensation due to limited ventilation cause serious rust damage that may threaten the safety and life of the entire structure.

RUST-OLEUM'S capacity to stop rust has been proved in industrial applications for many nationally-known companies, and leading railroads

for the past 25 years. Its tough, pliable, rust inhibiting film resists the basic causes of rust — dampness, brine, salt air, and general weathering — indoors and outdoors.

Discuss effective *rust control* with your clients. To solve your rust-in-construction problems, recommend RUST-OLEUM. Specify RUST-OLEUM as the primary or shop coat on all steel, metal sash, structural beams and bar-joists, fire escapes, etc. Your clients will readily recognize that future protection of sealed-in steel begins with the primer coat.

We're ready at all times to consult with you on rust problems and offer specific recommendations. See the complete RUST-OLEUM catalog in Sweet's Architectural File, or write for a copy. Industrial Distributors in principal cities of the United States and Canada carry large stocks of RUST-OLEUM for immediate delivery.



Available in many
COLORS
aluminum and white

Beautifies as
it Protects

"RIGID ECONOMY, MON!"

RUST-OLEUM CORPORATION

2502 Oakton Street, Evanston, Illinois

PRODUCT NEWS

AUTOMATIC EXTINGUISHER provides inexpensive fire protection

The Silver Spray fire extinguisher does not have to be pumped or aimed at a fire; nor does anyone have to be around to set it off. Mounted on the wall or suspended from the ceiling, the neatly styled device reacts automatically to a fire in its vicinity. Because each extinguisher works independently in the 350 cu. ft. area it protects, no piping system is necessary and so the units can be installed for about one-third



The heat from the fire melts a fuse on the extinguisher which uncoils a spring against a glass container of carbon tetrachloride. The chemical sprays out, consumes the oxygen under a blanket-fog, and smothers the fire.



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 sacri-

fice 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.

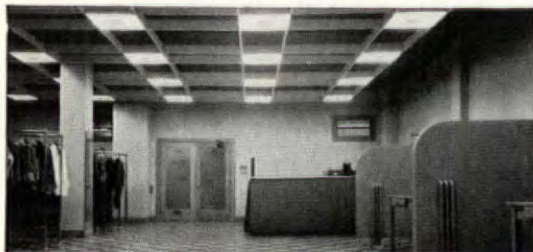


Photo by Milton Mann Studios

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 remodeling 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.

**SKYLIKE
LIGHTING INC.**



...A SILVRAY ASSOCIATED 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. 5-17-1311



the cost of a sprinkler system, claims the manufacturer. They are suitable for home installations, particularly in basements, attics and storage rooms as well as for school buildings and offices.

Here is how the Silver Spray works: When the temperature rises to 160° F. a fuse melts, releasing a coil spring which crashes a heavy metal slug against a thin glass grenade filled with carbon tetrachloride. The fluid sprays out, expanding almost instantly into a fog. The draft caused by the fire draws the spray directly to the danger zone and the fog engulfs the area, cutting off the oxygen and thus smothering the fire. The chemical employed is reported to be effective for many kinds of fires. A non-conductor, carbon tetrachloride is valuable for controlling electrical fires and also works well against oil and gas fires. It will not stain fabrics, furniture or fixtures. Although the chemical has been known to give off toxic gases at very high temperatures, a spokesman for Red Comet, Inc. claims that these are no more hazardous than the fumes and heat exuded by the fire itself.

The extinguisher is encased in an ivory-colored heat-resistant plastic. It comes in two sizes: the 8" senior, which retails at \$11.35; and the 7" standard, priced at \$8.35. Discounts are allowed on quantities of 100 or more.

Manufacturer: Red Comet, Inc., Littleton, Col.

FLOODLIGHT AND BATTERY provide efficient emergency illumination

Exide's Lightguard meets the requirements of many metropolitan civil defense ordinances governing emergency lighting for public buildings. Equipped with a sealed beam directional floodlight, the Underwriters' Laboratories approved battery-powered unit will illuminate 4,000 sq. ft. of floor area when the normal current fails. A relay automatically turns off the flood and turns on the charging unit once power service is restored. Because the Lightguard is kept plugged into a regular outlet, it stays fully charged from the electrical circuit. It furnishes light continuously for 6 hrs. With an additional floodlight, it will operate for 2½ hrs. at 70% capacity. Dimensions of the compact storage



(Continued on page 286)

You can easily keep peace in this family!

"I want a good-looking roof"

"I want a good, safe roof that won't keep needing repairs"



They're actually describing an Asbestone Asbestos-Cement Shingle roof and haven't named half of its advantages. The lady will find what she wants in choice of color, texture, and design. And an Asbestone roof assures her husband lifetime economy—a roof that will not wear out or burn.

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give every advantage your clients want!

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- ✓ Fire-proof
- ✓ Insulating (saves fuel)
- ✓ Weather-proof, weather-tight
- ✓ Needs no paint
- ✓ Freedom from rot and corrosion
- ✓ No upkeep expense
- ✓ Long-range economy



Dutch Lap:
Deep wood-grain texture—designed to emphasize popular straight line effect.



Hexagonal:
Smooth finish—the old reliable for an economical and functional roof design.



Early American Strip:
Deep wood-grain texture—the modern fireproof shingle of traditional design.

Colors: White, Green, Red, Gray, Black

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—designs and colors that sell on sight



Corrugated Roofing and Siding

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—Utility and Flexible grades—for interior and exterior use



More and more contractors are discovering that
Wingfoot Vinyl Enhances Rooms—and Reputations!



MAXIMUM BEAUTY WITH MINIMUM CARE!

For clients, this may be the best news of all: Wingfoot Vinyl is resistant to the action of greases, fats, oils, mild acids, commercial cleansers. It retains its brand-new beauty year after year without waxing. And this remarkable wall-to-wall flooring costs so much less than carpeting!

*We think you'll like
 "THE GREATEST STORY EVER TOLD"
 Every Sunday—ABC Network*

Enhances contractors' reputations because of the many glowing praises from customers.

For this remarkable flooring, developed by Goodyear, is *"the world's most beautiful flooring,"* according to decorators. And the most *acceptable*, according to contractors, because Wingfoot Vinyl is available in both a residential gauge and two commercial gauges—sheet or tile form.

What other flooring has such rich, characterful colors built right into the wearing surface, so that they won't walk off, scrub off or wash away? And *no* other flooring offers as many colors matching the

accepted decorator colors as Wingfoot Vinyl!

New, Modern Colors of Everlasting Beauty

Keeping pace with the modern decorator world — Wingfoot Vinyl is designed in a new rainbow range of fresh, clear, easy-to-live-with shades, keyed to today's decorative trends. Either solid or tone-on-tone, they're correlated to blend beautifully with traditional or modern settings.

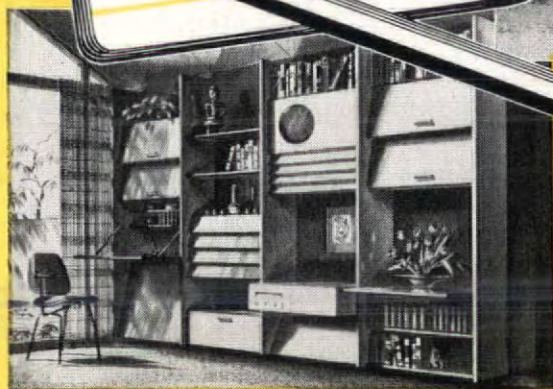
See Wingfoot Vinyl today—in either sheet or tile — at your flooring contractors' or dealers' showrooms. For specification data and color chart, write direct to Goodyear, Flooring Department, Akron 16, Ohio.

Sheet and Tile—Residential and Commercial Grades

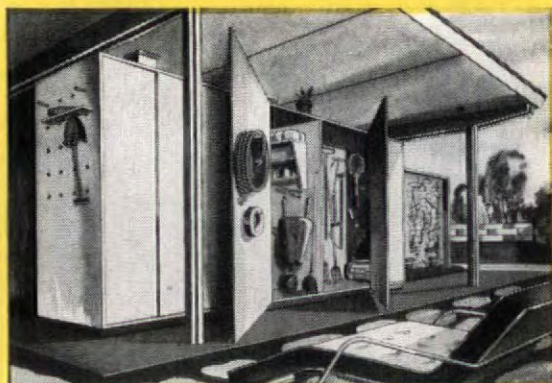
WINGFOOT *Vinyl* **FLOORING BY**
GOODYEAR

For Design Freedom— Plan with Plywood

Ingenious shelf-door wardrobe saves space by use of movable shelves inside plywood doors. The same principal is easily applied to other-than-bedroom storage units. Design by E. W. Hanson, Stillwater, Minn., awarded first prize in "Better Living Home" contest—history's biggest, most successful architectural competition. Plans available; see below.



There's storage to spare in this eye-appealing built-in. Because it's plywood it can't be dented, chipped by hard knocks. Note how it eliminates conventional desk, radio, chest of drawers. Design by Project Planners & Designers, New York City.



Outdoor storage is a blessing in garage and basement-less homes. This Exterior plywood unit holds garden, patio equipment—serves as windbreak to add patio privacy. Designer: Robert A. Little & Associates, Cleveland, Ohio.

IT'S EASY to add client-pleasing distinction to your homes—at low cost—with space-saving, work-saving built-ins. Even modest priced homes can be lifted above the ordinary . . . given far more *usable* floor space with plywood built-ins. And with plywood you have *complete* freedom of design. No tedious juggling to fit "stock size" elements into a cohesive unit. No limit to size, design, finish or color—you plan the built-in to fit the home, not the other way around. Versatile and adaptable, plywood has both appearance and structural value. It's splitproof, puncture-proof, easy to cut, fit and fasten . . . *the logical material for every built-in.*

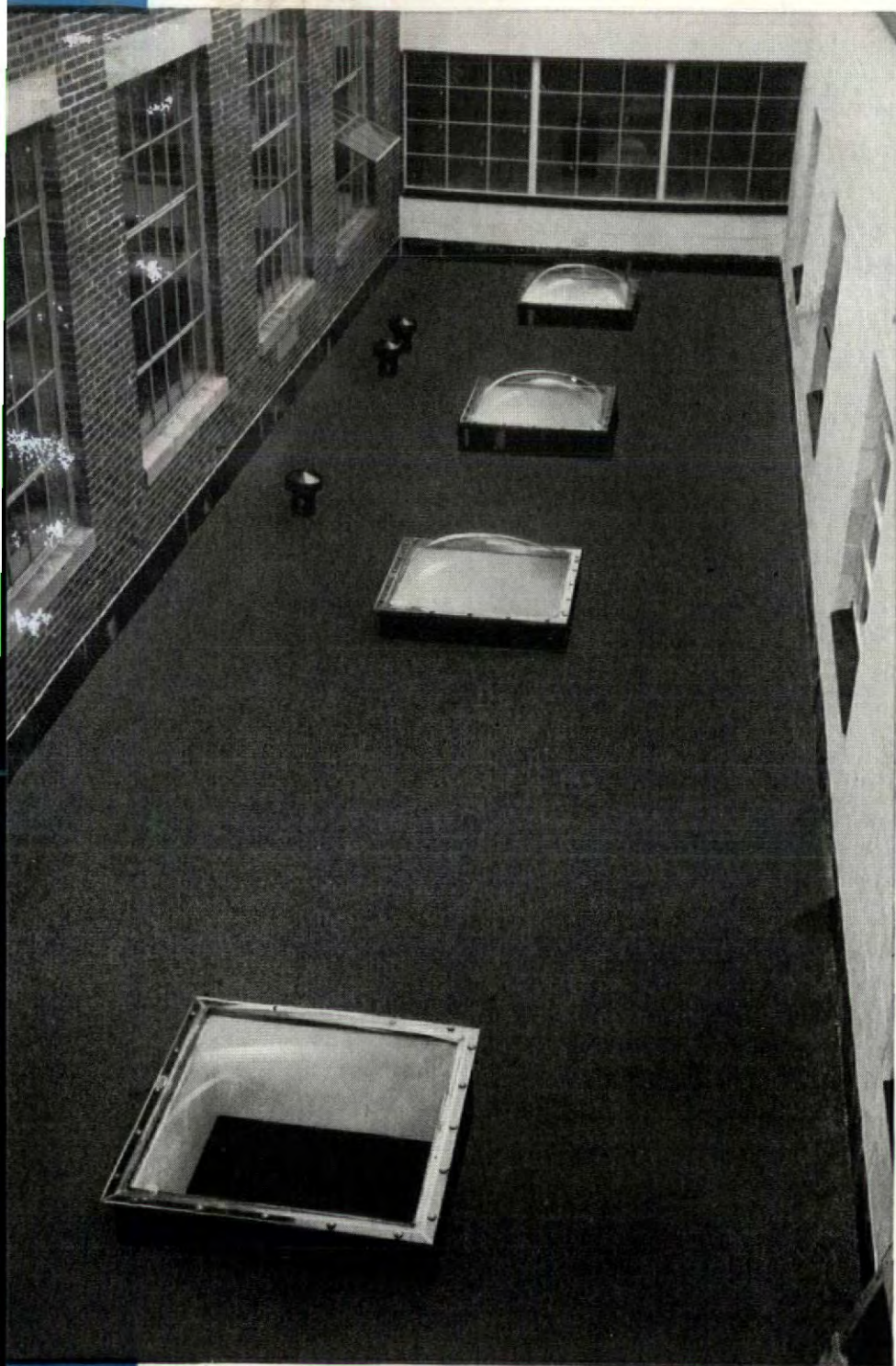
Write today for the idea-full Portfolio of Plywood Built-Ins. Contains over 50 reproductions of winning designs in national "Better Living Home" Contest. Also available: Plan and specification folder for shelf-door wardrobe shown above. For your free copies write (USA Only) Douglas Fir Plywood Association, Tacoma 2, Washington.



Douglas Fir Plywood

AMERICA'S BUSIEST BUILDING MATERIAL

PLEXIGLAS Skylights Let in **ALL** the Light



↑ **CLEAR BEAUTY, INSIDE AND OUT**—Wascolite Dome Skylights, manufactured of PLEXIGLAS by the Wasco Flashing Co., Cambridge, Mass., solved difficult lighting problem at Brandeis University, Waltham, Mass. Administrative offices on the ground floor of the building were overshadowed by adjacent walls rising above skylighted roof. The Wascolites admit maximum amount of daylight and contribute attractive architectural appearance. Architects: Isidor Richmond and Carney Goldberg, Boston, Mass.

PLEXIGLAS is a trade-mark, Reg. U. S. Pat. Off. and in principal foreign countries.
Canadian Distributor: Crystal Glass & Plastics, Ltd., 130 Queen's Quay at Jarvis Street, Toronto, Ontario, Canada.

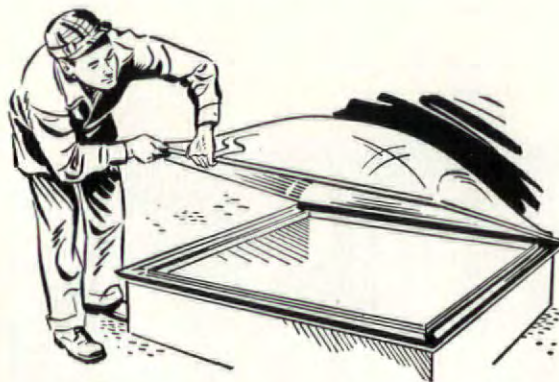
Old-fashioned skylights actually *keep light out* with wire reinforcements and opaque, dirt catching cross members. PLEXIGLAS, however, does away with dingy half-lighting. Light-obstructing supports are eliminated when the material is formed into domes. Rain washes soot and grime away from the smooth curved surface. And in clear form, PLEXIGLAS is as transparent as the finest optical glass.

Optical clarity—plus durability and weatherability—have helped make PLEXIGLAS the aviation industry's standard material for transparent enclosures and glazing on aircraft. Now the same properties make this tough acrylic plastic an important architectural material . . . in lighting, glazing, store-fronts, and partitions, as well as skylights.

Full information on PLEXIGLAS acrylic plastic is yours for the asking. Send for our latest booklet on architectural applications.

Quick Easy Installation

Wascolite skylights can be installed in a matter of minutes. Their PLEXIGLAS domes are light in weight, can be handled easily—and safely, because strength and resilience make them highly resistant to breakage.



CHEMICALS



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You can't beat BRADLEY UNIT WOOD BLOCKS

*..for Finish Floors
over Concrete!*

With the matchless beauty of oak, accentuated by Bradley's highly refined, rich finish, Bradley Blocks keynote smartly styled settings for modern furnishings. Blocks shown here are $2\frac{1}{2}$ " x $2\frac{1}{4}$ " x 9" Prime Grade Oak.



Here's Why

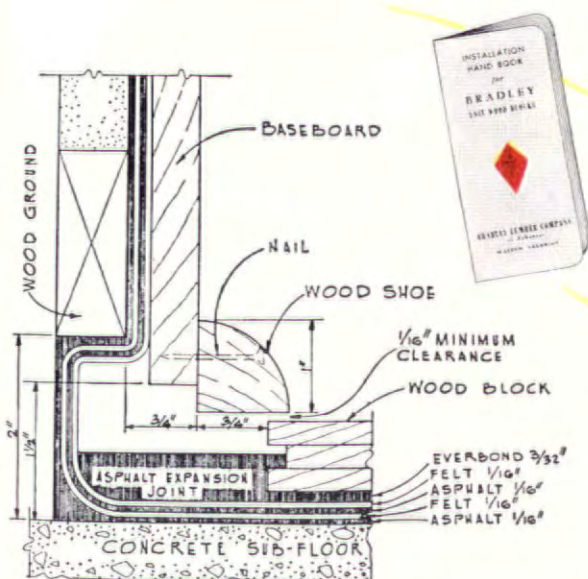
Blocks are of high quality oak, factory finished with Bradley's own penetrating seal and heavy-bodied wax... richer looking, more durable, *but less expensive* than sanding and finishing on the job.

Laid at low cost in asphalt mastic, *blocks are impervious to wear*. Occasional dry mopping and waxing maintain them in prime condition through succeeding generations of owners. Ample thickness cushions footsteps against noise, shock and fatigue. Hardwood cell structure insulates against chill and dampness.

Weigh these advantages against substitute materials, a mere fraction as thick, devoid of cushion or insulation factors, subject to short life and replacement. *The superiority of Bradley Blocks is overwhelming!*

For ultimate low-cost and *permanent service*, specify Bradley Blocks over concrete slabs for homes, for apartments. Their slightly higher initial cost will pay off many times as protection against the failure and replacement of cheap, substitute floor coverings. Remember, too, over 80 per cent of prospective homeowners *prefer oak floors!*

For complete data and specifications, see our catalog in Sweet's Architectural or Builders' Files. Write for your copy of Bradley's Block Installation Manual.



BRADLEY

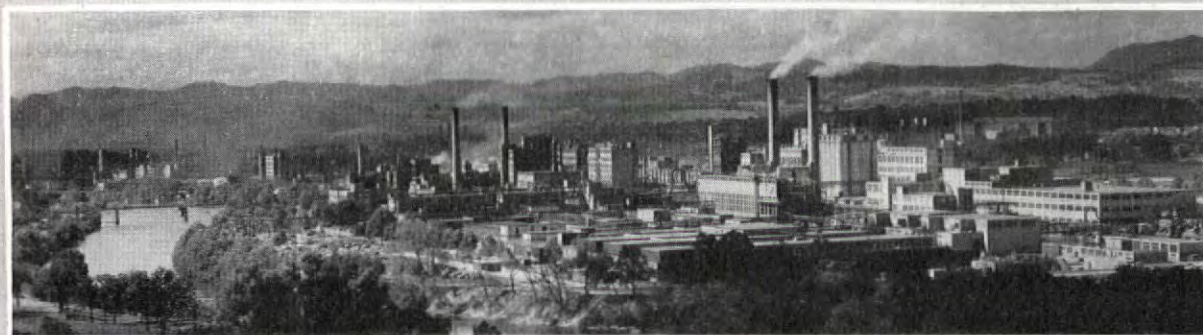
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ARKANSAS



At Tennessee Eastman Company

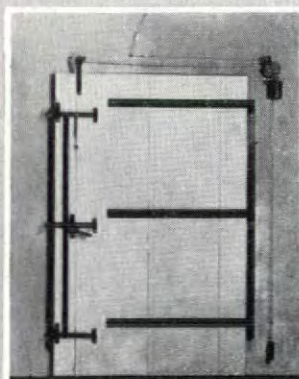
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it's **RICHMOND** Fyrgard and Kalamein Doors



**surer fire protection
and better design**



Single-swing Fyrgard Door

Twice thicker steel side sheets
mean real fire door protection

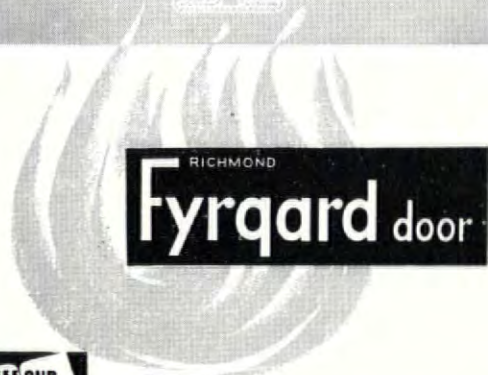


You will find many Richmond Door installations in this great, modern plant which is a large producer of cellulose ester plastics, acetate yarn and staple, and industrial chemicals. As the plant has continued to expand, Tennessee Eastman has continued to order Richmond Fyrgard Doors and Richmond Kalamein Doors. For years, Richmond products have been giving satisfactory service at Tennessee Eastman.

And so it is all over the country in plants that know and value the surer fire protection and better architectural design of Richmond Doors.

There are time-tested Richmond Doors for many industrial and commercial purposes — single- and double-swing or single- and double-slide Automatic Fire Doors — Kalamein Doors — Industrial Steel Doors. Also Unit Steel Frames.

If you are planning to use fire doors on any project, be sure to write for Service Sheet R5.



**THE RICHMOND FIREPROOF DOOR COMPANY
RICHMOND, INDIANA**

an affiliate of **THE PELLE COMPANY**

"it's **PELLE-RICHMOND**
engineered"



AUTOMATIC FIRE DOORS • KALAMEIN DOORS • INDUSTRIAL STEEL DOORS • UNIT STEEL FRAMES



Most in Beauty! Least in Care!

Wear, tear and care hike floor maintenance costs to the roof! But colorful, durable, resilient floor coverings based on VINYLITE Brand Resins knock these costs right back to the cellar!



THE REASONS:

- ★ They strongly resist scuffing, abrasion, dirt, oils, greases, and acid or alkali solutions.
- ★ They're resilient, yet outwear other types of floor coverings.
- ★ They're flexible, conforming to uneven surfaces and absorbing normal play of floors without cracking.
- ★ They can be safely laid on concrete floors in direct contact with the ground.
- ★ When waxed they're far more lustrous than any other resilient floor coverings and wax is not needed because the surfaces are non-porous, excluding dirt.


Limitless clear colors with lighter, brighter tones than ever before possible make these materials perfect for public buildings, industrial plants, private homes—wherever fine appearance and lowered maintenance costs are a serious problem.

Although defense requirements are cutting into civilian supplies, the same careful formulation . . . the same painstaking controls are still being maintained. Send for a list of representative suppliers of flexible floor coverings based on VINYLITE Brand Resins. Write Dept. LE-14.

Illustrations of "Flexachrome" Floors Courtesy The Tile-Tex Division, The Flintkote Company, 1232 McKinley St., Chicago Heights, Ill.

Vinylite
BRAND
RESINS



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

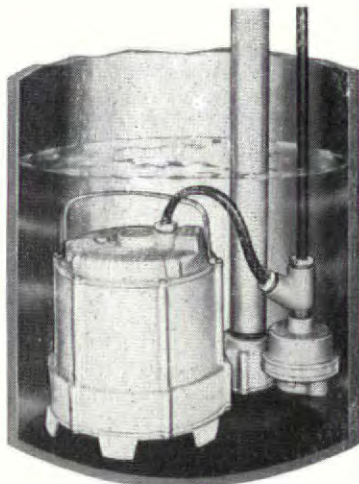
PRODUCT NEWS

battery are 13" x 7" x 11". The single lamp model sells for \$103.20 and the two-lamp for \$117.40. Discounts are allowed on quantity orders.

Manufacturer: Electric Storage Battery Co
Philadelphia 32, Pa.

UTILITY PUMP is completely submersible

Requiring no maintenance, Kenco's utility pump (Model P-109 MA) can be used to drain excavations, ditches, flooded areas and basements.



Made with a hermetically sealed motor, the bronze pump works when partially or entirely submerged.

The new type pump has a liquid level control switch which eliminates the need for a float, and a hermetically sealed motor so that the unit can be completely submerged. This control mechanism turns on the pump automatically as the air pressure created by a water rise in the switch skirt moves a diaphragm which trips the switch. Because it has no moving parts exposed to water, silt or other debris cannot foul the device. In sump usage, the entire pump may be directly submerged rather than having to support the motor on top of the sump with a permanent mounting. Weighing only 50 lbs. the pump can be moved wherever needed quickly and easily. It stands only 9½" high and has a diameter of 13", yet can pump 3300 G.P.H. Operation on the all-bronze model P-109 MA may be manual as well as automatic. A cord switch permits the unit to be started at any water depth, and after the manual start, the pump may be set to shut off automatically. The unit is generated by a ⅓ h.p. motor. It sells for \$95.50.

Manufacturer: Kenco, Inc., 1125 North Ridge Rd., Lorain, Ohio.

SHALLOW WELL PUMP operates without a tank

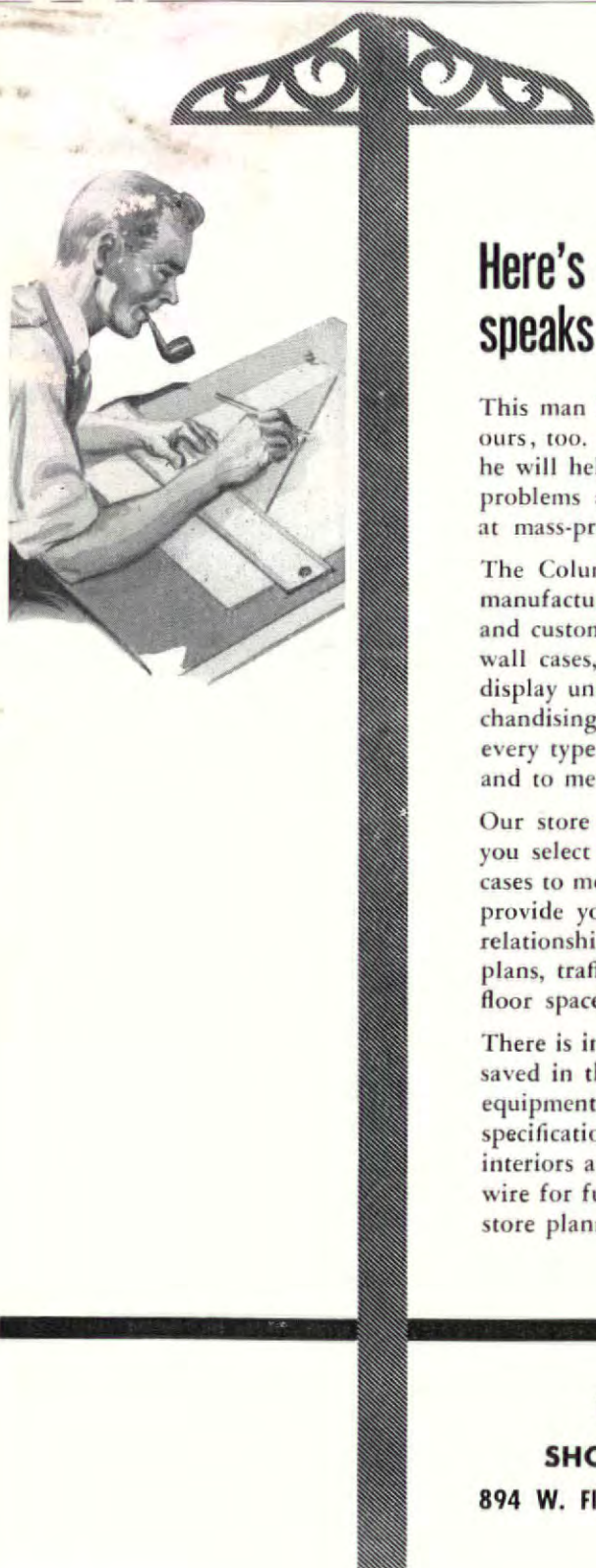
A self-contained shallow well pump, the Close Coupled Balanced Flow Jet eliminates the need for a storage tank in a domestic water system. Within pump capacity—520 GPH at 10' suction lift—the new pump provides fresh running water in the quantity desired to as many outlets as are in use. Construction features include quiet operation and wear resistance—the rotating impeller is the only moving part. All cast



iron parts which contact water are treated with a rust resistant coating like that applied on the inside of food cans. The impeller, guide vane and diffuser are of non-corrosive plastic. Measuring only 20" x 11½" x 15", the new unit can be installed almost anywhere. It retails at about \$109.50.

Manufacturer: Goulds Pumps Inc., Seneca Falls, N. Y.

(Continued on page 290)



Here's a man who speaks your language . . .

This man knows your business . . . and ours, too. As a designer and store planner, he will help you solve your store display problems and create custom-styled interiors at mass-produced prices.

The Columbus Show Case Company manufactures handsome, versatile, standard and custom-built store display fixtures—wall cases, floor cases, open and closed display units, and special purpose merchandising units . . . that are adaptable to every type of retail trade, to every size store and to meet every merchandising demand.

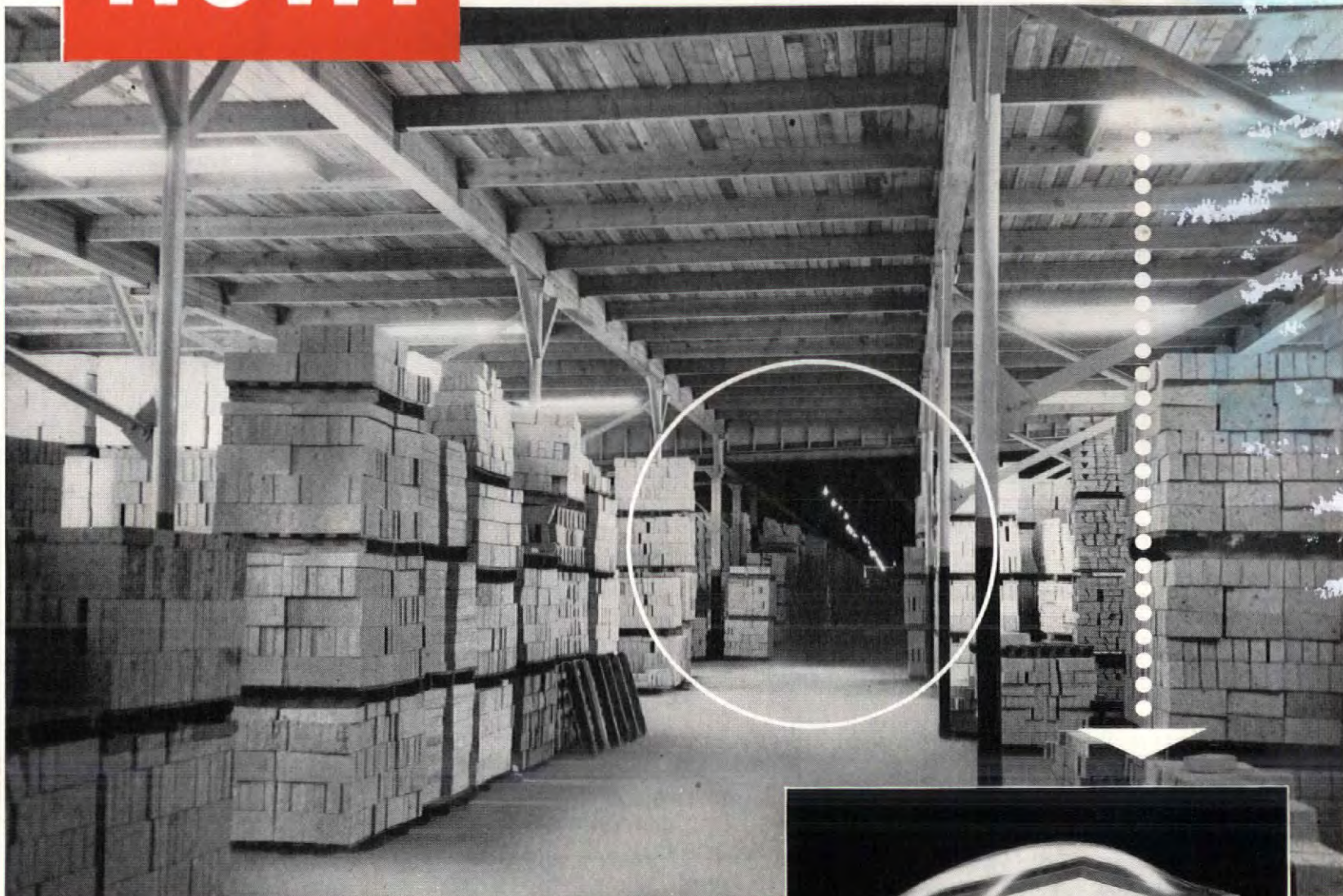
Our store planning department will help you select or design the proper display cases to meet your particular needs and provide you with information about the relationship between display cases and floor plans, traffic flow, sales clerk efficiency and floor space utilization.

There is important money and time to be saved in the proper specification of display equipment. To help you with your specifications . . . to create custom-styled interiors at no sacrifice in quality . . . write or wire for full details about our specialized store planning service for the busy architect.

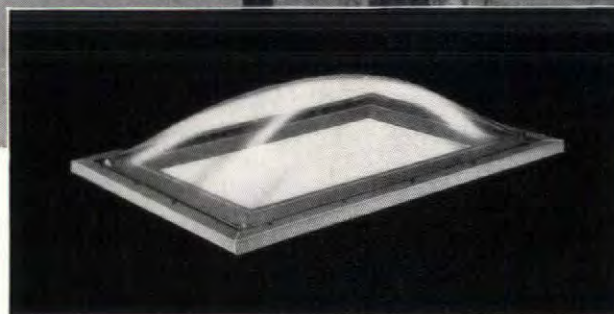
THE *Columbus*
SHOW CASE COMPANY
894 W. FIFTH AVE. COLUMBUS 8, OHIO

NOW!

*turn off the lights...
turn on the daylight!*



"Elimination of electric lighting during daylight hours, better distribution of light to create better working conditions . . . consequently safer conditions and better inspection of the merchandise" are the reasons of the Lindblad Construction Company for recommending Wascolite Skydomes in the new addition to the General Refractories Co. plant, Rockdale, Ill. Note sharp contrast between daylighting by Skydomes and illumination by incandescent lamps in adjoining structure (circled).



Thousands of dollars annually in power costs alone can be saved with Wascolite Skydomes . . . world's most efficient daylighting units. Improved production, safer working conditions, and elimination of lighting maintenance for daytime operations are also achieved for industrial applications.

Skydomes transmit 62% more light than conventional skylights* . . . are weather-proof and shatter-resistant. They come completely prefabricated . . . are installed in minutes. They are 100% worry-proof . . . require no maintenance except for routine washing under extreme conditions.

Skydomes are adaptable for any climate because their design permits

free expansion and contraction of the dome. Construction is guaranteed watertight; the curb flashing is not punctured during installation.

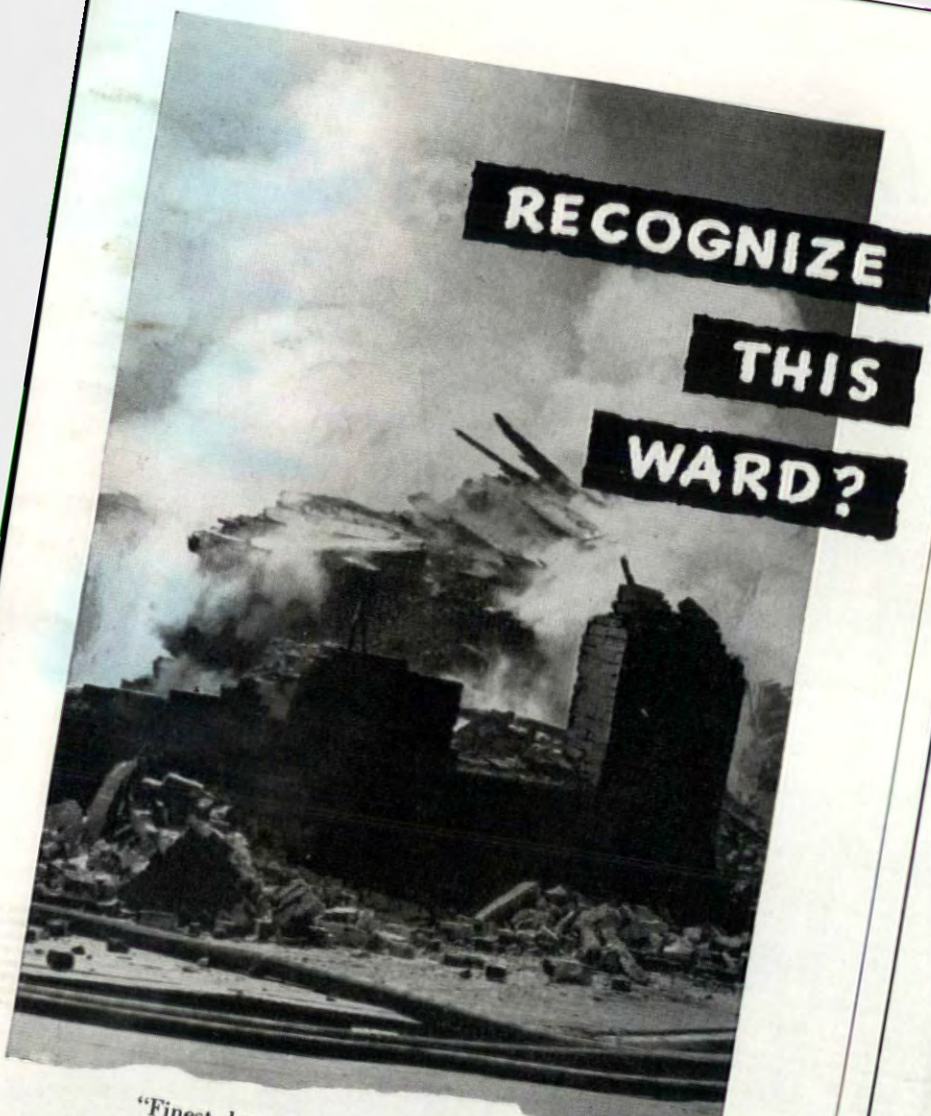
**By independent laboratory tests; name on request*



Wascolite Skydomes are available in stock sizes to fit standard roof openings (custom sizes to order) . . . in square, circular and rectangular frames . . . in clear colorless or white translucent Plexiglas. Specified light readings are easily obtained. Write for complete information.

WASCOLITE SKYDOMES®
PATENT PENDING
"62% More Light On The Subject"

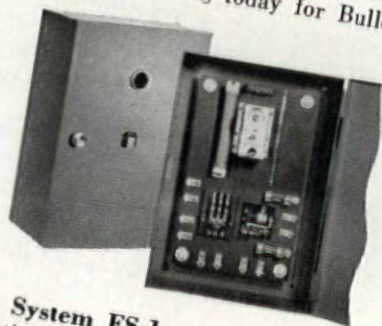
WASCO FLASHING COMPANY
87 Fawcett Street
Cambridge, Mass.



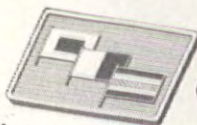
RECOGNIZE THIS WARD?

"Finest hospital in the State", so this hospital was tagged when it was built just a few years ago. But the charred ruins that remain today prove — too late — that even modern fireproof construction is not protection enough. There *will* be fires — and only positive protection can hold losses down . . . positive protection that *starts* with adequate warning — a way to call help fast.

For more than 17 years, Couch has specialized in Fire Alarm systems geared to hospital needs. Each type offers around-the-clock protection . . . constant assurance that when you need help you can get it *quickly*. Find out which Couch Fire Alarm System is best for you by writing today for Bulletin 116.



Fire Alarm System FS-1 — one of several types of Couch protective equipment . . . uses manual or automatic stations (self-restoring or partially self-restoring) . . . choice of a wide variety of signal alarms.



S.H. COUCH CO., INC.
DEPT. 311 NORTH QUINCY 71, MASS.

Private telephones for home and office . . . hospital signaling systems . . . apartment house telephones and mail boxes . . . fire alarm systems for industrial plants and public buildings.



Always
Specify
HAWS
for Highest
Quality

A complete line of coolers, fountains, faucets, equipment, filters and accessories. A reputation for reliability since 1909. Check in Sweet's or write for complete HAWS catalog.

HAWS DRINKING FAUCET CO.
1441 FOURTH STREET (Since 1909) BERKELEY 10, CALIFORNIA
Agents and Sales Representatives in All Principal Cities



light and
resilient

INSULITE*



INSULATING WOOL

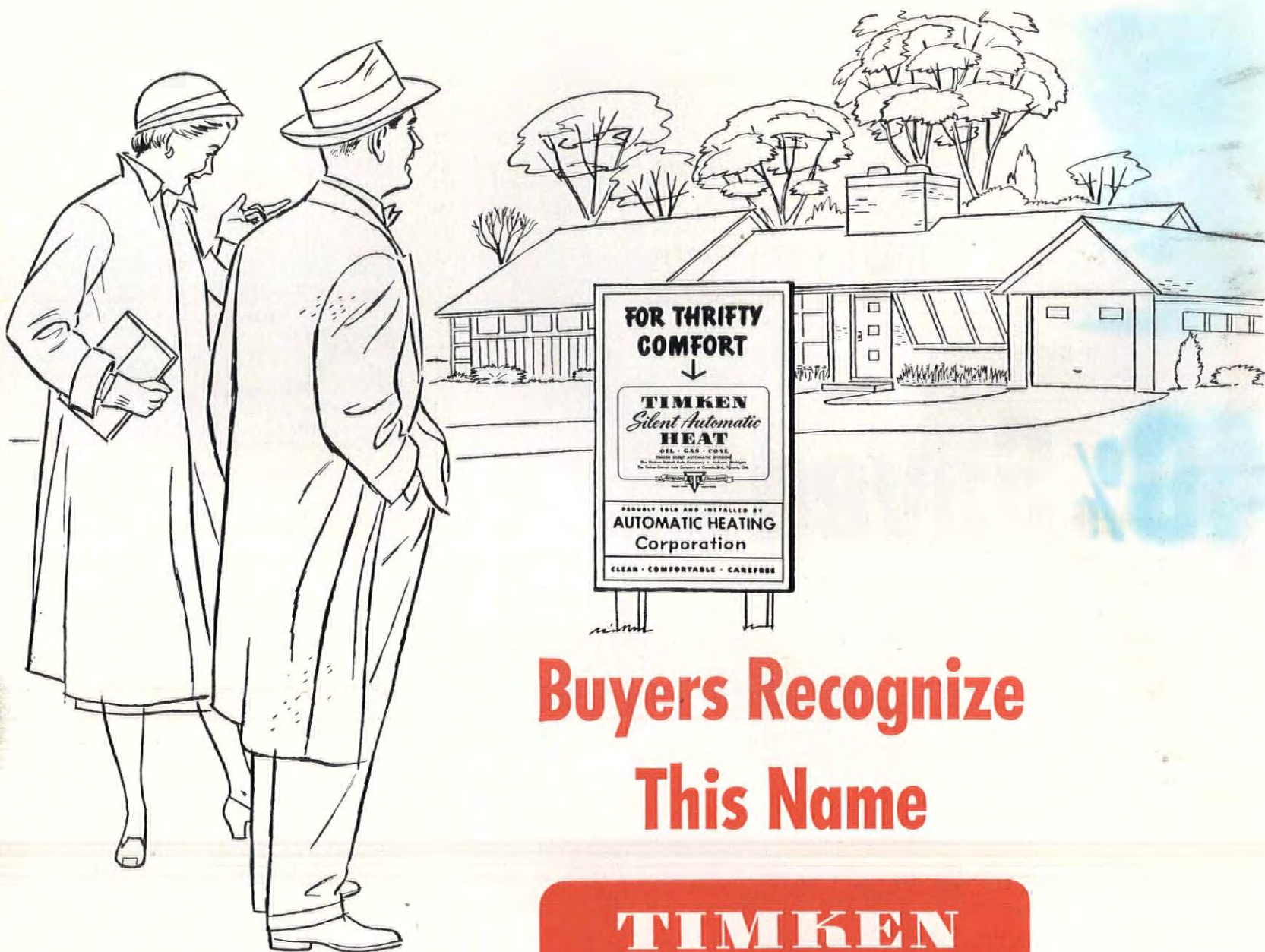
light—easy to handle and apply
resilient—doesn't pack down or settle
Specify Insulite Insulating Wool with confidence.

INSULITE



DIVISION

MINNESOTA AND ONTARIO PAPER COMPANY, MINNEAPOLIS



Buyers Recognize This Name



as a Mark of Quality in Your Homes!

93 models of conversion burners, furnace-burner units and boiler-burner units from which to select the *right* model for the homes you build. Water heaters, too!



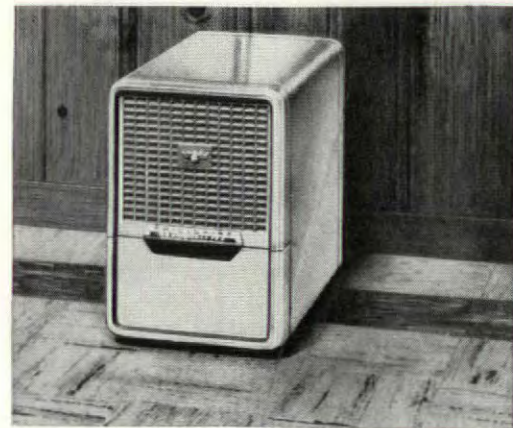
Consult your Sweet's File for performance data and specifications, or write directly to Timken Silent Automatic for a copy of our catalog.

PRODUCT NEWS

ELECTRIC DEHUMIDIFIER cuts plaster and paint drying time

Besides the usual comfort and storage protection applications for a dehumidifier, General Motors suggests that its compact new unit be used during construction to speed up the drying of fresh plaster and paint and new basements. Cracked plaster and peeling paint often can be prevented by removing excess moisture from the rooms during the drying period. The Raymond Loewy-styled dehumidifier has convenient hand holds on

either end and four leveling glides for easy handling. Although it measures only 18 $\frac{1}{4}$ " high, 20 $\frac{1}{2}$ " long and 11 $\frac{3}{4}$ " wide it will reduce the humidity in an enclosed space up to 8,000 cu. ft. Its drawer-type porcelain-finished moisture container has a 22 pt. capacity. A $\frac{1}{8}$ h.p. sealed compressor supplies refrigeration to the cooling coils. The dehumidifier will work most effectively at room temperatures between 60° and 95° F. with a relative humidity of 50% or more. Both compressor and fan motor operate on 115 v. If



This compact dehumidifier services 8,000 cu. ft.

desired, a rubber hose may be attached for disposal of the condensate to a permanent drain. Retail price of the unit is \$142.

Manufacturer: General Motors, Frigidaire Div., Dayton 1, Ohio

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..."

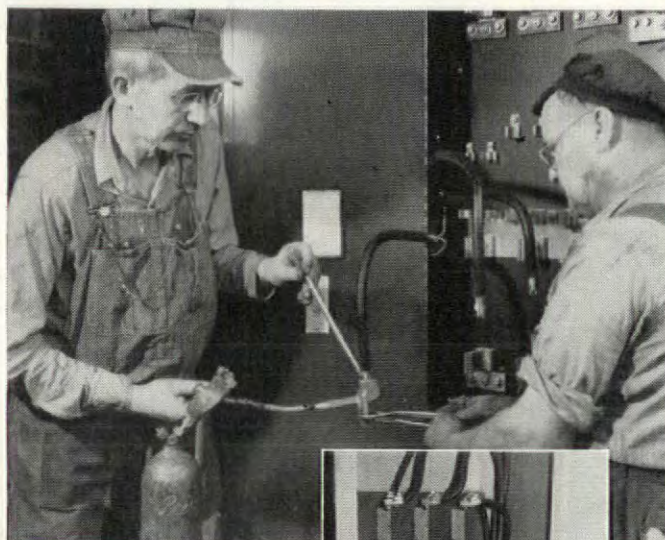


figure your new wiring job in Aluminum and figure low

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.

Although the rearmament program restricts the use of Aluminum we are ready to help you with the planning for trouble-free, low-cost wiring. For information write ALUMINUM COMPANY OF AMERICA, 1770L Gulf Bldg., Pittsburgh 19, Penna.



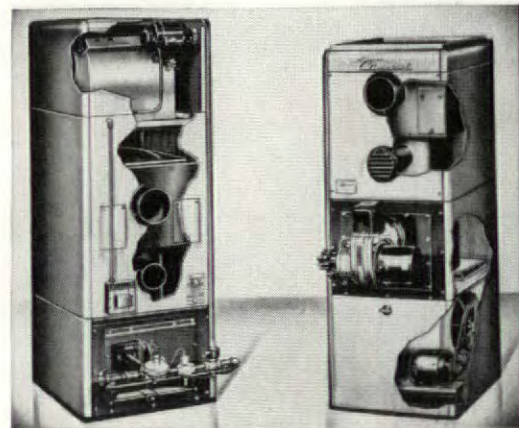
Aluminum Conductors



of ALCOA  ALUMINUM are made by leading manufacturers

WARM AIR FURNACES made for top and counter-flow discharge

Two of the new Mueller Climatrol high-boy furnaces discharge the heated air at the bottom so that they may be connected to perimeter warm air systems. One burns gas, the other oil; but each may be converted inexpensively to the other fuel with a specially designed burner package. The furnaces are factory-wired with leads from the motor and switches terminating in a convenient front outlet box. Two other Climatrols discharge the air at the top for basement installation with conventional warm air ductwork. Features of each of the new units include a heavy-gauge welded steel heat exchanger with an easy-to-clean radiator, and a



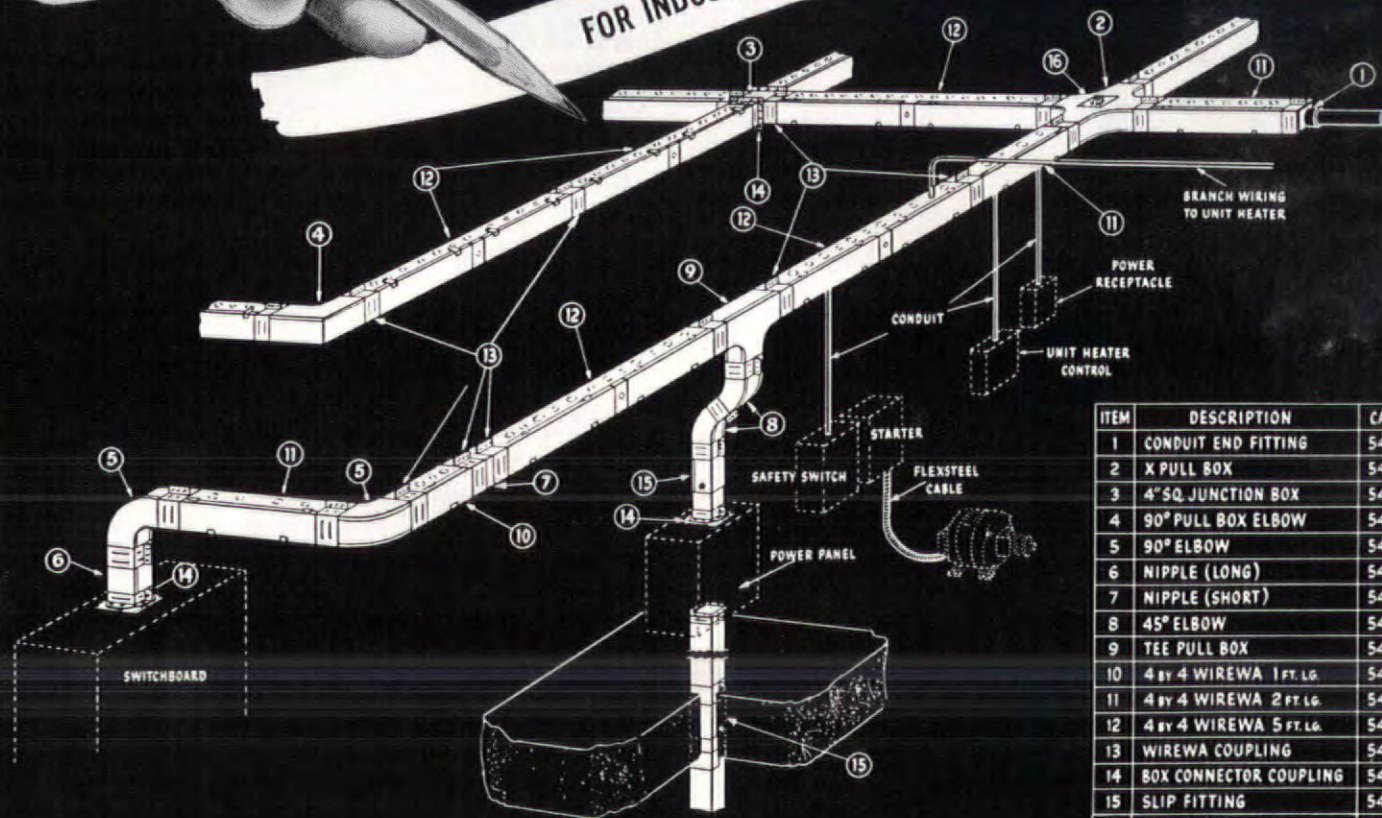
large quiet 13" blower. All four models are shipped pre-assembled. Measuring 24 $\frac{1}{2}$ " wide, each will go through most doors easily and can be installed safely in a closet or small utility room. Prices, not installed, are about \$300 for the gas-fired type models and about \$400 for the oil-fired.

Manufacturer: L. J. Mueller Furnace Co., 2005 W. Oklahoma Avenue, Milwaukee 15, Wis.

(Continued on page 298)

Specify National Electric 4x4 WIREWĀ

FOR INDUSTRIAL AND COMMERCIAL WIRING MODERNIZATION



ITEM	DESCRIPTION	CAT. NO.
1	CONDUIT END FITTING	544C30
2	X PULL BOX	544XB
3	4" SQ. JUNCTION BOX	544JB4
4	90° PULL BOX ELBOW	544PL9
5	90° ELBOW	544L90
6	NIPPLE (LONG)	544N6
7	NIPPLE (SHORT)	544N3
8	45° ELBOW	544L45
9	TEE PULL BOX	544TB
10	4 BY 4 WIREWĀ 1 FT. LG.	544W1
11	4 BY 4 WIREWĀ 2 FT. LG.	544W2
12	4 BY 4 WIREWĀ 5 FT. LG.	544W5
13	WIREWĀ COUPLING	544C
14	BOX CONNECTOR COUPLING	544A
15	SLIP FITTING	544SF
16	END PLATE	544EP

Sketch of a typical 4 x 4 WIREWĀ installation showing complete flexibility, simplicity and use of fittings.

Plant men like National Electric 4 x 4 WIREWĀ for protecting wiring—wiring that may be re-routed, changed, tapped, or spliced frequently. National Electric WIREWĀ provides steel protection, plus accessibility, unequalled by any other type of wiring raceway, for housing of electrical wiring systems up to 600 volts.

STEEL FOR PERMANENCE . . .

GROUNDING FOR SAFETY!

Listed by Underwriters' Laboratories, Inc.

HERE'S WHY

4 x 4 Wirewā will do the job.

- It goes up fast . . . can be tapped or rerouted without disturbing existing installations.
- No flanges to line up and bolt when assembling sections. Wrap-around hinged couplings—only two bolts to tighten.
- It may be mounted direct to wall or suspended from ceiling. Couplings may also serve as hangers.
- Low maintenance, simple to reroute and extend—100% salvable.

EVERYTHING IN WIRING POINTS TO

National Electric
PRODUCTS CORPORATION

1334 CHAMBER OF COMMERCE BUILDING, PITTSBURGH 19, PA.



Use of Wood Answers Gov't Ban on Metals, Say Builders!



and in wood, today's big buy is

Wolmanized* PRESSURE-TREATED Lumber

Lasts 3 to 5 times longer!

Today, many leading builders are going ahead with construction by using wood instead of metals! Wood, in addition to being readily available, is resistant to crumbling, rust, spalling and corrosion . . . and when it's Wolmanized pressure-treated Lumber, you get added protection against rot and termites. Wolmanized Lumber may also be laminated for extra strength!

in industry

Wolmanized Lumber is used for flooring, under-structures, roof decking and wherever wood is exposed to weather, moisture and termites.



for housing

Wolmanized Lumber gives protection against rot and termite damage in foundations, flooring, porches. Remember,



Wolmanized Lumber lasts 3 to 5 times longer than untreated lumber!

American Lumber & Treating Co.

General Offices: 1601 McCormick Bldg. • Chicago 4, Illinois
Offices: Little Rock, Ark. • Portland, Ore. • Boston • Los Angeles • San Francisco
Baltimore • New York • Jacksonville, Fla.

* Reg. U. S. Pat. Off.

Wolmanized
PRESSURE TREATED
Lumber
Stops Rot and Termites

malta

FRAMES
go in

fast,
true
and
for
keeps



Here's why—the construction of a MALTA SUPREME window frame offers many advantages at the job-site. Carpenters nail them in place with a few strokes of the hammer and the frames are in to stay. Precision milling to rigid specifications from select western woods is only part of the story. They are uniquely adaptable to walls of varying thicknesses. By adding jamb liners, these frames require no additional working, even after installation in the wall. Architects, too, prefer MALTA frames because of their modern styling and adaptability to every plan.

Join the swing to MALTA—a brand new frame with a grand old name.

MALTA

MALTA, OHIO

MANUFACTURING
COMPANY

SHEPARD



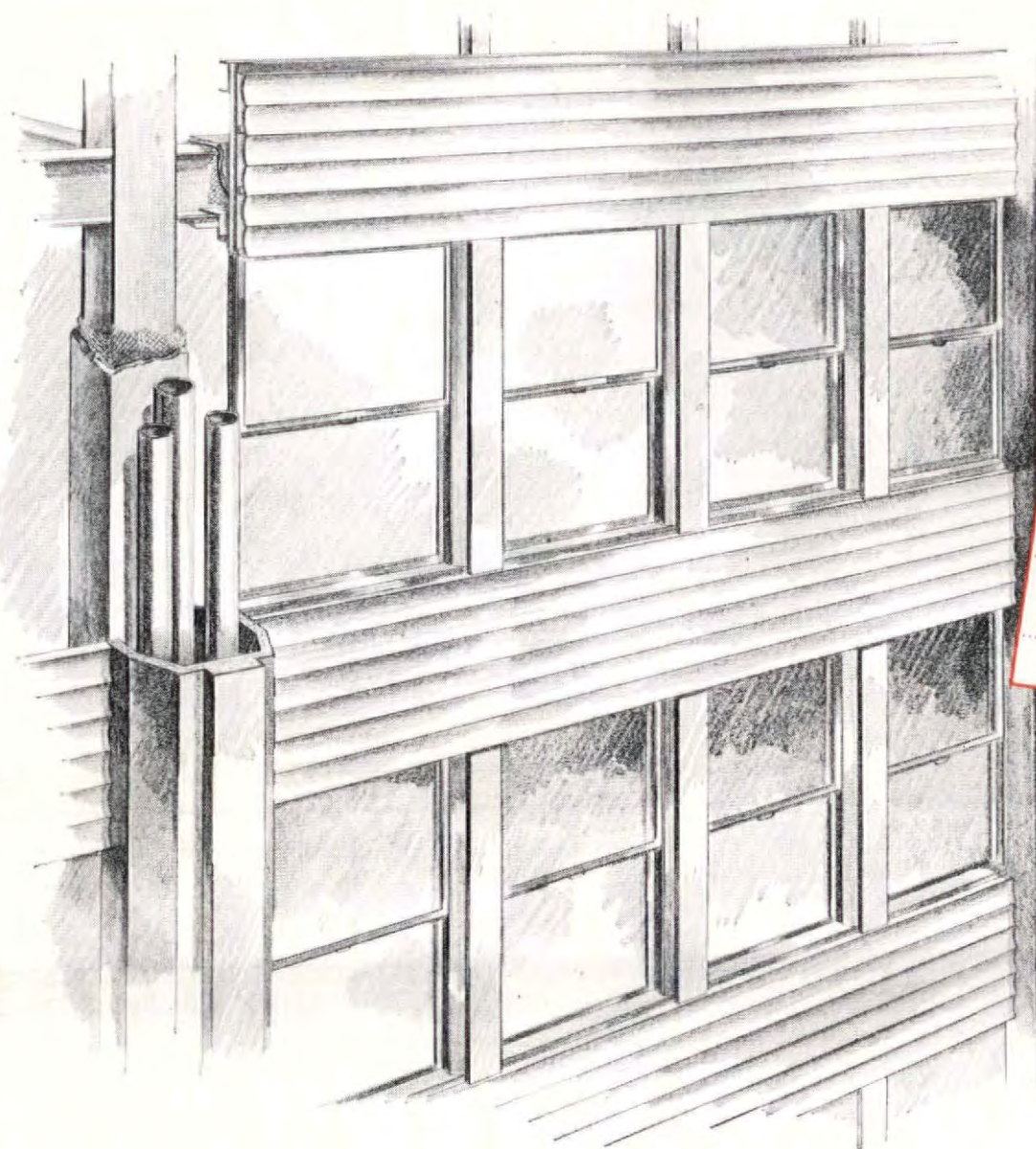
**HIGH DEPENDABILITY
GREATER ECONOMY
LESS MAINTENANCE**

Built up to a quality—not down to a price. SHEPARD Elevators offer you high dependable service at low maintenance costs. For that new elevator you're planning or the old one you're modernizing—consult SHEPARD Engineers. Write for 58 page Elevator Planning Book.

THE SHEPARD ELEVATOR CO.
5007-K1 Brotherton Road
Cincinnati 9, Ohio

ELEVATORS

notes from the architect's sketch pad



More usable
floor space here
with
curtain walls of
U·S·S STAINLESS STEEL

Vertical, insulated pilasters of Stainless Steel that carry service lines outside the building feature this illustration of curtain wall construction. Identical panels of Stainless Steel extend from column to column. This type of construction permits the use of any type of commercial window and any kind of insulating material that meets building requirements.

By carrying utility pipes and air-conditioning ducts within the Stainless Steel pilasters *outside* the building, the construction suggested here makes fullest use of interior floor space . . . permits a more orderly arrangement of offices . . . provides easy accessibility to these service lines.

Such savings in space are only one of the benefits of curtain wall construction utilizing U·S·S Stainless Steel. In addition, there are savings in weight, savings in maintenance costs and the distinctive, modern appearance that such construction makes possible.

To bring a new concept of lasting, colorful beauty

to multi-story buildings, Stainless Steel surfaces may be alternated with pilasters or sections of Porcelain-enameled Steel.

Although government directives have made certain Stainless Steels unavailable for this type of application at the present time, we are continuing development work on what promises to be tomorrow's method of construction for multi-story buildings. We'll pass along to you, from time to time, in the form of sketches, basic ideas on steel exteriors. We hope you will find them a valuable addition to your planning file.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND • COLUMBIA STEEL COMPANY, SAN FRANCISCO
NATIONAL TUBE COMPANY, PITTSBURGH • TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM • UNITED STATES STEEL COMPANY, PITTSBURGH
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST • UNITED STATES STEEL EXPORT COMPANY, NEW YORK



U·S·S STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS

UNITED STATES STEEL

T-998

One of America's most **STARK GLAZED**

See how many types of buildings benefit

Drug and chemical plants must keep dirt and bacteria under as close control as possible. Easy-to-clean walls of Stark Glazed Facing Tile are a real aid to this control.



Heavy traffic in transportation terminals is a severe test for the wearing quality of building materials. Stark Glazed Facing Tile passes this test with ease.



Wherever food is processed or prepared, Stark Glazed Facing Tile provides attractive interiors that promote cleanliness and good housekeeping.



- Name the building you may be planning or erecting . . . Stark Glazed Facing Tile is almost certain to be ideal for the interior walls and corridors.

Whether it be for schools, hospitals, food, drug or chemical plants, warehouses, factories or public buildings, you'll find a precedent of service for selecting Stark Glazed Facing Tile.

Judge it any way you like . . . for lower cost of construction, ease and economy of maintenance, durability, good looks or all-round utility . . . and you'll make Stark your choice.

Stark Glazed Facing Tile is modular dimensioned, saves cutting and fitting, goes up fast and builds the wall and the wall finish at one time. You don't have to lath, plaster, paint or decorate in any way. The result is real savings in construction costs.

Walls of Stark Glazed Facing Tile are easy to clean. All it takes is soap and water or hosing down. The impervi-



versatile building products

FACING TILE

by this **WALL AND FINISH IN ONE!**

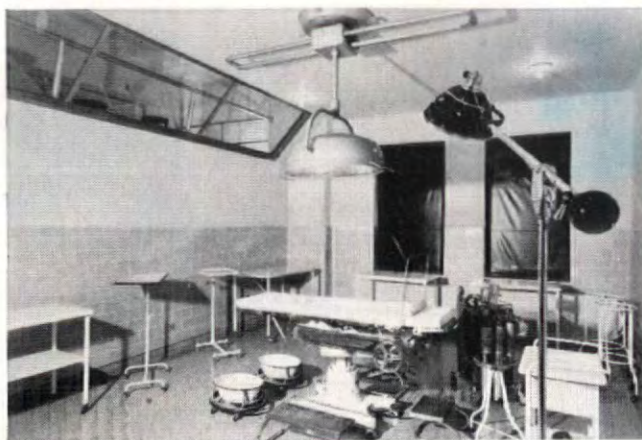
ous, glazed tile finish keeps dirt and bacteria exposed on the surface where they can be disposed of quickly and inexpensively.

With Stark Glazed Facing Tile, the initial cost is the final one. Walls of Stark are made of fire-hardened clay. They successfully resist the wear and tear of heavy traffic, virtually cannot be marred or scratched under normal usage and never need to be refinished.

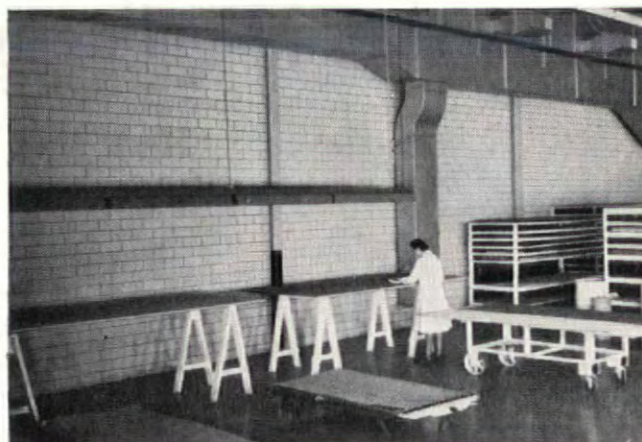
To help employee morale, reduce accidents and increase production in commercial and industrial buildings, and to assist educational and therapeutic programs in schools and hospitals, Stark Glazed Facing Tile now is "color-engineered." This means you can specify the color most suitable for the building's purpose.

NEW BROCHURE TELLS THE STORY. You are invited to write on your own letterhead for a free copy of our descriptive brochure on Modular Masonry. Just address your request to Dept. MB-11. Our Sweet's Catalog number is 4f-St.

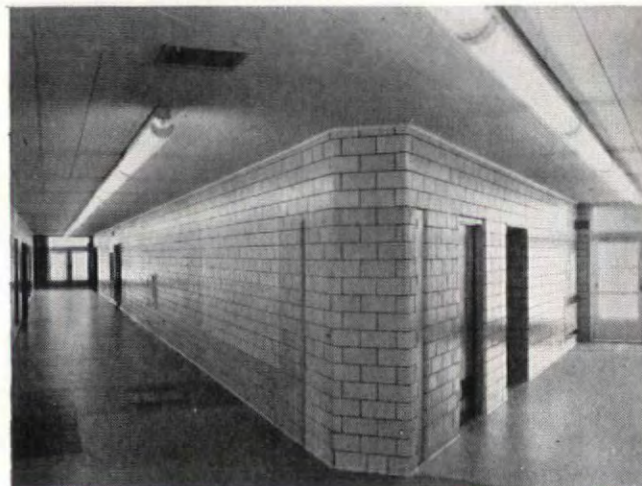
Ease of cleaning, low cost maintenance and proper color treatment make Stark Glazed Facing Tile ideal for hospital interiors.



Industrial interiors should be durable, easy to maintain, and helpful to production. Stark Glazed Facing Tile qualifies on all three counts.



Stark Glazed Facing Tile performs best where the going is toughest as in school corridors, gymnasiums and cafeterias.



STARK CERAMICS, INC.

(formerly The Stark Brick Co.)

Canton 1, Ohio

14305 Livernois Avenue . Detroit 4, Michigan
15 East 26th Street . New York 10, N. Y.



do magic after
one easy lesson!

Now you see an activities room—a gym—an auditorium—then, presto, tables and chairs roll out from the wall on mark-proof rubber casters in units that seat 20 students each—one unit every 47 seconds. IN-WALL space saving equipment for new and existing buildings is the very logical answer to high school construction costs and increased enrollments.

Schieber Manufacturing Co.

12738 Burt Road
Detroit 23, Michigan

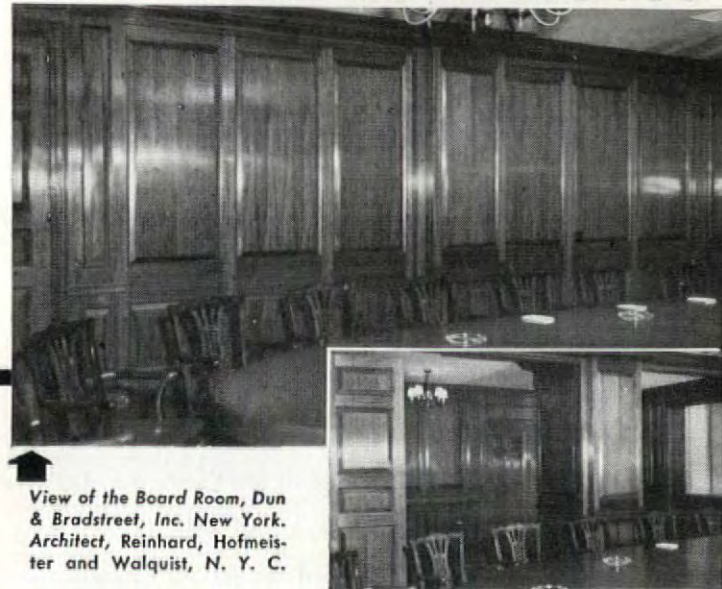
In Canada

LaSalle Recreations, Ltd.
945 Granville Street
Vancouver, B. C.

**ACTIVITIES AREA TO LUNCHROOM
FOR 200 IN 8 MINUTES**



Another *Fairhurst* TRADEMARK INSTALLATION **FOLDING WALLS...**



View of the Board Room, Dun
& Bradstreet, Inc. New York.
Architect, Reinhard, Hofmeister
and Walquist, N. Y. C.

The handsome solid wall above is actually a UnitFold folding wall. No hardware is visible in this exclusive Fairhurst construction. Inset shows how wall units fold back to stacked position in columns.

John T. Fairhurst Co., Inc.

45 West 45th Street

New York 19, N. Y.

STATEMENT OF THE OWNERSHIP, MANAGEMENT AND CIRCULATION REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233) OF Architectural Forum, The Magazine of BUILDING, published monthly at New York, N. Y. for October 1, 1951.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, P. I. Prentice, 9 Rockefeller Plaza, New York, N. Y.; Editor, Henry R. Luce, 9 Rockefeller Plaza, New York, N. Y.; Executive Editor, Joseph C. Hazen, Jr., 9 Rockefeller Plaza, New York, N. Y.; General Manager, Robert W. Chastaney, Jr., 9 Rockefeller Plaza, New York, N. Y.

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State of New York } ss:
County of New York }

(Signed) Robert W. Chastaney, Jr.,
General Manager,

Sworn to and subscribed before me this 26th day of September, 1951.
(Signed) Veronica C. Biehl.

(My Commission expires March 30, 1953)

[SEAL.]

VERONICA C. BIEHL, Notary Public for the State of New York. Qualified in New York County, No. 31-0288350. Cert. filed with City Register, N. Y. County, Commission Expires March 30, 1953.

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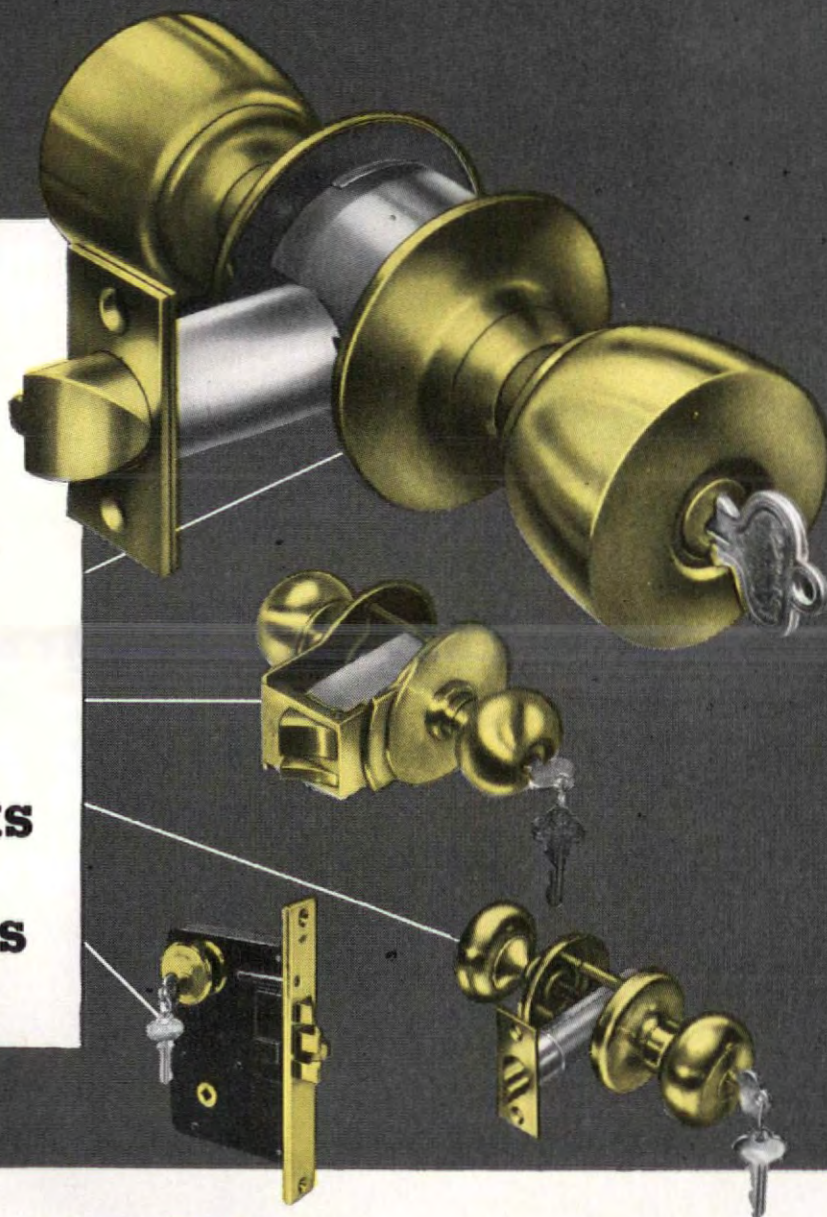
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PRODUCT NEWS

CLEAR PLASTIC-ENCASED LEVELS are shatterproof

If a two or three story drop to a cement sidewalk should break a Level-It shatterproof level, the manufacturer will replace it. The new building tool has a glass bubble-vial embedded in rugged transparent plastic, and is made in two sizes. Architects and builders should find the 3" line and surface model as weightless to tote around as a pencil—and perhaps as indispensable. The 9" torpedo level's easy readability



Viewed from any position, the vial-bubbles on both transparent plastic levels are plainly visible.



from any angle is an important feature for carpenters and plumbers. It is characteristic of the plastic material to "pick up light," so that the bubble is clearly visible even in dark corners. Nonconductive, the levels may be used on electrical equipment. They are said to be unaffected by weather extremes. The smaller Level-It sells for 98 cents; the larger, for \$2.69.

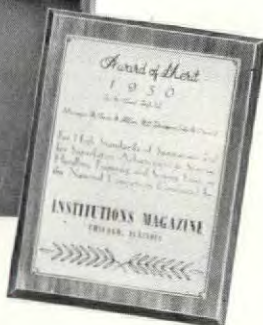
Manufacturer: Creative Plastics Corp., Stony Brook, Long Island, N. Y.



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Architects: Coolidge, Shepley, Bullfinch and Abbott



VAN-equipped hospital honored for its food service

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★ Van takes pride in its part . . . responsibility for design and fabrication of equipment for kitchens, cafeterias, and decentralized food service for this important 16-story hospital.

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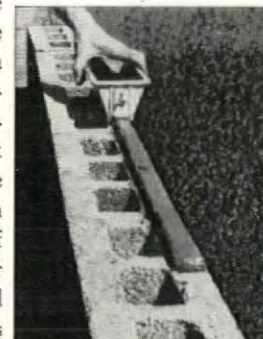
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CINCINNATI 2, OHIO

DISPENSER applies even mortar flow on concrete block

With the Mortar Plane, an unskilled workman can lay mortar on concrete or cinder block with the precision of a pastry chef. Equipped with a guide and adjustable gates at the base, the new device dispenses a straight ribbon of mortar in the desired thickness along the block edge. It is said to save 10% in mortar, 75% in labor time. Made of aluminum, the Mortar plane is 1' long, and weighs 1½ lbs. It sells for \$9.95.

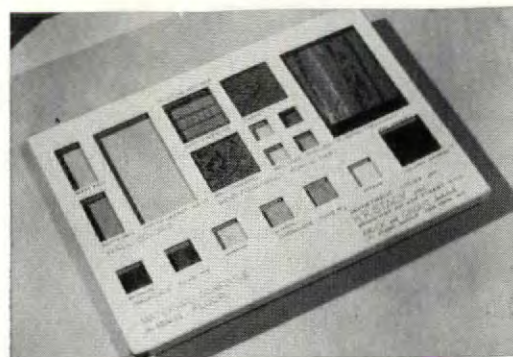


Manufacturer: Kakest Co., Curwensville, Pa.

PRESENTATION AID becomes permanent decor record for architect

Interior finish schemes can be presented attractively to the client with the Matecolor. Made of two pieces of smooth surfaced matte finished board—one a tray, the other a cover precut with various sized openings—the 10 x 14" display set-up is a handy presentation plate or filing record of coordinated samples of flooring, wall covering, fabrics, and paint colors selected for an interior. Matecolors sell for \$15 per dozen.

Manufacturer: Matecolor, Box 1524, Grand Central P. O., New York, N. Y.



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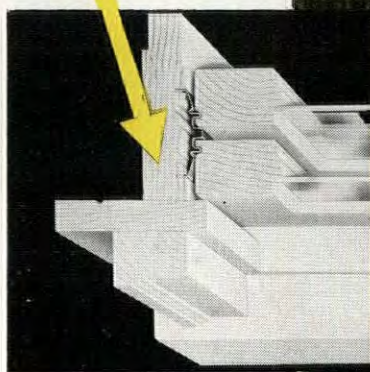
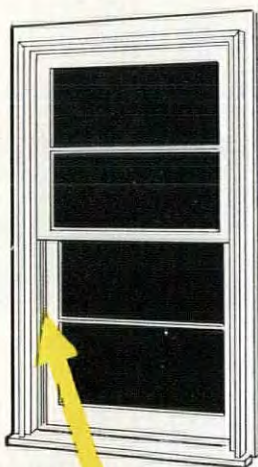
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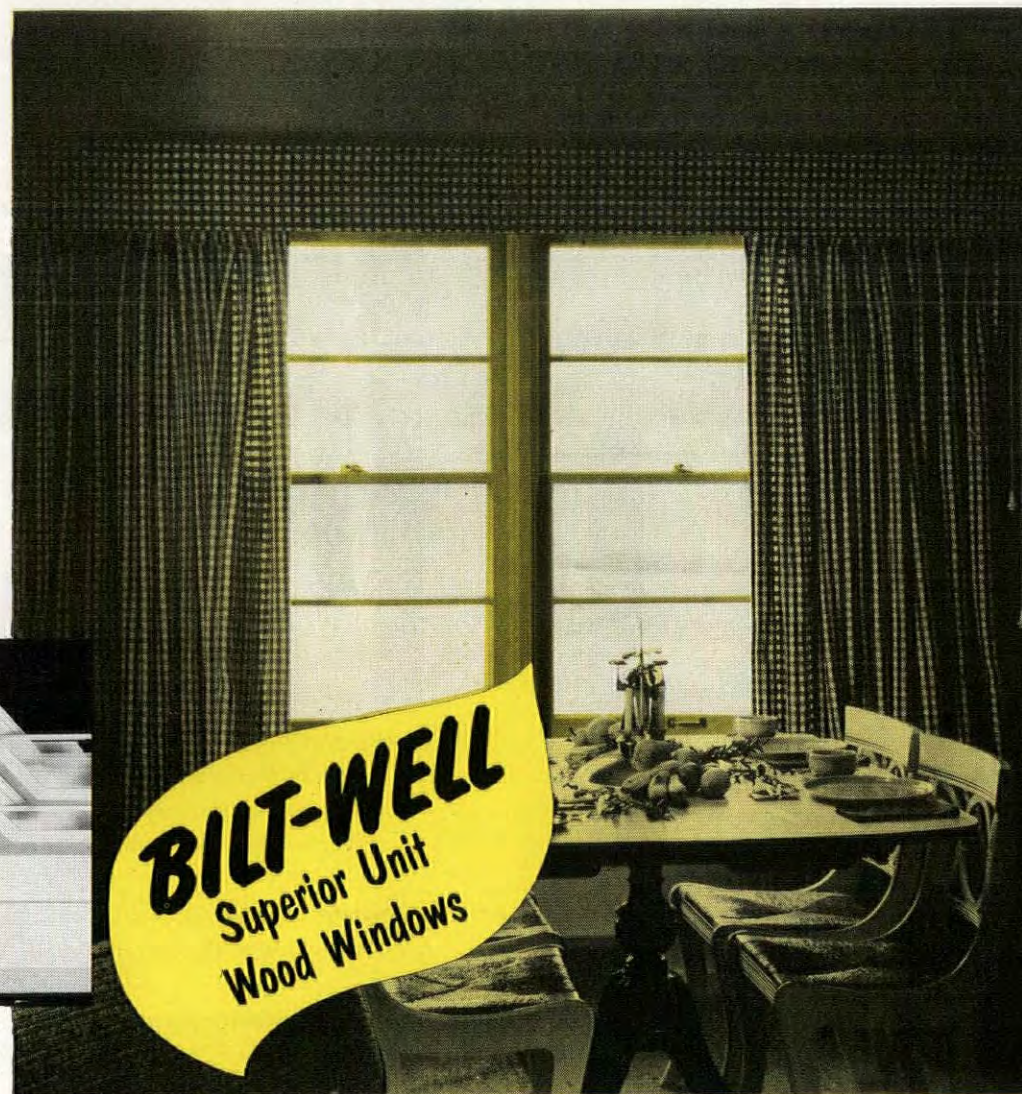


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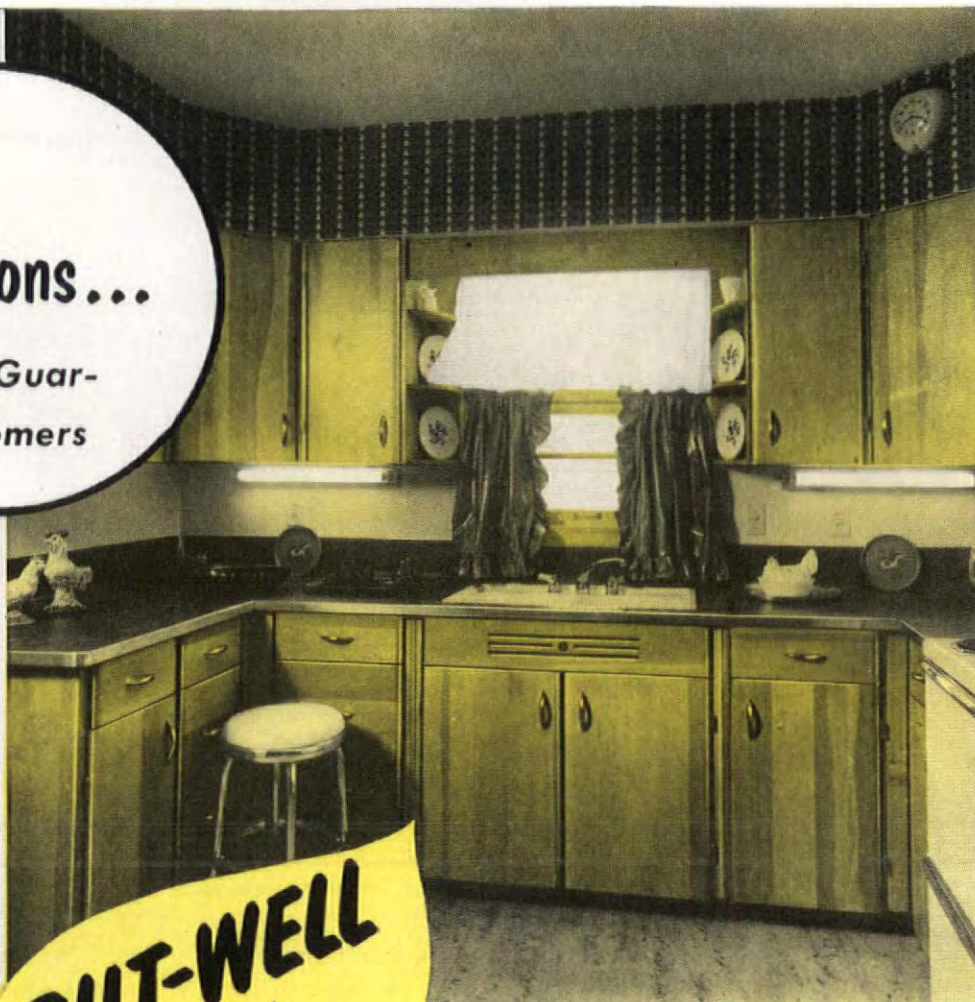
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- 4** 1 1/8" thick jambs and 1 3/4" thick sill of kiln-dried Ponderosa Pine.
- 5** Toxic water-repellent preservative treated with *NWMA approved solution.
- 6** Produced by skilled window specialists.
- 7** Accurately machined and prefitted at factory . . . saves hours installing at job.

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BILT-WELL
Nu-Style Unit
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All parts are completely machined, prefitted and assembled, as far as practical, for carton packaging. All hardware with exception of nails is included. They can be finished natural or enameled any color.

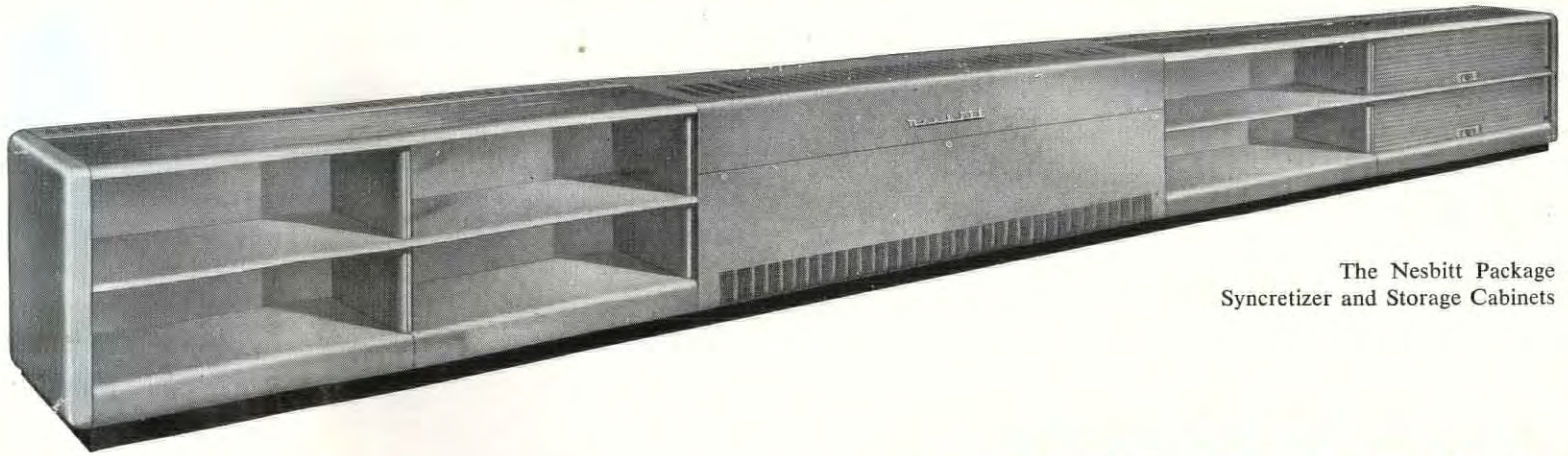
. . . distinctive design "with beautiful rounded corners" that harmonize perfectly with latest ranges and refrigerators. They can be enameled any color or finished natural wood. Exceptionally well constructed of kiln-dried clear Ponderosa Pine, with dovetailed drawers, solid (3/4" thick) standards, mortised, tenoned and glued framework. Offered in sectional units in graduated sizes of 3" multiples, 15" to 42" widths. Fit any size or shape of kitchen, can be sawed or scribed to fit plastered walls. Height of counter-top can be regulated in the auxiliary base.

Specify Bilt-Well Woodwork in your Plans and Specifications . . . Bilt-Well Woodwork guarantees satisfied clients.

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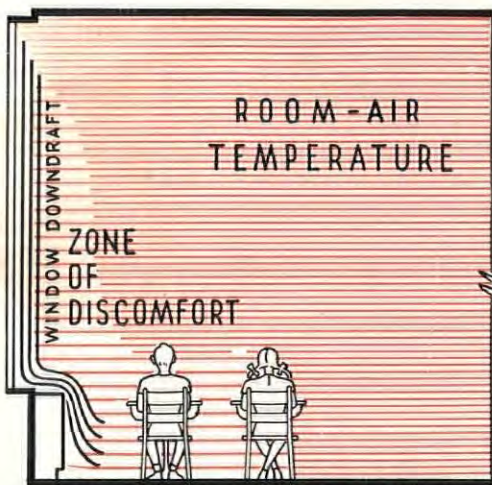
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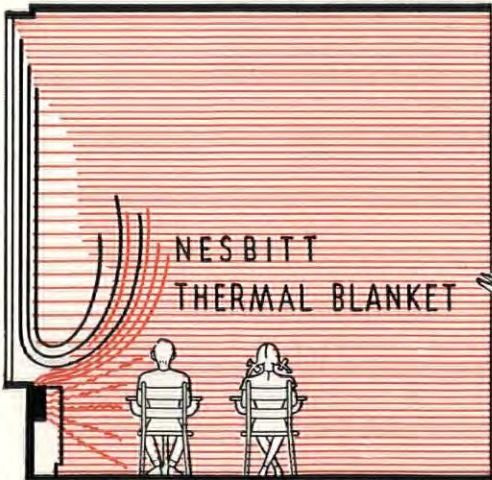


The Nesbitt Package
Syncretizer and Storage Cabinets

The Story of THERMAL



With room-air temperature evenly maintained, the downdraft from large windows on cold days may remain the robber of comfort for pupils.



Nesbitt Syncretizer and Wind-o-line Radiation temper the window downdraft, raise it out of the impression range, improve thermal balance.

(THE POSITIVE ANSWER
TO WINDOW DOWNDRAFT)

Nesbitt

SYNCRETIZER with WIND-O-LINE

THE STORY of classroom heating and ventilating began many years ago with the need for artificial heat in a one-room schoolhouse. A potbellied stove provided the heat.

With multi-room schools came central heat and hot-air, then steam-radiator distribution. Schoolrooms soon became so hot that the need for regular ventilation was recognized.

NESBITT became a character in the story in 1917 with a schoolroom unit that introduced outdoor air and heated air on the bypass principle.

The story progressed as knowledge increased. The *heating* effect of room occupants, electric lights, and the sun's rays became better known. The need for *cooling* during a large part of the classroom day hastened the development of heating and ventilating units.

Room-air temperature was the recognized index of comfort. But the widely divergent temperatures of the unit ventilator's air stream created conflict—*drafts*. NESBITT brought the air stream under separate control—syncretized, or harmonized, its temperature within draftless limits to that of the room air. Syncretized Air, a new standard of thermal comfort, was created—but air temperature remained its popular index.

Comfort Can Now Be "Seen"

Today thermal comfort has another dimension. Besides *air temperature*, we consider the *radiant temperature differential* of the surrounding walls and surfaces of the classroom. The temperature especially of large windows in cold weather is so far below the room-air temperature

that it soaks up the body heat of pupils sitting near it and, to a degree, of all others whose bodies can "see" it (are exposed to it). This explains why the comfort *impression* of some pupils is poor even when the air temperature is good—according to the room thermostat.

The Nesbitt Comfort Control

Within the Nesbitt Syncretizer heating and ventilating unit is the Comfort Control which "sees" and "feels" the outdoor air temperature at all times. This control automatically adjusts the temperature of the unit's continuous air stream so as to impose a protective thermal blanket—warm enough to shield room occupants from the chilling effect of cold windows, and cool enough to prevent overheating of the room air.

Wind-o-line Radiation

For conditions of large glass area and extremely cold outdoor air—which accelerate the problem of window downdraft—Nesbitt provides Wind-o-line Radiation for integration with the Syncretizer. Wind-o-line consists of fin-and-tube radiation in a grilled wall-hung casing to extend from both ends of the ventilating unit for the full length of the windows, at the sill line—and continued, if required, along cold outside walls. (Or it may be had as a component of the storage cabinets in installations of The Nesbitt Package.)

Unlike the attempts to draw off window downdraft as recirculated air—which are easily proved to be ineffective—Nesbitt Wind-o-line solves the problem of *heat loss* logically with a *heat gain* where and

Like all good stories
this one has *conflict...solution...*
and a *happy ending*

(READING TIME: Four minutes—and worth it.)

COMFORT in the Schoolroom

when needed. Convected currents of warm air from the grille temper the cold down-draft and divert its flow upward and above the heads of the occupants. Radiation from the casing or cabinet helps to balance the radiant temperature differential.

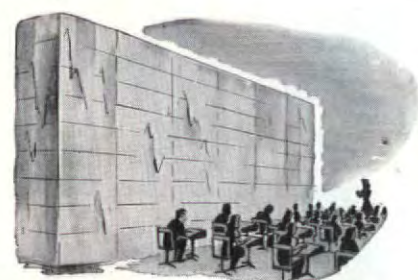
"Happily ever after"

For school officials, architects and engineers who have a personal interest in Thermal Comfort the story turns out well:

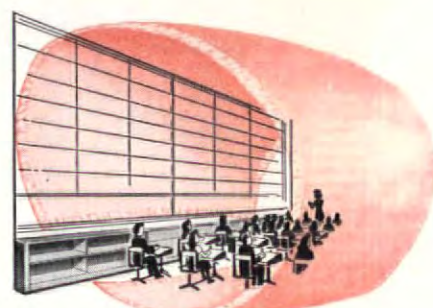
NESBITT SYNCRETIZED AIR—with Wind-o-line Radiation where desired—a *symmetrical* environment in which room-air and surface temperatures are better related to bodily heat exchange for a classroom comfort unequalled by any other system.

This is the story up to now. If it is ever to have a sequel, NESBITT expects to write it!

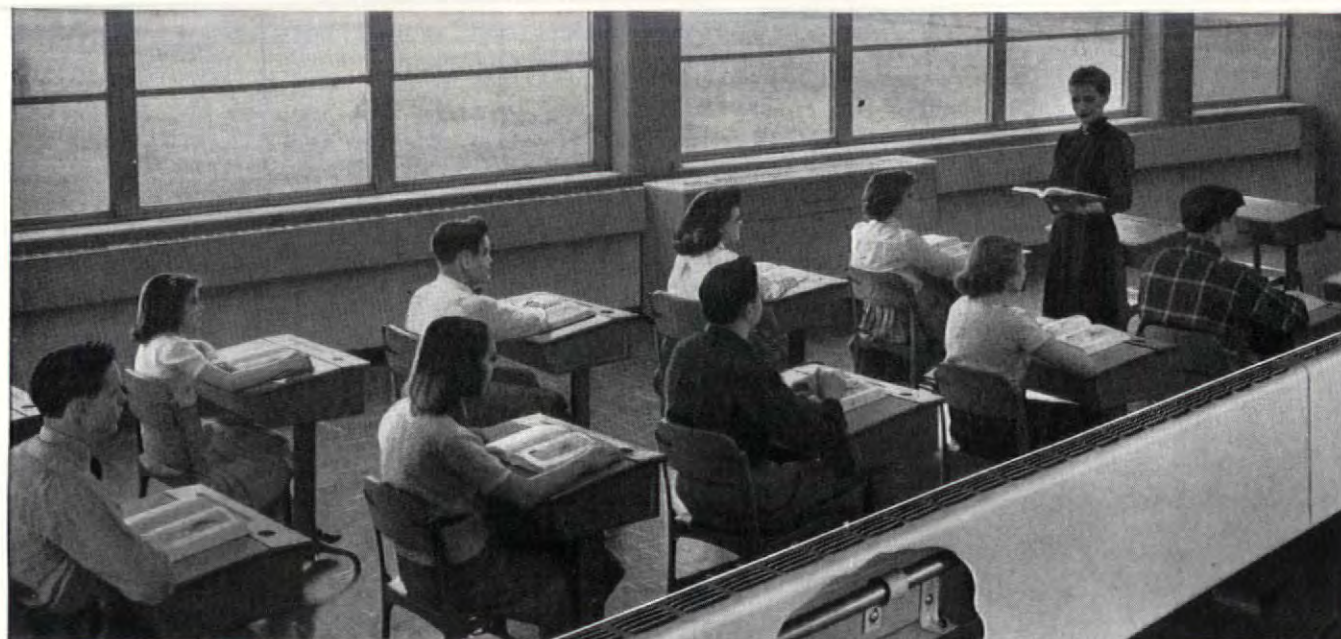
JOHN J. NESBITT, INC., STATE ROAD & RHAWN STREET, PHILADELPHIA 36, PA.



In very cold weather large window areas become a "wall-of-ice" in the classroom.



The Nesbitt "thermal blanket" protects pupils from the cold window downdraft.



Cut-away view of Wind-o-line Radiation, and photograph of a typical installation.

The Nesbitt Syncretizer, Wind-o-line Radiation, and The Nesbitt Package are made and sold by John J. Nesbitt, Inc.; sold also by American Blower Corporation.



MAIL THIS COUPON FOR MORE FACTS

JOHN J. NESBITT, INC.
 State Rd. & Rhawn St., Philadelphia 36, Pa.

Please send me publications describing the Nesbitt Syncretizer and Wind-o-line Radiation.

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ADDRESS

CITY ZONE STATE

TECHNICAL LITERATURE

REINFORCED CONCRETE. Building Code Requirements for Reinforced Concrete (ACI 318-51). American Concrete Institute, 18263 W. McNichols Rd., Detroit 19, Mich. 6 x 9", 63 pp. 50¢.

The recently adopted American Concrete Institute standard is an important reference for engineers and architects who design reinforced concrete structures—and for municipal officials concerned with contemporizing building codes. Written so that it may be incorporated verbatim

or adopted by reference in a general building code, the new standard should result in vital steel savings. Although the code decreases the allowable bond stress in plain bars and in old types of deformed bars, it increases the stresses allowable for the new type deformed reinforcing bars. According to the current provisions, all plain bars must be hooked. (The new bars develop sufficient anchorage without hooks in many cases.) Proper bond is just one of the essential phases of concrete construction treated in the

code. Also covered are recommended practice and specifications for quality of concrete; mixing, placing, curing, and cold weather protection of concrete; forms; construction joints; shear and diagonal tension; flexural computations; general design considerations; flat slabs; columns and walls; and footings.

HEATING. Bulletin No. 2301. C. A. Dunham Co., 400 W. Madison St., Chicago 6, Ill. 16 pp. 8½ x 11".

This bulletin describes in detail the company's blower type unit heaters for large area heating and ventilating. Pictured are five types of mountings—floor, ceiling, wall, inverted, and platform—and other accessories which graphically illustrate the units' versatility. Cutaway drawings reveal the heaters' construction features, including easy access to all parts. Six types of temperature controls are discussed, and the advantages of each noted for specific installations. The technical information covers basic sizes of 10 different assemblies, capacities, and conversion factors.

BOILERS. Superior Steam Generators. Superior Combustion Industries, Inc., 1475 Broadway, New York 18, N. Y. 16 pp. 8½ x 11".

Although written specifically for engineers, the booklet explains the technical aspects of steam generators so that they may be readily understood by anyone in the market for such equipment. Photographs and schematic drawings illustrate construction details and operating principles, and tables provide essential data, dimensions, specifications and test results.

HEATING. Airtherm Convectors, Catalogue 702A. Airtherm Manufacturing Co., 746 South Spring Ave., St. Louis 10, Mo. 14 pp. 8½ x 11".

Airtherm's new catalogue features the company's steam and hot water convectors for schools, institutions, apartments, homes, and offices. The dimensional data and steam and hot water capacity tables should be of interest to engineers who specify equipment for heating systems.

PAINTS. Wilbur & Williams Penetrating Protective Paints. The Wilbur & Williams Co., 130 Lincoln St., Brighton 35, Mass. 4 pp. 8½ x 11".

This technical folder is a quick index to coatings suitable for surface protection against rust, chemical corrosion, and dampness.

BUILDING MATERIALS. Stone Creek-Ava Face Brick. The Stone Creek Brick Co., Stone Creek, Ohio, and The Ava Brick Co., Ava, Ohio. 28 pp. 8½ x 11".

Accurate color reproductions of 21 of the straight shades and blends of the producers' face brick lines are featured in the catalogue. Photographs of homes and many types of buildings, and a series of pictures on exposed masonry interior walls portray the adaptability of the brick. Useful data on bonds and mortars is also presented.

(Continued on page 312)



PAYROLLS PREPARED IN SECONDS WITH THE REMINGTON RAND PRINTING CALCULATOR

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Today, against the background of rising costs, fast accurate payroll figuring is more important than ever. And it's a quick, simple operation when you use the new Remington Rand *Printing Calculator*—with "first-time proof" printed on the tape.

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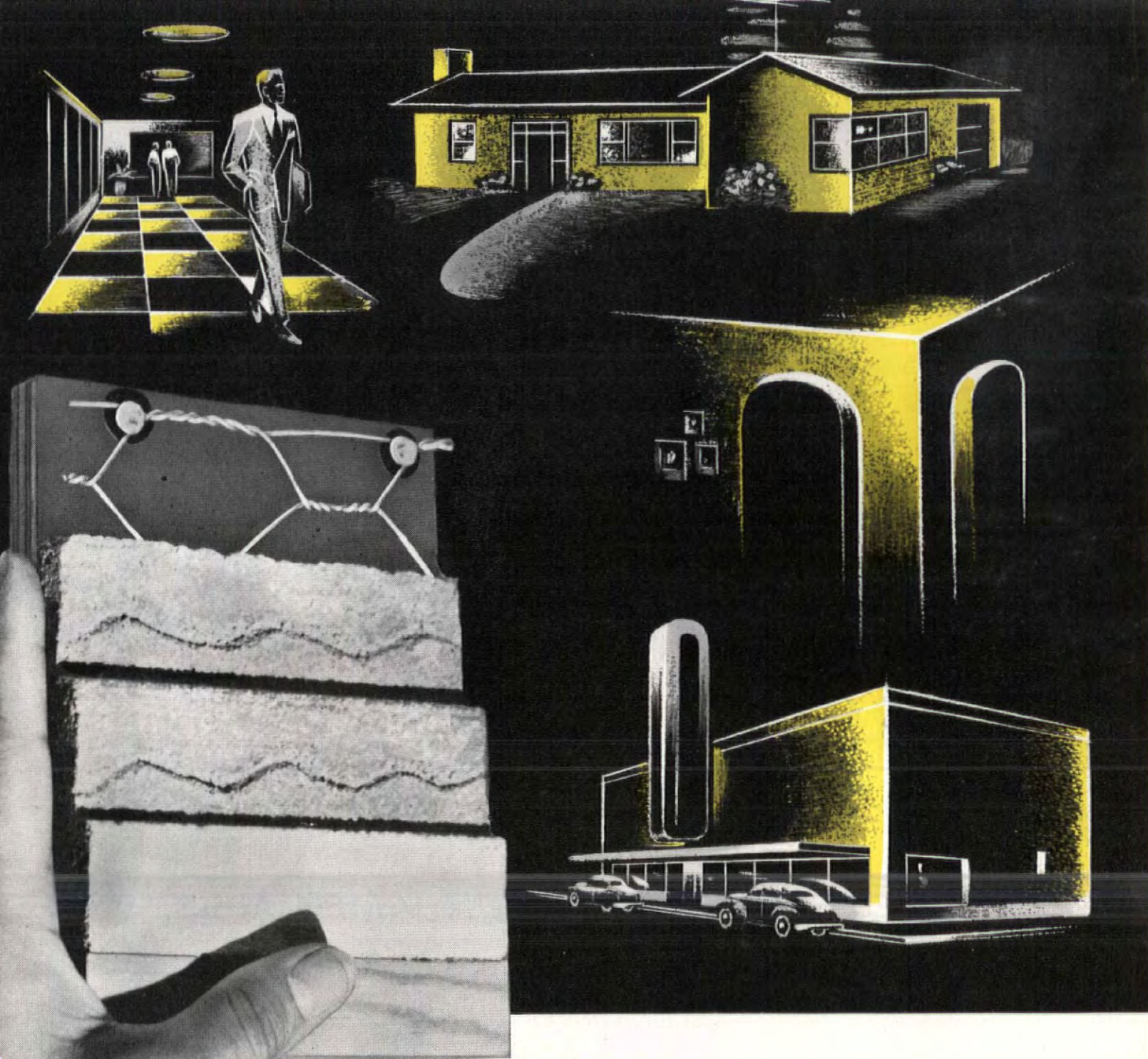
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The Keystone System of Stucco Application is the modern way of getting all of the advantages *and* none of the disadvantages of stucco construction.

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Structurally, economically, and from the standpoint of design, the Keystone System of Stucco Application is worthy of serious and detailed consideration by anyone concerned with residential or commercial building or remodeling.

It's a way to reduce costs

When using the Keystone System, material and labor costs compare very favorably with any other acceptable type of construction.

Just check the figures; you'll be amazed.

It's a way to assure modern, attractive exteriors

Consumer surveys prove that the designs preferred by a large majority of home buyers and builders are adaptable to Keymesh reinforced stucco. (Details of survey furnished on request.)

It's a way to assure durability

Unlike the stucco of the "roaring 20's", Keymesh reinforced portland cement stucco is a sturdy, long-lasting material which, when properly applied on a structurally sound building, will last the life of the building—will retain its attractive appearance with very little maintenance attention.

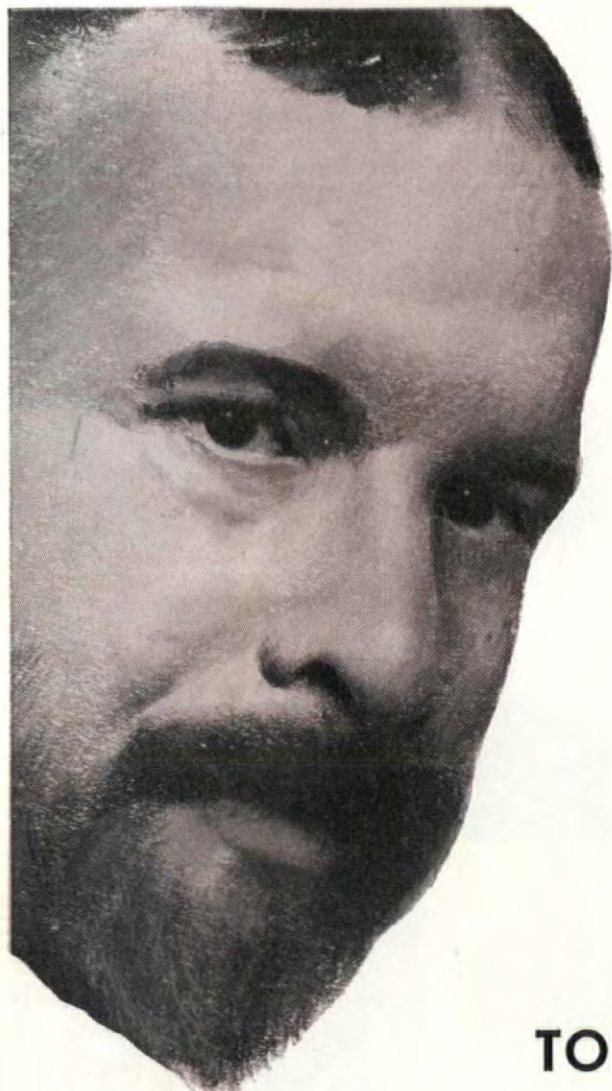
Write for complete information about Keymesh reinforcing.

Keystone Steel & Wire Company Peoria 7, Illinois



You should have the information contained in the booklet "Keystone System"—write for a copy.

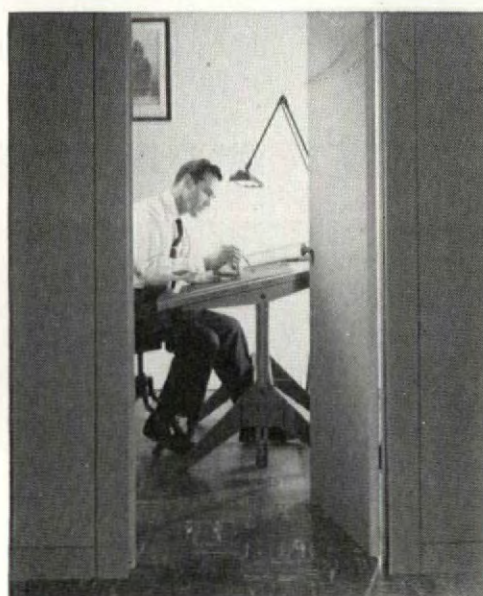
Keymesh is made in convenient size rolls.



Louis Sullivan said...

*"have a similarity, an organic quality,
descending from the mass down
to the minutest subdivision of detail."*

**TODAY, ARCHITECTS
HONOR THIS FUNDAMENTAL
OF CONTEMPORARY DESIGN**



STORE FRONT METALS • ALUMINUM FACING MATERIALS • ALL-ALUMINUM FLUSH DOORS • TRIM • ALUMINUM ROLL-TYPE AWNINGS •

HEAD PIECE—adjustable for accurate fitting on the job

TRANSOM FRAME—integral with door frame for rigidity

CORNERS—mitered and welded for maximum strength and beauty

GLAZING SETTING—engineered to eliminate unsightly screws

MINIMUM DIMENSION OF STILES—for maximum glass area and visibility into interior—without sacrificing strength

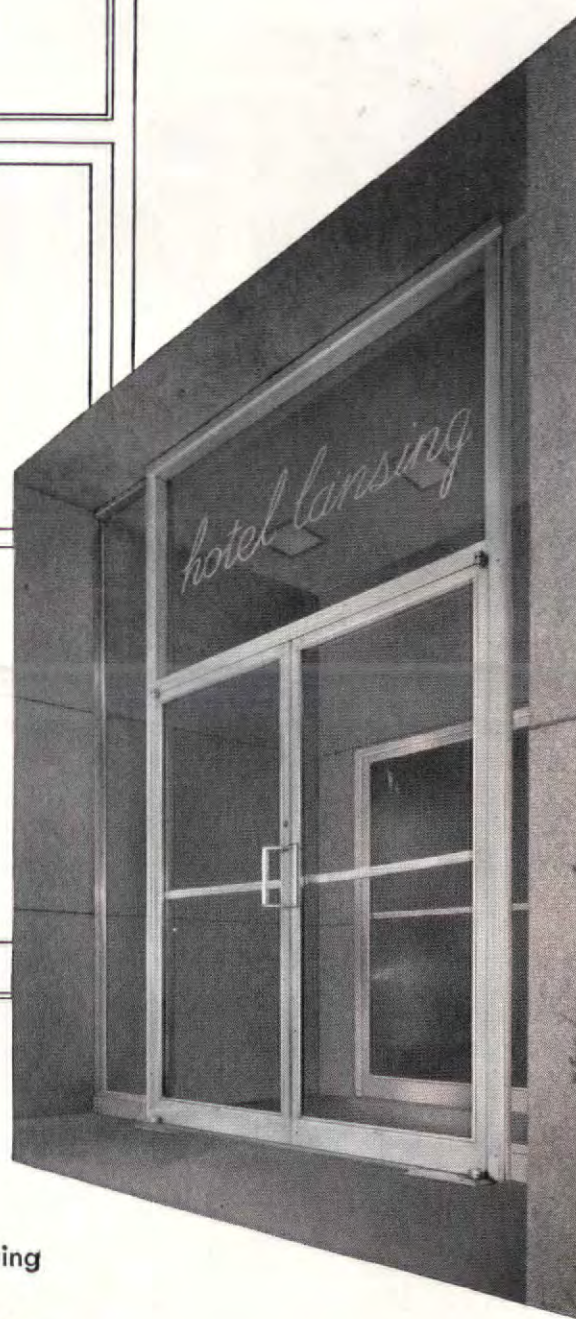
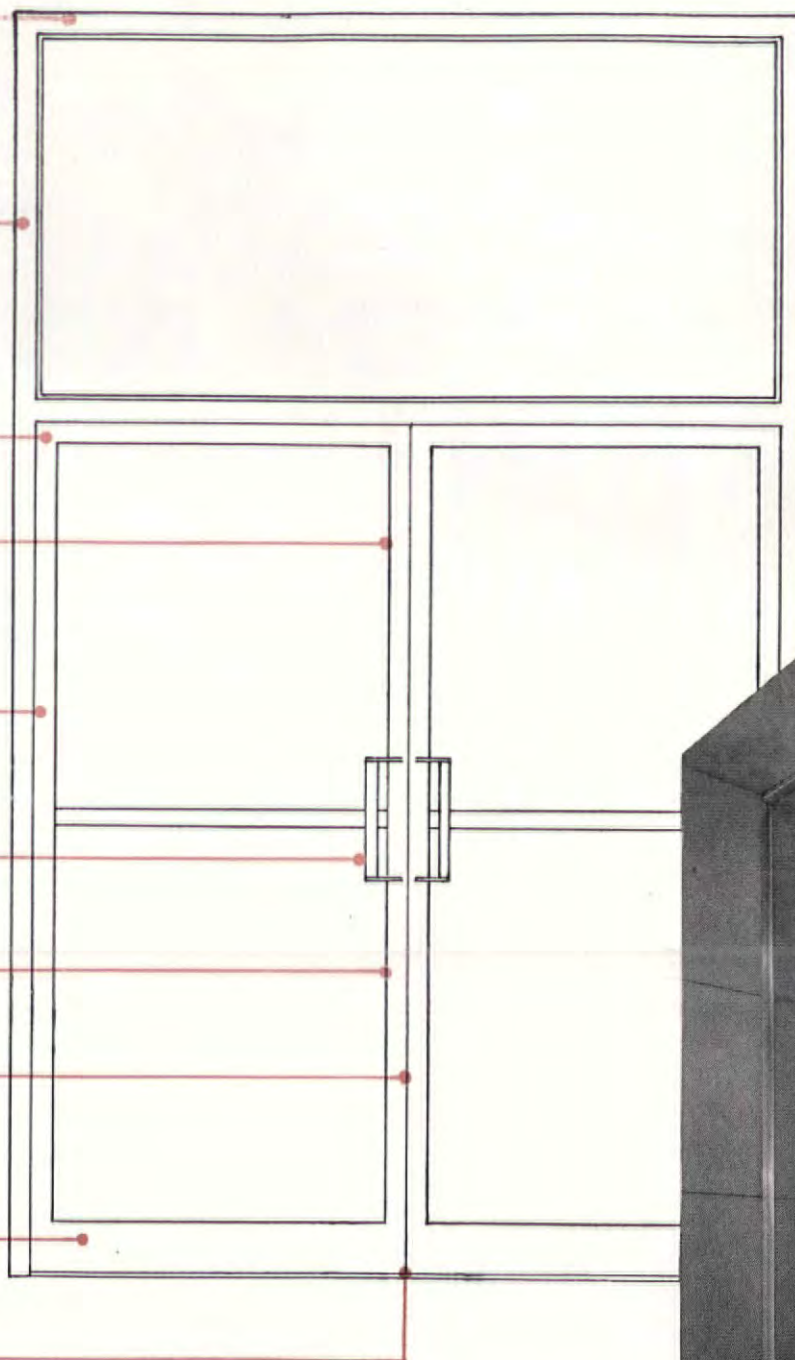
DOOR HANDLES—carefully formed and positioned at proper height for ease of operation

MEETING STILES—plainly visible to prevent accidents

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HEAVY BOTTOM RAIL—reinforced and welded to stiles

ACCURATE BALANCE—for smooth operation year after year



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ARCHITECTURAL METAL PRODUCTS

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1 Insert built-up unit in wall opening.



2 Square the frame and shim at these 7 places. Saw off shims flush with frame.

An independent research company recently proved that R•O•W Removable windows can be washed in 1/2 the time it takes to wash ordinary windows. For complete information on this test, and the name of your nearest R•O•W Distributor, fill out the coupon.

B-20



3 Nail *through* the highest shim at each side of window.



4 Final 10-second adjustment insures owner satisfaction.

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is the World's Most Convenient Window
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CYLINDRICAL LOCKS

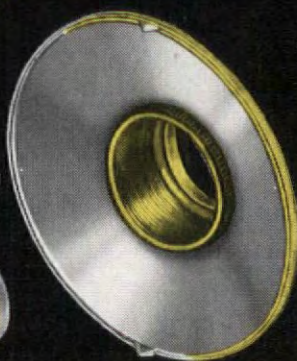
1

Seamless Tubular
Knob Shank
for full torsional strength.



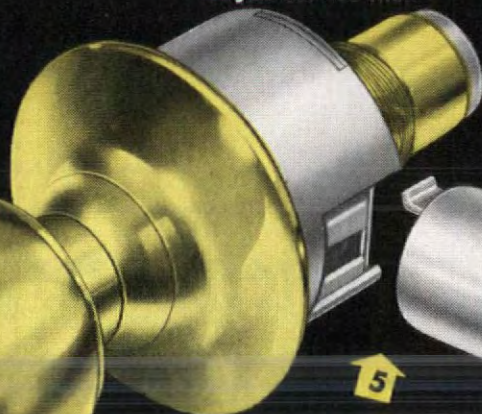
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Simplified Knob Design assures
quick, scar-proof door assembly.
Knob action, strong and positive.



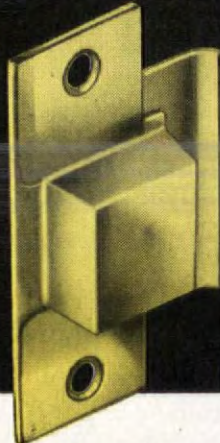
3

Extra Large Steel Knob Bearing
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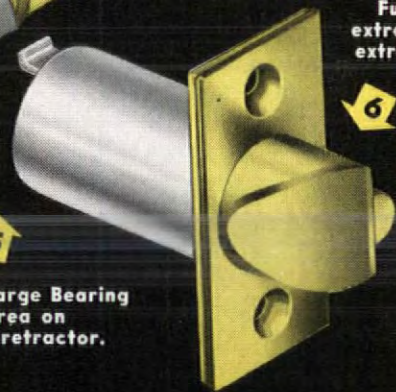
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6



5

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Sugar Pine

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Incense Cedar
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Lodgepole Pine

For more than 50 years, paneling of the Western Pines (Idaho White Pine, Ponderosa Pine and Sugar Pine), in both clear and knotty grades, has been a favorite with builders, architects and home owners. In recent years they have rediscovered the natural beauty of the seven Associated Woods for distinctive decorative effects.

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DOUGLAS FIR: Dominant figured grain; rich, red-brown color.

WHITE FIR: Straight, even grain; light color.

ENGELMANN SPRUCE: Barely perceptible straight grain; a pale, off-white color.

INLAND RED CEDAR: Straight, fine grain; slightly reddish brown color.

INCENSE CEDAR: Straight, fine grain; finishes to a silky sheen; pale or dull yellow-brown, sometimes tinged with red.

LOGEPOLE PINE: Straight, even grain; color varies from clear yellow to pale brown tinged with red.



Knotty Incense Cedar Paneling

White Fir Paneling

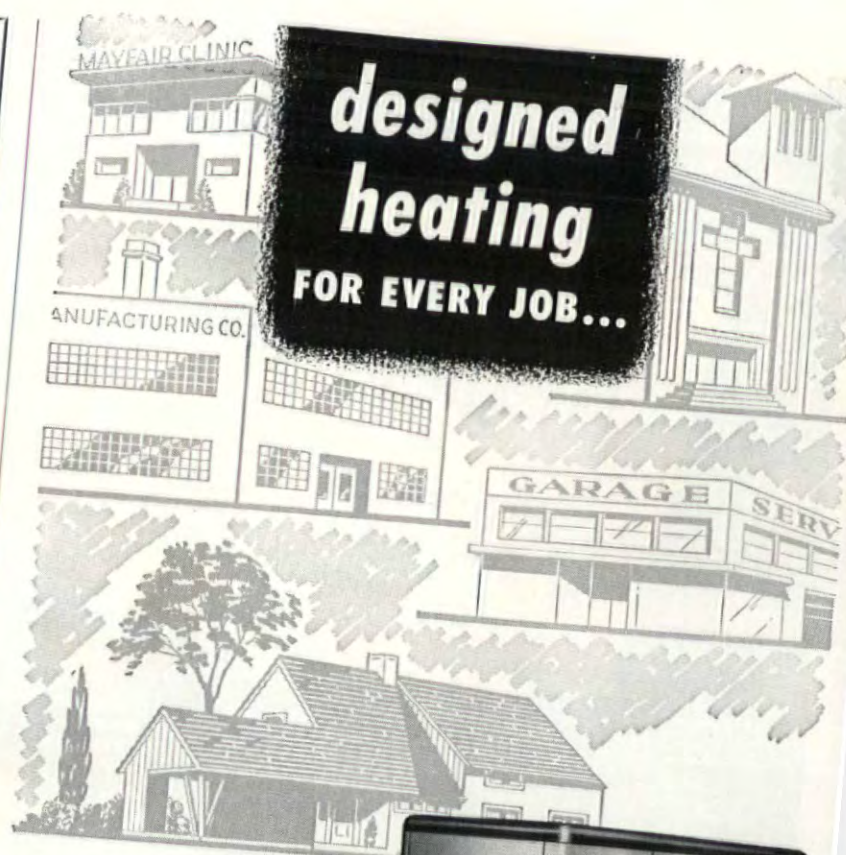


For finishing instructions, Paneling Pattern folder, list of member mills, or information on any product of Woods from the Western Pine Region, write—

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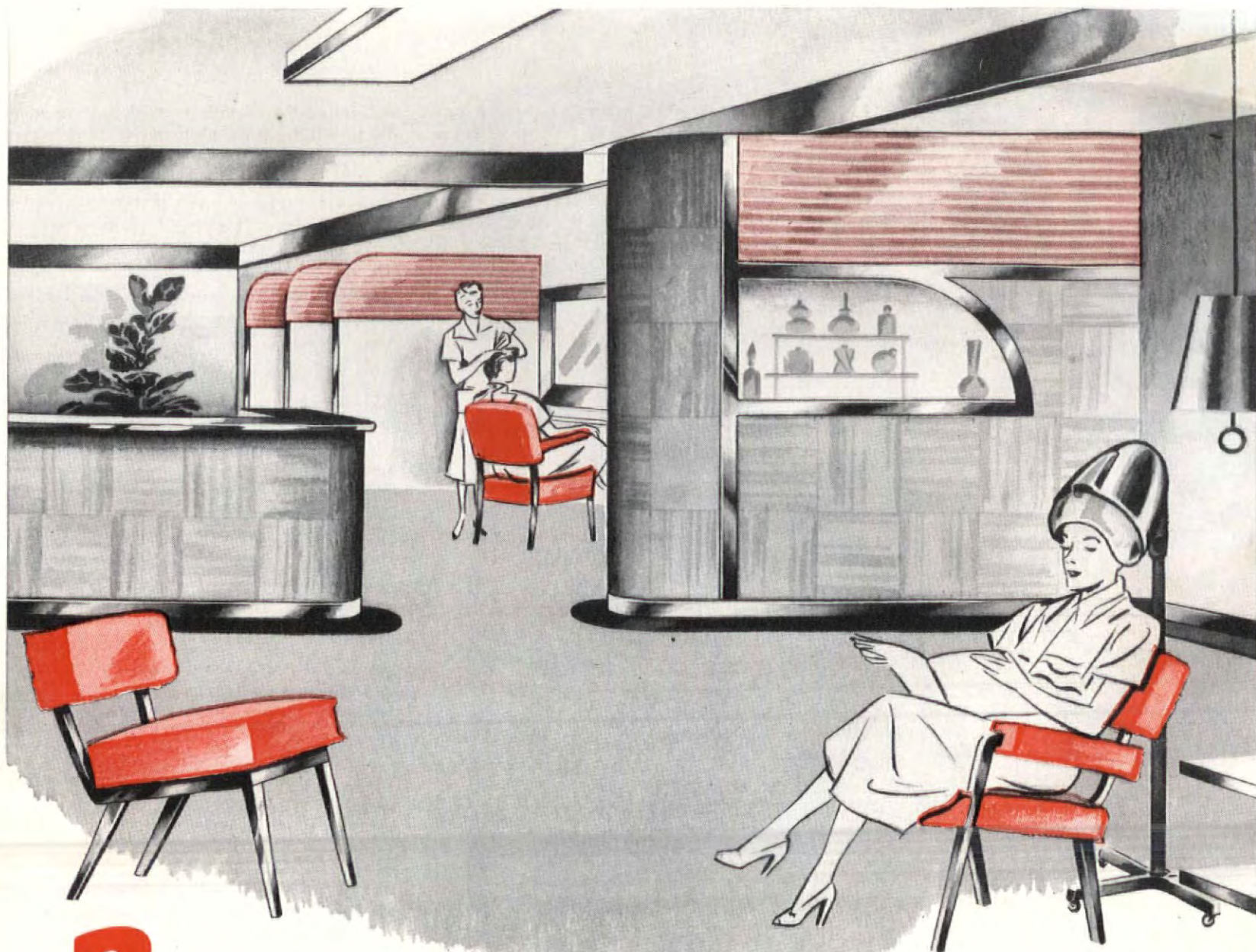
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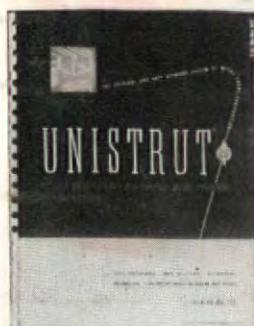
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SHARONSTEEL

TECHNICAL LITERATURE



LIGHTING. Holophane Datalog. Holophane Co., Inc., 342 Madison Ave., New York 17, N. Y. 64 pp. 8½ x 11".

In content and format, the *Datalog* is an exemplary piece of manufacturer's literature. A combination engineering data book and catalogue, it contains pertinent information on all Holophane's lighting equipment engineered for specific commercial, institutional, and industrial applications. Presented in the publication are performance data

and installation details on 270 lighting units illustrated by many photographs, cross-section drawings and candlepower distribution curves. Principles of controlling light with prismatic glass are explained, and proper illumination levels are listed. Finally, the fastidiously prepared *Datalog* is easy on the eyes.

METAL FRAMING. Unistrut Catalogue No. 700. Unistrut Products Co., 1013 West Washington Blvd., Chicago 7, Ill. 78 pp. 8½ x 11".

Catalogue 700 is a well organized comprehensive manual on how to hang, mount and support many kinds of mechanical and electrical equipment with Unistrut metal framing. Excellent two-color diagrams, detailed data on applications, and helpful information on ordering these versatile channels and fittings make the book a valuable reference for architects and contractors.

SPRAY EQUIPMENT. Sprayways. DeVilbiss Co., Toledo 1, Ohio. 16 pp. 11 x 16".

Printed in rotogravure style, *Sprayways* is a handy reference to the manufacturer's equipment for spraying paint and other coatings. Nearly 100 on-the-job photographs graphically illustrate many uses of the equipment.

STEEL PILING. Rent Piling Faster from Foster, Bulletin F-160. L. B. Foster, Pittsburgh 30, Pa. 8 pp. 8½ x 11".

Advantages of renting steel sheet piling for small as well as big construction jobs are itemized in this brochure which also gives specifications for piling sections, corners and connections produced by three manufacturers of the piling. Details are presented on interlocking sections and information is given on pile hammers and extractors available through Foster. Photos show piling in use on six projects where contractors were faced with unusual construction obstacles.

WINDOWS. Fenestra Industrial Steel Windows. Detroit Steel Products Co., 3111 Griffin St., Detroit 11, Mich. 8 pp. 8½ x 11".

The folder describes pivoted, projected and security windows for industrial and commercial buildings. It explains construction features of the hot rolled steel units, and gives full specification and size information.

ACOUSTICAL PLASTER. Coralux Acoustical Plaster. F. E. Schundler & Co., Inc., 504 Railroad St., Joliet, Ill. Dept. A. 4 pp. 8½ x 11".

The brochure describes Coralux, a lightweight, incombustible, perlite aggregate product said to form an excellent sound absorptive surface for walls and ceilings. Its adhesiveness and ease of application—Coralux may be handled like ordinary plaster or can be sprayed—are advantages emphasized in the folder. Mixing instructions and performance data are given, and a close-up photo shows the texture of the finished surface.



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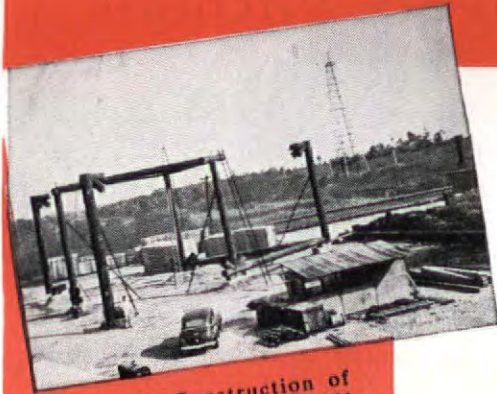


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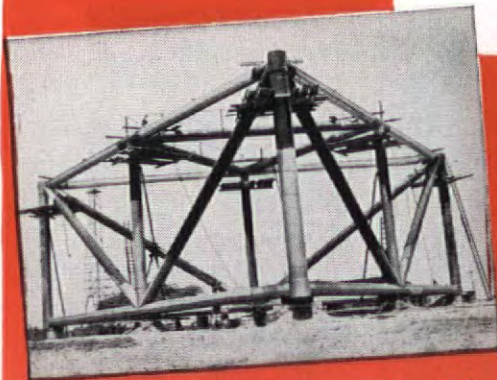
FOR VENEZUELAN OIL CONCESSIONS, LTD.,



1. Construction of pipe frame float 30' high, 80' long on each side of the triangle.



2. Closer view of the starting framework, showing 22" diameter steel pipe being used.

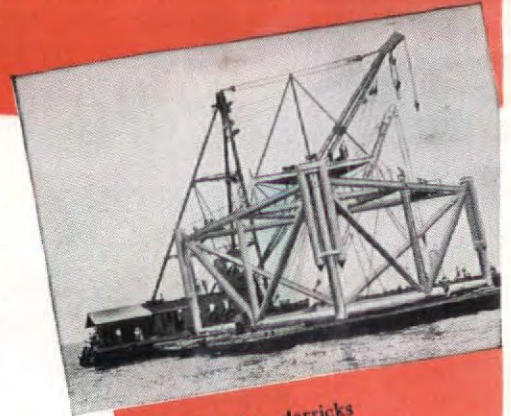


3. Completed framework, welded and watertight except for the corner verticals, which will accommodate anchor spuds.

The Problem: 250-foot Gow soil borings, accurately spotted five to ten miles offshore in the deep waters of Lake Maracaibo, Venezuela. The Project: pile foundations for future oil-well derricks. Special Hazard: 70-mile-an-hour "chubascos," violent squalls that would wreck temporary platforms.

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The Moral: When the problem is tough, the answer must still be right. That's when it pays to have a resourceful, experienced organization on the job... like Raymond!



4. Floating derricks preparing to lift the float from barges and place it in the water.



5. Launching the 60-ton float. Note work platform erected 10 feet above framework.



6. Float in position for Gow boring operations, anchored by the 120' spuds and cables at each corner.



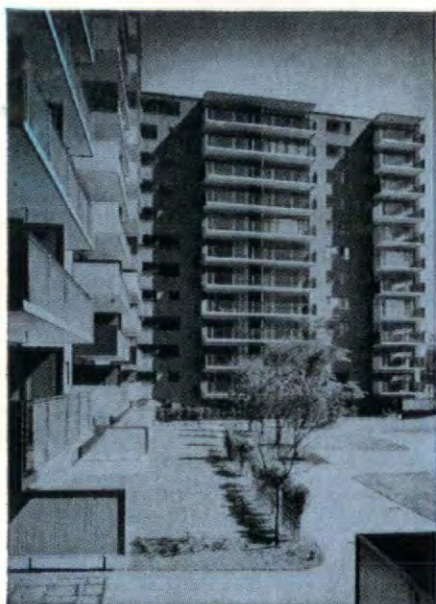
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Designed by leading members of the Massachusetts Institute of Technology's architecture department, 100 Memorial Drive includes balconies or gardens for every one of the 260 apartments, a skip-floor elevator system, southern exposure for every living room, and many other elements of advanced design.

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Home Bureau, General Electric Co., Bridgeport 2, Conn.





This kitchen (above) at 100 Memorial Drive shows how well General Electric equipment fits into the modern plan. Up-to-date design and good old G-E dependability are an unbeatable combination.

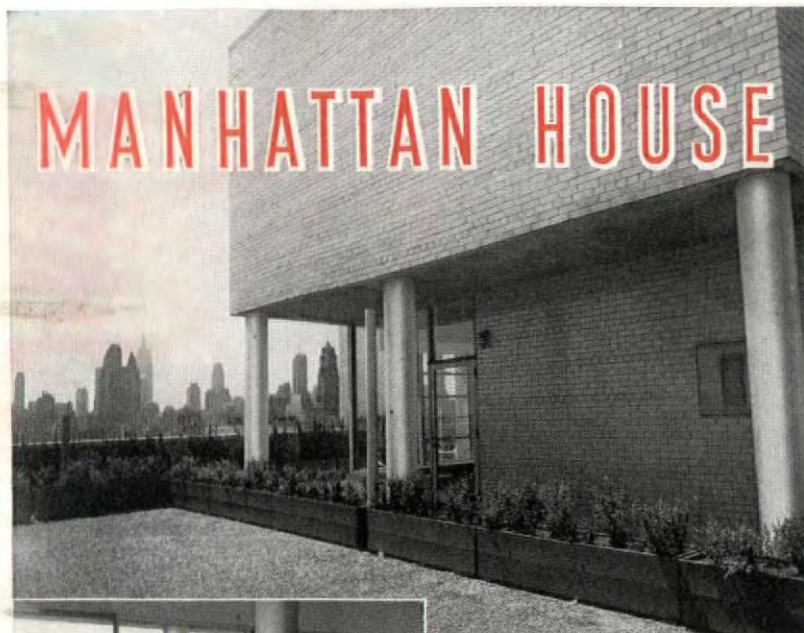
Mrs. Frederick C. Carreiro, Jr., (right) a 100 Memorial Drive tenant, says: "The G-E Disposall has made garbage disposal so easy I wonder how I ever got along without it. Our roomy G-E Refrigerator and fool-proof G-E Range are also what I had hoped to find in Boston's most modern apartment house."



This living room (left) at 100 Memorial Drive reflects the progressive spirit of the building. Convenience, beauty and comfort are the important factors in every room of every apartment in the New England Mutual Insurance Company's wonder-building.

You can put your confidence in—

GENERAL  **ELECTRIC**



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PHOTOS BY JERRY SALTSBERG & ASSOCIATES

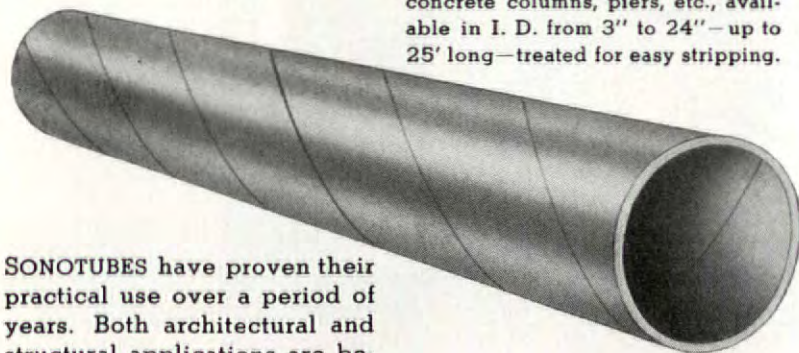
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SPECIFICATION AND

The advertising pages of The Magazine of BUILDING are the recognized market place for those engaged in building. A house or any building could be built completely of products advertised here. While it is not possible to certify building products, it is possible to open these pages only to those manufacturers whose reputation merits confidence.

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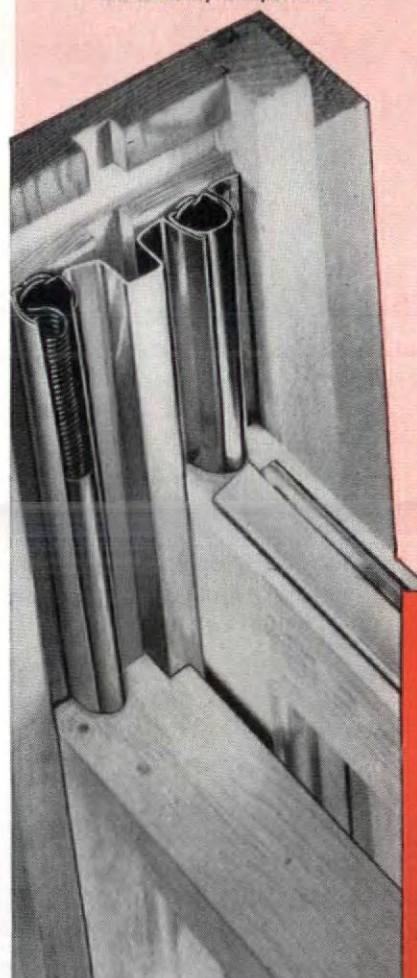
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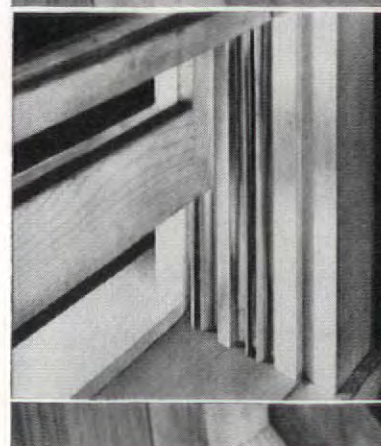
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ARCHITECTS! See Sweet's File, Architectural, Section 19b.

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Dura-seal
**COMBINATION
METAL WEATHERSTRIP
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Dura-seal is cut exactly to the pitch of the sill—another feature that helps make a more attractive and efficient window.

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Specifying a material like wall tile normally is predicated on fulfillment of twin requirements: function and decoration. Yet in meeting these requirements, the tile's cost must not be disproportionate to the overall building costs per square foot.

These requirements form the only just criteria for measuring a product's competence. It is against these criteria that we ask you to assay Crown Steel Wall Tile.

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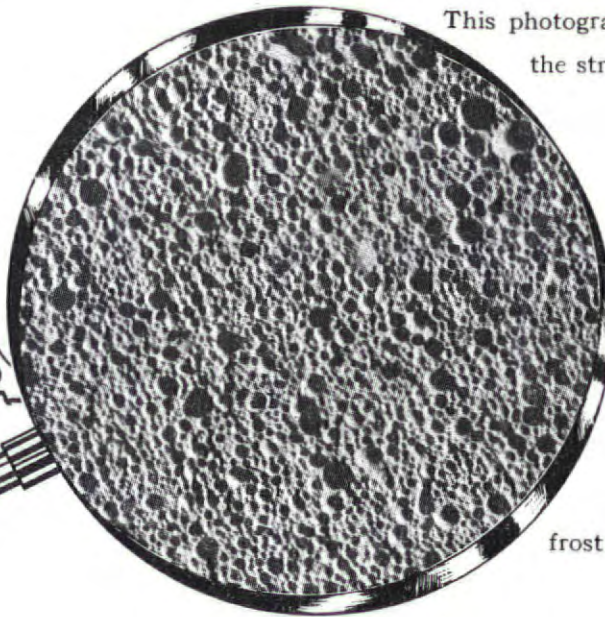
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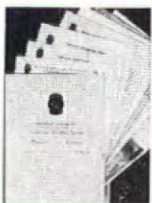
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