architectural **forum**

August 1954

Photos of "Flor-Ever" floor covering, made of BAKELITE Vinyl Resins, courtesy of **Sloane-Delaware Floor Products,** Trenton, N. J.

Consider the 3-way advantages

of flooring made of BAKELITE Vinyl Resins

1. Many, many colors and patterns provide ample selection to satisfy clients' decorative tastes.

2. Your own creative design has a versatile medium for expression.

3. You satisfy the fundamental requirements of modern flooring – lasting beauty, unmarred wear, easy cleaning, comfort and long-term economy.

Today, it just isn't necessary to sacrifice any of those advantages to obtain one special benefit. Flooring made of BAKELITE Vinyl Resins provides all the fundamental features . . . and no other type combines them so well.

You know the inherent characteristics of the resins used . . . how impervious to dirt and disfiguration . . . how they lend resiliency . . . how their transparency and discoloration-resistance keeps colors bright and true. You know how their resistance to soiling makes cleaning easy, and cuts the work and cost of maintenance.

Make flooring "made of BAKELITE Vinyl Resins" your standard specification. It's simple, it's sure.

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

Washington, D. C. Tenant Office Building

Saves $79,097 in Thirteen Years

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When it comes to changing floor space requirements, tenants of the Washington Building, Washington, D. C., find it no problem to have wall rearrangements made quickly and easily, without annoying interruptions of normal business efficiency. In just a weekend, a single office, or an entire floor, can be completely altered to meet exact space needs.

But that's only part of the reason for the popularity of modern, attractive Hauserman *Movable* Walls with Weaver Brothers, Inc., operating managers of the Washington Building.

Already—in only thirteen years—these necessary wall rearrangements have paid big cash dividends, too. *Actual savings* of $79,097 represent the cost difference between moving Hauserman *Movable* Walls, and tearing down and re-erecting ordinary so-called permanent walls.

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This 96-page comprehensive guide for architects contains complete technical details as well as stock sizes, general instructions and specifications on *all* types of Hauserman *Movable* Interiors. Write to The E. F. Hauserman Company, 7147 Grant Avenue, Cleveland 5, Ohio.

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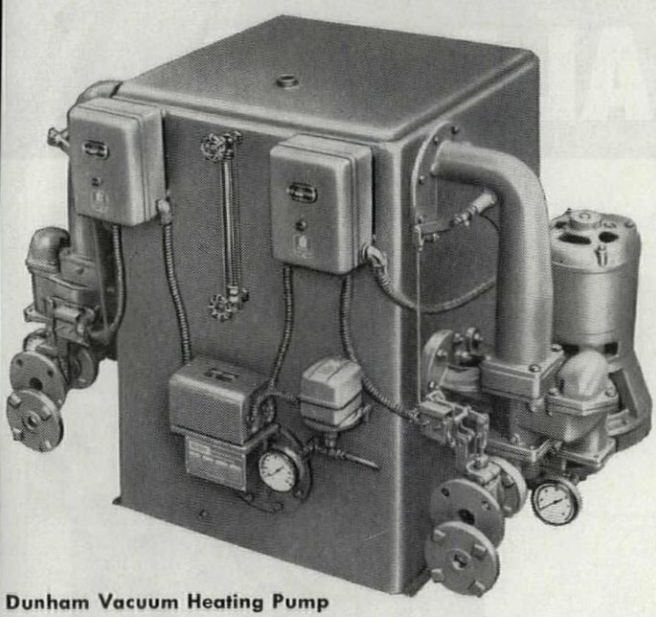
ARCHITECTURAL FORUM, August 1954. Volume 101, Number 2. Published mothly by TIME Inc., 9 Rockefeller Plaza, New York 20, N. Y. Entered as second-class matter at New York, N. Y. Professional Subscription price $5.50 a year, non-professional $7.00 a year.

same reading ten years from today



Dunham Vacuum Heating Pump
Single and Duplex models for capacities from 2,500 through 65,000 EDR

Read "behind" this vacuum gauge, and you'll see that Dunham Vacuum Heating Pumps perform as rated year after year, in properly installed and serviced systems, without expensive repairs—at low amperage.

That's because Dunham pumps have no fine tolerance parts—*need no close clearance adjustments to maintain full capacity.* One simple impeller is the only principal moving element.

Dunham gives you a pump "package" too. No extras to buy! All standard units have controls mounted and wired for immediate use. Duplex Pumps have mechanical alternator as standard equipment.

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All standard pumps are rated in accordance with A.S.H.V.E. Vacuum Heating Pump Code. For new bulletin just off press, write C. A. Dunham Company, Dept. AF-8, 400 West Madison Street, Chicago 6, Illinois.

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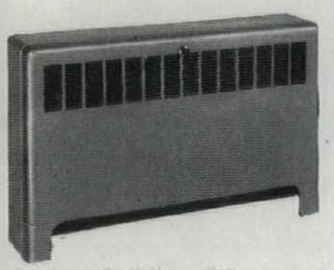
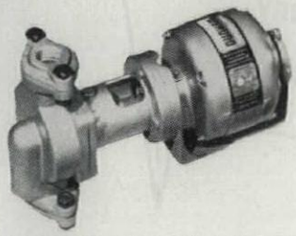
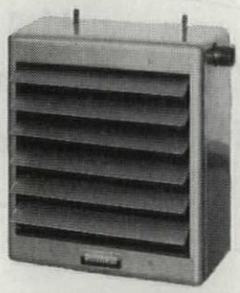


Dunham Radiation. Full range of sizes and types of convectors, baseboard and finned tube radiation.



Dunham Circulators. Heart of Dunham's complete hot water line. Single-spring motor coupling. Brand-name motor, compact, quiet.



Dunham Unit Heaters. Complete line includes heating-cooling cabinet types, vertical discharge, horizontal discharge and large blower unit heaters.

Dunham Vari-Vac®. Engineered precision temperature control system uses continuous flow sub-atmospheric steam to cut fuel costs up to 40%.

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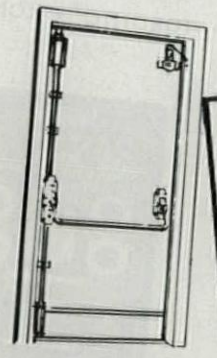
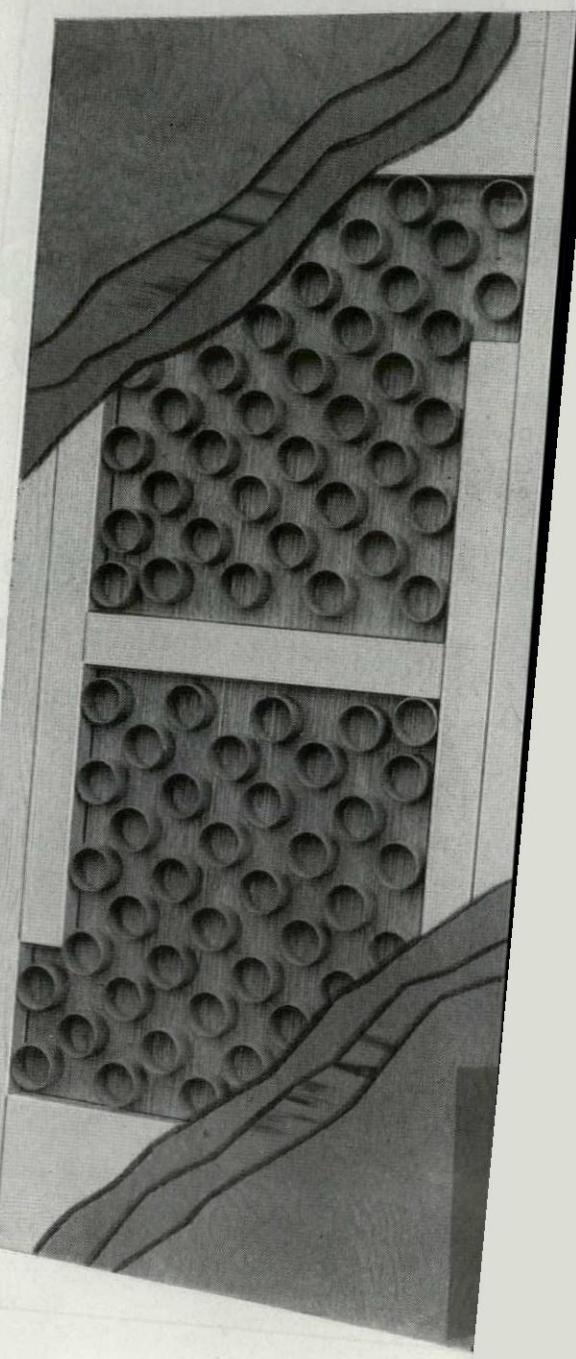


Complete blocking provides space for mounting any institutional hardware



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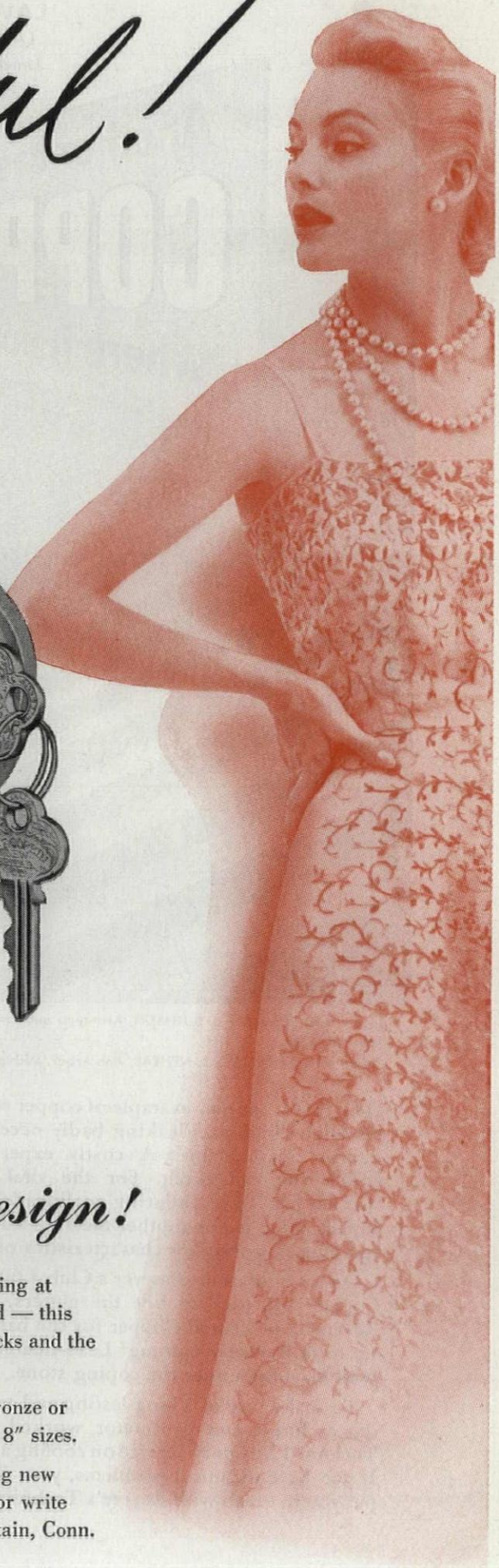

New Corbin Crestwood design!

Here is another example of the exciting things that are happening at Corbin. A new, modern knob and rose creation — The Crestwood — this design is made for use with Corbin Heavy-Duty Cylindrical Locks and the popular Defender Standard-Duty Cylindrical Sets.

Crestwood knob and rose-plates are made of solid cast brass, bronze or aluminum metal. Rose-plate is available in 3″, 3½″, 5″, and 8″ sizes.

For complete details on the Crestwood and many other refreshing new Corbin designs consult your Corbin sales representative or write P & F Corbin Division, The American Hardware Corp., New Britain, Conn.

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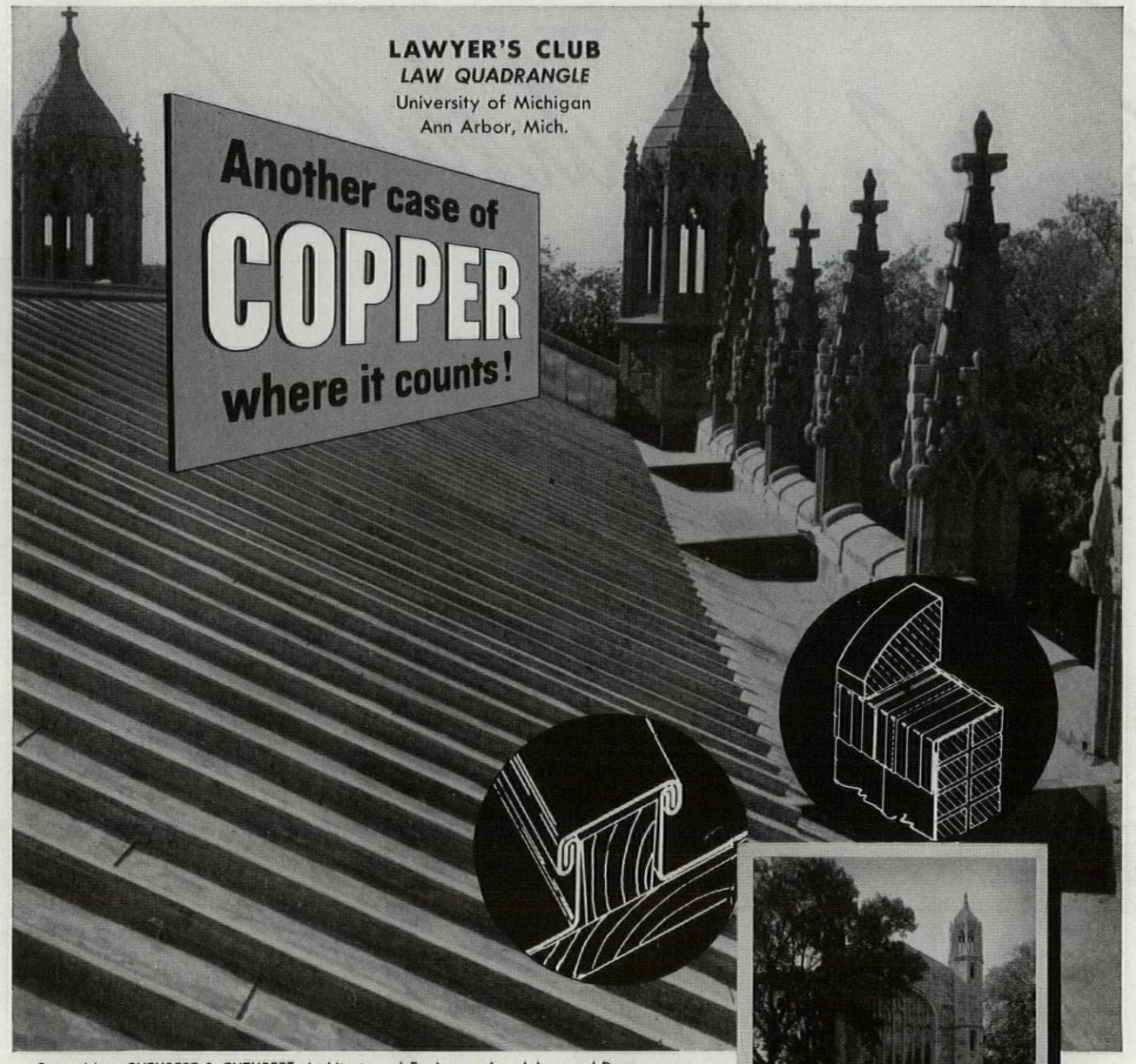

Supervising: CUTHBERT & CUTHBERT, Architects and Engineers, Ann Arbor, and Dearborn, Michigan.
Contractors: MUEHLIG & LANPHEAR, Ann Arbor, Michigan.

Here is still another example of copper replacing a less durable material which was leaking badly necessitating considerable interior maintenance. A costly experience, but one from which you can profit. For the vital spots use the metal that has proven its enduring qualities for centuries . . . copper. In fact, there is not another metal or alloy that has all the outstanding construction characteristics of copper.

On the roof of the Lawyer's Club 4,000 lbs. of 32-oz. Revere Copper was used to line the gutters, 10,000 lbs. of 16-oz. Revere Lead-Coated Copper for the batten seam roof and 500 sq. ft. of Revere-Keystone* Lead-Coated, 16-oz. 3-Way, Thru-Wall Flashing under the coping stone.

To make sure of a long-lasting and trouble-free installation, the architect and contractor worked closely with Revere's Technical Advisory Service on roofing and flashing techniques. If you have technical problems, your Revere Distributor will put you in touch with Revere's Technical Advisory Service.

**Patented*

IN CIRCLE above left is cut-away section of batten seam roof of Revere Copper installed on the Lawyer's Club. Circle at right shows detail of Revere-Keystone 3-Way Thru-Wall Flashing of copper that will seal out weather, prevent recurrence of costly leaks.

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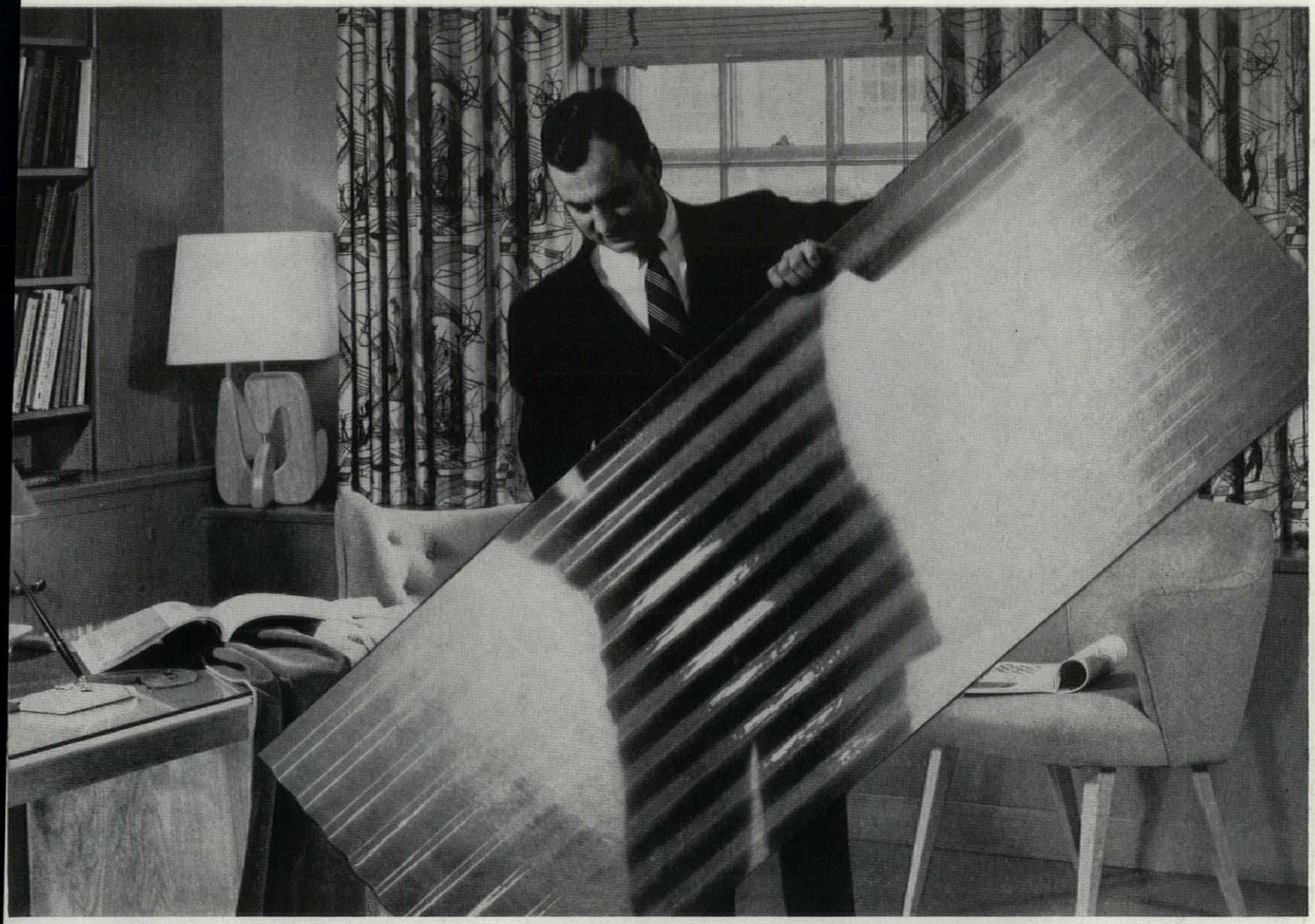

To help you meet code requirements, now and in the future, your fabricator can supply panels and sheets made with ***HETRON*** *polyester.*

Now—polyester-glass fiber panels with ***specific flame resistance***

Now you can specify polyester-glass fiber construction *to meet code requirements* that call for a definite flame spread rating.

This is important to you, because building officials and construction people are becoming increasingly aware of the need for specific flammability data on polyester-glass fiber panels and sheets to be used in coded areas.

Fire resistance "locked in"

Structural panels, sheets, and other shapes made with HETRON are *permanently* self-extinguishing. Typical flame spread ratings of 75 or less (compared with 100 for red oak, and as high as 400 for ordinary polyester-glass fiber panels—by independent laboratory tests) place HETRON-based panels in a bracket equivalent to the BOCA classification of "slow-burning." Specific flame resistance is permanently, chemically locked in.

You can get HETRON-based panels and sheets from leading fabricators now. They cost only a little more than panels and sheets made with standard resins. You can get them in a wide range of sizes, gauges, and colors—translucent or opaque. For applications where ultraviolet exposure will be severe, we suggest you consult with your fabricator or with us.

We do not make the panels, but will gladly send you complete information on where to get them. Write also for technical specifications and flame spread data on HETRON.

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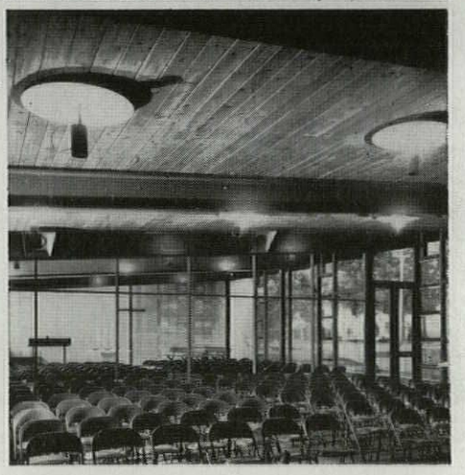

the ultimate in efficiency where budgets control the building plans

● The First Methodist Church of Plainfield, Iowa, had to be more than just a church to warrant the expense of its construction. Consequently, architects Schweikher & Elting, although limited by a budget of $67,000, designed this remarkably flexible building for the 1300 church members. It includes:

- **A church assembly room for 140 worshippers.**
- **A social hall with stage that will seat up to 90 people.**
- **A 350-sq. ft. kitchen to serve the social hall.**
- **Four distinct classrooms with sliding walls. Will seat 70 persons.**
- **All the storage, office and service space required of a small community building.**
- **A complete radiant heating system of USS NATIONAL Steel Pipe.**

In such installations where efficiency is the key word, there is no better choice of materials to be made than NATIONAL Pipe—dependability at a moderate price. So dependable that architects and contractors have been specifying it for over 60 years as the "standard" for conventional plumbing and heating systems. They know that NATIONAL Steel Pipe has the inherent characteristics necessary to meet the requirements of such applications—smooth, uniform bending; sound, strong welding properties; and long service life—characteristics that have made it the largest selling pipe in the world.

For further information on the application of USS NATIONAL Steel Pipe to radiant heating and snow melting services, write:

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USS

USS NATIONAL Steel PIPE

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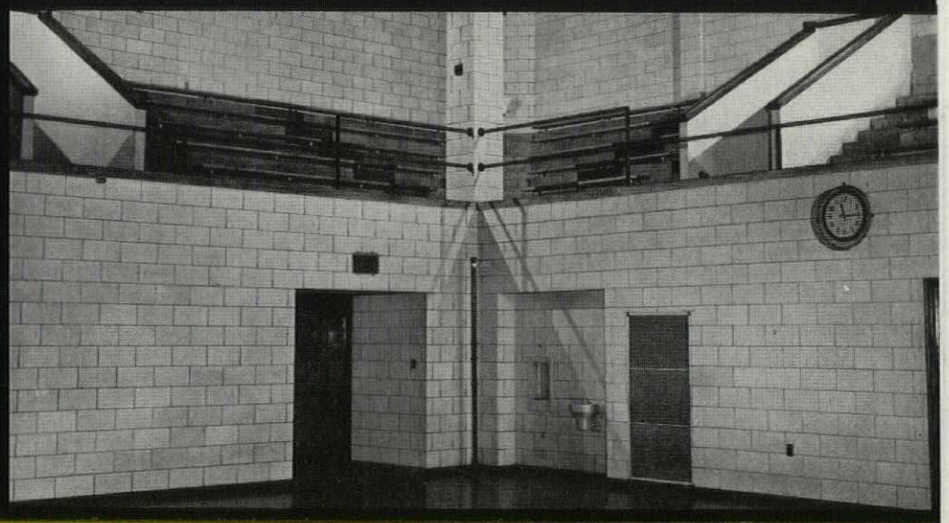
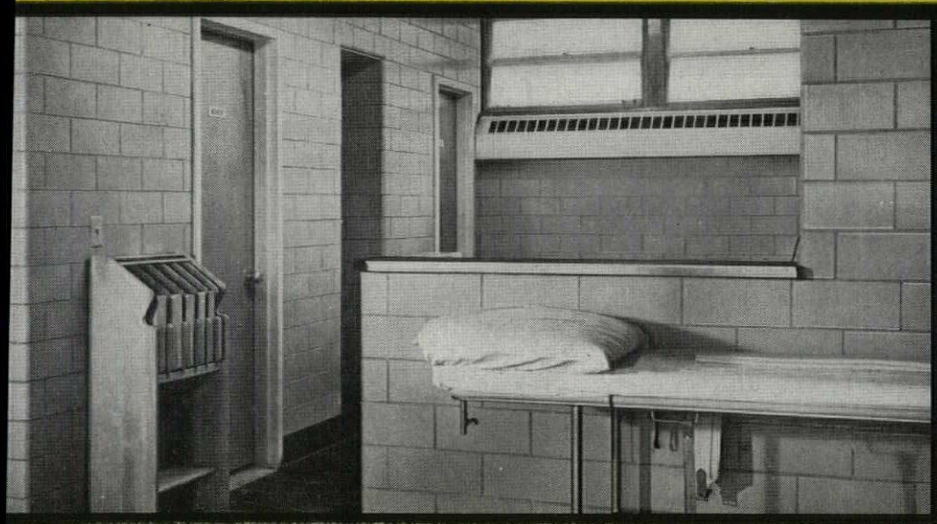
—Which Facing Tile job is brand new?



North Shore Hospital Nurses' Station, Emergency Admitting Section
Manhasset, Long Island. Architect: Isadore Ronsenfield

Wauwatosa High School Gymnasium, Wauwatosa, Wisconsin. Architects: Herbst & Kuenzle



—Which is 16 years old?

As these two recent photographs show, it's hard to guess the age of a well laid-up wall of structural clay Facing Tile.

Thanks to walls of durable Facing Tile, a 16-year-old school gymnasium (top, right) looks just as clean and bright today as a nurses' station in a brand new hospital (bottom, left).

You can *count* on Facing Tile for satisfactory performance—

- *as an economical wall-and-finish in one*
- *as a positive help to sanitation and maintenance*
- *as a permanent, pleasing color background*

Facing Tile has been thoroughly tested by years of varied uses in practically every category of building. It gives you more for the dollar than any other single building material.

For complete data on Facing Tile, just write one of the Institute offices listed below.

LOOK FOR FTI THIS SEAL

Used only by the members of the Facing Tile Institute, it is your assurance of highest quality. In the interest of better Facing Tile construction the companies listed here have contributed to the preparation of this advertisement.

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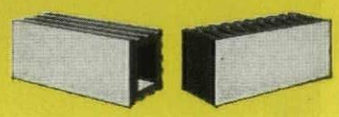
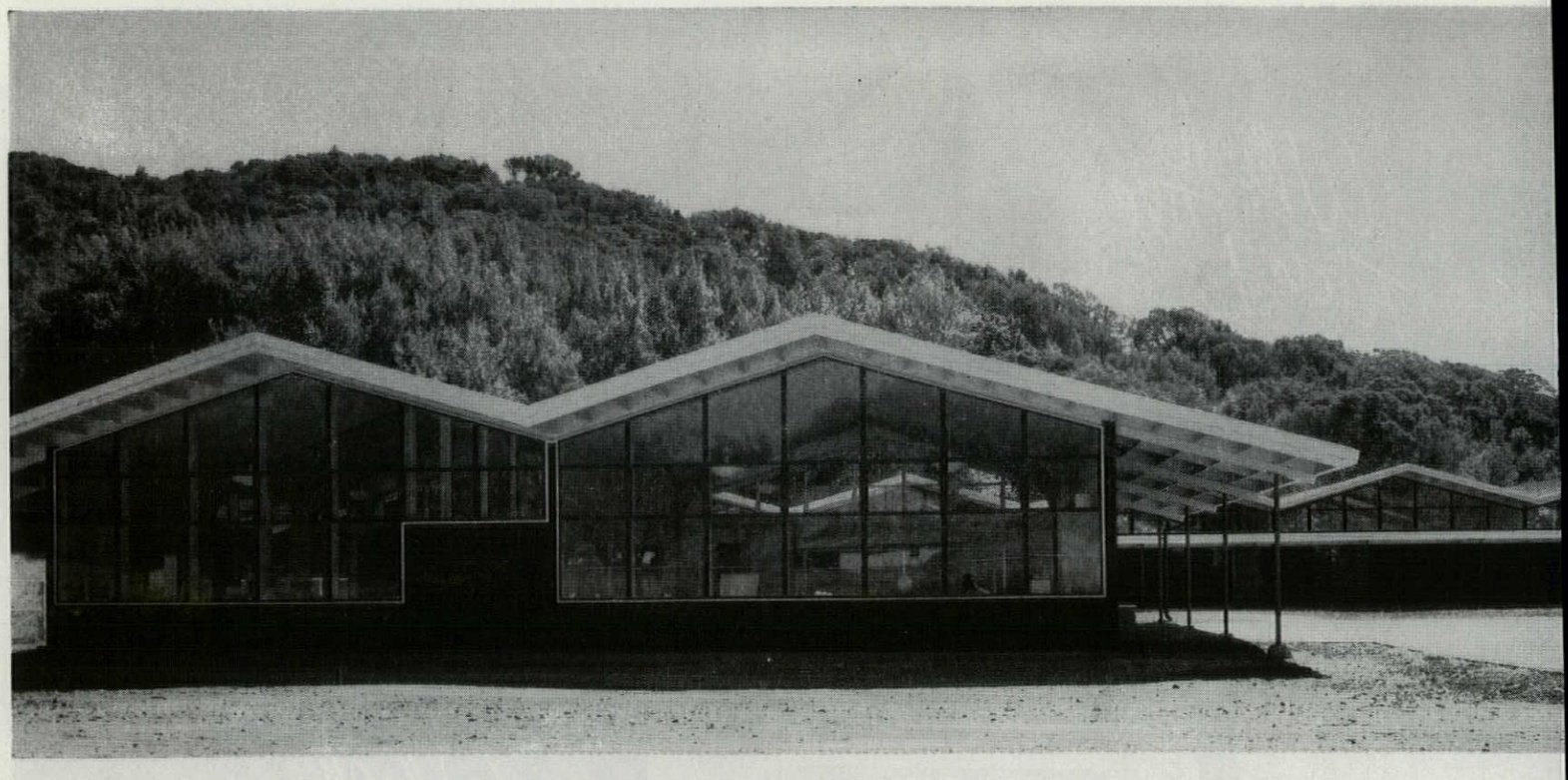
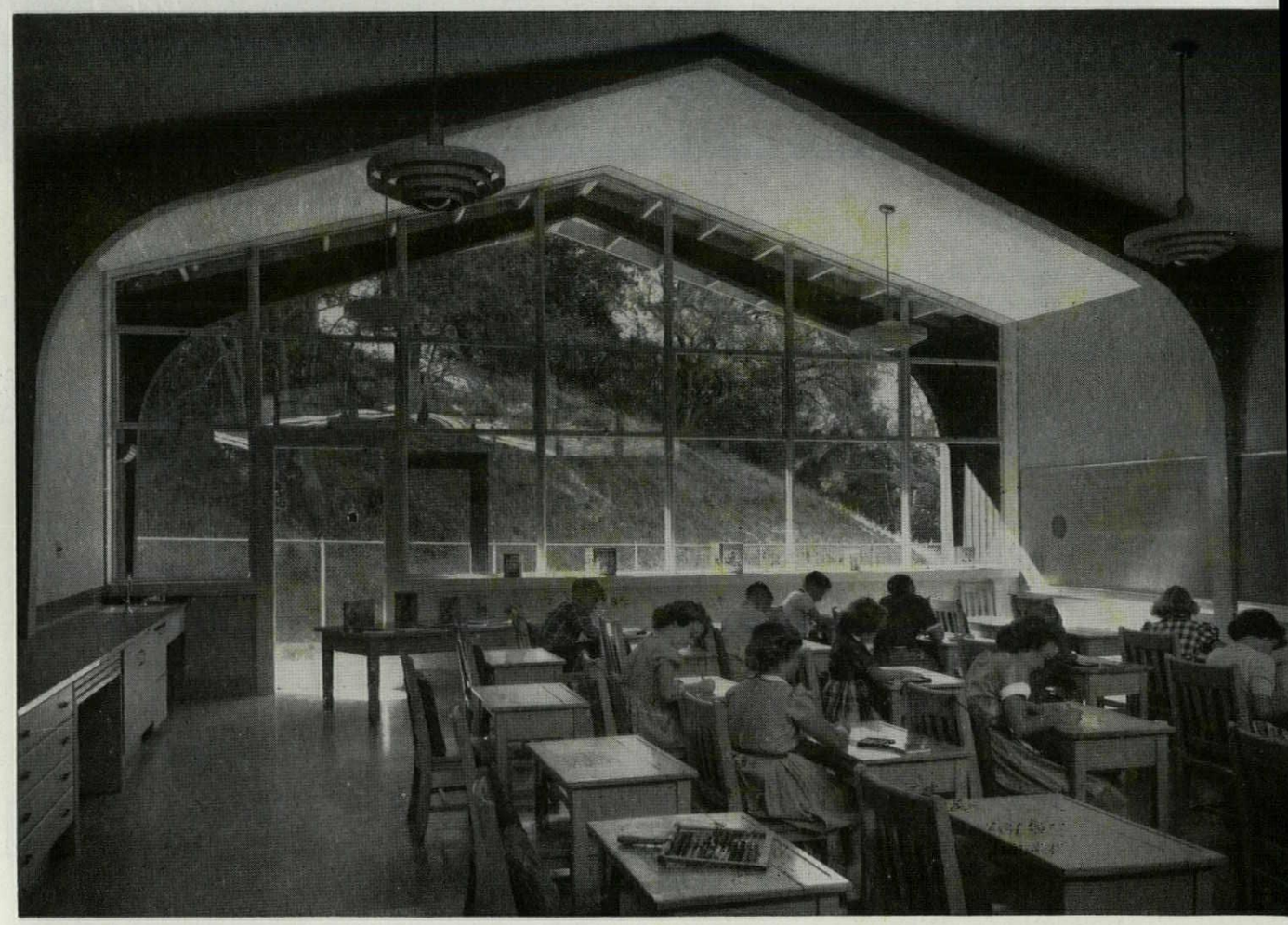




THANKS TO DAYLIGHT WALLS of L·O·F Glass, there will be no "penned-up" feeling for children attending the prize-winning Oak Manor Elementary School in Fairfax, California. Exterior and interior views here show the natural blending of outdoors and indoors. Architect· John Lyon Reid, San Francisco, California.



IN *The School Executive's* THIRD ANNUAL COMPETITION FOR BETTER SCHOOL DESIGN*...

17 out of 17 winners used modern daylight walls!

That's quite a record—out of 139 schools entered, all seven winning designs and all ten honorable mentions have daylight walls, windows of clear glass extending from wall to wall and sill to ceiling. It's an indication of a sharp, decisive trend in school design.

In the words of the judges themselves: "Each (of the winners) showed a sensitive relationship between indoor and outdoor surroundings. Each was sensitive and responsive to its site. Each of them used the outdoors to enhance the environment of people occupying rooms. In each of the winners there has been a conscious effort to combat the confining effects of people contained in limiting boxes."

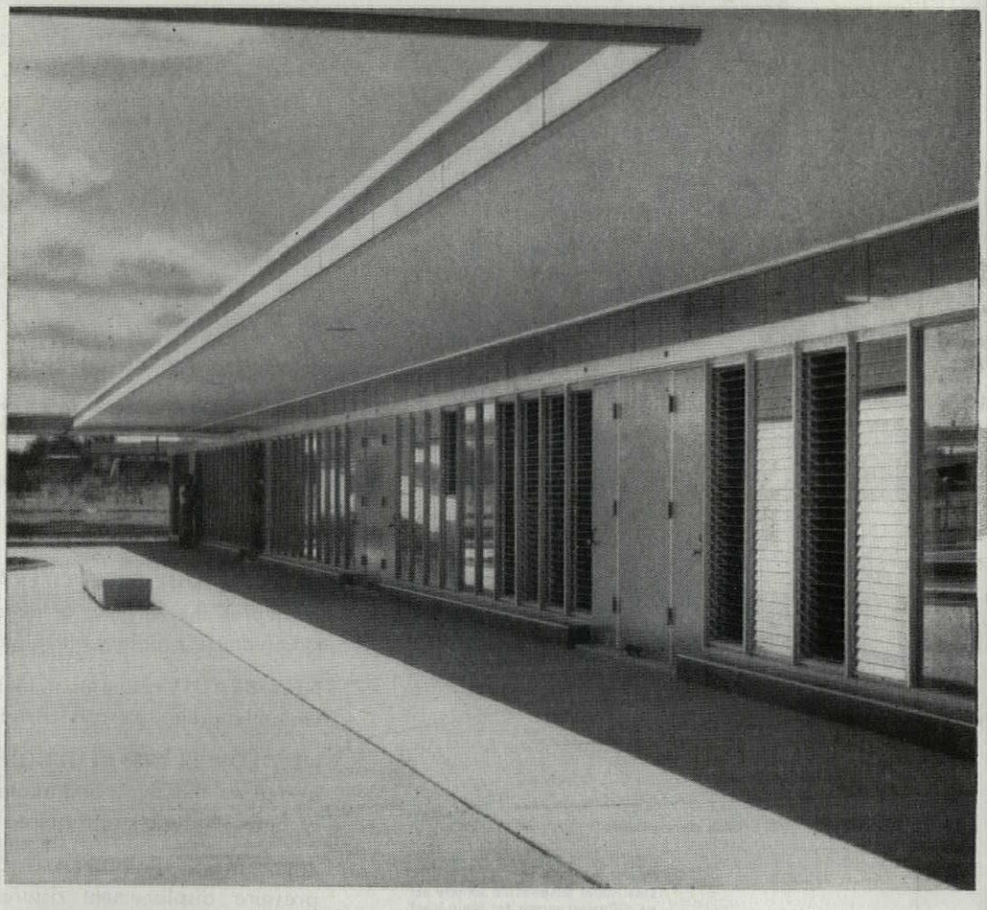
These words reflect the growing enthusiasm of educators all over the country for the use of daylight walls to eliminate "that cooped-up feeling". These daylight walls add a feeling of spaciousness . . . bring light and view inside . . . make the classroom a part of the world beyond.

School boards like daylight walls, too. They are economical to build (less masonry, lath, plaster and paint). Economical to maintain (glass is easy to clean, doesn't wear out). When glazed with *Thermopane** insulating glass, heating costs are lower and areas close to windows are comfortable on coldest days.

For a more complete story on the use of daylight walls in school design, write for the book described briefly below or call your nearby Libbey·Owens·Ford Glass Distributor or Dealer. *®

Free Book on School Daylighting

You'll enjoy—and get a lot of good ideas from—this 24-page authoritative publication on school daylighting: "How to Get Nature-Quality Light for School Children". For a free copy write Dept. **4284**, Libbey·Owens·Ford Glass Co., 608 Madison Ave., Toledo 3, Ohio.



HERE'S A HEALTHY and stimulating environment for children in the Mirabeau B. Lamar Junior High School at Laredo, Texas. For fullest ventilation, these daylight walls are glazed with jalousies made of L·O·F Glass. Architects: Caudill, Rowlett, Scott Associates, Bryan, Texas.

*Awards announced at 1954 convention of American Association of School Administrators in Atlantic City.

L·O·F GLASS · Corrulux · FIBER-GLASS

THERMOPANE • PLATE GLASS • WINDOW GLASS

DAYLIGHT WALLS

. . . THAT LET YOU SEE

OTHER L·O·F PRODUCTS: Vitrolite* · Tuf-flex* Tempered Plate Glass · Tuf-flex Doors · Safety Glass · E-Z-Eye Safety Plate Glass · Fiber-Glass · Corrulux*

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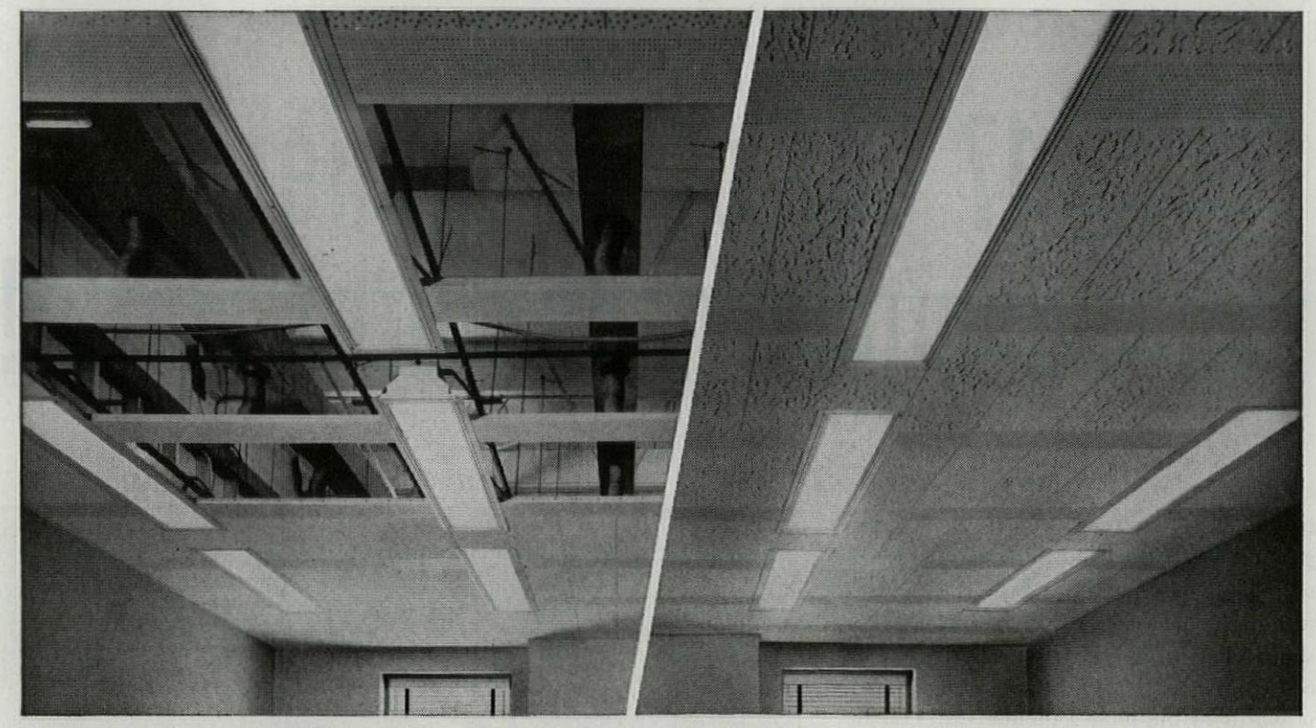
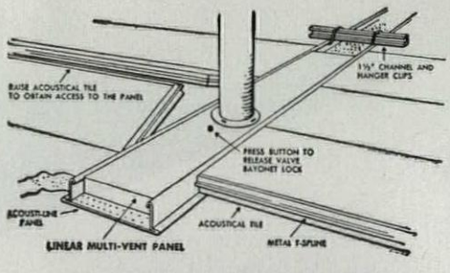


new! *Out-of-sight* AIR DIFFUSERS for acoustical block ceilings!

Now Pyle-National Multi-Vent® air diffusing panels, adapted for concealed installation in Celotex Acousti-Line ceilings, provide advantages heretofore possible only with metal pan.



The perforated face of Acousti-Line metal suspension panels act as diffusing plates for Multi-Vent units. No special supports are needed. Flexible connection minimizes need for accurate alignment between duct opening and Acousti-Line panels.

Note ready access to Multi-Vent unit for cleaning or valve adjustment.

NEW SMUDGE-FREE OPERATION—Multi-Vent's low velocity air delivery eliminates the dirtying or discoloration of adjacent acoustical blocks, a costly maintenance problem with high velocity diffusion.

NEW BEAUTY—Out-of-sight installation eliminates all protruding outlets and unsightly grilles. Permits complete freedom of interior design and decoration.

NEW LOWER INSTALLATION COST—Multi-Vent units can be assembled, connected to the duct, and seated in the metal suspension panels in just a few seconds. No tools are required . . . no cutting of blocks necessary.

AND, MOST IMPORTANT OF ALL—Air distribution by Multi-Vent's gentle pressure displacement assures perfectly even air motion and exceptional uniformity and control of room temperatures. The total absence of strong air streams or blow eliminates all usual sources of draft complaints and permits complete freedom in relocating partitions.

For complete information about Multi-Vent installations for all types of ceilings consult the Pyle-National Sales Engineer in your vicinity, or write direct.

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Sales and Engineering Representatives in Principal Cities of United States and Canada

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EXTRUDED ALUMINUM

Make Ualco Awning Windows

ARCHITECT-QUALITY!

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ASK ABOUT OUR ENGINEERING PLANNING SERVICE. DESIGNED TO ASSIST ARCHITECTS, ENGINEERS AND CONTRACTORS IN MAKING "TAKE-OFFS" AND SOLVING WINDOW PROBLEMS.

These awning windows do the job no matter what your commission—residential, commercial or institutional! That's because they're made of heavier extruded 63S-T5 aluminum! Ualco Awning Windows are precision-engineered, job-tested in buildings of all types. They never rust, rot or need painting. They'll do justice to your designing skill and remain a lifetime tribute to your reputation!

OTHER FEATURES: Exclusive Strip-Proof Operator unlocks, opens, closes and locks vents in any position up to 90 degrees. Completely weatherstripped with Koroseal. For night or inclement weather ventilation, lower vent opens slightly while upper vents remain closed and locked. Integral fin completely surrounds window, takes brick fin and fin trim. Jiffy Quick Sill Clips slide in channel from each side; locate as many as wanted, where wanted. Easy to clean from inside.

SEE OUR CATALOG IN SWEET'S ARCHITECTURAL FILE 16A OR WRITE US FOR COMPLETE INFORMATION
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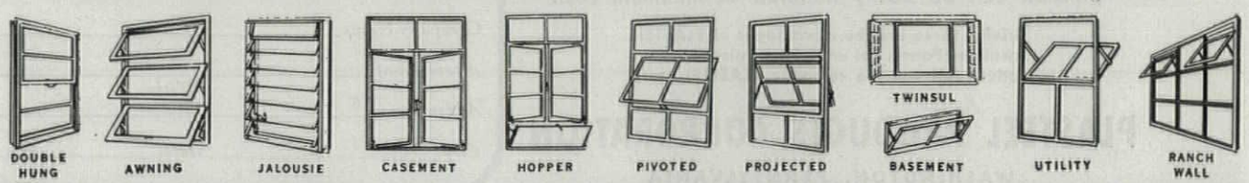
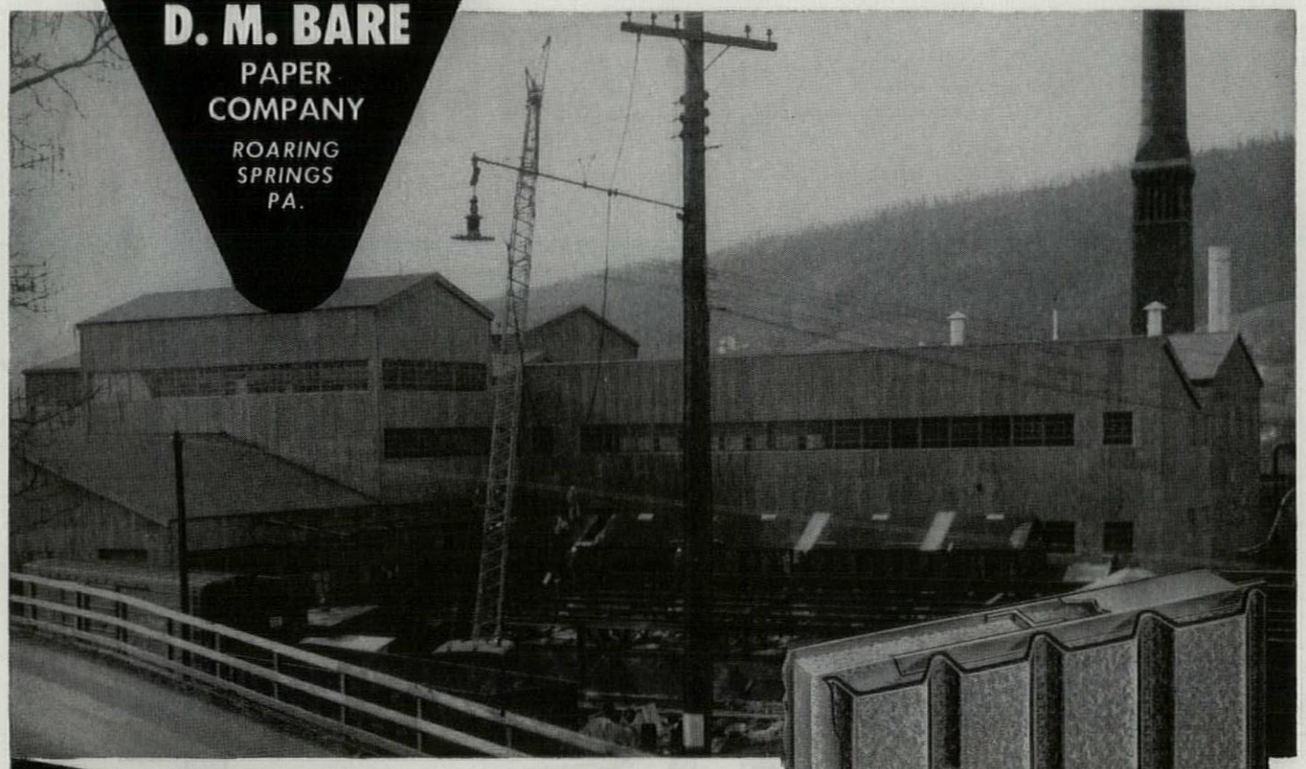
SOUTHERN SASH SALES & SUPPLY CO. • SHEFFIELD, ALABAMA



Ualco THE WORLD'S LARGEST MANUFACTURER OF ALUMINUM WINDOWS

The
D. M. BARE
PAPER
COMPANY
ROARING SPRINGS PA.



Partial View of New Construction

Chose **LIFE** conditioned

Plasteel INSULATED PANELS

PLASTEEL Insulated Panels—first choice for another major industrial installation. Here is the answer to long-life, maintenance-free curtain wall construction. PLASTEEL "Mica-Protected Steel" resists corrosive fumes from acids and alkalis. And, because it practically eliminates all metal to metal contact, condensation is minimized and insulation efficiency is increased. PLASTEEL Panels have a "U" factor equivalent to 16" of masonry wall construction—permitting the use of lighter building foundations, less structural steel and more usable floor space. Also, they allow closer control of plant temperatures and humidity levels. PLASTEEL Panels are quickly erected and so flexible in design that alterations or building expansion can be easily handled at minimum cost.

Briefly, these are the advantages of PLASTEEL Insulated Panels. Let one of our sales representatives tell you the complete PLASTEEL story.

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WASHINGTON, PENNSYLVANIA

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☐ *Please send new Engineer's Handbook.*

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*Attention of*_____ *Title*

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MAIL THIS COUPON TODAY!

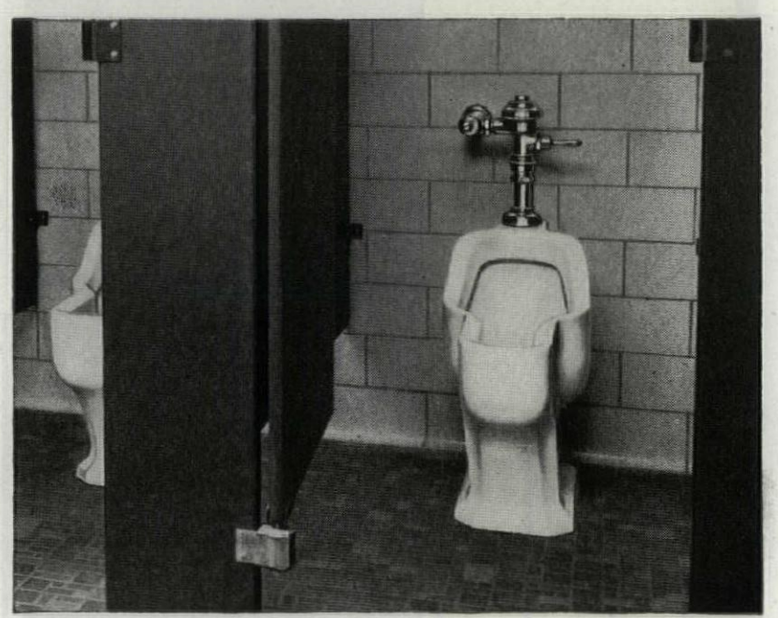
Sanistand urinals by American-Standard provide cleaner, more sanitary girls' washrooms in the new Canton Senior High School

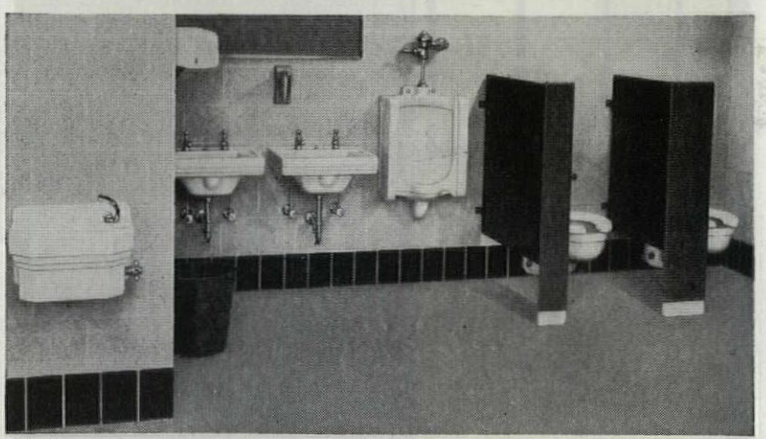
Included in the variety of American-Standard plumbing fixtures selected by architects Atkins, Barrow and Associates for the new Canton Senior High School, Canton, Illinois, were Sanistand fixtures—the urinals for women.

The Sanistand fixture, one of the most important contributions to washroom sanitation, is ideal for installation when large groups of girls must use the same washroom during the short periods of time between classes. Washrooms with Sanistand urinals can often handle twice the number of girls with less confusion.

Sanistand urinals cut down maintenance time, too. The large bowl, extended lip, slanted rim and convenient 18-inch height tend to discourage misuse, keep fixtures cleaner, floors neater, reduce upkeep. The Sanistand fixture is made of genuine vitreous china and is available with foot or hand operated flush valve. It features siphon vortex water action with flushing rim which empties bowl quickly and quietly, rinses inside of fixture. The Sanistand fixture is designed primarily as a urinal and should be installed in conjunction with conventional toilets, but it can function as a toilet.

For more information on the Sanistand fixture and other quality plumbing products, contact your nearest American-Standard sales office. **American Radiator & Standard Sanitary Corporation**, P. O. Box 1226, Pittsburgh 30, Pennsylvania.





In the boys' locker room of Canton Senior High School, a variety of American-Standard plumbing fixtures is used. They are the Neo Toric drinking fountain, New Buena lavatories, Casal urinal, and Glenco toilets. These wall-type fixtures make floor cleaning faster and easier.

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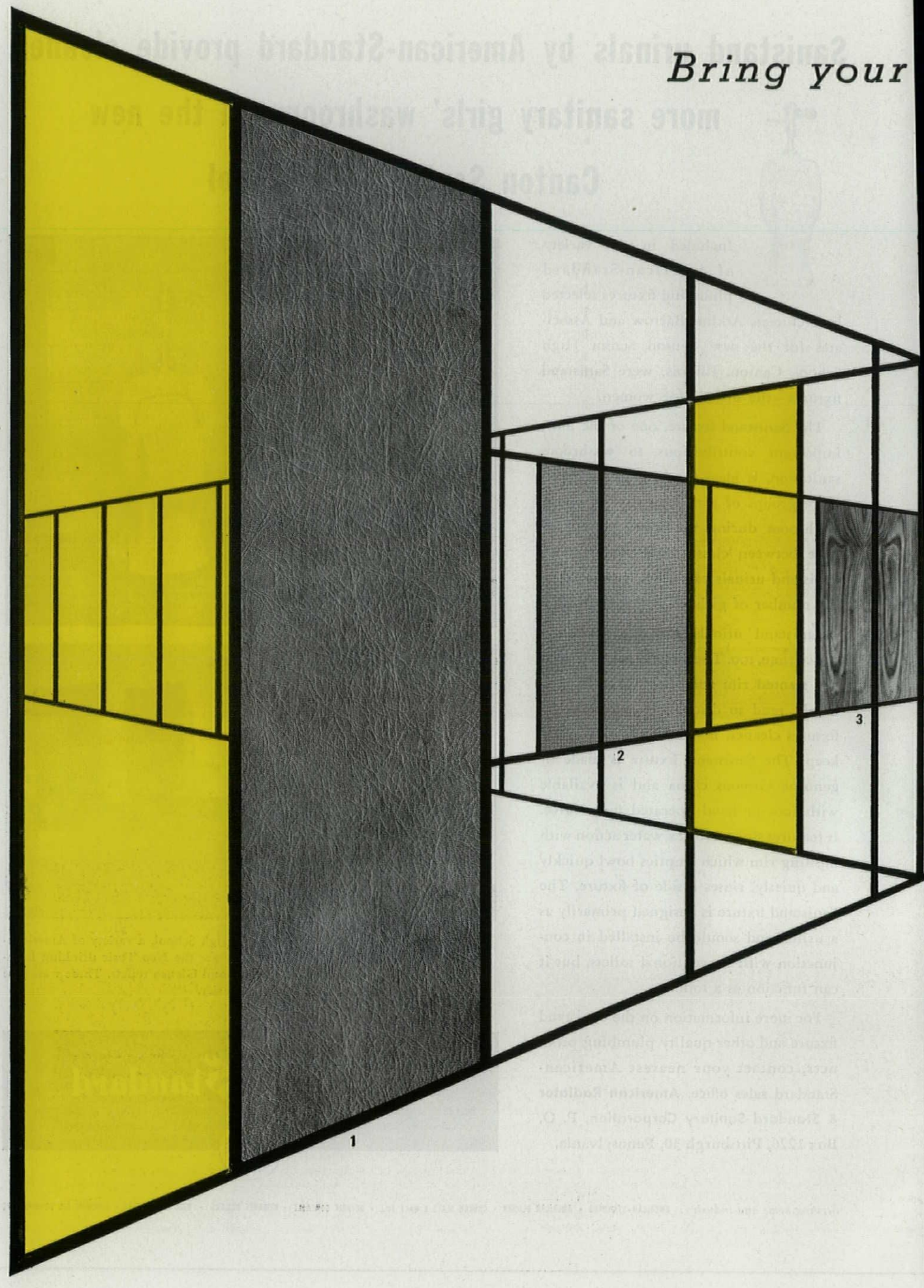
Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KEWANEE BOILERS • ROSS EXCHANGERS • SUNBEAM AIR CONDITIONERS



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We're specialists . . . in wall coverings. That's why the wall covering division of United States Plywood Corporation has come to be called "Wall Center, U. S. A." That's why you will always find, among the job-proven products described and illustrated on these pages, the one "right" application. Like these, for example:

On walls in hotels, schools, hospitals, etc., that must be kept fresh-looking.

On walls that "take a beating" from traffic, equipment, tradesmen, children.

On curved, rounded or straight walls that call for the beauty of wood panelling.

On walls that demand the distinction of wood panelling—on a limited budget.

Want more information about these wear-defying yet decorative wall coverings? The coupon below at right is for your convenience.

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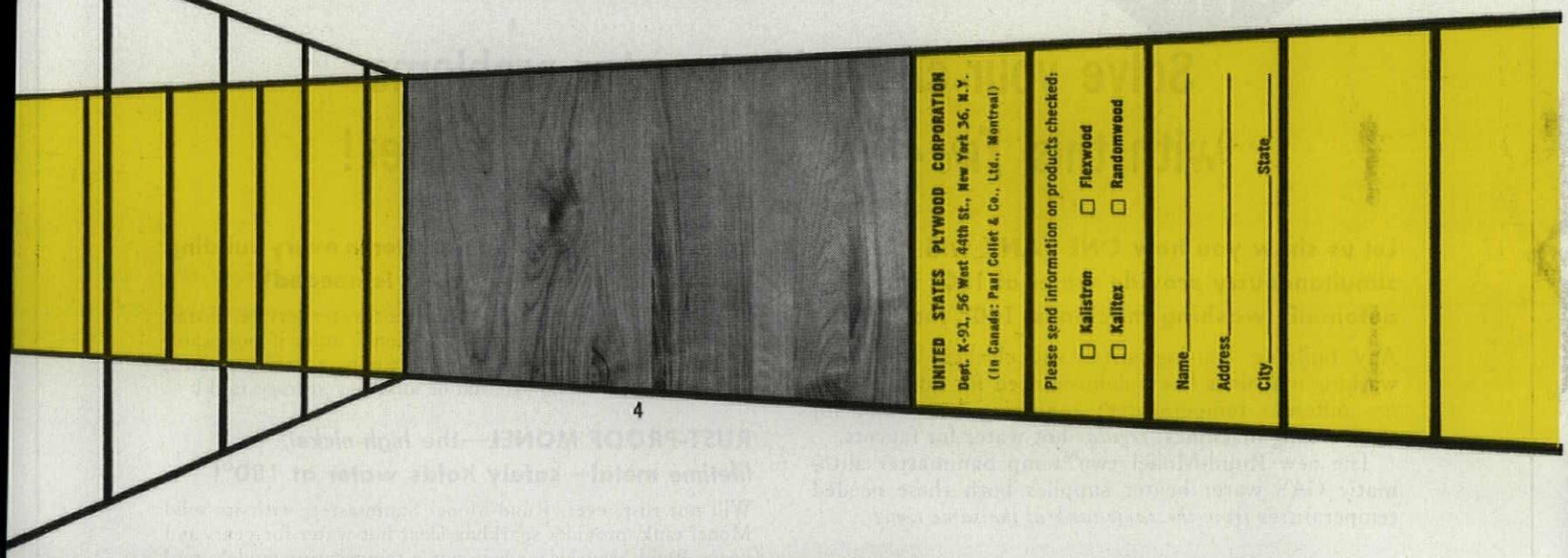
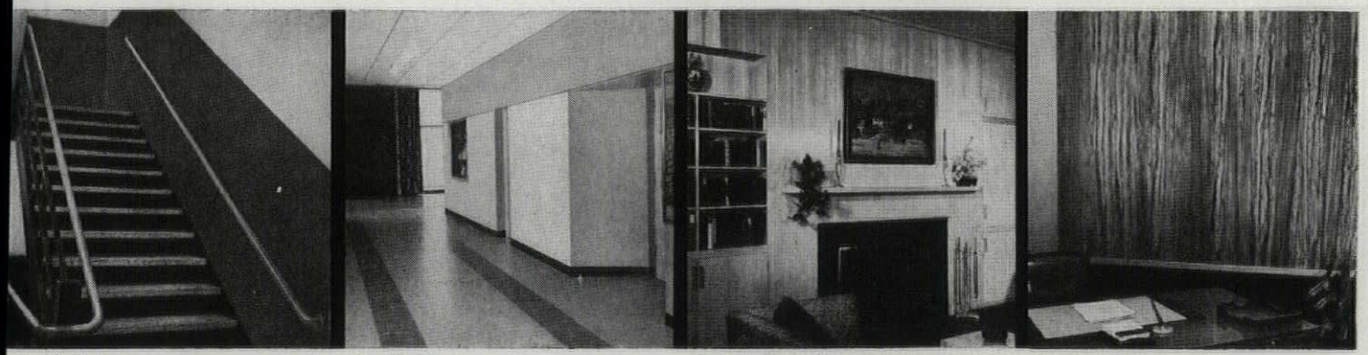


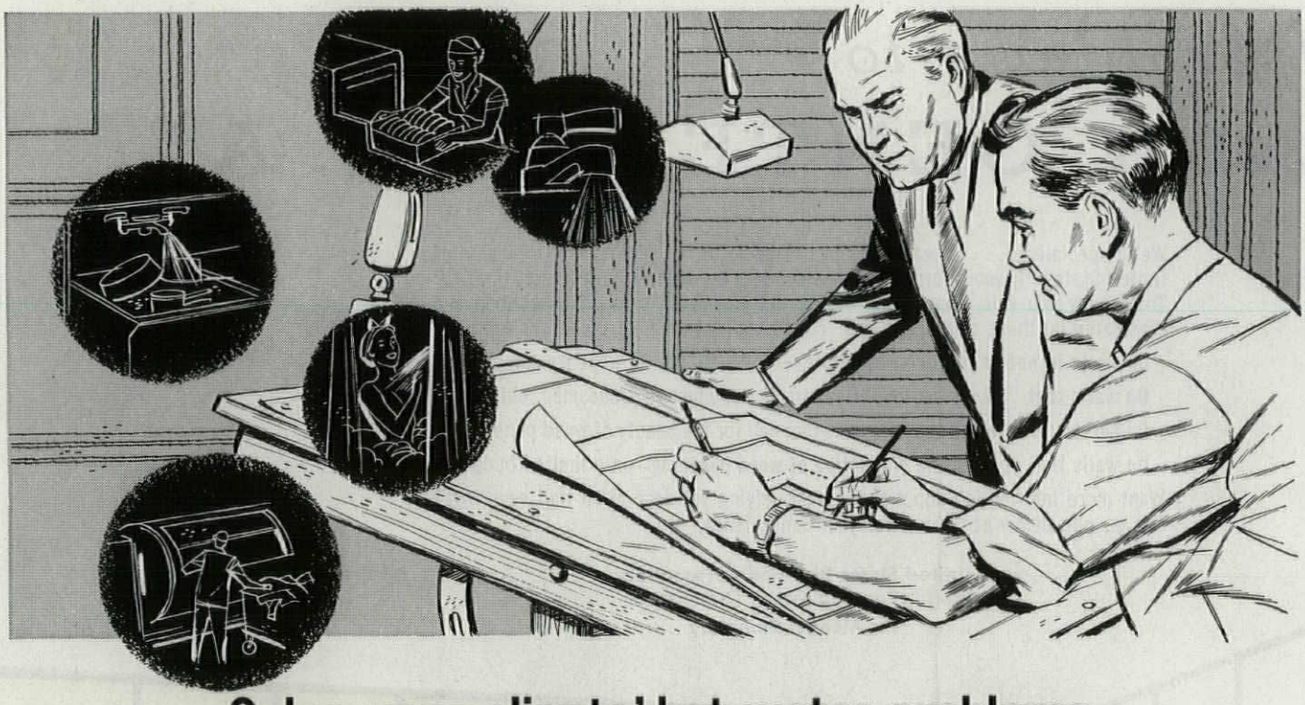


1. Kalistron A transparent vinyl "coat of armor" shields this rich wall covering . . . . its color is fused to the underside. Virtually impervious to scratches, scuffs, stains, roughhouse. A damp cloth cleans it. 33 colors. Marvelous Kalistron adhesive prevents open seams. Ideal wherever traffic is heavy. Also made in matching upholstery grades.

2. Kalitex Gives more protection than any other wall covering at anything like the price. Made much like Kalistron, with the same vinyl-protected beauty. Low in cost, yet its luxurious rough textured pattern is distinctively different. Combines relatively low cost with great beauty and durability. Superb in hospitals, hotels, public buildings, etc.

3. Flexwood Genuine wood panelling in flexible form. Hence, you can curve it, wrap it around posts, get stunning matched grain effects over wide areas. Meets fire code requirements. Over 1.7 million feet installed in 1953. Every installation guaranteed. Widely used in banks, offices, public rooms, etc., for new construction and alteration jobs.

4. Randomwood Similar to Flexwood except the shading of the wood varies, giving an interesting "random" effect. Use it where imagination is high but budget is low. May be hung by any good mechanic. Effective for a whole room or a dramatic single wall, in homes, small offices, anywhere. First cost is last cost for years.



Solve your clients' hot water problems with this *Two-Temperature* water heater!

Let us show you how ONE TANK will simultaneously provide water at 180° for automatic washing machines, 140° for faucets!

Any building housing automatic clothes- and dish-washing machines has a definite need for hot water at *two* different temperatures: *sanitizing* hot water for the washing machines; *regular* hot water for faucets.

The new Ruud-Monel two°°temp Sanimaster automatic GAS water heater supplies both these needed temperatures *from the same tank at the same time!*

Specify Ruud-Monel Sanimaster in every building you design where hot water is needed!

Sanimaster provides an expandable hot water service. Install what is needed now, connect additional units if hot water needs increase. And Sanimaster is a compact, self-contained, space-saving unit—no external or auxiliary storage tank!

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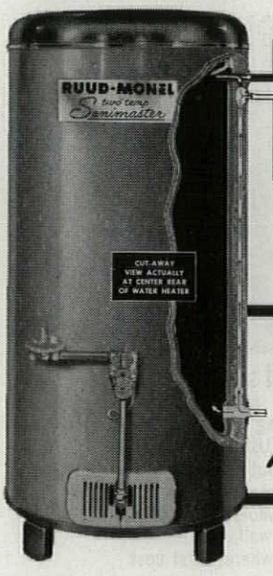
Will not rust, ever. Ruud-Monel Sanimaster, with its solid Monel tank, provides sparkling clear hot water for years and years. Ruud-Monel is made in single-temperature models, too!



180° SANITIZING HOT WATER is piped directly into automatic washing machines and to any other operations needing it. Meets all sanitation codes.

140° GENERAL-USE HOT WATER is always on tap at the hot water faucets. Both temperatures from the same tank at the same time!

FREE CONSULTANT SERVICE!
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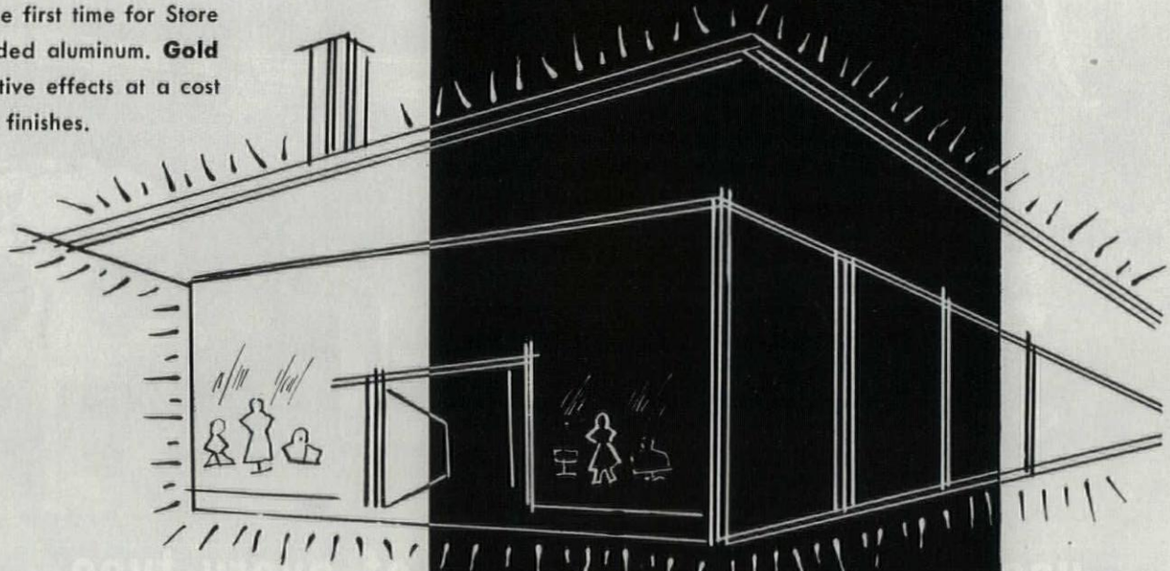
THE FINISH THAT ARCHITECTS HAVE WANTED ... FOR YEARS!

Gold Lite is a colored Alumilite finish that has been exposure-tested by Alcoa for a period in excess of 10 years, yet has shown no perceptible signs of fading. New! **Gold Lite** is offered for the first time for Store Fronts and Entrances using extruded aluminum. **Gold Lite** achieves unusual and attractive effects at a cost comparable to standard Alumilite finishes.



Highly resistant to wear and tarnish, **Gold Lite** requires a minimum of maintenance. **Gold Lite** is available in all Alumiline extruded Alumilited aluminum products as shown in our catalogs. Also available for custom windows, spandrels, facia, curtain wall construction, etc. Choice of lustrous polished finish, or rich satin finish.

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Store Front Construction ... Entrances ... Doors ... Windows ... and Special Aluminum Building Materials

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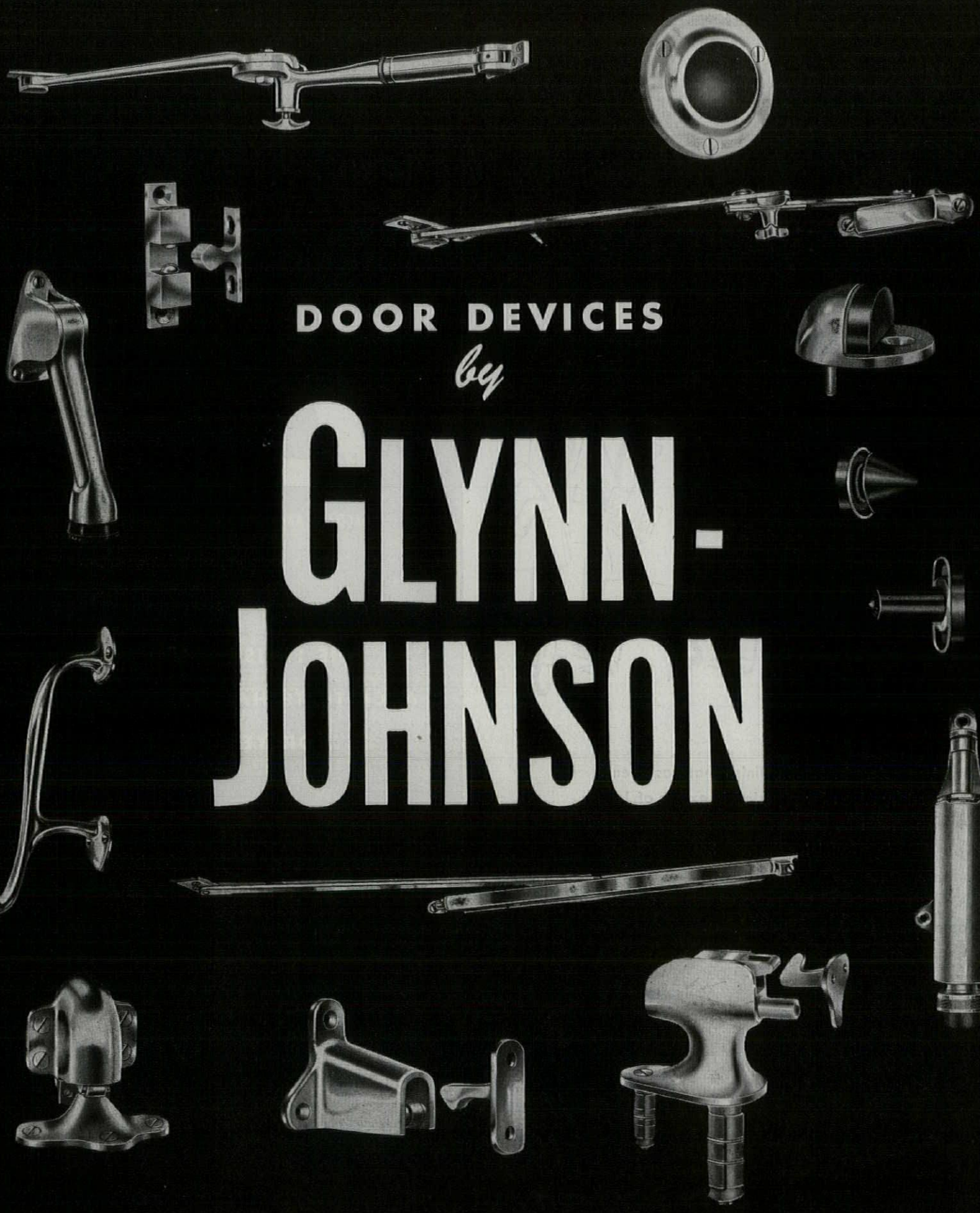

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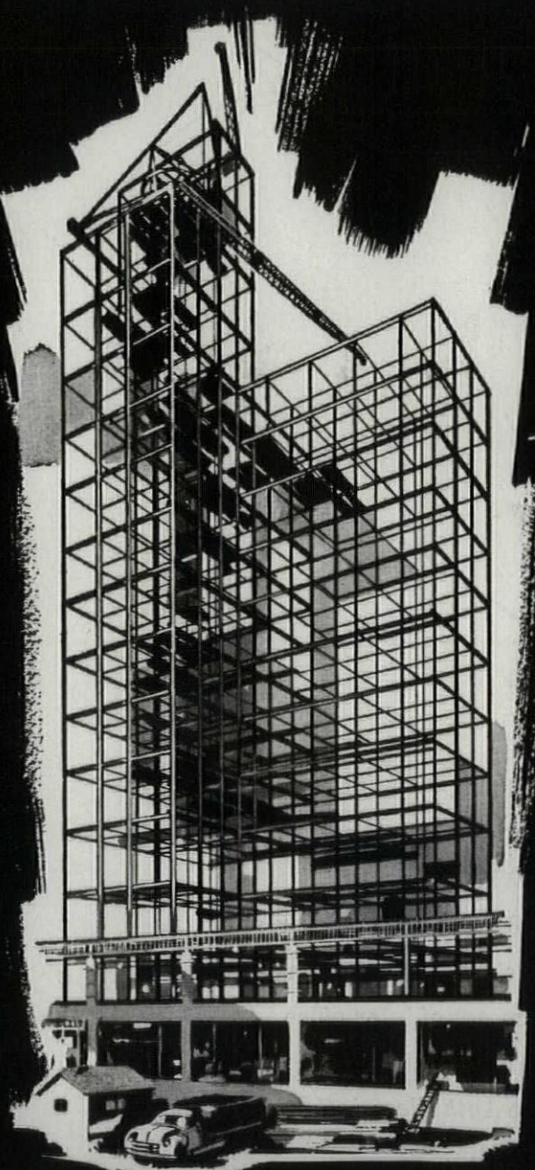

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the signal, protection and communication systems required for this great business center were designed and produced by

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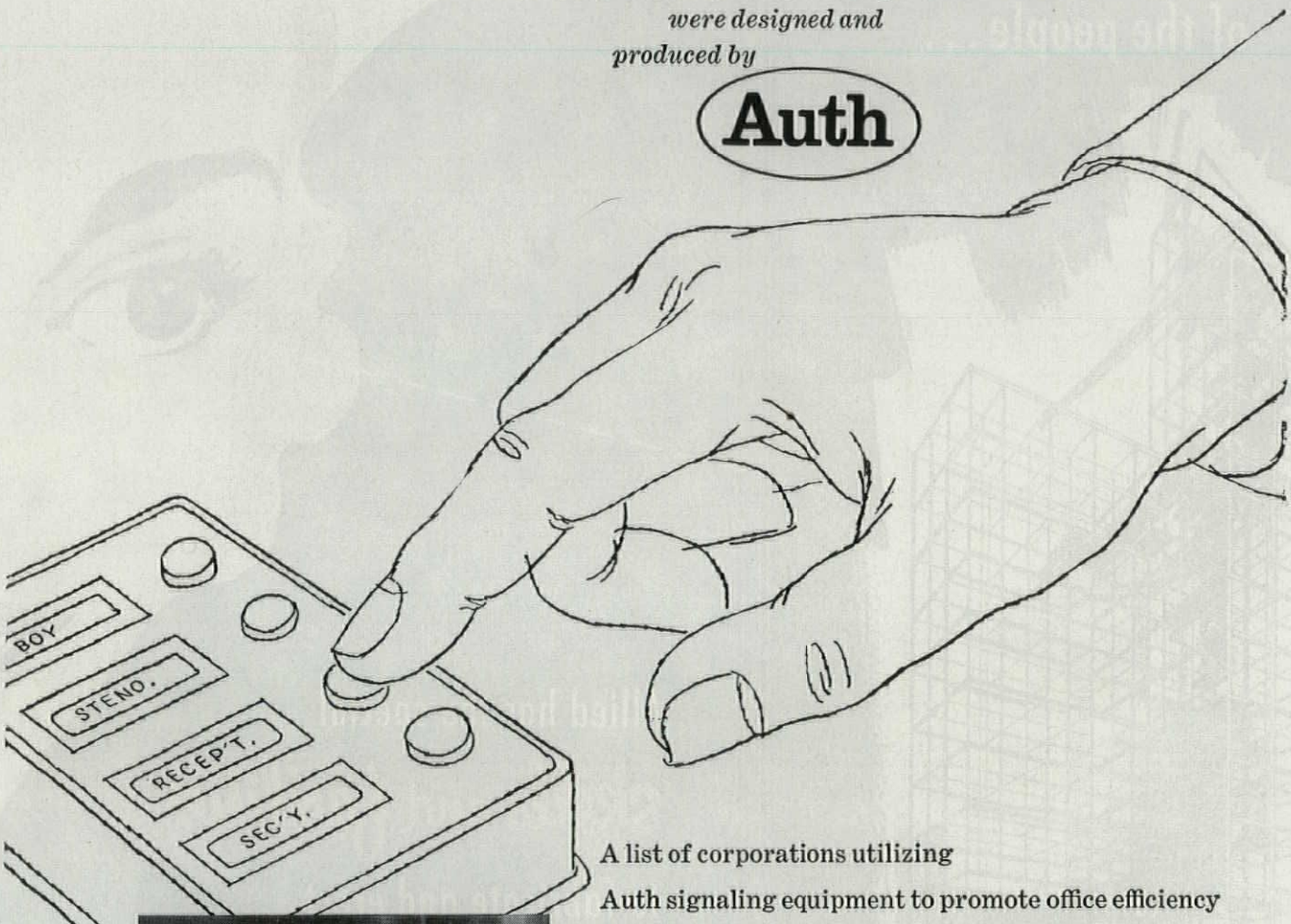

A list of corporations utilizing Auth signaling equipment to promote office efficiency would read like "Who's Who in Industry". For over 62 years Auth Buzzer, Annunciator, and Inter-Communicating Telephone Systems have provided simple and inexpensive means of inter-office communication suitable for any size office. For information write to *Auth Electric Company, Inc., Long Island City 1, New York.*

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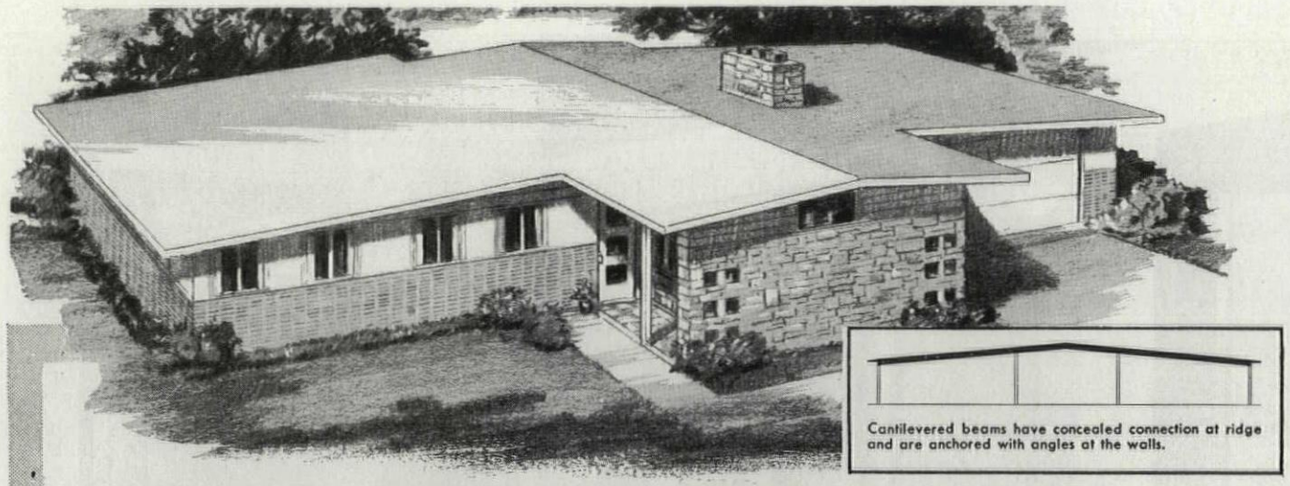
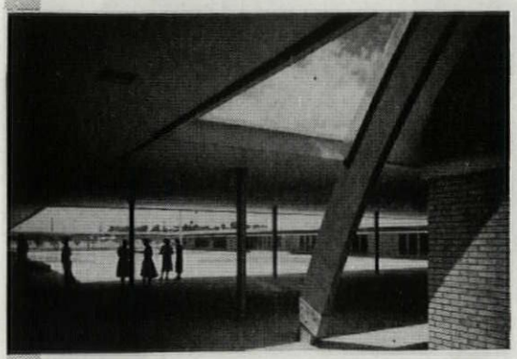
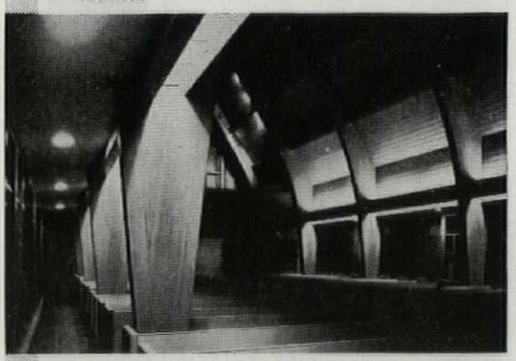


Cantilevered beams have concealed connection at ridge and are anchored with angles at the walls.

COULD THIS BE THE ANSWER
To Tomorrow's Low Cost Construction?



Built for only $10 per square foot, the award-winning Mirabeau B. Lamar Junior High School in Laredo, Texas, uses RILCO arches because of their low cost and flexibility of design. Architects: Caudill, Rowlett, Scott & Associates, Bryan, Texas; A. A. Leyendecker, Laredo, Texas, Assoc. Architect.



St. Luke's Lutheran Church in Manhattan, Kansas, utilizes the natural beauty of wood, the great economy and modern design of RILCO arches. Architect: Ramey & Himes, Wichita, Kansas. Contractor: Green Construction Co., Manhattan.

Here is Today's appearance with a hint of Tomorrow's economies. The home of Dr. and Mrs. S. Brownstone, Clear Lake, Iowa, is one of the first houses designed with the structural beauty and economy of RILCO Glued Laminated Wood Members in mind. The plank and beam roof design is cantilevered toward the ridge on $3\frac{7}{16}$" x 14" RILCO Beams, spaced 7'-6" o.c. The beams are covered with 2" "V" grooved decking, rigid insulation and a 5-ply built up roof with pitch and gravel. This structural economy brought the contract price of this 2,300 square foot, 3-bedroom house down to $12.75 per square foot.

The church and school building illustrated are only two of a multitude of structures whose unique design and great economies are made possible by RILCO Glued Laminated Wood Members.

These buildings are but the beginning Today's structures with the economy and fresh look of Tomorrow. The post-free interior area presents space flexibility to meet new needs and requirements.

What shape Tomorrow's construction will take, we can't predict. But we are confident that the freedom of design, economy of construction and the warm beauty of natural wood offered in RILCO Glued Laminated Wood Members will be a welcome medium for those who build for Tomorrow.

RILCO experienced engineers will be glad to consult with you about your requirements and give "on the job" cooperation. Write now for free catalog on all types of Rilco Structural Members.

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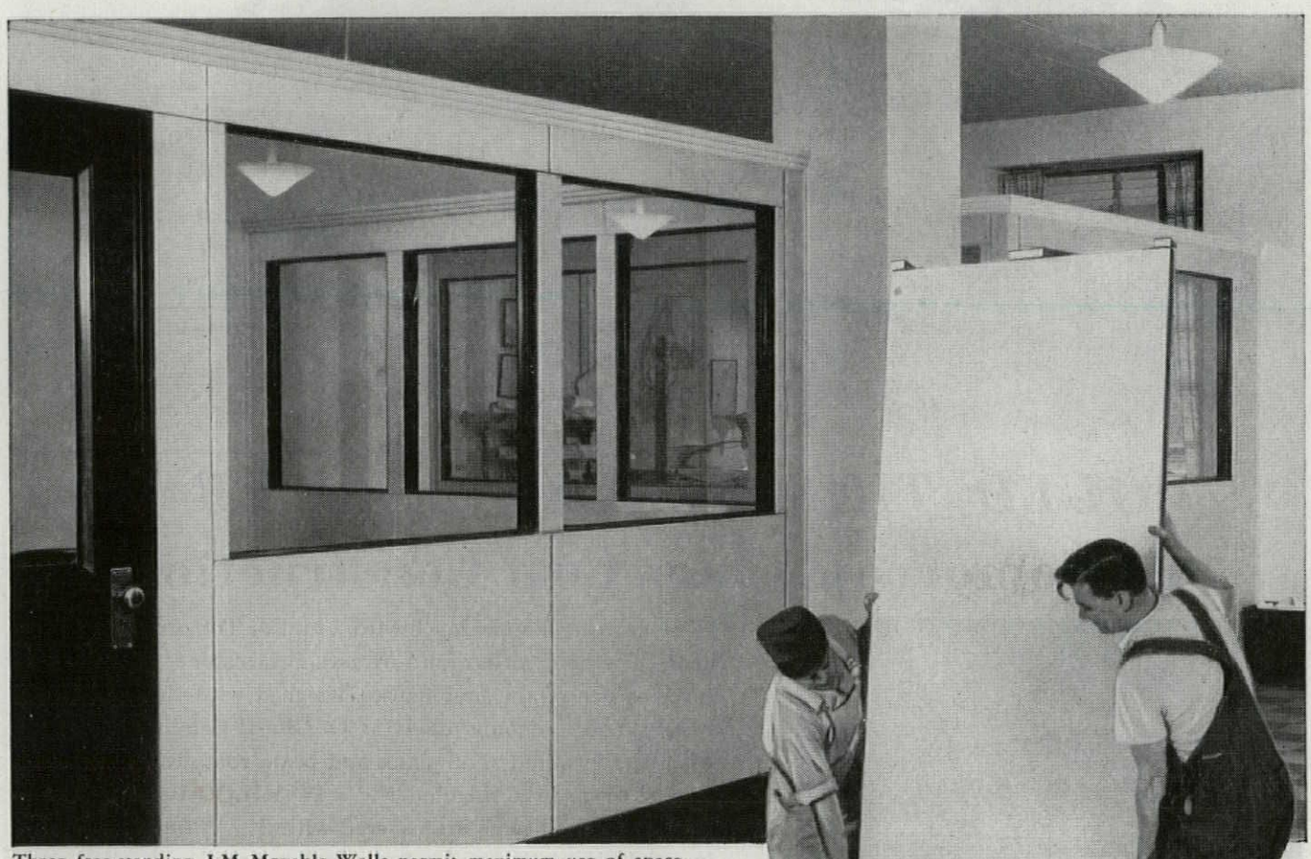

These free-standing J-M Movable Walls permit maximum use of space. They create efficient offices that can quickly and easily be rearranged to suit the needs of changing space requirements.

For the busy office that needs a change of space

Johns-Manville Asbestos Movable Walls provide offices when and where you want them

YOU can rearrange your present space or have new space partitioned off quickly and economically with Johns-Manville Asbestos Movable Walls. Made of asbestos, they resist fire, rot and wear.

These flush-type, attractive panels have a clean, smooth surface that's hard to mar, easy to maintain . . . and extra strong to withstand shock and abuse. Also, they are light in weight, easy to install and relocate. The "dry wall" method of erection assures little or no interruption to regular routine.

Johns-Manville Asbestos Movable Walls may be used as ceiling-high or free-standing partitions. The complete wall, including doors, glazing and hardware, is installed by Johns-Manville's own construction men under the strict supervision of trained J-M engineers . . . *responsibility is undivided.*

For details about Johns-Manville Asbestos Movable Walls, consult your Sweet's Architectural File, or write Johns-Manville, Box 158, Dept. AF, New York 16, New York. In Canada, write 199 Bay Street, Toronto 1, Ontario.

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Johns-Manville ASBESTOS *Movable Walls*

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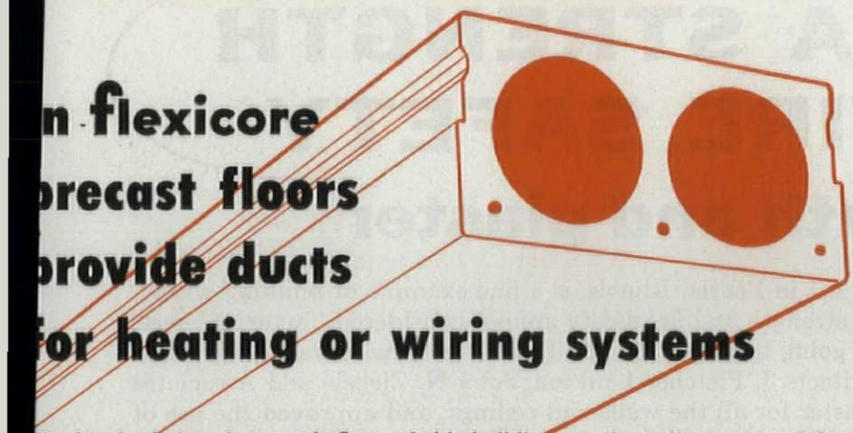
Hollow Cores

n flexicore precast floors provide ducts for heating or wiring systems



The black circles along each floor of this building are the hollow cores of fire-safe Flexicore slabs. They run through each slab from end to end.

How would *you* use built-in raceways like these?

H. E. Beyster and Associates, used every fifth core for telephone cable or electric wiring in this addition to a building used by The Michigan Bell Telephone Co. Other builders use the cores for hot air ducts or piping.

In addition to many such money-saving uses, these cores cut dead load nearly 50%, increasing the load capacity of the structural concrete floor.

Flexicore is dependable, too. It's precast to the exact lengths you need, with a carefully controlled mix and pre-stressed reinforcing steel accurately positioned. Because slabs are mass-produced and quickly installed the cost is low. You save the nuisance, expense and delays of formwork and on-the-job pours. You save construction time, too (several months on large projects) because it's easy to erect 2500 to 5000 ft. a day in almost any weather.

Call the Flexicore manufacturer nearest you for full information or a look at nearby Flexicore installations. There's no obligation at all.

flexicore slabs are . . .

. . . low cost, kiln-cured concrete units—prefabricated to order in inch variations of length and reinforced for specified loading. Grouting of joint keys locks these monolithically cast slabs into a single, rigid floor or roof unit. Slabs clear-span up to 22′ 6″ or 26′ 8″, depending on cross-sections. Cross-sections range from 6″ x 12″ to 8″ x 16″. Hollow cores, 4⅛″ to 6⅛″ in diameter, increase load carrying capacity by reducing dead load. Smooth undersides form finished ceiling without plaster—require only caulking and painting.

Hollow cores for heating and cooling

Hollow cores of Flexicore floors make possible a *perfect comfort* heating system that combines circulating air and radiant heat. It is widely used for one-story structures. The same duct system can be used for summer cooling.

Write Nearest Manufacturer Below For This Literature

Flexicore Catalog
Flexicore Split-System Heating
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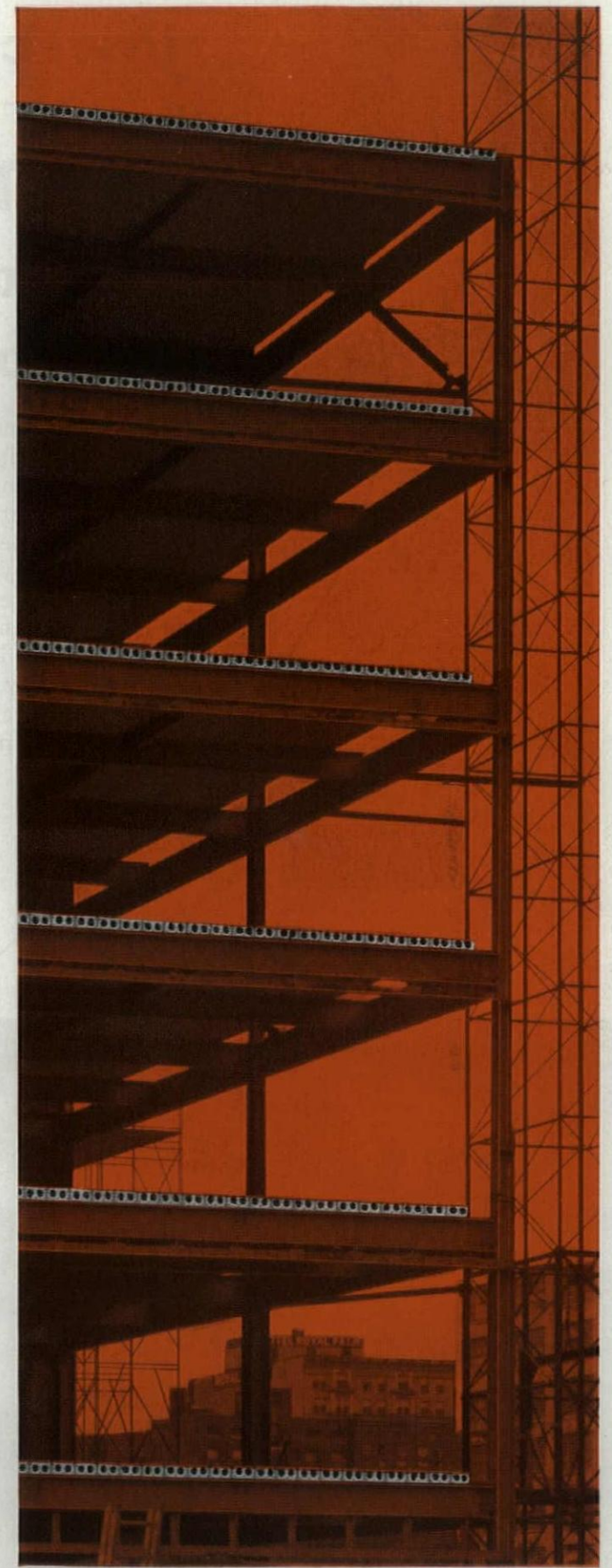

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low-cost housing needs the

EXTRA STRENGTH and FIRE SAFETY of lath and plaster

This housing project in Peoria, Illinois, is a fine example of building wisely, though economically. Extra strength and fire safety are not considered "luxuries" here, not when you are going to house 360 families. To get the extra strength and safety they wanted, Architects J. Fletcher Lankton, John N. Ziegele and Associates specified plaster for all the walls and ceilings, and approved the use of Keycorner and Keybead wire reinforcing lath at corners and junctures. These plaster walls are much stronger than "dry wall" and give extra strength, longer life and better service to this housing development. And, of course, fire safety is greatly increased when you build with plaster, especially reinforced plaster. Every day, more architects and builders realize that the use of reinforced lath and plaster is the best way to build housing that has the durability, protection, beauty and long-range economy that assures satisfaction to both dweller and owners. Ask your plastering contractor to figure your jobs with the "3 Keys to Stronger Plaster"—Keymesh, Keycorner and Keybead.

KEYSTONE STEEL & WIRE COMPANY
Peoria 7, Illinois

Makers of { Keymesh • Keybead • Keycorner • Keystone Nails
Keystone Tie Wire • Keystone Welded Wire Fabric

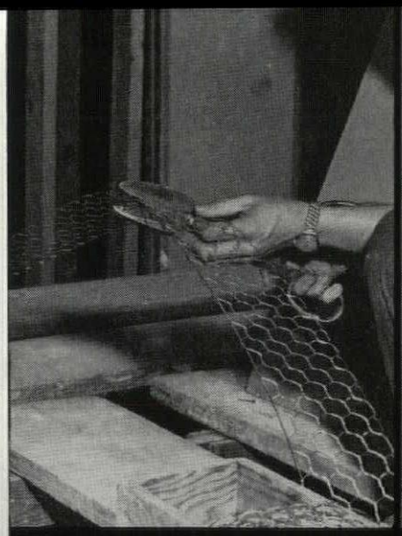
Peoria project architects say:

"When we want the best plastering job, we specify reinforced plaster, and we know Keymesh, Keycorner and Keybead do exactly the job we want. Even when price is a major consideration, we like to use lath and plaster because it is superior to "dry wall" construction and assures the durability, protection and long-range economy that makes the best investment."

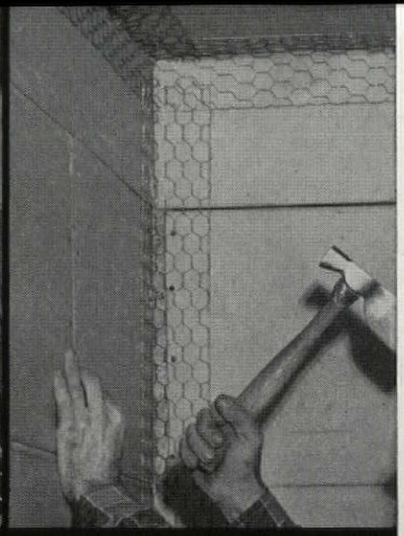
J. Fletcher Lankton
John N. Ziegele and Associates
Architects—Engineers
Peoria, Illinois

C. S. Miller, President of Mid-States Plastering Contractors, says:

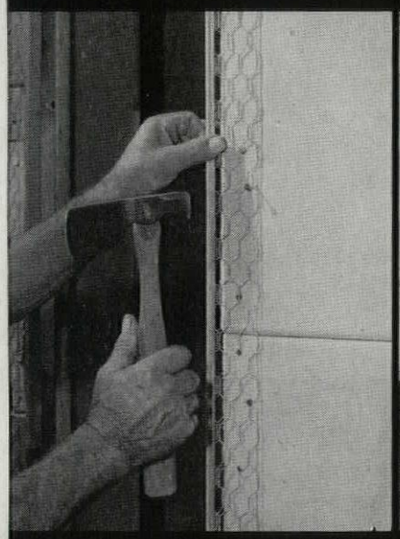
"If you want a good, strong plastering job, I recommend the 3 Keys to Stronger Plaster—Keymesh, Keycorner and Keybead. These three wire reinforcement products give very good protection against cracking. They're easy to work with, too. Keymesh and Keycorner unroll flat, don't cut the hands, and are put up easily, quickly. Keybead is easily applied for a straight, solid corner. You can't beat the 3 Keys to Stronger Plaster."



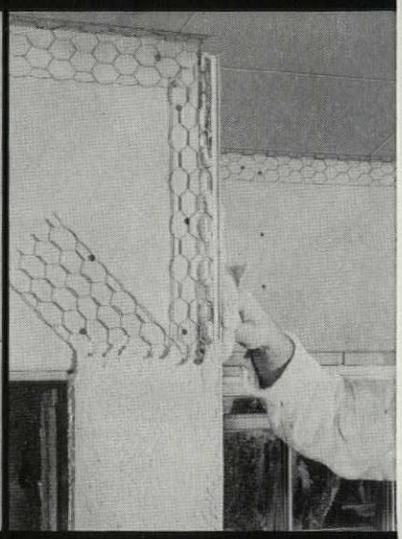
Easy to use—Keycorner unrolls flat, cuts easily, handles easily, speeds the job. Cuts down waste, too.



Preformed—Keycorner is preformed for corners, joints, ceiling junctures. Flex it and it fits right in.



Solid Corners—Keybead's precision-formed bead on open mesh fits all outside corners, quickly, easily. Full, solid corners result.



Easy Trowelling—Plaster flows evenly through open wire mesh; easy trowelling. Multidirectional reinforcing is backbone of strength.

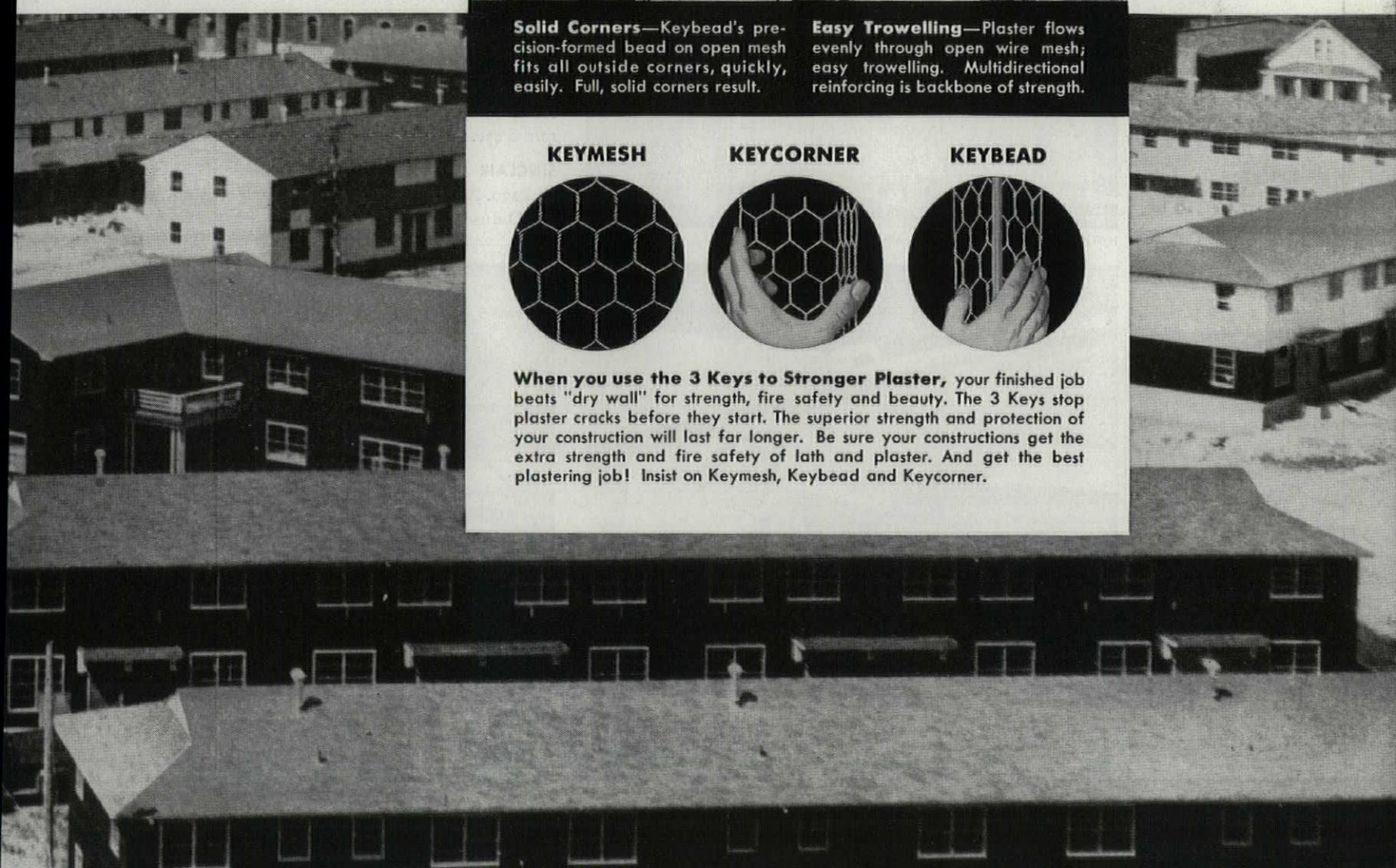
see our CATALOG in SWEET'S FILE
2d 11a 3d

KEYMESH

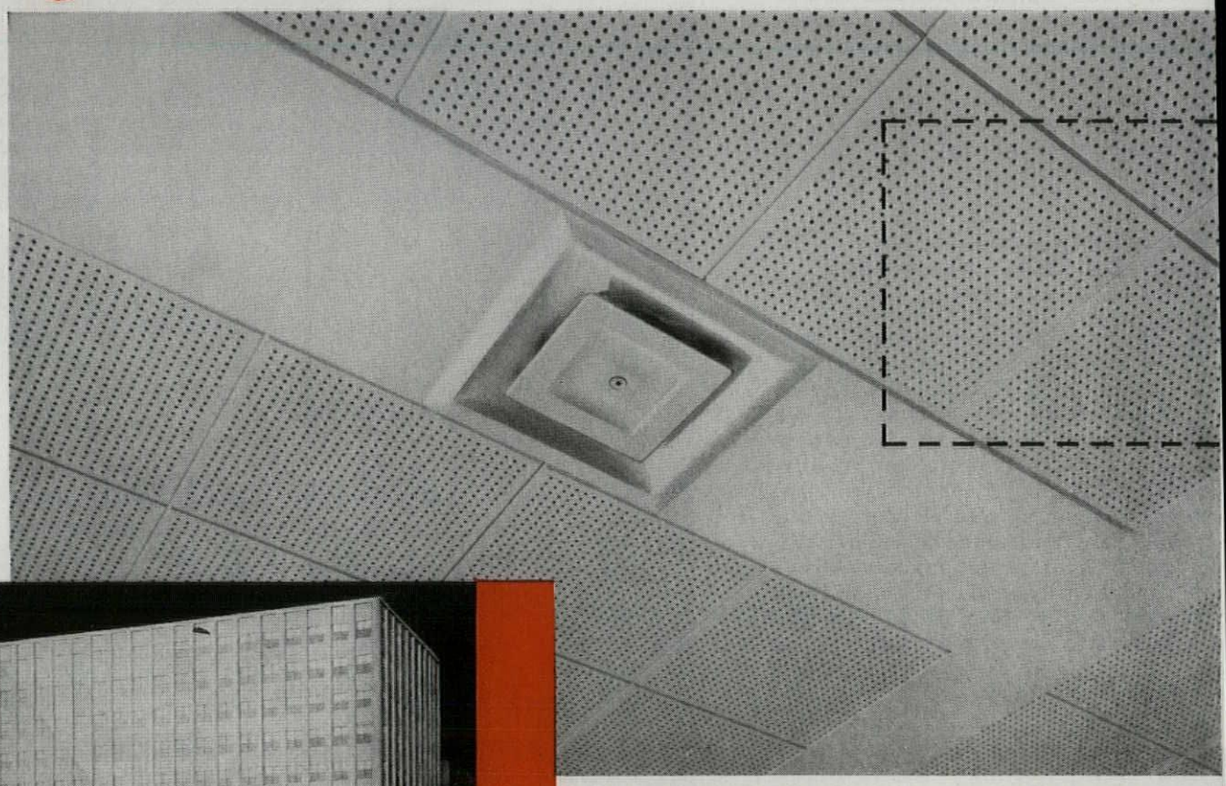
KEYCORNER

KEYBEAD

When you use the 3 Keys to Stronger Plaster, your finished job beats "dry wall" for strength, fire safety and beauty. The 3 Keys stop plaster cracks before they start. The superior strength and protection of your construction will last far longer. Be sure your constructions get the extra strength and fire safety of lath and plaster. And get the best plastering job! Insist on Keymesh, Keybead and Keycorner.



Now... made to be integrated



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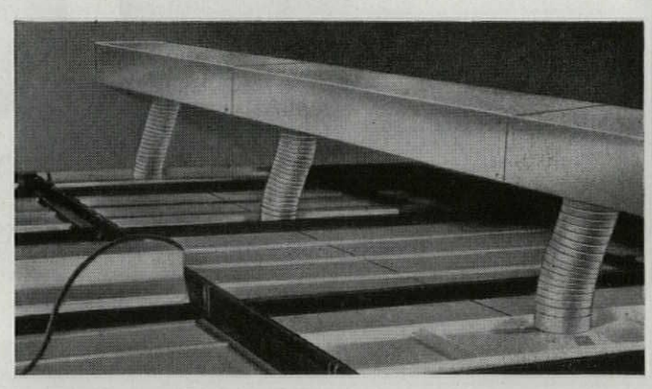
BASIC BEAUTY of the ceiling is accented by the Kno-Draft Panel Type Air Diffusers, which blend into the ceiling pattern and create a single unified surface that is absolutely level and pleasing to the eye.

SINCLAIR OIL COMPANY'S new modern 12-story building in Chicago. Acoustical ceilings with integral Kno-Draft Panel Type Air Diffusers are used throughout.

EASY TO INSTALL as the acoustical tiles themselves, Kno-Draft panels snap quickly into place. Ducts and flexible connections are readily accessible and connections can be made in a matter of minutes.



FLEXIBILITY of location is a big feature of Kno-Draft Panel Type Air Diffusers. Flexible connections permit diffuser panels to be offset from ducts. This allows partitions, offices, display areas to be relocated without moving ductwork.

with your acoustical ceilings...

kno·draft®

PANEL TYPE air diffusers

These handsome, efficient Kno-Draft Panel Type Air Diffusers are especially designed for use with suspended acoustical ceilings, and can be moved anywhere on the ceiling to meet changing conditions of occupancy. They benefit everyone —

Architects can specify handsome, low-cost ceilings with completely integrated air diffusers and lighting units.

Consulting engineers have a welcome flexibility in design and avoid the exact calculations imposed by fixed outlets and rigid connections.

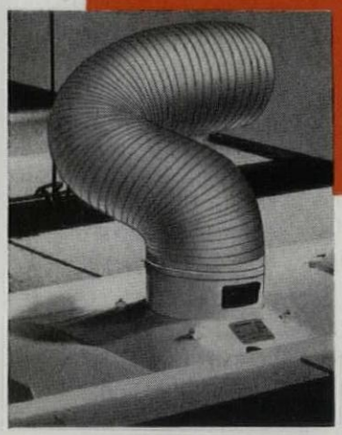
Sheet metal contractors save a lot of installation time and labor. Kno-Draft Panel Type Air Diffusers go up faster than any others.

Building maintenance engineers always have quick access to the concealed service lines, air ducts and wiring.

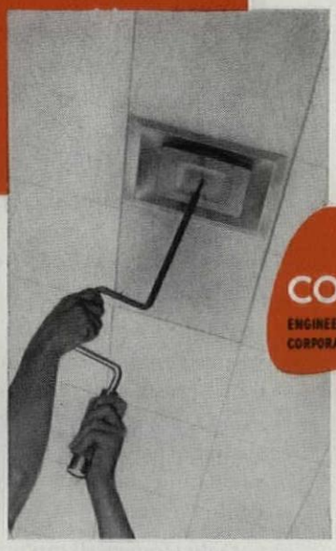
Owners enjoy the comfort of perfect air diffusion and can relocate diffusers and lighting units easily to meet demand changes.

Kno-Draft Panel Type Air Diffusers are available in 12″ x 24″ and 12″ x 48″ panels and three outlet sizes to handle up to 175 c.f.m. Diffusers can be easily adjusted *after installation* to regulate air volume without affecting air velocity which remains constant. No air "spillage" at *any* damper position.

For complete specifications and engineering data, mail the coupon today. Connor Engineering Corporation, Danbury, Connecticut.



COMPLEX BENDS to connect diffusers to ducts may sometimes be necessary. They can be easily made by taking off from side of duct. Special connectors are practically indestructible, will not support combustion, and maintain a uniform interior cross section at all times. They do not contribute to noise level.



DAMPER ADJUSTMENT to control air volume can be made quickly and easily *after installation.* Exclusive Kno-Draft sleeve type damper regulates volume without affecting air velocity.

CONNOR ENGINEERING CORPORATION

kno·draft®

panel type air diffusers

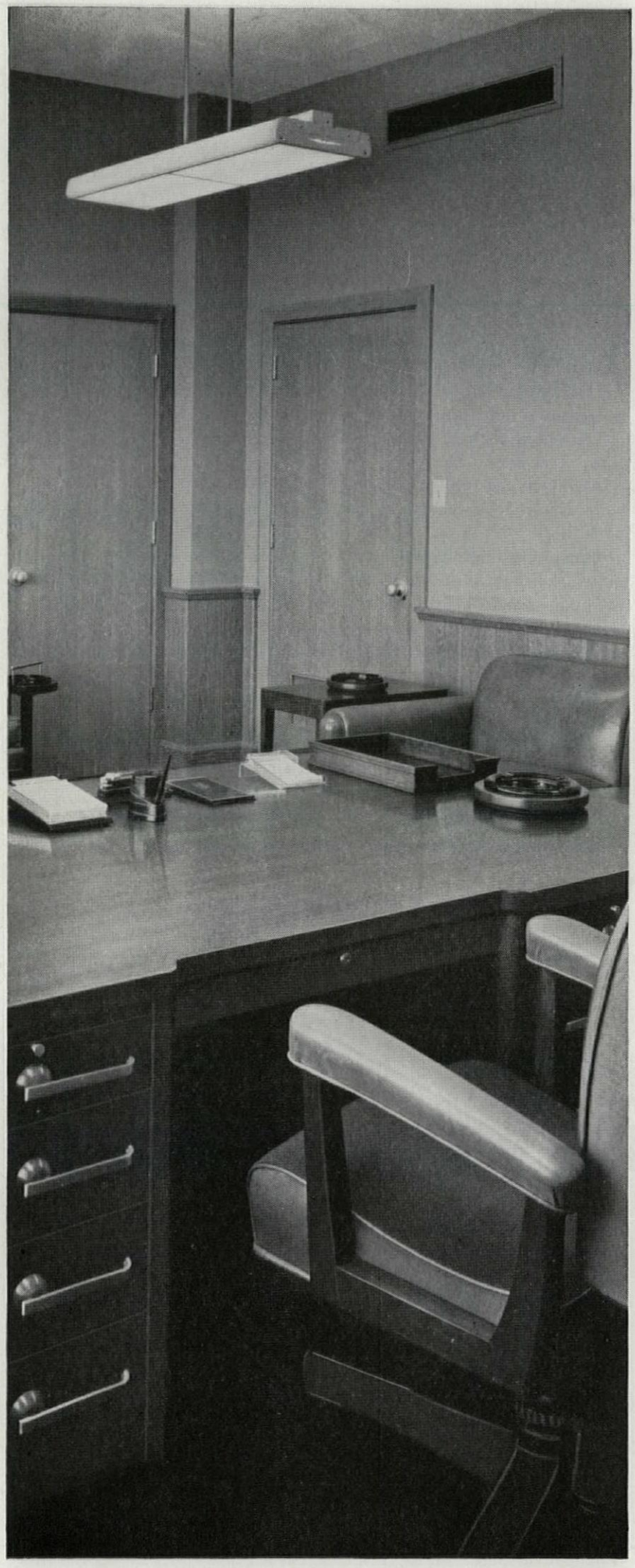
see our catalog in ARCHITECTURAL FILE or write for copy

CONNOR ENGINEERING CORPORATION
Dept. D-84, Danbury, Connecticut
Please send me, without obligation, full information on your new Kno-Draft Panel Type Air Diffusers.

Name_____

Company_____

Address_____



How Honeywell Customized Temperature Control can help you

Assure your clients ideal Indoor Weather—the year round

Honeywell Customized Temperature Control is becoming a "must" in all types of buildings

IF ALL THE AIR conditioning and ventilation ductwork in the new home office of the Allstate Insurance Company in Skokie, Illinois, were laid end to end, it would make a tunnel *2½ miles long*.

Which is by way of saying how important ideal Indoor Weather is at Allstate—for hundreds of employees handling the affairs of 2,500,000 policy holders.

Another important part of the Indoor Weather installation in Allstate's new home office is the *Honeywell Customized Temperature Control* installation, which controls both heating and cooling.

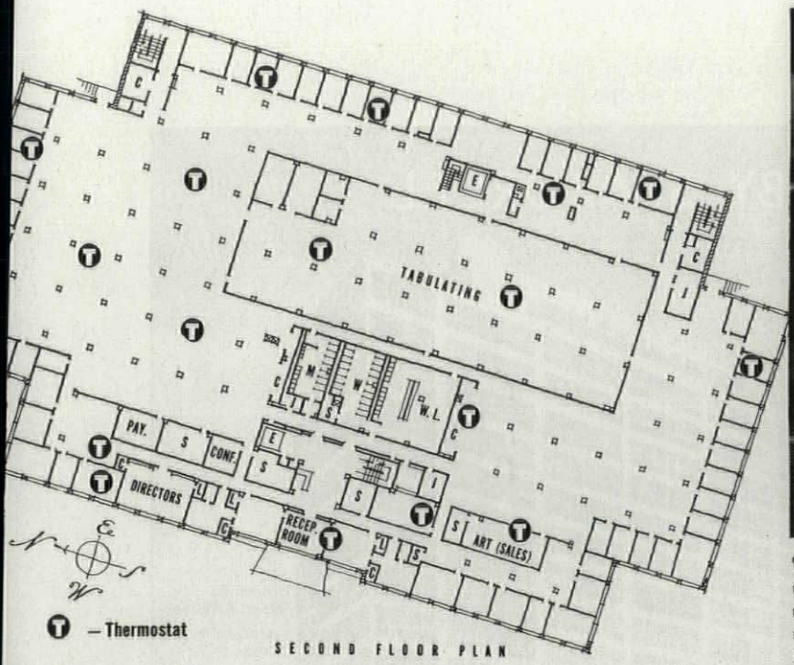
The story, in brief form, of the Honeywell Customized Temperature Control installation in Allstate's new home office is told by the pictures and captions.

The *techniques* used, applied to your particular problems, can help you give clients the Indoor Weather they've always wanted—customized to their requirements.

The key word here is "customized." It means that whatever your clients' control requirements, a Honeywell Customized Temperature Control installation *designed to fit the needs of the building and its occupants* is your answer. This applies not only to heating and cooling, ventilating and humidity control, but to industrial control as well.

Only Honeywell can provide true "customized" control. Because only Honeywell manufactures all three types of controls—pneumatic, electric and electronic.

The executive who occupies the office at left likes to work in temperatures that are cooler than average. This atmosphere he can have, because the office is equipped with its own thermostat. Individual office temperature control is a feature of Honeywell Customized Temperature Control.



The new home office of the Allstate Insurance Company in Skokie, Illinois, is a three-story building of some 184,750 square feet. Large glass areas face all four directions. Yet with Honeywell Customized Temperature Control on the job, *comfort* is uniform throughout the building. Architects and engineers were Dunlap and Esgar, Inc., Chicago. Consulting mechanical engineer was William F. Goodman, Chicago.

For comfortable, even temperature in new or existing buildings—of any size—specify Honeywell Customized Temperature Control

Whether it's an office, school, shopping center, factory, motel, hospital—or any size building—new or existing, Honeywell Customized Temperature Control can help meet your clients' heating, ventilating, air conditioning and industrial control problems.

Your clients will not only enjoy more comfort and efficiency, they'll save fuel, too.

For full facts on Honeywell Customized Temperature Control, call your local Honeywell office. Or mail the coupon today.

William Goodman, consulting mechanical engineer, says:

"Providing ideal Indoor Weather the year round sometimes gets to be quite a job. I'm sure glad to have Honeywell Customized Temperature Control available to help do the job."

MINNEAPOLIS
Honeywell

112 OFFICES
ACROSS THE NATION

H HONEYWELL

First in Controls

MINNEAPOLIS-HONEYWELL REGULATOR COMPANY
Dept. MB8-145, Minneapolis 8, Minnesota

Gentlemen: I'm interested in learning more about Honeywell Customized Temperature Control.

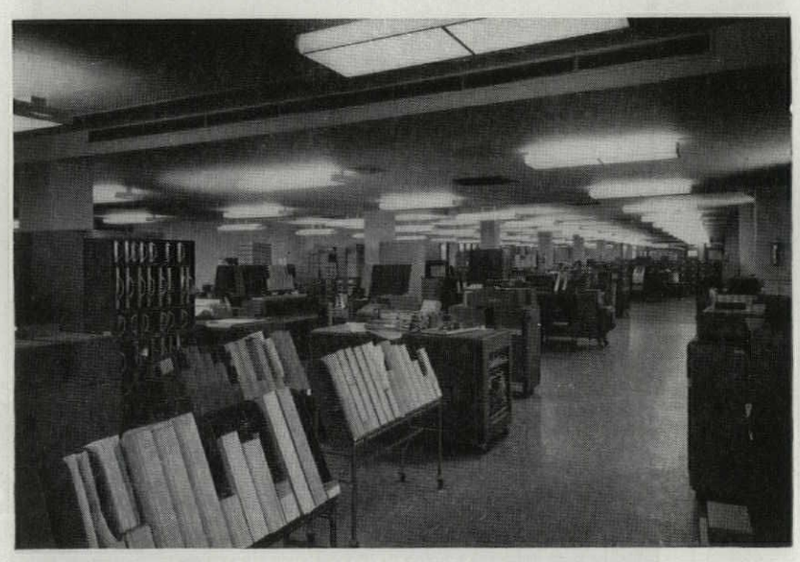
Name.....

Firm Name.....

Address.....

City.....*Zone*.....*State*.....

The comfort problem in large office areas is quite different from what it is in the relatively small private office. More people are involved, the much greater area itself is important, exposure factors are heightened. In the area pictured above (located at left in the floor plan) three thermostats were needed for perfect comfort.

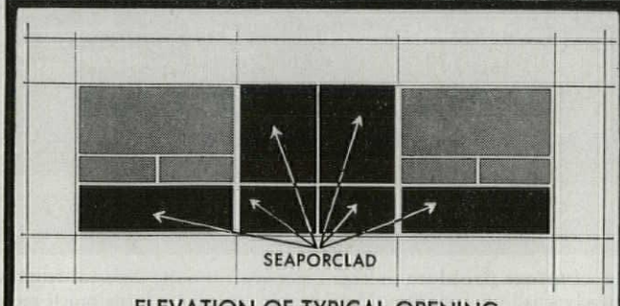


A special comfort problem was involved in the electronic calculator room above. On the floor plan it's that separate area labeled tabulating. Calculating machines, because of the way they work, just naturally give off heat. But this needn't cause discomfort—not with Honeywell Customized Temperature Control on the job. The right number of thermostats, strategically placed, insures perfect comfort at all times.

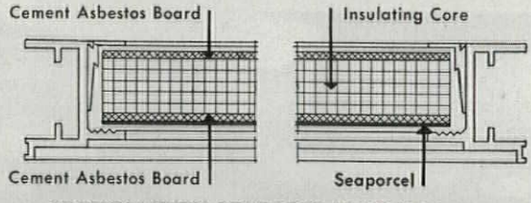
SEAPORCLAD BY SEAPORCEL

as modern as the new Hartford Statler Hotel

William B. Tabler, Architect
Geo. A. Fuller, Contractor
Aluminum windows by Universal Corporation, Dallas, Texas
photograph by Louis Checkman from model by Theodore Conrad



ELEVATION OF TYPICAL OPENING



SECTION THRU SEAPORCLAD WALL PANEL

455 ROOM HARTFORD STATLER HOTEL, Corners of Pearl, Ford Sts., Hartford, Conn.

THE USE OF versatile Seaporclad building panels is finding increasing architectural recognition. A lamination of Seaporcel porcelain with thermal and sound insulating core, Seaporclad has been chosen for the 20,000 square feet of colorful panels for the Hartford Statler, the newest addition to the Statler Corporation's national chain of quality hotels.

MEASURING ONLY 1⅜ inches in thickness, Seaporclad curtain wall panels for the Statler Hotel meet the most rigid requirements of the Hartford Building Department codes. Seaporclad provides a complete exterior and interior wall . . . of sandwich construction . . . weather, fire and corrosion-resistant . . . with maintenance costs at the vanishing point.

THE STATLER HOTEL panel consists of nationally recognized Seaporcel porcelain, laminated to a cement asbestos board and an insulating core to form a single sandwich unit.

SEAPORCLAD FACADES supplant heavy masonry walls, save space and weight, with resultant reductions in structural steel and foundation requirements. It is also easily and economically installed. Seaporclad is fabricated for a variety of uses in conventional sizes and in any thickness or shape . . . and is available in the fullest scope of textures and colors.

There are a few areas in which Seaporcel Metals, Inc., is not represented. Inquiries from interested agents are invited.

For Some Job . . . Somewhere . . . You Can Use SEAPORCEL*

Let Seaporclad's successful applications be your guide to future planning . . . write for brochure #68

SEE OUR CATALOG IN SWEET'S

Seaporcel

SEAPORCEL METALS, INC.
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ARCHITECTURAL PORCELAIN

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Colors designed with the Builder in Mind!

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"First with the Finest"
CERAMIC GLAZED STRUCTURAL TILE

ARKETEX CERAMIC CORPORATION Brazil, Indiana

Arketex has anticipated the growing importance of color in modern building.

Now, more than 70 brilliant color shades of *Arketex* Ceramic Glazed Structural Tile are available . . . in any quantity you desire. Functional colors that fit to perfection today's decorative requirements in public and private buildings of all kinds. Beautifully bright colors that retain their original lustre forever.

The world's finest tile-producing facilities enable *Arketex* to offer both variety and unlimited quantity, custom-made to your exact specifications. Another reason why *Arketex* is and always will be "First With The Finest."

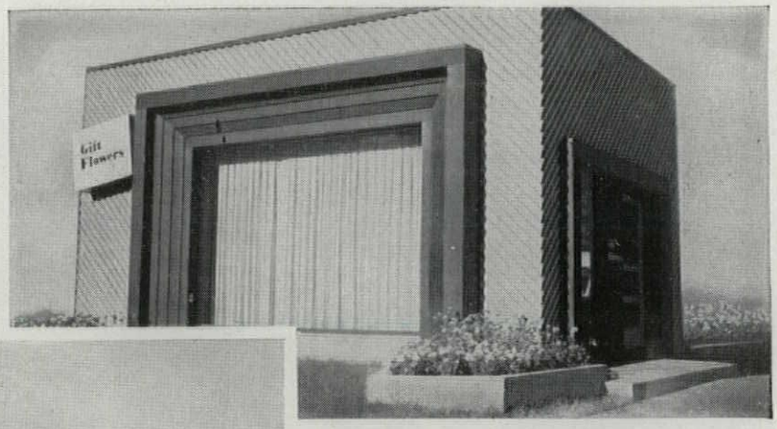
Write today for our Color Chart and the name of your ARKETEX distributor!

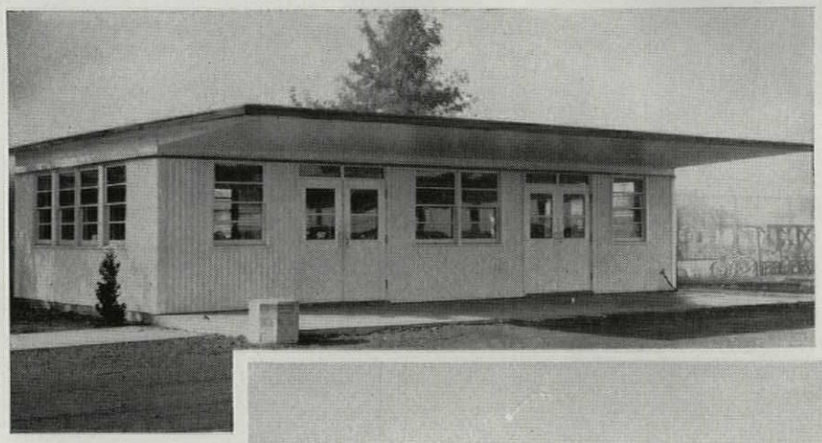
Refer To Sweet's File No. $\frac{3f}{Ar}$

THE WORLD'S LARGEST EXCLUSIVE MANUFACTURER OF CERAMIC GLAZED STRUCTURAL TILE

DECORATIVE

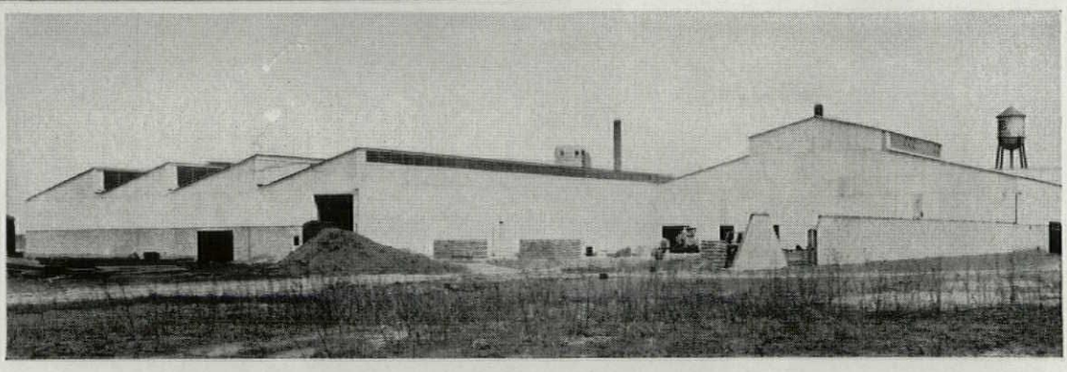
Used here with unusual effect to give a flower shop a gift-wrapped look





DURABLE

The rugged shell of this attractive bus terminal can shrug off a lot of abuse



ECONOMICAL

For factories like this it offers initial low cost and maintenance-free economy

Ruberoid Corrugated Asbestos Sheets

combine durability and economy with decorative qualities to provide a wide range of architectural applications.

When used as siding and roofing over skeleton construction, these strong sheets permit lighter footings, foundations and framework.

Besides being fireproof, weatherproof and non-corrosive, Corrugated Asbestos Sheets eliminate the cost of painting and maintenance. They are used extensively in chemical plants, railroad yards and other places where the destructive effects of acids, fumes, smoke or steam are extreme.

For complete specification data, assembly instructions and detail sketches, write for your handy Corrugated Asbestos Catalog to nearest district office.

Engineering consulting service, including take-offs on request.

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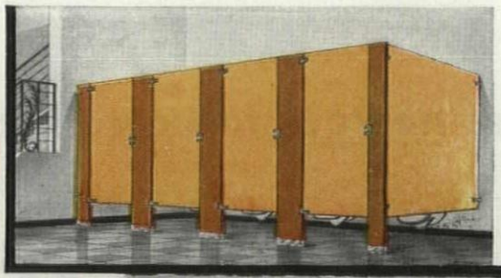
DENVER 16, COLO.—*156 W. 56th Avenue*
ERIE, PA.—*16th Street*
KANSAS CITY 3, MO.—*7600 Truman Road*
MILLIS, MASS.—*Curve Street*
MINNEAPOLIS 11, MINN.—*50 Lowry Ave. North*
MOBILE 8, ALA.—*Emogene Street*
ST. LOUIS 15, MO.—*9215 Riverview Drive*
SALT LAKE CITY, UTAH—*1674 Beck Street*
SAVANNAH, GEORGIA—*P. O. Box 1183*
Executive Offices: 500 Fifth Ave., New York 36, N. Y.

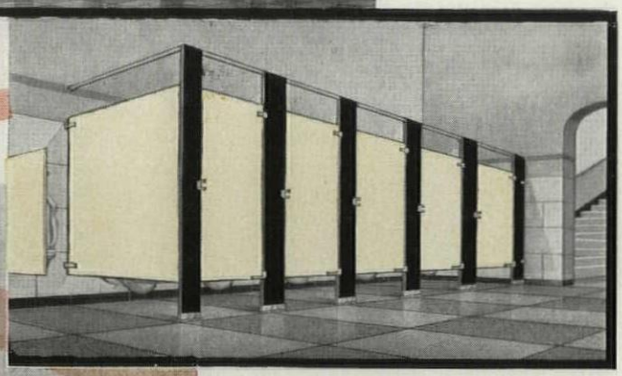
The RUBEROID Co.

Asphalt and Asbestos Building Materials

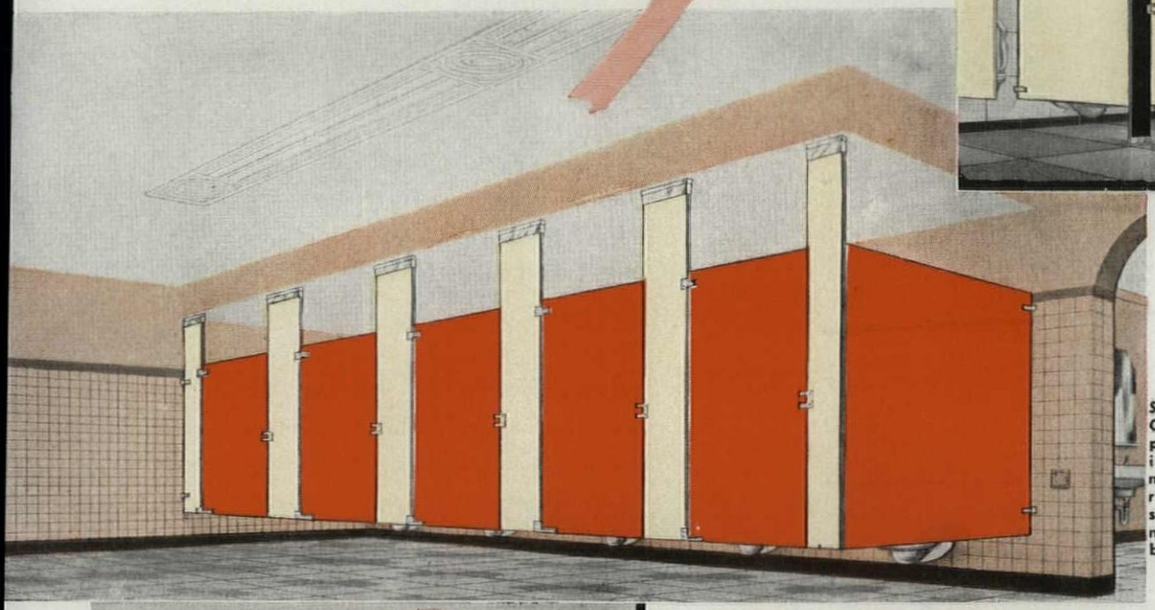
Untimely obsolescence of washrooms usually occurs when and where it is invited . . .



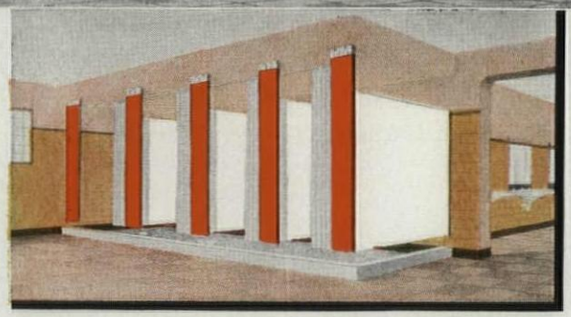
Sanymetal NORMANDIE Type Toilet Compartments endow a rest room environment with dignity and good taste.



Sanymetal ACADEMY Type Toilet Compartments are suitable for conservative but modern washroom environments.



Sanymetal CENTURY Type Ceiling Hung Toilet Compartments offer the utmost in sanitation and provide modern, distinctive rest room environments for schools, institutions, terminals and other public buildings.



Sanymetal CENTURY Type (Ceiling Hung) Shower Stalls of Sanymetal "Porcena" (Vitreous Porcelain on Steel) Partitions and Pilasters, as arranged for a typical club installation. Also available in Sanymetal "Tenac" (synthetic enamel baked-on over Galvanized, Bonderized* Steel).

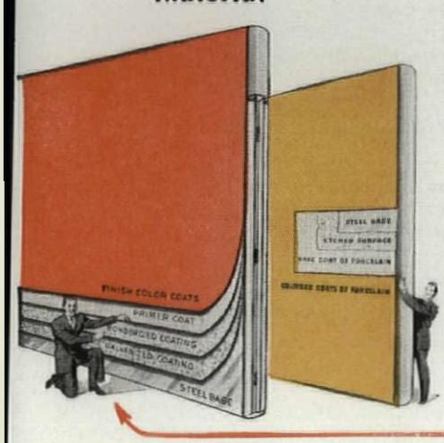
To insure against *untimely obsolescence* consider wall-type plumbing fixtures installed with Sanymetal ceiling-hung toilet compartments.

Sanymetal offers several different types of toilet compartments. Sanymetal also offers and recommends Two Full-Purpose Metal Base Materials which combine colorful attractiveness with long years of service life and effect important day-after-day savings in cleaning and maintenance costs. These Two Full-Purpose Metal Base Materials—Sanymetal "Tenac" (Galvanized, Bonderized** Steel), and Sanymetal "Porcena" (Vitreous Porcelain on Steel), the ageless and fadeless, rustproof material—are described herein. Sanymetal Toilet Compartments are also available in cold rolled steel.

Sanymetal Toilet Compartments and Shower Stalls embody the results of 40 years of specialized skill and experience in making over 1,000,000 toilet compartment and shower stall installations. Ask the Sanymetal representative in your vicinity to demonstrate the worthiness of Sanymetal Toilet Compartments as protection against *untimely obsolescence.*

Sanymetal "PORCENA"
(VITREOUS PORCELAIN ON STEEL)

The Ageless and Fadeless Material



This is Sanymetal "PORCENA"

(Vitreous Porcelain on Steel)

A metal base material that is impervious to moisture, odors, cleaning and uric acids, oils and grease. It is rust proof. Available in 21 glistening colors.

This is Sanymetal "TENAC"

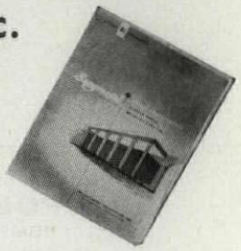
*(Baked-on Paint Enamel over Galvanized, Bonderized** Steel)*

A metal base material that is notable for the positive adhesion of the baked-on paint enamel to the metal and its resistance to corrosion. Its lustrous, protective finish assures long-lasting newness. Available in 21 gleaming colors.

THE SANYMETAL PRODUCTS CO., INC.

1687 Urbana Road • Cleveland 12, Ohio

Sanymetal Toilet Compartments embody the results of specialized skill and experience in fabricating over 500,000 toilet compartments in all types of buildings. Ask the Sanymetal representative in your vicinity for information about planning suitable rest room environments that will always stay new. Refer to Sanymetal Catalog $\frac{21b}{Sa}$ in Sweet's Architectural File for 1954 and Catalog $\frac{13a}{Sa}$ in Sweet's Industrial File for 1954.



Sanymetal*

TOILET COMPARTMENTS SHOWER STALLS AND DRESSING ROOMS

*Trade Mark Reg. U. S. Pat. Off.

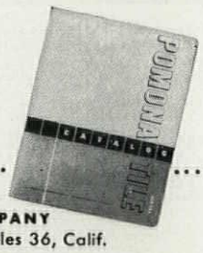
**Treated with "Bonderite", a product of Parker Rust Proof Company

the newest look in bathrooms is...

POMONA TILE

Pomona's real clay tile colors never fade or become dull.

The newest look in real clay tile is now available at Pomona Tile's modern factories in California and Kansas... At the California plant Perma-glaze trim is now being made to match most of the Perma-glaze floor and deck tile colors — sparkling new shades have been added to the line... While the Kansas factory is now offering a greater range of colors and, for the first time, a complete line of Rolled-edge trim with stretcher angles to match. See your favorite Pomona Tile Contractor for samples or send for free catalog containing actual tile samples. (This offer good only in west and mid-western states.)



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Gentlemen:
I do want to see pictures and samples of Pomona Tile's complete line. Please rush a catalog to me right away.

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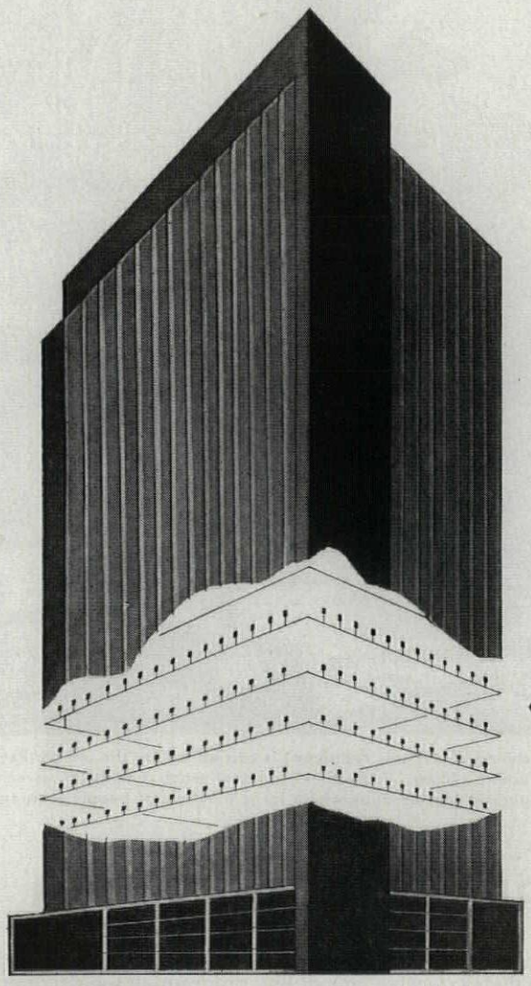
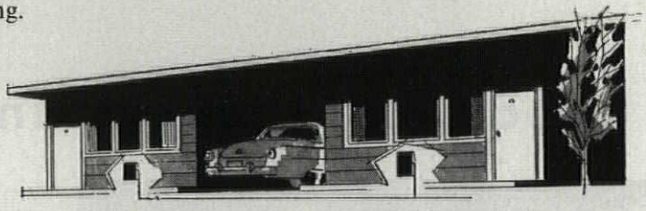
Lingerie: courtesy I. Magnin & Co. • Accessories: courtesy Barker Bros., Inc.



Modulated Heat with Thermostat in Every Room

Every room in a building is an individual zone, with its own thermostat. Every room is heated with filtered warm air, continuously circulated by a compact, recessed wall unit. Sets a new standard of comfort and heating economy for every type and size of residential, institutional and commercial building.



SelecTemp Highlights

THERMOSTAT IN EACH ROOM. Temperatures can be varied in every room to fit the "activity plan" and personal preference of the occupants.

MODULATED HEAT. Air circulation is continuous. Both temperature and volume of air is automatically modulated, as required to offset heat loss from room.

FILTERED, CIRCULATED AIR. Individual room air circulation prevents transmission of odors or bacteria from other rooms. Air is cleaned by a spun glass filter in each room unit. Filtered outside air can be introduced if desired.

BOILER LOCATION. Does not require centrally located heating plant. Boiler can be placed in any desired location, with proper distribution of heat to every room.

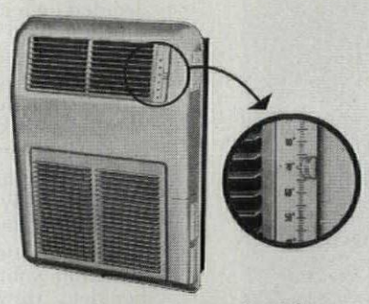
LOW POWER COST. No electricity required to operate circulating fans. Nonelectric thermostats.

LOW INITIAL COST. No other system can be so easily installed in either new or old construction. Small soft copper tubing (¾ inch I.D.) carries steam to individual room heater units. Return lines are ⅜ inch. Tremendous savings in installation costs.

LOW FUEL COST. Temperature easily reduced in unused rooms. Eliminates overheating.

AUTOMATICALLY BALANCED. No special adjustments of dampers, valves or orifices required to balance heating system. Each unit continuously regulates heat needed for each room. Automatically compensates for external heat sources such as fireplace or solar heat, without affecting temperatures of other rooms.

FOR LARGE OR SMALL BUILDINGS



Individual room control with continuous modulated heat

With SelecTemp heating, every room in the building is an *individual zone*, with its own thermostat. Low pressure steam, supplied to recessed wall units through small flexible copper tubing, provides heat and power for the circulating fan. Thermostats are nonelectric and require no wiring.

Exact, constant temperatures

Each room thermostat may be set at any temperature from 40 to 90 degrees. Heat in each room is accurately maintained at the temperature selected. The thermostat detects any change in temperature and regulates both the speed of the circulating fan and the steam supply to exactly meet heating requirements. SelecTemp thus eliminates ordinary on-and-off cycling and "cold 70" stratification. It constantly modulates from 1/20th of capacity to full capacity, supplying just the amount of heat needed. SelecTemp compensates automatically for variations due to changes in outdoor temperature, and in velocity and direction of the wind. It compensates for heat gains from the sun's heat, fireplaces, cooking ovens and body radiation.

Low installation and operating cost

The various parts of the selecTemp system are engineered for rapid economical installation without time wasting special provisions. SelecTemp units are delivered assembled in steel enclosures for mounting in wall stud spaces or wall openings. No electric power required for operation of circulating fans or thermostats—an important saving. Fuel savings result from elimination of wasteful overheating and from lower temperatures in unoccupied rooms. Small steam lines greatly reduce heat transmission losses.

SelecTemp
TRADE MARK
PRODUCT OF IRON FIREMAN

Send for full information

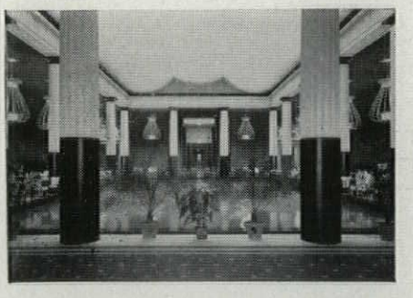
IRON FIREMAN MANUFACTURING CO.
3234 W. 106th Street, Cleveland 11, Ohio.

Please send literature on Iron Fireman SelecTemp heating.

Name _____

Address _____

City _____ State _____



METROPOLITAN MUSEUM OF ART
New York City, New York

Associate Architects:
R. B. O'Connor & Aymar Embury II

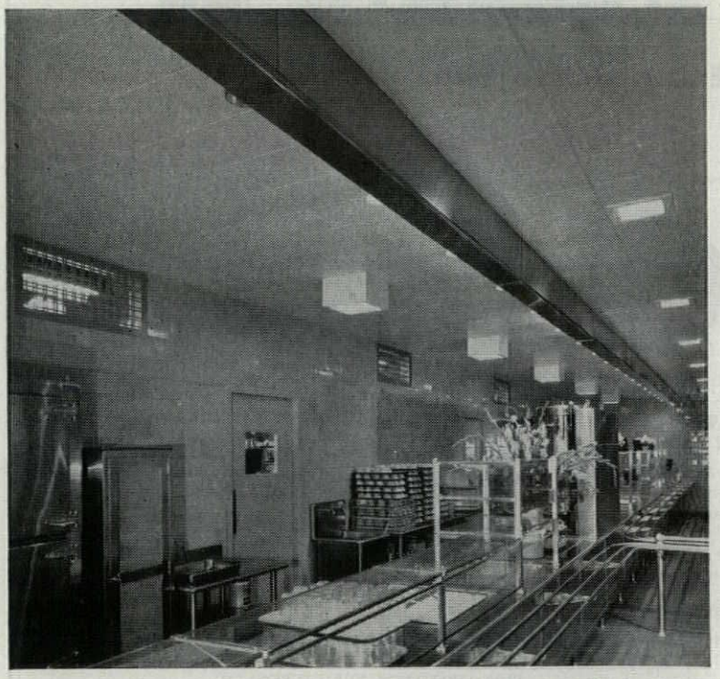
Interior Design & Decoration:
Dorothy Draper, Inc.

General Contractor:
Cauldwell-Wingate Co.

Acoustical Contractor:
William J. Scully Acoustics Corp.

The classic styling of the new restaurant is carried out by the marble-like appearance of the Travertone ceiling. Travertone's mineral wool composition is completely fire-safe, an important consideration where large numbers of people congregate.

Ideas blend décor and sound conditioning



The high sanitary standards of the cafeteria's serving area are fully met by the easy-to-clean Arrestone ceiling. Installed by mechanical suspension, sections of this ceiling can be removed for repairs on concealed piping or wiring.

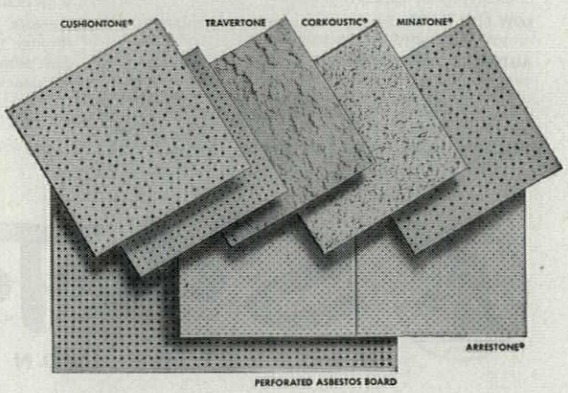
When New York's Metropolitan Museum of Art decided to include a restaurant in their extensive remodeling program, noted decorator Dorothy Draper and the architectural firm of O'Connor & Embury were called in.

In keeping with the near-by exhibits of Greek and Roman art, they decided on a classic décor with stately pillars, a palm-edged pool, and a subtly lighted glass overhead.

The acoustical material that keeps the busy new restaurant comfortably quiet also contributes to the decorative theme. Armstrong's Travertone, usually used on ceilings, was applied to the upper walls and painted a dark brown to carry out decorator Draper's interesting color scheme. Travertone can be repainted without loss of efficiency.

Besides its acoustical efficiency and decorative characteristics, Travertone is quickly installed. Here, it was cemented to the old plaster walls, simplifying the remodeling job.

Get full details on Travertone and Armstrong's other acoustical materials from your Armstrong Acoustical Contractor. For the free booklet, "How to Select an Acoustical Material," write Armstrong Cork Company, 4208 Rooney Street, Lancaster, Penna.



ARMSTRONG'S ACOUSTICAL MATERIALS

State of building

Construction outlays rise to a new peak and advance contracts hold up, too. Easy money makes building easy to finance and sends homebuilding to a new peak

Midpoint in 1954 was distinguished by more good news of construction volume. Total first-half expenditures were listed by BLS and the Commerce Dept. at a record $16.6 billion, with private outlays making up $11.4 (up 3% from the first half of record-busting 1953). Mainstays of building's strength were mass housing and commercial construction. The latter, up 35% above last year to date, was booming at such a pace that professional building owners and managers were beginning to worry about the threat of rising vacancy rates in older offices (see p. 47). Shopping centers, another potent factor in commercial construction's gains, were sprouting fast enough so some realtors were warning that the US may overdo the new-style marketplace (see p. 41).

Even more heartening to the industry than the whopping outlays for building was the way contracts were holding up, promising that next year will be a big year for construction, too. The government also was moving into the new fiscal year with confidence. As one economist put it: "Our forces for economic growth have been buttressed." President Eisenhower's proposal to the state governors' conference for a ten-year, $50 billion highway building program reflected a rising national demand for better roads, suggesting that this segment of construction could look forward to a long prosperity. The new Housing Act (see below) promised—in the words of HHFAdministrator Albert Cole—"to make more money available to more people to buy more homes than ever before." There was a flood of money available for mortgages already. June's 120,000 housing starts (a peak for the year at an unusual time) were largely the result of ready mortgage money, which in turn was the result of the Federal Reserve's easy money policies. Some experts now wondered if still more money for building would begin to be inflationary.

The dip in industrial production was saucering out, as was the business sag in general. Some thought this would be the first postwar year in which a client's dollar bought as much cubic footage as it had the year before. Whether the wage boost in steel would be reflected in a cost boost for construction was still being debated (see p. 45)

Housing Act provides new tools for redevelopment

Despite the FHA investigation and attendant demands by some segments of the press that the government get out of the housing-aid business entirely, the Housing Act of 1954 not only left the industry's customary federal instruments in working order but added a few new ones.

The most comprehensive overhaul of US housing law in years—so public housers charged—also slyly throttled their program. The conference compromise (which two senators and three representatives refused to sign) called for only 35,000 units of public housing for one year, plus the 33,000 already in the pipe line. But the new 35,000 would be limited to rehousing families displaced by slum clearance, redevelopment and urban renewal. Some public housers insisted this hurdle would limit the program to 5,000 to 10,000 units. Cried Sen. John Sparkman (D, Ala.): "Planned execution of the public housing program." Despite such criticism from the bipartisan public housing bloc, there was no serious attempt in either House to send the measure back to conference for revision. Public housers knew they did not have the votes. HHFAdministrator Albert M. Cole promised if the "restrictive language" about public housing eligibility proves "too severe . . . we will bring that fact to the further attention of Congress for reconsideration and adjustment."

Broader slum fight. The biggest of the act's new tools for building was urban renewal—under which Title I redevelopment of the Housing Act of 1949 was broadened to include not only slum clearance but also—for the first time—slum prevention and rehabilitation. The broadened concept would have teeth in it. The law would bar urban renewal grants and loans (but not preliminary planning advances) to communities until HHFA approves "workable" official plans to attack existing slums and prevent growth of new ones. Even before preliminary planning funds could be advanced, city councils would be required to pass an ordinance or resolution requesting them. This would close the door to many a stunt by which public housers flimflammed projects through before cities understood what was happening. The law would also modify the requirement that blighted commercial or industrial areas be redeveloped primarily as housing. It was over this stipulation that the row over Manhattan's Coliseum had revolved (AF, April '54 *et seq.*), leading to an ill-conceived move by Rep. John Phillips (R, Calif.) to bar *all* nonresidential redevelopment projects. As the act finally emerged, it retained the language of the old law, but provided a loophole through which the Coliseum apparently could squeeze. This permitted nonresidential redevelopment of nonresidential slums if the area contains a "substantial number of slum, blighted, deteriorated or deteriorating dwellings" and is unsuited for redevelopment as housing. HHFA would be limited to 10% of its capital grants for loophole projects.

Guinea-pig fund. HHFA was given a $5 million kitty to make outright grants to local public bodies to develop "methods, techniques and demonstrations" for preventing slums and blight. Each locality will have to foot one third of the bill, however, for each project—the standard basis for all US redevelopment aid. The fund will have a philosophy of Uncle Sam helping those who help themselves: it directs HHFA to parcel out the money to projects which will "contribute most significantly" to improve fight-blight methods and which will "best serve to guide renewal programs in other communities."

Buildings on property acquired in blighted areas need not be demolished. They could be repaired if this is the cheapest way to wipe out or prevent slums. But costs of rehabilitation would not be included in renewal project costs and could not be financed by federal loans; they would have to be borne by the purchasers (in most cases) or by local agencies. As HHFAdministrator Cole noted: "To encourage this investment, the Housing Act for the first time authorized the FHA to insure mortgages, on the same liberal terms as elsewhere, for the construction and rehabilitation of homes in neighborhoods threatened with blight." Under this FHA Sec. 220, home owners will be able to get FHA-insured loans up to 95% of the first $9,000 of value and 75% of the excess up to $20,000 for one- and two-family buildings, up to $27,500 for three-family dwellings and up to $35,000 for four-family dwellings. Four- to 12-family dwellings would have a special maximum of $35,000 plus $7,000 for each unit over four.

Building contractors would be limited to 85% of the terms available to owner occupants—a new and slightly less favorable concept which was threaded into most sections of the 1954 Housing Act. Moreover, they would be subject to antimortgaging-out rules compelling them to return any mortgage money in excess of the allowable loan-to-value ratio (plus a reasonable profit and the cost of the land before development, as determined by FHA). Sec. 220 contained another deal for buildings with more than 12 units under which builders could get 90% mortgages up to $2,250 per room (or $8,100 per unit of less than four rooms), and $2,700 per room ($8,400 per under-four unit) for elevator buildings—plus $1,000 a room more in FHA-approved high-cost areas. Most experts expected little activity. Reasons: Sec. 220 is based on value (whereas the late, unlamented Sec. 608 was based on cost); Sec. 220 is subject to the antimortgaging-out rules; the pending tax bill would prevent taking Sec.

220 profits as capital gains. Said R. G. Hughes, president of NAHB: "Secs. 220 and 221 were born dead." He pointed out that "under the cost certification clause, the maximum mortgage under 220, for example, would be 90% of 1) the amount of outstanding indebtedness against land and improvements prior to rehabilitation, plus 2) the total cost of materials and labor used for rehabilitating the property, plus 3) not more than 10% builder's profit on materials and labor actually used in the rehabilitation of the property." To the owner, say, of an old apartment with a $100,000 mortgage, Sec. 220 offered only the prospect of winding up with a $90,000 loan after rehabilitation—a distinct loss. Somewhat red faced about this and other technical bloopers in the Housing Act, the banking committees of both houses made hasty plans to rush through a correcting legislation.

Apartment building hit. The antimortgaging-out rules would strike hardest, it was generally agreed, at FHA's regular Sec. 207 rental housing program, under which 7,451 units (many of them high-rise apartments) went up in 1953. Sec. 207 provides only an 80% loan. With the antiwindfall rules tacked on, it means apartment builders would have to leave considerable capital in 207 projects. Few experts expected many more to go up under the new rules, despite an increase in mortgage limits for elevator buildings (to $2,400 a room and $7,500 a unit if less than four rooms).

Planning and public works. The new housing law would also broaden federal aid to localities in planning and public works. One section (701) would give HHFA a $5 million fund to make grants to communities of less than 25,000 population to cover not more than half the cost of surveys, land use studies, urban renewal plans, city and community plans (but not for engineering or architectural plans for specific public works). State regional and metropolitan planning agencies would also be eligible, and such planning would not be restricted by the 25,000 population limit.

Another little-noticed section (903) would shift to HHFA the old RFC program to help localities finance public works, set up a revolving fund of $50 million for it. Since 1932, the RFC had received 6,200 applications, approved 60% of them for a total of $1.5 billion in loans. It was expected RFC's policy of concentrating on small towns and small projects would continue. So far, the average loan has been about $220,000. Most projects involve sanitation or water treatment plants. The interest rate was to be set at 4¼% to force cities with better-than-poor credit ratings to borrow on the private money market.

The act gave HHFA a $10 million fund for interest-free loans to local governments for planning public works. This was part of the GOP program to stimulate a backlog of anti-recession projects.

For a summary of the Housing Act's provisions affecting home building and mortgage finance, see August HOUSE & HOME.

SIDELIGHTS

A 300-ton case of tilt

At San Mateo, Calif. some 350 dignitaries gathered at the invitation of Vagtborg Lift-Slab Corp. to watch the San Francisco area's first demonstration of lift-slab construction. Hydraulic jacks were smoothly hoisting the 70′ x 65′ slab roof of Serra Catholic High School. Inches short of the 16′ high objective, the roof slowly tilted, buckling the 6″ supporting columns on the west side of the slab. Five workmen dived to safety from under the crashing 300-ton slab. Eight persons who had been walking on top of it were injured, among them President C. Henning Vagtborg of the lift-slab firm. What happened, explained Architect Vincent G. Raney, was "due to improper bracing of the supporting columns, which is only necessary during construction. The columns were braced in one direction, but the weight of the the slab fell in the opposite direction." Said Rainey: "The pipes were capable of holding twice the slab's weight, but the minute you get off center you lose strength."

Should garages be compulsory?

New York City settled a fight over parking in characteristic fashion last month: it decided to do nothing, pending more study. At issue was a city planning commission proposal to require parking garages in all new nonresidential construction (the city already requires garages in new housing). Merchants and realtors protested that the new scheme would stagnate building because Manhattan land values were too high for parking garages to be economic in the densely packed midtown area where most of New York's new construction is concentrated. Moreover, they cried, more garages would just invite more autos downtown to make Manhattan's traffic snarls thicker.

Moving sidewalks

Daniel V. Terrell, dean of the college of engineering at the University of Kentucky and currently president of ASCE, recently ventured a prediction that New York City residents might be forced in the future by heavy surface traffic to travel on underground conveyor belts. "Movement of traffic in New York today is hardly faster than the movement of traffic on horse-drawn vehicles 68 years ago," Terrell noted.

For New York, as the dean implied, such a solution—on a widespread scale—was probably a ways off yet. But pedestrian conveyor belts, moving sidewalks, speedwalks—call them what you will—had moved out of the idea stage into reality. In Jersey City, commuters on the Hudson & Manhattan Railroad a few months ago began using the nation's first moving sidewalk to go 227′ up a 10% grade at an underground station. This pilot installation has been successful enough to encourage New York's Transit Authority to call for bids this fall on a more complex belt conveyor system to replace the shuttle subway under 42nd St. between Times Square and Grand Central Station. The scheme would have passengers step from a loading belt moving at 1½ mi. per hour into belt-powered passenger vehicles that would speed up (on rubber rollers) to 15 mi. per hour for the half-mile trip. Decelerating rollers would slow the cars down at the other end, and they would ease around a U-turn channel return.

The idea has captured a lot of other imaginations, too. Ben Swig, the Massachusetts-born real estate operator who has dealt largely in hotels (both East and West), last month put forth a $50 million scheme for San Francisco involving speedwalks. In a run-down 3½-block area south of Market St. Swig would build 1) a 75,000-seat major league ball-park, 2) a 20,000-seat convention hall, 3) a 15-story office building, 4) a 7,000-car garage, 5) two transportation terminal buildings. He would hook the whole thing up to the shopping center of downtown San Francisco with a moving sidewalk along 4th St., under Market St. and over to Union Square along a landscaped mall replacing part of Stockton St., which would be closed to traffic. At Sacramento, Swig was proposing converting downtown K St. from 2nd to 12th Sts. into a $10 million traffic-free shoppers' mall, complete with you-know-whats. Cincinnati was considering a speedwalk in its business area and Houston, Tex. was contemplating a walk which would move right through major department stores and office buildings above grade.

In Los Angeles, Trailerman Roy Fruehauf let his imagination out, predicted America will some day ride 100 mph on rolling roads powered by the sun.

All in all, city planners, architects, realtors have a fascinating new idea to work with.

Wasted words?

Are building materials manufacturers wasting a lot of money in their efforts to communicate with architects because their copy misses the point? Enough architects in California think so for the forthcoming convention of the California Council of Architects (Sept. 30–Oct. 2, Hoberg's) to have chosen this theme: "Manufacturers' Literature—from Mail Basket to Waste Basket." The aim is to devise a system for "more adequate advertising distribution, filing and revising of building [materials] information." Said one recent announcement of the convention: "The advertising agency must revalue its literature of all types so that this literature is a help to the planner and builder and not a source of confusion. The manufacturer must be made aware that the literature for which he pays the advertising agency is generally thrown away promptly and forgotten because it is so often too bulky, noninformative or useless to the builder and architect."

Shopping centers: how many are enough?

Developments leapfrog each other in rising competition for the shopper's dollars

Take equal parts acres and automobiles, stir in borrowed capital and sprinkle with plate glass and whoppo—a shopping center. It used to be easier than falling off the mall. Not any more. Voices are now loud in the land decrying the precocious development of this stepchild of the gasoline age and builders contemplating such suburban bonanzas think twice and then call an economist. The worrisome—although quite logical—situation is that everybody is now in competition with everybody else.

Such a state of affairs is not surprising. The realty men who first started assembling store groups a few miles from the center of town knew that they were going to be in competition with the merchants left in the center of town. The first wave of informed opinion had it that the downtown districts would go bankrupt. This has not proved so. When it became evident that whole urban populations were not going to move en masse to the foothills and shop there, the opinion was revised to read that the downtown merchants would have to bestir themselves to stay in the black. In many areas this *has* proved so. But the inroads of the massed marts on the old-fashioned districts have thus far not been so severe as might have been expected. The fact that the shopping centers have now turned cannibalistic—are, in a manner of speaking, eating each other—has become an equalizing factor in the district-center tussle for the consumer's dollar.

Blue sky expansion. Although facts and figures on shopping centers are notoriously open to question ("I have not heard of any subject in 35 years in the real estate business where words have been bandied about so loosely," observes one expert), there is no doubt that they are here and they are numerous. More important, hundreds more are planned. An estimate of recent growth: 1,800 centers completed in the past five years. One drawback to precise statistics is that there is still confusion as to the definition of a shopping center and few analysts in the field ever bother to distinguish between the neighborhood, district and regional varieties. Last month FORUM tabulated a round 875 centers* from coast to coast as an indication of the astonishing size of the boom.

Among the centers where opening dates were discoverable, FORUM found that 43% either opened or were to open last year or this. And

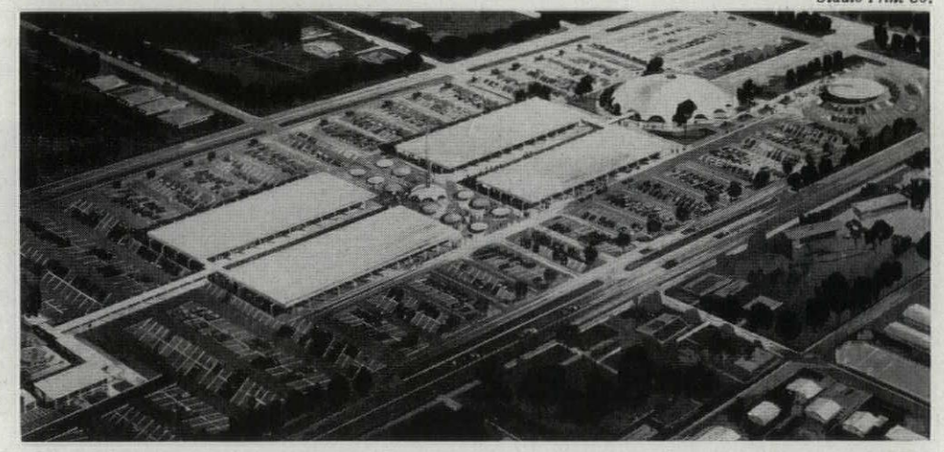
*FORUM's Reader Service Dept. will be happy to provide FORUM readers who request it with the list, which is also available by states.

GREATER MILWAUKEE'S first regional shopping center, a ritzy $15-million development of 70 stores, is scheduled for completion in '55. Capitol Court came about when Ed Schuster & Co., Milwaukee department store, decided to build its fourth store and realized that the site in question could stand heavy development. One factor: population growth of the city's northwest area was ascertained to be four times the national rate. Larry Smith did the survey. Architects: John Graham & Co. and Brust & Brust. Landscaping: Alfred Geiffert.

Photograph House

INDIANAPOLIS' oldest department store—L. S. Ayres & Co.—will occupy the largest store in Glendale shopping center 8½ mi. northeast of the city's downtown area. The Ayres company and Landau & Perlman will jointly develop the 45-acre site for 45 stores at an estimated cost of $7 million. The center, with five buildings occupying 390,000 sq. ft., is expected to be the largest in Indiana. Again, the developers are counting on population growth—20% up in three years in the northern Indianapolis trade area. Victor Gruen & Associates planned it.

Studio Print Co.



LOS ANGELES suburb of Palmdale in the fast-growing Antelope Valley (more subdivision activity than anywhere else in Los Angeles county, according to the Regional Planning Commission) is the site of this mall-type center with a dome-shaped supermarket at one end. Palmdale's population has doubled in four years (to 5,500) and employees from at least four aircraft factories are on their way in. The center will include 170,000 sq. ft. of shopping area and 18,000 sq. ft. of office space at a cost of $2 million. Designers are Pereira & Luckman.

during 1955 and 1956 another 24% of shopping centers planned and open will begin competing for customers' dollars. Thus by the end of '56, FORUM's figures indicate, about 65% of all shopping centers will be less than four years old!

Construction cost of the centers varied from $500,000 (Northwest Village in Phoenix) to $60 million (Lakewood in Los Angeles). A large majority were operating or had scheduled more than 25 stores. Out in front numerically was California, where 131 were listed. Here, as elsewhere, it was obvious that shopping centers mushroom in populated areas. No less obvious was the fact that they thrive on the automobile—California leads the 48 states in auto registrations.

How many drive-in emporiums could one community bear? To some old hands in the business it looked like overbuilding in many areas. FORUM's cross section showed a dozen on tap in Los Angeles; seven in Denver; nine in Indianapolis. Baltimore (more later) showed at least nine in operation or on the way. Texas was feeling its oats with 14 in Dallas and 16 in Houston.

The camel's back. Realtor Arthur Rubloff, who can preach because he practices large-scale urban redevelopment and himself has a successful shopping center, sounded off on the local situation. Pointing to the fact that there are some 30 additional shopping center projects planned for the area, Rubloff told a panel at the Merchandise Mart: "Our Loop, or downtown area, generates a volume of business approximating $700 million. . . . If these 30 centers all become a reality, the spendable income supporting the already established business sections will be siphoned off considerably. While some may survive the competition, others will be affected with disastrous results."

Rubloff was talking about potential damage to downtown districts. Chicago is also an exemplification of the leapfrog system of center building which ultimately damages the centers themselves; and in Chicago this damage is not potential—it is there. Soon after families took up residence in the suburbs a clear pattern of building for merchants emerged. The trend was to capture, or intercept, shoppers as they started into town. On Chicago's Milwaukee Ave., for example—the great diagonal thoroughfare leading to the northwest—centers have leapfrogged out, about 3 mi. apart. Each tried to intercept the inbound traffic. Already the store group nearest the city is virtually a "ghost center." And the intermediate ones, now suffering from inadequate parking facilities, face competition from the even newer models that boast relatively wide open spaces.

Merchandise Mart News Bureau

TALKING over the pros and cons of shopping centers at a conference at Chicago's Merchandise Mart last month: Lawrence Sizer of Marshall Field; A. C. Huffman of Huffman & Boyle Co.; Victor Gruen, AIA; and Realtor Arthur Rubloff.

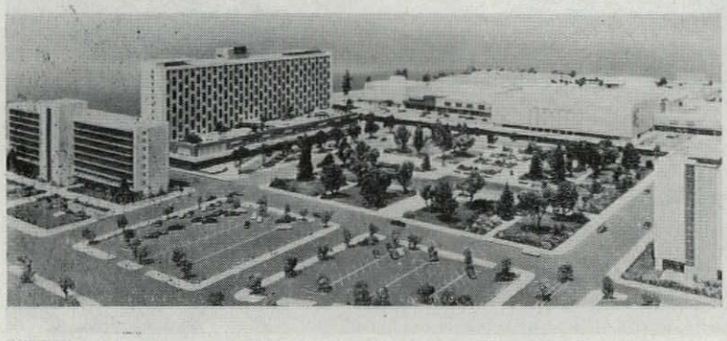
Push and pull. Suction and resistance, two terms applied to the desire or reluctance with which families face a trip to the store, are having a near-equal push-me-pull-you effect on shoppers. The main influence of the burgeoning shopping centers has been simply to provide more push and more pull. The consumer's dollar is not swelled by the advent of 1,000 more places to purchase. The basic, competitive proposition is still that a shopping center cannot create expenditures, but can only intercept them on their way to the location where they were spent originally. A rechanneling of disposable income therefore takes effect. Shopping centers have so far not upended the economy; they have merely spread it thin.

Nevertheless, some one has to lose. The Urban Land Institute, in a recent technical bulletin, commented that "The major shopping district is a common casualty of the rapid growth of American cities." But ULI noted that after an initial loss of business occasioned by the first exodus of families to the city limits, in-town shopping districts stabilized. Recent indications are that their function has been increasingly to serve the working population in offices, transients, residents of high density areas (where better, say some planners, to place a store?) and some periodic basic purchasers. But if the downtowners were successfully treading water—and there was increased prediction that they would not be able to forever without more positive action toward physical improvement—the so-called strip facilities were taking a beating from the competition. Consultant Larry Smith of Seattle mentioned at a seminar in New York last winter a study showing that only about 20% of these shopping districts (which mushroomed in the twenties) were "thriving" and that only about 10% had escaped hurt from shopping centers. The strip, neither fish nor fowl, had been caught between the still-solid downtown districts and the new extravaganzas farther out.

When in doubt: rebuild. There was feeling that when in doubt an intown commercial landowner should rehabilitate. Some comment on the subject:

- "Downtown stores are so busy looking for greener pastures they are not doing enough to counter deterioration and protect their existing investments," comments Harold B. Wess, former Macy executive now teaching at the American University.
- Rex Allison, the extraordinary promoter of Seattle's famous Northgate: "I have been trying to find out 'who' the downtown is that is going to make this heroic fight. . . ."
- "Retailers who have faced the situation squarely . . . see it as a challenge—not a mortal threat."—Lawrence B. Sizer, vice president of Marshall Field & Co.

Efforts to rehabilitate residential areas have had a head start on similar campaigns to ameliorate commercial sections. But merchants on Chicago's State St., according to Sizer, have "accepted the challenge" and spent some $60 million on capital improvements since the war. Others can follow, if they realize that the "vigorous counter-pull working continually to draw people toward the central city" is something to be capitalized on and not just taken for granted.



BIGGER—if built as planned—than New York's Cross County, twice the size of Seattle's Northgate, mammoth Lloyd Center in Portland, Ore. (above, left) will occupy 40 acres and provide 1.2 million sq. ft. of retail shopping facilities. Cost: $20 million. The developers figure close to 600,000 people live within 20 minutes driving time of the site. Experts predicted an overdose of centers with this new model, but only for a year or two—until the city's burgeoning population evens things up. Architects: John Graham & Co. Also on tap: another suburban center (above, right) just beyond the western boundary of Portland in the rapidly growing Cedar Hills residential district. Commonwealth Construction, Inc. has started work on the "second phase," with addition of 27 shops to the supermarket and service station already in operation. Expected construction of a department store would bring total cost to $10 million. Architects are Belluschi and Skidmore, Owings & Merrill.

Everybody's ball game. As the shining shopping centers ate up the acreage in big pieces on the California coastline, in the Pacific Northwest, Florida and Long Island, experts and advisers chipped in advice on all aspects. Some of the comment:

▸ New York Realty Consultant Robert H. Armstrong: "Although trading areas will vary greatly for different types of stores and for certain sections of the country, it is best to proceed with caution. . . . In the case of regional shopping centers, the trading area must be reexamined with care because purchases from 50, 25 or even 10 miles distant may be woefully few."

▸ Victor Gruen, architect: "At present suburban shopping facilities grow helter skelter without analysis of existing need and in merciless competition with each other, very often duplicating and triplicating certain services."

▸ A real estate analysis from Hunter Moss & Co. in Baltimore, on the question of shopping center expansion there: "There is serious question concerning the need for this ever-multiplying number of shopping centers. Strong promotion and a small equity position, in most instances, have dulled the serious analysis of the long term prospects. . . . "

It has been fairly definitely ascertained that the shopping center's best customers are upper middle bracket families with automobiles who do not care as much for bargains as for convenience; that a center must at the same time permit browsing by customers and not "knock 'em and soak 'em"; that a shopping center promoter would be silly not to ascertain the proven spendable income and extent of transportation facilities in his chosen area before he started building. About other matters there is less agreement. The vagaries of traffic and parking have not yet been sufficiently analyzed. Rubloff: "I question whether there is adequate proof or experience to date as to the actual parking requirements for a regional shopping center." (Victor Gruen's formula for correctly interpreting figures about new shopping centers: "Claimed parking space: divide by three.")

Crossroads. The new trend that seemed to be gradually getting a grip on the men who knew store building best was that shopping centers were at a crossroads. The bonanza was a big baby. In numerous cases it was beautiful, but in others it had suddenly developed growing pains. Arthur Rubloff is a man with an enormous personal and financial interest in keeping things and people downtown, but his summation of the situation, if strong, was worth noting: "There are thousands of so-called shopping centers in the planning or building stage. There is absolutely no question that we have reached an overdevelopment of commercial real estate as it relates to shopping centers. If the trend continues . . . it will destroy the value of millions of dollars of real estate through the decentralization of many of our established business areas."

Congress cuts Eisenhower programs to aid building

Building statistics and hospital construction were a couple of fields hard hit by economy-minded Congressmen. The House appropriations committee turned thumbs down on a sought-after $35 million for beefed-up federal aid for the hospital program; the House, however, later restored almost half of this. More funds for more figures on construction activity ($1.1 million) were thrown out, leaving one chance—reinstatement of the appropriation by the Senate when it gets the supplemental appropriations bill.

In other action, military construction for fiscal '55 got the customary Congressional squeeze treatment and the House armed services committee moved that military housing be built with federal funds. The latter decision by the committee came after consideration of three other methods for financing such housing. As recommended, the bill would give the Pentagon about half what it had claimed was needed (original request: $350 million for 25,000 units) and eliminated some requested construction entirely.

Lease-purchase Act signed; $3 billion of building seen

President Eisenhower last month signed the long-delayed Lease-purchase Act, authorizing government acquisition of office buildings and post offices on the installment plan. During the present fiscal year, the General Services Administration is permitted by the law to take on contracts involving expenditures of up to $5 million a year. Government men figure this will generate a building volume of about $60 million. Over a period of years, GSA has estimated, the act could unlock some $3 billion of federal construction. The Post Office Dept., which also participates in the program, can commit itself during the initial three-year operation to contracts that do not involve annual payments of more than $3 million. Later on, Congress will take another look at the picture and decide how much more lease-purchase authority it will extend. But construction does not have to await appropriations, as is usually the case; the lease-purchase act permits GSA and the post office to use appropriations for rental space to make initial payments.

Under the program, the government signs a deferred purchase agreement with the sponsor of a building project. Lease projects are set at a level sufficient to pay off the cost, plus a fair return within a minimum of ten or a maximum of 25 years (30 years for the post office). After this, the government takes title.

The bill will apply a new concept to government space procurement and GSA has had to work out some new administrative policies. It wanted to avoid package deals, has come up with a three-part schedule unique because it involves lining up the bidders on the mortgage financing before deciding who will build and own the property and who will draw the plans. First, invitations to financing institutions; second, plans and specifications; third, request for offers from sponsors.

GSA hoped to get some jobs up for the required approval by the House and Senate public works committees during the summer recess and get some construction under way by late fall. There was nothing official yet on the interest rate for lease-purchase; informed sources guessed it would be under 4% —perhaps as low as 3¾%.

At the moment, the post office is spending some $27.5 million a year for rent; GSA is spending about $35 million.

Building labor pay rises 1.6% in second quarter

When the 1954 wage bargaining season began in the construction industry, the watchword among employer groups was: "Hold the pay line!" But the building unions, seeing construction sprint ahead from a slow start in the first quarter of the year, pressed for more money. This month the results were in from BLS. They showed that construction labor—surveyed for seven major building trades in 85 cities—had gained 1.6% in wages during the second quarter. Contractor and worker pressure had balanced to a great extent, and the wage increases were not as great as they were last year in the same period (2.6% average gain). BLS estimates of quarterly increases in union minimum scales and rate levels on July 1, 1954:

	Average Increase April 1, '54-July 1, '54		Rate Levels July 1, 1954	
Trade	percent	cents-per hour	average	range
Bricklayers	2.3	7.6	$3.39	$2.50-3.80
Carpenters	1.3	3.8	2.89	2.10-3.50
Electricians	1.5	4.6	3.09	2.45-3.50
Painters	1.2	3.4	2.77	1.75-3.13
Plasterers	.9	2.9	3.27	2.25-3.75
Plumbers	2.0	6.1	3.12	2.50-3.50
Building laborers	2.3	4.4	1.94	.90-2.70

Northwest lumber strike goes into second month

By early August, with the West Coast fir lumber strike well in its second month, wholesalers and retailers across the nation were reminded that the law of supply and demand has a harsh as well as a pleasant effect. In the days following June 21, when over half of the lumber producers in the Pacific Northwest were shut down by a general strike of AFL and CIO lumber workers, prices began to shoot upward. Dimension lumber prices rose as high as 30% more than prestrike levels, board prices slightly less. As July wore into August, with both employers and employees deadlocked over a wage increase demand, and with stockpiling of logs for winter sawing at a dangerous low, lumber users lost interest in snatching at every last board and 2x4. Moreover, the output of nonunion and cooperative mills was greater than had been expected. So prices slipped off until early this month they were only a few dollars per Mbf higher than prestrike.

KENFLEX VINYL TILE FLOORS MAKE RESTAURANTS MORE ATTRACTIVE...MORE ECONOMICAL TO MAINTAIN

Flooring for areas where food is prepared and served must always be sanitary...look fresh, clean and colorful...stay that way with minimum maintenance, effort and expense! KenFlex Vinyl Tile answers these requirements because it is *greaseproof*...impervious to spilled oils, greases, acids or alkalis. And, because it is non-porous, dirt, grit and grime can't be ground-in underfoot...can't mar the crisp, clear, modern colors. KenFlex *seldom* needs scrubbing . . . cleans quickly and easily with just a damp mop...*never* needs waxing except to add a bit brighter luster.

The KenFlex Floor shown here costs far less than many floors that can't come close to matching its quality advantages. The beauty is *lasting* beauty because the colors go clear through the tiles...can't fade, dim or wear off. And as the color choice is so wide, design opportunities are literally unlimited.

Samples and technical literature available on request from the nearest Kentile, Inc. office listed below. Or, contact the nearest Kentile Flooring Contractor. He's listed under FLOORS in the Classified Telephone Directory.

Specifications and Technical Data

Installation: Over any smooth, firm interior surface: wood, plywood, radiant heated concrete slab, concrete in contact with the earth—on or below grade.

Thicknesses: Laboratory and in-use tests have proven the wear-resistance and durability of vinyl flooring: Consequently, Standard Gauge (1/16") is recommended for normal residential and commercial uses. Where traffic will be very severe, 1/8" KenFlex is suggested.

Sizes: Standard tile size is 9" x 9"...also available are 9" x 9" decorative ThemeTile inserts, and 1" x 24" Feature Strip in four solid colors.

Approximate Installed Prices (per sq. ft.)

	Standard (1/16") Gauge	1/8" Gauge
KENFLEX all colors	40¢	65¢

KenFlex is available in 15 co-ordinated colors, all of which are marbleized. The costs shown above are based on a minimum area of 1,000 sq. ft. over concrete underfloor.

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BUILDING STATISTICS:

Steel goes up $3 a ton after wage boost; contractors predict industry will absorb it

Prompted by the 9¢ to 10¢ an hour "package" wage increase granted CIO steelworkers, prices of standard structural shapes last month rose from $82 to $85, concrete reinforcing bars from $83 to $86, and galvanized sheets from $105.50 to $109.00 (at Pittsburgh). Average increase: $3 a ton. Contractors, steel fabricators and metal product manufacturers fussed and fretted, but promised, in the face of fierce competition, not to pass the raise along to purchasers of construction. H. C. ("Chan") Turner, president of New York's Turner Construction Co., appraised the situation in these terms: "I believe . . . the price rises will be more theory than practice, and I think they will be largely absorbed along the way. I don't think we will have to absorb them. The manufacturers and fabricators will. . . . No appreciable increase in building cost is to be expected."

Other contractors lacked Turner's optimism. They expected to feel the pinch personally. Said the president of one national building organization: "If we're in pitching hard for a juicy $1½ million plant against both big contractors and a host of fly-by-night, shoe-box companies, wouldn't it pay for us to absorb the $3-a-ton increase if 400 tons of structural steel were used in the building and the increase amounted to $1,200? The subcontractors and manufacturers in turn would probably share the increase in such steel-consuming products as pipes, valves, ductwork, etc."

Eventually, some contractors felt, part of the steel increase would slip through to the consumer. But wasn't it "high time," asked Andrew Eken, president of Starrett Brothers & Eken, "that the steel companies, through research and study, found some way to offset these steadily increasing costs?" Charged Eken: "Very few technological advances have been made to effect greater standardizations. . . ."

Already the bellwether influence of the steel wage pact was being felt. Anticipating a wage settlement similar to the steelworkers, aluminum producers and marketing men were debating a possible 1¢ a lb. increase. The prices of cement and strikebound lumber were also up. Copper and lead prices remained steady. Net result: a slight upsurge in four heavy building cost indexes (see graph).

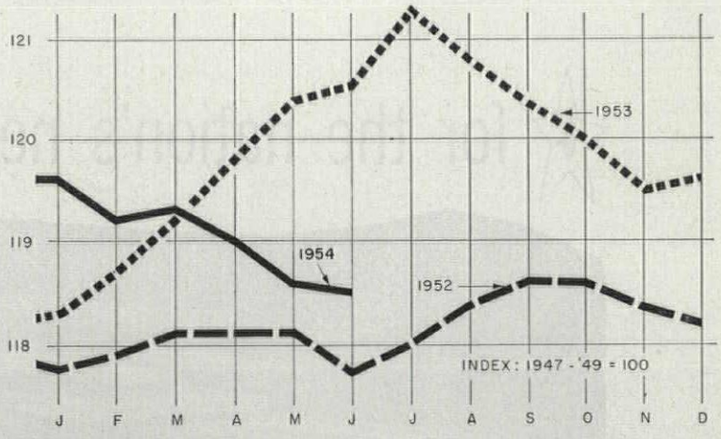
NEW CONSTRUCTION OUTLAYS

(millions of dollars)

Type of construction	June 1953	June 1954	June Per cent change	First six months 1953	First six months 1954	First six months Per cent change
PRIVATE						
Residential building (nonfarm)	1,123	1,148	2.2	5,536	5,647	2.0
New dwelling units	990	1,005	1.5	4,905	4,985	1.6
Additions and alterations	110	114	3.6	510	516	1.2
Nonresidential building	479	530	10.6	2,652	2,914	9.9
Industrial	185	166	—10.3	1,171	1,029	—12.1
Commercial	152	190	25.0	729	985	35.1
Other nonresidential building	142	174	22.5	752	900	19.7
Religious	38	46	21.1	208	251	20.7
Educational	34	47	38.2	190	244	28.4
Social and recreational	14	20	42.9	69	101	46.4
Hospital and institutional	27	28	3.7	158	162	2.5
Miscellaneous	29	33	13.8	127	142	11.8
Farm construction	174	157	—9.8	833	751	—9.8
Public utilities	398	398	0	2,009	2,074	3.2
All other private	13	11	—15.4	58	49	—15.5
*PRIVATE TOTAL	2,187	2,244	2.6	11,088	11,435	3.1
PUBLIC						
Residential building	51	29	—43.1	292	197	—32.5
Nonresidential building	377	408	8.2	2,146	2,254	5.0
Industrial	162	143	—11.7	914	859	—6.0
Educational	142	175	23.2	816	969	18.8
Hospital and institutional	31	33	6.45	200	166	—17.0
Military facilities	122	67	—45.1	672	387	—42.4
Highways	310	385	24.2	1,121	1,350	20.4
Sewer and water	73	88	20.5	400	462	15.5
Conservation and development	78	67	—14.1	409	339	—17.1
*PUBLIC TOTAL	1,037	1,078	4.0	5,164	5,154	—0.2
*GRAND TOTAL	$3,224	$3,322	3.0	$16,252	$16,589	2.1

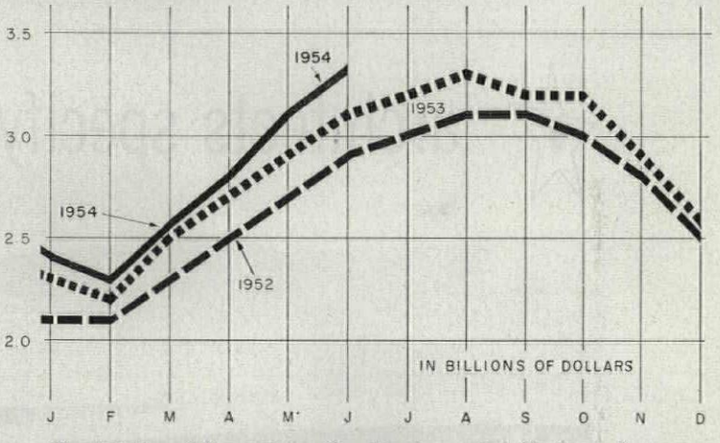
* Minor components not shown, so total exceeds sum of parts. Data from Depts. of Commerce and Labor.

MATERIALS PRICES



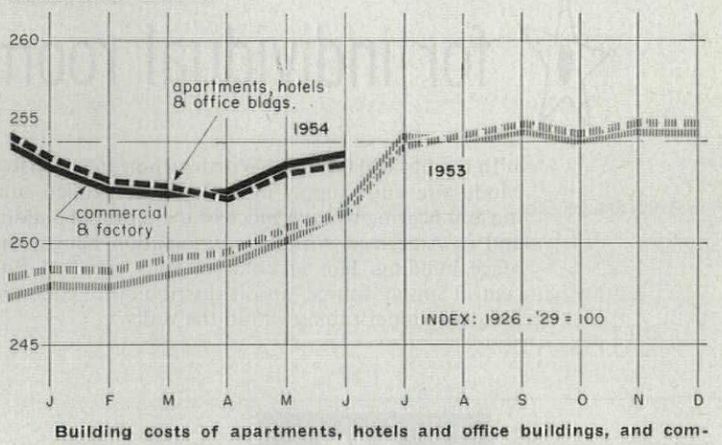
The wholesale building materials' index published by BLS dropped almost imperceptibly from May to June, from a revised 118.6 to 118.5. Nonmetallic minerals (flat glass, concrete ingredients, stuctural clay products) fell 0.3 point. Paint remained static and lumber and wood products showed a 0.2 point gain (the strike influence.)

TOTAL CONSTRUCTION EXPENDITURES



Construction dollar volume for June repeated May's performance, reached another peak. Expenditures for new construction totaled $2.2 billion for private and $1.1 billion for public. The first half of 1954, with $16.6 billion, edged Jan. to June '53 ($16.3). Most of 7% June increase reflected seasonal gains in private housing and highway building.

BUILDING COSTS



Building costs of apartments, hotels and office buildings, and commercial and factory structures rose slightly from May to June. The indexes, computed by E. H. Boeckh & Associates, gained about half a point to 254.1 and 254.5 (base 1926). Other indexes, on a 1947-49 base, showed similar small climbs: American Appraisal Co. from 124.7 to 125.3; AGC from 130.5 to 131.1. Smith, Hinchman & Grylls rose one point from 269 to 270 (1926 = 100). The Austin Co.'s index of industrial building costs advanced one point to 190 during the spring quarter, after three successive periods at 189.

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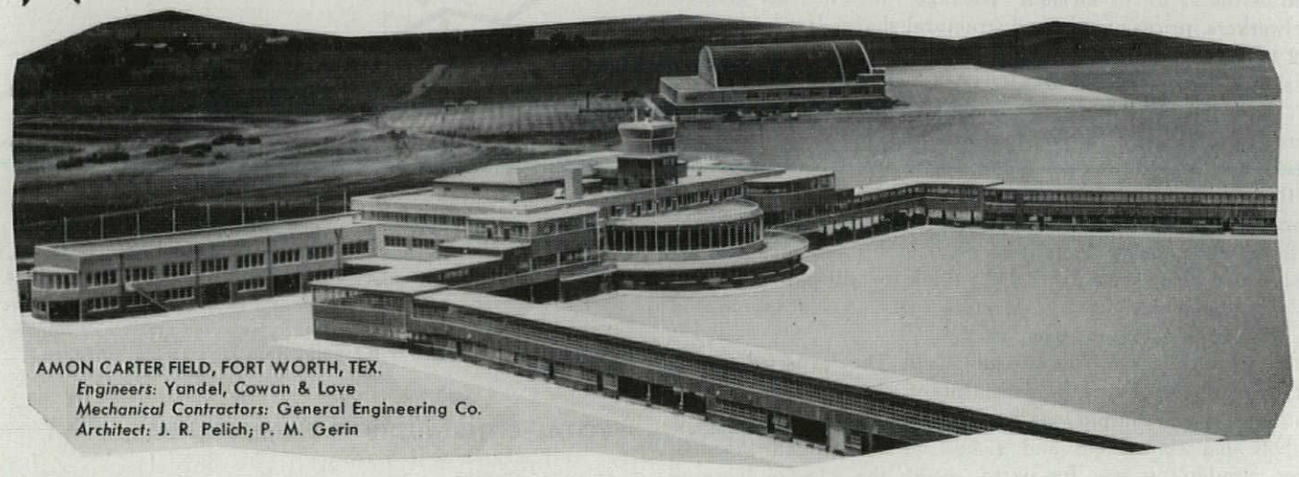

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Engineers: Yandel, Cowan & Love
Mechanical Contractors: General Engineering Co.
Architect: J. R. Pelich; P. M. Gerin

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Consulting Mechanical Engineer: Theodore F. Rockwell
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In the $14,000,000 Fort Worth airport, 67 usAIRco Modu-aire units supply individually controlled cooling and heating to each office in the terminal building and in American Airline's combination hangar and office building. Hot or cold water is supplied from central supply source and is distributed to each unit through copper tubing within the walls.

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Mile High Photo Co.

DENVER OFFICE TOWERS previewed by delegates included (r) the 23-story 400,000-sq. ft. Mile High Center designed by I. M. Pei for Webb & Knapp and the George A. Fuller Co., owners, and (l) the 20-story 267,000 sq. ft. Denver club building designed by Architects Raymond Harry Ervin and Robert Berne of Denver for John D. and Clint Murchison Jr. of Dallas.

Fresh acres of office space

Building Owners & Managers, conventioning at Denver, worry about overbuilding, loss of federal rents from lease-purchase

The men who manage the nation's skyscrapers are beginning to worry about overbuilding. A second fear is that the federal government's new lease-purchase act, permitting the US to buy new office space on the installment plan where it now rents quarters, will accelerate the curve of vacancies, already on the rise for two years.

Both problems were aired at the 47th annual convention of the Natl. Assn. of Building Owners & Managers June 28–July 1 in Denver.

Graham Aldis, former head of NABOM's Chicago chapter and of NAREB's Chicago board, presented a survey that showed eight out of 23 reporting cities already had reached the saturation point or were overbuilt in office space. Aldis put his data together by asking local building managers and appraisers in the 25 biggest cities for "confidential low-down" on local conditions. "I classified a city as overbuilt," he said, "if I judged that its vacancy was likely to be materially increased above its present vacancy" whether or not this would take offices above the traditional 10% vacancy accepted as "normal" in prewar days of lower operating costs. Aldis' complete tally:

Situation	Number of cities
Strong	1
Border, strong to stable	3
Stable	6
At saturation point	5
Border, saturation to overbuilt	3
Overbuilt	5

Butter for building. Aldis suggested facetiously that the office building industry ought to apply for government help to guarantee rents on a parity plan tied in with farm price supports: "Office building parity would be 90% occupancy and the government would take on any vacant space in excess thereof at a. . . support rental of 90% of the normal rate for space." Aldis theorized that surplus grains could go in surplus ordinary space, and surplus butter into surplus air-conditioned space.

Although Aldis did not name the cities he classified, he may have had Denver in mind. At Aldis' request, others at the speakers' table described local conditions, too. Among the replies:

- Denver will have a 20% vacancy in first-class office space within a year as a result of a 60% expansion (AF, May '54), predicted Palmer L. Burch, local BOMA president. In another report on new Denver buildings, former President Hudson Moore Jr. set the prospective vacancy rate at "something under 18%" (contrasted with 1.8% now). He said conditions would be the "most competitive" since 1939.
- Dallas acquired 2 million sq. ft. of new space in 12 postwar buildings, by Jan. 1 will have about 10% vacancy in its 4 million ft. of first-class space, according to E. H. Cary Jr.
- Pittsburgh expected a 15% vacancy from its flood of postwar construction, but on May 1 vacancy was below 9%. In Equitable Life's new Gateway Center buildings there was about 20% vacancy, however, said Frank T. Trohaugh, who blamed a city "mercantile tax" for driving an increasing number of office tenants beyond city limits.

Sterling Bigler of Philadelphia, who was elected NABOM president, commented that "many cities are creating too much space," and expressed specific concern over the outlook in his own city.

Vacancies near 3%. Supporting (if not stimulating) members' fears were results of NABOM's semiannual office space survey disclosed at the convention. Based on reports from 2,532 buildings in 162 US and Canadian cities, the survey showed a gross vacancy of 2.88% on May 1 compared with 2.26% last Oct. 1. It was the fourth straight rise in the vacancy index.

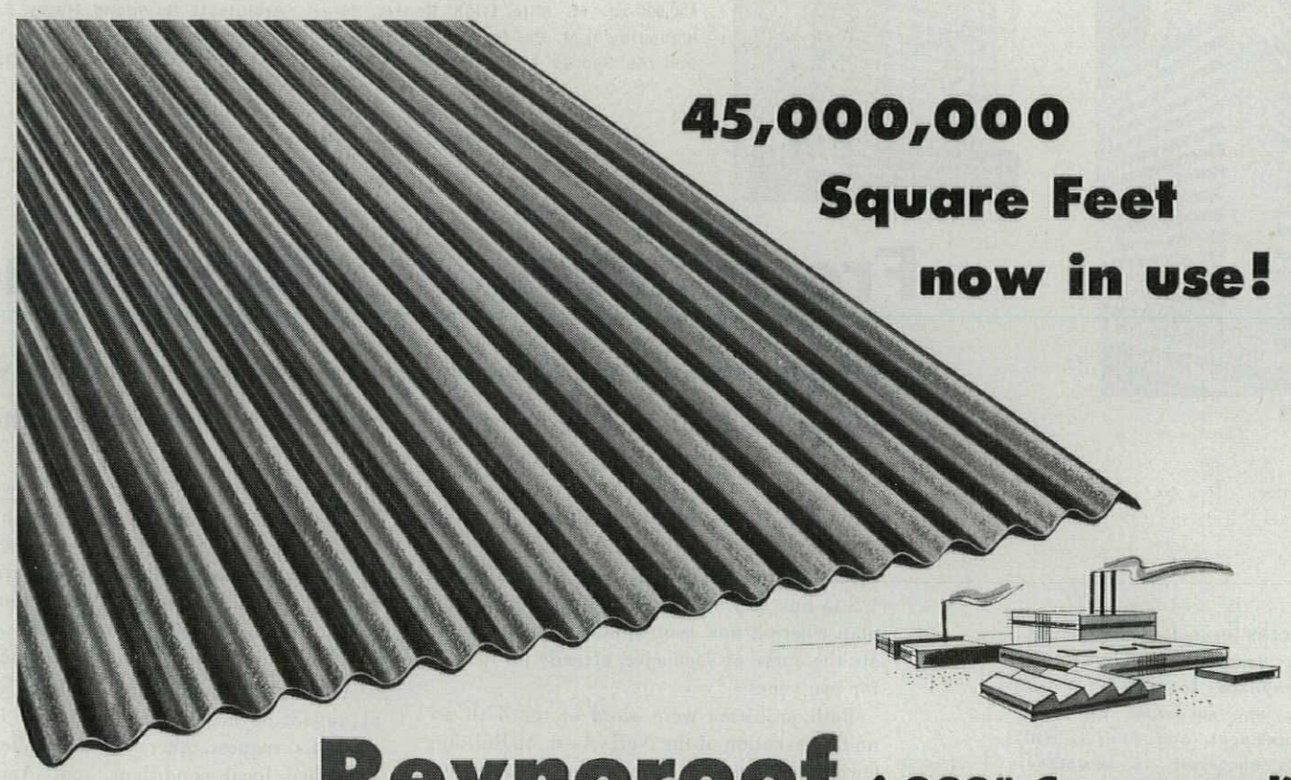
Most significant disclosure in the latest figures was a drop in space rented by private tenants, offset only by a big increase in gov-

NEW OFFICERS elected at the convention (l to r, below): President Sterling Bigler; Maynard Hokanson of Indianapolis, who succeeded Bigler as 1st vice president, and John I. Hill, Hokanson's successor as secretary-treasurer. Not a management firm man, but an owner-management executive, Bigler has charge of renting and maintaining 250,000 sq. ft. of office space for Philadelphia's Girard Trust Corn Exchange Bank.

Bigler, a handsome six-footer, graduated in 1923 as a mechanical engineer from Case Institute of Technology, Cleveland, where he was born Dec. 27, 1900. For two years he worked for S. S. Kresge, hoped to become a store manager, then "just quit—the work was too confining." A friend suggested he apply for a job open in a Cleveland management firm — "you probably won't like the work, but it would be a good spot to look around."

But Bigler did like the work, was fascinated by building management's constant challenges, as he still is. "You have to know everything: engineering, collections, the trend of economic changes, the complexities of the rental market. The work is so broad, not confining." For a few years he worked in Detroit, Rochester, Albany; joined Girard Trust as rental agent to open its new 30-story headquarters in Philadelphia in 1931.

McRae Photo Co.



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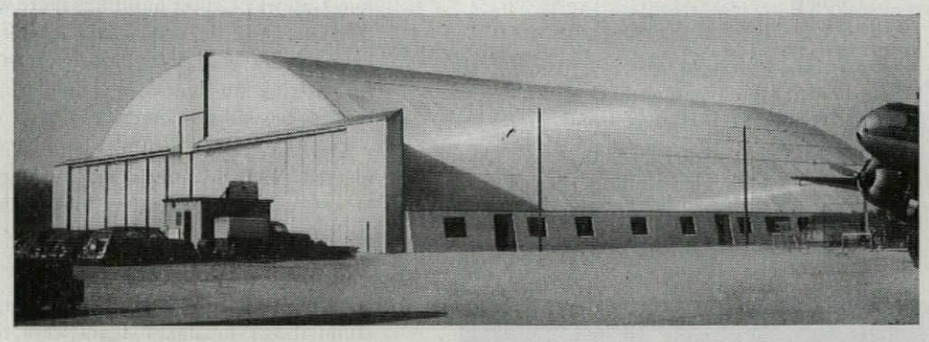
DESCRIPTION:

Reynoroof Industrial Corrugated, 48" width, embossed finish.
Reynoroof Industrial Corrugated, 35" width, mill finish.
.032" thickness (22 U.S. Std. Ga.).
Lengths 5' to 12' in 6" increments.
Weight approx. 56 lbs. per 100 sq. ft.

Also Reynoside, ribbed embossed siding, ribs 4" or 8" o.c., 1" deep. Lengths up to 14' 5½".



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BUILDING PRODUCTS

ernment office renting. Although total space for the base of the May survey went up 3 million sq. ft. over October space (230 million, compared with 227 million), gross private occupancy went down 766,000 sq. ft. Government occupancy rose 2.2 million sq. ft. Although gross occupancy was higher than reported in October, gross vacancy was greater too, both in volume and as a percentage of the bigger base.

Government agencies rented 6.7 million ft. in surveyed buildings last October, but 8.9 million in May (2.95% of the total space surveyed last fall, 3.89% of total space in May). State and local agencies increased their rented space from 1.4 to 2.5 million ft. (up 78%), federal agencies from 5.2 to 6.4 million ft. (up 23%).

The convention adopted this resolution drawn by the policy committee headed by V. B. Walling of Detroit:

"There are indications that in office building construction some cities are nearing the saturation point, while some may have overstepped the line. These facts warrant the attention of lending institutions as well as private capital, and the sober consideration of governmental agencies.

"Pending legislation in Washington has given rise to apprehension of much new building financed on a lease-purchase plan. We remind those in authority. . . that unwarranted public construction can be as harmful . . . as overbuilding by the industry itself."

How much, how soon? Because government renting provides private office buildings with revenue the industry has come to depend on, NABOM apprehension over the federal lease-purchase program (see p. 43) was understandable. The big question: how much would there be?

GSAdministrator Edmund F. Mansure told the convention he wanted to correct false impressions, make it "clear" that the bill (then still in Senate-House conference) would not be "a signal for a vast public works program . . . is no blank check. . . . GSA will be barred from making any commitments which might exceed its annual appropriation for rentals."

But the next day NABOM Counsel Harry J. Gerrity of Washington disagreed. He noted both Mansure's remarks and a specific limitation totaling $8 million for both GSA and post office buildings during the first year of the program. Nevertheless, Gerrity made a prediction that could make a lot of owners and managers unhappy: "pressure" on congressmen for local projects would soon cause Congress to boost annual appropriations sky-high. . . . Warned Gerrity: "If this legislation becomes law, government occupancy of commercial office space . . . will completely disappear within five years."

Slap at Congress. This year, at least, NABOM was still on the best of terms with GSA. It recently completed a survey and analysis for GSA on its operating methods and expenses in managing public buildings. In his annual address, retiring NABOM President James M. Bradford said this study had turned out "more of a chore than anticipated, was not highly profitable" for the association. He called results "largely confidential," but added: "Possibly our most constructive recommendation was that a substantial sum be set aside—we had in mind $100 million—for progressive modernization of antiquated federal structures and equipment. Only by bringing many properties up to good condition after years of penny-pinching neglect will it be possible to realize standards of efficiency in operation that the government should maintain and to which the public is entitled."

Ralph E. Thomas of Detroit charged that wasteful deterioration of government buildings from such penny-pinching was "all due to the fact it is possible for congressmen, without making a survey, to red-pencil appropriations and reasonable requests for funds. GSA has competent management and if allowed to operate as we do, would do a job equivalent to any Class A building in the country."

Thomas served on the NABOM team that studied maintenance problems in the Pentagon and other buildings for GSA, and he gave some unofficial observations of his own on this project. Said Thomas, after first pointing out that war conditions had dictated construction of the Pentagon to less than Class A standards:

"As a building manager I was very unhappy with conditions I found existing. Here was good management compelled to give all kinds of free service to stores that could well afford to pay standard rentals, operating crews working on curtailed schedules [so] they could only clean one third of their assignment per night, cleaning crews receiving materials that had to be doctored to get them through the machines. . . . The part that seems almost unbelievable is that there is actual physical deterioration to some of the buildings, and this enforced cleaning and maintenance procedure will cost you and me as taxpayers more in the long run than if done correctly as a standard procedure."

The convention elected Secretary-Treasurer Maynard Hokanson of Indianapolis as first vice president succeeding Bigler, and Regional Vice President John I. Hill of Houston as first vice president.

MORTGAGE LENDER speaker was Glenn McHugh (l), vice president of Equitable Life Assurance Society, which is financing both the Mile High and Denver club buildings. Conferring with McHugh: former NABOM President Leo J. Sheridan of Chicago (standing) and Convention Chairman Thomas B. Knowles.

GENERAL COUNSEL Harry J. Gerrity reported more than 18 bills pending in Congress for federal payments to localities in lieu of property taxes.

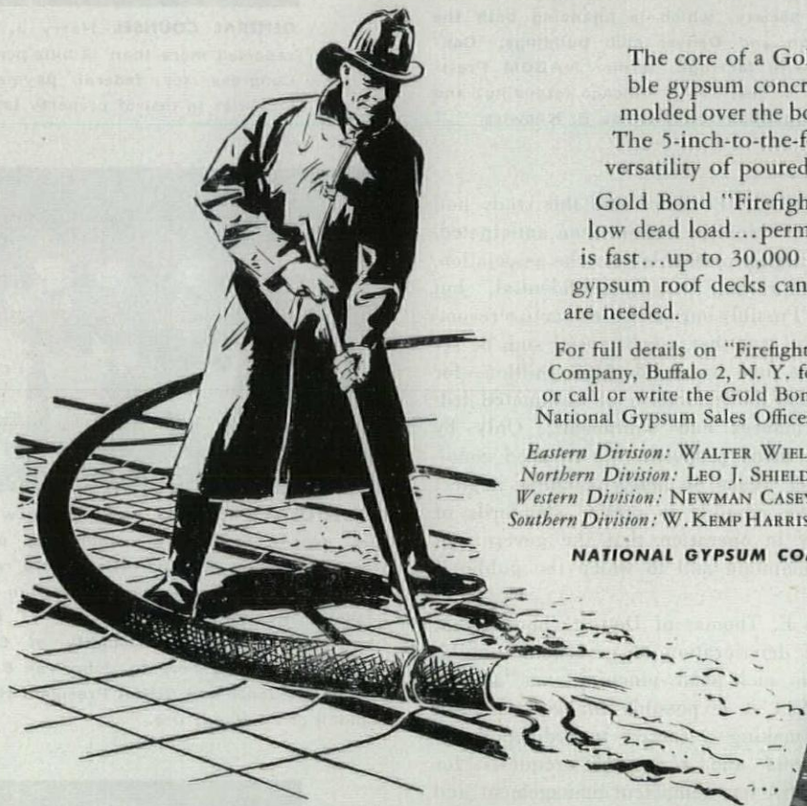
DOWNTOWN PROBLEMS, primarily how to arrest decentralization by improving parking, traffic and mass transportation, were reviewed by a panel of (l to r) G. Harold Swanson of Minneapolis, Realtor N. Lee Foster of Denver, Chairman William H. Doughty of Chicago, John A. Church of Toronto, John Van Bodegom Jr. of Providence and BOMA President Harry C. Kendall of Portland, Ore.

OUT OF THE TRAFFIC Charles J. Bauer (l), executive secretary of the Washington, D.C. BOMA, cornered Henry Barnes, who addressed convention on his extraordinary experiences as traffic engineer for Denver and Baltimore.

Photos: Chas. Kilgore

BIGGEST BUILDING MANAGER, GSAdministrator Edmund F. Mansure (l) reaffirmed willingness to have private firms operate federal buildings if it is shown to be cheaper. After his address, he chatted with George J. Beggs of Portland, Ore., chairman for that session.

We poured fire-resistance into this National Guard Armory roof!



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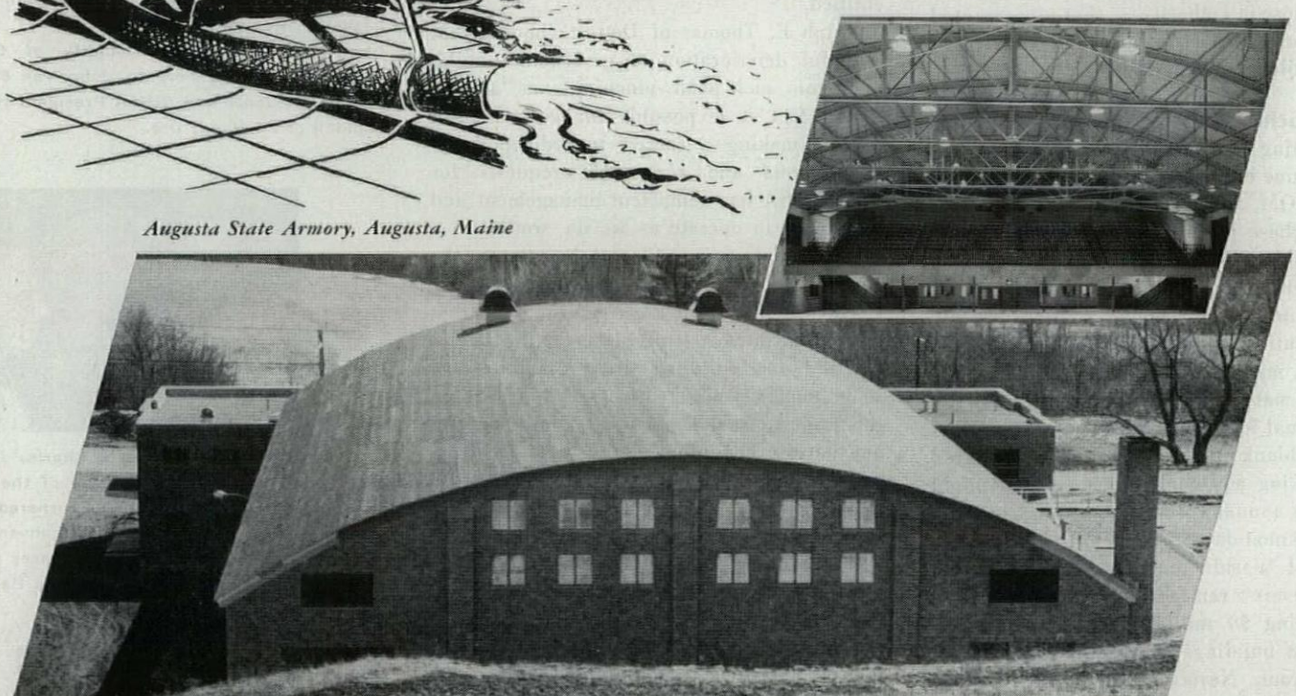

Augusta State Armory, Augusta, Maine

Architect:
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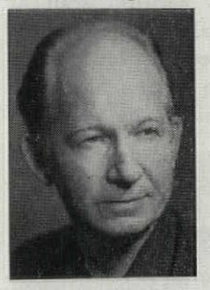
PEOPLE: John Lloyd Wright challenges California architect license law in court; Neal Hardy to quit HHFA

John Lloyd Wright and California's board of architectural examiners have come to grips in a court test which may bring as a by-product the revision—or at least a careful re-examination—of California's licensing procedures for architects. Wright, 61-year-old son of Architect **Frank Lloyd Wright,** has been charged with four misdemeanor violations of the California business and professional code, all involving the new clothing store (see cut, below) he designed for Salvador Villasenor of Oceanside, Calif.



JOHN WRIGHT

Specifically, Wright was accused of 1) displaying a sign indicating he is an architect (it carried the letters AIA after his name); 2) failing to notify Villasenor that he is not licensed to practice architecture in California (he is licensed in Indiana, Nevada and Texas). The board and Wright differ emphatically over whether or not Wright gave Villasenor written notice prior to beginning the project. Villasenor told FORUM that he received notice but neglected to read it; 3) practicing civil engineering without a license; and 4) designing a project which the examining board said required a civil engineer.

Wright has some defenders who see the controversy as something more than a technical matter. James Britton, writing in the locally circulated *San Diego Magazine,* called Wright the "victim of shameful persecution compounded of whisperings, plotting and legalistic abracadabra." He added: "What should most concern the public is that the elaborate machinery of government, designed to promote the general welfare, is not sensitive enough to protect the values of creative originality, but tends instead to make the world safer for mediocrity."

Last January, Wright was served with a warrant for his arrest. He would have spent the night in jail had a judge not released him on his own recognizance. When the case went to court, Oceanside Muncipal Judge L. W. Cottingham threw out two engineering charges on the ground that the complaint was too vague and the law itself badly worded. More important, he sustained Wright's objections to the architectural complaints on the ground that the business and professional code is contradictory (Wright had challenged its constitutionality). On contradictions in the code, the judge held: "The statute we are considering requires, on the one hand, years of study and experience followed by an examination by a competent board before one can obtain a certificate which entitles him to practice architecture, and on the other hand, permits one with no more education than is necessary to write the sentence 'I am not an architect' to practice architecture and enjoy the benefits from doing so to the same extent as if he were duly certified."

The engineering board was willing to let the case drop, but the architectural examiners insisted on pressing the issue. So, an amended complaint has been filed in Oceanside. If Wright wins again, the architectural board is expected to appeal; if Wright loses, he has indicated *he* will appeal. Wright's position is that the section of the code forbidding anyone to advertise in "any way which might indicate" he is an architect is unconstitutional under the first amendment (free speech and free press) and the 14th (due process of law.) In practice, however, Wright insists he has followed the letter of the law.

Since 1946, when he went to California from Indiana, (where he is also a registered professional engineer) Wright has not, he claims, advertised himself as an architect. He describes himself as "John Lloyd Wright Services." He has been designing buildings in the US and abroad since 1912. In putting the letters AIA on his site placard, he points to a letter from AIA President Ralph Walker in 1949. Wrote Walker: "As far as the use of the letters AIA is concerned, we believe very strongly that this right is yours regardless of where you are and should not be in any way interfered with by people in California."

Wright was denied a California license in 1946 when, according to Robert Kelley, executive secretary of the architects' examining board, he failed to pass a civil engineering section of a test which, Kelley told FORUM, was a standard one given to all architect-applicants. Wright has challenged the legality of the "schoolboy test." Wright was mindful of a decision of the Colorado supreme court, which recently threw out a statute comparable to California's because it granted too broad powers of discretion to examiners.

James Britton, writing further in defense of Wright, said, "Other architects freely admit that John Wright could qualify for a license if he chose to go through 'proper' channels. . . . They think of him as simply stubborn, and some of them expand with the pride of pigmies as they recall the similar troubles of Father Wright."

The reference is to Frank Lloyd Wright's brush with California's licensing board in 1924, when he applied for a license but, according to Kelley, never bothered to pick it up. He has since been accredited.

Villasenor, meanwhile, is a somewhat perplexed storm center. He is fully satisfied, he says, with Wright's design; he likes his new store. But he is "very unhappy" that a "nice man like Mr. Wright" should be put to any embarrassment on his account.

JOHN LLOYD WRIGHT'S CONTROVERSIAL CLOTHING STORE AT OCEANSIDE, CALIF.

Neal J. Hardy, 39, for the last five years assistant administrator for HHFA, was hired away by NAHB as director of its new $2.5-million National Housing Center now rising in Washington.

Thompson-Starrett Co., 55-year-old New York construction firm (Woolworth building, Waldorf-Astoria, American Stock Exchange) wrapped up negotiations to acquire **Roberts & Schaefer Co.,** 50-year-old Chicago firm specializing in engineering and construction for the coal, ore and steel industries.

Frank Lloyd Wright revised his plans for the proposed $2-million Guggenheim Museum on upper Fifth Ave. in New York, felt certain that the city's building department would approve them now and let the work get on. It has been over two years since Wright and the officials fell to discussing exits, overhangs and the like, while approval was held up. Among the changes: removal of a wing at the northeast boundary to meet objections to second-floor height and area and to provide an exit; reduction of overhang on Fifth Ave.; a dome of wire glass instead of plastic. Wright insisted the changes would not harm the building, in fact stated they would improve it. Expense was another reason for the changes, since costs are up about a third since the Guggenheim bequest of $2 million was made in 1949. The plans had been sent out to five firms for bids. Wright had rented the Presidential suite in the Hotel Plaza, overlooking the park, as a New York office.

Meantime, a civil engineer from Hopewell Junction, N.Y. purchased Wright's Usonian house, on display at the present museum during last autumn's "Sixty Years of Living Architecture" show, (AF, Oct. '53, News) for $1,000. **Harold Hayward** was the only person to bid more for the house than removal costs when the museum let it be bruited about that the famous model had served its purpose. He had moved it to Pleasantville, N. Y., at a cost of $1,800, planned to put the house together again and offer it for sale in suburban Dobbs Ferry.

OPINIONS: These intellects shed the following light on matters of moment to building:

▶. . . It is an established policy of the present administration to make money easy, cheap and readily available for sound ven-

tures. That means that we who are the employers of borrowed money will be inspired to proceed because the odds are that we can borrow a reasonable amount of money in relationship to the equity capital at hazard.... We have now seen the peak of industrial construction. I think that heavy and light industry, while it will continue to expand and require building, will very likely expand from the obsolete into the modern, for reasons of efficiency."—Realtor **William Zeckendorf.**

▸ "The apparent disregard of the architect's fundamental qualifications as the master planner is, I believe, largely responsible for the chaotic aspect and functional inadequacy of our typical American industrial community. Many of these have assumed the proportion of a national disgrace...."—Architect **George Vernon Russell,** in talk to Industrial Plant Design Institute at Los Angeles.

▸ "For every company that is building primarily to increase capacity, we find eight to ten that are making substantial capital investments just to improve their production equipment or cut their distribution cost."—President **George A. Bryant** of The Austin Co.

▸ "I brook no criticism of today's architectural design from anyone who is not practicing architecture. Only those who are familiar with today's problems, laws, costs, returns have the right to say that this building is good and that building is bad."—Architect **Richard Roth** of New York City.

Lawrence Callanan, business manager of an AFL steamfitters local in St. Louis, and three other business agents of construction locals in the St. Louis area, were sentenced to 12 years in prison for conspiring to violate the federal antiracketeering law. They were convicted (AF, June '54, News) on charges of conspiring to shake down an Oklahoma contractor for $28,016. A fifth business agent drew ten years in prison.

Lawrence Bogert Elliman, 77, chairman of the board of New York's noted real estate firm of Pease & Elliman (which he founded in 1897), died July 24 in Southampton, Long Island. Doing business from the basement of a private house at 532 Fifth Ave., he at first dealt only in homes, later expanded into commercial properties to make the firm one of the best known in the city. He was a former president of the Real Estate Board of New York and of the Chamber of Commerce of the State of New York.

OTHER DEATHS: **Walter L. Rathman,** 74, FAIA, head of Rathman, Koelle & Carroll in St. Louis, July 13 in St. Louis; **John A. Stalfort,** 66, president of Consolidated Engineering Co., which directed construction of some of the biggest buildings in Baltimore and Washington, July 14 in Baltimore; **Thomas Smith Tait,** 72, British architect who stirred controversy in his design of Selfridge's store in London in 1909, July 18 in Aberfeldy, Scotland.

NEW BUILDINGS

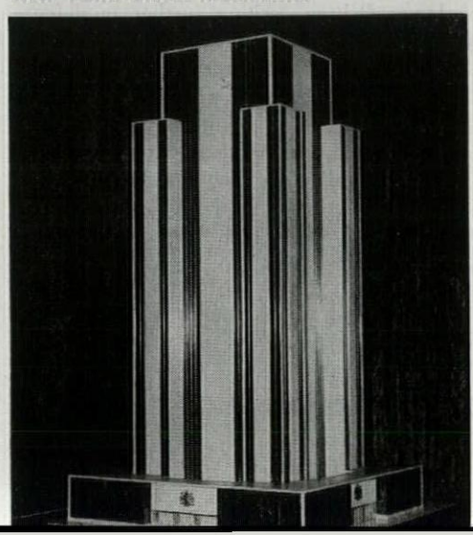
SOM to design Air Academy

Air Force Secretary Harold E. Talbott announced that **Skidmore, Owings & Merrill** had been named architects for the Air Force Academy to be built at Colorado Springs. Associated with the architects: **Syska & Hennessy** of New York; **Moran, Proctor, Meuser & Rutledge** of New York and **Roberts & Co.** of Atlanta. Talbott also named three individual architects to advise him on plans and construction: **Wallace K. Harrison** of New York; **Eero Saarinen** of Detroit and **Welton Becket** of Los Angeles. The seven-man board which picked the architects was headed by **John M. Ferry,** special assistant for installations to the Air Force undersecretary, but the Pentagon kept the other members a secret. The board had applications from 175 groups representing 260 individual firms. First, it whittled these down to a group of eight runners-up. Ferry said SOM was finally chosen on the basis of "experience, past performance, reputation, organization and fundamental approach to the problems." He said the Pentagon wants a design "suitable to the forward-looking view of the Air Force" but added "we have no fixed views on designs . . . we're not looking for stylized designs, nor for something very startling."

Seagram plans a monument

There were critical catcalls in the architectural world last month when **Seagram-Distillers Corp.** made public a man-sized model of its proposed new headquarters. Some said the 34-story building, scheduled for erection by 1957 on Manhattan's Park Ave., looked like an enormous cigarette lighter. Others thought it resembled a big trophy. Preliminary design for the building—marble and bronze for four floors and a "monumental tower" above—was worked up by Architects **Pereira & Luckman** and announced at the company's annual sales meeting. Cost was put "in excess of $15 million." The structure will go up a rivet's throw across Park Ave. from Lever House, the cost of which was said to have been an issue when Charles Luckman left the presidency of Lever Bros. A Seagram official said the firm had not yet signed a contract with Pereira & Luckman.

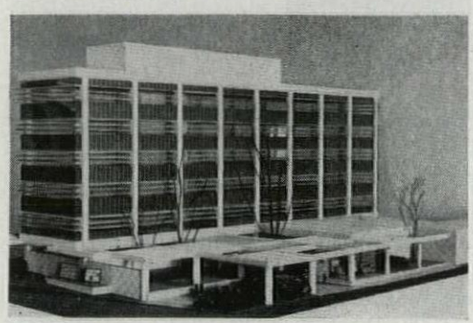
NEW YORK OFFICE MONUMENT



"But," he added, "no matter how many architects we bring in, Charlie Luckman will always be in the picture." The official felt sure Seagram would stick basically with the modeled design.

Window shades outside

The six-story office building for the **British Columbia Electric Co. Ltd.** in Victoria, B.C. will wear its Venetian blinds outside. The client stipulated no inside shading. So Architects **Sharp & Thompson, Berwick, Pratt** of Vancouver striped the walls with horizontal aluminum sunshades to keep the load on the air-conditioning system to a minimum. The main block of the $1.2 million building will

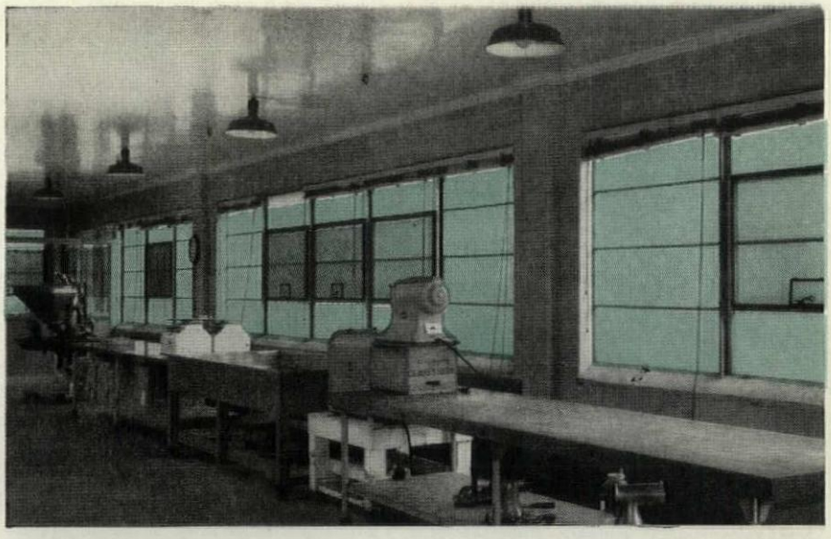


VICTORIA, B.C. OFFICE WITH FINS

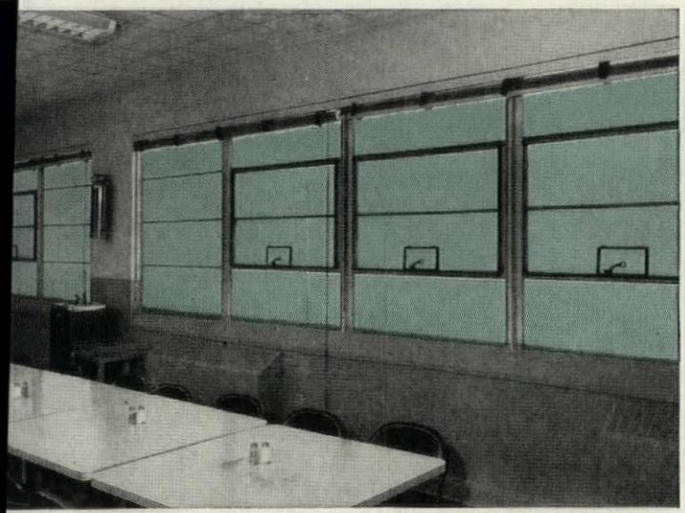
be glass-enclosed except for a service core and stair well. The pattern handling of the trellis over an outdoor area is the kind of thing that should make a mark when seen from the air, from where more and more cities are being seen by more and more people. Structural engineer **O. Safier** of Vancouver gave the reinforced concrete structure a multiple rigid framing system. **Severud-Elstad-Krueger** of N. Y. were structural consultants.

Specialized testing lab

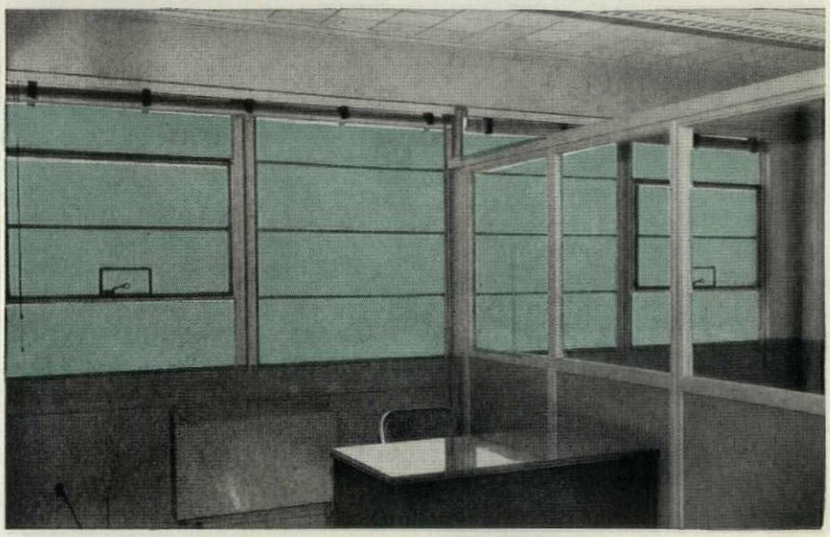
Architects for the **Trane Co.'s** new $1.2 million research laboratory in La Crosse, Wis.—**Magney, Tusler & Setter** of Minneapolis—had to work in a number of extraordinary facilities necessitated by the type of work planned for the lab, which has been named the "House of Weather Magic." The company had decided that the best way to estimate what the size of the lab should be was to determine what equipment should be in it and then multiply by three. Besides the extra space for expansion (total area came out to 35,000 sq. ft.), Trane engineers agreed there would have to be space for—among other things—a large, two-story craneway for testing refrigeration units; a dozen or more air tunnels; a soundproof room and two cold rooms. Inside, Trane is able to recreate any climate from Africa to the Arctic plus the searing temperatures needed for atomic research. The lab is one of the few in the nation devoted entirely to problems of heat exchange, which range from heating a home to cooling a guided missile in flight.



A cooler kitchen to work in. Cafeteria employes, like shop or office workers, can work better on a hot day when it's cooler inside. *Aklo* Glass can shut out as much as 44% of the sun's heat.



More and better work can result from a more relaxing lunch hour in this cafeteria glazed with Frosted *Aklo* Glass to diminish glare and keep the room cooler. *Colonial Stores, Raleigh, N. C. Architect: W. G. Bursnall, Atlanta.*



More comfort for office personnel. This Frosted *Aklo* Glass keeps a substantial portion of the solar heat from entering. Sun glare is diffused for eye comfort, too.

How to design daylighting for comfort

The problem: To bring plenty of daylight with a minimum of sun heat and glare into this cafeteria for employes in Raleigh, N. C.

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The result: A flood of daylight out of which the harsh rays and excessive heat had been filtered.

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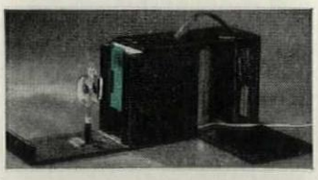

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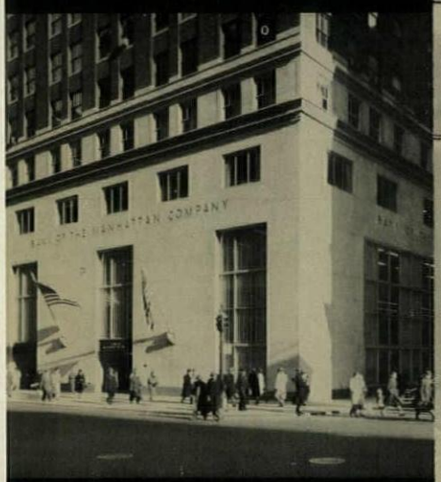
Santa Fe Railway



Bank of Manhattan

Standard Oil Company of California

Mercantile National Bank Building

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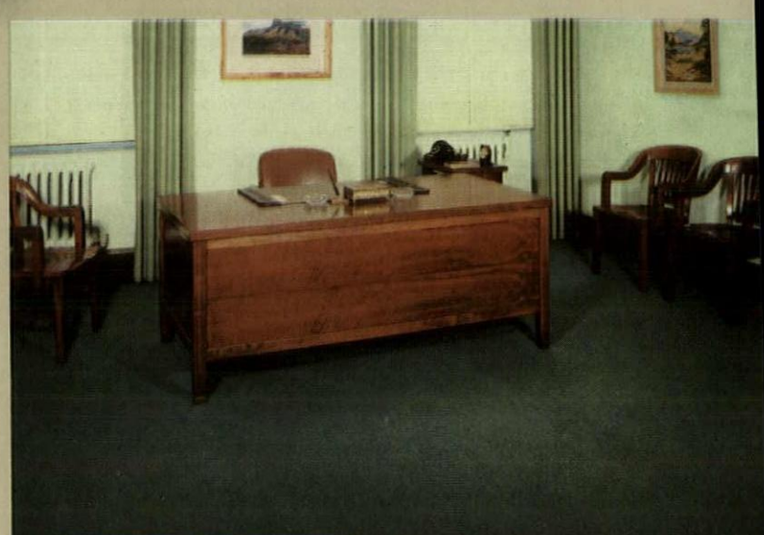
The Place: Standard Oil Company of California, San Francisco.

The Problem: To provide Standard Oil with a high-grade, low-maintenance carpet that harmonizes with the decorating scheme.

The Solution: A radiant, solid-colored Mohawk carpet that extends wall to wall, makes the room seem larger and reduces upkeep.



The Place: Santa Fe Railway, Chicago, Illinois.

The Problem: To provide the most luxurious setting possible for the railroad's busy offices.

The Solution: A fine Mohawk Carpet of matchless quality—and loomed from the finest raw materials available—was laid wall to wall, giving the offices a "poured-into" effect.

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The Place: Mercantile National Bank Building, Dallas, Texas.

The Problem: To furnish the executive offices with a distinctive, sound-absorbent carpet that would blend harmoniously with the furnishings.

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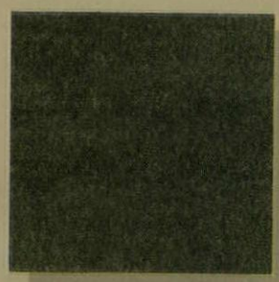

The Place: Bank of Manhattan Company, New York, N. Y.

The Problem: To create a "welcome atmosphere" in the executive offices.

The Solution: A rich, resilient Mohawk Carpet that puts customers and employees at ease.

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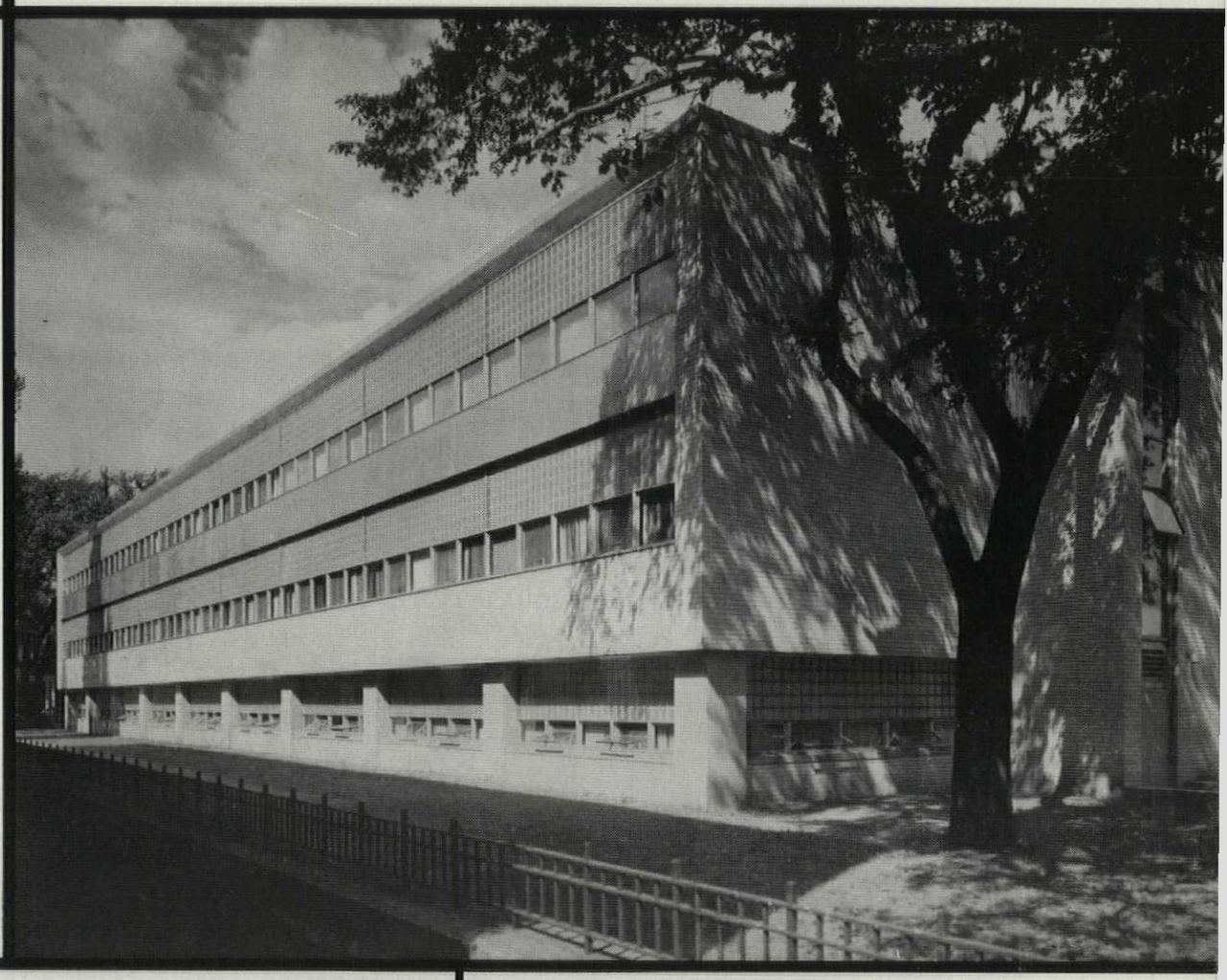

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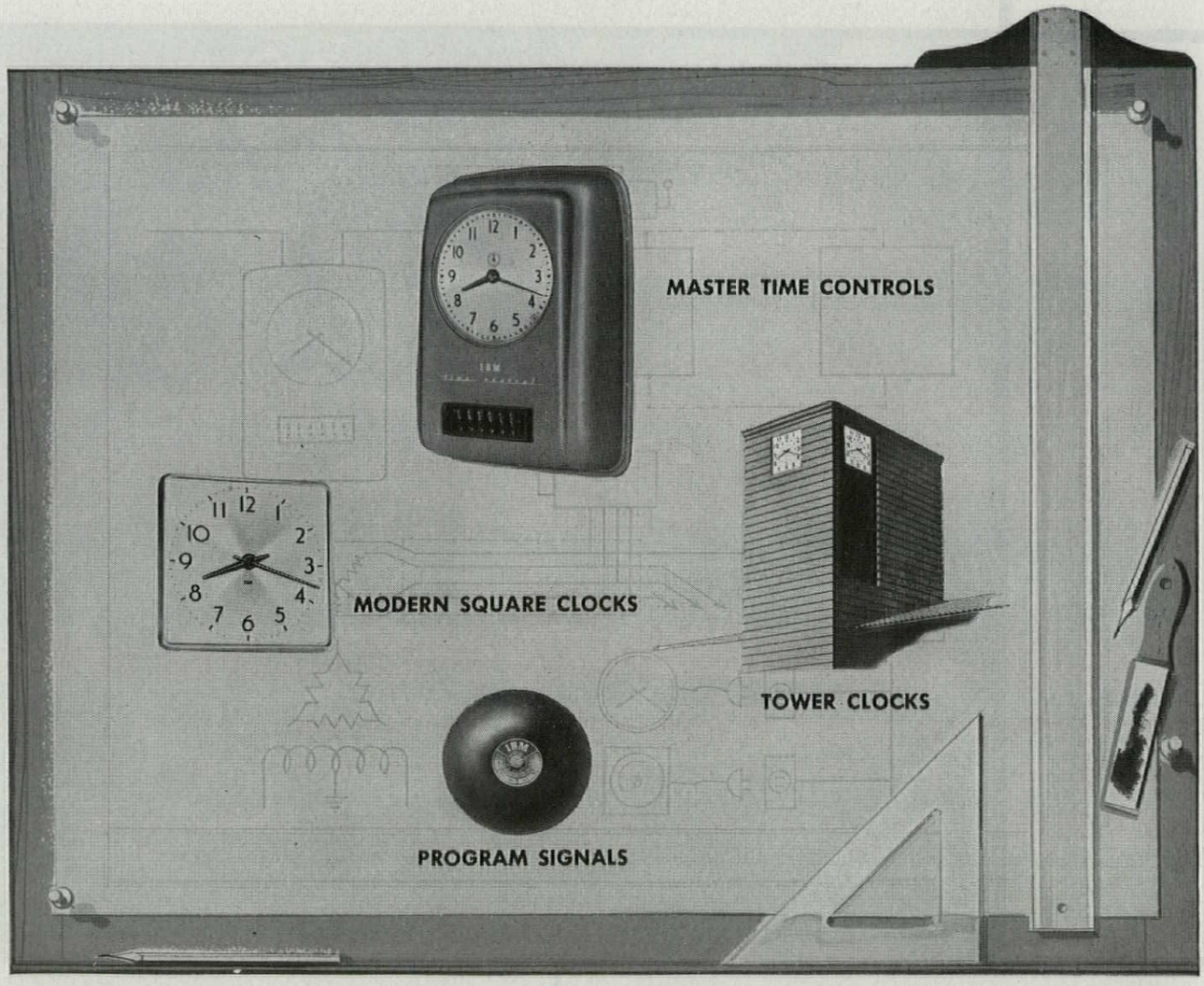

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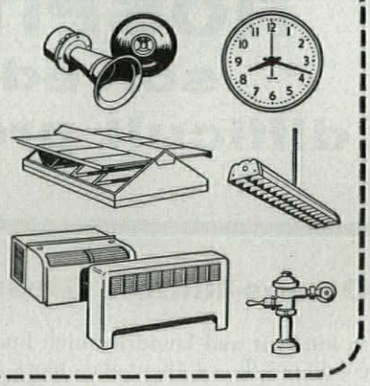

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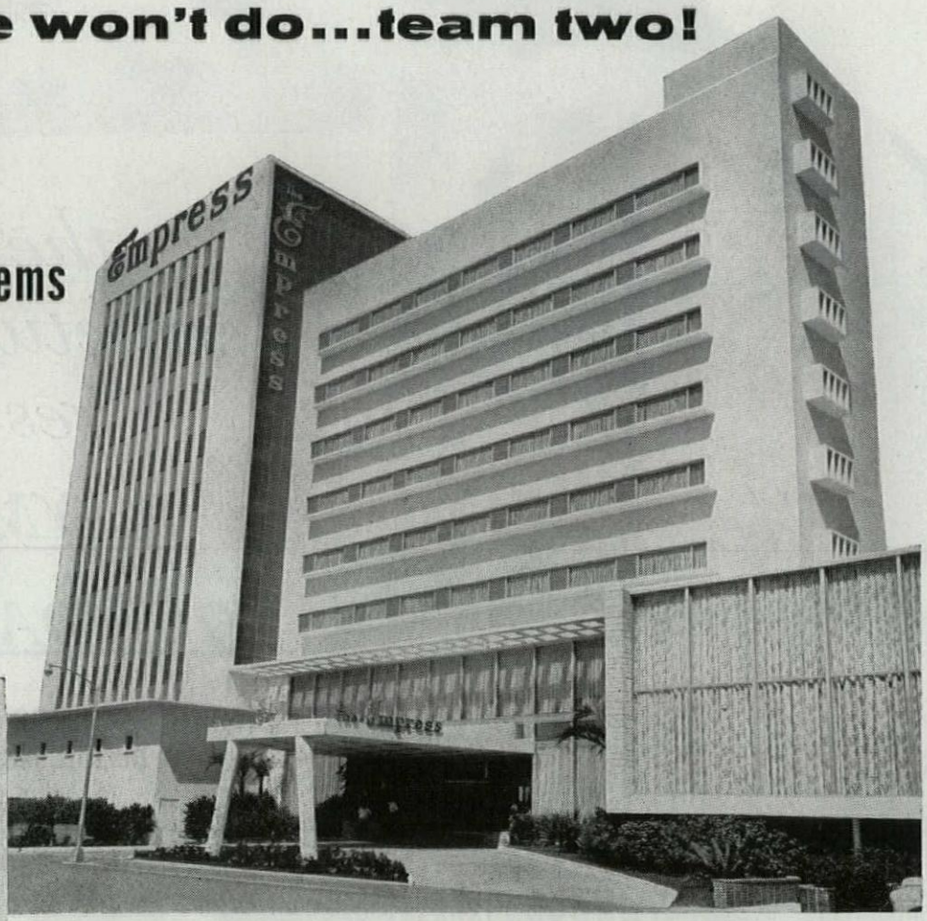

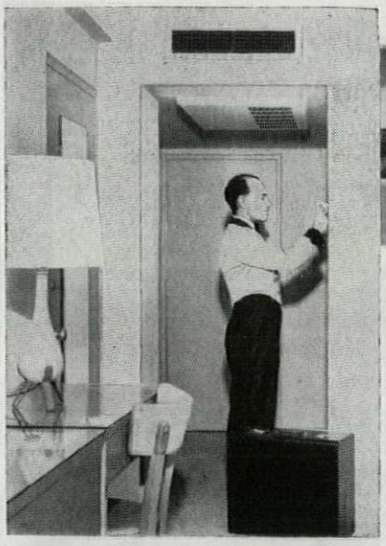

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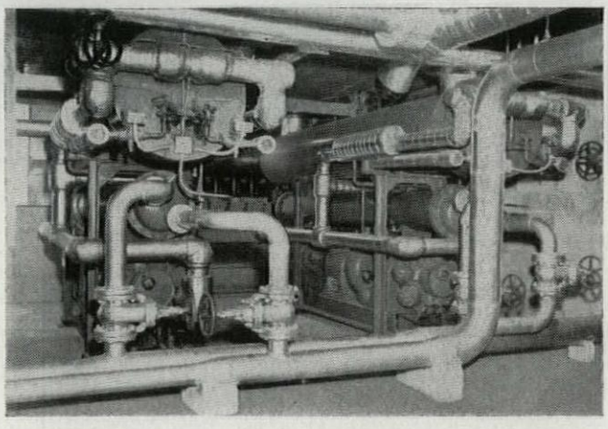
Three 100-H.P. Chrysler Airtemp "Packaged" Chillers dispatch chilled water to out-of-sight air conditioners in all guest rooms.



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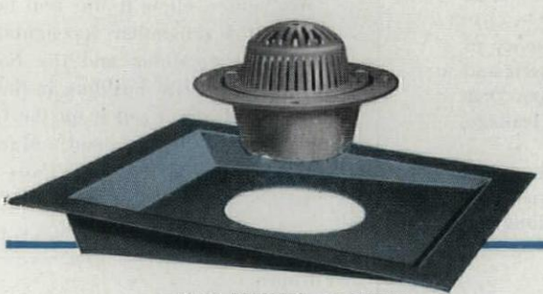
Built-up saddles are eliminated in Steel Deck Roofs. Purlins can be set to create valleys at sump locations in the drainage area. Steel Deck can be warped to conform. No additional deck plates are required—no cutting, fitting or bending necessary.



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Mahon Roof Sump Recesses for use with Mahon Steel Deck can be furnished to fit any roof pitch. Mahon Cast Iron Sumps can also be furnished for 4", 5", and 6" conductors.

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MAHON

LETTERS

BRILLIANT CRITICISM

Forum:

The critical analysis of the Livestock vilion in North Carolina by Paul Rudo (AF, Apr. '54) is as brilliant as the build itself. We need more articles of this calil

WILLIAM W. WURSTER, *d*
College of Architecture
University of California
Berkeley, Calif.

Forum:

There is great merit in architectural cr cism—criticism that makes one aware th architecture can be a form of art expressi of today as well as performing its everyd duty. But, you must select good, unprejudic critics, critics capable of seeing positive goo and not critics who measure good or bad terms of how close the originator approach the works of his own personal "hero." Cre tivity to me has greater virtue than selectivit

MAX ABRAMOVITZ
Harrison & Abramovitz, architec
New York, N. Y.

Forum:

The May FORUM on modernization in presses me as the solidest issue for a lon long time.

I am also very enthusiastic about Paul R dolph's criticism of the Nowicki "cow barn It is good indeed to read solid criticism by real architect in his own words. . . .

JOHN RANNELLS, *research associa*
Institute for Urban Land Use
& Housing Studies
Columbia University
New York, N.Y.

FLLW IN VENICE

Forum:

"Question: is Venice ready for a FLLW *palazzo?*" (AF, May '53).

Mamma mia—not Venice! Let Frank Lloyd Wright build in other cities but not Venice I don't even mind looking at the building he just finished a few yards south of my office on Rodeo Dr. in Beverly Hills—which is a photographic nightmare, but please no Venice!

Ah Venice—how it was and how it is! As a tourist I remember its sights and smells its gentle gondolas and the bouquet of its beauty. A FLLW building in the midst of all this? Well, don't put it on the Grand Canal, but *in* it—in the deep end! Mamma mia!

PAUL LASZLO
Beverly Hills, Calif.

PR POCKET GUIDE

Forum:

The *Pocket Guide for Better Public Relations* (AF, April '54) was well put together and will prove most useful to the profession.

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

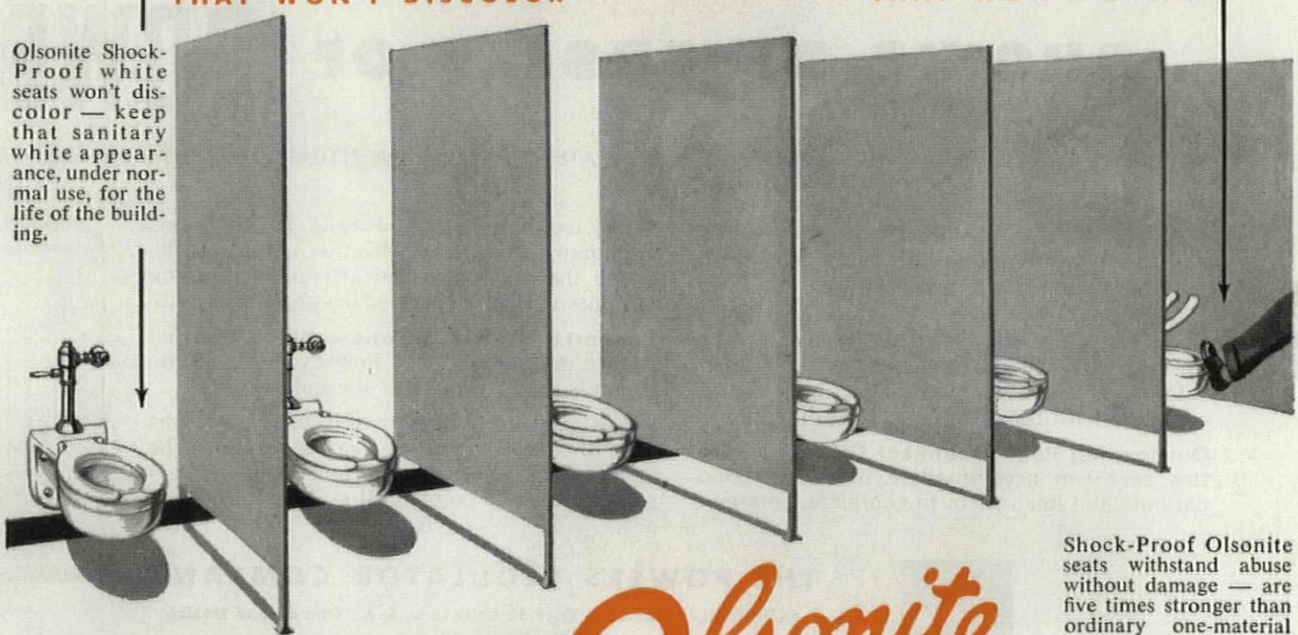
continued on p. 62

Now! WHITE Industrial SEATS

THAT WON'T DISCOLOR

THAT WON'T BREAK

Olsonite Shock-Proof white seats won't discolor — keep that sanitary white appearance, under normal use, for the life of the building.



Shock-Proof Olsonite seats withstand abuse without damage — are five times stronger than ordinary one-material seats.

SHOCK-PROOF SOLID Olsonite SEATS

A truly white seat looks more sanitary, is more attractive, brightens and lightens the room. And now—you can specify a white seat that *stays* white for a lifetime of normal use.

The new Olsonite White Shock-Proof Seats are ideal for all industrial and public toilet installations. Independent research laboratory tests have proven no visible discoloration, even after years of service. And these tests have also proven an ability to withstand shock five times greater than ordinary solid seats. Even deliberate abuse in public toilets and industrial installations won't crack, chip, or break the new Olsonite Shock-Proof Seats —and they won't absorb water.

Add to these new advantages the Olsonite features of concealed hinge, no exposed metal to rust or corrode; one material, sanitary white all-the-way-through; and one piece construction, no applied finish to crack or peel. Then—specify the seat that *stays white*—that can "take it" without damage even in public toilets—Solid Olsonite SHOCK-PROOF Seats.

All Olsonite Industrial, Commercial, and Public Toilet Seats are now of Shock-Proof Construction. They are available in both black and white.

Olsonite's complete catalog is available on request. Please write on your letterhead to:

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Plastics Division, 8561 Butler Avenue, Detroit 11, Michigan

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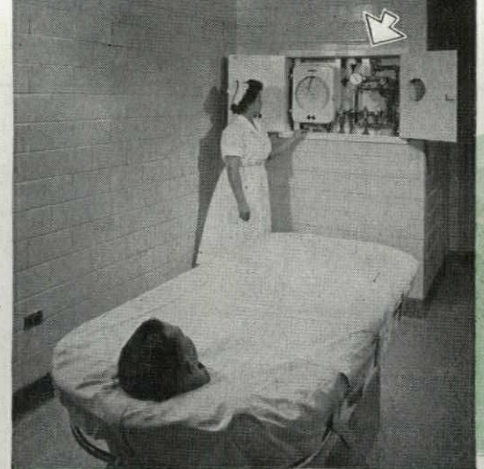
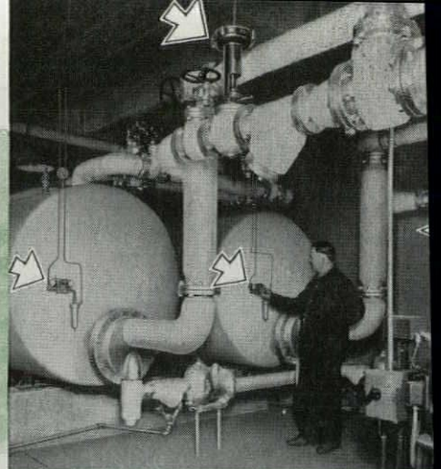


Continuous Flow Bath—Note Powers Control Cabinet



Large Water Heaters—Powers Controlled

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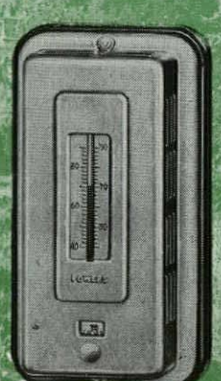
When you want help in selecting the right type of control for hospitals or any other type of building, call in an experienced Powers engineer. There's no obligation. (b86)



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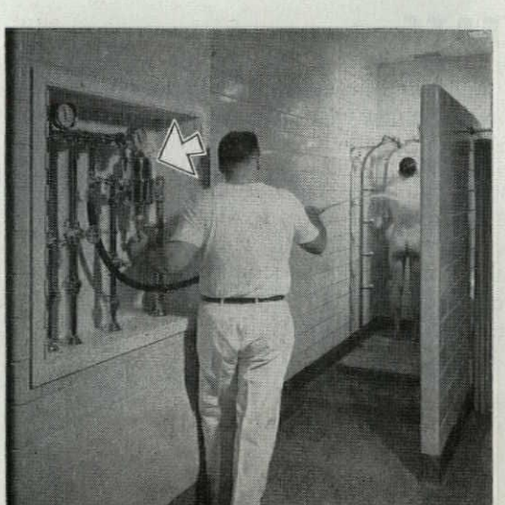
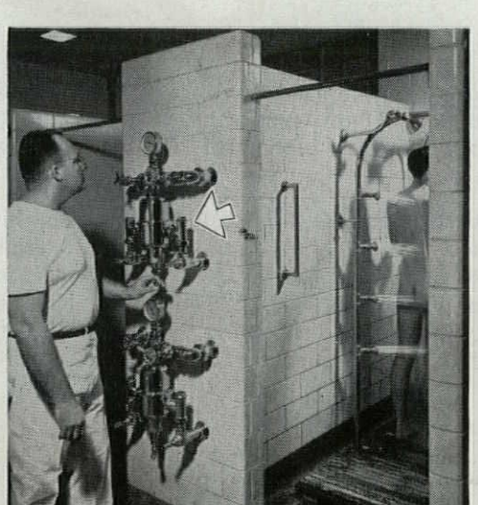
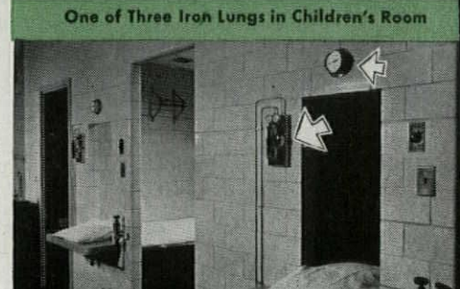




Scotch Douche and Hydrotherapeutic Showers are Both Powers Controlled

One of Three Iron Lungs in Children's Room



Steam Rooms Regulated by Powers Thermostats

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General Contractor: **E. H. Marhoefer Jr. Co.**
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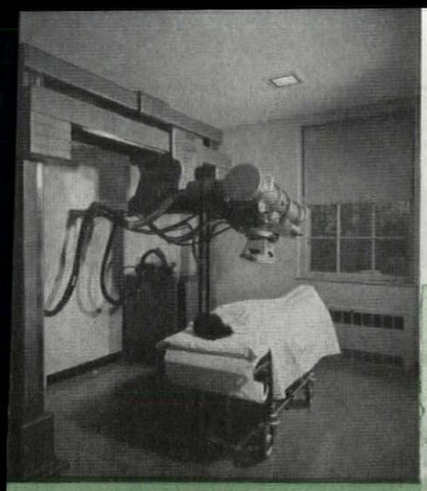
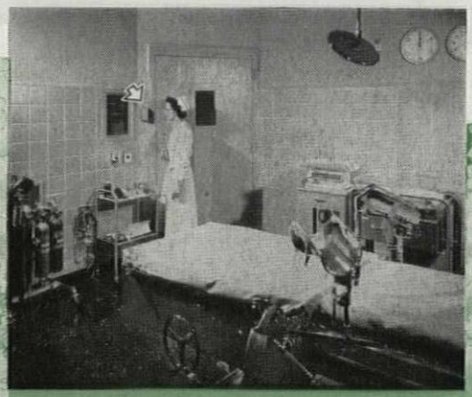
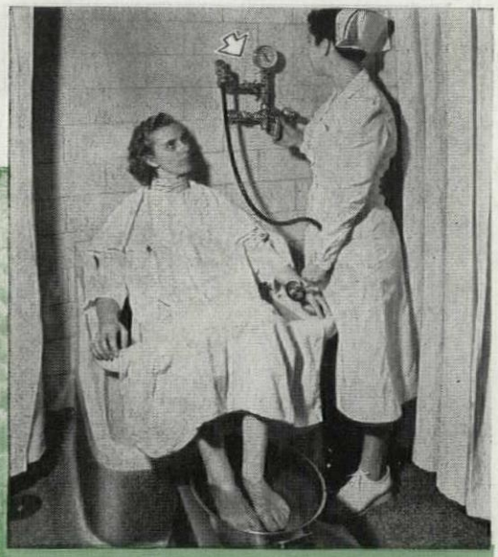
Plumbing Fixtures: **American Radiator Standard Sanitary Co.**
All of Chicago, Ill.



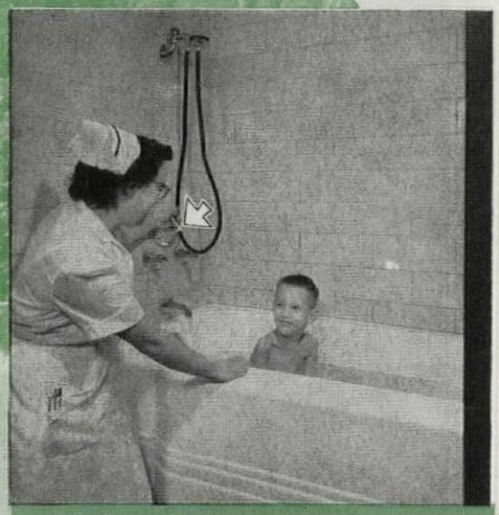
Deep Therapy X-Ray Room



Air-Conditioned Delivery Room

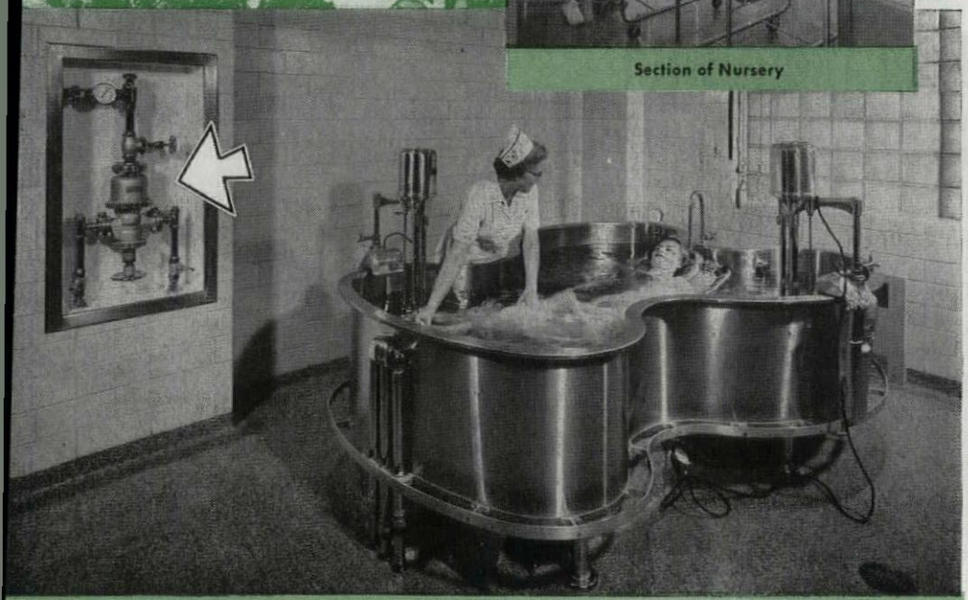


Powers Control on Sitz Bath with Raised Base

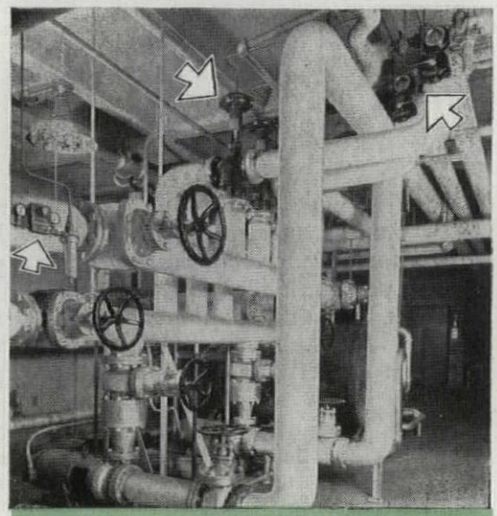


Treatment Bath for Children. Note Powers Mixer

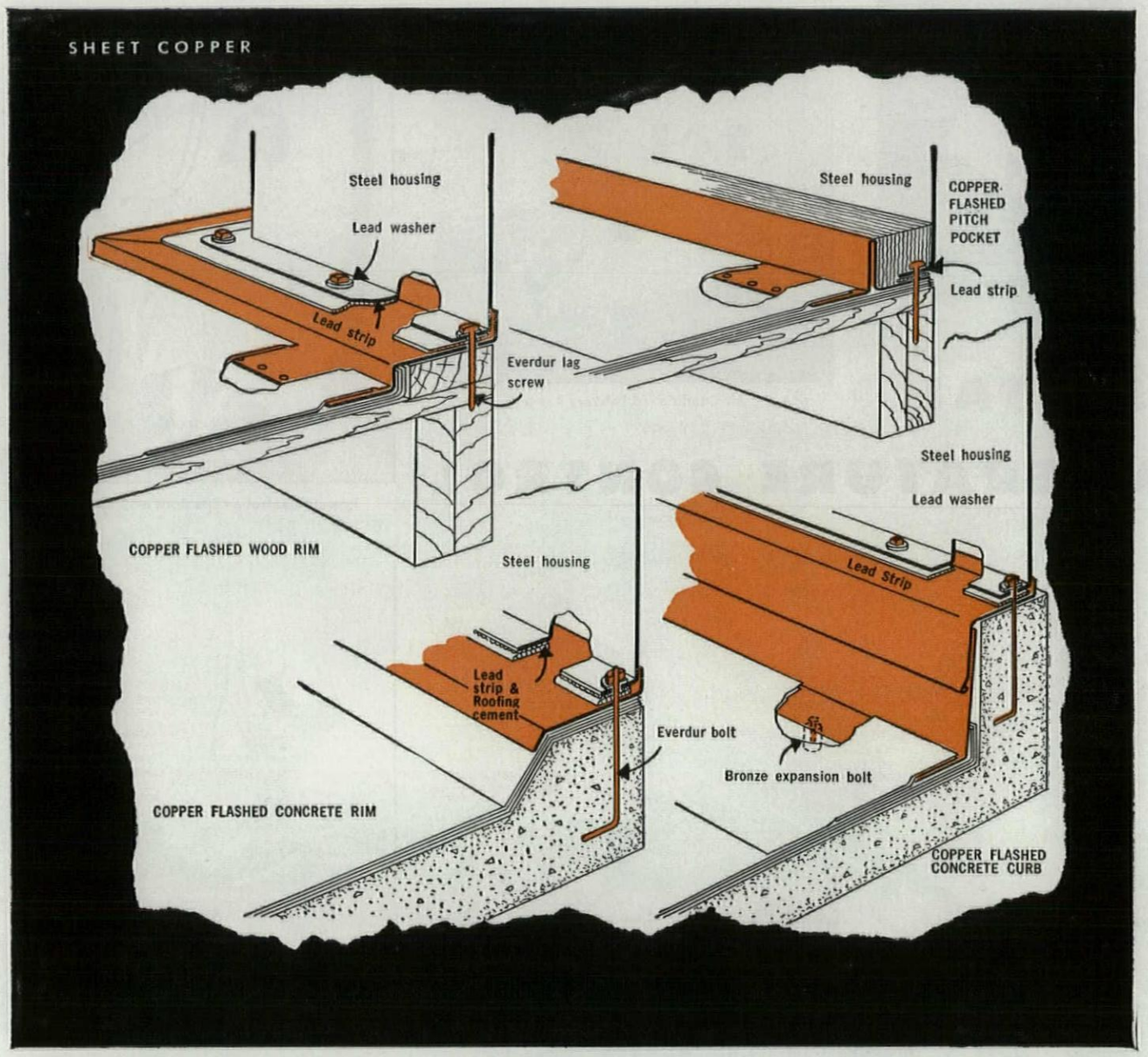
Section of Nursery



Powers Controlled Whirlpool Bath for Polio Patients



Controls on Forced Hot Water Heating System



ROOF CURBS: flash them with COPPER for lasting protection

Modern flat-roof buildings usually have one or more construction features calling for roof curbs. These are: penthouse for stairs, skylights, ducts, vent pipes for plumbing, flagpole base, stub columns and many more. Properly flashed curbs keep standing or wind-driven water from leaking into the building at these points.

Shown here are several curb flashing details for both fireproof and wood construction. Flashing for a piece of equipment with a metal housing, such as a roof fan or dust collector, is also shown. Lead strips and washers isolate one active metal from the other. In general, use 16 oz. copper of cornice temper for all curb flashing. 5453

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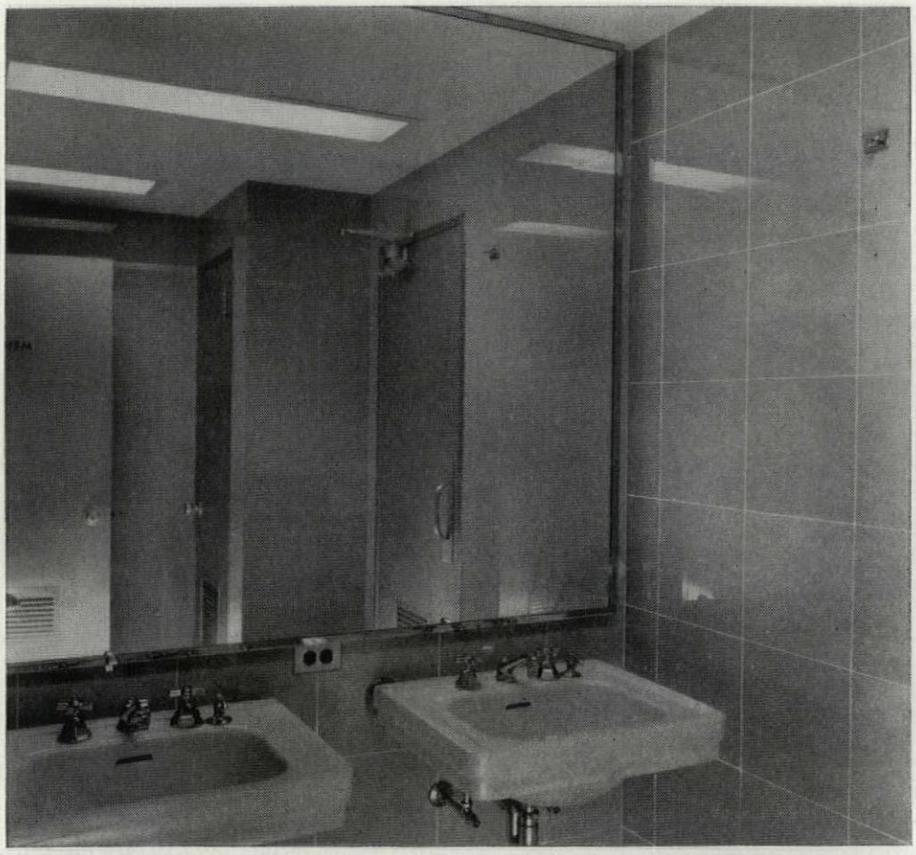

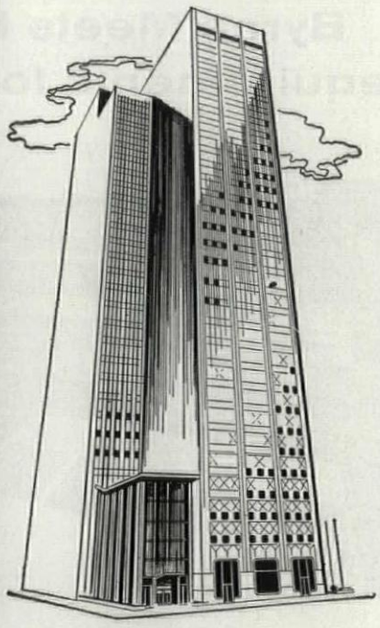

Alcoa Building, modern home office of the Aluminum Company of America, Pittsburgh, Pa., was designed by Architects Harrison and Abramovitz, New York, N. Y.

Washrooms of another notable building finished in Carrara Glass

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LETTERS *continued*

Forum:

We understand that you have reprinted your *Pocket Guide for Better Public Relations.*

Inasmuch as we would like to furnish each of our members with a copy of this excellent article, will you please advise us of the cost of 175 copies?

Please accept our compliments on the service being rendered to the profession by you with the issuance of such articles.

DONALD H. NEWMAN
Westchester Chapter, AIA
Bronxville, N.Y.

• In booklet form the reprint is available without charge for quantities of five or less and at the rate of 10¢ each in lots of ten. Thus, 175 copies would cost $17.—ED.

Forum:

I have read your comments anent the AIA public relations program in your "For Architects Only" column in the June FORUM and want you to know how appropos I think they are.

As a former member of the Public Relations Committee, the complete cooperation which the FORUM has shown in helping to forward this program for the betterment of the architectural profession is very pleasing to me.

HERBERT C. MILLKEY
Willner & Millkey, architects
Atlanta, Ga.

ACHING FEET

Forum:

Architecturally, I think the remodeling program at the Metropolitan Museum of Art (AF, May '54) is an excellent job from the point of view of lighting, maximum use of wall space, good vistas and an over-all interesting effect.

Editorially, the story is well presented and, with a limited amount of text, you have given a very good, clear picture of what was done and how it was accomplished.

But, I have visited the museum twice in the past few weeks and have the same complaint as always existed: when you get through an exhibit your feet still hurt. Why not some relief here and there for resting and contemplating an important picture or vista, such as an informal arrangement within a gallery itself, or perhaps between galleries—fix it so the girls can take off their shoes if they want to without being conspicuous! One goes to the museum to enjoy the pictures and, when the visit is over, the pleasure derived from seeing the picture should be uppermost in the mind rather than the feeling of how tired one is at the end of the visit.

J. GORDON CARR, *architect*
New York, N.Y.

continued on p. 68

Euclid Avenue Office, Central National Bank of Cleveland.
Conrad, Hays, Simpson, and Ruth, architects.
Hunkin-Conkey Construction Co., contractors.
Flour City Ornamental Iron Co., stainless steel fabricator.

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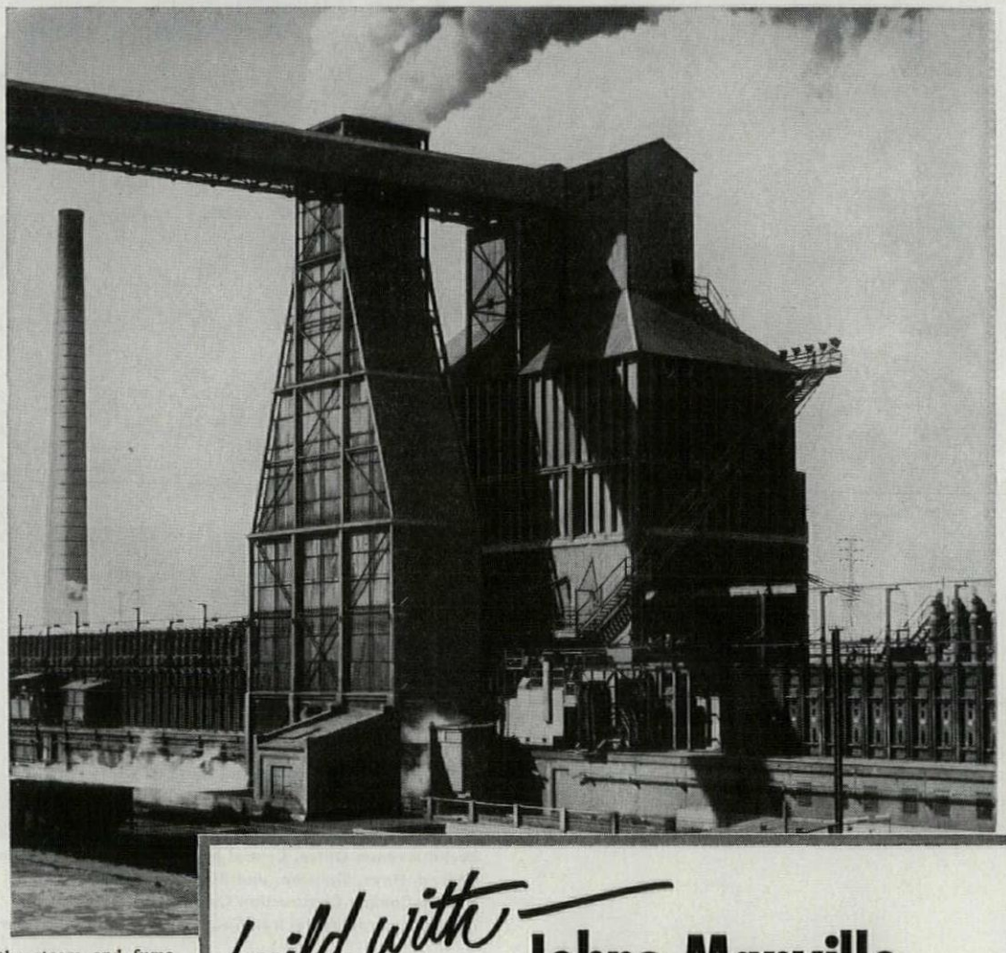

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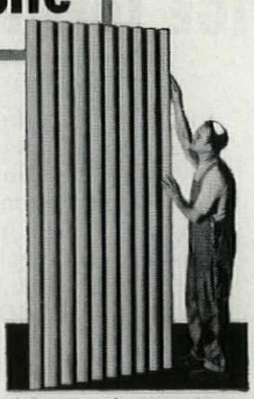

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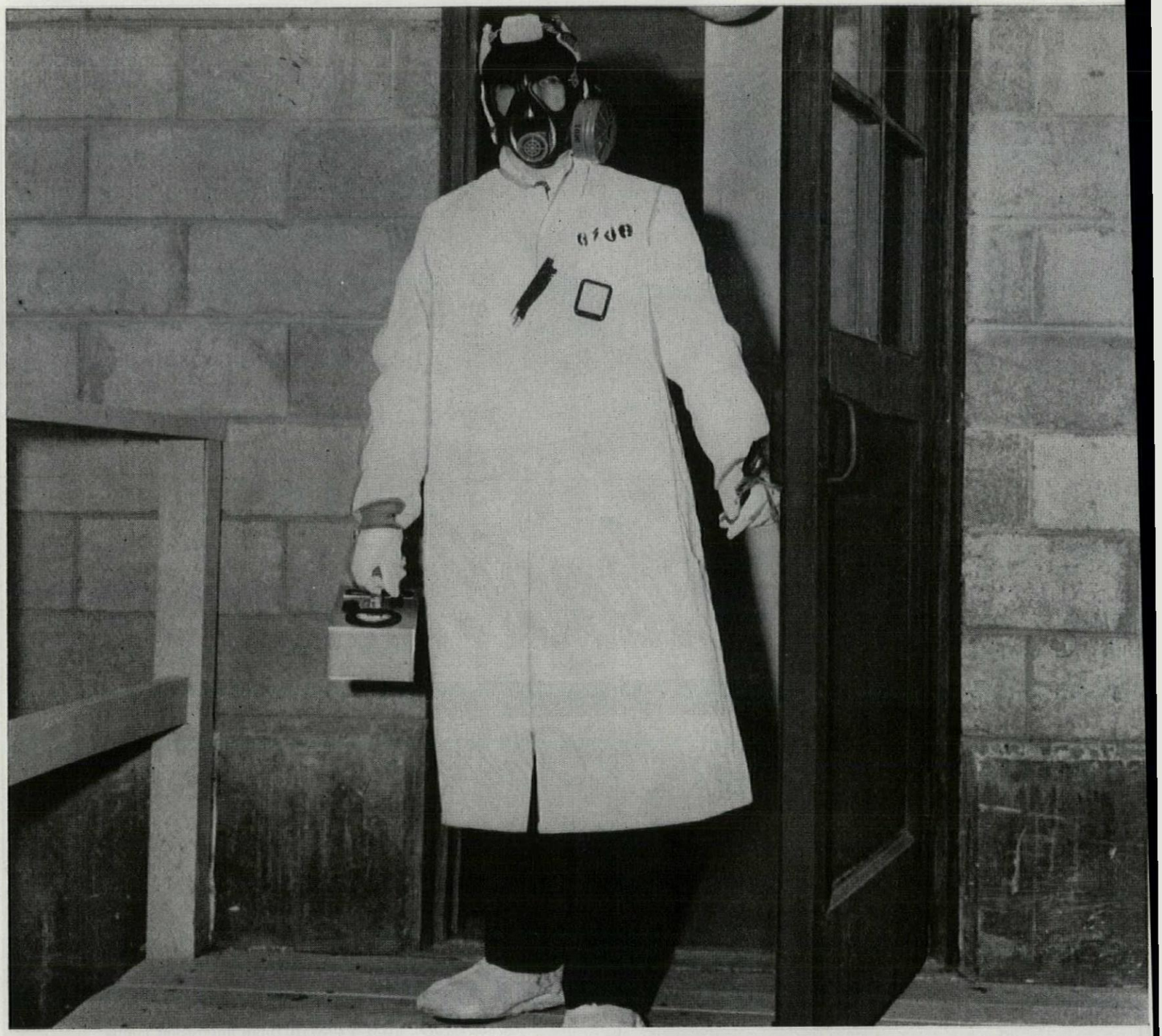

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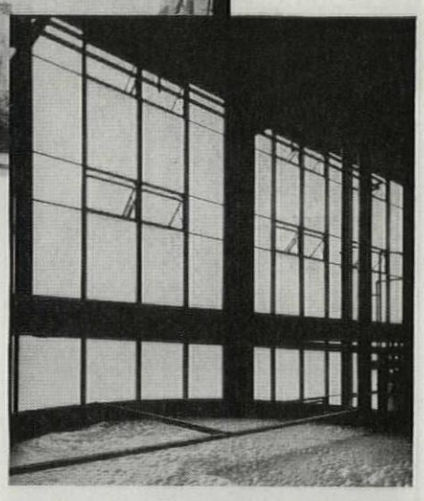

Coolite, Heat Absorbing and Glare Reducing Glass combines beauty and utility in an exciting new variety of architecture for H. J. Heinz Co. Ezra Stoller Photos.

Skidmore, Owings & Merrill, Architects and Engineers; Gordon Bunshaft, Partner In Charge. Jaros, Baum & Bolles, Mech. Engineers. George A. Fuller, Gen. Contractor, Lloyd B. Knutsen, Project Manager for H. J. Heinz Co.

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LETTERS *continued*

Forum:

The article was excellent. I hope you continue such comments on museum buildings and renovations. My only regret was that it could not be longer, although this may be only the attitude of one professionally interested in a special problem.

GORDON BAILEY WASHBURN, *director*
Department of Fine Arts
Carnegie Institute
Pittsburgh, Pa.

Forum:

The story on remodeling of the Metropolitan Museum is of interest and we are glad to have it on record. I must say, however, that no old pile of masonry can be turned into a contemporary enclosure of space. Without prejudice to the efforts of the great museum of art, I question whether FORUM should report remodelings of any kind without also reporting the predestined frustration of them.

I think you know this better than I do, and that I am inviting the editorial remark that one reports what happens. Perhaps you should have a demolitions department.

L. V. COLEMAN, *director*
The American Association of Museums
Washington, D.C.

Forum:

I write to raise a point of order in respect to your comment regarding the architect's fee for the reconstruction program at the Metropolitan Museum of Art. No doubt in relation to designing for commercial and business structures the fee was inadequate. The art museum in America is a community achievement realized through contributions great and small, from millions of people. The architects were complimented in being selected to carry out this project; I am happy to see that in waiving fees substantially above costs, they rose to the occasion. Hence the spirit of *noblesse oblige* is not entirely moribund in this land; you would dignify yourselves and the profession of architecture by recognizing it.

THOMAS C. COLT JR., *director*
Portland Art Museum
Portland, Ore.

AS THE ROMANS DO

Forum:

I would like to rectify an error in your fine May issue regarding the new railroad station in Rome. You state (p. 132) that "Rome's new railroad station pays scant attention to sacrosanct ruin of city wall, despite theory (illustrated below) that unique form of concourse roof was determined by it. Once legal preservation requirements are met, new Italian architecture continues on its independent way."

The actual situation, as borne out by con-

continued on p. 74

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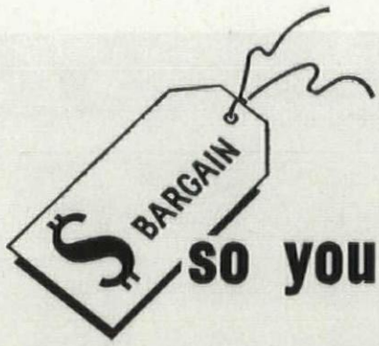


so you think you're saving money?

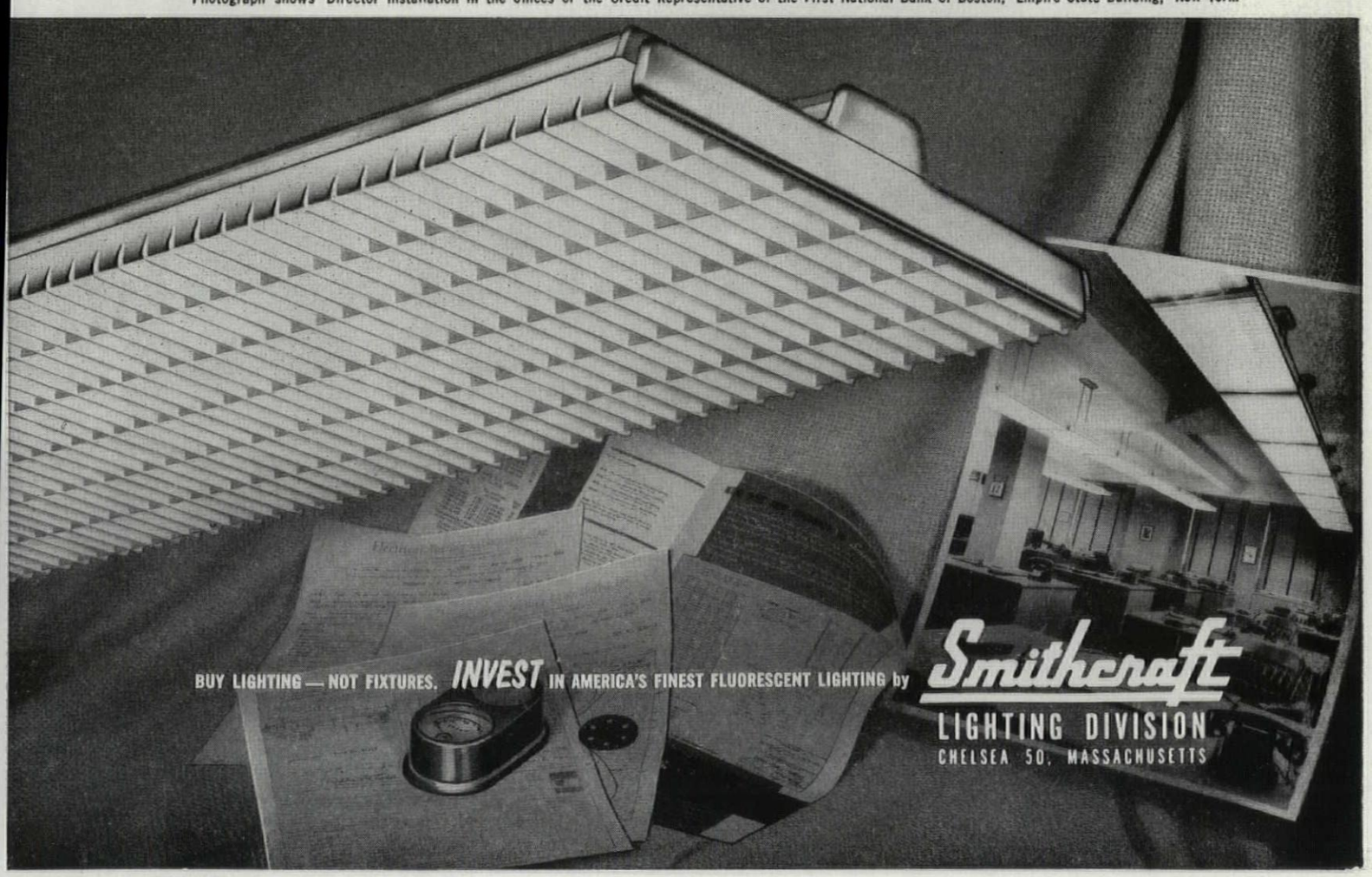
Far too often people figure lighting fixtures are all alike and buy by price tag alone. You may save a dollar or two on the price of each unit, but are you really saving money?

Today's carefully engineered lighting installations are planned with units that are designed to deliver more light at less cost. *Fewer units are required to secure the same results.* So, installation costs are less. And most important, power and maintenance costs are less during the whole life of the installation.

Take the Smithcraft DIRECTOR, for example. A recent comparison test by one of the nation's leading electric utilities clearly demonstrates that the Director produces more light and better light than ordinary fixtures.

Installed in literally thousands of banks, stores, schools and similar locations across the United States, the Smithcraft Director is in a class by itself for appearance, for quality of lighting and for soundness of investment. Be sure to get the complete story on the Smithcraft Director before relighting or when planning new installations. Ask us to send you our Smithcraft Director folder.

Photograph shows Director installation in the offices of the Credit Representative of the First National Bank of Boston, Empire State Building, New York.

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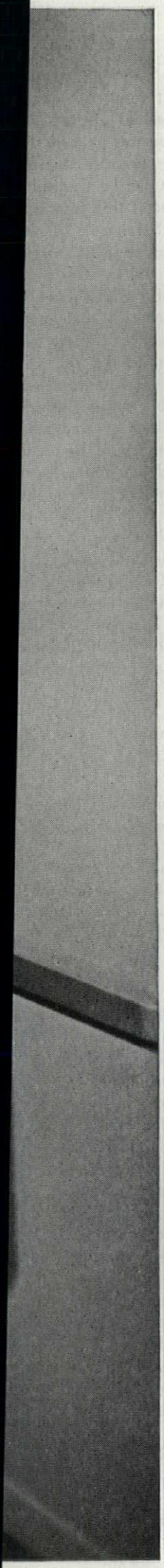

Westinghouse Solves Major Operatorless Elevator Problem . . . Leads Way to Superior Service

Exclusive TRAFFIC SENTINEL is the most recent Westinghouse contribution to more efficient, heavy-traffic, automatic elevatoring. Studies prove it solves a major problem—that of wasted time at intermediate stops where doors are normally set to stay open a fixed interval. TRAFFIC SENTINEL *automatically* controls door-open time—not based on a fixed interval—but solely according to the number of people entering or leaving the elevator.

The secret of this "phantom elevator operator" is an invisible beam, projected across the elevator doorway. During light traffic movement, this beam automatically closes the doors as soon as one or two passengers have entered or left the car. When traffic is heavier, it allows effortless loading or unloading—without the annoyance of premature door movement. TRAFFIC SENTINEL is constantly alert and is always riding with the elevator.

This ingenious new device definitely makes operatorless elevators more efficient than attendant-run systems. It combines new speed in traffic handling with complete passenger protection. Call our nearest office today for complete information on this new development. We're listed in the Yellow Pages.

Westinghouse Elevators

PASSENGER AND FREIGHT ELEVATORS • ELECTRIC STAIRWAYS
PROTECTIVE MAINTENANCE AND SERVICE

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

Send for new booklet, "Selectomatic Traffic Controlled Elevatoring"—today's most complete system for fully automatic elevatoring.

J-98705

Westinghouse Elevator Division
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Please send me your booklet
"Selectomatic Traffic Controlled Elevatoring."

NAME AND TITLE . . . . . .
COMPANY . . . . . .
CITY . . . . . ZONE . . . . .
STATE . . . . . .

LETTERS *continued*

versation with the architect (and as brough out visually in your illustrations) is just th reverse. Very strict attention was paid by th architects and engineers to this fourth century BC wall. Indeed, it can be truthfull said that the whole concept of this front en trance sprang from this Servian Wall, it shape and the desire to integrate it intimatel with the design of the new station.

This innate Italian regard for the old is on of the most rewarding facets of their new architecture. In addition to sheer respect, th best modern architects combine the old with the new with a wonderful, contrapuntal shock effect—as exemplified in this station—which works to the advantage of both old and new No more dramatic statement could be made to emphasize the ancient depth and present vitality of the most fascinating city in the world.

In most countries of the world ancient architecture is either brutally bulldozed away or used as a stultifying model for the new. In Italy, however, the inspiration (and not the circumscription) of the old is a very carefully considered element in the design of the new —a lesson which we could all remember with profit.

G. E. KIDDER SMITH
Springfield Center, N.Y.

MODERNIZATION

Forum:

We greatly enjoyed the entire issue on modernization and congratulate you on the fine presentation.

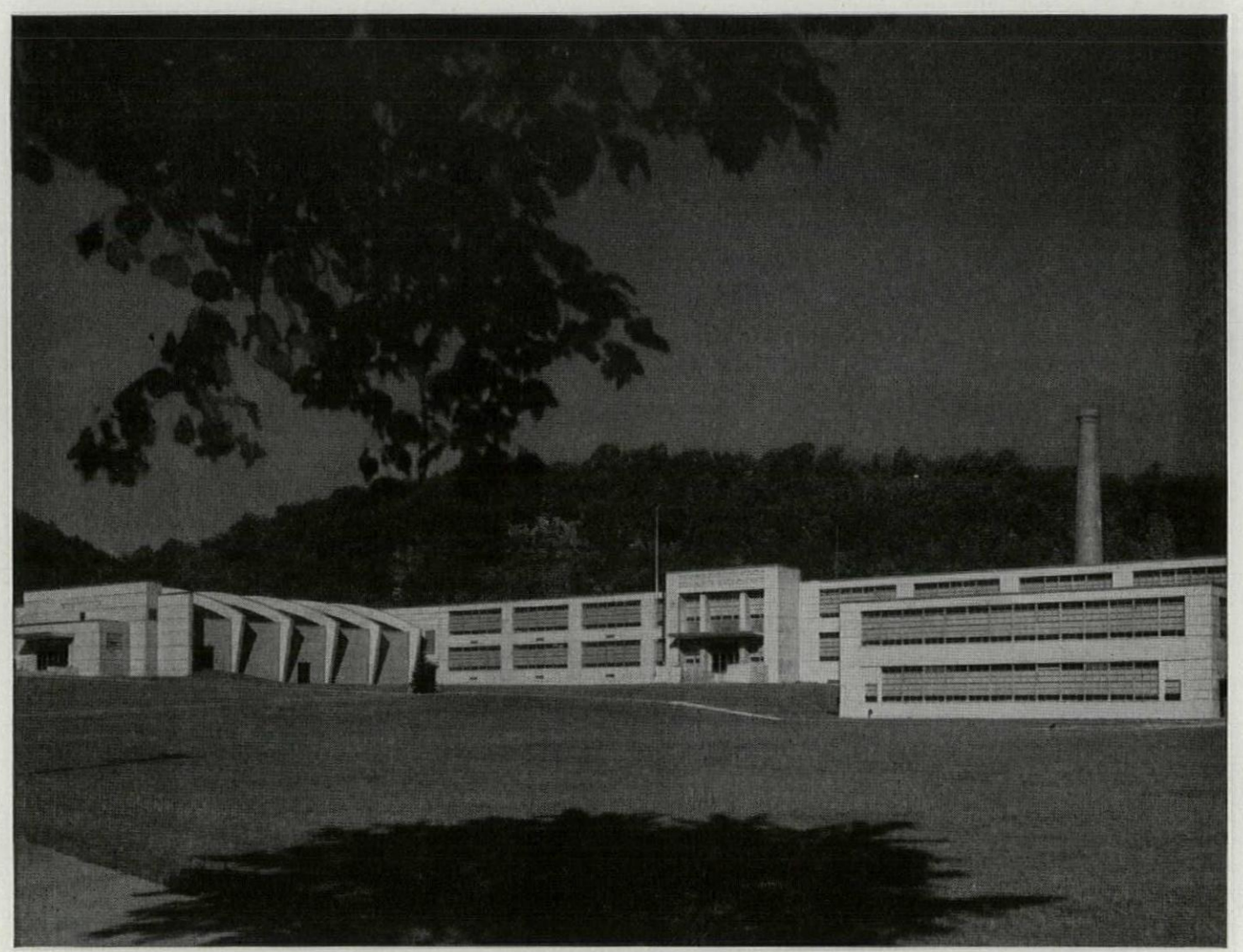
REXFORD E. THOMPKINS
Executive vice president
City & Suburban Homes Co.
New York, N.Y.

Forum:

We are proud of your presentation of Fotteral Square in the May FORUM as an example of the modernization of urban spaces. It seems to us that urban design, civic design or city planning is a direct challenge to many professions ranging from the civil engineer to the architect, in which planners, landscape architects, sculptors and public officials all have a creative job to do. In the case of Fotteral Square, we approached it as an *architectural* problem, that of creating an urban square which would be one "open-air living room" within a crowded row-house district in old Philadelphia.

However, the presentation contained two serious errors: 1) the project is the work of the office of Robert Geddes and Melvin Brecher and should not have been attributed to one of the partners alone; 2) we make no claim to being professional landscape architects. In fact, a landscape architect was one member of the team that developed Fotteral Square.

ROBERT GEDDES
Robert Geddes and Melvin Brecher
Philadelphia, Pa.



Outstanding school built at "astonishingly low cost" with Architectural Concrete

The beautiful Theodore Roosevelt High School in Williamsport, Pa. is considered by many to be the best school building built in the entire area since January 1, 1946.

In commenting on the interest in this school, architect D. H. Grootenboer, A.I.A., said:

"While I take deep satisfaction in the great interest and many favorable comments about one of my buildings, I must point out that architectural concrete made it possible for me to design a modern, completely fire-resistive building at the astonishingly low cost of $0.763 per cu. ft. when fire-resistive buildings of other construction were costing from 10 to 40 cents more per cu. ft."

Fire resistance and low cost are only two of the outstanding characteristics that make architectural concrete the choice of more and more architects. Architectural concrete also offers great durability and strength. It requires little maintenance and delivers ***low-annual-cost*** service.

While it is an ideal material for modern schools architectural concrete is equally adaptable to hospitals, apartments, churches, factories, stores, offices and public buildings.

For more information about designing beautiful architectural concrete structures of any size or style, write for free illustrated literature. It is distributed only in the United States and Canada.

PORTLAND CEMENT ASSOCIATION

DEPT. 8-7, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

York brings new standards of comfort to the modern miracle of air conditioning—and architects, building owners and managers are showing their approval by specifying York equipment for more and more buildings, old and new.

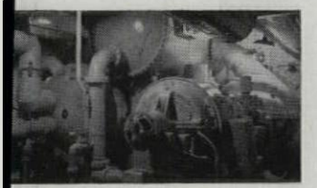
The magnificent, new Equitable Life Assurance Society Building, now under construction in San Francisco, is another such example—York equipment applied to the West's latest architectural achievement. When completed, this impressive structure will tower 25 stories skyward . . . be one of the largest office buildings in San Francisco, the *first* such in the "Bay Area" to have complete air conditioning.

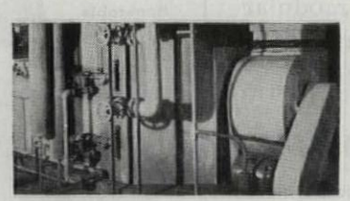
Naturally, the tremendous glass areas of this building presented a sizeable heat-load problem even in this relatively cool climate. York engineers—who have a wide range of systems from which to choose, who even design special systems to provide the *right kind* of air conditioning for unusual structures—are furnishing a Yorkaire Low-Pressure Induction Unit System as the perfect answer.

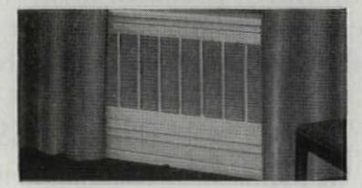
In homes and offices, ships and stores, skyscrapers, factories, hospitals, theaters . . . almost everywhere you go, when the air conditioning is just right, chances are it's York Air Conditioning . . .

. . . so a Yorkaire System of air conditioning was chosen, also, for San Francisco's newest skyscraper!

Beautiful new Equitable Life Assurance Society Building
Architects—Loubet and Glynn, Associates of the late W. D. Peugh of San Francisco
Consulting Architect—Irwin Clavan
General Contractors—Dinwiddie Construction Co. of San Francisco
Mechanical Contractors—Scott-Nelson of San Francisco







ource of comfort cooling in the Equitable Life Assurance ety Building in San Francisco is a 600-hp York Turbo er Cooling System. In your building it may be located he roof or at other points. ● "Raw" air from outdoors ltered, washed, cooled or heated, and moisture condi- ed. When it's "just right for comfort," it begins its swift, silent journey to you. Through sealed ducts the air is sent under mild pressure. Coils, on every fourth floor, maintain the coolness of the conditioned air. ● In room units (1177 in the Equitable Life Assurance Society Building) the conditioned air is released in a gentle, quiet stream —heated or cooled to the exact comfort needs of each office.

IF YOU ARE ABOUT TO AIR CONDITION—
Remember, York engineers brought the right kind of comfort cooling to such important projects as the Empire State Building, the S. S. United States, Cincinnati's Netherland-Plaza Hotel, Atlanta's Fulton National Bank, the Esso Standard Oil Company in Philadelphia and the Mile High Center in Denver, to name but a few. You, too, can take advantage of York's wide range of equipment and experience by calling any York District Office (located in principal cities), or writing: York Corporation, York, Penna.

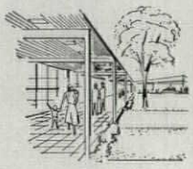
air conditioning by york

YORK CORP. York YORK, PA.

HEADQUARTERS FOR MECHANICAL COOLING SINCE 1885

SCHOOLS & CHURCHES

Exposed concrete block classroom walls save costs in new cluster, loft, and other economy school designs.

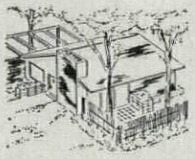


SHOPPING CENTERS

Store fronts and interiors are made more inviting with new block wall patterns and textures.

OFFICES & WAREHOUSES

Sound-absorbing concrete masonry walls help reduce noise level in busy offices and warehouses — make reception areas more inviting.



HOMES & APARTMENTS

New sizes, styles, colors in concrete masonry units give contemporary appeal to both interior and exterior walls,

This modern church in Plainfield, Iowa, designed by Schweikher and Elting of Roselle, Ill., achieves pleasing wall pattern with 8"x8"x16" concrete block in stacked bond pattern. Photos by Hedrich-Blessing Studio.

Concrete Masonry

offers these important advantages

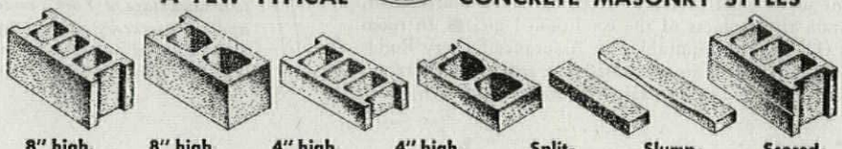
Design versatility: Concrete masonry units today offer unexcelled flexibility of design — both in imaginative use of "standard" 8"x16" face-size units, as well as the many new sizes, styles, textures, and colors now available in many areas.

Installed-in-the-wall economy: Concrete block construction usually costs less than any other permanent material; modular units eliminate costly cut and trim ——— permit attractive, cost-saving, sound-absorbing exposed interior walls.

NATIONAL CONCRETE MASONRY ASSOCIATION

38 South Dearborn Street — Chicago 3, Illinois

A FEW TYPICAL CONCRETE MASONRY STYLES



8" high, 3-core | 8" high, 2-core | 4" high, 3-core | 4" high, 2-core | Split-block | Slump-block | Scored-block

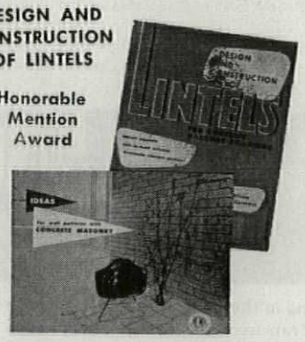
HELPFUL DESIGN AIDS

available from your local NCMA member

Both are award winners in the 1954 A.I.A. — Producers' Council Product Literature Competition.

DESIGN AND CONSTRUCTION OF LINTELS

Honorable Mention Award



IDEAS for wall patterns with Concrete Masonry

Winner of Certificate of Exceptional Merit award.

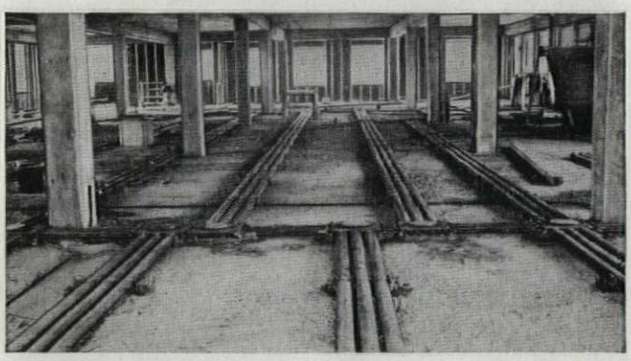
One view inside the new Improved Risk Mutuals building in White Plains, N. Y. Connections for the electrical equipment, telephones, and intercoms are provided by convenient floor outlets.

How to provide more outlets—now and in the future

G-E Fiberduct underfloor raceways let you locate electrical outlets where you want them—without exposed wiring—without high costs.

Here's a sensible underfloor electrical raceway system that carries electric power, telephone, and interoffice communications circuits, and provides as many outlets as your client may need—wherever he needs them. And when electrical requirements change, it provides additional outlets without tearing up the floor or disrupting business. Yet the cost is low, because Fiberduct is made of a strong, yet inexpensive, fibrous compound that can be sawed and fitted easily.

Specify G-E Fiberduct in your wiring plans for commercial and industrial buildings, to keep wiring out of the way, and to provide electrical versatility and expansibility—at a price your client can afford.



THE FIBERDUCT GRID under the floors of the Improved Risk Mutuals building provides outlets wherever they're needed, and makes electrical expansion easy.

For more information, write Section C37-84, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.

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GENERAL ELECTRIC

EVENTS

City and Regional Planning, two-week spec summer program offered by Massachuse Institute of Technology, **Aug. 23–Sept. 3,** MIT. For details address Prof. E. H. Hu ress, Room 7-103, MIT, Cambridge, Mass.

The Producers Council, annual fall meetin **Sept. 13-14,** Commodore Hotel, New York.

Illuminating Engineering Society, annual mee ing, **Sept. 13-16,** Chalfonte-Haddon Hall H tel, Atlantic City, N.J.

American Hospital Assn., annual convention an architectural exhibit of hospitals, **Sept. 13-1** Navy Pier, Chicago, Ill.

Pennsylvania Society of Architects, annual mee ing, **Sept. 16-19,** Great Lakes cruise on th *South American* leaving from Erie, Pa.

Midwest Conference of Building Officials and In spectors, annual conference, **Sept. 20-22,** Hote Commodore Perry, Toledo, Ohio.

Gulf States District, American Institute of Archi tects, regional conference, **Sept. 26-28,** Marion Hotel, Little Rock, Ark.

American Society of Planning Officials, annual meeting, **Sept. 26-30,** Benjamin Franklin Ho tel, Philadelphia, Pa.

American Transit Assn., annual meeting, **Sept. 27-30,** William Penn Hotel, Pittsburgh.

Porcelain Enamel Institute, annual meeting, **Sept. 29–Oct. 1,** The Greenbrier, White Sulphur Springs, W. Va.

National Hardwood Lumber Assn., annual convention, **Oct. 5-7,** Rice Hotel, Houston.

Pacific Coast Building Officials, annual meeting, **Oct. 5-8,** Denver, Col.

Architectural Woodwork Institute, annual convention, **Oct. 15-16,** La Salle Hotel, Chicago.

New York State Association of Architects, convention, **Oct. 21-23,** Lake Placid Club, Lake Placid, N.Y.

American Institute of Steel Construction, annual convention, **Oct. 25-28,** The Greenbrier, White Sulphur Springs, West Va.

North Central States District, American Institute of Architects, regional meeting, **Oct. 28-30,** Kahler Hotel, Rochester, Minn.

The STATLER PEOPLE

Came Back for MORE!

HOTEL STATLER,
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Architect:
W. B. TABLER
General Contractor:
GEORGE A. FULLER COMPANY

Aetna supplied doors and door frames for the new Dallas Statler—and now here they are again with the same for another of the Statlers... in Hartford, Conn.

The Statler people came back for more because they knew that Aetna Hollow Metal Products can be depended upon to meet the most demanding specifications and the tightest delivery schedules!

PRODUCERS OF: The new Arnot Partition-ettes; Arnot Functional Office Furniture; Hospital and Laboratory Equipment; Under-Counter Bank Equipment; Aetna Steel Doors and Frames; Kahr Bearings; Boyle Metal Office Partitions (Aetnawall).

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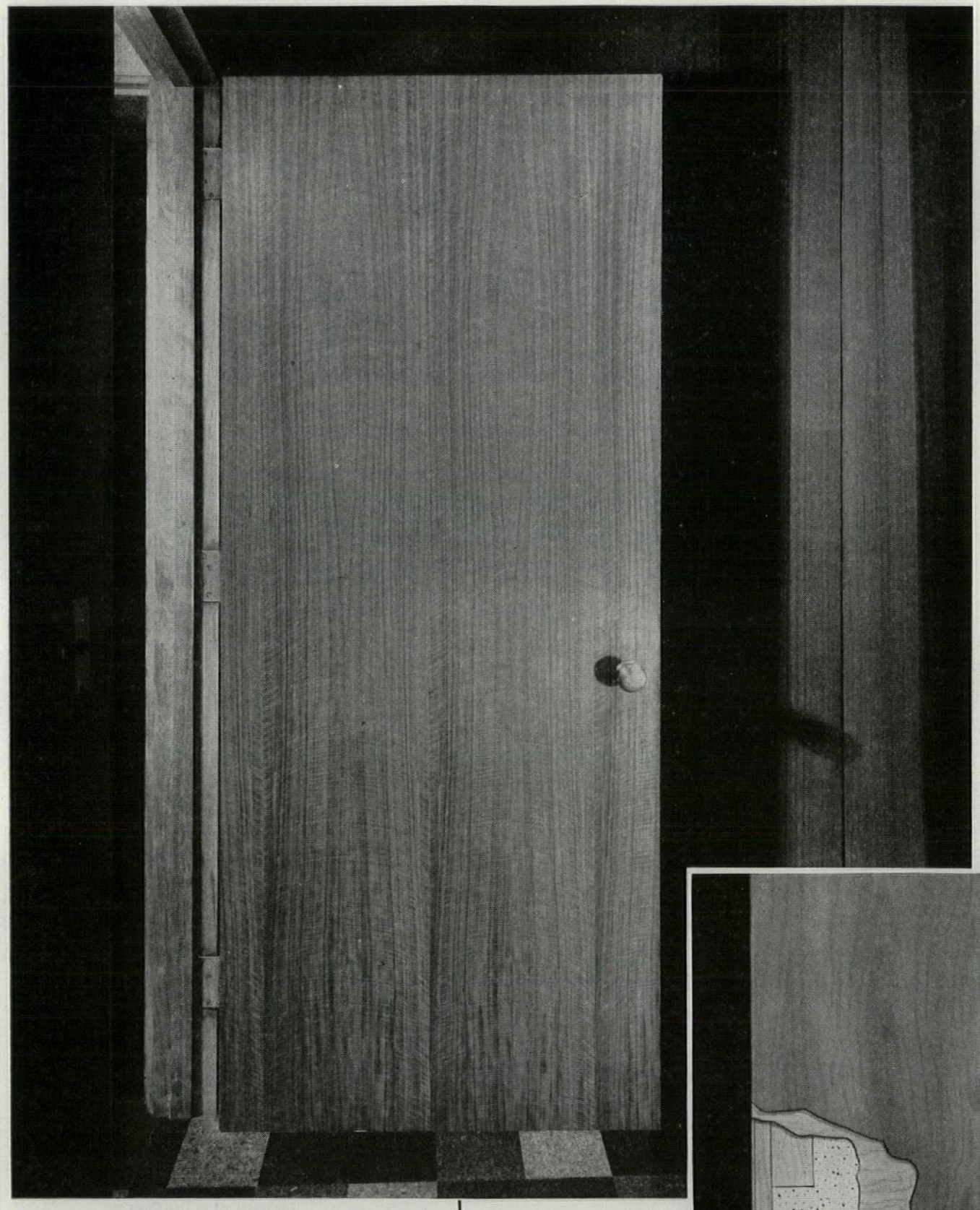

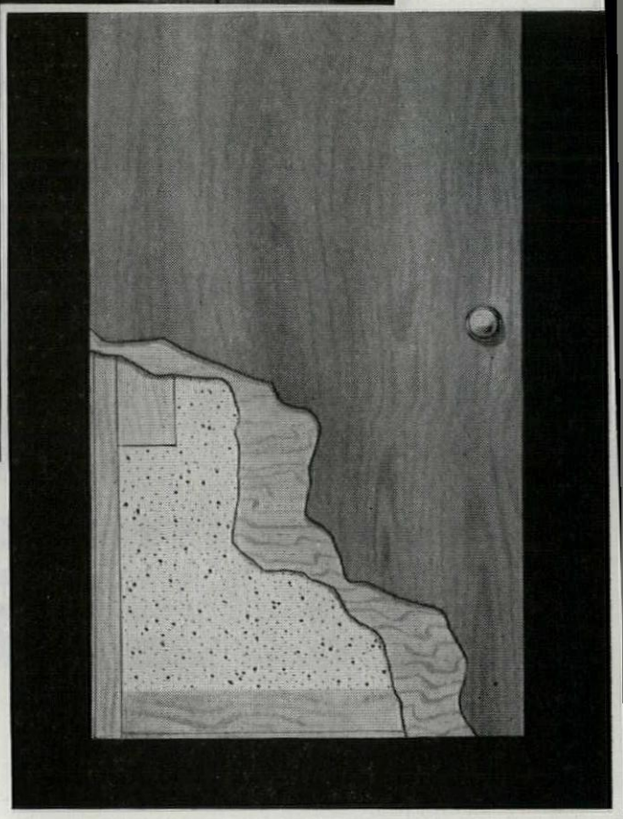

NO WONDER IT'S THE BEST—SEE HOW IT'S BUILT! Stay-Strate Doors have a special solid-core made of WELDROK—a strong, lightweight, incombustible core material designed to keep the door straight and true for the life of its installation. Weldrok helps Stay-Strate Doors resist decay, termites, fire and sound—has better insulation value, too!

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HEIGHT:	6'6" WIDTH	6'8" WIDTH	7'0" WIDTH
1¾" THICKNESS (Doors with light and louver openings available on order)	2'0"	2'0"	2'0"
	2'2"	2'2"	2'4"
	2'4"	2'4"	2'6"
	2'6"	2'6"	2'8"
		2'8"	3'0"
		3'0"	3'6"
			4'0"

Now! A GUARANTEE THAT PUTS AN END TO DOOR PROBLEMS

WELDWOOD STAY-STRATE FLUSH DOOR

REGISTRATION NUMBER 10338

UNITED STATES PLYWOOD CORPORATION unconditionally guarantees, if properly installed, this Weldwood "Stay-Strate" Door against warping, twisting, or manufacturing defects for the LIFE OF THE INSTALLATION. If any Weldwood "Stay-Strate" Door should fail to meet these standards, said door will be replaced without charge, including all labor costs of hanging and refinishing involved.

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Weldwood Stay-Strate Doors* are made and backed by the largest and best known manufacturing and distributing organization of its kind in the world, United States Plywood Corporation. As you can see, this unprecedented "Life-of-the-Installation" guarantee has no loopholes—and needs none!

Weldwood Stay-Strate Flush Doors have an individual beauty and reputation for durability that is all their own. That is why each Stay-Strate Door is proudly labeled with its own *registered guarantee* number. This guarantee is your protection against the door warping, twisting or delaminating in any doorway—interior or exterior!

Weldwood Stay-Strate Doors save you money because they *do* put an end to annoying and costly door complaints. Stay-Strate Doors are available in a variety of stock sizes in handsome woods such as birch, oak, walnut, Korina® and other fine hardwoods. See the complete line of Weldwood doors at any of the 73 United States Plywood or U.S.-Mengel Plywoods distributing units in principal cities, or mail coupon.

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FIRE DOORS. When an installation calls for a labeled fire door—select the Weldwood Fire Door† bearing the Underwriters' Laboratories Label for Class "B" and "C" openings.

STAVED LUMBER CORE DOORS. The most dimensionally stable lumber core door on the market—fully guaranteed against delamination and other manufacturing defects for two years—twice as long as most lumber core doors. Free replacement does not include cost of finishing and cost of installation.

HOLLOW CORE FLUSH DOORS. Lightweight, durable—in a complete assortment of sizes and face veneers. 40% lighter than standard panel doors.

BIRCH FACED CUPBOARD DOORS made with core of Novoply. Wide range of sizes.

For complete specifications on Weldwood doors see our insert in Sweet's Architectural Files, or in American Lumberman, American Builder and Practical Builder directory issues.

NOVOPLY SLIDING DOOR UNITS. Precision built units are prepackaged, ready to install. Novoply is the flattest, most dimensionally stable wood panel made. Can be painted or stained any color. Also available with birch faces on Novoply. Units can be joined together to form extra large sliding storage walls. Available in 2 or 3 door units 6′ 9½″ or 8′ high, in widths from 2′ to 8′. Includes all hardware necessary.

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"It saves us money on every fixture we install" —that's the kind of report we're getting every day on the Remington Stud Driver. Big savings just naturally result from the amazing speed of this powder-actuated tool. It sets as many as 5 studs a minute in steel or concrete!

You'll find real economy, too, in the fact that the Stud Driver is completely self-powered—no need for extra equipment, wires or cables. Compact and portable, the tool is designed in every way for easy handling. And since it weighs only 6 pounds, it's ideal for working overhead and in confined spaces.

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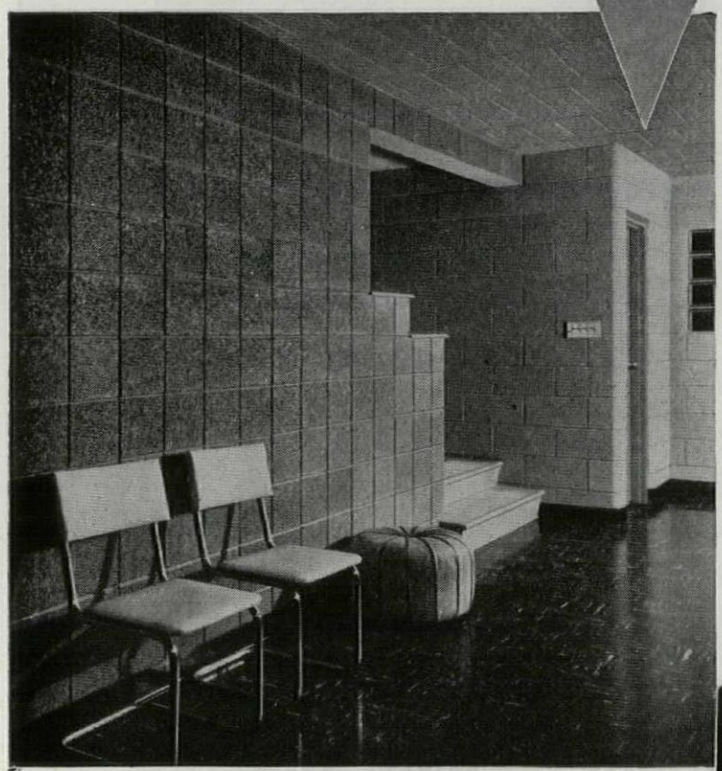

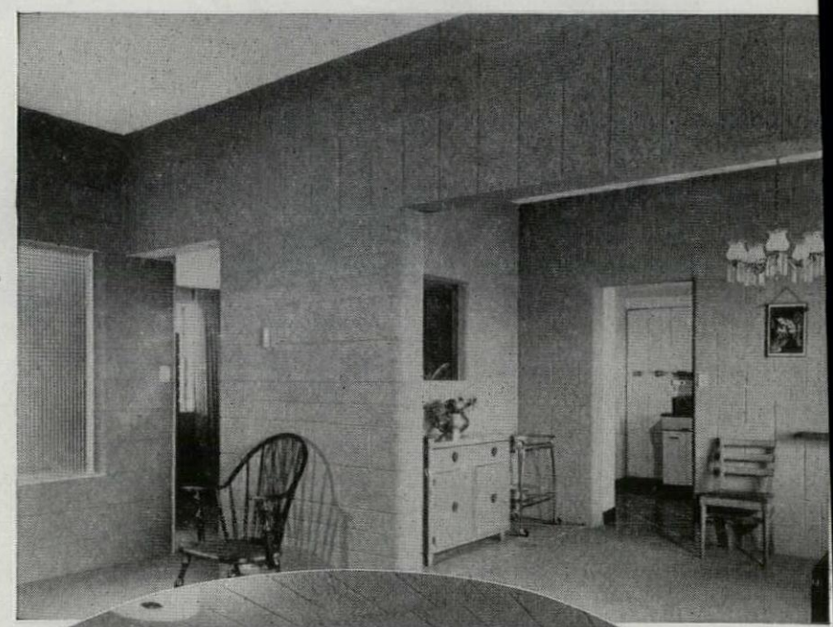

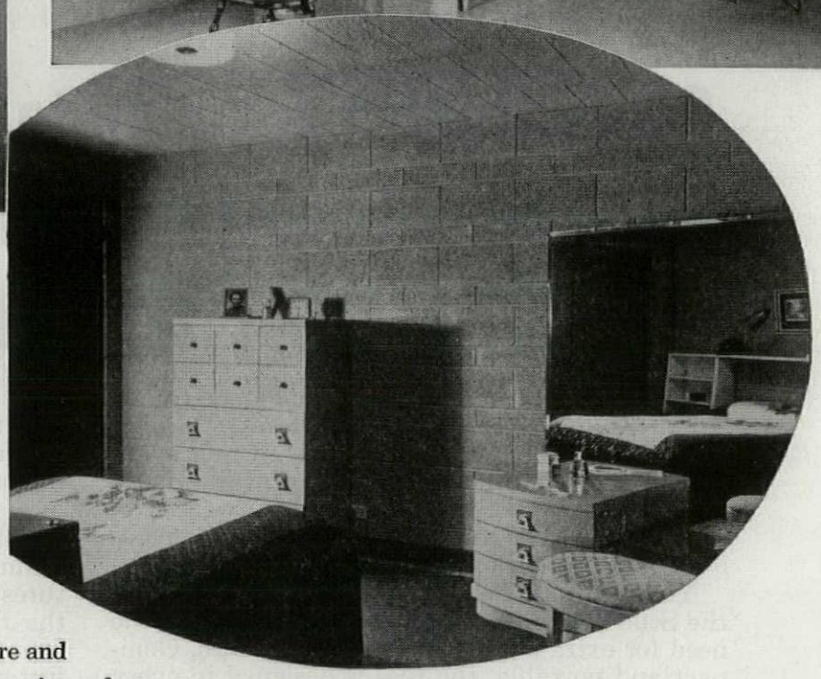

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Vibrapac Block, used extensively for *exteriors* of buildings, is equally adaptable to *interiors*. No other building material commands greater respect. In homes, and other structures, large or small, you know the colorful beauty, unique texture and ruggedness of Vibrapac Block is everlasting. Here is modern, practical, permanent construction that reflects good judgment and wins prestige.

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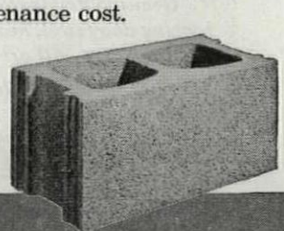

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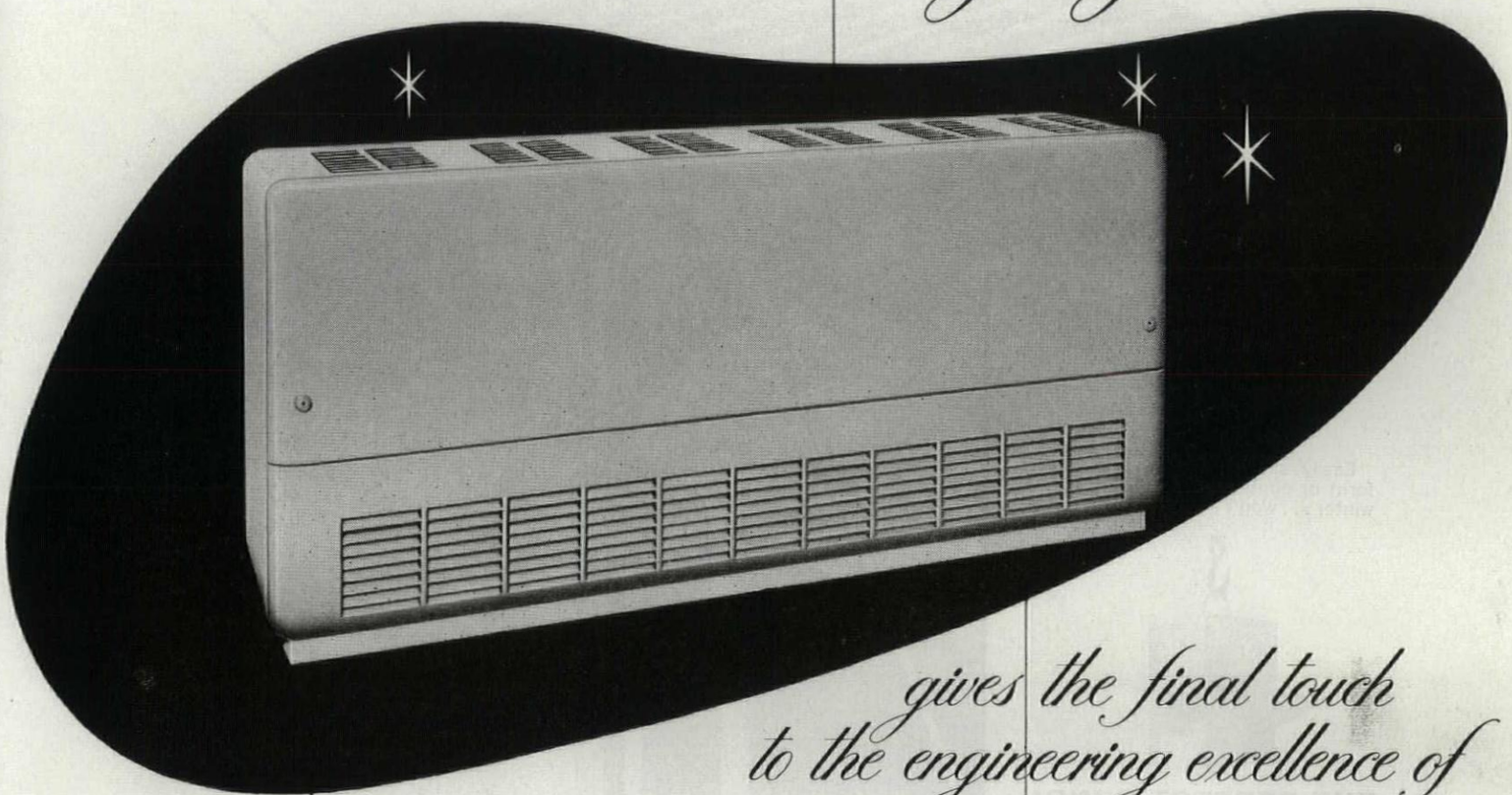

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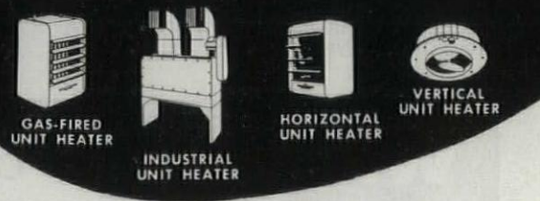

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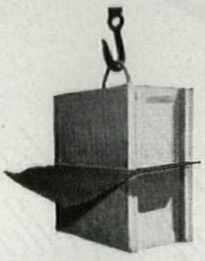

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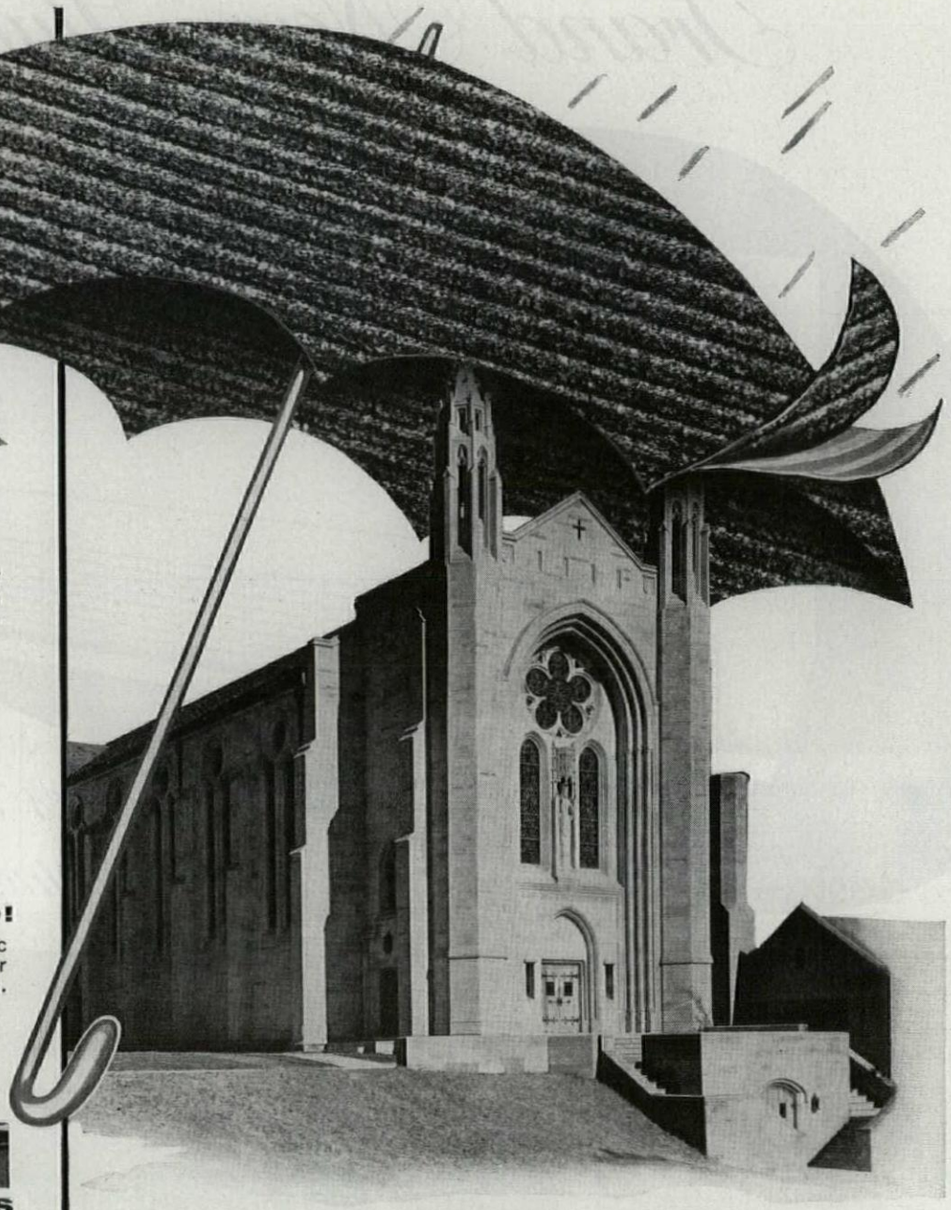

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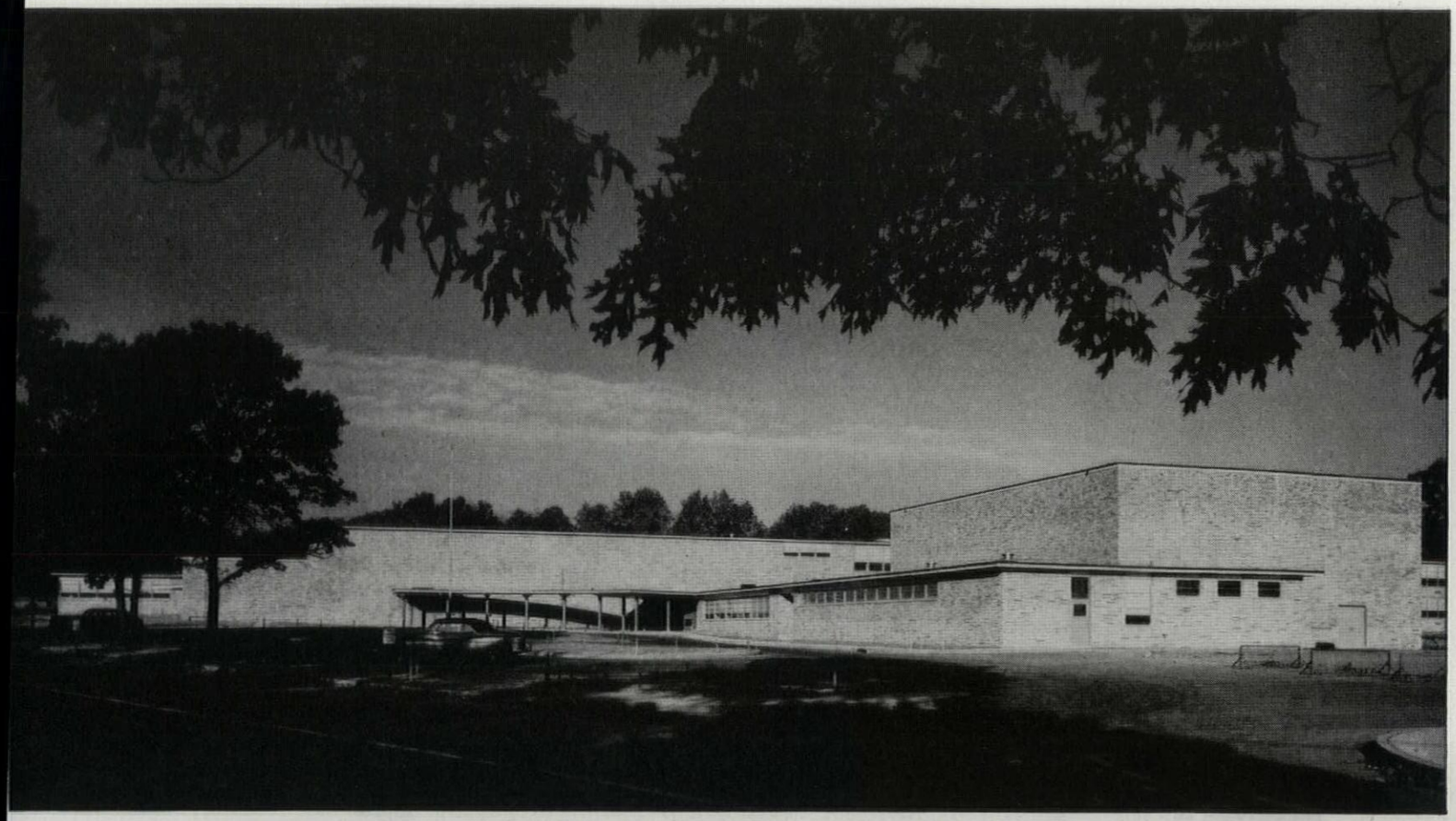

Thomas Jefferson Junior High School, Fair Lawn, N. J. Arthur Rigolo, A.I.A., Clifton, N. J.—*Architect.* Isaac Degenaars Co., Wortendyke, N. J.—*Building Contractor.* S. P. Simmons Co., East Paterson, N. J.—*Painting Contractor.*

Critical design and budget problem met in building of Fair Lawn School

(with a strong assist from paint)

The problem of Fair Lawn, New Jersey, is the problem of every residential community with a growing population . . . how to house an ever-expanding school enrollment efficiently and at low cost. Though Fair Lawn, New Jersey, is in one of the highest labor cost areas in the country, the school shown above was constructed at a cost of $1,200,000 or 84¢ per cubic foot and now houses 750 pupils.

Finishing of interior walls was one of the places where costs were lowered. All interior walls are of slag block, exposed and unplastered, and finished with SUPER® KEM-TONE, the washable latex wall paint. Rooms are painted different pastel shades in color schemes worked out by the architect. Interiors are bright and cheerful with good light reflection. Expensive wall finishing is eliminated, maintenance simplified.

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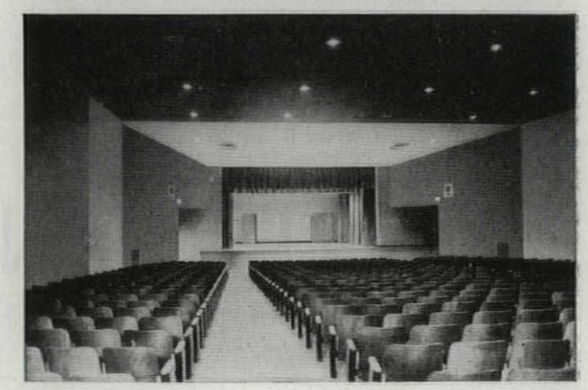
Use of color in corridors makes them colorful and inviting.



Unusual color scheme in auditorium breaks long walls and ceiling and helps frame the stage.

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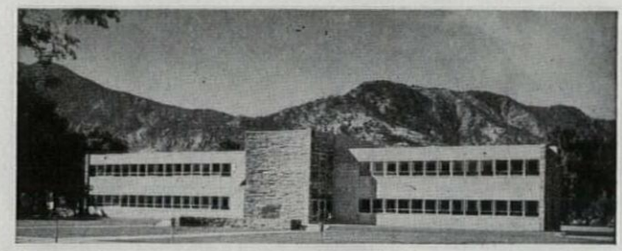

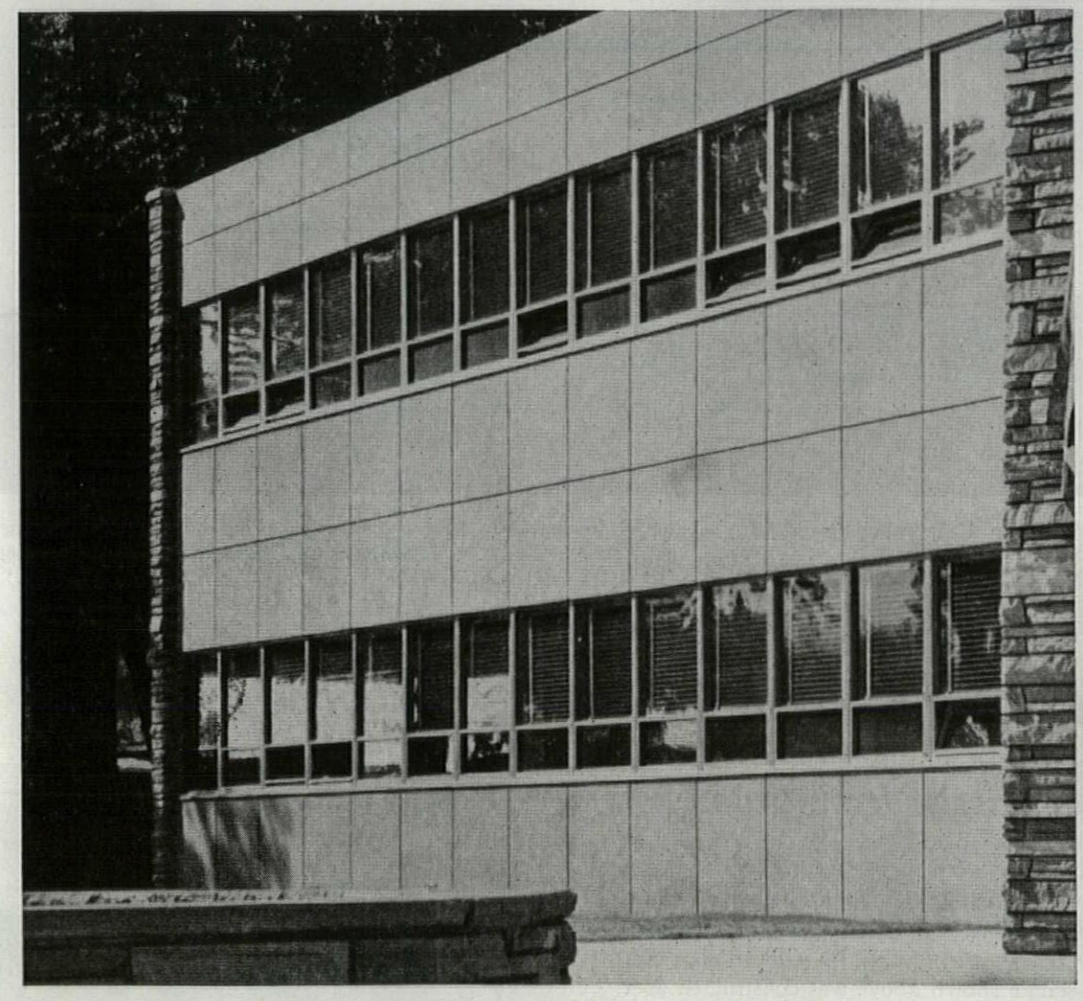

Municipal Building, Boulder, Colorado. Architect: James M. Hunter, Boulder, Colo. Contractor: Jack A. Cys, Denver, Colorado. Windows: Lupton Master Aluminum Windows.

Perfect match . . . with Lupton Windows

The Lupton Master Aluminum Windows in this new, modern building are as trim and sleek as the building itself. Adapted from a standard design, there is an open-in ventilator at the bottom only. The upper part of the window is a large sheet of fixed glass. New today, these windows will stay "new" for Lupton Master Aluminum Windows defy time and the elements. The ventilating sections will always work easily and maintain full contact on all edges when closed . . . their alignment will never be distorted by clogging paint.

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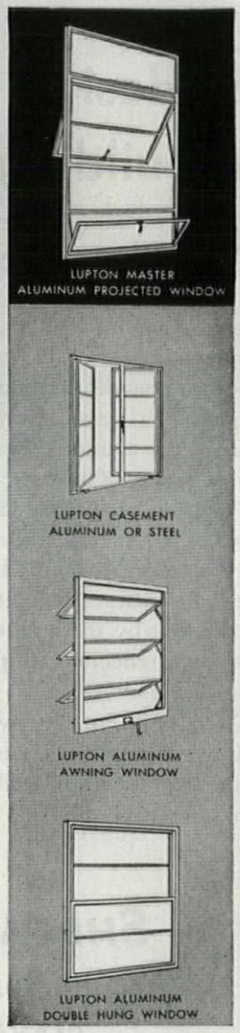
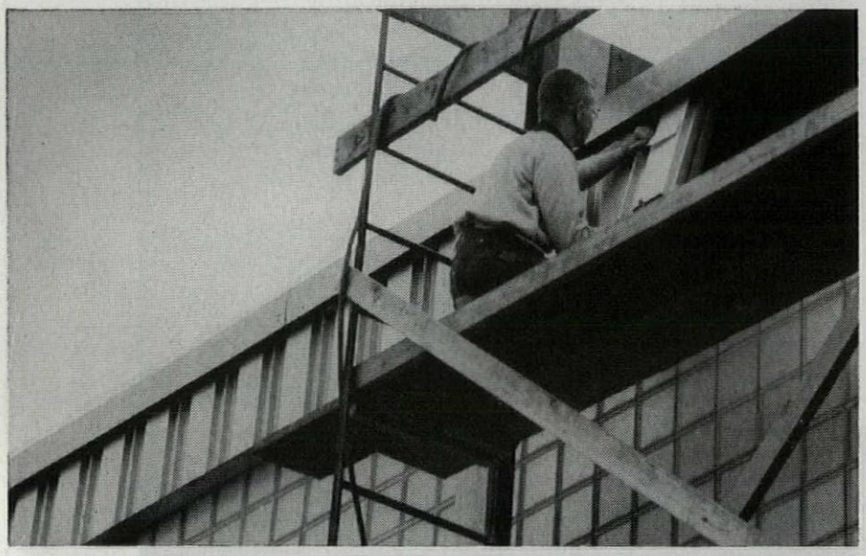
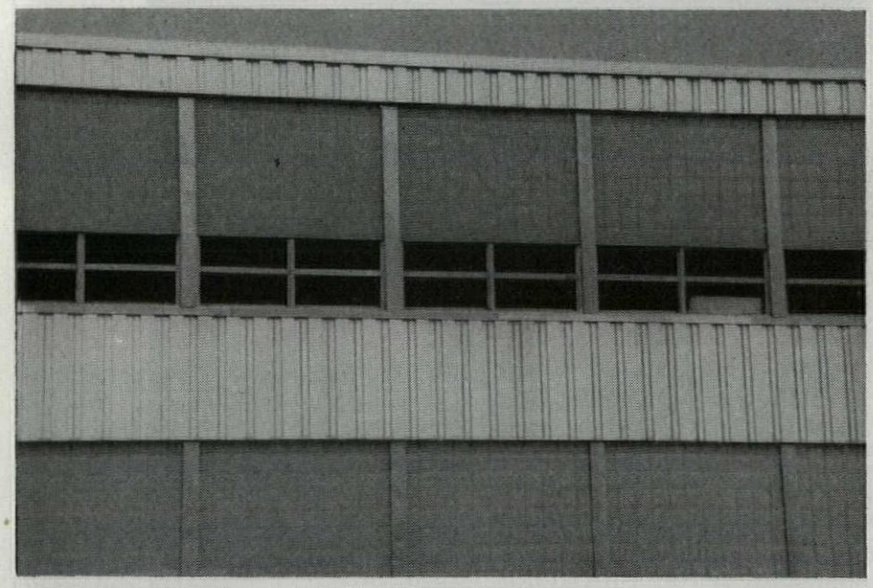
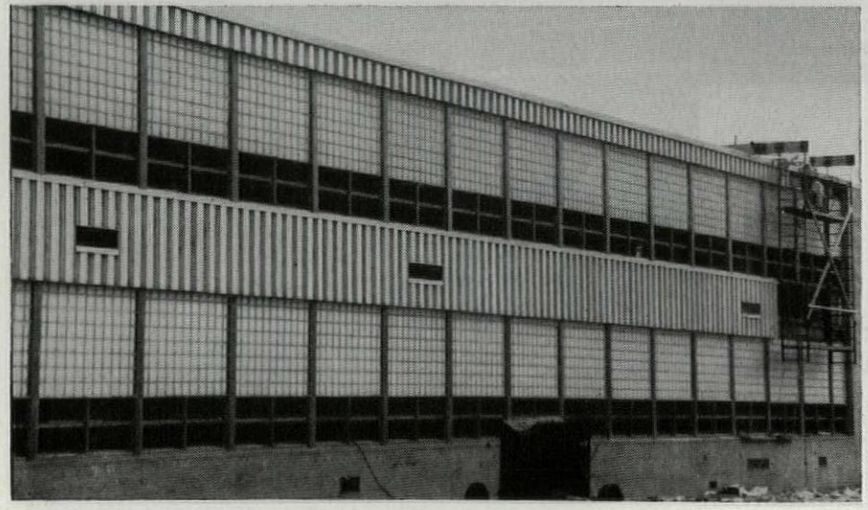
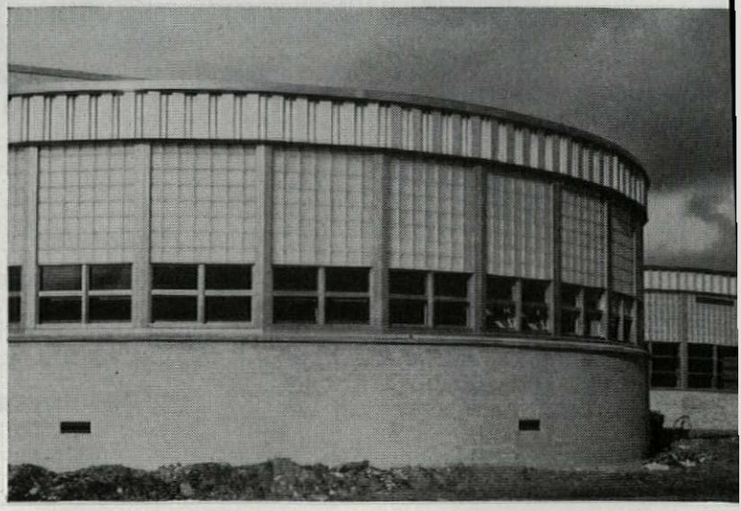


New EDISON JUNIOR HIGH SCHOOL* takes full advantage of the beauty and utility









Here is a fine, spacious, new junior high school building that sets a precedent in design and construction. For the architect has made extensive use of one of today's most beautiful and most functional building materials—Stainless Steel.

On the exterior of Edison Junior High School, insulated panels of Stainless Steel form the spandrels and the head panels. The spandrels are of 20 gage Stainless Steel, one foot wide and four feet high with six-inch face square corrugation. The head panels are one foot high. Panels are insulated with one and one-half inches of Fiberglas and attached to the structural framework with clips.

The combination of Stainless with masonry and glass block makes an extremely attractive building. But the benefit of Stainless panel construction doesn't stop there. Construction with the panels was fast and went forward in all types of weather. More complete utilization of floor space was possible through this curtain wall type construction. Maintenance on the Stainless Steel will be negligible and life will be long.

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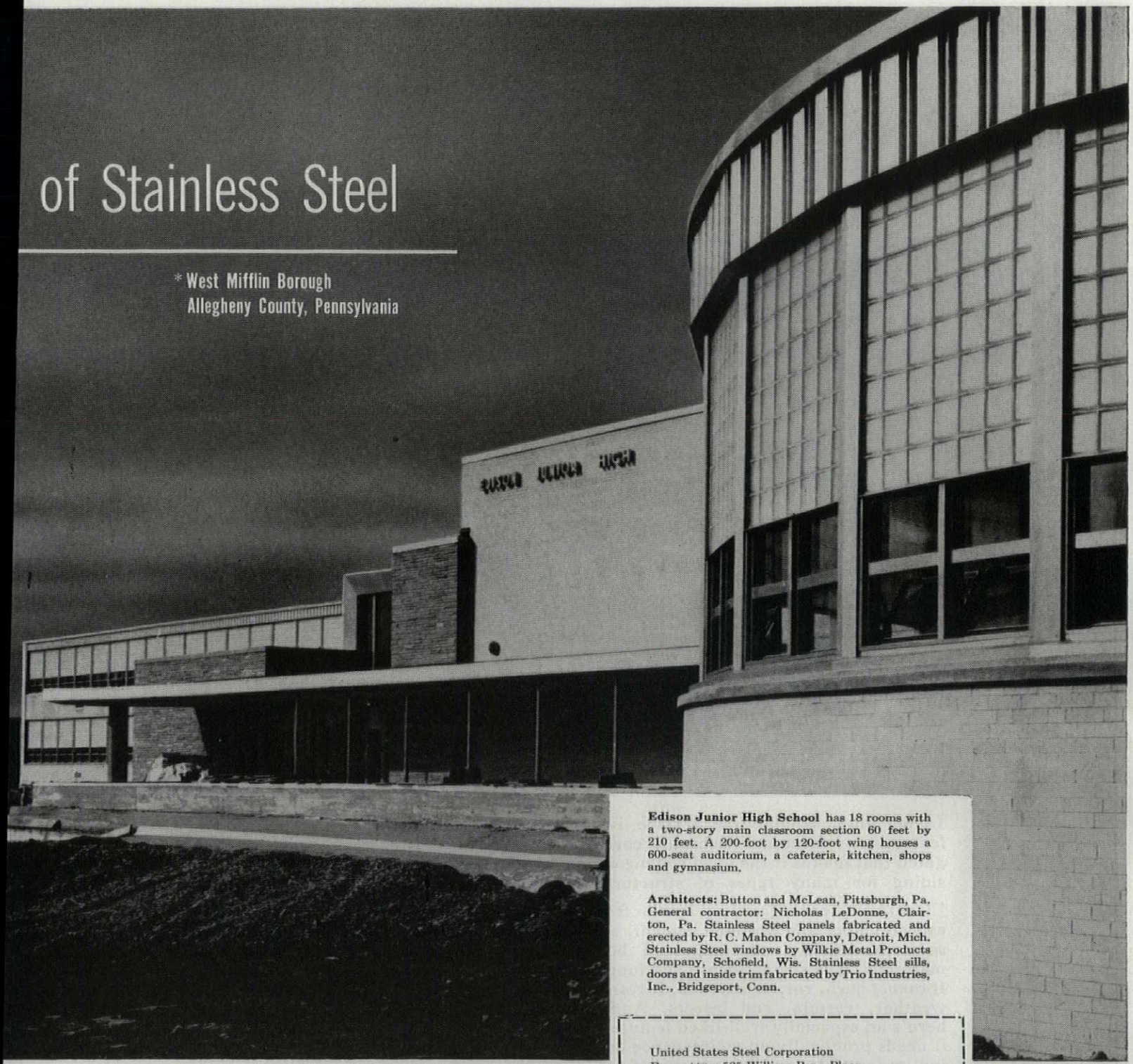
Stainless Steel also was used in this school for sills, mullions, windows, door canopies and trim, blackboard and tackboard frames, doors and door frames, column covers and other items of interior trim.

If you have a new school in the planning stage, now is the time to think about Stainless Steel and its many benefits. And think in terms of USS Stainless Steel. For more information on Stainless Steel panel construction, mail the coupon at right. If you like, we will be pleased to have one of our representatives call.



# of Stainless Steel

*West Mifflin Borough
Allegheny County, Pennsylvania

Edison Junior High School has 18 rooms with a two-story main classroom section 60 feet by 210 feet. A 200-foot by 120-foot wing houses a 600-seat auditorium, a cafeteria, kitchen, shops and gymnasium.

Architects: Button and McLean, Pittsburgh, Pa. General contractor: Nicholas LeDonne, Clairton, Pa. Stainless Steel panels fabricated and erected by R. C. Mahon Company, Detroit, Mich. Stainless Steel windows by Wilkie Metal Products Company, Schofield, Wis. Stainless Steel sills, doors and inside trim fabricated by Trio Industries, Inc., Bridgeport, Conn.

United States Steel Corporation
Room 442 . 525 William Penn Place
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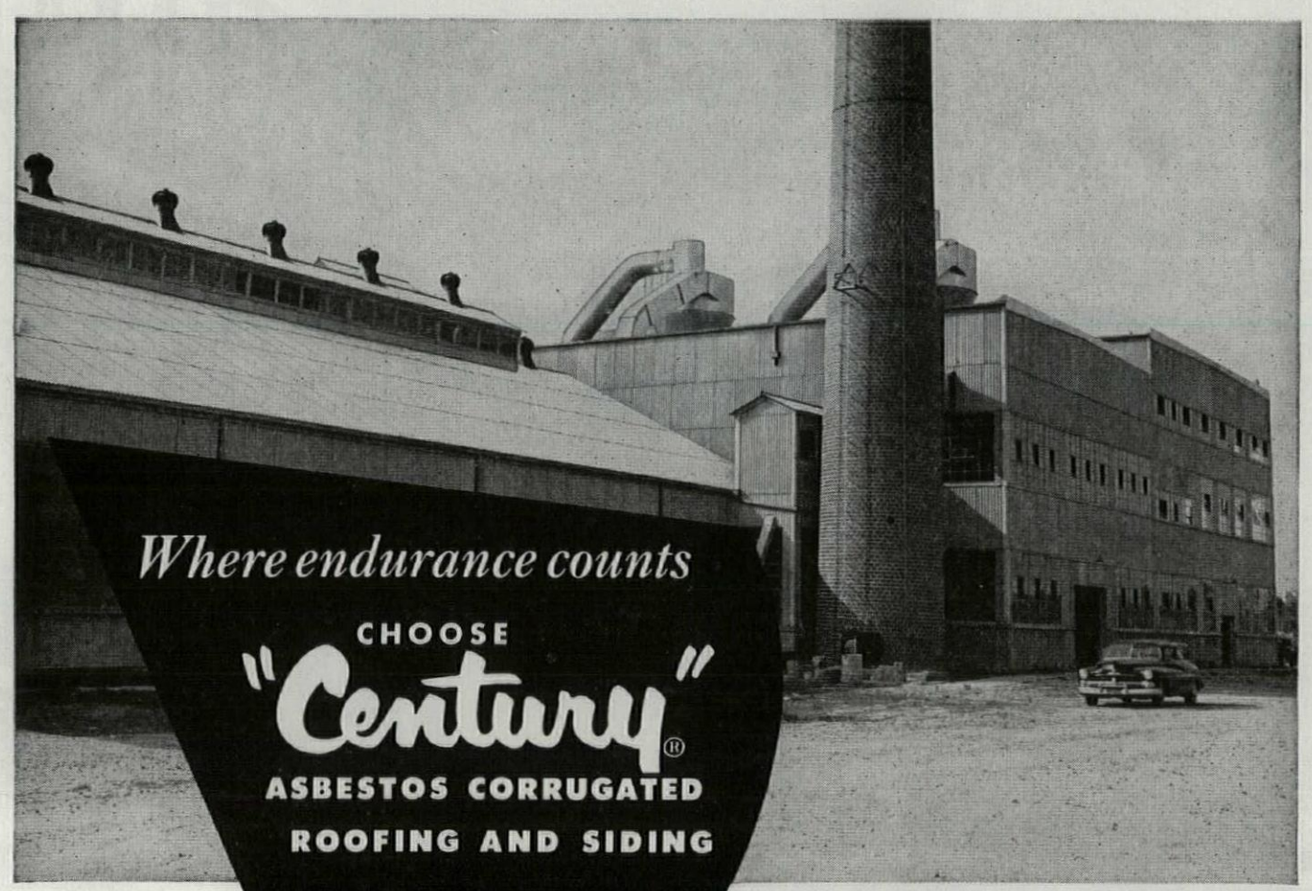
UNITED STATES STEEL



City of Houston North Side Sewage Sludge Disposal (by fertilizer production) Plant, roofed and sided with "Century" asbestos corrugated. General Contractor: Rust Engineering Company, Birmingham, Alabama; Roofing and Siding Contractor: Standard Asbestos Mfg. & Insulating Company; Engineers: J. G. Turney, Houston, Texas, associated with Greeley and Hansen, Chicago, Ill.; Design Engineer: William E. White, Houston, Texas.

Long, long, trouble-free service is a feature of "Century" asbestos corrugated that makes it the ideal roofing and siding for many types of structures.

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All these outstanding advantages make long-lived "Century" asbestos corrugated sound like a premium-priced building material. Actually it is one of the most economical materials you can specify!—low in application cost, low in maintenance expense.

Why not give *your* clients the outstanding advantages of this remarkable building material? For detailed information about "Century" asbestos corrugated, consult Sweet's Architectural File, or write directly to us.

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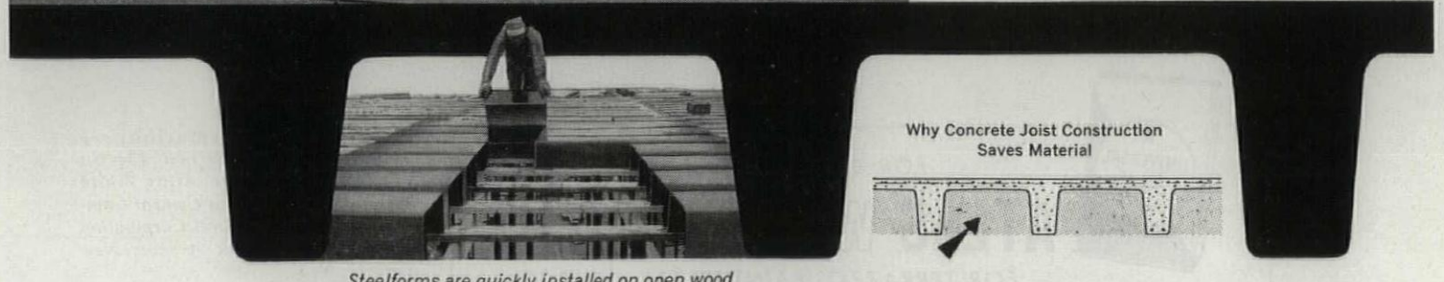

Steelforms are quickly installed on open wood centering. Cost is reduced because same lumber and Steelforms are re-used from floor to floor.

Shaded portions show concrete eliminated by concrete joist construction.

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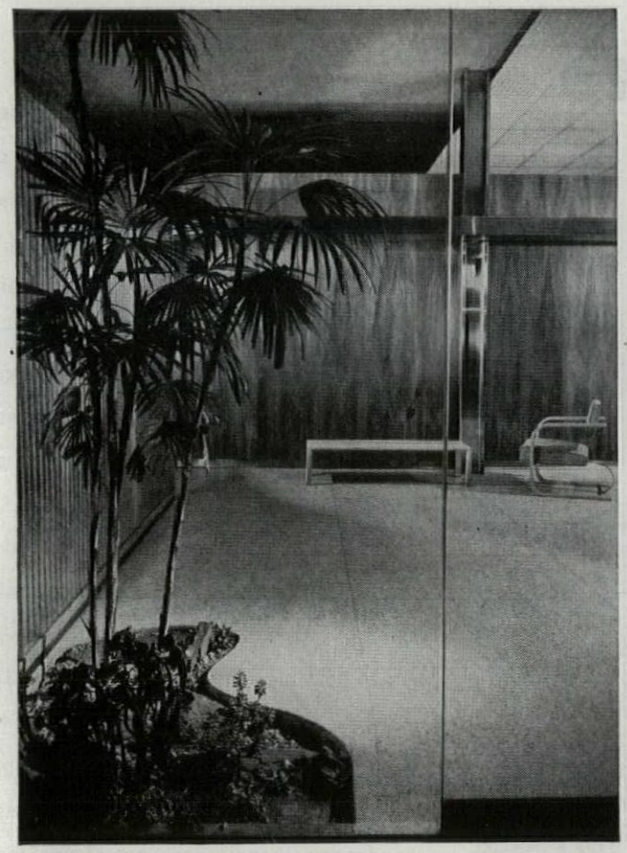


ENTRANCE AND LOBBY of Northwestern Mutual Fire Association Building, Los Angeles • *Architect,* Richard Neutra; *General Contractor,* C. W. Driver, Inc.; *Terrazzo* by Venetian Terrazzo and Mosaic Co.; all of Los Angeles.

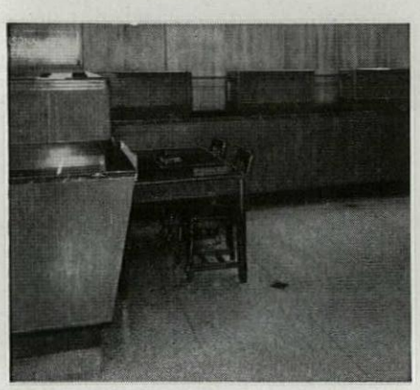
Wherever floors need beauty plus long life . . .

TERRAZZO

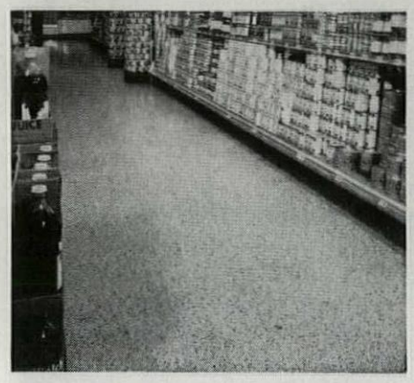
made with Atlas White Cement

Pictured on this page are four gleaming terrazzo floors. Every one of them is in a different type of building, yet in every case terrazzo is appropriate. Beauty and long life have been built in together.

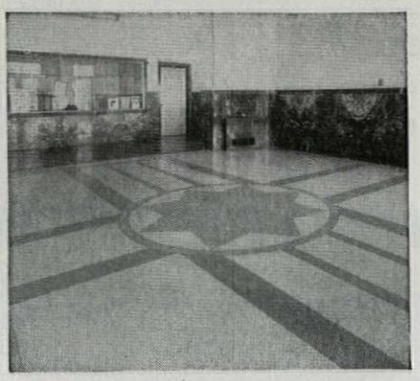
Good-looking terrazzo offers the architect the utmost in design possibilities—not only for floors but for wainscoating and stairways, too. That's because the colors and tones that can be achieved with Atlas White Cement are almost unlimited. Atlas White means enduring good looks at low annual cost. Time-proof terrazzo's smooth surface won't give dirt a foothold — takes the threat out of heavy use.



SECURITY BANK BUILDING, Sioux City, Iowa • *Architect,* William Beuttler; *General Contractor,* H. S. Holtze Construction Co.; *Terrazzo Contractor,* Sioux City Mosaic Company, Inc.; all of Sioux City.



FLOORS OF SUPERMARKET, Food Fair Market, Philadelphia, Pennsylvania • *Architect,* Louis Kasoff; *Terrazzo Contractor,* United Marble Company; both of Philadelphia, Pennsylvania.



HALLWAY OF DEERPARK SCHOOL, Deerpark, Ohio • *Architects,* Gruckemeyer & Sullivan; *Contractor,* Frank Messer and Sons, Inc.; *Terrazzo,* Martina Bros. Co., all of Cincinnati, Ohio.

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THE MAGAZINE OF BUILDING

architectural **forum**

AUGUST 1954

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Cover: Olivetti showroom by Belgiojoso, Peressutti & Rogers. Photo: © Ezra Stoller

VOLUME 101, NUMBER 2

Photos: © Ezra Stoller

Lavish, unrestrained

and straight from Italy, this

TYPEWRITER PALAZZO IN NEW YORK

is blowing up

a summer storm

among designers

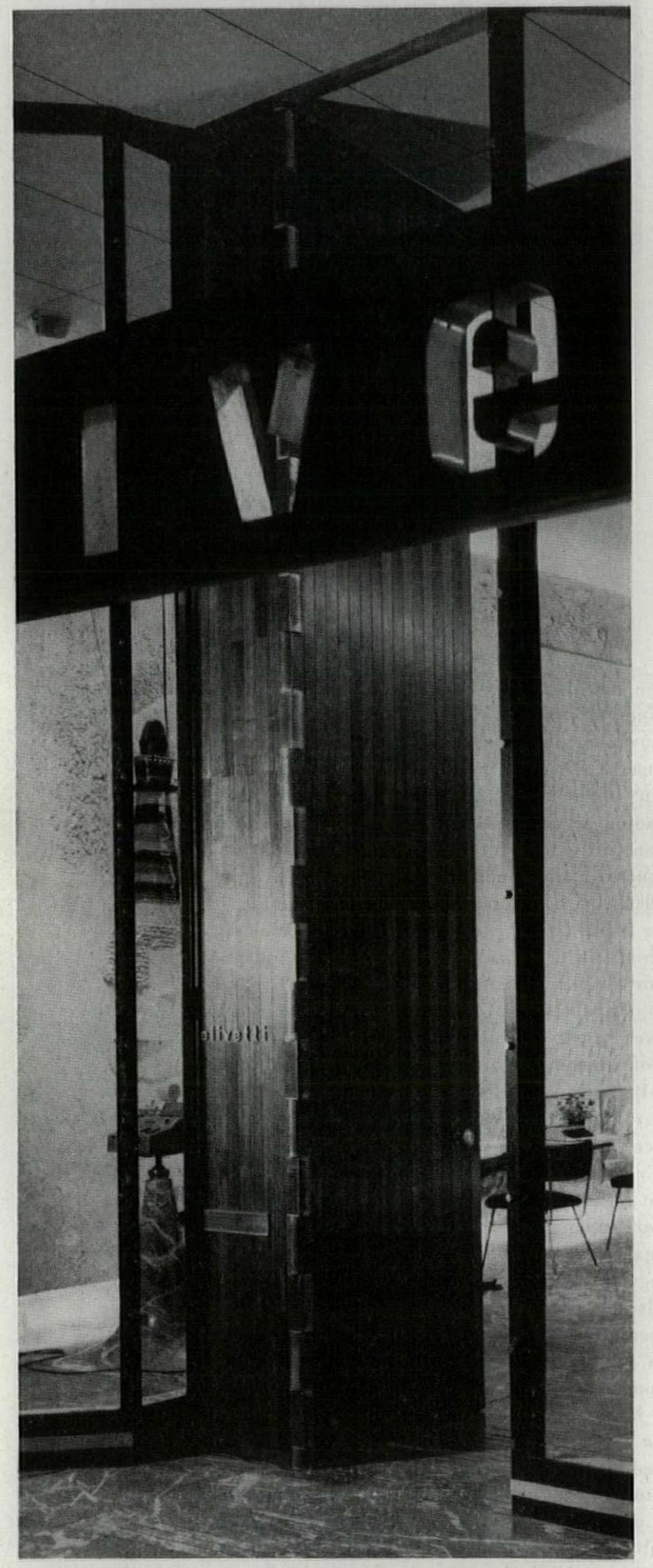
L. B. BELGIOJOSO, E. PERESSUTTI,
E. N. ROGERS, Milan, architects
MURPHY-BRINKWORTH, general contractor
CONSTANTINO NIVOLA, sculptor

The new Italian Renaissance, unlike some wistful Italian wines, travels well. The latest importation is an intoxicating showroom for typewriters and calculating machines on upper Fifth Ave., a store interior and facade which (except for one sculptured wall) were designed in Italy by a leading architectural firm, made there piece by piece and transported here for assembly as a proud symbol of reconstructed Italian industry. The big display room is also a calculated commercial symbol for manufacturer Olivetti, for it has already proved to be box office along the world's Broadway of merchandise, Fifth Ave. And as in his company's other designs (AF, Nov. '52) Olivetti here attains popular success not by going down to the mythical infantile level of public taste, but by attracting the public up to a professional design level.

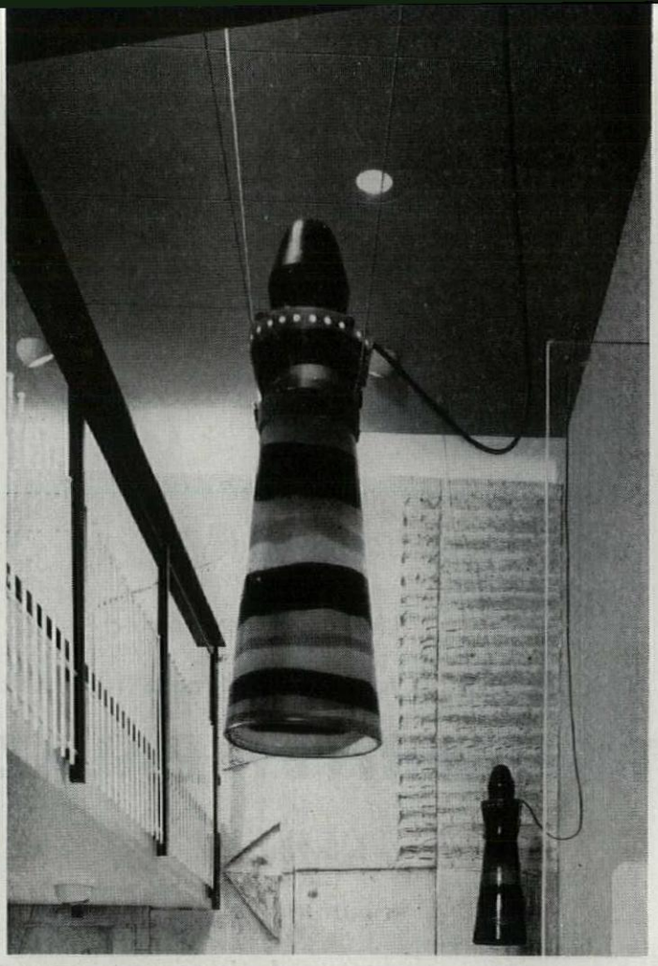
But professionally, the new showroom has cast a chunk of richly veined Italian marble into the recently placid surface of New York advanced design. There are arguments at cocktail parties and in drafting rooms about this design, not because of the mastery of its execution, uniformly applauded, but just because of its own bold basic esthetic. Against the current preference for sharp, staccato, surfacey, angular shop design, emphasing lightness and transience, this new Olivetti showroom opposes weight and hearty exuberant voluptuousness. It has deliberate excesses: a door 16′ tall, only 41″ wide, solid walnut, in the otherwise glass front of the shop; a floor of beautiful marble which seems to have been pulled up like taffy to form display mounts for typewriters and calculators. Other boisterous touches (see next two pages) have combined to cause something of a turmoil of conscience in the profession. Some would like to dismiss this finished design as a baroque retrogression, but they cannot. For this showroom, bold, intricate and exciting, clearly is a step, perhaps a leading one, into the uncertain future of US shop design, which must always keep changing to keep the customers interested.

Plaster "sand sculpture" by Nivola extends the full 70′ length of one inside wall. A semi abstract expression of hospitality, the handsome relief was cast in sections in sculptured sand molds, so it still bears the texture of Nivola's playful proddings into the Long Island beach.

. . . its display devices are rich and bold

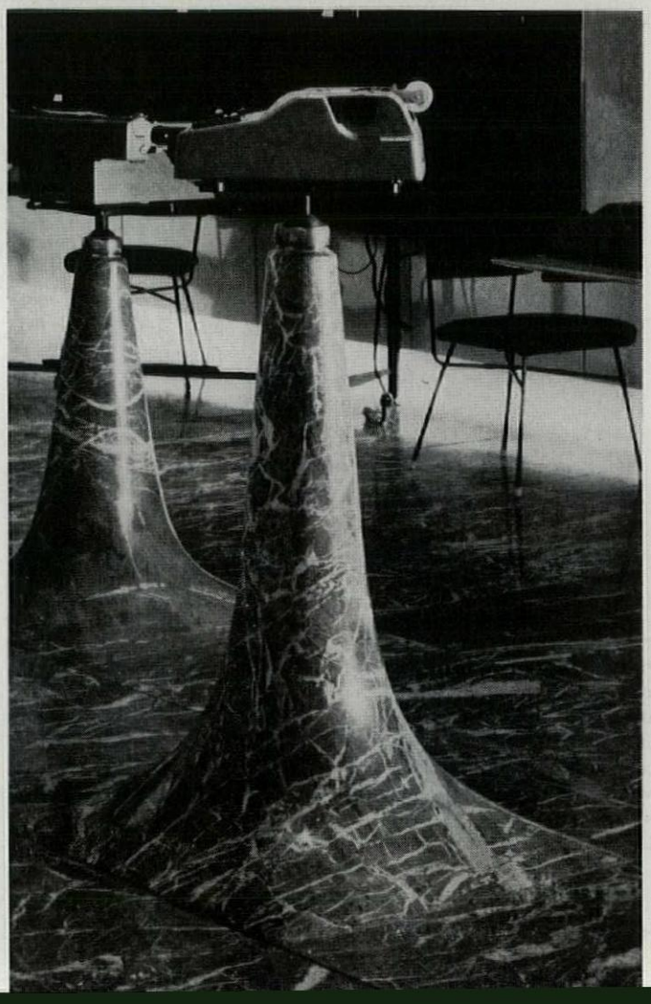


The great door, 16′ x 3′-5″, of matched walnut sections, has continuous brass hinge, can easily be hand operated, but is hard to keep quietly lubricated in New York's damp summer weather.



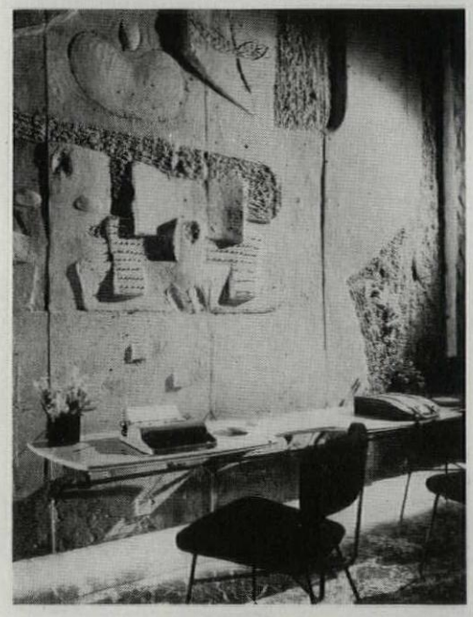
Suspended lighting fixtures are Venetian blown glass in spiraled colors, made by Venini of Murano. Spotlights are set in their tops, aimed at display stands below.

Display stands for machines are spotted around store (with one outside the glass wall near the sidewalk). Continuations upward of the floor, they are a rare malachite-green marble, quarried in a cave near Ivrea, the Italian headquarters of Olivetti.

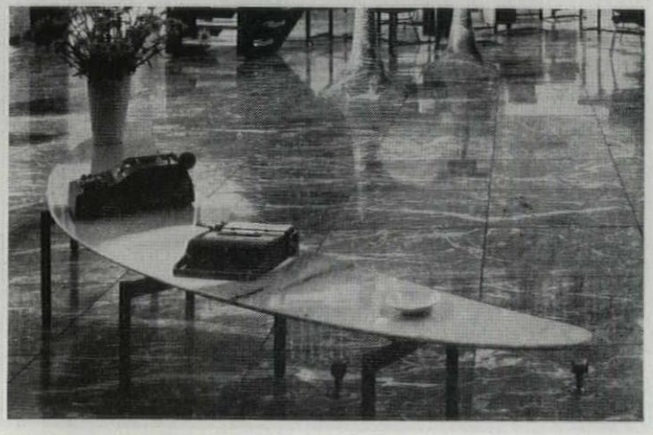


Exterior sign comes close to qualifying as sculpture in both design and execution. Brass, inset into green bronze, it spans one of two bays of the building front.

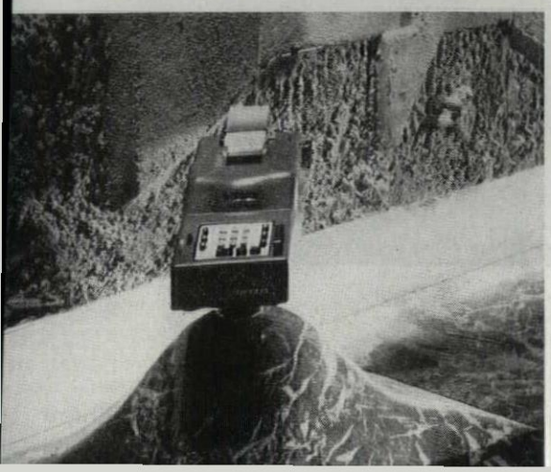
Continuous conveyor revolving around wheel was intended to deliver typewriters up from storeroom below, but New York building laws prohibited the hole in the floor. The "paternoster" has become a display.

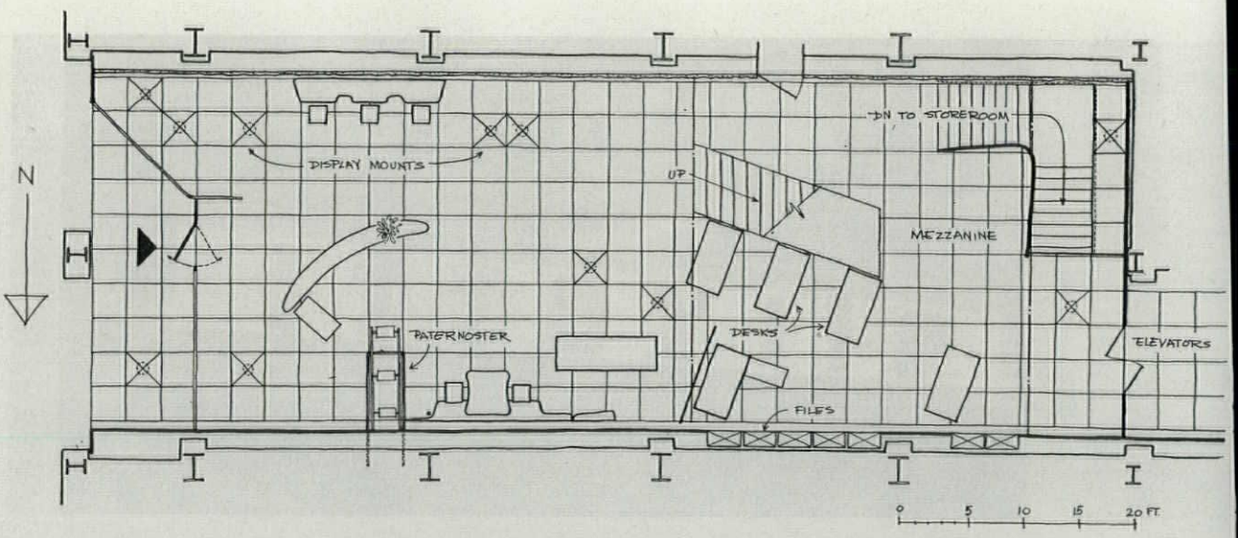


Furniture was designed by architects. Cove lighting both above and below the "Sand Wall" gives its bland color a margin against the forceful colors of the materials which surround it.



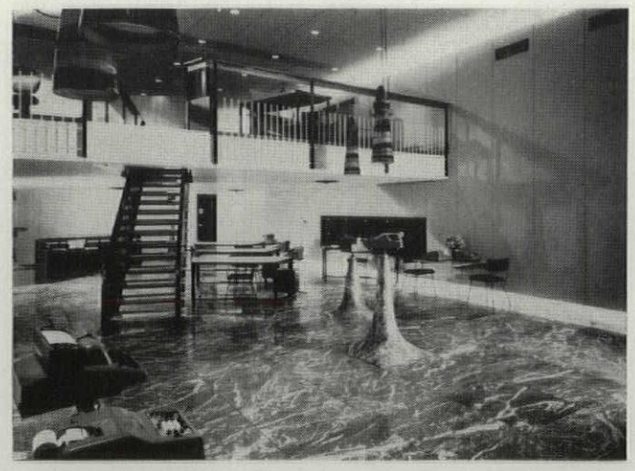
Pale pink Candoglia marble is used for tabletops like the crescent above and the wall table (above left). Edges are tapered delicately.



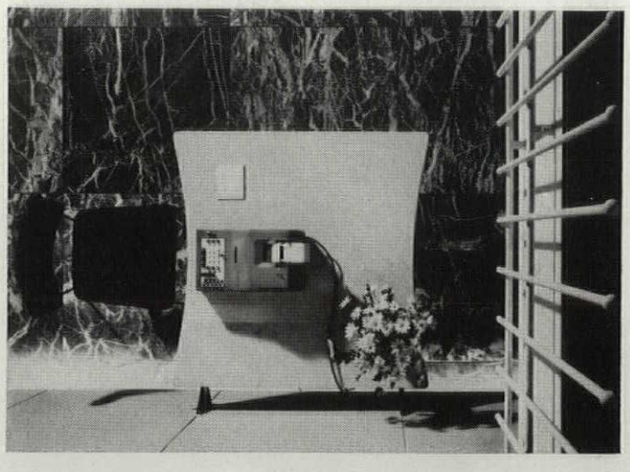


. . . its plan is simplicity itself: a single big room with a floating mezzanine

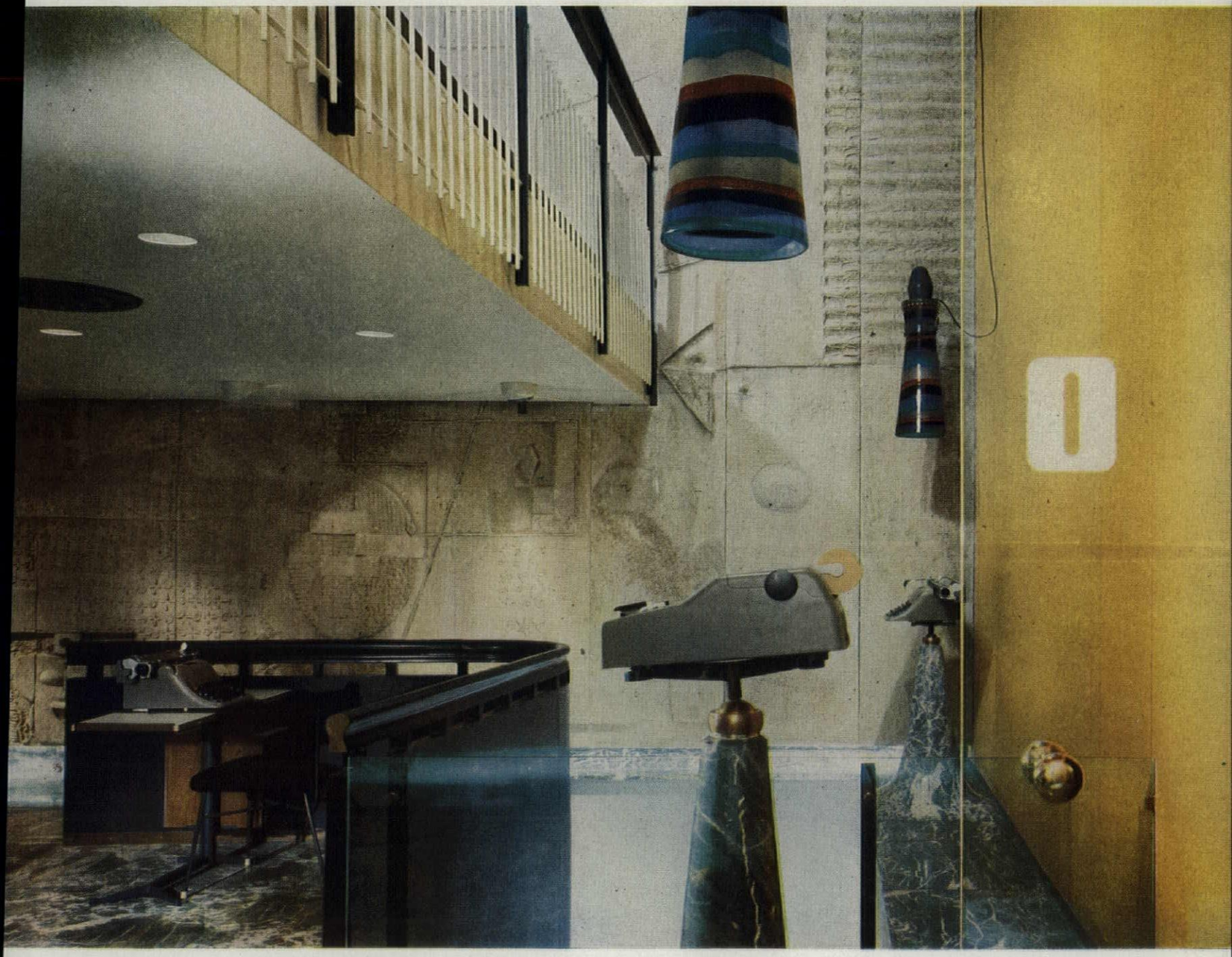
The big room, viewed from under front of mezzanine. Except for the very tall walnut door, the front is glass.



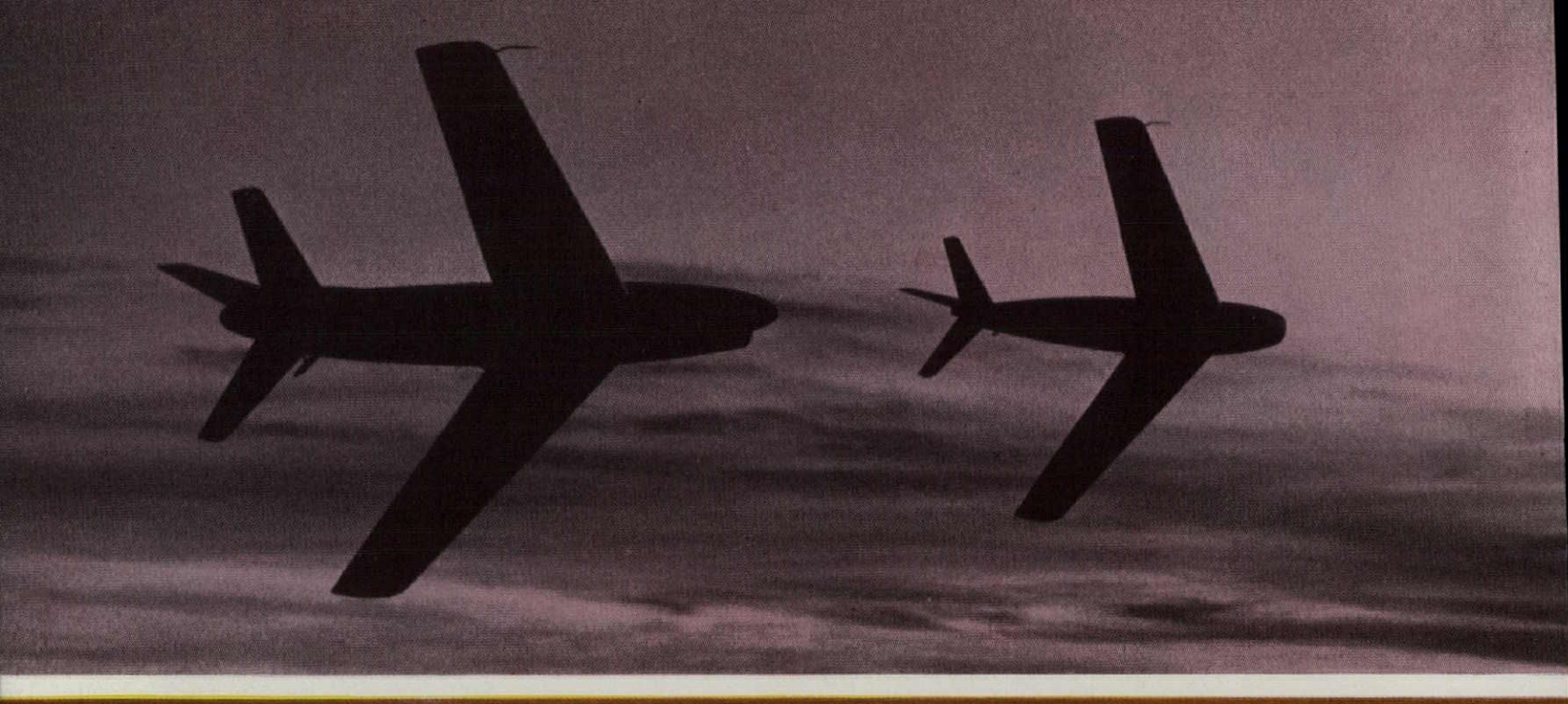
Mezzanine for office workers hangs toward back of store. Ceiling is a lively blue. Wall at right is painted sand color, has files set into it. Note lighting cove at top and bottom of this wall.

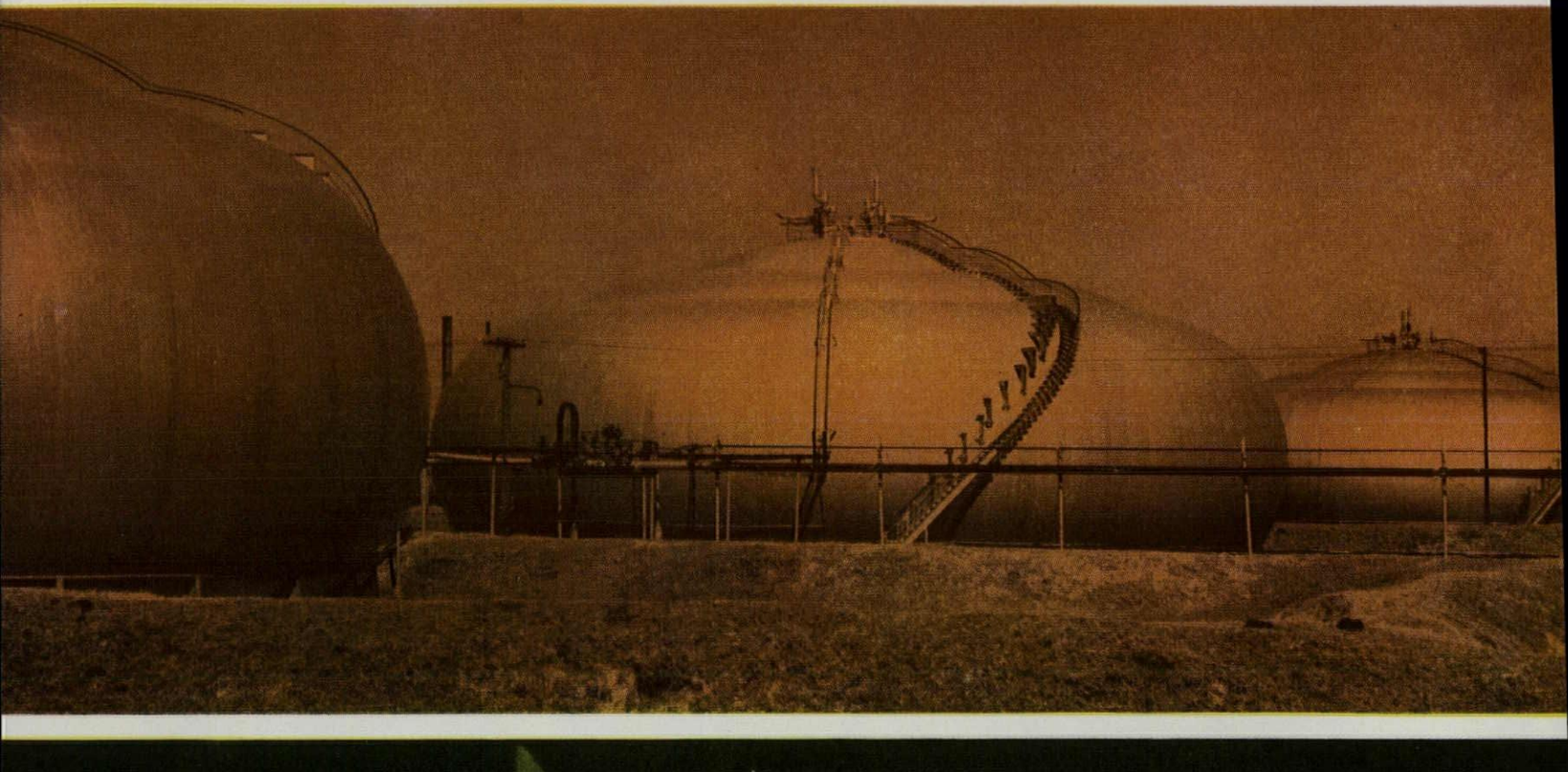


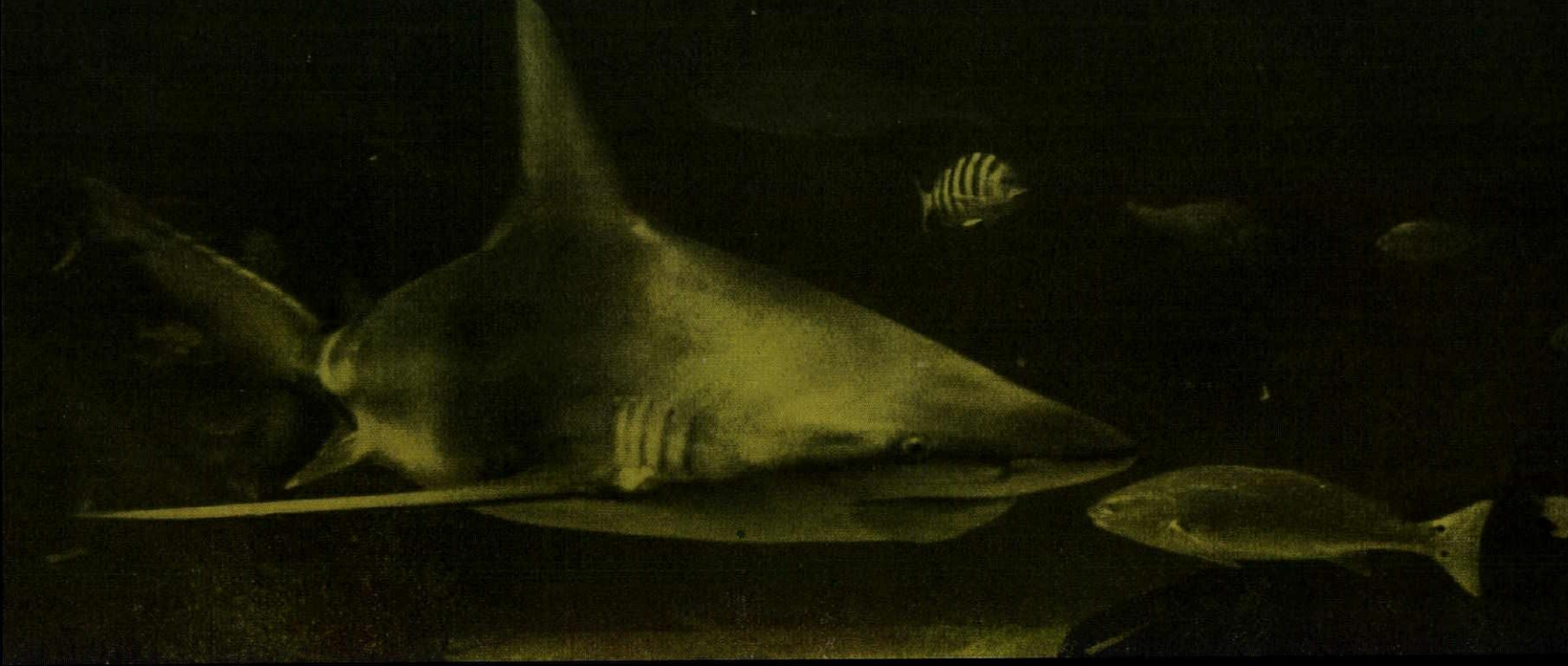
Looking down from mezzanine on pink marble table against green marble floor. The table is "modern," but of poetic shape as well as material, and capsules the spirit of the whole design.

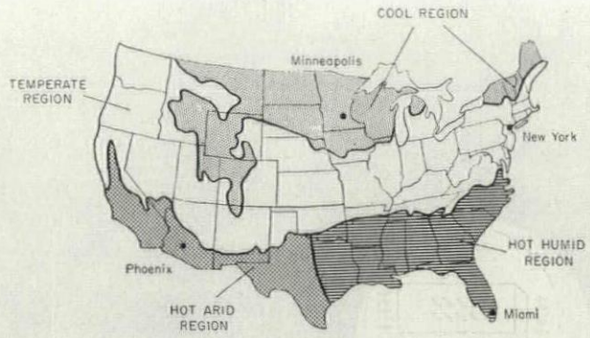


Stairway under rear of mezzanine leads to storeroom in basement. Beyond right wall are private elevators to Olivetti offices upstairs.









ENVIRONMENT and BUILDING SHAPE

Jet airplanes and fish are formed and modeled by the impacts of exterior environment. These storage tanks are shaped from within, like most buildings, whether they contain oil or house humans. But now, new research indicates that the masses of our buildings can be shaped to fit their exterior environment too, as are jet planes and fish.

It is easy to predict theoretically that the four different climates of the US (chart above) should require at least four different basic building shapes. Hundreds of years ago Vitruvius succinctly said why: " . . . the style of building ought manifestly to be different because in one part the earth is oppressed by the sun in its course; in another part the earth is far removed from it; in another it is affected by it at a moderate distance. . . ." Our country, whose areas vary in climate as widely as they do in Sweden and Somaliland (Vitruvius did not even think of humidity), has cities looking remarkably alike. Yet a square, dense office building in the tropic of Louisiana may be as "unenvironmental" as a fish out of water and a long lean slab in the subarctic of Minnesota may be a jet plane out of air.

The four reasons against regionalism of big buildings in the US have been:

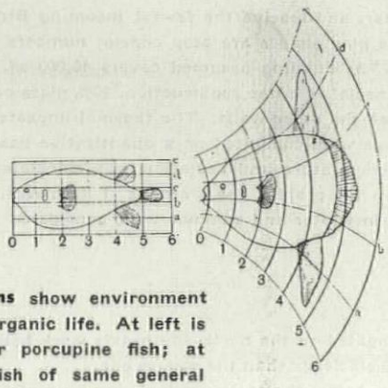
1. The rush into construction which often precludes thorough design.

2. The air-conditioning and heating industries, which can correct any architectural mistake in climate, though for a price.

3. The lack of architectural research telling how a building *should* be shaped for any given climate. Only designers' instinct and old architects' tales have been available.

4. The assumption among architects and owners that there is little to be gained in shaping big buildings to conform with climate (*shaping*, not just orienting, or sunshading).

But now this void of information is beginning to be filled. In this continuation by FORUM of the review of the research of Architects Victor and Aladar Olgyay at Princeton University's architectural laboratory, readers can discover what basic building shapes in the four climatic regions of the US should be, and why. The right shape building is not only an esthetic nicety, but can also save up to 10% in heating-cooling loads.

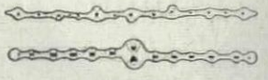


Fish cousins show environment effect in organic life. At left is Diodon, or porcupine fish; at right is fish of same general type, sunfish, who lives deeper in sea, and is deformed by greater pressures of habitat.

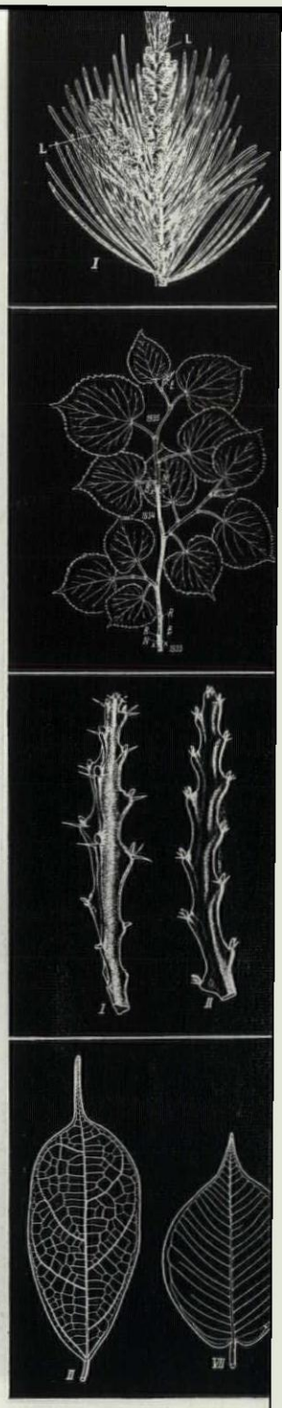
COLD ZONE

TEMPERATE ZONE

HOT-ARID ZONE



HOT-HUMID ZONE



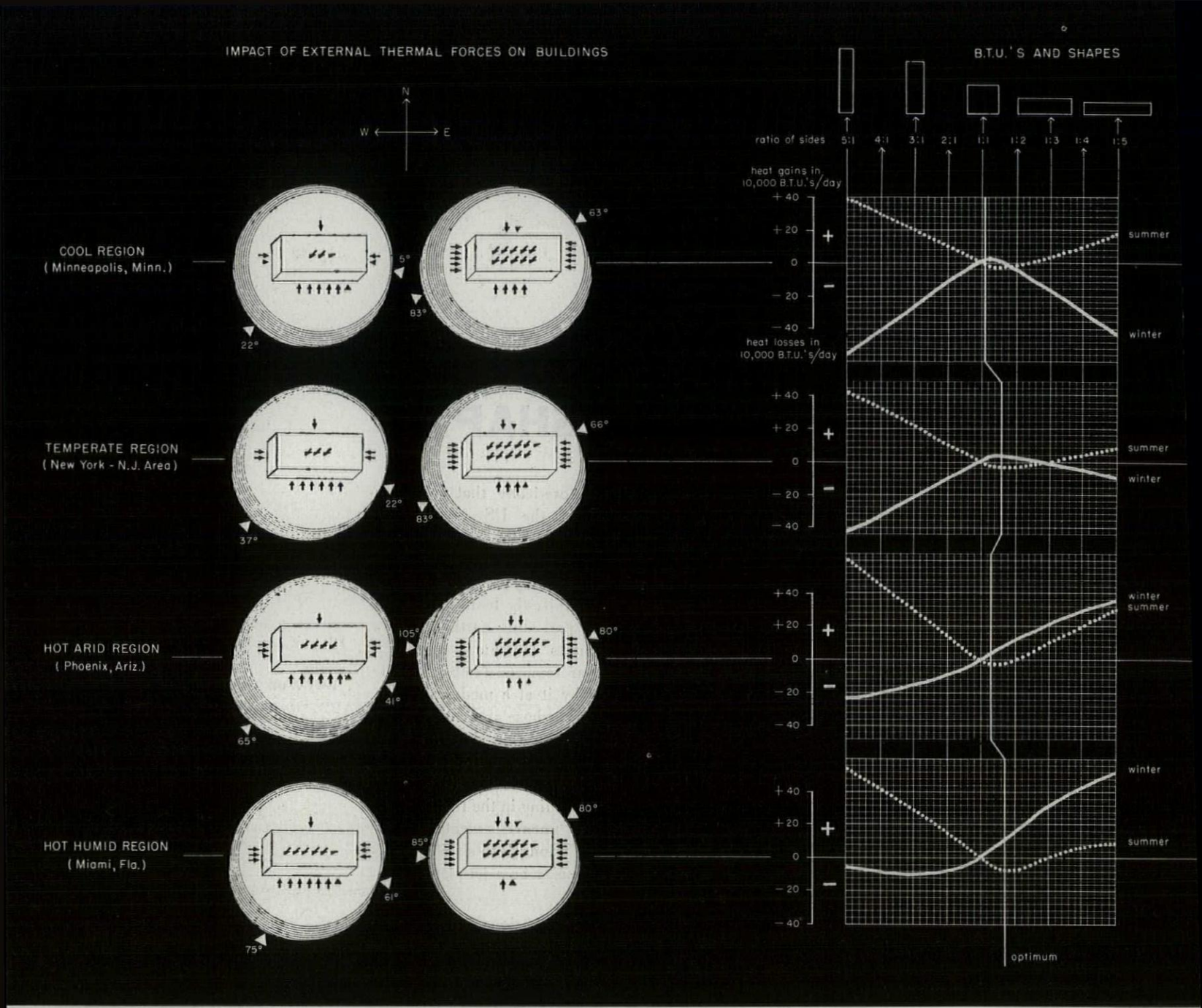
Leaf cross-sections show environment effect in plant morphology. Plants elongate or close surfaces according to favorable or adverse environment.

Cool zone: pine needles are slightly flattened cylinders to withstand unfavorable conditions. Forms are compact.

Temperate zone: friendly environment encourages linden leaf to open to considerable size.

Hot-arid zone: strenuous climate causes spurge plants to hide cells in bulky section and reduce leaf surfaces. Forms are massive for protection.

Hot-humid zone: leaf sizes multiply in wet, warm, hothouse climate. They grow roughly 2½ times as large as those in temperate climate.



The impact of thermal forces on buildings . . . and their effect on various shapes . . .

How to read the charts above: four cities were selected inside the US to investigate the effects of climate on structural shape, representing the various typical areas. The coldest (Jan. 21) and warmest (July 21) days were chosen in each region to indicate for winter (left) and summer (right). First measure of impact of external thermal forces on a building dealt simply with air temperature and radiation.

Each concentric circle represents with each line a 2° F. fluctuation of outside air (based on the lowest daily temperature). White arrows show direction of radiation impact; i.e., where the sun stands as the marked temperatures occur. Black arrows each represent 250 Btu's per sq. ft. per day direct radiation impact on various sides and on flat roof of typical building calculated on clear days. Diagrams are based on total radiation; i.e., the total effect of direct and diffuse energy.

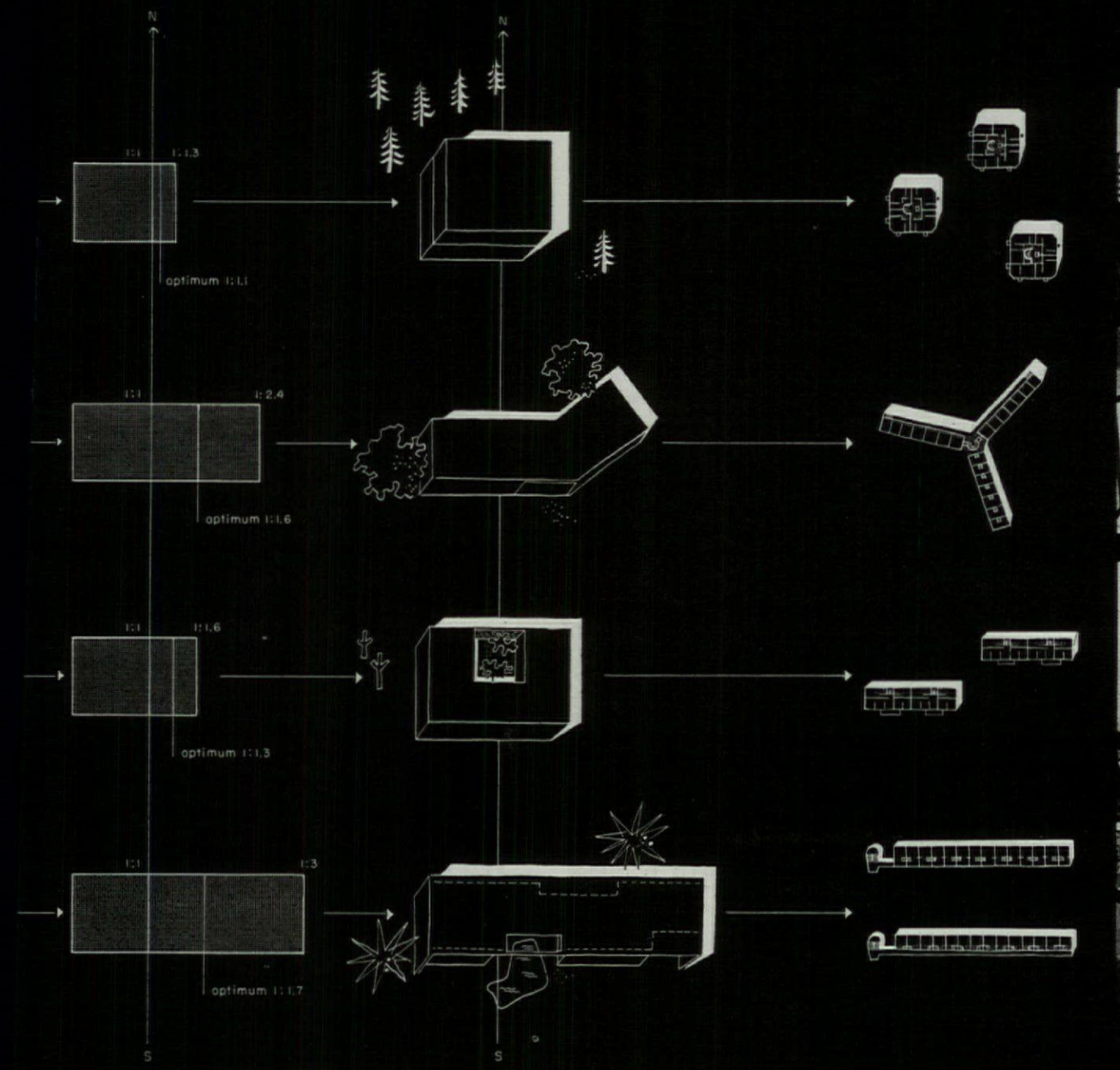
Interpretations:

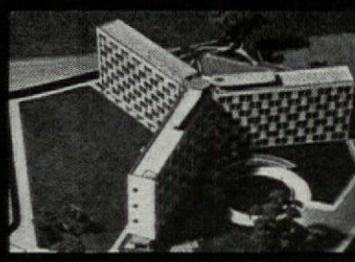
1. Adverse air temperature acts to compress buildings into a compact form to present the least surface.
2. Radiation tends to elongate certain sides, usually the north and south, to receive more sunlight.

Graphs of various plan shapes in each of the four climatic areas were used (above) to determine which shapes are most favorable thermally—those optimum shapes, for each locality, that lose the fewest outgoing Btu amounts in winter, and receive the fewest incoming Btu's in summer (diagrams of the plan shapes are atop charts; numbers give ratios of lengths of sides). The building assumed covers 10,000 sq. ft., is one story high, and has insulated frame construction, 40% glass on the south wall, and 20% glass on the other walls. The thermal impacts on the interiors of the buildings were computed on a quantitative basis, and the combined effect of temperature and radiation was calculated with the heat-flow method. On the graphs, the amounts of heat received by the square building both in winter and summer were considered as starting points.

Indications:

1. All the shapes elongated on the north-south axis work both in winter and summer with less efficiency than the square one.
2. The square building is not the optimum form in any region.
3. The optimum lies in every case in a more elongated form somewhere along the east-west direction.





. . . suggest four optimum building plans

The four optimum plan shapes are shown in block form, and in typical schematic plans. Starting from the basis of the square plan, the optimum shape for each climate is indicated above. The shaded extension at the right of the square in each case denotes the area of "stretch," within which the plan proportions are generally good, and the specific optimum is lined—in each case the cheapest to cool and heat. How much cheaper than the square plan?

In Minneapolis	1.4%	cheaper	to	heat	1.6%	cheaper	to	cool*
In New York	4.6%	"	"	"	4.2%	"	"	"
In Phoenix	26.7%	"	"	"	2.5%	"	"	"
In Miami	16.3%	"	"	"	8.1%	"	"	"

Schematic plans show how the knowledge can be applied. The New York plan, for instance, is bent to the NE, to show flexibility in direction in temperate zone. (This study concerns shape of building mass only.)

* The percentages in Minneapolis are small because the square form is very near to the optimum. Here a comparison to a 1:3 plan on the east-west axis would be more eloquent, where the saving in winter heating will be 13.9% and in summer cooling 6.8%. Other comparisons can be read from the graphs.

As buildings grow upward, the volume effect changes the scale of climatic impacts. The cause is the obvious geometric law that the growth in a linear direction is on the first power, in a surface on the second power, and in volume on the third power. This means that the same form enlarged four times will scale down its proportionate surface and hence the environmental impact to ¼.

Shown (above) are good multistory solutions for various climate types. In general the stresses in climate like Minnesota's and Arizona's are about 1½ times greater than those in Miami and New York, therefore it is eminently advisable to build up masses in cold and hot, arid regions where the adverse impacts are excessive.

In the cool zone, closed compact forms are preferable, because of their relatively dense cubature. Elongated unilateral buildings are not favorable. The environmental pressure definitely suggests higher buildings.

In the temperate zone there is the least stress from any specific direction, therefore this environment allows considerable freedom in form. However, forms on the east-west axis are preferable.

In the hot-arid zone massive shapes are advantageous. Cubical, or slightly elongated forms towards the east-west axis are most adaptable. High buildings are preferable.

In the hot-humid zone elongated buildings in the east-west direction are good. Buildings located on the north-south axis receive relatively the most penalty compared to all the other climatic zones.

Towns too should be shaped by climate

Although the forms of towns and cities represent composites of influences ranging from racial problems to sewage layouts, they are ruled by the same tendencies and characteristics that influence single buildings. One good example is the portion of an Arab village in Tunis shown above. Under the excessive stress of a hot-arid environment, individual dwellings congregate and pile together in collective mass protection, much as the spurge plants do (shown on p. 105). Here are other guides for the town planner, with illustrations, right:

In the **cool environment** the layout should provide shelter against winds. Larger building units should be grouped closely, but spaced to utilize beneficial sun heat treatments. The houses should be joined to minimize heat loss. The correct town structure in an *isolated, dense* layout.

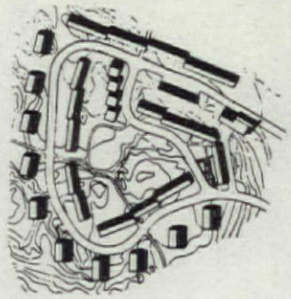
In the **temperate zone** plans can be open, with nature and houses merging. The town structure should utilize the possibilities of a *free* arrangement.

In the **hot-arid zone** the walls of the houses and the gardens should shade both the living areas and the street like a horizontal egg crate. Unit dwellings should be arranged around closed courtyards imitating cooling wells. Here the town layout should react against the heat with *shaded dense* structure.

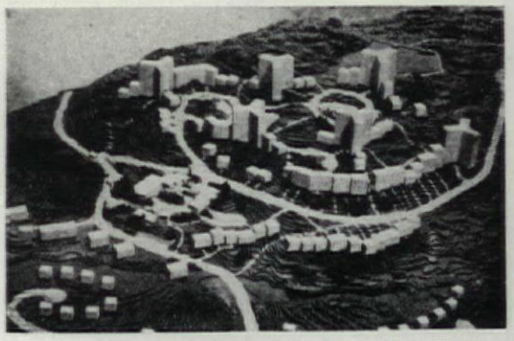
In **hot-humid areas** the buildings should be elongated, and this should be emphasized in the layouts. Separate the buildings to utilize air movement; shade trees are important. The character of the town fabric should be *scattered* and loose.

MORPHOLOGY OF TOWN STRUCTURES IN DIFFERENT CLIMATE REGIONS

COOL ZONE

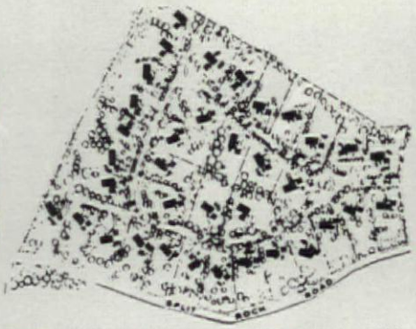


Hockaraegen, Stockholm



Gegenbach & Assoc., Kolsdal, Norway

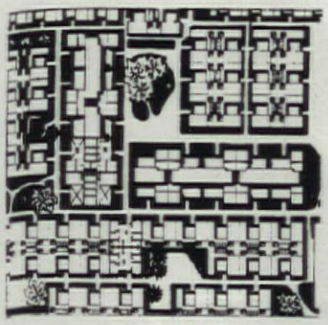
TEMPERATE ZONE



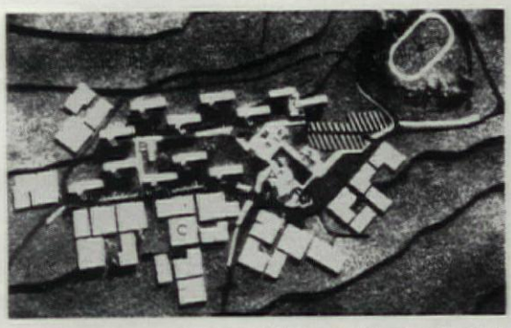
Furno & Harrison, East Norwich, L.I., N.Y.

Stevenage city plan, England

HOT-ARID ZONE

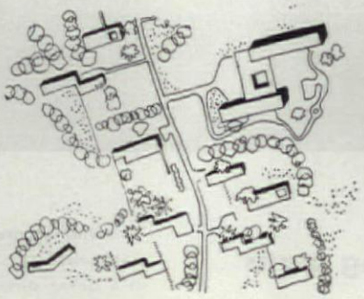


Wiener & Sert, Chimbote, Peru

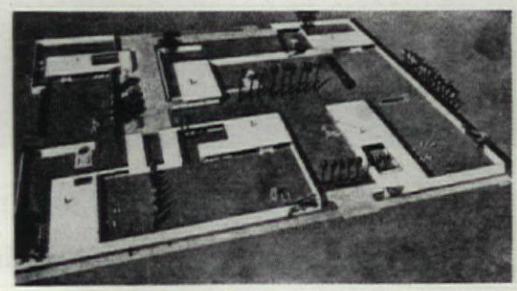


Tasteman, Morocco Housing Project

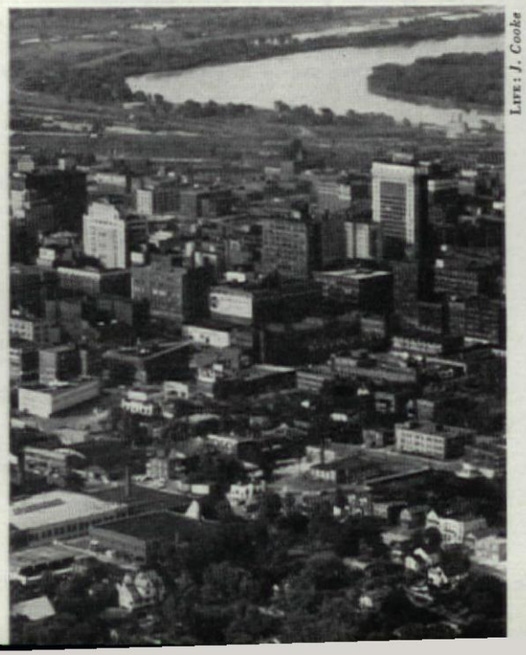
HOT-HUMID ZONE



Olgyay & Olgyay

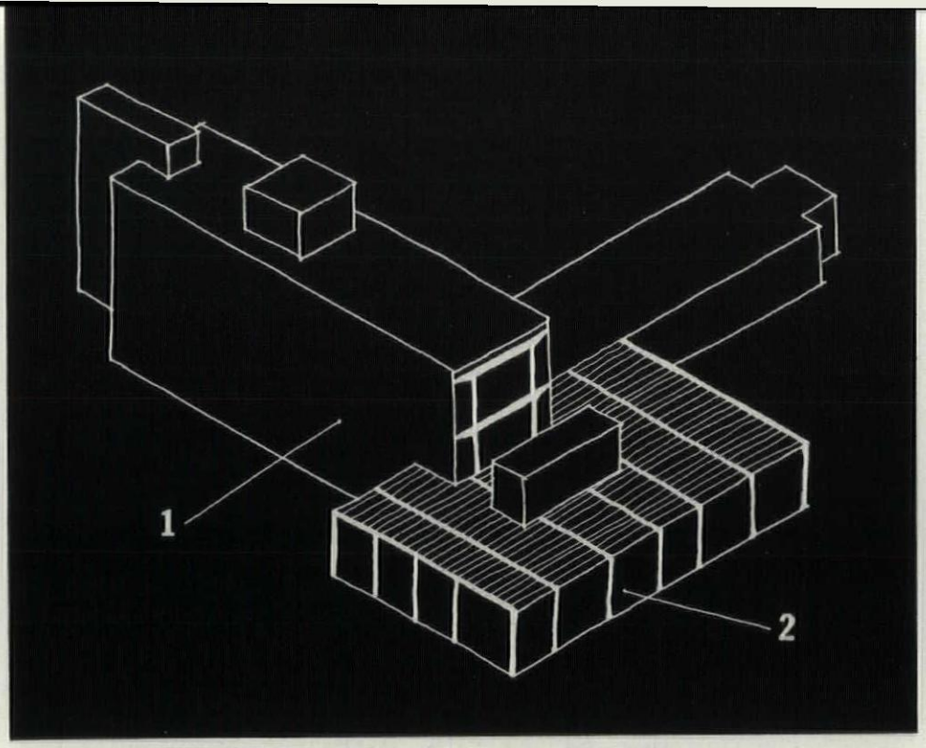


Paul Rudolph, Revere Houses, Fla.



LIFE: J. Cooke

A typical US city. To the casual glance it might be Houston, Salt Lake City, Minneapolis or New York. The fact that there is so little regionalism among cities in markedly different climatic zones is a caution to all builders of tomorrow's cities; it also undermines the importance of the proper design and use of protective and corrective climatological devices.



GROSSMONT DISTRICT HOSPITAL
LOCATION: San Diego County, Calif.
PEREIRA & LUCKMAN, architects
I. M. PEELYON, consultant
TREPTE CONSTRUCTION CO., INC.,
general contractor

Expansible hospital uses two kinds of framing for two kinds of planning:

1. Cantilevered concrete for the long, narrow nursing wings

2. Steel frame for the compact medical core

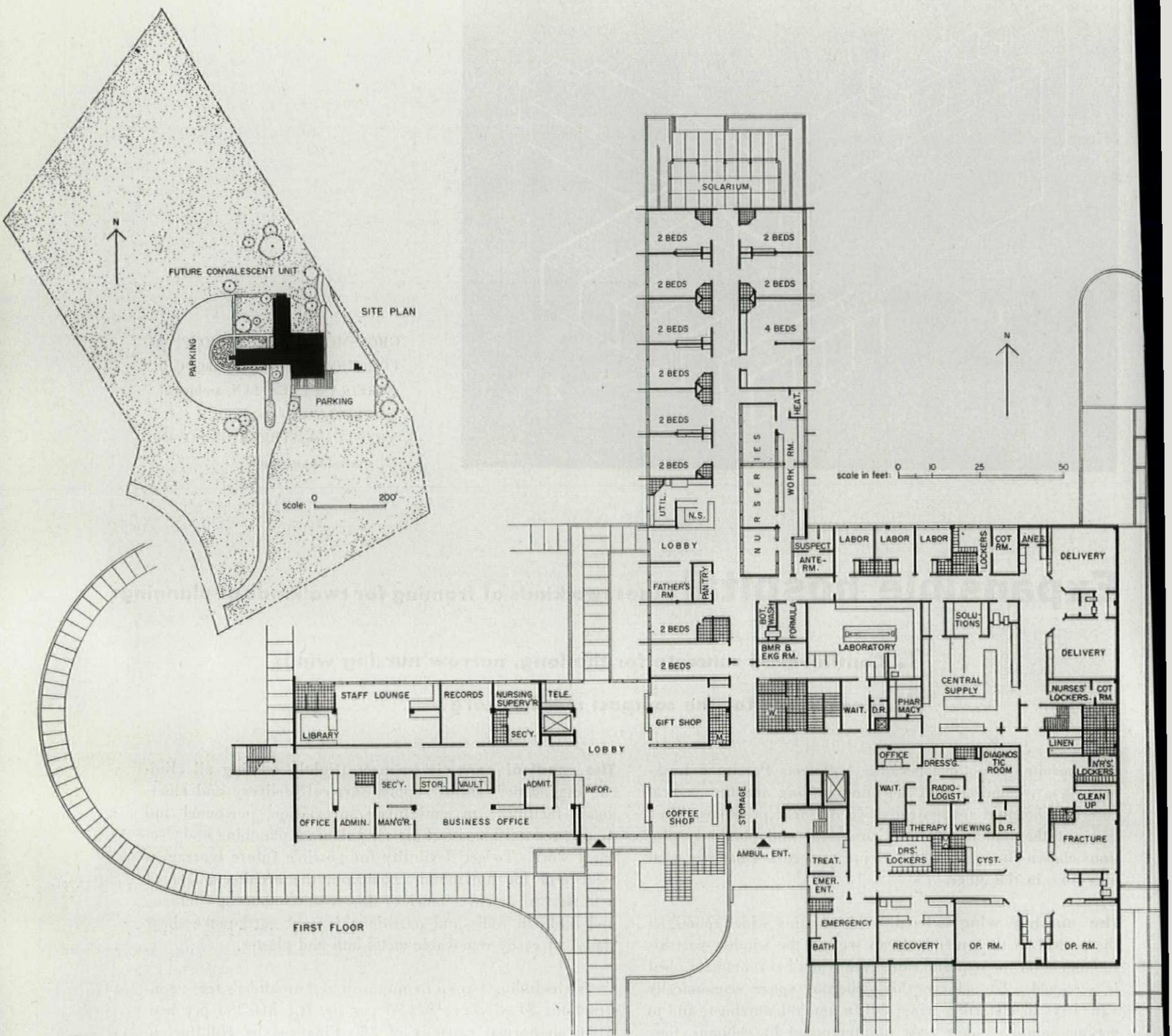
This hospital is notable because Architects Pereira & Luckman have recognized that the nursing wing and the medical core of a hospital are basically two different problems. They laid out the building so that structural and planning solutions chosen for one of these elements need not hamper what was done in the other.

The nursing wing is lengthened, creating wider rooms, so the patient in the inner bed can see out the window past his roommate on the opposite side, even when his roommate's bed is screened. To achieve this generous space economically (28′ bays in maternity wing, 24′ in general nursing), and to get maximum window area uninterrupted by columns, they chose a cantilevered concrete and pan-joist construction.

The medical core is compact (tightly relating all clinical, diagnostic, central supply, surgical, delivery and emergency facilities) to consolidate supervision, personnel and supply, reduce the cost of air conditioning, plumbing and electrical work. To get flexibility for possible future rearrangement and for horizontal expansion, the architects framed with steel trusses over much of this area, eliminating columns, and built all walls and partitions (except earthquake shear walls) of easily removable metal lath and plaster.

Costs (including Group I equipment and architect's fee): construction: $1,383,724; $21.96 per sq. ft.; $16,280 per bed, based on normal capacity of 85. Financed by Hill-Burton, state aid and $800,000 local bond issue.

Glazed facade of nursing wing is given room-scale by fins and perforated horizontal sunshades

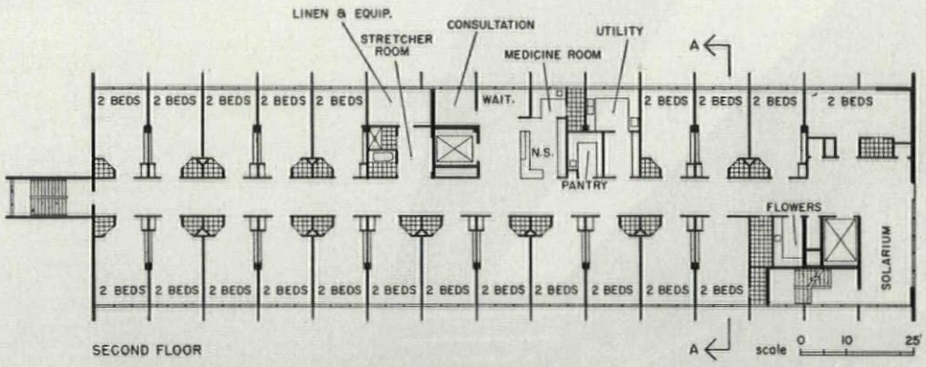


Site plan and floor plan provide for lateral expansion in three directions

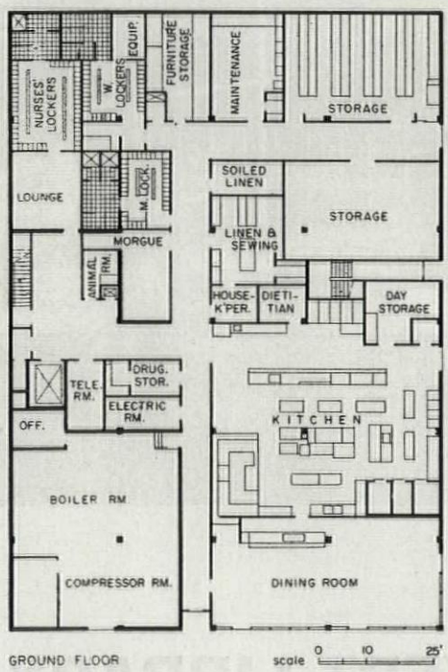
The medical core can be expanded three different ways with minimum disturbance to the hospital's operation and with minimum alteration costs: 1) south side of core can get 35′ addition containing two new major operating rooms and additional clinical area for recovery, X-ray and so forth; 2) delivery can be converted to surgery, labor-room space can give leeway for clinical expansion, with maternity wing converted to acute surgical nursing and separate, complete maternity pavilion can be built; 3) entire east wall of core can be expanded over service court with additional operating rooms at surgical end, additional delivery rooms at maternity end, clinical expansion between. The architects are realistically aware that medical changes five years hence will possibly make any one of these expansion plans impractical, are relatively certain parts of all three will be adopted, think that expansion in three directions makes good insurance. Convalescent unit will likely be added to north of hospital.

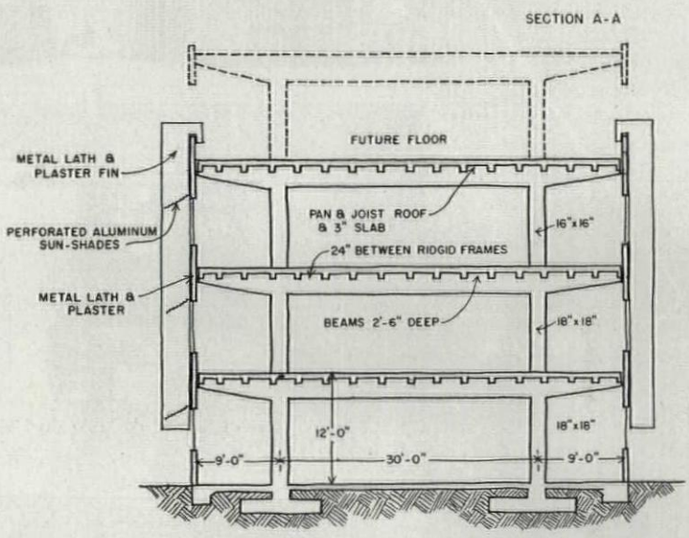
Present elevators are considered adequate for future expansion, with possible addition of hydraulic lift between core and service floor below.

Ambulatory patients use the same entrance, reception, business and record facilities as inpatients, and use treatment areas associated with emergency suite. The ambulatory load is expected always to be very light because the hospital, in a well-to-do suburb of San Diego, is a considerable distance from doctors' offices. This distant location will unhappily limit the hospital's usefulness in a field of service increasingly important to both doctors and patients. It also will limit the hospital's potential income from ambulatory use of the medical core.



Nursing-wing structure yields full windows. Orientation is actually northeast-southwest, hence vertical shades on both sides. Note good relationship of nurse's station, consulting room, elevator, waiting.





Cantilevered concrete nursing wing will carry vertical expansion

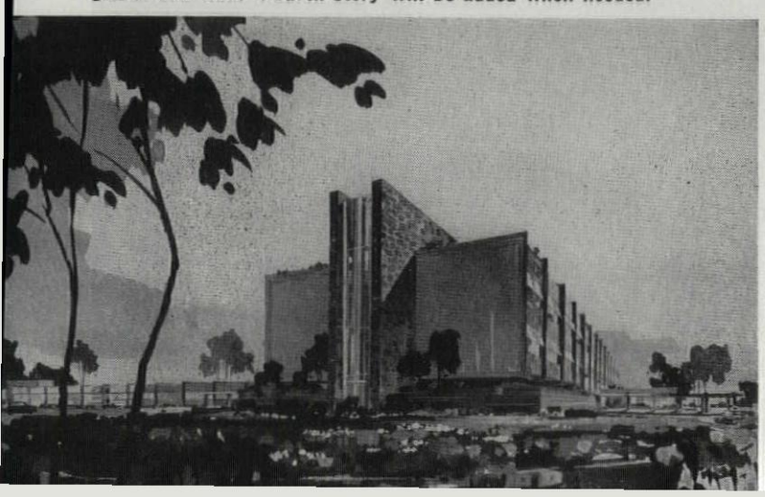
Nursing-wing construction was chosen after the architects investigated nine possible schemes and computed comparative costs. The three leading contenders:

- Concrete frame and pan-joist, suspended ceilings, 24′ x 32′ bays, $2.18 per sq. ft. (scheme chosen).
- Plate girder cantilevered over columns fireproofed with lightweight aggregate plaster, suspended ceilings, 24′ x 32′ bays, $2.41 per sq. ft. (Rejected on cost and tight duct space through girders.)
- Lift slab with columns 24′ o.c., three columns to slab width, $2.08 without ceiling, $2.38 with. (Rejected because not suitable for all nursing areas and because ceiling would be needed in most instances.)

Other schemes investigated were a more suitable but more expensive ($2.51 with ceiling) lift-slab construction with two columns per slab width, and various combinations of steel beams and columns fireproofed with lightweight aggregate plaster. Costs varied from $2.25 per sq. ft. for 2½″ concrete slab, suspended ceiling and 16′ x 12′ bays, to $3.09 for steel decking with lightweight concrete fill, suspended ceiling and 12′ x 20′ bays.

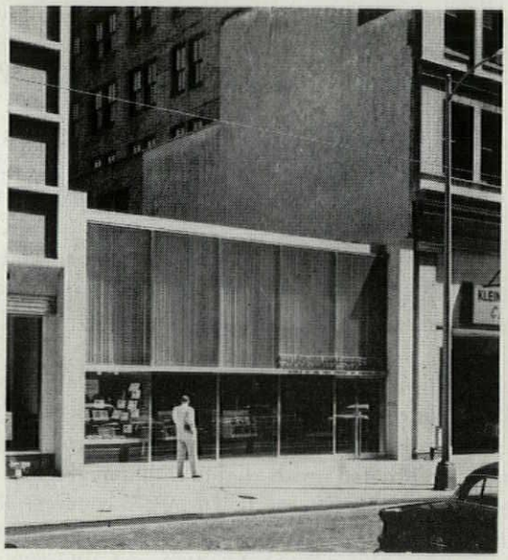
Normal bed capacity of nursing wings is 85, but with virtually all rooms used for two beds, peak capacity would be 105. Vertical expansion of nursing wings will bring normal capacity to 200, peak or emergency capacity to 250.

Stone-faced stair block at west end of general nursing wing has fully glazed end wall. Fourth story will be added when needed.

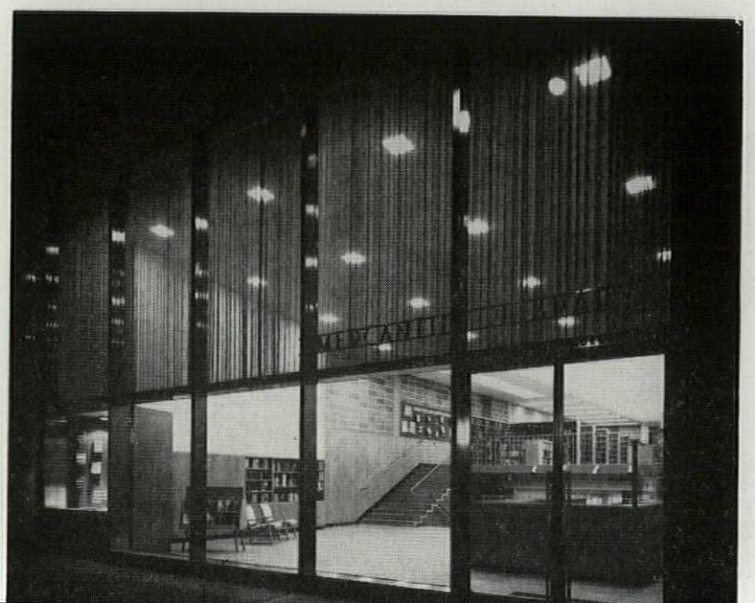


Photos: Cortlandt V. D. Hubbard

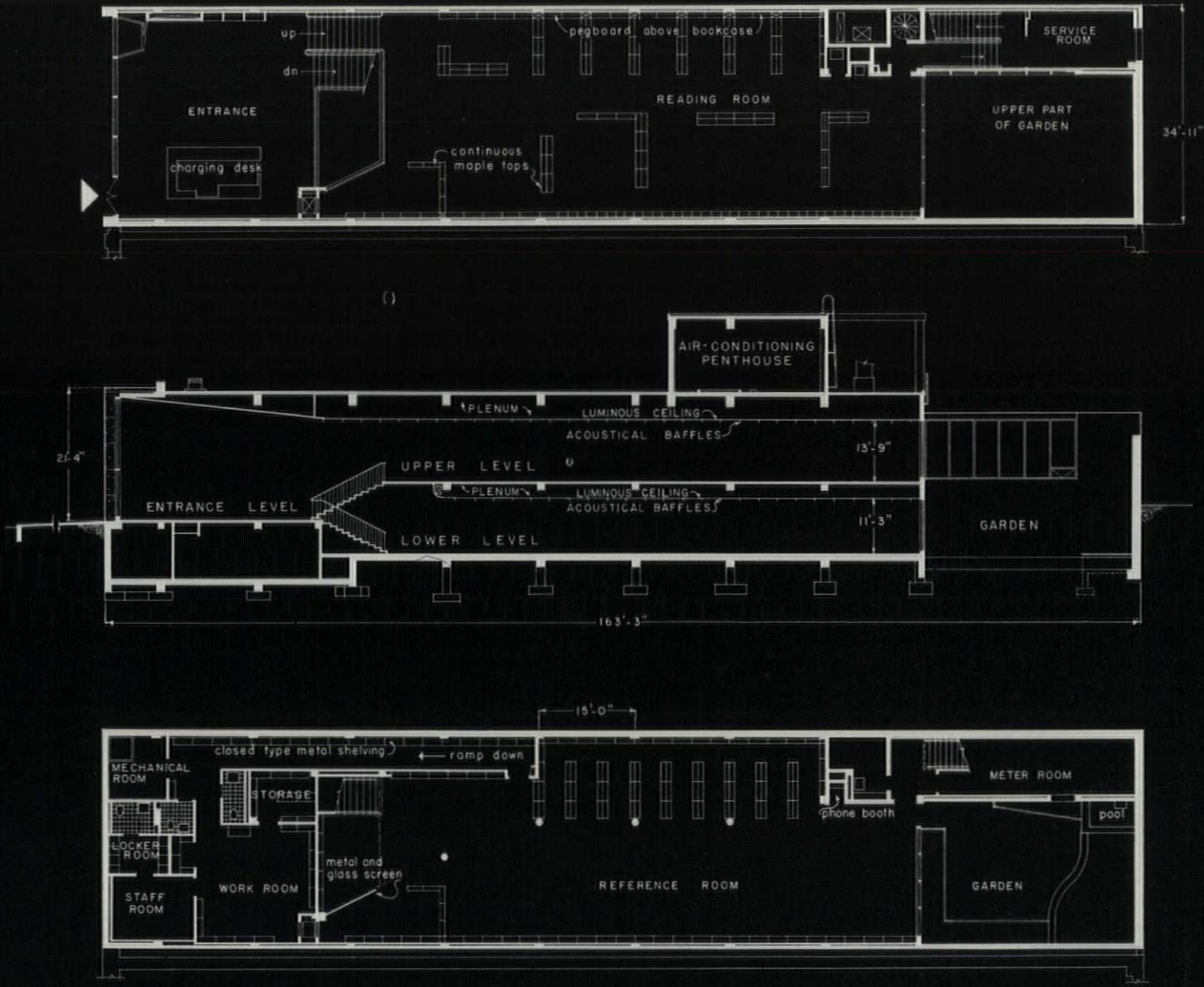
EXTROVERT LIBRARY



By day, simple glass and stainless-steel front meets competition from commercial neighbors.



By night, inviting lobby and both floors go on display from street.



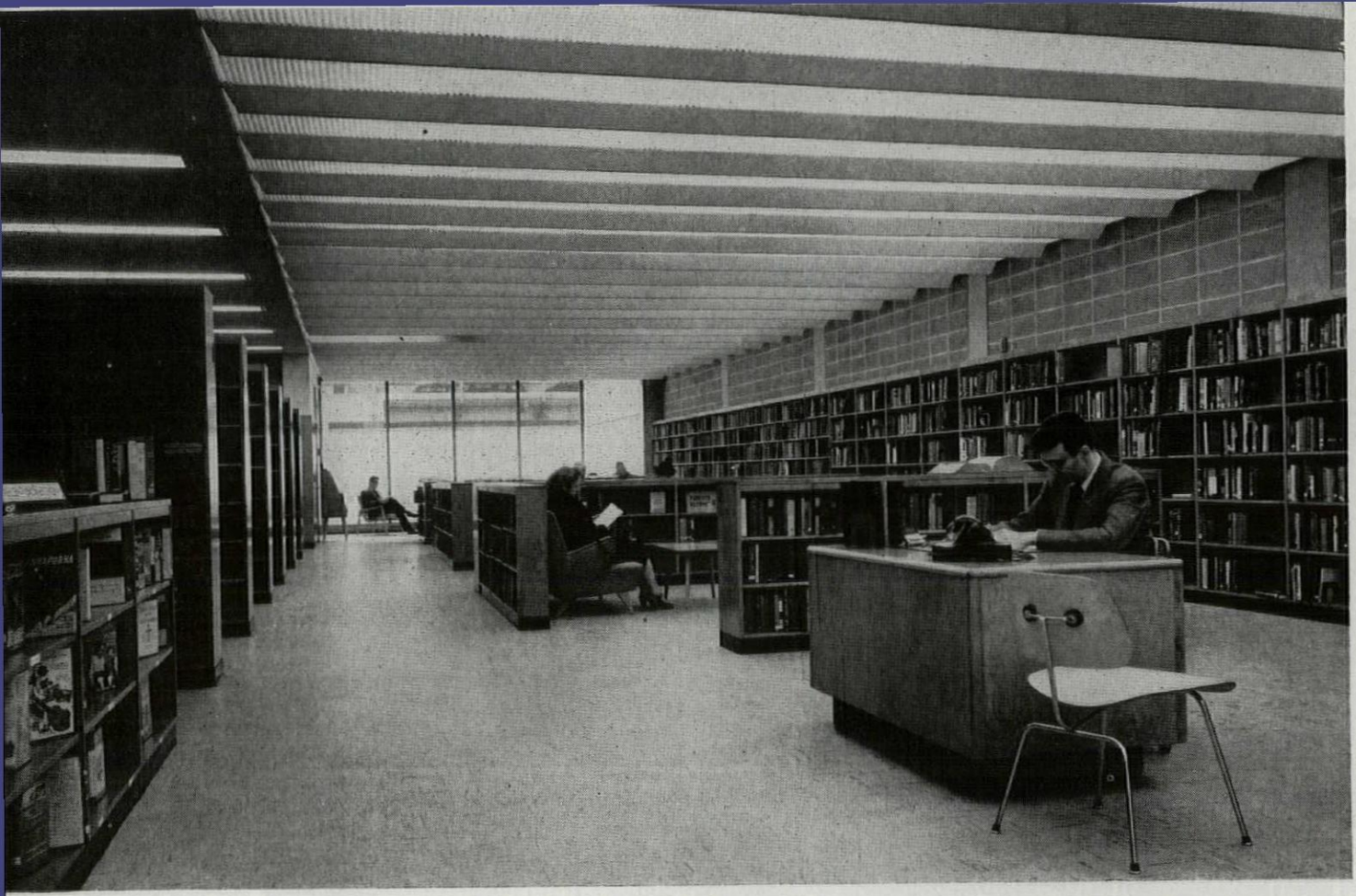
puts its split-level floors on public display and under easy supervision

Unlike most libraries which hide from people behind a landscaped plot and a parade of pillars, Philadelphia's new Mercantile Library is an extrovert. Its open show-window front removes all library mystery, does away with steps, makes using books seem natural, easy, popular.

Tired of rattling around in a cast-off railroad depot, the library two years ago traded the property with the local parking authority for a new lot, plus $350,000 of building money. At the same time, it gained a better address (on busy Chestnut St.) and an opportunity to erect this attractive building—both of which have boosted the library's patronage. Finally, it won the top award in the annual exhibition of the local AIA chapter.

Because the lot is only 35′ wide and is squeezed between tall buildings, the architects suggested not the usual monumental public building, but a glass-fronted structure which would meet the competition of its commercial neighbors. Through this transparent front passers-by plainly see the inviting lounge at street level and both of the two working levels which are staggered a half flight up and down. (This arrangement also helps the circulation desk in the mezzanine lobby control the other two floors.) The view into the 163′-long building is improved by the even flourescent lighting through continuous transverse strips of corrugated plastic suspended between acoustical baffles. This luminous ceiling is also part of the air-conditioning system, for it is the lower face of a plenum (see section above) which feeds conditioned air into the building through the loose joints between the edges of the corrugated plastic panels and the supporting acoustical baffles.

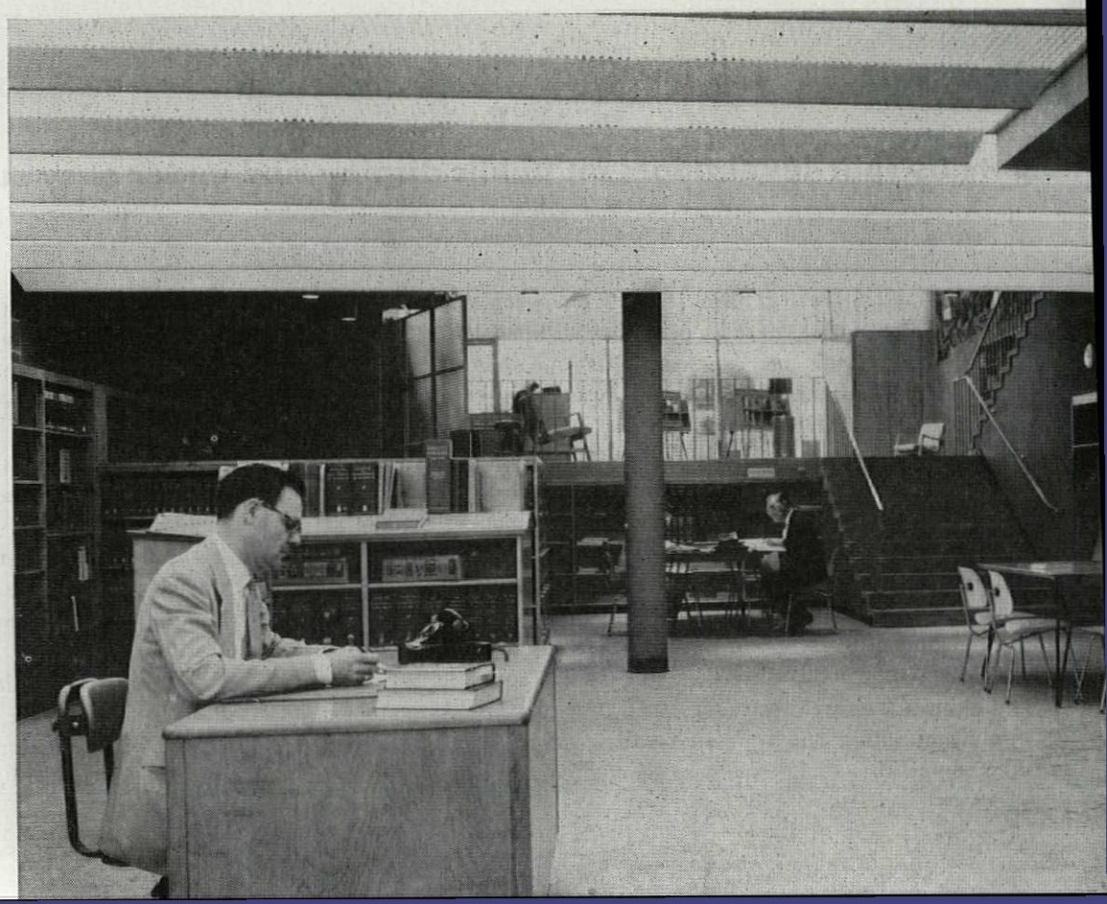
A division of Philadelphia's Free Library System, this building has shelf space for 40,000 volumes and a circulating stock of 10,000. Construction cost: $298,000 (including $16,300 architectural fees and $9,500 engineering fees), or $24.73 per sq. ft.



Upper level is divided into reading "rooms" by free-standing book cases. Above shelves, warm buff-colored cinder block is left exposed.

Both library levels are lit by luminous ceilings

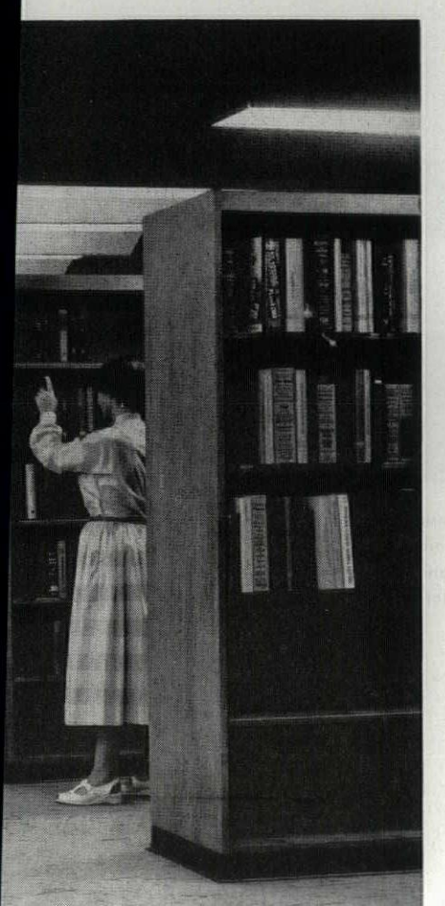
Lower-level reading area is half flight down from entrance lobby. Woodwork is mainly maple and red birch; floor is asphalt tile. Note luminous ceiling of corrugated plastic strips supported between acoustical baffles.



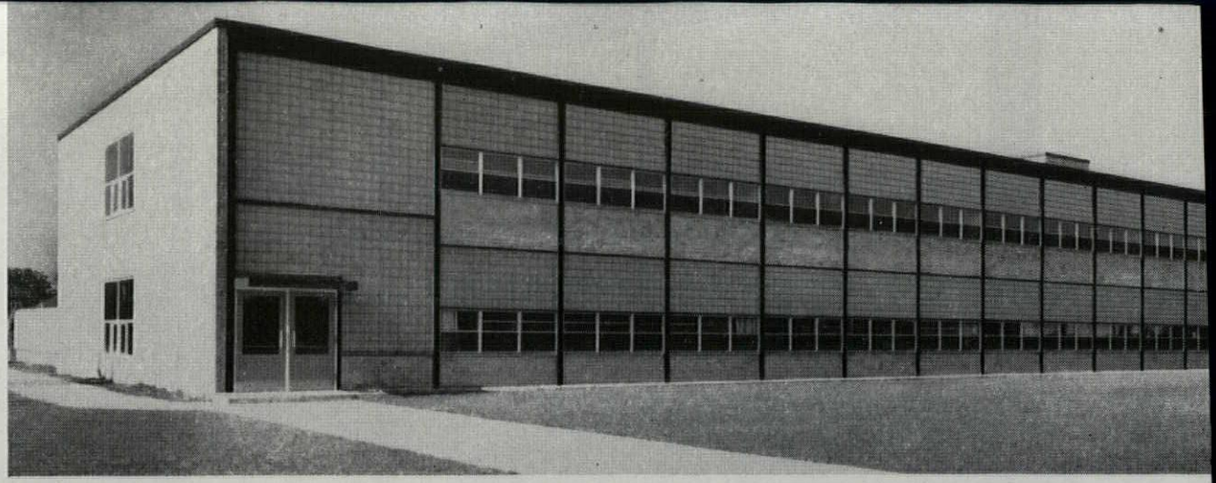
MERCANTILE LIBRARY, Philadelphia
SIDNEY E. MARTIN, architect
HARRY G. STEWART
& ROBERT W. NOBLE, associates
CHARLES S. LEOPOLD, mechanical engineer
WILLIAM H. GRAVELL ASSOCIATES,
structural engineer
FREDERICK W. PECK, landscape architect
IRWIN & LEIGHTON, general contractor

Reading area at rear end of first level extends during summer months out into small landscaped court which otherwise serves as light well.

and rear walls of glass

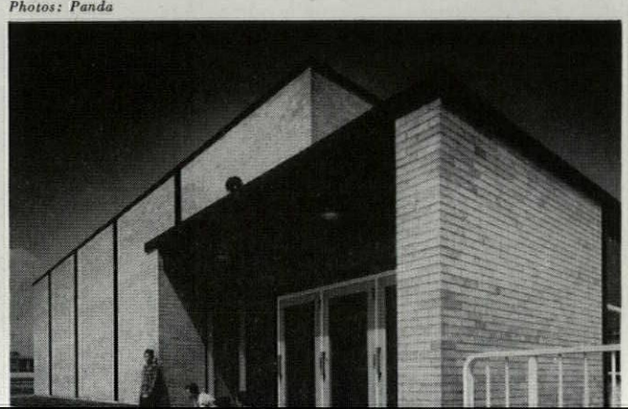


Wall of glass at rear of building opens both floors to garden, compensates for absence of windows along side walls.



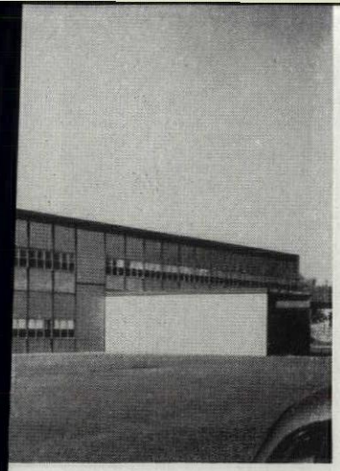
Front facade of classroom wing. Glass-block panels are set into steel frame, alternating with brick panels and clear glass.

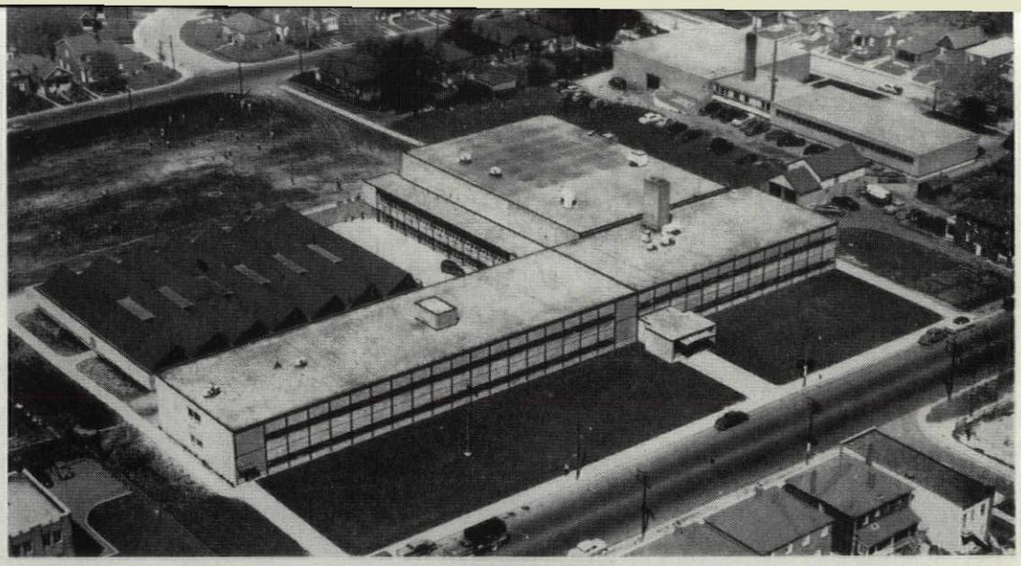
Photos: Panda



Handsome entrance to audi. torium-gymnasium wing. Bents of structure are left exposed in brick exterior wall.

Central courtyard is sunk below ground level of classroom wing, functions as service space for the shop wing (right). Gym-auditorium wing (at left) has wide gallery windows.





Sited and designed to harmonize with power plant next door . . .

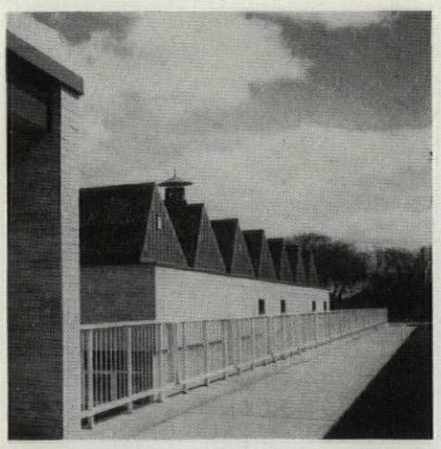
this industrial school looks its part

JOHN B. PARKIN ASSOCIATES, architects and engineers
BENNETT-PRATT LTD., general contractor

Several years ago Parkin Associates were engaged to design the York Hydro Plant at the end of a long stretch of land outside Toronto; a year later, they won the opportunity to design a vocational high school for that stretch of land itself. That they have been able to bridge the two clients—the Hydro Commission and the Board of Education—and create a common interlocking scheme of coherent siting and architecture, a good-looking harmony of diverse public buildings, shows the wide applicability of today's design techniques and shows also the designer's large view.

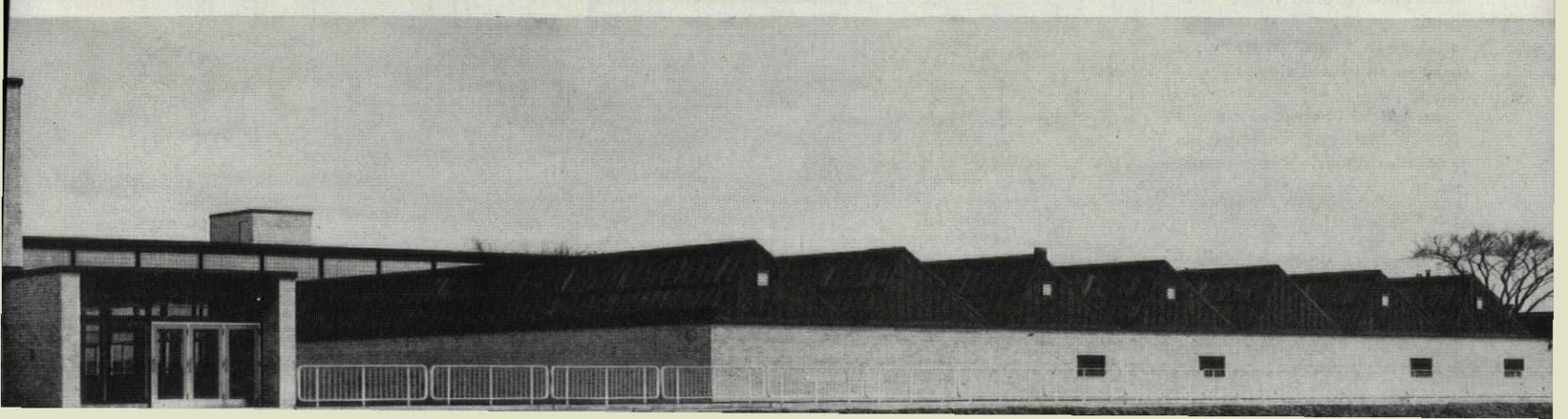
The school (shown on these pages) is split with industrial directness into three wings: classroom, shop and community center. The first of these is long and lean; the others are bulky. Only minor circulation is needed between the classroom wing and the massive shop wing; the curricula pretty well split the students either to academic or shopwork. The third unit has facilities to be used by the whole community—auditorium, gyms and exhibition gallery —and it too forms virtually a separate structure in function. Structurally these facilities also are isolated, to be used at night without lighting or heating the whole school.

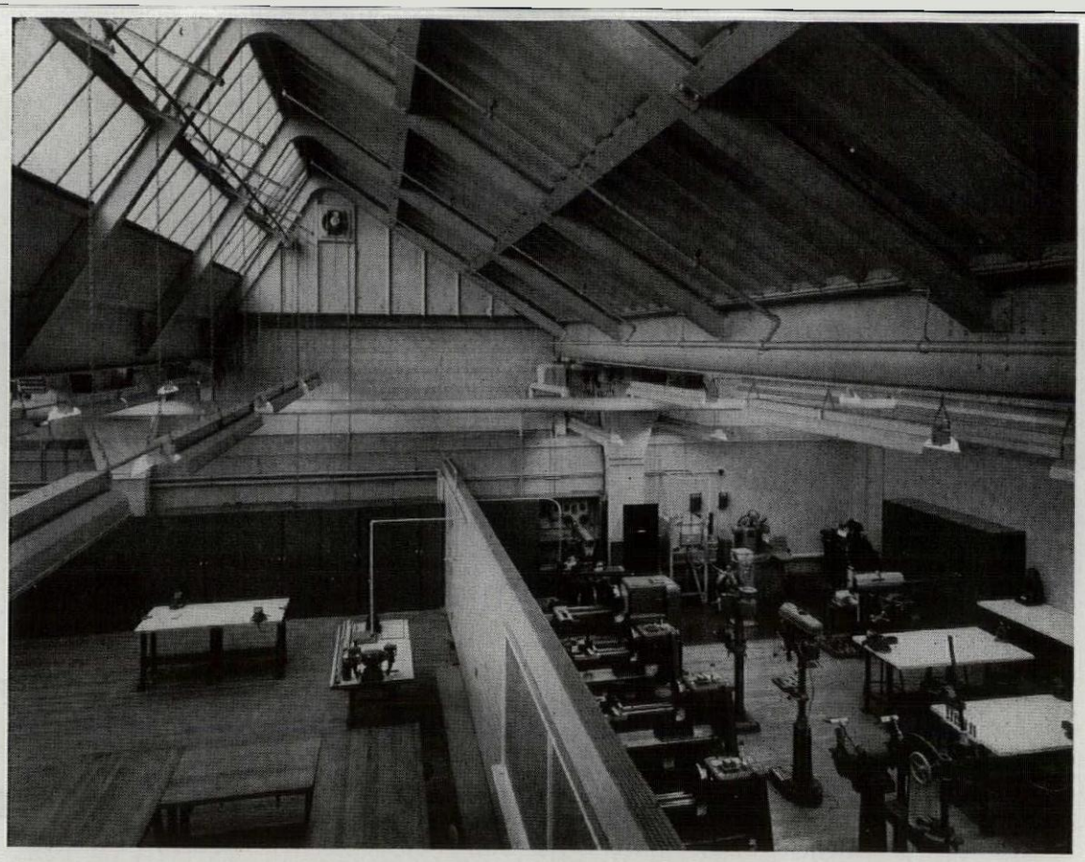
Natural lighting is one of the big pluses endorsed by the users: directional glass block is used to advantage on the east side of the classroom building, and a big sawtooth-skylight roof floods the shops with light—particularly important since this wing is dug into the ground to avoid shadowing the classrooms.



Shop wing from gymnasium entrance. Central courtyard separates gym and shops.

Sawtooth skylights extend over entire length of shop wing, which is dug into ground to avoid overshadowing other wings





Skylighted shops. Partition walls, which go only as high as necessary for functional division of space, allow the bath of natural light to flood equally through the space under each rigid-frame sawtooth skylight.

INDUSTRIAL SCHOOL *continued*

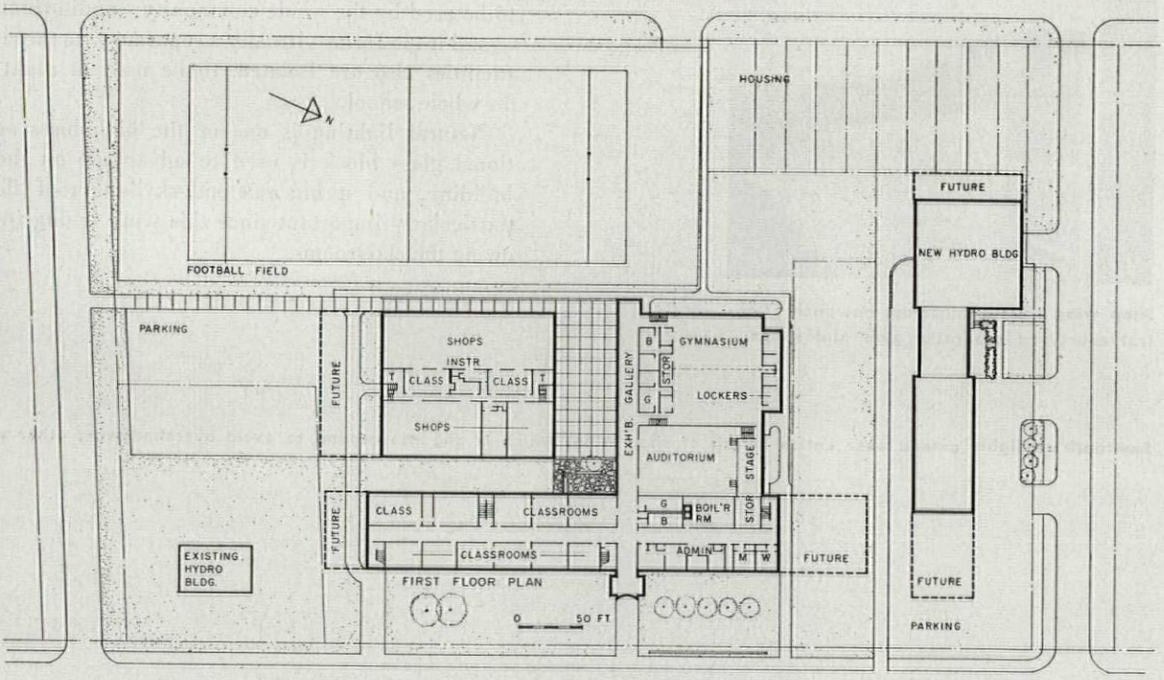
Its interior, too, has the efficient look of an industrial plant

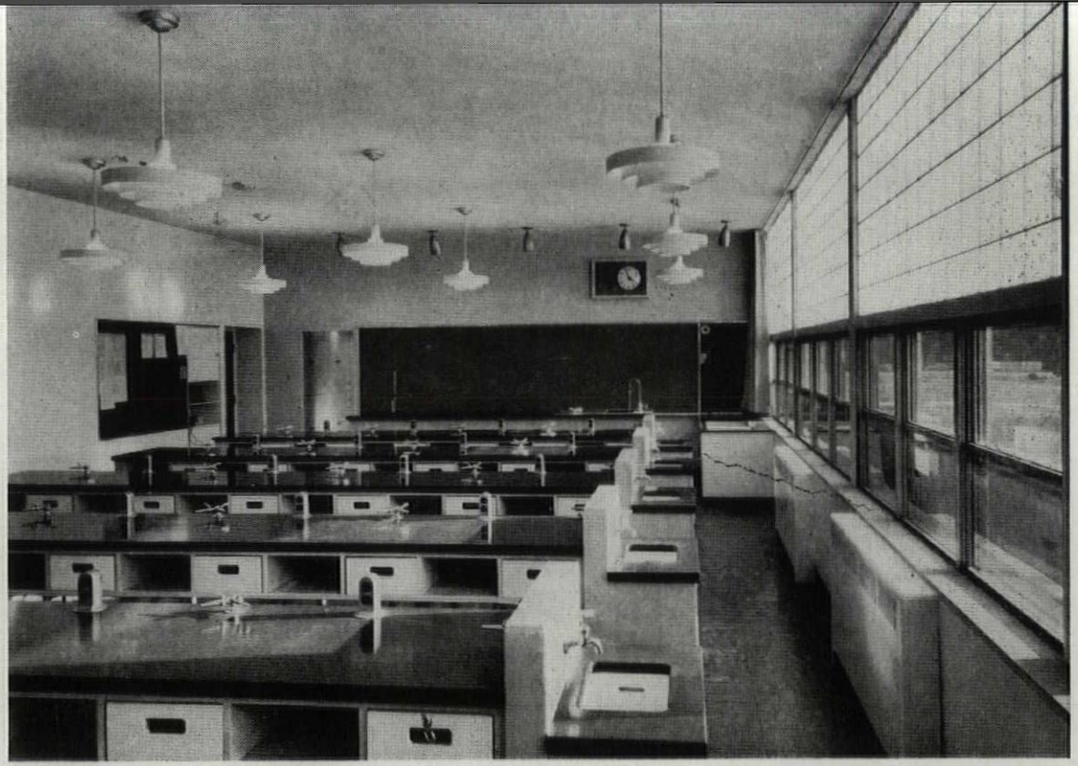
GEORGE HARVEY SCHOOL
York, Ontario, Canada.

▲ 12 student classrooms, three commercial rooms, 3 typing rooms, 2 music rooms, food preparation laboratory, sewing and homemaking room, physics and chemistry rooms. ▲ Shops for building trades, auto, electrical, cabinet making, machining. ▲ Drafting room, blueprint-reading room, barber shop. ▲ Double gymnasium, exhibition gallery, auditorium seating 500, library with protected terrace for outdoor study.

Construction: ▲ Steel frame, with brick, glass and directional glass-block fillers. ▲ No wood used in entire building.

Costs: ▲ $1,263,000, excluding land (490′ x 500′ plot), landscaping and furnishings. ▲ $13.15 per sq. ft.





Classrooms, well-separated in own wing from noisy shop and gymnasium wings, are liked by teachers and students for their light, airy quality (glass block is east).

Gymnasium can be split with large folding partition. Its edge is shaped to fit the irregularities of the mezzanine seating space, which also is divided in two.

Industry builds

KITIMAT

America's "new town" prototype

The story of its planning told by the planners* (*continued from the July issue*)

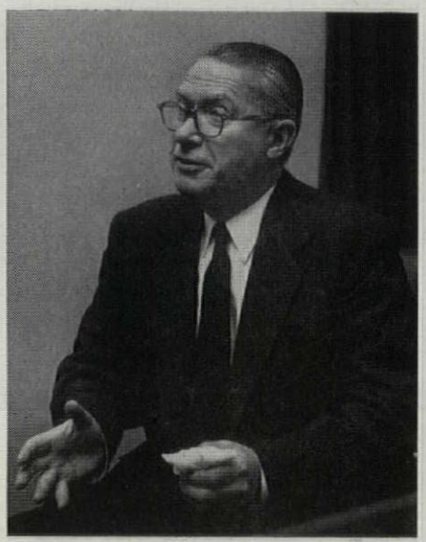
Kitimat is now being built in the British Columbia wilderness, under direction of the Aluminum Company of Canada, Ltd. The first neighborhood will be occupied this summer. This is, as FORUM said, "the first completely twentieth-century 'new town,' completely new, completely modern, in North America."

One kind of opportunity in Kitimat is shown on the map; the other, almost more important, was the opportunity to learn how to get modern planning off the map, off paper into a living, effective program.

On the map, Kitimat is a realization of guiding ideas long seeking an effective outlet: the Garden City idea that a town should be planned for calculated expansion, after which new growth is in a separate new community; the Radburn idea of separating through traffic from the pathways of the local citizen; the Greenbelt idea of surrounding a well-defined town with a belt of farm and forest in place of amorphous "string" development; a balancing park and greenway system within the town; and finally the idea of the neighborhood.

Off the map, the Kitimat project gave a chance to work out methods so the planning could be realized *as visualized* by the planners, not hurt and upset all along the line by incomprehension.

The story in this issue deals with the brand-new idea of a separate service center for the city; with the planning of the first neighborhood unit; and with the development of the first neighborhood center.



Charged with Kitimat: Vice President Du Bose of Alcan

THE PLANNING TEAM

CLARENCE S. STEIN, coordinator and director of planning; Roger Willcox, assistant

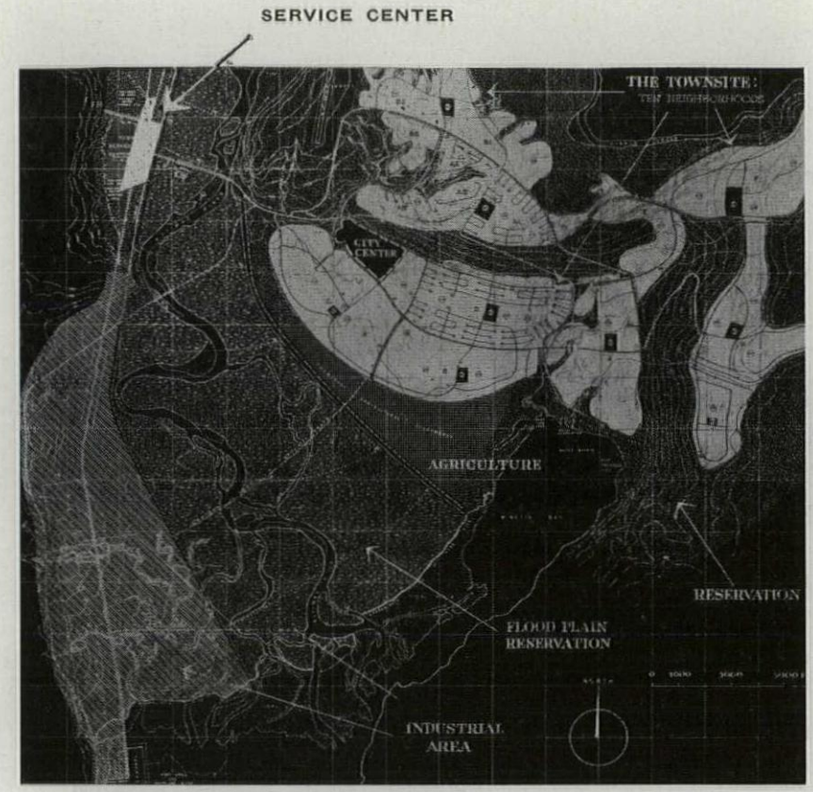
MAYER & WHITTLESEY, architects, engineers and town planners; M. Milton Glass, associate

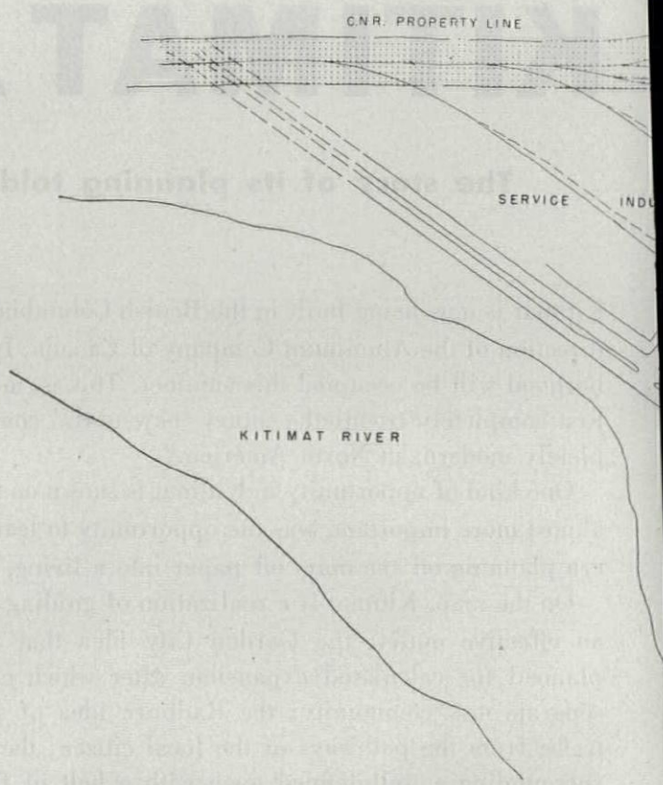
Photos: (left) LIFE—*Eyerman; (above)* FORTUNE—*Ehrenberg*

City-center character is shown in rendering. This is the idea of a DOWNTOWN civic and commercial center facing on a series of malls instead of facing on Main St.

High-tension towers of aluminum carry power 50 mi. over glaciers and rugged terrain to Kitimat's smelter.

* Through an error the first installment was called "the planner's story" instead of "the planners'" in the plural. Several contributed.





The service center is perhaps Kitimat's most original contribution to town-

Kitimat's service center combines ideas taken from Planned Industrial Districts (AF, April '54), Regional Shopping Centers (AF, June '54), roadside observation, common sense.

The center is basically a device for taking out of town but close to it the "dirty" or "working" side of town, combining it with stuff usually strung out along the roadside, working both into a planned, designed complex more attractive and more economical.

Elements brought together "outside town" include: 1) rail-side facilities—freight yards, warehousing, building material and contractors' yards, public work yards; 2) land-eating operations that cannot afford downtown prices and are usually messy—heavy repair, auto repair (showrooms associated with this for convenience), laundry, milk plants, bakeries and the like; 3) service to the center's work force—eating places; 4) limited retail outlets attached to sheet-metal shop, the lumber salesroom, the electrician.

The advantage of association together is that none of the activities is large enough alone to command correlated service facilities, eating or recreation, which all descend into the isolated road-defacing hot-dog roadstand type. Grouped together, these facilities command profitable services attracting better shop-keepers, and creating a dignified place.

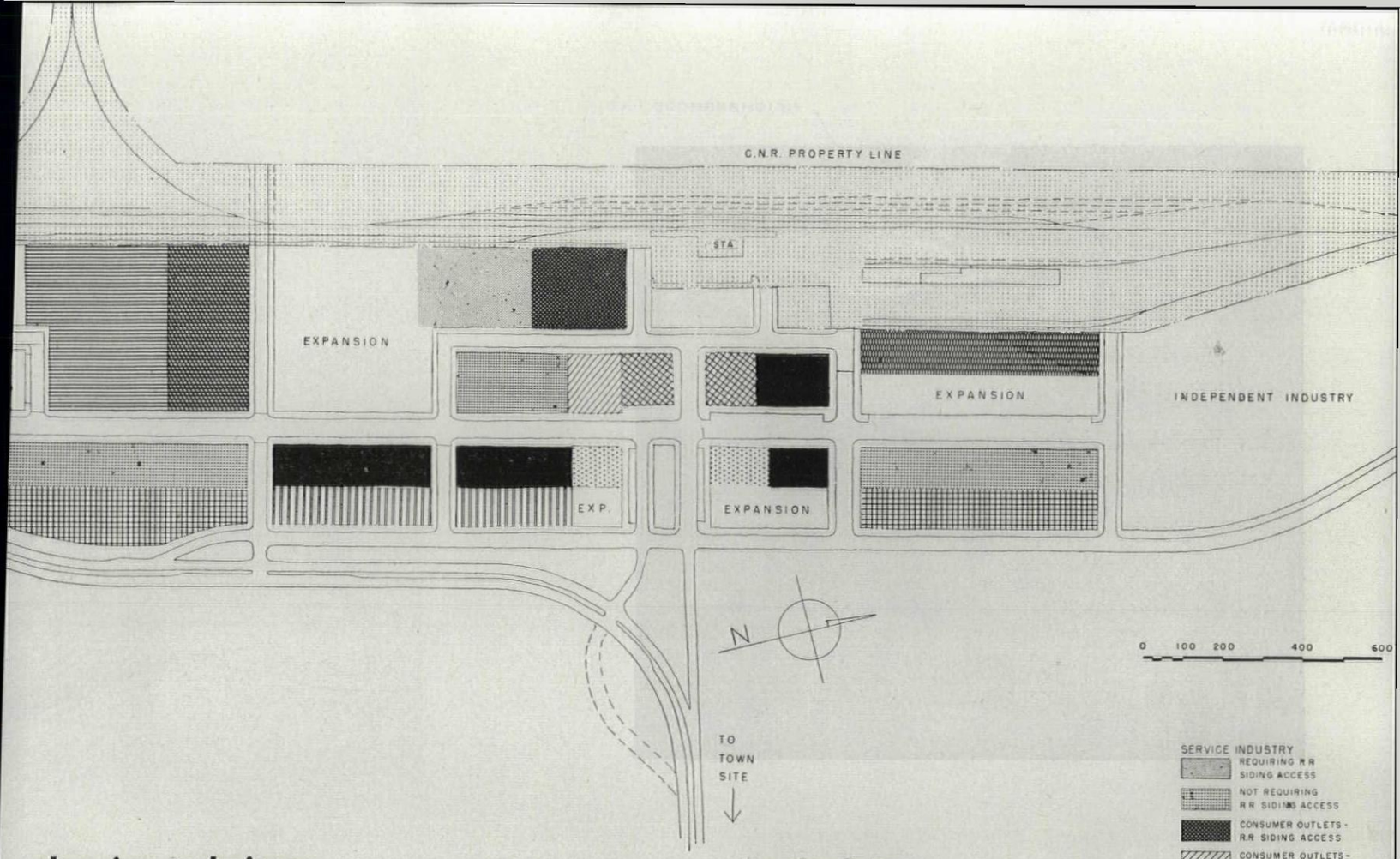
Adjoining or outlying from the service center are sites for light industry not requiring direct access to the port.

Major features of the plan:

1. Initial development may start using cleared areas and alignments already established in the field.
2. Each major land use may be expanded from the central area so that a consolidated development may be maintained at all stages.
3. Simplicity and directness of circulation at all stages.
4. Adequate industrial siding without deep penetration of rail into site.
5. Economical operational layout for sidings so as to avoid high costs for switching.
6. Industries requiring relatively large sites may expand back from their rail sidings.
7. Concentration of warehousing in one area adjoining freight yard.
8. Central entrance square for consumer appeal frontage.
9. Subordination of station plaza.
10. Consolidation of CNR facilities including housing site close to station and freight yard. (The latter is Canadian practice.)
11. Development all on one side of main rail lines.
12. Area for independent industry at north end of center.
13. Town-to-plant traffic may by-pass main intersection at central entrance.

Size of service center: the center is laid out with a liberal site area, with street and rail allowances for the various uses. The areas shown will probably prove more than ample. They could be further consolidated if all elements of the center were strictly controlled by one proprietary corporation with a formulated engineering concept for transit, storage, distribution, etc., tailored to known or prearranged retailing and service methods. On the other hand the areas shown could prove quite inadequate if there were complete absence of proprietary policy on these matters, and if there were no control of location, amount, tenure and use of land. Under such circumstances an efficient center might evolve only after years of costly adjustment, excessive road and utility building and filling.

The plan contemplates that the service center will not be subject to either extreme, namely complete proprietary control or complete absence of control. In other words, the land area shown is considered an envelope within which there is room for



planning techniques

give and take but not room for wasteful or inefficient relationships. Large initial land allocations for first occupants are avoided that would lead to a spread-out and costly layout.

Warehousing: among the policies recommended is that of establishing or encouraging consolidated warehousing to serve several businesses. This policy alone can save much in land and utilities. It can save friction and the expense of building and operating a horde of small individual storage facilities. This applies particularly to the transit storage and warehousing of community-support rail cargo. We believe that this policy, if adopted, will encourage those wishing to go into business in the service center.

Land leasing: another policy recommended is lease of land, rather than outright sale, with right of recapture subject to purchase of improvements made by the lessee. Outright sale of land may often block later adjustments beneficial not only to the service center as a whole but to the individuals doing business. (A similar concept underlay the planning of the city center—see July issue, p. 146.) Initial arrangements, while efficient and satisfactory at an early stage, must often yield to expansion and moving of businesses at later stages. Unless expansion and relocation within the service center is facilitated in an orderly way under the master plan for the service center, the later stages can become chaotic and more costly to users. There is a twofold purpose in back of land leasing. Firms going into business in the service center should be assured they can expand easily later on, and need not protect themselves today by taking up all the land that they may conceivably need tomorrow. It is also to Kitimat's interest that these firms should not be in a position to dispose in any way they see fit of excess land, or of land from which they move as a result of expansion on another site to which the service center may have spread.

Location factors:

Services having consumer outlets and need for display are on or close to the central square and the station plaza. Those likely to need early expansion calling for sidings are on main railroad line in the block closest to station. Temporary large yards on leased land beyond this and adjoining the main line.

Independent industry, not primarily dependent on the community, is kept off the valuable and limited space in the service center proper, is placed north of the warehousing and freight area.

Warehousing for community-support cargo is concentrated next to the freight area and has separate team tracks. Initial warehousing will not be built to full block depth. Expansion is possible laterally and in depth.

Public works, which require rail siding, adjoin main line. Larger service industries using rail spurs are separated from those requiring less rail frontage.

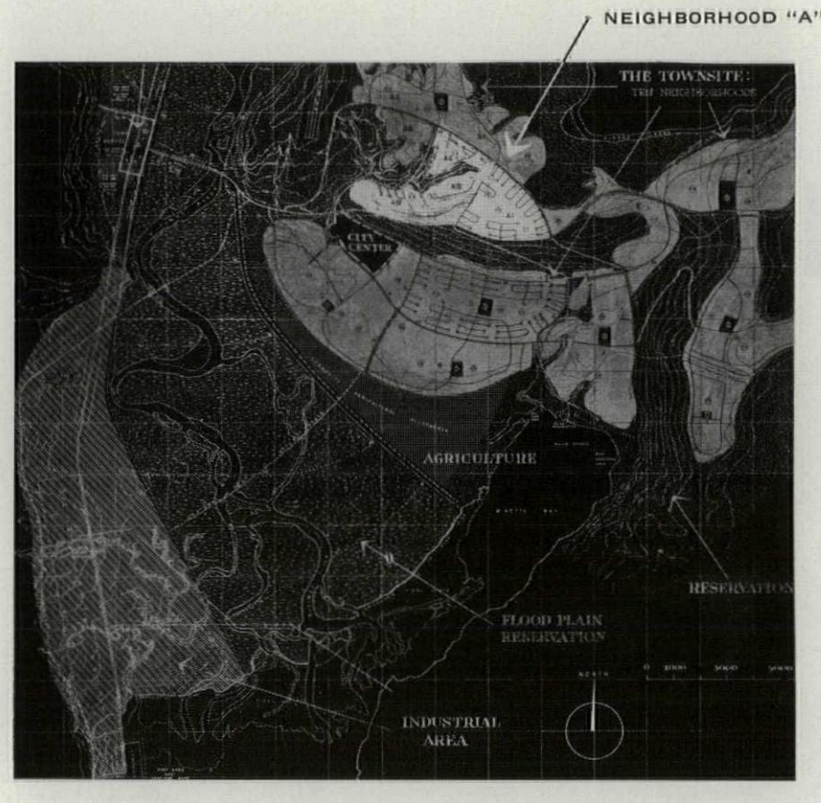
Automotive prime sales space is on the entrance square with accessory businesses close by.

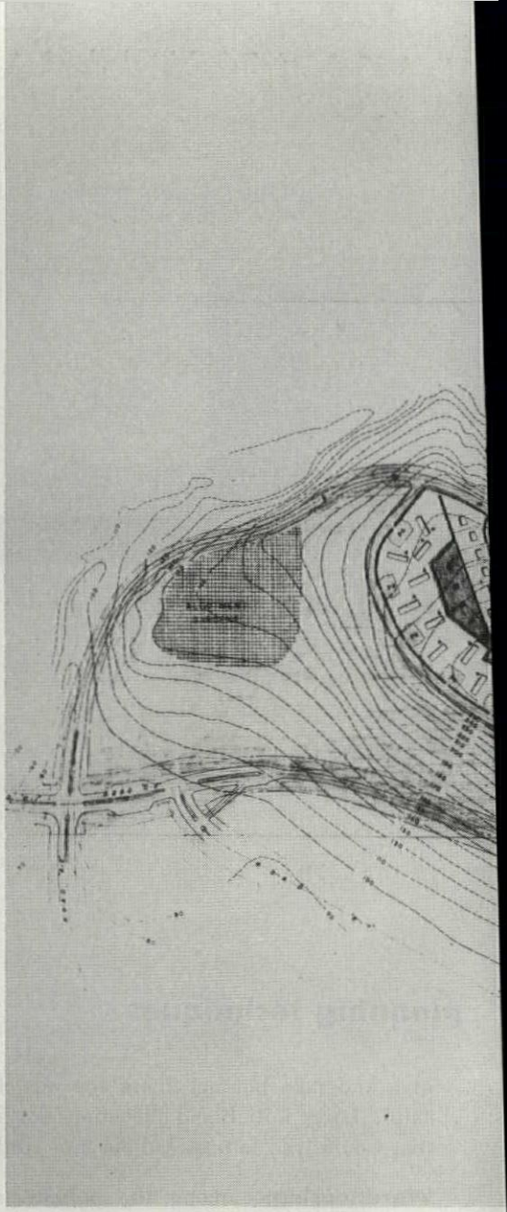
Commercial space is strictly limited to serve the working population of the center when at center and to avoid competition with downtown business. The commercial center may best be built as a whole and leased, so as to retain architectural control at a focal point of the center.

Parking and loading is mostly off street.

Zoning: land use is classified under the following major heads:

Service industry	Commercial
Warehousing	C.N. RR land
Automotive	Independent industry
Public works	





Kitimat is based on neighborhood concepts; first neighborhood for 5,000 is under construction

The best neighborhood size is one that can support a local shopping center and right-sized elementary school as the two focal points of local culture. Starting from a norm of about 1,500 families and distances not to exceed ½ mi. from the center, we were less concerned with pinpointing an exact standard than with setting the permissible extremes of deviation. Kitimat's irregular conformation and our aim of setting up a range of different living characteristics meant we must be better than strictly statistical.

Intangibles can override accepted ideas of economies. For example, too big a neighborhood center sets up habits that draw economic and cultural strength not only from other neighborhoods but from the city center too. Topography, configuration, concentration or dispersion count also. A given distance to local shopping may be convenient in a low-density area but inacceptable where density is high.

The neighborhood optimum was found to be about 1,200 families which would support one supermarket plus competitive food stores in the same center, and two elementary schools of 300 to 500 pupils. The minimum figure was 500 families who could support one supermarket and school. This minimum would be socially desirable only under favorable circumstances of density, income, location, natural physical boundaries. The maximum figure of 1,800 families was limited chiefly by the distance of the more remote households. Such a center could develop two K-6 schools and two K-3 schools, all of maximum desirable size.

Every neighborhood has a periphery, a circulation system, a neighborhood center

Peripherals are through roads which carry traffic *around* neighborhoods not through them, which provide alternate main routes and shortcuts connecting different levels of town, which flow by and around the city center, and which take people to Minette Bay.

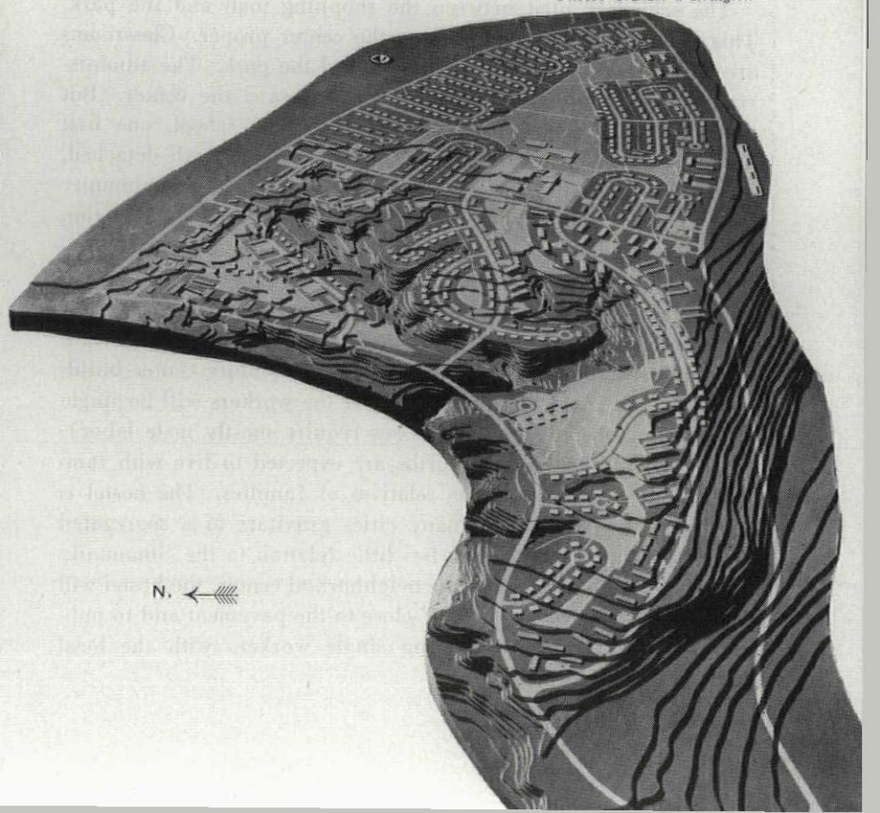
The internal circulation system of the neighborhood, and indeed of the whole city, is a greenway system balancing the peripheral paved throughways. These pedestrian greenways, which widen into parks at the center of the neighborhood, serve to interconnect home, local shopping center, school and recreation areas of all sorts and sizes ranging from yard to park to wild ravine to surrounding greenbelt. Underpasses interconnect greenways and provide a safe way to school, where grades permit.

Local access roads lead inward from the peripheral throughways in the form of loops or cul-de-sacs producing a lacy fringe of houses around the central park. These access roads are of no conceivable use to through traffic and are cheaply built.

Local stores, limited to three locations per neighborhood, are really small, about 700 sq. ft. including storage, have very moderate parking space, and are not closer than 1,000′ to the neighborhood center or to one another, so they serve strictly for local convenience. They came in through the recommendations of Lewis Mumford; on seeing plans for Greenbelt years ago, he said: "Isn't there something you have forgotten—the little neighborhood stores where you could get a spool of thread or a loaf of bread?"

Neighborhood A occupies triangle of high ground (quickest to dry firm). Schools are marked with "K" for kindergarten, and 3 or 6 as highest grades served. Double arrows mark the four underpasses carrying pedestrians under through streets. Small neighborhood stores are marked S in circle. Model shows rough terrain. Roads on model are approximate only.

Photo: Graham Warrington

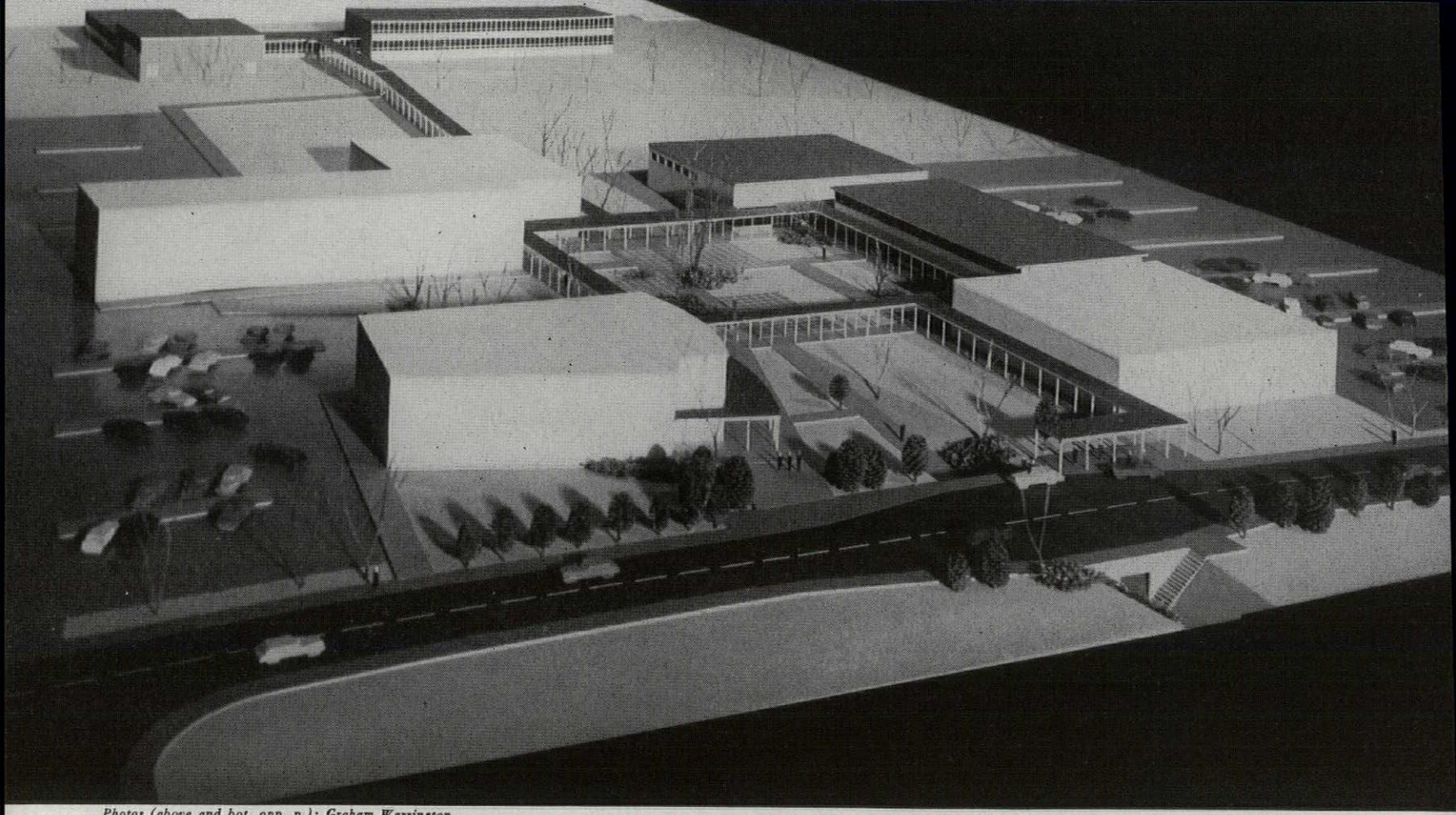


Neighborhood A—the pilot neighborhood

Neighborhood A was chosen as the first to be developed, because its high land would dry firm faster than other, low, land apparently more accessible, but still damp and requiring drainage. Rending the beautiful high forest was a heartache, mitigated as light and warmth, air and beautiful views began to come through.

Based on trial density figures established by studies of housing composition, Neighborhood A called for relatively high density and a generous ratio of multiple housing to single housing. This was partly because the first neighborhood must absorb heavy costs of utilities and roads, attributable to the city as fully developed, but meanwhile levied taxwise on a relatively small town.

Density was expressed in families per gross acre of buildable land within the neighborhood (after excluding gullies and ravines), including allowance for grade schools, internal parks, the neighborhood center, sites for public and institutional buildings and roads within the neighborhood. Neighborhood A was projected with 40% in single and twin houses, the balance in terrace and row houses and apartments. This composition, as applied to the difficult configuration of Neighborhood A, resulted in a density of some five families to the acre. A density of 4.5, however, applied on the easier land of Neighborhood C, would permit a considerably greater proportion of single-family houses. The density where only single houses were contemplated, on larger properties, as in outlying neighborhoods scheduled for later stages, was taken at three families per acre.



Photos (above and bot. opp. p.): Graham Warrington

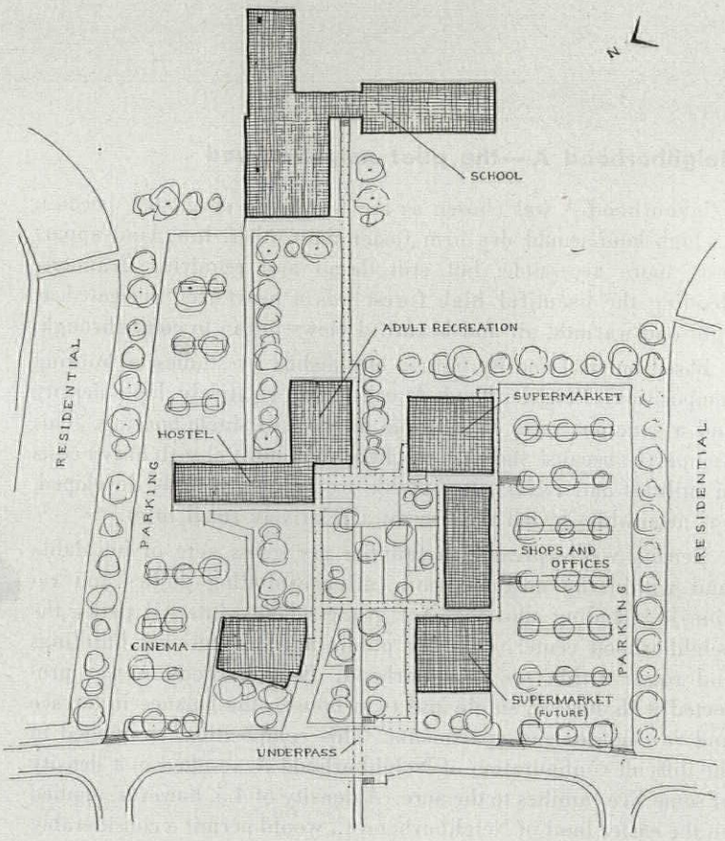
The focus of the neighborhood is its community center

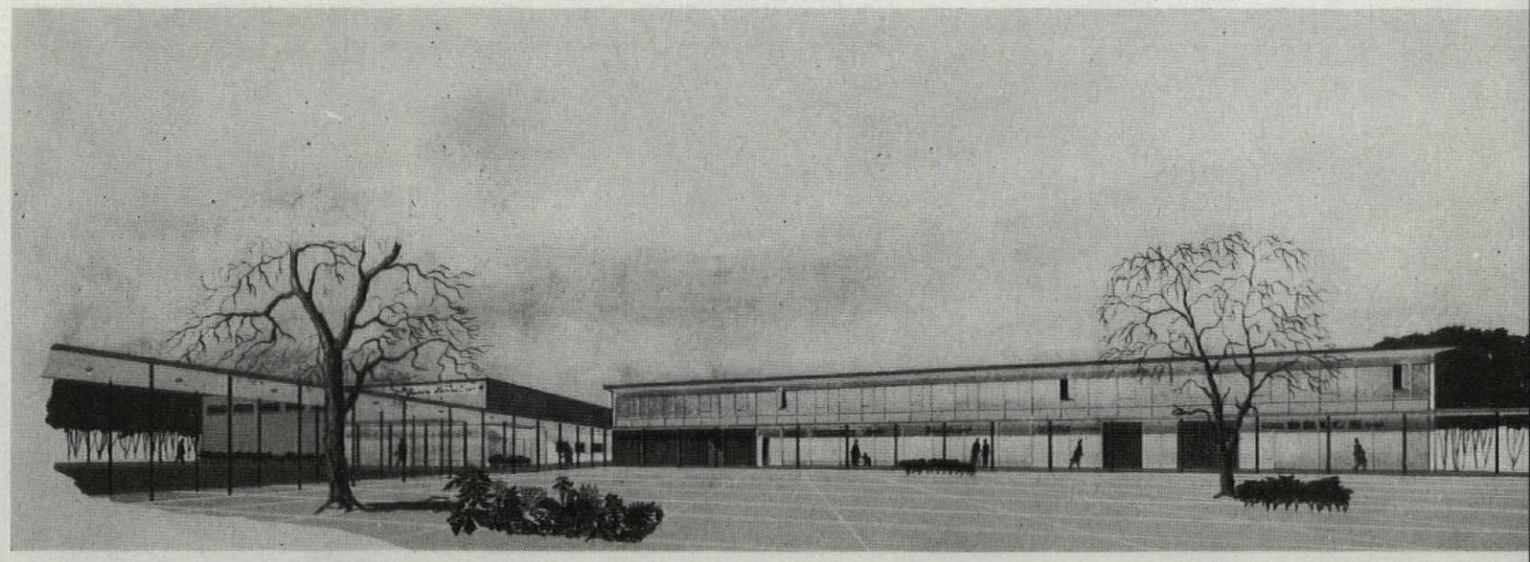
. . . which provides shopping for daily necessities, for cinema, churches, and school and community building in conjunction. Usually the school is a grade school, but in Neighborhood D it will be a junior high, drawing from two or three other neighborhoods as well.

The local shopping centers are planned around small pedestrian malls. Parking is off street in back of the shops. One may reach the shopping mall from the street, or from the internal park or from the parking areas. This is not simply a roadside store group where parking, pedestrians and service all vie for the same curb and sidewalk.

The school is sited between the shopping mall and the park. This sets it somewhat apart from the center proper. Classrooms are on the side away from it and toward the park. The administration and assembly of the school are toward the center. But when leaving the shopping mall to reach the school, one first passes the community building. So the school, though detached, is closely related to the center and particularly to the community building, which in fact may actually connect with it. The intention is to promote dual use of school facilities for community activities, and to connect parents more closely with the affairs of the school, because of its proximity to the center, which they frequent.

A hostel for single workers is another social link in the neighborhood center, closely tied in with the community center building. It is estimated that about 20% of the workers will be single men (aluminum and pulp processes require mostly male labor), among whom about three fourths are expected to live with families either as lodgers, or as relatives of families. The hostel is for the others who in so many cities gravitate to a segregated downtown cheap hotel which has little relation to the community as we think of it. Placed at the neighborhod center, the hostel will bring an element of "town life" close to the pavement and to public transportation, while linking single workers with the local community life and families.





First neighborhood center faces in on mall and is surrounded by parking. Commercial buildings, in site plan by Semmens & Simpson, are nearest street. Hostel and recreation buildings toward rear of mall are closest to school (by Sharp & Thompson, Berwick, Pratt). Construction will be in stages. First units to be built are shown black-topped in model. Rendering above shows supermarket, shops & offices.

(To be concluded in our next issue)

Main entrance opens into reception hall from covered gallery, with offices at either side

WINDOW MAKER'S OFFICE IS SHOWCASE

ANDERSEN CORP. office addition
LOCATION: Bayport, Minn.
BROOKS CAVIN, architect
JOHNSTON & SAHLMAN, structural engineers
RICHARD W. EVANS, mechanical engineer
THOMAS ROCHE, electrical engineer
ALONZO HAUSER, murals
GEORGE SIEGFRIED, general contractor

Rear entrance opens on employees' garden. Note orderly, easy-appearing incorporation of many window types in building's exterior.

Photos: Warren Reynolds, Photography Inc.

Reception room is richly paneled in rosewood and silk, has architect-designed desk of teak, marble and brass

OUTSIDE AND INSIDE

Who can get more excited about use of a building material than the people who make it? Answer: an imaginative architect.

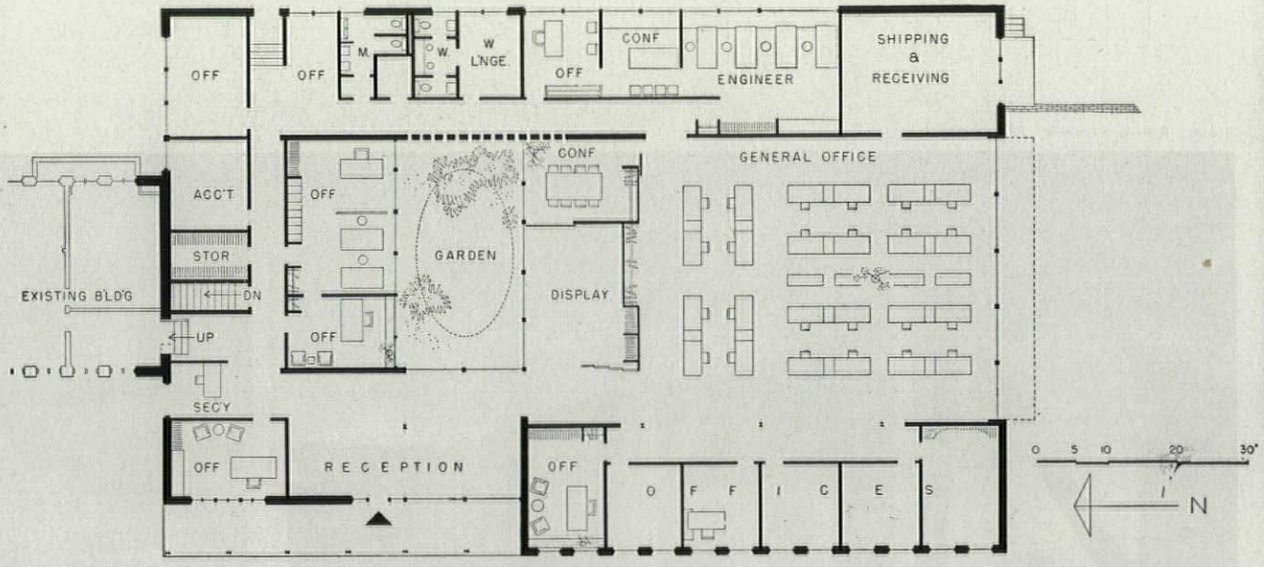
When young Architect Brooks Cavin was called in on this job, the scheme was simply to add workaday one-story and basement space at each end of a too-small office building on a factory site. As the architect studied office needs, he became convinced that a single one-story addition would do a better job and in the course of rethinking that problem he began to envision the new building in an advertising role—a striking demonstration of his client's products. Thus came the idea for the building's most charming and dramatic feature: a domed, skylighted inner garden as a "residential" background for display of the client's windows.

Building procedure was unusual. Individual suppliers and contractors were negotiated with directly, the client's plant engineer acting as coordinator. This simplified handling changes. The architect reports: "I do not believe the same quality of space would have resulted from the normal method of taking competitive bids on contract drawings. Many of the pleasing effects resulted from living closely with the building as it grew and determining some of the finishing details on the job.

"This also turned out to be one of those rare instances where the client has followed through with the complete design, instead of cutting out special features in an economy drive—and thus cutting out the life and sparkle of the project.

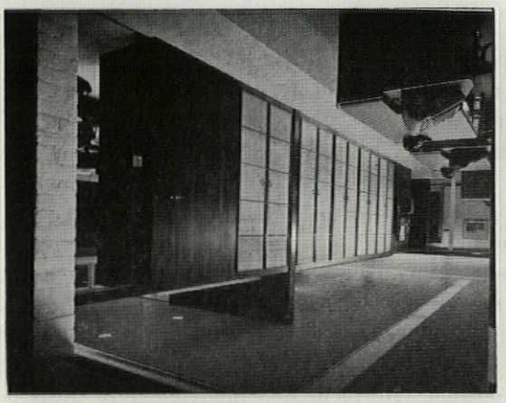
"The role of the plant engineer, who has an architectural background and a viewpoint both sympathetic and challenging, was very important. He facilitated interchange of ideas between architect and corporation so each decision balanced architectural effect and effect on business operation."

Cost, including fee, was $223,564; $22.10 per sq. ft.



Domed inner garden, tantalizingly glimpsed from entrance, also provides delightful vistas from work area

Office space is well planned, well lighted

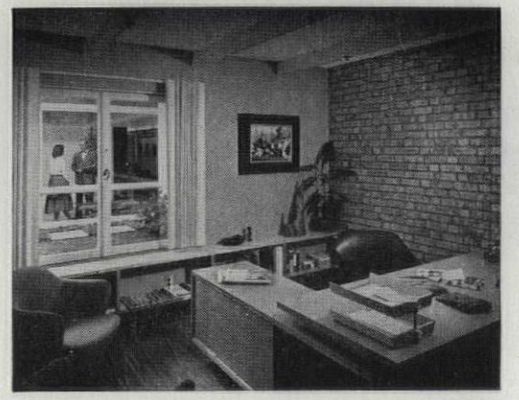


Storage wall between general office and display room has sliding-door coat closets; rear of conference-room storage unit is at right.

General office has all-purpose ceiling (radiant panel heating and cooling, acoustic control). Chosen late in program, it faced delay, "but was worth it."

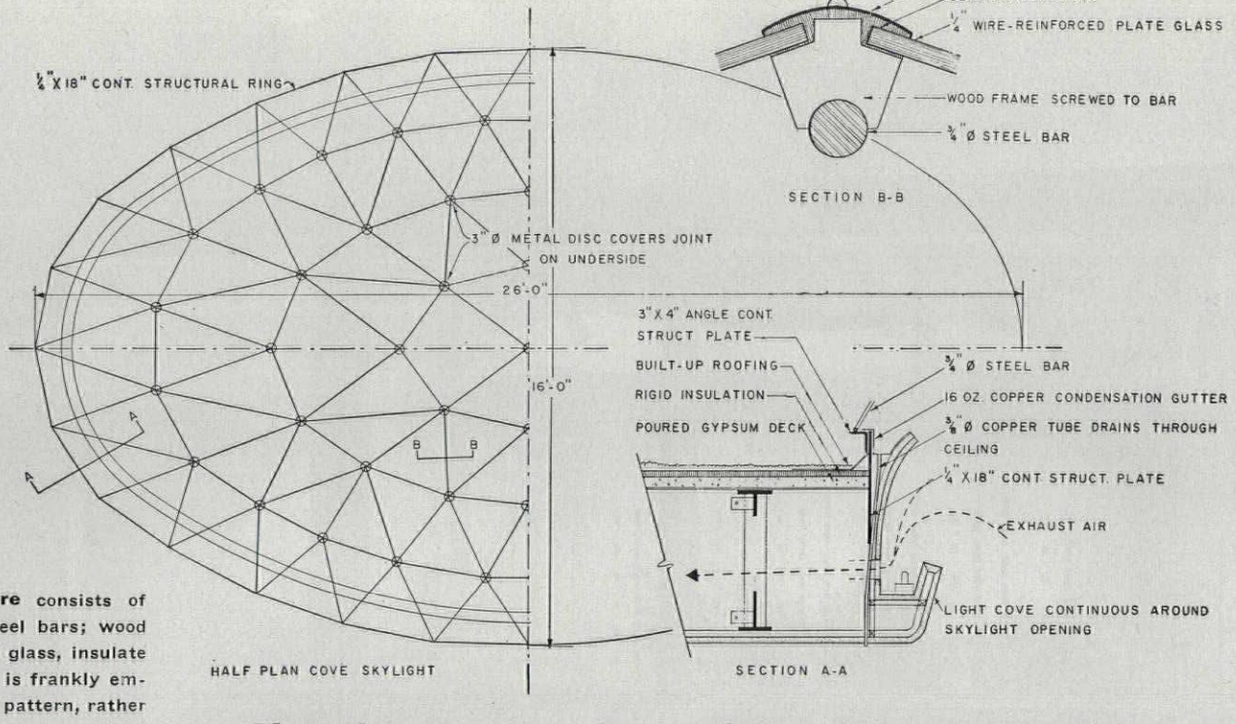
Reception area looks out on garden and perforated corridor wall beyond. Architect reports both factory and office employees realize building's drama represents good business and directly benefits them through company's profit-sharing plan.

and well liked by employees



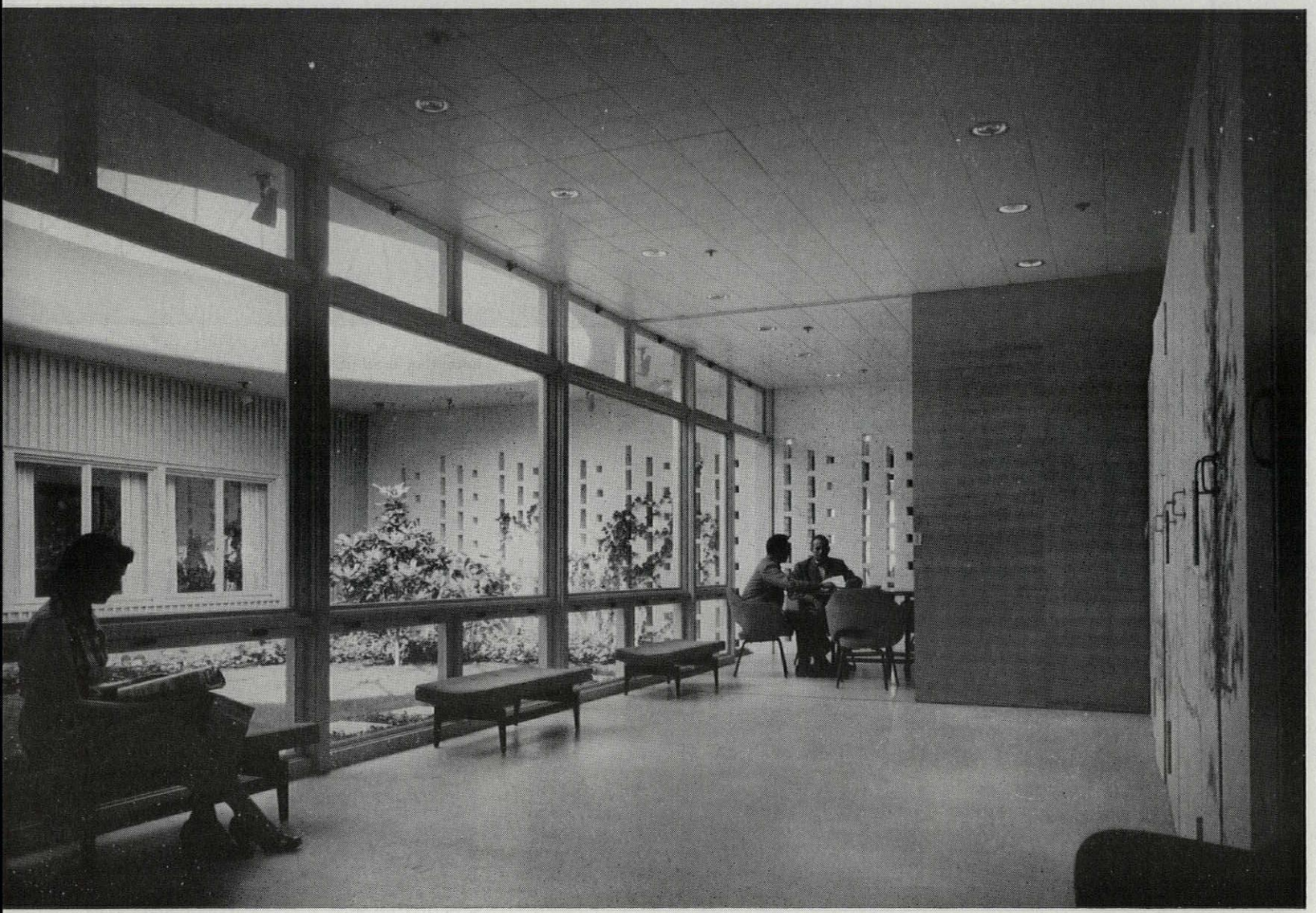
Typical private office shows fruits of architect's close attention to all details of furnishing, fabrics and lighting.

Engineering offices have luminous ceiling, downlights. Several days' open house for workers and families preceded opening building to public.



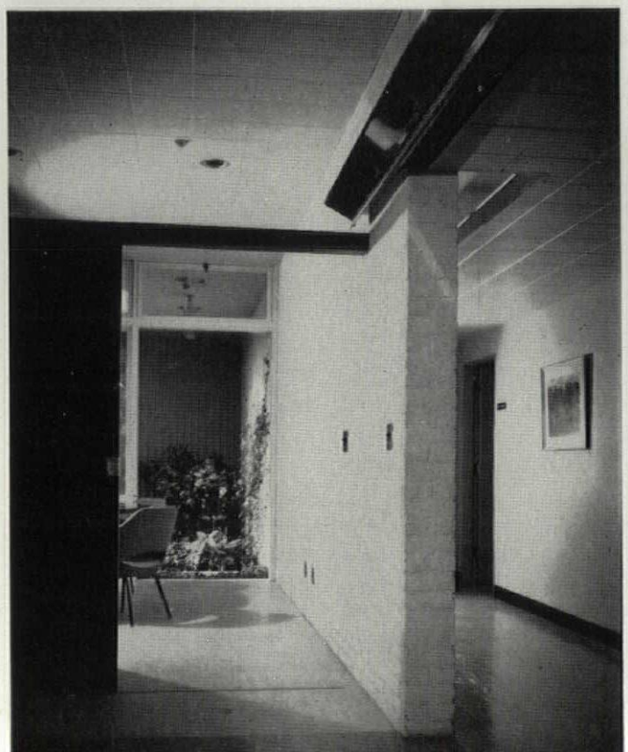
Dome structure consists of ¾" welded steel bars; wood members hold glass, insulate steel. Design is frankly empirical; visual pattern, rather than mathematics, determined divisions.

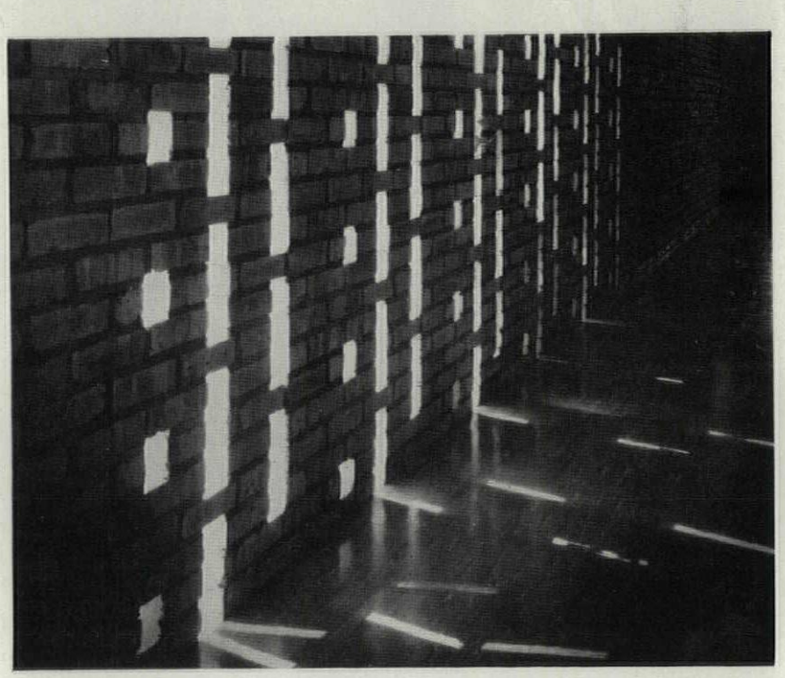
Glass dome creates climate-free patio in center of showcase office



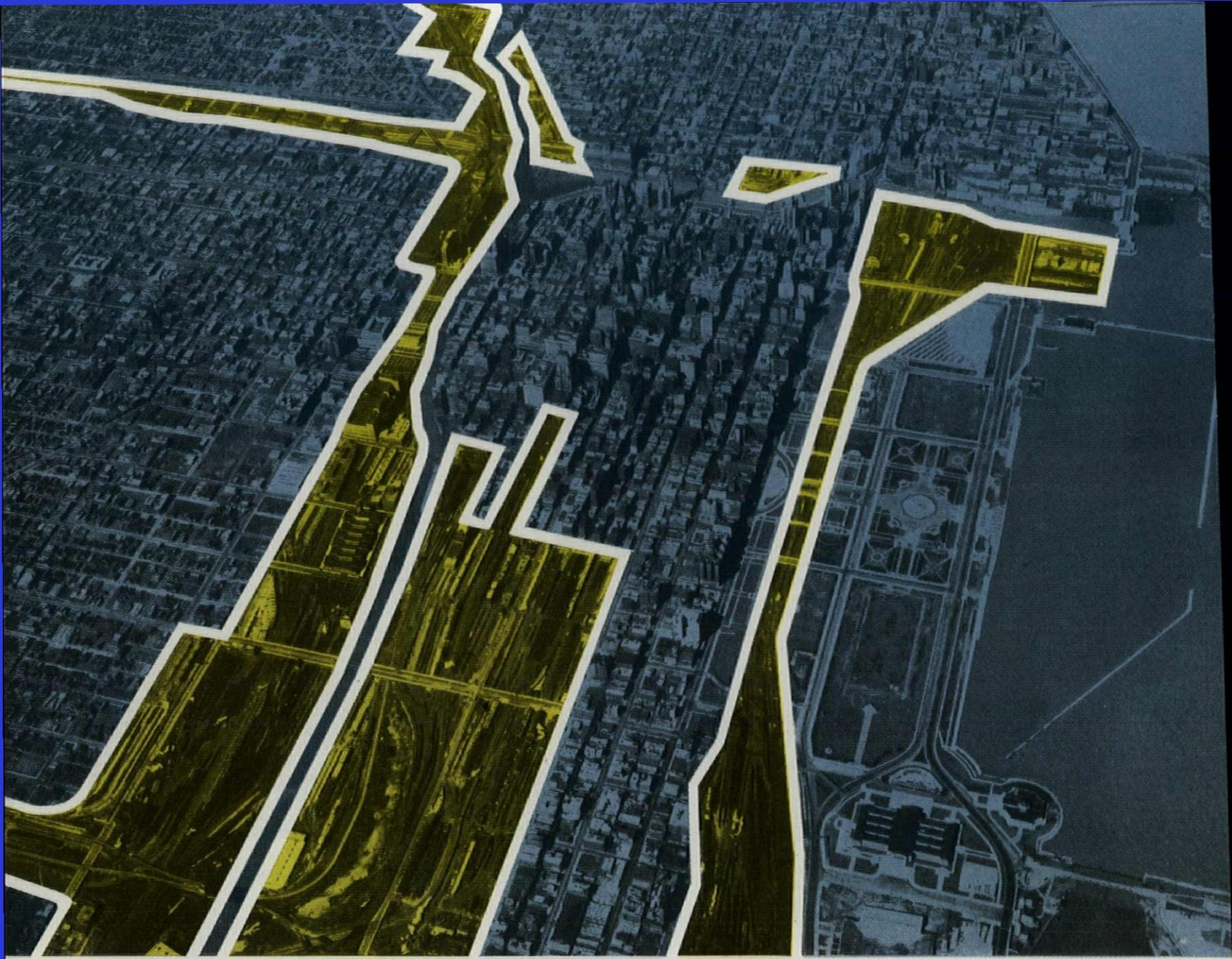
Display and conference rooms, separated by sliding partition, look out on glass-topped, always-summer garden, a charming setting for display of windows.

Lacy dome, inspired by work of Buckminster Fuller, makes greenhouse of central garden, gives spaciousness and sparkle to inside rooms and highlights architect's deft use of color and materials in interior. Complete design job, including furnishings and landscaping, was entrusted to architect.





Pierced brick wall screens office corridor from garden and conference room. Photo (at left) is taken at juncture of this corridor and general office space, looking through conference room to garden court beyond.



Chicago's railroad yards, shown in yellow, cover almost half of the city's downtown area

Can your city put its downtown railroad

Electrification, Diesel locomotives and now piggy-back freight offer scores of cities their biggest chance for redevelopment

From the dawn of history cities have grown up where transportation is cheapest. In the last century the great cities grew up around the passenger and freight terminals of the railroads, which offered the cheapest, fastest transportation. Today, these railroad facilities cover much of the best land in almost every city.

The past 20 years have brought a revolution in transportation. Electrification, the Diesel engine, trailer trucks and now piggy-back freight—all are bringing big changes in railroading. And these changes in railroading are bringing big changes in what land the railroads need downtown, big opportunities for almost every city to solve some of its worst problems by making better use of land—and air rights—the railroads no longer need.

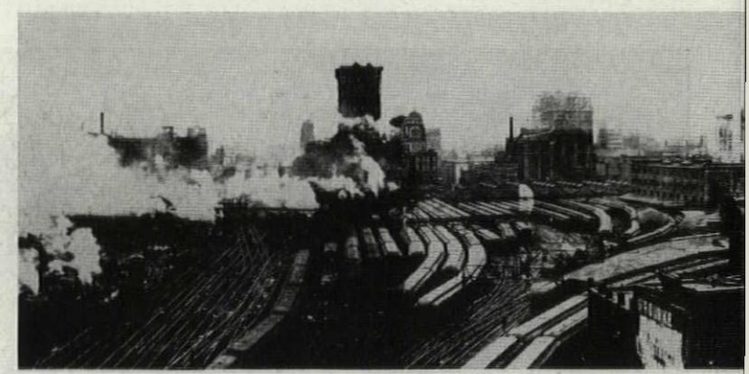
For example, electrification enabled the New York Central to cover its tracks into Grand Central Terminal with Park Ave. and its flanking apartment and office buildings. Today the Diesel, which

LIFE—*Gordon Coster*

Chicago has not

Railroads made Chicago the hub of the nation, but now the yards all around the Loop are at once the No. 1 problem and the No. 1 opportunity for better city planning. In fact, the railroads own so much land in the heart of Chicago that it may be years before the city's economic expansion can put all of it to better use.

The new Prudential building (AF, Aug. '52) starts the exploitation of the air rights over the lake-front tracks. Consolidation of the railroad terminals east of the river hinges on the creation of a terminal authority able to assure the carriers that a modern union station would not be penalized by higher city taxes (as it was in Cleveland, Cincinnati and Syracuse).



New York City has

At least part of Manhattan's railroad property is being put to good use. The photo (above) shows the Grand Central area in 1906 (looking south from 50th St. and Park Ave.); the one below shows the same area today. By building a mall and a parkway over the tracks, the surrounding property has been turned into one of the city's top apartment and office sections.

Now William Zeckendorf plans to put up the world's largest commercial building over the Pennsylvania's tracks on Manhattan's west side.

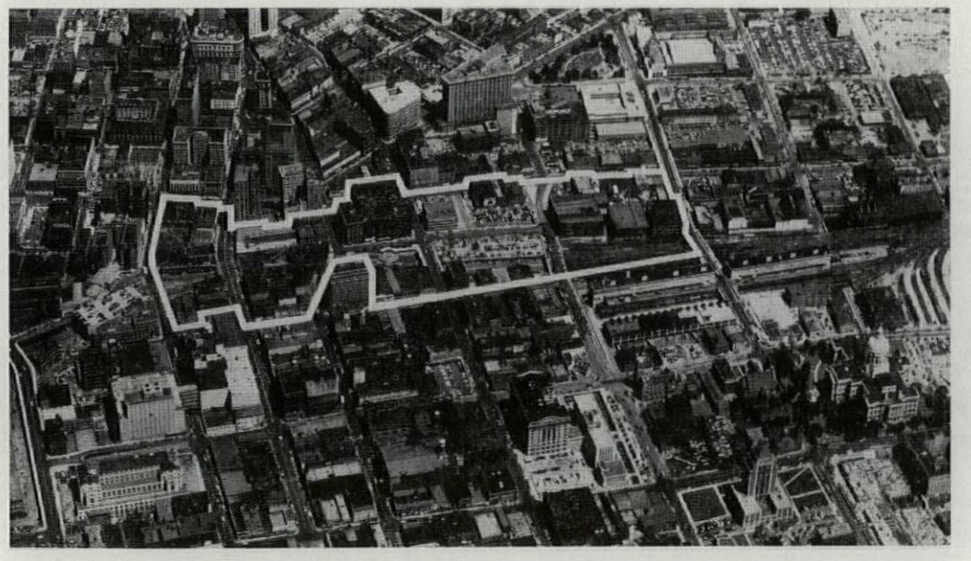
land to better use?

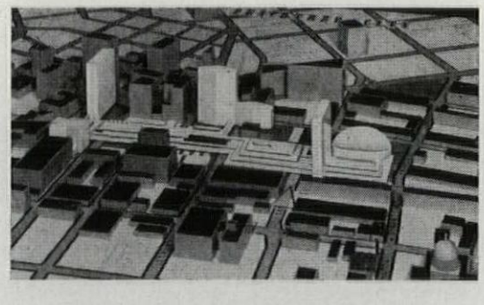
has almost replaced the smoky steam engine, has made it possible for any railroad and any city to use such air rights without the cost of electrification. Many are already doing so (see p. 140).

In the days of horse-drawn trucks, shippers wanted the rails to carry the freight as far downtown as possible, and so many freight terminals are right in the heart of the city (in Chicago, the rails cover nearly half the land between lake and river around the Loop —photo above). But with today's motor trucks, it might be far easier to pick up goods from terminals on cheaper land a little farther out, where the trucks would not be trapped in traffic congestion.

Now comes piggy-back freight to combine the pick-up economy of the trailer truck with the long-haul economy and speed of the 100-car freight train. Will this offer the biggest opportunity of all for re-using downtown railroad land more efficiently? (See p. 142).

By putting its downtown railroad land to better use . . .



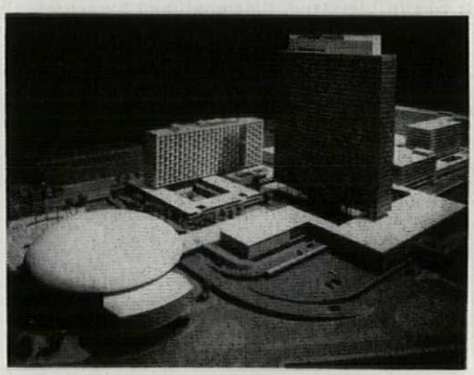


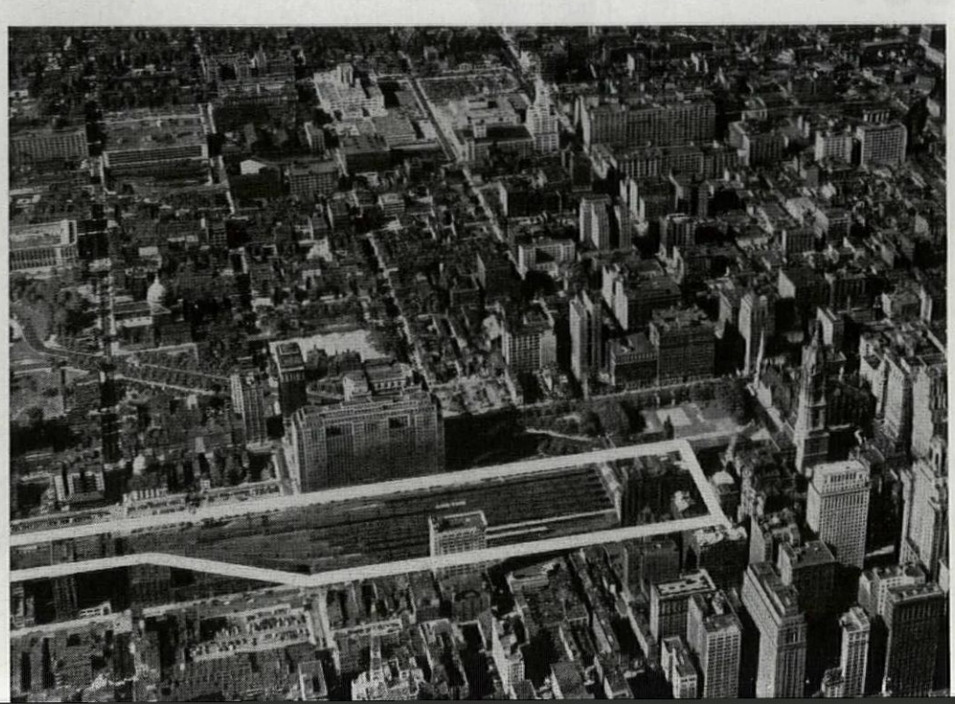
Atlanta may heal its cut

Today, Atlanta's business district is scarred by a deep railroad cut. Here is Architect Henry Tombs' plan for "Peachtree City," which would deck the tracks over with a pleasant mall, make the land now blighted along the tracks a prime site for new offices, stores and badly needed parking.

Boston plans new center

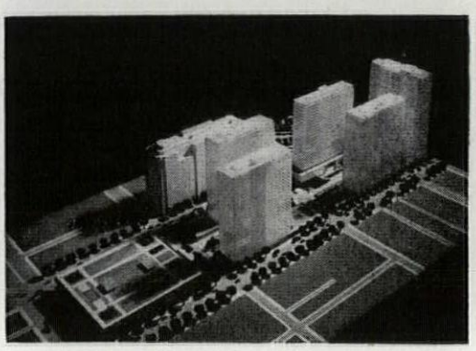
On this 28-acre railroad yard the Boston & Albany wishes to abandon, Roger L. Stevens had famed Architects Belluschi, Gropius, Bogner, Koch, Stubbins, *et al.* plan a $75 million business-entertainment center (model below) in the heart of Back Bay (AF, Nov. '53).



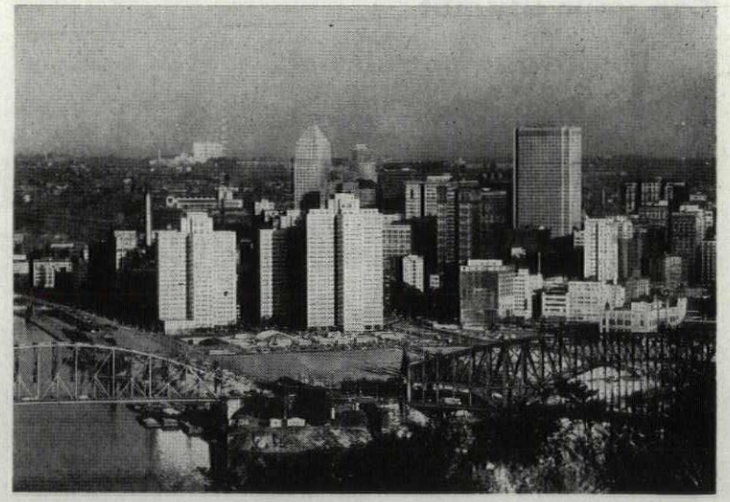


Philadelphia is rebuilding

When the Pennsylvania Railroad gave up an obsolete terminal and right of way that was lowering downtown property values, it insisted that the site be used for a fine Rockefeller Center–type development. Now Realty Tycoon Bob Dowling, City Planner Ed Bacon, Architects George Howe and Vincent Kling, Builders Uris and the Sheraton Hotel chain are all in the act (AF).

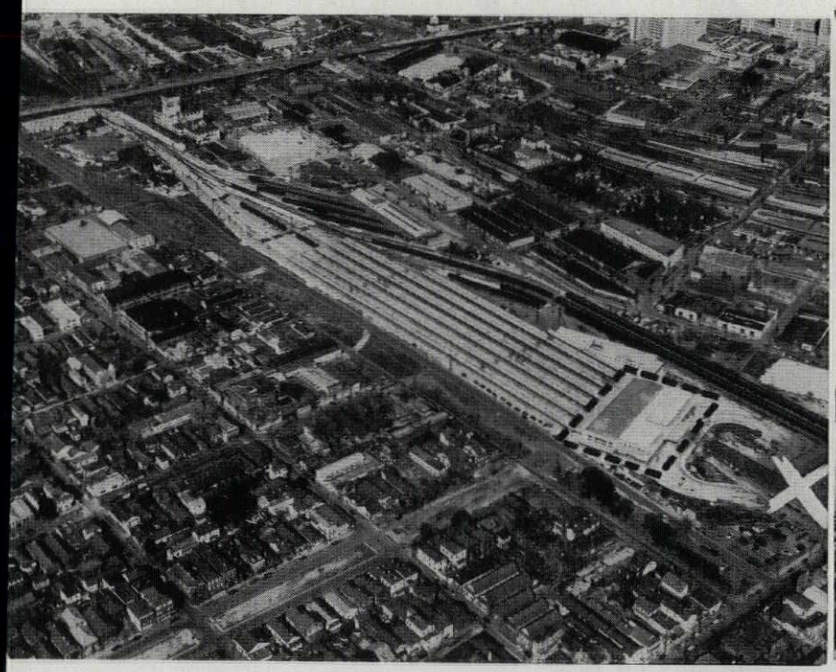


Photos: Wray Studio; Lawrence Lowry; Aero Service Corp.; L. S. Williams; R. D. Harvey Studio; LIFE—A. Feininger; Aerial Surveys, Inc.; Fairchild Aerial Surveys



Pittsburgh redevelops its Golden Triangle with office towers in a park

Some of the 59 acres for Pittsburgh's famed redevelopment at the tip of the Golden Triangle were either used for or blighted by a freight terminal and a station. The latter was abandoned, the former replaced by a new terminal more economically located just outside the Triangle. The result is Gateway Center (above and AF, July '49, Dec. '53) with its three office towers at the northern end of a proposed park.



New Orleans eliminates terminals and crossings

Although New Orleans is not so hard-pressed as some other towns for mid-city commercial property, the Crescent City set up a terminal authority to build a union terminal, thereby got rid of five scattered stations (three of them are marked with an X in the pictures above), speeded up traffic by eliminating half the 144 grade crossings where all cars had been required to stop, look and listen. The remaining grade crossings are used mostly for freight movements at night. The terminal authority may be the model for solving similar problems in other cities.

Sacramento seeks a waterfront park

The railroad right of way has turned the Sacramento river front into a slum. Now a comprehensive redevelopment plan (AF, June '54) proposes to build hotels, restaurants and parks where tracks now exist. Willing to go along with the plan, the railroads are prepared either to move their tracks or to have them covered.

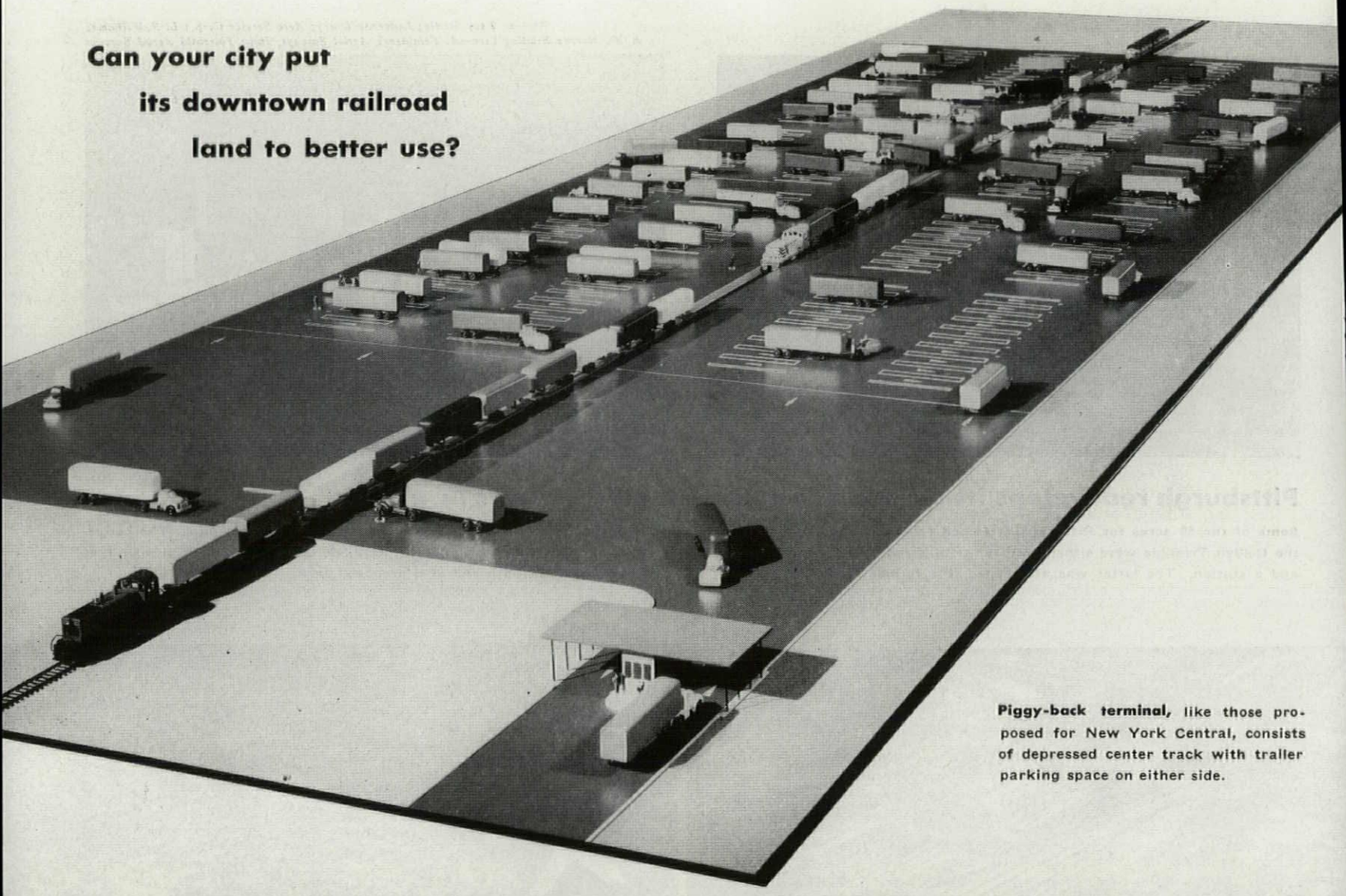
San Francisco: rapid-transit use of tracks

Instead of building new rapid-transit lines, San Francisco hopes to save money by renting trackage rights on the railroads around the Bay.

Buffalo will get a freeway

In Buffalo the Lehigh Valley Railroad has sold its right of way into the downtown area to the New York state thruway and disposed of downtown passenger and freight facilities. Reason: with the advent of piggy-back freight (see p. 142), the Lehigh Valley decided that it could operate more efficiently on the outskirts of town. Current plans call for turning one old passenger station into an office building; another may become a bus terminal; and there are plans to turn the freight yard into a truck terminal. Thus, Buffalo will gain a fast highway approach, and some of the commercial facilities it needs in the middle of the city.

Can your city put its downtown railroad land to better use?



Piggy-back terminal, like those proposed for New York Central, consists of depressed center track with trailer parking space on either side.

Carrying trucks piggy-back on trains may make it easier

Piggy-back freight seeks to combine the best economics of truck and rail by shipping the loaded truck from city to city loaded two to a flatcar. Since trucks already carry most of the freight shipments originating in big cities and most freight movements into big cities not consigned to lumberyards, stockyards and similar trackside facilities, piggy-back freight promises a major revolution in transportation.

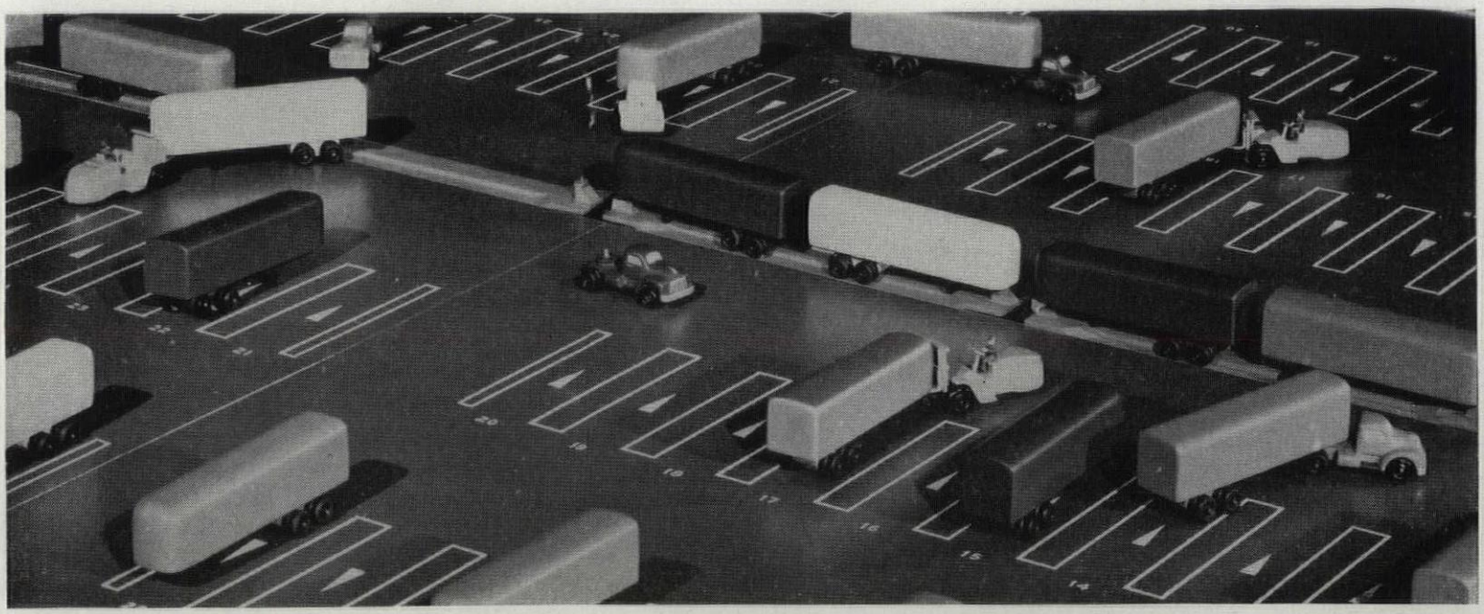
For shippers this will eventually bring big economies. For the railroads it will bring big added revenues (the New York Central hopes for $50 million a year). For the highways this may bring sorely needed relief by shifting to steel rails the heavy trucks that now crowd the roads and pound them to pieces. For the cities, it will almost certainly speed up the re-use of railroad land downtown. It will decrease the importance of a railroad siding and so encourage industry to move away from the tracks. It will encourage the railroads to relocate their freight terminals outside the most congested areas.

The full economy of piggy-back freight calls for a radically different kind of terminal, where the freight can go to its car (like a passenger) instead of waiting for the car to come for the freight. Trains can be made up before the cars are loaded, instead of after. Room for the trucks to maneuver will become more important than extra tracks for switching.

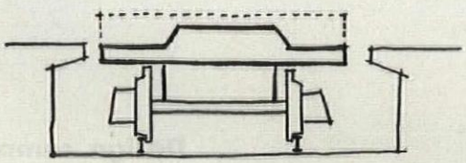
Here is one concept of what a piggy-back freight terminal should be like: Tracks are depressed so trucks can drive up level with the flatcar floor, where they can be shunted aboard easily by a lift truck.

The New York Central is now spending $1 million apiece on such terminals on the outskirts of New York, Chicago, Cleveland, Boston, Detroit and Buffalo.

Special railroad car has low platform and pedestal at either end to support trailers. Photo (at right) shows piggy-back train on New Haven's regular New York–Boston run pulling out of terminal on outskirts of New York. Train beats highway time for the run, and shippers save money due to less handling.



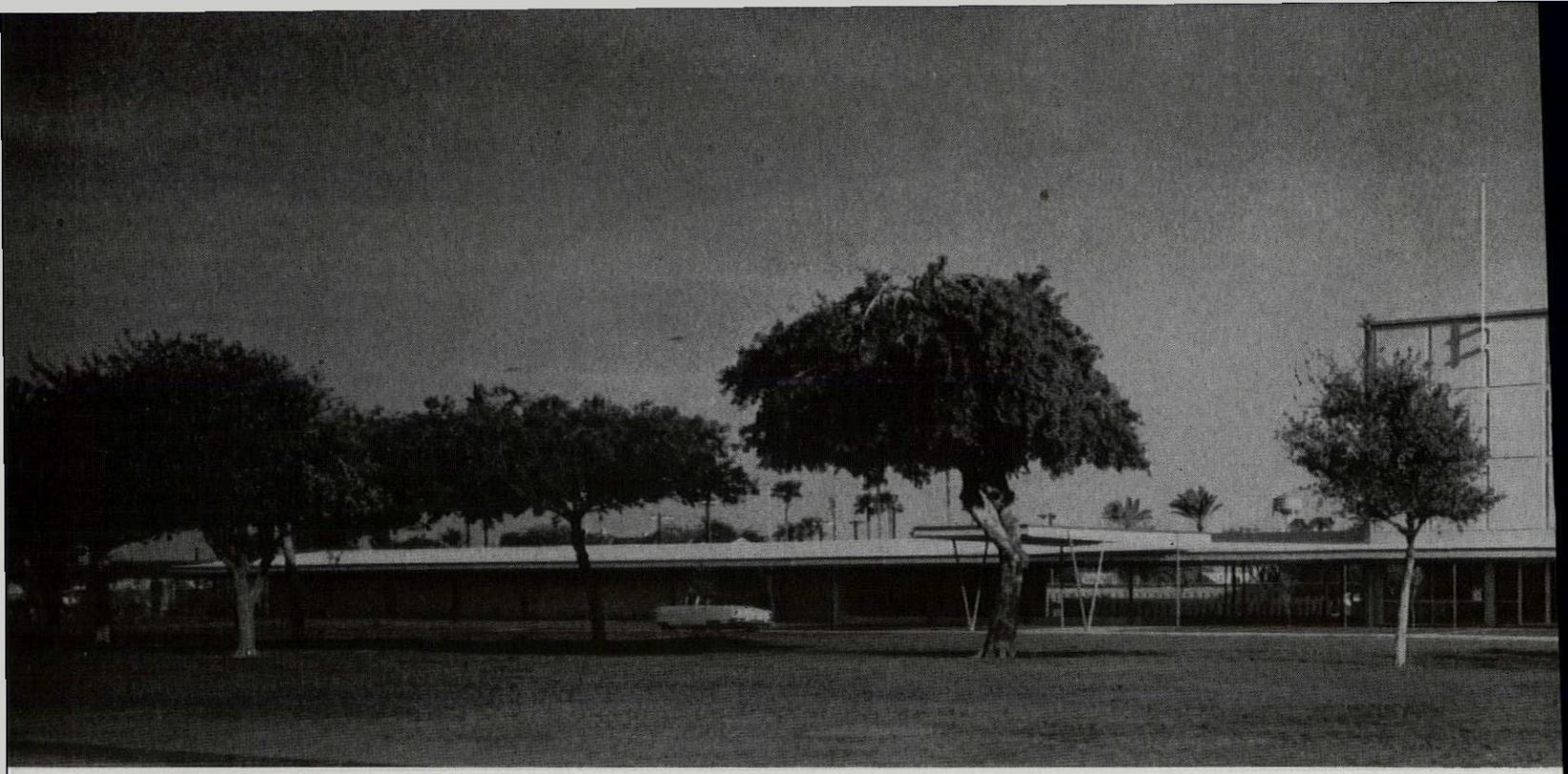
Close-up of terminal shows truck cabs parking trailers and fork lifts backing trailers onto specially designed railroad cars. Since freight is never uncovered, no protective buildings are needed in this type of terminal.



Section shows how terminal track is depressed to bring floor of railroad car flush with terminal floor.

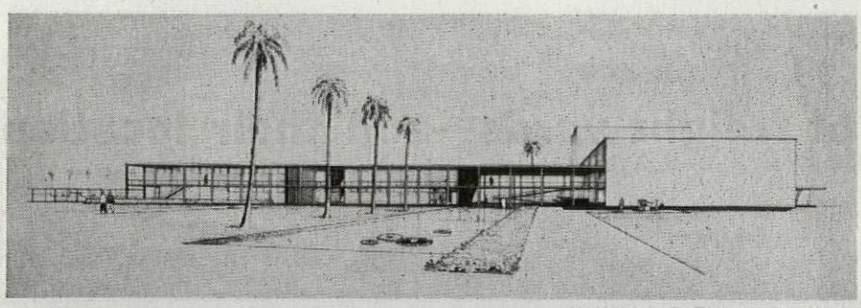
by changing the shape of freight yards—and their location

James Pickards

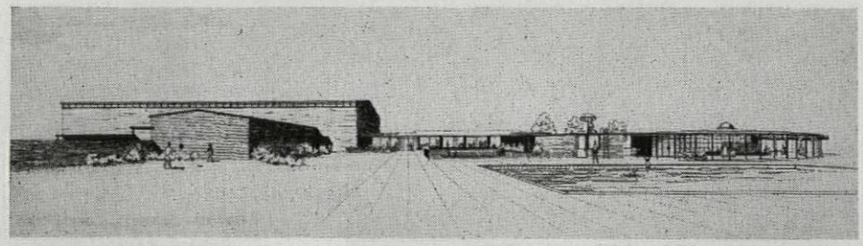


FORT BROWN MEMORIAL CENTER, Brownsville, Tex.
WILTSHIRE & FISHER, architects
ARTHUR S. BERGER, landscape architect
E. L. WILSON, structural engineer
LANDAUER, GUERRO & SHAFER, mechanical engineers
WAYNE RUDMOSE, acoustical engineer
WILLIAM M. PENA, color consultant
MARCHANT BROS. & BALAY, general contractors

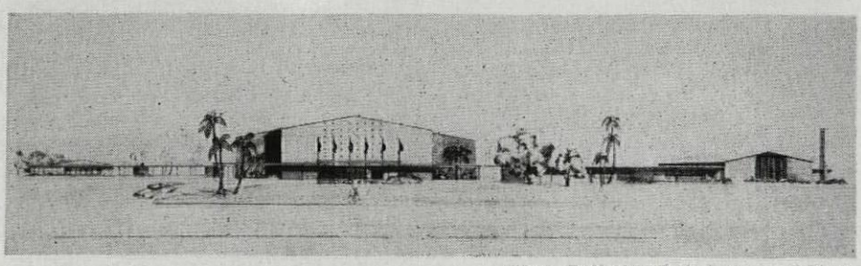
Design competition helps Brownsville build



Wiltshire & Fisher, architects



Richard Vrooman, architect



Page, Sutherland & Page, architects

Jury comment

FIRST PRIZE: the outstanding characteristic of early Brownsville architecture was the direct and straightforward simplicity. . . . In placing this design first, the jury felt that it was following in the footsteps of the early Brownsville builders. The first-prize design appeared to be the most direct, the simplest and most straightforward of all the 25 designs submitted. . . .

The required elements of the civic center are well integrated in this plan. The clarity of circulatory elements appealed to the jury; it was felt that even a stranger could find his way about easily. Sufficient means and areas for handling large crowds appear to have been well devised. . . .

SECOND PRIZE: this design reflects many of the commendable features of the winning design, including compactness . . . without crowding. . . . Placement of the . . . youth center received favorable notice. Its playful conception as a circular room with ample light seemed appropriate. . . .

While the exterior elevation, in the main, is quite simple and pleasing, the jury felt that the scallop-roofed walkway and covered carport . . . would "date" the building in years to come. . . .

HONORARY PRIZE: a great deal of favorable consideration centered on this design. . . .

The jury was critical of the auditorium arrangement, placing the playing area perpendicular to the stage, thereby elongating the auditorium and creating a poor vision and hearing area in a large portion of the room. Also, walking distances between the farthest elements of the plan would be long and monotonous. At first glance the exterior seemed pleasing. Upon analysis, however, it became apparent that the auditorium element by its overpowering massiveness might lose the graceful monumental feeling desirable in a center of this kind. Certainly the other elements would be dwarfed by the central auditorium and would be relegated to insignificance. . . .

Ulrich Meisel—Dallas

SIX-IN-ONE CIVIC CENTER, suggests pattern for other communities

Almost every community in the US needs a new building like this—a civic center providing a place for all the various activities of community life from square dances to town meetings. This one has reflected great credit on the architects and on the border city of Brownsville, Tex., and has set a planning pattern for other communities. It is a double prize winner.

In 1951 all the architects in Texas were invited to compete for the honor (and $50,000 fee) of designing his $800,000 building. At the left is the prize-winning design—along with two of the runners-up—and excerpts from the jury's comment. Above is the finished building—a somewhat modified version of the original but still a prize winner: it won one of the five 1954 honor awards in the annual design competition for finished buildings at AIA's convention in Boston (AF, July '54, p. 118).

Brownsville's feted civic center is actually six public buildings in one, each one of which would be a welcome addition to any community: 1) a youth center, including an indoor-outdoor game room, a lounge and a snack bar, 2) a 2,500-seat auditorium convertible into a gymnasium, 3) a regulation-size (30′ x 75′) swimming pool, 4) a library, 5) a women's center consisting of a lounge, 75-seat meeting room and kitchen, and 6) a small 265-seat town hall.

Integration of these six parts into one coherent building is shown in the photograph (above); close-ups of each part along with the pertinent requirements of the design competition are shown on the following pages.

Excerpts from the program of the Fort Brown Memorial Center architectural competition

BACKGROUND: Brownsville's name and history are . . . one with Fort Brown. From the early days of the old fort, the city has passed through a century of progress to become an international metropolis of 36,000 people today. It is this modern city which will commemorate 100 years of progress by the erection of the Fort Brown Memorial Center on the parade grounds of the old fort—which hopes that the Memorial Center will reflect in its design and construction the history, the aspirations, the dreams of a people who through so long a time have lived at peace with themselves and their neighbors across the Rio Grande and who want to leave to their children and their children's children something of this heritage.

PURPOSE: the purpose of this competition is to select an architect to design and supervise the construction of the Fort Brown Memorial Center. The City of Brownsville. . . . will have available for the design and construction of the center the sum of $800,000.

ARCHITECTURAL ADVISER: Ernest Langford, AIA, College Station, Tex. . . .

JURY OF AWARDS: . . . Herbert M. Tatum, AIA. . . . chairman, Dallas; Stayton Nunn, AIA, Houston; Marvin Eickenroht, AIA, San Antonio; Mrs. George McGonigle Jr., Brownsville; Ygnacio Garza Jr., Brownsville. . . .

AWARDS: . . . first prize—the commission to design, prepare working drawings and specifications for, and supervise construction of the Center.

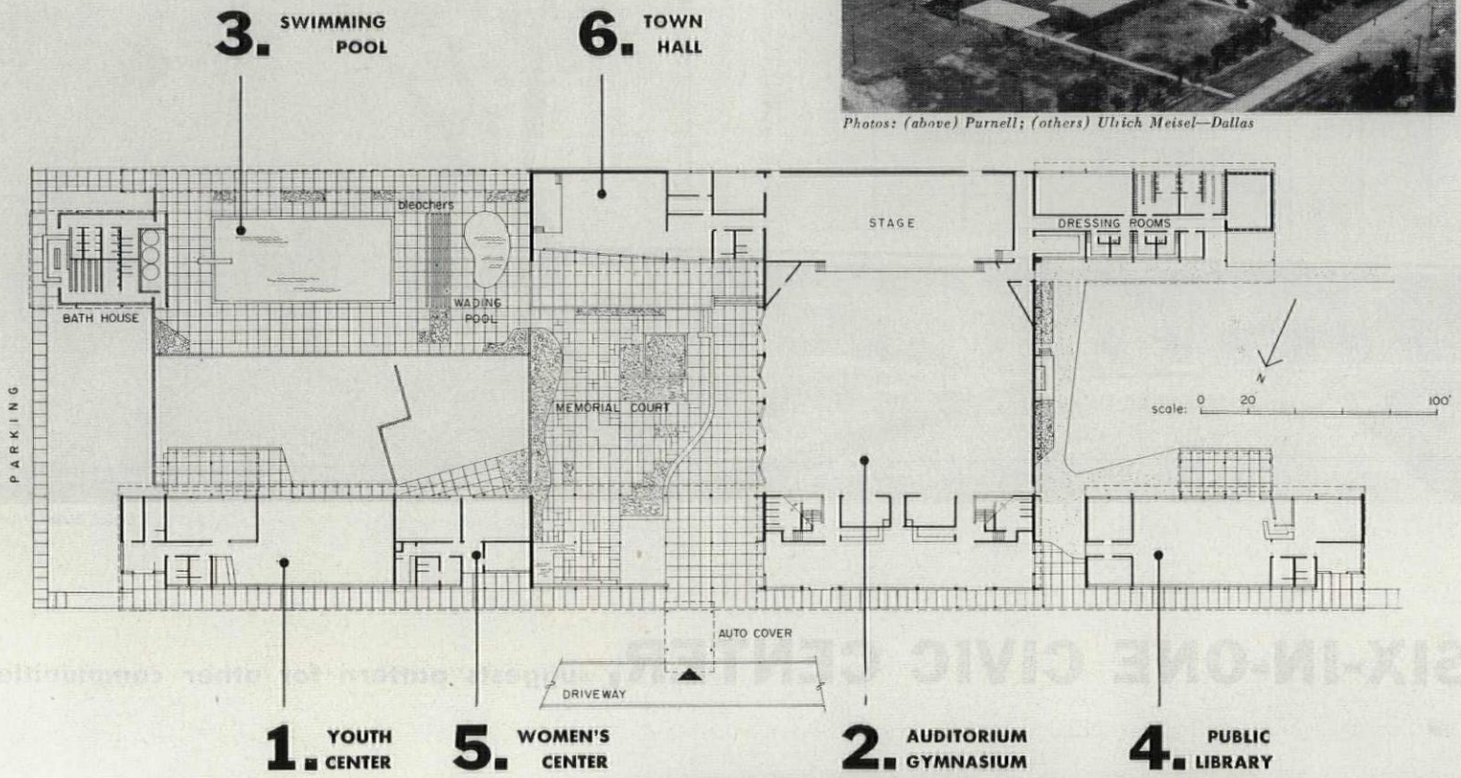
Second prize $750
Honorary prize $250

REQUIREMENTS: the mandatory requirements of the program are presented in picture captions on the following pages.—ED.

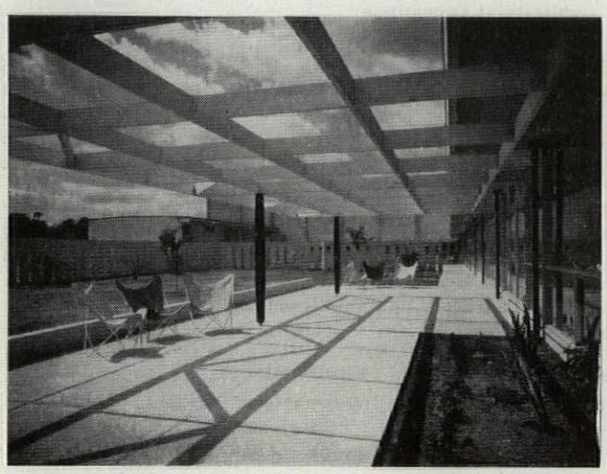
Prize civic center

is six community buildings in one

Photos: (above) Purnell; (others) Ulrich Meisel—Dallas

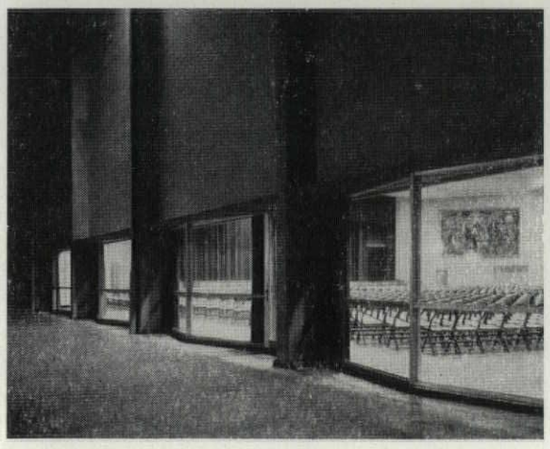


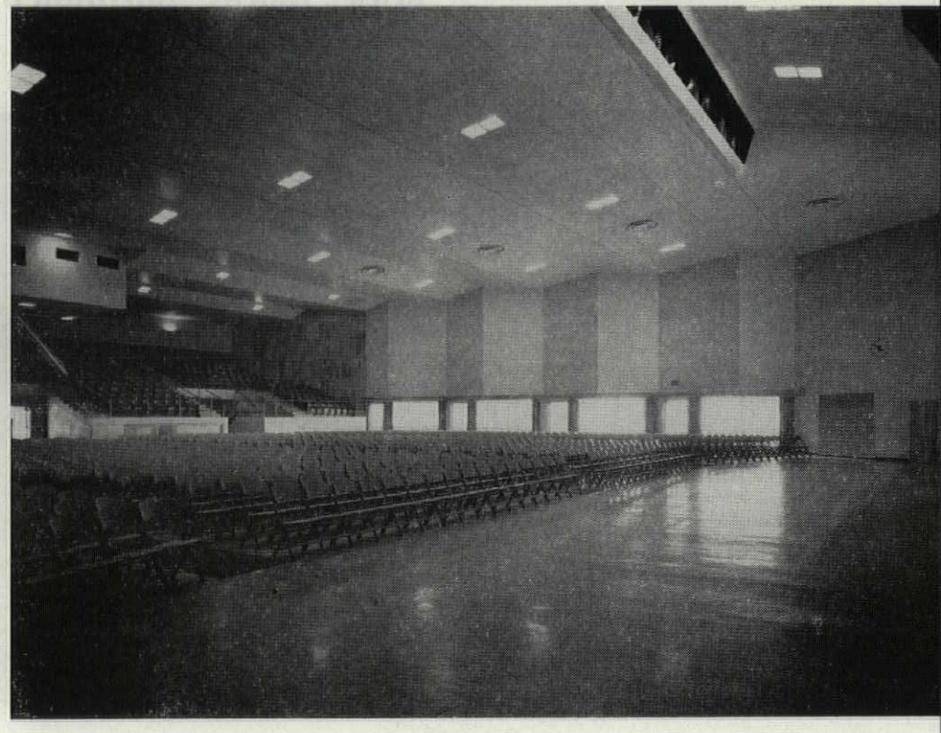
1. YOUTH CENTER: this unit need not be large as it is contemplated that the various activities will be supervised and programmed well in advance. Requirements: a small lounge, a play and dancing area, storage space, food preparation space and rest rooms. The food preparation room need not be equipped with a steam table as hot food will be prepared elsewhere. Sports will not go beyond the requirements for Ping-pong and similar indoor games. [This and other captions consist of excerpts from the mandatory requirements of the competition design program.]



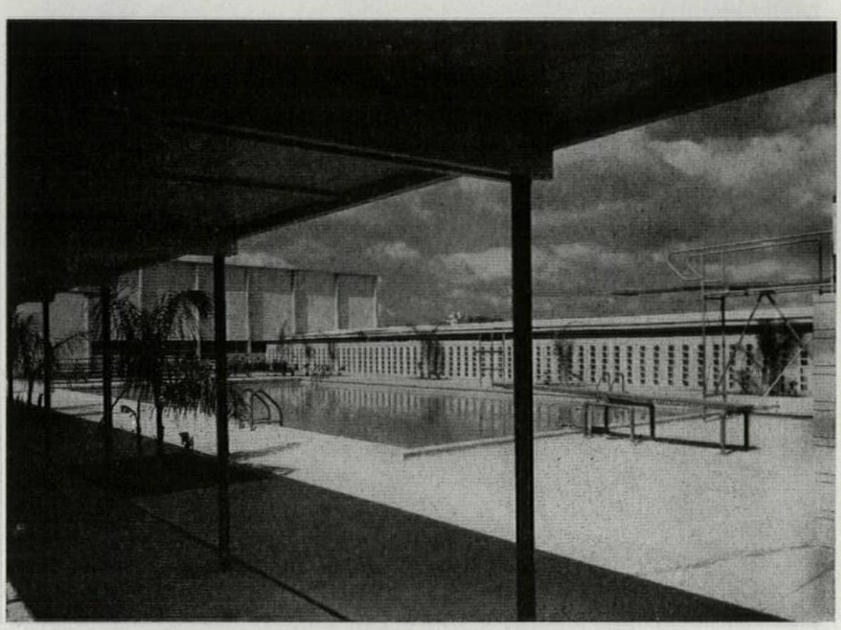
Entrance to center is a sheltered area between auditorium-library wing (background) and youth and women's wing (camera position)

2. AUDITORIUM: this room shall be designed for the greatest possible number of purposes: community meetings, conventions, dances, concerts, entertainment, dramatic presentations, recreation and indoor sports events but nothing greater than can be played on the standard AAU basketball court, 50' x 94'. Other requirements: a level floor, movable chairs for easy stacking and storing, a capacity of 2,500 to 3,000 people including balcony, adequate stage with dressing rooms, shower and dressing-room facilities for athletes, rest rooms, storage and utility rooms, administrative space, concession space, projection booth.

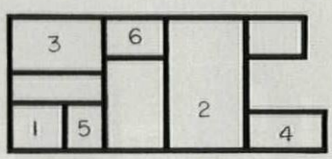




Brick "fences" partition outdoor areas of six-in-one civic center



3. SWIMMING POOL: a standard AAU six-lane, 30' x 75' swimming pool shall have such accessory areas as dressing rooms for men and women, life guard's station, control office and space for concessions. A small wading pool for children shall be located conveniently near. [This and other captions consist of excerpts from the mandatory requirements of the competition design program.]



4. LIBRARY: a library unit to serve both Brownsville and Texas Southmost College will be an important feature of the center. The present combined 10,000 volumes of both groups will probably be doubled by private contributions once adequate space is available. Basic requirements: general reading room, stack room, administrative office and public space, toilets, receiving, repair and storage space, one or two children's rooms which may also be used for storytelling, two or more private study rooms for adults.

Photos: (below) K. Walsh Studio; (others) Ulrich Meisel—Dallas

5. WOMEN'S CENTER: space shall be provided for activities of Brownsville's various women's clubs and will consist essentially of a general meeting area to accommodate 60 people in movable seats, a small lounge adjacent to toilet facilities, possibly one or two small rooms to accommodate 12 to 15 people each, speaker's platform and food-preparation and storage space.

6. TOWN HALL: this unit is to be designed to accommodate small groups and should be attractive but not lavish. Its seating capacity need not exceed 200 in movable seats. It will be used for public or organizational meetings and other like gatherings. Provision should be made for a small speakers' platform, a screen for illustrated lectures and a projection booth, a checkroom or storage room, rest rooms for men and women.

HOTEL ROOMS—part 1

This and the following page show examples of typical hotel rooms, with possible furniture arrangements. The following diagrams are for three basic types of rooms:

A. Minimum. Approximately 220 sq. ft. in room.
B. Average. Approximately 260 sq. ft. in room.
C. Luxury. 330 sq. ft. in area, or larger.

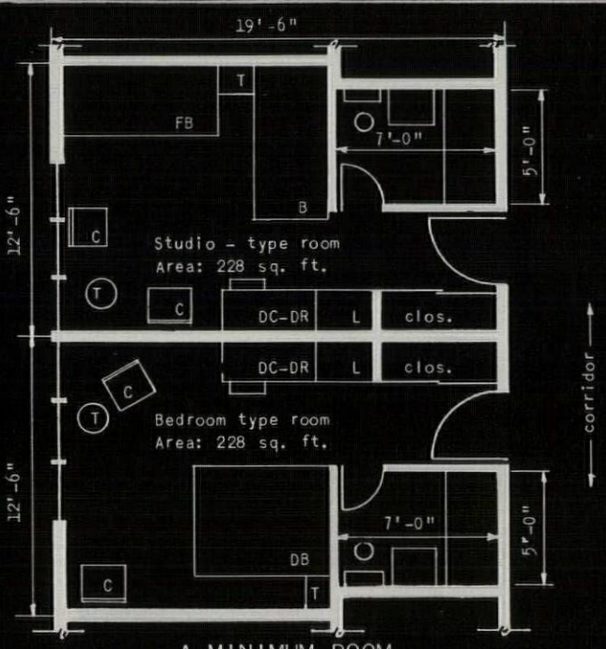
Studio-type rooms are those which are so arranged and furnished that they function as livingrooms during the day.

Where communicating doors are desired, the furniture may be rearranged or certain items omitted, to allow sufficient wall space for a door.

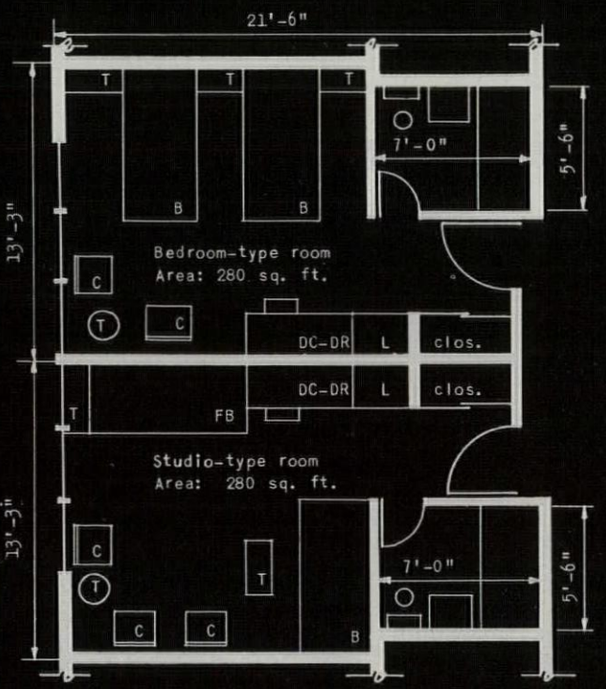
It may occasionally be desired to set back the entrances to the rooms, particularly when the corridor is narrow and this device would give a certain additional corridor width.

KEY TO FURNITURE

B - single bed
FB - folding bed
DB - double bed
C - chair
T - table
DC - desk and chair
DR - dresser
L - luggage rack
RT - radio-phonograph or television

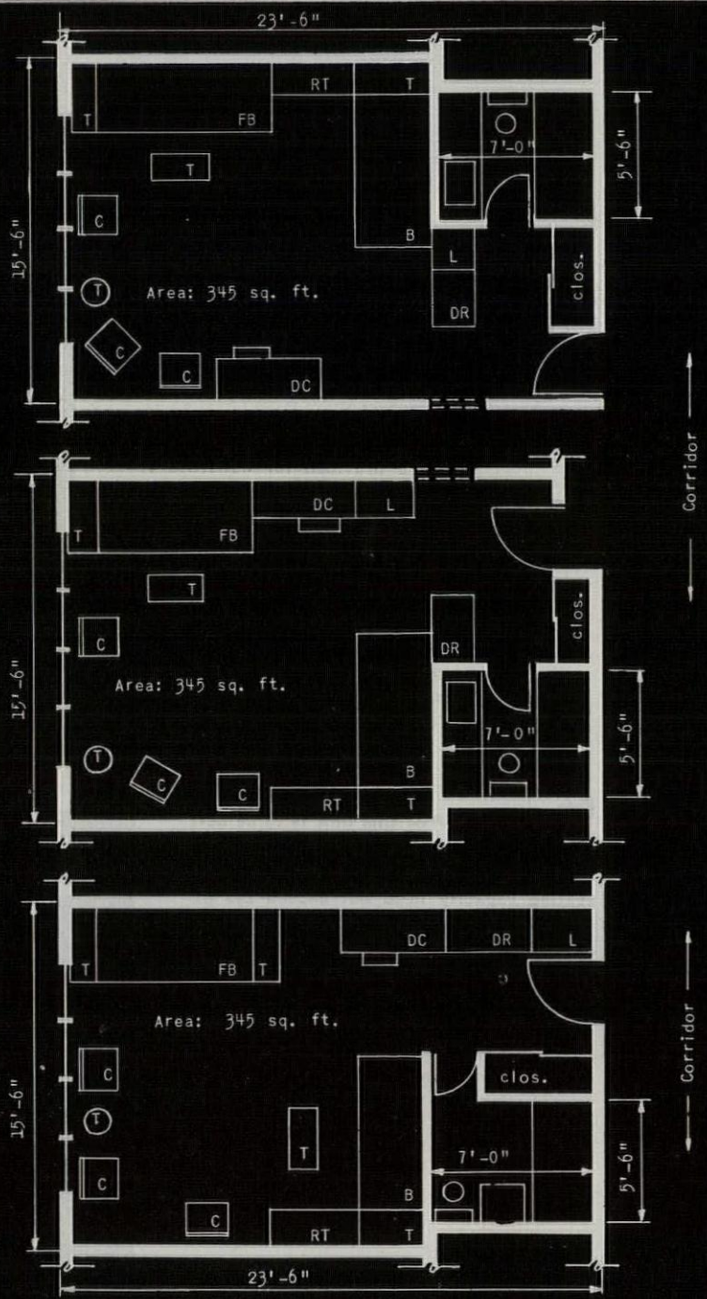


A. MINIMUM ROOM



B. AVERAGE ROOM

Scale: 1/8" = 1'-0"



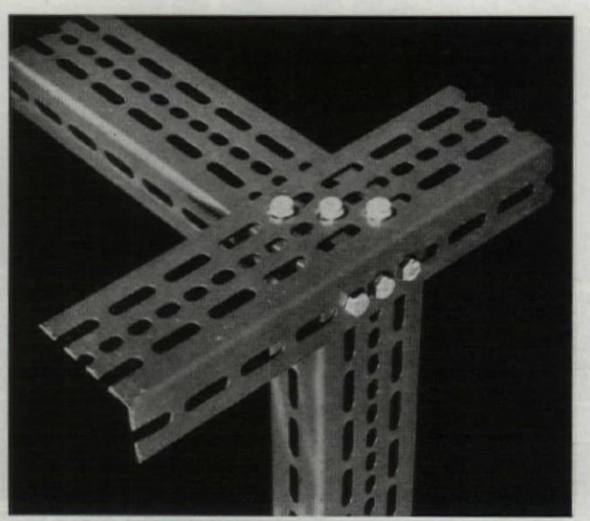
Luxury rooms are generally studio-type.

C. LUXURY ROOMS

NEW PRODUCTS

Special edition of FORUM'S regular department reviews and catalogues a year's accomplishments by the manufacturers of building materials and equipment

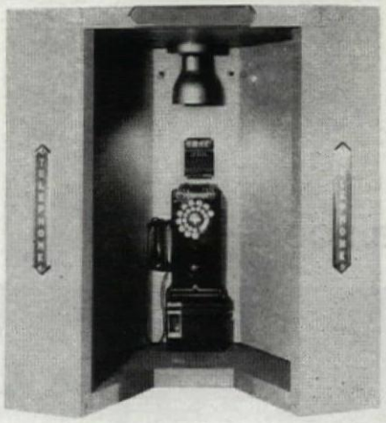
Each month FORUM presents manufacturer's new products which contribute to the progress of the building industry. This month this department is expanded to include not only the unpublished new products released during the last few weeks (below) but also a handy review and classification of all the new products published in the preceding 12 issues (p. 156, *et seq.*). This *New Products Review* should prove useful to architects, engineers, builders and their clients in the selection of modern building materials and equipment.



Slotted angles *bolt together to build utility structures*

Flowstrut is a grown-up and engineered version of the Meccano set. Like the familiar construction toy, it makes it possible for an unskilled man to build almost anything that may be required. Detail drawings are not necessary—a rough sketch is sufficient. No drilling, riveting or welding is required and the only tools needed are a cutter and a wrench. The basic component of the system is a 14-ga. steel angle, about 3″ x 1½″, 12′ long, prepunched with 40 holes per lin. ft. and marked for cutting at ¾″ intervals. A single angle with the long leg down will support a uniformly distributed load of 1,630 lb. over a 2′ span. For greater loads, angles can be combined to form channel, T, I or box sections. Shelving of 20-ga. steel is also available. It is channel-shaped, 1¼″ deep, 9″ or 12″ wide, and 3′ or 4′ in length. Channel stiffeners may be installed under the shelving for extra-heavy loads. All parts are bonderized and finished in gray baked enamel and may be safely exposed to the weather. The principal use foreseen for the system, recently imported from England, is in factories and warehouses where it can be stocked and used as needed for racks, shelves, benches, catwalks, bridges and supports of various types, as well as for minor sheds and buildings. *Flowstrut* is easily demountable and stores compactly, 1,000 lin. ft. requiring only 3½ cu. ft. of space as compared to the 51 cu. ft. needed to store 1,000 lin. ft. of 2″ x 4″ wood studs. Gable-roofed buildings up to 17′ in span are easily constructed; greater spans are possible. Plywood, corrugated metal or asbestos-cement cladding may be readily bolted on to the *Flowstrut* frame, and insulation and interior finish can be installed if desired. Price per bundle of eight 12′ angles, including 72 5/16″ bolts, is $28.80 F.O.B. Shelves cost $16.60 per dozen for the smallest size; $33.40 for the largest. The cutter sells for $30.

Manufacturer: Flowstrut Corp., 23 Leonard St., New York 13, N.Y.

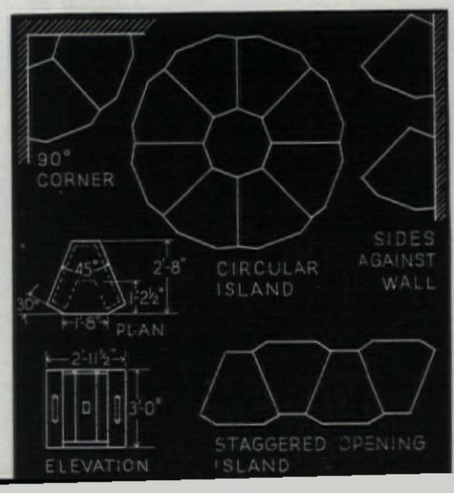


Abbreviated phone booth

does job of full-length model

This new model doorless telephone booth is triangular in shape and surprisingly efficient, effecting a reduction of 50% in outside noise and affording complete privacy to the user. The 45° triangular plan was adopted for reasons of compactness, especially when combined in multiple-booth installations. Two units will go in a corner, four make a semicircle against the wall, and eight form a full circle. The triangular shape also contributes to the acoustic quality of the booth, which when tested proved to be better than the theoretical calculations of Armour Research Foundation had indicated. The theory behind all doorless telephone booths, which are a speciality of Burgess-Manning, is that the torso of the person telephoning forms the door. The trick is to design the booth so that the user will invariably put his body in exactly the right place acoustically, and keep it there. When properly designed, the short-length doorless booth equals the full-length model in performance but costs only half as much and has no glass, or hinges, or ventilation problems. The new booth is of all-metal construction, finished in silver-gray baked enamel. It weighs 100 lb., and sells for $100 F.O.B.; available at extra cost are mounting bracket ($6), light ($9) and floor stand ($85).

Manufacturer: Burgess-Manning, 5970 Northwest Highway, Chicago 31, Ill.



architectural forum

DESIGN STANDARDS AND DATA

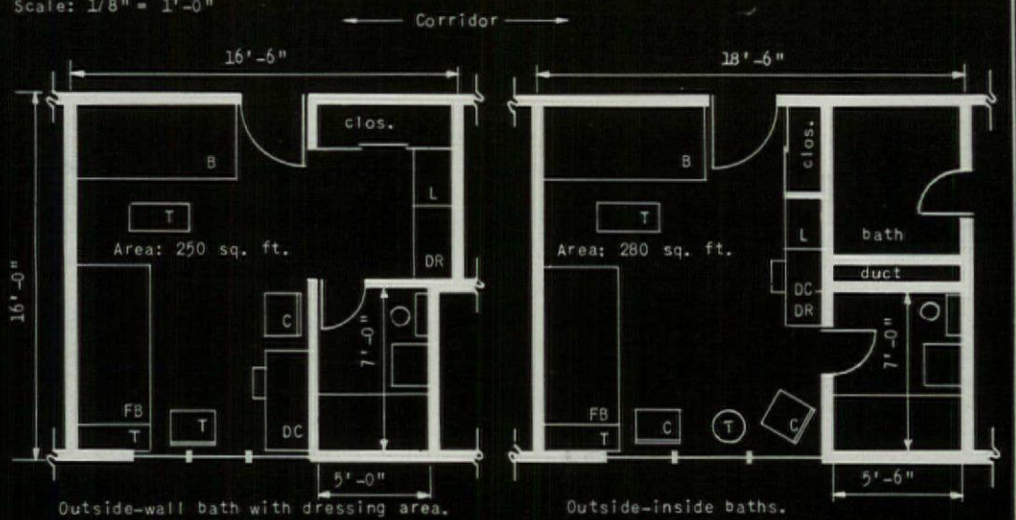
HOTEL ROOMS—Part 2

The following diagrams show variations of basic hotel rooms with possible furniture arrangements. The types shown are:

A. Rooms with baths on outside wall. Economy and desire to devote available outside wall space to rooms generally prohibit this arrangement from being used in most transient hotels.

B. Rooms with balconies. Generally found in resort and transient hotels where warm-tropical climates permit outdoor living. Balconies are shown with three types of rooms; actually may be used with any type.

Scale: 1/8" = 1'-0"



Outside-wall bath with dressing area.

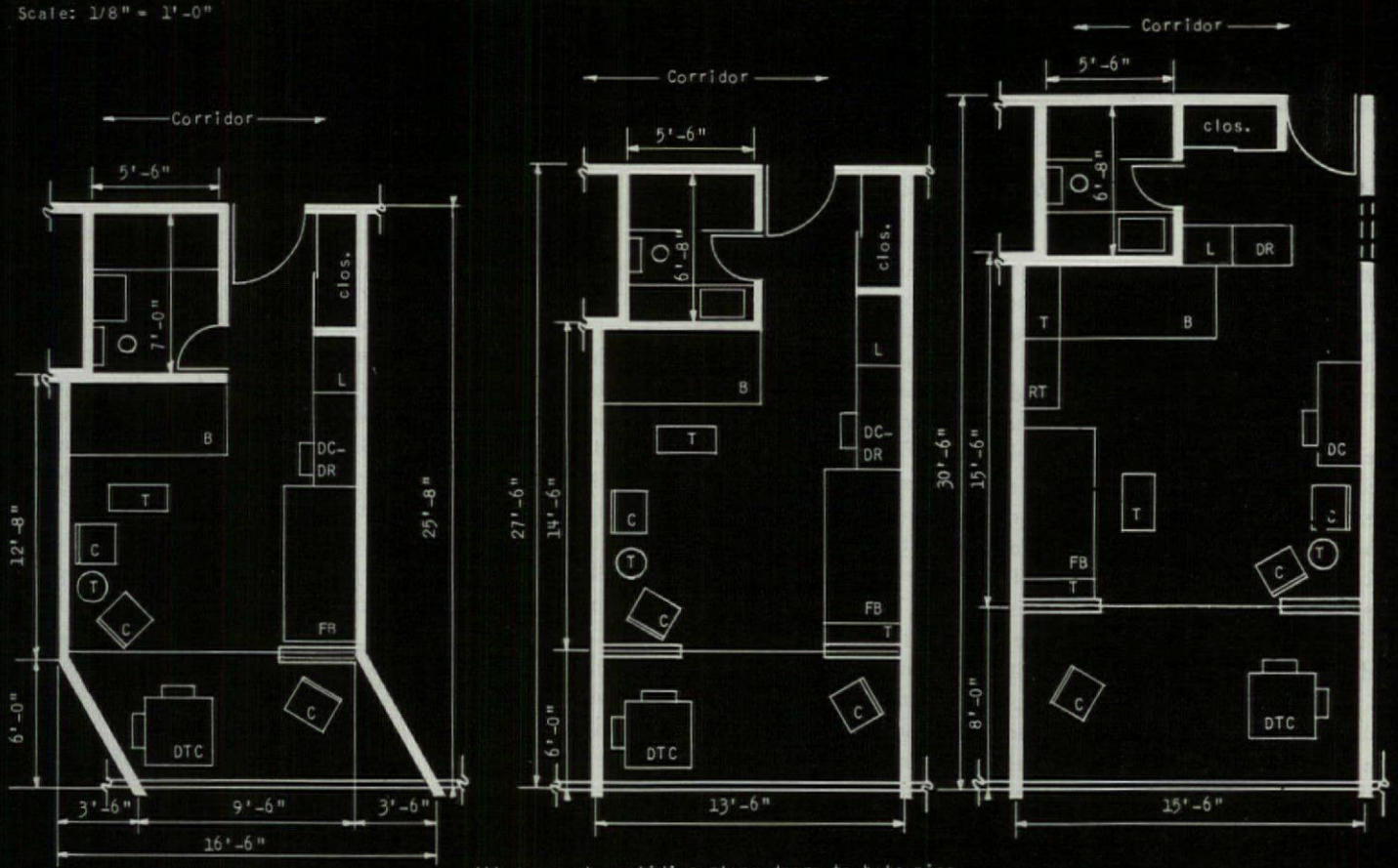
Outside-inside baths.

A. ROOMS WITH OUTSIDE-WALL BATHS

KEY TO FURNITURE

B – single bed
FB– folding bed
C – chair
T – table
DTC– dining table and chairs
DC– desk and chair
DR– dresser
L – luggage
RT– radio-phonograph or television

Scale: 1/8" = 1'-0"



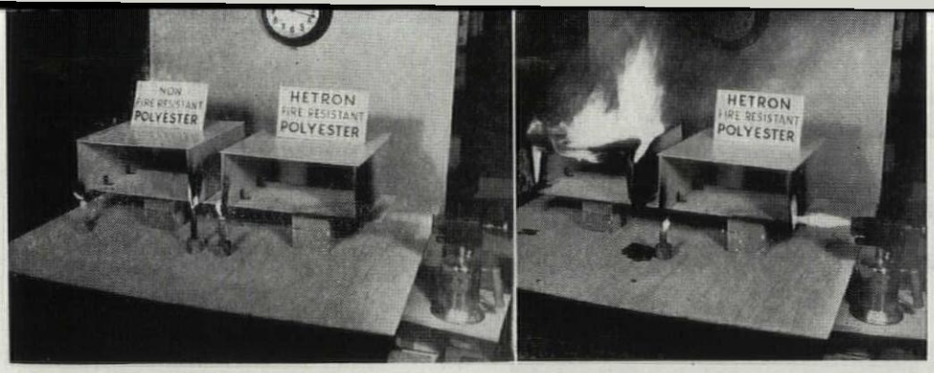
Minimum room. About 300 sq. ft. in floor area. Balcony wall turned for view or breeze.

All rooms show sliding glass doors to balconies.

Average room. About 325 sq. ft. in floor area.

Luxury room. About 430 sq. ft. in floor area.

B. ROOMS WITH BALCONIES



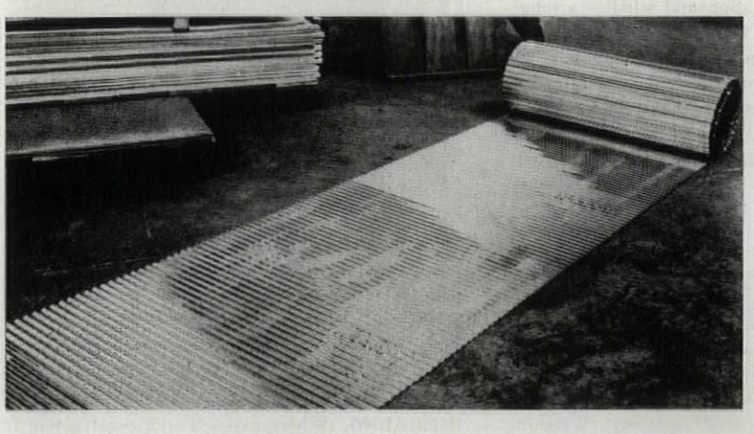
Fire resistant polyester *opens new fields for plastic sheets*

Translucent plastic sheets have achieved notable popularity in recent years but the highly combustible nature of many of them has prevented their use in many locations. Efforts to lessen the inflammability by adding mineral fillers and antimony oxide generally result in a reduced strength and light stability. *Hetron,* a polyester resin based on Het acid, makes possible a strong translucent plastic sheet of greatly improved fire resistance. Flame-spread tests were performed by an independent Chicago laboratory in accordance with ASTM E84-50T (Tunnel test) on five samples of *Hetron* made by five leading fabricators. Ratings ranged from 40 to 70, as compared with 100 for red oak and over 400 for ordinary polyester resin sheet. The Building Officials Conference of America (BOCA) has adopted the following classifications, based on the standard flame-spread test:

0-25 noncombustible
25-50 fire-retardant
50-75 slow-burning
75-200 combustible
over 200 highly combustible.

The *Hetron* samples are thus entitled to a classification of "slow burning" or better. The few cents extra that must be paid for the greater degree of fire resistance are well worth it in cases where ordinary plastic would not be permitted. Where there is no fire hazard, the ordinary plastic will no doubt continue to be used. *Hetron* sells for 43 to 48½¢ per lb. in truckload lots.

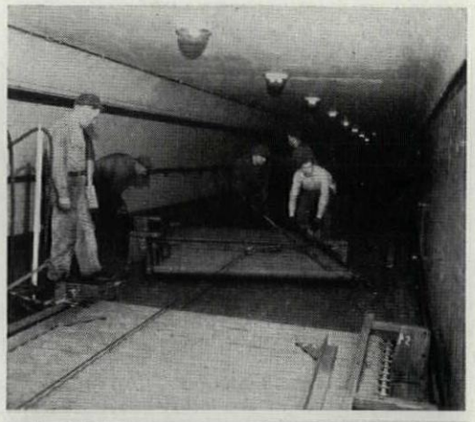
Manufacturer: Hooker Electrochemical Co., Niagara Falls, N.Y.

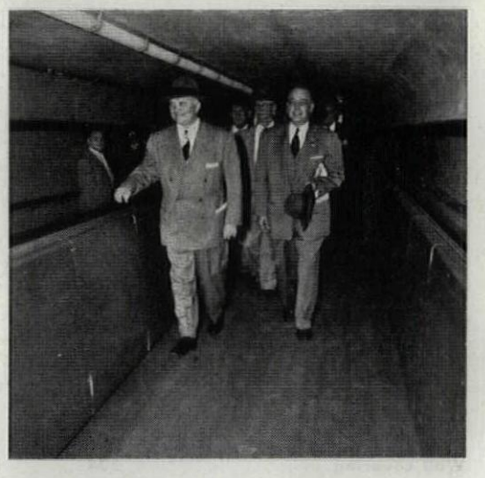


Cross-corrugated aluminum *roll roofing eliminates side laps*

Corrugated aluminum roofing, with the corrugation running across the sheet, is now offered in rolls of 50′, 100′ or 200′ length. Since in most cases a single piece can be used for the entire length of the roof, side laps are entirely eliminated. The new product comes in 2′ and 4′ widths, in three gauges (22, 24 and 26), with 1¼″ or 2½″ corrugations. Like all corrugated metal roofing and siding, no sheathing or decking is required. The new material is installed in horizontal courses beginning at the eaves with head laps of 4″ to 6″, depending on the slope of the roof, secured by aluminum nails and neoprene washers 8″ o.c. The new roll roofing costs about 10% more than corrugated aluminum in sheet form, but labor savings are said to more than offset this premium. Price of 4′ x 100′ roll, 26 ga., in less than 16,000-lb. truckload lots, is $45.28. Such a roll weighs 117 lb. and is easily handled on the job.

Manufacturer: Quaker State Metals Co., P.O. Box 1138, Lancaster, Pa.





Conveyor belts *move human cargoes horizontally or vertically*

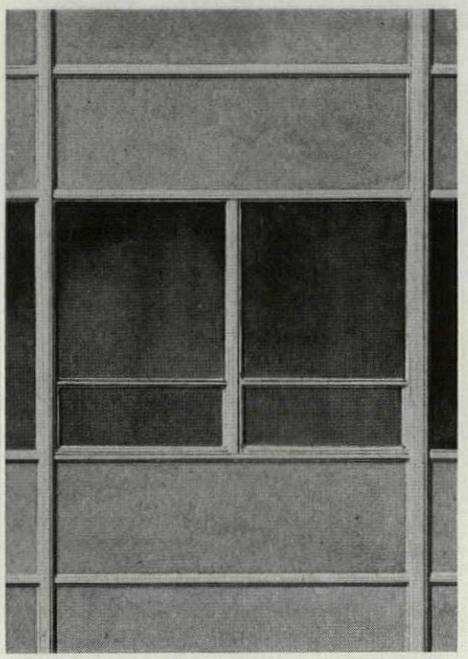
Having found that conveyor belts can successfully handle every other commodity, Goodyear has recently extended their use to the transportation of human beings. The "moving sidewalk" is not a new idea. Oldtimers may remember the one at the Chicago World's Fair in 1893. Nevertheless, the first practical installation of a moving sidewalk was opened only a few months ago in the Erie station of the Hudson & Manhattan Railroad (better known locally as the Hudson Tubes). This *Speedwalk,* as Goodyear calls it, is 227′ long and negotiates a 10% grade. It moves at a speed of 120′ per minute or a little less than 1½ mph. The ⅝″-thick belt is 460′ long and 5½′ wide and can carry 10,800 people per hour. It runs on a bed of closely spaced steel rollers and is operated by a 20-hp motor. Goodyear has an experimental *Speedwalk* at its

continued on p. 172

NEW PRODUCTS REVIEW

Capsuled descriptions and prices of the 120 products presented in the last 12 issues of FORUM, grouped by type for easy reference

INDEX

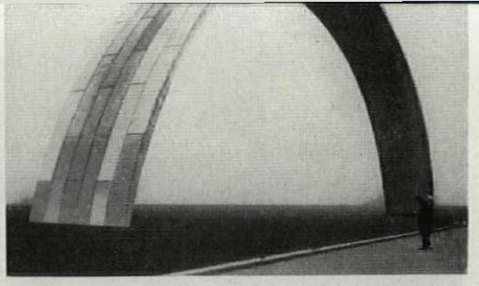


Prefab walls and structures

CURTAIN WALLS. Factory fabricated, this low-cost building wall allows flexible design through wide choice of facing, insulation and window arrangement. Complete walls (70% glass, 30% insulated panels) run $4 to $5 psf installed, unglazed. The crisp curtain has two unique features: instead of weep holes, enclosed gutters channel condensate to mullions; and the "soft" part of the panel is segregated from the face by an air space, preventing condensation from forming inside the insulation. *Michael Flynn Mfg. Co., 700 E. Godfrey Ave., Philadelphia 24, Pa.* (April '54, p. 168).

Steelcraft's slim interlocking panels can be secured to the structural frame horizontally or vertically with special speed rivets, removed and relocated at any time. Gaskets and the 3" glass-fiber core isolate outside and inside metal skins to prevent conduction. Entire wall surface has a "U" factor of .15—about the same as 8" masonry. Weighing only 6 lb. psf with steel skins (3 lb. with aluminum), the 2'-wide curtain panels sell for a modest $1.50 to $2.25 psf. Lengths are available up to 20', and various textured facings are obtainable. *Steelcraft Mfg. Co., Rossmoyne, Ohio* (Sept. '53, p. 230).

PREFAB BUILDINGS. This rigid-frame steel structure for factories and farms spans 40' without central columns. The 20'-long bays may be stacked side by side as well as end to end. Delivered knocked-down, buildings are assembled with patented clips and wedges; no riveting or welding is necessary. Each 20' bay can be put together in 160 man-hours. Stock doors, windows, skylighting and special clips for 2" insulation board can be provided. Price for the knocked-down 40' x 120' structure, F.O.B. plant, is around $7,392. *United Steel Fabricators, Inc., Wooster, Ohio* (April '54, p. 218).

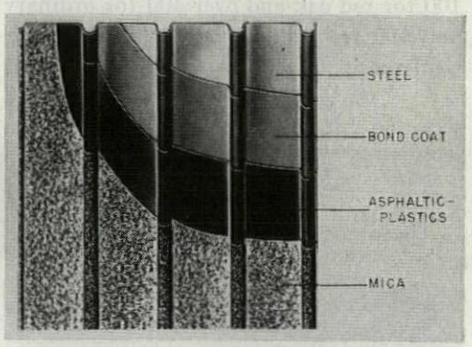


Clear spans of up to 100' are achieved without ribs, trusses or other framing members by simply bolting together 2'-wide sections of curved sheet metal. Panels for 100' span consist of curved 20-ga. sheet between two 16-ga. sheets, resulting in smooth surface inside and out. Smaller buildings use single thickness of 18-ga. steel, doubly curved and corrugated. Cost erected, including concrete floor slab, $3.68 per sq. ft. for 100' span, $1.40 for spans up to 60'. *Wonder Building Corp., 30 N. LaSalle St., Chicago 2, Ill.* (July '54, p. 165).

GATE HOUSE. An efficient guard building for factory yards, tollgates and drive-ins, the *Erie Gate House* stands up on its own load-bearing walls over any level surface. Its porcelain-enameled sandwich wall and hip-roof ceiling panels have glass-fiber insulating cores. A two-attendant size (4' x 11' x 7') structure costs $2,425 preassembled and $2,150 in knock-down panels F.O.B. plant. *Erie Enameling Co., Erie, Pa.* (Jan. '54, p. 204).

Roof decks

METAL PANELS. Three coatings protect *Plasteel* industrial metal deck from extremely corrosive

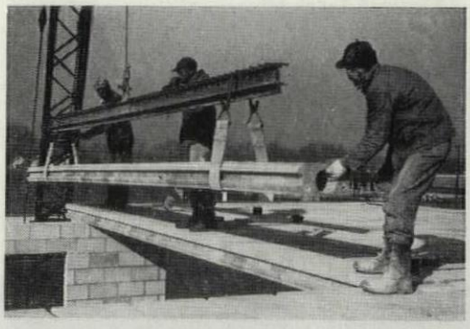


atmospheres: a rust-inhibiting bond, an asphalt-plastic weatherseal and a heat-reflective, mica-flake surface. The ribbed 2'-wide panels come in lengths up to 25' and run 50¢ to 60¢ psf in place. *Plasteel Products Corp., Washington, Pa.* (May '54, p. 214).

INSULATING. Where exposed web construction is called for, the deck for built-up roof, insulation and painted ceiling can all be provided with *Insulite Roof Deck.* The 2' x 8' wood-fiber board (1½", 2" or 3" thick) has an integral vapor barrier laminated near its undersurface which suits it to almost any climate. (Gaskets prevent moisture from moving up through T&G joints.) Ten squares can be laid in seven man-hours. Priced at 33¢ psf, it can save $20 to $40 per square over separate materials. *Insulite, 500 Baker Arcade Bldg., Minneapolis 2, Minn.* (Feb. '54, p. 218).

STEEL BEAMS. Light-gauge steel *Double Hat "D"* interlocking panels can span bearing walls up to 33' apart, doubling as structural roof deck and finished ceiling. The economical unit ($1.15 psf, installed) is made of two beams 9" wide, 1½" to 7½" deep. Used flat side up, the "D" panels create an unbroken surface for built-up roofing. Turned as underside they present a smooth stri-

ated ceiling. Perforated panels with glass-fiber blanket for sound control are an extra 25¢ psf. *Detroit Steel Products Co., 2250 E. Grand Blvd., Detroit 11, Mich.* (Nov. '53, p. 208).



CONCRETE BEAMS. A fast-construction floor or roof deck, *Rapidex* lightweight concrete beams span up to 29'-4" under a 30-lb. load. Assembled from 8' x 16" block (cast of concrete and expanded shale), each beam is reinforced with steel rods and cambered to allow for dead-load deflection. Grout poured between sections during installation locks them into a continuous rigid slab. *Rapidex*'s boxy, patterned ceiling on the underside absorbs as much sound as acoustic tile or plaster. The hollow cores can serve as ducts. Complete costs run 85¢ to $1.45. *Spickelmier, 1100 E. 52nd, Indianapolis 5, Ind.* (Nov. '53, p. 204).

Metal roofing and siding

PORCELAINED SHEETING. A vitrified coating of silicates and metal oxides protects edges as well as both sides of *V-Corr* corrugated steel siding and roofing. The fused-on porcelain guards against corrosion even under severe conditions; *V-Corr* resists fire, chemical fumes, sea air, smoke and steam. Prices run $31.30 per square for 24 ga. up to $40.56 for 18 ga. *Toledo-Porcelain Enamel Products, 2275 Mead Ave., Toledo, Ohio* (March '54, p. 220).

ALUMINUM SHEETING. Alcoa now fabricates a thinner-gauge .024" corrugated aluminum sheet for use as curtain-wall facing and as roofing on narrow spans which do not require standard .032". The .024" metal sells for $20 a square compared to $24 for the heavier. *Aluminum Company of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.*

Another cost-saving material is Nichol's 33" aluminum roofing. Wider than standard by 7", it cuts the material needed for side lap by 25%. Also, fewer seams mean less labor and less chance of leakage. In the .019" thickness it is $15 per square and $19 in .024". *Nichols Wire & Aluminum Co., 1725 Rockingham Rd., Davenport, Iowa* (March '54, p. 228).

INTERLOCKING TRIM. These anodized aluminum extrusions can be applied sideways or up and down as complete store-front facings or trim. Four basic interlocking members comprise the series: a top angle ($1.10 per lin. ft.), a 2¼" single concave flute ($1), a double flute ($2.20) and a single flute with drip flange ($1.50). *Desco Metals Co., 2264 Wilkins St., Detroit 7, Mich.* (June '54, p. 204).

Plastic panels

V-CRIMPED. A glass-fiber reinforced structural plastic, 29"-wide *V-beam* is deeply corrugated to correspond with 5.3"-pitch metal siding for wide purlin and girt span. Economical for side or top lighting, the shatterproof and chemical-resistant translucent sheets nest with their metal neighbors without calking or flashing. Furnished in lengths up to 12', in pale green, blue and semiclear, *V-beam* costs about $1 psf. *Resolite Corp., Zelienople, Pa.* (Dec. '53, p. 180).

FIRE RESISTANT. Made of color-stable, self-extinguishing resins, *Alsynite 200 FR* plastic is especially suited for siding, partitions and skylights in critical fire areas since it cannot support flame. Corrugated and flat sheet are available in yellow, green and opal at a slightly higher price than regular polyester panels. *Alsynite Corporation of America, 4654 DeSoto St., San Diego, Calif.* (Dec. '53, p. 180).

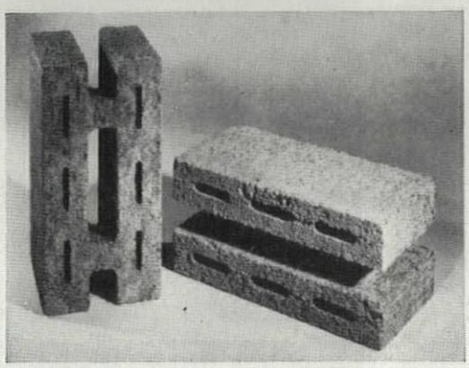
ROLLED. Rolled in continuous sheets, *Spun-Lite* glass-fiber reinforced plastic costs less to apply

than conventional 4'-wide panels. Fewer joints not only mean less labor but also less chance of leaks on outdoor applications and neater jobs indoors. Flexible enough for a 100' strip to curl into a 25" x 3' carton, the material has high impact resistance. Made in 1'-to-5' widths, it can be ordered flat or corrugated, shiny or dull, rippled or smooth at $1.25 psf. *Spun-Lite Corp., Miami, Fla.* (Jan. '54, p. 192).

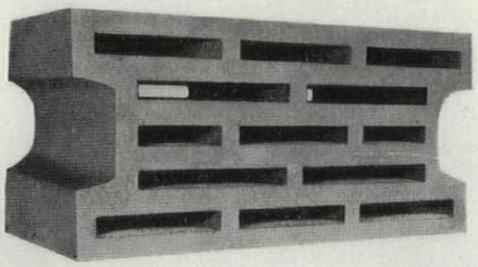
PATTERNED. Instead of the random strands usually seen in translucent polyester paneling, *Woven Corrulux*'s reinforcement is an attractive basket weave of glass fibers. Impervious to most chemicals, the shatterproof sheeting belies its delicate textural look. It is made in two corrugations, in fine- and bold-weave patterns suitable for partitions, shower stalls, ceiling diffusers. It costs about $1.25 to $1.50 psf. *Corrulux Div., Libbey-Owens-Ford Glass Co., 410 Holmes Rd., Houston, Tex.* (Aug. '53, p. 186).

Concrete and masonry

BLOCK. This ingenious masonry block can be used right side up for cavity walls, or bottoms up in reinforced construction. Each 35-lb. unit consists



of two 7⅝" x 15⅝" slabs joined by two 3"-high webs. Coned slots on each side of the block serve as insulated core and as mortar keys. For cavity walls, loose insulation is poured into the 2" space between faces. Laid with web at bottom, the block takes vertical or horizontal reinforcement, and grout is poured into the trough. Price: about 25¢ a unit. *Morris Lapidus, 9031 Ft. Hamilton Pkwy., Brooklyn, N.Y.* (Sept. '53, p. 236).



Similar to conventional block in size and weight, *Webco* is 25% stronger because of its more numerous cells. Since no webs run directly through, the new block is also superior in resistance to sound, moisture and heat transmission (U = 0.23 Btu). Estimated price of cinder block in Pittsburgh area is 30¢. *American Webco Corp., 501 Broad St., Sewickley, Pa.* (July '54, p. 218).

FOAMING AGENT. The *Aerofill* method precisely governs cellular concrete. Whatever the aerated material's use—steel fireproofing, insulating fill or tilt-up wall—its density can be gauged within 2 lb. per cu. ft. Key to the accuracy is a stabilizing chemical which is combined with water and transformed by a compact generator into a creamy froth of uniform air cells. This foam is hosed into the regular cement mix in prescribed quantity, and the lightweight concrete poured, pumped or sprayed, depending on application. *Cellular Products Co., 1238 S. Atlantic Blvd., Los Angeles, Calif.* (May '54, p. 210).

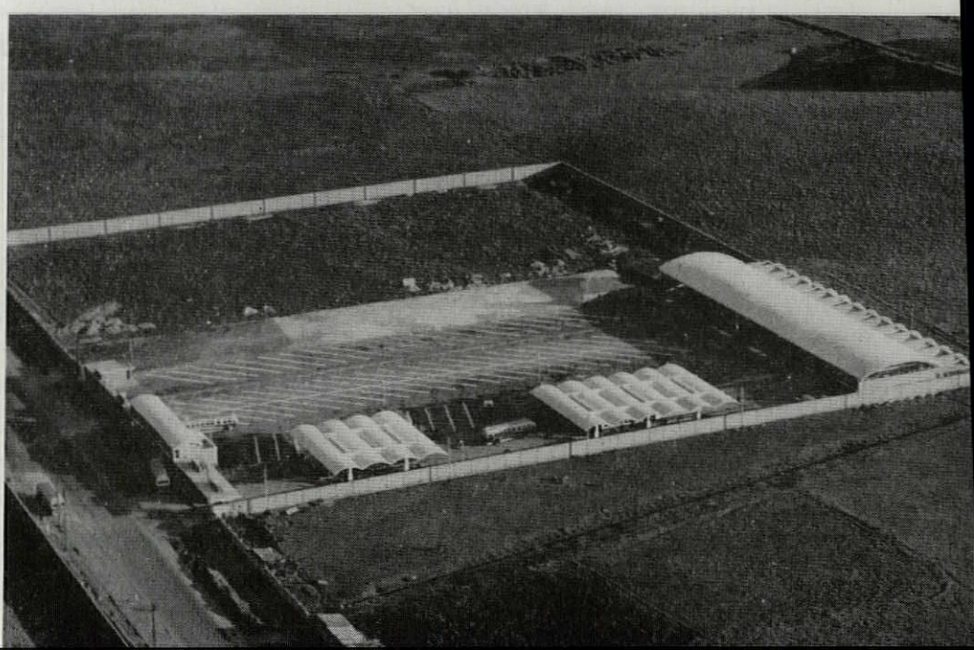
AUTOMATIC GROUTER. Reversing usual masonry setting methods, the *Foam-O-Matic* makes it possible to pour mortar in from the top of stonework, and let a rubber-faced 2' x 4' steel plate force it in and around the brick, block or stone. After each setting (6 to 15 minutes, depending on the masonry's porosity), the counterweighted machine is released, leaving stone faces and concave joints clean, and raised to the next level. One man can set 50' of wall in two hours. Price: $199.50. *United Research Development, Inc., New Britain, Conn.* (June '54, p. 196).

VINYL STRIP. Easy to apply, *Aeroflex V* 4" vinyl ribbon prevents wire groups used for post-tensioning from bonding to the concrete. The pliable plastic friction-reducer sells for 0.81¢ per ft. in .003" thickness. *Anchor Plastics Co., 36-36 36th St., Long Island City 6, N.Y.* (Jan. '54, p. 204).

Wall panels

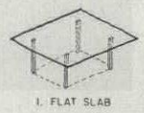
GLASS SANDWICH. *Hexcelite*'s translucent glass shows off an aluminum honeycomb core, heretofore concealed in opaque building panels. A clear or blue-tinted adhesive bonds the new laminate of ordinary window glass and scintillating foil cells into a strong, intrinsically attractive material. Suitable for walls, partitions, skylights, counter tops, *Hexcelite* claims high tensile and compressive strengths, impact resistance and in-

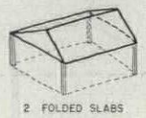
continued on p. 176



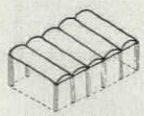
Doubly curved, nonbending
surfaces for wider,
more flexible roof spans

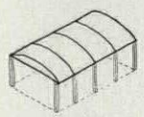
SHELL CONCRETE TODAY


1. FLAT SLAB

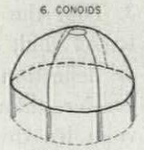

2. FOLDED SLABS


3. CURVED SLAB


4. LONG BARRELS


5. SHORT BARRELS


6. CONOIDS


7. SIMPLE DOME

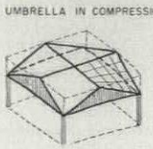

8. RECTANGULAR DOME


9. GROIN VAULT

HYPERBOLIC-PARABOLOIDS


10a. UMBRELLA IN TENSION


10b. UMBRELLA IN COMPRESSION


10c. FOUR-POINT COMPRESSION

Long barrel shells, only 2″ thick, are 15½″ wide and 70′ long over inspection bays of a bus service station at Bogota, Colombia. The four-shell roof is mounted on four columns, spaced two shell-spans apart, with the ends of the barrels cantilevered 19½′ front and rear. The repair shop roof (far left) is 75′ wide carried on column bents 65′ apart. Alvaro Ortega, architect; Guillermo Gonzalez, structural engineer.

Skeleton framing with reinforced concrete is an unimaginative copy of steel or timber construction. Because all concrete below the neutral axis of a beam is parasitic dead load, it cannot efficiently withstand bending forces. At MIT last month, 450 leading architects, engineers and builders discussed how to use concrete more efficiently—in thin, graceful shells that are designed as space frames to minimize bending moments. The results are more akin to natural forms than to conventional framing.

The three-day conference* covered architectural, engineering and construction aspects of thin shells besides giving brief attention to lighting and acoustical problems. Main interest fell on the wide variety of highly functional and expressive shapes—where structure and enclosure are one—that have already been achieved:

Barrels, in effect slabs that are arched upward to reduce bending forces, are built as vaults (left), precast and hipped (pp. 159, 162), also as ribbed arches (pp. 160-161).

Domes, of various types and supports, are precast for speedy construction and prestressed for maximum strength (pp. 166-167).

Warped surfaces, disarmingly simple hyperbolic-paraboloid shapes in which, under uniform loading, bending forces are practically zero, have been built by Architect Candela (pp. 163-165) and by Italian Engineer Giorgio Baroni (AF, Jan. '54, p. 150).

Because they are prefabricated in certain limited shapes, traditional building materials like timber, stone and steel normally transmit loads in one direction only, along a beam or down a column. In contrast, a properly reinforced concrete slab can transmit loads in any direction in its plane. Further, since it can be cast in any desired shape, the slab can be folded or arched upward (figs. 1-3, left) so that forces act in the plane of the slab, resulting in lower bending moments. When the folded slab is braced by end diaphragms, the structure becomes a space frame able to distribute concentrated loads throughout the entire structure (AF, Feb. '53, p. 150).

Barrel vaults are classed as either long or short (figs. 4-5), depending on whether the length of the arch is greater than the span or vice versa.

The simple dome (fig. 7) can span a rectangular area (fig. 8) by means of a larger radius of curvature over the longer span. The more advanced groin vault (fig. 9) is used at St. Louis, Mo. (p. 163).

The hyperbolic-paraboloids (fig. 10) are the shell equivalents of suspension bridge cables. Simply generated by straight "joists" laid between two "main beams" parallel in plan but not in elevation, they form doubly curved surfaces that effectively follow the polygon of forces due to uniform loading, and thus produce no bending moments. The conoids (fig. 6) act likewise.

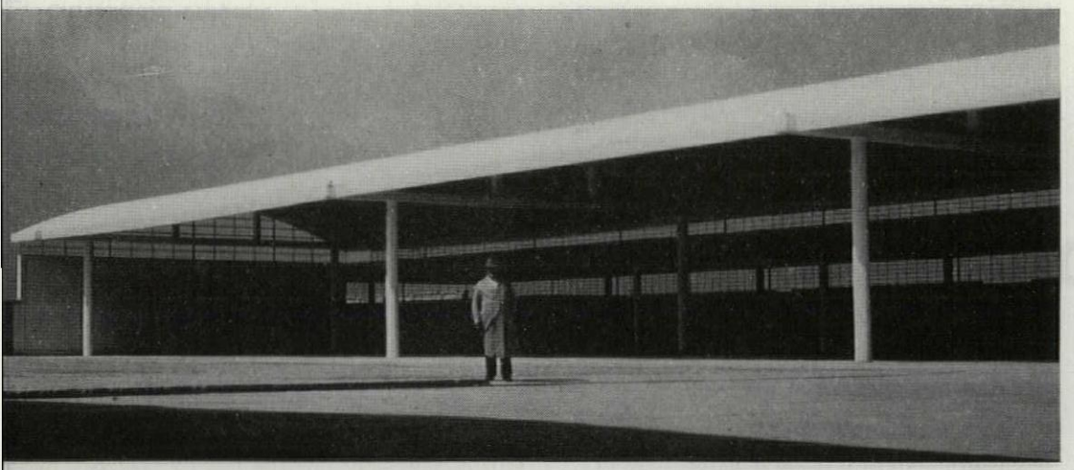
Greater strength in thin shells

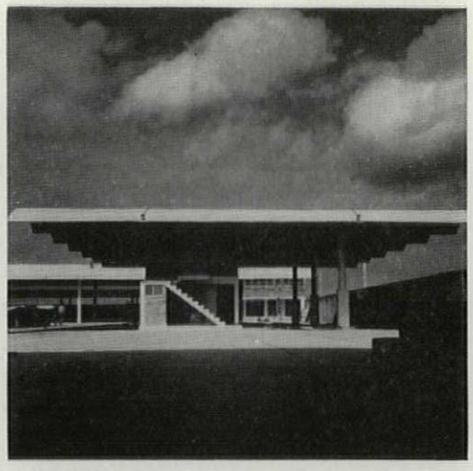
Properly designed, reinforced concrete shells develop surprisingly low stresses. Candela's double-curved Cosmic Ray Pavilion, for instance, spans 33′ with a shell only ⅝″ thick, mesh reinforced, yet maximum stresses are only 30 psi (AF, Sept. '52).

Stresses in concrete shells are mainly due to dead loads; consequently, a thicker shell is likely to add more weight than safety, besides giving rise to additional stresses due to volume changes in the concrete (temperature, shrinkage and plastic flow). Optimum thickness depends on radius of curvature of the shell. For reinforced concrete the ratio should lie between 1/100 and 1/250; the shell, if too thin, can, however, be strengthened by ribs or corrugations.

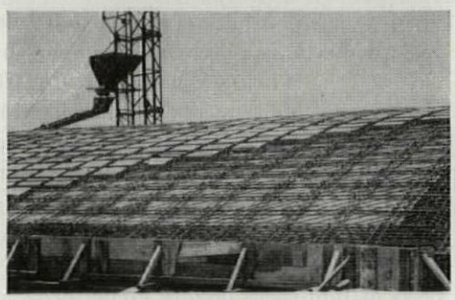
Natural shell structures similarly derive their strength from shape rather than from thickness. All shells—whether smooth eggshells, corrugated scallop shells or latticed radiolaria surfaces—distribute stresses through the material continuously in all directions. The walnut shell is perhaps the strongest example, for it is egg shaped, corrugated, has stiffening ribs on the shell and stiffening diaphragms inside it. These pages show some of man's latest attempts to learn from his natural environment.

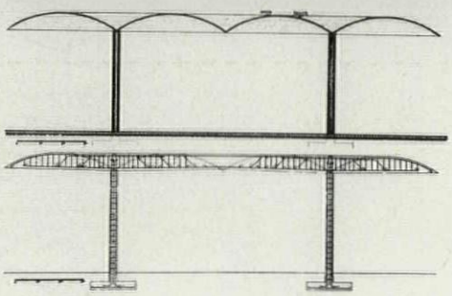
* Special conference on Thin Concrete Shells, jointly sponsored by MIT's Departments of Civil Engineering and Architecture.





Hollow tile fillers are used to lighten the 75′ wide repair shop roof of the Bogota bus station (above). The tiles are placed 8″ o.c. and covered with 2¼″ of concrete (right). The 70′ long thin shell barrels of the inspection bays (far right) are laterally braced by reinforced beams atop columns.





Ribbed arches vs. barrel vaults

While US shell concrete consists mainly of wide-span ribbed arches, British experience favors barrel vault roofs. Typical of the general trend:

▸ **Standardized formwork** mounted on wheels speeds transfer of scaffolding from one bay to the next in US arch construction. By this method a 286′-span, 340′-long ribbed arch structure for the Alabama Livestock Coliseum came out cheaper than an alternate nonfireproofed steel design, $557,500 vs. $579,000, on competitive bids (taken in Feb. '49, see p. 160).

▸ **Overhead tie bars** permitted similar traveling formwork to be used on 720′ long arches spanning 66′ and having 20′ cantilevers each side, in a Mexican Custom House structure (p. 161). Although the above-roof tie bars required higher columns and extra waterproofing, the solution proved economical.

▸ **Precast barrel shells,** 16′-8″ x 17′ and only 1¼″ thick, are cast atop one another at a rate of eight a day using a rapid-curing vacuum process (right).

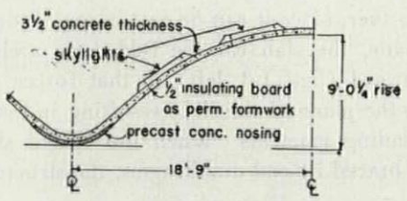
▸ **Prestressed barrel shells,** 33′ wide and 2½″ to 5½″ thick, span 148′ over a garage in Bournemouth, England. There are ten barrels with cables set in 5½′-deep edge beams.

▸ **Barrels and arches are combined** in two 333′-span hangar bays at Marseilles, France. In each bay six barrel vaults, 333′ long, 32′ wide and 2⅜″ thick, are arched upward in the direction of span to form a corrugated tied arch having a rise of 40′. To reduce formwork each shell vault is cast on the ground and jacked 62′-4″ into position. This bold design was engineered and built by the *Société des Enterprises Boussiron.*

Economical barrel vaults

As we have already seen, shell concrete barrels may be either long (vaults) or short (arches). As a result of their experience (over 500 barrel roofs completed since World War II) British engineers have come up with certain general recommendations:

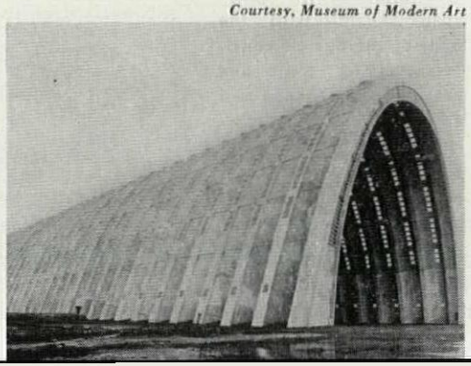
1. That a square barrel is cheapest when only one standard bay is to be roofed.
2. That the most economical ratio of barrel length to width is 2:1 (4:1 with edge beams between vaults). For the more expensive hipped or north-light roofs this ratio becomes 3:2.
3. That the ratio of length to rise of a barrel vault should be no more than 10:1 or deflection becomes excessive in spans greater than 100′. By prestressing the vault lengthwise (the cables being placed either in the shell or in the edge beam) a length/rise ratio of 20:1 is permissible since the cables help withstand shear forces. In general, however, prestressing

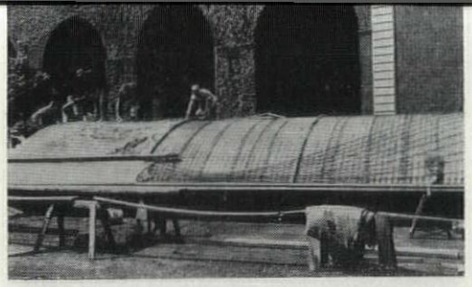


Precast nosing and permanent formwork speed construction of 105′ long barrels at Dumfries, Scotland. Engineer: C. V. Blumfield.

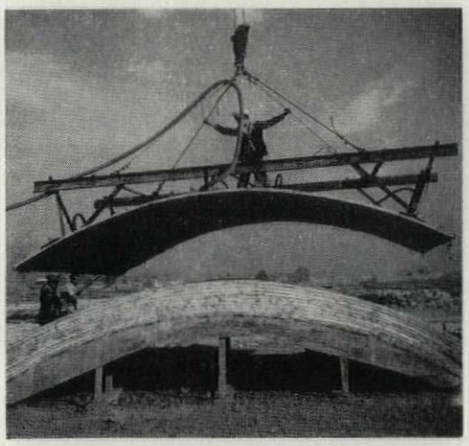
Corrugated arches span 320′ at the Orly, France, airship hangar. Built in 1916 by Engineer E. Freyssinet, this structure leads directly to Nervi's 315′ span precast corrugated arches in Turin (AF, Nov. '53).

Courtesy, Museum of Modern Art

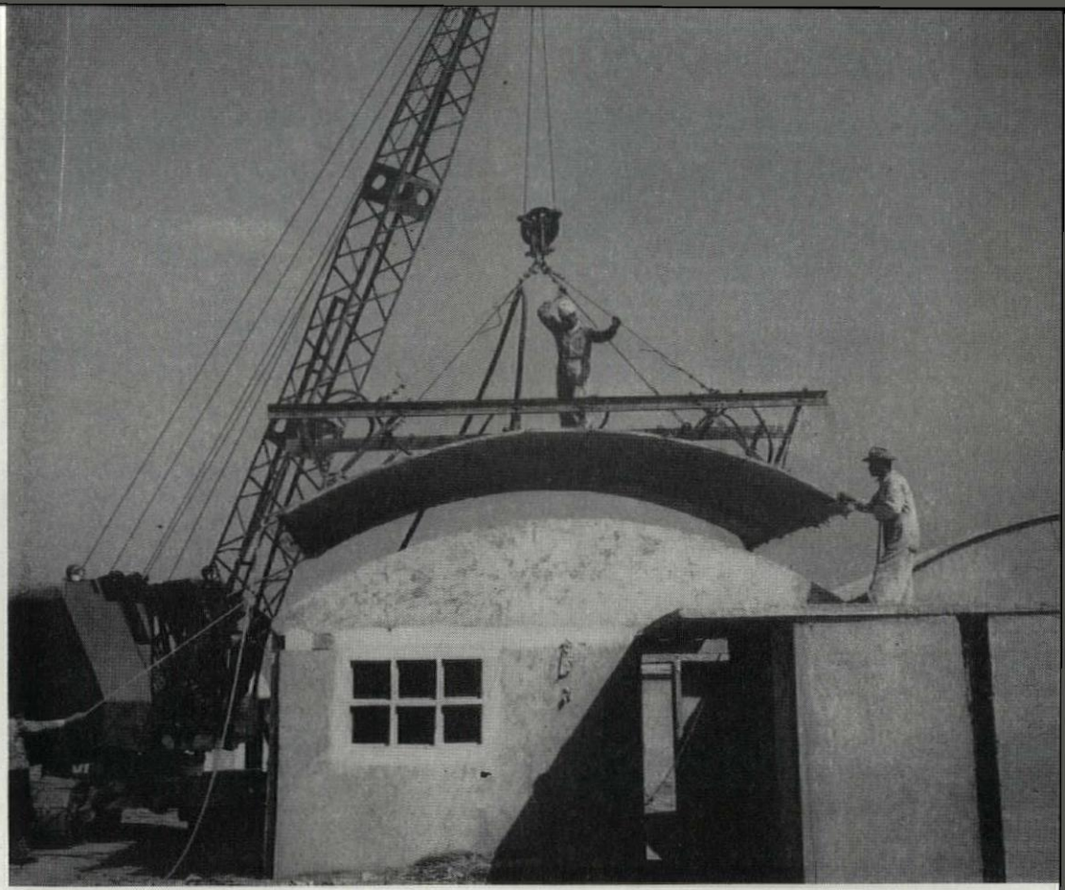




Shell concrete test barrel is 1½" thick, 31' x 20'. Displacements due to 40 psf loading: ½" inward and 2½" downward at edges; ¼" upward at crown. Engr.: Vacuum Concrete, Inc.



Precast barrel shells, 16'-8" wide, 17' long and 1¼" thick are cast atop one another using the rapid-curing vacuum process. Each barrel acts as formwork for the next.

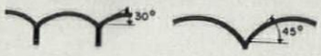


Vacuum-hoisting speeds erection of precast barrels atop precast walls of low-cost housing project at Bogota, Colombia. A six-man crew erects walls at a rate of six houses a day; barrels, 12 a day to produce a 540 sq. ft. house selling for $650 including plumbing, electric light and a stove. Alvaro Ortega, architect; Vacuum Concrete de Colombia, engineers.

only proves economical in large barrels spanning over 110'.

4. That the angle of springing should be about 30° where edge beams are employed, 45° without edge beams.

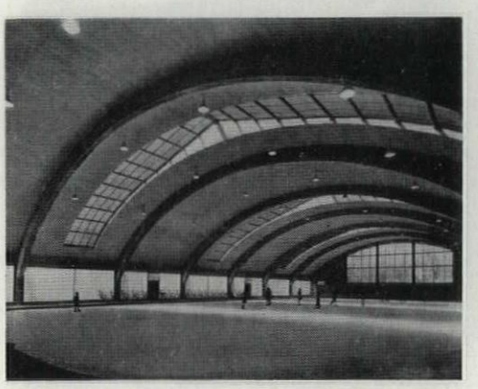
While long-barrel shells have an average ratio between thickness and radius-of-curvature of the order 1:150 (e. g. 2" for a 25' radius), in most US short-barreled arches this ratio is nearer 1:1,000 (3½" for a 200' radius) and the shell must be protected against buckling by stiffening ribs (or corrugations as in the Marseilles hangar).



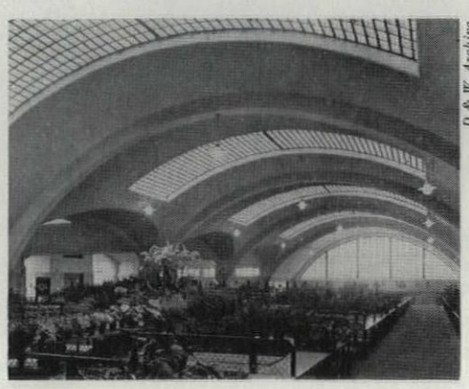
Deep 45° angles between adjacent shells can eliminate edge beams.

Generally, short-barrel shells are considered as a series of thin arch shells spanning between heavier stiffening ribs, which in turn carry the thrust down to the foundations. Thus the lower portion of each arch shell becomes a bridging zone and is in tension. In his conference paper, Engineer Eric Molke showed how this bridging zone could be made lighter and stronger by running prestressing cables close to the base of each arch, at right angles to the stiffening ribs.

Although the derivation of formulae for the design of barrel shells is complex, the application of these formulae is relatively simple, so time-saving tables and charts can be used. These are now available to US designers in the ASCE Manual No. 31, "Design of Cylindrical Shell Concrete Roofs."

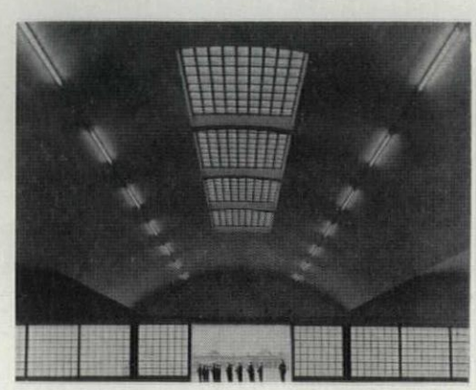


Skylit ribbed arches for this 105' x 232' skating rink at Ardmore, Pa., are provided by opening expansion joints. Architect: E. Nelson Edwards; engineers: Roberts & Schaefer Co.



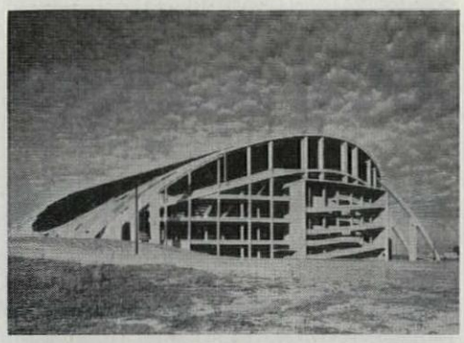
D & W Archive

Light and lightness is achieved in this Hamburg market hall, Germany, by a combination of glass shells and arched edge slabs. Engineers: Dyckerhoff & Widmann.



Skylit barrel vaults are obtained by setting glass blocks along the crown of each of five 90'-long, 45'-wide and 3"-thick shells for this Royal Marines Drill Hall at Deal, England.

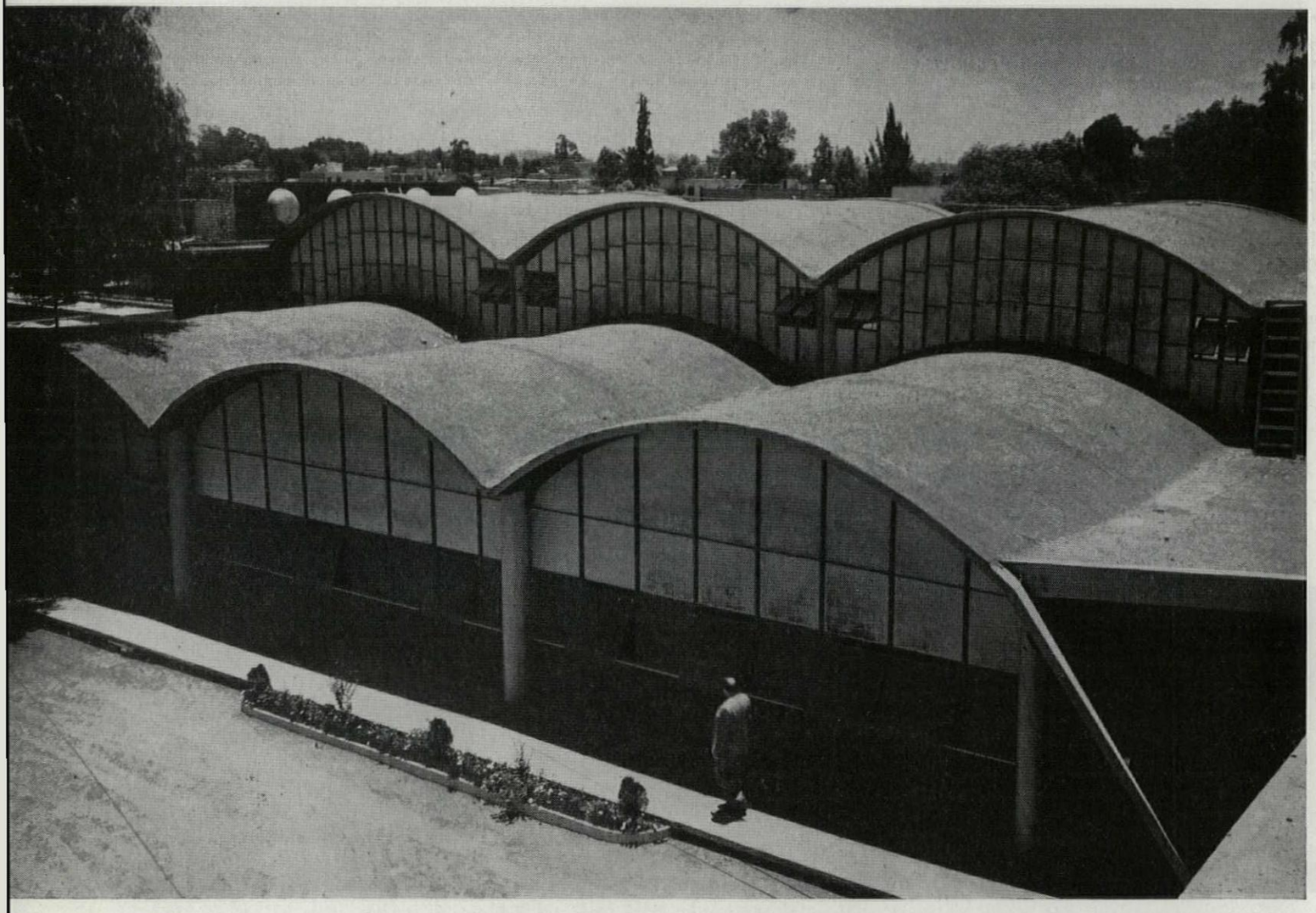
Ribbed arches span 253′-8″ at the newly completed Denver Coliseum. The 400′ long shell roof is 4″ thick, built with traveling formwork in six 56′ long units, each supported by three 20″ x 4½′ deep ribs. Architects: Lorimer & Rose; engineers: Roberts & Schaefer Co.



Circular coliseum is spanned with 286′ span ribbed arches springing from footings 375′ apart at the Alabama Livestock Coliseum. A 3½″-thick shell is carried by 2′ x 3½′ ribs 28′-4″ o.c. Architects: Sherlock, Smith & Adams; structural engineers: Ammann & Whitney.

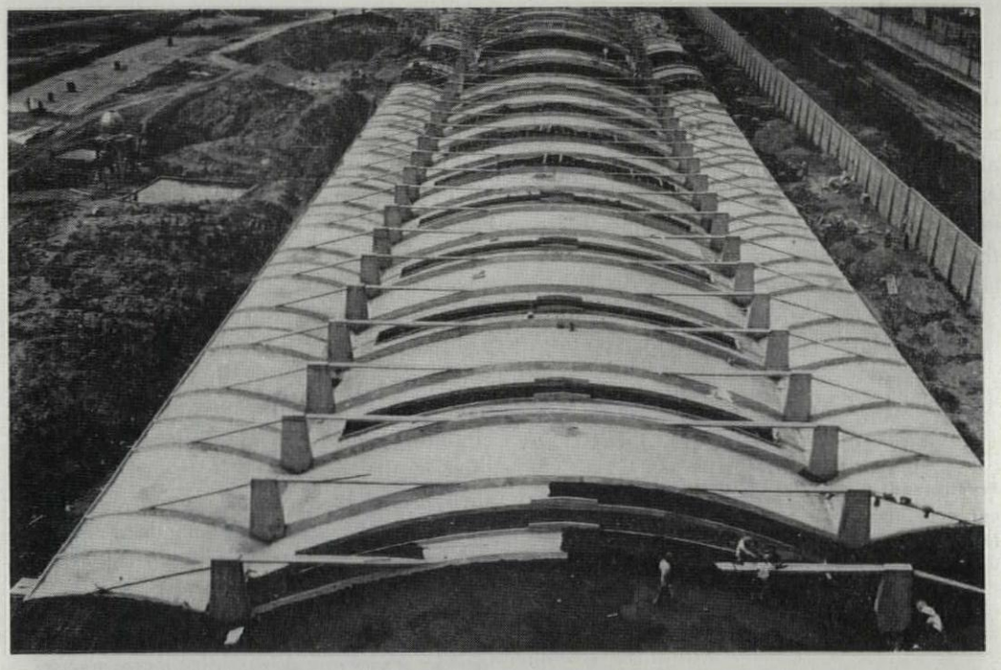
Precast lower panels, 22′ high and 16′ long, facilitated construction of this 85′-wide 200′-long and 41′-high St. Louis Waste Material warehouse in Fort Worth, Tex. Upper part of shell and the ribs between them were cast in place using traveling formwork. Consulting engineer: Eric C. Molke.

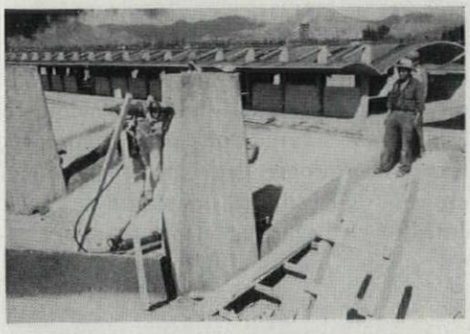
Traveling formwork speeds arch construction

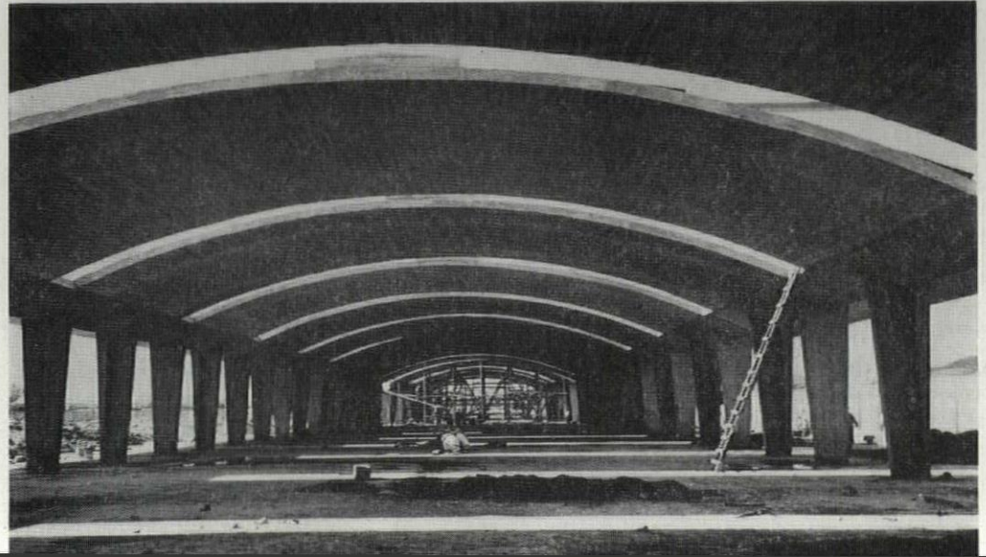


Two-level vaults at Mexican sporting goods factory are 27′ wide; the thrust is taken by oblique compression members at the ends of each row of vaults. Raised vaults in rear provide clerestory lighting for workshop. Designers: Raul Fernandez R. and Felix Candela.

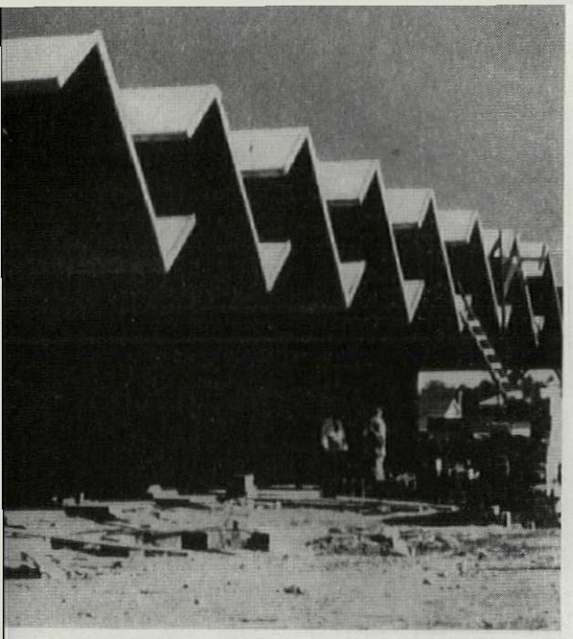
Short barrel shells of 66′ span and with 20′ cantilevers on each side compose a 720′-long Custom House warehouse in Mexico, D.F. In the background (above) can be seen the traveling formwork, which could be used by placing the tie bars above the roof (right). These tie bars are of high-tensile steel and are tensioned by jacking (below).



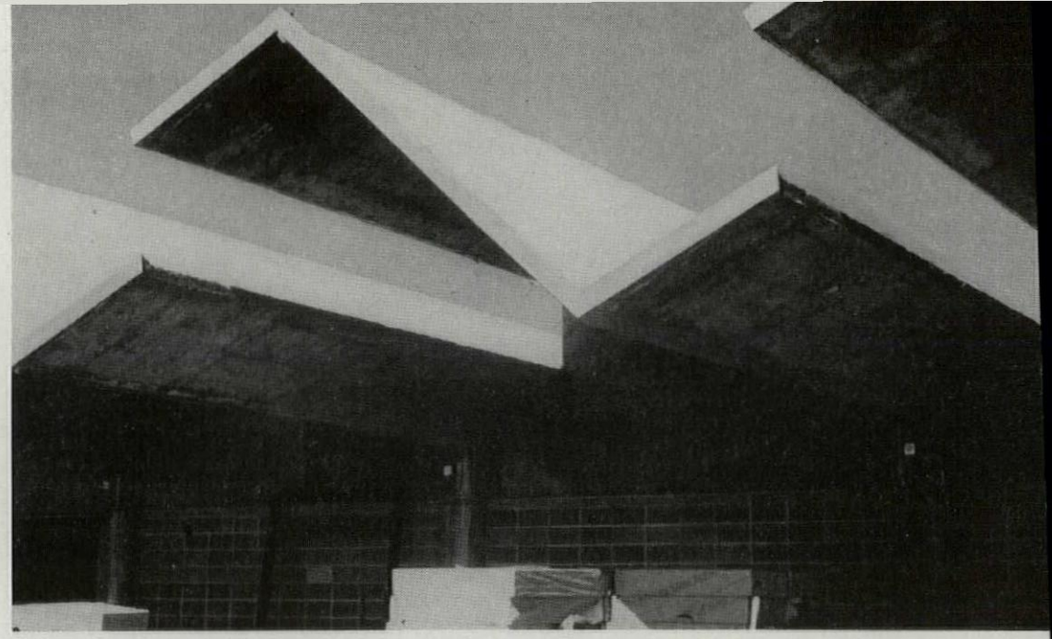




Expansion joints provide roof lights in the Custom House structure. They divide the 1½″ shell roof into 33′ lengths. Shell thickness increases to 4″ at the springing to form a V-shaped edge beam. Arch.: Felix Candela and C. Recamier.



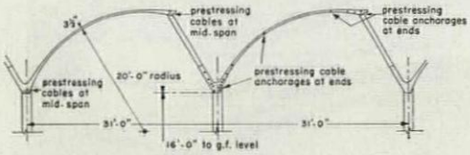
Folded plate shells, arranged in a discontinuous Z-shaped pattern, provide north-light clerestories for this H. W. Moore Equipment building in Denver, Col.



Z-shaped slabs are cantilevered 22′ at each end from their supporting columns. Each slab is carried on two columns spaced 75′ apart. Shells are 4″ thick and are laterally braced by concrete end walls and beams along the column lines. Estimated cost, $4½ per sq. ft. Architect: Tom Moore; structural engineer: Milo S. Ketchum; contractors: N. G. Petry Construction Co.

Shell concrete simplifies clerestory lighting

The tremendous variety of structural shapes now available in thin shell concrete makes possible good natural lighting for almost any type of building. Interior space can be lit from any or all of four sides, or even from above by punching holes through a greater part of the enclosing slab itself. For instance:

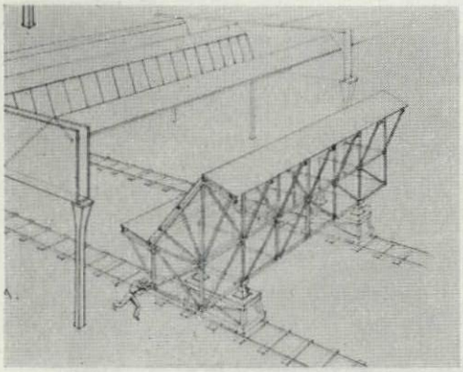


Prestressed north-light shells span 100′ without edge beams in the Bowater Paper Corp. factory at Manchester, England. Eighteen 12-wire cables are carried through the shell itself.

1. North-light clerestories provide the even, glarefree light that is required for a textile factory or a machine shop. Clerestories can be built either by hipped slabs (above) or by tilted barrel shells (below), or by conoidal shapes (p. 164), which are formed with straight timbers and have the advantage of negligible bending moments under uniform loading.

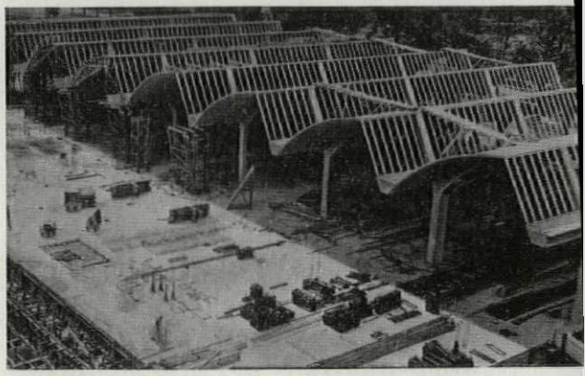
2. "Square domes" provide maximum light where there is no objection to direct sunlight. In the structures (shown opposite) clerestories on four sides extend from the level of the tie bars up to the edge of the shell itself. In order of economy of construction, these structures include: first, the 43′ square, 1½″ thick, hyperbolic-paraboloic roofs of Architect Candela's Mexican tool factory, which are economical in formwork since surfaces are generated entirely by straight timbers; next, the 82′ x 63′, 3″-thick, doubly curved shallow domes at the Brynmawr Rubber Factory, Britain, which are formed by steel deck plates atop tubular scaffolding; and last, the more complicated, deeper, cruciform barrels of the 120′ square St. Louis Airport roofs.

3. Glass lenses or skylights punched in the shell itself avoid glaring contrasts between bright clerestories and a dark enclosing shell. This is practical since maximum stresses in a properly designed shell structure are so small that glass can be employed as an "aggregate" material.

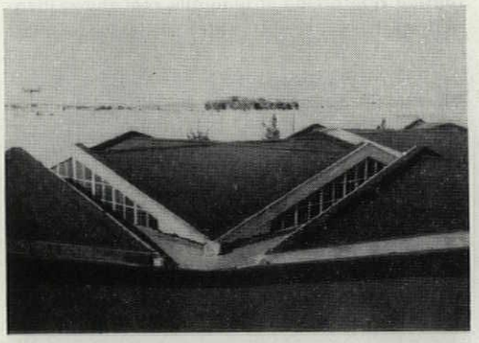


North-light traveling formwork for Z-slabs devised by Felix Candela to reduce costs. Jacks are provided to raise or lower formwork.

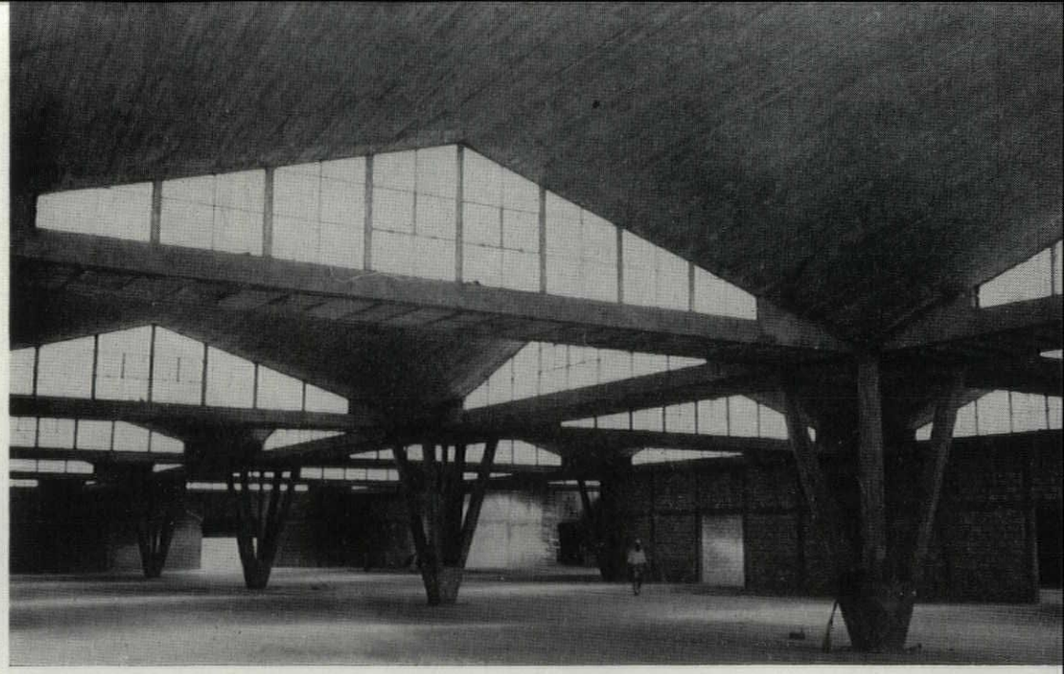
North-light shell framing applied to a Zeiss-Opton optical plant at Oberkochen, Germany. Engineers: Dyckerhoff & Widmann.



North-light shells under construction at the Voith industrial plant at Heidenheim, Germany. Engineers: Dyckerhoff & Widmann.



Warped shells provide good lighting in Mexican tool factory. Easy access to clerestories is by exterior catwalks between 43′ square bays.



High sky factor is a feature of these hyperbolic-paraboloid roofs. Columns are 43′ apart, clerestories are 6′-8″ high from tie bars between columns to the crown of the roof. Interior surfaces of shells are untouched; formwork pattern is clearly visible. Architect: Felix Candela.

Glass is generally strong in compression but cannot withstand tension stresses, therefore it should not be employed near the edges of shell structures where tension stresses might occur. Since the coefficient of expansion of glass is only slightly below that of good concrete, a permanently watertight bond can be made, which is further tightened by compression as the concrete shrinks with curing. The glass lenses must be strong enough to withstand any shear forces involved. In Europe, translucent slabs have been built with more glass than concrete, and this composite is known as "glasscrete."

Each dome of the Rubber Factory (bottom, left) is perforated with eight 6′-dia. glass domes and eight 5′-dia. portholes for electric lighting designed to approximate daylighting conditions. Each porthole contains a cruciform arrangement of six 5′-long 80-w. fluorescent tubes. Maintenance can be carried out from the roof by removing spun aluminum lids to the portholes; these lids are painted white on the underside for maximum reflection.

Precast skylights set in the 25′ x 20′ barrel shell roofs of a dock structure in Southhampton, England, are 9″ dia., spaced 15″ o.c. each way. During casting of the shell, the precast skylight molds are held in position atop steel sheet formwork by a pair of magnets bolted to each mold and provide firm attachment to the forms.

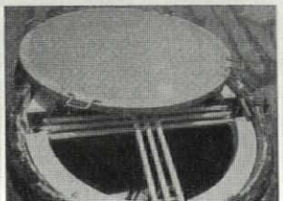
Other precast skylights include channels to carry off condensation. In general, British practice favors glass lenses rather than sheet glazing for shell concrete skylights; the lenses are more economical, require little maintenance and provide better insulation, better distribution of light.

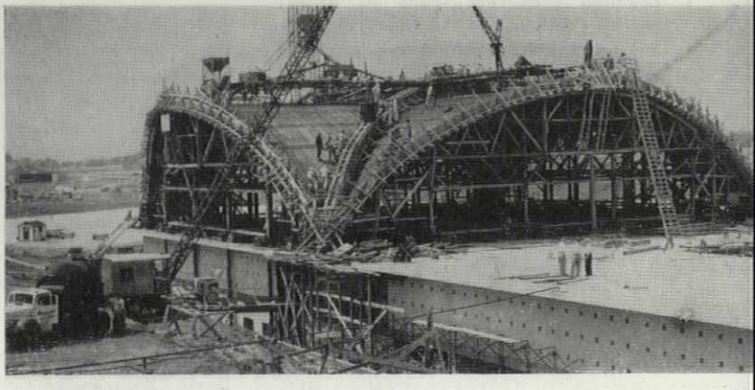
For electric lighting of shell structures, it is best to use the shell itself as a reflector for cove lighting. Any direct lighting required can be obtained by spotlights set in the shell itself (or as close to it as possible), and screened from the viewer beneath by a 45° cut-off angle. Suspended fittings should be avoided for they have a depressing effect on vault structures at night.

Photos: (bot. opp. p.) D.&W. Archive; (below) de Burgh Galwey, courtesy The Architectural Record; *(right) Mac Mizuki*

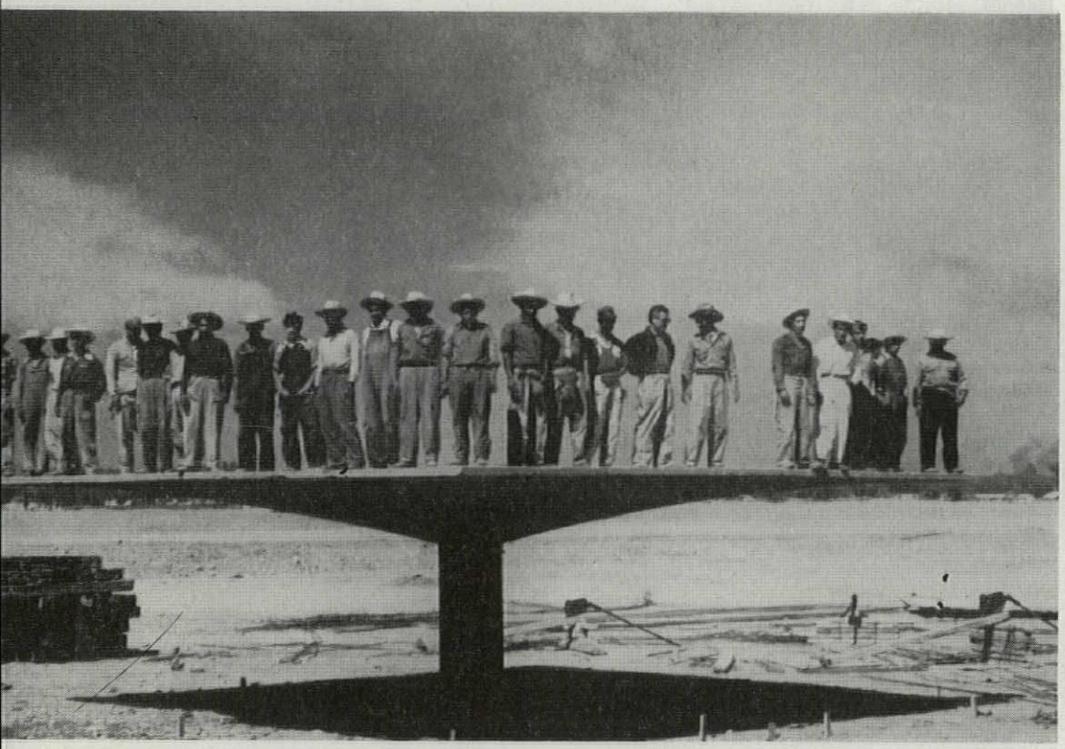
Square domes with skylights are feature of the British Brynmawr Rubber Factory above. Each 82′ x 63′ shell contains eight 6′-dia. skylights.

Eight fluorescent fixtures, 5′ diameter, are set in rubber factory domes.



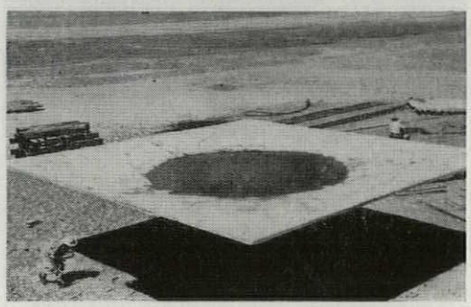


Even more clerestory lighting is provided in the 120′ square shell structures at St. Louis airport building. Barrel arches 4½″ thick span 120′, 32′ high. Architects: Hellmuth, Yamasaki & Lienweber.



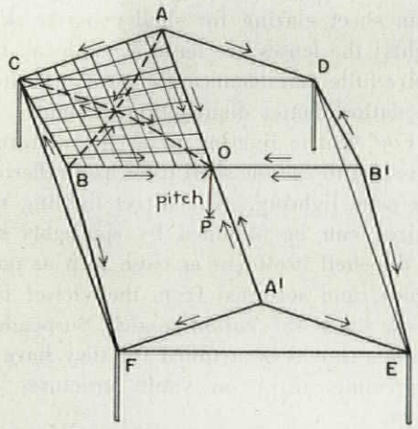
Umbrella roof of 1½" concrete, 32½' square, carries 25 men along two adjacent edges. This is a hyperbolic-paraboloid structure, with a rise of 39", that is generated by straight formwork and has negligible bending moments under uniform loading. Architect: Felix Candela.

Topside reinforcing of umbrella roof shows diagonal steel layout, with extra stiffening of main compression beams.



Deformation measured after six months was found to be a drop of 1½" at corners, probably due to shrinkage. There were no cracks.

Warped shells eliminate bending

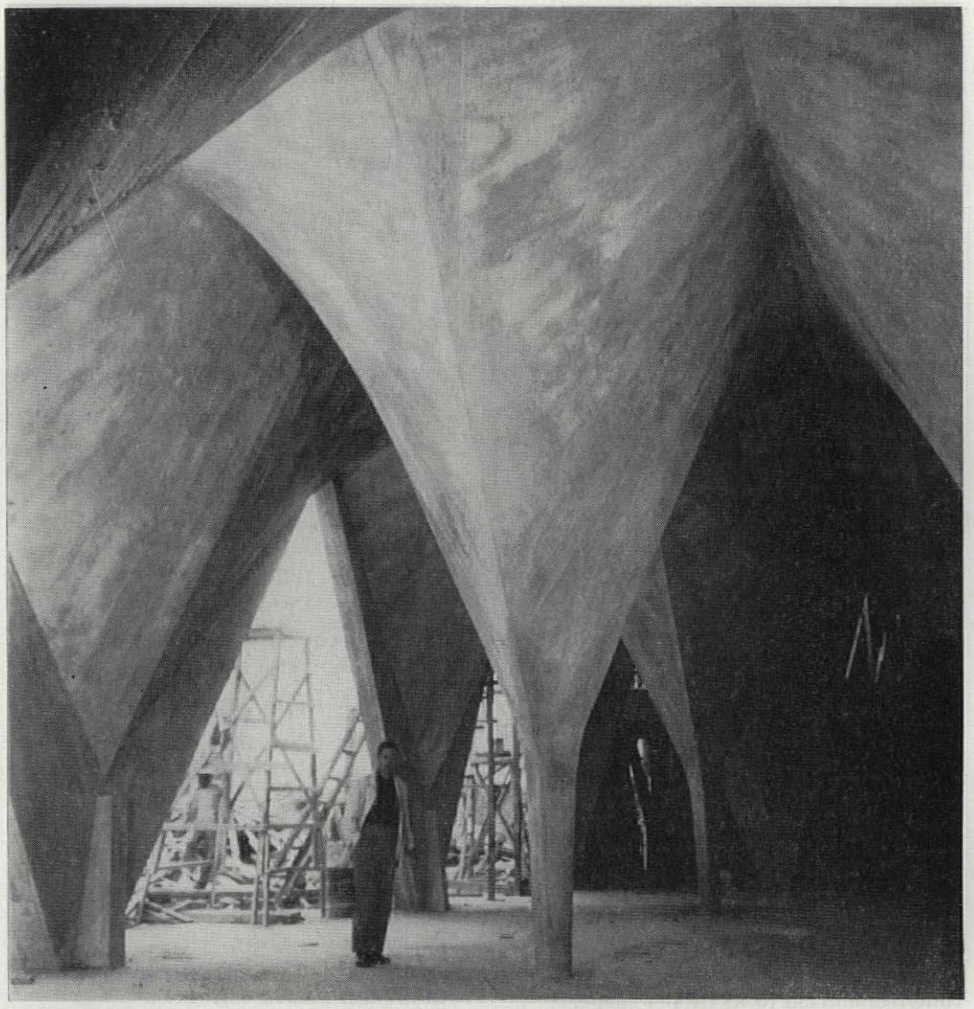


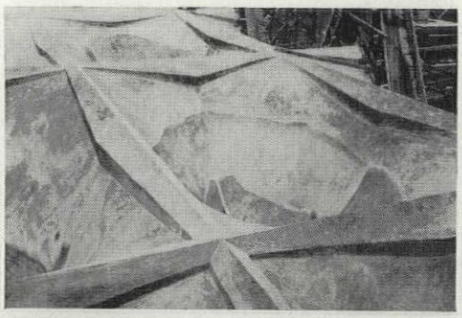
Can bending moments be neglected in hyperbolic-paraboloid surfaces? Sparked by Architect Felix Candela's warped shell structures, this question produced keen discussion and voluminous differential equations at the MIT conference, a long discussion which ended only by Candela falling back on his numerous structures and saying, in effect: "There they are and they seem to work!"

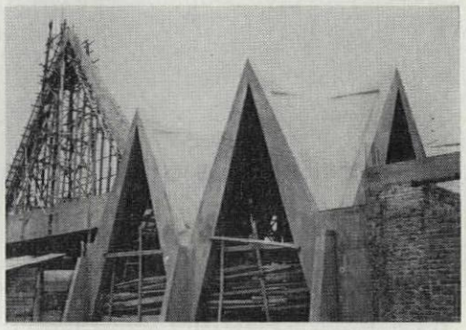
Like all three-dimensional space frames, these warped surfaces are difficult to draw on a two-dimensional board and almost impossible to analyze, particularly if maximum fiber stresses due to bending are sought as in conventional design analysis.

In practice, Candela uses ultimate load design applied to membrane stresses. Thus he shifts the emphasis from permissible safe stresses to permissible safe deformations, and takes into account the redistribution of stresses that occurs at loads approaching failure for any particular element in the structure. In short, Candela's structures are designed by an intuitive grasp of the distribution of forces due

Conoidal shell roof spans 50' x 20', is 1¼"-4" thick. Like the hyperbolic-paraboloid surfaces above, the sawtooth roof is generated by straight formwork laid between two arches of varying curvature with negligible bending moments under uniform loading.







Highly warped shells frame church in Mexico. Steep sides are concreted by hand starting at top ridge and using a dry, no-slump "grout" that sticks to the reinforcing. To drain roof holes, vertical pipes are cast in the main columns.

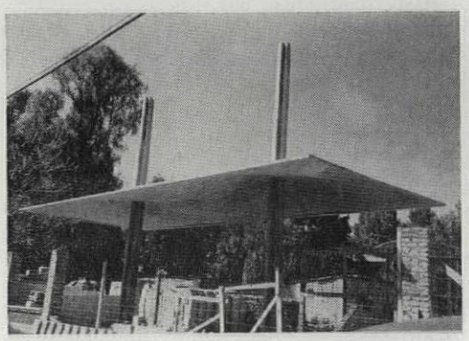
to applied loading, and are checked by mathematical analysis and scale models.

Membrane analysis

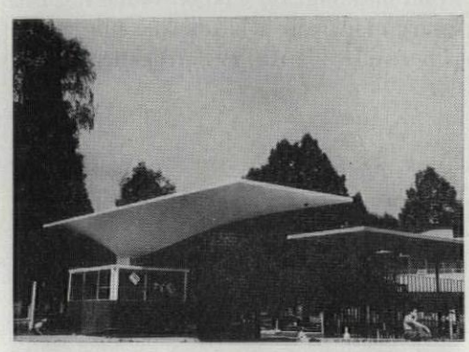
The hyperbolic-paraboloid warped surfaces shown on these pages have four outstanding advantages: 1) under uniform vertical loading they develop a pure shear state of constant stresses acting in the plane of the surfaces; 2) with properly designed tie bars, they result in purely vertical loads on the supports; 3) their double curvature gives excellent resistance to buckling; and 4) they are generated by two systems of straight lines, so formwork is simple to design and to erect.

The roof type shown in the diagram (left, opp.) is mounted on four columns C,D,E,F. Horizontal main beams AOA^1 and BOB^1 intersect in a plane pitched a distance OP above the column heads, to which they are attached (as shown).

Under uniform loading, the fibers parallel to the curve CO are in compression and those parallel to the curve AB are in tension. The resultants produce: 1) compression forces along the ridges AO and BO, zero at the edges of the roof and maximum at the center, where they are equalized by the ridge forces developed in the other quadrants; and 2) compression forces along the edges AC and BC, zero at the crown and maximum at the columns, where their horizontal components are taken by equal and opposite components transmitted from the other quadrants by the tie bars, resulting in a vertical force down each column. The pitch OP should be about one sixth of the span CD.

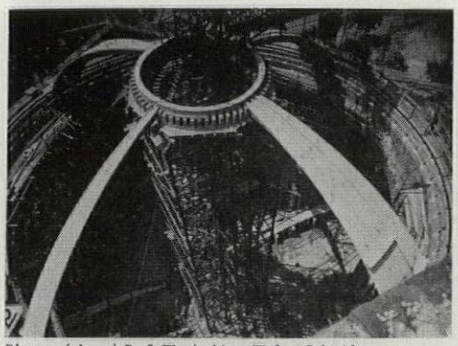


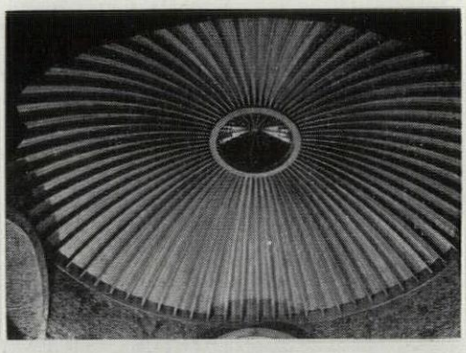
Umbrella roofs under tension are hung from column supports while the umbrella roof opposite is under compression.



Asymmetrical umbrella roof is cantilevered 36' to one side and 14' to the other. The structure is balanced by 8" concrete in short span.

Coupled hyperbolic-paraboloid shells, 5/8" thick, span 33' over the Cosmic Rays Pavilion at University City, Mexico.





Photos: (above) D. & W. Archive; Walter Schmidt; (top opp. p.) Schlesiger-Karlsruhe

Precast segments are used on a 100′-span dome at Karlsruhe, Germany. Spanning between an outer compression ring and an inner tension ring (seen on temporary scaffold, left) the segments are 2″ thick, 5′ wide at base and have 16″ ribs (above) to withstand erection stresses.

New techniques of dome construction

Shell concrete domes, doubly curved slabs that transmit predominantly compressive loads in all directions simultaneously, have progressed considerably since the 140′ dome of the Pantheon, Rome, went up in the first century A.D. Outstanding current developments include:

▸ **MIT's three-point auditorium:** a 3½″-thick roof slab covered with 2″ rigid glass-fiber insulation, another 2″ of concrete (added solely to exclude outside noise) and lead-coated copper roofing. In form the slab is an equilateral, spherical triangle of radius 112′ and side about 130′ (one eighth of a sphere) supported at its extremities. Some problems have been encountered with the tremendous lateral pressures concentrated at these three point foundations.

▸ **Three ways to reduce formwork:** 1) by precast radial ribs as used in a 100′ dome at Karlsruhe, Germany (above); 2) by pie-shaped movable scaffolding mounted on a circular track, used to cast a dome in 30° segments at a time at West Kenton, England; and 3) by spraying gunite directly onto balloon surfaces, subsequently adding mesh reinforcing and a further thickness of gunite. In spite of difficulties of maintaining constant shape of the balloon and of "flat" spots, spans of 32′ have been achieved for under $5 per sq. ft.

▸ **Prestressed reverse dome:** a 2⅜″ thick, 160′ x 240′ elliptical concrete shell is stretched as a catenary surface (no bending forces) between an outer compression ring mounted on perimeter columns at Karlsruhe, Germany (right). Prestressing bars are tensioned between each pair of diametrically opposed columns to hold the compression ring to its proper shape.

Properly designed, most of the load in a dome is carried by direct membrane action with relatively limited bending forces. Direct tensile stresses are avoided if the rise is between one sixth and one eighth of the diameter. Domes can be made even shallower by prestressing the outer ring (below).

Shell thickness is usually set by construction problems rather than design, so smaller domes are not appreciably thinner factually. The minimum thickness required for three layers of reinforcing is about 2½″, a thickness at which the radius of curvature should be no greater than 100′ to avoid buckling; for a larger radius it is necessary to increase shell thickness or employ either stiffening ribs or corrugations.

Thin shell concrete—bibliography

Amirikian, A. "Thin Shell Precast Concrete," *ACI Journal* (May '53).

Baroni, Giorgio. "Umbrella Building," ARCHITECTURAL FORUM (Jan. '53, p. 150).

Baker, A. L. "Graphical Method of Designing Cylindrical Shells," *Concrete & Constructional Engineering* (London, Sept. '53).

Billig, Kurt. "Corrugated Concrete Shell Roofs," *Central Building Research Institute Bulletin* (Roorkee, U.P., India, Nov. '53).

Candela, Felix. "Simple Concrete Shell Structures," *ACI Journal* (Dec. '51).

Candela, Felix. "Skew Shell Utilized in Unusual Roof," *ibid.* (March '53).

Gallo, Atilio. "Introduction to Thin Shells," *Student Pub., School of Design* (North Carolina State College), Vol. IV No. 2 (1954).

Hajnal-Konyi, K. "Concrete," *New Ways of Building* (London: Architectural Press, 1948).

Hruban, K. "Hyperbolic-Paraboloid Concrete Roofs in Czechoslovakia," *Concrete & Constructional Engineering* (London, Aug. '49).

Michaels, Leonard. "The Structural Shell," *Contemporary Structure in Architecture* (New York: Reinhold, 1950).

Samuely, Felix J. "Is this Tomorrow's Structure?" ARCHITECTURAL FORUM (Feb. '53, p. 150).

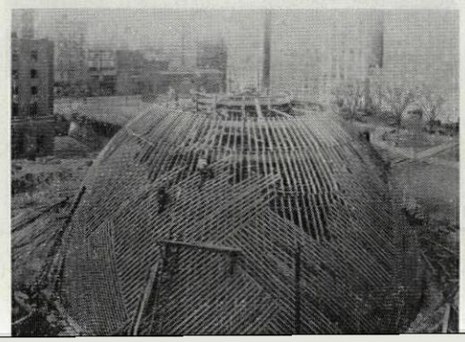
Whitney, Charles S. "Concrete Shell Structures," *AIA Bulletin* (Nov.-Dec. '52).

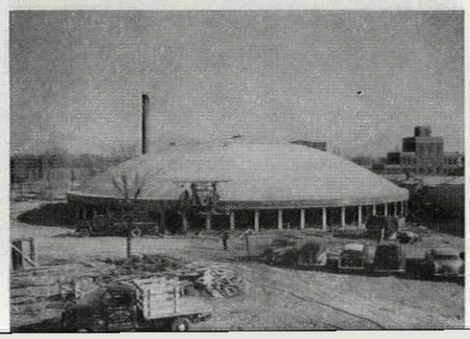
Whitney, Charles S. "Concrete Thin Shell Structures," *ACI Journal* (Feb. '53).

Whitney, Charles S. "Cost of Long-Span Shell Roofs," *ibid.* (June '50).

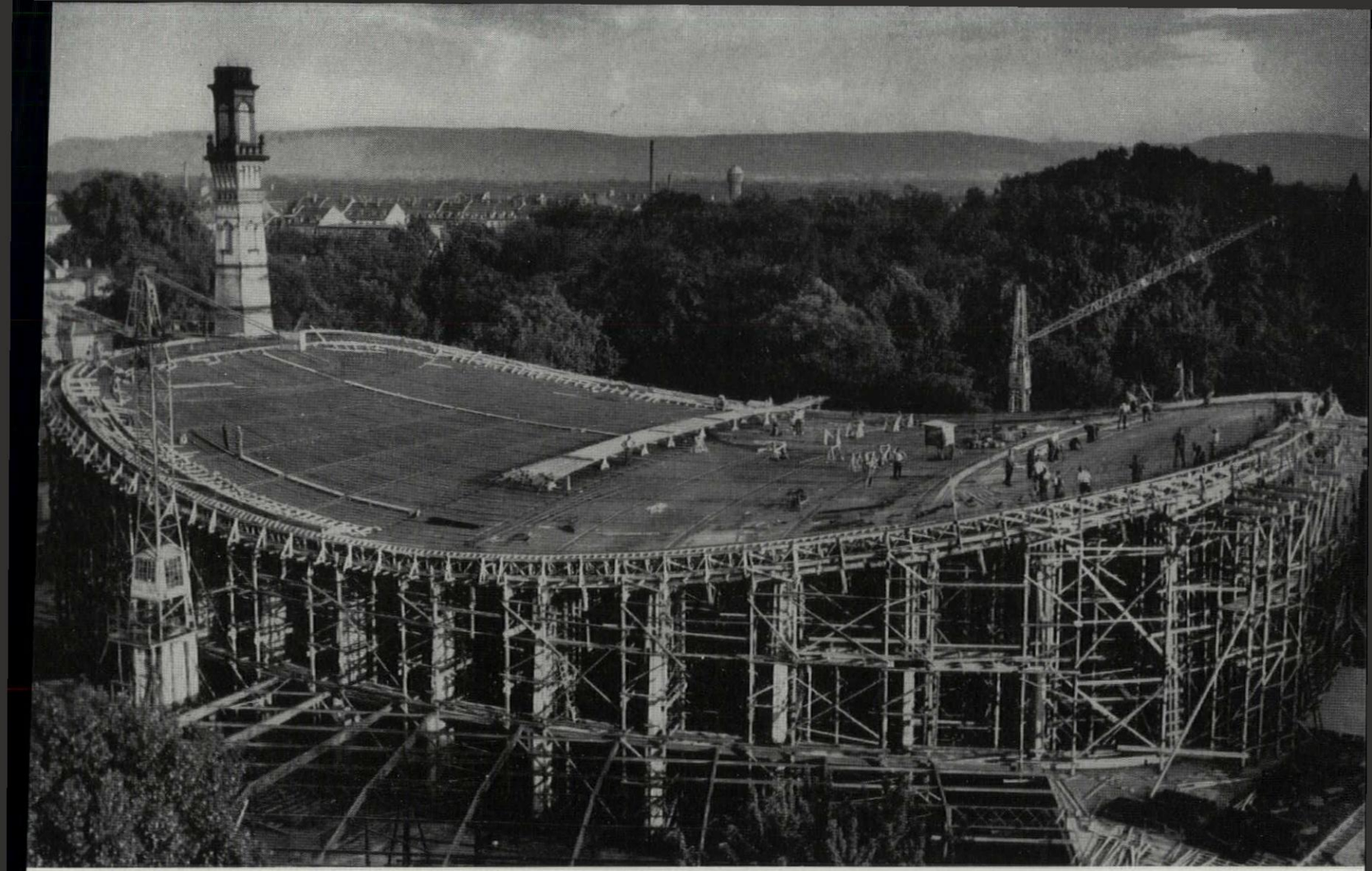
"Design of Cylindrical Concrete Shell Roofs," *ASCE* Manual, XXXI (1952).

First US dome—a 80½″-dia., 3″-thick hemisphere built at Hayden Planetarium, Manhattan, in 1934, is still a good example of the curved formwork required for dome structures. Trowbridge & Livingston, architects; Weiskopf & Pickworth, cons. engineers.





Prestressed dome, a 150′ tank structure at Flint, Mich., being prestressed by the wire-winding process. Cost: $3.30 per sq. ft. Preload Corp., consulting engineers.



Reversed dome under tension is suspended from a peripheral compression ring to roof a 160′ x 240′ assembly hall at Karlsruhe, Germany. Held by prestressing cables between outer columns, this catenary surface has a slight countercurve at midspan to aid drainage. Engineers: Dyckerhoff & Widmann.

Double shell dome on three supports nearing completion at MIT. This 160′-span auditorium is enclosed with two shells, a 3½″ inner structural shell and a 2″ outer shell added to help exclude outside noise. Eero Saarinen Assoc., architects; Ammann & Whitney, consulting engineers; George A. Fuller Co., general contractors.

for architects only

Thrugg in California

My friend Professor Thrugg left his notes in some confusion when he went on vacation but I would hesitate to edit them too much —you might like to see anyway how the crusty, corny Professor looks unedited:

"Law! Law! Law!" begins one of his scribbles, "the idea of law: to protect *society*. The idea of law enforcers: to protect the *law*. They get zealous. End by turning law from useful fortress into free men's jail. Example: architect registration laws mean to protect society vs. frauds, bad work. But acting as law enforcers, state registration boards like California's sometimes proceed vs. nice good men too, just to keep law going. John Lloyd Wright, 61, humorous, amiable. Spent all life, from boyhood on, in arch. & bldg. Supervised fr father, Frank LLW, including Tokyo Imperial Palace Hotel, whch emphatically dd not fall dwn. Blt nice hses, schls in Indiana, as noted in FORUM. Member AIA. Registered in Indiana, Tex, Nev. Has engrs license in one State. Could you suppose him not trustworthy fr 25′ x 100′ store in Calif. just bcs once flunked registratn exam there? Ha! ha! ha! ha! ha! & haw! haw! HAW! [Thrugg loves these exclamations!!!!]—How do you like that, Hoosiers?

"Did John really endanger society or did he only endanger law —by 'entering wedge' principle? Definition 'enterg wedge,' pcple: you can't afford as law enforcer to know & ignore, officially, a guy doing no harm, fr fear of raising expectatn you wouldn't know officially when some other guy was really doing harm.

"Tough spot really for Calif. Board. I have remedy. Device known in law as 'fiction.' Legal 'fiction' is just like any other fiction: an imaginary statemt of truth that can be more true to life—& more useful by far—than literal truth. Example: supposing some brilliant but 'unstable' guy applies in 1924 for license then forgets about it. Supposing by 1948 he's world famous & sassy. In 1948 he submits as 'evidence' for a license a whole issue of FORUM devoted to his work. You can now use fiction No. 1: give him a 'temporary' license for Calif. But then suppose he later goes still further, & collects every gold medal in US & Europe plus place on sacrosanct Academy of Arts & Letters. You now use fiction No. 2. Declare you gave him license, really, back in 1924, which, you now remind him, he neglected to 'pick up.'

"This shows how useful fictn can be. Serves every *substantial* interest of society. Lets a good architect *de facto* be one *de jure*. Saves everybody's face—provided you keep face straight while telling kind, useful, constructive fictn. Face being deadpan is essential. This explains why wise men call govt an art, not a science.

"Dare anybody say the case just described was not real?

"So: Proposal from Thrugg to Calif. Registration Bd: find a nice useful fictn to get license for *John* Lloyd Wright *too*. Hand it out deadpan.* Now don't be shocked. What cd be more ridiculously a fictn than the one you are *now* caught with, the pretense that John as an architect wd do Calif. harm?"

Thrugg in Boston

Thrugg last June seems to have been a man of several moods. He must have attended the AIA convention in Boston, for he says:

"Best architecture in Boston last June was unlisted. It was Art Festival on part of Boston Common. If we say architecture is art of civilzg man-made surroundgs —all of them—what example cd be better? 'Lanternlight' (frm spots & floods of course) at night on gay stage, wonderful dancing, folk dancg. Lights on little booths with fine modern art seen by thousands. Sculpture on grass. Light in Bucky Fuller's little stick-string-&-canvas dome with photos of official modern architecture (dome itself better than most of it). Less light on grass. Next to *no* light on lakes (better boating fr lovers). This part Boston gay, lovely, musical, popular, adored & used by *all* people. This Boston a city where can be in love, like Paris painted by Renoir.

"The secret: all this managed by real artists. No condescension, no polls of 'popular demand,' no honkey-tonk. People loved it because artists loved them. Lesson for architects. As Chuck Goodman says: people want artists to meet what they aspire to, not what they are. Prototype for broader, more popular architecture."

* * *

"But can't understand my old friend Ralph Walker at Boston convention. Monotonous speeches about modern monotony.

"Ralph himself, say I, acts far more wisely than he speechifies. Latest reports of FBO Review Board picture him understanding, appreciative of constructive ideas, tolerant.

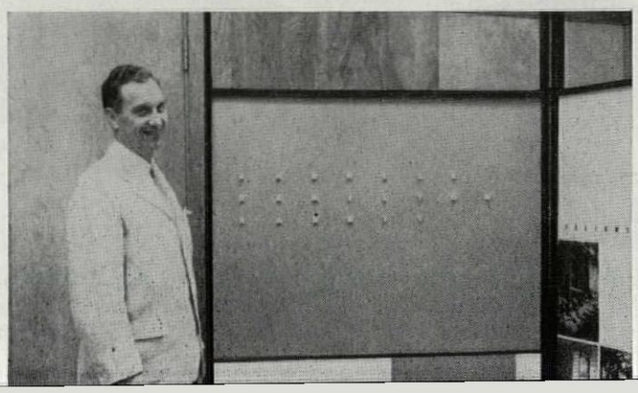
"Yet speech pleased frustrates. Men-trained *beaux-arts*, unable to cope with new industrial world, ready to transfer their frustration to the age, to scold those men of genius or just conscience who *are* coping. Poor Ralph admires Morgan library by McKim, but mentions nothing later. If he can't get magic in today's little Walker house (I mean by Wright) sorry for him. God hasn't died.

"All other panel speakers pledged architecture to renewed search beauty. Each had his own vivid idea of humanism too: Rudolph, Saarinen, Wurster, Sert. Didn't Ralph hear? Incidentally, will Ralph pls measure his rear elevation? If 'molded' by either Saarinen's modern chair or Mies's Roman chair as Ralph contends, it's wide enough to qualify him fr fat man in circus."

* Better yet, solve it straight.— ED.

Thrugg in Texas

Finally, Thrugg gets lyrical (for him): "Youth always right, says Geo. Howe. Can also be generous, loyal. Touching example, 3rd yr design class at Houston U sending fine display panels of Harwell Harris' work to Harris, who is dean at Austin, a wholly different college. Thank God our young men left to selves know a good man when they see one, and that will be forever."—DH.



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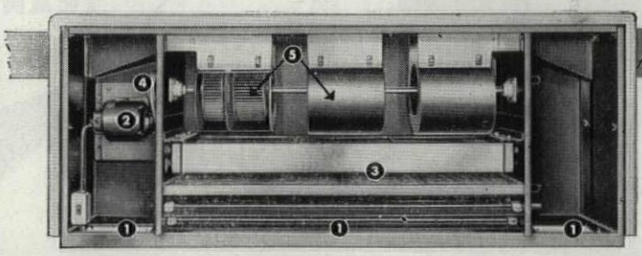

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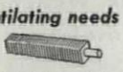

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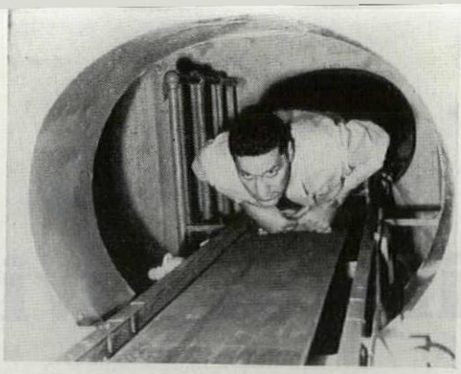
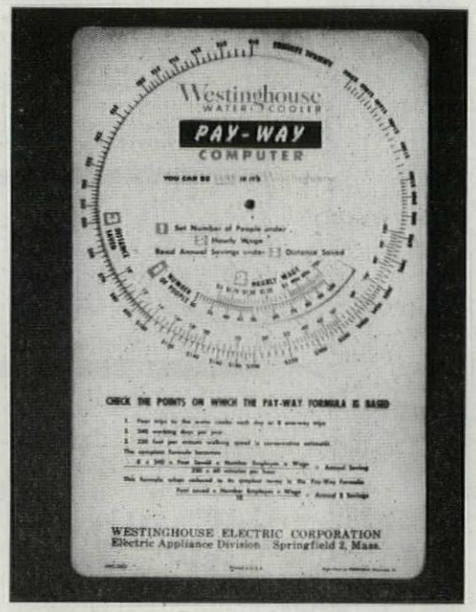


Man-Lift is two-way vertical conveyor belt which carries people up (left) and down (above).

Akron plant which is used by more than 10,000 people per day. This outdoor unit is 70′ long and climbs a 10% grade. The 4-ply belt is 150′ long, 42″ wide, and has a capacity of 7,200 persons per hour. The 15-hp motor is reversible. Since maintenance on these units is low and power consumption is small, and no attendants are required, Goodyear claims that it is the most economical form of passenger transportation known. They foresee its use in rail and bus stations, airports, stadiums, race tracks, auditoriums, on the central malls of shopping centers and between parking fields or garages and retail areas.

An entirely different use of the conveyor-belt principle is the *Man-Lift*, an elevator that never stops. Installed in the new parking garage in the Airlines building in New York, the device is for the use of the parking attendants on the four levels of the underground garage. The 5-ply rubber and fabric belt is 14″ wide and 105′ long. It has a step-platform every 16′ with a handgrip 4½′ above each step. The belt moves at a rate of 75′ per minute and can be stopped readily by pulling on a parallel rope. The *Man-Lift* can carry eight persons a minute in both directions. Power is supplied by a 3-hp motor.

Manufacturer: Goodyear Tire & Rubber Co., Akron 16, Ohio, *and* Stephens-Adamson Manufacturing Co. (Speedwalk); J. B. Ehrsam & Sons Manufacturing Co. (Man-Lift).

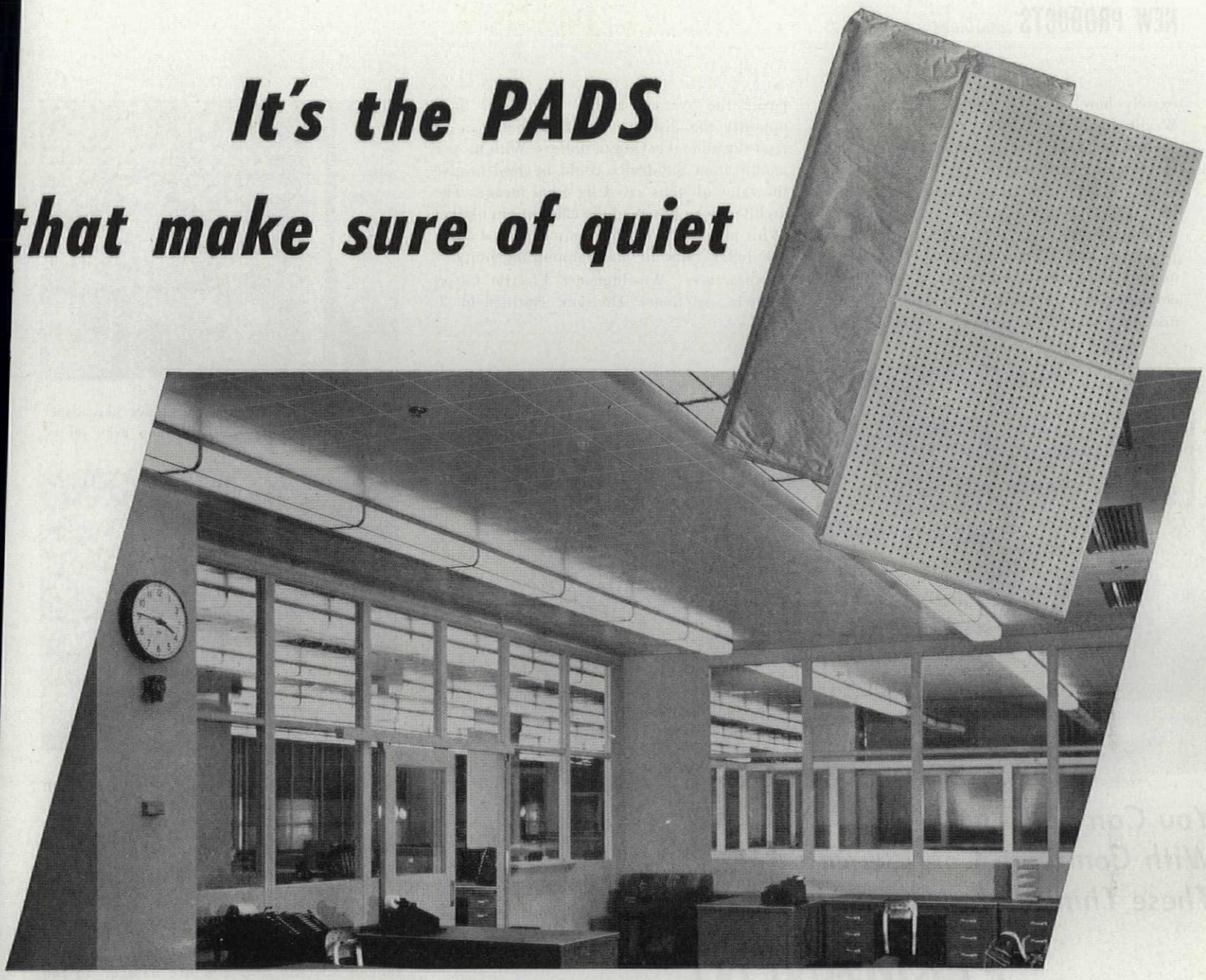


COMPUTER gives dollar value of saved steps

It is apparent that wasted steps means wasted time and wasted money. But no one knew

continued on p. 174

It's the PADS that make sure of quiet



AUGSBURG PUBLISHING HOUSE, MINNEAPOLIS, MINNESOTA. *Gold Bond Acoustical Contractor* . . . . . R. R. McGregor & Associates
General Contractor... Naugle-Leck, Inc. *Architects and Engineers*... Lang and Raugland *Associates*... James A. Brunet, Austin H. Lange

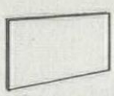
Perforated metal acoustical systems are only as efficient as their sound absorbing units! Behind the Gold Bond Acoustimetal ceiling in this busy accounting department are scores of noise-quieting rock wool pads. Each Acoustipad is uniformly 1⅜" thick to assure a noise reduction coefficient of .85 and to keep the work area quiet. These incombustible Acoustipads are especially wrapped and seated in perforated steel pans to contribute to the fire resistance of an Acoustimetal installation.

The perforated Acoustimetal casings have a baked enamel finish that can be washed or repainted without affecting sound absorption... and each unit can be easily removed for access to plumbing or wiring.

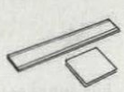
Gold Bond Acoustimetal ceilings are easily and quickly installed. Your Gold Bond Acoustical Contractor is a qualified sound control expert and can help you plan the best ceiling for your building designs. See all six Gold Bond Acoustical products... there's one for every job and budget.

NATIONAL GYPSUM COMPANY • BUFFALO 2, NEW YORK

Build better with Gold Bond® ... ACOUSTICAL PRODUCTS

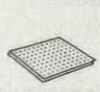

Gypsum Board Products

Plaster and Lime


Insulation Plank and Tile

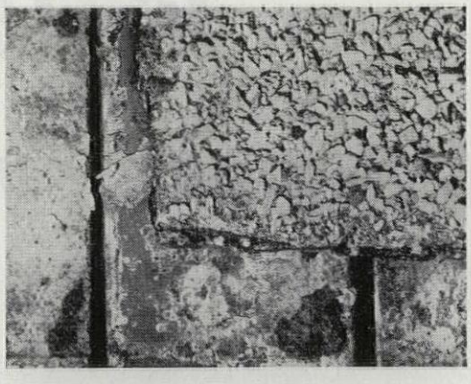

Rock Wool

Paint Products


Acoustical Tile


Asbestos-Cement Products

exactly how much a wasted step cost until Westinghouse, in an effort to sell more water coolers, worked out a formula for calculating the annual dollar savings resulting from steps saved by the installation of additional water coolers. The formula is based on four trips to the water cooler per day, 240 working days per year, and a walking speed of 320′ per minute. Based on this formula, a handy dial computer was developed on which it is only necessary to set the number of employees opposite the average hourly wage, and then, opposite the distance saved in feet, can be read the annual saving in dollars. With proper modification the device could be used to give the value of steps saved by other means. The architect who boasts of the efficient circulation of his plan might use the computer to establish the dollar value of his planning ingenuity.
Manufacturer: Westinghouse Electric Corp., Electric Appliance Division, Springfield 2, Mass.



Conventional roof after fire shows how vapor barrier has disappeared, revealing deck joints.

Protected roof after fire has vapor barrier still in place.

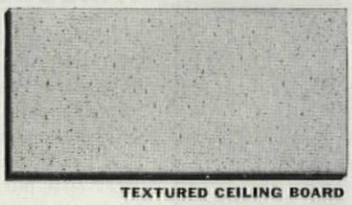
ASBESTOS-PLASTIC VAPOR BARRIER contributes fire resistance to factory roofs

It is by now well-known that the conventional 2-ply hot-mopped vapor barrier, formerly used on steel roof decks before the famous Livonia fire, is a fire hazard. In the event of a fire the asphalt in the vapor barrier melts and runs through the cracks in the decking, and adds fuel to the fire. To make a fire-resistant vapor barrier, Philip Carey has adapted the asbestos-plastic coating used successfully for some years on their *Fire-Chex* shingles. This plastic coating is thermoplastic as originally made, but under the high temperatures created by fire, it becomes thermosetting. Tests have shown that *Fire-Chex* vapor barrier does not melt or flow but stays in place throughout the fire and prevents any dripping of bitumen through the deck. Tests have also shown that it is an excellent vapor barrier, with a vapor permeance of only 0.12 grains as compared to the FHA requirement of 1.0. One roll of *Fire-Chex* vapor barrier, 36″ x 38′, covers 1 square, with 3″ side lap and 6″ end lap. It weighs 60 lb. per square. One gallon of *Fire-Chex* adhesive, applied by brush or spray, covers one square. Materials cost: $3.47 per square F.O.B.
Manufacturer: Philip Carey Mfg. Co., Lockland, Cincinnati 15, Ohio.

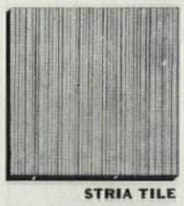
New Products Review p. 154

TEXTURED TILE

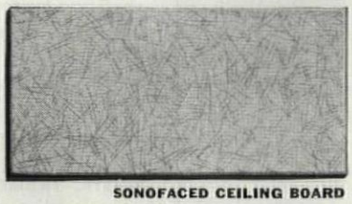
SONOFACED TILE



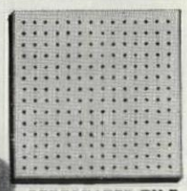
TEXTURED CEILING BOARD



STRIA TILE



SONOFACED CEILING BOARD



PERFORATED TILE

To satisfy the school board all 6 ways

1 ACOUSTICAL VALUE. High noise reduction coefficient—up to .90—equal or superior to any material.

2 FIRE-SAFETY. Easily meet all safety codes. Carry the Underwriters' Laboratories label service.

3 BEAUTY. The most complete fire-safe line of decorative textures, patterns and colors. Light reflection in many cases over 80%.

4 PERMANENCE. Will not warp, buckle, expand or contract under varying temperatures and humidity. Odor-proof, rot-proof, sanitary.

5 MAINTENANCE. Easily cleaned by standard maintenance methods. May be sprayed or brush-painted.

6 LOW COST. Actually the *lowest* cost fire-safe ceilings available. Lightweight, easy to install and maintain. Provide added thermal insulation.

RECOMMEND FIBERGLAS* ACOUSTICAL CEILINGS!

OWENS-CORNING
FIBERGLAS

SOUND CONTROL PRODUCTS

- Textured, Perforated, Sonofaced*, Stria* Acoustical Tile
- Textured, Sonofaced Ceiling Board • Noise-Stop* Baffles

*T. M. Reg. O-CF Corp.

OWENS-CORNING FIBERGLAS CORPORATION
DEPT. 171-H, TOLEDO 1, OHIO

 continued from p. 155

sulation value. Cost: about $2 per sq. ft. *California Reinforced Plastics Co., 1444 Fourth Ave., Oakland 8, Calif.* (May '54, p. 196).

BLONDE HARDBOARD. Suitable for sundry construction and cabinet jobs, smooth-faced fir-fiber and resin *Forall* is a workable, low-cost hardboard. The 4′ x 8′ honey-colored panel is easy to saw, rabbet or rout. Grainless, it cannot splinter or split. The edges hold screws and nails as well as its faces. Prices for the dent- and warp-resistant material per M sq. ft. range from $212 for ⅜″ thick to $332 for ¾″ in the West; $226 to $356 in the East. *Forest Fiber Products Co., Forest Grove, Ore.* (Nov. '53, p. 216).

REINFORCED GYPSUM. Added to the gypsum core of ½″ *Bestwall* is a glass-fiber network which improves the panel's nailability, shock-resistance and clean response to scored cutouts. By increasing the core's resilience, the rotproof incombustible fibers make the wallboard a better match for the strains of shipping and handling. It costs the same as regular gypsum board: about 6¢ psf. *Certain-teed Products Corp., 120 E. Lancaster Ave., Ardmore, Pa.* (Nov. '53, p. 216).

PLASTIC COATED. Melamine-faced in ten palatable colors, the 16″ x 8′ *Marlite Plank* and 16″-square *Block* are put up with clips or nailed over existing walls or on ceiling strips or studs. Recesses in the 3/16″-thick hardboard paneling's T&G joints hide either fastener; no cover-up molding is needed. Solid colors are 51¢ per sq. ft.; woodgrain pattern 55¢. *Marlite, Inc., Dover, Ohio* (Jan. '54, p. 200).

Windows and glazing

REVERSIBLE. Completely reversible, the *Adlake 1500* aluminum window makes an inside job out of window washing. The large sash cannot be pivoted unless unlocked by key and so the weather-tight unit should be well received in air-conditioned buildings where a few outdoor-air enthusiasts might impair the system's efficiency. Windows are made to turn either on a horizontal or a vertical axis. Price for 4′ x 6′ unit is about $150. *The Adams & Westlake Co., Elkhart, Ind.* (Nov. '53, p. 208).

AWNING TYPE. Factory-fitted with screen and glazing, the *Gate City* aluminum awning window comes in multiples up to five high. Retracting operating hardware and extruded aluminum glazing strips make for trim appearance. Weatherstripping is vinyl tubing. A three-light window for a 4′ opening retails at $70. *Gate City Sash & Door Co., 15 S.W. Third Ave., Ft. Lauderdale, Fla.* (June '54, p. 212).

PLASTIC FRAME. Made of plastic, asphalt and asbestos, and reinforced with steel, the *Plyco* window needs little care. Its sash, molded in one piece, has easy-to-clean rounded corners. Frame joints are mortised. Designed for industrial and farm buildings, the 32″ x 16″ unit fits readily in standard masonry or glass block walls. Included in the *Plyco*'s $13.60 price are glazed sash and storm-screen sash. *The Kohl Co., Elkhart Lake, Wis.* (Oct. '53, p. 248).

PLASTIC WINDOW. In plants or labs where gas or dust could set off an explosion, these butyrate plastic panes can prevent costly damage and save occupants from injury. In case of a blast, glazing units pull away from their metal casing and, taking the brunt of the force, prevent a pressure build-up which could blow out walls or window-glass fragments. The 12″ x 18″ panes cost $1.10 apiece in any color, clear or translucent. Crimped metal reinforces the edges for puttying. *General Plastics Co., Marion, Ind.* (March '54, p. 232).

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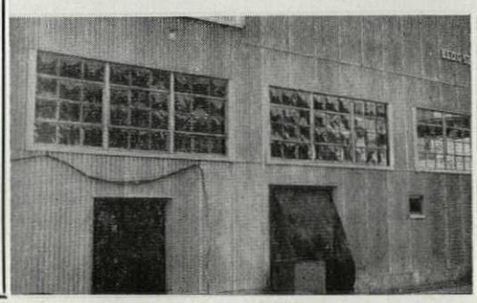

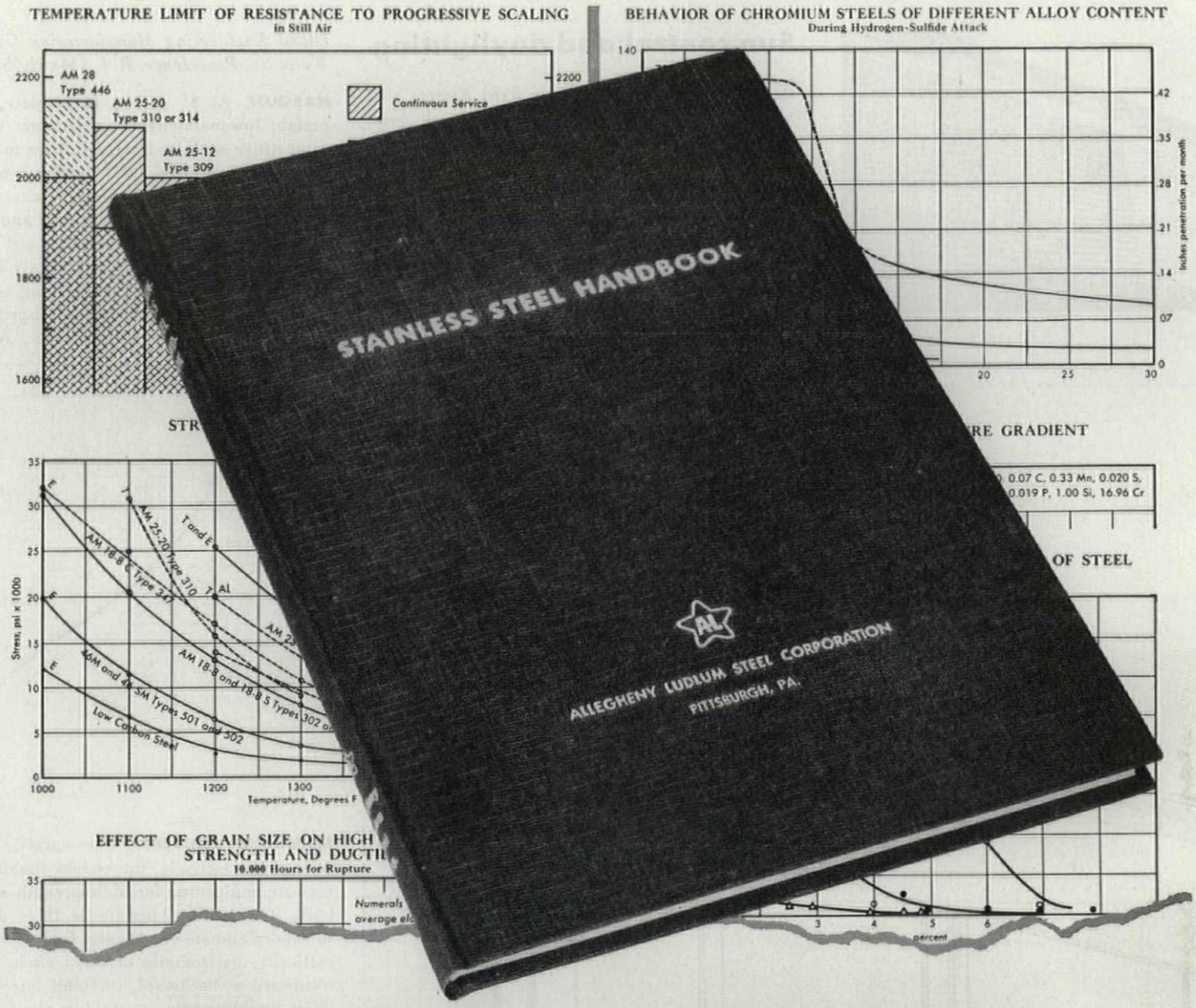

Here's 124 Pages of Valuable Data on STAINLESS STEEL

Stainless and heat resistant steel can usually be classed as a critical material, since it not only contains strategic alloys but is indispensable in many vital industrial and armament applications. It is always important, therefore, to make every pound go as far as possible.

The latest edition of our comprehensive 124-page, case-bound Stainless Steel Handbook is ready for distribution now. It will help you to select the right stainless steel and to use it properly. Comprehensive listings of analysis, properties and characteristics of each type will guide you in specifying grades that will do your job most efficiently. Clear, concise fabrication data will help you speed production and cut waste.

Your copy of the Stainless Steel Handbook will be sent—*without charge*—upon request. Our only stipulation: please make your request upon your company letterhead. ● Write *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.*

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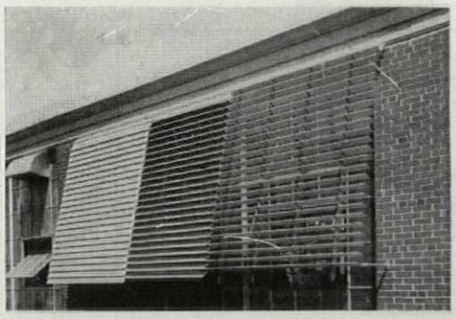
You can make it **BETTER** with

Allegheny Metal

AL® TIME-TESTED STAINLESS STEEL

WAD 5185

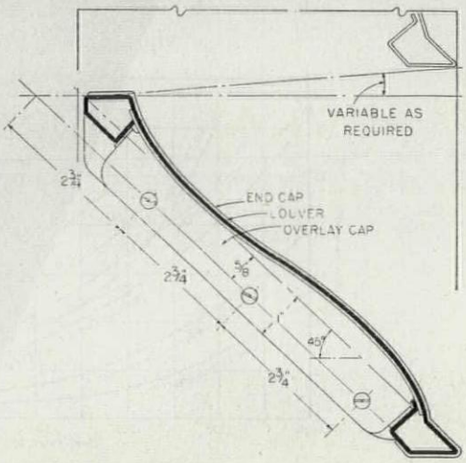
Warehouse stocks carried by all Ryerson Steel plants



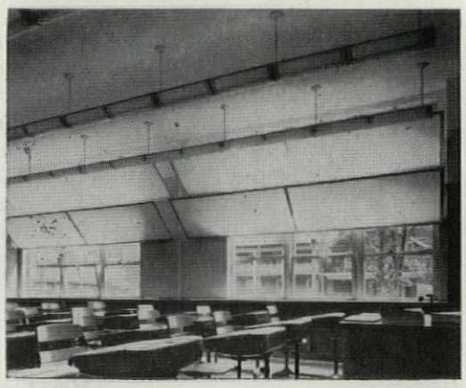
Sun control and daylighting

OUTSIDE BLINDS. Permanently fixed *Riemco* aluminum louvers can serve a building all year around. In summer, they deflect solar heat. On overcast days, fins may be tilted to bounce daylight indoors by the simple hand crank mounted inside the window. For about $5.50 psf, the heavy-gauge blinds may be mounted either as awnings, flush jalousies or both. (Hardware can be provided to regulate the slant of the complete blind as well as the angle of the fins.) *Rhode Island Engineering Manufacturing Corp., 570 S. Water St., Providence, R. I.* (March '54, p. 169).

MARQUEE. At $5 per sq. ft. in place, Kawneer's prefab low-maintenance aluminum marquee is competitive with its least expensive to-order wood cousin. The 3″-deep "*W*" louvers come in 6′, 8′ and 10′ lengths preassembled in panels 4′, 5′ or 6′ wide. Self-leveling fittings, gutter and trim come in the package. Three men can put up a complete unit for a 30′ store front in six hours. Supports are available for cantilevering marquees on new construction or for hanger-suspension on remodeling jobs. *The Kawneer Co., Niles, Mich.* (Aug. '53, p. 184).



ALUMINUM LOUVERS. Ogee-curved to bounce solar rays effectively, the etched aluminum *K-louvers* are engineered for high strength at minimum bulk. Outstanding feature is their adaptability to sundry climate conditions: fins can be mounted vertically, horizontally or on a pitch, with curve frontward or backward, to fulfill interior and exterior building-area needs for glare reductions, heat deflection, light direction or natural ventilation. Snap-on fittings are made for projected or recessed applications. Complete costs average $2.75 psf. *The Kawneer Co., Niles, Mich.* (Aug. '53, p. 150).

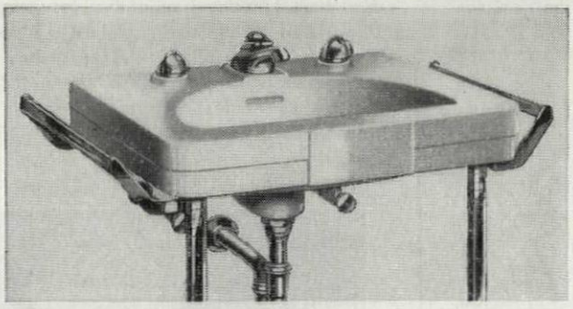


GLASS-CLOTH PANELS. Simple white shades of woven glass yarn soften intense sunlight and distribute it throughout a room. Easily constructed for old and new classrooms with large windows, the durable cloth diffusers are fireproof and rot-resistant. The fabric comes in light and heavy weaves (for different orientations) at 17¢ and 23¢ psf. *Owens-Corning Fiberglas Corp., 16 E. 56th St., New York, N.Y.* (Oct. '53, p. 248).

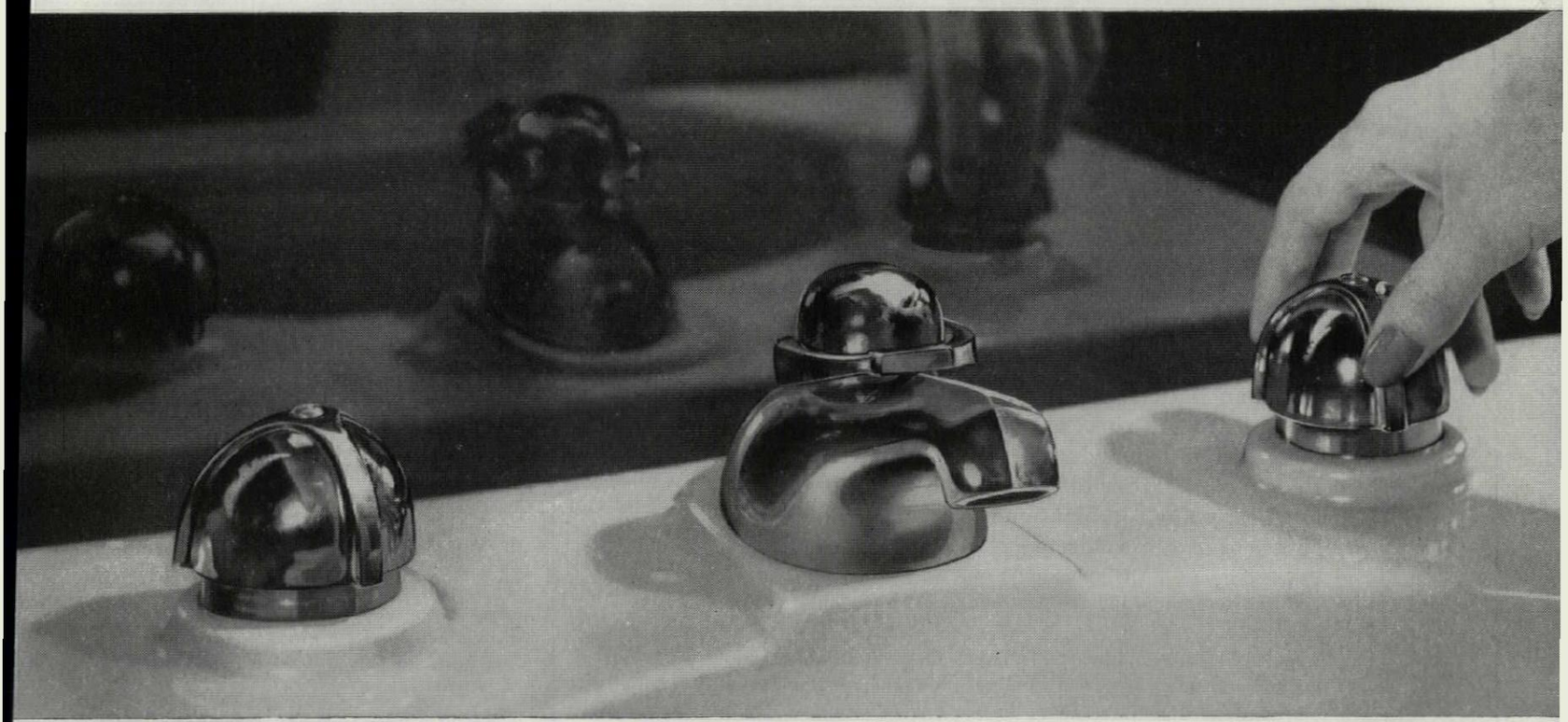
continued on p. 180

WHY YOU SHOULD SPECIFY CRANE

In Crane bathroom and kitchen fixtures, you have design that is as fresh as today's architectural thinking... styles and sizes as varied as the needs of your clients... a line so complete you never need look beyond the pages of the Crane Architect's Catalog. And in the minds of your clients, as you probably know, no other name in plumbing so strongly signifies quality.



The Crane Diana lavatory is of lustrous vitreous china with semi-oval basin and paneled front. Supported by chrome-plated metal legs. Available with or without chrome-plated towel bars. Three sizes: 24 x 20", 27 x 21" and 33 x 22".



Crane matched and colored fixtures

When you plan a bathroom around Crane fixtures, you find it easy to achieve harmony of both design and color.

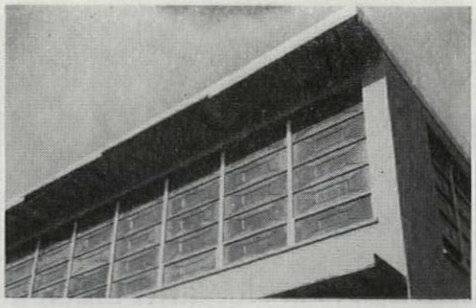
That's because the Crane line is so extensive that, regardless of the size or type of bathroom, there are Crane fixtures to fit it exactly—in size, shape, design. And in color, too.

With a choice of white or eight beautiful decorator colors available, Crane offers the widest selection of colors on the market.

CRANE CO.

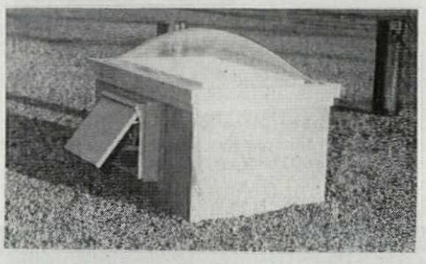
GENERAL OFFICES: 836 SOUTH MICHIGAN AVE., CHICAGO 5
VALVES ... FITTINGS ... PIPE ... PLUMBING AND HEATING

SHATTERPROOF SKYLIGHT. Ready to attach over a roof curb, the *Marco* top light consists of a domed rectangular sheet of corrugated plastic in an extruded aluminum frame. Any inside condensation collects in an integral gutter and is channeled outside. Twelve sizes in light green or off-white range from 24″ x 41″ ($60) to 73″ x 41½″ ($123). Slightly higher priced models, with curb and flange as part of their frames, can be set directly over roof openings. *The Marco Co., 45 Greenwood Ave., East Orange, N.J.* (June '54, p. 198).



PLASTIC PANES. For buildings requiring diffused light, translucent panes of resin and glass fiber provide it for about 75¢ psf. Geometric planes formed in the glazing break up light in intriguing patterns and add rigidity to the material. Square units come up to 3′ x 3′ and a paneled rectangle is made to fit industrial casements. A 3′ x 6′ domed skylight is also available. Colors are green, blue and white. *Molded Insulating Co., 335 E. Price St., Philadelphia, Pa.* (April '54, p. 196).

GLASS-PLASTIC SANDWICH. Two layers of window glass laminated around a gray vinyl sheet, *Dusklite* is an effective sun-glare reducer. Made for the ribbon windows and ventilators used in conjunction with glass block, the tinted glazing obviates mechanical louvers or shades. It sells for about $1.50 psf in sizes up to 15 sq. ft. *Pittsburgh Plate Glass Co., 632 Dusquesne Way, Pittsburgh, Pa.* (Oct. '53, p. 252).



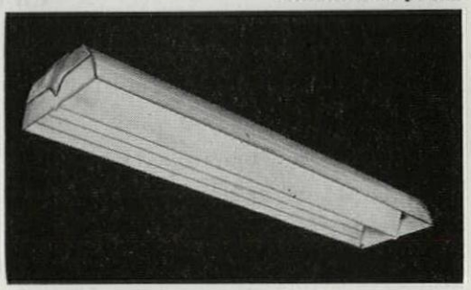
PREFAB SKYLIGHT. The *Ventdome* packaged skylight furnishes light and air for inside rooms at moderate cost. The unit consists of a clear or translucent molded plastic bubble on a leakproof aluminum frame and insulated 14½″ collar. Set in its collar is an 8″ exhaust fan shielded by a motor-operated weather door. A carpenter merely sets the *Ventdome* over a prepared opening and applies mastic and felt over the flange. Prices range from $70 for 20″-square *Ventdome* to $400 for a 64″ x 96″. Each extra fan is $34. *Wasco Flashing Co., 87 Faucett St., Cambridge 38, Mass.* (Dec. '53, p. 166).

Lighting

LIGHT FIXTURES. The *Budgetlite* has no shield or casing. Ballasts and lamp holders comprise the end pieces, and aluminum tubes above the lamps act as spacers and wireways. Hung on slim steel spokes, the fixture offers little surface for dust collection. It takes two 5′, 40-w. low-brightness lamps, and is at its best in long runs for classrooms, offices and stores. *Budgetlites* are $23 each, without lamps. *Ainsworth Lighting, Inc., 38-10 29th St., Long Island City, N.Y.* (June '54, p. 202).

Picked by a New York AIA committee as "best-designed industrial fixture," the 5′-long *IC* light-

continued on p. 182



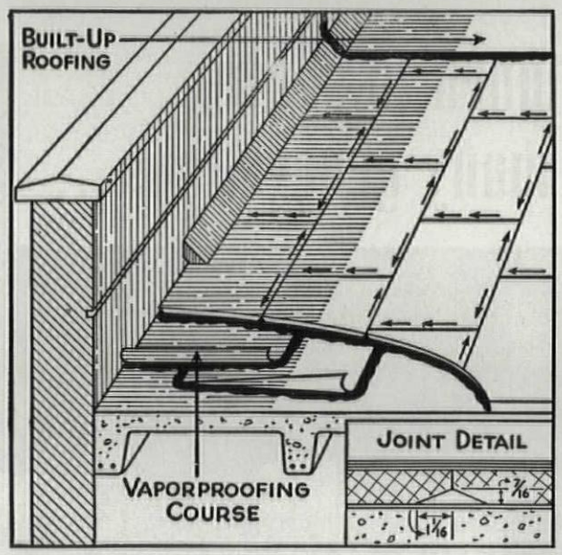
New Protection Against Roof Damage

NEW CELOTEX Channel-Seal

TRADE MARK

ROOF INSULATION

guards against blistering and separation of felt and insulation



As you can see in the diagram, high-pressure air pockets do not build up with Celotex Channel-Seal Roof Insulation. Pressures due to temperature differences are constantly being equalized by movement of air through the channels. This channeling principle of roof protection has been proved effective by many years of actual use on jobs of every type and size.

For an extra margin of safety against costly roof damage due to the building up of high-pressure air pockets where insulation meets felt—specify new Celotex Channel-Seal Roof Insulation!

Each piece has bevels 7/16" high by 1 1/16" wide on all bottom edges. When units are laid on the deck, these bevels form a network of broad, interconnecting channels extending over the entire roof.

"Safety Release" for Trapped Air

As higher pressures build up in some areas of the roof because of rising surface temperatures, they are relieved by air and vapor movement through the channels. This equalizes and reduces pressure—minimizes the danger of blistering or separation of felt and insulation!

Made of a low-density board of high insulating efficiency, Celotex Channel-Seal Roof Insulation comes in a range of thicknesses to meet the specific insulation requirements of each job. It is asphalt coated on both sides and all edges, for extra moisture protection in storage and on the job.

Low in Cost

Light and easy to handle, yet remarkably rigid and tough, Channel-Seal is low in both initial and applied cost. Resists damage from job handling. Quick, easy to apply. Smooth surface assures positive bond to both roof deck and roofing felt.

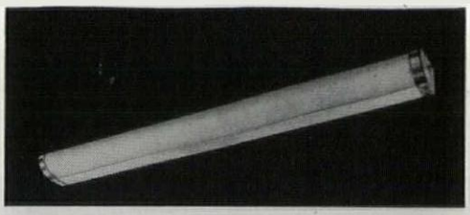
Moreover, it is the only roof insulation made of tougher, stronger, long Louisiana cane fibres—and protected by the patented Ferox® Process from dry rot and termite attack. Write now for full data on Channel-Seal and other types of job-proved Celotex Roof Insulation. The Celotex Corporation, Dept. AF-84. 120 S. LaSalle St., Chicago 3, Ill.

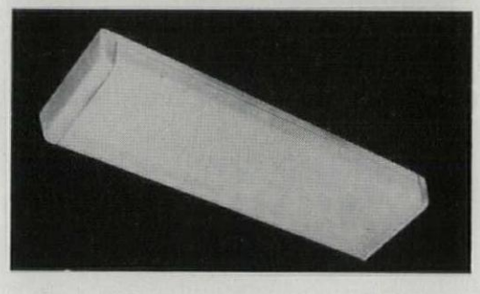
For a Better Roof... Specify Genuine **CELOTEX**

REG. U. S. PAT. OFF.

ROOF INSULATION

THE CELOTEX CORPORATION, 120 S. LA SALLE STREET • CHICAGO 3, ILLINOIS

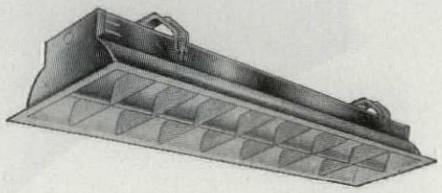




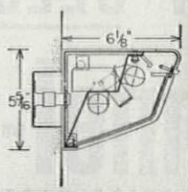
ing unit is engineered for high illumination levels. Easy relamping of the open, side-shielded fixture suits it particularly for high bay use. It lists at $46.90 with metal side panels; $49.50 with plastic. *Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N.Y.* (March '54, p. 244).

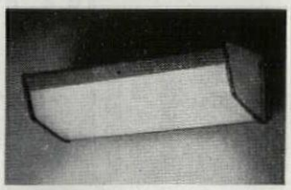
Dispersing even light through its fine-ribbed polystyrene diffuser, the four-lamp *Sightron* ceiling fixture should fit in many modern offices, stores and institutions. It lists at $49.55. The companion 48" wall bracket is tagged at $24.90. Either model may be mounted singly or in runs. Ceiling unit catalogue No. is *7194;* and bracket *7214. Lightolier, Claremont St., Jersey City 5, N.J.* (Jan. '54, p. 196).

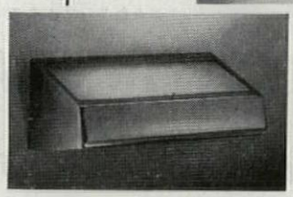
For seeing comfort, brightness must be controlled even on lighting jobs which demand intense illumination. To combat glare for its two 40-w. lamp *Para-Louver* troffers, Day-Brite devised ribbed

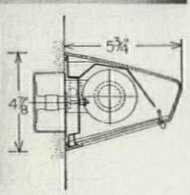


aluminum louvers that are actually segmented parabolas. Light hitting the fins is directed up and down; a minimum is thrown at the viewer. The fixture is $34 to the trade. *Day-Brite Lighting Inc., 5411 Bulwer Ave., St. Louis 7, Mo.* (March '54, p. 238).

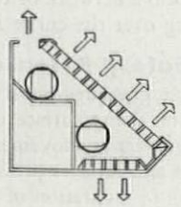


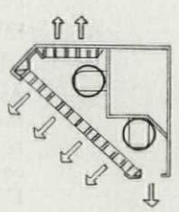






WALL LAMPS. Providing high levels of diffuse illumination, these wall brackets should serve handsomely over bulletin boards, mirrors, hospital beds or phone-book stands. *Model 224* ($14) has an 11"-long cast-aluminum case and prismatic glass diffuser. The 19-¾" *Model 211* ($21.60) comes with sockets for two 75-w. bulbs, or with provisions for two 15-w. fluorescents ($22.60 with low power ballast; $28.40 for high). *Gotham Lighting Corp., 37-01 31st St., Long Island City 1, N.Y.* (Aug. '53, p. 198).

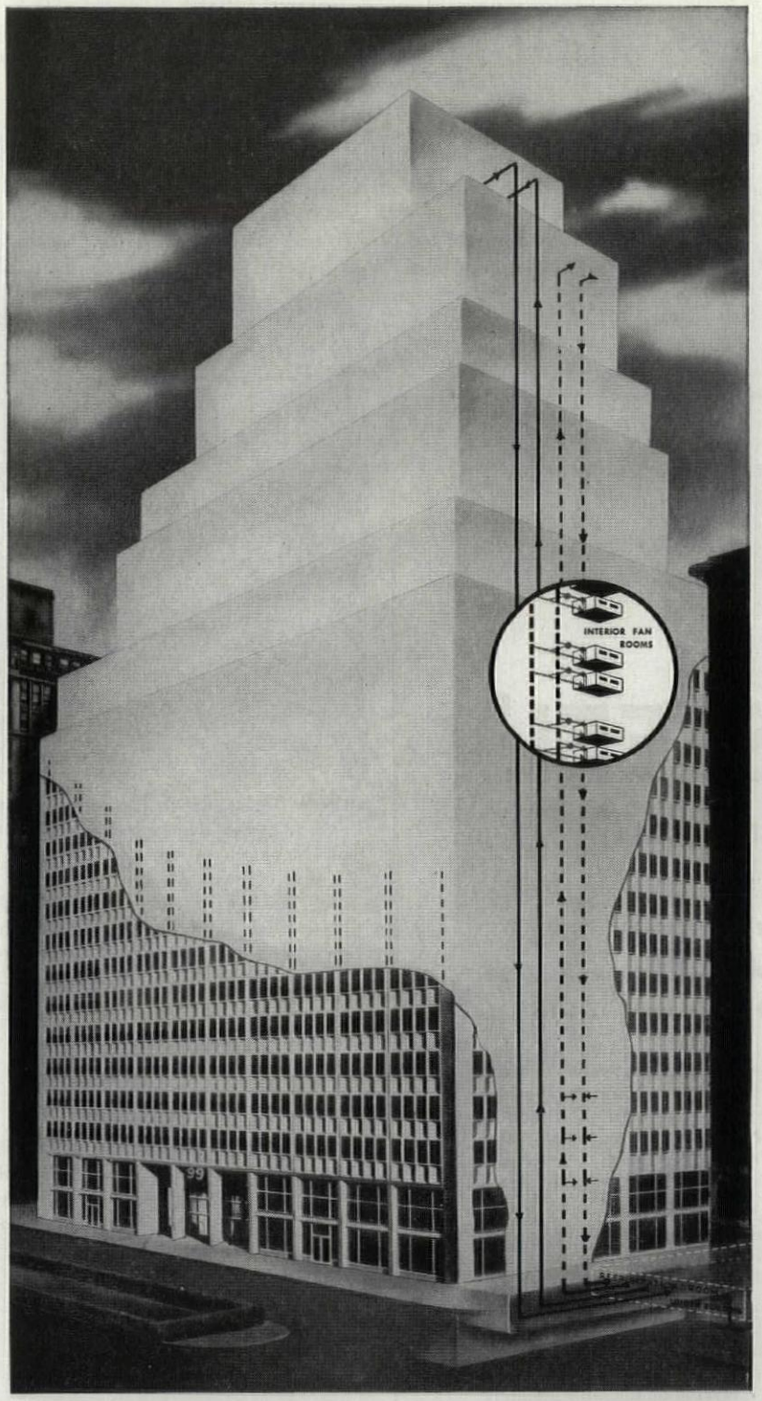




This two-in-one fixture directs 80% of its light either up or down, depending upon which way it is mounted. *Gratelite* louvers with ⅜" cells shield lamps from direct view. Fixture is made in three sizes: two 20 w. ($18), two 40 w. ($24), two 75 w. *Edwin F. Guth Co., 2615 Washington Blvd., St. Louis, Mo.* (July '54, p. 214).

PEACH FLUORESCENT LAMP. Cafés, shops and salons take on a friendly intimacy under *Glo-tone*

continued on p. 184



WATER IS CHILLED by Worthington centrifugal refrigeration units in sub-cellar, then fed through riser (dotted line — "up" arrows) to interior fan rooms. Water returns to sub-cellar (dotted line — "down" arrows) to complete circuit. Solid lines show condenser water circuit. Double lines show chilled water system (one in each face of building) for room units.

New building trend set by air-conditioned skyscraper

This 26-story structure at 99 Park Avenue is distinctly different from anything ever built in Manhattan.

It's completely sheathed in self-cleaning aluminum, with reversible windows set with heat-resistant glass.

99 Park is also going to set a new standard in comfort for its tenants. Dependable air conditioning is provided by a Worthington system made up of two 665-ton centrifugal refrigerating units, which supply chilled water to 38 Worthington-equipped interior fan rooms. These distribute cooled, dehumidified air to the interior offices on each floor. The centrifugal units also furnish chilled water for individually controllable room conditioners enabling tenants in the outer offices to select their own climate.

For more than fifty years, Worthington-engineered air conditioning installations have been serving business and industry. Whether large or small, Worthington systems are all Worthington-*made*, not just Worthington-assembled. For the full story, contact your nearest Worthington district office, or write to Worthington Corporation, Air Conditioning and Refrigeration Division, Harrison, N.J.

Tishman Realty & Construction Co., Inc., Owners and Builders; Emery Roth & Sons, Architects; W. R. Cosentini & Associates, Consulting Engineers; Raisler Corporation, Mechanical Contractor; Cushman & Wakefield, Inc., Agent.

A.4.52

WORTHINGTON

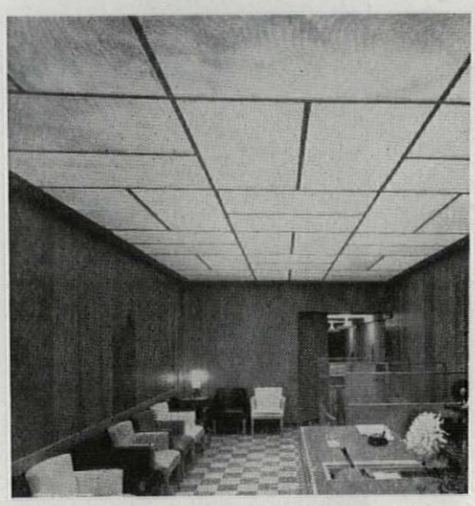
CLIMATE ENGINEERS TO INDUSTRY, BUSINESS AND THE HOME

lamps' peach-tinted illumination. Made in standard wattages, the fluorescent tubes have a two-year guarantee. *Lustra Corporation of America, 36 Washington St., Brooklyn 1, N.Y.* (June '54, p. 202).

COLORED LAMPS. The nuisance of collaring filters over white lamps for decorative lighting is eliminated by GE's color-reflector bulbs. Available in red, green, yellow, blue, blue-white and pink, the 150-w. lamps may be used singly or combined for any warm or cool tone in the spectrum. Prices, depending on color, range from $1.85 to $2.10. *General Electric Co., Nela Pk., Cleveland 12, Ohio* (Aug. '53, p. 198).

WHITE FLUORESCENT LAMP. Emitting 35% more light than any previous fluorescent source, GE's new 8′ tube makes it possible to bring up lighting levels for plants, schools or stores without added cost or upkeep. The cool white lamp has a 110-w. rating and its 6,800-lumen output is triple that of other 40-w. tubes. Maintaining its brightness even in cold, the new tube is eligible for outdoor lighting jobs. It sells for $3.85. *General Electric, Nela Pk., Cleveland 12, Ohio* (June '54, p. 210).

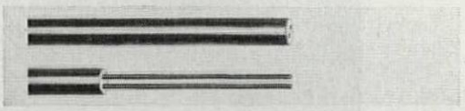
GLASS-FIBER GASKET. Die-cut to fit *Marco* recessed fixtures, this glass-fiber gasket effectively stops light leakage. Fireproof and resilient, the gasket also keeps dust and insects from getting into the fixture. *Marvin Mfg. Co., S. Beverly Dr., Los Angeles 5, Calif.* (March '54, p. 232).



HONEYCOMB CEILING. Expanded sheets of 3/32"-thick aluminum honeycomb on standard suspension supports comprise *Honeylite* fireproof dropped ceiling. Masking overhead pipes and ducts, the light (1 oz. psf) cellular panels also diffuse harsh glare from bare-bulb fixtures above into flattering illumination, and break up—thereby softening—noise from below. *Honeylite Co., 576 W. Grand Ave., Oakland, Calif.* (May '54, p. 204).

Wiring

MINERAL-INSULATED WIRE. Impervious to moisture and intense heat, *Safety m.i. cable* consists of a seamless copper tube around a mass of magnesium oxide in which are copper conductors.

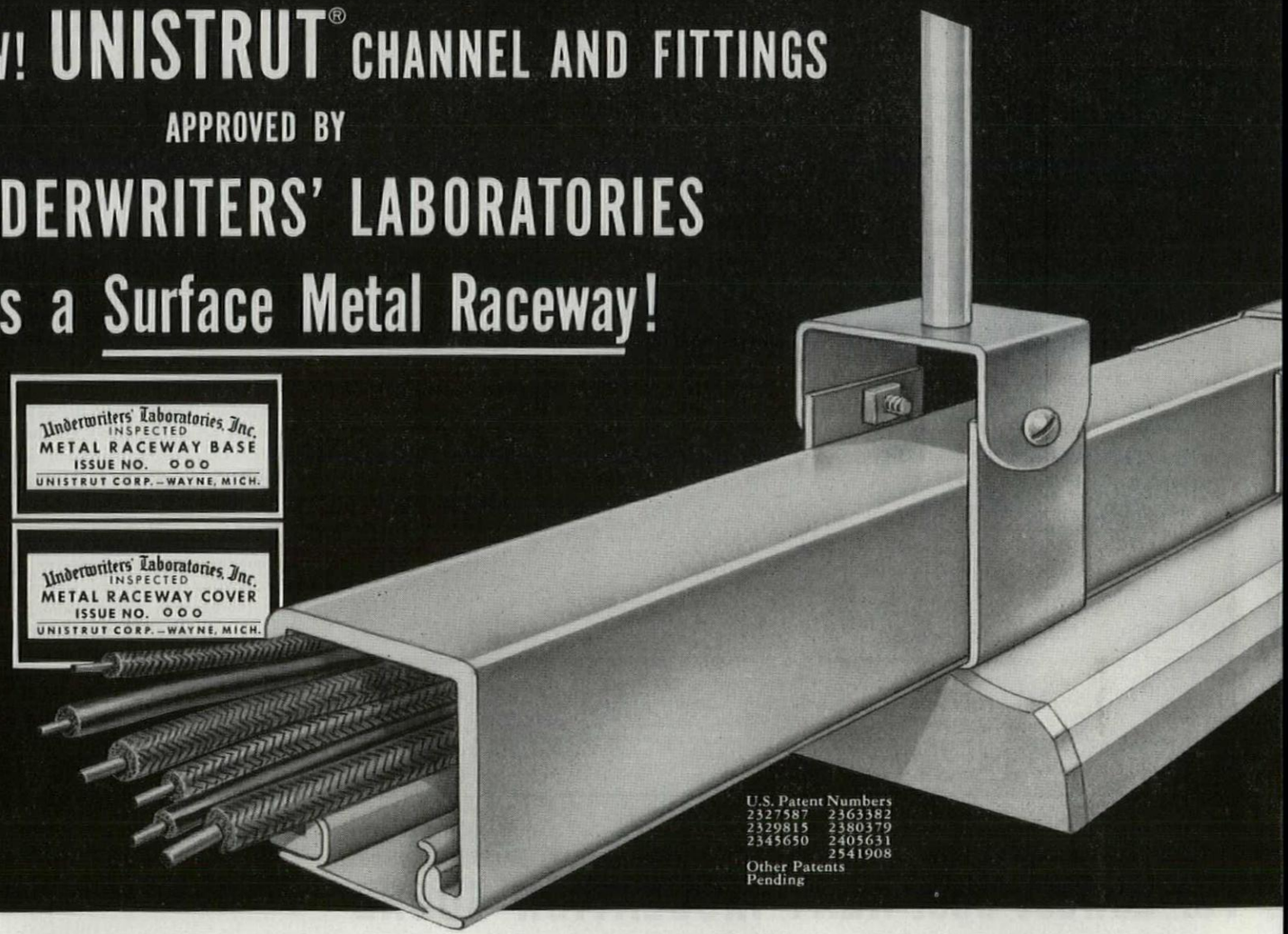


Supplied in sizes for power, lighting and control circuits the 600-v.-rated, self-contained wiring needs no raceway, enclosure or ground. Overloads cannot hurt it: the mineral insulation stays stable up to 4,000° F. The ductile cable can be bent to fit tight spots and may be wall-fastened, exposed outdoors or imbedded in concrete. *General Cable Corp., 420 Lexington Ave., New York, N.Y.* (May '54, p. 214).

BX CONNECTORS. After the armored cable is in place, *Harbot* connectors are put on the wiring outside the box. Taking up no precious space inside the box, the simple cast-aluminum devices grip the edges of knockout openings. Two machine screws pulled up on the cable fix it rigidly in any position. The connectors are available in

continued on p. 186

NOW! UNISTRUT® CHANNEL AND FITTINGS APPROVED BY UNDERWRITERS' LABORATORIES as a Surface Metal Raceway!



Long popular as a quick-erected, low-cost method of lighting support, UNISTRUT channel and fittings have now been approved for use as a surface metal raceway...for wiring lighting installations and for supplementary power wiring (up to 600 v.) of machines, motors, other lighting rows, etc.

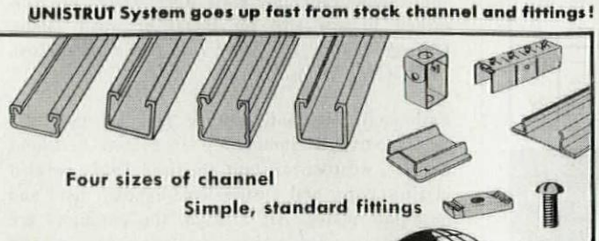
Faster, Lower Cost Installation—The UNISTRUT system is quick and easy to erect from stock parts. No wire pulling necessary as wires are *laid in* the channel and closer strip snapped in place. Continuous channel support permits wider spacing of hanger stems, reducing installation time and costs. Lines tapped from the channel for supplementary wiring eliminate special lines and extra cost.

Neat Appearance, Complete Flexibility—Straight, strong and rigid, UNISTRUT channel gives lasting true alignment that's undisturbed by changes or servicing. Concealed wiring eliminates unsightly external power lines. Fixtures may be attached anywhere along channel length...ideal for continuous run or spaced fixtures. Attachment of hanger stems at any point on channel permits quick, simple installations in spite of ceiling irregularities.

In this building, UNISTRUT channel was used to support and wire a lighting installation on a concrete ceiling. Savings over conventional methods of installation were estimated at 50%! Note the neat, perfect rows of fixtures.

Lighting for a large manufacturing plant was solved fast by using UNISTRUT channel for support and wiring. Even on ceiling arrangements as this, using two types of fixtures, the UNISTRUT System installs quickly and easily.

UNISTRUT System goes up fast from stock channel and fittings!



Four sizes of channel

Simple, standard fittings

The World's Most Flexible All-Purpose Metal Framing

UNISTRUT

Available *now* at your UNISTRUT Distributor

See your UNISTRUT Distributor for complete information on the UNISTRUT system of light support and wiring, or ask to have a UNISTRUT Demonstrator car brought to your door. Warehouse stocks in all principal cities. In Canada, Northern Electric Company. For export Pressed Steel Car Co., New York, N. Y. See your telephone directories.

Send for folder.

Write today for free copy of bulletin FF-3 and Underwriters' Laboratories Specifications.

UNISTRUT PRODUCTS COMPANY
1013 W. Washington Blvd. Dept. F-8
Chicago 7, Illinois

Name.....

Company.....

Address.....

City.....*Zone*...*State*.....

many types at 11¢ to 14¢ each. *Unimatic Corp., 52 E. Centre St., Nutley, N.J.* (June '54, p. 212).

RECESSED FIXTURE ASSEMBLY. Put in place with four nails, the *Atlite* UL-approved assembly saves time on installations of the manufacturer's 60- to 300-w. recessed lighting units. Supply leads are brought directly to the factory-wired assembly box. The *Atlite* lists at $5. *Atlas Electric Products Co., 319 Ten Eyck St., Brooklyn 6, N.Y.* (June '54, p. 210).

Communications

INTERCOM SYSTEM. *Dial-X* makes it unnecessary to redial a busy number. A sensing element keeps testing the called line and signals when that phone is hung up. Other features: executives with urgent calls can pre-empt lines by pressing a button which sounds a warning and then makes the connection; conferences can be called on one line; and announcements may be broadcast through the PA system. A 40-line layout fitted to handle 20 lines initially costs about $2,400 plus installation. *Stromberg-Carlson, 100 Carlson Rd., Rochester 3, N.Y.* (March '54, p. 250).

Direct-A-Call is a neatly designed push-button system for two to five stations, which can be plugged into any receptacle. It costs $25 per telephone plus $19.50 for power supply. *Private Line* is a dial system for 10 to 50 stations. Cost of 50-line system is $5,645, plus $500 power supply, plus wiring. *Connecticut Telephone & Electric Corp., Meriden, Conn.* (July '54, p. 208).

NURSE CALL. With *Couch Call* flush-mounted in the wall beside his bed a patient can communicate with his nurse at will. From her central station the nurse can monitor patients or initiate calls. Remote nurse's duty stations, patient's emergency priority stations, explosion-proof stations for operating rooms are among special features. Cost of a 36-station system is about $3,500. *S. H. Couch Co., Inc., N. Quincy 71, Mass.* (July '54, p. 208).

CONVEYOR TUBES. *Mix and Genest* and *Lamson* automatic pneumatic conveyor systems handle intrabuilding papers and materials via far simpler tubing than either manual or push-button layouts. Electrical relays—which work like phone dials—direct carriers in both new systems; no dispatchers are needed. Basic difference between the two is that in the *Lamson*, relays are located before each station and in the *Mix and Genest*, the actuators can be at a central point or decentralized. Automatic one-line systems with 360-carriers-per-hour capacity run around $2,500 per station, and two-line (600 carriers), $3,000 per station. *Mix and Genest-International Standard Trading Corp., 22 Thames St., New York*, and *Lamson System, 295 Madison Ave., New York, N.Y.* (Aug. '53, p. 194).

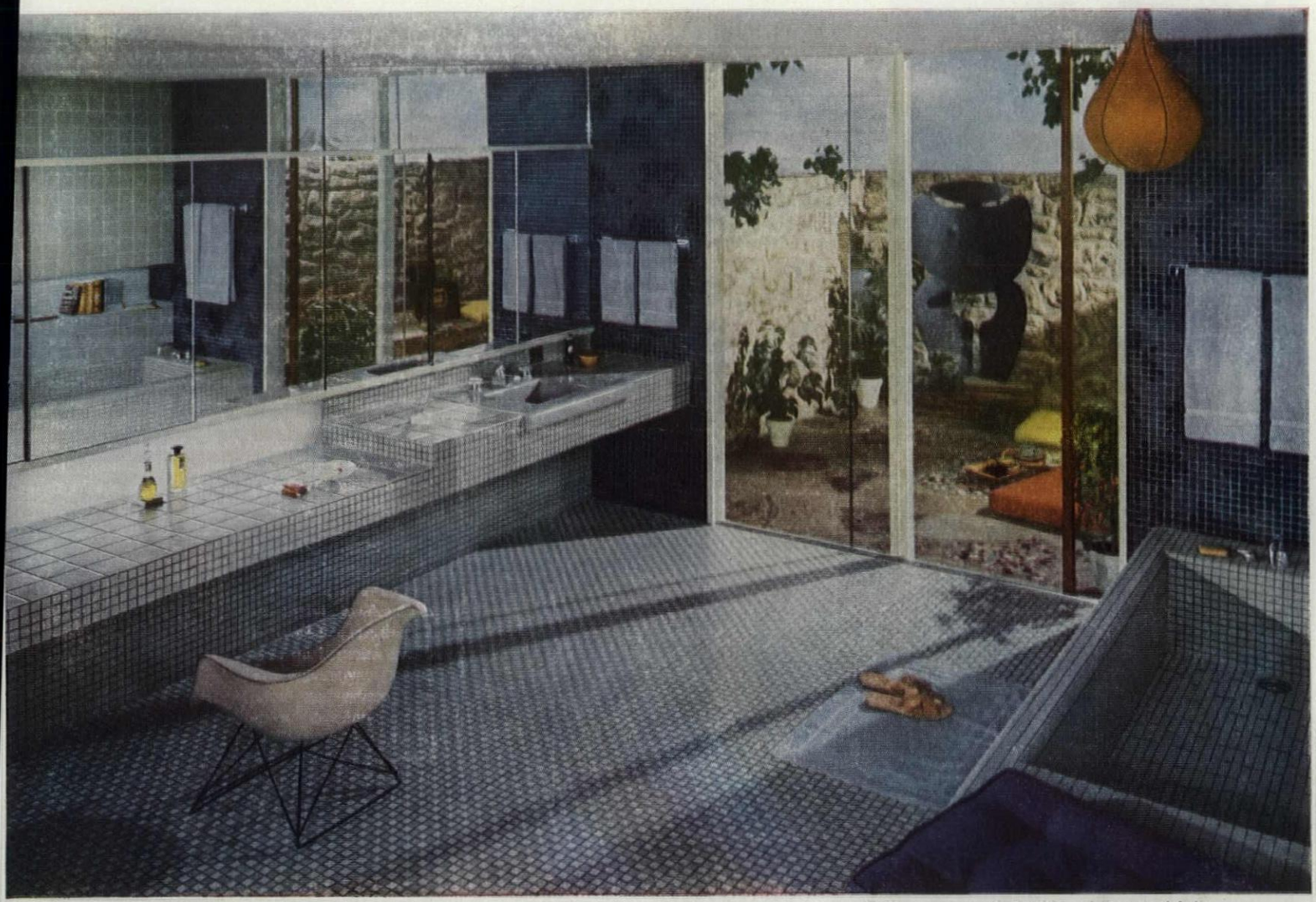
Doors, controls, hardware

ALUMINUM DOORS. Moderately priced, these bolted-frame aluminum doors come in sizes from 3' x 7' up to 6' x 7' in single- and double-acting models. Bolts connecting the corners through top and bottom rails are held securely by vibration-proof locknuts. Each door is furnished with pull handle, push bar, plastic glazing channels, concealed closer, threshold and lock cylinder. A single-acting unit installs for about $215. *The Kawneer Co., Niles, Mich.* (Oct. '53, p. 252).

Aircraft production methods are used in making O'Keeffe's sleek aluminum flush panel doors. Channel frames and outer skins of the lightweight (under 3 lb. psf) distortion-free units are aluminum. Cloth adhesive bonds the skins to the rigidizing core, which is either an all-aluminum foil honeycomb or alternate strips of honeycomb and sound-deadening glass fiber. Doors are furnished in any size for metal or wood jambs. *O'Keeffe's, Inc., 225 Shaw Rd., S. San Francisco, Calif.* (May '54, p. 208).

Fashioned for contemporary facades, the "*W*" *Series* extruded aluminum doors feature butt-joint corners, weather-resistant anodized finish, beveled glazing stops, and custom-look handles, bars and push-pull plates. All 7' high, the entrances are

continued on p. 188



Bathroom-sun patio by Marcel Breuer, A.I.A.

"CLAY TILE...AN INSPIRATION TO DESIGNERS ...A BOON TO THE MODERN HOMEMAKER"

Marcel Breuer

Done in subtly blended clay tiles of black, gray and white, Marcel Breuer, architect of UNESCO building, has designed a bathroom-sun garden that may well stimulate salable ideas for your next project.

Roomy, convenient clay tile counter-tops like this will take suds, wear and water for a lifetime. And the tile tub and recessed shelf demonstrates the practical and dramatic effects you can achieve with clay tile.

For durability and beauty, be sure to specify clay tile floors—walls and wainscoting, too. In the picture a scuff-proof, waterproof, no-wax clay tile floor leads invitingly to a sun garden. There, colorful clay tile, crisply accenting the outdoor flagstones, will resist fading and weather extremes for years.

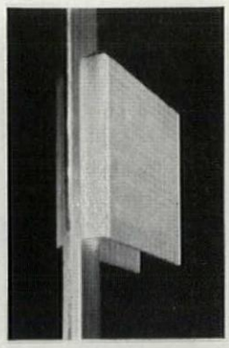
When designing, building, or remodeling consider clay tile's qualities: unlimited design potential, incomparable durability, long range economy and minimum upkeep. Tile is sure to enhance any project—for years to come!

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

The Modern Style is

GENUINE CLAY
tile

PARTICIPATING COMPANIES: American Encaustic Tiling Co. • Architectural Tiling Co., Inc. • Atlantic Tile Mfg. Co. B. Mifflin Hood Co. • Cambridge Tile Mfg. Co. • Carlyle Tile Co. • General Tile Co. • Gladding, McBean & Co. • Jordan Tile Mfg. Co. Mosaic Tile Company • Murray Tile Co., Inc. • National Tile & Mfg. Co. • Olean Tile Co. • Pomona Tile Mfg. Co. • Robertson Mfg. Co. Royal Tile Manufacturing Co. • Sparta Ceramic Co. • Summitville Tiles, Inc. • United States Quarry Tile Co. • Winburn Tile Mfg. Co.



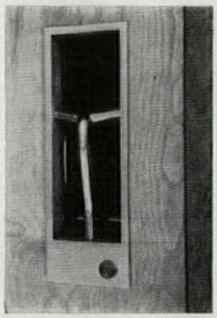
made in single- and double-acting units. A glazed, 3'-wide door, frame and hardware installs for $400 to $450. *The Kawneer Co., Niles, Mich.* (May '54, p. 208).

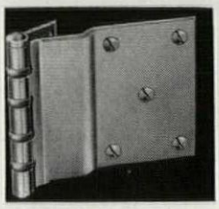
SLIDING DOOR. A frame of natural wood sets off *Westerner* sliding glass doors. Oak sills and fir frame are treated against rot. The units also boast low price: a 6'-wide x 6'-8" unit is $70 unglazed and a 16' four-light group is $150. Each unit is weather stripped and fitted with hardware. *T. V. Walker & Son Inc., 217 N. Lake St., Box 547, Burbank, Calif.* (Feb. '54, p. 222).

HONEYCOMB CORE. Rigidly built to resist dimensional change in extremely humid climates, *Chemclad* interior and exterior doors have resin-impregnated paper honeycomb cores between their hard plastic laminate faces. Only the frames for these stressed-skin units are wood. Their abrasion-resistant surfaces make them especially suitable for institutional use. Prices range from $30 to $60. *Bourne Mfg. Co., 1573 E. Larned, Detroit, Mich.* (Oct. '53, p. 356).

PACKAGED REVOLVING DOORS. Plant-assembled, these labor-saving entrances of revolving and swing doors need not inhibit the designer: a wide choice of metals, hardware, trim and door groupings can be made from stock components. A typical packaged unit costs $5,900 installed—about $1,000 less than separate items. All 6'-10" high, the doors fit under existing transoms without tricky alteration. A special control ($1,200 in place) motor-propels the revolving section at a constant rate. *International Steel Co., 1321 Edgar, Evansville 7, Ind.* (June '54, p. 168).

HARDWARE. Instead of using standard door hardware in a Connecticut school, Architects Ketchum, Gina & Sharp summed up separate components in one cost-saving unit. Now produced commercially as *Com-Vision No. HSC-3*, the 6½" x 18⅝" hardware consists of a Y-shaped chromed brass pull, glass viewer and push plate in an aluminum frame with a cylinder lockset. *Com-Vision* costs about $57 uninstalled, compared to about $70 for individual items. *Hardware Sales Co., 383 Post Rd., Darien, Conn.* (Oct. '53, p. 256).





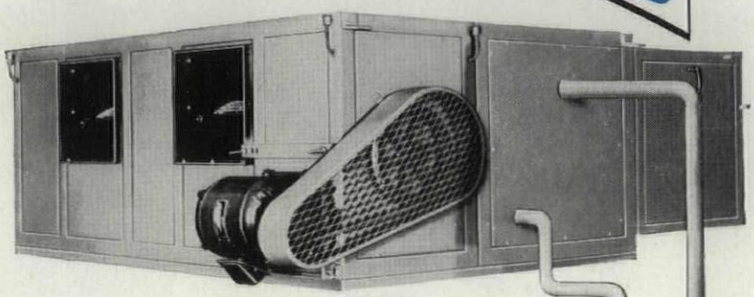
WIDE-THROW HINGE. Offsetting a 1-¾" door at a 90° angle, Stanley's *BB 266* hinge allows full clearance of hospital corridor and bedroom doors for easy passage of beds and carts. Its wide-throw eliminates tacking of protective metal strips on doors. The self-lubricating ball-bearing hinge is made of heavy wrought steel in all standard finishes. *The Stanley Works, New Britain, Conn.* (Sept. '53, p. 236).

DOOR CONTROL. As someone steps on the 80"-long vinyl mat running through an entrance equipped with an *Invisible Dor-O-Matic*, the door will open—if the opposite side is clear. It stays open until the person walks through and then closes noiselessly. Adaptable to all types of stock doors, the apparatus' floor-concealed control activates a remote 110-v. hydraulic power unit. If power fails, the door will work manually. Price for a single-door mechanism is $647.50 uninstalled. *Dor-O-Matic Div., Republic Industries, Inc., 4446 N. Knox, Chicago 30, Ill.* (May '54, p. 231).

DOOR CLOSER. Rixson's heavy-duty closers can be furnished with a hold-open device for theater, school and other entrances subjected to the rush

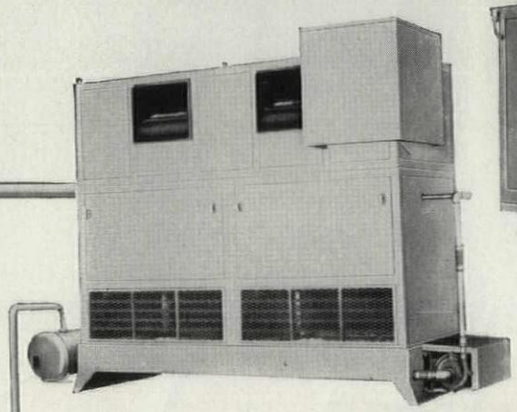
continued on p. 194

THE KENNARD *Engineered* LINE COMPLETES THE JOB



KENNARD AIR CONDITIONING BLOWER UNITS

are adaptable to all forms of air conditioning installations. 13 sizes, 400 to 21,600 C.F.M. Vertical or Horizontal.



KENNARD EVAPORATIVE CONDENSERS AND COOLING TOWERS

meet present day demands for efficient water saving. Rugged enough for Outdoor, quiet enough for Indoor, 3 to 75 tons.

Complete the job with other KENNARD products

Coils—Cooling or Heating.
Multi-Zone Air Conditioning Units
Heating and Ventilating Units
Sprayed Coil Dehumidifiers
Cooling Towers

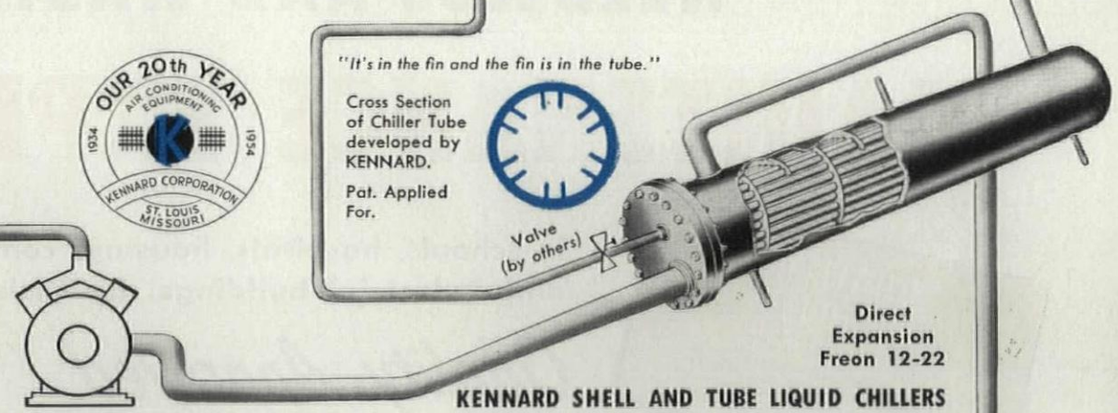
OUR 20th YEAR — AIR CONDITIONING EQUIPMENT — 1934 1954 — KENNARD CORPORATION — ST. LOUIS MISSOURI

"It's in the fin and the fin is in the tube."

Cross Section of Chiller Tube developed by KENNARD.

Pat. Applied For.

Valve (by others)



Direct Expansion Freon 12-22

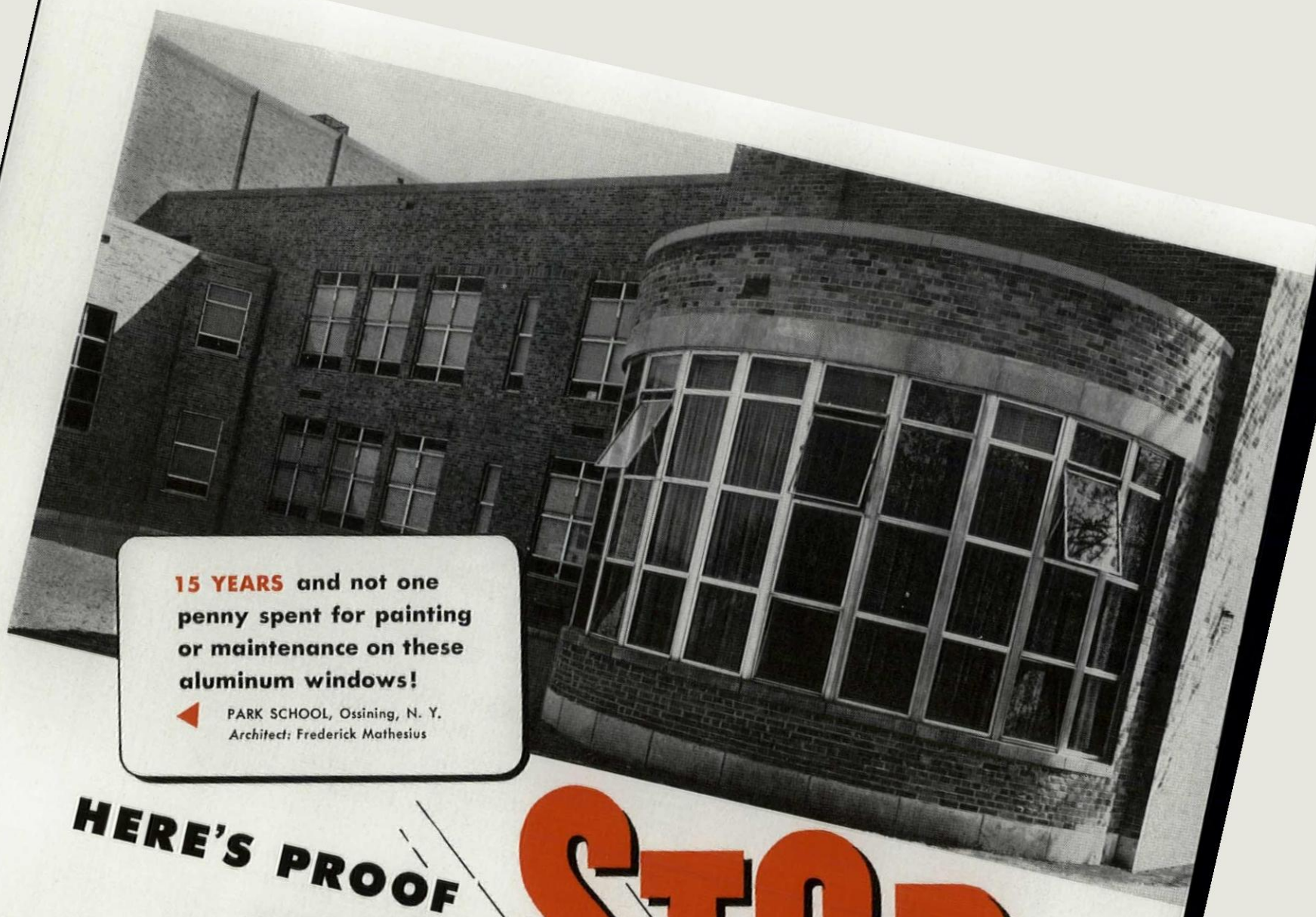
KENNARD SHELL AND TUBE LIQUID CHILLERS

Revolutionary internally finned tubing (exclusive with KENNARD) makes them better than 50% lighter and smaller—positive oil return—no Freon head gasket—smaller Freon charge. Sizes 2 to 200 tons.

Compressor *(by others)*

Pump *(by others)*

KENNARD CORPORATION
1833 HANLEY RD. • ST. LOUIS 17, MO.



15 YEARS and not one penny spent for painting or maintenance on these aluminum windows!

PARK SCHOOL, Ossining, N. Y.
Architect: Frederick Mathesius

HERE'S PROOF

YOU CAN **STOP**

NEEDLESS AND WASTEFUL

MAINTENANCE EXPENSE

in schools, hospitals, housing, commercial and industrial buildings, by insisting on

Quality Approved

ALUMINUM

QUALITY APPROVED

(TYPE)

A.W.M.A. Quality Specifications—Materials, Construction, Strength of sections and Air infiltration requirements—confirmed by Pittsburgh Testing Laboratory.

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APARTMENT
Lenoshire House, Washington, D. C.
Architect: George T. Santmyers
Contractor: Lenkin Construction Co.

SCHOOL
Winchester Elementary School,
New Haven, Conn.
Architect: Caproni Associates
Contractor: Fusco-Amatrudo Company

COMMERCIAL BLDG.
Texaco Bldg., New Orleans, La.
Architect: Claude E. Hooten
Contractor:
Haase Construction Co., Inc.

HOSPITAL
Lankenau Hospital,
Philadelphia, Pa.
Architect: Vincent G. Kling
Contractor: Wark & Co.

EXPERIENCE SHOWS . . . ALUMINUM WINDOWS SAVE MANY DOLLARS ON PAINTING ALONE

YES, Aluminum Windows actually DO SAVE YOU MONEY... They do help keep building maintenance expense at a minimum. Experience in hundreds of schools *(like the one shown on opposite page)*, hospitals, and other types of buildings erected 15 to 25 years ago shows that not one penny was ever required for painting the aluminum windows.

That's why today, more and more architects are specifying "Quality-Approved" aluminum windows for every new building project they design. That, too, is why maintenance-conscious building owners and managers insist on "Quality-Approved" aluminum windows.

Aluminum windows, whether they be double-hung, casement, projected or awning type, are the only practical, reasonably-priced windows that *never* require painting... that cannot rust or rot, warp or swell... that retain their trim, modern-looking appearance for the life of the building.

A WORD OF CAUTION—Remember, that only aluminum is rustproof through and through. Mere surface protection against rust is not enough. Wear, unintentional scratches in delivery or installation may nullify any protective surface coating and soon require painting. "Quality-Approved" aluminum windows are available through many manufacturers in sizes and styles that fit any exterior design treatment. For your protection and full satisfaction, insist on the "Quality-Approved" Seal when you specify or OK specifications.

For a copy of our 1954 window specifications book and names of approved manufacturers, consult Sweet's Architectural Catalog (Section 16a/ALU) or write direct to Dept. AF-8.

Aluminum Window Manufacturers Association

74 Trinity Place, New York 6, N. Y.

MEMBERS: Alcasco Products, Inc., Muskegon, Mich. • Aluminum Home Products Co., Knoxville, Tenn. • The Wm. Bayley Co., Springfield, Ohio • Ceco Steel Products Corp. (*Sterling Aluminum Window Division*), Chicago, Ill. • Cupples Products Corp., St. Louis, Mo. • Fentron Industries, Inc., Seattle, Wash. Michael Flynn Mfg. Co., Philadelphia, Pa. • General Bronze Corp., Garden City, N. Y. • Hunter Mfg. Corp., Bristol, Pa. • Metal Arts Mfg. Co., Inc., Atlanta, Ga. • Miami Window Corp., Miami, Fla. • Reynolds Metals Co. (*Parts Division*), Louisville, Ky. • J. S. Thorn Co., Philadelphia, Pa. • Timm Industries, Inc., Los Angeles, Calif. • Universal Window Co., Berkeley, Calif. • Ware Laboratories, Inc., Miami, Fla. • Windalume Corp., Kenvil, N. J.

WINDOWS

Another distinguished hospital air conditioned by the Carrier Conduit Weathermaster System

Scores of modern hospitals like these have Conduit Weathermaster air conditioning:

Georgia Baptist, Atlanta
Detroit Receiving, Detroit
The Moses H. Cone Memorial, Greensboro, N.C.
John Sealy, Galveston
Self Memorial, Greenwood, S.C.
Hermann, Houston
St. Vincent's, Little Rock
St. Vincent's, Jacksonville
Southern Baptist, New Orleans
Woman's, Detroit
Sandia Base, Albuquerque
Baptist Memorial, Memphis
Baylor University Hospital, Dallas
U. S. Veteran's, Houston

Driscoll Foundation Children's Hospital, Corpus Christi, Texas

Best place to get well is in an air conditioned hospital. The Conduit Weathermaster* System serves many of the finest. This air conditioning, perfected by years of unmatched experience, permits the occupant of each room to dial his own climate. Operation is quiet; there are no moving parts within the room. Cross-contamination is eliminated; there is no recirculation of air. And installation can be readily engineered into an existing building. Carrier Corporation, Syracuse, New York. *Reg. U. S. Pat. Off.

first name in air conditioning Carrier

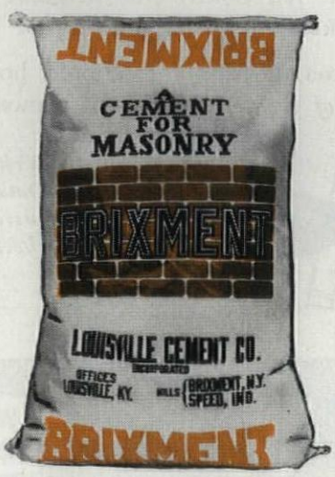
BRIXMENT

Better Mortar for Blocks

WHY IS GOOD MORTAR IMPORTANT?

Because of their size and weight, concrete blocks require mortar with "body", plasticity and water-retaining capacity. Brixment meets all these requirements. It has the *body* necessary to support the weight of the unit and hold it up to the line. It has the *plasticity* necessary to prevent the mortar from falling off the long head joint, while the block is being placed in the wall. It has high *water-retaining capacity*, which gives the bricklayer more time to shift and adjust the block to its final position before the mortar stiffens.

It is the combination of these characteristics that makes Brixment the leading masonry cement for concrete block as well as for brick.



of sporadic crowds. Set in "contact" position, the mechanism engages and holds open a door until reset at "noncontact." It then functions as usual, closing the door quietly after each opening. *The Oscar C. Rixson Co., 4450 W. Carroll, Chicago 24, Ill.* (May '54, p. 231).

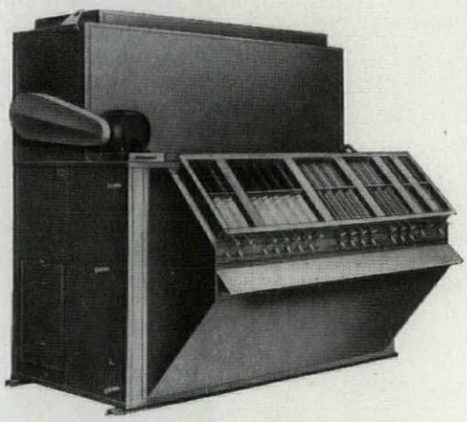
GARAGE DOORS. Borrowing bracing and riveting techniques from aircraft, this aluminum door spans openings up to 60' without posts or mullions. Weighing just 1 lb. psf, the big, corrugated unit can be opened and shut by hand. Various operating mechanisms are obtainable. Knocked-down doors up to 20' wide are $1.10 psf; from 20' to 60', $2 F.O.B. Los Angeles. Hardware is extra. *Stevens-Thuet Co., Long Beach 13, Calif.* (Feb. '54, p. 226).

S-shaped joint seals on steel panel *Roly-Door* allow it to adjust to an uneven garage floor for weather-tight closure. The sectional overhead units lift up and roll open completely inside the building. Each ribbed panel is welded and braced at key points to prevent sagging. The doors come in seven widths from 8' to 16' and 16 heights from 6'-6" to 14'. Prices: $100 to $600 F.O.B. Buffalo. *Morrison Steel Products, Inc., 601 Amherst, Buffalo 7, N.Y.* (April '54, p. 218).

GARAGE-DOOR OPENER. As a car or truck passes over either of two magnetic discs set in a driveway, the *Electronic Door Keeper* inside the garage opens the doors. Sensitive to masses of metal, the discs close a relay, activating the mechanism. The *Keeper* will not close doors behind a vehicle until clear by 7', and during power failure, keeps them open. When necessary, it can be switched on and off manually. *Automatic Electronic Engineering Co., 2207 E. North Ave., Milwaukee 2, Wis.* (Nov. '53, p. 214).

PLASTIC DOOR STRIP. *Stan-Guards* prevent painful finger-pinching accidents at the hinge side of a door by covering the crack with flexible plastic strip. The light gray plastic is held by extruded aluminum moldings, screwed to jamb and door. Price for one side of a wood door is $17.50; for an all-glass door, $21.50. *The Stanley Works, 195 Lake St., New Britain, Conn.* (July '54, p. 222).

Heating, air conditioning

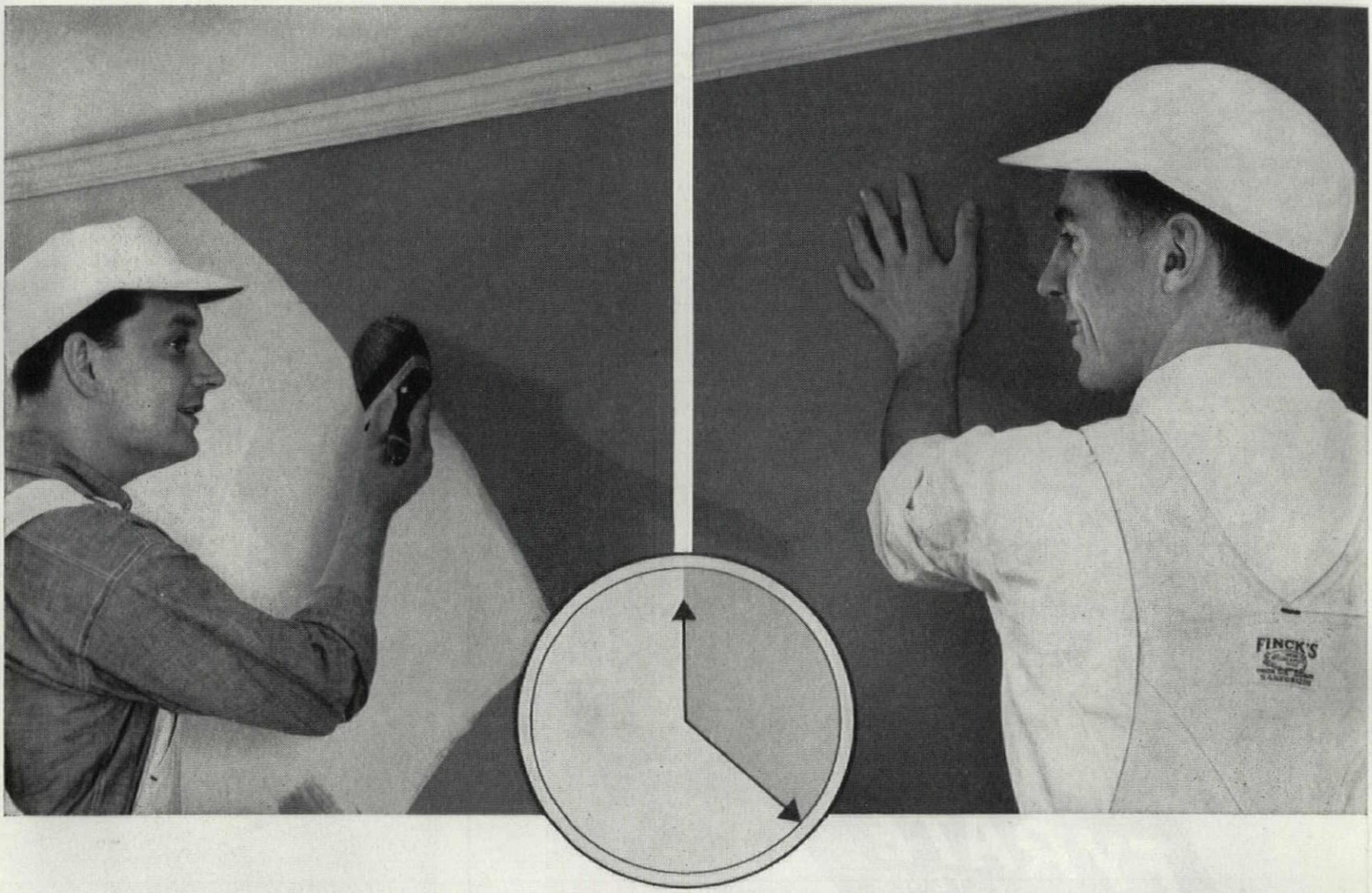


AIR CONDITIONER. The *Flexazone*'s three major components—coil, blower and damper—can be job-assembled 24 different ways according to air-conditioning needs and space available. Intake air is blown past the heating or cooling coils through one to eight individual dampers in air streams of different temperatures called for by zoned thermostats. Models are made with capacities of 1,300 to 24,000 cmf. Price for a 30 T. unit, uninstalled, is about $1,750. *Drayer Hanson, Inc., 3301 Medford St., Los Angeles 63, Calif.* (April '54, p. 196).

PANEL GRID. Factory-formed *Panel Grids* can cut costs on copper-coil radiant ceilings or walls by 4¢ per lin. ft. since the single-size *PG* can meet all panel design requirements. Fabricated from 50' lengths of ⅜" tube, the 6"-spaced loops have enough give to be squeezed 4½" apart or stretched to 12" to fit varying space and radiation needs. Opened from its bowknot shipping shape, each 56" x 60" *PG* (serving 30 sq. ft.) is neatly secured with fewer straps or ties than site-bent coils. *The American Brass Co., Waterbury 20, Conn.* (Oct. '53, p. 254).

continued on p. 196

DOW LATEX . . . bringing a new concept of perfection in paints . . . DOW



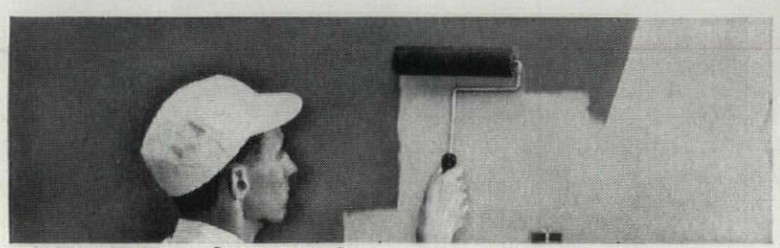
Specify time-saving LATEX PAINTS to complete the job ahead of schedule!

They dry so quickly painters can apply two coats in a day . . . and there's no long wait for plaster to cure!

You can have buildings ready for occupancy *ahead of schedule* with latex paints. These durable paints can be applied soon after plastering, even over hot spots. They dry so quickly on any surface that painters can recoat them, if necessary, the same day. And those aren't the only time-saving advantages! They can be put on quickly because they flow on smoothly . . . leave no brush or lap marks that need going over again. This means painters can do a top-quality job in a minimum of time!

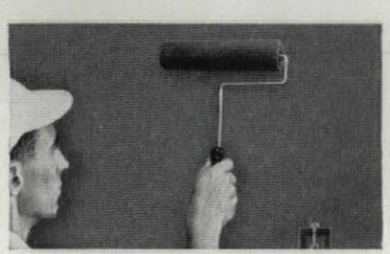
They dry to a tough, impermeable film that's durable, cleanable . . . can be simply wiped clean with soap and water.

Leading paint manufacturers make latex paints available in a wide range of colors and will supply you with further information on latex paints upon request. For a list of their names, write Dow Plastic Sales, Department PL 515M. THE DOW CHEMICAL COMPANY, Midland, Michigan.



EASILY APPLIED . . . Latex paints flow easily from brush or roller to a smooth, velvety finish. No need for tedious brushing out.

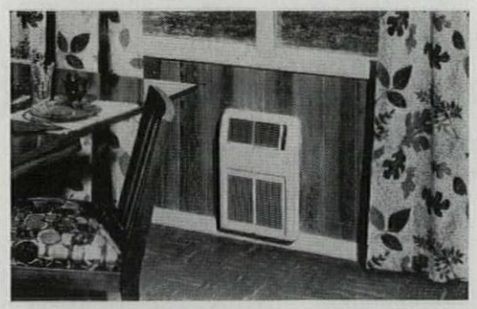
PUT ON SOON AFTER PLASTERING . . . There's no long wait for plaster to cure completely. Latex paints can be applied right over plaster hot spots.



TWO COATS IN ONE DAY . . . Latex paints dry to the touch in twenty minutes to an hour, can be recoated the same day.

EASY TO CLEAN . . . Latex paints are unusually cleanable. They're wiped clean with soap and water, and without any damage to surface appearance.

you can depend on DOW PLASTICS DOW

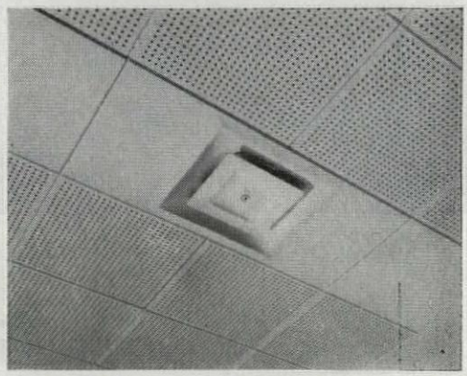


STEAM SYSTEM. Planned for motels, hotels and rambling structures, *SelecTemp* steam heating system handles unlimited heating zones. A boiler feeds steam to the wall-mounted heaters via ¼" copper tubes. Each room unit has a copper heat exchanger, steam-turbine driven fan, filter and thermostat. The units in unoccupied rooms run at 1/20 capacity; when the thermostat is turned up, the ready steam supply can warm the air almost immediately. *SelecTemp*'s cost is competitive with other wet systems, but less than most requiring zone controls. *Iron Fireman Mfg. Co., 3170 W. 106th, Cleveland 11, Ohio* (March '54, p. 256).

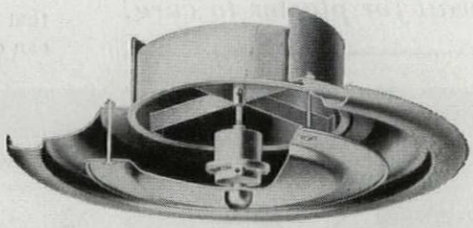
SALAMANDER. Providing cold-weather protection for plaster, concrete and water pipes, and comfort for workmen, the 50,000-Btu *Heat Kit* portable salamander is merely hooked up to a tank of liquid petroleum for operation. Heat ducts can be extended from its six open-end pipes. Price: $69.50 F.O.B. Detroit. *Arthur H. Kitson, Inc., 20818 Harper Ave., Detroit, Mich.* (June '54, p. 216).

HEAT LAMP. Delivering triple the radiation of a conventional 375-w. infrared lamp, this new heat bulb can do such jobs as dry paint or solder metal. Its two filaments are operable at three wattages—650, 900 and 1,500—allowing precise control of infrared output. The bulb sells for $25. *Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N.Y.* (March, '54, p. 238).

Air distribution



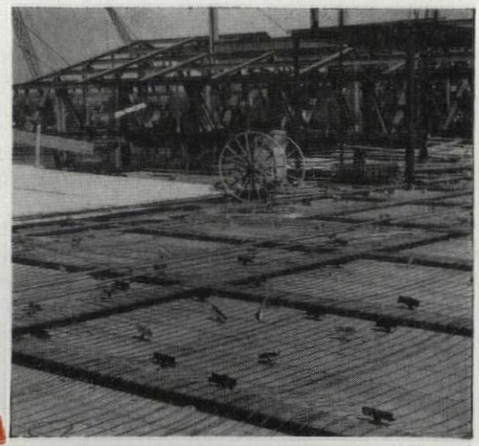
PANEL DIFFUSER. Attached to the neck of this neat air diffuser is a flexible plastic and rubber hose connection which makes it possible to shift the modular 1' x 4' unit from one spot in a suspended ceiling to another without relocating main ductwork. As for balancing air distribution when room layouts change, a screw-regulated damper built into each diffuser controls air volume but does not alter the air throw. Outlets cost about $26 each, in place. *Connor Engineering Corp., Danbury, Conn.* (April '54, p. 184).



DIFFUSER. Designed for air-conditioning systems which serve interiors with changeable heat loads, the *Kno-Draft* ceiling diffusers regulate air flow at the point of discharge. A thermostat-controlled damper in each unit moves the sleeve up or down to vary the air volume without altering the air pattern. *Connor Engineering Corp., Danbury, Conn.* (Jan. '54, p. 196).

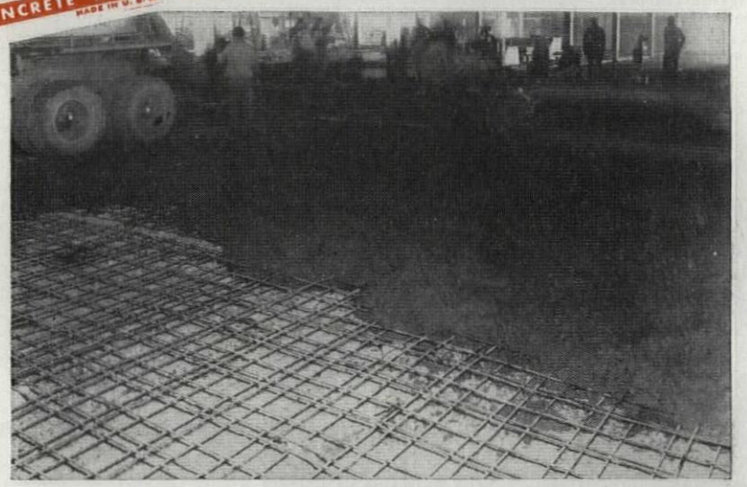
continued on p. 198

THESE NEW BUILDINGS, part of the redevelopment of Pittsburgh, Pennsylvania, have short-span floors reinforced with American Welded Wire Fabric.



AMERICAN WELDED WIRE FABRIC reinforced short span floors mean speed in building construction.

ALL 14 BUILDINGS in Rockefeller Center, New York City, have floors reinforced with American Welded Wire Fabric. This high quality fabric comes in prefabricated rolls, wound on large mandrels in any style you need.



FACTORY FLOORS—pounded day after day by heavy traffic and vibration—need the extra protection of American Welded Wire Fabric.

It's American Welded Wire Fabric for the strongest concrete

● Don't worry about the strength or durability of your concrete work if you reinforce it with American Welded Wire Fabric. American Fabric doesn't just meet the new ASTM Specifications A185-53T; it often *exceeds* them. It assures you an extra margin of safety in concrete walls, floor slabs, driveways and roofs, whether they are pre-cast or poured at the job site.

We make sure our fabric is the best quality by rigid inspections that check size and spacing of wires, soundness of welds, and strength of the finished product. This assures you high quality concrete work that is just as strong and crack-resistant as you designed it.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

EVERY TYPE OF REINFORCED CONCRETE CONSTRUCTION NEEDS

USS AMERICAN WELDED WIRE FABRIC

UNITED STATES STEEL

DUCT FITTINGS. Interlocking seams on *Duc Pac* galvanized metal duct fittings make bends, folds and hammering unnecessary. A sheet-metal worker can assemble any prescribed air-conditioning ductwork with the stock components. Prices for a few of the many items: $2.71 for a 14″ x 8″ offset collar, $2.50 for a flat 90° elbow 4″ x 8″, and $5.52 for a 24″ x 8″ trunk duct. *Swett Bros., Duc Pac Div., 78 Island Pond Rd., Springfield, Mass.* (April '54, p. 190).

SLOTTED DUCT VANES. These packaged vane runners with slotted knobs reduce the sheet-metal handicraft necessary for air-conditioning ducts. Blades are cut from scrap, the vanes locked in place with shears or hammer, and the assembly screw-fastened into an elbow for a rattleproof job. Runners are 24-ga. galvanized steel, and come in bundles of 20 8′ lengths at $32 F.O.B. plant. *Elgen Mfg. Corp., 31-34 39th St., Long Island City 4, N.Y.* (April '54, p. 196).

Insulation

GLASS FIBER. Firesafe and rotproof, *Aerocor Fiberglas* products fit any conceivable insulation job. *Aerowrap*, a soft padding, wraps around cold and hot pipes. Covering a 4″ line with 1″-thick material and aluminum jacket costs about 50¢ per lin. ft. *Flexible Duct Insulation*, a lightweight thermal and acoustical mat, is used on warm-air or air-conditioning ducts. It is 5¢ to 35¢ per sq. ft., depending on thickness, density and type of facing. Applied inside ductwork, *Flexible Duct Liner* makes the metal walls act as their own vapor barrier. According to thickness, prices are 16¢ to 26¢ per sq. ft. *Metal Building Insulation* is a resilient blanket bonded with resin for use between metal siding or roofing and structural members. It is 5¢ to 15¢ per sq. ft. Fluffy, porous *Sonocor* rolls and precut pads for acoustical ceilings have high sound absorption. *Owens-Corning Fiberglas Corp., Nicholas Bldg., Toledo, Ohio* (Jan. '54, p. 208).

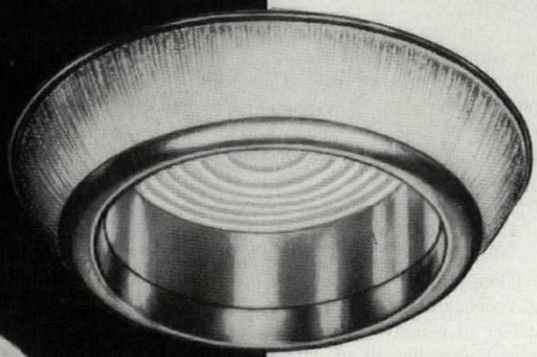
A glass-fiber core in a .016″ aluminum jacket, *Met-L-Glass* pipe insulation is virtually impervious to weather. Applied to outdoor lines at a density of 6 lb. per cu. ft., the jacketed blanket costs 45¢ to $6.60 per lin. ft. depending on size. The aluminum sheath is available separately at 22¢ to $1.85 per lin. ft. for recovering existing insulation. *Met-L-Glass Corp., 2220 25th St. S., Seattle 44*, Wash. (Dec. '53, p. 166).

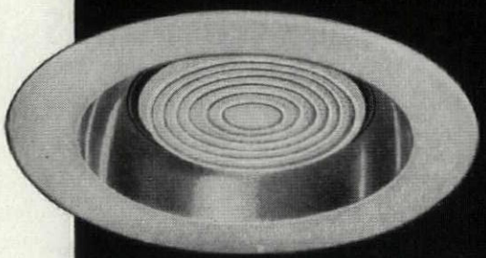
PETROLEUM GRANULES. *Gilsulate* solidified petroleum insulation protects underground pipes from corrosion and root attacks. Similar to asphalt, the granulets are poured into shallow trenches around the pipes, tamped down and back-filled. Hot fluid or steam, run through the line, fuses the inner layer in a dense semiplastic. Around this form two other thermal layers. No sheath is needed; multiple runs and bends are insulated as easily as single straight pipes. Over-all cost is said to be $5 to $30 less per lin. ft. than comparable materials. *American Gilsonite Co., 248 S. Main St., Salt Lake City, Utah* (Nov. '53, p. 204).

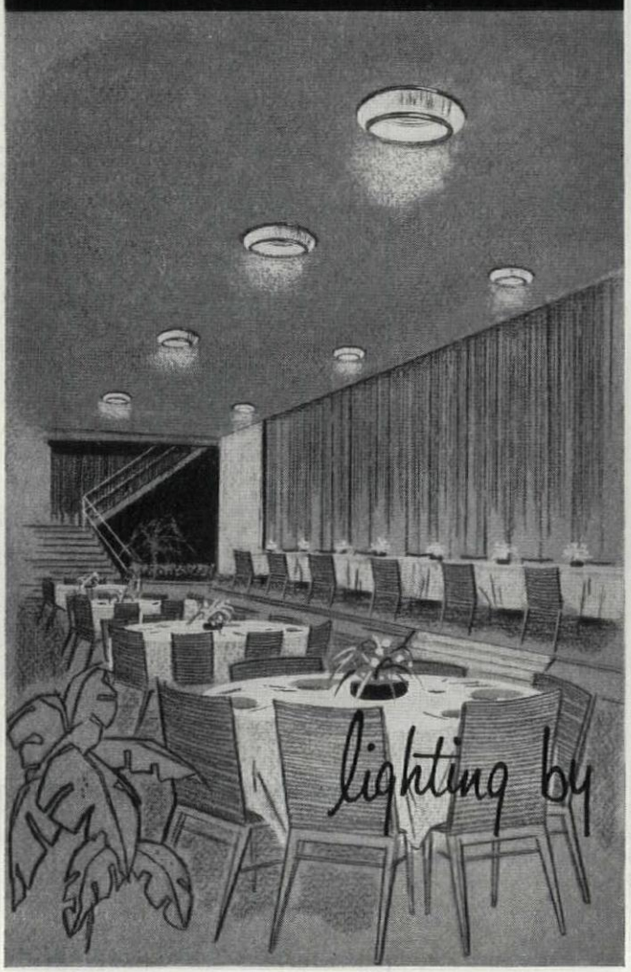
INCOMBUSTIBLE VAPOR BARRIER. Plastic vapor barrier which chars at 350° F. but does not support combustion reduces the hazard of factory fires. Tough, flexible film, .004″ thick, is made of special *Koroseal*, costs 2½¢ to 3¢ per sq. ft. Special adhesive for sealing joints costs about $1.75 per gal., may also be used for securing film to deck. *Lexsuco, Inc., 4815 Lexington Ave., Cleveland 5, Ohio* (July '54, p. 206).

continued on p. 200

fresh new feeling in *functional lighting*







decorative calculites

Efficient recessed downlights . . . now with a fresh decorative appeal that makes them doubly-effective for showrooms, restaurants, reception areas, residences. Gleaming brass and sparkling, champagne-tinted glass add a feeling of warmth and elegance. Colouvered® lens and alumilite reflectors assure maximum light output without side glare. Torsiontite® hinges, pre-wired adjustable construction permit quick installation, easy maintenance. Fiberglas gaskets reduce convection currents, eliminate ceiling dust streaks. These designs help solve the often perplexing problem of specifying efficient lighting that is also a decorative accent.

Write today for a complete portfolio of Architectural Lighting by Lightolier.

LIGHTOLIER

Jersey City 5, N. J.

Preferred by Architects, Interior Designers and Illuminating Engineers for Fifty Years.

50

NEW PRODUCTS REVIEW *continued*

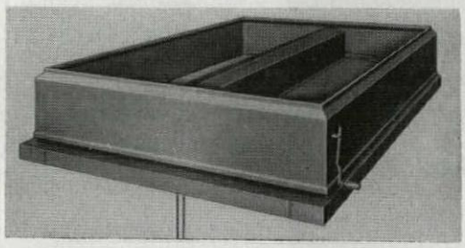
Sound control

ACOUSTIC TILE. Each recessed perforation on *Terne-coustic* metal tile acts as a tiny funnel, channeling noises to insulation pads above. These round-edged orifices do not scrape water during cleaning, instead prevent dirty water from backing up. Tile pad and suspension system cost about 30¢ psf plus 25¢ to 35¢ for labor. *Terne-coustic* ceilings have a .90 noise-reduction coefficient. *Tach-Fast Mfg. Co., Lonaconing, Md.* (April '54, p. 208).

The usual boxy appearance of acoustical tile wall and ceilings are camouflaged by *Minatone*'s scatter perforation. Highly absorptive and incombustible, the tile is usable wherever codes stipulate firesafe material. Coated with light-reflecting white paint, it comes in 1′ x 1′ and 1′ x 2′ sizes. *Armstrong Cork Co., Lancaster, Pa.* (March '54, p. 256).

Random-grooved *Stria* sound-control tile works into many decorative patterns. Its highly porous surface of compressed glass fiber gives it a noise-reduction coefficient of .80. Firesafe, dimensionally stable and rotproof, the striated tile comes in 1′ squares and 1′ x 2′ size, and installs for 50¢ to 65¢ psf. *Owens-Corning Fiberglas Corp., Nicholas Blvd., Toledo 1, Ohio* (March '54, p. 244).

Fire control



ROOF FIRE VENT. *Fire Valve* is a packaged metal unit fitting a 9′-9″ x 5′-9″ roof opening. When fire melts the 160° fusible links, dampers drop by their own weight, providing a clear opening of 46 sq. ft. for escape of heat and gases. Unit can also be used as roof ventilator. Prices: $190 in galvanized steel, $285 in aluminum. *Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio* (July '54, p. 214).

Flooring

CONDUCTIVE TILE. Conductive flooring is regarded generally as one essential safety material for hospital operating rooms where volatile anesthetic gases are used. Three conductive tile products recently marketed are made for just such locations. One type is vitreous ceramic. Pigmented warm brown, the 9/16″ squares are installed for $2.50 psf. *Mosaic Tile Co., Zanesville, Ohio.* (Sept. '53, p. 232).

A terrazzo-patterned ¼″ vinyl which is laid dry over any kind of subfloor, *Lifetime* tile conducts static electricity through its butted edges and via a layer of aluminum foil beneath the waffle-back units. It is made in three pastel tones in 9″ and 1′ squares, and costs $2.50 psf in place. *Robbins Floor Products, Tuscumbia, Ala.* (Sept. '53, p. 232).

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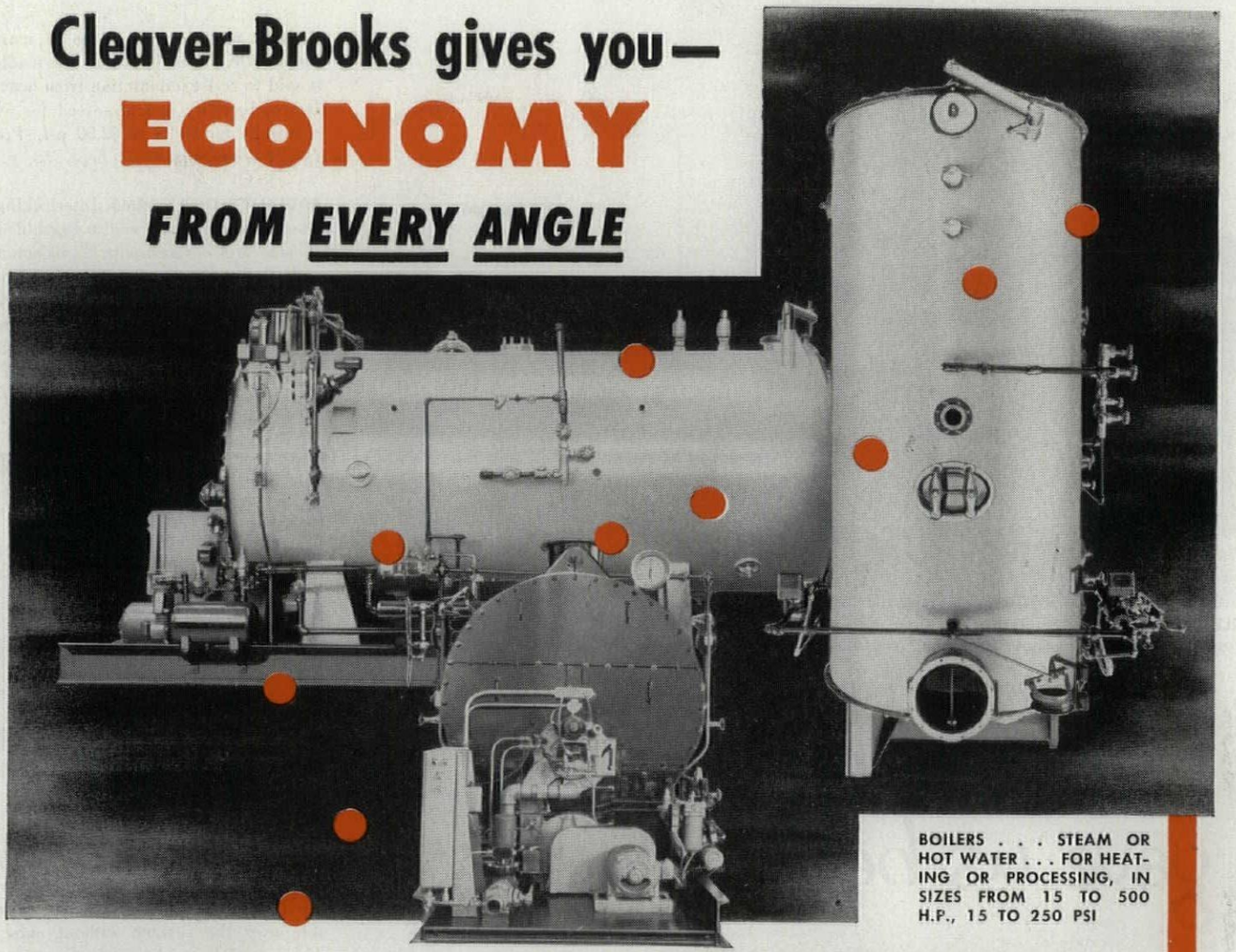
Cleaver-Brooks gives you—

ECONOMY

FROM EVERY ANGLE



BOILERS . . . STEAM OR HOT WATER . . . FOR HEATING OR PROCESSING, IN SIZES FROM 15 TO 500 H.P., 15 TO 250 PSI

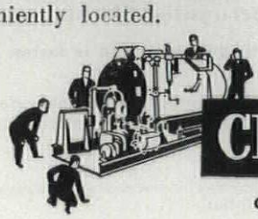
Use this guide to plan present and future boiler installations

Here are basic reasons why Cleaver-Brooks self-contained boilers SAVE money wherever installed. Remember these advantages when expanding your present plant or replacing obsolete boilers. For complete details, write for catalog AD-100, Cleaver-Brooks Co., Dept. J, 336 E. Keefe Avenue, Milwaukee 12, Wisconsin, U.S.A. — *Cable address: CLEBRO — Milwaukee — all codes.*

- **SAVES FUEL** — greatest efficiency and fuel economy through high-heat transfer of four-pass, forced draft boiler design.
- **SAVES SPACE** — boilers are compactly self-contained. Use less boiler room area. Fit into low headroom locations.
- **SAVES SERVICE** — factory assembled with trouble-free, quality components. Tested and backed by Cleaver-Brooks' one-source responsibility. ASME code constructed.
- **SAVES MAINTENANCE** — oil, gas or combination oil/gas firing eliminates bulky fuel handling. Designed for easy cleaning and inspection.
- **SAVES EXPENSE OF SPECIAL EQUIPMENT** — boilers available for hot water or steam service . . . heating or processing applications.
- **SAVES INSTALLATION COSTS** — no special foundation needed. Set boiler on existing concrete floor. Simple, roof-high vent eliminates costly smoke stack. Service connections conveniently located.
- **SAVES THRU FUEL FLEXIBILITY** — uses most economical and available fuel in your area. Exclusive burner permits 10-second gas/oil interchange.
- **SAVES BY QUICK STEAMING** — meets fluctuating steam loads automatically. Electronic controls start and stop burner. Safety controls assure 100% protection.
- **SAVES MANPOWER** — fully automatic operation. All controls easily accessible and all normal maintenance can be done by men without special training.
- **SAVES PLANNING TIME** — standard design in 15 to 500 hp; 15 to 250 psi gives you custom planning for single or multiple units.

IT PAYS TO PLAN FROM *ALL ANGLES* TO GET GREATEST BOILER ECONOMY — PLAN WITH CLEAVER-BROOKS — WRITE FOR DATA TODAY

"It's NEW — get the facts on the CB boiler — write today!"



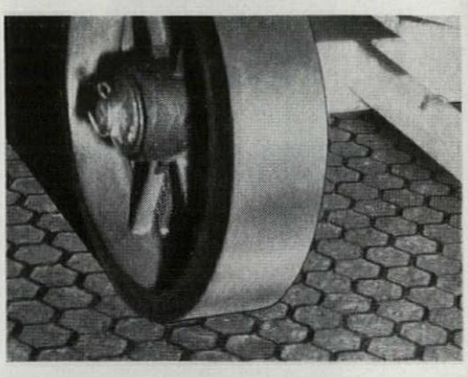
Cleaver Brooks

ORIGINATORS OF THE SELF-CONTAINED BOILER

NEW PRODUCTS REVIEW *continued*

Another resilient tile is the 9" marble-patterned *Conductile.* This ⅛"-thick thermoplastic flooring is said to resist indentation from heavy equipment. Its conductivity is guaranteed for five years, and it installs for $2.25 to $2.50 psf. *Vinyl Products, Inc., Sheboygan, Wis.* (Sept. '53, p. 232).

RADIANT FLOOR FORMS. Interlocking metal forms shaped like groined vaults assembled on top of a 2" slab and covered with 2" of concrete result in a 7¼" floor with a continuous plenum for heating or cooling. Continuous baseboard registers or standard floor or wall registers may be used. Forms of 26-ga. steel are 1' square by 3¼" high, weigh 1 lb. and cost 34¢ each F.O.B. *Airfloor Company of California, Inc., 8620 Otis St., South Gate, Calif.* (July '54, p. 210).



INDUSTRIAL FLOOR. Heavy steel mesh and resilient topping are combined in *Steel-Rock* packaged flooring to withstand impact and loads for the life of the building. The cushioning filler compacts to the level of the armor grid so truck wheels can ride over the surface without noise or slipping. The material may be applied on wood or concrete surfaces, new or old, indoors or out. *Steel-Rock* costs 80¢ to $1.20 psf depending on depth of reinforcing, plus 30¢ to 50¢ for labor. *United Laboratories, Inc., 16801 Euclid Ave., Cleveland 12, Ohio* (March '54, p. 262).

SLIPPROOF SURFACING. Treating treacherous floors, steps and ramps with *Safety-Walk* can ward off many foot-traffic accidents. This durable gritty material is a tough waterproof fabric coated with synthetic grains. It comes in various shapes and sizes in two types: *Type B,* with pressure-sensitive adhesive, goes on like tape; *Type A,* prepared for rough concrete, is applied with liquid adhesive. *Safety Walk* strips for a 12-strip stairway cost $6.60. *Minnesota Mining & Mfg. Co., 900 Fauquier Ave., St. Paul, Minn.* (Jan. '54, p. 200).

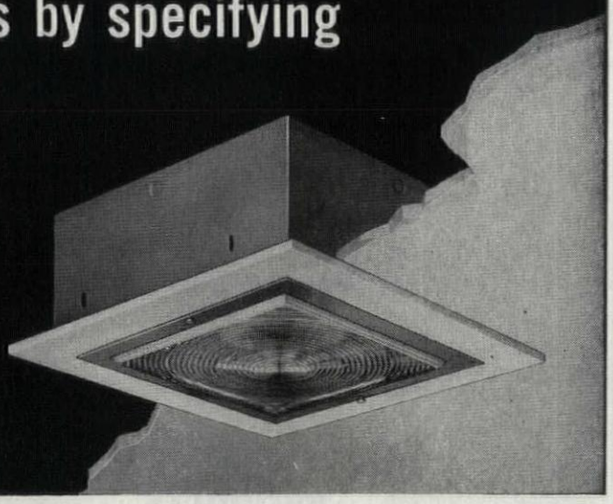
ALUMINUM SAFETY TREADS. *Stairmaster* extruded aluminum treads brighten all types of worn stairs and add life and safety to new ones. Firmly embedded in the metal ribs of the 9"-deep units is a black abrasive antislip compound. Treads are precut to any length. *Wooster Products, Inc., Wooster, Ohio* (April '54, p. 202).

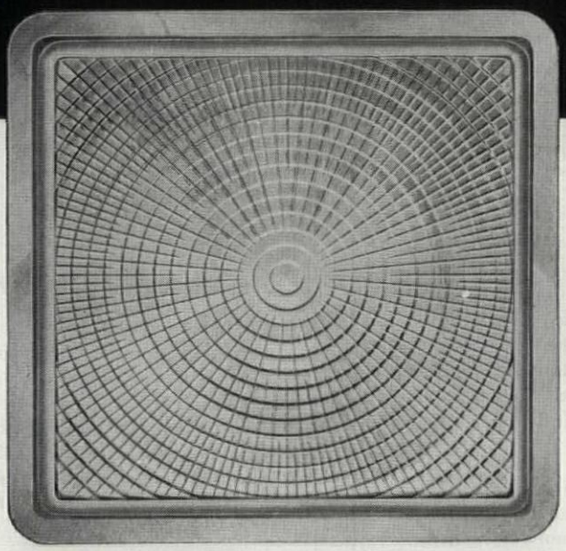
CORK-NEOPRENE SANDWICH. Eliminating costly bolting of machinery, and engines to floors, *VPS Elasto Rib Dampers* add flexibility to heavy industrial equipment. The cork and synthetic rubber sandwich impedes noise and vibration, and its deep grooves keep heavy machinery from creeping. *VPS* runs $1.20 for 2" squares (for 200-lb.

continued on p. 204

Offer clients these benefits by specifying

ART METAL advanced ELIPTISQUARE

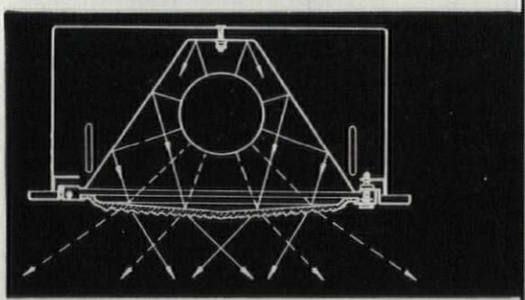




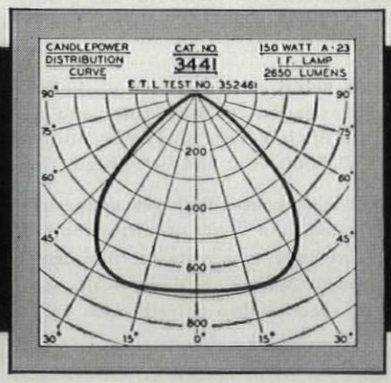
with clear, prismatic AMCOLENS

- Lighted objects reflect their true color value
- Highest light transmission efficiency
- Precise light direction control
- Edge light to ceiling for visual comfort
- Shallow recessed lens lighting

advanced ELIPTISQUARE
Multiplies Light Output



Eliptisquare reflector redirects *all* box-enclosed light downward through AMCOLENS to multiply lamp light utilization.



Please notice that the candlepower distribution curve is by Electrical Testing Laboratories, Inc., not The ART METAL Company.

May we send Bulletin 254 which gives complete details? Please write:

THE **ART METAL** COMPANY
CLEVELAND 3, OHIO

Manufacturers of Engineered Incandescent Lighting

loads) up to $12 for 1' squares (for 8,500 lb.). *The Korfund Co., Inc., 48-15 32nd Pl., Long Island City 1, N.Y.* (April '54, p. 230).

Wall coverings

WOOD VENEER. A natural material handled naturally, *Randomwood* flexible hardwood wall covering plays up irregularities in grain shadings and markings. The gauze-backed 1/85" veneer is paste-applied over any smooth surface like wallpaper. It can be purchased in walnut, mahogany, tulip, oak, birch and tigerwood at 50¢ psf. Sheets are 15" wide, 8' and 10' long. *US Plywood Corp., Weldwood Bldg., New York 36, N. Y.* (June '54, p. 204).

FABRICS. Laminated to the backs of Ruskin textured wall coverings are layers of foam rubber, sponge rubber or felt. These cushioned backings act as sound absorbers and also make it possible to use the woven fabrics for tackboards. Prices run from $2.25 per yd. for 36"-wide jute with felt backing to $3.18 for a 36"-wide basketweave with foam rubber. Color choice is excellent. *B. F. Ruskin & Co., 1410 Wood Rd., New York 62, N. Y.* (April '54, p. 208).

Finishes and compounds

MASONRY PRIMER. A good finish for hard-to-paint porous masonry is said to be assured with Medusa's *Ruf-Seal* cement paint. Developed particularly for lightweight aggregate masonry, the white primer is worked into the surface with a scrub brush and cured like regular cement paint with a fine water spray. A 25-lb. package sells for $5.75. *Medusa Portland Cement Co., 1000 Midland Bldg., Cleveland, Ohio* (Oct. '53, p. 250).

LATEX ENAMEL. Drying quickly to a durable, washable finish, *Spred Gloss* latex base enamel has no odor and so can be applied in closed rooms without disagreeable effect. The tough coating is ideal for woodwork exposed to constant finger smudging. It sells for $6.95 per gal, which covers about 450 sq. ft. *The Glidden Co., Union Commercial Bldg., Cleveland, Ohio* (Oct. '52, p. 246).

CANNED SILICONE. After 24 hours at room temperature, *RTV Silastic* canned calking develops all the favorable properties of silicone rubber: temperature stability, water repellency and chemical resistance. The compound is shipped as two components which, when mixed, create a heatless vulcanizing action, setting the material in four hours, curing it in 24. *RTV* costs about half as much as molded or extruded silicones. *Dow Corning Corp., Midland, Mich.* (April '54, p. 224).

TILE MASTIC. Performance-tested by acoustical engineers, *Accu-mastic* tile-buttering agent creates a lasting bond yet stays pliable enough to withstand stress. Nonslumping, the new mastic does not string out over tile faces. It sells for $1 per gal. *Dicks-Pontius Co., 5300 Hubrol., Dayton, Ohio* (June '54, p. 216).

SPRAYED PLASTIC. *Delrac Transparent*, sprayed on fresh concrete, forms a hard, smooth, waterproof seal which enforces a long slow cure without further attention. Material can also be sprayed on

continued on p. 206

freshly plastered walls to permit early painting. It is made of chlorinated rubber and sells for $6 per gal. *Delrac Corp., 142 Mill St., Watertown, N. Y.* (July '54, p. 218).

Furniture and fixtures

SCHOOL CABINETS. These comely, rugged cabinets and bookshelves adapt to modern teaching demands for flexibility. The interchangeable knockdown panels are easily put together, taken apart and rearranged—all with a screw driver. A basic single-compartment assembly is about $51 delivered; a four-compartment, $115. Surfaces are coated with yellow, gray or turquoise melamine. *The Brunswick-Balke-Collender Co., 623 S. Wabash Ave., Chicago 5, Ill.* (May '54, p. 218).

TABLE AND BENCH. Forty tots or 32 teen-agers can sit comfortably at the *MobilFold*, a pair of 14′ tables and four 14′ benches. Folding out and into an attached caster-equipped truck, the six pieces can be stored against a wall. Ruggedly constructed of tubular steel with plastic-faced ¾″ plywood tops, the set sells for $550 F.O.B. Detroit. *Schieber Sales Co., 12955 Inkster Rd., Detroit, Mich.* (Oct. '53, p. 250).

STAGE. A boon to multiuse schoolrooms, the *Horn* stage rolls into position and is secured with floor stops. When no longer needed, it accordions and is stored away. Widths of 6′ up to 16′ are available and prices average $4.50 psf for the 15″-high model and $5 for the 24″, including delivery. The stage's select fir floor is mounted on a sturdy steel understructure. *The Brunswick-Balke-Collender Co., 623 S. Wabash Ave., Chicago, Ill.* (Oct. '53, p. 250).

MODULAR FURNITURE. Built of beautiful, rugged materials, Lehigh modular furniture is suitable for many contemporary offices. Plastic-impregnated hardwood covers desktops and pedestals; hardware and legs are lacquered black. *Lehigh Furniture Corp., 16 E. 53rd St., New York, N.Y.* (Dec. '53, p. 168).

NOTCHED TABLE. Eugene Korda's sawtoothed conference table gives 18 people around it a personal "desk" and a comfortable view of the speaker or presentation up front. The 18′-3″-long plastic-surfaced table costs $1,600; others are $1,000 to $1,800. *Korda Industries, 20 W. 46 St., New York 36, N. Y.* (Dec. '53, p. 168).

STORE FIXTURES. A few turns of a screw driver securely locks shelf brackets and merchandise fittings at any height in metal channel uprights in the flexible *Vizusell* display fixtures. Light-, regular- and heavy-duty brackets (providing 4″ to 26″ support for glass or wood shelves), channels in lengths up to 7′ and a full line of fittings make up the sturdy, crisp-looking line. Displays are easily altered for new merchandise. *L. A. Darling Co., Bronson, Mich.* (April '54, p. 202).

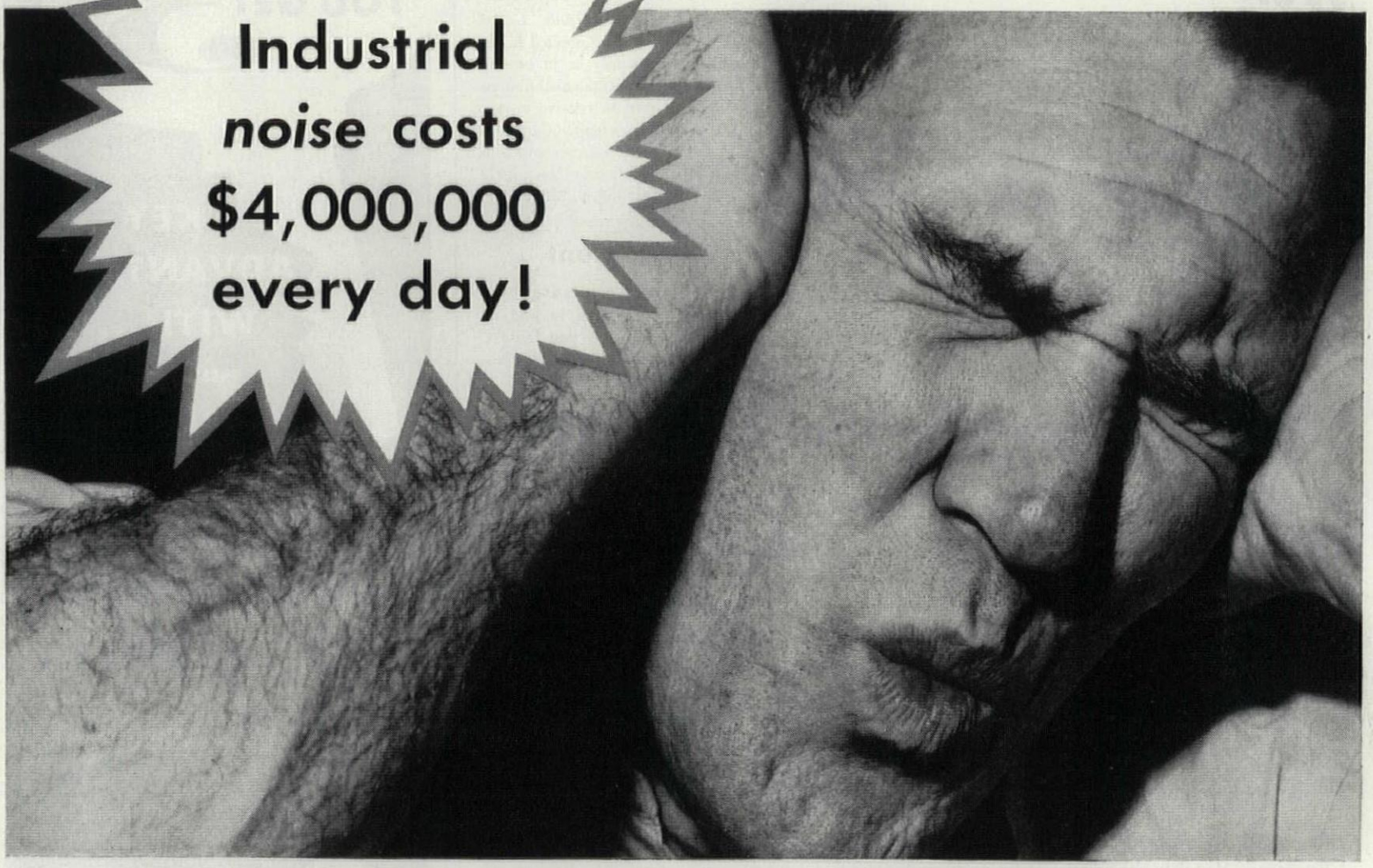
FURNITURE RESTS. Designed to eliminate objectionable indentation of resilient flooring, *Furniture Rests* come in four sizes for various loads and flooring materials. Three types of attachment are offered for wood or tubular metal legs. All have ball and socket joints to assure even bearing. Prices vary according to size from 65¢ to $1.10 for

Continued on p. 206

Fenestra 50 YEARS OF BUILDING PRODUCT LEADERSHIP

"A salute to those who made it possible" *

Industrial *noise* costs $4,000,000 every day!



You know all the losses industrial noise can bring—worker fatigue, absenteeism, labor turnover, accidents—$4,000,000-a-day worth! But *you* can avoid them if you keep one basic idea in mind when you *plan* your building.

It's a wonderful *new* building idea called Fenestra* Acoustical Holorib. It's a *combination* acoustical-structural roof.

And it costs as little as *75 cents per sq. ft.... installed!*

In one compact unit you get: (1) perforated, heavy, 18-gauge Holorib Steel Deck, which provides a smooth-finished, metal-faced interior ceiling (2) sound-absorbing element which also provides efficient heat insulation (3) strong steel surface for support of 1" wood fiber insulation and finished roofing.

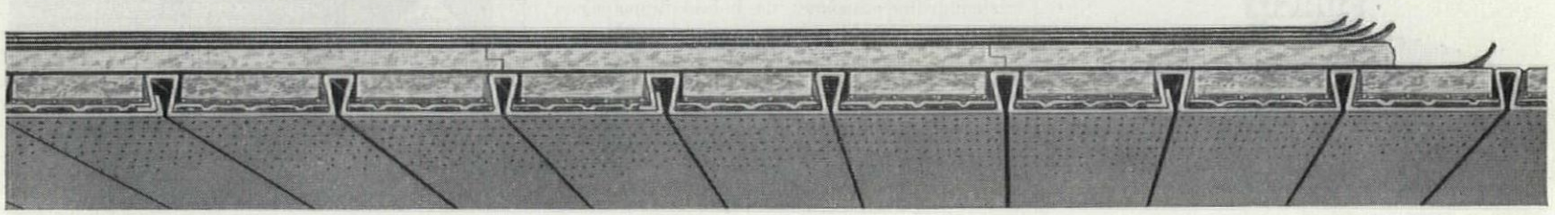
Holorib is lightweight. It saves you building time, labor, materials and money. It's almost maintenance-free but, if you want to, you can wash or paint it time after time without cutting its acoustical efficiency a bit. And it is *noncombustible!*

There is *no* comparable building material. That's why you'll find Acoustical Holorib Roof Deck in the General Motors Technical Center, Warren, Michigan; Standard Pressed Steel Company, Jenkintown, Pennsylvania; Simmons Saw & File Company, Fitchburg, Massachusetts, and many other modern structures.

Write today for complete information—or have your architect write—and check on Fenestra floor panels and wall panels. Fenestra Metal Building Panels speed building and lessen the need for structural steel. Write E. A. Miller, Manager, Building Panel Division, Detroit Steel Products Company, Dept. AF-8, 2296 East Grand Boulevard, Detroit 11, Michigan. *Trademark

Fenestra | **METAL BUILDING PANELS**

* Your need for a maintenance-free, noncombustible, built-in acoustical treatment encouraged us to develop Fenestra Acoustical-Structural Building Panels—a great advancement in building products.



NEW PRODUCTS REVIEW *continued*

set of four. *Armstrong Cork Co., Lancaster, Pa.* (July '54, p. 218).

LIBRARY CUBICLE. Prefabricated *Study Carrel* weighs less than 100 lb., and can be erected in ten minutes without tools. Used singly or in groups, the 4' x 4' "office" provides desk, concealed fluorescent light, bookshelf and space to receive visitor. Homasote walls are sound-absorbent. *Carrel* is finished in neutral gray washable lacquer and sells for $215 F.O.B. *Design & Production, Inc., 1912 Duke St., Alexandria, Va.* (July '54, p. 222).

Playground equipment

SCULPTURAL GYM. These dynamic, pleasing sculptural forms are actually play places in and on which children can exercise muscle and fantasy. Safely engineered of modern building materials—concrete, plastic, glass fiber, steel—the esthetic constructions by international artists and architects combine athletic values of slides and gyms while adding eye interest to playgrounds. Models are priced from $300 up to $3,500. *Creative Playthings, Inc., 5 University Pl., New York, N. Y.* (Oct. '53, p. 246).

SPRINGY COATING. An antiskid cushioned surface, *Parafall* absorbs the shock of a child's spill from jungle gym, swing or seesaw. Applied like black-top, the blanket consists of a bottom pad of long-lived springy rubber particles poured on the existing surface, a resilient membrane, and a spray- or trowel-applied tough rubbery coat. Called *Parascuff*, this final topping can be used alone on slippery spots indoors and out. *Parafall* is 79¢ psf for 1" depth, $1.35 for 3"; *Parascuff* is 8¢ to 15¢. *Southern Chemicals, Inc., 5225 Wilshire, Los Angeles 36, Calif.* (Dec. '53, p. 176).

Appliances

COMPLETE KITCHENS. Where there is little space for food preparation—in a motel, small apartment or classroom—combination appliances are most welcome. The 42"-wide *General Chef* features a double sink, 6 cu. ft. refrigerator, broiler and range. Acme National's 30"-wide kitchen unit has a large, stainless-steel sink and two-burner range set over a 5 cu. ft. refrigerator. Both appliances are made in gas and electric models. *General Air-Conditioning Corp., E. Dunham St., Los Angeles, Calif. Acme-National Refrigeration, Inc., 40th Ave., Long Island City, N. Y.* (Feb. '54, p. 222).

LAVATORY WATER HEATER. Inside the compact cabinet for this porcelain sink is an insulated, 5-gal. water heater. Suitable for motels, stores and other buildings where it is impractical to run lengthy hot water lines, the dual UL-approved appliance retails for only $109.50. *Bowen Water Heater Div., Handling Equipment Mfg. Corp., Wicsom, Mich.* (Feb. '54, p. 222).

FOOD DISPOSERS. To help restaurants achieve assembly-line economies, the In-Sink-Erator is now producing ½-hp high-capacity commercial grinders. Two models with stainless-steel hoppers can be placed in countertops. A third, for diet kitchens, attaches to a sink bowl. Prices: $240 to $300 F.O.B. Racine. *In-Sink-Erator Mfg. Co., 1225 14th St., Racine, Wis.* (April '54, p. 230).

continued on p. 214

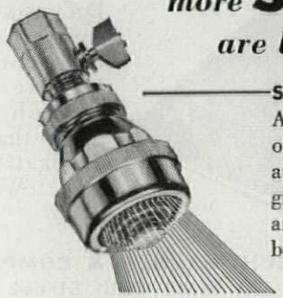
THE VAST MAJORITY OF THE NATION'S FINE BUILDINGS ARE SLOAN EQUIPPED

CLAUDE E. HOOTEN
architect
DE LAUREAL & MOSES
engineers
HAASE CONSTRUCTION CO., INC.
general contractor
JAMES F. O'NEILL CO.
plumbing contractor
CRANE CO.
plumbing wholesaler

Fresh air is supplied to individual air conditioning units through intake louvers on the exterior face of the new TEXACO *building, between the vertical fins which decrease the sun heat load. (See circle above.)*

17 STORIES - NO BASEMENT!

• If you were in New Orleans and stopped to admire the 17 stories of architectural beauty bearing the well-known name TEXACO you would have no reason to suspect that under this modern building there is *no basement.* Because the site was soggy soil it was necessary to drive clusters of concrete piling to a depth of 85 feet and set the welded steel building frame on top of the groups of piling. To reduce the building load the frame was enclosed within curtain walls of aluminum and glass, and the broad vertical section which carries the TEXACO sign was faced with porcelain enamel panels. On exposures subject to direct sunlight aluminum fins decrease the heat load and reduce air conditioning costs. Individual air conditioning units, automatically controlled, are located beneath window sills. Two 200-ton refrigerating machines and two gas-fired steam boilers deliver cooling and heating to these units. As in a high majority of notable buildings of all kinds throughout the nation, SLOAN *Flush* VALVES, famous for efficiency, durability and economy were installed throughout the new TEXACO building—more evidence of preference that explains why . . .

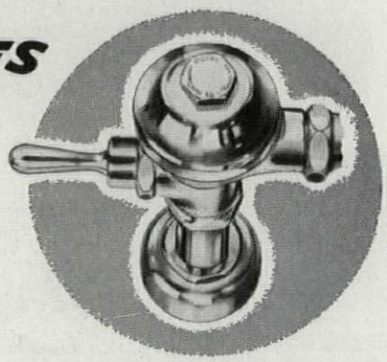


more **SLOAN** *Flush* **VALVES**
are bought than all other makes combined

SLOAN VALVE COMPANY • CHICAGO • ILLINOIS

Another achievement in efficiency, endurance and economy is the SLOAN *Act-O-Matic* SHOWER HEAD, which is automatically self-cleaning each time it is used! No clogging. No dripping. Architects specify, and Wholesalers and Master Plumbers recommend the *Act-O-Matic*—the better shower head for better bathing.

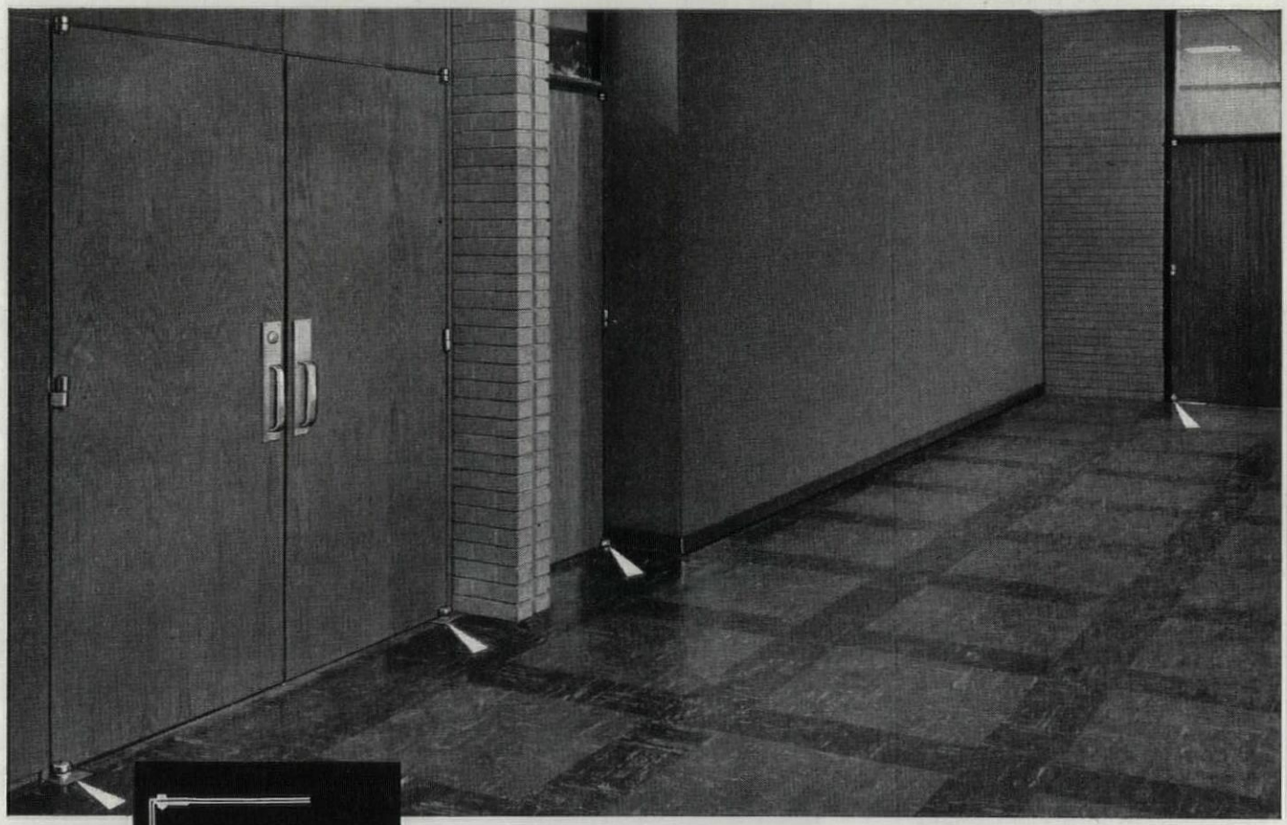
Write for completely descriptive folder

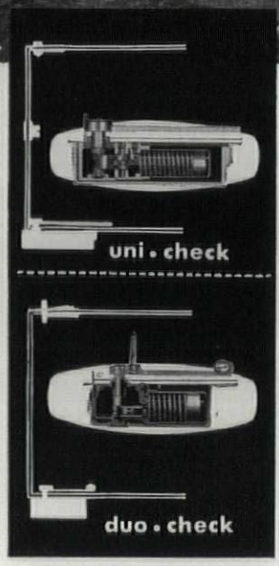


all interior room doors too!

...should close automatically with RIXSON closers concealed in the rigid floor

installed, they really cost no more





- *single acting* RIXSON **UNI•CHECKS** *for*
  School Classroom Doors • Hospital Patient Room Doors
  Office Room and Suite Doors • Toilet Room Doors • Cafeteria Doors
- *double acting* RIXSON **DUO•CHECKS** *for*
  Hospital Supply Room Doors • Hospital Utility Room Doors
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CONCEAL THE CLOSER AND EXPOSE THE BEAUTY OF THE DOOR
No unsightly arms or mechanism exposed to tampering—or dust and dirt.

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USING GENUINE Simpson ACOUSTICAL PRODUCTS
ACOUSTICAL CONTRACTORS

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Cramer Acoustics, San Francisco and Fresno

COLORADO
Construction Specialties Co., Denver

CONNECTICUT
Wilson Construction Company, East Hartford, Bridgeport

GEORGIA
Dumas and Searl, Inc., Atlanta

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The Baldus Co., Inc., Fort Wayne
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NEBRASKA
Kelley Asbestos Products Co., Omaha

NEW JERSEY
Kane Acoustical Co., Fairview

NEW MEXICO
Fiberglas Engineering & Supply Co., Albuquerque

NEW YORK
Davis Acoustical Corp., Albany
Davis-Fetch & Co., Inc., Buffalo, Rochester and Jamestown
Robert J. Harder, Inc., Lynbrook, L. I.
James A. Phillips, Inc., New York

NORTH CAROLINA
Bost Building Equipment Co., Charlotte

OHIO
R. B. Brunemann and Sons, Inc., Cincinnati
The Mid-West Acoustical & Supply Co., Cleveland, Akron, Columbus, Dayton, Springfield and Toledo

OKLAHOMA
Harold C. Parker & Co., Inc., Oklahoma City
Kelley Asbestos Products Co., Tulsa

OREGON
Acoustics Northwest, Inc., Portland
R. L. Elfstrom Co., Salem

PENNSYLVANIA
General Interiors Corporation, Pittsburgh

SOUTH CAROLINA
General Insulation & Acoustics, Inc., Columbia

TEXAS
Blue Diamond Company, Dallas
Fiberglas Engineering & Supply Co., El Paso
Otis Massey Co., Ltd., Houston
Builder's Service Co., Fort Worth

UTAH
Utah Pioneer Corporation, Salt Lake City

VIRGINIA
Manson-Smith Co., Inc., Richmond

WASHINGTON
Elliott Bay Lumber Co., Seattle
Fiberglas Engineering & Supply Co., Spokane

WISCONSIN
Building Service, Inc., Milwaukee

CANADA
Albion Lumber & Millwork Co., Ltd., Vancouver, B. C.
Hancock Lumber Limited, Edmonton, Alberta

these selected acoustical specialists are trained for efficient installation

The Simpson Certified Acoustical Contractors listed at the left are outstanding experts in the field of noise control. They have been selected by Simpson's acoustical staff as the foremost firms in each territory. Through constant inter-communication, periodic group meetings with Simpson experts, and on-the-job training of their mechanics, these acoustical contractors are amply qualified to make the best use of Simpson's fine acoustical materials . . . including the new *Forestone* fissured fiber tile. When you call in a Simpson Certified Acoustical Contractor you are assured of superior workmanship with superior materials.

Forestone INSTALLED *EXCLUSIVELY* BY

SIMPSON CERTIFIED ACOUSTICAL CONTRACTORS

ACA-C-44

amazing NEW development!

Forestone

FISSURED FIBER

ACOUSTICAL TILE

(PATENT PENDING)

FISSURED FOR BEAUTY...*FIBER* FOR ECONOMY

For the first time in history you can have an acoustical ceiling combining the rich, travertine-like charm of fissured tile with the economy of fiber tile. *Forestone*, an exclusive Simpson research development, has three basic advantages:

BEAUTY

Forestone has a natural look, creating a ceiling of architectural distinction. Its flame resistant finish has a *warm,* cream tone that blends with every type of wall and all decorative schemes. Available *square edge* as well as beveled, *Forestone* is the first fiber tile that permits an "overall" pattern without accentuated joints. Either beveled or square edge, the irregular, random-spaced fissures create a distinctive pattern of light-and-shade.

ECONOMY

Forestone has the basic economy of wood-fiber, with its low cost and ease of installation . . . the attractiveness and distinction of fissured mineral tile, but at much lower cost. Never before has the beauty of fissured tile been available in this price range.

EFFICIENCY

Forestone has high sound absorption, equivalent to fissured mineral tile or perforated fiber tile of equal thickness. *Forestone* is an efficient acoustical material that is beautiful and *economical.*

GUARANTEED

A written guarantee covering materials and workmanship is available.

EXCLUSIVE **WITH SIMPSON LOGGING COMPANY**
AT SHELTON, WASHINGTON

Address inquiries to Simpson Logging Company. 1010 White Building, Seattle 1, Washington

rely on Simpson

and Simpson Acoustical Contractors

NEW PRODUCTS REVIEW *continued*

Materials handling

AUTOMATIC LIFT. A small hydraulic lift for factory and warehouse loading platforms, the *Load-o-matic* starts to rise automatically when the wheels of a hand or motor truck touch a switchbar in the front of its 8'-6" x 4' platform. When the hinged ramp is level with the truck floor the lift stops, the plant truck is unloaded and backed onto the lift for the automatic descent. It has a 3-ton capacity and runs on a 3-hp motor. Price is about $1,800 F.O.B. plant. *Field Engineering Co., 66 Foote Ave., Jamestown, N. Y.* (Aug. '53, p. 190).

HALF-CAB TRUCK. Long pipe, lumber, structural steel and other construction materials usually toted by tractor or trailer can be accommodated on the Murty flat-top truck. Its cab is offset to make deck room for long, clumsy and heavy cargoes. The single-axle truck ($8,450) with 25' deck can carry 10 tons. The dual-drive ($12,200) with 30' deck will take 15 tons. Said to handle easily in traffic and parking, each model has a 150-hp engine. *Murty Bros., 906 E. Third Ave., Portland, Ore.* (Aug. '53, p. 190).

Maintenance

POWER BROOM. Whisking debris from floor to hopper, the heavy-duty 2-hp *Turbo-Sweep* can clean 40,000 sq. ft. an hour. The turbine-principle maintenance machine raises no cloud of dust, and all its controls are on a console within easy reach. Price F.O.B. plant is $648. *Parker Sweeper Co., 91-99 N. Bechtle Ave., Springfield, Ohio* (March '54, p. 262).

MAINTENANCE TOOL. Shooting a slug of compressed air, the *Hydraulic Water Ram* forces a column of water against solids clogging a drain pipe or sewer, disintegrating the trouble-maker. The *Ram* sells for $98, and is a useful maintenance item for big buildings where after a few uses it pays for itself in plumbers' calls. *Hydraulic Mfg. Co., Kiel, Wis.* (May '54, p. 220).

Instruments

PLASTIC RULE. By pushing the middle strip of the *Steel Beam Selector* slide rule, a designer can quickly determine the most economical laterally supported steel beams for a light construction job. The *Selector* sells for $4 with a simulated leather case. *Everett Rader Co., Box 122, Bowling Green Station, New York 4, N. Y.* (Nov. '53, p. 216).

There is a fine

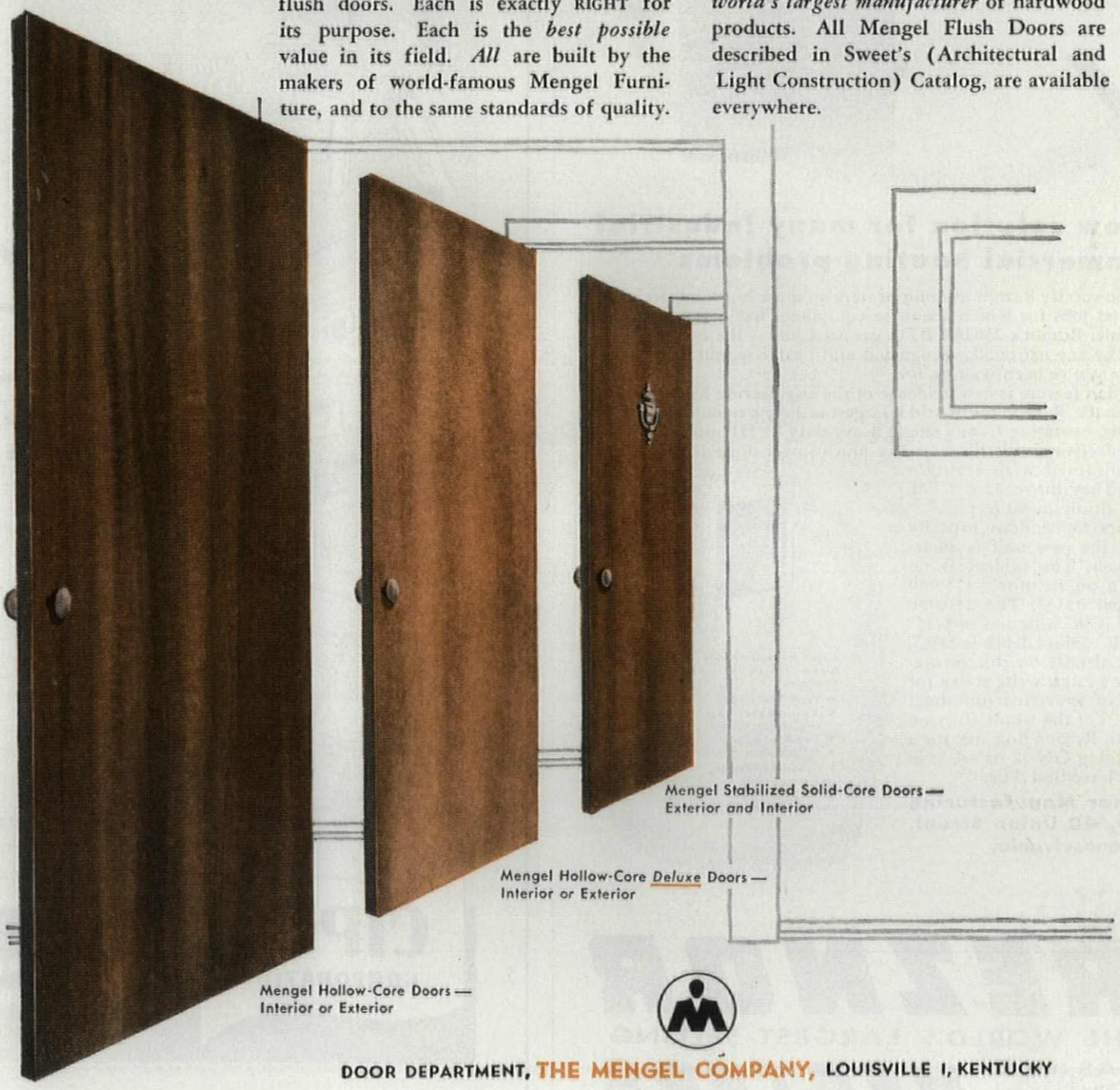
MENGEL FLUSH DOOR FOR EVERY DOOR OPENING—

Palace or Project!

What is the RIGHT door for any particular job? Is it the BEST door you can buy, or the CHEAPEST, or *what?*

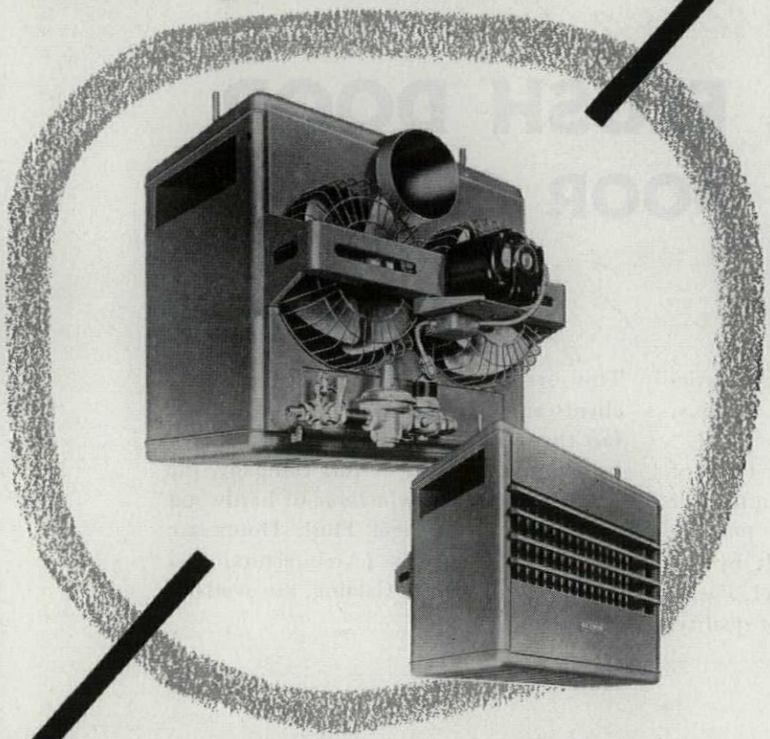
Mengel makes *three* distinct types of flush doors. Each is exactly RIGHT for its purpose. Each is the *best possible* value in its field. *All* are built by the makers of world-famous Mengel Furniture, and to the same standards of quality.

This MEANS SOMETHING to you, your clients and your customers—this, and the fact that every Mengel Door is guaranteed by all the resources of this company, the *world's largest manufacturer* of hardwood products. All Mengel Flush Doors are described in Sweet's (Architectural and Light Construction) Catalog, are available everywhere.



DOOR DEPARTMENT, THE MENGEL COMPANY, LOUISVILLE 1, KENTUCKY

NEW - Reznor's 250,000 BTU twin-fan gas unit heater



a new solution for many industrial and commercial heating problems

Now you can specify Reznor gas unit heaters on those big commercial and industrial jobs for which adequate equipment has never before been available. Reznor's 250,000 BTU gas-fired unit – the first of its size offered by any nationally-recognized unit heater manufacturer– is the heater you've been waiting for.

The twin-fan feature is new evidence of the engineering leadership which has made Reznor the world's largest-selling gas unit heater. The two fans, operating from a single heavy-duty 1/4 HP motor, provide more effective air distribution at a much lower noise level than could be obtained with a single larger fan. They move 3200 CFM with an air throw of 90 feet.

Despite its tremendous capacity and power, the new unit is amazingly compact. The cabinet is no higher than on Reznor's 175,000 BTU heater: 33½". The 250,000 BTU model is 36" wide and 40-3/16" deep overall; cabinet depth is 24⅝".

For more details on this revolutionary new heater, write today for your copy of specification sheet NPS-5401A. For the whole story on the complete Reznor line, ask for a copy of Catalog GN-52 or see it in Sweet's Architectural File.

The Reznor Manufacturing Company, 40 Union Street, Mercer, Pennsylvania.

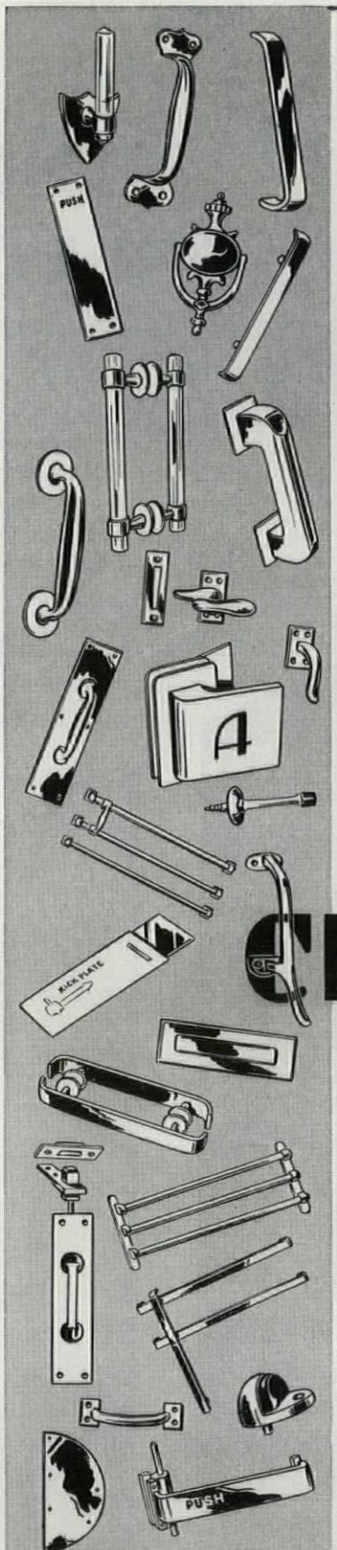
only Reznor room heaters have these 4 exclusive features

- Wall Thermostat
- Adjustable Vertical and Horizontal Louvres
- Two-Speed Fan
- Independent Fan Control

3 sizes—handsome, furniture-styled cabinets — for primary or supplemental heating in stores, offices and homes.

REZNOR

THE WORLD'S LARGEST-SELLING GAS UNIT HEATERS



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CIPCO BUILDERS HARDWARE

Manufacturers of fine Hardware for over 25 years

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Outstanding Apartment Building

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by

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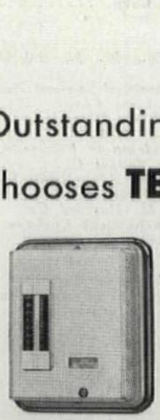
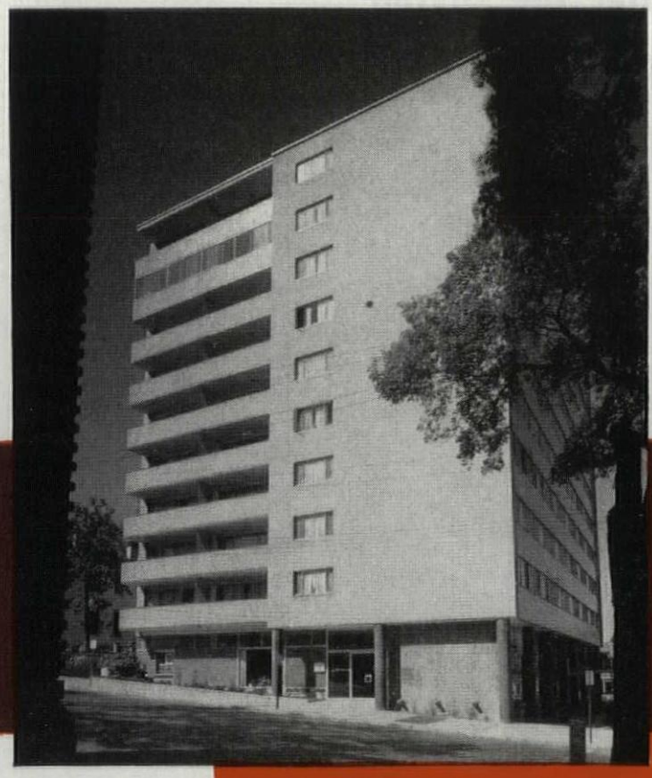




Walter Bragg Smith Apartments, Montgomery, Alabama. Sherlock, Smith & Adams, architects and mechanical engineers; Boddie & Johnson, Inc., heating and air conditioning contractors; all of Montgomery.

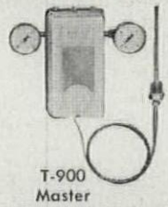
The modern Walter Bragg Smith apartment building has among its many desirable features year 'round air conditioning to provide all-weather comfort in each apartment.

Here is gracious living at its comfortable best! Weather is forgotten in the enjoyment of the refreshing, even temperatures that prevail throughout the building.

Behind the scenes, efficient Johnson Master-Submaster Control operates Johnson Valves and Damper Operators on the primary air system which supplies the individual room units in each apartment. With Johnson Control in command of the air conditioning equipment, indoor comfort remains the same *all the time.* And it's all done effortlessly—*automatically.*

For over 70 years, Johnson engineers have cooperated with building owners, engineers, architects and contractors in planning, manufacturing, installing and servicing of complete automatic control systems. With Johnson, all responsibility is centered in *one* highly specialized organization—the *only* way to insure the most efficient control installation for every type of building.

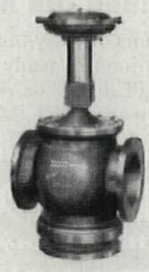
Ask a nearby Johnson engineer to make a survey of your problem. He will give you his recommendations without obligation. JOHNSON SERVICE COMPANY, Milwaukee 2, Wisconsin. Direct Branch Offices in Principal Cities.



T-900
Master
Thermostat

D-251
Piston Damper
Operator

T-901
Submaster
Thermostat



V-107
Three-Way
Mixing Valve

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TEMPERATURE ↕ AIR CONDITIONING

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A touch of independence that's welcomed

UNION COMMERCE BUILDING
Cleveland, Ohio

Operatorless elevatoring is another step in a progressive modernization program in the 21-story UNION COMMERCE BUILDING. The original signal control elevators were modernized in 1949 to Otis AUTOTRONIC supervision. Now, with the wide acceptance of the tenants, 19 elevators are being modernized to self-service.

UNION COMMERCE BUILDING is one of more than 175 new and modernized office buildings, hotels, hospitals, banks, and department stores that have given AUTOTRONIC elevatoring an overwhelming vote of confidence—by buying it!

Owned and Operated by Union Properties, Inc.

"How would my tenants react to operatorless elevators?"

This question is uppermost in the minds of building managers who are concerned with today's spiraling operational costs.

Why not ask your tenants?

Otis AUTOTRONIC elevators give tenants a sprightly feeling of independence. Riders simply step into the car and press buttons for the floors they want. Everything else is completely automatic.

We've found that tenants like the idea of self-service elevators. They push buttons for each other. They tell new riders what to do. Everybody's friendlier.

Tenants quickly accustom themselves to automatic door closing. The Otis Electronic Elevator Door inspires confidence with its "electronic politeness." A two-way communication system in the car keeps the riders from feeling alone. Employees feel more independent, especially when making frequent interfloor trips.

We'll be glad to help you explain Otis AUTOTRONIC elevatoring to your tenants. Call any of our 268 offices.

Otis Elevator Company, 260 11th Ave., New York 1, N. Y.

COMPLETELY AUTOMATIC
AUTOTRONIC®
ELEVATORING

McKnight Shopping Center

PITTSBURGH, PENNSYLVANIA

Architect: C. A. Lake, Pittsburgh, Pa.
General Contractor: Rose & Fisher, Pittsburgh, Pa.
Plumbing Contractor: Weldon & Kelly, Pittsburgh, Pa.
ELJER Wholesaler: Malone Plumbing Supply Co., Pittsburgh, Pa.

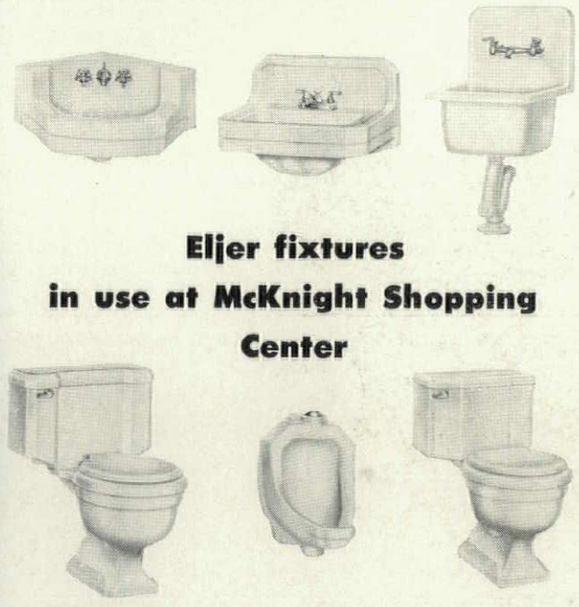
Eljer answers all plumbing fixture needs in this busy suburban development

Heavy store traffic and constant use demand top-quality plumbing equipment for retail centers like the one pictured above. To meet this requirement, more and more commercial buildings are being equipped with Eljer plumbing fixtures and brass fittings.

Quality is the keynote in all Eljer products. They are built to render long service, withstand heavy use. To insure this performance, Eljer fixtures and brass goods are made to rigid specifications, subjected to many performance tests. And all Eljer product materials are laboratory-controlled by modern scientific techniques.

Important! Only Eljer manufactures plumbing fixtures in all three materials—cast iron, vitreous china, and formed steel. All these materials are color-matched in a wide choice of styles and sizes. For commercial building, the architect will find Eljer fixtures and brass fittings to meet the needs of the most exacting job. You can specify with ease—and confidence—when you select Eljer plumbing fixtures and fittings.

For further information consult Sweet's Architectural and Light Construction files, or write Eljer Co., Box 192, Ford City, Pa.

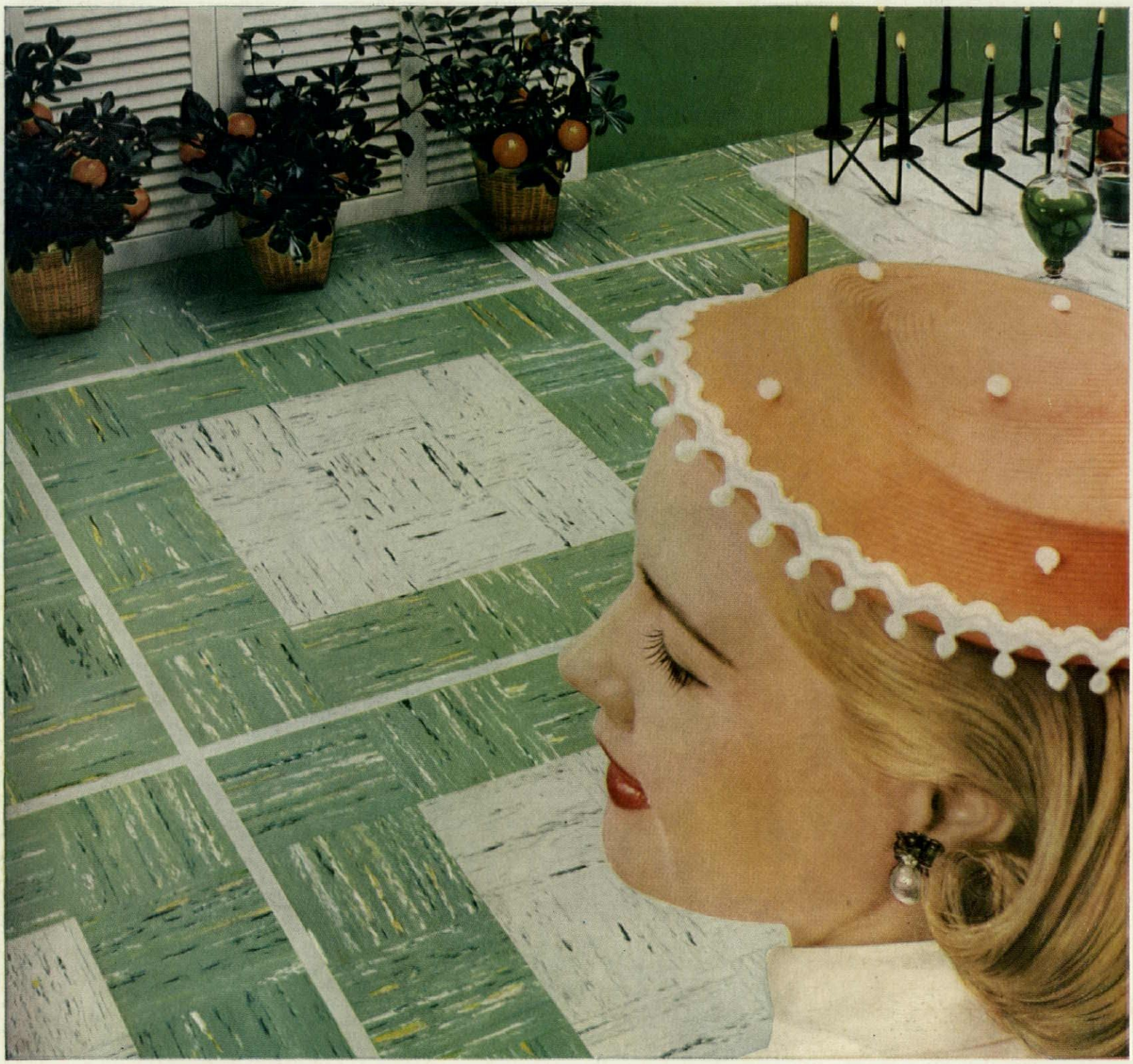


Eljer fixtures in use at McKnight Shopping Center

ELJER

A SUBSIDIARY OF THE MURRAY CORPORATION OF AMERICA

The only name you need to know in plumbing fixtures



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Write Department 6-8 for full details and specification data today.

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