AGAZINE OF BUILDING

# architectural forum

December 1954 complete

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St. John the Divine

Should this great Gothic cathedral be finished in contemporary architecture? (p. 112)

**Eight modern churches** 

Their widely different shapes are deeply rooted in the past (p. 118)

**Building engineering** 

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New kind of prison

It is designed to prevent riots, save money and reform criminals (p. 148)

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and a whole college planned from scratch (p. 132)

Glass bank

Its luminous ceilings light a golden partition and banish outside reflections

from its all-glass walls (p. 104 and below)









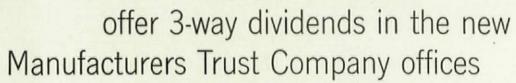




Vicrtex LINEN on the walls of this lounge means textural beauty and color that will stay fresh day after day, year after year!



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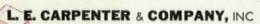




For the most dramatically new banking offices in the country, the decorator, Miss Eleanor LeMaire, chose VICRTEX V.E.F.\* FABRICS to add striking color . . . as well as business-like practicality. And no wonder-VICRTEX always looks fresh and sparkling in the busiest rooms and corridors . . . cleans with a swish of a damp cloth . . . a proven economy. In 20 deep-textured three-dimensional patterns and 36 fadeproof House & Garden colors, it can't chip, crack, peel or scuff . . . an investment in beauty with unlimited returns!

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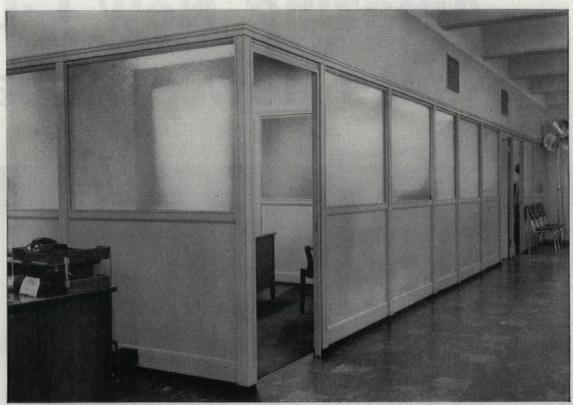
"vinyl electronically fused.

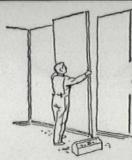


SALES OFFICE: Empire State Building, New York 1 • Longacre 4-0080 • MILLS: Wharton, New Jersey

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OFFICES . SCHOOLS . LABORATORIES . HOSPITALS . INDUSTRIAL PLANTS

# Amazing New L·O·F sets new standard

PLATE GLASS PARALLEL-O-PLATE GLASS THIS IS ORDINARY THIS IS L.O.F TWIN-GROUND THIS IS L.O.F TWIN-GROUND PARALLEL-O-PLATE GLASS

**Look at this comparison** between the reflections of the upside-down signs in the mirror of conventional plate glass (left) and the mirror of Parallel-O-Plate (right). This unretouched photograph dramatically illustrates the principle of parallelism.



# Parallel-O-Plate Glass for modern glazing!

- It's the finest plate glass ever made in America.
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For the past year, this amazing new glass has been reserved solely for fine mirrors and military optical instruments.

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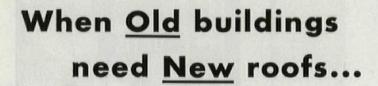
**Look at this comparison.** In the ordinary plate glass (left), see the distortion in the words on the marquee, the awning, the telephone pole. Then look at the Parallel-O-Plate (right). No distortion!

## Parallel-O-Plate Glass

Finest plate glass made in America... only by LIBBEY. OWENS. FORD a Great Name in Glass



Changes under way. Workmen begin demolition of cupola atop the Old Post Office Building in Halifax, N.S. The entire slate roof is scheduled to be replaced by an all-Monel standing seam batten roof.



In 1950, time ran out for the slate roof of the Old Post Office Building in Halifax, Nova Scotia.

So off came the slate — on went a fine new batten seam roof of Monel®.

The excellent resistance of Monel to the prevailing sea air and rugged winters had a lot to do with the choice of Monel Roofing Sheet in this location.

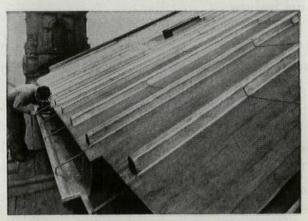
Today, more and more architects everywhere are writing "Monel Roofing Sheet" into their specifications. Why?

Because Monel can be counted on to serve long and dependably — anywhere. It is stronger and tougher than structural steel. It resists corrosion from the fumes and soot and grime of urban areas, the salt air of seacoasts, and the chemical-laden atmosphere of industrial towns. It stands extremes of heat and cold, wear and abrasion.

The architect who knows Monel seldom considers it expensive. True, it may cost more pound-for-pound than some other roofing metals. But when you keep in mind that a pound of Monel, by using thinner gauges, can cover a greater area, then the difference in cost per pound becomes unimportant. And the high physical and mechanical properties do let you figure



As work progresses, the roof takes on a more modern look. Among the considerations governing choice of Monel, was the well-known resistance of this rugged nickel-copper alloy to salt air.



Finishing touches. Neat and perfectly water-tight seams in Monel present no problems. It is as easy for roofers and sheet metal contractors to do a workmanlike job in Monel as in any other kind of sheet.

on thinner gauges - without sacrificing corrosion resistance, strength, toughness or rigidity.

In fact, it's often possible to save money for a client by using Monel.

Want proof? Then the next time you're ready to select a long-lasting metal for a complete roof, for a drainage system (or for louvers, skylight frames or ventilators), get a quotation on Monel — and see for yourself.

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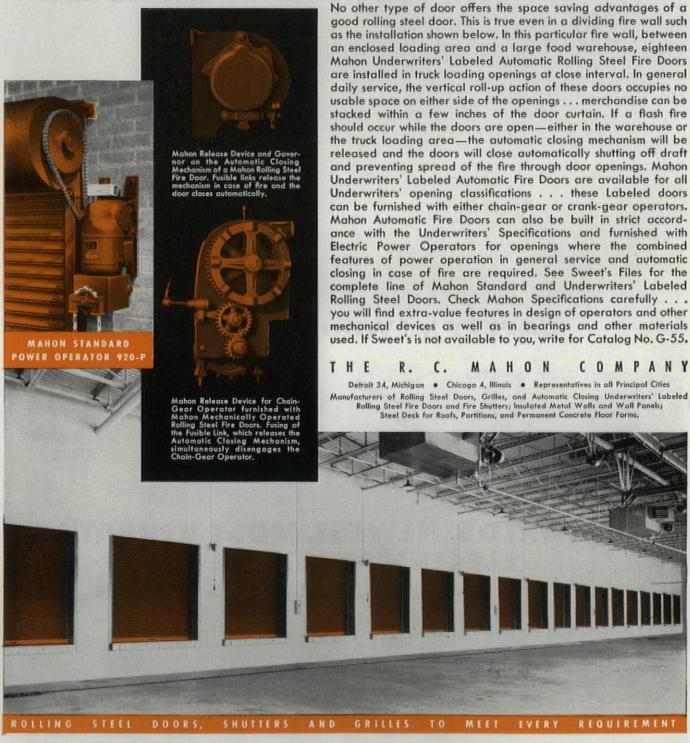
**Monel Roofing** 

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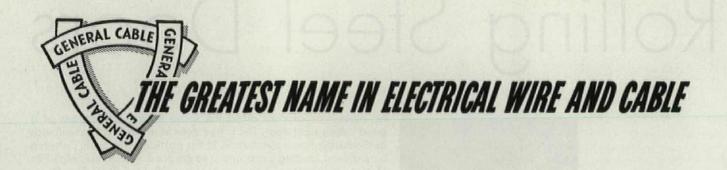
# Rolling Steel Doors

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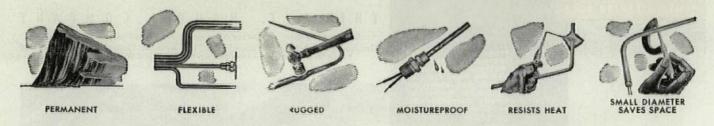


Eighteen Mahon Underwriters' Labeled Rolling Steel Fire Doors installed in a new Big Bear Warehouse, Detroit, Michigan. In addition to the fire doors, Two Mahon Power Operated Rolling Steel Doors and Three Mechanically Operated Rolling Steel Doors were installed in other openings of this modern building. T. Rogwoy, Architect. Barton-Malow Co., Gen. Contrs.

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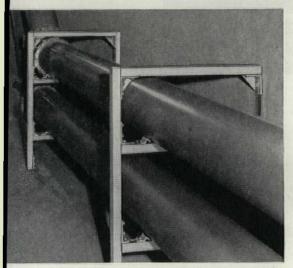
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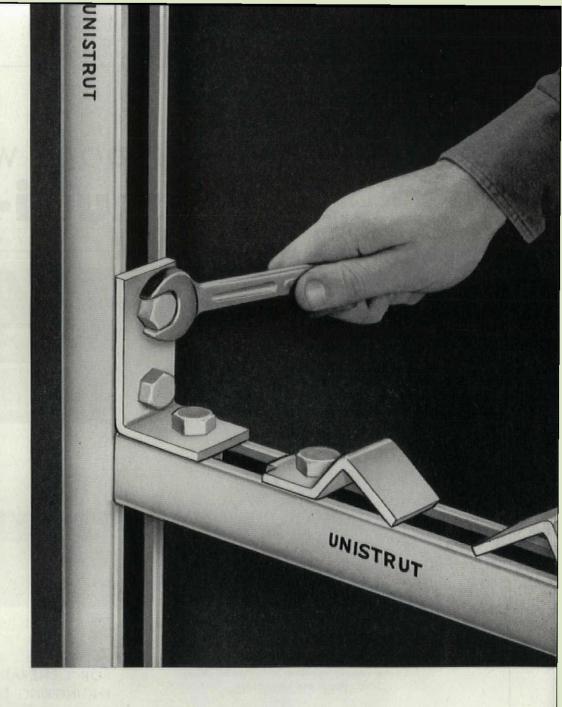
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In this tunnel between two buildings, pipes of all sizes and types are supported on strong UNISTRUT framing. Exact slope and pitch are easily attained because of the adjustability of this system.



UNISTRUT framing used to rack heavy water and sludge lines at large sewage treatment plant. Note convenient UNISTRUT concrete



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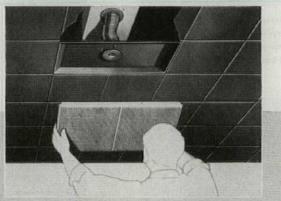
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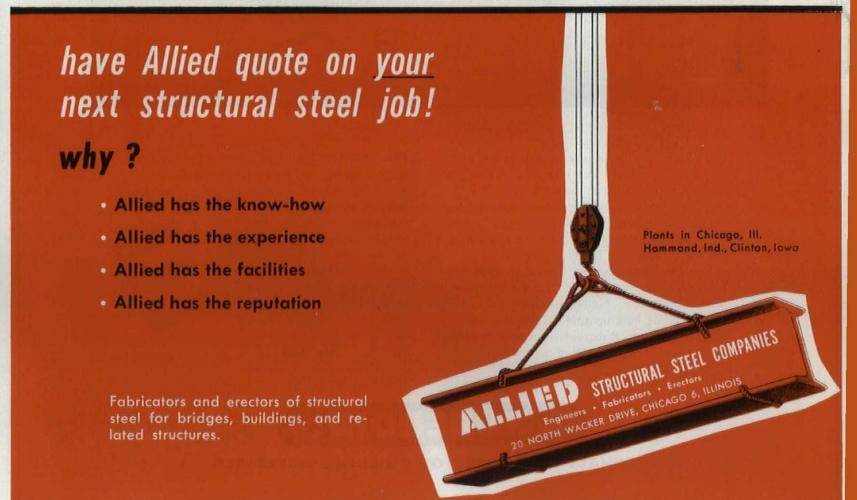
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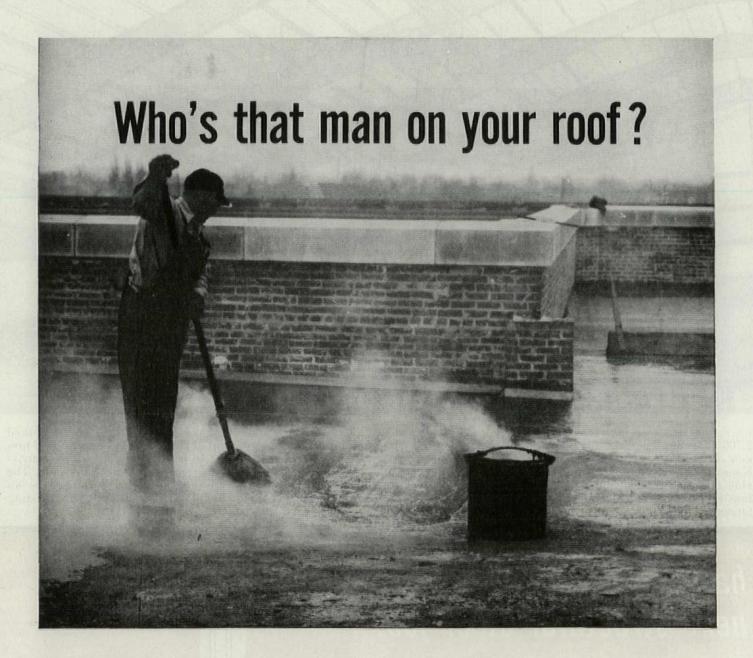


UNIVERSITY OF KANSAS BUILDS NEW FIELD HOUSE: More than 2,700 tons of structural steel went into the framework of new field house at the University of Kansas, Lawrence, Kansas. The structure features 10 rigid frames which provide a clear span of 250 feet. The frames, which weigh 80 tons each, are completely welded, and were produced simultaneously in Allied's three plants at Chicago, Illinois, Ham-

mond, Indiana, and Clinton, Iowa. The three plants worked on a schedule that permitted shipments to be made in a prearranged sequence (about 10 days apart), with frames arriving in Lawrence, Kansas, as needed by erection crews. The new building, completed in March, 1954, is used as an armory and for physical education purposes. It has a seating capacity of 15,490 people.



Send your plans and specifications to Allied Structural Steel Companies, Suite 1771, 20 North Wacker Drive, Chicago 6, Illinois



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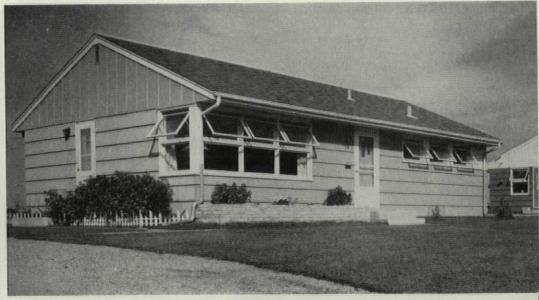
You can count on your Ruberoid Approved Roofer for sound advice, too . . . not only because of his experience . . . but because Ruberoid makes every type of built-up roof in specifications to meet every need. Ruberoid Approved Roofers are not prejudiced in favor of any one type.

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## The RUBEROID Co.

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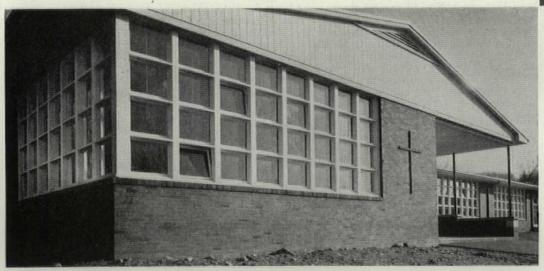
ATTRACTIVE WINDOWS AND FRAMES in this Richfield, Minnesota, development are all protected by Penta against insects and rot.

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ADVANTAGES OF WOOD as a building material are well known. Window frames in this moderately priced home at Buffalo, New York, were treated with Monsanto Penta, then painted. They will last at least 3 times as long as untreated windows of the same type.



CLASSROOM WINDOWS in this New Jersey school are Penta-treated. More flexible than many other materials, wood provides singular advantages in style and economy. Penta treatment increases the service life of the wood.

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Penta, wood sash and frames will remain snug and weatherproof over the years with comparatively little maintenance expense. They will not rust or corrode.

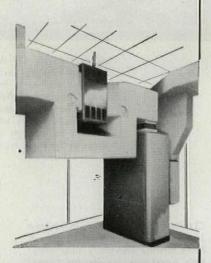
Service life of wood, whatever its use, is tripled when you protect it with Penta. This chemical will not leach out or lose its preservative strength. Penta-treated wood is clean, odorless, easy to handle and store.

Ask us for a list of woodworking plants offering products treated with Monsanto Penta. Write: Organic Chemicals Division, Monsanto Chemical Company, Box 478, St. Louis, Missouri.

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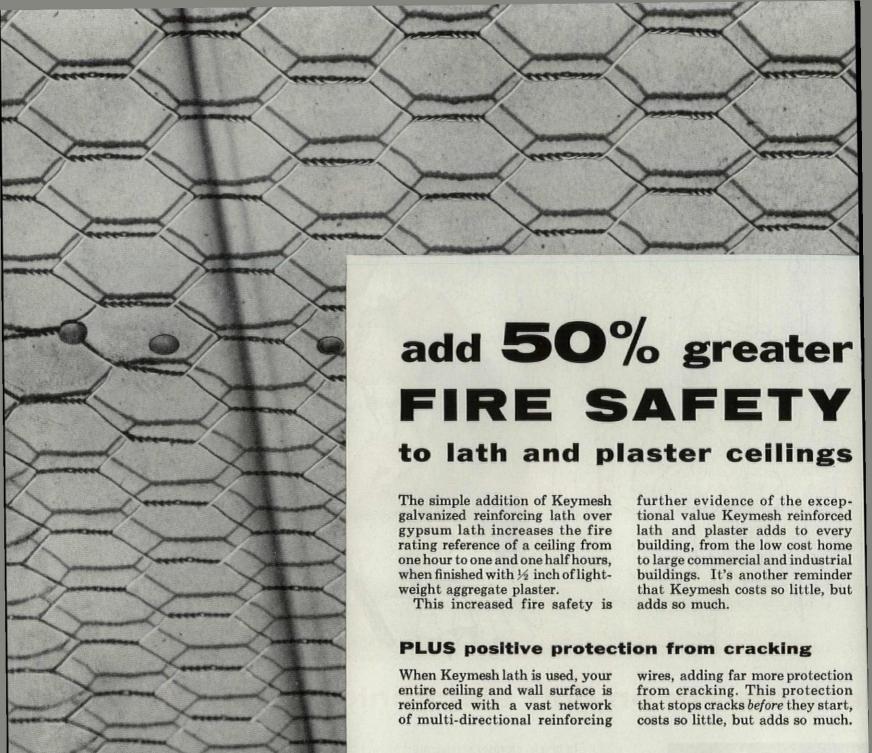
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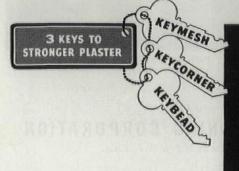
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### outside installation

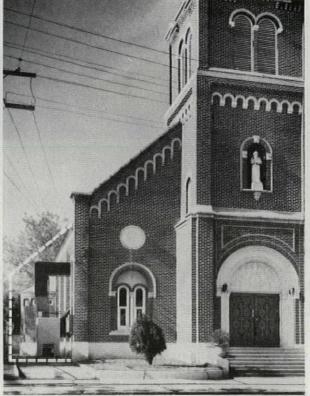
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central station air conditioners save floor space, ductwork and labor costs

usAIRco's outdoor locations of equipment have proved the answer to cooling existing buildings when lack of space prohibits the usual type of air conditioning installation.

To air condition the Church of St. Francisco di Paola, To air condition the Church of St. Francisco di Paola, a religious landmark of San Antonio, Texas, conserve space and preserve the architectural beauty of the church, inside and out, A. H. Thomas, engineer for G. H. Dillard Company, recommended placement of a 20 h.p. usAIRco packaged central station unit (RK) outside the building. The unit was shielded from view by construction of a matching extension to the brick front of the church. The supply duct leads through the outside wall and is concealed in the wall-like railing of the organ and choir loft located at the rear of the church. the organ and choir loft located at the rear of the church. Five discharge grilles in the choir loft railing deliver the conditioned air at a low velocity, providing quiet, draft-less cooling throughout the church. To allow for return of air, two stained glass windows, adjacent to the exterior location of the unit, were removed and replaced with return grilles

Business needs demanded that the Big Apple Super Market of College Park, Georgia install an air conditioning system. Lack of floor space was the major obstacle. To overcome it, a usAIRco 20 h.p Model RK was installed outside at the rear of the store. The built-in evaporative condenser saves 95% in water consumptions the property of the store. tion by continuous recirculation.



Central station air conditioner of St. Francisco di Paola Church is concealed by extension of front wall of building, shown by dotted line.



Five discharge grilles at rear of church and two large return grilles are the only visible signs of air conditioning inside the building.

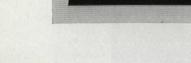
Front view of Big Apple Super Market, air conditioned by USAIRCO RK unit.



For detailed information on usAIRco RK's, write Dept. AF 124

#### UNITED STATES AIR CONDITIONING CORPORATION

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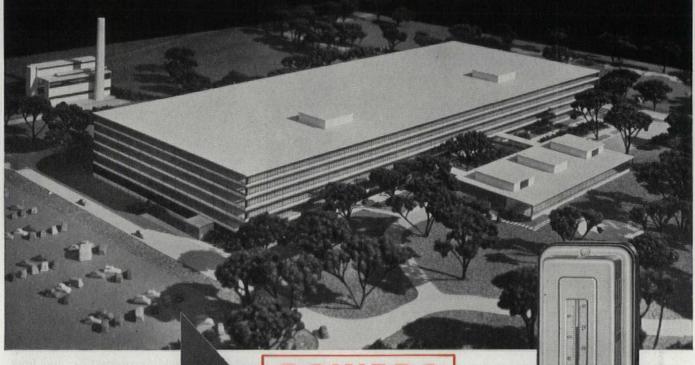


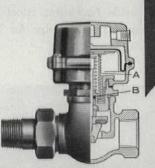
175 Year old problem of storing and handling records solved by this unique modern building

### UNITED STATES MILITARY PERSONNEL RECORDS CENTER

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## The old snow shovel's gathering dust



Today's modern snow melting installations have sent many a snow shovel into retirement. In addition to being used for residential sidewalks and driveways, hundreds of snow melting systems have been installed at hotels, office buildings, church entrances, theaters, train platforms, and bus terminals throughout the snowfall areas of the United States.

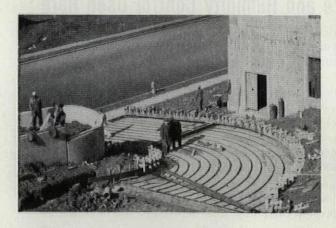
Besides taking the aching back out of a tiresome winter chore, snow melting systems take the accident and lawsuit hazard out of dangerous, icy sidewalks. Moreover, when used in front of theaters, around department stores and other business establishments, they offer a wonderful psychological advantage. People tend to congregate in these clear areas on bad winter days. Thus, the snow-free sidewalks before a place of business create good will, and the merchandise on display there is seen by large groups of people.

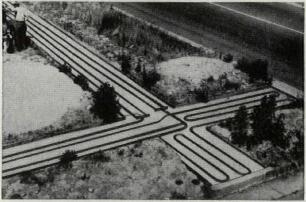
For over 50 years, architects, engineers and contractors have been specifying NATIONAL Steel Pipe for conventional plumbing and heating systems until it has



become the nation's standard for such applications. It is only natural, then, that they should turn to National for this relatively new application—snow melting systems. They know that National Pipe has the inherent characteristics necessary to meet the requirements of such applications—smooth, uniform bending; sound, strong welding properties; and long

service life. Small wonder that such confidence has made NATIONAL Steel Pipe America's largest selling pipe for snow melting service.



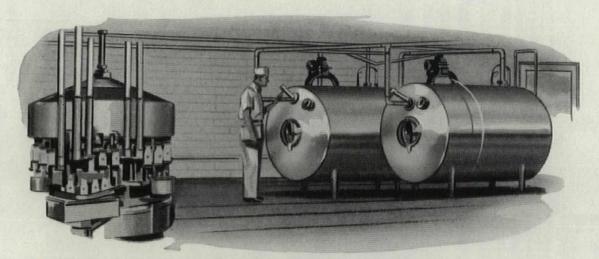


NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

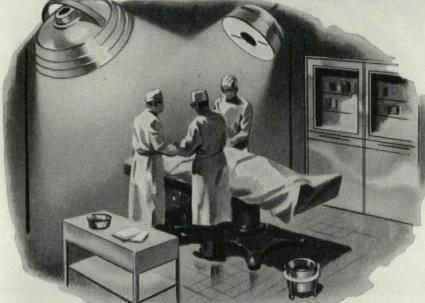
U.S.S NATIONAL Steel PIPE



UNITED STATES STEEL



. . FOR DAIRIES



. . . FOR HOSPITALS

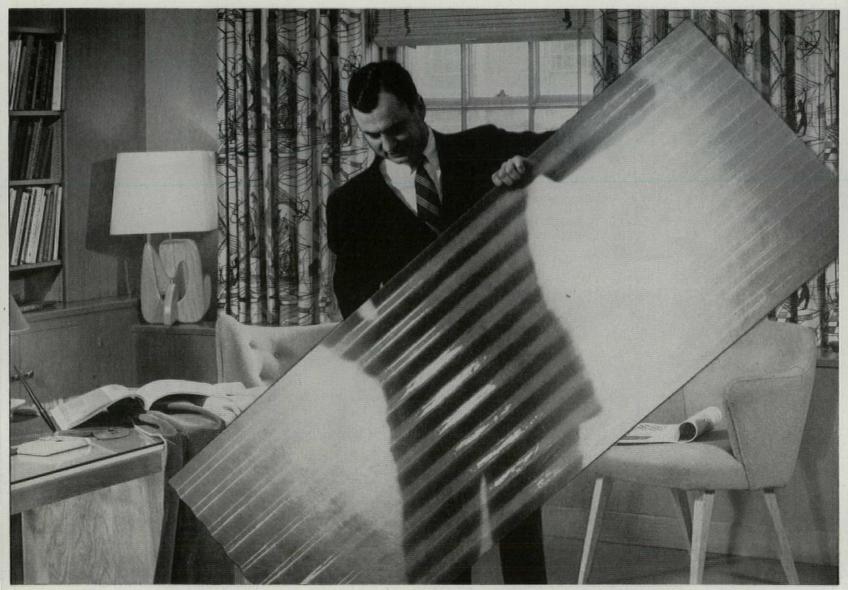
## McLouth STAINLESS Steel

High quality stainless sheet and strip steel . . . for the product you make today and the product you plan for tomorrow.

. FOR THE CHEMICAL INDUSTRY

McLouth Steel Corporation DETROIT, MICHIGAN

Manufacturers of Stainless and Carbon Steels



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

\*Building Officials Conference of America

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 information and flame spread data on HETRON.

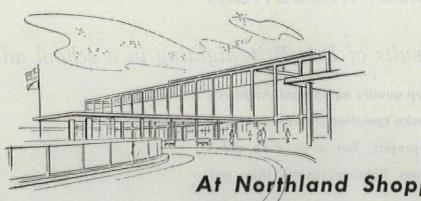


- From the Salt of the Earth

#### HOOKER ELECTROCHEMICAL COMPANY

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At Northland Shopping Center

## GRINNELL **SPRINKLERS**

Inconspicuous . until

fire strikes!





Biggest of all the centers, Northland boasts not only the latest developments in shopping center design and construction, but the most efficient fire protection system. More than 5500 Grinnell Automatic Sprinklers provide positive protection for this super shopping center's 161 acres.

Note that the Grinnell Flush-Type Ceiling Sprinklers in the two areas illustrated extend a scant inch below the line of the ceiling, and are hardly noticeable. Wise planning on the part of the architects, Victor Gruen Associates, resulted in a fire protection system that harmonizes with Northland's attractive modern interiors.

The time to plan for fire protection is at the start. Call in the Grinnell engineer while your project is still in the blueprint stage. Let him show you how you can provide dependable protection against fire without detracting from the appearance of your carefully planned interiors. There is no obligation. Grinnell Company, Inc., 292 West Exchange St., Providence, R. I. Branch offices in principal cities.

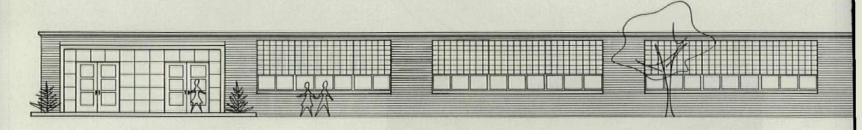


Manufacturing, Engineering and Installation of Automatic Sprinklers Since 1878 —

#### MARSHFIELD, WISCONSIN

The interesting results of Day-Brite lighting in a school addition

Firm believers in top quality equipment, Architects Taylor, Foster & Yasko specified Day-Brite for their Jefferson School project. But even they didn't expect the premium lighting results they got.



Two months after the Jefferson School addition was opened, Karel Yasko made a demonstration. Partly for the benefit of the School Board and the City Council. Partly to reassure himself.

With a freshly calibrated light meter, Mr. Yasko measured the performance of the Day-Brite LUVEX\* installation his firm had specified. He reported his findings and enthusiasm to us in a letter we treasure very much.

In part, the letter states: "The LUVEX fixtures are spaced 8'0" on centers, 8" hanger suspension from a 10'0" high acoustical tile ceiling. We obtained readings at the desk tops of 80 footcandles at mid-spacing and 75-78 footcandles directly under the 2-lamp fixtures. Remarkable!"

And most important, these high levels combine with over-all LUVEX low-brightness to furnish a completely comfortable visual environment for young eyes.

This particular case history of LUVEX premium performance is doubly significant because it solidified client satisfaction on a key problem every school architect faces.

School and local government people rightly expect good lighting. And because lighting results are so vulnerable to comparison, so easily measured, your lighting installation is often the first phase of your work called upon to prove itself.

Day-Brite's LUVEX consistently offers the most dependable answer to the school architect's lighting needs.

You may already be a LUVEX man. If you are, you know why more LUVEX fixtures are specified for school lighting than any other single make. If you haven't yet heard the full LUVEX story, call your Day-Brite representative. The information he can give you may well be the most valuable lighting news you've ever heard.

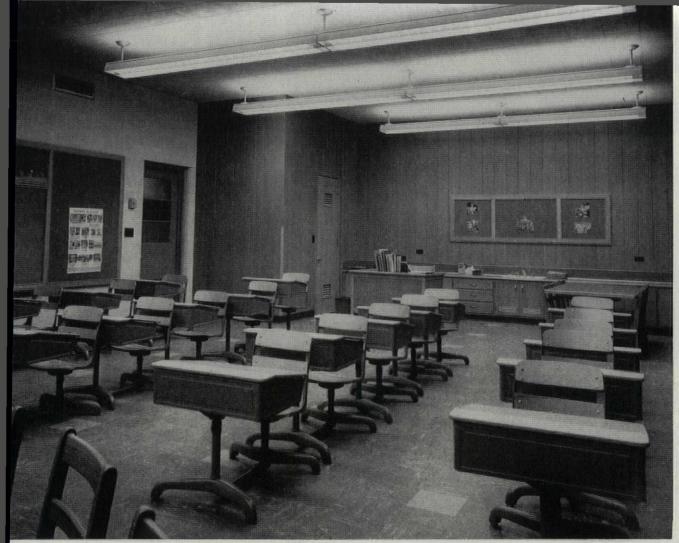
Day-Brite Lighting, Inc., 5471 Bulwer Ave., St. Louis 7, Missouri. In Canada: Amalgamated Electric Corp., Ltd., Toronto 6, Ontario.

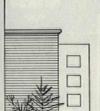
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CALL OR WRITE YOUR NEAREST DAY-BRITE REPRESENTATIVE

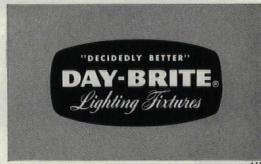
\*Trade-Mark Registered.





ABOVE: Clean, fresh design in classrooms is heightened by the high level of evenly distributed illumination from LUVEX fixtures. LUVEX is one of the very few fixtures with low enough cross-wise brightness to allow this type of "across-the-room" lighting layout.

LEFT: The kindergarten is cheerful and kind to young eyes. Good lighting, such as this LUYEX illumination, is important in helping children get their school life off on the right foot. Learning is a process 80% controlled by the eyes. Youngsters in this kindergarten won't be denied the opportunity to see properly, even those sitting in the back of the room.



441



THE FIRM OF TAYLOR, FOSTER & YASKO of Stevens Point and Wausau, Wisconsin, designed the Jefferson School addition. At left is George Foster; center, Karel Yasko; right, Gage Taylor. Engineer was John K. Primm, P. E., Manitowoc, Wisconsin. The Electrical Contractor was Merkle Electric, Marshfield, Wisconsin.

BELOW: This spacious area serves as a multi-purpose room. The exposed wood beams and steel roof deck form an interesting overhead pattern. Day-Brite incandescent lens boxes are mounted directly to the roof deck to furnish a novel and effective lighting layout. Recessed Duo-Frame lens boxes light the stage.







Sheeting of extruded "Lucite" acrylic resin is available in a variety of clear and translucent colors from custom extruders. Extruded troffer-type panels of "Lucite" transmit optimum light without glare.

## Lighting as a design element

Specify extruded Du Pont LUCITE® acrylic resin for well-engineered lighting effects



Extruded panels of "Lucite" like this are used for light-diffusing ceilings. "Lucite" has excellent impact strength and color stability. Its light transmission does not deteriorate

Luminous panels and sheeting of "Lucite" can be fabricated in an unlimited number of designs of unusual beauty. Panels of "Lucite" can be extruded in widths up to 4 feet—and in a variety of diffusing, clear and translucent colors. Extruded sheets of "Lucite"—flat, formed or corrugated—make unique light-diffusing ceilings.

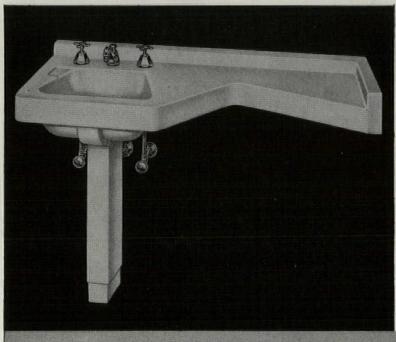
"Lucite" is highly resistant to shattering and weathering. This engineering material used in lenses and panels efficiently transmits light without glare. Fabrication is economical to custom specifications. Fixtures of "Lucite" retain their initial uniform color and appearance with minimum cleaning.

Write to the E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Room 2912 Du Pont Building, Wilmington 98, Delaware, for complete information on extruded "Lucite" now available for engineered lighting.





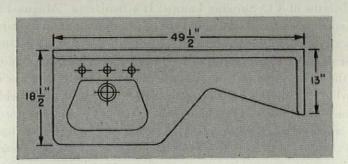
# The distinctive <u>new</u> Guestledge lavatory for hotel and motel bathrooms



### offers dressing table luxury, easy-to-clean, one-piece construction

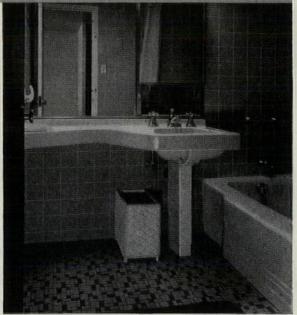
Especially designed for hotels and motels, the new Guestledge serves as both a lavatory and a dressing table. Featuring a spacious integral counter area, this handsome fixture makes average-size rooms look larger, more luxurious. Where space conservation is an important factor, the toilet can be placed so it will also serve as a vanity seat.

The Guestledge is of easy-to-clean, one-piece genuine vitreous china with matching pedestal. All fittings are finished in gleaming Chromard.



#### The modern fixture for modern buildings.

This unusual fixture is the answer to the public's demand for "that extra touch of refinement." In shape, in quality, and in the convenience it offers, the Guestledge lavatory is strikingly different! The diagram above and the photograph at the right show how this finer fixture can be worked into your plans. For additional information, please contact your nearest American-Standard sales office, or write direct to American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 22, Pa.

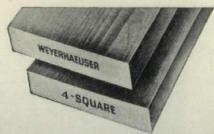


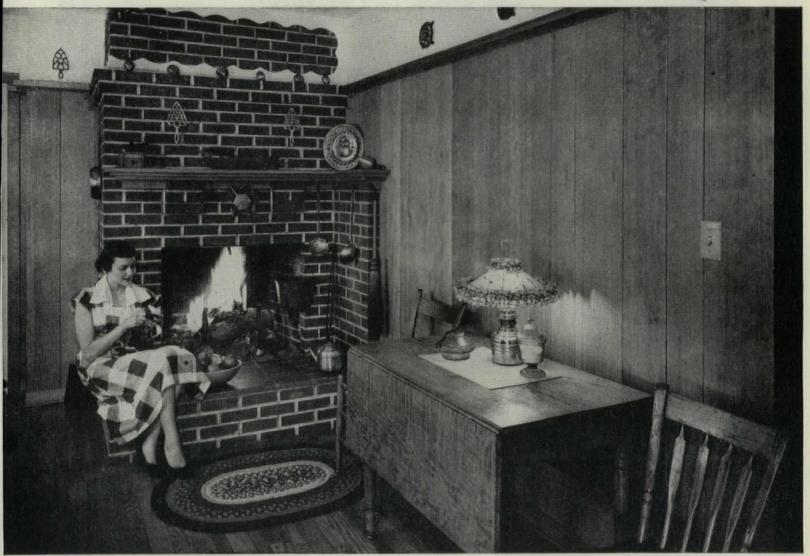


Serving home and industry: AMERICAN-STANDARD . AMERICAN BLOWER . CHURCH SEATS & WALL TILE . DETROIT CONTROLS . KEWANEE BOILERS . ROSS EXCHANGERS . SUMBEAM AIR CONDITIONERS

THIS BRAND NAME ON LUMBER ALSO BRINGS YOU

## A WIDE VARIETY OF West Coast Hemlock Products





# WHY West Coast Hemlock IS POPULAR FOR INTERIORS AND EXTERIORS

Weyerhaeuser 4-Square West Coast Hemlock has earned the name "Ability Wood" because it serves so well in such a wide variety of places.

As paneling, for example, this fine species from the West offers straight grain . . . fine, even texture . . . and a light, warm color which mellows slightly with age. Also, West Coast Hemlock ranks high as siding because it is easy to work . . . resists the elements . . . takes nails without splitting and remains firmly in place year after year. Hemlock takes paint or natural finishes beautifully and holds them exceptionally well.

For almost any use . . . from framing to paneling, from flooring to moldings and built-in cabinets... Weyerhaeuser 4-Square West Coast Hemlock offers refreshing beauty and enduring service at moderate cost. A selection of grades is available from the yards of Weyerhaeuser 4-Square Lumber Dealers. Descriptive literature will be mailed you on request.

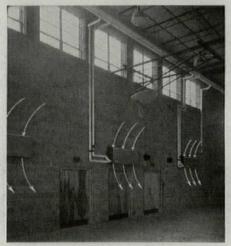


## Weyerhaeuser 4-Square

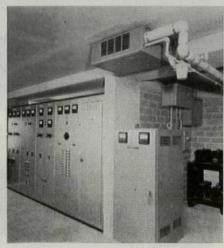
WEYERHAEUSER SALES COMPANY . ST. PAUL 1, MINNESOTA



VERSATILE MODINE CABINET UNIT provides year 'round office comfort. Quickly and quietly distributes filtered heated or cooled air . . . introduces fresh air for ventilation.



HEAT LARGE AREAS with Type BT units mounted high on outside wall in inverted position. Heated air is directed downward for maximum comfort.



CEILING INSTALLATION of Modine Type BT Cabinet Units delivers large volumes of heated air . . . quietly and gently. Temperature is controlled automatically.



SIMPLIFY MODERNIZATION JOBS. One Modine Cabinet Unit replaces up to three or more unsightly cast iron radiators...recesses neatly in the wall.

## PICK YOUR HEATING PICTURE

Then see how much better Modine Cabinet Units do the job ....

MODINE has the answers to your heating problems. Whether it's new construction or remodeling, Modine Cabinet Units do the job better . . . in less space . . . at lower cost. The heating applications pictured above are only four of many hundreds of efficient, attractive installations.

Modine Cabinet Units are the ultimate in versatility. Some models heat with hot water, cool with chilled water. Others for steam or hot water heating only. There are five enclosure types . . . capacities from 120 to 640 Edr. All have quiet blower fans for positive yet gentle circulation of air. Take your difficult heating problems to the Modine representative listed in your classified phone book. Or mail coupon at right.

Modine CABINET UNITS

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Please send me immediately a free copy of Bulletin describing Modine Cabinet Units.	
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## ...Smooth as a Flagship Flight!



American Airlines International Waiting Room, San Antonio Municipal Airport, San Antonio, Texas.

The smooth, closely-textured surface of Azrock is no accident—it's deliberately built into this rugged asphalt tile—to make it easier to clean and keep clean. Azrock's dense inter-laced structure means years of extra wear, too.

And whether it's a modern airline terminal...a hospital, restaurant, school or home... Azrock sets 'the color theme with lighter, brighter colors you wouldn't expect to find in this low-cost flooring. Azrock colors are smart and modern... clean and bright... compatible with modern décor.

Azrock is made to order for the quickened tempo of today's living. It's easy to look at ... easy to walk on ... and easy to keep looking right.

With all its extra qualities, Azrock costs no more than ordinary asphalt tile — a longer wearing, better looking flooring with exceptionally low cost.

When there is no added cost, why not specify the best—quality Azrock Asphalt Tile. Samples and detailed product data sent on request without obligation.



ASPHALT TILE

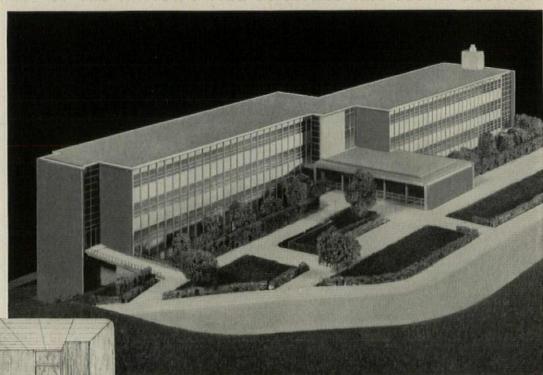
AZROCK PRODUCTS DIVISION . UVALDE ROCK ASPHALT CO.

FROST BANK BUILDING . SAN ANTONIO, TEXAS

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#### THE VAST MAJORITY OF THE NATION'S FINE BUILDINGS ARE SLOAN EQUIPPED

MITCHELL & RITCHEY
architects
THEODORE ROCKWELL
mechanical engineer
GEORGE H. CHILLI
general contractor
SAUER, INC.
plumbing contractor
AMSTAN SUPPLY DIVISION,
AMERICAN RADIATOR &
STANDARD SANITARY CORP.
plumbing wholesaler



Donner Hall, new men's dormitory, CARNEGIE INSTITUTE OF TECHNOLOGY, Pittsburgh, Pennsylvania, has the distinction of having been designed by two 1932 graduates of Carnegie's College of Fine Arts, and erected by a former Carnegie student, the General Contractor.

## NEW MEN'S DORMITORY HAS "NEW LOOK"

• In the minds of many college administrators and students 1954 will be long remembered as the year during which much-needed dormitories began to bloom on scores of campuses throughout the land. High on the list of notable sleep-and-study buildings made ready for Fall occupancy is Carnegie Tech's new million dollar men's dormitory, Donner Hall, providing modern, quiet living facilities for 243 students. Contemporary in design, equipment and furnishings, Donner Hall is a

two-wing structure with major exterior areas of aluminum and glass. The wings are joined on the ground floor by two spacious lounges available for dances, social events and other functions. Also on this floor is a student counselor's suite. Above, each room floor has its own smaller lounge. SLOAN Flush VALVES, famous for efficiency, durability and economy, were selected for installation throughout Donner Hall—more evidence of performance that explains why...

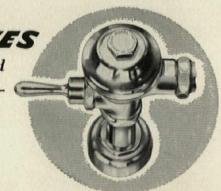
more SLOAN Flush VALVES

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





The beautiful surface of this long-wearing wall covering is smooth, easy to clean. That's because it's made of Krene.

Krene is extra-quality material, always tough and flexible. It resists scratches, cleaners, foods, acids, alkalies, alcohol and other agents. Keeping the surface clean is a simple

matter, most dirt is merely wiped right off . . . very quickly, easily, and economically.

Specify wall covering made of Krene, and upholstery, too. It's a splendid solution for hospitals, hotels, restaurants, for any heavily-used rooms or corridors where styling and service must both be tops.

Hospital corridor wainscoting is covered with easy-to-clean "Kalistron," made by Kalistron, Division of United States Plywood Corporation, New York 17, N.Y. It's made of a clear sheet of Krene, with colors fused to the underside so that the durable surface takes all the wear.

#### ST. JOSEPH'S HOSPITAL

Lancaster, Pennsylvania



Architect:
Schmidt, Garden & Erickson
Acoustical Contractor:
Novinger's, Inc.

The attractive Travertone ceiling contributes to the pleasant atmosphere of the hospital's carefully styled, well-lighted lobby. Quiet as well as beautiful, Armstrong Travertone is a highly efficient, incombustible acoustical material.



## It Took Three Acoustical Materials To Quiet This Hospital



This low-cost ceiling material is not only completely fireproof and easy to clean, it's also highly efficient. Noise, bouncing off the many hard surfaces in the kitchen, could build up to disagreeable levels were it not for the ceiling of Armstrong Perforated Asbestos Board.



In the new unit of Lancaster's St. Joseph's Hospital, three distinct sound-conditioning problems prompted the use of three different acoustical materials—Armstrong Travertone\*, Arrestone®, and Perforated Asbestos Board.

In the lobby, chapel, and patients' rooms a distinctively beautiful ceiling appearance was as important as acoustical efficiency. Armstrong Travertone offered both features, as well as complete incombustibility.

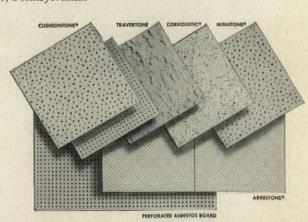
The high sanitary standards of the nursery suggested a material that is easy to keep clean and spotless. Here, Armstrong Arrestone, an incombustible metal-pan unit, will require only an occasional washing to stay new looking for years. In addition, highly efficient Arrestone soaks up as much as 85% of the noise that strikes it.

Economy was the deciding factor in sound conditioning the kitchen. Large 24" x 24" tiles of Armstrong Perforated Asbestos Board provide efficient acoustical treatment and easy maintenance at a surprisingly low cost.

Get full details on the entire Armstrong Line of acoustical materials from your Armstrong acoustical contractor. For the free booklet, "How to Select an Acoustical Material," write Armstrong Cork Company, 4212 Rooney Street, Lancaster, Pennsylvania.

\* Trademark

Sound is muffled, kept from becoming a serious problem under this Armstrong Arrestone ceiling. Arrestone's high acoustical efficiency, incombustibility, and ease of upkeep make it especially suitable for nurseries and other hospital areas.



Armstrong ACOUSTICAL MATERIALS

# Few building legislation changes expected from new Congress

In last month's Congressional elections the Republicans were upset, apparently lost the Senate as well as the House of Representatives. Washington experts, however, foresaw only minor changes for construction as a result of the political reversal. Reasons: the slim margin of Democratic control; the conservative bent of most seniority-heavy Southern Democrats who will dominate Congressional committees; the probability that southern Democrats will line up with Eisenhower Republicans on many crucial issues.

Prospects on specific matters affecting building:

School-building aid might gain more support in both houses. Despite their feelings about racial segregation, many southern Democrats have backed federal school-building aid as a general rule, because most come from relatively less affluent states. The Eisenhower Administration has been blocking such a bill pending study and would like to put it off still another year.

Those who hope for expanded federal building allocations observe that Democrats traditionally have been less inhibited in buying orthodox public construction: highways, dams, post offices, river and harbor facilities, etc.

Anti-bid-shopping legislation, requiring general contractors on federal jobs to post their subcontractors and the amount of their bids, and prohibiting award of contracts to any other subs unless savings to the government will result, probably will be revived in some form. Specialty contractors, beaten for two sessions of Congress in their fight against bid shopping, may have a strong new Senate backer in Patrick McNamara of Michigan who has a plumbing contracting background.

Construction unions, like most of American labor, will probably have little luck in getting the Taft-Hartley law repealed or amended. No matter how the new Congress is viewed a repetition of last session's stand-off on Taft-

Hartley seems likely. The House labor committee will be run by Graham A. Barden of North Carolina, a conservative who is under little pressure from organized labor from his district. The Senate labor committee will be headed by James E. Murray of Montana, who is friendly toward labor. The balance of power will rest with Democrats from southern states. where laws prohibiting union shops-laws on which the AFL has declared total war-are prevalent. About the best labor can hope for is a stalemate, for there is some feeling in Congress for tightening Taft-Hartley, and Commerce Secretary Sinclair Weeks in his jurisdictional dispute with Labor Secretary James Mitchell would like to see labor unions made subject to federal antitrust laws.

A program of the AFL Building and Construction Trades Dept. calling for partial recognition of a closed shop in the building industry, among other things, appears to have little chance of being passed, whether it is introduced in an omnibus bill, as a series of separate bills, or as Taft-Hartley changes.

Public housing enthusiasts are not very optimistic about getting their program revived. A bill might get past the two banking and currency committees. Both new chairmen, Sen. J. W. Fulbright (D, Ark.) and Rep. Brent Spence (D, Ky.), would be more favorable toward public housing than their predecessors, Sen. Homer Capehart (R, Ind.) and Rep. Jesse P. Wolcott (R, Mich.). But from then on the going would be rough, especially in the House, where two conservative southern Democrats, Howard Smith of Virginia and Albert Thomas of Texas, heading the rules committee and the independent offices subcommittee of the appropriations committee respectively, are bitter opponents of public housing. What's more, the Supreme Court decision against segregation in schools-expected to be extended to other fields-makes southern Democrats more opposed than ever to public housing. One big public housing job was opened by the election: New York State Housing Commissioner Herman Stichman would be replaced by a Democrat. Most likely to be named: NYCHA Executive Director Joseph McMurray, or National Housing Conference President Ira S. Robbins.

Rental housing is dead because of the tight provisions in the new housing law against mortgaging out. There probably will be no attempt to revive the program, with both parties fearing a revival of windfall investigations.

Detroit Times-International



#### Michigan's new Senator: union leader-contractor

"The construction industry is my vocation, and construction labor is my avocation." This creed, stated by Michigan Senator-elect Patrick V. McNamara, shown with wife (white dress) and jubilant campaign workers after he defeated Republican Sen. Homer Ferguson last month, makes clear that McNamara will be a strong supporter for legislation to make the US a bigger buyer of construction. President of a Detroit AFL pipe fitters' local, he had complete building trades' backing. He wants Taft-Hartley act replaced with a law to "eliminate inequities." McNamara, 59, is no glad-hander, lives in a middle-income brick house on a 40' lot in Northwest Detroit. He is a sales vice president of Stanley-Carter Co., which grosses about \$7 million yearly installing plumbing and heating, mostly for heavy industry. He never participates in union negotiations involving Stanley-Carter.

### **Support grows for saving Grand Central concourse**

From several quarters last month came support for preserving the concourse of New York's Grand Central Terminal if plans to rebuild the station with a huge office tower above it are ever put through.

Although they witheld formal comment for the present, it was indicated New York Central Chairman Robert Young and New Haven President Patrick B. McGinnis were giving serious consideration to the open letter in November's Architectural Forum in which 220 leading architects urged them to spare the concourse—and also to Forum's suggestion for an international competition for a redevelopment design that would retain it.

Said a New York *Times* editorial approving this proposal and the architects' letter; "This handsome room belongs to all America.... We have learned to conserve remnants of nature's grandeur. Before it is too late we should also learn to respect our man-made masterworks." A *Christian Science Monitor* editorial took a similar stand. The New York *Herald Tribune* editorial page reprinted extracts from Carroll L. V. Meeks' Forum article on the terminal, ending with Meeks's observation: "A more utilitarian transfer point can never achieve its uniquely successful blend of efficiency and civic dignity."

Another important new source of support:

the American Institute of Architects' committee for preservation of historic buildings.

At month's end, William Zeckendorf, who hoped to have a large hand in any Grand Central redevelopment, disclosed that he also was launching studies to rebuild New York's Pennsylvania Station. Pennsy President James M. Symes and Zeckendorf said they agreed on terms on which the railroad would be willing to give Zeckendorf an option to the buy air rights over the station. "If the studies are favorable and the option is exercised," they said, the terminal would be "thoroughly modernized below the street level" and a huge new building erected over it.

### **NAREB** convention:

Industrial brokers hear optimistic forecasts for 1955, with money easier, but trend to higher building costs; post office ready for \$300 million of lease deals

Despite forecasts of a small decline in industrial construction next year, cheerful optimism dominated the Society of Industrial Realtors sessions at the annual NAREB convention in Cleveland last month.

Surveying 1955 industrial building prospects, James E. Hanson of the SIR governing council predicted: 1) a continued high level of construction in almost all areas, spurred by modernization or "put-your-house-in-order" building programs by many large corporations; 2) a slight trend to higher building costs; 3) easier financing. Hanson said costs will be nudged upward by higher labor and materials charges, which will rise because of record demands for both from almost all other types of construction next year. His easier financing forecast was supported by SIR's annual survey of leading industrial mortgage lenders. This found "a large and constantly increasing supply of funds" available-and interest rates now averaging from 41/2 to 5%, compared with 41/2 to 51/2% a year ago.

Post office plans. In Cleveland during the convention the post office was moving into the largest leased quarters ever built for it anywhere. This was an \$8.25 million, highly mechanized 600,000 sq. ft., parcel post building: 200,000 sq. ft., including interior sidings for 72 railroad cars, occupied by the New York Central Railroad; 400,000 sq. ft. occupied by the post office. It also has docks to accommodate 132 trucks, will receive and distribute mail over the highways for a distance up to 250 mi.

Asst. Postmaster Ormonde A. Kieb told the

realtors the post office was ready to launch a program for another \$300 million of large buildings in 60 major cities on both lease and lease-purchase deals. Most will range from 200,000 to 400,000 sq. ft. and cost an average of about \$3 million. Three or four about the size of the Cleveland building are planned for the New York City area, which accounts for 10% of the nation's mail. Insurance companies are enthusiastic over these deals, said Kieb; one told him it has earmarked \$18 million to finance such projects.

Kieb also hailed a new law that now authorizes the post office to take direct options on building sites, later transfer such options to private firms submitting the best bids to erect structures to its specifications under lease or lease-purchase arrangements. Now, said Kieb, the post office can beat or "freeze out" speculators who used to corner-option all the suitable potential post office sites in a given area and then demand a high profit from anyone else trying to obtain any of them for a government structure.

Build America better. Plans for a tenfold expansion of NAREB's slum clean-up and rehabilitation program were drawn, but temporarily held in abeyance. Explained new Treasurer C, Armel Nutter: Fritz Burns of Los Angeles requested \$100,000 for this program for 1955, compared with \$10,000 to \$12,000 this year, but approval was delayed until the January directors' meeting acts on a proposed \$5 a year membership dues increase. (In addition to his NAREB budget, President Chinnock told the convention, Chairman Burns has

spent more than \$50,000 of his personal time and money pushing the Build America Council's work.)

Convention resolutions supported the Build America campaign and the federal urban renewal program with a series of recommendations favoring: 1) optional one-to-five-year tax write-off privileges covering demolished buildings in conservation areas; 2) five-year write-offs for the total cost of new capital improvements in such areas; 3) the same depreciation rates for existing buildings as applied to new construction under the 1954 tax laws; 4) enactment of state minimum housing standards for either "state-wide or local" enforcement.

## Henry Waltemade, Bronx realtor, named '55 leader

"State after state came in to recommend him. No other name was considered—or submitted."

In those words, Nominations Chairman Charles B. Shattuck reported the nomination of Henry George Waltemade of the Bronx, now NAREB's 1955 president-elect. Stocky, vigorous Waltemade, 49, was chairman of the Realtors' Washington Committee this year, and national convention chairman in 1948 and 1950. He also has headed the Real Estate Board of the Bronx and the New York state realtor organization.

Waltemade's father was a German immigrant who came to the US alone at the age of six. Although he received no formal schooling he worked his way up and finally established Henry Waltemade, Inc., Bronx realty firm. His Bronx-born son, Henry, attended public high school and Columbia University, joined his father's office in 1923 and has headed the firm since his father died in 1938. The firm does an "all-around real estate business," particularly mortgages, says Waltemade (MAI). He sits on the boards of the Manhattan Life Insurance Co. and several New York savings and commercial banks.

### Herb Nelson retiring; directed NAREB 32 years

Herbert U. Nelson, for 32 years executive vice president of NAREB and one of the building industry's—and nation's—most influential lobbyists, will retire July 1.

For years, internal and external foes had tried to unseat Nelson, whose articulate conservatism sometimes carried him into political storms. He weathered all tempests, gave real estate the benefit of a seemingly boundless work-or-read-all-night energy and a disarming personal charm which soothed ruffled feelings.

Last summer, the burden Nelson had placed on his physique for 32 years took its toll. At 68, his health broke. Last month at NAREB's annual convention in Cleveland, he did himself what his opponents could never make him do: he asked to retire. After July 1, he will become a "consultant" to NAREB.

Miner, journalist, realtor. Born in Ellsworth, Wis., in 1886, Herbert Undeen Nelson

graduated from the University of Minnesota, worked briefly as a silver miner, a seaman, and for a few months at the Seattle Post-Intelligencer. He quit journalism because "there wasn't enough money in it." From 1917 to 1921, he was secretary to the Minneapolis Real Estate Board; in 1919-20 was also secretary of the city's planning commission. In 1922 he was named executive vice president of the then 15-year-old NAREB.

Herb Nelson rendered real estate many invaluable services. By working for brokers' licensing laws, by organizing NAREB's several institutes to lift the standards and refine the techniques of appraising and management and to study farm, industrial real estate and urban land use problems, he did more than any other single person to give the responsible real estate man the professional stature he now holds.

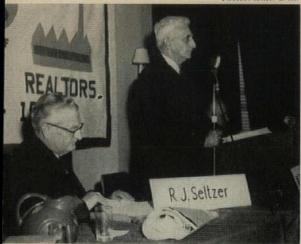
In the early thirties, President Hoover called

on Nelson to help launch the Home Loan Bank system. A few years later he worked with Cordell Hull, Marriner Eccles and other Democratic leaders drafting legislation to create the HOLC, and later the FHA.

Linked Taft to Reds. After World War II, Nelson's ardent campaigns against rent control and public housing caused President Truman to speak contemptuously of the "real estate lobby." In his zeal, it was Nelson who once accused the late Senator Robert A. Taft ("Mr. Republican") of having "lined up with Communism" by sponsoring public housing—but apologized the next day.

At such times some of its more liberal realtors felt NAREB might fare better with a less controversial executive, but at board meetings any plans for ousting or retiring the durable, captivating pioneer (and efficient administrator) were always sidetracked.

Photos: Miller-Ertler



CABINET RANK for a new Department of Urbiculture was recommended at an S.I.R. session by Walter S. Schmidt, former president of both NAREB and the Urban Land Institute. Richard Seltzer (seated) predicted a back-to-the-city trend as suburban taxes soon caught up with city levies.



ELECTION PORTRAIT of old and new presidents and their wives found 1955 President-elect Henry G. Waltemade (I) in contemplative mood, but retiring President Ronald Chinnock wreathed in smiles. Chinnock (with Realtor "First Lady" Mary Swain Chinnock) continues as head of NAREB until the end of next month, when Waltemade (with Jeannette) will be inaugurated.



LEASE - PURCHASE PROGRAM will help the post office acquire new buildings in 60 big cities, said Asst. Postmaster General Kieb, former N.J. Realtors' president.



"BANG-UP" SALE of surplus US realty after inventory is ended next March was promised by GSA officer David H. Brill. New law will allow brokers full commissions.



PROUDEST MOMENT at Cleveland convention for retiring Executive Vice President Herb Nelson occurred when he presented a plaque to his former protegé Frank Cortright (center), who won NAREB contest for writing a realtor's pledge. At right: Realtor Committee Chairman E. Fred Kemner,

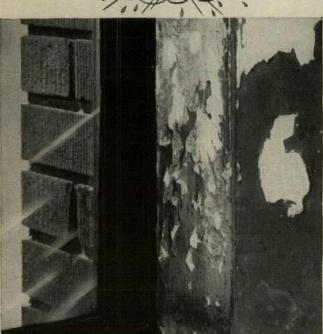


civil Works of the Army that aid industry were outlined at an S.I.R. luncheon by Maj. Gen. S. D. Sturgis Jr., chief of engineers. The St. Lawrence Seaway projects, he noted, will stimulate considerable Great Lakes area industrial growth. With him: S. I. R. President E. Sanford Gregory.

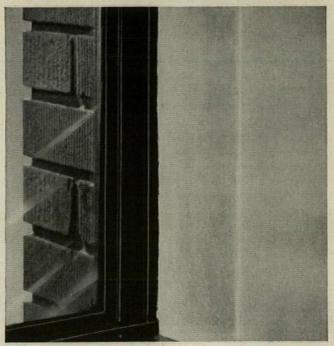


SHOPPING CENTER economics were studied at Appraisal Institute session addressed by (I to r):
Martin J. O'Brien, Addison T. Cutler and Horace
Carpenter Jr., vice president and general manager
of Detroit's huge new Northland Center.





Both of these pictures show the same wall, six months after separate repaintings



Same Wall... Same Paint

# SOME DIFFERENCE!

Driving rain kept soaking right through the brick walls of this Buffalo, N. Y. laboratory. Typical damage to interior paint only six months old is shown at left.

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By eliminating moisture damage to interior plaster, woodwork, paint, and wallpaper, these amazing repellents already are making sharp reductions in repair and maintenance costs for hospitals, factories, schools, institutions, to name a few. New buildings can be fully protected; old buildings fixed up to last.

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# Wright and Mies open New York offices; Mies to do modern Park Ave. tower

In September, Frank Lloyd Wright opened a New York office, in the Hotel Plaza, to supervise construction of his spiral-shaped Solomon R. Guggenheim Museum on Fifth Ave. overlooking Central Park.

Last month it looked as if Wright might have touched off a migration of major modern Midwest architects to New York: Mies van der Rohe also was opening an office, and Chicago's Holabird & Root & Burgee were reestablishing an eastern business office after a lapse of more than a year.

Mies was coming to New York for a more utilitarian building than a museum. With Phillip C. Johnson as his collaborator, he was going to design another full-block Park Ave. office building that architecturally promised to rival Skidmore, Owings & Merrill's dramatic Lever House. New York's Kahn & Jacobs would work with Mies and Johnson as associate architects on this project, mainly for drafting and technical services. George A. Fuller Co. will be contractors.

Civic "contribution." The structure Mies and Johnson were commissioned to design will be a high-rise \$8 million executive headquarters for Joseph E. Seagram & Sons, Inc. It will stand cater-corner across Park Ave. from Lever House in the next block to the south. So far the designers have only been exploring economic and zoning problems; architectural details will be evolved later. Present buildings on the 100,000 sq. ft. site are yet to be razed, but the company hopes to have its new building completed before the end of 1957, to help celebrate the Seagram organization's 100th anniversary that year.

Samuel Bronfman, president of Distillers Corp.-Seagrams Ltd. of Canada, parent company of the US firm, has expressed his desire to have the building's architecture make a "great contribution" to the city. For a regional headquarters on Chicago's Michigan Boulevard he also was contemplating engaging another top-flight modern architect.

President's daughter. Although she gives credit to Seagrams' "building committee" for the selection of Mies, no one had more to do with awarding him this commission than Mrs. Phyllis Bronfman Lambert, 27, the distillery president's daughter. A painter and sculptress, Mrs. Lambert studied architecture at Vassar and New York University. At the building committee's request she made a "scouting trip" around the country interviewing leading architects and architectural college deans on the qualifications of prospective designers. Mies picked Johnson as his associate after being chosen for the job, said Mrs. Lambert.

Pereira & Luckman model. Last summer, when Seagrams first announced its intention to build in New York, it exhibited a model prepared by Los Angeles' Pereira &

Luckman. The final award to Mies and Johnson, however, was in no way a "switch" in architects. P&L were engaged only for preliminary consultations, and to make a model that could be shown at the company's annual distributors meeting. At that meeting Charles Luckman, previously president of Lever Brothers, defined his office's role very carefully: "I have to . . . in fairness to everyone concerned, make one thing clear, and that is that whatever work I have been doing for the past several months has been in the area of being a consultant on this project. At the moment the architect has not been selected. Our firm is just one of a great many [about 14], believe me, that are being considered."

## **US Supreme Court OK's** redevelopment land resale

Slum clearance and urban redevelopment won a landmark victory in the US Supreme Court last month. In a unanimous decision the court upheld the constitutionality of the District of Columbia Redevelopment Act, rejected a challenge to its validity that claimed the government has no right to take the property of a private citizen except for public agency use.

Property owners in a deteriorated Capital

area protested proposed condemnation of their land because it was slated to be resold for redevelopment by private parties instead of by a public agency. But the Supreme Court, in a decision written by Justice William O. Douglas, held that Congress, by enacting the District Act, had made a valid "legislative determination" that it was the "policy" of the US to promote the public welfare in the District by eliminating injurious conditions by all "necessary and appropriate" means. Douglas wrote:

"Once the object is within the authority of Congress, the means by which it will be attained is also for Congress to determine. Here one of the means chosen is the use of private enterprise for redevelopment of the area. . . . Subject to specific constitutional limitations, when the Legislature has spoken, the public interest has been declared in terms well-nigh conclusive. In such cases, the Legislature, not the judiciary, is the main guardian of the public needs to be served . . . whether it be Congress legislating concerning the District or the states legislating concerning local affairs."

In 21 out of 23 states where similar cases had been tried, courts of final appeal had ruled along the same general lines followed by the Supreme Court. Until the Supreme Court rendered its first definitive federal decision in such a case, however, many lawyers held a slight reservation-wondered what turmoil might ensue if the Supreme Court should rule the other way. Last month all reservations

were canceled.



## Eisenhower urges support for ACTION program

Before an audience of some 200 legislators, officials, civic and housing leaders, President Eisenhower last month gave the American Council to Improve Our Neighborhoods a warm personal endorsement as it set about its mission of spurring nationwide efforts to stem the spread of blight and slums. At the ACTION kickoff lunch in Washington's Mayflower Hotel (see cut), the President said:

"This group seems to represent, to me, much more definitively and much more emphatically than most, almost the philosophy of government by which I try to live: that federal government has certain functions, but that federal government, or any other government [at any level] . . . can succeed only as the locality and the individual citizen does his full part and seeks ways of organizing and combining together to do his part collectively and locally. So, with the million houses, I am told, becoming slums each year, to find the local people undertaking to do something about this, to stop this kind of economic deterioration, is very wonderful."

HHFAdministrator Cole (second from right) called the council a "significant new resource and a new ally" in the urban renewal aims of the 1954 Housing Act. Also pictured (1 to r): Sen. Homer Capehart (R, Ind.), LIFE Publisher Andrew Heiskell, an ACTION vice chairman; the President; Maj. Gen. Frederick A. Irving (ret.), ACTION president; and Oveta Culp Hobby, secretary of Health, Education & Welfare.



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# **Building forecast for '55**

Commerce and Labor Depts. reinforce FORUM's estimates made in September, raise total volume a trifle higher, to \$39.5 billion; revised '54 estimate — \$37 billion

Three months ago, Forum forecast another record construction year for 1955 on top of the peak volume being set this year (AF, Sept. '54). Total 1954 expenditures will reach about \$36.9 billion, and next year's outlays will soar to \$38.75 billion, predicted Forum's market study prepared by Economist-Consultant Miles L. Colean.

Last month analysts of the Departments of Commerce and Labor released the government's latest construction estimates for this year and next. They solidly reinforced the Forum forecasts—as a matter of fact reflected an even more sanguine attitude toward the future than this magazine was able to register amid the uncertainties of September. In both cases Commerce and Labor put an ace on the king, predicted expenditures for 1954 will reach \$37 billion, and in 1955 total \$39.5 billion.

Increasing optimism of all forecasters suggests that nothing has developed since September to weaken confidence in the year ahead. Quite the contrary, the unfolding improvement of business during the last three months has only confirmed and strengthened FORUM's earlier views. Next year will certainly total close to \$39 billion or beyond.

Minor variations. Differences between government and FORUM estimates for various types of building are not great (see table). For 1954, Commerce-Labor estimates for private activity are somewhat higher, and for public construction somewhat lower. Within the private sector, Commerce-Labor see more residential and less nonresidential; but in all these cases differences are more a matter of shading than disagreement.

For 1955, the two forecasts agree on all fundamentals. In private building both foresee substantial increases in residential, commercial and institutional activity. On the public side, both expect expenditures for schools and highways to rise.

The main reasons for the larger total in the government's 1955 prediction is that Commerce-Labor are more bullish on private housing and on private religious and educational building. The total divergence would be greater except for the fact Commerce-Labor expect private commercial building to be markedly less and farm utility construction to be slightly below the FORUM figures.

While the farm estimates are too nebulous to be arguable, FORUM, in September, may have taken a bit too rosy a view of commercial building. It now seems doubtful whether its 1954 figure will be quite reached. For 1955, FORUM would now split the difference between the two forecasts, but would not go as low as the government estimate.

Public construction. Aside from private housing, the greatest differences in the two forecasts for 1955 are in estimates for government construction. Commerce-Labor expect a bigger drop in public industrial (mainly atomic energy) construction, and substantially lower outlays for highways, than FORUM. In the mysterious realm of atomic energy, FORUM will not argue, but it does feel highways will bulk larger than the government predicts.

Commerce-Labor boost this magazine's estimates of government-financed hospitals, military construction, and other types of government work such as courthouses, post offices, etc. These higher estimates are well within the bounds of possibility.

**Dodge forecast comparison.** Early in November, preceding the government forecast, F. W. Dodge Corp. issued its annual predic-

tions. Because Dodge estimates cover only 37 eastern states and do not give the same amount of detail or follow Commerce-Labor classifications, complete comparisons are not possible.

However, Dodge apparently agrees with Commerce-Labor that private commercial building will be lower than expected by Forum; and agrees with Forum that private residential building will be lower, and total public construction greater than expected by Commerce-Labor. Especially bullish on highway expansion and schools, Dodge sees total public construction next year rising 10% above 1954, compared with Forum's 8% increase and Commerce-Labor's 5.4%.

Housing volume. In September, Forum expected at least 1,130,000 new nonfarm housing starts for 1954, and 1.2 million for 1955. The 1954 figure now looks low—it will be very close to 1,200,000. For 1955, the Bureau of Labor Statistics offers an estimate of 1.3 million, and Dodge about 1,250,000. NAHB officially stands on 1,250,000, although some of its key men would agree to a higher figure. FHA Commissioner Mason says that 1.2 million is conservative; he expects more. FORUM now feels its September estimate of 1.2 million for 1955 represents the minimum rather than a median probability.

	1954			1955		
		Commerce-		Commerce-		
Type of construction	Forum	labor	Forum	labor		
PRIVATE		(in millions				
Residential building (nonfarm)	12,700	13,305	13,650	15,000		
New dwelling units	11,200	11,890	12,000	13,475		
Additions and alterations	1,150	1,120	1,250	1,200		
Nonhousekeeping	350	295	400	325		
Nonresidential building (nonfarm)	6,300	6,140	6,450	6,400		
Industrial	2,000	2,000	1,800	1,850		
Commercial	2,300	2,155	2,500	2,300		
Warehouses, office and loft buildings.	1,000	955	1,150	1,000		
Stores, restaurants and garages	1,300	1,200	1,350	1,300		
Other nonresidential building	2,000	1,985	2,150	2,250		
Religious	560	585	600	675		
Educational	565	560	600	650		
Social and recreational	230	210	250	225		
Hospital and institutional	345	335	400	400		
Miscellaneous	300	295	300	300		
Farm construction	1,550	1,560	1,500	1,450		
Public utilities	4,575	4,400	4,500	4,425		
All other private	125	120	100	125		
PRIVATE TOTAL	25,250	25,525	26,200	27,400		
PUBLIC						
Residential building	350	340	300	250		
Nonresidential building	4,590	4,605	4,600	4,450		
Industrial	1,600	1,570	1,450	1,050		
Educational	2,100	2,070	2,250	2,400		
Hospital and institutional	340	350	350	400		
Other nonresidential building	550	615	550	600		
Military facilities	900	935	900	1,100		
Highways	3,750	3,550	4,700	4,200		
Sewer and water	1,000	975	1,050	1,050		
Miscellaneous public-service enterprises	225	200	200	215		
Conservation and development	725	720	700	675		
All other public	110	150	100	160		
PUBLIC TOTAL	11,650	11,475	12,550	12,100		
GRAND TOTAL	36,900	37,000	38,750	39,500		



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# PEOPLE: Wright threatens to forsake Wisconsin because of taxes; New Orleans school modernizer beaten at polls

A few days after Madison, Wis., voters had said "yes" (15,169-13,885) to the singular question on their ballots last month, "Shall the City of Madison employ Frank Lloyd Wright as an architect for designing and planning a municipal auditorium and civic center," Wright had news from another quarter that he said would impel him to move Taliesin out of Wisconsin forever. The Wisconsin Supreme Court ruled that Wright's home and school near Spring Green (the school is on 80 acres of 3,000 that he owns there) was not officially an educational institution and therefore was subject to local taxation. "The tax situation amounts to \$13,000-there's no hurt there," Wright said, "but the interpretation out of which it springs does hurt. Instead of getting help from our county and state, where I have invested so much of myself, we've been looked upon askance. Under the circumstances, I don't care to continue." Wright has been educating about 60 students a year on the site (he was born nearby) since the school was established in 1932. In winter the students move to Taliesin West in Arizona. Wright said he would sell the acreage not occupied by the school (upon which he has been paying taxes), but keep the stonework on the other 80 acres in memoriam to his forebears. "Our work has been drifting eastward and this court decision is so equivocal that we don't want to stay in Wisconsin," he told Forum. "The county won't exempt us from taxes because they say we make so much money we cannot possibly be a cultural organization, and yet we lose money each year. It is unfortunate that I have to give up something which I have put so much love and work into." He said he would transfer his base to the Berkshires or the Adirondacks. Gov. William G. Stratton of Illinois invited him to move there; Wright said he would consider the offer, added that it was "interesting and refreshing" to find a governor with "an eye on architecture." At month's end Wisconsin's governor also had his eye on architecture: he was trying to get Wright to change his mind about leaving the state.

Philosophic Architect Richard J. Neutra and pragmatic Associate Professor Richard Dewey of the Illinois University sociology department reached the same conclusions, but from different lines of thinking, when they spoke on the same panel at the recent convention of the American Society of Planning Officials.

Urging compilation of sufficient information as a basis for sound planning, Dewey said: "I am not nearly so interested in the democratic answer as I am in the right answer." Democracy does not establish the size of a steel beam to be used in a bridge, he explained. Knowledge determines this. He also stressed the need for developing a "broad philosophy" for planning, after citing ways in which the "democratic" and "planning" approaches both failed to solve some fundamental community problems. Neutra proclaimed the "need for a dynamic philosophy" for planning, after reviewing ways in which communities have developed in a manner that often frustrates "human needs." Said Neutra: "The whole man, the biological and psychological entity, must be used as the basis for determining not only the scale, but the content and character of the community."

Mrs. Jacqueline T. Leonhard, the 37-year-old woman who inspired and directed a \$31-million building and renovation program which



LEONHARD

hauled New Orleans schools out of the horse-and-buggy days, was defeated for re-election last month after six notable years on the Orleans Parish school board. Victor (by 7,000 votes in a small election-day turnout) was Matthew R. Sutherland, a lawyer new to public office.

Louisiana laws prohibit endorsement of school board candidates by organized political factions. There was little question, however, that Mrs. Leonhard's defeat could be attributed to activities of Mayor de Lesseps Morrison's machine, the Crescent City Democratic Assn. She and the mayor have been at odds over school board jobs.

Mrs. Leonhard was elected to the school board in 1948. There had been no school construction for many years; buildings were unsafe, unsanitary, inadequate. She started a minority battle for a long-range plan to build contemporary, functional schools. Her efforts became majority rule in 1950, when two candidates she campaigned for were elected to the five-person school board. In 1952 two more pro-Leonhard members were elected. Most of her program (11 schools finished, including celebrated Thomy Lafon—AF, Nov. '54, 11 others in construction or ready to be started, 41 renovated, 40 repaired) has about run its course.

Many architects had good reason to regret Mrs. Leonhard's defeat. Her insistence on improvement of the physical conditions of learning resulted in elimination of an architectural department from the New Orleans school system and substitution of a program of selecting and cooperating with independent outside architects. Some began to shudder at prospects of politics and reactionary attitudes seeping back into the school board. Said one: "Jackie was the only board member who felt good design was more than showmanship. . . . I am particularly incensed by her defeat since . . . school architecture in New Orleans (quadrilateral classrooms, raised classrooms, zoning of grade groups) was just beginning to have some effect on schoolhouse planning in other states."

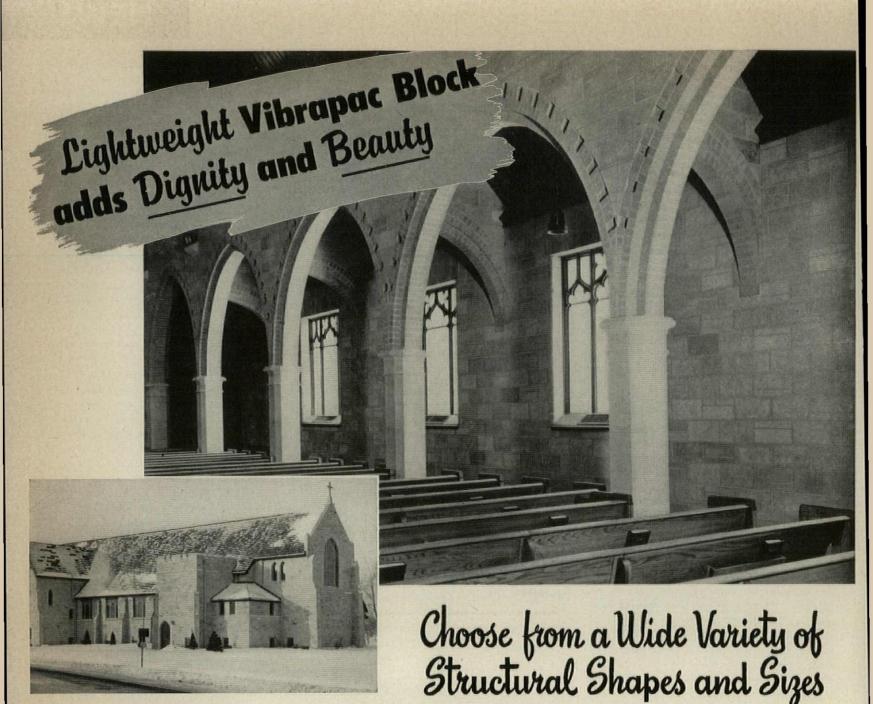
Photos: (top) Times-Picayune, P. H. Guarisco; (below) Gabriel Moulin

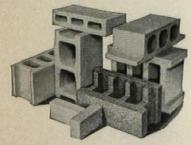


## GE electronics lab built on Stanford University campus

Newest industrial tenant of land-poor Stanford University, in an ambitious plan to raise its endowment by leasing two thirds of its 9,000-acre campus near Palo Alto, Calif., is General Electric Co. Last month GE leased an electron tube development laboratory, built for it by Stanford at a cost of \$120,000. Quick construction and simple structure characterize the 10,000 sq. ft. single-story lab. Designed last July by San Francisco Architect John C. Warnecke, and built in four months by Haas & Haynie, San Francisco contractors, the laboratory has two rear tilt-up walls and two walls of glass, roofed with timbers. GE was drawn to Stanford by the university's research institute, which has pioneered microwave tube studies. It is one

of eight industries to take up Stanford's offer to lease land which the university can not sell under terms of original grants by Founder Leland Stanford and his widow. Two other industries already have plants built on sites leased for 99 years; plants for five more firms will be built next year. Architecture and site planning are closely controlled by the university, which will accept only industrial tenants that are smokeless and quiet. Other tenants include: 43 families living in houses built on 24 acres (of 4,500 acres set aside for residential use), and a \$15-million, 50-store, 55-acre shopping center designed by Welton Becket & Associates, Los Angeles. Plans also are in the works for a \$10-million teaching hospital.





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## **BUILDING TRENDS:**

#### Steel output stages recovery;

#### October plywood production sets a record

Steel production in October and November, mirroring the business upturn, has staged a sharp recovery from its midsummer doldrums. Large orders from auto plants were mainly responsible, aided by a steady increase in buying for appliance, farm equipment, machinery production and construction. Shipments of structural steel, a great prop to the industry through the lean part of this year, totaled 2,679,348 tons for ten months, compared with 2,592,941 for 1953. Backlog orders were 1,293,779 tons, compared with 1,927,240 last year.

Northwest fir plywood mills were also flooded with fall orders; October production exceeded any month in the industry's history. Demand was well ahead of supply and some mills reported order backlogs as large as 60 days. Sustained homebuilding and other light construction were given most of the credit for this unseasonal situation, although some mills reported heavy buying for next spring. Early last month prices were holding steady at \$85 MSF for quarterinch AD, sheathing \$90. In the lumber market, some Douglas fir items started to show weakness by midmonth, but not so much as is normal in November, usually the year's low point.

Timber purchase. One of the largest business transactions ever seen in the Pacific Northwest took place last month when Georgia-Pacific Plywood, in a deal involving about \$13 million, bought out the stock of the Oregon Mesabi Corp. This purchase gave Georgia-Pacific control of about one billion board feet of lumber, a big percentage of it plywood peeler logs, in a 23,000 acre forest that has seen almost no cutting for 40 years.

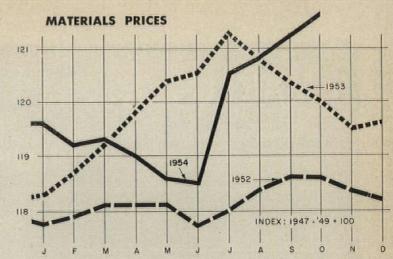
Branching out. In the trend of many building material and equipment producers to enter new fields, US Plywood formed a new division to manufacture wall covering, luggage, automotive and upholstery products. Armstrong Cork Co. went into the rug business by purchasing the Deltex Rug Co. of Oshkosh, Wis.; Minneapolis-Honeywell bought stock control of Boston's Doelcam Corp., producers of precision instruments and control equipment. Plans were announced to merge Toledo's Glass Fibers, Inc. with the Fiber Glass and Corrulux divisions of Libbey-Owens-Ford Glass Co. The new firm will be called Glass Fibers Corp. To capture a bigger share of air-conditioning equipment sales, York Corp. is splitting itself into two divisions—Industrial and Commercial.

## New York architects ponder means to curb excessive Santa Clausing

What will happen when an irresistible overgenerous contractor or manufacturer meets an immovable overconscientious architect? This problem may become a real one this month in New York, where the AIA chapter's *Oculus* recently carried the following notice:

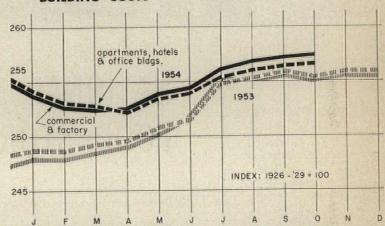
"It is not unusual these days for a practicing architect as late as April or May to break open an excellent bottle of Bourbon or Scotch from its original Christmas wrapping, or perhaps open a bottle of sherry with a silver-plated corkscrew hearing his name in letters of gold. . . . These treasures are not usually the gifts of grateful clients, loving family or boyhood chums. They come from our good friends, the contractors and manufacturers. It's very cheerful, but isn't it getting out of hand?

"The executive committee thinks so. On Oct. 5 they passed a resolution (freely paraphrased) that while we architects have none but the warmest feelings for our builder companions, all we want of them is low bids, a superlative workmanship and occasional free advice. Costume jewelry, leather goods, comestibles, and all other seasonal tokens of good will are looming too large in the traditional pattern of mutual respect between architect and builder. The committee is considering means for bringing this to the attention of the too generous donors."



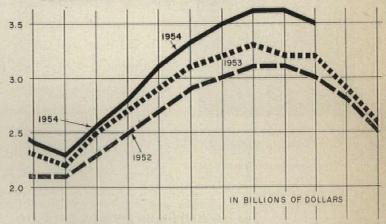
Setting another all-time high, BLS' wholesale building materials price index climbed to 121.7 in October from the revised September level of 121.3, the previous peak. The October index was 1.4% above Oct. '53. The latest increase was due largely to a small rise in lumber and a larger rise in asphalt roofing prices.

#### **BUILDING COSTS**



E. H. Boeckh & Associates' building cost indexes rose to new highs for the second consecutive month. Apartments, hotels and office buildings moved up 0.2 points to 256.4 in October, from 255.4 in Oct. '53. Commercial and factory buildings edged up 0.2 points to 257.2, compared to 255.2 a year ago.

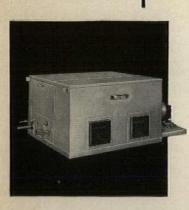
#### CONSTRUCTION EXPENDITURES



Expenditures for new construction remained at a high level in October. The total of \$3.5 billion showed a seasonal decline of 2.8% from September but stood 8% above Oct. '53. The ten-month total of \$30.8 billion was 4% ahead of the same 1953 period. Reflecting the continued boom in private residential construction, housing starts in October totaled 106,000, a record high for the month (18% above Oct. '53), but were down seasonally (7%) from September. October starts lifted the 1954 total to 1,016,500, the first time since 1950 that the tenmonth level topped the million-unit mark.

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# **NEW BUILDINGS**



PHILADELPHIA HIGH-RISE HOSPITAL

## Jefferson Hospital completed

A quarter century of advancement in hospital design was summed up last month when the new 14-story, \$7-million pavilion of Jefferson Medical College Hospital was opened in Philadelphia. The problem for Architect Vincent G. Kling was not simply fitting the complex equippage of modern medicine into a pleasing building; it was necessary to integrate many aspects of the new pavilion efficiently with other buildings of the Jefferson medical group. In addition to 230 private and semiprivate beds in hotel-like atmosphere, the pavilion contains a new central sterile supply suite, a surgical section with 18 operating rooms (each wired for closed-circuit color television transmission to college quarters), laundry and administrative facilities. Skilled handling of complex hospital gadgetry starts with street entrance doors operated by carpet treadles and is carried through to conversational-level voice receivers and transmitters beside each bed and oxygen piped into every patient's room. Awkward mingling of patients and visitors in elevators has been avoided by flanking a central bank of four high-speed elevators with two separate sets of lobbies; two cabs and patients, two for visitors.

#### Hemisphere cultural center

Dreams of an Inter-American trade and cultural center in Miami, wetblanketed for 20 years by investors' timidity and failure to obtain federal grants or loans, were congealing last month into something resembling reality. A preliminary contract was signed between the Inter-American Center Authority (a Florida agency) and two New York financial firms, Lehman Bros. and Van Alstyne & Noel, for an underwriting syndicate to float a \$78-million bond issue. Instead of getting smaller during the past two decades, plans for the center have grown until they now surpass in size and scope the 1939 New York World's Fair. They contemplate permanent improvement of 1,800 acres (600 are





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# NEW



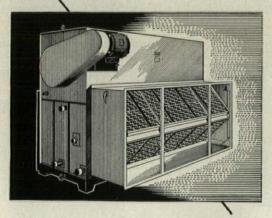
ARCHITECT AND ENGINEER: IRVING W. RUTHERFORD CONTRACTOR: THE EDWARD PACKTOR CO.

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# NEWS

NEW BUILDINGS (continued)



HOTEL-CLUB-RESTAURANT FOR CULTURAL CENTER

still under water) north of Miami where Western hemisphere nations could display their products in modern exposition buildings. Economic soundness of the scheme is suggested in a study by Ebasco Services, New York construction and consulting firm. Total cost of the center is now estimated around \$200 million. Its backers hope it will be selfliquidating as tourists amble, drive and boat through its three levels of exhibits. W. H. Walker, president of the First Federal Savings & Loan Assn. of Miami, has been pushing the center since 1950, is now chairman of the authority. Present promotion designs, termed "futuristic" by the center's promoters, are the product of an architectural board: Alfred B. Parker, John E. Petersen, Robert F. Smith, Robert L. Weed, all of Miami, and Russell T. Pancoust, of Miami Beach.

#### **UNESCO** bids below estimate

Bids received last month for construction of the UNESCO building in Paris (AF, Aug. '52 et seq.) ran a good 20% below original estimates-well within a total budget of \$6.25 million, including furnishings. Bids came in from almost every country in Western Europe and contracts were let to a group of subcontractors rather than to one large builder. Work will be coordinated by UNESCO's construction office and by the building's three designers: Marcel Breuer, Bernard Zehrfuss and Pier Luigi Nervi. Bidding under estimates was attributed mostly to the comparative instability of Paris' building costs, which makes all preliminary estimating difficult. The prospective savings are expected to more than offset the cost of the two designs that were scrapped before the present one finally was approved.

#### Clay products research center

Research by the Structural Clay Products Institute, now carried on in several midwest cities, will be centralized in a new laboratory-office at Geneva, Ill., 35 miles west of Chicago. The institute says many features of the center, designed by Howard T. Fisher & Associates, Chicago, are symbolic of its purpose: materials are mostly brick and tile,



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of

Fitchburg Youth Library

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Manufacturers Trust Company Branch 5th Avenue at 43rd Street, New York City Architect: Skidmore Owings & Merrill

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- Special Design Consultant: Eleanor Le Maire
- Special Sculptured Effects: Harry Bertoia
- · Vault Door Design: Henry Dreyfu
- Electrical Contractor: Fischbach & Moore Inc.
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• Artists: Gyorgy and Juliet Kepes

• Sculptor: William Talbot • Acoustics: Robert Newman

• Lighting: Domina Eberle Spencer

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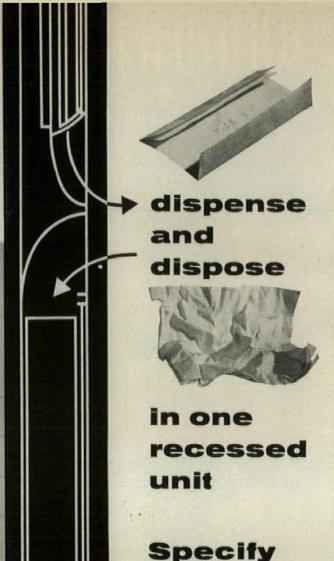
walls are load-bearing masonry, six flues to carry off fumes from lab operations are gathered in a massive brick chimney, and the side-by-side placement of the center's two units indicates consciousness of the shape and pattern of structural clay products. Nevertheless, the architecture gives no clue as to whether progressives or diehards are in control of the institute; architecturally, the research center is as neatly perched on the fence as any building could be (see cut). One section of the center will be large enough to hold full-size experimental buildings for indoor study. Even part of the ground will be left exposed so foundation conditions can be duplicated. The center also will have large-scale ceramic testing equipment. Architectural research space will be provided in a smaller, air-conditioned office section.

### **S&L** office by a harbor

A new \$700,000 building for the Newport Balboa Savings & Loan Assn., at Newport Beach, Calif., has many of the latest touches (radio-controlled parking lot gates, music controlled from the receptionist's desk, electrically-operated doors in the president's office) characteristic of banking's rush to escape its stodgy monuments and embrace the efficiency of functional structures. From the street the bank looks slick and fresh-modernistic rather than modern. From the harbor it resembles a yacht club. The outstanding interior feature is a group of booths each designed for cozy meetings of the four persons (buyer, seller, broker, loan officer) usually involved in sale of a house. The front of the building (it was designed and built by the Bank Building & Equipment Corp. of America) has floor-to-roof tinted windows. louvered by precast concrete fins. These have been sprayed with blue-colored plastic.

#### Tilt up terrazzo

Seattle Architect Paul Thiry has used what probably are the biggest (7' x 12') tilt-up factory-cast terrazzo panels made so far, at least, on the West Coast, in a \$142,000, singlestory branch library he designed for his home city. The panels, faced with quartz particles, form the outside walls, running 7' from foundation to windows. They are backed inside by concrete blocks. H-columns, between which the buff-colored panels are inserted, are finished in black on the outside, as are other visible structural members.



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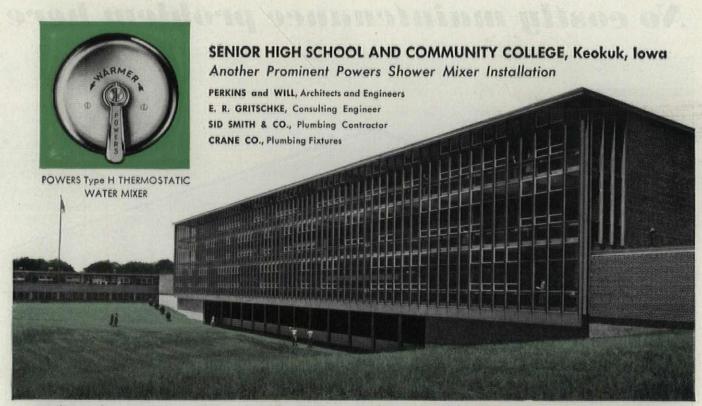


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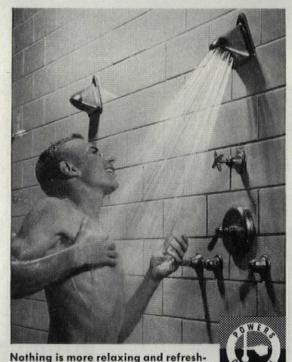
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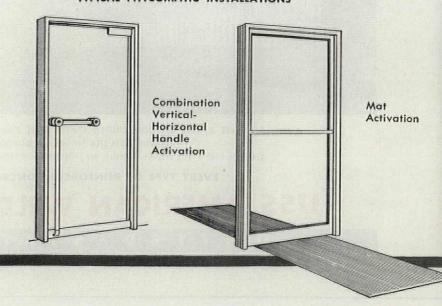


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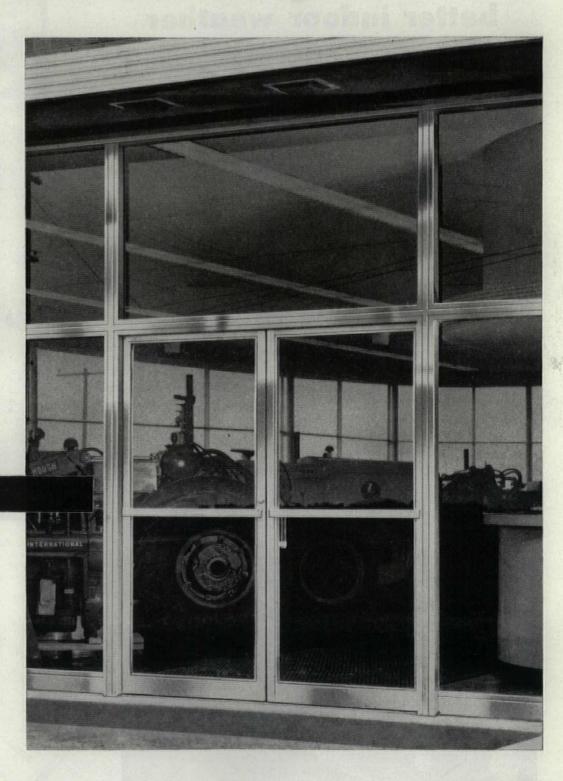
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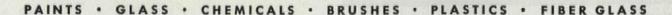
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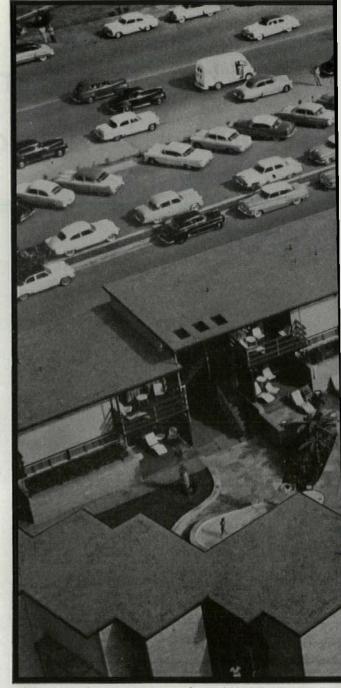
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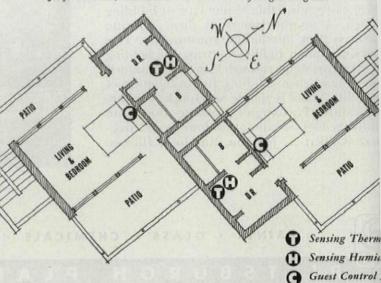
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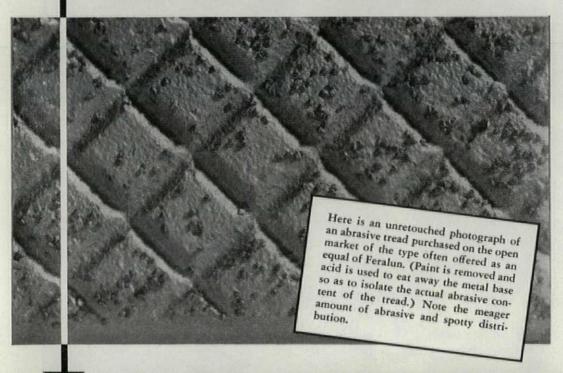
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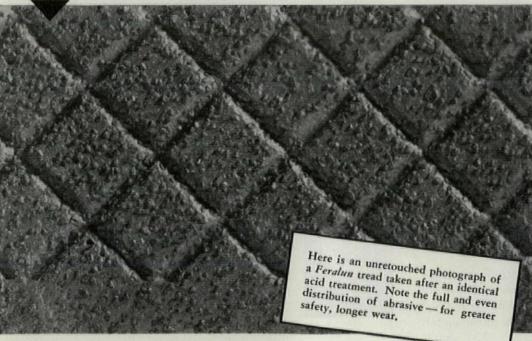
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The life and non-slip effectiveness of any abrasive tread is approximately proportional to the amount of abrasive embedded in the surface. Note that the abrasive of the Feralun tread also extends over the nosing where the danger of slipping is greatest. Feralun has provided lasting safety—free from maintenance—for the past 35 years.

Feralun is available as treads, thresholds, floor plates and elevator sills. Also in Bronzalun, Alumalun and Nicalun. See Sweet's Catalog 1954—12b/Am.

AB117

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## **EVENTS**

Market Research and Design, two-day conference sponsored by the University of Michigan and the Boston Institute of Contemporar Art, Dec. 9-10, At Ann Arbor. For detail address Dean Wells Bennett, College of Architecture and Design, University of Michigan, Ann Arbor.

1955 "Good Design" exhibition, sponsored by New York's Museum of Modern Art and Chicago's Merchandise Mart, opening Jan. at the Mart, will be shown in New York in the fall.

National Retail industry Show, sponsored by the Store Modernization Institute, including an exhibit on store building and modernization Jan. 7-11, Madison Square Garden, New York

American Road Builders Association annua convention, Jan. 10-13, Hotel Roosevelt, New Orleans, La.

American Society of Heating and Ventilating Engineers, annual convention, Jan. 24-27, Philadelphia.

Heating & Ventilating Exposition, 12th International Heating & Ventilating Exposition Jan. 24-28, Commercial Museum and Convention Hall, Philadelphia.

Mason Contractors Association of America, annual convention and exhibition, Jan. 30-Feb. 2
Jefferson Hotel, St. Louis, Mo.

Industrial Ventilation Conference, 14th annual conference, Feb. 14-17, Michigan State College, East Lansing, Mich.

American Concrete Institute, 51st annual convention, Feb. 21-24, Hotel Schroeder, Milwaukee, Wis.

Conference on Church Architecture, sponsored by the Church Architectural Guild of America and the Council of Churches' Bureau of Architecture, Feb. 23-25, Netherlands Plaza Hotel, Cincinnati.

Associated General Contractors, 36th annual convention, March 14-17, New Orleans.

Building Officials Conference of America, annual meeting, April 18-21, Milwaukee.

Western Mountain District, American Institute of Architects, regional meeting, Apr. 28-30, Camelback Inn, Phoenix, Ariz.

American Institute of Architects, annual convention, June 20-24, Hotel Radisson, Minneapolis.

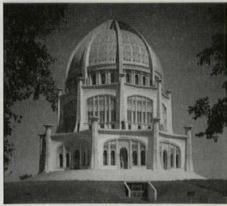




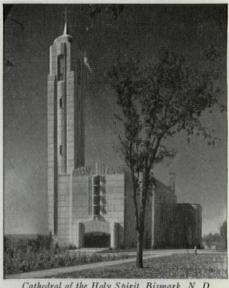
First Baptist Church, Long Beach Cal. K.S. Wing, architect.



Bradford Church Monastery, Bradford, Vt. William Colleary, architect.



Bahai Temple, Wilmette, Ill.



Cathedral of the Holy Spirit, Bismark, N. D. W. F. Kurke, architect.

# Architectural Concrete is ideal for churches of any design

These photos illustrate the versatility of architectural concrete for churches. No other material offers architects more freedom to translate the wishes of building committees into structures that please congregations aesthetically and economically. It combines distinctive beauty, rugged strength and proved economy.

Beauty can be imparted by forming materials, by a finish treatment or by ornamentation. Ornamentation is economical because it can be cast integrally with structural elements.

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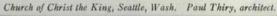
With its moderate first cost, low maintenance cost and long life architectural concrete serves at *low annual cost*.

For more information about designing churches and other structures in architectural concrete, write for free, illustrated literature. It is distributed only in the United States and Canada.

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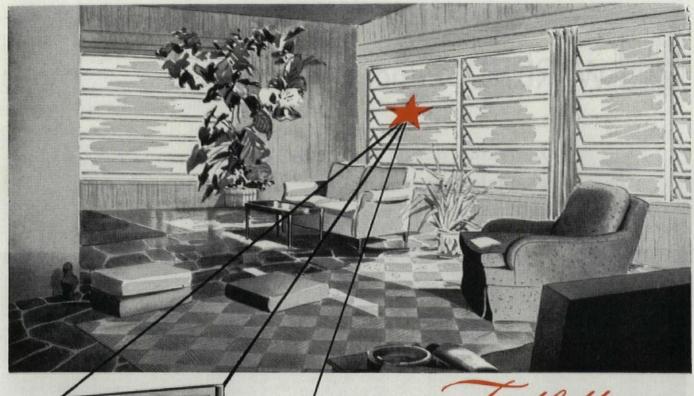
A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work





Holy Blossom Synagogue, Toronto, Canada. Chapman & Oxley, architects.







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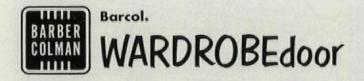






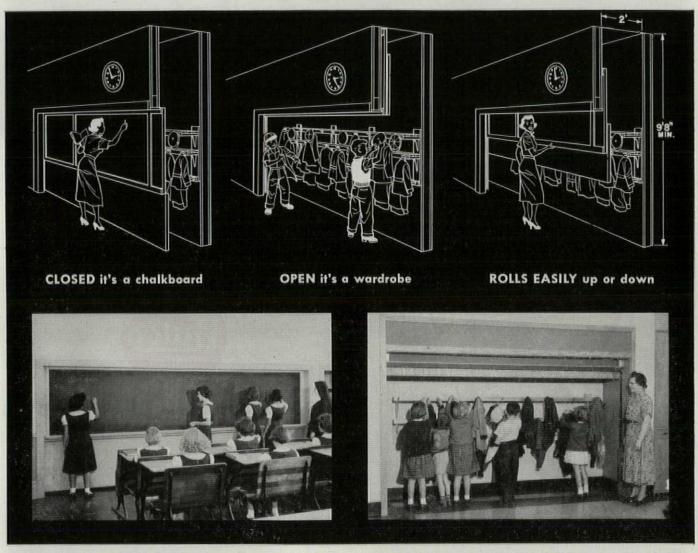
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more flexible design for new or remodeled classrooms ...more usable floors and walls! School officials and architects everywhere report that Barcol WARDROBEdoors provide more working wall space for chalkboard or tackboard . . . and more usable floor space. Full-view opening gives teacher control of "cloakroom rush." Maintenance is easier, because floor is completely clear of pivots or hinges.

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ST. AUGUSTINE SCHOOL, Rochester, N. Y. finds large extra blackboard a valuable feature. Architect: Frank Quinlan.

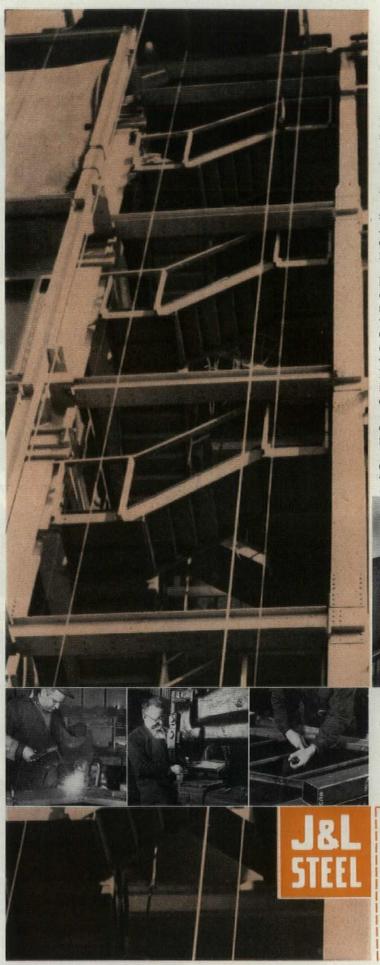
INSTALLATIONS EVERYWHERE acclaim the practical advantages of WARDROBEdoor. For example, in the East there are installations in Marion, Somerset, Mass.; Hoboken, N. J.; Heuvelton, New Rochelle, Niskayuma, No. Tonawanda, Rochester, Romulus, Skaneateles, Snyder, Utica, N. Y.; Richmond, Va.; So. Charleston, W. Va.; in the South at LaGrange, Ga.; Louisville, Ky.; in the Midwest at Cantrall, Chicago, Fancy Prairie, Rockford, Streator, Yorktown, Illinois; Hobart, Ind.; Mt. Pleasant, Iowa; Benton Harbor, Dearborn, So. Haven, Wells, Mich.; Lakefield, New Prague, Watertown, Minn.; Lincoln, Nebraska; Minot, No. Dakota; Columbus, London, Ohio; Cudahy, Wisc.; in the West at Sanbruno, Calif.; Missoula, Mont.; Forest Grove, Ore. Complete list of schools and architects on request.

REMODELED HEUVELTON CENTRAL SCHOOL demonstrates how modern space saving equipment increases usefulness of class-room floor and wall space. Architect: John C. Ehrlich.



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One of the big reasons for Standard's success is the way Junior Channels help out in production and shipping costs. Mr. Pfaff reports the company saves about 20 percent in shipping weight on the stairs fabricated with lightweight Junior Channels over an equivalent stair built of ordinary channels. In other words, for each ten floors of stairs two floors are shipped free.

Another advantage pointed out by Mr. Pfaff is that the lightweight J&L Channels can be handled faster and easier during fabrication and finishing. J&L Junior Channel stair stringers are strong, lightweight members. 12 inch sections weigh only 10.6 pounds per lineal foot... 10 inch sections 6.5 or 8.4 pounds depending on the web thickness required. A standard structural channel of the same height would weigh almost twice as much. Standard Metal Products Company translates this weight-saving feature into a dollar savings because less weight means less fabricating, erecting and material cost.

Finally, J&L Junior Channel stair stringers provide clean, straight lines that give excellent appearance without further finishing and take ornamental trim readily.

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Junior Channels Are Readily Available for Prompt Delivery

# Jones 4 Laughlin

STEEL CORPORATION - Pittsburgh

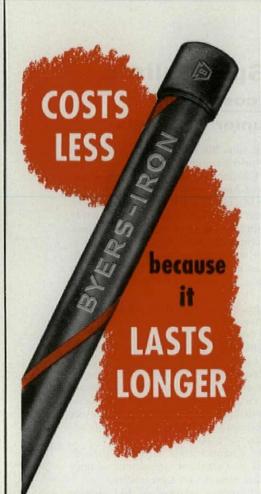
Jones & Laughlin Steel Corporation 491 Gateway Center. Pittsburgh, Pa.

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When you consider that the true cost of a piping installation is INSTALLED COSTS plus the cost of any REPAIRS, you can readily see why the proved, longer life of wrought iron pipe under various corrosive conditions adds up to real economy.

You'll get a good idea of how wrought iron pipe's durability has served and saved for others by reading over our bulletin, Piping for Permanence. We will be glad to send you a copy, or answer any specific inquiry that you might have concerning the use of wrought iron in corrosive services.

#### A. M. BYERS COMPANY

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Wrought Iron—Available

Throughout the World



## **LETTERS**

#### YOUNG MEN

Forum:

Forum's section in the October issue on the work of young architects is inspiring and reassuring.

In itself, it is a good reply to those critics who have tried to bury contemporary American architecture under a gravestone labeled "The International Style." These young men have proved that today's architecture in the US is American architecture and that its vitality does not depend alone on the great pioneers of the past 50 years—national or international.

MORRIS KETCHUM JR. Ketchum, Gina & Sharp, architects New York, N.Y.

#### Forum:

The work illustrated is not unlike other work shown in Forum since the war. It is neither more crude, nor more sophisticated, better or less well detailed, more or less arresting in conception than the average run of the well-studied jobs in your monthly presentations. These buildings are in the mainstream of American architecture (by which I do not mean building). They are healthy looking, appear suitable for the purpose intended; if there is no particular invention shown, this may be due not to the designers' inability, but to the exigencies of program and budget, for we all know how our best schemes end in file or wastebasket,

On the whole, I always prefer something a little more off beat. It might be interesting for FORUM to show a group of unbuilt designs by these very men. I'll bet they are more interesting!

> PERCIVAL GOODMAN, architect New York, N.Y.

#### Forum:

I congratulate Forum for finding the portfolio of fine work by younger men. This sort of thing shows that American architecture is continuing to renew itself with creative young blood and therefore is doing just what I believe it should, rather than the too-familiar retreating into the expressions of the great masters of the last generation. . . .

However, if a drive-in church is the wave of the future then I am sorry. Perhaps if the first drive-in church I had ever considered had been in the redwood forests in California instead of the Florida hammock, I might have liked the idea better. This is, however, no reflection on the straightforward little building.

The Girl Scouts are indeed to be congratulated on their dining hall in Anne Arundel County!

> HARRIS ARMSTRONG, architect Kirkwood, Mo.

> > continued on p. 72







# ELECTRICAL OUTLETS...

# at a new low cost!

standard ducts can be buried in structural concrete—without fill

## Flexibility At Low Cost

Now you can get 100% electrical flexibility—at a new low cost—with underfloor electrical distribution ducts set in standard reinforced concrete joist floors. These ducts are buried in the structural slab of the floor, and no special "fill" is needed. As a result, electrified R/C Duct Floors can be constructed at a cost that is appreciably less than the cost of cellular steel flooring.

### **Electrical Outlets As You Need Them**

With R/C Duct Floors, all wiring—power, telephone, and intercommunication systems—can be run in the ducts. These ducts, which can be run at any desired spacing, have blank risers every two feet of their length. Electrical outlets can be connected to these risers in a matter of minutes, to serve each desk. This makes it possible to rearrange desk spaces or offices as needed without digging up the concrete floors. Office buildings, department stores, and other structures require this flexibility for future change and growth.

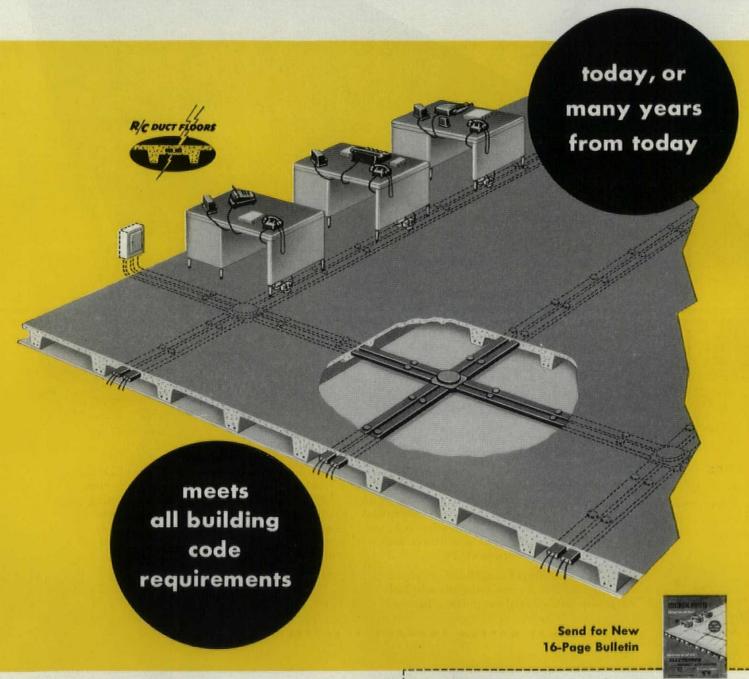
#### **Underwriters' Laboratories Tests**

Recent tests made at Underwriters' Laboratories have established fire ratings for R/C Duct Floors with the ducts in the structural slab. One test used reinforced concrete construction with joists 6" deep, plus a 2" top, and a 34" vermiculite ceiling. This construction was given a three-hour fire rating, which meets all building code requirements. Another test was run on heavier-type reinforced concrete construction with joists 6" deep, plus a 3" top, and a 1" vermiculite ceiling. This fire test was stopped after six hours. In both test floors, the forms were dropped 2" under the ducts and junction boxes. No special provision was made for the ducts, which were buried in the structural concrete—no fill required.

Before you design your next building, investigate R/C Duct Floors. They can be built with standard forms and ducts, and require no special engineering. And, compare the cost of R/C Duct Floors with cellular-type construction!



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One of Rotor Tool Company's best protections against fire is the Gold Bond "Firefighter" Roof Deck poured over its new Cleveland plant. Incombustible gypsum—39,000 square feet of it—covers the building with natural fire-resistance. Gold Bond Insulation Formboards also provide this installation with a heat reduction coefficient of .18.

The wide versatility of Gold Bond "Firefighter" Roof Decks makes them especially adaptable to any industrial design—pitched, barreled or flat. Application is fast...up to 30,000 sq. ft. can be poured in a day! Gypsum Roof Decks can be used with lighter supporting structures because of their low dead load, permitting substantial construction savings. Maintenance costs are low, and decks can be easily cut or patched to meet any future design modifications.

For full details on "Firefighter" Roof Deck, write National Gypsum Company, Buffalo 2, N. Y. for Technical Bulletin No. 589 AF.

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Available in sizes 15 through 150 hp — heating or pro-cessing steam or hot water. A complete unit from a single source. (Other Cleaver-Brooks boilers in sizes through 500 hp.)

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## NO BOILER HAS EVER OFFERED SO MANY ADVANTAGES AND QUALITY FEATURES AT SUCH LOW INITIAL COST

• This NEW CB boiler has EVERYTHING needed to bring big boiler standards to commercial, industrial and institutional users with small capacity requirements. Despite its unusual, compact size you get big boiler performance - from matched-quality components, proved the world over on thousands of Cleaver-Brooks self-contained units.

Get all the facts NOW on how the new CB can help you save dollars. Make it a point to see . . . and hear the most silent-running, biggest boiler value available anywhere!

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- FOUR-PASS FIRETUBE CONSTRUCTION longer gas travel scrubs heat from flame - means lower fuel costs - guaranteed efficiency of 80% when firing with oil.
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- COOLER BOILER ROOM fiber glass blanket insulation and 16 gauge metal sectional lagging are non-corrosive, moisture and heat resistant.
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NOW - FIRST SIZES OF THE CB BOILERS ARE MADE IN CANADA TOO.

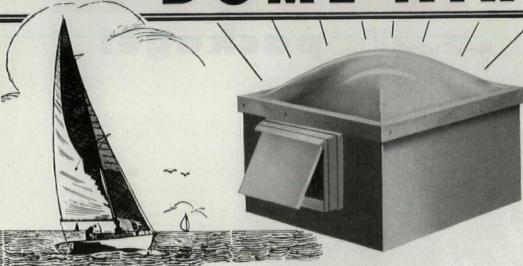
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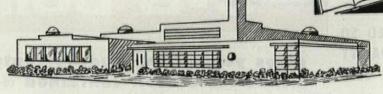


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DURATITE



SKYLIGHTS



LETTERS continued from p. 66

#### RAPID TRANSIT ROLE

Forum:

I found your article in the October issue "The Role of Rapid Transit in Urban Rede velopment," both timely and informative. The subject is highly controversial here.

> HERBERT W. VON COLDITZ, enginee Lafayette, Calif.

#### 17- YEAR OLD QUERY

Here's one for the books! In chatting with the secretary of the manager of the Nationa Oak Flooring Manufacturing Assn., she re ported the recent receipt of a coupon inquiry from a magazine 17 years old. At my request she dug out the inquiry: it was from the October 1937 issue of FORUM!

> WILLIS OSBORN Atlanta, Ga.

#### FILL FIRE

Forum .

The article in your September issue, regarding the town of Eastwick and the proposed redevelopment program, says that it is proposed to use solid coal dust as fill, pumped from the Schuykill and Delaware River dredging operations.

I suggest very careful consideration of the hazard of using such fill. Weight in the form of foundations may create a very definite hazard of ignition.

I am familiar with an instance of a large concrete slab placed on a fill consisting mostly of ashes from a producer gas operation which naturally contained several per cent of carbon. This ignited and smoldered for several years, in spite of expensive efforts to quench it.

The fact that the coal in the present instance would be very finely divided and have a large surface area per unit of weight would make the material potentially more reactive.

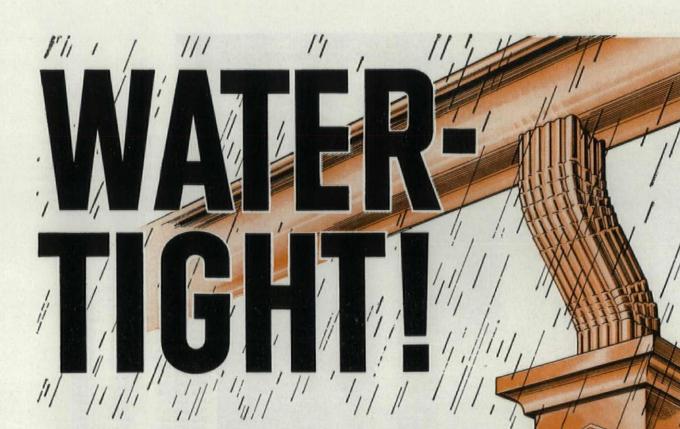
URBAN E. BOWES Perrysburg, Ohio

#### NEW WAYS TO FINANCE SCHOOLS

Forum:

Bouquets to Klutznick of Park Forest. . . . The finest bit of writing on the "school cause" that has appeared in FORUM (AF, Oct. '54). I know of no architectural magazine, no architect, no school administrator, no school trustee and no citizen who has managed to unblindfold himself so completely and gracefully as Klutznick appears to have done. But Klutznick's highly commendable experiments can't amount to a small drop in a huge barrel if only thousand-acre-and-more developers are eligible to sit in the game. You couldn't get half of the big ones to sit in and you couldn't get one out of ten of the few in the game to play with the kind of chips he says he's playing with.

continued on p. 76



Chase® Copper Roofing Products joined with standard soldering techniques stay joined for good!

Chase Copper Roofing Products not only stay watertight for good-they also resist the ravages of weather, withstand the weight of snow and ice-far better than any substitute.

Chase copper downspouts, gutters, elbows and shoes are made of 16 ounce copper or heavier for extra strength, longer life. All corrugations are deep and generous, so you can be sure Chase Copper Roofing

Products will hold up under extreme temperature changes.

And remember this: Chase Copper Roofing Products blend harmoniously with any home design, modern or traditional. The free Chase Copper Roofing Products Booklet tells you more about Chase products, and how they will assure you of a quality job that will last for years. Write for your copy today.

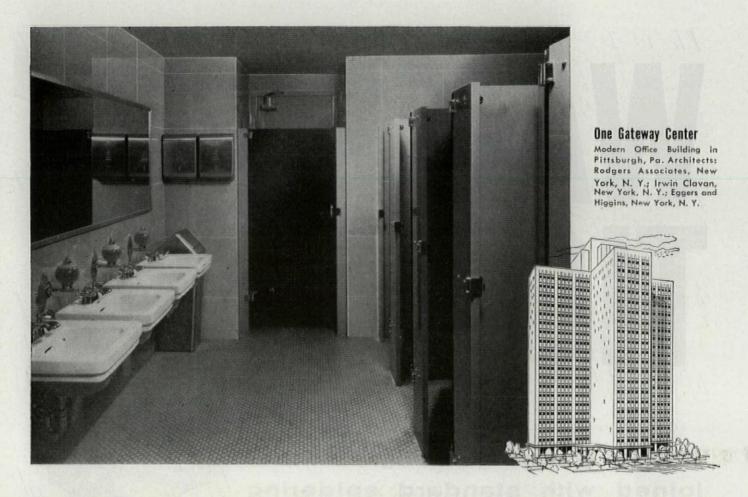
> Chase Copper adds extra value to any home!

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# finished in <u>Carrara Glass</u>

• Through their consistent specification of Carrara Structural Glass, leading American architects have proved it to be a preferred material for walls, stiles and partitions in the washrooms of important buildings. And the reasons behind this preference are many.

Carrara Structural Glass is outstanding for quality. Every piece is mechanically ground and polished. It permits joints that are true and even, without lippage or warpage. The beautiful, gleaming finish of Carrara Glass is permanent. It won't check, craze, stain or fade. Its smooth, homogeneous surface is unaffected by moisture, soap, damp atmospheres and pencil marks. It won't absorb odors.

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And Carrara is versatile. Available in ten glowing colors, Carrara Structural Glass lends itself perfectly to an unlimited variety of architectural applications.

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# ...the quality structural glass



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# CERTIFIED (SBM) BALLASTS

No one knows better the value of CERTIFIED CBM BALLASTS than the manufacturers of fluorescent tubes. For the satisfactory performance of their lamps is vitally dependent on the ballasts that operate them. Here's what they say:

### **CHAMPION** says:

"Fluorescent lamps are designed to operate at specific electrical values. The use of auxiliary equipment that has been proven to meet these agreed upon standards will assure the user maximum value for his lighting dollar with a minimum of operational failures. Certified Ballasts are inexpensive insurance."

### **GENERAL ELECTRIC says:**

"The life and light output ratings of fluorescent lamps are based on their use with ballasts providing proper operating characteristics. Ballasts that do not provide proper electrical values may substantially reduce either lamp life or light output, or both. Ballasts certified as built to the specifications adopted by the Certified Ballast Manufacturers (CBM) do provide values that meet or exceed minimum requirements. This certification assures the lamp user, without individual testing, that lamps will operate at values close to their ratings."

# are Tailored to the Tube

### SYLVANIA says:

"The light and life ratings of fluorescent lamps are based on three hour burning cycles under specified conditions and with ballasts meeting American Standards Association specifications. Ballasts marked with the CBM emblem and certified by Electrical Testing Laboratories, Inc., meet ASA specifications."

### **WESTINGHOUSE** says:

"Use ballasts that are tested and Certified by Electrical Testing Laboratories or ones that are otherwise known to meet the specifications of the lamp manufacturer. These will give best results with Westinghouse fluorescent lamps."

By using fluorescent fixtures that are equipped with CERTIFIED CBM BALLASTS you are assured long lamp life, full light output and trouble-free operation.

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## You, too, can specify Hubbell quality with a "sharpened pencil"

ty TIGH SCHOOL

In planning and designing this beautiful Cumberland Valley High School, Architect Edmund George Good, Jr., not only maintained highest quality standards in the products and materials specified but also held overall building costs to a practical minimum. This design achievement recently won the commendation of school administrators and architects alike at the recent School Administrators Architectural Exhibit at Atlantic City, New Jersey. Hubbell highest grade, heavy duty wiring devices were specified throughout the school...best assurance there is of economical installation, safety, and trouble-free, long-life performance.

For economy that counts . . . always specify Hubbell.



**HUBBELL**, Inc.

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# LETTERS continued from p. 72

In face of the fact that the economy of th country has expanded for more than 50 year at a remarkably steady rate in excess of 39 per annum, and the further fact that moschool districts can borrow at less than 39 you can bet that the majority of voting cit zens still feel that bonded debt is sin. Th less the bonded debt the less the sin. Mor rationally, the less the bonded debt the less the imposed retrenchment when the next eco nomic "slip" comes and the less the likelihoo of public school bankruptcy.

Although bonded debt no longer appear sinful to me, I still eye it with some ver genuine reservations. The prophets of gloon and doom are not all dumb and they can' all be wrong forever. I'd like to see some public school credit left after the next "slip." We'll need it.

Now is the time, in my view, when real and honest "federal aid" is desperately needed. Changes in federal income tax laws to allow public school districts to retain out of federal income taxes (before their trip to Washington) enough to staff, operate and house their own public schools in their own ways (provided of course that their ways were more frugal than Uncle Sam's) would do the trick.

School buildings can be built for 25% less than they are being built now when both school administrators and architects are willing to take off the blindfolds, recognize the seriousness of the dilemma, take the ugly word frugality into their vocabularies and invest it with legitimacy. Needless to say they would not arrive at the same schools. They probably would arrive at better schools, and far more of them than the big merchant housebuilder could ever be expected to produce.

> STAYTON NUNN School coordinating architect Houston, Tex.

All new housing developments should be planned to be integrated into their communities, and zoning or regional planning commissions should work from the beginning with the builders to allocate land for community facilities. Together with the board of assessment, the school boards and other public agencies, they should work out the financial programperhaps, for a limited time, along the lines suggested by Philip Klutznick in order to get sufficient funds to get construction under way without delay. But I would strongly recommend that the design of the schools and other public buildings are not turned over to the builders, but that architects be selected by the school boards as customarily or by AIAsponsored competitions. If funds are promptly made available and the architects are selected to work in the early stages of the planning of the development, the plans for the schools, carefully worked out with the school board and parent-teacher associations, could be well

continued on p. 78

# easy on the eyes...

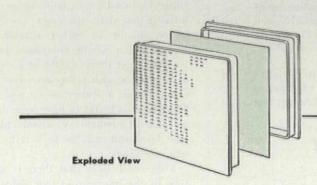
• Frequently you have to design fenestration for an "impossibly bright" location. Examples are 1) overlooking a white concrete parking or recreation area, 2) unusually sunny localities or exposures, 3) unusually cold localities where the snow lies on the ground for months at a time to create intense glare.

If you have these problems, the new PC Suntrol Blocks will solve them.



Suntrol Blocks contain a pale green fibrous glass diffusing screen that reduces glare by 35%, compared to standard blocks. This screen also reduces instantaneous solar heat gain by 25%. Suntrol Blocks are available in a light directing pattern for above eye level and in a light diffusing pattern for above or below eye level. The new green screen is also available in Skytrol Blocks for use in top-lighting systems.

Suntrol Blocks, available only from Pittsburgh Corning, don't cost any more than standard glass blocks. So if you have an unusual glare problem, bone up on what Suntrol Blocks can do to help. For information, write to Pittsburgh Corning Corporation, Dept. E-124, One Gateway Center, Pittsburgh 22, Pa.

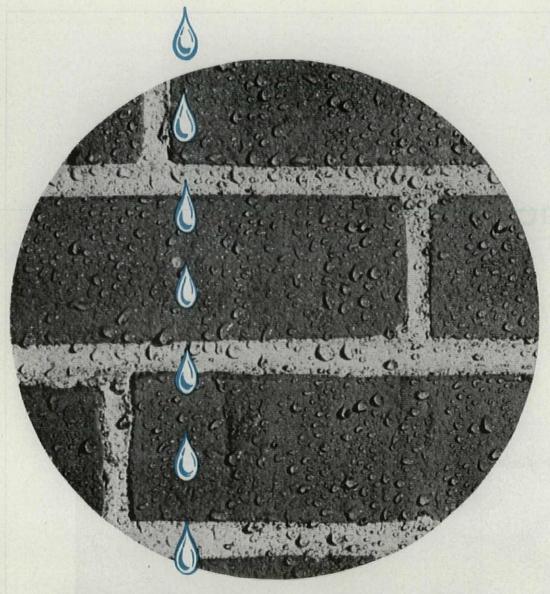


# PC Suntrol\* Glass Blocks



ALSO SKYTROL® AND FOAMGLAS®

T. M. Reg. Applied For



# Among all silicone water repellents **Dewey and Almy's** DARACONE is outstanding!

DARACONE is used on buildings of Tufts College, Arthur D. Little, Inc., Monticello, many other important buildings. Thousands of buildings have proved the efficiency of silicone water repellents. But experience has also shown that it must be the right silicone. There must be enough of it. It must be carried into the masonry to the right depth.

That's why there is a big difference in the efficiency of silicone water repellents. That's why so many architects and contractors, after making their own tests, specify DARACONE water repellent to insure lasting protection against leakage, efflorescence, weathering, staining and spalling.

Send today for this brochure that includes both the information you need to make your own tests of the efficiency of silicone water repellents . . . and suggested specifications that insure long-lasting protection.

# DEWEY and ALMY **Chemical Company**

Cambridge 40, Mass.

Offices or Subsidiaries in principal U. S. cities and in Buenos Aires, Copenhagen, London, Melbourne, Milan, Montevideo, Montreal, Naples, Paris, São Paulo, Tokyo.

under way when the housing construction starts. Perhaps the actual construction could well be undertaken by the builder with it consequent savings in cost, but the specifica tions and supervision should be left under the independent architects' control.

Pressing as is the need for classrooms, the question remains: "What are we getting for the square foot?" I fear that the developer will end up using prefabs and other means to cheapen the costs, with no better results than producing "disposable teaching cartons."

SAMUEL E. HOMSEY, architect Wilmington, Del.

Forum:

I would not like to see the public school system influenced by private enterprise. still think it should be handled in the democratic way by a town meeting or by public

We should push for more advanced planning in the community. Let the community keep up with the housing projects; also, keep the housing projects under the control of the community rather than forcing the community to come up and meet the housing project demands.

I think it is reasonable for the community to put an excise tax or a special tax on every house of a housing project to take care of the school that must go along with that project. This should apply to all houses in the community, however, and not just to a housing project. It would be similar to an auto excise tax on a new automobile. This would be a very economical and just way to take care of the capital investment needed for schools.

> ALONZO J. HARRIMAN, architect Auburn, Me.

Forum:

We can build adequate elementary school facilities for about \$20,000 a classroom. If this were measured in terms of dollars and cents to the average new home owner, it would probably result in \$700 per dwelling unit. I believe that it would be easier to finance this \$700 by means of a low interest rate bonding program rather than to add it to the cost of the house with its accompanying high interest rates and carrying charges.

The cost of financing secondary school facilities in most cases must be spread over a broader base than just a mere residential area. There should be either taxable industrial plants which would contribute to this at a local level, or there should be a redistribution of taxable wealth from industrial areas at a county level, a state-wide or federal level. I feel that it is better to have secondary schools as well as elementary schools planned and developed and paid for in part by the people who use them.

I do not believe that there is any foundation to the implication that there is a great saving in the construction of school facilities

continued on p. 82

# **GERHOLZ COMMUNITY HOMES**

# uses VISQUEEN in 800 unit project polyethylene film



Perimeter insulation is individually wrapped in VISQUEEN film.



16 foot wide VISQUEEN drops into place with minimum of labor.

# Concrete slab floors protected forever from moisture penetration by VISQUEEN film barrier

VISQUEEN film, job tested on hundreds of homes, is the moisture barrier under the slabs floors in Robert P. Gerholz' prize-winning community development in Flint, Michigan.

"I used VISQUEEN film in my Westgate Park development for two reasons," says Mr. Gerholz, past president of the NAHB. "First it is the most enduring vapor and moisture barrier I can buy, and second, it costs less in place under the slab than any comparable material."

IMPORTANT: VISQUEEN film is all polyethylene but not all polyethylene is VISQUEEN. Only VISQUEEN, produced by process of U. S.Patents No. 2461975 and 2632206, has the benefit of research and resources of The VISKING Corporation.



World's largest producers of polyethylene sheeting and tubing Plastics Division, Terre Haute, Indiana

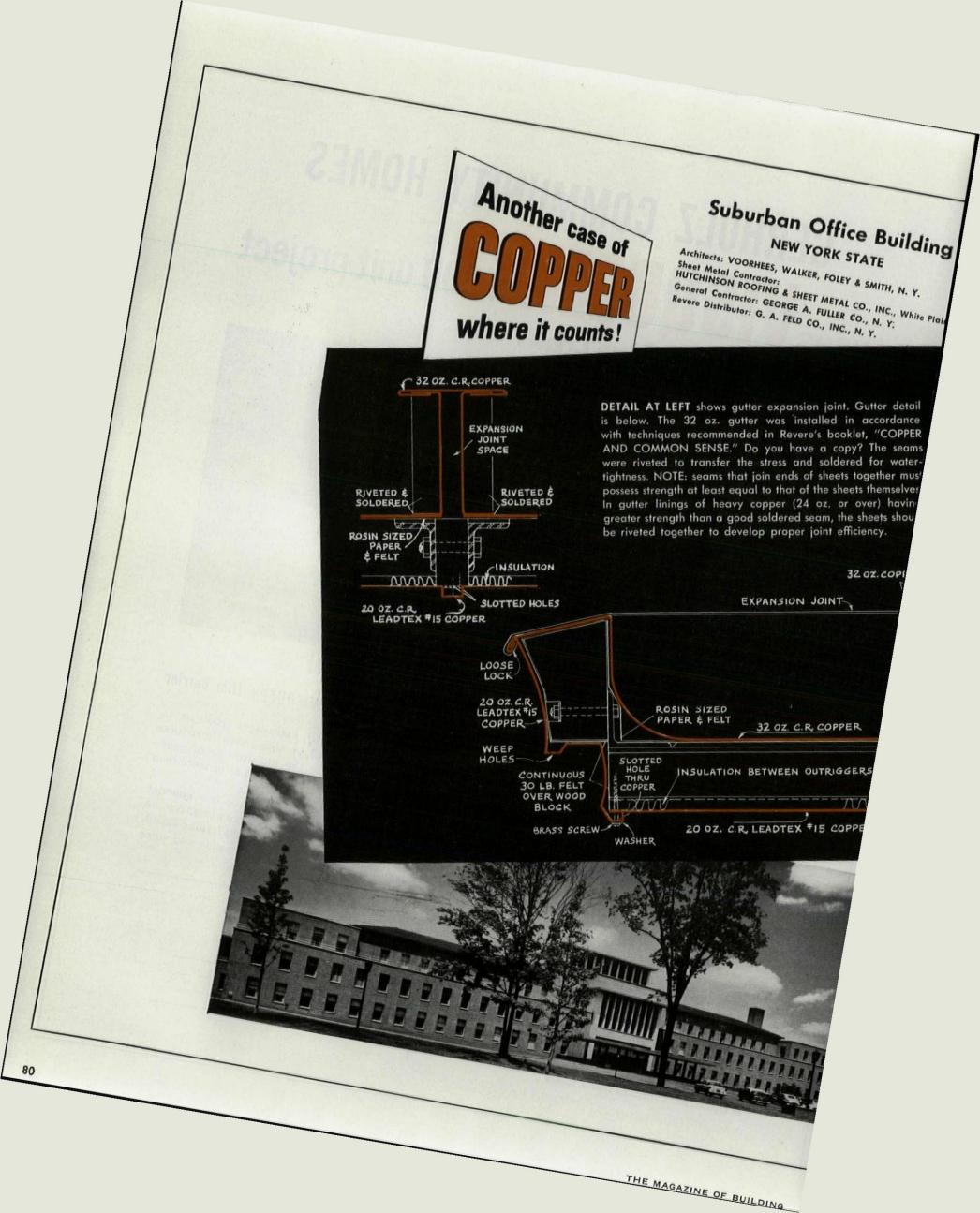
In Canada: VISKING Limited, Lindsay, Ontario In England: British VISQUEEN Limited, London

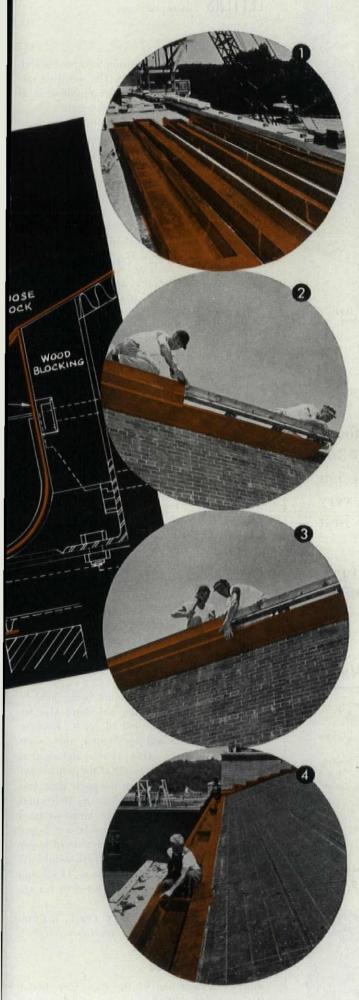
Extra-wide (up to 16 ft.), extra-light (1000 sq. ft. weighs less than 20 lbs.), VISQUEEN greatly reduces labor costs for installing the moisture-proof membrane. Often the savings are as much as or more than the cost of the film.

Now builders everywhere can have this superior moisture barrier under slabs, in crawl-spaces, on stud walls and ceilings, for flashing and termite shield.

Mail the coupon for detailed information and name of distributor serving your area.

The VISKING Corp	poration, Box AL12-1410
Plastics Division,	Terre Haute, Indiana
☐ Tell me more o	about VISQUEEN film.
☐ Who is the dis	tributor in my area?
Name	
Company	
Address	
City	ZoneState





This building was selected from our case history files primarily because it combines fine gutter design by the architect with splendid execution of the specifications by the sheet metal contractor.

Check the detail at left and you'll see what we mean. Also note photograph #1 showing prefabricated gutter sections as they were delivered from the contractor's shop. Copper lends itself so well to prefabrication, with resultant savings in time and labor. Also note photograph #4 showing the placement of the gutter expansion joints approximately 25' apart, a most important factor in trouble-free installations. (Caption #4).

In fact, proper installation is as important as good design. The two go hand in hand. For modern, trouble-free installation techniques consult Revere's "Copper and Common Sense", a booklet that has become the "bible" of the sheet metal industry. It is based on more than a century and a half of experience with sheet copper. If you do not have a copy send for it today. And if you have any technical problems confronting you on current jobs, let us know and we'll put you in touch with Revere's Technical Advisory Service. No obligations.

We are not just mouthing an advertising phrase when we say, "Keep out of trouble with copper." For this "ageless" metal has proved its enduring qualities for centuries. It can't rust or rot. Its design possibilities are unlimited, thus giving the architect a free rein. Sheet metal men prefer to work with it as it solders beautifully, requires no special tools, is readily worked into any desired shape and is ideal for shop prefabrication. In fact, there is not another metal or alloy that has all of the outstanding construction characteristics of copper. Write us today about the money-saving advantages of Revere Keystone Thru-Wall Flashing\*. And, if you have technical problems, we will put you in touch with Revere's Technical Advisory Service.

\*Patented

- PREFABRICATED SECTIONS of gutter prior to installation. Much time is saved on the job when sections are prefabricated in the shop. This also prevents delays due to bad weather.
- 2 SOFFITS being installed. The copper pans underneath gutters are attached to wood outriggers with Fiberglas insulation between the outriggers.
- 3 FASCIA AND CORNICE being attached. Gutters are of 32 oz. Revere Copper with the outside cornice of 20 oz. Revere Lead Coated Copper; all cold rolled.
- 4 SHEET METAL MEN prefer copper to any other metal with which to work. It solders to perfection. No special tools are required and it is readily worked into any desired shape. Note expansion joints which are spaced approximately 25' apart. Spacing of expansion joints in relationship to the gauge of metal used is of the utmost importance to a trouble-free installation (See "COPPER AND COMMON SENSE").

45,000 LBS. OF REVERE SHEET COPPER were used on this job. Entire building was flashed with 16 oz. Revere Sheet Copper under the sills. Revere Copper was also used for through-wall flashing, cap and base flashing.

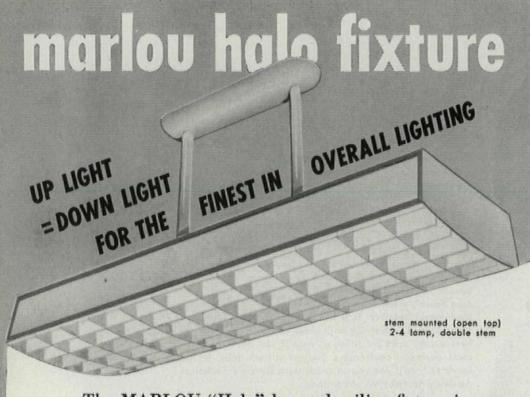
# REVERE

### COPPER AND BRASS INCORPORATED

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

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

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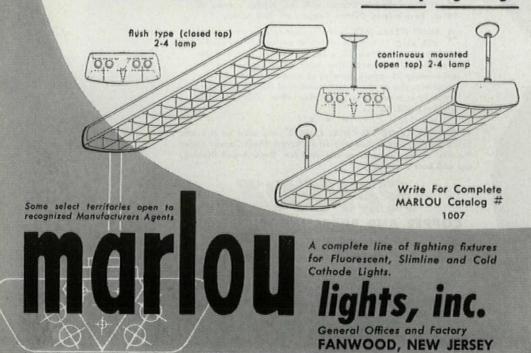


The MARLOU "Halo" louvred ceiling fixture is recognized by the government, prominent architects and engineers, when stem mounted, as producing the finest overall illumination. It corresponds to Federal #362 to #365 series, and due to its unique engineering design up light almost equals down light. Result—the very finest, diffused even light from one of America's best designed fixtures.

Complete installation of the MARLOU "Halo" Fixtures are being made in the Justice Department, Post Offices and many other Government departments.

Specify the "Halo" Fixture for your Job.

"Above All Else...MARLOU is Quality Lighting"



by means other than the now accepted standard way of building schools. The so-called sayings are usually made by the elimination of facilities and sacrificing on materials.

I question whether it is necessary to have complete schools ready as soon as a builder starts to operate within any area. Most of these houses are purchased by new families whose children, in most cases, will be below the school age. The need for schools develops very rapidly within two or three years, but there is time enough for the community to plan, develop and build their new facilities.

> EBERLE M. SMITH Eberle M. Smith Associates, Inc. Architects and engineers Detroit, Mich.

Forum:

The state of Georgia with sales tax money is building schools for local systems on a lease-purchase basis. Under this program, the State School Building Authority allots money to a county based on \$7.50 per sq. ft. and an arbitrary number of square feet per student in the county.

The counties' needs are established by surveying committees of the State Department of Education. Such a committee establishes the number of schools to be operated in the county and the size and general location of each school. Based on the size, the specific program for each school is established by a Division of School Building Services of the State Department of Education. Then buildings designed from these programs are financed by the School Building Authority on land deeded to it by the local school system. The total capital investment is owned by the Authority for 20 years on a lease-purchase arrangement, the schools reverting to local ownership at the end of the term. The state in turn pays to each system sufficient money to pay rent.

School costs in Georgia are being held to less per square foot than anywhere else we know of. They run around \$8 per ft. Because of the way state aid is allotted, this is an absolute necessity. One of the factors that makes it possible is that all of the schools for any one county are bid on the same date and contractors are asked to bid on an individual school basis and also on a combined or total project basis. Very few schools are being built on an individual basis because of lower costs on the combined bids. Such combined bids have been taken on as many as 14 schools in one county. The average project is for six to eight schools.

> RICHARD L. AECK AND F. J. BULL Aeck Associates, architects Atlanta, Ga.

### WHERE CREDIT IS DUE

• In its presentation of the Base Line Junior High School in Boulder, Col. (AF, Oct. '54), FORUM failed to credit Phillip-Carter-Osborn, Inc. as structural engineers .- ED.

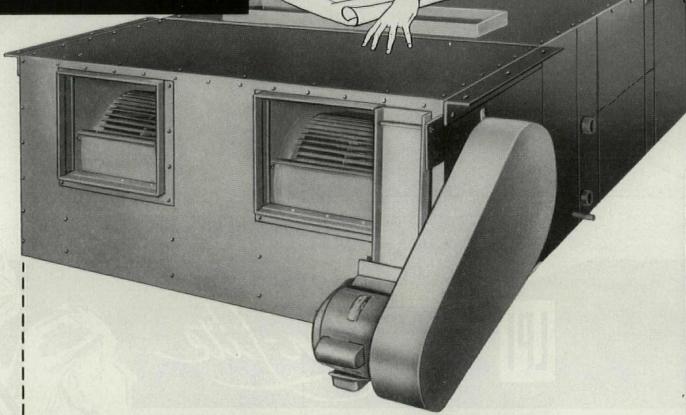


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HEATING AND VENTILATING UNITS



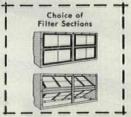
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# Alcoa Architectural Colors used for first time in new Aluminum Office Building





# Alcoa offers architectural details of new Cincinnati office building

Complete details of the aluminum curtain wall used in the new Cincinnati office building are being distributed by Alcoa. This latest application of the Alcoa Aluminum wall system will be of interest to all architects and designers, since it introduces the practical combination of texture and color in curtain wall construction.

For complete information and your copy of Alcoa's architectural details on this new building, call your local Alcoa sales office. You'll find the number listed under "Aluminum" in your classified directory. Aluminum Company of America, 1887-M Alcoa Building, Pittsburgh 19, Pennsylvania.



ALUMINUM COMPANY OF AMERICA



Warwick Realty Company, Cincinnati, Ohio, owner.

Paul Schell, aia—Martin Knabe, asce, Pittsburgh, Pa., architect—engineer.

Frank Messer & Sons, Inc., Cincinnati, Ohio, contractor.

General Bronze Corporation, Garden City, L. I., New York, aluminum subcontractor.

Newman Brothers, Inc., Cincinnati, Ohio, aluminum subcontractor.

# Aluminum curtain walls in <u>color</u> give striking individuality to Alcoa's Cincinnati office building

Alcoa Architectural Colors in aluminum curtain wall construction are used for the first time in the new Alcoa sales office building in Cincinnati, Ohio.

The wall facing panels on the front are composed of pre-assembled Alcoa® Aluminum Extrusions prefinished in gold. Aluminum wall facing panels on the rear of the building have a sparkling blue finish. Mullions, windows and other trim are natural aluminum color.

By combining the texture of the extruded aluminum panels with enduring, nonfading *Alcoa Architectural Colors*, the architect has endowed this new building with a striking individuality.

The use of color in exterior aluminum walls gives you an important new design element to add to your "kit of architectural tools." For Alcoa Architectural Colors mean you can now design in color when you design in aluminum.

But there's a lot more than color to the story of this new building in Cincinnati. There's a story, too, of savings in fabrication, construction, maintenance and usable floor space brought about by the use of Alcoa Aluminum for curtain wall systems.

Erection of the wall components is simple, rapid and relatively low in cost. Extruded aluminum mullions, windows and facing panels are shop assembled into one unit and anchored into place between columns. Rigid glass fiber insulation is installed behind the panels from the inside. The interior finish is plaster applied to metal lath on furring channels.

Total thickness of the wall is but 6 inches, with the flush interior surface unbroken by columns. Wall weight is less than 13 pounds per square foot and heat transmission value is .118 Btu/hr/sq ft/°F, both extremely low.

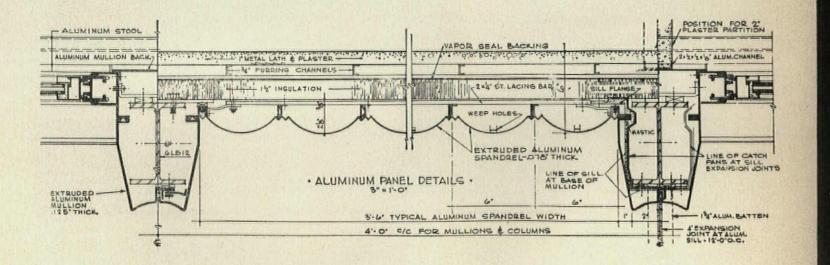
To achieve the effect of continuous windows, as well as take advantage of the lightweight wall, 4 x 6-inch columns are spaced 4 feet on centers. This not only eliminates the need for piers, but also permits interior partitions to be installed at increments of 4 feet.

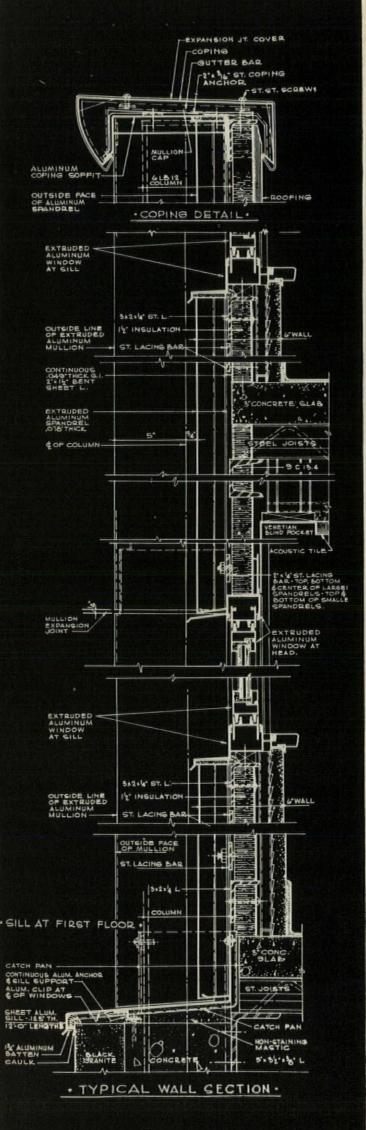
Window jambs are retractable to allow the vertically pivoted window sash to reverse for easy inside cleaning.

Copings, window sills, interior trim and many other practical and economical uses of Alcoa Aluminum have been incorporated into this new structure.

For complete information on this or other architectural applications of Alcoa Aluminum, call your local Alcoa sales office. You'll find the number listed under "Aluminum" in your classified directory. ALUMINUM COMPANY OF AMERICA, 1887-M Alcoa Building, Pittsburgh 19, Penna.







# Advantages of Alcoa Aluminum for Curtain Wall Systems...

### Design and Fabrication Advantages

Design versatility offers an almost unlimited variety of architectural effects through cast, extruded or sheet shapes with wide range of colored and textural finishes.

Thin wall construction can increase rental income by providing more usable square feet of floor area.

Workability permits speedy fabrication with less equipment and lower fabrication investment.

### Construction Advantages

- Smaller foundations, lighter structural steel framework.
- 2. Larger and fewer wall facing units.

Ease and speed of wall erection (when anchoring and alignment devices are properly engineered).

- 1. Reduces labor costs.
- 2. Normal construction time can be substantially reduced.
  - a. Savings in overhead construction costs.
- Savings through earlier occupancy and rental return for owners.

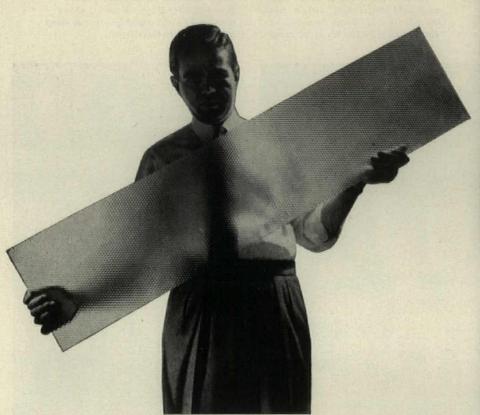
### Maintenance Advantages

Permanent material eliminates painting need.

Fewer joints provide greater weather tightness and reduce wall deterioration.

Special joint designs reduce need for calking.

Cleaning of wall areas is assisted by rainfall.



# Give your imagination a lift with Corning engineered lightingware

Your imagination has lots of room to work when you use Corning engineered lightingware.

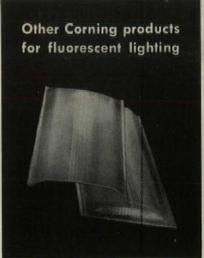
You determine the lighting job you want to do—and Corning can provide lighting glassware exactly engineered for the task. And you get utility plus attractive design.

Just for an idea, take the panel the fellow in the picture is holding. It's Corning Pattern 70 Low-Brightness Lens Panel. You use this pattern to control fluorescent lighting. A pattern of six-sided pyramidal prisms directs a maximum amount of light into the useful zone and re-

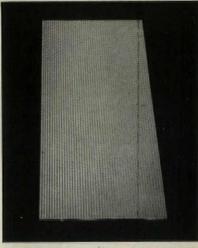
duces fixture brightness at all glare zone angles. You can get Pattern No. 70 in single panels for troffers or for larger luminous elements.

You'll enjoy working with exclusive features like lightweight single piece lens panels and the finest water-white crystal glass. You'll find these features in Pattern No. 70—and all Corning engineered lightingware.

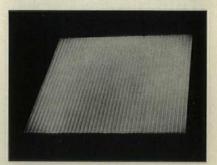
To see how much you can accomplish with efficient long life lightingware like this, contact your Corning representative. He'll be happy to help you.



LIGHTWEIGHT CURVED LENS PANEL, single piece fresnel design curved lens for twoand three-lamp troffer applications.



CRYSTA-LITE NO. 63, straight prismaticfluted brightness controlling glass in waterwhite crystal.



ALBA-LITE, made in three surface textures, the standard opal diffusing glass of the lighting industry.



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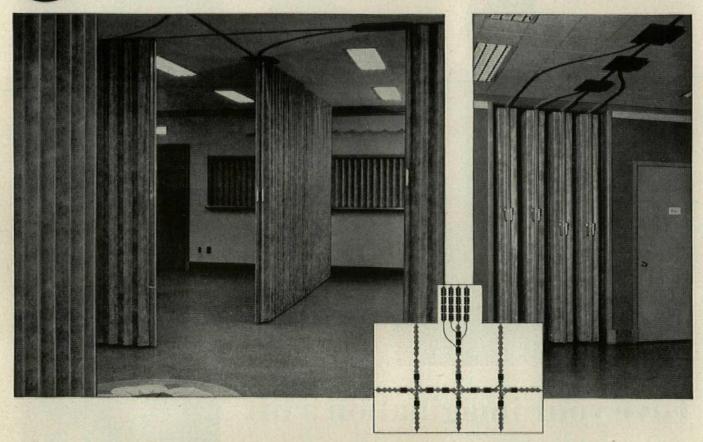
Corning means research in Glass

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Company	
Address	
City	ZoneState

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Eight rooms, that is, thanks to "Modernfold" movable walls—and to patented "Modernfold" switch tracks.
One minute this church basement is a single room, perfect for large groups.

The next minute "Modernfold" doors come out of the "side pocket," then roll smoothly and quietly along overhead switch tracks to form as many as eight private classrooms.



# Your ideas come to life... for life with "Modernfold" doors

For every room division or door closure problem, there's a simple, economical, space-saving solution. That's "Modernfold," the original folding door.

Specifying "Modernfold" doors keeps clients happy. For these steelframed, vinyl-covered doors can't be equaled *anywhere* for quality of design . . . for quality and strength of materials.

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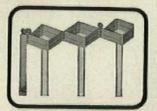
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### **Better Looking**

Fabric covering conceals all operating mechanism. No cornice needed. Adjustable trolleys keep doors hanging flush to jamb.



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Balanced hinge construction both top and bottom. Trolleys attached at hinge intersections. No sidewise twist or pull possible.



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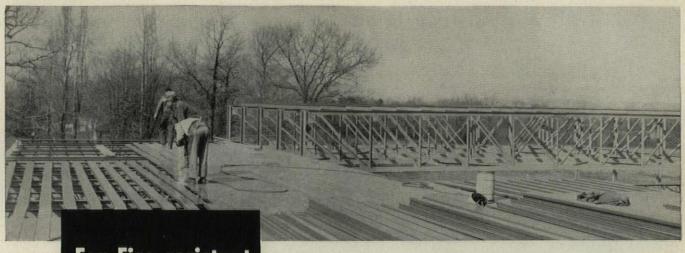
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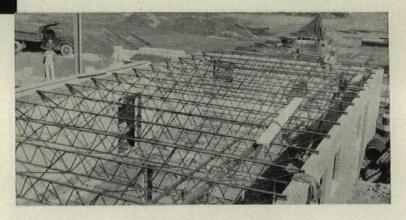


For Fire-resistant Roofs that are Light in Weight

# ...TRUSCON FERROBORD® STEELDECK AND "O-T"® STEEL JOISTS

Chaney High School, Youngstown, Ohio. Scheible and Shaffer, architects. Charles Shutrump and Sons Co., contractors.

Other Truscon products in this new school include Clerespan® joists; commercial projected, architectural projected, and intermediate combination steel windows; screens; series 31 industrial doors and frames; Ribplex® metal lath; lath clips; welded wire fabric and reinforcing bars.



This Truscon "package" provides a roof construction that is light in weight, fire-resistant, long-lasting, and economical. It is quickly erected and can be insulated to any required degree.

Truscon "O-T" Steel Joists for floor and roof supports are light, strong, and fire-resistant. Being light in weight, they lessen the time and labor required for erection, save material in supporting framework and foundations.

The Ferrobord Steeldeck can be clipped or welded directly to the joists and comes in lengths that span three or more purlins. It is easy to handle, easy to place. It roofs large areas quickly . . . flat, pitched, or curved. Erection is done from above. No scaffolding needed. Exclusive design allows for fulllength interlocking and greater strength.

When laid, Ferrobord's top surface presents a smooth, unbroken face that is ideal for the application of insulation and built-up waterproofing.

The key to successful installation of this type of roof construction is the use of both companion Truscon products. They'll be delivered to your job site on schedule as promised. Get Truscon's figures for jobs you now have on the boards. Ask your Truscon representative, or write:

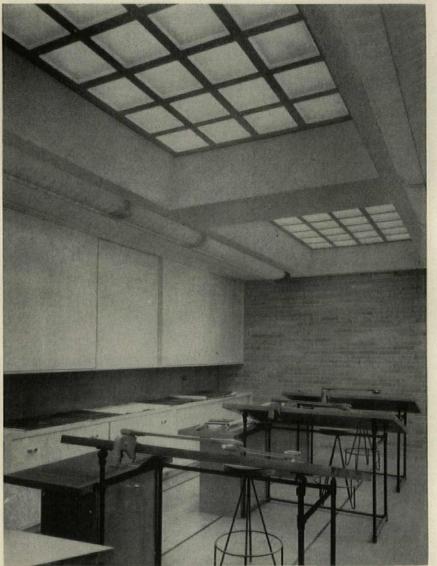
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A NAME YOU CAN BUILD ON

# Here at low cost is filtered, natural daylight from overhead



Skytrol panels installed in the offices of W. Harold Tanner & Associates, Architects, Villa Park, III.



\*T. M. Reg. Applied For.

# with PC SKYTROL Blocks

Toplighting is the easiest way to bring daylight into low, one-story buildings where lighting of the inner areas is a problem. And of all the toplighting methods, Skytrol Blocks stand alone in their ability to give the highest quality daylighting, good insulation value and a trouble-free, low maintenance installation.

Skytrol Blocks are a flexible building unit, giving the architect freedom to design practical toplighting panels of virtually any size. The panels can be flat or curved and are not limited by special orientation requirements. The blocks are bonded into a weathertight, reinforced concrete panel-the same method that has been used with success for many years in northern Europe.

But one of the best things about Skytrol panels is their cost. Actual installed costs are running between \$4.50 and \$6.50 per square foot of panel area. If you're considering toplighting, you'll do well to investigate the Skytrol method. Compared with methods giving comparable results, you'll find Skytrol out-performs, yet costs

New. Skytrol Blocks are now available with the new Suntrol pale green diffusing screen to reduce heat and glare in difficult locations.

Consult our section under "Skylights" in Sweet's, or write for more information. Pittsburgh Corning Corporation, Dept. E-124, One Gateway Center, Pittsburgh



# YOU CAN <u>BUILD</u> FOR THE AGES ... with a <u>STEEL</u> FOR THE AGES

What's the building on your mind? Maybe a big multi-story structure—or an industrial building, like our own Research Laboratory (see above)? Maybe a plant office building—or a bank, store, school, power station, warehouse, hospital, hotel? Or perhaps it's an existing structure that needs a facelifting—modernizing the exterior, as well as the interior.

In any case, you're sure to consider curtain wall construction, because it's the newest, most modern method. Packed with advantages over masonry, too: such as fast, all-weather installation; more space per floor; more floors on a

given foundation, etc. And you'll be equally sure to realize that stainless steel-surfaced panels (again, see above) promise the best long-term protection for the building investment. No other surfacing material is at once as hard, tough, strong, and lastingly beautiful, as impervious to wear and as resistant to heat and corrosive influences as stainless steel.

That's just why Allegheny Metal generally figures to last longer and cost less in the long run—wherever you use it. Let us help you to realize its benefits. Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.

Make it BETTER-and LONGER LASTING-with

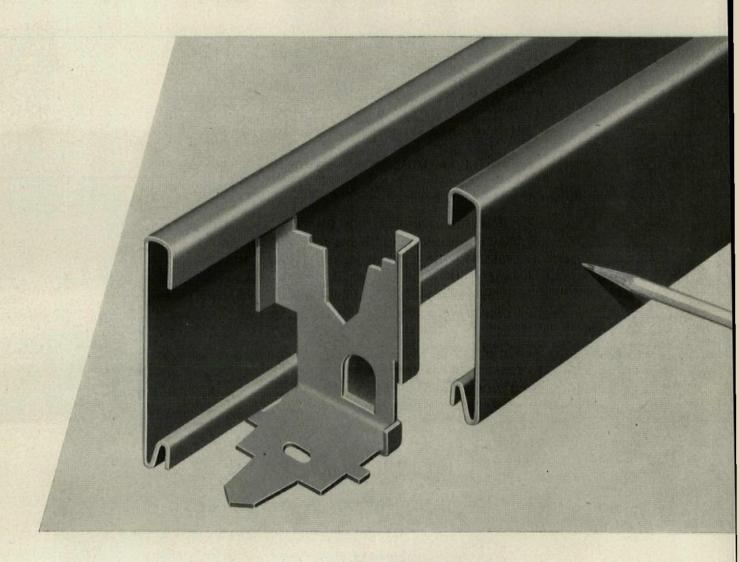
# Allegheny Metal

Warehouse stocks carried by all Ryerson steel plants



WaD 5287 B

# "SIMPLEST JOINING BASE AND say 89% of architect



# New Gold Bond All-Purpose Metal Base SNAPS, LOCKS, HOLDS

Recently we asked architects from coast to coast what they thought of the new Gold Bond Metal Base and Clip Assembly. 89% of the reports said it was the "simplest joining base and clip assembly ever seen!"

This new Metal Base snaps into place easily, locks at top and bottom and holds rigidly. It saves time and money in construction. Use it with Gold Bond 2" Solid Metal Lath, Plaster and Channel Stud Partitions...Studless Metal Lath Partitions...Hollow Walls and Furred Exterior Masonry Walls.

No special T's or prefabricated corner or angle units are needed because the base can be bent and cut on the job. Completed sections of this Metal Base form an attractive base trim for the finished wall or partition, and are designed to compensate for normal floor irregularities.

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LATH. PLASTER

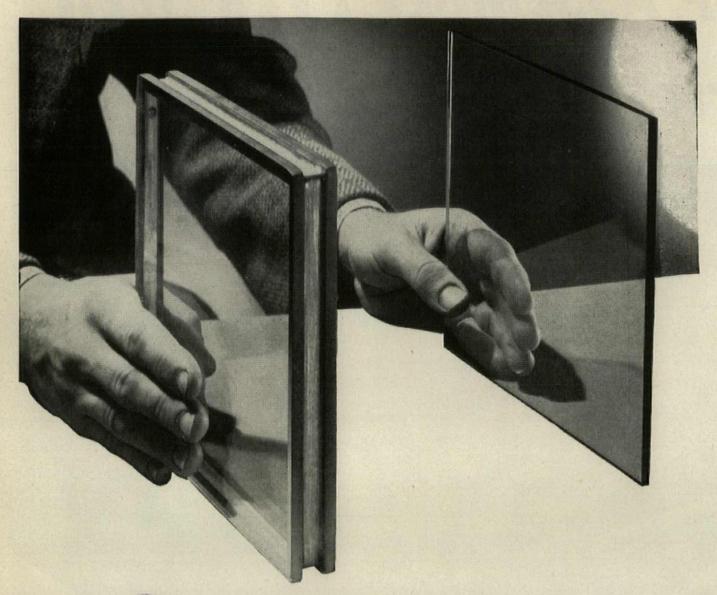
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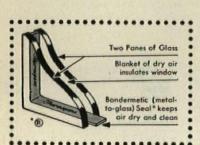
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# Another Outstanding Installation of Joanna Vinylized WALL FABRIC

Interior scenes from the New York offices of the

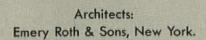


10,854 sq. ft.

for the new offices of the National Association of Manufacturers



National Association of Manufacturers.





Interior design: Michael Saphier Associates, New York. In this day of fierce competition, a product must prove itself in every way to be accepted in offices like those of the National Association of Manufacturers. Here, Joanna Vinylized Wall Fabric is an integral part of the beautiful remodeling designed by Michael Saphier Associates.

Joanna's acceptance has been earned by outstanding performance. Time after time, on job after job, Joanna Vinylized Wall Fabric has demonstrated its durability, economy and beauty.

Joanna's tough vinyl surface is resistant to the hardest usage—it's built to take the bumps and scrapes that are part of the daily life of any office wall. It's economical, too—lasts for years, requiring a minimum of maintenance. Washing with soap and water makes it new again. Think of the decorating costs that saves.

And as for beauty—Joanna Vinylized Wall Fabric is an integral part of any well-planned design. A variety of colors and textures provides outstanding decor for any wall, anywhere.

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# You could almost enjoy being sick in this



EASY-TO-INSTALL OAK PLANKWELD adds a cheery background to this unusually pleasant waiting room. Plankweld can be installed on any wall with special metal clips which hide nails.

Weldwood paneling helps new Lankenau Hospital, Overbrook Pa., escape from austere, institutional design. Cheerful, real wood lifetime interiors boost patient, visitor and staff morale.

Call it built-in get well psychology! Call it a therapeutic assist on th part of the architect, builder and supplier alike! In any event, the Weldwood paneled walls in Lankenau Hospital represent a refreshing new approact to hospital interior design.

Gone is the plain institutional atmosphere so often associated with many hospitals. Lankenau, which proudly lays claim to being the finest, most modern hospital in the world, more closely resembles a resort hotel, when the patient's recovery is speeded by pleasant surroundings as well as by medical skills.

Easy-to-install pre-finished Weldwood Plankweld® (161/4" wide), in a variety of fine wood faces, was used to soften walls in visitors' lounges patients' waiting rooms and other areas. Plankweld keeps down cost because it is completely pre-finished, easy to maintain and is guaranteed.



HALF-INCH RED BIRCH WELDWOOD was used to achieve this unique method of paneling in conference room,  $\frac{3}{4}$ " recessed joints are backed by strips of white birch plywood. Stay-Strate Door is birch. Sliding door acts as room divider when necessary.



PHILIPPINE MAHOGANY PLANKWELD WALLS bring restful charm to this staff study room. Plankweld walls like this can be installed in a matter of hours. Desks are Weldwood birch; tops are white Micarta.



**AFRICAN MAHOGANY WELDWOOD** was used to panel auditorium walls. Notice the dramatic staggered grain effect made possible by this tier arrangement. Each tier is approximately 3' high.

# unusual, new type hospital

for the life of the structure! Other types of lifetime guaranteed Weldwood hardwood paneling were used extensively in conference rooms, study areas and in the auditorium.

Gayly hued Micarta® was used to brighten and protect hospital furniture in all patients' rooms; all table tops in cafeteria; all nurses' stations as well as on desks and tables in library. It was used, also, to cover the Reception Desk, and cashier's desk.

Weldwood is equally proud that 1131 Stay-Strate® Doors add to the beauty of Lankenau. Weldwood Stay-Strate Doors and Fire Doors\* have an incombustible Weldrok® core and are backed by this outstanding guarantee: "This door, if properly installed, is guaranteed against warping, twisting, or manufacturing defects for the LIFE OF THE INSTALLATION."

If you are planning a new project or remodeling an old one, consider using Weldwood Products. After all, what other wall covering material even comes close to matching the natural beauty and practicability of real wood paneling?

For further information consult any of the 73 United States Plywood or U.S.-Mengel Plywoods distributing units in principal cities, or mail coupon.

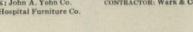


BIRCH WELDWOOD was used to construct this ultra-functioned reception desk. Wearproof, easy-to-clean white Micarta was used for top. Weldwood panels in various thicknesses and wood faces are especially suitable for built-ins.

ARCHITECT: Vincent G. Kling

MILLWORK: John A. Yohn Co. FURNITURE: Hospital Furniture Co

CONTRACTOR: Wark & Co.







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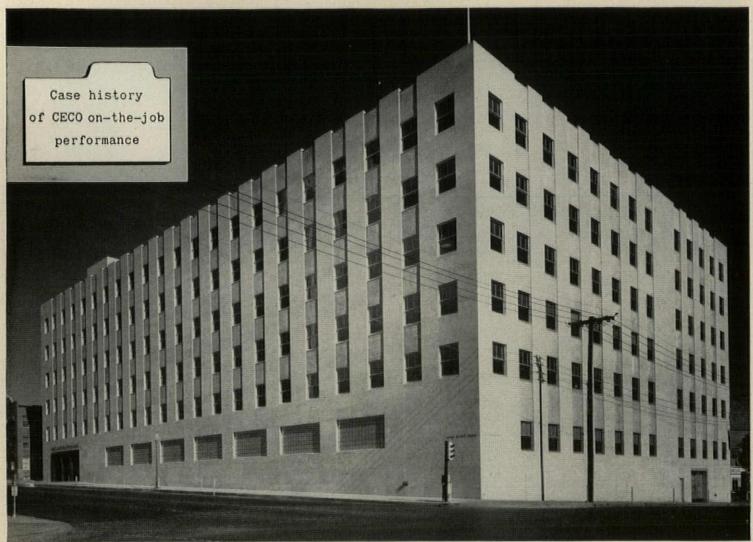
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PHILIPPINE MAHOGANY PLANKWELD WALL helps ease tensions in this clinic patients' waiting room. There is no need to be plain. Plankweld holds down costs because it is

\*U. S. Pat. No. 2593050

guaranteed for a lifetime!



Sinclair Building, Tulsa, Okla./Architect, Hugh R. Humphreys

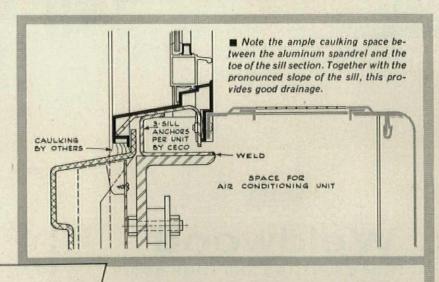
# How Ceco Aluminum Windows solved two architectural problems...

CECO ENGINEERING

makes the big difference

Achieving striking architectural effects draws upon the imagination of the architect . . . adapting products to realize the design poses another problem. Architect Hugh R. Humphreys found the solution for Tulsa's new Sinclair Building in Ceco-Sterling Aluminum Double-Hung Windows. An unusual building design was created through the use of aluminum panel spandrels . . . Ceco Aluminum Windows were a perfect complement to the spandrels and likewise met the air conditioning problem. A simple but effective tie was made between the window and air conditioner cover. Ceco engineers helped develop the economical yet positive sill anchor. Architect Humphreys gives another reason why Ceco Aluminum Double-Hung Windows were used: "Their stainless steel weatherstripping holds air In construction products

infiltration to a minimum." Ceco Aluminum Windows need no painting ... will outlast any structure. Next time call Ceco Product Specialists to help solve your building problems.



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# architectural forum

Why not finish the Gothic cathedral in contemporary architecture?

Five small churches: St. Anselm's Church, Vancouver, B.C.

Semmens & Simpson, architects; Christ the King Lutheran Church, Reseda, Calif. Culver Heaton, architect; Lutheran Church of the Atonement, Fluorissant, Mo. Harris Armstrong, architect; First Presbyterian Church, Concord, Calif.

Donald Powers Smith, architect; Mission Chapels designed

Children's Chapel, Neighborhood Church, Pasadena. Smith & Williams, architects.

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DECEMBER 1954

NEWS

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EIGHT MODERN CHURCHES

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Manufacturers Trust Co. in New York. Skidmore, Owings & Merrill, architects.

Hopewell Baptist Church, Edmond, Okla.

Preview of Lutheran College, Ft. Wayne. Eero Saarinen & Associates, architects.

Michael Saphier Associates, Inc., architects.

A new approach to the planning of buildings-

Preview of Louisiana State Penitentiary in Angola. Curtis & Davis, architects.

A discussion of basic planning requirements for sound in worship—by Ray Berry and Bertram Y. Kinzey Jr.

A review of new building materials and equipment.

Church of the Resurrection, St. Louis.

Murphy & Mackey, architects.

by Creative Buildings, Inc.

NAM headquarters. New York.

Anderson Cancer Hospital, Houston. MacKie & Kamrath, architects.

Hollow Tree School, Darien, Conn. Ketchum, Gina & Sharp, architects.

Geodesic dome for cow barn.
Cantilevered framing for hangars.
Glass block and flat glass comparison.
Lightweight walls for schools.

COLLEGE PLANNED FROM SCRATCH

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### THE MAGAZINE OF BUILDING

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\* House & Home, Architectural Forum's sister publication, is devoted exclusively to homebuilding.





Cover: Manufacturers Trust Co. in New York City. Skidmore, Owings & Merrill, architects.

Photo: © Fira Stoller.

Hospital-bedroom plans and lavatories.

## **MODERN ARCHITECTURE**

## **BREAKS THROUGH THE GLASS BARRIER**

The new bank at 43rd St. and Fifth Ave. in New York City already has been acclaimed widely on the basis of a painstakingly perfect scale model (AF, Sept. '53) but the difference in architectural content between model and final reality is a revelation. The model showed a daringly rational solution, a design distilled down to a diagram of essential structure, nothing more. Glass from sidewalk to roof, it was a brilliant and paradoxical exposition of the essential wares of a bank: safety and convenience.

What is added now that the building has been finished? A surprising element for modern architecture—a quality of gentle, serene grace that belies the brisk rigidity of the rational concept.

When you look at most glass-walled buildings in daylight you cannot see inside; instead you see your ghost reflected darkly in the glass. But, thanks to its bright interior, this is not true in the new bank, and because it is not true, this may be the first big building truly to fulfill architects' immaculate drafting board idea of glass as an invisible material.

The building's lucid grace, which contradicts the steely quality of most metal-and-glass architecture, can be traced to one physical fact behind the sheer glass walls-the glowing ceilings. These accomplish two things. From outdoors they reduce to nothingness the apparent weight of the floor slabs hung from interior columns; instead of resting heavily on their supports the slabs seem almost to float, anchored by the columns. But even more important, the tremendous wealth of illumination which these vast plaques pour down from overhead does nullify the shine and reflectivity of the glass wall. It is an old merchandising trick-if you have a store window and you want the contents seen from outside, you have to put more foot-candles inside the glass than there are foot-candles of natural light outside the glass, or it mirrors. But doing this to a five-story building is new and surprising, a true landmark in delineation of space. It makes a glass wall into something it has not been before, an invisible control instead of a mysterious barrier. At last the deeply sculptural feeling of a steel frame under construction has been retained in the completed building.

MANUFACTURERS TRUST CO. BRANCH, NEW YORK, N. Y. SKIDMORE, OWINGS & MERRILL, architects

Partners in charge:

WILLIAM S. BROWN, coordination

GORDON BUNSHAFT, design

WEISKOPF & PICKWORTH, structural engineers

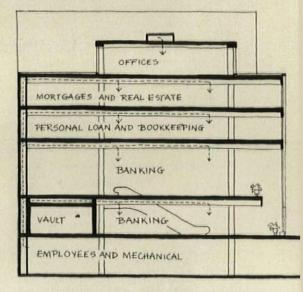
SYSKA & HENNESSY, mechanical engineers

ELEANOR LE MAIRE, interior design consultant

CLARKE & RAPUANO, landscape architects

HARRY BERTOIA, sculptor

GEORGE A. FULLER, general contractors

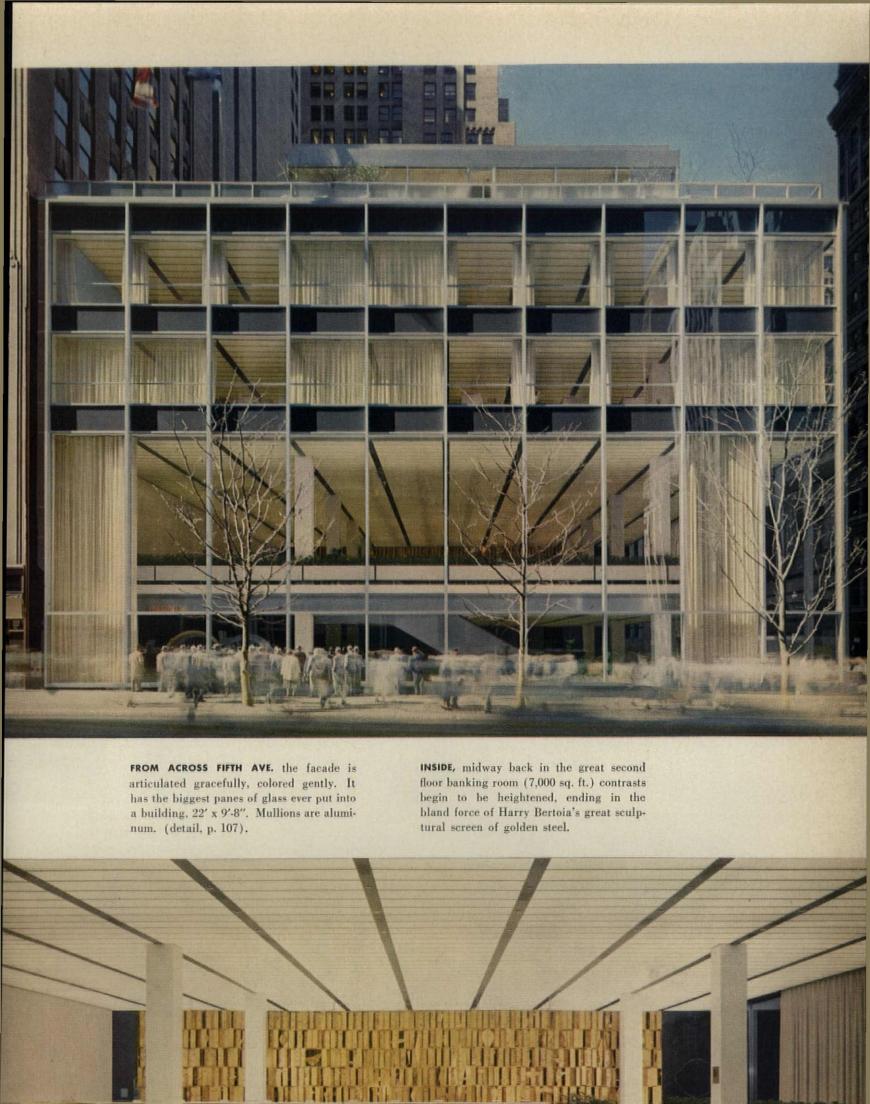


INTERIOR STRUCTURAL COLUMNS hold up the floor slabs, from which the exterior wall hangs in tension, a true curtain, supporting nothing, not even itself. Air conditioning ducts and services all run up in the south wall (left, above) then run north with the beams to distribute or receive their cargo. (In penthouse, ducts go up in far wall of building, then come across roof in central high section and dump down.)

FIVE STORY STRUCTURE nestles in midtown New York, shaded and protected from sky glare by taller buildings around it. Building to left owns air rights above fourth floor over to edge of penthouse, which helped form the decision not to use this site for a standard skyscraper with a bank in its base.

Photos (including color) D Ezra Stoller



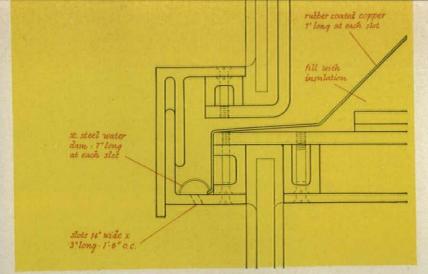


There is complete consistency between the outdoor and indoor feeling of this design, and equal care in the scaling and articulation of big spaces as well as small components. The big room and the unity in understated decorative treatment between design of interiors and exteriors show much the same studied touch. S.O.M. and decorator Eleanor LeMaire worked in team here.

The mezzanine banking room is linked visually with the floor below by the view down, and physically by the moving stairway. All upper floors are cantilevered to Fifth Ave. from two columns, to 43rd St. from four columns. The cantilever to 43rd St. is 20' carried on steel members; toward Fifth Ave., it is 10' on reinforced concrete beams.

STABILE by Bertoia hangs from second floor ceiling over moving stairway landing

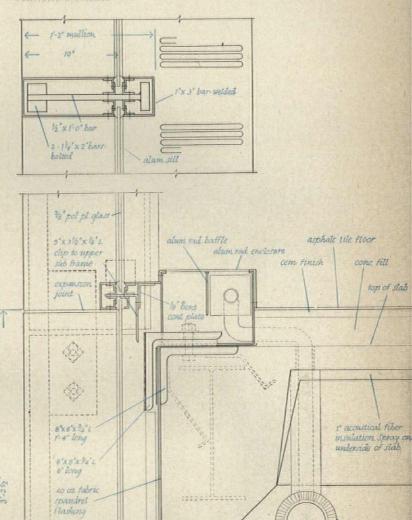




DETAIL



### VERTICAL MULLION



HORIZONTAL SECTION

hi pol pl glass

" polivire glass

+" rd ins pupe

translucent plastic ceiling

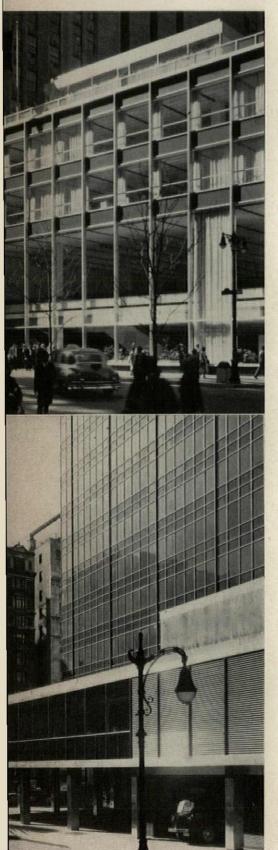
4" bent pl clips - 5'0" a.c.

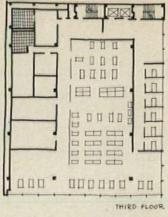
cont tusert drapery track

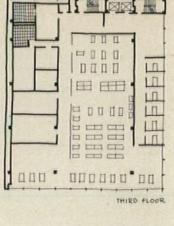
fin. ceiling line

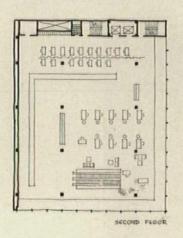
1'-31/2"

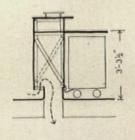
LACK OF REFLECTIVITY in bank building is demonstrated by comparison with Lever House by same architects, both photographed in sunlight (which invades bank for only a few minutes of the day).

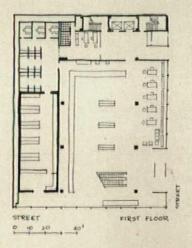














THIRD FLOOR LOBBY is for people awaiting appointments in the private loan offices-quiet, cork-lined spaces down the hall. Most of rest of floor is open.

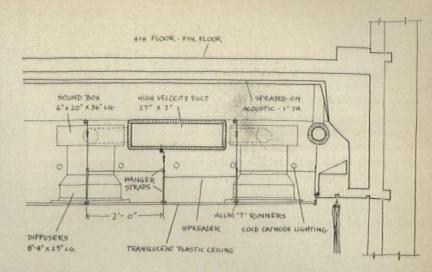


SECOND FLOOR BANKING SPACE. Banking counter also serves as air return. Wheeled tellers carts can be squeezed together or spaced out as traffic demands.



FIRST FLOOR BANKING SPACE. This area, buried downstairs in most banks, is for quick check cashing, payrolls, etc., the routine business which makes banks convenient to their depositors.

THE CEILING actually seems to be sealed down, rather than up, by the intensity of its light glow. It is made of thin corrugated plastic supported on aluminum T's, below a field of cold cathode tubes spaced 17" o.c. (In the first floor elevator lobby, which technically is a means of egress from the fire tower, glass is used instead of the plastic, and does not diffuse as well as the plastic.) Air conditioning outlets for the high velocity system complete the ceiling. In some areas the ceiling has not solved the acoustical problem—not all sound frequencies get through the plastic to be absorbed above, some frequencies bounce down. But the glaring surface has another dividend: its platter of light extends right up to the curtain edge and de-emphasizes glare through the colorless glass walls on bright days by diminishing contrast. The silhouette of ceiling edge against sky is not harsh.



### THIRD FLOOR GENERAL OFFICE



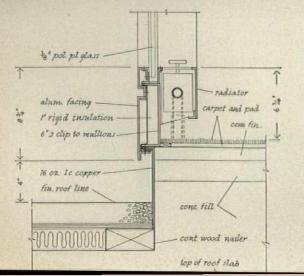
TOP FLOOR of the new branch is a suite of offices, and boardroom. Climaxing this is the president's office at the end of the
long interior corridor in photo (right). The magnificent room
(below) has a desk at one end for the president, at the other for
a secretary. The entrance is at the center—visitors have already
been screened and announced by the receptionist at the elevator.
The paneled bulk in the middle of this space encloses the president's private bathroom and dressing room. Beyond the glass
wall is a graveled roof terrace spotted with potted trees. At the
bottom of this page, beside the penthouse plan, is the deft
sill detail of the exterior wall.

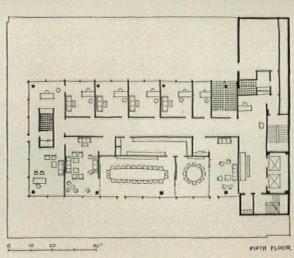


CORRIDOR

PRESIDENT'S OFFICE







LORE. As a commission, the Manufacturers Trust Co.'s bank is already surrounded by lore. One aspect is illustrated in the photo, right: across the street is the classic building from which the branch moved.

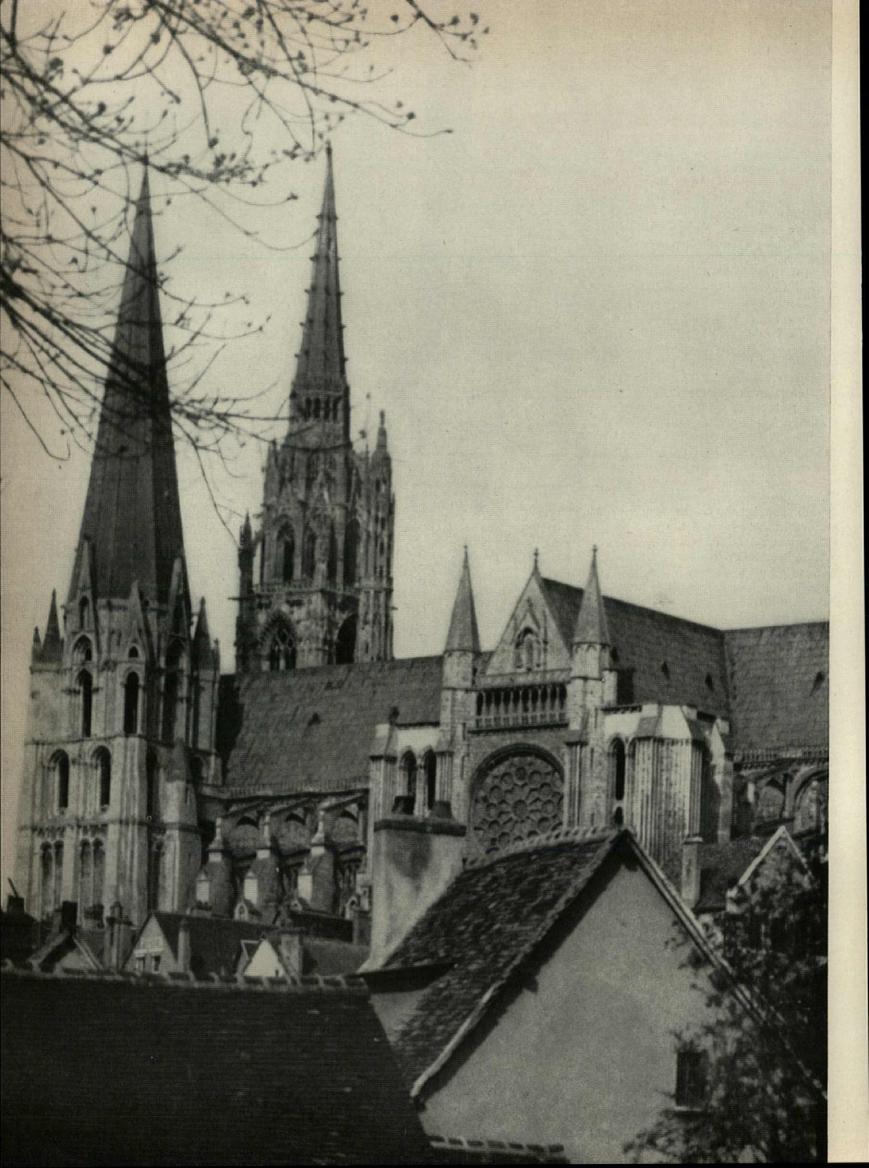
When Skidmore, Owings & Merrill first got the job, their design room at 575 Madison Ave. (a Uris Brothers Building with an excellent view of Lever House) was alerted and an esquisse competition held; first prize, \$50. Charles E. Hughes III took the honors with a design scheme much like the one that has since been built.

Then Gordon Bunshaft, the New York design chief, went to work on it with another partner, William S. Brown, coordinating, the client bought it, and Al Labie was tapped to be job captain on the working drawings. "This one has to be perfect" he was told, "and, oh yes, you've got ten weeks." Labie demanded pick of the crews, got it, and with Roy Allen, Bunshaft's right hand man, egging them on, the crew did a notable job (see representative detail p. 107).

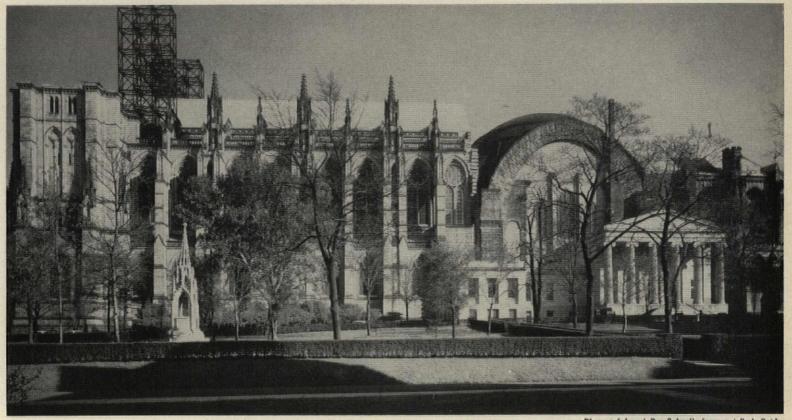
The contractor and his workmen got in on the spirit of high quality too. At one point a carpenter picked up some door hardware to install, looked at it, and said, "This must be wrong. The architects could not want this in this job." He hunted up Doug Logan and Bert Warrington. SOM superintendents and asked them. They looked at the drawings; the hardware checked, but the carpenter insisted no, this was not up to the rest of the design. Logan called Bunshaft and he decided the carpenter was right. The change was made.

Bunshaft ascribes a lot of the credit to the client, an old architectural curtsy, of course, but believable in this case because of the novelty of the bank. "Hap Flanigan (the bank president) was terrific," he says. "You know, there are two kinds of good clients, the ones who help you and the ones who just leave you alone. He was both."





CHARTRES' TWO TOWERS, separated by centuries, led Henry Adams\* to exclaim: "The quiet, restrained strength of the Romanesque married to the graceful curves and vaulting imagination of the Gothic makes a union nearer the ideal than is often allowed in marriage. . . . The French architects felt no discord, and there was none. Even the pure Gothic was put side by side with the pure Roman."



Photos: (above) Ben Schnall; (opp. p.) Rod. Reider

# ST. JOHN THE DIVINE: STARTED IN GOTHIC SHOULD IT BE FINISHED IN MODERN?

Acting on repeated suggestions that St. John the Divine was having difficulty getting enough funds for its completion in costly Gothic, FORUM asked JAMES M. FITCH, Associate Professor of Architecture at Columbia, to open a broad inquiry on the further question whether the cathedral might not better be finished in modern style. Other thoughtful contributions will follow later.—ED.

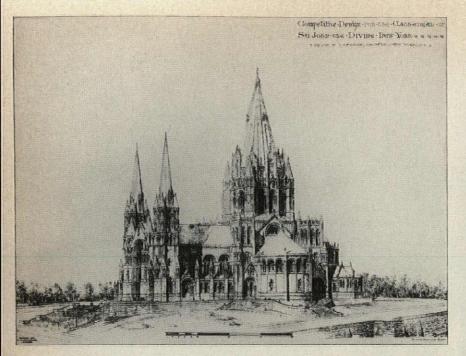
On St. John's Day, 1892, the cornerstone was laid in New York for the world's largest cathedral and second largest church. Today, 62 years later, this church, the Cathedral of St. John the Divine, is perhaps three fifths complete. This is not a particularly good record: Chartres (excluding the spires) took but 64 years, Notre Dame 72 and even St. Peter's required only 120 between Bramante and Maderna. Of course, by American standards, 62 years is a mighty long time. And completion is still far away—conservative estimates are that it might take as much as 14 years (and up to \$20 million) to finish the church according to designs of the architects, Cram & Ferguson.

The task of completing a half-finished cathedral must have always posed thorny problems for the people involved. Even with the slow movement of Gothic times, and certainly with the accelerated pace of the Renaissance, there was always that change in \*Mont-Saint-Michel and Chartres (Boston: Houghton Mifflin Co., 1928), p.33.

belief and attitude, that shift in intellectual perspectives, which underlies all artistic development. Thus, after a lapse in the building of a cathedral, there would be the problem of whether to continue in the stylistic level at which it had ceased or to resume work in a thoroughly contemporaneous (i.e., modern) idiom. Controversy there probably was; and yet we know that always, after each lapse, the builders carried on in their own modern style, expressing their own points of view. The remarkable thing is that generally speaking, they managed to maintain an organic continuity between the new work and the old (photo, left).

Can we do as much with the Cathedral of St. John the Divine, today? It is possible, even necessary, to raise the question. For, as we shall shortly see, a whole series of developments make it unlikely that the cathedral will be completed in the manner envisaged by the 40-year-old design of the architects. But, if we are at all serious, we must admit the almost agonizing implications of the question. For it raises the question of our connections, not only with a remote Gothic tradition but with our own immediate past. It exposes a live nerve of present controversy; how do contemporary American architects propose to live with their own tradition?

In the design of secular buildings the architect can ignore not only the "how"; he can challenge even the "why." But in church



design, he is pinned flat to the wall. He cannot avoid the question; he must offer some serious formula for handling tradition. If the church be new, he may have a certain degree of freedom to design in as contemporary a fashion as the liturgical and iconographic requirements of the congregation permit. But in a half-finished cathedral, on which over half a century of work and some \$15 million have already been lavished, the problem is more complex. His design must provide for organic continuity with the existing work. How will he do it?

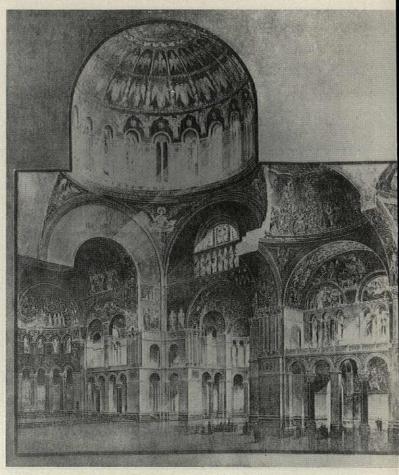
Under normal circumstances, the cathedral authorities—the bishop, trustees, dean and chapter—would have at least ample time in which to resolve this question. But circumstances are not "normal" at St. John's, due to the fact that the terra-cotta dome over the crossing shows signs of failure. This dome was built by Rafael Guastavino in 1909 and guaranteed by him for only ten years. It has always been regarded as a temporary expediency: and now, though it has outlived its guarantee by almost five times, it looks as if its days were numbered. Even with radical and expensive surgery, it cannot last much longer.

#### Time for a change?

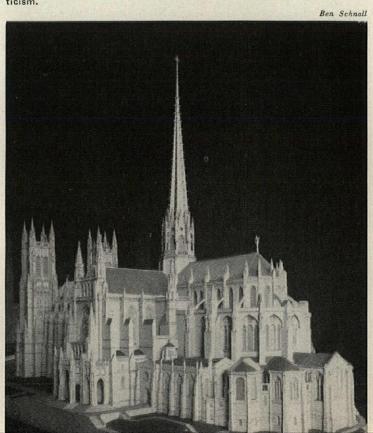
Hence the need is real and pressing to complete at least the central section of St. John's—and to do it quickly, economically and appropriately. Cram & Ferguson's design (right, below) will be neither quick nor economical. The load-bearing masonry columns and genuine groined vaulting of the tower and crossing would, alone, cost \$5 million. They would require five years to build, even if the money were immediately available. And, since the money is not available, a long fund-raising drive would have to precede actual construction. From a practical point of view, therefore, a less costly, less time-consuming alternative would seem desirable.

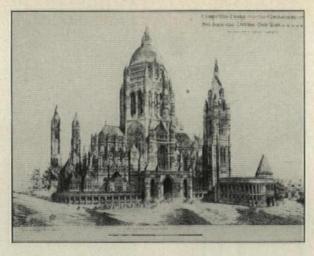
Even beyond such considerations as these, there is the further point that many people, including the cathedral authorities, are seriously questioning the appropriateness of proceeding with drawings which are decades old and based, in turn, on concepts which are anachronistic. The question arises: ought the cathedral be completed in a contemporary manner? Obviously, there is precedent aplenty for such a change. Indeed, you would be hard put to it to find a cathedral completed in one regime, by one master, in a simon-pure and unchanging style. And this is already the case with St. John's. It has had two sets of architects up to date and these have changed their designs repeatedly. As a matter of fact, even in his original prize-winning design Grant

La Farge's prize-winning design is Gothic in profile but Romanesque In detail, deliberately avoiding pointed arch and flying buttress. The interiors, with their glowing mosaics, would seem today much closer in spirit to Byzantium than to Westminster or Manhattan.

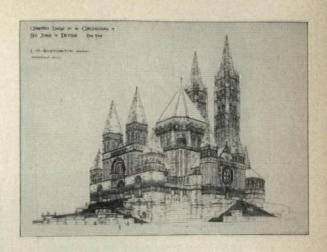


Cram & Ferguson's plans for the completion of St. John's are correct and cool, the apotheosis of Ralph Adams Cram's scholarly historicism. A High Gothic fabric completely conceals La Farge's buoyant eclecticism.





W. Halsey Wood's proposal in the competition for the design of St. John's had obvious faults, but timidity was not one of them.



L. S. Buffington's proposal was almost barbaric in its intensity, powerful in its massing and knowledgeable in its Romanesque detail.

La Farge sought to recreate exactly this effect. "In the works of the medieval past it is not the few finished examples, in which the last word has been spoken to the point of dryness, that most excite our imagination. It is rather those in which successive styles appear together."\*

The competition for the design of St. John the Divine occurred in 1891 at the very pinnacle of eclecticism. It produced a fascinating set of proposals. Some of them, like Carrère and Hastings' are platitudinous; some of them, like Halsey Wood's (drawing above) make us flinch at their awfulness; while others, like Buffington's (above, right) have a kind of rude yet admirable vigor. The prize-winning design, by the firm of Heins & La Farge, was a bold and florid piece of eclecticism—more Byzantine than Romanesque within, more Gothic than Romanesque without (facing page). The plan was very compact and un-Gothic, with wide and stubby nave and transepts. Central feature of the whole composition was to have been a huge dome over the crossing, topped by a great pyramidal tower.

This central feature was to prove the nemesis of both Grant La Farge and Ralph Adams Cram after him; it is still unsolved to this day. La Farge's proposal was ingenious. He would enclose the crossing with four gigantic arch-ribs of granite, these arches to be braced in their turn by eight buttresses (p. 116). This system would support both the dome over the crossing and the tower above it; but, being only structural, it would be completely concealed in the fabric. Although he completed the arches and buttresses, La Farge was unable to go further because, in the process, he ran into foundation conditions (quicksands and subterranean springs) which made his ultimate design unfeasible. Work proceeded on choir and apse with its ring of small chapels; but 18 years after the cornerstone, the crossing was still unroofed. It was at this point that Guastavino was called in to roof the crossing with his light, self-centering terra-cotta dome over the arch-ribs. And it was at this point, too, that La Farge was discharged as architect.

For, whatever the merits of his building, it had become the victim of the express-train speed of modern history. In 1907, 15 years after the start, La Farge had found it necessary to publish his longest and most detailed defense of his design. It is a moving document and reflects, however indirectly, his understanding that the tides of public taste were shifting beneath his feet. His intu-

\* "St. John the Divine." Scribners Magazine, Apr. 1907 (Vol. XLI, p. 401). † Ibid; pp. 385-401.

ition was correct: the very next month, American Architect published the famous "Candidus" letter. This anonymous communication was a thoroughly hostile document, challenging the La Farge design on the basis both of historic precedent and esthetic congruity. In addition to being wretchedly lit and badly heated, Candidus charged that "much of the huge structure is a needless outlay, superfluous in a Gothic cathedral; that a great mistake has been made by changing a possibly good Byzantine design into a bad Gothic one." Candidus admits that "matters have gone too far to rectify them in choir and crossing" but urges "that a reconsideration of the nave should be made before it is too late, to save money and avoid a still more hybrid effect.";

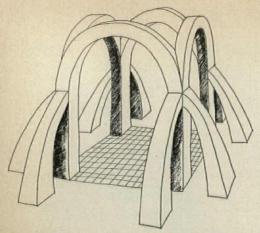
### From one style to another

Whoever Candidus was, he obviously spoke for an influential body of opinion, both ecclesiastical and lay. For shortly thereafter, Ralph Adams Cram was appointed consulting architect and, in 1911, La Farge was removed as architect and the task of completion was given to the firm of Cram & Ferguson. "A harsh divorce," as the Architectural Record tartly observed, which put St. John's in the hands of a "'consulting architect' whose own works show an entire lack of sympathy with what has thus far been accomplished." § La Farge's inability to master the problem of the crossing may have played some role in his dismissal. But, in retrospect, it seems inevitable that the impeccable scholarship of Dr. Cram would have been selected by the period in preference to La Farge's more vigorous but freer eclecticism.

In any event, the Cram office immediately discarded the unbuilt portions of the design. The nave, the transepts, the west facade, even the roof of the finished choir—all were recast into High Gothic, irreproachably accurate, though rather thin and cold. But the problem of the crossing remained to dog the footsteps of Dr. Cram. He was committed to the 100' square crossing by the sheer presence of La Farge's completed choir and circle of arch-ribs; and he was committed to a central tower by the sheer logic of the composition. Cram's original sketches, submitted in 1913, showed "twin towers with lofty spires located at both north and south transepts, accompanied by a massive but rather low square tower at the crossing. Subsequently, the idea of the transeptal towers was abandoned and the later designs and perspective drawings were of towers located at the crossing. The next two completed designs were of polygonal towers of varying heights, fol-

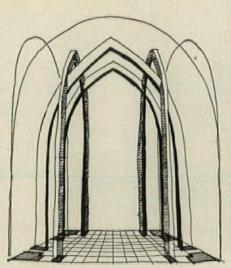
American Architect, May 18, 1907 (Vol. XCI, pp. 203-4).

<sup>§</sup> Architectural Record, Aug. 1907 (p. 212).



Four great arches and eight buttresses were proposed by La Farge to carry a stilted dome and soaring pyramidal tower above the crossing.

Cram's solution for the crossing used La Farge's arches but not the buttresses; it replaced the dome with punctiliously correct Gothic vaulting.





Photos: (above & top opp. p.) Ben Schnall; (bot. opp. p.) Wide World

lowed by a third [1920] whose base was similar to the former two but was topped by a richly paneled, lofty spire."\*

But years elapsed before the new architects could publish a satisfactory solution. Finally, in 1927, they evolved an ingenious new design which was hailed as an accomplishment that "had never before occurred to Gothic architects from the twelfth century to the present time." This was a scheme for inserting four more masonry arch-ribs between the La Farge originals, locked together egg-crate fashion (see above). This scheme reduced the vaulting problem to manageable proportions while keeping the space of the crossing open. It also presumably furnished adequate support for the huge flat-topped tower.

Yet rising building costs and difficult foundation problems (despite its elevated location, the Cathedral subbasements are full of sump pumps) led, finally, to the abandonment of this tower, too. In the forties it was replaced by the flèche of the current design (photo above) which some wag has identified as being the one from the roof of Ste. Chapelle, merely inflated to American proportions.

### A challenge for today's architects

Now, history has overtaken the cathedral again. The history of St. John's up to date may seem to us one of mistaken, if sincere, efforts, but it has the great merit of being still unfinished. It thus presents still another generation of American architects with a challenge. It seems to the FORUM, as it does to me, that this challenge should be accepted. The cathedral should be finished and finished in a thoroughly contemporary idiom, just as cathedrals have always been. But it is one thing to call for a change and quite another to decide what kind of a change to make. If the cathedral authorities have qualms about our raising this issue, their qualms are easy to understand. American architects have seldom dealt imaginatively or gently with the past-their own or anybody else's. Generally speaking, each time a change of bath water has been indicated, the baby has been thrown out, too. If the cathedral is to be brought to a satisfactory completion, then the architects-whoever they may be-are going to have to display more historical perspective, more sympathy for and at the same time more detachment from the forms and symbols of the past, than they commonly do. They must produce a new work consistent, congruent, with the old.

† Karl Schriftgiesser, New York Times, Jan. 15, 1927.

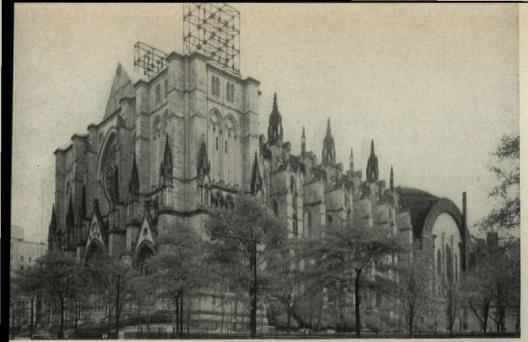
And this consistency, this congruity, cannot be merely literary: it must be real, tangible, visually apparent. For example, the new design must finally solve what has always been the heart of the problem, structurally and esthetically: the crossing. This is more difficult than it was in Dr. Cram's day, since there are now three powerful elements to be resolved-La Farge's great Romanesque choir. Cram's soaring Gothic nave and his half-finished north transept. And there is now talk of moving the altar down from the choir into the crossing, so that La Farge's conception of this element as a great luminous area, lit from above, is more valid than ever. Thus, whatever its design and material, the new crossing will have to satisfy a number of architectural and esthetic problems.

Externally, the crossing will be marked by a tower. This might be of open metalwork, echoing the George Washington Bridge towers up the river. It might be a ring of tall masts from which the crossing roof could be suspended like a great baldachino. It might be a light shell of molded concrete or a lacework of aluminum and stained glass. But whatever the form or material, it must in its general configuration be consistent with the dominant features of Cram's steeply pitched roofs, gray stone masonry, and flying buttresses with their crockett-edged pinnacles.

There is also, in cathedral circles, some feeling that the proposed south transept might be entirely omitted. If this is done, the south wall of the crossing automatically becomes a gigantic window. Since it will be 100' wide and at least 150' high, it will obviously require fairly heavy wind-bracing. (The cathedral is exposed to high winds and carries heavy insurance against glass damage.) This will, of itself, constitute a tracery, and whatever its detailed pattern, this tracery will have to be congruent with that of La Farge's and Cram's stained glass windows. There are other problems, too, to be reckoned with-the unfinished towers of the west front, for one, and the fate of the little Greek revival building just south of the crossing. For composition reasons, the two towers must ultimately be completed. Should they, too, be redesigned in the contemporary idiom? If so, what materials will they use, what form will they take, how will they accommodate the great bells which the authorities hope some day to have?

As to the Greek revival structure (p. 113), its demolition has always been envisioned to make way for the south transept. But if there is not to be a south transept, what then? The building is handsome, of some artistic and historic interest, dating from the 1840's. (It was built for the Leake & Watts orphanage which formerly occupied the site.) Both Dean and Chapter confess a desire to see it preserved. But it stands only 40' from the south wall

<sup>\*</sup> According to a letter from Mr. Chester A. Brown, member of the firm of Eram & Ferguson, dated Boston, Mass., Nov. 18, 1954.



The current problem of bringing St. John's to a satisfactory completion can be clearly visualized from this view of the cathedral. La Farge's crossing will probably have to be dismantled. Aside from the threatened failure of the temporary dome, the great masonry arches are not high enough to receive the gabled roofs of choir, nave and north transept. And this new crossing will have to satisfy the demands of Cram's soaring nave and La Farge's choir (below).

of the crossing, squarely athwart the proposed new window. Can it be kept here? Should it be razed? Or might it be removed to some other location? These are all questions of real substance and cannot be evaded in any new design.

Nowhere is the contemporary architect so sharply confronted with the necessity for making his peace with tradition as in the field of ecclesiastical art. For here the past cannot be ignored. The church comes out of the past, has deep roots in the past; its iconography and liturgy can be neither ignored nor greatly modified. Both have been molded by the centuries, so that their symbols are inextricably a part of the faith itself. At St. John's, as elsewhere, the new art must interpret these symbols and do it convincingly and intelligently.

These are limitations, no doubt about it. But limitations never prevented artistic accomplishment; on the contrary, they often seem a necessary precondition. Undoubtedly, Europeans are more adept at this sort of thing than we are since they have had more experience at it. But as the relics of our past accumulate around us, we shall see more rather than less of this sort of problem.

One limitation, however, we are mercifully spared—that peculiar slavery to tradition, to historic precedent, which crippled La Farge and his generation. Since they had no genuinely contemporary idiom of their own, they could only express themselves in the dead language of the past. The tragic consequences of this are very clear in La Farge's defense of his design.\* He cannot propose anything without citing historical precedent. He is opposed to flying buttresses because he does not think they would long withstand "the ferocious attacks of our climate." But that is not sufficient argument: he must also cite a Gothic church without flying buttresses. He finds it at Albi. He wants a big crossing, domed and lit from above, but he cannot justify it on merely functional groundsthat it makes a better auditorium; or on an esthetic basis-that it creates a more splendid intersection of nave and transepts. No, he must cite precedent, Gothic precedent, at that. He can find only two (the Cathedrals of Ely and Gerona) but these, as he wryly puts it, are "good enough." Every aspect of his design is similarly based on precedent-he cites chapter and verse to prove it.

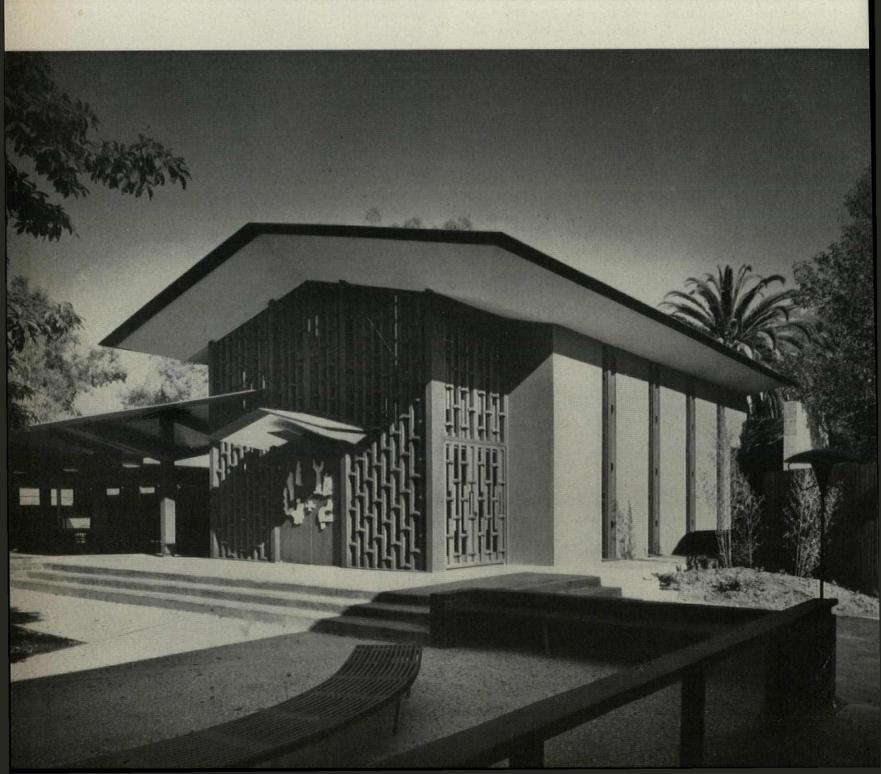
It would be grotesque, in 1954, to see a church design justified in any such fashion. This of itself is proof that we stand upon higher ground than La Farge's generation. But this new position, bitterly fought for and newly won, should give us a new perspective of the past. It should enable us, at long last, to live comfortably with tradition, on terms of equality and respect.



<sup>\* &</sup>quot;St. John The Divine," op. cit., pp. 385 ff.

# CHURCHES

have had a hard time catching up with the twentieth century. Many building clients, quick to accept new design standards for their week-day surroundings, still seek refuge on Sunday in reassuring (and expensive) copies of the past. Perhaps one reason lies in the bewildering variety of modern churches that make coherence and continuity hard to find. In the good recent churches shown on the succeeding pages, the variations are considerable but are soundly based. Each church fits a specific established tradition of worship, a specific region, a specific technology, and budget, as well as the newer esthetics. In one whole group of what are here called tent churches, a similarity of purpose and method has brought a striking similarity of form. This has the advantage that comparisons can be made in detail, leading to an improvement in all-around excellence.





# A CHAPEL FOR CHILDREN

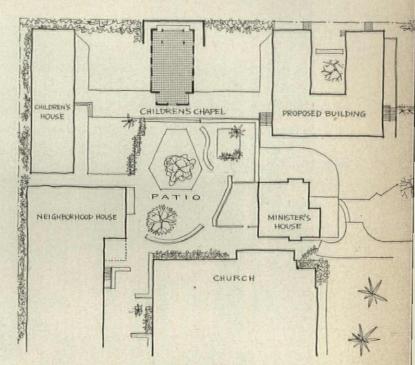
In this little chapel is beautifully expressed the goal of all congregations: to make religion a spontaneous and lasting experience for their children. This is the fifth of six buildings that started with the parent church in 1886, grew into a family circle that will be completed with a school building for the first six grades (see plot plan, above).

The new chapel is a full-fledged member of the family, standing alone yet linked with the others in a grouping around pleasant little courts and gardens. It gives the children of the parish a church of their own, right next to their own classrooms and playgrounds. It is no replica of the old church, but it uses the same redwood and earth colors in a fresh way while retaining a family resemblance.

Most important, it is scaled down to child size and made exciting with a handful of devices shown on the following pages. The little-theater atmosphere that results should make Sunday school every bit as appealing as a TV puppet show.

New chapel is connected by covered walk to nursery school at far left. It is only 19' high at the ridge, has 7' doors with sculptured figures depicting simple themes taught at church school. Redwood grille, made of studs and scrap lengths with swinging glass panels on interior, throws a lively pattern of sunlight into the nave.





CHILDREN'S CHAPEL OF THE NEIGHBORHOOD CHURCH, PASADENA, CALIF.

SMITH & WILLIAMS, architects

ECKBO, ROYSTON & WILLIAMS, landscape architects

ALBERT STEWART, sculpture

ROULAC CO., contractors

Photos: Julius Shulman



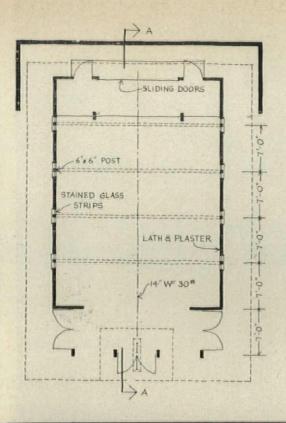


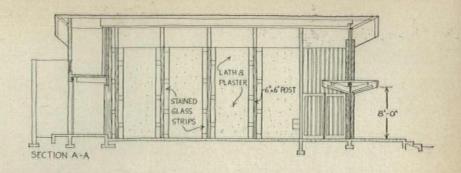
Stagelike chancel has a pink and brown light quality, an intimate, exciting mood

Playground and covered play terrace link the chapel with a new lower-school building (at left).



Some of the best features of the chapel, which won an award of merit at the AIA convention last June, actually grew out of cost limitations and code requirements. The decorative latticework of the exterior, repeated over the chancel to screen the furnace space, is simply stock lumber and waste pieces nailed together and stained. Plaster, the cheapest building skin that would give a one-hour fire rating, was neatly panelized with plaster grounds into crisp-edged wall sections, leaving the supporting wood posts exposed and giving the chapel the character of an all-wood building. Between the plaster panels the architects used inexpensive tinted glass-pink strips with brown inserts-producing a warm-light quality within the room rather than trying to create costly pictures with conventional stained glass. A fire restriction was turned into an asset by setting a brick wall on the property line, using the 4' space between it and the chapel as a sunlit, planted backdrop for the altar (photo above). Sliding glass doors and curtains here close the 12' opening against weather. Ceilings are acoustical tile, floors are cork on slab for further sound reduction and easy maintenance.





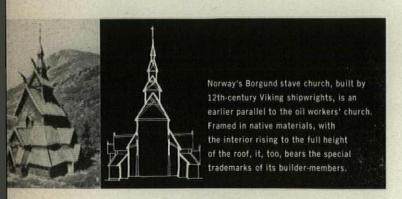
Freestanding brick wall is fire protection for adjacent property, extends the limited interior (1,100 sq. ft.), and gives rear access. Effect of outdoor backdrop is seen in photo (opp.).

Movable pews seat 70 children. Separate Sunday-school services are given for grades 1-2, 3-6, 7-8 and 9-12. Space above altar is used for hot-air furnace.





# DRILL PIPE, FAITH AND HARD WORK

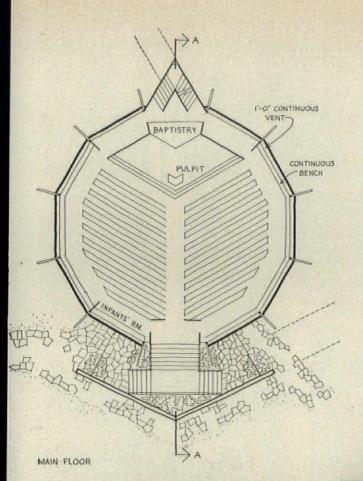


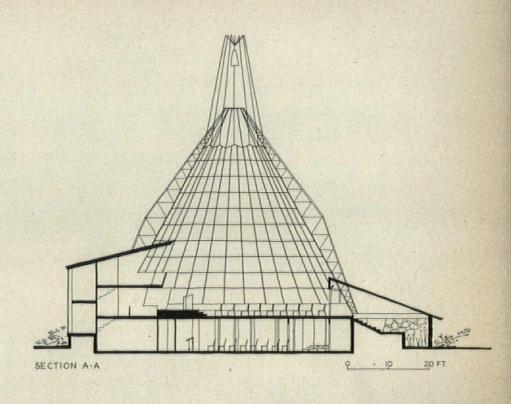
HOPEWELL BAPTIST CHURCH, EDMOND, OKLA. BRUCE GOFF, architect; WILLIAM H. WILSON, assistant

Hand built in the oil fields by oil workers, this little church has the simple sincerity of the oil derrick from which it takes its character and some of its materials.

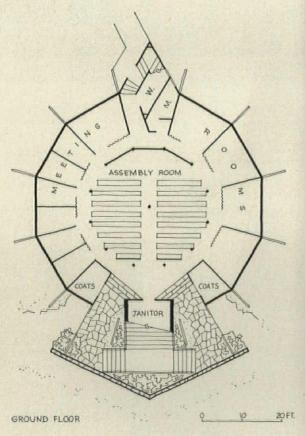
Shaped like a tepee to enclose the most space with the least outside area, the church seats 300 in a circular nave and another 100 in a Sunday school room below, at a total cost of \$20,000. It reflects as few buildings do, the region and the people, who in this case erected it themselves: an Oklahoma pastor and his flock of pipe welders, drillers and riggers, and their families.

The spidery trusses that support the 12-sided cone are actually 4" round "drill stem" welded to 21/2" line pipe, and the siding is the corrugated aluminum often used for oil-field shacks. The central lighting fixture that dangles down from the "smoke hole" is made of rigid conduit, metal cake pans and silver-bottomed light bulbs. Even the pews are made of pipe and planks.





Windowless for privacy from nearby highway, nave is ventilated by plywood flaps behind perimeter benches. Small hydraulic cylinders lift glass lid off top of cone for flue effect. Panels of foamed plastic are nailed to underside of roof deck for insulation and sound absorption. Sunday school is in basement.





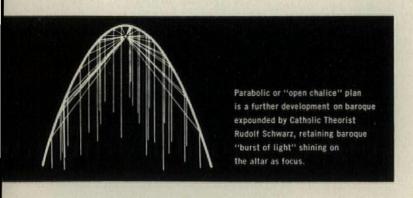


75 FT.



Rich mural accenting church altar has as its theme the Apostles' Creed\*

# A PLAN IN THE OUTSTRETCHED ARMS OF CHRIST



CHURCH OF THE RESURRECTION, St. Louis, Mo.
MURPHY & MACKEY, architects
HARRY F. WILSON, mechanical engineer
WILLIAM C. E. BECKER, structural engineer
EMMET LAYTON, landscape architect
GAMBLE CONSTRUCTION CO., contractors

For centuries decorative art and reaching spires have intensified the meaning of the Catholic liturgy. In this church the basic forms themselves try to convey even deeper symbolisms. Its plan is a parabola, and to some a parable as well: the ending of the long pilgrimage that started with the self-centered circle of men alone, then broke out down the long naves of life in search of higher truth, and now appears to draw to a close around a final goal. The open sweep of the sidewalls seems to welcome the pilgrims arriving from near and far, drawing them in through a clear veil of glass to the warm, rich interior. Before them, at the burning focus of the parabola, Christ awaits them in the altar tabernacle. Above hangs a great halo and above this a domed skylight, which in baroque tradition sends a burst of sunlight down on the ritual of the Mass. Still higher is the bell tower, marking the altar focus for miles around and soaring in resurrection to a life after death with Christ. After the body of Christ is shared and the candles extinguished, the pilgrims arise refreshed. The great arms of the church now appear outflung, gesturing them out again to continue their worldly journey.

<sup>\*</sup> By Robert Harmon, with Emil Frei. Statues of Blessed Mother and Child and Joseph the Artisan are by Hillis Arnold.



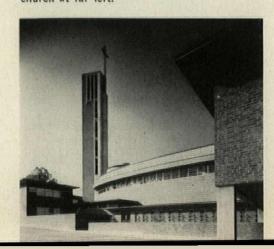
Counterpoise of curves is formed by sidewall of parabola moving in toward bell tower, wall of side vestibule and boys' sacristy curving out. Covered side entrance to narthex at left.

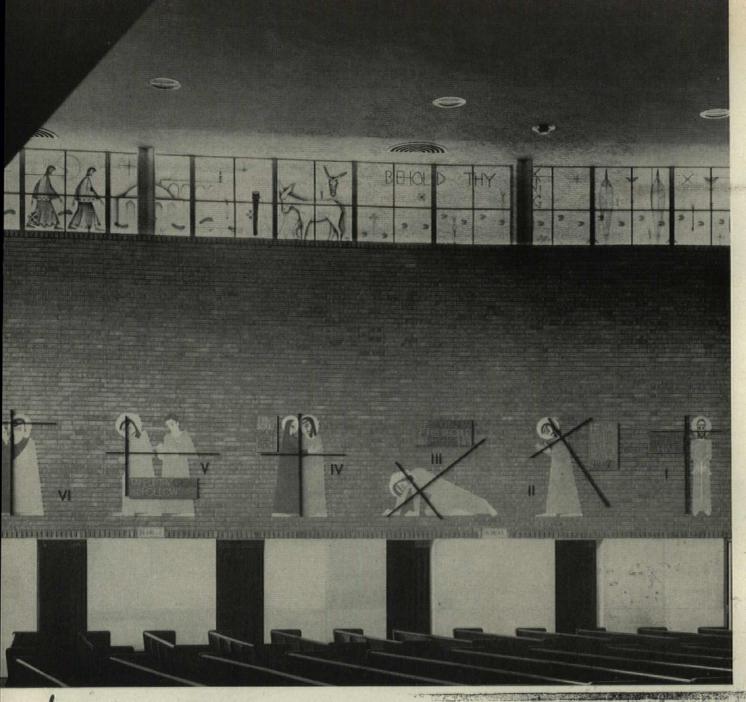
As was the custom in cathedrals and churches of old, this modern Catholic congregation has united its architecture with the work of noted artists of the day. The traditional symbols are all there, but cleanly and colorfully stated in contemporary art, not in ornate relics borrowed out of habit from the past. Since the parish is in one of the more liberal dioceses in the country, Architect Murphy was able to work freely with a handful of artists, integrating building and decoration into an articulate whole.

The shape of the plan and the arrangement of the pews in slight curves give every member of the congregation an unusual sense of nearness to the altar and the Mass. Seating for 625 on the main floor is so disposed that the furthest seat is only 21 pews back from the altar rail. Another 125 seats are provided in the choir loft.

The church, including tower, baptistry and rectory, contains 500,000 cu. ft., was built for \$590,000 or \$1.18 per cu. ft. Furnishings including pews, murals and sculpture, came to an additional \$55,000. The convent, with 112,000 cu. ft., cost \$159,000, \$1.41 per cu. ft.

Priests' gallery and sacristy line sidewall of church next to new convent, corner of which can be seen at right. New rectory is behind church at far left.





Stations of cross by William Schickel line rosebrick wall above confessionals. Ideas are stated directly in simple forms with thin black wooden crosses, wrought iron numerals, and walnut panels for text. Clerestory band of stained glass (by Robert Frei, with Emil Frei) portrays public life of Christ Lord in graphic line symbols. In this segment: disciples going to Bethphage to find ass and colt; hoofprints against palm leaves on journey to Jerusalem. Light colors admit ample natural light to interior.

Aluminum altar rail separates raised sanctuary from pews. Choir and organ loft at rear floats free of side walls on two large pedestals bridging the center aisle. These contain stairs, washrooms, riser ducts to ceiling, which is hung from four diagonal trusses.



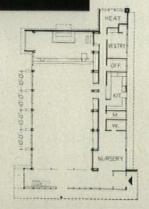
# THE TENT FORM—A VILLAGE GOTHIC FOR TODAY



Predecessors of the modern "tent" form are the old village churches of northern Europe, with steep wooden roofs that shed the heavy snows.

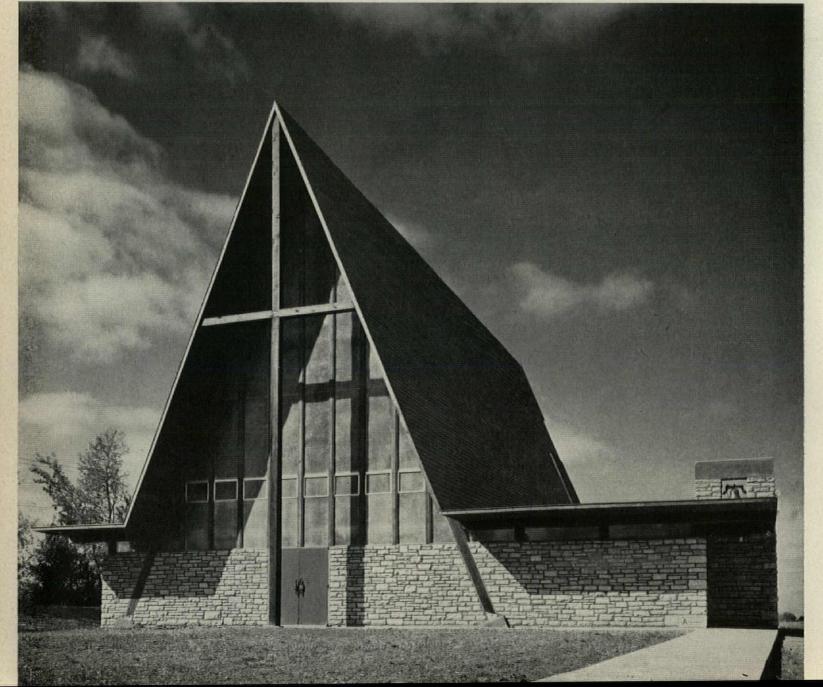
Among the handsomest are the early Lutheran churches of Finland, such as this one at Kaarina (13th century).

LUTHERAN CHURCH OF THE ATONEMENT,
FLORISSANT, MO.
HARRIS ARMSTRONG, architect
SWAN CONSTRUCTION CO., contractor
Robert Frei



More and more rural and suburban congregations are turning to single, high-gabled roofs for their new churches. The bold simplicity of the form fits well with modern concepts of worship; its economy appeals immediately to the many church groups with limited budgets. And behind it lie deep traditions. It is the old north country church, boiled down to a new structural clarity appropriate to the times, yet retaining the best of old essentials: the warm, neighborly personality, the humble aspiration and some of the medieval magic. Its triangular silhouette—a symbol of stability, shelter and prayer—conveys the idea "church" so universally and so strongly that elaborate bell towers, steeples and sculpture can often be omitted.

The church (shown below) has an unusually steep roof, supported on wooden A-frames. These are carried to their footings clear of all the low walls, front or side, to keep the structural system honestly visible. A chancel curtain and storage for folding chairs and tables adapt the nave to social activities. Seating capacity: 200-250. Cost: \$67,000, about \$15 per sq. ft.

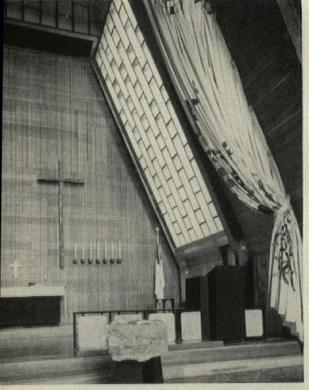




FIRST PRESBYTERIAN CHURCH, CONCORD, CALIF.

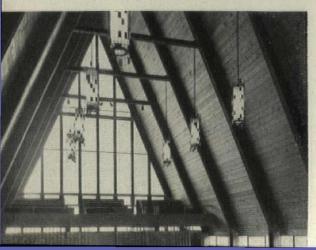
DONALD POWERS SMITH, architect
ISADORE THOMPSON, structural engineer
ZUCKERMAN CONSTRUCTION CO., contractor

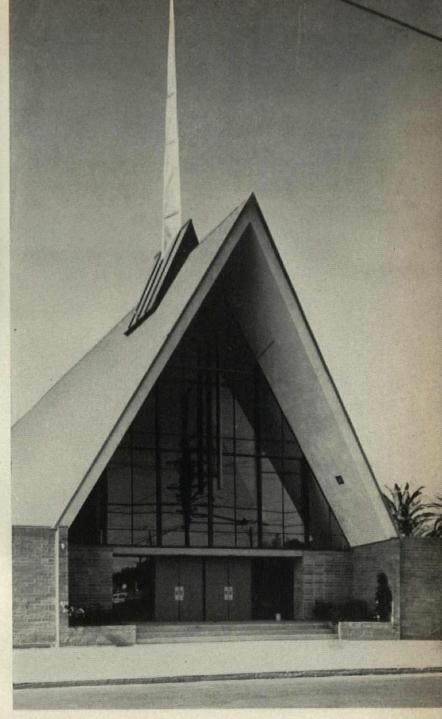




Redwood grid directs daylight down upon the chancel

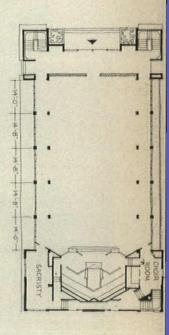
Plastic sheaths entry gable; wood slats define a narthex





#### A LARGER, MORE FORMAL VERSION

Designed to seat 500, this more urban church carries its tent roof atop low buttressed side walls. It is near San Francisco and serves a congregation which includes many young families sympathetic to Architect Smith's straightforward brand of architecture. They requested that the building be dignified and churchlike, but that it retain the warmth and intimacy of character found in English parish churches. For his wider spans Smith used steel beams on 15' centers, supported on the side walls, a roof of 8' x 8' wood purlins, 2" plank deck and cement asbestos shingles. Masonry walls are buff-colored concrete block; hard plaster was used over the chancel for brilliance, acoustical plaster over the back of the nave for sound absorption. A full basement accommodates six small classrooms opening on a large assembly room with platform stage, and a choir room, bride's room and heater space. Building cubage: 186,310 cu. ft. Total cost: \$157,578 (including fees).





# **BOLD STRUCTURE AND TEXTURES** SET A DEEP RELIGIOUS MOOD

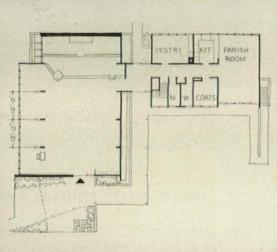
In this little Canadian church, the full power of the triangle form is exposed to the congregation inside, with no side walls to screen the base of the roof beams that spring from the earth to the infinite. These solid members (18" laminated wood) march down to the chancel, concealing spotlights which pinpoint, in theatrical fashion, the altar, cross and pulpit. On either side, panels of acoustical plaster establish a rather emphatic horizontal, pulling the eye toward the service (and concealing strip windows and fluorescent tubes for up and down lighting). The church seats 144 in pews, 50 in folding chairs to one side. Including the parish wing, it cost \$59,123-about 78¢ per cu. ft.-plus architects' fee, landscaping and furnishings (designed by the architects).



Sparkling stone of many colors forms a rich background for worship. At left, behind pulpit, is a chancel sidelight of frosted glass.

Photos: Graham Warrington







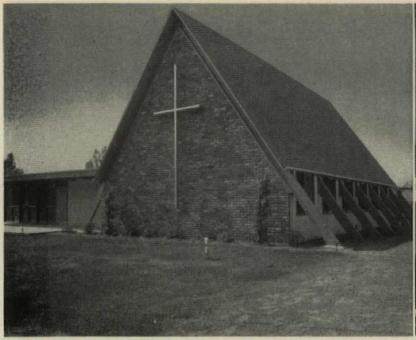
Stark silhouette of 38' equilateral triangle is etched against cold white skies. Gable end sets a cross of white mullions against blue heatabsorbing glass.



Side gallery for late-comers and extra seating also accommodates baptismal font, temporary organ. A low ceiling here heightens the effect of the pointed nave.



ST. ANSELM'S CHURCH, VANCOUVER, B. C. SEMMENS & SIMPSON, architects ERIC ACLAND & ASSOCIATES, lighting NAROD CONSTRUCTION, LTD., contractors



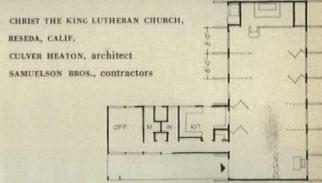


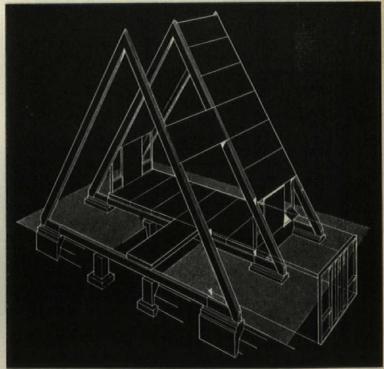
#### MULTIPURPOSE NAVE FOR MINIMUM BUDGETS

During services this mission church seats 150 in folding chairs, with choir and electronic organ behind a movable screen in the rear. For church suppers the screen is placed across the chancel and folding tables are set up. Acoustical partitions at each 8' bay fold out for Sunday school cubicles. Cost: \$24,822, including parish wing, sprinkler system, all furnishings.

Photos: (top) Culver Heaton; (below) George W. Sommer

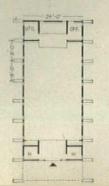




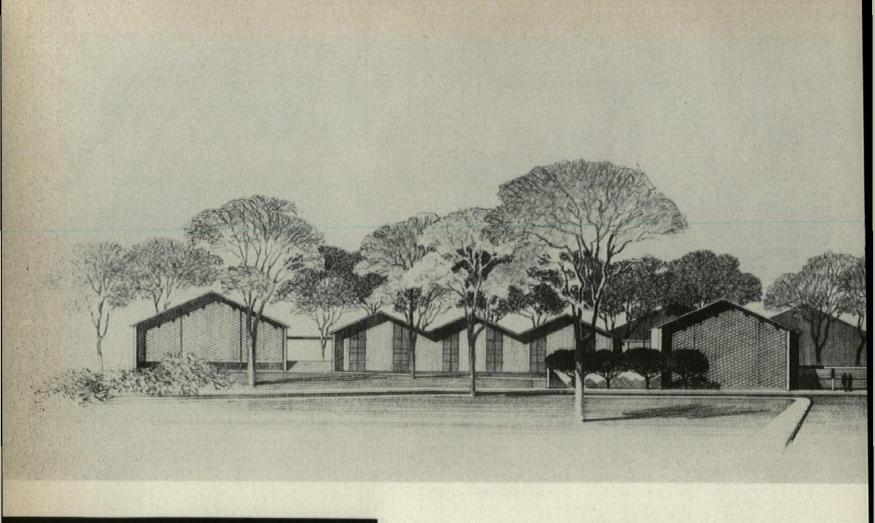


# PREFAB CHAPEL COMES OFF THE BACKS OF TWO TRUCKS

Plywood skin panels and built-up bents get this church under roof in four days at total cost of \$20,000 to \$22,000 (\$14 per sq. ft., 80¢ per cu. ft., plus wing and basement). The basic chapel seats 150, sells at \$11,250 F.O.B. Urbana, including all materials, chancel furnishings, limited supervision. This lower cost compensates for a less sophisticated design; seven are finished, more abuilding.



MISSION CHAPELS DIVISION OF CREATIVE BUILDINGS, INC., prefabricator JOHN EBERHARD, ROY MURPHY, THOMAS KLAUSMEYER, architects





In the early German moor village of Aichbuehl, all roots were oriented the same way for defense against the onslaught of nature, creating a strong effect which is to be re-used for more subjective purposes by Eero Saarinen in the US Midwest.

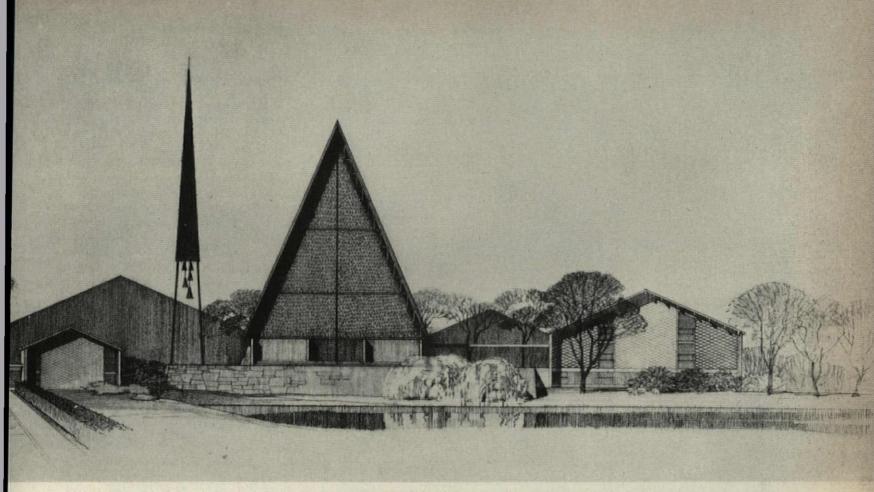
# **FOR A NEW COLLEGE**

SENIOR COLLEGE FOR MISSOURI SYNOD, LUTHERAN CHURCH EERO SAARINEN & ASSOCIATES, architects

Richard Shirk



LAKE leads into composition of central buildings; dormitories are along shores.



ROOF LINE. Viewed from the approaching road, the central buildings look like a village.

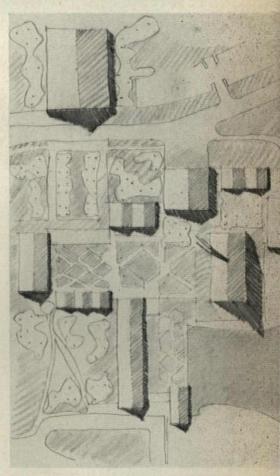
Wall treatment has been revised somewhat since this study was made.

# AN OLD VILLAGE SILHOUETTE

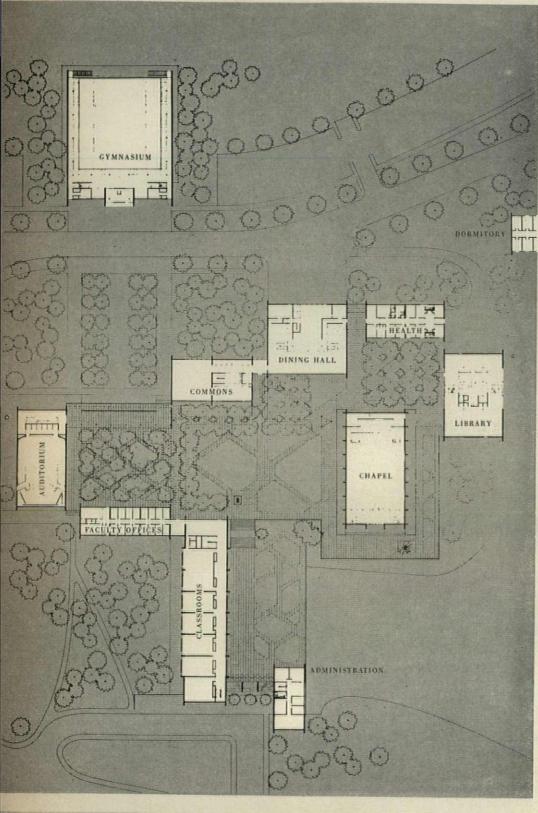
Near Fort Wayne the Lutheran Church will soon start building Concordia Senior College, to prepare students for admission to its St. Louis seminary, and to implement a belief: "Good leaders are never born as such; always, they must be trained. . . ."

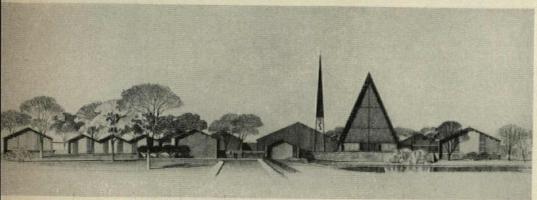
The school's design is superficially as different as it can be from the General Motors Technical Center by the same architect (AF, Nov. '54). Where GM is Saarinen's projection of technology, the solution for Concordia lead him into history. In simplest architectural terms, the rhythmical series of steep, dark-tiled roofs all angled the same way "will look," Saarinen predicts, "strong against the white sky. It is the same kind of white winter sky you see in northern Europe." The architect and his associates are seeking to capture simultaneously the tranquillity of the Lutheran Church and its stern morality, the exhilarating thrill of belief and the demanding devotion of conviction. To find forms to hold this content, the designers looked where the Protestant church was born, under that white sky.

In religious buildings, Saarinen has looked to the past for shapes before, as in the MIT chapel now under construction (AF, Jan. '53), a kind of modern medieval keep. Religion is old, he seems to say; there is no need to reinvent significant forms for it. But this time, in designing not just the church but the village around it—classroom buildings, living facilities, library, dining hall—he is taking this ancient melody for lute and recorder and orchestrating it into a rather radical composition for today, with all today's imbalances and other subtleties surrounding and deepening the simple theme.



When long shape of building is north and south, roof saw-tooths. Formal concept is softened in its arrangement around a pleasant court (see plan next page) and by the romantic effect of the "village" roofs.





# The case for the pitched roof

A statement by Architect Saarinen:

"In giving visual expression to Lutheran traditions and objectives, the appropriate concept seemed to be one of common buildings intimately grouped around a central square with the chapel dominating the highest slope; the lesser buildings clustered around it; and the student housing radiating outward.

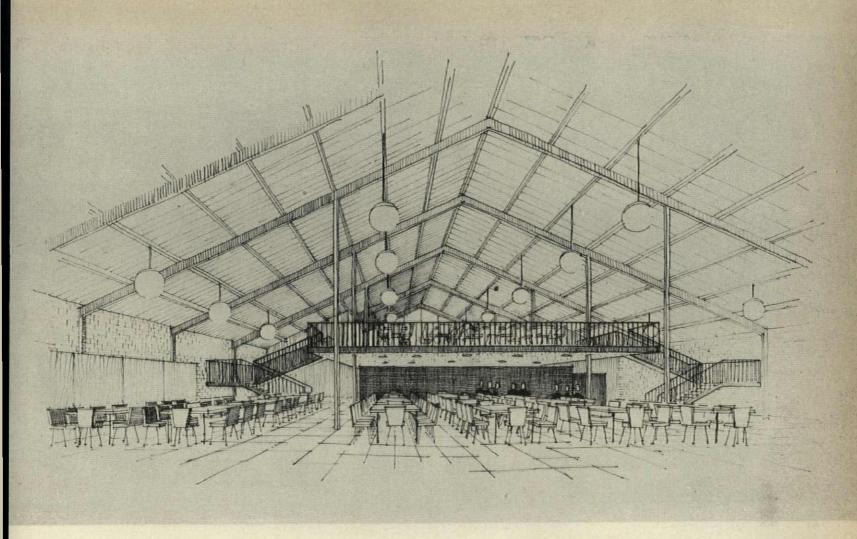
"Designing within this villagelike concept, we could achieve a tranquil, unified environment into which the students could withdraw to find a life complete and balanced and still related to the outside world. This villagelike plan also seemed suitable to the gently rolling prairie land—framed by protective green forests. The chapel could command the group, the other buildings could adapt themselves to the lesser slopes and ridges, and the hollow below the chapels could easily be transformed into a little lake. . . . The challenge was to achieve these permanent and dignified yet friendly and serene surroundings with the greatest possible economy.

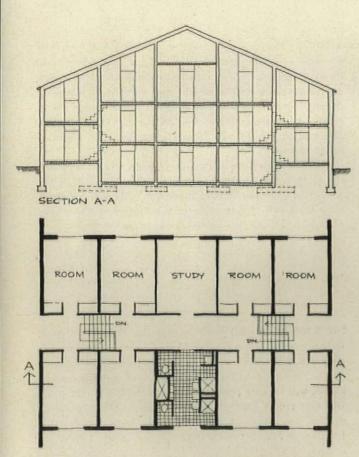
"Now, what about the pitched roofs? Very important, in addition to the village-concept, was a site where the buildings would be seen in silhouette from outside as well as from within the group. How does one achieve an interesting silhouette with horizontal roofs? Then the thought kept recurring how nice the silhouette was of medieval hill-towns and how nice the silhouette was of Danish villages with the church dominating.

"Then there was the question—is the sharp horizontal really the best relation of building and sky? One of the esthetic problems is the transition between flat land and the sky-vault above it. Are the boxes that our age takes for granted really the best thing? Then there is the question of whether a flat line at the eaves is really best with the horizontal base line. I had been impressed when I was at the Upper Villa at Caprarola by the way Vignola's wall was related to the woods behind it. It wasn't just a straight wall—the only kind we know—but a curving, dipping one which gave the trees behind the wall a chance.

"Then, in addition and as important: with the flat roof you create certain limitations to your mass. The pitched roof lets you look up and—as in Chinese perspective—you can see or at least comprehend the total outline or total plan of the building and can also comprehend the relation of the buildings to each other. By running all the roofs in one direction, the total order which one desires seemed to come about.

"These all are awarenesses which we seem to have forgotten in our more or less standardized approach. But they were awarenesses we wanted to explore. We discovered that it was possible to explore these things without letting go of or violating the principles of modern architecture—like integrity and articulation of structure, respect for function, modern technology, and the rest—to which we are all dedicated."

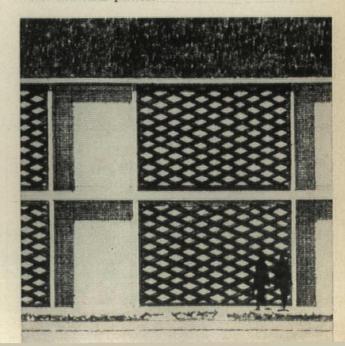


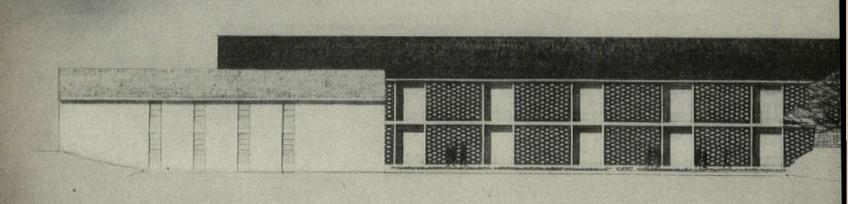


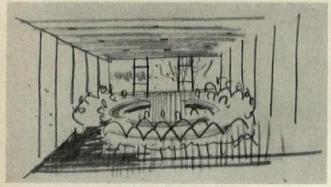
broad pitched roof, with five floor levels for rooms. Each separate dormitory will accommodate only 34. Intention is to keep group small enough so that each individual will feel himself a responsible member in all its activities.

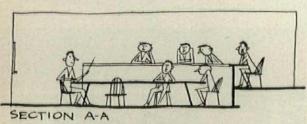
DINING HALL INTERIOR. Structure is steel bents 16' on center and box columns. Wood roof deck is supported by wood purlins 5'-4" o.c. Hall seats 450 (300 on main floor, 150 on concrete slab mezzanine) plus 24 in private dining room. Students will eat breakfast and lunch cafeteria style using only main floor; dinner will be served "family style" with elevator to raise food to mezzanine.

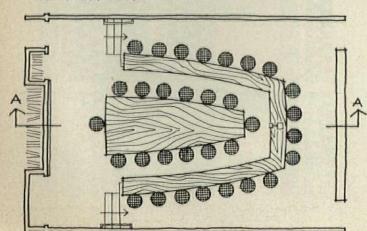
biamond-shaped grill of masonry in front of glazed wall is being studied as a repeating vertical motif to complement pitched roofs, which will be black tile with strong texture (gray tile in dormitories). Other walls will be glass, white-painted brick or metal panel. End walls will reveal structural pattern.









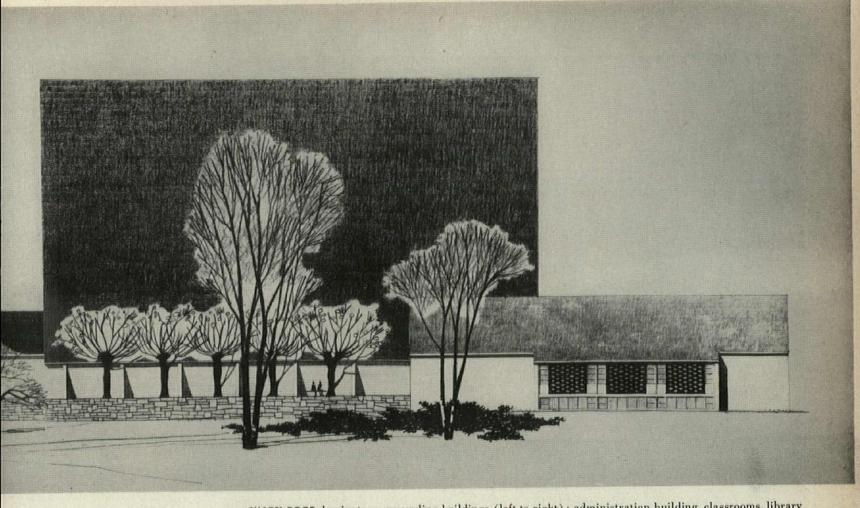


A NEW KIND OF CLASSROOM. The group instruction program was carefully analyzed in the program for this college, and summarized in this question to the architect: "What kind of space, equipment and environmental treatment will enable a group of 30 students and one teacher to work together most effectively in group instruction so that, in each meeting, one half of the 30 will form the nucleus and focus of

group activity?"

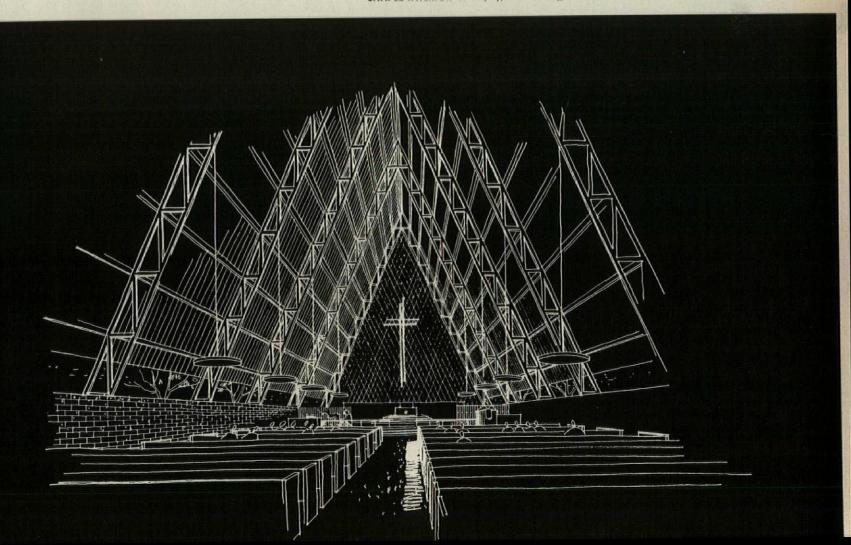
Saarinen's answer: a two-level space which puts half the class in the spectator's position, the other half in the performer's. At the head of the lower table is the instructor. Roles will change at intervals. Two test classrooms of this design are in successful operation.

THE ROOF PITCH. All roofs except the chapel (interior, right) will be pitched at 23.5° from the horizontal; the chapel will be 23.5° from the vertical, the same pitch as the world's axis against the sun. Roof gutters for the chapel will be long pools underneath the roof edge; pools will also reflect light up into the chapel. On this college project, the Saarinen office's designer-in-charge is Glen Paulsen, and the project manager is William C. Linde.



CHAPEL ROOF dominates surrounding buildings (left to right): administration building, classrooms, library

CHAPEL INTERIOR is daylighted through continuous strip windows beneath eaves





# **PARTITIONS WITH A PURPOSE**

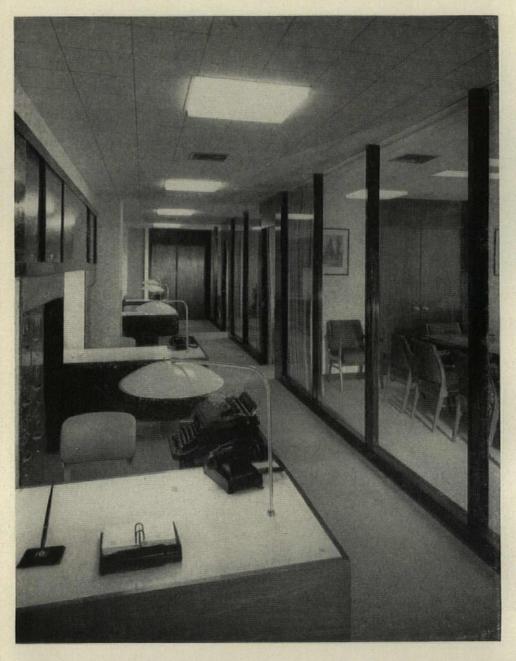
NAM's new headquarters feature four varieties in wood, steel and glass, plus a folding wall 42' long

This new Fifth Ave. headquarters for the National Association of Manufacturers is notable for the flexible manner in which the floor area is divided. Most partitions are frame-and-panel enclosures which can be easily moved, and the partition materials themselves vary with their function: clear glass (with draperies) or patterned glass where daylighting is as important as privacy; polished walnut where appearance is paramount; steel sandwich panels in corridors where maintenance costs are important; and, where day-to-day flexibility is the major need, a 42' partition which folds up (see p. 140).

# Reception room has walnut and glass backdrop

The first thing a visitor sees when he gets off the elevator is a partition of 3/4" walnut veneer plywood screening an interior corridor and creating a rich backdrop for the reception room. The polished 13' x 7' panels are set between brass H-channels. They rest on the floor but are spaced 1'-9" below the corridor ceiling to aid ventilation. The etched glass panel, which in NAM's former offices, was used inappropriately flat against a wall, serves here as another corridor partition, dramatically lighted from both sides. The carpet is beige; plastic wall covering, gold on white; upholstery, black and white.

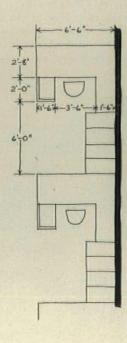
NATIONAL ASSN. OF MANUFACTURERS, owner
MICHAEL SAPHIER ASSOCIATES, INC., designers
SMITH MEEKER ENGINEERING CO., audio engineers
DIESEL CONSTRUCTION CO., INC., general contractor
LOCATION: NEW YORK CITY

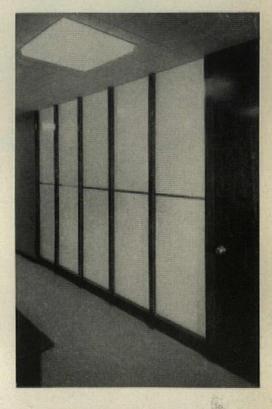


#### Secretaries' desks have built-in efficiency

Although this secretarial row typically occupies interior space, it is pleasant space. The inside partitions of the bosses' offices and their private conference room are fully glazed and the air is fully conditioned. Patterned draperies are pulled when the directors require privacy. Each secretary has built-in filing and storage space within her cubicle and ample desk-top area. The part of the desk which extends into the storage partition is lighted by an egg-crate fixture built into the soffit (photo below). Woodwork is walnut; desk tops are off-white laminated plastic; the carpet is beige.







#### Partition materials vary with purpose

The partition above separates an executive's office from his secretary's desk and must therefore be translucent. It consists of glass with an integral egg-crate pattern in white. Set at an angle, the egg crate creates privacy for the boss' office but allows daylight to reach the secretary.

The partition below separates an open office from a corridor. It consists of  $V_2''$  thick sandwich panels (two layers of corrugated kraft paper between sheets of 14 ga. steel) set in a steel framework. The paint finish is baked on in the shop. Color: light blue panels in a dark gray framework. Note that the panels are free from both floor and ceiling to aid air circulation.





#### Specifications

FINISHES: Floors—cork, Armstrong Cork Co., and asphalt tile, Kentile, Inc. Walls—Vinyl, Joanna Western Mills Co.; "Flexwood," U. S. Plywood Corp. Doors—walnut veneer, U. S. Plywood Corp. Ceiling—"Fiberglas" acoustic tile, Owings-Corning Fiberglas Corp. Paints—Pittsburgh Plate Glass Co. Desk tops—Formica Co.

FIXTURES: Lighting—Lightolier. Public address system, microphones—Altec-Lansing Co.; speakers—General Electric Co. Air diffusers, Anemostat Corp. Hardware, Schlage Lock Co. Folding partitions—"Modernfold," Newcastle Products Co.

FURNITURE: Reception room—Jens Risom Design Inc. Conference room chairs—Brower Furniture Co.; tables, built-in desks and special furniture—Korngold Brothers. Other desks and cabinets—"Steelcase," Metal Office Furniture Co. Glass partitions—"Fotolite," Corning Glass Works.

FABRICS: Carpets—James Lees. Draperies—Goodall Fabric Co.

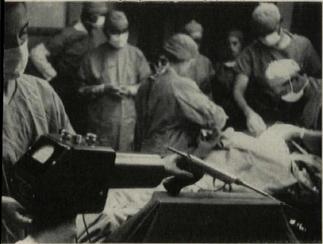
#### Conference room partition unfolds to divide room in half

This 42' x 44' room serves many purposes. As one big conference room it seats 154 people. With the folding partition closed, it is two rooms—one for a smaller meeting, the other perhaps cleared for a display of some kind (about 80% of the tables fold up for easy storage). From the ceiling hang 28 microphones which pick up the voice of a speaker seated anywhere in the room and broadcast it through 28 loud speakers. To control reverberation, the partitions were built slightly out of line, the ceiling covered with absorbent tile and the floor, carpeted.



# THE HOSPITAL BEHIND THE GUN

Photos: (top) Life-Gordon Tenney; (others) Ulric Meisel-Dallas

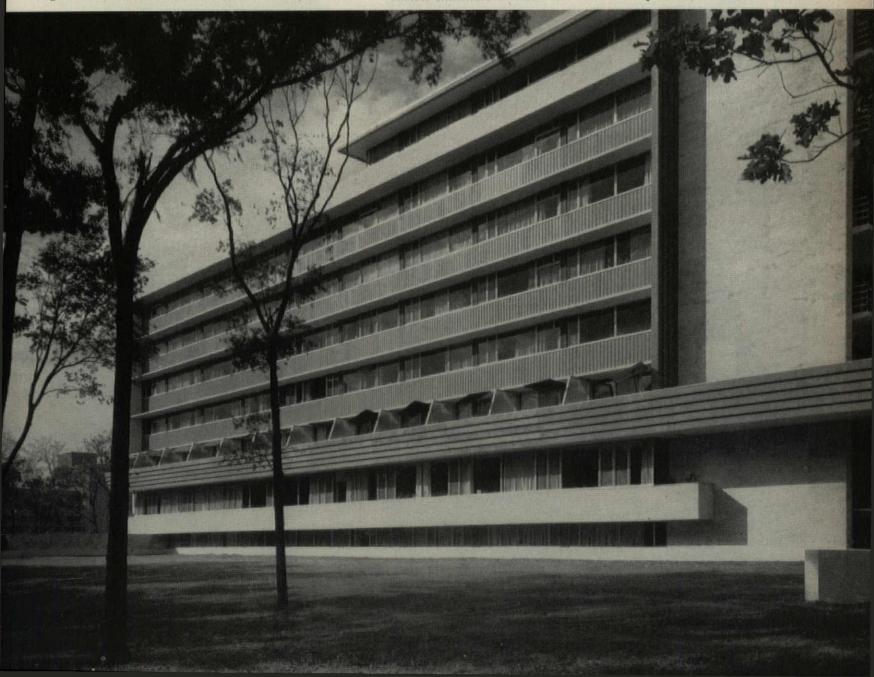


CANCER PISTOL "fires" small radioactive gold projectiles into tumors from injection needle. Healing agent is gamma rays. Pellets' radioactivity lasts ten days.

The only US hospital which packs the new English cancer gun (left) in its holster is Houston's M. D. Anderson Hospital for Cancer Research. It is a large structure in the Texas Medical Center which does treatment, teaching and research under one roof (see complete background story, AF, Feb. '52). Not a pallid temple to antiseptics, it has walls clad in an unusually rich, rosy marble (Georgia Etowa Pink) and the furnishings are by one of the leading modern interiors firms.

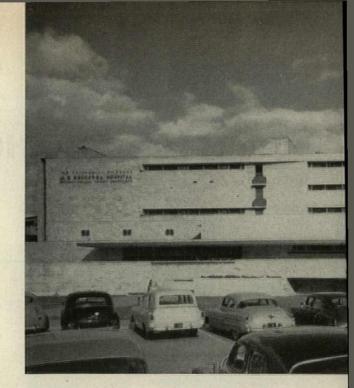
Some of its carefully studied features: thick concrete floors for isolation of the atomic medical equipment; thin curtain walls for space saving (but with marble cladding that is remarkably impervious to both weather and radiation—its water absorption is 0.01%; its 7% thickness stops as many harmful rays as 3/16% lead); individually controlled air conditioning units placed neatly over hall doorways instead of bulkily under windows; one of the first all-foodwagon serving systems; transportation and communications facilities including a pneumatic tube system to transport sup-

MARBLE SHEATHING contrasts with aluminum spandrels, windows and fascias



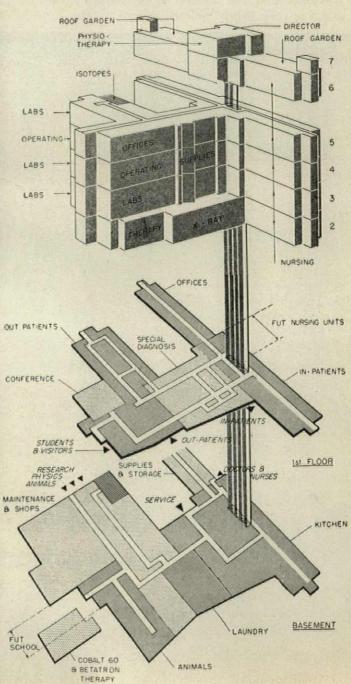
plies up to 33/4" in diameter and 131/2" long; a visual call system for doctors and nurses which practically eliminates the perpetual discreet gonging in most hospitals; two-way radios between beds and nurses stations; unique acoustical construction to house the Betatron (p. 145) and other atomic equipment, which sometimes makes as much noise as 70,000 people all shouting at the top of their lungs; a pleasant, colorful atmosphere in both public spaces and private rooms (opp. and p. 144); and not least, a traffic pattern which is a marvel of organized intricacy—there are separate entrances for doctors, nurses, in-patients, out-patients, trainees, kitchen supplies, lab supplies, animals (which require air locks to prevent spread of smells) and also special elevators for some of these categories.

The space planning itself is a hard and shrewd investment in the constant fight against hospital costs (total here, \$8,375,000, or \$23.95 per sq. ft.), but pleasantness was retained stubbornly for staff and patients. Anderson is not an aloof research facility, but a practicing hospital in every respect, with a 310-bed nursing unit and a complete medical services wing. Housing also the offices of a monthly medical magazine, the hospital is the correlating center of Texas' effort against this one disease. To be reminded of the intricacy of this effort, check the simplified diagram below.



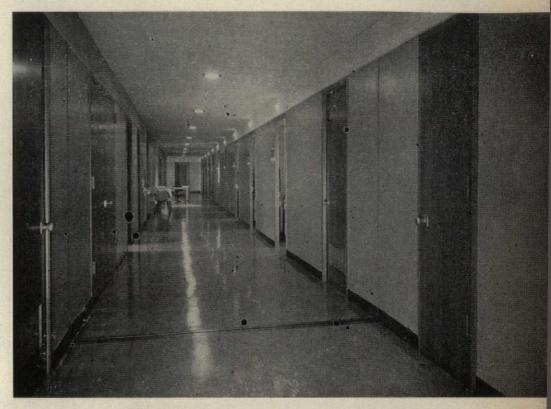
COVERED WALK reaches out from base of stair tower into parking lot



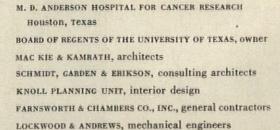




MAIN FACADE is mostly marble. It is %8" thick, backed up by 1" airspace, then 4" perlite block, metal lath and plaster. Building is completely air conditioned, and windows on sun walls are kept small.



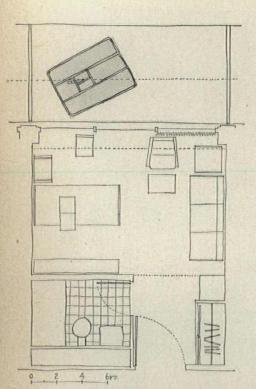
corridor to examining rooms: six signal lights beside doors indicate whether rooms are in use and, if so, by what kind of diagnostician.

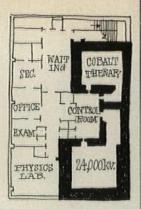


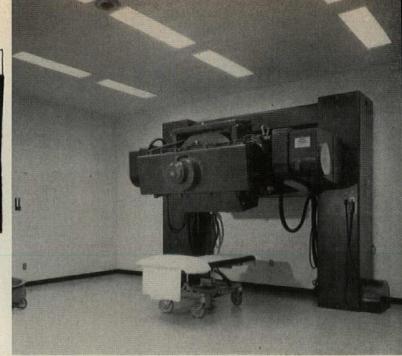
WALTER P. MOORE, structural engineer

space of an unusual character for a hospital. Informal arrangement of modern furniture is abetted by cheerful colors.



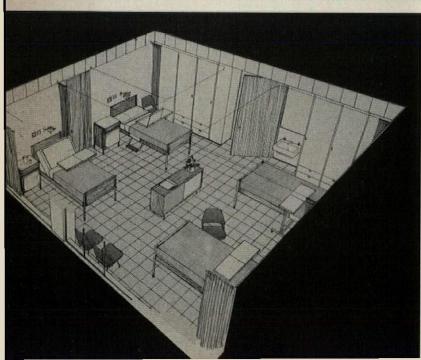






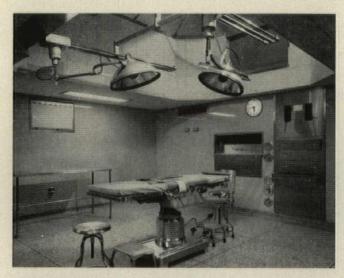
BETATRON, rated at 26 million volts, is housed underground within thick walls (plan, left) plus interior acoustical treatment. All told, decibel reduction is from 94-96 decibles to 15.



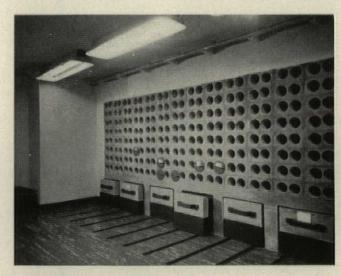


BEDROOM INTERIORS vary but all hit out for life and color. The Knoll Planning Unit did not dimension the rooms, as they sometimes do, nor did they specify such equipment as lights, but otherwise they researched and furnished the entire structure with the architects. Patients' rooms were made "not wildly bright, but clear bright," according to Florence Knoll, by including color in small areas; colors were used more strongly in public areas. Single rooms, (left) face out on broad balcony, baffled for privacy, with an adjustable sunshade for each division. In the four-bed wards, drawing (bot. left) a central storage cabinet, shared for magazines, flowers, etc., is intended to present the patients with something to look at besides each other. Frequently it becomes a central island of foliage. (Each patient has a bedside cabinet in addition.) Curtains are made of a Dutch material and their colors-rose, blue and yellow-are arranged to form a controlled pattern over the facade.





OPERATING ROOM has observation facilities above, like a skylight. These rooms are paired around central work and scrub-up room so one surgeon can shuttle between two operations without delay.



storage for "hot" material consists of concrete pigeon holes which receive lead containers. Note thickness of drawer front. Of ordinary materials, concrete is an unusually good barrier against radioactivity.



Architectural research is still in its infancy. Its methods are happenstance. Its purposes are confused. Its usefulness is spotty. Organized support for it hardly exists.

The author—director of a remarkable English hospital study project supported by a foundation—thinks architectural research often makes so little headway because it is confused with command. His program gives the architect and the client tools but does not try to do their job. This approach makes just as much sense for other building types as it does for hospitals; the research methods described here are already being applied to English agricultural buildings, will soon be used to investigate industrial laboratories.—ED.

# A STUDY IN HOSPITAL FUNCTION AND DESIGN...

by R. Llewelyn Davies \*

One of the most important things we have learned in the five years our team has been studying hospitals is the need to break down problems into aspects that can be studied objectively.

Suppose you start with the problem of what is the best design for a hospital ward. So long as you leave the problem in this general form, there is not a lot you can do to study it. You can look at wards and watch their operation. Some work better than others but it is difficult to make objective comparisons between them. You can organize questionnaires but they tell you little. They can only tell what a number of people think about the questions—the results are purely subjective. The people who work in a building usually criticize it only in terms of the pattern of work they know, and even this is likely to have been influenced by the design of the building. The views they express will probably contain no effective fundamental criticism of the design.

We therefore set to work to break down the problem of design into a number of separate issues, susceptible to closer study. They fall into three groups: medical, nursing and architectural. I can best illustrate this method by brief comment on some of the findings of our nursing ward studies.

#### EXTENT OF PATIENT DEPENDENCY

	Type of patients		
General surgery: 155 patients	Bedfast	Partially ambulant	Fully ambulant
Actual conditions	50.3%	20.0%	29.7%
If early ambulation	16.4	35.0	48.6
If traditional procedure	66.7	17.3	16.0
General medicine: 167 patients			
Actual conditions	53.3	24.6	22.2
If early ambulation	25.7	28.3	46.1
If traditional procedure	61.1	13.9	25.0
Gynecology: 100 patients			
Actual conditions	48.8	33.0	20.2
If early ambulation	16.2	45.5	38,4
If traditional procedure	55.7	31.0	13,3

Patient dependency table indicates percentages of bedfast, partially ambulant and fully ambulant patients in a group of English general hospitals, also indicates how percentages would differ if physicians used thoroughgoing early ambulation methods and if they used traditional procedures (staffs of hospitals studied were closer to traditional school). This study, made by the doctor-member of our research team, has been one of our most useful pieces of planning data. Such information is vital for determining toilet and washing facilities, size and placement of day rooms, patient dining facilities. Complete survey covered eight representative hospitals.

#### SINGLE ROOM REQUIREMENTS

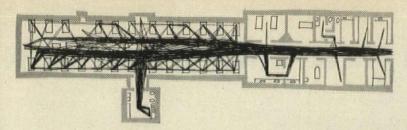
Medical ward of 16 beds (based on data from ten wards)

	Two types o	of single room*	Close-supervision rooms only		
Number of single rooms	% of time rooms meet need	% of time rooms are properly used	% of time rooms meet need	% of time rooms are properly used	
2	47%	97%	65%	86%	
3	67	92	84	74	
4	82	84	94	62	
5	92	75	98	52	
6	97	66	-	-	
Surgical war	d of 16 beds (ba	ased on data from	eight wards)		
1	36%	95%	45%	87%	
2	65	86	76	73	
3	84	74	92	59	
4	94	62	98	47	
5	98	52	_		

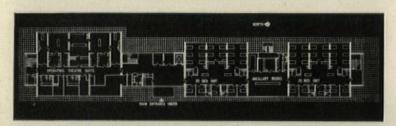
<sup>\*</sup> Those requiring close supervision and those not requiring it.

Proportion of single rooms or cubicles needed in medical and surgical wards—on medical grounds only—was also surveyed by the doctor-member of our team. Because the survey showed a wide fluctuation in room needs from time to time, results were statistically analyzed for efficiency of occupancy. Single rooms were divided into two types—those requiring close supervision and those not requiring it. The table shows, for example, what a luxury six single rooms per 16-bed ward would be: while they would meet the need 97% of the time, they would be properly used only 66% of the time. On the other hand, two rooms would be properly used almost constantly (97% of the time) but would meet the need less than half (47%) of the time. This distinction—as well as over-all proportion—is obviously important in planning. Full survey covered 900 patients, indicated that for English practice 25% single-room accommodations are needed in medical wards; 20%, in surgical wards.

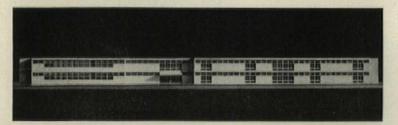
Director, Division for Architectural Studies of the Nuffield Foundation; associate, Royal Institute of British Architects. This material is excerpted from a speech by Davies at the recent American Hospital Assn. convention.



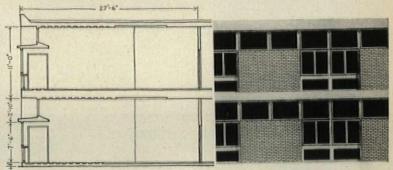
Journeys by nurses were traced with cotton thread. Each nurse during a duty shift made between 300 and 400 trips, adding up to an average of 2 to 2½ mi., excluding movements around patients' beds. The higher a nurse rises in the hierarchy, the less her walking. The most useful results of this survey—made by the nurse-member of the team working with time-study engineers—were tabulations of the proportion of trips made from bed to bed, from bed to various ancillary rooms, and from ancillary room to ancillary room. This offers guidance to placement of ward elements relative to each other. It also underlines the desirability of a compact, rather than strungout, arrangement of bed areas. Actual tabulation of trip proportions would differ with another country's hospital practice, but the same method could give guidance.



Ward plan of experimental hospital in Belfast incorporates many of our findings—for instance compact bed units and centered ancillary rooms, as indicated by the nurse-journey studies; deep wards with natural light, as guided by daylight studies; proportion of single rooms indicated by medical survey. It is important to note that these studies have been interpreted in terms of British hospital practice. The same or similar data applied to the US or any other country would inevitably result in different schemes. So would they, quite properly, in another British hospital. [See the author's comments on standard plans in text below. ED.]



Daylighting studies were made because the deeper a ward building is the more economical its construction cost is apt to be and the shorter the nursing journeys. We considered the limiting factor is daylight, and we wanted to know just how deep a ward could be and still be well lit from its windows. Our studies, made by the architectmembers of the team with the aid of government building research scientists, differed from most school-lighting studies by taking reflected light into fuller account. We think our results were of considerable importance, and not only to hospital design. Among the findings: 1) the amount of natural light, including reflection, received at the back of a room can be as much as eight times that received directly, so if reflection is given full credit some current onerous standards for daylighting are unnecessary; 2) it is possible to measure separately the lighting contribution made by each room surface, useful data in designing color schemes; 3) carrying the normal sill level down to the floor increases deep lighting appreciably by admitting light bouncing upward from ground surfaces; if these are paved with reflective surfaces light is increased again; 4) but where large windows are used, a further increase in window areas does not produce a proportional increase in daylighting because windows not only admit light-they allow it to escape (as an internal reflective surface, a window equals a black wall).



Cross-section of model ward at a cooperating hospital shows one arrangement for bringing in deep light. A horizontal baffle 7' above the floor level cuts off the brightest part of the sky from patients beside the window, but lets light pass above. Facade of experimental hospital at Belfast shows another arrangement for bringing light deeply into the ward but at the same time controlling window area.

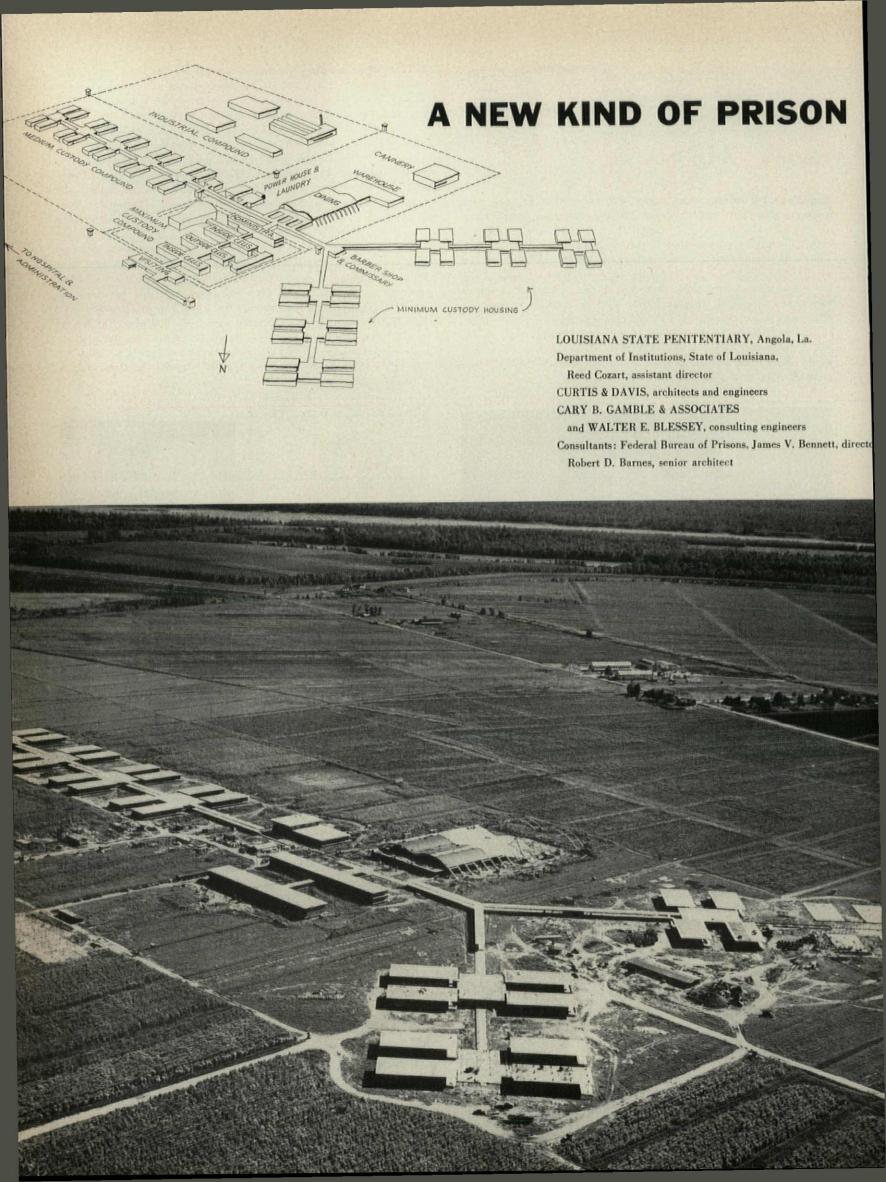
# . and a new look at the job of architectural research

Limitations: Research can give tools to architects, management and administrators but it cannot do their job for them. If this is not realized clearly, researchers may mistakenly attempt to provide final and complete answers. This is rather like the early days of medical research which set out originally to discover the elixir of perpetual life. More headway was made in medicine when they settled down to tackling more

limited problems. Medical research, like other successful operational research, does not now attempt to standardize diagnosis or treatment; it aims to give essential knowledge and leave its application to the practitioner.

Similarly, architectural research can illuminate some aspects of the architect's problem and provide him with data, information and analyses methods which enable his imagination to work on a better and fuller understanding. But it cannot make his decisions. In fact many of his decisions must be made on hunch or judgment and this will remain true however much research we are able to do.

Standards: So I do not think it is any part of the work of a research team to produce type plans or standards. These (continued on p. 174)



## . . . designed to prevent riots, save money

## and help criminals go straight

"To deprive a man of his liberty is punishment enough."

Three years ago the worst prison in the US was probably the Louisiana State Penitentiary at Angola, a collection of seven shack camps on 18,000 acres of remote brush country locked in a wide loop of the Mississippi River. One day the news leaked out that 31 convicts had slashed their heel tendons in protest against guard brutality, and gradually newsmen uncovered one of the ugliest scandals in prison history: 1,760 Negroes and 880 whites living like jungle animals in filth and depravity (photo, right), underfed and worked to exhaustion, flogged and even shot by their prisoner guards for minor infractions, jammed as many as 300 to a room, with unlimited gambling and perversion.

As a result of Angola and the chain-reaction prison riots of 1951-53, the nationwide prison problem hit the headlines and stayed there. Another result: a new kind of prison has been developed—and at the very place where the trouble started: Angola.

Citizens of most states, say leading penologists, are paying a far higher price for physical obsolescence than they realize, not only in higher-than-necessary operating costs but in the further hardening of criminals by the old kind of prison; two thirds of them are released only to commit more costly crimes and find their way back within five years to live in the same embittering conditions—at public expense.

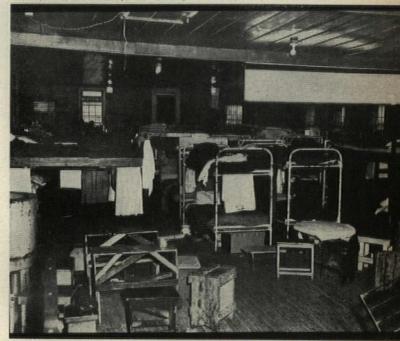
The building industry, says Federal Prison Bureau Director James Bennett, has at least \$150 million of potential business in replacing worn-out penal plants. Of the 152 state institutions, only 17 are less than 50 years old, and many are well over 100—not counting an estimated 10,000 city and county jails and lockups. Maryland's prison is 146, Massachusetts' Charlestown, 148. Built like fortresses on principles of design long since disproved, many of these structures resist destruction from without as effectively as they do from within. Progressive wardens, struggling with dungeon inefficiency, overcrowding, forced idleness and mixing of criminal types, say they cannot even begin to prevent riots and apply positive techniques of modern penology. In Bennett's words: "Every prison—staff and inmates—seeks the level set for it by its physical characteristics."

Until now state progress has been limited pretty much to short spurts (paced by such successful forward steps as California's 1,500-man "open" institution at Chino). But at the new Angola, Governor Robert Kennon's reform administration (elected in no small part in a reaction to the prison scandal) is making the first clean sweep of a state penal system in modern history. For almost the first time a prison is getting the public support and design talent usually reserved for its more popular blood brothers: hospitals, schools, industrial plants. At Angola good architecture and good administration will get more from the prison dollar, more for the prisoner.

<del>- ||||</del>

Open plan, focused on communal facilities, combines efficiency of large inmate population (about 2,500), easy circulation and supervision of modern "telephone pole" type of layout and human scale of "separate cottage" system. Instead of self-enclosing ring of buildings or expensive walls there will be careful prisoner classification, a progressive staff, wire mesh fences.

Photos: (below) Bob Durham for the "Morning Advocate"; (others) Frank Lotz Miller

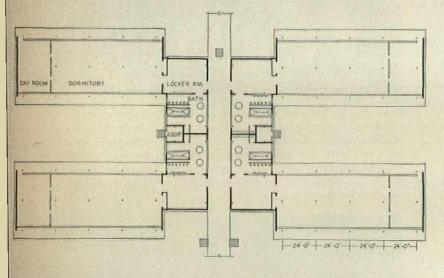


Contrast: Old barracks (above) were dark, poorly ventilated firetraps, expensive to light, heat and keep clean. New lift-slab dormitories (below) minimize heat and dampness with shaded glass walls (standard steel detention sash with adjustable vent louvers, no separate bars) paint-finished masonry for easy maintenance. Day room, foreground, is glass-partitioned for supervision, will have chairs, tables, end-wall mural.





Lift slabs form raised, covered walkways connecting all buildings





Deep 7'-6" overhangs shade window walls, create covered walks for maintenance staff and for guards checking on prisoners. Crawl spaces may be sealed off by skirt of precast concrete planks. Contractors: R. P. Farnsworth & Co., Atlas Construction Co., S. J. Lemoine Co.

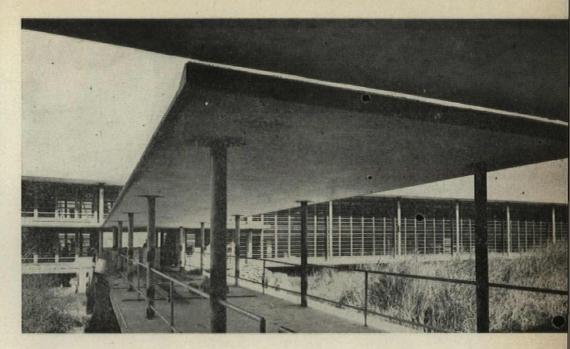
The new Angola will offer, in one economical plant, what progressive penologists have long pleaded for: facilities diversified and flexible enough to make the confinement fit the criminal. All-cellblock prisons are expensive (up to \$15,000 per inmate) and can lead to trouble when single cells have to be used for two men or for less-hardened criminals. Medium and minimumsecurity barracks usually cost from \$3,000 to \$10,000 per man and when overcrowded can result in unhealthy mingling of types. Angola on the other hand, combines all three security grades for under \$3,000 a man\*, and at the same time offers its new warden a chance to separate his men into many groups for specialized treatment. The relatively few (10%) who require heavy discipline or isolation get solitary confinement in outside or inside cells (photos opp.). All the rest will live in the same basic dormitory unit (sketch left), a 37' x 104' room 11'-4" high with adjacent locker and washrooms. This unit is economically repeated four times to form a cloverleaf, which in turn is repeated four times in the fenced medium-security compound, six times in the minimum security area. This gives the warden 40 separate, small (60-man) dormitories in which he can classify up to 40 gradations of prisoner groups by age, behavior, race and common interests to reduce friction, bad influences-and the urge to escape or riot. He can set up or take down partitions, as prison needs fluctuate, to turn some of these shells into units devoted to honor rooms, squad rooms or cubicles for inmates who need or merit more privacy.

Lift slabs, used in standard 54' widths for almost all buildings, are proving a major economy, and construction is so simple that four of the cloverleaf units are being built by inmates from the old camps nearby, at less than 70% of normal contract costs. Floor slabs are raised 3' for dryness and all pipes and wires are hung underneath, eliminating expensive trenches and future maintenance. Layout permits reduction of the present 400-man guard force to 175 trained, civil service guards, 50 of whom cover the prison and all outside work details at peak hours.

<sup>\*</sup> Total cost: \$7.5 million, including housing for 2,300 to 2,800 inmates, all facilities shown on preceding page, plus a nearby administration building, an initial 41 new houses for guards and their families, conversion of the best existing camp to a women's institution.

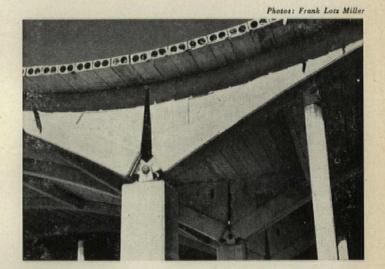


Cell block (above and right) has 124 one-man cells 6'-8" x 8' with toilet, basin, radio jack. Glass louver wall admits ample light, air.



## Well-centralized facilities at the new Angola include:

- ▶ A 76,000 sq. ft. dining hall and kitchen, divided into medium and minimum security and staff sections, with a large warehouse and vegetable cannery behind.
- ▶ An education-administration building directly across from the dining hall, with eight classrooms, a library (10,000-book capacity), offices for chaplains, instructors, classifiers and newspaper.
- A reception building with open, lobby-style visiting room for 60 family groups, locker and washrooms for guards.
- An industrial compound for bookbindery, furniture and garment shops, sheet metal plant (auto license plates, road signs and other state needs). Off site, soap and paint factories may be added to the present meat-packing plant. Farming is being revised so that the prison can live almost entirely on its own produce and supply other state institutions as well. New industry and agriculture will provide inmates with useful, healthy activity, vocational training and pocket money, could eventually make Angola as much as 75% self-supporting. For the moment, the maintenance goal is \$2 per inmate per day. Most older prisons have to spend at least \$3 a day to approach the new standards Angola has set.



Concrete arches of dining hall span 200' total, are hinged at center (above). Columns for administration building are in foreground





Campus plan breaks school into seemingly independent little houses connected by open, covered corridors

## **CLUSTER-PLAN SCHOOL**

HOLLOW TREE ELEMENTARY SCHOOL
Darien, Conn. ▲ 16 classrooms
▲ 520 students (by Connecticut
standards, 30 per classroom, 50
each in two youngest groups).

### FEATURES:

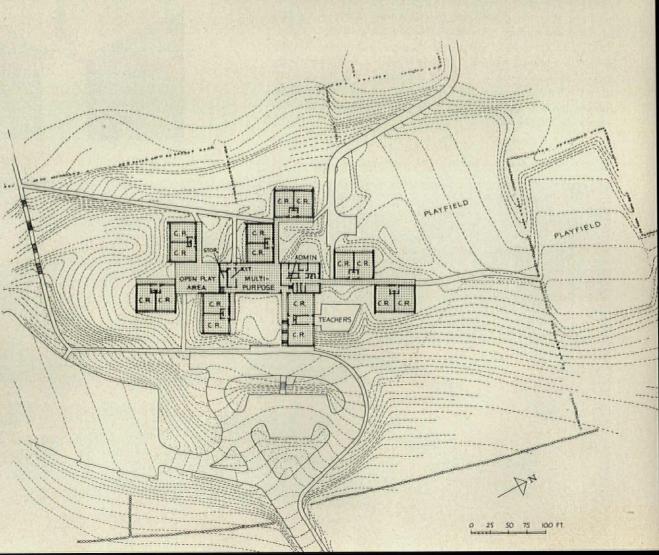
Three-dimensional dispersal saving grading costs and trees. A
Convertibility to junior high A
Versatile "live" walls for changeable equipment A Ingenious
economy vestibules A Covered
outdoor playroom.

## CONSTRUCTION:

Slab on grade A 6" x 8" steel columns exposed on exterior A Open web steel joists; 8'-8" module giving greatest span for least expensive (18-gauge) roof decking A Cement block (six to module) walls with brick veneer on ends A Radiant panel hot water heat A Interior roof drains over plumbing,

## COST:

Construction (including extensive built-in equipment but not including sitework of \$61,440 or architects' fee): \$336,090 \(\text{\$33.13}\) per sq. ft.





## COMPLETE

"I would strongly recommend, instead of one immense building, to have a small one for every professorship, arranged at proper distances around a square, to admit of extensions, connected by a piazza, so that they may go dry from one school to another. The village form is preferable to a single great building for many reasons, particularly on account of fire, health, economy, peace and quiet."

-Thomas Jefferson, 1816

Architect Jefferson had a university on the drawing board. Elementary schools were too small to take "village form" in his day. But all the advantages he foresaw have been realized in this 16-classroom K-6 school, in operation since September (previewed AF Oct. '53).

The photographs and drawings best illustrate most of the building's advantages and its remarkably interesting detailing. As for economy, construction cost came to \$646 per pupil, compared with \$1,180 for the 52 other elementary schools finished or building in Connecticut during the same period ('53-'54), Fully equipped cost came to \$736 per pupil, compared with \$1,260 for the other schools.

KETCHUM, GINA & SHARP, architects

ROBERT MACKINNON, staff architect in charge
SAM GRASSO CO., INC., general contractor

SYSKA & HENNESSY, mechanical engineers

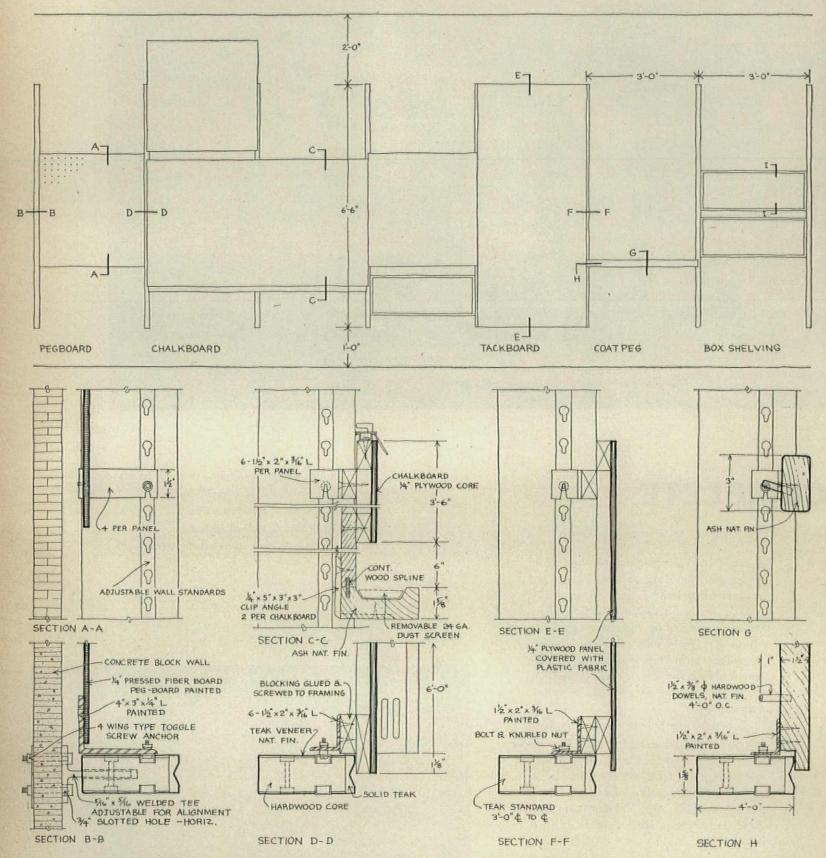
SEVERUD, ELSTAD, KRUEGER, structural engineers

Photos: © Ezra Stoller



Play and outdoor classroom spaces fit into nooks formed by classroom houses

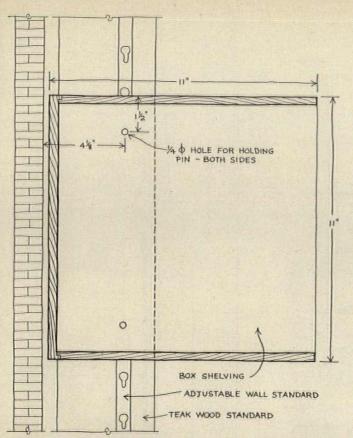
## Modular wall standards make equipment changes easy



Teak standards 3' o.c. take modular strips, boxes or panels. Plan view shows neat detailing for truing up the standards: wall bracket is slotted for horizontal play in bolting to wall, and standard itself is slotted to give backward-forward play in vertical alignment. Detail also shows fastening of single-module pegboard panel. Chalkboard in 8' (two module) panels spans outer edge of standards, fastens to keyhole strips with angles and blocking. Either height or horizontal placement can be easily shifted. Scheme was devised to allow for future conversion to junior high, but flexibility is also much appreciated by elementary school teachers.

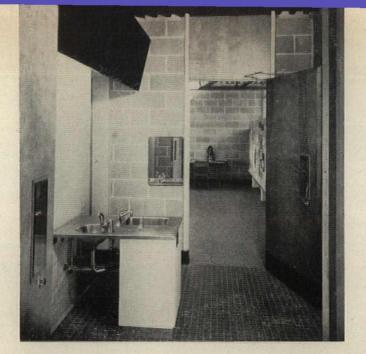
Tackboard panels have fastening similar to that for chalkboard panels, thus can be more than one module wide. Acoustic panels can also be fastened to standards (and spotted at random on ceiling) where meter readings show necessity. This device (plus acoustic properties of exposed block) saved an estimated \$16,000.

Wardrobe strips detailed above are used between tables in multipurpose room (see also photo, p. 157). Pegs protrude on inner side of strips for safety and neatness. Children wear Jackets and caps to lunchroom in winter because access from all but youngest grades is customarily along open outdoor corridors.

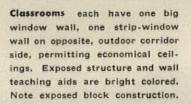


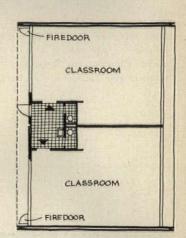
SECTION I-I

Stock wooden boxes fastened to teak standards provide economical and flexible classroom shelving. Each box yields two shelves, whether used singly or in tiers.



Vestibules include architect-designed sink and fountain fixture with stock stainless steel bowls, janitor's storage below. Sound baffle above takes tack-up three-dimensional displays, has light fixture concealed behind.



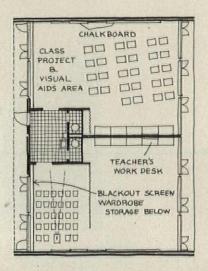




## Fresh solutions make activity spaces thrifty

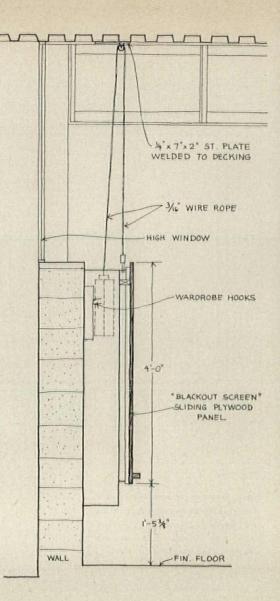


Main entrance leads past kindergartens to juncture of administration and multipurpose areas. Kindergarten is the only wing jutting above grade; boiler room is under.



Plan shows classrooms' curtained visual-aids alcoves on vestibule side; blackout detail, right. Children like the dwarf firedoors beneath the strip windows.

Wardrobes for classrooms are ingeniously combined with visual-aids blackout. Counterweighted tack panel covers wardrobe, or slides upward to cover strip-window above.

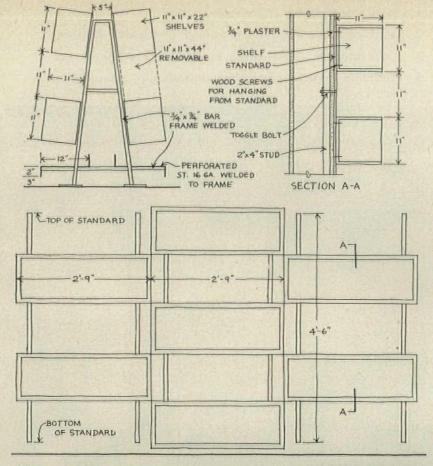




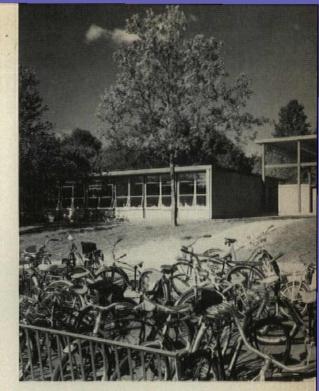
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Open playroom, in place of gym, permits allweather outdoor games and exercise. Sides can be enclosed, if that seems desirable, when school is converted to junior high. For K-6 use, school administration welcomes opportunity to test advantages of fresh-air play even on rainy days. This paved porch with its partially sheltered sides saved \$34,000 over cost of a gym.

Multipurpose room seats 160 diners at wall-fold and roll-fold tables. It can be converted into assembly, seating 136 in 20 min.; into assembly, seating 232 in 45 min. Library end of room (rear in photo) has curtain and fold-up sliding stage. Kitchen, at opposite end, is used only for serving because food in carts in brought from nearby junior high kitchen, saving personnel costs. When school is converted to Junior high, classroom off multipurpose space will become library, kindergartens will become shops.



Library shelving at end of multipurpose room consists of stock wooden boxes (hollow blocks) fastened to stock metal wall standard strips. The same boxes are fastened to welded bar frames for movable stacks (detail, top left). Library wall forms backdrop to folding stage, which is retracted in photograph view below.



Site uses preserved natural features, also gives clearly defined outdoor activities areas. View here of southernmost cluster and playporch corner shows bicycle parking off front sidewalk access. Trees saved on site provide most of the sun and sky glare control, but in a few special cases, slightly translucent corrugated plastic hoods are used.



## **BUILDING ENGINEERING**

- 1. Plastic skin for 84' space frame dome
- 2. Light steel cantilevers for widespan low-cost hangars
- 3. Glass block vs. clear glass windows for schoolrooms
- 4. Porcelain enamel panels for lightweight spandrel walls



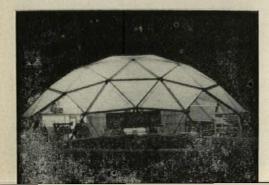
Photos: Gordon Koch

## 1. GEODESIC COW BARN

Combination of reinforced plastic and geodesic framing produces an 84' dome for only \$2.40 per sq. ft.

The building industry's newest structural technique, geodesic framing in laminated timber, has joined the industry's newest cladding material, tough, reinforced polyester plastic, to produce a highly practical and efficient 84' diameter storage barn. As one of the most

Translucent skin becomes luminous at night



interesting building experiments of the year, it is likely to have many other useful applications

Erected on a farm at Ste. Anne de Bellevue, just west of Montreal, this demountable 84' space frame consists of 1/16" thick glass fiber reinforced polyester panels fastened with aluminum clips to a laminated timber frame. Connected in 12-14' triangular sections, this frame is mounted atop 20 concrete footings that double as leveling pads. There is no floor slab, the animals are insulated from ground frost by a 4' deep dry manure pack which is kept healthful by inoculation of Bacteria and nitrogen. A skirt of heat-treated Orlon taffeta, plus a top vent, allows ventilation in the dome; animals are kept away from the Orlon by a perimeter bank and wire stretched inside the framing members.

Complete with two 25' high silos, the 5,540 sq. ft. prototype barn cost \$26,000. If its performance through the winter comes up to

expectations, which already seems more than likely, the geodesic barn will be mass-produced and distributed on an installation charge and rental system. With production of 100 units, its cost is estimated at \$12,000, or \$2.40 per sq. ft., while its low weight, 17,380 lb., or  $3\frac{1}{2}$  psf, can be packed in only 712 cu. ft. for easy transportation.

### Stressed skin design

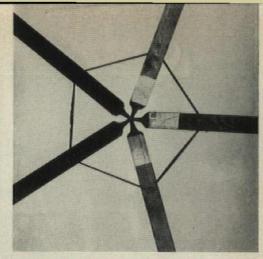
Framing members, all B.C. fir 9½" x 2½" laminated and pressure treated timbers averaging 12' long, are assembled to form equilateral framing triangles with sides of 12' to 14'. The ends of each member are fitted with steel shoes that butt against 1" dia, steel bearing pins in the center of each joint, abutting members being secured by stainless steel aircraft cables tightened by turnbuckles to 16,000 lb. tension (see photos, top right). To prevent possible bowing up of the horizontal members at the footings, these members are



Laminated framing members,  $91/2'' \times 21/2''$  and 12' to 14' long, are fitted with steel shoes that butt against 1" dia. pin in each joint. Members are secured by cables around joint.



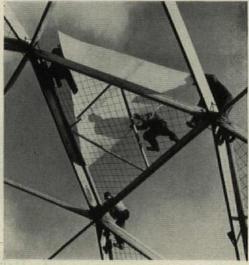
Perimeter joints atop footings are braced with steel spacers as well as cables, to prevent horizontal members from being forced upwards. The dome is mounted atop 20 such footings.



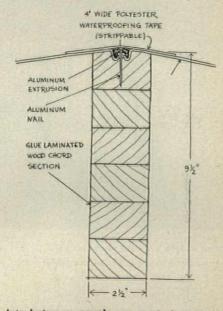
Topmost joint has five framing members, carries a flowering type vent mounted on bearing pin. Connected to aluminum extrusions securing plastic panels, vent is also lightning conductor.



Erection of space frame is done from light scaffold after silos are built inside dome. Because framing members are connected by rigid joints, they exert no lateral thrust on foundations.



Supplementary framing members and  $6" \times 6"$  wire mesh are used temporarily to facilitate positioning of triangular reinforced plastic panels; these are 1/16" thick and weigh 35 lbs.



Joints between punels are made by aluminum extrusions pressed into grooves in framing timbers atop lapped edges of plastic panels, then sealed by 4" wide plastic tape.

Complete frame is a single day's work for six men. Thanks to long lasting plastic, aluminum, stainless steel and pressure-treated timber, barn should last 60 years.

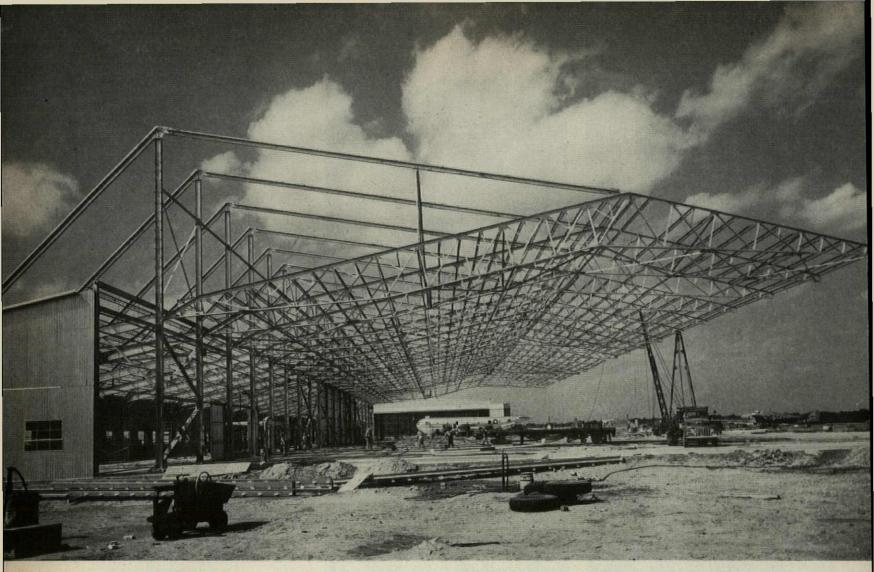
wedged tight with spacer bars to maintain proper intervals between adjacent members.

Reinforced polyester plastic has about the same coefficient of expansion as timber. Therefore, the triangular plastic panels are designed to fit rigidly into the tops of the timbers, and, by acting as stressed skin surface, the plastic panels provide enough lateral stability to permit a weight saving of 75% in the framing timbers. Edges of the panels are formed to fit grooves in the timbers. Adjoining panels are wedged into each joint by long aluminum extruded clips, secured by aluminum nails and the entire joint waterproofed by 4" wide polyester tape glued the entire length of the joint.

This barn is descended from the geodesic structures developed and patented by R. Buckminster Fuller. It is designed by Jeffrey Lindsay, head of the Fuller Research Foundation of Canada, for Client Dr. John Hackney, who judged it to be more durable and more economical than three conventional alternatives.



Photos: (opp. & top left) Gordon Koch; (others) Jeffrey Lindsay



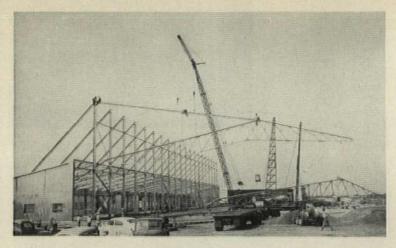
Prefab trusses are held by 76' long tension members at ridge and bear against rocker joint at columns.

# Spans and costs 1. 120' span Temco hangar—framing cost \$2.40 per sq. ft. 2. 152' span Branniff hangar at Dallas—\$3.50 per sq. ft. 3. 160' span TWA hangar at Kansas City—\$3.70 per sq. ft. 4. 250' span alternate design for TWA—\$4.80 per sq. ft. 5. 196' span industrial building project—\$2.46 per sq. ft.

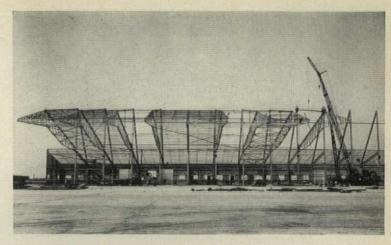
## 2. HANGARS WITHOUT COLUMNS

Ingenious cantilever construction spans 120', weighs only 11.8 per sq. ft., costs \$3.26 per sq. ft.

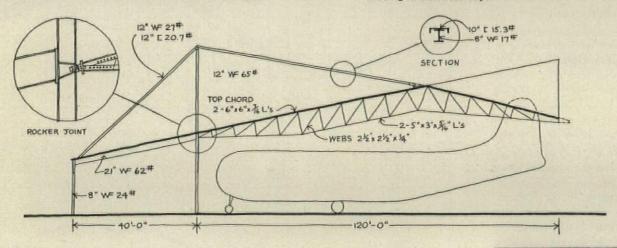
Because today's aircraft have outgrown their hangars, a crop of boldly designed widespan hangars is mushrooming all over the US. Typical of the growing trend is this highly efficient Temco Aircraft Corp. hangar at Greenville, Tex., where a clear, unobstructed, 30' high hangar space has columns on one side only. The roof is carried on 120' steel truss cantilevers via "skyhooks" atop 56' tall inner columns, which in turn, are joined to 39' outer columns placed 40' farther back where they form useful workshop and office space. Prefabricated framing for this hangar was bolted together in only six working days for a cost of \$3.26 for framing and roofing, and \$5.06 for the complete building including services, foundations, and 32,400 sq. ft. of concrete apron.



**Bolted assembly** of 435' long structure takes only six working days; lean-to at rear goes up first, then two cranes hoist 121' long trusses.



Bar joists span 20' between trusses, lateral stiffening is achieved by crossbracing in alternate bays.



Key element in the design of each framing bent is the 76' long member connecting the top ridge of the cantilever truss to the top of the inner column. This long member has two important functions:

1. It is designed to act either in tension or in compression—in tension to support the weight of the roof structure and roof loading; in compression to withstand a 30 lb. psf uplift from wind under the cantilevered roof, a mandatory provision under many building codes.

2. It also counters the downward deflection of the roof under snow load in winter. (The key member, exposed to outside air temperature above the roof, will contract, while the steel of the truss proper is kept warm inside the heated hangar.)

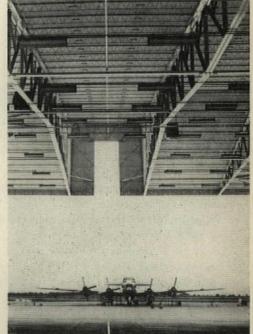
Speedy construction helped hold down costs. The columns were erected first; the rear ones were bolted atop deep concrete piers as they must withstand considerable pull, roughly 14 tons on each column, from the

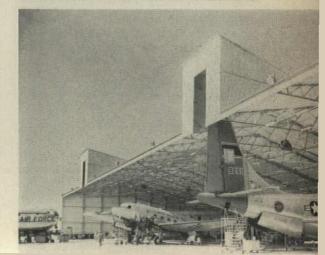
weight of the cantilevered roof structure. Next the columns were joined and the cantilever trusses raised (in one piece) and held until the rocker joints and the long tension members were in position and adjusted. Then the roof joists, cross-bracing and lower chord bracing were erected. Finally the structure was enclosed with prefabricated panels of galvanized corrugated iron.

Main doors are track-mounted, electrically operated, with provision for 5" vertical movement, the maximum deflection anticipated at the ends of the cantilevers. Vertical clearance is 30', but goes up to 45' inside three tail housings which open at the edge of the overhanging roof to admit the huge tails of large aircraft.

This patented construction is designed by the Erwin-Newman Co., designers and constructors, who are adapting the same technique to other widespan hangars and a factory building, shown diagrammatically at the left.

> "Doghouses" project above roof to permit entry of tail planes up to 45' high. Boeing's Stratocruiser, shown here, has tail 381/2' high.





## 3. GLASS BLOCK UNDER TEST

Classroom temperatures behind clear glass and glass block walls trace almost identical curves

Recent studies at the Texas Engineering Experiment Station have indicated 1) that classroom temperatures are about the same whether the window walls are of clear glass or of glass block; and 2) that natural crossventilation improves thermal comfort in two ways—first, by reducing effective temperatures roughly 1° and, second, by pushing upwards the temperature at which discomfort first becomes noticeable, again about 1°.

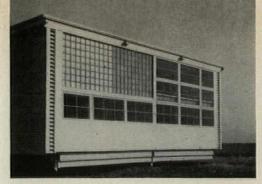
Some have felt that glass block stores up and radiates more heat into classrooms in warm weather than does clear glass. This idea is proved to be false. On sunny days, an unvented room with clear glass is slightly warmer by day (by 1° - 3°) and is slightly cooler by night (by ½° - 2°). Reason: the insulation effect of glass block is somewhat more than that of clear glass.

The temperature difference between rooms with clear glass and glass blocks is decreased by the addition of Venetian blinds. This difference is practically eliminated when windows are opened to permit cross-ventilation. In an unvented room a feeling of discomfort is felt at an average 84° effective temperature (a combination of temperature, humidity and motion), but an average 85° in a room having cross-ventilation.

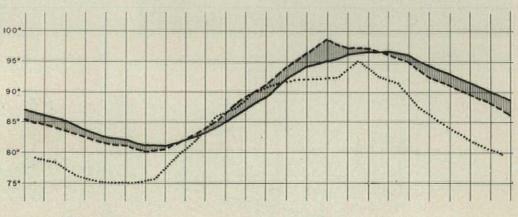
An unexpected conclusion of the Texas study is that overhanging sunshades have little or no effect on midsummer thermal comfort, although tests were made with fenestration walls facing directly south. This is because in midsummer the sun is so nearly overhead that its rays are almost vertical, meeting the window walls at a very large angle of incidence at which they can have practically no solar heating effect. In spring and fall such overhangs have considerably greater value.

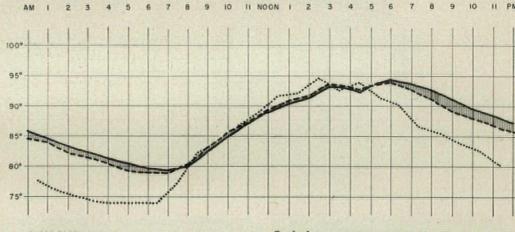
The studies were made in a 30' x 30' test building having one window wall; the other walls and roof were heavily shielded against solar radiation. The building was partitioned into two 15' wide rooms, each having one 15' wide window wall above a sill about 2½' high. An identical 2' high vision strip in each room could be opened outwards to give a downward air flow through the room. Above each vision strip, one room was fitted with clear flat glass, the other with the standard glass block of two manufacturers.

In all, 40 tests were made of vented and unvented rooms under various conditions of sun control—no controls, Venetian blinds, small overhangs immediately over vision strips and large overhangs shading the entire window wall. Reading of outdoor and indoor (dry and black bulb) temperatures and room air speeds were noted at hourly intervals.



Test classrooms, one with glass block, the other with clear glass windows were compared for heat gain under summer and fall sunshine.



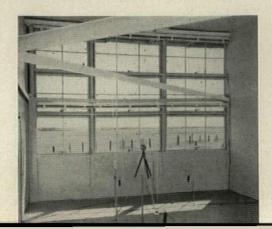


Typical temperature curves for classrooms with no Venetian blinds and no outside overhangs: top, with vision strip windows closed; below, with vision strip windows open. Note how ventilation tended to close gap between temperature curves. Tests were conducted on behalf of the glass block manufacturers.

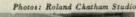
Measuring instruments in classrooms were identical. They were used to measure wet and dry bulb temperatures and air speeds every hour

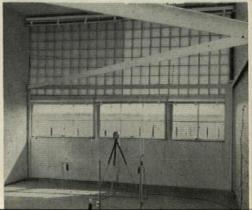
FLAT GLASS ---

OUTDOOR



throughout each 24 hour, midnight-to-midnight, test. The results were then plotted in a series of curves such as those above.





## 4. LIGHTWEIGHT CURTAIN WALL

Sandwich panels of foam glass and steel go up fast, are only 2" thick, cost \$3.60 per sq. ft.

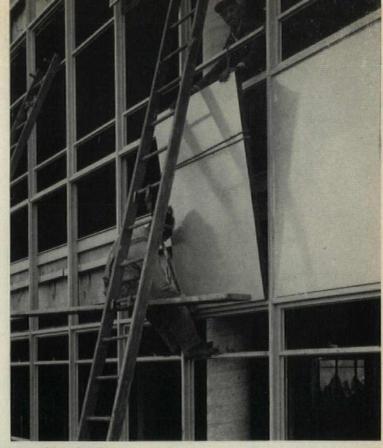
The walls of Douglass Elementary School in Kansas City, Mo., are only 2" thick and weigh only 7 lb. psf. They consist of 392 pre-fabricated curtain wall panels in sizes up to 3'-8" x 7'-41/2" which cover the 4,768 sq. ft. of continuous spandrel wall area around the building. Erection time was fast: 6.9 sq. ft. per man-hour. Cost was low: manufacture, \$2.75; erection, 85¢; total, \$3.60 per sq. ft. in place.

Made entirely in the factory, the wall panels consist of a 2" cellular glass insulating core faced with sand-colored 18 ga. porcelain enameled steel sheet and backed with 22 ga. galvanized iron that can be painted as desired. Front and back skins are joined with dowels inserted through holes in clips welded on the inside of the front and the back of the metal skins (see diagram). These rods are simply driven through the cellular glass insulation and eliminate the need for bond between metal skins and the insulating core of the panels.

The sandwich panels have a U-value of 0.166, are designed for a lateral loading of 35 psf (equivalent to a 114 mph gale) and are expected to require little maintenance since all materials offer good resistance to moisture. The panels are also efficient vapor barriers and should be free from internal condensation.

Erection is simple and effective. Each panel is set into a hollow steel frame. The bottom of the frame is buttered with calking compound and carries three ½" thick shims to prevent the calking from being squeezed out under the weight of the panel. After calking the side and top joints of each panel, it is secured by a small steel angle trim screwed into position at the top and sides. A 42½" x 14" ventilation louver, also of porcelain enamel, is set in the spandrel wall of each classroom to provide a fresh air intake to classroom unit ventilators.

The school was designed by Architects Kivett & Myers, with Angus McCallum, associate architect. The curtain wall panels were designed and fabricated by Barrows Porcelain Enamel Co.

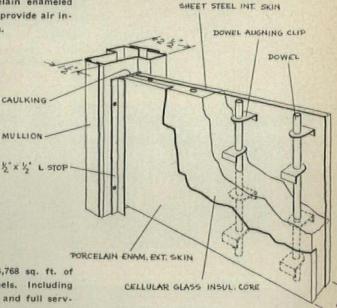


Photos: (below) Pittsburgh Corning Corp.; (above) L. D. Jones



Erection of panels, each weighing 180 lbs., is carried out by two-man crews, who average 6.9 sq. ft. of spandrel wall per man-hour. Sand-colored porcelain enameled panels are caulked, then secured by steel angles at top and sides.

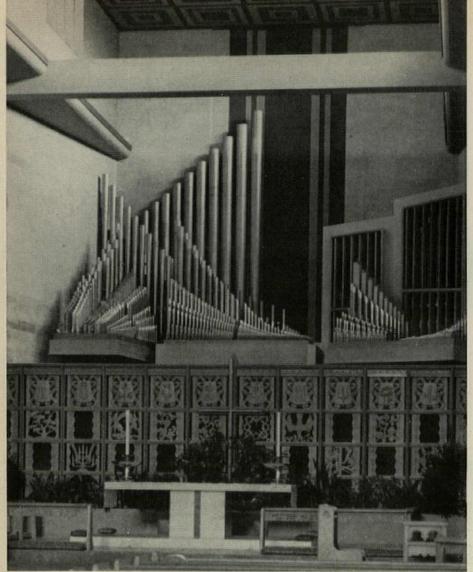
Ventilation louvers, also of porcelain enameled steel, are set in spandrel walls to provide air intake to classroom unit ventilators.



Three-story school is clad with 4,768 sq. ft. of insulated porcelain enameled panels. Including cafeteria, auditorium-gymnasium and full services, school was built for \$13.77 per sq. ft.



Strengthening dowels connect exterior and interior surfaces of 2" thick insulated panels. Original design used two plugs of lightweight concrete cast around stainless steel anchor clips welded inside each surface.

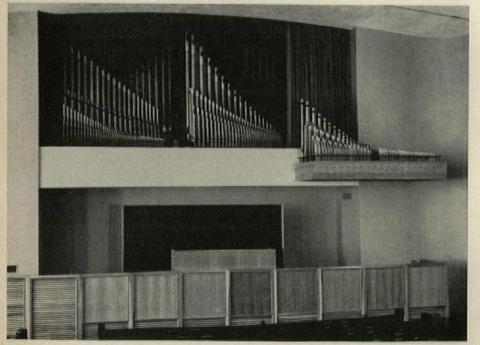


Willard Blum

Exposed organ pipes are made part of design of St. Paul's Episcopal Church in Cleveland Heights. Effect might have been better with less ornamentation of ceiling and choir screen.

Functional ornament is created by shiny organ pipes lined up against subdued backdrop above podium in First Church of Christ Scientist in San Antonio.

Billo Smith Studios



## PLANNING FOR SOUND IN

Pipe organ and choir do their best only when integrated to church design

In the act of worship sound has greater impact than any other factor. It ranges from a single voice in prayerful supplication through voluntaries, anthems and canticles of choir and organ and up to the majestic surge of many voices in their praise and adoration to the Almighty. Planning for sound in worship is of vital import to both the architect and the churchgoer. Yet, new churches and new books on church architecture are almost totally indifferent to the all-important factor of an appropriate acoustical environment for worship.

The architect alone coordinates all creative effort, and squarely at his feet lies the task of designing a room in which sound enhances rather than defeats worship, in which aural control matches visual and in which denominational requirements are realistically consummated.

Worship is a corporate act. Appeal to both the intellectual and emotional capacities of the worshiper is almost totally dependent on 1) the voice of the minister; 2) sounds from the organ and choir and 3) the response of the congregation through music and the word. The entire tone of worship demands that all hear easily and properly. Even more important, sound must be acted on by the space to gain subjective qualities. Acoustic fundamentals are found in such good references as Acoustical Designing in Architecture by Knudsen and Harris, Competent consultants are available. But architects must realize that purely scientific criteria will not always achieve a realistic worship room.

Solution of acoustical problems has recently advanced from a hit-and-miss process to one which can be solved with confidence as a part of a total concept of any architectural design.

### The importance of reverberation

Truly corporate worship is possible only with adequate sound reverberation, distributing sound throughout the room for easy audibility and imparting qualitative value. Resonant exhortation, prayerful supplication of the voice or similar intonations in

## **CHURCH WORSHIP**

by RAY BERRY, director of music, Fort St. Presbyterian Church, Detroit, and BERTRAM Y. KINZEY JR., associate professor of architecture, Virginia Polytechnic Institute, Blacksburg, Va., and member, Commission on Architecture, National Council of the Churches of Christ in USA. Both are also members of the Committee on Architecture and Acoustics, American Guild of Organists.

music, acquire the most effective appeal in a "live" environment.

A worship room with controlled but ample reverberation promotes inspiration and aspiration, plays up the higher emotions, lifts. From time immemorial, worship has been *upward*—praise and adoration offered *up* to Deity. It is not logical to expect worshipers to waft upwards their prayers in an environment emphasizing a pressed-down, confining atmosphere created by wrong shapes and acoustical padding.

Acoustically "dead" space is incapable of distributing sound in good quantity and quality. On the other hand excessively reverberant environments sometimes found in very large churches cause sound to be unintelligible, confusing.

Reverberation times to be attained in design depend on the worship tradition of the denomination in question. At one extreme the Roman Mass demands an especially live atmosphere but the Christian Science service, where speech predominates, requires only enough sound reflection to support the spoken word. The optimum reverberation time at 512 cycles for church music recommended by Knudsen and Harris varies logarithmically from 1.3 seconds in a room with a volume of 10,000 cu. ft. to 2 seconds where the volume is 1,000,000 cu. ft. Below 512 cycles reverberation time should be gradually increased. In larger rooms this increase may be as much as 150% at 100 cycles and should be proportionately less in smaller rooms. Where commercial sound absorbents are used to control reverberation time. this gradation is easily attained, for these materials are less absorptive at lower frequencies.

Recommended reverberation times for speech are given as nearly one-half the values for church music. This might lead the architect to compromise the requirements of music and speech in the church service. Actually both the musician and the minister must gauge the tempi of music and the rates of speaking so that they are appropriate for a given acoustical environment regardless of whether the reverberation time is long or

short. Church music and liturgy were conceived for unhurried paces in reverberant spaces that would give life to the sound. Hence, churches should be more live than the lecture hall even though both are places where speech must possess a high degree of intelligibility.

### Spaces, shapes and surfaces

Development of a church plan cannot be successfully undertaken without regard for relationships of the minister, organ, choir, and congregation as sound sources. Ideally, all persons should be a closely grouped body of worshipers. Usually this cannot be accomplished literally. A little separation is needed for auditory perspective, and this often supplies just the space needed for the circulatory element of the plan.

The proper sound reinforcement system for any auditorium is the reflective surfaces of the space and their arrangement.

Sound-focusing shapes such as domes, barrel vaults and arched ceilings tend to concentrate sound so that the resulting sound intensity is not uniform throughout the space. Instead, shapes should be devised to distribute sound in uniform intensity. Long, parallel surfaces which may exist between opposite walls or between a floor and a flat ceiling may cause flutter echoes. Slight non-parallelism or splayed planes of sufficient width avoid this acoustical defect. In very large spaces where some absorptive surfaces may be required to reduce reverberation time, patches of sound absorbents irregularly placed on opposite parallel walls may solve the problem of flutter. Walls more than 40' from a sound source may return an echo. Adroit space shaping will relate such reflective surfaces so that they direct sound down to auditors seated close by, thereby raising the sound intensity at a point removed some distance from the sound source.

### . . . and finishes

Finishes can spell the difference between spiritual uplift and depression, between success and failure for sound in worship. The padded cells which many churches are in this country today ruin utterly any possibility for dynamic worship. Concave ceilings, often covered entirely with acoustical absorbents, gobble up the very portions of the sound spectrum, be it speech or music, which are essential to dynamism, result in little else than morbid turgidity. So do carpeting, drapery, wall padding, other finishes which are basically non-reflective. One exception is pew cushioning which tends to equalize the acoustical difference between the full and empty room.

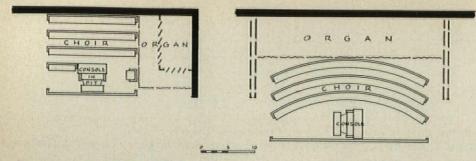
Acoustically padded spaces prevent music from being complete and virile, result in sound which is heavy, tubby, and ponderous. Vocalists sound vapid, choirs sluggish, organs hooty. In large part, this is caused by the unwarranted and ill-conceived absorption of sound upper partials, the very parts of sound which give brilliance, dynamism and ringing conviction.

Most acoustical absorbents, as customarily installed, do not act upon all sound frequencies at the same rate. Little or no absorbent is required for the average size worship space of proper shape.

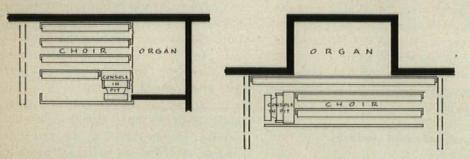
## Integrating organ and building

Planning for music requires the sympathetic, able assistance of the competent church musician and the artisan organ builder from the very beginning. Few church committees are capable of choosing an organ. The wise committee will engage a consultant who knows organs and is also an active church musician.

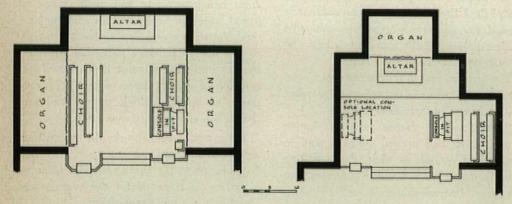
Organ builders must also be retained as consultants. Organs must be integrated to the total architectural scheme just as sculpture and stained glass. A good organ is a work of art, and the building in which it speaks is half its success. The room itself is part of the organ, always. Architects should learn more about the instrument, the materials of which it is made, and the natural arrangement of pipework. Visually it can enhance the church interior (see photos left). Contrasts of pipework of wood,



Ideal organ and choir plans for small (left) and larger churches: organ and choir are closely knit, have common acoustical environment. Larger console is turned 90° to give choir unobstructed sight line to signals made by organist's left hand.

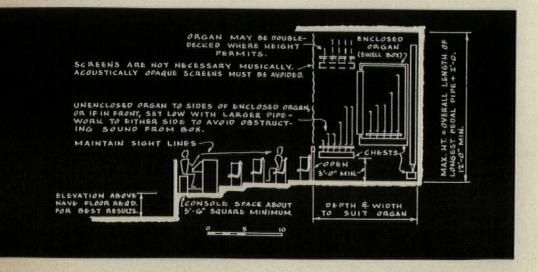


Compromise plans: although organ and choir are closely knit and organist-director has good control over choir, organ at left is boxed in on three sides and does not speak in same direction as choir; low notes of organ will escape more readily than high ones. In plan at right, choir is stretched out too far for easy control by organist.



Poor, but common, plans: in plan at left, divided choir is difficult to control; divided organ is more expensive and tonally less desirable than single unit. Sound is altered in quality in turning corners to reach nave, and loss in sound requires larger organ and unnatural forcing of voices. At right, choir and organ are in different rooms.

Design standards for church, organ and choir facilities



tin and copper challenge the imagination of the architect and organ builder. (Organ builders' representatives or other consultants are usually acceptable as advisers, but, unfortunately, there are no individuals or firms currently listing themselves as "organ architects" who are actually so qualified.)

Organ design and placement depend intimately upon each other. Ideally, the organ must be placed entirely within the walls of the room. This permits unhampered passage of tone from the source and allows the organ sound to be natural, unforced. Sound which proceeds directly, however, should be sufficiently separated from listeners so that space itself may act upon it and perspective made complete. The buried organ suffers both as to sound quality and quantity. A smaller, more tonally satisfactory instrument will serve when the organ speaks within the walls of the worship room. Furthermore, an organ in an auditorium receives heat from the space easily and uniformly, thereby staying in tune.

Some principles regarding the relationships of organ, choir, and organist-director are shown in accompanying sketches. The choir should be a relatively close knit unit facing the director. Since many organists also direct from the keydesk, the console should be so placed that his left hand can be seen by the singers.

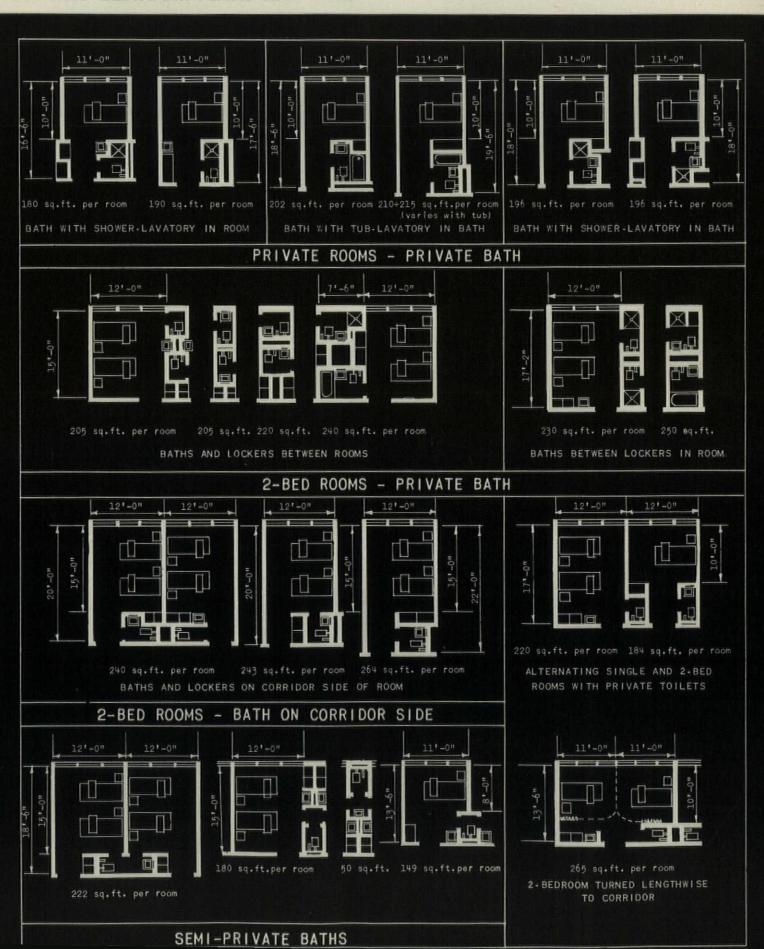
Choir and organ should have a common soundboard as a backdrop for best results. Choir and organ as two instruments will then perform in the same acoustical environment. Orchestras are always arranged as single units in a semicircular grouping despite the wide range of orchestral voices present. Division into two or more groups produces separate orchestras and not different groups of the same unit. In similar fashion a divided choir is really two choirs, and a divided organ, two organs.

Placement of the organ-choir group within the worship room will be governed in part by the denominational attitude toward the function of music in worship. Architects must remember, and clients understand, that music in worship is primarily an auditory, not a visual factor.

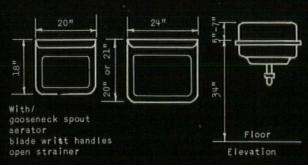
## Help for the architect

Design of a realistic worship room demands sympathetic assistance from minister, musicians, organ builder and acoustical engineer, all working with the architect as coordinator. This requires imagination and resourcefulness from any architect but will pay dividends. No organ builder, no church committee should attempt to define or solve a problem alone. This is for professionals in whom there must be faith.

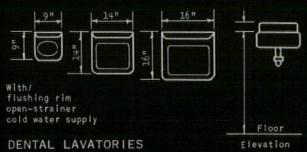
## HOSPITALS-BEDROOM PLANS AND SIZES



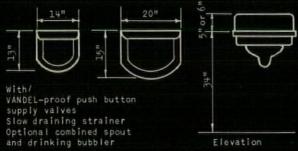
## HOSPITALS-BEDROOM LAVATORIES



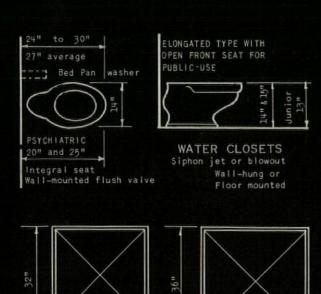
## LAVATORIES FOR PATIENTS' BEDROOMS



DENTAL LAVATORIES

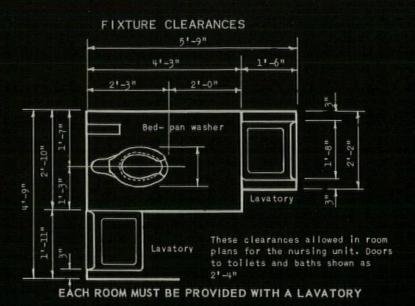


### DISTURBED PATIENT'S LAVATORIES



STANDARD SHOWER STALLS

32"

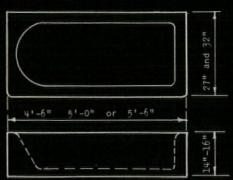


Lavatories should have knee or wrist control to prevent cross-infection and should have open strainers to prevent washing in standing water. A high gooseneck spout makes it possible to fill basins and containers. Dental lavatories are required in rooms to be occupied by tubercular patients.

tubercular patients.
REQUIREMENTS FOR BATHS ADJOINING PATIENT'S ROOMS
Bathroom doors should always open outward.

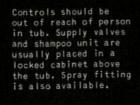
Baths should have an emergency nurses' call button and a grab bar. Baths adjoining patients' rooms should be as sound proof as possible and should have soundproof doors.

Baths in chronic hospitals must be arranged to accommodate patients in wheel chairs, with no raised thresholds, wall-hung lavatories open underneath, and grab bars on either side of toilet enclosure.



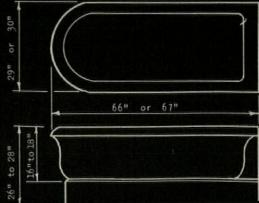
REGULAR TUB

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## **NEW PRODUCTS**





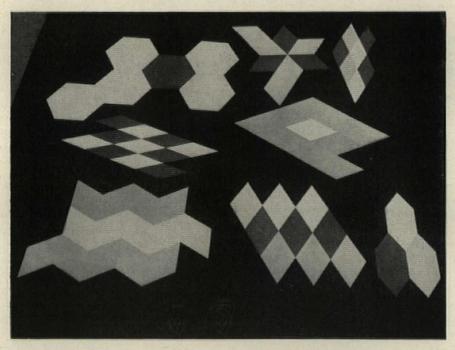


Film to wrap buildings (p. 188)

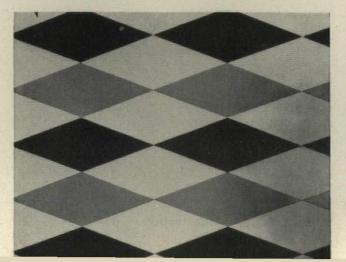
A nail pierces steel (p. 192)

Glass rides in a groove (p. 194)

## Vinyl tile cut in classic geometric shapes, modern proportions



Four tile shapes now obtainable in vinyl at 85¢ a foot (and soon in adhesive-backed rubber at 70¢) make up the eight starter patterns above. Both the slim and wide diamonds pictured measure 1' tip to tip; and 18¢ version of the thinner will be made for large rooms and lobbies. A fifth shape, the octagon (lower right) is practically self-aligning as square inserts counter-check seams.



Geometile, the first resilient floor to be diecut in a series of modular geometric units, is now coming off Robbins' plant No. 2 assembly line. These simple but expressive forms permit the architect design freedom with an easy maintenance material, (machine buffing without wax is best treatment for heavy traffic areas). And Geometile gives him compatible solid colors to worth with. (Confounding to the manufacturer, not one of the 100 or so architects who have seen the new flooring have disputed the selection of platinum gray, gray-beige, slate, and off-white. Architect I. M. Pei at Webb & Knapp called Geometile "the interior designer's dream," and J. Gordon Carr is considering using some of the new tile shapes on several tenants' floors in Manhattan's Socony Vacuum Building. It is already being written into specifications by other architects for three office buildings interiors.) Both the fat diamond (60° and 120° corners) and slim (continued on p. 184)



## for antitects mely

How long do you think the reshaping of a city might take?

—A century, 50 years, perhaps 150 years?

The question is pertinent now that the new ACTION\* organization has made urban rehabilitation prospects real. Many still think, however, that despite such imposing committees, representing all major factions of the community, truly large-scale action is remote, "Nothing much will happen," say they.

Let's see how long building or rebuilding cities does take.

Chicago, now housing 3.7 million, was nothing more than a fort in the war of 1812. In the last 75 years Chicago has grown not by any fractional percentage but by a multiple of ten. Chicago of 1955 is Chicago of 1880 x 10. Los Angeles is an extreme case. In 1880, under President Rutherford Hayes, it was a village of under 10,000. At 2.1 million, Los Angeles of 1955 is roughly Los Angeles of 1880 x 200. New York, in a more settled area, multiplied itself in the same period "only" five times; Boston "only" three times. Smaller cities may have grown less but are they any less transformed?

Nor does growth and change mean only the spreading of cities over a vastly larger area. The downtown district of a big city, during its growth, gets rebuilt over and over again. When plans for a Chicago 100 years hence were recently displayed at the Art Institute (AF, Nov. '54) the Planning Commission shrewdly guessed that people would consider the projected transformations quite "impossible," so pictures were shown of transformations effected already, in the "natural" course of events. One of these is reproduced herewith. Would you believe that these wooden stores, with a sidewalk that steps up where some progressive merchant had lifted his floor above danger of floods, still existed in 1850 in Clark St. in the

\* American Council to Improve Our Neighborhoods (AF, Nov. '54). middle of the Loop? If change has been so unbelievably radical in the past 100 years, what may the year 2055 not bring?

Of course rates of expansion are flattening out as usable raw land is harder and harder to find, and as people find that ultimately taxes cannot be escaped. Indeed. viewed totally, building new streets, new sewers, new water and electric supply, new schools, new protection against fire and crime in the suburbs is a tremendous expense, the more so because the old ones in the central city cannot be abandoned (with all the investment they represent) no matter how many people desert their old "fouled nest." Hard-headed Realtor Zeckendorf has been proclaiming no less eloquently than the reformers that ultimately the tax cost of maintaining our cities downtown and in our suburbs must be considered as a single package. Bankrupt big cities are no national asset.

So rehabilitation, the reshaping of cities inside and out, is our next major job.

And with the proof before us of the way our cities have in the past been transformed, through sheer energy and despite the lack of correlated plans, we know it can be done. Let's face it, however: if the reshaping of our cities is to be not only healthy and efficient but also fine, it is the architectural profession which must be transformed. Except among a few farsighted leaders, the viewpoint of the profession is obsolete.

For a majority of architects any remodeling or rehabilitation is the most distasteful of all jobs. Too often those architects who have mastered it have been the grubbers, not the men of vision. When it comes to remodeling, many architects, whose new work is shiningly resplendent, possess not even a workable technique. In the hands of such men the cost of doing a really fine rehabilitation job runs too high, and they themselves can make no living at it.

This is natural enough. The architectural assignment of the past 25 years has been a departure from the past. There was a big job to be done, not only in planning new buildings but also in shaping the new industrialized construction and equipment into an architectural style.

The job of the next 25 years may, however, well be a relinkage with the past. Emphatically this does not mean a return to compromise and eclecticism in architectural style. It does, however.

mean mastering the art of combining the new with the old, of bringing older sound structures, older areas, representing a past investment of money, work and brains, into fresh use—and without doing violence to what was really fine and true in the work of predecessors, including their basic architectural expression.

The creation and use of a national shelter system—shelter not only for families but for commerce and industry and institutions—can no longer be considered as a series of haphazard individual events. What all of us really live in and work in is not a succession of structures but a town.

ACTION as a group creates the opportunity anew, gives the reshaping of our cities the support of businessmen, bankers, sociologists, labor, all factors in the community. Architects are represented on it too. Let this opportunity be captured for achitecture. And may architecture rise to it, so the keystone will be inserted in this arch.

\*

John Root was the man who directed attention to the fact that architecture as the art of fine building must now attend not only to our own cities and our own past but also to the great world beyond. The amount of work and responsibility undertaken abroad by this country or its individual citizens since World War II, is quite astonishing. So much so that FORUM will devote most of its forthcoming January issue to the subject. We hope the scope of the activity will be as fascinating to you as it was to us.

\* \* \*

—And this is the last time this column will be addressed to "architects only." Many may have noticed anyway that it was designed to be read by others over the architect's shoulder. Architecture, fine building, will continue to be the subject but, as Ned Purves says, it cannot be furthered by architects talking only with other architects. Many means exist for communication within the profession but more are needed that take it out into the forum of the community.—D.H.

Chicago Photographers





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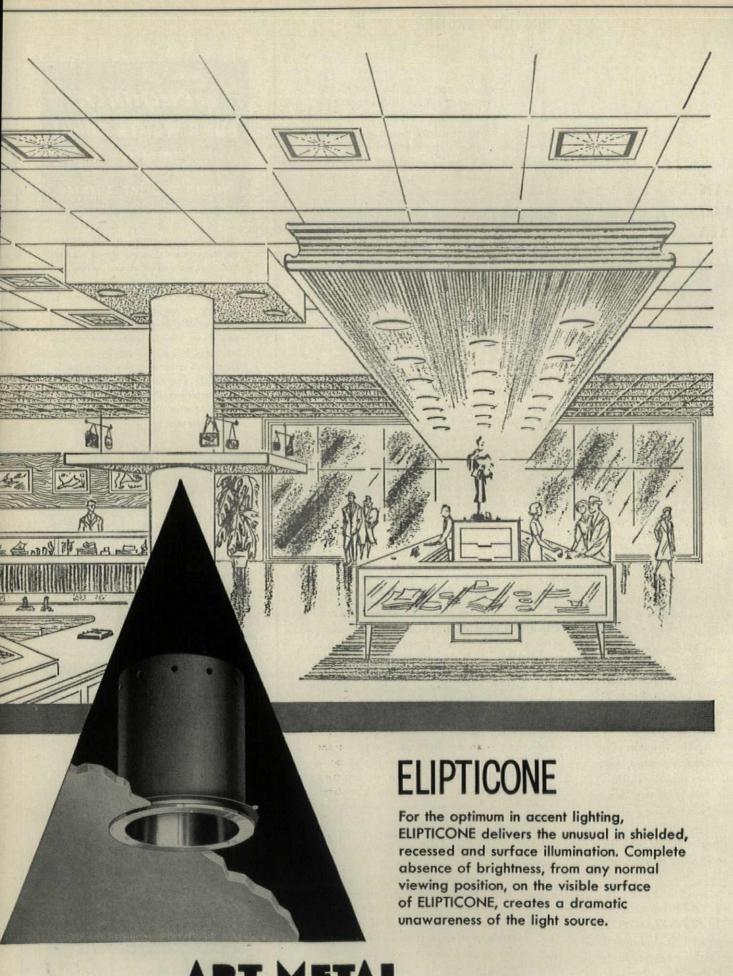
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## By Henry-Russell Hitchcock

Author of In the Nature of Materials: the Buildings of Frank Lloyd Wright and Painting Toward Architecture

Here is a major artistic and literary event, which may well start a trend toward a re-examination of this muchmaligned school of architecture. As a contrast to the ungainly gingerbreadcovered structures that immediately spring to mind, 19th century England produced such magnificent buildings as the Crystal Palace, Victoria Station, and remarkably imaginative country houses, banks, churches, and commercial buildings in general, Here for the first time, is a book that demonstrates the enormous value and influence of Victorian architects like Pugin and Sir Charles Barry, and the significance of their bold, imaginative ideas on the architecture of Britain. the United States, and the Dominions. Number 9 in the Yale Studies in the History of Art. In two volumes: Volume I-657 pages of text. Volume II -228 pages of plans, contemporary graphic material, and specially taken photographs.

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## HOSPITAL FUNCTION

(continued from p. 147)

can be useful, of course, as the work of the US Public Health Service shows, but such standards are inevitably instruments of national policy and must take into account many other factors outside the field of research. If a research body issues standards, it implies that the standards are derived from research, which can never completely be so.

**Methods:** Our principle of breaking down a problem into aspects that can be studied objectively is illustrated by the acompanying material on nursing wards.

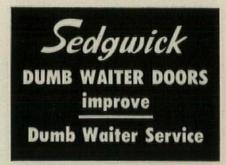
Sometimes you want a subjective answer to research—for instance, we are now doing a study on tolerable levels of hospital noise. If you want to find out what noises people think they can stand, subjective research is appropriate because the fact being sought is itself subjective. But the question of where noises originate and how loud they actually are—which the architect also needs to know—is not subjective and cannot be studied as if it were. The important thing is not to attempt to find objective facts by asking people what they think, how they like to do things, what improvements they suggest.

Results: No scientist would dream of publishing a paper saying: "I have done a great deal of research on problem X and I have the following answer." Yet this is what is frequently done in hospital planning. It would be far more useful to publish an account that includes methods as well as conclusions—so the reader can evaluate its worth and draw conclusions of his own.

Experimental design: It is open to argument whether this is a proper task for a research body at all, but we have felt the need to take this step-to put together the results of a number of separate studies and see what they led up to in terms of design. So we have designed and constructed experimental hospital buildings. The value of such an experiment to an architectural research team is enormous: it corrects the tendency to focus too closely on particular issues (a tendency which inevitably arises from an analytical approach), it brings out interrelationships of the different needs a design must satisfy; it gives a practical test, without which the research might soon become sterile and academic.

But this is not the same thing as production of a type. We look upon an experimental design as one example only of the sort of design that may arise as a result of research. The research materials themselves are the basic materials and they can be interpreted in an infinite variety of ways to suit individual circumstances.

It is a good old principle of military organization that the intelligence service should be divorced from command. The principle is sound, and applies equally well to architectural design.



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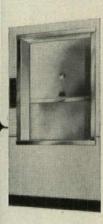
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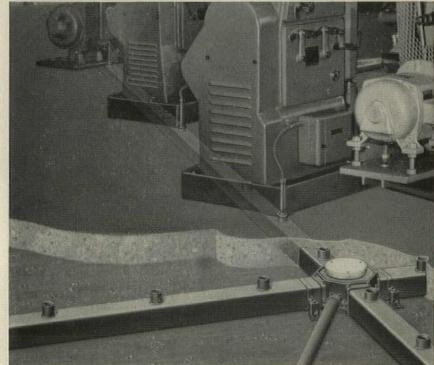
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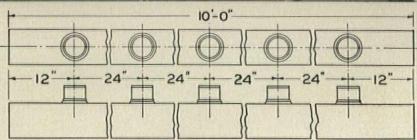
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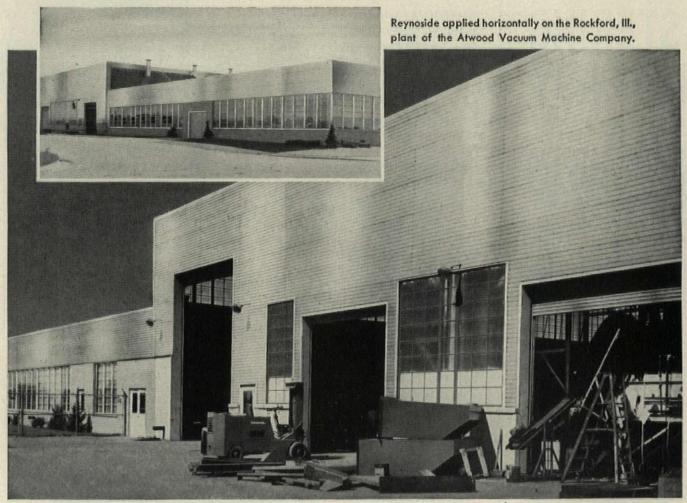
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## **BOOK REVIEWS**

MATERIALS OF CONSTRUCTION. By M. O. Withey and G. W. Washa. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N.Y. 6" x 91/4". Ilus. \$9

This is both a textbook and a reference book. According to its preface it "aims to provide essential information concerning the sources and manufacture of the principal building materials; to give carefully selected data covering the more important mechanical and physical properties and the influences of various factors upon these properties; to show the causes of defects and variations and how they may be discovered; to furnish an acquaintance with the technique of testing materials; and to present to the student some of the more general uses of the different materials." M. O. Withey is Emeritus Dean of the College of Engineering and G. W. Washa is Professor of Mechanics at the University of Wisconsin.

LIGHTING FOR COLOR AND FORM. By Rollo Gillespie Williams. Published by Pitman Publishing Corp., 2 W. 45th St., New York, N.Y. 340 pp. Illus. 6" x 91/4". \$8.50

This book brings together a vast number of different but related branches of lighting knowledge. Part I deals with the scientific factors underlying the subject of color lighting. Part II discusses light sources and filters useful in applied color and directional lighting, along with equipment for color, accent and modeling work or for architectural, concealed or color lighting effects. Part III defines artistic use of directional light, shade and color. Part IV deals with display, architectural, photographic, motion picture studio, television studio, stage, exterior and photochemical lighting.

Rollo Gillespie Williams is a Member and Fellow of the Illuminating Engineering Societies of the US and Great Britain respectively. He is famous on both sides of the Atlantic as a lighting designer and an authority on mobile color lighting.

ESTIMATING PRODUCTION AND CONSTRUCTION COSTS. By Louis Dallavia. Published by The Dallavia Co., 2110 Elmen, Houston 19, Tex. 257 pp. 81/2" x 11". \$15

This book contains some very valuable information on estimating and application of job and labor variables, but the value is somewhat weakened by the claim that "this is the first estimating book . . . that by its application will never go out of date." Never is a long time and puts one in a critical frame of mind.

In addition to normal unit labor costs for different sections of the country which are included in most books giving cost data, this continued on p. 180



25'x 19' Cookson Power Door (Type FCM-B) with special sloping footpiece. 1 hp motor supplies ample power for .67 ft./sec. operation.

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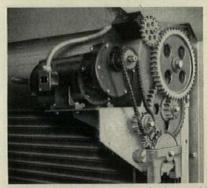
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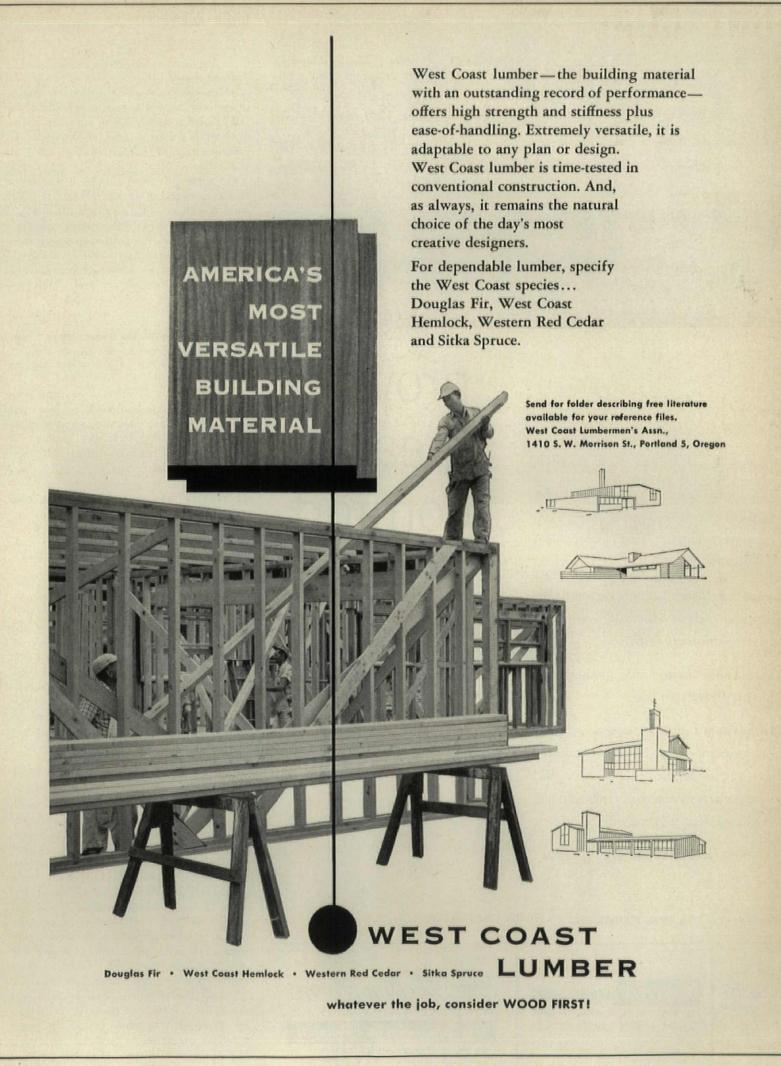
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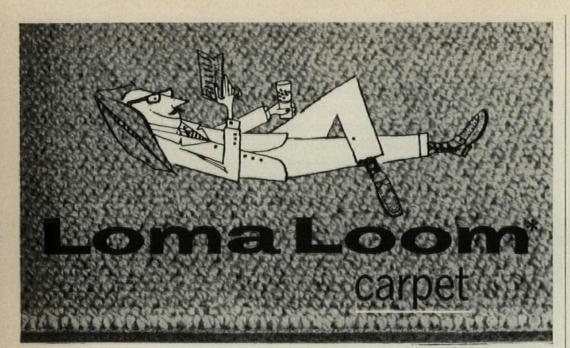




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## BOOK REVIEWS continued from p. 178

book emphasizes the variables affecting rate of production, such as good, normal or hard times; poor, normal or good supervision; bad, fair or good weather. There are eight classes of variables similar to these. These factors can influence rate of production from 25% to

The main portion of this book consists of typical shift production cost tables. The "shift crew" cost becomes the unit rather than wages of individual trades. The typical shift crew is set up to meet the particular construction operation; the personnel in the crew may be changed to meet the needs of a medium or large project. Unit-in-place prices may vary in ratio of ten to one between jobs.

ART AND INDUSTRY. By Herbert Read. Published by Horizon Press, Inc., 220 W. 42nd St., New York 36, N.Y. 239 pp. 61/4" x 91/2". Illus. \$6

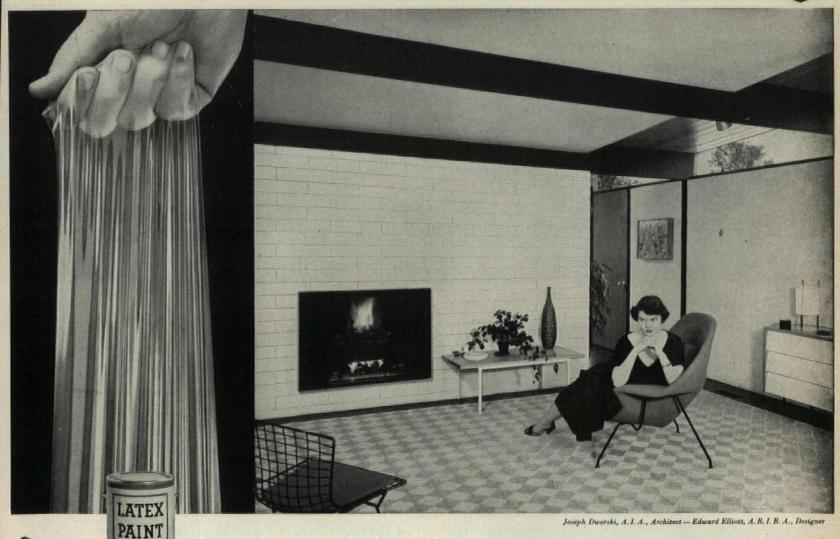
Because this book in England has long been considered the standard work on industrial design, US designers, architects and teachers will be pleased that it is now available in the US-revised and up-to-date with new American material.

PRESTRESSED CONCRETE DESIGN AND CON-STRUCTION. By F. Walley, M.Sc., A.M.I.C.E. Published by Her Majesty's Stationery Office. American agents: British Information Services, 30 Rockefeller Plaza, New York 20, N.Y. 279 pp. 71/2" x 10". Illus. \$6.75

This is perhaps the most practical reference book yet for structural engineers and architects wishing to enter the growing field of prestressed design. The author, who has considerable experience in prestressed concrete construction at the British Ministry of Works, discusses simply and effectively the principles underlying the design and manufacture of prestressed concrete units and covers a few special design problems, including continuous framed structures, composite action, two-stage prestressing and circular tanks.

In a 97-page design chapter, many design problems are worked out in detail, the reader being led through the thinking from which each design develops. Questions are answered as they arise (but only to the extent necessary for practical design). Subsequent chapters cover behavior under load, materials and allowable stresses, practice, experimental work and stress losses (helping the designer to determine the approximate stresses at different design stages and the changes of stresses with time, a problem peculiar to pretressed concrete). Fire tests, for instance, indicate that a 21/2" concrete cover over prestressing steel earns a two-hour fire rating, and that the failure of loaded beams becomes imminent once the temperature of the steel rises above 750° F. A useful appendix includes 36 pages of section properties to facilitate the design of efficient beam sections.



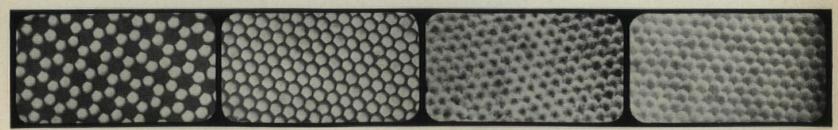


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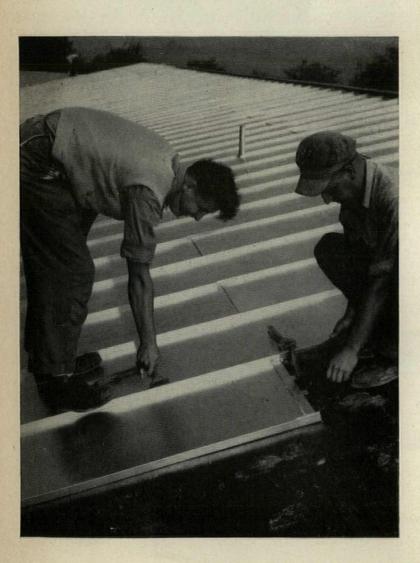
you can depend on DOW PLASTICS





The Roof of the new Walnut Grove School, West Mifflin Borough, Allegheny County, Pa., is USS Stainless Steel. Architects: Button and McLean, Pittsburgh, Pa. Contractor: Nicholas Le Donne, Clairton, Pa. Roofing contractor: Limbach Company, Pittsburgh.

## New Walnut Grove School has a maintenance-free roof of



• The school board of West Mifflin Borough, Allegheny County, Pennsylvania, took care of roof maintenance almost permanently when the new Walnut Grove School was built. They did it by specifying a roof of long-lasting USS Stainless Steel.

The roof is approximately 385 feet long and 75 feet wide. The Stainless Steel roofing panels have a satin-type architectural finish. They are of 26-gage material fabricated into a standing seam panel 27% wide by 12 feet long.

Stainless Steel's superior corrosion resistance, combined with its almost complete freedom from maintenance, fits it for years and years of satisfactory service. It has excellent reflective properties, and features needed strength with light weight.

The Stainless Steel roofing sheets are laid on double-coated, 35 pound asbestos felt. Each cross seam is caulked and the roofing is locked into the Stainless Steel gutter. Gutters and downspouts are of 22-gage Stainless Steel, architectural finish.

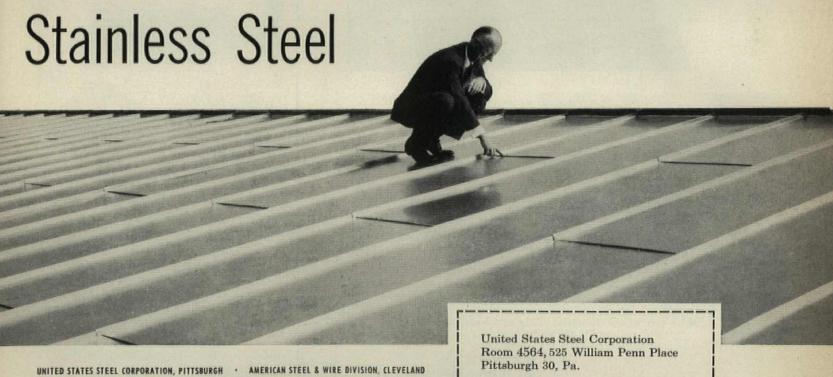
In addition, all attachments, supports, hanger bars, bolts and screws are Stainless Steel.

Stainless Steel is finding wide favor with school architects, not only for roofing, but for exterior walls as well when used in the form of insulated panels. Of course, its wonderful possibilities for interior trim are also being used to advantage.

If you have a new school in the planning stage, now is the time to think in terms of Stainless Steel and its many benefits. And think in terms of perfected, service-tested USS Stainless Steel. For more information, mail the coupon below. If you like, we will be pleased to have one of our representatives call

Installing the standing-seam USS Stainless Steel roof on the new Walnut Grove
School. The roof was laid on double-coated asbestos felt with each cross seam
carefully caulked before the upper sheet was installed.





COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO - NATIONAL TUBE DIVISION, PITTSBURGH
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.

UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

## **USS STAINLESS STEEL**

SHEETS . STRIP . PLATES . BARS . BILLETS



PIPE . TUBES . WIRE . SPECIAL SECTIONS

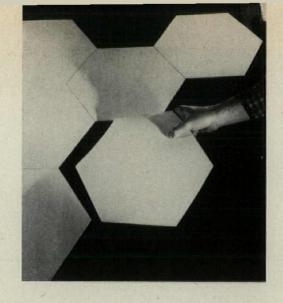
Please send me information on architectural use of Stainless Steel.

Name Title

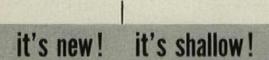
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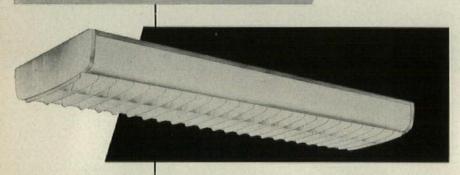
City.....State.....

II N I T F D S T A T F S S T F F I



New shapes for vinyl tile: an equilateral hexagon which can be combined in strips with a diamond (shown alone far right in bold harlequin).





"The Garfield" A & B 13000 SERIES

4 & 8 FT. LUMINAIRES FOR INDIVIDUAL OR END-TO-END MOUNTING

- The 2-lamp Garfield is a gracefully styled luminaire with long, low lines that give it a "built-in" look. Its 31/8" depth makes it ideal for surface mounting on low ceilings-yet it is equally handsome when pendant mounted.
- Diffusing polystyrene side panels and 35° x 35° louver bottom result in a desirable brightness pattern. Closure type reflector with baked-on white finish assures highest efficiency.
- Open chassis construction makes the unit easy to install and maintain. Side panels slip into position; hinged louver opens or removes quickly.
- Unit is wired complete, ready to install in line or individually. Finished in all-white. U. L. listed.

Write for Bulletin N It gives complete specifications, di-mensional drawings and engineering data for the Garfield.

## TTSBURGH REFLECTOR COMPANY

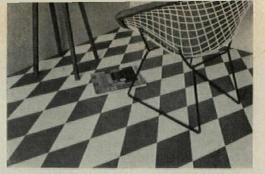
401 OLIVER BUILDING, PITTSBURGH 22, PA.

**FLUORESCENT** 



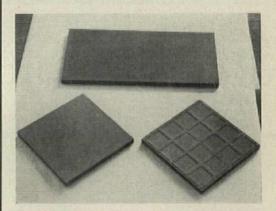
INCANDESCENT

REPRESENTATIVES IN PRINCIPAL CITIES . WHOLESALERS EVERYWHERE



(45° and 135°) measure 1' point to point and the big hexagon and octagon are 1' top to bottom. The slim hexagon is 6" wide. While myriad color combinations can be devised into infinite checkerboards, harlequins, and starbursts, Geometile behaves best (i.e. stays at ground level visually) in monochromatic hues and in one color where the fine hairline seams create a delicate linear tracery. Not only can the decorative patterns be related to other interior motifs but the optical illusionary characteristic of some groupings can be used to play up (or down) a wide or narrow room, or even functionally to direct lobby or corridor foot traffic. Price on volume orders is 85¢ per sq. ft. plus installation, as compared to \$3 and up for job-cut floors.

Manufacturer: Robbins Floor Products, Tuscumbia, Ala.



### CAST MINERAL TILE is strong, naturally colored

Mineral aggregates are bonded under high pressure to make rich-hued Caltile wall and floor surfacing. Suitable for outdoor or interior use, the 1' squares and 1' x 2' oblong units cost about 41 to 51¢ per sq. ft. plus 50 to 75¢ for application. Pigments - clay red, buff, yellow, slate blue, green and matte blackare akin to the material and uniform throughout the tile. If a high gloss is wanted, Caltile's sandstonelike surface will take wax well. The pressure used in processing gives the material high-strength characteristics so that it can be made thinner (7/8") and thus lighter than quarry tile.

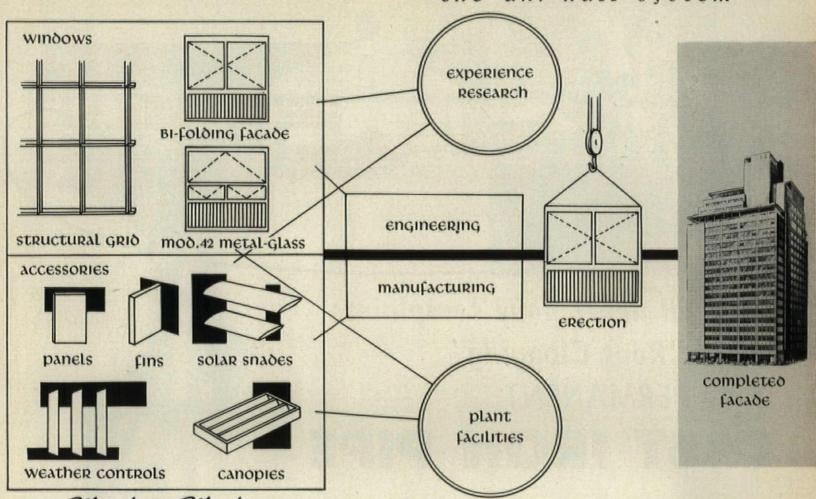
Edges, squarely cut, will butt precisely. An adhesive bed is suggested for the bigger tile since it would not take much mortar shrinkage to destroy the bond. Although Calstone Co. makes 115/8" squares and 115/8" x 235/8" units for mortar laying, it recommends the thin-bed method for its waterproofness and resiliency.

Manufacturer: Calstone Co., 970 Commercial St., San Carlos, Calif.

continued on p. 188

#### evolution of a Sealuxe facade

the uni-wall system



Miracles in Metals

Write for Universal's new catalog: SEALUXE ENGINEERED METAL-GLASS FACADES of Aluminum, Stainless Steel and Bronze.

SEALUXE ENGINEERED UNI-WALL SYSTEMS for metal-glass buildings provide a complete package unit giving more efficient construction at no increase in cost over conventional walls — buildings that are easier to heat, cool and maintain. Erection costs are reduced by the fact that they are light in weight and are easily and quickly erected by Universal Corporation's Field Erection Department.

Properly designed, the glass may be cleaned from the inside, reducing maintenance cost and insuring the full beauty and function of glass. Properly insulated, these facades provide low heat transfer and vapor transmission characteristics.

Universal Corporation assumes the entire responsibility for SEALUXE metal-glass facades, from design to approval of the completed job.

IMPORTANT: Send Universal Engineers your preliminary drawings for study in Climatology, Orientation and Scale in Metal-Glass Facading. This is an added service to Architects throughout the Nation.

# Universal Corporation

DALLAS

NEW YORK

J. P. TRAVIS, President CHICAGO LOS

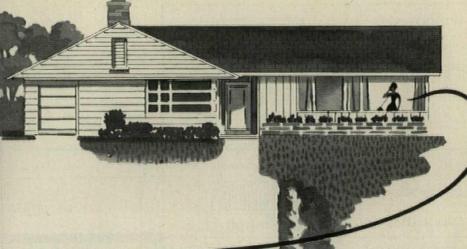
LOS ANGELES

DES MOINES

and Subsidiaries

DALLAS UNIVERSAL CONSTRUCTION CORPORATION
DEVELOPMENT ENGINEERING CORPORATION





You will never have complaints about "Root Clogging" if it's PERMANENT

#### CAST IRON PIPE

Unless you've advocated Cast Iron Soil Pipe sewers, you can't blame your customer if she calls you to complain that her drainage system is clogged with roots . . . or needs major repairs or replacement. Naturally she doesn't want to dig up her beautiful lawn and shrubs or incur this cost that could have been avoided in the first place.

Your customers look to YOU. Pleased customers are your biggest business boosters.

When you install permanent Cast Iron Pipe, your customers will never have root clogging troubles. Caulked with oakum, sealed with lead, its tight but flexible joints are impervious to tree roots. It resists ground settlement and heavy loads and will outlast any home. You can recommend Cast Iron Soil Pipe with complete confidence that you'll have no come-backs.

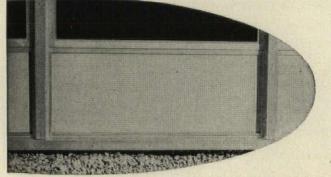
Our Company does not make Cast Iron Soil Pipe, but produces quality pig iron used in its manufacture by many of the nation's leading foundries.



#### WOODWARD IRON COMPANY

WOODWARD, ALABAMA

# Your designs accurately executed in *Erice* porcelain



enamel panels-

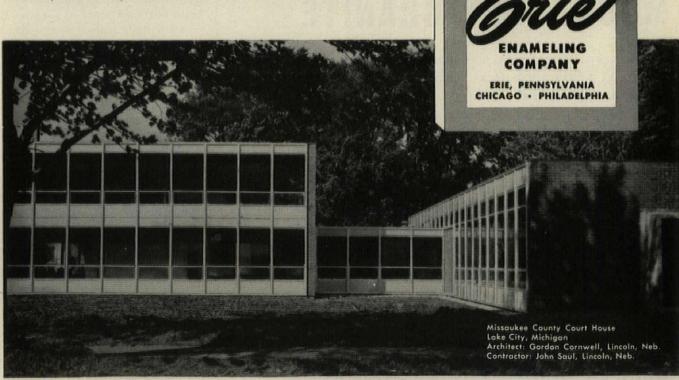
Filled, Insulated or Plain

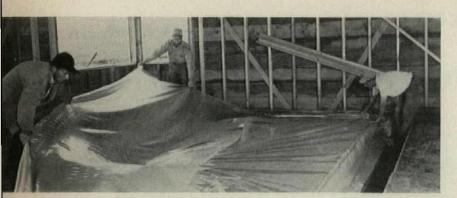
Complete co-operation from drawings to final erection . . . 5 developed panel designs to choose from or custom fabrication to your designs.

ERIE gives you full choice of plain or Porock filled pan type porcelain enamel panels or 5 different types of laminated or box type double-faced insulated panels suitable for spandrels, window walls and curtain walls. Your problems are fewer with Erie because the panel designs are developed and ready for your adaptation to sash frame suspension, mullion bar systems or attachment over furring. Recommended suspension systems are also available to you from Erie's engineers.

Plan your next project around Erie Porcelain Enamel Panels in the standard designs offered—or custom fabricated to your exact specifications.

WRITE for new 16-page "Architect's Sketch Book of Panel Wall Systems" giving detail drawings of panel designs and suspension systems.









Saint Anthony's Shrine, Boomer, W. Va. Architects: Vecellio and Kreps. Builder: Hawk Construction Company, Pastor: Rev. Charles A. Doyle

#### An Investment Worth Your Investigation

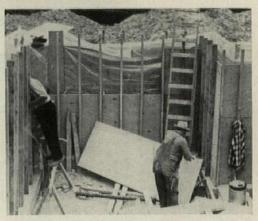
#### **MOUNT AIRY GRANITE**

Here's a Shrine which compliments the architect's choice . . . a fitting tribute of lasting beauty with Rock-Faced Mount Airy Granite Sawed Bed Ashlar strikingly contrasted with 8-cut Mount Airy Granite at entrance door, window trim, copings and cross . . . chosen because of its distinctive light grey (almost white) coloring, its hard and durable composition, its maintenance-free qualities and its very attractive price comparable to other stones.

Mount Airy Granite offers unlimited design opportunities both for small churches and large cathedrals . . . ideal for base courses or the entire facade. Mount Airy Granite is definitely an investment worth your investigation. Why not write us today regarding specific church applications?

#### NORTH CAROLINA GRANITE CORPORATION

MOUNT AIRY, NORTH CAROLINA



POLYETHYLENE FILM, a practically perfect vapor barrier at 11/2¢ a ft.

Currently packaging everything from sweaters to sirloins, polyethylene may soon wrap up the building field. The thin, pliable plastic's low price (11/2¢ psf for the .004" thickness), lightweight (1,000 sq. ft. weighs 19 lb.) and its high resistance to moisture suit it to countless construction uses. (Troops who have made amphibious landings with ammunition sealed in the film can vouch for its waterproofness and toughness.) It stays flexible in temperatures as low as -72°F, and so can be handled in weather that would make many other materials brittle.

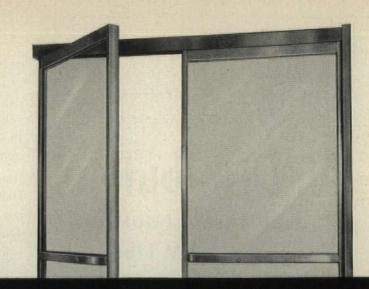
Produced in continuous lengths polyethylene film now comes in widths up to 20'. Seams can be lapped, stapled or taped, or welded with an ordinary iron. A .002" sheet of the noncorrosive, noninflammable, chemically inert membrane applied on the warm side of outside walls is said to eliminate condensation for the life of the structure. As a vapor barrier beneath a concrete slab, the heavier gauge (.004") is put down over a layer of sand; no gravel or stone base is necessary. Placed in a crawl space with sand on top to keep it in place, it guards subfloor and joists against moisture damage. Laid over a subfloor it acts as a dust and draftbarrier and squeak-muffler.

Polyethylene film also will serve as flashing, termite shield, waterproofing for shower stalls, and as tarpaulin for machinery and materials left outdoors. Some other uses: concrete, form liner, vapor barrier in roof deck, concrete-curing blanket, drop cloth, and cavitywall liner. Visking Corp., biggest producer of the film trade named Visqueen (but no end products) is experimenting with a quilted double layer of the polyethylene. The manufacturer suggests that a fabricator could sell this as a bantam-weight insulating blanket for as little as 4¢ per sq. ft. The quilt's insulating fill: air, in tiny pillows.

Manufacturer: The Visking Corp., Plastics Div., Box 1410, Terre Haute, Ind.

continued on p. 192





#### How to help a building put its best face forward



Stainless Steel number and doors make a clean, modern entrance at 430 Park Avenue, N. Y. Doors at right by Schacht Associates, Inc., N. Y.

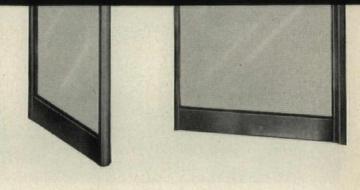


Entrance at 390 Fourth Avenue takes complete advantage of Enduro for beauty as well as durability. Panels and doors are both stainless steel.



Department stores like New York's Lamston's have stainless steel doors that withstand daily wear and tear from thousands of customers.

**ENDURO STAINLESS STEEL** 



Make its doors a combination of glass and Enduro Stainless Steel!

This is the metal that gives you freedom of design. The metal that lends itself to modern styling.

This is the metal that gives your clients beauty with practically no maintenance. With Enduro, you clean infrequently. And then you take off the dirt only. There is no coating to wear off. No pockmarking from weather. No oxidation. And perspiration from peoples' hands has no effect on it.

Enduro gives a door strength without added weight. Enduro provides a strong frame that does not sag. And it is tough and hard to withstand the daily scuffing and kicking of millions of feet.

There you have it. Beauty. Less maintenance. Client satisfaction. Want to know more? Sweet's has all the facts. Or write to:

#### REPUBLIC STEEL CORPORATION

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



"UNI-FLO" ENGINEERED

## Air Distribution

... used throughout new Oklahoma A&M Library!

Students study in comfort in this outstanding new library at Oklahoma A&M. Complete with summer-winter air conditioning, the new structure is rated as one of the finest college libraries in the nation. Air distribution throughout the building is handled by Uni-Flo equipment—ceiling diffusers as well as supply, return, and door grilles. This is the eighth building constructed in the past six years on the Oklahoma A&M campus where Barber-Colman equipment has been specified. Strong testimony, indeed, to the design, construction, dependable performance and engineered results of using modern Uni-Flo developments.

Architects: Sorey, Hill & Sorey, Oklahoma City, College Architect: Philip A. Wilber, Stillwater, General Contractor: Manhattan Construction Company, Muskagee, Sheef Metal Contractor: Clint Cooke Company, Oklahoma City and Stillwater, Okla.



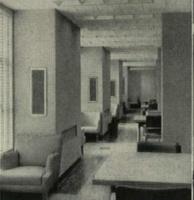
Spacious "browsing room" with Venturi-Flo Ceiling Diffusers above, Uni-Flo Sidewall Diffusers and Return Grilles on the firred panels between windows. Each ceiling diffuser has integral volume control for simplified balancing of system.



New library building at Oklahoma A&M is the pride of the Stillwater campus. It is one of the latest results of a multi-million dollar building program undertaken at the school in recent years.



Reference Room on second floor. Exceptionally quiet operation of Uni-Flo equipment makes it particularly suitable for library applications.



Reserve Reading Rooms, where Uni-Flo Sidewall Diffusers and Return Grilles in firred panels provide efficient distribution of conditioned air.



Reserve Reading Room, one of two located on first floor of library. Uni-Flo Sidewall Diffusers provide unobtrusive decorative patterns in keeping with the modern treatment of the interior... supply conditioned air free from draft and disturbing noise.

#### BLAZING THE TRAIL TO BETTER AIR DISTRIBUTION



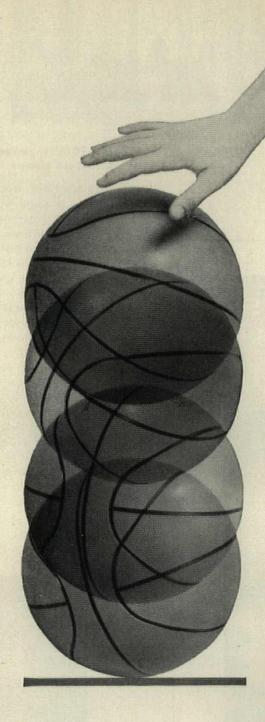
First with integral volume control

Among many pioneering "firsts" accredited to Barber-Colman research is this opposed-blade type integral volume control. Linear

control of volume extends from full open to shutoff.

Blades are gang-operated from a single lever. The lever is hidden from sight, but easily accessible for adjusting volume. Volume control is available on all types of Barber-Colman ceiling diffusers, round or square, recessed or surface mounted. For information on this, and the dozens of other Uni-Flo "trail-blazing" features, call your nearby Field Office (consult phone directory), or write us.

BARBER-COLMAN COMPANY, Dept. L, 1135 Rock St., ROCKFORD, ILL., U.S.A.



#### ... but how does your school design sound?

Your renderings and prints show the school board how the project will look, but what about the control of clamor in classrooms or gymnasiums?

When you're looking for a sound buy to fit the budget,

#### **Only Fiberglas\* Sound Conditioning** delivers all these values:

- 1. Acoustical Value. High noise reduction coefficient—up to .90-equal or superior to any material for quiet classrooms.
- Fire-Safety. Easily meets all school building safety codes. Carries the Underwriters' Laboratories label service.
- 3. Beauty. The most complete fire-safe line of decorative textures, patterns and colors. High light reflection for bright, airy rooms and halls.
- 4. Permanence. Dimensionally stable as a window pane. 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. Provides added thermal insulation, helps save on fuel bills.

Owens-Corning Fiberglas Corporation, Toledo 1, Ohio.

\*Fiberglas, Sonofaced, Stria and Noise-Stop are trade-marks (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation.

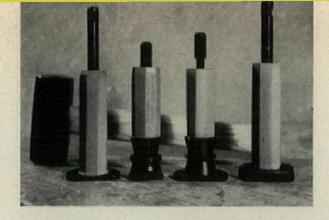


#### SOUND CONTROL PRODUCTS • Textured, Perforated, Sonofaced\*, Stria\* Acoustical Tile

- · Textured, Sonofaced Ceiling Board · Noise-Stop\* Baffles







#### FASTENING TOOLS: tempered nails handdriven into steel and concrete

Liechtenstein-fabricated Hilti fastening systems should get a warm welcome from US contractors. These simple steel shafts pack a powerful punch; with them, conical-shanked nails (formed of hardened steel) can be driven through ½" carbon steel plates or into concrete with a few blows of a heavy hammer A stud embedded in 1" of masonry will withstand a 700-lb. pull. Several variations of the basic steel tube-encased plunger are made for use in electrical, plumbing and carpentry trades. The standard nailing tool will sell for under \$20 (duty included); the studding tool, less than \$12. Nails range from 3¢ to 10¢ and studs are 4¢ each.

Hiltis have in fact captured the fancy of Realtor Robert Dowling (whose usual foreign interests run to theater and cinema), and his City Investing Corp. will handle distribution of the hand-drive tools here and in Canada and may later include a line of Hilti powder-actuated stud guns.

Manufacturer: Maschinenbau Hilti Schaan-Forst, Liechtenstein.

Distributor: City Investing Corp., N.Y., N.Y.



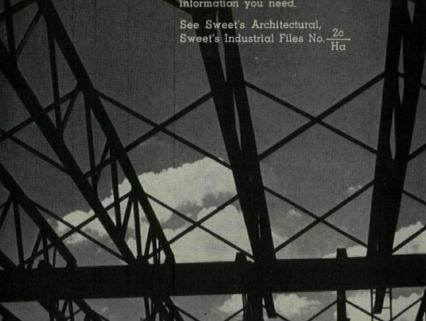
#### TWO-BLADE POWER SAW grooves plaster for electric lines

One messy and time-taking job in alteration work is running new metal conduit in old walls and ceilings. Now, instead of hacking away at the plaster with hammer and chisel—a practice that frequently cracks the plaster surface—the electrician or maintenance man can score a parallel cut with Wodack's new double-blade power tool. He then can chip the pieces out of the clean groove easily. The plaster cutter's two 4" abrasive wheels can be set at

continued on p. 194

# BRIDGE WIDER SPANS WITH T-CHORD LONG SPAN JOISTS

Large, free areas with clear span up to 125', or larger multiples, are planned easier . . . and for lower cost per square foot when you plan with T-Chord long span joists. No sub-joists or purlins are needed. Framing is simpler, columns and footings are lighter, and erection is easier. Shallow depth of T-Chord joists reduces total room volume and still provides area to carry lighting, ducting or piping. Our engineering staff welcomes the opportunity to help you. Write, wire or phone us for whatever information you need.



Structural Steel • Miscellaneous Iron • T-Chord Long Span Joists • Ornamental Iron



HAVEN - BUSCH COMPANY

501 Front Ave., N. W., Phone 9-4173, Grand Rapids 4, Michigan

The American Trust Co. Charlotte, N. C. Architect: Walter Hook & Associates, Charlotte, N. C. Contractor: Southeastern Construction Co. Charlotte, N. C.



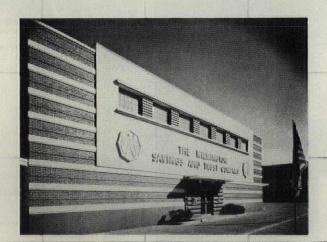
Mo-Sai Slabs by Mabie-Bell Co., Greensboro, N. C., used on both jobs.

# Slabs.

Savings

#### Architects bank on pre-cast concrete slabs for design flexibility and enduring good looks

The Wilmington Savings and Trust Co. Wilmington, N. C. Architect: Charles C. Hartmann, Greensboro, N. C. Contractor: Godley-Hinnant, Inc., Wilmington, N. C.



AF-WCSL-44



FOR BEAUTY AND UTILITY

FOR TERRAZZO, PAINT, SLABS, STUCCO

UNITED STATES STEEL HOUR—Televised alternate weeks—See your newspaper for time and station.

Pre-cast slabs of architectural concrete give architects design flexibility and freedom. Made with special aggregates and a matrix of Atlas White Cement, these versatile modern facing units offer almost unlimited variations in form, color and texture. The true white-ness of Atlas White enhances the color values of both aggregates and pigments.

Moderate first cost and low up-keep costs make long-lasting precast slabs a wise choice for use on commercial and other structures. Lettering and decorative effects can be cast as integral parts. Modular design is simplified.

Atlas White Cement complies with ASTM and Federal Specifi-cations. See SWEET'S Catalog, Section 12g/Un and 3d/Un, or write Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. V

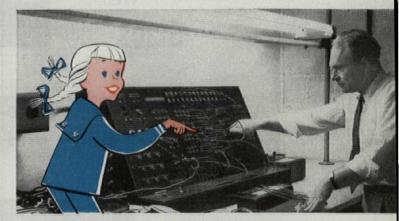
Library of the

# Core and coil construction is carefully designed for minimum power loss; close control of noise and heating. Quality insulation throughout-protects against failure, assures longer life. All components, like this G-E Pyranol† capacitor, are manufactured to our precise specifications. †Reg. trade mark of General Electric Co. Every part of a G-E ballast is carefully designed, manufactured, tested and assembled to give you the best ballast value.

# Flora\* shows you General Electric



1. SOUND RATING—Only G-E ballasts are sound-rated to assure you of meeting your sound level requirements. You can choose the proper G-E ballast whether it's for a quiet installation or for an application where noise is less important. G-E sound rating eliminates expensive noise complaints.



4. LAMP-MATCHED DESIGN—The ballast governs light output and life of the fluorescent lamp, G-E ballasts are lamp-matched to provide up to 50% longer lamp life and up to 30% more light output. Here you save two ways—lower lamp replacement costs and more light from your installation.

Whether you use, install, specify or make fluorescent fixtures, G-E ballasts mean savings to you!

The six reasons why you save, described by Flora above, grow out of these simple facts:

- G-E ballasts are designed to high engineering standards (1, 3, 4, 5 above).
- G-E ballasts are made under exacting quality control standards (2 above).
- G-E ballasts are backed by complete sales and engineering services (6 above).

Only G.E. offers you all these money saving features.

In every conceivable way, we make sure you get more when you use G-E ballasts. For example, G-E engineering standards

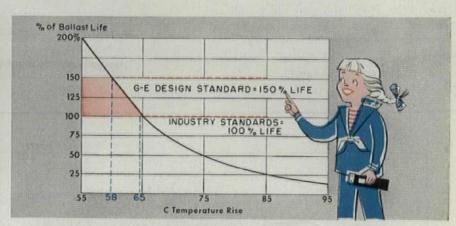
Capyright 1954, General Electric Campany.

six ways . . .

## ballasts help you save lighting dollars



2. UNIFORMLY HIGH QUALITY—Lighting specifiers have learned to depend upon the consistently high quality of G-E ballasts. Rigid material specifications and constant production line tests mean uniformly good ballasts; save lighting dollars on early replacement and maintenance costs.



3, LONGER LIFE—G-E ballasts are designed to operate 10% cooler than U.L. and Certified Ballast Manufacturers' standards. Tests show that a 10% reduction in ballast temperature rise can mean up to 50% longer ballast life, giving you half again as much ballast life!



5. PROVED PRODUCT LEADERSHIP—General Electric has the largest group of specially trained ballast design and development engineers in the industry. They're constantly improving G-E ballasts, assuring you of all benefits of top quality when you "specify" General Electric.



6. COMPLETE CUSTOMER SERVICES—General Electric's extensive sales, warehousing, and engineering organization is anxious to serve you. These unequalled facilities can provide services for you which no other ballast manufacturer offers. These extra services mean real saving to you.

actually exceed the specifications established by the Certified Ballast Manufacturers where extra quality pays off to you. Another example: Ten quality control stations make dozens of physical and electrical checks during manufacture to assure that each ballast measures up to the high G-E standards.

Next time, specify General Electric Ballasts. Dollar for dollar they're your best ballast value.

#### LOOK FOR THIS G-E BALLAST TAG

A G-E ballast tag on your fixture is proof that it's equipped with a top-quality ballast. It's the easy way to be certain. For further information on G-E ballasts, contact your nearest G-E Apparatus Sales Office or G-E Distributor. General Electric Company, Schenectady 5, New York.

401-7

\*Miss Flora Ballast, G-E Ballast Mascot.



Progress Is Our Most Important Product



#### NEW PRODUCTS continued from p. 192

different widths up to 11/4" and an adjustment of the wheel guard controls cut depth. Weighing 13 lb., the 161/2"-long tool is designed for easy handling; it has a trigger switch in the handle and a side grip on the wheel guard. The tool's model number is CDH-B; price, \$126. It will also score tile, marble and concrete, and can make single cuts for outlining new door and window openings.

Manufacturer: Wodack Electric Tool Corp., 4627 W. Huron St., Chicago 44.



# and best wishes for a good 1955.

#### from your friends at Karnak

Marty Jelin

Lou Kern

Ben Hazelton

Duke Wellington

Bill Stewart

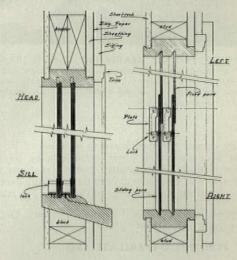
Ernie Hutson

Lewis Asphalt Engineering Corp. 30 Church Street, New York 7, N. Y.

#### SLIDING WINDOW: glass lights glide in redwood frame

A generation of station wagons has proved the merit of sashless windows. Providing unobstructed viewing plus ventilation minus the mechanical woes of many windows, the window type is so logical that architects often detail their own versions for many small building types. Here is a sashless sliding unit that can be purchased knockdown in 22 stock sizes. The Pierson redwood frame is machinegrooved for two unmounted panels of 3/16" glass with polished edges. Only hardware on the mass-produced window is a small brass lock which holds the panes tightly together but lets them part for scratchless sliding; this inobtrusive hardware also will secure the panes with a 2" ventilation space between, or release them to be lifted out for cleaning.

According to Pierson, weatherstripping is unnecessary; water along the outside edge of the 3" glass lap holds the panes even closer. Weep holes in the sill carry off rain and con-



densate. The lapping and weight of the glass panels prevent rattling. Jamb and header edges are molded so that the trim is complete whether installed with plaster or dry wall. Frames for two-lights come in 14 sizes from 2' x 3' to 3'-6" x 6' and three-light from 2' x 7' up to 3'-6" x 8'. Retail prices run from \$8.82 up to \$18.06 plus shipping. Storm sash grooves are optional.

Manufacturer: Ernest Pierson Co., 4100 Broadway, Eureka, Calif.

continued on p. 198





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

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:

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.

SWEDISH
CRUCIBLE STEEL COMPANY

Plastics Division, 8561 Butler Avenue, Detroit 11, Michigan

# The Name HOPE'S Guarantees CHURCH WINDOWS



Blessed Sacrament Church, Holyoke, Mass.
Chester F. Wright, Architect Daniel O'Connells' Sons, Inc., Contractor

HOPE'S STEEL CHURCH WINDOWS lend themselves to modern or traditional architecture. The Hope's Windows above have leaded art glazing inside and protective glazing outside.

Hope's new method of double glazing permits either protective exterior glass or decorative interior glass to be removed at any time for replacement or repair without disturbing the glass in the other side. The widest choice in sizes and design of glass and utmost flexibility in arrangement of ventilators provide almost unlimited variety in layout for the designer. The unsurpassed strength and rigidity of Hope's Steel Windows assure trouble-free operation and a minimum of maintenance.

Write for Booklet 134P.

HOPE'S WINDOWS, INC., Jamestown, N.Y.

THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE'S WINDOWS

# The Most Rigid, Economical All-Steel Door You Can Specify





## Proved In

525 WM. PENN PLACE BUILDING PITTSBURGH

DUPONT CHEMSTRAND (DE) NYLON PLANT GONZALES, FLA.

T. C. & I. OFFICES FAIRFIELD, ALA.

**GATEWAY CENTER** BUILDINGS PITTSBURGH

#### KNOW THIS TOP QUALITY LINE

Get acquainted with this new line of all steel flush doors and frames that have already been proved in some of the finest new commercial projects erected in the past few years. All USF Doors are triple box constructed and internal welded for rigidity-mass produced for economy. USF  $1\frac{3}{4}$ " Doors are made in every type you require and follow

a flush surface design that permits all doors in your project to match exactly. One-piece matching frames are easiest of all to install. All types of USF Doors and Frames can also be furnished in stainless steel if desired as illustrated in roof entry above.

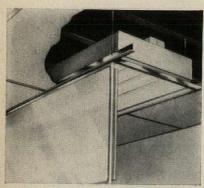
Let us send you fully descriptive literature or see our catalog in Sweet's.

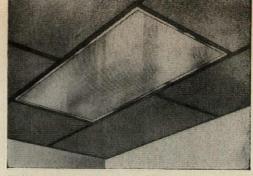


Representatives • Minneapolis, Minn. • Seattle, Washington • West Somerville, Mass. • Akron, Ohio • Cincinnati, Ohio • San Juan, Puerto Rico • St. Louis, Mo. • Toledo, Ohio • St. Petersburg, Fla. Mobile, Alabama • Kansas City, Mo. • Madison, Wisconsin Buffalo, N. Y.

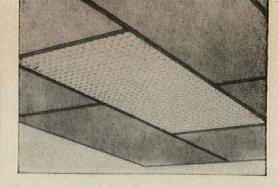


#### NEW PRODUCTS continued from p. 194





Quick access to the big troffers' lamps and ballasts is provided by double-hinged face panels.



#### KING-SIZE TROFFERS rest on suspension T's

Metro's modular recessed troffers integrate easily with ceilings of big acoustical boards hung on inverted T's. These 2' x 4' light fixtures for rapid-start bi-pin or slim line fluorescents are obtainable with diffuser faces of ribbed and patterned glass, translucent plastic, and egg-crate louvers in steel or plastic. User net prices range from \$54.69 to \$104.58. (Square units 2' x 2' are available on special order.) The big troffers slip up easily on the bare grid or may be installed after ceiling boards are in place. Since their sizes correspond to the fiber or metal panels, the fixtures can be rearranged as interior lighting needs change without disturbing the ceiling's continuity. Louver models are hinged on either side with patented hangers; glass shields are gripped firmly by contact latches. Ballasts on both are easily accessible for servicing from below.

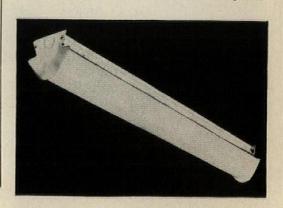
Manufacturer: Smithcraft Lighting Div., Chelsea 50, Mass.

#### CORRIDOR LIGHT: shaft of light for narrow space is easily installed

The tapered section and simple mount of this one-lamp fixture frankly connote the kind of linear space it should go into-school and office hallways, library stacks and similar areas that need continuous light. Its molded plastic shield gives good color and light transmission with reflectivity of not less than 86%, and the shield slips out easily for servicing. Knockouts are provided on the steel housing frame for either pendant or surface mounting. Although the unit can be used singly in washrooms or over phone-book stands, it probably will have best effect in tandem runs. (The ends come off for continuous wireway installation.) List price is \$25.21 for the 4'; \$45.31 for the 8'.

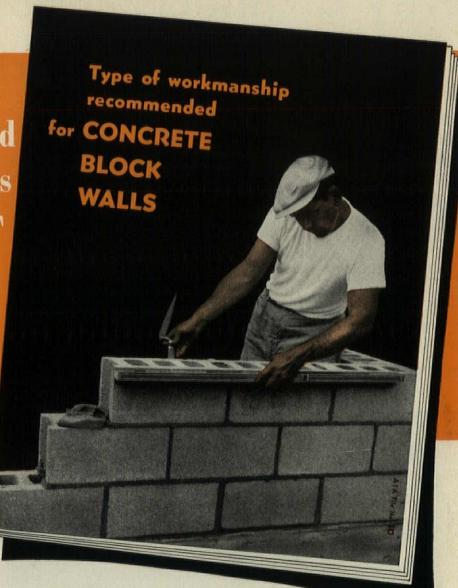
Manufacturer: Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

continued on p. 202





# Send for this IMPORTANT BOOK



Possibly half the masonry-work currently being done in the U. S. utilizes concrete blocks.

Despite this wide usage, very little information has been issued on the type of workmanship required for good concrete-block construction.

The booklet shown above contains a full description of good block workmanship. It is completely illustrated. It is endorsed by leading officials of the American Institute of Architects, Mason Contractors Association of America, National Concrete Masonry Association, and the Bricklayers, Masons and Plasterers International Union of America. It should be in the hands of every architect, contractor and bricklayer. Use the coupon today for getting your free copy.

Published as an Industry Service

by the Manufacturers of

BRIXMENT for MORTAR

Louisville Cement Company — Dept. AF-8
Second and Walnut Streets, Louisville 2, Kentucky
Gentlemen:
Please send me a free copy of "Type of Workmanship Recommended for Concrete Block Walls".

Name
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Address
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State

# Why architects choose <u>CRANE</u> for public buildings

Buildings that are used by vast numbers of people are generally designed both to serve them efficiently and to please them visually. Also, of course, such buildings should be easy to maintain.

This applies to the buildings' equipment, too... and public washrooms are an important example of this. That's why so many architects specify Crane plumbing.

There are Crane fixtures for every purpose. They are handsomely designed and well engineered. And they are built to give satisfactory service, year after year after year.



Less faucet repairs! Crane Dial-ese faucet controls last longer—require less maintenance. That's because of the simple replaceable cartridge that contains all working parts. When necessary, old cartridge can be replaced by new one in seconds.



Above, you see Crane "Norwich" 1-240-S lavatories with "Embassy" trim, and Crane "Correcto" 7-87-R urinals.

#### New York Air Terminal features Crane plumbing

Four million people a year will use the new \$7,500,000 East Side Air Terminal in New York City. It will be, for most air travelers, the first point of entrance into New York and the last point of exit. Until a similar West Side Terminal is built, air line busses for all New York airports will serve this block-square building—a total of some 550 bus trips a day.

Naturally-for a building so important and so busy-

Crane plumbing was specified. In all types of commercial as well as domestic installations, Crane enjoys a justly superior reputation. Yes, Crane plumbing equipment will serve your clients better.

#### CRANE CO.

GENERAL OFFICES: 836 SOUTH MICHIGAN AVENUE, CHICAGO 5
VALVES • FITTINGS • PIPE • PLUMBING AND HEATING



Bottom: VMP's Type "M" Mobilwall glazed with Mississippi Syenite in offices of Michigan Bell Telephone Co., Detroit, Michigan. Smith-Hinchman & Grylls, Architects.

#### Office Layouts and Daylighting Made Easy with Movable Walls Glazed with Mississippi Glass

Efficiency is the word for the ease with which present and future office layouts can be made with famous VMP Mobilwalls that can be arranged to grow with need. Virginia Metal Products Company has designed its partitions for utmost efficiency in maintaining high lighting levels as well as meeting space requirements. Mobilwalls feature glazing with a variety of Mississippi Glass patterns. Adjacent areas are flooded with copious quantities of "borrowed light" which make offices seem larger, friendlier. Seeing tasks are easier and the result is a modern, efficient work area combined with a pleasant atmosphere.

There is efficiency, too, in the glass, itself. For glass never wears out, never requires painting. It wipes shining clean with a damp cloth . . . always looks new.

Make your client's office tasks lighter. In your plans for office in-

teriors, specify glass by Missis-

sippi. Available in a wide variety

of handsome patterns and surface

finishes wherever quality glass is

Write Dept. 6 today for free idea booklet. Samples on request.

sold.



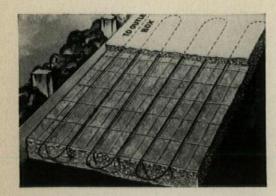
MISSISSIPP 88 ANGELICA ST. SAINT LOUIS 7, MO.

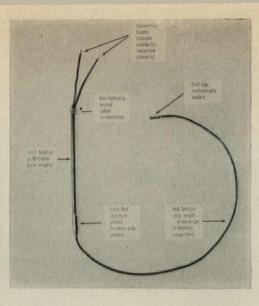
NEW YORK . CHICAGO . FULLERTON, CALIF.

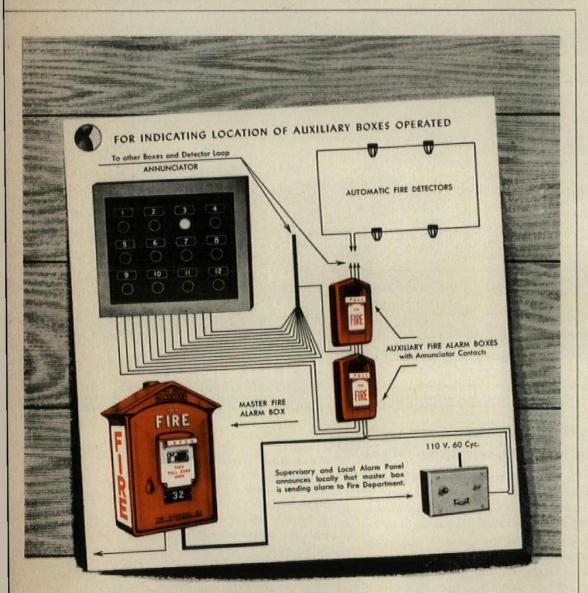
LARGEST MANUFACTURER OF ROLLED, FIGURED WIRED AND GLASS

#### **NEW PRODUCTS**

continued







#### Connects Buildings Directly with the Municipal Fire Department

Wherever life or property should be safeguarded against fire, this Gamewell system gives reliable 24-hour daily service.

Alarms may be transmitted manually, or automatically by fire detectors. Thus, even when buildings are unoccupied, they are at all times connected directly with the Municipal Fire Department.

Write for additional information about Gamewell Auxiliary Fire Alarm Systems.

GAME WELL®

THE GAMEWELL COMPANY
Newton Upper Falls 64, Mass.

THE BOX IS POSITIVE

Reduces Human Error



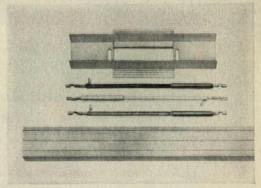


#### COPPER-CLAD WIRING is safe outdoor heating element

Its resistance wires protected by tightly packed mineral insulation and a seamless copper sheath, Heatflex is a rugged, self-contained heating element useful in many tough locations. A modification of Safety MI Wiring (New Products, May '54) the new cable's hot section has nickle-copper conductors. Its cold section, like MI, contains all-copper wires. It is impervious to moisture, chemicals; and can be bent, flattened and twisted without damage. Outdoor temperature does not affect its performance, and its own temperature is thermostat controlled.

Heatflex may be imbedded directly in a slab for snow-melting applications or left exposed and wrapped around outdoor pipe lines, tanks, and under catwalks to prevent icing. The diagram (above, left) illustrates how the wiring is installed in a driveway; no insulation or special conduit is necessary. A cold MI line runs from the drive to the thermostat. Although copper will oxidize at 482° F. in still air, where the cable is imbedded in material or immersed in liquid (noncorrosive to copper), operating temperature (and Btu output) can be even higher. Heatflex runs 62¢ per lin. ft. plus the cost of controls and terminals.

Manufacturer: Continental Electric Equipment Co., Box 1055 Cincinnati 1.



#### MULTIPLE OUTLET STRIP is run from regular outlet box

Switch controlled *Plug-in Strip* can be mounted directly to outlet boxes with this Nepco fitting. Simplifying new installations of the switch-controlled type CF-3 strip, the new CF 3-629 box cover can also bring fresh wiring flexibility to buildings where power is adequate but outlets scarce. Underwriters' approved, the box plate fitting is furnished with three splicing jumpers and insulator tubes with connections which crimp on the *Plug-in Strip*.

Manufacturer: National Electric Products Corp., Gateway Center, Pittsburgh.

continued on p. 206





The new 300,000 sq. ft. plant of the Rex Manufacturing Company at Connersville, Indiana has an unusual mezzanine floor of Flexicore pre-

cast concrete slabs.
"Flexicore saved us two months," reports J. H. Stonebraker, job superintendent for the A. J. Glaser Company, Inc., Muncie, Indi-

ana, general contractors.

"We didn't have to wait for pouring and curing of the mezzanine," he says. "We went right ahead on the main floor without inter-

ference from either formwork or shores."

The Rex plant was designed by Giffels & Vallet, Inc. and L. Rosseti, Detroit. It is 760' by 420', with a steel frame, corrugated metal

curtain walls and channel slab roof.

The mezzanine runs the 760' length of the building on one side and varies in width from 60' to 240'. It is used for light assembly, stockrooms, and storage. Flexicore was selected to get flexibility for future changes. The slabs clear-span 20' bays.

The adjoining two-story office building has Flexicore slabs for second floor and roof.

Flexicore mezzanine is 760' long. 115,000 sq. ft. of slabs used.

Flexicore concrete slabs make hollow-core fire-resistant floors and roofs. Each slab is a monolithically cast unit with a clean, smooth undersurface that gives an attractive panelled ceiling without plaster. The joint between the slabs forms a grout lock that ties the slabs together in a flat, rigid unit.

Flexicore slabs fit right into conventional

design and have cut costs and reduced construction time on thousands of jobs from coast to coast. See Sweets for catalog information. Phone or write your local manufacturer for complete facts.

#### THE FLEXICORE MANUFACTURERS ASSOCIATION - PRODUCERS OF PRECAST CONCRETE FLOOR AND ROOF SLABS

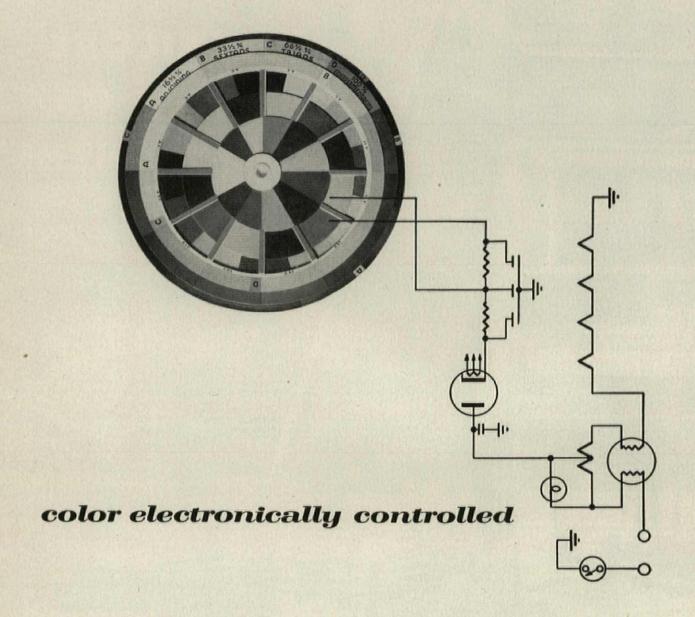
Alabama—Birmingham Alabama Cement Tile Co. Phone 4-8651 Colorado—Denver Flexicore Co. of Colorado MAin 6456 Florida—Miami Universal Concrete Pipe Co. Phone 2-1472 (Hollywood) Florida—Tampa Universal Concrete Pipe Co. Phone 4-3931

Illinois—Chicago Mid-West Concrete Pipe Co. GLadstone 5-0127 Indiana—East Chicago Calumet Flexicore Corp. Phone 940 Michigan—Detroit
Price Brothers Company
WOodward 5-6376 Minnesota—St. Paul Molin Concrete Products Co CApital 6-8818

New York—Buffalo Anchor Conc. Products, Inc. HUmboldt 3152 North Carolina—Lilesville W. R. Bonsal Co., Inc. Phone 661 Ohio—Cincinnati
Tri-State Flexicore Co.
REdwood 9705 Ohio-Columbus Arrowcrete Corporation CApital 1-5506

Ohio-Dayton Price Brothers Company HEmlock 7861 Rhode Island—Saylesville Durastone Flexicore Corp. PAwtucket 3-1288 Texas—Houston-Deer Park Flexicore of Texas GRand 9-2216 W. Va.-Wheeling Universal Concrete Pipe Co. Phone 2404

Wisconsin-Beloit Mid-States Conc. Prod. Co. DUnkirk 9-2249 Canada-Ontario-Toronto Murray Associates Ltd. EMpire 4-4362 Puerto Rico— Rio Piedras Flexicore of Puerto Rico, Inc. Phone Rio Piedras 1205



Here at Kentile, Inc. a mechanical "color eye" has been found far more accurate in matching colors than the most highly skilled human eye. It electronically controls the shades of resilient tiles from one batch to the next by checking the over-all distribution of pigment materials. That's why you

always get the exact color you specify, and why it is always uniform, regardless of floor area used. Uniform thickness, accuracy of cutting, trueness and clarity of color, surface smoothness and built-in durability—all of these qualities make this the world's most popular line of resilient tile floorings.

#### KENTILE, INC.

America's largest manufacturer of resilient floor tiles

KENTILE: Asphalt Tile • KENCORK: Cork Tile for Floors and Walls • KENRUBBER: Rubber Tile • KENFLEX: Vinyl Asbestos Tile • KENFLOR: Vinyl Tile...also available by the yard • SPECIAL KENTILE: Grease-proof Asphalt Tile • THEMETILE, KENSERTS: Decorative Inserts • KENCOVE: Vinyl Wall Base • KENBASE: Wall Base

NEW COMFORT FOR EMPLOYEES through year-'round air conditioning is enjoyed in the Alcoa Building. Architects Harrison and Abramovitz chose a Worthington system for maximum performance. Installation by Dravo Corporation, Pittsburgh. Engineers: Jaros; Baum & Boles, New York. Assoc. Architects: Mitchell & Ritchey and Altenhof & Bown, Pittsburgh.

WORK-SPEEDING METHODS, such as this new way of crimping aluminum ceiling panels to water-circulating aluminum tubing resulted in fast completion.

"SEE the Worthington Corporation Exhibit in New York City. A lively, informative display of product developments for industry, business and the home. Park Ayenue and 41st St."

# New idea in air conditioning adds 1½ floors of rentable space to aluminum building

Displaying aluminum exterior walls and featuring aluminum throughout, Pittsburgh's new Alcoa Building sets a high point in advanced construction methods and materials. And it is fitting that the heating and cooling requirements are met by the first system of its kind in the country.

Crimped to perforated aluminum ceiling panels, a grid of aluminum tubing circulates hot or cool water for winter or summer. Chilled water in this panel cooling system meets half of the summer's air conditioning needs. For the balance of the cooling and for all dehumidification, primary air fans in three locations service local mixing units on each floor. Chilled water for both systems is supplied by two Worthington 625-ton centrifugal refrigerating units — each unit consisting of a compressor, condenser and water chiller. And because this new air conditioning system eliminates radiators and their extensive piping, the building's rentable area is increased by the equivalent of one and one-half floors.

For over half a century, Worthington air conditioning installations have been serving business and industry. Today, the complete Worthington line can meet any assignment, large or small. So when you think of air conditioning — think of Worthington. Get in touch with your nearest Worthington district office or write to Worthington Corporation, Air Conditioning and Refrigeration Division, Section A.4.32, Harrison, New Jersey.



**WORTHINGTON'S DESIGN** for these two 625-ton centrifugal refrigerating units called for special finned aluminum tubes for condensers and coolers.

A.4.32

WORTHINGTON



CLIMATE ENGINEERS TO INDUSTRY, BUSINESS AND THE HOME

#### **NEW PRODUCTS**

continued from p. 202





Folding doors turn lobbies into showrooms for cars or cabin cruisers by creating extra wide entries. A few turns of a screwdriver and these revolving doors fold away, glass shell and all.



Manufacturer: International Steel Co., Evansville, Ind.

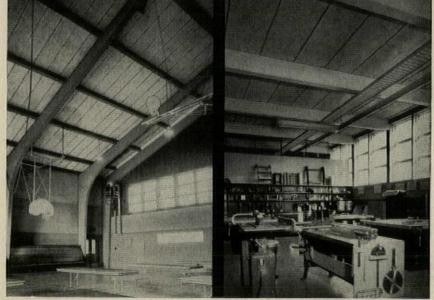
from \$2,000 to \$2,500 more installed than similar fixed entrances. Except for somewhat heavier lintels to support the transom over the 20' gap, outward appearance of the doors is

#### PARKING BARRIER keeps cars in line, needs little upkeep

A redesign of the old log stop, the "X" parking barrier helps keep order on the parking lot. Anchored to any surface-black top, cement, macadam or gravel-the cast aluminum brackets lift standard 4 x 4's off the ground, pitching them as tangents to front tires for a gentle stop. The "X" creates no drainage problem; easily cleaned under, its timbers are less likely to rot than if set on the ground. The barriers also protect buildings and fences from bumper nudging. Brackets (\$3.75 each in orders of 500) and 8' timbers (\$2 primed) are set in continuous runs on perimeter parking layouts. On island and staggered plans, 9'-3" timber spacing is suggested for 30° parking and 11'- 3" for 45°. Individual barriers for staggered parking require pair of brackets per car.

Manufacturer: Fred Ex Enterprises, Inc., 310 E. Ohio St., Chicago 11, Ill.

continued on p. 210



Junior High School, ne, New Hampshire Composite Porex Architect: J. A. Britton Gen. Contractor: MacMillan Co.

## POREX ACOUSTICAL CEILINGS

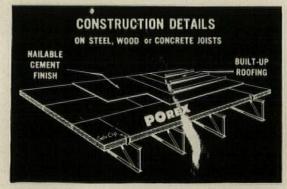
#### Heat Insulation, Sound Control and Fire Protection

...all in one ROOF DECK!

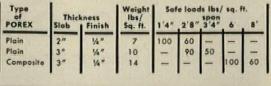
When roof decks must provide maximum quality at minimum cost, architect after architect specifies POREX . . . because POREX combines all these properties:

- STRUCTURAL STRENGTH
- LIGHT WEIGHT
- NAILABILITY
- INCOMBUSTIBILITY
- HEAT INSULATION
- SOUND CONTROL

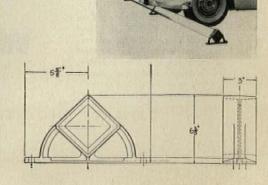
Plain POREX for short spans and Composite POREX for long spans are also ideal for Auditoriums, Gymnasiums, Armories, Churches, Factories and many others.



SAFE UNIFORM LOADS







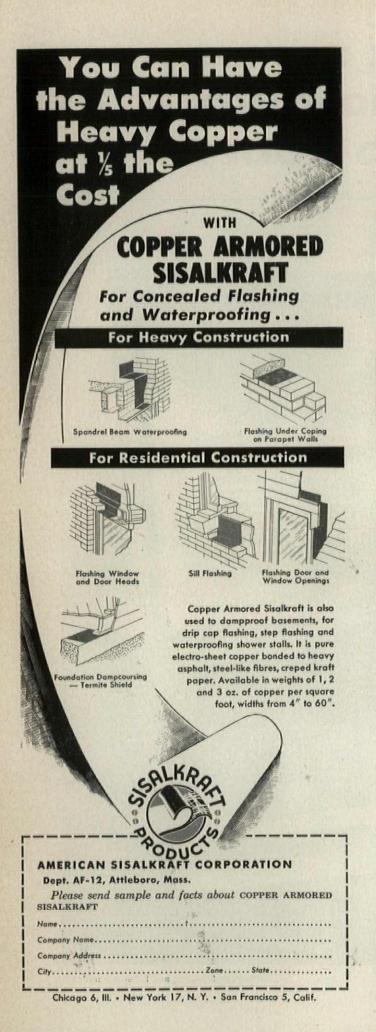
# NEW WASCOLITE HATCHWAY PROVIDES DAYLIGHTING PLUS ACCESS TO ROOF!

This great new building product — the WASCOLITE HATCHWAY — makes all other hatchways obsolete. The WASCOLITE HATCH-



Patent No. 2610593 and Patents Pending.

WASCO FLASHING COMPANY, 89 Fawcett St., Cambridge 38, Mass. In Canada - Crystal Glass & Plastics, Ltd.



CHILDREN'S CHAPEL, Pasadena, California Architects: SMITH AND WILLIAMS, Pasadena



For distinctive beauty and...
LASTING PROTECTION

# Cabot's CREOSOTE STAINS

Cabot's stains enhance the grain and texture of siding and shingles and add years to their life. The high content of creosote oil guards against decay and insects; due to careful refining these stains may be painted over later if desired.

Cabot's Creosote Stains will not crack, peel, or blister. Easy and economical to apply; cost less than half the price of good house paint; available in 18 modern colors ranging from rich reds, greens, and browns to soft weathering grays.

A quality product from Cabot Laboratories
...manufacturing chemists since 1877

Samuel babot

Cabot's
CHOSOTE SHINGE
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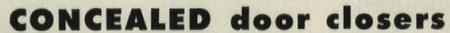
Request a color card today--

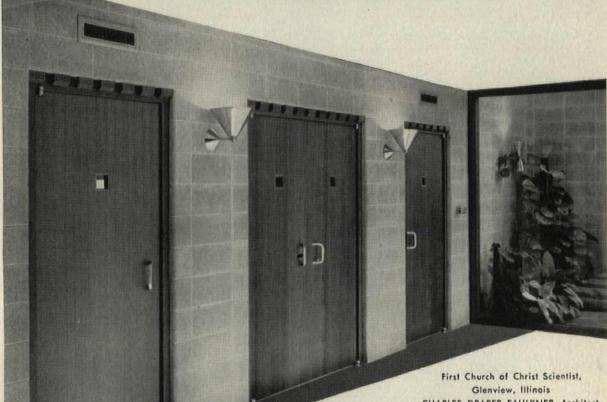
#### SAMUEL CABOT INC.

1231 Oliver Bldg., Boston 9, Mass.

## modern architectural beauty

that could only be accomplished with





CHARLES DRAPER FAULKNER, Architect

RIXSON **UNI-CHECKS** and DUO-CHECKS for interior doors

> Send for your copy of the new condensed RIXSON catalog.

Here's startling simplicity . . . with no bulky mechanisms or protruding arms to mar the trim lines of this beautifully designed auditorium entrance. The RIXSON Uni-checks that silently bring these modern doors to a gentle close are firmly embedded in the rigid floor . . . out of sight and out of the way . . . where they cannot be tampered with or gather dust or dirt.

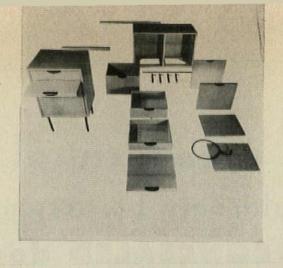
And, as many architects have learned, you pay no premium for the advantages of concealed closers for interior doors . . . installed, RIXSON Uni-checks and Duo-checks really cost no more.

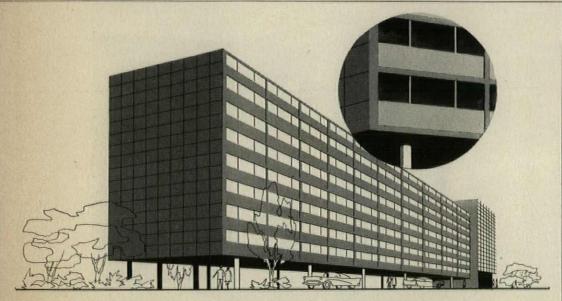
THE OSCAR C. RIXSON CO. 9100 west belmont ave. . franklin park, ill.

#### **NEW PRODUCTS**

continued from p. 206







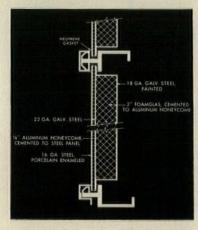
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### ING-RICH PORCELPANELS

You have greatest freedom of color, design and texture when you use Ing-Rich PORCELPANELS for walls and spandrels. These colorful, durable porcelain enamel panels are applied either as curtain-wall construction or as surfacing for exterior or interior wall areas.

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Above section shows Ing-Rich PORCEL-PANEL construction used for spandrel panels below and above glass windows in a new office building, in which 90,000 square feet of PORCELPANELS will be used.

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Designed by Gerald Luss, Kaleidoscope hospital furniture features case components that can be combined in 72 different arrangements for patient rooms which vary in size and layout. A warm birch finish keeps these contemporary storage pieces, and their companion chairs and beds, from looking overclinical. A basic 20" case sells for \$55 to \$65 depending on number of drawers; the 39" double unit is \$87 to \$104. The adjustable-height bed, with electric control, (pictured left) is \$250; a crank-operated model, \$154. Manufacturer: Carrom Industries, Inc., Ludington, Mich.

#### BUFFET KITCHEN puts lid on galley to become cabinet

Specialist in galleys for air transports, Dwyer has turned its talent for compact kitchens to a neat cabinet unit, the *Dwyer 400*. Providing every facility for food preparation in its 48" x 42½" x 22" box, the new buffet kitchen can change a motel room into an efficiency apartment. It could also add a touch of graciousness to an executive office and would be a welcome convenience in an employee lounge. Cabinets come in either blond or mahogany color on a furniture steel base with





brass hardware (on the outside). The onepiece sink and worktop is porcelain enamel, and the two-burner range may be wired for 110 or 220 v. (Total connected load of the heavy-duty model is 3,360 w. including refrigerator and appliance outlet.) Unit pictured costs \$495. Another model without the sink is \$475.

Manufacturer: Dwyer Products Corp., Michigan City, Ind.

continued on p. 213

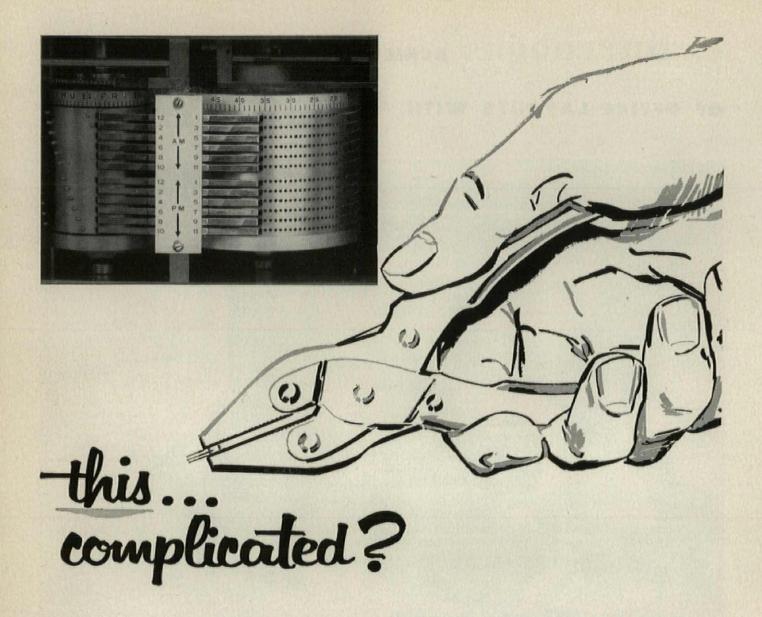
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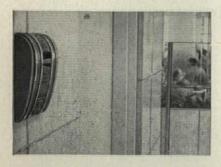


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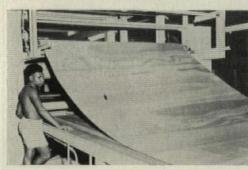
#### **NEW PRODUCTS**

continued from p. 210

#### JUNGLE PLYWOOD from 300' Klinkli tree has seam-free face

If a manufacturer were to create an ideal tree for the production of plywood, it probably would be the Araucaria Klinkii. Fiddes-Moore Co. of Chicago did not invent the Klinkii but they found it in New Guinea where, to get to the tropic sun, this jungle giant has to grow fast and straight up—300' up in 75 years. Rained on every other day, the tree grows steadily in the 80° to 90° climate; its timber shows no seasonal variation.

When Fiddes-Moore set up a modern mechanized mill in the UN mandate and began whittling the trees down to plies, it found the



end-product far above standard. Klinkii plywood had no core voids, and at least one face could be made seamless as well as defect-free. Since first shipment to the US in June, 15 million sq. ft. of 1/4" and 3/8" Klinkii has been absorbed by jobbers, and Fiddes-Moore is bringing in 3 million sq. ft. a month. (Current plans call for importing some veneers and laminating them on the West Coast into 3/4" stock since shipping costs on this thickness pre-glued would be prohibitive.) Light tan in color, Klinkii has a distinctive pattern that ranges from straight grain to tiny birdseye. Many architects who specify it for wall paneling and fixtures find that not only is its purchase price low (19¢ for 1/4", 30¢ for 3/8") and appearance near-perfect, but that Klinkii needs no filler and takes on a fine patina with half the usual finish coats.

Manufacturer: Fiddes-Moore Co., 400 W. Madison, Chicago.

(Technical Publications p. 214)



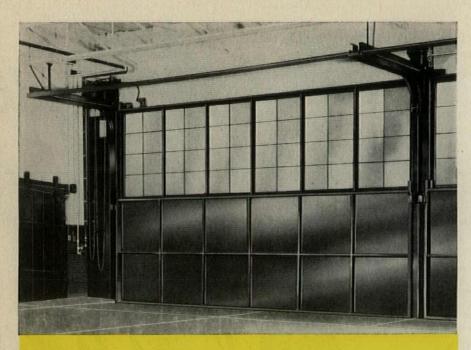
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#### TECHNICAL PUBLICATIONS

#### DOORS AND WINDOWS

Daylighting With Wascolite Skydomes. Wasco Flashing Co., 87 Fawcett St., Cambridge 38, Mass. 12 pp. 81/2" x 11"

The Diebold-Basic 10" door. Pub. SL-0002-051. Diebold, Inc., Canton 2, Ohio. 18 pp.

Fenestra Hollow Metal Doors Swing and Slid. Detroit Products Co., 3111 Griffin St., Detroit 11, Mich. 20 pp. 81/2" x 11"

#### FLOORING

Wright Floor Tile. Wright Manufacturing Co., 5200 Post Oak Rd., Houston, Tex. 8 pp. 21/2" x 11"

#### HEATING, VENTILATING AND AIR CONDITIONING

Electro-Air Electronic Air Cleaners. Electro-Air Cleaner Co., 1285 Reedsdale St., Pittsburgh 33, Pa. 8 pp. 81/2" x 11"

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Self Cooled Motor Propeller Fans. Cat. No. 151. Ilg Electric Ventilating Co., 2850 N. Pulaski Rd., Chicago 41, III. 36 pp. 81/2" x 11"

Superior Steam Generators. Water Tube Type D. Superior Combustion Industries Inc., Times Tower, Times Square, New York 36, N. Y. 8 pp. 81/2" x 11"

#### INSULATION

Infra Accordion Insulation — Installation Techniques. Infra Insulation, Inc., 525 Broadway, New York 12, N. Y. 4 pp. 81/2" x 121/2"

Insulation Data Book. Form HI-48. Zonolite Co., 135 S. LaSalle St., Chicago 3, III. 10 pp. 81/2" x 11"

#### LIGHTING

Lightolier... Fifty Years, Lightolier, 346 Claremont Ave., Jersey City, N. J. 96 pp. 9" x 12"

Wiremold Fluorescent Lighting Fixtures and Fittings. Form 578. Wiremold Co., Hartford 10, Conn. 4 pp. fold-out. 81/2" x 11"

#### PLUMBING

Dur-Ace Plastic Pipe Fittings and Valves. Bul. 80-A. American Hard Rubber Co., 93 Worth St., New York 13, N. Y. 3 pp. fold-out. 81/2" x 11"

Sumo Submersible Pumps. Sumo Pumps, Inc., 375 Fairfield Ave., Stamford, Conn. 4 pp. 81/2" x 11"

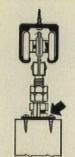
Sump Pump Selector. Bul. No. 54-3-1420. Byron Jackson Co., P.O. Box 2017 Terminal Annex, Los Angeles 54, Calif. 20 pp. 8"1/2 x 11"

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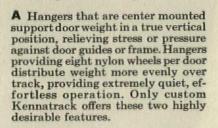
The PI Method. Data Manual. Prestressing Inc., Transit Tower, San Antonio, Tex. 81/2" x 11"

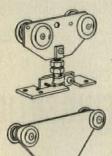
## **ANSWERS**

that help you specify and detail the right type of SLIDING DOOR HARDWARE



**Q** What are the advantages of center mounting and 8 wheels per door?





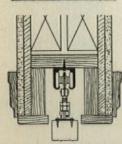
Q When should adjustable hangers be used?

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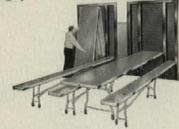
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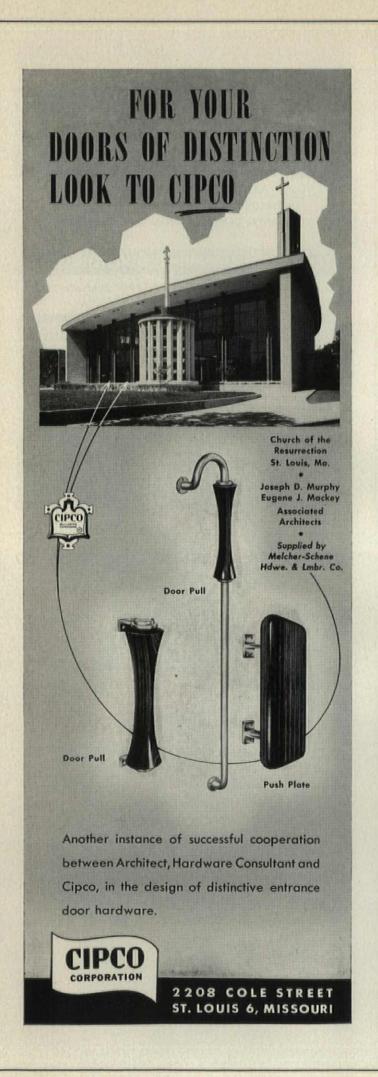
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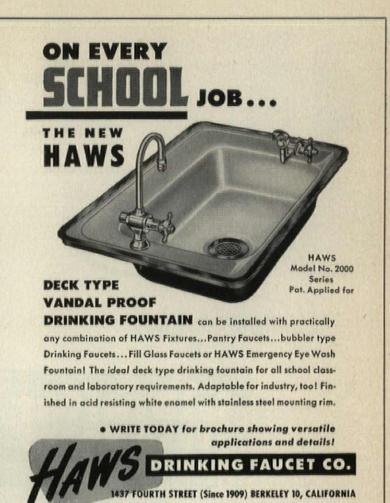
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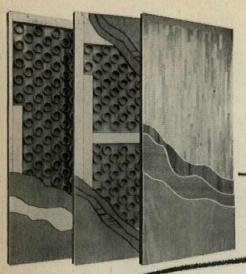
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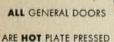
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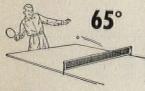


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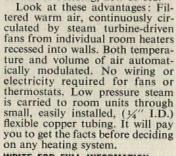
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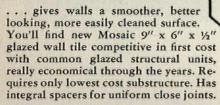
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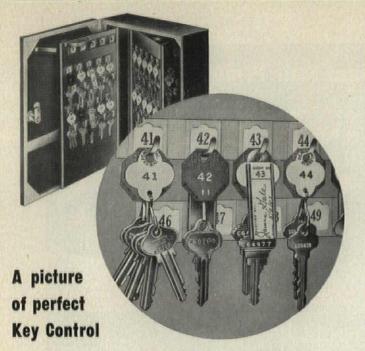
- 1950 Welfare Building, US Naval Training Station, Great Lakes, Illinois, by Skidmore, Owings & Merrill. The Museum of Modern Art, New York City, by Louis C. Jaeger associated with Edward D. Stone.
- Harvard University Graduate Center, 1951 Cambridge, Massachusetts by The Architects Collaborative.
- Hotel Panama, Panama City, Canal Zone, 1952 by Edward D. Stone
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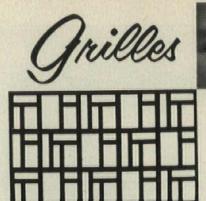
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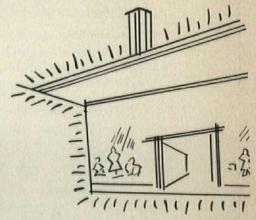
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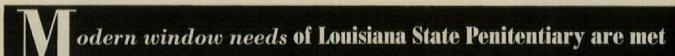
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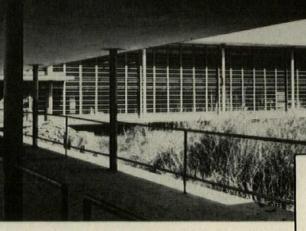
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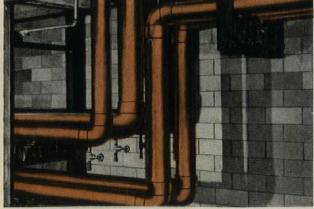
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BOILER ROOM of new Ste. Justine Hospital, Montreal, Canada. Architect, Joseph Sawyer. Associate architect, Henri S. Labelle. Consulting engineers, Leblanc & Montpetit. Distributor, James Robertson Co., Ltd. All the above firms are located in Montreal, as is the Industrial Plumbing & Heating Co., Ltd. who made the installation.



**SHOWN ABOVE** are 8" Type K water main, 6" fire main and two 6" hot water lines. Note tubes do not touch steel support. They rest on copper strip welded on U-shape support.

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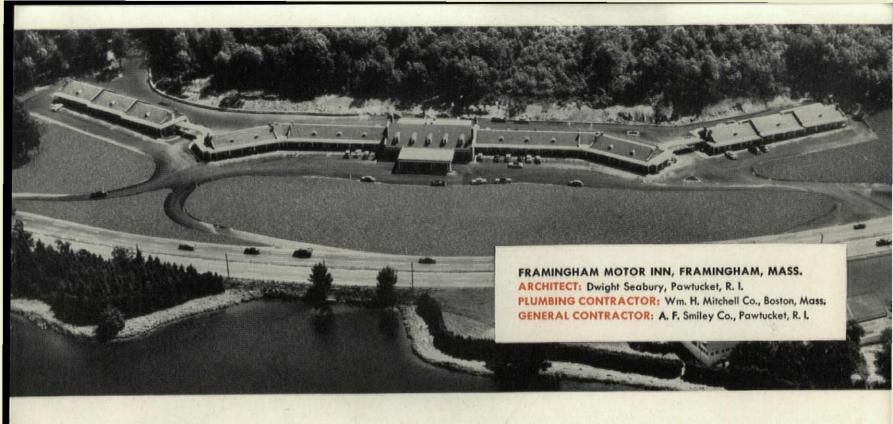
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