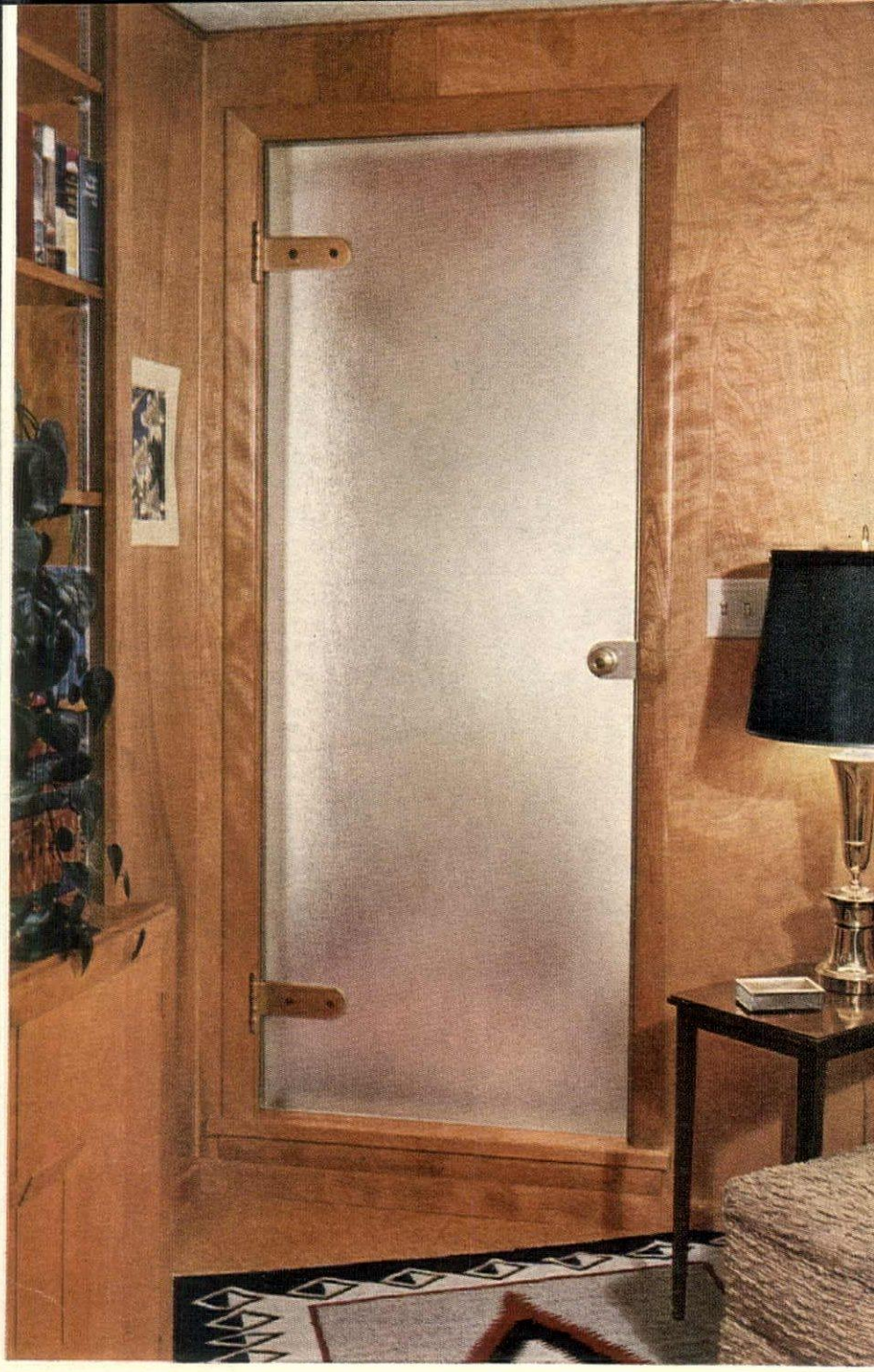
GAZINE OF BUILDING

architectural **forum**

August 1953

New beauty for interiors...

A DOOR THAT DECORATES WITH LIGHT!



Ever so subtly, it glows with the colors of the room decoration, while it transmits soft tones of brighter colors behind it. Here is glass in one of its most beautiful forms—translucent patterned glass. The door, rather than just something to open and close, is a strikingly decorative highlight of the room.

The Blue Ridge *Securit** Interior Glass Door is a single piece of Muralex patterned glass. It lets light come through to brighten rooms. Yet its pattern (on both sides) diffuses light to provide privacy.

The glass is ⅜" thick, tempered so it can stand hard usage.

The *Securit* Door is easy to hang. It requires no cutting, planing or painting. Everything comes to the job with the door—beautiful hardware and ball-bearing hinges. When specified, the door can be shipped with a Sargent closer or prepared for use with an LCN concealed closer.

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Use *Securit* Doors to give interiors an extra touch of smartness. Your L·O·F Glass Distributor or Dealer can tell you more about them. He's listed in the yellow pages of phone books in principal cities. Or mail the coupon for further information.

*®

Architect: William Ames, Milwaukee

BRIEF DATA

Glass—⅜" thick. Muralex pattern on both surfaces.

Tempered—3 to 5 times stronger than untempered glass of same thickness.

Reversible—can be used right or left hand.

Standard Sizes—2'6" x 6'8" 3'0" x 6'8"
2'8" x 6'8" 3'0" x 7'0"

—also 4 sizes for openings of these dimensions with proper allowance for clearances.

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B-2083 Nicholas Building, Toledo 3, Ohio

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(PLEASE PRINT)

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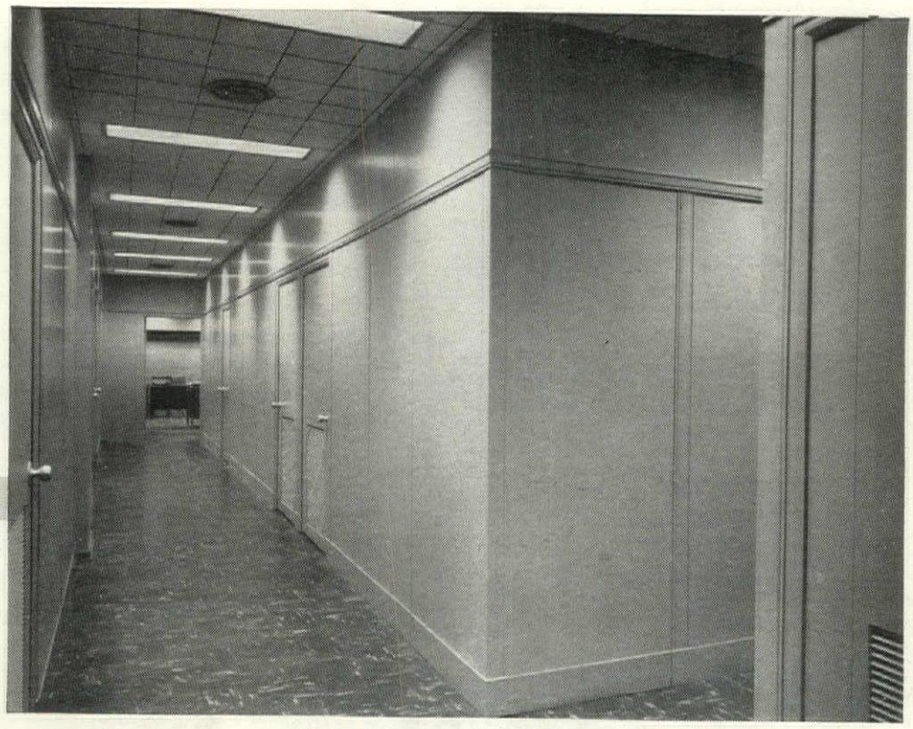

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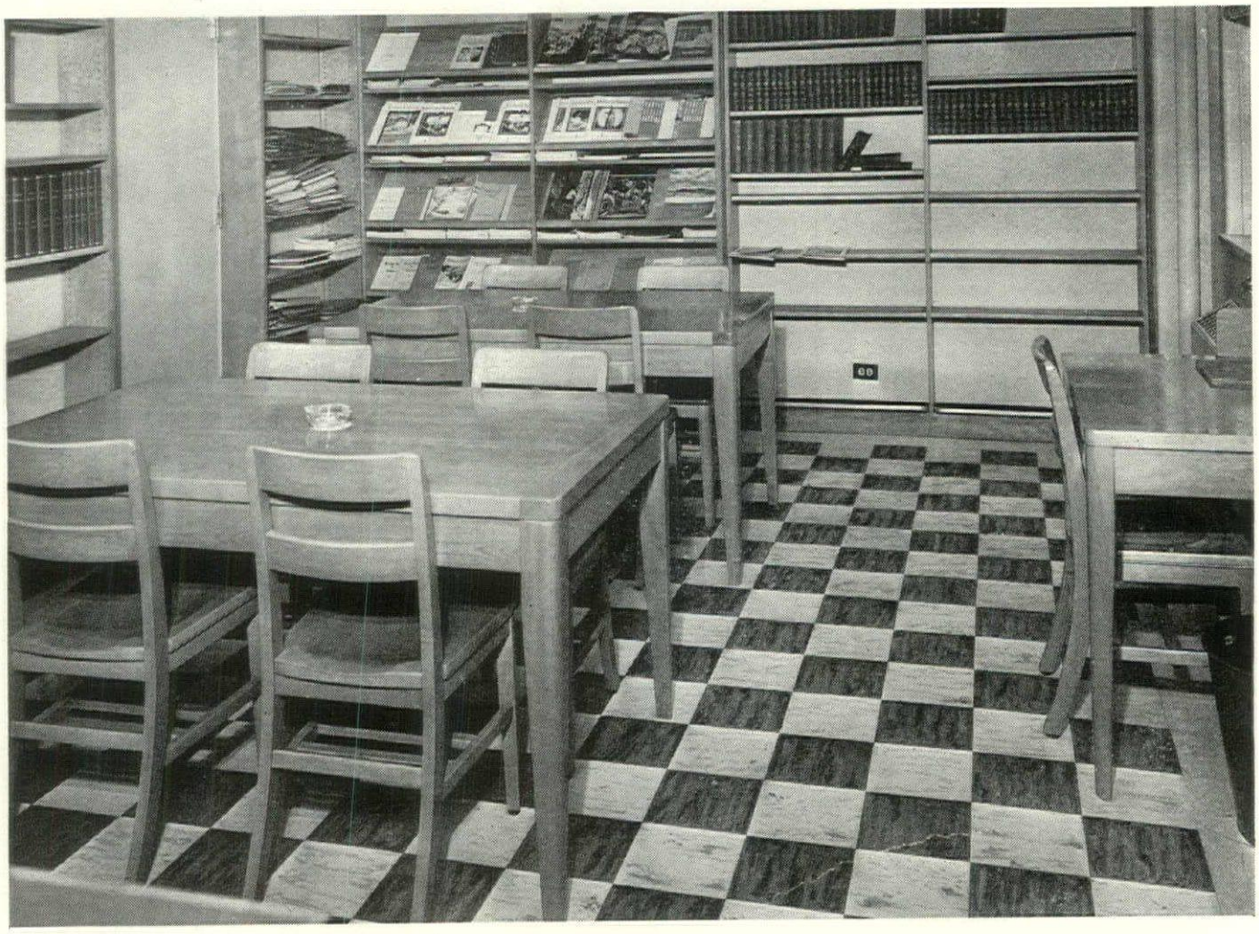

GOODYEAR Rubber Flooring

BY THE TILE · OR YARD-WIDE ROLLS

THE MAGAZINE OF BUILDING

architectural **forum**

AUGUST 1953

Published by TIME Incorporated

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ARCHITECTURAL FORUM

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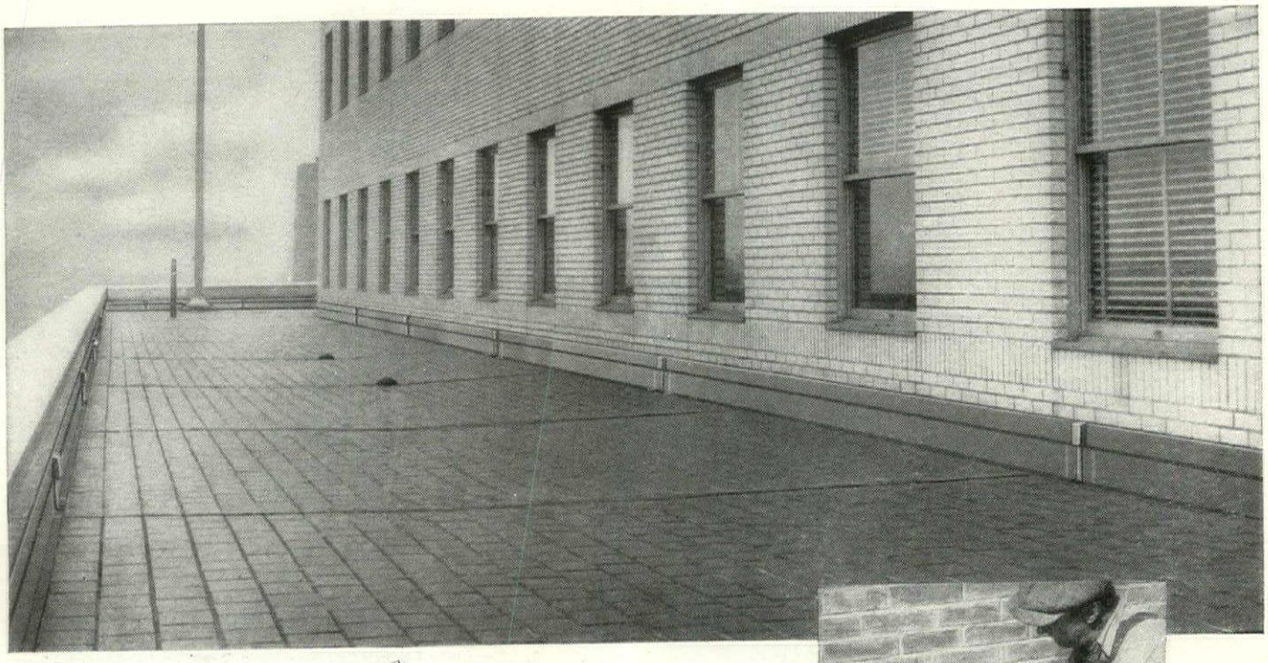

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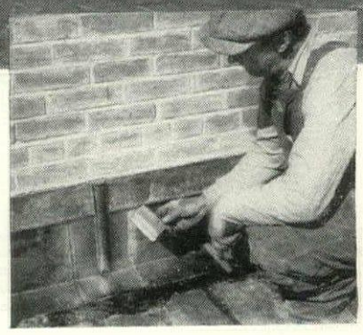

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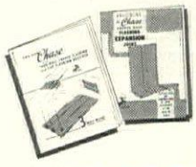

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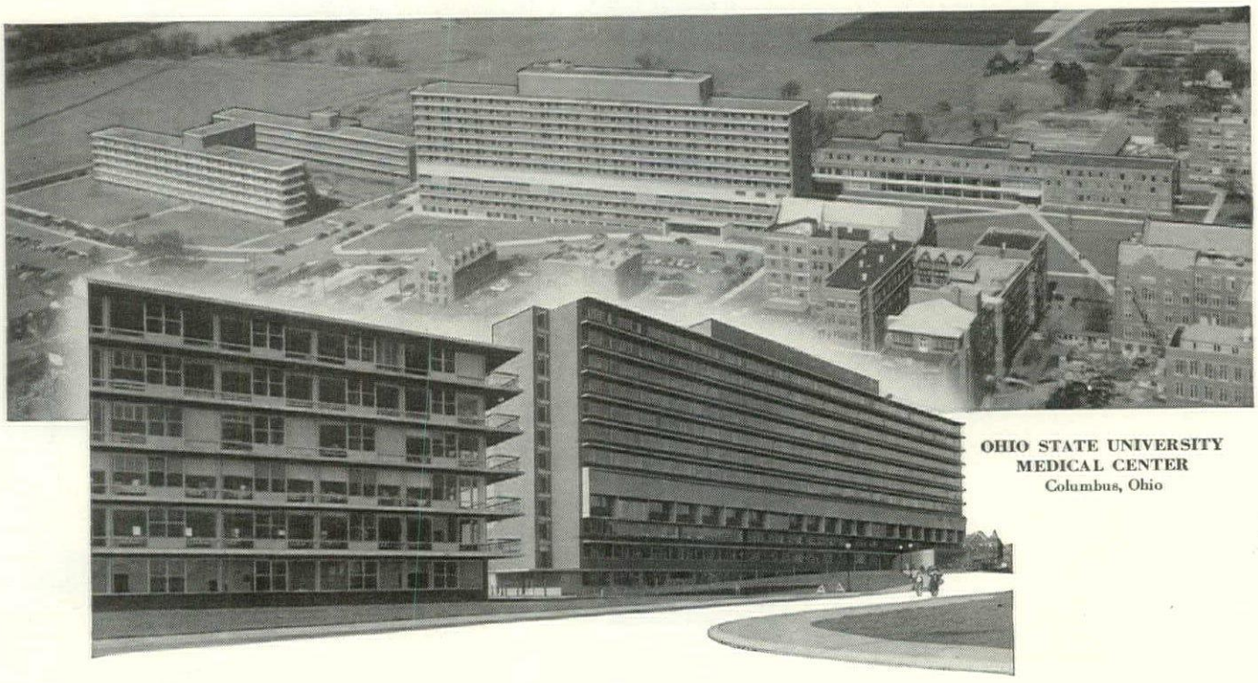

OHIO STATE UNIVERSITY
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Columbus, Ohio

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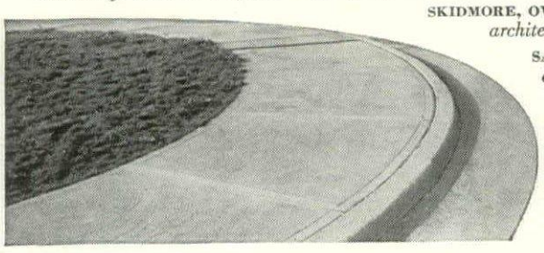

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Columbus Psychiatric Hospital

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architects

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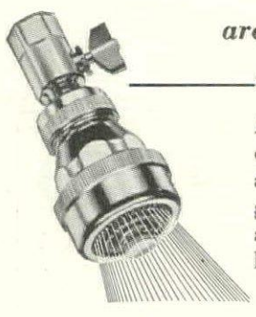

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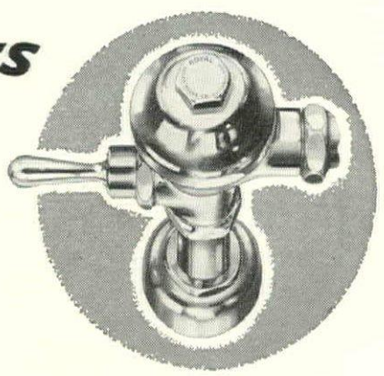

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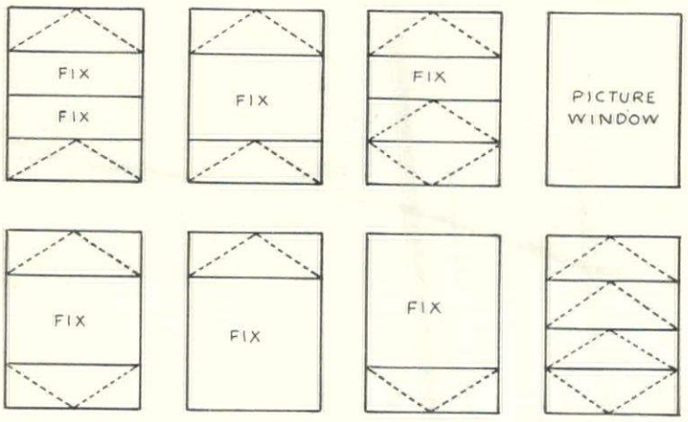

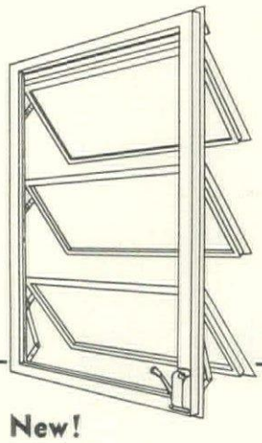

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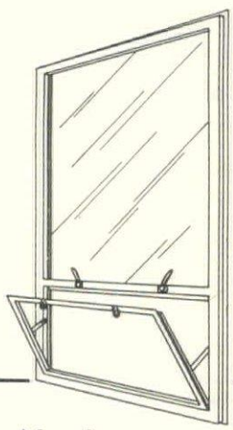

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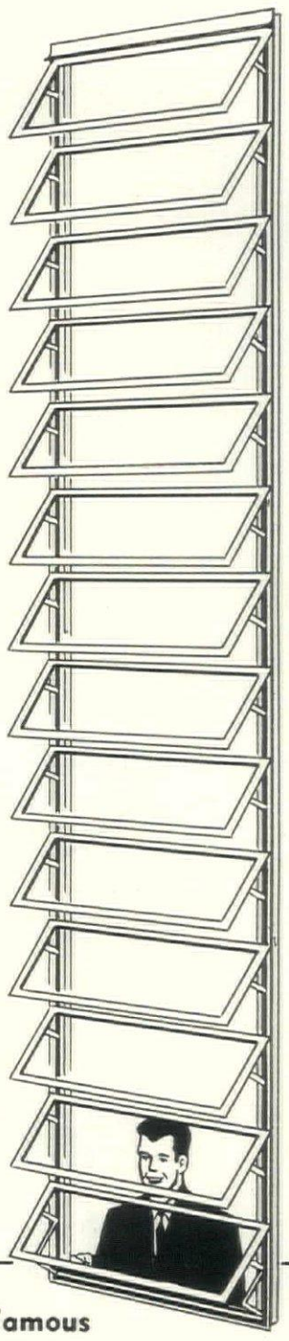

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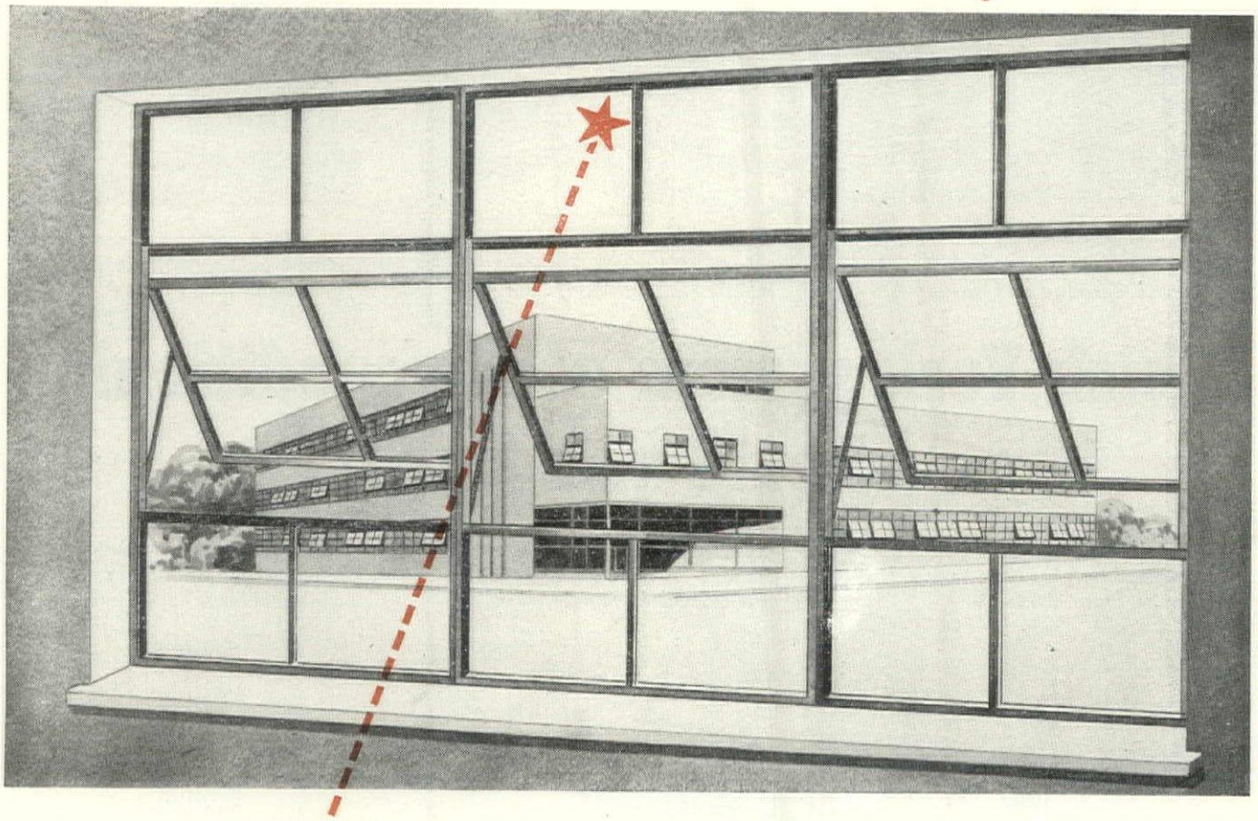

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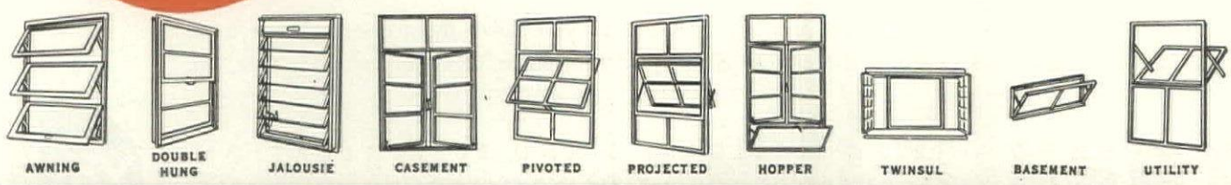

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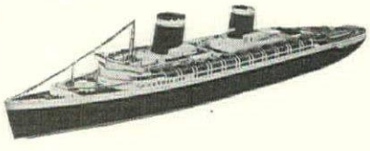

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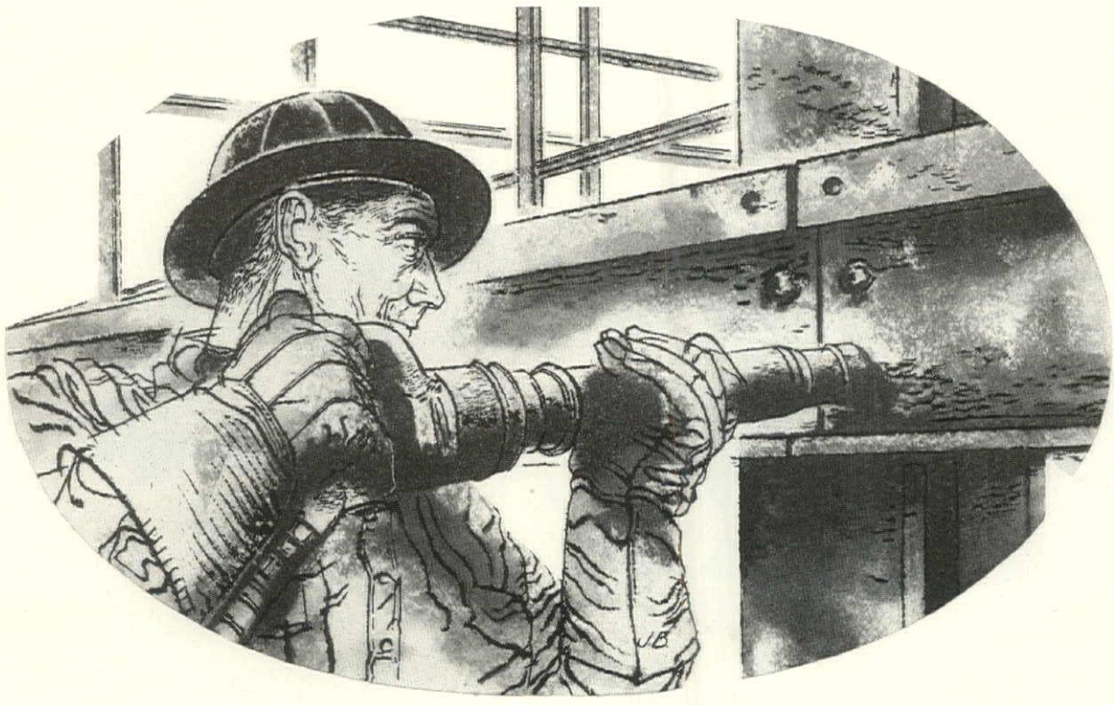

men and **methods** make the difference

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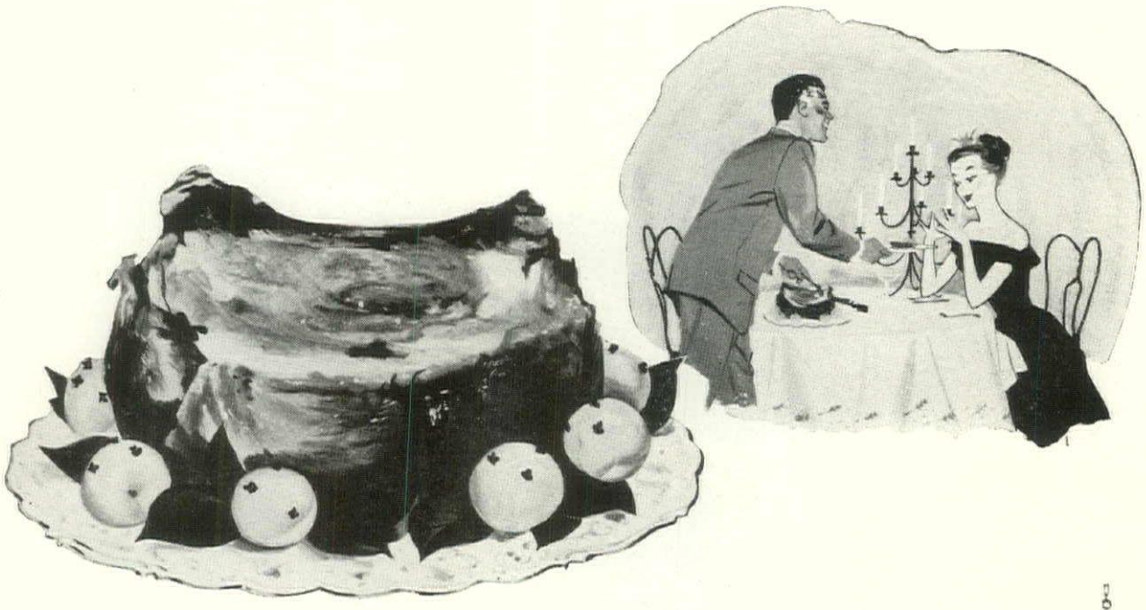

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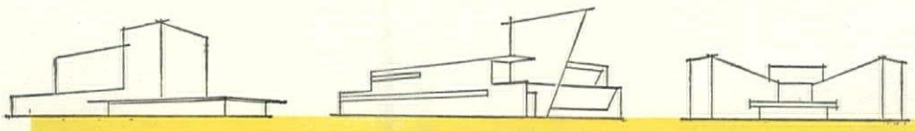

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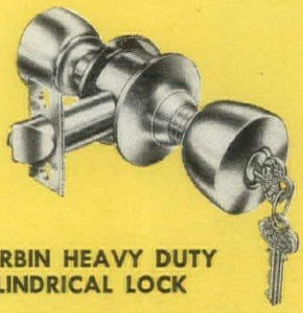
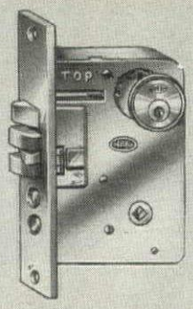
For more convenient service . . . for the time-saving, money-saving advantages of *one-source* hardware purchasing, *it pays to call your Corbin Architectural Hardware Consultant.* He is the man who can offer you a complete selection of locks for every purpose — in every price range.

In addition, Corbin offers a complete line of highest quality Builders' Hardware . . . a line that through honest value and honest service has become *the world's most widely used Builders' Hardware.*



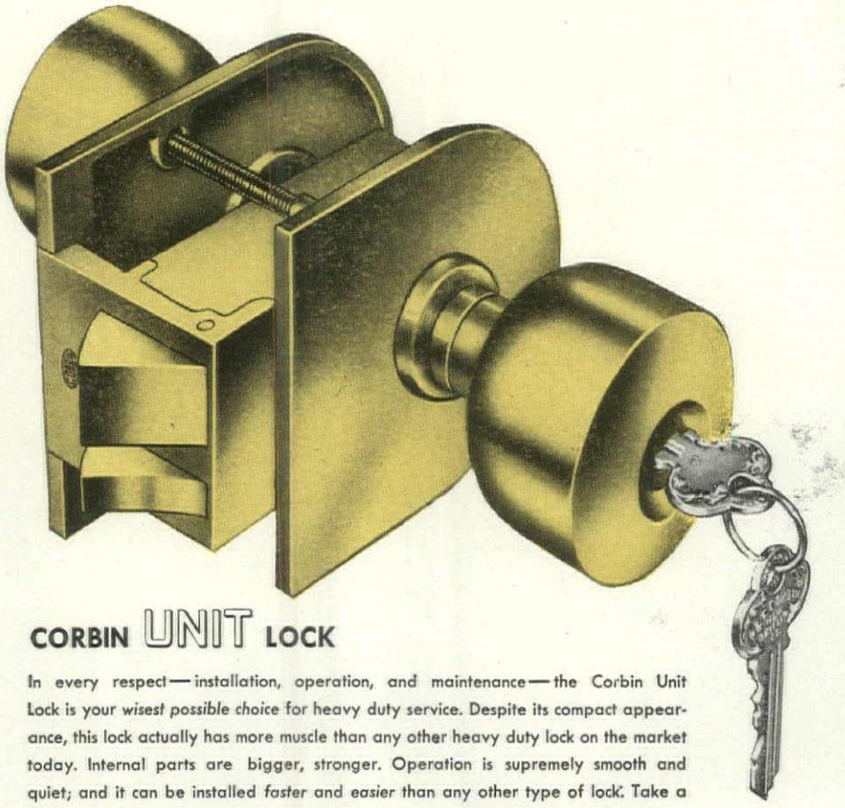
CORBIN HEAVY DUTY CYLINDRICAL LOCK

Offers all the features you expect on the finest cylindrical locks, plus three extra points of superiority: full ⅝" throw; extremely wide range of function; most flexible, master-keying system.



CORBIN MORTISE LOCKS

Made in a wide variety of functions and weights for every requirement. Can be master-keyed with other Corbin cylinder locks.



CORBIN UNIT LOCK

In every respect — installation, operation, and maintenance — the Corbin Unit Lock is your *wisest possible choice* for heavy duty service. Despite its compact appearance, this lock actually has more muscle than any other heavy duty lock on the market today. Internal parts are bigger, stronger. Operation is supremely smooth and quiet; and it can be installed *faster* and *easier* than any other type of lock. Take a long, searching look at the Corbin Unit Lock come next specification time. You'll be glad you did.

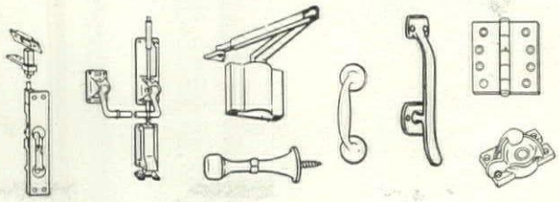
NEW!

CORBIN "*Defender*" STANDARD DUTY CYLINDRICAL LOCKS

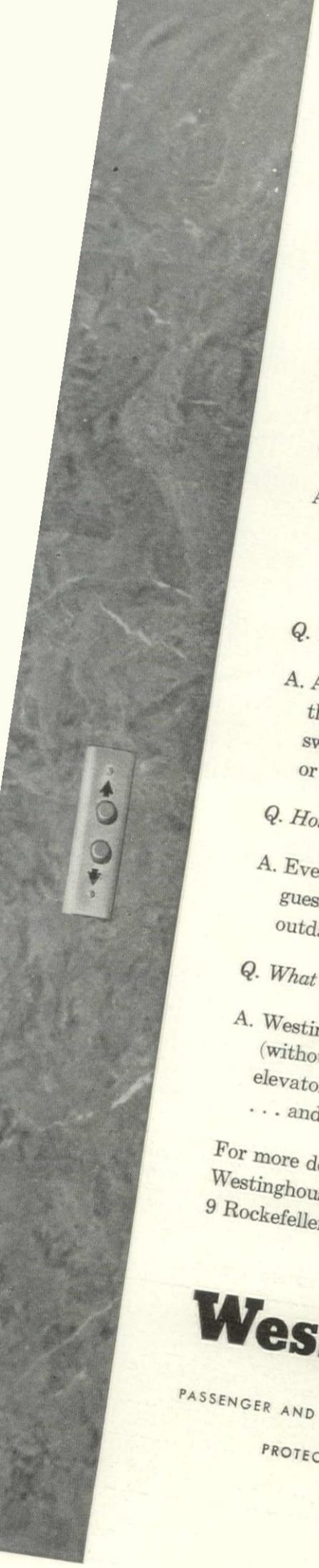
A major advancement in its class, the Corbin "Defender" has "Velvet-Glide" ball-bearing latch retractor action that is completely new to locks in the moderate price class. For any building where security and appearance must be combined with economy.

CORBIN
The World's most widely used BUILDERS' HARDWARE

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




4 TO 11
4 TO 10
N O
U P



Wanna' Take the Mystery Out of Automatic Elevators?

No fast pitch here.

These are straight forward answers to actual questions most frequently asked about Westinghouse Selectomatic Elevators with Automatic Traffic Pattern Control.

Q. What is Selectomatic?

A. Selectomatic is the Westinghouse supervisory elevator control that enables cars (with or without operators) to work as a team in meeting the varying demands of heavy traffic buildings, such as office buildings with their morning rush . . . coffee hour . . . lunch . . . the 5 o'clock scramble . . . and after-hours.

Q. Then what is Automatic Traffic Pattern Control?

A. Automatic Traffic Pattern Control is a new Westinghouse development that thinks for itself, adjusts and readjusts to the correct operating pattern . . . switches *with* the traffic flow automatically . . . operates 24 hours a day, with or without car attendants.

Q. How does Automatic Traffic Pattern Control work?

A. Everything is Automatic! With Automatic Traffic Pattern Control, guesswork, time-clock or starter dial settings are eliminated—it completely outdates all previous control systems.

Q. What advantages does Automatic Traffic Pattern Control offer?

A. Westinghouse Selectomatic with Automatic Traffic Pattern Control (without operators) turns starters into good-will ambassadors . . . assures elevator service of uncanny efficiency—swift, comfortable, utterly dependable . . . and cuts operating costs up to $7,000 per car a year.

For more details on this amazing new development, send for Booklet B-5269. Westinghouse Electric Corporation, Elevator Division, Department 2, 9 Rockefeller Plaza, New York City.

Westinghouse Elevators

PASSENGER AND FREIGHT ELEVATORS • ELECTRIC STAIRWAYS
PROTECTIVE MAINTENANCE AND SERVICE

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

J-98684

Space that changes shape in seconds

One minute this is a private office with a large waiting room or lounge . . . the next, a conference room "walled off" by a graceful "Modernfold" door. Making two rooms out of one is good business . . . and easy to do with "Modernfold."

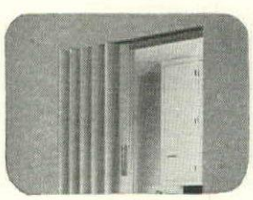
Sessions Engineering Company used "Modernfold" doors to separate and combine this space to meet the day-to-day needs of the Powers Regulator Company, Skokie, Illinois . . . quickly . . . economically . . . beautifully.

Your ideas come to life . . . for life with "MODERNFOLD" doors

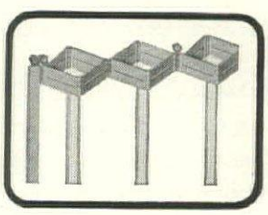
For every room division or door closure problem, there's a simple, economical, space-saving solution. That's "Modernfold," the original folding door.

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

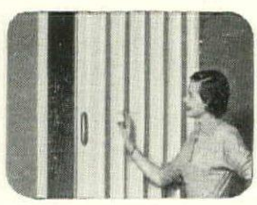
And because this line is *complete,* you're sure to save time and get exactly what you want when you specify better looking, easier operating, longer lasting "Modernfold" doors.



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



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



Better Background
Over 100,000 "Modernfold" doors now in operation—a backlog of space engineering experience that's your guarantee of satisfaction.

YOU CAN'T GET MORE IN A FOLDING DOOR

Sold and Serviced Nationally

NEW CASTLE PRODUCTS, NEW CASTLE, INDIANA

In Canada:
Modernfold Doors, 1315 Greene Avenue, Montreal

New Castle Products
P.O. Box 509
New Castle, Indiana

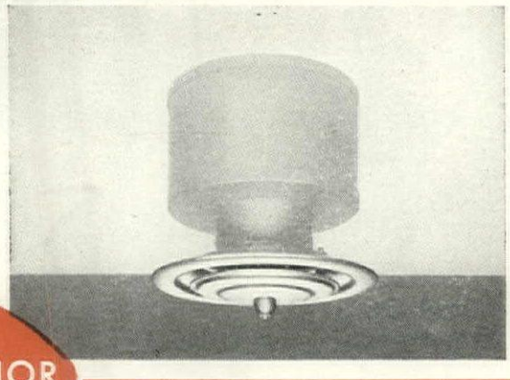
Please send full details on "Modernfold" doors.

Name .....

Address .....

City .....County .....State ....

AIR CONDITIONING SYSTEM for Hutzler's Towson has a total capacity of 500 tons of refrigeration, with an air supply of 100,000 cu. ft. per minute. Air enters the Kno-Draft Diffuser through a perforated cylinder that induces a pressure drop. A simple adjustment screw in the center plate of the diffuser readily positions the piston in the damper—controlling the number of perforations through which the air must pass, thereby regulating the volume discharged. System engineered by Henry Adams, Inc., Baltimore; installed by Carrier Corp., Philadelphia, Pa.



Department store air conditioning calls for extreme flexibility. Shifts in store layout are frequent and unpredictable, and the air diffusers, wherever located, must be readily adaptable to needed air changes. So—

For Hutzler's Towson, a branch store of Hutzler Brothers Co., Baltimore, a special Kno-Draft High Pressure Air Diffuser was developed. This permits the air to be distributed through small uniform-size pipelike ducts at high pressures and velocities, and diffused through conventional flush-mounted diffusers installed in a hung ceiling.

These special Kno-Draft High Pressure Air Diffusers permit air supply in any given area to be changed without unbalancing the air delivery of the other outlets. The air, in effect, is "metered." And this is done without creating any objectionable noise, and for a cost comparable to a conventional system of the same capacity.

For a more detailed description of this unique method of high pressure air distribution, simply mail us the coupon. Connor Engineering Corporation, Danbury, Connecticut.

CONNOR ENGINEERING CORPORATION

kno·draft®
adjustable air diffusers

see our catalog in ARCHITECTURAL FILE or write for copy

CONNOR ENGINEERING CORPORATION
Dept. D-83, Danbury, Connecticut

Please send, without obligation, your bulletin describing the NEW Kno-Draft Adjustable Air Diffuser for high pressure air distribution.

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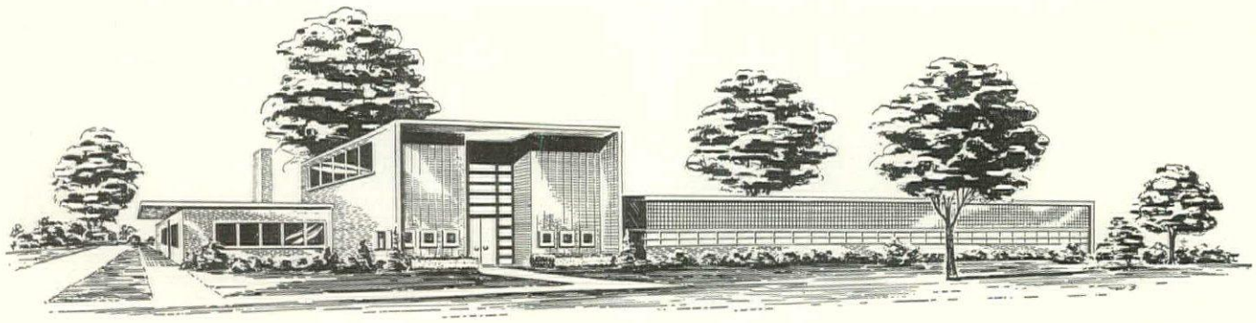
Position.....

Company.....

Address.....



Good news for light-conscious planners

First Toplite installation leads new trend in classroom design

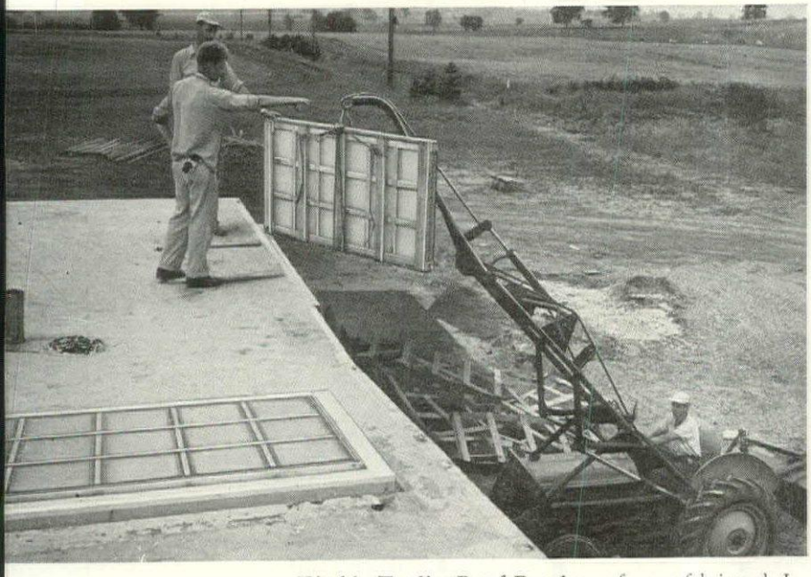
New school uses Kimble Toplite Roof Panels and Insulux Light-Directing Glass Block in side walls to give better, more evenly lit rooms.

There was a time when lighting experts worked to increase the amount of illumination in rooms because they felt the more light, the better the seeing conditions.

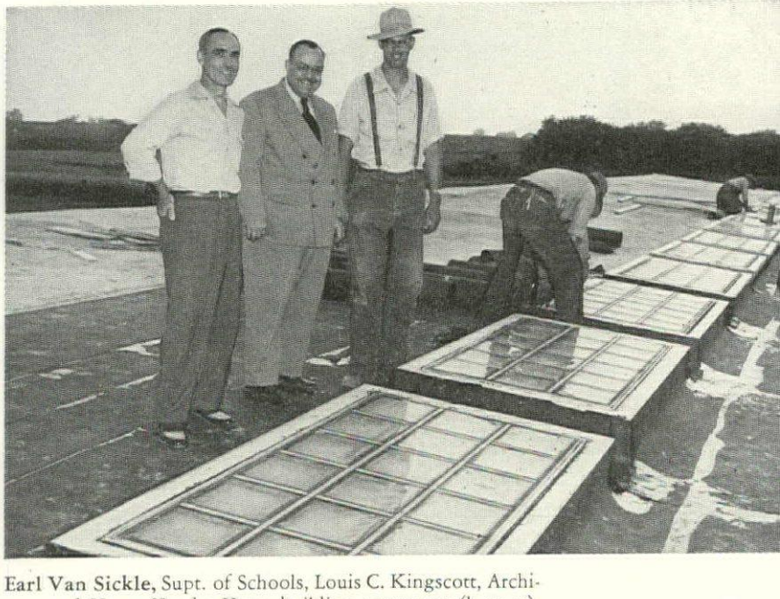
However, continuing research by Kimble Glass Company at its Daylighting Laboratories has proved it is *quality*, not *quantity*, of daylight that creates good seeing. Steady, even lighting without glare and harsh contrasts creates the ideal seeing environment.

With this new combination of Insulux fenestration and Kimble Toplite it is now possible to bring adequate daylight into any classroom regardless of depth, and to create illumination levels that fall within those requirements established by I.E.S. Size and arrangement of the Toplite panels are determined by room dimensions.

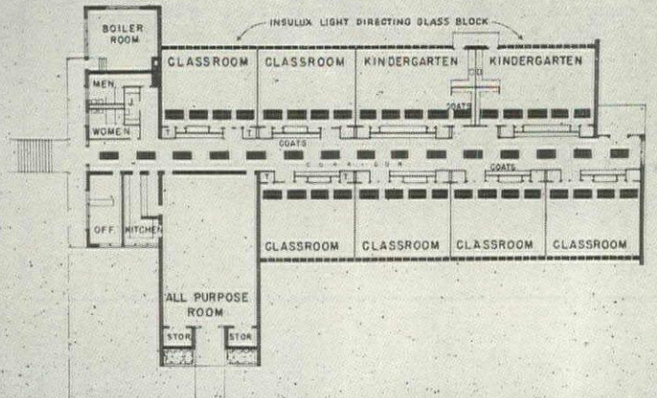
New Kimble Toplite Roof panels are designed to transmit low Autumn and Winter sun as well as cool northern light all day long . . . but . . . also repel the hot, glaring light of a mid-day summer sun. The result is soft daylight throughout the room all day.



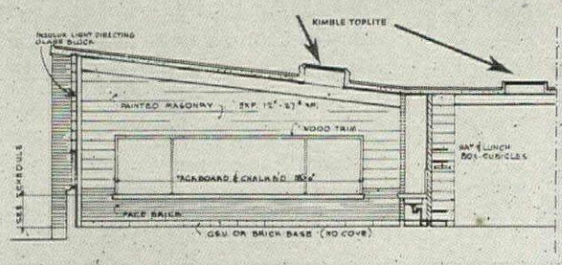
Kimble Toplite Roof Panels are factory-fabricated. In their sturdy, individual crates, they arrive on the site ready to install.



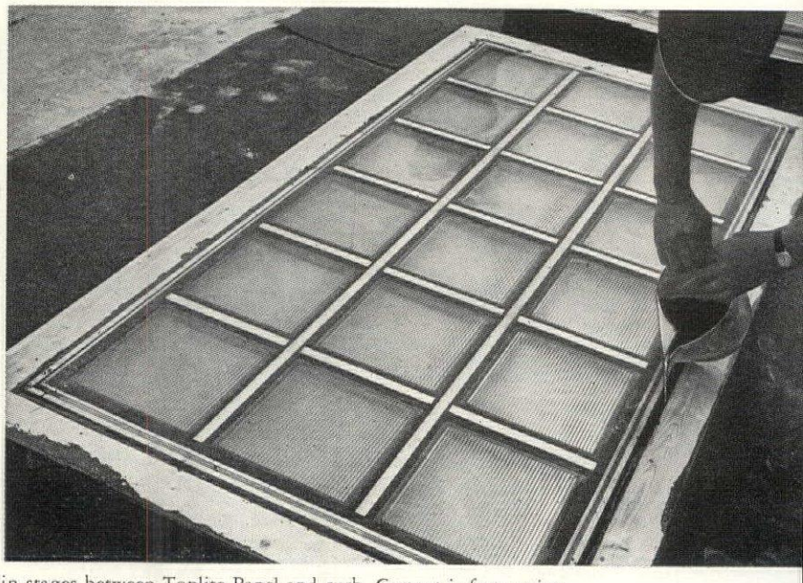
Earl Van Sickle, Supt. of Schools, Louis C. Kingscott, Architect, and Henry Vander Veen, building contractor (l. to r.), inspect the installation.



Black boxes (sketch left) indicate location of Toplite panels in corridor and classrooms. The high insulating value of Insulux Glass Block and Toplite Roof Panels reduces troublesome condensation in winter . . . reduces loads on heating and artificial illumination systems.



The new Middleville School, Middleville, Michigan, was designed by the architectural firm of Louis Kingscott & Associates, Kalamazoo, Michigan. It is the first school completed that uses a combination of Kimble Toplite Roof Panels and Insulux Light-Directing Glass Block panels. Here is a construction photograph of the roof of this new school. The Toplite Panels in left and right rows are in classroom areas. Center panels are overhead in corridor. (See sketches lower left).

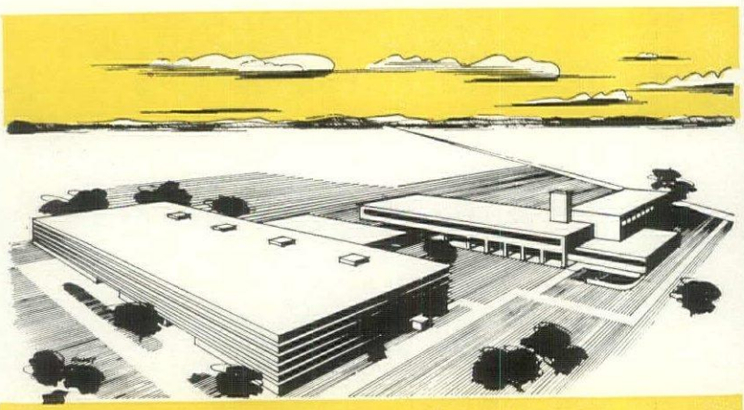


Factory fabrication means uniform quality and low job-installation cost. Panels are set on prepared curbs. Left, above, marine-spun oakum is forced into the expansion space between Toplite Panel and curb. Next, right above, Vault-Light cement is poured in stages between Toplite Panel and curb. Cement is fast-setting and serves as a seal. Below left, worker trowels on asphaltic compound in preparation for laying of fabric membrane flashing material. Note roofing material is brought to top of curb.

The complete story of this great new advance in efficient utilization of *free* daylight is available in the bulletin: "Kimble Toplite—a new system in daylighting." Send for your free copy today. Address Kimble Glass Company, Dept. MB-8, Box 1035, Toledo 1, Ohio.

KIMBLE GLASS COMPANY

Toledo 1, Ohio—*Subsidiary of Owens-Illinois Glass Company*



Modern Architectural Design Demands Newest Methods & Material *that's why architects specify*

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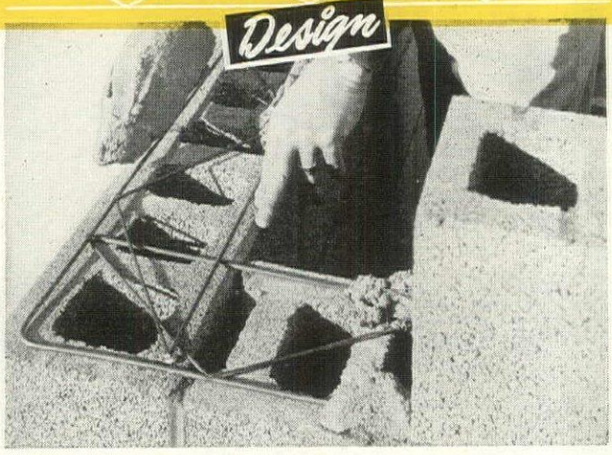
WITH TRUSSED *Design*



Now Butt-Weld Construction assures tightest Mortar Joints

Now, you can specify a custom-designed steel reinforcing that is butt-welded on a single plane. Butt-welded Dur-O-waL offers these important advantages: premium quality steel (strength 100,000 p.s.i.), trussed design for both vertical and horizontal reinforcing, electric welding for durability and ease of handling. Trussed designed Dur-O-waL is available in both lap and butt weld, readily available from strategically located manufacturing points. Make sure the beauty you design is protected by this time-tested backbone of steel. Write for detailed information.

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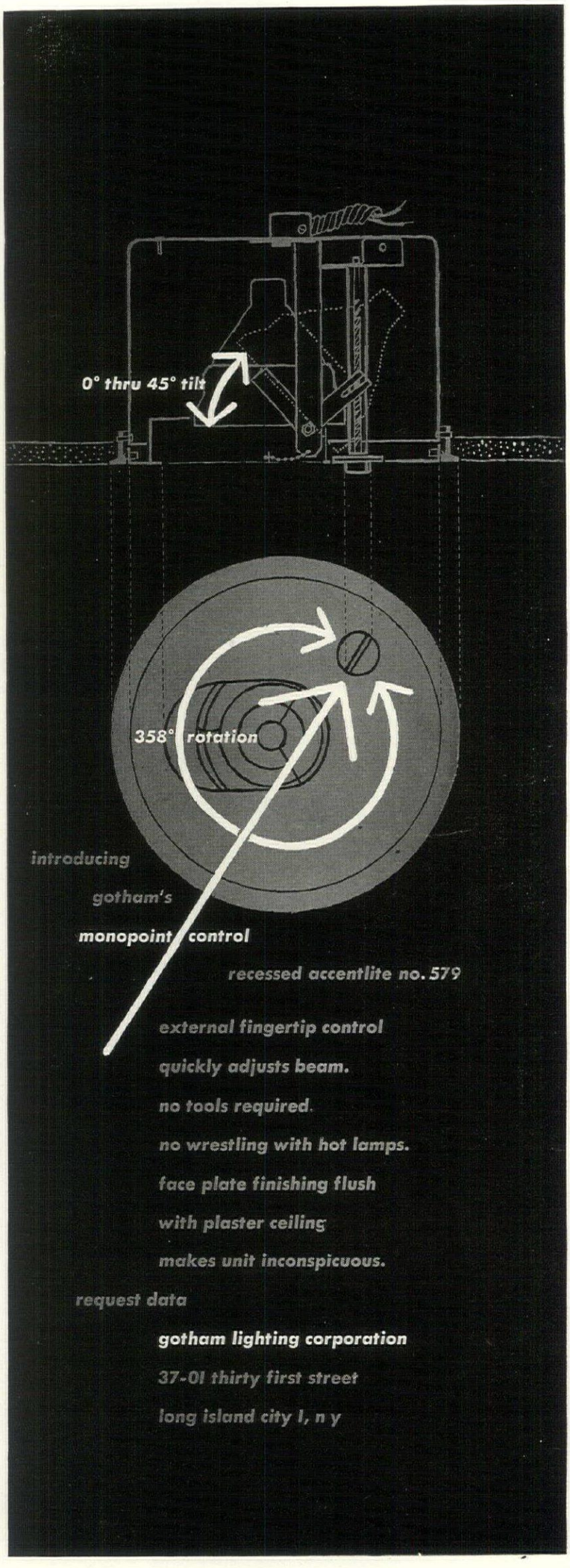


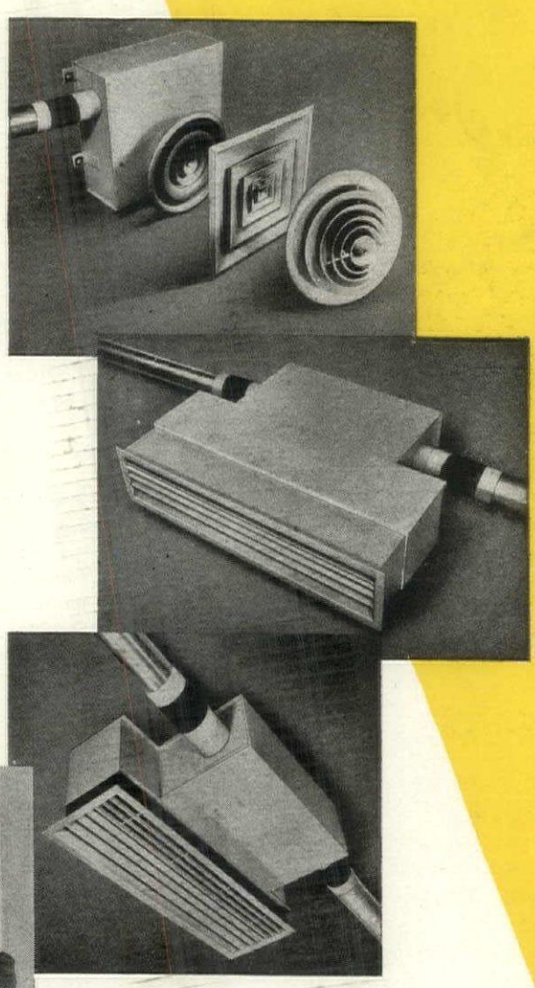
Pick your package

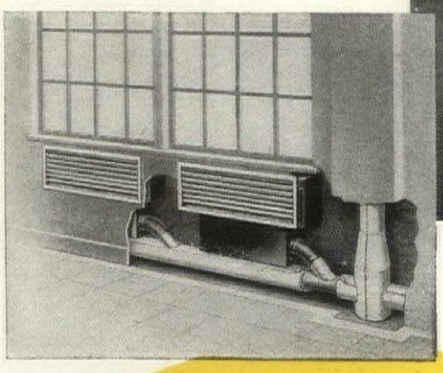
ANEMOSTAT HIGH VELOCITY ASPIRATING UNITS

Here's Anemostat's answer to the problem of high velocity air distribution.

Each of these easy-to-install packaged units consists of a combination static pressure and velocity reducing valve, plus sound attenuating chamber and one of several types of Anemostat draftless air diffusers. A wide choice to meet all your engineering and architectural requirements.

For top flight performance in high velocity air distribution systems, pick your package from Anemostat's line of tried and proven high velocity units. Write for High Velocity Manual No. 48 for details.





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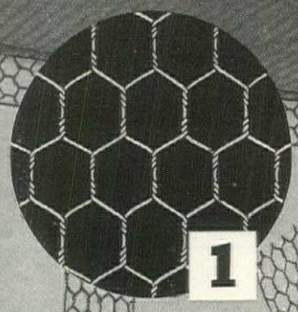

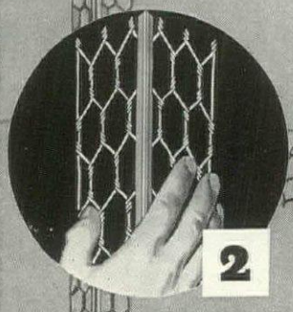

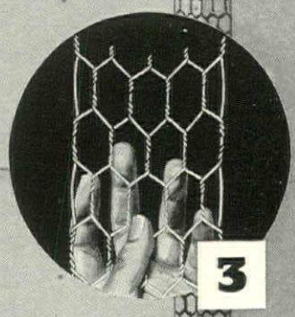

1. Notice how Keymesh is lapped and covers the entire ceiling surface. This assures smooth, long lasting plaster where it is most desired by builders, contractors, architects and owners.

2. Keybead protects the outside corners against nicks and cracks and makes an easy-to-follow plaster thickness guide. Outside plaster corners are more easily made with the help of these Keybead corner beads.

3. Keycorner on the inside corner, on joints above and below the window, at the corners of the window and at the entire ceiling-wall juncture provides the extra assurance against plaster cracks usually occurring at these areas.

to guard against plaster cracks

1 KEYMESH on ceilings

2 KEYBEAD on outside corners

3 KEYCORNER on inside corners, joints and ceiling-wall junctures

KEYMESH applied on the entire ceiling area of any room assures more crack-resistant plaster surfaces. Because stresses and strains are distributed more evenly, longer plaster life results. There is no limit to the interior design and construction possibilities when ceilings are completely Keymesh reinforced. Keymesh also provides strong plaster reinforcement, with desirable heat transfer properties, for ceiling radiant heat installations.

KEYCORNER applied at corners, joints and ceiling-wall junctures prevents future plaster crack troubles. Its preformed-for-corners, convenient width and easy-to-handle features provide fast, economical reinforcing exactly where needed. It snaps into corner shape by merely flexing the cut piece. And, Keycorner lies flat, too, for flat joint reinforcing.

KEYBEAD produces strong, economical "true" outside plaster corners. The open-mesh design of the Keybead wings permits plaster to flow through the steel wires and give a generous bond of plaster to lath . . . a solid plaster corner results. This thorough steel wire embedment combined with the true-formed bead makes strongly reinforced, more highly crack-resistant outside plaster corners.

THE COMBINED USE of Keymesh on the entire ceiling area with Keycorner at inside corners and joints and Keybead on outside corners, results in trouble-free, lasting plaster beauty . . . a valuable selling advantage to plasterers, lathers, builders, contractors and architects alike. It promotes greater owner satisfaction—more *quality* plaster jobs.

KEYMESH	KEYCORNER	KEYBEAD
3′ and 4′ widths, 150-ft. rolls, Galvanized	4″, 5″ and 6″ widths 150-ft. rolls, Galvanized	7′, 8′, 9′, 10′, 12′ lengths 2½″ wings, Galvanized. Packed in convenient cartons

Other gauges and sizes available

KEYSTONE STEEL & WIRE COMPANY

Peoria 7, Illinois

KEYMESH • KEYCORNER • KEYBEAD • KEYSTONE NAILS • KEYSTONE WELDED WIRE FABRIC • KEYSTONE TIE WIRE • KEYSTONE NON-CLIMBABLE FENCE • KEYSTONE ORNAMENTAL FENCE

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Belmont Hospital at *height* of fire

What fire? You mean you didn't read about it? How it started by spontaneous combustion—just as do many tragic hospital fires.

Only—and this is why you may not have seen the news item—the fire at McLean Hospital in Belmont, Mass., set off a Grinnell Automatic Sprinkler System. One sprinkler head extinguished the flames before the Fire Department arrived. Patients were unaware of the blaze and the damage was slight.

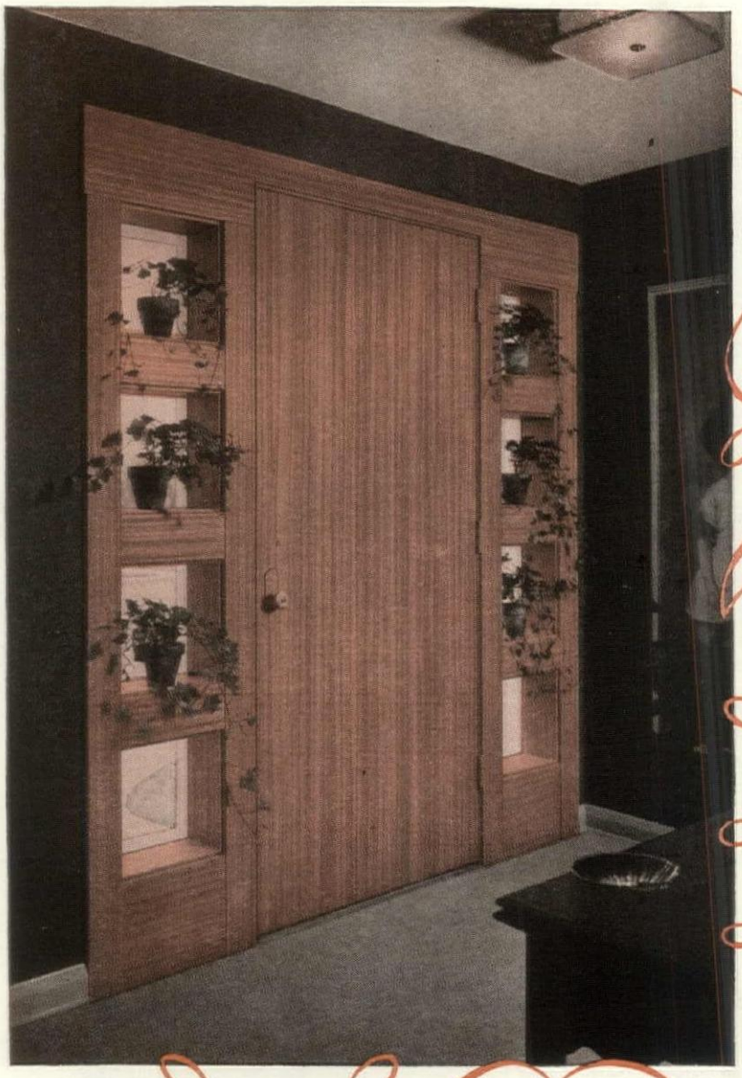
Grinnell Sprinklers stop fire at its source, whenever and wherever it may strike, night or day, *automatically*. 75 years experience proves this.

Consider the *cost* of fire . . . in terms of lives lost; property damaged; records ruined. Then ask yourself whether you can possibly afford NOT to fully protect your hospital, warehouse, plant, theater, hotel, or school, against this scourge.

The time to act on Grinnell Protection is *now* — before fire strikes — burning you out, or crippling your business. The irony of it is, if you have fire insurance, you're probably paying for Grinnell Protection anyway in higher premiums. *So why not have it!* Grinnell Company, Inc., Providence, Rhode Island.

GRINNELL
FIRE PROTECTION SYSTEMS

Manufacturing, Engineering and Installation of Automatic Sprinklers Since 1878



MENGEL

Mahogany

FLUSH DOORS

ADD $ $ $ TO HOUSE VALUES—

YET COST LESS THAN MANY DOMESTIC WOODS!

Genuine African Mahogany is recognized everywhere as the King of Woods — is far more *desirable* than ordinary woods.

Mengel Mahogany Flush Doors are built with faces of genuine African Mahogany, which *automatically* upgrades any building in which it is used.

Yet you can buy Mengel Flush Doors, or Standardor Flush Doors, with faces of genuine African Mahogany, for fewer dollars than you'd pay for comparable doors of almost any domestic wood!

The Mengel Company operates its own logging concession and mill in the best Mahogany section of Africa, and imports this King of Woods in tremendous volume. *You get the savings!*

Equally important, Mengel and Standardor Flush Doors are built *better,* to give *better service.* Compare specifications, either in Sweet's or at your dealer's. You'll be glad you investigated!

Door Department
THE MENGEL COMPANY
Louisville, Kentucky

Herman Nelson Leads . .

Mark of Leadership

...ligh School	Tappahannock, Virginia
...onal School	Appleton, Wisconsin
...Clay School	Markleysburg, Pa.
...rdan Junior High School	Sandy, Utah
...Horrall School	San Mateo, California
...ood Elementary School	Dayton, Ohio
...l Elementary School	Andover, Massachusetts
...ntary and High School	Charlestown,
...ley School	Bay City, M
...oro High School	Glassboro, New
...School Addition	Blooming Prairie, Mi
...rt Elementary School	Freeport,
...ark School	Little Rock, Ar
...chael's School	Crowley, Lo
...chool	Wellsburg, West V
...n Meeker School	Ame
...d School	Casper, Wyoming
...n Moore School	Bismarck, North Dakota
...unior Senior High School	Liberty, Pa.
...Lutheran School	Bay City, Michigan
...er Elementary School	Hanover, New Hampshire
...Street School	Hamden, Connecticut
...ce High School	Beatrice, Nebraska
...ngton School	Ponca City, Oklahoma
...9th St. School	Anderson, Indiana
...Park School	Cranston, Rhode Island
...ale School	Allendale, New Jersey
...n School Addition	Pierre, South Dakota
...t Heart School	Auburn, Mai
...eld Grade School	Clearfield, Ut
...e School	Albany, New Yo
...e Field Grade School	Sioux Falls, South Dak
...sity of Arkansas	Fayetteville, Arkan
...ey Elementary School	Berkeley, Misso
...am Lincoln School	Norfolk, Virgi
...n School	Berlin, Wiscons
...ite Grade School	Riverdale, North Dakot
...ysius High School	Nashua, New Hampshir
...ve. School	East Patterson, New Jersey
...lementary School	Bangor, Maine
...School	Salt Lake City, Utah
...ntary School 26	Buffalo, New York
...Elementary School	Rapid City, South Dakota
...r Elementary School	Brentwood, Missouri
...ount School	Arlington, Virginia
...ounty High School	Randolph, Utah
...z School	Allouez, Wisconsin
...High School Addition	Lewiston, Pa.
...wn Grade School	Akron, Ohio
...ward Elementary School	Lewisburg, Pa.
...School	Adrian, Minnesota
...School	Chicago, Illinois
...in High School	Stockton, California
...ington and Lee High School	Arlington, Virginia
...n Voc. High School	Tucson, Arizona
...amos School	Sante Fe, New Mexico
...rt Junior High School	Freeport, Illinois
...School Addition	Casper, Wyoming
...Street School	New Haven, Connecticut
...orne Elementary School	Hawthorne, Nevada
...School Addition	Lisbon Falls, Maine
...velt School	Salt Lake City, Utah
...auge School	Long Island, New York
...ale School	Anderson, Indiana
...School Addition	Custer, South Dakota
...s School	Affton, Missouri
...an Angel School	Cincinnati, Ohio
...an Boston High School	Arlington, Virginia
...s School	Janesville, Wisconsin
...n Township High School	Lehman, Pa.
...igh School	Akron, Ohio
...Township Jr. High School	Indianapolis, Indiana
...ton Public School	Appleton, Minnesota
...east Phoenix High School	Phoenix, Arizona
...ck School	Shiprock, New Mexico
...d Heart High School	Charleston, West Virginia
...d School	Casper, Wyoming
...Elementary School	Bismarck, North Dakota
...side School	Shelton, Connecticut
...ington Tiogue School	Conventry, Rhode Island
...nsack School	Hackensack, New Jersey
...School	Bethel, Maine
...High School Addition	Galva, Illinois
...east Junior High School	Salt Lake City, Utah
...artford Central School	New Hartford, New York
...Elementary School	Rapid City, South Dakota
...Watkins High School	Ladue, Missouri
...ry's School	Antigo, Wisconsin
...er Township Elementary School	Ligonier, Pa.
...n Elementary School	Austin, Minnesota
...School	Flemington, West Virginia
...ntary School	Webster City, Iowa
...High School	Upton, Wyoming
...tine School	Brigantine, New Jersey
...igh School	Ellsworth, Maine
...ay School	Salt Lake City, Utah
...od Colonie School	Albany City, New York
...Mann School	Sioux Falls, South Dakota
...n Elementary School	Nevada, Missouri
...High School	Austin, Indiana
...School	Columbus, Wisconsin
...unity High School	Adams County, Pa.
...igh School	Cleveland, Ohio
...chool	Grafton, West Virginia
...ial Park High School	Big Piney, Wyoming
...Lutheran Church School	Fargo, North Dakota
...an Street School	Laconia, New Hampshire
...sfield High School	Wethersfield, Connecticut
...ower Elementary School	Tulsa, Oklahoma
...o's School Addition	Pawtucket, Rhode Island
...School	Casper, Wyoming
...rade School, Borough of	Mt. Lakes, New Jersey
...ton Street School	Camden, Maine
...Senior High School	Dugway, Utah
...School	Newcastle, Wyoming
...de School	Sioux Falls, South Dakota
...ntary School	Pond, Missouri
...Military Academy	Culver, Indiana
...re Center School	Cheshire, Massachusetts
...a Community High School	Havana, Illinois
...ale Jct. Union High	Riverdale, California
...ntary School	Hamburg, New York
...ale Elementary School	Riverdale, Maryland
...ehannock School	York, Pa.
...da School	Amanda, Ohio
...uel Lutheran School	St. Charles, Missouri
...k Highlands School	Norfolk, Virginia
...K. Walls School	Pitman, New Jersey
...waska School	Madawaska, Maine
...ntary School	Warden, Washington
...ntary School	Detroit Lakes, Minnesota
...rth School	Heyworth, Illinois
...School	Berkley, Michigan
...School Addition	Charlton, Iowa
...outh High School	Dartmouth, Massachusetts
...ley Elementary School	Redwood City, California

...Lebanon School	Lebanon, Maine
West Willow	Lancaster, Pa.
Sharon School	Sharon, Ohio
Our Lady of Grace School	New York, New York
School Building Addition	Champlin, Minnesota
High School	Cedar Falls, Iowa
Bellevue School	Bellevue, Michigan

...Rich Montgomery High School	Rockville, Maryland
John Holst Elementary School	Sacramento, California
Brewster High School	Brewster, Washington
Berk Elementary School Addition	St. Louis, Missouri
Lindenwood Elementary School	Norfolk, Virginia
York New Salem Elementary School	York, Pa.
Windemere School	Akron, Ohio
...ntary School	Ramsey, New Jersey
...Grade School	Livermore Falls, Maine
...iond Central School	Hammond, New York
...t No. 89 Addition	Danube, Minnesota
...ld Elementary School	Cedar Rapids, Iowa
...nia Elementary School	Benzonia, Michigan

Burton School	Huntington Woods, Michigan
Memphis Elementary School	Memphis, Indiana
Public School	Tyler, Minensota
Dr. Howard School	Champaign, Illinois
Madison High School	Royal Oak, Michigan
Holy Cross School	Mt. Calvary, Wisconsin
Humboldt State College	Arcata, California
New Miami School	New Miami, Ohio
Elementary School	Springettsbury Township, Pa.
Elementary School	Green Lake, Wisconsin
Main Street School	Uhrichsville, Ohio
South Junior High School	Elgin, Illinois
Covert Elementary School	Covert, Michigan

...rth Canton Elementary School	North Canton, Ohio
...man School	Kirkwood, Missouri
...bar School	Richmond, Virginia
...ide High School	Hillside, New Jersey
...gton School Addition	North Windham, Maine
...ey School	Walla Walla, Washington
...gomery Township School	Ashland, Ohio
...h Education Center	Duluth, Minnesota
...entary School Buildings	Davenport, Iowa
...engill Elementary School	Berkley, Michigan
...mbus School	East Chicago, Indiana
...nis Elementary School	Dennis, Massachusetts
...cred Heart School	Hubbard Woods, Illinois
...ddletown High School	Middletown, Maryland
...t. Mathias School	Youngstown, Ohio
Our Lady of Lourdes School	Kansas City, Missouri
Franklin School	Richmond, Virginia
New Elementary School	York County, Pa.
Nankin School	Ashland City, Ohio
South School District No. 1	Monroe, Wisconsin
Greenwood Elementary School	Greenwood, New York
Old Town High School	Old Town, Maine
Twisp Elementary School	Twisp, Washington
Elementary School	Laurelton, New Jersey
St. Edward's School	Ashland, Ohio
Lakeside School	Duluth, Minnesota
Garfield School	Davenport, Iowa
Airport Community High School	Carleton, Michigan
St. Stanislaus School	East Chicago, Indiana
St. Brendon School	Dorchester, Massachusetts
Herbert Hoover School	Redwood City, California
St. Mary's Elementary School	Laurel, Maryland
George Mason School Addition	Richmond, Virginia
St. Francis College	Burlington, Wisconsin
Station Avenue School	Ashtabula, Ohio
Dover Area Elementary School	York, Pa.
Glens Falls High School	Glens Falls, New York
Trentwood School	Trentwood, Washington
School No. 1	Little Falls, New Jersey
New Student Union, University of Maine	Orono, Maine
Highland Junior High School	Barberton, Ohio
Elementary School Addition	Elbow Lake, Minnesota
Fremont School	Bay City, Michigan
Grade School	Des Moines, Iowa
St. Therese School	Dracut, Massachusetts
St. Benedict's School	Evansville, Indiana
Holy Redeemer School	Kensington, Maryland
Jefferson School	Jacksonville, Illinois
Pioneer Elementary School	Quincy, California
High School	DePere, Wisconsin
Washington Elementary School	Barberton, Ohio
New Virginia School	Rumford, Maine
Longfellow School	Spokane, Washington
Galway Central School	Galway, New York
Upper Darby High School	Upper Darby, Pa.
Minnetonka High School	Excelsior, Minnesota
West Independent Grade School	Des Moines, Iowa
No. 9 School	Battle Creek, Michigan
Vogel School	Evansville, Indiana
New Consolidated School	Gardner, Massachusetts
Northside Elementary School	Jacksonville, Illinois
Nicholas Orem High School	Hyattsville, Maryland
Lincoln School	Youngstown, Ohio
Porterville School	Porterville, California
Telford Borough School	Telford, Pa.
Courtview School	Dewitt, New York
Belleville High School	Belleville, Ohio
Public School Addition	Gary, Minnesota
Franklin Elementary School	Kankakee, Illinois
Coleman Community School	Coleman, Michigan
Central Elementary School	Berea, Ohio
Union Free High School	Eatle River, Wisconsin
Joseph Sears School	Kenilworth, Illinois
Colon School Addition	Colon, Michigan
Wooster Township School	Wooster, Ohio
St. Nicholas School	Freedom, Wisconsin
York Township High School	Elmhurst, Illinois
Bethel Tate School	Bethel, Ohio
Elementary School	Cortland, New York
Jackson Elementary School	Elmhurst, Illinois
St. Charles School	Boardman, Ohio
Sugarloaf Township School	Sybertsville, Pa.
Jackson Grade School	Green Bay, Wisconsin
Burns School Addition	Saco, Maine
Lincoln Elementary School	Willoughby, Ohio
Cook County High School	Grand Marais, Minnesota
Dike School Addition	Dike, Iowa
Forest Elementary School	Ypsilanti, Michigan
Brilliant High School	Brilliant, Ohio
Abington High School	Abington, Massachusetts
Forest Road School Addition	LaGrange Park, Illinois
St. Mary's Parochial School	St. Marys, Pa.
McGraw Cent. School Addition	McGraw, New York
Versailles High School	Versailles, Ohio
School Bui	
Goodman A	
Murlin Hei	
School Str	
Holy Cross	
Jefferson S	
Butler Tow	
Lanark Hig	
Groton Sch	
Elementary	

Orphir School District 235	Triumph, Illinois
Elementary School	Muir, Michigan
Nordheim School	Oshkosh, Wisconsin
St. Bernard School	Wabash, Indiana
Jeanne D'Arc School	Lowell, Massachusetts
St. Catherine's Parish School	Toledo, Ohio
Summitt School	Summitt, Illinois
New Lincoln School Building	Menominee, Michigan
St. Paul's Parish School	Valparaiso, Indiana
Rhinebeck Central School	Rhinebeck, New York
Minster Grade School	Minster, Ohio
Franklin School	Battle Creek, Michigan
High School	Roachdale, Indiana
John Price School	Manchester, Massachusetts
Little Flower School	Toledo, Ohio
Oxford School	Oxford, Wisconsin
St. Joseph Grade School	St. Joseph, Illinois
Millwood Willow School	Millwood, Washington
Colorado State Reform School	Buena Vista, Colorado
West Chester Township School	Porter, Indiana
New Boswell School Building	Menominee, Michigan
Home Elementary School	Stickney, Illinois
Milan School	Milan, Ohio
McKinley School	Battle Creek, Michigan
Mahomet Grade School	Mahomet, Illinois
Washington Township School	Centerville, Ohio
Collidge School	Maynard, Massachusetts
Webster School	Plymouth, Indiana
High School	Pardeeville, Wisconsin
McArthur High School	McArthur, Ohio
Central Grade School	Menominee, Michigan
Indiana Boys' School	Plainfield, Indiana
Public School Addition	Westbrook, Minnesota
Augustus Haley School	Stickney, Illinois
Clarksfield School	Clarksfield, Ohio
Mingue Elementary School	Battle Creek, Michigan
Palmyra High School	Palmyra, Indiana
Stevenson Elementary School	Masury, Ohio
Bluff View Grade School	St. Clair County, Illinois
Melvindale High School	Melvindale, Michigan
John J. Cory School	Denver, Colorado
Colerain Township School	Cincinnati, Ohio
Public School	Welcome, Minnesota
Elementary School	Noblesville, Indiana
Elementary School	Medfield, Massachusetts
St. Charles High School	St. Charles, Illinois
Wayzata High School	Wayzata, Minnesota
Grade School	Pelican Lake, Wisconsin
New Carlisle High School	New Carlisle, Indiana
Howard County High School	Ellicott City, Maryland
Grade School District 140	Marengo, Illinois
So. Elementary Grade School	Martins Ferry, Ohio
Sparta Grade School Addition	Sparta, Illinois
Indian Hill School	Cincinnati, Ohio
McBain School	McBain, Michigan
Pewaukee Elementary School	Pewaukee, Wisconsin
High School	Marengo, Illinois
Elementary School Addition	Warroad, Minnesota
Ohio State Training School	Marion, Ohio
Little Valley School	Little Valley, New York
Jackson Grade School	Esterville, Iowa
Marquette Township School	Marquette, Michigan
Maple Heights High School	Maple Heights, Ohio
St. John the Baptist School	Plymouth, Wisconsin
Roosevelt School	South Holland, Illinois
Surrattsville School	Clinton, Maryland
Longfellow School	Pasco, Washington
School Building	Le Roy, New York
J. Porter Junior High	Cincinnati, Ohio
Ladywood High School	Livonia, Michigan
Jefferson Grade and High School	Jefferson, Iowa
Merrimac School	Merrimac, Massachusetts
New Carpenter School	Mansfield, Ohio
Bedford School	Lambertville, Michigan
St. Mary's School	Port Washington, Wisconsin
Brown School	Natick, Massachusetts
Union Township School	Bargersville, Indiana
Independent School District 5	Verndale, Minnesota
Mary Dill Elementary School	Cincinnati, Ohio
Sharp Corners School	Skokie, Illinois
Lamber School Addition	Keego Harbor, Michigan
New Middletown School	Mahoning City, Ohio
Marion Junior High School	Marion, Illinois
Dwight School	Needham, Massachusetts
Nativity Church School	Cincinnati, Ohio
Sharp Elementary School	Jackson, Michigan
Salem School	Salem, Wisconsin
St. Ann's School	New Bedford, Massachusetts
Fairview School	Skokie, Illinois
McCulloch Elementary School	Jackson, Michigan
Madison High School	Madison Township, Ohio
Sauk City Grade School	Sauk City, Wisconsin
Edsel Ford School	Inkster, Michigan
Keystone Consolidated School	Keystone, Iowa

HERE'S PROOF OF LEADERSHIP . . . . . .

Mechanical Engineering Bldg.	State College, Pa.
Dayton Street School	Newark, New Jersey
Fairfield Township School	Butler County, Ohio
School Addition	Halstad, Minnesota
Lansing Elementary School	Lansing, Illinois
Concord Comm. Agric. School	Concord, Michigan
St. Patrick's School	Dubuque, Iowa

Quincy Elementary School	Quincy, Washington
Sacred Heart High School	Pittsburgh, Pa.
Pierce Elementary School	Roseville, Michigan
Columbia School	Champaign, Illinois
Alturas Elementary School	Alturas, California
Edison Elementary School	Pullman, Washington
New London Elementary School	New London, Ohio

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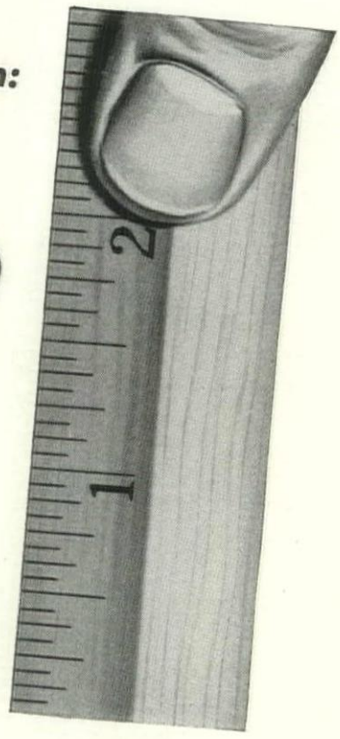
mpshire High School	Hampshire, Illinois
abrook Elementary School	Seabrook, Maryland
et Harte School	San Francisco, California
pe Lutheran School	St. Louis, Missouri
nover Industrial School	Hanover, Virginia
aig School	Wauwatosa, Wisconsin
rnpike School	Mildred, Pa.
thel High School	Bothel, Washington
Dominic School	Shaker Heights, Ohio
Jude Church and School	New York, New York
sbon Falls High School	Lisbon Falls, Maine
Cou School	Trenton, New Jersey
Mary's School	Greenwood, Wisconsin
St. Casimir's Academy	Chicago, Illinois
Jessie Loomis School	Saginaw, Michigan
North Olmsted High School	North Olmsted, Ohio
St. Matthias School	Milwaukee, Wisconsin
Elementary School Addition	Rutherford County, Pa.
Hemmeter School	Saginaw, Michigan
Elementary School	Chicago, Illinois
Renton Senior High School	Renton, Washington
Lawhead Elementary School	Champaign, Illinois
Oak Ridge School Addition	Royal Oak, Michigan
Catawsa School	Catawsa, Ohio
Elementary School	Reardon, Washington
Wayne Central School District 1	Ontario, New York
	Morrow, Ohio
	Ossineke, Michigan
	Port Leyden, New York
	Swanton, Ohio
	Frederick, Maryland
	Algonquin, Illinois
chool	Montgomery, Ohio
	Littleton, Massachusetts
	Whiteland, Indiana
	Onsted, Michigan
	Toledo, Ohio
on	Athens, Michigan
Hagerstown High School	Hagerstown, Indiana
Northwood Elementary School	Baltimore, Maryland
Washington High School	Two Rivers, Wisconsin
St. Joseph Hill Academy	Staten Island, New York
School of the Assumption	Washington, D. C.
St. Paul Union High School	St. Paul, Oregon
Tipton School	Tipton, Iowa
Wyoming Park High School	Grand Rapids, Michigan
Gettysburg High School	Darke City, Ohio
Thomas Jefferson Elementary School	Moline, Illinois
St. John's Evangelical School	Red Wing, Minnesota
Pittman Square School	Gary, Indiana
Leedom Elementary School	Chester Pike, Pa.
Richardson Elementary School	Washington, D. C.
Waldport Grade School	Waldport, Oregon
Oakdale Christian School	Grand Rapids, Michigan
Georgetown High School	Georgetown, Indiana
Grade School	Pengilly, Minnesota
Lucy Diggs Slowe School	Washington, D. C.
Edison School	Dayton, Ohio
Community High School	Morris, Illinois
Spencerport Central School 1	Spencerport, New York
Walworth Public School	Walworth, Wisconsin
Junior High School	North Mankato, Minnesota
High School Addition	Dover, Pa.
Brandeis University	Waltham, Massachusetts
Yachats Grade School	Yachats, Oregon
Mead School Addition	Mead, Washington
Central Junior High School	Rock Island, Illinois
Jeromesville School	Jeromesville, Ohio
Browne Junior High School	Washington, D. C.
Alexander Graham Bell School	Tulsa, Oklahoma
Huff School Addition	Grand Rapids, Michigan
Leavenworth	Leavenworth, Washington
Morrison Community High School	Morrison, Illinois
Fairview Elementary School	Dayton, Ohio
Anna Burdick School	Washington, D. C.
So. Onondaga Central School	So. Onondaga, New York
Delton Elementary School	Delton, Michigan
Waterford School	Waterford, Wisconsin
Central Elementary School	Shelby, Ohio
St. Mary's School	Worthington, Minnesota
Pennsylvania College for Women	Pittsburgh, Pa.
Boyleston Elementary School	Boyleston, Illinois
St. Joseph School	Haverhill, Massachusetts
Lincoln Ave. School	Orchard Park, New York
St. Margaret Mary	South Euclid, Ohio
Little Flower School	Great Mills, Maryland
Montrose Elementary School	O'Hara Township, Pa.
St. Michael's School	Richville, Michigan
Tioga School	Bensenville, Illinois
St. Patrick's School	Pasco, Washington
Oak Street School	New Boston, Ohio
Oakmont Elementary School	Oakmont, Pa.
Shear Elementary School	Redford, Michigan
St. Simeon's Parish School	Bellwood, Illinois
Emerson School	Springfield, Ohio
Akron School	Akron, Michigan
Panama Central School	Panama, New York
Hazelwood School	Neward, Ohio
Woodrow Wilson School	Port Huron, Michigan
Wolf Lake High School	Wolf Lake, Illinois
Lynnewood Elementary School	Montgomery City, Pa.
Grade School	Neosho, Wisconsin
Kenwood School, Clark County	Springfield, Ohio
Wever School	Pontiac, Michigan
High School Addition	Batavia, Illinois
Mt. Healthy High School	Mt. Healthy, Ohio
Hingham School Addition	Hingham, Massachusetts
Jordan Grade School	Monroeville, Pa.
Dalrymple	Albion, Michigan
Regina High School	South Euclid, Ohio
Grant N. Britten School	West Chester, Illinois
Willis and LeBarron Schools	Pontiac, Michigan
Glenmont Elementary School	Glenmont, Maryland
St. Cecelia's School	Bartelso, Illinois
Newport Elementary School	Newport, Washington
North Side Public School	Albion, Michigan
Waverly Community High School	Waverly, Illinois
Edgefield Elementary School	Stark County, Ohio
Andrews School	Holliston, Massachusetts
Penfield Central School No. 1	Penfield, New York
Lebaron School Addition	Pontiac, Michigan
Plain Center School	Stark City, Ohio
St. Michael's School	Pinconning, Michigan
Avon Community School	Avon, Illinois
Assumption School	Lawrence, Massachusetts
Mt. Carmel Elementary School	Mt. Carmel, Ohio
Wauconda Township High School	Wauconda, Illinois
Stow High School	Stow, Ohio
West Aurora High School	Aurora, Illinois
Oxford School	Oxford, Michigan
Holmes School Addition	Warrenville, Illinois
Lincoln School	Winona, Minnesota
Woodbury School	Marshalltown, Iowa
Shumway School	Shumway, Illinois
Lincoln Elementary School	Buena Vista, Maryland
Lawn Ave. School	Cleveland, Ohio
Middlesex Valley Central School	Rushville, New York
Burton High School	Huntington Woods, Michigan
Public School No. 56	Indianapolis, Indiana
Friends Academy	North Dartmouth, Massachusetts
Stenardson Strasberg School	Shelby County, Illinois
St. Anthony's School	Lorain, Ohio
Home Economics Building	Burlington, Vermont
Student Center	Arlington, Texas
Holy Rosary Addition	Rochester, New Hampshire
Strawberry Hill School	East Norwalk, Connecticut
Maplewood Elementary School	Cleveland, Ohio
Scott School	Melrose Park, Illinois
Camden Elementary School	Camden, Tennessee
South School	Peabody, Massachusetts
Homer Community School	Homer, Michigan
Brunswick Elementary School	Brunswick, Maryland
High School	Sheffield, Illinois
Lakeview Elementary School	Lorain, Ohio
Littleton School	Littleton, New Hampshire
D. C. Everest High School	Schofield, Wisconsin
Dabney Hall	Knoxville, Tennessee
Newton High School	Newton, Iowa
School and Office Building	Climax, Colorado
Public School No. 45	Indianapolis, Indiana
Egremont Ave. School	Pittsfield, Massachusetts
Columbia Township School	Lorain City, Ohio
Bladensburg High School	Bladensburg, Maryland
Pathology Building	Memphis, Tennessee
Blackstone School	Mendota, Illinois
Utley School	Flint, Michigan
Hillsboro Elementary School	Hillsboro, New Hampshire
Lincoln Elementary School	Lisbon, Ohio
Grade and High School Addition	Serena, Illinois
Shawano High School	Shawano, Wisconsin
Rye Elementary School	Rye, New York
Wyngate Elementary School	Bethesda, Maryland
Mundell School	Hobart, Indiana
Paseo School	Colorado Springs, Colorado
Lexington School	Lexington, Ohio
Elementary School Addition	Midlothian, Illinois
Dalewood 11th District School	Nashville, Tennessee
Wollaston School	Quincy, Massachusetts
St. Paul's School	Concord, New Hampshire
St. Thomas More School	Cleveland, Ohio
Hayes Township School	Harrison, Michigan
Woodmont School Addition	Nashville, Tennessee
Taconite Grade School	Taconite, Minnesota
Siren Consolidated School	Siren, Wisconsin
Gym and Field House	Grand Forks, North Dakota
Shurtleff School	Revere, Massachusetts
St. Christopher's School	Columbus, Ohio
School for Ursuline Sisters	Bethesda, Maryland
Henry Evans High School	Hobart, Indiana
Scanlon School	Scanlon, Minnesota
Monroe Township School	Laurel, Ohio
Elementary School	Medical Lake, Washington
High School	Osage, Iowa
Wayland Central High School	Wayland, New York
Hollywood Elementary School	Berwyn, Maryland
St. Patrick's School	Sparta, Wisconsin
Sevierville High School	Sevierville, Tennessee
Arlington High School	Arlington, Oregon
Sacred Heart Addition	Grand Forks, North Dakota
Painesville Nursery School	Lake County, Ohio
St. Luke Parish School	St. Paul, Minnesota
St. Christopher's School	Midlothian, Illinois
Central Lutheran School	St. Paul, Minnesota
Mason Grade School	Beaverton, Oregon
St. Joseph's Parochial	Rawlins, Wyoming
Grace Lutheran Church School	Fargo, North Dakota
Miller Consolidated School	Seneca, Illinois
Concord Elementary School	Concord Township, Ohio
St. Mary's School	Ottumwa, Iowa
Merrill Junior High School	Denver, Colorado
Lincoln School Addition	Highland, Indiana
St. Paul's School	Grosse Pointe Farms, Michigan
Wheeling Union Grade School	Wheeling, West Virginia
Field House	Laramie, Wyoming
Corvallis Public Schools	Corvallis, Oregon
Milledgeville High School	Milledgeville, Illinois
Assumption Church School	St. Paul, Minnesota
Webster School	Red Oak, Iowa
Harrison School	Colorado Springs, Colorado
Grandville Elementary School	Grandville, Michigan
Queensbury High Addition	Warren City, New York
Edison School	Rock Island, Illinois
Kingsville School	Kingsville Township, Ohio
Eliot School	St. Louis Park, Minnesota
Stonewall Jackson High	Charleston, West Virginia
St. Francis School	Roy, Oregon
North School Annex	Seekonk, Massachusetts
Community Consolidated School	Minooka, Illinois
Coventry High School	Coventry, Ohio
Terrell Jr. High School	Washington, D. C.
Lyncourt School Addition	Syracuse, New York
School Addition	Springfield, Minnesota
Fifth St. School	Charleroi, Pa.
Gym and Shop Building	Spencer, Iowa
Grant Junior High School	Denver, Colorado
Elementary School	Sharon, Massachusetts
Alexander Hamilton Grade School	Moline, Illinois
Johnstown School	Johnstown, Ohio
Springarn High School	Washington, D. C.
West Side Grade School	Springfield, Oregon
Edward L. Brown School	Denver, Colorado
Purdue University	Hammond, Indiana
Clark School	Swampscott, Massachusetts
Solon High School	Cuyahoga County, Ohio
Washington Elementary School	Rochester, Minnesota
Elementary School	Sumner, Iowa
Tess Corners Grade School	Tess Corners, Wisconsin
St. Michael's School	Swansea, Massachusetts
Maizeland School	Colorado Springs, Colorado
Junior High School	Oconomowoc, Wisconsin
Nimisila School	Nimisila, Ohio
Brickell School	Defiance,
Chinook School Building	Chinook, Mon
Christ the King School	Wauwatosa, Wisc
Ft. Hall Grade School	Ft. Hall, I
Westport High School	Westport, Massachu
Pargny Elementary School	Farrel
High School	New London, Minn
Defiance High School	Defiance,
Red Bud Community High School	Red Bud, Il
Glasgow Grade School	Glasgow, Mon
Groveland School	Blackfoot, I
Shirley Hills Elementary School	Mound, Minn
Huron Junior High School	Huron,
Glasgow High School	Glasgow, Mon
St. George's Parish School	New Baden, Il
Booker T. Washington School	Baltimore, Mary
Loveland High School	Hamilton County,
Freeland School	Freeland, Mich
East Side Grade School	Moscow, I
Mainsville Elementary School	Franklin City
South Side Elementary School	Moorhead, Minn
Komarak School	North Riverside, Il
Deer Park School	Deer Park,
West Side Grade School	Pittsburg, Ka
Alameda Junior High School	Pocatello, I
C. M. Russell School	Great Falls, Mon
McKinley School	Wauwatosa, Wisc
Onarga High School Addition	Onarga, Il
Armistead Gardens School	Baltimore, Mary
Gettysburg High School	Gettysburg
East Elementary School	Dover,
Franklin School Addition	Missoula, Mon
Elementary School Building	Fairchild, Washir
St. Francis of Assisi School	Flint, Mich
Accokeek Elementary School	Accokeek, Mary
Eugene Field School	Park Ridge, Il
Sharp Elementary School	Moorhead, Minn
South Elementary School	Dover,
College High School	Pittsburg, Ka
Hawthorne School Addition	Missoula, Mon
Maine Township High School	Park Ridge, Il
Corthell School	Whitman, Massachu
Junior High School	East Palestine,
Dayton Elementary School	Dayton, Washir
St. Kevin's School	Minneapolis, Minn
Fern Wilson School	Pekin, Il
Eaton Elementary School	Eaton,
Jefferson School Addition	Missoula, Mon
Central High School	Louisville, Kent
Kearsley Agricultural School	Flint, Mich
Elementary School	Kansas City, Ka
Hines School Addition	Peoria, Il
St. John Lutheran School	Garfield Heights,
High School Addition	West Bend, Wisc
Flat Rock High School	Flat Rock, Mich
Resinger School	Homer City
Loucks School Addition	Peoria, Il
Eaton High School	Eaton,
MacArthur Elementary	Louisville, Kent
St. Helena School	Minneapolis, Minn
Colfax Elementary School	Colfax, Washir
Washington Carver School	Ferndale, Mich
Polo Grade School	Polo, Il
Nannie Lee Frayser Addition	Louisville, Kent
Euclid Elementary School	Euclid,
St. Patrick's School	Whitinsville, Massachu
Grade School	Whitewater, Wisc
Grade School	Port Byron, Il
New High School	Great Bend, Ka
Grade School Addition	Milaca, Minn
Elementary School	Hometown
Frankfort Village School	Frankfort,
Logan School	Princeton, Il
Chewelah High School	Chewelah, Washir
Homestead School	Weymouth, Massachu
Prophetstown Grade School	Prophetstown, Il
Marshall Grade School	Marshall, Minn
Elementary School	Ephrata, Washir
St. Patrick's School	Escanaba, Mich
St. Mary's Academy	Dodge City, Ka
Hickory Grove School	Waukesha City, Wisc
Elementary School	Fairborn,
Eau Clair School	Eau Clair, Mich
Robert E. Lee School	Owensboro, Kent
Junior High School	Rantoul, Il
McDaniel Elementary School	Bonner Springs, Ka
Holy Maternity Parish School	Dowagiac, Mich
Hyndman Londonderry School	Hyndman
Upson School	Euclid,
St. Mary's School	LeCenter, Minn
Rantoul Elementary School	Rantoul, Il
St. Robert Sellarmine	Euclid,
Parochial Grade School	Little Falls, Minn
St. Theresa School	South Gate, Kent
St. Suzanne School	Detroit, Mich
Iona School	Iona
Carson Elementary School	Carson, Washir
St. Thomas Seminary	Louisville, Kent
Administration Bldg. Addition	Ponca City, Oklah
Liberty Drive Elementary	High Point, North Car
Mountain Home Grade School	Mountain Home, I
New Elementary School No. 18	Snyder, New
Horace Mann School	Mt. Vernon, Il
Weaver School	Dayton,
Medical Building Addition	Chapel Hill, North Car
Elementary School	Billings, Mon
Grandview School	Grandview, Washir
Holy Trinity High School	New Ulm, Minn
Harborcreek High School	Erie County
Shawnee Elementary School	Huron,
Lincoln Park School	Rockford, Il
Jefferson School	Jefferson,
Austin High School	Detroit, Mich
North Side Grade School	Coeur D'Alene, I
South West LaGrange Elem. School	LaGrange, Geo
Adelaide Davis School	Washington,
Mapheim School 83	Melrose Park, Il
School Addition	Coon Rapids, Minn
Coe College Chapel	Cedar Rapids,
	Greenbush, Minn
	LaGrange, Il
School	Vandalia,
	Gardner, Massachu
ol	Ft. Wayne, Ind
	Greenfield, Wisco
ool	Vandalia,
	Lanark, Il
	Groton, Massachu
	Skowhegan, M
	Bay City, Mich
	Culver, Ind
	Waukesha County, Wisc
	Davenport,
	Wauwatosa, Wisc
	Pittsburgh

. . . NOW MORE THAN 125,000 HERMAN NELSON UNIT VENTILATOR INSTALLATIONS

nset Intermediate School	Coalinga, California
arr School	Royal Oak, Michigan
theran High School	Chicago, Illinois
ly Cross School and Convent	Mishicot, Wisconsin
rrysville Elementary School	Ross Township, Pa.
rrollton School	Carrollton, Ohio
ne Fc State Teachers College	Oneonta, New York
Webster School	White Bear Lake, Minnesota
Villa Park Junior High School	Villa Park, Illinois
Big Walnut School	Sunbury, Ohio
Clinton Elementary School	Oak Park, Michigan
Lincoln Elementary School	Lyons, Illinois
Wheaton Elementary School	Wheaton, Minnesota
Norris Foundation School	Mukwanago, Wisconsin
Johnsville School	New Lebanon, Ohio
Bunker Hill School	Bunker Hill, Illinois
Junior High School	Romulus, Michigan
St. Margaret Mary School	Neenah, Wisconsin
Western Pa. School for Blind	Pittsburgh, Pa.
St. Stanislaus School	Bay City, Mich
Culver Grade School	Culver, Ind
Hillcrest School	Waukesha County, Wisc
Hayes School	Davenport,
Underwood School	Wauwatosa, Wisc
St. Bedes R. C. School	Pittsburgh

When specifying roof insulation:

not How Thick?



but How Thermal?*

*Thermally efficient

Obtaining roof insulation results begins with "What is the thermal value of the insulation?" To answer this safely and consistently, specify Fiberglas† Roof Insulation. By all standards of comparison, Fiberglas Roof Insulation gives you dependable, proved-in-use performance that is far superior to most materials. It is made from one of the most efficient insulators known, fibers of glass.

You get all these other advantages, too, when you specify Fiberglas Roof Insulation. Ease and speed of handling to cut labor costs. Light weight to reduce structural steel. And fibers of glass will not rot. In all, highest quality performance at comparative low cost.

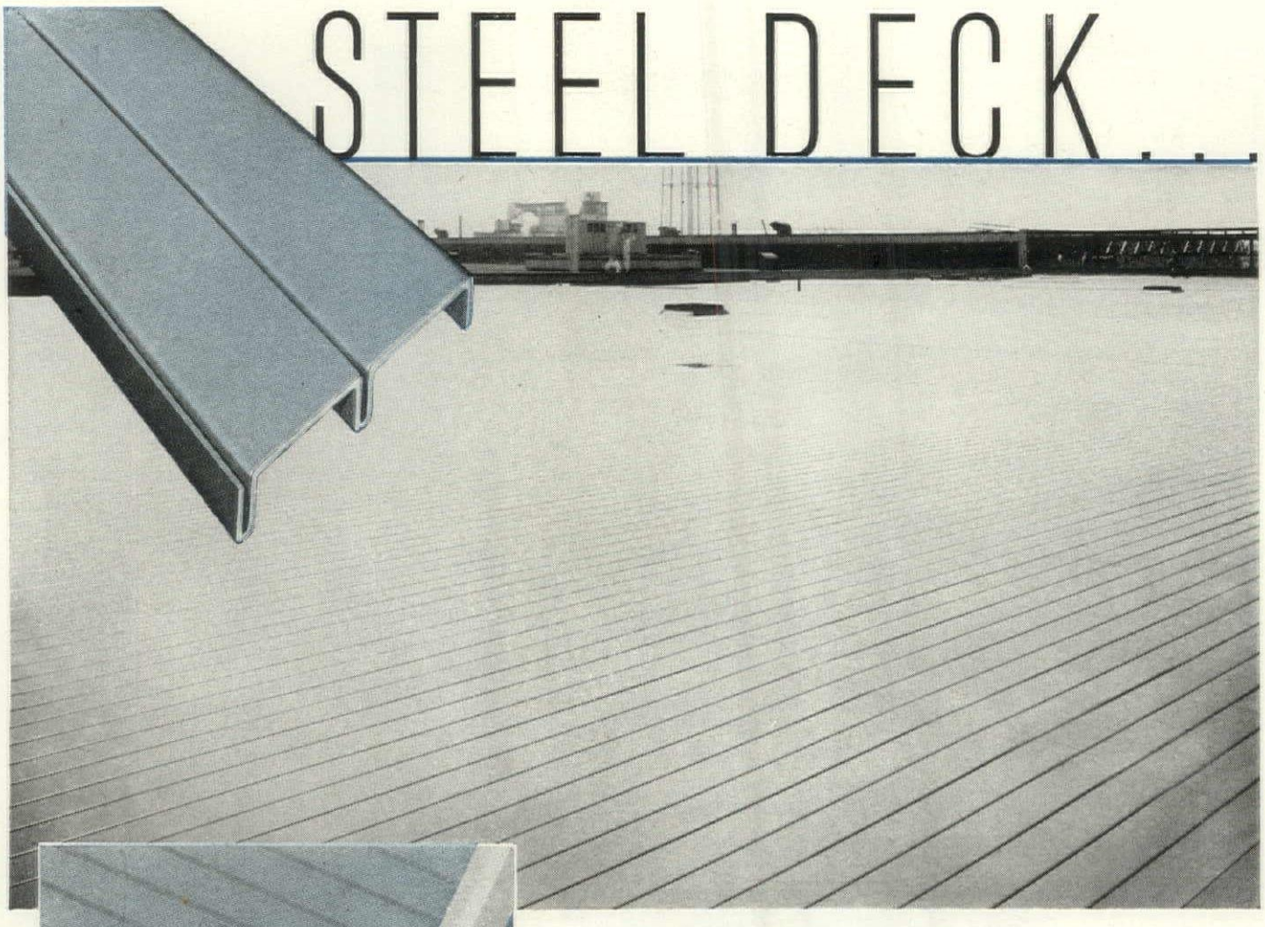
For proof of Fiberglas Roof Insulation superiority, send for latest technical brochure about many outstanding jobs, "Fiberglas Roof Insulation Preferred", and Design Data Sheet RW6.A2. No obligation. Write: OWENS-CORNING FIBERGLAS CORPORATION, Dept. 67-H, Toledo 1, Ohio.

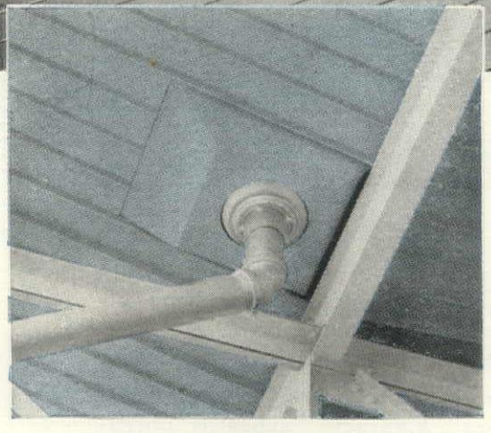
†Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for a variety of products made of or with fibers of glass.

Specify OWENS-CORNING FIBERGLAS Roof Insulation

first for thermal value

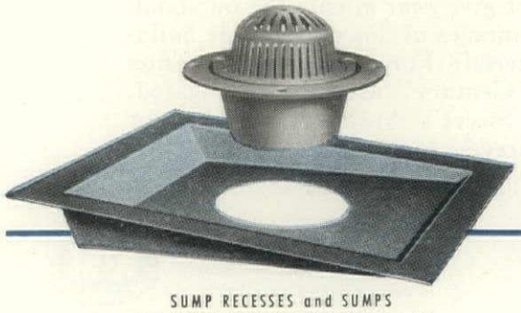
STEEL DECK...





BUILT-UP SADDLES ELIMINATED

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



SUMP RECESSES and SUMPS

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

1,000,000 Sq. Ft. of Mahon Steel Deck Protects Another Industrial Plant!

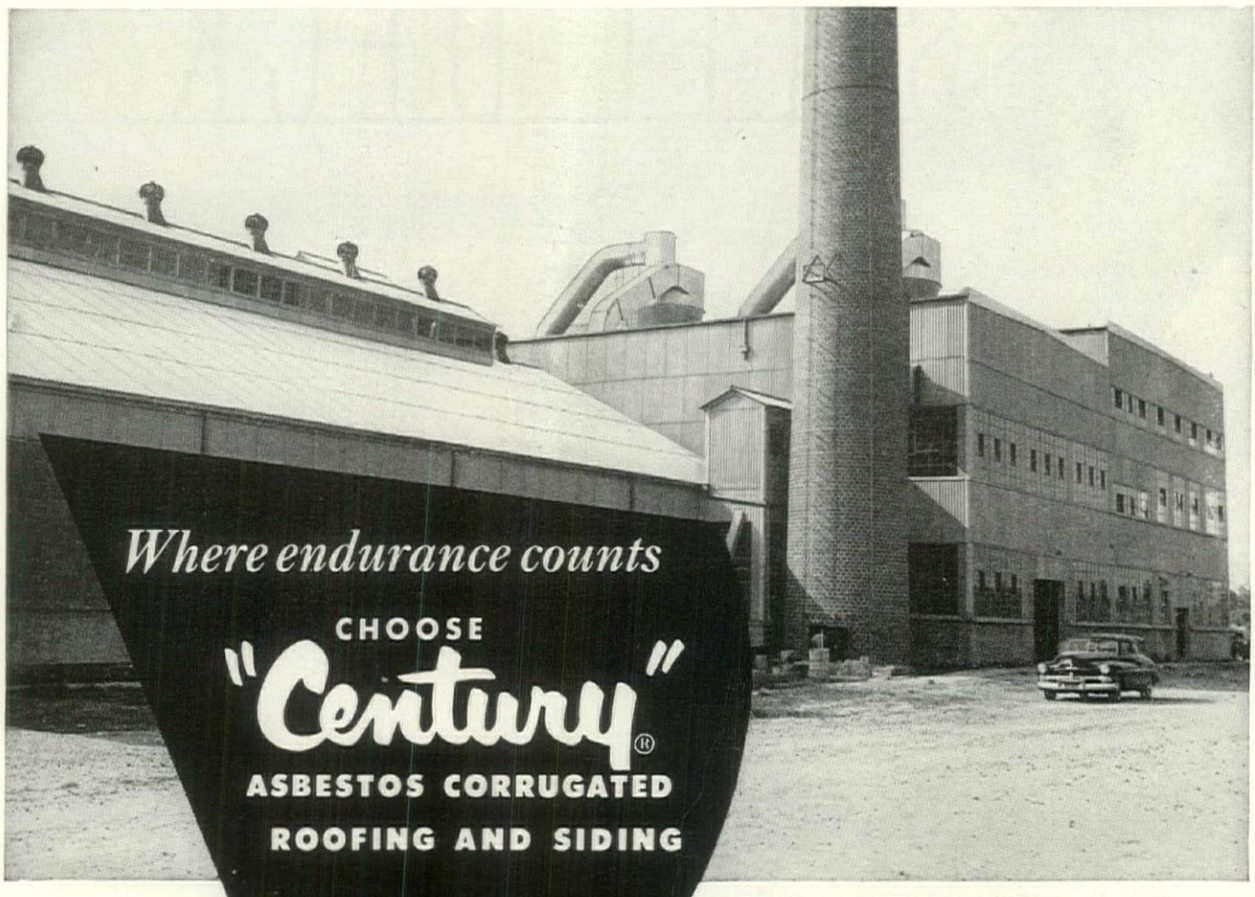
Steel Deck continues to gain in preference for roof construction in modern industrial and commercial buildings throughout the country. There are three good reasons for this growing preference. One: the speed with which it can be erected. Two: its light weight, which permits savings in the supporting structure. And, three: Steel Deck is the most economical, permanent, firesafe roof material available today . . . the fact that it can be insulated to any degree, to produce specific thermal properties for any temperature range, reduces total roof cost per sq. ft. to an absolute minimum in any given locality. Mahon Steel Deck is available in Galvanized Steel, Galvanized Enamel Coated Steel, or Enamel Coated Black Steel. Stiffening ribs are vertical—no angular or horizontal surfaces where troublesome dust may accumulate. In the enamel coating process, the metal is chemically cleaned, phosphated, and treated with a chromic acid solution to provide paint bond, and the protective coating of synthetic enamel is baked on at 350° F. prior to roll-forming. These extra value Mahon features warrant your consideration. See Sweet's Files for complete information, or write for Catalog B-53-A.

THE R. C. MAHON COMPANY

Detroit 34, Michigan • Chicago 4, Illinois • Representatives in all Principal Cities

Manufacturers of Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms; Insulated Metal Walls of Aluminum, Stainless or Galvanized Steel; Insulated Metal Wall Panels; Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.

MAHON



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

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

"Century" corrugated is made from asbestos fiber and portland cement, and so combines the advantages of both materials. It is strong, dense and tough. It *cannot* burn, rot, or corrode. It resists weather, vermin, and insects. And—here's an especially well-liked feature—it needs practically no maintenance during its long life, and it *never* needs protective paint. But that's not all!

"Century" asbestos corrugated is made in standard length sheets up to 12 feet that are easy to handle and store, easy to cut and fit, easy to erect. When TOPSIDE* Fasteners are used, no scaffolding is needed within the building, thereby saving additional time and money.

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

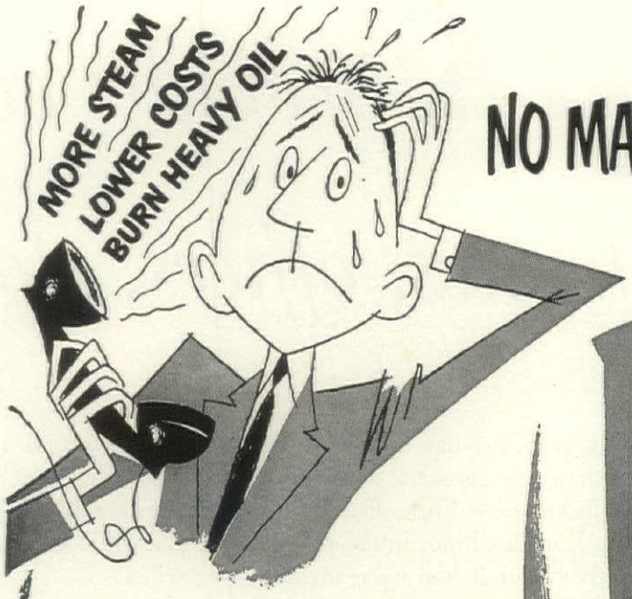
Why not give *your* clients the outstanding advantages of this remarkable building material? For detailed information about "Century" asbestos corrugated, consult Sweet's Architectural File, or write directly to us.

*® H & B Enterprise Corporation

Nature made asbestos . . .
Keasbey & Mattisen has made it serve mankind since 1873

K&M best in asbestos ®

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA



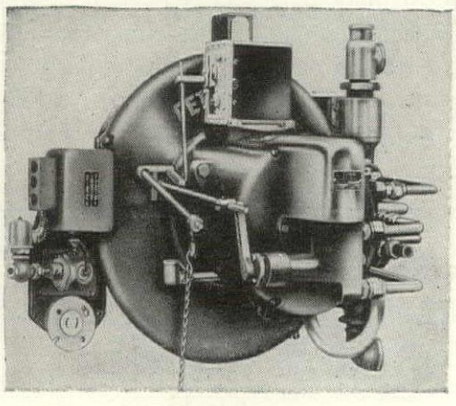
NO MATTER WHAT THE DEMAND

THERE'S A

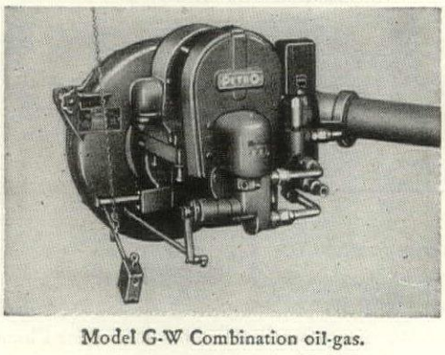
Petro

INDUSTRIAL OIL BURNER

to handle it!



Shown above Model WA for use with cold oil.
Also available Model W-AH for use with heated oil.



Model G-W Combination oil-gas.

Cut Fuel Costs with Heavy Fuel Oil

Petro rotary oil burners are built for firing all types of boilers up to 600 boiler horsepower, and also for many other industrial applications. They are designed to burn the low-cost, heavy fuel oils with complete reliability, Petro oil burners slash fuel costs two ways—they burn the *lower priced oils*, and they do it with *outstanding efficiency*. Fluctuating steam demands are answered automatically with Petro modulating flame control. Thousands of owners will tell you that Petro Industrial Oil Burners and combination oil-gas burners are fuel savers, labor savers and trouble savers, and their dependability is traditional.

Your heating contractor can tell you about Petro burners. Turn to "Oil Burners" in telephone book yellow pages. See catalog in Sweet's Architectural File, or mail coupon below.

see our catalog in
ARCHITECTURAL FILE
or write for copy

INDUSTRIAL AND COMMERCIAL OIL, GAS AND COMBINATION OIL-GAS BURNERS, RESIDENTIAL OIL BURNERS, OIL AND GAS FURNACES AND BOILERS

PETRO

T.M. REG. U.S. PAT. OFF.

50 Years of Leadership in Automatic Heating and Power Equipment

PETRO, 3201 W. 106th St., Cleveland, Ohio.
In Canada: 2231 Bloor Street, West, Toronto, Ontario.

Please send me the Petro catalog of commercial-industrial oil and gas-oil firing equipment.

Name_____

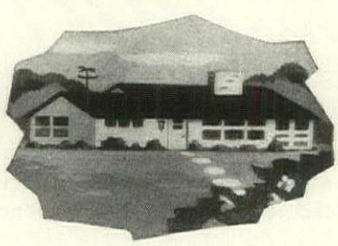
Address_____

City_____ State_____

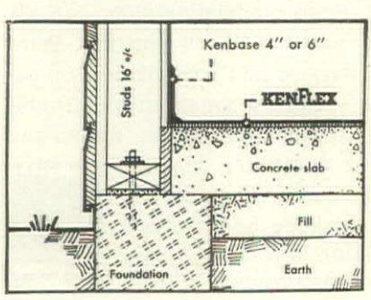
KENFLEX VINYL TILE *provides every*

for today's homes, offices, stores,

Specify for commercial use: KenFlex has decorative beauty plus the important economy advantages of rugged wear, extreme grease resistance and easier maintenance.



Specify for residential use: The coordinated beauty of the 15 colors plus the ease and economy of upkeep make KenFlex ideally suited to homes. Recommended installation shown below.



New as it is, KenFlex has been thoroughly proven in actual use! One example of this exhaustive research is the test installation that was placed in a major, heavy-trafficked New York office building. Here, over 13,000,000 people have walked on a KenFlex Floor in the past 13 years...yet it shows no signs of wear...is attractive as if it had been installed yesterday.

KenFlex is truly a superior floor...combining the best qualities of vinyl and asbestos. It's rugged for long, hard service...colorfully beautiful but never needs waxing except to make the glowing colors shine a bit more. And, KenFlex sets a new standard in grease resistance...it's impervious to cooking and petroleum oils, alkalis, alcohols, most acids and reagents. Still, it cleans without scrubbing and colors never wear off...they go clear through the tough tile.

Specifications and Technical Data

INSTALLATION

KenFlex can be installed over any smooth, firm interior surface...wood, plywood, radiant heated concrete slabs, even over concrete in contact with the earth...on or below grade.

THICKNESSES

Laboratory and on-floor usage tests have *proven* that vinyl has great durability and wear resistance. Therefore, standard gauge (1/16") is recommended for normal residential and commercial uses. If exceptionally heavy traffic is expected, 1/8" gauge is recommended.

INSTALLED PRICES

Prices range from 40¢ per sq. ft. to 65¢ per sq. ft. depending on which of the thicknesses is chosen—for minimum area of 1000 square feet over cement underfloor.

SIZE

Standard tile size is 9" x 9". Also available are 9" x 9" decorative ThemeTile and 1" x 24" Feature Strip.

THE KENTILE, INC. FLOORING CONTRACTOR is a trained and experienced flooring expert...fully qualified to give you whatever assistance you might require. Call on him whenever you must specify flooring for new construction or remodeling of any type or extent. Find his name and address by looking under FLOORS in the classified pages of your Phone Book.

KENTILE, INC., *Makers of:*

- KENTILE ASPHALT TILE
- *SPECIAL (greaseproof)* KENTILE
- KENCORK FLOORS and WALLS
- KENRUBBER TILE FLOORS
- KENFLEX VINYL TILE

KENFLEX VINYL TILE TRADE MARK

by the makers of Kentile

KENTILE, INC., 58 Second Ave., Brooklyn 15, New York • 350 Fifth Ave., New York 1, New York • 705 Architects Bldg., 17th and Sansom Streets, Philadelphia 3, Pennsylvania • 1211 NBC Bldg., Cleveland 14, Ohio • 900 Peachtree Street N.E., Atlanta 5, Georgia • 2020 Walnut Street, Kansas City 8, Missouri • 4532 South Kolin Avenue, Chicago 32, Illinois • 4501 Santa Fe Avenue, Los Angeles 58, California.

modern flooring advantage institutions

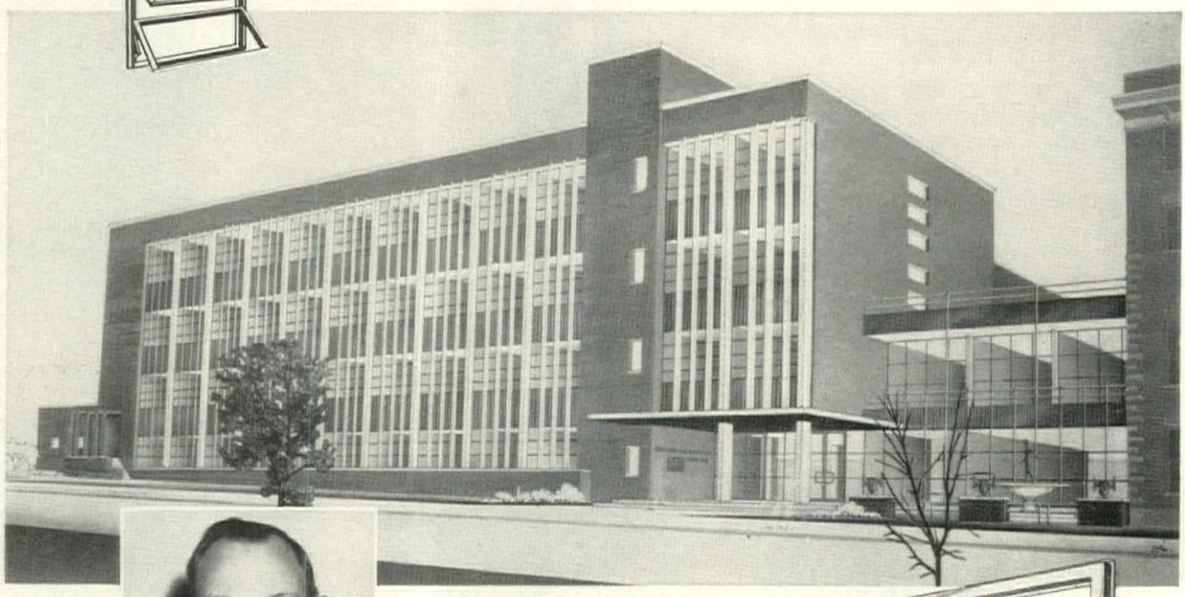
In this drug store, the colorful KenFlex Floor is both *beautiful* and *functional*. And its grease-resistant properties save time, work and money...especially at the counter section. KenFlex colors shown are Marigold, Egret White and Ivy ThemeTile.

This kitchen-dining area owes much of its *charm* and *efficiency* to the modern KenFlex Floor that's so easy to clean with just a damp mop...needs waxing only to give the lustrous surface a brighter gleam. KenFlex colors shown are Desert Sand, Antique Coral, Bird ThemeTile and White Feature Strip.

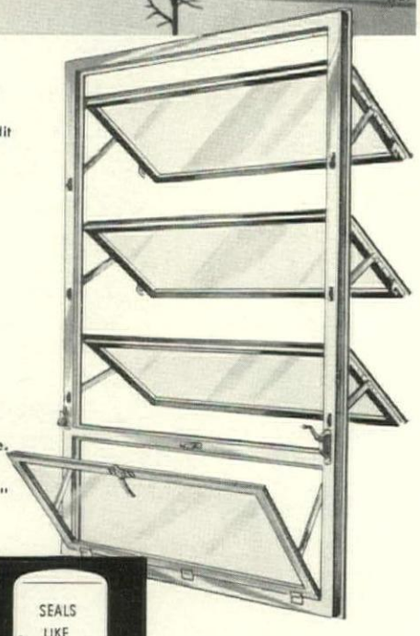
LUDMAN Auto-lok AUTOMATIC LOCKING PATENTED WINDOWS

THE TREND IS TO AWNING WINDOWS

for performance!



Dane D. Morgan is a member of the firm of Morgan-Gelatt and Associates of Burlington, Iowa. This well-known architectural firm has to its credit many fine buildings including the Burlington Protestant Hospital shown above



Mr. Morgan has this to say of the Ludman Auto-Lok Windows which he has specified for a number of his projects:

"In hospitals especially, services and conveniences must afford the highest reliability and protection for patients and personnel.

"We have specified Ludman Auto-Lok Windows for several hospitals we have designed, and it is our opinion from their many fine attributes that they will result in excellent performance. They are attractive windows lending themselves to a wide variety of architectural arrangements and we believe them to be exceptionally sturdy, weather-tight, and simple and easy to operate."

LUDMAN *Corporation*

Box 4541 Dept., AF-8 , Miami, Florida

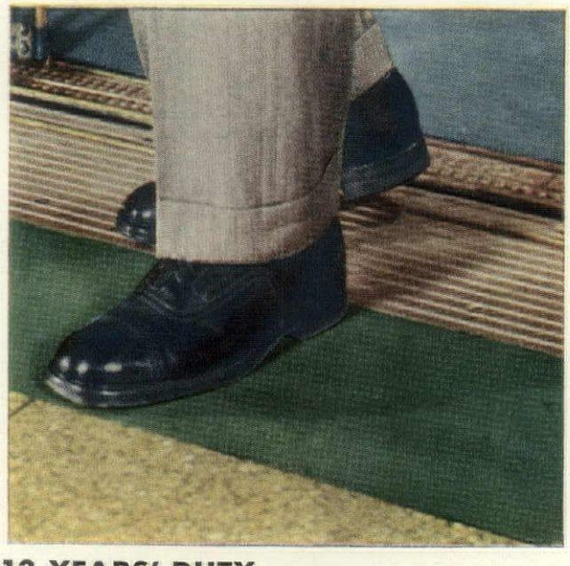
Consult Sweets File (16a, 16c, 16d) for complete specifications of all Ludman windows.

Thank you Mr. Morgan! Because you and many other leading architects have recognized the value of Ludman Windows,

LUDMAN LEADS THE WORLD IN WINDOW ENGINEERING

KenFlex colors shown: Bikini Blue, Desert Sand with Star theme tile.

FIRST in Beauty, LAST in Maintenance...
and ALWAYS best in year-in, year-out economy



13 YEARS' DUTY...and in perfect condition! Extra-heavy traffic (13,000,000 people) in 22-story office building has caused no appreciable wear on this elevator entrance floor tread. It's KenFlex, made of VINYLITE Resins by Kentile, Inc., Brooklyn, N. Y.

That's the record of flooring made of VINYLITE Brand Resins—in schools, hospitals, restaurants, office buildings, stores, factories, homes—in buildings of every kind.

The brighter beauty of flooring by Kentile, Inc., made of VINYLITE Resins is *sealed in* . . . permanently protected by the smooth, non-porous surface that dirt just cannot penetrate. Millions of rough steps of workmen, of energetic youngsters . . . will not scratch, mar, dent or even noticeably wear that surface.

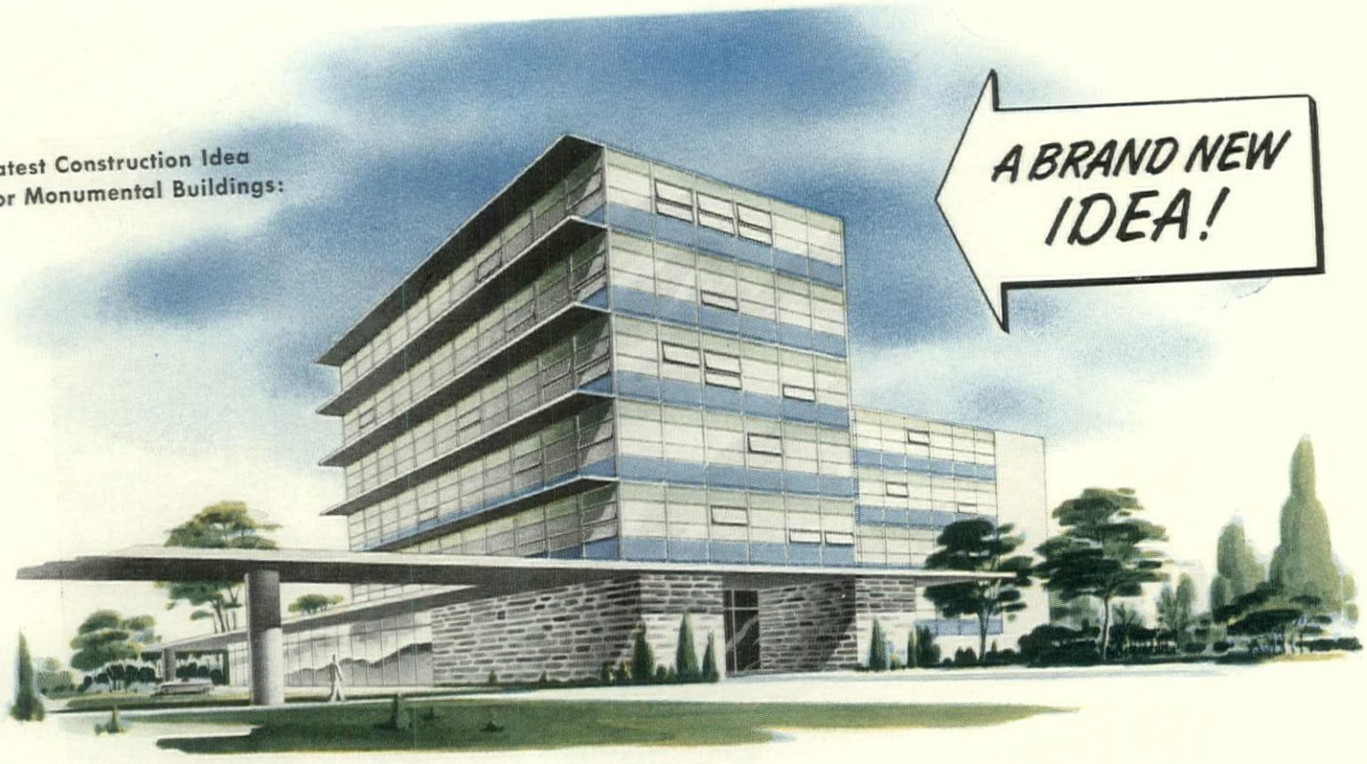
Its cleanability cuts maintenance costs to the bone. Food, oil, grease, alcohol, and hundreds of other usually damaging agents do not harm flooring made of VINYLITE Resins. Cleaning is easiest ever. Strong cleaning compounds, soaps, acid and alkali solutions are withstood. No waxing is needed to protect the tile.

No matter where, specify tile or continuous flooring made of VINYLITE Brand Resins. You assure *permanent* beauty, lowest maintenance costs, and the greatest economy for years to come. For a list of suppliers write Dept. RF-14.

Vinylite
BRAND
RESINS
TRADE MARK

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

Latest Construction Idea
for Monumental Buildings:



A BRAND NEW IDEA!

NEW Vision-Vent WALLS BY TRUSCON

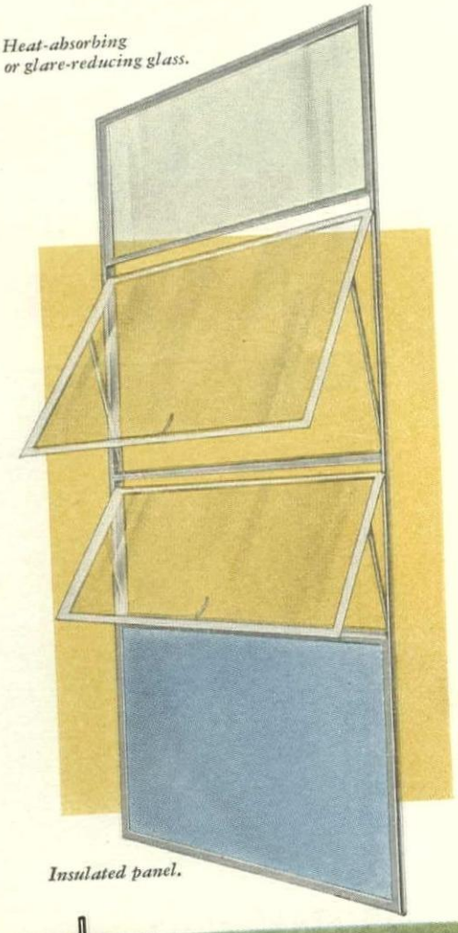
At last!—a new building panel incorporating all mass-production and installation economies of standard steel windows.

Truscon's new Vision-Vent Wall is designed to cover the entire building surface. Cost compares very favorably with that of any other wall construction system. Vision-Vent provides extra usable square feet of floor space. Erection goes forward in any weather.

Each Vision-Vent Wall is *complete*—with fixed lights, awning type ventilators, and insulated steel panels, replacing the conventional spandrel wall. Horizontal metal sunshades are available as an integral part of the installation. Insulated panels have a "U" factor of .197, equal to that of an ordinary masonry spandrel wall. They retain interior heat. And, they provide for efficient air-conditioning.

Vision-Vent Walls are extremely flexible in arrangement. All elements may be varied to meet functional and appearance requirements. Insulated panels may be furnished in colored porcelain enamel, in stainless steel, or in plain steel. Vision-Vent units may be hot dipped galvanized after fabrication to eliminate field painting. Ventilators may be arranged so that complete exterior washing can be done from inside. Screens are available.

Write Truscon for complete details and specifications of Vision-Vent Walls —the latest construction idea for monumental buildings.



TRUSCON STEEL DIVISION
REPUBLIC STEEL CORPORATION
1102 ALBERT STREET • YOUNGSTOWN 1, OHIO

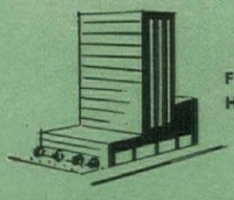
TRUSCON MARK OF MERIT PRODUCTS

TRUSCON®
a name you can
build on

14 YEARS AGO—

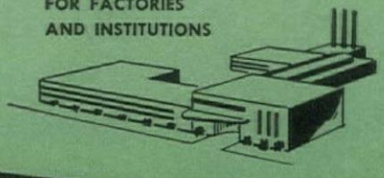
THE ORIGINAL OLSONITE SEAT

TODAY—MILLIONS



FOR OFFICES,
HOTELS, STORES

FOR FACTORIES
AND INSTITUTIONS



The years since 1939 have more than justified our basic principles of seat design and construction:

1. A closet seat must combine beauty and durability.
2. It must be made of one material—all the way through.
3. For permanence—it must be *compression molded* under tons of pressure.
4. No metal should be exposed to rust or corrode.
5. It must be available in a wide range of colors *that will not fade.*

Architects, master plumbers, wholesalers, and consumers have agreed with these principles over the years by continually increasing their demand for solid Olsonite seats.

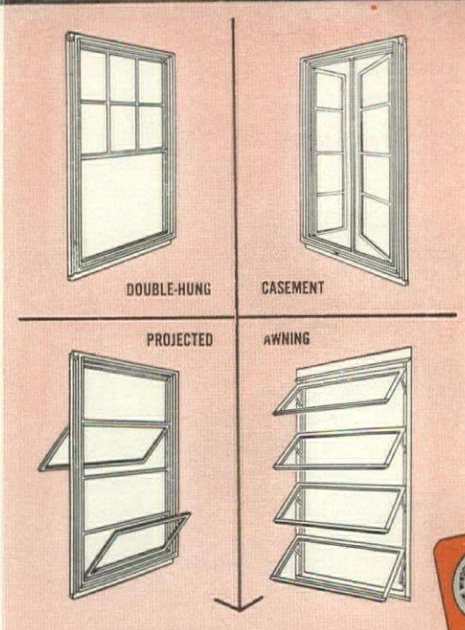
ONE MATERIAL,
ONE PIECE,
ONE COLOR
ALL THE WAY THROUGH!

FOR HOMES

SOLID Olsonite SEATS

SWEDISH CRUCIBLE STEEL CO.
PLASTIC DIVISION
8561 BUTLER AVE., DETROIT 11, MICHIGAN
ORIGINATOR OF SOLID SEATS

Bradford Hospital, Bradford, Pa.
Architect: Thomas K. Hendryx
Contractor: Erdle Construction Co.



INSIST ON...

NOT JUST SURFACE-PROTECTED AGAINST RUST
but RUSTPROOF through and through

When you insist on aluminum windows you can be sure of windows that *never* rust . . . windows that *never* need painting. Remember, mere surface protection against rust is not enough. Wear, unintentional scratches or damage may nullify any protective surface coating. For your protection insist on aluminum—rustproof through and through.

QUALITY APPROVED
(TYPE)
A.W.M.A. Quality Specifications—Materials, Construction, Strength, of sections and Air infiltration requirements—confirmed by Pittsburgh Testing Laboratory
MEMBER—ALUMINUM WINDOW MANUFACTURERS ASSOCIATION

Quality Approved

ALUMINUM

PLANNING A NEW HOSPITAL BUILDING?

Reduce Annual Maintenance Costs with Windows That Never Need Painting

Why add extra expense to your annual operating budget when it's so easy to eliminate it?

By insisting on "Quality-Approved" aluminum windows for all new hospital buildings, you can keep annual maintenance expense at a minimum and save important dollars year after year.

Aluminum windows cannot rust or rot. They never need painting, costly repairs or replacement. They always operate easily, effortlessly, efficiently. They remain beautiful for the full life of the building.

That's why aluminum windows are first choice with so many architects, administrators and "Boards."

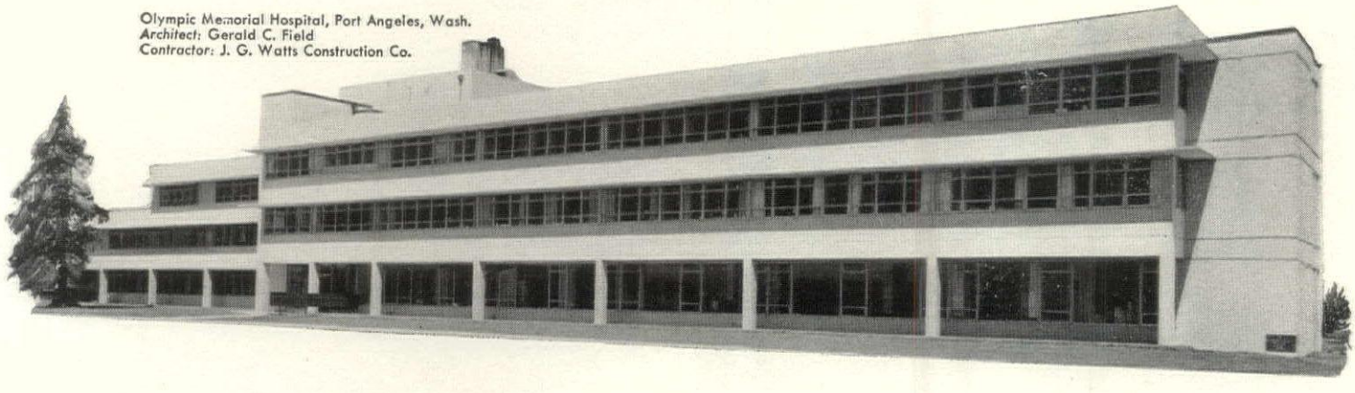
"Quality-Approved" aluminum windows are available through many manufacturers in sizes and styles (double-hung, casement, projected and awning) to fit any design treatment. Only windows that have been tested by the Pittsburgh Testing Laboratory and approved for quality of materials, construction, strength of sections and minimum air infiltration are permitted to carry the "Quality-Approved" Seal. For your protection and full satisfaction insist on "Quality-Approved" windows when you specify.

For a copy of our latest Window Specifications Book and names of manufacturers ready to supply you with "Quality-Approved" windows, consult Sweet's Architectural Catalog (Section 16a/ALU), or write direct to Dept. AF-8.

Aluminum Window Manufacturers Association

74 Trinity Place, New York 6, N. Y.

Olympic Memorial Hospital, Port Angeles, Wash.
Architect: Gerald C. Field
Contractor: J. G. Watts Construction Co.



WINDOWS

Sanymetal*...

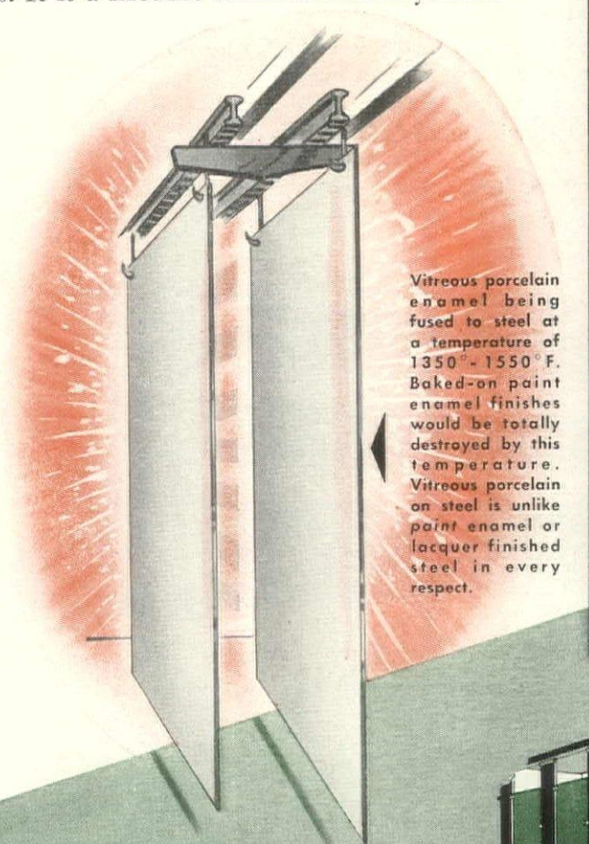
* Trade Mark Registered

...uses the ageless and fadeless material

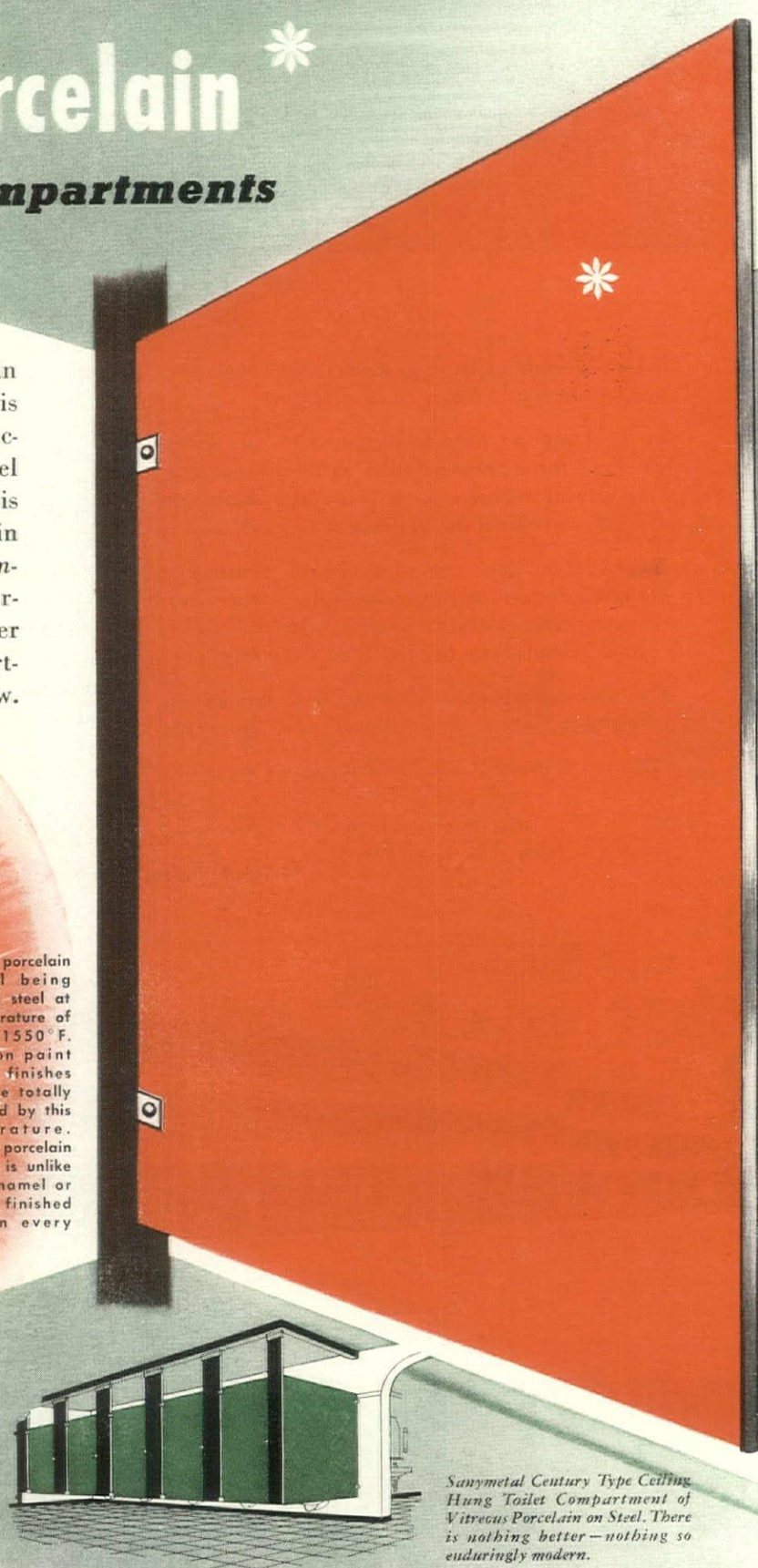
Vitreous Porcelain *

on steel for toilet compartments

Sanymetal "Porcena" (Vitreous Porcelain on Steel) is a *material*, not merely a finish. It is in every aspect unlike *paint* enamel or lacquer finished steel because it is fused to steel at a temperature of 1350° - 1550° F. This impregnates the steel with vitreous porcelain enamel to the extent that it *cannot be hammered out*. Sanymetal "Porcena" (Vitreous Porcelain on Steel) is incomparable with any other material commonly used for toilet compartments. It is a lifetime material that stays new.



Vitreous porcelain enamel being fused to steel at a temperature of 1350° - 1550° F. Baked-on paint enamel finishes would be totally destroyed by this temperature. Vitreous porcelain on steel is unlike *paint* enamel or lacquer finished steel in every respect.



Sanymetal Century Type Ceiling Hung Toilet Compartment of Vitreous Porcelain on Steel. There is nothing better—nothing so enduringly modern.

Sanymetal* *Vitreous Porcelain on Steel* Toilet Compartments possess enduring beauty, fadeless colors, structural durability, resistance to acids, defacement and abuse.

Vitreous porcelain on steel is a product of the white heat of the enameling furnace—a material that is as new as tomorrow and as old as time!

Sanymetal Engineers were the first to adapt vitreous porcelain on steel for toilet and shower compartments.

a material that insures against untimely obsolescence

Vitreous porcelain on steel provides these features that ***cannot be duplicated by any other material suitable for toilet compartments:***

It is a non-porous material that greatly exceeds the structural strength and durability of other materials now available for toilet compartments. It is often acclaimed as a lifetime material because it consists of no elements that are vulnerable to gradual depreciation.

It is impervious to moisture, odors, uric and other ordinary acids, oils and grease, and is scratch resistant.

Its flint-hard, glass-smooth surface can be kept as immaculately clean as a china plate.

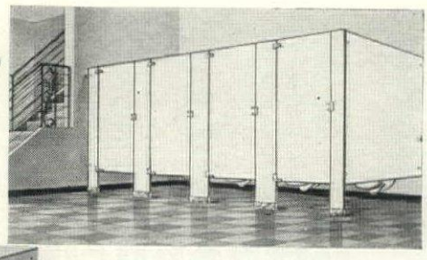
It reduces the cost of maintenance to an all-time low.

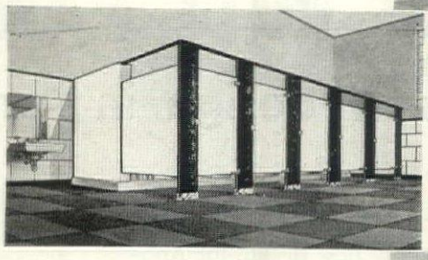
The glass-hard, lustrous finish of vitreous porcelain on steel does not fade, tarnish, peel or discolor. This surface is obstinately resistant to scratching, scrubbing, scribbling or defacement.

The original luster and freshness of colors is never lost. Its gleaming, colorful beauty does not fade or depreciate. It is truly an ageless and fadeless material.

Sanymetal "Porcena" (Vitreous Porcelain on Steel) Toilet Compartments are available in several different styles and a wide range of fadeless colors. Only Sanymetal offers "Porcena" (Vitreous Porcelain on Steel) Toilet Compartments. Ask the Sanymetal Representative in your vicinity to demonstrate the unusual and exclusive features of Sanymetal Vitreous Porcelain on Steel Toilet Compartments.

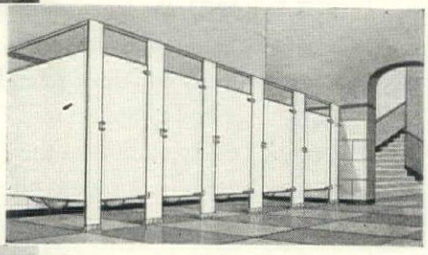
Sanymetal Normandie Type Toilet Compartments endow a toilet room environment with dignity and good taste.

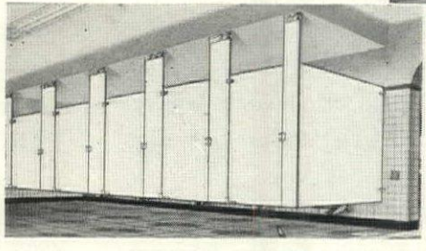




Sanymetal Academy Type Shower Stalls and Dressing Room Compartments provide the utmost in sanitation for gymnasiums, stadium dressing rooms, Y. M. C. A.'s, clubs, trailer camps and tourist motels, etc.

Sanymetal Academy Type Toilet Compartments are suitable for conservative but modern toilet room environments.





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

THE SANYMETAL PRODUCTS CO., INC.
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Sanymetal* **Toilet Compartments, Shower Stalls and Dressing Rooms**

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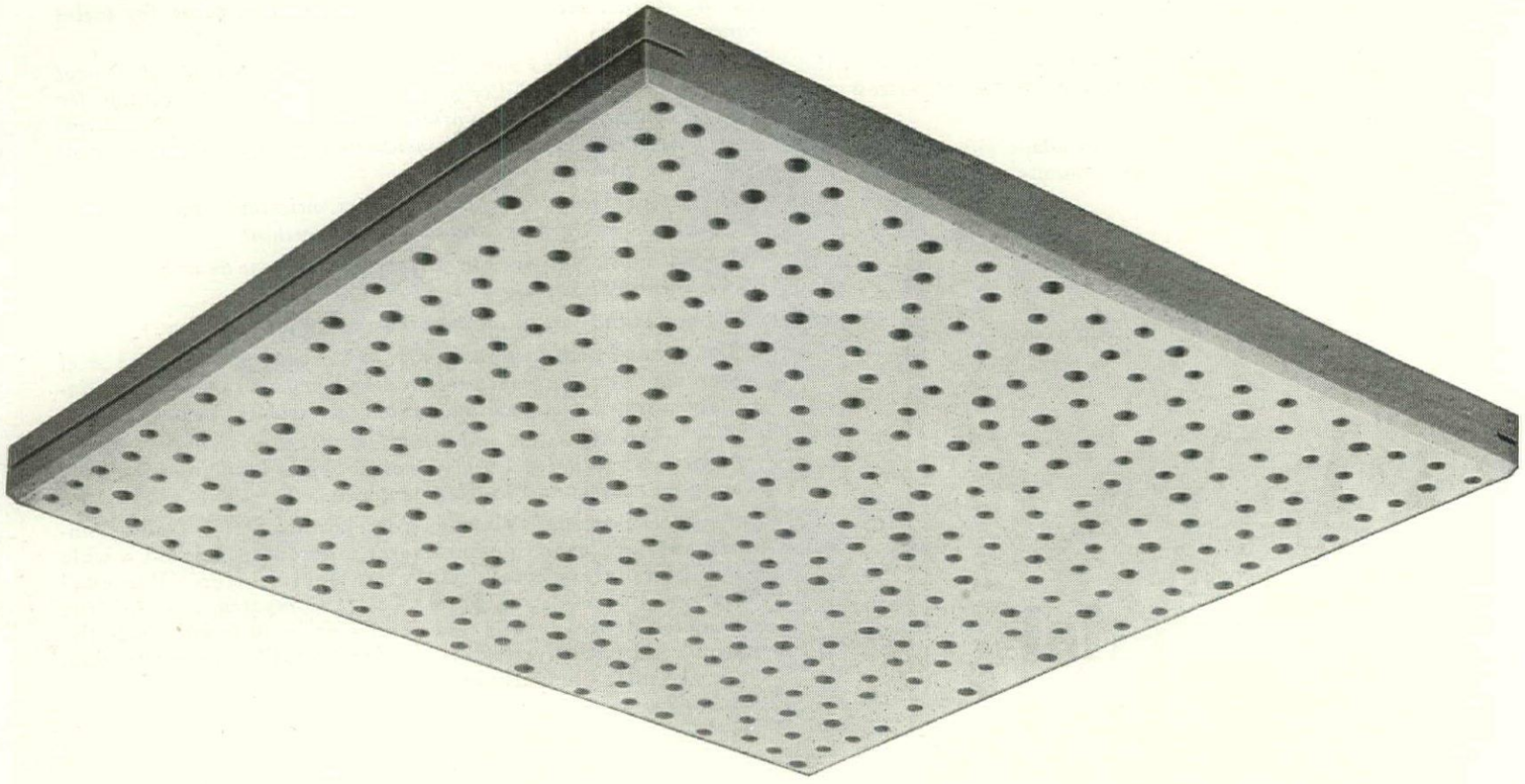

INTRODUCING FULL RANDOM

an entirely new design in Armstrong's Cushiontone

FULL RANDOM is an entirely new design for Armstrong's Cushiontone. This interesting surface pattern is a completely non-directional arrangement of perforations. Applied to the ceiling, FULL RANDOM Cushiontone largely eliminates the pronounced tile effect of materials with perforations aligned in rows.

● **Acoustical Efficiency . . .** Since FULL RANDOM is made of the same fiber composition as Armstrong's regular Cushiontone, efficiency is comparable.

● **Light Reflection . . .** The smooth, factory-painted white surface gives FULL RANDOM Cushiontone a light reflection factor of .78, without glare.

● **Finish and Sizes . . .** FULL RANDOM Cushiontone has two coats of washable white paint on face and bevels. Size 12″ x 12″ tile, in ½″ and ¾″ thicknesses.

● **Economical Maintenance . . .** FULL RANDOM Cushiontone can be repainted with oil base paint without loss of acoustical efficiency.

● **Application . . .** FULL RANDOM Cushiontone can be erected either by cementing or nailing to a solid surface or by nailing or screwing to furring strips 12″ on centers.

Your Armstrong Acoustical Contractor is ready to give you further information and samples of the new FULL RANDOM Cushiontone, as well as any of the other materials in Armstrong's complete line, or you may write directly to Armstrong Cork Company, 4208 Rooney Street, Lancaster, Pennsylvania.

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New military extravagance seen with Creedon, Coogan departing

Last year military construction was such a confused, deplorable mess Congress established the Office of Defense Installations in the Pentagon. The assignment for this office: to serve as the Defense Secretary's construction analyst, coordinator and controller, to spot and halt waste and extravagance, to develop and enforce greater efficiency and economy in all military building operations. The civilian appointed to this important post was construction expert Frank Creedon.

This year the Creedon appointment paid off handsomely. The Senate and House armed services and appropriations committees no longer had to wrestle in the dark with confusing requests from the armed forces. Creedon sat at the elbows of committee chairmen, gave them the clear picture of military construction spending they lacked before, and the counseling they requested so they could tighten the program without curtailing vital defense projects.

Far-reaching results. Creedon's review activities disclosed huge accumulations of unspent construction funds, which on July 1 amounted to $900 million for the Army, $460 million for the Navy, and $1,700 million for the Air Force. As a result the services were ordered to live off their fat for a year. Except for a new $241 million Air Force appropriation not a nickel of additional money was provided for military construction during the fiscal year that started last month. In fact some previous unexpended authorizations that totaled $757 million were rescinded: $271 million from the Army, $85 million from the Navy, $401 million from the Air Force.

For future spending the armed services committees established some practical unit-cost limitations: $20 per sq. ft. for cold storage warehousing; $6 per sq. ft. for regular warehousing; $1,700 per man for permanent barracks; $1,400 per man for ten-year life barracks; $5,000 per man for bachelor officer quarters. They tightened an escalator clause in the old law that permitted a 10% increase in the cost of individual US stations if the excess was averaged out by reductions elsewhere. This margin was cut to 5%.

Spending rate unaffected. With funds still available, military construction would continue close to the level reached last year—$1.3 billion. The military spenders, however, would not find the going quite as easy as before, would have to squirm sometimes to live within the new limits.

Reorganization victim. But the irony in the whole situation that disturbed industry leaders and Congressmen alike this month was the well-grounded fear that Creedon and his staff would soon be gone. Under the top-level Pentagon reshuffle engineered by Defense Secretary Wilson it was doubtful whether Creedon would consent to stay or even be asked to retain his post.

The Pentagon reorganization involved the creation of six new assistant secretaryships —one of them an assistant secretary for properties and installations who would take over and supersede the Office of Defense Installations. Appointed last month to this new position: 64-year-old Franklin G. Floete (pronounced Float-ee), affable retired small city banker and former Des Moines automobile and tractor dealer.

Floete's one venture in construction was between 1932 and 1941, when he was the controller and later president of the Wood Bros. Construction Co. and several affiliates of Lincoln, Neb. This organization engaged in levee and highway construction, is no longer in business. Critical observers were not inspired; some who had struggled to establish firm civilian supervision over military construction spending were discouraged.

AP Photo

FLOETE

Said a high-ranking member of the Senate armed services committee: "The military brass will run circles around him. He knows little about the technical aspects of construction, even less about the ramifications of government contract procedure from the Washington end. Before he knows the score the program will be right back where it started—wallowing around in waste and extravagance."

Housing agency will fold. Under the Pentagon reorganization the armed forces housing agency under former NAHB President Thomas Coogan also would be scrapped, despite the fact that the Rockefeller committee recommended its retention. Floete, it was said on Capitol Hill, tried to save the agency—just as he tried without avail to keep some teeth in Creedon's watchdog set-up—but was overruled by the hierarchy. Coogan, who had served all along without compensation, was convinced his period of usefulness was ended, was ready to hand in his resignation.

SOCONY-VACUUM TOWER to be erected in New York by the Galbreath Corp. (former NAREB President John Galbreath of Columbus, Ohio) from plans by Harrison & Abramovitz—John B. Peterkin, associate.

Huge NY office project set; Rockefellers buy large site

Details were released last month for New York's largest post-war office building, a $45-50 million 42-story air-conditioned tower to rise from a full Grand Central area block (see cut). Socony-Vacuum leased 500,000 of the building's 1.3 million sq. ft. of rental space, as an extra dividend would have the building named for it. Turner Construction will be the contractor.

Announced this month for a 57,000 sq. ft. site on the Avenue of the Americas adjoining Rockefeller Center on the north: another 35-story building, by unidentified architects, to contain 750,000 sq. ft. of rental space. Sponsors: a syndicate headed by Realtor Leonard J. Beck that leased the site from the William Waldorf Astor estate.

The Rockefellers sold most of this site in 1944 after deciding not to expand Rockefeller Center. This summer, however, they bought for "investment" almost the entire block west of the Music Hall *across* the Avenue of the Americas (all but the Roxy Theater and Hotel Taft on the Seventh Ave. end). Most of this 80,000 sq. ft. site is vacant (a parking lot) and its location is ideal for eventual improvement with TV, theater or opera facilities, or a combination office and theater building as permitted under the recently revised New York building code (AF, June '53).

William Zeckendorf negotiated this important Rockefeller purchase and last month also sold them a fully-improved "investment" property facing Rockefeller Center on the east: the land under Saks Fifth Ave.

Taft-Hartley revisions, most construction bills left over for next Congress session

When the first session of the 83rd Session of Congress quit early this month it left behind a mixed, unimpressive record on legislation affecting construction.

Its two most important moves were negative actions: 1) it cut appropriations for new military construction almost to zero, but with carryover funds spending would continue on only a slightly diminished scale (page 43); 2) it limited new federal assisted public housing starts to 20,000 units, although FHA already had a backlog of 54,000 units "under contract" (p. 45).

Paper budget cuts. On its economy spree the Congress boldly slashed budget requests in virtually all the periodic, routine bills covering various public construction programs. Total construction appropriations were only about $2.1 billion, but any comparison with the $8.2 billion appropriated a year earlier was deceptive. As in military construction, there were huge carryovers that would defer any sizeable cutbacks in federal construction for almost another year.

Example: the Atomic Energy Commission was voted $3,327 million last year, only $166 million this year. But last year's appropriation was for a three-year program. Its actual spending was about $1.1 billion last year, its outlays still will be about $1.4 billion this year.

Some specific building appropriations:

▸ SCHOOLS—The lapsed program for federal grants in areas where defense or military activity has increased the school load was renewed with an appropriation of $174 million to the Office of Education to last two years. (It already has a backlog of applications totalling $95 million). Under a revised formula grants will be 50% if the parents of children receiving schooling live in private housing paying regular real estate taxes, up to 95% if parents live on public property.

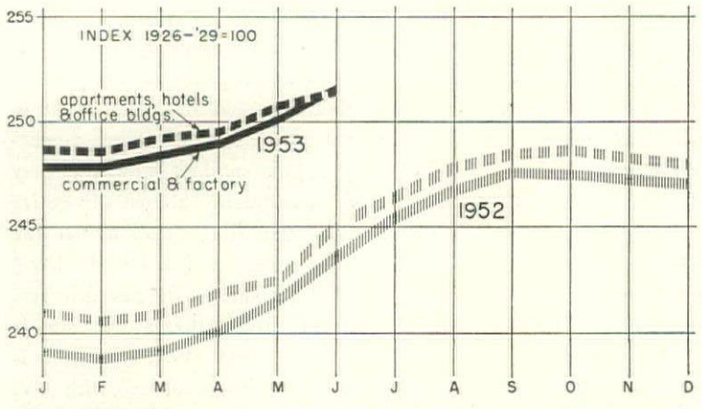
▸ HOSPITALS—For Hill-Burton Act hospital grants, $65 million—a compromise between $50

BUILDING STATISTICS: lumber prices sag while others rise; July spending sets record

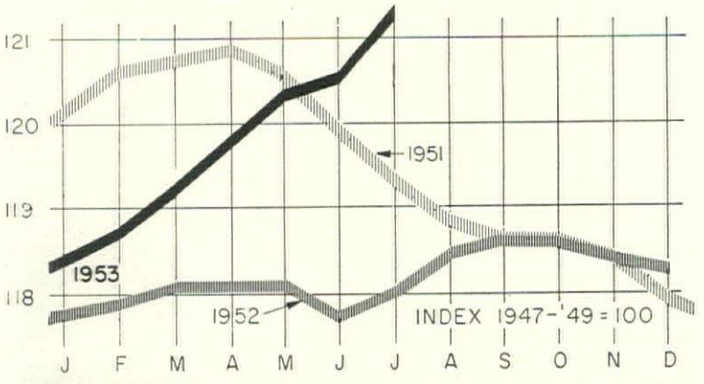
Lumbermen have been producing and selling more lumber and plywood than a year ago, but their prices have been sagging and running counter to the steady increase in the average cost of all building materials that has occurred since December (see chart). While the average of all materials in this BLS index advanced 0.8 points from mid-June to mid-July, the lumber items in it declined 0.3 points.

In Washington, President Eisenhower's new chief economist, Dr. Arthur Burns, chairman of ABEGS (Advisory Board on Economic Growth and Stability) was keeping a weather eye on this potential "weak spot" in the economy, but felt no alarm. Lumber's troubles appeared to be something of a "little slump within a boom." They stemmed from three factors: 1) increased competition—and a degree of dumping—by Canadian mills trying to make up for their losses in the curtailed European market; 2) sharply reduced government purchasing; 3) expanded production that temporarily overshot the expanded domestic market.

Western Pine Assn. reports from 116 mills for 30 weeks of 1953 compared with the same period in 1952: orders, up 5%; shipments, up 6%; but production, up 11%. Reports from 157 Douglas fir mills for the same period recorded a 6.9% increase in orders, production just a sliver behind, up 6.6%.



BUILDING COSTS compiled by E. H. Boeckh & Associates edged up again in June, and the Boeckh national average for commercial and factory structures passed a shade ahead of apartment, hotel and office building costs, 252.9 and 252.7, respectively. The commercial building index rose 2.9 points (1.1%) above the previous month, the hotel and office building index advanced 2.0 points (0.8%). Smith, Hinchman & Grylls, however, reported an anomaly in their July building cost index: although materials and labor rose an average of 1.3% their cost index declined 1.4%. Their explanation: increasing competition among contractors, higher labor productivity, more economical designing.



MATERIALS PRICES charted by the Bureau of Labor Statistics reached an index figure of 121.3 at mid-July, an increase of 2.8% since they started climbing last December and the highest point ever reached on the 1947-49 index base. Plumbing and metal product price increases were the principal cause of the rise, but cement and clay products also advanced.

NEW CONSTRUCTION ACTIVITY

(expenditures in millions of dollars)

Type	July '52	July '53	July change	1st seven months '52	1st seven months '53	1st seven months change
PRIVATE						
Residential (nonfarm)	1,028	1,101	+7.1	5,991	6,599	+10.1
New dwelling units	910	970	+6.6	5,310	5,840	+10.0
Additions & alterations	101	107	+5.9	586	614	+4.8
Nonhousekeeping	17	24	+41.2	95	145	+52.6
Industrial	181	179	—1.1	1,367	1,354	—1.0
Commercial	99	165	+66.7	608	894	+47.0
Other nonresidential	134	149	+11.2	867	896	+3.3
Religious	33	41	+24.2	211	249	+18.0
Educational	29	36	+24.1	189	226	+19.6
Hospital	36	27	—25.0	234	183	—21.8
Public utilities	370	410	+10.8	2,207	2,411	+9.2
*TOTAL	1,992	2,172	+9.0	12,017	13,091	+8.9
PUBLIC						
Residential	54	51	—5.6	395	341	—13.7
Industrial	161	172	+6.8	852	1,068	+25.4
Educational	138	144	+4.3	933	961	+3.0
Hospital	41	30	—26.8	275	229	—16.7
Military	128	126	—1.6	760	800	+5.3
*TOTAL	1,045	1,101	+5.4	5,841	6,217	+6.4
GRAND TOTAL	3,037	3,273	+7.8	17,858	19,308	+8.1

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

CONSTRUCTION EXPENDITURES in July set an all-time monthly record of $3,273 million. But as construction roared through the peak building season toward a record $34.5 billion year (AF, July '53), industry leaders predicted that August outlays would top July's fabulous figure.

million voted by the House, $75 million by the Senate. For VA hospitals, $17.5 million, which will be added to a $20 million carryover from last year. Although the Eisenhower administration requested no new funds, the House voted $30 million to start VA buildings in San Francisco, Topeka and Houston (later cut to $17.5).

Unfinished business. Among the principal measures that were talked about, or advanced only partially along the road to enactment, then were left over until the second session in January (barring an earlier special session):

- Taft-Hartley Act revisions, which never got away from the starting line in the first session.
- The lease-purchase bill to allow 8- to 25-year federal leases if the facilities (including new construction) then become federal property. The House passed this administration-approved bill, but it must still clear the Senate.
- Anti-bid-shopping rules on federal construction contracts. This measure, pushed by specialty contractors but as vigorously opposed by general contractors, was reported favorably by Senate and House committees, but could budge no farther.
- Judicial review of disputes over government construction contracts. This AGC-supported bill to offset the Supreme Court's Wunderlich case decision making government contract officers the final arbiters in contract interpretation disagreements won its way through the Senate but failed to pass in the House.

School officials issue study proposing high-rise schools

Based on studies by Pratt Institute department of architecture students, the New York State Association of School Business Officials published *School Research Thesis*, a stimulating 48-page portfolio on school designs, costs and construction intended for "the professional library of every school business officer or architect."

To offset high land costs and obtain "more schools for fewer dollars" in city districts that might change in character, the students proposed a model high-rise elementary school (see cut) that would be designed to take into account one of the suggestions made in a FORUM article on schools (Dec. '49): "if a building were flexible enough we would not need to worry about permanent building materials outliving a temporary school . . . instead . . . if the neighborhood changed the use of the building could change from school use to industrial or commercial use."

This building would have kindergartens (and separate gymnasium and auditorium buildings) on the ground level, and a general-purpose and exhibition terrace level. Above these would be nine standard classroom floors. Each of these would have two 23′ 6″ x 35′ classrooms (plus coat and activity alcoves) on each end, with the middle section housing the elevator-plumbing-stairwell core and providing lobby, study and lunch areas.

Public housing slashed to 20,000 starts; 125,000 units in planning stages halted

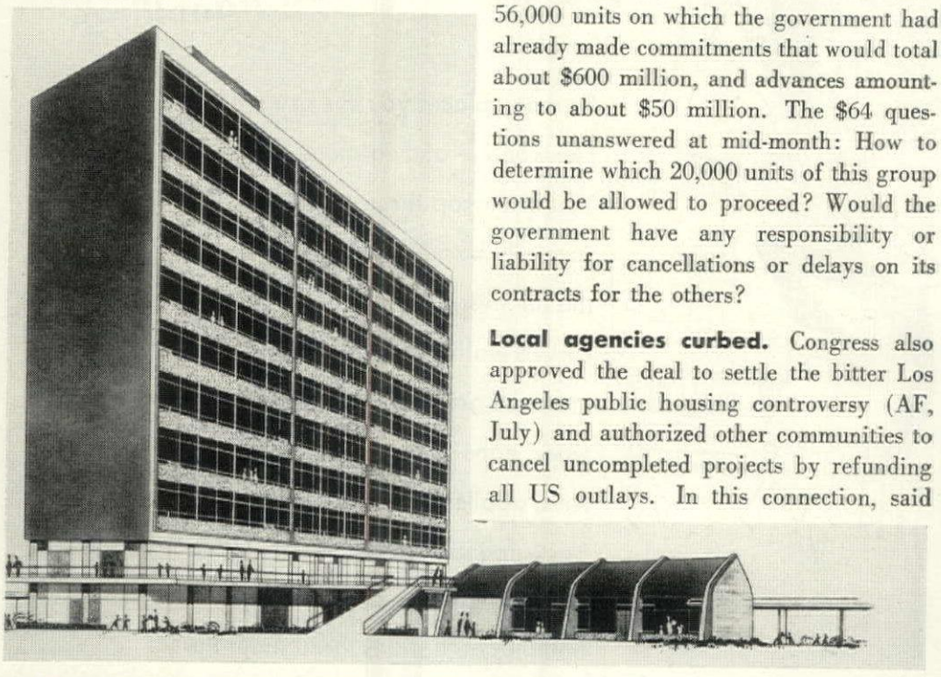
Public housing's future was never so dark. It never before went through a month as bad as July, when:

- Anti-housers won their greatest victory in years, nullifying almost completely the 1949 Housing Act provision that gave the President power to authorize up to 135,000 new public housing units a year. Housing foes persuaded Congress to limit this year's starts to only 20,000 by withholding appropriations. It was an outstanding victory because this figure was even far below the 50,000 and 35,000 limitations imposed by Congress in 1951 and 1952, when it curtailed the program for "defense controls" reasons. This Congress had scrapped controls, enacted a new law to stimulate private residential construction again.
- BLS reported that actual public housing starts during July dropped to a mere 400, lowest monthly figure since March, 1948.
- Death deprived it of Senator Robert A. Taft, leading Republican defender of public housing and co-author of the 1949 Housing Act.

Halt order issued. PHA Commissioner Charles E. Slusser, who would execute the Congressional cutback mandate, lost no time slamming on the brakes. On July 30 he ordered all local housing authorities to: 1) suspend all activity and incur no further obligations in connection with projects under preliminary loan contracts, estimated by PHA to total about 125,000 units, and 2) hold up all projects under final federal-local subsidy contract but not yet under construction.

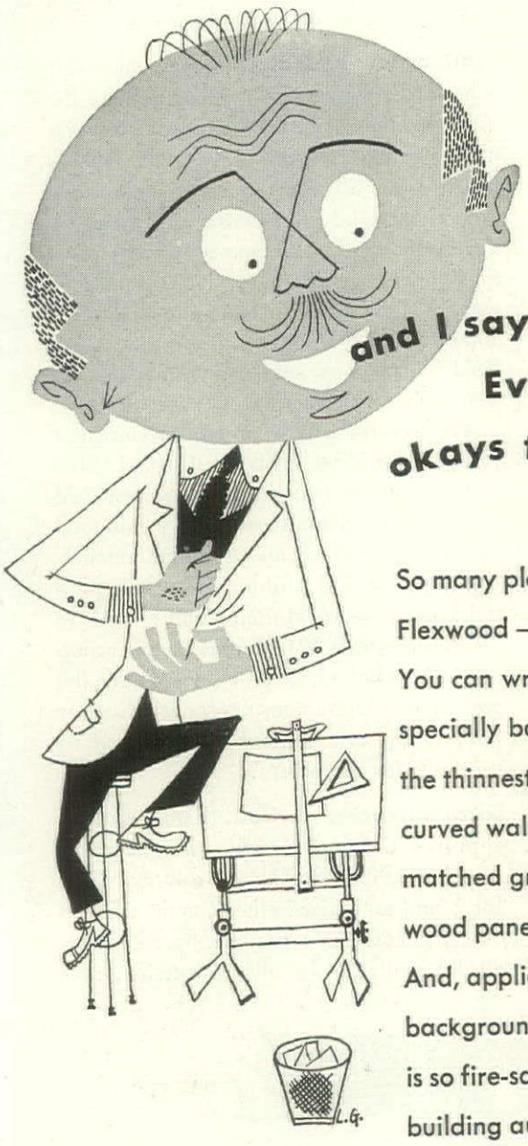
The second group posed the toughest problem for PHA. This consisted of about 56,000 units on which the government had already made commitments that would total about $600 million, and advances amounting to about $50 million. The $64 questions unanswered at mid-month: How to determine which 20,000 units of this group would be allowed to proceed? Would the government have any responsibility or liability for cancellations or delays on its contracts for the others?

Local agencies curbed. Congress also approved the deal to settle the bitter Los Angeles public housing controversy (AF, July) and authorized other communities to cancel uncompleted projects by refunding all US outlays. In this connection, said



ADAPTABLE HIGH-RISE SCHOOL proposed by Pratt Institute students would allow greater classroom space per pupil on high-cost sites, could be converted into office or industrial use if area changed.

INDOOR-OUTDOOR PLAYGROUND space for inclement weather will be provided under the classroom wing (l) of this Lower East Side New York elementary school designed by Harrison & Abramovitz. Parallel two-story auditorium and gymnasium units (r) will be connected with the main structure through a one-story kindergarten and lunchroom-playroom section. Bids are due in October



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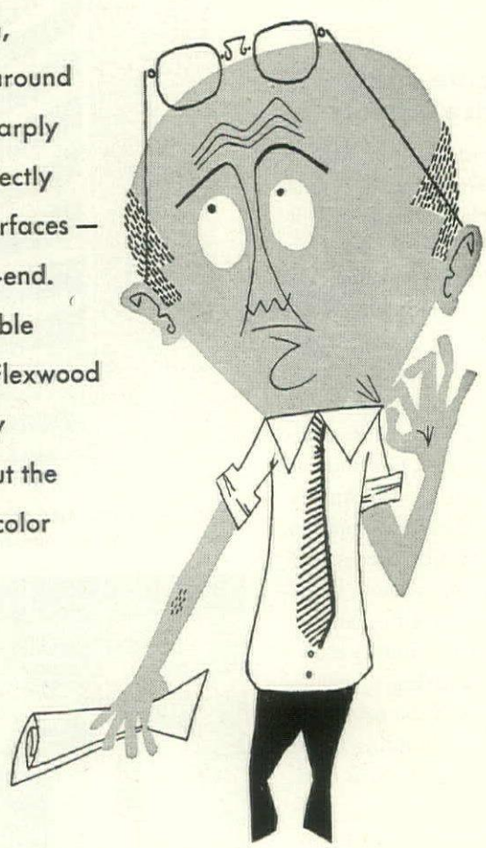

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Slusser, PHA will no longer countenance projects developed by local housing authorities against the will of local governing bodies. "No community is going to have a project rammed down its throat."

Backing up his statement, he halted a 46-unit Aberdeen, Wash. project that was started last Feb. 9, one day before a local referendum disapproved the project, 579 to 530. This was 60% completed early this month, would cost the city about $475,000 if it was canceled at this stage, unlike specially-treated Los Angeles, where the US will absorb a large loss.

Hastily, but reluctantly, the council voted to approve completion by the local authority; with this resolution on record PHA rescinded its halt order.

Both attendance and collections swell as many churches warm to air conditioning

Heaven knows what blasphemies have been muttered or contemplated by churchgoers melting in the heat of a summer Sunday service. Rather than squirm and fan themselves many parishioners dispense with church entirely during the warmer months, dismaying pastor and treasurer alike.

This summer, however, a growing number of churches were boasting better attendance than in any summer before and the answer was revealed in the fact that they now have what virtually every movie theater has: air conditioning.

The trend toward making church temperatures more bearable in the summer is something that has been developing only over the last few years and its growth is testimonial to the wonders it has performed in bringing strays back into the fold. A survey of air-conditioned churches made by the magazine *Christian Herald* found increases as high as 50% in both attendance and "loose" collections while all churches reported increased attentiveness on the part of worshipers.

Ascending sales. Carrier Corp. recently estimated that more than 5% of all US churches with 100 seats or more had cooling systems of one kind or another and that about 3% of this number had refrigerated air conditioning.

Carrier has also noted that most units have been sold since 1950. Its Dallas office alone sold 32 in that year compared with a total company average of 12 per year before the war. Its various southern offices have concluded that there is virtually no church that cannot be considered a good prospect—Negro churches included. Adding up its sales records for 1952, Servel, Inc. found that 3% of its total nonresidential air-conditioning tonnage was sold to churches. "This is pretty substantial for one classification," a company spokesman said.

The trend, however, has been largely confined to the South, and for an obvious reason. General Electric has had no particular reports of sales to churches in the west or northwest, but its distributors in the New Orleans area, for instance, report 15 sales so far this year as against one during 1952. The Dallas Power & Light Co., in a survey made six months ago, showed that of the 450-odd churches in that city, about 90, or 20%, were air-conditioned.

Worldly obstacles. Deterrents to even more installations are the special problems encountered in air-conditioning a church, particularly an existing building. The system must make as little noise, be as unobtrusive as possible and be simple enough in operation for a sexton to handle. While the ideal solution would be a built-in, year-round central plant which heats in the winter, cools in the summer and dehumidifies all the time, such units may well be beyond the means of many churches.

Each church, however, presents its own engineering problem and it is up to the church itself to work with an air-conditioning engineer to determine which type of unit would be best suited to its needs and finances. While the church can expect a fairly sizable initial outlay and a bigger electricity bill, it also has every reason to anticipate results similar to those achieved by the First Baptist Church of Waco, Tex. After it paid $36,000 for its air conditioner membership grew so much this church's budget increased $50,000.

John Gass

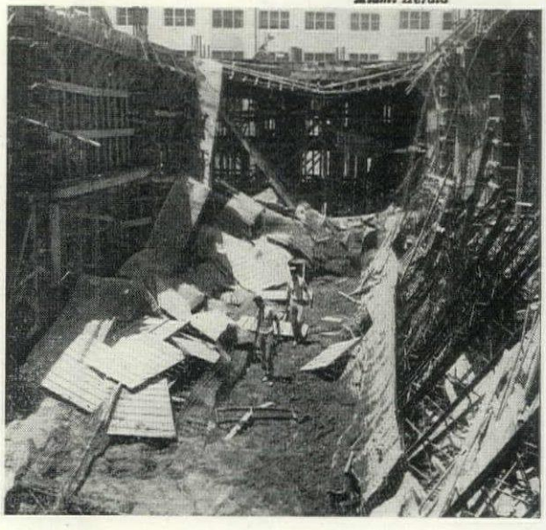
Two structures collapse while concrete is being poured

In Scarsdale, N. Y. on July 10 the roof of a four-story reinforced-concrete office building was being poured when a large section gave way and crashed through each succeeding floor into the basement (top). Three workmen were killed and ten injured. District Attorney Samuel Faile engaged Hardesty & Hanover, New York consulting engineers, to investigate the collapse, and their report was due later this month. Concrete work was being done by Rizzi Construction Co. of New York; the general contractor was the Arthur D. Stolle-Delval Corp. of White Plains.

In Miami Beach on July 19 a 100′ section of lobby ceiling for the 329-room DiLido Hotel being erected by General Contractor Robert L. Turchin crashed 25′ to the ground in a circular motion (r). Ten men pouring concrete fell with it but escaped without any serious injuries.

Up to Aug. 7 Chief Building Inspector O. M. Pushkin had not submitted a final report on the failure, but City Engineer Morris N. Lipp rejected what he called "horseback opinions" of architects and engineers who thought insufficient shoring was responsible. Oboler & Clarke of Miami Beach said their firm was engaged for structural designing but not to supervise construction of the building. The architects, Morris Lapidus of New York and Melvin Grossman of Miami Beach, had no comment.

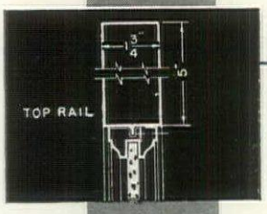
Miami Herald



RICHMOND MD DOORS

Molded Design

Now available with U.L. label

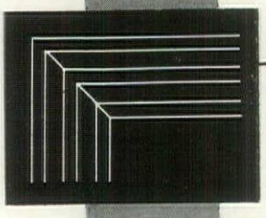


HEAVY DUTY CONSTRUCTION

Stiles and rails 16 gauge; butt and lock cutout reinforcing

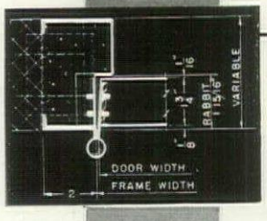
MOLDED DESIGN

A Richmond "first"; neat 20 gauge hollow metal molding around all glass and solid panels



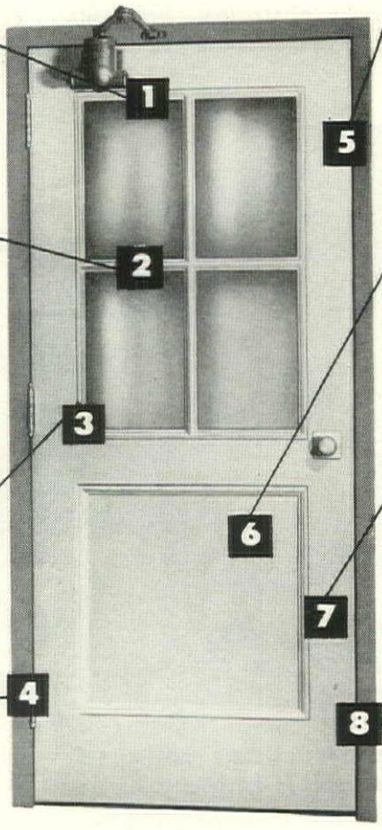
MITRED AND BRAZED CORNERS

Continuous sash ready for glazing; no open mitres



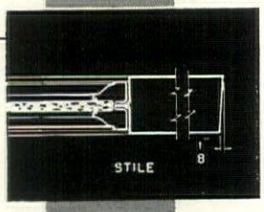
HINGE RECESSES

provided for neat fit; no cutting on job



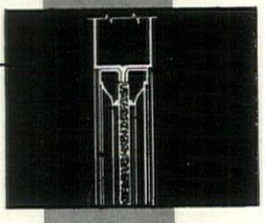
BEVELED EDGES

for snug fit in frame, and non-binding operation



METAL COVERED PANELS

¼" sheet rock (asbestos for labeled doors) glued between 20 gauge steel sheets



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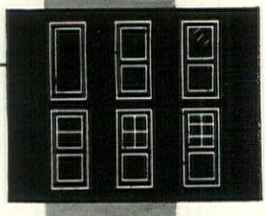
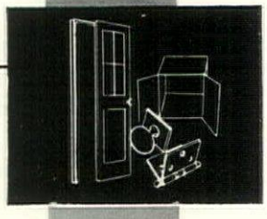


COMPLETE "PACKAGE"

Furnished complete with frame and standard hardware for savings on job



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PEOPLE: Seattle office buildings leased to Roger Stevens for $37 million; Bartholomew gets Washington planning post

Unobtrusive but dynamic **Roger L. Stevens,** principal figure in the Empire State Building purchase in 1951, spread his kingsize realty operations to the Northwest last month. A syndicate headed by Stevens, his two Empire State partners (Detroiter **Alfred R. Glancy Jr.** and Florida hotel owner **Ben Tobin**) and New York Realtor **H. Adams Ashforth,** won a 35-year lease on a ten-acre tract in the heart of Seattle's business district owned by the University of Washington. They outbid 11 other groups, guaranteed the university at least $37 million in rents. Payments might rise as high as $2 million a year after improvements.

Simpson Kalisher

STEVENS

Under the Stevens lease the tract's six office buildings and eight-level Olympic Hotel garage will not be razed for a new skyscraper complex redevelopment, as many persons had contemplated. Instead the property will be extensively modernized, and only two small buildings erected.

While **Walter Gropius, Pietro Belluschi, Walter F. Bogner, Carl Koch** and **Hugh Stubbins Jr.** were working together as the Boston Center Architects on plans for his $75 million Boston redevelopment (AF, Feb. '53), still another Stevens venture was announced in New York. With the Playwrights Company, Robert Whitehead and **Robert W. Dowling,** realty owner and advisor, Stevens formed a $1 million corporation that will apply "business methods" to theatrical operations and explore the feasibility of erecting new theaters. Dowling already controls six Times Square theaters and is chairman of the American National Theater and Academy. Stevens is ANTA's treasurer, produced "Peter Pan" on Broadway in '50.

And for the summer lull theatrical partner **Dowling** also accepted an extra-curricular NAREB role last month, the chairmanship of a cooperative housing committee. Main committee objectives: to help city apartment dwellers obtain more home ownership advantages; to create a more effective market for co-op apartment resales. Individual co-op owners need better safeguards against mortgage defaults caused by other co-owners, explained Dowling. The commitee is making good progress on two possible solutions, he reported: 1) an "insurance" type of protection, and 2) a new type of individual mortgage on each apartment in a cooperative building.

CONGRATULATIONS: To City Planner **Harland Bartholomew** of St. Louis, former president of the American City Planning Institute and the National Conference on City Planning, appointed by President Eisenhower as a member of the National Capital Planning Commission and also its chairman (succeeding **Joseph D. Lohman,** who remains a member); **John Hazeltine** of Los Angeles, who has been appointed to direct HHFA's community facilities and special operations division (including the college dormitories program); Construction Engineer **Wilbur A. Dexheimer** of Denver, appointed as head of the Bureau of Reclamation; Realtors **Hubert A. Boisvert** and **Thurlow S. Culley,** appointed as members of the Los Angeles Planning Commission; **William Collins** of Yonkers, president of Walter Kidde Constructors, Inc., appointed by Governor Thomas E. Dewey to a special committee to explore the problems of privately-owned bus lines providing transportation service within cities.

BARTHOLOMEW

DIED: **James J. Russell,** 67, board chairman of Revere Copper & Brass, Inc. since 1951, formerly treasurer and president, Aug. 1 in New York; **George McAneny,** 83, a founder and first president of New York's Regional Plan Association, sponsor and member of the commission that drafted New York's first zoning ordinance regulating building heights, recipient of the Beaux Arts medal from the French government (also named a Chevalier of the Legion of Honor) for his contributions to city planning, also a medal presented jointly by

AP Photo

RUSSELL

McANENY

New York's architectural, engineering and landscape societies, July 29 in Princeton, N. J.; **John C. Hegeman,** 69, co-founder and president of Hegeman-Harris Co., Inc., July 6 in New York; **Francis Pierpont Davis,** 68, FAIA, co-recipient with his brother Walter of the AIA Distinguished Honor Award for designing St. John's Episcopal Church, Los Angeles, assistant to the chief architect in designing the Pentagon, July 15 in Los Angeles; **George Wood Bacon,** 84, retired (1946) board chairman of Ford, Bacon & Davis, Inc., July 21 in Pasadena, Calif.; **Lazarus White,** 79, underpinning and foundation specialist and former president of Spencer, White & Prentis, July 30, Larchmont, N. Y.

Carpenters quit AFL; protest "no-raiding" pact with CIO

A big surprise to the labor world this month was the sudden withdrawal of the 822,500-member United Brotherhood of Carpenters & Joiners from the American Federation of Labor. The move was made in protest to the proposed no-raiding agreement between the AFL and the CIO.

While the union had "no objections" to the agreement per se, it felt that the federation was ignoring "disruptive conditions" within its own membership and was more concerned with the affairs of the CIO. One reason the carpenters may have objected to CIO collaboration: recently the CIO defeated them in organizing Gunnison (US Steel) prefab housing operations.

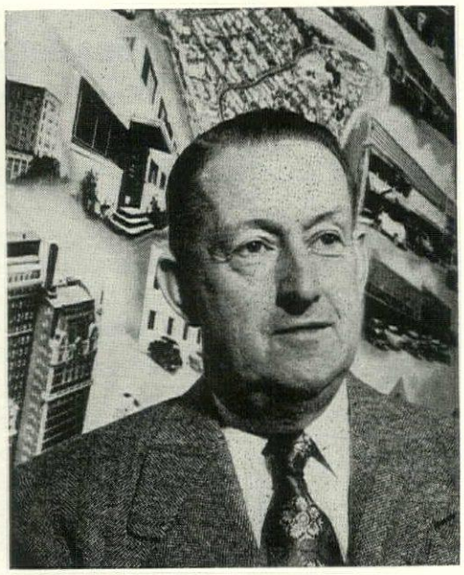
CLOSEUP: Leo Corrigan, the fast-dealing realtor, builds a 50-story skyscraper, Dallas' tallest, controls 55 shopping centers

Leo Francis Corrigan, the multimillionaire Dallas builder and real estate operator, remembers that as a boy back in St. Louis (where he got through the fifth grade) he used to visit the St. Louis stock market and wonder how the traders could move so fast.

"Today I guess I move faster than any of them, and I like it this way," he says. "Lots of my friends play golf or poker. I have more fun in two hours in my office, trading and dealing, than they do in a day on the golf course or an all-night poker game."

Skyline builder. Last month excavation was under way at the corner of Main and Akard—the heart of downtown Dallas—to make way for a 50-story glass-and-aluminum office building designed by Architect Wyatt Hedrick which will, by September 1954, completely dominate the stretching Dallas skyline (AF, Oct. '52, News). It will cost somewhere between $12 and $15 million—Corrigan doesn't know exactly. Precise figures don't worry him. The First National Bank of Dallas has already extended a $2 million line of credit on it, and one of a procession of

TIME: *Ed Miley*



CORRIGAN

men in his office one recent morning offered him, Corrigan said, $6 million in credit. "I don't go out looking for credit," he says. "It comes to me."

Maxims and principles. This business of people offering him credit instead of him seeking it out is closely akin to another Corrigan principle of 1953:

"All you have to do to get ahead is remember—never buy anything unless someone wants to sell it, and never sell anything unless someone wants to buy it. I'll sell anything I have—excepting my family—but the buyer has to come looking for it."

In the past three years Corrigan has:

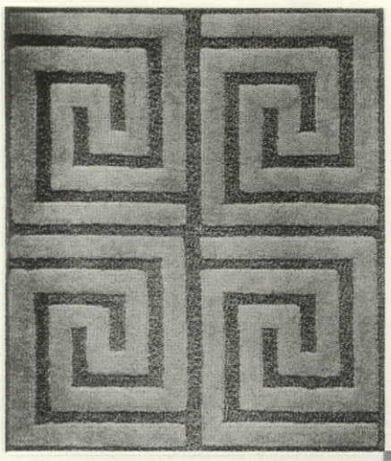
- Completed the $5 million Corrigan tower, a downtown Dallas office building.
- Completed a 20-story addition to the Adolphus Hotel.
- Built a shopping center at Humble, near Houston.
- Added 11 stories to the Burt Building in downtown Dallas—an office job designed by White and Prinz of Dallas.
- Bought the Biltmore Hotel in Los Angeles for $11 million ($2 million down).

In all, Corrigan figures he controls more than $500 million worth of buildings and land. Among them: 14 office buildings, 15 hotels, 55 shopping centers, 40 apartment projects. For a while, the value of his holdings was shooting up at an astronomical $100 million a year. Lately, Corrigan says, this has leveled off.

Last month his current deals included:

- Plans for a 1,000-room hotel in the center of San Francisco to be completed in two years; construction has not been begun—it's still in the hands of attorneys and architects.
- Building the $12 million Fulton National

(continued on p. 52)



On the Great Lakes Ore Boats as in the Great Hotels

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Guests of the owners of the Edward B. Greene, Cleveland Cliffs Iron Company, who cruise the Great Lakes—like travelers the world over (on the great ocean liners, in the best hotels and restaurants) enjoy the beauty and comfort of Carpets by Lees! Lees Contract Carpets are specifically constructed to withstand wear and steady traffic. They come in a wide range of colors, patterns and textures, also custom designs for special interiors. Send for specific information from James Lees and Sons Company, Contract Carpet Division, Bridgeport, Penna., or offices in principal cities.

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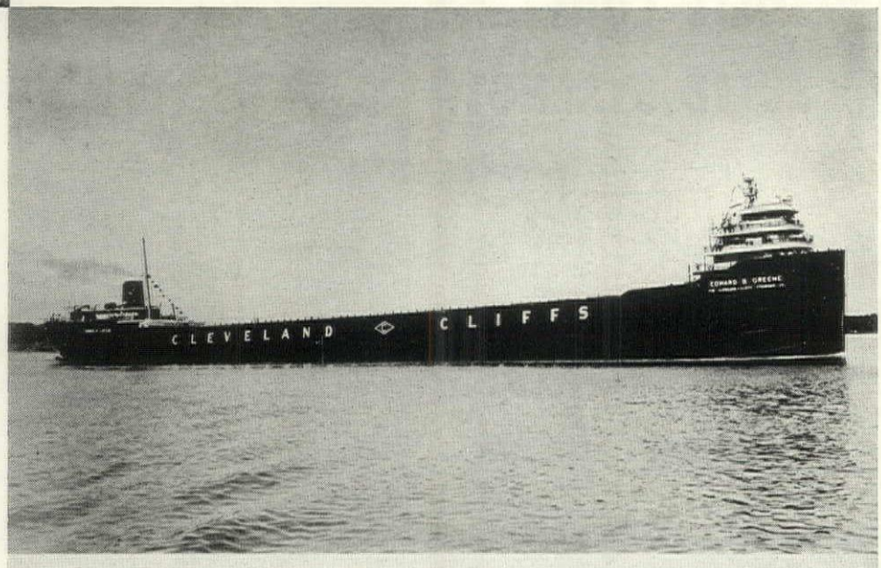


Lees Contract Carpets add beauty and comfort to guests' quarters aboard Great Lakes Ore Boat of the Cleveland Cliffs Iron Company.

Lees Glowtuft is installed in the lounge. Cabins and staterooms also feature Those Heavenly Carpets by Lees.

INTERIOR DESIGNED BY JACK HEANEY AND ASSOCIATES, NAVAL ARCHITECTS AND INTERIOR DESIGNERS, BEEKMAN PLACE, NEW YORK

Dean Vannice

Metropolitan Life yields to modern design—in California

Conservative Metropolitan Life officials usually establish their branch offices in plain or traditional buildings. In Panorama City, Calif. however, they liked exceedingly the design of this modern two-story (but elevatored) structure and will share the glass-enclosed second floor with the municipality's offices. The post office and a store will occupy the glass-front ground floor. Architects: Hutchison, Kinsey & Larson.

Bank building in Atlanta, to be completed in a year and a half.

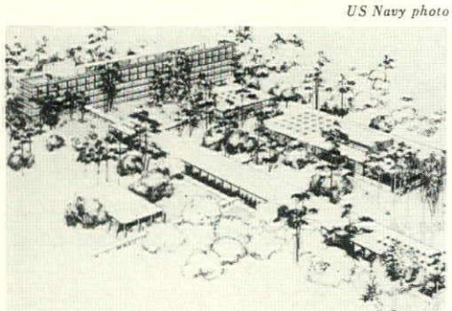
▸ Construction of the $12 million, 50-story office building in downtown Dallas. This, with a 1,250-car parking garage to be built on the other side of the Adolphus, will fill out Corrigan control of one of the most valuable building blocks in Dallas.

▸ Construction of a $3½ million Emerald Beach Hotel in Nassau designed by London Architect Michael Rosenauer.

Renovation specialist. Until the past few years Corrigan's specialty was buying old buildings, fixing them up and putting them on a profitable management basis. Now most of his operations involve new construction. Corrigan says that when he was dealing in old buildings, most of them were under-priced. Now they are up to the market, and he would rather have a

(continued on p. 54)

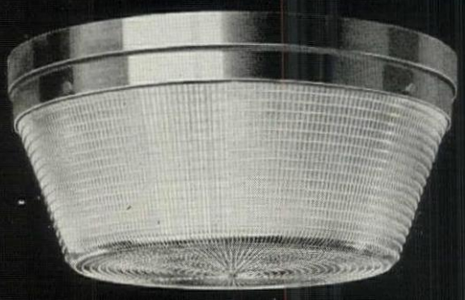
US Navy photo



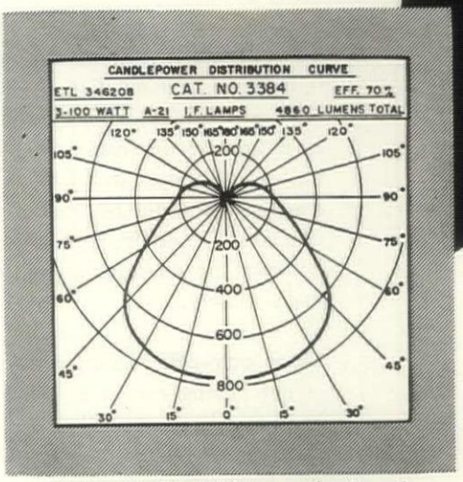
Navy engineering school being erected in Monterey

Superstructures were rising at Monterey, Calif. this summer for this group of U. S. Naval Postgraduate Engineering School buildings designed by Architects Skidmore, Owings & Merrill. Beyond the main five-story building there will also be a 1,200-seat lecture hall (not shown). At least two counts on which this project is expected to qualify for special citations after it is completed next year: the triumph it scored for clean, efficient modern design through acceptance by a government agency; its exceptionally fine site planning to preserve and capitalize on existing natural beauty (virtually every tree in this sketch is already growing exactly as shown, Navy officials report).

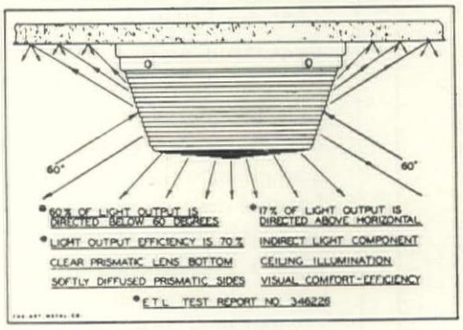
lens lighting in drum form



PATENT PENDING



Maximum surface brightness uniformity ratio of 1.2 to 1.00 in the normal viewing zone.



Specifically designed for multiple horizontal lamp operation, the clear lens bottom provides a widespread direct light distribution with no color distortion of the lamp light. The prisms on the sloping sides elevate light to the ceiling, adding the quality of indirect lighting. Available in two sizes.

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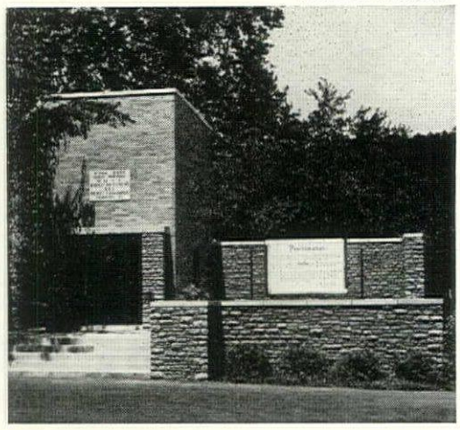

Architect-designed warehouse for a single barrel of whisky

Never again can it be said: whisky never did anything for an architect—nor vice versa. When a Schenley distillery produced its two-millionth barrel of post-Repeal bourbon in June it went into this unique, specially-constructed one-barrel bonded whisky warehouse in Frankfort, Ky. Because Internal Revenue regulations would have required jail-like bars in front of any windows, the building was designed instead with a glass "wall" (front) to allow visitors to view its pedestalled, spotlighted raison d'etre within. Architect for this radiant heated showcase-monument-warehouse: George Schatz, of Cincinnati's Schatz-Elliston-Hall-McAllister-Stockwell.

new building than an old one for his money.

Corrigan, 59 on Aug. 30, jammed his way into Dallas real estate 36 years ago as a want-ad salesman. He built a neighborhood drugstore with $10,000 savings. It was also one of the few buildings he bought outright. Generally, he has pyramided his holdings by mortgaging one purchase to make another.

Slow pay-off. Along with the business of not buying except in a buyer's market and not selling except in a seller's market, Corrigan has a few business principles he says he observes religiously.

One is that he asks for long-term credit with the option to pay off fast. "Long-term credit never hurt anyone; it's short-term credit that breaks people. If you're on a fast pay-off and you get some vacancies—bang, they've got you. I don't have a single note that isn't self-liquidating—if I should die tomorrow they would go right on working themselves out. And I don't retire a debt at a higher rate than my depreciation charge-off."

Another is that when he builds something, he builds it to rent, not to sell, and he avoids expensive frills. He will spend just as much money as the man who goes in for what he calls "filigree," the extra decorative details, but Corrigan spends the extra money on such things as copper plumbing which, once in, won't cost him anything more.

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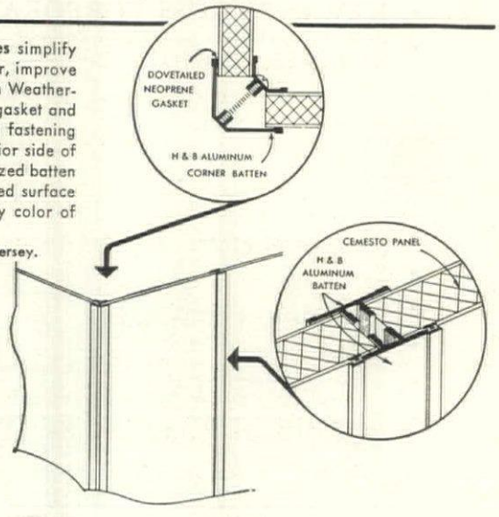
New Aluminum Curtain Wall Accessories simplify application of Cemesto Panels, save labor, improve appearance. Trim, new H & B* Aluminum Weather-stripping Battens have built-in neoprene gasket and continuous thread channels for engaging fastening bolts. Since bolts are applied from interior side of curtain wall, the exterior face of the anodized batten presents a smooth, unbroken, satin-finished surface which blends harmoniously with the gray color of Cemesto Panels.

*H & B Enterprise Corporation, Trenton, New Jersey.



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EVENTS

City and Regional Planning course, conducted by M.I.T.'s School of Architecture and Planning **Aug. 24-Sept. 4,** offers intensive review of administrative and technical aspects of urban and regional development to men and women in the fields of building, investment and industry, as well as to practicing professionals. Tuition for 2-week program, $100; enrollment limited. For details, application blank, write: Office of the Summer Session, Room 3-107, M.I.T., Cambridge, Mass.

Acoustics—Special summer session program in noise reduction **Aug. 24-Sept. 4,** Acoustics Laboratory, M.I.T., Cambridge, Mass.

Illuminating Engineering Society's 45th National Technical Conference **Sept. 14-17,** Hotel Commodore, N. Y.

Gulf States Regional Council, AIA, annual meeting **Sept. 17-19,** Buena Vista Hotel, Biloxi, Miss. Architects from Louisiana, Arkansas, Tennessee, Alabama and Mississippi will confer on various aspects of regionalism. Speakers: Hodding Carter, Walter Greese, Richard Neutra, Christopher Tunnard, Paul Rudolph.

Pennsylvania Society of Architects' annual convention **Sept. 18-19,** Lancaster, Pa., as guests of the Central Pennsylvania Chapter, AIA. Theme: "Research—and Things to Come"; expected participants in the program: Armstrong Cork Co.; Walter Taylor, AIA; Leonard Haeger, NAHB; William Scheick, BRAB.

Third International Congress of Architects at Lisbon, Portugal, **Sept. 20-28.** All architects invited. For information and program address: Secretario do Congresso, Rua de S. Bernardo 14, Lisboa, Portugal.

Midwest Conference of Building Officials & Inspectors, Hotel Lowry, St. Paul, Minn., **Sept. 21-23.**

National Electrical Industries Show, 69th Regiment Armory, New York City, **Sept. 29-Oct. 2.** Adequate wiring will be the theme.

International Churchman's Exposition, Chicago Coliseum, **Oct. 6-9.**

New York State Association of Architects' convention, **Oct. 8-10,** Lake Placid Club, Lake Placid, N. Y.

California Council of Architects' convention, **Oct. 14-17,** Coronado Hotel, Coronado, San Diego.

Pacific Coast Building Officials Conference's annual meeting, **Oct. 20-23,** Huntington Hotel, Pasadena.

National Savings and Loan League's fall conference **Nov. 8-11,** Casablanca Hotel, Miami Beach.

National Association of Real Estate Boards' annual convention **Nov. 8-14,** Statler and Biltmore Hotels, Los Angeles.

Mortgage Bankers Association of America's annual convention **Nov. 13-19,** Miami Beach.

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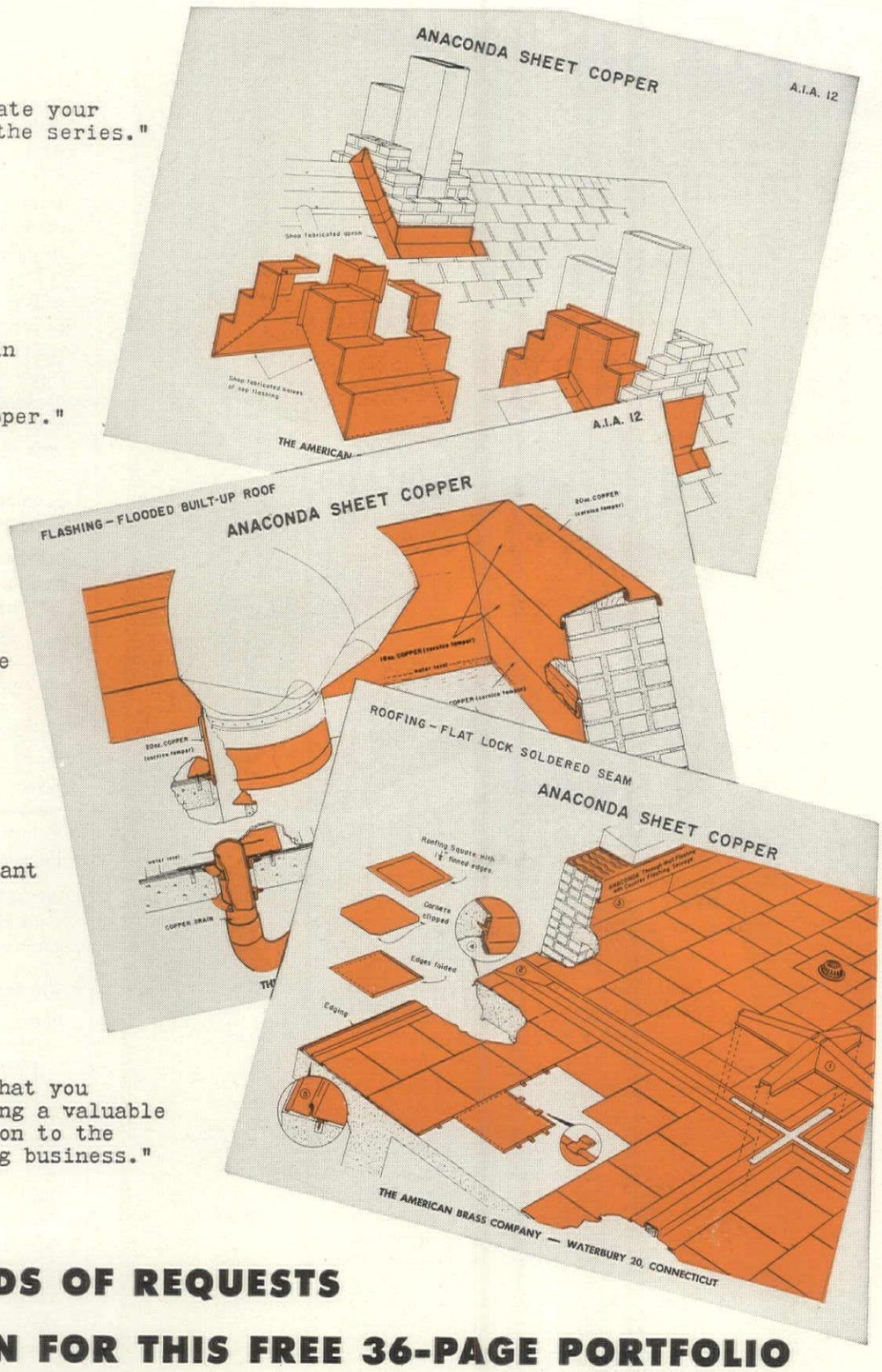
"We feel that you are making a valuable contribution to the building business."



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LETTERS criticism vs. statesmanship

In its May issue FORUM *made clear its stand in the controversy currently swirling around the various schools of architectural thought: ". . .* FORUM *will continue to be a forum indeed, where buildings reflecting different attitudes toward design are sympathetically presented, where architects of conflicting convictions can express their thoughts. . . ."*

This editorial has prompted a boom in reader mail—most of it sympathetic. Excerpts from all these letters (except one of the unsympathetic variety whose author would not permit it to be edited down to appropriate length) are presented below and in last month's Letters *department. Letters on other subjects begin on p. 80.—*ED.

. . . a nonexistent fence

Sirs:

I have read your editorial "Criticism vs. Statesmanship in Architecture" (AF, May '53) with a great deal of interest.

I agree with you that it is time to call a halt to the heedless sniping done by those on each side of the fence; a fence which does not really exist. Architecture is greater than any so-called school or movement. It is high time that the public be given some respite from these "hatchet campaigns" and that someone—and the FORUM can do it—offer real criticism and thoughtful guidance.

ALEXANDER C. ROBINSON III
Garfield, Harris, Robinson & Schafer, architects
Cleveland

. . . dangerous conclusions

Sirs:

The editorial is to the point.

Different expressions in design should be accepted and given recognition in such publications as the FORUM. The merging of these different conceptions, the influence of one on another, their very divergencies bring about unexpected interpretations and lead to experiment, variety and fresh interest. Hasn't that always been true?

Opinions of the individual architect and critic must be judged and screened through their human reactions. Arbitrary conclusions are certainly dangerous at best, particularly when they apply to creative efforts.

JOHN WELLBORN ROOT, *architect*
Holabird & Root & Burgee
Chicago

. . . critical, but not destructive

Sirs:

We were delighted.

Myself and a great many of my friends in the field are seriously concerned over the unsavory political condition this country has fallen into in the last few years, epitom-

continued on p. 59

ized by the demagoguery of Senator McCarthy. When this kind of irrational unthinking dogma is presented as America, it makes many of us fighting mad. And to see this kind of thing applied to houses (or architecture in general) is particularly unfortunate. One might perfectly well feel correctly critical of many things in American architecture, and this is the way we progress; but I have never seen progress aided by what amounts to rabble-rousing, intemperate, destructive criticism or name-calling.

JOHN CARDEN CAMPBELL, *architect*
Campbell & Wong
San Francisco

. . . freedom of speech and choice

Sirs:

. . . An inspiring statement of democratic faith.

I am willing to listen to the mobsters and to the retrogressives as long as I am assured that the progressives will have an equal opportunity to be heard. The creative spirit of man is infinite. The great majority will discern good from evil and choose the joy of living in sunshine in preference to the dingy past.

ISADORE ROSENFIELD, *architect*
New York, N. Y.

. . . confusion and fear

Sirs:

In answering the weak but destructive whines which have suddenly come to a nasty head in the last few months you have maintained a mature, constructive and professional attitude.

For a long time I have been sensing a disastrous lack of understanding of the issues involved in architecture. I have been searching for the causes of this lack of understanding. In my opinion several factors become apparent if one glances at the periodicals publishing architecture with one's colleagues or people in related art fields.

First: A confusion resulting from the use by professionals and critics, and then picked up by dilettantes, of such terms as: Purism, Internationalism, "Fascistic box" — now: "Communistic rectangle" (amazing how geometry has fallen victim to whimsical and convenient labels), traditional modern, romantic modern, classical modern, bay-region architecture, "*Organic or Truly American Architecture.*"

Now what do all of these words mean when we come to really analyse them? Do they enlighten anyone? Do they clarify architectural concepts? Or are they but magical sounding phrases used over and over and over again—hypnotizing the people to the point of being easy pushovers for these charted trips to the "Next America."

Second: Fear—that word which means death to any creative thinking. *Fear* of the

continued on p. 64

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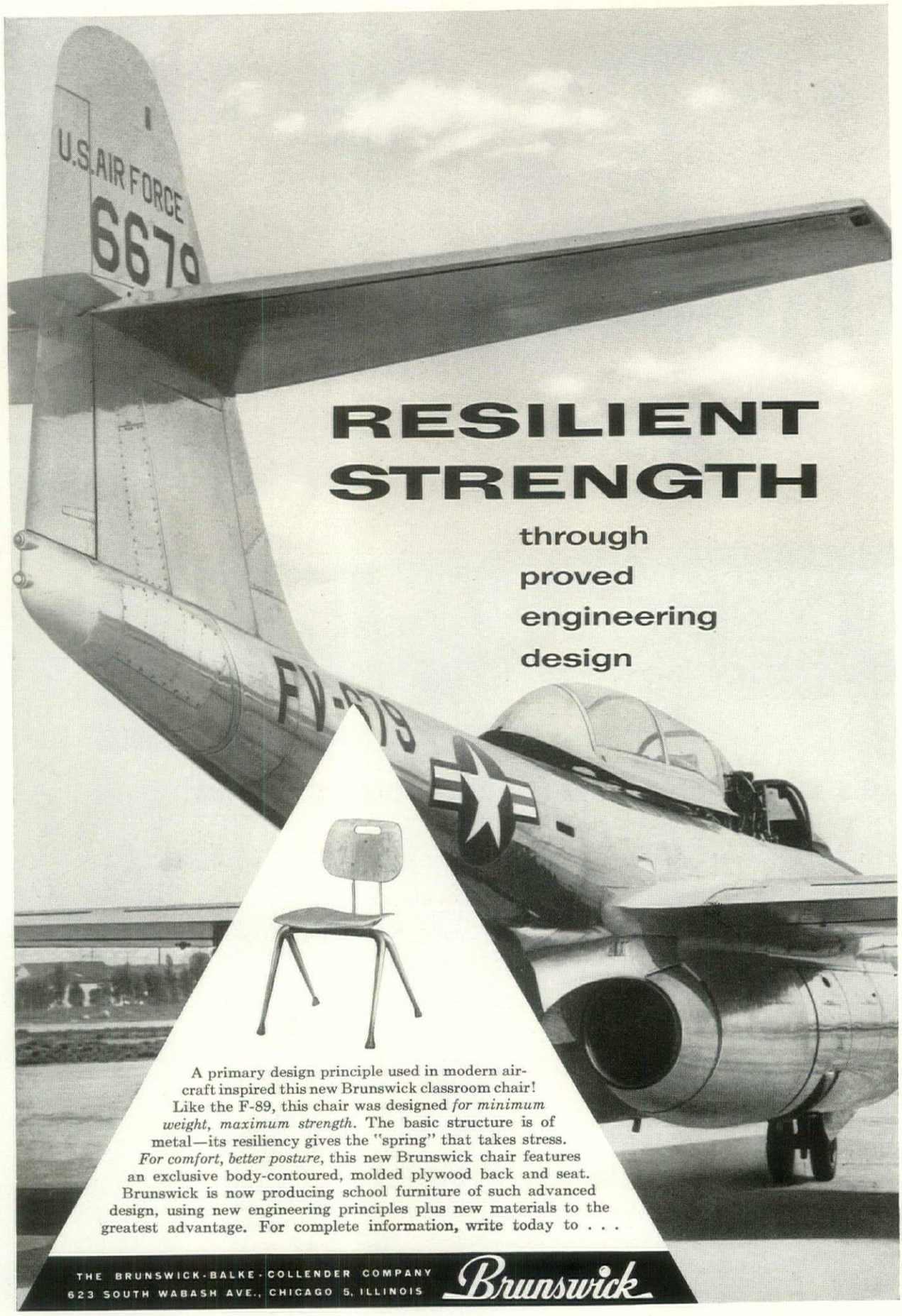
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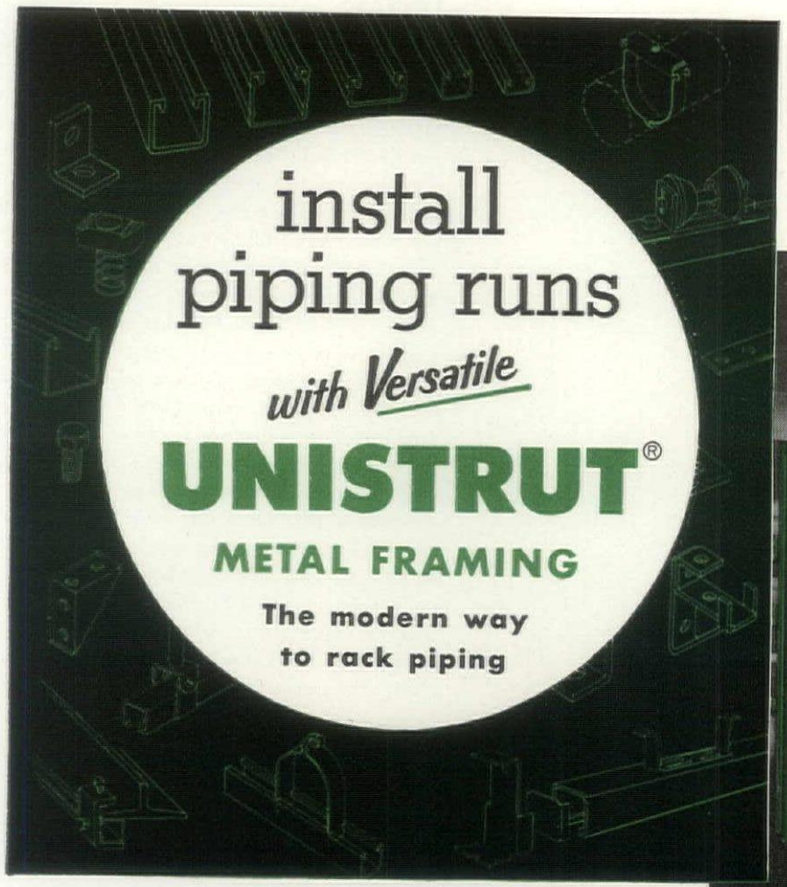

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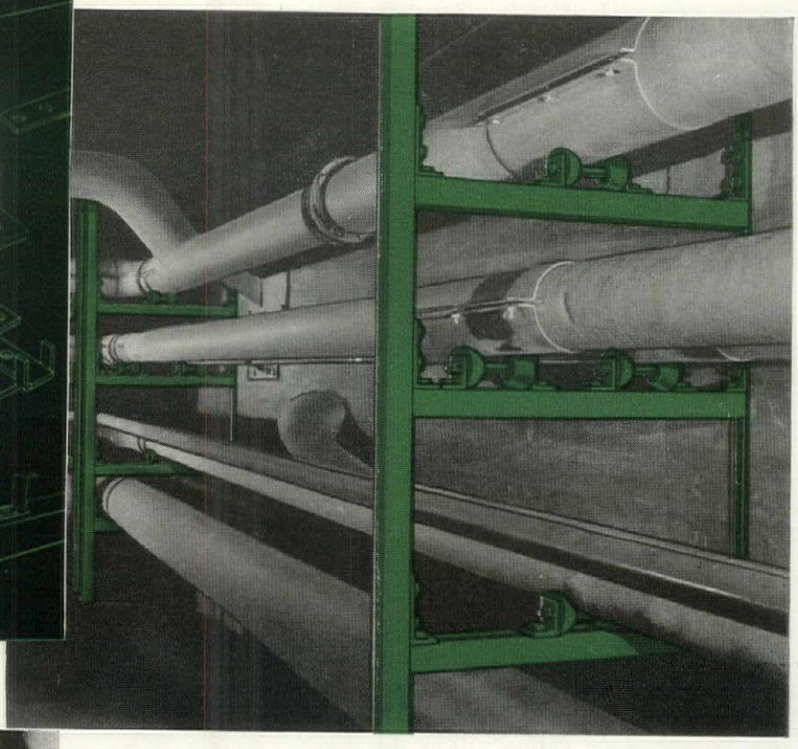

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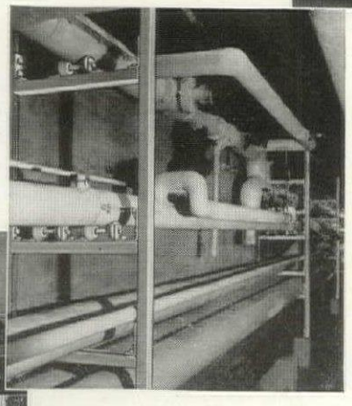

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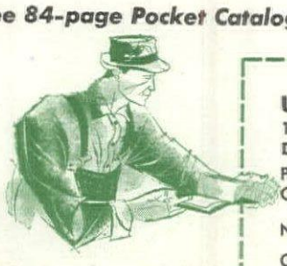

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LETTERS

fearless mind—*fear* of anything which cannot be called "*our own.*" Since when has thought been localized any more than the sky is localized? Does the science of prestressed concrete mean different things in different countries? Is the conception of an embryo and its development different in mothers throughout the world? I wonder what would happen if there were no winds to cast the seeds into the air—if we were to put a cellophane bag over the plant to prevent its disseminating fertility? Is architecture a way of life having its roots in *the world*—or is it an arbitrary, stylized, regional, nostalgic expression?

I believe that we should have a permanent exchange of ideas among people of *knowledge* of all countries and not dilettantes—particularly here in the US. We should have no fear to express our opinion and to dissect architecture. I know of no other way to clarify the issues for the public and in return to enrich our own knowledge.

Perhaps your article can be the starting point of a permanent discussion, thus bringing about for the first time *honest, open* discussion between all people of *architectural knowledge.*

RAPHAEL S. SORIANO, *architect*
Los Angeles

. . . Bauhaus, pro and con

Sirs:

Doric columns and freestanding fireplaces, glass walls and timbered cells, free forms and bilateral symmetry, static and dynamic—who cares? Maybe it needs a little of all to make good architecture, plus the touch that is not in the book, not in Vitruvius, and not in Giedeon.

The final word lies in the saying of Duquesne of the old Beaux-Arts:

"*Ça c'est beau quand c'est bien fait.*"

All honor to the Bauhaus for whatever of good architecture its devotees have accomplished (and that is not little) and for its salutary assistance in promoting amongst architects the free and open plan and a consciousness of the site.

And the back of my hand to the Bauhaus for its lack of a liberal eclecticism, for its esotericism, for its pontification, for its lack of *compassion* (with thanks to W. W. Wurster), and for its unwarranted arrogation of original, ultimate and unique authority for whatever in architecture is currently held to be good.

EDWARD HUNTSMAN-TROUT, *landscape architect*
Beverly Hills

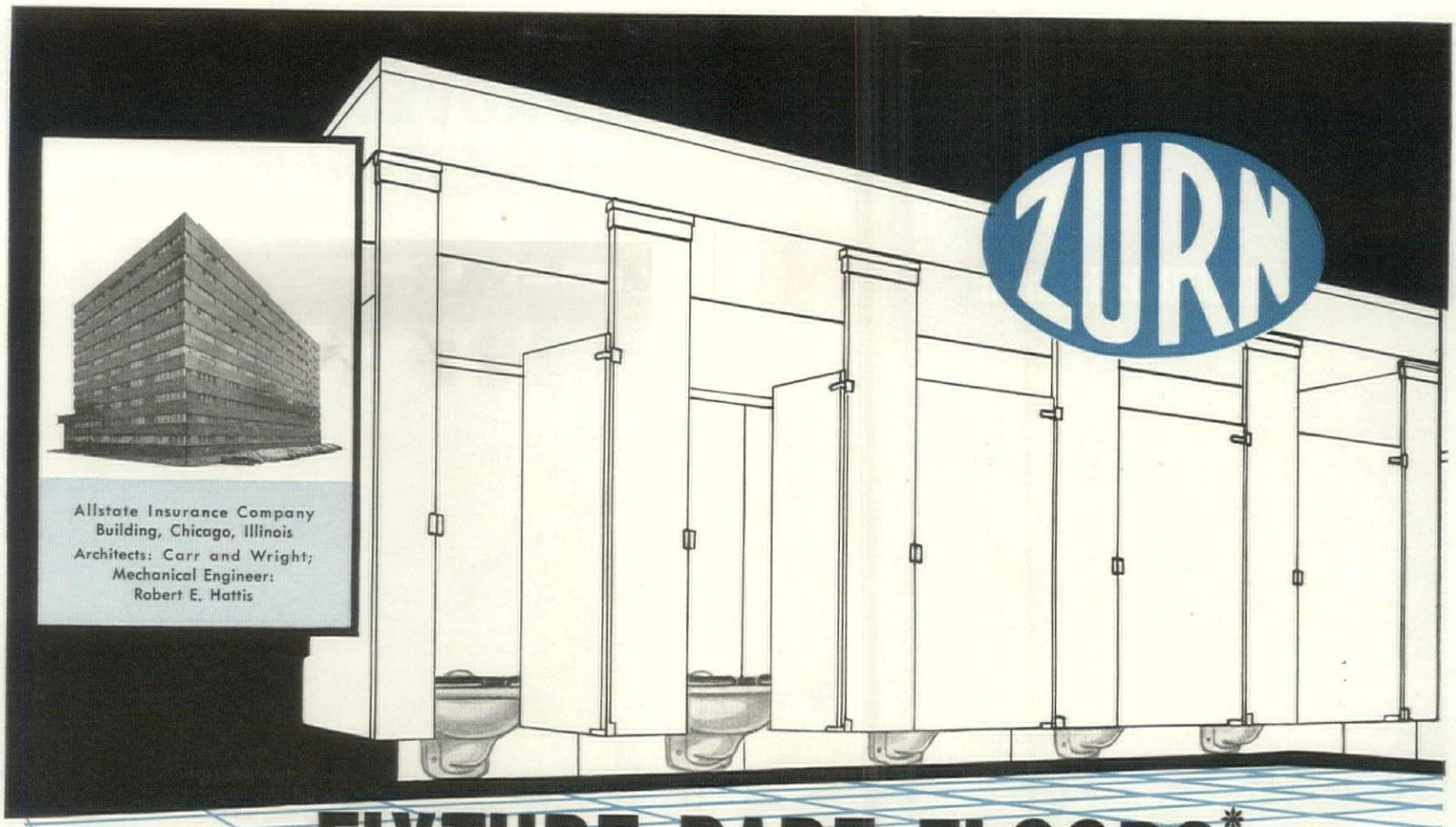
. . . which, not whether

Sirs:

Shame on me for being a "yes man," but I like your editorial.

I remember once that Eliel Saarinen said that we should present two schemes rather than one. This would introduce the idea of

continued on p. 68



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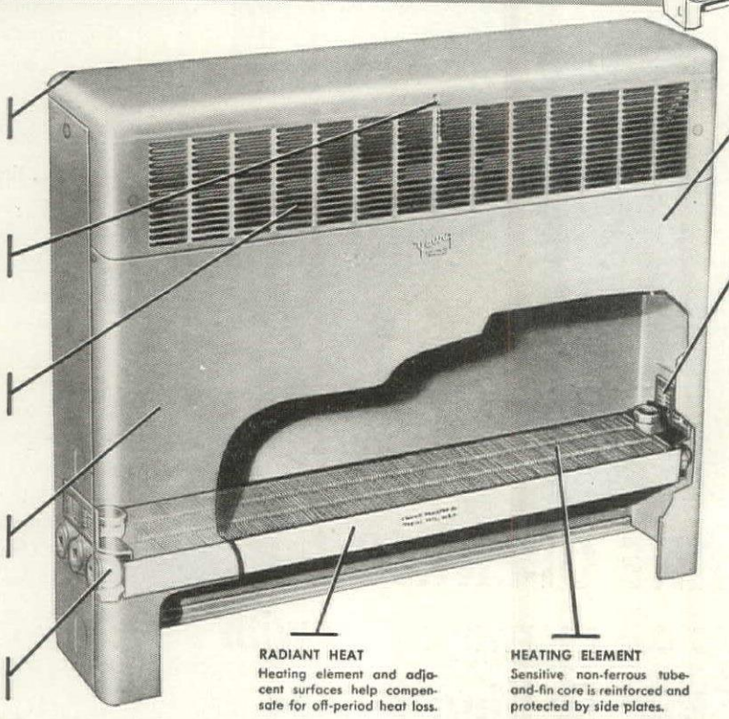

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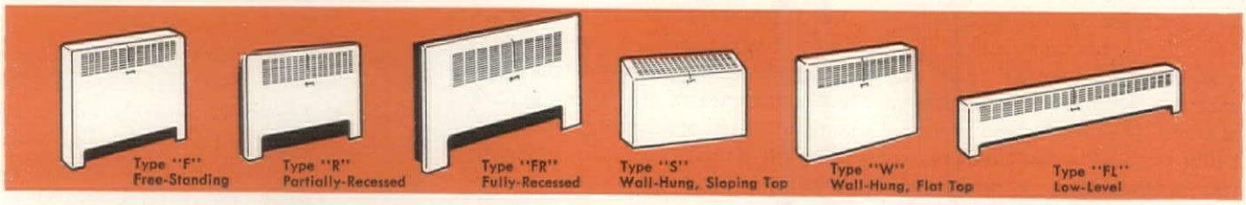

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LETTERS

which to build whereas one scheme might have suggested the question of *whether* or not to build. You are reporting "at least five different trends" in architecture, and you are disclaiming the wisdom to praise or condemn them this early. I wonder if that's wise. You will make mistakes of judgment, but since you have used the enormous prestige of the FORUM to create the climate in which "five different trends" could emerge and in some degree prosper, don't you have some responsibility to oppose incompetence within those trends, thus giving some or all of them a bad reputation which could hurt their joint cause?

LAWRENCE B. PERKINS, *architect*
Perkins & Will
Chicago

. . . time in esthetics

Sirs:

Perhaps some other time you will wish to write an editorial on the "time" factor in esthetics. Perhaps we speak too much in absolutes without sufficient regard for the tremendous variation in the human animals for whom we are creating environment.

Any response to visual stimulus, after all, is as much an intellectual as an emotional process requiring positive effort on the part of the beholder. Not only is effort involved but also knowledge and training.

Can it be that you, by improving our audience, are thereby creating beauty?

PHILIP WILL JR., *architect*
Perkins & Will
Chicago

. . . teams, not stars

Sirs:

Your editorial touches a very sensitive spot with me and elicits an answer not entirely free from emotion.

No one knows who designed the Piazza of St. Mark's, but everybody knows that it is a great achievement and is not dependent upon the name of the architect.

I assume your editorial is directed toward Elizabeth Gordon's editorials about Mies van der Rohe. I think you have a perfect right as a magazine to say whatever you believe. I also think she had a right to say whatever she believed. I think the general end result is beneficial to all concerned. It suggests and gives full expression to the theory of free speech and free press.

I would welcome more outspoken, frank articles on architectural design and building. The present vogue of slanting practically all architectural subjects toward a few individuals is the same kind of blind hero worship in reverse that those individuals experienced during their so-called unpopular period. There are architects in this country besides these few famous names, and it is those other architects who

continued on p. 72

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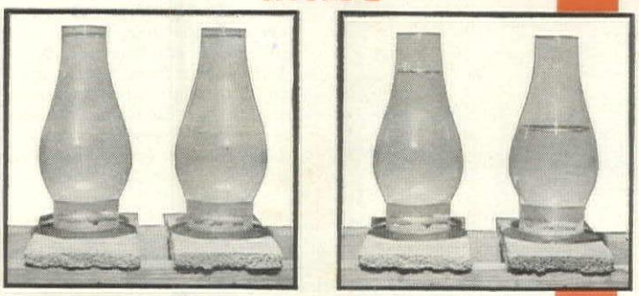
FIGURE 1

To compare the durability of Brixment with that of any non-waterproofed mortar, make a cylinder or block of each, let both cure for a month or so, then freeze and thaw them about 15 times in your deep-freeze or refrigerator, with a little water in the pan.

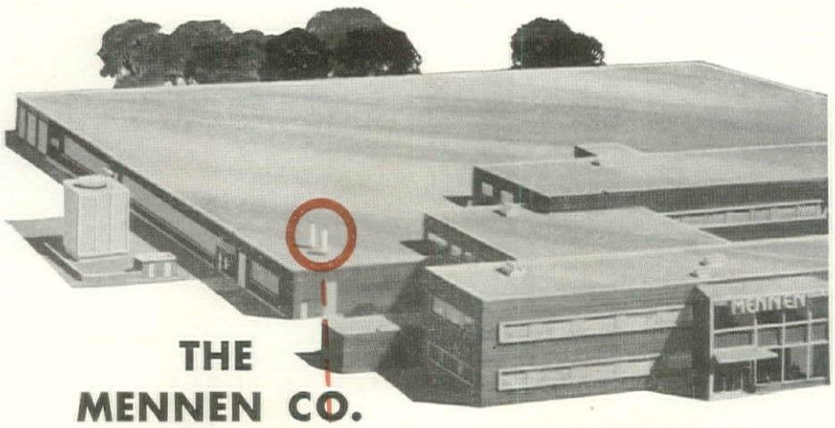
After a number of freezings and thawings, you will note that the cylinder of Brixment mortar (at left, in both the before and after photographs above) retains its original condition, while the cylinder of non-waterproofed materials has badly crumbled and scaled.

FIGURE 2



Prepare two slabs of mortar, one with Brixment and one with ordinary cement-and-lime mortar. After mortars have hardened, seal a lamp chimney to each of the mortar slabs, using wax or candle grease, and fill with water.

After 24 hours note how much water has gone into and through the non-waterproofed mortar, and how little water has gone into or through the Brixment mortar



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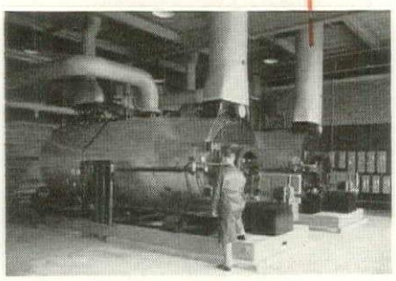

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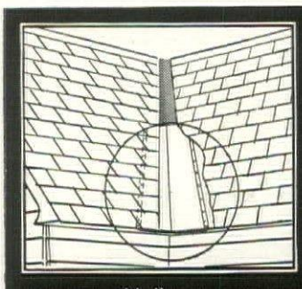
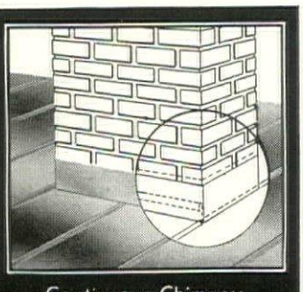


Valleys



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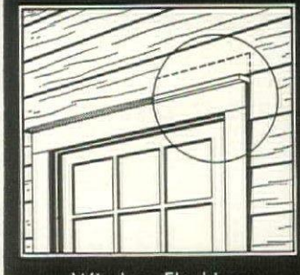

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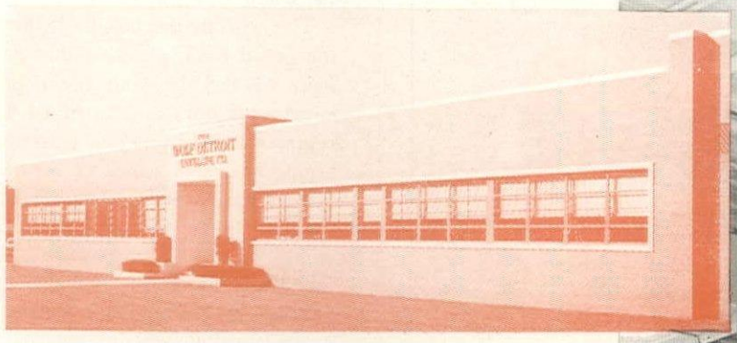

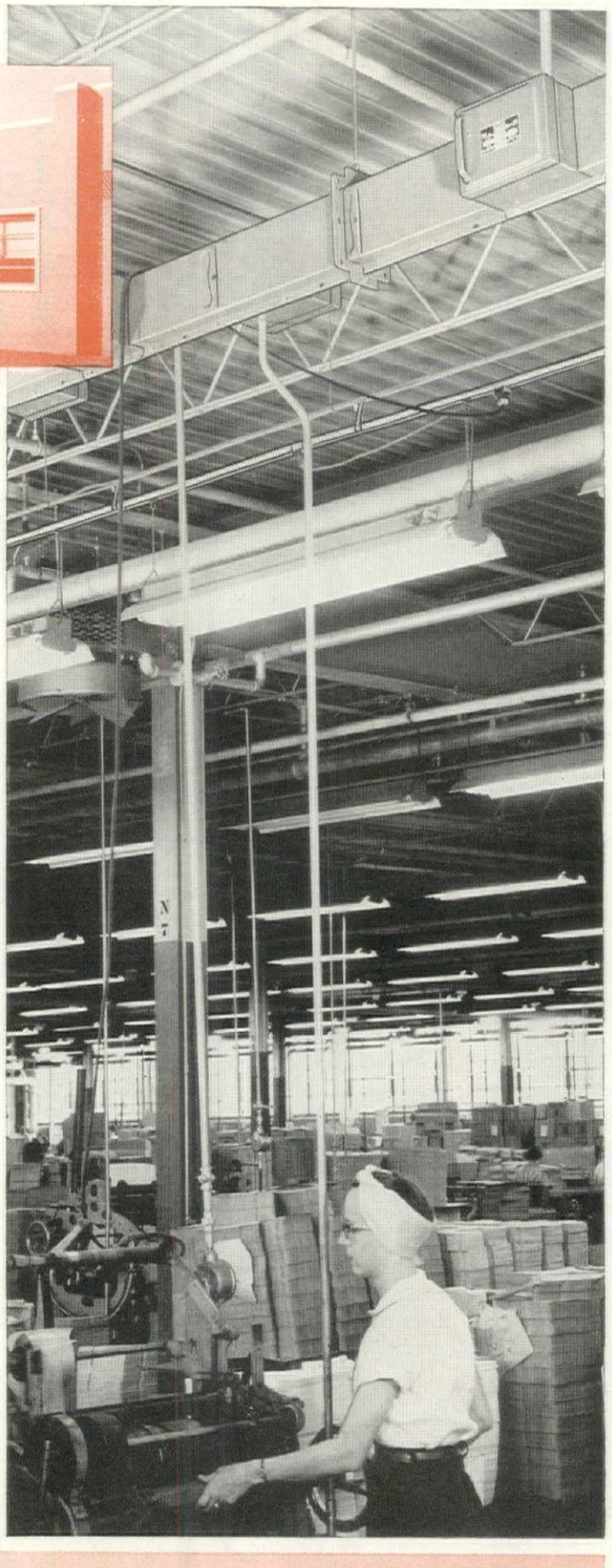

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LETTERS

are carrying the burden of responsibility to the country and to the world.

The schools, the hospitals, the institutions, the broad basic planning that goes on every hour of the day and night in this great country of ours is carried on by teams of competent architects, not single stars. These arguments as to which of the three or four famous names in architecture is the greatest suggests to me the decadence of the later period of the Greek Republic. While these quibblings proceed . . . buildings are being built in this country that are substantial and a fundamental part of our national philosophy, economy, and a basic contribution to art. It would be quite refreshing to be able to pick up a magazine with a new idea in it in connection with the real contributors to the architecture of this country.

N. A. Owings, *architect*
Skidmore, Owings & Merrill
Chicago

. . . architectural dictators

Sirs:

The editor of *House Beautiful* seems to feel that there is a danger to the American public of being dictated to by certain architects with "foreign" ideas. No architect, in my opinion, dictates public taste. No one should.

Peculiarly enough, it is the *House Beautiful* itself that has been attempting to dictate to the American public. Under the cloak of "Americanism" it has been trying to sell its personally selected, rigid architectural standards as the only way. This is the American Public's real danger.

George Nemeny, *architect*
New York

. . . refute or ignore?

Sirs:

You have done an excellent job.

In these days the measure of conformity —material or idealogical—seems to be the quantity by which conceptions are formulated and valuations are judged. Should we *as individuals*, in our haste to defend our nonconformist principles and our democratic architecture, provide a means for a prejudiced, intolerant rebuttal? Or should we recognize the article for what it truly is, and simply refuse to dignify it?

I prefer to ignore Miss Gordon.

Craig Ellwood, *designer*
Los Angeles

. . . what is the best solution?

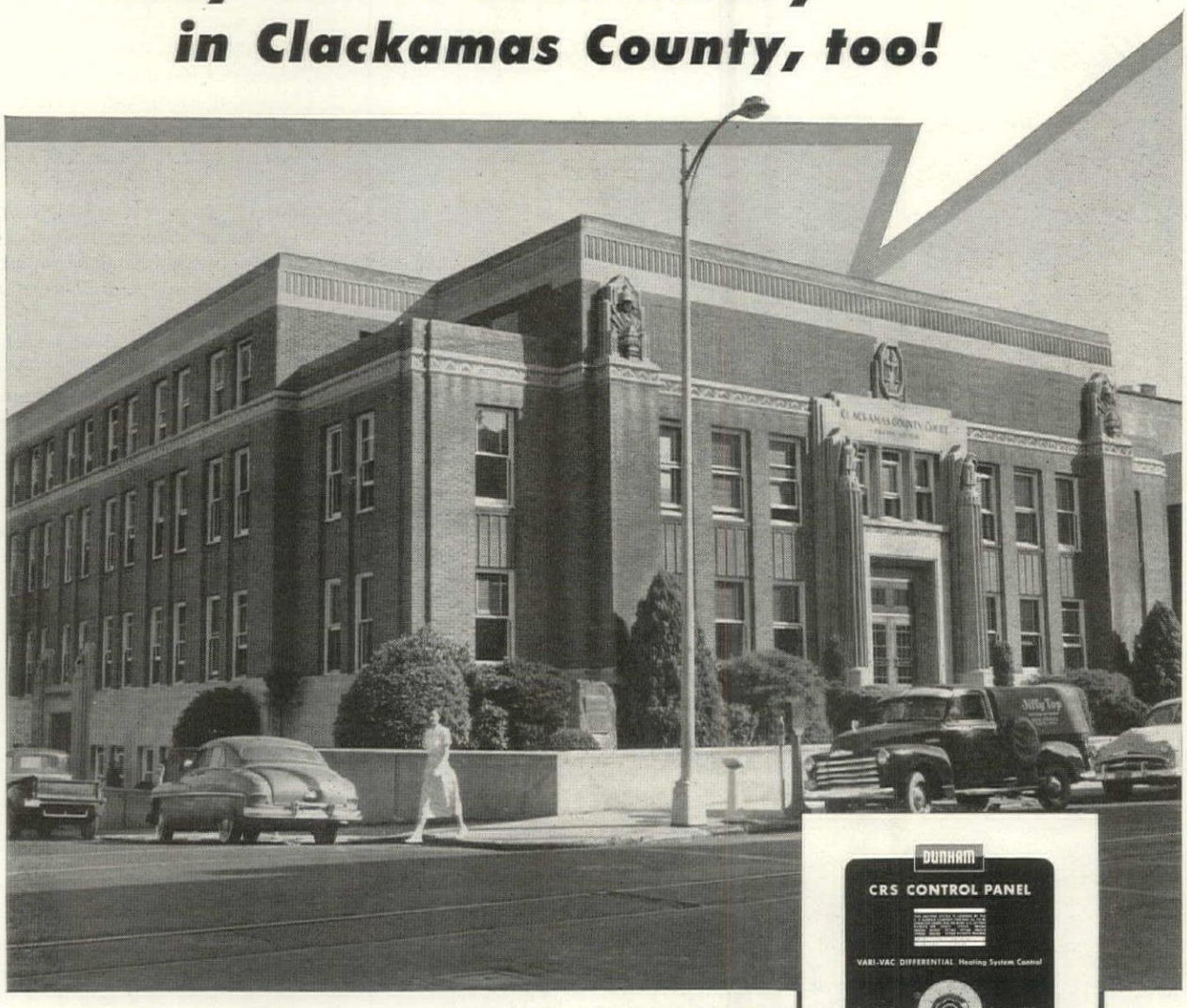
Sirs:

All architects, the great and small of each age, contribute, more or less, to the evolution of all architecture.

Perfection is achieved by repetition. Ex-

continued on p. 74

they like to save money in Clackamas County, too!



Clackamas County Court, Clackamas County, Ore.

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LETTERS

isting ideas may be, and should be, repeated until they are replaced by new concepts, for the existing attitudes should never be a block to fresh thinking and experiment. The honest designer will attempt to design for each client individually. In this way, a contribution, if not a new solution, is made possible. It should not be disturbing to find two architects in widely separated areas arriving at similar solutions. The miracle of air transportation alone is making the expression of architecture more and more universal.

The question of repetition of form and attitude in architecture is personal to each architect. The important consideration is does he use the forms, spaces and materials in a design of his own artistry, or does he strain to cover up a joining of "ideas"? Does he just produce a watered-down imitation of a little bit of everything and thereby create nothing at all?

The question "what is the best solution?" must be applied to architecture, not "what style should I use?" or "is it in good taste?" I believe that good architecture is Art, and not only will always be recognized as being in "good taste" but also will always be in "style."

MARIO CORBETT, *architect*
San Francisco

. . . for the ordinary architect

Sirs:

The necessity of delineating a pattern of architecture as *the* one is a dead give-away of the lack of capacity to think individually, and evidence of a lack of individual principle. One pitfall, dug deep by the architectural magazines, that lies in wait for the young practitioner is this classification, this deification, and this marking of a *trend.* You have staked out your share of guilt. What's more, you've added glitter and wrapped it in cellophane. In the face of all this, it takes a hardy individual indeed to go his own way and turn out a building that is neither Mies nor Wright nor Gropius.

He would be a fool who denied the influence of the architectural greats in any time but where is the necessity to take sides if one is working on a side of his own even if in clumsy fashion? Would it be better to buy one ready-made and have it slicker thereby?—Also, guaranteed, as it were, by its advance publicity?

Of course it is easier with a standard, a ruler to measure by. It fits, it's a "Mies" or a "Wright," it's in the *trend*—so it's good. You don't have to know, you don't have to think, just measure it; apply the standard and we'll all go fishing. It's obvious that some part of the public prefers this, along with the *Good Housekeeping* Seal of Approval and other labor-saving devices.

continued on p. 80

MINNESOTA, home of McQuay, is famous for its 10,000 sparkling lakes and its four distinctive seasons. Minnesota's smart Red Squirrel knows that it pays to prepare for the cold season before it arrives.

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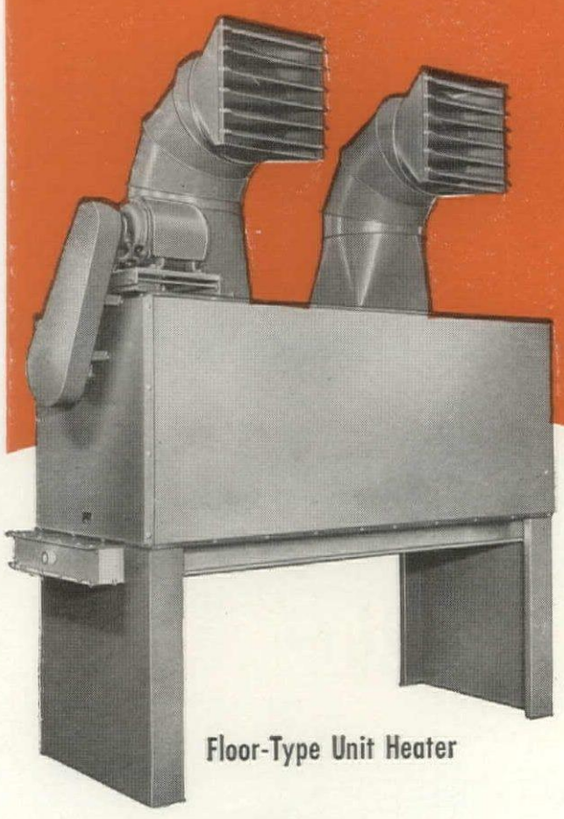
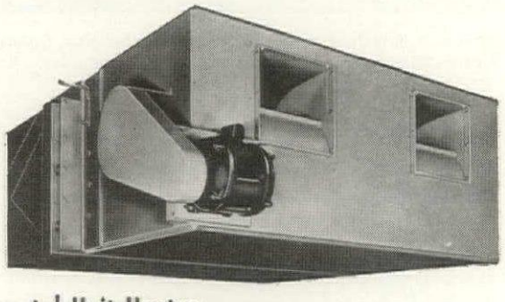


Floor-Type Unit Heater



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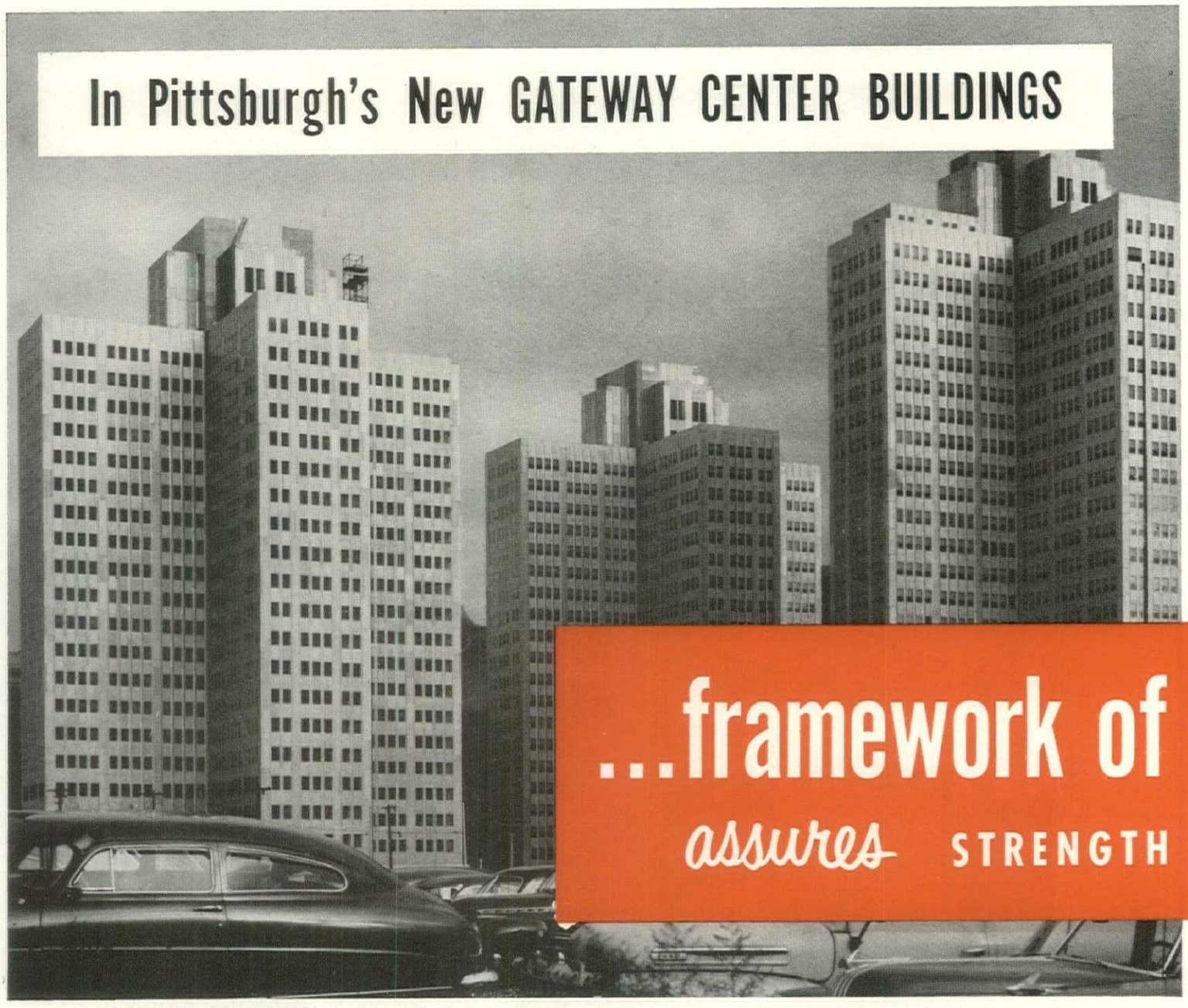

...framework of *assures* STRENGTH.

GATEWAY CENTER'S first three Stainless Steel Buildings, one 24 story and two 20 story, are now completed and occupied. They were built for the Equitable Life Assurance Society of the United States by Starrett Bros. & Eken, Inc., New York. Architects were Irwin Clavan and Eggers & Higgins.

● These three gleaming office buildings rising high in the heart of Pittsburgh's Golden Triangle are manifestations of a new era of building. They are the first multi-storied structures to be completely enclosed with panels of Stainless Steel.

Supporting the thousands of square feet of Stainless Steel "skin" on these three buildings is a 12,000-ton framework of Structural Steel—the strongest, the most economical of load-carrying materials. Structural Steel will withstand more abuse than other structural materials. It effectively resists tension, shear, compression, and torsion. And steel is permanent—enclosed in buildings it lasts indefinitely for it needs no maintenance.

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As the new era buildings of Gateway Center were being erected, a great and powerful symbol of an old era—the Carnegie Building—was being razed. Its Structural Steel framework, almost 60 years old, was found to be in excellent condition—testimony to the intelligent foresight of building with steel.

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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S Structural Steel

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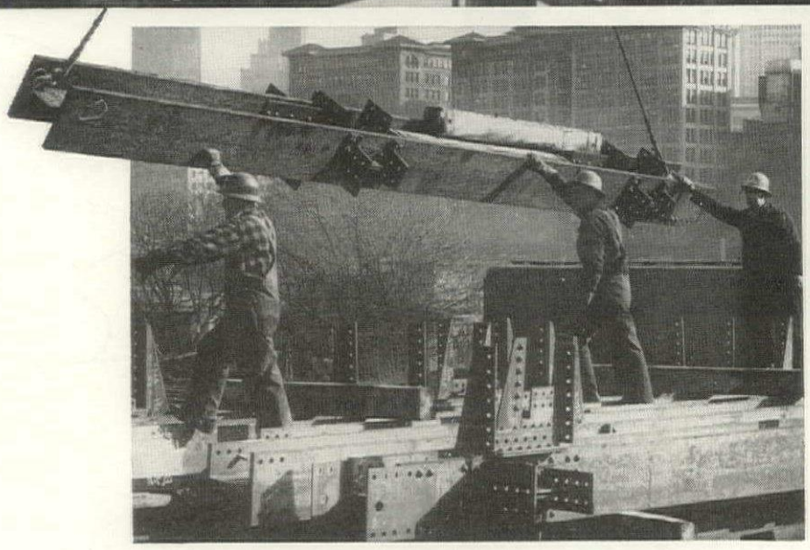

WORKMEN "TOPPING OFF" one of the steel structures with the Stars and Stripes, signifying the completion of the steel framework. The Structural Steel for the project was fabricated and erected by American Bridge.

WORKMEN UNLOADING STEEL BEAMS in the storage yards across the river from the site of the Gateway Center Project. The 12,000 tons of structural steel for the three buildings was produced at U. S. Steel's Homestead district works.

U·S·S STRUCTURAL STEEL

UNITED STATES STEEL

Benefits of multi-story construction of Type 430 Stainless Steel proved on Gateway Center Buildings

WHEN CONSTRUCTION of the first three office buildings in Pittsburgh's Gateway Center began three years ago, the project caught the attention of the entire building industry, for it represented new concepts in multi-story construction. The Gateway buildings were the first tall office structures to be enclosed with insulated panels of Stainless Steel.

The panels—faced with straight-chromium Type 430 Stainless Steel and backed with a porous concrete breather bed and reinforced light weight concrete—are bolted to the structural framework. Six basic panel units were used.

Even before the first panel was installed, the benefits of this type of construction were obvious. The light weight of Stainless panels makes possible a lighter structural framework. And, curtain wall construction can add thousands of square feet to the floor area.

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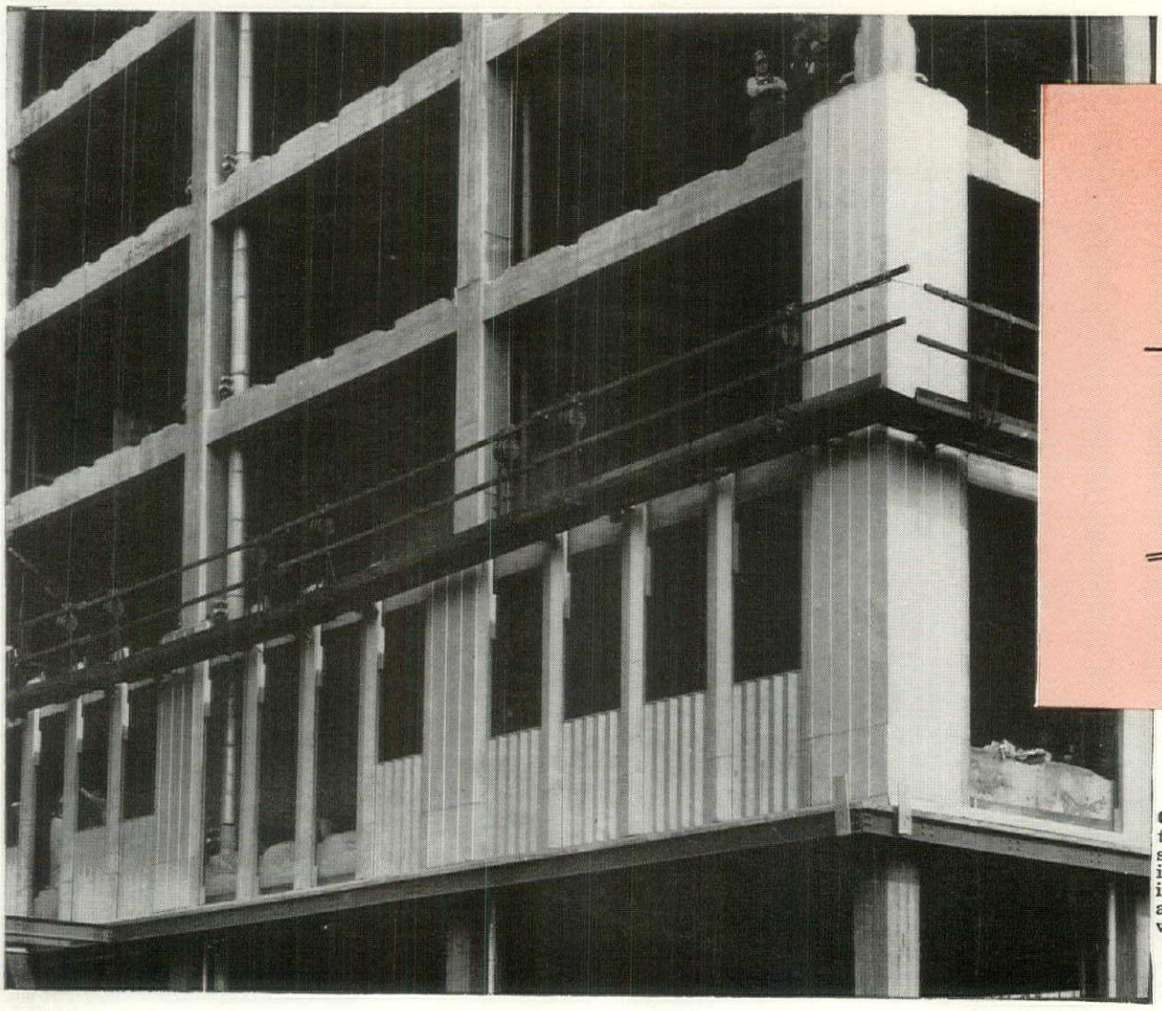
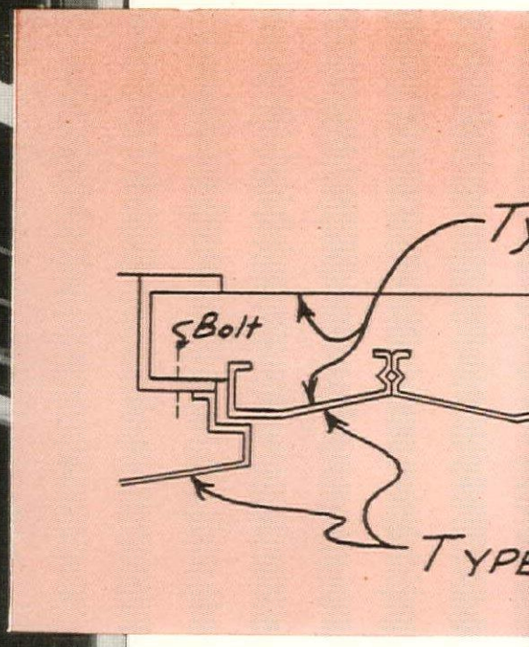


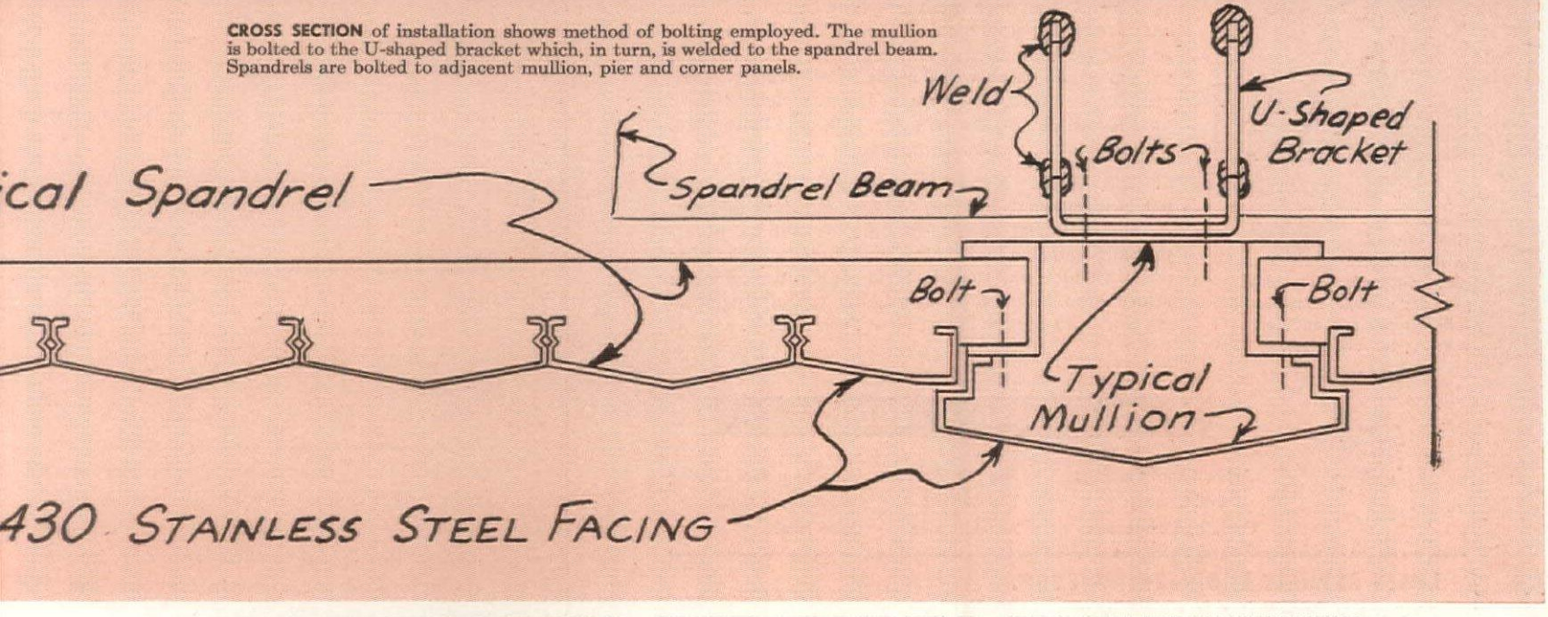


CONSTRUCTION VIEW of one of the three Gateway Center Buildings showing panels as they are bolted into place. Basic panels shown here include corner units, piers, mullions and spandrels. The panels are faced with Type 430 Stainless Steel.

with insulated panels

HELPING TO GIVE a new look to Pittsburgh's lower Golden Triangle, the first three Stainless Steel office buildings are now being occupied. They were built for the Equitable Life Assurance Society of the United States by Starrett Bros. & Eken, Inc., New York. Architects were Irwin Clavan and Eggers & Higgins. Stainless Steel facings for the panels were fabricated by United Steel Fabricators, Inc., Wooster, Ohio. Precast concrete backup by Cemenstone Corporation, Neville Island, Pittsburgh, Pa.

CROSS SECTION of installation shows method of bolting employed. The mullion is bolted to the U-shaped bracket which, in turn, is welded to the spandrel beam. Spandrels are bolted to adjacent mullion, pier and corner panels.



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LETTERS

What about those others, who are quite willing to grant the laurel wreaths where they are due, who draw help and inspiration from the great but resist the overloaded bandwagon at this late date, and who insist on the beautiful personal prerogative of taking their own lick at the target? I know you claim for yourself being above late band wagons, but is your recent Wright effort an example? And where were you in the late Twenties—and what does it matter?

Let the public be confused: better that than convinced a building should fit a pattern, particularly when the pattern is selected by others for reasons of their own. Let's see the inconspicuous architecture along with the sure-fire Sunday supplement stuff. Let's see a perception of architectural value on a broad service basis rather than a recognition of the latest fire alarm in the field.

All in all, you do serve up a whale of a lot of good solid matter but must the trumpets always blare at your entry? Can we have our eggs without the hot sauce? Perhaps the spotlight with a few less lumens? I do not want to cancel my subscription—your magazine is too valuable to me for the ideas it brings, for the news it tells, for the arguments it provokes. I'll get in my shockproof suit, settle down in a bath of cool water, stuff my ears against the drum-beating, and shred the FORUM for the many worth-while helps it offers.

DON BARTHELME, *architect*
Houston

Sirs:

CONGRATULATIONS ON YOUR HEALTHY, HONEST AND COURAGEOUS REBUTTAL TO THE NONSENSE IN HOUSE BEAUTIFUL.

CAMPBELL & WONG, ARCHITECTS
SAN FRANCISCO, CALIF.

FLLW's prairie skyscraper

Sirs:

I have read with great interest the article about Frank Lloyd Wright's "Skyscraper on the Prairie" in the May FORUM.

The fact that "it will probably be the costliest office building ever erected" does not detract in the least from its architectural merit. This excessive cost is justified apparently by the reminder "from the time of Cheops, that great architecture has almost always implied some element of conspicuous waste." The word "almost" would naturally allow the exclusion of such buildings as the Petite Trianon, Val de Grace, Azay-le-Rideau, the Folger Library, and the second-place prize in the Tribune Tower Competition.

While these monuments may have been somewhat costly in dollars and cents, certainly, they were not unduly expensive when compared with other similar contemporary works employing similar materials. Further-

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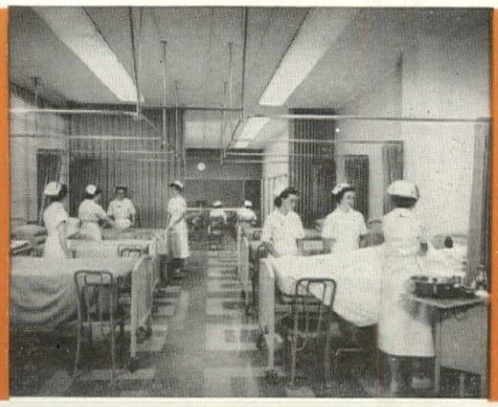

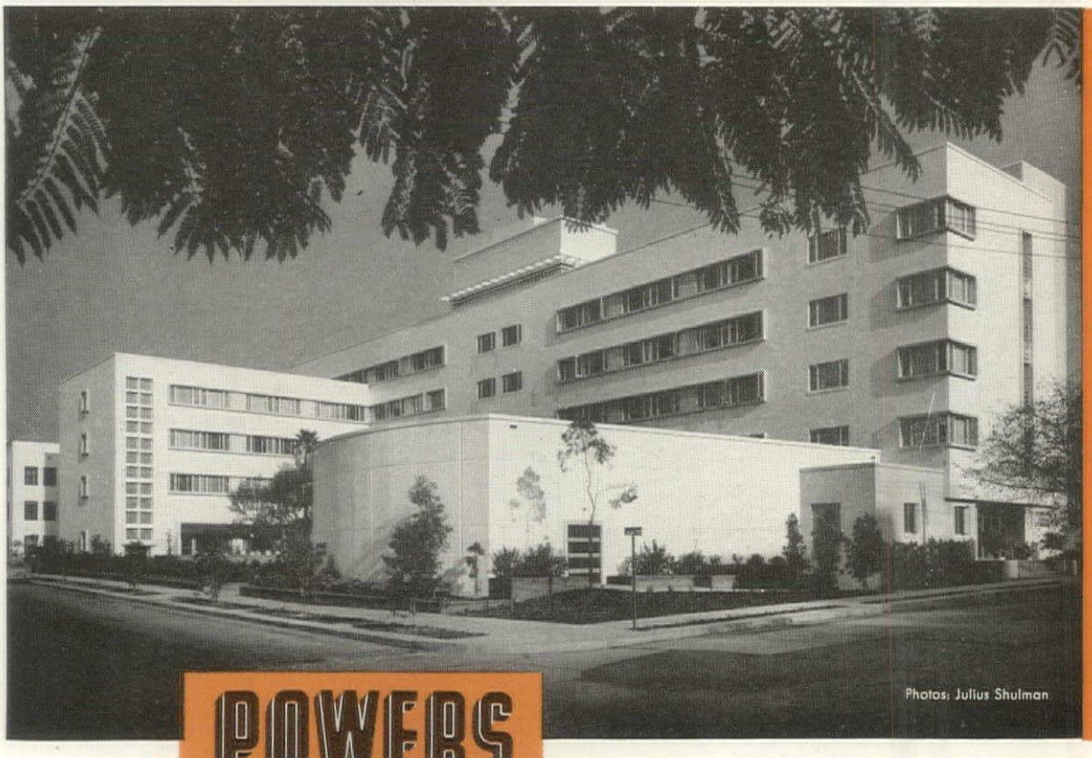

Photos: Julius Shulman

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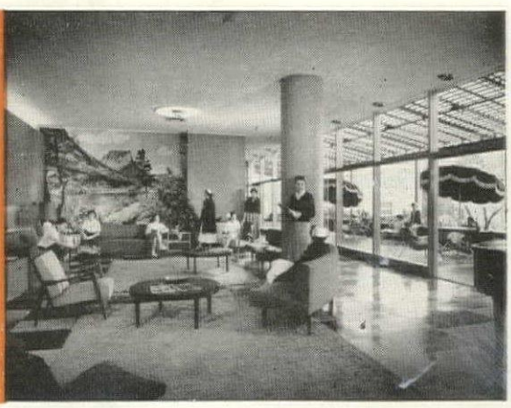


LETTERS

more, each appears to have solved its functional problem most adequately and to express the purpose for which it was designed in a simple straight-forward manner without the necessity to be "exciting," or to "transcend function and be touched with poetic imagination," whatever that is.

Even if a certain amount of waste is permissible in the interest of achieving artistic effect, it could hardly be established that it is a necessary by-product of the esthetic. There can be no question that Ghiberti used his material to the fullest advantage in designing the doors of the Baptistery in Florence, and the bridges of Freyssinet certainly do not appear to carry any excess dead load.

It is most fortunate that the architectural profession can furnish talent for whatever objective the client may wish to accomplish, whether it be to exploit the advertising potentialities of the project, or to provide a lasting contribution to schoolhouse design, such as was achieved in the Crow Island School (AF, Aug. '41).

JOSEPH WILLARD WELLS, *architect*
Norfolk, Va.

• Cost of the prairie skyscraper has been estimated by Wright at $1,250,00 or "about $20 per sq. ft.," well below FORUM's original estimate. —Ed.

SWINGING PENDULUM

Sirs:

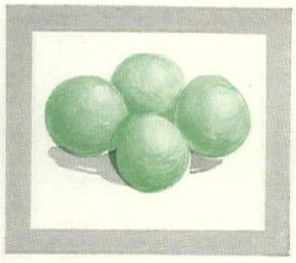
FORUM keeps me up with all the esoteric issues being debated today. Had I not known which way "the pendulum" was swinging, my latest commission might have thrown me for a loop! But now I realize that poetic art triumphant is trampling on the dead body of functionalism. FORUM saw a hint of it when the U. N. architects decided not to change the exterior of their auditorium to fit its economized interior, apparently out of laziness. This was art triumphant. Now Mr. Wright, former "comrade in arms," has for the first time become defiant, and "the pendulum" is gathering speed! [See Frank Lloyd Wright's prairie skyscraper, AF, May '53—ED.]

My latest client, a rich but little-known company selling hogwash directly to hogs, had purchased a lot on Michigan Ave. in downtown Chicago and wished me to erect a skyscraper thereunto. Standing in that forest of steel and concrete I realized that the beauty of being in a forest is being on the ground. My first step, therefore, was the sale of the lot and the purchase of 1,000′ of the frontage of Grant Park, across the street, so that a single-story building "looking up into the forest" might be erected.

How economical is a single-story building! No elevators, no stairs, no dangerous window washing! I had saved my client a fortune! But I was not unaware of the "swing of the

continued on p. 84

Like in a pod...



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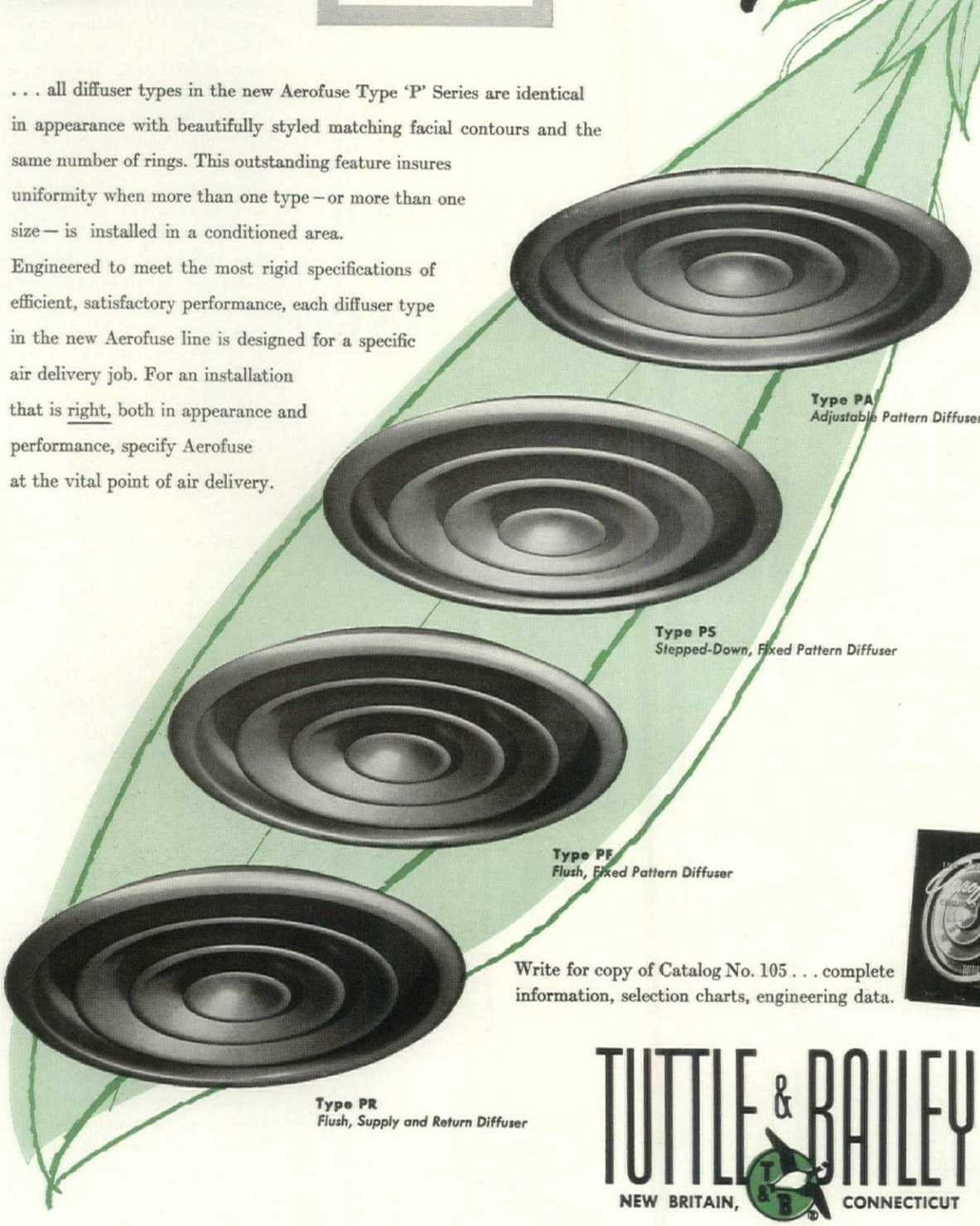

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LETTERS

pendulum," so I decided on ornamentation and richness. So that each organic soul working in the building might look up into the forest, and thus to Heaven, I decided on a roof of glass, but Steuben glass, whose ornament is "of the glass, not on it." So that man's basic needs may never be forgotten, the floor is also glass, 2″ thick. The bids have come in rather high, $500 per sq. ft. for roof and floor alone, but neither will ever have to be refinished or repainted, and so in the long run (say 1,000 years) they will prove economical. We may have to compromise on the columns, and make them of solid silver, instead of that noblest of all metals, solid gold. However, the real saving is in the walls. They are of Chicago's cheapest natural asset, water. Yes, continuous waterfalls, piped from the lake and back again, surround the four sides of the building. In summer cooling breezes wafting through will produce organic air conditioning, thus saving that expensive installation. In winter they will freeze solid, thus exploiting a principle long known to that most climate-wise of all peoples, the Eskimos.

Thus in winter Chicago will have the first Usonian igloo, sweeping in from the Northlands, and in summer the H_2O of old Lake Michigan will be brought within touch of all her people! From each office a private escalator runs down to an atomic-bombproof private apartment for each employee (adjoining apartments for secretaries optional). Thus it will be the only American building in which business can go on as usual in case of Russian attack.

My client was hesitant at first, but when I explained to him that his hogwash would soon become known in the four corners of the earth because of this building, he was eager to begin construction. I will send drawings via airmail if you so wish them for publication. I imagine you don't want to wait until the building is finished to publish it. . . .

ALSON CLARK, *architect*
Pasadena, Calif.

KUDOS

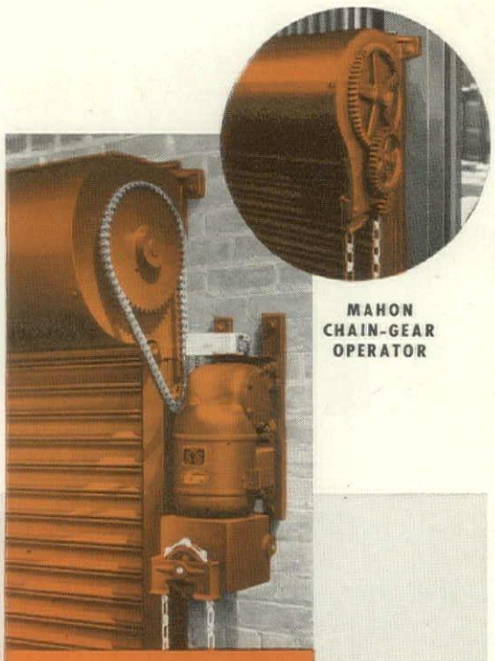
Sirs:

Your magazine has been the inspiration for a great deal of the work which I have done in the design of store buildings, market buildings, supermarkets, etc. The new ideas that come forth in your magazine have been of great help not only in direct application, but also in inspiring other new ideas which we apply in the marketing field.

The very clear presentation of information, the complete coverage of the material presented, and the very complete interchange of ideas on that information as presented in your magazine is a thing of never ending interest, vision and inspiration.

R. E. MAUGER, *design engineer*
Portland, Ore.

Rolling Steel DOORS



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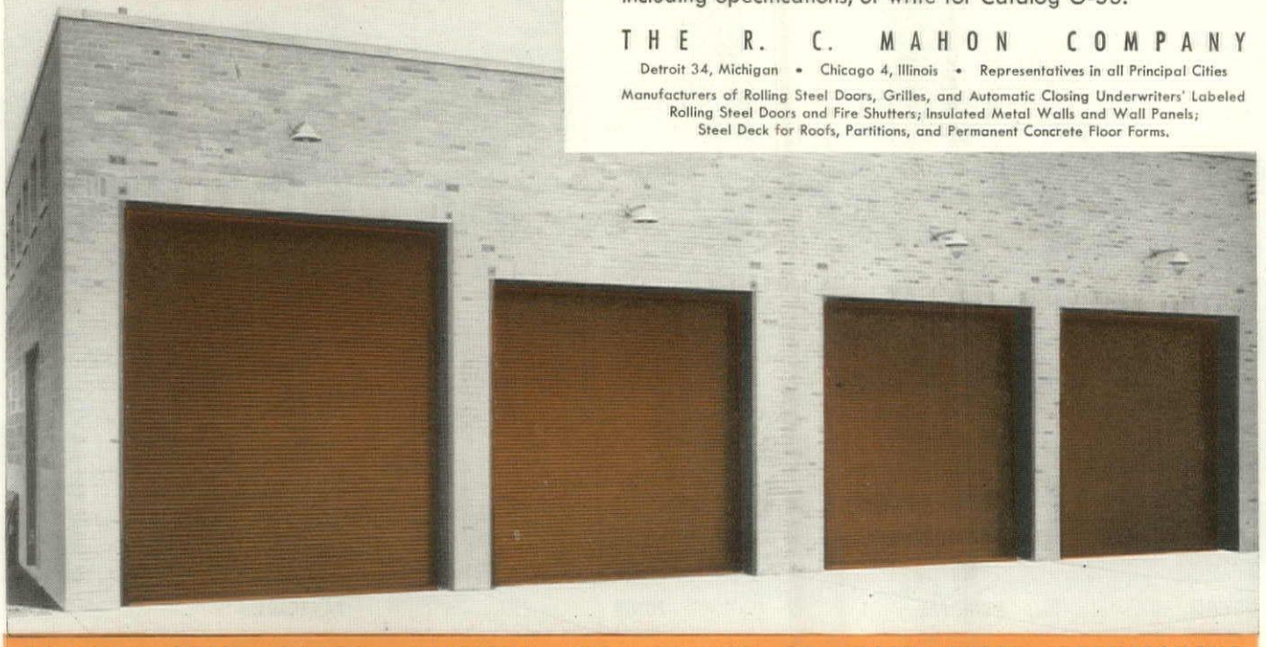

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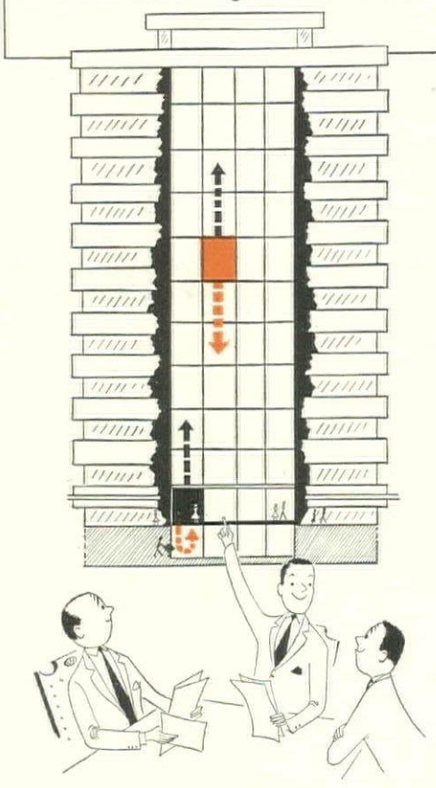

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Autotronic—WITHOUT ATTENDANT—Elevatoring keeps two traffic programs "on duty" electronically during nights and holidays.

An INTERMITTENT program handles light off-hour traffic. Two cars provide on-call service. One car is parked at the lobby. It handles incoming traffic and responds to basement calls. The second car is parked at a middle floor. It handles outgoing traffic and responds to interfloor calls. These two cars answer calls quickly and economically.

When service demands become too heavy for two cars, the system switches over to a Balanced UP-DOWN program. Extra cars are put into operation automatically. Service is placed on a continuous basis. Up and down service is equalized. This automatic car balance is controlled by interrelated car dispatching from upper and lower terminals. Regular and frequent service to all floors is maintained with scheduled, nonsequence dispatching, and late car reversal. When traffic lightens, the two car on-call program is resumed automatically.

The Balanced UP-DOWN program is also in operation during a major portion of a building's business day.

Autotronic—WITHOUT ATTENDANT—Elevatoring saves up to $7,000 a car, each year. 6 automatic programs operate the cars as a coordinated group. Program selection can be supervised by the starter; or, as an optional feature, made completely automatic. Diversified traffic can be handled in large, or small, office buildings, hotels, and hospitals. Ask any of our 266 offices about new or modernized installations. Otis Elevator Company, 260 11th Avenue, New York 1, N. Y.

BETTER ELEVATORING IS THE BUSINESS OF OTIS

American-Standard announces new-design plumbing fixtures

new matched styling . . . new utility . . . for buildings you plan

NEW-DESIGN American-Standard plumbing fixtures are more beautiful, more convenient than ever. You can choose from a variety of genuine vitreous china lavatories and toilets styled to match the trim, horizontal lines of famous American-Standard cast iron bathtubs. These fixtures are also unusually convenient to use and easy to maintain.

All embody the same top quality that your clients have come to expect from American-Standard.

These beautiful, harmonizing American-Standard fixtures will add immeasurably to buildings you plan. And your clients will have fixtures that afford modern convenience, easy maintenance, and beauty that will last through the years.

See this new line at your American-Standard retailer's. Or write for literature, Form No. 382.

BEAUTIFUL AMERICAN-STANDARD FIXTURES add glamour to this practical bathroom. Notice the trim lines of the matching fixtures. This harmonizing group includes twin New Companion lavatories, a New Compact toilet and a Master Pembroke bath. American-Standard plumbing fixtures are available in white and a variety of colors.

SMARTLY-STYLED lavatory with convenient design is the New Roxbury. As in all the new-design lavatories, the bowl is wider at the front where space is needed most, then tapers to provide large soap dishes. It's made of vitreous china and features a front overflow and anti-splash rim.

THIS IS THE NEW COMRADE LAVATORY. It features a useful shelf back, integral soap dishes and smooth-working fittings finished in easy-to-keep-clean Chromard. Made of genuine vitreous china for long life, the New Comrade has a front overflow to preserve smoothness of design.

THE NEW CADET toilet harmonizes perfectly with other American-Standard fixtures, is ideal for budget bathrooms. Its smooth, graceful lines and new base design make it easy to keep glistening clean. Made of genuine vitreous china.

AMERICAN-Standard
BATHROOMS

American Radiator & Standard Sanitary Corporation,
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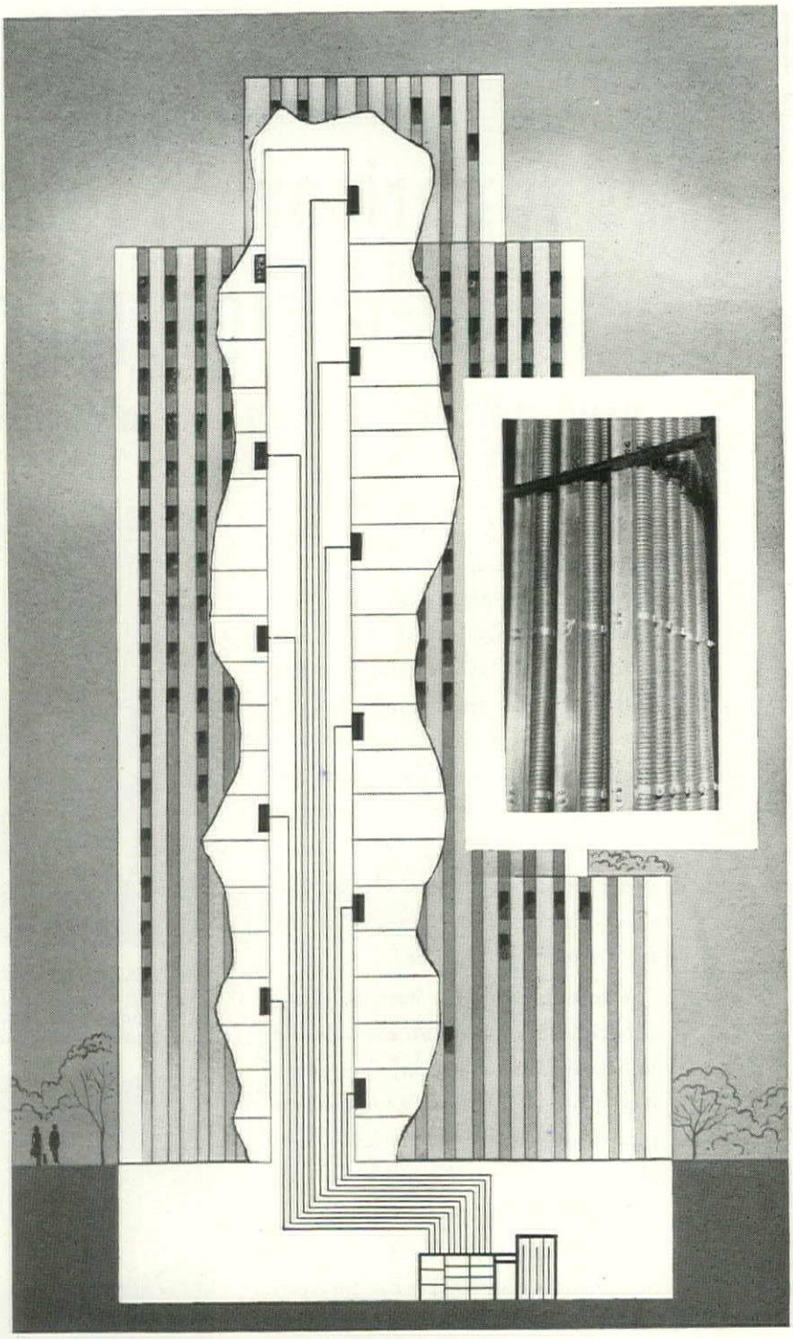
Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KEWANEE BOILERS • ROSS EXCHANGERS

How to cut cable feeder costs in a multi-story building

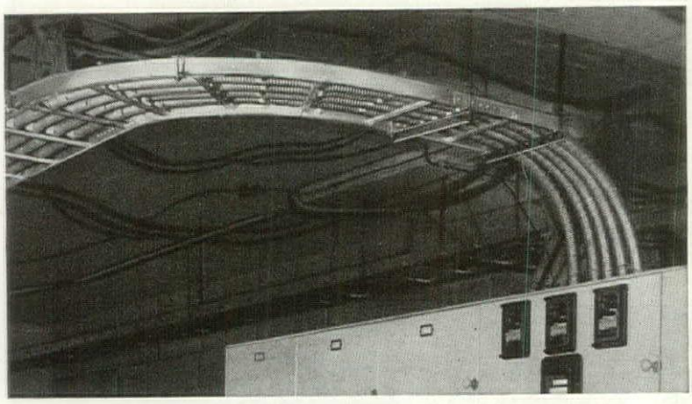
Whether you're planning new construction or modernizing an existing multi-story building, it is possible to cut the material costs of cable feeders as much as 20%—by using a General Electric V-c interlocked armor cable system for power distribution. In a typical 20-story office building these savings can amount to $14,000, as shown in the tabulation below.

G-E interlocked armor cable saves both engineering and installation time on a tight building schedule, too. From basement load center units it can be run easily around corners, over beams, up the shaft, and off at floor levels. No conduit to thread, fit, or pre-bend. The cable is strung on low-cost aluminum racks and spliced with simple mechanical joints. Each rack is used to carry several feeder circuits. And the circuits are well protected by strong metal armor. To our knowledge, no installation has ever suffered mechanical damage sufficient to cause electrical failure.

For more information on the economies of interlocked armor cable, or any other G-E wiring system, write Section W98-84, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.



G-E V-C INTERLOCKED ARMOR CABLE is run up a shaft on racks to carry power to the upper floors. Sturdy armor construction protects the circuits. Simple installation saves both time and cost.



THE CABLE, strung on aluminum racks, leads from the basement load center unit to a vertical shaft. Note the neat apearance. It bends easily, so corners and projections present no installation problem.

ESTIMATED MATERIAL COSTS OF VCI ON RACKS VS. CABLE IN CONDUIT AS CABLE FEEDERS IN TYPICAL 20-STORY BUILDING

Estimated Cost in Dollars

Item	VCI on Racks	Type RH in Conduit	Type R in Conduit
Cable*	$43,145	$39,491	$50,963
Racks or Conduit	5,462	10,951	10,951
Hardware and Fittings	3,458	4,515	4,515
TOTAL MATERIAL	$52,065	$54,957	$66,429

*Conductors based on NEC ratings.

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1878 75 1953 YEARS OF ELECTRICAL PROGRESS

GENERAL ELECTRIC

New thinking on INDUSTRIAL BUILDINGS

According to government forecasters, 1953 was to see the industrial building boom on the wane. They forecast a 27% drop from the record $2.32 billion worth of new plant space built last year. But, by June, it was evident that the estimates were in error: at that time the dollar volume of such construction was only 0.8% below 1952's half-year mark and no major second-half downturn seemed likely.

The 'why' of the continued industrial building boom lies in the fact that while necessitous building has largely ended, the need for better planned plant space has increased.

Here is the way the reasoning runs:

A buyer's market is either here or just around the corner for most manufacturers. With material costs still high and labor costs fixed at high levels or rising, *the competitive problem is reduced to a race to lower production costs through more efficient operation.*

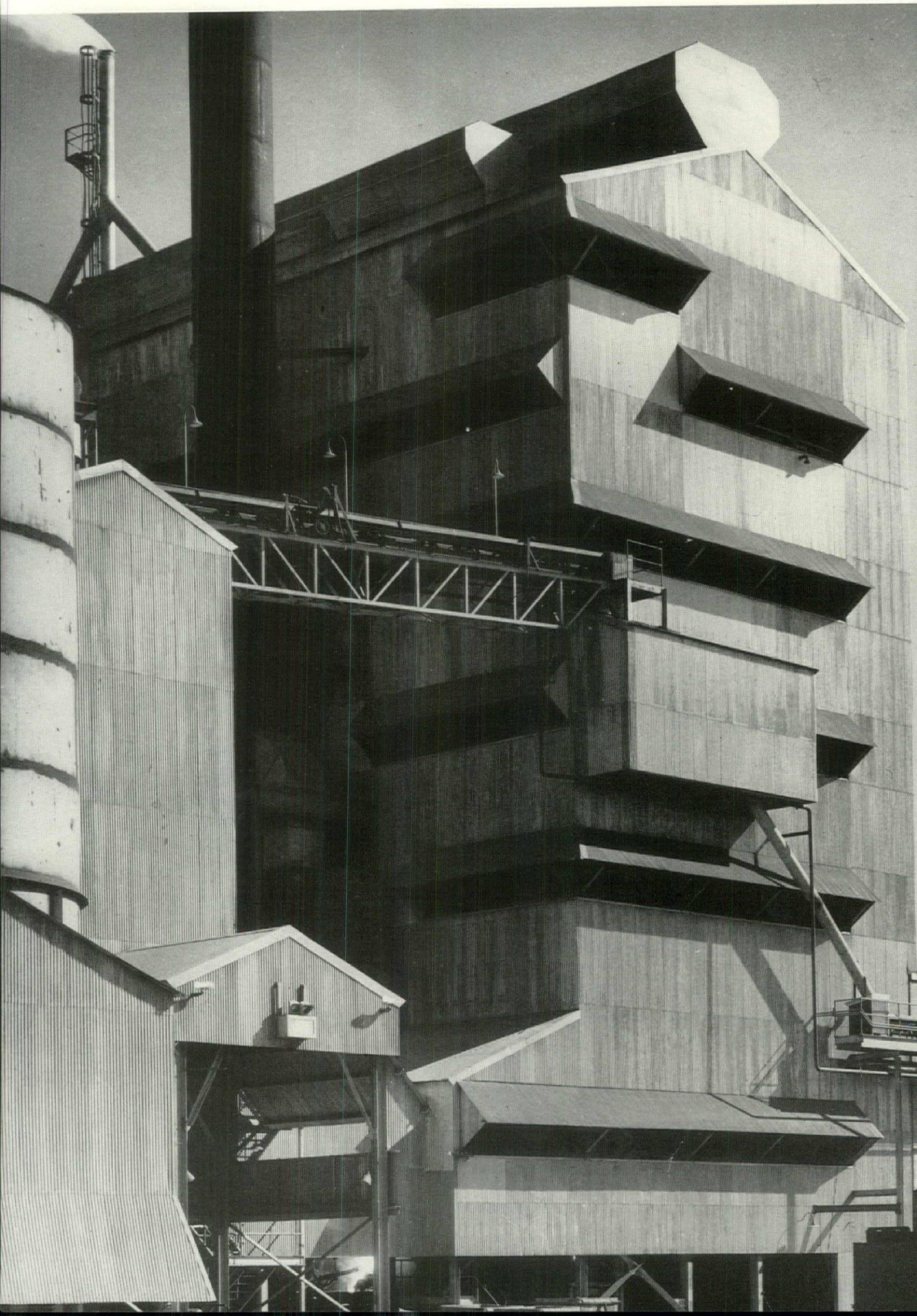
But in many cases tools and methods equally productive are in use by competing manufacturers. *This means that whoever plans and builds the most efficient building will be able to cut production costs most.*

The results of this reasoning are found in two trends in factory design that mark the best plants being built.

1. Today's factory building is itself a machine of production. Today's industrial building is not just a shelter for an operation. It is located, shaped, heated, ventilated, lighted, framed, covered and painted to do one thing: help manufacture a product the most efficient way devisable. In short, today's factory is thought of as a tool—the most potent cost-cutting tool at a manufacturer's command.

Different production problems call for individual solution. However, broadly speaking, the choice lies between: 1) the special-purpose factory (see p. 98) designed to fit a set of production operations like a glove and 2) the flexible or all-purpose building (see p. 101) that can be easily adapted to a variety of production demands. Architects call the first plan type "functional" or "articulated"; they speak of the second as "universal space."

2. Today's factory makes architectural quality an aid to efficiency. The first step toward making the factory a pleasant place was taken years ago when employees were provided with cafeterias, rest-rooms, recreation. Today's forward step is more subtle—it seeks to make the plant a pleasant environment for people, not simply a shell around machines. It starts with pleasant landscaping; it even investigates finger plans because they yield a green view outside; it copies school practice in designing lighting as a total luminous environment, not merely light on the task. These and other things are done strictly for efficiency, not for fun.



part 1.

Today's factory building contributes to greater production efficiency

Two trends today in plant design are making factory buildings more efficient production tools:

1. More flexible production space is being sought by many light manufacturing industries. The result is a single-story structure of wide bays that can handle a variety of processes, can take medium-weight machinery anywhere on the floor, has high general illumination throughout and has a strip or grid plan for electrical service to any point from either overhead or below the floor. Such flexibility insures the building against early obsolescence when new production machines or techiques are introduced. It also raises the resale value of the building.

2. Specially designed space for special processes is a demand of heavy manufacturing, chemical and oil-processing plants. Such buildings must be shaped to follow the contours of the process going on within them. In such buildings, preplanning must be accurate and exhaustive to make the building work as efficiently as a precision machine.

Many factories reflect both trends. For example, special foundation and structural requirements may have to be met while flexibility of service to the production floor is included to permit layout changes without expensive alteration costs.

The General Electric turbine plant (p. 98) in Schenectady is an example of a special-purpose factory with as many built-in efficiencies as possible. The Norton Co., Machine Tool Div. plant (p. 101) in Worcester, Mass. shows how flexibility can be applied to the special requirements of a job shop.

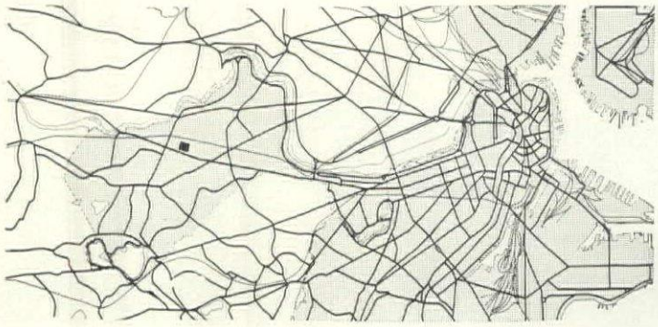
SITE selection is always an individual problem but here are some factors that will play in increasingly important part in location decisions.

Though country sites still look good, expected lower tax rate is not a permanent asset. Reason: country people soon hike the rate.

City fringe areas with municipal power and water sources, but with country advantages of lower land cost, less crowded neighborhoods, are creating new *industrial districts.*

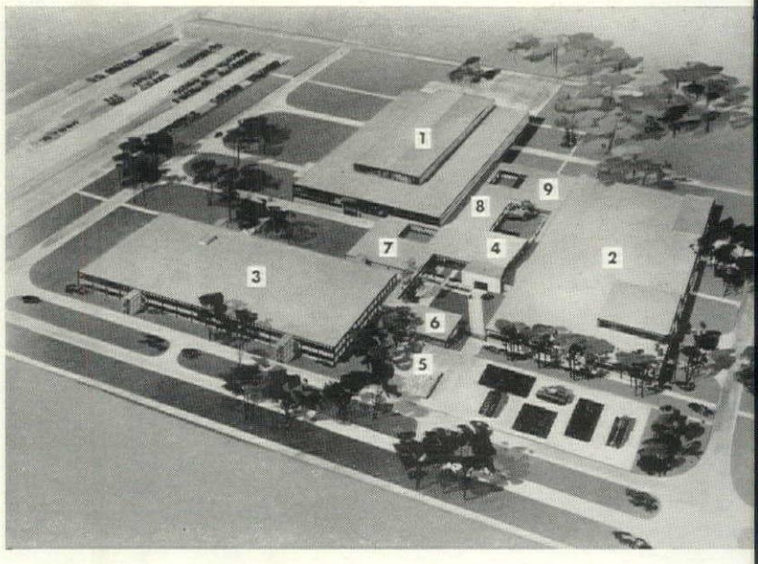
Extension of natural gas lines into midwest, eastern and northeastern areas solves fuel problems for many areas that could not be considered before.

One-highway access no longer seems sufficient. Trend is toward a site near several main roads. And in many cases trucks do all shipping to and from the plant.



Site *of H. A. Johnson Co., a food process and distribution plant, was chosen because of central location between Boston and suburbs, freedom from congestion, main highway access routes. Time spent selecting it: over five years.*

PLAN of factory space currently follows the demands of continuous line production on one floor. One result has been the development of gargantuan horizontal monoliths that have generated new problems for the plant designer. Parking space, accessibility to various departments, site sizes, heating and ventilating requirements, noise reduction are only a few of them. A trend today is toward a breakup of the monolith. For example, a new tank arsenal in a Detroit laboratory (right) marks a departure from the usual one-building factory plan. Departments are housed in separate blocks and are linked through office wings. Advantages of such planning are: easier heating and ventilating, isolation of noise, better natural light, and interior spaces reduced in scale to be more friendly to the human being inside.



Block plan *for Detroit tank arsenal laboratory breaks up building masses. Key: 1) engineering shop building, 2) laboratory, 3) office building, 4) lecture hall, 5) main entrance, 6) lobby, 7) dining area, 8) lab offices, 9) graphic department. Leinweber, Yamasaki & Hellmuth, architects.*

←

Furnace building *of National Carbide Co.'s Calvert City, Ky. plant is of conventional corrugated iron, has shaded unglazed window openings to dissipate furnace heat. Blower keeps air moving up and out of the building.*

Nuclear fission laboratory *of Rice Inst. houses tall 5.5-million volt accelerator in form-fitting 70' tower. Lab and office wings flank central structure. George Pierce, Abel B. Pierce, architects; H. E. Bovay, consulting engineers; Walter P. Moore, structural engineer; Texas Gulf Construction Co., contractors.*

Fifty-seven-foot *high incinerator building in Long Beach, N. Y. houses vertical operation. Overhead cranes feed refuse to incinerators; truck drive-through on ground level speeds ash removal. Kelly & Gruzen, architects; Leonard Wegman, city engineer; Alexander Potter Associates, Farkas & Barron, engineers.*

Photos: (top) Odin Clay; (bot.) Ben Schnall

STRUCTURE of today's factories is moving toward:

Larger bay sizes. Where 40′ x 60′ bays were sufficiently large a short time ago, they are now being increased to give more column-free production space. Fairchild's Hagerstown plant, for example, has 100′ x 200′ bays with no columns interrupting the production floor. The clear 200′ span is made possible by use of specially designed welded camel-back trusses (AF, June '53). Machinery rearrangement problems are pushing bay sizes up in such industries as textiles where 30′ x 100′ is not uncommon.

Higher ceilings. Working heights are being increased to get vertical flexibility over production floors. One primary reason is the increasing use of overhead conveyors which must be kept clear of structural, lighting and other service elements. Best way to insure this is to raise ceilings so each service can have its own space layer to itself.

Lightweight curtain walls. They are still replacing masonry. Metal, plastic and composition sandwich panels are hung on the frame to keep out weather. Advantages lie in economy, light weight, speed of erection, ease of removal and replacement for expansion.

Uniformly strong floors. Formerly it was considered economical to build extra-strong floors only where heavy machinery was to be located. Today, except in special cases, the entire production floor is built to support heavy machines, to anticipate production-line changes.

Flexibility is stressed in light manufacturing plants. Overhead bus ducts along column lines permit power to be taken off anywhere to serve the production floor; other factories have grid floor system in the slab similar to many office building plans. Water and steam lines are located to be accessible from any point on the floor. Pay-off for such painstaking planning comes when 1) new machines alter production layouts, 2) model changes force a shift, 3) expansion is necessary, 4) the plant is sold.

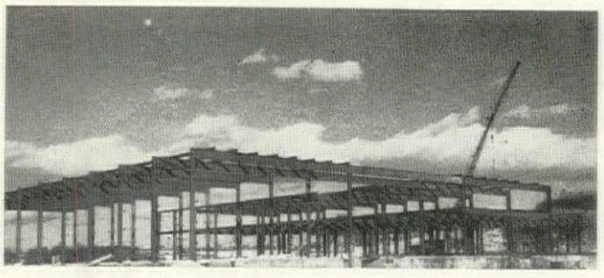
Special processes call for special structures—and more special processes are being used as technology advances. More and more, new factories are being designed to fit those processes like a glove. Examples:

- To lick vibration in the screen settling room of the Elmira Westinghouse cathode-ray tube plant, the floor slab was "floated" on a bed of sand, cushioning was placed between floor edges and walls, and the 54′ x 117′ room kept free of columns.
- To get rid of heat from its furnace building at Calvert City, Ky., National Carbide Co. (see p. 92) used conventional corrugated-metal walls, shaded window openings with metal visors and omitted windows.
- To help control temperature and humidity in textile processes, mills are designed without windows, are fully air-conditioned.

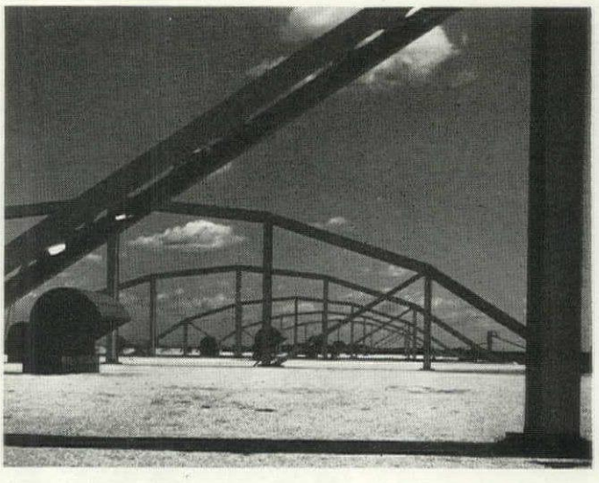
SERVICES are taking more of each new factory-building dollar —particularly electrical service. Development of materials-handling equipment, electronically controlled machines, plus requirement of flexible service and rising light levels, add up to more money spent for electrical work. Initial costs are higher because flexibility must be built in and more complex switching equipment must be installed; maintenance of increasingly complex control equipment is higher.

Most steam, water and special gas or chemical lines are being placed with an eye to accessibility—which usually means overhead.

Gene Virts



***Welded steel girders** in new Norton Co. plant were used instead of more expensive fabricated trusses to span 60′ bays. Result: a 12′ lower ceiling with consequent heating, ventilating and construction savings. Solid girder gives less cluttered look to factory ceiling, is easier to paint.*



***Camel back trusses** of Fairchild Aircraft's plant span 200′, protrude 25′ above flat roof with resulting savings in interior space to be heated, area to be roofed.*

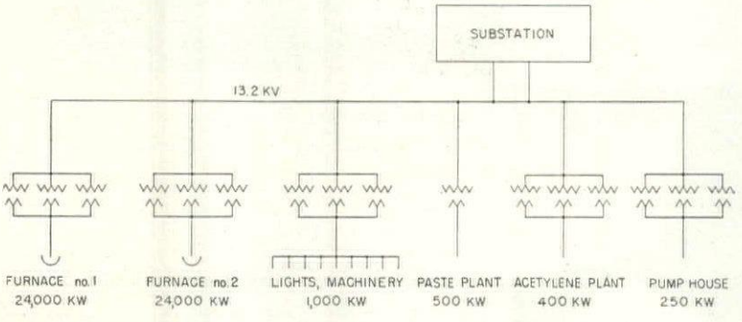
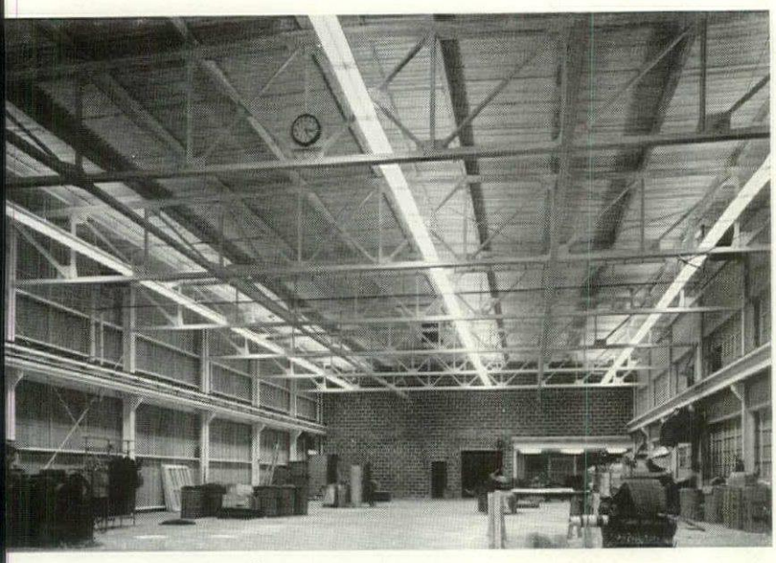
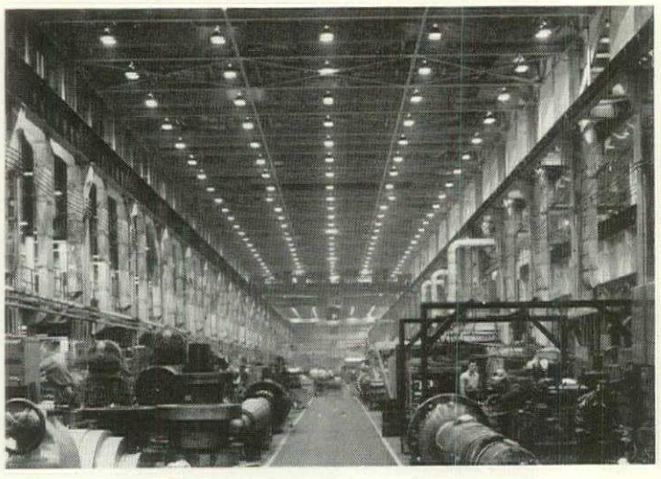


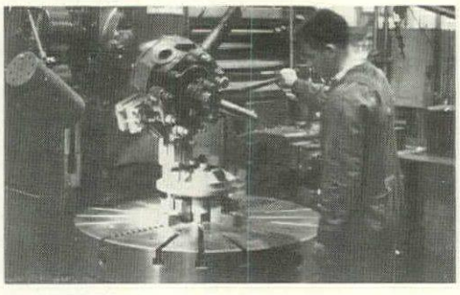
***Diagram of power** needs of National Carbide's Calvert City, Ky. plant gives idea of size and scope of electrical demand that drew company to the TVA area. Two additional furnaces under construction will use same basic power pattern.*

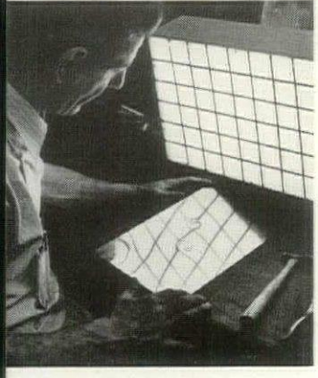


Upward component *of light from louvered reflectors gives high-quality general illumination, banishes dark ceiling. Seeing task is not great here so light level is held at 25 foot-candles at work level.*



Mercury arc–incandescent *combination provides excellent 40-foot-candle light at work level from high-bay factory.*





Special spotlight *on precision machine tool increases light level in critical area.*

Inspection-station light *speeds production by quickly pointing out blemishes in highly polished chrome surface.*

LIGHT of unusually high level and versatility marks new factories. General illumination ranges upward from 40 foot-candles. Higher level illumination up to 100 foot-candles is supplied to such special work areas as precision machines, inspection stations, benches where delicate handwork is done.

Fluorescent systems are being more efficiently designed and installed. Slotted reflectors direct some of the light upward to banish the eye-tiring dark ceiling above the lamps. Study of the use to which downward-thrown light will be put helps determine most efficient lamp patterns of grids or runs, continuous or intermittent.

Incandescent- and mercury-arc systems provide illumination in many high-bay factories. Pure mercury-arc systems still have not gained acceptance due to color distortion.

To augment light levels, factory floor, machinery and wall finishes are chosen for their reflective quality; lamp reflectors are being designed to reduce their dirt-gathering characteristics.

MATERIALS HANDLING affects plant design today more than any other single factor, reshaping the factory building.

- Rail sidings and truck docks have moved from unprotected exterior areas into the building or under broad sheltering roofs. One designer looks for the day when trucks will drive into the plant to specific locations before discharging a shipment.
- Aisles have widened to let larger vehicles move stock to point-of-use bins. In addition, central stock storage has shrunk, continual replenishment at point-of-use bins is the aim. Result is fewer people handling paper work, less running back and forth, more production.
- Conveyors have taken over more and more of the movement of units between machines and departments. These conveyor systems take space—hence higher ceilings (up nearly 10′ in as many years) and larger bays.
- Multistory factory revival for continuous line production plants may lie ahead. Architect Roland Wank points out that new vertical materials-handling equipment makes upper floors economical enough to challenge the currently popular factory all on one floor. Advantages lie in smaller site requirements, better supervision of departments, better noise control and elimination of deep interior spaces.

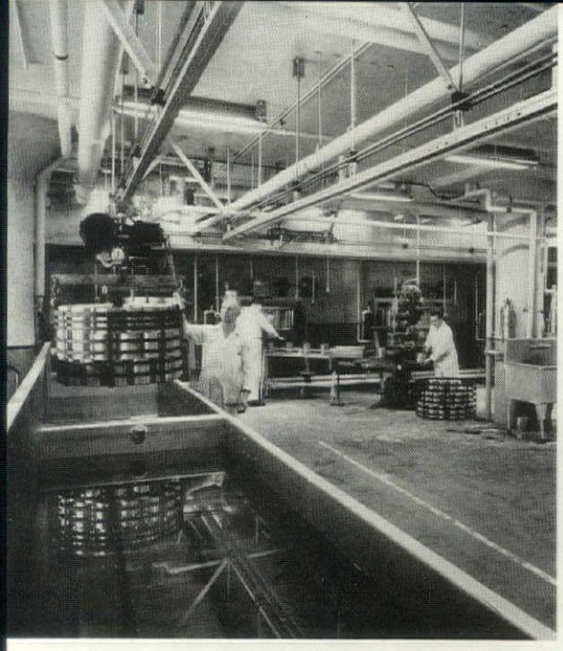
AUTOMATION moves closer with each materials-handling development. The final step is having the conveyor system introduce the unit into the machine, take it out when the operation has been completed, deliver it to the dock.

Given a completely mechanized production operation, the plant designer will be faced by a triple problem: 1) how to place and service elaborate control apparatus; 2) how to design a building easily adaptable to continuing refinements; 3) what to do about people in a plant that works mainly without people.

He may find it necessary to plan an entirely separate controls building to insulate delicate electronic equipment from the vibration of producing machines.

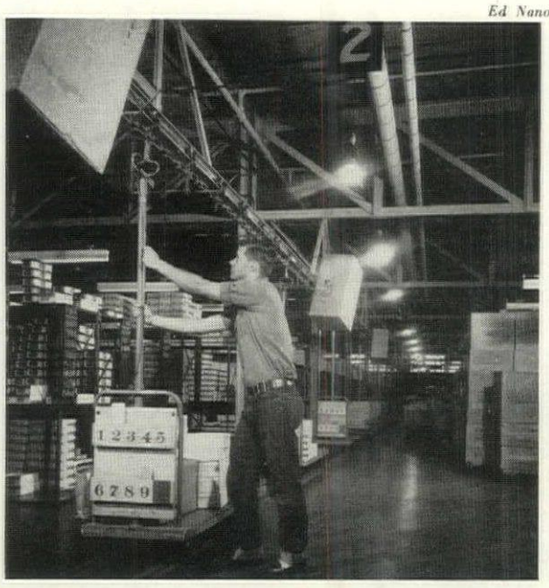
If controls are thus removed, the only people to enter the main plant will be maintenance men and trouble shooters. Will the designer then dare to cut down equipment for heat and light? The Ford Co.'s Cleveland engine plant (where controls are still within the main building) supplies an inconclusive answer. Windows are retained for natural light. There is super-duper air conditioning, for the interesting reason that machines operating without people need even closer atmospheric controls.

There are types of factories that will probably never be automatized. Job shops do not lend themselves to full automation though they benefit from many materials-handling techniques. On the other hand, such continuous line operations as engine production (opp. p.) offer full scope to automation.



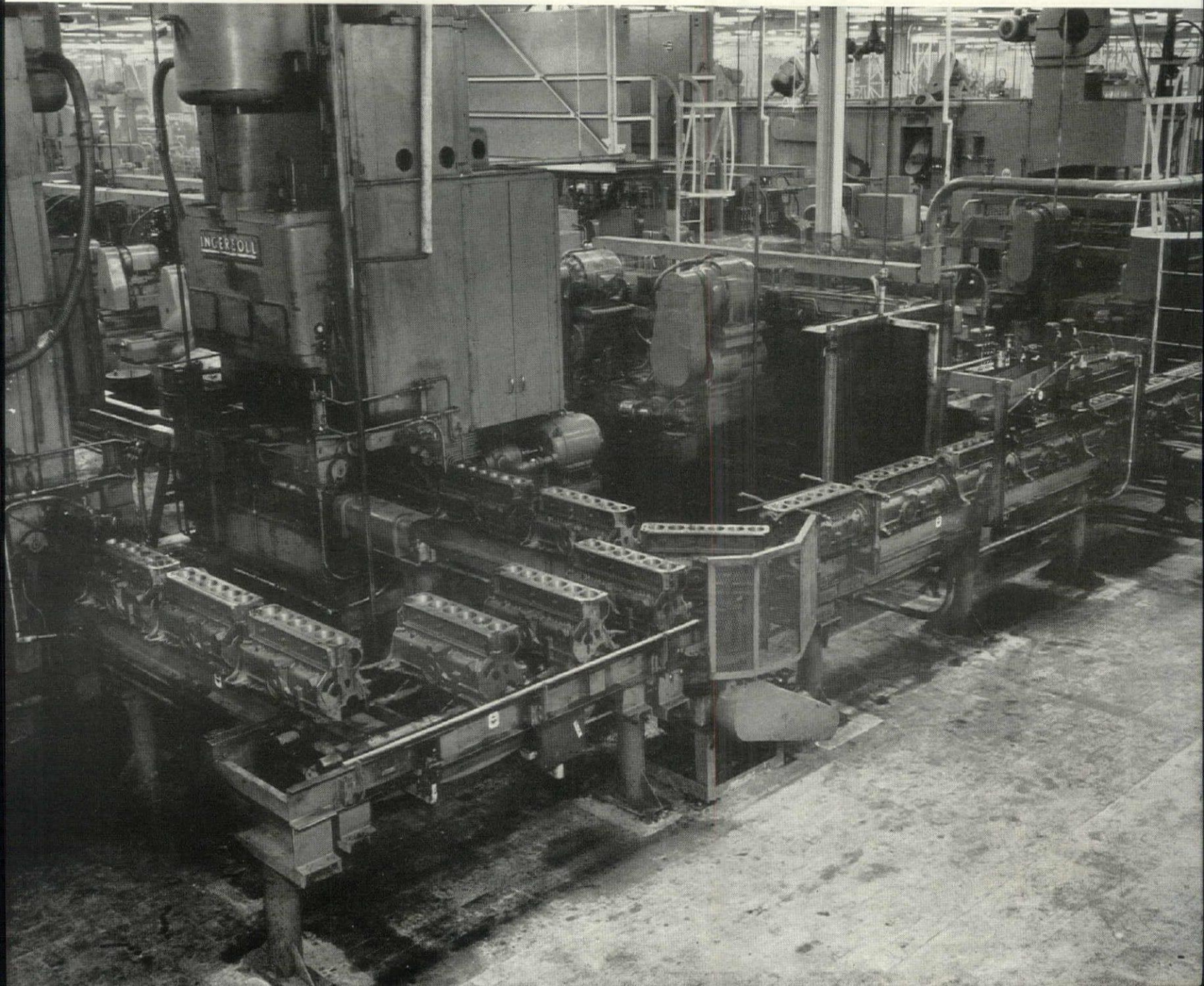
Monorail network *in H. A. Johnson Co. plant working with power-operated trolley hoists facilitates handling of batches of canned goods. Vertical space for conveyor was carefully planned in design of the building. The Austin Co., engineers & builders.*

Ed Nano



Drag link overhead *conveyor used with floor trucks helps distribute incoming merchandise and fill outgoing orders. (Shoe Corp. of America, The Austin Co., engineers & builders.)*

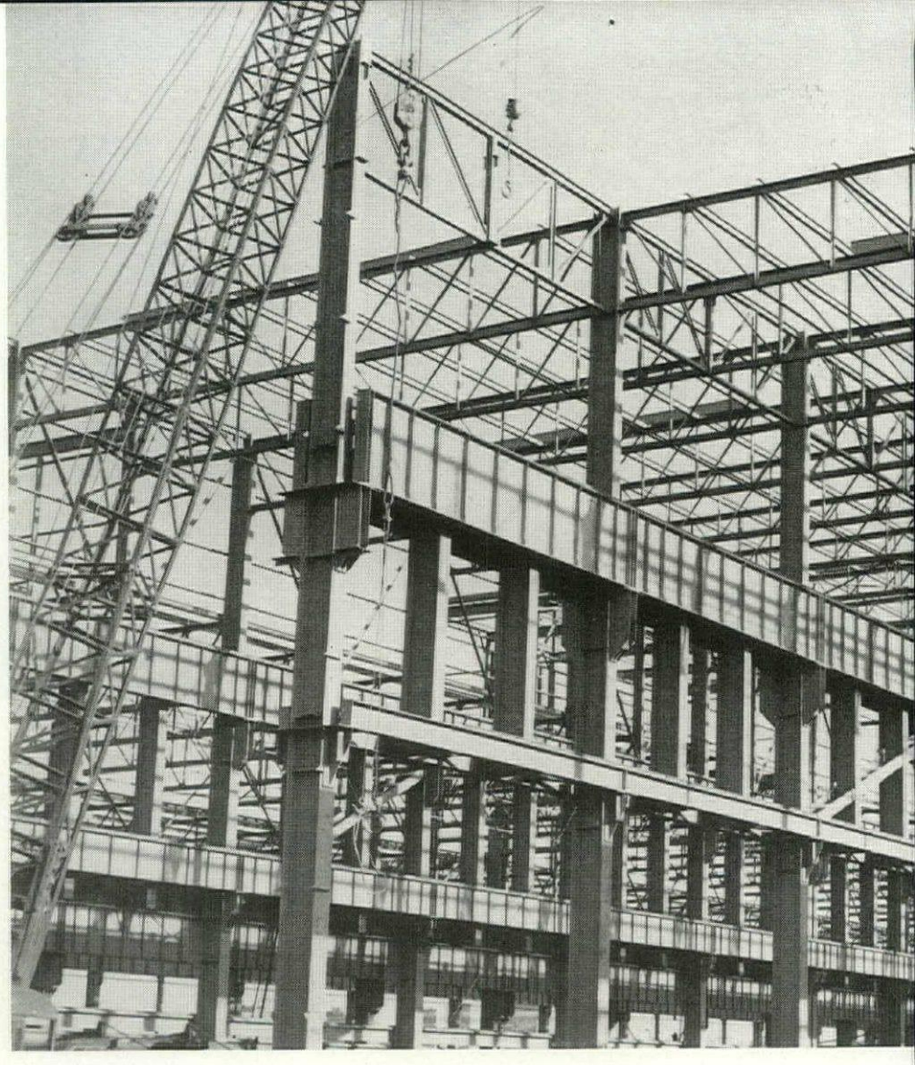
Automation *is a reality in the Ford Motor Co.'s Cleveland engine plant. Cylinder blocks move between automatic process machines on automatized conveyor system. Albert Kahn Associated Architects & Engineers Inc.*



LOCATION: Schenectady, N. Y.

STONE & WEBSTER ENGINEERING CORP.,
engineer and contractor

***Turbine plant** covers 20 acres, has a four-story air conditioned office wing along front.*



Special-purpose plant

is an integral part of production machinery creating giant turbines

With the completion of an 80,000 sq. ft., three-bay extension, General Electric's Schenectady turbine plant becomes a quarter-mile-long special tool designed to produce turbines up to 200,000 kw. capacity.

Although of the familiar steel-mill type of construction, the plant has a host of special arrangements built into it for the handling of heavy turbine parts.

The building actually starts 80′ to 140′ below grade where nearly 5,000 H-beam piles rest on bedrock. Atop these but still 7′ below grade is an initial 16″ thick mat of reinforced concrete. Resting on this mat are special foundations for test stands, with compacted earth fill around them. A 10″ concrete slab topped with 2″ wood block forms the factory floor.

Reason for the special subterranean concrete slab is that test stands and pits can be relocated or added without the necessity of sinking more piles. Where loading requirements were lighter, concrete pedestal piles averaging 50′ in depth support the floor. Steam exhaust mains in the test area are run in special trenches, and connected to condensers—all beneath the factory floor. Result is a custom-built floor, throughout the more than 1 million sq. ft. plant, to fit innumerable special requirements.

Materials handling is done by 51 cranes of from ½-to 200-ton capacity. The two largest bays have a unique double-level crane system. Light, 100-ton cranes are carried on special girders 35′ above the floor. Over these are large, 200-ton cranes 61′ above the floor in the 91′ high bays.

To maintain the cranes, special catwalks were built to give access to the craneways. And engineers can view the entire production process from a balcony extending from the third-story engineering department in the office wing across one end of the factory.

Light in high bays comes from combinations of one 1,000-w. incandescent lamp and two 3,000-w. mercury lamps. Mounted 80′ above the floor on the bottom chord of the roof trusses, they provide 40 foot-candles at work levels.

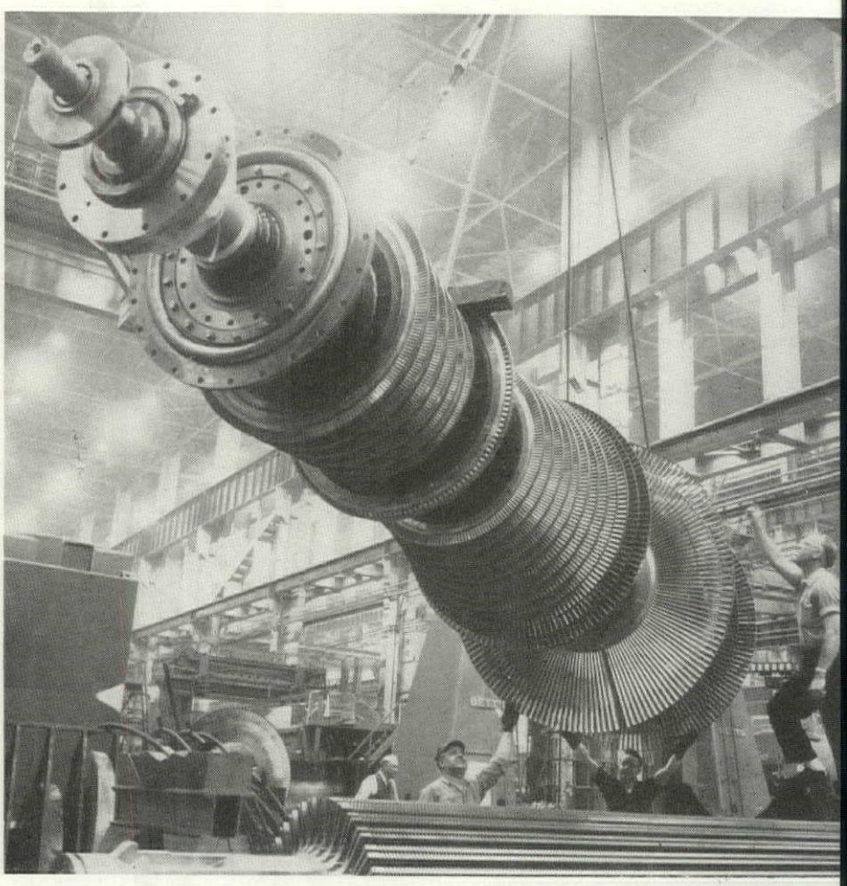
Power is supplied through 9ac and dc substations strategically located at load centers and raised on elevated platforms so as not to intrude on the production space. The lighting load alone is 4,000 kw. and the machine tool connected load is 20,000 kw.

Ventilating and heating the huge space is done by two systems. One, of 18 units, is situated in special fan rooms in the roof. The other, of 19 units, is located on the third floor of the service bay. Ventilation ducts drop down building columns from roof supply points to discharge heated air over the factory floor.

Columns had to be designed to carry the combined load of four cranes. Columns are spaced 40′ apart to allow temporary storage space for the turbine parts en-route to final assembly.

The steel frame structure is enclosed by walls made of poured concrete up to window sills and of insulated metal panels above windows. The roof is cellular steel decking covered by built-up roofing.

Welded steel structure *carries crane girders in high 91′ bays. Columns supported on special piling are spaced 40′ o.c. to allow storage space on production floor.*



Heavy turbines *like this one, ranging in capacity up to 200,000 kw., are built and tested in Schenectady plant. Fifty-one overhead cranes can handle loads up to 200 tons.*

Production bay *a quarter-mile long is 80′ wide. Note dual crane system with 100-ton cranes on lower level, 200-ton cranes on high level.*

New H. J. Heinz Co. vinegar plant by Skidmore, Owings & Merrill encloses universal space in handsome building. To be presented in a later issue

FLEXIBILITY is built into many of today's best factories. Structurally this produces the traditional loft space, up-dated and treated architecturally (photo, above).

Probably no factory has learned the value of flexible space better than today's textile mills which must meet continuing technological changes without costly plant alteration. In design of such plants as Deering Milliken's, Columbus, N. C. Hatch Mill (right) many aids to flexibility are considered. They include:

- Wider column spacing (up now to 30′ x 100′) to permit layout changes and the introduction of new machines and methods.
- Temporary exterior walls where expansion is planned.
- Location of permanent offices and service areas so as not to interfere with such expansion.
- Partitioning of small service areas in the plant with easily demounted lightweight metal or composition panels.
- Underfloor electrical ducts for machinery wiring capable of being picked off at any point.
- Continuous rows of fluorescent lights to provide the same light level to any point on the floor.

Flexibility *is built in Deering Milliken's Columbus, N. C. Hatch Mill with 100′ spans, underfloor electrical service, few permanent interior partitions. Carson-Lundin, consulting architects.*

Photos: (top) Torkel Korling; (bot.) Duke Photo Co.

Universal space plant

gives the benefits of line production to a job shop operation

LOCATION: Worcester, Mass.
ANDERSON-NICHOLS & CO., architects & engineers
GILBANE BUILDING CO., contractors

This plant (of Norton Co., Machine Tool Div.) can turn out more than 22,000 different machine parts while operating with the smooth efficiency of a straight line production plant. Secret of its success lies in flexibility built in. The plant consists of just a roof and a floor and a completely dispersed flow of services.

A central service core occupies the strip of space down the middle of the floor. Here are located the tool crib, toolmaking shop and maintenance shop. The core strip serves either side. On one side is the light parts production line, on the other side are the medium and heavy lines.

All receiving is done at one end of the factory. Raw materials used by each of the three lines are taken to the foot of each line and stored.

Machine layout was studied carefully to eliminate waste motion. Result: most parts go straight through without backtracking. Some must backtrack and zigzag (see diagram below) but planning was so careful that even this did not upset the line flow.

Completed parts move laterally across the floor to assembly and shipping areas. A rail spur in the shipping end brings railroad cars into the building for quick, easy loading.

Rest rooms are on a mezzanine above the service core.

Every column in the factory was designed so it could take a jib crane if necessary. Overhead cranes in medium and heavy parts sections are carried on separate columns to reduce vibration.

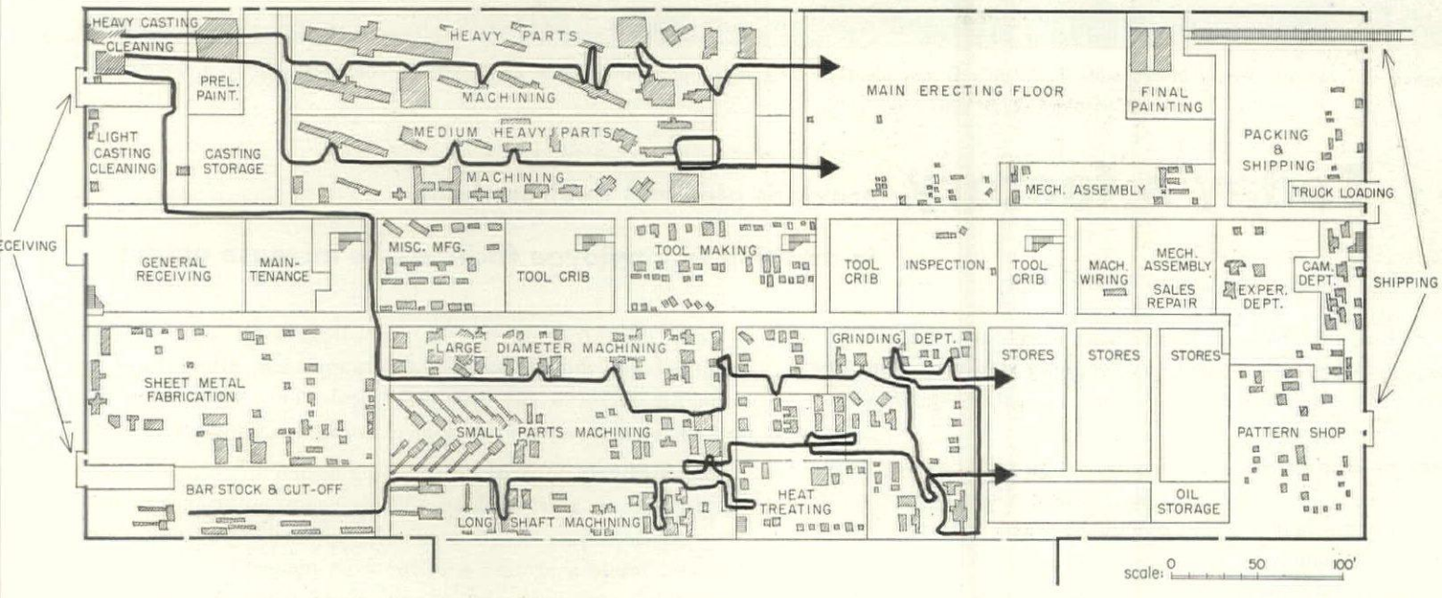
Illumination is 40 foot-candles at work level throughout the production area so machines shifted anywhere on the floor will have excellent light. Slotted reflectors throw 30% of the fluorescent light up to the ceiling to elimniate tiring light contrasts.

Electrical service comes from bus ducts along the column line that can reach machines from overhead anywhere along the line.

Slab floors on grade are of uniform strength along each production line. Thus a machine can be shifted to any location in its line without fear of floor failure.

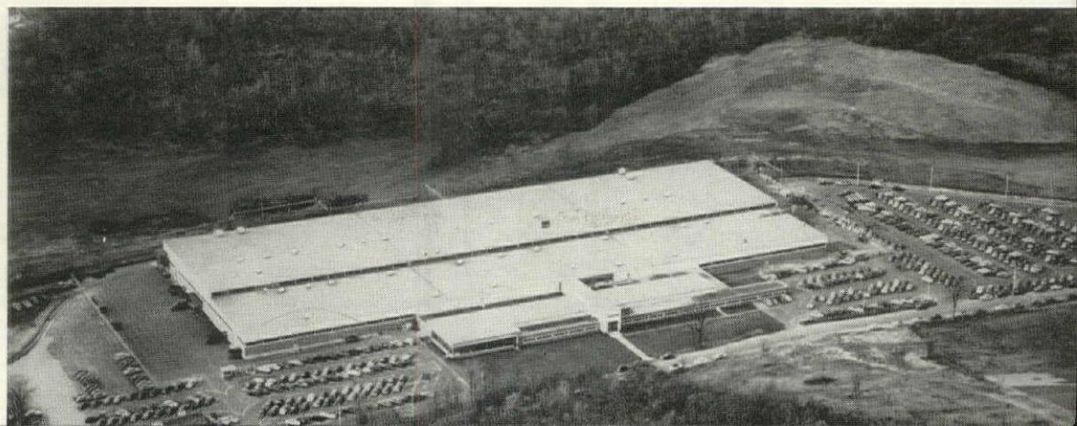
Result of this carefully planned flexible space is that 1) materials handling has been reduced between various operations from 50% to 90%, 2) manufacturing cycle (which determines delivery time to customers) has been cut by several months.

Walls of the 222,000 sq. ft. factory area are of brick-faced block up to windows, composition panel above. The steel decked, built-up flat roof is supported on welded girders rather than trusses to reduce building volume, provide a neater interior, make painting of the roof structure easier. Paved parking lots adjacent to the plant make access easy. Office and drafting-room wing parallels the factory area and contains a cafeteria to serve all personnel.



Flow chart *of Norton Grinding Machine Div. shows routes of sample parts. Note that despite occasional backtracking and zigzagging of some parts, the amount of divergence from straight line flow is small, general flow pattern is maintained.*

Norton Co.



Factory area *(back of clerestory roof-break) is flanked by lower ceilinged drafting room, cafeteria wing with lobby and offices facing street.*

Gottscho-Schleisner

***Landscaping** and careful exterior design make Fairchild's Stratos plant on Long Island pleasant to enter. Fordyce & Hamby, architects*

part 2. Today's factory provides pleasant environment, in addition to employee facilities, to increase output

Although forward-looking factories have long since added facilities for employees to raise their morale, only slowly have factory managers come to realize that a more agreeable total environment will do still more.

Exterior appearance. A factory set in park-like surroundings and designed with as much dignity as a shopping center can always draw the best workers though its wage rates may be no higher than its competitors'.

Interior environment now adds visual comfort and noise reduction, and recognizes that even though the local lighting directed to the job may be perfect, output can still be increased by knocking out surrounding unpleasantnesses such as the black ceilings that have caused "factory gloom."

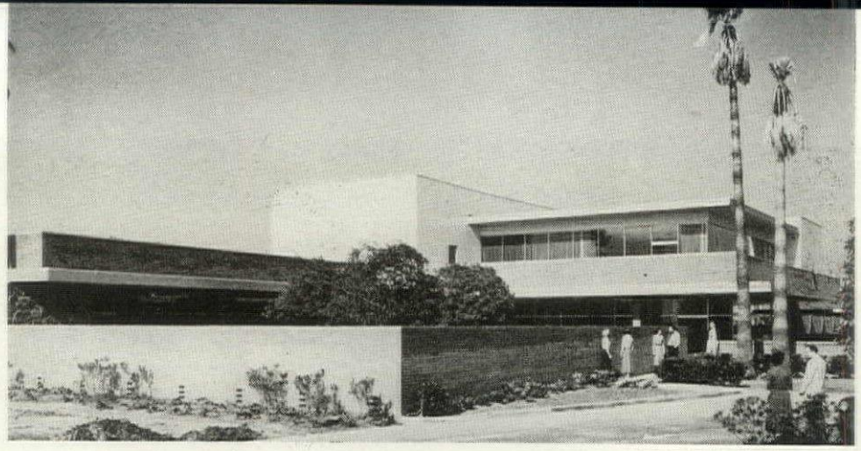
At a FORUM Round Table a leading industrialist confessed there have not yet been time and motion studies to measure the effect on output of such architectural factors as the size of the interior, the over-all lighting pattern, the local reduction of noise by acoustical baffles, or the introduction of pleasant color, yet the helpful effect of such measures could not be disputed.

Cafeterias. The elaborate facilities for feeding factory workers brought in during World War II were supposed to pass out at war's end. Instead, the factory cafeteria is being put into nearly all well thought-out new plants especially where there are no public facilities for noontime meals, or where the worker would have to go excessive distances to eat something hot.

Atmospheric control. Circulating heated air for winter comfort presents no great problem but air conditioning today's huge factory spaces is still economically impossible in most cases. However, where a process requires strict temperature control (as in production of some pharmaceutical products) or where there are many workers in a limited area, the cost of full air conditioning has been paid. The large manufacturer contents himself for the present with air circulation to provide worker comfort.

Human contact. Arranging plant space and layout to facilitate contact between fellow workers is being recognized as a definite part of plant design. It has been found that working in complete isolation or in too large a group acts to depress the worker—and his efficiency.

Accessibility. Ease of entering and leaving the factory area, location of food and rest-room facilities for easy and quick access become of prime importance in large factories.



Recreation building *for employees of McCullough Motor Corp. cost more than $1 million. It contains 12 bowling alleys, lounge, a theater, cafeteria plus inside and outside dining rooms capable of handling over 500 people. Welton Becket & Associates, architect.*

RECREATION FACILITIES for employees are accepted today as being part of the factory design job. Sometimes an entirely separate building is put up (see picture above) to provide the last word in such facilities. Many times, however, less expensive methods are used. For example, the Norgren plant (AF, June '53) was located in a suburban area chosen mainly because a nearby public park provided swimming and golfing—at no expense to the company. A combination of facilities, built and found, sometimes goes farthest. Electrolux Corp. (AF, Apr. '53) put up a $900,000 recreation building but omitted a swimming pool because public beaches were nearby.

While amounts spent vary from factory to factory, the thinking behind provision of recreation facilities is consistent: All successful recreation areas reflect the well-analyzed desires of the workers and the participation of employees in realizing them.

CAFETERIAS in today's factories vary from the snack bar and coffee counter found in small factories to such big installations as the 12,000 sq. ft. dining room serving 60,000 meals a month in General Motors Dayton, Ohio plant.

Biggest improvement going into new cafeterias is air conditioning. Where manufacturing areas are too large to air-condition, designers have found an air-conditioned cafeteria can give workers respite from summer heat at the midday break.

Most common fault in factory cafeterias is noise. To combat it, many plants use rubber tile floors, acoustical tile or plaster ceilings, complete separation of eating and serving areas. Ease of maintenance calls for metal chairs and stainless steel counter equipment.

Location of the cafeteria in a basement is being tried by some factories. The most successful basement cafeterias adroitly avoid a claustrophobic atmosphere by use of indirect lights, lighted glass block walls, planting boxes and well-managed color.

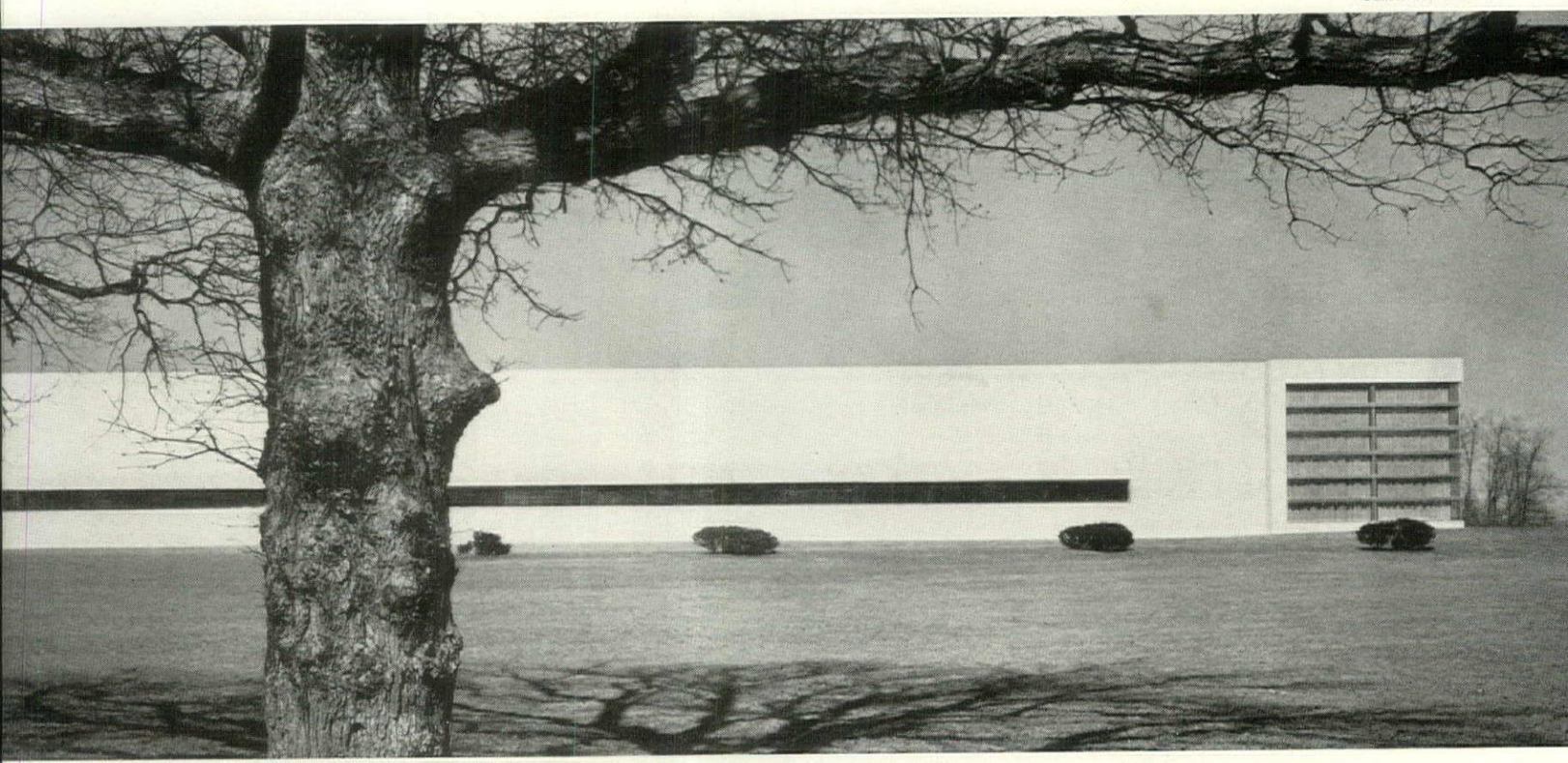
Courtsey: Institutions Magazine

Modern cafeteria *of H. J. Heinz Co. has partition between eating and serving areas that serves as a noise baffle. Skidmore Owings & Merrill, architects.*

Snack bar *in recreation building of the Electrolux Corp. draws employees from company cafeteria with its pleasant atmosphere. Raymond & Rado, architect.*

Ben Schnall

FORTUNE: *Fenno*



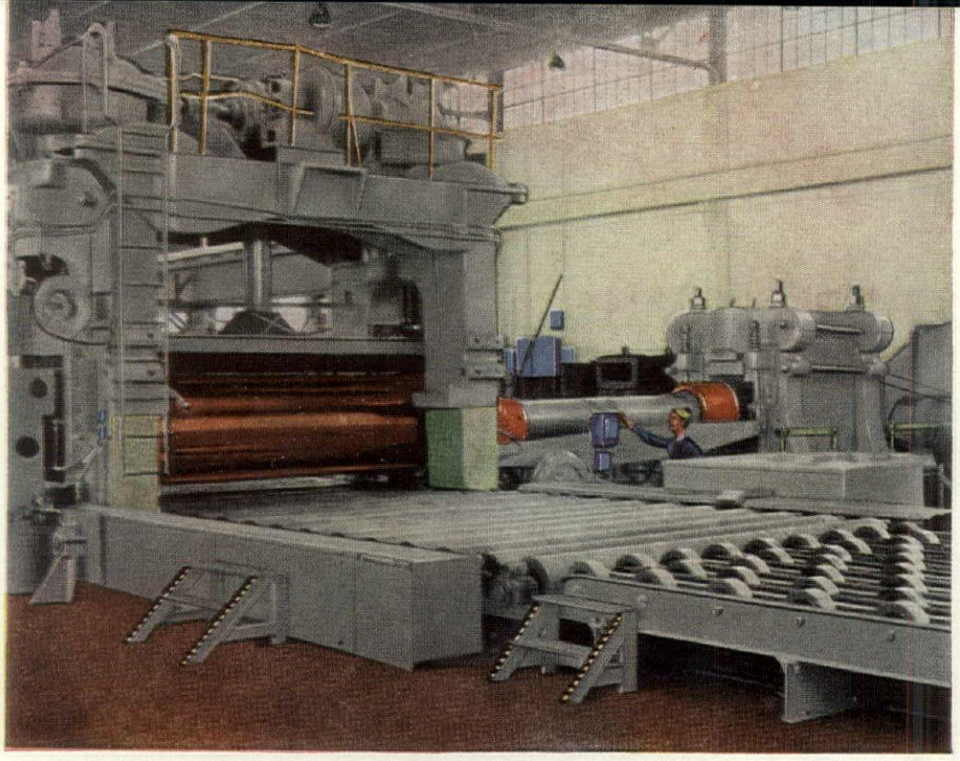
Simple, crisp handling *of exterior marks the Ethicon Suture Laboratories, Inc. in North Brunswick township, N. J. White marble facing is juxtaposed with fixed blue glass (plant is completely air-conditioned). Vision strip marks the manufacturing area while the high glass wall denotes the well-lighted lobby and administrative area. Cory & Cory, architects & engineers.*

EXTERIOR treatment of factories rarely reaches the beautiful simplicity portrayed above, which makes this factory a showplace for the company. The most common and glaring faults could be corrected at little or no added cost by obtaining better architects and releasing them from the dominance of engineers. These common faults are: 1) lumps and bumps sticking out of the building where some added element has not been digested into the design; 2) incoherence between one side of the factory and another, because nobody has considered the building as a whole; 3) clumsy detailing which could have been made skilful with no further expenditure. The new surfacing materials, mostly lightweight panels of metal, asbestos cement, enamel, glass, or corrugated plastic, offer plenty of opportunity for texture and rhythm in vast factory walls.

ILLUMINATION is getting more study than ever before from a standpoint of comfort. Raising the light level helps but does not solve the entire problem. Important contributions to visual comfort are made by considering the brightness and area of the light source, shielding of the source, diffusing the light to avoid glare, studying brightness ratios and patterns of adjacent visual surfaces, such as contrast between work and work surfaces, and between work areas and background areas. For example, the Norton Co. has fluorescent reflectors that throw 30% of the light upward to the factory roof, thus eliminating excessive contrast between the work space and a dark ceiling.

During the war, employees broke so many wall panels in windowless factories that designers now tend to supply at least enough windows to provide some visual contact with the outside world. For daylighting purposes roof monitors or skylights are still unbeatable, providing a nearly uniform overhead source that can be louvered to reduce glare.

Glareless light *in the Mennen Co.'s Morristown, N. J. plant is produced by 16,000 sq. ft. of eggcrate louvers forming hung ceiling below slim line fluorescents. Window areas of glass block augment overhead light. Result: 50 foot-candles of evenly diffused light at work level; pleasantly low brightness differences throughout the interior. A. M. Kinney Associates, architects and engineers.*



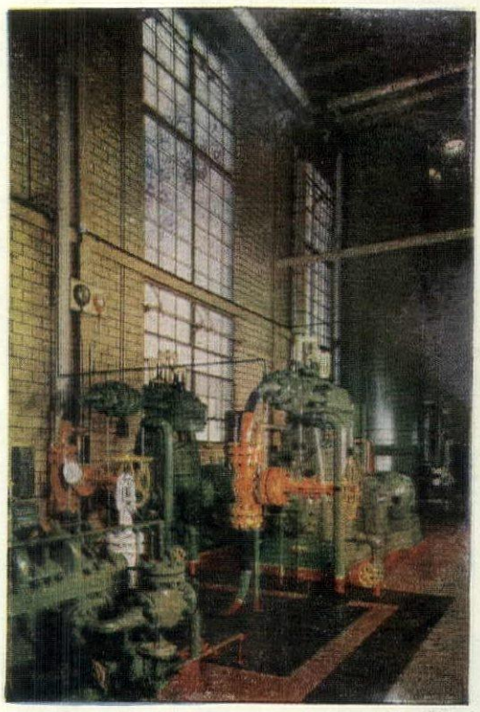
Courtesy: the Du Pont Co.

COLOR in today's factories makes three definite contributions to worker comfort and efficiency: 1) reflective colors make factories lighter and more cheerful work places, 2) contrasting colors demark the work against work surfaces, point out danger areas, identify fire and electrical equipment locations; in addition, steam, power, water and process chemical lines can be color coded for quick identification; 3) color reduces housekeeping problems not only because painted surfaces are easily cleaned but also because workers actually respond to the idea: they will clean up painted machines, remove litter from a painted floor themselves.

While arguments still rage regarding the effect particular colors have on workers, the pastel greens and grays find general favor on the theory that they form excellent backgrounds (as well as having the necessary reflectance). For specific contrasting colors, the difference in value is regarded as critical. Brilliance, except in danger areas, is regarded as tiring to the eye.

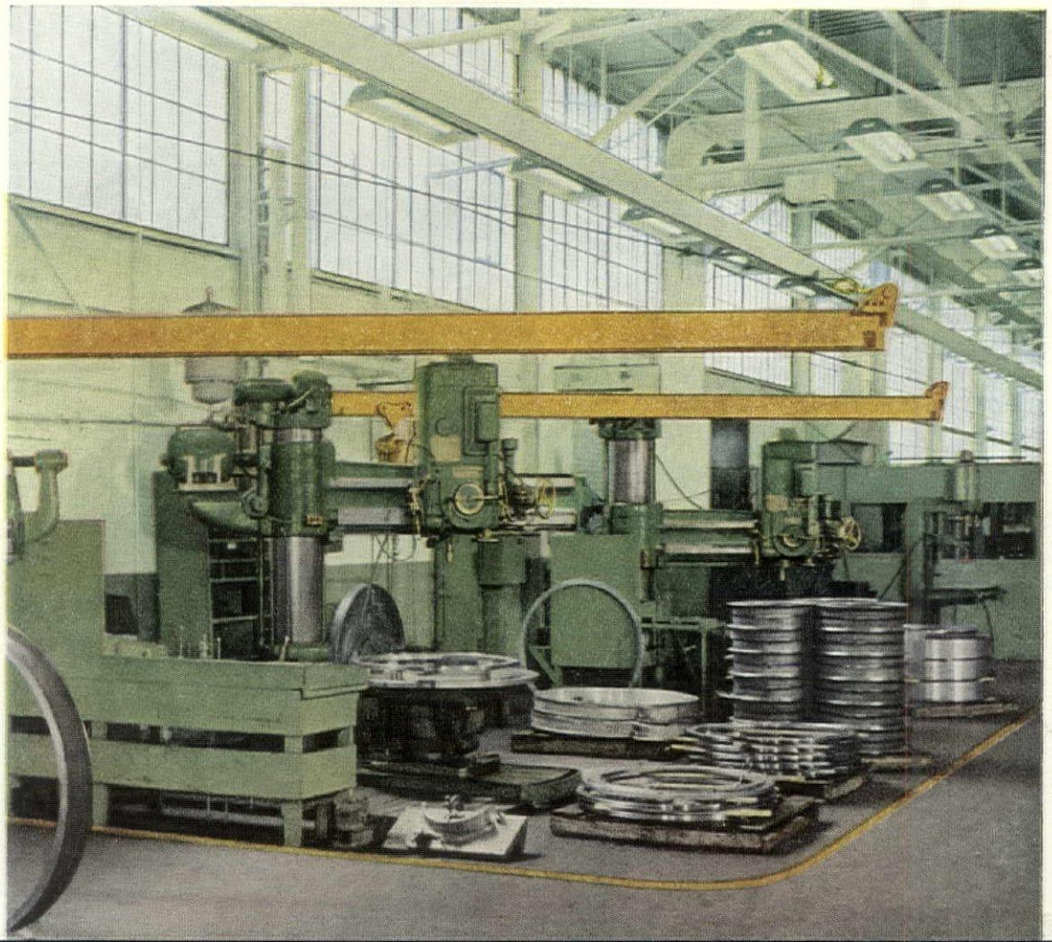
Pastel gray and green *of high reflectance is used for over-all color in Revere Copper & Brass Co.'s New Bedford, Mass., factory. Note blue electrical switch box marking, yellow-black safety stripes on stairs, yellow handrail above mill.*

Courtesy: The Stark Brick Co.



Color *in General Electric's Coshocton, Ohio, plant gives warmth to the interior. Use of contrasting colors marks controls and process lines.*

Courtesy: Pittsburgh Plate Glass Co., Paint Div.

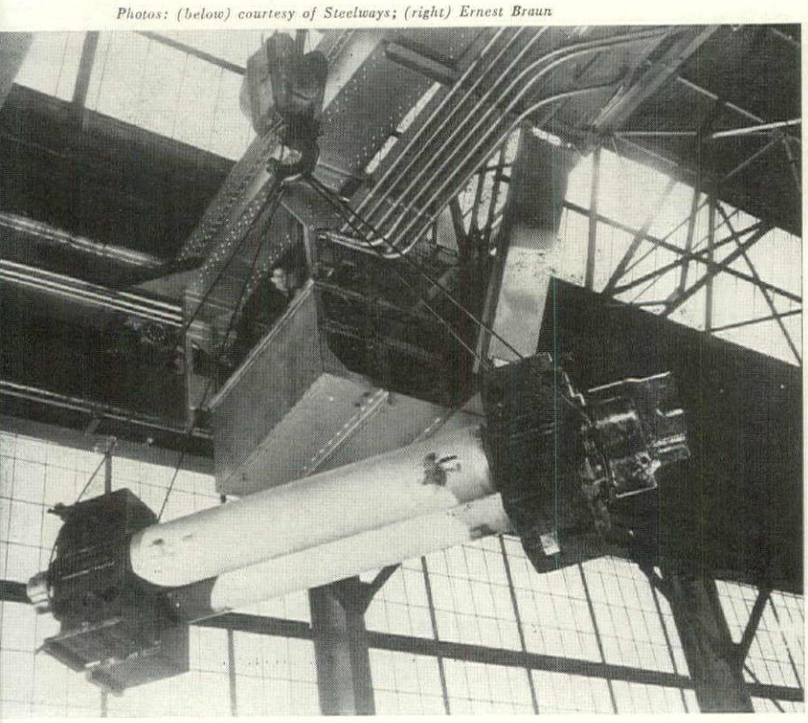


Yellow paint *on crane booms calls attention to these moving machines to promote safety. Contrasting greens throughout the Federal Fawick Corp. plant in Cleveland have high reflectance, encourage workers to keep plant clean.*

ATMOSPHERE CONTROL still is a major problem for large factories. Disproportionately expensive to air-condition, most rely on introduction of outside air through blower units to keep the air moving. Exception to the rule can be found in such pioneering examples as the Duncan Electric Co. in Lafayette, Ind. Its entire 90,000 sq. ft. production floor is air conditioned; in summer the inside temperature is 15° below outside temperature.

Manufacturing processes that require strict temperature and humidity control (such as those using high precision machinery) make air conditioning mandatory. Often such plants are windowless to reduce air-conditioning loads and provide more accurate atmospheric control.

Photos: (below) courtesy of Steelways; (right) Ernest Braun

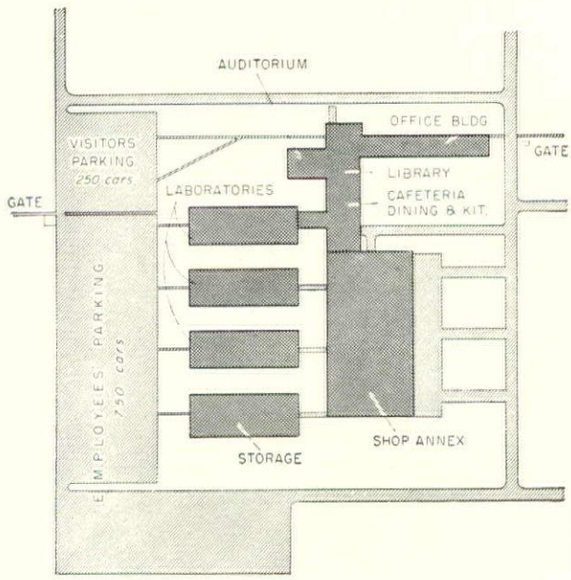


Isolated workers, *like this one in cab of an overhead crane, tend to be less productive than when they can work with a group. One company found that floor operated cranes (above) solved the problem. Not only were operators happier, they could do other work when crane was not in use.*

HUMAN CONTACT plays an important part in a worker's efficiency. Isolated completely from his fellows, he produces less, is less contented. Conversely, too much contact—too large a work group—produces the same falling production characteristic. Here is the suggestion that accurate partitioning or semi-partitioning can be beneficially included in plant layout. But many large plants with line production setups cannot use any physical partitioning whatever. Some amelioration could come from dividing work areas *by color* (following department-store design techniques) to impart a group sense to workers.

ACCESSIBILITY to rest rooms, cafeterias and, above all to the surrounding parking lots becomes a problem in many of today's gargantuan factories. Rest rooms and eating areas have been separated vertically in many plants. This makes them easy to reach from any point on the floor yet keeps them from taking up production floor space. Mezzanines are better than basements.

Huge, one-building factory systems are beginning to break up. General Electric's Appliance Park in Louisville and R. C. Mahone Co.'s new plant in Detroit show the trend to smaller units. Finger plans (diagram, r.) and block plans do two important things: 1) they produce buildings of more human scale and permit grassy courts and walks to relieve the cog-in-the-machine feeling of the workers; 2) they reduce time wasted walking from distant parking lots to work areas.



Finger plan *plant has separate but accessible areas, each near employee parking lot. Result is quicker access to building, less interdepartmental traffic. Scheme by Leinweber, Yamasaki & Hellmuth, Architects.*

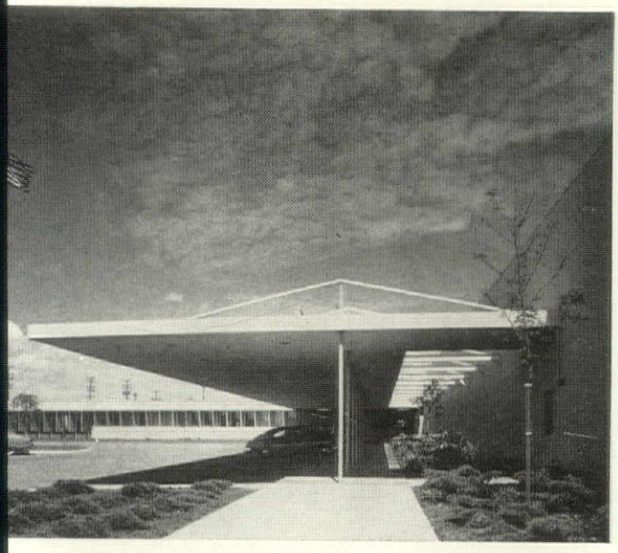
Photos: Ernest Braun

Lobby *with open front is at junction of building wings*

Republic Supply Co.

"We have observed a definite reduction in personnel turnover because of the beauty and comfort of the new plant. Our employee relations are far better than at any time in the past" *John J. Pike, President*

LOCATION: San Leandro, Calif.
GEORGE VERNON RUSSELL, architect
LAWRENCE HALPRIN, landscape architect
SWINERTON & WALBERG CO., contractor



Canopy over customers' cars *protects route to entrance, avoids a gloomy effect by opening over planted area next to warehouse wall.*

This plant shows what can be put in a top AIA-award industrial building to raise worker morale and efficiency without raising the building cost. Intelligent planning produced this plant for only $9.97 per sq. ft.

▸ ***Outward appearance*** puts this working plant in the class usually reserved for fancy industrial laboratories, makes the p'ace inviting to employees as well as customers. The "service" rear is as good as the "front."

▸ ***Recreation area*** is a large patio between office wings. It is used for group meetings, as a lounge and as an outdoor dining room.

▸ ***The cafeteria*** opens up during warm weather to turn the adjoining patio into an outdoor dining room.

▸ ***Light*** for the warehouse is supplied through double-faced monitors in the roof and supplemented, on infrequent occasions, by fluorescents. Five-foot roof overhangs keep sky glare from office areas, and sun fins along the east side of the executive wing solve early morning sun problem.

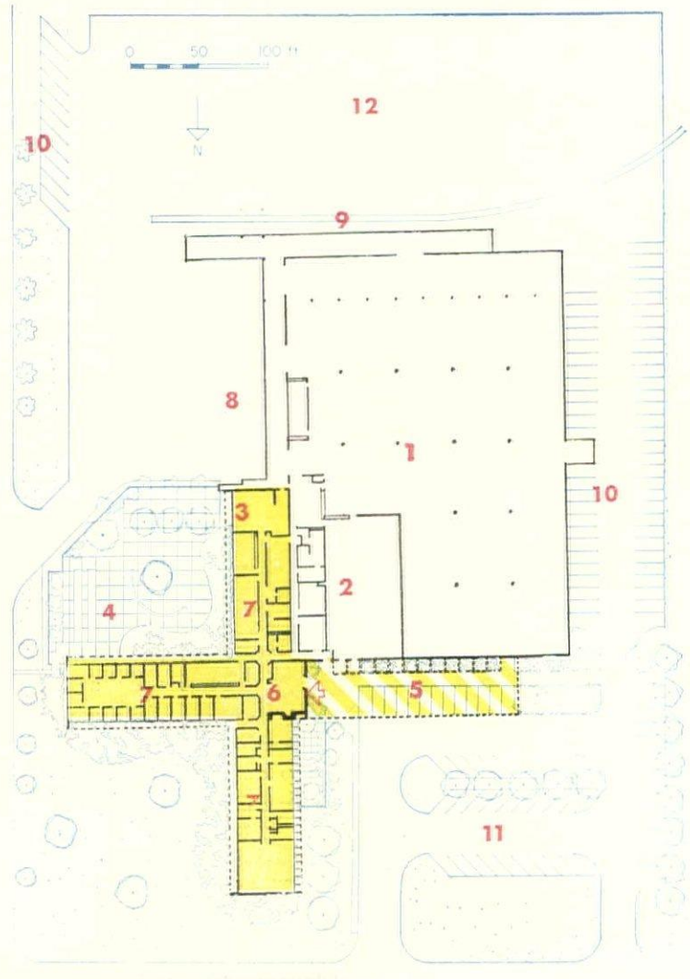
▸ ***Color*** in the warehouse is off-white above door level to reflect light from monitors. Below door level, walls are light olive green with fire and lighting equipment painted contrasting colors. Earth colors, chromates and natural wood finishes blend office interiors with landscaping.

▸ ***Atmosphere control*** in administration area is accomplished by a fan and coil unit at midpoint of each wing. Radiant heat in the warehouse marshaling area keeps workers warm when rail or truck dock doors are open during winter.

▸ ***Human contact and accessibility*** are evident in the plant plan. Ample employee parking adjoins one side of the warehouse, the patio adjoins office wings (with executive wing removed from the center of activity) and the central cafeteria links all worker areas.

Sun fins, *on columns and mullions, protect east facing executive wing from early sun. Executive offices open onto small patio similar to employees' (opposite page). Corrugated asbestos cement gives texture and an economic finish to facia and sign structure.*

1. Warehouse
2. Tool room
3. Cafeteria
4. Employee patio
5. Covered client parking
6. Reception
7. Administration
8. Truck dock
9. Rail dock
10. Employee parking
11. Open client parking
12. Outside storage area



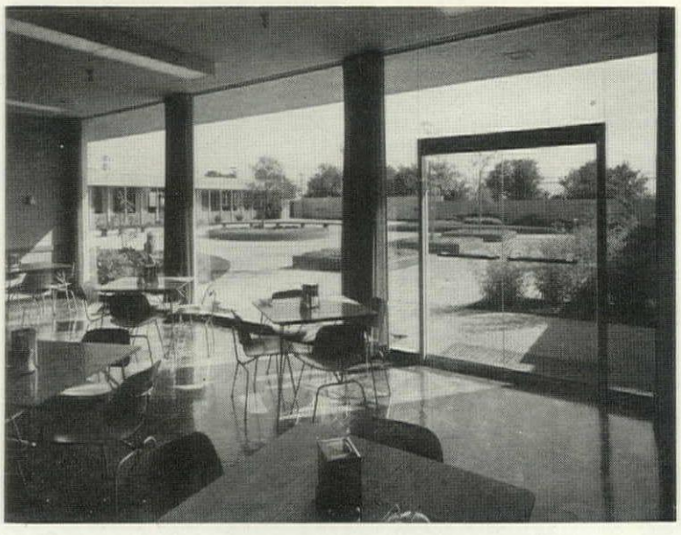
Industrial Photo Service

Air view *shows scheme of plant. Clients park in front, go to lobby at junction of wings. Executive wing (foreground) is away from center of action. Warehouse, office wing shelter employee patio (left background).*

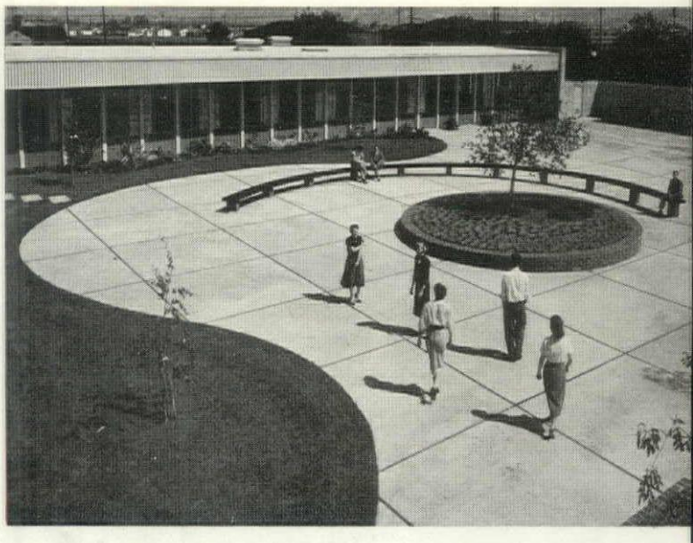
Conference room *in executive wing gets natural light from floor to ceiling windows diffused by vertical sun fins of asbestos cement sheets. Wing is isolated from main warehouse area, yet is easily accessible to it (plan, opposite page).*

Sales office *is located at end of executive wing farthest from warehouse, since no direct communication is necessary between the two areas.*

Photos: Ernest Braun



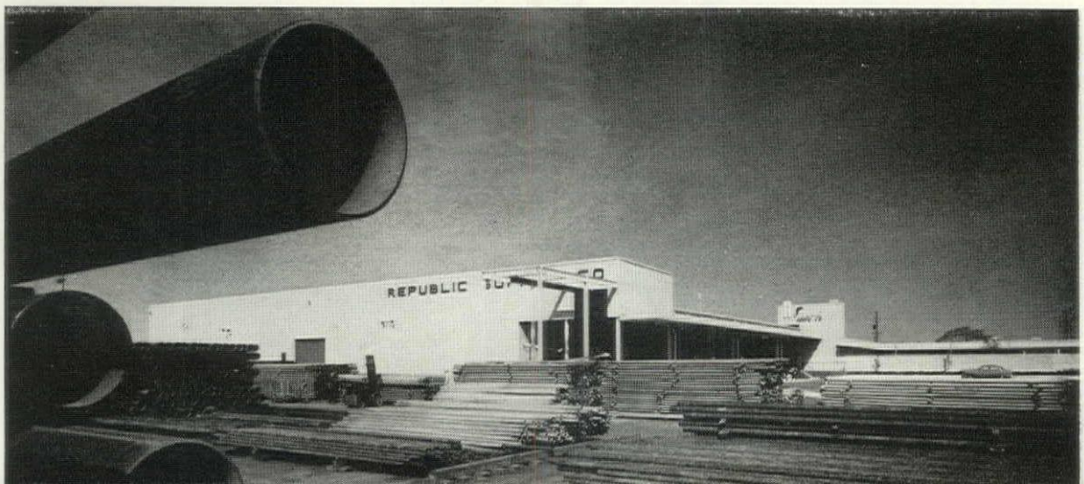
Cafeteria *for employees links warehouse proper and employee patio (plan, opposite page). It is actually at the center of workers' areas. Window wall opens onto the patio which becomes an outdoor dining area in warm weather.*

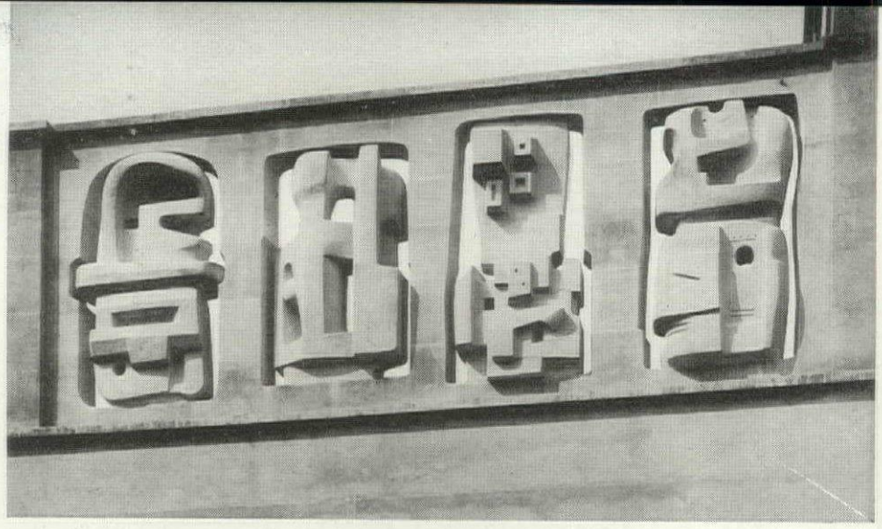


Patio *itself is bounded by two wings of the building and masonry wall, is used not only for summer dining but—in the generally temperate climate—as a lounge. Note curved terrace that relieves the rectangularity of the building.*

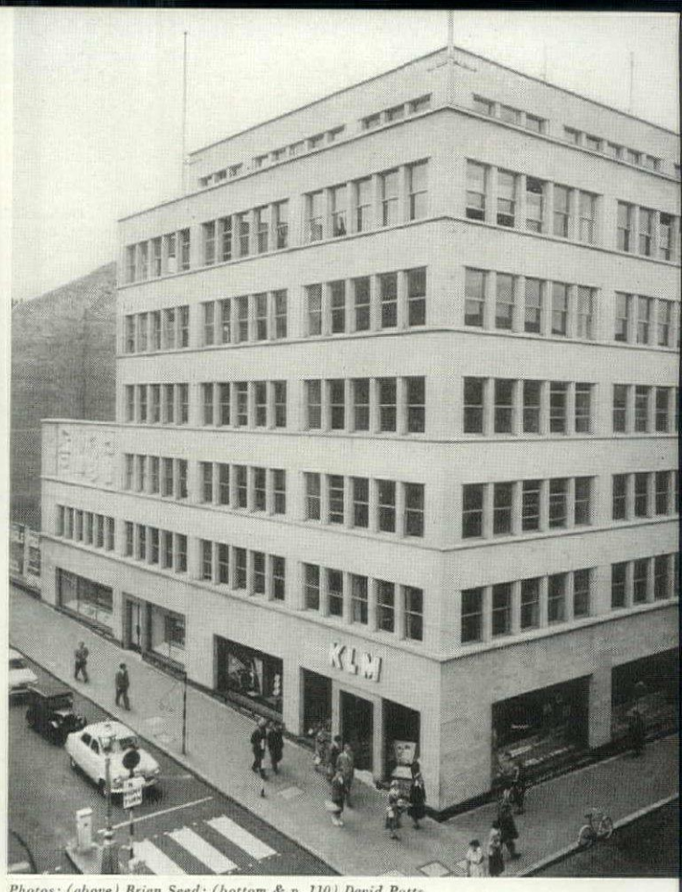
Storage yard *outside warehouse provides more space. Rail siding separates it from warehouse. Note crane structure on corner of warehouse which is over tracks. Sheltered truck dock runs along other side of warehouse.*

Warehouse *has concrete slab on grade, large 40' x 60' bays, a roof structure of steel trusses 10' o.c., T&G fir decking with built-up roof. Continuous double-faced roof monitors make use of slimline fluorescent lights turned off most of the time.*





Sculptural screen *by Henry Moore adds interest to the building's matter-of-fact facade, adds a visually necessary "third story" to an otherwise dwarfed wing and adds privacy to a large roof terrace opening off the reception room shown below and to the left.*



Photos: (above) Brian Seed; (bottom & p. 110) David Potts

London's newest building provides offices for a US tenant and a showcase for British artists and craftsmen

TIME & LIFE BUILDING, London
MICHAEL ROSENAUER, architect
SIR HUGH CASSON, coordinating designer for the interior
MISHA BLACK, associate

Reception room *on second floor features hand-woven carpet (grass green and rose), sculptured clock on end wall of peroba-veneered strip with ebony joints (above), communications-map mural of leather on other wall (right), white ceiling ribbed in brick bond pattern from which is hung lighting panel of black cowhide.*

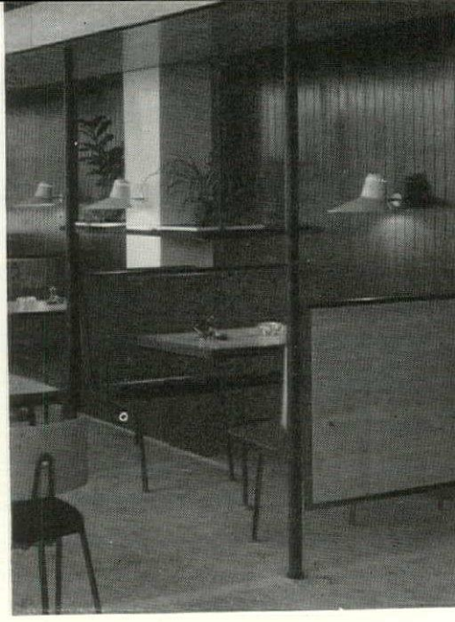
This new office building on London's Bond St. is as much a showcase for British artists as a European headquarters for TIME and LIFE.* To offset the less-than-inspired architecture of the shell (the result in part of meeting regulations of boards, councils and ministries in charge of Britain's austerity program) the tenant enlivened the interior by giving a free hand to 50 British designers and artists. They were assembled and directed by Sir Hugh Casson (who also marshaled the Festival of Britain in London—AF, Aug. '51). Summarized on these pages, the result is a display of British interior design and craftsmanship in fixtures, furniture, fabrics and other building accessories.

Shape and exterior appearance of the building were influenced by the small size of the site (a bomb hole 100′ x 110′), its location (streets on three sides, a bombed site on the other), the zoning law (at the seventh floor the building had to set back at 45°), the owner's conservatism (the proposed aluminum mullions were vetoed in favor of stone), the building code (all toilets must have windows—hence the court-type plan) and the tenant's basic requirements (large, well-lighted, well-ventilated floors with a minimum of building) which were met with an unusually high ratio (86.5%) of useful office space to gross floor area.

* Owner of the building is the Pearl Assurance Co., Ltd; TIME-LIFE International Ltd., is the tenant.

Photos: Millar & Harris, David Potts and Council of Industrial Design

Cafeteria *pipe columns and tables create a pleasant pattern of lines and rectangulars. Note four kinds of seating: 1) table for eight people eating alone in foreground, 2) tables for two in center, 3) booths for four along partition at right, and 4) large tables next to the terrace windows.*

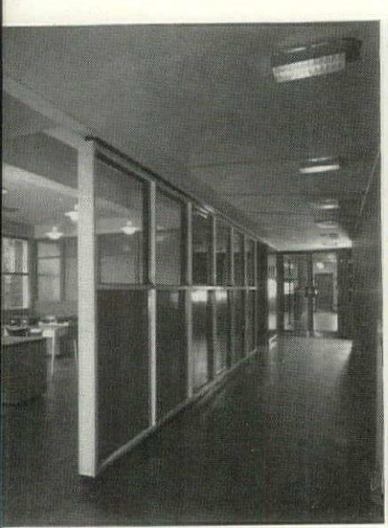


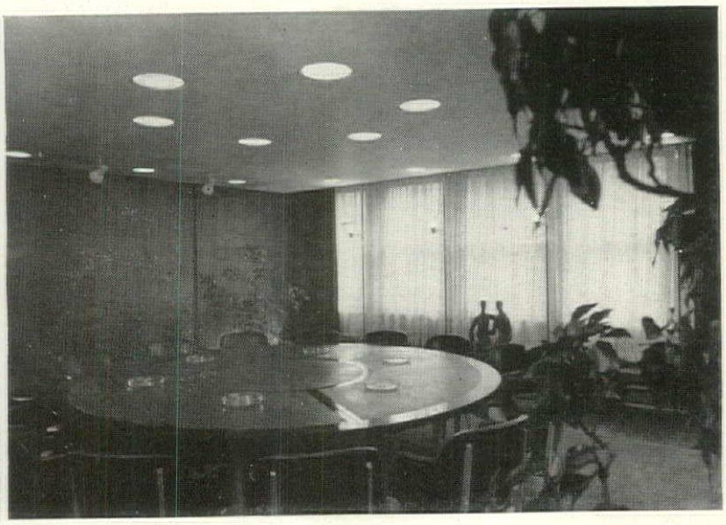
Dining booths *have individual lights of special design and a mural overhead to compensate for their lack of windows and view. Colors: white marbleized linoleum floor, mahogany paneling, gray-blue plastic tabletops, black columns and chair legs, yellow curtains, dark green, red and black upholstery.*

→

Private office, *viewed at right from adjoining conference area, serves two purposes: it provides work space for an editorial executive and at the same time can accommodate a meeting of up to 14 people. Typical 9'-6" ceiling is lowered in part of the room to conceal a beam, house heating ducts, and to form an indirect light cove. Conference and office areas are partially separated by book shelves barely visible at left of photo.*

From British critics the TIME & LIFE Building obtained a generally cordial reception. The authoritative *Architectural Review* thought the building suffered from the demand of "excessive enclosure" involving a multiplicity of passages and partitions and consequently some confusion. Yet the *Review* praised the "imaginative and up-to-date interior," the inclusion of some major work of sculpture and painting, some expert craftsmanship. Said the *Review*, generously, "If the building convinces British Big Business that the use of monumental Queen Anne and Bankers' Georgian is over . . . it will have done something more valuable than merely using some modern British artists."





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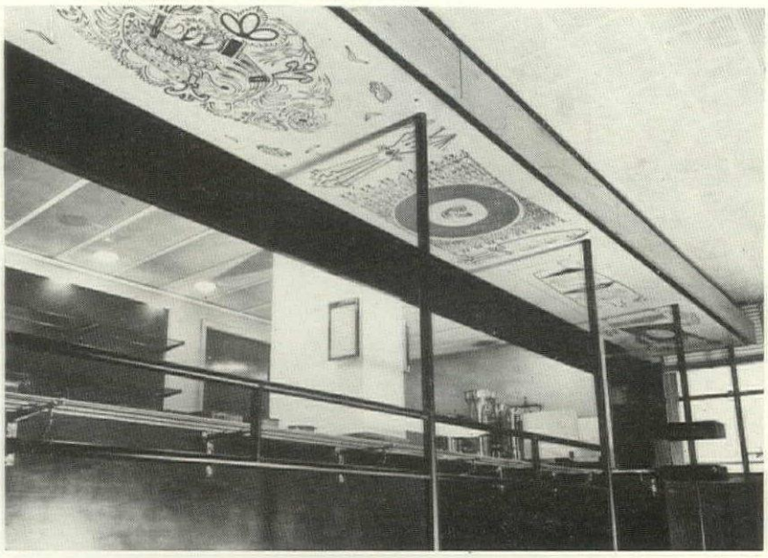
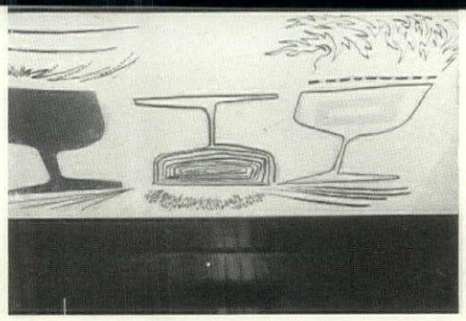
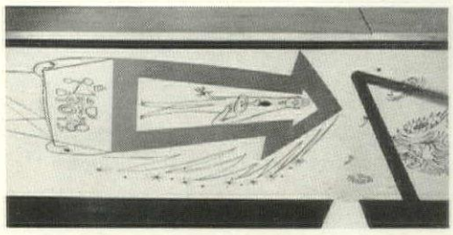
Flexibility *of office space is typified by use of easily shifted wood and glass partitions along office corridors and by use of four-piece conference-room table which can be divided to accommodate informal meetings. Conference room is lit by a combination of downlights and glass reflectors aimed at the ceiling. Its decoration includes a marble window seat along two walls and a sculpture of two seated figures.*







Ceiling murals *over cafeteria service counter are made of photographically enlarged drawings which are colored and laminated in a plastic sheet material. Arrow is above starting point at counter and indicates direction of movement.*

Photos: (above) Warerite Ltd.; (below) David Potts

TWO CLUBHOUSES

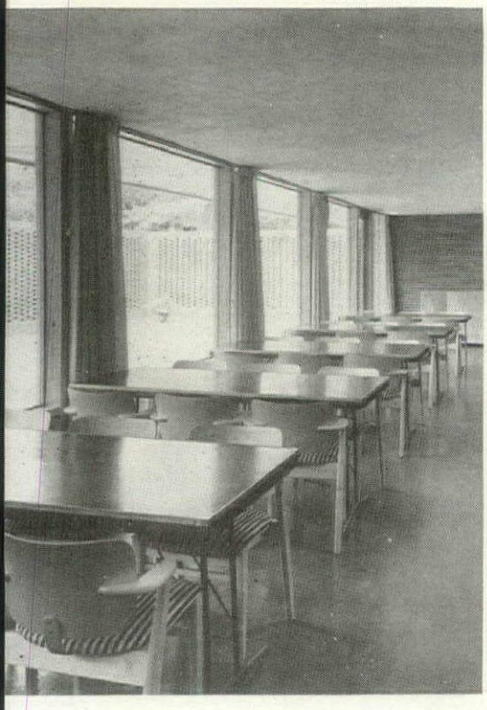
The buildings shown on the next six pages were designed to do two jobs: 1) to serve as small residential hotels, and 2) to serve as small social centers for groups with something in common.

It so happens that these buildings are college fraternity houses—one by Architect Ed Stone for the University of Arkansas, the other by Architect Paul Rudolph for the University of Miami. But neither the program nor the structure would have been very much different if these architects had been asked to design a country club for week-end golfers or a vacation hide-out for movie stars.

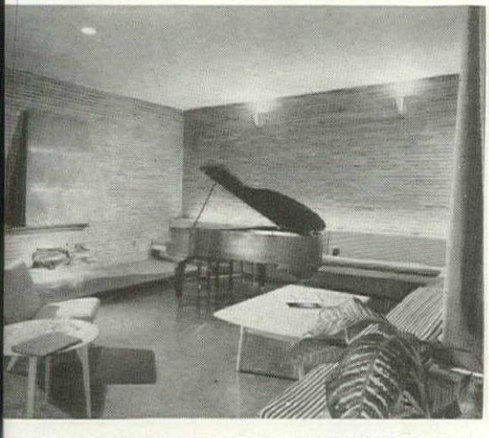
In other words, these buildings represent a very common building type. What makes them most interesting, however, is not their alikeness but their striking differences: Stone's fraternity house is a big and comfortable house, Rudolph's is a small public building of great formality.

Photos: Lionel Freedman

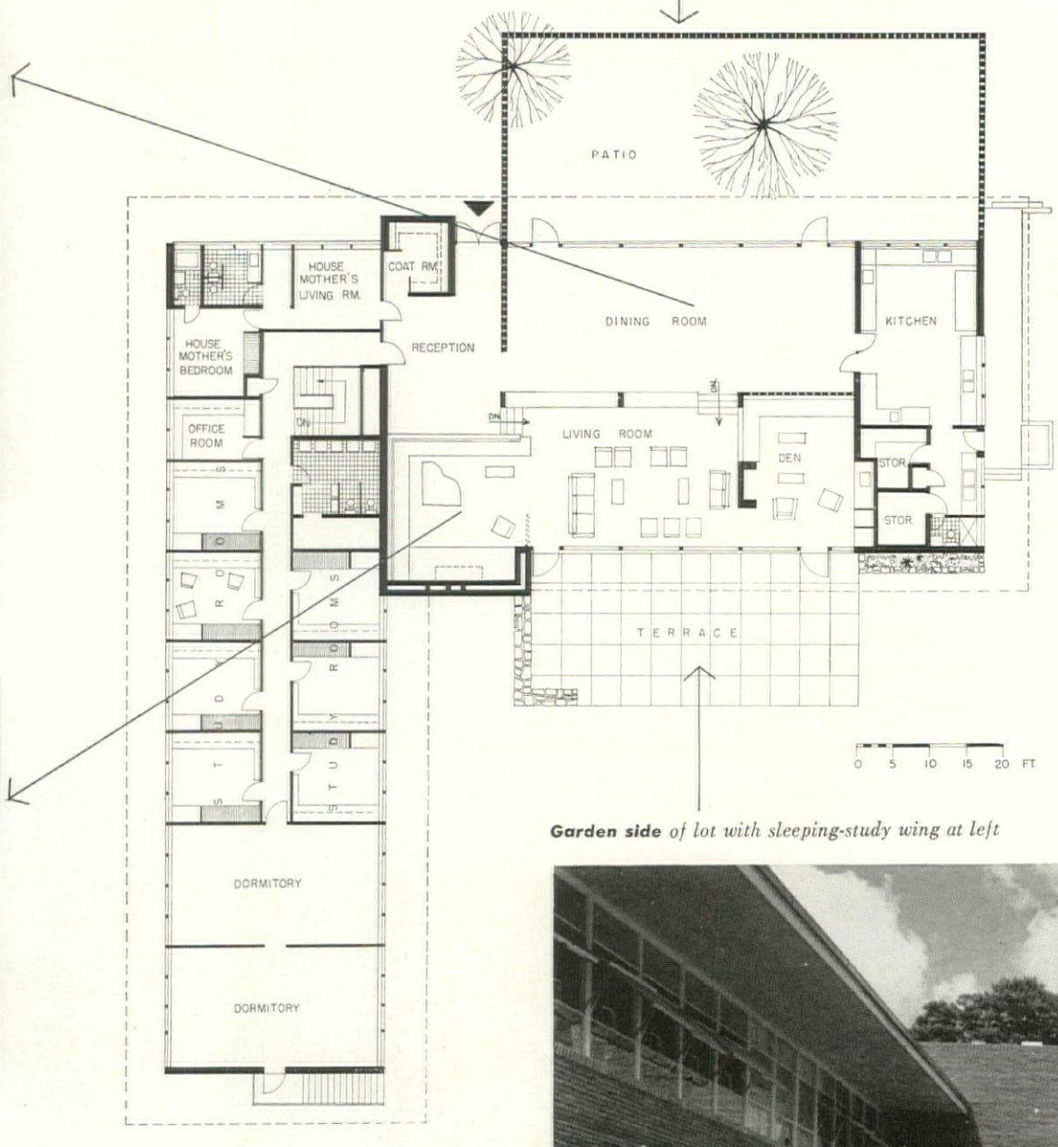
Street facade *has perforated brick screen wall to shield dining*



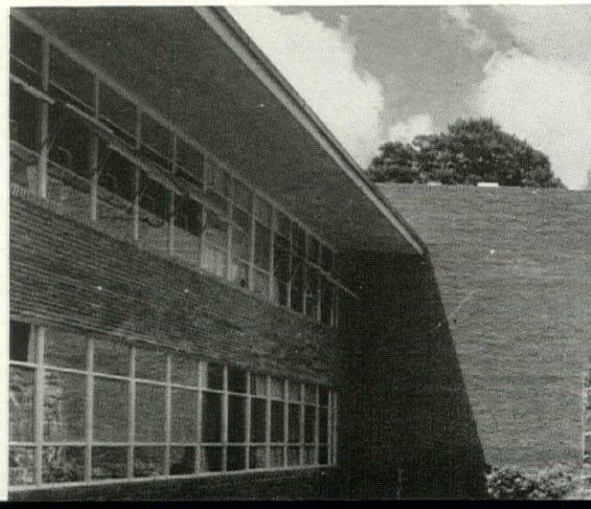
Dining room *is open to screened patio along street side of building. Future landscaping of this patio will include construction of barbecue facilities.*



Music room *at one end of living room is 20' x 20' nook, domestic in scale, which can serve as chapter room. Another fireplace is located in the den.*



Garden side *of lot with sleeping-study wing at left*



patio. Note residential character of exteriors

1. Homelike for a residential area

A fraternity house for the University of Arkansas by Architect Edward D. Stone

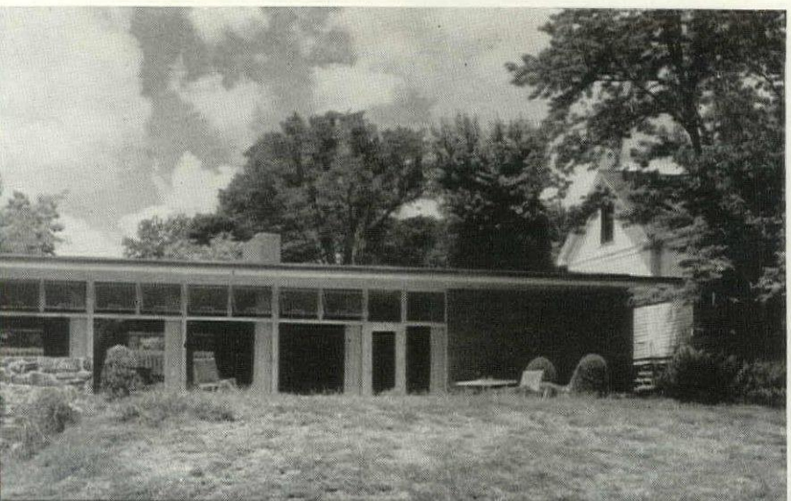
Everything about this comfortable fraternity house reminds you of home. ▸ Take the plan: it is clearly and simply divided into a wing for daytime living and a wing for sleeping (or quiet study). ▸ Take the general character of the architecture: this is a rambling, pleasantly informal building, closely fitted to its sloping site, constructed of materials like random stone and brick that you associate with domestic architecture. ▸ Take the scale: even where you have large spaces (as in the 40′ x 63′ living-dining area), Architect Stone has used changes in floor level, transparent screens, a freestanding fireplace to produce smaller areas, groups and nooks of domestic dimensions.

The principal problem—a steeply sloping site—was overcome effectively: the living area is on two levels that follow the slope, and the sleeping and study wing is a two-story annex with dormitories for younger fraternity members, private rooms for older ones. A sweeping flat roof plane ties the building together, shelters its glass walls with deep overhangs.

The result of this informal and unpretentious approach is a building that looks just right on its residential street (see above), although some landscaping (especially in the front patio) still needs to be completed. For Architect Ed Stone, an alumnus of the university, this commission is part of a highly satisfying series of jobs that has to date included such other University of Arkansas buildings as the new Arts Center (AF, Sept. '51) and the new University Hospital (AF, July '50).

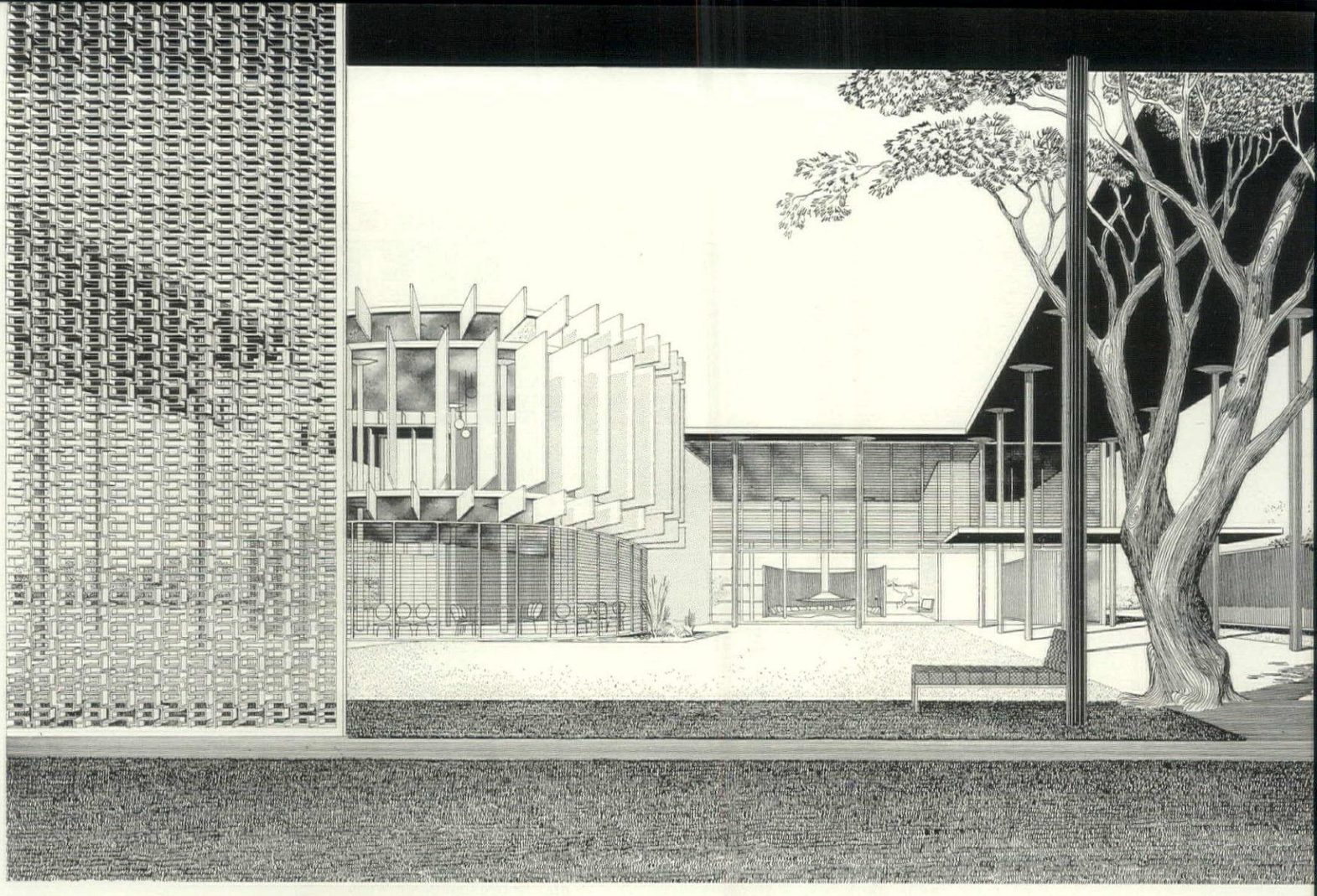
SIGMA NU FRATERNITY
UNIVERSITY OF ARKANSAS
LOCATION: Fayetteville, Ark.
EDWARD D. STONE, architect

***Living room–lounge** faces terrace*



Individual study and bedrooms *in Arkansas fraternity house are simply finished (with concrete block) and efficiently planned. Younger members sleep in dormitories located at end of wing.*

Garden side *of fraternity house has spacious terrace, deep roof overhang to shield living area. Two-story bedroom wing is at left.*



Central patio *of architect Paul Rudolph's fraternity house contains cylindrical two-story structure with dining room below, chapter room above*

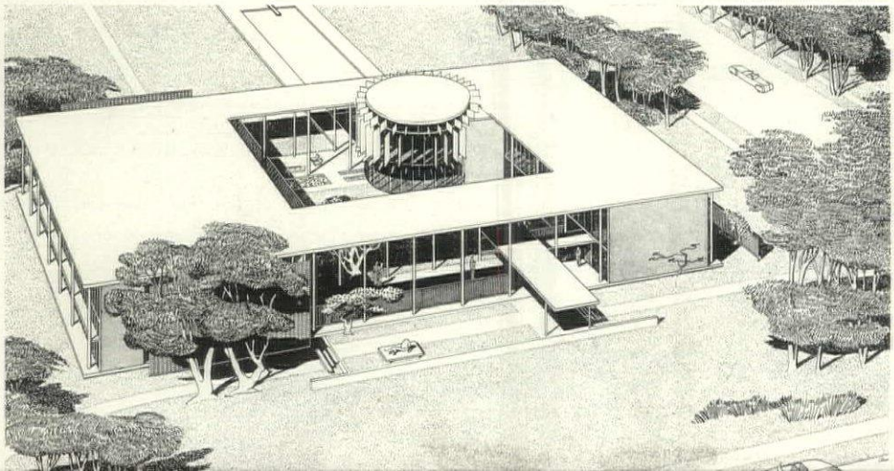
2. Formal building for formal rituals

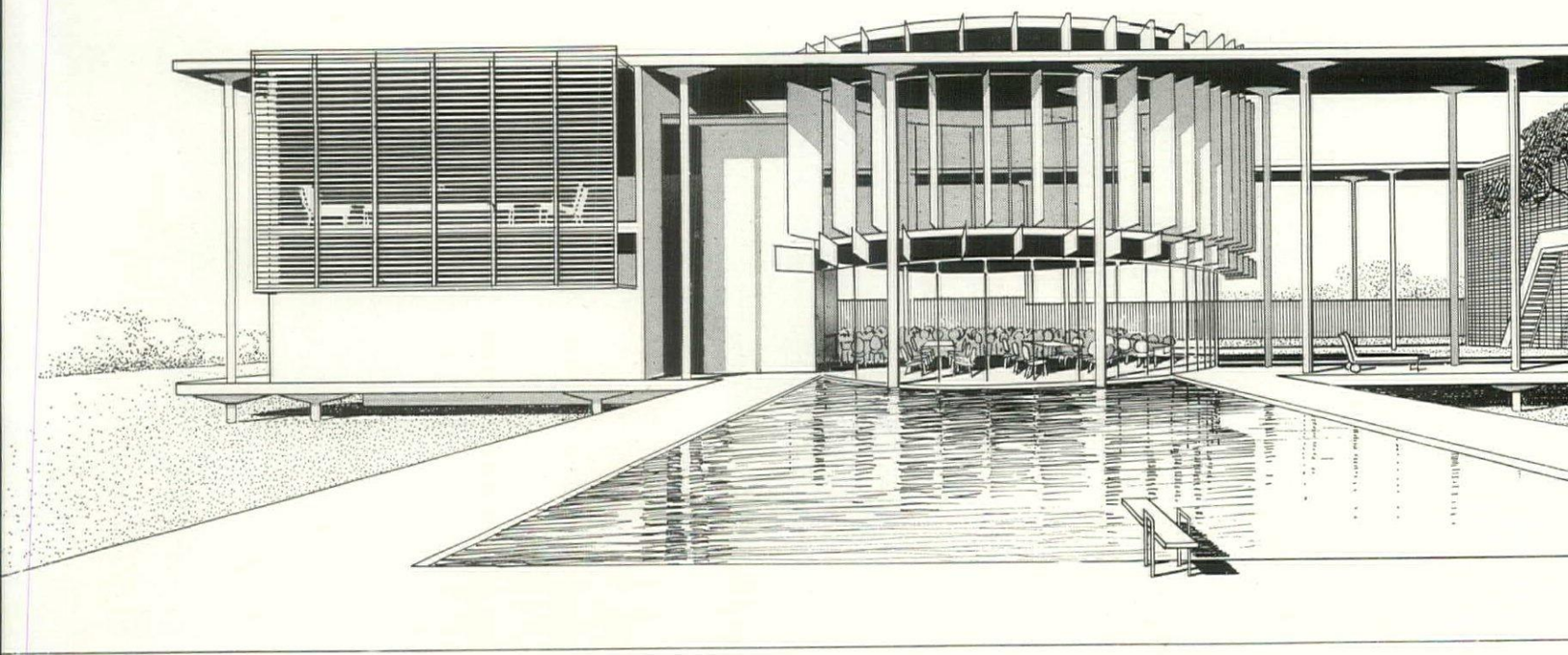
A fraternity house for Miami University by Architect Paul Rudolph

There is nothing informal or domestic about this fraternity house planned by Architect Paul Rudolph for the University of Miami. While Architect Ed Stone thought of his student club house as a place that should look a lot like home, Paul Rudolph seems to feel that half the fun of being at college is that you are *away* from home. However that may be, nobody will deny that this student club—with its pools and its mystic chapter room, with the elegance of its patio and its dining area—suggests a place that would be a lot of fun to inhabit. It also suggests that there may be more to the supposedly ascetic college life (and to ascetic architecture) than many observers have heretofore believed.

The project is now in the fund-raising stage, will be built as soon as the fraternity has collected the money needed. On the University of Miami's modern campus (see AF, June '49) this building should fit well and add further distinction to a fine architectural group.

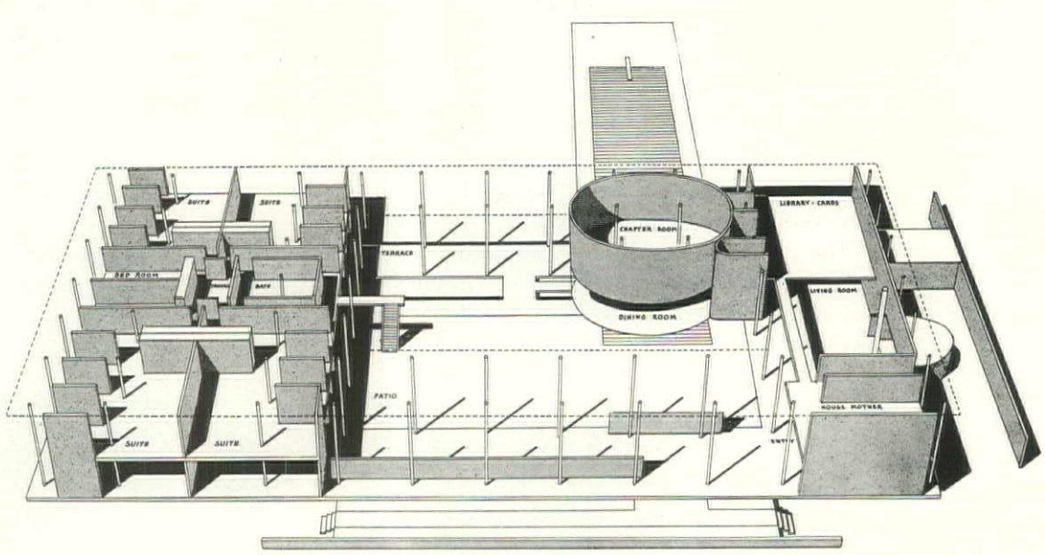
SIGMA ALPHA EPSILON
University of Miami
LOCATION: Miami, Fla.
PAUL RUDOLPH, architect
OSCAR MILLER,
president of Florida
Alpha Corp., SAE
JAMES DEEN,
architectural consultant
to corporation





Rudolph's fraternity house, like that by Ed Stone, is divided into two distinct and separate wings. Both are two stories high. One contains bedrooms, the other contains the living area. Between them is a spacious court and cylindrical building containing a glassed-in dining room on the lower level and a chapter room on the upper level. The latter, according to the architect, recalls a "Druid Circle"; its louvered walls can be closed to provide absolute privacy for secret cabals. The cylindrical unit seems to float on a long, rectangular pool and will be reflected in it.

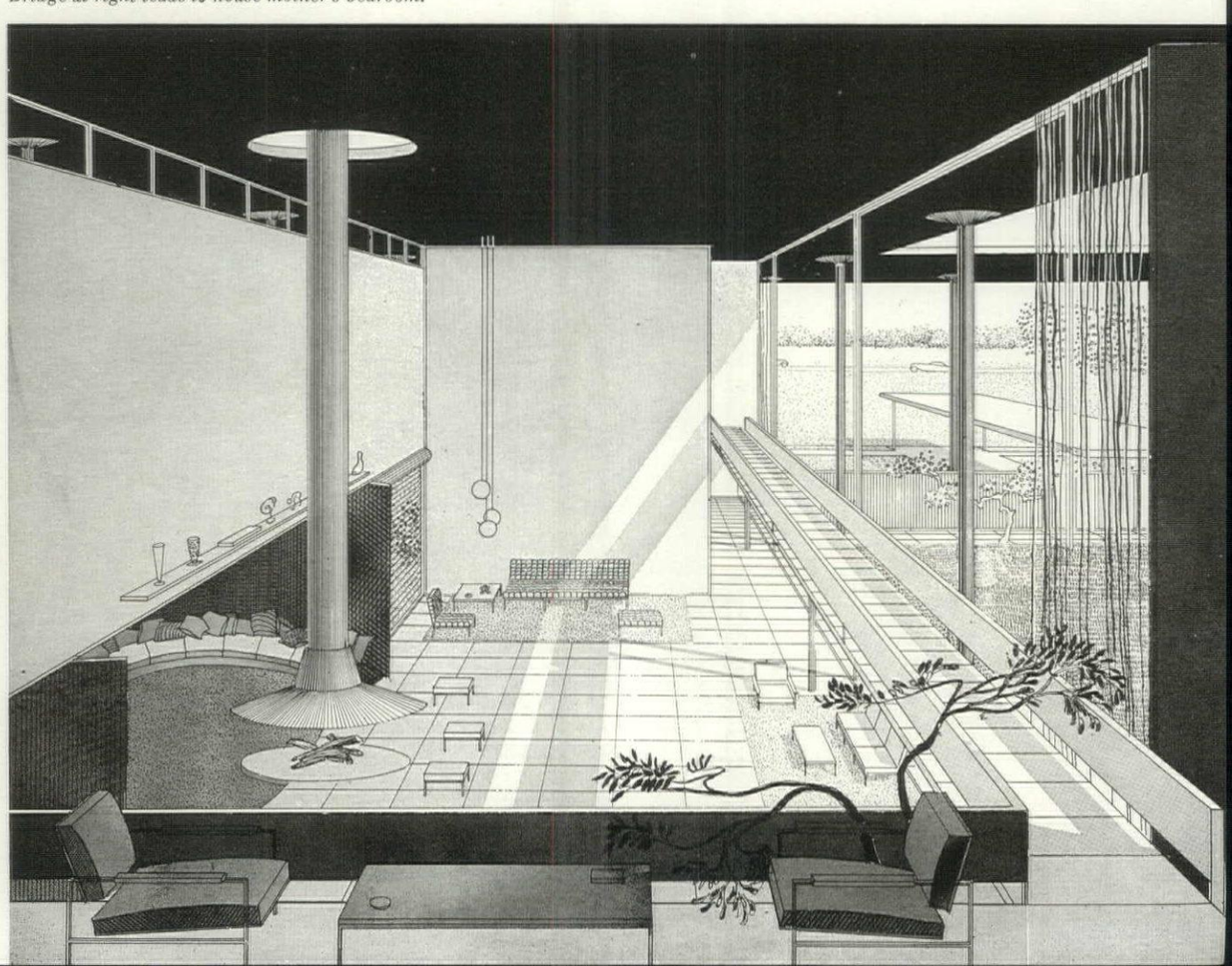
A specialist in dealing with Florida weather, Rudolph has made his building a big, screened breezeway and has used the various shading and screening devices to create patterns and textures that will enrich the quiet, geometric silhouette of his building. Rudolph feels that modern architecture, with its simple, over-all forms, calls for careful and imaginative detailing to hold the spectator's interest at close quarters.

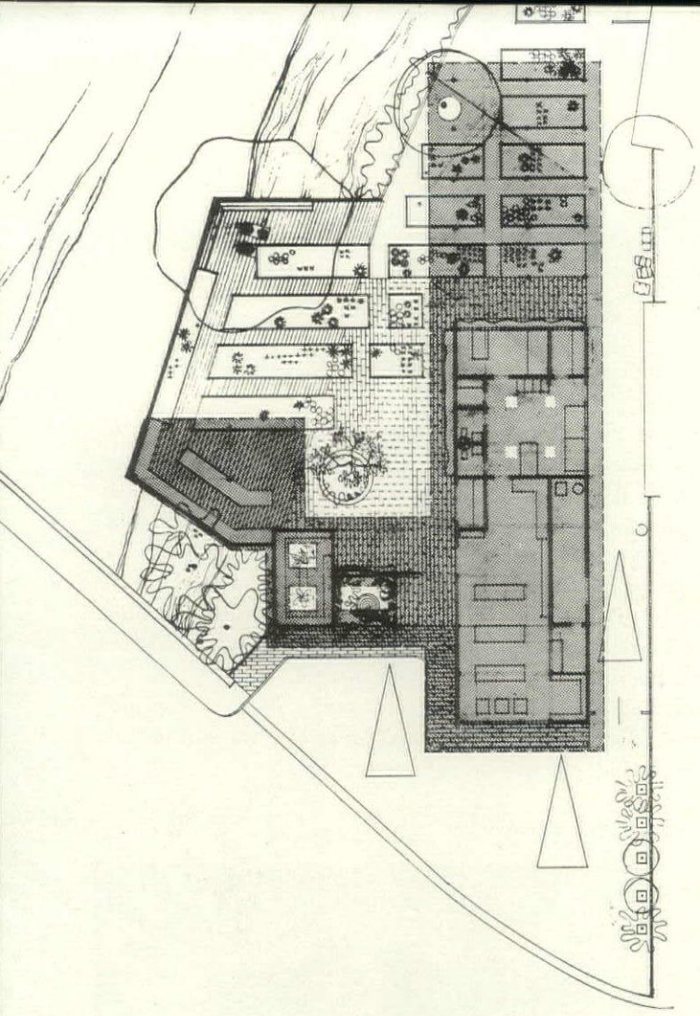


Organization of building *is clear and orderly: bedroom wing at left has study-and-sleeping cubicles arranged around small living rooms, each serving four cubicles and one double bedroom. Plan thus contains four small group-living units on each floor, each serving six members.*

Swimming pool *becomes reflecting pool as it seemingly passes under cylindrical dining room-chapter room unit. Living areas are at left, sleeping wing at right. Flared column capitals are steel welded to tops of lallies, will serve to resist shearing stresses. Note free-hanging louvered screens to protect generous glass areas.*

Two-story living room *(below) has formal, 18' high areas alternating with intimate, low-ceiling spaces. The circular area around the fireplace has upholstered seats, will serve for intimate gatherings. Rudolph describes it as a "cave opening out upon a goldfish bowl." Bridge at right leads to house mother's bedroom.*





Shaded beds *behind building are covered with latticelike extension of roof. Beyond is deck which projects out over steep creek bank and is shaded by huge willow tree.*

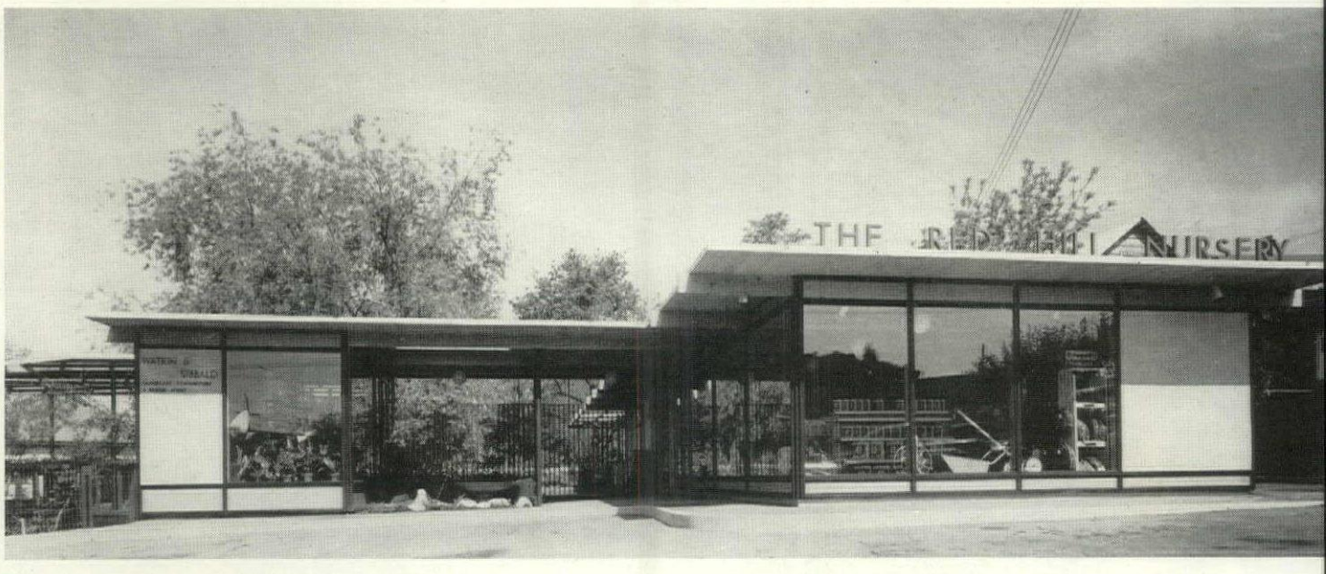
Designed by a landscaper

This nursery building uses a willow for sunshade, a projecting terrace for site enlargement, plants for decoration and a modular frame for economy

While an architect often dabbles in landscape work, a landscape architect seldom dabbles in building. Here is a notable and logical exception: a building for an up-coming retail plant nursery and landscape contractor by one of California's top landscape architects. The result: such a pleasant merger of architecture, landscaping and merchandise that a shopper can hardly tell where one begins and the other ends.

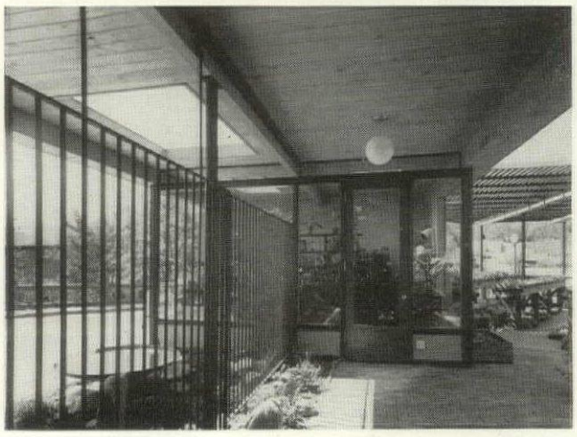
The site was not much: steeply sloping and too small. For this reason it did not cost much. But it had a magnificent willow tree and an adjacent creek, both appropriate adjuncts for a plant nursery. A wooden deck or terrace projecting out toward the creek levels and enlarges the site, and the willow becomes an important design feature (see plan and picture, left).

A landscape expert's respect for nature is evident everywhere. "The basic idea," says Designer Halprin, "was to develop the whole site as a complete area with different degrees of enclosure in its various parts. The site was roofed all in one plane and with a uniform framing system. However, the roof materials vary from solid planking over the store and offices to openings over the entrance display, to plastic skylights over

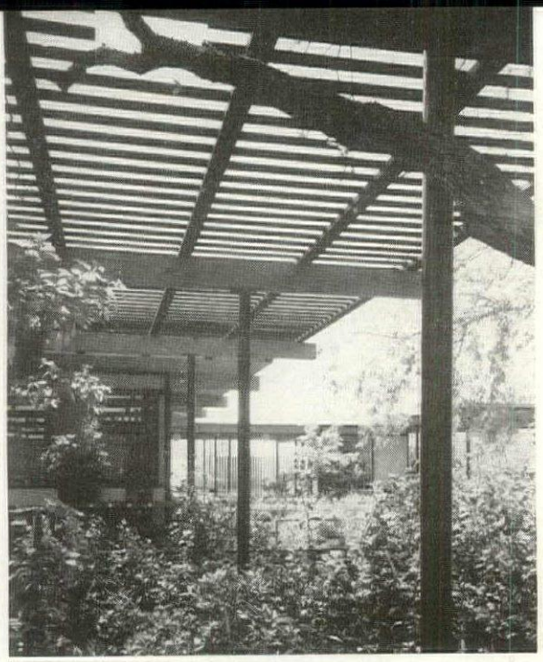


Photos: Ernest Braun

Street front *is a handsome combination of glass, stucco and plywood panels set in a frame of 4" x 4" posts, 8' o. c. Large (stucco) panels are white; small panels below are cobalt blue. Sign on roof is Indian red. Note trim line of roof which consists of 2" x 6" T & G planking on 4" x 10" beams, plus ¾" insulating board, tar and gravel.*



Greenhouse *to south of display-office building is connected to it by roof extension and vertical screen. Greenhouse is glazed on three sides, also has two 4' sq. skylights of corrugated plastic.*



Slatted roofing *which protects plants from full sun is supported on lally columns repeating the building's framing module.*

RED HILL NURSERY, San Anselmo, Calif.
WATKIN & SIBBALD, landscape contractors, owners and builders
LAWRENCE HALPRIN, landscape architect, designer
DON E. STOVER, associate

the greenhouse, to lath over the shade planting and to the willow tree over the deck.

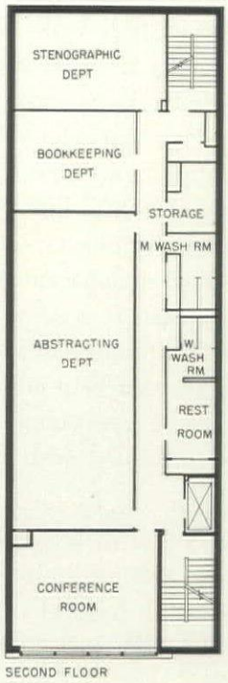
"The open spaces on the ground move through the building so that the lines of demarcation between the various degrees of enclosure become obliterated. The line between structure and out-of-doors is practically nonexistent, and outdoors and indoors are woven together so that solids and voids become three dimensional."

Lending itself to the easy merging of indoors and outdoors, the walls are framed with 4″ x 4″ posts 8′ o.c. The voids between them are filled with white stucco or brightly painted plywood or clear glass, or else are left open—as required for the degree of enclosure desired.

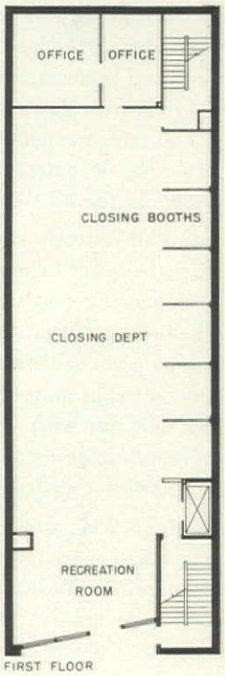
Total cost, including site development, structures, desk, landscaping and fees was about $25,000. Since the owners were also the contractors, this figure does not include the normal contractor's fee.

Projecting deck *enlarges the steep creekside site. This arresting view is seen by motorists as they cross adjacent bridge*

HEXTER TITLE & ABSTRACT CO.
LOCATION: Dallas, Tex.
HOWARD R. MEYER, architect
HENRY C. BENNETT CO., contractor



SECOND FLOOR



FIRST FLOOR

Striking facade *is created with contrasting light and dark marble used in horizontal and vertical panels*

Small building, big impact

Two-story office structure uses neat design and marble veneer to gain attention and prestige on a typical Main Street

Reception room, *like show window, opens to street*

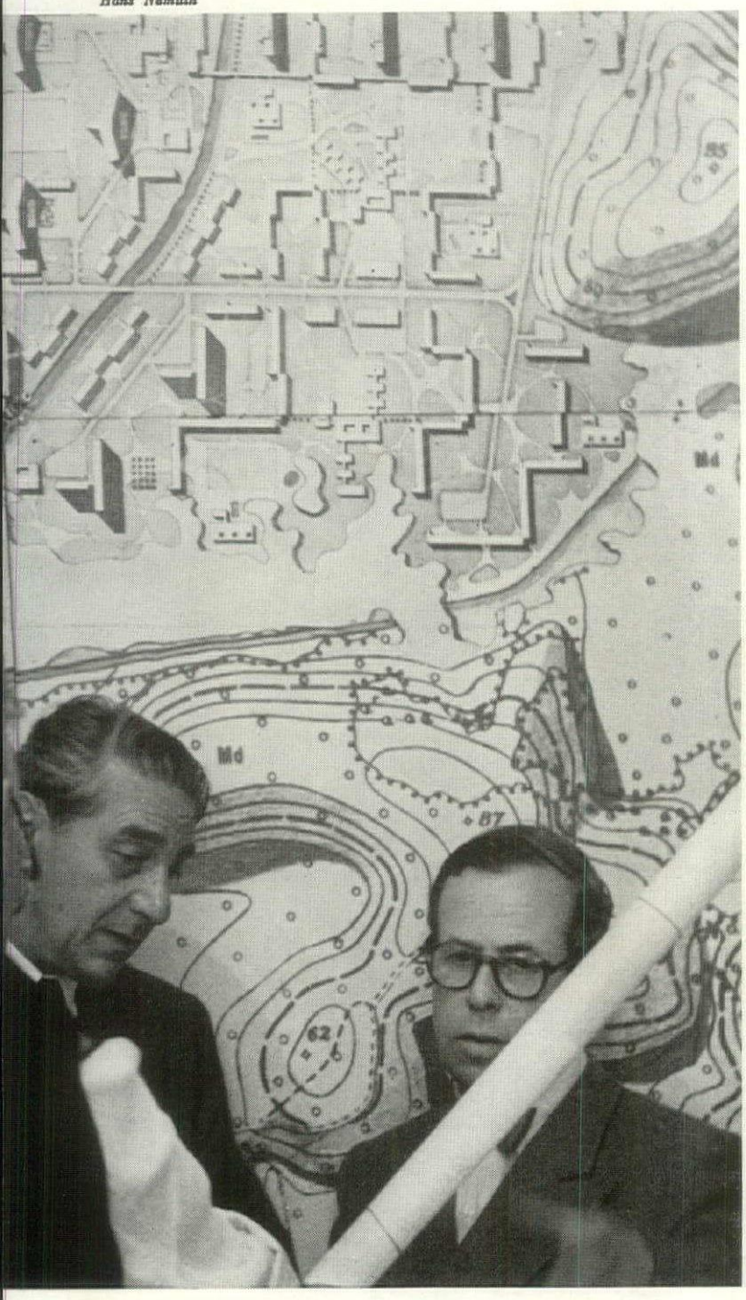
Photos: Ulric Meisel

This little building is only two stories high, only 34′ wide and identified with only a modest title, yet it is one of the most noticed buildings on Dallas' typically garish Main Street. It gains its visual impact with architectural good taste: with horizontal panels of Texas pink granite, vertical panels of Roman travertine and glass set in neat aluminum trim, the architect created a facade which jolts the observer and advertises the client without creating disharmony along the street. The first floor's glass front, which shows off the open work area and the comfortable reception room (below), contributes to the building's promotional value.

Cost of the building was $145,270 or $17.34 per sq. ft., including the architect's $8,220 fee and the contractor's $18,700 overhead and profit. Other significant items in the cost breakdown: $7,300 for the marble veneer and $19,500 for heating and air conditioning.

CAN PATIOS MAKE CITIES?

Hans Namuth



PAUL LESTER WIENER & JOSÉ LUIS SERT

What is basically wrong with today's city?

Here is one answer that is triply interesting because:

1. ***Its co-author, Architect-Planner José Luis Sert, has just become Dean of Architecture at Harvard. The other co-author is his long-time partner, Paul Lester Wiener.***
2. ***It is a Latin answer, but it parallels much of the best US thinking: e.g., the Skidmore, Owings & Merrill proposal to the Ford Motor Co. for Dearborn, Mich., and the Baltimore Planners' conclusion that "redevelopment can succeed only if neighborhoods are revitalized."***
3. ***And it is actually being tested in the master plans of a dozen South-American cities.***

The checkerboard city on the opposite page looks about as different from Radburn, the US model town, as two cities can easily look. And yet close study shows some fascinating similarities, well disguised but unmistakable. Indeed the importance to the US of this Latin American city (by US planners Paul Lester Wiener & José Luis Sert) is *not* as a working model to be copied (unless perhaps in parts of the Southwest) but as a kind of laboratory model against which to check our own ideas. It is so very geometrical, so clearly diagrammatic, that you can easily find and study in it the very same things that help make Radburn so excellent, but that most people miss completely in Radburn's loose-knit organization dappled with foliage.

This geometric city is part of a redevelopment for Cuba and its techniques are the same that Wiener & Sert have used at large-scale on a dozen Latin-American town planning projects.

Its "module" is the patio: the very ancient device of Latin cities —the outdoor living room, the parlor under subtropical skies. Here are some of the results:

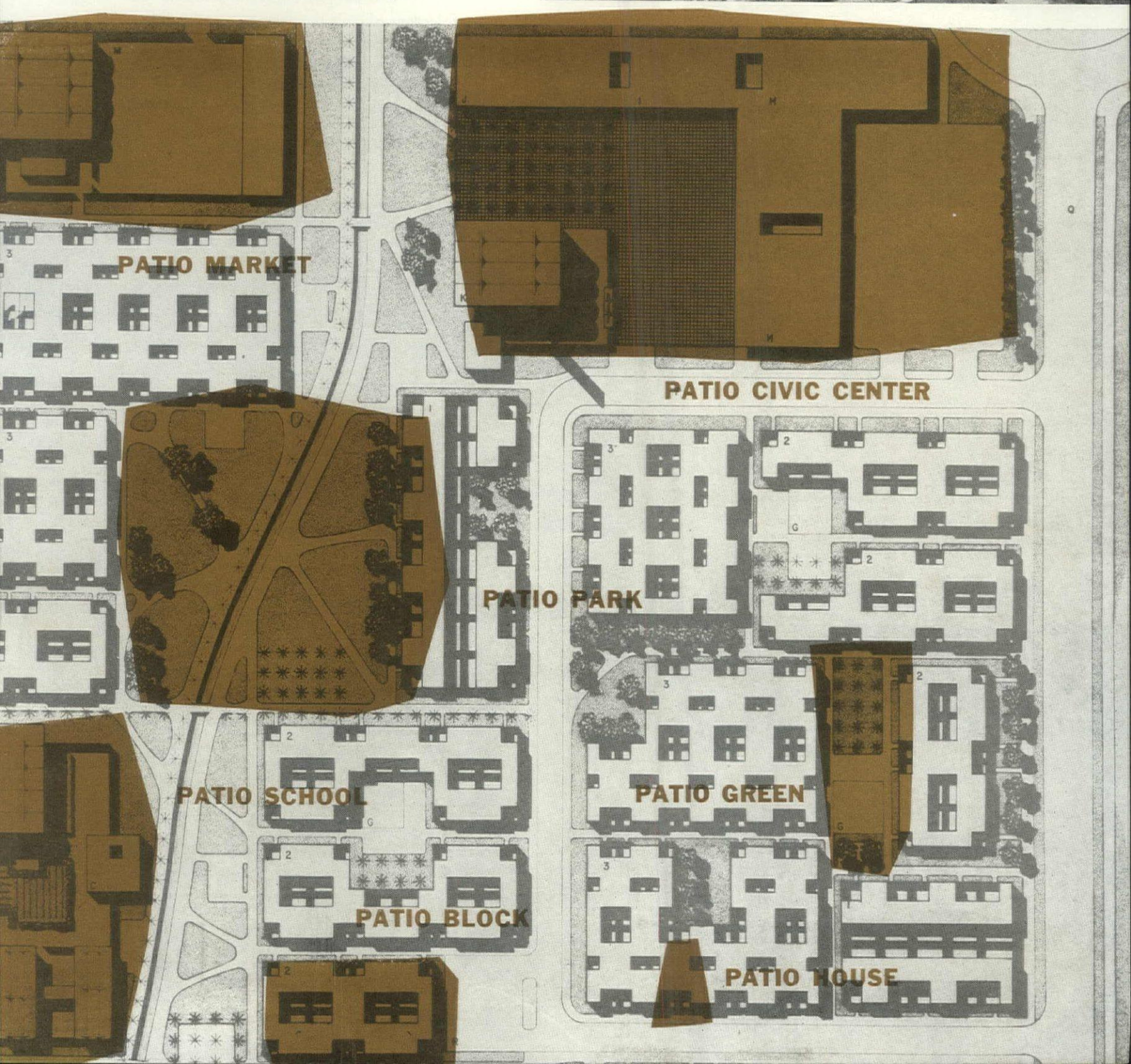
▸ Because every element of these cities is related to the basic patio idea, each city plan has an underlying coherence, a kind of trademark visible in the smallest unit (the patio house), the intermediate units (patio greens, patio parks, neighborhood centers), individual public buildings (patio schools, patio churches, patio shopping centers)—all the way to the biggest unit, the monumental city center which is, invariably, a series of gigantic piazzas (or big patios) that form places of outdoor assembly for all the citizens.

▸ And because these cities are full of patios of different sizes, there are innumerable places where the citizens can get together, talk, watch parades, watch each other and, in short, get to know each other. Before the automobile this was a minor problem, for pedestrians can always stop for a chat. But in cities with high-speed traffic, Wiener & Sert feel that outdoor living rooms must be created on every level—for the smallest family unit, for each block and neighborhood, for the city as a whole. Nobody is going to stop *his car* for a chat unless he can park and sit down for a while.

But how does all this clarify Radburn? Well, one need not pause over Radburn's initiative in separating motor from pedestrian traffic, in providing for off-street parking. More important is the handling of *outdoor living space.* Superficially Radburn is intensely North American, as centrifugal as Cuba is centripetal: it is based on the free-standing house on the individual lot, and both the house and the town look *outward*—to neighbors, to street, to lawn, to countryside (where Cuba looks *inward* to the patio). But observe nevertheless how Radburn is itself based on a graded series of outdoor courts! They are not walled but they are well defined. The cul-de-sac entrance drive forms a *service court.* The houses parallel to it face one another across a cozy lawn space that is like an inlet off a river, with a footpath down its center. The "river" itself is the larger free-winding space of the park that forms the spine of the superblock. The houses at the ends of the cul-de-sacs face directly on it. It is this *graded series of outdoor living spaces,* graded from more intimate to less intimate, yet all in human scale, that makes the difference, the major difference between excellent Radburn and the aimless, stupid type of planning carried out so generally in our developments. Any further parallels are left to the reader's own observation, as he turns the page.

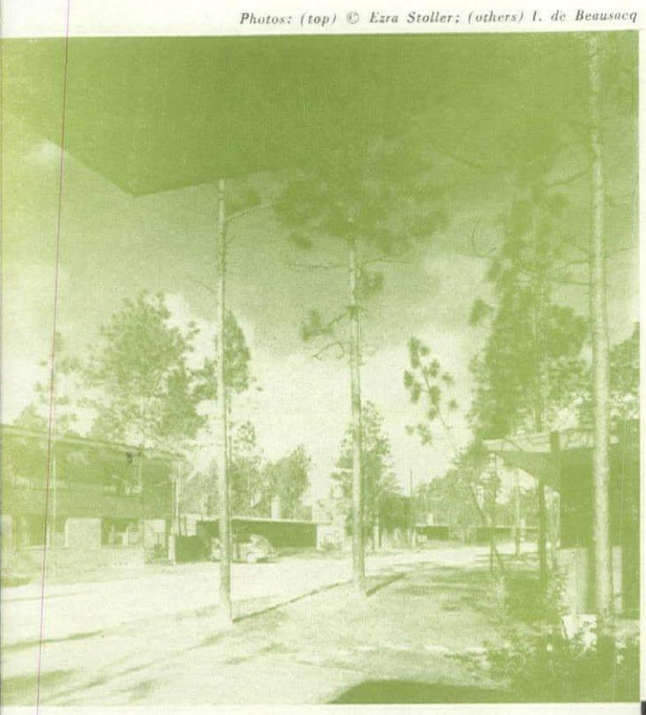
Few have noticed that the best US new towns, despite their outward informality, represent a conscious shaping of outdoor space—witness famed Radburn

The new Latin American towns of planners Wiener & Sert show a whole range of outdoor "patios" handled with instructive virtuosity



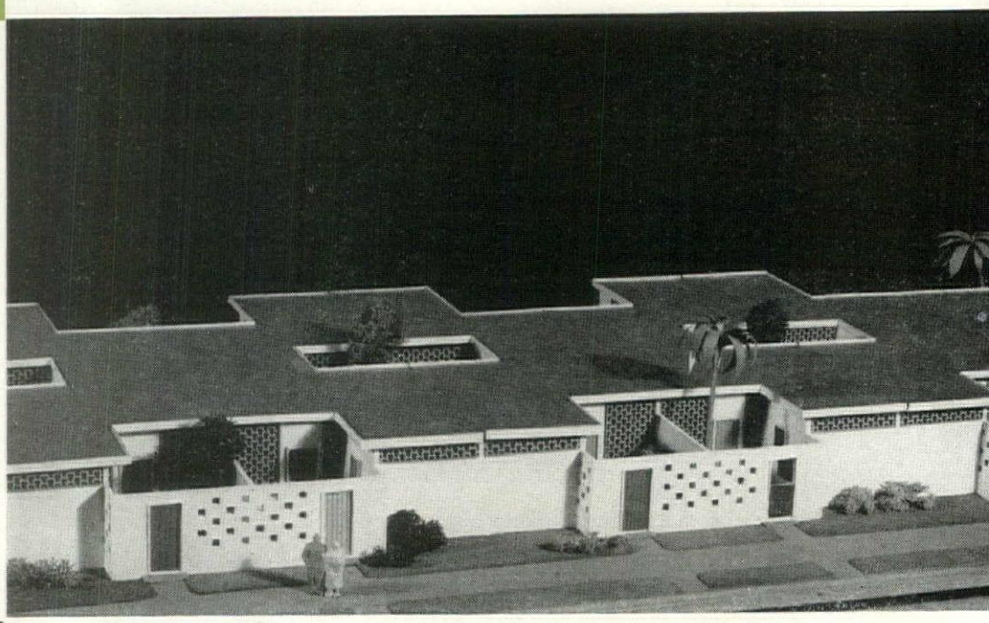
From patio house . . .

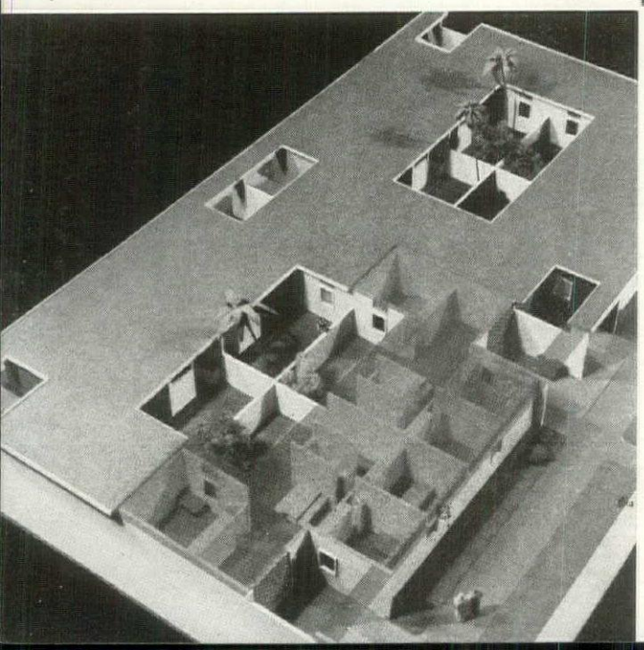
Photos: (top) © Ezra Stoller; (others) I. de Beausacq



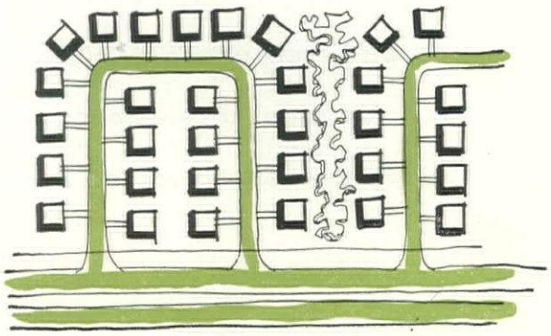
Street in Cherry Point, N. C. *(by Rowland, Stone & Maxwell) has better continuity than Radburn because of the quieter, more sociable front of the house. When the designer carves outdoor spaces with such individual houses, he gains variety and informality, loses the force and clarity of the Latin way.*

Patio houses for Cuban redevelopment *(right & below) have outdoor rooms to supplement enclosed areas, thus make excellent use of limited sites. Note use of traditional screens of tile to permit breezes to flow through entire house.*





The typical American residential street of today looks about like this in plan:



Individual houses on individual lots, set back from a curving residential street.

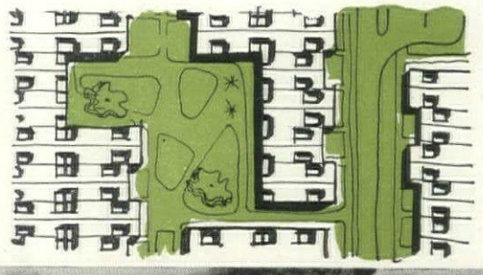
Wiener & Sert's handling of a residential block is quite different: they feel that this pattern wastes outdoor space, provides no sense of privacy for outdoor living, requires long and expensive utility lines, and provides little opportunity for coherent street design. In place of the rows of individual houses on individual lots, Wiener & Sert use blocks of contiguous patio houses.

The houses are so planned that almost every indoor room is complemented by a walled-in outdoor room (or patio). Outdoor living is given a lot of privacy, utility lines are short, lots are small *but more useful than the more traditional open lot*, and the street presents a coherent, large-scale architectural pattern (see below).

What Wiener & Sert save in land by making their lots tight and compact they turn back to the community by planning generous community patios (like the old village greens) at the end, or in the middle of each block.

. . . to neighborhood patio

These community patios vary in size depending upon the number of people they serve. They are kept free of vehicular traffic by off-street parking provisions. *And they are always "walled in" by surrounding blocks of patio houses.* Result: people really get the feeling of being inside an outdoor *room*, thus tend to associate with others more freely than they would in an "unframed" park area.



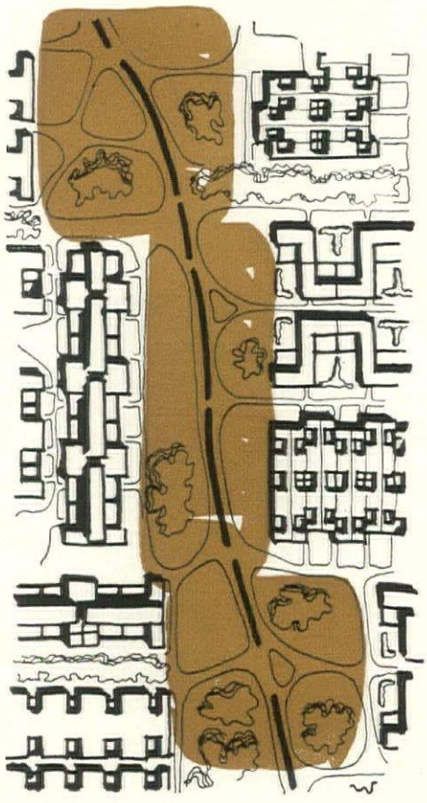
Richard H. Althoff

Neighborhood patio *designed for new steel town at mouth of Orinoco, in Venezuela, contains patio church (see also p. 129), theater, shops. Note that paved center is broken up into small-scale areas by planting and changes in level.*

Picture above shows the community patio grown to its logical maximum size: this is the neighborhood center—again a big, "walled-in," paved-and-planted patio, surrounded by shops, theaters, churches, etc. Vehicular traffic is kept out and gathered up in big parking lots around the periphery of the center.

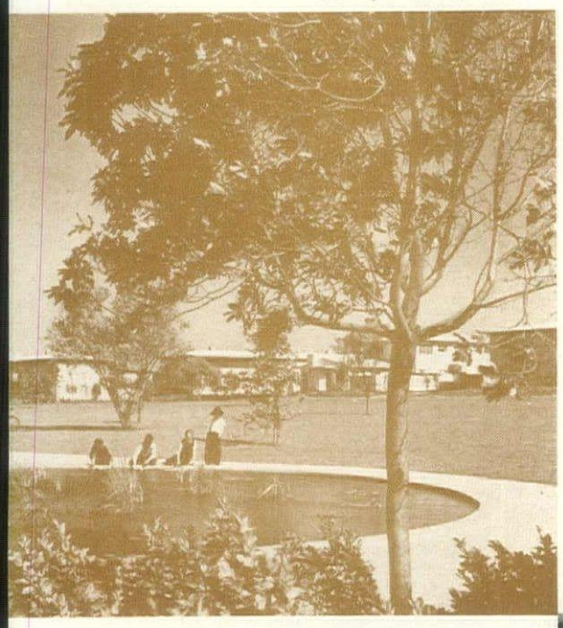
. . . to patio park

Strips of parkland separate neighborhoods in Wiener & Sert towns. These are not "naturalistic" parks, but formal, walled-in squares (or big patios) filled with trees, streams, lawns and walks. These squares interlock to produce a continuous green strip between neighborhoods.

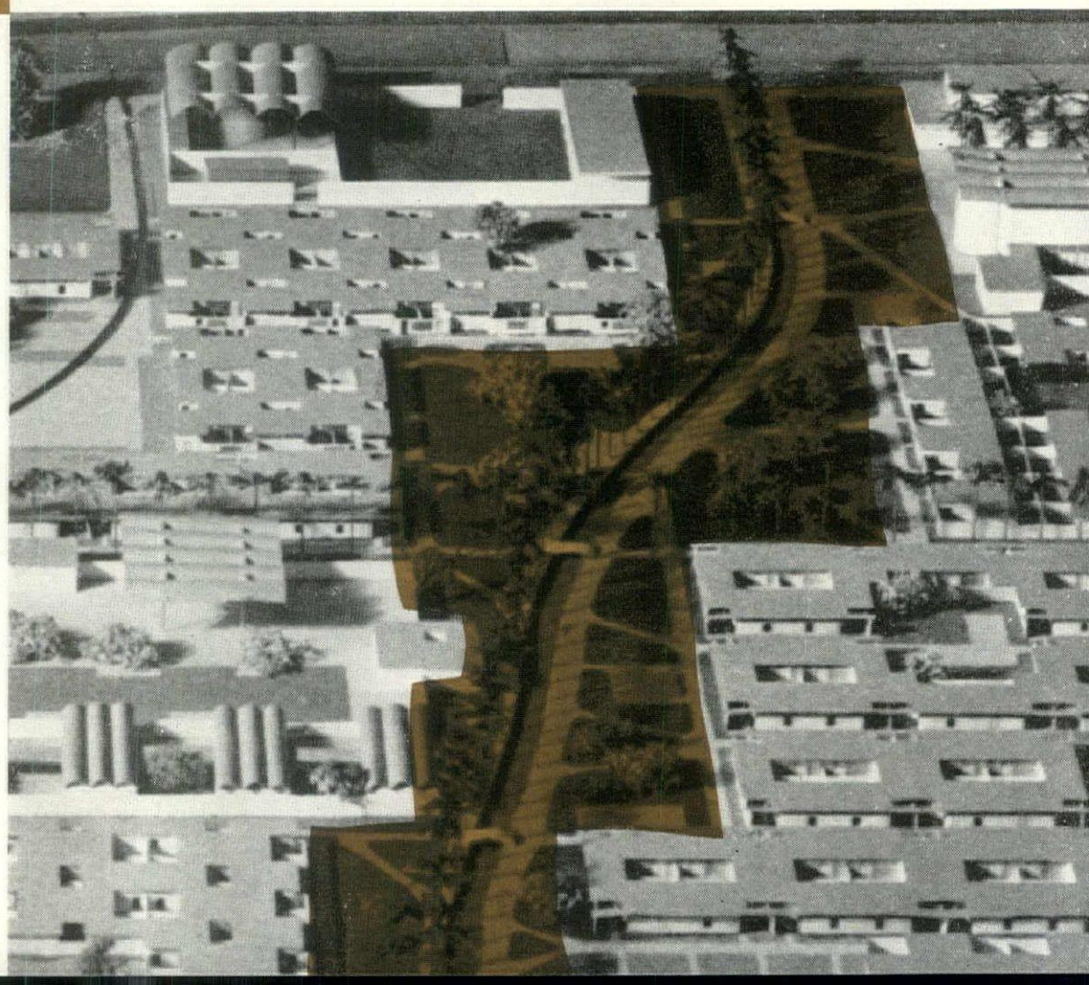


The reason Wiener & Sert make even their parks formal is that a squared-off, walled-in park is again some sort of outdoor *room*—not a part of the open countryside. The atmosphere of the open country encourages centrifugal habits—people going away from each other, rather than getting to know each other better.

Courtesy Museum of Modern Art



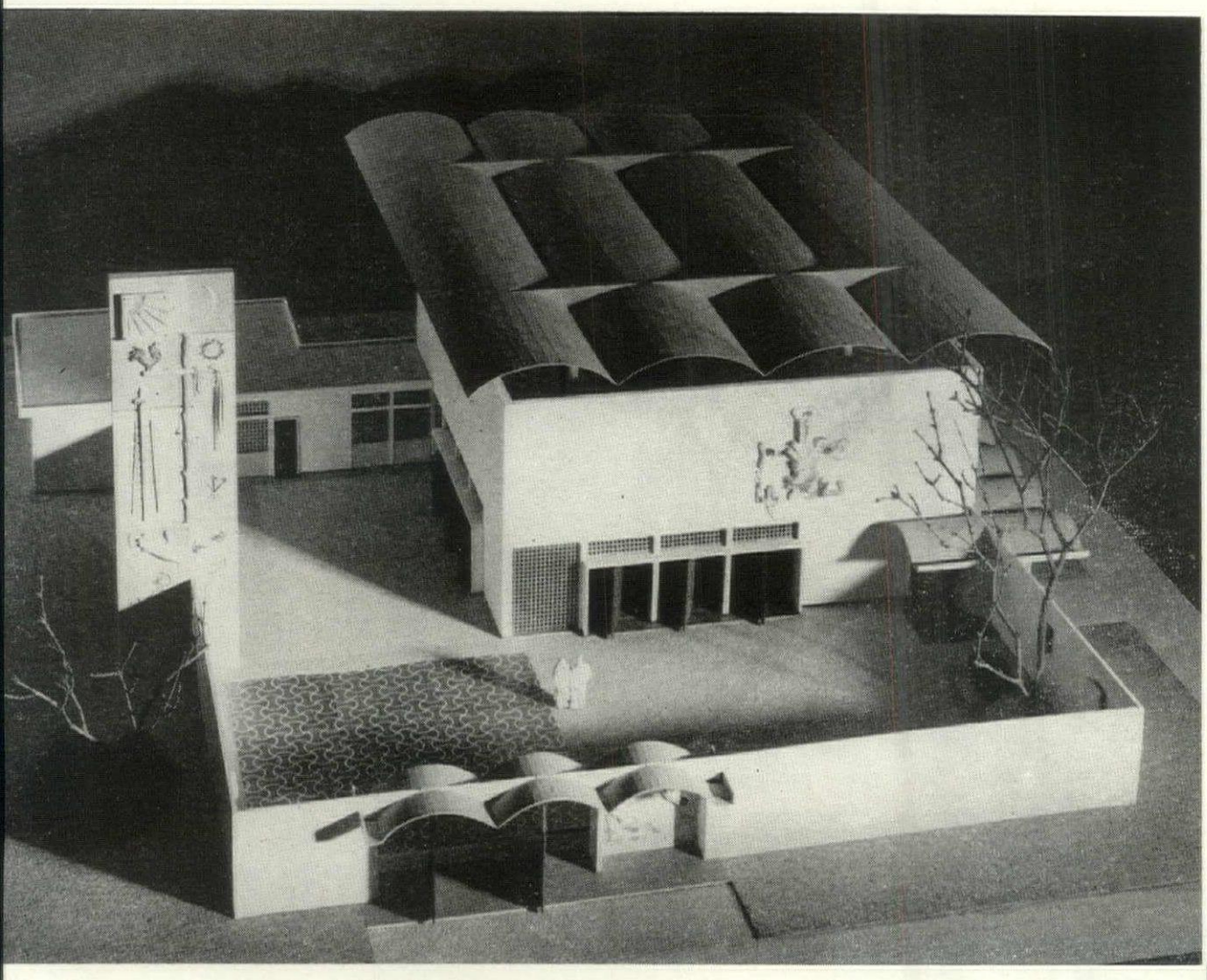
Baldwin Hills Village, Los Angeles *(by Johnson, Wilson, Merrill, Alexander & Stein) has village green walled in with less formality than the geometry of the classical garden square.*



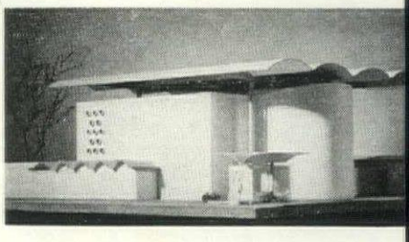
Patio parks for Cuba *are overlapping, continuous, formal squares that frame an informal landscape. Wiener & Sert have used this device frequently, as in their plans for Chimbote, Peru (see sketch on this page).*

. . . patio buildings

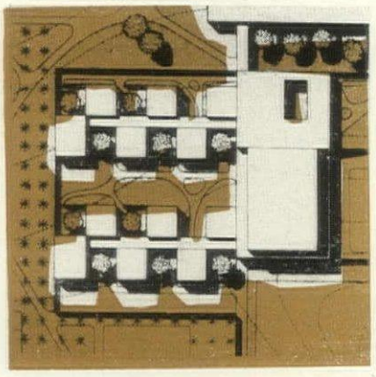
By this time the basic patio device of the typical Wiener & Sert city has been clearly established in the minds of all its inhabitants: The patio house is the smallest unit—in it the family meets under sunny skies; the patio green is the next unit—an outdoor meeting place for all the people in the block; the neighborhood patio and the patio park do the same job for larger numbers of people.



Patio church *for Venezuelan steel town is planned for indoor-outdoor rituals. Stations of the Cross are on inside surfaces of patio walls. Decoration will be in local tradition. Thin shell-concrete vaults are exacty to scale in this model. Houses with similar thin vaults are now being built by Wiener & Sert.*

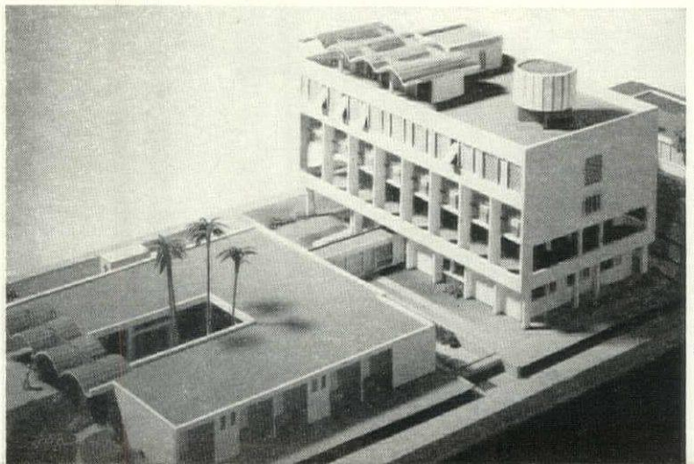


In addition, there are patio buildings—a church in which the whole surrounding patio serves the ritual; a school whose classrooms are separated by little patios; and a hospital whose outpatient department is again a patio-centered building. This is what Wiener & Sert mean by creating a *coherent* city—as opposed to an "informal" town at one end of the scale, or a monotonous collection of identical units at the other.



Patio school *for Pomona, Venezuela, makes each classroom a separate house, gives each house its own patio.*

Hospital *for Venezuelan steel town retains patio motif in its out-patient department.*



Photos: Richard H. Althoff

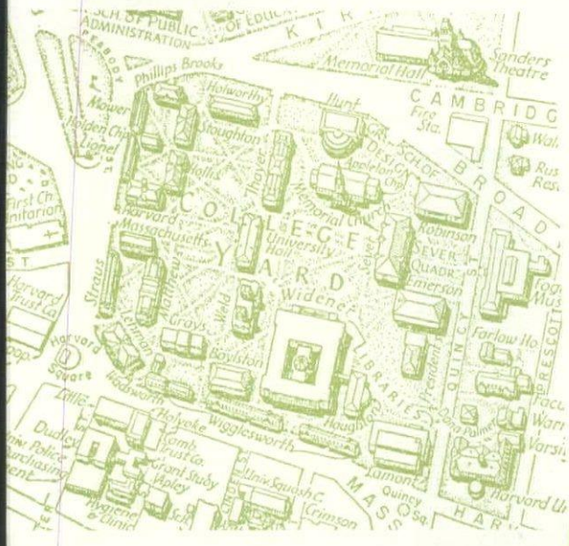
. . . and patio civic center

The most important outdoor living room in any Wiener & Sert city plan is the city center. It differs from the neighborhood center principally in size. This difference, however, is quite important since patios can easily get to be too large for human comfort. (The Piazza San Marco, in Venice, is broken up into humanly tolerable areas by a handsomely patterned pavement, by arcades, and by the L-shape of the plan itself.)

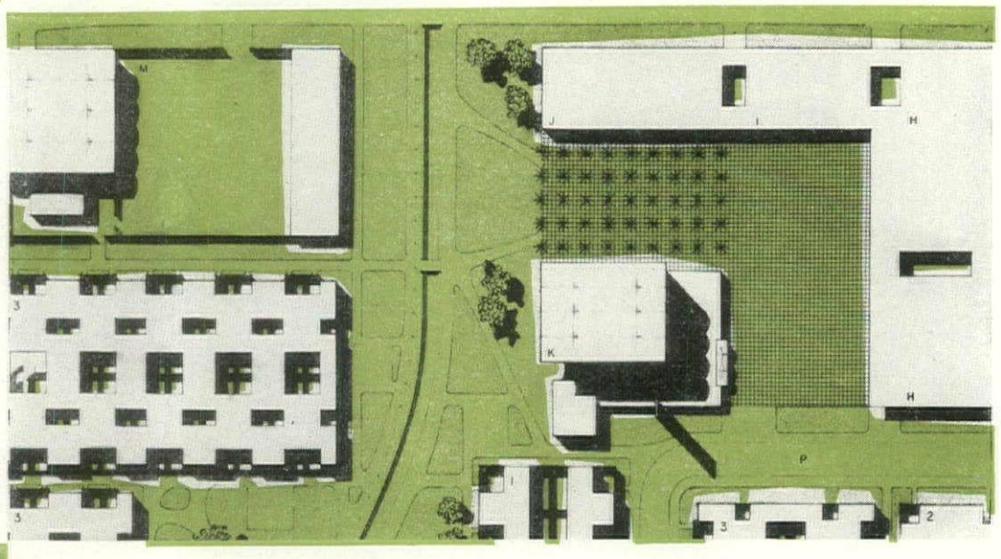
Wiener & Sert's solution of the scale problem is somewhat similar: paving, formal planting of trees (and informal areas of grass, flower beds, walks, water) are used to break up the huge patios into areas small enough to have some reasonable relation to the human size. The center shown below (for Cuba) is still relatively small—it consists of restaurants, shops, a church, all arranged around an L-shaped, pedestrian patio; and of an indoor-outdoor market patio on the other side of a green strip bordering a stream.

But the centers for Medellin, Colombia, and Chimbote, Peru (left and below), and the center for the Cidade dos Motores near Rio are all monumental in size and required scaling-down to tolerable human dimensions. The way this was done was to break up the centers into a series of interlocking patios, to use planting and paving devices within these patios, and to create *many different* points of interest all around the center, rather than a single, monumental focal point.

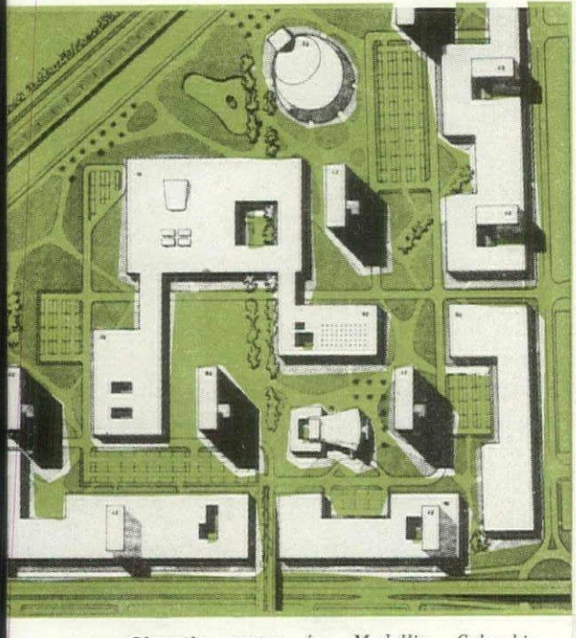
Wiener & Sert's work is continuing at an ever expanding rate, and solutions in detail are constantly revised and improved. Today the partners are working (in collaboration with Le Corbusier) on a master plan for Bogota; they are designing new cities on the mouth of the Orinoco, new developments for Cuba and Peru. And in all of these, Wiener & Sert are trying to apply two criteria of good city planning: how to make the city more coherent architecturally, and how to bring more companionship to its inhabitants. With some possible differences in style and taste these are the aims of the best new US towns too.



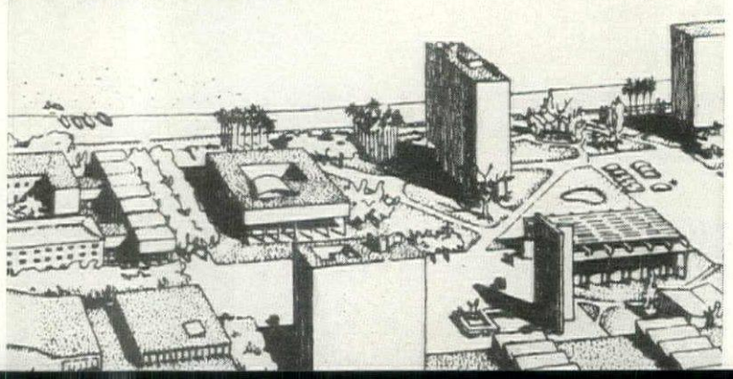
Harvard Yard *is "civic center" of the University. Although its various courts are clearly defined by surrounding buildings, their enclosure is never as tight as that of Latin piazza, has open corners that open up views in every direction.*



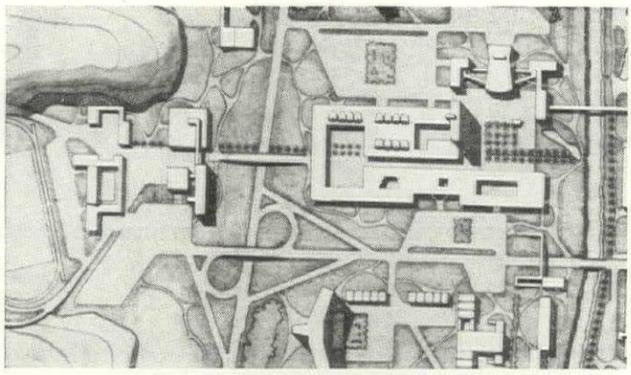
Cuban redevelopment scheme *contains a patio market (left) separated from the patio center (with church, restaurants, stores) by a stream and park.*



Gigantic center *for Medellin, Colombia, (above) has tall, free-standing office slabs strikingly contrasted with low-slung stores, restaurants, museum, library.*



Chimbote, Peru, center *is located close to magnificent Pacific beach. All these centers are designed for pedestrian use, contain large parking facilities around periphery.*

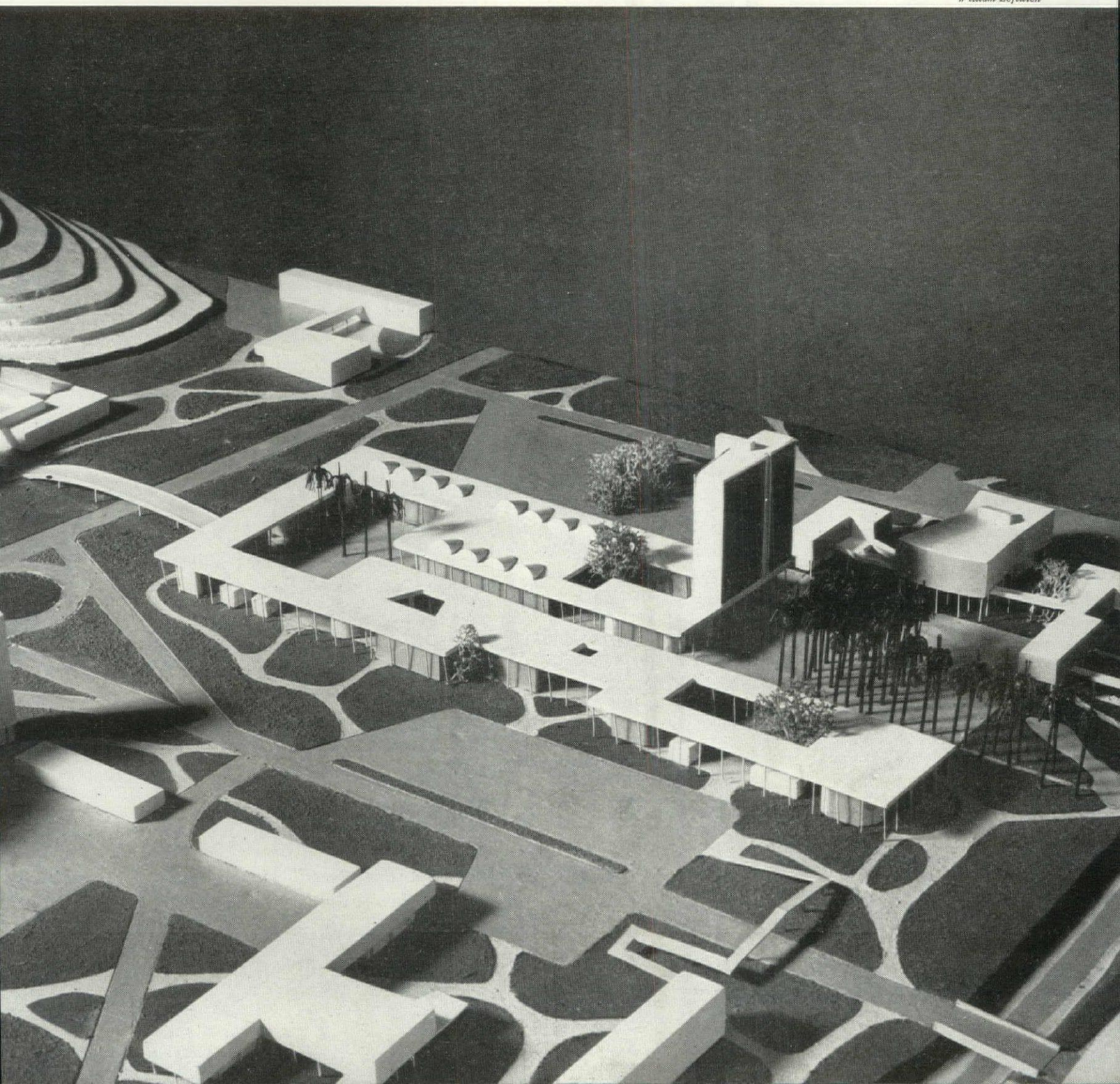


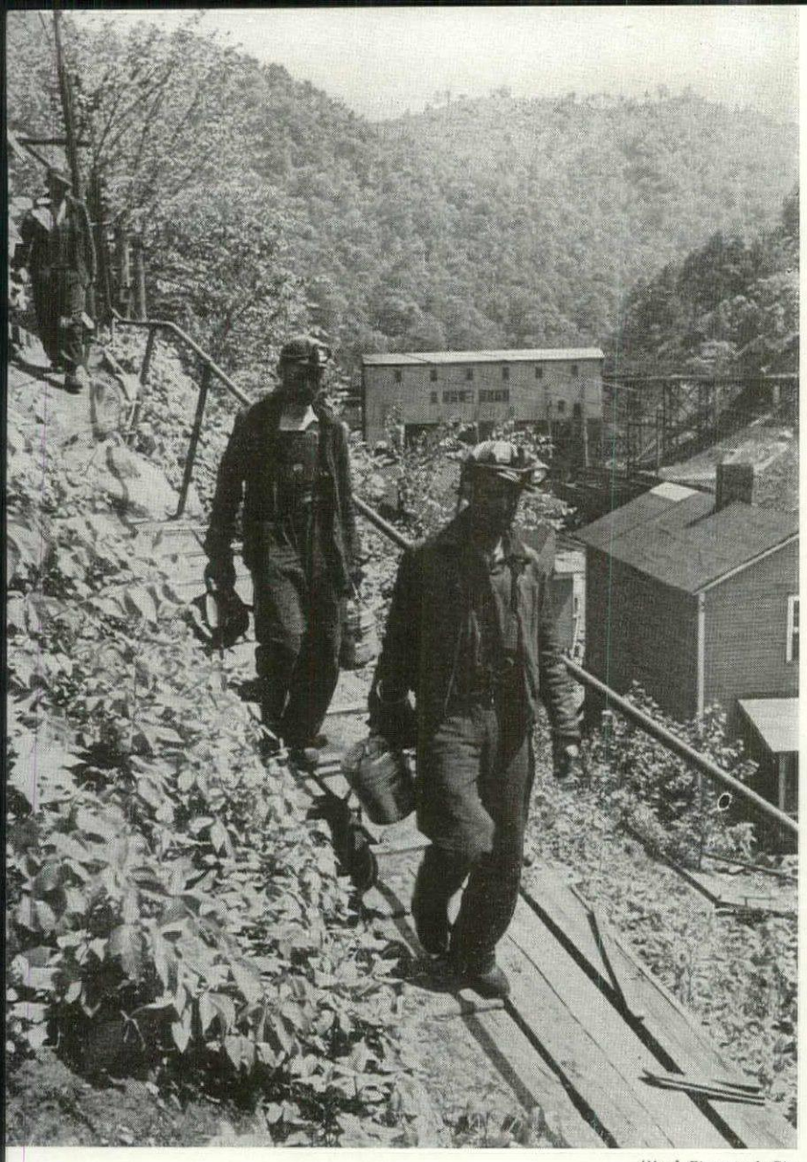
Cidade dos Motores near Rio *(above and below) was one of first Wiener & Sert centers to employ patio principle, contains all its most important elements: peripheral parking, contrasting heights of buildings, patios of different size and scale arranged to form continuous, interlocking spaces for communal gatherings.*

Naturally, the patio system is only one device employed by these planners. Many other factors affect the health of cities: new types of zoning (Wiener & Sert are developing that for Bogota), new classifications of road systems and new designs for individual highways, farsighted provisions for future growth, control of fringe developments. Then there are elements still nebulous in character, but important if you plan for the next two or three generations: new sources of energy, new developments in transportation, in the production of food, in the control of climate. A city is an infinitely complex organism; and while the personal happiness of each citizen must be the first objective, the patio system is only one striking device Wiener & Sert have used to achieve it.

***The following collaborated with Wiener & Sert on various projects shown in this article: On Puerto Ordaz & Ciudad Piar, Venezuela**—Oficina de Planificacion y Vivienda, Caracas; **on Chimbote, Peru**—Oficina de Planeamiento y Urbanismo, Luis Dorich, Director; **on Pomona, Venezuela**—M. Benaserraf, C. Guinand & F. Carillo-Batalla, associated architects.*

William Lefwich





Alfred Eisenstaedt–Pix

For southern mountain miners

A HOSPITAL CHAIN

After years of talk about coordinated hospitals here at last is a real prototype: ten pioneering hospitals for beneficiaries of United Mine Workers' welfare fund —first of three articles

Here is the first report on how well John L. Lewis and his miners are using some of their famous 40¢ a ton Welfare Fund royalty on coal. They are lacing the West Virginia-Kentucky coal country with America's first good regional hospital system—all of it so well conceived and so full of good new ideas that it will interest not hospital experts alone, but anyone concerned with better building.

Any architect or client should want to know all about:

- their success in standardizing methods, materials and maintenance without sacrificing individual design (p. 136);
- their savings from standardization—15 to 50% on materials costs alone (p. 139);
- their new all-sash wall that goes up (and expands) like a sectional bookcase (p. 138);
- their new laminated steel wall panel that is absolutely watertight, does not come apart (p. 139);
- their client-architect-contractor teamwork (p. 137);
- their new research-team way of choosing materials and methods (p. 200);
- their cagy "examining panel" method of picking a cost-plus-fixed fee contractor (p. 200).

Hospital planners and administrators will certainly want to know about:

- this first thoroughgoing coordinated hospital system which will be a reference point for every coordinated hospital group in the future;
- the new kind of central service plant (p. 134) and—in individual hospitals—
- their radically new operating-efficiency ideas;
- their new kind of nursing services and internal supply plans;
- their main door–emergency entrance schemes;
- the idea that a new kind of hospital design—tailored to new administrative ideas—will lure hard-to-get staff.

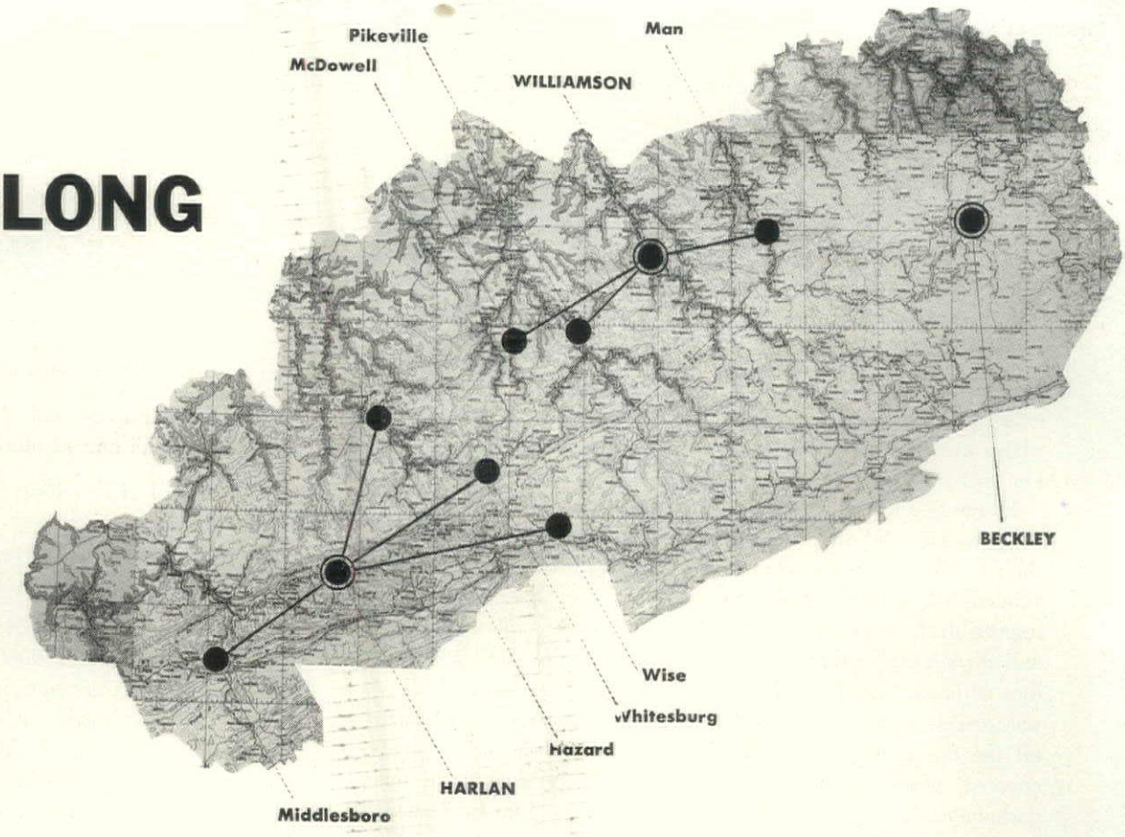
In this issue FORUM will present the thinking and techniques behind the over-all project. In two forthcoming issues FORUM will present plans and thinking on the ten component hospitals.

MEMORIAL HOSPITAL ASSOCIATION OF KY., owner
(F. D. Mott, M.D., medical administrator
John Newdorp, M.D., deputy medical administrator
Gordon A. Friesen, senior hospital administrator)

LOCATIONS: Beckley, Man and Williamson, W. Va.; Harlan, Hazard, McDowell, Middlesboro, Pikeville and Whitesburg, Ky.; Wise, Va.

Architects:
ISADORE ROSENFIELD
SHERLOCK, SMITH & ADAMS
OFFICE OF YORK & SAWYER:
Architects Kiff, Colean, Voss & Souder
E. TODD WHEELER, hospital consultant
J. A. JONES CONSTRUCTION CO., general contractor

250 MILES LONG



Siting and sizing

Laying out a regional hospital pattern at one swoop is something new. MHA's basic document was a dot map of fund hospital patients, modified by data on expected life of coal fields and refined according to topography. In this area settlements dribble along stream beds, widening into nuclei with few obvious advantages of one over another. To fix the three central hospitals, MHA determined on "natural trade centers" by analysis of retail and wholesale trade surveys. Williamson got the nod as over-all purchasing and service hub because it has a good rail head and is closest to industrial cities. The 1,035 beds to be built initially (see table) come to 2½ per 1,000 of beneficiary population, about half the ideal number.

York & Sawyer advised on site selection. Some problem! Most empty land either stands on end or floods. Ownership of bottom land not already pre-empted by coal car yards or cemeteries carries prestige. But finally families who thought they would never sell reconsidered for the sake of a good hospital. Even so, choices were desperately limited. Site development costs for much of the group will run extraordinarily high because basic utilities to hook into are lacking. But every hospital has the regional luxury: a breathtaking view of mountains.

Whole cloth

This stretch of Kentucky–West Virginia mountains has been hospital wasteland (see overleaf) and in a wasteland new roads need not join up with old lanes. There can be a fresh start. When planners fully realize this rare opportunity—as they did here—it is fascinating to see how the fresh start clarifies the possibilities for ordinary situations too.

For instance: The clients figured as long as they had ten hospitals to do at once, they might as well take advantage of tenfold buying and integrated construction, also get the by-product of standardized maintenance and repairs forevermore. They did it without confining themselves to one architect and without getting mass-produced design. Here is a possibility that any organization with several jobs going forward at once—a school district for example—should study carefully.

Another instance: Clients and architects made a skeptical ex-

Hospital chain *stretches 250 miles by road (150 by air), includes three district (central) hospitals, seven community hospitals*

Basic data:

Hospital	*type*	**beds*	*expandable to*	*sq. ft.*	*architect*
Beckley	central	199	380	107,600	Rosenfield
Williamson	central	143	240	83,500	
Man	community	80	190	49,600	York &
McDowell	community	60	105	40,000	Sawyer
Pikeville	community	50	115	36,700	
Harlan	central	192	379	111,400	
Whitesburg	community	92	120	55,100	Sherlock,
Hazard	community	84	170	54,200	Smith &
Middlesboro	community	77	125	50,700	Adams
Wise	community	58	140	41,700	
Totals		1,035	1,964	630,500	

Cost: Best current estimate is $13,800 per bed; $22.65 per sq. ft.

Coordination:

Specialties—Central hospitals provide specialized medical staff and equipment for satellite community hospitals, send certain specialists to community hospital outpatient departments. For highly specialized medical services, the three central hospitals interchange service.

Nursing schools—Harlan will have a registered nurses' training school. Beckley and Williamson have schools of practical nursing. All ten hospitals will draw on graduates.

Services—Williamson is location of group service center (p. 134) Whitesburg is a transportation transfer point.

* Not including maternity bassinets and counting premature bassinets at ½.

amination of all the services usually included in a hospital as a matter of course, separated out whatever could best be centralized. Some of their decisions will astonish hospital people; but the service center was worked out strictly on the basis of economy, efficiency and good medical care, after the most searching study. Here is a point of departure for existing hospitals willing to attack cost problems cooperatively.

Hospital wasteland

Without seeing (and smelling) it is hard to believe there might exist anywhere in the world such evil hospitals as most of the places available to UMW patients in this area up to now—facilities known by the gentle, official term of "inadequate."

Examples: a four-story, 60-bed firetrap with delivery and operating rooms on the top floor and no elevator (patients walk up or their families carry them); six-bed wards with no outside windows (embedded during expansion); delivery rooms so narrow it is impossible to walk around the delivery table; joint diet kitchen and dirty utility room; treatment room with debris-studded puddles of blood, dried for days; operating-delivery room with open unscreened windows; an operating room cleaned up only after all the day's surgery (it would only get messy again); grease-covered splintery-floored kitchen equipped with coal stove, open garbage cans, chipped sink and two ancient wood tables on which dirty breakfast dishes and vegetables for lunch are inextricably mixed; a drug room wide open (no tops on jars) in an uncontrolled corridor; food and biologicals jumbled in the refrigerator.

These are typical hospitals—not the worst; the worst have been crossed off the fund's list. The fund shells out for care in "typically inadequate" institutions like those mentioned above because (aside from a few score beds, four church-run hospitals, and two or three "fairly adequate" hospitals on the fringe of the area) there is nowhere else for patients to go. This is almost exclusively a region of closed-staff proprietary hospitals, mostly owned by physicians. Care is not cheap. The hospital with the fly-welcoming delivery-operating room (owned by a coal company) gets $19 a day for ward accommodations—$3 more than a semiprivate room in New York's famed Columbia Medical Center. One wretched place converted from an apartment house (and owned by a pillar of the medical society) was paid almost $500,000 by the fund last year.

The fund's standard policy is to supplement normal facilities, not supplant them, and for some years its officials hoped the security of sure-payment (fund patients make up 75% of the load of most hospitals in the area) would stimulate new hospital construction and higher standards. Indeed, with prodding, there have been victories: the practice of hanging visitors' coats over newborn babies' cribs has stopped, operating rooms no longer double as isolation nurseries, all fund-used hospitals now test and treat their water supply.

But on the whole, sure-payment simply made the situation worse. Constant policing is required to get some hospitals to discharge recovered sure-payment patients. Worst of all, still more "typically inadequate" hospitals have sprung up, their owners presumably happy to pay off capital investment in four or five years.

In 1951 fund officials faced up to the fact that willy-nilly they were already buying hospitals and concluded they might as well buy good ones. So MHA (Memorial Hospital Assocation) was formed with money for building lent by the fund.

In principle the MHA hospitals will operate much like any voluntary hospital: they will be open to all patients (although fund beneficiaries will get preference in case of bed shortage); the fund will pay per diem rates for beneficiaries' care. Outpatient departments are designed so they can operate as group practice offices. Any qualified physician with patients in the area will have hospital privileges.

SERVICE CENTER for all ten hospitals

This hospital service plant is the first of its kind:

▸ It is a new and economical answer to the problem of servicing a *group* of small and medium hospitals.

▸ And it is full of new ideas for *single* large hospitals too because it knits laundry, pharmacy and central sterilizing into one integrated processing and issue system. It uses the kind of production-flow thinking that goes into efficient industrial plants.

At first glance the service center looks surprisingly "small." Study the plan and its flow lines; you will see "compact" is a better word. With the equipment shown on the plan, for example, the laundry can process 17,500 lbs. of linen in eight hours!

Other hospitals—like the Bingham Plan group in New England—have worked out schemes of medical coordination. But until this project, no one had taken a look at a hospital group and analyzed just which operating services could be centralized.

Note first that everything touching directly on medical care is left in individual hospitals: there is no centralized clinical laboratory for instance; no centralized record archives. Nothing has been taken from hospitals that will bureaucratize medical care.

Now note what *has* been centralized: ▸ purchasing ▸ warehousing ▸some food processing ▸ group administration ▸ supervisory training ▸ shops and some maintenance (furniture, electrical, bracemaking, etc.) ▸ laundry ▸ some central sterilizing ▸ manufacturing pharmacy ▸ dental laboratory.

Note also that within the service plant all issue and receiving is centralized. Processing departments do not store their products, have nothing to do with issue. This same principle is ingeniously carried out in individual hospitals, too.

Here is how the collection of services evolved:

At first centralized services like laundry and manufacturing pharmacy were to be in each of the three central hospitals. The over-all center at Williamson was to be no more than a central administrative and purchasing office plus a warehouse to take advantage of bulk shipment prices and to stock standard replacement parts; maintenance and repair shops were a logical adjunct.

The big change in thinking came when costs on one laundry were compared with costs on three.

This single-laundry idea was a particular pet of Gordon Friesen's, senior hospital administrator for the entire MHA group. Friesen's former hospital, up in Kitchener, Ont., had a laundry so efficient it took in linen from neighboring hospitals at 3¢ a lb.—less than their own costs or commercial rates—and still delivered the finished laundry at a profit. Moreover, Friesen's other hospital customers felt they got a bonus because their linens came back in such good condition and lasted so much longer.

Friesen's "secret" was simply thoroughgoing mechanization and an expert manager who saw that everything from quantities of bleach to tumbler loads was precisely controlled.

Friesen figured MHA could get both these advantages more surely with one laundry than with three; cost analysis showed a single laundry would have $45,240 annually in payroll, in addition to wear-and-tear savings from top-notch control. Independent hospitals might be interested to know that the savings against ten

is key to coordinated operation

MEMORIAL HOSPITAL ASSOCIATION SERVICE CENTER
LOCATION: Williamson, W. Va.
OFFICE OF YORK & SAWYER—ARCHITECTS KIFF, COLEAN, VOSS & SOUDER, architects
DiSTASIO & VAN BUREN, structural engineers
KREY & HUNT, mechanical and electrical engineers
HOWARD K. BELL ASSOCIATES, water and sewage engineering
J. A. JONES CONSTRUCTION CO., general contractor

small laundries (an inefficiency never contemplated by MHA) amount to 3.4¢ a lb. in payroll alone, 2½¢ after transportation.

Centralized sterilizing was added because it has similar cost advantages and processing packs is a logical sequence to laundering.

Individual hospitals will sterilize their own instruments and such items as treatment trays. When sterile sets are made up, such "home-base equipment" will be added to prepared, sealed standard packs from the service center according to a formulary sheet standard for all ten hospitals.

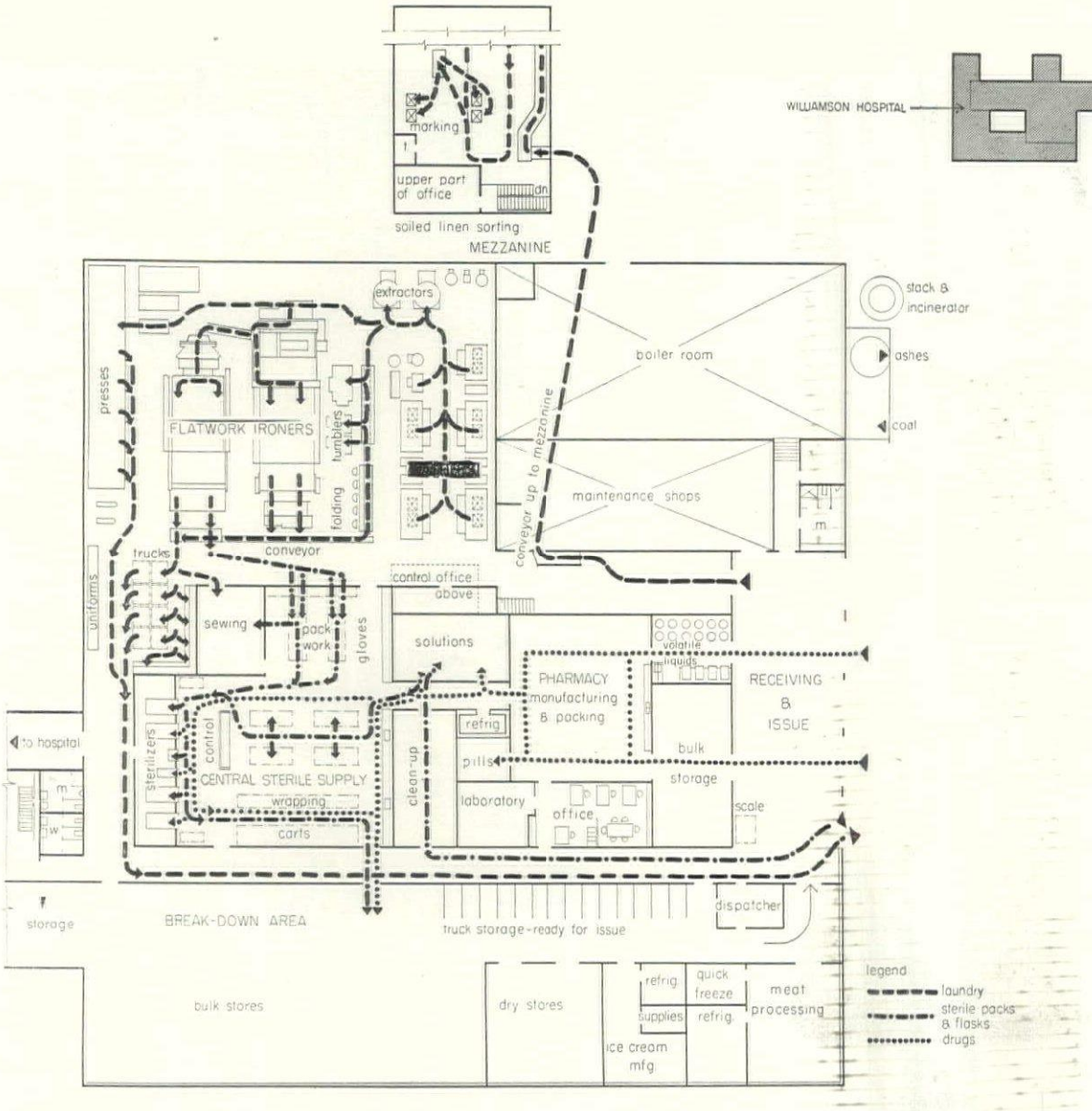
The central manufacturing pharmacy was a natural to share central sterilizing equipment. Personnel advantage: another single top-notch manager to supervise both pharmacy and sterilizing. The pharmacy will manufacture almost all chemical products, from intravenous solutions to furniture polish.

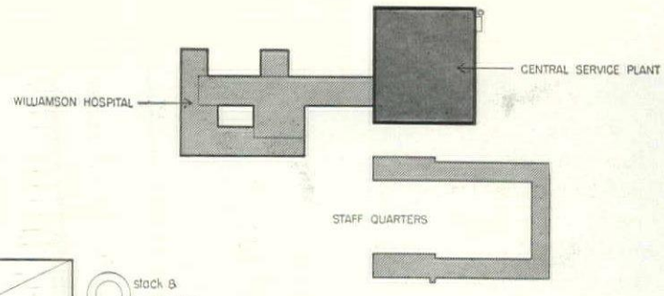
Transportation (not including food perishables but including crates, hand carts, wrappings etc. for other items) will come to 30 lb. per bed per day for a five-day operation; 14 lb. of this is laundry. Round-trip costs will come to ¾¢ a lb. Four 16-ton trailer trucks (averaging only 22 mph on these circuitous roads against the usual 32 mph) are expected to handle the job, servicing some hospitals every day, others on alternate days. The service center is 173 miles from the farthest hospital.

Instead of the usual 25 sq. ft. per bed storage space, individual hospitals have 11 to 13 sq. ft. Service-center storage comes to about 12 sq. ft. per bed. Individual hospitals will carry 15 to 30 days' supplies on most items, will build up week-end laundry from calculated surpluses through the week. The service center will carry 60-day supplies of most items.

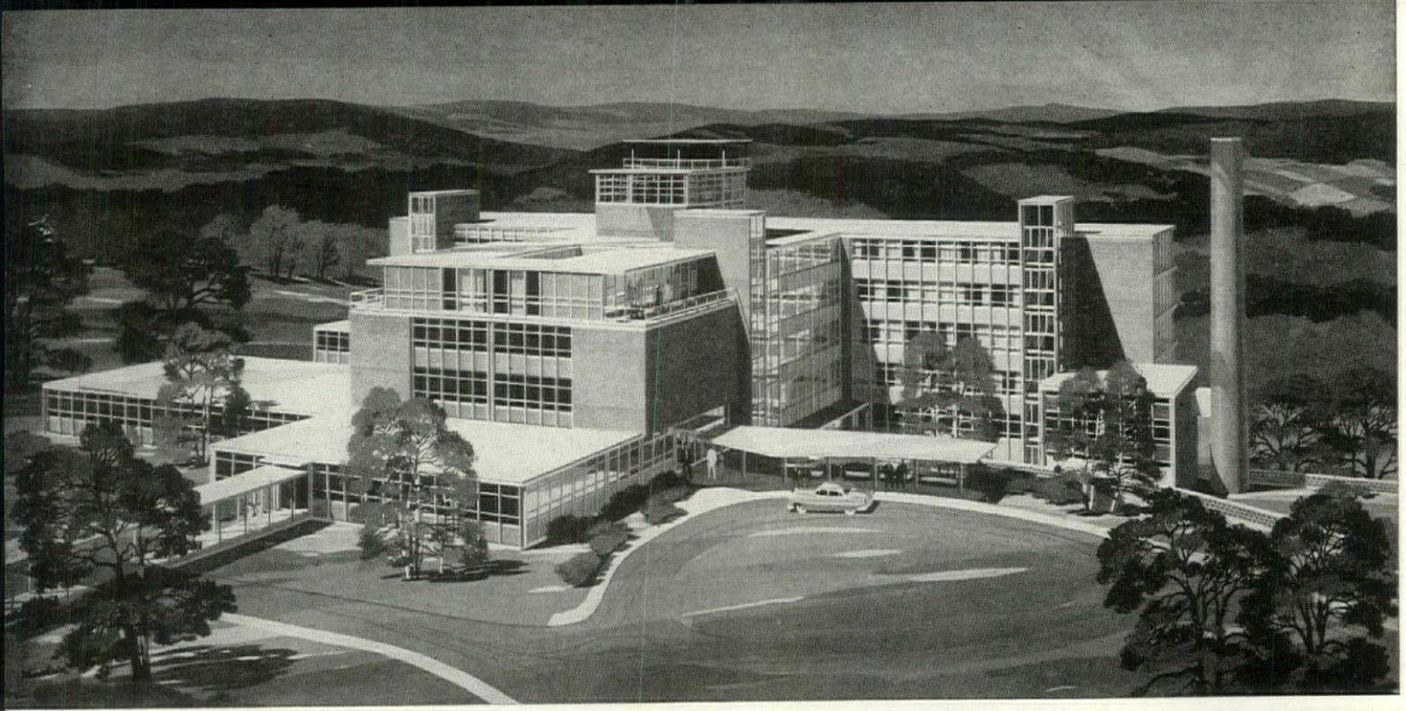
Estimated cost of service-center construction and fixed equipment is $700,000.

Friesen's six administrative assistants will have their own provinces—as business, personnel, plant maintenance, etc.—will operate central services and act as circuit-riding advisors to administrators of individual hospitals. All key personnel—administrators, head nurses, dispatchers and the like—will be brought to the service center for training sessions and conferences.

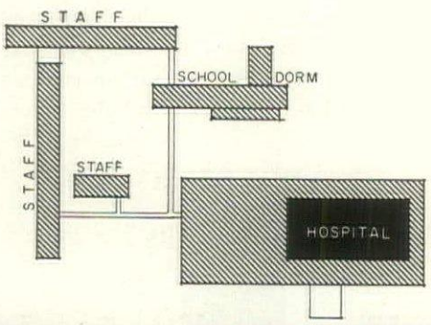


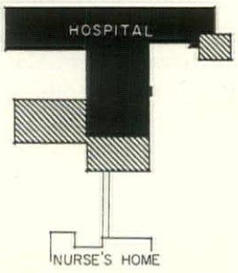


Flow chart *shows how soiled laundry is sorted on floor above, drops by chute into wash-wheels. Wash foreman has intercom control of chute-load weights and types, also controls release. Laundry is full of efficient tricks: For instance, loads for tumblers drop on top deck of double-decker conveyor, slide into machines down short ramps; then ramps reverse and tumbled loads slide onto lower deck of conveyor. All laundry is sterile as it comes from pressers, tumblers or ironers. End of laundry production line is eight carts each taking complete standard linen complement for 60 beds; carts are also transportation cases. Linen destined for sterile packs is first inspected on light tables (new idea). All items emerging from central sterile supply have sealed wrappings for transportation.*

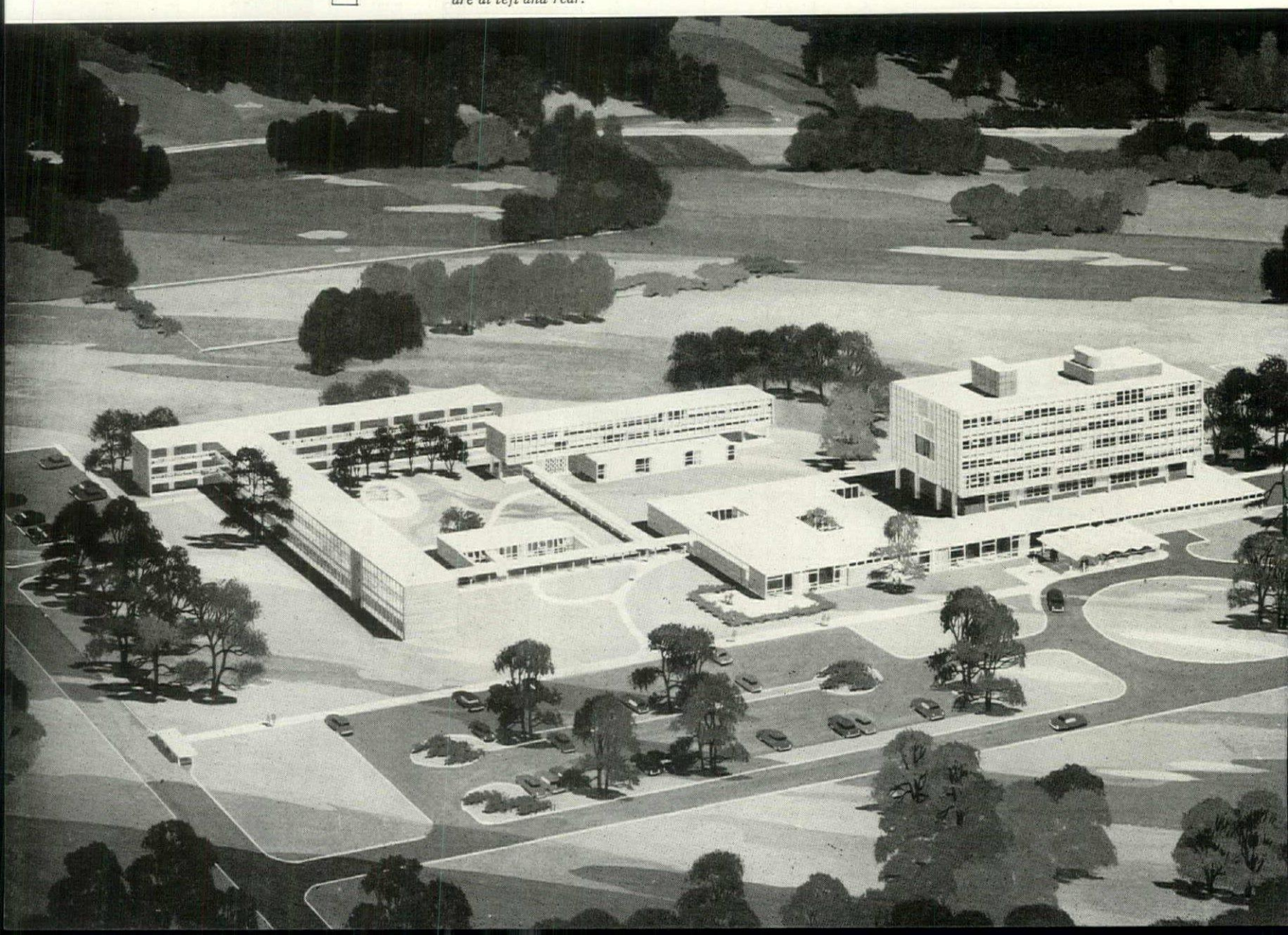


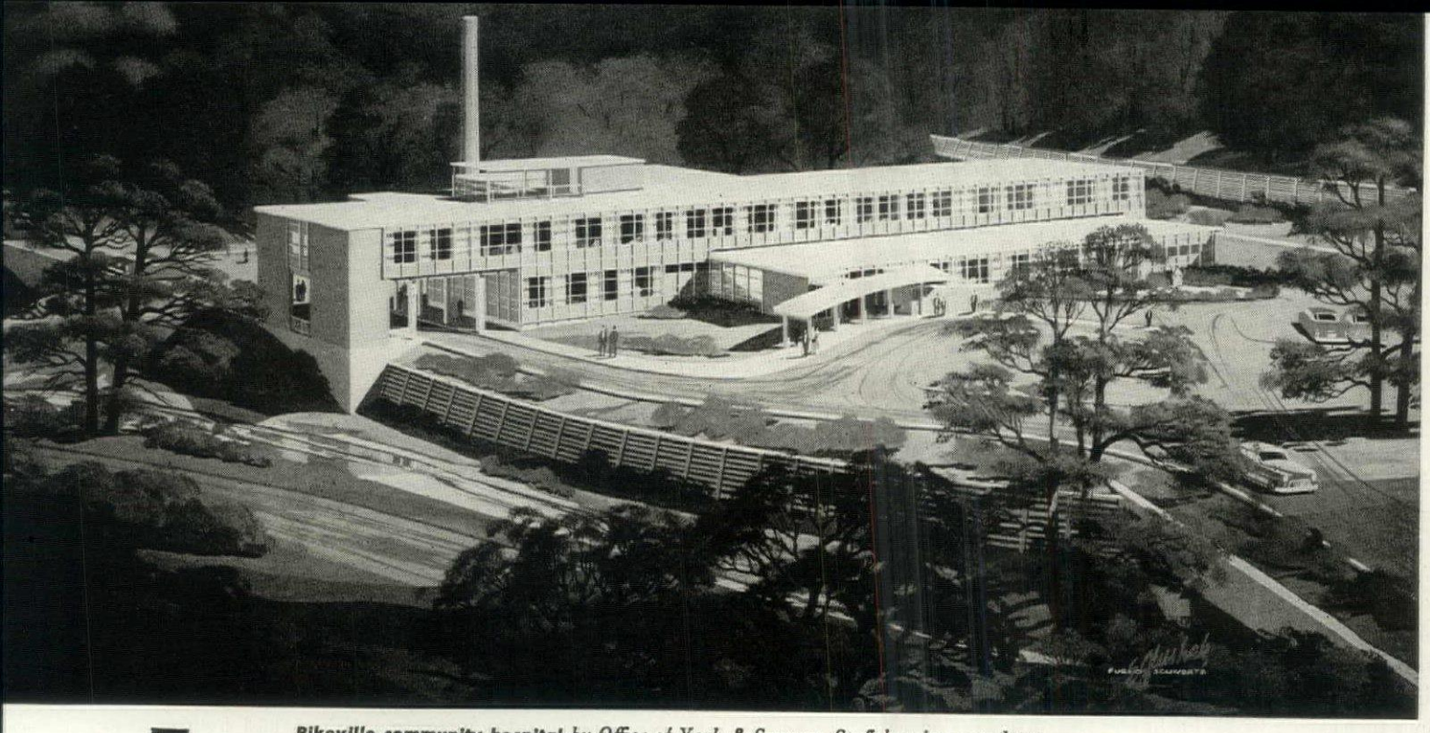
Beckley central hospital *by Architect Isadore Rosenfield. Housing and nursing school not shown*





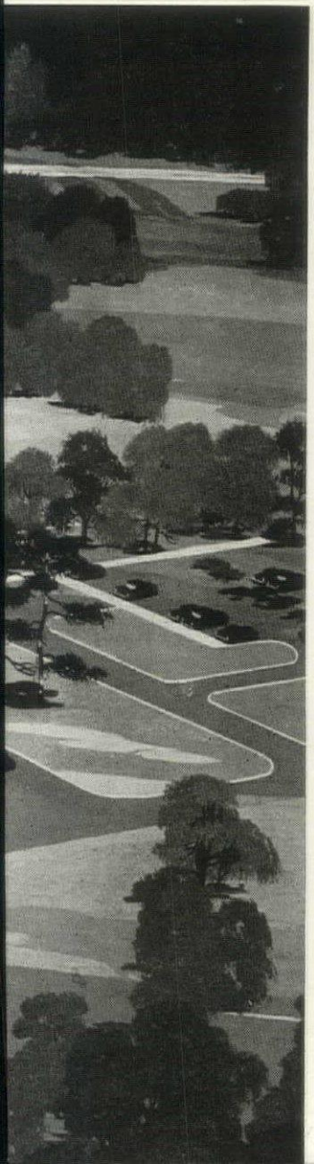
Harlan central hospital *by Architects Sherlock, Smith & Adams. Staff housing and nursing school are at left and rear.*





Pikeville community hospital *by Office of York & Sawyer. Staff housing not shown*

THE HOSPITAL DESIGN TEAM: a strange (and prophetic) type of client plus three strong-willed architects and a contractor-planner



"There is nothing here simply because 'it is usually done.' The architects were encouraged to divest themselves of their past and try new directions."—Isadore Rosenfield

From beginning to end, this project is a model example of fine client-architect-contractor teamwork.

The first uncommon fact is the attitude of the MHA clients. They were skeptical *equally* of accepted practice and new ideas. They did not want a pastiche of the best features of other hospitals. They had a concept in minute detail—right down to what short-order cooking might be done in the middle of the night—of exactly how they wanted this pioneering group of hospitals to function when peopled with staff and patients.

In short they are creative professionals. This combination of client responsibility and pro's knowledge is common in commercial and industrial planning where the last word seldom rests with amateurs. But it is uncommon in community hospital planning.

"This is a fore-runner of something that will happen many times over. The day of the hospital with private philanthropy behind it is coming to an end; hospitals sponsored by unions, industries, cooperative groups are the coming thing. In this project, owner responsibility is put where it is paid for; it is not a random, spare-time thing. I think this, plus the fact that these happen to be exceptional men, is the basic reason why these hospitals have so much."—Aaron Kiff of York & Sawyer

MHA's top planner is Dr. Fred Mott, medical care administrator for Farm Security and USPHS since the mid-'30's and author of *Rural Health and Medical Care,* the definitive work in its field. (Saskatchewan borrowed him to head its Health Services Planning Commission, later made him Deputy Minister of Public Health.) His deputy, Dr. John Newdorp, practiced as a physician in

the Kentucky mountain coal camps, later helped lay out Alabama's rural hospital program. Senior hospital administrator is Gordon Friesen, whose brilliant, unorthodox innovations at Kitchener-Waterloo Hospital were the sensation of last year's American Hospital Association convention. Right-hand man to the MHA staff is Consultant E. Todd Wheeler—planner of the 300-acre Chicago medical group—who wrote the program for nine of the hospitals (Rosenfield, first architect hired, wrote Beckley's program).

Wheeler coordinated all planning under Dr. Mott's direction. Top-policy help came from Josephine Roche, director of the United Mine Workers' Welfare and Retirement Fund, and its executive medical officer, Dr. Warren F. Draper.

The team put in a good six months of basic thinking about goals before clients and architects got down to preliminaries.

Dr. Mott and his colleagues knew what they wanted, but they were under no illusion *they* were designing hospitals or originating technical answers—another point of difference between this group and too many building committees and administrators. The MHA people turned out to be brain-pickers in the best sense of the word. They used (and respected) architectural and technical brains* to find the means to their goals.

* Including for instance: Marshall Shaffer and his staff, USPHS; Charles I. Sayles, professor of institutional engineering, Cornell; Evelyn N. Jardine, chief medical technologist, Mary Hitchcock Hospital Hanover, N. H.; Dr. Basil C. McLean, Director and Grover Bowles, chief pharmacist, Strong Memorial Hospital, Rochester; Hospital Consultant Jacques Norman; plus 42 others in addition to architects' consultants and consulting personnel of the Welfare Fund.

> *"They did not try to do our job but there isn't a bolt in these hospitals that the owners don't know is it chrome or brass plated —and why."*—Richard Adams of Sherlock, Smith & Adams

Prima donnas in triple harness

The clients' problem: How to satisfy the economy requirement of standardized replacement and maintenance on all ten jobs without standardized or uninspired design? This is a tough problem that desperately needs an answer, as New Orleans' School Planner Charles Colbert has pointed out. The experience of most municipalities that have tried standardizing materials seems to say the two aims are self-canceling.

The MHA solution: Instead of one architect or an association of firms, the clients chose three separate firms (from 35 investigated) and most important, *they deliberately selected firms that were strong-willed and proud of it.*

Into the architectural contracts went a provision that the firms cooperate to standarize materials and equipment. For the unwritten provision, "This shall not stultify," the clients banked on built-in individualism. They also figured cagily that if one prima donna firm outdid itself, pride would compel the others to outdo themselves too.

The architects' problem: How to go about their own separate designs and keep them their own without working at cross-purposes to one another? They worked this one out empirically.

To begin with, they agreed on a bay size of 20′ (possible because these hospitals have only paired single rooms and four- or six-bed wards, all of which work nicely with 20′ bays; they have no pairs of two-bed rooms which demand the customary 24′ bay).

The architects then divided up the job of equipment research: Sherlock, Smith & Adams took lighting fixtures, casework and sterilizers; Rosenfield took hardware and elevators; York & Sawyer took plumbing and communications. They all went ahead independently on first preliminaries, occasionally comparing notes.

A few months later, in Dec. '52, the three firms, along with their engineers, met to pool findings. Naturally they did not see everything alike. There was also the fact that the clients not only

(continued on p. 208)

THE WALL Standardized walls

One of the contractor's first suggestions was this: "Get whatever you can fabricated elsewhere for assembly on the spot. And the less masonry the better."

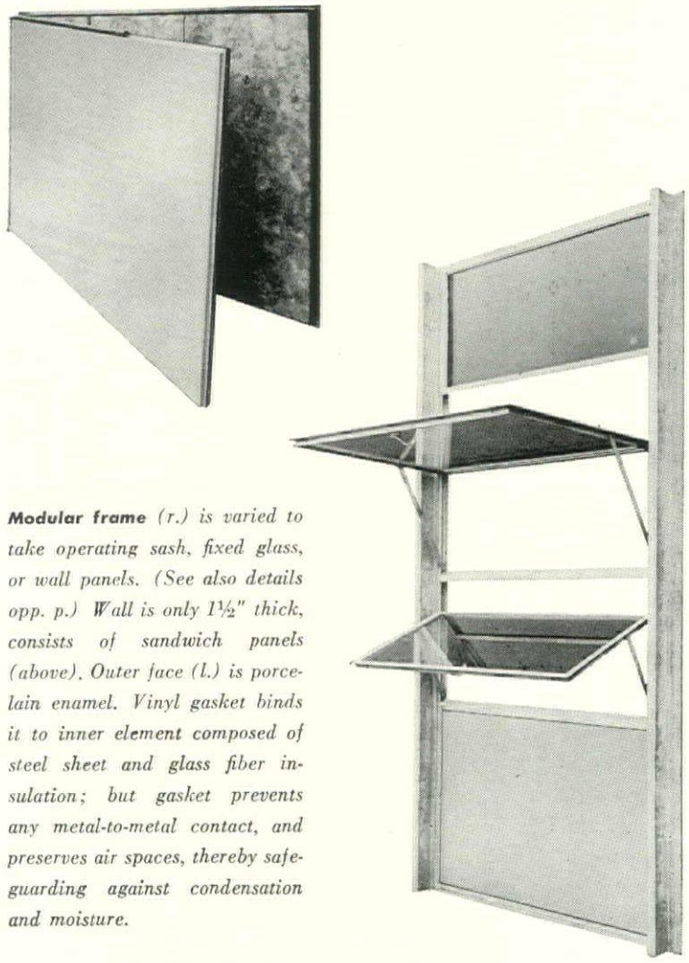
Rosenfield, thinking along similar lines, had early settled tentatively on cement asbestos panel for spandrels and windowless portions of north-south walls (with brick end walls). Sherlock, Smith & Adams had an as-yet-undetermined skin wall in mind. York & Sawyer's designers were thinking wistfully of the same thing. The contractor's advice (plus the fact that Kentucky, West Virginia and Virginia would approve skin walls) clinched it.

The architects wanted a "checkerboard" wall taking panels or glass as needed. The owners wanted self-cleaning panels that would not absorb coal dust, and sash requiring no maintenance whatever. SCAMP was directed to find the answers.

SCAMP canvassed window manufacturers, found nothing that answered requirements. But Truscon Steel volunteered to develop a unit—even though it may not get the order if another supplier turns in a lower bid.

The laminated panel Truscon evolved overcomes two plagues of forerunner panels: it cannot separate; it is completely watertight. The essential gimmick is a vinyl gasket edging, squashed between panel and frame and also between the flanges of the exterior sheet of porcelain enamel and the interior sheet of furniture steel so the two sheets nowhere touch each other (*see detail, right*).

Insulation is a 1″ sheet of glass fiber wired to the inside panel. Air space of ¼″ separates insulation from the exterior panel and it stops ⅜″ short of the panel bottom. Vertical air space keeps condensation out of the insulation; bottom air space takes care of any rain blown in through condensation weep holes. The inside face,



Modular frame *(r.) is varied to take operating sash, fixed glass, or wall panels. (See also details opp. p.) Wall is only 1½″ thick, consists of sandwich panels (above). Outer face (l.) is porcelain enamel. Vinyl gasket binds it to inner element composed of steel sheet and glass fiber insulation; but gasket prevents any metal-to-metal contact, and preserves air spaces, thereby safeguarding against condensation and moisture.*

painted, gives a finished wall.

The whole panel is less than 1½″ thick and is expected to do the same job as an ordinary 12″ wall—4″ brick, 6″ backup, 2″ furring, lath and plaster. In windowless walls, panel and assembly weight come to 11.18 lbs. per sq. ft. compared with 78.16 lbs. for masonry. Weight of fenestrated walls where the panel is used as spandrel comes to 7.56 lbs. per sq. ft. against 24 lbs. for windows with masonry spandrel. The unit's light weight was reflected in structural savings and its thin cross section, in space savings.

The entire wall is assembled from inside, doing away with all scaffolding. First the mullions are positioned and anchored to slabs. Each mullion slips over a sleeve on the one below. Then window-panel frames running from slab bottom to bottom are bolted to the inside of mullions (panels are attached to frames just before frames are put in place). On the average, one floor a day can be equipped with frame and panels and the next day can be glazed. The upper floor assemblies are finished with a coping cap that can be easily removed and reused for vertical expansion.

The design of the metal frame wall unit allows interchangeability of insulated panels, fixed glass or ventilating sash as desired prior to fabrication. The interchangeability of panels and glass after fabrication was considered, but Truscon deemed it too expensive for the added flexibility in future alteration. Frame and mullions will get a heavy galvanizing coat (2 oz. per sq. ft.) and matt finish, after fabrication.

To take advantage of this system, the three architectural firms had to reconcile dimensions. Originally, nursing floor-to-floor heights ranged from 10′ to 10′-10⅝″. They agreed on 10′-8″. Originally, one firm had a six-module bay. All agreed on four.

Spandrel height (see elevation) was arrived at by adding 8″ slab and flooring thickness to the height of heating and cooling units—2′-6″—which is also a desirable sill height for low-bed or chair view from patients' rooms. Subtracting two 3′-2″-high panels from 10′-8″ and halving the difference gave the other vertical dimension of 2′-2″. Panels in the two bottom units give proper wall height for treatment-room furniture. A panel in the top unit takes care of areas with hung ceilings.

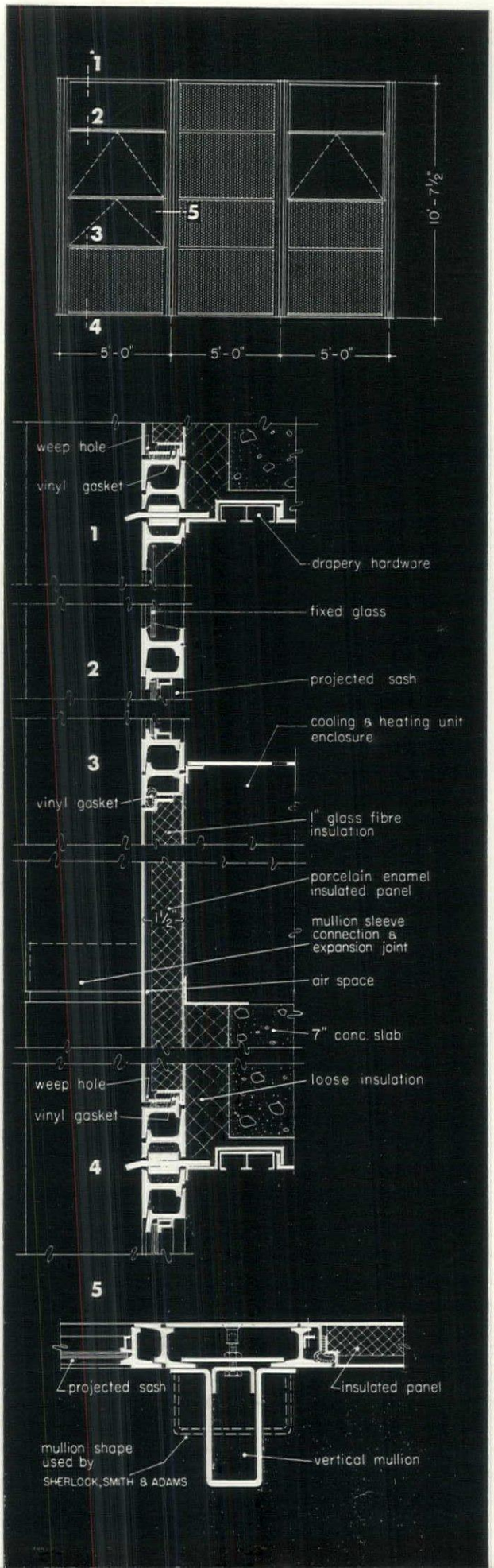
Panel standardization does not include exterior color; architects can have all the variety they want.

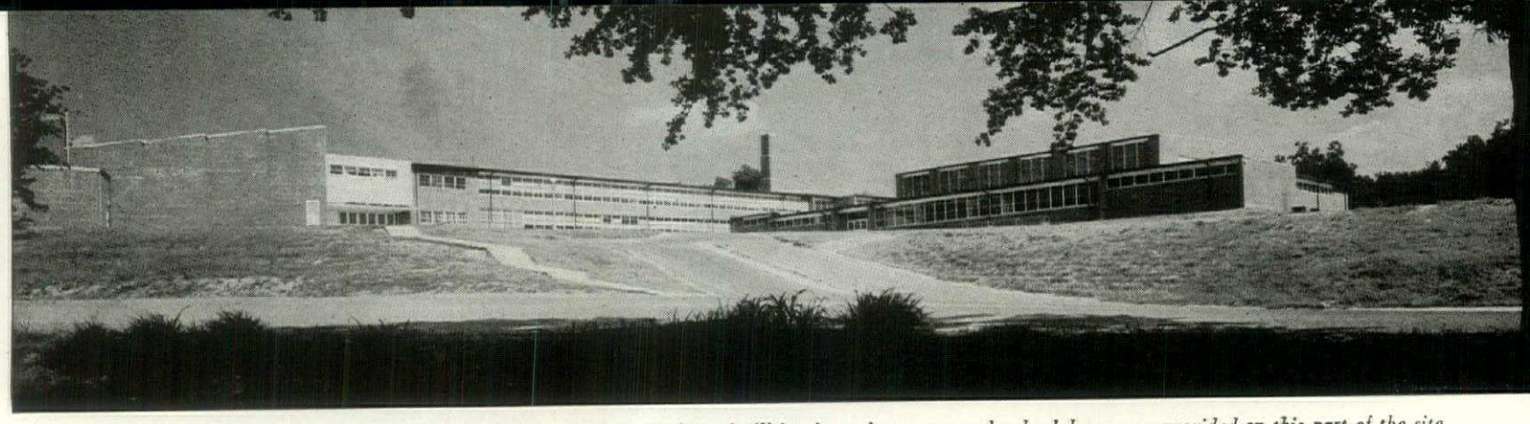
Was standardization worth while?

Truscon estimates use of the exterior wall assembly for all ten hospitals will save 50% over its cost for a single hospital. SCAMP estimates that ten-fold purchasing savings on other materials and equipment will range from 15 to 30%. MHA has no figures on expected savings for maintenance and repair, knows only they will be a godsend.

Did standardization hamper design freedom?

The architects say not. Readers who examine individual hospitals in the September and November issues of FORUM may judge for themselves. Some incontrovertible facts: these ten hospital designs have responded to site and size differences with as much flexibility as any ten hospitals picked at random. In nursing floors alone, the group exhibits single-corridor, double-corridor and a unique square arrangement. One has a freestanding round cafeteria; another grows out of a big concrete shelf; another has crystal-tower stairs hung outside the building. In other words, design is less inhibited than in the usual hospital that has only itself to consider.



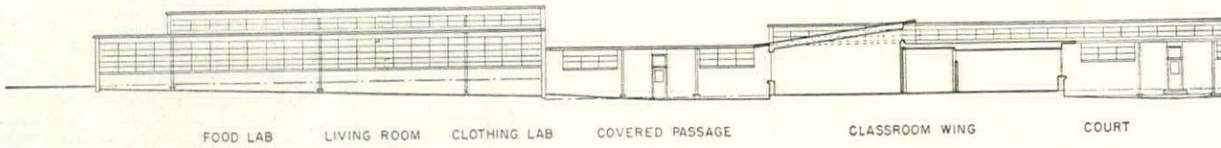


Main access *is from northwest. Parking facilities for private cars and school buses are provided on this part of the site*

LOCATION: Anniston, Ala.

PEARSON, TITTLE & NARROWS, architects

JONES & HARDY, general contractor



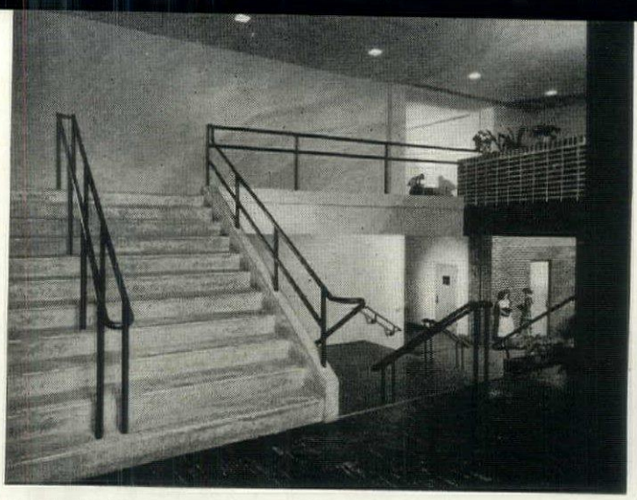
East-to-west section *shows how various levels are connected by stairs or ramps. Principal change in level was achieved by cutting one floor back into slope, thus turning potential basement into fully lighted, useful classroom wing.*

Photos: Douglas Grundy

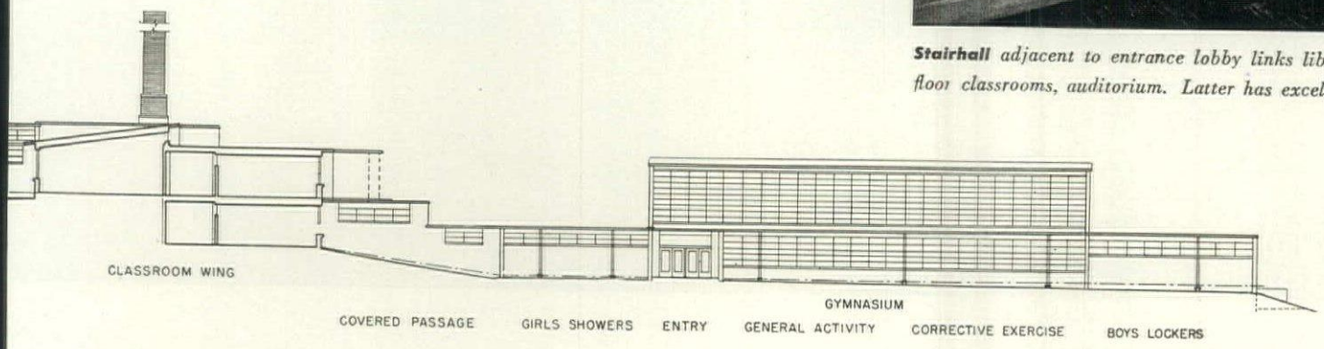
Sawtooth auditorium *for one-fourth of student body is at left, main entrance and gymnasium block at right. View is looking due east*

PRIZE SCHOOL

masters one of year's most difficult sites, provides a small office for every teacher



Stairhall *adjacent to entrance lobby links library, upper- and lower-floor classrooms, auditorium. Latter has excellent acoustics.*

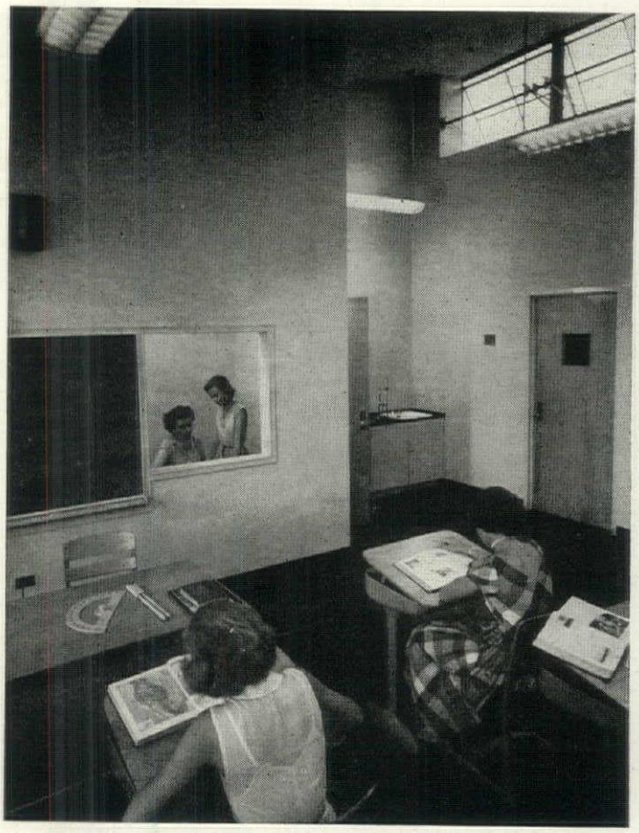


The principal reason this junior high school won a 1952 AIA honor award for the Gulf States region is that its architects made a virtue out of an almost impossible site and produced a building that looks as effortless as it was complicated to design.

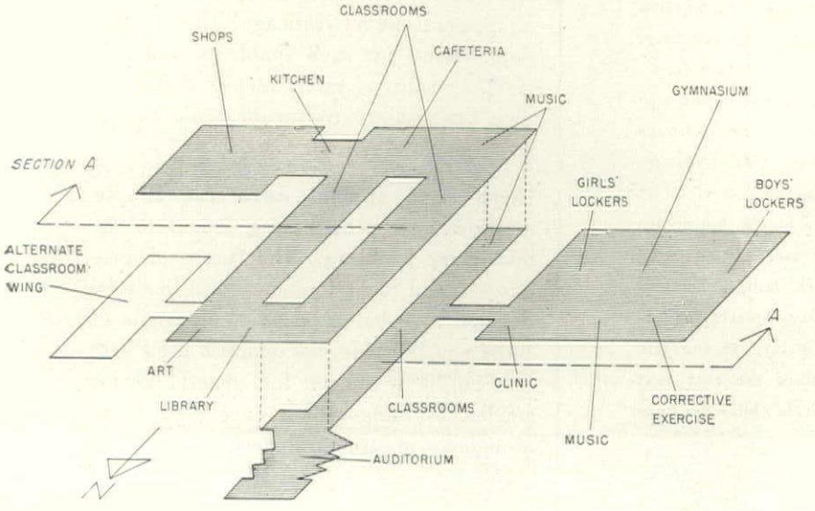
The site—a strip of land about 1,400′ deep and 350′ wide—not only presented the most difficult problems of drainage and of access; it also suffered from a 75′ drop in grade in less than 700′! Moreover, one-third of the land, though flat, was too low to build on, had to be devoted to play areas instead. Just to add a last straw, the local superintendent of schools felt (quite rightly, of course) that the best kind of school was a building all on one level.

The picture opposite, and especially the long, drawn-out, multi-level section above, shows how the architects fitted their school for 1,200 children to this exasperating site, and came up with a very nice, rambling, *almost* one-story structure that cost less than $7.50 per sq. ft. More than that: these pictures also show a school that has all the virtues of an irregular plan—there is very little monotonous repetition of rooms along assembly-line corridors.

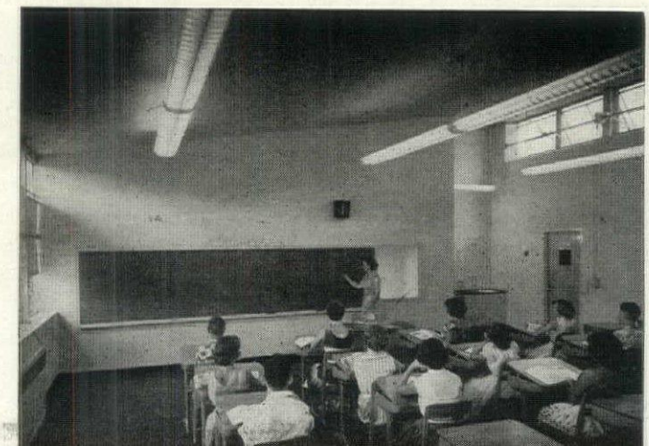
Unusual features include a separate teacher's office to go with every classroom, a sawtooth-plan auditorium with first-rate acoustics, an isolated gymnasium building (which includes music rehearsal rooms), and a whole series of links between building elements. These links help to bridge differences in grade and make it possible to use some parts of the building independently for community activities after the children have gone home.



Teacher's office *overlooks classroom (above). Architects say this unusual arrangement has proved very popular, permits private teacher-student discussion and simultaneous classroom supervision.*

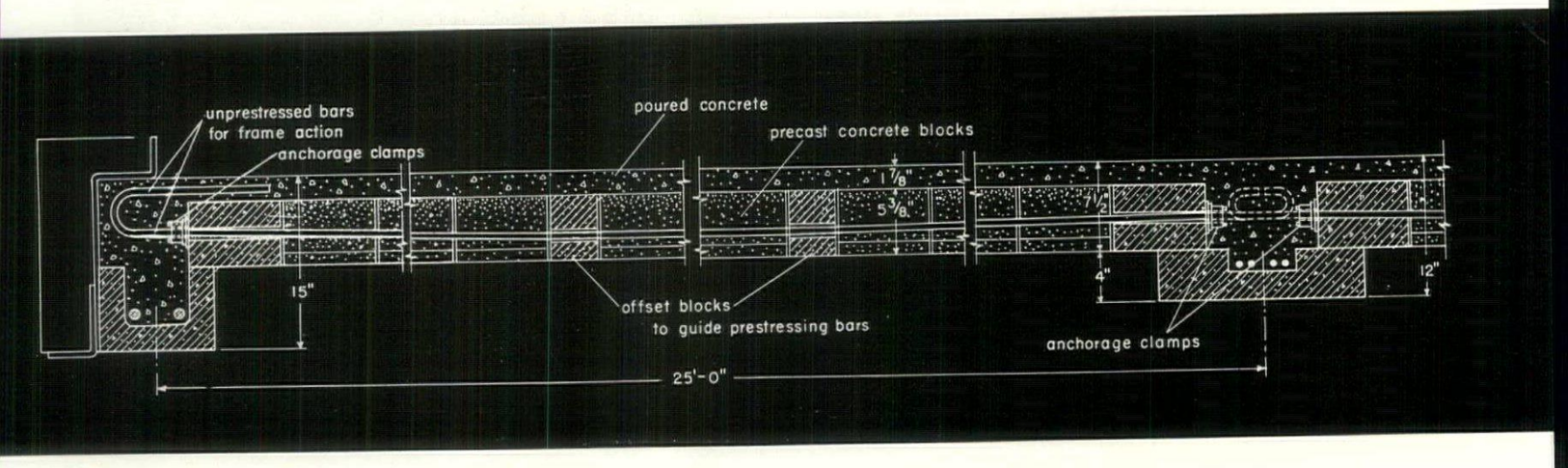


Clerestory lighting *(below) was achieved in half of the classrooms*



BUILDING ENGINEERING

1. *How to prestress a multistory building*
2. *How to integrate structure and heating*
3. *How to engineer wide-span girders in timber*
4. *How to build better built-up roofs*



1. PRESTRESSED CONCRETE SIMPLIFIED

by L. Coff, consulting engineer

For economical prestressing of multistory buildings, a top concrete engineer suggests:

1. integral formwork of prestressed precast block;

2. low-cost, medium-strength corrugated steel; and

3. cheap foolproof anchorages.

Result: a rigid monolithic frame combining the advantages of prestressing and precasting

▸ Why is prestressed concrete so little used when it offers so many proved advantages over ordinary concrete and over steel framing too?

▸ Why are the still more obvious advantages of prestressing in combination with precasting so seldom realized?

▸ Why is prestressed concrete considered a sort of construction caviar even in Europe where wages are so low?

▸ Why is prestressed and precast concrete almost unused on large multistory buildings where its advantages might be greatest of all?

The discouraging answers to these questions lie in the intricate techniques still used for prestressing—techniques so exacting and slow that prestressing still seems to require the personal supervision of some distinguished specialist. How different this is from the way reinforced concrete was brought into general use 50 years ago! Then Hennebique strove for such simplicity and provided such broad safety factors that in no time the smallest contractor could understand and use the new material.

There is a special need for simple methods of prestressing concrete in multistory building. The future of prestressed and precast concrete will likely be decided by what happens on this type of building. If it does not establish itself here it is not likely to come into general use for smaller buildings either once there is an abundance of structural steel.

ADVANTAGES OF PRESTRESSED CONCRETE

Engineers are keen on prestressed concrete for several reasons: 1) It is crackless; consequently, it is impervious to damaging ice formation and its steel is protected against corrosion. 2) It is an elastic material that regains its original shape after deformation. 3) It permits the use of high-strength concrete having compressive stresses up to 8,000 psi. 4) It provides a structure that can be subdivided with construction joints wherever convenient and subsequently its several parts are bound together by prestressing steel to form an efficient monolithic frame. 5) It is an efficient material engineeringwise; every part of the concrete is put to work because the whole section is kept in compression. 6) It reduces the effects of shear and diagonal tension.

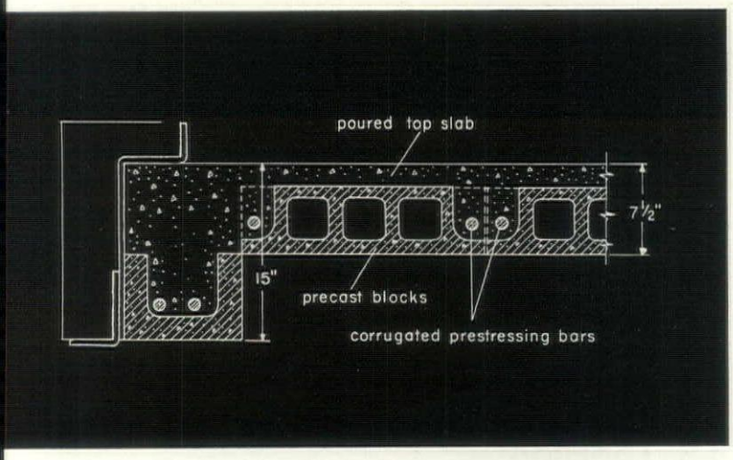
Through prestressing, concrete bridge spans have been doubled with less depth, producing lighter construction at less cost. In buildings prestressing promises wider, shallower spans of 30′ or 40′ at no more cost than today's 15′ spans.

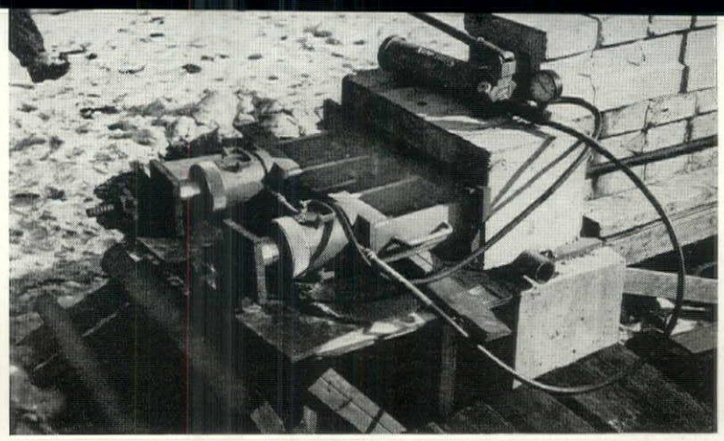
This would permit great savings from fewer columns, lighter construction. It would also provide more flexible space.

ADVANTAGES OF PRECAST CONCRETE

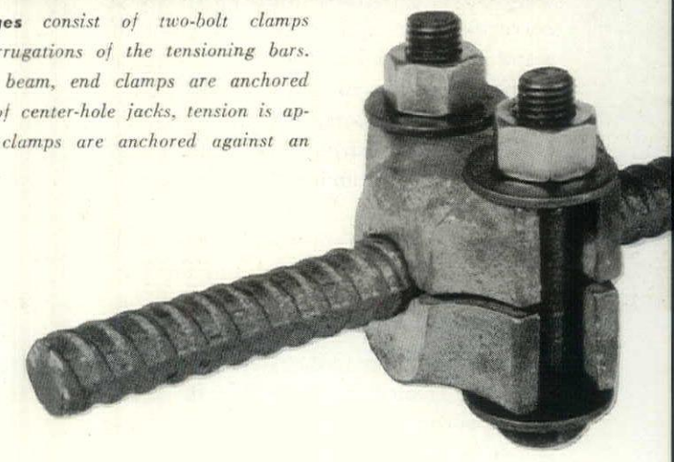
Precast concrete also has many advantages: 1) Elimination of practically all on-the-job formwork and therefore cheaper construction costs per unit; 2) better quality concrete; and 3) cheaper prefabricated reinforcing.

However, precast concrete construction also has several disadvantages: 1) It often proves expensive because of the high cost of placing and connecting each precast member. 2) It does not always produce a monolithic structure. 3) It must be more carefully designed and supervised than more familiar poured concrete. 4) It requires heavy hoisting equipment and a casting site handy to the job. These disadvantages explain the fact that few buildings over two stories high have been precast.





Simple anchorages *consist of two-bolt clamps grooved to fit corrugations of the tensioning bars. To prestress the beam, end clamps are anchored against plungers of center-hole jacks, tension is applied and inner clamps are anchored against an end plate in beam.*



On tall buildings it can almost be said that the advantages of prestressed concrete are multiplied by the number of floors as the weight and depth savings it permits are compounded. But the difficulties are increased in proportion with successive floors due to the elastic deformation, shrinkage and plastic flow that occurs when cast-in-place concrete is prestressed. This deformation, which may continue to develop for several months, exerts awkward bending moments on the supporting columns and creates parasitic bending moments in continuous monolithic design.

There is an easy way to overcome the difficulties of multistory prestressing and at the same time simplify the whole construction procedure. This is to use precast prestressed concrete forms and to make them part of the finished structure. Consisting of special precast concrete blocks assembled into prestressed beams, these are simply supported on lintels or main beams to double as formwork for a poured top slab. The cast-in-place concrete binds the precast units, prestressing bars and supporting columns into a single homogeneous frame acting just like monolithic conventional concrete.

This combination of precast prestressed formwork with cast-in-place floor slabs reduces expensive site work and simplifies construction. The prestressing is done in the shop under ideal conditions and close supervision. There is no need to leave holes in the concrete for prestressing steel, nor to sheath the steel against bond (since the steel is outside the precast block) nor is there need for expensive grouting after the member is tensioned. The whole procedure is in keeping with normal concrete practice of first placing formwork and then pouring a floor slab.

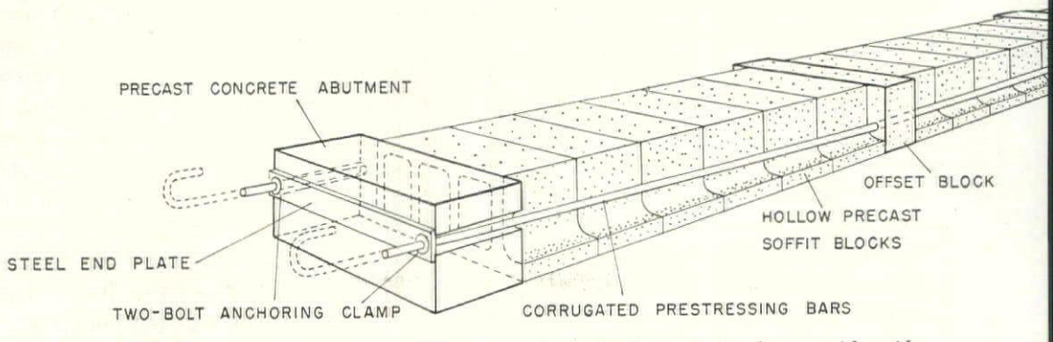
The idea of assembling precast blocks into prestressed beams with tensioning bars anchored into precast crossheads was suggested by the author several years ago.* Individual blocks have bottom flanges extending out about 2″ on either side. When erected the flanges of adjoining beams are in contact and act as permanent formwork for the cast-in-place top slab which surrounds the steel between the beams. A similar technique has been successfully used by Engineers Bryan & Dozier to build, among many other projects, a two-story school at Bordeaux, Tenn. (AF, Oct. '52).

In this construction any shrinkage of the precast units is completed before tension is applied to the composite beam. Consequently, there are no volume changes except in the poured concrete encasing the prestressing steel, and this shrinkage is resisted by the precast block. This, in effect, *adds* to the prestress of the composite unit. (This behavior was discovered in tests on composite beams made by the author in 1939 and subsequently confirmed by Dr. Henry Marcus, consultant to the US Navy).

There is a low-cost way to prestress this kind of construction, for medium-strength tensioning steel and simple anchorages can be used. Adequate tension can be applied with high carbon steel having a yield strength of 100,000 psi and used at working stresses up to 75,000 psi. This steel costs only slightly more than ordinary mild reinforcing steel [from 6-10¢ a lb. compared with 15-20¢ a lb. for 220,000 psi wire—Ed.] and promises to be more economical than the high-tensile wires that are normally used today.

Steel bars corrugated to US Specification

* *"Prestressed Concrete for Bridges and Slabs," an address by L. Coff to the 33rd Annual Meeting of the American Association of State Highway Officials, Sept. '47.*

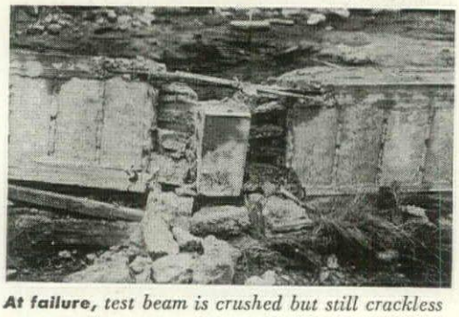


Prestressed precast beam *made from precast blocks is held together by tensioning bars on either side*

A-305 can be firmly anchored at any point along them with two-bolt clamps acting against end plates. Bars can also be spliced together with similar four-bolt clamps, permitting the use of bars in stock lengths. Furthermore, the corrugations on the bars improve the bond with the poured concrete, relieving pressure on the end plates.

The author has used these anchorage and splicing clamps in a 31′ test beam, 23″ x 14½″ deep, prestressed with two 1″ A-305 corrugated bars having a yield point of about 100,000 psi. Under single H-15 bridge loading the maximum deflection was 0.33″; under double loading, 0.85″. No visible cracks appeared during these tests, which were carried out under the direction of R. W. Hunt Co.

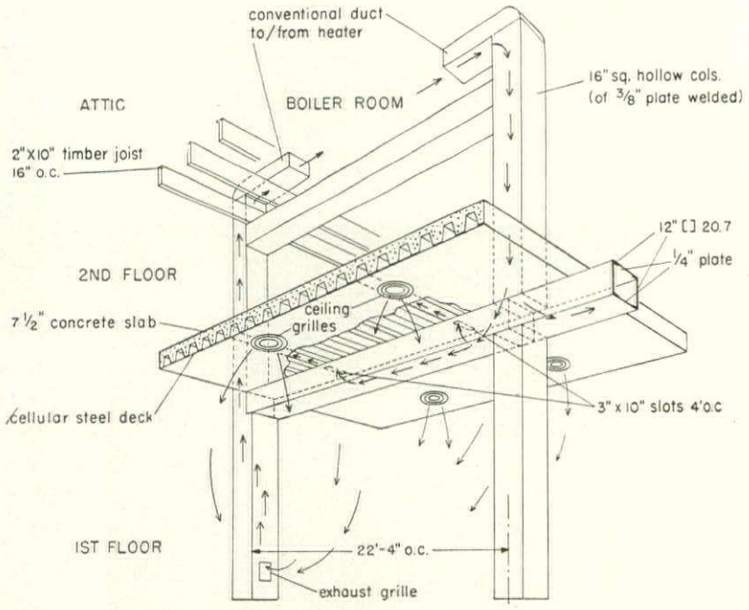
To see how the beam would behave with its end anchorages removed and the prestress transmitted only by the bond between the corrugated bars and the concrete, another test was arranged. A bond length of 3′-2″ was created at each end of the beam by supporting it upon two new supports which reduced the span to 25′. After removal of all end clamps double the live load was placed at midspan. After 48 hours the load was removed, leaving a residual deflection of 2″ at midpoint of the beam but with no visible cracks. This indicates a plastic movement of the prestressing bars from the ends to the middle of the beam. However, no further bond adjustment took place and,



***At failure,** test beam is crushed but still crackless*

under new increased loading, the beam was tested to failure with no other cracking than in the middle 24″ due to yielding of the steel. The beam carried a concentrated load of 10 tons at failure.

There is promise of 30′ spans at the cost of 20′ spans. Although no multistory prestressed buildings have yet been erected with these techniques, analysis of a projected apartment indicates that it is quite possible to erect a multistory prestressed building of any floor plan using permanent precast formwork and medium-strength bars to develop full continuity in a monolithic frame. It is believed that spans greater than 30′ will cost less with this method than 20′ spans in conventional reinforced concrete. When confirmed by actual construction, this might influence greatly architectural thinking in the future.



2. DUAL-PURPOSE FRAMING

Hollow steel box columns and beams double as warm-air heating ducts

The hollow structure of this two-story office building doubles as a warm-air heating system. Fresh air at 110° is blown from an attic heater into the tops of five hollow steel box columns, down to hollow main beams, then through a cellular second-floor slab and out through ceiling grilles. Return air enters similar hollow columns around the perimeter of the building for passage back to the heater or exhaust.

This integration of structure and mechanics resulted from close architect-engineer consultation at the very earliest stages of design. It proves successful in several ways:

- Separate ductwork was eliminated (apart from the connections between heater and columns) thus saving considerable space as well as time and money.
- Useful radiant heat comes from the hollow columns, beams and floors.
- Cool summer ventilation is possible by simply blowing in fresh air.
- The frame is stronger, too. Since the box column provides a greater radius of gyration it offers more efficient structural support than conventional H-columns of the same cross-sectional area. However, this is not likely to save on framing costs because shop fabricated box sections are more expensive than rolled members.
- Cost of the 10,000 sq. ft. building was kept down to $9.65 per sq. ft. The welded steel frame cost $9,800 erected—41 tons at $239 per ton. The attic heating plant, including ducts, came to $10,450—$1.04 per sq. ft. Piping costs were negligible since the boiler is adjacent to the heater.

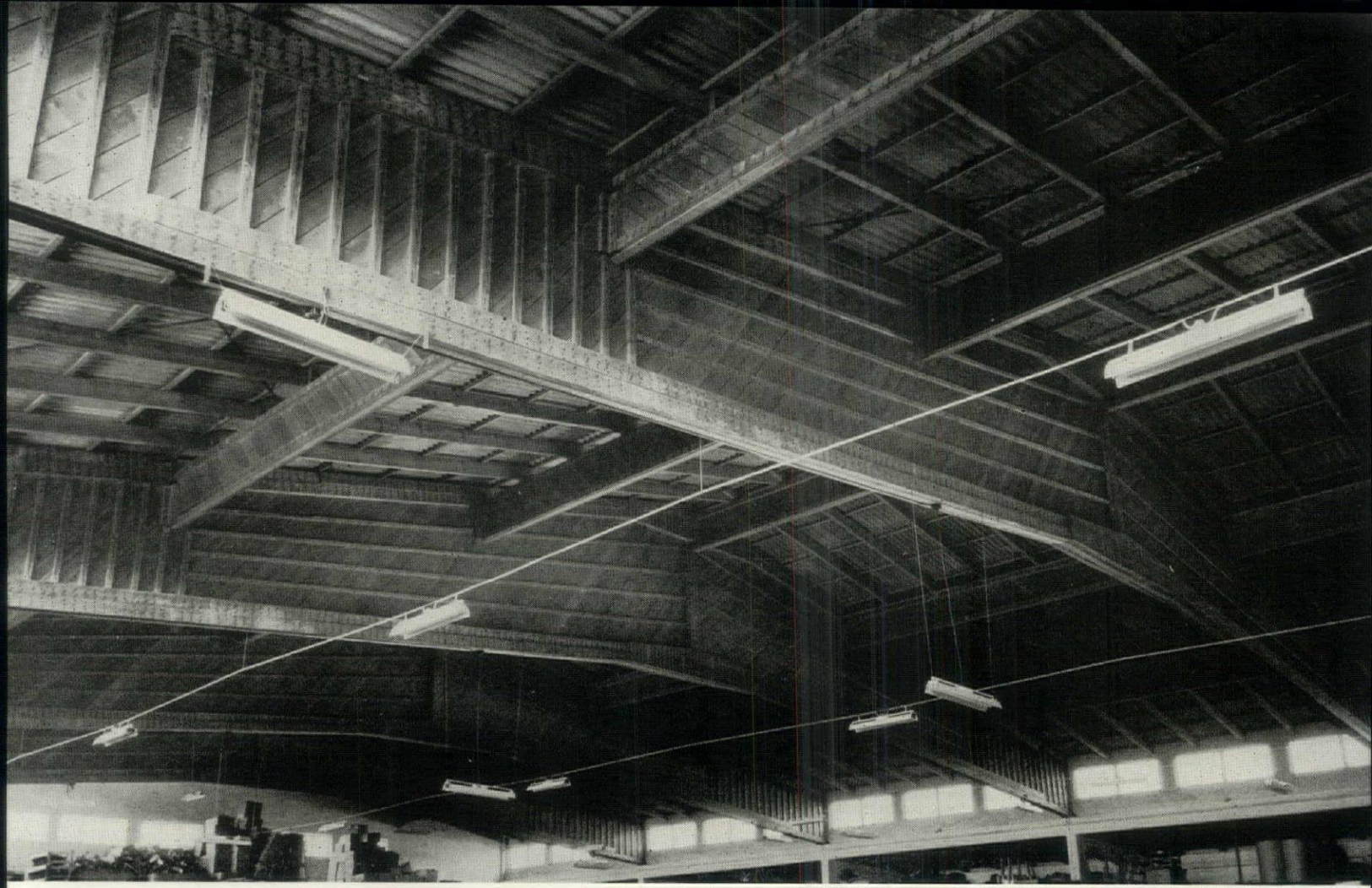
Since this building is only two stories high, fireproofing was not required; the steel is merely painted. (Most building codes require fireproofing in public buildings over three stories high.) *

Floors consist of a cellular steel deck topped with a 7½″ concrete slab. The flat side of the deck forms the ceiling for the floor below. About half of the 3″ x 5″ cells in the steel deck are used to carry electrical and telephone conduits; every eighth cell carries warm air.

Hollow beams and columns were selected as the simplest way to get the warm air into the floor cells. The columns are made from four 16″ plates welded at the corners (¼″ plate was specified but not available, hence ⅜″ plate was used). Hollow box beams consist of a pair of 12″ channels separated by two 16″ plates welded top and bottom. A 3″ x 10″ slot is cut in the top plate at 4′ intervals through which the air passes into the floor cells. From the cells the air goes down into the room beneath through circular grilles (at a rate of 58 cfm per grille). The second floor is heated partly by radiant heat from the columns and floor, partly by ceiling grilles serviced by ducts leading directly from the heater in the attic.

The building was designed by Marshall, Barr & Associates, consulting engineers and architects; Gerald C. Field, associate architect; C. A. Pangborn, mechanical and electrical engineer.

** Similar welded, hollow columns and beams doubled as air conditioning ducts in three libraries by Structural Engineer Gilbert D. Fish (AF., Jan. and May '52). The tallest of these is a seven-story building at Athens, Ga.*

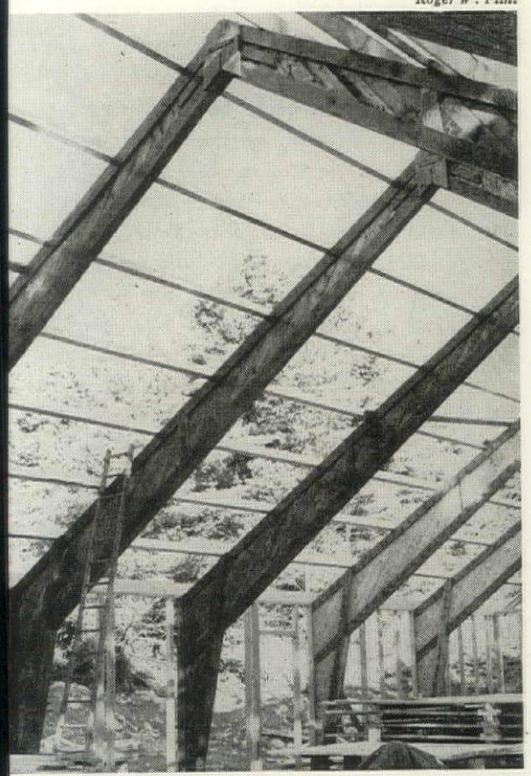


Nailed beams, *simply supported, span 100′ in this all-timber warehouse in Gothenburg*

3. TIMBER PLATE GIRDERS

laminated flanges nailed to diagonal web sections prove 41% lighter and 16% cheaper than steel roof trusses

Roger W. Flint



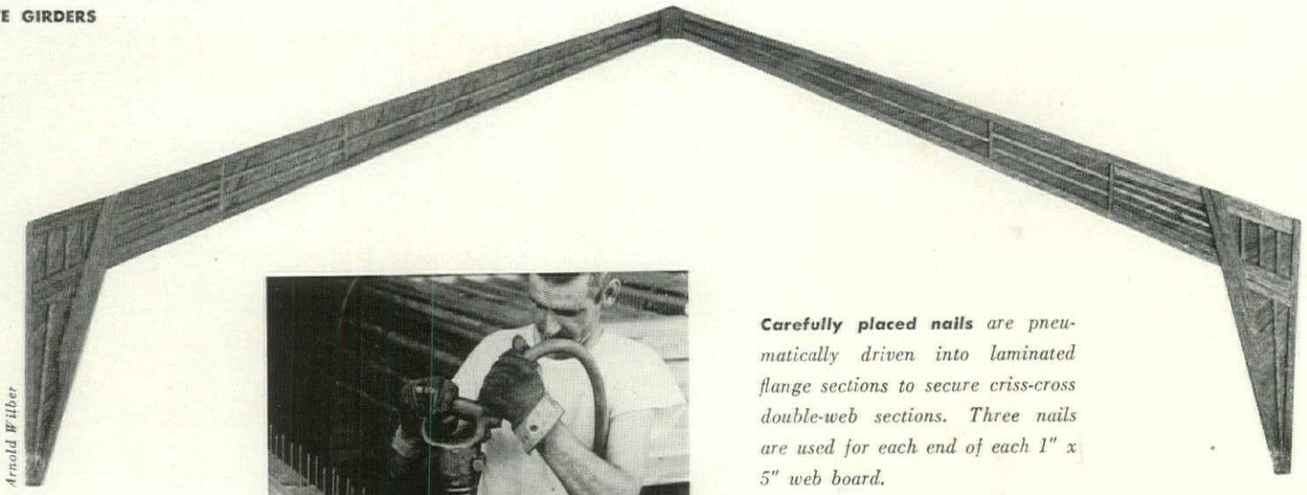
Three hinged arches *span 48′ in Maine theater. Crisscross webs are nailed to solid flanges.*

Timber can now be used as a precise engineering material. Flanges can be designed to take bending moments and webs to take shear forces just as in regular steel plate girders. This is made possible by the Swedish HB Co. system, a nailing technique for rigidly connecting glued laminated flanges to crisscross web sections. This system has already been used in over 2,000 Scandinavian structures with spans up to 155′, and is now proving economical in Canada and the US.

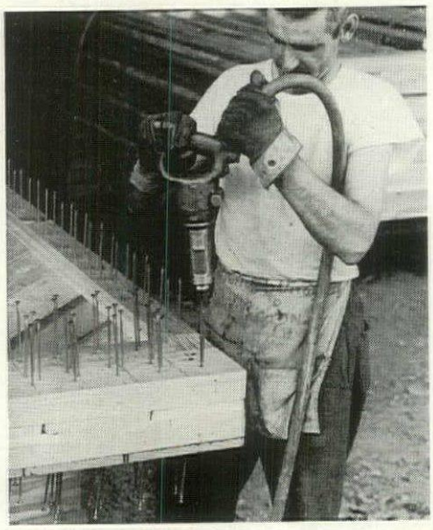
First developed in 1939 by the Swedish Professor Hilding Brosenius to permit use of short (under 14′) lengths of common structural lumber, this girder construction technique was thoroughly tested last year, by Toronto University Professor Carson F. Morrison, using Canadian timber. He reports that laminated timber flanges are 16% cheaper and 41% lighter than equivalent steel truss chords for a typical 40′ roof span. In a comparison of equivalent laminated timber and steel chord sections of trusses having the same calculated strength, timber proves 41% lighter than steel (14½ vs. 24½ lbs. per lin. ft.) and is 16% cheaper ($2.80 vs. $3.32 per lin. ft., based on shop prices of laminated Douglas fir at $400 per M and steel trusses at $270 per ton). Furthermore, timber frames are more fire-resistant than steel and their lighter members are more easily shipped and are erected with the use of only a few woodworking tools. Witness these structures built to date:

▸ Largest of the European examples is Architect Alvar Aalto's 1952 Olympic Games Hall in Helsinki. Two tennis courts are roofed with two-hinged portal frames 52′ high and spanning 155′. Similar structures include 75% of all Sweden's aircraft hangars and many arenas, warehouses, assembly halls, churches and bridges.

▸ In Canada three warehouses have been built by this method in the past year. The first, for A. S. Nicholson & Son Ltd. who now manufacture HB beams in Canada, is a 100′ x 240′ building spanned by 11 T-frames spaced 20′ o.c. A center column carries all the lateral load and most of the vertical load of each frame. (Side columns are only 6″ square.) With a 2″ timber deck

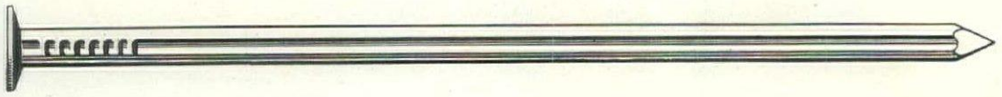


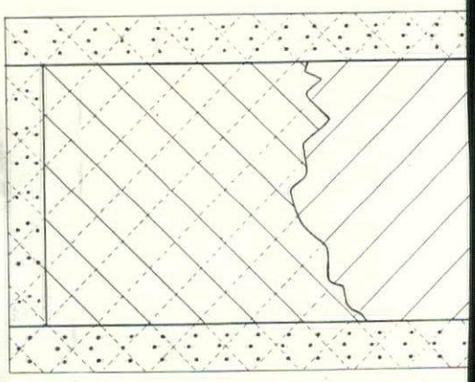
Arnold Wilber



Carefully placed nails *are pneumatically driven into laminated flange sections to secure criss-cross double-web sections. Three nails are used for each end of each 1" x 5" web board.*

Swedish wire nails *of cloverleaf section are used in this construction to reduce splitting of timber.*





the dead load is only 11 lbs. per sq. ft. to take a 40 lb. snow load plus a 20 lb. wind load. Cost of the frame, including 15 strings of continuous purlins 6'-3" o.c., came to $12,830 or 53.2¢ per sq. ft. erected. Another smaller warehouse, only 80' x 100', spanned by four two-hinged HB frames at Hamilton, Ont. was framed for 39.6¢ per sq. ft. erected. A third warehouse in Toronto is 120' x 224', with ten 120' continuous beams. Including 19 strings of continuous purlins, 6' o.c., the structure cost 46.6¢ per sq. ft. erected.

▶ The first such timber structure built in the US is the theater completed last year at Naples, Me. (see photo), by Architect J. M. Dennerlein (who holds the US franchise for this construction method). This theater contains 48' span three-hinged arch frames and cost 22¢ per sq. ft. erected for the frames and purlins. The laminated flanges are assembled with nails only, no glue, and 15% extra timber is employed to make up for the consequent loss of strength.

Nails transmit full loads

This construction technique employs members built-up like plate girders but the top and bottom flanges need not be parallel. To form the web, two layers of 1" x 5" boards are placed diagonally to the axis of the member and at right angles to each other. Vertical or horizontal stiffeners are added where necessary to prevent buckling. Flanges consist of several laminations of 1" boards glued into continuous lengths and nailed to each side of the top and bottom of the web, using a predesigned pattern of nailing (see drawing) to ensure full rigidity.

Shaped nails reduce splitting

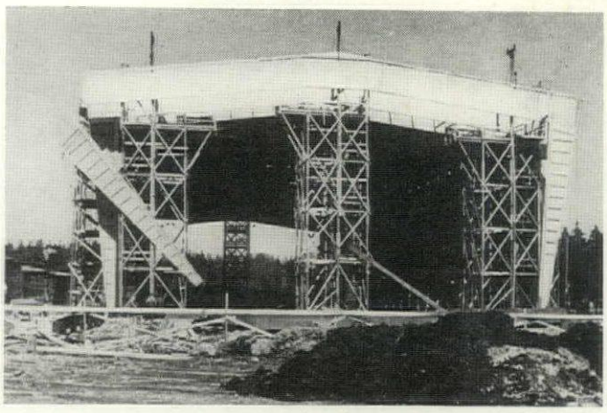
Nails are positioned according to the load requirements and nail capacity determined by numerous load tests. Special Swedish wire nails are used. They are small in diameter compared with ordinary, round nails of the same length and are grooved longitudinally to provide a stiffer section, increase the effective nail surface and lessen the possibility of splitting the wood. The rest of the design is based on standard engineering practice with bending resisted by the flanges and shear by the web of each member.

This construction system is highly versatile. It can be adapted to almost any shape of frame—portal or arch, two-hinged or three-hinged. Field assembly is simple, too. Component members of a frame can be shipped in prefabricated straight lengths up to 80' and rigid joints can be made at the site by a simple nailing process. Thus continuous timber beams over 300' long have been built.

After considerable testing of Western white spruce and Douglas fir, Professor Morrison chose the latter timber exclusively for construction of these beams in North America. In nail tests, using medium-grade Douglas fir with a moisture content of 11%, it was found that the ultimate load capacity of 5½" Swedish nails, 0.185" diameter, averaged 1,540 lbs. Design loading of such a nail by Professor Brosenius' formula comes to 275 lbs. giving a safety factor of over 5½.

A full-size Canadian test beam, 35½' long and 2'-9" deep, was made having flanges of grade "A" fir with permissible compressive and tensile stresses of 1,630 and 2,475 psi respectively. Average moisture content was 13%. A load of 1,640 lbs. per lin. ft. (2.8 times the design load) produced a deflection at midspan of 4.1", less than 1/100 th of the span. Two hours after the load was removed the beam had recovered 93% (all but ¼") of this deflection. This indicates a high elastic modulus which, as Professor Morrison points out, requires further investigation.

Production of these timber girders is quite simple and requires relatively little equipment. HB Co.'s 80' x 130' workshop in Sweden is now producing about 3 million bd. ft. of such beams a year with fixed and portable saws, molding and planing machines, glue mixing and spreading machines, drills and pneumatic hammers. In Maine, the built-up members for the Naples theater, where the flanges were not glued, were made by local carpenters.



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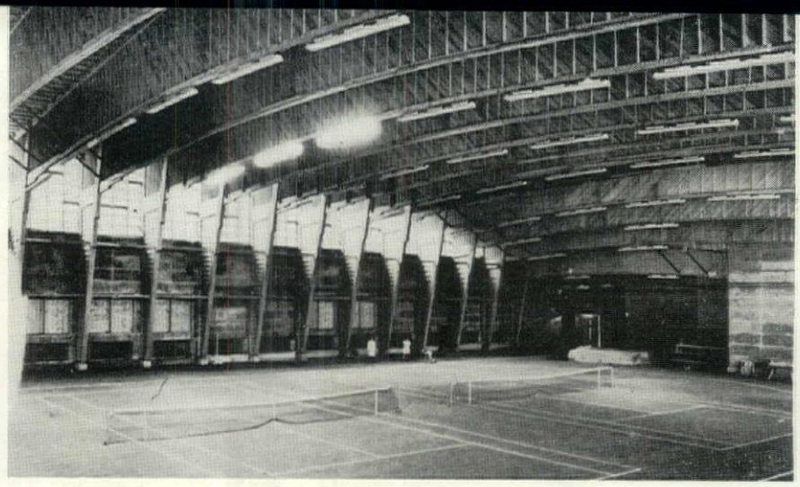


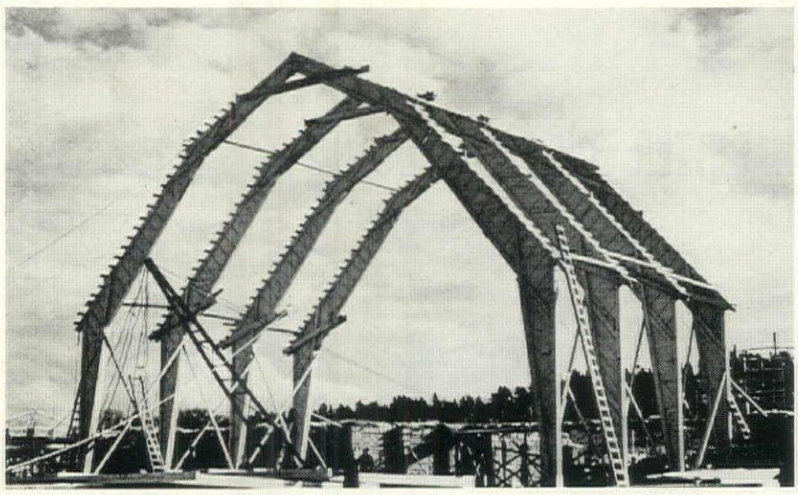
2

1. Portal frames *span 117′ in Swedish warehouse. The 133′ long main beams are lifted atop scaffolds and the 65′ high leg sections nailed into position using special rigid joint construction.*

2. Two hinged frames *of 1952 Olympic Games Hall at Helsinki by Architect Alvar Aalto are 52′ high, span 155′.*

3. Three hinged arches *frame a Swedish barn—75′ span, 56′ high.*

4. Traveling crane *spans 72′, has been in use over ten years throughout rigorous Swedish winters. Its timber structure closely resembles steel.*



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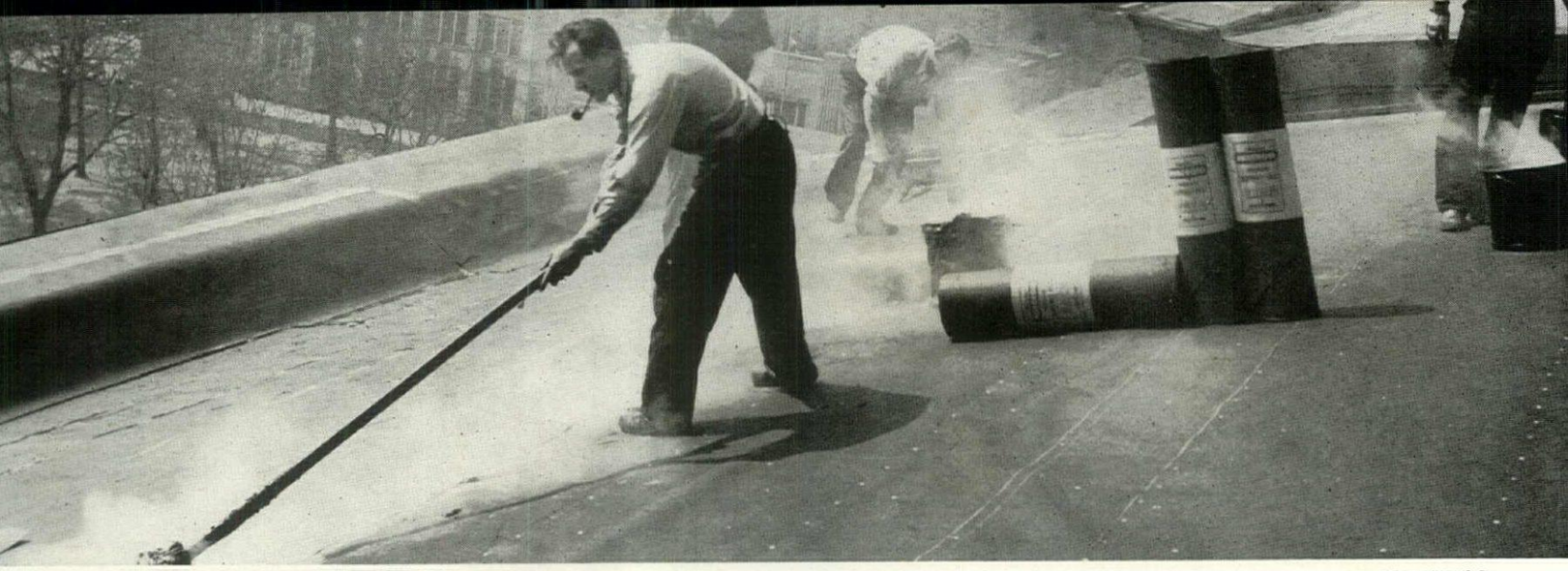
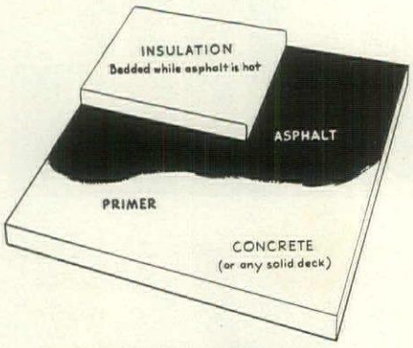
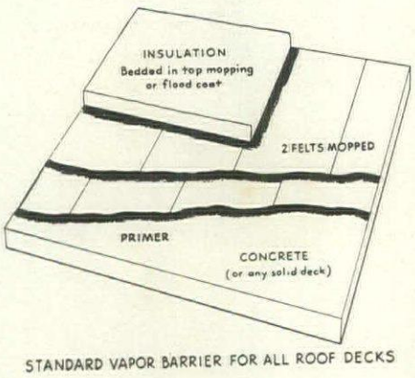


The Ruberoid Co.

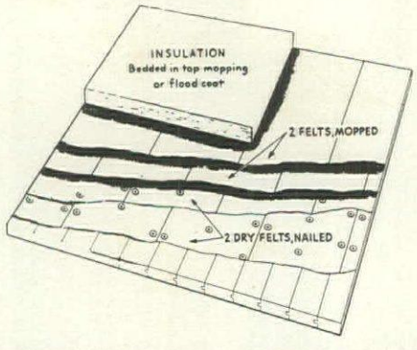
4. BETTER BUILT-UP ROOFS can be made to last longer with today's materials at today's prices. The secret: new methods of combating condensation



MINIMUM VAPOR BARRIER
Adequate if no cracks develop in slab



STANDARD VAPOR BARRIER FOR ALL ROOF DECKS



VAPOR BARRIER ON WOOD PLANK or other NAILABLE PRE-FORMED DECK

Have we been blaming built-up roofing failures on the wrong man—or the wrong cause? Instead of blaming the roofer, should we charge the architect with disregard of his own specifications, the general contractor with neglect of adequate ventilation, and the owner with a demand for speed or economy that forces unsound practices on the roofer?

Recent research into built-up roofing failures reveals that many are due to factors the roofing contractor cannot control—the weather, the owner, the designer and the contractor, singly or in combination.

▸ It suggests that roofers are often compelled to "repair" new roofs that do not leak, because condensation — due to improper design or insufficient ventilation—is the real cause of dripping or stained ceilings.

▸ It reveals the causes of blisters and related troubles and it shows how to avoid or correct roofing failures.

▸ It does not hold the roofer wholly blameless, by any means, but it draws a sharp line between roofing deficiencies caused by poor workmanship and those resulting from faulty design and construction.

Because leaky roofs cause such costly damage, built-up roofing failures receive far more attention than their successes. Applied by unskilled labor, these roofs usually deliver surprisingly good performance, commonly outlasting their 10, 15 or 20 year bonds by liberal margins. And inexpensive surface treatments will extend their useful life another five or ten years, making a good built-up roof one of the least expensive surfaces used in building.

The great wonder is that so many built-up roofs have served so well for so many years. During the field investigations it was found that some of the best roofs were laid by good workmen in spite of faulty specifications; that all failures could be traced to violation by the designer or the roofer of simple principles founded on well-known laws of physics; and that successful roofs combined a common-sense respect for those principles, plus good workmanship.

Professor C. E. Lund of the University of Minnesota, after four years of research in roofing failures, has found that sound practices follow sound theory. His studies, supported by the experience and technical work of a half dozen of the industry's leading experts, can be summed up thus:

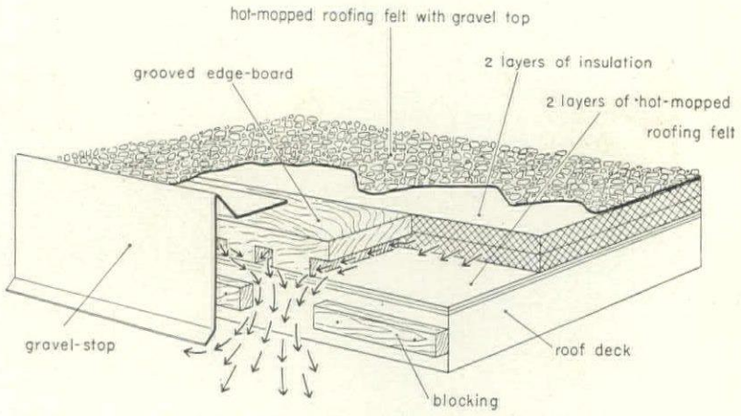
"Better built-up roofs can be constructed with existing materials by adopting simple changes in certain design, specification and field practices. The roofer cannot make these improvements alone; he must be aided by the architect, the general contractor and the owner."

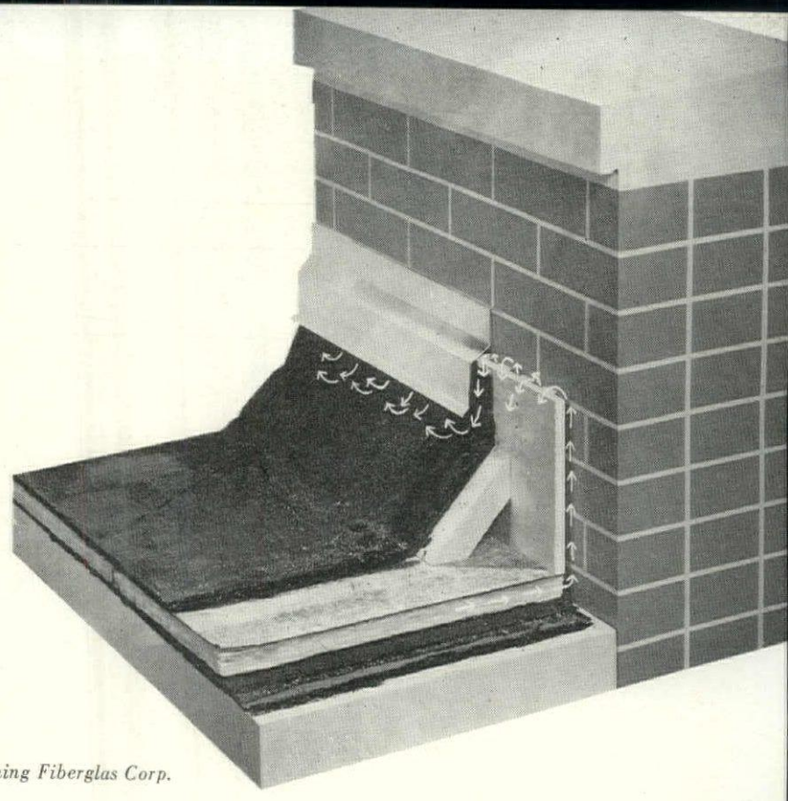
Water in the wrong place

Four out of five causes of failure are due to water in the wrong place—that is, water or water vapor under the surface of the top felts. Although most people blame any dampness in the roof structure on leaks, the water often comes in from below or is trapped in the roof during construction.

Here are the five principal types of failures and their causes:

1. *Blisters in roofing* are caused by water and air in the roofing felts or between them, in the roof insulation, or in the roof deck or on its surface, coupled with failure to cement the felts securely to each other and to the insulation or deck.





Edge venting *of insulated built-up roofs may be done at facia (above) or parapet (right). Slots in boards around periphery of roof carry air vapor from edge of insulation blanket to outside. Openings are shielded against rain.*

and construction damage *by Tyler S. Rogers*

Technical consultant to Owens-Corning Fiberglas Corp.

Most of this water comes from exposure during construction or from poured decks that have not had time to dry adequately before the roofing was applied.

2. *Wet insulation* may be caused by exposure during construction, but more commonly is caused by moisture from within the building.

3. *Deck failures*

4. *Dripping due to condensation* results from excessive indoor moisture, lack of an effective vapor barrier, or failure to ventilate the building adequately during construction.

5. *Leaks resulting from damage* to the roofing by other trades are caused by carelessness and poor timing of construction operations. Two-stage application is a simple method of minimizing this difficulty (see below).

Water put into the building during construction plus water evaporated indoors by occupants or processes exerts a destructive force on roofing and roof decks and is the source of condensation troubles. An immense amount of water is used in constructing most buildings—in concrete, mortars and plaster. Some combines with the cementing materials; the excess must evaporate. Years ago it was standard practice to cover window openings only with muslin or paper on temporary frames. These let the moisture out and kept some of the temporary heat inside. They remained in place at least a month, often longer. Today it is common practice to glaze the windows almost as soon as the walls are finished and to keep them closed, especially in cold weather. There is little chance for the excess moisture to escape.

After occupancy of the building more moisture is added to the air by the washing of floors, cooking, laundering, bathing, the respiration and perspiration of people, and by industrial processes. In all heated buildings the air contains more moisture in actual volume than an equivalent amount of colder outdoor air.

This extra indoor moisture called humidity or water vapor is invisible, but creates a pressure of its own. This pressure makes the vapor seek to get out of the building. It will pass through most building materials: readily through wood, plaster, gymsum, brick masonry, damp concrete, and through the joints in steel decks; more slowly through dry concrete. It will not pass through glass or sheet metals like steel, copper, aluminum foil, nor through thin, continuous coatings of asphalt or coal tar pitch.

When water vapor reaches a sufficiently cold surface which hinders its further movement, it will change to water, saturate adjacent materials and, if the condition is prolonged, cause dripping from the exposed surface, and possibly rotting or rusting of the structural materials. The temperature at which this condensation takes place is aptly called the dew point temperature.

If we can keep the indoor water vapor from reaching any structural material colder than this dew point temperature, we can entirely prevent condensation.

Problem: How to prevent condensation

Top responsibility must be placed on the architect or engineer to design the structure so that water will not get into the roof and condense.

Unfortunately, the textbooks have been proved wrong, or at least inadequate, in dealing with this problem. In the past designers have been taught to assume that roof decks are impervious to moisture—a fundamental fallacy. (If roof decks were impervious to moisture, no roofing would be required.) They were trained to use materials, including insulation where needed, which would conserve heat in the winter and reduce heat flow during the summer.

This method of design is acceptable when 1) the climate is warm and moderate, 2) indoor air is kept relatively dry, 3) periods of outdoor cold, or of excessive humidity indoors are brief, and 4) when the roof deck and insulation materials are fairly absorptive and can hold some water without dripping. But such design fails in most buildings in which a high relative humidity is constantly maintained, as in most textile plants, and in many other structures during the first year or two of occupancy or when long periods of cold weather coincide with the presence of higher-than-normal amounts of moisture in the indoor air.

Proper design calls for a vapor barrier in roof construction, with sufficient insulation (heat-retarding materials) above it to keep the surface of the vapor barrier, not the exposed ceiling, above the dew point temperature of the indoor air under the most adverse conditions that will exist for any considerable period of time. Since that time element cannot be precisely determined, conservative practice uses the standard outside design temperature of the locality and the highest dew point temperature likely to be developed indoors as the basis for calculations.

Since many buildings are erected for optional occupancies, such as shops, stores,

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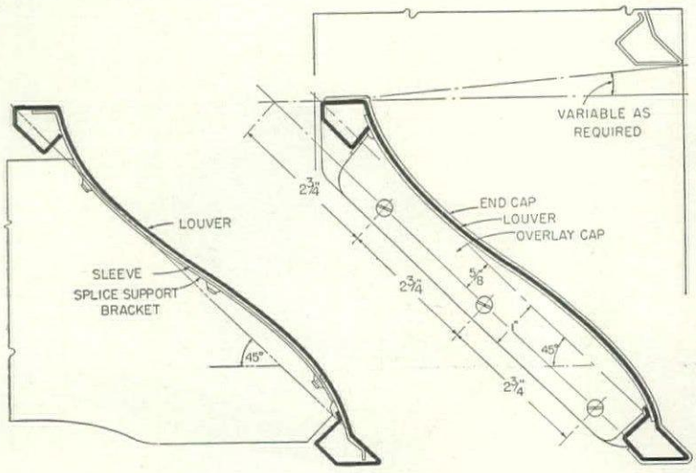
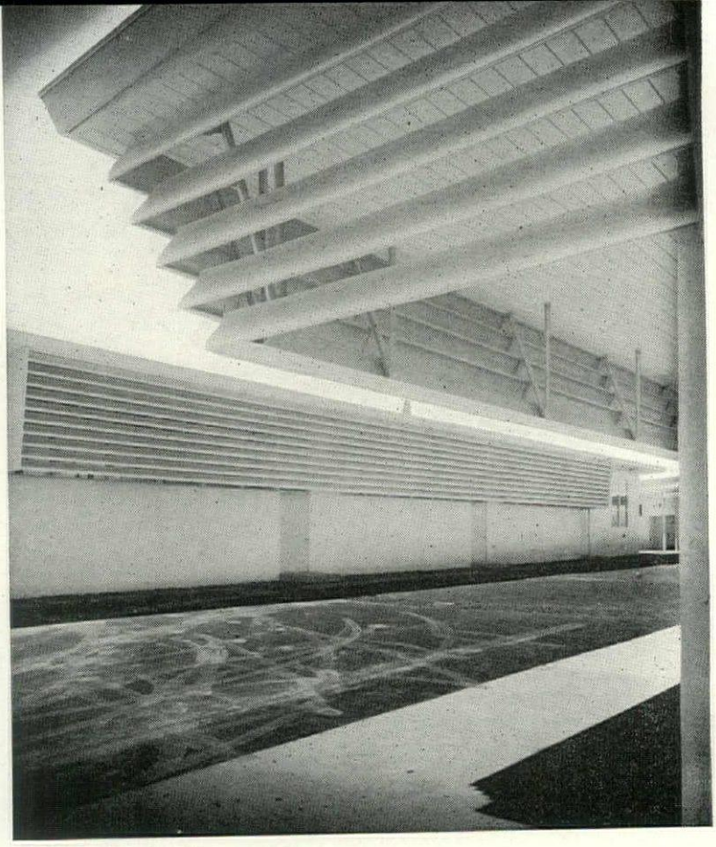
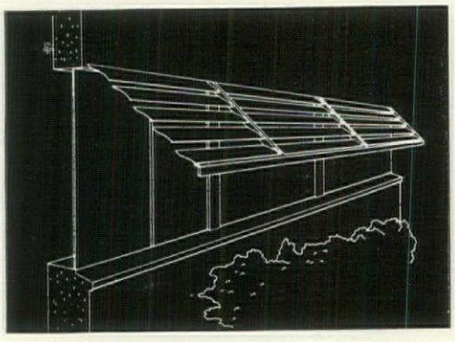
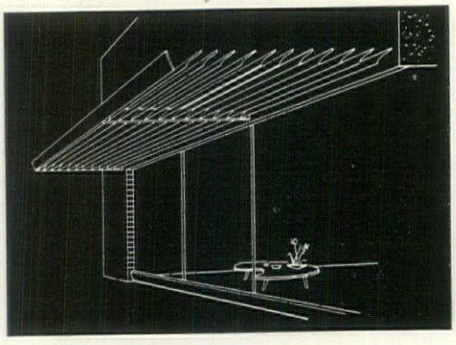


Simple fittings *designed for projected (right) and recessed (left) mountings can adapt the aluminum fins to almost any solar heat or glare problem. No bolts or rivets are required for installation and the design of the accessories makes allowance for necessary expansion and contraction.*

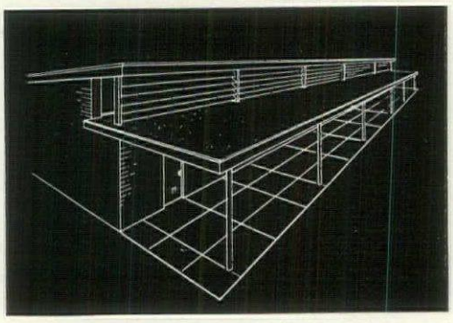




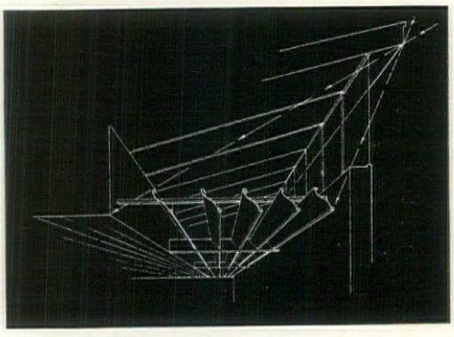
Sliced awning. *The K-louvers make a svelte sloping shade device requiring little maintenance.*



Eyebrow. *Lightweight and rigid, the aluminum components are suitable for a projecting sunshade.*



Ventilator. *Spacing is variable; grip-type end connectors hold blades rigid between members.*



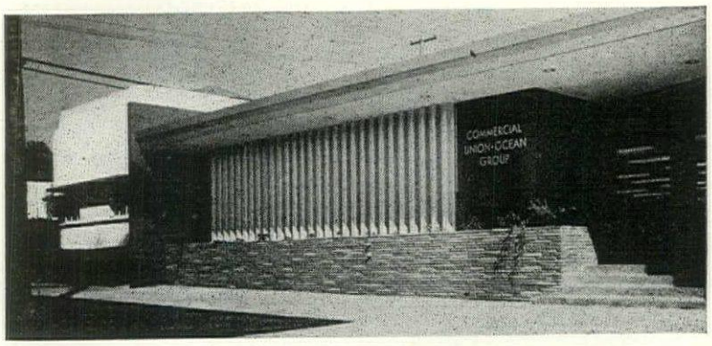
Interior clerestory. *Permanent pitch and spacing are determined by orientation of building.*

SUN-CONTROL LOUVERS are factory-engineered for site assembly

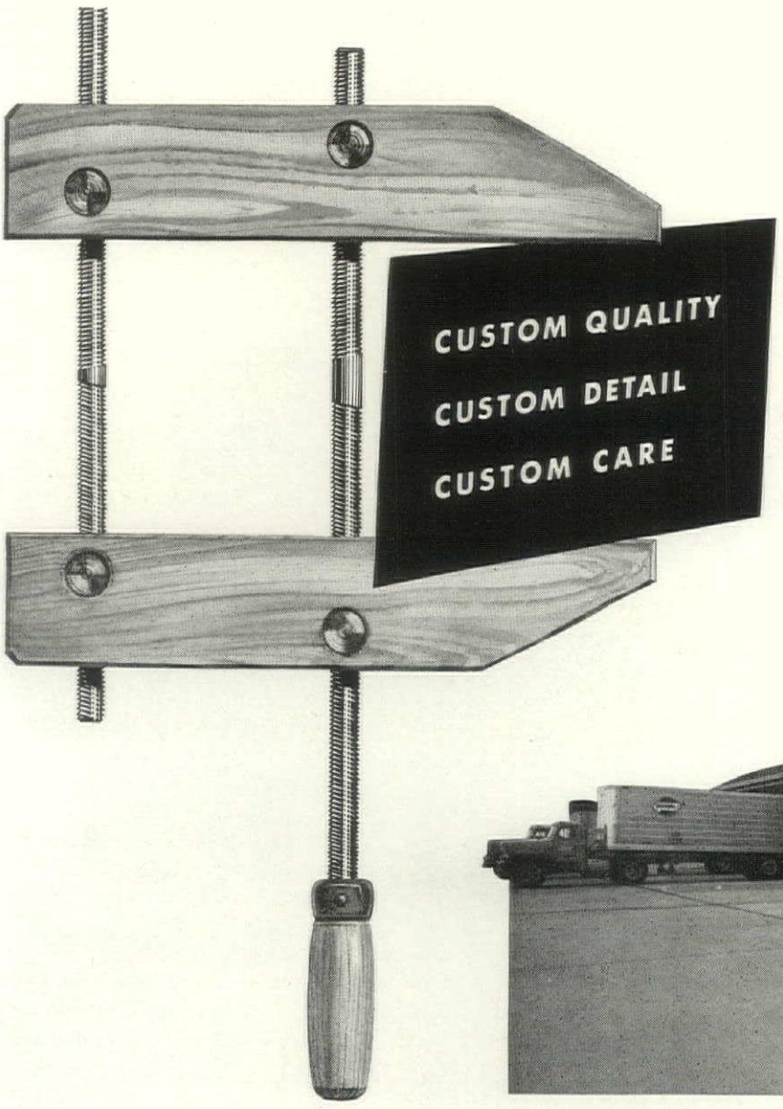
Air-conditioning engineers are the first to admit that the most effective way to deal with solar energy is to keep it outside the building. Lighting engineers agree that diffused daylight is easier on the eyes than straight sunlight. To handle either problem, hot or bright, Kawneer Co. has developed a simple and smart aluminum K-louver.

Made of .050 ga. aluminum, Kawneer's new louver is shaped into a gentle ogee curve to provide necessary strength at minimum weight. It is reinforced at both ends so that even the 20′ lengths will not sag. Most welcome asset of the K-louver is its inherent flexibility. Using the shallow S-shape to reflect solar rays and its chemically etched surface to bounce diffused light where needed, the new louvers are adaptable for building areas requiring glare reduction, heat deflection, direct sun control and natural ventilation. The fins may be installed horizontally or vertically, straight up and down or on a slope, with either the convex

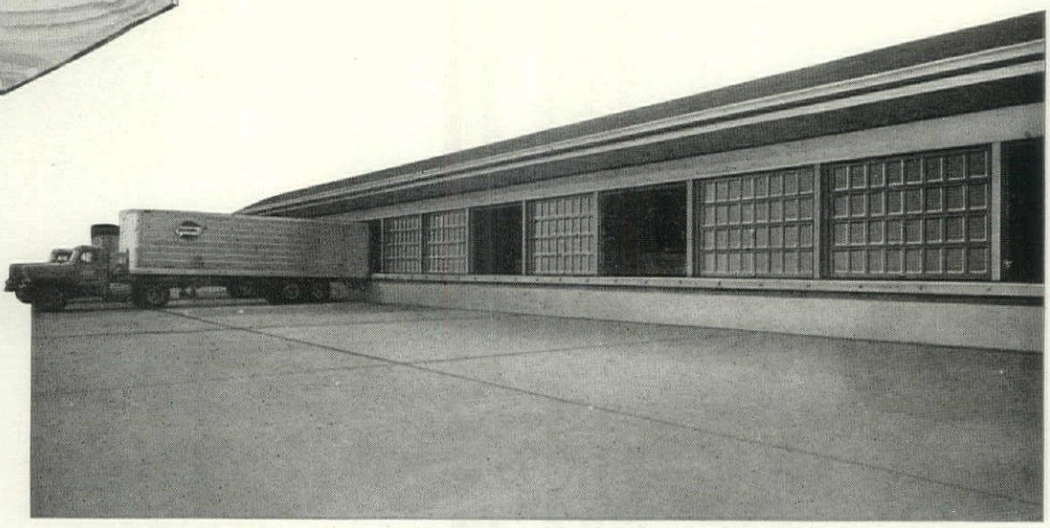
continued on p. 182



Vertical sunshade. *Excluding direct sunlight, the K-louvers can help building owners realize considerable savings in air-conditioning costs.*



...Built into every Ro-Way Door



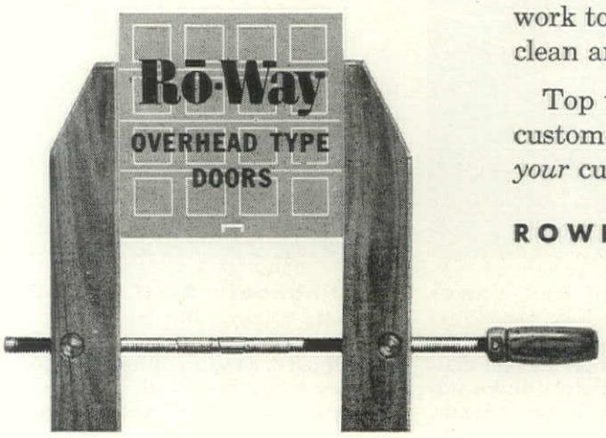
Every Ro-Way Overhead Type Door—whether for residential, commercial or industrial installation—is true custom quality, engineered and built with custom detail, custom care.

Sections and panels are *selected* West Coast lumber. Millwork is *both* drum and hand sanded to a lustrous finish. Mortise and tenon joints are *both* glued and steel doweled. Sections are rabbeted to assure weathertight joints. Heavy gauge steel hardware is Parkerized *and* painted—*after fabrication*—for maximum protection.

SEE OUR CATALOG IN SWEET'S

Nationwide sales and installation service. See your classified telephone directory for nearest Ro-Way distributor.

And these exclusive custom features give Ro-Way doors the ultimate in easy up-and-down operation the year around, and year after year. Smooth running, ball bearing Double-Thick tread rollers . . . Power-Metered springs matched to the weight of each door . . . Taper-Tite track and Seal-A-Matic hinges that work together to assure snug, weathertight closing. *Plus* superb Ro-Way styling, clean and simple to blend with any style of architecture.

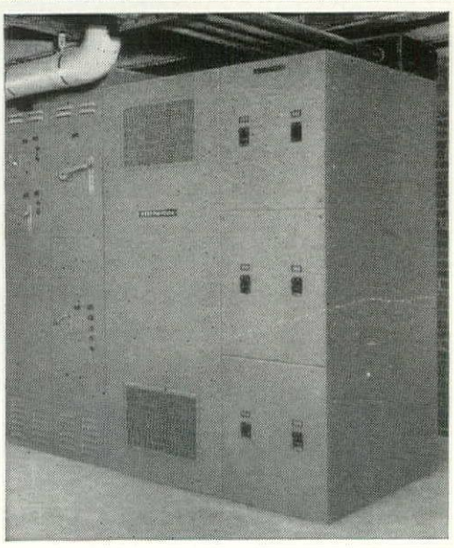


Top to bottom, inside and out, Ro-Way builds its doors with custom quality, custom detail, custom care . . . *yet at no extra cost!* If that's what you want for *your* customers, specify Ro-Way—and get it.

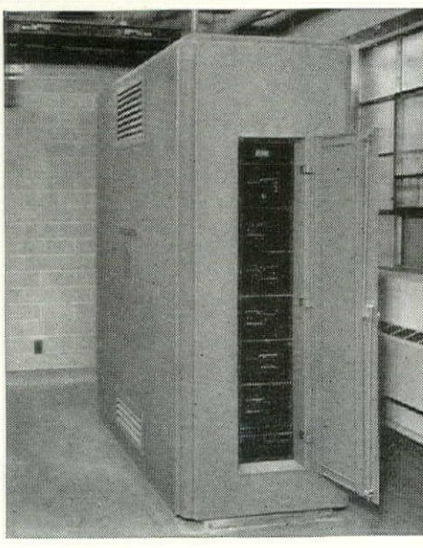
ROWE MANUFACTURING COMPANY, 929 Holton St., Galesburg, Ill.

there's a Ro-Way for every Doorway!

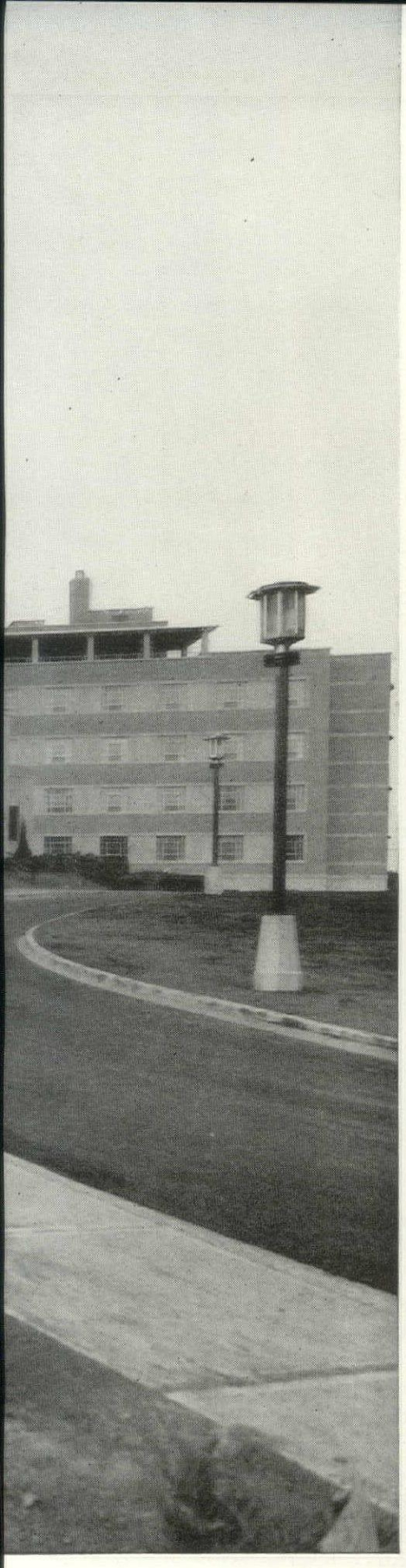
300-bed St. John's Hospital in Springfield, Mo., reflects progressive techniques in architectural design. Maguolo and Quick, St. Louis, architects and engineers; Gustav Hirsch Org., Inc., Columbus, Ohio, electrical contractor.



Westinghouse Control and Power Center was fabricated at the local Westinghouse plant especially for the hospital. Control center operates ventilating motors. Power center steps down 480 volts to 120/208 volts for lighting loads.



Westinghouse Air-Cooled Powe Center, 300 kva, 480/208 volts, contai 1000 ampere convertible distributio panelboard. One of nine, this compac factory-assembled unit saves valuab space . . . minimizes layout problem



Electrically, it's Westinghouse... in St. John's Hospital

Where modern power is matched to modern architectural design

The new St. John's Hospital in Springfield, Missouri, reflects the most progressive techniques in architectural design. Moreover, its system for distributing electrical power is as modern as the building—assuring a high degree of service continuity.

This reliable power system was planned during the blueprint days by the architects and engineers, with Westinghouse assistance. It provides for two primary feeders with dual switching and control equipment. Further, if the incoming power supply is interrupted, an engine generator keeps essential services in operation.

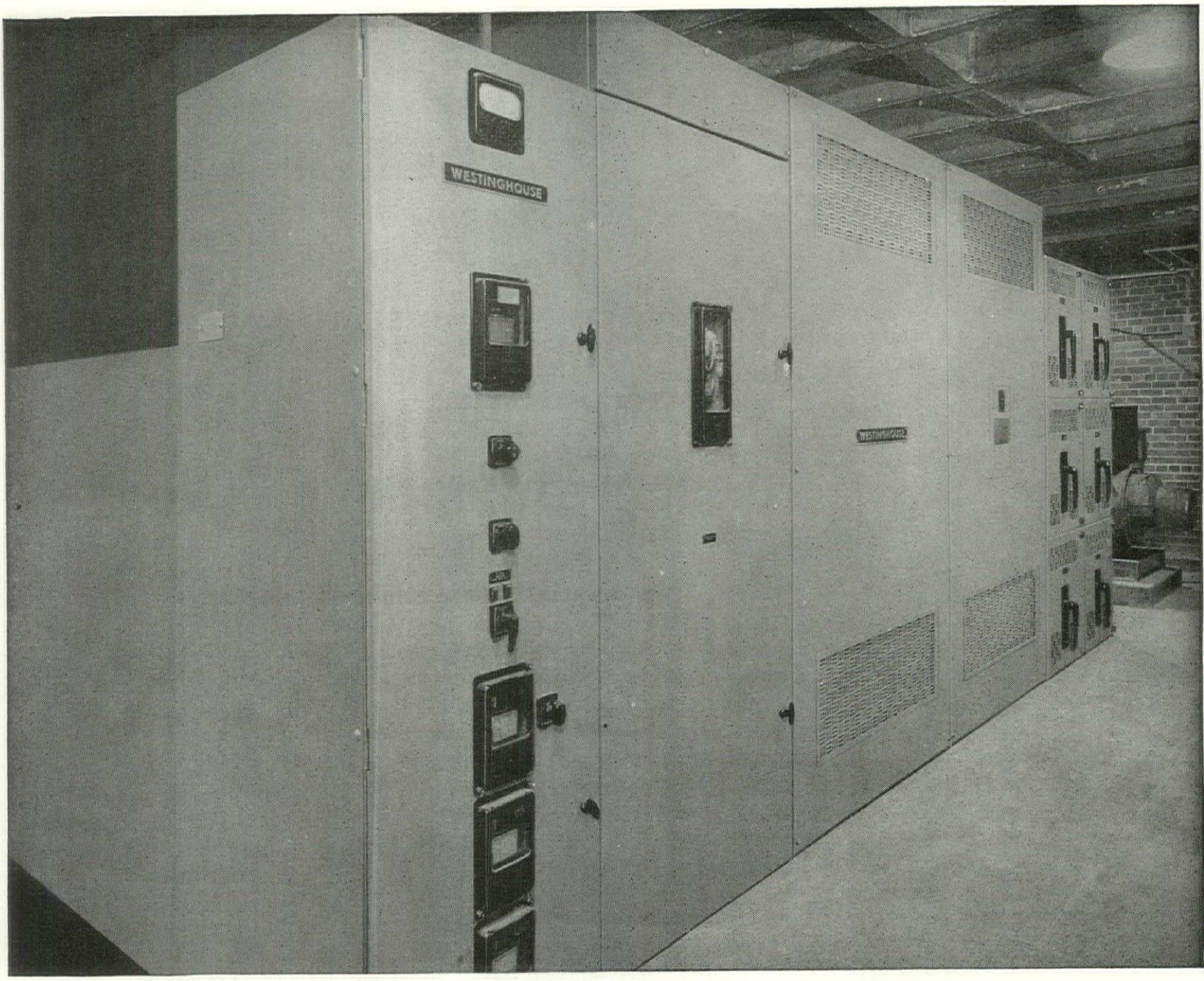
Bus duct feeders distribute power throughout the hospital at 480 volts. Motors are supplied this voltage through control centers, while 120/208-volt lighting and appliance circuits are supplied by "Triplex" power centers.

Westinghouse unitized power and control centers are located in every section of the hospital. Placed near the loads they serve, these compact units save valuable space . . . minimize layout problems.

In every building, the design of the distribution system is a vital consideration. It must be planned early... tailored to individual requirements... matched with well-engineered equipment.

Westinghouse builds apparatus that gives you more freedom in design techniques . . . and backs it up with technical assistance to help select the right distribution system for your building. For complete information, call your nearest Westinghouse office and ask for the construction application engineer. Or write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-94966

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



They got the most for their money today and easy expansion for tomorrow

This power center is the heart of the power system at St. John's Hospital . . . and it shows sound planning by Maguolo & Quick and Westinghouse.

St. John's wanted their electrical dollars put into working equipment, not stand-by capacity. But they also had to allow for future expansion. So they chose a Westinghouse Power Center with the ASL Air-Cooled Transformer, which is completely safe and doesn't require a vault. Provision was made for future air-blast equipment, so that as the load grows, transformer capacity can be boosted with slight increase in cost.

The end units house air circuit breakers which provide protection for the incoming line and the 480-volt power feeders which serve the hospital. Controls are so arranged that a stand-by diesel generator automatically cuts in and supplies operating rooms and other vital circuits if utility power should fail.

For complete information about Westinghouse Power Centers, ask for Booklet B-4162. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-60810

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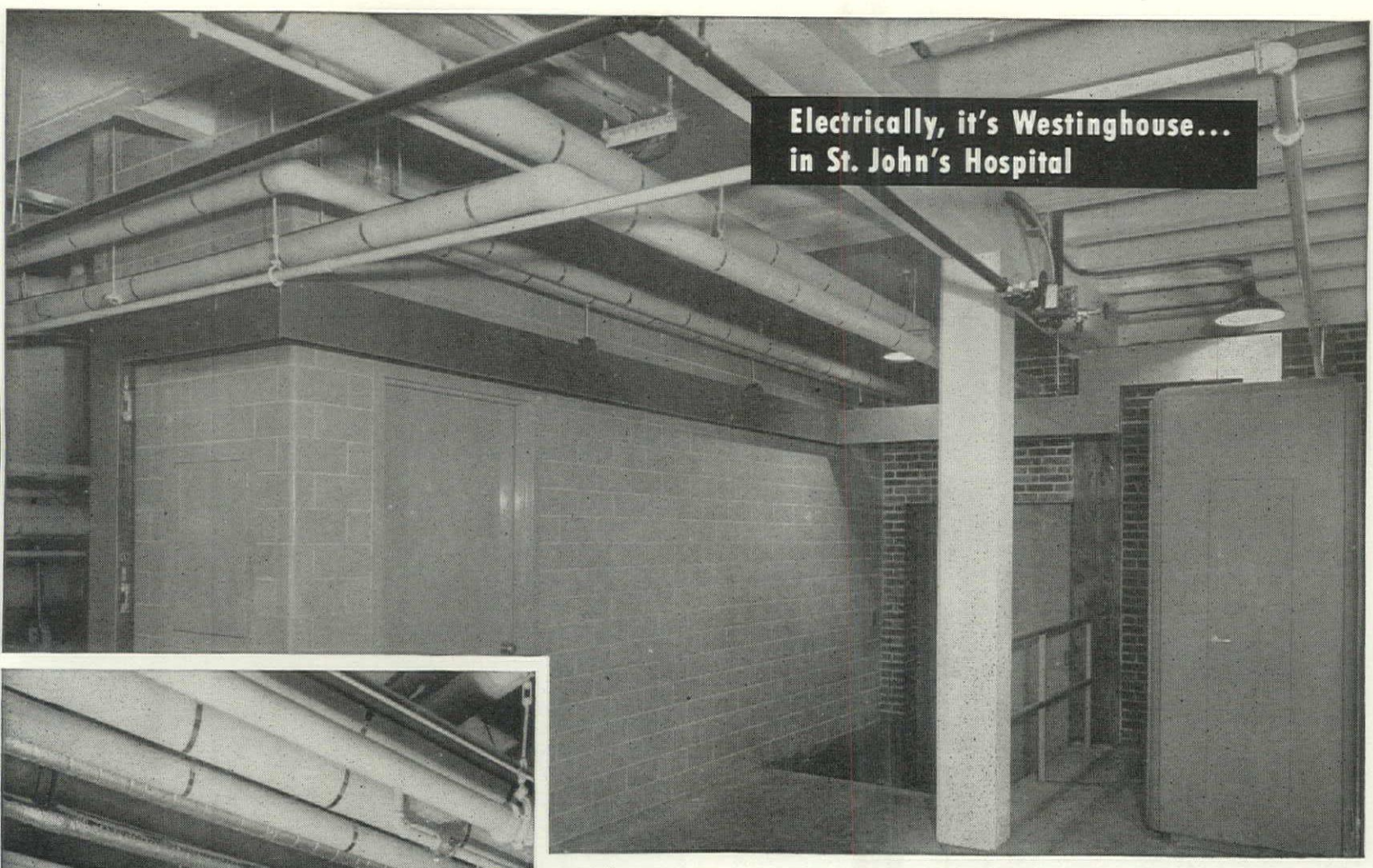
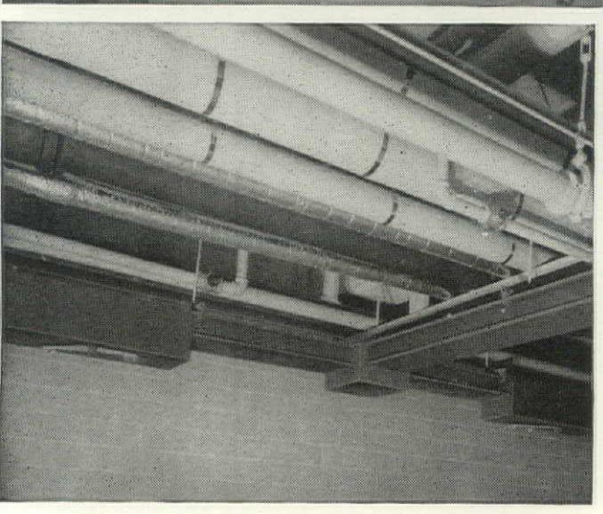




Power for the boilerhouse! Here, 600-ampere duct feeds the 300-kva sub-power center in the boilerhouse. Note how duct hugs the wall. This run is over 400 ft. long.

Tee for two! Here an 800-ampere main feeder connects with two 600-amp branch feeders. Tee is one of several standard units. Note circuit breaker cubicles for overload protection.

Bus duct minimized power loss, matched perfectly with building plans

The choice of Westinghouse Bus Duct to carry power in St. John's Hospital was highly suitable to the client, the architect and the contractor.

Of prime concern was the possible power loss in carrying 480 volts the considerable distances between the main and sub-power centers. Bus duct minimized this loss, assuring distribution economy.

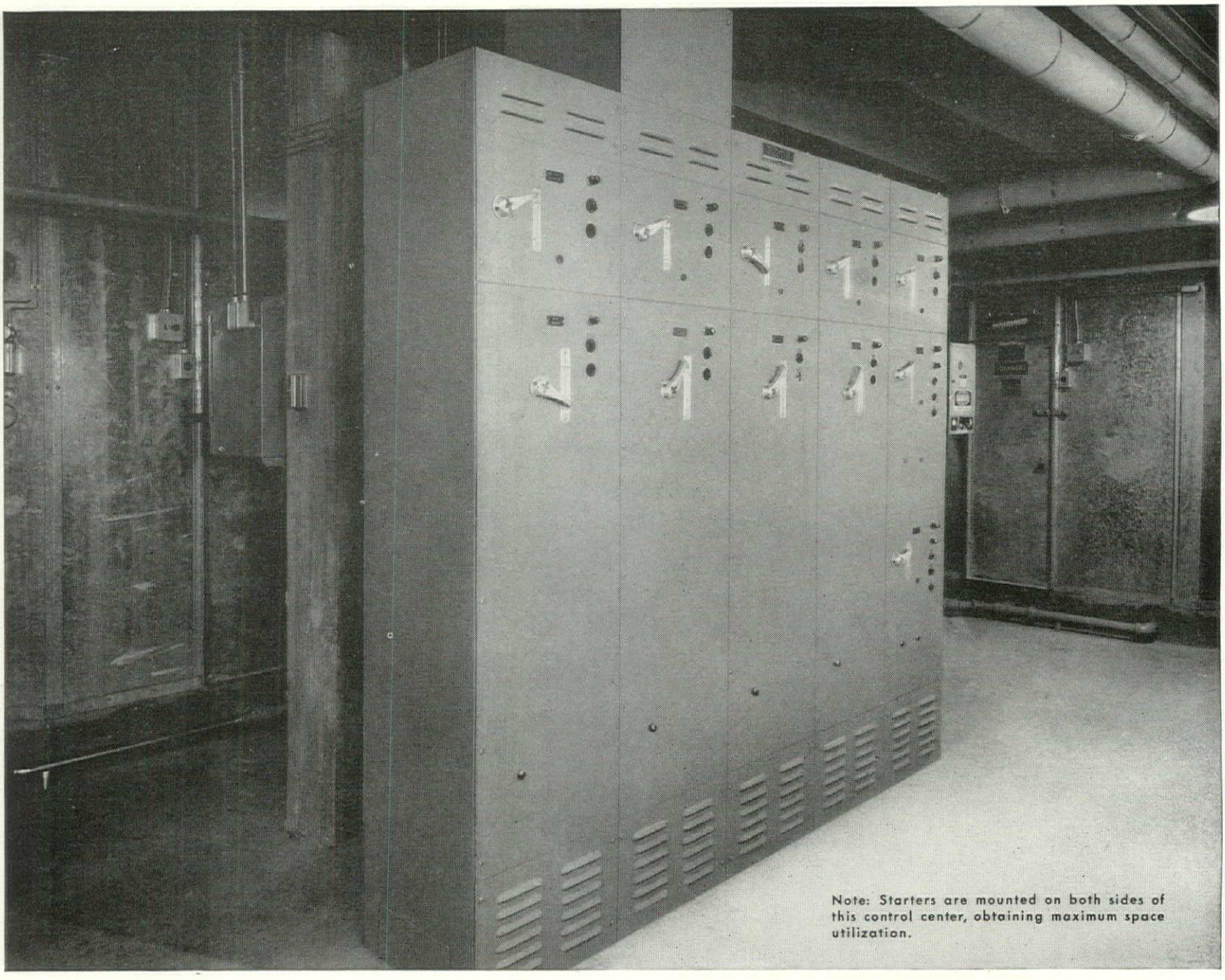
Bus duct matched perfectly with building plans. Standard lengths, elbows and tees, plus specially fabricated sections, made it easy to fit the runs into the structure, around obstructions.

Installation was fast, simple. Pre-assembled in advance of the installing crew, sections bolted together easily; were swiftly mounted with sliding cantilever and "C" type hangers.

These advantages, plus reliability, reduced maintenance and flexibility to handle additional loads without expensive rewiring, make Westinghouse Bus Duct ideal for institutional, commercial and industrial buildings. For full details, see your Westinghouse Representative, or write for B-5835, Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pa.

J-30159

Westinghouse



Note: Starters are mounted on both sides of this control center, obtaining maximum space utilization.

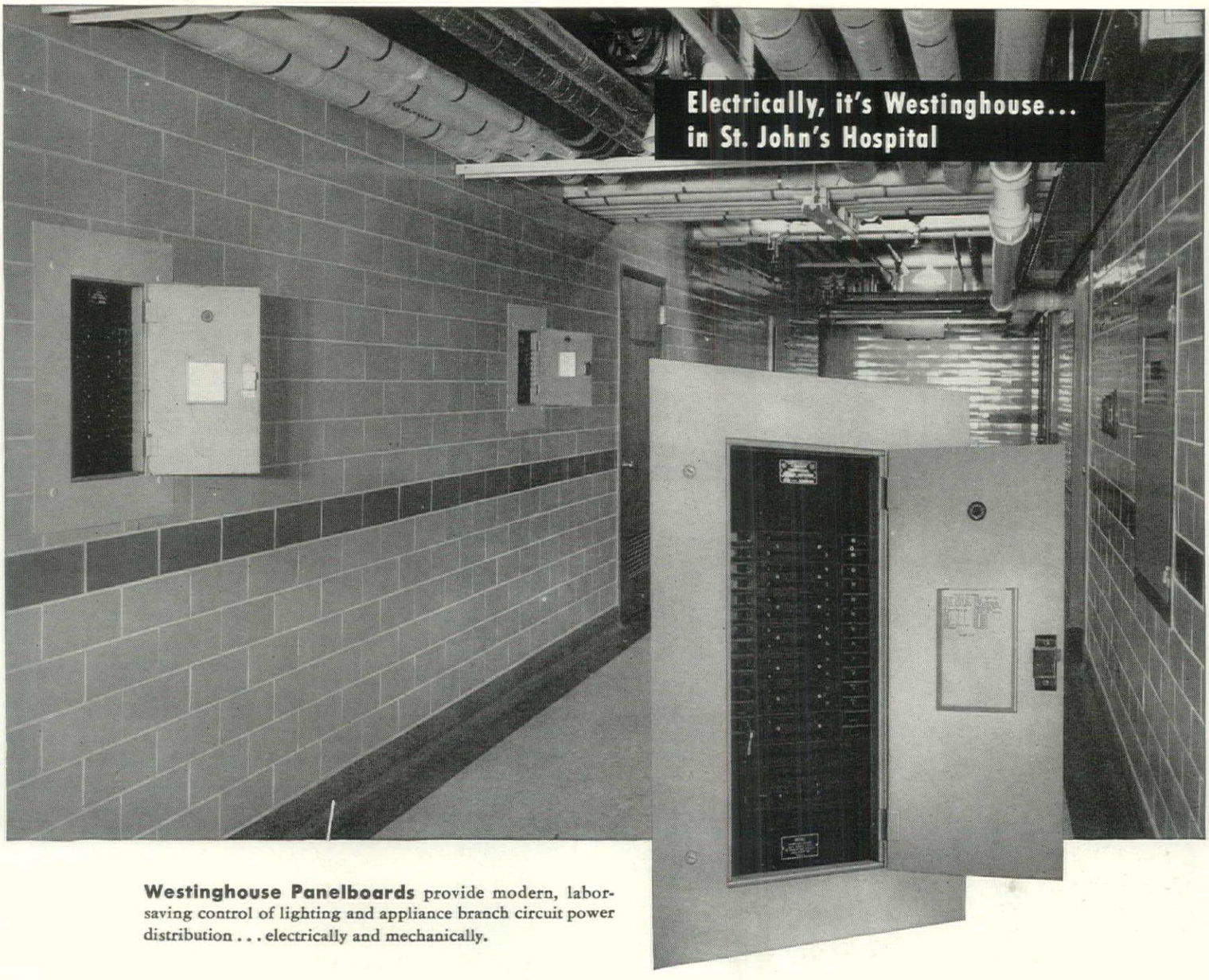
Designers select control centers for substantial savings

Motor control was needed for the ventilating fans and compressors at different locations throughout St. John's Hospital. "We specified control centers because of their lower over-all cost for this job," said G. E. Quick, consulting engineer.

"We were sure," Mr. Quick reported, "that grouping controls in one location would cut installation costs up to 40% and save on maintenance in the future." Westinghouse Control Centers install easily. Factory built at a nearby Westinghouse plant, each control center was individually wired, tested and shipped to the job, ready for operation. Because the single enclosure of the Westinghouse Control Center houses all necessary starter units and wiring, it leaves the surrounding wall area free and clean.

Westinghouse Control Centers offer other advantages for greater safety and flexibility to meet any motor control problem. For further information, write for Control Center Booklet, B-5621, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-27039

YOU CAN BE SURE...IF IT'S



Westinghouse Panelboards provide modern, labor-saving control of lighting and appliance branch circuit power distribution . . . electrically and mechanically.

Circuit breaker panelboards cut maintenance, eliminate unnecessary power outages

The electrical nerve centers of St. John's Hospital are 89 Westinghouse Circuit Breaker Panelboards.

These panels provide maximum circuit protection and minimize interruption of the services so vital in a hospital. And, with fuses eliminated, they cut maintenance time and cost.

The hearts of these panels are the famous Westinghouse De-ion® Circuit Breakers. They trip instantly on short circuits and dangerous, high overloads, but ride out temporary, harmless overloads. *Unnecessary* power outages are ended. Circuit breaker handles provide positive trip identification when breaker has opened automatically. When faults are cleared, a flip of the handle restores power.

On standard lighting panelboards, each circuit and the bus to which it is connected is clearly and permanently identified. Ends costly ringing out of circuits. This and other quality features of Westinghouse Panelboards can cut job installation costs.

There's a Westinghouse Panelboard to answer every circuit protection problem. Thirteen assembly plants assure prompt service and quick delivery throughout the country.

For the full story, call your Westinghouse Representative, or write for B-5260-A, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-93499

Westinghouse

(continued from p. 149)

general warehouses or industrial buildings for rental, and many others originally intended for a specific occupancy are ultimately converted to other uses, it is up to the architect and his client to anticipate the most adverse conditions that future uses may bring.

Another factor not commonly understood is what happens where a suspended ceiling is installed at some future date under a roof that does not have a factor of safety (with respect to condensation) in its original design. The suspended ceiling, often using an acoustical material which also has insulation value, has the effect of cooling the temperature of the deck and the vapor barrier; hence condensation will form at lower indoor dew point temperatures than could be tolerated before the new ceiling was added.

Most of the difficulties resulting from improper design have been blamed on the roofer or the roofing. Many a tight roof has been "fixed" at someone's expense without actually correcting the real cause of the dripping.

Solution: A good vapor barrier

An effective vapor barrier is easily constructed and is desirable on all roofs insulated above the deck.

Theoretically, a single, glossy mopping of bitumen, which leaves no pinholes or dull spots, is a sufficient vapor barrier, since it is the bitumen coating on the felts, and not the felts themselves, which is impervious to vapor. But if this were applied directly to a roof deck, and the latter developed cracks or structural movement, the single coating would be broken. Therefore, good practice calls for thoroughly mopping down two 15 lb. roofing felts, with the emphasis on the thorough mopping.

More felts will do no good; they may even lead to trouble by encouraging the roofer to skimp the mopping of each layer. If there is "skip" mopping, moisture can work its way through the felts, from layer to layer, and blisters are likely to develop in the roofing wherever the adhesion of the felts is not strong.

The cost of a vapor barrier installed on the deck of any insulated roof is but a fraction of the cost of repairing damage caused later by condensation.

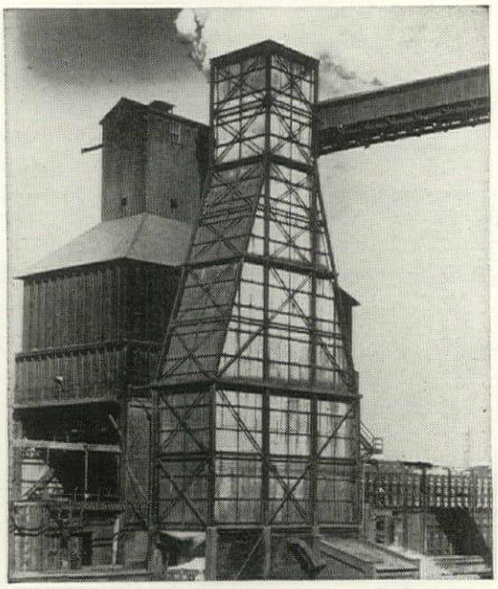
When a vapor barrier is installed in the roof deck (as experienced roofing experts advocate for all insulated decks) and then a fibrous or granular insulation is sealed in with a multi-ply roofing above, the air entrapped within the insulation has no place to go when it gets hot. Sun heat may raise the temperature of the surface felts to 120°F. in winter, while the deck itself remains more or less constant at the design indoor temperature.

On a clear winter night the top surface may cool down to *below* the prevailing air temperature, due to the radiation effect from the roof surface. Thus there may be

continued on p. 160

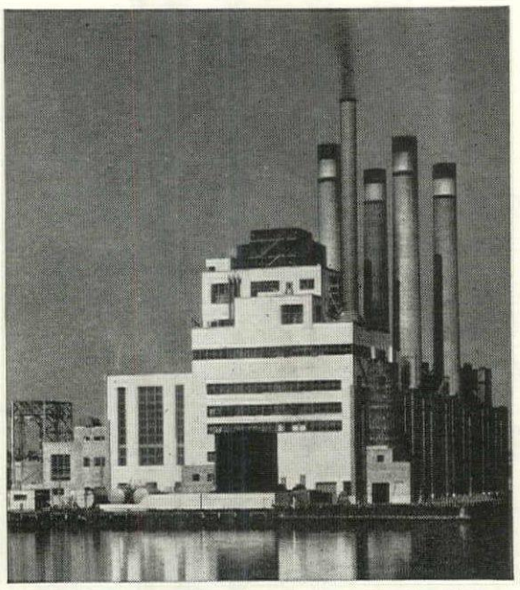
CORRUGATED *Asbestos* TRANSITE*

Defies corrosive fumes



The outside structural steel framing of this coke quencher station is being effectively protected against the severe and destructive steam and acid fumes by Johns-Manville Corrugated Transite.

Defies corrosive moisture



J-M Corrugated Transite resists the deteriorating effect of severe seacoast wind and salt spray conditions—gives long, maintenance-free service in moisture-laden lake and river front areas.

You build economically and quickly with these versatile fireproof and weatherproof asbestos building sheets

In the past quarter century, Johns-Manville Corrugated Transite has proved an ideal material for roofs and for sidewalls of industrial, commercial, institutional and agricultural buildings. Made of asbestos and cement, the large sheets are easy to handle, go up quickly with a minimum of framing. Practically indestructible, Corrugated Transite is fireproof, rotproof, weatherproof; needs no paint or special treatment to preserve it, and can be salvaged and re-used if necessary.

Today, Corrugated Asbestos Transite is also used increasingly for smart interiors . . . the streamlined corrugations and attractive shadow lines that give it such unusual architectural appeal for exteriors offer unlimited interior design possibilities.

• • •

Investigate J-M Corrugated Asbestos Transite and learn how you can build quickly and easily . . . have an attractive, long-lasting, trouble-free structure regardless of size or purpose. For complete details write Johns-Manville, Box 158, Dept. AF, New York 16, N. Y. In Canada write 199 Bay Street, Toronto, Ontario.

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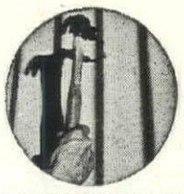
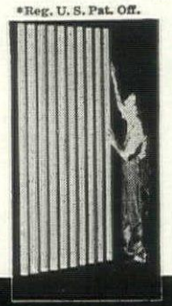
EASY TO SAW

EASY TO DRILL



EASY TO NAIL TO WOOD



Johns-Manville *Asbestos* **CORRUGATED TRANSITE**

a very wide change in temperature of the air trapped in the insulation. Since it is this trapped air that does the insulating job, the forces generated by these fluctuating temperatures must be considered.

Pressures as high as 450 lbs. per sq. ft. can be developed in confined air when the temperature rise is 100 F. It is the same force that causes blisters between improperly cemented felts. It can delaminate poorly adhered felts from the insulation.

Actually this rarely happens. Instead, the pressure finds some pinhole through which it can escape. The opening may be in the flashings or in the vapor seal; it is rarely found in the roofing felts unless they have been punctured and already leak.

During the cold cycle, as at night, the pressure condition reverses. Air may be drawn into the insulation. If such air comes from within the building, it carries excess moisture with it. This moisture may then condense, wetting the insulation and at least temporarily impairing its insulating value.

. . . plus edge vent safety valves

To relieve these destructive alternating pressures the author proposed (in 1951) deliberate venting of the insulation to the outdoor air, either at the flashings or through surface vents. Professor C. E. Lund was commissioned by Owens-Corning Fiberglas Corp. to investigate this proposal by laboratory methods. His studies confirmed the effectiveness of the idea; he dubbed the edge vents or surface vents as "safety valves" for the roof. He found that with the roof insulation studied, about 3 lbs. of water could be removed in 24 hours for a distance of 10′ from the source to the vent, or ½ lb. could be moved a distance of 100′.

While other roof insulations have not yet been studied, Professor Lund believes that the venting principle will work with all vapor-porous insulations and would prove advantageous even with the impervious cellular types which are laid with unsealed joints through which vapor can move.

To architects and engineers this means: 1) detailing the flashings as indicated in the edge-venting mock-ups illustrated in Figure X, 2) requiring that "cut-offs" normally installed at the end of each day's work be opened near the top surface before the adjacent insulation is laid if they are located so as to obstruct movement to the nearest vented edge, or 3) to provide surface vents at the intersections of all cut-offs permanently installed.

. . . plus adherence to standard specifications

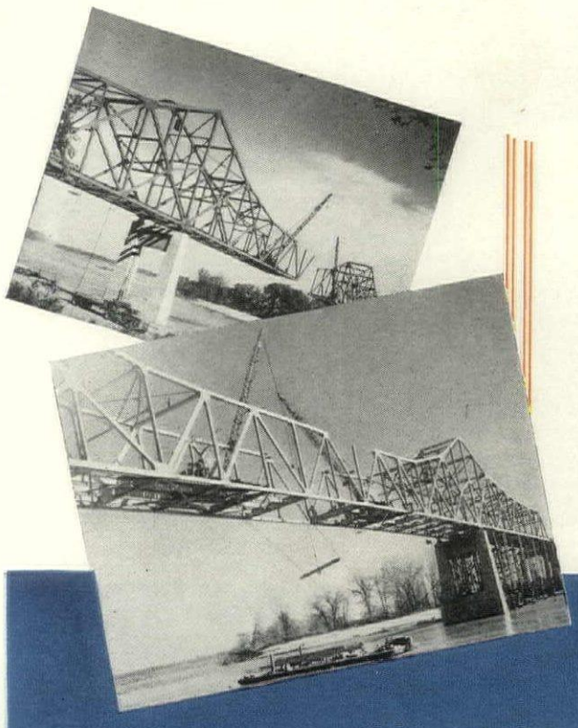
Unreasonable specifications, or failure of the owner or architect to live up to standard specification requirements, place an impossible burden of responsibility on the roofing contractor.

All good roofing specifications require that the general contractor provide a

continued on p. 166

Step by Step...

a bridge is born



The important requirement to highway engineers is that the steps be taken with speed and accuracy.

The special skills of the men who fabricate the bridge sections insure a high degree of accuracy. And to make certain, many bridge sections are pre-erected in the shop before shipping to location.

In the three Allied shops identical equipment is available to speed fabrication. Much of the equipment has been designed specially by Allied engineers and built to their specifications.

On location Allied erecting crews co-operate with highway engineers to get the bridge up fast. They know the short cuts.

It's a comfortable feeling for highway engineers to have Allied performing these services both in the shop and on location.

Send your plans and specifications to us to be estimated.

Color photograph of Florence Bridge, North Omaha, Nebraska—2200 tons fabricated and erected.

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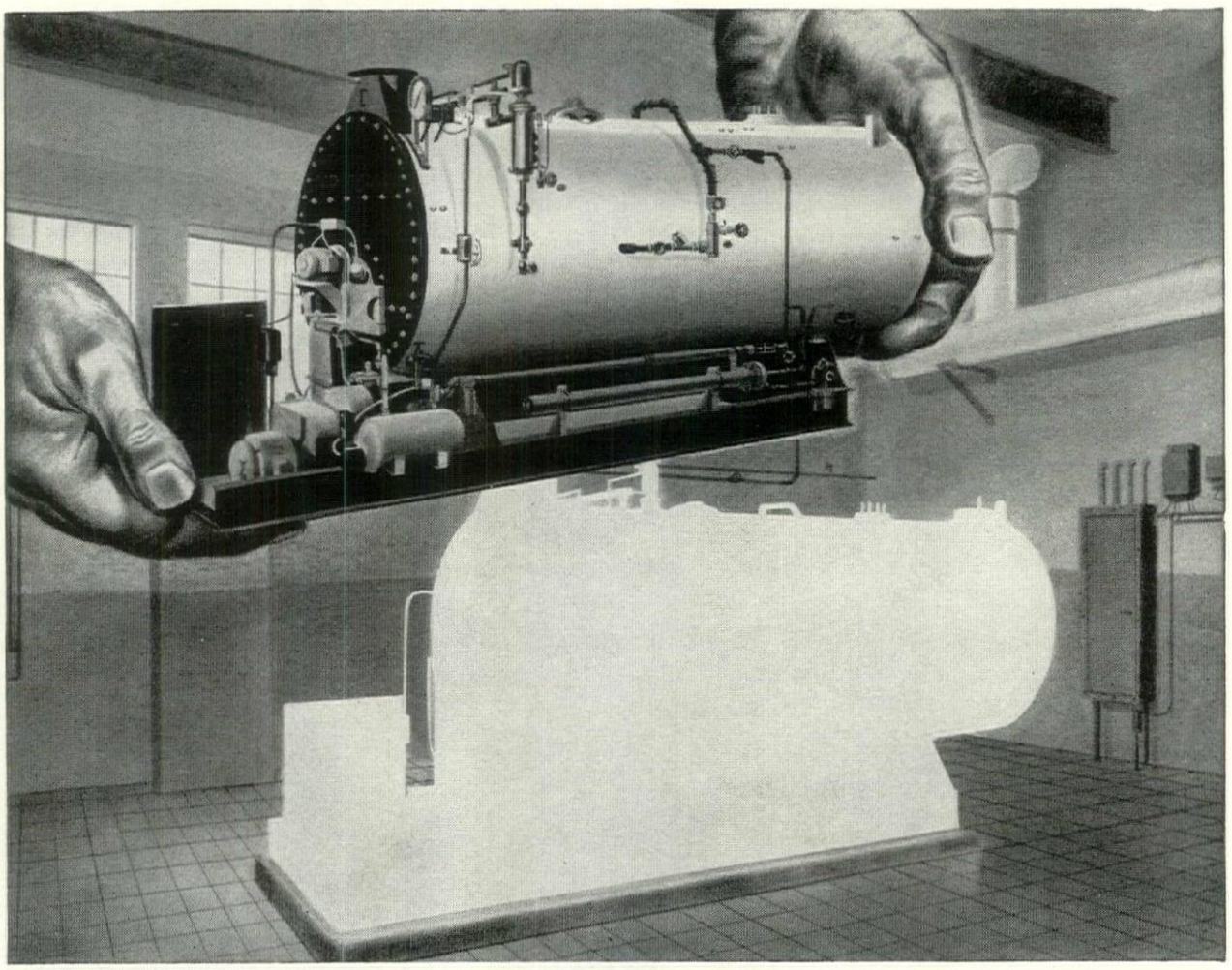

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CLEAVER-BROOKS pioneering has been largely responsible for simplifying boiler buying . . . lowering costs of installation . . . delivering 80% guaranteed steam efficiency from every fuel dollar.

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Cleaver-Brooks, originators of the self-contained boiler, offers wider experience that counts in another important way. Qualified engineers help you plan steam plants tailored *exactly* for your needs. Carefully analyzed are loads, space and equipment arrangement. This not only helps you solve present steam needs, but adds flexibility for future expansion as well.

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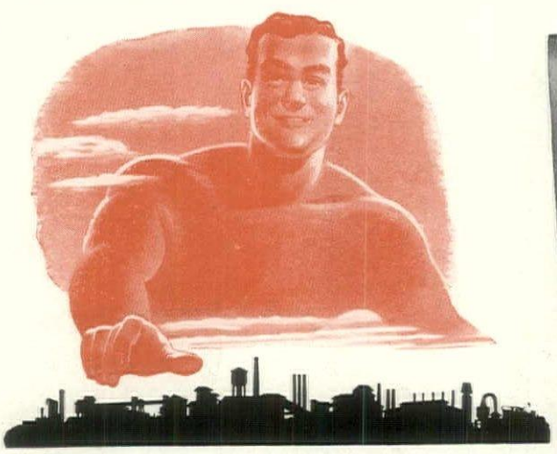

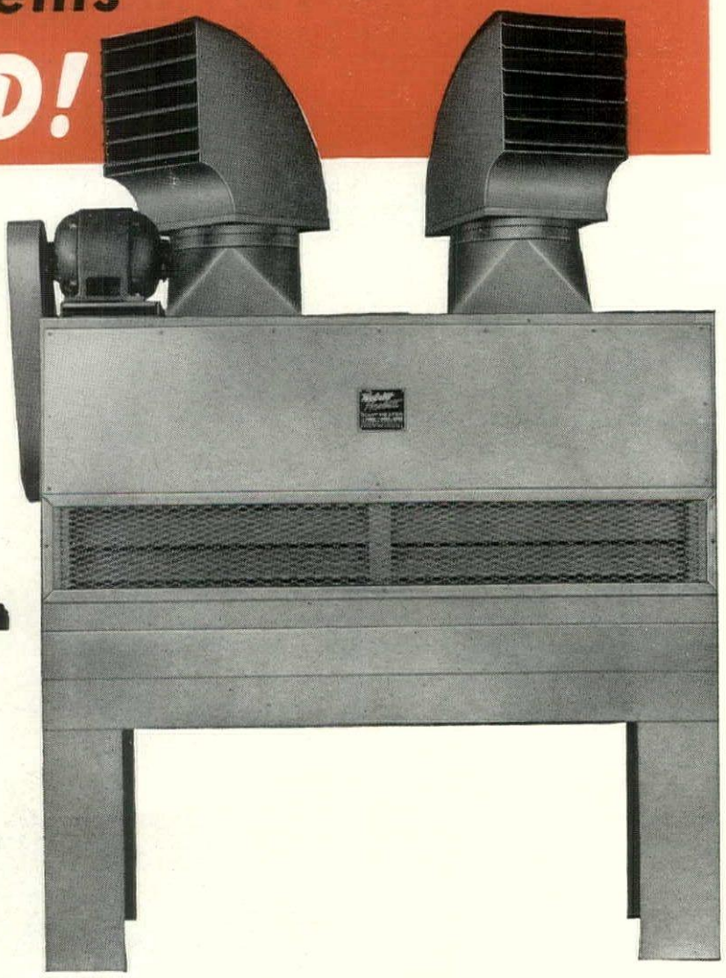

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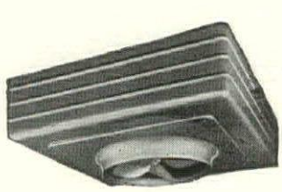

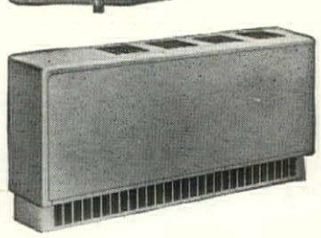

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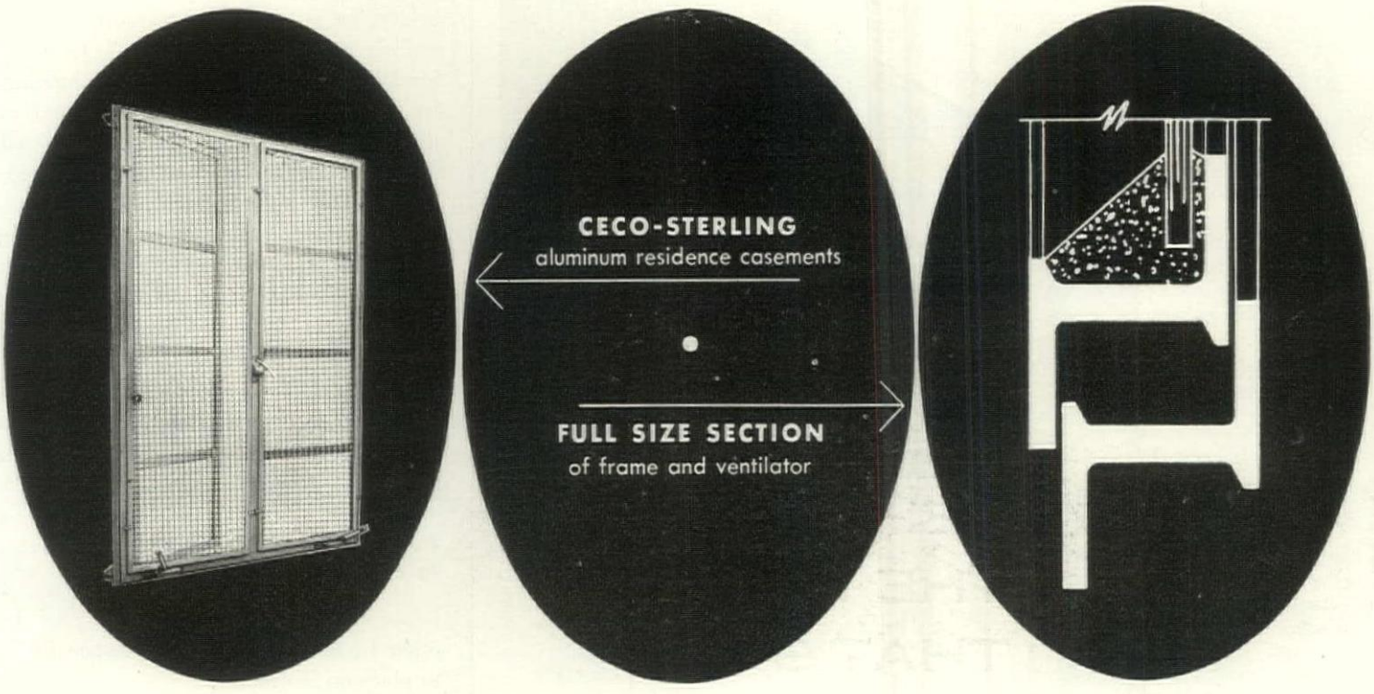

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Look at these special features which add up to a better product:

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2. Sections also have a full 1/8" thickness in the flanges.
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There are special sections for picture windows used with 1" insulating glass. The glazing strips securing the glass do not have to be fastened with screws. Aluminum screens and storm windows are especially engineered for Ceco's new aluminum casements. So to be sure you have the exact window for an exact job, specify Ceco. Write for new window literature today.

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"clean, dry, smooth" roof deck on which the roofer is to work. Sometimes the roofing specification instructs the roofer to see that the deck is "free of all dirt, loose particles, uneven surfaces and that it is dry and free of frost."

However the specifications are worded, the requirement that the deck be dry is almost universally used — and very frequently disregarded by the architect himself.

At the owner's insistence on speed, the roofer is expected to close in the building as quickly as possible. Gypsum roof decks must be covered promptly—and long before the deck is really dry. Concrete decks are cured only for the time required to develop a safe working strength. Wood decks should be covered quickly to prevent warping and swelling. Steel decks need protection against rust, although their shop coating may allow some tolerance.

Nature also plays her part. Rain, frost or dew may dampen the deck the day the roofer is instructed to start—or at any time during the roofing operation.

If the roofer stands on the specifications and insists upon waiting until the deck is dry, he is put under pressure to "quit stalling and get the job done." Or he is black-listed on future competitive bidding. So he puts the felts down on a wet or damp deck, hoping that the hot stuff will steam off the surface water and provide a reasonably good bond to the deck.

Here is an unfair situation. It is known that water or water vapor causes blisters, prevents good adhesion, defeats the perfect cementing of felts, which produces good roofing. But the roofer gets a specification that calls for such care, and pressures to violate the specification. He also gets the blame later if the roofing is not satisfactory.

. . . and two-stage application to correct roof damage

Post-application damage to the roof by other trades is not a proper responsibility to place on the roofer.

The customary specification also requires that where one trade must cut, remove or otherwise damage the work installed by another trade, the latter must repair the damage but the subcontractor causing it must pay the costs.

Most flat roofs have some superstructures that are not completed when the roofing is laid. Elevator penthouses, monitors, skylights, ventilation fan housings, tank towers and a host of other top structures require other trades to work over the completed roof surface. Almost invariably some damage is caused, some leaks develop. Where they are discovered, often long after the other trades have left the job, the roofer is called back to repair his previously perfect roof.

If he protests that others should pay for his extra work, the general contractor turns on the pressure again. The contractor cannot prove who did the damage,

continued on p. 170

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Cleveland 4, Ohio	2717 E. 75th St.
Detroit 14, Mich.	11855 E. Jefferson St.
Los Angeles 58, Calif.	2620 E. Vernon Ave.
Louisville 10, Ky.	1201-5 S. 15th St.
Marshfield, Wis.	115 S. Palmetto St.
Miami 38, Fla.	255-315 N.E. 73rd St.
Milwaukee 8, Wis.	4601W. State St.
New Hyde Park, L.I., N.Y.	1756 Plaza Ave.
New York 55, N. Y.	920 E. 149th St.
Port Newark 5, N. J.	103 Marsh St.
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L·O·F Polished Plate Glass adds to the beauty of this handsome room in the Boulder (Colo.) Municipal Building. Architect: James M. Hunter; Hobart D. Wagener, Associate, both of Boulder.

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nor can he collect from the other subcontractors. He simply demands a satisfactory roof before final payments can be approved. The architect, whether or not aware of the causes of the damage, also insists on a tight job before the work is accepted.

The roofer complies, and pays. In fact, he has provided in his bid for such work, hoping it will not be too costly and eat up his profits. Ultimately the owner pays.

There is a simple way to eliminate both bad-weather hazards and post-application damage on projects large enough to involve several days' work: application of the roofing in two stages. The vapor barrier, in itself a two-ply roof, is installed and glaze-coated as one operation. It can be applied fast. If it has to be applied over a damp or wet deck, blisters that develop can be repaired before the second stage of the job is done. The vapor seal acts as a service roof until the building structure has been well dried by ventilation, and all other trades have completed their work above the roof level. All tendency for the vapor seal to leak or to form blisters, and all post-application damage by other trades are easily discovered and inexpensively repaired.

Later the roofer applies the insulation and roofing felts without the pressure of time and adverse weather forcing him to take chances. He need anticipate no further damage by other trades. His savings in this respect will more than make up for doing the job in two steps.

The owner gets a better roof; condensation damage is eliminated (by proper design and the vapor barrier); dampness which causes blisters is either eliminated or will subsequently be removed by edge-venting; the roof deck is no longer in danger of saturation and deterioration; and the insulation remains dry and performs well indefinitely.

When two-stage application is impractical, as on small projects where even the laying of the vapor barrier does not represent a full day's work, or on certain types of decks which cannot be adequately protected by a vapor barrier, a cushion should be provided in the time schedule so that the roofer can work under reasonably good weather conditions. Otherwise, the owner who forces haste, not the roofer, should accept responsibility for the consequences.

The roofer's responsibility should remain within his province. He must keep his felts and insulation dry before application. He must see that his moppings are complete and thorough. He must see that the felts are broomed down into the bitumen while it is still tacky, to assure good adhesion. He must cut out and re-cement all ripples, "fishmouths" and other poorly laid felts.

All this he can do, and will do if he is a good roofer. But he cannot be responsible for the weather, the architect's design and specifications, the general contractor's failure to dry out the building, the damage caused by other trades, or the owner's insistence upon haste.

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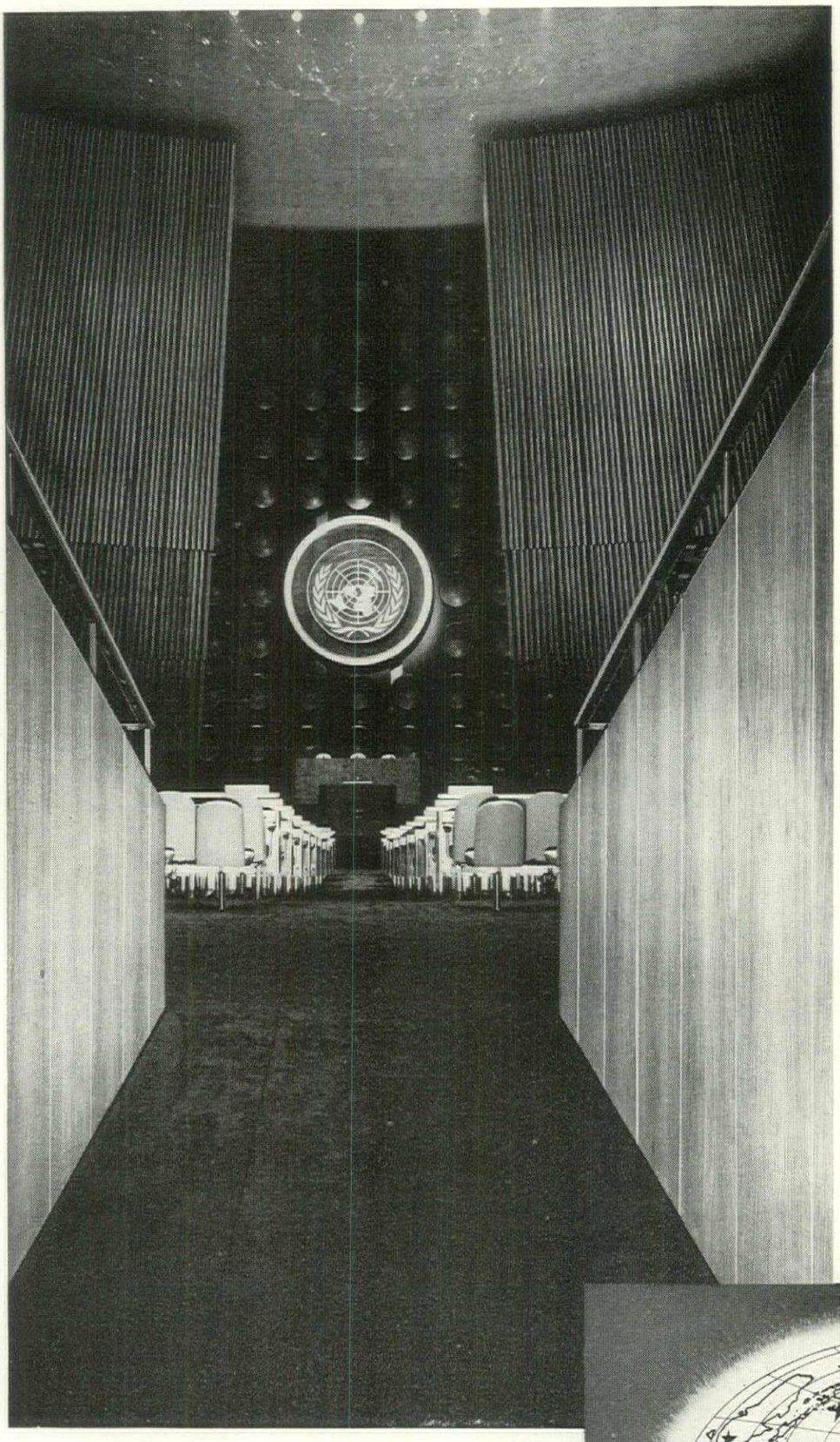
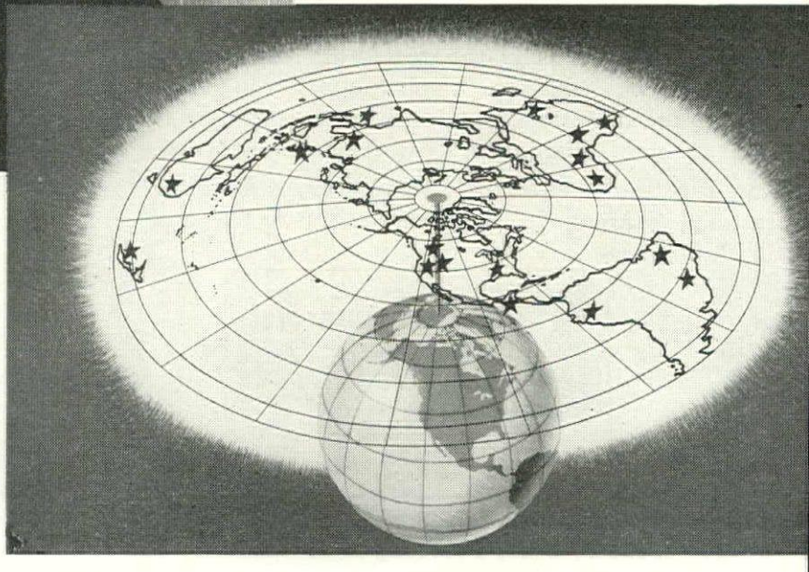


Architectural Weldwood

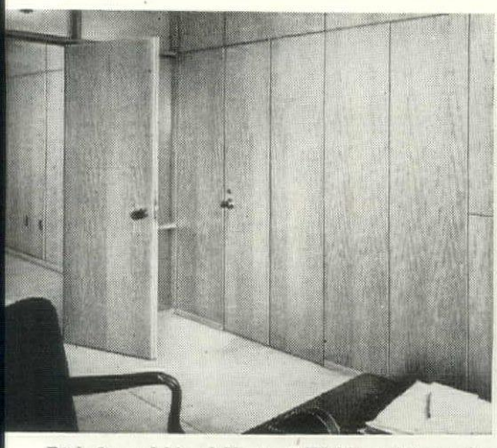
. . . from the Nations of the World —for the UNITED NATIONS BUILDING

On the right you see an interesting application in the United Nations building of American walnut Weldwood and matching Weldwood Fire Doors. The facing veneer for the doors came from the same flitch used for the attractive paneling.

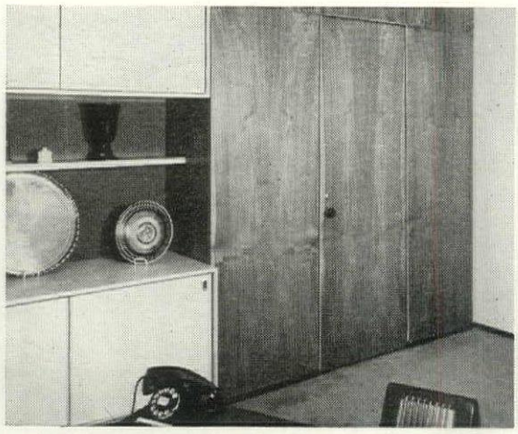
Exotic golden narra Weldwood paneling from the Dutch East Indies lines the entrance of the General Assembly Hall of the United Nations.



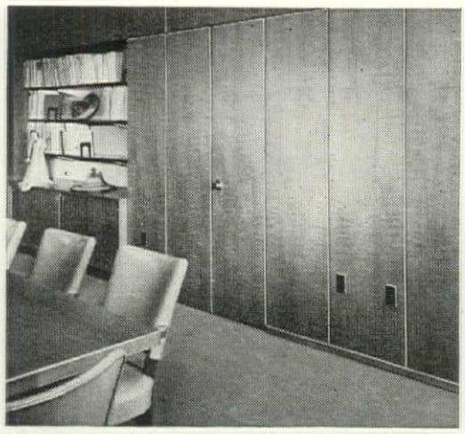
Among the types of Weldwood paneling in the United Nations building are Figured Korina from the Belgian Congo and walnut from America. Woods from many nations are represented and include birch, oak, prima vera and lacewood.



Rich-figured blond Korina® Weldwood from the Belgian Congo with matching Weldwood Fire Doors adds distinctive beauty to this office of an Assistant Secretary General. Korina is offered exclusively by United States Plywood.



In the office of the President of the U. N. General Assembly is this handsome example of American walnut Weldwood. The Weldwood Fire Doors are also faced with walnut veneer. All Weldwood in the U. N. is fire resistant.



Weldwood paldao Paneling with matching Weldwood Fire Doors makes a beautiful wall in the conference room of one of the Assistant Secretaries General of the United Nations. This striking wood comes from the Philippine Islands.

When plans call for rich beauty and distinction there are over 100 fine Weldwood Hardwoods from which to choose

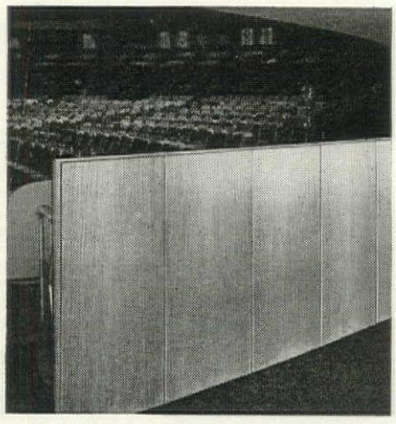
The trend is towards genuine wood wall paneling and away from ordinary wall surfaces that need frequent redecoration. Architects are increasingly turning to the rich beauty and quiet dignity of wood, and are specifying Weldwood architectural grade hardwoods for the finest installations in offices, institutions, government buildings, stores and fine homes.

A great many varieties of Weldwood Hardwoods in a number of sizes and constructions are available. The assortment includes a vast selection of woods in the superb Algoma grade. These panels are in stock in our many warehouses, as are doors in many of these woods.

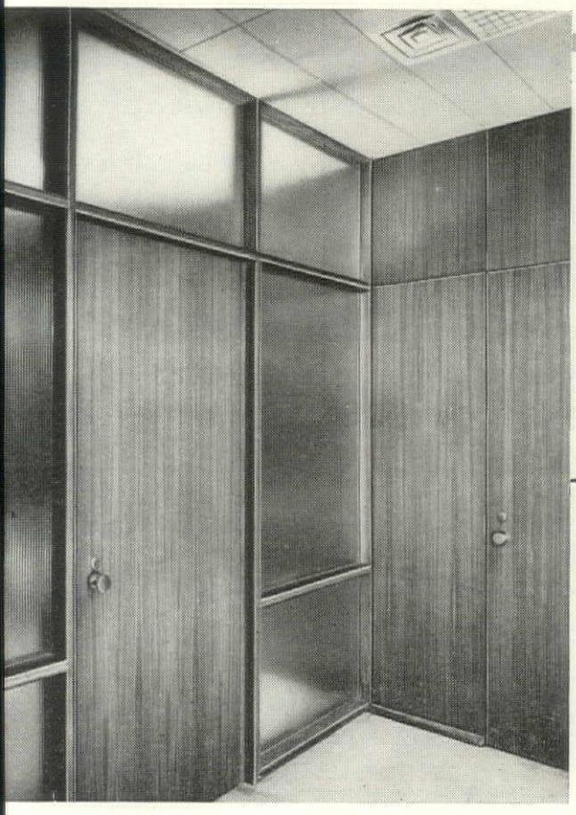
When sequence-matched panels are required, they can be made to order from veneer flitches selected by the architect; in the case of some woods such sequence-numbered panels are frequently carried in stock. When custom-made panels are ordered, it is possible to obtain doors from the same flitches, and therefore have a completely matched installation of doors and paneling.

Weldwood Architectural Paneling can be obtained with *fire-resistant* cores, carrying the Underwriters' Label.

Through United States Plywood's nation-wide architectural veneer service, samples of veneer flitches may be inspected. Merely contact your nearest United States Plywood branch manager. Architects near New York are invited to use the facilities of our New York veneer room in the Weldwood Building.



Another use of Weldwood Paneling is shown by these golden narra railings in the General Assembly Hall. All Weldwood paneling for interior use is guaranteed for the life of any building.



Architect: Wallace K. Harrison, Director of Planning. Weldwood Paneling installed by: Murray Hill Woodworking Corp.

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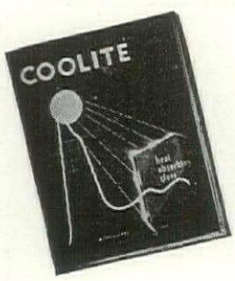

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ARCHITECTURE THROUGH THE AGES. (New revised edition.) By Talbot Hamlin. G. P. Putnam's Sons, 210 Madison Ave., New York 16, N.Y. 684 pp. illus. Trade ed. $10; educational ed. $8

It is 13 years since Talbot Hamlin, a frail-seeming Columbia professor with a wispy white beard and a very tough mind, published his *Architecture through the Ages*. Since then it has become the historical textbook for a generation of student architects in the US. It filled a void in architectural textbooks; instead of emphasizing measured drawings, as the then current histories did, it measured the mind of each historical epoch to explain its architecture in terms of the people, both individually and in moving masses. It was a wonderful way to discover architecture.

The book is now mature enough (and so is the generation which first used it as a college text) so that many old students will pause in their practice and sit down with this new edition to see if Professor Hamlin can tell them where architecture has come since their student days—and, by implication, is going. He has rewritten his last chapter, "The Architecture of Today," and that is where they will look.

They will find pictures of new buildings, and a good deal of data, but they will not find a basic weighted analysis of today's architecture—a new insight to match those in the rest of the volume. That may be too much to ask of any man. A historian in his own time is handicapped, and Professor Hamlin has wisely relied more on reportage than on the dogmatic interpretation of recent buildings and trends. He does categorize the different movements and events in recent historical architecture, and staff them with names of architects, but the categories balance each other out in his presentation just as they frequently do in our skylines.

It is in scattered phrases that Hamlin's historical ability gleams in this chapter, as he pulls out implications from his photographs and presents them to the reader. For instance, discussing our architects' progress from merely searching for efficiency in the design of industrial buildings to something better, he mentions Harrison & Abramovitz's Corning Glass Center (AF, Aug. '51) and Saarinen, Saarinen & Associates' General Motors Technical Center (AF, Nov. '51), and characterizes them: "...glass and metals ... used with a new bravura." It is this kind of eye that has made Hamlin a top architectural historian.

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Many glaring mistakes in airport-terminal building design might never have been made if this concise 42-page booklet had been written earlier. Now, for only 25¢, airport designers can get quick answers to key questions: How to plan airport building areas. How to handle the flow of passengers, spectators, baggage, mail, express and cargo. How big should the terminal be? How can you plan for expansion? What and how many concessions and services should be included?

Schematic drawings propose good area relationships; traffic diagrams point out proven flow systems; charts give answers to size of services needed for various peak-hour loads. Unchartable problems, such as what concessions will make most money, what organizational system should be employed, are discussed objectively.

Data comes from CAA's lengthy experience as well as from extensive conferences with airlines, airport managers, restaurateurs and concessionaires throughout the country.

Chief virtue of the booklet is that the information presented in no way precludes progressive design of buildings nor does it stifle imaginative planning. It does provide a sound base for better-designed air terminals.

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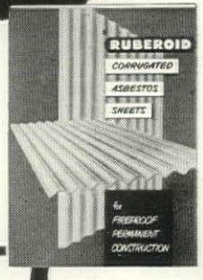

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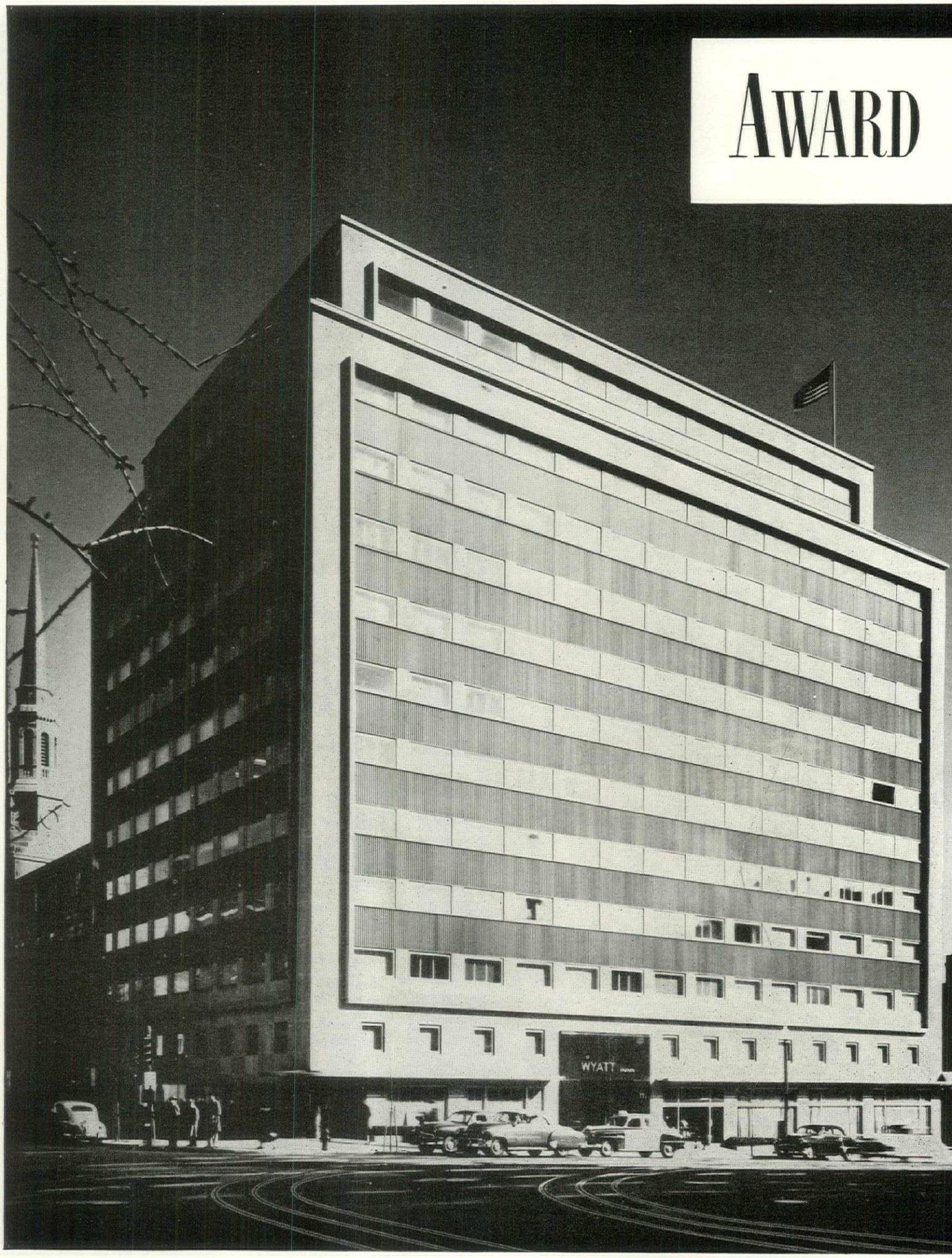

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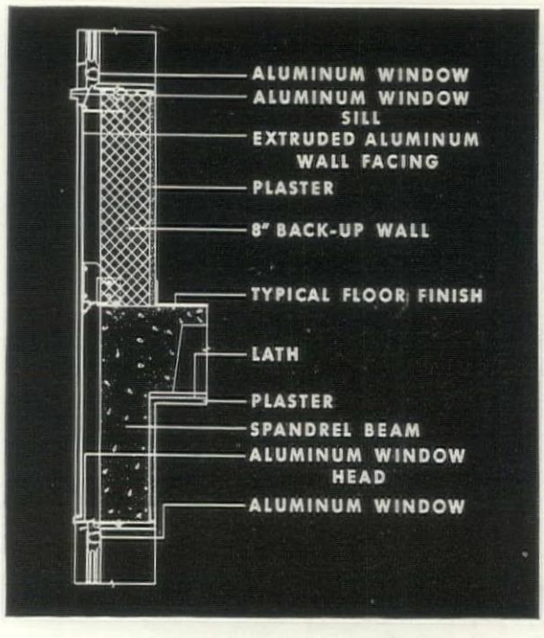

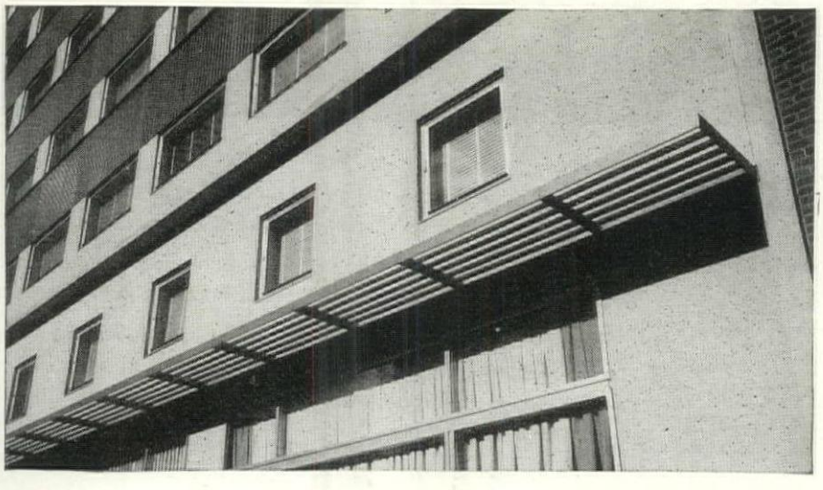

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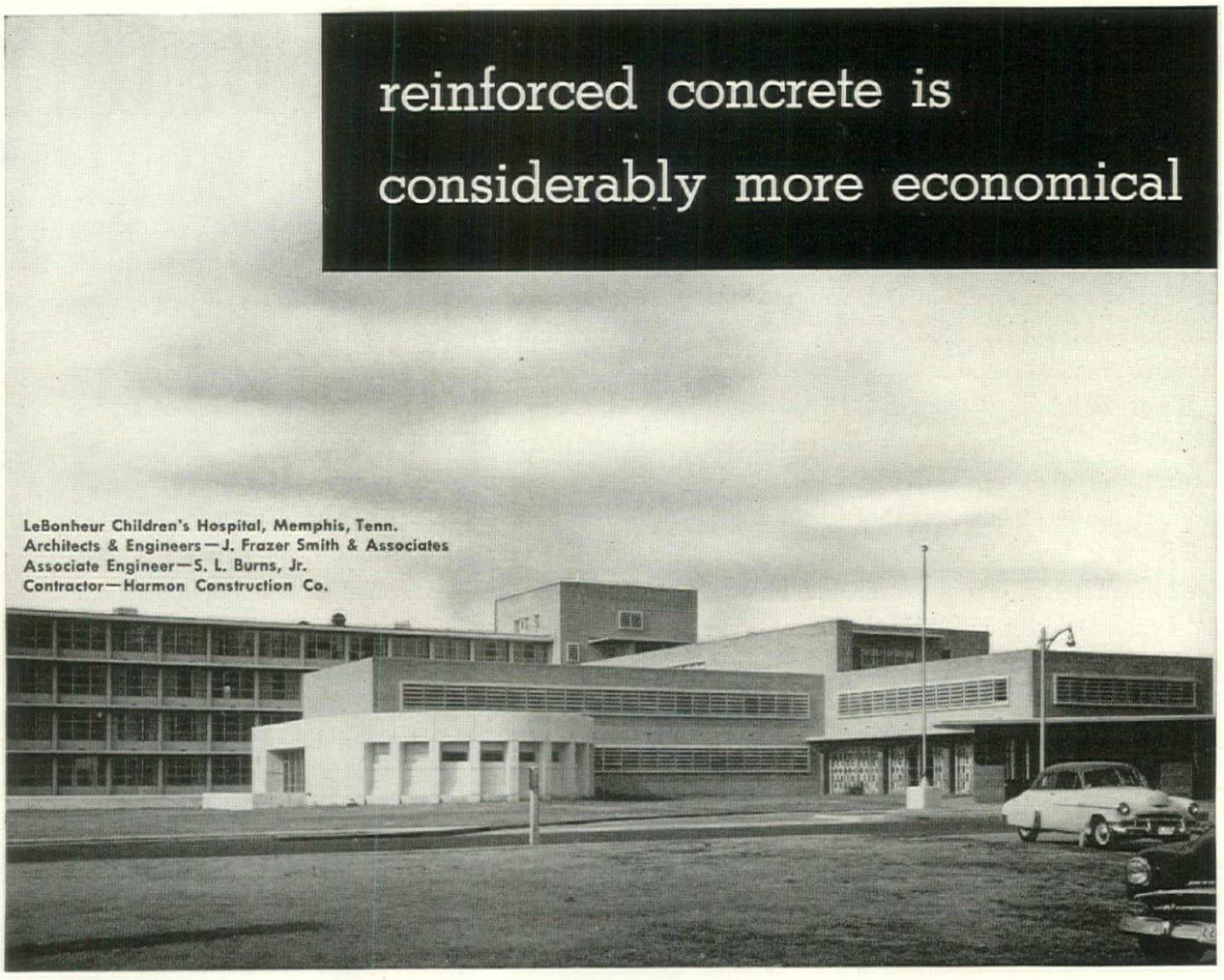

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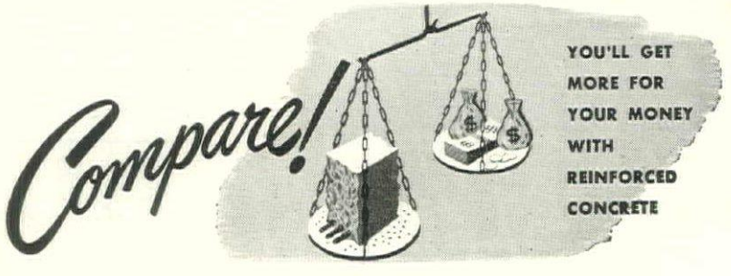

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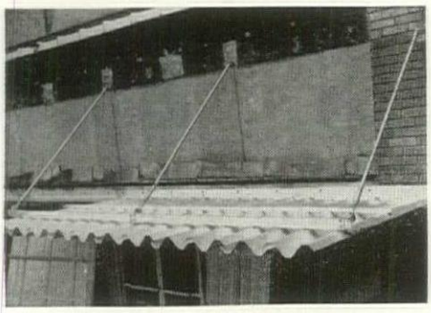
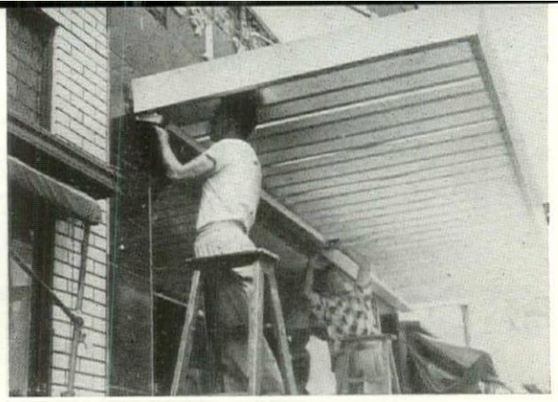
Hartford, Conn.	*Industrial Sound Control, Inc.*
Houston, Texas	*Construction Products Co., Inc.*
Indianapolis, Ind.	*General Asbestos & Supply Co.*
Jackson, Miss.	*Best Interiors, Inc.*
Jacksonville, Fla.	*Southern Supply Distributors, Inc.*
Johnson City, Tenn.	*Eustis Lancaster Associates*
Kansas City, Mo.	*George Will Company*
Kingston, Pa.	*Culp Brothers*
La Crosse, Wisconsin	*Acoustical Engineering Co.*
Los Angeles, Calif.	*The Sound Control Co.*
Louisville, Ky.	*Kentucky Sound Control Co.*
Lubbock, Texas	*Southwest Specialty Co.*
Memphis, Tenn.	*Alexander Marble & Tile Co.*
Miami, Fla.	*Rowell Flooring Company*
Milwaukee, Wis.	*Schauer Co., Inc.*
Minneapolis, Minn.	*R. R. McGregor & Associates*
Nashville, Tenn.	*The Workman Company, Inc.*
Newark, N. J.	*Charles S. Wood Co.*
New Orleans, La.	*Childress & Hawk Co.*
New York, N. Y.	*National Acoustics*
Norfolk, Va.	*Febre & Co.*
Oklahoma City, Okla.	*Scovil and Sublett*
Omaha, Nebraska	*Porter-Trustin Co.*
Pharr, Texas	*Pearson Insulating & Dist. Co.*
Philadelphia, Pa.	*Chas. M. Wall, Inc.*
Pittsburgh, Pa.	*Harry C. Leezer Co.*
Portland, Oregon	*Oregon Sound Control, Inc.*
Richmond, Va.	*McL. T. O'Ferrall & Co.*
Roanoke, Va.	*Modern Floors, Inc.*
Rockford, Ill.	*David Carlson Roofing Co.*
Salt Lake City, Utah	*Specialty Contractors & Suppliers, Inc.*
San Antonio, Texas	*Leo S. Joeris, Acoustical Contractor*
San Diego, Calif.	*Asbestos Products Co.*
San Francisco, Calif.	*Fiberglas Engineering & Supply Co. of Northern California*
Seattle, Wash.	*Northwest Cork & Asbestos, Inc.*
Shreveport, La.	*Acoustical Engineering Co.*
Sioux Falls, S. D.	*Midwest Acoustical Co.*
Spokane, Wash.	*Allied Floors Company*
Springfield, Mo.	*Southwestern Insulation Co.*
State College, Pa.	*Duggan & Marcon, Inc.*
St. Louis, Mo.	*Fawcett & Heyward Co., Inc.*
Terre Haute, Ind.	*Noffke Bros. Marble & Tile Co.*
Tulsa, Okla.	*Midwest Marble & Tile Co.*
Utica, N. Y.	*Utica Acoustical Co.*
Warsaw, Indiana	*J. F. Kelley Co.*
Washington, D. C. (Arlington)	*A. W. Lee Co.*
Watertown, N. Y.	*Northern Builders, Inc.*
Youngstown, Ohio	*Wester Acoustical & Insul. Co.*
CANADA:	
Edmonton, Alberta	*Premier Industrial, Ltd.*
Toronto, Ontario	*William G. Kerr*
ALASKA	*Northwest Cork & Asbestos, Inc. Seattle, Wash.*





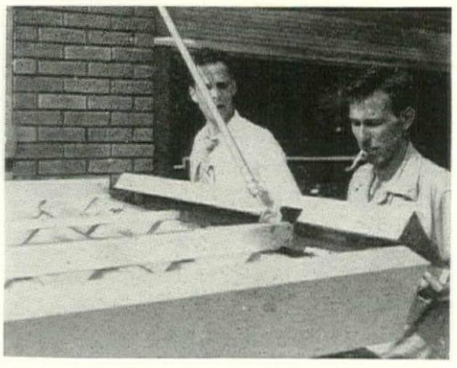
Suspended on hangers from an existing structure or cantilevered on a new one, Kawneer's factory-cut marquee is a smart and functional component for many buildings.

or concave arc to the fore. The projected mounting type pictured above weighs about 1½ lbs. per sq. ft. Accessories—and there are few of these—are designed to snap or grip onto the louver, thus allowing for expansion and contraction of the metal. All are stock items and require no special tools for application. Installed cost of K-louvers, depending on type of mounting, average $2.75 per sq. ft.

Fittings are part of package

Another elemental sun-control product introduced by Kawneer is a prefab aluminum marquee. In less than six hours, a three-man crew can mount a unit for an average 30′ store front. Louvers and trim come packaged with all necessary accessories: a Z-section, gutter and hanger fittings. The W-shaped louvers are available in lengths of 6, 8, and 10′, and are preassembled into panels 4, 5, or 6′ wide. (Minor variations to meet any dimension are possible.) Weighing just 65 lbs., a 6′ x 8′ section can be handled easily by one man.

Alternate supports on the mounting surface allow for either cantilevering the marquee on new construction or for hanger suspension on remodeling jobs. In either application, the Z-section is secured to the building and each marquee panel-butted and fastened to it. After the panels are fixed and leveled (self-leveling fittings are part of package), the gutter is applied and outside trim snapped in

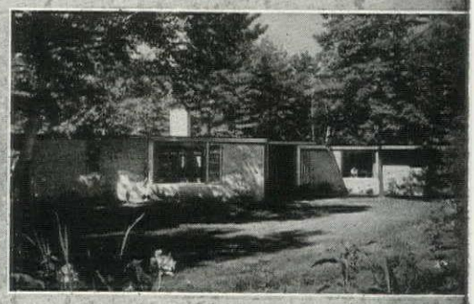


place. The marquee louvers are made of the same lightweight gauge aluminum as the K-louvers. The 3″ deep bends in the W shape, however, make them strong enough to hold up under a load of 60 lbs. per sq. ft., meeting most maximum building-code requirements. Like the K-units, the W-louvers reflect solar heat while filtering light and allowing air circulation. Water from rain or snow is channeled into troughs between each section and drained into the main gutter.

According to Kawneer, the least-expensive wood relation of this marquee runs around $6.50 per sq. ft. as compared to less than $5 per sq. ft. for the new aluminum unit fully installed. Biggest economy for both the K-louvers and marquee probably will be in maintenance. Chemically treated to resist cor-

continued on p. 186

Protect above-grade masonry walls with a water repellent made with Dow Corning Silicones



These and many other homes and public buildings are treated with masonry water repellents made with Dow Corning Silicones to preserve their original beauty and to reduce maintenance costs.

Masonry water repellents made with Dow Corning Silicones:

- ***are effective for years; completely invisible and nonplugging; stain resistant and easy to apply.***
- ***inhibit spalling, cracking and efflorescence***
- ***help to maintain original color and texture.***

Here's why. Dow Corning Silicones are inherently water repellent and durable, with a natural affinity for brick, stone, concrete and mortar. Among the most obvious properties of silicones observed by the earliest researchers are a very high degree of water repellency, and an order of durability previously found only in such inorganic materials as ceramics, glass, quartz and stone. It became practical to apply these properties to the treatment of masonry walls only after Dow Corning made silicones available in large commercial quantities at a price low enough to recommend their use on homes as well as public and industrial buildings.

Such silicone-base water repellents are readily available from formulators and their distributors in all parts of the country. Write for more information and list of suppliers. **Dept. BI-8**

first in silicones

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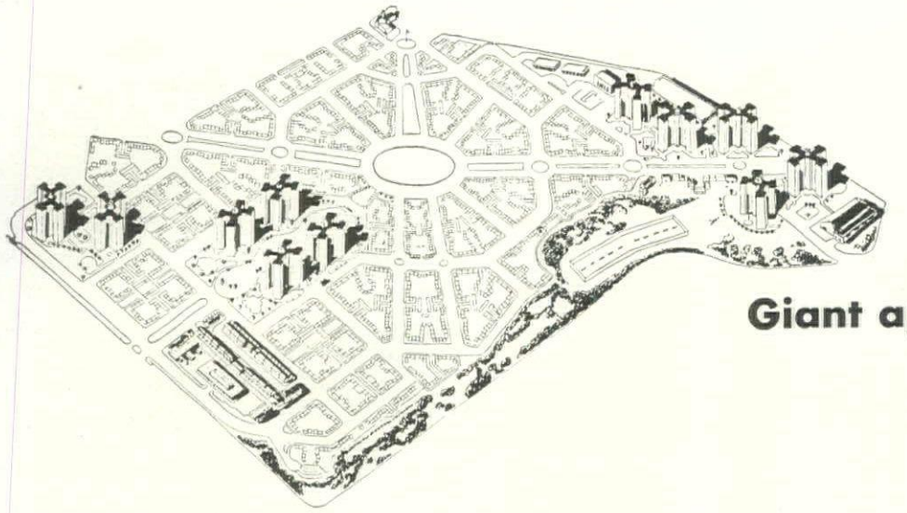
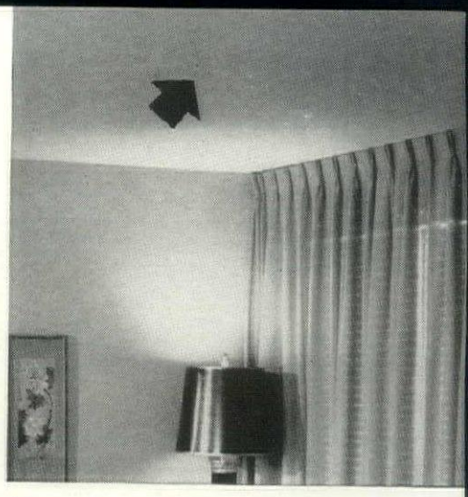
Midland, Michigan • Atlanta • Chicago • Cleveland • Dallas • New York
Los Angeles • Washington, D.C. • In Canada: Fiberglas Canada Ltd., Toronto
In England: Midland Silicones Ltd., London



Giant apartment project demonstrates

Situated in park-like 200-acre tract, development consists of eleven 13-story cross-shaped units, 110 2-story colonial units. Plywood forms were used for all concrete.

THREE KEY ADVANTAGES OF FIR PLYWOOD FORMS



Plywood-formed ceilings were painted after grinding, spackling.

1. SMOOTH, FIN-FREE CONCRETE

On this modern housing development, fir plywood forms were used for (1) all exterior and interior wall surfaces and (2) reinforced concrete ceiling slabs. Result: Walls are smooth, dense, uniformly attractive; ceiling slabs were smooth enough to be painted direct after grinding and application of spackling compound—permitting a substantial savings by eliminating expensive plastering.

2. ECONOMY THROUGH RE-USE

Large built-up forms of Exterior plywood (see specification data below) were used 13 times on the 13-story tower buildings, eliminating form re-building as pouring progressed. After use on the large buildings, many of the plywood form panels were re-used, in some cases, an additional 8 to 10 times on the 2-story buildings which dot the 200-acre tract.

3. 20% TIME AND LABOR SAVINGS

According to estimates of engineers on the job, use of built-up plywood forms afforded a 20% savings in time and application costs over the cost of lumber forms—plus savings in finishing time and cost of both ceilings and exterior walls. Even on interior walls where appearance was no factor, time and labor savings plus re-use made plywood the most economical material.

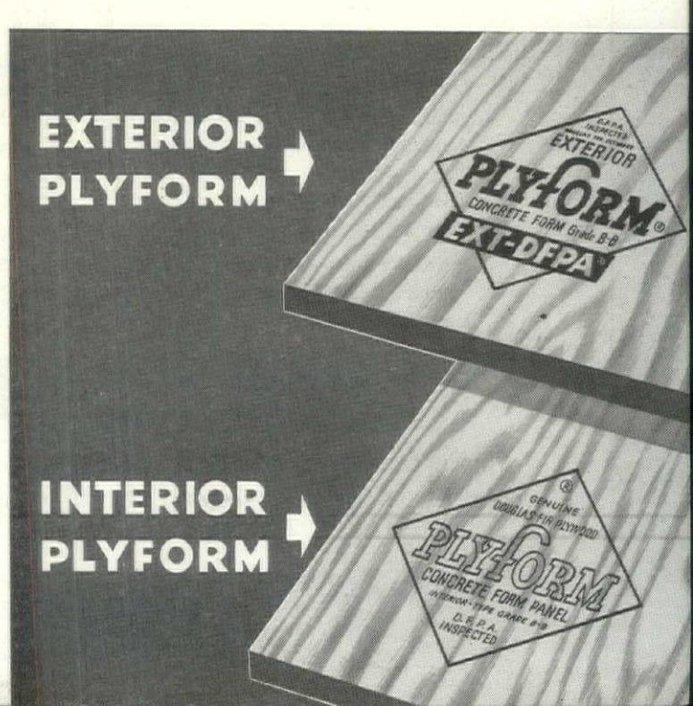
PLYWOOD FORM SPECIFICATIONS:

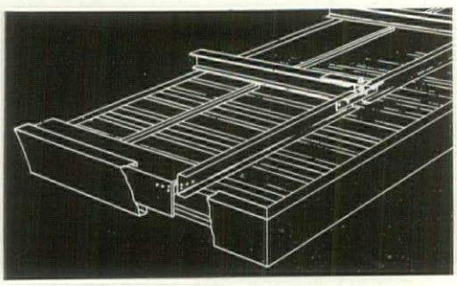
These registered industry trademarks are your guide, guard and assurance of DFPA quality-tested fir plywood manufactured especially for concrete form work. INTERIOR PLYFORM (highly moisture-resistant glue) gives multiple re-use; up to 12-15 are not unusual. For maximum re-use, specify EXTERIOR PLYFORM (100% waterproof glue). For special architectural concrete use fir plywood with "A" face veneer (such as used for exterior walls and ceilings on project described above) or one of the new plastic-surfaced or hardboard faced fir plywoods identified by this star and link industry hall mark of quality. ★ D.F.P.A. INSPECTED — A Product of the Plywood Industry

For further information write Douglas Fir Plywood Association, Tacoma 2, Washington.

SPECIFY DFPA INSPECTED FIR PLYWOOD

CONTRACTORS: Starrett Bros. & Eken, Inc., New York
SUBCONTRACTORS HANDLING JOB: Dinwiddie Construction Co., San Francisco
ARCHITECTS: Leonard Shultze & Associates, New York
Thompson & Wilson, San Francisco, architectural consultants

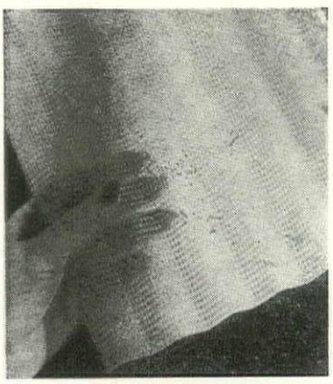


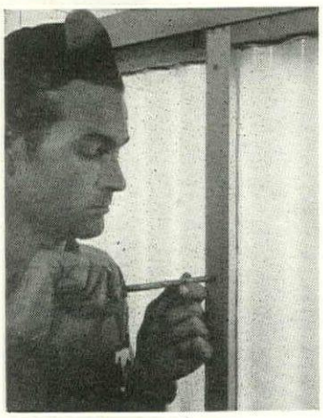


rosion, they need no painting—just an occasional washing. Both K-louvers and marquee are suitable for stores, office buildings, schools, factories, hotels, banks and restaurants.
Manufacturer: The Kawneer Co., Niles, Mich.

TRANSLUCENT PLASTIC PANELING molded with woven glass fabric

In its Woven *Corrulux*, Libbey-Owens-Ford has found a novel way to bolster polyester resin for a practical and pretty building material. Instead of the usual random glass fibers, a loose basketweave of glass strands serves as reinforcement in the colorful, shatterproof sheeting. The cloth not only gives the panel a handsome textural look but also assures uniform color and light diffusion. It comes in two weaves—bold and fine. For interior partitions or bath enclosures, the coarser would be suitable; and the tighter pattern could be adapted for use as lighting diffusers on fixtures or overall luminous ceilings. (The panels weigh just 4 oz. per sq. ft. and will span 4′ in width without noticeable sag.) Although delicate in appearance, the sheeting is impervious to humidity, grease and common chemicals, and





can be installed with ordinary carpentry tools. It is available in seven translucent tones: peach, blue, eggshell, aqua, coral, yellow and green, and costs about $1.50 per sq. ft. for the bold weave, $1.25 for the fine weave. Flat sheets of Woven *Corrulux* are being fabricated as well as the two types of corrugated pictured. Panels with 1½″ corrugations are

continued on p. 190

Shell Pink *and* Gunmetal

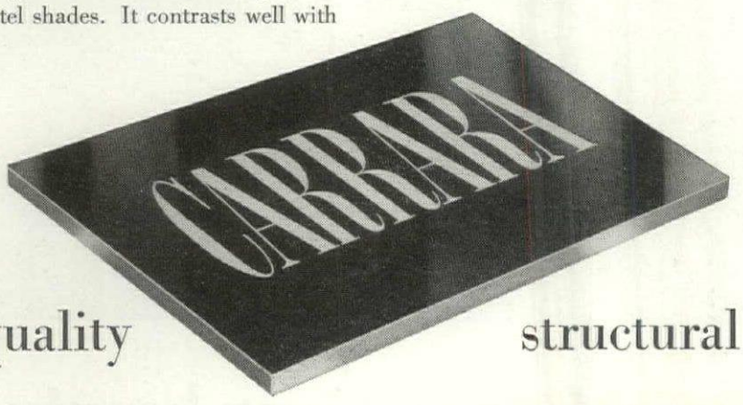
two new colors added to your Carrara palette

TO GIVE the architect even greater design possibilities with Carrara, two new colors have recently been put into production. With Shell Pink and Gunmetal — the complete Carrara color line includes — Ivory, Tranquil Green, Forest Green, Gray (light), Rembrandt Blue, Wine, Black and White.

Shell Pink is a light, delicate shade designed to blend with soft pastel shades. It contrasts well with white and with many stronger, deeper colors.

Gunmetal is a rich, sophisticated color approaching black. It has the distinct advantage of having deep blue-gray as a base color making it ideal for use in combination with many other colors.

Additional facts on Carrara are contained in Sweet's Catalog.



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IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

performs better–7 ways

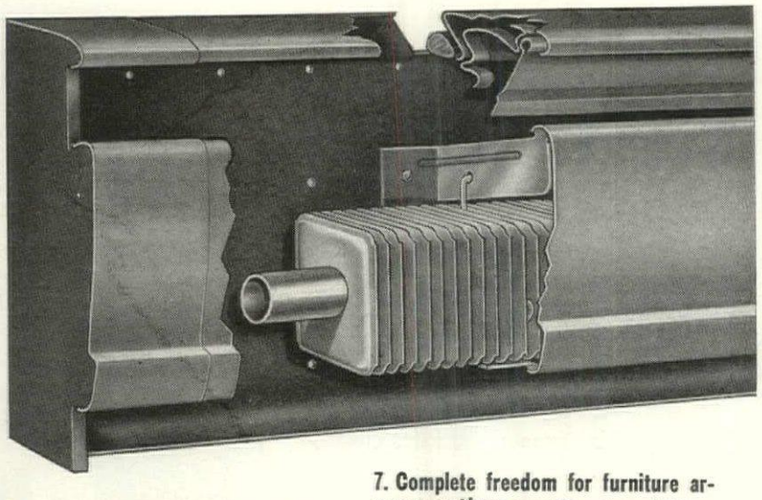
1. Improved design that matches (never mars) the beauty of the modern home. Your clients can paint it to match the walls . . . hang draperies or curtains with complete freedom.

2. Continuous front opening directs a moving blanket of heat out and away from the wall . . . blocks every inch of wall and window draft.

3. Designed to end noise! Free-hanging fin-and-tube heating element moves freely with expansion. No ducts to carry noise.

4. Helps homes stay clean longer! Full-length rubber strip seals back plate to the wall, prevents dirt seepage. Coved bottom, smooth top make cleaning easy. No dust-trapping grillwork.

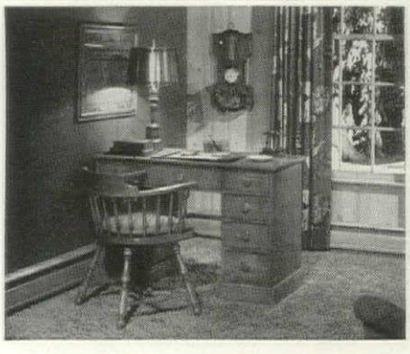
5. Heats faster at no extra cost! Famous TRANE copper and aluminum fin-and-tube heating element responds extra fast, keeps heat uniform. No fuel wasted on long warm-up and cool-off periods.



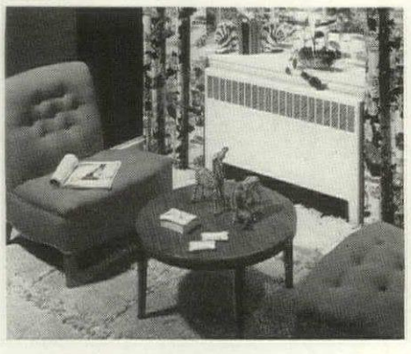
6. Simple, snap-together installation saves labor, money! Basic parts arrive assembled. No special tools needed, no complicated fitting . . . saves hours per job.

7. Complete freedom for furniture arrangement! TRANE Baseboard Convector is part of the wall, projects only 2¾" . . . recessed, only 1½". No hot blasts or scorching surfaces to force the dweller or his furniture out of place.

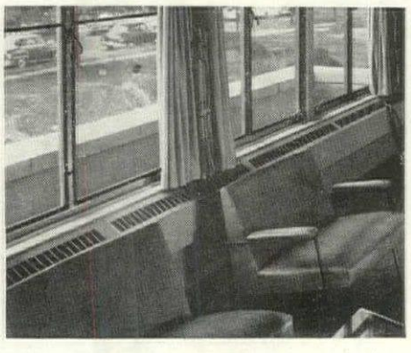
NOW! 3 TRANE FINNED RADIATION PRODUCTS BRING NEW HEATING EFFICIENCY



New TRANE Baseboard Convector surrounds the occupants with even, all-over heat. Blocks every inch of downdraft with a wall of moving warm air. Yet no hot blasts of air or scorching surfaces. You can touch it anytime.



TRANE Standard Convectors offer a design for every application—anywhere. Ten distinct cabinet styles for floor, wall and under-the-window application. You can choose free-standing, semi-recessed or completely hidden units.



TRANE Wall-Fin Heater can be fitted with cabinets to heat long walls and window areas in offices, institutions and industrial plants. Single or tiered fin-and-tube elements. Available also with economical expanded grilles.

TRANE Baseboard Convector

For complete TRANE Baseboard Convector data, write for bulletin DS-381.

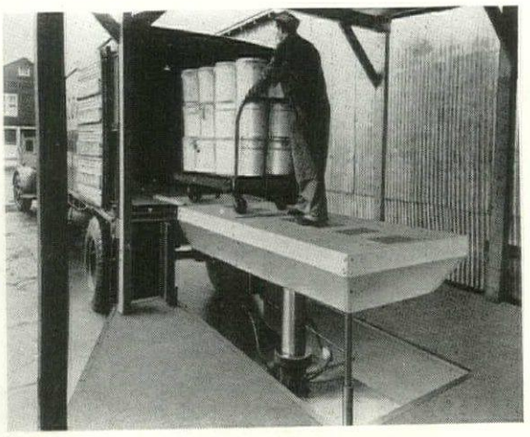
Trane Co. of Canada, Ltd., Toronto • 87 U. S. and 14 Canadian Offices

7/16″ deep, 31″ wide and up to 11′ long; with 2½″ corrugations they are 9/16″ deep, 33½″ wide and up to 12′ long.

Manufacturer: Corrulux Div., Libbey-Owens-Ford Glass Co., Box 20026, Houston, Tex.

AUTOMATIC LIFT seeks its own level; simplifies dock-to-truck loading

Spanning the breach between a dock and truck floor, the *Load-o-matic* is a small and practical hydraulic lift for plants and warehouses. Starting automatically when the front wheels of a materials-handling truck touches a switch bar in the floor of the platform, the *Load-o-matic* rises until its 30″ long hinged ramp is level with the truck floor. The plant truck is then unloaded and run back on the lift, actuating the operation in reverse. No hand switches are necessary, and since the ramp is always on the level when in use, spilling and damage to materials is prevented. Price of a standard *Load-o-matic* is about $1,800 F.O.B. Jamestown, N. Y. The lift operates on a 3 hp motor and has a 3 ton capacity. Its platform measures 8′-6″ x 4′ and is topped with ¼″ nonskid steel.



Manufacturer: Field Engineering Co., 66 Foote Ave., Jamestown, N. Y.

HALF-CAB TRUCK makes deck room for bulky cargo

Taking its design cue from Navy aircraft carriers, the Murty flattop truck accommodates many kinds of structural materials usually delegated to tractors and semitrailers. Its offset cab makes room for long pipe, lumber and structural steel. Good visibility all around the 32″ wide x 5′ deep "pilot house" is claimed for the driver as well as comfort in the adjustable bus-type seat. Both single axle and dual axle drive flattops are available. The single axle truck, priced at $8,450 plus taxes, has a 25′ deck and can carry a 10 T. load. The dual drive, selling for $12,200, has a 30′ deck and will take 15 T. Built with wheel bases of 15′ and 17′ respectively, both trucks are said to handle easily in traffic and for parking. Steel deck plates are mounted over rugged wood beds and carried on steel frame rails. The 150 hp engine for each truck is mounted under the cab.

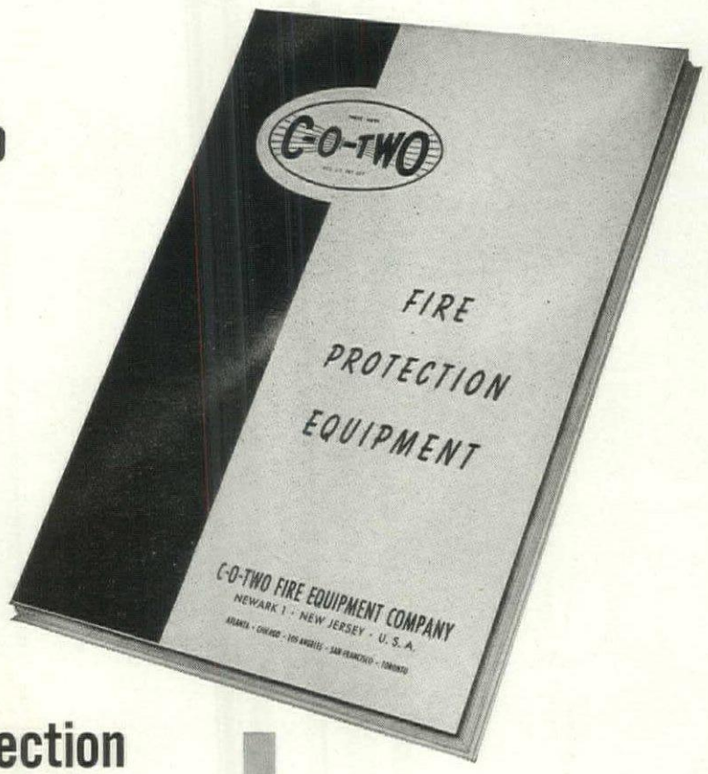
Manufacturer: Murty Bros., 906 E. Third Ave., Portland, Ore.

continued on p. 194

WORKING ON INDUSTRIAL CONSTRUCTION?

Get this handy guide to

- SPECIFICATION DETAILS
- LAYOUTS
- ENGINEERING DATA



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With today's high costs and delayed replacements, it is becoming more and more a "must" for you to assure your clients of receiving the lowest insurance rate and the maximum in fire protection at a justified all over expenditure.

This personal sense of responsibility is inherent with C-O-TWO Fire Protection Engineers . . . a definite plus in your behalf. Whether it's fire detecting or fire extinguishing . . . portables or built-in systems . . . C-O-TWO means top quality backed by experienced engineering that results in operating superiority for your clients at all times.

Any qualified architect or consulting engineer working on industrial construction is welcome to utilize the benefits of our extensive fire protection engineering experience, as well as obtain a free copy of our comprehensive brochure entitled, "C-O-TWO Fire Protection Equipment (Code A/CE)" by writing on his letterhead. Get the facts today!

You'll find this comprehensive brochure a highly valuable source . . . especially where the recognized fire hazards parallel the following typical types:

- ✓ DIP AND QUENCH TANKS
- ✓ SPRAY BOOTHS
- ✓ MIXING VATS
- ✓ DRYERS AND OVENS
- ✓ PRINTING PRESSES
- ✓ KITCHEN RANGES
- ✓ ELECTRICAL EQUIPMENT
- ✓ FUR AND RECORD VAULTS
- ✓ STORE ROOMS
- ✓ AIR CONDITIONING EQUIPMENT

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MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeez-Grip Carbon Dioxide Type Fire Extinguishers
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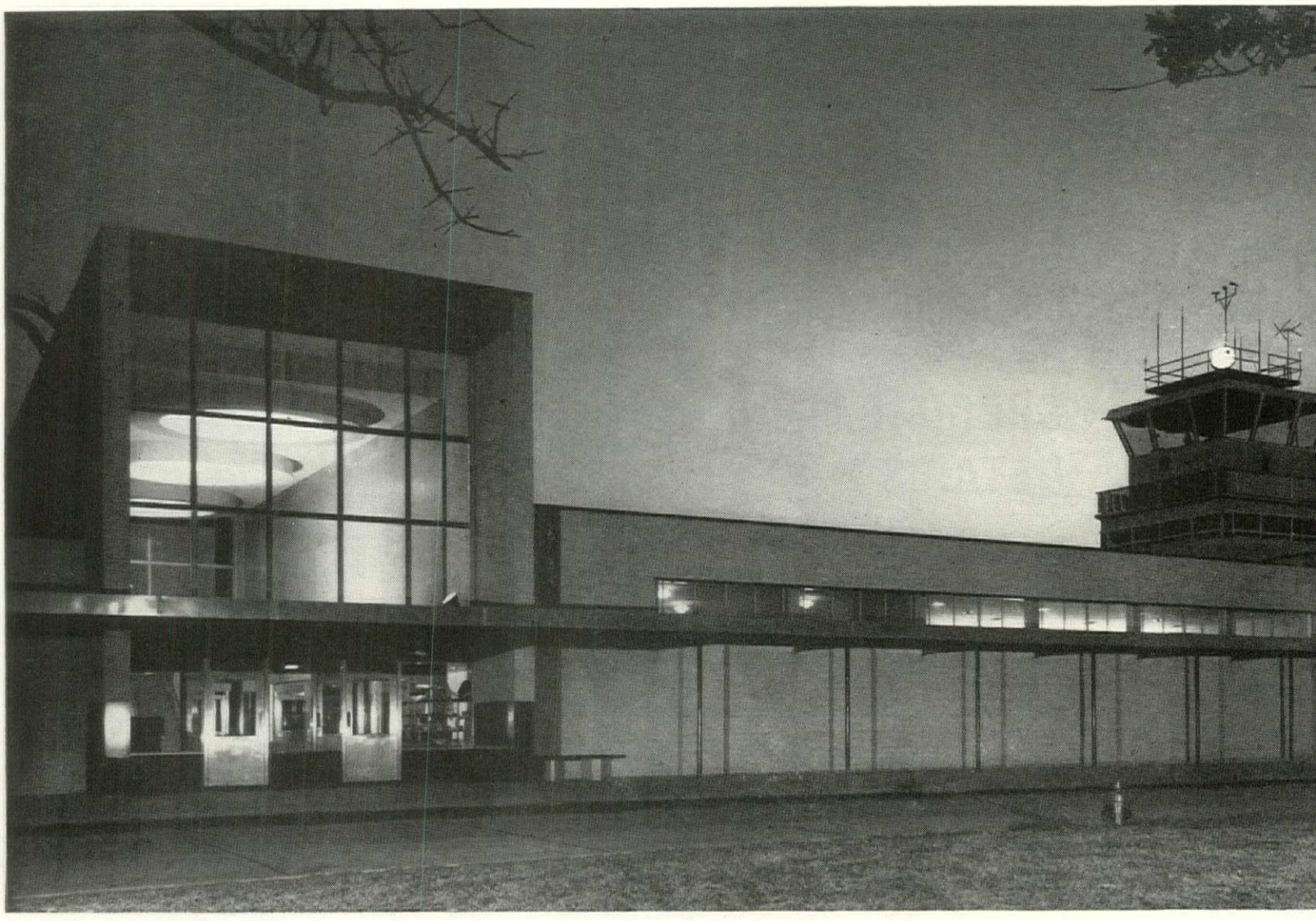


Samuel G. Wiener, FAIA; E. M. Freeman, CE, architects and engineers; Paul O. Rottmann, associate electrical and mechanical consultant.

This Honeywell Customized Temperature Control installation helps you

Learn about your business – from an airport

Why customized temperature control is becoming a "must" for all types of buildings

How do you make sure of comfort in a modern building that has lots of glass and a spread-out design?

In particular, how do you answer this over-all question when your building has a dozen varying comfort requirements such as a high ceiling lobby with busy outside doors, a waiting room that's often crowded, many small private offices, separate storage and baggage areas?

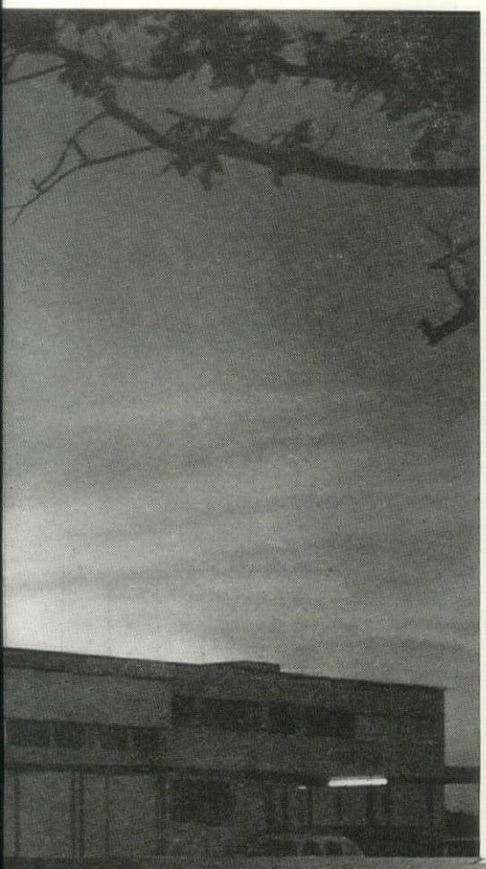
And how do you make sure, since yours is a 24-hour operation, that the temperature control system will give the flexible, dependable service you *must* have?

With modification, these major questions which Shreveport, La., airport officials and their professional advisers had to answer, can be applied to your business, or to the businesses of your clients. The answer can be stated in five words: Install Honeywell Customized Temperature Control. This is the answer officials of the Shreveport airport have found eminently satisfactory. It is the answer for you, too.

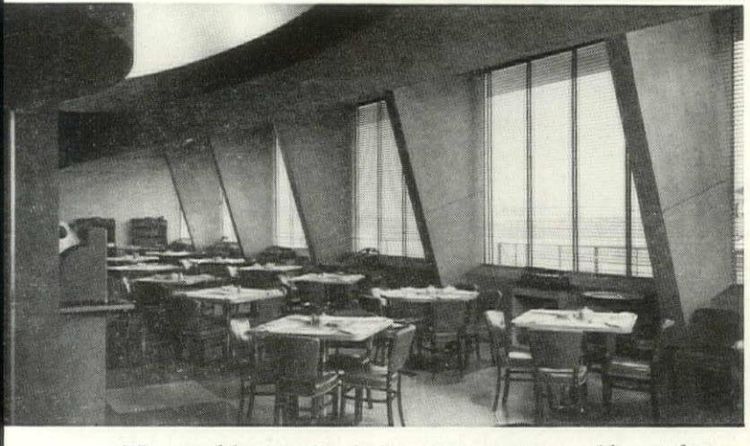
Key reason why this is so is found in the word *customized.* This means that whatever the control requirements of your building, Honeywell Customized Temperature Control *designed to meet the needs of your building* is your solution. This applies to heating and cooling, ventilation and humidity control.

The customized installation in the case of the Shreveport airport included careful selection and strategic placement of thermostats as indicated on the floor plan.

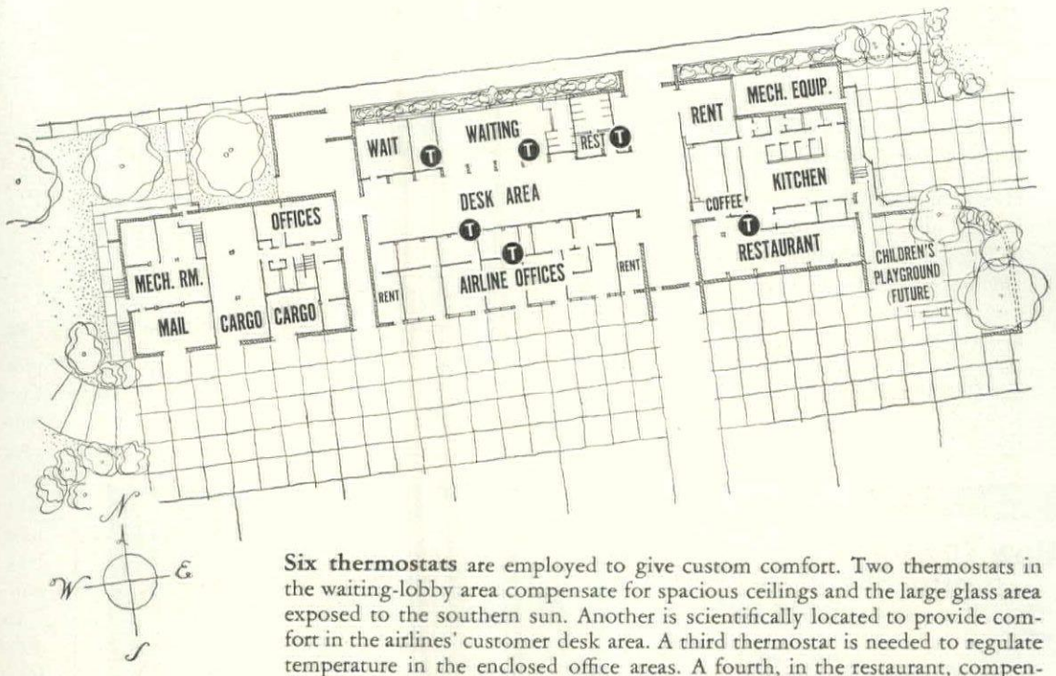
Two of the specific problems solved by the Honeywell Customized Temperature Control installation are brought out in the captions beneath the small photos.



The problem in the counter area was to provide comfort—for passengers and airline personnel. Comfort load varies greatly with occupancy of room, the amount of heat or cold coming from outside. But with Honeywell Customized Temperature Control in charge of comfort, conditions are right all the time.



The problem in the dining room was to provide comfort regardless of "weather effects" of large windows, and whether there were two diners—or two hundred. And with Honeywell Customized Temperature Control on the job 24 hours a day it's comfortable in the dining room—no matter what.



Six thermostats are employed to give custom comfort. Two thermostats in the waiting-lobby area compensate for spacious ceilings and the large glass area exposed to the southern sun. Another is scientifically located to provide comfort in the airlines' customer desk area. A third thermostat is needed to regulate temperature in the enclosed office areas. A fourth, in the restaurant, compensates for heat loss (or intake) through big south windows, adjusts hot or cool air input according to number of patrons.

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

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

Once equipped with Honeywell Customized Temperature Control, they'll have an ideal indoor "climate"—and save fuel besides.

For facts on Honeywell Customized Temperature Control, call your local Honeywell office. There are 104 across the nation. Or mail the coupon today.

Claude L. Hamel, Shreveport airport manager, says:

"It's certainly true that we've got a great many temperature control problems here. And it's gratifying to report that Honeywell Customized Temperature Control handles them all so well."

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First in Controls

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Dept. MB-8-160, Minneapolis 8, Minnesota

Gentlemen:

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

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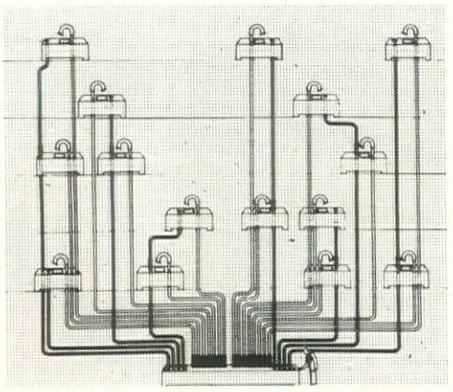
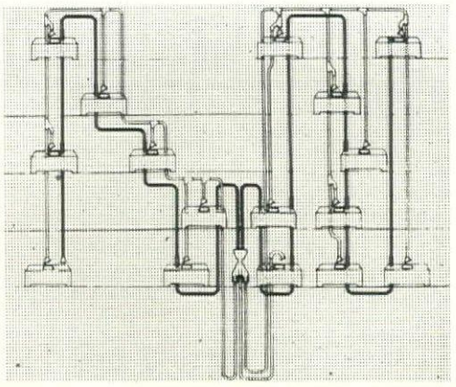
DIAL-CONTROL PNEUMATIC TUBE SYSTEMS: electronic relays direct carrier traffic

Most new hospitals use pneumatic conveyors instead of foot messengers for intrabuilding deliveries. Till recently the only systems available were regulated by manual or push-button controls and involved great complexes of lines and counterlines. One of the big pay-offs of the research conducted by the designers of the United Mine Workers chain of new hospitals (see p. 132) was the unearthing of two European fully automatic pneumatic tube systems that could handle medical records, charges, messages, mail, lab specimens, X-rays and drugs via a much-modified tube layout. Although costing somewhat more initially, the new *Mix and Genest* and *Lamson* systems take less tubing, smaller blowers, and very likely will require less upkeep.



push-button system



dial system

In the automatic setup, the dispatcher required by both manual and push-button systems is eliminated; electrical relays tell the carriers where to get off. Carriers in the automatic systems have several metallic rings along the body—some fixed and two or three movable—stamped with numbers, letters, or both. By dialing a station code number, specific rings are rotated to complete a circuit. Basic difference between the two systems is that in the *Lamson*, the controls are dispersed, ie., relays are located before each station; and in the *Mix and Genest* the actuators can be located at a central point or decentralized. (Where the longest tubing run from station to station is 600′ or less, UMW designers figure the centralized layout would be most practical.) In decentralized systems, suitable for longer runs, the carriers are electrically tested 12′ or 15′ before each station switch. When a carrier set for a particular station passes the test point ahead of the trigger for that station it is deflected into the right receiver. (In small institutions with ten stations or less, a single-loop decentralized system could be installed.)

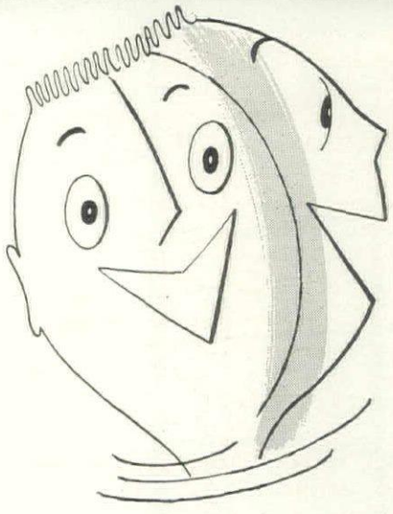
As for costs, an automatic one-line system having a capacity of 360 carriers per hour runs around $2,500 per station, and a two-line which can take 600 carriers per hour would cost $3,000 per station.

Distributors: Mix and Genest-International Standard Trading Corp., 22 Thames St., New York, N. Y. *Lamson System*, 295 Madison Ave., New York, N. Y.

WALL BRACKET LAMPS shed useful light from pretty housings

Clean yet dressy, Gotham's new wall brackets are adaptable to almost any localized lighting need. The smartly faceted fixtures are equally "at home" in a hospital, office building, store or residence. Providing high light levels of diffuse illumination they can serve as reading lamps over hospital beds and lobby phonebook stands, or for lighting up milady in a fitting room, notices on a bulletin board, or bathroom mirror. *Model 224*, the smaller,

continued on p. 198



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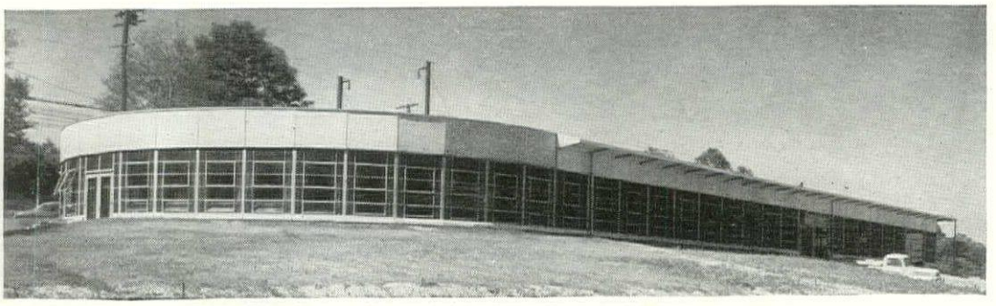


The Filler Machine Company, Bethayres, Pa., showing the office end of the plant. Completed in July 1952, the building's esthetic appeal is a direct result of simple materials expertly and economically handled. Roof is supported by lally columns on 14 ft. centers. Space between columns is filled by Lupton Commercial Projected Windows welded to columns. Overhanging roof and heat absorbing glass protect interior from excessive heat in summer.

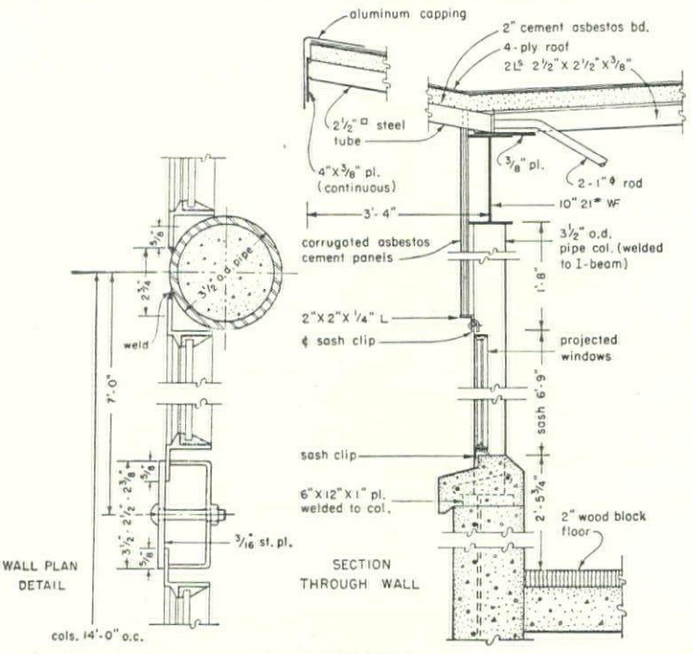
Just north of Philadelphia, on the New York Branch of the Reading Railroad, is one of the most interesting buildings that have contributed to the tremendous industrial expansion of the Delaware Valley.

Built for the Filler Machine Company at Bethayres, Pa., with Ralph Wesley Jones, Philadelphia, as Consulting Engineer, the plant features the utmost simplicity in construction without sacrifice of quality. The 13,300 square foot factory has a 147 ft. by 74 ft. shop. A semicircular 2,000 square foot office is located on the north end. Total cost was $82,000.00 at $6.15 per square foot, yet it has been mortgage appraised at $9.50 per square foot.

Exterior walls are formed by 3½ inch lally columns 14 feet on centers. These rise from a 2 foot high reinforced concrete wall topped by steel bed-plates. The lally columns are welded to the bed-plates and to the sidewall I-beams. Open-web joists, totaling 73 feet 4 inches, span the building and are supported at the center by 6 inch lally columns. This center row of columns offers the only floor obstruction in the entire building. The ceiling is the underside of 2 inch insulated roof slabs covered with built-up roofing.

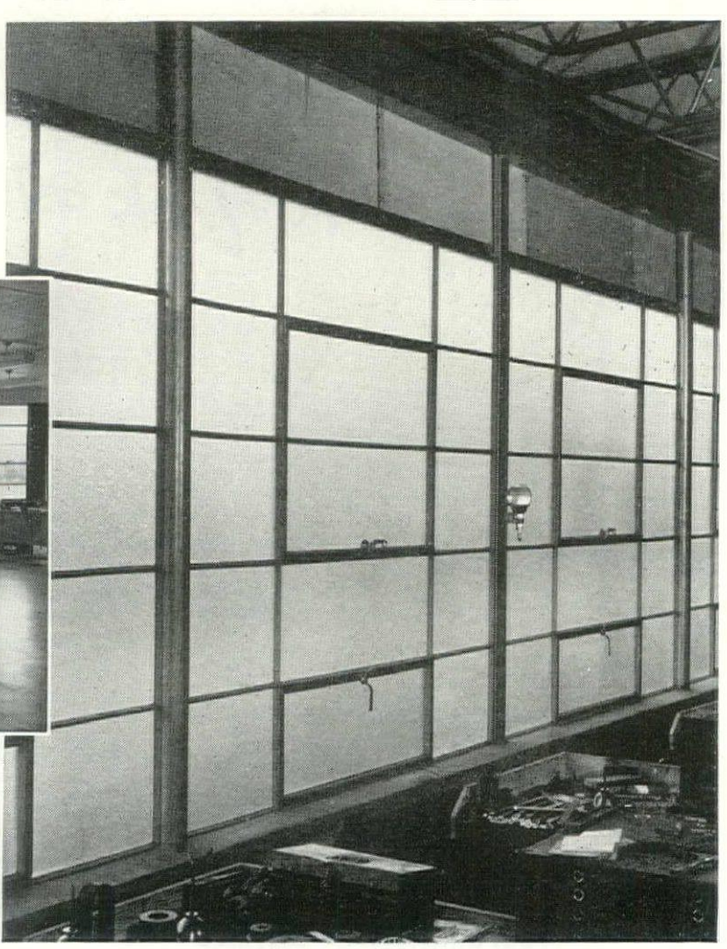
The two Lupton Projected Steel Windows filling each of the 14 foot bays are tack-welded directly to the lally columns. A 3½ inch plate mullion joins the two windows at the center of the bay. Each window has two ventilators. Upper ventilator opens out, ventilator at the sill opens in. Ventilation is possible in any weather. Glazed with heat-absorbing glass, further sun and weather protection is afforded by a 40 inch roof overhang. The end result is a strikingly modern building with clean lines uncluttered by extraneous construction details.

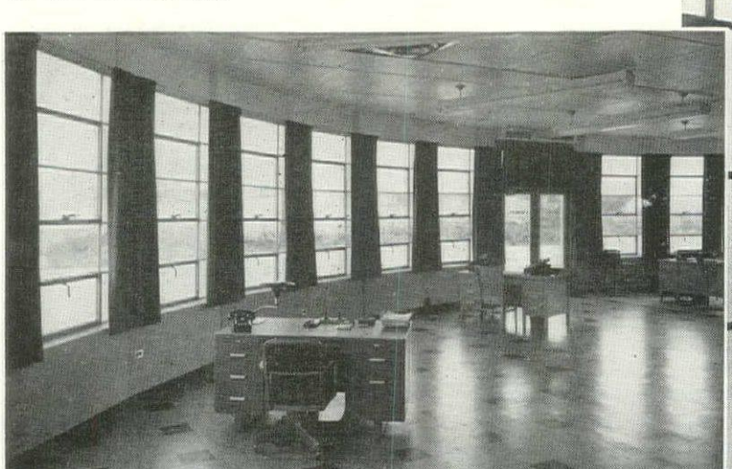
If you too, are planning unusual construction let Lupton help you. See the complete line of steel and aluminum windows in Sweet's. There is a complete drafting and design staff ready to help you with your window problems.



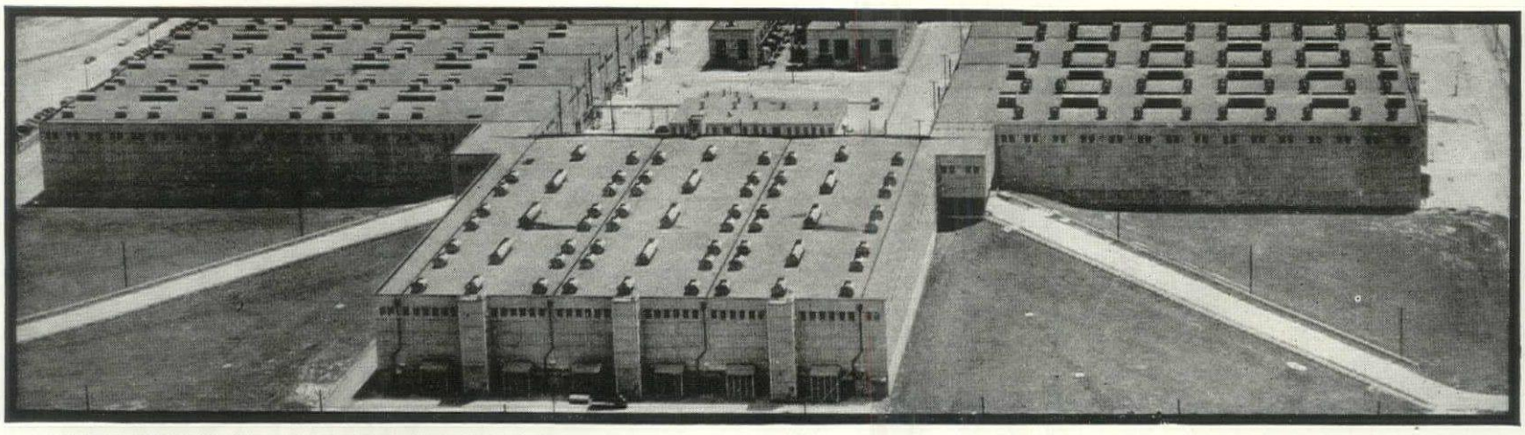
The Factory view at right shows the 14' bay formed by lally columns. The center mullion is a 3½" formed channel welded to the I-beam and sill plate. Lupton Steel Projected Windows are welded to the lally columns, center mullion provides for expansion and contraction. All glazing is translucent, pebbled, heat-absorbing glass.

Interior of the semicircular office located at the north end of the building. The second and third rows of window lights are clear glazed, the others have translucent, pebbled glass. Entrance to the building is by a sunken path as the grading has been brought right up to the window sills.





LUPTON
METAL WINDOWS



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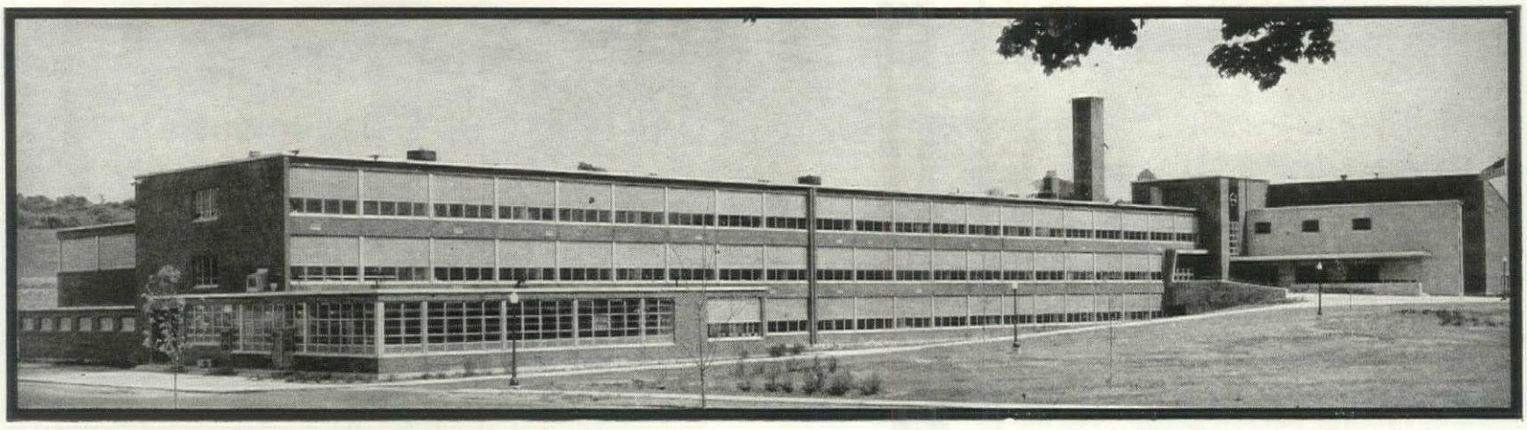

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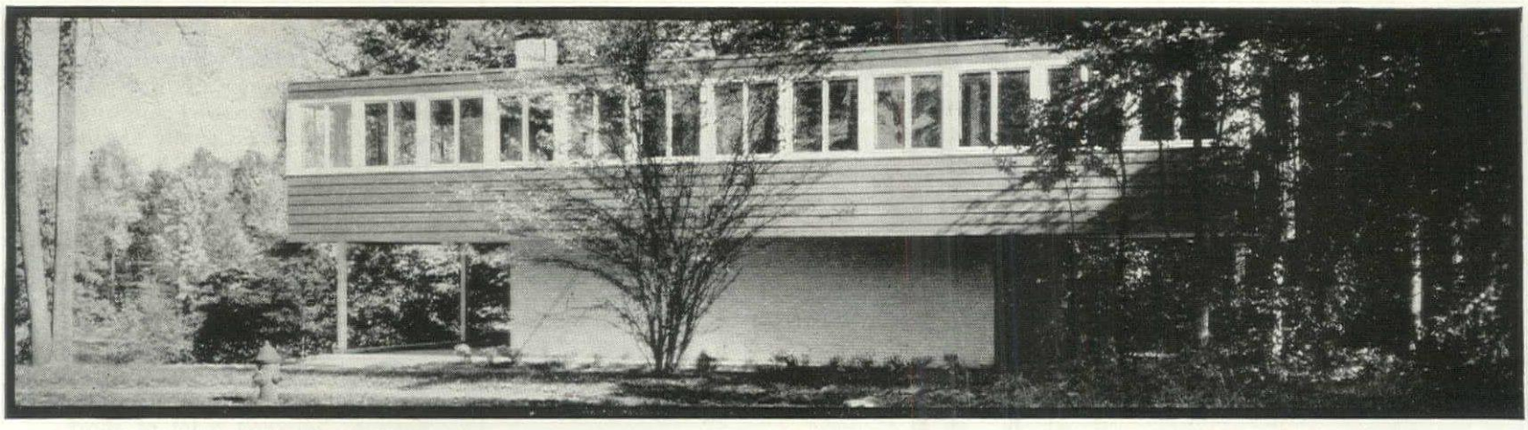

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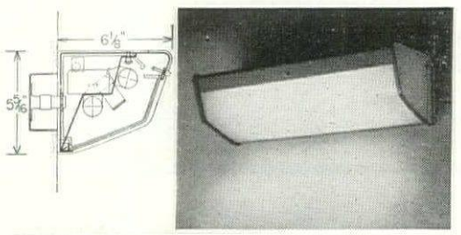
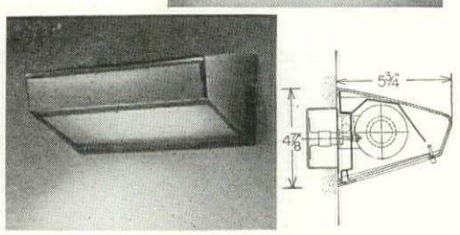
PRODUCT NEWS

is 11" long and 4⅞" high. Its case is die-cast aluminum and its diffuser, prismatic glass. The fixture will take any incandescent bulb up to 100 w. and is turned on and off by a pull-chain switch. Factory-wired and





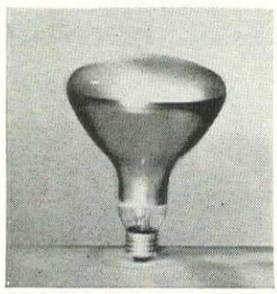
fitted with a slotted backplate, the unit is easily aligned and mounted on any vertical surface over an outlet box. It lists at $14.

The larger unit is 19¾" long and 5-5/16" high. It may be obtained with either twin porcelain sockets for two 75 w. bulbs (Model 211, $21.60) or with provisions for two 15 w. fluorescents ($22.60 for Model 2211 with low-power ballast and $28.40 for high power). Convenience outlets are available on any of the fixtures for an additional $1.25.

Manufacturer: Gotham Lighting Corp., 37-01 31 St., Long Island City 1, N. Y.

REFLECTOR LAMPS made in six colors; will produce full spectrum

The bothersome business of affixing separate color filters and caps to white lamps for decorative lighting is eliminated with G-E's six new reflector bulbs. Produced in four strong tones—red, green, yellow and blue—and two tints—blue-white and pink—the new 150 w. lamps may be used singly or combined to



create any warm or cool color effect. The simplicity of using the lamps not only should make current display illumination easier to handle, but should carry more applications of colored lighting up into ceilings and outdoors. The yellow, green and blue-white lamps cost $1.85 each; blue, $1.95; and red and pink, $2.10.

Manufacturer: General Electric, Nela Park, Cleveland 12, Ohio.

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THIS INTERMEDIATE LONGSPAN is a descendant of the original Macomber Bar Joist—grown up now—carrying the heavier loads of industrial plant roofs.

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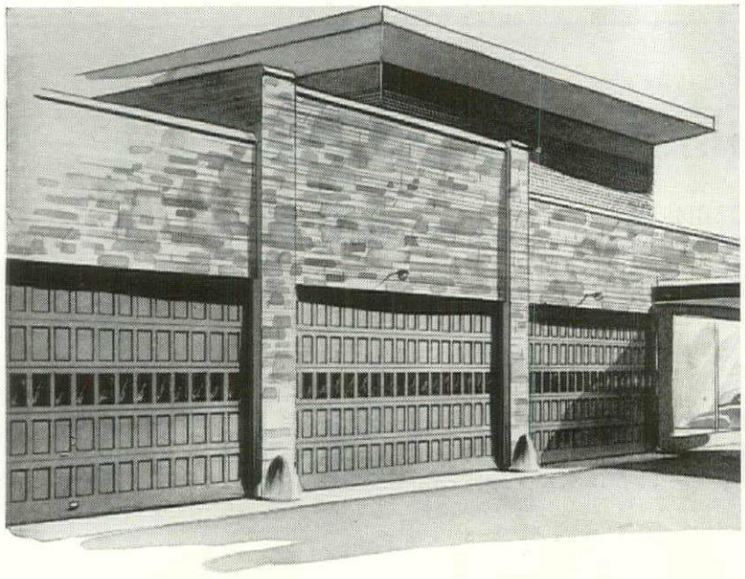

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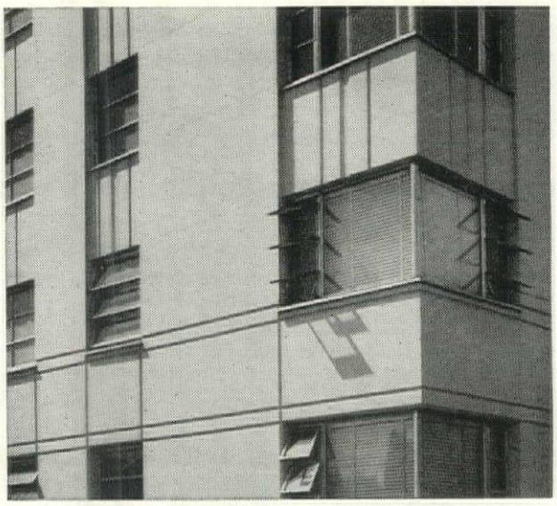
Above: General view of the 12-story-and-basement Charleston Apartments in Salt Lake City. Below: closeup view showing the corner windows and the decorative treatment on the spandrels and side walls. Slack W. Winburn was the architect, John M. Banford the engineer, Vincent-Peterson Co. the contractor; all of Salt Lake City.



TECHNICAL PUBLICATIONS

LIGHTING. Celine Cold Cathode Lighting. Chicago Electrode Laboratories, Inc., 220 N. Fourth St., St. Charles, Ill. 12 pp. 8½" x 11"

PORCELAIN ENAMEL. Seaporcel Architectural Porcelain Metals. Seaporcel Metals, Inc., 28-25 Borden Ave., Long Island City 1, N. Y. 11 pp. 8½" x 11"

TESTING INSTRUMENTS. Apparatus for Engineering Tests of Soils, Asphalt, Concrete, Materials, Catalogue No. 53. Soiltest, Inc., 4520 W. North Ave., Chicago 39, Ill. 72 pp. 9" x 11"

PORCELAIN ENAMEL. Texlite Architectural Porcelain Enamel. Texlite Inc., 3305 Manor Way, Dallas, Tex. 6 pp. 8½" x 11"

FRAMING. Modern Construction with Engineered Timbers. Timber Structures, Inc., P. O. Box 3782, Portland 8, Ore. 12 pp. 8½" x 11"

TIMBER CONNECTORS. Teco Products and Services. Timber Engineering Co., 1319 18 St. N.W., Washington 6, D. C. 9 pp. 8½" x 11"

AIR CONDITIONING. Facts on Air .Foil Air Conditioning Outlets. Titus Manufacturing Co., Waterloo, Iowa. 4 pp. 8½" x 11"

ROOFING. Solving Roof Problems. The Tremco land, Ohio. 32 pp. 8½" x 11"

AIR CONDITIONING. Clean Air, Trion Electronic Air Cleaners, Catalogue E-60. Trion, Inc., 1000 Island Ave., McKees Rocks, Pa. 12 pp. 8½" x 11"

SURFACE COATINGS. Vinylite Resins, Technical Release No. 12. Bakelite Co., Div. of Union Carbide & Carbon Corp., 300 Madison Ave., New York 17, N. Y. 15 pp. 8½" x 11"

FLOORING. Mastic Cold-Applied Asphalt Flooring, Bulletin No. 205. United Laboratories, Inc., 16801 Euclid Ave., Cleveland 12, Ohio. 4 pp. 8½" x 11"

FLOORING. Vinylized Azphlex, a New Concept of Greaseproof Flooring. Uvalde Rock Asphalt Co., P. O. Box 531, San Antonio 6, Tex. 4 pp. 8½" x 11"

FLOORING. Duraco Greaseproof Industrial Tile. Uvalde Rock Asphalt Co., P. O. Box 531, San Antonio 4, Tex. 3¼" x 6¼"

FLOORING. Specifications for Vermiculite Concrete Floors. Vermiculite Institute, 208 S. LaSalle St., Chicago 4, Ill. 12 pp. 8½" x 11"

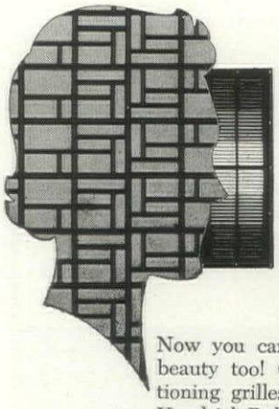
WALLPAPER. It's Smart to Choose Imported Salubra. The Warner Co., 420 S. Wabash Ave., Chicago, Ill. 12 pp. 6" x 9"

HEATING CONTROL. Hot Water Temperature Control. Water Service Laboratories, Inc., 423 W. 126 St., New York 27, N. Y. 2 pp. 8½" x 11"

WIRING. Wiremold Catalogue and Wiring Guide No. 19. The Wiremold Co., Hartford 10, Conn. 120 pp. 4½" x 6½"

SCHOOL EQUIPMENT. Weber Costello Chalkboards. Weber Costello Co., Chicago Heights, Ill. 6" x 8½"

TEMPERATURE CONTROL. Wheelco Capacitrol Direct Reading Temperature Controller, Bulletin F-5783. Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill. 4 pp. 8½" x 11"



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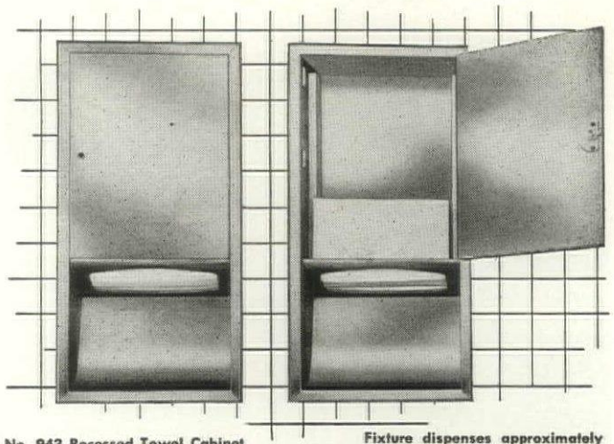

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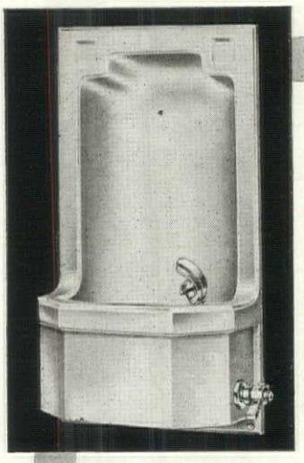

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TECHNICAL PUBLICATIONS *cont'd*

STRUCTURAL PLASTIC. Resolite Translucent Structural Panels. Resolite Corp., Zelienpole, Pa. 12 pp. 8½" x 11"

A reinforced plastic paneling, *Resolite* is given attractive and informative coverage in this booklet. Renderings show the translucent material used as skylighting and partitions. Technical data is presented on *Resolite's* impact resistance, light transmission and installation. An accessory line of molding, closure strips and flashing is also pictured and described.

AIR CONDITIONING. Worthington Equipment for Buildings and Institutions. Worthington Corp., Harrison, N. J. 19 pp. 8½" x 11"

STAIR TREADS. Safety Treads by Wooster. Wooster Products Inc., Wooster, Ohio. 23 pl. 9" x 12" (file). 23 pp. 4½" x 6" (brochure)

PUMPS. Yeomans Vertical Wet Pipe Pumps, Bulletin 3-8000, Yeomans Brothers Co. 1999-A N. Ruby St., Melrose Park, Ill. 23 pp. 8½" x 11"

AIR CONDITIONING EQUIPMENT. Young Heat Transfer Products, Catalogue No. 148. Young Radiator Co., Racine, Wis. 19 pp. 8½" x 11"

HEATING. Commercial and Industrial Unit Heating with Gas—Janitrol Heating Guide, Bulletin A.I.A. 30-C-43. Janitrol Space Heating Div., Surface Combustion Corp., Toledo 1, Ohio. 32 pp. 8½" x 11"

TIMBER CONSTRUCTION. Enduringly Beautiful Churches at Fund-Saving Costs. Timber Structures, Inc., Box 3782, Portland 8, Ore. 8 pp. 8½" x 11"

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ROOF VENTILATORS. Penglass Round Fan Square Ridge Roof Ventilators, Catalogued No. 16V-1953. Pennsylvania Wire Glass Co., Philadelphia 3, Pa. 4 pp. 8½" x 11"

STORAGE. Penco Adjustable Interchangeable Steel Shelving—The Flexible Storeroom. Penn Metal Corp. of Pennsylvania, 50 Oregon Ave., Philadelphia 48, Pa. 20 pp. 8½" x 11"

HOSPITAL CHAIN

continued from p. 139

wanted a best choice of materials and equipment now in use; they wanted to consider items so new they might not yet be used —so long as such items could be ready when needed.

Mulling over all this, the architects decided the only good way to satisfy both themselves individually and the clients was to do a job of basic research starting from scratch on every item.

Thus arose SCAMP (Standardized Components and Methods Program), a joint committee headed by Joe Ray from York & Sawyer with John Wetzel from Sherlock, Smith & Adams to assist him, and, as client representative, Roy Hudenberg, slated for the top plant and maintenance job in the finished hospitals. SCAMP's fluctuating demands for additional personnel were filled from the firms and the three firms shared SCAMP's cost, based on their proportionate shares of the total job.

SCAMP's "consumer research" job was as staggering as it sounds. The committee canvassed potential manufacturers for each item, told them to submit certified laboratory reports if they wanted their products considered. Next SCAMP organized results. Example: a tabular comparison of all varieties of resilient flooring for maintenance required sound deadening, resilience, color choice, total setting depth, cost per sq. ft. installed, resistance to indentation, abrasion, acid, alkali, water and skidding. They made similar tabulations for conductive flooring, sanitary flooring, washable wall surfacing—everything from rough plumbing to curtains. The tabulations on lighting would paper a small wall.

The upshot was a report giving SCAMP's first or alternate choices on each item and the reasons why. Recommendations were influenced by two factors in addition to basic comparisons: unless it was impossible, each recommended product or alternate had to be competitively manufactured and made by union labor.

SCAMP's report was scrutinized item by item at a full-dress meeting of clients, consultant, contractor (see below), partners and designers from the three firms. In case of alternates or conflicting advantages the clients held last word of course, but there was remarkable unanimity.

Architects and clients surprised themselves with some decisions they came to as a result of SCAMP. Most unexpected finding: instead of tile on operating-room walls, toilets, etc. they settled on sprayed vinyl coating. The same material, sprayed a little thicker on areas of hard wear, eliminates corridor wainscoting. They decided on hydraulic elevators and they chose a pneumatic tube system so new in the US (see New Products, p. 190) it was not yet installed anywhere (although Johns Hopkins now has it too).

SCAMP's final job is preparation of master specification with job supplements, a task taken on at Sherlock, Smith & Adams.

Including specification writing, SCAMP's total cost comes to something between $25,000 and $30,000. In any case, specifications for each hospital would have come to about $2,000 each. All three firms are convinced the extra $1,000 per hospital will be more than repaid them by use of SCAMP data on other jobs.

On a very few points the firms have not agreed. Sherlock, Smith & Adams prefer a mullion shape not chosen by the other two firms. Rosenfield uses a combination radiant panel-convection heating and cooling system, while the other hospitals will have conventional duct systems. In the face of these strongly maintained convictions, the clients refrained from browbeating the dissident. Otherwise agreement has been 100%.

"It has been a lot less aggravating than any architect reading about it will be willing to believe—or than I would have believed it could be," says Kiff.

Perhaps the best proof of the success of the whole unorthodox competitive-cooperative arrangement is the three firms' own decision to put their reputations unreservedly into each other's hands by setting up a joint circuit-riding field office to supervise construction and check shop drawings. Joint checking will save time, bring lower subcontract bids than a serve-three-masters arrangement.

Getting the contractor on the team

About the time SCAMP's work was starting, owners and architects came to another sound decision: the contractor should be an active member of the planning team.

As preliminaries shaped up, cost questions kept arising: many were the kind only the contractor could well answer because they depended on how construction would be staggered for the ten jobs, on the kind of labor employed, on the extent to which repetition would mean savings, on local supply peculiarities.

To hire the contractor at this point, of course, meant a cost-plus-fixed-fee contract instead of bids. And it meant putting all the eggs in one basket.

Owner and architects selected their man as warily as if they were arranging a dynastic marriage. To 46 candidates (some self-suggested, some suggested by team members) they sent an information outline of the job with a brief questionnaire. Forty-one replied; answers eliminated 11. The remaining 30 got a comprehensive questionnaire to which 17 replied. The replies were studied, recommendations and credit checked, and the list was reduced to 7. Each of these was sent a suggested contract agreement, schematic drawings of the ten jobs and an invitation to an interview.

A 16-member examining panel made up of clients and architects conducted the interviews. Each contractor got 1½ hours to present his case, followed by half an hour of questioning by the panel. After each interviewee left, the panel reviewed his references, the architects summarized and discussed his record from a technical viewpoint, and MHA representatives analyzed his showing from legal and financial viewpoints. Then he was evaluated on 17 points, ranging from the method he proposed for sharing savings, to his labor relations and his plan for staggering construction.

The interviews took two days; at the end ballots reduced the candidates to three. A second ballot based on a more precise rating system yielded a unanimous winner. J. A. Jones Construction Co. was informed the next morning. The losers got equally prompt word.

A very fancy contract was drawn up (based on a suggested form by the architects) allocating a portion of the contractor's fee to services during planning, allocating shares on any savings, arranging possible additional fees for possible additional buildings and setting a maximum fee limit.

Everyone agrees the contractor has been an invaluable member of the planning team. SCAMP consulted him repeatedly, resolved such questions as which of eight possible partitions to use. Architects and contractor together investigated every possible framing system including lift slab and prestressed concrete, settled on cantilevered flat-slab reinforced concrete.

One of the biggest advantages of having the contractor early has been plain saving of time. If ground-breaking for the first job had to await completion of all hospital working drawings, construction would be delayed close to a year. As it was, foundation work for Beckley (farthest along of the group) started six weeks before its working drawings were finished and before preliminaries for Wise and the Service Center had jelled. Beckley is expected to be finished late in 1954; others will follow three or four weeks apart. The whole system will be operating in 1955.

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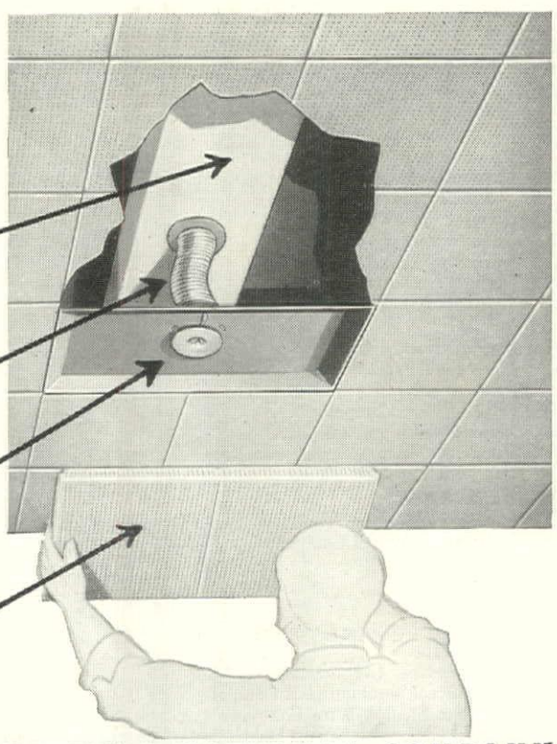

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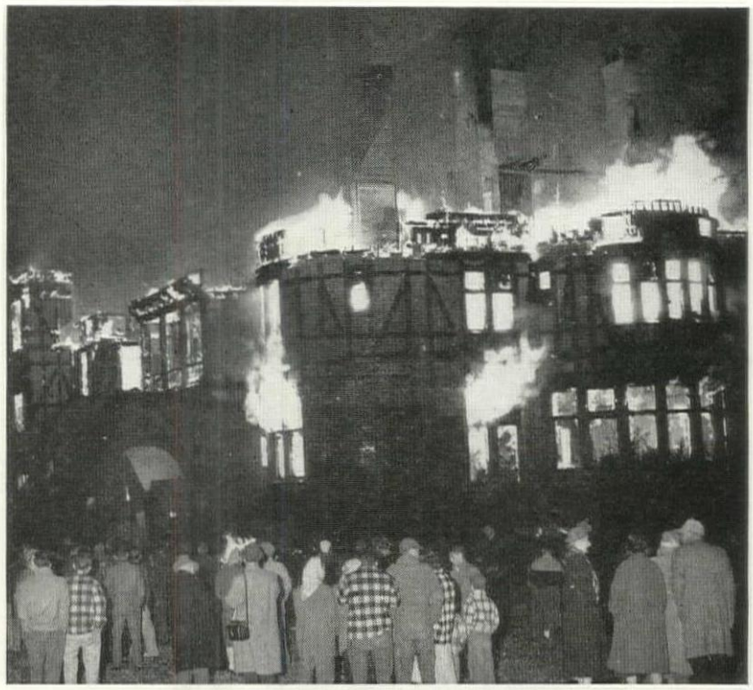

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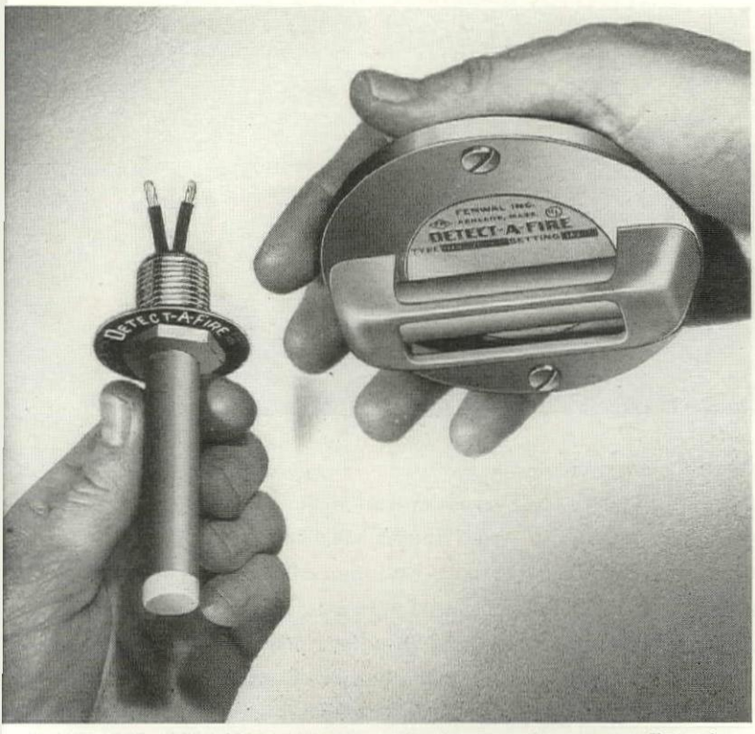

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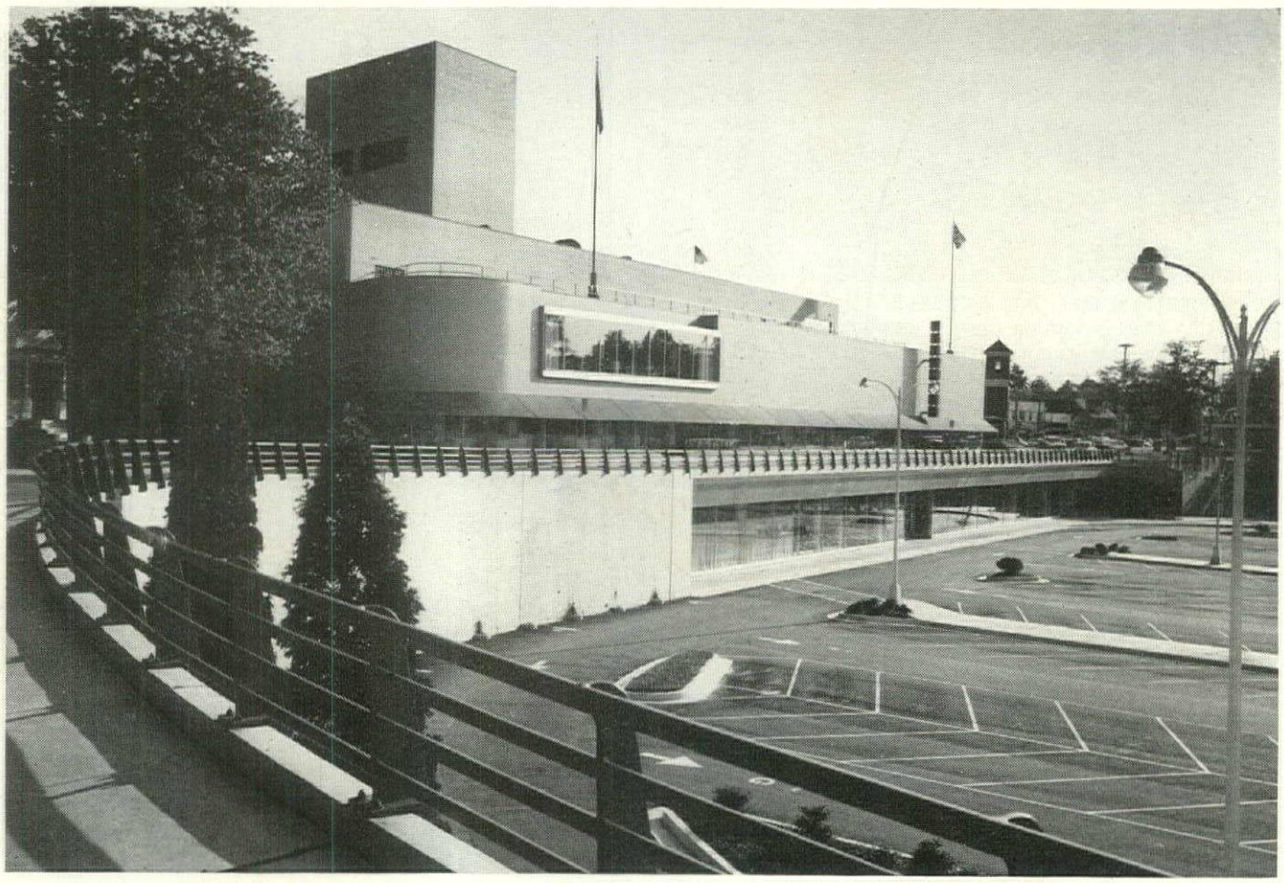

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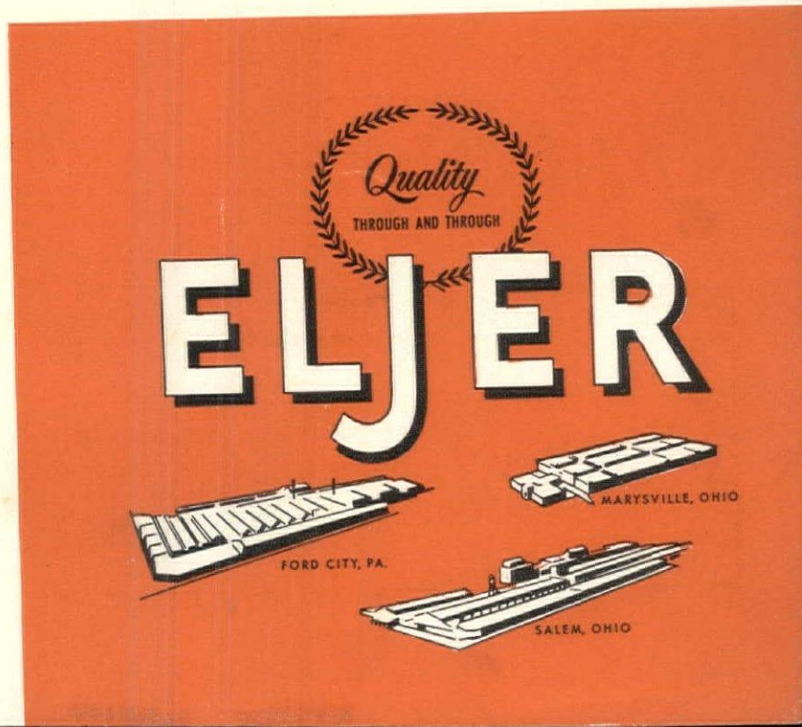

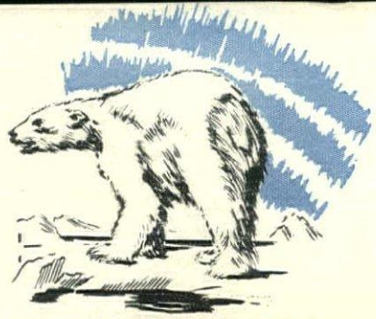

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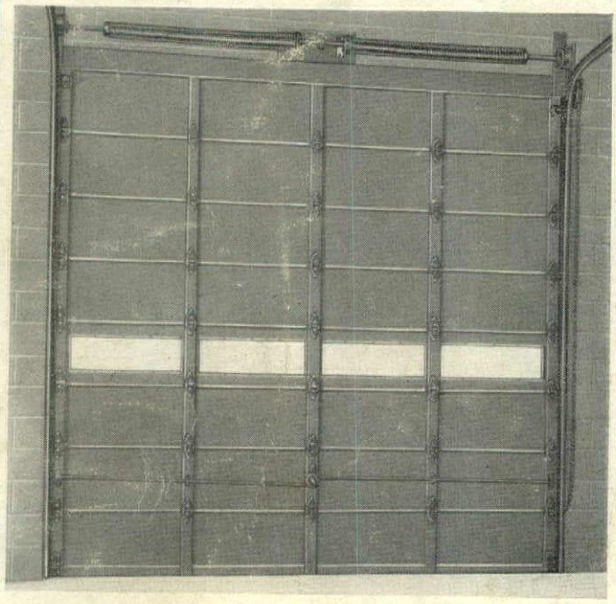

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