MAGAZINE OF BUILDING

copy

architectural **forum**

September 1954

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Library of the Minneapolis School of Art



The wall and doors paint a mural of color and light

Two patterned glass doors blend perfectly into this patterned glass wall. They pick up color and light—transmit them softly from either side. Yet the view is obscured for privacy.

The Blue Ridge *Securit** Interior Glass Door is a single piece of tempered glass, patterned on both sides. It is attractive in many settings. The glass goes well with other materials, and its neutral tone harmonizes with other colors. Being tempered, the *Securit* Door is toughened to take hard usage.

Easy to hang. Needs no cutting, no mortising. Arrives at the job with distinctive, easily applied hardware.

The cost compares favorably with that of high-quality doors of ordinary materials—and you save on installation and maintenance costs.

Your L·O·F Glass Distributor or Dealer will be glad to give you all the facts. Look for his name in phone book yellow pages, under "Glass". Or write us direct. *®



BRIEF DATA

Glass—3/8" thick. Muralex patterned on both surfaces.

Tempered—three to five times stronger than untempered glass of same thickness.

Reversible—can be used right or left hand.

Standard Sizes—

2'6" x 6'8"	2'5 1/16" x 6'7 1/16"
2'8" x 6'8"	2'7 1/16" x 6'7 1/16"
3'0" x 6'8"	2'11 1/16" x 6'7 1/16"
3'0" x 7'0"	2'11 1/16" x 6'11 1/16"

Closers—when specified, the door can be shipped with a Sargent closer or prepared for use with an LCN concealed closer.

For more complete information, see the Securit Door insert in Sweet's Architectural File.

Securit *Doors are part of this wall of Muralex patterned glass in the offices of Bert Mills, Inc., St. Charles, Illinois. Architects: Burgess, Stevens & Purdy, Chicago.*

Patterned glass has many uses — Blue Ridge *Patterned Glass* offers both function and beauty for many places in offices, homes, stores and institutions. In partitions, for example . . . to lighten a hall . . . for distinctive cupboard doors . . . for lovely built-in furniture. Choose from linear, checkered and overall designs in plain, textured or *Satinol** finishes.

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608 Madison Avenue, Toledo 3, Ohio

Please send me your folder "Blue Ridge *Securit* Interior Glass Doors".

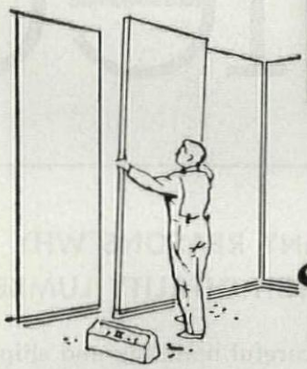
I would also like the booklet of ideas for using Blue Ridge *Patterned Glass* in ☐ homes ☐ other buildings. (Check one or both.)

NAME (PLEASE PRINT)_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____





INDIANA MANUFACTURING PLANT

Saves $14,394 in Eight Years

WITH HAUSERMAN MOVABLE WALLS

As office space requirements change, some companies go through the trouble and expense of remodeling . . . others move to new locations. But in ever-growing numbers, progressive companies like the Salisbury Axle Division of Dana Corp., Fort Wayne, find it far more convenient and much less costly merely to rearrange their modern Hauserman *Movable* Walls.

In this case, tangible cash savings of $12,508 are a direct result of making necessary rearrangements with Hauserman *Movable* Walls, rather than "remodeling" ordinary masonry walls. These moves were made easily and quickly, too . . . without disturbing normal office efficiency . . . without dust, dirt or confusion.

Additional savings of $1,886 represent the difference between cost of periodic soap-and-water cleaning of Hauserman's lifetime surface finish, and routine repainting of other type walls at four-year intervals. Whether your offices are large or small—doesn't this suggest an idea to you?



WRITE FOR FREE DATA MANUAL 53! This 96-page comprehensive guide for architects contains complete technical details as well as stock sizes, general instructions and specifications on *all* types of Hauserman *Movable* Interiors ...Write to: The E. F. Hauserman Company, 7148 Grant Avenue, Cleveland 5, Ohio.

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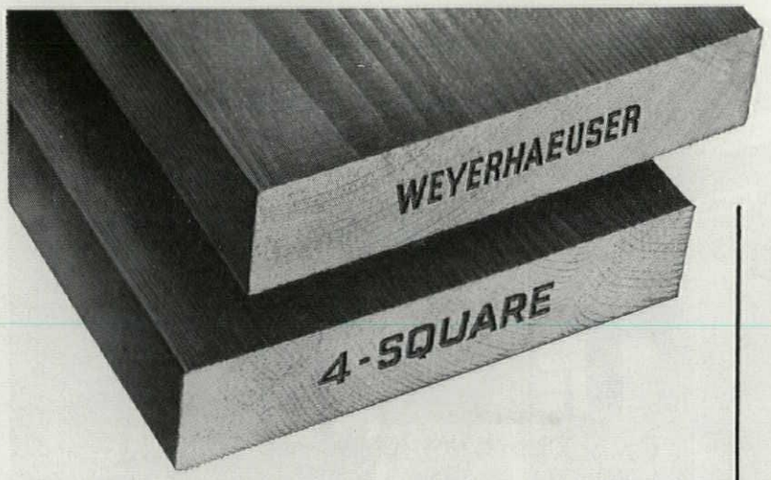


this brand name on lumber also means

kiln-dried

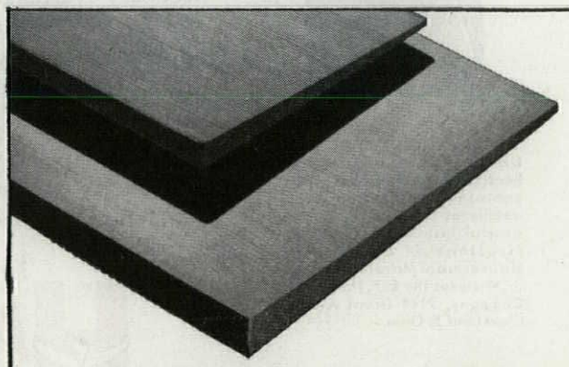
CONTROLLED KILN SEASONING IS ONE OF MANY REASONS WHY *WEYERHAEUSER 4-SQUARE* MEANS UNIFORMLY HIGH QUALITY LUMBER

The use of well-known, trade-marked materials is sound building practice—and always wins appreciative approval from home and building owners.

Builders and owners see in the Weyerhaeuser 4-Square brand name a familiar mark of quality. This confidence is the result of many years of advertising and, more important, the fine record of performance of every product bearing the Weyerhaeuser 4-Square trade mark.

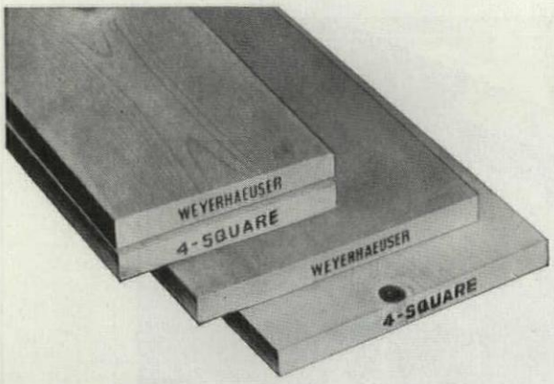
One of the reasons for the widespread acceptance of Weyerhaeuser 4-Square is the fact that every piece of lumber bearing this brand has been scientifically kiln-dried. Controlled seasoning means that this lumber holds its size and shape remarkably well... has maximum strength and stiffness . . . takes paint and other finishes. These characteristics, plus the benefits of precision sawing and surfacing, proper grading, careful handling and shipping, mean that Weyerhaeuser 4-Square Lumber is consistently high in quality.

See this lumber, in a wide range of species, grades and sizes, at the office of your local Weyerhaeuser 4-Square Lumber Dealer.

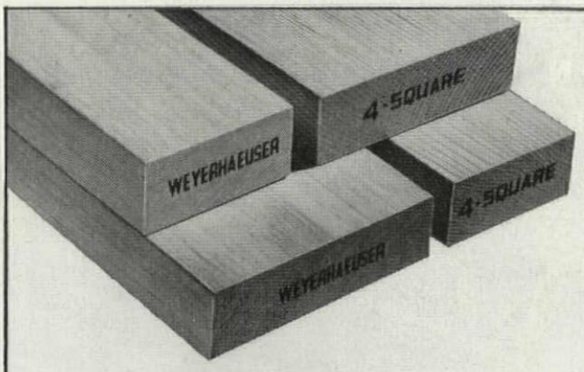


SIDING—Weyerhaeuser 4-Square bevel and bungalow siding takes and holds paint exceptionally well because it has been scientifically kiln-dried.

ARCHITECTURAL FORUM, September 1954. Volume 101, Number 3. Published monthly by TIME Inc., 9 Rockefeller Plaza, New York 20, N. Y. Entered as second-class matter at New York, N. Y. Professional Subscription price $5.50 a year, non-professional $7.00 a year.

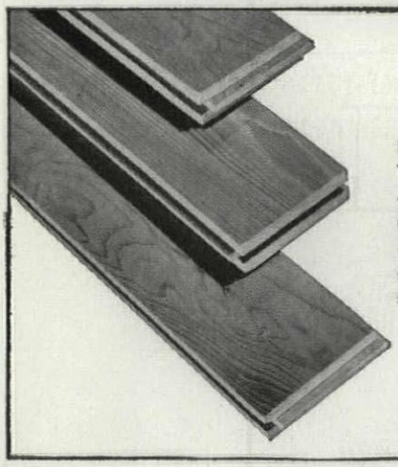


BOARDS—Every board bearing this brand name has been seasoned prior to manufacture.

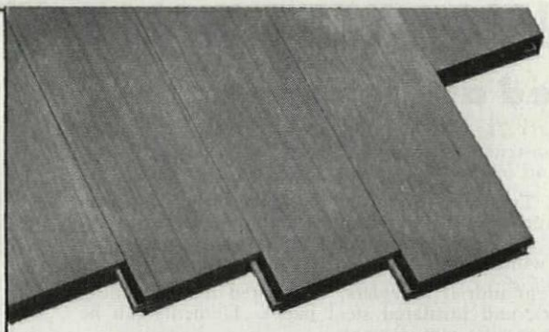


DIMENSION—Scientifically kiln-dried lumber contributes to sound, durable construction.

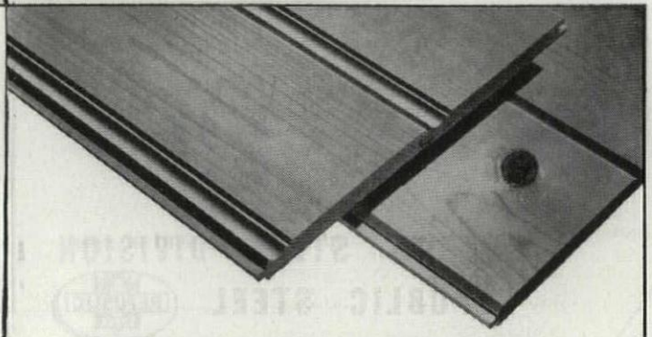
lumber



END MATCHED—This popular item eliminates waste and reduces building time—proper seasoning gives it maximum strength.



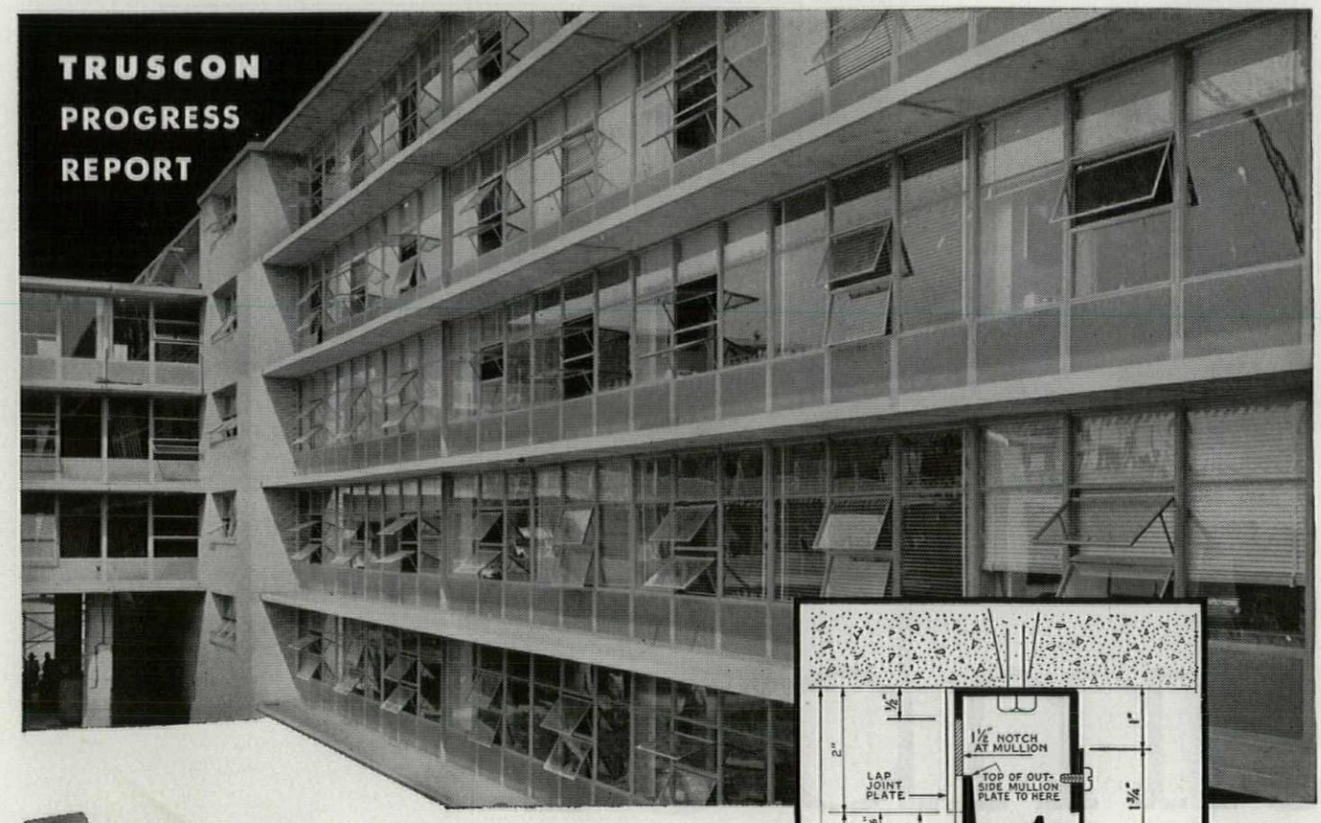
FLOORING—Controlled kiln-drying means a firm, smooth surface for superior appearance and wearability.



PANELING—Seasoned Weyerhaeuser 4-Square paneling presents a dry, smooth surface for a variety of finishes.

Weyerhaeuser Sales Company

ST. PAUL 1, MINNESOTA



First VISION-VENT WALLS

Installed at Clemson College

Vision-Vent construction now is a reality! Initial installation is completed and in use.

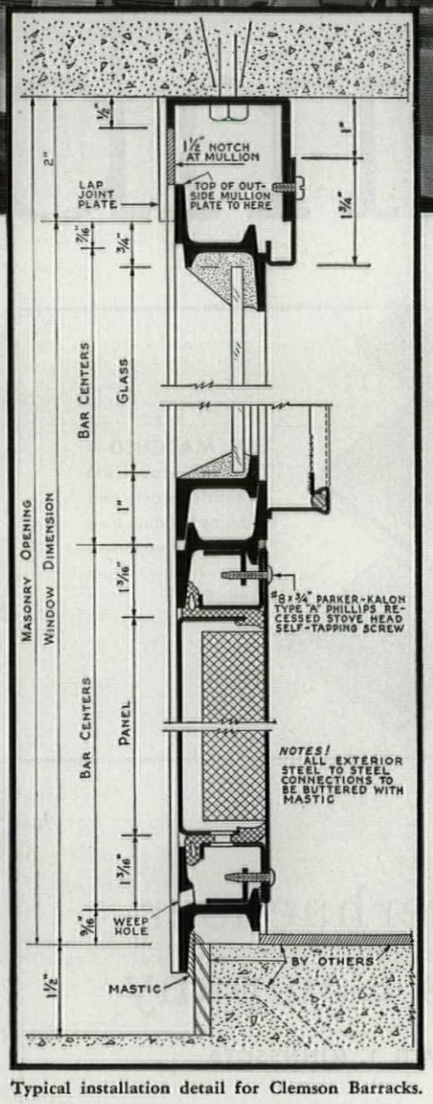
Vision-Vent is Truscon's exciting new approach to fast, economical construction. It is a complete wall panel that incorporates all the mass production and installation economies of standard steel windows.

Each Vision-Vent unit is *complete*, with fixed lights, awning type ventilators, and insulated steel panel. Elements can be varied to meet specific requirements.

Insulated panels may be colored porcelain enamel or stainless steel. They have a "U" factor of .197, equivalent to that of an ordinary masonry spandrel wall. They retain interior heat. They provide for efficient air-conditioning. Less than 1½" thick, they provide extra square feet of floor space. Light weight is reflected in structural savings.

Vision-Vent is weathertight. Erection is done from inside, and can average a floor-a-day rate.

Vision-Vent is recommended for all types of single- and multi-story buildings. Truscon engineers will be glad to study your requirements and develop design details and costs. More facts in Sweet's; or write:



Typical installation detail for Clemson Barracks.

Clemson Barracks, Clemson College, S.C.
Lyles, Bissett, Carlisle & Wolff, architects;
Daniel Construction Co., contractors.

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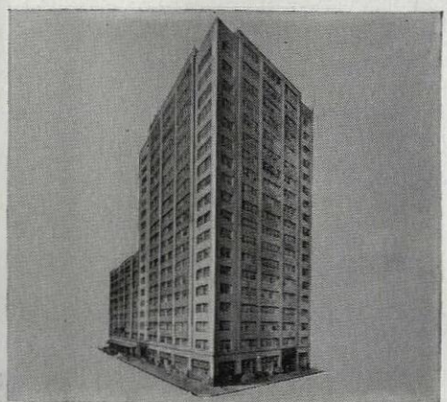

HOUSTON CLUB BUILDING
Houston, Texas

The new 18-story HOUSTON CLUB BUILDING will have 7 Otis operatorless elevators. The 7th to 10th floors will be occupied by the Houston Club. The 2nd to 6th floors are garage space. The 11th to 18th floors are air-conditioned office space.

HOUSTON CLUB BUILDING is one of more than 175 new and modernized office buildings, hotels, hospitals, banks, and department stores that have given AUTOTRONIC elevatoring an overwhelming vote of confidence — by buying it!

Architect: J. Russ Baty
Consulting Engineer: Robert J. Cummins
Mechanical Engineers: Dale S. Cooper and Associates
General Contractor: Manhattan Construction Co. of Texas

Office buildings, as well as hotels, often go social after dark. Full elevator service must be available late at night and holidays. Ordinarily, this means the added expense of keeping elevator operators on overtime duty.

With completely automatic AUTOTRONIC elevatoring, night and holiday service normally consists of two car "on-call" operation. However, every car with its "automatic elevator operator" is always on duty electronically.

Here again, traffic tells Otis AUTOTRONIC elevators what to do. Passenger calls and waiting time data are measured continuously. A sudden social or late business traffic surge is detected automatically. Additional cars go into operation immediately. They stay in service until the last straggler's call has been promptly answered. Then the extra cars go out of service automatically and normal two car "on-call" service is resumed.

Otis operatorless elevators save up to $7,000 a car, each year in office buildings; and up to $14,000 in hotels. Ask any of our 268 offices for details.

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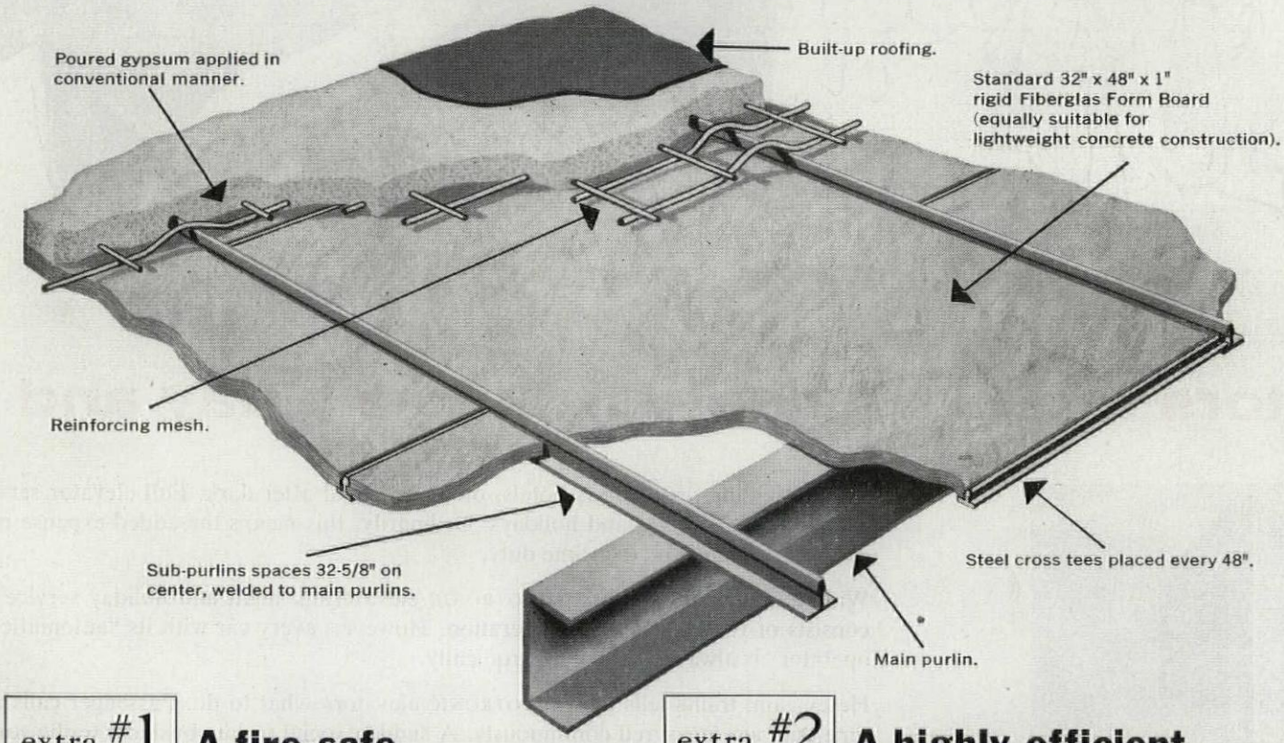
gives you two big extras at one low price!



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Triple-duty Fiberglas* Acoustical Form Board gives you a permanent, dimensionally stable form board for gypsum or lightweight aggregate . . . *plus* a rot-proof, highly-efficient insulated roof . . . *plus* a fire-safe acoustical ceiling. Yet Fiberglas Acoustical Form Board and poured-in-place deck cost no more than an acoustical ceiling alone! Specify easy-to-install Fiberglas Acoustical Form Board for schools, factories, shopping centers, all similar structures . . . get *two big extras* at one low price! For full technical data write Owens-Corning Fiberglas Corporation, Dept. 171-I Toledo 1, Ohio

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to keep
imagination
from ever
wearing out—

granite

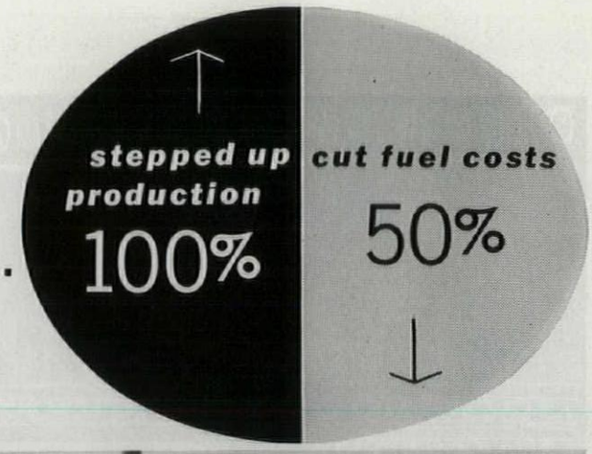
Granite ignores wear, weather and careless people

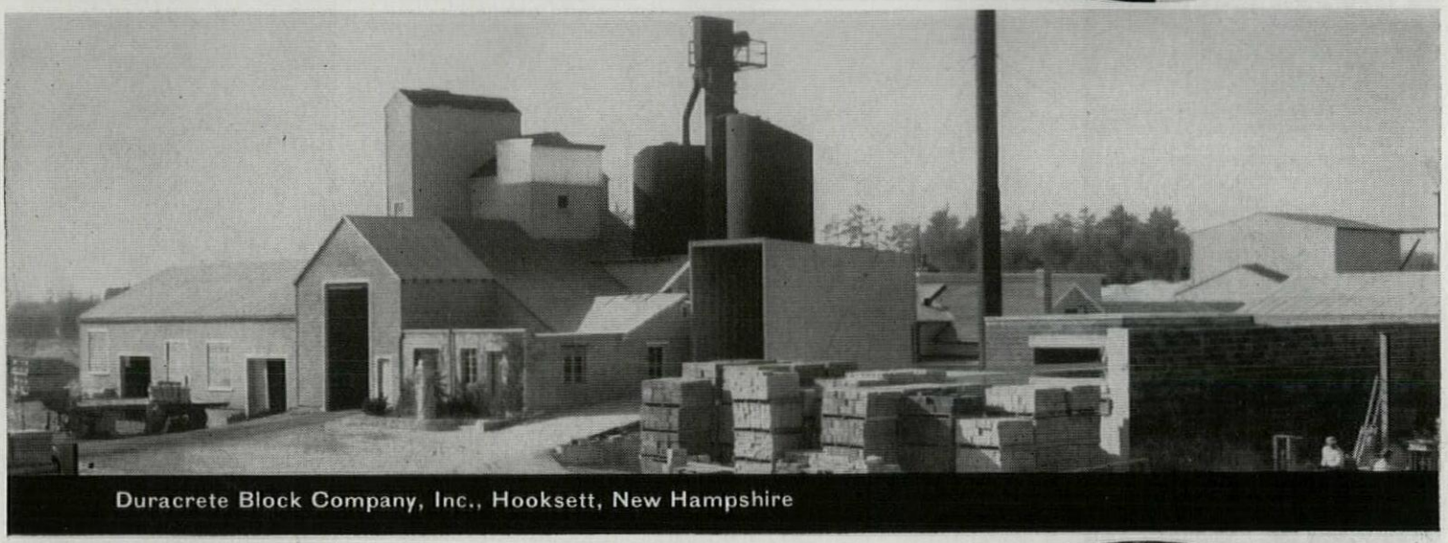
An entrance spotlights the taste of the people who work behind it and the imagination of the people who designed it. A *beautiful* entrance deserves a long life. Granite keeps an entrance as beautiful as the day it was completed—with only an occasional washing! Granite is nature's hardest building material, resisting ravages of weather, wear of heavy traffic and destructive tendencies of careless people like no other architectural stone.

The cost? Today the cost of granite is much lower than a few years ago—one of the biggest and most pleasant surprises in the building world. For 12 exact examples of how little granite costs today, write for our free file folder on granite entrances. In addition, you will receive a brochure with colored reproductions of 14 kinds of granite—and the reasons why granite costs less now than ever before. Write for file 8-B-3.

Cold Spring Granite Company
Cold Spring, Minnesota

How a KEWANEE Reserve Plus Rated boiler...





Duracrete Block Company, Inc., Hooksett, New Hampshire

■ Anyone would find it difficult to prove to Dante V. Donati, Manchester, New Hampshire, that Kewanee Reserve Plus Rated Boilers do not pay dividends. That's because he discovered it the hard way. First, he bought an ordinary boiler for his plant at the Duracrete Block Company. He operated it one year, and then . . . but let him tell the story—

"We installed an ordinary boiler and found it to be inadequate. We then purchased a Kewanee Unit. Our production was stepped up more than 100% . . . with fuel costs cut in half. Maintenance cost is extremely low. The quality of our product has improved because of lower moisture content due to ample steam for processing."

Judging from Mr. Donati's experience it just makes sense that it's money in the bank to follow the Kewanee Reserve Plus Rating Plan in selecting a boiler. So when you choose a boiler, know these important facts:

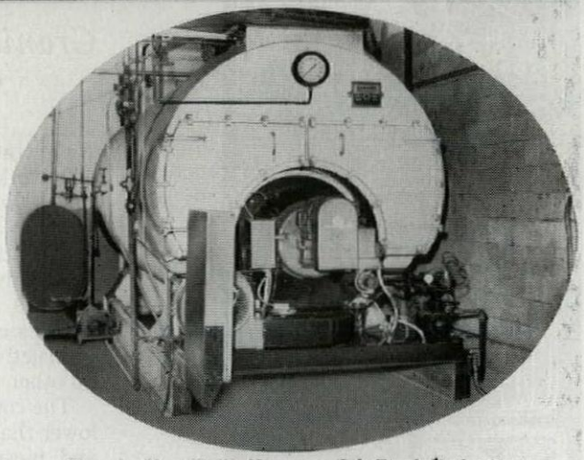
1—*Boiler rating must be based on nominal capacity, not maximum capacity;*

2—*Boilers must have sufficient built-in reserve to meet changing demands;*

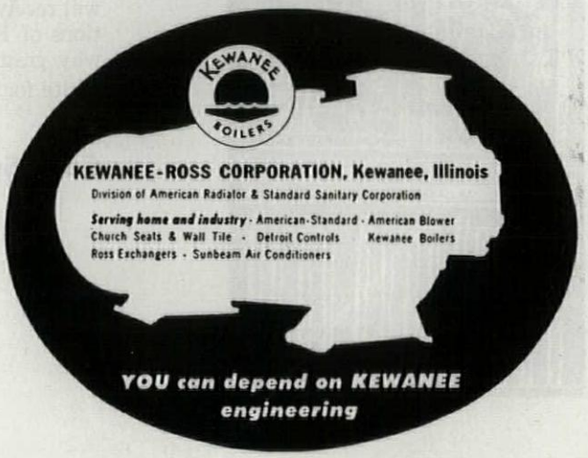
3—*Boilers must have sufficient capacity to operate at "cruising speed," not maximum speed at all times;*

4—*Like examples must be considered in comparing boilers. Don't be confused by vague technical claims.*

Choose Kewanee and cut fuel costs—lower maintenance—reduce breakdowns —get longer boiler life.



Here is No. 85-60 Kewanee Oil Fired Boiler-Burner Unit installed at the Duracrete Block Company.



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high quality American Welded Wire Fabric



PREFABRICATED ROLLS of American Welded Wire Fabric wound on large mandrels can be unrolled continuously from beam to beam, making installation easy and assuring continuous reinforcing.

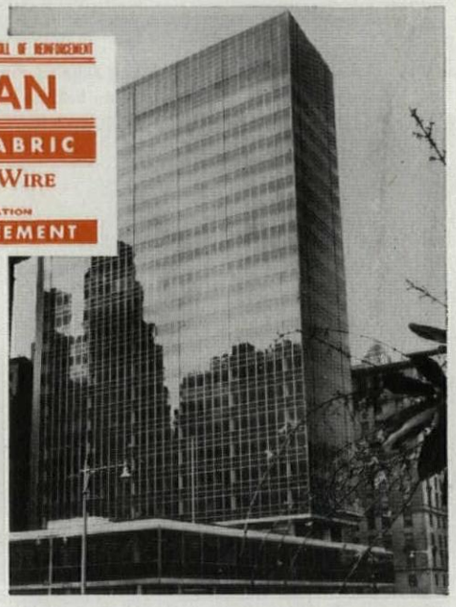




PITTSBURGH'S RENAISSANCE is symbolized by these new Gateway Buildings which are built with short-span floors reinforced with American Welded Wire Fabric.

PRE-CAST CONCRETE slabs and planks used in this building have exceptionally good resistance to cracking when they are reinforced with American Welded Wire Fabric.





LEVER HOUSE contains American Welded Wire Fabric Reinforcement. American Fabric often exceeds the new ASTM Specification A185-53T; it puts an extra margin of safety in your designs.

REINFORCEMENT is the backbone of your concrete structures, so it pays to specify the best wire fabric for walls, floors, roofs, and concrete ground slabs. And the very best is American Welded Wire Fabric.

American Fabric not only meets the new ASTM Specification A185-53T, it often *exceeds* it. We make a concerted effort all along the line, in making the steel, in drawing the wire, and in fabricating and testing the fabric, to see that American Welded Wire Fabric is the best it's possible to make.

This pays off for you, because you can use it with confidence in your designs, knowing that it will give your concrete more than the calculated strength and resistance to cracking.

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COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
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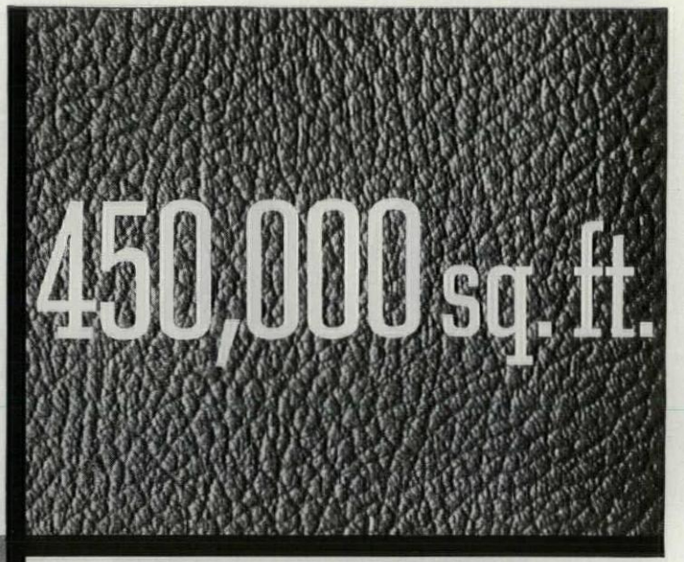
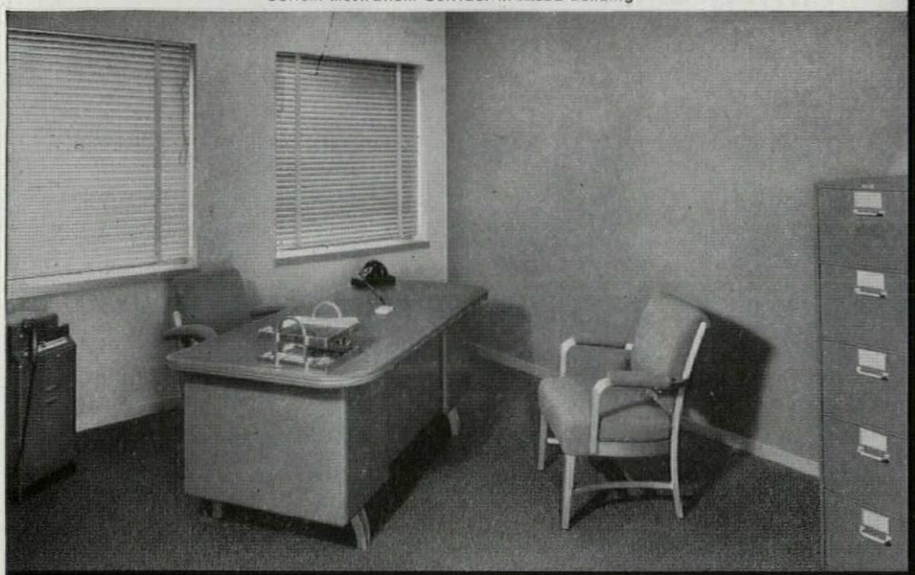
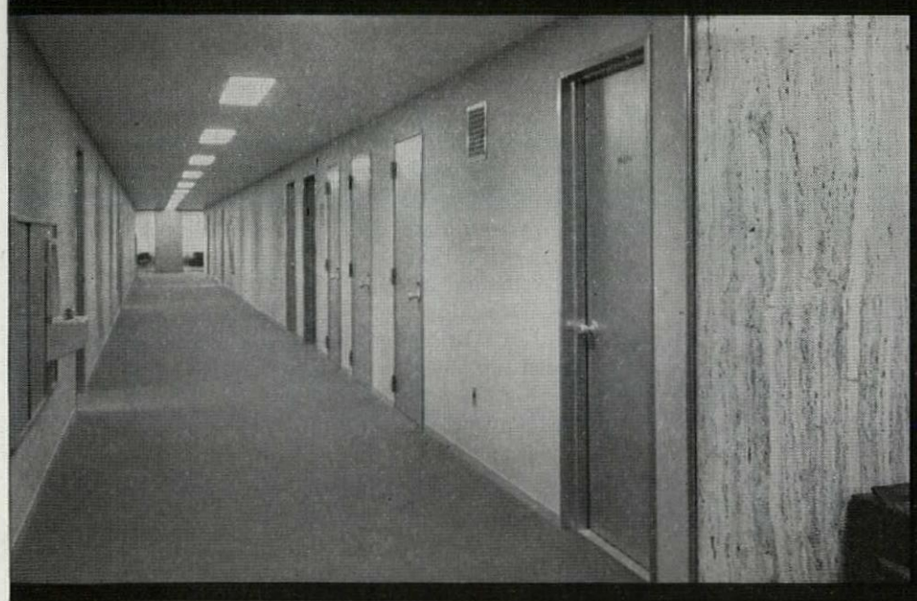
✓ They liked it...

✓ They came back for more!



Top Illustration: Administrative Office, Alcoa Building, Pittsburgh
Bottom Illustration: Corridor in Alcoa Building





Architect: Harrison and Abramovitz, New York.

Decorator: Knoll Associates, New York

# of Joanna *Vinylized* WALL FABRIC

in the new Alcoa Building, Pittsburgh . . .

NOW—

42,500 sq. ft. more for Alcoa branch offices

The gleam and sparkle of aluminum—ALCOA aluminum—the austere beauty of marble, and the vivid color and charm of Joanna Vinylized Wall Fabric . . . these are the principal materials used in the magnificent interior decor of the Alcoa Building in Pittsburgh.

With this remarkable building, ALCOA further proved that aluminum is one of the finest building materials available . . . and, incidentally, proved that Joanna Vinylized Wall Fabric is tops for economical, durable wall decoration.

"They tried it" . . . and found Joanna Vinylized Wall Fabric is built to last for years. Its vinyl surface takes all the punishment, the scuffs and scrapes and bumps that are part of ordinary wear in a busy office. Maintenance and redecorating costs are cut to the bone . . . Joanna stays unmarred after years of wear, and dirt and soil simply wash off with soap and water.

"They liked it" . . . especially Joanna's warm, rich color and unusual textures. These offer limitless possibilities for the creation of interiors with distinct character and atmosphere. Joanna's appearance is a definite decorating asset to any building that's built for beauty.

It didn't take long for Joanna to prove its performance and economy, so ALCOA has "come back for more." Already more than 42,000 additional sq. ft. have been installed in Alcoa branch offices. We are sure that your satisfaction upon once trying Joanna will also bring you back for more. Write today for Sample Folder S-24, the same one that got ALCOA started.

Approved and Recommended by WALLPAPER RESEARCH BUREAU OF THE PAINTING AND DECORATING CONTRACTORS OF AMERICA 1884

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Montreal, Quebec, Canada

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Export Division: 1 Exchange Place
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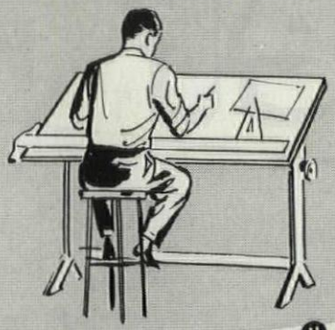

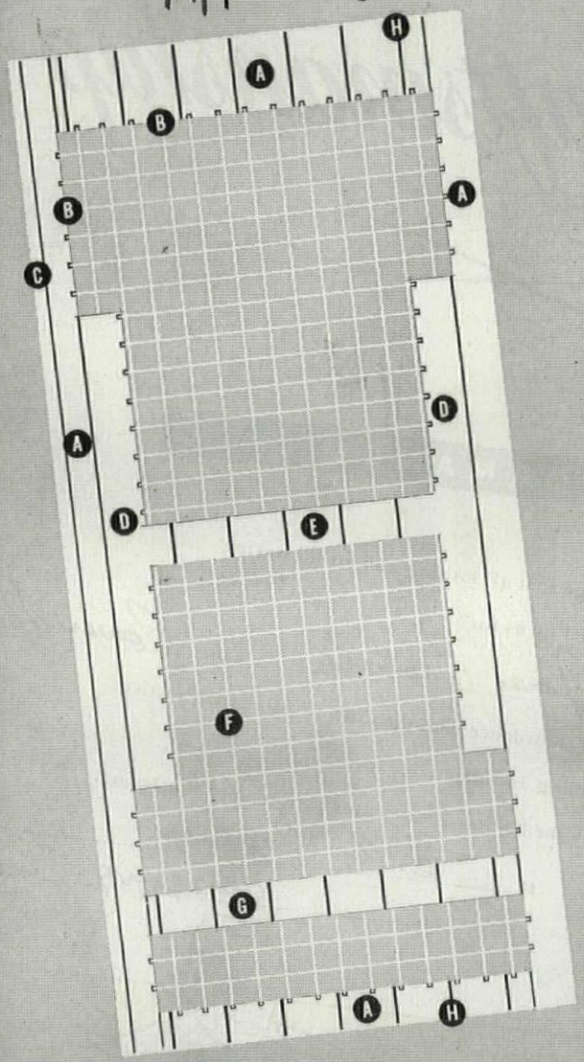



Light Weight . . . and easy to handle for quick, one-man installation.

Built-in Strength . . . to resist hard abuse in hospitals, schools and apartments.

Has Public Approval . . . for modern appearance and ease of opening-and-closing.

when quality and service count architects coast to coast specify

PAINE REZO

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America's Finest

INSTITUTIONAL DOORS

For use in public buildings, no door equals a Rezo for lightness, strength, service, appearance — and low cost! To be sure . . . specify Paine Rezo Institutional Doors by name!

Only a Rezo Institutional Door has all these quality features:

A. Nominal width of stile, 3"; top rail 5" bottom rail 3". If no kick plate or top door closer required, standard door may be reversed where extra heavy hardware is needed at bottom.

B. Gridwork hand assembled and mortised into stiles and rails for greater strength.

C. Matching vertical edge strips can be furnished when specified.

D. Lock area, on each side, softwood — 6" wide and 21" from either end. Varies in length in proportion to specified height of door.

E. 3" cross rail for special hardware located 41" from bottom of door to top of rail unless otherwise specified.

F. Hollow core gridwork: 2" by 2" air cells, of finely machined softwood with interlocked construction for strength and rigidity. Hand assembled for precision fitting.

G. 3" cross rail for kick plate located 10" from bottom of door to top of rail unless otherwise specified.

H. Vent grooves at top and bottom of door permit air circulation to equalize moisture content of door under conditions of changing humidity and temperature.

3-ply face panels regardless of specie; 1/8" thick before sanding.

Built to rigid standards of quality, workmanship and inspection — backed by over 100 years of woodworking experience! Write for details!

PAINE

LUMBER COMPANY, LTD.

ESTABLISHED 1853 • OSHKOSH, WIS.

LATH and **plaster** with

Certified Craftsmanship

PLEDGE OF PERFORMANCE

We hereby pledge that all lathing and/or plastering

performed by us for

Jonas Brothers ON Tower Apts.

will be (is) in accordance with the Code of Standard Practices

for Lathing and Plastering,

established by the National Bureau for Lathing and Plastering.

BY E. A. Taylor

June 1, 1974 DATE



Certified Craftsmanship

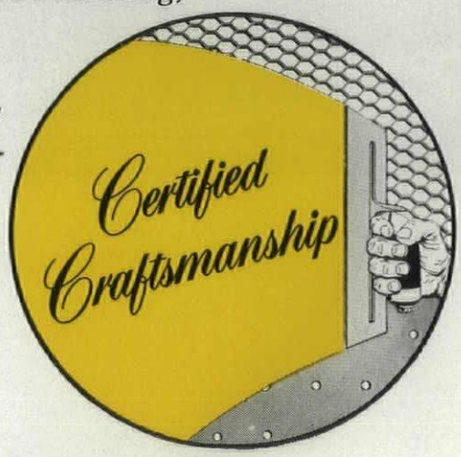
IN ACTION IN OVER 40 CITIES

● Plastering contractors in more than 40 major cities are offering Certified Craftsmanship certificates. As members of local chapters of the National Bureau for Lathing and Plastering, they have subscribed to the Bureau's recently adopted Code of Standard Practices for Lathing and Plastering.

● *The Certified Craftsmanship Certificate* is a written commitment to work schedules, job cooperation, work of craftsmanship caliber and nationally recognized standards of quality. A certificate is yours for the asking from lathing and plastering contractors adhering to the Code of Standard Practices for Lathing and Plastering.

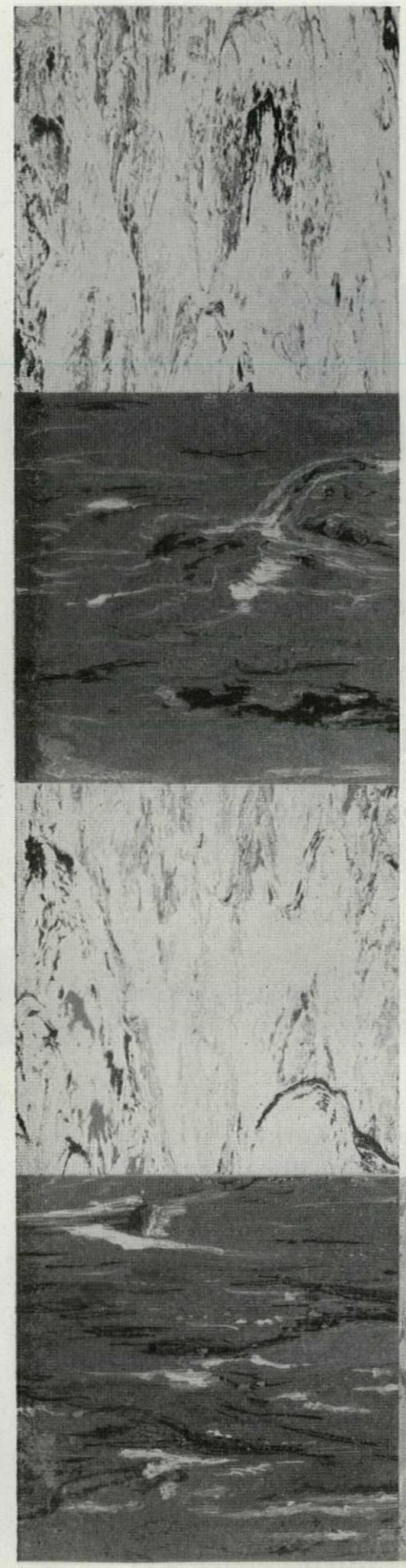
We suggest a thorough reading of the Code of Standard Practices which appears on the back of every pledge. Ask your lathing and plastering contractor for a copy or write National Bureau for Lathing and Plastering, 1401 K Street N. W., Washington 5, D. C.

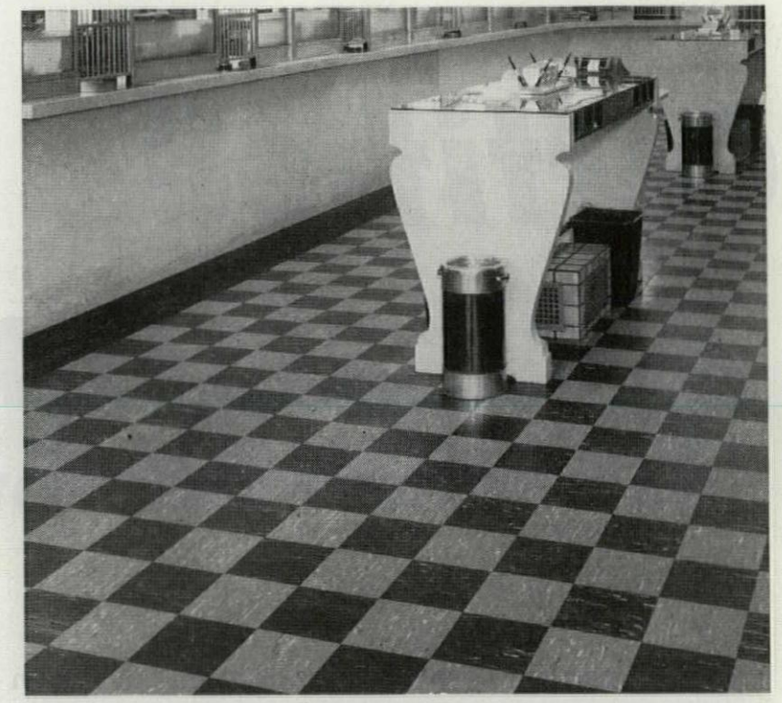
This is the emblem of the National Bureau for Lathing and Plastering. It symbolizes high standards of job performance and responsibility.



Associated Manufacturers
of Lathing and Plastering Materials
520 N. Michigan Avenue, Chicago 11, Illinois

FINISHING LIME ASSOCIATION OF OHIO • GYPSUM ASSOCIATION
METAL LATH MANUFACTURERS ASSOCIATION
PERLITE INSTITUTE • VERMICULITE INSTITUTE





Floor of Teutonia Bank in Milwaukee, Wisc., is typical of an installation where vinyl tile is used because of its remarkable wearing qualities.

Pattern for Beauty

Plus Durability . . .

VINYL TILE FLOORING

What is "vinyl" tile? This new floor covering is made from synthetic resin, fillers, stabilizers and plasticizers. The resin and plasticizers are the binders and the most important ingredients—they impart durability, abrasion resistance, grease and stain resistance, flexibility, heat and light stability.

How can you use vinyl tile? This tile is your answer to questions of durability and rich, colorful appearance in flooring. Vinyl tile comes in a wide array of colors—light to dark; soft, warm pastels; unusual marbleized effects. You'll find it ideal wherever wear's a problem. It also keeps its gloss; requires little maintenance and can be used over practically any kind of dry, smooth subfloor. These advantages make vinyl tile the fastest growing floor covering. Available in a wide price range.

Monsanto's role: This new development in flooring is made possible by Monsanto Opalon* vinyl resins and Santicizer* plasticizers.

For more information on the companies manufacturing vinyl tile, get in touch with the nearest Monsanto sales office or write to Organic Chemicals Division, MONSANTO CHEMICAL COMPANY, Box 478, St. Louis 1, Missouri.

Reg. U.S. Pat. Off.

MONSANTO
CHEMICALS AND PLASTICS ®

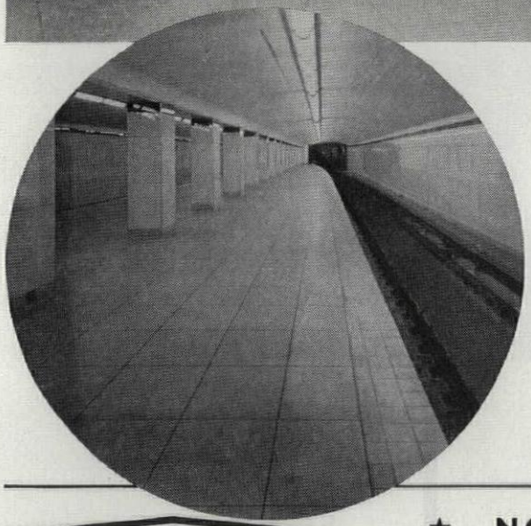
SERVING INDUSTRY
. . . WHICH
SERVES MANKIND

Where foot traffic is heavy,

make your terrazzo *Non-slip* and *Wear-resistant*

with ALUNDUM AGGREGATE





. . . non-slip, wet or dry!

Everybody is in a hurry in a subway. Slipping accidents can happen, and often — but here in the new Toronto subway, Norton ALUNDUM Aggregate in terrazzo has made the station floors and ramps non-slip in all kinds of weather . . . . And, there is a money-saving factor too, because the hardness and toughness of ALUNDUM Aggregate assures years and years of life for the terrazzo, even with heavy subway traffic.

Write for information or see our catalog in Sweet's

NORTON
NON-SLIP AGGREGATE

★ NORTON COMPANY ★
WORCESTER 6, MASSACHUSETTS
Making better products...to make other products better

SURCO

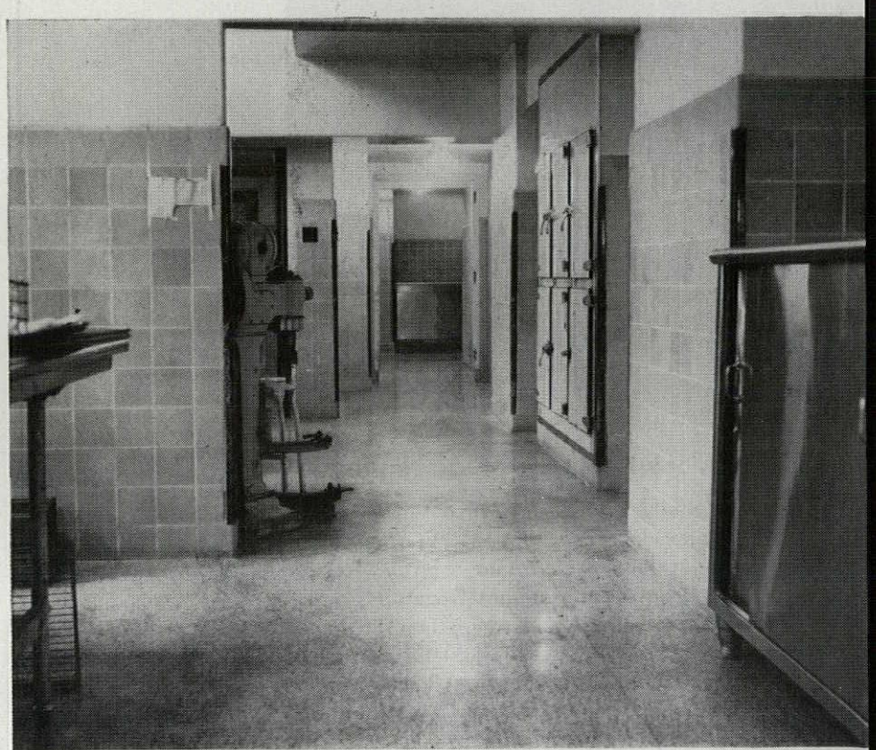
terrazzo-type floors

Beautiful • Durable • Comfortable

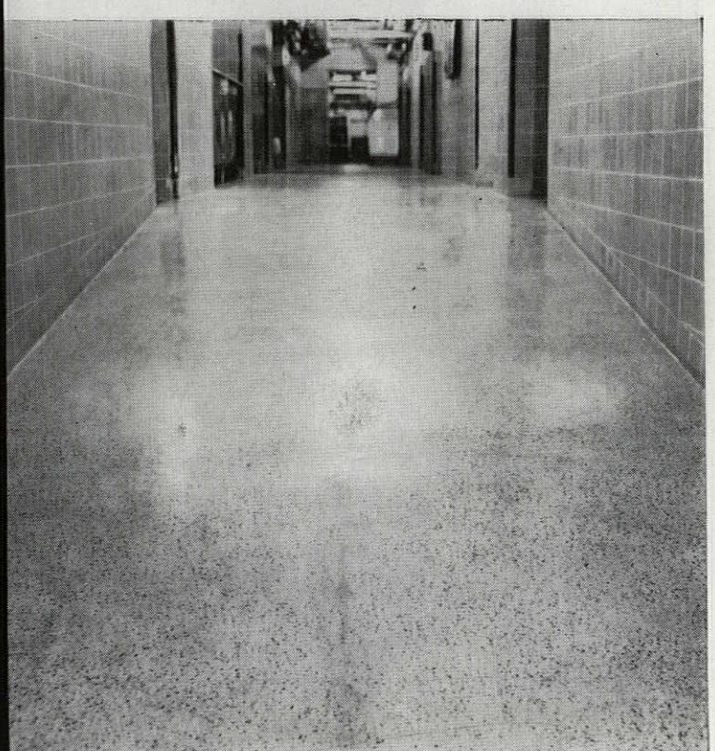
Beautiful SURCO terrazzo-type floors are as durable as concrete . . . yet as resilient as quality hardwood flooring. Discomfort and fatigue often caused by walking or standing for long periods on concrete or tile floors are drastically reduced when SURCO floors are installed.

For new construction, SURCO terrazzo-type flooring is ideal since its wide range of color and design will match any decor. SURCO terrazzo-type flooring saves time and money because final finishing of concrete subsurface is unnecessary.

For resurfacing, SURCO flooring is perfect for old floors, too. Applied only ¼-⅜ inches thick, its light weight eliminates structural changes. SURCO bonds permanently to concrete, metal, wood, even glass.



• **hospital kitchen** This floor formerly of ceramic tile has been entirely resurfaced with SURCO terrazzo-type material. Applied only ¼-inch thick, SURCO decorative flooring was used also to resurface the ground floor, linen room, and service room of the hospital. Stoves and heavy machinery remained in place during entire application.

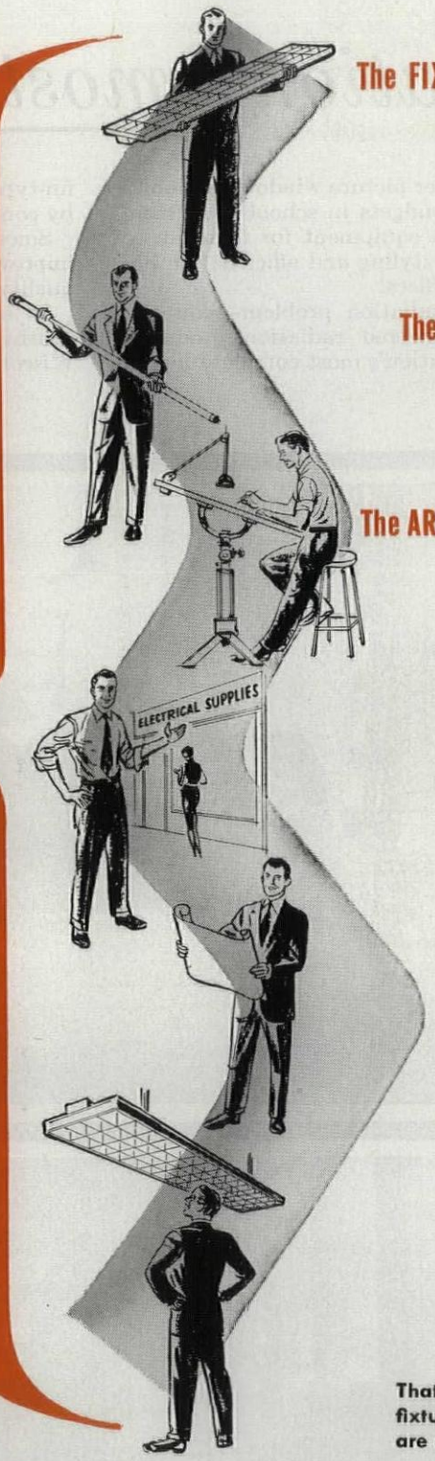


• **hospital corridor ramp**
Ramp was resurfaced in same manner as kitchen. SURCO Red Label latex was utilized in both installations.

See Sweets' File for further information or write to:

SURFACE COATINGS, INC.
110 Pear Street, S. E.
Atlanta, Ga.

Because Certified Ballasts are "tailored to the tube" everybody benefits



The FIXTURE MANUFACTURER benefits...

Because satisfactory fluorescent fixture performance depends largely on the ballast. Customer dissatisfaction will eventually cost him money and his reputation. CERTIFIED CBM BALLASTS are Tailored to the Tube to assure best lighting performance.

The TUBE MANUFACTURER benefits...

Because he knows his tubes will give full lamp life and full light output when powered by CERTIFIED CBM BALLASTS that are tailored to the Tube.

The ARCHITECT or CONSULTANT benefits...

Because his clients want fluorescent lighting that will be reliable. Specify CERTIFIED CBM BALLASTS in all fluorescent units and you'll have happy clients.

The DISTRIBUTOR benefits...

Because he wants to stock and sell fluorescent fixtures that will give satisfactory performance. CERTIFIED CBM BALLASTS match accurately the requirements of the fluorescent tube used.

The CONTRACTOR benefits...

Because he can't afford to lose his reputation by using equipment that won't give satisfaction. Install CERTIFIED CBM BALLASTS to play safe.

The USER benefits...

Because he wants fluorescent lighting performance that is trouble-free, quiet and economical. CERTIFIED CBM BALLASTS assure him satisfaction.

That's why, today, most fluorescent fixtures for general lighting service are equipped with



CERTIFIED BALLAST MANUFACTURERS

Makers of Certified Ballasts for Fluorescent Lighting

2116 KEITH BLDG., CLEVELAND 15, OHIO

Whatever your radiation

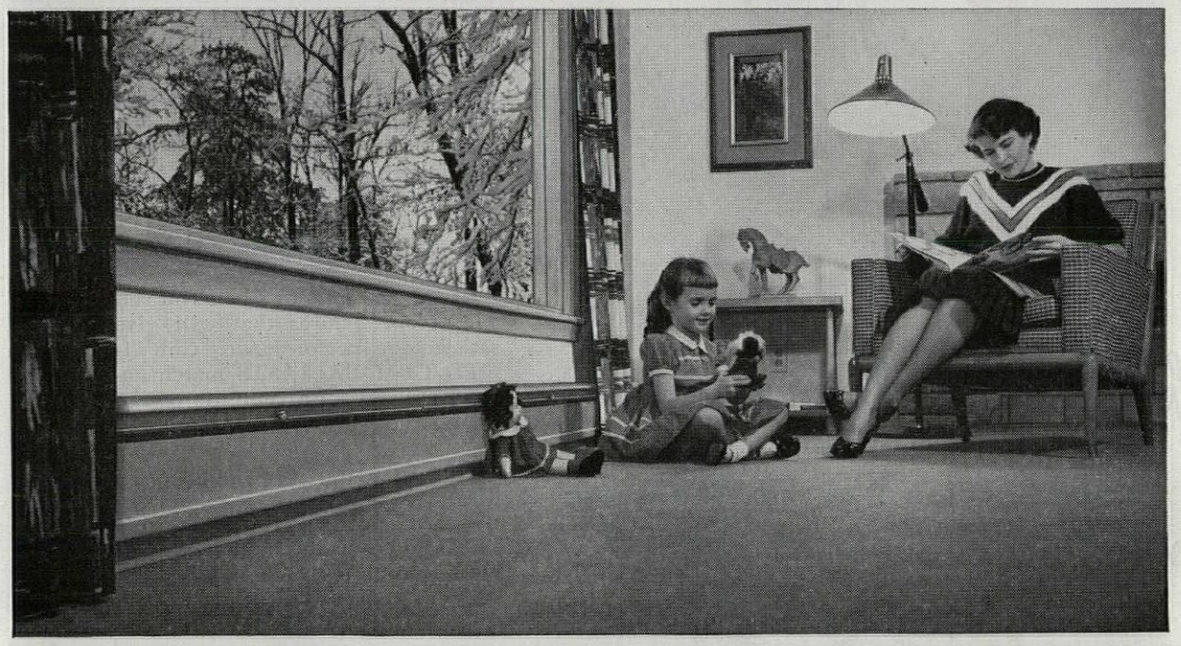
...*the nation's most complete line!*

From killing icy drafts under picture windows in homes to meeting tight heating budgets in schools . . . from providing rugged radiation equipment for factories to meeting rigid standards of styling and efficiency in hotels, hospitals, churches, offices!

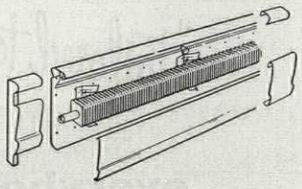
No matter what your radiation problem—you can solve it with TRANE-engineered radiation products. TRANE manufactures the nation's most complete line of fin-type radiation . . . makes it easy for *you* to save time by concentrating responsibility in *one* reliable source.

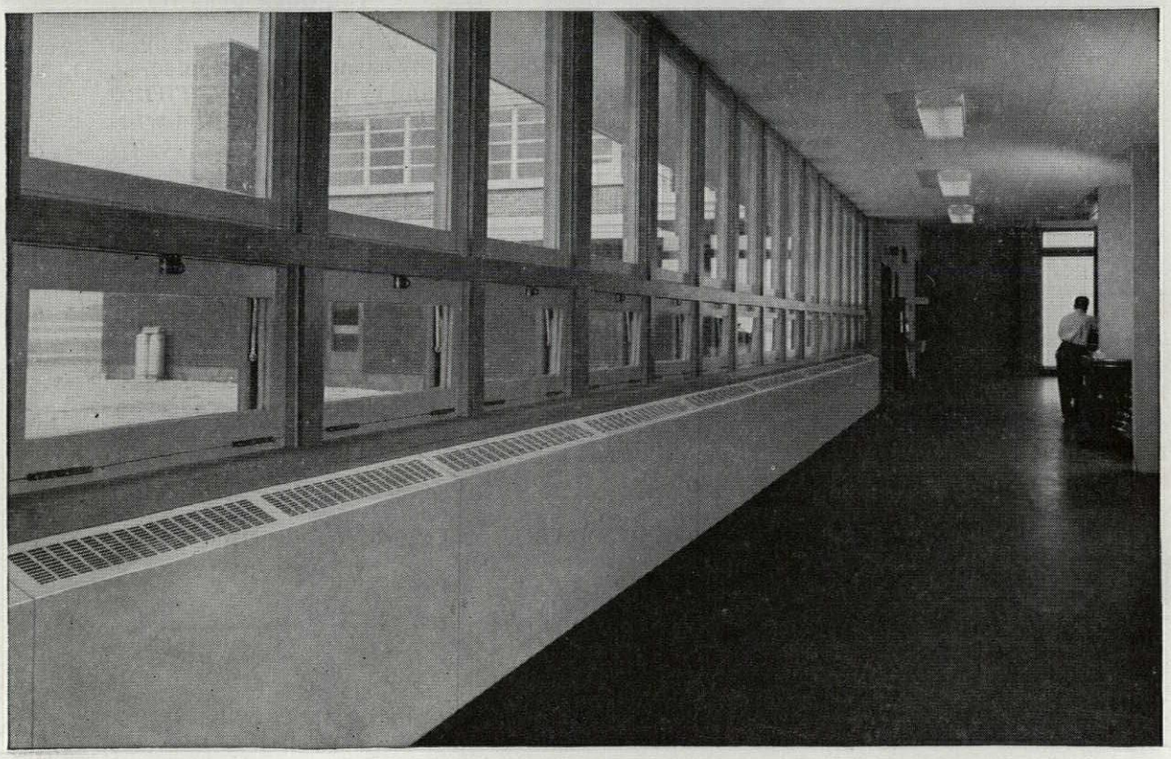
Since 1925 TRANE has led the way in developing and improving radiation products. You can depend on TRANE quality and TRANE ratings in job after job after job.

So make *your* next job a *one-order* job. Call your nearby TRANE Sales Office, or write TRANE, La Crosse, Wisconsin, for complete information.

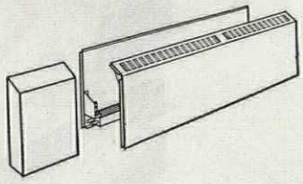


TRANE Baseboard Convectors assure your homeowner clients greater comfort by heating where the cold begins—along *outer* walls, *under* windows. Give greater freedom of furniture arrangement, add beauty to any home. And they may be installed up to 50% faster because cabinet and coil come preassembled, closures *snap* together. Nonferrous heating element. 8¼″ and 12″ heights.





TRANE Wall Line Convectors combine low initial cost with low installation cost to meet even the tightest heating budgets. Designed for attractive wall-to-wall applications in schools, office buildings, institutions, wherever *high capacity* and *economy* are paramount. Rugged construction, extra reinforcements and full back. Cabinet heights 14″, 20″, 26″; depths 4″ and 6″; lengths to 72″.



need – Trane can supply it !

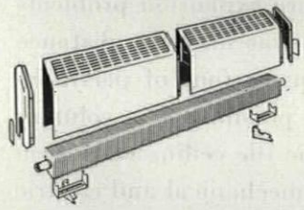
one source • one responsibility

Specify **TRANE** *for all your radiation needs*

MANUFACTURING ENGINEERS OF AIR CONDITIONING, HEATING, VENTILATING AND HEAT TRANSFER EQUIPMENT

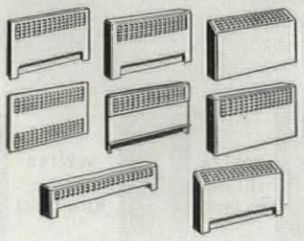
The Trane Company, La Crosse, Wis. • East. Mfg. Div., Scranton, Penn. • Trane Co. of Canada, Ltd., Toronto
90 U. S. and 15 Canadian Offices

TRANE Wall-Fin brings draft-free heating to long wall and window areas. Large tube diameters make it especially suitable for loop systems where pressure drop is critical. Use single element where capacity requirements are low, multi-tiered elements where high capacity per lineal foot is required. Sloping-top cabinets or expanded metal grilles. Choice of 1¼″ or 2″ steel or 1″ or 1¼″ nominal copper elements.





TRANE Convectors combine efficiency with compactness and beauty. Aluminum-copper heating element responds quickly, provides heat instantly . . . eliminates wasteful overheating common to cast iron radiation. Ideal for homes, offices, institutions. Can be installed free-standing, recessed or wall-hung. 21 cabinet styles with flat or sloping tops. Knob or chain dampers optional.



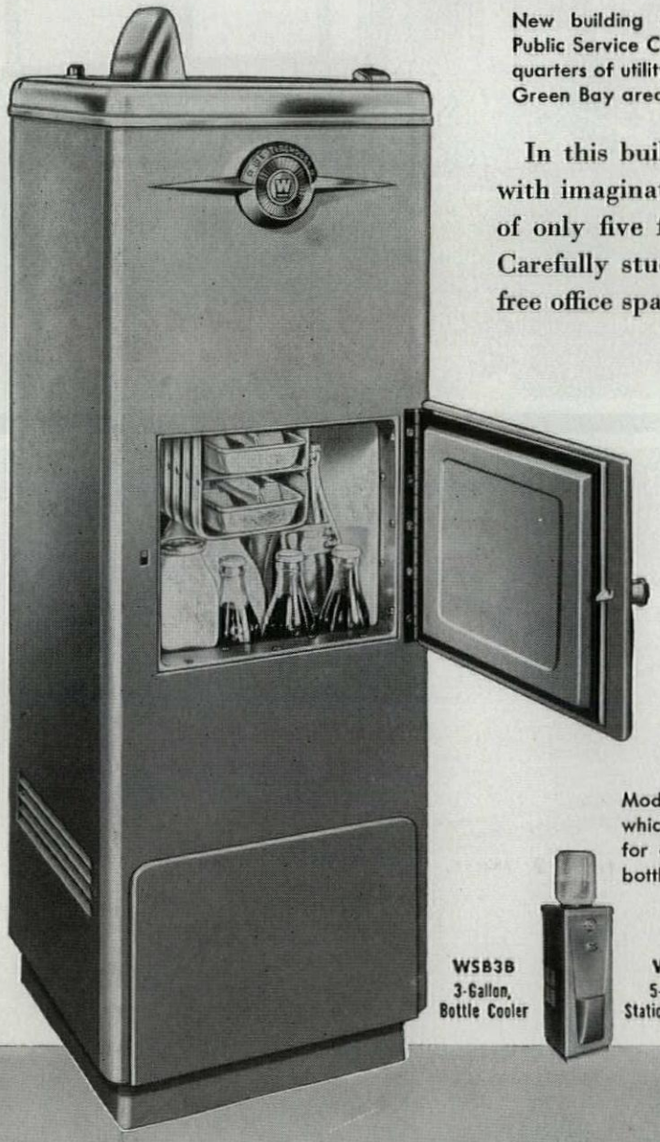


Congratulations



TO ARCHITECT:
John E. Somerville
of Green Bay, Wisconsin

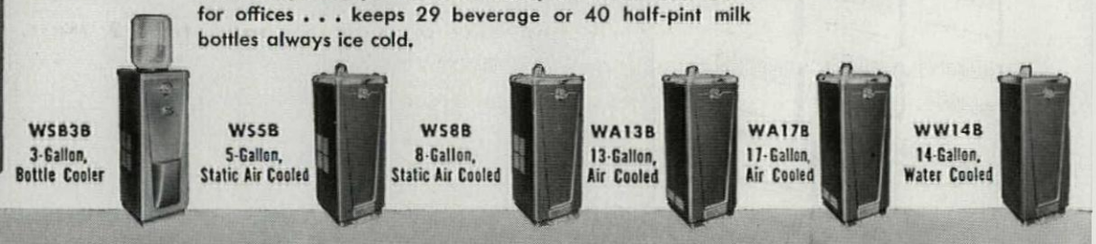
New building of The Wisconsin Public Service Corporation—headquarters of utility operations in the Green Bay area.



In this building the architects have handled future expansion problems with imagination. Recently, an 18′ by 10′ partition was moved a distance of only five feet at a cost of just 32 cents per square foot of partition. Carefully studied architectural planning made this possible. The column-free office space has a completely removable, acoustic tile ceiling resting on flanges of light troffers. Access to all mechanical and electric services above the ceiling can be gained without tools. Light fixtures and air ducts are flush with the ceiling. Windows are at regular 5 ft. intervals; between the windows are 1 ft. wide flush mullion surfaces for receiving abutting partitions without any fitting required. An infinite number of rearrangements is possible with these facilities.

Westinghouse Water Coolers have been selected to add to the efficiency of this business office. Architects know that Westinghouse gives their clients more cold water per dollar of investment.

Model WAC2 . . . a compartment pressure-type cooler which keeps 3½ pounds of ice ready for instant use. Ideal for offices . . . keeps 29 beverage or 40 half-pint milk bottles always ice cold.



WSB3B
3-Gallon,
Bottle Cooler

WS5B
5-Gallon,
Static Air Cooled

WS8B
8-Gallon,
Static Air Cooled

WA13B
13-Gallon,
Air Cooled

WA17B
17-Gallon,
Air Cooled

WW14B
14-Gallon,
Water Cooled

designed to compliment the variety of planning of today's top architects, the Westinghouse Water Cooler for 1954 is better in every respect. Distinctively styled with polished metal trim and a new escutcheon, the attractive silver-grey hammered finish is capped with a sanitary stainless steel top.

with *dual electric control*, you now have both finger-tip and toe-tip operation on the same cooler at no extra cost. The patented *Pre-Cooler* and exclusive *Super Sub-Cooler* utilize cold water waste to pre-cool incoming drinking water and sub-cool the hot liquid refrigerant respectively.

the architect specifies Westinghouse Water Coolers to overcome problems created by varying water pressure. The Westinghouse automatic stream-height control is built right into the bubbler assembly and prevents splash and dribble by compensating for variations in the water pressure. All these features in a unit that occupies only 14" x 14" of floor space.

in mind, when Westinghouse engineers developed these Water Coolers, were the many different requirements which they had to fulfill. That's why your client has a choice of 13 models with capacities of from 1 to 20 gallons in pressure, compartment, bottle and remote types. All are backed by the Westinghouse 5-Year Guarantee Plan.

SEE THE NEW PAY-WAY COMPUTER

Designed to save time in making calculations and to aid in specifying the number, type and location of water coolers for your clients. Check the yellow pages of the telephone directory for your nearest Westinghouse Water Cooler distributor . . . or drop us a line.



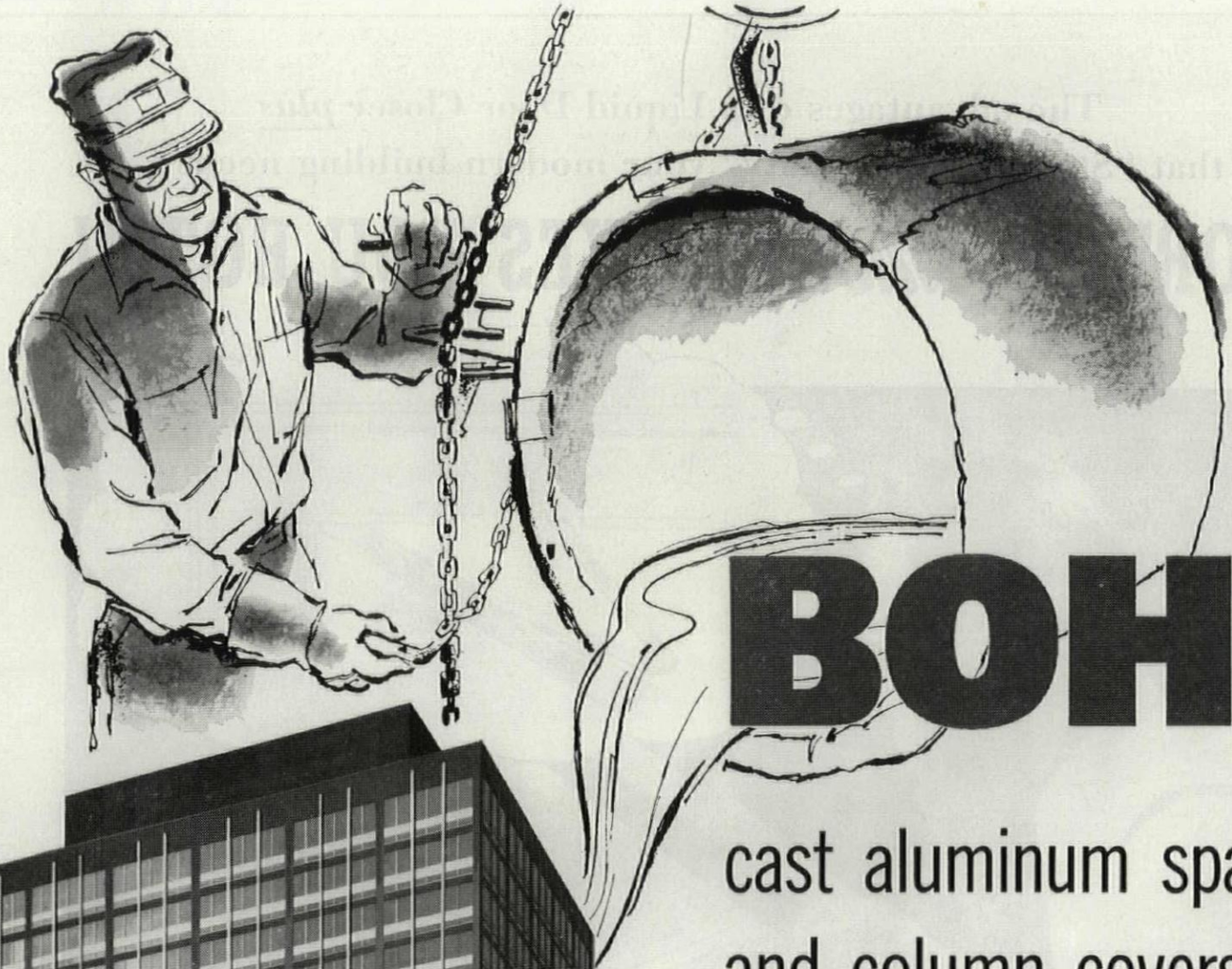
YOU CAN BE SURE...IF IT'S Westinghouse

WESTINGHOUSE ELECTRIC CORPORATION
Electric Appliance Division • Springfield 2, Mass.




WHITE is so much more effective!
Trinity white—the *whitest* white cement—is a true portland. The gleaming sparkling whiteness as mass or contrast increases the stature of good design. Use it for architectural concrete units; stucco; terrazzo; and wherever high light-reflection is indicated. Trinity white meets all Federal and ASTM specifications.
This greyness of grey portland cement is absent in Trinity White. That's why Trinity White is best where concrete is to be tinted. There is no muddiness to your colors. You get cleaner, truer values.

Trinity White
THE WHITEST WHITE CEMENT
A Product of GENERAL PORTLAND CEMENT CO. • Chicago • Dallas • Chattanooga • Tampa • Los Angeles



BOHN

cast aluminum spandrels and column covers create lasting beauty





CAST ALUMINUM SPANDRELS are lightweight yet sturdy. They are easily handled, quickly anchored in place. Maintenance costs are low.

CAST ALUMINUM COLUMN COVERS which run the full height of the building are cast with recessed tracks for a traveling window cleaning platform.

THE MILE HIGH CENTER, Denver, Colorado

- *ALUMINUM ERECTOR.* Universal Corporation, Dallas
- *ARCHITECT:* Webb & Knapp, Inc., *Architecture & Planning Div., I. M. Pei, Director*
- *ASSOCIATE ARCHITECTS:* Kahn & Jacobs, New York; G. Meredith Musick, Denver
- *GENERAL CONTRACTOR:* George A. Fuller Company

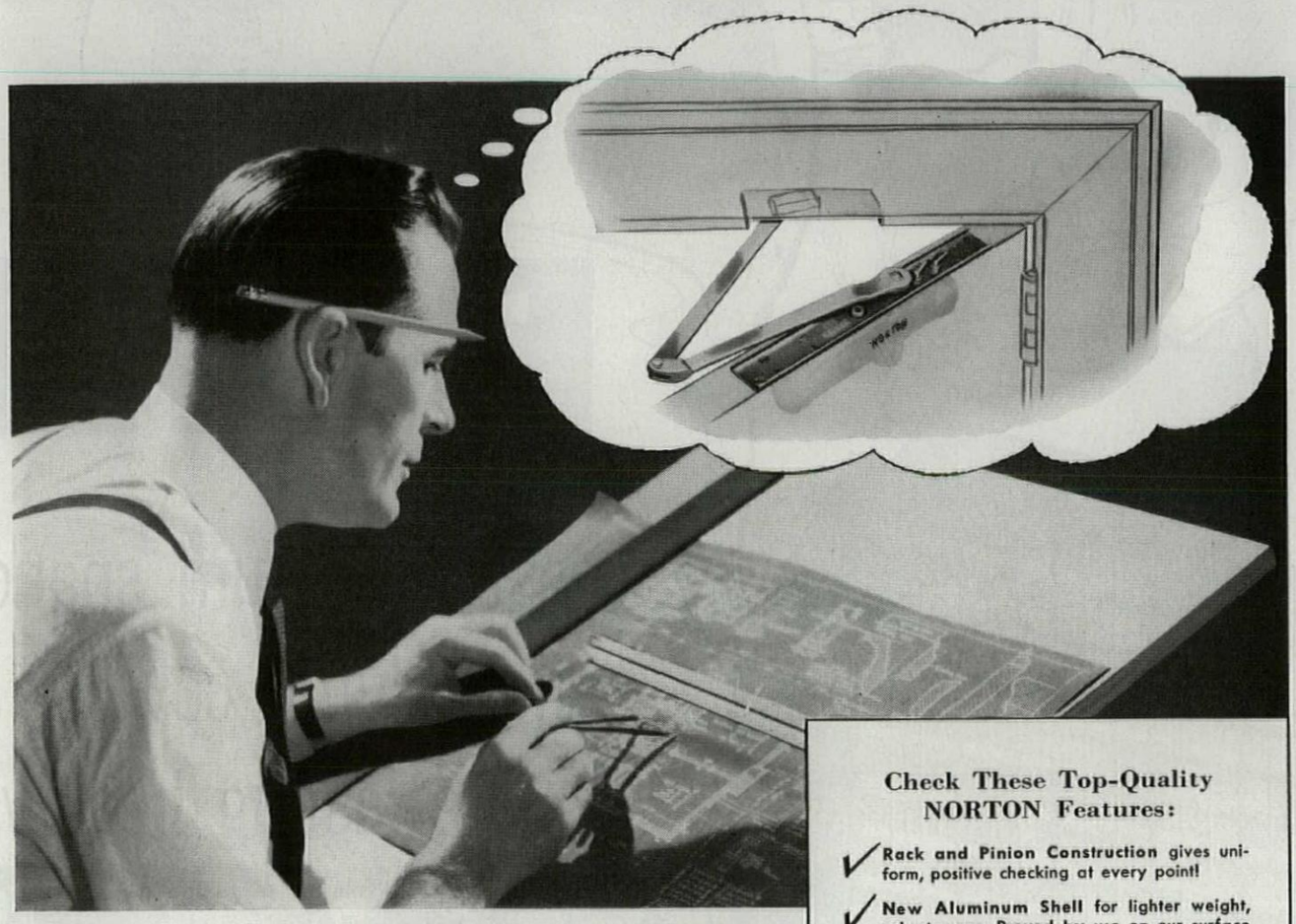
Write for information folder, "Bohn Cast Aluminum Spandrels and Column Covers". A.I.A. File No. 15-P 1954.

BOHN **ALUMINUM & BRASS CORPORATION**
1400 LAFAYETTE BUILDING • DETROIT 26, MICHIGAN

Sales Offices: BOSTON • CHICAGO • CLEVELAND • DAYTON • DETROIT
INDIANAPOLIS • LOS ANGELES • MILWAUKEE • MINNEAPOLIS • MOLINE
NEW YORK • PHILADELPHIA • ROCHESTER • ST. LOUIS

The advantages of a Liquid Door Closer *plus* that "Streamlined Beauty" your modern building needs...

NORTON *"INADOR"* GIVES YOU BOTH!



No matter *what* type of building is involved, look into Norton's "Inador" for interior applications! This Closer gives you the reliability, durability, low maintenance, and precision workmanship you've come to *expect* from Norton Liquid closers. But the "Inador" gives you beauty, too...isn't unsightly or bulky...is streamlined through its "Inador" construction to fit the needs of *modern* design! Yes, Norton "Inadors" can *take it* under severest use, and at the same time enhance the *appearance* of your building. Available in "Regular Arm" and "Holder Arm" models, which are distinguished by engineering "know-how" and finest materials!

Specify Norton—the name that's become the industry's *standard*—with confidence you've chosen something "special." Write for full information on the "Inador"—and *other* Norton closers—to:

Check These Top-Quality NORTON Features:

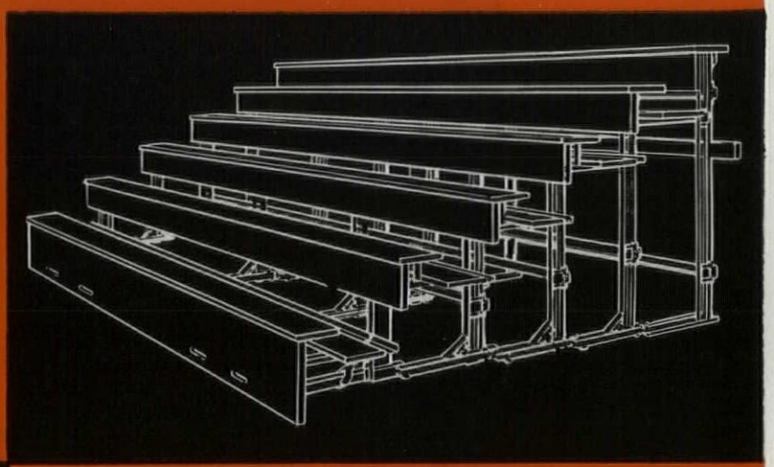
- ✓ **Rack and Pinion Construction** gives uniform, positive checking at every point!
- ✓ **New Aluminum Shell** for lighter weight, robust wear. Proved by use on our surface closer for over 7 years!
- ✓ **Special spring**—of the highest quality steel!
- ✓ **Non-gumming, non-freezing hydraulic fluid** *permanently* lubricates every inside moving part!
- ✓ **Double adjusting levers,** at top of plate, easily moved by the fingers. One adjusting lever controls speed of closing action. The other governs latching action when door is semi-closed!
- ✓ **Famous Guarantee!** Norton Door Closers are guaranteed for 2 years providing proper recommended sizes are used!

NORTON

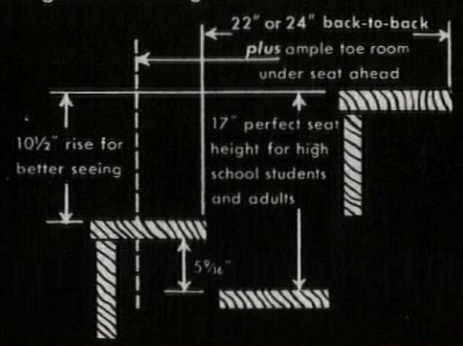
NORTON DOOR CLOSER COMPANY, DEPT. AF-94
Division of The Yale & Towne Manufacturing Company
Berrien Springs, Michigan

"Over 70 Years of Leadership in the Door Closer Industry"

BEST BUY!



TWO DEPTHS . . . 22″ row depth for maximum seating capacity—24″ row depth for greatest seating comfort.



MEDART *New*

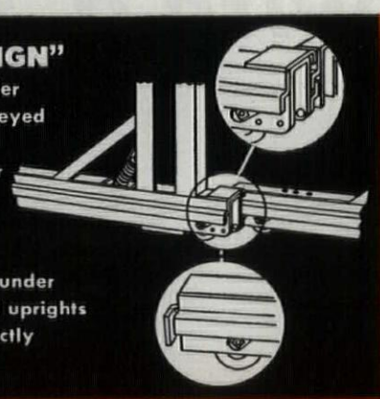
TELESCOPIC GYM SEATS*

NEW DESIGN has achieved weight reduction up to 70 pounds per row—the easiest gym seat to open and close.

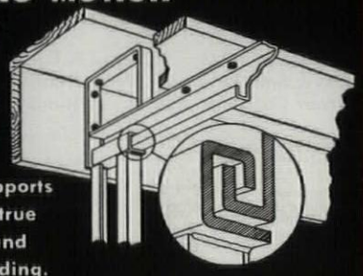
SELF-SUPPORTING understructure now stronger than ever—wood parts give *additional* strength.

4 VERTICAL UPRIGHTS support each row—controlled weight distribution—no extra wall reinforcing required.

"DUAL-ALIGN" cushioned roller housing are keyed together and interlocked for straight-line trackage. Non-marring rollers retract under load—vertical uprights then bear directly on floor.



"FLOATING MOTION" opening and closing assured by interlocking members and multiple supports that insure true alignment and prevent binding.

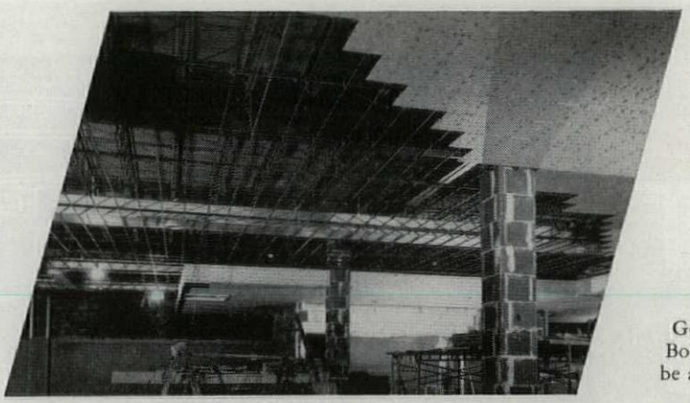


Write For Catalog!

*Medart Telescopic Gym Seats are fully protected by U. S. Patents

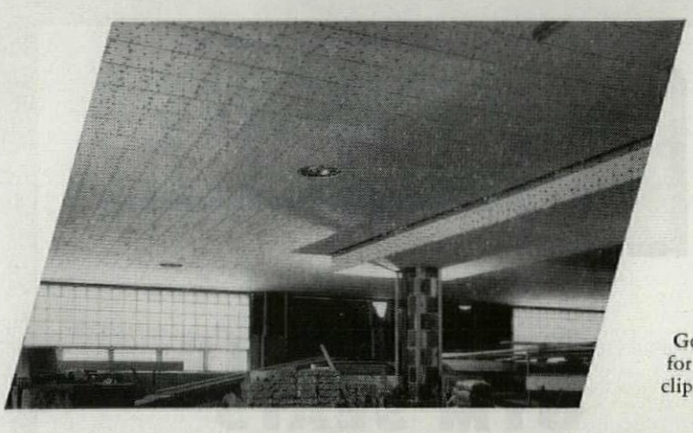
FRED MEDART PRODUCTS, INC. • 3584 DEKALB ST. • ST. LOUIS 18, MO.

Clip-Lok Ceilings



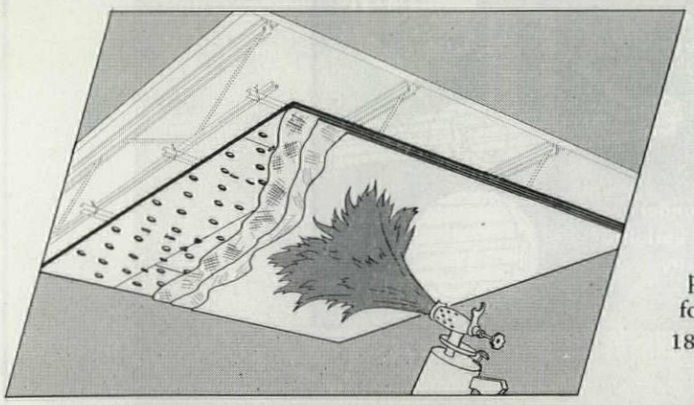
Gold Bond Perforated Lath is attached with Gold Bond Clips to suspended channels. ¾" channels may be attached directly to bar joists for same fire rating.

protect bar joists



Gold Bond ⅜" Perforated Gypsum Lath ceiling ready for application of Gold Bond Gypsum Plaster. Center clips give positive lath support and eliminate sagging.

with a 3-hour fire rating!



Gold Bond Clip-Lok Systems protect buildings with fire resistant ratings of up to three hours... according to independent laboratory tests (name of laboratory upon request).

This safe, low cost ceiling was built in Remington Rand's Pittsburgh office with Gold Bond Clip-Lok System. Ceilings like these are built rapidly and easily... and at the same time, you get built-in fire resistance, too. Gold Bond Clip-Lok ceilings, consisting of Gold Bond steel channels, gypsum lath, clips and plaster... may be attached to or suspended from bar joist construction. They don't limit ceiling design possibilities because they're especially flexible around fixture openings.

One of the big advantages of the Gold Bond Clip System is that every component is made by *one* manufacturer... assuring superior product quality and performance throughout. For further details on the Clip-Lok System, refer to page 18, in Section 11b of Sweet's Catalog or write National Gypsum Company.

NATIONAL GYPSUM COMPANY • BUFFALO 2, NEW YORK

Architects: Harry Owen Bartlett, A.I.A. & James J. Angus, A.I.A. Associate, Chicago, Ill.
Plastering Contractor: J. J. Morris & Son, Pittsburgh, Pennsylvania
General Contractor: Mellon & Stuart Co., Pittsburgh, Pennsylvania

Build better with Gold Bond® ... LATH AND PLASTER





Adams Building, Bartlesville, Oklahoma. Architects: Neville, Sharp and Simon. Hardware Supplier: Murray R. Womble Company.

Another Famous Building looks ahead . . .

to low Sargent *maintenance . . .*

PHILLIPS PETROLEUM COMPANY'S NEW ADAMS BUILDING

Bartlesville, Oklahoma.

Architects with an eye to the future specify Sargent Builders Hardware.

Sargent Door Closers, for example, are giving complete satisfaction on hundreds of thousands of installations. These products have features that insure precision closing, perfect control and dependability.

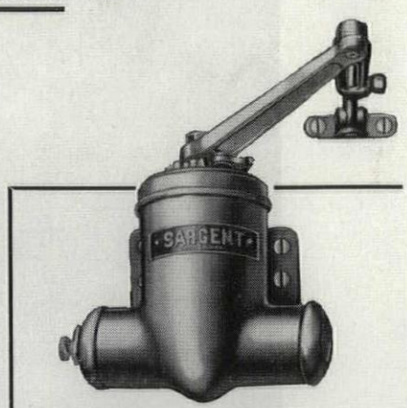
Double rack and pinion controls the movement of closing all the way . . . permits universal application without changing parts. Standard arms will open doors up to a full 180°.

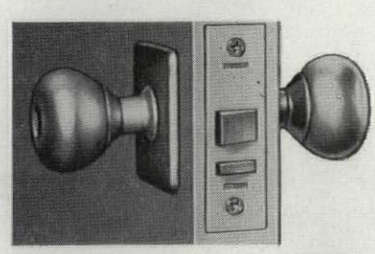
Fourteen feet of helical type coil spring goes into operation as soon as the closer starts to function. Controlled tension eliminates spring breakage. Simple valve with 2-speed control and easy adjustment makes possible any desired speed up to latching point. And Sargent Door Closers provide the *last word* in leak-proof packing glands.

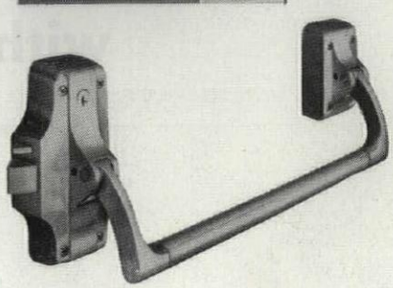
With Sargent Integralocks, your clients will be sure of utmost security, beauty, convenience of operation, ease of installation.

For *emergency* safety . . . rely on Sargent "Quick" Exit Devices . . . the only panic bolts with trigger-action release.

For complete information see your Sargent Representative or write us, Dept. 8J.





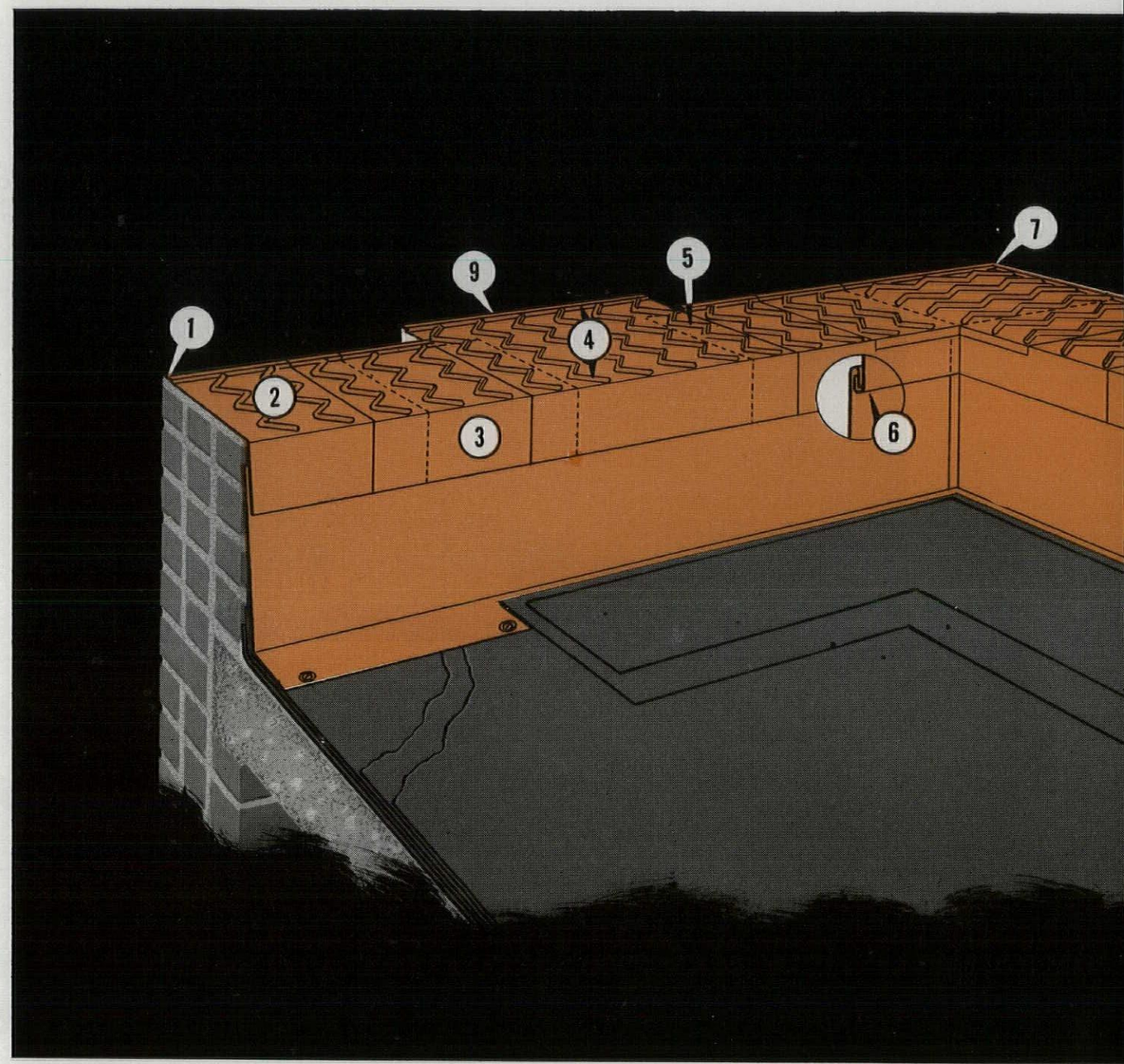


SARGENT of New Haven ®

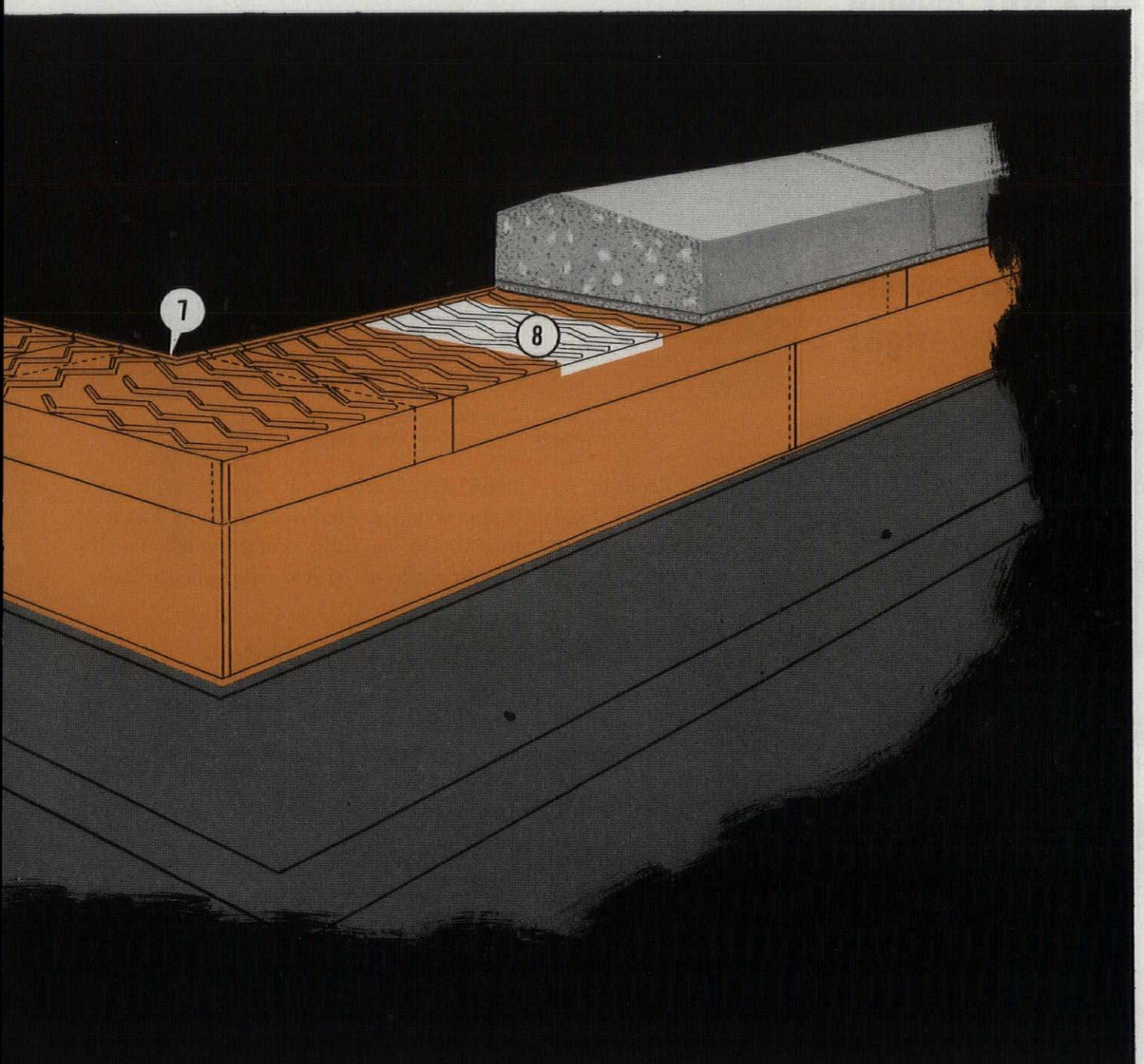
Sargent & Company

New York • NEW HAVEN, CONN. • Chicago

Hardware of Character



You get the protection of sound engineering with ANACONDA® Through-Wall Flashing



1. Positive interception of downward water flow
Pre-formed dam of special design permits positioning to within ¼″ of the face of the wall.

2. Prevents lateral movement
The 7/32″ high embossed zigzag corrugations provide a positive bond with the mortar on both the top and bottom of the flashing.

3. Flat, integral, easily bent counter flashing
The counter flashing portion is furnished without corrugations. Bending does not overstress metal or form a bead at the bend.

4. Complete drainage in desired direction
The die-stamped dam and corrugations of uniform height assure complete drainage on a level bed. The smooth edge on the drain side cannot trap water. There is no danger of heaving by frost.

5. Accurate nesting
Precision die-stamping assures tight nesting of dam and corrugations when overlapping adjacent lengths.

6. Flat selvage for easy joining
No problem to clinch-lock or solder to other copper work.

7. One-piece die-stamped corner flashings
Available for inside and outside corners for 8″ and 12″ walls. Interlock with adjoining straight lengths. Corner flashings are installed quickly and with a normal thickness of mortar joint.

8. Protection without waste
A pound of flashing (16-oz.) covers a full square foot area.

9. Wide range of sizes
Available up to 47″ wide over-all, with corrugations and plain selvages of variable widths. All in standard 8 ft. lengths.



FREE! Publication C-28, "ANACONDA Through-Wall Flashing," tells how to use adequate flashing of efficient design. Twenty-seven illustrations make every point crystal-clear. For your copy, write to: *The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.* 5347

good construction demands

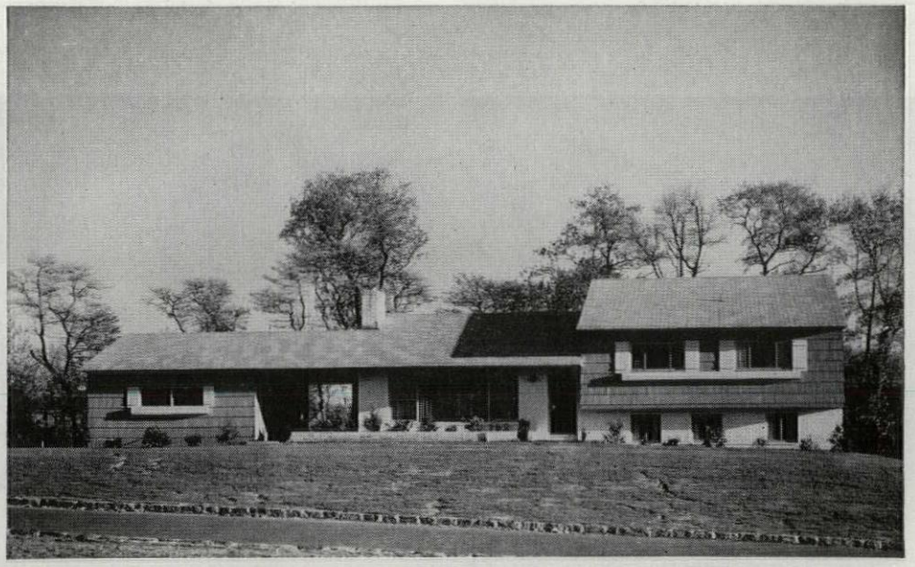
ANACONDA®

Through-Wall Flashing

Here's why leading architects and builders say:

RUSCO PRIME WINDOWS

offer outstanding improvements in window design!



Rusco-equipped home in Beverly Hills project, Long Island, N. Y.
Architects and Builders: Siegel and Rapp. *Photo by* Herman Kroll.



RUSCO HORIZONTAL-SLIDE PRIME WINDOW



RUSCO FULVUE PRIME WINDOW



RUSCO VERTICAL-SLIDE PRIME WINDOW

When deciding on window specifications—it's good business to remember that only RUSCO makes a window that DOES EVERYTHING A WINDOW SHOULD DO—a fully prefabricated, finish-painted, ready-to-install unit made of Armco hot-dipped tubular galvanized steel.

Here's what a *good* window should do— and what *only* RUSCO does!

- **GIVES COMPLETE PROTECTION.** Built-in weatherstripping and double-glass insulation give year 'round protection against heat, cold, wind, rain and insects—block outside noise.
- **ELIMINATES HANDLING OF "EXTRAS."** Nothing to change! Nothing to store! Rusco Windows with insulating sash (optional) and Fiberglas screen completely eliminate separate storm windows and screens.
- **EASY TO OPERATE.** The RUSCO PRIME WINDOW slides smoothly and silently on super-quality felt that banishes all possibility of binding or sticking! There's nothing to get out of kilter. No pulleys—no weights or counter-weights!
- **OFFERS SAFETY AND CONVENIENCE.** Each sliding glass panel or screen is quickly removable—*from the inside*—for easy cleaning. A remarkable safety factor.
- **GIVES DRAFT-FREE VENTILATION.** RUSCO's patented MagicPanel® allows any desired amount of draft-free ventilation while offering positive protection from rain, sleet or snow!
- **PROVIDES MAINTENANCE-FREE SCREENING.** RUSCO's Fiberglas screen will not rust, rot, corrode or stain and never needs painting. Even screens out airborne particles of dust and dirt!
- **MADE OF ARMCO ZINCGRIP.** The special purpose steel that prevents corrosion—bonderized and finished in beautiful baked-on enamel just like a fine automobile.
- **ADDS TO PROPERTY SALABILITY.** Nationally advertised—with universal consumer-acceptance—the RUSCO PRIME WINDOW is a needed, wanted and highly merchandisable unit. The *hottest* news in the field of building today.

For Complete Information and Specifications, write

THE F. C. RUSSELL COMPANY

Dept. 7-AF 94 CLEVELAND 1, OHIO
In Canada: Toronto 13, Ontario

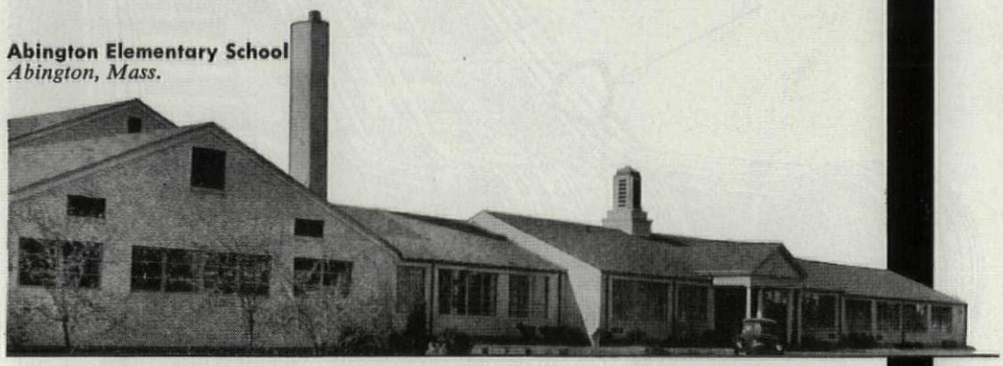
"Always one step ahead of the weather" with RUSCO

Manomet Elementary School
Plymouth, Mass.



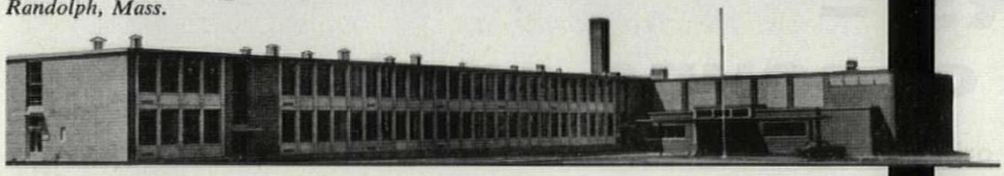
Architect—Walter M. Gaffney, Hyannis, Mass. • Gen'l Cont.—C. A. Batson Co., Brockton, Mass.
Plbg. Whlslr—Locke Stevens, Inc., Somerville, Mass. • Plbg. Cont.—Velardo Plumbing Co., Duxbury, Mass.

Abington Elementary School
Abington, Mass.



Architect—Walter M. Gaffney, Hyannis, Mass. • Gen'l Cont.—Park Const. Co., Boston, Mass.
Plbg. Whlslr—Locke Stevens, Inc., Somerville, Mass. • Plbg. Cont.—Velardo Plumbing Co., Duxbury, Mass.

Randolph Jr. & Sr. High School
Randolph, Mass.



Architect—Harry J. Korsland, Norwood, Mass. • Plbg. Whlslr—Bennett Co., Somerville, Mass.
Plbg. Cont.—C. H. Cronin, Inc., Boston, Mass.

North Clay Community High School
Louisville, Ill.



Architect—S. A. Claussen, Decatur, Ill. • Gen'l Cont.—Cleo Phillips, Flora, Ill.
Plbg. Whlslr—Capitol Plumbing and Heating Supply Co., Springfield, Ill. • Plbg. Cont.—E. M. Petty, Flora, Ill.

West Jr. High School
Brockton, Mass.



Architect—J. Williams Beal & Son, Boston, Mass. • Gen'l Cont.—Platt Const. Co., Boston, Mass.
Plbg. Whlslr—Locke Stevens, Inc., Somerville, Mass. • Plbg. Cont.—Edward W. Diegoli, Brockton, Mass.

it's the **toughest test** of all—when **plumbing fixtures** go to **school**

When you install plumbing fixtures in a school restroom, you've got to be sure they'll stand up under the awesome energy of youth. That's why so many schools install Richmond fixtures—they're MORE than "equal" to that kind of treatment.

When you specify Richmond, you're choosing plumbing fixtures of maximum durability with minimum maintenance—the end products of correct design, careful selection of raw materials and close control in manufacturing operations. Richmond vitreous china ware, for example, is fired in modern kilns at temperatures up to 2300°F. to give you a highly scratch-resistant surface that is actually comparable in hardness and durability to the natural sapphire. In Richmond cast-iron ware you get a ceramic glaze that's furnace-fused to the base for a permanent, impermeable bond and smooth glass-hard surface. Continuous quality control at all stages of manufacture assures the production of only top-grade fixtures.

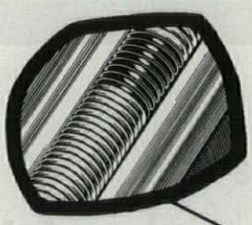
Richmond fixtures comply with U. S. Government specifications WWP-541A, Federal specifications for land use of Army, Navy and Air Force installations and exceed the requirements of Commercial Standards CS20-49 and CS77-51.

Richmond plumbing fixtures are available in a wide range of sizes and modern styles, in famous "Whiter-White" or seven lovely pastel colors.

For long service life with minimum maintenance, it pays to specify Richmond.

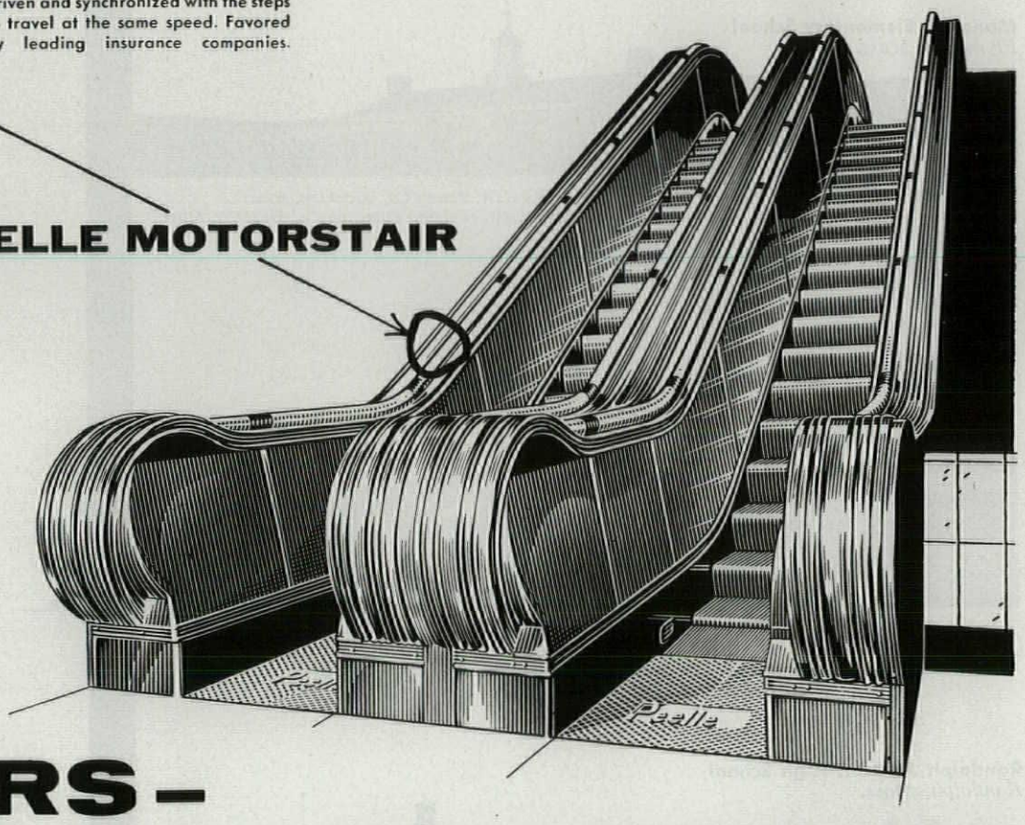
RICHMOND
Affiliate of Reynolds Metals Company
PLUMBING HEATING

Richmond
radiator company
Affiliate of Reynolds Metals Co.
Metuchen, N. J.



The handsome, all-metal, safety handrail quickly identifies the Peelle Motorstair. This handrail is positively driven and synchronized with the steps to travel at the same speed. Favored by leading insurance companies.

THE PEELLE MOTORSTAIR



RE-ORDERS – the final test of sound engineering

Important and original engineering advances combined with crisp, contemporary styling are steadily increasing the acceptance for the Peelle Motorstair. But the final test comes when owners, architects and engineers commit substantial sums for re-orders. And that is what is happening. More than half the Peelle Motorstair installations being made now-a-days are re-orders.

A FEW OF THE MANY PEELLE MOTORSTAIR INSTALLATIONS

Those marked * have re-ordered from one to forty Motorstairs.

TRANSPORTATION

TORONTO TRANSPORTATION COMMISSION, Toronto, Canada
Architects, DeLeuw, Cather & Company, Chicago, Ill.
PORT OF NEW YORK AUTHORITY BUS TERMINAL, New York, N. Y.
Architects, Port of New York Authority Engineers
UNION PACIFIC RAILROAD COMPANY, Seattle, Wash.
WICHITA MUNICIPAL AIRPORT, Wichita, Kan.
Architects, Thomas-Harris-Calvin Associates
HUDSON & MANHATTAN RAILROAD
PENNSYLVANIA RAILROAD
GREYHOUND BUS TERMINAL, Kansas City, Mo.
*NEW YORK CITY DEPT. OF MARINE & AVIATION, Pier Shed No. 84
*NEW YORK CITY DEPT. OF MARINE & AVIATION, Pier Shed No. 57

PUBLIC BUILDINGS

PENTAGON BUILDING, Arlington, Virginia
METROPOLITAN MUSEUM OF ART, New York, N. Y.
Architects, Vorhees, Walker, Foley & Smith
AMERICAN NATIONAL BANK, Austin, Texas
Architects, Kuehne, Brooks and Barr

HOTELS

STATLER
*HILTON

INDUSTRIAL

FORD MOTOR COMPANY, Livonia, Mich.
Architects, Albert Kahn Associated Architects & Engineers, Inc.
*BUICK MOTOR DIVISION, Building No. 36, Flint, Mich.
Architects, Albert Kahn Associated Architects & Engineers, Inc.
*BUICK MOTOR DIVISION, Building No. 44, Flint, Mich.
Architects, Albert Kahn Associated Architects & Engineers, Inc.
*GENERAL MOTORS SAGINAW GEAR DIVISION, Saginaw, Mich.
Architects, Argonaut Realty Co.
*ROCHESTER PRODUCTS DIVISION GMC, Rochester, New York
Architects, Argonaut Realty Co.
*FISHER BODY DIVISION GMC, Detroit, Mich.
Architects, Argonaut Realty Co.

CHAIN STORES

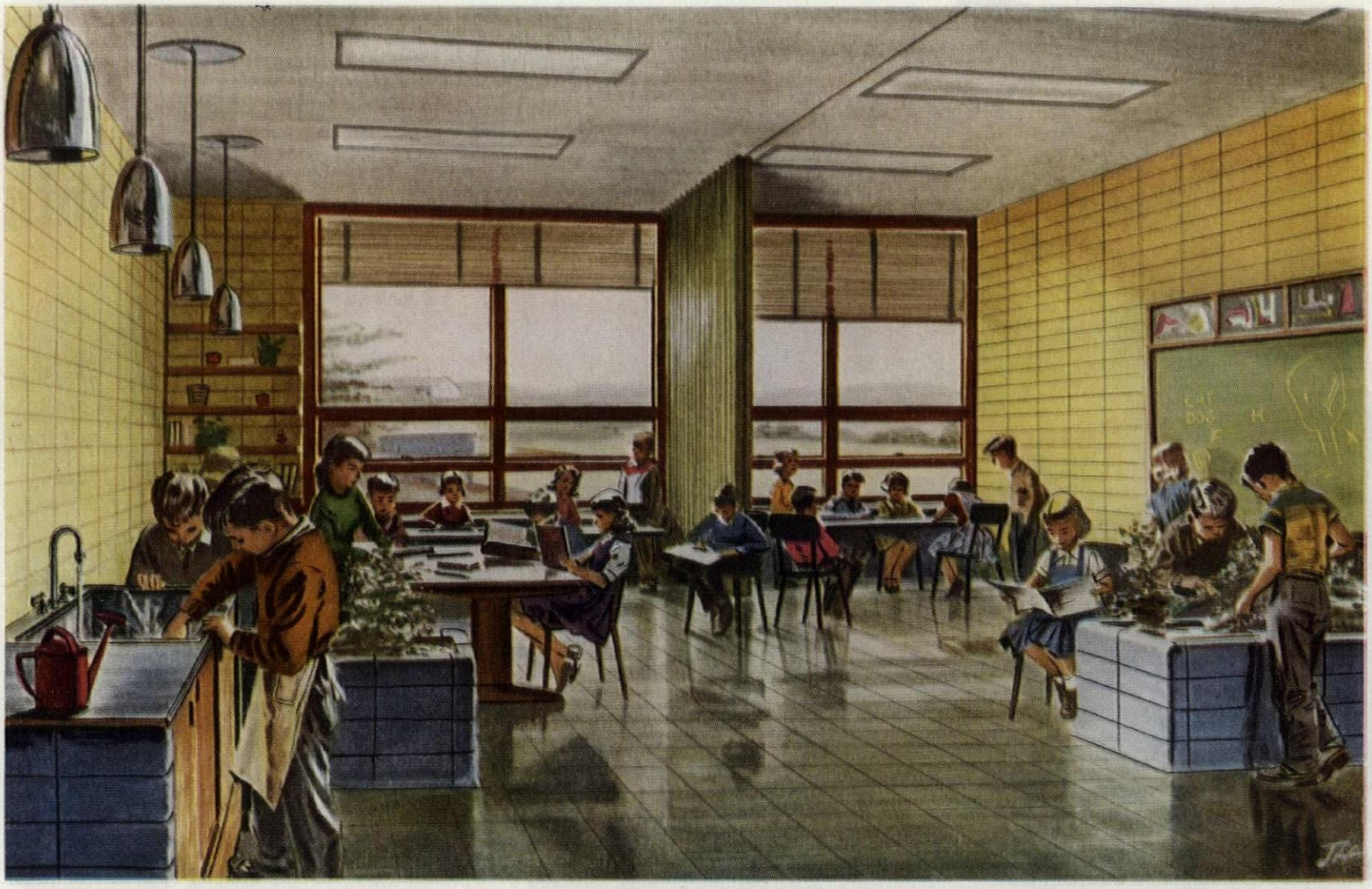
*C. R. ANTHONY COMPANY
*J. C. PENNEY COMPANY
*SEARS, ROEBUCK & COMPANY
*McCRORY STORES
*W. T. GRANT CO.

DEPARTMENT STORES

*R. H. MACY & CO., INC. and L. BAMBERGER & CO.
EVERGREEN PARK SHOPPING CENTER, Chicago, Ill.
*ALLIED STORES

Write for descriptive literature and complete list of installations.

THE PEELLE COMPANY – 47 STEWART AVENUE, BROOKLYN 37, N. Y. – OFFICES IN PRINCIPAL CITIES



Design for a bright future...

school interiors of Facing Tile

STRUCTURAL FACING TILE enables you to build the *right* environment into the schools you design—and make it last the life of the building.

In the classroom pictured here, walls of sunny yellow Facing Tile not only give the pupils a psychological lift—they also help to improve the quality of lighting. Low "flower-box" partitions of blue Facing Tile can't be harmed by spilt water or earth or by hard knocks – and they'll clean like a dish.

These walls will never have to be refinished – you can specify colors that will help to make learning easier – and be sure that they'll serve through the years.

Facing Tile is easy on your construction budget, too. Made in large units, it goes up fast with a minimum of cutting and fitting – you get a structural wall and a finish in one material.

All these assets qualify Facing Tile for many uses. You'll see it not only in schools, but also in today's finest hospitals, industrial plants, public and commercial buildings.

For full data on Facing Tile, glazed or unglazed, just write us on your letterhead. Address: Desk AF-9 of our Washington or New York offices.

LOOK FOR THIS SEAL

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

CHARLESTON CLAY PRODUCTS CO.
Charleston 22, West Virginia

THE CLAYCRAFT CO.
Columbus 16, Ohio

HYDRAULIC PRESS BRICK CO.
Brazil, Indiana

MAPLETON CLAY PRODUCTS CO.
Canton, Ohio

METROPOLITAN BRICK, INC.
Canton 2, Ohio

McNEES-KITTANNING CO.
Kittanning, Pennsylvania

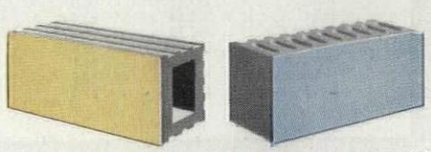
NATCO CORPORATION
Pittsburgh 22, Pennsylvania

STARK CERAMICS, INC.
Canton 1, Ohio

WEST VIRGINIA BRICK CO.
Charleston 24, West Virginia

FACING TILE INSTITUTE

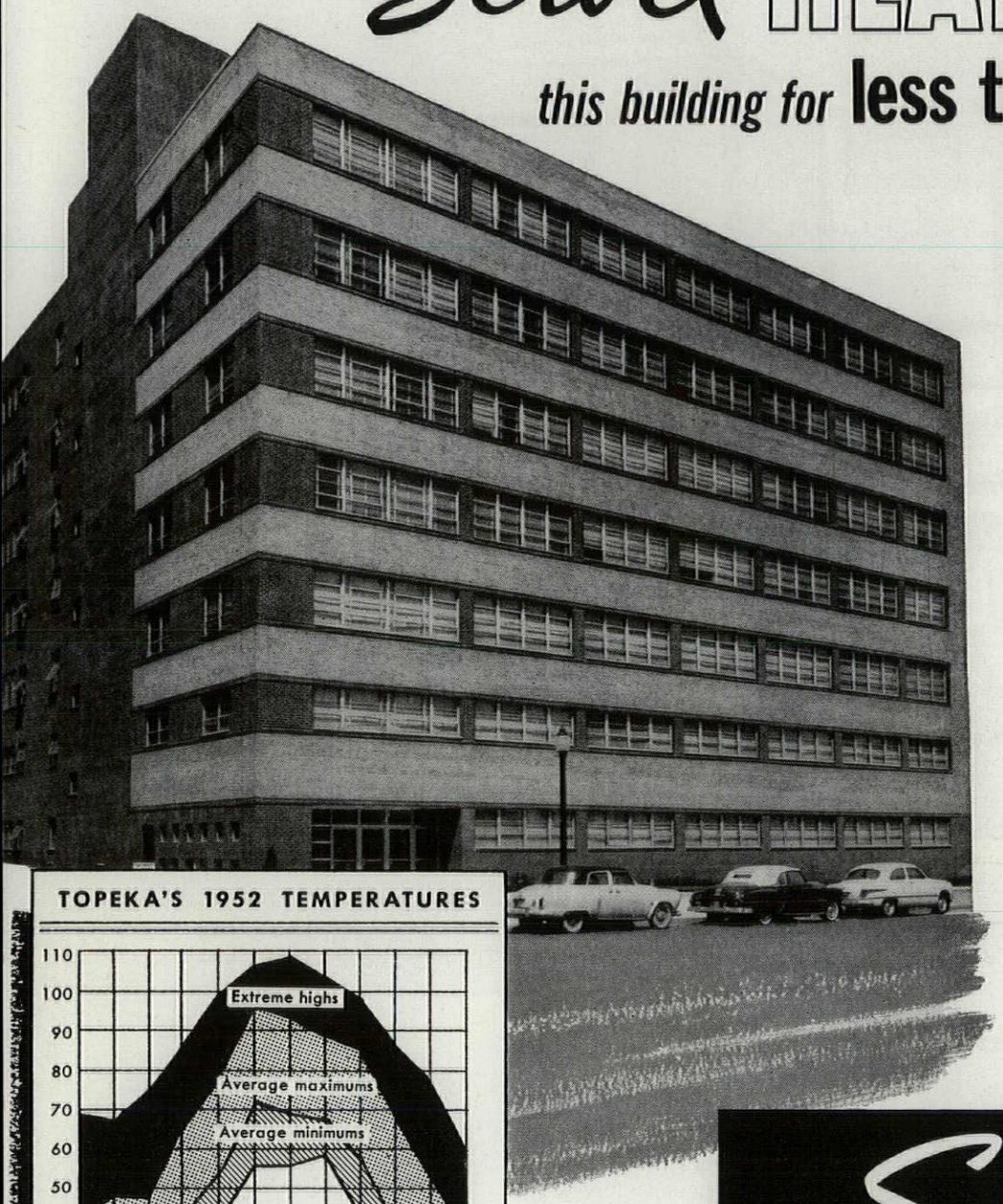
1520 18th Street, N. W., Hudson 3-4200, Washington 6, D. C. • 1949 Grand Central Terminal, Murray Hill 9-0270, New York 17, N. Y. • 2556 Clearview Avenue, Canton 5-5329, Canton 8, Ohio • 221 N. LaSalle Street, Andover 3-6449, Chicago, Ill.



No other single building material gives you so much for so little . . . **IT'S FACING TILE!**

Servel HEATS AND COOLS

this building for less than $175.00 a month year 'round!



Through Topeka's temperatures of 4° to 108°, heating, cooling and air-conditioning this 7-floor office building cost only $2000 in gas bills for the entire year of 1952!

These facts speak for themselves:

Installation: 823 Quincy Building, Topeka—7 floors, 92,000 square feet of occupied area, 600 population. Owner-operator, John R. Peach; architect, Stookey & Howells; general contractor, M. W. Watson; occupant, Southwestern Bell Telephone Company.

Servel equipment: 38 5-ton units—2-unit increment in basement; 5-unit increment on each of first six floors; 6-unit increment on top floor.

Performance: "Very satisfactory"—despite temperatures ranging from 4° to 108°F., and with outstanding fuel economy (see charts). Except for electricity for pump and fan motors, $2071.66 paid the entire fuel cost for the full year of 1952. Because of Servel's exclusive absorption principle, with no moving parts in the heating or cooling system, operation is quiet, vibration-free. Says John R. Peach: "We are now adding three floors to the building, *and of course favor Servel.*"

Servel equipment *uses heat to produce cold*—will operate on the most economical fuel in your area: gas, oil, steam or waste heat. Every Servel unit carries a full five-year warranty. Get in touch with your nearest Servel dealer or write Servel, Inc., Dept. AF-94, Evansville 20, Indiana.

TOPEKA'S 1952 TEMPERATURES

Servel

the name to watch for great advances in

AIR CONDITIONING ✓ REFRIGERATION

MONTHLY COST OF FUEL FOR SERVEL AIR CONDITIONERS

Gas	Average Maximum Temperature	Average Minimum Temperature	Extremes High	Extremes Low
January.....$118.72	43.0	22.7	69	5
February.....146.27	48.2	29.7	67	18
March.....163.20	47.9	29.8	74	4
April.....113.69	64.5	43.1	86	27
May..... 90.13	77.1	54.8	99	55
June.....267.57	96.0	71.1	106	40
July.....332.93	93.4	69.1	108	55
August.....327.79	89.2	67.3	104	58
September.....216.85	86.8	58.0	99	44
October..... 63.42	69.1	41.0	86	27
November..... 78.91	53.9	32.7	77	8
December.....152.18	39.3	24.9	59	7

SERVEL, INC., Dept. AF-94, Evansville 20, Indiana

I want to know more about Servel Air Conditioning for use in ☐ Home ☐ Store ☐ Office ☐ Factory

Name_____ Title_____

Company Name_____

Address_____

City_____ County_____ State_____

Completely new—

PC Suntrol Blocks

take the dazzle out of sunlight!

Pittsburgh Corning expands its line of 12-inch functional glass blocks with a group of totally new patterns—known as Suntrol. Available in light-directing, light-diffusing and toplighting patterns, these blocks are expressly designed for locations where heat and glare are a problem. Suntrol Blocks contain a pale green fibrous glass diffusing screen that reduces panel brightness by 35%.

Suntrol Blocks do not replace the present line of PC Functional Glass Blocks. But for special applications, Suntrol Blocks will reduce glare, reduce instantaneous heat gain, and give more human comfort than ever before.

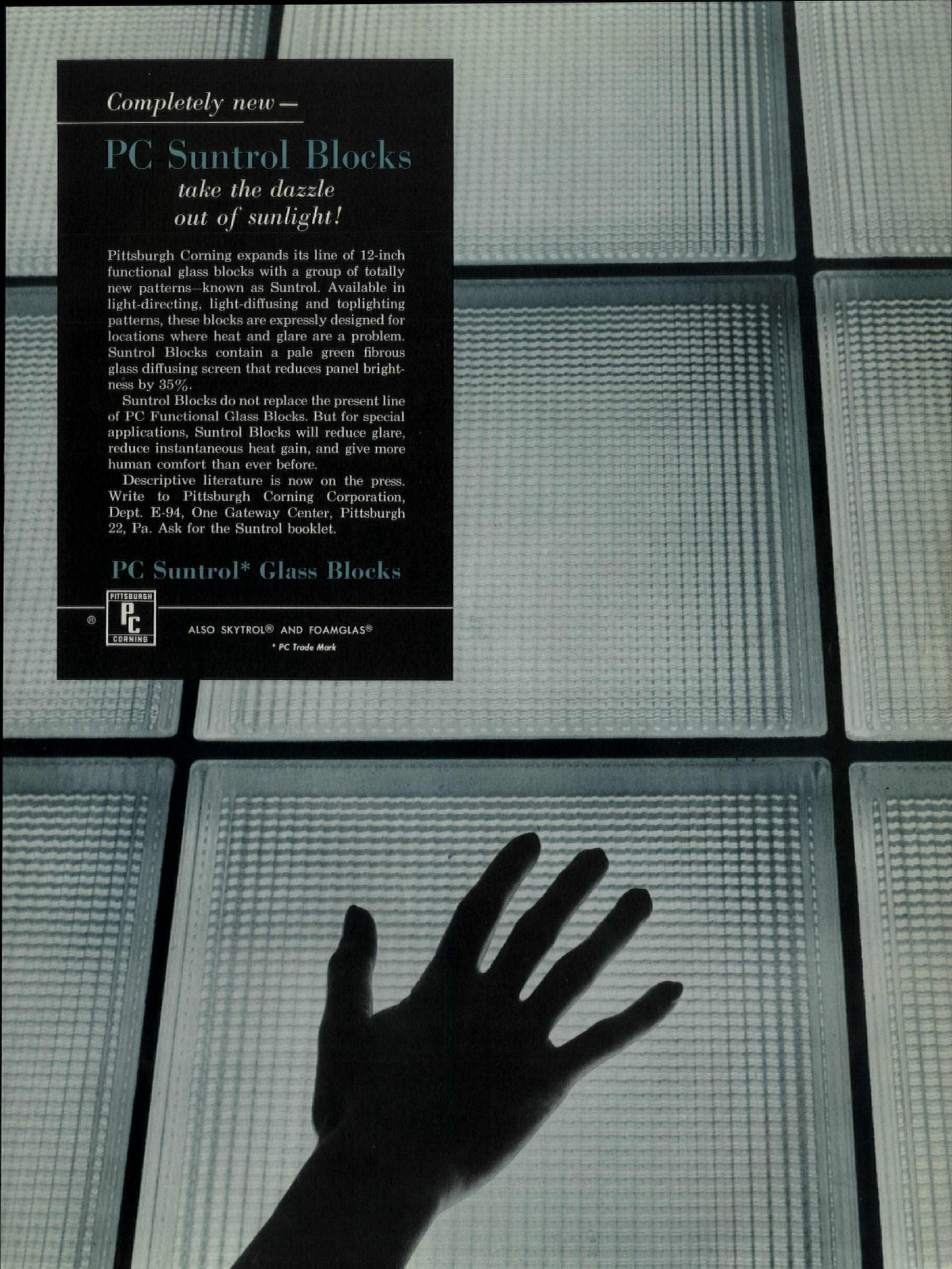
Descriptive literature is now on the press. Write to Pittsburgh Corning Corporation, Dept. E-94, One Gateway Center, Pittsburgh 22, Pa. Ask for the Suntrol booklet.

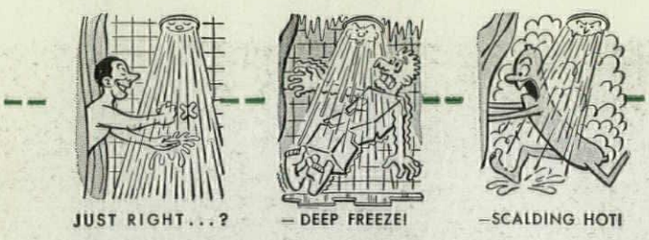
PC Suntrol* Glass Blocks

®PITTSBURGH PC CORNING

ALSO SKYTROL® AND FOAMGLAS®

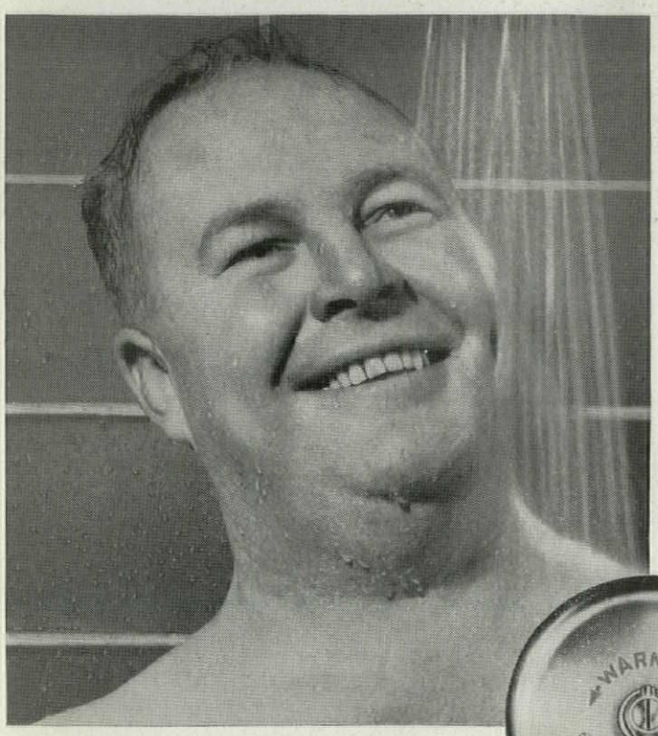
* PC Trade Mark







Public Liabilty Insurance Will Not Protect Shower Users from personal injuries, nor does it, in case of accidents, protect property owners from damaging publicity or time consuming lawsuits.



End Shower Complaints

with

Double-Safety

of

POWERS

Thermostatic WATER MIXERS

They protect bathers from scalding and "shots" of hot or cold water, caused by—

★1 **PRESSURE or**

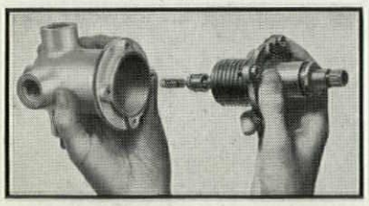
★2 **TEMPERATURE**

fluctuations in water supply lines

Only a **thermostatic** water mixer gives this **double-safety**



Refreshing, Relaxing Safe Showers
and water economy too, are assured by Powers Thermostatic Water Mixers



One moving part easily accessible from the front. Easy removal of thermostatic motor and valve assembly with only a screwdriver makes it possible to inspect, clean or flush out mixer. Powerful thermostatic motor gives quick, positive shut off if cold water supply should fail.

No Shower Is MODERN Without This Protection

Powers thermostatic water mixers *always* hold shower temperature constant wherever the bather wants it. They are completely automatic. Failure of cold water supply instantly shuts off the shower. Delivery is *thermostatically* limited to 115° F.

POWERS Mixers Save Water. No time or water is wasted by bather having to get out from under shower because of fluctuating shower temperature. Water conservation feature alone makes Powers mixers a profitable investment.

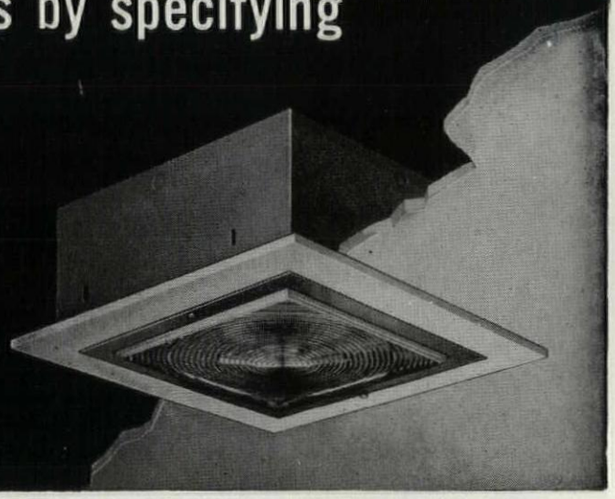
"Minimum of Maintenance" . . . report many users of Powers Type H Thermostatic Water Mixers. Their simple, durable construction insures years of dependable service. (b63r)

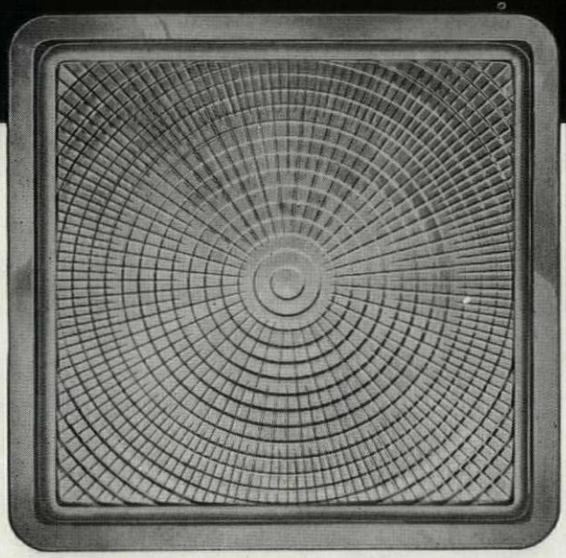
For Utmost Comfort, Safety and Economy Specify Powers Mixers • See SWEET'S Catalog

Established in 1891 • THE POWERS REGULATOR COMPANY • SKOKIE, ILL. • Offices in Over 50 Cities

Offer clients these benefits by specifying

ART METAL advanced ELIPTISQUARE

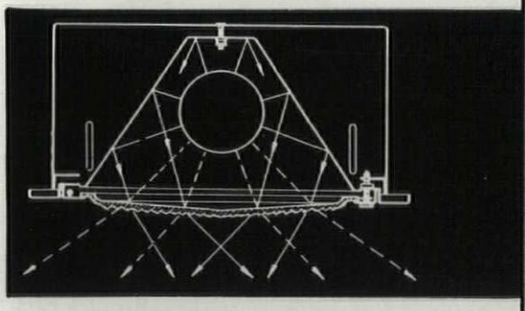


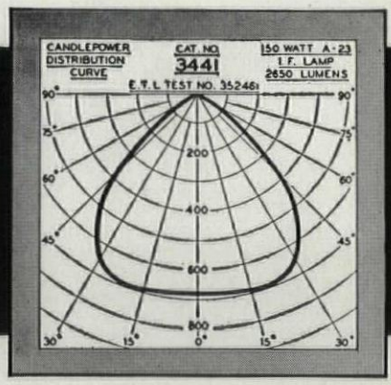


with clear, prismatic AMCOLENS

- Lighted objects reflect their true color value
- Highest light transmission efficiency
- Precise light direction control
- Edge light to ceiling for visual comfort
- Shallow recessed lens lighting

advanced ELIPTISQUARE
Multiplies Light Output





Please notice that the candlepower distribution curve is by Electrical Testing Laboratories, Inc., not The ART METAL Company.

Eliptisquare reflector redirects *all* box-enclosed light downward through AMCOLENS to multiply lamp light utilization.

May we send Bulletin 254 which gives complete details? Please write:

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flexible, adaptable to any spandrel size or fenestration

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Example: for the new Clemson College Barracks at Clemson, South Carolina, Truscon "Vision-Vent" window wall treatment is used. Panels were supplied by Davidson Enamel Products, Inc., to exact specification, with tolerance of $\pm 1/32$" for the mechanical fastening to fenestration. *No compromise of cost, time or specification.*

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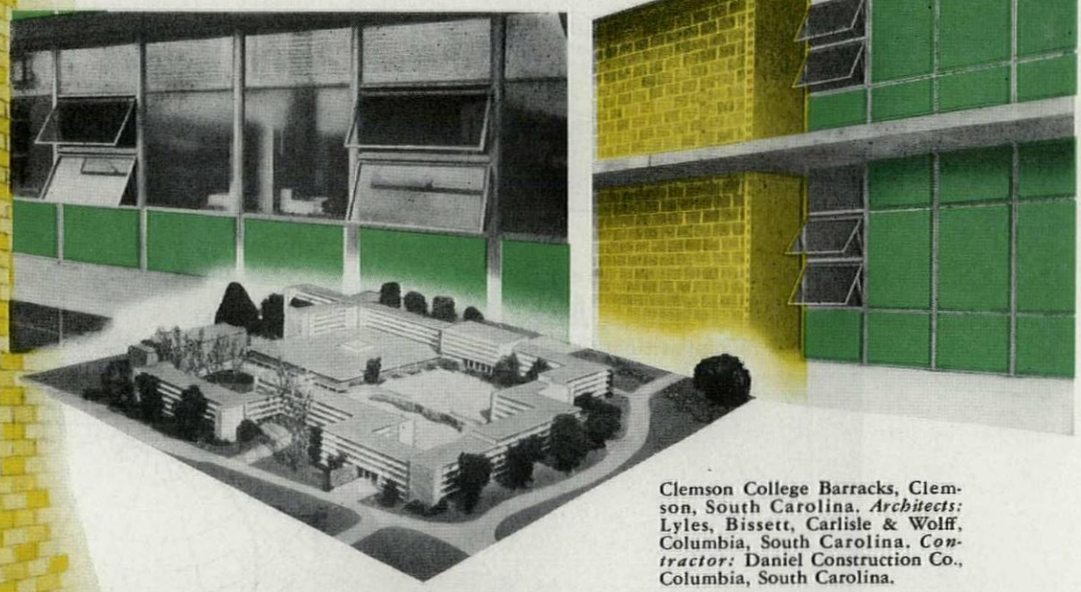
The Davidson Organization includes Franchised Distributors at strategic locations; Engineers, Technicians, Fabricators and Erectors. A specification for Davidson Architectural Porcelain to be installed by Davidson erectors insures a complete job with Undivided Responsibility.



Clemson College Barracks, Clemson, South Carolina. *Architects:* Lyles, Bissett, Carlisle & Wolff, Columbia, South Carolina. *Contractor:* Daniel Construction Co., Columbia, South Carolina.

How Davidson *Double-Wall* Architectural Porcelain Panels supersede conventional spandrel wall. Shown here as used with Truscon "Vision-Vent" Window Wall, Davidson Panels are completely coated on all surfaces, including back and flanges. Panels have a "U" factor of .197, equal to insulating qualities of masonry walls. All elements may be varied to meet functional and appearance requirements.

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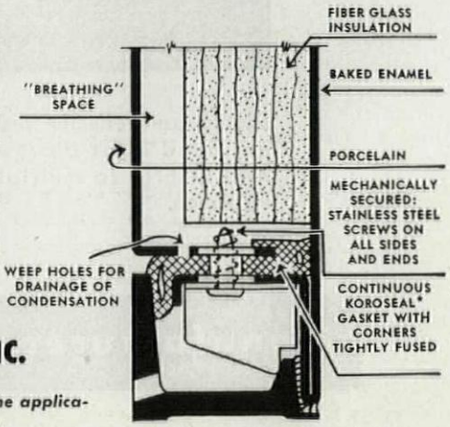

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Photos—Courtesy Republic Steel Corporation, Truscon Steel Division.

*Reg. T.M., The B.F. Goodrich Co.

Congress writes new angles into US construction spending

Funds appropriated are nothing surprising, but policy shifts are. Hoover Commission to study lease-purchase

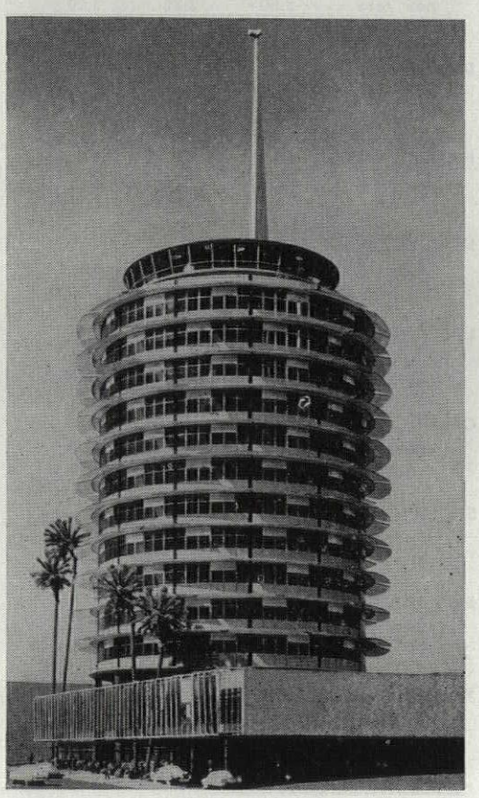
Though dollarwise it broke no records in providing funds for federal building activities, Congress in its final months gave several government construction programs a new look. Military public works, Hill-Burton aid to hospitals and federal aid to airport construction were routine. The important moves: authorization of a lease-purchase method of acquiring federal buildings; a shift back to direct construction of housing at military bases (appropriation for which was sharply cut at the last minute) and specific permission to the General Services Administration to pay brokerage fees in disposing of surplus federal real estate holdings.

Lease-purchase—the most important of the new moves—was unique enough to cause the Hoover Commission to set up a task force on federal real estate to examine the program at its next meeting. John R. Lutz, formerly of Stone & Webster, is chairman. Probably the chief question the Hoover group will consider is whether the obvious advantages of lease-purchase are sufficient to offset the fact that in the long run such a program will cost the government more than if it did the building itself. The argument in favor of the lease-purchase approach, of course, is that it avoids large federal outlays at a time when it is particularly important to hold down spending. Meantime, the House public works committee gave the green light to 29 lease-purchase deals submitted by GSA. They involve construction costs totaling $42.9 million, with yearly lease installments coming to an aggregate $6.4 million. The latter figure exceeds the $5 million limit that may be contracted for during the first fiscal year; it was purposely upped by GSA in order to give the committees some basis for selectivity. The Senate public works committee was still mulling over the list, but had promised quick action.

Largest project on the GSA list was a new barge office building in New York to house federal port activities for an estimated cost of $9.7 million. Second largest: a $9.6 million AEC building in Washington. The Post Office Dept. has submitted four projects so far this year, amounting to a proposed $486,250 in construction costs.

Military housing. Over the protests of the Wherry Act Housing Assn., which has spearheaded the fight for privately financed military housing, Congress finally decided to return to a limited public construction program. It authorized the expenditure of $175 million (about half what the Pentagon had originally requested) for 11,967 units (cut down by the Senate) at specified installations. Then in a last-minute decision, the appropriations committees actually put up only $75 million. In addition, three certificates are now needed on a job before construction can start, attesting to the practicality of the proposed project, to the fact that adequate housing is not available in the area and that suitable housing could not be built there under other provisions of the law. The Defense Dept. feels it will be lucky if it can get 5,000 units built under this arrangement with the available funds.

Both the House and Senate armed services committees, while not needing to be sold on the Wherry Act sponsors' argument for using private enterprise to the maximum extent, felt that the act had its limitations. They noted in their reports that Wherry Act applications have fallen off considerably since an antimortgaging out amendment was added last year, also contended that Wherry Act housing ultimately costs more and that it contains the further disadvantage of being limited to use at permanent bases. The total $175 million has, of course, been authorized; it remains to be seen in what quantities the spare $100 million is parceled out. In addition, Congress approved a new trailer purchasing plan and the use of $25 million in available foreign exchange money for construction of overseas military housing.



Brokerage fees. GSA has always had the authority to pay brokers' fees in connection with sale of federal property, but has had difficulty making use of the privilege because of an inability to forecast in its budget the amounts it would need to cover such selling expenses. To remedy the situation, Congress put through a bill in the closing days of the session allowing GSA to use a specified portion of the proceeds from sale of buildings and other realty holdings to defray selling costs. Up to 10% of the sales price may be used for such items as advertising costs, appraisal fees and real estate commissions. The 10% figure was agreed upon at the last minute and the legislation actually reads 12%. This higher limit was left in to avoid holdup in committee, with an injunction that GSA keep the charges down to 10%.

Other appropriations: $728 million for military public works; $21 million for supplementary aid for hospital building under Hill-Burton, plus $2 million for state surveys; $75 million for the regular hospital-aid program; $22 million under the airport measure.

Meantime, Franklin G. Floete, assistant secretary of defense and top reviewer for military construction, had tapped some of the best brains in architecture and engineering for research on his hydraheaded program. His consultants: Giffels & Vallet of Detroit, for warehouse construction; Parsons, Brinkerhoff, Hall & Macdonald of New York, for a study of airfields; Keyes, Smith, Satterlee & Lethbridge of Washington for family housing.

Circular office building for downtown Hollywood

This extraordinary building by Architect Welton Becket will house headquarters for Capitol Records, Inc. in downtown Hollywood. Publicized as the first circular office building in the world, the 13-story structure bears superficial resemblance to the round "Helix" apartment building that William Zeckendorf and Ieoh Ming Pei thought up four years ago (AF, Jan. '50) but have as yet not built. Ground will be broken this month for the Capitol Records building. It will be composed of a 12-story concrete cylinder, 90′ in diameter, supported on an 82′ x 180′ base by two circular rows of columns. Second floor (lowest in the column) has a diameter of 78′ as opposed to the 90′ diameter of the other circular floors.

Total floor area in the building will be close to 92,000 sq. ft. and net usable space about 78,000 sq. ft., including corridors. Core facilities —stairs, elevators, washrooms, etc.—occupy 14% of the gross floor area, considerably less than they usually occupy in ordinary straight-line planning. Cylindrical design also cuts lineal feet of perimeter wall, a fact the architects say will make for reduced cost and higher efficiency in heating and cooling. Total cost of the building has been estimated at $2 million.

Construction wages up 9c; labor gets more fringe benefits, longer contracts

Wages in construction rose by an average 9¢ an hour across the nation during the bargaining season which ended this summer. A midsummer survey of the building labor market by FORUM identified some trends which alert contractors were keeping under scrutiny to help them estimate the wants and needs of their labor next year. In a dozen major building areas, this is the way things were shaping up:

Fringe benefits—a long time coming to construction—are on the rise. Basic fringes, such as health and welfare insurance plans, are becoming well established in most metropolitan centers. Big exceptions are the South and West. Vacations and pensions are pushing into contracts in many big metropolitan areas which have stable labor forces. New York is still the pacesetter in fringe benefits; many of its trades have pension plans and vacation funds. In Detroit, six trades and their employers have cooperated in setting up a joint health and welfare plan costing employers 10¢ an hour. The Detroit group plan is one of several clear-cut signs of a trend in construction fringe benefits toward enlarging groups under coverage. Union and employer leaders, thinking of administrative savings, foresee city-wide and perhaps even state-wide coverage. Another form of widening application of fringe plans was apparent in a ten-state contract signed last month in the Midwest between the boilermakers union and representatives of 5,000 contractors, providing employer-paid hospital and surgical benefits for some 30,000 construction boilermakers. Union officials hope the plan, which took eight months to negotiate, will be applied to the rest of the nation's boilermakers in a month or two.

Two-year contracts as a partial satisfaction of the hunger of both contractors and workers for stability in their relations. Some contracts, important chiefly for their experimental nature, run from three to five years. For construction, adoption of long-term contracts and wage escalator clauses was unusual. Construction union leaders have driven hard for pay boosts every year in the last decade, counting for help on the boom in building since World War II and on the eagerness of most contractors to avoid strikes. Result: building construction wages are the highest of all industries in the country ($91.70 gross average weekly earnings). In 1945, construction wages were fourth highest in the country ($53.73) and in 1939 they were eighth ($30.39). Labor's acceptance of multiyear contracts has been interpreted as recognition by unions that the postwar ascent of wages may have lost most of its force. But, as insurance against wrong guesses on the economic future, most contracts longer than one year contain cost-of-living wage-adjustment clauses or provisions for reopening pay negotiations yearly. In Chicago, an unusual three-year contract gave plumbers a 13¢ pay increase this year, assures them a 7¢ boost next June and commits them to no rise the following year. Nearly all major Boston contracts are for two years.

Blanket contracts. Wage rates for housing still are being patterned by negotiations covering all of construction. In a few cities this year, homebuilders revolted against bargaining jointly with other types of contractors and in many more areas builders talked about the need for negotiating separately with unions. But the revolts were unsuccessful, and the talk was mostly about "next year." Standout example of what homebuilders want was a contract between Providence builders and carpenters setting a lower wage rate than that for carpenters in general construction. In many parts of the country, however, lower wage rates for housing workers than for other construction craftsmen are a reality, for housing is about half open shop. In addition, wages tend to be somewhat lower in suburban areas, where the bulk of housebuilding occurs. In large cities, where much housing is apartment buildings, builders usually have to pay the wages which apply to other types of structures.

Mixed employment picture. Construction employment varied by city. In most it was high—unemployment in spots was only 10% or less of the total work force, normal in an industry with constant movement of workers from job to job. In some areas, however, there was serious unemployment. Carpenters and bricklayers seem most vulnerable, for they have to contend not only with day-to-day fluctuations in the call for their services, but also with the constant nibbling at their jurisdictions brought about by adoption of new building materials. In two areas, Omaha and San Francisco, there was heavy unemployment in many trades.

HOURLY BUILDING WAGE RATES, THIS YEAR COMPARED WITH LAST

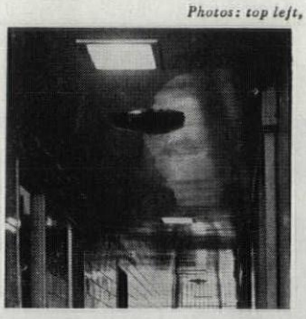
	Bricklayers	Carpenters	Electricians	Laborers	Cement masons	Operating engineers	Plasterers	Plumbers
CHICAGO								
new rate	$3.55*	$3.40*	$3.50*	$2.50*	$3.30*	$3.15*	$3.62½*	$3.37*
old rate	3.40*	3.25*	3.37*	2.35*	3.15*	3.00*	3.52½*	3.24*
BOSTON								
new rate	3.18*	2.75	3.12*	2.14*	3.22½	3.57½	3.30*	negotiating
old rate	3.18*	2.75	3.12*	1.99*	3.22½*	3.57½	3.20*	3.10*
DALLAS								
new rate	3.50	2.75	3.00	1.45	2.75	2.87½	negotiating	3.00
old rate	3.50	2.62½	2.90	1.40	2.62½	2.75	3.43¾	2.90
DENVER								
new rate	3.50	2.85	3.00	1.87½	2.85	2.61	3.30	3.05
old rate	3.50	2.77½	2.90	1.80	2.77½	2.53½	3.30	2.97
DETROIT								
new rate	3.45*	3.22	3.52*	2.45*	3.00*	3.20*	3.49*	3.35*
old rate	3.35*	3.10	3.41*	2.35*	2.90*	3.10*	3.44*	3.22½*
KANSAS CITY								
new rate	3.62½	2.75	3.15*	2.03	3.62½	2.97	3.25	negotiating
old rate	3.62½	2.67½	2.97½*	1.98	3.62½	2.88½	3.25	3.00
NEW YORK								
new rate	4.15½*	3.57*	4.10*	2.42*	3.67*	4.10*	4.15*	3.92*
old rate	3.87*	3.43*	3.60*	2.29*	3.52*	3.95*	4.15*	3.64*
LOS ANGELES								
new rate	3.40	2.82½*	3.20	2.15*	2.70*	3.67½*	negotiating	3.32½*
old rate	3.17½*	2.70	3.10	2.05	2.60	3.59½	3.55½*	3.20½*
OMAHA								
new rate	3.17½	2.62½	3.00	1.85	2.75	2.50	3.05	3.02½*
old rate	3.12½	2.55	2.90	1.80	2.67½	2.45	3.00	2.87½
ST. LOUIS								
new rate	3.45	3.12½*	negotiating	2.17½*	3.45	3.12½*	3.17	3.20*
old rate	3.45	3.02½*	3.28*	2.09½*	3.45	3.00	3.17	3.02½*
SAN FRANCISCO								
new rate	3.62½*	2.85*	3.30½*	2.40*	2.82*	3.36*	3.50*	3.35*
old rate	3.47½*	2.77½*	3.22½*	2.32½*	2.74½*	3.31*	3.45*	3.22½*
WASHINGTON								
new rate	3.59*	3.09*	3.46*	1.87½	3.02½*	3.29*	3.55*	3.36*
old rate	3.39*	2.96½*	3.31*	1.81½	2.90½*	3.19*	3.52½*	3.22*

* includes fringe benefits

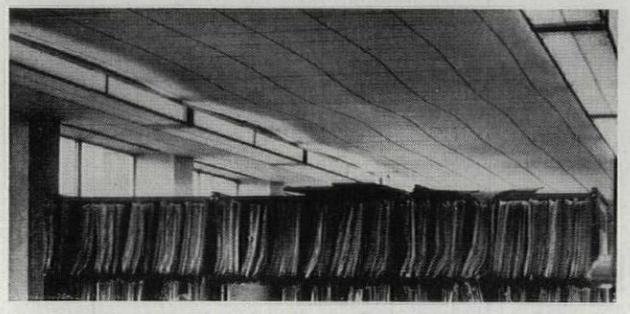
Photos: top left, Charles R. Pearson; others, Marshall Lockman



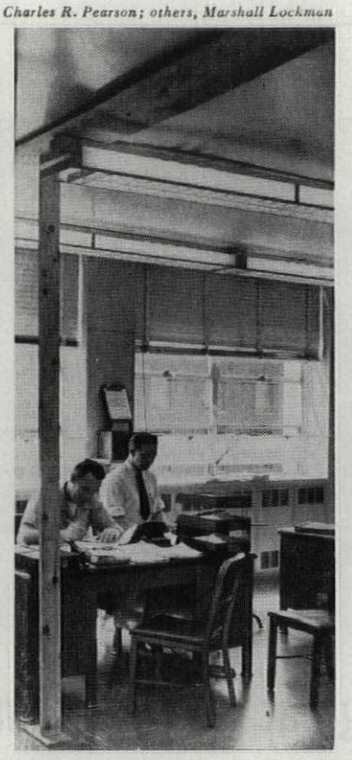
WAR MEMORIAL in center of Seattle's 15-story public safety building houses police and public health headquarters.



CELL BLOCK corridor in city jail has buckled ceiling; one report blames rigidity of the surrounding walls.



ACOUSTICAL TILE applied to plaster ceiling now shows humps and dips. Ceilings throughout the building have buckled where the walls on either side are bearing partitions.



DETECTIVE DEPT. ceiling is bolstered up with scaffolding of shiplap and 2 x 4s.

Cracking plaster and tile walls in Seattle building stir row over who is to blame

Three years ago, the citizens of Seattle smiled as they passed their new war memorial, the public safety building. They had answered the growing clamor in the architectural world for a functional monument to their war dead, and the 15-story police-and-public-health building was a good example of contemporary taste (AF, Aug. '52).

This year there was chagrin among Seattleites who watched plaster cracks—mostly hairline but some perhaps ½″—appear in the walls and ceilings. They saw glazed hollow tile partition blocks pop out. The Seattle *Post-Intelligencer,* interested when Fred B. McCoy, city building superintendent, asked the city council for $50,000 for repairs to the memorial building, carried pictures and details of the damage. One paper called the building an "eyesore" because of the imperfections.

Whose fault? McCoy listed these problems: need for repainting throughout, and recoating roof; leaks around aluminum window sash; loose mortar joints; leaks from planting boxes, causing discoloration; loose door jambs, and inadequate oil burning system. But the cracking plaster and tile, as McCoy noted, were the "main problems." Around them swirls a controversy that has spread from Seattle to concern technical men across the US. The reason: the public safety building was plastered with gypsum-perlite. Perlite is a 13-year-old lightweight aggregate used with gypsum or Portland cement to form wall plaster. It costs more, but offers better fire and thermal insulation than sand and gravel. Perlite is a siliceous volcanic rock mined in the West and heat-treated.

It may be some time before experts can agree what caused the damage. For one thing, the cracking and sagging and warping have not stopped. For another, architect, perlite supplier and plastering contractor have been more active in avoiding than in fixing blame, so the argument over whose fault the damage is goes round like a ball in a roulette wheel.

Architect Perry B. Johanson of the firm of Naramore, Bain, Brady & Johanson, wrote the Seattle city council on May 3 indicating the fault must lie with the brand of perlite used. He wrote: "The major problem develops in the expansion of the ceiling plane. If the surrounding walls are rigid, the ceiling tends to buckle. . . . Where the surrounding walls are nonbearing partitions such as glazed block walls in the police area, the pressure of the ceiling tends to dislodge the top block." He asserted that in other buildings in Salem and Portland, Ore., in Yakima, Bellingham and Spokane where the same brand of perlite was used, "the same conditions had developed."

Slurs & scapegoats. Supplier of the perlite, Dant & Russell, of Portland, Ore., stopped making the aggregate two years ago. F. S. Burt, formerly manager of the perlite operation for Dant & Russell and now advertising manager of the firm, has been incensed over the slurs on the product, which was known as Dantore, and which was widely used in the northwest.

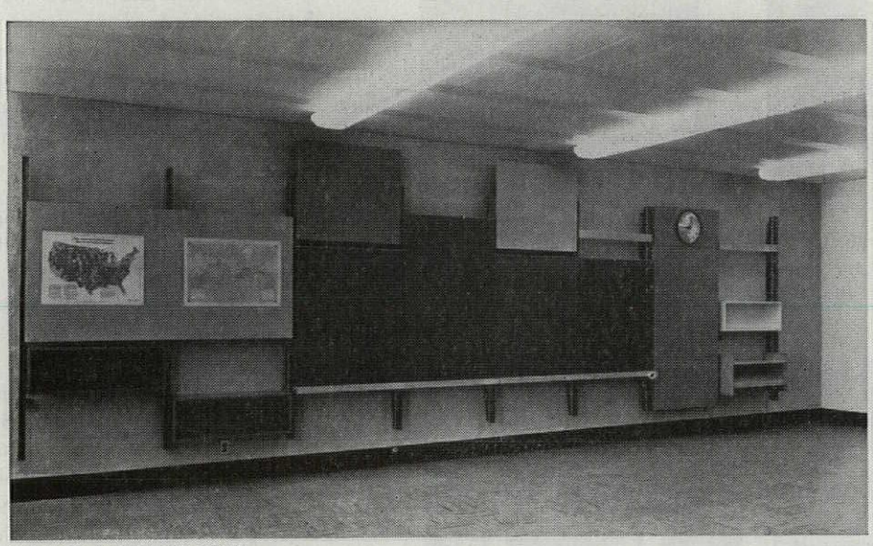
"The ends of too many people were going to be served if a scapegoat could be found, and apparently we're it," he fumed last month. "We are not involved in the failure of that building in any way. . . . At the same time that perlite appeared on the building scene, architects started coming out with revolutionary new designs." Burt suggested new design or construction methods might be at fault in plaster failures in the Northwest.

Was it design? Dantore had not been approved by the Perlite Institute, Burt said, because Dant & Russell were not members. But the institute, seeing clearly on which side its wall was plastered in the controversy, investigated on its own and blamed the cracking of plaster on structural movements. In a report, R. J. O'Heir, technical director of the institute, blamed the way the runner channels and furring channels in the ceilings were put together. O'Heir said the ¾″ furring channels were tied to runner channels so they butted into partition walls which came up to the main runner channels. This tended to transmit any building movement to the partitions, causing either the partitions to fail or the ceilings to buckle and wave (see cut). He said he found evidence of structural movement in partitions and around door jambs.

R. L. Davis, secretary-treasurer of the institute, asserted there is "no correlation" between the Seattle troubles and the national experience with the 300 million sq. yd. of ½″ gypsum-perlite which has gone on walls since 1948. He noted that the difficulty "seems to be pointed at one producer's perlite that is no longer available," and called attention to the institute's certification label for approved perlites.

Joe Jefferson, plastering contractor, insisted he followed specifications. It was the general contractor, Kuney Johnson, who suggested perlite be used, but this was approved by the client. Representatives of four building unions denied workmanship was to blame.

The proponents of design and the defenders of perlite have not had a clear battlefield by any means. The building is a public one, and political factions are taking sides. So far, there have been no lawsuits, but odds were that the courts would be involved before long. This promised more delay and more controversy. Yet for the building industry, and especially for perlite interests, perhaps the most important thing of all was to get the question settled before second-hand reports and whispers magnify the trouble beyond its true proportions. Building Superintendent McCoy suggested one way this might be done. He asked the city for $5,000 to hire a "disinterested engineer and architect" to analyze the situation. Other Seattle buildings also face the same problem, said McCoy.



ARCHITECTS: KETCHUM, GINA & SHARP

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The Stokes Company,
2035 Washington St., Kansas City, Mo.

Porter-Trustin Co.,
910 Saddle Creek Road, Omaha, Nebraska

Atkins & Co., Inc.,
19 North Harrison St., East Orange, N. J.

Hoddick and Taylor,
71 West Eagle Street, Buffalo, New York

Kalflex Inc.,
101 Park Ave., New York 17, New York

DiClemente and Volke
4 Elton St., Rochester 7, New York

R. G. Ross Company,
415 Clement Ave., Charlotte, North Carolina

Dubrow—Otte, Associates Inc.,
1426 Clay St., Cincinnati, Ohio

Link Equipment Company,
1935 Euclid Ave., Cleveland 15, Ohio

Tri-State Supply Co.,
1846 West Fifth Ave., Columbus 12, Ohio

Dayton Builders Supply Company
800 East First Street, Dayton 2, Ohio

Scovil & Sublett,
20 N.E. 27th St., Oklahoma City, Oklahoma

A. M. Masters & Son
4 North 11th St., Philadelphia, Pa.

A. M. Masters & Son,
300 West Penna. Ave., Pen Argyl, Pa.

Engineered Materials Co.,
650 Washington Road, Pittsburgh 28, Pa.

Tennessee Structural Products Corp.,
3601 Chapman Highway, Knoxville, Tenn.

Kearney & Son
2026 Chestnut St., Dallas, Texas

Bickley Bros.
2017 Preston Ave., Houston, Texas

John A. Williamson Co.,
1727 Broadway, San Antonio 2, Texas

American Paper & Supply Co.,
444 So. 2nd West St., Salt Lake City, Utah

Flowers School Equipment Co.,
327 West Main Street, Richmond 20, Virginia

Freyer-Knowles,
1718 Broadway, Seattle 22, Washington

Milwaukee Equipment Co.,
4221 North 35th St., Milwaukee 16, Wis.

PEOPLE: Elizabeth Wood is fired as Chicago public housing executive; Tracy Augur named to city planning post at HHFA

For more than two years, there had been friction between Executive Secretary **Elizabeth Wood** and the four commissioners of the Chicago Housing Authority. Since race rioting began more than a year ago after Negroes were admitted to the all-white Trumbull Park public housing project, the breach has widened. Last month, the tensions erupted into a front-page quarrel and Miss Wood, boss of Chicago public housing for 17 years and a nationally prominent figure in public housing, was abruptly fired.

The explosion began building up when the board, after a study of CHA operations by a firm of consulting management experts, demoted Miss Wood without notice to herself. It named Lt. Gen. **William B. Kean,** 57, just retired as commander of the Fifth Army (headquarters Chicago) to the newly created top post of executive director. Salary: $20,000 (some $2,500 more than **HHFAdministrator Cole** is paid). Kean, who will take over Oct. 1, has a reputation as a cost-cutter (he claims he saved $1 million in his command last year).

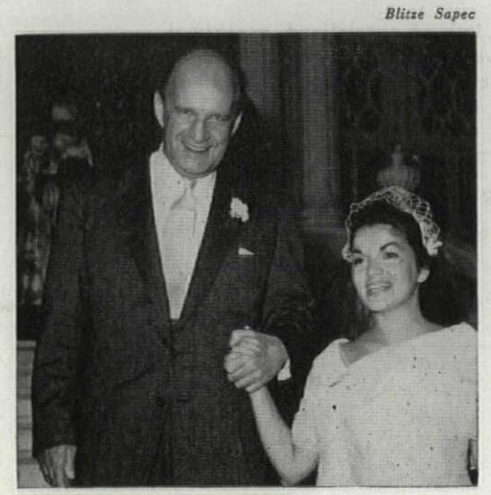
He had also been in the middle of Negro-white integration, which is public housing's No. 1 problem in Chicago; in the summer of 1950, he integrated the all-Negro 25th Infantry regiment into white units of the 25th division—the second in action in Korea. But Kean is also a man with no extensive experience at housing. The commissioners explained later they had planned to ask Miss Wood to stay with the public housing organization, possibly to take charge of its social work. But they never got around to discussing this with her. On Aug. 31, Miss Wood handed Chicago newsmen a statement accusing the board of paying "lip service to policies [of nonsegregation] publicly proclaimed while privately issuing instructions thwarting those policies." She also added, referring to the commissioners: "It is personally shocking to me to find individuals who can hope to sweep the race issue under the rug by unabashed moral blackmail." The stunned commissioners immediately fired her, with a year's severance pay (about $14,000). Chairman **John Fugard** called her statement "unfounded, unwarranted and irresponsible." The blackmail accusation, he said, was "simply malicious. . . . I think she's held the commission in utter contempt for a long time. . . . It's a presumption on Miss Wood's part to feel that she is the sole person in Chicago capable of effecting integration."

Some Chicago integration facts: CHA operates 26 projects with some 12,000 units housing 60,000 people (about 62% Negro and 38% white). In all but three of the 26 projects, there are some Negroes. As the Chicago *Daily News* editorialized: "One of the perils to the whole public housing program is and always has been the risk that it might evolve into an accommodation supplied exclusively, or nearly so, for Negro occupants. Taxpayers will not long support it on that basis. . . . We are sure that Miss Wood herself would consider it vital for the administrators to use some discretion in establishing priorities for the location of Negro families in new areas . . ."

City Planner **Tracy B. Augur** last month was appointed assistant director for planning assistance in HHFA's slum clearance and redevelopment division. Augur is a lifetime city planner and an experienced thinker on atomic defense. He was in private practice until 1933, then joined TVA, first as a consultant and then as a staffer in town planning. He has been in on a number of other projects, including the Greenbelt towns and the postwar community of Oak Ridge, Tenn. In the spring of 1949 he joined the staff of the Federal Works Agency in Washington to assist in developing plans for the security of the capital; recently he was director of the urban targets division of ODM. Augur believes in urban dispersal. "Too many of our eggs are in one basket," he said recently, "and the baskets are too big and easy to hit. . . ." At HHFA, he will be in a key spot to put his theories into practice in the rebuilding of US cities.

Famed Architect **Edward D. Stone,** Arkansas-born prize winner who helped plan Rockefeller Center and designed the Museum of Modern Art, married a young fashion writer and designer from Ohio last month in Beirut. The Bishop of Lebanon presided. Stone met the exceptionally attractive **Maria Elena Torch** on an airplane to Europe a year ago fell into conversation with her about her father (trained as an architect in Florence) and mother (Barcelona-born) and her own childhood on an Ohio farm. Miss Torch won some beauty contests when she was 17, did a stint of modeling in New York and worked into fashion writing in Baltimore. A few years ago she spent two years at Northwestern University's school of journalism and returned to New York to become foreign editor of a new magazine called *Fashion & Travel.* Plans for the wedding were made last spring when Miss Torch was visiting Rome and Stone was visiting New Delhi, where he is doing the US Embassy. Beirut was a logical meeting place, since he is doing a hotel there. The couple took a globe-trotting honeymoon—back to New Delhi, east to Bangkok, thence to Hong Kong and on to Japan, where they arrived at **Frank Lloyd Wright's** Imperial Hotel in time for a major earthquake. ("The columns went like rubber," reported Stone, "and the water in the pools slapped up and down, but the Japanese clerks stayed at their posts, laughing and smiling. . . .") In Japan, the Stones met up with US Sculptor **Isamu Noguchi** and his actress wife; Architect **Tony Raymond** and wife; peripatetic philosopher **Walter Gropius** and **Torao Saito,** editor of Nippon's sumptuous magazine, *This Is Japan.* They flew home a few weeks ago.

Blitze Sapec



ARCHITECT STONE AND BRIDE

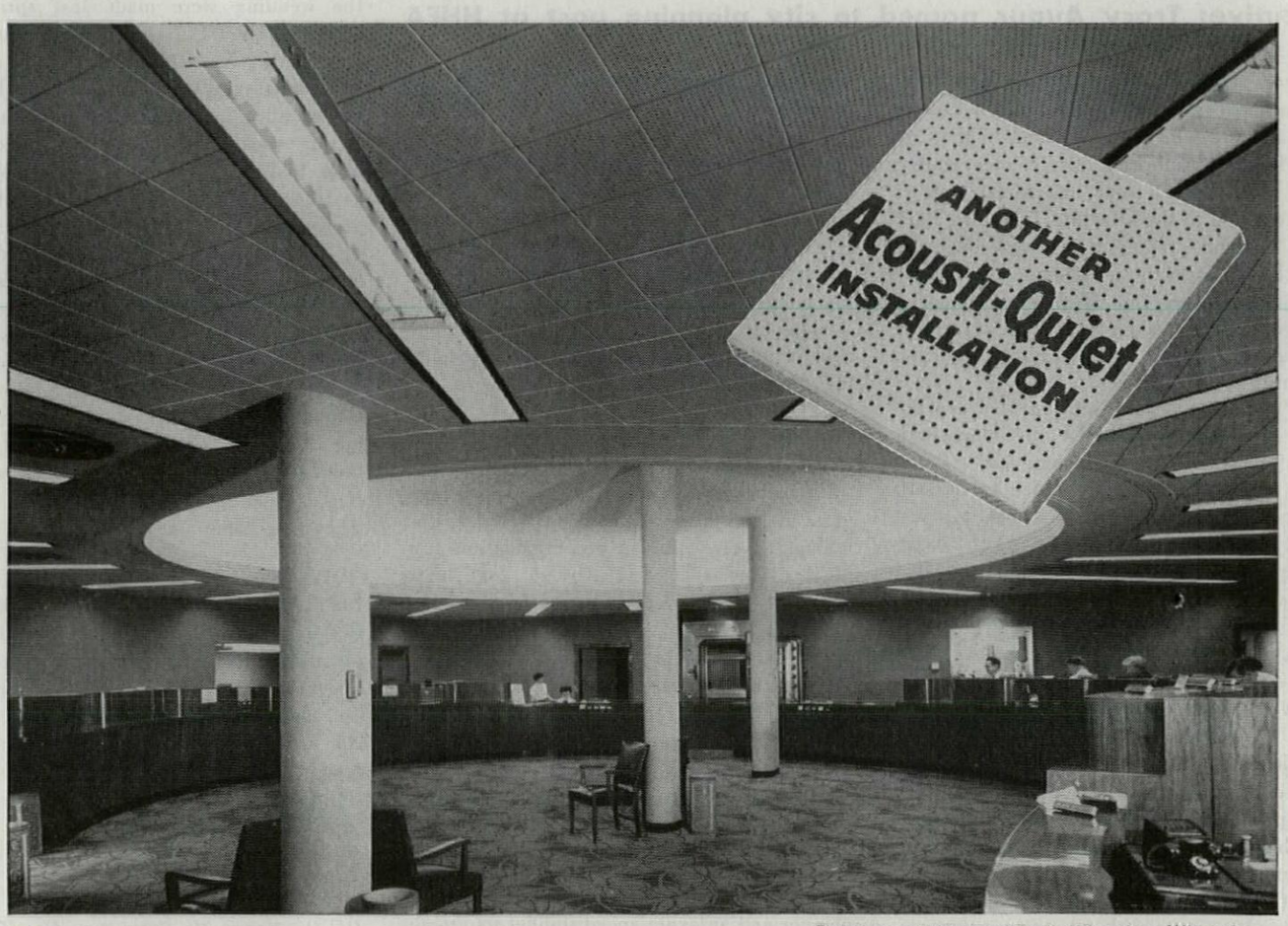
Rear Adm. **Joseph F. Jelley Jr.,** the Navy's ranking construction expert, retired last month after serving nearly a year as director of construction in **Franklin Floete's** properties and installations division in the Defense Dept. No successor had been announced. Another resignation: **Allen S. Thorn,** with the Public Buildings Service for nearly 20 years and supervising architect in charge of building design there since 1949.

DIED: **Henry H. Gutterson,** 69, FAIA, designer of many churches and homes in northern California, Aug. 19 at his home in San Francisco. A former (1910-11 and 1920-21) member of the University of California architecture faculty, Gutterson had also served on the state board of architect examiners, on the Berkeley city planning commission, and, until his death, was supervising architect of the swank St. Francis Woods residential section of San Francisco.

Harris & Ewing



SWORN IN last month as Architect of the Capitol, J. George Stewart (r) takes the oath from Judge James Kirkland as Stewart's predecessor, David Lynn, looks on. Stewart is a civil engineer and a former Congressional representative from Delaware (1935-37). Lynn started as apprentice to the Architect of the Capitol 53 years ago, has been in the top post since 1923. He has had a staff of 900—the Architect is responsible for everything from wing additions to light bulbs—and among other projects has seen the complete air conditioning of his group of buildings and the construction of the Supreme Court.



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BUILDING STATISTICS:

Basic forces in US economy seen as bolstering construction prospects

With more than two months of good building weather still ahead, construction men were sizing up a number of influences on their business. Their industry, they knew, was in good shape. The national pressures which were acting to greater or lesser degree in construction's favor—or in some instances perhaps owed their direction to the health of construction—could be itemized as follows:

Gross national product—the nation's output of goods and services—rose slightly during the second quarter of 1954, reversing a nine-month decline.

Construction employment was fairly high and building labor showed signs of easing off its pressure for higher wages in favor of fringe benefits and contract stability (see p. 38).

Personal income, up $600 million over the first quarter of 1954, was still $700 million below the second quarter of last year. But after-tax income was figured at $600 million above what it was in the first quarter of '54 and was $2.5 billion over the second quarter of '53.

Fast tax write-offs on plant and property were faster than ever, courtesy of the Congress just adjourned, a promising indication of accelerated industrial expansion for defense needs (see p. 128).

Lease-purchase program passed by Congress offered another market for big-scale building.

A master plan for economic growth of the US for the next 20 years was being worked up by President Eisenhower's Council of Economic Advisers.

Unemployment in nonconstruction fields was still a problem, with the national total hovering around 3.3 million persons out of work.

Plant obsolescence, said to afflict more than half the industrial facilities of the nation, assured construction of a further market—with or without fast tax write-offs—as long as national consumption continued high.

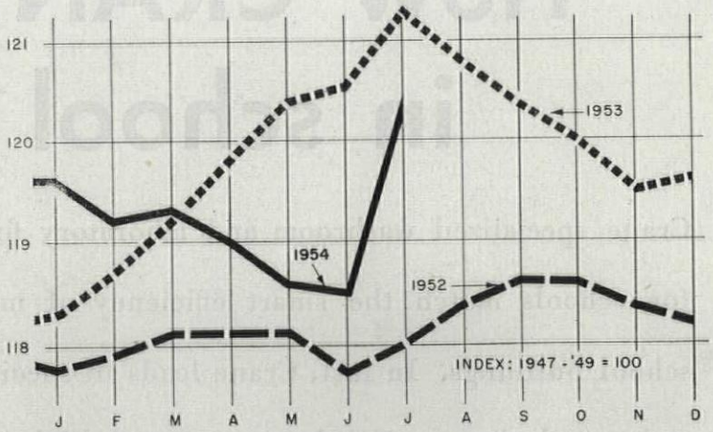
NEW CONSTRUCTION EXPENDITURES

(millions of dollars)

Type of construction	July 1953	July 1954	July Percent change	First 7 months 1953	First 7 months 1954	First 7 months Percent change
PRIVATE						
Residential building (nonfarm)	1,126	1,237	9.9	6,662	6,929	4.0
New dwelling units	990	1,095	10.6	5,895	6,125	3.9
Additions and alterations	112	113	.9	622	629	1.1
Nonresidential building	489	554	13.3	3,141	3,464	10.3
Industrial	176	164	—6.8	1,347	1,190	—11.7
Commercial	165	203	23.0	894	1,184	32.4
Other nonresidential building	148	187	26.4	900	1,090	21.1
Religious	40	51	27.5	248	302	21.8
Educational	36	51	41.7	226	295	30.5
Social and recreational	15	21	40.0	84	122	45.2
Hospital and institutional	27	29	7.4	185	191	3.2
Miscellaneous	30	35	16.7	157	180	14.6
Farm construction	182	164	—9.9	1,015	915	—9.9
Public utilities	408	410	.5	2,417	2,484	2.8
All other private	13	12	—7.7	71	61	—14.1
*PRIVATE TOTAL	2,218	2,377	7.2	13,306	13,853	4.1
PUBLIC						
Residential building	46	26	—43.4	338	223	—34.0
Nonresidential building	373	409	9.7	2,519	2,646	5.0
Industrial	153	133	—13.1	1,067	972	—8.9
Educational	147	177	20.4	963	1,146	19.0
Hospital and institutional	28	34	21.4	228	202	—11.4
Military facilities	122	90	—26.2	794	487	—38.7
Highways	382	415	8.6	1,503	1,765	17.4
Sewer and water	77	90	16.9	477	550	15.3
Conservation and development	77	69	—10.4	486	408	—16.0
*PUBLIC TOTAL	1,107	1,136	2.6	6,271	6,282	.2
*GRAND TOTAL	$3,325	$3,513	5.7	$19,577	$20,135	2.9

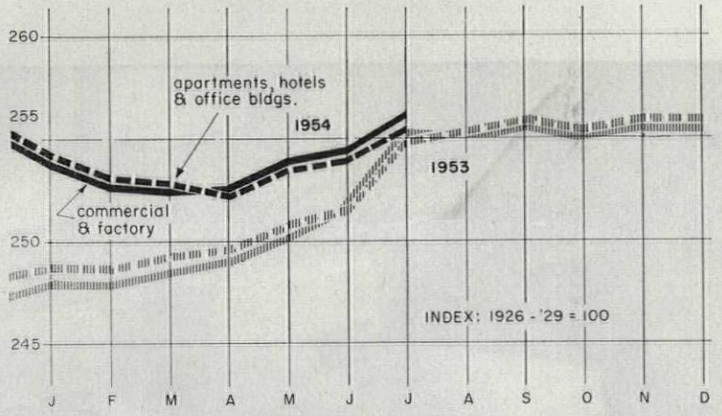
* Minor components not shown, so total exceeds sum of parts. Depts. of Commerce & Labor.

MATERIALS PRICES



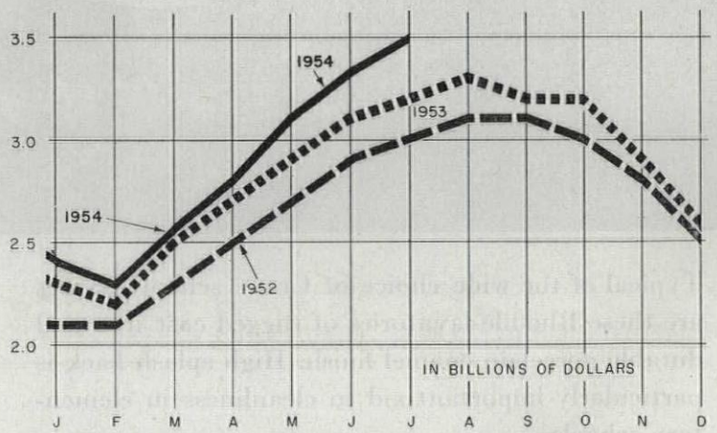
The BLS index of wholesale building materials prices climbed 1.9 points to 120.4 in July, reversing the downward trend that started early this spring. Lumber, still partially strikebound, was chiefly responsible for the upturn. Its July price index was up 2.6% over June. A copper strike affecting 30,000 US workers stimulated some fear buying, boosted the price of copper scrap by ¼¢ a lb. Demand for structural steel shapes still boomed, though at a slower pace, and remained the brightest spot in an otherwise gloomy steel picture.

BUILDING COSTS



Heavy building costs showed slim gain from June to July—less than a point in both the Boeckh (see above) and American Appraisal Co. indexes and 1.6 points in the AGC series. Higher lumber prices and rising wage rates were the principal causes.

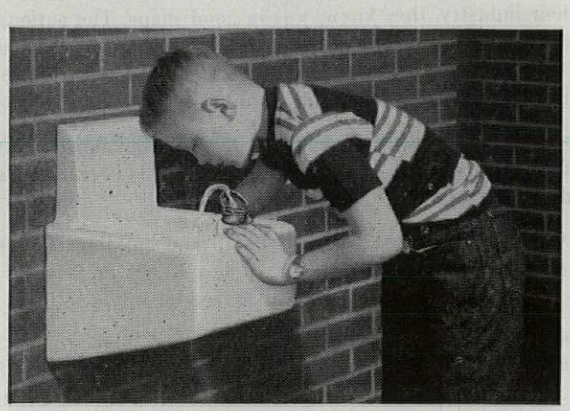
NEW CONSTRUCTION EXPENDITURES



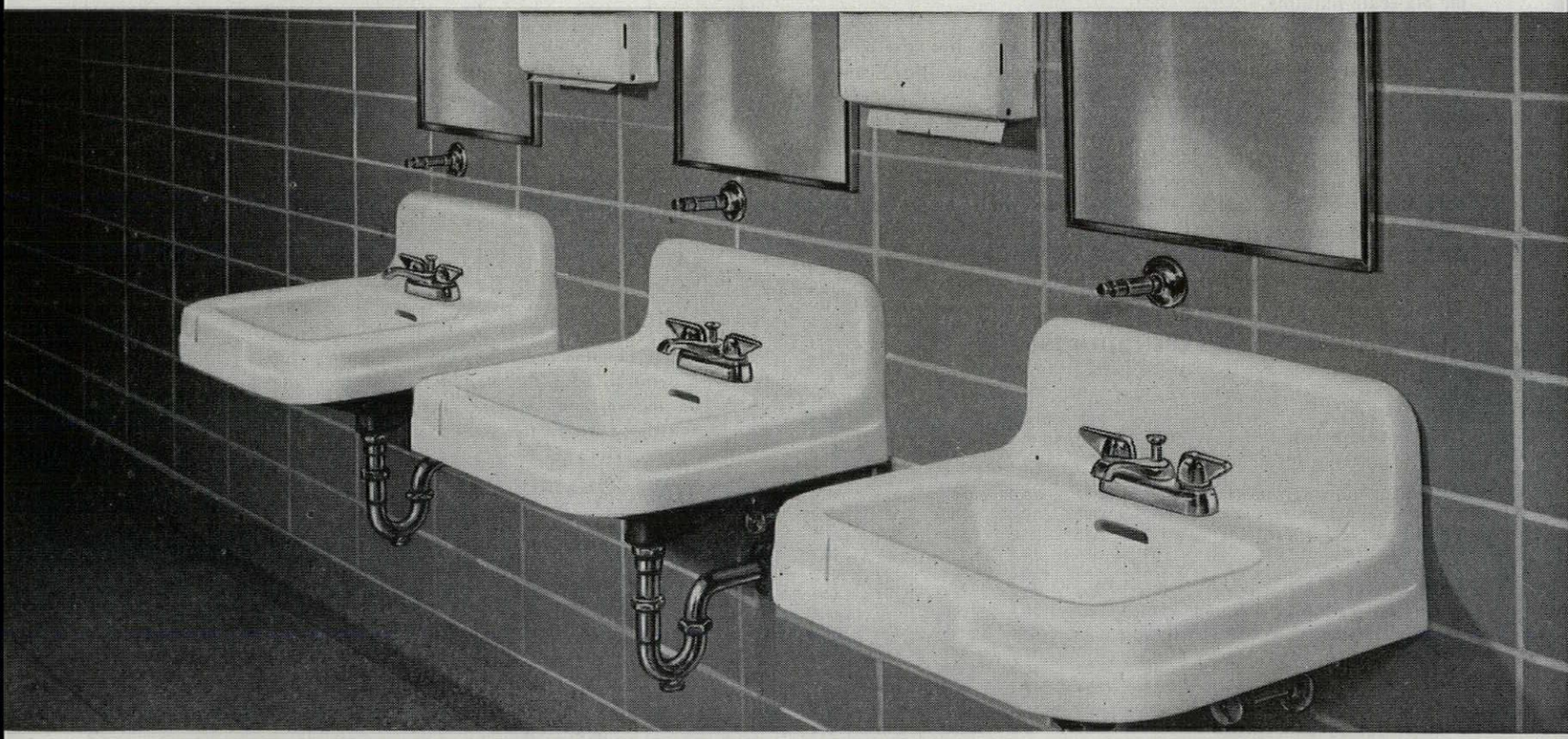
Dollar outlays for new construction during July reached a high-water mark of $3.5 billion, the biggest monthly volume on record. Private construction set its own record of almost $2.4 billion, or 7% more than July '53, with residential and commercial building showing the largest gain. This impressive performance was expected to continue throughout this year and next (see "FORUM Forecast: 1955," p. 130). The detailed figures are in the table at the left.

How CRANE helps you in school planning

Crane specialized washroom and laboratory fixtures for schools match the smart efficiency of modern school buildings. In fact, Crane leads in specialized styles and sizes to fit elementary and high school plans. And, of course, the wide choice of Crane prices makes it easy to fit Crane equipment into any school budget as well as any school plan.



Crane school fountains are of the highest quality vitreous china. This Crane Waterfall, one of a wide choice of both wall and floor models, includes Crane's famous Purflo angle stream bubbler to prevent contamination. Individual or central water chilling units now available with Crane drinking fountains.



Typical of the wide choice of Crane school fixtures are these Rhodile lavatories of rugged cast iron and durable porcelain enamel finish. High splash back is particularly important aid to cleanliness in elementary schools.

Besides a comprehensive choice of specialized school fixtures, Crane offers you the advantage of its unmatched reputation for quality—which is well known to school administrators. When you specify Crane equipment, they know you have recommended the best.

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SIDELIGHTS

Sell public housing?

Now that Congress had more or less turned off the flow of new public housing construction, the National Association of Real Estate Boards, long one of public housing's chief foes, turned *its* attention to trying to rid the nation of what public housing had already been built (about 400,000 units). In NAREB's weekly news letter, *Headlines*, President Ronald J. Chinnock urged state realtor associations to back state and local laws to require any municipality to hold a referendum vote on liquidation of public housing "upon petition signed by 10% of the taxpayers." Instead of government ownership, Chinnock would have occupants or private investors buy and operate the properties. By such referenda, Chinnock said, the "vicious grip of the housing authority in Washington on our cities can now be broken." In passing, the NAREB leader also ticked off some of the strongest invective aimed at public housing recently. He wrote: "Public housing is bad because it is . . . a special privilege and a political racket, . . . a new kind of 'ghetto' which herds problem families together and accentuates their difficulties, an unfair tax burden on those who save and struggle to provide their own homes."

Gunplay in Memphis

Nonunion construction workers had come into Memphis before and AFL building trades had not seriously protested. But jobs were scarcer now. So when Jones Equipment Co. of Dyersburg, Tenn. imported nonunion ironworkers for its steel subcontract on a cattle barn at the Memphis fairgrounds, AFL men protested. When some of the structure collapsed, they added a complaint that the work was shoddy. On Aug. 25, AFL ironworkers went to the scene armed with sticks and bats. They were repulsed by the nonunion workmen, who were armed with pieces of iron. Next day, the nonunion men took guns to work. When the AFL men reappeared, a gun battle ensued. Five union men were wounded, one critically. The nonunion crew, firing from behind concrete blocks, was unhurt. Police arrested 14 union men and 11 nonunion workers. The charge: "engaging in common affray." After the shooting, Mayor Frank Tobey declared it was city policy to use union labor for construction. At month's end, work on the cattle barn was resumed with union labor.

Patent suit hits Inland Steel

Hardly had Inland Steel Products Co., Milwaukee subsidiary of Inland Steel Co., readied its new Quonset-shaped shelter and storage building for a first appearance at the Wisconsin State Fair when it was accused of patent infringement. MPH Manufacturing Co., Chicago, charged that Inland had violated MPH patents on the manufacture of self-supporting arch panels which make the Inland building trussfree.

Inland says its building, marketed as the Milcor Lok-rib building, can be put up by unskilled labor with homemade scaffolding and one wrench. Panels of standard radius are bolted together in such a way that a V-rib on one edge of each panel overlaps the edge of another panel to form a triangular box rib. A clear-span, trussless structure can be built varying in width from 24′ to 48′, of infinite length. Big selling points are low material cost and simplicity of construction.

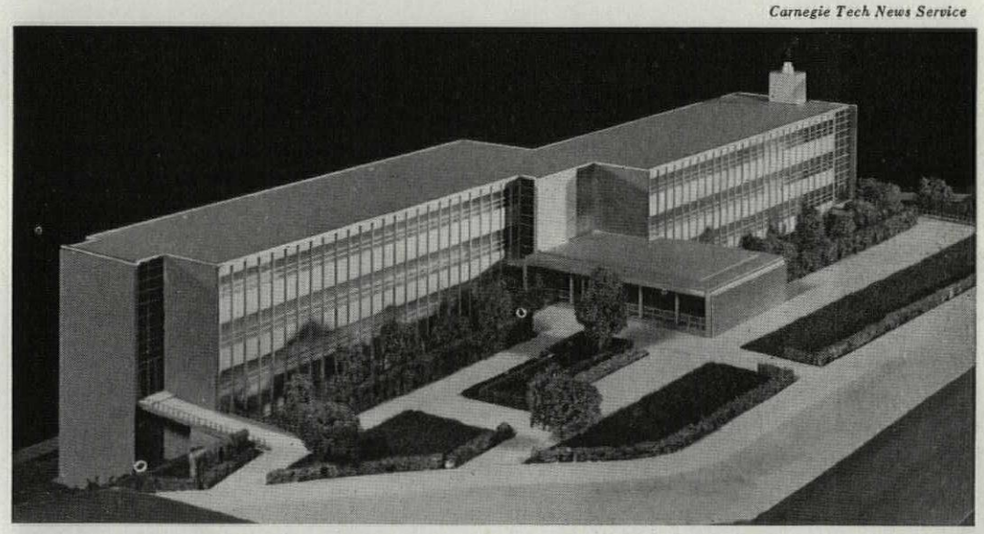
Peter S. Pedersen, president of MPH, said his firm and the affiliated Wonder Building Corp. (AF, July '54) have been producing and selling buildings using this principle of self-ribbed paneling for four years. There are thousands of Wonder buildings in the US, Pedersen told FORUM, used for everything from wheat storage to manufacturing. "Why, there are 219 of them in North Dakota alone," he said.

William A. Jahn, president of Inland Steel Products, said: " . . . To our knowledge we are not infringing on any patents. Until we see the nature of the complaint and the charges, we have no other comment." Pedersen alleges that Inland hired two of his former employees and applied their knowledge of the Wonder building to produce Inland's Lok-rib.

Ahead: atom building era

President Eisenhower signed the hotly debated atomic energy law, which permits private groups to own and operate atomic reactors for the production of electricity. The signing marks a huge step forward for projected plant expansion to house research facilities and generator space for the burgeoning electric business. The effect on construction will not be instantaneous. An average guess on how soon atom-fueled power will be commercially available has been ten years. The AEC has said that by 1975 between 2% and 7% of the nation's electrical needs would be so supplied. But the long-range view holds promise of a revolutionary shift in building and business (see p. 94.) Companies will now be allowed to patent discoveries in the field (although for the next five years AEC will fix royalty rates) and will have an incentive to expand activity. One member of AEC foresees that in 30 years utilities will be putting $1 billion a year into atomic power plants.

Carnegie Tech News Service



CARNEGIE INSTITUTE FAVORS CONTEMPORARY DESIGN FOR NEW DORMITORY

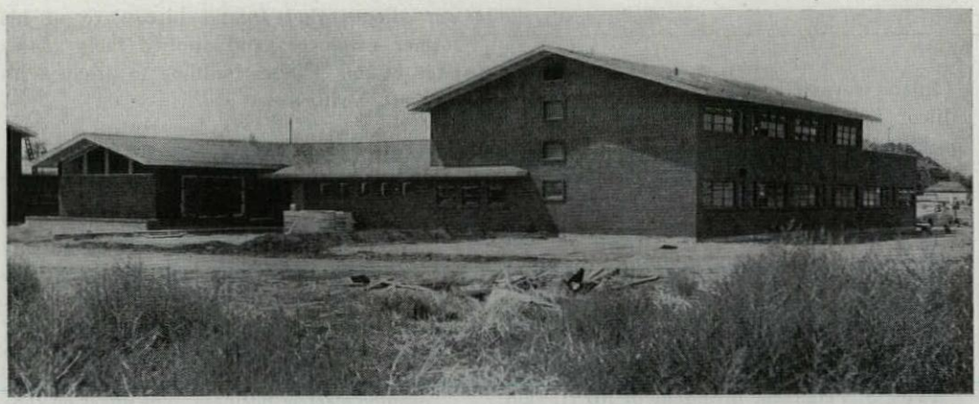
Contemporary design, flow of private money mark college dormitory program

Students at many American colleges accustomed to traditionally antiquated dormitories and fraternity houses will get a taste of well-designed campus housing this year. The big stimulus for a nationwide splurge of improved bed and study space is HHFA's Title IV program (passed by Congress in 1950 but kept on ice until the Korean war showed signs of ending) under which colleges may borrow up to 100% of costs of student and faculty housing.

About half of the $300-million fund for the program had been spent or committed by HHFA by early summer. By the end of July, 132 applications totaling $107 million had been approved by the agency to house 32,554 students, 260 student families and 414 faculty members. Preliminary approval had been given 69 more applications. Another $50 million has been authorized for fiscal 1954.

Free enterprise. Private lenders did not like the program much at the start. They had to stand by and watch the federal government earn interest on bonds they have by tradition steered clear of. Now, although still standoffish, the banks have begun to show some enthusiasm for these college housing bonds. And HHFA has done what it can to encourage private bidding—so successfully that nearly one third of such offerings approved by HHFA

Republic: Forrest Stroup



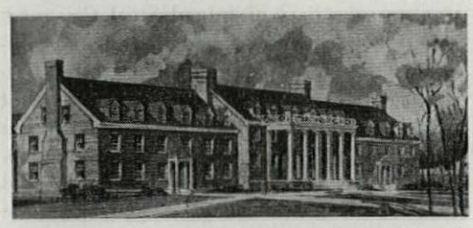
ARIZONA STATE COLLEGE BUILDINGS FOR LEASE TO FRATERNITIES

in the past two years have been taken by private institutions. From the start of the program, HHFA would buy the bonds only if colleges were unable to obtain private bids a fraction of a per cent above current HHFA interest rates. Now it goes a few steps further: it notifies private lenders and the financial press when colleges apply for financing and permits these lenders to bid for the first 20 years of 40-year serial bonds, for the next 10 years, or for the whole issue. HHFA interest for the second half of 1954 has been reduced from 3.5% to 3.25%, and the private bid limit below which colleges may seek HHFA financing has been cut from 3.6% to 3.5%.

Plans of the new dormitories showed increasing attention to students' needs for comfortable living and studying, even if it meant departing from traditional college architecture. There were exceptions, of course. The University of Maryland was putting up a $2-million nest of dormitory buildings of "tidewater colonial" design (see cut) and Stetson University at DeLand, Fla. was spending $500,000 to house 250 students in buildings of similarly conservative design. But contemporary was on the move. Example: a 243-man sleep-and-study building at Carnegie Institute of Technology Pittsburgh, designed by Mitchell & Ritchey of Pittsburgh (photo, p. 45). Generous in its use of aluminum and glass in walls, the $850,000 structure is being built with a steel frame, concrete slab floors on bar joists. Heat source is a central plant on the Carnegie campus.

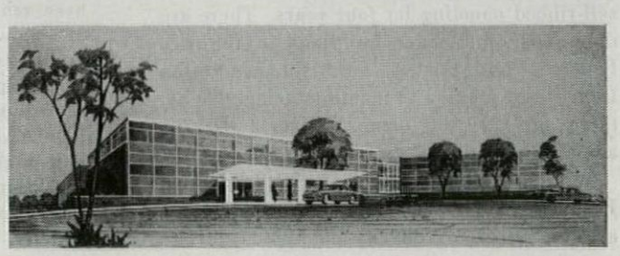
Student opinion. A new wrinkle in satisfying collegiate housing needs appeared at Bowling Green (Ohio) State University. Committees including faculty, administration and students studied dormitory requirements for a year. Then, after more research, Architects Sims, Cornelius and Schooley of Columbus, and Britsch and Munger of Toledo, produced a full-scale model room which was scrutinized and commented on for a month by all hands. Upshot: an 11′ x 18′ room with built-in wardrobes and desks, draftfree aluminum windows and gypsum board for soundproofing.

In an interesting class by itself was a project at Arizona State College (see cut). The school has obtained HHFA financing for the first five of 16 wooden dormitory houses to be leased to campus chapters of national fraternities. The evaporation-cooled buildings will accommodate 30 men apiece and each will be built around a garden-patio. Bedrooms will house two students, with a bath for every two rooms.



TRADITIONAL DESIGN AT MARYLAND

For the RCA *Cherry Hill Laboratories...*



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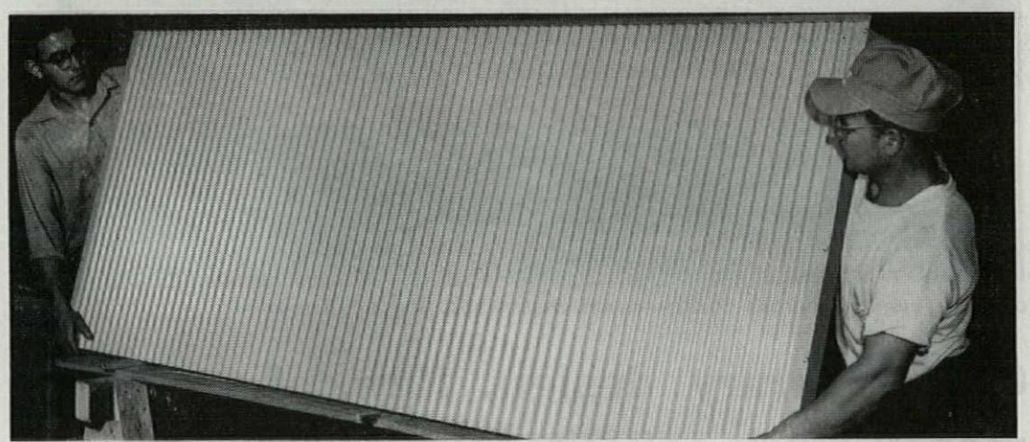
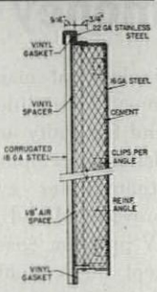


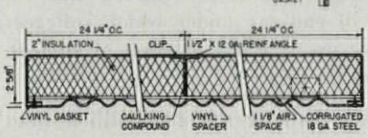
Approximately 35,000 square-feet of Ing-Rich PORCELPANELS will be used for the prefabricated insulated panels used for enclosing buildings A, H and S of RCA's new Cherry Hill project. The exterior surfaces of the panels are corrugated as designed by the architect for appearance and texture. The interior surfaces are flat.

Ing-Rich PORCELPANELS provide lightweight, space-saving, economical, maintenance-free construction, with the widest latitude in design, color and texture. Write Architectural Division, Ingram-Richardson Manufacturing Company, for complete details.

ARCHITECT: Vincent G. Kling, Philadelphia
GENERAL CONTRACTOR: Turner Construction Company

Completely prefabricated panels are delivered, ready for erection. They consist of fabricated sheet steel, porcelain enameled, containing two inches of foam-glass insulation.





INGRAM-RICHARDSON MANUFACTURING COMPANY
BEAVER FALLS, PENNSYLVANIA

Member: ARCHITECTURAL DIVISION, PORCELAIN ENAMEL INSTITUTE, INC.

BARBER COLMAN

"UNI-FLO" ENGINEERED

Air Distribution

. . . provides comfort for mental patients at huge Indiana institution . . .

Nearing completion at Westville, Indiana, is one of the world's largest institutions for the mentally ill. Since 1949 most of the thirty-four large buildings, plus staff residences, have been constructed at a total cost of nearly $25,000,000. The institution contains a small city within itself with provision for housing, feeding, working, and recreational facilities for 3,250 patients and 450 employed personnel. Air distribution in most of the project has been engineered with Uni-Flo equipment to assure comfort conditions for the patients and staff members. Over 2,500 pieces of Uni-Flo equipment have been specified or installed in various buildings.

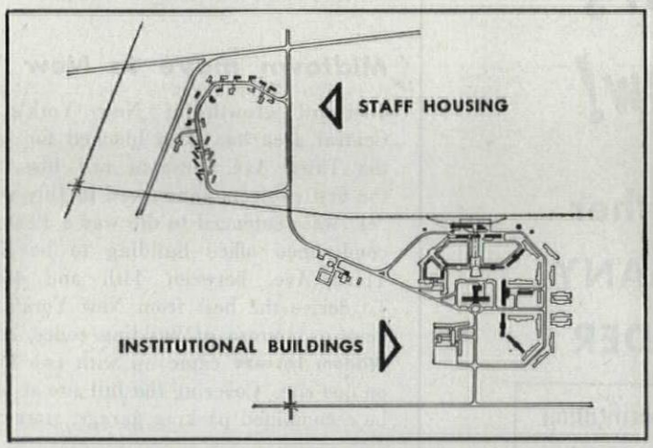
Architects, Engineers, Interior Designers: Boyd E. Phelps, Inc., Michigan City. *General Contractors:* Tonn & Blank, Michigan City; E. H. Marhoefer, Jr. Co., Permanent Construction Company, and Gordon & Company, Chicago. *Ventilating Contractors:* Troeger Sheet Metal and Zack Incorporated, South Bend; Industrial Sheet Metal, Hammond; Reliable Sheet Metal, Chicago.



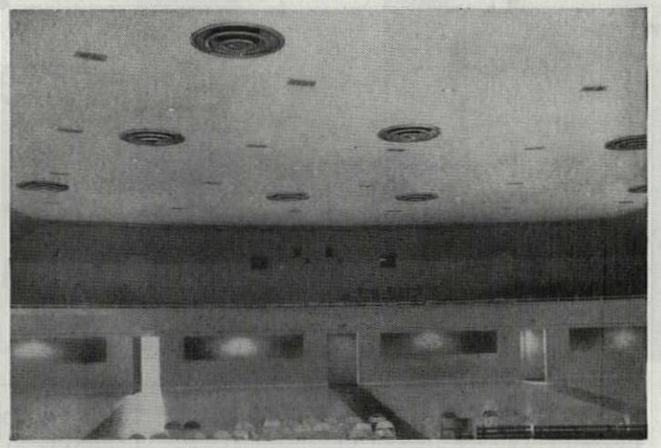
Disturbed Unit houses violently insane patients. Uni-Flo Sidewall Diffusers in soffit distribute air quietly and uniformly. Each Diffuser is furnished with tamperproof screws.



Aged and Infirm Unit has dining area handling eighty patients at one time. Facilities are available for serving eight hundred patients in various units simultaneously. Uni-Flo Sidewall Diffusers are installed high on the walls.



Huge size of project is indicated by sketch. Included are dormitories, a hospital, laundry, kitchens, auditorium, greenhouses, occupational and recreational units, cold storage, warehouses, power and sewage plants, plus a separate personnel building and individual staff residences.



Spacious Auditorium has every modern facility for musical therapy treatments, plus entertainment of patients. Venturi-Flo Ceiling Diffusers (individually adjustable) provide a healthful, comfortable, draft-free atmosphere without distracting air noise.

BLAZING THE TRAIL *TO BETTER AIR DISTRIBUTION*



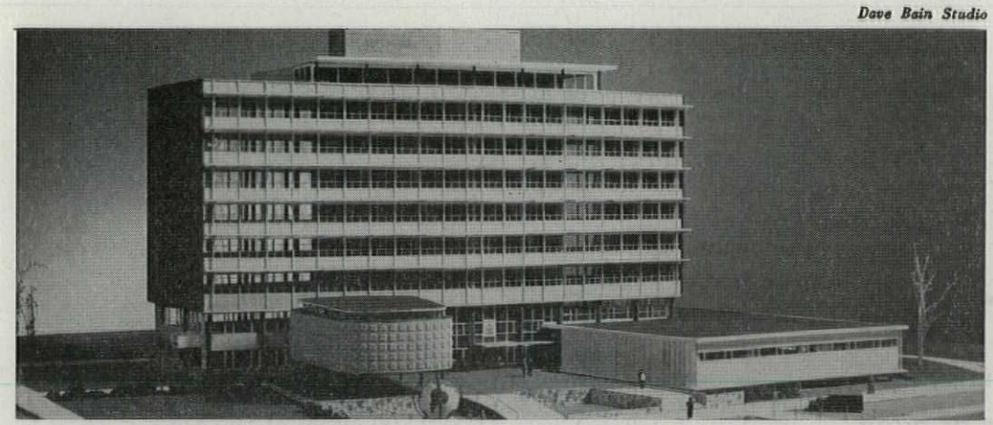
First to publish reliable data . . .

Performance data on air distribution equipment was meager and incomplete just twenty years ago. Pioneer work on this subject in the Barber-Colman laboratories was the basis for comprehensive engineering data, now time-proved and widely used to determine, in the layout stage, the exact requirements for any desired conditions.

Research, development, and testing facilities are fundamental requirements and the responsibility of manufacturers to assure progress in the field of air distribution. Complete information about Barber-Colman's reliable selection data is available from our nearby Field Office (consult phone directory) or by writing us.

BARBER-COLMAN COMPANY, Dept. I, 1135 Rock St., ROCKFORD, ILL., U.S.A.

Dave Bain Studio



CANADIAN CITY HALL WITH SUNSHADES ONLY ON THE SOUTH SIDE

NEW BUILDINGS

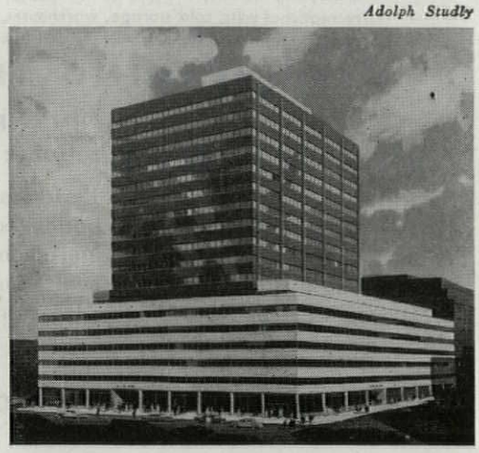
Canadian municipal building

What promises to be one of the most advanced civic buildings in North America will be started before year-end: a progressive city hall for Edmonton, Canada. Realizing that adequate space around a building does more to enhance its monumentality than all the Doric or Corinthian capitals they could muster, Architects **Dewar, Stevenson & Stanley** are spending their city's money on careful planning and flexibility. Biggest unit is an office building which widens out at midpoint on both sides—like the head of a sledge hammer—in order to allow ample office space on both sides of the elevator blocks. The building is one of the first on the continent that wisely puts sunshades on the south face and leaves them off the north face in the knowledge that the human being does not exist who can see both sides of such a building at once. Like a number of other recent civic buildings (a social security building in Mexico, education ministry in Rio de Janeiro and some recent New York City schools) the Edmonton city hall will have a bargelike auditorium moored to it. Planned for city council meetings, it is raised on stilts to put part of the terrace pleasantly under cover. A large ground-floor consumer service section has been provided so that citizens of Edmonton (which owns four major utilities) can park and pay their bills conveniently.

Midtown move in New York

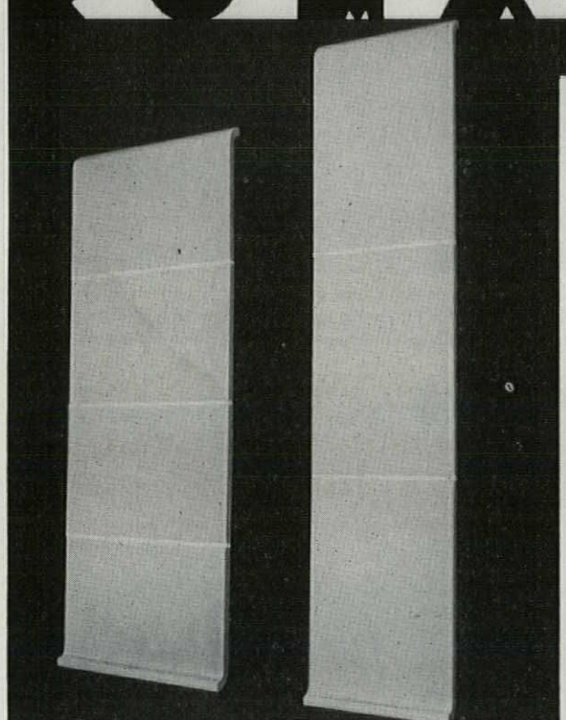
Eastward growth of New York's Grand Central area has been blocked for years by the Third Ave. elevated rail line. Among the first projects announced in July when the "el" was sentenced to die was a 19-story, air-conditioned office building to be built on Third Ave. between 44th and 45th Sts. To derive the best from New York's heterogeneous pattern of building codes, Architect **William Lescaze** came up with two buildings on one site. Covering the full site at base will be a combined parking garage, store and loft

Adolph Studly



MORE MANHATTAN OFFICE SPACE

ROMANY Real Clay



6 x 9 TILE

It's New!

Another ROMANY LEADER

Ideal for use in Corridors and other large areas of Schools, Hospitals and other Institutions.

This new enlarged shape covers more area per piece and simplifies installation. It has recently been added to the versatile ROMANY line and possesses all the high quality characteristics that have made ROMANY Tile preeminent in the building field.

The "hard as steel" glaze and rugged buff body defy wear and this 6"x9" tile is recommended for use wherever a sturdy tile is needed.

ROMANY Tile is regularly featured in Sweet's Catalog. Detailed information to meet specific requirements will be gladly furnished upon request.

Correspondence Invited

UNITED STATES QUARRY TILE CO

Member: Tile Council of America and Producers' Council, Inc.

217-J FOURTH ST., N.E., CANTON 2, OHIO

for the specification consider these outstanding features

ROMANY IS:

FIRE PROOF

WEAR PROOF

FADE PROOF

AND

ACID PROOF

And is available in more than 30 attractive colors.



YOU CAN BUILD FOR THE AGES

... with a STEEL FOR THE AGES

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

In any case, you're sure to consider *curtain wall* construction, because it's the newest, most modern method. Packed with advantages over masonry, too: such as fast, all-weather installation; more space per floor; more floors on a given foundation, etc. And you'll be equally sure to realize that *stainless steel-surfaced panels* (again, see above) promise the best long-term protection for the building investment. No other surfacing material is at once as hard, tough, strong, and lastingly beautiful, as impervious to wear and as resistant to heat and corrosive influences as stainless steel.

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

Make it BETTER-and LONGER LASTING-with

Allegheny Metal

Warehouse stocks carried by all Ryerson steel plants

AL® TIME-TESTED STAINLESS STEEL

W&D. 5287 B



TWO STORIES WITH ELEVATORS: each of the ground-floor suites in this two-story air-conditioned Los Angeles office building will have its own patio. Its second-floor suites will be reached by a stairway and by a self-service elevator. Architect Edward H. Fickett designed the $95,994 building for the L.H.L. Corp., an insurance firm. The elevator was included, said an L.H.L. executive, because he himself had turned down second-floor offices without one.

NEW BUILDINGS (continued)

building, rising six floors. Above that there will be 11 floors of 13,500 sq. ft. with a single intermediate floor of 23,500 sq. ft. to make the transition. Lescaze chose to separate the two parts still more sharply by covering the base with cream-colored masonry and floating the upper shaft against the sky by coloring it pale blue. The basement and mezzanine levels will garage about 250 cars.

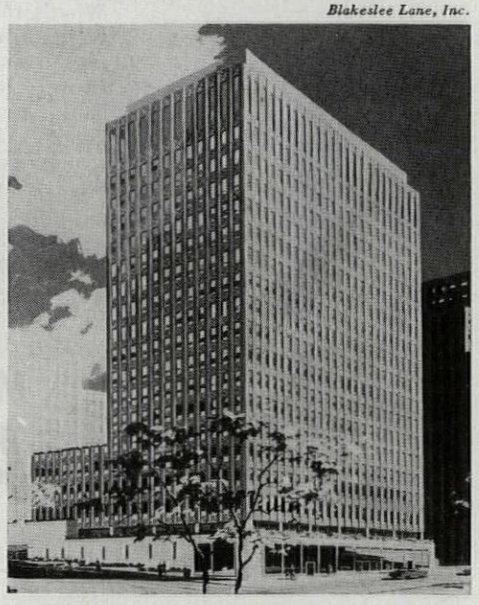
More room for the market

A new building type may be taking form as cities begin serious thinking about replacing rickety wholesale produce centers (which yearly cost American consumers an estimated $100 million in wastage and unnecessary handling) with something better. Next month in Philadelphia construction will be begun on a $6.5-million food-handling center into which most of the city's perishable food dealers are expected to move. The project, which will include 204 units to be built in three stages, will replace Philadelphia's 170-year-old Dock St. produce market. The new center will be built on 40 acres in South Philadelphia, near railroads and piers. Its developers hope the center will be a prototype for similar centers in New York, Baltimore, Boston, Richmond and Raleigh—all cities whose produce markets have become obsolete.

Baltimore office atop garage

A 20-story, aluminum-faced office home for **Commercial Credit Corp.** will be built in Baltimore on the foundations—to be reinforced—of an existing parking garage. Ground-floor walls of the garage will be left standing and the new building will rise within them. **Harrison & Abramovitz** are architects for the air-conditioned structure, most ambitious office building Baltimore has had in a quarter century. Mechanical equipment will be housed at the top of the building so basement and first three floors can hold 300 cars.

Blakeslee Lane, Inc.



BALTIMORE OFFICE BUILDING



BACK IN THE DAYS of the prancing fire horses, the heating equipment at the fire station was often merely an old stove and a pile of firewood. In cold weather, stoking was practically a full-time job. When the stove overheated, the roof sometimes burned off the fire station, which entertained the public but was most humiliating to the firemen.



Today the heating stove has disappeared, along with the horses. Push-button heating, under precise automatic control, now helps keep the equipment ready to roll, and assures the men's comfort.

The Humphrey Model A Gas Unit Heater, pictured above in a Louisville fire station, represents modern automatic gas heating at its best. It has such Humphrey-developed features as Dual-Flame Burner with stainless steel tips; non-clogging pilot; Free-Flow Heat Exchanger with unrestricted, non-baffled interior; and Tilting Front. Both burner and fan are operated by accurate, automatic thermostat controls, while full 100% automatic safety controls provide the ultimate in protection.

In a fire house, heating equipment must operate 24 hours a day, 7 days a week. Humphrey Unit Heaters, for more than 25 years, have been demonstrating their ability to give peak performance in the hardest service.

Truly they are today's finest heating equipment, not only for fire stations but for every other type of commercial, industrial, and public building.

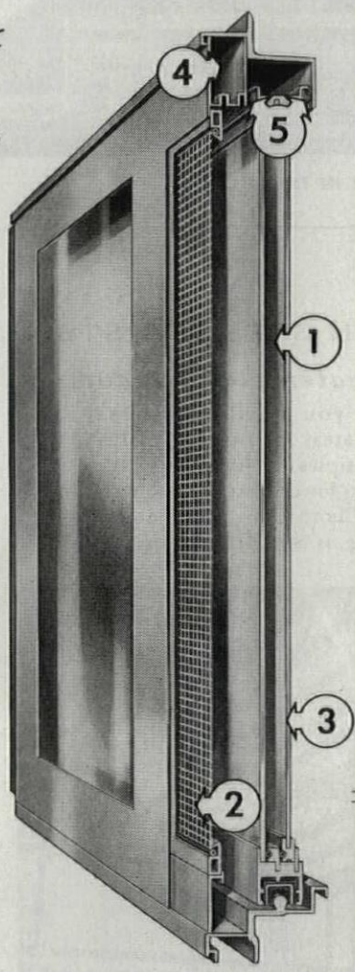
GENERAL GAS LIGHT CO.
KALAMAZOO, MICHIGAN

Humphrey
Greatest Name in GAS HEATING

PETERSON *HORIZONTAL SLIDING* ALUMINUM WINDOWS

The Windows That Have Won The Women!





WHY WOMEN FAVOR PETERSON WINDOWS

Make window washing a lark. Sash (1) lifts up and out into room for quick, easy cleaning.

Save wear and tear on husbands. Non-rusting aluminum screens (2) never require painting or removal. Storms (3) stay up, too, are self-storing all-year 'round.

Sturdy, hollow-type aluminum framing (4) bespeaks strength, security, permanence, so important to a woman's peace of mind.

Hi-pile water-and-wear-resistant weather stripping (5) prevents window rattle, provides the draft free comfort which women cherish.

WHETHER intuition or an innate sense of practical value is responsible, more and more women are insisting on Peterson windows for their new homes. So are firms erecting business buildings.

You will indicate clearly that you are abreast of this trend if you recommend Peterson windows for your clients. They're designed to contribute *the most* in the way of appearance, comfort and convenience to new structures. The contribution they make is a lasting one—insuring highest continuing value through the years.

Thousands of Installations *from Coast to Coast . . .*

Peterson Windows have a proven record of satisfaction in Hotels, Motels, Churches, Schools, Dormitories, Offices, Hospitals, Clinics, and other monumental and commercial buildings.



PETERSON HORIZONTAL SLIDING ALUMINUM WINDOWS

- ***ROLL OPEN***—With effortless horizontal operation on grease-packed, dust-proof ball bearings
- ***APPEAL ARCHITECTURALLY***—Enhance all design motifs
- ***SAVE MAINTENANCE DOLLARS***—Require no paint; won't rust, swell, warp, stick or rot
- ***INCORPORATE ADVANCED DESIGN***—Eliminate putty, sash balances, cranks, projecting hinges
- ***CLEAN EASILY***—Sliding sash removes into room for easy washing
- ***LOCK SAFELY***—Positive locking in closed, one, two and three inch open positions
- ***EXCLUDE WEATHER***—Hi-pile, water-and-wear-resistant weather stripping cuts heating and air conditioning costs
- ***COME COMPLETE***—Built-in storms and screens with balanced sight lines.

50 STANDARD SIZES

All designs and sizes popularly specified for residential, commercial and monumental building supplied promptly.

Standard windows up to 6 feet high by 10 feet wide are available. Special sizes can be obtained at only slightly higher cost.

Constructed of sturdy aluminum extrusions—63S-T5 Alloy, minimum thickness .062"—engineered for maximum strength.

SEE 16a/Pe IN SWEET'S CATALOG or WRITE FOR COMPLETE DETAILS.

A limited number of exclusive dealerships with protected territories are available. Peterson Window Corporation invites inquiries from reputable dealers.

PETERSON

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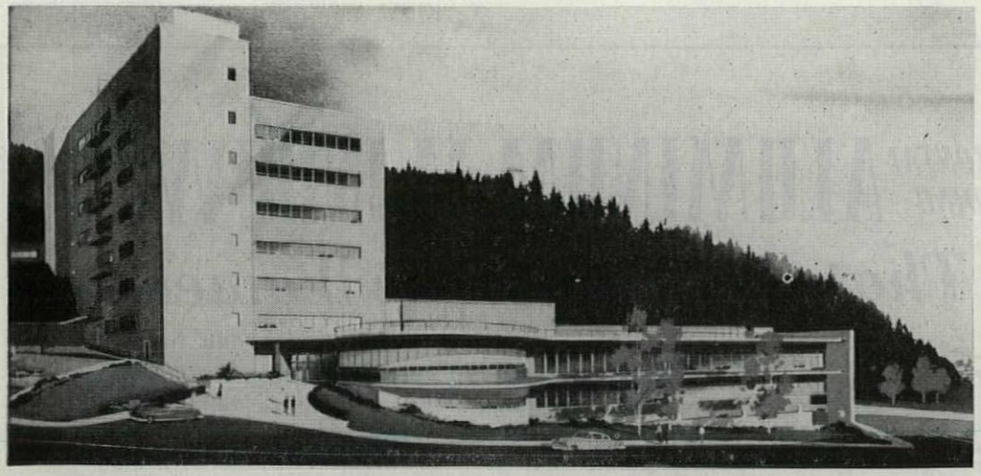
1399 E. Eight Mile Road • Ferndale 20, Michigan



Maurice Hodge

NEW ADDITION TO PORTLAND'S UNIQUE MEDICAL CENTER IN THE HILLS

NEW BUILDINGS (continued)

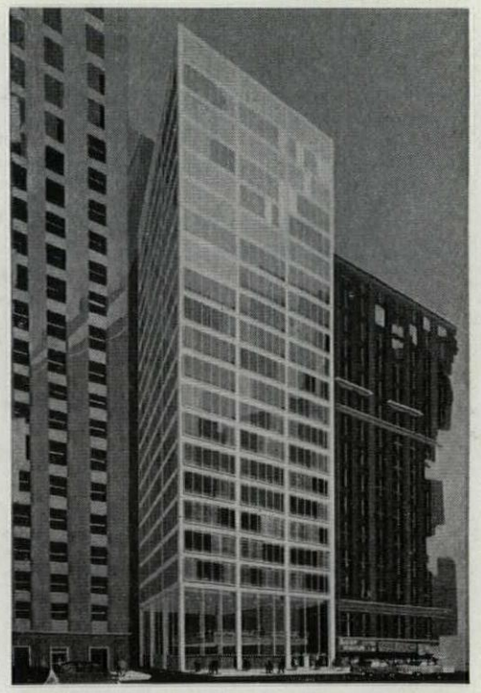
Built-in dental school

Couched on the north wall of a steep canyon, the University of Oregon's dental school (cut, left) is the latest addition to Portland's spectacular medical center. The new building is an eight-story reinforced concrete structure with brick veneer. Besides being lodged in the landscape, it is connected by tunnel to the rest of the project. Cost when completed next June: $2.2 million. **Lawrence, Tucker & Wellman** of Portland are architects. Engineers: **J. Donald Kroeker & Associates, Miles K. Cooper Rowland Rose,** and **George Pettingell & Grant Kelley. Donald M. Drake Co.** holds the general contract.

Boost for downtown Chicago

Efforts to revitalize the downtown core of Chicago, which have produced several ambitious redevelopment plans (AF, April '54, News), have encouraged others to actual building. Shortly after the first of next year construction will begin on a straightforward stainless steel, granite and glass office building for the **Harris Trust & Savings Bank,** the first major building for the Loop since the Field building was built in 1932. There will be 150,000 sq. ft. of air-conditioned space. William Hartman of **Skidmore, Owings & Merrill,** the architects, plans to clean the fixed windows with an exterior apparatus similar to the one SOM pioneered in Lever House. Rear of the new building, which fronts on South Clark St., will back up to the Harris bank's present structure, a 20-story skyscraper-classic edifice, complete with Greek pillars. Because of cost and efficiency, said Vice President Kenneth V. Zwerner, the bank never seriously considered imitating that style.

Kaufmann & Fabry Co.



BANK FOR CHICAGO'S LOOP

T-CHORD LONG SPAN STEEL JOISTS

give greater plan freedom

Wherever you must create clear, column-free areas . . . from 25′ to 125′, or larger multiples . . . you plan better, freer and for lower cost per square foot with T-Chord long span steel joists. Framing is simpler, stronger,



GRAND HAVEN SENIOR HIGH SCHOOL, GRAND HAVEN, MICH. ARCHITECT: WARREN S. HOLMES

faster . . . with lighter columns and footings. Enclosed joist areas permit wide latitude for lighting, ducting, ventilating, insulating or sound-proofing. And when exposed, T-Chords afford a pleasing textural-web perspective. Our extensive engineering service may be of great value to you. Write, wire or phone us for whatever information you may wish.

See Sweet's Architectural File, Sweet's Industrial File, No. 2CHA.

STRUCTURAL STEEL
MISCELLANEOUS IRON
T-CHORD LONG SPAN JOISTS
ORNAMENTAL IRON

HAVEN-BUSCH COMPANY

501 Front Ave., N. W. Phone 9-4173 Grand Rapids 4, Michigan



This "Kalistron" upholstery and wall covering has been on the job 5 years . . . and there it is, fresh and bright as new.

MADE OF BAKELITE®

Krene®

®REGISTERED TRADE-MARKS OF UCC

Beautiful, durable, cleanable wall covering and upholstery . . .

Here is a material that matches style with service. Think of the opportunities for hotels, restaurants, hospitals . . . for any room where heavy traffic and hard use make durability and easy maintenance just as vitally important as beauty.

It's material designed for the job—a clear sheet of KRENE, with rich, brilliant colors fused to the underside. Thus, the surface takes all the wear and protects the color beneath.

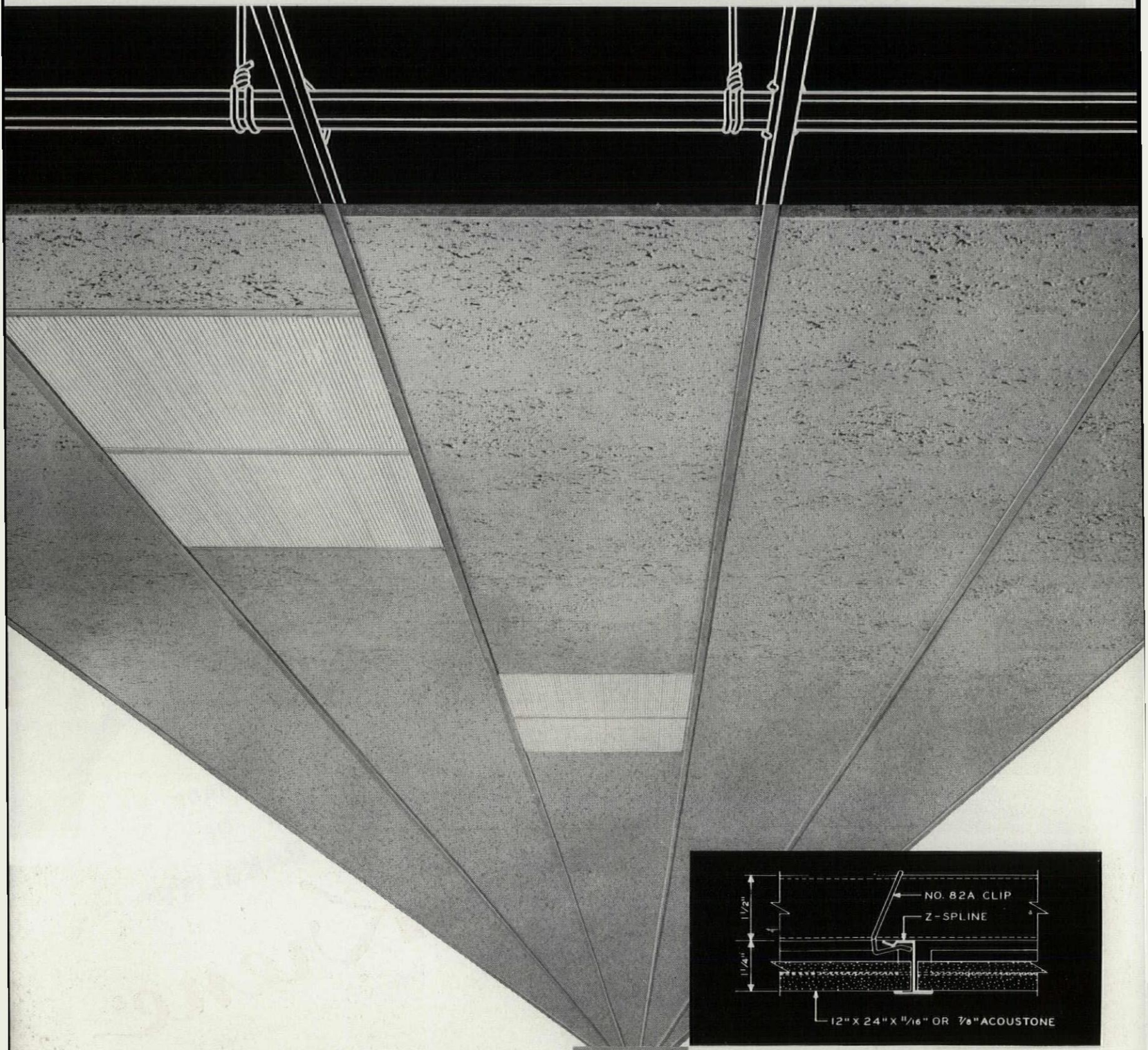
It's thorough protection. KRENE is always tough and flexible. It resists scratches, oil, grease, cleansers, foods, acids, alkalies, alcohol. It makes a smooth, tough surface. Dirt wipes right off.

Specify wall covering and upholstery material made of KRENE. It provides a beautiful combination of richness, durability and maintenance economy.

This restaurant features wall covering and upholstery of "Kalistron," made of KRENE by **Kalistron, Inc., Division of United States Plywood Corporation,** New York 17, N. Y.

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

now! easier installation . . . easier



ACOUSTONE is the original fissured acoustical tile. Its beauty and high sound absorption provide the finest in sound control. MOTIF'D* ACOUSTONE Tile is incombustible, highly light reflective; available in a wide variety of exclusive patterns.

Sound Control is a job for experts.

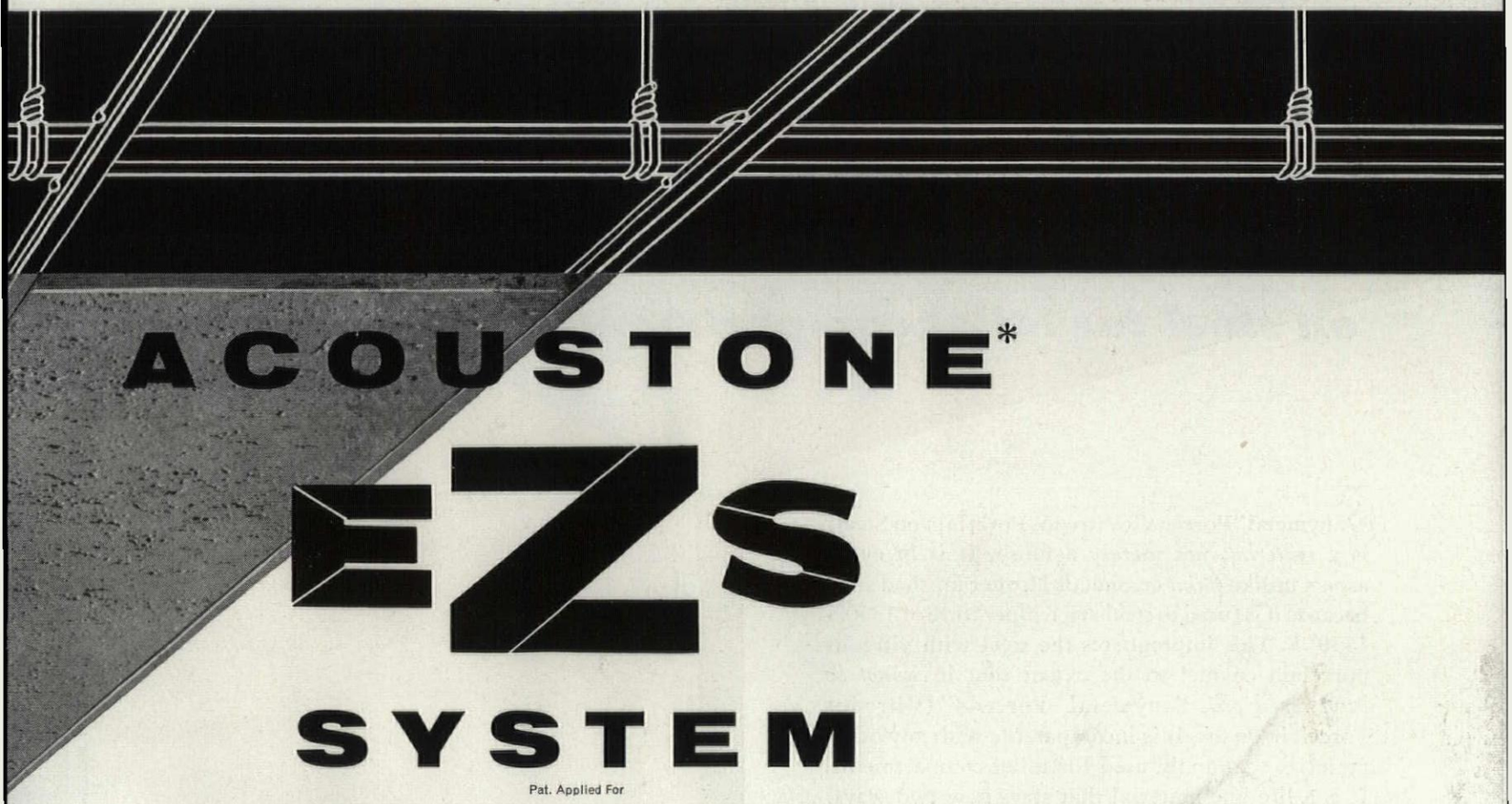
For complete drafting room details and assistance in planning, contact your nearby ACOUSTONE contractor or write United States Gypsum, 300 W. Adams St., Dept. AF3, Chicago 6.

USG®
UNITED STATES GYPSUM

For mechanical suspension of ACOUSTONE the E-Z-S System is installed by simply attaching painted Z-Splines to 1½" carrying channels, bar joists or wood furring or framing members. ACOUSTONE is then placed on the lower flange of the Z-Spline.

UNITED
the greatest

maintenance of services above the ceiling



ACOUSTONE*

EZS

SYSTEM

Pat. Applied For

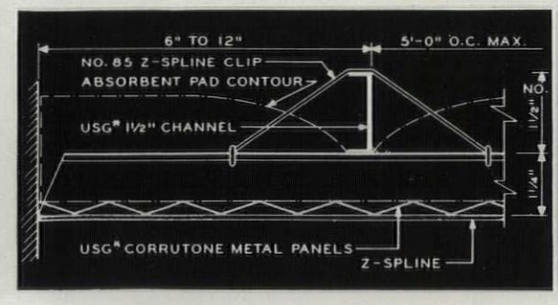
a new method of ACOUSTICAL ceiling construction

Here is *one, simple* ceiling system—comprised of a few parts—designed *specifically* for the mechanical suspension of either ACOUSTONE mineral acoustical tiles, or CORRUTONE metal acoustical panels. Now a *complete* ceiling can be installed by an experienced ACOUSTONE contractor, who has the full responsibility for its performance. Other outstanding advantages:

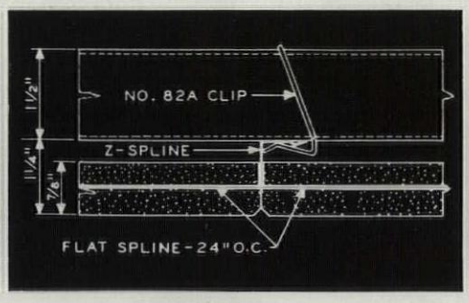
ADAPTABILITY Ideal for new construction and for lowering ceilings in existing buildings. Simplifies installation of lighting, air conditioning ducts, conduits, plumbing, etc.

ACCESSIBILITY Tiles lift out readily at any point in the ceiling to provide easy maintenance of services located above the ceiling.

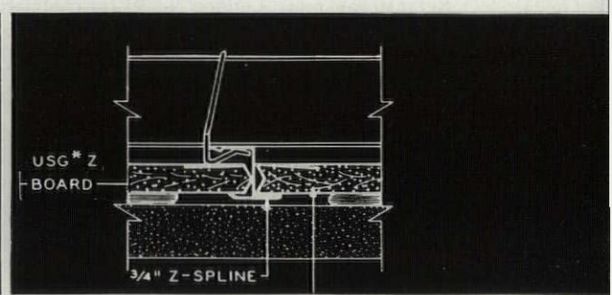
ECONOMY Comprised of just a few parts. Tiles or panels go up neatly, quickly, easily.



The E-Z-S System for mechanical suspension of CORRUTONE is erected in the same manner as for ACOUSTONE. The CORRUTONE panel which holds a mineral wool pad is then placed on the lower flange of the Z-Spline.



The concealed Z-Spline System of installing ACOUSTONE by mechanical suspension is accomplished by engaging the kerfs of the tile with the lower flange of the Z-Splines, which are attached to carrying channels, bar joists or wood furring or framing members.



The mechanical suspension of Z-Board on Z-Splines is an economical method of providing a base for adhesive installation of acoustical tile. The ½" x 2' x 8' Z-Board is placed on top of the lower flange of the Z-Spline.

STATES GYPSUM

name in building

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

Sanymetal...*

* Trade Mark Registered

...uses the ageless and fadeless material

Vitreous Porcelain *

on steel for toilet compartments

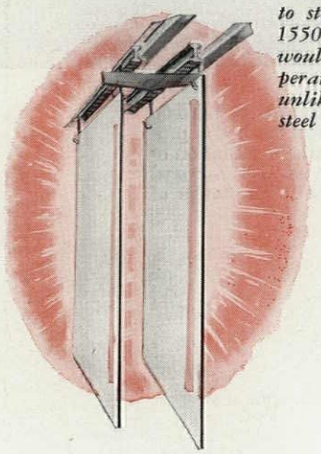
Sanymetal "Porcena" (Vitreous Porcelain on Steel) is a *material,* not merely a finish. It is in every aspect unlike *paint* enamel or lacquer finished steel because it is fused to steel at a temperature of 1350°-1550° F. This impregnates the steel with vitreous porcelain enamel to the extent that it *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 two ways: (1) in appearance; (2) in structure! This newness is the result of a correct combination of the desirable qualities of the hardness of glass and the natural structural strength of steel. Sanymetal was first to utilize vitreous porcelain on steel for toilet compartments. Ask the Sanymetal Representative to demonstrate the unusual and exclusive features of Sanymetal Vitreous Porcelain on Steel Toilet Compartments.



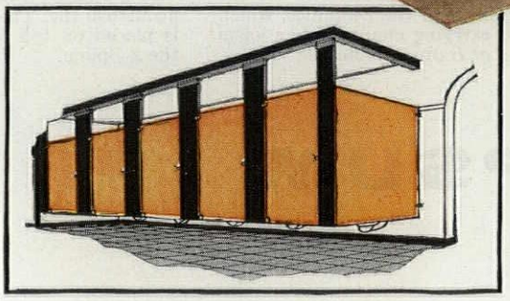
Refer to Sanymetal Catalog No. 91 for complete range of types of compartments and colors.

THE SANYMETAL PRODUCTS CO., INC.

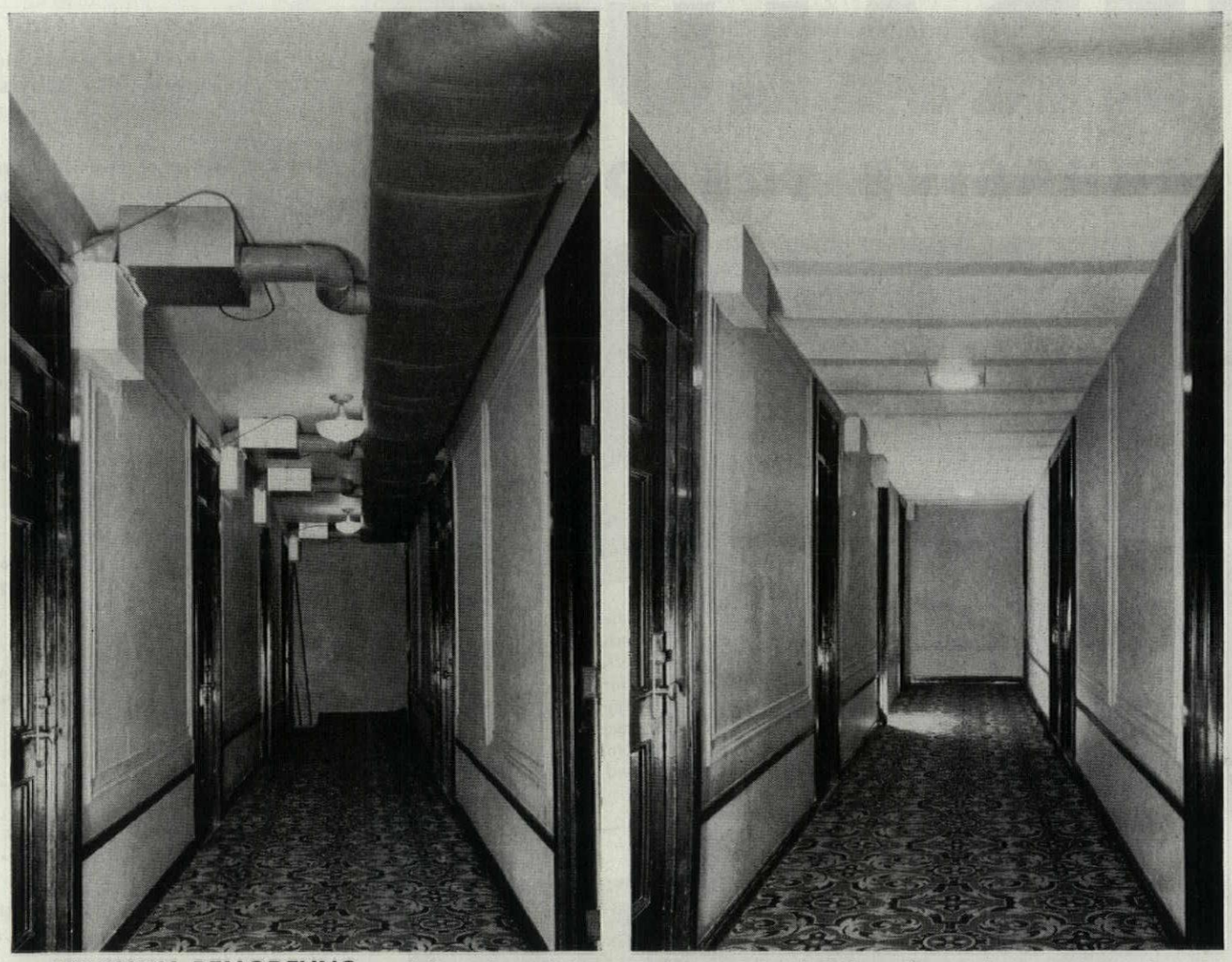
1687 Urbana Road, Cleveland 12, Ohio



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.



MINIMUM REMODELING needed to air condition this 400-room hotel. False ceiling (picture, right) hides small air ducts and high pressure units used in...

Kno-draft High Pressure System

Famous Lincoln Hotel, in Indianapolis, wanted to air condition its rooms. Separate refrigeration units for each floor had to be ruled out. So did individual window units. And space limitations prevented use of the regular sized ducts used for ordinary low-pressure air distribution.

A High Pressure System, designed by Bevington, Taggart and Fowler, consulting engineers, solved the problem. In this system, air is circulated through small ducts at better than 3,000 feet per minute and at 16 times normal pressure. In the take-offs to each room, however, specially designed Kno-Draft high pressure units assure quiet air delivery.

Another Kno-Draft advantage: the amount of air to each room can be varied from *within the room* by a simple wall control.

Does the foregoing spark an idea for one of your present jobs? Connor engineers will gladly help you in any way they can. As a first step, clip and mail the coupon below to Connor Engineering Corporation, Danbury, Connecticut.

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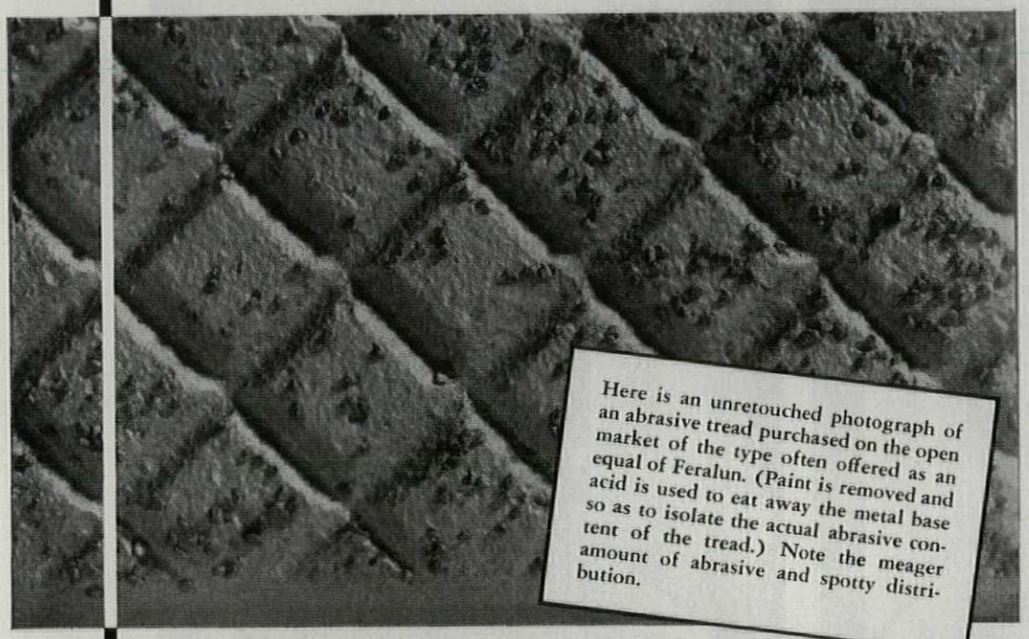
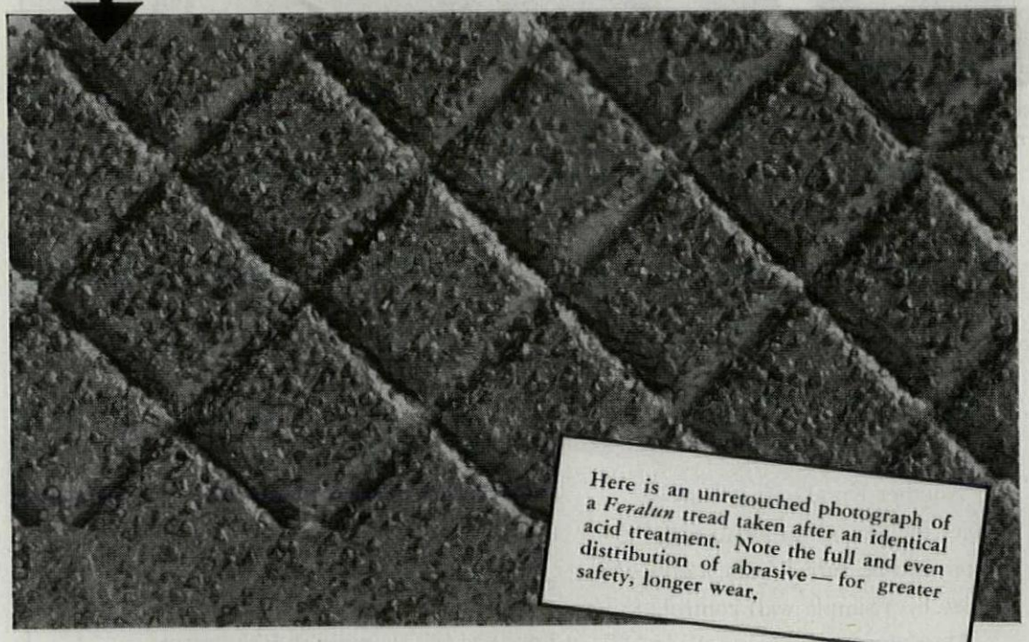


Here is an unretouched photograph of an abrasive tread purchased on the open market of the type often offered as an equal of Feralun. (Paint is removed and acid is used to eat away the metal base so as to isolate the actual abrasive content of the tread.) Note the meager amount of abrasive and spotty distribution.



Here is an unretouched photograph of a *Feralun* tread taken after an identical acid treatment. Note the full and even distribution of abrasive — for greater safety, longer wear.

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

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

AB117A

AMERICAN ABRASIVE METALS CO., IRVINGTON 11, N. J.

EVENTS

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

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

Institute of Traffic Engineers, annual meeting, **Sept. 27-30,** Hotel Muehlbach, Kansas City.

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

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

California Council of Architects and Sierra-Nevada District, American Institute of Architects, annual convention, **Sept. 30–Oct. 2,** Hoberg's, Lake County, Calif.

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

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

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

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

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

"Plastics in Building" conference conducted by the Building Research Institute, examining the structural, utility and decorative uses of plastic products, **Oct. 27-28,** National Academy of Sciences, Washington, D.C.

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

National Motel Show, exhibition of items used in the construction, maintenance, etc. of motels, **Nov. 1-3,** Morrison Hotel, Chicago.

Texas Society of Architects, convention, **Nov. 3-5,** The Texas Hotel, Ft. Worth.

National Association of Real Estate Boards, 47th annual convention, **Nov. 6-11,** Cleveland.

Great Lakes District, American Institute of Architects, regional conference, **Nov. 13-14,** location not yet announced.

American Municipal Assn., annual convention, **Nov. 28–Dec. 1,** Bellevue Stratford Hotel, Philadelphia.

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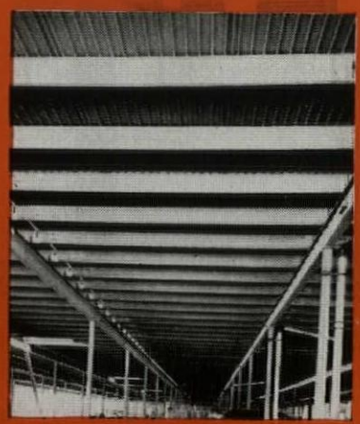

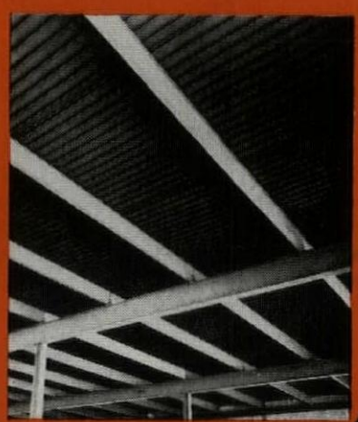

Five hundred and fifty tons of J&L Junior Beam roof purlins have been specified for Orgill Brothers new $2,000,000 wholesale hardware warehouse in Memphis, Tenn. Both architect and contractor agree that Junior Beams enabled them to save money on this 14-acre project and complete the job on schedule.

Architects W. C. Jones and W. C. Jones, Jr., chose Junior Beams because their physical characteristics permitted greater economy in design, allowed more head room, better clearance and thus provided a better stabilized building. In addition Junior Beam's light weight made for fast, easy handling during construction, as well as during hauling to the building site.

Clinton J. Wagner, Vice President of S&W Construction Company, contractors on the job, reported that "we found Junior Beams to be adaptable and economical for this type of construction. Deliveries were satisfactory and well ahead of schedule. This was a great factor in enabling us to complete the project on time."

Additional savings were outlined by B. S. Merrill, structural engineer for the architects. He said, "we had 6500 sprinklers to install and the use of Junior Beams effected considerable savings . . . I would estimate we would have had to put in 10 to 20 percent more heads if we had used some other joist and at $20.00 a head you can see what we saved."

Take a tip from the men who built Orgill Brothers Warehouse, Junior Beams are adaptable, rigid, shrinkproof, fire resistant, vermin-proof, and impervious to termites. Write for more information today. Our new booklet, *J&L Junior Beams*, shows how these modern structurals are being used as floor joists and roof purlins, with loading and spacing tables for various spans.

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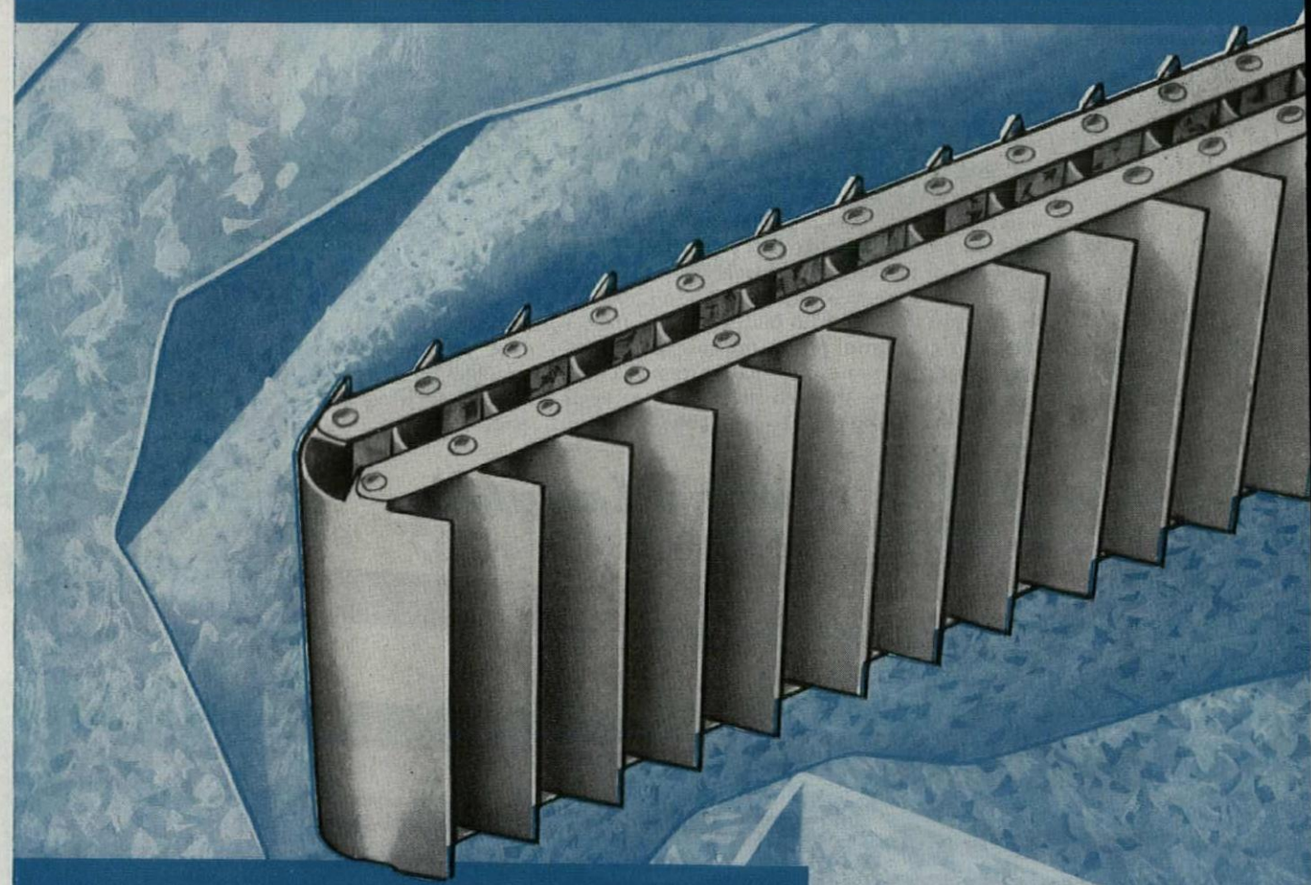
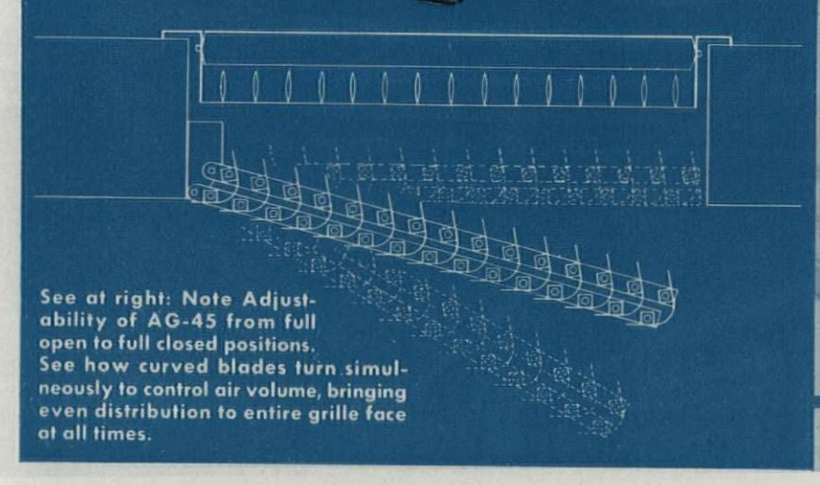
STEEL CORPORATION — *Pittsburgh*



TITUS New Ai





See at right: Note Adjustability of AG-45 from full open to full closed positions. See how curved blades turn simultaneously to control air volume, bringing even distribution to entire grille face at all times.

TITUS



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This model AG-45 is *double-duty* unit. It controls air volume . . . at the same time acts as an extractor, turning air stream in any desired direction. Regardless of turns in the duct system, shape or position of grille, the AG-45 assures even air distribution and correct air volume in the grille.

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The AG-45 is adjustable from full open to full closed position (note blueprint). It equalizes air distribution and air flow. Turns air from main duct to secondary duct on grille. Reduces pressure losses. Stops excessive turbulence.

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LETTERS

ACCOLADES FOR CLARENCE S. STEIN

Forum:

That was a beautiful piece on Stein (AF July '54, p. 168)—just, perceptive, generous; yet, as far as the professional world goes, long overdue. I'm glad that Stein has lived to read this accolade himself.

LEWIS MUMFORD
Amenia, N.Y.

Forum:

The idea that Clarence Stein should receive the gold medal of the AIA is superb. Certainly no man in the history of American city planning and the development of sound urban architecture is better qualified for this honor. His contributions to the technology of city building are so phenomenal that it is almost beyond our ability to perceive them. His persistent conjoining of sound design, technology and understanding of human requirements has enabled those of us in positions of responsibility in city planning and housing to test our decisions by standards that have become almost universally accepted as appropriate for the modern city.

Radburn, Greenbelt, Baldwin Hills and Kitimat, along with other important experiments with which Stein has been associated, have set the pace for private and public developments that will prove to have been the major turning points in the art and technology of planned human environment.

Were the AIA to honor Stein for his selfless and yet relentless pursuit of his extraordinary objective, it would be honoring itself. Certainly having handed the accolade to Sir Patrick Abercrombie for his great work in Britain, it could not do better than to present a similar one to Clarence Stein for his even greater contribution to the US and to the world. . . .

CARL FEISS, *chief*
Planning and engineering branch, HHFA
Washington, D.C.

KITIMAT AND NEW TOWNS

Forum:

The Kitimat story in your July issue is very interesting. I wish I had the talent, time and money to concentrate on town planning, which I find to be fascinating.

R. E. POWELL, *president*
Aluminum Company of Canada, Ltd.
Montreal

Forum:

I suggest that Kitimat is not the first completely planned town for North America and nominate as predecessors:

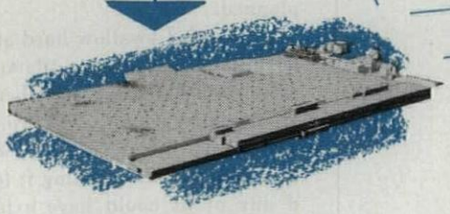
Kingsport, Tenn.; Longview, Wash.; Alcoa, Tenn.; Kohler, Wis.; Mariemont, Ohio. Still earlier: Savannah, Ga. And in this hemisphere: Lima, Peru; Oaxaca, Mexico.

It's too hot to go on and who cares?

HENRY S. CHURCHILL, *architect, planner*
Philadelphia

continued on p. 64

Nearly 4 Miles of MILLS MOVABLE WALLS Provide *Space Control* at UNITED AIRCRAFT



Hamilton Standard Division,
United Aircraft Corporation,
Windsor Locks, Connecticut

Architects: Albert Kahn Associated Architects & Engineers, Inc.

Builders: Turner Construction Co.

THE ability to expand, contract or adapt production facilities quickly and efficiently is of primary importance in aircraft manufacturing today. As part of its program for preserving this essential flexibility United Aircraft makes extensive use of Mills Movable Walls in its offices and plants.

Mills Walls give United Aircraft *Space Control*—because they can be moved quickly, easily and at low cost. Changes can frequently be made overnight or during a week end.

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LETTERS *continued*

Forum:

I note with considerable surprise that you headline Kitimat as "the first complete new town in North America." Complete new towns—not just residential subdivisions—are spotted all over the US. A few, Kohler, Wis.; Kingsport, Tenn.; Midwest City, Okla.; and during the past three years my own office has planned three complete new towns:

Fairless Hills, Pa.: an incorporated town complete . . . self-contained. It has its own water and sewage disposal plants, elementary and high schools, churches, parks and playgrounds, shopping centers, for an expected 15,000 to 20,000 people. . . .

San Manuel, Ariz.: 50 mi. from any other community, out in the desert . . . so isolated it could not be inspected by auto or horseback, and light low-flying planes were used in selecting the site. Well toward completion, it is self-contained from hospital to cemetery. . . . Although primarily for workers of San Manuel Copper Co., it is not a company town. Its modern facilities and magnificent views of distant mountains should attract many tourists. Eventual population: 12,000 to 15,000.

Partridge Lakes, Minn.: now under construction, to accommodate thousands of workers for the taconite plants of the northern Minnesota wilderness, miles from any other town. . . .

I am confident that other organizations of planning engineers, e.g. Harland Bartholomew, could list numerous complete new towns they have designed and actually built, not just planned.

Although I swallow hard at the smug statement that "the master planner is ideally the architect" I realize no other profession but architecture could use "two dominant negative-positive ideas," and although I think we planners have been doing it for years, I doubt if any of us could have explained that "the real synthesis, fusion, sublimation of functional and spiritual elements with the requirements of nature, climate, topography calls for an enhancement of both by arrangements, form, scale, climax." If that's what I've been doing, I am going to double my fees at once.

My congratulations to all concerned: the drawings were beautiful and the text breathtaking. Only next time calm your headline writer down. . . .

SEWARD H. MOTT, *land planning consultant Washington, D.C.*

• FORUM's headlong title was studiously qualified in a bold-face introduction, presenting Kitimat as ". . . a first complete 20th century 'new town,' completely new, completely modern, in North America. Every word in that long list of adjectives is necessary to the description." Other new towns have admirable features and Kitimat is not perfect. But it alone, so far, seems to merit the full description.—ED.

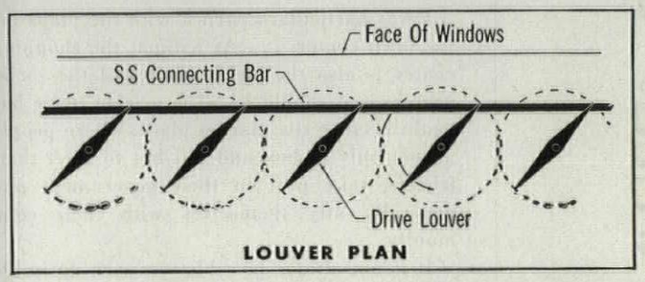
Forum:

The Kitimat article is one of the most com-

continued on p. 66

In Cincinnati... THE NEWEST IN LIBRARY CONSTRUCTION

ARCHITECTS: Woodie Garber & Associates and Sam Hannaford & Sons, Associated Architects Cincinnati, Ohio



LOUVER PLAN

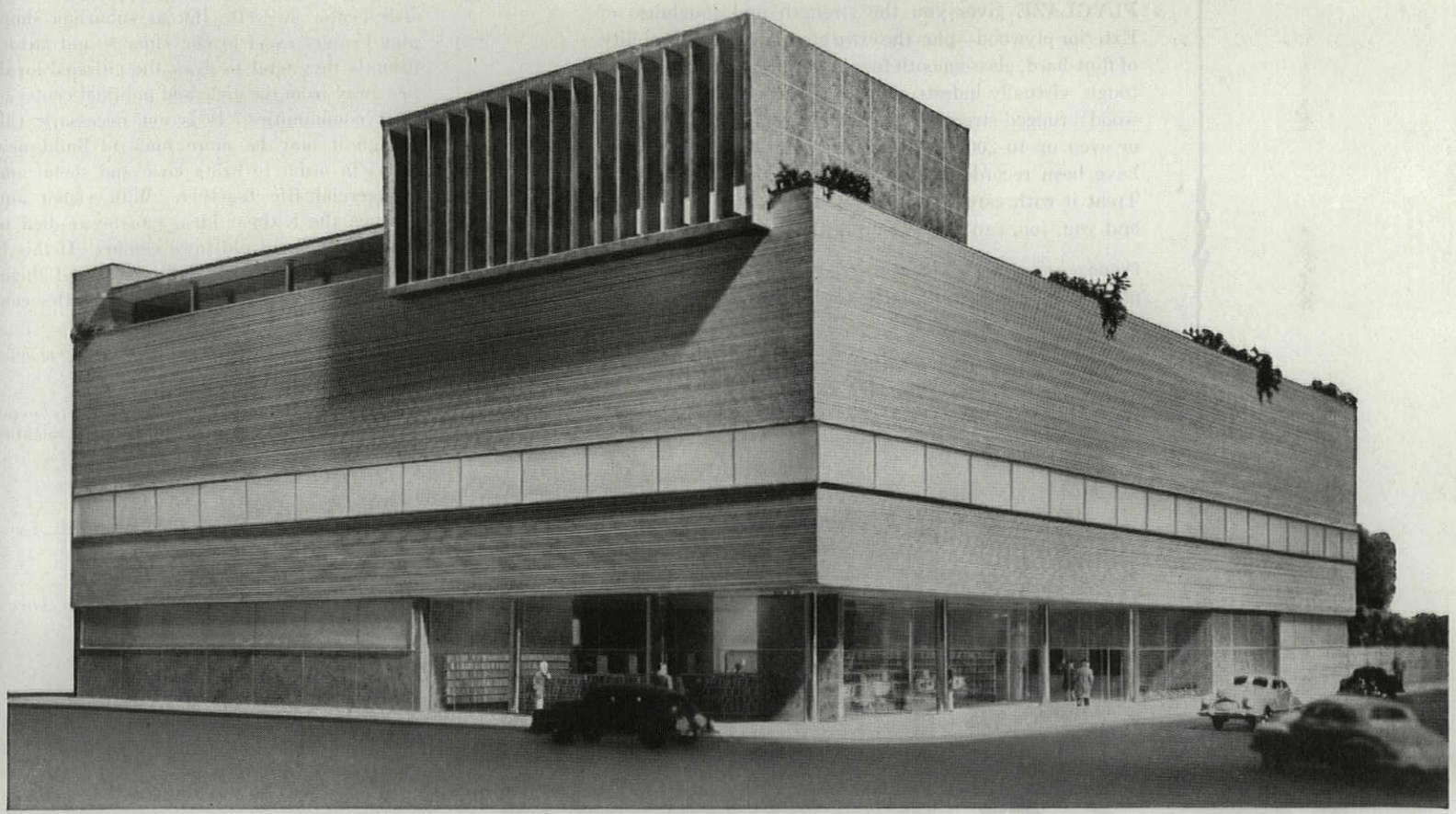
Cincinnati's new Main Library is a municipal achievement of national importance. No mere civic monument to be filled with its 1,300,000 books, the library is designed for the convenience of patrons and for ease of maintenance and operation, brightness, color, simplicity, economy and long life.

In the selection of material, utility alone was not enough. Each part had to contribute to the whole effect. The structure contains a wealth of traditional building materials, such as fine woods and ageless stone, together with architecture's most trusted material, stainless steel.

Interesting applications of Armco Stainless Steel include the louvers (shown in sketches) on the front of the roof-top memorial room. Here a 52-foot wide, 18-foot high window faces due west. The rare books in this room are protected from the varying angles of sunlight through the seasons by 20 giant louvers that swivel through 90 degrees. Motor driven, they are readily adjusted in unison.

Armco Stainless Steel was also used in this new library for mullions and sash, doors and frames, conveyor doors, dumb waiter and elevator doors and cabs, vacuum tube stations, hand rails, mail box doors and book return door.

For complete information on Armco Stainless Steel, write us at the address below.



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prehensive and understanding pieces on the planning of a city that I have ever seen. It should be required reading in every school that teaches city planning either on its own or conjoined with architecture, engineering or the social sciences.

It should also be required reading for every professional office which has, or hopes to have, responsibility for large-scale community developments, whether complete towns or not. . . . The real significance of what was done could easily have been lost if the article had not been expertly written.* I hope there will be reprints.

I was particularly struck with the plans for the town center. . . . At Kitimat the shopping center is also the civic center and the social center, as it should be. The market place has again become the market place, where people go not only to buy and sell but to meet their friends, take part in their government and generally ally themselves with their community.

It is not always possible—or even desirable—to make the suburban shopping center a civic center as well. But as suburban shopping centers excel in convenience and attractiveness they tend to draw the citizens' loyalties away from the civic and political center of their communities. It is not necessary (although it may be more fun) to build new towns in order to bring civic and social and commercial life together. With vision and courage the Kitimat ideas can be applied to redevelopment of old town centers. If this is not done, the old city halls may find themselves on the fringe of new communities centered in a shoppers' paradise.

TRACY B. AUGUR, *planner*
Washington, D.C.

* The planners themselves collaboratively wrote the story; Julian Whittlesey labored mightily pulling the material together.—ED.

Forum:

The piece on "Kitimat" in the July issue is superb!

CHARLES A. PEARSON JR.
Pearson, Hill & Sullivan, architects
Radford, Va.

PHILOSOPHY AND RUDOLPH

Forum:

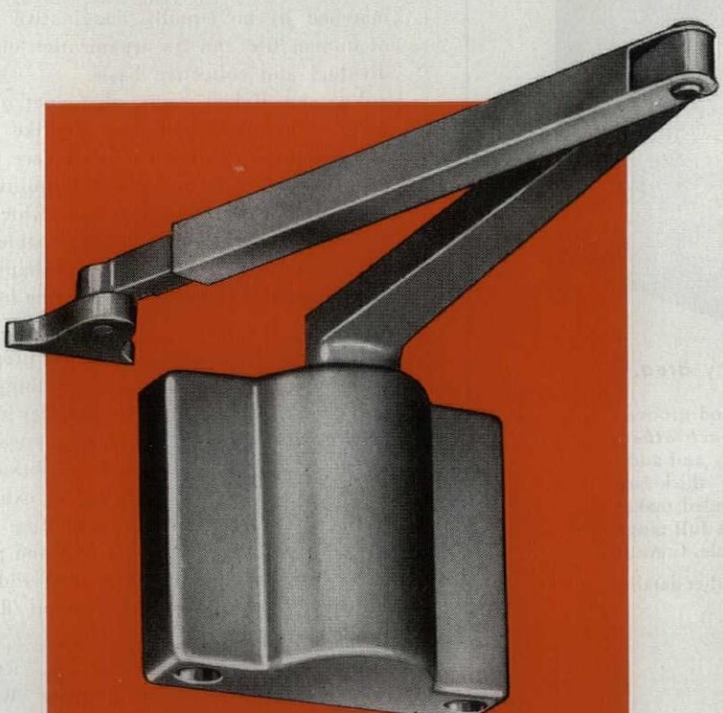
. . . I liked Paul Rudolph's talk. Such thinking is much needed today. We seem to forget that . . . "visual delight" . . . should be the most cherished objective in our profession.

MIT thinks knowledge of what makes a city beautiful is so much needed that they are initiating a study which they call "The Perceptual Form of the City." The outline . . . ties in remarkably well with the ideals . . . suggested by Paul Rudolph.

JOHN WELLBORN ROOT
Holabird & Root & Burgee,
architects, engineers, consultants
Chicago, Ill.

continued on p. 68

The handsome door closer that closes any door the way you want



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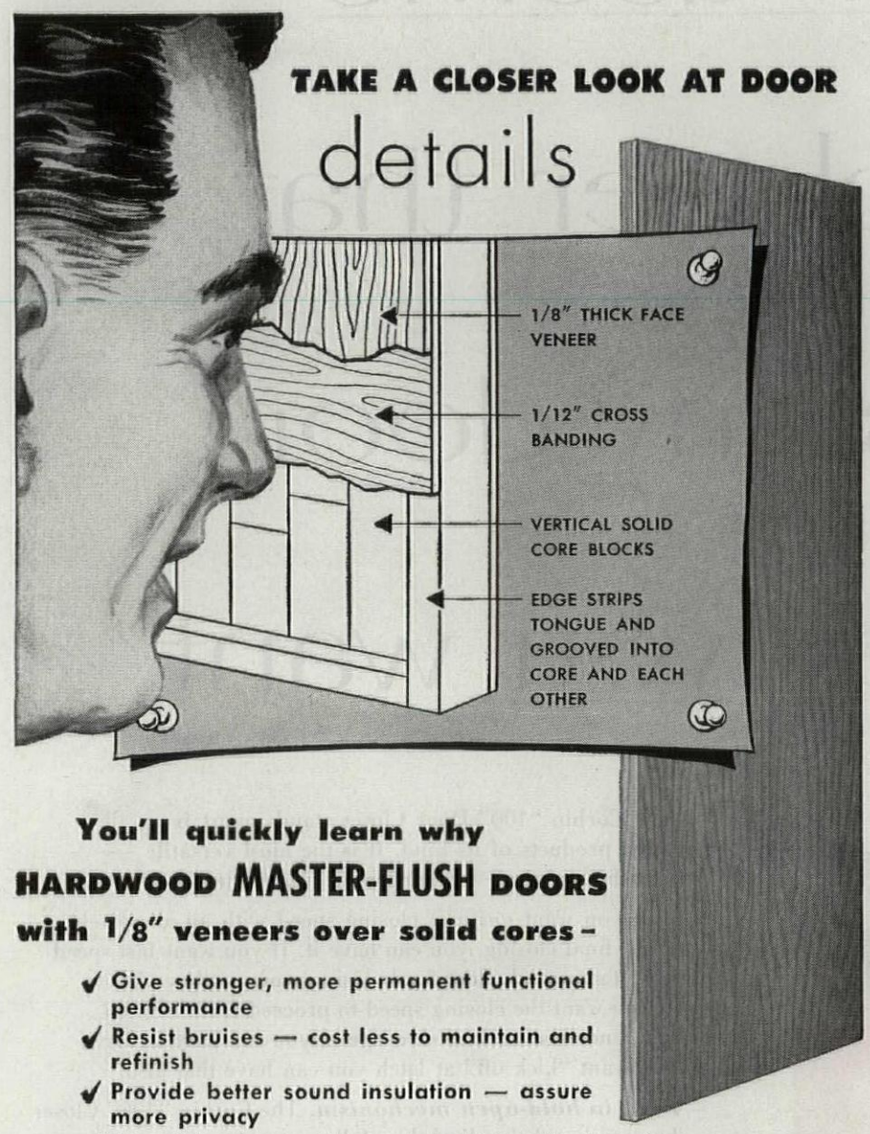

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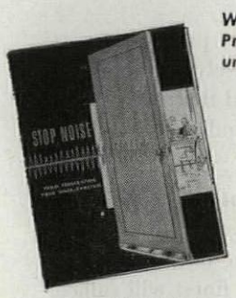

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LETTERS *continued*

Forum:

In Paul Rudolph's "The Changing Philosophy of Architecture" (AF, July '54) I find little that is sustaining.

I have no quarrel with Mr. Rudolph's points against the "rue corridor," for a better spatial organization of city buildings and interspaces, and his restating the lessons of Rome, Japan and the views of Le Corbusier, Camillo Sitte and the *Architectural Review* in terms of the American architectural problem.

What I find singularly disturbing is the total absence of a philosophy in this talk, in the architecture around us and on the drawing boards.

The lessons which Rudolph teaches us are lessons in superficials. It matters very little (unless in the area of craftsmanship) to increase the virtuosity of handling formal problems by study of the masters, if we fail to see the main point of their work, which gives them the stature of architecture.

Le Corbusier's "play of forms under the light" continues in abundance and freshness because it is nourished by an inner energy which derives from a poetic and passionate view of life. His concepts of form are always matched by an equally imaginative concept of human life and its organization on an individual and collective basis.

Van der Rohe's every alignment of structure, every space sequence (unlike that of his imitators) and every wall face is permeated with tensions and tranquilities that come from a philosophy of life, which, lofty as well as humble, and less accessible to our day than the Mediterranean perhaps, gives an inescapable "must" to every line he draws in space.

I sense in Rudolph's approach a preponderance of the formalistic. I see nothing but a resultant chase after formal qualities in superficial scenery, in a world of appearances, which is limpid because it is without any inner fiber. I see nothing but an exhausting chase after sensation, by exploiting of the formal repertoire of masters past and present, of the primitives or noble ancient and exotic cultures, or one's own individual flair for formal invention.

"Architecture is not for children," was Mies van der Rohe's advice to students. We shall not grow beyond the child's precocious and un-understanding imitations if we will not abandon the conceits of pure performing for a much more serious view of the art of architecture!

An architecture is needed in which forms will always relate to a profoundly imaginative view of life, of man's destiny as a member of a temporal society.

The result will be an abundance of invention to go hand in hand with an abundant view of the life process and the many different facets it shows to each artist, who, freed

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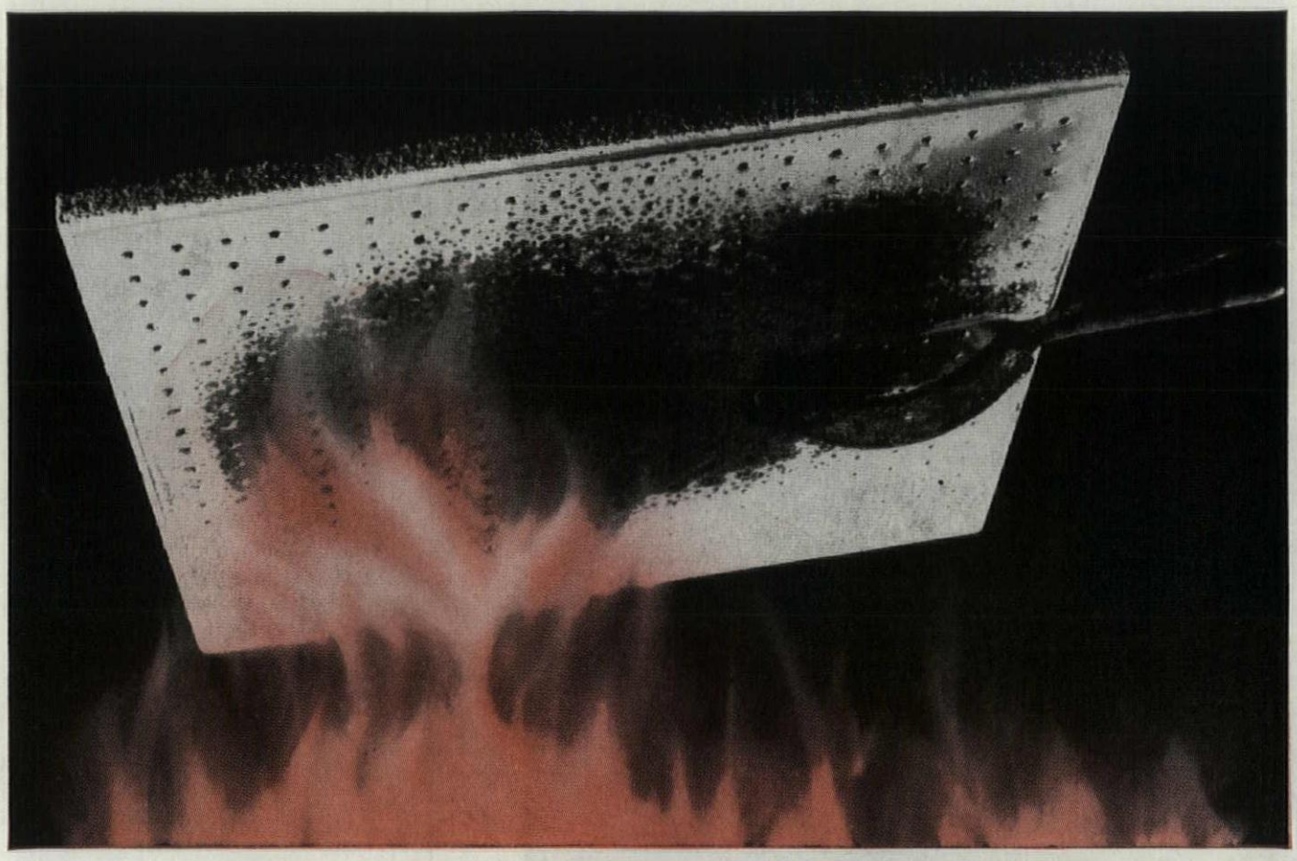

New fire-retardant paint protects with "insulating blanket"

Duo-Tex is here! It's a remarkable new paint that prevents rapid spreading of fires! Laboratory tests and actual fire conditions prove that this remarkable new paint reduces damage to a minimum on interior surfaces. The Duo-Tex film expands when exposed to flames and forms a heavy char blanket.

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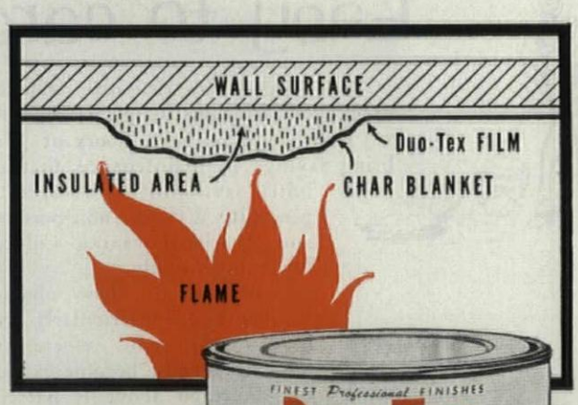
Duo-Tex is recommended for wood, acoustical tile, wallboard, plywood, plasterboard and metal. It is listed by Underwriters' Laboratories Inc., and meets Federal Government fire-retardant specifications SSA-118A.

Write to The Glidden Company, Maintenance Finishes Division, Department AF-9, 11001 Madison Avenue, Cleveland 2, Ohio for complete details.



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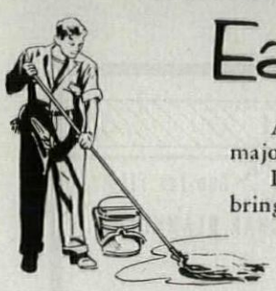

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Because of these characteristics, Wright Rubber Tile is particularly appropriate in large, heavy-traffic jobs, where maintenance costs might otherwise become excessive.

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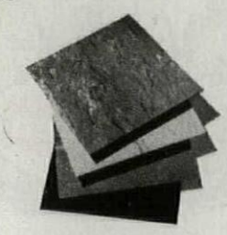

WRIGHT
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The 100-Year Floor!

4795

LETTERS *continued*

from the restrictive formalist view of what is right, what is beautiful, what is respectable, what is sensational, can find his integrity in the everlasting game, which is the search for truth.

G. M. KALLMANN, *architect*
New York, N.Y.

AIA CONVENTION

Forum:

Your AIA Convention report is very gratifying to those who worked for months on the convention committee. It is quite complete as to facts but more than that, it very sympathetically conveys the spirit of the convention.

I am particularly impressed by your presenting Paul Rudolph's address, "The Changing Philosophy of Architecture."

ISIDOR RICHMOND
Isidor Richmond and Carney Goldberg, architects-engineers
Boston, Mass.

Forum:

. . . From the opening sentence, which caught perfectly the spirit of the entire session, to the last word of Paul Rudolph's able address, your reporter has recorded in apt fashion every highlight of the annual meeting.

I was particularly pleased that you chose to report Mr. Rudolph's address in full.

. . . I was amazed, impressed and delighted with his thoughtful concept, thorough coverage and forceful delivery.

PHILIP D. CREER, *director*
AIA New England District

PRESTRESSING STEEL A REVOLUTION?

Forum:

In addition to the references in your article to work under way in this country, may I mention a proposal recently prepared by us for a prestressed steel bridge with a span considerably greater than the longest girder bridges heretofore used in this country?

Prestressing (as applied to steel, concrete or any other material, for that matter) has certain advantages not mentioned in your article or in the usual literature on the subject. One of the most interesting to the designer is the fact that for once he is able to dictate to the structure what the stresses shall be, instead of seeking (as heretofore) through complex analysis to determine what nature dictates the stresses shall be for his given structural configuration and loading. This essentially constitutes a revolution in our design philosophy, which has many interesting and obvious corollaries. Not the least important of these is that by manipulation of stresses in the cables, one can control erection stresses at will.

Prestressed steel is not without its difficulties. It is pertinent to caution that not only are the permissible stresses affected in a complex way by the deflections and the factor of

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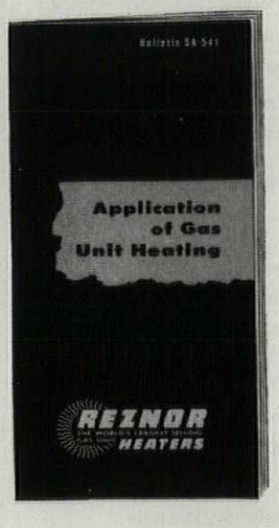
the *where when why how* of gas unit heater applications



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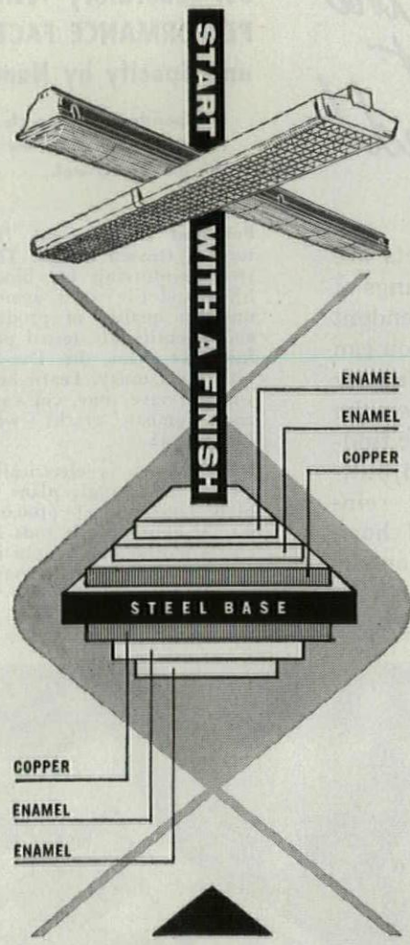

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LETTERS *continued*

safety, but the extreme theoretical savings quoted in your article lead to reduction of the structural steel sections to about one seventh or one eighth their normal size. The attendant structural problems connected with the lateral stability and local buckling of such reduced members are not to be dismissed lightly, and require the attention of competent structural engineers.

E. H. PRAEGER
Praeger-Kavanagh, engineers
New York, N.Y.

Forum:

. . . a very excellent job in presenting a difficult and controversial subject.

E. SCHECHTER, *vice president*
Stressteel Corp.
Wilkes-Barre, Pa.

Forum:

The information concerning application of prestressing techniques to various steel structures in Europe probably will stimulate the thinking of structural steel designers in the US on future projects where its application may prove of advantage.

Engineers in the US have become familiar with prestressed concrete designs. Your article points out the interesting potentialities of prestressing steel structures. As engineers become more familiar with the application of prestressing to special and unusual steel structures, they will be more likely to apply the principle in designing conventional steel structures. They likely will develop ways of partially reversing bending moments without the use of special high-strength prestressing members.

Wider adoption of the prestressing technique in the US will, of course, generally be determined by relative cost as compared with conventional design procedures.

B. L. WOOD, *consulting engineer*
American Iron & Steel Institute
New York, N.Y.

ALLEN DARES DESIGNS ON WOMEN

Forum:

What are we as a profession doing about women?

The way in which I came to ask myself that question is interesting although not very. I went to the AIA convention at Boston and had a lovely time except that out at Ipswich, eating the cold lobster, I was much colder than the lobster although not as red and I contracted another sinus ailment and when I got home I got thinner and thinner until finally if I had drunk a bottle of strawberry pop God forbid I would have resembled a thermometer and eventually they took 14 X-ray photographs of my head without finding anything which my enemies would have told me for nothing but finally it turns out that I have to work considerably less and drink slightly more so I am doing that and hurray for medical science.

So while I was resting up I read, in the

continued on p. 74

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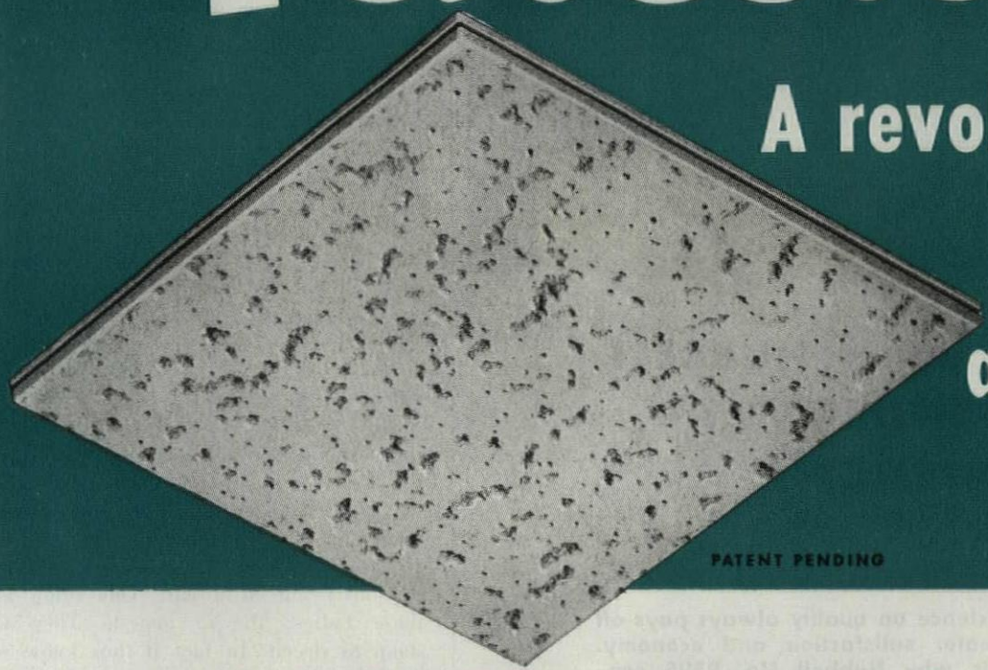

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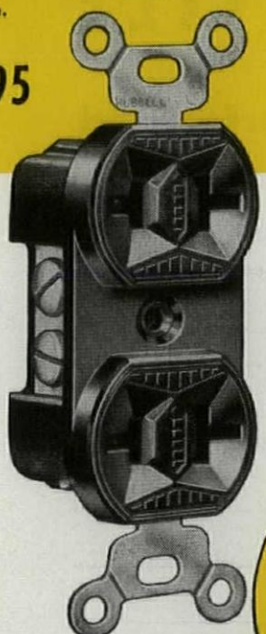

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LETTERS *continued*

July FORUM, Paul Rudolph's "The Changing Philosophy of Architecture" which I heard him deliver at Boston and it was one of the best speeches on architecture I ever heard and I couldn't have done it better myself. In fact I couldn't have done it myself full stop. And I agree whole-heartedly that "the architect's prime responsibility is to give visual delight."

This is also woman's prime responsibility and she isn't doing it.

We should explain this to women, preferably under an assumed name. I do not wish to quarrel with the basic design of women which if my memory serves is excellent. But what does she do with it in the line of applied ornament? Only a few weeks ago LIFE magazine featured the butch haircut for women, pointing out that "now a wife could look like her husband." This is a low aspiration if I ever heard one. Suppose a wife gets her hair cut so she'll look like her husband and then finds out that her husband didn't marry her because she looked like him?

If, when I first met the lady who became Mrs. Allen, I had noticed that she looked like me I would have leaped into my Paige roadster (this was some time ago) and made off at top speed (58 mi. per hour with a favoring tail wind) in several directions.

This is the season when Michigan welcomes thousands of tourists and there are No Vacancies in the motels or in the slacks of the stout lady visitors. Try driving up to Mackinaw City and the first thing you know you see a fat lady in toreador pants backing cautiously out of a car. One thing about these ladies: they're honest. They won't stoop to deceit. In fact if they know when they're well off they won't stoop.

I think we ought to have a seminar about this.

Unfortunately I will not be able to take part in this seminar as I have lived dangerously long enough and henceforth I am going to be the George Apley type. I am practicing rolling up an umbrella very tight and training ivy to grow up the wire of my earphone. And I am going to ask my old friend Hollis Baker to get Finn Juhl to design a contemporary cracker barrel for me to be a philosopher on.

ROGER ALLEN
Grand Rapids, Mich.

PLANNED INDUSTRIAL DISTRICTS

Forum:

We would like 100 reprints of the article on "Planned Industrial Districts" (AF, April '54). We have a project of this kind in mind.

This is the best article we have seen on this subject.

J. D. BEELER
Executive vice president
Evansville's Committee of 100, Inc.
Evansville, Ind.

continued on p. 80

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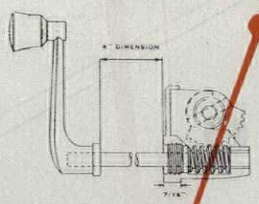
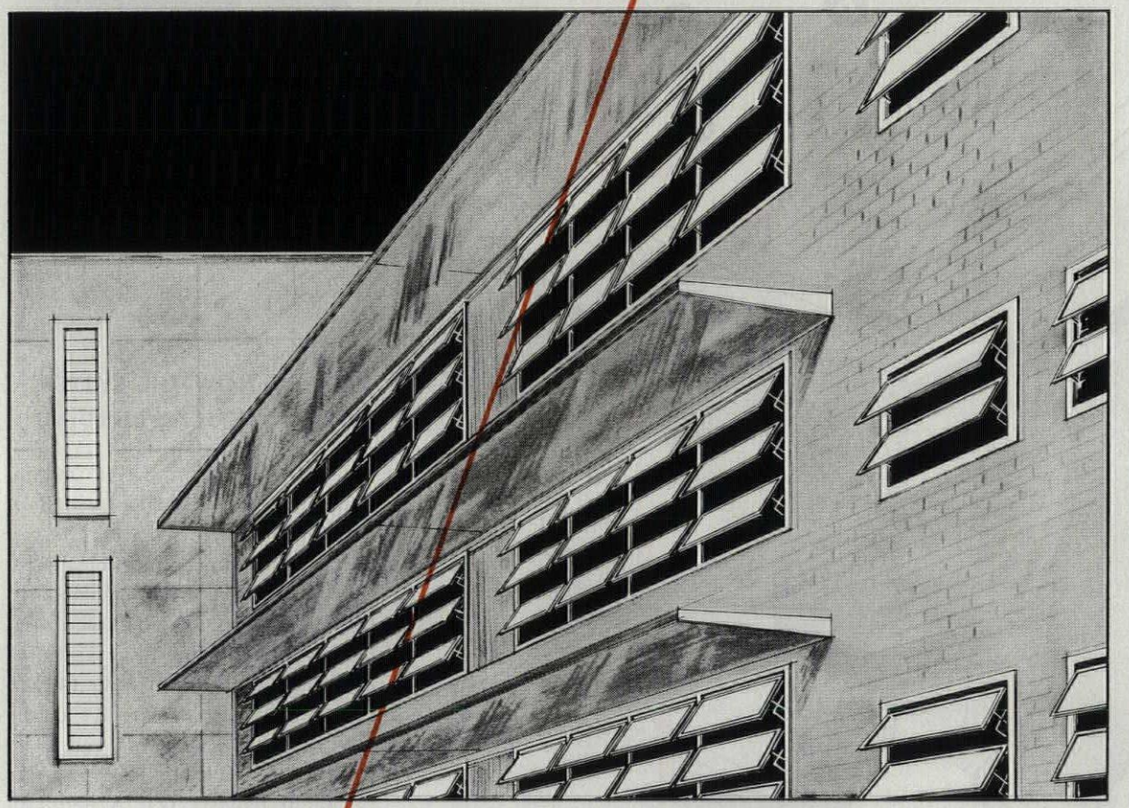
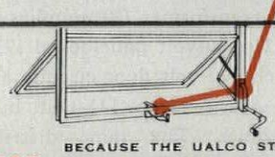
EXCLUSIVE STRIP-PROOF OPERATOR UNLOCKS, OPENS, LOCKS IN . . . *one operation*



THIS:

STRIP-PROOF OPERATOR HAS HEAVY-DUTY TORSION BAR BUILT IN CAM LOCK: UNLOCKS. OPENS. LOCKS IN ONE OPERATION.





NOT THIS: BECAUSE THE UALCO STRIP-PROOF OPERATOR HAS NO EXTERNAL LOCKING GEAR, IT COMPLETELY ELIMINATES ALL POSSIBILITY OF STRIPPING GEAR THREADS THROUGH FAILURE TO UNLOCK WINDOW.

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AWNING


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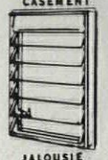
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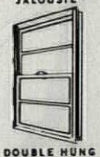
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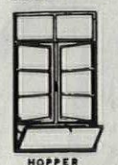
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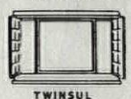
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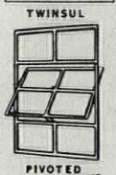
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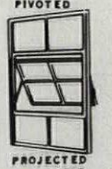
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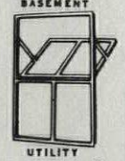
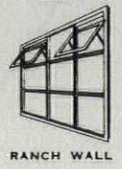
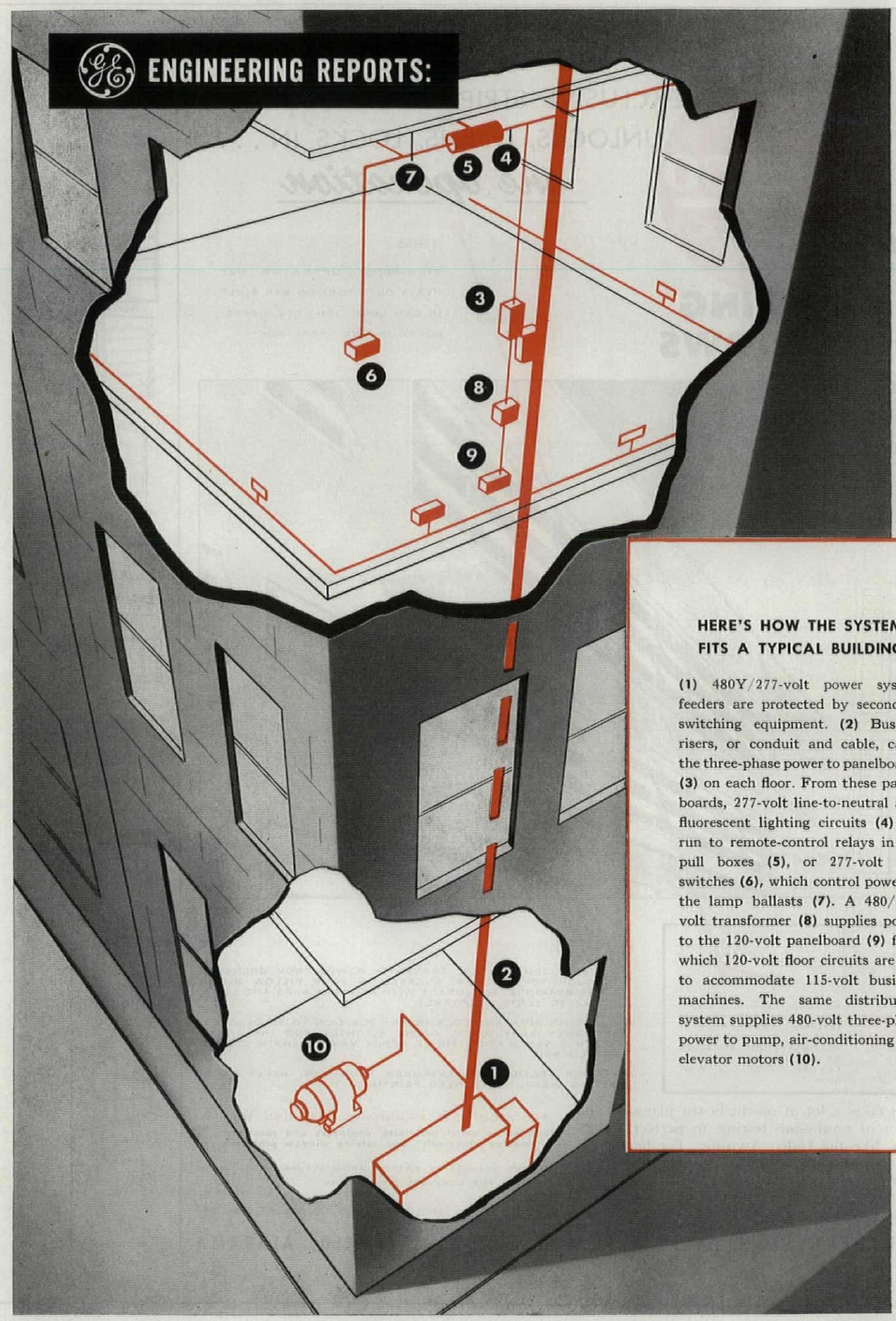
BASEMENT


UTILITY


RANCH WALL


SELECT-O-VENT



HERE'S HOW THE SYSTEM FITS A TYPICAL BUILDING

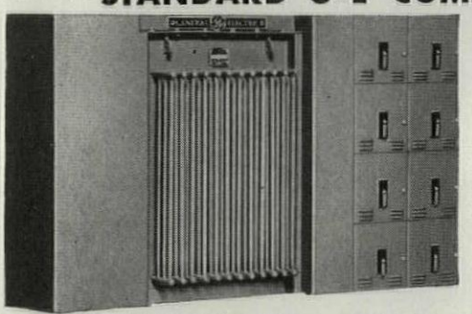
(1) 480Y/277-volt power system feeders are protected by secondary switching equipment. **(2)** Busway risers, or conduit and cable, carry the three-phase power to panelboards **(3)** on each floor. From these panelboards, 277-volt line-to-neutral area fluorescent lighting circuits **(4)** are run to remote-control relays in the pull boxes **(5)**, or 277-volt wall switches **(6)**, which control power to the lamp ballasts **(7)**. A 480/120-volt transformer **(8)** supplies power to the 120-volt panelboard **(9)** from which 120-volt floor circuits are run to accommodate 115-volt business machines. The same distribution system supplies 480-volt three-phase power to pump, air-conditioning and elevator motors **(10)**.

Lower cost power for commercial buildings made possible by General Electric 480Y/277-volt electrical systems

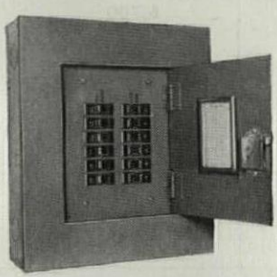
Many kinds of large commercial buildings—schools, department stores, shopping centers, office buildings, —can now take advantage of the flexibility and substantial savings made possible by 480Y/277-volt electrical systems. This economical system has now been accepted for commercial and public buildings by the National Electrical Code. Pioneered by G.E., it is already in wide use in industry. Co-ordinated standard General Electric components, including the recently developed low-voltage remote-control system, make application easy.

Building owners and contractors: With higher-voltage systems you get substantial savings in initial installations. On the next page you will find figures which demonstrate these savings in dollars and cents for a typical building. Area fluorescent lighting fixtures are supplied at 277 volts, while motors can be operated at 480 volts.

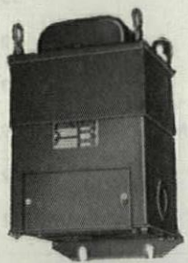
STANDARD G-E COMPONENTS MAKE SYSTEM APPLICATION EASIER



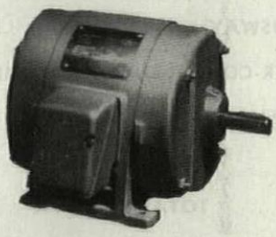
UNIT SUBSTATIONS—Where 480-volt power is supplied, only the switchgear section of the substation is required.



FLOOR-CIRCUIT PANELBOARDS—From these panelboards circuits are run to accommodate business machines, etc.

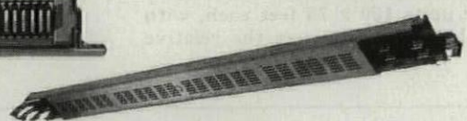


480/120-VOLT TRANSFORMERS Supply power to floor-circuit panelboard. Type M (above) available from ¼ to 15 kva.

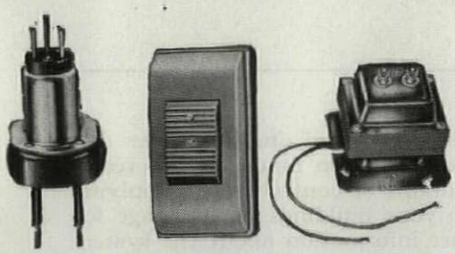


G-E MOTORS AND CONTROL supply more reliable drive and control for pumps, air conditioning.

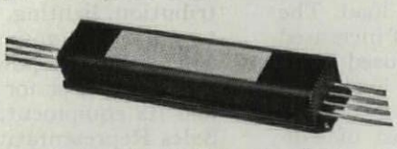




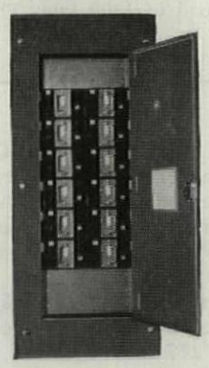
RISERS & FEEDERS can be either busway, interlocked cable, or cable in conduit for distributing 480-volt power to panelboards.



CONTROL-CIRCUIT TRANSFORMER—G-E 120/24-volt transformer (right) provides 24-volt power to the remote-control relays (left) and wall switches (center).



LAMP BALLASTS—This one shown above (rated 265 volts) for use with two 40-watt rapid-start lamps, designed for use with 277-volt systems.



PANELBOARDS—Either circuit breaker or fused panelboards may be used to help protect 277-volt circuits.

TURN THE PAGE AND COUNT YOUR DOLLAR SAVINGS

GENERAL ELECTRIC

CONTINUED FROM PREVIOUS PAGE

Here's how you can save up to 25% with G-E 480Y/277-volt power systems

EQUIPMENT	Old-Style Low-Voltage System (208Y/120 volts)		New High-Voltage System (480Y/277 volts)	
	Estimated Installed Cost	Weight of Copper, lb	Estimated Installed Cost	Weight of Copper, lb
REMOTE CONTROL	$ 6,750	240	$ 6,750	240
BRANCH-CIRCUIT WIRING FOR LIGHTS	42,450	1,530	29,800	1,100
FLOOR CIRCUITS (120 VOLTS)	28,125	1,080	31,650	2,460
PANELBOARDS	4,950	150	4,515	255
UNIT SUBSTATION	55,300	6,700	36,000	6,500
BUSWAY RISERS	12,400	5,200	6,200	2,200
AIR-CONDITIONING EQUIPMENT	23,370	5,855	17,450	3,470
ELEVATOR AND FIRE-PUMP EQUIPMENT	9,010	2,400	6,470	1,145
TOTAL	$182,355	23,155	$138,835	17,370
TOTAL PER KVA	$121.57	15.44	$92.55	11.58

BY COMPARING THE EQUIPMENT COSTS of a 480Y/277-volt system with those of a conventional 208Y/120-volt arrangement for a typical building, the economies of high-voltage distribution become readily apparent. As an example, consider a five-story office building consisting of three units 160 x 75 feet each, with total load of 1500 kva. The table above compares the relative costs for this building. Note that with two exceptions, one due principally to the need for the 480/120-volt transformer for the floor circuits, the high-voltage system results in dollar savings item for item. The total saving is approximately $30 per kva. Studies of smaller and larger buildings have indicated similar savings in proportion to size.

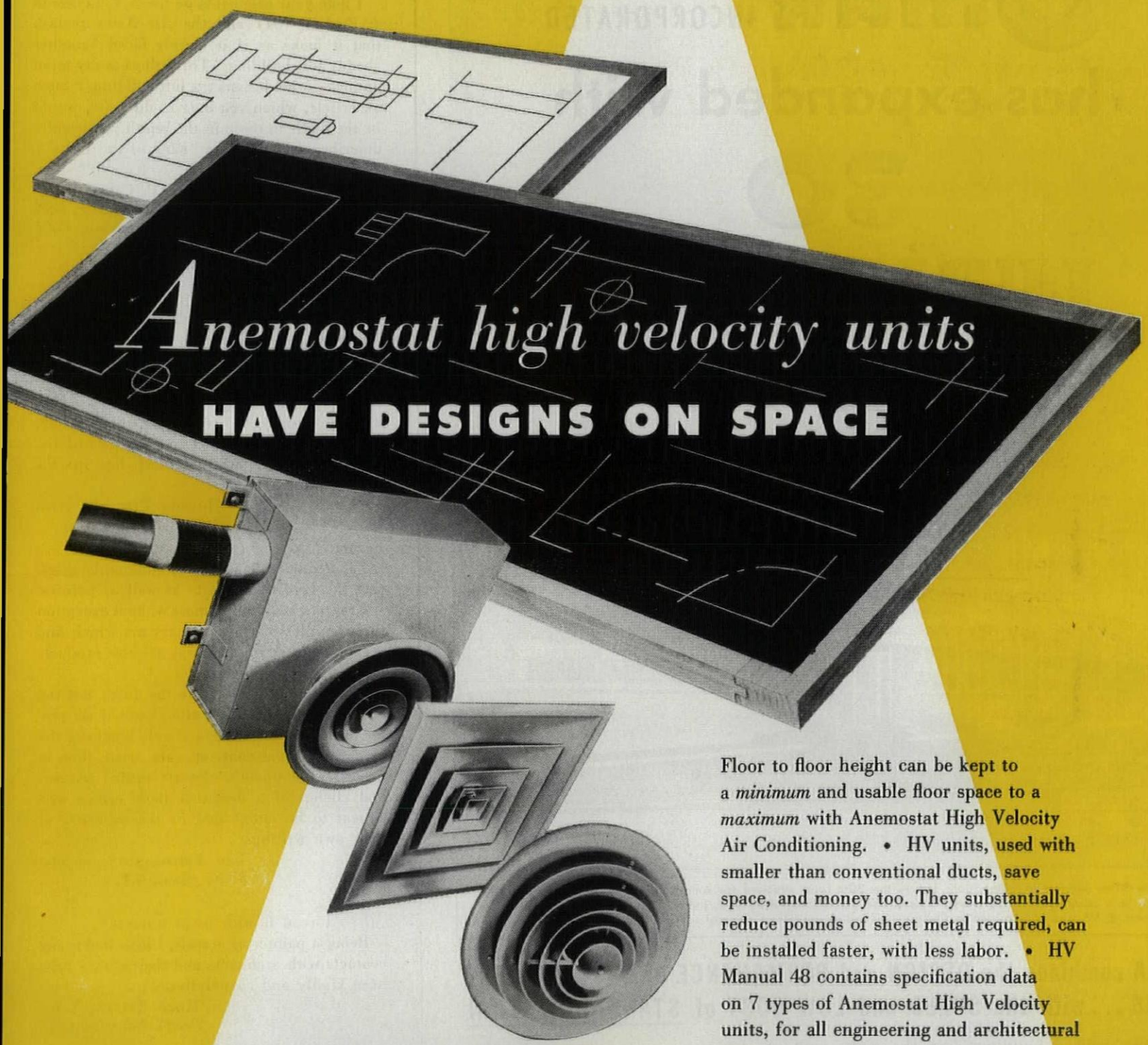
FIRST SAVING IS IN CIRCUITS. Higher voltage means lighting circuits can carry a much greater kva load. The number of circuits can be halved. Conversely, if increased illumination is the goal, the same circuits used in a 208Y/120-volt system can now carry twice the load.

FURTHER SAVINGS RESULT from the lower cost of 440-volt motors and power equipment. Altogether, a complete 480Y/277-volt system can save as much as 25%, as shown in the chart above.

General Electric engineers specializing in power distribution, lighting, and construction materials are ready to work with your consultants or contractors in applying 480Y/277-volt power to your buildings. To arrange for this service, or for further information about the system and its equipment, contact your nearest G-E Apparatus Sales Representative *early in the planning stage*, or write for Bulletin GET-2307 to General Electric Company, Apparatus Sales Division, Section 665-122, Schenectady 5, New York.

Engineered Electrical Systems for Commercial Buildings

GENERAL ELECTRIC



Anemostat high velocity units

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Floor to floor height can be kept to a *minimum* and usable floor space to a *maximum* with Anemostat High Velocity Air Conditioning. • HV units, used with smaller than conventional ducts, save space, and money too. They substantially reduce pounds of sheet metal required, can be installed faster, with less labor. • HV Manual 48 contains specification data on 7 types of Anemostat High Velocity units, for all engineering and architectural requirements. Write for free copy.

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AC1324

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OMAR INCORPORATED
has expanded with
30
LURIA Buildings
since 1949



This new Omar building in Indianapolis, Ind. — the 30th Luria structure for America's fastest-growing bakers — basically is a counterpart of its twenty-nine predecessors located in Ohio, Indiana, Nebraska, Iowa, Wisconsin and Illinois. E. W. Hauser Construction Company of Indianapolis was general contractor for this newest building.

LURIA combines the DESIGN and PERMANENCE of CUSTOM-BUILT UNITS... with the SPEED and LOW COST of STANDARDIZATION

Can standardized buildings *look* the way you want them to? Yes—if they are Luria structural steel buildings. The *flexibility* and *adaptability of design* provided by the "Luria system of standardization" make possible almost *any* type of architectural treatment. And to assure you *durability of structure*, Luria materials and construction surpass the most stringent building code requirements. Finally, Luria Buildings deliver substantial *initial* savings, continuing *maintenance* savings. The list of companies who *re-order* Luria Buildings is best testimony of the advantages of Luria Standardization. Contact your Luria representative.

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LETTERS *continued*

KING OF THE LOFTS

Forum:

I note your comments on the N.Y. Coliseum (AF, June '54) and the *Art News* remark that it looks as if it merely faced "another shoddy loft building." This brings to my mind an idea—who designs the loft buildings? Such an article, which you *only* could write, would be the nadir to those in the zenith you usually describe. Why not the "King of the Lofts"? Tell us about him too!

R. P. Carlson
Captain (CEC), USN
San Francisco, Calif.

ARTISTS ON ARCHITECTURE

Forum:

Thank you for the article on art and architecture by Aline Saarinen (AF, June '54). I found it extremely pertinent, thoughtful and timely.

So often the artist's work is not in keeping with the design and "feeling" of the building. But on the other hand there are artists of distinction and gift whose ability lies in this needed direction.

Hobson Pittman, *artist*
State College, Pa.

Forum:

. . . Pedantic demagogy is apparently besetting the field of fine arts as well as politics.

I regret to say that almost without exception the examples of contemporary art which find the favor of Mrs. Saarinen are the products of meretricious dilletantism.

What we need today are the doers, not the clever critics of the fine arts. I would far prefer to listen to or read in simple language the credo of a great contemporary artist, than to listen to the smooth, cleverly turned phrases and clichés of a dozen of these critics who appear to be intoxicated by the sophistry of their own writings.

Leo Friedlander, *sculptor*
White Plains, N.Y.

Forum:

. . . I read it with great interest.

Being a painter of murals, I have had many contacts with architects and they always have been kindly and cooperative. . . .

Hugo Ballin, *N.A.*
Pacific Palisades, Calif.

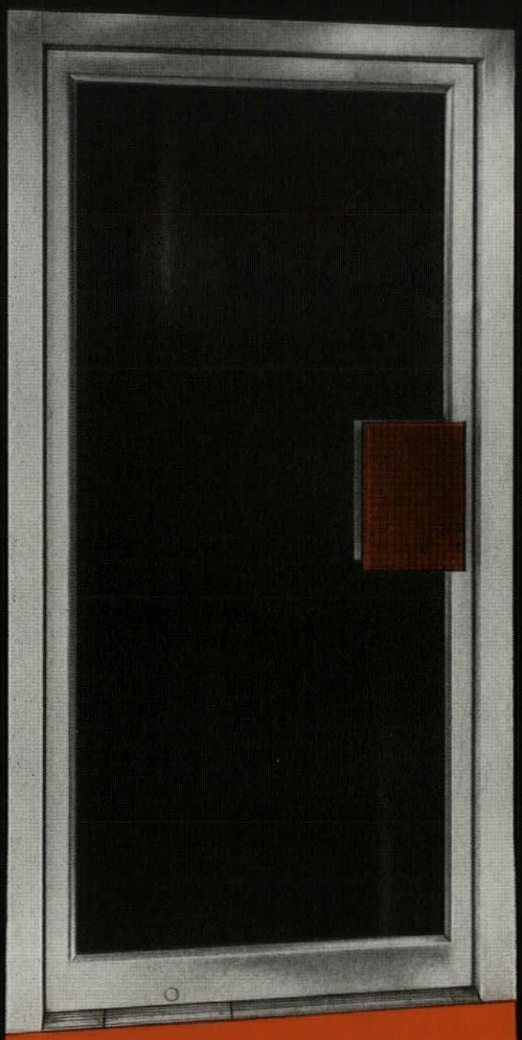
CANTILEVER ECONOMIES

Forum:

The Statler Hotel for Dallas (AF, June '54) promises indeed to be a most interesting building in terms of structure and planning. However, your statement: "This is the first time that a two-column-per-bay cantilever floor system has been used in multistory building in the US" is not correct.

There have probably been a number of buildings using this structural scheme; we are certain of at least one—the six-story Mid-

continued on p. 84



HARDWARE VARIATIONS UNLIMITED! Interchangeability between standard and Deluxe stock hardware is easily accomplished at the factory or job site. Kawneer also supplies special-made insert plates for the Deluxe identification hardware, in any design or monogram you want, in any color you want.

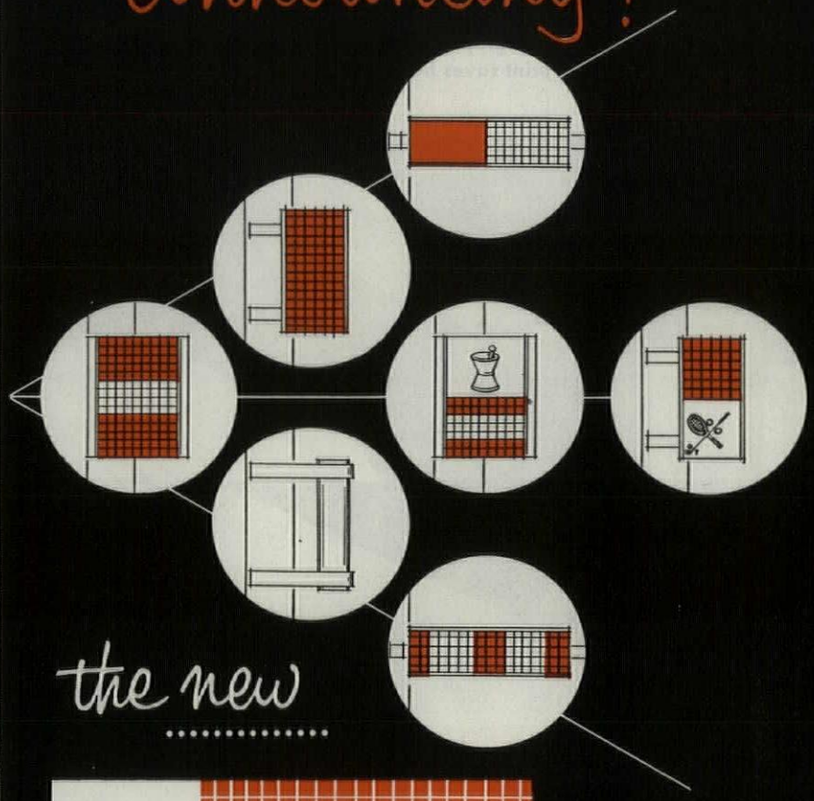
A NEW LOOK! Smartly styled beveled glass stops, welded hairline joints, offset pivots! Finest polished Alumilite finish; no weld "bloom" or weld "halo", no exposed screws! All these features make up the most attractively designed and most easily adapted entrance you have ever seen.

GREATER STRENGTH! 10% more rigid than most other aluminum doors made! New Kawneer "Deep-Weld" penetrates the metal 100% for the strongest weld ever used in door construction. Precision-made corner joints of stronger tubular construction add to that rigid strength.

USE IT EVERYWHERE! Larger stile area takes standard narrow line panic exit hardware required for school and public building use. Standard size lock cylinder allows quick, easy master keying. W-Series Door takes overhead or floor checks. And the same stock door can be installed as a right- or left-hand door.



Announcing!



the new .....

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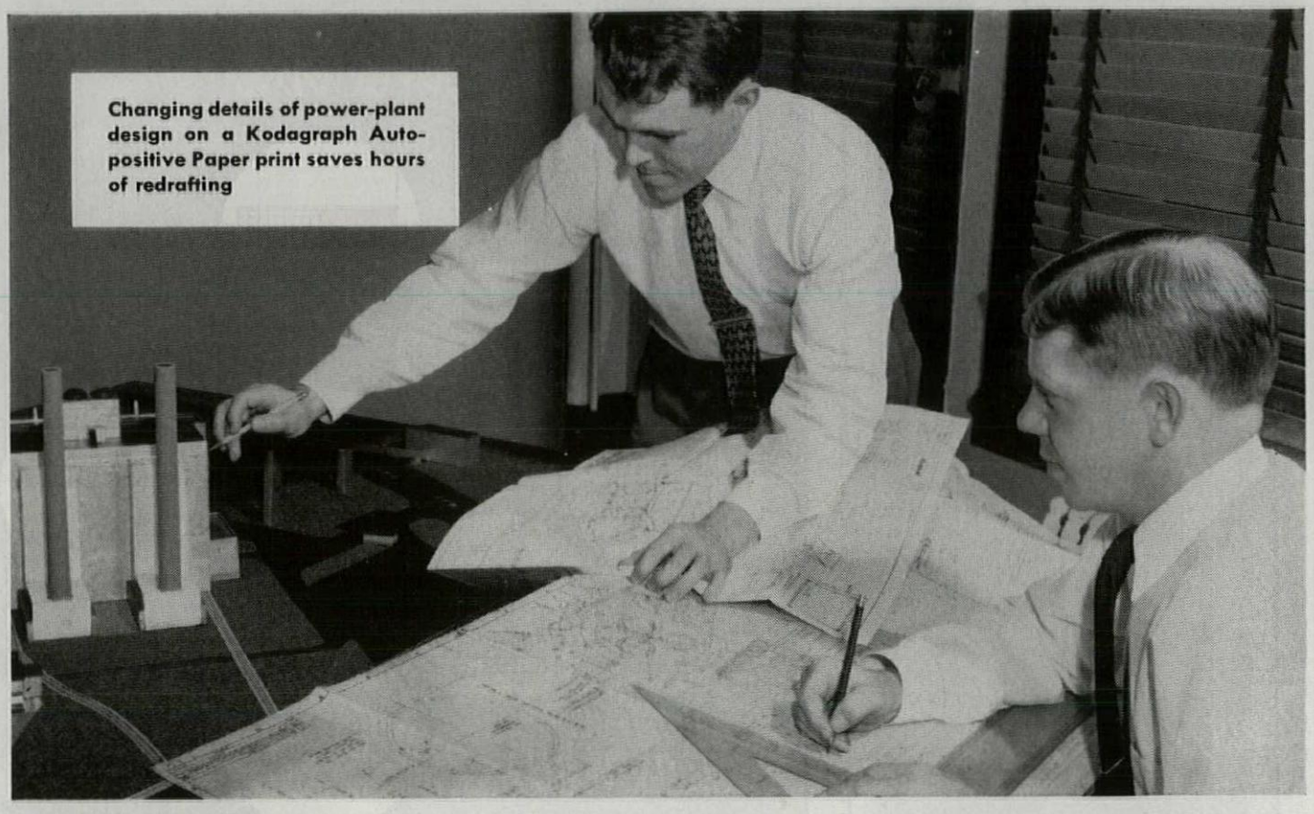
KAWNEER W-SERIES DOOR

"a thousand doors in one!"

Now! Your design problems are simplified, and client satisfaction assured when you specify the new Kawneer W-Series Door. To meet these needs you demanded a readily available door with all the qualities of a "custom-made" product . . . distinctive beauty, adaptable design and rigid strength that defies rugged use. Kawneer has vastly improved manufacturing techniques over ordinary methods of metal door production to bring you these highly desirable features. Kawneer has created the new materials and methods needed to do the job. What would be "custom" production elsewhere is now standard procedure at Kawneer in the production of the new W-Series Door. The quality of materials and workmanship is even superior to the usual Kawneer standards which have led the field of architectural metal products. Demand the newest and best—the Kawneer W-Series Door! For complete information, write Kawneer, Niles, Mich.



Changing details of power-plant design on a Kodagraph Autopositive Paper print saves hours of redrafting

Toledo Edison Company reports on its use of Autopositive—

"One saving after another since 1947"

Shortly after Kodagraph Autopositive Paper was introduced, the Toledo Edison Company, Toledo, Ohio, began exploring its possibilities for engineering drawing reproduction.

Here was a revolutionary photographic intermediate paper which produced positives directly from positives—no negative step. It could be exposed in standard print-making equipment . . . processed in standard photographic solutions. *Entire operation in ordinary room light, too.* Jobs which had been difficult and costly became easy and economical—Kodagraph Autopositive Paper costs only a few cents a square foot. Some typical savings at Toledo Edison *which you can duplicate* are listed here.

☐ **Old prints and intermediates reclaimed.** No time lost retracing. Autopositive Paper strengthens weak line detail, cleans up backgrounds. Toledo Edison now can get intermediates which have dense photographic black lines on an evenly translucent paper base. *Original quality or better!*

☐ **Opaque originals no problem.** Many of Toledo Edison's forms, charts, operating maps, etc., are on opaque stock—some two-sided. Data is added to these in pencil or by typewriter. Then Autopositive reproductions are made and used to produce the direct-process prints needed for distribution. The 1954 Annual Budget, for example, was reproduced in this manner. *Autopositive saves time and dollars for all departments.*

☐ **Print-making simplified.** Toledo Edison runs Autopositive intermediates at uniform, practical speeds in its direct-process machine . . . gets sharp prints time after time. *Autopositive lines do not smear, smudge, or lose density.*

☐ **Drafting shortcuts.** An Autopositive print is made of a drawing which has to be altered. The obsolete detail is eradicated or scissored out, and another Autopositive is made. New design is then added, and the job is completed without redrafting.

☐ **Photo-lasting file copies.** Toledo Edison also finds that Autopositive intermediates will not turn yellow or become brittle . . . are ready to produce sharp, legible prints whenever needed.

Kodagraph Autopositive Paper

"THE BIG NEW PLUS" in architectural drawing reproduction



Shows all the ways you can save with Kodagraph Autopositive Paper.

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Gentlemen: Please send me a copy of "Modern Drawing and Document Reproduction."

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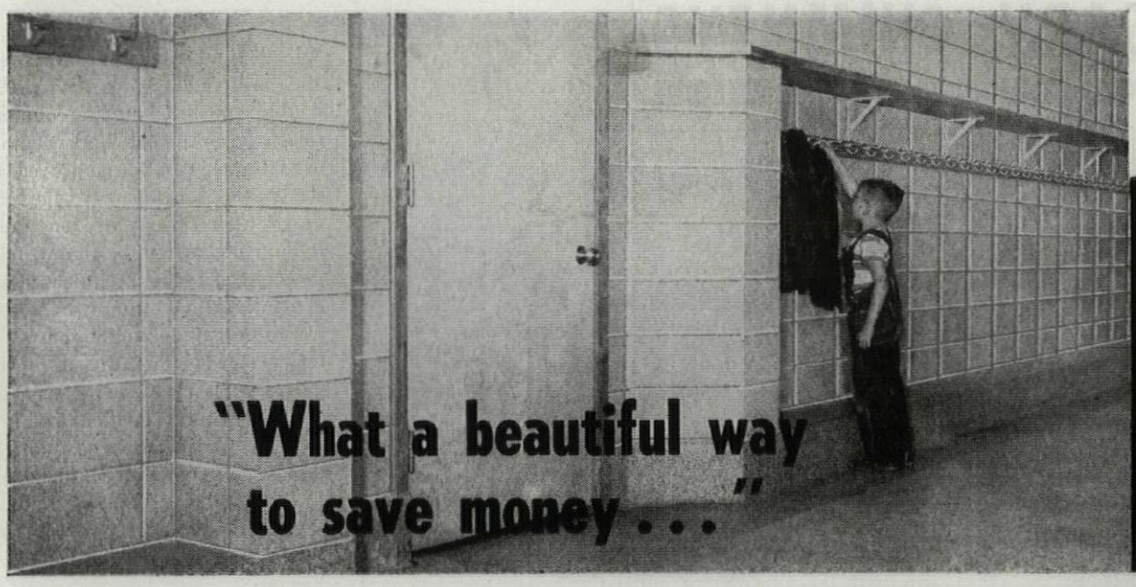
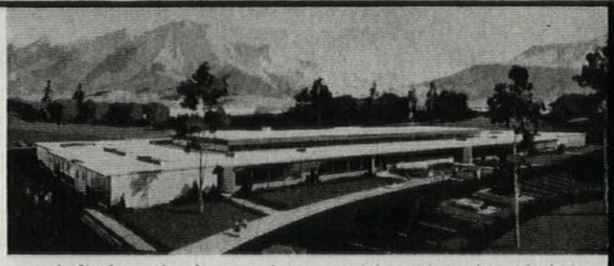
Kodak
TRADE-MARK



CONCRETE MASONRY

Low installed-in-the-wall cost, speed of erection, and long life with low upkeep make concrete masonry the ideal material for today's cost-saving, one-story school designs. Best of all, it's economy plus attractive appearance.
The wide selection of concrete masonry sizes, shapes, colors, mortar joint treatments, and wall patterns offer unlimited design possibilities.

In addition, exposed concrete masonry interior walls offer a double bonus saving: (1) **sound-absorbing** concrete block walls in classrooms and activity areas often eliminate the need for additional expensive acoustical treatment; (2) modular size concrete masonry units eliminate costly cut and trim, and make possible a **decorative interior wall pattern** that needs no expensive plastering or dry wall treatment.



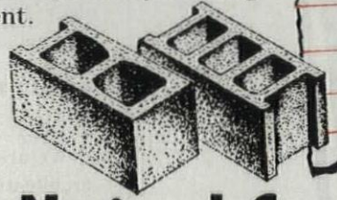
Loft plan school—one of many widely publicized trends that includes cluster, zone, and other prototype plans—uses exposed and painted concrete masonry interior walls in classrooms, multipurpose central recreation area. Concrete block afforded cost saving on interior wall finishing and acoustical treatment.
William Rowe Smith, architect; Fred W. Needham, Richard H. Johnson, associates.

Memo: call local NCMA member for copies of school design aids

Ideas for Wall Patterns with Concrete Masonry (Certificate of Exceptional Merit Winner in 1954 A.I.A.—Producers' Council competition)

Design and Construction of Lintels—another 1954 award winner

Concrete Masonry in School Construction



National Concrete Masonry Association

38 South Dearborn Street Chicago, Illinois

HOW TO OMIT TALL, UNSIGHTLY, UNNECESSARY CHIMNEYS
FROM MODERN SCHOOL DESIGN



Wing

DRAFT INDUCERS

PROVIDE POSITIVE, UNIFORM, ADEQUATE DRAFT AT ALL TIMES

Architects find that "blending" a tall chimney into a low, modern, functional school design is an unworthy compromise. Actually such compromise is unnecessary, for there is no need today for an unsightly chimney. Wing Motorized Draft Inducers provide positive, uniform, adequate draft for boilers or furnaces . . . completely independent of weather conditions. In addition, they save money through higher fuel burning efficiencies. Easily installed in the flue or breeching, Wing Draft Inducers require only enough chimney to vent the exhaust gases. Write for bulletin and special information on school applications.

In confirmation of the above, there are over 500 Wing Draft Inducer installations in schools alone, in all parts of the country, with hundreds more being specified by architects and engineers as the great school building program continues.

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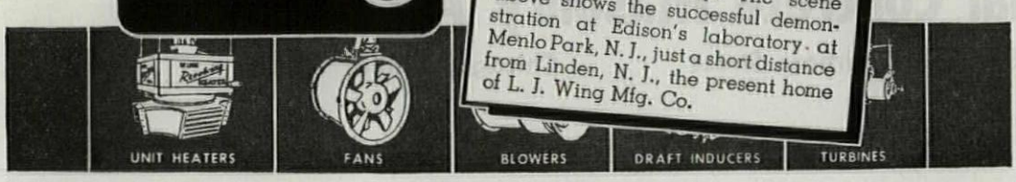
Factories at Linden; N.J. and Montreal, Canada



In 1879, the year the L. J. Wing Mfg. Co. was founded, Thomas A. Edison perfected the first practical incandescent electric lamp. The scene above shows the successful demonstration at Edison's laboratory at Menlo Park, N. J., just a short distance from Linden, N. J., the present home of L. J. Wing Mfg. Co.

OUR 75TH YEAR 1879

Wing



LETTERS *continued*

Wilshire medical building, designed by us and built in Los Angeles in 1950—where the double cantilever on two columns was applied to a structural steel rigid framing. The scheme used for this building proved (as I am sure the Statler scheme will) the economy of this design. The weight of structural steel for the building ran to less than 10 lb. per sq. ft. despite the demanding clearance requirements at the first floor, where the two main columns were interrupted and supported by a V-shaped truss, and despite the necessary design requirements imposed by seismic loads. The planning of the medical suites demonstrated the flexibility made possible by the elimination of columns along the wall lines.

EDGARDO CONTINI, *chief engineer*
Victor Gruen Associates
Los Angeles, Calif.

Forum:

Your article on the Dallas Statler (AF, June '54) was excellent.

W. R. WALTON
Robert E. McKee General Contractor Inc.
Dallas, Tex.

LOST INDEX

Forum:

I like your magazine; it contains plenty of interesting articles and a good selection of ads. But why do you make it so difficult to find things? Why can't you put the index of contents on the first page where it belongs, rather than in the middle somewhere?

You're supplying a rational audience; let's have a rational format!

LENNART THUNSTROM
Purdue University
Lafayette, Ind.

● The contents page is always the first page of the main editorial section; the ad index is always on the last few pages of the magazine.—ED.

A NAME

Forum:

In all that Eleanor Clark article on Rome's remodeling (AF, May '54), no mention of Nervi and no name of the architect of the Rome Station!

ALFRED BENDINER, *architect*
Philadelphia, Pa.

● The station was designed by L. Calini, E. Montuori, M. Castellazzi, V. Fadigati, A. Pintonello, A. Vitellozzi.—ED.

REPORT FROM FORMOSA

Forum:

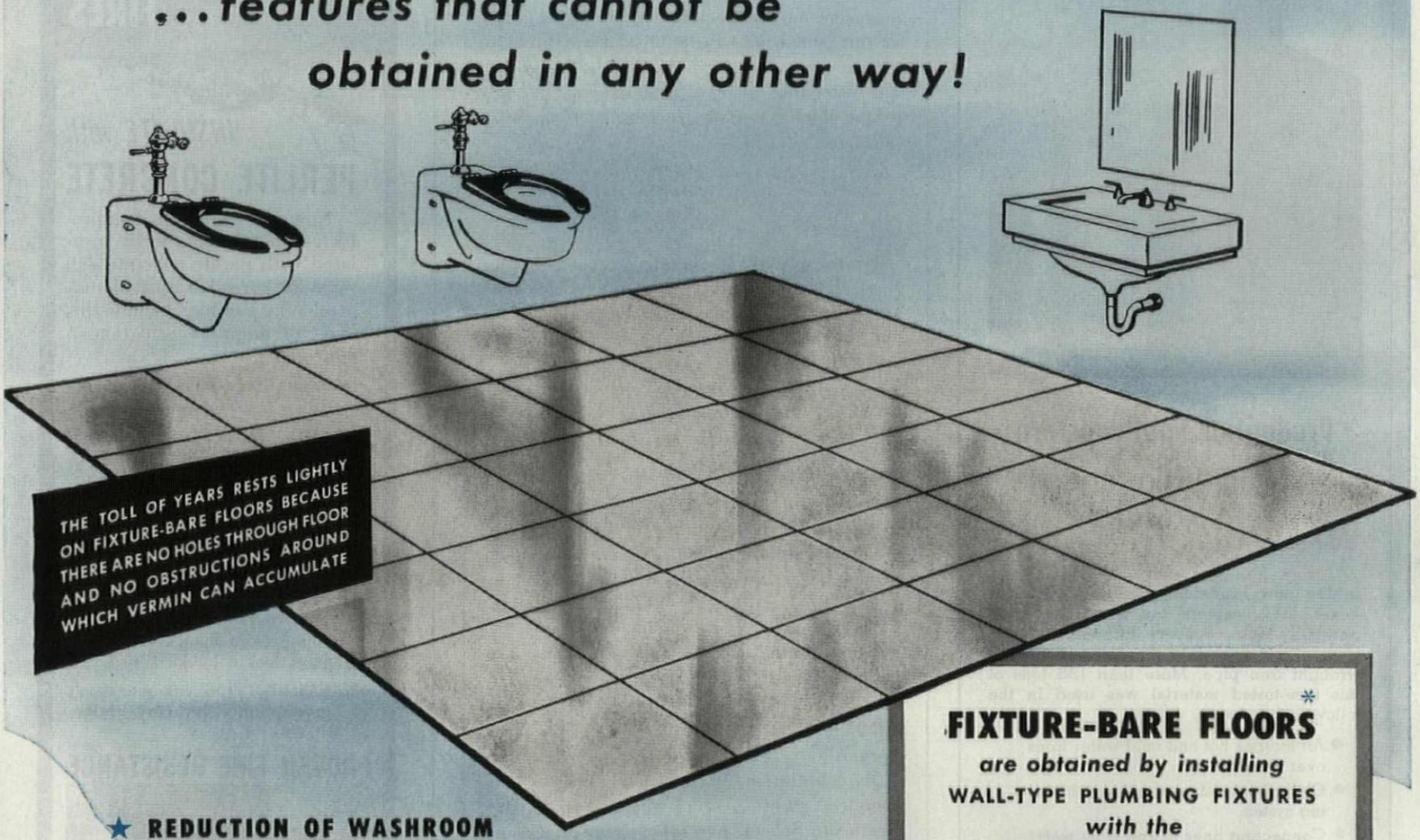
We are a group of young students studying architecture at the Taiwan College of Engineering.

We appreciate your magazine very much, through which we have learned a lot of new ideas and read many of the famous architect's works in addition to much of the news about architecture. We believe that your magazine

continued on p. 86

Four Features a Fixture-Bare Floor* gives your client

...features that cannot be obtained in any other way!



★ **REDUCTION OF WASHROOM MAINTENANCE COST TO AN ALL-TIME LOW**

★ **INSURANCE AGAINST UNTIMELY OBSOLESCENCE**

★ **MAINTENANCE OF CLEANLINESS AT AN ALL-TIME HIGH**

★ **MAJOR SAVINGS IN THE OVER-ALL COST OF BUILDING**

● Off-the-floor wall-type plumbing fixtures installed with a Zurn System effect many substantial savings in construction costs; permit the use of any type floor construction and any type of wall construction; permit reduction in height of ceiling; eliminate need of furring-in drainage lines; eliminate caulking to floor; simplify drainage and vent piping layout; give greater flexibility for planning washrooms—and unrestricted opportunity to exercise your imagination, skill and ingenuity in a way that will win both owner and user approval for this all important convenience facility—the washroom.



WRITE FOR FREE BOOKLET entitled, "You Can Build It and Maintain It for Less, A NEW WAY". It presents new ideas for washroom installations in new and existing buildings.

Over 700,000 wall-type plumbing fixtures installed with the Zurn System in buildings of every type from coast to coast. Your Zurn Representative has list of buildings which have washrooms with fixture-bare floors. *T. M. Reg. U. S. Pat. Off.

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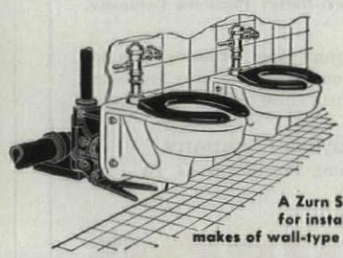
FIXTURE-BARE FLOORS* *are obtained by installing* **WALL-TYPE PLUMBING FIXTURES** *with the*

ZURN system*



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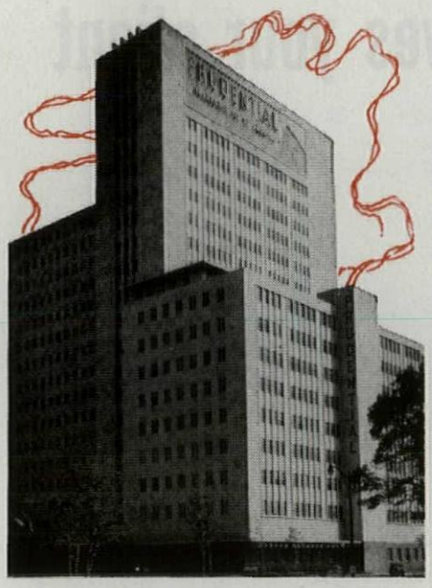

Prudential Southwestern
Home Office uses
WROUGHT IRON PIPE

In the new Prudential Building, Houston, Texas, the designers' insistence on piping durability and economy through long-life service, is reflected in the extensive use of wrought iron pipe. More than 135 tons of this time-tested material was used in the following services:

- All interior hot and cold water lines over 3 inches
- Chilled water lines for air conditioning system
- Connecting lines to and from water softener
- All water piping, supply and recirculating lines in swimming pool
- Water supply lines from mains to cooling tower
- Downspouts

Architect: Kenneth Franzheim, Houston, Texas

Engineers: Dale S. Cooper & Associates, Houston, Texas

General Contractors: W. S. Bellows Construction Corporation, Houston, Texas

Mechanical Contractors: Barber Plumbing Company, Houston, Texas

How wrought iron pipe protects against premature failures is told in our bulletin, *Piping for Permanence.* Write for a copy.

A. M. Byers Company
Clark Building, Pittsburgh 22, Pa.

BYERS
WROUGHT IRON PIPE

LETTERS *continued*

has influenced us quite a good deal.

Recently we have established an architectural investigation agency held by several schoolmates of ours. As we feel the lack of a magazine on architecture written in Chinese on this island, we have published one through the agency—just a little bimonthly pamphlet, but better than none.

Our chief materials are selected from your magazine. . . .

C. W. LEE, *chief editor*
Architecture-Today
Taiwan, China

Sirs:

Having owned and operated 22 hotels in the West I can truthfully say that time and again FORUM has played an integral part in our operation by keeping our ideas young and our innovations up to the minute.

THOMAS E. HULL, *president*
Hull Hotels
Hollywood, Calif.

ARCHITECTURAL ISOLATIONISM

Sirs:

You have given much too little space to architectural development abroad. Surely one cannot be architecturally isolationist?

ERIC G. YONDORF
Chicago

• FORUM is the only magazine serving the US building industry which presents at least one foreign building per issue.—ED.

KUDOS

Forum:

My admiration for your July issue is unbounded. While certain parts of it (the Heathcote School, naturally) were of exceptional interest, it was the way the entire issue was balanced and of sustained excellence that most impressed me. I am not a Kitimat fan; although I recognize the unique nature of the project, it is still an objectionable company town and designwise hardly in advance of the Greenbelt towns. Yet even with this topic I believe you made the most of it, and I especially liked the tribute to Clarence Stein (and that nice fresh photo of him by Gretchen van Tassell).

FREDERICK GUTHEIM
Washington, D.C.

ERRATA

It was erroneously stated in the June issue of FORUM that Frank Lloyd Wright's synagogue for Beth Sholom Congregation in Philadelphia would cost $175,000. The error is regretted. Cost of the building has been estimated at $750,000.

• In FORUM's May issue on remodeling, the Central Penn Bank building of Philadelphia was shown only by a photograph of the exterior (and a rendering of the facade before remodeling). The new interior as seen through the revised front was designed not by architects Thalheimer & Weitz alone but by these architects in association with Robert Montgomery Brown.

continued on p. 88



STOP ROOF DECK FIRES

INSULATE with
PERLITE CONCRETE

New test proves that unprotected metal roof decks insulated with perlite concrete will resist fire spread at least 45 minutes! Why gamble? Include this low-cost fireproof insulation in *your* roof.

INCOMBUSTIBLE – Perlite concrete cannot burn or spread fire.

NO VAPOR SEAL needed between insulation and metal deck.* This eliminates fire hazard of bitumen on exposed steel.

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1650°F INSIDE



Flames failed to penetrate a metal deck insulated with perlite concrete in a 45-minute fire test. Final average temperatures are shown above. Write for complete test data.

U-VALUES FOR PERLITE CONCRETE (1:6 MIX) ON METAL DECK WITH ROOFING:

Thickness	2"	2½"	3"	4"
U-value	.222	.186	.160	.126

**FOR TECHNICAL DATA* write for 43-page report: "Vapor Diffusion and Moisture Migration through Perlite Concrete," by Prof. C. E. Lund. $1.00 per copy. Sorry, cannot bill – please send cash or check with order.*

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New York 16, N. Y.

marble ... good for shariwaggi?*

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***Shariwaggi:** "A word from India describing the art of picturesque composition in combining new architecture with old so as to enhance both". Architectural Forum, February, 1954.

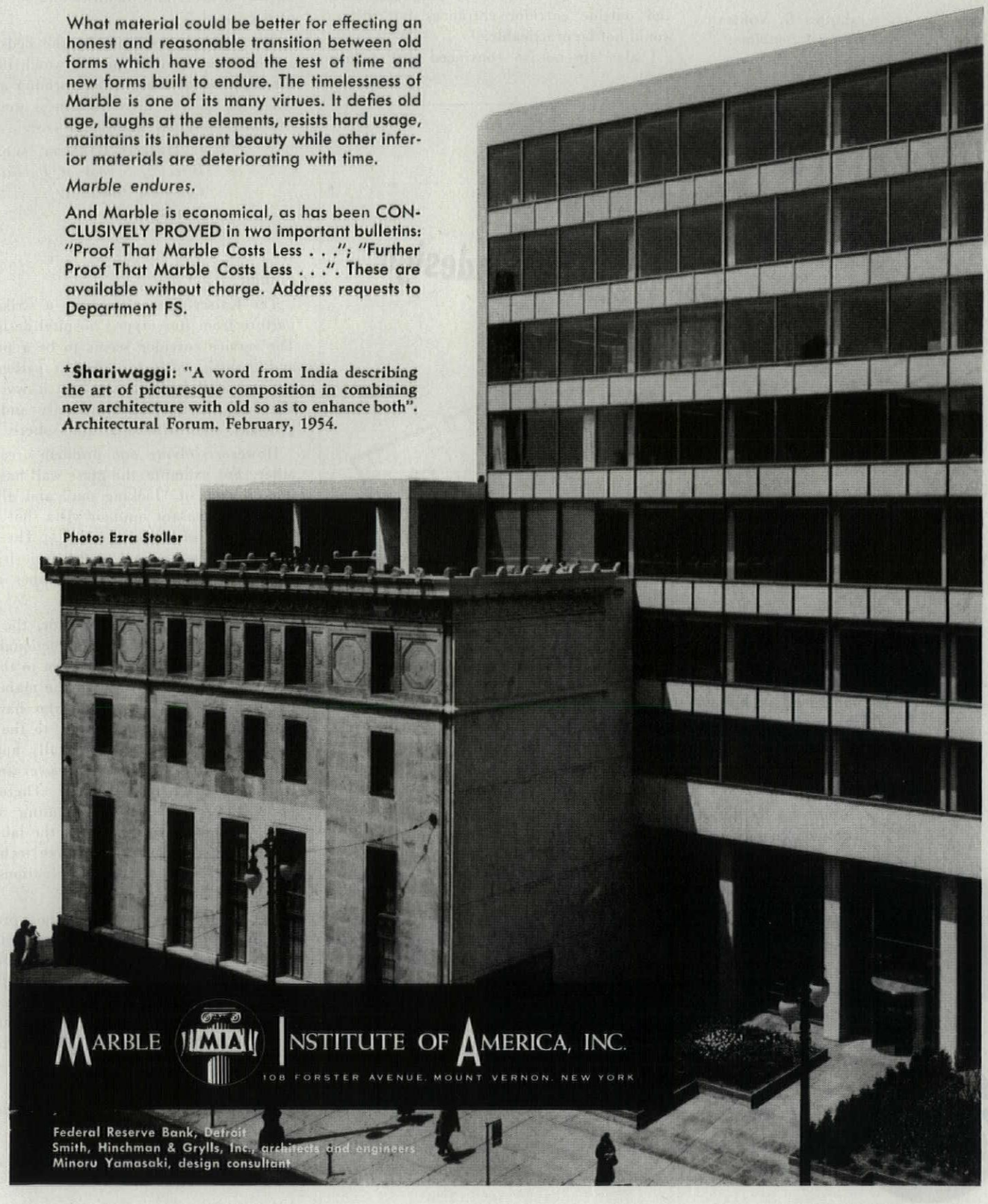

Photo: Ezra Stoller

MARBLE INSTITUTE OF AMERICA, INC.

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Federal Reserve Bank, Detroit
Smith, Hinchman & Grylls, Inc., architects and engineers
Minoru Yamasaki, design consultant

KAISER MEDICAL CENTER

Forum:

. . . I hope your magazine will continue to publish articles of this type, especially when they bring out buildings over which there has been much discussion and possibly some criticism.

JACQUES B. NORMAN
Hospital consultant
Greenville, S.C.

Forum:

. . . We have all been much interested in some of the hospital innovations in the Kaiser Foundation Medical Center. I think they are particularly adapted to a climate like Walnut Creek. I rather doubt that they would be as effective where winters are long and cold, and outside corridor entrances for visitors would not be practicable.

I also am not so convinced that a long structure is optimum for hospitals. Its length must of necessity limit the values of central services. Experiences show that too many things have to be moved horizontally, and extra personnel must be employed for that movement. Things that can be moved upward on tray bearers and dumbwaiters cut the cost of personnel.

The self-help facilities by the bedside are unusual and I would like to watch their use for a period of time before forming an opinion as to whether their usefulness would justify their original additional cost.

E. DWIGHT BARNETT, M.D.
Director, School of Public Health
Columbia University
New York, N. Y.

Forum:

The Kaiser Center presents a striking departure from stereotyped hospital design. . . . The service corridor seems to be a practical and realistic basis for efficient patient care, but we shall have to see how it works out. The hospital fits the community and has a pleasant, noninstitutional atmosphere.

However, solving one problem creates another. For example, the glass wall has solved the problem of "looking out" and gives the patient a pleasant outdoor vista, but creates the problem of "looking in." . . . The patient must either be exposed to the curiosity of all who pass or else close the drapes and be shut off from garden and sky.

To the hospital administrator, the layout appears to have some very objectionable features. Every patient being taken to the operating room must go through the main lobby. Are the bodies of patients who have died taken through the main lobby to the ambulance entrance? Is it esthetically appealing to put your baby in the top drawer and your bedpan in the bottom drawer? There is apparently no space for accounting and no space for medical records.* Is the laboratory space adequate for two or three technicians and 75 to 100 laboratory examinations a day which can be expected?

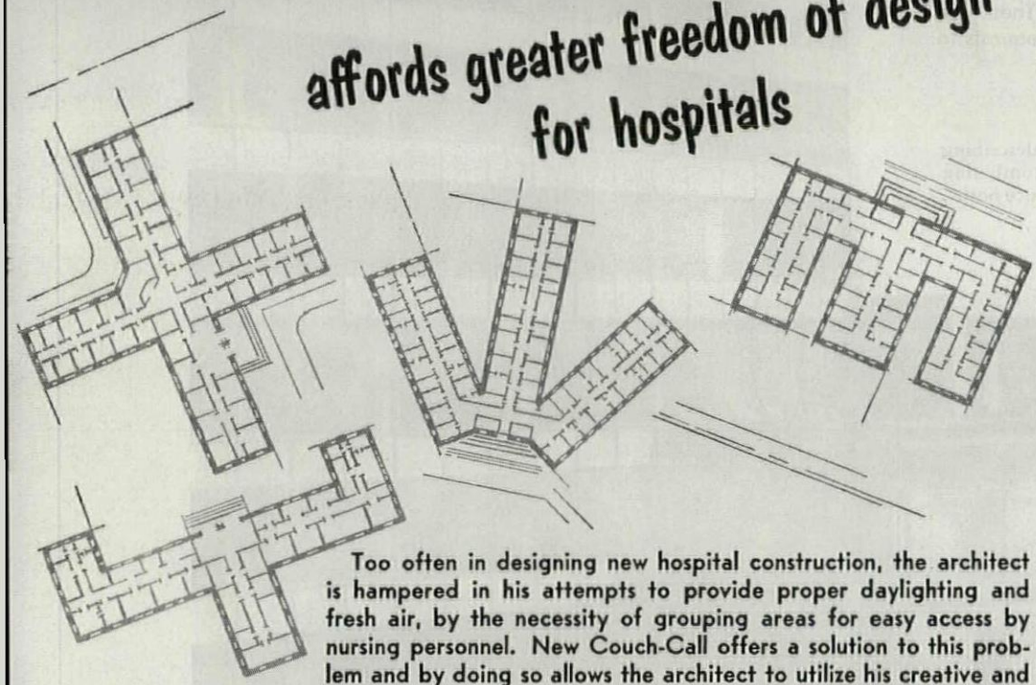
Just as brilliant plans sometimes prove impractical, so fears of functional defects often prove groundless. What we shall look forward to is an objective evaluation of the hospital after a year or so of operation. And, incidentally, to a casual reader of architectural magazines, there are entirely too few articles appraising how the plan has worked in actual use.

RICHARD T. VIGUERS, *Administrator*
Pratt Diagnostic Clinic
New England Center Hospital
Boston, Mass.

* Hospital care is prepaid, gets accounted outside. Records are jointly kept, are stored in clinic.—ED.

NEW COUCH-CALL
NURSES' CALLING SYSTEM

affords greater freedom of design for hospitals



Too often in designing new hospital construction, the architect is hampered in his attempts to provide proper daylighting and fresh air, by the necessity of grouping areas for easy access by nursing personnel. New Couch-Call offers a solution to this problem and by doing so allows the architect to utilize his creative and technical skills without this restriction.

Here are the design advantages offered by Couch-Call:

The nurse can handle more patients and greater nursing area for fully automatic Couch-Call provides two-way voice communication . . . eliminates trips to the patient's bedside in 6 out of 10 calls.

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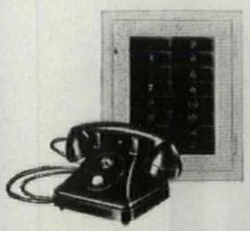
Room stations are automatically reset and are ready for re-use immediately when a call is completed.



For complete details on Couch-Call, write for bulletin 126.

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Cafeteria, Fitkin Memorial Hospital, Neptune, N. J., Ferrenz & Taylor, Architects. A. Tozzini Tile Works, Inc., Tile Contractor

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New, large Mosaic 9" x 6" x ½" glazed wall tile

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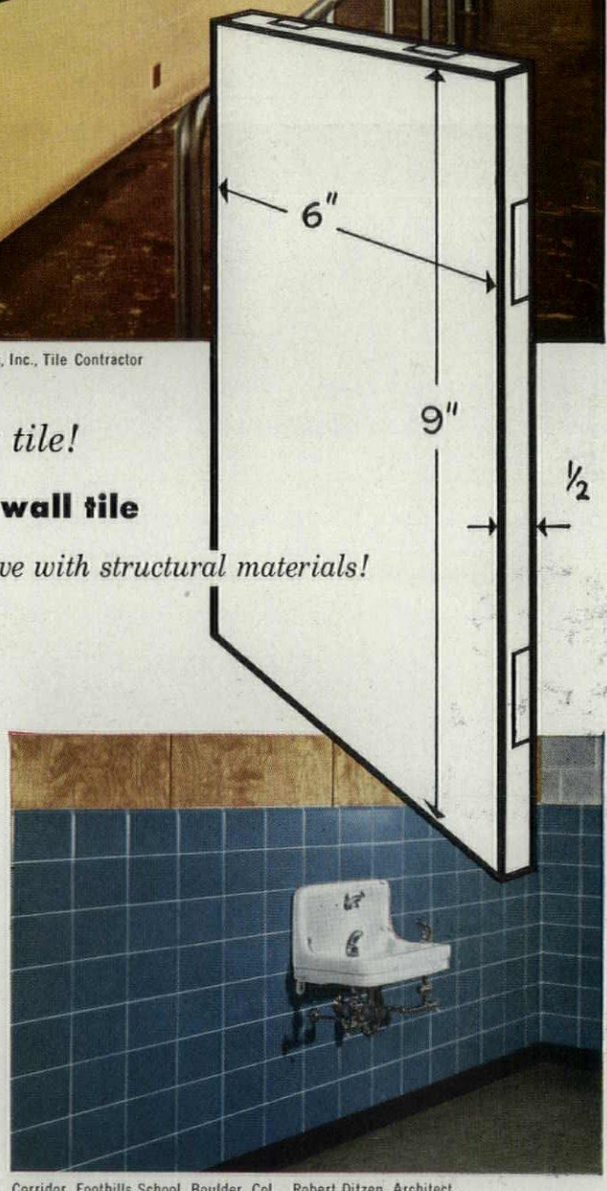

Mosaic 9"x6"x½" Glazed Wall Tile is the ideal material for schools, hospitals, public buildings. Gives large scale character and economical smooth surfaces to large wall areas in lobbies, classrooms, laboratories, natatoriums, cafeterias, kitchens, operating rooms and corridors.

Modern 9"x6"x½" Glazed Wall Tile, like all Mosaic Clay Tile, gives permanent beauty, sanitation, easy maintenance, long time satisfaction. In all Mosaic Harmonitone and Bright Glaze colors, with integral edge spacers for uniform close joints.

Compare this fine, smooth Mosaic Clay Tile with common glazed structural blocks. You'll find it competitive in first cost, really economical through the years. Requires only lowest-cost substructure. No expensive special trim shapes needed for any installation. And, Mosaic 9"x6"x½" Glazed Wall Tile gives you a sturdy, smooth-surfaced, better-finished wall.

For helpful literature on all Mosaic Clay Tile, write Dept. 51-3, The Mosaic Tile Company, Zanesville, Ohio. Visit our showrooms and those of your Tile Contractors.

Corridor, Foothills School, Boulder, Col. Robert Ditzen, Architect.
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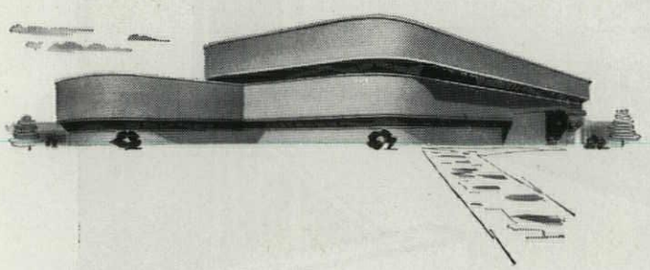
THE SPRINGS COTTON MILLS, Fort Mill, South Carolina



Architect: **Robert & Co. Associates**

General Contractor: **George A. Fuller Co.**

Acoustical Contractor: **W. Morton Northen & Co.**



Tight weather seals around the window sash, perfect shading of the windows, and the relatively small area of glass help save as much as 10% on air-conditioning costs. Noise is greatly reduced in this office by the efficient Cushiontone ceiling.

Springmaid's controlled environment includes sound conditioning

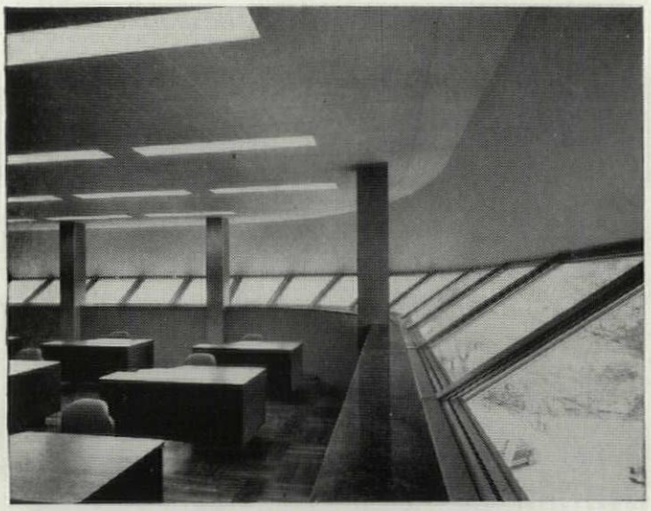
New ideas in environmental controls make the headquarters of The Springs Cotton Mills one of the most interesting and unusual structures in the industrial field.

Windows are set at an inverted angle of 45 degrees to permit maximum daylight illumination with a minimum infiltration of the sun's infrared rays. The entire building is air conditioned, and temperature can be controlled to a ± 1 degree, humidity to ± 2%. Walls contain radiant heating panels to provide winter comfort.

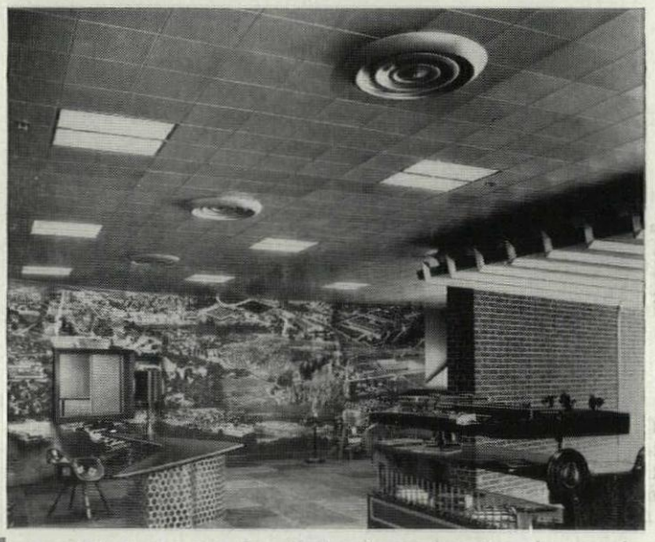
The finishing touch to this controlled environment is ceilings of Armstrong's sound-absorbing materials that reduce noise in the office areas.

Because of its beauty and incombustibility, Travertone, a fissured mineral wool tile, was chosen for many of the executive offices. The large general office spaces called for low-cost Cushiontone, a perforated wood fiber material. In the main lobby, a metal-pan ceiling of Arrestone absorbs up to 85% of disturbing noise, ties in decoratively with the metal fixtures and furniture.

Get full details on Travertone, Cushiontone, Arrestone, and Armstrong's entire line of sound-conditioning materials from your Armstrong Acoustical Contractor. For the free booklet, "How to Select an Acoustical Material," write Armstrong Cork Company, 4209 Rooney Street, Lancaster, Pennsylvania.



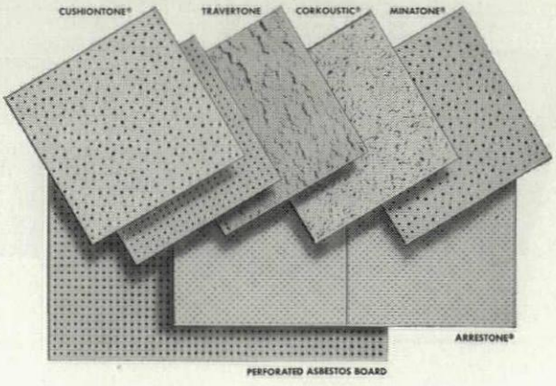
The upside-down window design provides all climate control advantages of a windowless building. In the general office areas, distracting noise is controlled by ceilings of Armstrong's Cushiontone, an easy-to-clean, white-painted acoustical tile.



Discarded machine parts from Springs' own plants have been used to make most of the furniture throughout the offices. In the main lobby, the sound-absorbing ceiling of Arrestone with a bare mill finish blends with the metal furniture and fixtures.



An elaborate control panel on the desk and a conference table that rises from the floor when needed are two of the many unusual features of Col. Elliot Springs' private office. Here, too, is a sound-muffling ceiling of Armstrong's Travertone.



ARMSTRONG'S ACOUSTICAL MATERIALS

Prefabrication COMES OF AGE!









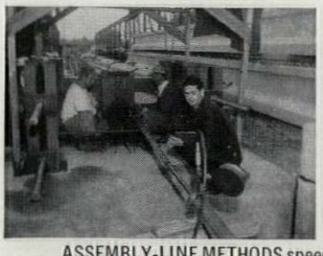
218 Precast, Prestressed Deck Girders, with Spans up to 63', Factory-made for Garden State Parkway Bridges

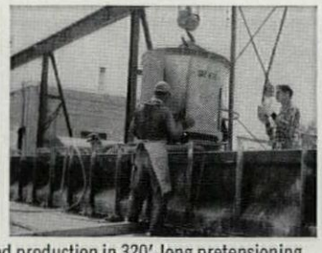
● Precasting continues its rapid spread, as today's building costs intensify the quest for sound economies. The range of concrete prefabrication is greatly widened by prestressing, which makes possible lighter members and longer spans, for buildings and bridges, with substantial savings in concrete and steel. Prestressing is really pre-testing, because a member is subjected to greater loads in fabrication than it takes in the field.

Factory-made, prestressed deck girders, 218 in number, up to 63 ft. in length, for eight bridges on New Jersey's Garden State Parkway, highlight this trend. Designed by GANNETT FLEMING CORDDRY & CARPENTER, INC., Harrisburg, Pa. and manufactured by FORMIGLI ARCHITECTURAL STONE CO., Williamstown Junction, N. J., every member is field practical, for fast erection with minimum supervision.

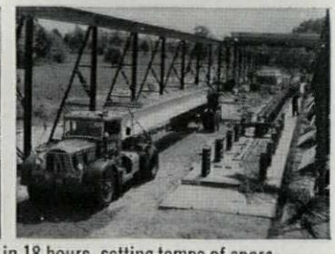
Cost in place invites comparison . . . inherent resistance to fire, weather, rust and rot, with no painting and little or no maintenance, mean further economies . . . marking the coming of age of concrete prefabrication.

For school and residential, commercial and industrial construction, factory-made concrete columns, spandrel beams, girders, roof slabs, provide fire-safety, structural stability and pleasing appearance of concrete, at marked cost advantage.









ASSEMBLY-LINE METHODS speed production in 320'-long pretensioning bench at Formigli's Williamstown Jct., N. J. plant, where 5 bridge deck girders were cast at a time and steam-cured. Facia members were post-tensioned at Formigli's Berlin, N. J. plant. 'INCOR'* 24-HOUR CEMENT produced 4000 psi stripping strength in 18 hours, setting tempo of operation, assuring maximum output at minimum production cost . . . with high ultimate strength and durability, hallmarks of America's FIRST high early strength portland cement. *Reg. U.S. Pat. Off.



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THE MAGAZINE OF BUILDING

architectural **forum**

SEPTEMBER 1954

Published by TIME Incorporated

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* HOUSE & HOME, ARCHITECTURAL FORUM's sister publication, is devoted exclusively to homebuilding.

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Cover: B.C. Electric Co., Ltd. Substation in Vancouver, B.C. Sharp & Thompson, Berwick, Pratt, architects.

VOLUME 101, NUMBER 3

Does atomic radiation promise a building revolution?

For cooperation in the preparation of various sections of this report FORUM *gratefully acknowledges the help of Dr. Bernard Manowitz and Dr. David H. Gurinsky of the Brookhaven Atomic Laboratory; Dr. John Harley and Dr. Hanson Blatz of the New York staff of the AEC; Dr. Walter Isard, specialist in the economics of nuclear fission at MIT; Galen Van Meter, management consultant; and Dal Hitchcock, former program director of the National Security Resources Board, now of Clark, Hitchcock & Associates, management consultants.*

Every statement in this report is attested by at least one of these men, but no one of the seven was familiar with all the news brought together here.

Reliable reports indicate that atomic power is on the verge of transforming the art of peaceful construction as decisively as it has transformed war.

Where war has used atomic energy to destroy materials—and life—construction will use atomic energy to transmute materials to make them serve life better. Here is the spot news.

1. The gamma rays which are a by-product of nuclear fission are being harnessed to change the molecular structure of many materials, sometimes effecting no commercially significant change, sometimes effecting a complete metamorphosis.

Despite vigorous denials the news is now beginning to leak through the screen of industrial atomic secrecy that massive doses of gamma radiation have been harnessed to make an ordinarily soft sheet of plastic stronger than the same thickness of today's structural steel and so resistant to heat that it could be used in the after-burners of jet engines; i.e., so resistant to heat that in building it could be used naked without fireproofing. It can also be made transparent, translucent or opaque at will. It is said to be so hard that it will probably have to be formed before irradiation.

This is in effect alchemy. It reaches far beyond anything heretofore done by traditional chemistry. The sober facts indicate that science has at last achieved the ancient dream of transmuting a base material into a material as different as a Damascus blade from a tobacco pouch and vastly more valuable, though nothing is added—no alloy, no combination.

2. Behind a most elaborate veil of atomic secrecy the big chemical companies are seeking other revolutionary products of gamma radiation to exploit as Du Pont exploited nylon. At least one of them has completed the design for a $60 million pilot plant to put the process on a low-cost commercial basis. Its initial production of irradiated specialities will be measured not in grams, not in pounds, but in thousands of tons.

This is alchemy on an undreamed-of scale.

Today's architects and builders can no more ignore or escape these portents of coming events than today's generals can laugh off the atomic explosion.

This story, pieced together for the first time by FORUM, brings you

1. The news—what has already been accomplished and what is coming (below).
2. The engineering implications, analyzed by Engineer Paul Weidlinger (p. 98).
3. The architectural implications, studied by FORUM's editorial chairman (p. 100).
4. An explanation of how comparatively small quantities of gamma radiation have modified polyethylene and other plastics, by Arthur Charlesby of the British Atomic Energy Research Establishment, condensed from *Nucleonics* (p. 102).

Even before the first successful atomic bomb experiments scientists knew they could alter the molecular structure of certain materials by exposing them to various quantities of gamma rays.

But they had no means of getting enough gamma rays to put the knowledge to practical use outside the laboratory—they were not even able to conduct large-scale laboratory experiments.

On the other hand, from the beginning of atomic research gamma rays have been the most troublesome and useless by-product. Until now, atomic energy plants have had to spend large sums burying the gamma ray by-products deep and safe in the ground or ocean.

The news that makes gamma rays so important for the future is that these two well-known but hitherto not-very-useful discoveries have been brought together with apparently explosive results. It came about this way:

After the war the AEC began spending billions of dollars to develop peacetime uses for atomic power.

First thoughts centered on power plants. Uranium provides a great new supply of fuel (estimated at 23 times the world's reserves of coal and oil) so a major effort was launched to find an economical way to generate electricity with atomic fuel instead of coal, oil or water power.

Before long, however, it became apparent that it would be years before atomic fuel could offer any important economy over coal and oil except in special areas. If it took two decades for Diesels with their 50% better economy to replace steam locomotives, how long would it take atomic fuel to develop a market if it could offer only a 16% saving?

To speed the revolution: a dual purpose reactor

Scientists then turned their attention to developing a so-called "dual-purpose" reactor: one that would produce both electrical energy for industry and plutonium for atomic weapons. The price the government would pay for the plutonium would be set high enough, it was anticipated, to make the operation of such power plants economically attractive.

The coal and oil interests objected, reasoning that this would amount to a government subsidy of atomic competition.

A third possibility presented itself even before these objections were fully voiced. In 1951 the Stanford Research Institute, working for AEC, announced that industry could make use of gamma rays which were then a waste product of the reactors.

At that time, some of the chemical companies—Monsanto and Dow among them—were known to be working on the problems and potentials of a dual-purpose reactor. The Stanford report spurred a new effort to develop a reactor yielding *more* than two products—a multiple-purpose reactor.

To use waste products: a multipurpose reactor

Briefly, here is what such a reactor would produce:

- Heat for electrical power at a price that could be made economical by the income from not one but several "by-products."
- Plutonium for military purposes or to supply fuel for additional commercial reactors.
- Isotopes that have a wide variety of industrial and medical uses, primarily in the fields of industrial automation, tracing particles, measurement of materials and general analysis.
- Alpha, beta and gamma rays and neutrons.*

Such a multipurpose reactor is not likely to perform any one function as efficiently or economically as a reactor specifically designed for that single purpose. The big

* Because of varying degrees of strength, each of these rays will do different things to materials. Alpha rays will be stopped by a piece of paper but are often effective for surface treatment. Beta rays will penetrate only a quarter inch or so and might be utilized in treating thin sheets. Gamma rays are strong enough to penetrate several inches, so presumably they could be used to alter relatively thick materials. Neutrons will knock whole molecules out, but to do so they must hit the core of a molecule—which is often a one-in-many-millions shot.

design problem is, therefore, an economic problem on how far to sacrifice the full efficiency of one function to the needs of another.

For example, the most economical way to get the massive radiation effects necessary to achieve a major change in materials should be to expose them directly to fission, and to do this without making them radioactive requires screens (perhaps of water or boron steel) that will stop the destructive neutrons but let the gamma rays pass through. All this necessitates a design change in the reactor that could be expected to reduce its efficiency for producing electricity or plutonium. Atomic scientists see no insuperable technical reason why gamma rays could not be so harnessed on a large scale. They point out only that there has never been any published word that it has been done.

Research on the multipurpose reactor has apparently moved at a satisfactory pace, for in May Dr. Phillip N. Powers, director of Monsanto's Atomic Project, said very mysteriously to a meeting of the Atomic Industrial Forum:

"Perhaps I can make our thinking most clear by mentioning what I would like to be able to report if I could. I can't. I make that clear, too. But if all were nice and simple in the world, perhaps we would be able to announce that we were about to build with private financing a nuclear reactor of some substantial size from which not one but three sources of income are to be derived. We would be selling heat to produce electricity, to be sure, and this subject is the one which has been most discussed. Second, we would be selling nuclear fuel—to whom, I don't know. Third, we would be manufacturing, through the use of the radiation or the fission products in some way, some chemicals which are of interest to the chemical industry."

How various materials have been transmuted

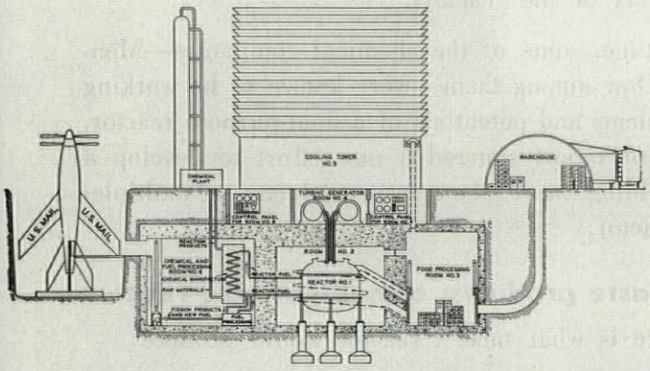
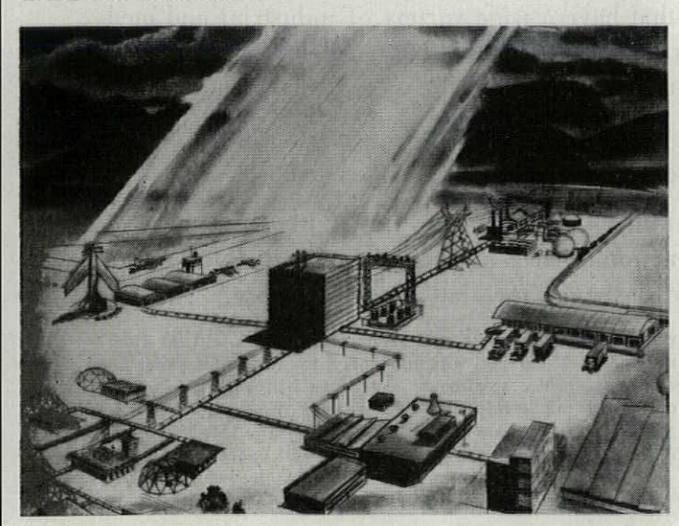


DIAGRAM OF ATOMIC ENERGY PLANT

Atomic processing plant such as the one above would harness chemical and radiological products of nuclear fission to turn out raw materials for plastics, provide food sterilization facilities and generate power. Seen from the outside (below) the plant would appear in the center of an industrial complex—including transportation as well as power and manufacturing units. Designs are by John J. Grebe, Dow Chemical Co.



The alchemy of gamma radiation can alter the molecular structure of many different materials in many different ways. Furthermore, it can alter the same material in different ways depending on the strength and other characteristics of the radiation. To explore all the possibilities of this new philosopher's stone will take at least a generation.

Different as these effects are, in cases where they occur they have three tendencies in common. They tighten up the molecular structure, with these results:

1. They tend to increase strength.
2. They tend to increase the modulus of elasticity.
3. They tend to increase heat resistance.

The search for materials whose value and usefulness can be very greatly enhanced by radiation may well prove like the search for useful antibiotics, where thousands of molds have been tried and found wanting for each one that has shown therapeutic powers.

So far most of the experimenting with radiation has been done on plastics, partly because the big chemical companies heading the research are in the plastics business, partly because the long-chain plastic molecules are particularly susceptible to drastic change through irradiation.

Not much research has been done on irradiating metals, for two reasons:

1. Their simple molecular structure is little affected by gamma rays, which work best when they can cross-link the long chains of plastic polymers. Metals can be changed only by neutron bombardment.
2. After neutron bombardment, metals remain dangerously radioactive.

Experiments with neutron bombardment on carbon and

stainless steels, and nickel and nickel base alloys, are reported in the Aug. 19 issue of *The Iron Age*, which states:

"Materials generally show higher yield strength, lower percentage elongation and somewhat higher ductile-brittle transition temperatures . . . the degree of change seems tied to flux intensity and exposure temperature . . . hardness increases are more noticeable in materials which start soft . . . hardness effects are annealed when exposure temperatures are higher."

Little or nothing is known about what radiation will do to wood as a structural material (or even to plywood, whose plastic binder might easily be affected by gamma rays). Most of the radiation research on wood has focused on making it edible, first as a cattle fodder, possibly later for human consumption.

About the effect of gamma rays on plastics, quite a bit more is known and a little of it has been reported. But it is noteworthy that none of the results published so far is in any way comparable to the revolutionary changes of which news is now beginning to leak out. The effects published to date are hardly of sufficient commercial value to justify the kind of multimillion dollar investment that now seems in prospect.

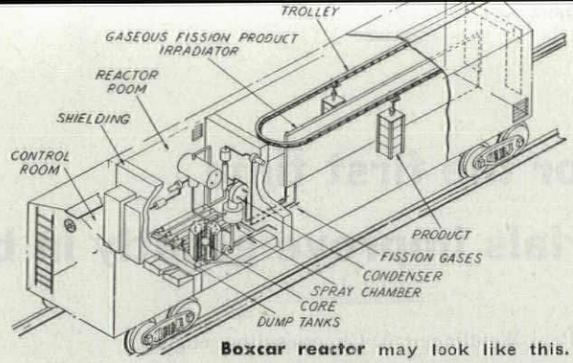
For example, as far back as Aug. '53 *Nucleonics* reported some laboratory tests of the effect of gamma radiation on polyethylene, nylon, Koroseal, Buna-N, neoprene, natural rubber and Thiokol. The results: in all cases a somewhat higher modulus of elasticity, and in most cases an increase in hardness.

At Harwell (England's Oak Ridge) the plastic variously known as Lucite, Plexiglass or Perspex was irradiated and immediately released hydrogen gas bubbles which were trapped inside. The bubbles then swelled up to form a complex of gas-filled cells, thus producing a substance with possible value as insulation.

In the June '54 *Nucleonics*, Arthur Charlesby of the British Atomic Research Establishment at Harwell reported that: "silicones have been successfully cross-linked" (following exposure to gamma rays) and the substance created by irradiation "is transparent and does not flow even at fairly elevated temperatures." Many physicists believe that the irradiation of silicones should produce materials capable of withstanding particularly high temperatures, because the silicones start off with a much higher heat resistance than the carbon plastics.

Charlesby summed up the current state of knowledge concerning irradiated materials with his concluding statement that: "The amount of information obtained to date [on irradiated materials] is limited mainly by the effort devoted to the subject. Large-scale industrial use depends on the availability of suitable sources of radiation."

A suitable source of large-scale radiation is precisely what the new multiple-purpose reactors will provide for the first time.



Boxcar reactor may look like this. Designed by AEC's Bernard Manowitz, it could move from city to city. Military will probably be first users. Material to be irradiated (food, plastic, wood, etc.) enters on trolley and reactor-produced gamma rays are "sprayed" onto substance from freestanding wall in center.

How gamma rays work

How is it done? To take the simplest example, when you expose a plastic like polyethylene to radiation you change the molecular structure by knocking out the "inside" atoms (which tend to weaken the material), so that direct cross-links can be established between the core atoms of different molecules. As these attachments are set up laterally between the chains of a polymer, it becomes more rigid and more resistant to high temperatures.

Similar cross-linking can often be accomplished by traditional chemistry. For example, vulcanizing rubber is a process for producing cross-links.

But radiation is a particularly efficient way of cross linking many materials. A single fast neutron can produce as many as 5,000 cross links in a piece of polyethylene, and in polyethylene a single additional bond per 2,000 atoms will greatly change the properties of the material. As the radiation dose is increased, a network of theoretically infinite extent is formed that includes a large number of the original molecules linked together into one gigantic molecule.

Another major advantage of radiation as a means of changing molecular structure is that it can be used to achieve at low temperature effects which in traditional chemistry would develop so much heat as to destroy the material in the process.

What about costs?

Dr. Bernard Manowitz of the Brookhaven Atomic Laboratories has figured that industry would be justified in investing as much as $21 million in a reactor that would give off enough controllable gamma rays to irradiate a ton of ethylene per hour—*provided the radiation could add 30¢ a lb. to its value.* The best information available indicates, however, that the projected cost of irradiation in multipurpose reactors capable of irradiating 18,000 lb. per hour of a 30¢-a-lb. plastic has been brought down to around 2¢ a lb. This particular plastic is one that responds easily to irradiation. If this cost estimate is correct, it means that irradiated products could be cheap enough for use in the building industry.

For the first time materials improve greatly in both strength and elasticity

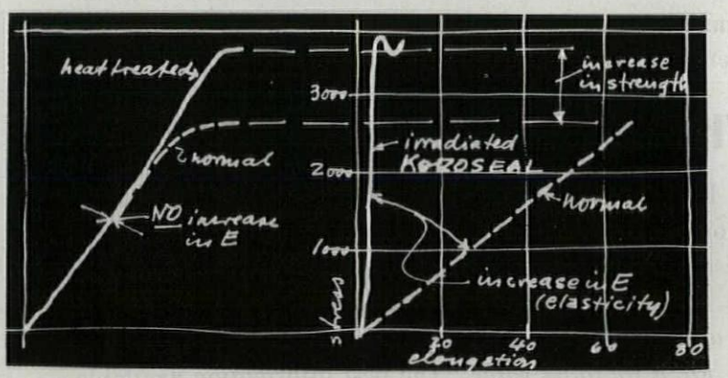
By Paul Weidlinger, ASCE, consulting engineer

FORUM:
Answering your questions to me, and assuming the correctness of your data, here is my reply:

The implications of gamma radiation as disclosed in this FORUM report are too shattering to contemplate quite objectively. There is no doubt that the resulting revolution in building will produce structures which may be unlike anything we have ever known.

In order to visualize the meaning of this transformation let us imagine that a piece of plywood will be transformed into a material whose working stress and elastic modulus would be six to eight times those of the untreated plywood. We would have now a sheet with the strength characteristics of steel with fire protection added but of such low weight that the resulting sheet would be something completely new and unlike anything we have used up till now.

Any speculation along these lines must assume that certain immediate technological difficulties and economic problems of the process have been solved. Then some well-informed guesses can be made by extrapolating the implications of a radiation process which brings about a basic rearrangement of the molecular structure of matter and achieves simultaneously two changes of great importance. These two changes are 1) an increase in strength, and 2) an increase in the elastic constants (i.e. modulus of elasticity and related constants). The result of such transformation for various rubbers and plastics was first published in Aug. '53. I am told that since that time further improvements in the process have been made resulting in increases far above those indicated on these graphs.



How irradiation excels heat treatment: in graph at left, solid line representing heat-treated metal rises higher than untreated metal (dashed line) but follows the same slope, showing no improvement in elastic properties. In graph on right, adapted from *Nucleonics* magazine for Aug. '53, irradiated Koroseal line not only rises higher (increase in strength) but steeper (less elongation and higher elasticity).

This is the first process by which it becomes possible to get an important increase in *both* strength *and* elasticity. Even ancient technology, presumably since the Bronze Age, was able to modify and increase significantly the strength of materials, especially strength of metals, by alloying, annealing, strain hardening and other processes. But until now this increase in strength has never been accompanied by a proportional increase in the elastic modulus of the material, or even any increase at all. All the modern lightweight high-strength alloys show this great gap between strength and elasticity. For example, high-strength stainless and alloy steels may have a capacity which is four to five times as much as that of ordinary structural steel but their elastic properties and specific gravity remain essentially unchanged. High-strength aluminum can approach the strength of steel with only one third the weight, but unfortunately the elastic modulus is also only one third that of steel. The elastic modulus of magnesium and magnesium alloys is also lower in exactly the same proportion as its specific gravity to other metals.

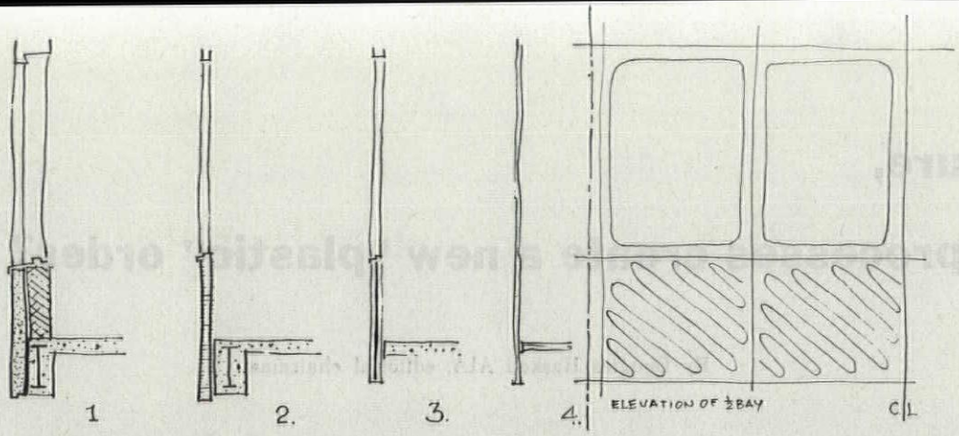
Why full strength has rarely been used

Failure of all pre-gamma ray technology to increase the elasticity of materials along with their strength has (with rare exceptions) made nearly impossible the full utilization of the added strength characteristics. In other words: we would hope that the increased strength would permit a proportionate decrease in the amount of material used. This expectation usually remains unfulfilled, due to the high deformations resulting from the gap between high strength and low elasticity. The type of strength increase obtained at the present time is illustrated in left graph of figure at left.

As our modern structural members become thinner, lighter and slenderer due to more efficient use and higher strength, the importance in physical characteristics shifts more and more from strength to elasticity. In practical language this means that if the dimensions of a structure, say a thin shell, are reduced to approach the minimum permitted by strength requirements, then elastic instability (i.e., buckling) becomes the dominant design consideration, and this tendency to buckle must be countered either by increasing the significant dimensions once again or by providing stiffening elements to prevent or limit the appearance of buckling waves.

Against this background let us consider again the new process which gives materials a great simultaneous increase in both strength and elasticity. For the first time in history, we shall be dealing with materials whose full-strength potential can be utilized to nearly 100% of their capacity.

This would permit structures with completely smooth surfaces, freed from a cluttering of stiffening ribs, crimps or other methods of stiffening. This means that thin shell structures, stressed skin



Progressive thinning and weight reduction: 1) conventional fireproof multistory wall; 2) curtain wall without backup; 3) proposed "industry truss" eliminating fireproofed spandrel beam (p. 152); 4) skin structure of irradiated material fully fireproof.

panels, and *monocoques* will be designed *without* the addition of the above-mentioned stiffeners.

If (as we must assume) the cost of the processing (i.e. irradiation) will be an important economic factor, new methods must be devised 1) to utilize the irradiated material to its full potentialities, or 2) to apply the irradiation process at full intensity only to the essential portions of the structure.

Buckling must be overcome

Using the irradiated material to its full potentialities will involve a renewed effort to create structures which are primarily in tension. The fact is that even though the elastic modulus may be increased in proportion to the strength, the further reduction of the dimensions and other geometric relations may once again make buckling the controlling factor limit in the exploitation of the full-strength potential. It may become necessary, fantastic as it sounds, to create "all-tension" structures: i.e., supporting elements in which all members act in tension. This can be done by the use of suspension and catenary systems and by specific prestressing methods (conceivably utilizing air and liquid pressure) which will impose tensile forces on members which would usually receive compressive loads in use. Emphasis may shift to tension-field girders (which are already used in air-frame design) in which an extremely thin web is permitted to buckle and act purely in tension to resist sheering forces.

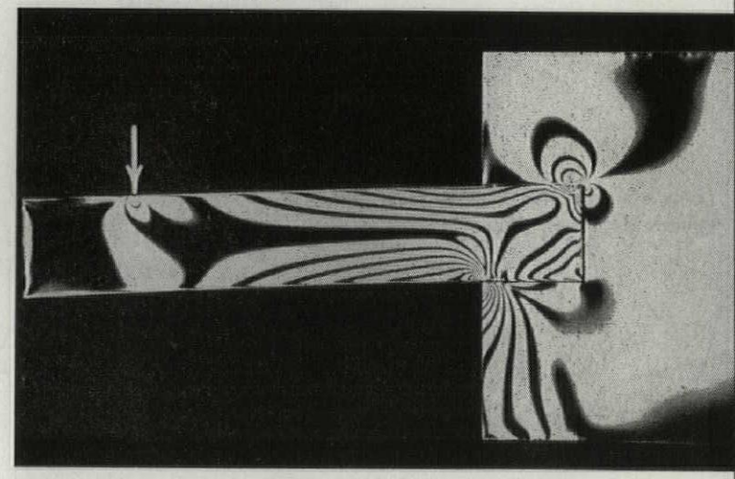
Applying the irradiation process only to those portions of the structure where great strength is needed calls for design solutions both interesting and imaginative, namely, the selective transformation of certain portions of a structure. This is akin to the modification of cell structures for special purposes found in organic structures. Just as nature modifies the cells at critical parts of living things, so this new technology will bring about a selective molecular modification along stress lines.

This would mean that various types of structural components and elements will be "reinforced" by transforming the material only at appropriate locations. For example, in the familiar reinforced concrete girder the function of the reinforcing bars might be taken over by the modified molecules of the original form, or matrix, in which it was cast, which may be concrete but more likely plastic or some metal. Similarly structures subject to buckling (thin shells, stressed skin panels, etc.) will be provided with integral reinforcing ribs consisting of these modified molecules. This integral stiffening rib may appear as a small "superstrength" rib molded into the shell or other surface or ultimately it may become invisible and consist simply of strengthened portions within the thickness of the structure itself. The approximate shape of these "modified molecular lines" can be expected to run along the direction of the principal stresses in the structure, corresponding to the "geodesic lines" of Buckminster Fuller or the isostatic ribs of Nervi's plates.

And of course another alternative is possible if we would be satisfied with the partial utilization of the greater strength: we could use structural elements of ordinary and traditional form in a somewhat reduced scale, with a correspondingly smaller gain in economy. Even this would make possible the use of some forms which heretofore have been impossible due to technological limitations. For example: we might visualize future skyscrapers supported on irradiated "superstrength" plastic imitations of cast-iron Corinthian columns—it is too gruesome to contemplate this implication any further.

With infinite faith in the potentials of modern technology and human progress we can contemplate the shape of structures and buildings to come. The step from the laboratory application to even a limited industrial use must be some time away. Nevertheless, a technological process which will bring about such a deep-going transformation of the physical properties of matter will have similar revolutionary implications. This writer only hopes that the cost of such processing will be sufficiently high for a sufficient time to bring back into focus the importance of creating and designing structures fully consistent with the physical aspects of the material. No other process introduced into the building industry can be more tempting to misuse.

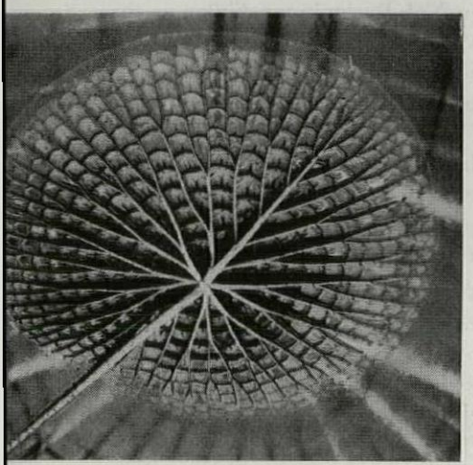
"Photoelasticity," Max Mark Frocht



Photoelastic tests show direction and magnitude of stresses in materials under loading. Irradiation may be carried further in areas under stress. In sheet materials this may sometimes be cheaper than equal over-all irradiation. In the case of columns or beams the contours may follow stress lines leaving out "excess" used in today's shapes to simplify fabrication.

In architecture, will atomic processes create a new "plastic" order?

By Douglas Haskell AIA, editorial chairman



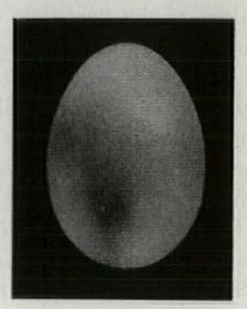
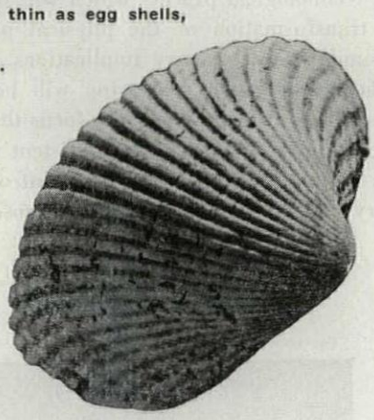


Photo: (left) courtesy N. Y. Botanical Garden; (above) John Ebstel; (opp. p.) J. Maisel; Foto Oscar Savio; Vasari

In nature the material IS the structure.
Future buildings may be as thin as egg shells,
as ribbed as leaves,
as corrugated as sea shells.



A change as profound as atomic creation of new materials must result in a new world of architectural forms.

Given this first opportunity to speculate on the future with the support of some apparently solid evidence, we should grasp the significance as broadly as we can, assuming that obstacles will be overcome. Knowing that irradiation will make soft materials into sheets that are very hard and highly fireproof, let us assume that they will become economical and widely available.

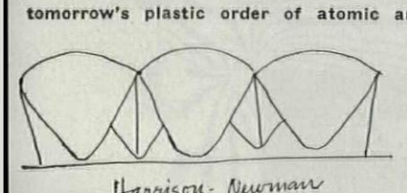
A second "modern" order is then indicated, to which today's "modern" will be just an antecedent. Todays typical "order," as Mies van der Rohe says, is the skeleton frame (heavily fireproofed, wrapped in a curtain wall of panelized materials).

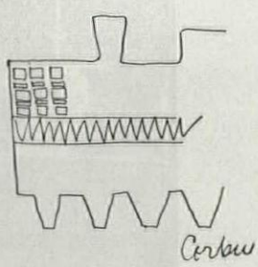
Tomorrow's structure may be typically all "skin." Its skin may be formed to become its shell *and* its interior columns of cellular structure. Even its "windows" may be simply transparent patches of its skin. A single continuous envelope of a thin sandwich material may yield structure and enclosure; resistance to destructive forces from outside; solidity or porosity; control of light and view; insulation for heat and sound, color and finish—all the characteristics we now impose separately.

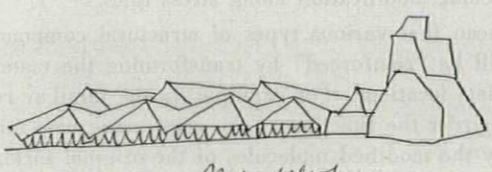
Chemical, electronic, radionic manipulation will be the *dominant process* in "building," which has hitherto been dominated first by handicraft and later by mechanical joinery.

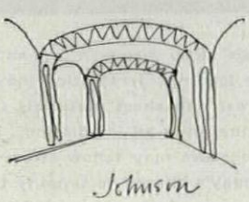
In over-all shape, buildings created by this new extension of *monocoque* principles, already familiar in the construction of airplanes and storage tanks, may well harmonize still better with the world of ships, planes and hangars than with today's typical rectangular "frame" buildings.

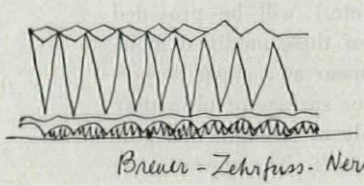
Today's masterpieces are already prototypes for tomorrow's plastic order of atomic architecture.

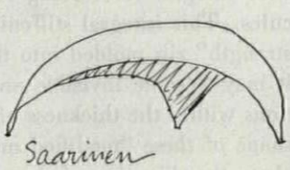






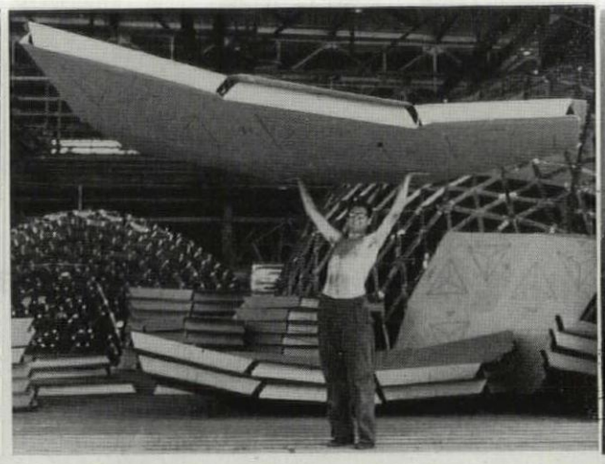








Plastic panels similar to these . . .



will be even lighter than this . . .



creating domes like this atomically

Prototype buildings for the new order are already increasing rapidly in number, since coming events cast long shadows ahead of them. Some recent buildings are sketched herewith. They are by today's leading architects. Their common denominator is that they are more "plastic." Saarinen's MIT dome, Le Corbusier's Marseilles apartments, the UNESCO building of Breuer, Zehrfuss and Nervi, Harrison's church, and above all (not shown) the structures of today's best engineers could be translated with immense advantage into the new plastic mode by molecular irradiation.

Immensely increased fire resistance, immensely decreased weight are an integral part of this architectural revolution. If irradiated plastics will resist fire as promised, then our cities can drop the tons and tons of fireproofing that represent four fifths of the weight of the average tall-building wall and an even higher proportion of time, labor and investment. But this is not all. Since irradiated plastics will weigh something like one seventh as much as steel* of the same strength, floors will weigh a fraction of what they weigh today, and so will the columns or partitions that will carry them.

A corollary is structures of vastly bigger span, especially in buildings such as hangars, where the weight of the structure itself is the major factor to be handled.

Structure, light control, view control, insulation and finish, which today are all separate items requiring separate structural devices, can all be rolled into the one "structuring" procedure. Imagine a wall, for example, made of polyester plastic sandwich with a foam plastic filler. Simply cutting the filler away will leave part of it transparent to serve as "window." The uni-material wall will support itself and insulate itself, and be its own finish.

Building processes will change just as radically. Architecture and engineering and product design and construction will be cross-linked and locked together as firmly as the new atom chains. Building design will be largely a laboratory job, and building materials distribution can follow Buckminster Fuller's lead and carry the lightweight components straight to the site by helicopter.

Considering the vast implications in a statement like that, it is perhaps comforting that the prophecies are long range, that much is still hypothetical, that working out such implications will take a long time. We may need it.

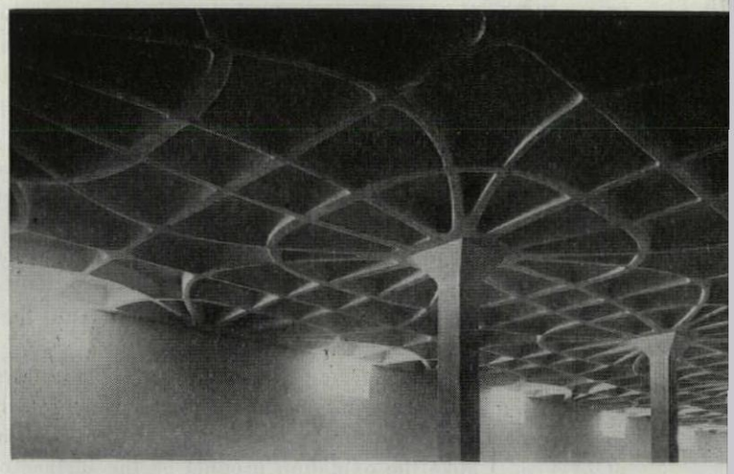
* Steel itself may become a new material through neutron treatment.

Buckminster Fuller's geodesic domes suggest one way of building atomic structures. This one was built at Yale, shipped to the Venice Triennale. Already the material is plastic—polyester resin. Fuller, en route to his Quantico demonstration for the Marine Corps, gave FORUM the following prognostication:

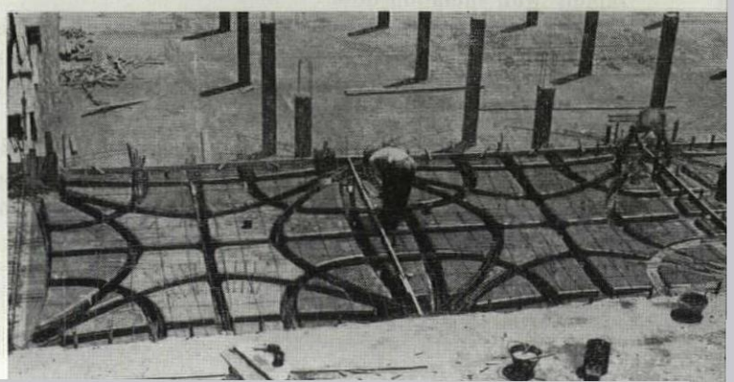
His favored material for atomic irradiation is something like a new Du Pont sandwich of extra-thin plastic sheets with foam plastic filler. These would be rolled out with an impression of all structural components printed on. Sandwich is then folded to shape and irradiated. Shapes are shipped to site by helicopter.

Fuller's Marine Corps domes weigh 900 to 1,000 lb. Using FORUM's figures Fuller suggests that irradiated polyethylene would take 300 lb. per 36' diameter geodesic dome of 1,000 sq. ft. floor area.

This beautiful ceiling by Engineer Luigi Nervi shows exact stress lines as ribs cast into the concrete.



The form used (below) suggests the kind of mold that plastic sheets might be laid on for stiffening. Ribs would of course be smaller. Otherwise pattern could be sewed in, as seams, or even irradiated into a flat sheet.



Even with small doses of irradiation many materials undergo dramatic change

—a report on British experiments by Arthur Charlesby, director of radiation investigations, Harwell Atomic Energy Research Establishment

Condensed from *Nucleonics* magazine

Many long-chain polymers can be modified considerably by exposure to high-energy ionizing radiation. A change of only one chemical bond of many hundreds can profoundly influence a material's physical properties even though the chemical structure is affected very little.

Unlike the effect of radiation on other solids (such as metals), changes once produced in plastics are as permanent as the bonds in the original material. These changes are usually accompanied by removal of the displaced atoms in the form of a gas. When radiation removes an atom from its molecule, the atom is extremely unlikely to find an equivalent position in which it can settle in the structure.

The number of bonds affected is considerably greater than the number of primary collisions with the incident high-energy particles. A fast neutron may produce 5,000 bond changes at 20 ev each. Thus, the process often can be relatively economical as far as conversion of energy to chemical change is concerned. For example, in polyethylene an additional bond per 2,000 carbon atoms will greatly change the properties of the material.

Radiation causes molecular linking

The individual molecules in polyethylene, polystyrene and rubber are linked together by chemical bonds whose formation is induced by radiation. The cross-linking profoundly affects melting and solubility. Density of cross-linking is directly proportionate to the radiation dose.

Radiation doses to achieve these effects in polystyrene are far greater than for polyethylene. A polystyrene molecule containing an average of about 8,000 carbon atoms in the main chain length would only need about 0.02 units to achieve the same cross-linking. The difference can be ascribed to the benzene ring in styrene, which stabilizes many organic compounds against the effects of radiation.

As in polyethylene, surface oxidation occurs when polystyrene is irradiated in the presence of air. After considerable irradiation, a brown powder is formed that contains substantial amounts of oxygen. Unlike the oxidation product on the surface of polyethylene, this material is not sticky and can be removed readily. Apart from this slight oxidation the only obvious change to irradiated polystyrene rods is a yellow coloration that increases rapidly with radiation dose.

For a small amount of radiation and cross-linking, the molecular weight distribution is altered with a corresponding change in the viscosity of the product when dissolved. For such radiation doses certain molecules become linked together in pairs, threes, etc. As the radiation dose is increased, a point is reached where a network of theoretically infinite extent is formed that includes a large number of original molecules linked together into one gigantic molecule.

Several theoretical studies have been made of the variation of gel fraction with cross-linking density—the latter being accurately proportionate to radiation dose. The relation is found to depend on the initial molecular weight distribution.

Irradiated polystyrene also has been used in connection with studies of swelling of cross-linked polymers. A cross-linked polymer will swell in compounds that are usually solvents for the uncross-linked molecules. The solvent molecules (benzene, toluene) enter the network and try to force the molecules apart. This tendency is resisted by the elastic properties of the cross-linked network. With higher degrees of radiation (and, hence, of cross-linking) the swelling is reduced.

By calibrating the swelling of a series of polymers cross-linked by irradiation it should prove possible to provide laboratory standards of cross-linking for use in industrial and research laboratories dealing with polymer behavior.

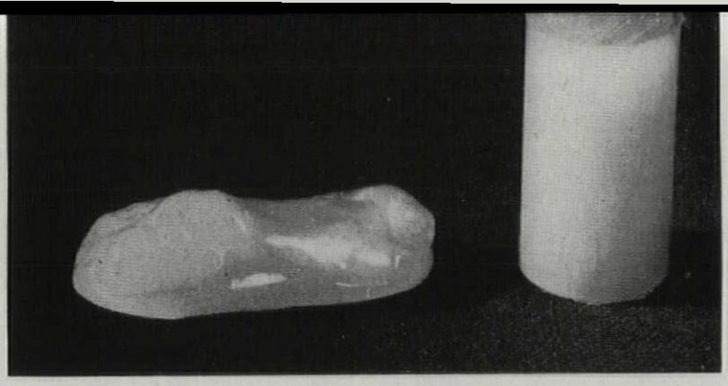
Rubber can be considered a naturally occurring polymer that, for most practical purposes, has to be vulcanized (cross-linked). This cross-linking can be achieved by exposure to ionizing radiation alone, without introducing sulfur or accelerators and without heat treatment. The process can take place in the absence of oxygen, and the degree of cross-linking is proportionate to the radiation. The efficiency of cross-linking is somewhat higher for rubber than for polyethylene. Cross-linking efficiency can be deduced both from swelling experiments and from the network's elasticity.

The property of cross-linking is not confined to long-chain polymers with carbon atoms in the main chain. Silicones have been successfully cross-linked, the amount of radiation required being smaller for the longer molecules, as is to be expected if cross-linking occurs at random. The cross-linked polymer formed is transparent and does not flow even at fairly elevated temperatures.

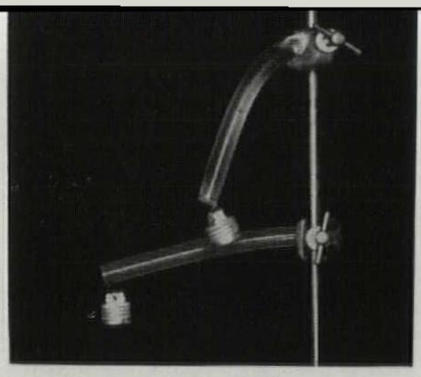
Valuable commercial uses are coming

Apart from its use in research work, the possibility of producing cross-linked, degraded or foamed material under accurately controlled conditions by a purely physical process can well have valuable commercial possibilities. These will depend on the cost of irradiation, the enhanced value of the material, and the comparative cost of the competitive chemical process (where one is available).

Since the phenomena occur equally well whatever the source of primary high-energy radiation (electrons, X-rays, gamma rays, fast neutrons, etc.), the most suitable form of radiation will depend on the cost of the source and the ability to produce radiation of useful penetrating power. High-energy electrons obtained from linear accelerators have penetrations of only a few millimeters



Heat resistance of polyethylene after it had received what will soon be considered minor doses of radiation is demonstrated by this comparison. Blob at left is unirradiated polyethylene; cylinder at right is same material treated with as large a dose of radiation as science could muster at time of tests. Both samples had been subjected to same amount of heat.



Photos and chart from June 1954 issue of "Nucleonics," Copyright 1954 by "McGraw-Hill Publishing Co. Inc."

Strength of even slightly irradiated polyethylene is dramatically shown in this comparison. Top rod received 0.6 units of irradiation, but weight attached to end of it pulls rod way down. Bottom rod received three units and was better able to support weight.

and, thus, seem most suitable for thin specimens. Gamma radiation is so penetrating that fairly considerable thicknesses of material are necessary if full use is to be made of the energy available. The use of reactors appears feasible. Irradiations can be carried out in the shield, thus making use of energy otherwise wasted. However, installation of conveyor belts or similar methods of feeding specimens into reactors, and postirradiation storage in the immediate vicinity of the reactor, might raise engineering objections.

Costs seem to be reasonable

Use of high-energy radiation on a commercial scale appears promising in a number of fields. In many cases the required radiation doses run into at least several million roentgens. It is too early to make any reliable calculations of costs, but very rough estimates may be of interest as an order-of-magnitude indication.

If we assume an installed and operating cost of $1/curie a treatment needing 1 million roentgens, a source of half-life ten years, a gamma source emitting 1-Mev gamma rays, and an overall efficiency of 10%, the cost of processing will be $100/ton, or 5¢/lb.

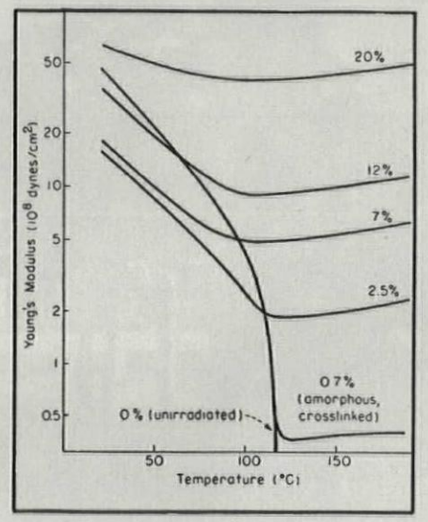
This estimate is very rough indeed; the cost of producing, installing and operating fission-product sources is not known, nor is the efficiency with which radiation can be absorbed. However, these figures indicate that costs are not necessarily exorbitant for certain modifications in plastics.

In the cases of oils or shorter chain compounds in which several units of pile radiation are needed to produce useful changes, the costs are much higher. Two units of reactor radiation (or 10-million roentgens) would, on these bases, cost about $5 per lb. It is for this reason that the more promising commercial applications of cross-linking lie in the field of long-chain polymers. This is where small degrees of cross-linking result in marked and often desirable changes in physical properties.

Industry needs radiation

A considerable need for sources of high-energy radiation appears to be arising for a variety of industrial purposes. Design of equipment to provide such sources at an economical cost is most desirable. The modification of polymer properties is only one of the possible applications of such sources. They also could be used for sterilizing pharmaceuticals and foodstuffs.

The amount of information obtained to date is limited mainly by the effort devoted to this interesting new subject. Large-scale industrial use depends on the availability of suitable sources of radiation.



Ability to change elastic properties of polyethylene through irradiation is charted above. At first there is a drop in Young's modulus until usual melting point is reached (about 115° C). Unirradiated polyethylene becomes viscous liquid at this point; irradiated polyethylene is transformed into transparent and elastic material that is amorphous in character. The five lines and percentages represent different doses of radiation.

How irradition affects common plastics

Polymethyl methacrylate (Lucite, Plexiglas and Perspex) shows most strikingly the effects produced on the main and side chains by exposure to high-energy radiation.

After irradiations of the order of one unit at about 80° C., the polymer swells into a foam or mass of bubbles consisting mainly of hydrogen, carbon monoxide and carbon dioxide, which are the main breakdown products of the side chain. Increases in volume of the order of eight times can be produced.

If irradiation is stopped before the foaming stage is reached, and the specimen is subsequently heated, the same process of foaming takes place. The higher the radiation dose, the lower is the temperature needed to produce this effect, at least for temperatures above about 70° C.

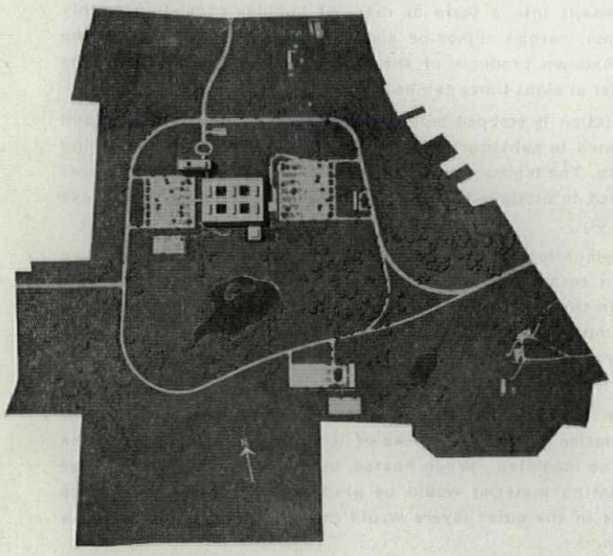
The explanation is that radiation produces side-chain fracture at random throughout the specimen, and the resultant gases are retained in the solid until a combination of increased pressure (due to the temperature rise) and weakened polymer structure causes bubble formation. Bubbles do not occur near the surface; the gases produced there can escape.

One can envisage a possible use for this irradiated polymer for heat insulation purposes. Blocks of it could be placed around the vessel to be insulated. When heated, bubble formation would occur and insulating material would be produced in situ. The absence of bubbles in the outer layers would result in a material having a tough skin.



© *Ezra Stoller*

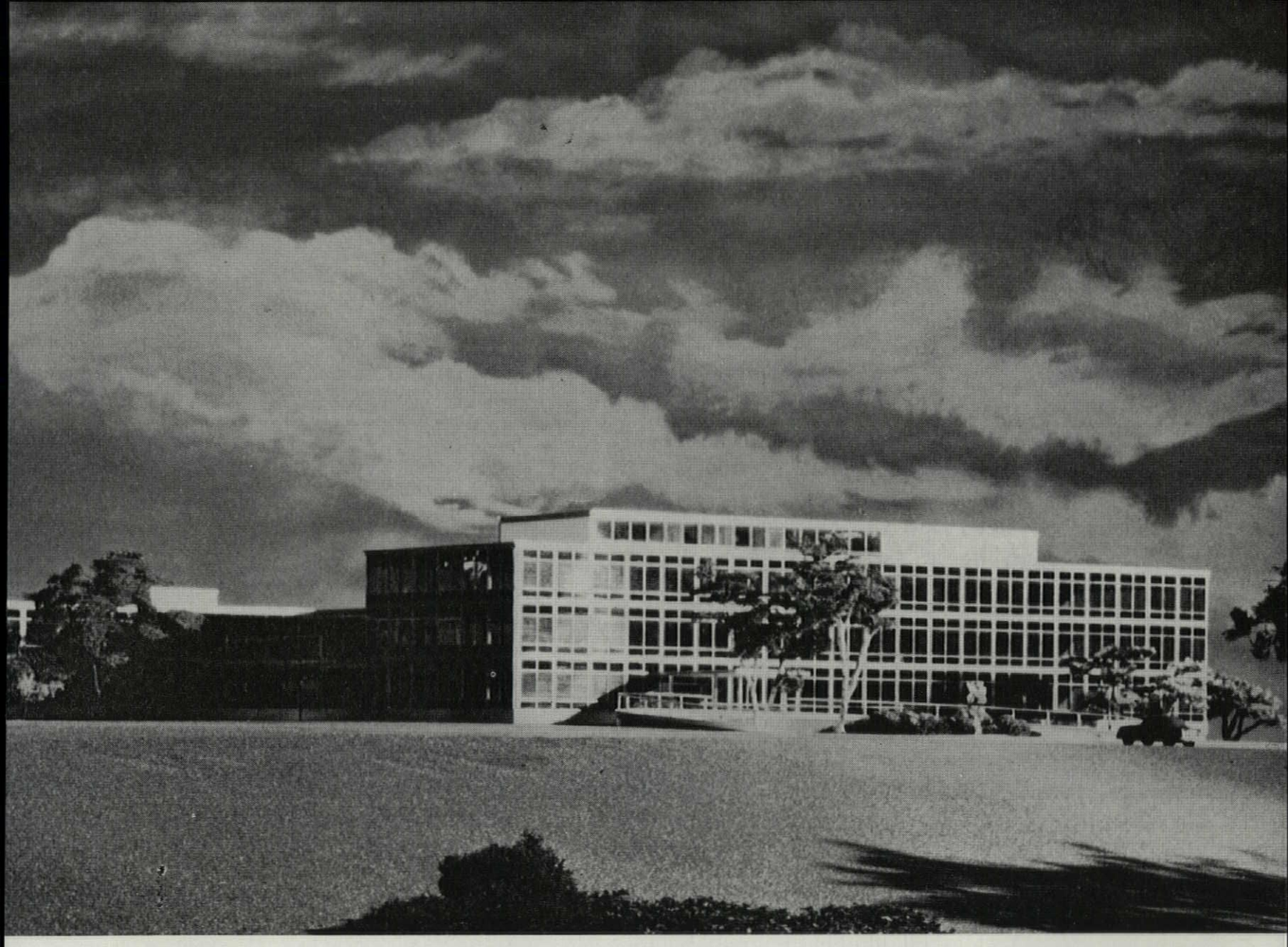
RURAL INSURANCE PLANT: Connecticut General takes a tip



Site covers 268 acres 5 mi. northwest from downtown Hartford

"A life insurance company has a work flow which is very similar to the operations of a light manufacturer. While we do not assemble radio sets or vacuum cleaners with stamping machines or lathes, we do, in a sense, assemble pieces of paper with the use of such tools as typewriters and calculating machines. We use a different type of personnel to do it. . . . but the nature of the problem is the same."

This is the key statement in the programming of the new 500,000 sq. ft. home office the Connecticut General Life Insurance Co. will erect on a rolling stretch of farmland 5 mi. from the insurance mecca, Hartford. The seed of the statement came even before the programming began, when the company's president suggested to Skidmore, Owings & Merrill's designers that since the company was moving to the country, he thought the building should be kept low, so everyone could be near the ground. But the seed was a long time growing, through months of conferences, and hundreds of hours of detailed study of the real needs of an insurance company, as opposed to the auto-

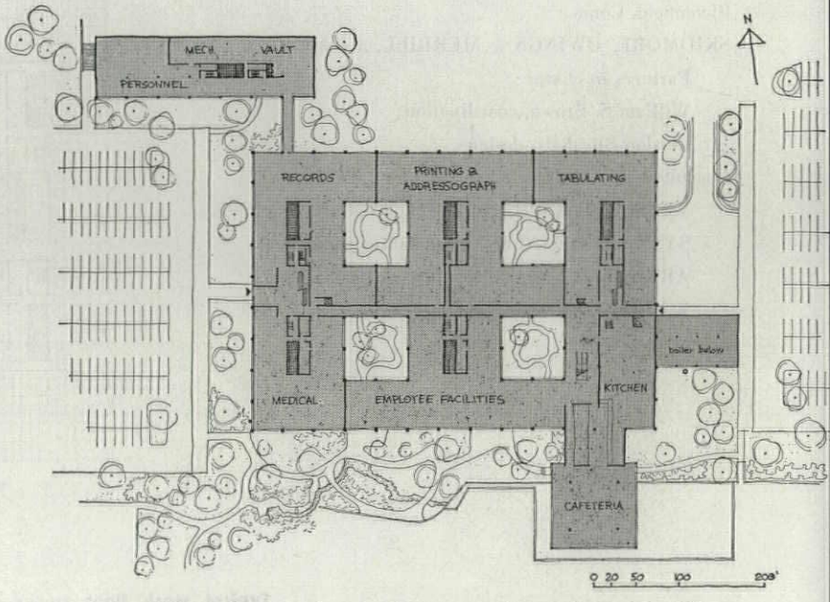


Model photograph of planned structure; administration wing is to right, main body of building to left

from industry, plans a horizontal office building without columns and partitions

matically pompous solutions of most of the structures in Hartford. SOM's partners call this client the most thorough they have encountered: "They didn't investigate our references by mail; they got in a plane and went and looked at all the big buildings we'd ever built."

Connecticut General's new building will be basically a long, horizontal stretch of three unencumbered floors, approximately 140,000 sq. ft. per floor. There will be no interior columns, no floor-to-ceiling partitions in main clerical areas (light screens instead), no barriers to interior departmental expansion or horizontal expansion of the building itself. And most important, no employees will be stationed more than 35′ from the continuous glass windows (heat and glare absorbing). To accomplish this in the big 325′ x 475′ rectangle of the main wing, the designers sank four large interior gardens into the rectangle. Adjoining this main bulk of clerical space will be a wing for the cafeteria, one story high, glass walled, cantilevered over a pool, and a wing for specialized departments off the production flow, four stories high.



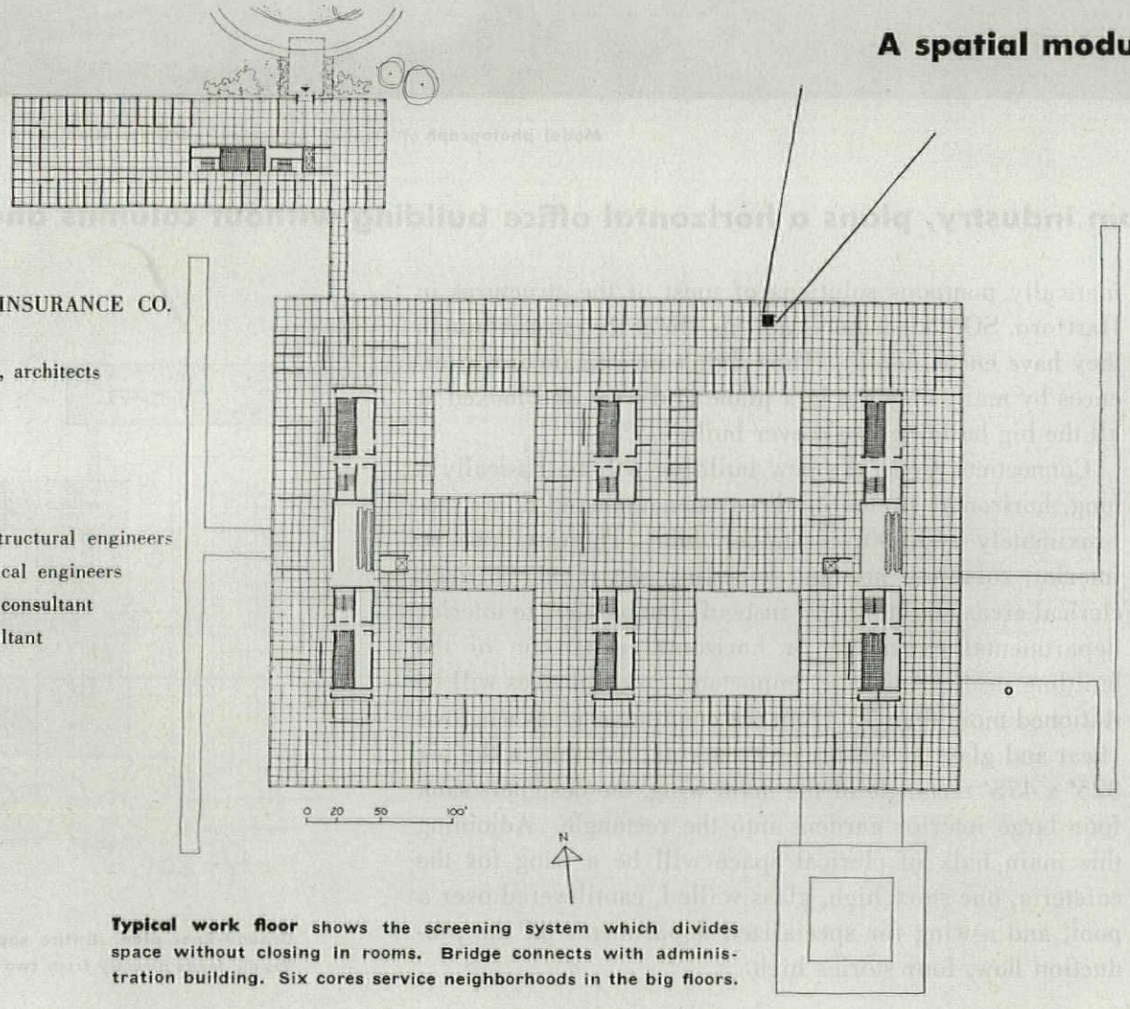
Ground-floor plan. Entire south exposure is employees' facilities. Traffic feeds directly from two 500-car parking spaces to escalators.



South facade: heat- and glare-absorbing glass will shield sun. To right is the pagodalike cafeteria, cantilevered over pool

A spatial module

CONNECTICUT GENERAL LIFE INSURANCE CO.
Bloomfield, Conn.
SKIDMORE, OWINGS & MERRILL, architects
Partners in charge:
William S. Brown, coordination
Gordon Bunshaft, design
Consultants:
WEISKOPF & PICKWORTH, structural engineers
SYSKA & HENNESSY, mechanical engineers
ARTHUR W. DANA, restaurant consultant
WALTER VOSS, technical consultant



Typical work floor shows the screening system which divides space without closing in rooms. Bridge connects with administration building. Six cores service neighborhoods in the big floors.



Model by Theodore Conrad; photo: © Ezra Stoller

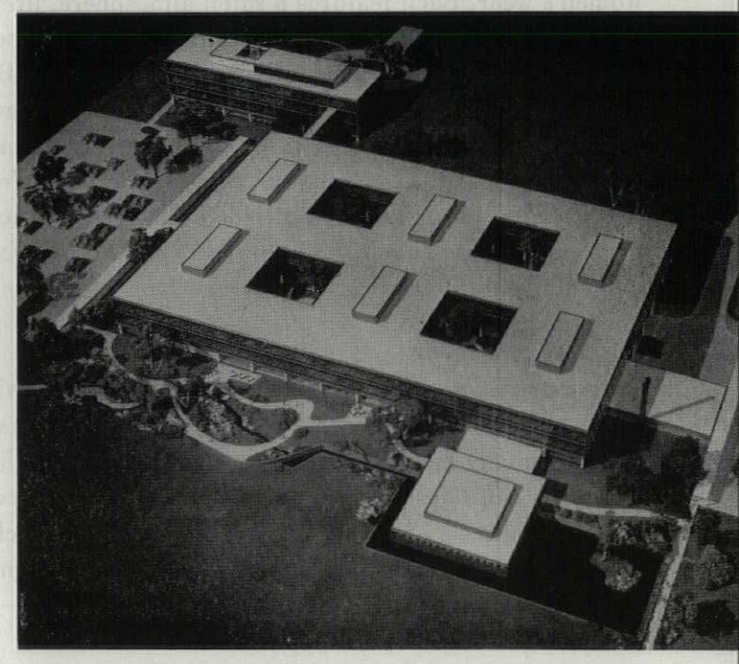
makes the building fit the employees just as the structure fits the loads

Basic planning assumptions started with the decision to allot a unit of 60 sq. ft. per clerk (modified subsequently to 48 sq. ft.), with supervisors and technicians of nonofficer rank allowed two or three basic units, intermediate officers allowed four units, and ranking officers (other than the president) six units. To areas determined by these standards are added machine and file areas, conference rooms, corridors, etc. (Capacity of the structure will be 3,000 employees.)

The horizontal sweep of the big work floors will make it especially easy for the small departmental expansions and realignments that can work such havoc in a vertical office building. Circulation up and down in the six service cores will be by escalator, with elevators for freight service. An electrical conveyor system will deliver files and papers anywhere throughout the building within 16 minutes.

Spanning the main areas will be 60′ girders on 12′ centers, resting on exposed steel columns; the walls between columns will be fixed glass in 7′ x 11″ panels above sill level, and from the sill down, porcelain or glass insulated panels. The wall will be flush inside and out, with a window-sill depth equal to the column depth.

Openness and flexibility will be retained inside the building by using bright-colored acoustical screens to divide areas, instead of full partitions. All glass will be fixed. Air conditioning may use well water. The site is almost surrounded by good roads; quick dispersal of employees to these roads is the objective of the 2 mi. of highway within the site (see plot plan, p. 104). Completion is set for 1956.



Expansion plans project growth of main bulk of building to west (left in model photo, above) with repetition of structural bay and open court system. Small wing jutting to right is power plant.

SIX NEW STORES...

that show it is not so much what you do as how you do it

Here are six stores that have all gotten off to a successful start. Yet on the surface it would be hard to find six more various approaches. Pairing them off according to similarity of problems—two showrooms, two specialty shops, two chain stores—highlights some of their differences.

The approach paradox of the two showrooms: each of these establishments—one for selling typewriters and business machines, one for selling airline transportation—employs the design device of a bold and definite exterior frame edging a glazed front. But in the case of Olivetti (opp.), the frame serves as the proscenium of a space; the picture inside the frame is the interior. In the case of Northwest Orient Airlines (p. 114) the frame is the surround of a composed facade; the interior is tantalizingly glimpsed but it retreats. Two fundamentally different ways of saying "Come on inside the frame."

The display paradox of the two specialty shops: each of these establishments sells high fashion, fairly expensive women's wear. Each features a salon atmosphere, fireplace and all. (Each of the businesswomen-owners chose her architect because she liked a house he had done.) But in the case of Irene Sargent's in San Francisco, the merchandise is tucked behind the scenes; only a come-on minimum is displayed (p. 118). In the case of Cricket West in Kansas City, most walls and dividers are display racks; a maximum of merchandise is on view (p. 120). Two fundamentally different ways of saying "Our wares are lush and wonderful."

The paradox of client-architect relationship in the two retail chains: each of these nationwide organizations has many new store plans in work at once; each uses prototype store designs, modified for site, size and experience. In the case of Grant (p. 123) the company architectural and construction department gives many design jobs to outside architects. In this instance, the architect—who controls a construction firm—was given an unusual package commission to construct the buildings as well. In the case of Rayco (p. 124) the company architectural department—which is now branching into advertising and product design for the firm—does all store designing itself. Two different approaches to the chain-management problem of combining lively architectural thinking with design consistency and specialized understanding of the chain's operation.

From the results—from the way the clients and the customers feel about these six jobs — it is impossible to say that any one approach was better than its opposite. All six stores are striking practical successes.

What do all six have in common? First, obviously, as the plans and photographs show, whichever approach was selected, it was carried out consistently and well. Each shows the thought that went into the *how* of carrying out its merchandising premise.

Second, it turns out that each of these jobs happened to be blessed with a particularly happy architect-client relation. Without exception, each of the architects found himself fascinated with the client's problem, enthusiastic about his purposes and respectful of his ideas. Without exception, each of the clients selected his architect or designer with a realization of the full importance of professional services and followed this up with respect for the architect's thinking. Each job is a reflection of *how* client and architect worked together as people.

The moral of these six examples is that stores have almost as many different ways as human beings of making themselves attractive and useful, but fishing these out is a problem of professional imagination.

And to show how far selling can go, our six shops are followed by one final paradox—a "store" that is without salespeople or customers but that does a bang-up job of advertising its merchandise (p. 126).

1. *For business machines, a three-dimensional walk-in poster (below and following)*

2. *For airline ticket sales, a cool and urbane assist from the Japanese (p. 114)*

3. *For a specialty shop, the old-fashioned genteel salon with a new twist (p. 118)*

4. *For another specialty shop, self-selection infused with elegance (p. 120)*

5. *For a chain-variety store, closed-up walls with a top glow (p. 123)*

6. *For purveying auto seat covers, a drive-through upholstery shop (p. 124)*

And for selling electricity, a "store" without salespeople or customers (p. 126)



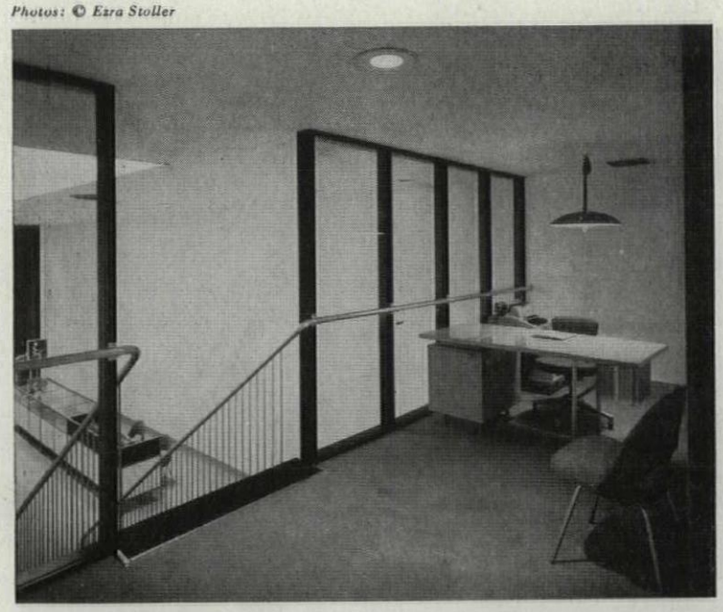
Exterior and interior design are one in Olivetti's new San Francisco showroom. Three-dimensional quality of handsome posterlike composition is pointed up by off-center door-light-stair axis and by boxlike design of mezzanine within main box.

© Ezra Stoller

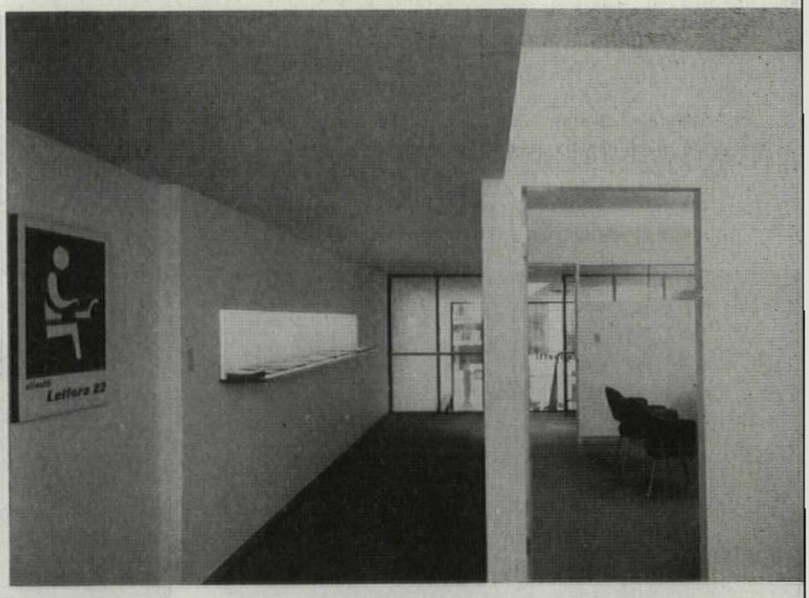


Interior is an open-ended white box, its purity twice accented: with dignity of old Roman statue, with cheerfulness of bright color spots.

Photos: © Ezra Stoller



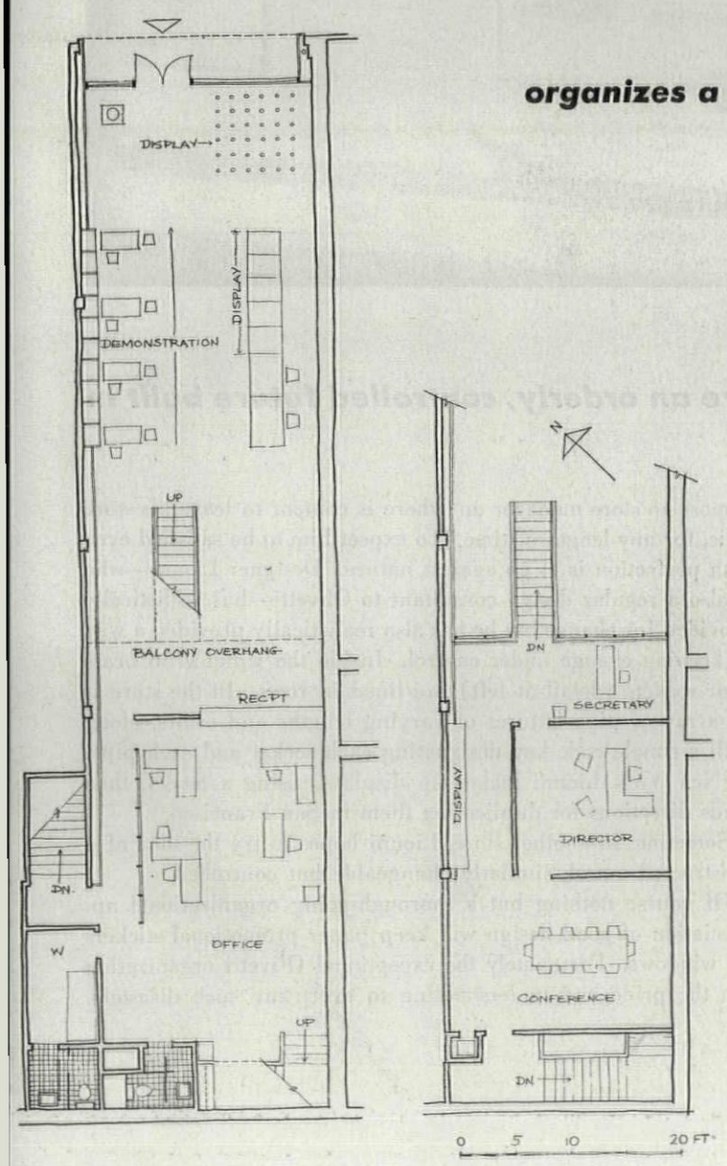
Mezzanine reception area surveys sales space and entrance. Mezzanine construction is steel, inserted into very old building of wood and masonry. Basic space and construction of building was little altered.



Mezzanine corridor has simple wood shelf for literature with light box above and red panels between shelf ends and light. Store Designer Lionni also did trademark poster depicting typing figure.

1. ORDER WITH GAIETY

organizes a typewriter salesroom into one arresting picture



"Stores should be civilized places," thinks Designer Leo Lionni. "They should say something about our more lasting values."

Here something plainly lasting is the 2,000-year-old museum piece of Roman sculpture at the entry. But equally lasting, we may hope, is the highly civilized appreciation of order and gaiety, the pleasure in kinship between contemporary classic and antique classic, and the designer's and architect's obvious feeling that the continuity of the ages is a source of riches and delights rather than a ponderous burden.

Inevitably this shop will be compared with the Olivetti showroom in New York (AF, Aug. '54). The two are as dissimilar as lush midtown Fifth Ave. is from the gray old San Francisco street where this white box shines out among a hodgepodge of weary office supply stores. But the civilized Olivetti touch is unmistakable in both. Lionni comments that this company's extraordinary basic design unity results neither from an iron hand nor a belief in unity through devices, but from "a group of people who think about design in the same way: this is the highest kind of integrated design I know of."

The only overt similarity between the two stores—typewriters mounted on pedestals—was arrived at by designers of each shop independently, unbeknownst to the other. They both simply hit on a similar vocabulary for declaring a product is light and handsome.

OLIVETTI SALES CORP., San Francisco office
LEO LIONNI, designer
GIORGIO CAVAGLIERI, architect
FRANK F. EHRENTHAL, supervising architect
GINSBURG & SMITH, ventilation engineers
CHARLES O. JONES CO., general contractor

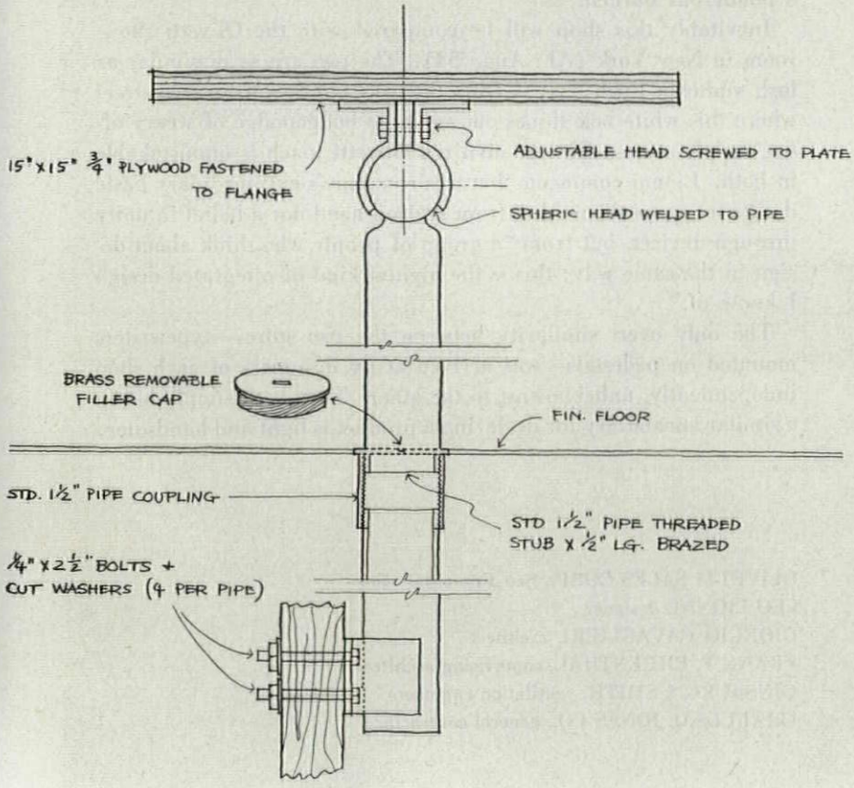
Window display emphasizes lightness and design of machines by mounting them on colored pipes.

Display flexibility is achieved by varying arrangement of standards, posters and machines.





Typewriter displays have an orderly, controlled future built in



Almost no store manager anywhere is content to leave his store as is, for any length of time. To expect him to be satisfied even with perfection is to go against nature. Designer Lionni—who is also a regular design consultant to Olivetti—has realistically provided for change but he has also realistically provided a way of keeping change under control. Inside the window 36 brass floor sockets (detail at left) are lined in rows. In the store is an array of pipe fixtures of varying lengths and colors, along with a simple code key designating each socket and each pipe. In New York Lionni makes up displays, using a model, then sends directions for duplicating them in San Francisco.

Sometime in another store, Lionni hopes to try the idea of a constructed mural, similarly changeable but controlled.

Of course nothing but a thorough-going organizational appreciation of good design will keep paper promotional stickers off windows. Fortunately the exceptional Olivetti organization has the pride and understanding to avert any such disasters.



Showcases eschew the ponderous look usually associated with business machines. Row of wall boxes is strip of colors. Floor case has 1" x 1" angle iron and T-bar frame; ¼" plywood panels hide wrapping counter, reserve shelves and supply drawers.

Stair is airy construction of fir stringers reinforced with 4" x 4" angle irons, oak treads and aluminum railing. One of store's most effective, though unobtrusive, design features is axis formed by stair, shielded ceiling fluorescent light strip, and entrance.

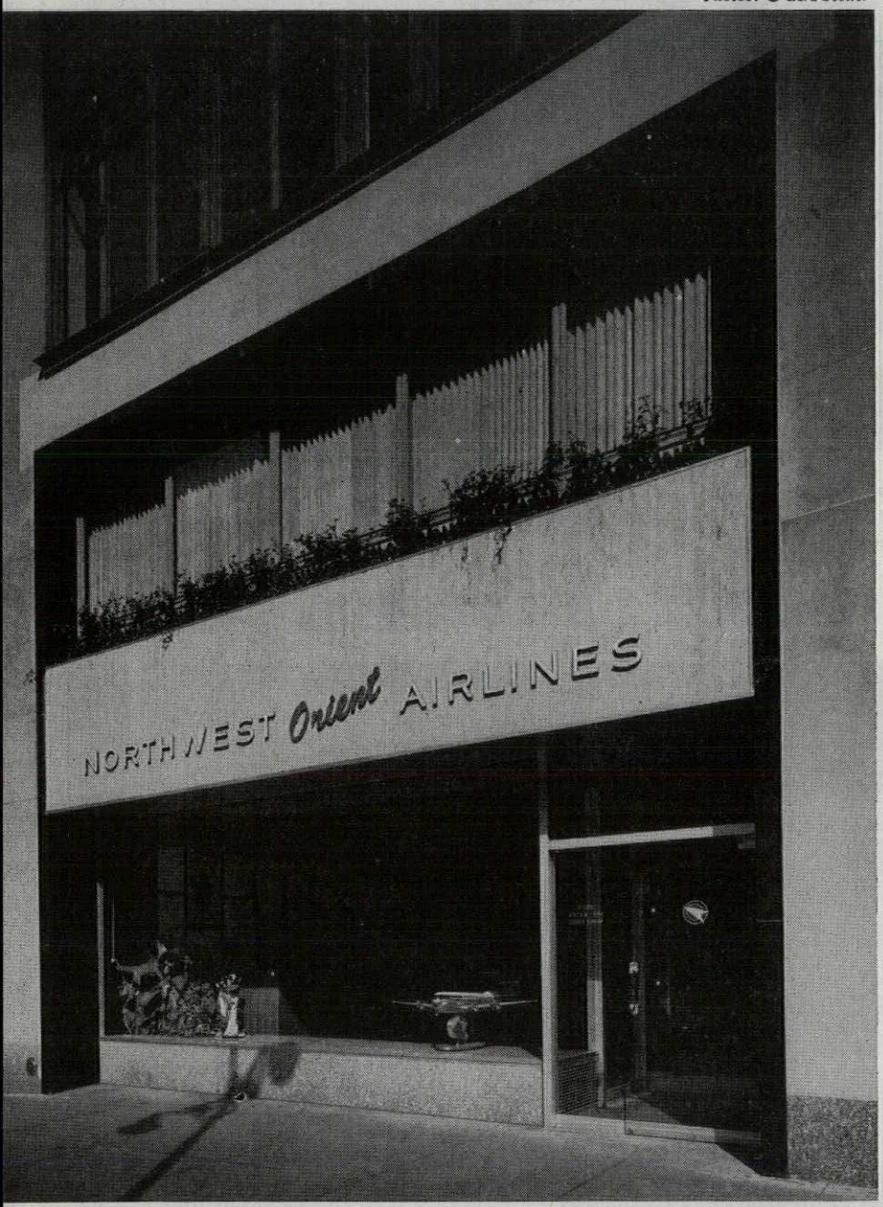


Offices under mezzanine are divided from sales space by counter to which customers bring machines for repair (see also photo above). Note corridor divider of plywood panels in wood uprights.



2. TICKET OFFICE DRAMATIZES

Photos: © Ezra Stoller



Exterior is two-story chunk of big office building framed with black serpentine. Letters are stainless steel with porcelain enamel faces against serpentine slab. Pivoting upper windows have vertical wood blinds.



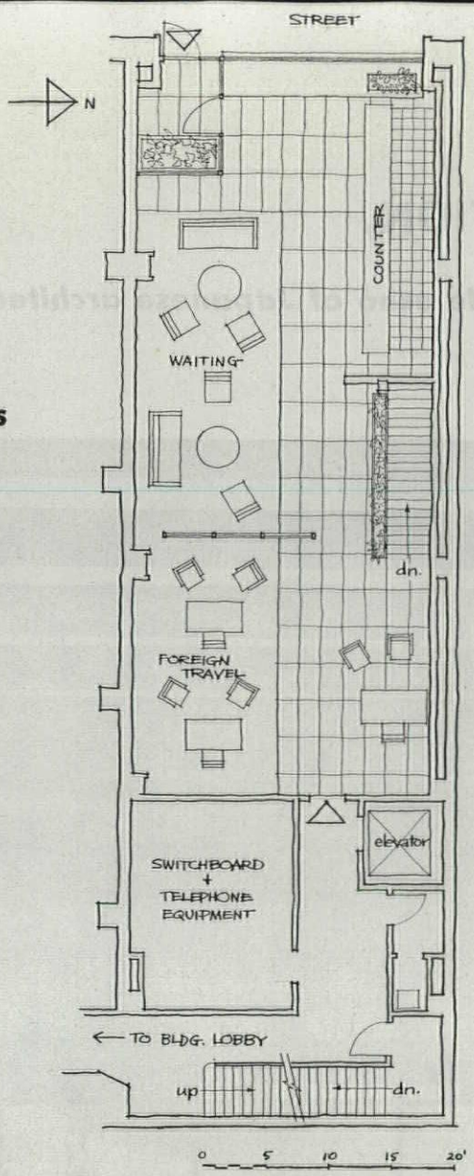
Main waiting and ticket-selling area repeats delicate black exterior frame in column facings, map screen. Black-and-white delicacy is set off by rich gold wall at rear, red wall at left and wood of ceiling baffles and counter.

NORTHWEST ORIENT AIRLINES
LOCATION: New York City
CARSON & LUNDIN, architects
GEORGE A. FULLER CO., general contractor

DESTINATION,

wafts a subtle echo of Japanese architecture into New York's Fifth Avenue





Ticket-office plan and design are a sensible and sensitive adaptation of exotic forms

Japan is no novelty as a course of contemporary architectural ideas but its influence has been most apparent in residential design. This unusual commercial example of Japanese influence is an interesting demonstration of how to employ a characteristic esthetic in a nonindigenous context without impracticalities and without any literal copying.

Although the over-all effect is deliberately suggestive of Japan, nothing here was done overtly for its exotic effect. The chosen esthetic was used simply and straightforwardly to solve immediate problems. For instance, the architects made a virtue of what were originally elephantine columns by plastering the column fronts and facing the cheeks with black lacquered wood. Too-high room proportions and the hard sources of engineered light were overcome by natural birch baffles, reminiscent of woody Japanese ceilings. To make a poster background, panels like sliding paper screens were adapted to a permanent wall. For a space divider and advertising panel, wood rounds were used in the manner of loose bamboo screening. In short, a restrained style was used with restraint.

Second floor and basement have local offices of the airline. The entire job, including furnishings, was handled by the architects. The budget was "reasonable"; even so, part was turned back.

Photos: © Ezra Stoller



Consulting office for passengers planning foreign travel is separated from main waiting space by screen of wood dowels with light vertical wood bracing and lacquered uprights. Map is ¼" white plastic with plastic ribbons.

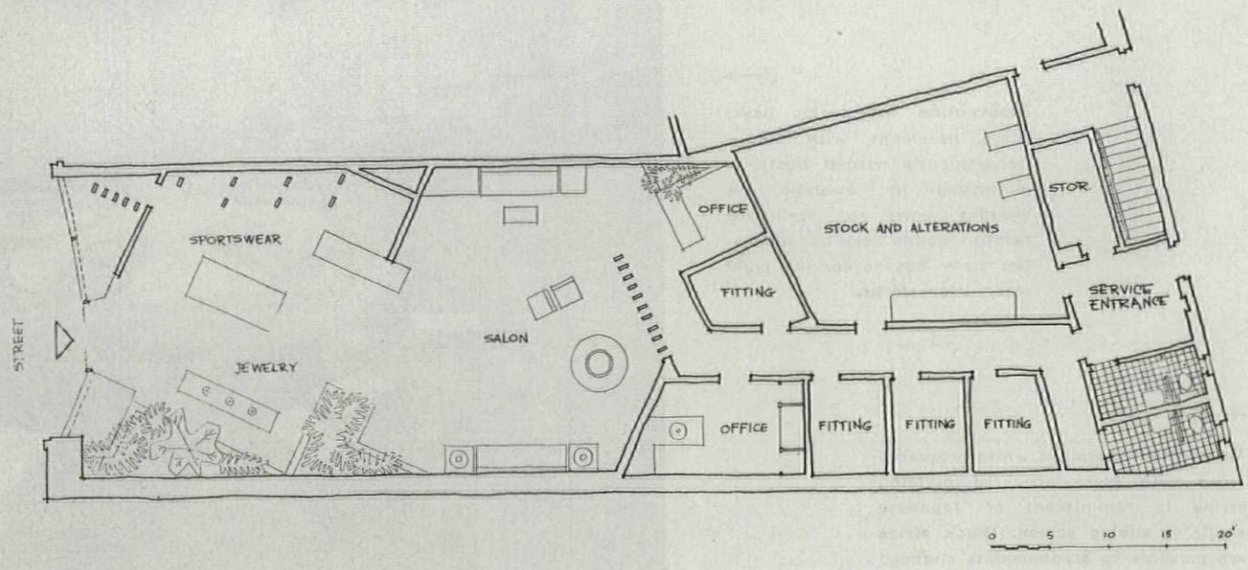


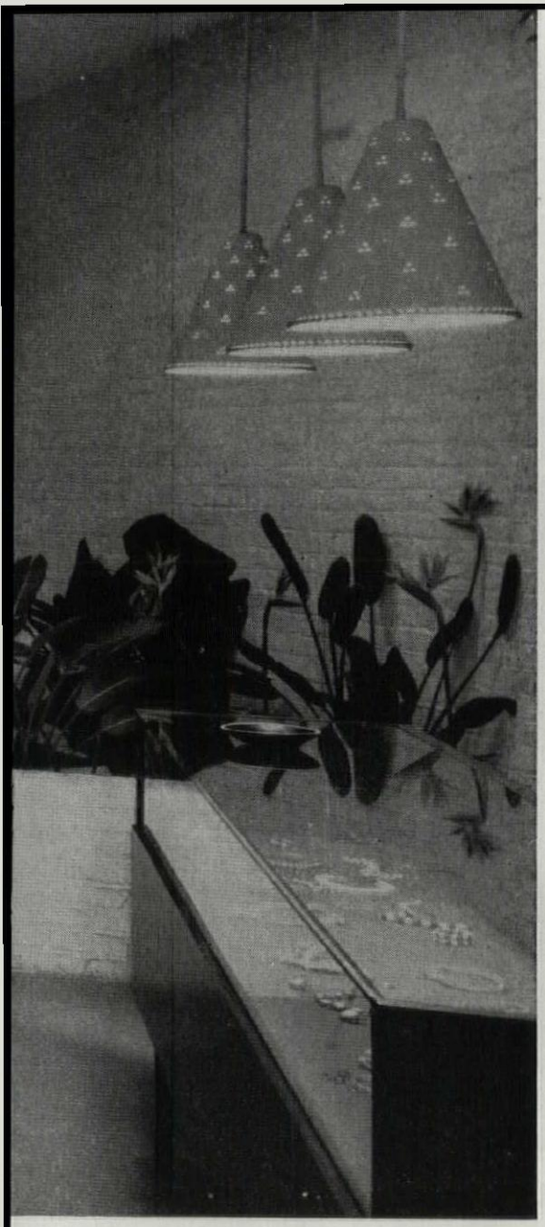
Reservation and traffic desks share basement with offices. Department's normal bustle is minimized by acoustic tile brought down to wainscote height. Round desk has double-tier Lazy Susans serving eight reservation clerks.

Ticket-counter wall of white-lacquered wood with black-lacquered dividing strips is reminiscent of Japanese shoji, or sliding screen. Black strips are movable to accommodate changed poster displays.

IRENE SARGENT DRESS SALON
LOCATION: Oakland, Calif.
MARIO GAIDANO, architect
HELEN NEWBAUER, interior planting
KARL RHODE HAMEL of BONYNGES, furnishings
ELVIN C. STENDELL, general contractor

3. HOW TO MAKE THE CUSTOMERS

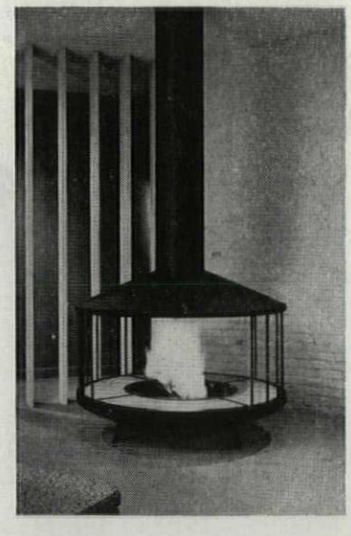






Front was stock frame with corrugated metal above. Black paint, plastic awning, plastic-on-wood facing, tube sign and spotlights transformed it for only $1,000.

Central salon, in restrained black, white and gold, is open to exuberant front portion of shop but is set off by wall, floor, ceiling and lighting treatment, creating sense of seclusion although rear wall is only 55' from show window.



Freestanding fireplace of black iron has background of burlap-covered wood louvers, painted white. Louvers suggest there is more than customer has yet seen.

WANT HIDDEN MERCHANDISE

The owner of this shop set her heart on quite a trick, and she and her architect pulled it off. Her idea—which flouts current merchandising theory—was to hide the merchandise but at the same time to provide a setting that would make the customers feel like begging for a peek at the wonders for sale behind the scenes. This aim was no whim: it was an astute plan to set the shop apart from formidable department store competition. The shop is such a success that the owner is confident its returns will soon equal those of her several popular-price dress shops combined, and it has created quite a stir in Oakland merchandising circles.

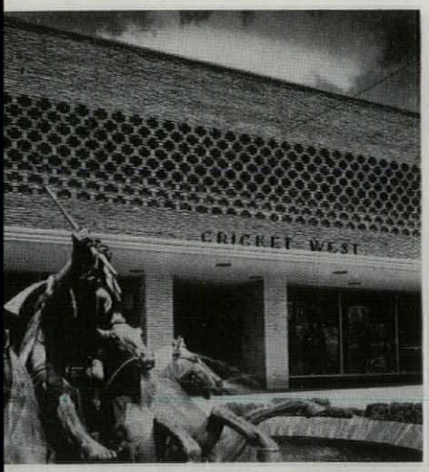
Most selling goes on in the fitting rooms at the rear. The salon is for showing new models, serving tea and establishing a receptive mood. How to make a small open space look like a series of inner sanctums? Gaidano made an abrupt change from entrance area to salon and set an eye-catching louvered screen to the rear, suggesting still more to come.

The entire budget, including fee, was $25,000. The architect's thrifty use of gray textured vinyl plastic to dress up the exterior ("Henry Kaiser used it on hard-top convertibles—why not the exterior of a building?") left him almost all the money to play with inside.

Photos: Ernest Braun



Sportswear department has small merchandise display. Note wood dowel racks for featured items.

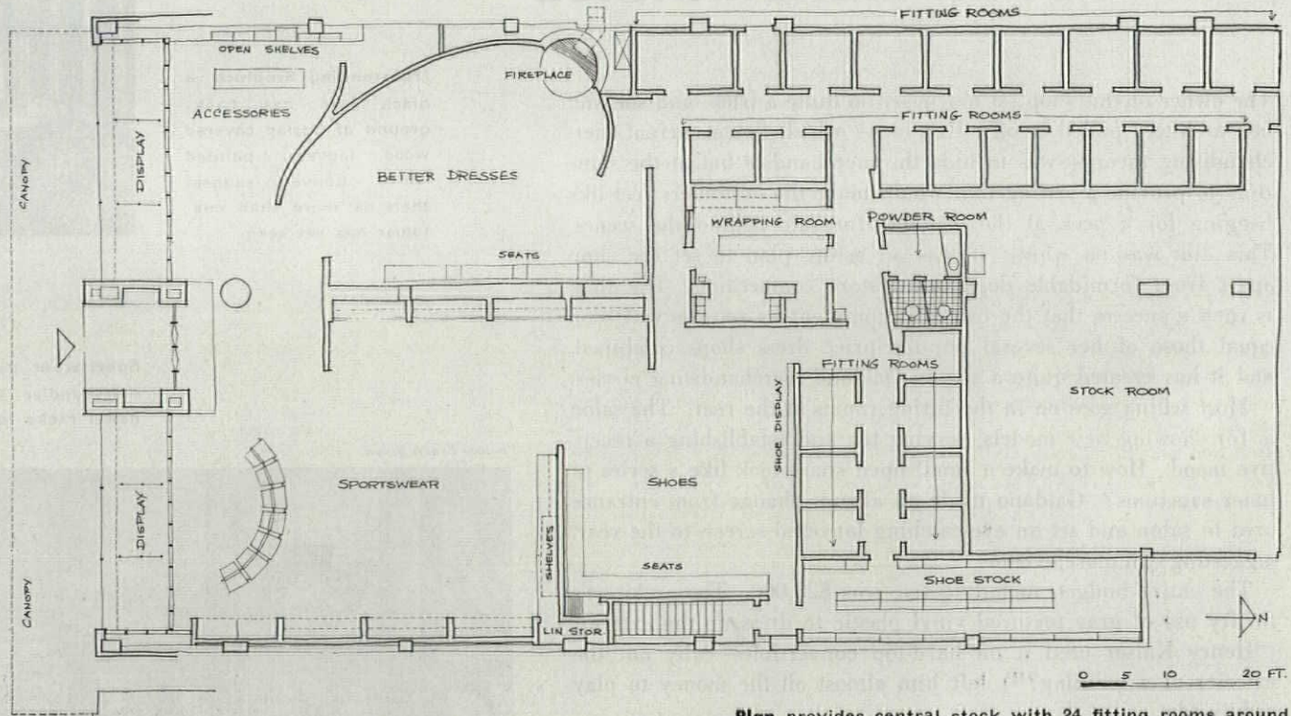


Exterior design included fretwork above store. Building, by Architect Edward Tanner & Assoc., has three parking decks over store.



Decorative hat display, set up for self-selection, is so popular it takes full-time clerk to handle replacements and sales. Curved case has 158′ of shelving on sportswear side.

4. HOW TO MAKE SELF-SELECTION ELEGANT

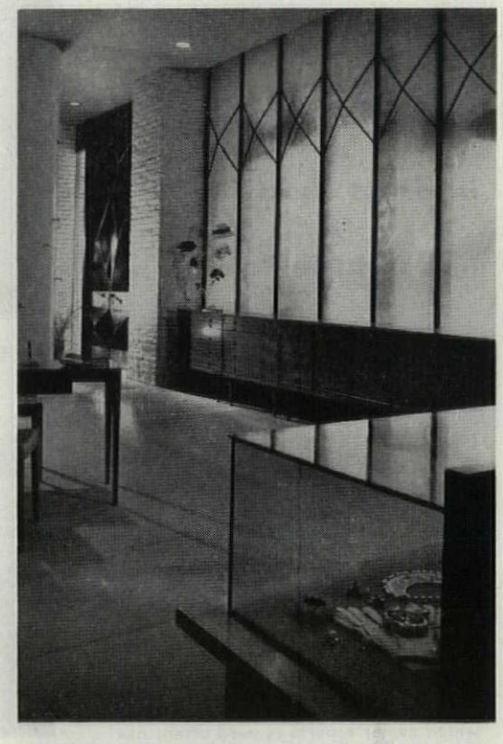


Plan provides central stock with 24 fitting rooms around

CRICKET WEST SHOP
LOCATION: Kansas City, Mo.
WILLIAM SUTHERLAND BECKET, architect
J. C. NICHOLS CO., general contractor



Sportswear shop, viewed from shoe department, demonstrates architect's success in providing for large amounts of open merchandise, yet keeping friendly, uncluttered effect.



Accessories department, looking toward main door. Metal window braces echo design of door which is formed of projecting triangular wood planes ribbed with brass where they intersect.

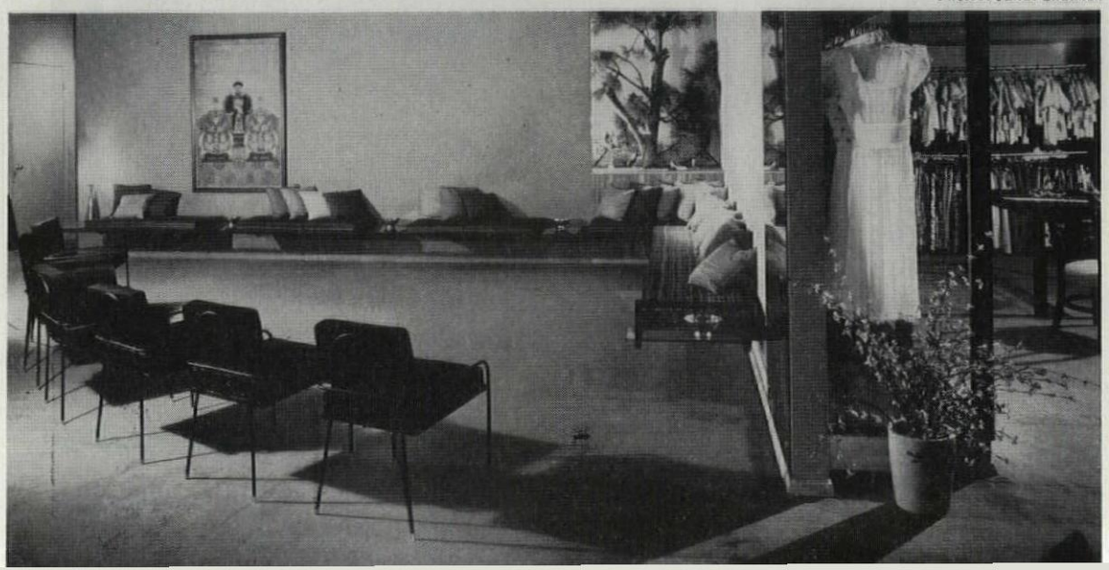
Like the smaller shop just preceding, this store has a salon and differentiated selling areas, but being bigger, the areas here need to be more decisive. This posed a problem because the client wanted to avoid the feel of a big store and to keep the sense of coordination that had already brought her success in a smaller shop. So departments, while given variety, were kept fluid. Whether you are in the salon with its formal and dramatic curved backdrop or in the breezy squareness of the sportswear area, you still feel you are in a single, comprehensible store. The central stock room is another device for reinforcing the position of "a shop that dresses the customer in the entirety." All items are available here for serving customers in the fitting rooms.

The client's other chief aim was to display her merchandise—and a lot of it—in a setting that would enhance it. She happily reports the customers can't keep their hands off it.

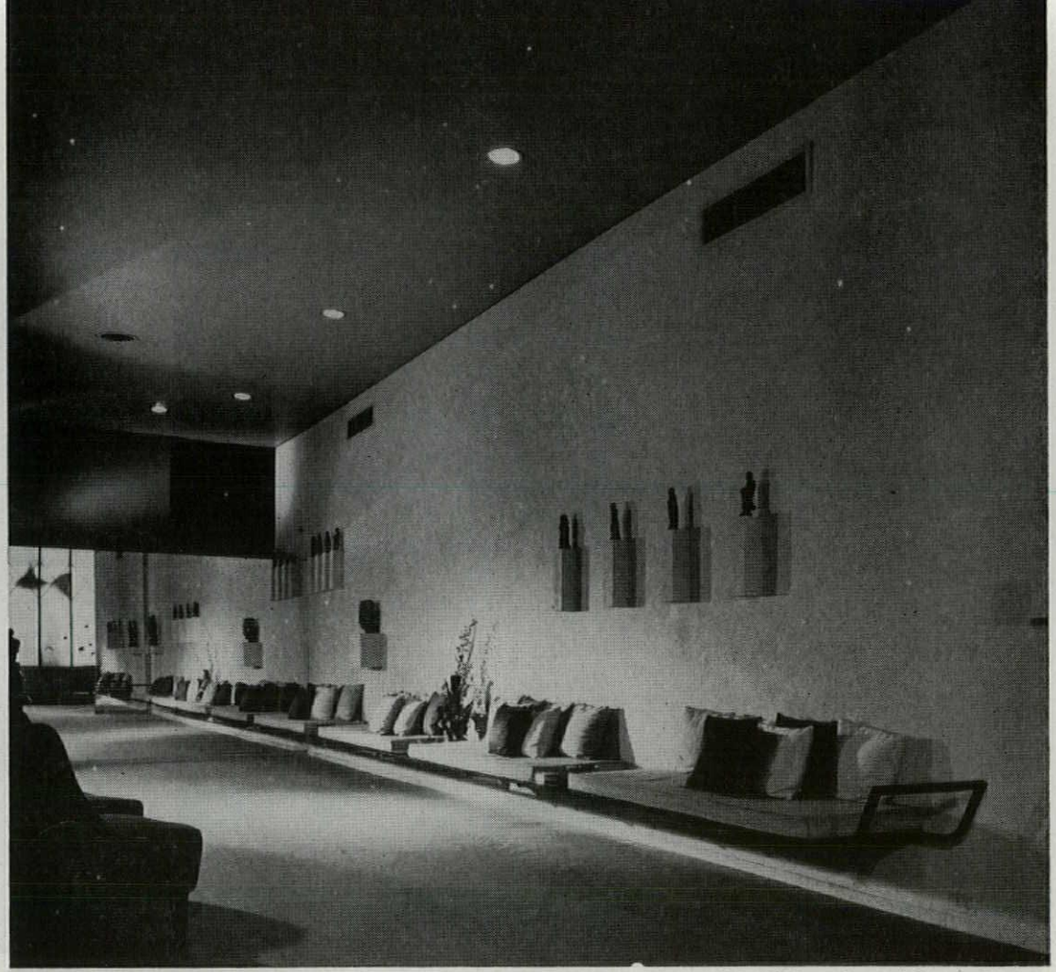
Volume in the new store has jumped an average of 68% over the client's former shop; a 25% increase would have justified the expansion. Cost was $49,618, including all furnishings.

Photos: Julius Shulman

Calm shoe department confines display to rear where it catches traffic on way to fitting rooms. Selection of all furnishings and design of case goods throughout was handled by architect. Client chose him because she especially liked remodeling job he did on his own home.



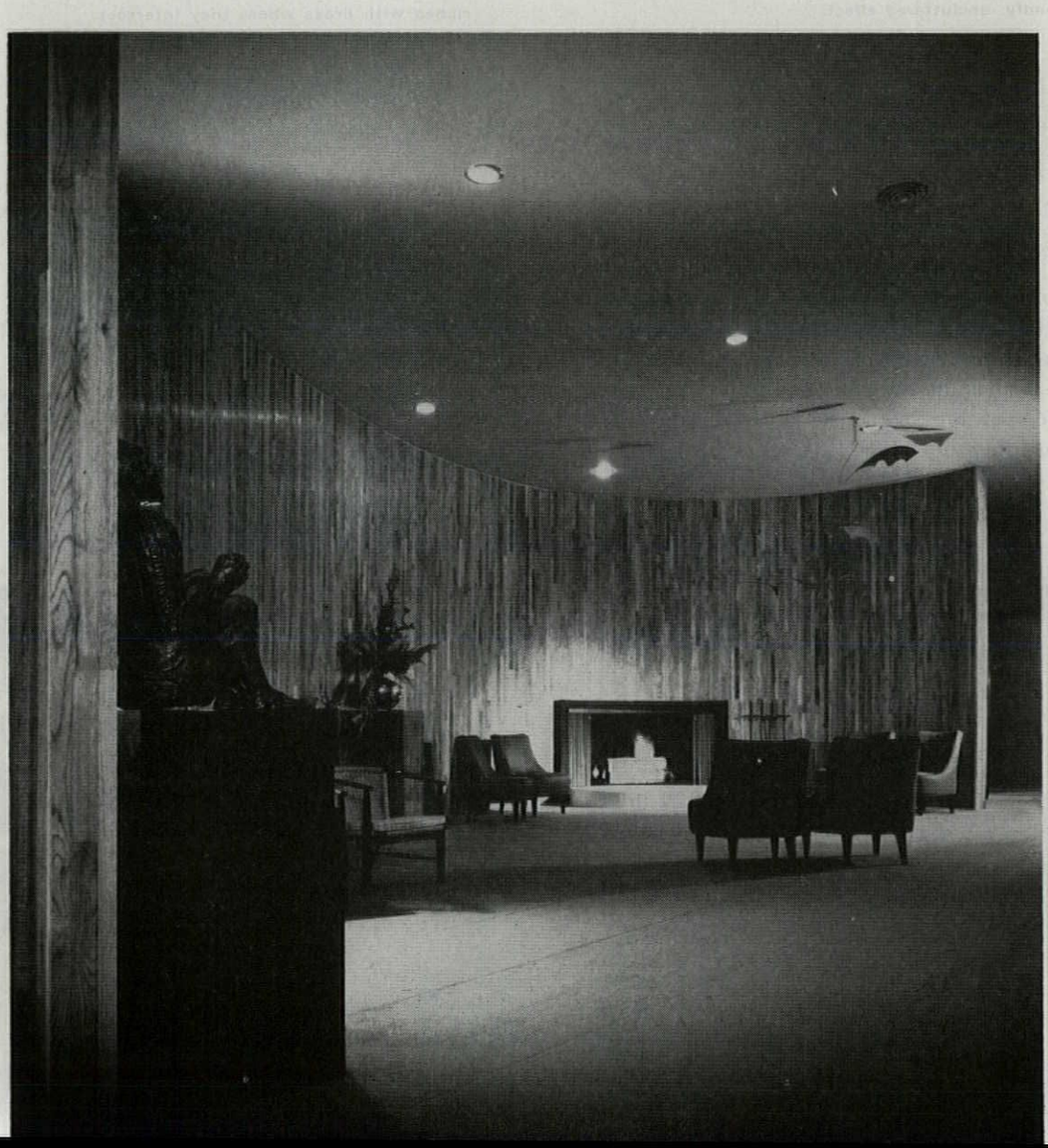
Self-selection in dress shop halts at the salon



Special showing room for dresses and coats has long metal-frame bench welded to wall brackets, similar to shoe department seating on preceding page.

Curved wall in special showing room is narrow oak flooring. Fireplace, which owner reports is used often, has circular hearth of bricks on end.

Photos: Julius Shulman; (opp. p.) Gottscho-Schleisner



5. ECONOMICAL CHAIN STORE

by an architect-builder team in which the architect wears the pants

The store at right is an example of the work of an architect-builder team that is unusual because it is a package operation right-side-up.

Instead of a building contractor that throws in a design service, this is an architectural firm that handles the rest of the building job too, keeping the over-all excellence of the product topmost in a professional way.

The firm started after Architect Kline Fulmer had arrived at some personal conclusions about the architect's role. "The architect's first duty is to his client," he reasoned. "The client does not understand the conflict between architect and contractor. He wants a good job and no arguments about blame if it is not good. As for the architect, I cannot see how his basic professional standing is lowered if he assumes responsibility for building too. On the contrary, he raises himself where he belongs, as master builder."

Fulmer explained his ideas to Bowers, architectural and engineering educated president of a construction company. They agreed to associate. Fulmer reports his role has worked out as he visualized it and that clients are as relieved with the simplicity (from their point of view) as he expected. An indication of how clients like the arrangement: the firm's business has doubled in the past year.

Each Fulmer & Bowers job is handled under a single contract, usually at a lump-sum price based on preliminary plans and negotiation. The lump price typically includes architect's fee, building cost and overhead, landscaping, sitework, any fees for outside consultation. It provides the usual allowances for unknowns. Typically the contract also includes a year's performance guarantee by the architects, fixing as their responsibility any difficulties from either faulty design or construction. If the client wishes, the firm also arranges financing.

Almost all of the buildings the firm constructs are designed by Fulmer & Bowers. On the occasional jobs they have not designed, they insist on passing architectural approval, as a part of their contract to build.

The store shown here was done for W. T. Grant Co., which reports it is well pleased with cost savings. This is the second store the firm did for Grant; it has been given several others under the same package arrangement, also a national warehouse and distribution center.

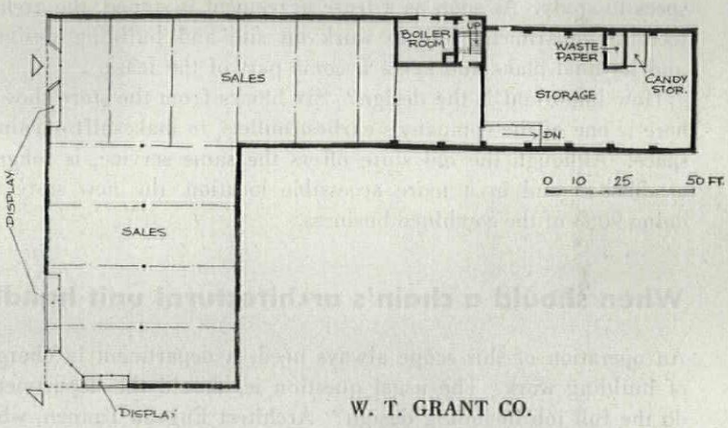
The store's principal features:

- Considerable display space inside the exterior wall for a distance 7′ above the floor, precluding a continuous glass facade. Amber glazing (to protect merchandise from sun) above the 7′ line pulled the divided entrances together and gave the whole main facade a "glow" because ceiling lighting is visible to pedestrians.
- Elimination of the usual variety-store plywood wall facing for shelving and displays. Instead keyhole strips are applied to furring strips nailed to the wall block.
- Economy of exposed lightweight aggregate block and brightly painted exposed steel bar joists in sales area.

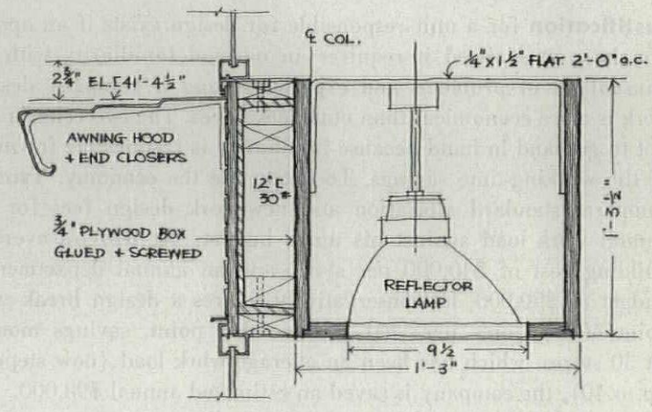
Incidentally, Architect Fulmer has discovered that exposed interior steel for such buildings as warehouses need not be disfigured by the usual raw orange rust-resisting paint. He asked his steel supplier for something prettier, promptly got a light turquoise paint job giving equal protection.



Exterior of chain's retail outlet is governed by need for large amounts of inside display wall. Continuous high glazing keeps main facade brightly lighted and busy looking from pedestrian vantage point.



W. T. GRANT CO.
LOCATION: Millville, N.J.
FULMER & BOWERS, architects
LEWIS C. BOWERS & SONS, INC.,
architect-controlled builders



Design details, like this combination awning bar and light box, are made up in construction shops controlled by architects' firm.

RAYCO MFG. CO. RETAIL STORE
LOCATION: Paramus, N.J.
EUGENE TANNEN, architect
STITES CONSTRUCTION CO., general contractor

6. DRIVE-THROUGH UPHOLSTERY SHOP

is designed to sell and install auto seat covers while customers wait

Selling and installing automobile seat covers has become so much of a business that this store is one of 115 franchised outlets established by a national chain which is only seven years old and which has expectations of establishing still another 300 stores. This is an expansion problem with a vengeance. It has two main aspects: efficient layout and attractive design of stores; and spotting stores in the right places. The photographs and plan show thinking on layout and design.

To spot stores in swift and orderly fashion, management first selects an area for study by its market research department. Favorable analyses go to the real estate department which—on a second favorable report—sends out a negotiator to find an investor willing to buy a selected site and build to plan, specifications and supervision furnished by the company's 2½-year-old architectural department. The investor gets representative plans and specs to study. As soon as a lease agreement is signed, the architectural department gets to work on site and building design, and its final plans and specs become part of the lease.

How important is the design? Six blocks from the store shown here is one of the company's earliest outlets, in makeshift existing space. Although the old store offers the same service, is longer established and in a more accessible location, the new store is doing 90% of the combined business.



Workroom is designed to service two lines of cars, each passing directly through building from surrounding parking lot. Installation job takes half an hour.

When should a chain's architectural unit handle design?

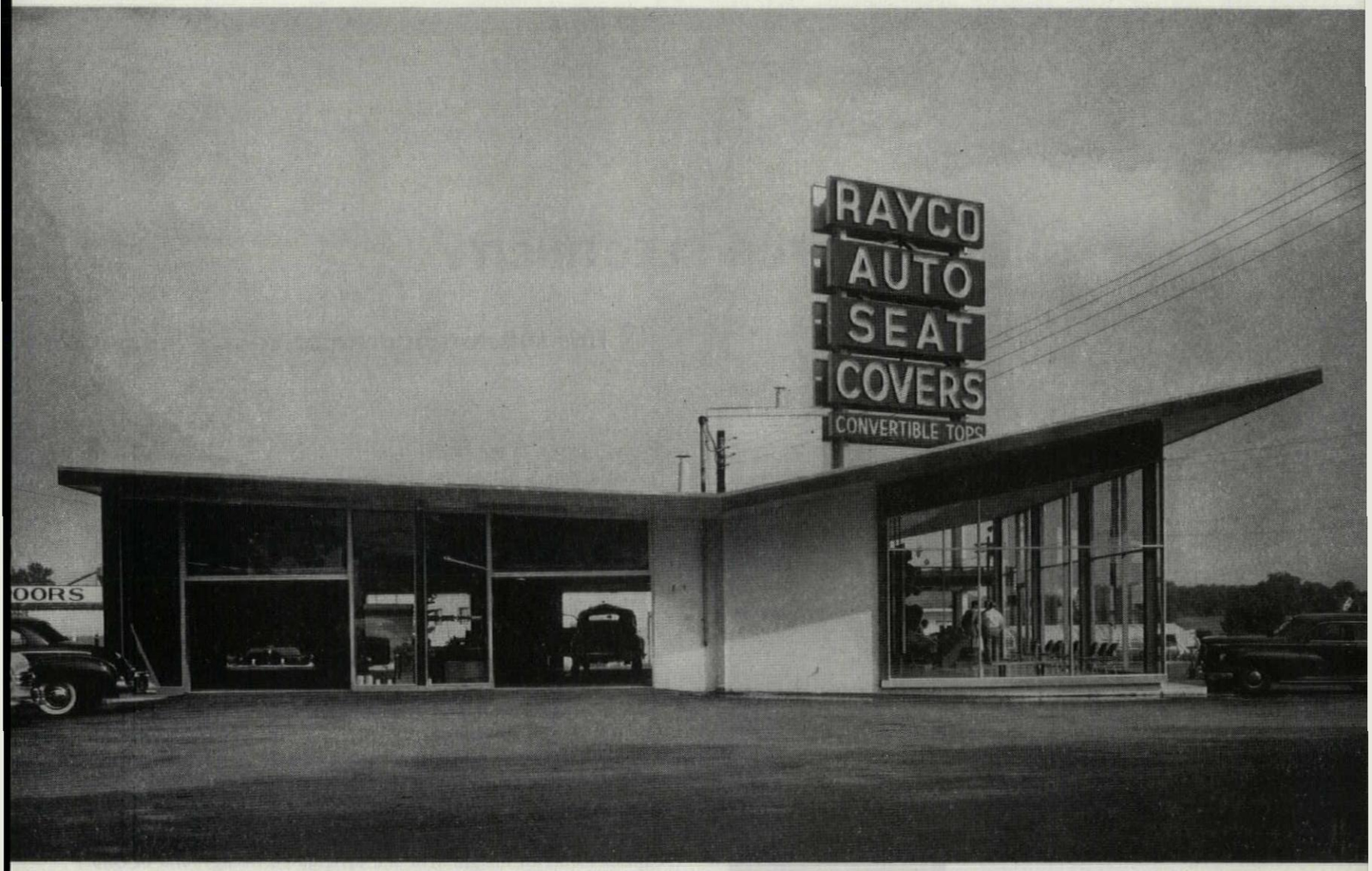
An operation of this scope always needs a department in charge of building work. The usual question is, should the department do the full job including design? Architect Eugene Tannen, who heads Rayco's architectural unit, has found time, amid the rush of new projects, for some hard-headed thinking on this question and on administration and growth of company architectural units. Some of his conclusions:

Justification for a unit responsible for design exists if an operation is so specialized it requires an unusual familiarity with an unusual set of problems and experience, *and* if company design work is more economical than outside services. The two criteria are apt to go hand in hand because familiarity is responsible for most of the working-time savings. To determine the economy, Tannen compares standard alteration and new-work design fees for an annual work load against his unit's budget. At Rayco's average building cost of $40,000 per store, and an annual departmental budget of $90,000, he conservatively figures a design break-even point of 21 stores per year. Above that point, savings mount. At 30 stores, which has been an average work load (now stepped up to 40), the company is saved an estimated annual $98,000.

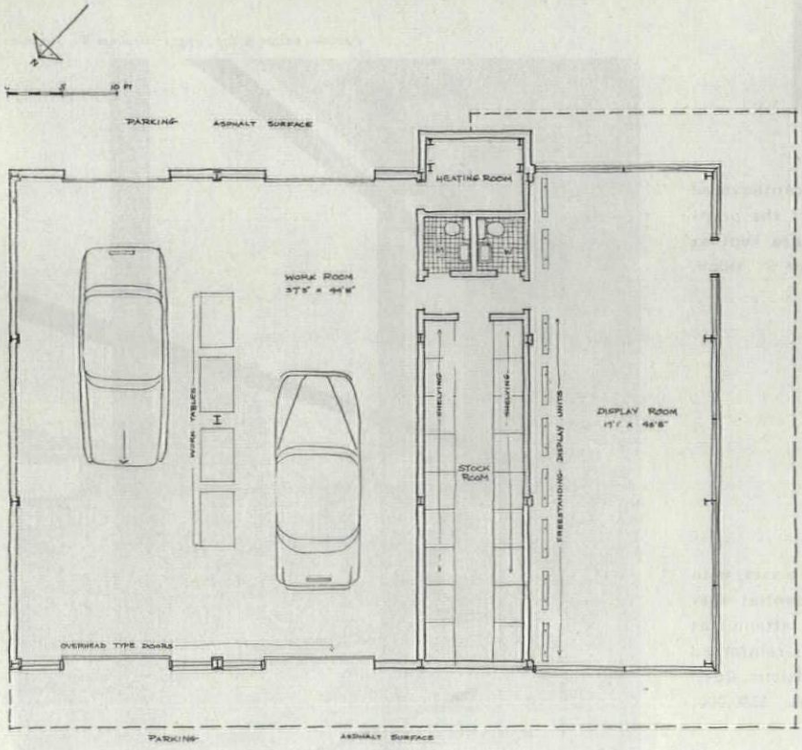
Administration must rest on clear charting of job responsibility for each member of the department, and for the department itself vis-a-vis other departments. "Sooner or later this must be done, either by reasoning it out or by bitter trial and error." The company architect's responsibility must not be narrowly construed. Just as any client gets the best from his architect if he calls him in early and has him participate in initial thinking, a company also gets its worth from an architectural department only if the architect participates in management thinking touching all phases of design and construction.

Growth or contraction of a company architectural department can stray away from the realities. With everyone including the department head on salary, there is not the direct and immediate connection between income and outgo which controls the size of an independent architect's office. To prevent either being caught with too light a department for the work load or too much staff, Tannen makes an annual projection of manpower needs based, in the case of Rayco, on an experience average of 223 man-hours per store. He projects this against the expected work load and also against possible increases or cutbacks in the program. With his projection approved, he has assurance of the help he needs; management has the assurance of a payroll geared to the work.

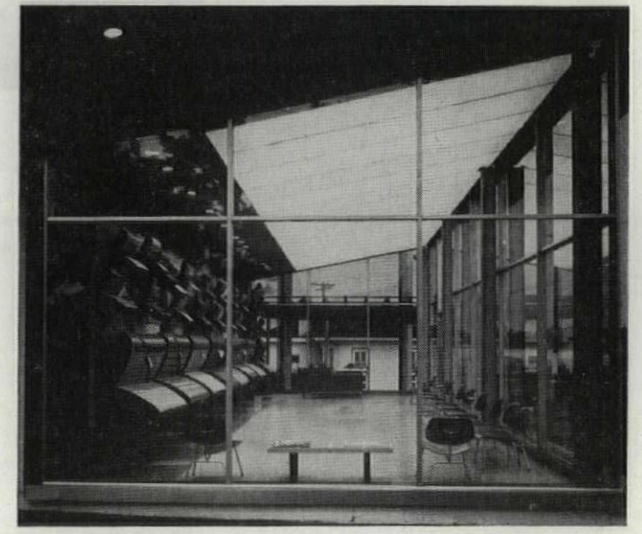
As for the dangers of stultification, Tannen sees too many still unsolved problems for his department to take a humdrum view of its job. A few of his design aims: more integration between sign and building; more use of swiftly recognized symbols in place of lettering. Self-service devices, such as recorded "sound designs" in the showrooms, to be activated by the customer, cutting demands on salesmen. More study of color for better visibility, esthetic effect and maintenance. Sales–waiting room on stilts, leaving the entire ground level for parking and installation.



Division of building into workroom and showroom is achieved by midrib storage area and is marked by changed roof slope. Architect is now working on a more open scheme so waiting customer can watch work being done on his car.



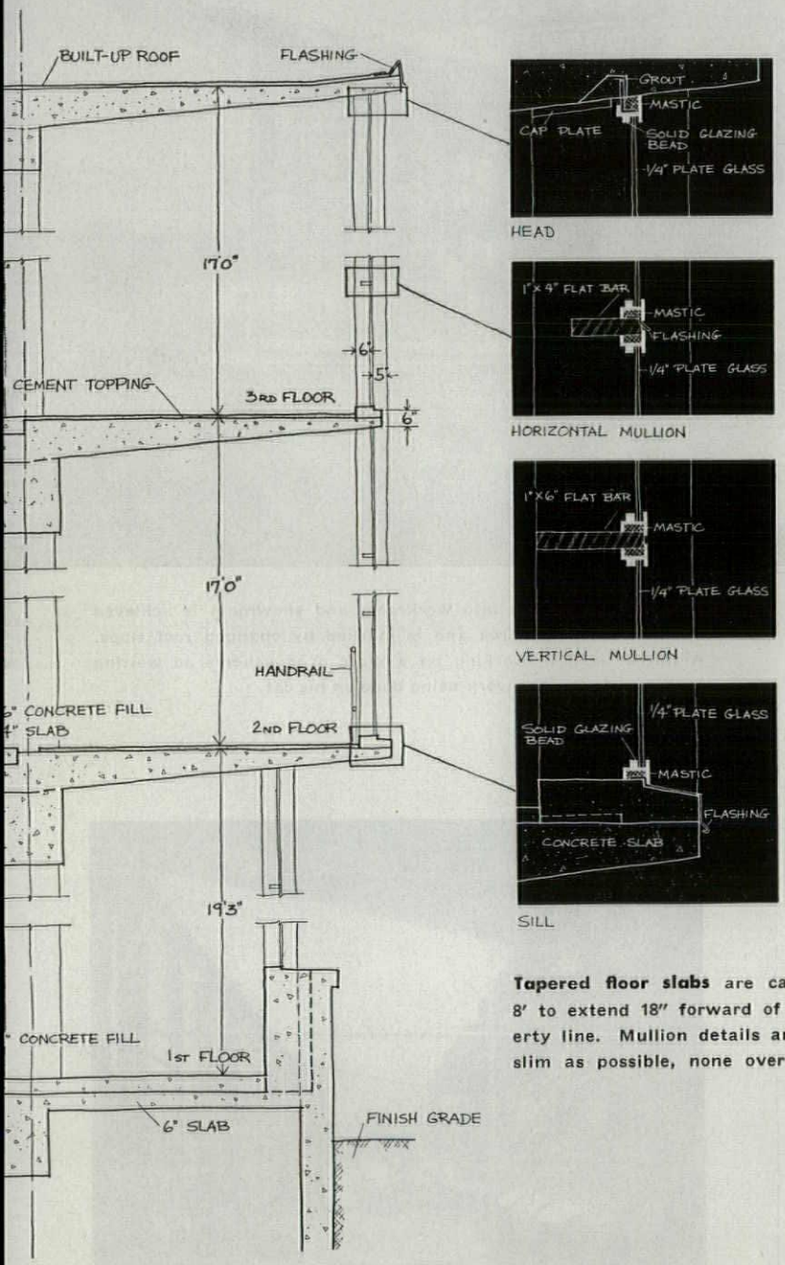
Photos: Marc Neuhof



Showroom display of seat materials replaces former shadow boxes, lets customers "touch." Building has steel framing and decking, concrete slab, block walls; cost: $40,000; $13.40 per sq. ft.

SHOWCASE FOR ELECTRICITY

this substation dramatizes its innards to



HEAD

HORIZONTAL MULLION

VERTICAL MULLION

SILL

Tapered floor slabs are cantilevered 8′ to extend 18″ forward of the property line. Mullion details are kept as slim as possible, none over 3″ thick.

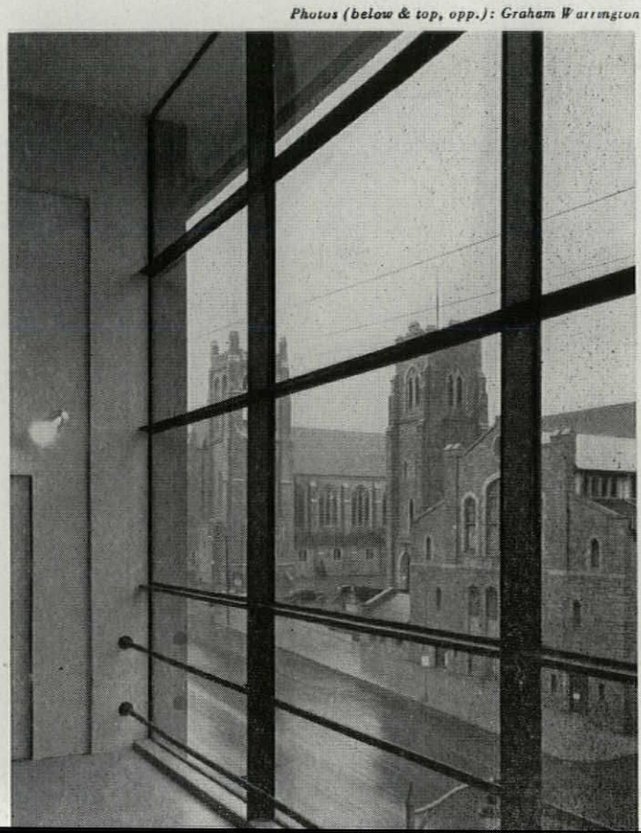
Steel and glass front contrasts with older monuments of residential district, does not make usual attempt at "harmonizing." Structure is reinforced concrete with concrete partitions. Cost, excluding equipment, was $580,000; $9.70 per sq. ft.

The West End of Vancouver, late a district of fine old town houses turned rooming houses, is now seething with new apartment, office and commercial construction. The B. C. Electric Co., taking a proud view of electricity's role in this boom, has given the district a dramatic Main Street landmark, a district substation that looks like a Fernand Leger painting come to reality.

Although artists like Leger have long recognized and communicated the electric excitement belonging to inhuman and antiseptic appurtenances of the age of power, the people who actually provide these things have persisted in hiding them from city consumers—usually in mausoleumlike fake monuments. Out in the country, where supposedly nobody cares about appearance, the equipment is exposed to the elements where it manages to look quite stirring in spite of ugly fencing.

In this case the architects, inspired by open plants on the outskirts of town, decided the equipment deserved both city exposure and an imaginative and articulated background of color. Their first design left the front open except for safety rails and screens. When it was decided glass was a more practical protection, hues were stepped up in intensity to counteract reflections. The finest effects are seen by homecomers in the evening when the full blast of the western sun hits the front.

Photos (below & top, opp.): Graham Warrington



DAL GRAUER SUBSTATION
LOCATION: Vancouver
SHARP & THOMPSON, BERWICK, PRATT, architects
B. C. BINNING, color consultant
VICTOR THOMSON, structural engineering
D. W. THOMSON and R. J. CAVE, mechanical engineering
B. C. ELECTRIC CO. (owner), electrical engineering
DOMINION CONSTRUCTION CO., LTD., general contractor

become a stunning institutional ad

Brilliant front gives selective, impressionistic view of substation's mechanics. Stacklike objects in center carry stepped-down electricity upward to regulators.



STAIRS AND CORRIDORS at front of building create lively pattern when viewed from street (below). Building is empty of humans except for occasional maintenance.



New tax bill to benefit industry

Choice of new depreciation systems on plant and property a major change; chief intent of bill is to boost business

"Builders must absolutely make a restudy of their operations in the light of the new law. For the last six months we have been planning new projects with two sets of laws in mind. It's particularly important in the matter of reorganizations and mergers to make sure you are not in a tax trap." Sylvanus G. Felix, authority on builders' tax problems, is one of a number of experts who have urged builders to acquaint themselves with the new tax bill. Toward that end, FORUM *presents a roundup of the provisions most applicable to the industry.*

IN THIS MONTH'S NEWS

(see pp. 37 through 52)

Direct construction of military housing approved by Congress; first lease-purchase deals signed

Labor roundup shows fringe benefits on rise; more two-year contracts being signed

Cracks in the plaster in Seattle war memorial stir a material vs. design squabble

J. George Stewart named Architect of the Capitol to succeed David Lynn, in office for 53 years

FHA backing for college dorms stimulates new financing and new design on the campus

The comprehensive overhaul of federal taxes signed into law last month by President Eisenhower promises interpretive headaches for the industry. The new act is the first extensive rewrite of the country's tax structure since 1876 and the number of sins and omissions it seeks to correct are legion. But if the taxpayer can penetrate the text he will discover sizable benefits for himself and his business. Building should take notice. The law's effect runs the gamut of the economy—there are new provisions for everybody from inventors to working mothers—but a very large portion of its influence bears specifically on the activity of the nation's $40 billion construction industry.

It is evident that the prime concern of the legislators who composed the 875-page act was to boost business. So-called inequalities in the individual's income tax were straightened, but such action was minor compared to provisions intended to accelerate the economy. The Senate finance committee went on record that the new rules would mean ". . . economic growth, increased production and a higher standard of living." Obvious aim: prosperity without inflation. Building's part in the scheme of things was equally obvious. The ponderous and beneficent momentum of construction activity must be maintained; private investment in building—the control of which is the true province of the tax legislator—must be made attractive enough to keep capital flowing.

At least five important changes in the law demand the special attention of the realty field. These have to do with new methods for depreciation of plant and property; deductions for research; the status of retained earnings; the anti-mortgaging-out provision and various regulations affecting corporations.

Flexible and faster depreciation systems should act favorably on plant productivity and building. The most dynamic shift in policy is to allow faster write-off in the early life of a facility; second, to give the taxpayer a choice of write-off methods, including a combination.

The ordinary straight-line method of depreciation—under which a property was depreciated at a static annual rate figured by dividing its purchase price by its useful life—has been joined by two other methods: the declining-balance and the sum-of-the-years-digits systems. Under the declining-balance method (see chart) a company can now write off two thirds of the cost of a new building in half its life (as opposed to 50% of the cost, under the arithmetical straight-line system). The declining-balance method uses a rate twice as high as the straight line, but is applied only to the undepreciated balance of the price. As the years go by, the owner would be applying his percentage against a declining figure and would never get back all his investment—until he disposed of the property and wrote it off. Logical way out, approved by the legislators: to permit businessmen to switch to the straight-line method at any time.

The sum-of-the-years-digits—the third method—provides for depreciation at a

rate figured by adding up the digits in the useful life of the property (for ten years, the total would be 55) and using this figure as the denominator for the annual fractional rate. First year: 10/55; second year: 9/55, etc. A comparison of the three methods on a ten-year facility costing $20,000: first year: $3,636 under SOD; $2,000 under straight line; $4,000 under declining balance; second year: $3,273 under SOD; $2,000 under straight line; $3,200 under declining balance.

The new rulings do not apply to projects started before Jan. 1 of this year except against costs incurred on those projects since that date. Nevertheless, for the future the new choice system of write-off promises increased activity in building. Such reduction of tax load in the early life of a property could mean the difference between projects shelved and projects built. In the matter of construction machinery, it could mean that contractors would find it preferable to buy equipment and replace it annually, rather than rent. It is also notable, in regard to tax amortization on buildings, that under the new act the owner has much more say in how long the amortization period shall be. In the past he was up against a strict decision from the Internal Revenue men, who were in the habit of fixing the period as long as possible (40 years was about the average useful life of an apartment building in IRS thinking) so as to keep taxes coming in over a maximum span. Now the property owner can take the initiative in choosing a period suited to his purpose (which may be a short span in the face of technological progress) and in applying it to different periods for different parts of the building —elevators or heating plant, for example.

Depreciation on a $1 million apartment building for 40 years, as figured under the old straight-line method and under a combination of straight line and declining balance:

Year	Straight-line method	Declining-balance method
1	$25,000	$50,000.00
2	25,000	47,500.00
3	25,000	45,125.00
4	25,000	42,868.75
5	25,000	40,725,31
6	25,000	38,689.05
7	25,000	36,754.59
8	25,000	34,916.87
9	25,000	33,171.02
10	25,000	33,512.47
11	25,000	29,936.85
12	25,000	28,440.00
13	25,000	27,018.00
14	25,000	25,667.10
15	25,000	24,383.75
16	25,000	23,164.56
17	25,000	22,006.33
18	25,000	20,906.02
19	25,000	19,860.72
20	25,000	18,867.68
21	25,000	17,924.30
22-40	25,000	17,924.30*

* In the 22nd year the declining-balance figure actually drops to $17,208 —less than what could be gained by shifting to a straight-line write-off of $17,924.30. The latter figure is therefore used for the remainder of the term.

Research in the building field gets a boost from the new tax law, which provides that a business can deduct expenditures therefore during the year they were made or over a period of five years or longer. In the past, the procedure was complicated by the fact that only "ordinary" expenses for research could be written off—all right for the big companies with integrated research programs but tough on the little fellow. The builder is a little fellow when it comes to research; the present changes may give him his chance to dip into much-needed industry testing and development and still make ends meet. (The new research rules do not apply to land or depreciable buildings.)

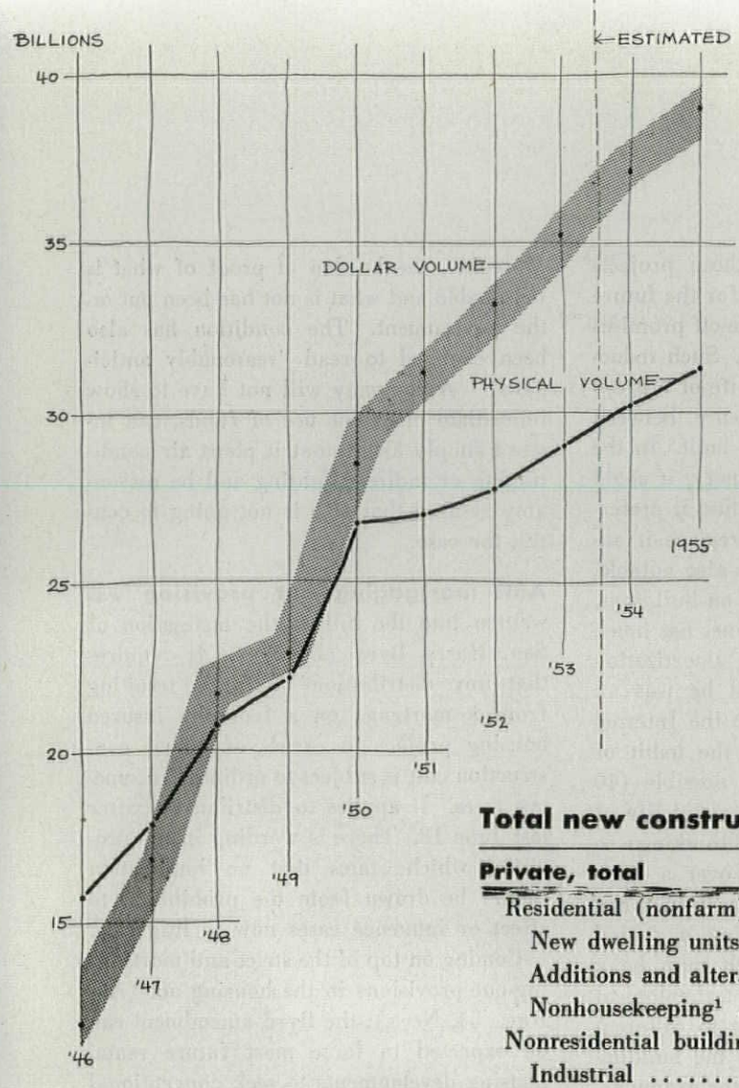
Accumulated earnings held by a company and not paid out in dividends have in the past been subject to a penalty tax of from 27 to 36%. It was a fuzzy proposition. IRS, after hearing what companies' "reasonable" needs were—for expansion, improvement, etc.—could throw Section 102 at them if the sums in surplus seemed unreasonable. IRS has seldom made the penalty provision stick in court, but the threat of it was no fun for businessmen.

In the new law, provision is made to exempt the first $60,000 of accumulated earnings from the penalty tax altogether. Moreover, the burden of proof of what is reasonable and what is not has been put on the government. The condition has also been changed to read "reasonably anticipated." A company will not have to show immediate plans for use of funds, can instead simply assert that it plans air conditioning or indirect lighting and be reasonably assured that IRS is not going to contest the case.

Anti-mortgaging-out provision was written into the bill at the instigation of Sen. Harry Byrd (D, Va.). It requires that any distribution of funds resulting from a mortgage on a federally insured housing project in excess of actual construction cost is subject to ordinary income tax rates. It applies to distributions after last June 18. There is wording in the provision which states that no implication should be drawn from the prohibition to affect or influence cases now in litigation.

Coming on top of the strict anti-mortgaging-out provisions in the housing act (AF, Aug. '54, News), the Byrd amendment can be expected to force most future rental housing developments to seek conventional financing. Ironically enough, conventionally financed developments will not be barred under the act from taking mortgage profits as a capital gain.

Corporate regulations written into the bill were among the most complicated. They covered a variety of conditions, worked benefit in some instances and tightened existing practices in others. One provision of interest to builders: a reworking of the law affecting stockholders in small corporations, who frequently faced tough tax sledding in the past when one stockholder died and the others had to meet the death taxes. Liquidation was often necessary. Now provisions have been broadened to permit tax-free redemption of stock to meet the estate taxes. Small corporations will also benefit under legislation which allows them in some instances to pay taxes as partnerships. There is a new tightening of merger procedure which places on the corporation itself the onus of deciding whether its purpose in acquiring a subsidiary is or is not to duck taxes. The test: whether or not the price paid for the subsidiary is disproportionate to its value. On the other hand, a company owning 80% of another (instead of 95%, as formerly) can now file a consolidated return. For big business—and big building—the best weapon was a fine-tooth comb.



FORUM FORECAST:

NEW CONSTRUCTION ACTIVITY (millions of dollars)

	1953 Actual	1954 Estimate	1953-54 Change	1955 Forecast	1954-55 Change
Total new construction	**$35,256**	**$36,900**	**5%**	**$38,750**	**5%**
Private, total	**23,877**	**25,250**	**6**	**26,200**	**4**
Residential (nonfarm)	11,930	12,700	6	**13,650**	7
New dwelling units	10,555	11,200	6	**12,000**	7
Additions and alterations	1,108	1,150	4	**1,250**	9
Nonhousekeeping[1]	267	350	31	**400**	14
Nonresidential building	5,680	6,300	11	**6,450**	2
Industrial	2,229	2,000	—10	**1,800**	—10
Warehouses, office and loft buildings	739	1,000	35	**1,150**	15
Stores, restaurants and garages	1,052	1,300	24	**1,350**	4
Other nonresidential	1,660	2,000	20	**2,150**	8
Religious	472	560	19	**600**	7
Educational	426	565	33	**600**	6
Hospital and institutional	317	345	9	**400**	16
Social and recreational	163	230	41	**250**	9
Miscellaneous	282	300	6	**300**	0
Farm construction	1,731	1,550	—10	**1,500**	—3
Public utility[2]	4,416	4,575	4	**4,500**	—2
All other private	120	125	4	**100**	—20
Public, total	**11,379**	**11,650**	**2**	**12,550**	**8**
Residential	556	350	—37	**300**	—14
Nonresidential building	4,352	4,500	5	**4,600**	0
Industrial	1,771	1,600	—10	**1,450**	—9
Educational	1,728	2,100	22	**2,250**	7
Hospital and institutional	353	340	—4	**350**	3
Other nonresidential	500	550	10	**550**	0
Military facilities[3]	1,307	900	—31	**900**	0
Highway	3,165	3,750	18	**4,700**	25
Sewer and water[4]	861	1,000	16	**1,050**	5
Miscellaneous public service enterprises	201	225	12	**200**	—11
Conservation and development	830	725	—13	**700**	—3
All other public	107	110	3	**100**	—9

Sources: 1953, US Departments of Commerce and Labor; 1954-55 estimated by ARCHITECTURAL FORUM.

1. Includes hotels, motels and dormitories.

2. Includes buildings of various types (power plants, telephone exchanges, stations, maintenance shops, warehouses, etc.) as well as power, telephone and telegraph lines and other nonbuilding construction.

3. Includes mainly buildings of various types (warehouses, barracks, theaters, hangars, school, etc.) as well as airport and other nonbuilding construction.

4. Includes buildings of various types (sewage plants, pump stations, etc.) as well as nonbuilding construction.

1955 will see building activity soar to a new high of $39 billion.

Favorable trends in the nation's growth, the government's attitude and the industry's economy underlie the continuing boom

—by Economist-Consultant Miles L. Colean

Construction has once again confounded the prophets of gloom by setting a new record high in 1954. And there is now every reason to expect that construction volume will climb still higher in 1955.

The 1954 performance has amazed the skeptics and surprised even the optimists. Last year, in face of a general business decline, an optimist was one who felt that 1954 construction would not fall more than 4% below the 1953 volume.* Dr. Colin Clark, the British economist whose gloomy predictions attracted so much attention at the end of 1953, predicted a 40% decline in construction activity during 1954.

Instead of a decline in activity during 1954, the expenditure for new construction—now estimated by FORUM at around $37 billion—will be 5% greater than the official 1953 total. And it should be remembered that the final 1953 total itself was about 2% higher than the preliminary figure below which 1954 was supposed to fall.

What happened was that decisions already made by the time the recession became evident in 1953 involved enough advance work to assure that there could be nothing worse than a slight decline in construction in 1954. As it turned out, the character of the recession was mild enough to prevent any serious modification in previous commitments; and, as confidence in the future was maintained, the volume of new commitments increased rather than declined. Noteworthy is the fact that the outlook for the present year is now even better than it was in June, when the Commerce and Labor Departments revised their 1954 forecast upward to $36 billion.

* According to this standard, the 1954 FORUM Forecast was optomistic and incidentally more accurate than most—ED.

It might well be argued that, if construction can be so vigorously sustained in a recession year, it is bound to grow in a period when the forces of economic expansion are again reasserting themselves. The conclusion is sound; and there are more reasons back of it than are contained in the statement itself. Next year is sure to be another boom year, almost certainly a year of higher construction expenditures than 1954, with a probability of reaching a total close to $39 billion.

PRIVATE CONSTRUCTION will outdo 1954 by about $1 billion.

Residential building, and predominantly the building of single-family houses, will be the bulwark of private activity, accounting for most of the increase. Elsewhere, expansion and contraction will pretty well offset each other.

Industrial building will continue to sag, although the amount of decline will be somewhat less than from 1953 to 1954.

Commercial building will be at a high level, although the rate of expansion will slacken.

Religious buildings, private school and college buildings, hospitals and institutions, social and recreational structures, as a group, will advance moderately beyond 1954.

Public utility activity (railroads, telephone, telegraph, electric power and service companies, etc.) due mainly to demands for private power capacity, will hold close to its 1954 level.

GOVERNMENT CONSTRUCTION will exceed 1954 by about $900 million.

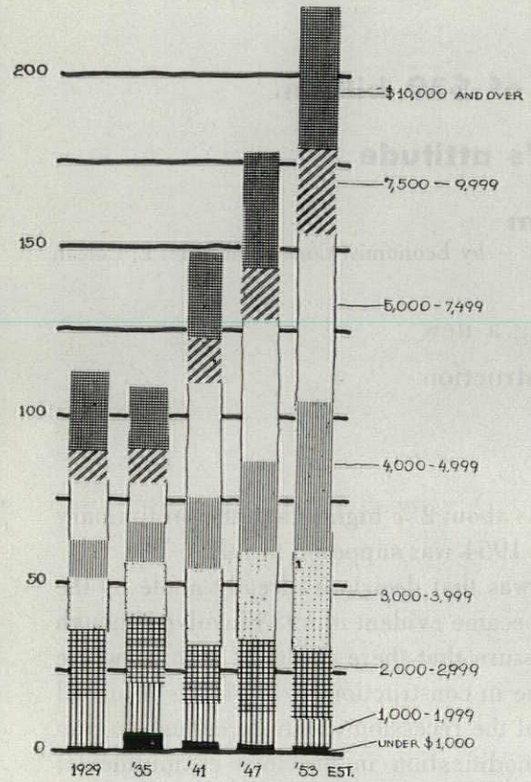
Highway construction will be the most substantial source of expansion, adding close to $1 billion to this year's high of about $3.7 billion.

School building will be the second strongest element in the increase in public construction.

Hospital and institutional building will increase only slightly. Four categories of government construction are expected to show less activity in 1955 than in 1954: **public housing, industrial (atomic energy) construction, conservation and development,** and **miscellaneous public service enterprises.**

Other types of public nonresidential building, including administrative buildings, will at least hold level with 1954. Sewer and water facilities will probably surpass this year's high volume by almost 5%.

The reasoning behind the 1955 forecast



Consumer income up: since 1929 US families have been growing into one major income group with a rising living standard and more spending money. Based on data from FORTUNE magazine, chart shows that the $4,000-to-$7,500 group, or great middle class, which has increased by 45% since World War II, now accounts for 42% of total income.

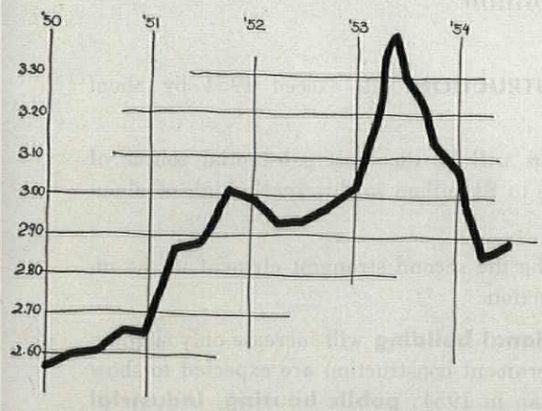
Five factors offset the declining rate of family formation

Skepticism about the future of construction year after year has grown up from the simple conviction that anything so good could not last indefinitely and from the more serious assumption that the decline in the rate of family formation that began after 1950 must sooner or later depress the demand for construction. But, by now there should be sufficient evidence to indicate that other influences are offsetting this bearish factor:

1. **The continued high birth rate,** and the lowering of the death rate, with the effect of sustained population growth.
2. **The continued growth in personal income.**
3. **The upward shift in average income** and the great increase in the number of families with unsatisfied wants that are coming into an income range that permits them to make their demands effective.
4. **The increasing propensity to spend,** as confidence in the future is renewed.
5. **The increased security in old age,** permitting older members of the community to maintain their independent status and to remain as active participants in the market.

These five influences make for an intensification of the demand for construction, directly in the form of houses, schools, hospitals, churches and recreational facilities, and indirectly in the form of facilities for all the industrial, commercial and public activities that a vigorous and confident economy requires.

In addition to the underlying strength of the market, the federal government has provided seven sustained and stimulative influences



Money rates down: after bond yields zoomed upwards during early part of last year, government's easy money policy has reasserted itself and forced money rates down to their 1951 level. Source: Moody's Aaa bond yields.

1. **The Federal Reserve Board and the Treasury** have produced a generally easy money condition, and, in particular, have made little or no demands on long-term investing institutions, leaving them wholly free to serve construction and other capital requirements. At the same time, inflationary forces have been curbed—"sound money made easy," as one observer has described the official line. Those policies may be expected to be continued during 1955.
2. **The Internal Revenue Act of 1954,** through its tax reductions for individuals and business organizations, should prove to be a broad stimulative force. Numerous specific provisions will be helpful to building organizations and investors in construction, particularly the more liberal and flexible depreciation arrangements, the longer period for loss carryover, the greater ability to accumulate surplus without incurring penalty, the more liberal treatment of research and experimental expenditures, and various provisions designed to improve the tax position of small business (see p. 128).
3. **The Housing Act of 1954** will make the easy money policy more effective by liberalizing the terms on which FHA may insure mortgages, and

will encourage the development of a trade-in house market and expand the demand for residential alterations and additions. (The stimulative effects of the Housing Act will be limited to houses built for sale. The net effect of the measure on apartment construction is likely to be negative. At some point, probably not in 1955, the "urban renewal" provisions should encourage a considerable amount of both public and private construction in the older sections of cities.)

4. **The expanded highway program** will in the main be responsible for close to a $1 billion boost in highway expenditures during 1955.

5. **The "lease-purchase" plan** (AF, Aug. '54) for the construction of federal administrative buildings, post offices, etc., may contribute $20 million or more to 1955's office building volume.

6. **Federal aid for hospitals and schools** together in 1953 amounted to more than $160 million and will be somewhat more in 1955.

7. **Appropriations for military housing,** providing a $75 million expenditure for housing and military installations, will help sustain the category of military construction.

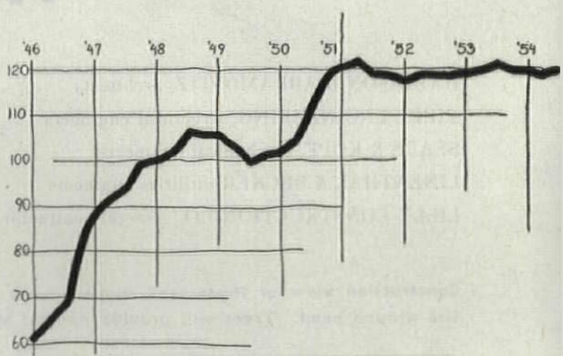
It is doubtful that there has ever been a time when the force of government has been more broadly or effectively behind an expansion of construction activity. It is aimed to stimulate private building by activating the credit system and by concentrating on the types of public construction operations that in turn facilitate the carrying forward of many kinds of private work. The depression-born idea of public construction as a counter-cyclical device to compensate for deficiencies in the private economy has been replaced by the idea of public construction as a vital force in a vigorous private economy.

Finally, the industry itself is in a strong position, ready to meet its responsibilities

1. **Material supplies are ample:** producers of building materials and equipment have ample capacity to supply without strain all the products that building activity can possibly demand. Shortages and necessitous substitutions are matters of history rather than current concern. The result is an industry able and eager to serve.

2. **Technological advances are many and great:** all through the construction industry, from design to manufacturing, a continuous technological change is taking place, creating obsolescence in the old as it provides heightened style appeal, more comfort and convenience, and greater serviceability and desirability in the new. This great movement represents industry's response to the expanded market arising from the income revolution, and is giving a powerful boost to construction demand.

3. **Prices are stable:** during 1954 building costs have been remarkably stable. Wage increases have been offset by moderate declines in materials prices, greater efficiency in building operations, and stiff competition among sellers. This same situation will prevail during 1955, affording a dependable base for planning and ordering.



Material prices steady: after a steep climb between 1946 and April '51, wholesale building materials price index of Bureau of Labor Statistics has remained fairly steady, fluctuating narrowly between 117% and 121% of the 1947-49 average.

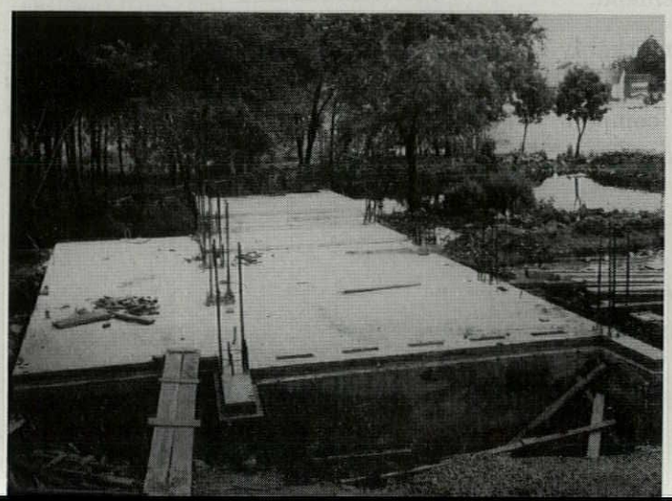
On the basis of anything that can now be foreseen, 1954 will end with construction activity more buoyant than it was at the end of 1953, and 1955 will begin with momentum high and a prospect of carrying through to the ninth of a succession of new annual records.

Chapel group includes Jewish chapel at left, Protestant at rear, Catholic in right foreground

THREE RELIGIONS AT ONE FOUNT

HARRISON & ABRAMOVITZ, architects
EIPEL ENGINEERING, structural engineers
SEARS & KOPF, mechanical engineers
LINENTHAL & BECKER, utilities engineers
LILLY CONSTRUCTION CO., general contractor

Construction view of Protestant chapel shows beautifully wooded site around pond. Trees will provide natural shading for chapels.



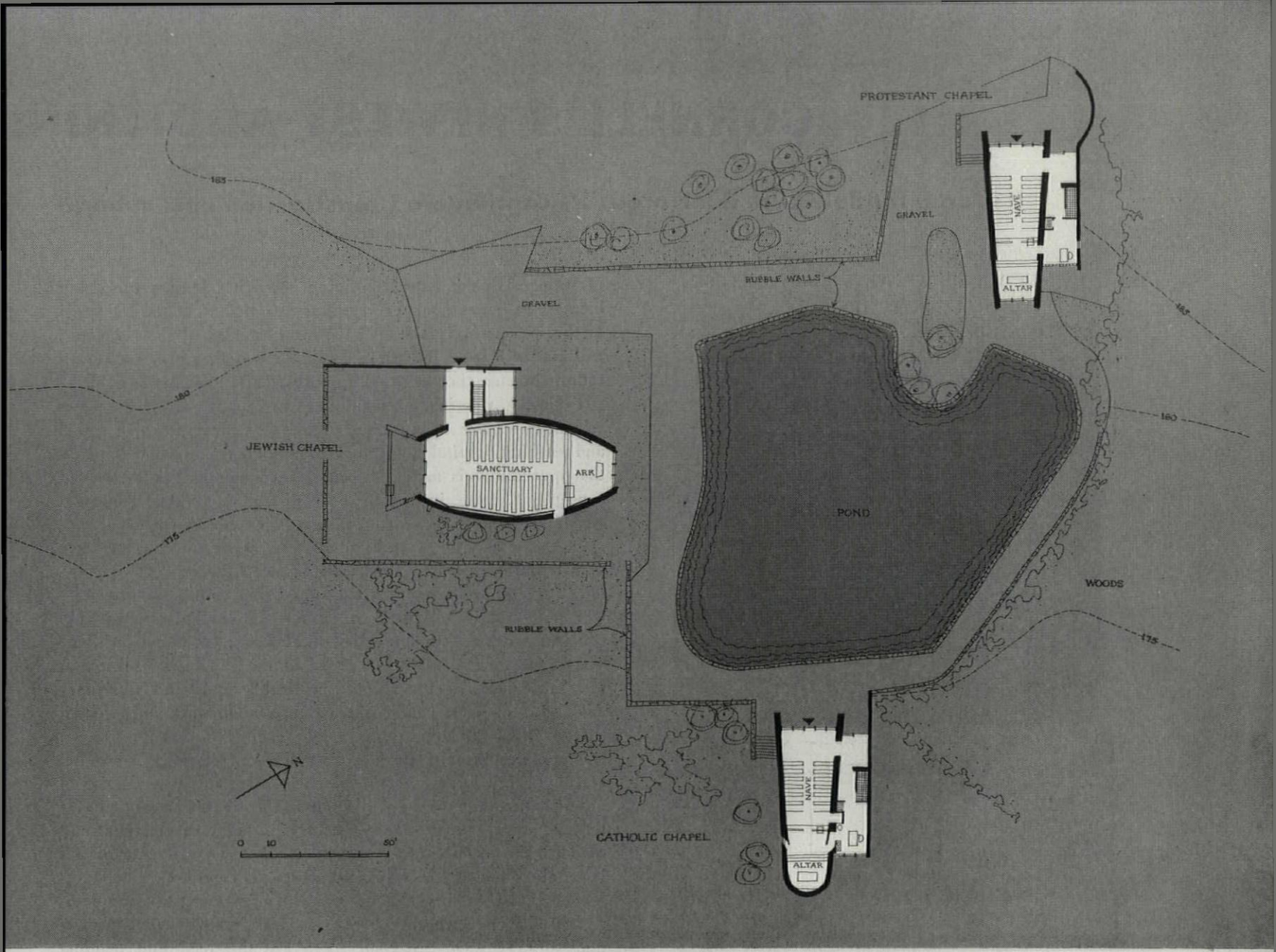
This campus group at six-year-old Brandeis University in Waltham, Mass. breaks a long tradition. It may well start a new one.

The old tradition is the single university chapel, which offers the hospitality of the founding faith to congregations of other faiths. At Brandeis, a nonsectarian university founded by Jews, the host-chapel concept was questioned as soon as chapel plans began to be seriously discussed three years ago.

"It is our feeling that worship is very much a matter of mood and is not limited to the words spoken or the ceremonies performed," says Dr. Abram L. Sachar, university president. "Protestants who worship in a Catholic chapel or Jews who worship in a Christian chapel, while grateful for the hospitality, are never really at home and the mood they seek is never properly evoked."

Nevertheless, this scheme for "three religions, separately together" did not burst forth, fully clad like Minerva, from anybody's brain. It has a history which happens to illustrate unusually clearly the common problem of transferring an abstract concept into architectural form.

The first tangible idea was to provide a frankly nonsectarian chapel with revolving stage, as has been done by the armed forces



For the first time, a chapel group for three major faiths

and on a few campuses. Architect Max Abramovitz sums up the two objections he and the university administration found: "They are gadgety in a place where gadgets do not belong. And they are watered down to the least common denominator." Since the university was specifically trying to provide for three extracurricular religious groups which were already an active and enthusiastic part of campus life, "watering down" seemed wrong.

Then came the idea of combining three separate chapels in one building—with the phenomenon of seeing that ideas which sound perfectly reasonable in words may show themselves unsound in visual form. A model of three chapels in a row-building inescapably conveyed the idea of stores, of shopping for a religion. A model of three in a stack carried a look of hierarchy. Groupings of one alone and two together conveyed the idea of two also-rans. But when Architect Abramovitz came up with the final scheme—which includes an outdoor lectern for joint services like Thanksgiving or the Baccalaureate sermon—it was plain that abstract concept and concrete form were at last in harmony.

When construction is finished at midterm this year, the chapels will be turned over to the three student religious groups. Students and alumni are already eagerly asking if they may be married in the new chapels.

None of the three will carry an exterior designation. Instead the Catholic altar, Jewish ark and Protestant communion rail will be visible through the glazing facing the pool promenade. Differences among the three are as interesting as their similarity. Abramovitz explains: "The Catholic chapel is rounded and enclosed, to envelop the ritual of the mass and to help meet a requirement for only a low level of lighting (6 to 10 foot-candles). The Protestant chapel has a forthright trapezoidal shape, the walls focusing toward the communion table. The Jewish chapel shape curves toward the ark; in form, it lies between the two others."

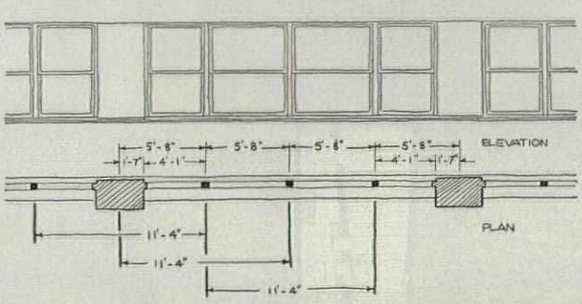
All will have dark, floating, side-lighted ceilings to destroy box-like feeling, and top light (stepped down for the Catholic chapel) to highlight the sanctuaries and counter end light.

Roof framing is wood on brick piers; walls are block faced with brick inside and out—on the outside with a handsome cream-and-brown speckle. Mullions are steel protected with wood. Cost of the three, including fees and utilities, is $242,714; $30 per sq. ft.; $1.36 per cu. ft.

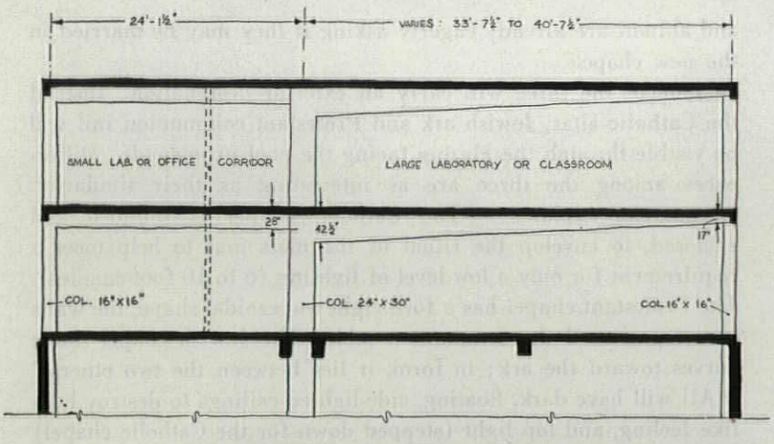
CORNELL'S NEWEST ADDITION:

Its room module cuts floor area; its cantilevered construction cuts cubage

NEW YORK STATE VETERINARY COLLEGE, CORNELL UNIVERSITY
LOCATION: Ithaca, N.Y.
ISADORE & ZACHARY ROSENFIELD, architects
C. J. WHITE, state architect
OTTO J. TEEGAN, state university architect
JOHN D. DILLON, mechanical engineer
GENERAL ENGINEERING ASSOCIATES, structural engineers
W. E. O'NEIL CONSTRUCTION CO., gen. contractor
WILLIAM A. HAGAN, veterinary college dean



Module of 5'-8" is based on 11' clear room width (11'-4" to partition centers) of typical interchangeable office or laboratory. Narrow windows next to columns keep interior module regular, with savings on mechanical plant, laboratory details, finishing work. Repeated 11' x 15' minimal room saved 14% in area against original idea of average 12' x 16' room, varying because of regular window module.



Framing of basic science building uses double-cantilever bents with slender outer columns and shallow spandrels for most daylight. Flat ceiling wall to wall eliminated second pipe chase and much cubage because pipes from one side of corridor can cross to other under hung perforated metal ceiling without bending for girders.

Overlooked in the general building boom has been a surprising increase in new schools of veterinary medicine; in the US seven of the 17 veterinary schools have been established since the war, and abroad it looks like a big decade or two ahead for such institutions because they are tied up with efforts to increase food.

Typically, veterinary schools have an opportunity that comes seldom to schools of human medicine: the chance to plan school and teaching hospital at once and as one integrated whole. Usually the opportunity is muffed because the planners stick to the old concept of these institutions—a self-contained classroom and research building convenient to a random collection of barns.

In this case full advantage has been taken of the chance to plan a truly integrated plant, and Cornell's 200-student school—long famous for its research and pioneering of new techniques—will now undoubtedly become an international pilgrimage stop for study of its physical plant. (However, thinking in some "backward" areas is already ahead of the US on the subject of integrated facilities for regular medical schools and veterinary medicine schools, to handle instruction, student work and research that overlap or duplicate.)

The most unusual feature of Cornell's new school is its hospital and clinic for large animals, which is surprisingly analogous to a hospital for humans. The diagnostic and treatment core adjoins the preclinical, basic science school building (see plot plan and rendering, opposite, and plan, overleaf). To the east of the hospital core lies the principal hospital corridor, a tanbark-surfaced, clerestory-lighted breezeway fully glazed at both ends. Across the breezeway are five sick barns, analogous to medical and surgical wards; beyond these are the feed and bedding and garage and farriery buildings, analogous to kitchen and service portions of a hospital. The dairy (maternity ward) and bull barns are for teaching animal obstetrics. Beyond the barn group are convalescence pastures. The central breezeway, which has a sprinkler system to keep down tanbark dust, serves both as a passage from wards to the hospital core and as a diagnostic runway for studying movements of injured animals.

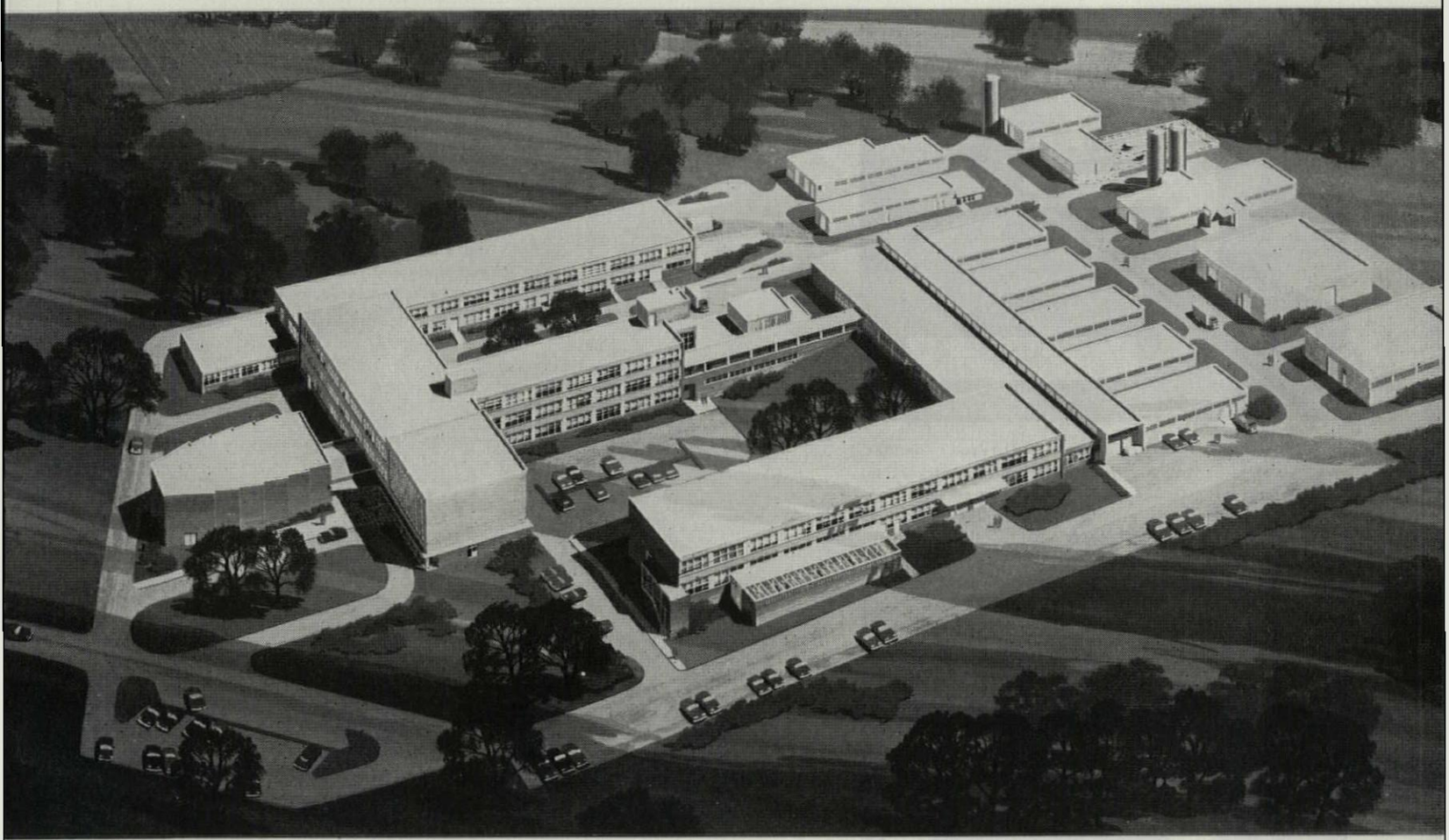
The small-animals' hospital and clinic are contained in one building; the core adjoins the large-animals' core to make one L-shaped clinical building. It has a separate and very pleasant public entrance for persons bringing in pets for treatment.

Construction of principal buildings is reinforced concrete two-way floor system, with slag block fillers spanning from transverse bent to bent. Crosswise beams are cantilevered (see section, left) and there are no cross members between bents other than the floor system itself and the shallow spandrel beam. Masonry spandrels could have been omitted but were a state and university requirement. Wall facing of red and buff brick and column facing of white rough-sawn marble is in harmony with the white farmhouses and red barns of the local countryside.

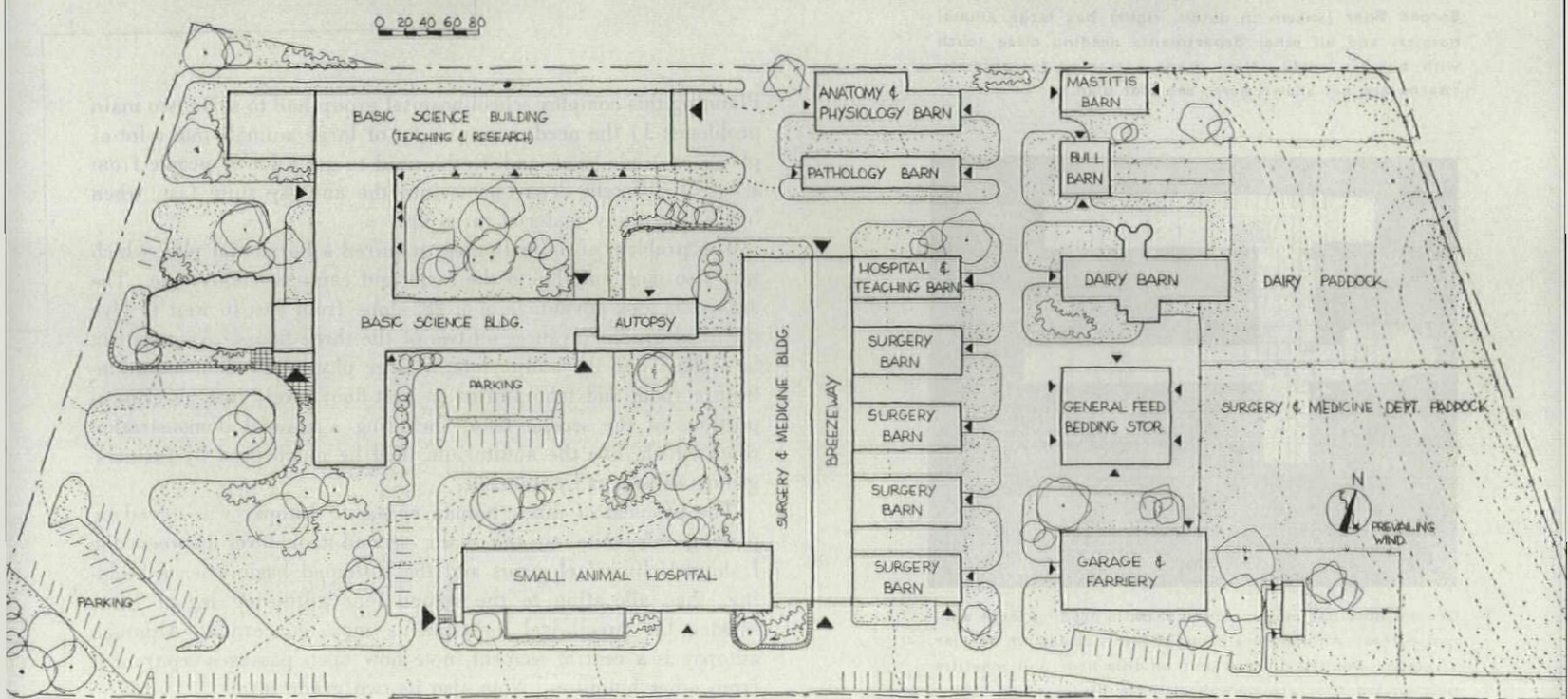
Barns are concrete block pier construction supporting transverse steel beams with one-way concrete slab.

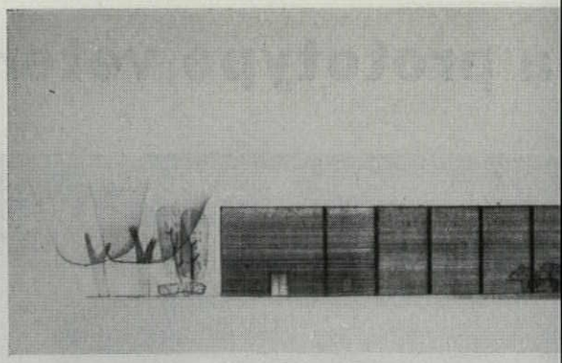
The contractor saved time and money by erecting the concrete structure with the aid of reusable, adjustable lattice-steel shoring (AF, Dec. '53), a shoring system relatively new in this country. Construction is scheduled for completion next year. Cost: $5,488,581 including Group I equipment and excluding architects' fee; $23.47 per sq. ft.; $1.42 per cu. ft.

a prototype veterinary school

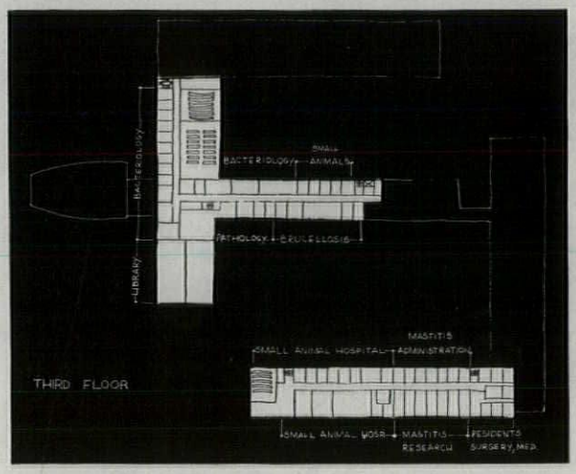


Model and site plan show how basic science building with classrooms and labs is joined by important autopsy and receiving link to big clinical area. Small animal hospital is in foreground, large animal hospital is at the right.



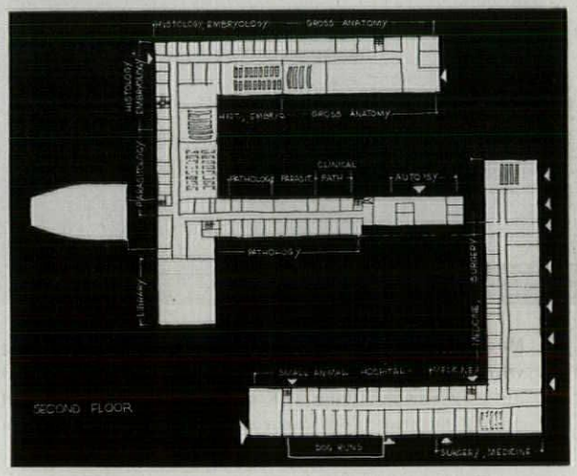


Elevation shows south side of basic science building and, at right, cross-section through large animal clinic and clerestory-lighted breezeway. (Point of view is indicated by line A-A in plan below.)

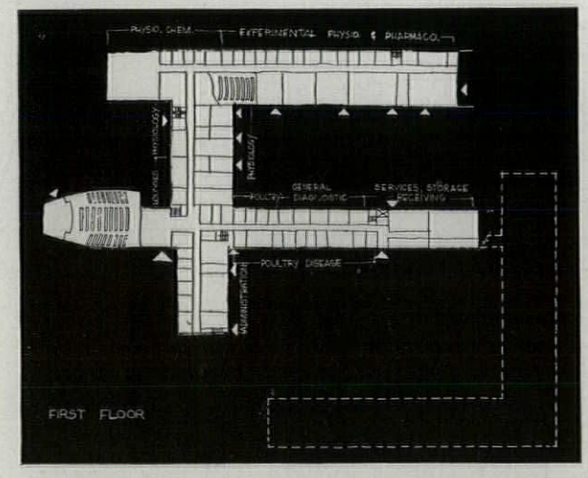


Third floor houses departments which require neither presence of large animals nor quick and easy access to autopsy for study. Resident suites at end of small animal hospital serve both this unit and large animal hospital.

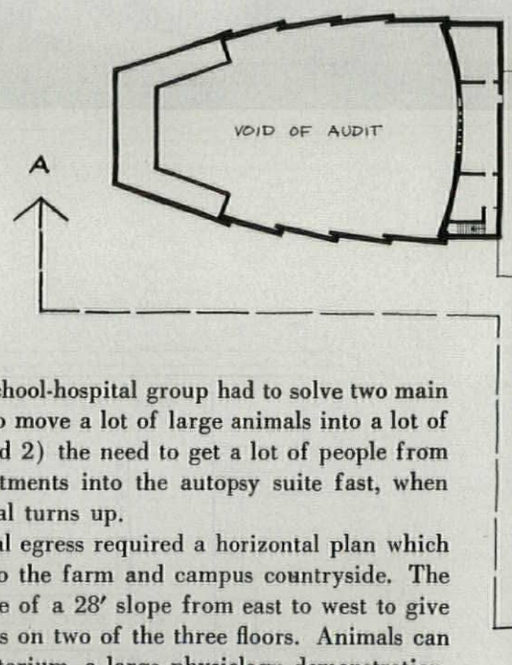
Plan closely knits veterinary school with teaching hospitals



Second floor (shown in detail, right) has large animal hospital and all other departments needing close touch with autopsy study. Note grade entrances for animals. (Barns are not shown here; see plot plan.)



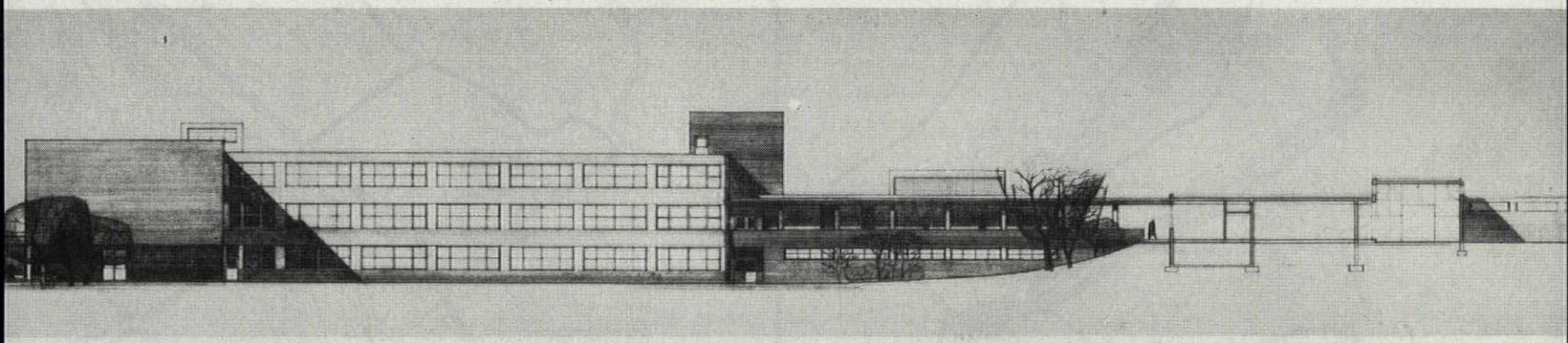
Ground floor has most preclinical units needing large animal egress. Animals are brought into auditorium at rear of stage. Poultry disease unit on this floor and mastitis unit on top floor are nonschool state projects.

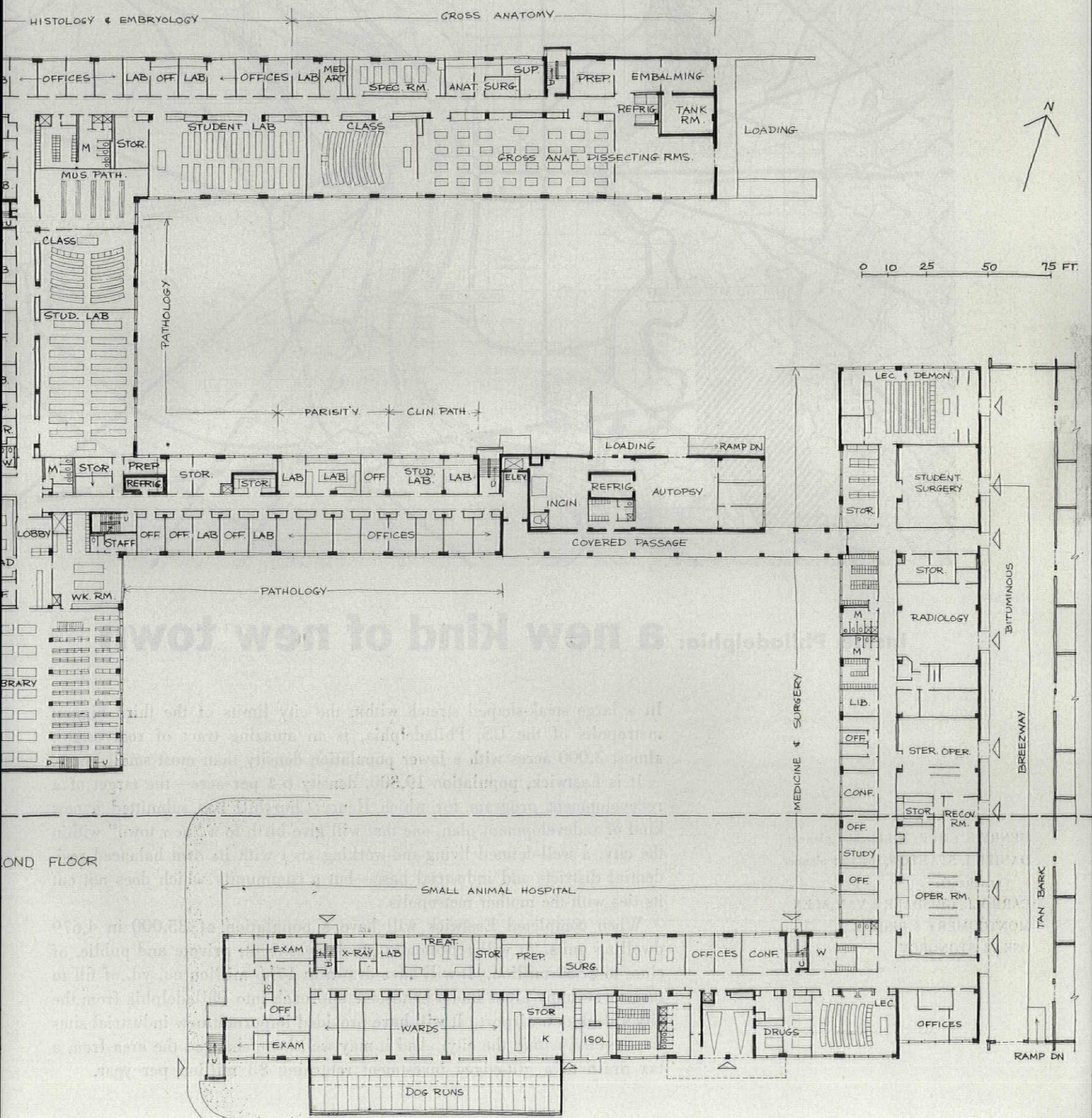


Planning this complex school-hospital group had to solve two main problems: 1) the need to move a lot of large animals into a lot of places at grade level, and 2) the need to get a lot of people from a lot of different departments into the autopsy suite fast, when interesting study material turns up.

The problem of animal egress required a horizontal plan which was also most suitable to the farm and campus countryside. The architects took advantage of a 28′ slope from east to west to give plentiful grade entrances on two of the three floors. Animals can be walked into the auditorium, a large physiology demonstration-lecture room and laboratories on first-floor level; into all clinical portions of the second floor, including a clinical demonstration room which, like the auditorium, will be much used by farmers' groups as well as by students.

The problem of quick human egress to autopsy was solved by placing this suite on the main, second-floor level between the L-shaped clinical elements and the F-shaped basic science building, then allocating to the second-floor adjoining leg of basic science the preclinical departments most concerned. Although autopsy is a central element, note how open passages separate it from other buildings. Note also its two grade levels.

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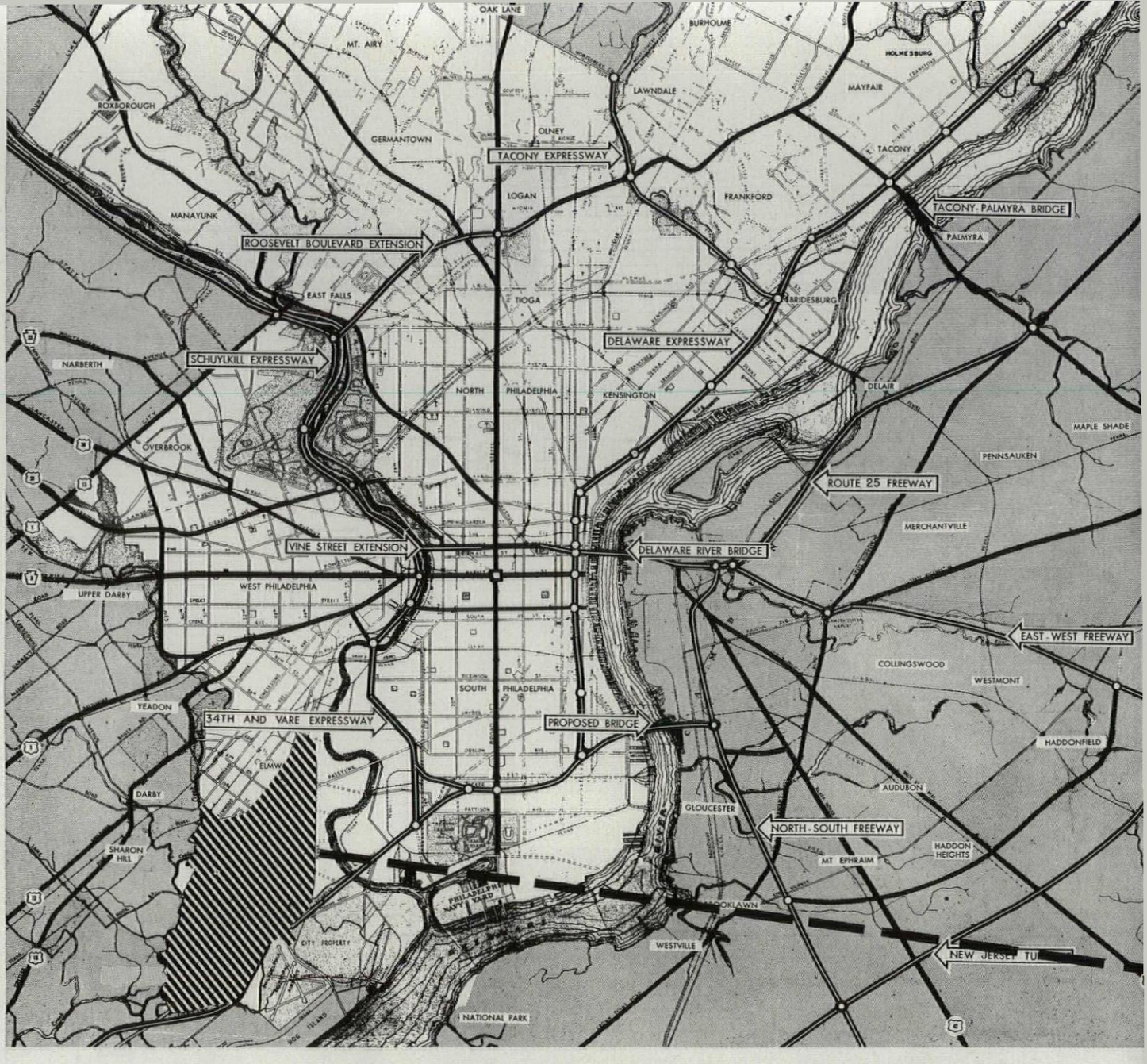


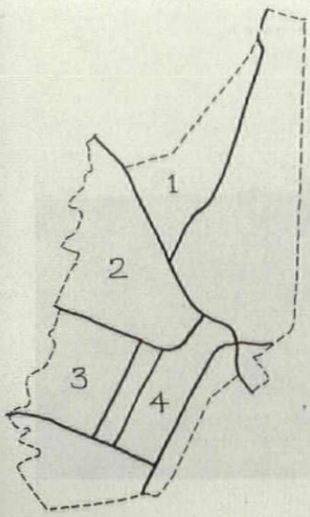
Inside Philadelphia: a new kind of new town

HENRY S. CHURCHILL, chief planner
DANIEL J. STANTON, resident planner
Consultants:
CARROLL, GRISDALE & VAN ALEN
MONTGOMERY & BISHOP
OSKAR STONOROV

In a large steak-shaped stretch within the city limits of the third biggest metropolis of the US, Philadelphia, is an amazing tract of real estate: almost 3,000 acres with a lower population density than most small towns.

It is Eastwick, population 19,300, density 6.4 per acre—the target of a redevelopment program for which Henry Churchill has submitted a new kind of redevelopment plan, one that will give birth to a "new town" within the city, a well-defined living-and-working area with its own balanced residential districts and industrial base—but a community which does not cut its ties with the mother metropolis.

When completed Eastwick will have a population of 35,000 in 4,679 dwelling units. It will represent a gross investment, private and public, of close to $350 million. It will have drawn in 17½ million cu. yd. of fill to turn its swampy areas into a handsome approach into Philadelphia from the city's sleek new airport. It will have provided important new industrial sites for the city, *within* the city. And it may well have changed the area from a tax drain to a gilt-edged investment returning $3 million per year.



The four plan areas

1. Reading Railroad
2. Pennsylvania Railroad
3. Commercial centers
4. Civic center
5. Heavy industry zone
6. Light industry zone
7. Existing heavy industry
8. Wild park
9. Bird refuge

Library of the Minneapolis School of Art

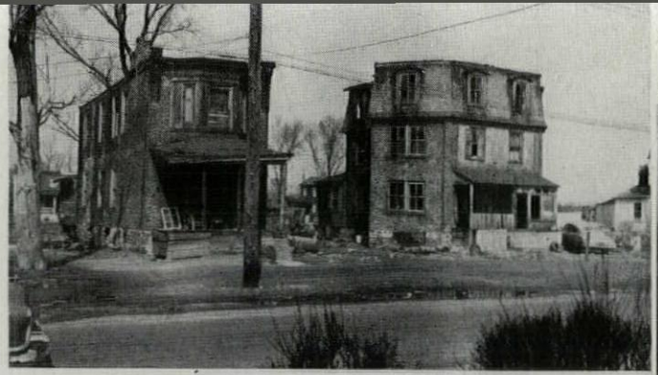
Henry Churchill's realistic approach to Eastwick

"A neighborhood is a sociologic concept and I don't think you can plan an area in that sense." What his plan implies is the larger reality of the city into which Eastwick will fit.

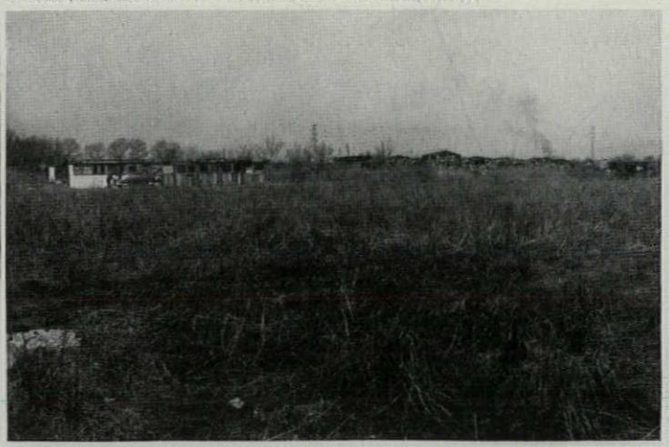
The plan areas into which Churchill is slicing the parcel are defined but not independent. He is providing settings for the areas to create themselves, rather than pat solutions.

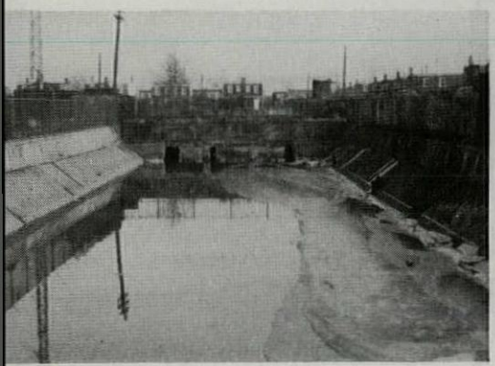
There will be four residential areas plus three industrial areas, plus parks and wild life preserve. Each living district will be surrounded by convenient arterial roads, but not penetrated by them; each will have its own schools and shopping center for daily needs; density will be midway between city and country standards: about 13.8 families per gross residential acre. Areas can be developed one by one (see diagram upper left) and probably will start with 1 in diagram.

After the city, with the help of federal aid, condemns and improves the land, it will be resold to private developers for completion of the projects. For estimated cost, and sources, of the original investment, see p. 143.



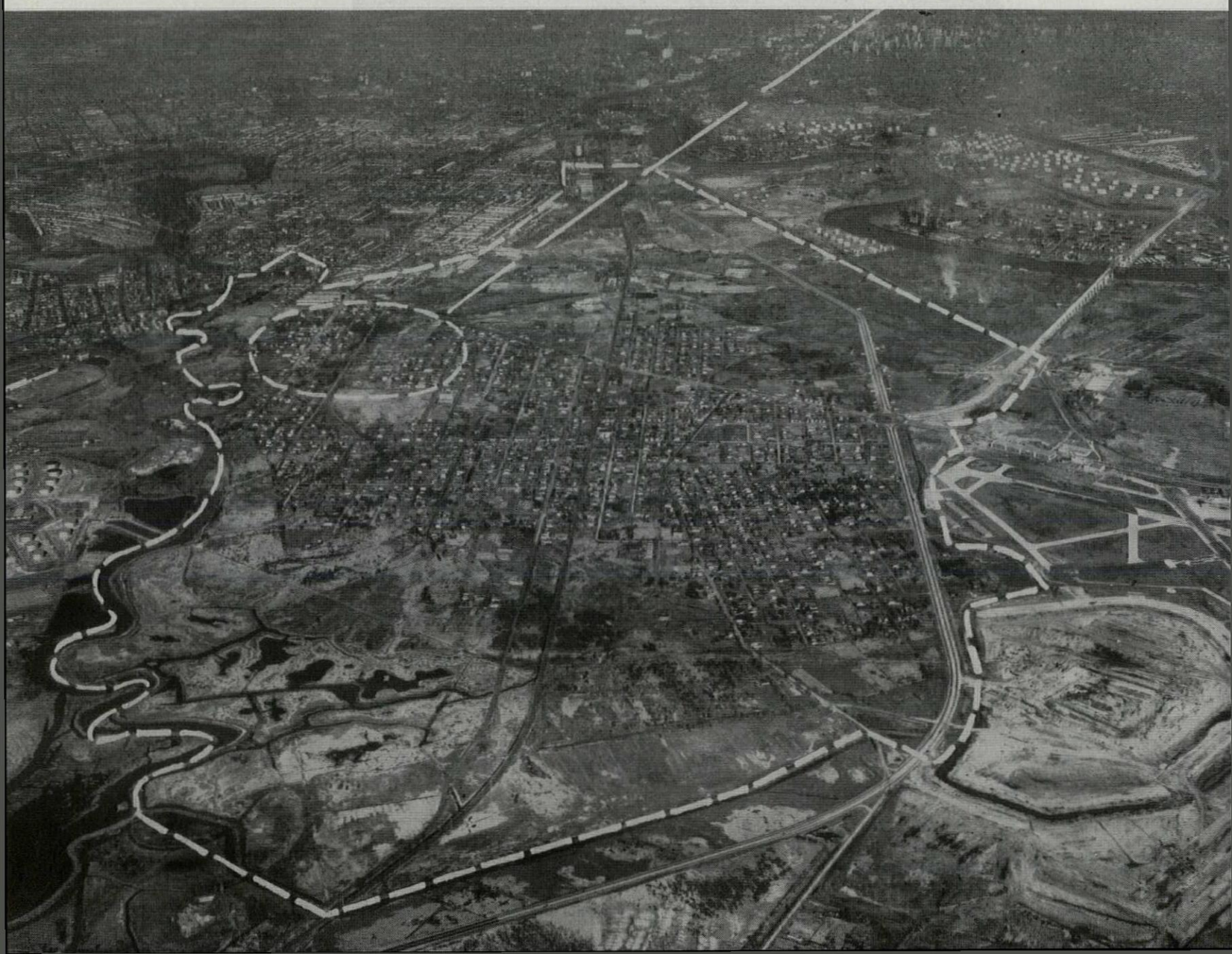
Photos: (bot.) Aero Service Corp.; (others) W. R. Livingston Jr.

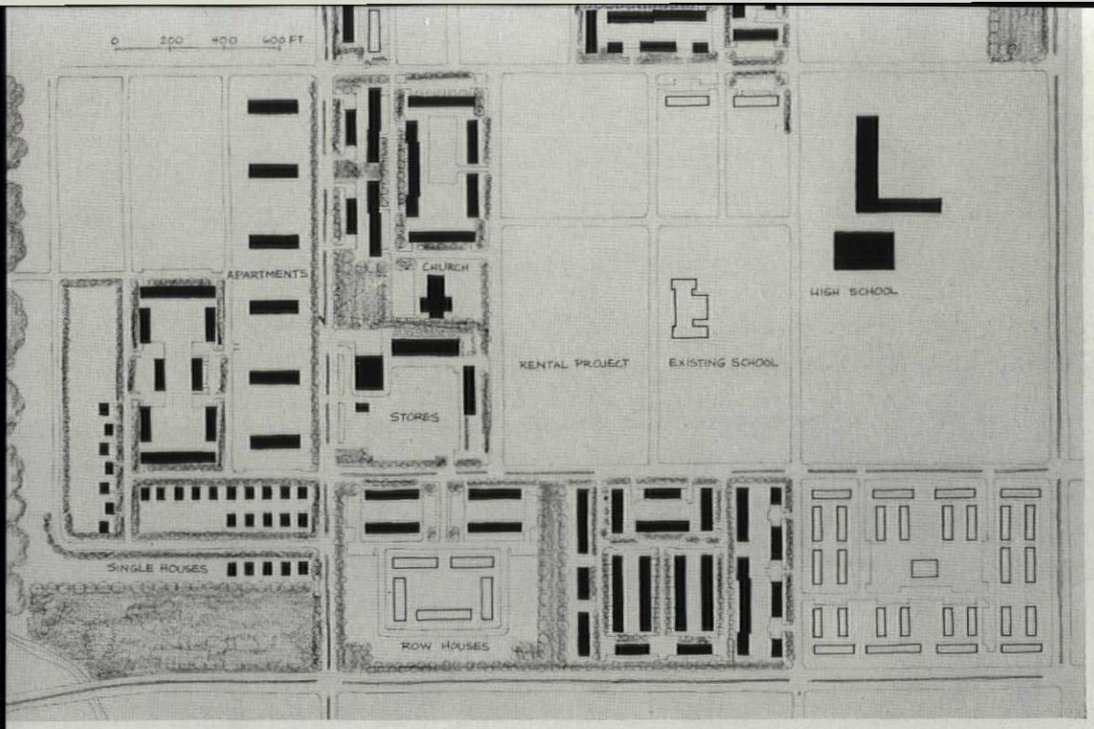




Drainage and fill are big problems in the 3,000-acre site, now replete with swamps, sunflowers, open sewers and many rundown houses. Accumulation of fill already has begun, pumped from Schuykill and Delaware River dredging operations 10 mi. away. This fill is almost entirely coal dust, dumped in the river by industrial plants upstream over the course of many years. A frosting of topsoil will be necessary over it to nurture the green environment planned for the redevelopment project.

Air view of area. Section nearest camera will be the home of the bird sanctuary. Airport is to right. Smaller area outlined approximately inside tract is shown upper right in preliminary plan for development.





Mixture of row houses, apartments and detached houses will be the solution for residential areas in the redevelopment area. Row houses will be 18′ wide instead of the usual 16′ in Philadelphia, accommodating two bedrooms with views front.

Twelve targets for the Eastwick planners:

1. A factory offering employment within ¾ mi. of every dwelling unit.

2. A street pattern with only a half-dozen through-street limited-access highways; local streets with slow, safe traffic.

3. Express bus service on half the expressways, cutting the present running time of the buses from one end of the district to the other from 18 minutes to 7.

4. A park or grassy recreational area within ¼ mi. of every house.

5. All schools located in parks, with footpaths connecting the schools in each plan sector.

6. A *mixture* of housing types (see scheme above): row houses, single houses, semi-detached houses and garden apartments, with a few high rise apartments variegating the skyline.

7. Elimination of the ubiquitous Philadelphia alley.

8. Offstreet parking or garage facilities for every dwelling unit, including community garage facilities to be privately built, then turned over to the Philadelphia Parking Authority; also parking bays at the block ends.

9. No rights of way less than 40′ wide, with paved areas of smallest minor streets cut down to 20′ widths, to be flanked by side planting strips of 10′ on each side.

10. A major shopping center in the heart of the district designed primarily for access by rapid transit (but with parking facilities too). This will stand at the main bus interchange. Provision for local shopping also will be made in each plan sector, plus provision for some corner stores.

11. Variety in solutions. Three different architectural firms (see credits) are developing diverse layouts for the residential districts to avoid monotony.

12. A coordinated industrial development in the industry-zoned areas—large-scale and small industrial parks.

Land allocation	Acres
Total acreage	2,990
Residential, to be retained	89
Residential, new	914
Industrial to be retained	254
New industrial	1,009
Commercial	61
Schools (public and parochial)	85
Parks and open space	432
Civic center	9
Major roads and highways	137

Density	Families
Future population: 12,600 families (35,360 people); 8,600 units for sale; 4,000 rental units; average density per gross residential acre	13.8

Costs	Million
Land acquisition	$23.
Site clearance	1.2
Site improvement	51.
Demolition, relocation, appraisals, etc.	12.3
Total project expenditure	87.5
Community facilities	22.
Gross project cost	109.5
Resale value of land	35.
Net project cost	74.5

Financing	
Federal capital grant	49.5
Local participation	25.
(of which $22 million will be in noncash grants in aid)	

A SOARING WING OF STRUTS

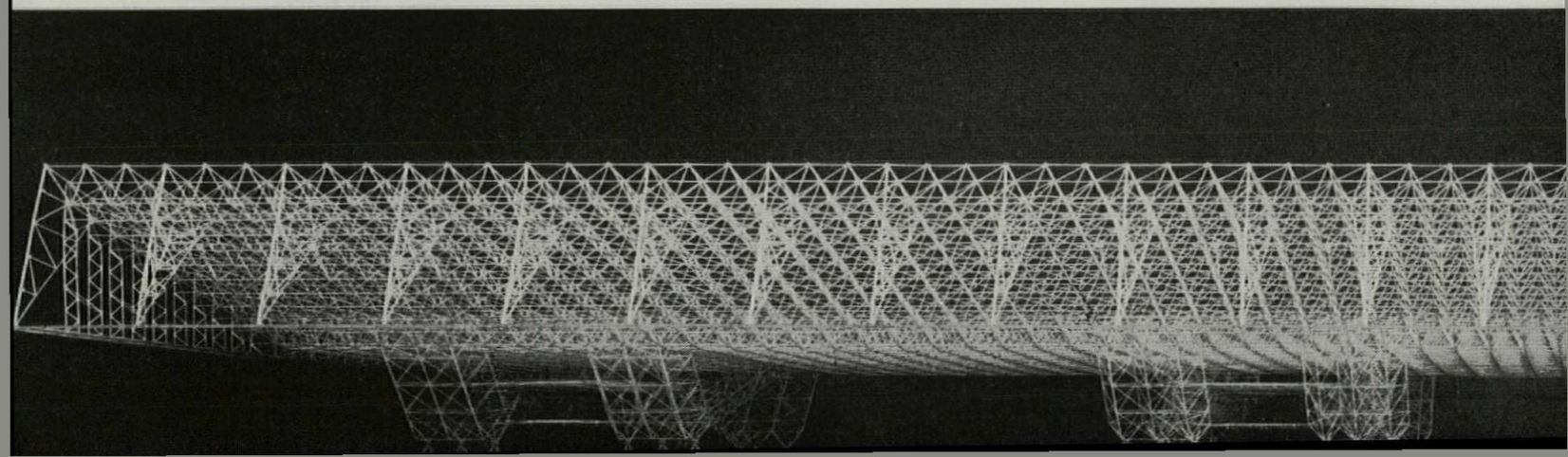
Space-frame hangar with 150′ overhangs is built with thousands of identical steel pipes, a set of ingenious connectors and a single assembly tool—the hammer

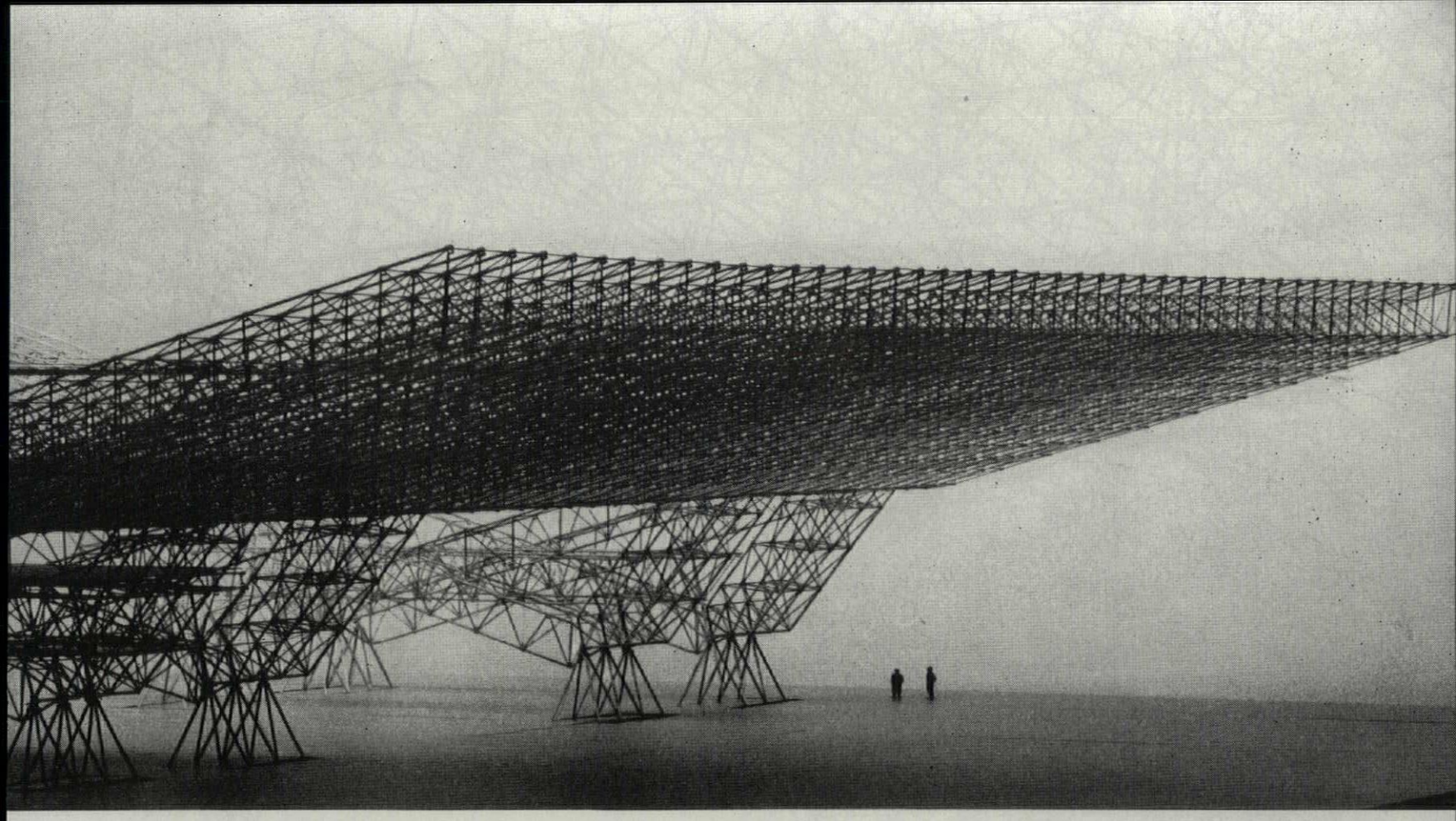


Photos: (top & bot.) H. Callahan; (center) R. Bleston

Konrad Wachsmann, professor of advanced building research at IIT's Institute of Design was project director for this tubular steel structure.

Side view of 20′-long model represents 805′ of finished structure, shows four three-story supporting towers, each designed to carry two 50′ x 90′ mezzanine floors of shop and office space.





Gull-wing shape of Air Force hangar is tied together by high-strength cables, across the upper half of structure.

Out of the Chicago Institute of Design the building world has come to expect fantastic projects which look far into the future and sometimes turn out to be intensely practical.

▸ It was there that Mies van der Rohe designed his first American buildings.

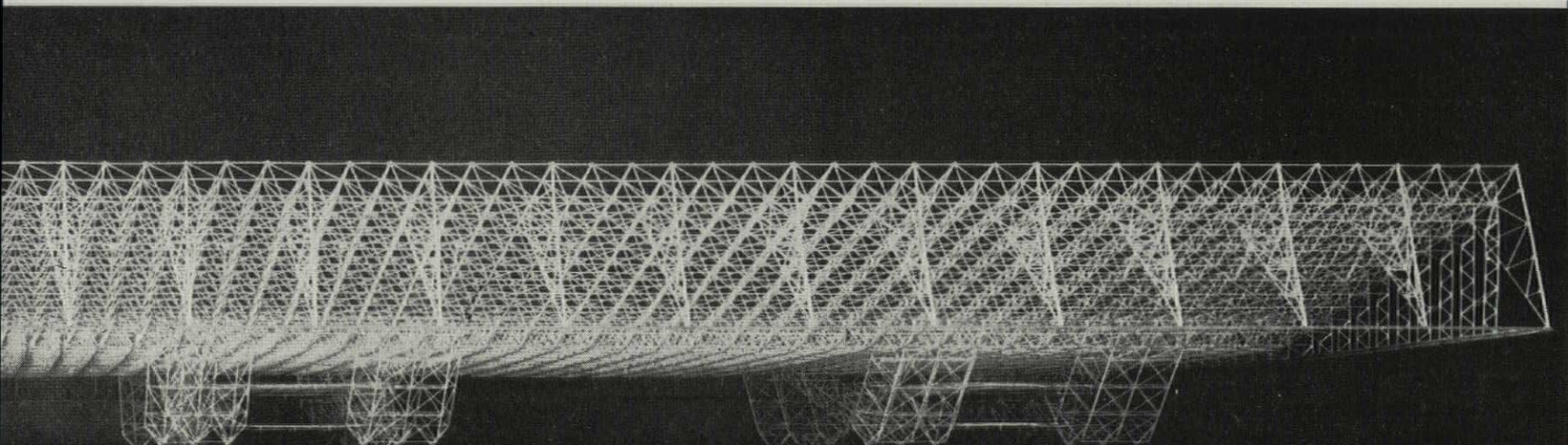
▸ It was there that Buckminster Fuller got his first big student following and put together his first geodesic domes.

▸ It was CID's Architect Konrad Wachsmann and Harvard's Walter Gropius who worked out the prefabrication technique for General Panel Corp. And it was there that Wachsmann and Engineer Paul Wiedlinger in 1946 developed their flat-topped, widely cantilevered aircraft hangar made entirely out of standard tubular steel framing members held together by highly flexible connectors and adaptable to virtually any structural situation.

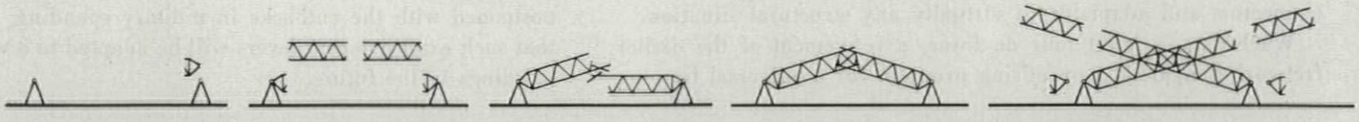
Wachsmann's latest tour de force, a refinement of the earlier fretwork hangar, is a promising proposal for a universal framing system. It is a winged structure based on a 10′ module of 3″ and 6″ steel pipe held together by forged swivel connectors that are quickly locked into place by two blows of a hammer (no other tool is required to erect the entire structure). The hangar is delivered to the site in 20′ x 30′ frames folded for easy transportation. Each section is demountable and thus can easily be replaced.

In conventional buildings the form of the shelter is obscured by all the things that hold it up. Here, structural support is kept to a minimum. The sheltering wings of the hangar are so dominant as to produce almost a new architectural expression—the wide-span cantilever.

Although this particular hangar, developed after two years of research under government contract, has been indefinitely postponed with the cutbacks in military spending, it is probable that such extensive cantilevers will be adapted to a wide variety of buildings in the future.



Space-frame hangar's myriad struts are shop assembled into 30′ long



This spectacular integration of engineering and architecture is the result of meticulous study into the type of standard structural module that might serve the widest number of building types. Though the universal tubular steel space frame finally selected is applied to a huge aircraft hangar, the system is designed to be equally adaptable to any other building requiring large, unobstructed floor areas.

Requirements of a universal framing system: uniform, mass-produced parts that can be prefabricated in large sections for speedy erection and yet can be easily transported; simple connections to facilitate erection by unskilled labor; flexibility; demountability; lightness; durability; low cost.

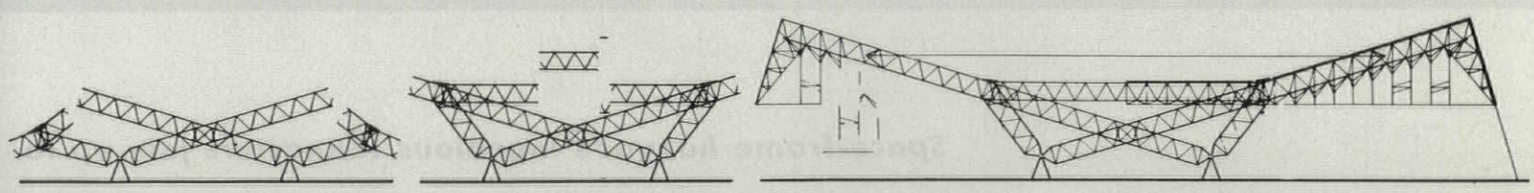
Solution: tubular steel framing members that are mutually supporting in all directions through the use of ingenious forged clip connectors. These connectors can join as many as 20 members in any desired angle at any one point and are locked with only three wedges simply hammered into place.

At the factory, five 30′-long, 6″-diameter pipes are joined with swivel connections to 10′-long, 3″-diameter pipes to form a 20′ x 30′ framing section that can be folded for transportation (see photo, p. 148). In erection this section, weighing 2¾ tons, is hoisted into position and braced by further 3″ diameter pipes, 10′ and 14′ long, placed transversely and *(continued on p. 174)*

For connector details see pp. 148-149

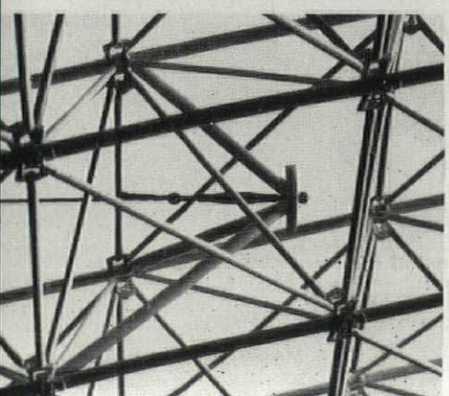
Triangular edge frames carry structure down from 75′ height of cantilever edge to 40′ height of rolling doors which will surround hangar. Cladding consists of prefabricated curtain-wall panels and built-up roof deck.

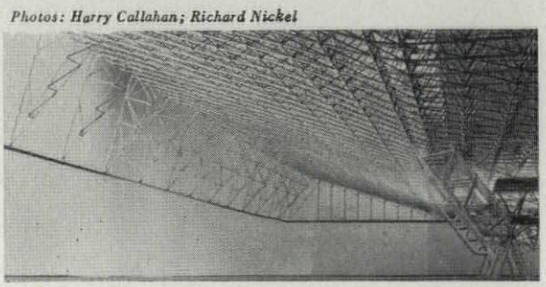
frames to simplify erection sequence



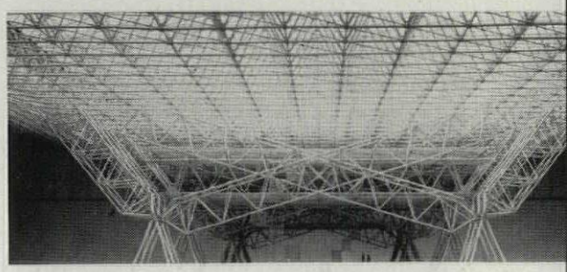
Photos: Harry Callahan; Richard Nickel

Tension cables transmit loads to three points of structure through a tripod base piece.

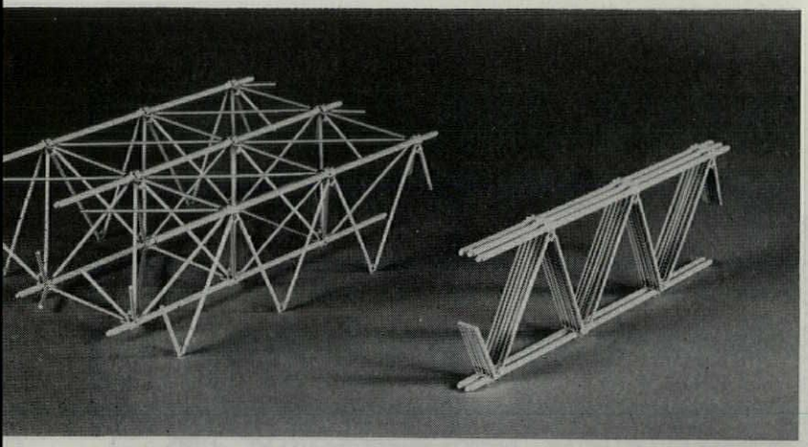




Fixed upper walls above rolling doors are pierced with 30′ Venetian blind arrangements where necessary to allow entry of huge tailplanes.

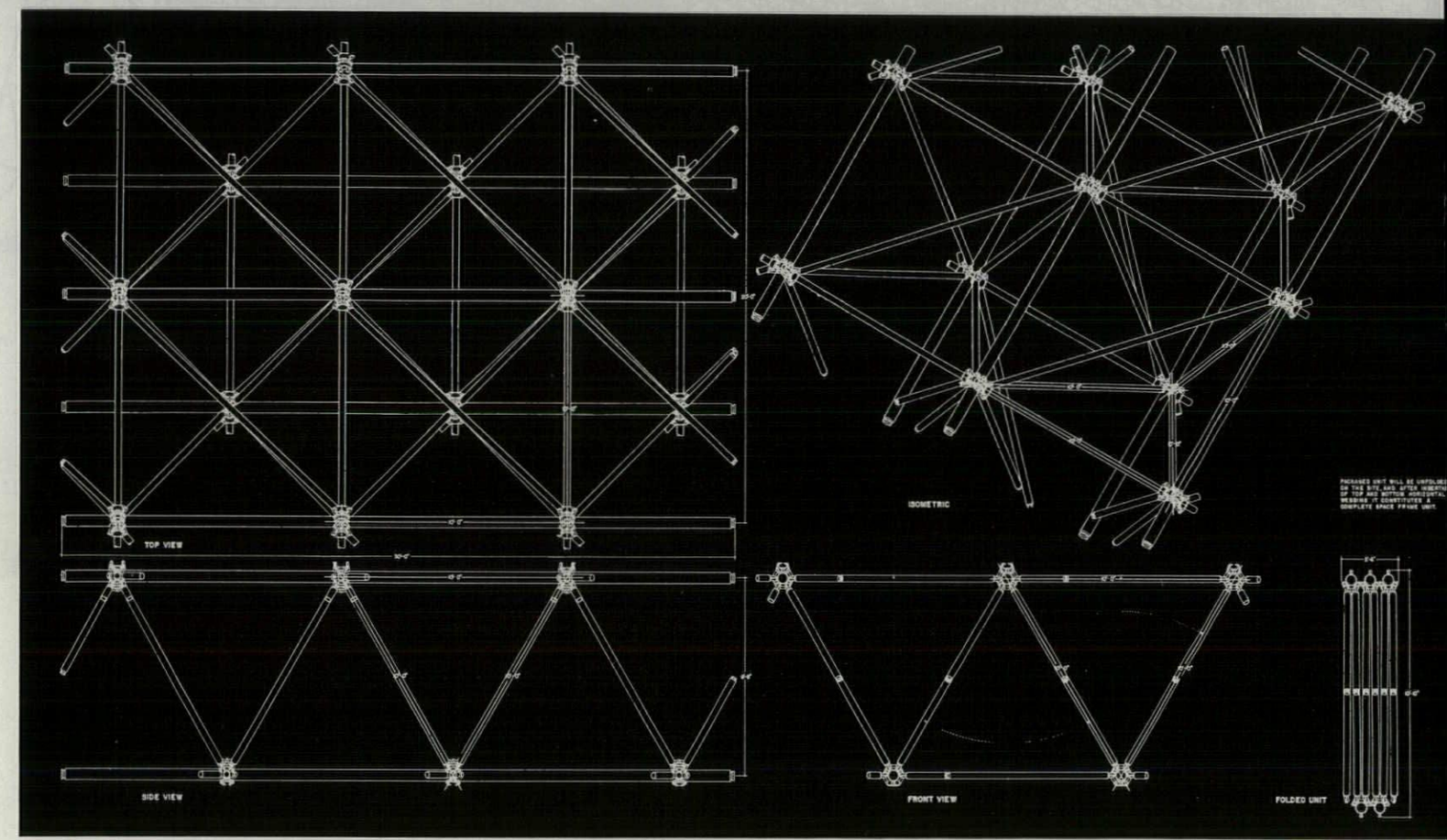


Four-strut base supports, are 100′ apart, each set in concrete foundation slab and designed to withstand both compression and tension forces.

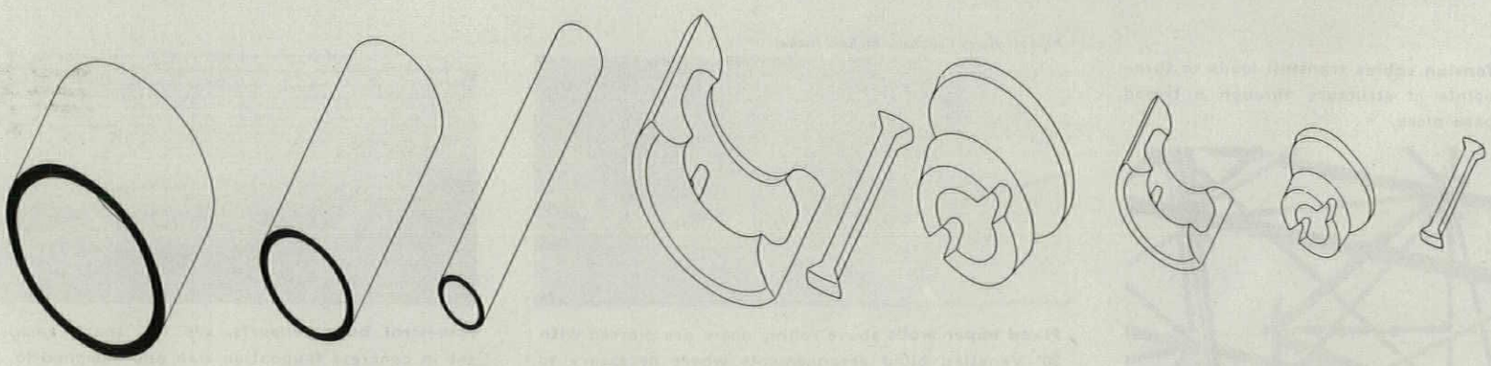


Prefabricated frames, spanning 20′ x 30′, are shop-welded with swivel connectors so the frame can be folded for easy transportation. In erection, the frame is opened up and the 6″ main struts positioned.

Supplementary struts are wedged into place to bind the frame into a continuous structure.



Space-frame hangar's ingenious connectors join up to

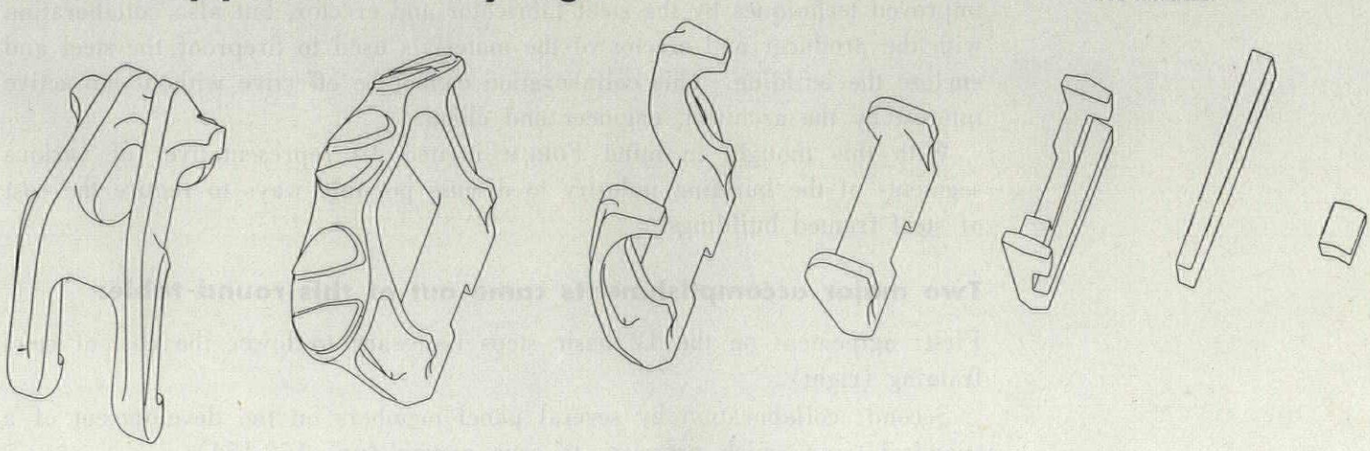


Three sizes of pipes and 13 forgings are required for this tubular hangar structure. In all, there are 7,565 standard joints

Photos: (above) James Blair; (opp. p.) Richard Nickel

Typical connector looks complicated, yet is fastened by three wedges simply hammered into place. Two men can set and lock each joint in less than five minutes.

20 struts at any point and at any angle





ROUND TABLE REPORT:

How to cut the cost of steel framing

Reinforced concrete has been displacing steel framing in more and more buildings up to 20 stories tall. (In taller buildings concrete columns on the lower floors occupy too much space.) The reason is cost.

If the cost of steel construction is to come down, it will require not only improved techniques by the steel fabricator and erector, but also collaboration with the producer and erector of the materials used to fireproof the steel and enclose the building. This collaboration cannot be effective without the active interest by the architect, engineer and client.

With this thought in mind FORUM invited 19 representatives of various segments of the building industry to discuss possible ways to reduce the cost of steel framed buildings.

Two major accomplishments came out of this round table:

First: agreement on the 12 basic steps necessary to lower the cost of steel framing (right).

Second: collaboration by several panel members on the development of a spandrel truss which promises to save money (pp. 152-154).

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...ve steps toward lower-cost steel framing

1. Some of the biggest savings would be achieved if architects would design their buildings to a relatively small number of standard bay dimensions instead of making every building a tailor-made job.

2. Conversely, the steel fabricators and erectors could speed up the general use of such standard bay dimensions if they would "substantially lower prices for steel framing in those standard dimensions below those for steel framing in special dimensions."

   As long as architects and their clients think the bids on their steel will be the same whether they use standard dimensions or not, few architects are likely to do much about standardizing bays.

3. Welding has made such progress that on many and perhaps most buildings it should permit savings of at least 15% on the steel structure. Some of these savings from welding will come from continuity of design; some will come from cheaper connections.

4. Low buildings can often be bolted together with ordinary bolts much cheaper than they can be riveted together, and taller buildings can often be bolted together with high tensile bolts cheaper than they can be riveted.

5. Very substantial savings on the fireproofing of the horizontal members can be achieved by fireproofing the underside of the members with a continuous ceiling of lightweight perlite or vermiculite gypsum plaster attached to the underside of the beams. This type of fireproofing has met the standard fire tests and is approved in every major code.

   A major factor in the economy of this type of fireproofing lies in the very substantial reduction in the weight of the floor slab and the fireproofing itself, thereby permitting the use of lighter structural members.

6. For vertical members and some others on big jobs the most economical type of fireproofing is perlite or vermiculite gypsum plaster sprayed on with a plaster pump which can now be used in almost all parts of the country. (Notable exceptions: New York and Philadelphia.)

7. Promising field for further study is the combination of steel vertical members with concrete horizontal members or concrete slabs.

8. Further substantial economies can be achieved with the use of corrugated steel floor-forms with built-in reinforced bars.

9. To meet the increasing stiff competition from reinforced concrete, most of us consider it important that steel construction should be allowed to make use of higher working stresses. Since the steel is rolled under well-controlled shop conditions, there is no need for such a high safety factor as is now required.

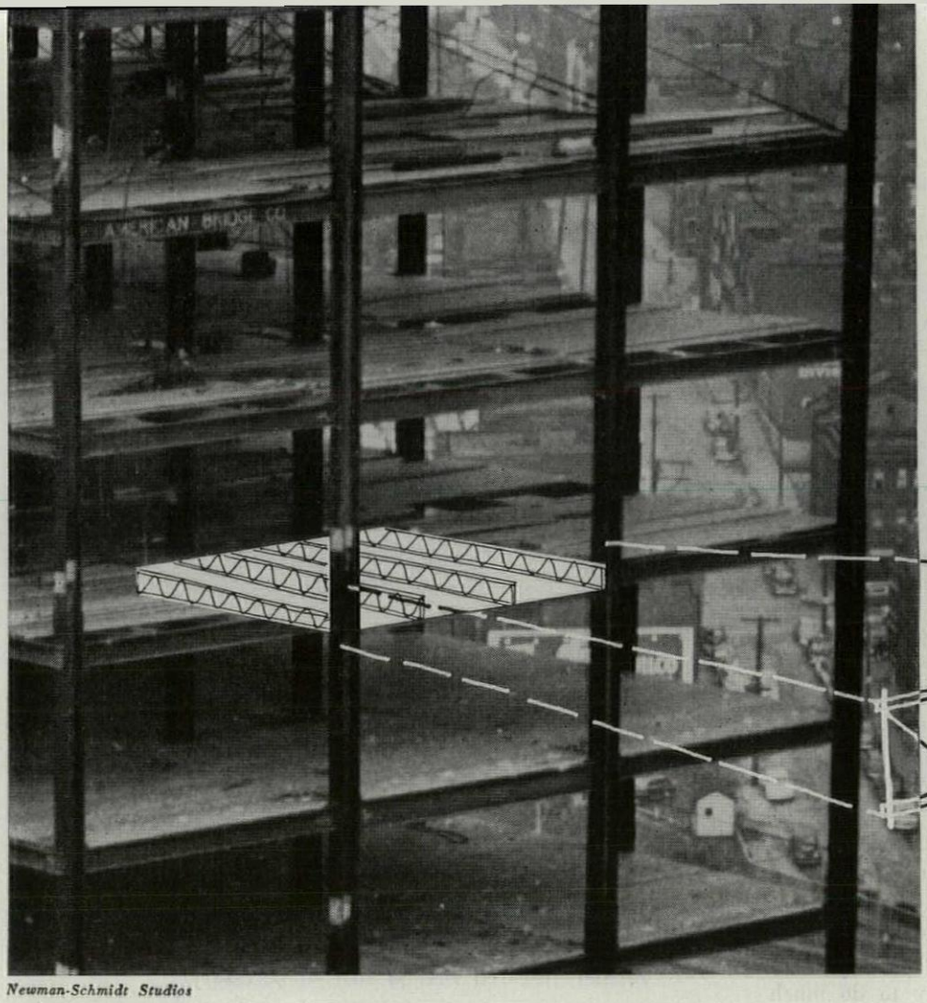
10. Too few architects and engineers are taking advantage of the research being done by the steel industry to develop more efficient designs. This failure to use the research already available is not calculated to spur the steel industry to the further research that is still so necessary.

11. The increasing use of curtain wall construction suggests that careful study should be given to the development of deep spandrel trusses like those in the General Petroleum building (AF, May '49) which could do double duty as structural members and as support and reinforcing for the curtain wall backup. When all buildings had heavy masonry walls, such spandrel trusses offered no such advantage as they offer with curtain wall construction. This advantage will, if anything, increase with the present trend to deeper spandrel walls where strip windows are being reduced in height to as little as 4½'. The cost of fireproofing such spandrels is being substantially reduced by the use of sprayed-on-perlite Portland cement and gypsum plaster fireproofing. The same thickness of perlite cement plaster that is required for thermal insulation will in most cases do double duty in fireproofing steel. (See p. 152.)

    At least one member of the round table is prepared to offer a flat bid of $1 a sq. ft. for a backup wall of perlite 4" thick so constructed.

12. Clients should insist on paying their structural engineers enough to make it possible for them to do a really bang-up job instead of making them design on a fee too small to cover the cost of doing their best work. Most of us believe the engineering standard for structural design in steel has lagged far behind engineering standards for structural design in concrete and has failed to take advantage of much research which would permit more economical steel framing. For example, modern design methods which effect economy through taking cognizance of continuity and frame action are less often applied to steel framing than to reinforced concrete.

    The client who skimps a few thousand dollars on engineering design may pay an extra $100,000 for his frame.



Deep spandrel truss costs less than girder, supports windows and curtain wall as well as bar-joist floor system.

Newman-Schmidt Studios

Joint industry action develops

A LOW-COST SPANDREL TRUSS

The wall construction methods were worked on jointly by:

COMPANIES AND ASSOCIATIONS

Allegheny Ludlum Steel Corp.
J. B. Henry Jr.

Ceco Steel Products Co.
Frank H. Kitchell

E-Z-On Co.
Lloyd H. Hobson

Michael Flynn Manufacturing Co.
Leonard Starr

Gypsum Assn.
Lloyd Yeager

Huntley Blazier Co.
Orville P. Huntley

Macomber Inc.
W. J. Kupec, engineer

Penn Metal Co., Inc.
William Taylor

Reynolds Metal Co.

ARCHITECTS

John Hancock Callender

Holabird & Root & Burgee

Robert McLaughlin

D. Clarence Wilson

CONSULTING ENGINEER

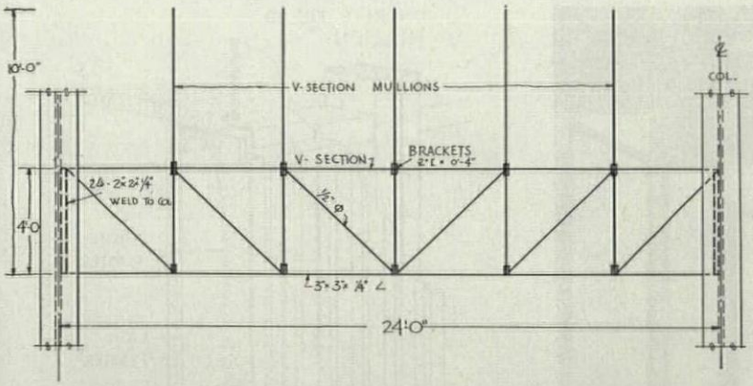
Paul Weidlinger

The new spandrel truss wall shown on succeeding pages has been responsibly priced at $2.41 per sq. ft. of wall complete compared to a conventional spandrel wall at $4.84 and up, but the truss is something other than a new engineering design pulled out of a hat.

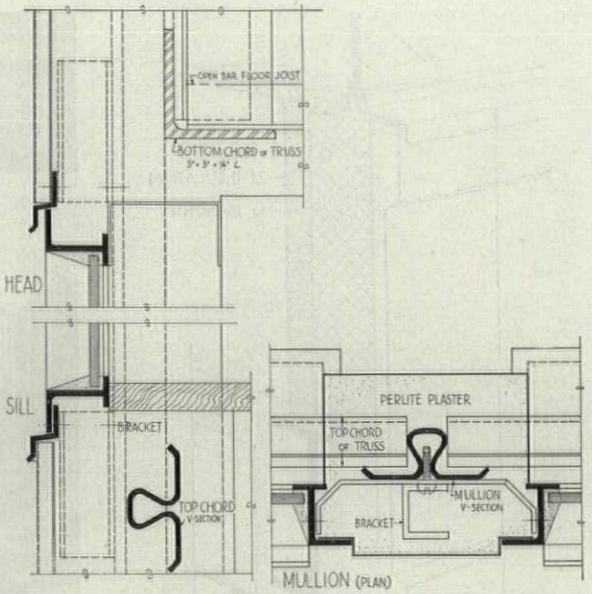
More important even than its economy is the method of arriving at it—for this truss is an *industry product.* FORUM sponsored it because there are now so many building parts that are "nobody's baby"—the responsibility of no one manufacturer—they can be solved only by cooperation *across* the industry.

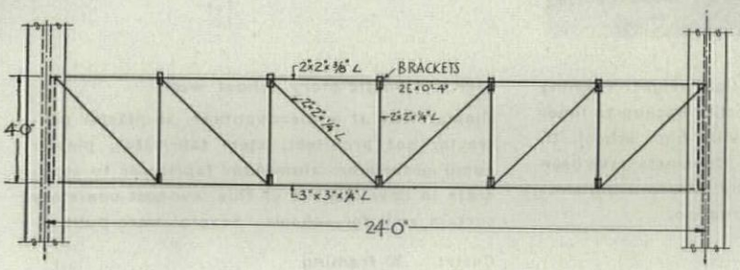
What the truss does: it unites in a short set of easy operations the functions of the spandrel beam (which holds up the floor and has to be encased in fireproofing concrete), the separate curtain-wall frame holding wall and windows, the outer facing and interior finish, the separate thermal insulation. The truss spans from column to column. It carries its own mullions (as lateral stiffening), its own metal facing. The fireproofing can be sprayed in from behind the face with a plaster pump.

Additional advantages: 1.) Weight can be up to one third less than a spandrel girder to carry the same load. 2.) Facing of metal can be lightened in gauge because the fireproofing reinforces it. 3.) Stiffness of the frame is greater because horizontal structural members cross verticals at shorter intervals—the maximum is about 4′ to 6′ instead of 12′. Resistance to earthquake or blast is similarly improved. 4.) Shop application of the metal face can reduce field labor and enclose the building as columns and trusses are placed.

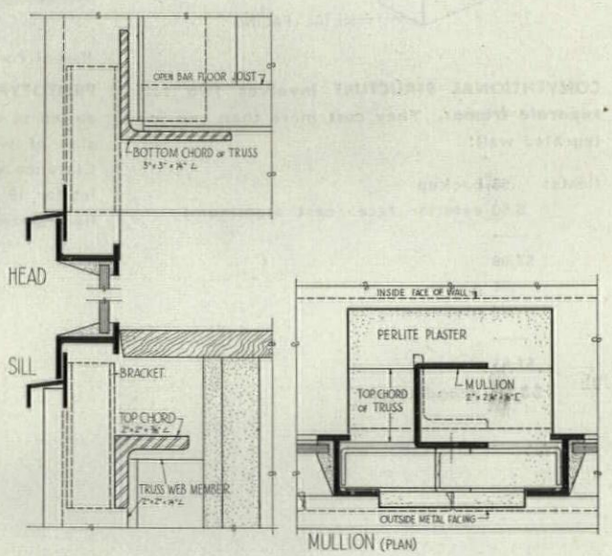


INDUSTRY TRUSS NO. 1, designed by Macomber, Inc. (New York office) spans from column to column, acts 1) to support floor, 2) to support outer metal face, 3) to allow fire backup to be sprayed to inner side of face, 4) to hold lath for plaster finish. "Mullion studs" run through truss from floor to floor to take lateral loads like windbracing, are slip-jointed at top so vertical loads will not buckle them. Cost of truss is less than cost of a 14 w.f. 34 girder to carry equal load.





INDUSTRY TRUSS NO. 2, designed by Ceco Steel Products Corp. (Hillside, N.J. office). "Structural mullion" coped and field-welded to truss to take lateral loads; top connections are slip-jointed. Cost of truss is less than cost of 14 w.f. 34 girder for equal load.



How the industry truss was worked out

For many years the fire underwriters and codesters had put a road block in front of the curtain wall, preventing full realization of its intrinsic economies. Every time FORUM reported an advance it was by detour. (Detroit's Federal Reserve Bank in marble, GM's Technical Center in porcelain enamel, the Republic Bank in Dallas in aluminum, were examples all done where codes were nonexistent or interpretations especially favorable.)

FORUM wanted an economical type that would pass on a two-hour fire-test basis anywhere. This meant that any facing that could not take the test must have a backup.

Hitherto the backup had been blamed by producers of facing materials for the excessive cost of two-hour curtains; conversely the producers of lightweight concrete aggregates had blamed the high cost on too heavy metal facings.

FORUM thought progress might best be made by bringing these conflicting producers together.

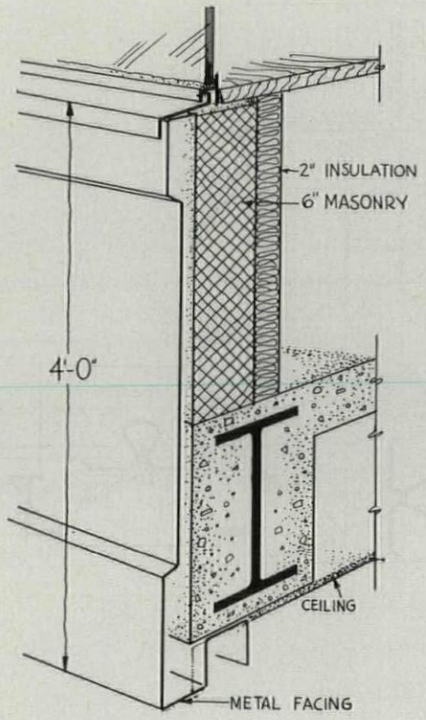
Other companies might have been used; other materials could have been eligible; other prices might be quoted for the same materials; but a pilot project was needed, so FORUM started it subject to these qualifications.

A spandrel truss seemed to offer the best chance because it could support the fireproofing *and* the face of the wall in the act of supporting the floor. As a dividend it would also carry the windows.

Preliminary designs obtained from Macomber, Inc. and Ceco Steel Products were both priced under the spandrel beam they would replace—even if the beam were not charged with its necessary fireproofing.

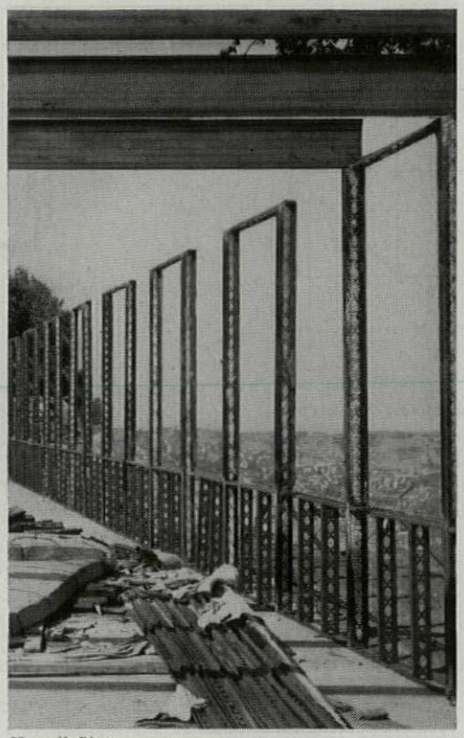
Then Allegheny Ludlum Corp. reported that a thinner, rigidized, stainless steel (.01″) could be used provided lightweight concrete were applied directly to its inner face. Stainless steel would thus come down to 46¢ per sq. ft. of spandrel wall surface.

And, finaly, the study began to take on speed when it was found that the lightweight backing could be sprayed on—indeed the plastering industry was actively promoting an aluminum-faced and perlite-cement backed wall produced with a McNulty plaster pump. This had already been used on a group of school buildings, in connection with a stud wall by Penn Metal Co. and panels by Reynolds Metal Co. designed to be backed by this kind of



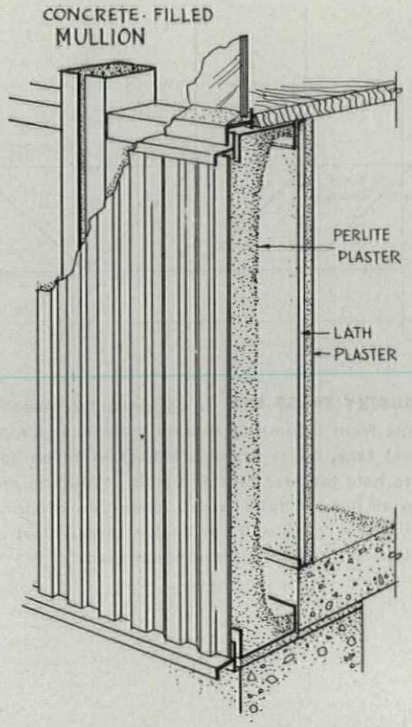
CONVENTIONAL STRUCTURE involves two full separate frames. They cost more than one integrated wall:

Costs: .58 backup
6.50 exterior face (cast aluminum)
$7.08
.96 girder
.87 fireproofing
$1.83
$8.91 grand total



Maxwell Photo

PROTOTYPE example of lightweight framing suited to the spraying of perlite backup to inner side of wall facing: Nashville high school, D. Clarence Wilson, architect. Contracts have been let for 18 low-cost schools by Wilson using similar lightweight steel construction.



STEP 1. Single-story school wall

Plaster was at a disadvantage, so plaster contractor got architect, steel fabricator, plaster pump proprietor, aluminum fabricator to cooperate in development of this low-cost one-story curtain wall for schools. Several were built.

Costs: .30 framing
.58 insulating concrete and plaster
.65 exterior facing (extruded aluminum)
.05 extras
$1.58 total

Spandrel truss is favored by comparative analysis

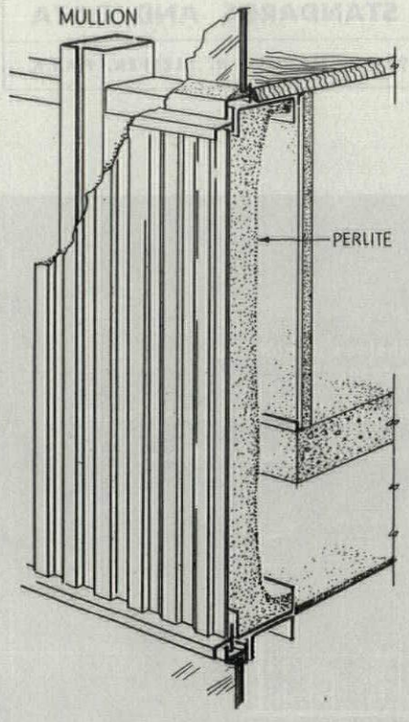
Continued from p. 153

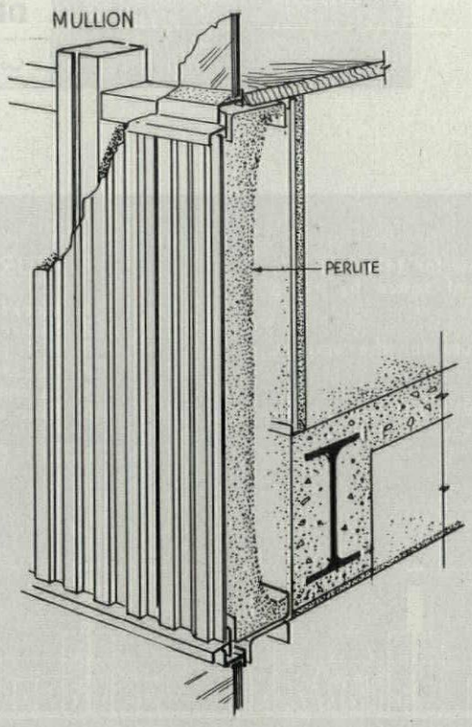
"stucco." So Penn Metal, Reynolds and the architect of the schools, Clarence Wilson, were promptly brought into the study. The results of this collaboration from all directions are shown here.

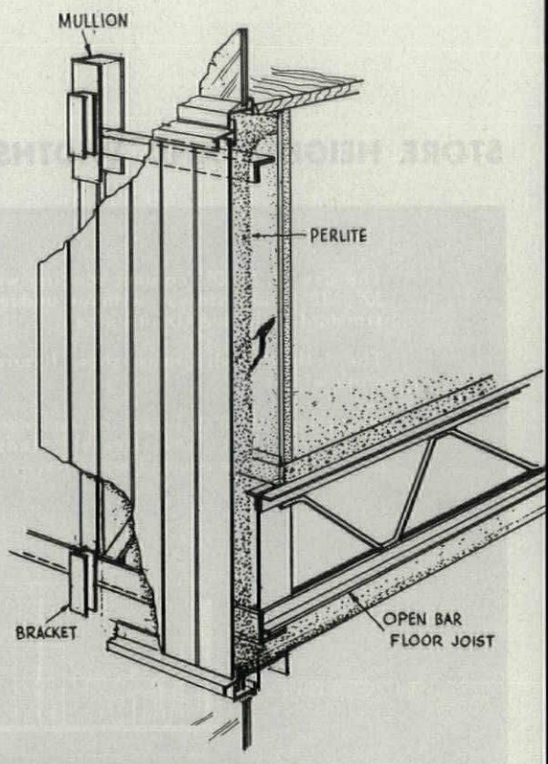
The school wall that opened the way toward the development of the industry truss was not a truss at all but a stud wall (photo above); and its authors were ready to endorse it for multistory use, too. This would be practical and economical with the proviso that the floor must be cantilevered. And apart from the fact that cantilevering is sometimes not desired for planning reasons, FORUM had meanwhile obtained another analysis showing that a cantilevered floor slab construction might cost more than a bar-joist supported floor used with the truss.

Accordingly the pilot design ended with a truss, or rather the two versions of spandrel truss construction whose details and advantages are presented on the preceding pages. The low cost of pumping on the backup made possible a thinner face; the metal faces made possible the use of plaster backup in place of masonry; the combination of the two with steel studs put plaster back in the competitive market.

An incidental problem is stiffening the top chord of the truss to resist bending from wind loads or compression. Mullions between every pair of windows act in FORUM's two industry designs to transfer lateral loads to the floor slab. Another, more conventional, way would be to make the top chord of the truss a structural channel.







STEP 2. School wall redesigned for multistory cantilever construction

The same wall as (1) could be adapted to multistory construction using either cantilevered or spandrel girder construction. As cantilever construction its cost would be:

Costs: .42 framing
.59 insulating concrete and plaster
.73 exterior facing (aluminum)
.05 extras

$1.79 total

STEP 3. Redesign for multistory spandrel girder construction

Substituting spandrel girders more than doubled the cost, because the girder and its fireproofing cost more than the wall and its facing:

Costs: .42 framing
.59 insulating concrete and plaster
.73 exterior facing (aluminum)
.05 extras

$1.79
.96 girder
.87 girder fireproofing

$3.62 total

STEP 4. Redesign substituting truss for spandrel girder

By substitution of a truss which carries the floor load and simultaneously supplies the framework to carry the backup for the facing. The cost of wall and support for floor is cut by one third:

Costs: 1.04 framing (truss)
.59 exterior facing (aluminum)
.73 finish
.05 extras

$2.41 total

Important note: cost in step 2 covers curtain wall only. Step 4 includes support for bar joist floor system which costs less than a flat slab. Therefore ultimate cost of truss and floor in step 4 is less than the wall and floor in step 2.

of curtain wall and floor costs

Complete breakdown of steps 1 and 2 (above) showing analysis used

Cost based on a 15′ x 10′ panel using 2′ x 2′ finished aluminum panels. Figures by Huntley Blazier, June '54, East St. Louis area.

MATERIALS	1-story school, cost per sq. ft.—↓
4″ 16-ga. Penn Metal stud including freight for 500 mi.	.15
½ stud track 2″ x 1″ for top and bottom of panels	.018
Nefco stud clip @ 3¢	.013
Nefco "V" clip @ .45 per lin. ft.	.045
Aluminum embossed sheet .040 ga. cut to size	.24
Nefco pin clips	.0075
Air stacks spandrel 2′ x 6″ x 1″ every 6 lin. ft.	.02
Glass-fiber expansion joint, horizontal and vertical every 20′	.0032
Crystal asphalt coating	.04
2″ cement and perlite	.16
Foil back rock lath	.052
Clips to attach foil back rock lath	.015
Plaster, scratch, brown and finish	.058
Chalking	.01
Total material	.83

LABOR	Additional cost for multi-story construction—↓ per sq. ft.		Total
Shop handling and close tolerance cutting of metal	.01	.01	.02
Labor for hauling metal to location within 100 mi.	.0025		.0025
Labor for distribution of metal to point of installation, fabricating of panel and erection 400 sq. ft. per man per day	.07	.085	.155
Installation of aluminum clips, aluminum facing and cleaning aluminum	.15	.054	.204
Installation of chalking	.015		.015
Installation of crystal asphalt coating	.02	.01	.03
Installation of cement and perlite	.10		.10
Installation of stacks and miscellaneous strips at windows, sills, etc.	.01		.01
Installation of rock lath	.03		.03
Installation of interior plaster including finish	.0732		.0732
10% tax and insurance on all labor items	.048	.015	.063
Total labor	.52	.17	$.70
Total labor and material	**1.35**		**1.53**
Overhead (7%) and profit (10%)	**.235**		**.26**
	1.58		**1.79**

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STORE HEIGHTS AND WIDTHS

The use of 28'-0" column spacing will allow for 14', 21', 28', 32', 38' wide stores, without undue loss of space by using standard aisle and fixture sizes.

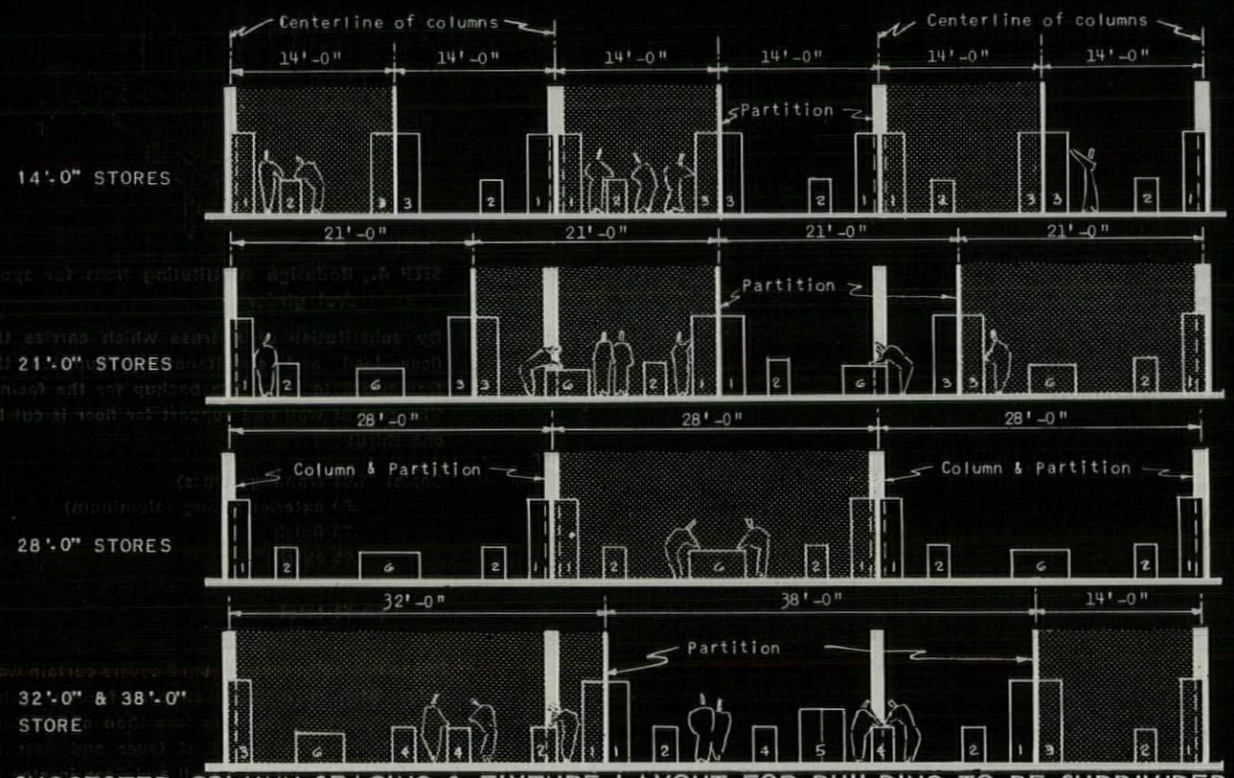
The following diagrams show fixture layouts for the various store widths.

By using the 28'-0" spacing and narrow walls between stores it is possible to have flexible areas that can be enlarged or broken up as the demand warrents.

FIXTURES:

1. Backfixtures.
2. Showcase.
3. Wall fixture – shelves or hanging.
4. Counter or Showcase.
5. Island fixture.
6. Free standing fixture, Table or Double Hangrack.

NOTE: Every other store is shown hatched.

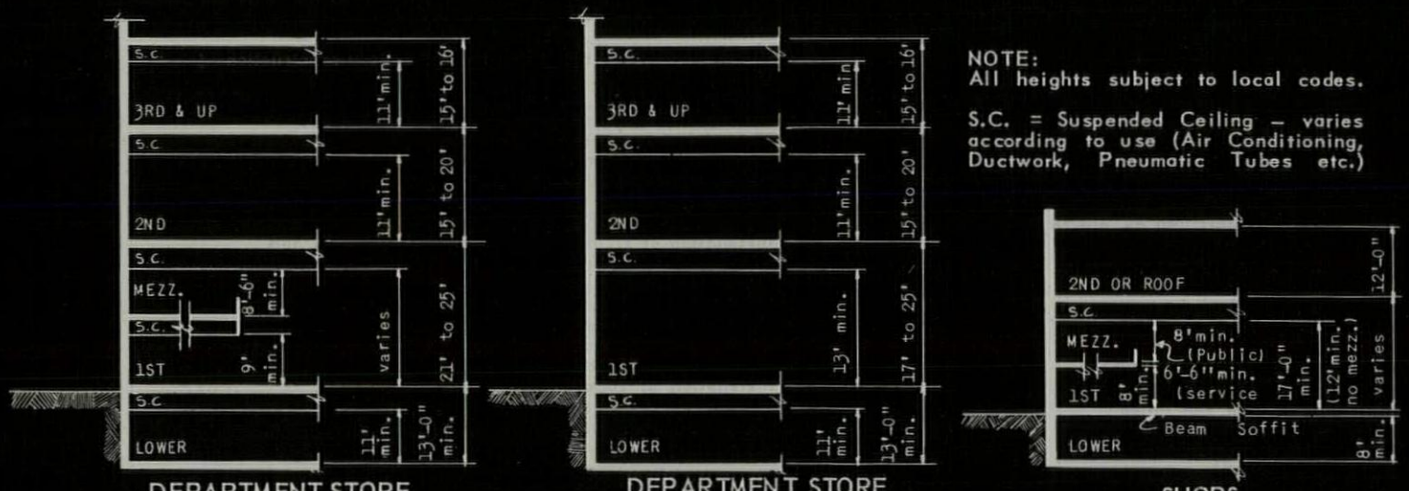


SUGGESTED COLUMN SPACING & FIXTURE LAYOUT FOR BUILDING TO BE SUBDIVIDED INTO SHOPS

Scale: 1/16" = 1'-0"

DEPARTMENT STORE BAY SIZES:

A column spacing of 25'-0" column spacing has proven to be the most economical span for Department stores. It still permits good fixture layouts and aisles even when diagonal circulation is required.



DEPARTMENT STORE WITH MEZZANINE

DEPARTMENT STORE WITHOUT MEZZANINE

SHOPS

NOTE:
All heights subject to local codes.

S.C. = Suspended Ceiling – varies according to use (Air Conditioning, Ductwork, Pneumatic Tubes etc.)

RECOMMENDED STORE HEIGHTS

Scale: 1/32" = 1'-0"

Daniel Schwartzman, Consulting Architect

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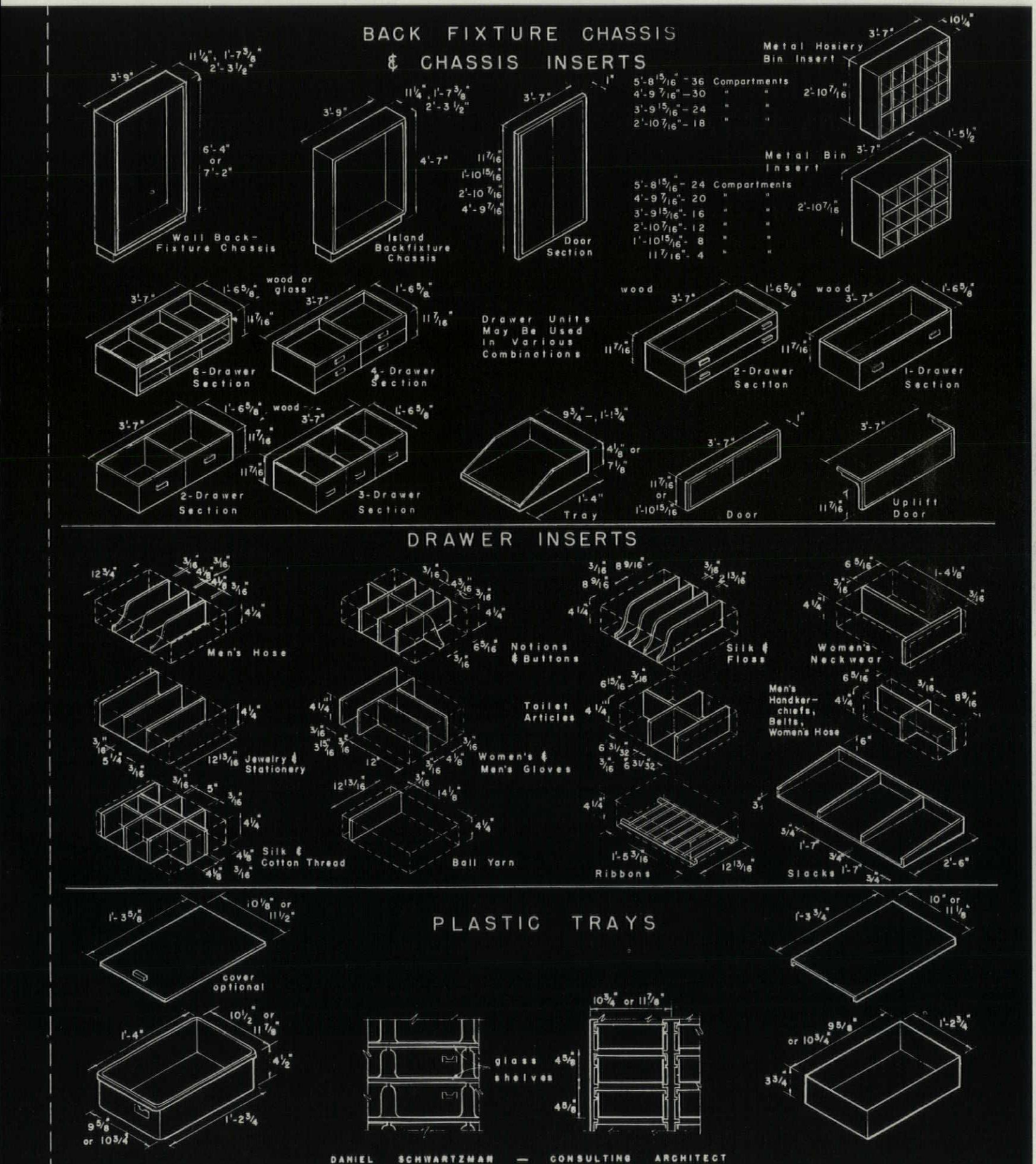
STORE FIXTURES



DANIEL SCHWARTZMAN — CONSULTING ARCHITECT

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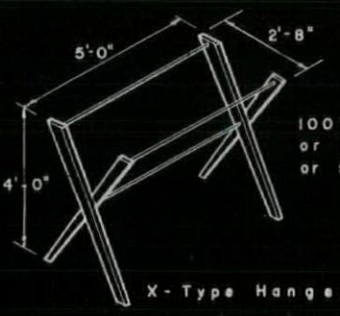
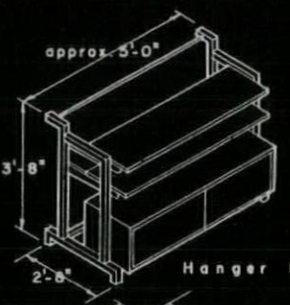
STORE FIXTURES

RACKS



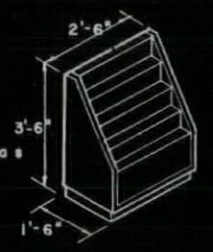
100 garments or 104 slacks or skirts

X-Type Hanger Rack



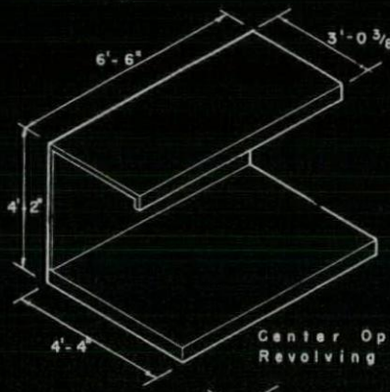
Available with drawers and/or glass or wood shelves; center hangrod or two hangrods

Hanger Rack

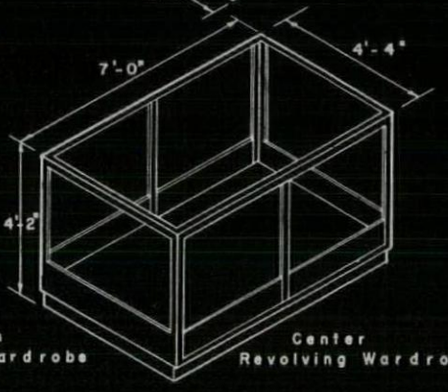


45 umbrellas 5 rows

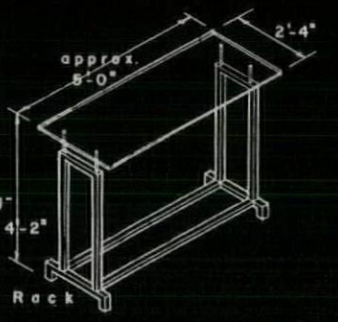
Umbrella Rack



Center Open Revolving Wardrobe

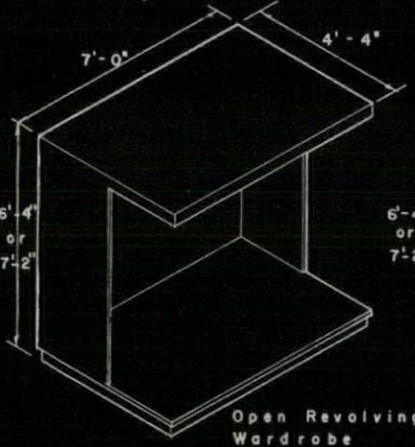


Center Revolving Wardrobe

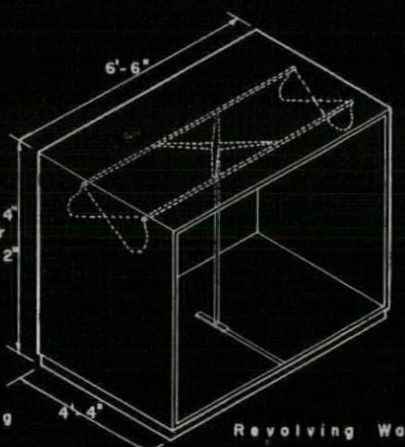


Available with drawers and/or glass or wood shelves, one side hangrod or center hangrod.

Hanger Rack



Open Revolving Wardrobe

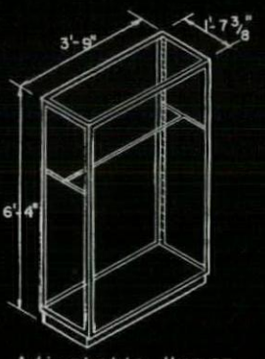


Revolving Wardrobe

Men's wear single or double tier revolving wardrobe

Fits in cabinet 74" wide & 49 1/2" deep. If cabinet has side disappearing doors, width 79". Allow 2" from top of shaft to case ceiling. Allow 6" if rack is to be removed from shaft.

Capacity:
single tier: 75 garments
double tier: 150 garments

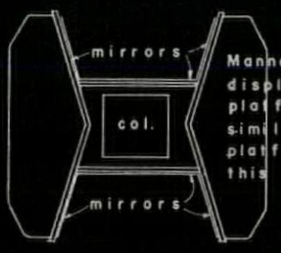


Adjustable Hang-Rod Section

THREE WAY MIRRORS



Elevation



Mannequin display platforms similar to platform this page

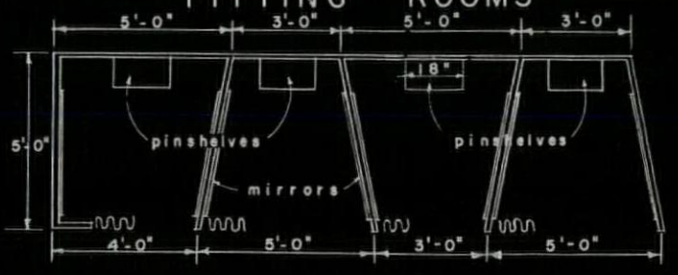
Typical Arrangements



Plan

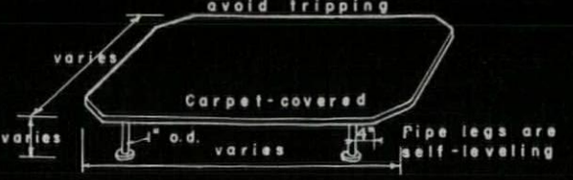


FITTING ROOMS



PLATFORMS

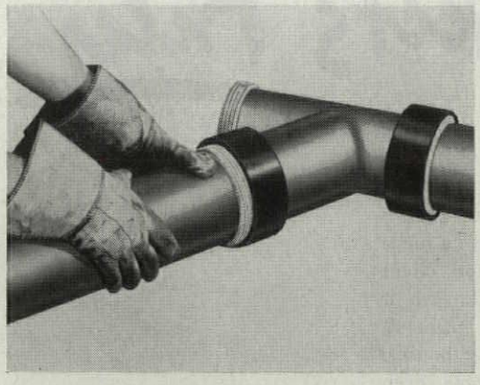
Splay corners to avoid tripping



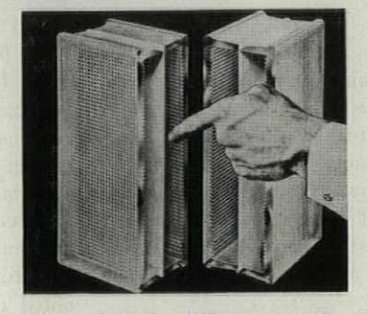
NEW PRODUCTS



Aluminum framing for plastic partitions (p. 210)



Clay pipe joined by plastic screw seal (p. 222)



Glass block diffuses cool green light (p. 216)

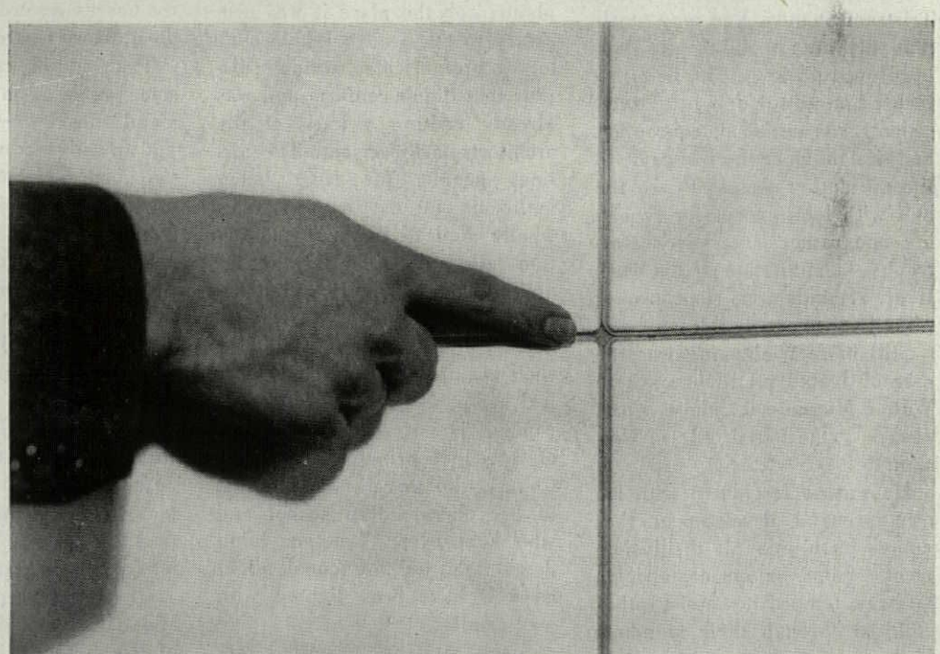
Plastic gaskets, and fireproof backing, help solve metal wall problems

Metal wall panels have graduated from the filling station and the hamburger stand and are now coming into general use for all types of building. New problems have come with the new wall. Answers to some of these problems are furnished by two new materials which have been developed by a leading fabricator of metal wall panels.

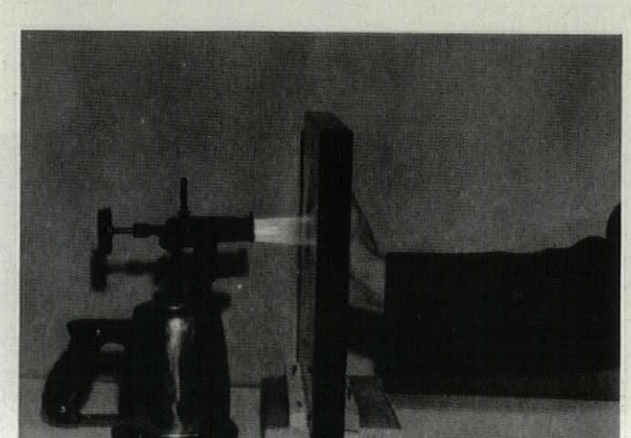
Perma-Joint is a permanent gasket-type joint sealer which eliminates the need for caulking. Caulking, the traditional material for sealing joints where there is possibility of movement, has not proved satisfactory for metal walls with their high coefficient of expansion. *Perma-Joint* is an extruded polyvinyl gasket, consisting of two oval tubes connected by a flat strip. It is applied in the factory, by means of an adhesive or by brass grommets, to all four edges of the metal panel in one continuous piece. When the panels are placed in the building, the gaskets are under constant compression and form a tight nonleaking joint. The little hole remaining at the point where four panels meet in filled on the job by a special vinyl plug made for the purpose. Price: approximately 15¢ per sq. ft. of wall.

Porock is a lightweight, fireproof material which is poured into the back of the pan-shaped metal panels while they are still in the shop. It sets up in 20 minutes and dries overnight, so that no great stock is tied up for lengthy curing periods. The porous material, made of "hydrocal, perlite and other materials," is fireproof and has a K factor of 0.75 Btu. Although no formal fire rating has been obtained as yet, the informal test illustrated is impressive. The metal face was

continued on p. 200



Porcelain enamel panels have extruded vinyl gaskets applied at factory. Hole left at point where four panels meet is filled in the field by vinyl plug.



Blow torch softens porcelain enamel and buckles steel face without injuring hand on Porock backing 1" thick.

for architects only

How do you make sure that a piece of architecture stays a piece of architecture after the client has got in? How make sure it stays not only workable but nice?

We have all seen the houses, schools, stores, showrooms, even the churches and town halls, whose pleasant aspects inside and out began to be violated the moment the key was turned. We have all seen still others whose best-thought-out working provisions were uncomprehendingly neglected or misused.

Our literature talks about keeping up maintenance but never about keeping up architecture. Architecture's children are too often in the case of young Tristram Shandy. You may recall that his author didn't get him born until about p. 356, being so focused on all the delightful antecedents, the period of conception and design. Once the boy came to life the author seemed to say the hell with him, except for reporting one rather suggestive catastrophe—a mutilation of his nose. It all reminds you, somehow, of what happens to buildings.

Still more frightening was the case of Jean Paul Richter's hero Walter Vierneissel, whose story, alas, is to be found only in German. *

He was so fascinated with his own prenatal development that actual birth was all disillusionment. Later as an obstetrician he was temped to assist other children through their mundane birth and heavenly rebirth all in one operation, skipping the intermediate trouble. Translated into building terms, this would mean skipping the ordinary useful phase and jumping from the design phase to the historical monument phase.

We, alas, can't skip that way past vulgar life and its daily problems. To be modest about this as well as real, let's talk about this showroom on p. 114 of this very issue. Here, Architects Carson & Lundin made provision for a most orderly and handsome display of travel posters; but before FORUM could even photograph the place it was necessary to put aside a whole clutter of prefabricated window display that didn't conform and was already making a hash of the architects' achievement. The airlines people, far from being malicious in the matter, were wholly glad to have their attention called—by somebody not an architect. They simply hadn't noticed.

Any architect could multiply such examples faster than chemical companies can push out styrofoam. The strangest I recall is of a school principal in Marin County who was proud as Punch of her oh-so-modern school and who kept every Venetian blind down tight, so the school might as well have been lighted with wax candles.

Since striking examples are bound to jump up in every architect's mind let me stop here with an offer of a year's subscription to FORUM for the best such disaster story—and another for the best success story where architectural values were preserved. Submissions must be in by Oct. 15 and our own judgment will be final.

By a success story I mean something like Morris Ketchum's Florsheim shoe store on Fifth Ave. in New York, which is eight years old but looks as if it had come off the boards yesterday. How did you do it, Morris—are you listening?

The saddest cases are where some expert on "popular demand" decides that people won't put up with surroundings that are too good for them, and cheeses up the place to make the people feel at home. Of course there is an attempt at democracy in this. But the difference is that our old-time democratic leaders like Washington and Jefferson used to think that any public addiction to slop was just a weakness and a problem for leaders to deal with, by sharing their own fortunate skill and knowledge, whereas today's politicians (among businessmen too) say "if they like slop let's give them still more of it."

Of course the problem of pace and consonance is genuine. One of our editors said of Peresutti's very beautiful Olivetti store we published last month that the grand 16′-high walnut doors awed her a little about walking in and the wonderful interior threatened to make her street clothes look a bit dowdy.

Altogether this problem of setting architecture into action and getting others to care for it (the architect being helpless) has so many facets that these words are just an invitation for you-all to take the discussion over.

Meanwhile our spies tell us of another movement afoot that might fascinate you. It's the employment of petite models (flesh, not cardboard) at home shows, automobile shows, trailer shows. A HOUSE & HOME editor stumbled on the reason when trying for more impressive pictures of a builder house that was, shall we say, petite itself. His little Hillman car parked in front seemed to bring an instant improvement. Compared to the baby car the baby house looked big, and that's no doubt how they photographed it. If such movements keep on, the built-in stoop will have to be part of the purchaser rather than his purchase.

Thrugg, again

By the way, in last month's column Professor Thrugg was less than wholly just, I thought, to his friend Ralph Walker. Maybe Thrugg and I tend to fire too exclusively at those who will have nothing of our times, whereas Walker fires too exclusively at those who abuse them. Anyway, Walker and his colleagues are doing a bang-up job with imaginative younger men on the FBO, and some of these younger men like Yamasaki have said they enjoyed the challenges he gives them. He knows the difference it seems between the quick and the hasty.

Meanwhile Thrugg has been unkind to me personally as a critic. Says he: "In a recent column you let yourself for the first time into a discussion of magazine preference ratings. For crying out loud, nobody cares but you editors, and the next man who uses editorial space to tout his magazine against others is a r-tt-n e - -." Hard words, Thrugg, but so be it.—D.H.

The Edward Stones get married in Beirut by the Bishop of Lebanon (see p. 43).

Sapec

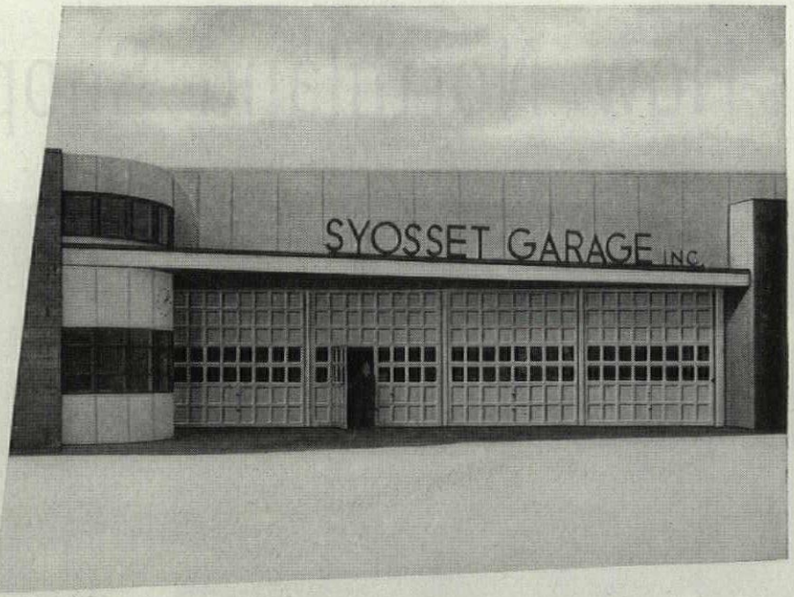


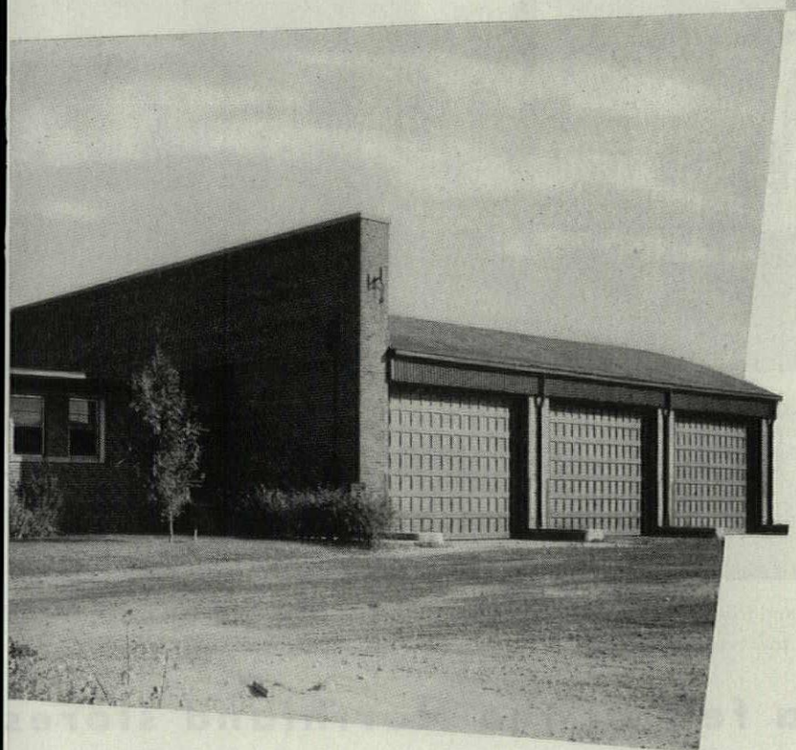
* The German title: Nachtgedanken des Geburtshelfers Walter Vierneissel ueber seine verlorenen Foetusideale, indem er nichts geworden als ein Mensch. Roughly: Night thoughts of obstetrician Vierneissel concerning his lost foetus ideals, since he became nothing but a man.

Performance

THAT BACKS YOU UP

...NEVER LETS YOU DOWN





When all's said and done, it's *performance* that counts in overhead type doors for commercial and industrial applications. And that's exactly what you can count on with Ro-Way Overhead Type Doors.

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Selected west coast lumber and heavy gauge hardware.

And rugged construction to take the daily ups and downs in stride. Mortise and tenon joints both glued and steel doweled; muntins, rails and stiles precision squared for precision fit; sections rabbeted for weather-tight joints; millwork both drum and hand sanded for finest finish; hardware both Parkerized and painted for maximum rust prevention.

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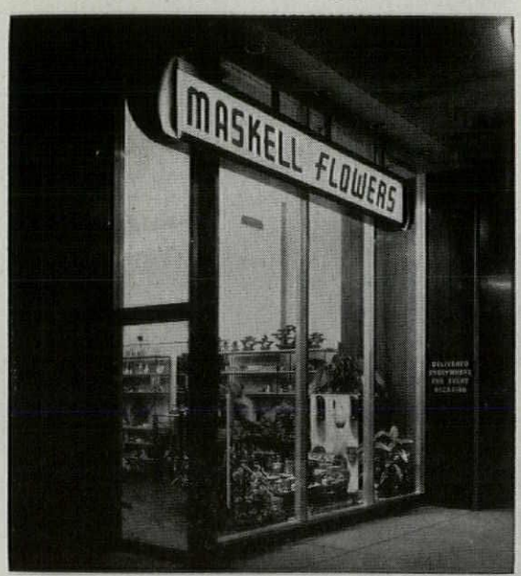
SEE OUR CATALOG IN SWEET'S

How Northland Shopping Center Planners

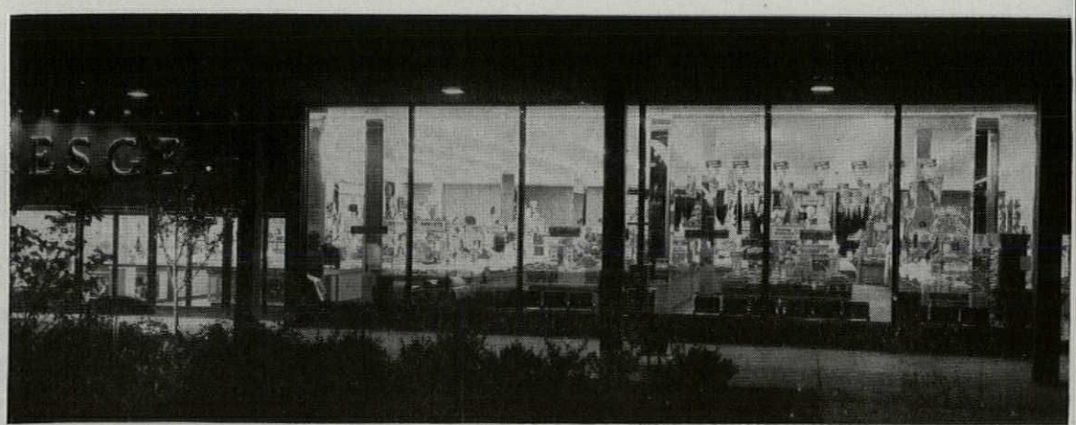


The J. L. Hudson department store, which developed Northland, used *Thermopane* insulating glass in its front. *Thermopane* reduces steam and frost on windows in winter . . . helps muffle outside noise. *Project Architects:* Victor Gruen & Associates, Inc., Hollywood and New York.

. . . a few of the Northland stores



MASKELL FLOWERS



KRESGE'S

NO FINER GLASS THAN LIBBEY · OWENS · FORD

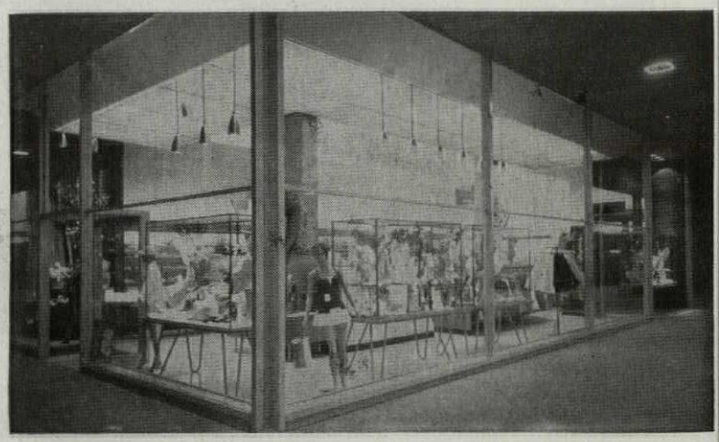
used L·O·F POLISHED PLATE GLASS for Visual Fronts

Practically no restrictions were put upon the storefront designs of the 80-odd units in the Northland Shopping Center in Detroit. And each store was designed independently, except for coordination by the project architects. Yet, all over the Center, there is one common denominator: *Large plate glass "visual fronts", designed to put a store's entire interior on display to pedestrians.*

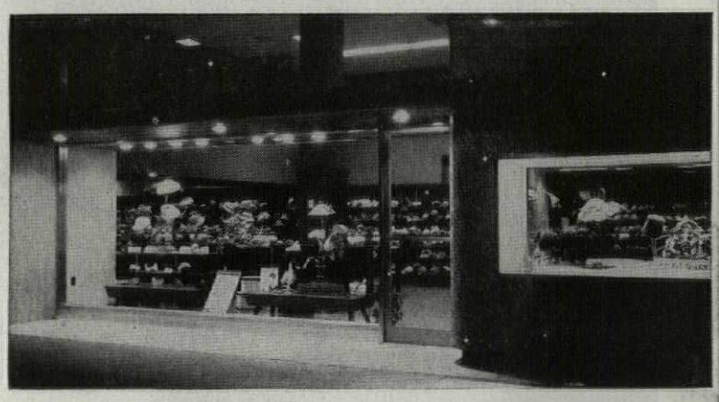
Of course, waviness and distortion would ruin the whole effect, so store after store at Northland was glazed with L·O·F Polished Plate Glass.

No matter what your next job may be, you'll want the true vision, beauty and luster of L·O·F Plate Glass. For special applications, these same qualities are available in *Thermopane** insulating plate glass, Heat Absorbing Plate Glass, *Tuf-flex** tempered plate glass and others.

For details on any of the standard or special types of plate glass, call your nearest L·O·F Glass Distributor or Dealer. Or write Libbey·Owens·Ford Glass Co., 608 Madison Avenue, Toledo 3, Ohio. *®

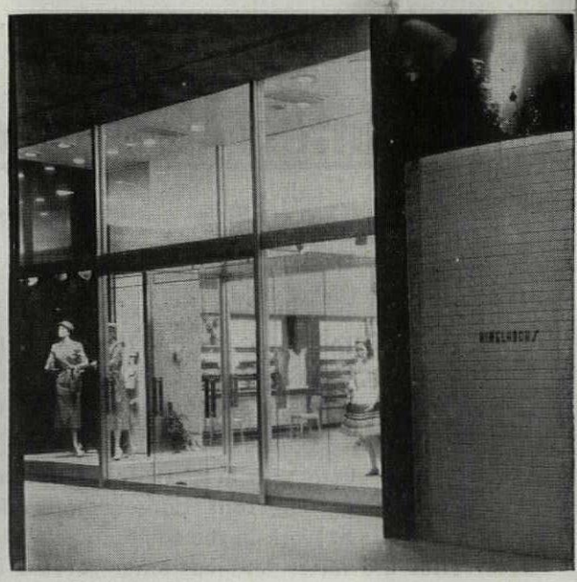


ROBELLE SHOP

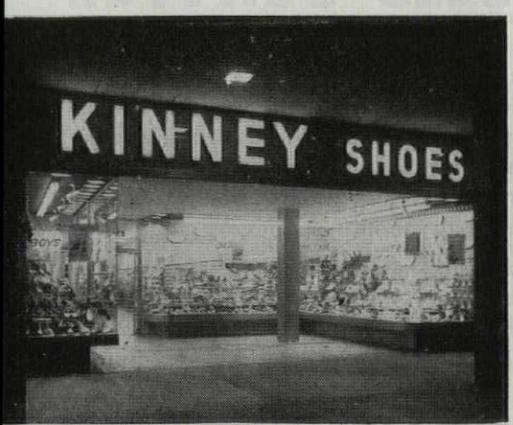


BRENNAN'S

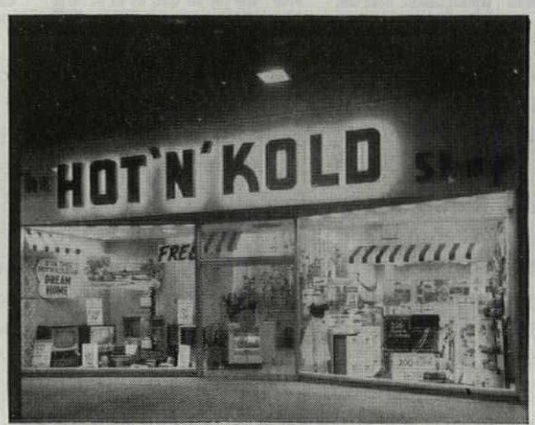
using L·O·F Polished Plate Glass



HIMELHOCHS



KINNEY SHOES



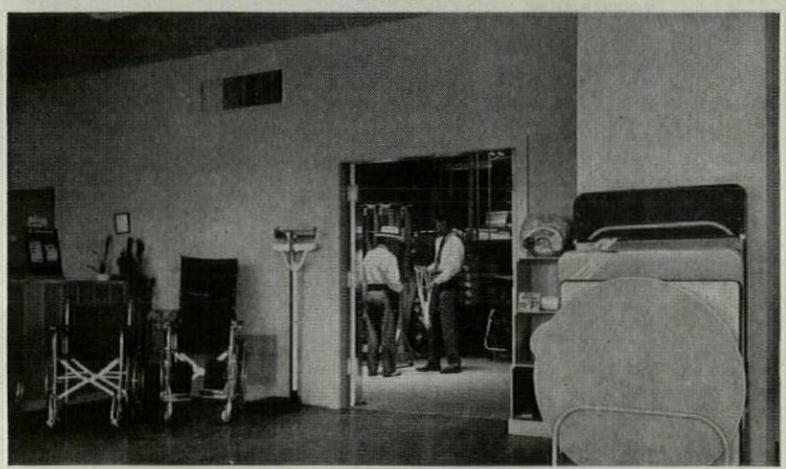
THE HOT 'N' KOLD SHOP

POLISHED PLATE GLASS

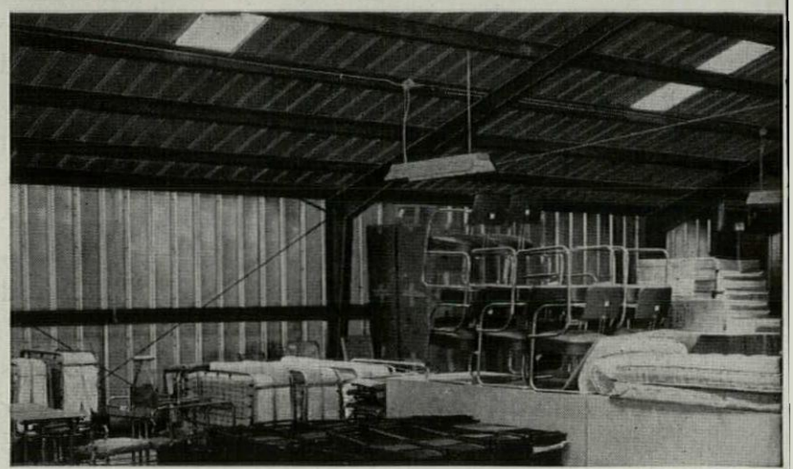
L·O·F GLASS Corrulux FIBER-GLASS



Traffic stopper! Butler buildings combine easily, economically with other materials for functional beauty.



Sales builder! Attractive display space in this Butler building upped sales 20% in three weeks. Modern offices help keep employee morale high, encourage efficiency.



Utility! Butler clear-span furnishes floor-to-roof storage space. Translucent Lite*Panls flood the building with natural light. Aluminum sheets, bolted firmly, assure long life.

Architect-designed

This BUTLER building SELLS SERVICE

Planned by Golemon and Rolfe—well-known architects in Houston, Texas—for Best Rentals, Inc. in Houston, this Butler building began to produce more business the day the supply rental firm moved in!

New customers are attracted by the building's modern, attention-getting front. Larger, more effective equipment displays are at work in the roomy, well-lighted showroom. Deliveries are faster and customer service is improved with the convenience of the clear-span interiors. Employee efficiency stays high in the comfort and cheerfulness of the new Butler building, too! Big doors and inside docks save time and work.

At the same time, the low-initial cost and complete adaptability of Butler buildings helped Golemon and Rolfe give their client a modern, long-lived building at moderate cost. Proving the sound economy of creative architecture teamed with Butler steel buildings with steel or aluminum sheeting.

See your local Butler dealer! Ask him for a copy of the new Butler Architect's Brochure—A.I.A. file number 14i. It will tell you more about the architectural adaptability of Butler buildings. Write for name of your dealer and more facts by mail.

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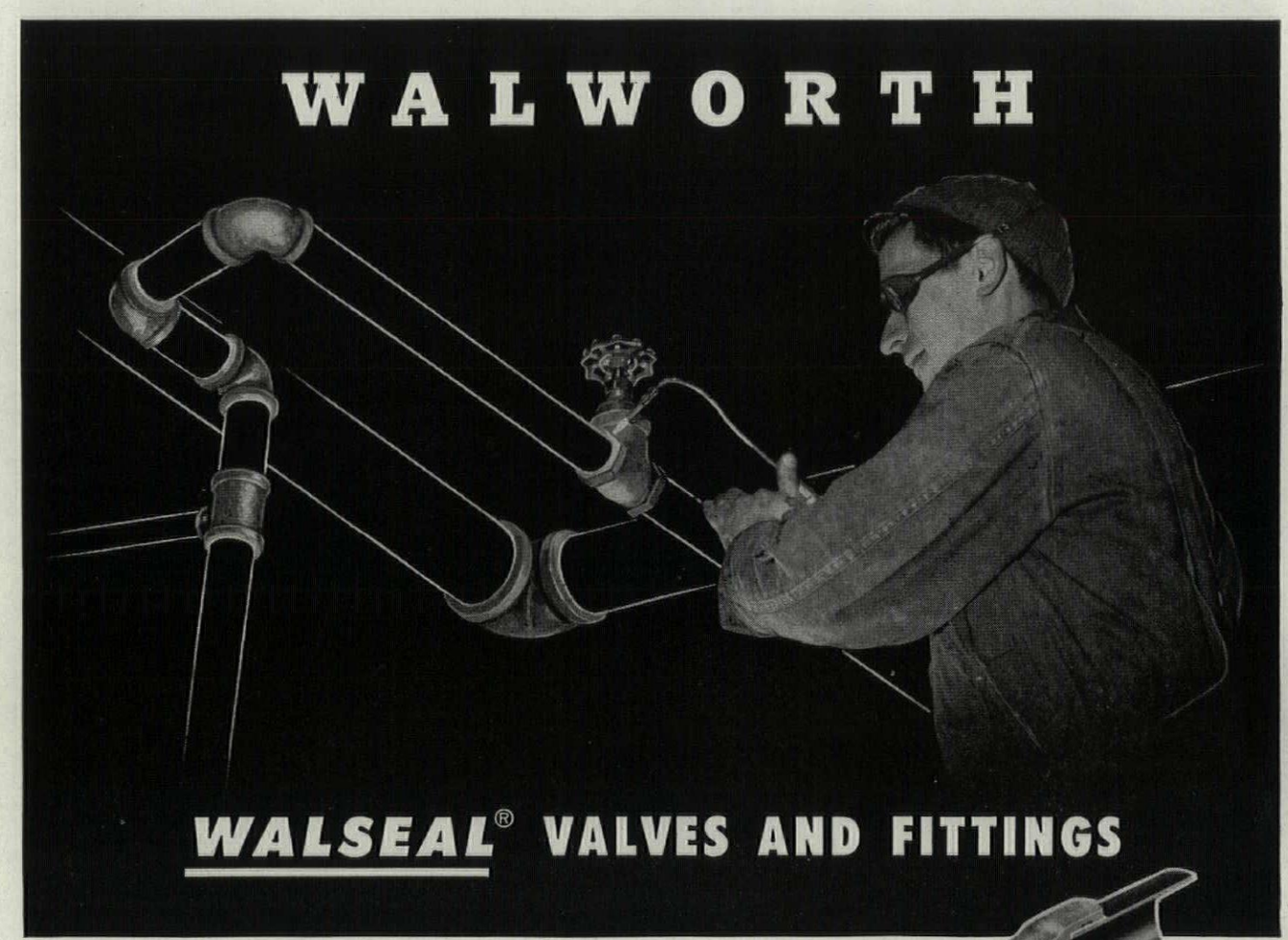

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Cutaway view of a Walseal Tee showing: factory-inserted ring of silver brazing alloy; fillet of silver brazing alloy that appears upon completion of Walseal joint; cutaway view of the completed joint showing that silver brazing alloy has flowed in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

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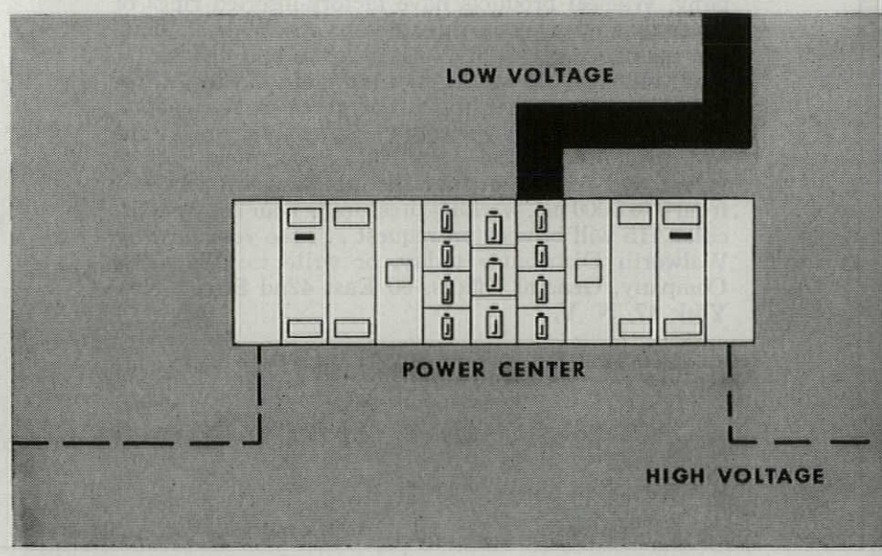
DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD




LOW VOLTAGE
POWER CENTER
HIGH VOLTAGE



A DESIGN STANDARD LIKE THIS DEMANDS USE OF MODERN POWER

The standards being set in today's office building design call for full utilization of modern electrical power. It's an important consideration—in view of such necessities as high-speed elevators and modern lighting, the heating, ventilating and air conditioning systems.

These devices, as you know, have placed greater demands on a building's electrical system. *More* power must be carried. And power *quality* has had to be improved to minimize outages, assure well-regulated voltage.

Thus, a modern, completely adequate electrical system is extremely vital if the service devices you design-in are to operate at peak efficiency. Literally, it's an integral part of the building's foundation. It should be considered in the study stage . . . keyed to the services that will operate from it . . . built with equally modern electrical power equipment.

By so doing, you'll be bringing the power facilities up to the standards you've set for design. And you'll be providing your client with a better building—economically sound and adequately equipped to handle the many functions it must perform.

For assistance on modern electrical system planning, call the construction application engineer in your nearest Westinghouse Office. Westinghouse Electric Corporation, Construction Dept., Building 12-L, East Pittsburgh, Pa.

DP-5002-A

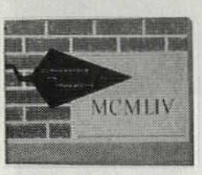
YOU CAN BE SURE...IF IT'S Westinghouse

WHAT IS A MODERN ELECTRICAL SYSTEM? It's an integral part of basic design—not superimposed or considered after the building is under construction.

The modern system is planned around requirements for reliability, versatility and convenience. And it stresses electrical characteristics essential to building services. Therefore, system design will vary—based on the type of building involved.

The Spot Network System, left, is an example. It emphasizes "reliability"—an important requirement in large office buildings. Efficient, high-voltage power is brought close to building loads from two or more sources. An electrical fault at one source will not interrupt power to the loads being served.

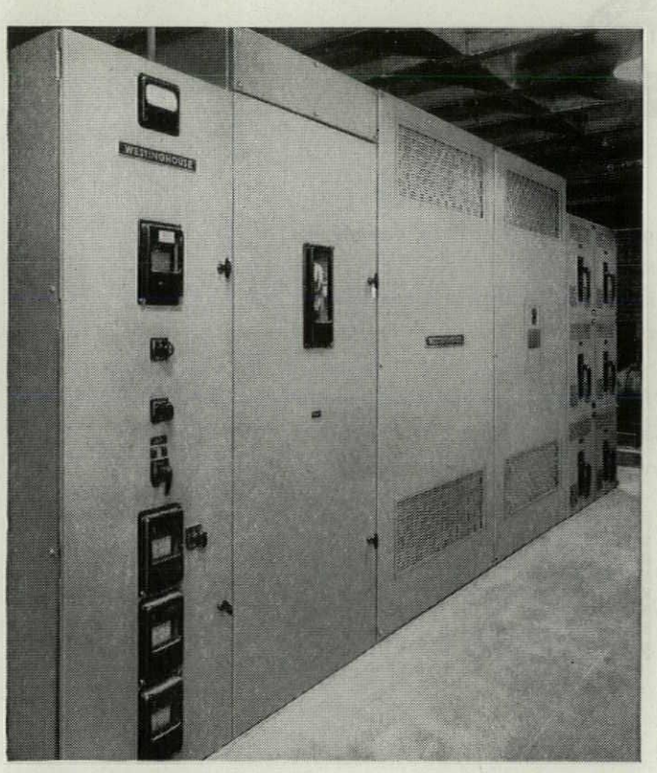
FOR YOU . . . 24-page book, covering modern electrical systems and equipment for commercial buildings. Valuable adjunct to your design planning. Write at no obligation for *Cornerstone or Tombstone*, B-6151. Westinghouse Electric Corp., 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa.





AIM:

MATCH PEAK TRAFFIC WITH PEAK POWER



High-speed elevator service—demanded when tenants must be moved quickly during heavy traffic hours—should begin at the electrical system planning stage.

The need for completely adequate power distribution makes this so. Not only do high-speed elevators require *more* power, but their drives are usually located in the penthouse—far removed from the power source. Thus, the electrical system must carry *heavier* loads *greater* distances. Yet, it has to hold voltage and power losses to a minimum.

A typical way: *High-voltage* distribution—carrying high voltage from power source in the basement close to the electrical center of load in the penthouse. This modern practice stabilizes voltage. It eliminates line losses that result from long runs of secondary lines. It assures adequate capacity for heavy electrical loads.

At the center of load, then, high voltage is stepped down to operating levels with a Westinghouse Dry-Type Power Center. It installs anywhere to feed the elevator equipment and other local loads. No need for a vault. And the dry-type transformers and air circuit breakers minimize maintenance.

DP-5002-B

WESTINGHOUSE DRY-TYPE POWER CENTER . . .
a compact substation that permits high voltage to be carried close to elevator and other remote loads. Comes ready to install.

AIM:

MATCH MODERN AIR CONDITIONING WITH MODERN CONTROL

Modern air conditioning is another tenant demand completely dependent on the electrical facilities behind it.

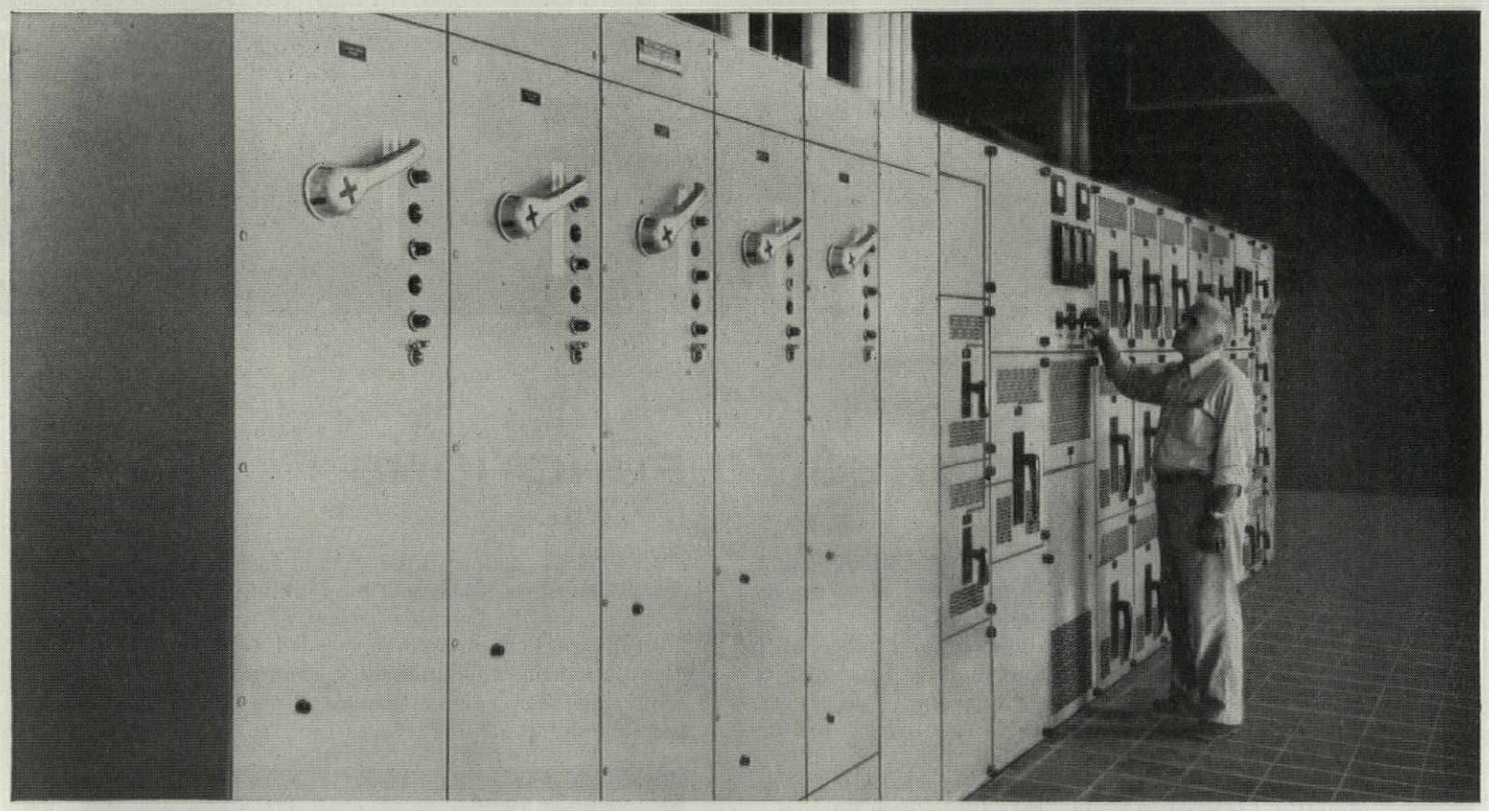
A number of motors and controls is involved in the modern air conditioning system. Thus, early steps should be taken electrically to assure continuous circulation of conditioned air—to the various building services.

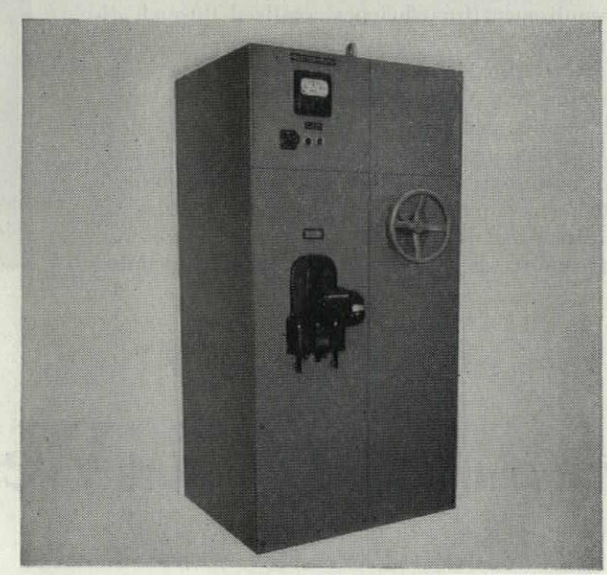
In many modern buildings, all control equipment is located in one spot. This brings about easier operation and simplifies maintenance.

More complete integration of the controls is possible with a Westinghouse Control Center. It centralizes motor starting and protective devices in a compact enclosure that installs easily in any convenient location. Then, operating personnel can check operation of all motors at a glance.

In addition, Westinghouse Control Centers meet future requirements. This flexibility is due to standardized design and modular construction of the units.

DP-5002-C





WESTINGHOUSE CONTROL CENTER centralizes electrical control for building air conditioning systems in a single enclosure. At right: Secondary control for wound rotor motor drives . . . typical of the Westinghouse complete line of air conditioning compressor motor control.

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



AIM:

MATCH FIXTURES TO FUNCTIONS

Effective illumination demands this consideration: Lighting systems must be matched to functional requirements, yet blend harmoniously with building design.

This is particularly difficult in general office areas where sharp contrasts must be minimized. Thus, to keep contrast between fixture and ceiling down—to prevent specular reflection from shiny surfaces—indirect lighting is required.

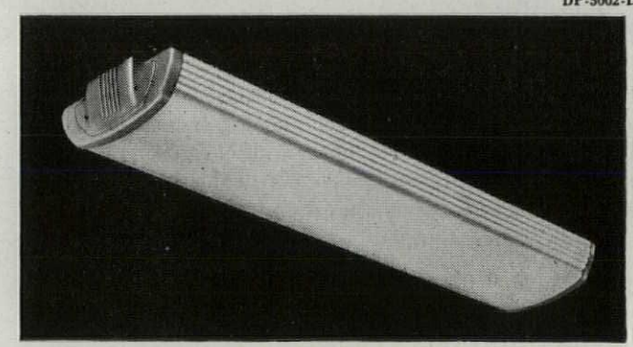
When you select the fixture, you must balance the desirability for comfort—obtained with indirect lighting—with the requirement for efficiency, realized through direct lighting.

Other factors also affect the selection. Fixture design and proportion and the ultimate lighting layout must blend with interior design.

Above is an outstanding example of how these considerations have been met. A Westinghouse CD-80 Luminaire was selected. It assures both comfort and efficiency by providing direct *and* indirect lumination. It blends well with room proportions . . . gives quality light for detailed office work . . . maintains the same high level of balanced design that exists throughout the building.

Architecturally, complete advantage was taken of the 10′ ceilings. Fixtures were suspended approximately 2′. This permitted installation of a comfortable system of continuous semi-indirect lighting. Today, it still maintains a desk-top lighting level of over 40 footcandles.

DP-5002-D



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

AIM:

PROVIDE MAXIMUM RENTAL SPACE

The heavier electrical loads elevator, air conditioning and lighting systems place on a building's power system make selection of its component parts a vital consideration. This equipment must have adequate capacity for increased loads. Yet, it should be compact to release maximum space to your client.

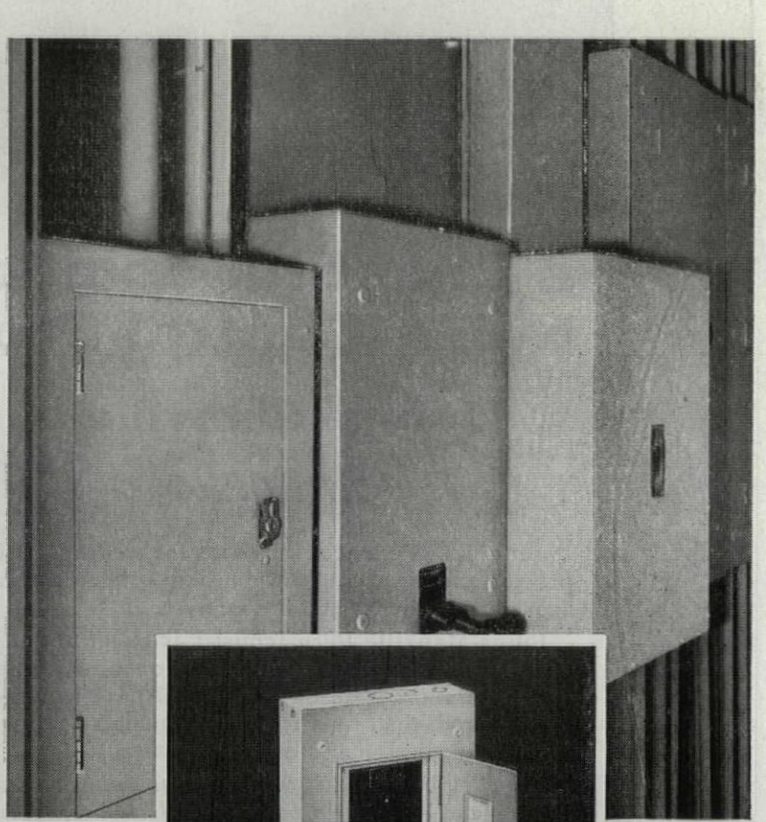
Modern distribution equipment answers these requirements. Example: Westinghouse Bus Duct—a highly efficient way to distribute low-voltage power. Up to 5000 amperes, in fact, it packs more power into less space than any other method of secondary electrical distribution.

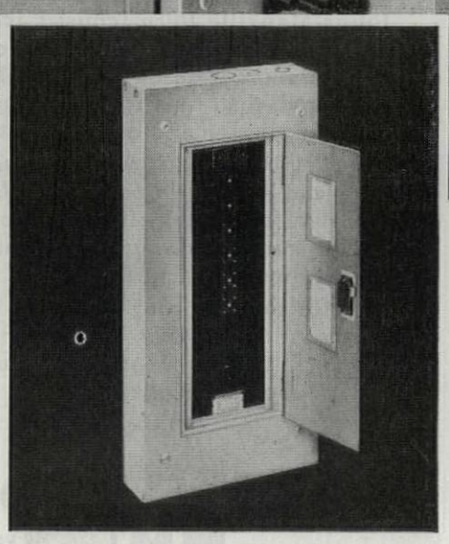
Westinghouse Bus Duct comes in standard, prefabricated sections that adapt perfectly with building plans. It can be installed in elevator shafts or wireways. When exposed, its neat appearance blends well with interior design.

The inherent flexibility of bus duct is another "plus". It provides adequate reserve capacity to handle future loads. Expensive rewiring is eliminated.

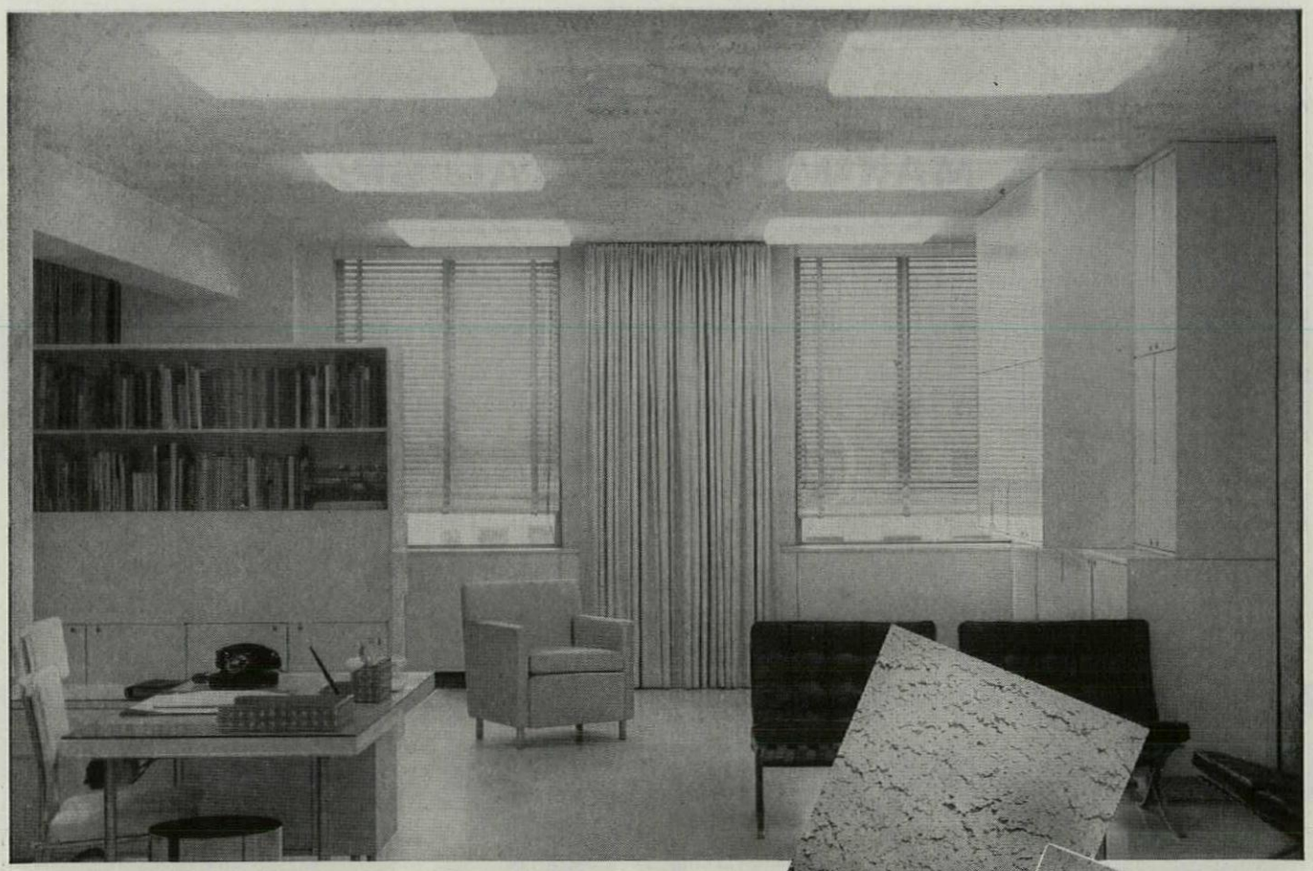
DP-5002-E







MATCH LIGHTING INSTALLATION WITH MODERN PANELBOARDS to give your clients both adequate protection and the convenience of circuit breakers. Westinghouse NPLAB-type lighting panelboard, here, features the compact Quicklag® P AB De-ion® circuit breaker. It enables you to design circuit protection into a smaller panelboard . . . and saves valuable closet space.



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Johns-Manville *Permacoustic*

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Specify J-M Permacoustic® tile for ceilings that provide unusual architectural beauty with maximum acoustical efficiency and fire safety.

Johns-Manville Permacoustic is exceptionally sound-absorbent, attractive and noncombustible. Its two random-textured surface finishes—textured and fissured—increase its noise-reduction qualities . . . provide design and decorative interest.

Made of baked rock wool fibres, Permacoustic is fireproof—*meets all building code fire-safety requirements.* Johns-Manville Permacoustic is easy to install on existing ceilings or slabs, or by suspension using a spline system of erection.

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INFORMATIONAL DATA ON PERMACOUSTIC

Sizes 12" x 12" 12" x 24"	Thickness ¾"*	Color: white
	ACOUSTICAL EFFICIENCY	
	Test No. A51-98	Test No. A51-99
cycles per second	cemented to plaster board (mounting No. 1)	mechanically mounted on special metal supports (mounting No. 7)
125	.04	.56
250	.21	.53
500	.75	.60
1000	.88	.73
2000	.85	.88
4000	.78	.88
noise reduction coefficient	.65	.70
weight per sq. ft.	1.3	1.3

*Also available in ⅞" thickness

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Johns-Manville

40 years of leadership in acoustical materials

"REINFORCED CONCRETE was a substantial factor in its economy"

Concerning this modern emergency hospital, Mr. A. Gordon Lorimer, architect, writes, "Actual competitive bidding obtained by the New York Housing Authority (for similar construction) has repeatedly established a substantial cost differential for reinforced concrete."

He added that, "The ceilings in large parts of the hospital were left as smooth concrete, and then painted, which produced appreciable savings."

Not only does reinforced concrete cut costs but it also allows work to be started sooner, because materials are available locally. Actual erection time is less, too.

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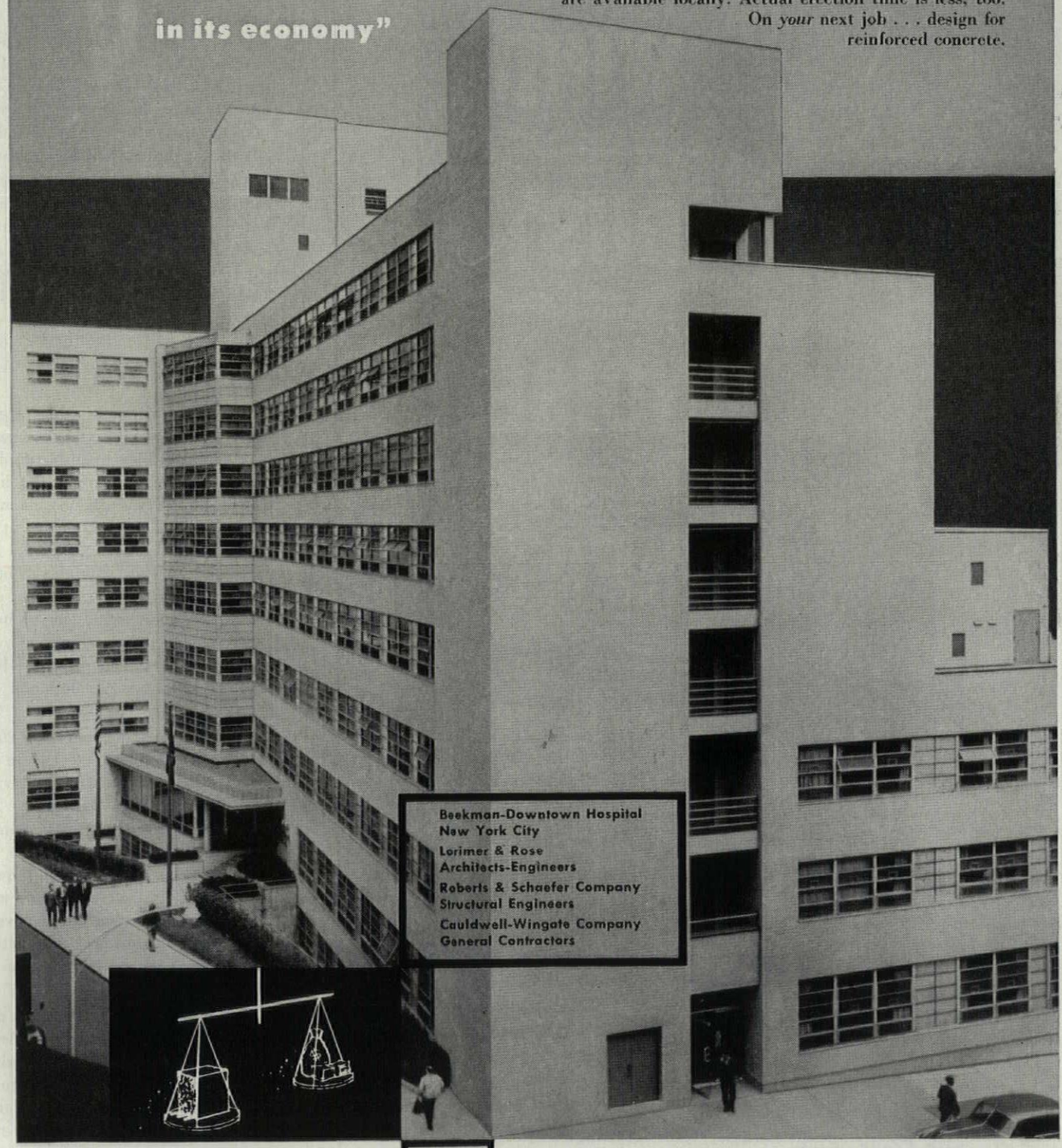

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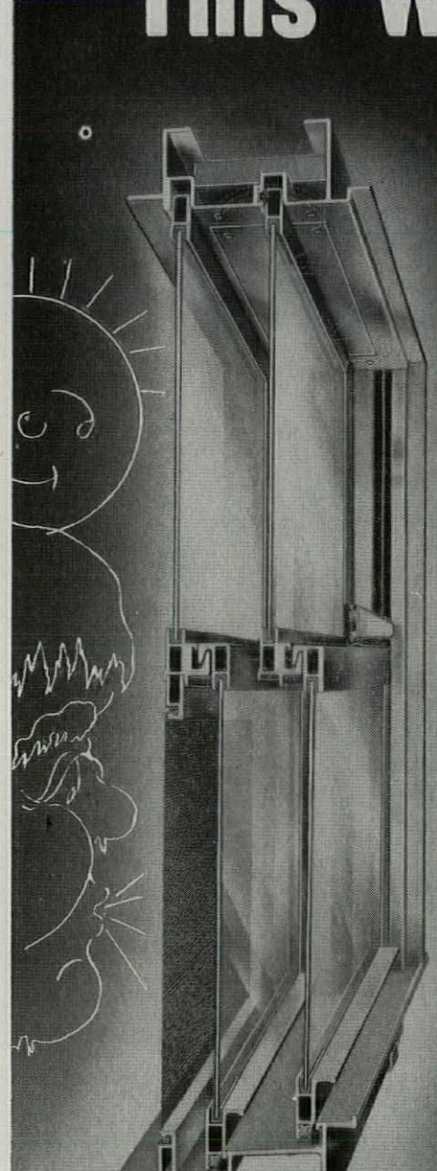
This Window STOPS WIND



Testing Laboratories report extruded aluminum Fleetlite most airtight of all operating windows.

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Yet Opens Instantly – Easily

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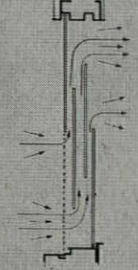

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SPACE FRAME HANGAR

(continued from p. 149)

diagonally in the upper and lower chords. The result is a completely flexible space frame truss, 8.6′ high, in which the strength of the whole is greater than that of its component parts because the entire frame acts to relieve local stresses.

Application: this technique is used for a proposed 387′ x 805′ double-cantilevered aircraft hangar in which 150′ overhangs extend either side of a three-story supporting structure containing 30,800 sq. ft. of useful office and shop space. Critical stresses due to dead load of the structure are kept down by high-tensile suspension bridge cables, 3″ diameter and 30′ o.c., spanning 250′ between overhangs.

An important aspect to be considered in cantilever design is the effect of wind. Air Force specifications demand that such cantilevers be able to withstand an uplift due to wind of 20 psf. In this hangar no special provision is made against uplift; the designers state that once the roof panels are in place, dead load will more than counteract wind pressures, although the factor of safety is not excessive.

Since the dies for the forgings of the three sizes of piping and 13 types of castings have already been manufactured, production of the standard parts for the hangar is expected to be reasonably economical. Moreover, replacement or extension at any point of the structure would be a simple matter. This particular design contains 7,565 standard connectors, 82,972′ of 6″ pipe and 283,168′ of 3″ pipe, about 2,600 tons of steel in all.

Structural engineers presently engaged on more conventional cantilevered hangars* are interested in the Wachsmann hangar, but have certain reservations:

1) tubular steel members are 20% more expensive than rolled steel, 10¢ vs. 8¢ per pound, although this design may require less steel than standard structures; 2) corrosion may occur in the intricate connectors and perhaps even inside the pipes, though the tubes may be galvanized if required; 3) in northern areas excessive snow might collect in the trough between the two overhangs. All these problems, however, are teething difficulties likely to be overcome as the structure is developed.

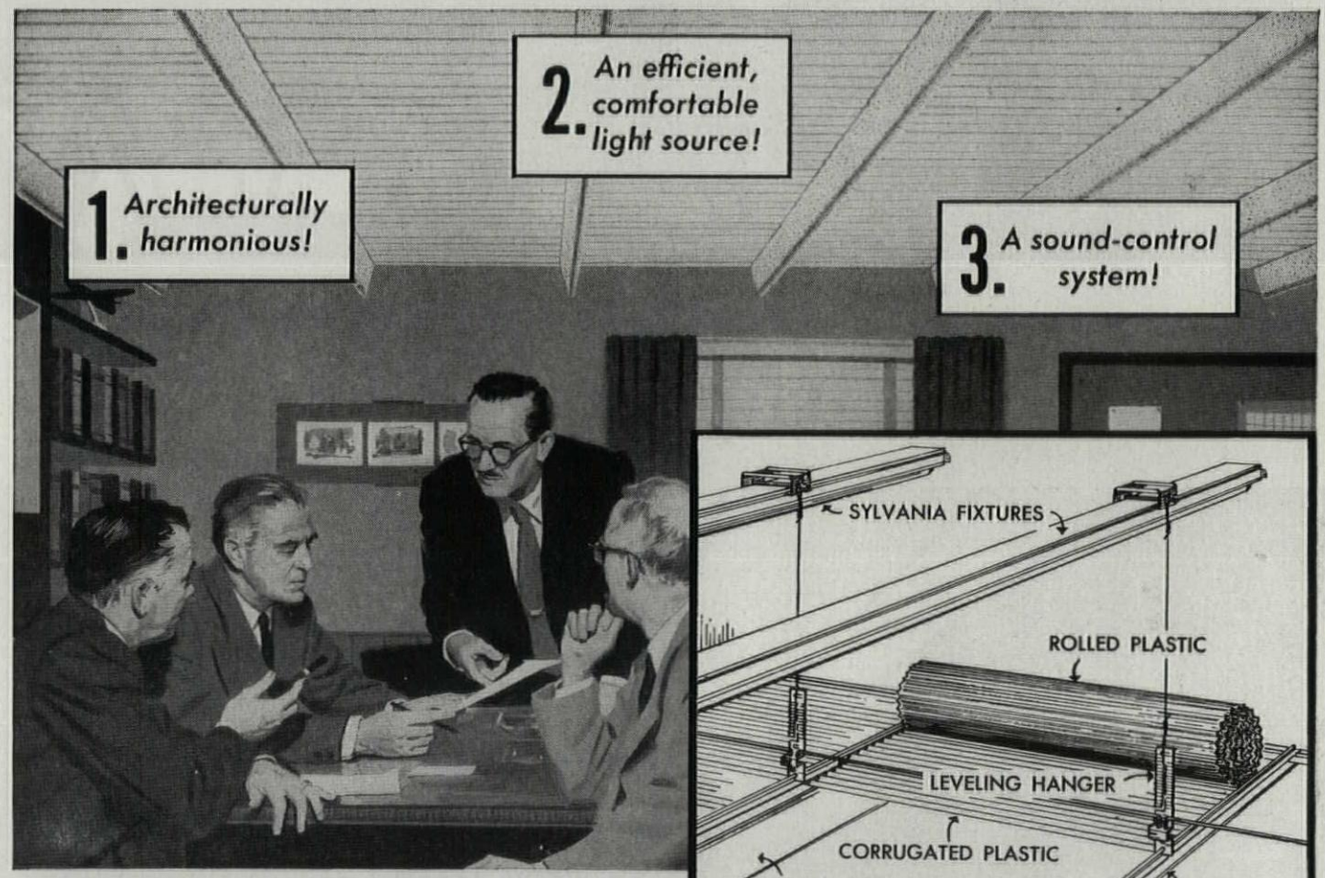
This tubular steel structure is developed by Chicago Institute of Design Professor Konrad Wachsmann in association with Douglas Church Ryhn and Jon B. Dunnington, research assistants, and with Frank J. Kornacker & Associates, consulting engineers.

* Comparative structures framed with rolled steel members: a double-cantilevered hangar at New York International Airport has 134′ overhangs with 20 psf of structural steel (AF, Jan. '54); a single-cantilevered hangar for the Temco Aircraft Corp. at Greenville, Tex., has a 121′ overhang with only 11.8 psf of steel. Erwin-Newman Construction Co. are the designers.

Another Sylvania Achievement

SYLVAN-AIRE

A three-way functional treatment of beauty — sight — sound



Showing details of Sylvania's new functional Sylvan-Aire. For ease and economy of installation, wire supports shown here are attached to lighting fixtures instead of structural ceiling.

Adaptable! Easily Installed! Economical!

You never saw a more fascinating or a more functional system of sight and sound control! It's engineered by Sylvania to serve 3 ways!

1st ...it has the beauty and character of continuous corrugated white plastic.

2nd ...it is a source of soft, eye-pleasing over-all lighting.

3rd ...its inconspicuous V-shaped "Sono-Wedges," lined with thick glass-fiber pads, deaden noise...reduce distracting sound to comfortable levels.

In addition, the corrugated form of the plastic permits air to circulate along the supporting channels. Thus *air-conditioning* also can be effectively introduced.

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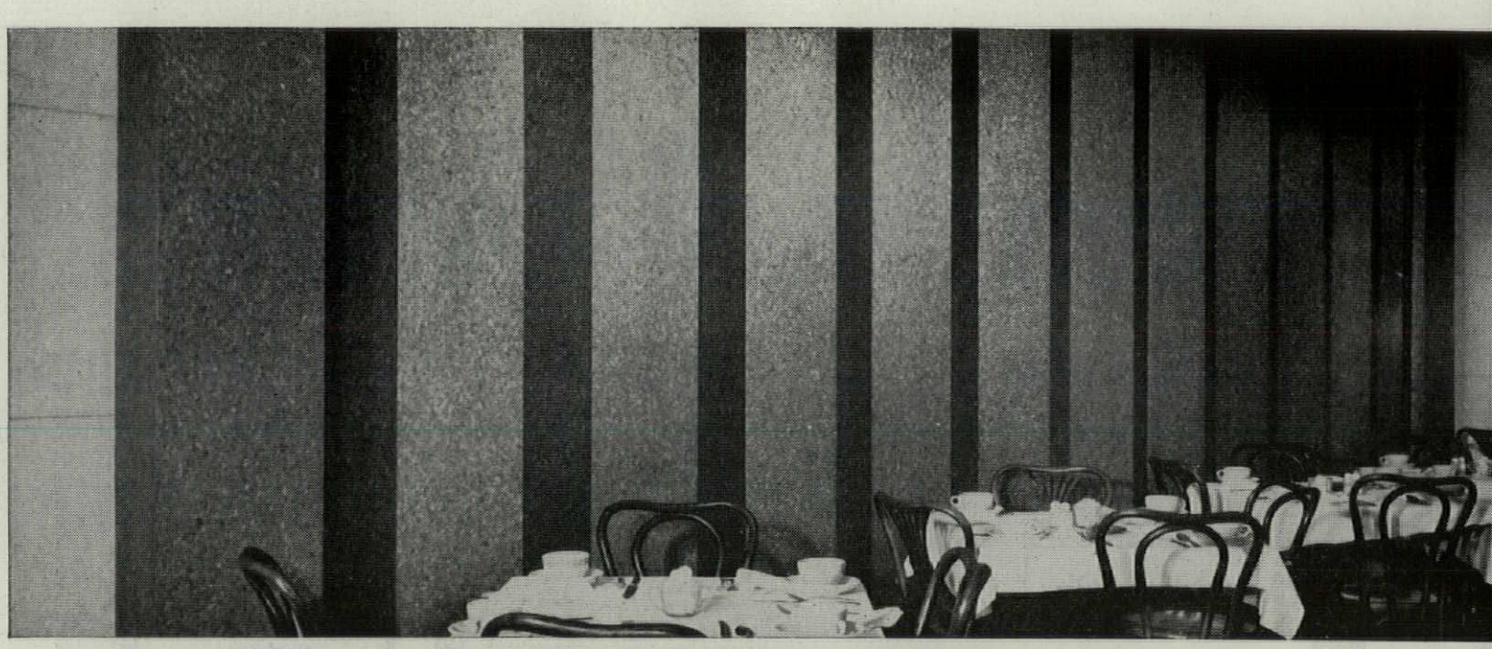
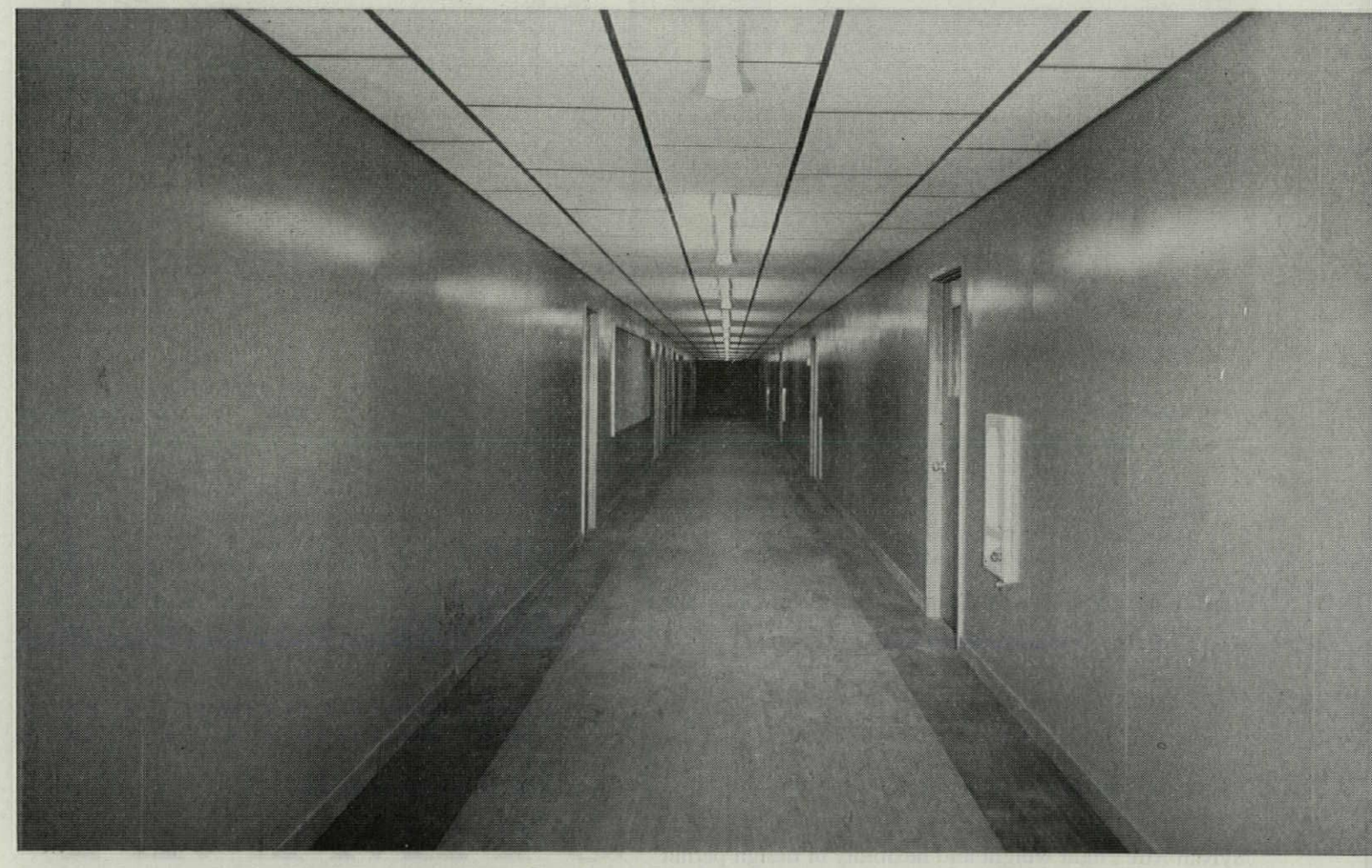
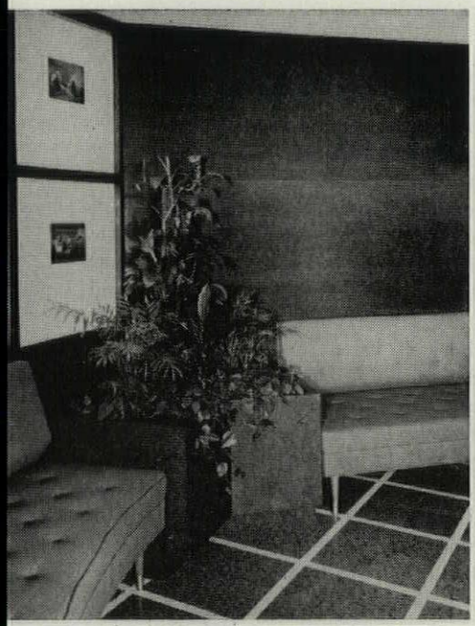


EXTRA LONG LENGTHS (available up to 48″ x 192″) of California redwood and pine Novoply were used to achieve this dramatic wall treatment.

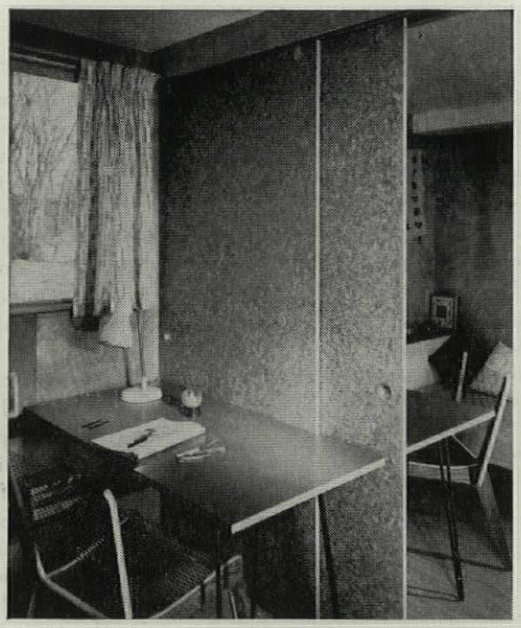
New wood-plastic Novoply gives free



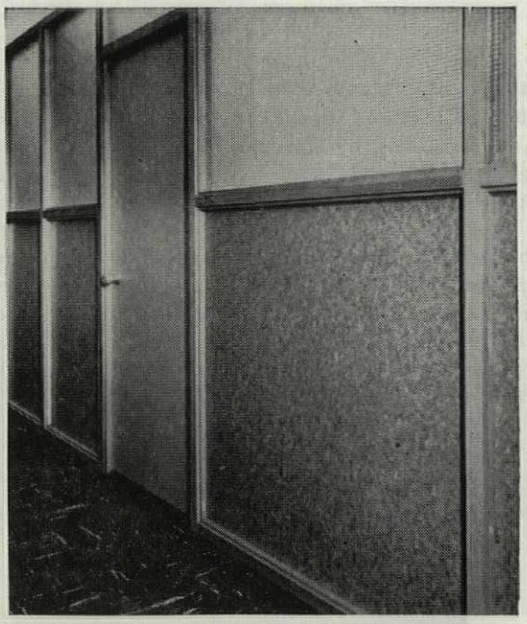
SMUDGY LITTLE HANDS will never hurt this Novoply lined school corridor.



LOOKS LIKE A "MILLION" but this Novoply showroom wall costs so little.



WARP-FREE NOVOPLY sliding door unit room divider in moderate price house.



NOVOPLY IS PERFECT for partitions—good two sides—no patches or plugs.

rein to your wall ideas

Novoply paneling opens the way to an entirely new wall treatment concept. It's bold, imaginative, practical, yet it's priced for even a modest budget.

When funds are limited, yet you still want to avoid the dull, the done-to-death ideas, then it's time to specify Novoply. You'll like the fresh mosaic textured look of Novoply in either pine or California redwood faces.

Novoply has its practical side, too! It's the most dimensionally stable wood-plastic panel made—*virtually warp-free!* Novoply is made by a special bonding process which results in an exceptionally hard, *ultraflat* surface—*good both sides!* Novoply scorns wear, takes almost any finish.

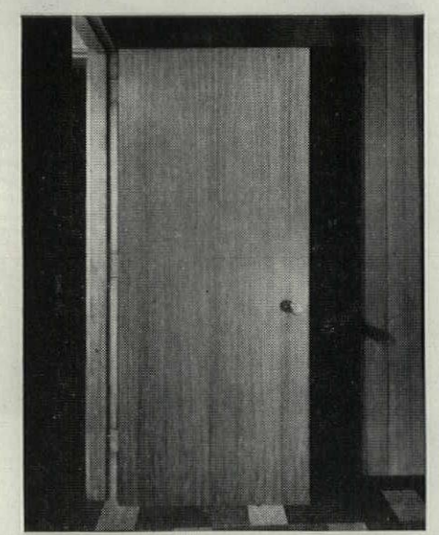
With Novoply, maintenance is never a problem, because once the walls are up and finished an occasional waxing or a wipe of a sponge is all that's needed to keep them looking fresh and new. Novoply can be installed with Weldwood Contact Cement. It's a natural for built-ins, too!

For further information consult with the Architect's Service Section at any of the 73 United States Plywood or U.S.-Mengel Plywoods distributing units in principal cities. Send for a free sample—you'll be amazed at Novoply's possibilities.

SPECIFICATIONS

THICKNESS: ¾"; *Sizes:* 24" x 72", 24" x 96", 30" x 48", 30" x 60", 30" x 72", 36" x 72", 48" x 48", 48" x 72", 48" x 96"; also cut to size for volume users from panels 6′ x 12′ and 4′ x 16′. Available in 3/8" thickness, sizes 48" x 96" and 48" x 192". Can be made 5/16" and 11/16" to order.

IMPORTANT NOTE: Only slight extra cost for long-length Novoply panels up to 16′. Long lengths reduce number of joints, reducing installation costs.



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MANUAL ON PRECAST CONCRETE CONSTRUCTION. By F. Thomas Collins. F. Thomas Collins & Associates, Box 208, San Gabriel, Calif. 102 pp. 8½" x 11". Illus. Paper-backed. $25. ($12.50 to students)

This is the first comprehensive textbook dealing exclusively with precast concrete construction. It is written, illustrated (with hundreds of valuable construction details) and produced by an experienced consulting engineer who has himself built several important precast structures and who believes that all except the smallest structures can be built most efficiently with precasting. His reasons: precasting permits better quality concrete; it requires less formwork and can therefore be more accurately constructed; it permits easier reinforcing, faster erection and closer control of critical joint details, all of which help to produce better work at less cost. Dollarwise, precast construction has boomed from $10 million in 1947 to $500 million in 1952.

Throughout his book Engineer Collins stresses the need to consider erection methods in the initial design stages—lifting stresses, for instance, must be carefully checked to assure that members will not be damaged during erection; and erection procedures must be rapid and foolproof, for a heavy crane and crew might cost about $25 an hour. In short, the author thinks an extra $1 spent on engineering can save as much as $10 in the field.

The book is highly informative on every aspect of precasting from patents to painting. It includes reports on formwork design, erection procedures, vacuum-lifting techniques, sandwich panels, thin shell concrete, multistory framing and prestressing. There is also an excellent chapter on costs of precast framing with several useful *pro formas* to help decide whether a particular project is large enough to justify the investment of time and capital in extra engineering and equipment for precast construction (see table).

Unit costs for preliminary estimating of typical warehouse structure. Using Class I framing, all concrete, the structural shell would cost about $2.85 per sq. ft. on the West Coast, excluding mechanical and electrical services but including engineering and overheads; using Class III framing, timber roof trusses and tilt-up concrete walls, the shell would cost about $2.90 per sq. ft.

Preliminary estimating costs for precast construction

General requirements
- Engineering, supervision, overhead 6-10%
- Social security, insurance, sales tax, etc. 6-10%

Site and subgrade preparation
- Ground level .....10-12¢ per sq. ft.
- Dock high .....22-26¢ per sq. ft.

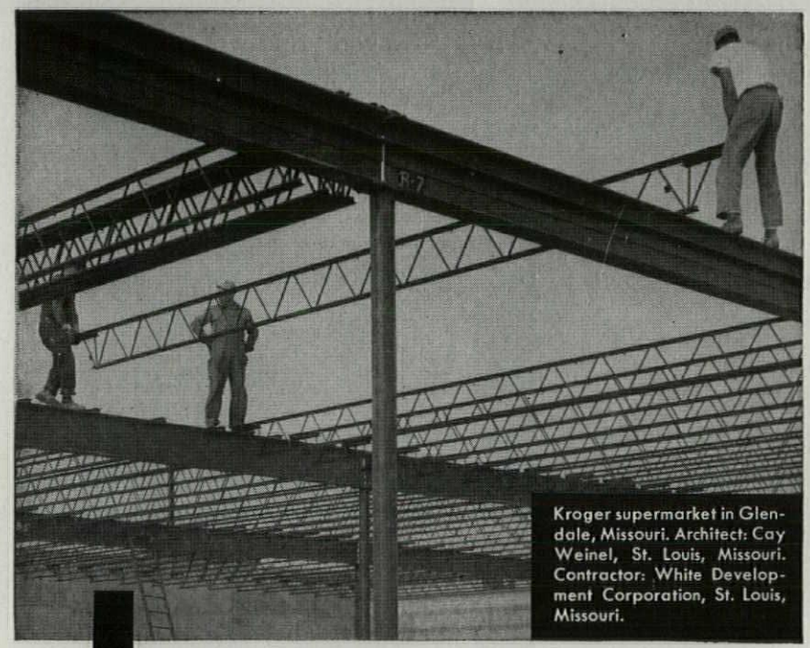
Floor slab fabrication
- 5" Unreinforced .....32¢ per sq. ft.
- 5" Reinforced .....36¢ per sq. ft.

Wall panels
- With openings—
  - stacked .....90¢-$1.10 per sq. ft.
  - no stacking...85¢-$1.05 per sq. ft.
- Without openings—
  - stacked .....88¢-93¢ per sq. ft.
  - no stacking...84¢-88¢ per sq. ft.

Foundations
- Concrete roof—
  - wall .....$2 per lin. ft.
  - interior .....4-5¢ per sq. ft.
- Wood roof—
  - wall .....$1.65 per lin. ft.
  - interior .....2-3¢ per sq. ft.

Roof structure
- Thin-shell concrete—
  - long span .....$1.35-$1.55 per sq .ft.
  - medium span ..$1.20-$1.35 per sq. ft.
  - short span .....$1.05-$1.20 per sq. ft.
- Wood—no ceiling—
  - long span .....85¢ per sq. ft.
  - medium span ..80¢ per sq. ft.
  - short span .....75¢ per sq. ft.

continued on p. 182



Kroger supermarket in Glendale, Missouri. Architect: Cay Weinel, St. Louis, Missouri. Contractor: White Development Corporation, St. Louis, Missouri.

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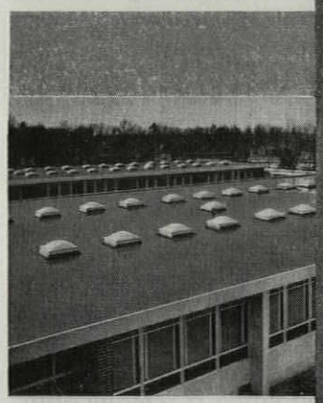

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Balanced Daylighting

. . . with low initial cost, savings in construction, no maintenance . . . these are the reasons why Architect Leslie N. Boney, Wilmington, N. C., has specified Skydomes for 42 schools during the past four years.

Mr. Boney says: "We specify Skydome toplighting because this method achieves balanced daylighting with lower ceiling heights, reduced cubage costs and simple roof construction . . . at substantial savings. School administrators and teachers are very satisfied with the quality of toplighting achieved.

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"We are proud of these schools. They are among the state's most advanced in design."

Wascolite Skydomes are available in White Translucent or Clear Colorless acrylic plastic. They come in 3 basic shapes — square, rectangular, circular — and in a wide range of stock sizes.

CREDITS: Leslie N. Boney, Architect; M. L. Skinner, General Contractor; Isham B. Hudson, Superintendent of Schools.

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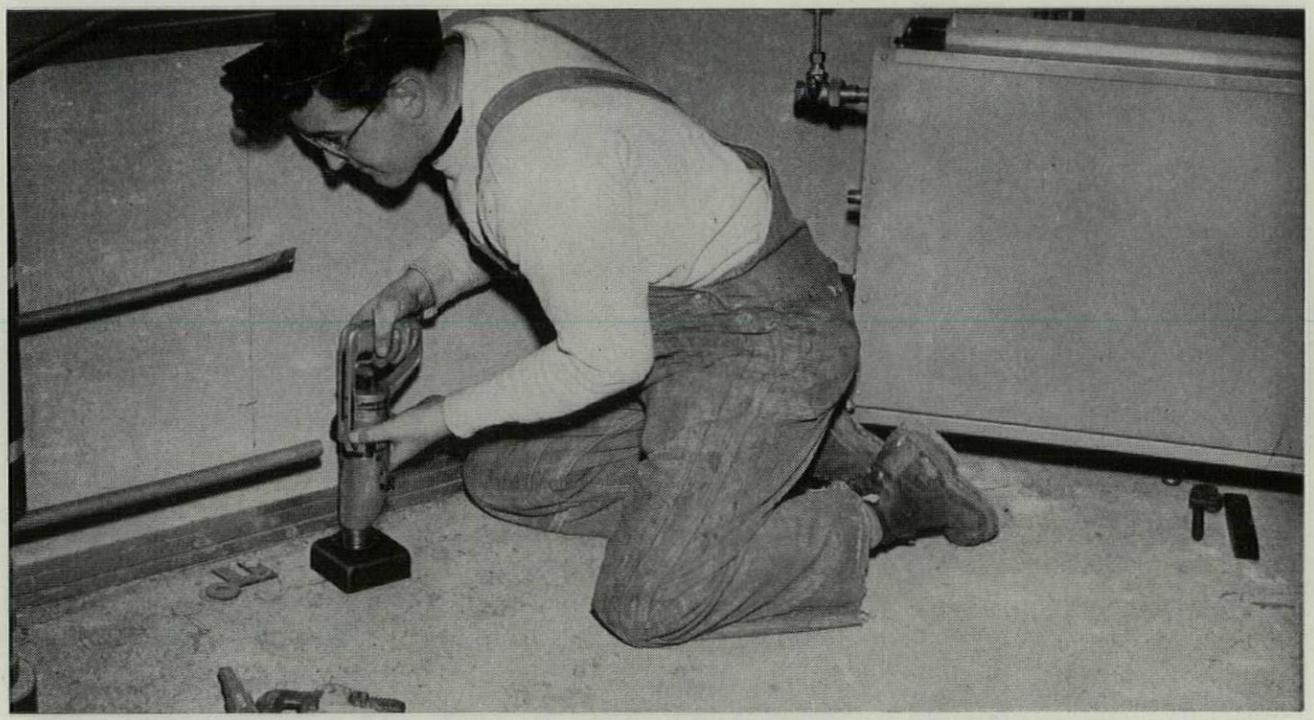

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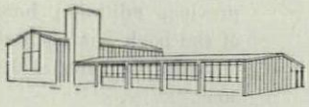

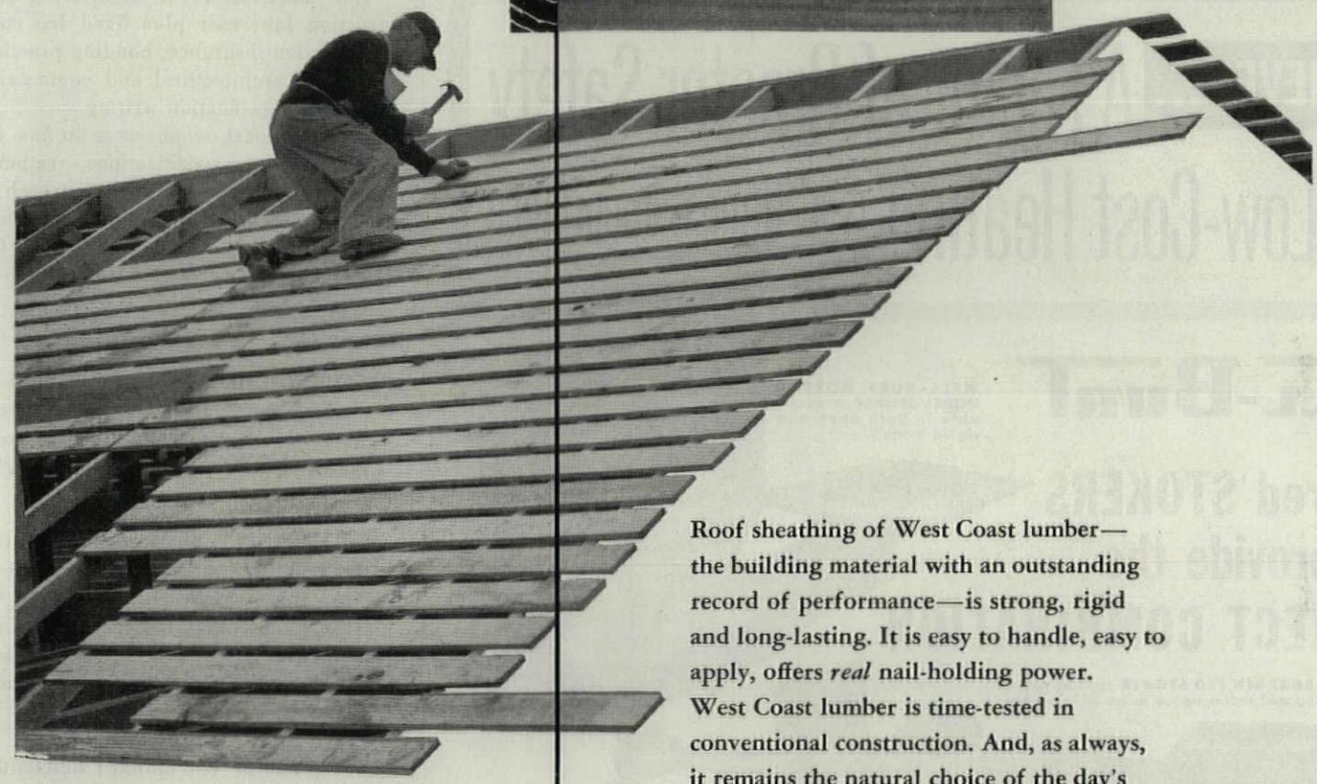

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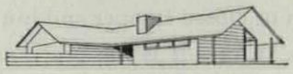

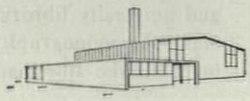

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MIES VAN DER ROHE. By Philip C. Johnson. Second Ed. Published by The Museum of Modern Art, New York, N. Y. Distributed by Simon & Schuster, 630 Fifth Ave., New York, N.Y. 216 pp. 7½" x 10¼". 200 plates. $3.50 (paper). $7.50 (cloth)

This handsome monograph on Architect Mies van der Rohe, originally published in 1947 (and reviewed in FORUM, Nov. '47) has been republished in an expanded second edition. In addition to the buildings originally shown, Mr. Johnson has included plans, details and photographs of such recent Mies structures as the Farnsworth House, the various Chicago apartment towers, the Chicago Arts Club, a number of new I.I.T. buildings and several projects. It is perhaps unfortunate that the Farnsworth House was not shown in better photographs, but the rest of the new pages continue the high standard set in the original book.

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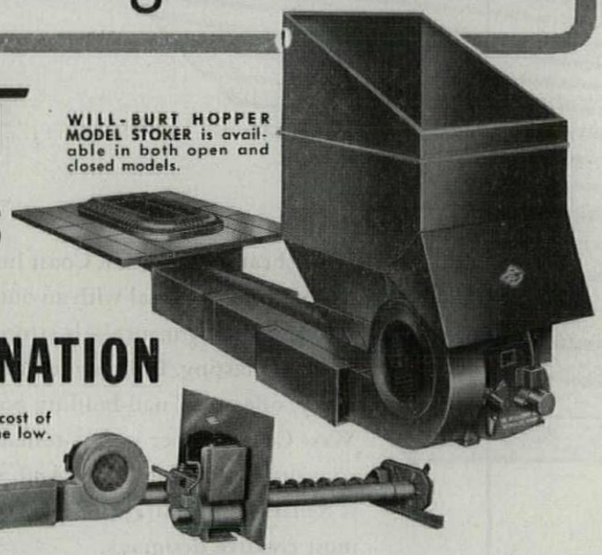

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Over Twenty-Five Years in the Stoker Business

ENGINEERING CONTRACTS AND SPECIFICATIONS. By Robert W. Abbett. Third Ed. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N.Y. 429 pp. 5½" x 8½". $6

A basic legal guide to the administration of construction work, this is a clear and concise description of the fundamental methods of preparing contracts and specifications, and a useful outline of engineering and construction law.

Scope of the book remains the same as the previous editions; however, about one half of the book has been rewritten, and the total amount of material has been increased by 30%.

New materials cover engineering and construction law, cost plus fixed fee contracts, construction insurance, bonding practice, contracts for architectural and engineering services and specification writing.

As in the past, emphasis is on *how* to write contracts and specifications, rather than merely *what* to write. The approach is that of the professional engineer, and the book includes many of the ways in which US government contracts' procedure differs from private practice.

PROCEEDINGS OF WOOD SYMPOSIUM. Coordinated by Frank J. Hanraham. Timber Engineering Co., Dept. WS-L, 1319 Eighteenth St. N.W., Washington 6, D.C. 109 pp. 8½" x 11". Illus. No charge

"One hundred years of engineering progress with wood" are recorded in these 21 papers and six discussions delivered at the Centennial of Engineering Convocation in the fall of 1952. Three primary problems are considered—timber supply, utilization and structural design.

PROCEEDINGS OF THE LIBRARY BUILDING PLANS INSTITUTE. Edited by Donald C. Davidson. ACRL monographs, c/o American Association of College and Library Assn. Reference Libraries, 50 E. Huron St., Chicago 11, Ill. 98 pp. 8½" x 11". $2.25

This work represents material discussed and presented at last year's workshop session where architects and librarians collaborated in the study and analysis of plans for proposed library buildings. The monograph includes an up-to-date bibliography on college and university library buildings which should make the monograph a useful reference tool for both the librarians and the architects.

JEWISH SCHOOL BUILDING MANUAL. By Isadore H. Braun. The Board of Jewish Education, 72 E. 11th St., Chicago 5, Ill. 32 pp. 9" x 6". Illus. Paperbound. $1

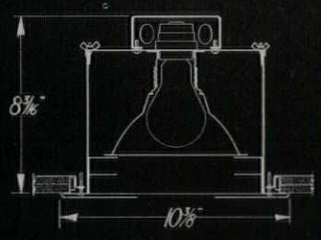
A guide for private school boards by an architect experienced in the field of Jewish school building.

continued on p. 186



SPOT
LIGHTING
WITH
CURTIS

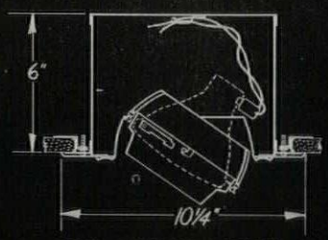
"VARI-SPOT"



CATALOG No. 2246

Curtis "Vari-Spot" is a shallow recessed downlight, utilizing one 100-watt inside frosted incandescent lamp. It is designed for use in residential and commercial interiors. An adjustable Alzak aluminum reflector permits the diameter of the circle of light to be controlled and changed as desired. Decorative holes in the finishing ring provide an attractive light pattern at the ceiling.

"PUNCHY"

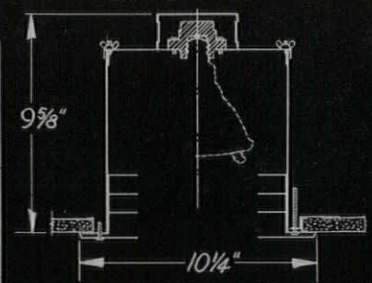


CATALOG No. 2240

Curtis "Punchy", is a shallow recessed adjustable downlight utilizing one PAR-38, Side Prong 150-watt projector spot or flood lamp. It is designed to provide punch lighting for counters, displays, show windows and other areas in store interiors.

"Punchy" features an exclusive aluminum gimbal ring which permits adjustment of the lamp to any angle 0° to 35° from the vertical, and 0° to 360° horizontal.

"SPOTTY"



CATALOG No. 2244

Curtis "Spotty" is a shallow recessed fixed downlight utilizing either one PAR-38 or R-40 screw base 150-watt spot or flood lamp. It has wide application for accent, supplementary and general lighting.

Three horizontal steel baffles, an integral part of each unit, are designed and positioned to provide an exceptionally low-brightness incandescent unit at normal viewing angles.

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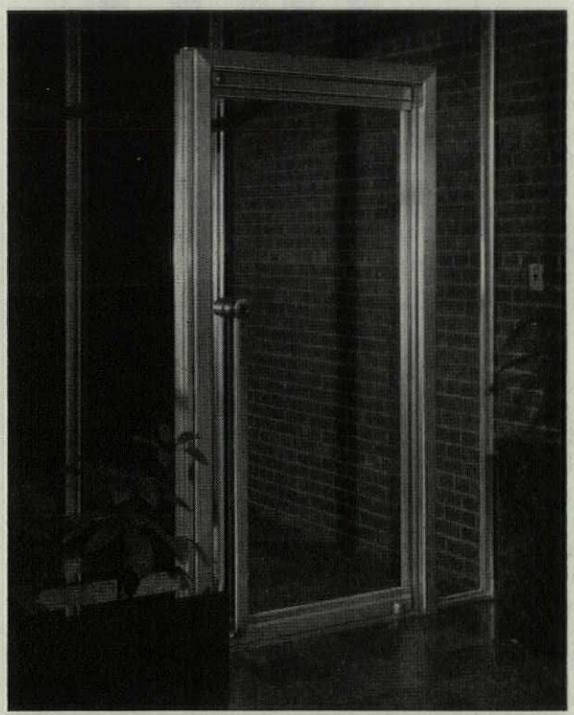
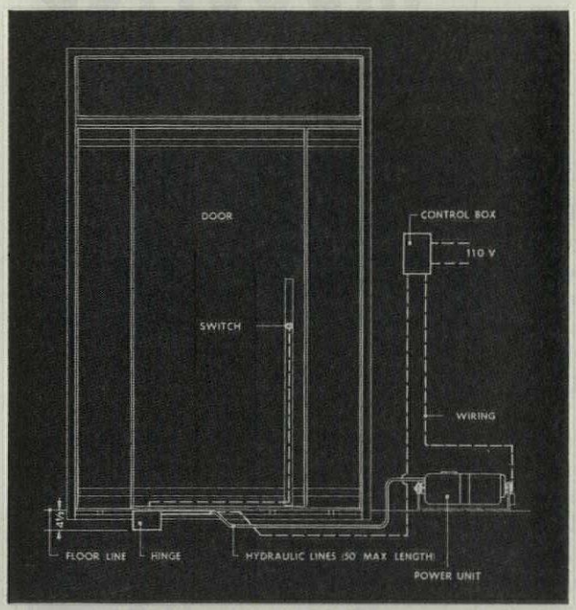
automatic door opener"



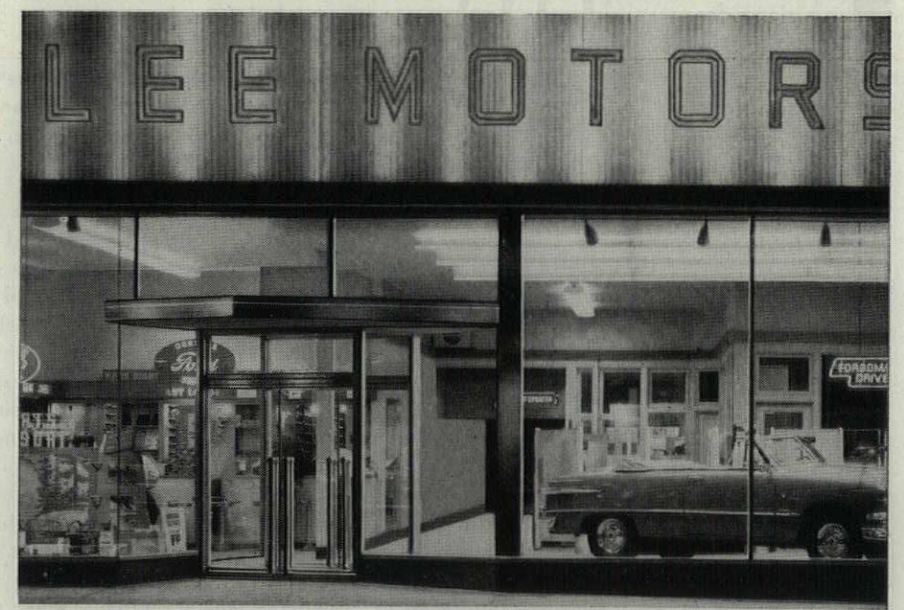
FOR ALL KINDS of industrial and commercial buildings, leading American architects are specifying the Pittcomatic automatic door opener. This building in South Bend, Indiana, is an interesting example. Architects: Schwartz & West, South Bend, Indiana.



BANK EXECUTIVES are "sold" on the Pittcomatic. They state that their customers like the easy response of doors having this automatic opener; that these installations have actually attracted more customers. Architect: Wyatt C. Hedrick, Dallas, Texas.



THE POWER UNIT supplies hydraulic power to the hinge under the door through ⅜" copper lines. The power unit is activated by a 10-volt circuit in the handle which passes through the control box. Oil lines are 3000-lb. test. The action of the door in all respects can be regulated by adjustments provided in the control box and the hinge. No power can build up. It is a safe door.



IN RETAIL STORES, like this automobile showroom in Toledo, Ohio, the Pittcomatic not only brings the practical advantages of its automatic operation, but, with Herculite Doors, adds to the over-all feeling of open-vision, which is such a proven sales stimulator. Architects: Sanzenbacher, Morris & Taylor, Toledo, Ohio.

For complete information on the Pittcomatic, write to Pittsburgh Plate Glass Company, Room 4287, 632 Fort Duquesne Blvd., Pittsburgh 22, Pa.

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BOOK REVIEWS *continued from p. 182*

MANUAL ON BOYS' CLUB BUILDING AND CONSTRUCTION. A publication of Building Service Boys' Clubs of America, 381 Fourth Ave., New York 16, N.Y. 34 pp. 9" x 6". $1

A guide for architects, engineers and builders, this manual contains information on location of the building and selection of a site, as well as on design, construction and maintenance of boys' club buildings.

CHESKIN COLOR CHARTS FOR COLOR PLANNING. By Louis Cheskin. The Macmillan Co., 60 Fifth Ave., New York 11, N.Y. 8¼" x 5½". Illus. $2.50

This book presents a condensed but complete color system of 300 colors, taken from the *Cheskin Color System* which is composed of 4,800 different colors. Three of the 300 colors are primaries: yellow, magenta red and green-blue. The remaining 297 colors can be mixed from some combination of the three primaries, black and white. Simple instructions are given on the use of the charts and on mixing any of the 300 colors.

CHESKIN COLOR WHEEL FOR COLOR PLANNING. By Louis Cheskin. The Macmillan Co., 60 Fifth Ave., New York 11, N. Y. 11" x 11". $5

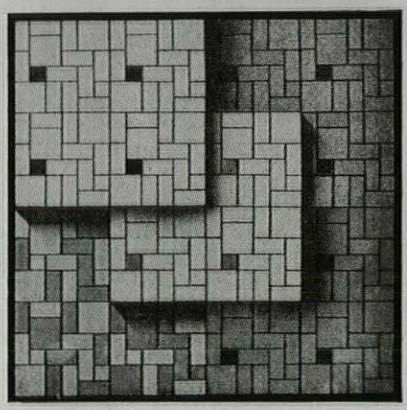
A tool for color planning, this wheel shows 12 hues, 48 tints, 60 shades and 240 tones—a total of 360 colors.

GARDENS. ("The Things We See" series, No. 7.) By Lady Allen of Hurtwood and Susan Jellicoe. Penguin Books, Baltimore, Md. 64 pp. 7" x 8½". Illus. $1.25

This inexpensive little picture book (100-odd photographs) is crammed with good ideas for outdoor planning. In house landscape, it touches lightly on everything from cheerful window boxes to lavish swimming pools, but most eye-opening for US readers are its ideas for public spaces, a field in which Europeans have long surpassed us. Here are simple, handsome settings for apartment buildings, schools and factories, corners of public parks designed for sun, chess or fountain watching, benches comfortable enough to keep people off the grass, litter baskets gay enough to attract litter. From Copenhagen there is an organized "junk playground" where children can build houses and dig caves, from Stockholm an abstract "jungle-gym" sculpture covered with climbing kids. There are restaurant gardens, roof gardens for factory and office workers, waiting gardens for railroad commuters. And there are quiet gardens for the dead that make the average cemetery look pompous and cluttered. One thing is obvious from the pictures: if any outdoor space is carefully and beautifully designed, people will enjoy it enough not to abuse it.

continued on p. 190

TILES
by
SPARTA



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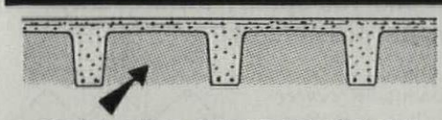
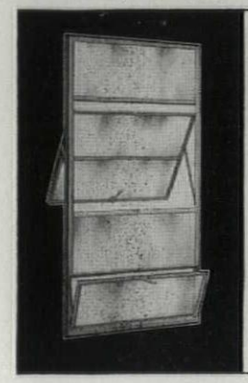
How Ceco-Meyer steelform construction cut floor weight 40%



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



Shaded portions show concrete eliminated by concrete joist construction.



Ceco's rugged 1½" Intermediate Projected steel windows are made to outlast any structure. Combined weight of frame and ventilator members not less than 3.6 pounds per lineal foot.

In construction products **CECO ENGINEERING** *makes the big difference*

CECO 1½" INTERMEDIATE WINDOWS PROVIDE BETTER DAYLIGHTING—OUTLAST ANY STRUCTURE

When Karl Keffer Associates, architects, designed the Charles Evans Junior High School in Ottumwa, Iowa, they faced exacting requirements:

> The structure had to provide all instructional units, plus shops, lunch room and auditorium for a minimum of 875 students . . . plus a gymnasium for a seating capacity of 4,500 . . . and this had to be done on a rigid budget.

Ceco-Meyer Steelform Construction was selected as the best way to span the 22′ to 24′ wide rooms . . . a natural choice by architects for thousands of schools. The method eliminates beams, thus allowing a flat ceiling for all rooms. Rigidity and soundproofing are provided . . . plus a saving of 40% in dead load over other types of reinforced concrete. Since Steelforms are quickly placed and removed, pouring of concrete is speeded, with weeks of construction time saved. Total cost of the Evans School was only $12.13 per sq. ft. When it came to windows, Ceco's 1½" Intermediates got the call. Heavy 1½" sections assure smooth operation and long life. Maintenance is negligible. Large glass lights provide open view . . . controlled daylighting guards pupils' eyesight. As on thousands of projects, Ceco supplied the Reinforcing Steel on schedule . . . Ceco Integrated Service brought all products to Contractors Ringland-Johnson, Inc., as needed. Result . . . a better structure . . . building budget balanced. Here is another example of Ceco performing on the Architect-Contractor-Supplier team. Ceco Product Specialists help you save through product engineering. Consult Sweet's File for address. CECO STEEL

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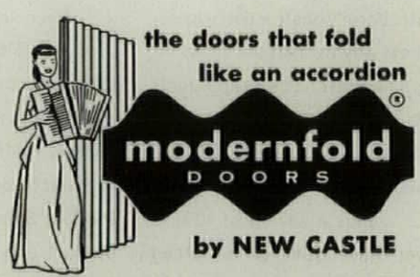

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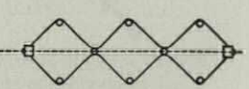
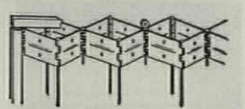
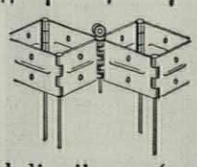


★ Two—not just one—vertical steel rods to each hinge section, for greater rigidity.



★ Trolleys at hinge intersection—along the centerline—for smoother, torque-free operation.



Get full details from your Modernfold distributor (under "doors" in city classified directories) or write New Castle Products, Inc., P. O. Box 904, New Castle, Indiana.

In Canada: New Castle Products, Ltd., Montreal 6

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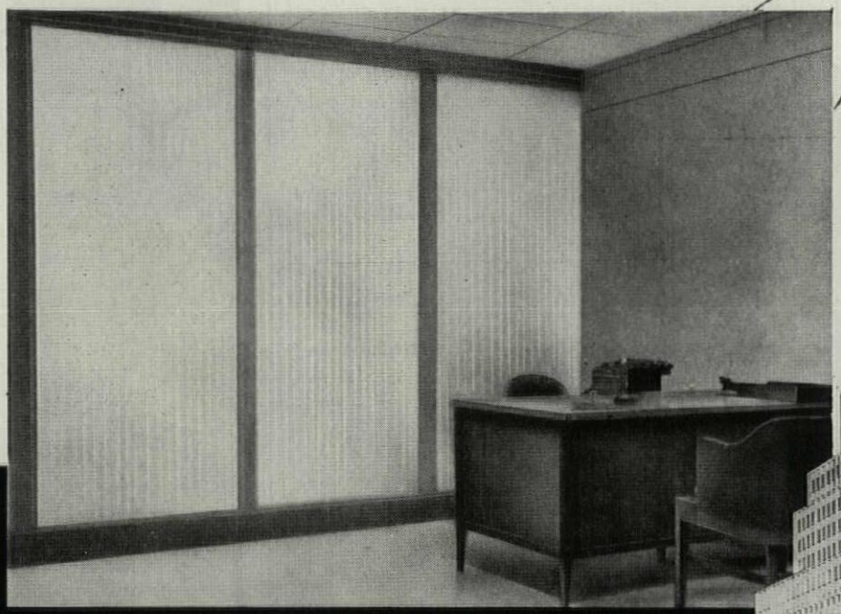



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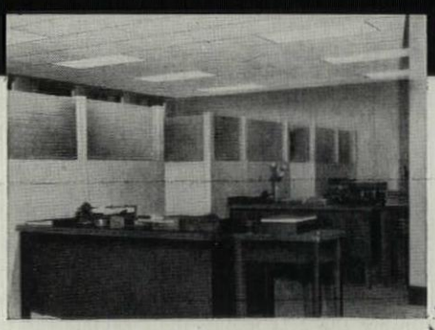

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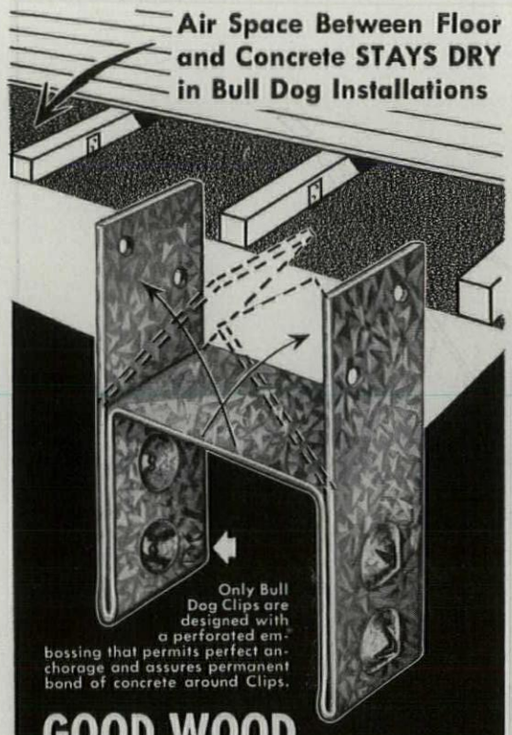

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BOOK REVIEWS *continued*

VANITY AND VALUE—The Importance of Art for Our Time. By Francesco Memoli. Exposition Press, 386 Fourth Ave., New York 16, N.Y. 502 pp. 5½" x 8¼". $5

Taking a firm stand against "the destructive scientific and technological concepts of modern materialism," Francesco Memoli, Cincinnati architect and noted esthetician, has written a lucid guide to the larger meaning of art in our society. The book combines four volumes in one: 1) Value: A Picture of Society; 2) Economics: The Principles of Social Management; 3) Vanity: A Discussion of Social Attitudes and Standards; 4) Esthetics: The Practical Means to Social Ends.

THE SOCIAL FUNCTION OF ART. By Radhakamal Mukerjee. Philosophical Library Inc., 15 E. 40th St., New York 16, N.Y. 280 pp. 10" x 7¼". Illus. $10

This book is the outcome of a series of special lectures at the Faculty of Arts in the University of Lucknow in India.

ARCHITECTURE IN BRITAIN 1530-1830. By John Summerson. Published by Penguin Books Inc., 3300 Clipper Mill Rd., Baltimore 11, Md. 373 pp. 7½" x 10½". Illus. $8.50

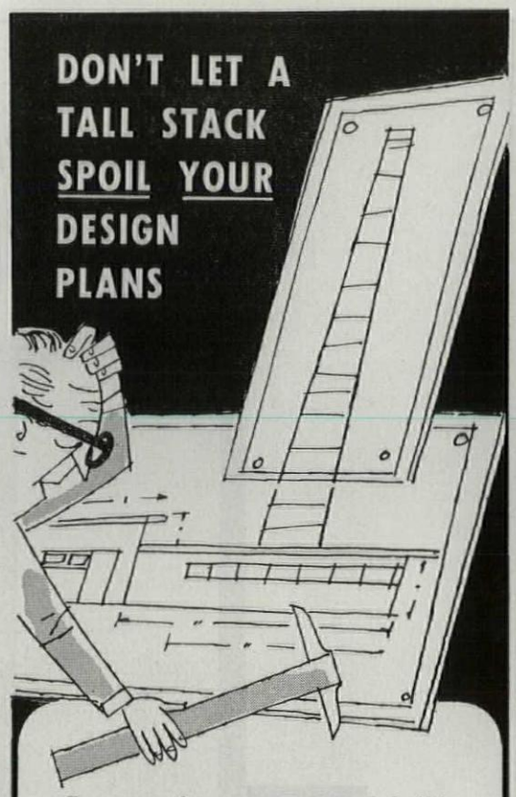
In addition to the main text describing the architecture of the period, there are two long appendices, one on Scottish architecture and the other on the architecture of the Thirteen Colonies.

ART UNDER A DICTATORSHIP. By Hellmut Lehmann-Haupt. Oxford University Press, 114 Fifth Ave., New York 11, N.Y. 277 pp. 6¼" x 9¼". Illus. $5.50

Here for the first time in English is the complete story of the perversion of art to propaganda in twentieth-century dictatorships.

In later chapters of the book Mr. Lehmann-Haupt considers the artistic policies of the Soviet Union and how they resemble those of Nazi Germany, but the body of the book deals with the Nazis, whose grim efficiency in corrupting the arts makes their regime the perfect case study. He shows how all branches of the arts, from architecture to children's art, were radically warped by them to suit their own ideological purpose.

Hellmut Lehmann-Haupt was born in Berlin, the son of a professor of Ancient History at the University of Berlin. In 1929 he came to this country where he has now spent half his life. From 1948 to 1949 he worked with the American Military Government in Berlin as civil art administration officer and thus gained a first-hand knowledge of Nazi art.



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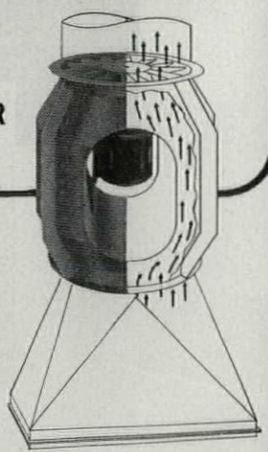

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Berger **STEEL LOCKERS**

REPUBLIC STEEL

"Ah... here's snow melting!"



sign of a progressive business

People who buy are often unfairly referred to as the "fickle public." Nothing is further from the truth . . . for there is nowhere displayed greater constancy than by a really *satisfied* public.

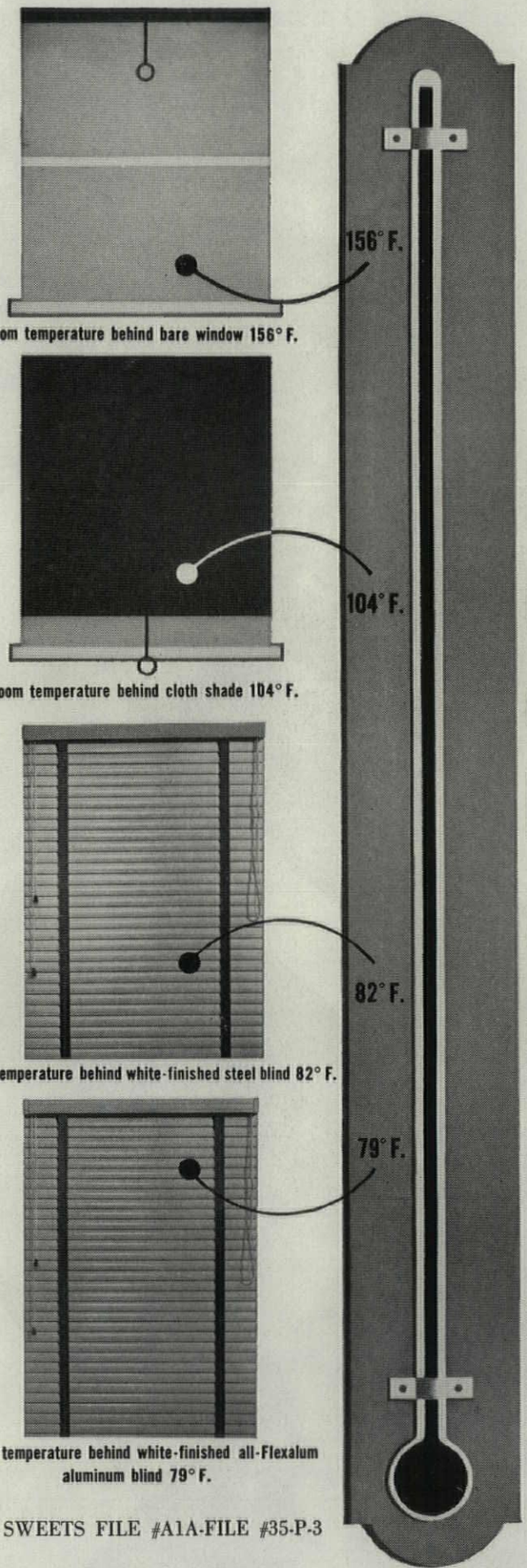
Progressive, successful businesses are increasingly aware of their obligation to perpetuate this public loyalty by making it easy, convenient and comfortable for customers to do business. Hence *snow melting* has taken its place along with air conditioning, good lighting, adequate rest rooms, ample parking facilities and other conveniences that win public esteem.

For sidewalk, driveway, and parking area snow melting and ice removal systems, *steel pipe* is the overwhelming choice. For steel pipe is economical, formable and weldable for grid and coil fabrication, and has been proved in more than 60 years of conventional hot water and steam heating applications. In fact it is the most widely used pipe in the world for plumbing, heating, fire sprinkler systems, air, gas and water lines!

Ask for the new 32 page color booklet, "Steel Pipe Snow Melting and Ice Removal Systems." It is yours, free and without obligation.

Steel Pipe is First Choice

COMMITTEE ON STEEL PIPE RESEARCH
AMERICAN IRON AND STEEL INSTITUTE
350 Fifth Avenue, New York 1, N.Y.



room temperature behind bare window 156° F.

room temperature behind cloth shade 104° F.

room temperature behind white-finished steel blind 82° F.

room temperature behind white-finished all-Flexalum aluminum blind 79° F.

SEE SWEETS FILE #A1A-FILE #35-P-3

no window covering controls temperature like the all-*Flexalum* blind

An objective study by the Faber Birren Company* shows: the all-FLEXALUM aluminum blind controls room air temperature more effectively than any other window covering—including venetian blinds made with other materials. An even more dramatic difference was obtained by measuring the surface temperatures of unfinished FLEXALUM aluminum and raw steel exposed to solar heat... the FLEXALUM reading was 19° F. lower. This study points to all-FLEXALUM blinds as an effective way to reduce heat.

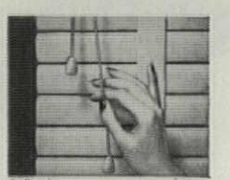
only all-Flexalum blinds have all these long-life and low-maintenance advantages:



Wipe-Clean Plastic Tapes—Won't fade, fray, shrink or stretch.



Spring-tempered aluminum slats—Snap back to perfect shape. Won't rust, chip, crack or peel.



Long-Wear Nylon Cords—Won't fade or fray. Tassels are noiseless, unbreakable plastic.

Copies of this study available on request. Write for local Flexalum sources, free file of venetian blind information

HUNTER DOUGLAS CORP., 150 BROADWAY, NEW YORK 38, N. Y. • IN CANADA, HUNTER DOUGLAS LTD., MONTREAL 3, QUEBEC

Library of the Minneapolis School of Art





Dispel the Shadow of Time... Modernize Your Elevators

He had his foot in the door the first day your building was complete. Then he moved in; little by little took up more space, until suddenly —Father Time became a troublesome tenant.

An investment in Westinghouse elevator modernization may be just what your building needs to help you meet new building competition.

Our elevator modernization experts help make the most of your existing installation. They add new equipment only when necessary to make your system equal to that of any *new* building both in operation *and* appearance.

Westinghouse modernization experts have helped management increase rentals in *all* types of buildings. Their service has kept existing buildings young in the face of new building competition by providing fast, smooth, efficient Westinghouse elevator service.

Our engineers are ready to talk over your problems at any time. Call our nearest office today.

Westinghouse Elevators

PASSENGER AND FREIGHT ELEVATORS • ELECTRIC STAIRWAYS

PROTECTIVE MAINTENANCE AND SERVICE

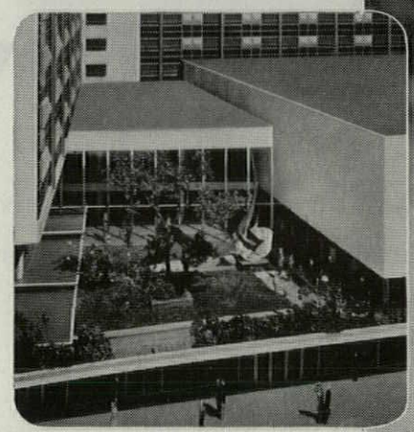
YOU CAN BE SURE...IF IT'S Westinghouse

J-98703

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

WILLIAM B. TABLER
architect
JAROS, BAUM & BOLLES
mechanical engineers
ROBERT E. McKEE, INC.
general contractor
J. S. BROWN & E. F. OLDS
plumbing contractors
ELECTRICAL & MECHANICAL SUPPLY CO., INC.
SOUTHLAND SUPPLY CO.
plumbing wholesalers

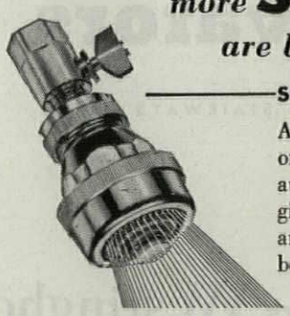




The gardened court features a reflecting pool

DALLAS STATLER —A PARADE OF STAR FEATURES

• True to Texas tradition of bigness, the DALLAS STATLER HOTEL is "one of the largest projects of its kind developed anywhere in more than a quarter of a century." At a cost of 15 millions of dollars its 18 stories will house 1001 air conditioned guest rooms with specially-designed furnishings, extra large and luxurious dining and social rooms, and a spacious lounge facing a gardened court. Its ballroom, largest in the southwest, will accommodate over 3,000 persons. Its "Terrace Room" will serve more patrons than any present Dallas supper or night club. The building will have an exterior skin of glass, aluminum and embossed porcelain panels. Because of its widely spread wings, guest rooms will not face others across courts. Each bathroom will have combination, one-piece lavatory and dressing table, with closet bowl angled to become a dressing table seat. The bowl is equipped with concealed SLOAN *Quiet-Flush* VALVE. Thus Hotels Statler Company follows its policy of using Sloan Flush Valves for all new construction, rehabilitation and replacement—repeated evidence of preference that explains why . . .

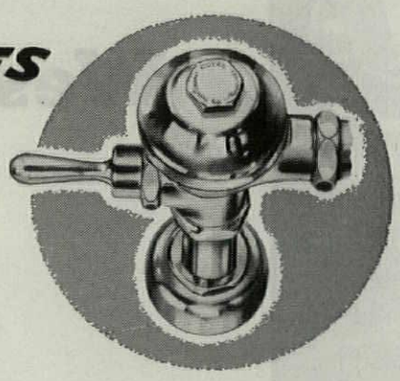


more **SLOAN** *Flush* **VALVES**
are bought than all other makes combined

SLOAN VALVE COMPANY • CHICAGO • ILLINOIS

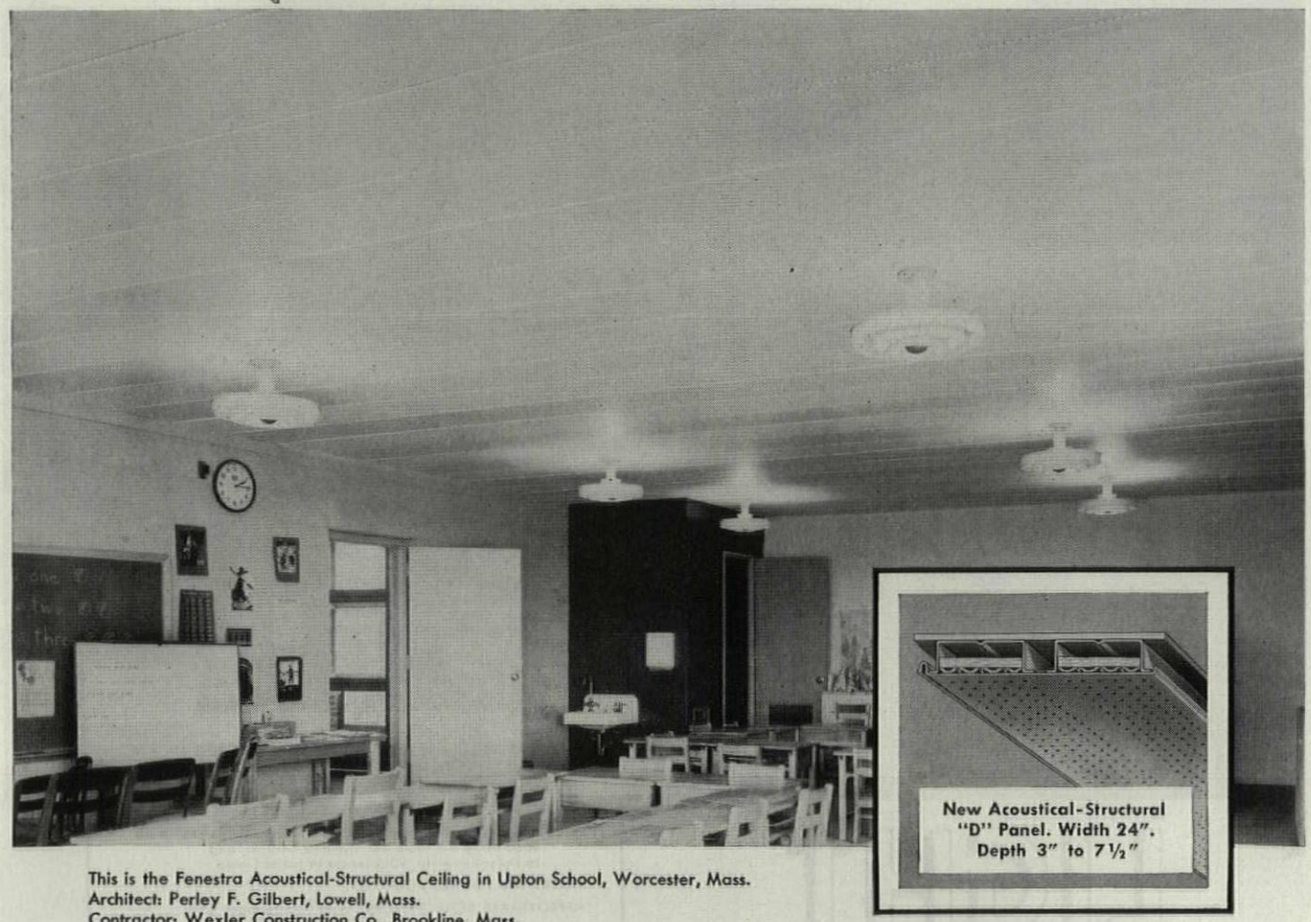
Another achievement in efficiency, endurance and economy is the SLOAN *Act-O-Matic* SHOWER HEAD, which is automatically self-cleaning each time it is used! No clogging. No dripping. Architects specify, and Wholesalers and Master Plumbers recommend the *Act-O-Matic*—the better shower head for better bathing.

Write for completely descriptive folder



Fenestra 50 YEARS OF BUILDING PRODUCT LEADERSHIP

"A salute to those who made it possible" *



This is the Fenestra Acoustical-Structural Ceiling in Upton School, Worcester, Mass.
Architect: Perley F. Gilbert, Lowell, Mass.
Contractor: Wexler Construction Co., Brookline, Mass.

Doesn't this ceiling make sense?

Here, acoustical treatment is an *integral part* of the structural ceiling. It's built right in. No acoustical material has to be pasted on the ceiling surface. You pay no bills for special trades or extra labor. Maintenance washing or painting won't affect the acoustical efficiency. And it is *non-combustible* construction.

Fenestra* Acoustical-Structural Building Panels make so much sense that it's surprising no one thought of the idea long ago. In fact, they are the *only* material that can give you really practical acoustical treatment in a classroom or gymnasium. These strong, long-span panels form a beautifully finished structural ceiling, non-combustible acoustical treatment and a joist-system support for finished roofing!

A *Boston Globe* story on Upton School states: "The largest single saving in design was effected by use of steel panels which form in one unit the roof and the ceiling. These units span the width of each classroom in easily handled sections which are welded together on the job. Looked at in cross section, the panels are corrugated and filled with acoustical soundproofing material."

For full details on Fenestra Acoustical Building Panels, call your Fenestra Representative (listed in the yellow pages of your phone book) or write Detroit Steel Products Company, Dept. AF-9, 2296 E. Grand Blvd., Detroit 11, Michigan. *Trademark

* Your need for a maintenance-free, noncombustible, built-in acoustical treatment encouraged us to develop Fenestra Acoustical-Structural Building Panels —a great advancement in building products.

Fenestra | METAL BUILDING PANELS



INSTALLATION: Fanny Farmer Candy Store, 50th St. & 6th Ave., New York City, New York.

DESIGNER: Lippincott & Margulies.

ELECTRICAL CONTRACTOR: Reksal Electric Company.

FIXTURES: Litecontrol Luminous Lens Ceiling Panels, 45" x 48", each using 4-3 lamp 48" slimline fixtures, and 16 Holophane No. 9015 lenses in lucite frame.

WATTS PER SQUARE FOOT: 3.1.

APPROXIMATE REFLECTANCES: Wall (Wallpaper), 63%. Floor(Beige-grey terrazzo), 10%.

AVERAGE INTENSITY: 63 footcandles initially at counter height.

BRIGHTNESS: (One of center lenses).
Normal to lamps, at 30°, 1.0 candle per square inch.
at 45°, 2.07 " " " "
Parallel to lamps, at 30°, 1.0 " " " "
at 45°, 1.99 " " " "

LIGHT

— for Sight and Sales

. . . with Fixtures by LITECONTROL

Lighting by LITECONTROL is an important member of the sales staff in this Fanny Farmer store.

LITECONTROL'S Luminous Lens Ceiling Panels bathe every surface in a flattering, even illumination...show merchandise in its *best* light, without ugly shadows, glare or harsh contrasts.

Note entire surface of each panel is aglow. Holophane No. 9015 Low Brightness Lenses make display light but not bright, just right for sweet selling.

Why not discover for yourself the selling magic in standard lighting fixtures that are fashioned right for good sight, good looks and easy maintenance — see your local LITECONTROL Representative.

LITECONTROL *Fixtures*

KEEP UPKEEP DOWN

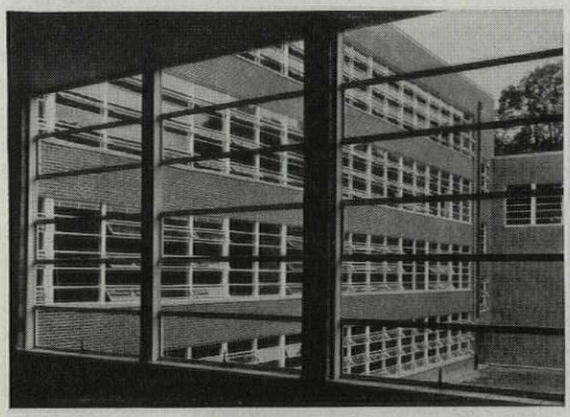
LITECONTROL CORPORATION, 36 Pleasant Street, Watertown 72, Massachusetts

DESIGNERS, ENGINEERS AND MANUFACTURERS OF FLUORESCENT LIGHTING EQUIPMENT DISTRIBUTED ONLY THROUGH ACCREDITED WHOLESALERS

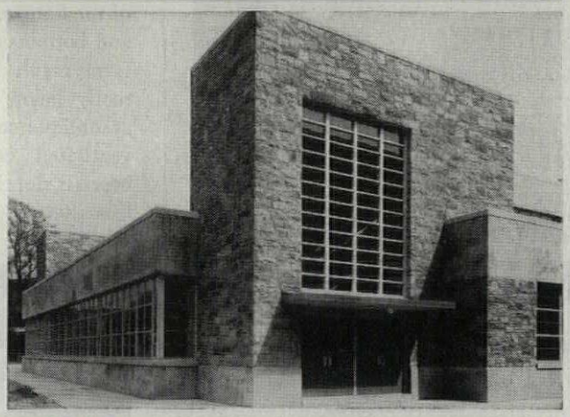
Fenestra 50 YEARS OF BUILDING PRODUCT LEADERSHIP

"A salute to those who made it possible" *

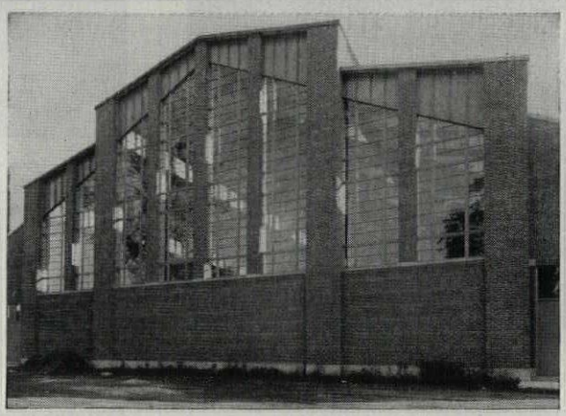
Why so many of America's finest schools have



Fenestra Intermediate Steel Awning Windows in Clemson College Chemistry Building, Clemson, South Carolina. Architects: Hopkins & Baker of Anderson, S. C. Contractor: Industrial Builders, Inc., Anderson, S. C.



Fenestra Intermediate Steel Awning and Projected Windows in Lower Merrion Schools, Ardmore, Pa. Note how the high bank of windows in the entrance wall lights the stairway. Architects: Savery, Scheetz & Gilmour, Philadelphia. Contractor: Frank V. Warren, Philadelphia.



Fenestra Intermediate Steel Projected Windows in the Athletic Field House at Evanston High School, Evanston, Ill. Architects: Perkins & Will, Chicago. Contractor: Peter Hamlin Construction Co., Chicago.

Fenestra Windows—

Fenestra* Intermediate Steel Windows are selected by architects and administrators of many of the finest and best-looking schools in America. The reason is not appearance alone: because of their quality construction, Fenestra Windows do an incomparable job.

They provide *more and better daylight.* Fenestra Windows are engineered and precision built to be rigid and rugged without excess bulk. You get *more glass area* and *clear-vision view* per window opening.

You get *better ventilation,* too. Tilt-in vents bring in abundant fresh air, without drafts . . . shed rain outside. Other vents project-out to form weather-protective canopies over their openings.

Screening and cleaning are safely, economically done *from the inside* . . . no ladders or scaffolds . . . no expensive labor.

You *save on maintenance.* Steel-strong window members and sturdy hardware assure years of trouble-free service. And Fenestra Windows are available Super Hot-Dip Galvanized . . . save thousands of dollars in painting costs every few years.

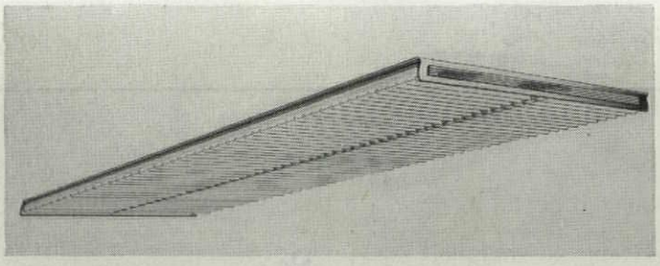
Write for further information. Or call your Fenestra Representative (listed in the yellow pages of your phone book). Ask for our authoritative booklet on *Better Classroom Daylighting.* Detroit Steel Products Company, Dept. AF-9, 2296 East Grand Blvd., Detroit 11, Michigan. *®

* Your need for windows that would give better school daylighting, protected ventilation and lower maintenance costs encouraged us to develop today's Fenestra Intermediate Steel Windows . . . a great advancement.

Fenestra | INTERMEDIATE STEEL WINDOWS

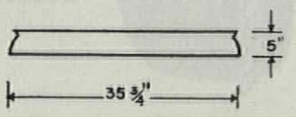
heated by a blow torch to the point where it was deformed and the porcelain enamel was softened, yet the back of the panel remained cool enough to touch. Besides fireproofing and insulation, other important functions of the backing material are to give the panel rigidity, to keep the thin metal face flat at all times and to deaden impact sounds. A square foot of *Porock* 1″ thick weighs 3 to 3½ lb. and costs about 50¢.

Manufacturer: Erie Enameling Co., Erie, Pa.



FLUORESCENT FIXTURE has large area and low brightness contrast

Arealux commercial luminaire is wide and shallow, approximately 36″ wide and 5″ deep. Models are available with four, six or eight lamps in lengths of 4′, 6′ and 8′. The 8′ unit is designed to take the new T-12 110-w., high-

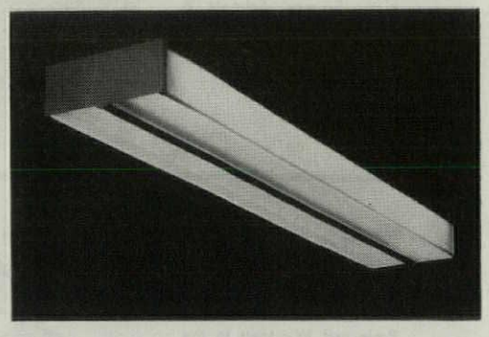


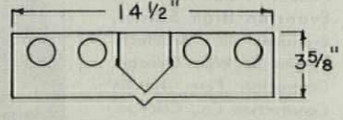
output, rapid-start lamp. Fixtures may be surface mounted or suspended, singly, in rows or side to side. Individual top reflectors, or fully closed tops are available. Louvers are hinged in 4′ sections for cleaning. Relamping can be done from side, without removing the louvers. Finish is high gloss white baked enamel. Price to consumer for four-lamp 96″ unit is $137; six-lamp 96″, $165.

Manufacturer: Lighting Products, Inc., Highland Park, Ill.

FLUORESCENT FIXTURE hugs ceiling, has interlocking plastic sides and bottom

Extruded polystyrene plastic sides and bottom of the *Challenger* commercial luminaire interlock to support themselves without the use of metal framing members. The only visible metal is a narrow line down the center of the fixture. Sides of ribbed diffusing plastic and bottoms of clear plastic in prismatic lens form result in maximum light intensity directly below the fixture with low brightness at oblique angles. Ballasts are housed in a ventilated central channel, permitting the over-all depth of the fixture to be reduced to less than 4″. Enameled metal reflector tops





interlock with the plastic sides to form a dust-free enclosure. Relamping is done by pushing up the plastic bottom and removing it. Fixtures may be stem-mounted if desired. Reflector tops may be omitted and metal louvers substituted for the bottom panels. No extra parts or accessories are required for continuous mounting. Contractor's net price for two-lamp 40″ unit is $23.75; for four-lamp 96″, $67.20.

Manufacturer: Globe Lighting Products, Inc. 2121 S. Main St., Los Angeles 7, Calif.

continued on p. 204



LORD & TAYLOR SUBURBAN STORE, WEST HARTFORD, CONN.
52,000 sq. ft. of 3¼" COMPOSITE POREX PLANK
Designed by: Raymond Loewy
Architect & Engineer: Irving W. Rutherford
General Contractor: Edward Packtor Co.

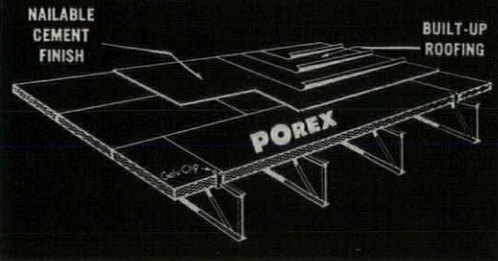
For Lowest Cost HEAT INSULATION-SOUND CONTROL and FIRE PROTECTION—POREX

When roof decks must provide maximum quality at minimum cost, architect after architect chooses POREX . . . because POREX combines all these properties:

- STRUCTURAL STRENGTH
- LIGHT WEIGHT
- NAILABILITY
- INCOMBUSTIBILITY
- HEAT INSULATION
- SOUND CONTROL

Plain POREX for short spans and Composite POREX for long spans are also ideal for Auditoriums, Gymnasiums, Schools, Armories and many other uses. For floors, precast lightweight concrete channel slabs and plank are available.

CONSTRUCTION DETAILS
ON STEEL, WOOD or CONCRETE JOISTS



SAFE UNIFORM LOADS

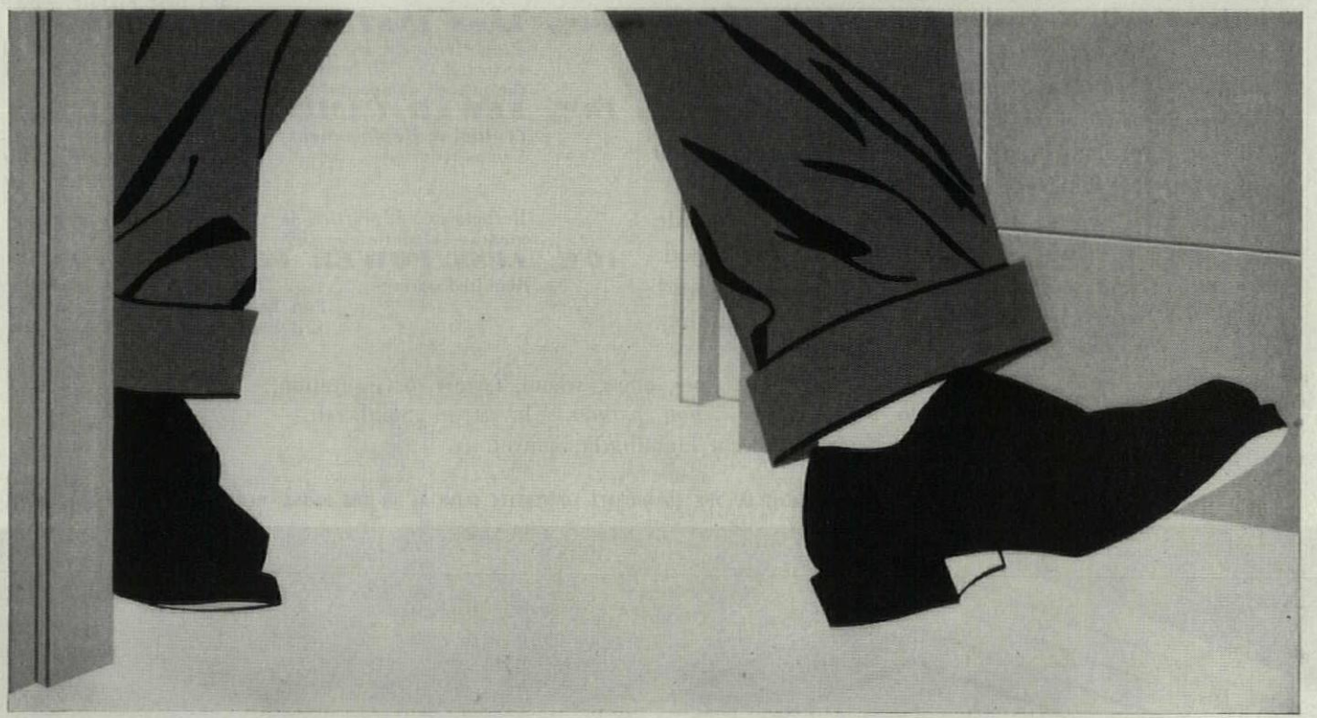
Type of POREX	Thickness Slab	Thickness Finish	Weight lbs/ sq. ft.	Safe loads lbs/ sq. ft. Span 1′4″	2′0″	3′4″	6′	8′
Plain	1¾″	¼″	7	100	60	—	—	—
Plain	3″	¼″	10	—	100	50	—	—
Composite	3″	¼″	14	—	—	—	100	60

POREX MANUFACTURING CO., North Arlington, N.J.
Precast lightweight concrete products since 1920

Fenestra 50 YEARS OF BUILDING PRODUCT LEADERSHIP

"A salute to those who made it possible" *

How to save money coming and going



Count the doors in your building. Like to save up to $100 apiece on each door you put in your *next* building? *Compare* the installed cost of Fenestra* Hollow Metal Door-Frame-Hardware Units with the cost of other hollow metal doors!

Here are three sound reasons why Fenestra Door Units can bring you such important savings:

1. They cost less to buy because you get production line economy—not custom job costs. They are mass produced on special jigs that avoid expensive time and labor.

2. They come to your job complete with pre-fitted frame, door and hardware specifically made for each other. You save time because there's no need for planning, ordering and assembling special elements.

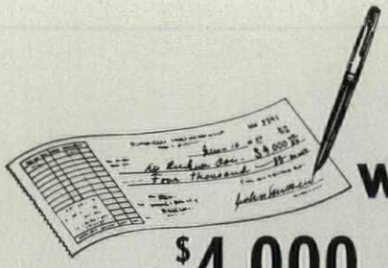
3. You save on installation costs because these complete units need no cutting, no fitting, no mortising or tapping. Each door is installed and in use in minutes.

And you save year after year on maintenance because Fenestra Hollow Metal Doors can't warp, swell, stick or splinter. They always open easily . . . smoothly. They close quietly because inside surfaces are covered with sound-deadening material.

For strong, solid quality at low cost, check on Fenestra Doors. There's a door for every purpose in the Fenestra line: Entrance Doors, Flush or Regular Interior Doors with glass or metal panels. Doors with the Underwriters' B Label. For pictures and details, write the Detroit Steel Products Company, Department AF-9, 2296 East Grand Blvd., Detroit 11, Michigan. *®

* Your need for lower building costs encouraged us to develop a quality door unit that would save initial cost and installation cost—Fenestra Hollow Metal Door-Frame-Hardware Units . . . a great advancement in building products.

Fenestra | DOOR • FRAME • HARDWARE UNITS



would you turn down a savings of $4,000 on a $40,000 lighting expenditure?

You can enjoy the benefits of the *finest* lighting money can buy and effect really substantial savings at the same time, simply by buying the *right* lighting fixture. Time and again, the better design and efficiency of Smithcraft Fluorescent Fixtures result in *fewer units* to produce recommended lighting levels.

Here's an actual case history of how a Pennsylvania department store saved 10% in initial costs and 10% in operating costs . . . or approximately $4000 on a ten-year $40,000 expenditure.

Before re-lighting, a complete survey was made and exact lighting requirements were established. To meet these requirements, Smithcraft units and units of several nationally-known top quality manufacturers were subjected to an exhaustive *comparative* analysis. Here are the results:

10% *FEWER UNITS REQUIRED*

Number of units required to achieve recommended lighting levels: ..... Smithcraft — **270**
2nd Best Fixture — 297
3rd Best Fixture — 339

10% *LESS INSTALLATION COST*

Proportionately less labor and materials were required to install the 270 Smithcraft units than the 297 units of the nearest competitor.

10% *FEWER LAMPS*
(Initial & Replacement)

Lamps required: ..... Smithcraft — **706**
2nd Best Fixture — 776
3rd Best Fixture — 914

Recommended practice is to replace lamps every 18 months—a continuing 10% savings.

10% *LESS POWER CONSUMPTION*

Required wattage: ..... Smithcraft: **51.3** kilowatts
2nd Best Fixture: 56.3 kilowatts
3rd Best Fixture: 64.8 kilowatts

Whether you're lighting a store, office, school, factory, or institution, it pays to *buy lighting — not fixtures.* Invest in Smithcraft — America's Finest Fluorescent Lighting Equipment.

PHOTOGRAPH SHOWS AN INTERESTING PATTERN ARRANGEMENT OF THE SMITHCRAFT LOUVERLITE SLIMLINE IN THE PENNA. DEPT. STORE DESCRIBED ABOVE.



Fenestra 50 YEARS OF BUILDING PRODUCT LEADERSHIP

"A salute to those who made it possible" *

Fenestra Super Hot-Dip Galvanized Industrial Steel Windows in Riverside Laundry, Dania, Florida. Engineer: L. B. Taylor, Miami, Florida. Contractor: Witters Construction Co., Hialeah, Florida.



They'll clean up on maintenance savings here!

Here, the outside air around this laundry is full of salt water. And you can imagine what it's like inside. The air soaked with moisture. Walls and windows wet. But the Fenestra* Industrial Steel Windows in this building *will never rust!*

They are Fenestra *Super* Hot-Dip Galvanized Industrial Steel Windows. They'll save thousands of dollars in paint and labor—every few years, for the life of the building—because they never need painting. And they *cost no more than regular steel windows with two inside-outside field coats of paint!*

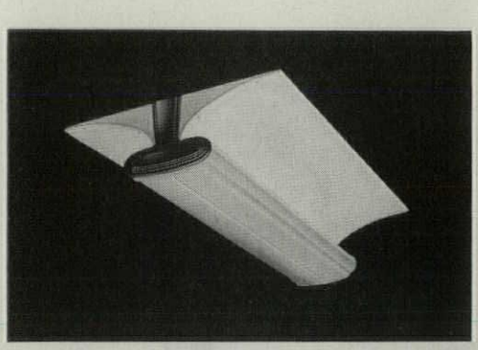
Fenestra has the only plant and equipment in America especially designed for the highly specialized job of window galvanizing. For complete details on Fenestra Super Hot-Dip Galvanized Industrial Steel Windows, call your Fenestra representative—he's listed in the phone book yellow pages—or write the Detroit Steel Products Company, Dept. AF-9, 2296 East Grand Blvd., Detroit 11, Michigan. *®



BEND TEST shows why Fenestra Steel Windows are called Super Hot-Dip Galvanized. When two pieces of galvanized steel are bent, then straightened, some types of galvanizing crack open, leaving the steel vulnerable. The Fenestra piece stays protected.

* Your desire for windows of strong material that would resist rust resulted in Fenestra Super Hot-Dip Galvanized Industrial Steel Windows—a great advancement in building products.

Fenestra | SUPER HOT-DIP GALVANIZED INDUSTRIAL STEEL WINDOWS



FLUORESCENT FIXTURE doubles as acoustic ceiling

Sono-Lume is the appropriate name of a new sound-absorbent lighting fixture. An extended double cove reflector ensures good light distribution and also functions as an accoustical material. For this purpose the metal reflector is perforated and backed with glass fiber. Each 4′ length is equal in sound-reduction effect to 10 sq. ft. of acoustically treated flat ceiling. For maximum noise reduction, fixtures should be installed in continuous rows with a spacing of not more than 6′ to center.

Sono-Lume costs less than separate installations of lighting and sound control. It was designed especially for use in schools, offices and stores where both noise reduction and high-level illumination are desired but the budget will not stretch to cover both installations. The new fixtures are available in 4′ and 8′ lengths, with all plastic shielding as illustrated, or louver shielding. Price of 4′ unit is $70.22, 8′ unit $134.38.

Manufacturer: Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

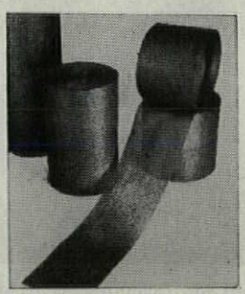
for a
SECURE barrier against
hydrostatic head
call for



Karnak®

WATERPROOFING PRODUCTS

Here's how the Karnak Membrane System is superior to ordinary methods of waterproofing, especially where there is danger of water seepage.



THE Karnak long-fibre-cotton cloth, which has been saturated with specially prepared asphalt, is layered, on the job, with alternate moppings of a highly refined and very ductile asphalt. The open mesh of the fabric allows the coating to penetrate and interlock the layers. This provides a firm mechanical bond that resists abrasions, cracks, settling and maintains water resistance through the life of the structure.

Karnak Fabric is non-sticking, unrolls easily to the very end . . . works faster with no waste. It is packed in sturdy corrugated cartons for protected shipping and storage. Available through waterproofing contractors, or distributors or write us for information. *Made by Lewis Asphalt Engineering Corp.. 30 Church St., New York 7, N. Y.*

© L.A.E. Corp.

SEE OUR CATALOG IN SWEETS FILE

OTHER KARNAK PRODUCTS

Asphalt Roof Coatings and Cements
Asphalt Emulsions
Floor Mastic
Asphalt Paint
Aluminum Roof Coating
Wood Block Mastic
Tile Cement
Joint Filler



HEATING CONTROL SYSTEM for school doubles as fire alarm

The advantages of individual classroom thermostats are now well recognized: the teacher can adjust the temperature of the room to the varying activities of the class. *Schoolmaster Control* system carries this idea one step further by permitting the principal to maintain push-button supervision over temperatures in all classrooms without leaving his office. He has only to push any one of the 24 buttons on the monitoring control panel, and the temperature in that room will register on the dial in front of him. Thermostats are equipped with fusible links, and temperatures above 136° F. will sound an alarm and cause a red light to glow under the transparent button for that room on the control panel. This gives the supervisor an audible warning of the presence of fire, and immediate information as to its exact location. Fire-detecting elements may be installed in storage rooms and other places where thermostats are not required. Panel box is approximately 9″ x 14½″ and may be surface mounted or flush. *Schoolmaster Control* costs about 10% more than a standard pnuematic individual room control system, or approximately $30 per room.

Manufacturer: Minneapolis-Honeywell Regulator Co.

continued on p. 210

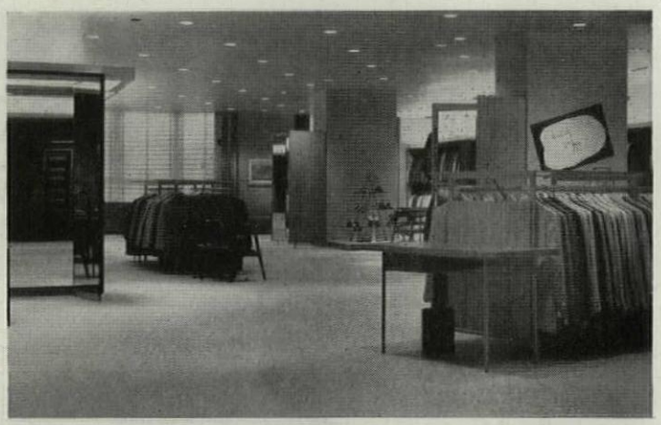


well known as the home where millionaires roam...

Neiman-Marcus *in DALLAS, Texas*

selects wall-to-wall carpet and

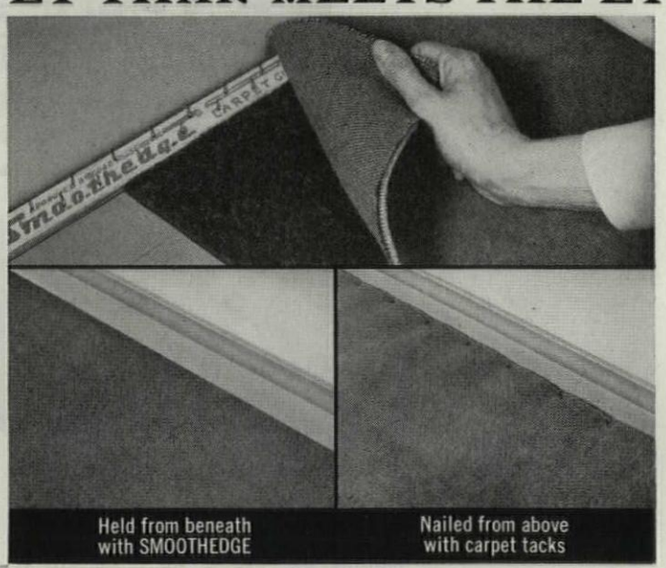
Tackless **Smoothedge**® *carpet gripper*



THERE'S MORE TO LAYING CARPET THAN MEETS THE EYE

Highlighting a $7,500,000 expansion program, this fine-apparel and accessories store chose large expanses of fine velvet and chenille carpet; as always to convey the utmost in exclusive appointments!

Approximately 10,000 feet of genuine SMOOTHEDGE carpet gripper was used for the installation on concrete and tile floor. Since much careful fitting was required; the installation contractor found SMOOTHEDGE invaluable as an aid to speed and faultless results!



Here's why there's no substitute for genuine Pre-Nailed

APPROVED BY GOOD HOUSEKEEPING

Smoothedge

CARPET GRIPPER

PRE-NAILED for faster, easier installation and insured, maximum strength!

EXTERIOR-TYPE PLYWOOD resists deterioration ... easy to cut, nail or cement!

BEVELED EDGE means quarter-round does not have to be removed!

RUST-RESISTANT PINS set at precise intervals and gripping angle!

UNIVERSALLY USED and accepted by all progressive carpet firms!

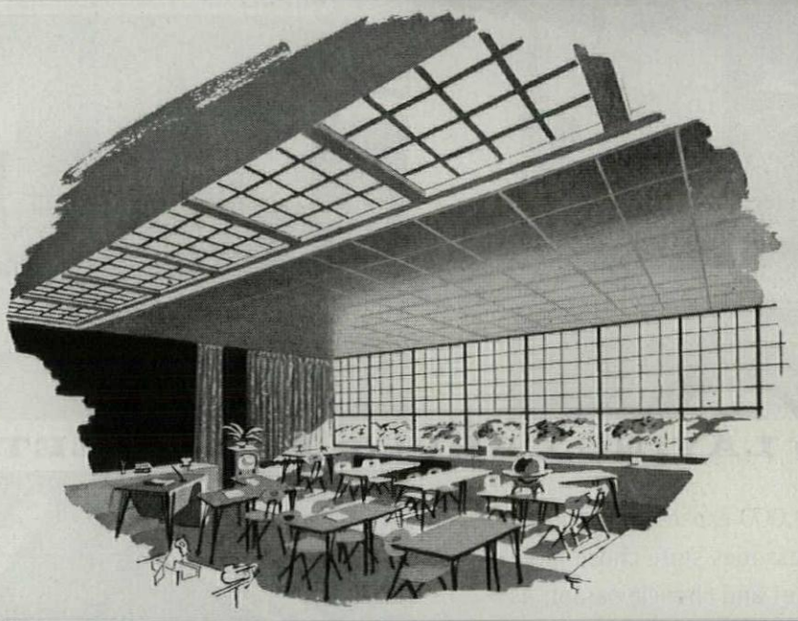
See Sweets AIA File No. 19J or write Dept. AF 49 for samples and informative installation manual.

THE ROBERTS CO.
1536 No. Indiana Street
Los Angeles 54, California
In Canada, Write Box 129, Weston, Ontario

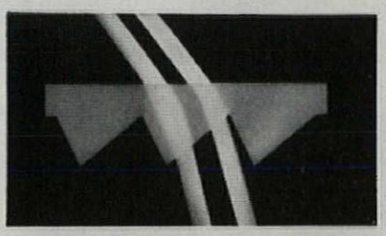
Guaranteed by Good Housekeeping

TOP

factory-fabricated panels...

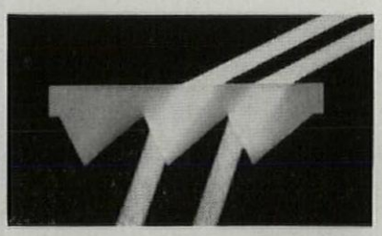


Toplite Roof Panels give you a flexibility never before possible in architecture and planning. They enable you to bring controlled daylight right where it's needed without increasing cubage. Handle Toplite Panels the way you do lighting fixtures and artificial light. Spot panels over areas where special light is needed or install them in continuous strip, pattern, or in individual panels.



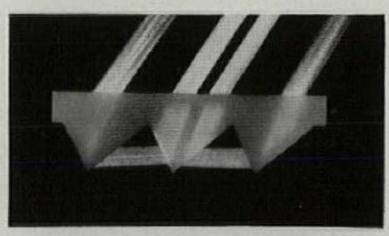
Transmits North Light

Maximum transmission of north light is a desirable quality in toplighting because of its uniformity and freedom from glare and solar heat. Note how the prism structure of Toplite affords efficient transmission of north light.



Accepts Winter Sun

Since low winter sun is comparatively weak in relation to high summer sun as far as glare and solar heat are concerned, maximum transmission is again desirable. This photograph shows how Toplite accepts and transmits winter sunlight.

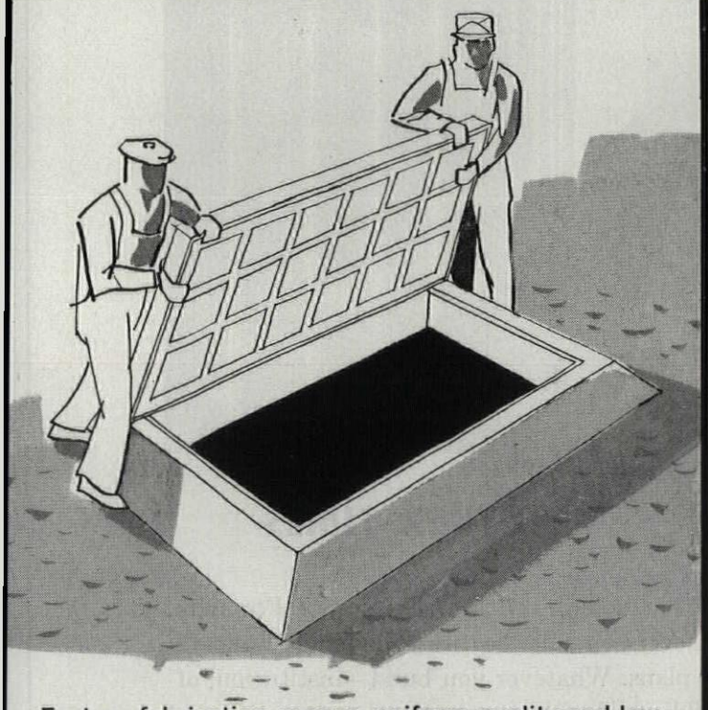


Rejects Summer Sun

Other materials which transmit north light and low winter sun also transmit high percentages of light during the hot, summer months. Toplite rejects the direct light and heat from the hot, summer sun, but transmits much of the cool, north light.

LITE

give fast, trouble-free installation . . . uniform quality . . . low job-installation cost



Factory-fabrication means uniform quality and low job-installation cost. They arrive on the job site ready to install. Panels are set on prepared curbs and anchored, ready for flashing by the roofer. Properly installed, roof can be flooded without panels leaking. And, of course, they are fireproof.

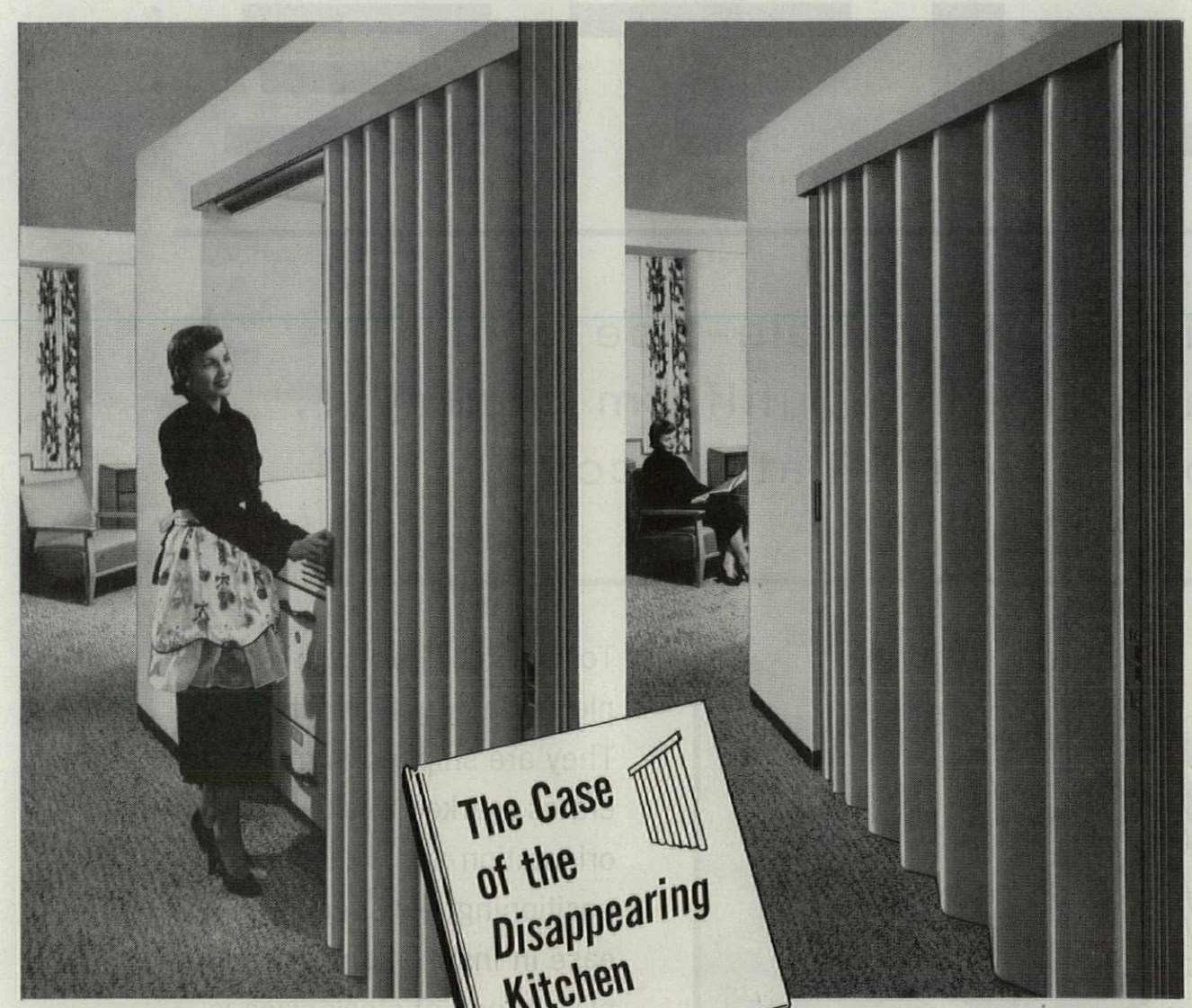
Toplite Roof Panels are completely factory-fabricated. They are shipped in individual crates marked to show correct orientation and directional positioning; for speed and ease in installation. A complete range of stock sizes is available to meet any desired panel arrangement.

NEW INFORMATION CATALOG

Want more information about this great advance in daylighting? Send for our new, free, technical catalog on Toplite. Address: Kimble Glass Company, subsidiary of Owens-Illinois, Dept. AF-9, Box 1035, Toledo 1, Ohio.

TOPLITE ROOF PANELS
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO



The Case of the Disappearing Kitchen

DINNER TIME... ...OTHER TIMES



A hideaway kitchen and a slideaway wall in 390 apartments proved an unbeatable combination for the Essex House, Indianapolis, Indiana. Not only did this arrangement save on space and construction costs, but tenants are delighted with the planning.

FOLDOOR was chosen for the job to give the best folding door appearance and performance. Its ability to stack into a minimum of 1½″ per foot of opening . . . its choice of handsome quality fabrics, equaled by no other folding door manufacturer . . . and its quiet, smooth folding action were other important factors that determined the selection of FOLDOOR.

Whenever you build be sure you include FOLDOOR in *your* plans. Whatever you build—institution, office building, church or school—there's a size and type of FOLDOOR to fit your every need and opening. Construction strength and quality are uniform in *all* models—you never have to guess when you specify FOLDOOR for any installation.

• • •

For further information see Sweet's Catalog or consult your nearby FOLDOOR installing distributor. There's one in every principal city.

HOLCOMB & HOKE MFG. CO., INC. • 1545 VAN BUREN ST., INDIANAPOLIS, IND.
IN CANADA: FOLDOOR of Canada, Montreal 26

HOLCOMB & HOKE
FOLDOOR
WITH THE CORNICE ON TOP



Thermopane insulating glass was specified for the Wyatt Building after careful calculation by Architect A. R. Clas and Consulting Engineers Karsunky, Weller and Gooch, both of Washington, D.C.

Their decision to use *Thermopane* was based on the following:

The insulation provided by the *Thermopane* enabled them to save approximately $16,000 on the size of the original heating and air-conditioning plant.

The *Thermopane* (glass and installation) cost about $18,000 more than would single plate glass for the same 441 windows.

Savings in operation of the oil heating and the air-conditioning system were computed at $530 annually.

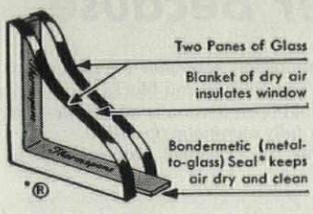
Result: *Thermopane* would pay for itself in four years —from then on it would return a profit.

How long since you've computed *Thermopane's* values in the light of up-to-date costs for the glass, the heating and cooling equipment, and the cost of operating them? Not to mention the extra comfort and the extra appeal to tenants. Look into it, thoroughly, before specifications are drawn up for your next building.

Thermopane does cost more. So do most up-to-date improvements. Measure its cost against return and you'll see the wisdom of its use in many new structures like the Wyatt Building.

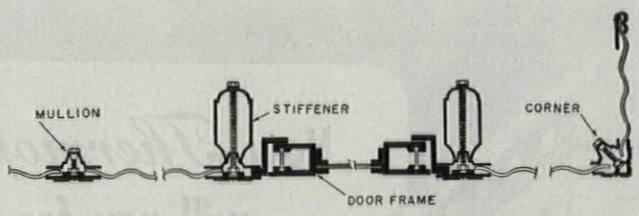
LOF GLASS Corrulux FIBER-GLASS

Thermopane
INSULATING GLASS



LIBBEY·OWENS·FORD GLASS CO., 608 Madison Ave., Toledo 3, O.





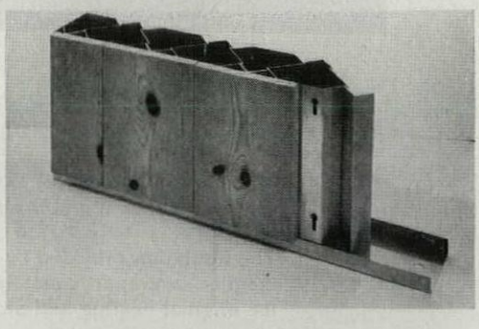
ALUMINUM FRAMING simplifies construction of corrugated plastic partitions and doors

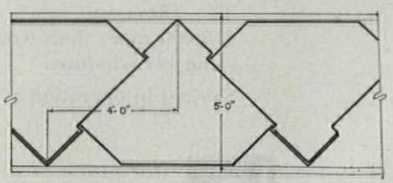
Translucent and colorful office partitions of corrugated plastic can be easily erected, and just as easily taken down, by the use of extruded aluminum structural members designed for this purpose. Doors can be built by the same method. A complete kit for a 3′ x 7′ door includes stiles, rails, hinges, lock, push plate and bars. The door is shipped knocked-down and can be readily assembled by anyone who can use a screw driver and wrench. List price for the door kit is $80. Special sizes cost $17.40 extra, but sizes smaller than standard can be had by simply cutting the aluminum members to the required size with a hack saw, before assembling. A wide choice of colors and patterns is available in the several brands of corrugated plastic now on the market. The door can also be used to advantage in a conventional solid partition.

Manufacturer: Desco Metals Co., 2265 Wilkens, Detroit 7, Mich.

FRAMELESS CELLULAR WALL formed by interlocking metal sections

Con-Wall is an easy-to-erect system for building walls and partitions. No skill is required and no tools are used. Two simple sections of aluminum or steel interlock to form a 5″-thick wall. The parts nest for shipment and storage. For permanent construction, the interlocking sections can be tack-welded. Otherwise the wall can be easily demounted with full salvage and re-

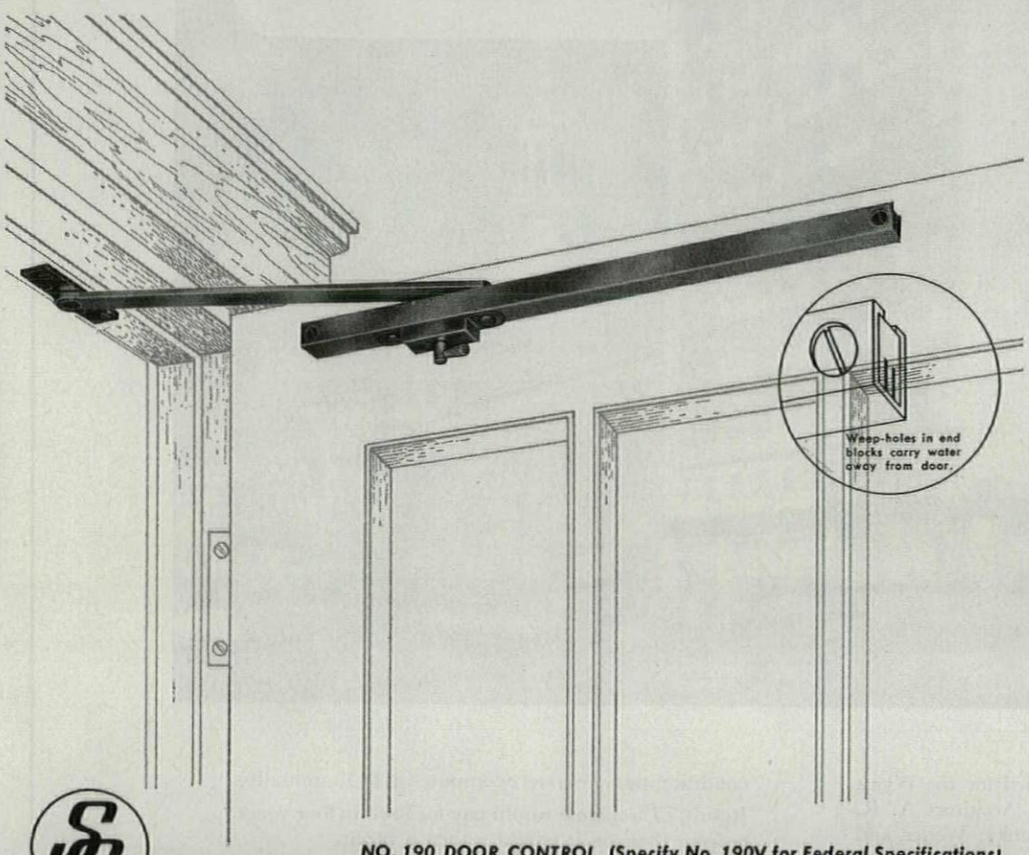




erected elsewhere or stored until needed. Facing materials can be "buttoned" on if desired. *Con-Wall* can also be used as a floor or roof. Estimated price in place, 70¢ psf.

Manufacturer: Roedter Products, 343 Bryant Ave., Cincinnati 20, Ohio.

continued on p. 216



NO. 190 DOOR CONTROL (Specify No. 190V for Federal Specifications)

SASH AND DOOR CONTROLS

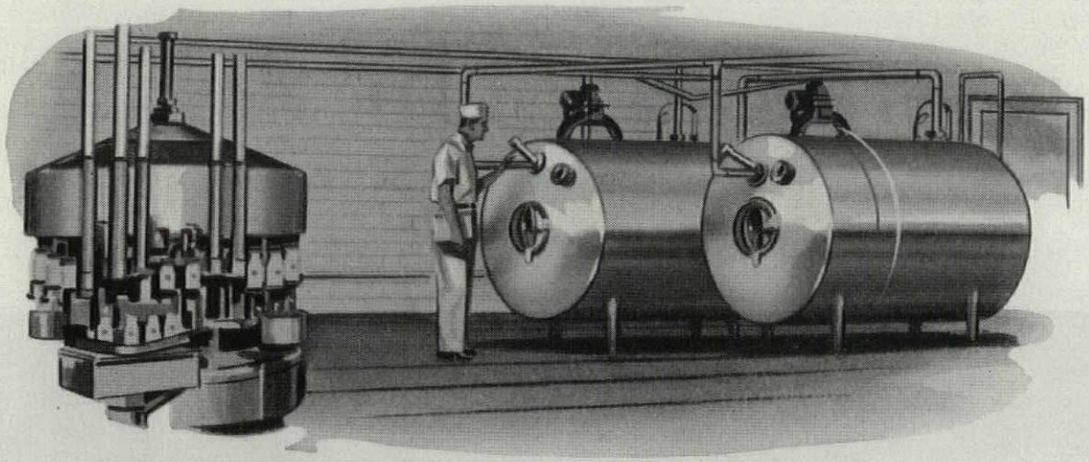
...Better Because

Completely *reversible* for right or left hand doors.
Weep-holes in end blocks carry water *away* from door.
Hold open tension is *adjustable*—may be set for manual or *fully automatic* operation.
One piece channel fastened directly to door with thru bolts.

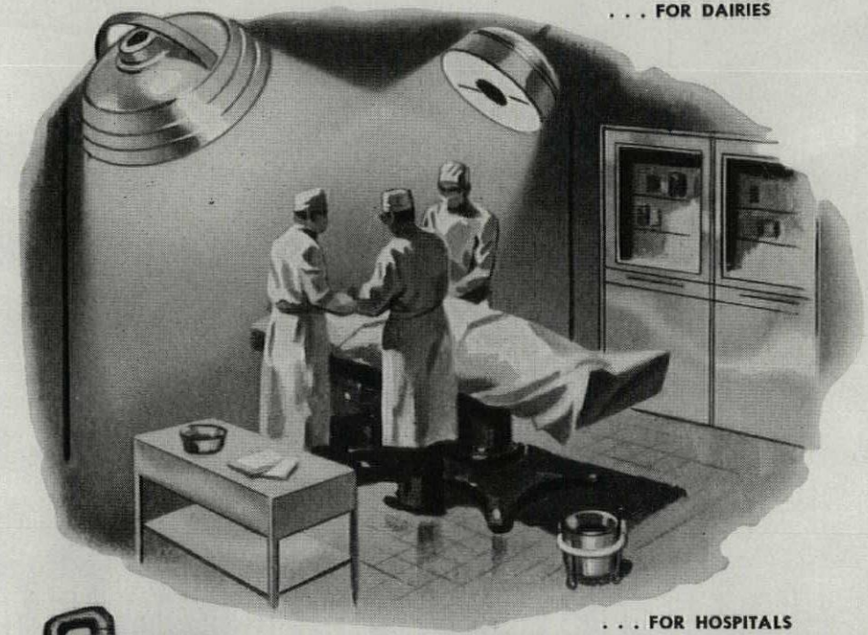


Send for Catalog

SARGENT & GREENLEAF, INC. ROCHESTER 21, N. Y. • SINCE 1857



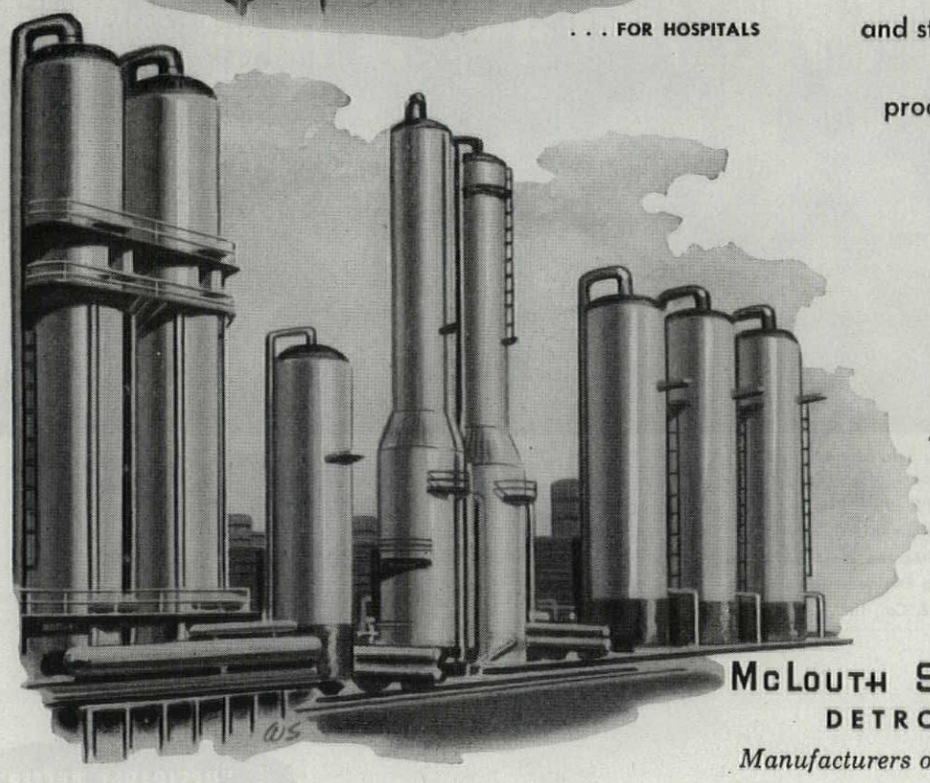
. . . FOR DAIRIES



. . . FOR HOSPITALS

McLouth STAINLESS Steel

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



. . . FOR THE CHEMICAL INDUSTRY

McLouth Steel Corporation
DETROIT, MICHIGAN
Manufacturers of Stainless and Carbon Steels

IN BALTIMORE THE SUN



This is the home of the Baltimore Sun and Evening Sun. Founded in 1837, the Sunpapers are credited during their 117 years of journalism with many advances in news-gathering and publishing practices.

Designed by the Baltimore architectural firm of Palmer, Fisher, Williams & Nes, the modern Sunpapers plant incorporates the most advanced facilities for publishing a newspaper. Consulting Engineers were Egli & Gompf, Inc.; Electrical Contractor, Riggs-Distler & Co., Inc.

Photograph by A. Aubrey Bodine

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

439

LOOK AT DAY-BRITE . . .

"DECIDEDLY BETTER"
DAY-BRITE®
Lighting Fixtures

● Under the roof of an ultra-modern newspaper plant, the famous Baltimore Sunpapers are written, edited, and set in type by the light of 3,000 Day-Brite parabolic troffers.

DEPENDS ON DAY-BRITE LIGHTING

● This is an out-of-the-ordinary lighting installation, one that merits your attention because it may suggest a similar treatment for your projects.

LOW-BRIGHTNESS LIGHTING IN ALL AREAS

● Too often, a distinction is made in lighting office space and production areas. Not in this case. The men at the Linotype machines in the composing room enjoy the same advantages of super-comfortable illumination from Day-Brite parabolic troffers that the editorial and office staffs do.

DAY-BRITE A LEADER

● Among fixture manufacturers, Day-Brite has been a leader in advocating increased visual comfort for industry. We believe it is sound lighting practice and a profitable investment for industry's management. We have engineered and built Day-Brite fixtures to conform with our belief.

● It is encouraging to see such a pronounced trend toward better production lighting. It is significant, too, that a great many of today's most advanced industrial installations were carried out with Day-Brite fixtures.

LOOK AT DAY-BRITE

● However you choose to upgrade production lighting for your own projects—with recessed troffers as in the Sunpapers plant, with pendant or surface mounted louvered fixtures, with upward-component heavy duty industrials—look at Day-Brite . . . *feel* the difference . . . before you specify.

● We think you'll find the "extra something" you need to make your lighting installation the finest you've ever done.



THE SUN'S COMPOSING ROOM. Even without the acoustical ceiling which is still to be installed, the Day-Brite Alzak parabolic troffers here transform this room into an extra comfortable working area, comparable to the finest office space. A sensible approach, too, because mistakes and inaccuracies are just as costly here as in the office.



THE EVENING SUN'S EDITORIAL ROOM. Quiet now, but full of active, fast-working people before press time. And the light they work by *helps* them get the job done right, never hinders them. The fixtures are Day-Brite's Alzak parabolic troffers. The parabolic design and diffuse Alzak aluminum provide accurate control of light distribution and an excellent low-brightness ratio.

Call or write your nearest Day-Brite Representative

LIGHT FOR FREEDOM · POWER FOR PROGRESS

FEEL THE DIFFERENCE . . . BEFORE YOU SPECIFY

ZONE CONTROL of indoor climate REQUIRED . . .

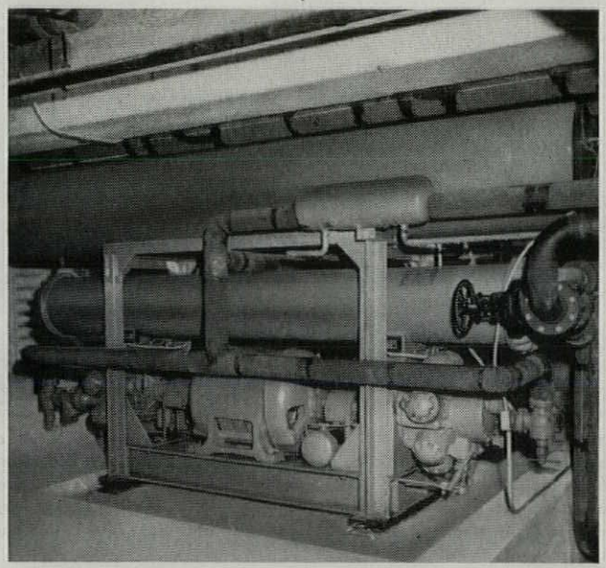
PROVIDED economically with CHRYSLER AIRTEMP

CENTRAL STATION AIR CONDITIONING



Engineers: Sasnett & Bennett, Miami; Levy & O'Keef, New York City.
Gen. Contractor: Robert L. Turchin.
Mechanical Contractor: Markowitz Bros., Inc.

Ainsley Building, Miami, Florida.
Owner: Herman Greenfeld.
Architect: Morris Lapidus.



Four 125 H.P. Chrysler Airtemp "Packaged" Liquid Chillers supply chilled water for cooling which is pumped to air handling units on each floor. Chrysler Airtemp Variable-Capacity Radial Compressors feature exclusive weight-saving, space-saving design. Perfect balance reduces noise and vibration—no special foundations required!

Professional and commercial offices of many types in the Ainsley Building in Miami made zone climate control on every floor a primary requisite in planning the year 'round air conditioning. And economy of installation and operation dictated a central station system. So the air conditioning was engineered to fit! Chrysler Airtemp central station equipment supplies chilled water for cooling and warm water for heating to air handling units. Every zone on every floor has individual control.

Whether the particular requirements of a building make one system or a specially-engineered combination of air conditioning systems the most practical choice, Chrysler Airtemp has the answer. A complete line of equipment for *every* air conditioning need is produced in Chrysler Airtemp's windowless, air conditioned plant. And through a wholly-owned subsidiary, Airtemp Construction Corporation, architects, engineers and contractors get a complete air conditioning service. Just write to Airtemp Division, Chrysler Corporation, Dept. AF, 1600 Webster Street, Dayton 1, Ohio.

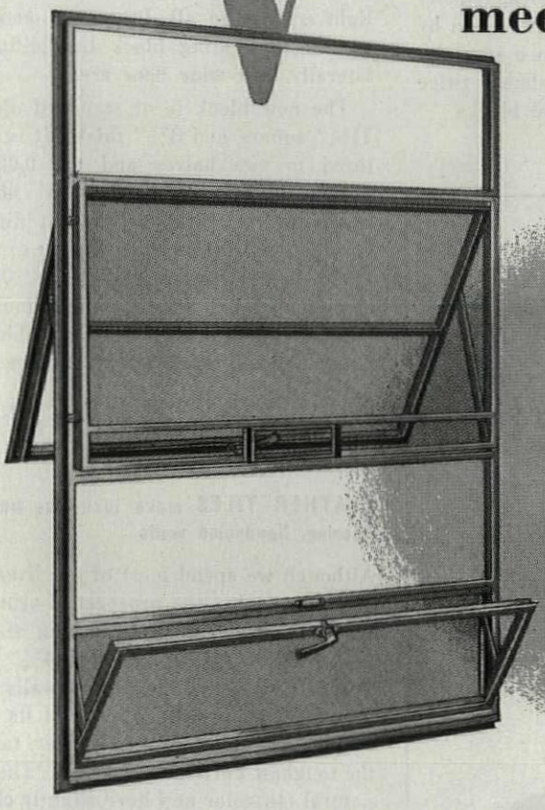
CHRYSLER AIRTEMP

HEATING • AIR CONDITIONING for HOMES, BUSINESS, INDUSTRY

AIRTEMP DIVISION, CHRYSLER CORPORATION
Dayton 1, Ohio

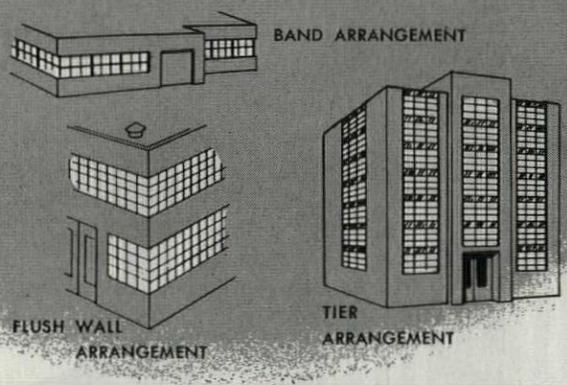
Visioneering*

meets the demands of modern building trends



BAYLEY

aluminum projected windows in panel wall arrangements

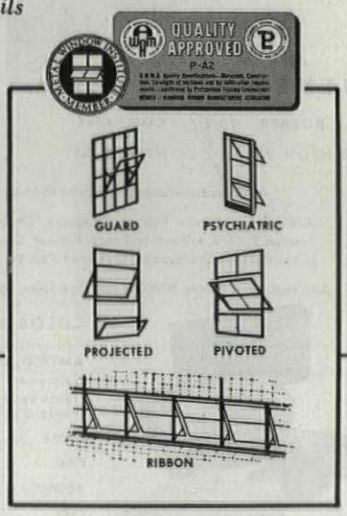


As a result of Bayley Visioneering you can now execute many of your choice design treatments in modern panel-wall construction, without the costliness of special window designing. With Bayley subframe design, which accommodates separate window units, standard Bayley Aluminum Projected Windows (with channel frames) of any standard size can be used—offering wide flexibility in the use of newer panel decorating materials, plus the desired window area for providing maximum air, light and vision.

Window units are available in a variety of ventilator arrangements. And in addition to the many other advantages of the projected type window, the maintenance-free aluminum construction complements all types of building materials. If you're not fully acquainted with this newest Bayley development look up Bayley's Aluminum Window Catalog in Sweet's —or better yet, *write for a Bayley Catalog and full size drafting room details*



*Visioneering—*The science of coordinating vision, air and light in modern building walls with windows of advanced design.*



Bayley Visioneering Reflects 75 Years of Reliability

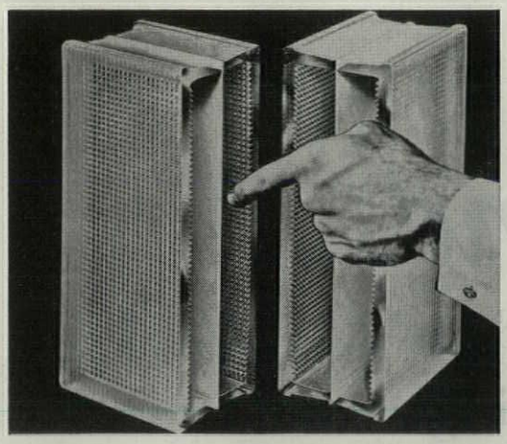
Copyright 1953 The William Bayley Company

THE WILLIAM BAYLEY COMPANY

Springfield, Ohio

District Offices:

Springfield · Chicago 2 · New York 17 · Washington 16



NEW PRODUCTS *continued from p. 210*

GLARE-REDUCING GLASS BLOCKS contain green-tinted fibrous glass filters to cut glare and promote cool, restful interiors

Suntrol is the trade name for a new series of double-cavity glass blocks designed to overcome high brightness problems resulting from sun and snow. They contain a pale green diffusing screen which, it is claimed, reduces glare by 35% and instantaneous heat gain by 25%. Further, the new block has a specially toughened exterior face with almost twice the impact resistance of standard blocks.

Although colorless diffusing blocks have long been available, the new tinted blocks provide a cooler light and a more relaxed atmosphere. The green diffusing screen is employed in three types of standard glass block: 1) in a light-directing wall block that throws light upward toward the ceiling; 2) in a light-diffusing wall block that directs light equally in all directions; and 3) in a *skytrol* toplighting block that diffuses light laterally over wide floor areas.

The new block is of standard dimensions, 11¾" square and 3⅞" thick. It is manufactured in two halves and the 0.020" thick fibrous glass screen is sealed across the center of the block to prevent direct light from passing through it. Weight of the block is 15 lb; estimated "U" value, 0.44. The cost is no more than standard double-cavity blocks, approximately $1.55 per block when bought by the carload from dealers.

Manufacturer: Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22, Pa.

LEATHER TILES make luxurious but durable flooring, handsome walls

Although we spend most of our lives walking on leather soles, the prospect of using leather for flooring comes as something of a shock. Leather tiles, 4½" x 4½" and 4½" x 9", are now offered for use on floors, walls or furniture tops. *Pigs Kin*, in spite of its synthetic sound, is genuine pigskin leather, taken from the toughest portion of the hide. The tiles are natural tan color and have slightly chamfered



edges. About 1/5" thick, the tiles are very flexible and can be easily cut and fitted around corners and into coves. They can be installed over any smooth surface by means of a special adhesive furnished by the manufacturer. Pigskin tiles have been laboratory-tested for abrasion, indentation, absorption and resistance to heat, acid, alkalis, solvents and stains, and proved equal or superior on all counts to standard cork flooring. The tiles cost $1.25 per sq. ft., and the special adhesive sells for $5.91 per gal., delivered.

Manufacturer: Kiefer Tanning Co., 240 Front Ave., S. W., Grand Rapids 4, Mich.

continued on p. 222

Perfect for that new hotel...

Amtico America's most beautiful rubber flooring!



AMERICAN BILTRITE RUBBER COMPANY TRENTON 2, NEW JERSEY

Amtico RUBBER FLOORING

In Canada—American Biltrite Rubber Co. (Canada) Ltd., Sherbrooke, Quebec

Affiliates... Biltrite Rubber Company, Chelsea 50, Mass. • American Tile & Rubber Co., Trenton 2, N. J. • Panther-Panco Rubber Co., Chelsea, Mass. • American Tile & Rubber Co. (Canada) Ltd., Sherbrooke, Quebec • Panther Rubber Co., Ltd., Sherbrooke, Quebec, Canada.

Also makers of Biltrite NURON for Shoe Soles, Luggage and Accessories—and Biltrite Rubber Heels



26 COLOR SAMPLE KIT...YOURS ON REQUEST

AMTICO, Dept. MB-22, Trenton 2, New Jersey
Gentlemen:
Please send me free box of 4" x 4" samples of Amtico Flooring in standard ⅛" gauge and all 26 stock colors—also illustrated literature.
NAME.....
FIRM.....
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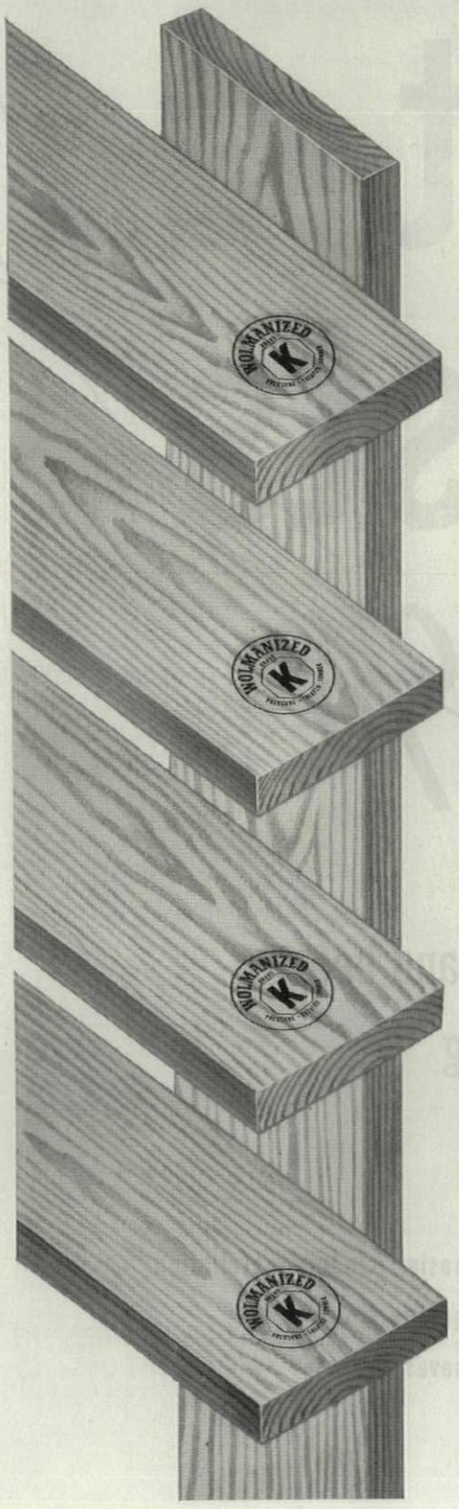
CITY.....STATE.....
(Please attach coupon to your business card or letterhead)

*Wolmanized
LUMBER
is your assurance



. . . Because only Wolmanized clean pressure-treated lumber gives you all four of these important advantages:

1 uniform treatment

Basic *Wolman salts are produced under a single exacting standard of control. And the pressure-treatment process by which Wolmanized lumber is made is the same throughout all 14 sources operating 24 pressure-treatment plants. Wherever you buy Wolmanized lumber, you can be certain of uniform undeviating standards of treatment.

2 application versatility

No matter what use you may have for treated lumber, Wolmanized lumber will serve your purposes . . . and serve them better. Deadly to rot and termites, Wolmanized lumber is clean, odorless, completely paintable, harmless to clothing and skin, and noncorrosive to metal fittings.

3 available anywhere

It is easy to specify Wolmanized lumber by name. And delivery is assured, since Wolmanized lumber is produced coast-to-coast and in Canada by 24 recognized and dependable wood-preserving plants. You are assured, too, by the fact that 47% of all clean pressure-treated lumber is Wolmanized lumber . . . nearly as much as the total output of all other sources combined. You are assured of a nationally recognized and accepted product with Wolmanized lumber.

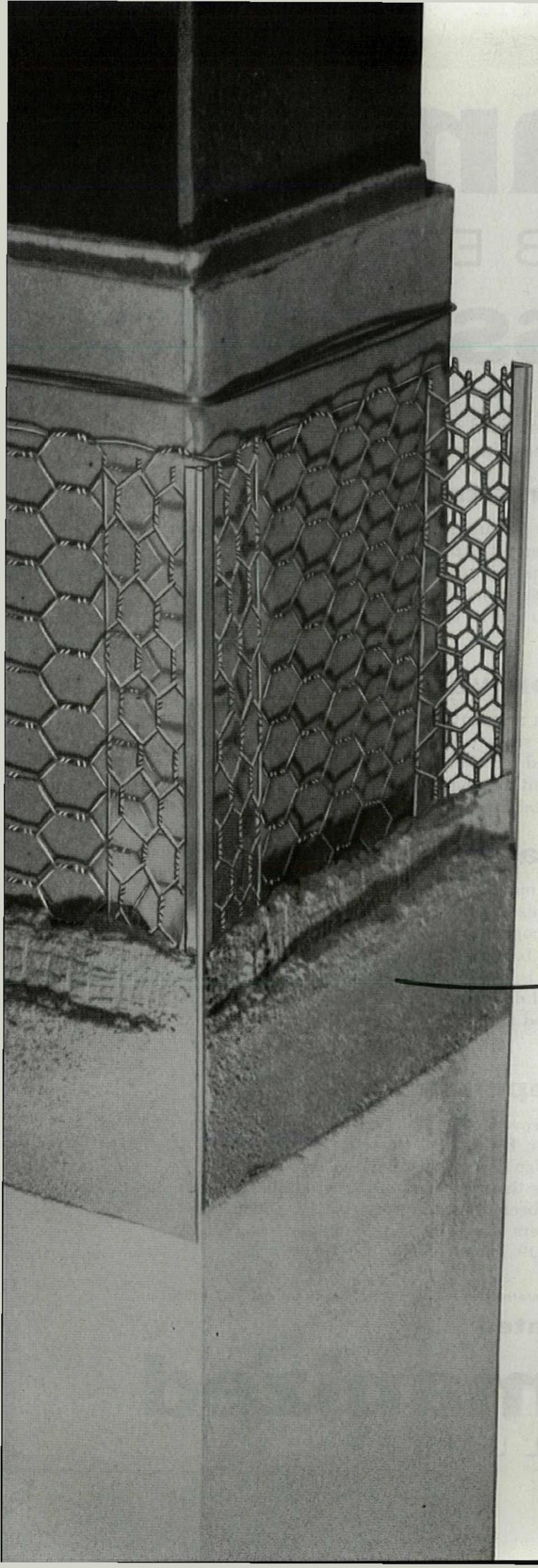
4 proved dependability

Actual service records prove that Wolmanized pressure-treated lumber lasts years longer. Even under the most demanding conditions . . . such as "Wet Process" industries . . . Wolmanized lumber gives many times the service of untreated lumber, or lumber that has merely been dipped in preservative. For further information write: Koppers Company, Inc., Wolman Preservative Department, Pittsburgh 19, Pennsylvania.

*"Wolman" and "Wolmanized" are registered trade names of American Lumber & Treating Co.

Pressure-Treated

Wolmanized
LUMBER

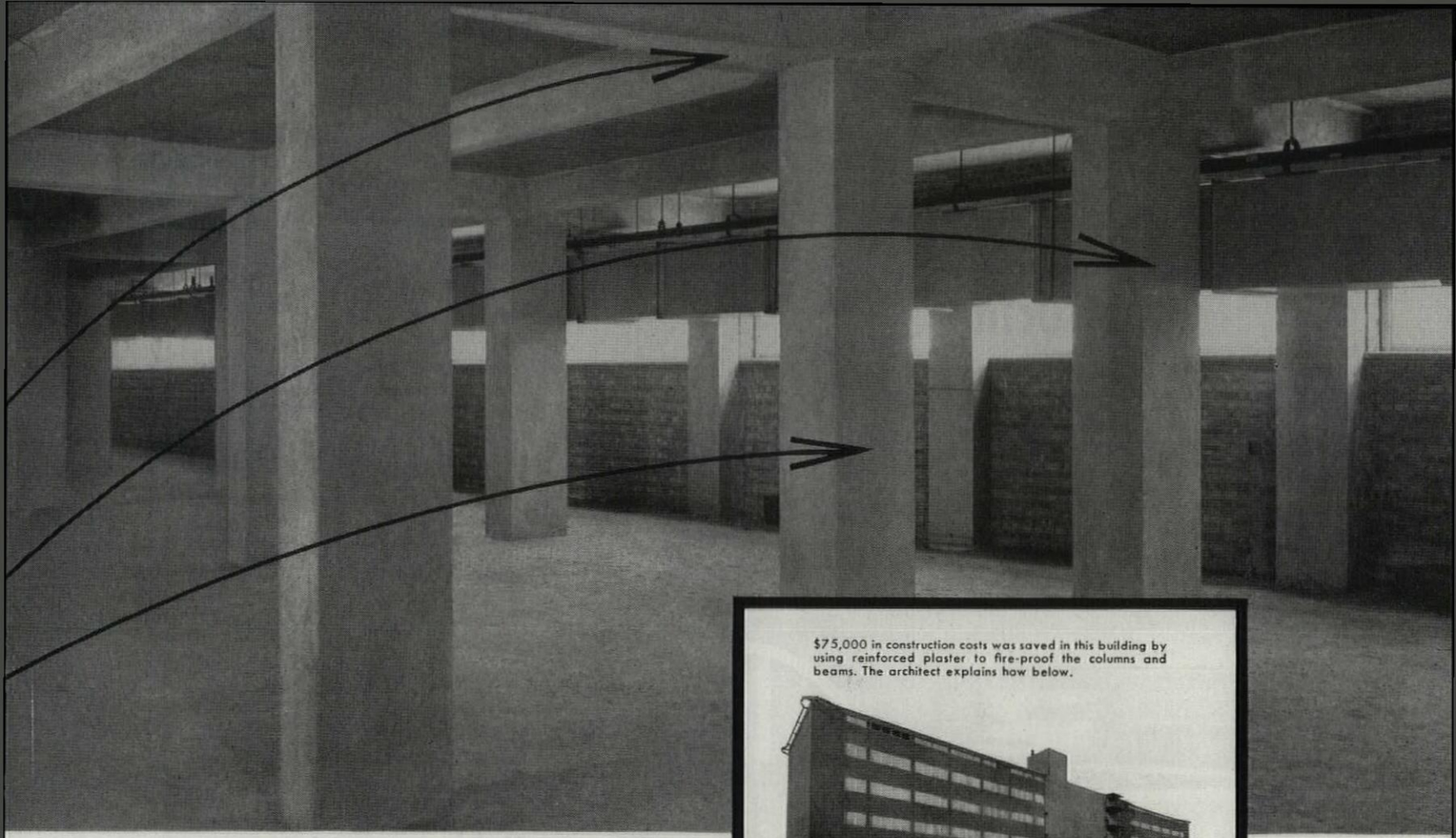


reinforced
plaster

cut costs 30%

for column and beam
fire-proofing

- less weight
- no forms
- fewer piles
- easier conduit installation
- quality finish
- saves space



Column and beams with reinforced plaster fire-proofing.
East Dentistry-Medicine-Pharmacy Building—University of Illinois, Chicago
Architects—Pace Associates
General Contractor—Sumner Sollitt Company
Plastering Contractor—McNulty Bros. Company

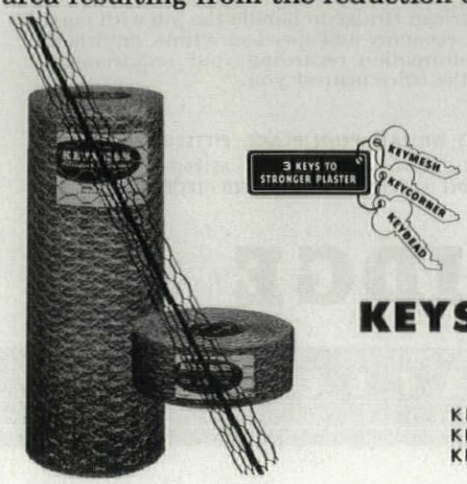
$75,000 in construction costs was saved in this building by using reinforced plaster to fire-proof the columns and beams. The architect explains how below.

Pace Associates tell why they specified LATH AND REINFORCED PLASTER FIRE-PROOFING

"Seven years ago when this building was in the preliminary design stage, we had faith in plaster fire-proofing, but only a few fire tests had been made. We knew that if we could find a simple plaster construction that would pass code ratings, we could produce this $7-million structure for about $75,000 less than we could with concrete fireproofing. This saving represents 31 cents per square foot of gross floor area resulting from the reduction of steel tonnage, piles, yardage of concrete and omission of forms. This rough plaster fireproofing, which is concealed behind finished walls and ceilings, cost about 70 cents per square foot,* or about 30 cents less than the cost of column and beam forms. Many fire tests of plaster coverings have been made in recent years and we are sure that plaster will have a long and active future in the protection of steel structures."

W. H. Binford, Pace Associates, Chicago
Planners–Architects–Consulting Engineers

*Job contracted Feb. 1952. Costs subject to change according to local conditions.



Specify Keymesh for the finest, most economical reinforced plaster fireproofing . . . Architects and contractors everywhere are finding Keymesh the most economical reinforcement for all types of plastering. It's the heart of Keystone's 3 Keys to strong plaster—Keymesh, Keycorner and Keybead. These three products guard against cracking and make stronger corners, joints and junctures. Make your structures better at less cost—specify Keystone's 3 Keys. Write Keystone Steel and Wire Company for complete details.

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Peoria 7, Illinois

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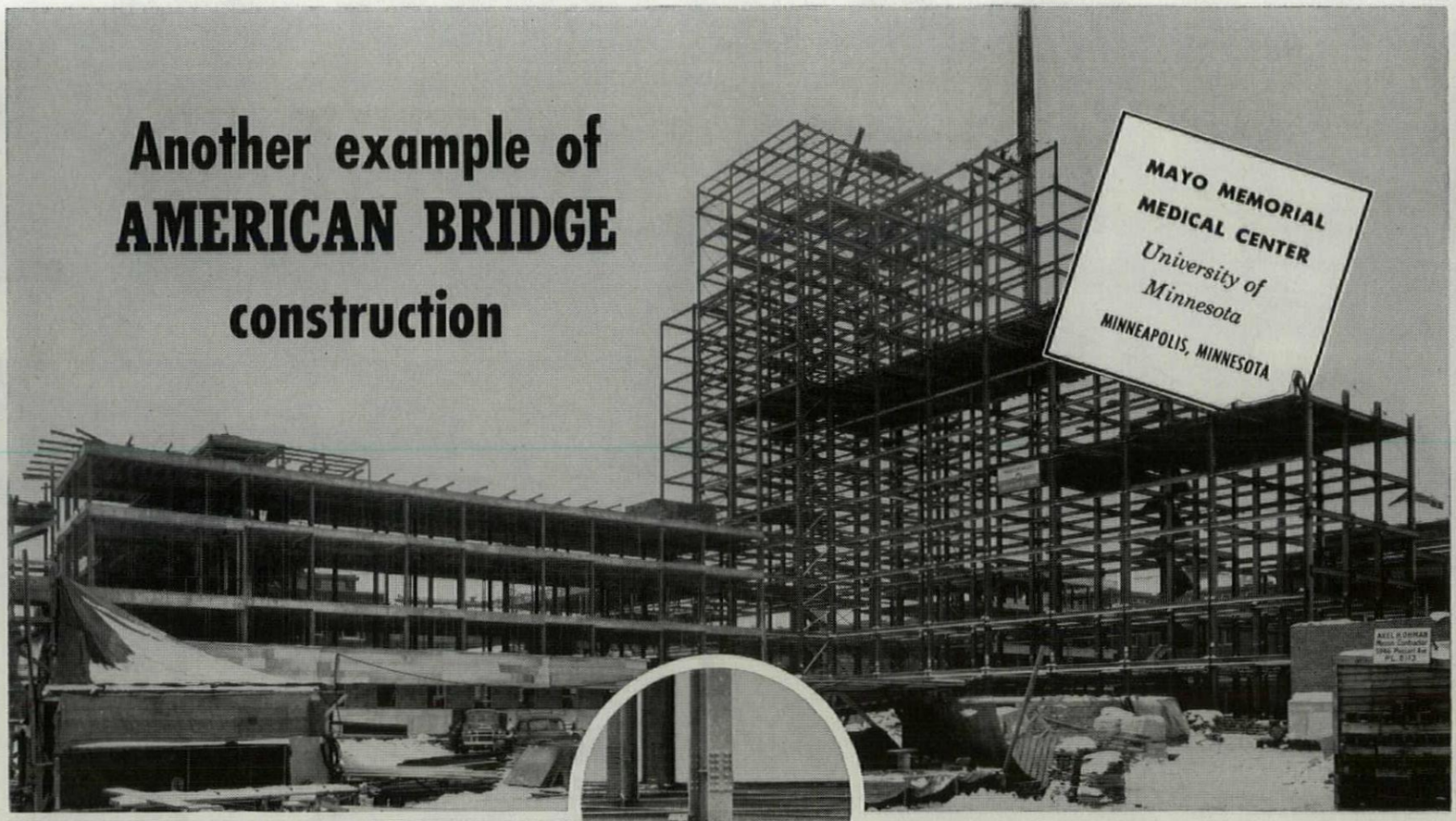
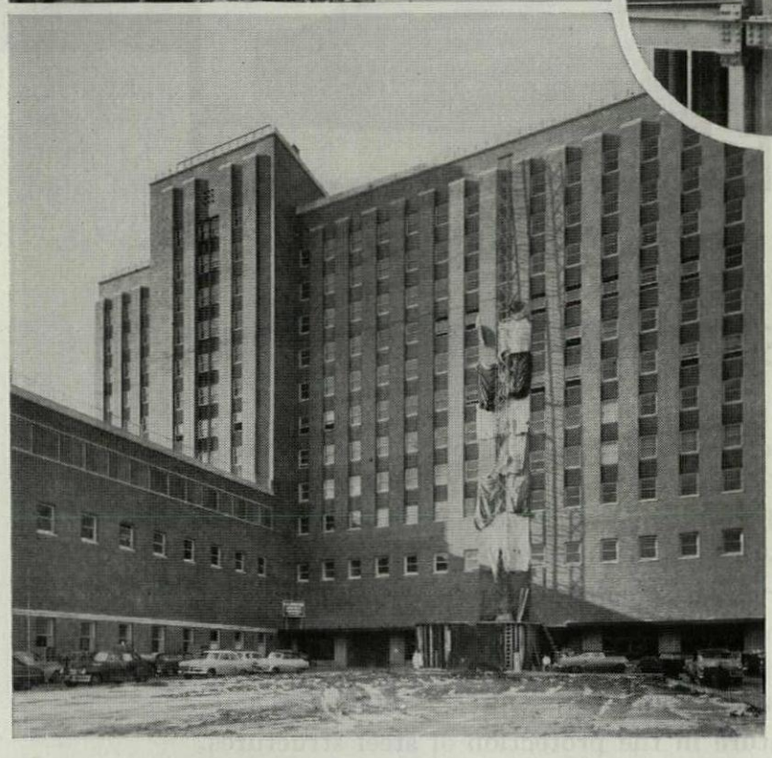
KEYSTONE TIE WIRE • KEYSTONE WELDED WIRE FABRIC
KEYSTONE NON-CLIMBABLE AND ORNAMENTAL FENCE

see our CATALOG in SWEET'S FILE

FILES
2d Ke | 11e Ke | 3d Ke

Another example of AMERICAN BRIDGE construction





Field connections on 2,300-ton steel framework made with high-strength bolts!

● The University of Minnesota's imposing new Mayo Memorial Medical Center, in Minneapolis, is one of the largest steel frame structures erected with high-strength bolts for field connections.

2,300 tons of structural steel—all of it fabricated and erected by American Bridge—went into the framework of the building. The project consisted of an auditorium approximately 100′ x 125′; an east wing six stories high, approximately 50′ x 250′; a south wing six stories high, approximately 50′ x 140′; and a fourteen-story tower section, approximately 50′ x 250′.

The successful use of high-strength bolts on a building of this size makes a good case for the soundness of this type of construction. American Bridge crewmen can make strong, tight connections with high-strength bolts as efficiently and speedily as less skilled personnel can handle the more common methods.

Another factor favoring the use of bolted connections is the reduction of construction noise. And this advantage creates considerable goodwill when erecting in business, hospital and educational areas.

But American Bridge plays no favorites when it comes to methods of making connections. Whether specifications call for riveted, welded or bolted construction, you can depend on American Bridge to handle the job with maximum efficiency, economy and speed—anytime, anywhere! For detailed information regarding your requirements, please contact the office nearest you.

Owner: University of Minnesota.

Plans and Specifications by C. H. Johnston, Architects-Engineers, St. Paul, Minnesota.

Fabricated and Erected by American Bridge.

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION • GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.

Contracting Offices in: AMBRIDGE · ATLANTA · BALTIMORE · BIRMINGHAM · BOSTON · CHICAGO · CINCINNATI · CLEVELAND · DALLAS · DENVER · DETROIT · ELMIRA GARY · MEMPHIS · MINNEAPOLIS · NEW YORK · PHILADELPHIA · PITTSBURGH · PORTLAND, ORE. · ROANOKE · ST. LOUIS · SAN FRANCISCO · TRENTON UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN BRIDGE

USS

UNITED STATES STEEL

KENTILE asphalt tile floors meet small store requirements for *durability...beauty...economy*

A.I.A. 23-G

Every unit in a modern shopping center has its own special, flooring problems! But, all floors must be long lasting, attractive, economical, easy-to-clean. When you specify Kentile you answer all these needs.

KENTILE costs less to buy, install and maintain. And, it is one of the toughest, most durable floors made. Years of heaviest traffic can't harm it, discolor it or destroy the crisp, clear, tile-deep colors. The wide color selection offers limitless design opportunities ...makes "custom" flooring easy and economical to achieve. Find out for yourself why KENTILE is America's most-used commercial floor.



KENTILE ASPHALT TILE easily withstands the constant daily wear and tear of heavily-loaded hand trucks, shoppers' carts and continuous foot traffic. Spilled foods, acids and alkalis can't harm it...mild soap and water cleans it quickly and thoroughly. An occasional self-polishing, no-rub waxing keeps Kentile bright, fresh and new-looking.

Specifications and Technical Data

INSTALLATION: Over any smooth, firm interior surface free from spring, oil, grease and foreign matter... over metal, wood, plywood, concrete, radiant heated concrete slab, concrete that is in direct contact with the earth; on or below grade.

THICKNESSES: KENTILE is available in two gauges: 1/8" for residential and most commercial uses—3/16" for industrial use and where extra-heavy duty flooring is needed.

SIZES: Standard tile is 9" x 9".

SPECIAL KENTILE: Greaseproof asphalt tile for use around meat counters, in bakeries, beauty shops, in a wide range of marbleized colors—extremely resistant to fats and oils, alcohols, alkalis and most acid solutions.

Approximate Installed Prices (per sq. ft.)

	1/8" Gauge	3/16" Gauge
KENTILE: A Colors	20¢	25¢
KENTILE: B Colors	25¢	30¢
KENTILE: C Colors	30¢	40¢
KENTILE: D Colors	35¢	40¢
SPECIAL KENTILE	40¢	50¢

These costs are based on a minimum area of 1,000 sq. ft. over concrete underfloor. Color groupings range from Group "A," the darkest solid colors...to Group "D," the lightest marbleized colors. Special Kentile is available in Regular and Deluxe Colors.

Samples and Technical Literature available to architects, builders and designers on request. Contact the Kentile Flooring Contractor listed under FLOORS in the Classified Phone Book. Or, write the nearest Kentile, Inc. office listed below stating the samples and information desired. Be sure to request samples of ThemeTile die-cut inserts, Feature Strip and KenBase.

KENTILE®

The Asphalt Tile of Enduring Beauty

Kentile is the floor your clients know and want...

BACKED BY MORE FULL-COLOR ADVERTISING THAN ANY OTHER ASPHALT TILE FLOOR

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*REG. U.S. PAT. OFF.

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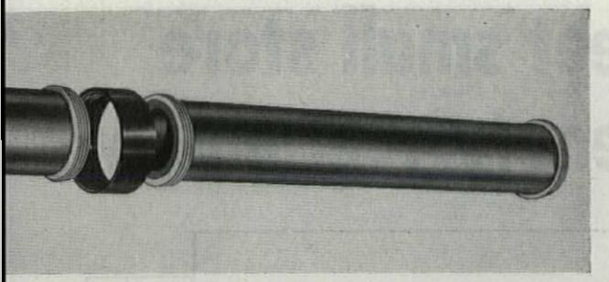
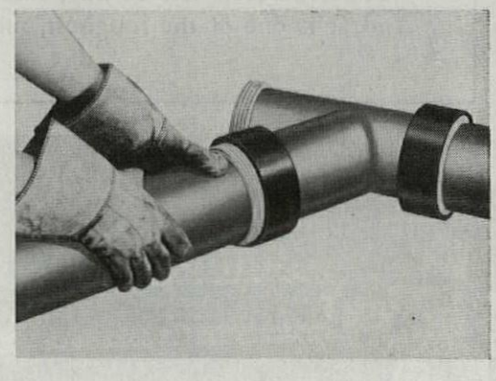


CLAY PIPE for industrial waste has plastic screw-seal joint

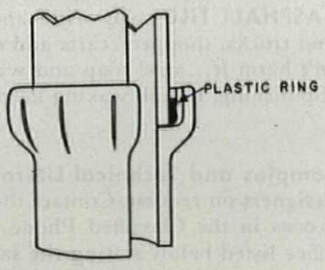
Designed especially for handling corrosive fumes and liquids, *Screw-Seal* is made of extra-strength, premium grade vitrified clay pipe. On each end of the 3′ lengths of pipe, a threaded plastic ring is cast in place at the factory. The ring is resilient polyvinyl chloride, called *Plastisol*. A separate collar, with female threads, is made of hard phenolic plastic. Screw joints are easily made, requiring only three turns by hand and one by strap-wrench. The resulting joint is under constant compression and is watertight and gas tight. It will withstand most corrosive industrial wastes, including hydrochloric and sulphuric acids in any concentration. Because of the resilient nature of the plastic seal, vibration does not affect it and pipe can be out of line as much as 6° without causing a leak. For locations where the screw-seal can not be used, a split-flange union is provided, which is bolted together over a polyvinyl gasket. A complete line of screw-seal fittings is provided. F.O.B. prices: 4″ inside diameter pipe, $1.50 per lin. ft.; 6″ pipe $2.25 per ft.; 8″ pipe $3 per ft.

Manufacturer: Robinson Clay Product Co., Akron 9, Ohio.



CLAY PIPE with built-in plastic joint seals by pushing together

Fifty feet of clay pipe can be laid in 15 minutes by using the new *Amvit* jointed pipe. Precast plastic rings are molded into the bell and spigot ends of the pipe at the factory. The ring at the bell end has a concave surface and the spigot ring has a convex surface. The pipe is joined by lubricating the joint with water and pushing the two pieces of pipe together. Since the plastic at the spigot end is slightly larger in diameter than the ring at the bell end, the completed joint is under constant compression, insuring tightness. The joint, of polyvinyl chloride, is immune to weather, underground



continued on p. 230

DO WASHROOM CONTACTS LEAD TO SPREAD OF INFECTIONS?





MODERN BRADLEYS ELIMINATE SUCH CONTACTS

Two can wash—yet each with spray of clean running water.

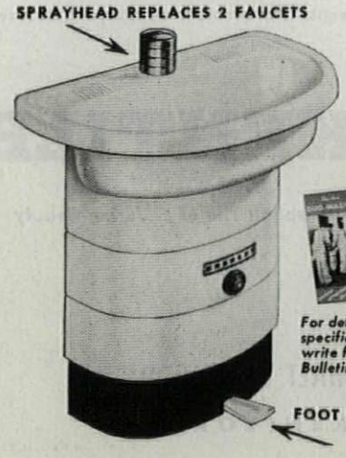
Physicians and nurses today warn against unnecessary contacts to reduce chance of spreading polio and other diseases.

The BradleyDUO-Washfountain has a spray-head that provides clean running water and controlled by a convenient foot-pedal. There can be no contact of dirty hands that others may touch. Also the foot-control eliminates waste of water, the water supply being instantly cut off when foot is removed from the pedal.

The bowl of the Bradley is also *self-flushing*, preventing collection of contaminating water in the bowl and reducing janitor work.

Thus Bradley DUO-Washfountains for new washrooms and replacements not only guard against spread of disease but provide the most economical and modern sanitary washing facilities . . . . . BRADLEY WASHFOUNTAIN CO., 223 W. Michigan Street, Milwaukee 1, Wisconsin.

SPRAYHEAD REPLACES 2 FAUCETS





For details and specifications, write for Bulletin K-958.

BRADLEY Duo-Washfountains

Distributed Through Plumbing Wholesalers

FOR NEW AND OUTSTANDING **SCHOOL BUILDINGS,** ARCHITECTS PREFER

aluminum WINDOWS *by* GENERAL BRONZE

QUALITY APPROVED

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

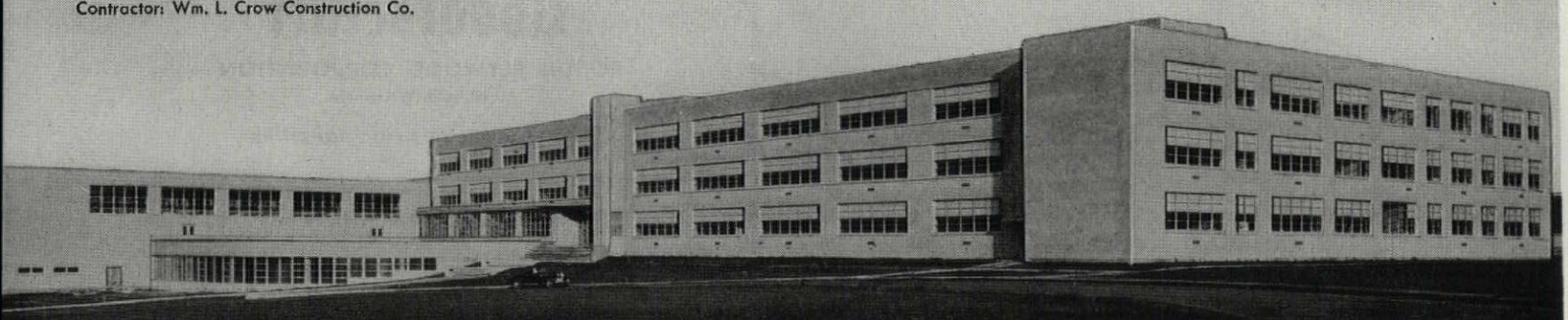
● The school building of today with all its many new and modern facilities is a far cry from the little red school house of a few years ago. Just consider its windows for example. Today's modern, easy-operating, weathertight aluminum windows are vastly superior in every way to the old-fashioned, hard-to-open windows that always needed painting and maintenance expenses.

Yes, today, architects as well as school authorities are concerned with more than just mere windows. They demand *all* the requirements of good fenestration—maximum light, controlled ventilation, weathertightness, easy operation, permanent beauty and low maintenance costs for the entire life of the building. That's why so many new schools are being built with "Windows by GENERAL BRONZE."

Whether you are planning school buildings, hospitals, apartments, commercial or monumental buildings, General Bronze, the world's largest fabricator of aluminum windows, offers you the benefit of more than 40 years' practical experience in solving your problems as they pertain to windows, spandrels, curtain walls and architectural metalwork. Our reputation for quality products, for sound engineering and design, for precision workmanship is known and accepted from coast to coast.

Because of our unequalled facilities and our vast experience, we are well qualified to serve you, especially when your requirements are complex or unusual. We will be glad to discuss your problems with you at any time. Our catalogs are filed in Sweet's.

TROY HIGH SCHOOL
Architect: Frank J. Morgan
Contractor: Wm. L. Crow Construction Co.



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PERMATITE DIVISION—Custom-built Windows, Architectural Metal Work and Revolving Doors. **ALWINTITE DIVISION**—Stock-size Aluminum Windows
BRACH MFG. CO. DIVISION—Multel, T. V., Radio and Electronic Equipment. **STEEL WELDMENTS, INC. DIVISION**—Custom fabrication in steel and iron.

Roddiscraft announces a new wood-faced fire door

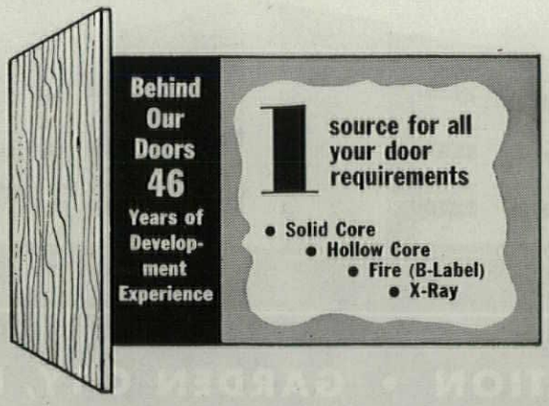
. . . approved by Underwriters Laboratories

Lightweight Roddiscraft B-Label Fire Doors are available in all wood species to match any flush doors you specify

Now architects and engineers can specify all flush doors from one source — Roddiscraft. With the development of the new B-Label Fire Door, Roddiscraft now offers a complete line of flush doors for all types of applications. For openings in vertical shafts, where a fire barrier is required, specify the new B-Label Fire Door. It has been approved by the Underwriters Laboratories and gives a minimum of at least one-hour fire protection.

The door is currently being produced in all available wood species — in both standard and specified sizes. Widths up to 3½ feet and heights up to 7 feet meet almost all commercial, industrial or institutional requirements. These include stairway and room entrances, shaft and fire escape openings. You'll find wide residential application, too. There is a growing trend in the use of fire doors for entrances to bedrooms, basements and attached garages.

Check the advantages of the new Roddiscraft B-Label Fire Door listed here. Write for complete specifications or call on your nearest Roddis warehouse for details.



Only Roddiscraft B-Label Fire Doors give you all these quality features

- Non-combustible core of special asbestos compound.
- Faced on both sides with plywood veneer . . . in all available wood species.
- Available in widths up to 3½ feet . . . heights up to 7 feet.
- 20% lighter than conventional solid core doors for lower shipping costs . . . easier handling.
- Warp-free, low sound transmission, low heat transmission.
- Completely stable core — no chance of rattling. Three sections are assembled with tight tongue-and-groove joint.

Roddiscraft

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warehouses in principal cities

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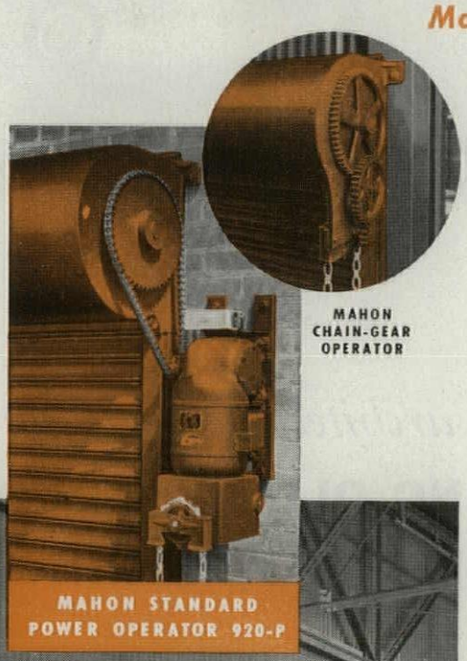
Marshfield, Wisconsin

Please send me
☐ Specifications of your new B-Label Door
☐ Information on your complete door line

Name .....
Address .....
City ..... State .....

Rolling Steel Doors

Manually, Mechanically, or Electrically Operated



MAHON CHAIN-GEAR OPERATOR

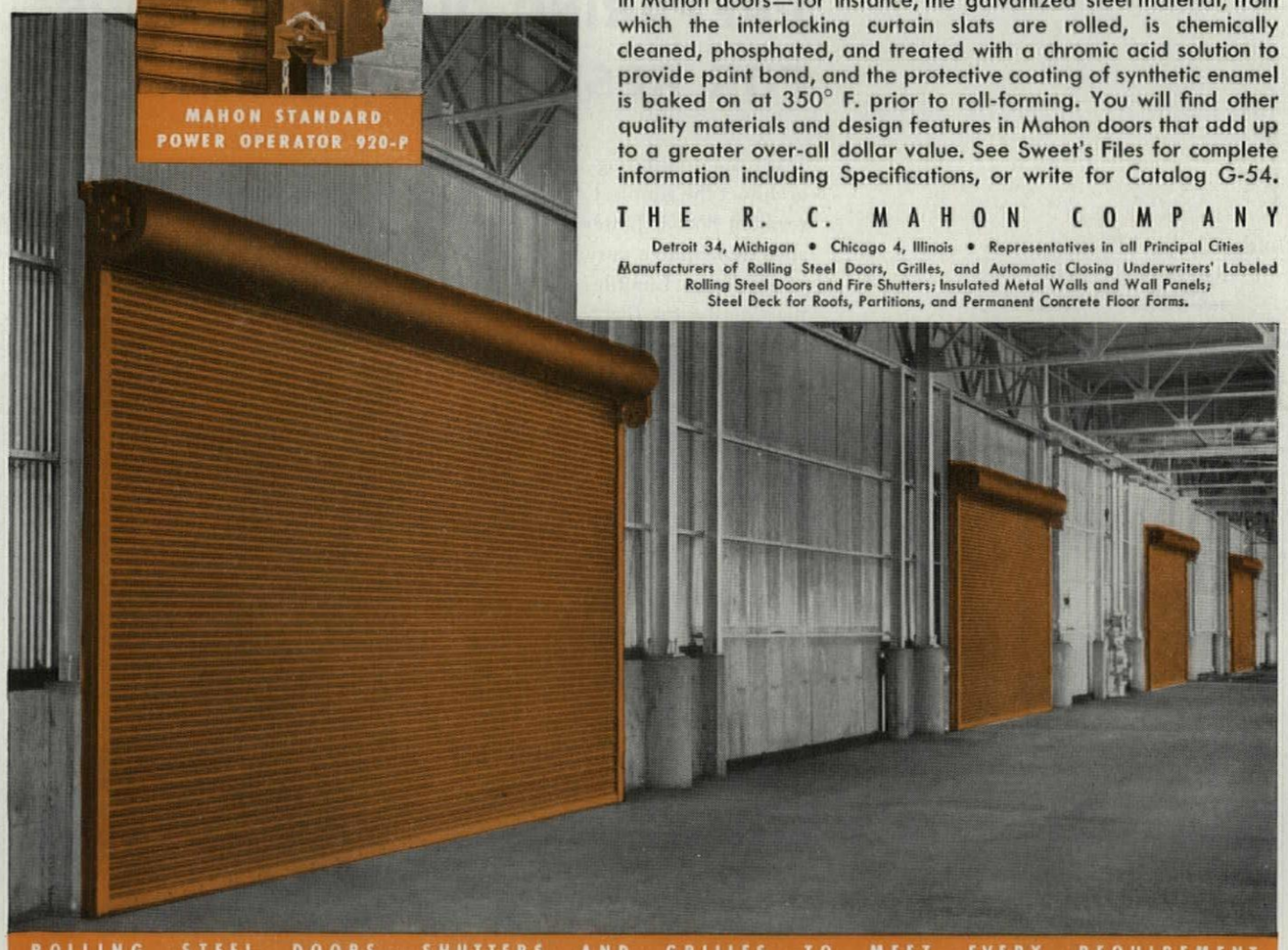
MAHON STANDARD POWER OPERATOR 920-P

In pier storage buildings, and warehouses of world ports, rolling steel doors play an important role in providing access and protection for off-loaded and on-loading cargoes. For this particular purpose, no other type of door so fully meets today's requirements . . . because, Rolling Steel Doors occupy no usable space either inside or outside the door opening . . . their vertical roll-up action permits cargoes to be stacked within a few inches of the door curtain on either side. And, there are no overhead tracks or other obstructions to interfere with crane handling adjacent to door openings. A Mahon electrically operated, quick-opening, quick-closing Rolling Steel Door will save valuable space and valuable time in any type of opening. In addition, Mahon Rolling Steel Doors are permanent—their all-metal construction assures a lifetime of trouble-free service and maximum protection against intrusion and fire. When you select a Rolling Steel Door, check specifications carefully . . . you will find extra-value features in Mahon doors—for instance, the galvanized steel material, from which the interlocking curtain slats are rolled, 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. You will find other quality materials and design features in Mahon doors that add up to a greater over-all dollar value. See Sweet's Files for complete information including Specifications, or write for Catalog G-54.

THE R. C. MAHON COMPANY

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

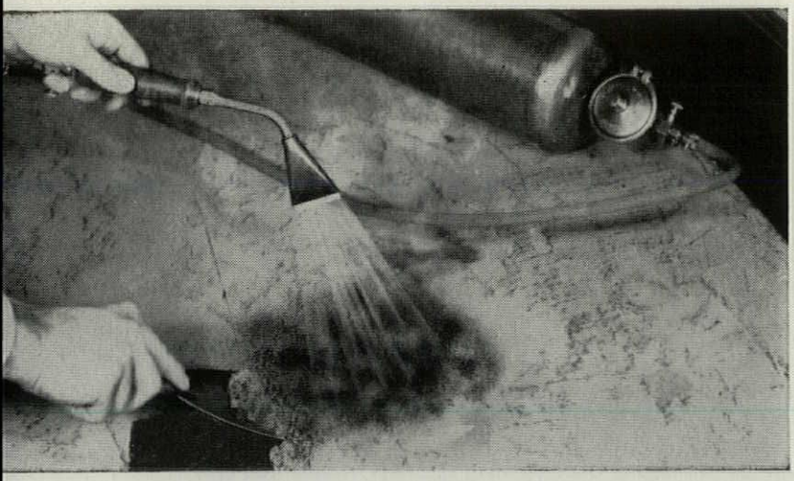
Manufacturers of Rolling Steel Doors, Grilles, and Automatic Closing Underwriters' Labeled Rolling Steel Doors and Fire Shutters; Insulated Metal Walls and Wall Panels; Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms.



ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

Four of Thirty Mahon Rolling Steel Doors installed in the Napoleon Avenue Wharf Shed built by the Board of Harbor Commissioners, Port of New Orleans, Louisiana.

MAHON



To insure a proper bond for the adhesive, all paint must be removed. Because of the speed with which paint can be removed from large areas, the acetylene paint burner is often preferred for this type of work. However, machine sanding and chemical paint removers also do the job quickly and well.



Since adhesives will not adhere to oil- or grease-soaked floors, it is necessary that these floors be cleaned with a strong grease-cutting solution of tri-sodium phosphate or alkali-type cleaner. Floors should be rinsed well to remove excess chemicals which might destroy the binding qualities of the flooring adhesive.

For remodeling jobs, here's what an architect needs to know about...

PREPARING OLD SUBFLOORS FOR RESILIENT FLOORING

With the continuing importance of modernization projects, resilient floors offer the architect the simplest means of utilizing the previous floor construction. However, no resilient floor is better than the subfloor over which it is installed, and satisfactory results depend to a very great degree on correct preparatory work. Such resilient floors as linoleum, Linotile, plastic flooring (such as Corlon), rubber tile, cork tile, vinyl-plastic-asbestos tile (such as Excelon), and asphalt tile are readily adaptable to remodeling jobs and will give many years of service if subfloors are properly prepared.

The installation of resilient floors in an old structure usually involves the conversion of what was once a wearing floor into a subfloor. Two main conditions must be met before such a floor forms a satisfactory base for a resilient floor. First, it is necessary to have a relatively smooth-surfaced subfloor, free from serious irregularities which would mar the appearance of the finish floor. Second, since nearly all resilient floorings are applied with adhesives, the old floor must be so prepared as to provide a satisfactory bonding surface for the adhesive.

Wood Floors. The preparation of old wood floors for the installation of resilient flooring depends on the type of construction:

1. Single wood floors, not tongue-and-groove. These should be covered with 25/32" T. & G. flooring or 5/8" or heavier plywood, of DFPA Plypanel grade or better.
2. Single wood floors, tongue-and-groove. Use Armstrong's Temboard® Underlayment or 3/8" or heavier plywood underlayment of DFPA Plypanel grade or better.
3. Double wood floors. If boards are 3" or more, proceed as (2), above. If less than 3", renail loose boards and replace defective or badly worn boards with new material. Fill cracks and holes with plastic wood or snugly fitting wood pieces. Remove surface irregularities, such as cupping, by sanding.

Wood floors which are too uneven to be sanded smooth should be covered either with a mastic-type floor fill made with Armstrong's No. S-170 Flormastic, or with hardboard, or with 3/8" or heavier plywood.

Old wood floors which have been painted or oiled present a special problem. Such treatments tend to prevent the penetration of the adhesive into the wood and deprive

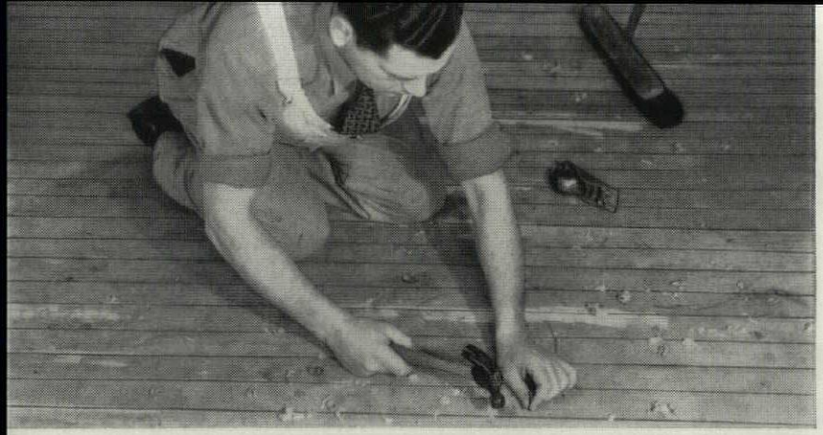
preparing old wood subfloors

	Type of Subfloor	Armstrong's Temboard Underlayment	Plywood
Single wood floor	Tongue-and-Groove	√	3/8" or heavier
	Not Tongue-and-Groove	Do not use	5/8" or heavier
Double wood floor	Strips 3" or more	√	3/8" or heavier
	Strips less than 3"	Renail or replace loose boards. Remove surface irregularities.	

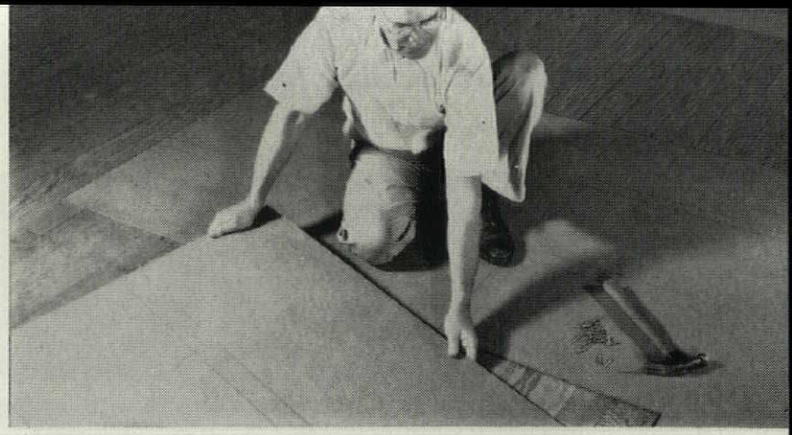
Double floors too uneven to be sanded smooth: S-170 Flormastic, or hardboard, or 3/8" or heavier plywood.

Armstrong's Floors

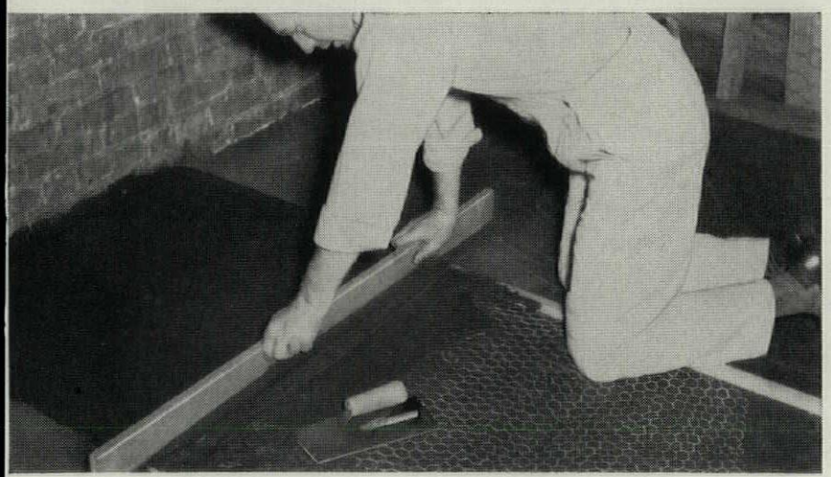
LINOLEUM PLAIN SPATTER® JASPÉ RAYBELLE® ROYELLE MARBELLE® STRYPELLE® CRAFTLINE INLAID EMBOSSED INLAID STRAIGHT LINE INLAID



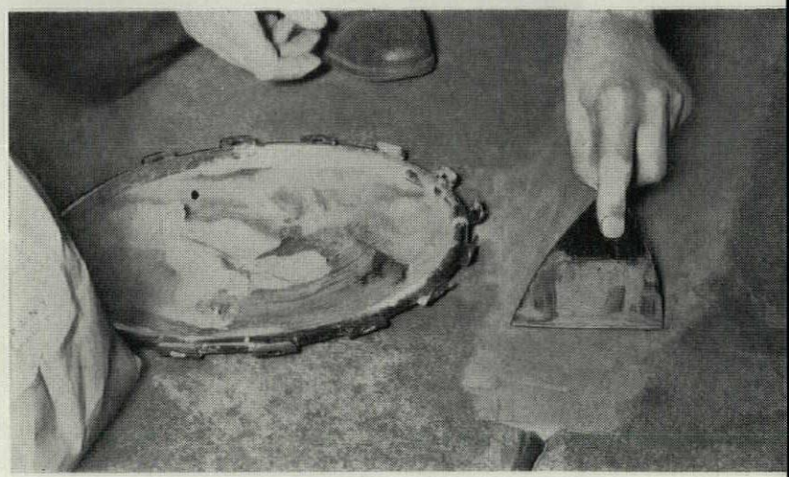
Surface defects in the old floor often damage or otherwise mar the finished resilient floor. This can be prevented by carefully renailing loose boards and sanding or planing warped areas to floor level. All badly damaged floor boards should be replaced. Sanded areas should be treated with a sealing compound.



An underlayment, consisting of four-by-four sheets of hardboard or plywood, is advised for uneven subfloor areas which cannot readily be corrected by sanding. When laid over a tongue-and-groove floor, this underlayment provides a sound, smooth, and economical base for all types of resilient flooring.



Another method of resurfacing damaged wood and concrete subfloors is the use of a cold mastic floor fill. It can be laid directly over the old floor. Wood screeds and a straightedge may be used to maintain the thickness necessary for leveling. Cold mastic fills will not adhere to subfloors treated with oil.



Although resilient flooring adhesives will fill minor cracks and crevices in concrete subfloors, it is best that all holes, cracks, and crevices be filled with a reliable cement crack filler before installation is started. It is important that all concrete subfloors be allowed adequate drying time before installing flooring.

it of bonding strength. All traces of oil or paint should be removed by sanding, scraping, or, if necessary, by scrubbing with chemical solvents. The subfloor should be dry and free of all traces of solvents before the installation of flooring.

Concrete Floors. The problem of securing proper adhesion to concrete subfloors usually arises from dusty, chalky, or flaky concrete surfaces. This can generally be overcome by thorough sweeping with a wire brush to remove all loose particles, followed by a sealing treatment with Armstrong's Floor and Wall Size. All cracks, minor holes, and crevices should be filled with Armstrong's Crack Filler or a filler of equal quality before any resilient flooring installation is started. If concrete floors are too badly damaged to be repaired by crack fillers, the entire floor may be resurfaced with a fill made from Armstrong's Flormastic or a concrete topping. It is important that concrete topping and new concrete floors be fully cured before installing resilient floors.

Special Conditions. The above comments cover the most common conditions encountered in dealing with subfloors of wood and concrete. Other types of subfloors such as metal, terrazzo, and magnesite require special treatment which is so dependent on individual circumstances that it is not practical to lay down general recommendations. In such cases, Armstrong will be glad to give you assistance by telephone or by letter and, when the occasion demands it, will send a representative to study the subfloor condition and offer suggestions on proper methods of preparation.

ARMSTRONG CORK COMPANY makes all types of resilient floors for all types of interiors. Almost any flooring problem can be met with one or more of the floors in the Armstrong Line. As a result, we have no special bias toward any one type and can offer architects impartial recommendations on any flooring problem. Our main interest is to aid you in making a sound flooring selection.

Armstrong's sales representatives throughout the country will be glad to consult with architects and make specific recommendations for individual jobs. Your Armstrong representative has a wide variety of experience and training in resilient flooring and can also call upon Armstrong's Research and Development Center for assistance with special problems.

For helpful information on any flooring question, just call your nearest Armstrong District Office or write direct to Armstrong Cork Company, Floor Division, Lancaster, Pa.

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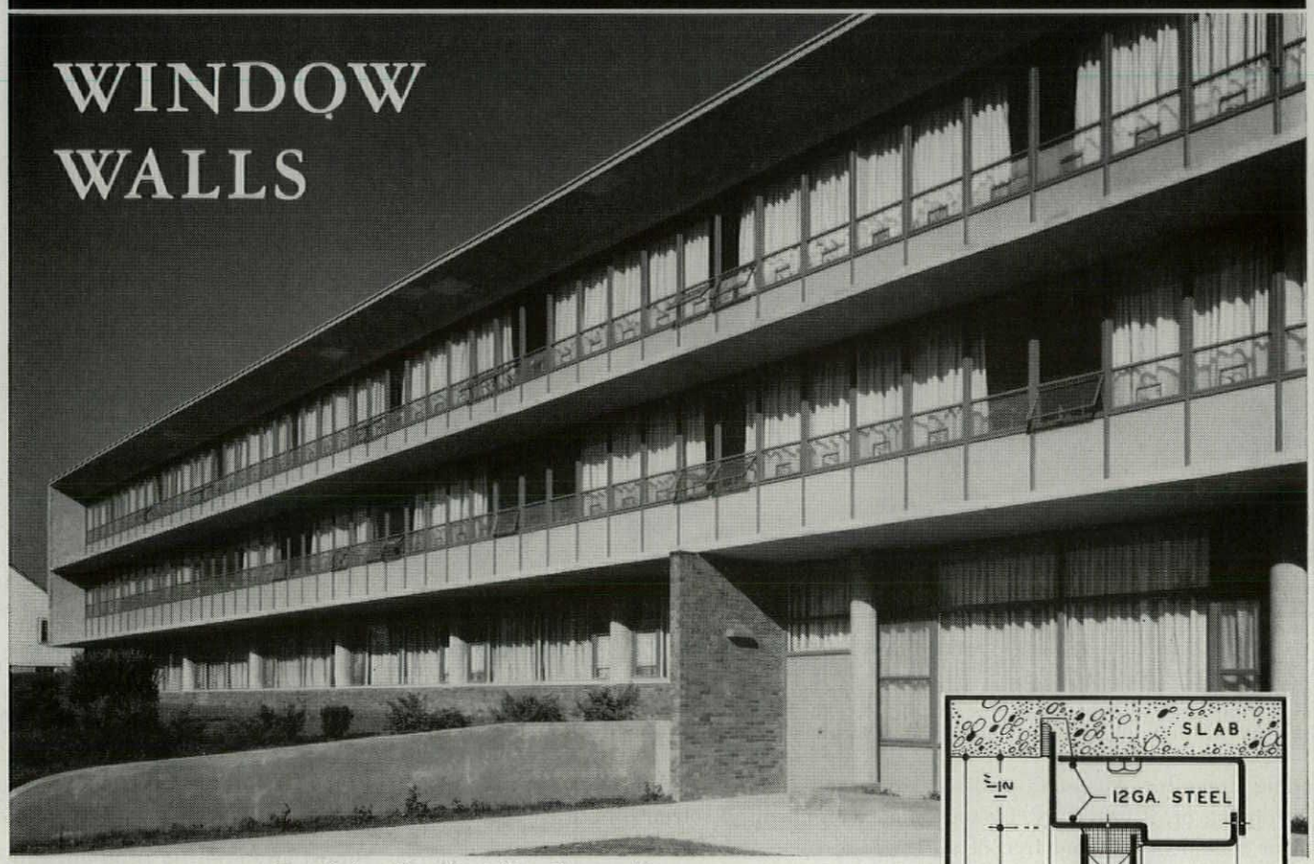
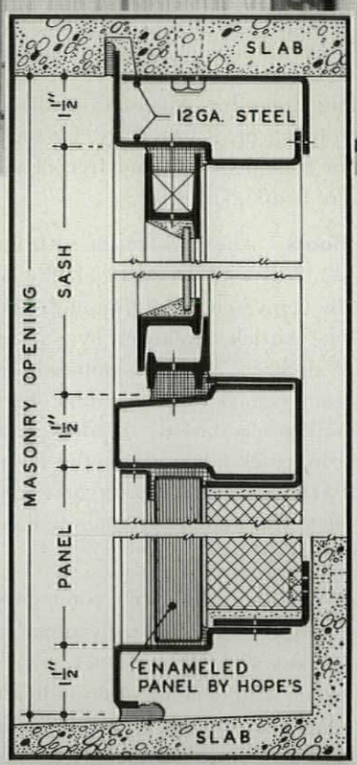
WINDOW WALLS



Don Orione Rest Home East Boston, Mass.

Coletti Bros. Architects — *Mozzicato Construction Co., Contractor*

Over the years, as architects have incorporated more and larger glass areas in their designs, Hope's engineers have assisted by pioneering Steel Window Walls of outstanding strength, rigidity and durability. They adapt to any architectural plan, they can accommodate any desired ventilator arrangement and they complement the facade. At right are Hope's construction details used in this modern rest home.



Here's a Partial List of Hope's Steel Window Wall Installations:

1947 — Science and Pharmacy Bldgs., Drake University, Des Moines, Ia. Saarinen, Swanson and Saarinen, Arch'ts, Brooks-Borg, Associates . . . *1950* — Senior High School, East Providence, R. I. Charles A. Maguire and Associates, Arch'ts . . . *1951* — John Thompson Dorrance Lab., M. I. T. Cambridge, Mass. Anderson and Beckwith, Arch'ts . . . *1952* — Douglass Elementary School, Kansas City, Mo. Kivett and Myers, Arch'ts; Angus McCallum, Associate . . . *1953* — Elementary School, 42nd St. & Proctor Ave., Waco, Tex. Walter A. Cocke, Jr. & Co., Arch'ts . . . *1954* — Senior High School, Anaconda, Mont., Fox and Ballas, Arch'ts and Eng'rs.

Write for Catalog 134AF

HOPE'S WINDOWS, INC., *Jamestown, N. Y.*

THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE'S WINDOWS

Chase®

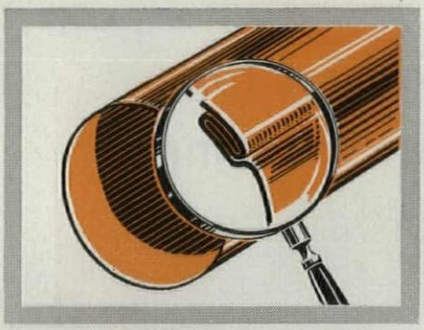
gives you 7 reasons why copper means a better home!



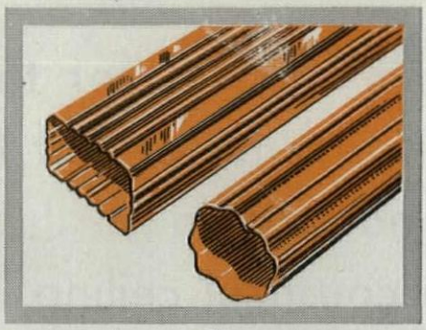
It won't rust and resists corrosion—**Copper's** resistance to the elements is traditional—even in areas where atmospheric conditions destroy other metals. Its performance is proved over centuries of experience.



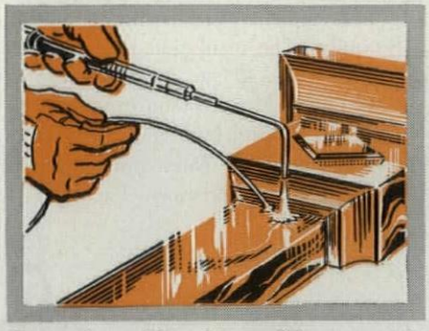
It's full weight—Look for the die-stamped Chase Trade Mark and Weight Stamp—your assurance that Chase **Copper** Roofing Products have stability and permanence.



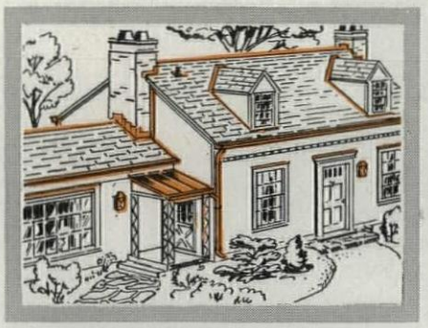
Seams are adequate—Chase **Copper** Leaders are formed from full-width strips, to assure strong, expansion-proof seams.



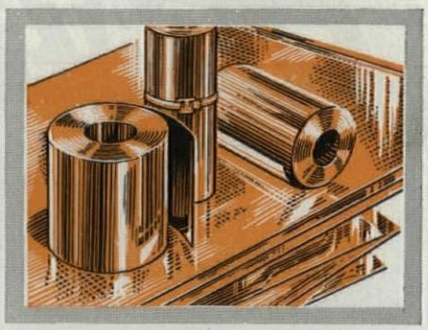
Corrugations are deep and generous—Chase **Copper** Downspouts have full-depth corrugations, ample for temperature ranges in *any* climate.



It can be soldered . . . with ease and economy—Long-lasting, water-tight joints are assured when standard soldering techniques are applied to Chase **Copper** Roofing Products.



It's architecturally harmonious—Modern or traditional design both benefit from **Copper's** rich appearance—a metal protected and beautified by nature itself.



It's economical—The ratio of *first-cost* to *years of service* is at a bare minimum, when **Copper** is used. And, the relationship of copper to overall building costs is as reasonable as it ever was in the past.

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Boston	Dallas	Indianapolis	Minneapolis	Philadelphia	St. Louis	(†sales office only)

conditions, roots, acids, alkalies, oil, sewage and most industrial wastes. The joint will withstand a pressure of 30 psi and, by using an adhesive as a lubricating agent, hydrostatic pressures of 80 psi have been withstood. Since the plastic is resilient, the result is a ball and socket type of joint, which has remarkable flexibility. Pipe can be as much as 7° out of line without injury to the seal at the joint. This property can be used to make long sweep turns without special fittings. With 6° offset at each joint, a 90° turn can be made in eight 2′ lengths of pipe, the turn having a radius of 9½′. Another advantage of the resilient joint is that a section can be removed from an installed line without disturbing more than the two adjacent pieces. Prices: 4″ diameter, 46.5¢ per ft.; 6″, 58.5¢; 8″, 88¢ all F.O.B.

Manufacturer: American Vitrified Products Co., Cleveland, Ohio.

NOW...for the first time in the history of the building industry—a two-hour fire-rated acoustical ceiling.

Tested and approved by Underwriters' Laboratory

FYRATE SYSTEMS

A new and highly efficient method of combining 2-hour fire protection with mechanically supported acoustical tile ceilings — another step forward in safety and economy for modern building construction.

An Important Plus: The complete assembly provides, in addition to 2-hour fire-rated protection, thermal insulation with vapor barrier, and exceptionally high acoustical properties.

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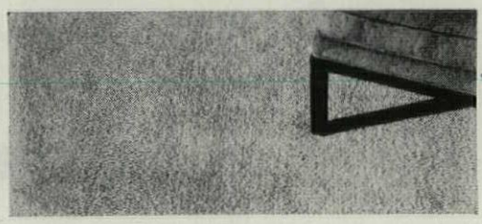
ALL-WOOL TUFTED CARPET retails for less than $10 per sq. yd.

Said to be a revolutionary development, the first all-wool tufted carpet, woven on a warp and woof of jute, results in a floor covering of a high quality at a moderate price. Called



Counterpoint, the new carpet is available in 12′ width in four color combinations: turquoise and beige; two shades of green and gray; gold, beige and white, beige, gray and white.

Manufacturer: A. & M. Karagheusian, Inc. 295 Fifth Ave., New York 16, N.Y.

ALUMINUM FOIL INSULATION has asbestos core

Insul-Attic is a low-cost insulation consisting of aluminum foil laminated to one or both sides of 10 lb. asbestos felt, and is therefore incombustible and immune to attack by rot or vermin. Like other aluminum foil insulations, it is an excellent vapor barrier, has low heat capacity, and is clean, light and easy to apply. The insulation is available in rolls of 100 sq. ft., 18″ or 36″ wide. Price in quantities of 25 M sq. ft. and over, foil one side: $20 M sq. ft.; foil both sides: $27 M.

Manufacturer: Norristown Magnesia & Asbestos Co., Norristown, Pa.



WHITEPRINT MACHINE produces 42″ wide positive prints at 30′ per minute

The new compact, high-capacity *Ozalid Model 800* will be in production this fall. Operation is continuous through exposure and development; no rehandling is required. Various automatic controls assure uniform printing and developing. Speed is adjustable from 8″ to 30′ per minute. Front or rear delivery is offered. Price: $3,250.

Manufacturer: Ozalid, Johnson City, N.Y.

continued on p. 232



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BOK SINGING TOWER
Mountain Lake, Florida

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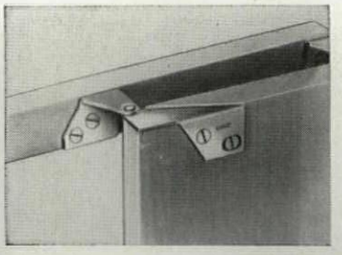
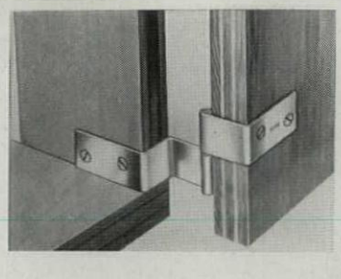
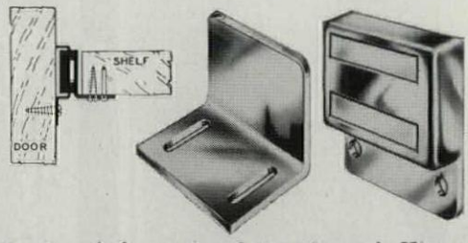




CABINET HINGES permit flush front cabinets cut from single piece of plywood

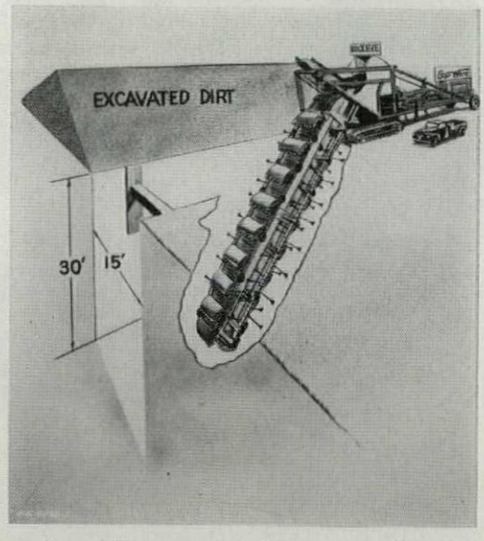
Cabinets designed so that the doors completely overlap the frames and form the entire cabinet front are both economical and attractive. Economical because the entire front can be cut from a single piece of plywood and the frame, being fully concealed, does not have to be of select quality. Attractive because of the completely flush appearance and the continuity of the grain of the plywood. Hinges suitable for this type of construction have often been hard to come by. Now Stanley offers both pivot and offset loose-pin hinges designed for this purpose. Each type comes in two models, for attaching to horizontal or vertical framing members. The loose-pin hinge is also available in a third model, for hanging two doors back to back on the same partition. All fastenings are concealed when the doors are closed and the exposed portions of the hinge are inconspicuous. Hinges are made of steel in several finishes: bright zinc, bright brass, satin bronze, or primed for painting. Cost 40 to 60¢ per pair, according to finish.



A new magnetic catch for cabinet doors has also been announced. The catch fits between door and shelf, so that no part projects into the cabinet. The magnet is spring mounted in an anodized aluminum housing. The strike is steel, bright zinc plated. Cost: approximately 70¢ per set including screws. *Manufacturer:* The Stanley Works, New Britain, Conn.

GIANT DITCHING MACHINE will dig gorge 30′ deep and 15′ wide

Buckeye Model 435, now being designed, will be a mechanical monster 81′ long, 15′ high and 12′ wide, and will weigh an estimated 65 tons. It will be used to excavate intercepting and outfall sewer trenches, water diversion aqueducts and other big ditches. At a price of $100,000, the new machine will be a bargain, according to the manufacturer, since the equipment now used for this type of work costs twice as much.



Manufacturer: Gar Wood Industries, Wayne, Mich.

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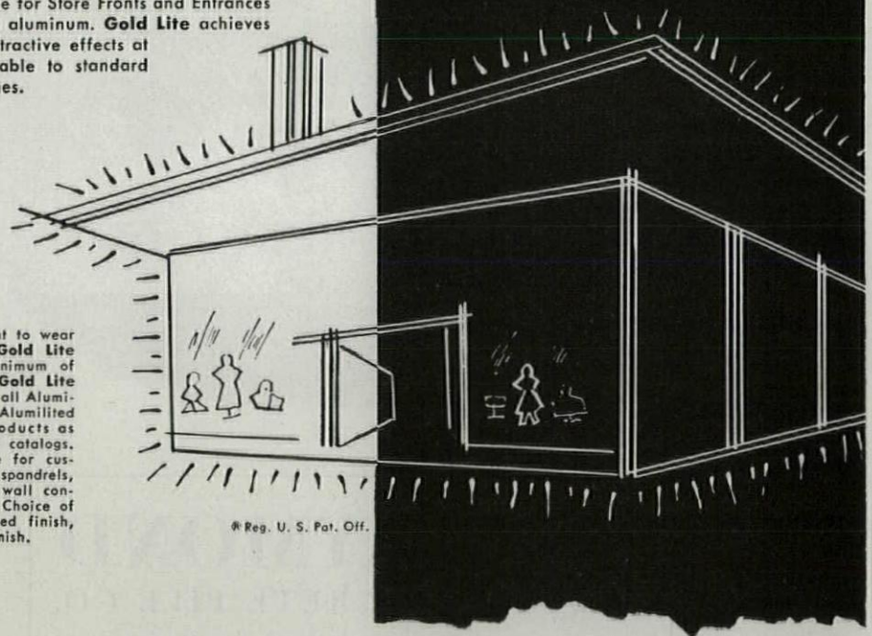
Gold Lite is a colored Alumilite finish that has been exposure-tested by Alcoa for a period in excess of 10 years, yet has shown no perceptible signs of fading. New! **Gold Lite** is offered for the first time for Store Fronts and Entrances using extruded aluminum. **Gold Lite** achieves unusual and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



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

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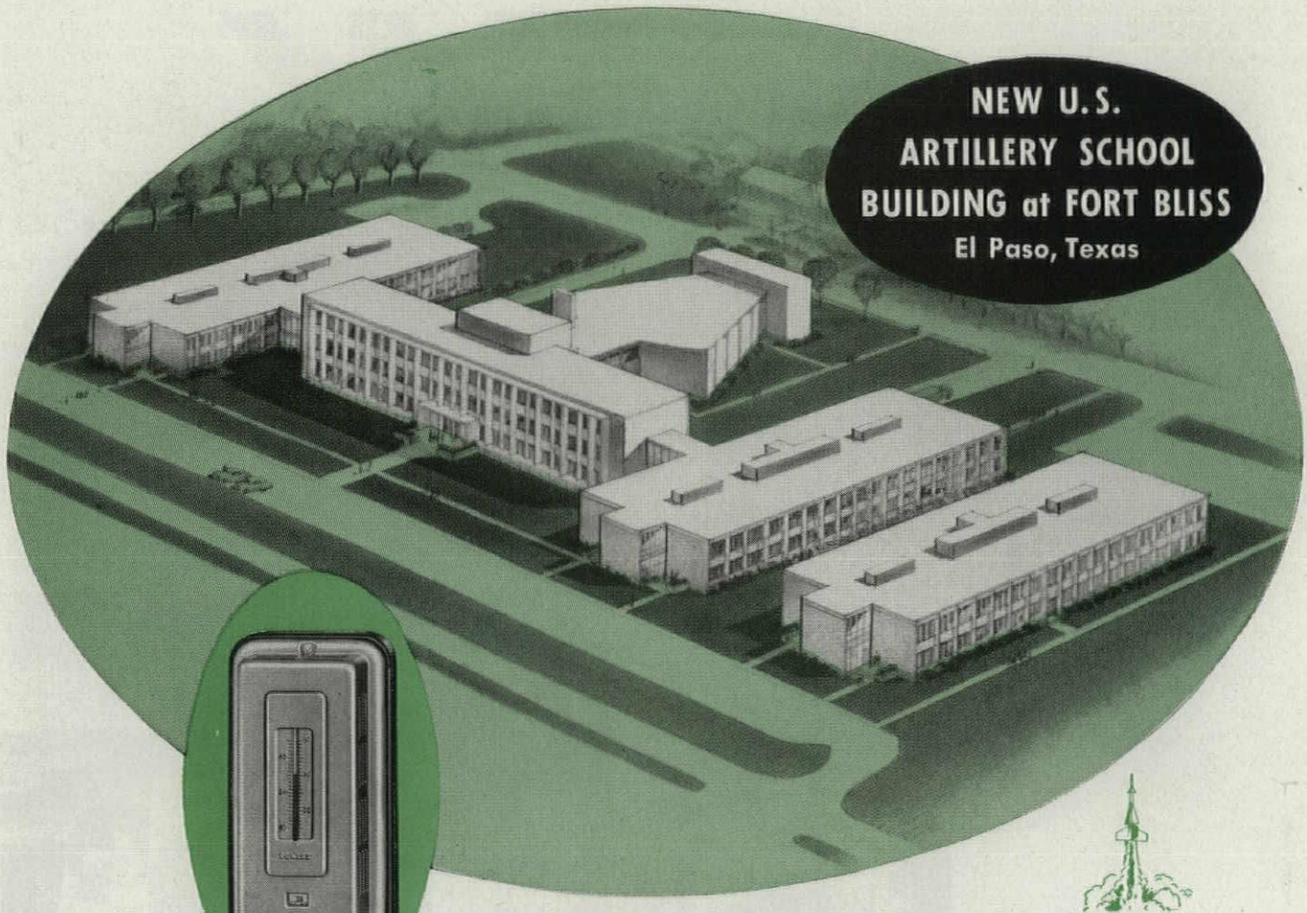
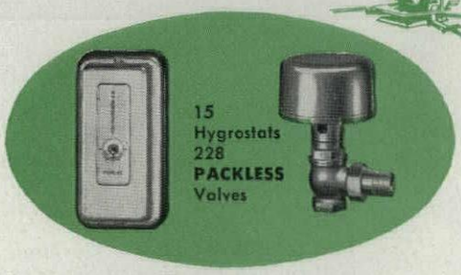


NEW U.S. ARTILLERY SCHOOL BUILDING at FORT BLISS
El Paso, Texas

Designed under the supervision of the Albuquerque District of The Corps of Engineers
by Carroll & Daeuble and Landauer, Guerrero & Shafer, Architects-Engineers
General Contractors: Robert E. McKee, Inc., El Paso, Texas.
Mechanical Contractors: J. S. Brown — E. F. Olds Plumbing & Heating Co.

214 Powers Room Thermostats
Used here.



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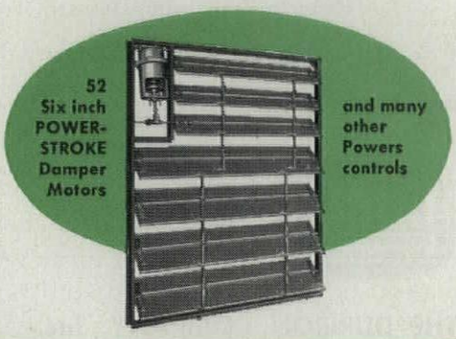

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Proper temperature for maximum comfort and efficiency will be maintained in all classrooms, auditorium and administrative facilities by a Powers control system.

With over 60 years of experience, a modern complete line of controls for heating, air conditioning and industrial processes—POWERS is well qualified to help with your temperature and humidity control problems.

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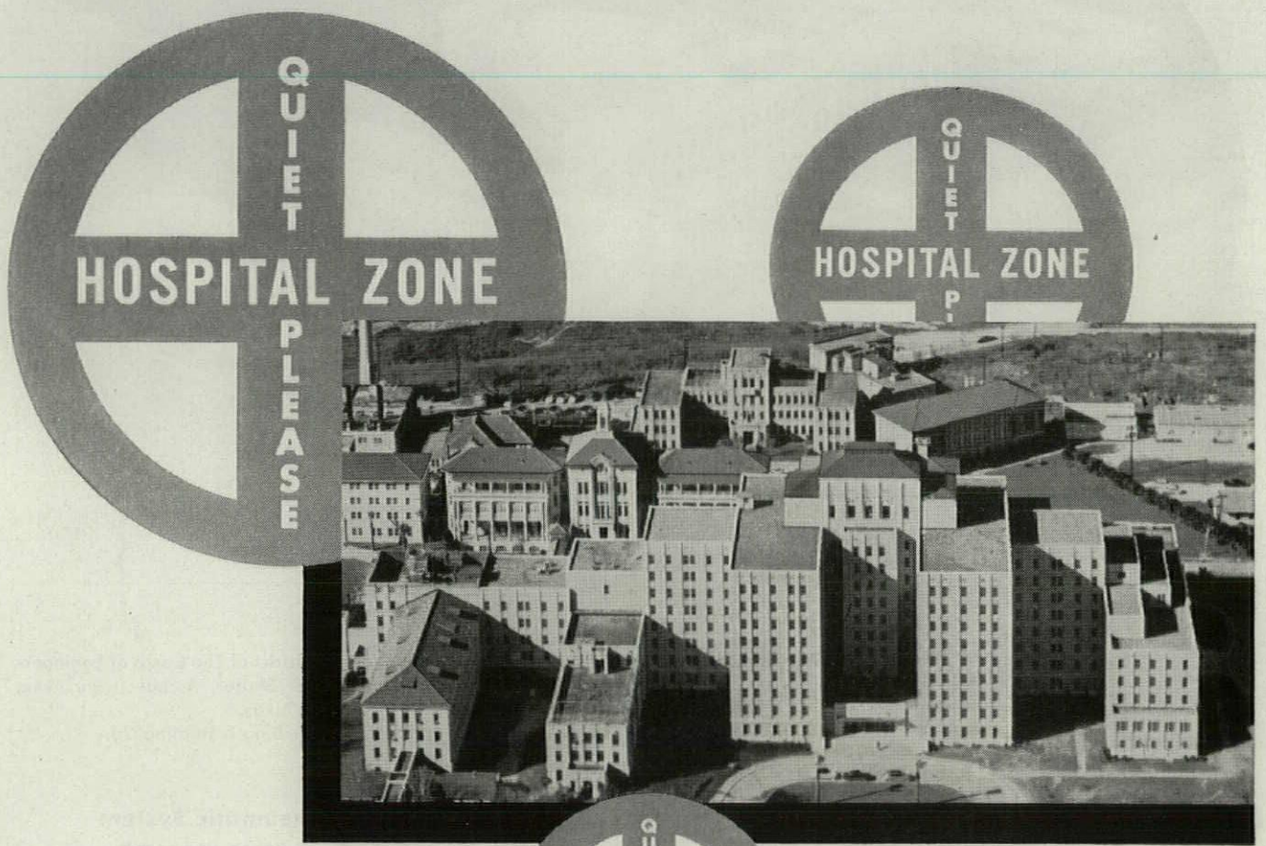
DURIRON *cures corrosion at*

University of Texas Medical Center – Galveston, Texas



In the recently completed $16,500,000 University of Texas Medical Center—including the John Sealy Hospital, the Rosa and Henry Ziegler Hospital and the Gail Borden Pre-clinical Sciences Bldg.—drain lines are of *Duriron*. Duriron offers high resistance to corrosives handled throughout the thickness of the pipe wall. There'll be no replacement cost for labor, new pipe or interior reconstruction during the life of the building. Duriron pipe and fittings are available from stock in principal cities. Specify, and insist on, the permanent drain line—*Duriron*. May we send you Duriron Catalog PF/4?

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C. H. Page & Sons, Austin, Texas
MECHANICAL ENGINEER—
Zumwalt & Vinther, Dallas, Texas

Rosa and Henry Ziegler Hospital, Gail Borden Pre-clinical Sciences Bldg.

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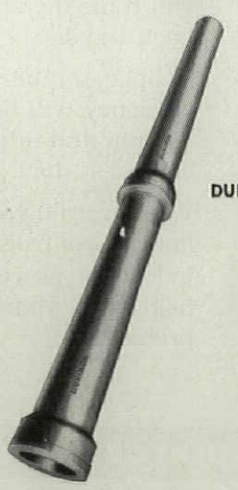

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CORROSION RESISTING ALLOYS & EQUIPMENT

THE DURIRON COMPANY, Inc.
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BENJAMIN "Magna-Flo" Systems Excel!

that's why Overall Lighting Costs are LOWER!

Because Benjamin "Magna-Flo" Systems excel by every Quality Standard—lighting, electrical and constructional—they can provide high illumination levels at low overall lighting cost. Such cost involves more than the original price of the units. Overall lighting cost also includes the costs of installation, operation, maintenance and replacement. Add them all up and see why you're ahead with "Magna-Flo" Systems (individual unit or continuous line)—because "Magna-Flo" excels by ALL QUALITY STANDARDS!

This chart gives some of the important reasons why:

"MAGNA-FLO" CUTS INSTALLATION COST	"MAGNA-FLO" CUTS MAINTENANCE COST	"MAGNA-FLO" CUTS OPERATION COST	"MAGNA-FLO" CUTS REPLACEMENT COST
wide variety of knockouts facilitate wire entrances into unit. complete line of sliding hangers. single, rugged channel coupling for continuous mounting.	Porcelain Enamel reflecting surface is easy to keep clean with soap and water. exclusive "Springlox" lampholders make possible "quick-in, quick-out" lamp maintenance. Speedy, exclusive "Lok-Latch" reflector fasteners.	made for efficient utilization of high light output T12 Slimline lamps. high power-factor ETL-approved ballasts for continuously-cool, efficient operation. high reflection factor remains constant because genuine Porcelain Enameled reflector does not discolor or become dull with age.	famous Benjamin "built-like-a-battleship" construction of heavy gauge steel. rigid channels and reflectors withstand toughest industrial vibration. 96″ reflectors are made in two sections, kept perfectly aligned by positive alignment clips.



FREE Bulletin AD-5705 *brings you complete specifications on Benjamin "Magna-Flo" Lighting Systems—famous for "Task-Matched" Lighting Installations.*
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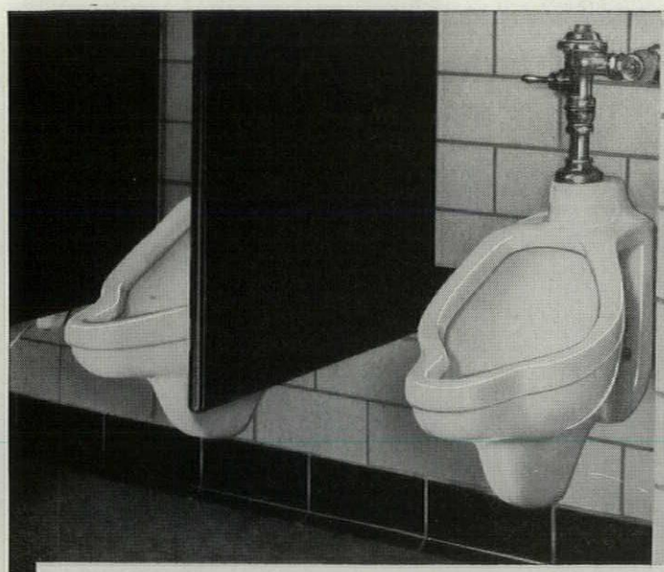
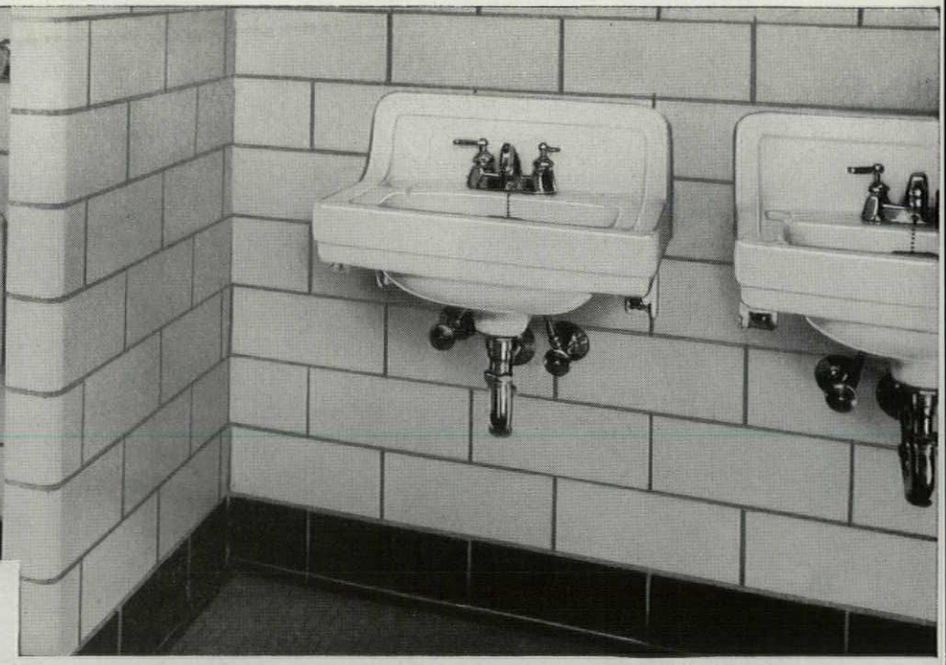
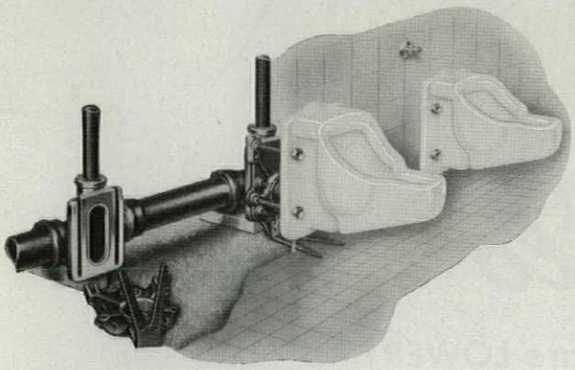
Benjamin "Magna-Flo" Systems are Sold Exclusively through Electrical Distributors





This Combination gives you wider latitude in planning rest rooms

ZURN ENGINEERED carrier systems relieve the wall of all the load! There is a Zurn adjustable wall closet fitting or carrier for every type plumbing fixture —lavatory, toilet, urinal, sink, and fountain.



SHOWN ABOVE is the new wall-type model of the famous Sanistand fixture—a urinal especially designed for women by American-Standard. Made of genuine vitreous china and available in gleaming white and a variety of colors. Fits standard toilet compartments.

AMERICAN-Standard
off-the-floor plumbing fixtures

INSTALLED WITH THE ZURN system*

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

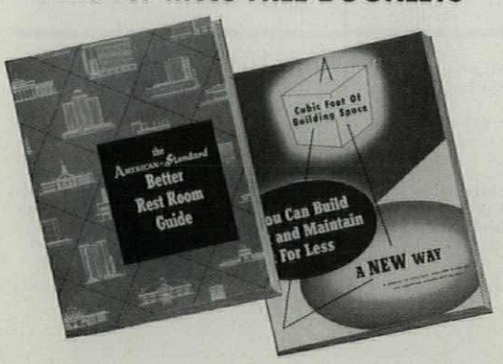
THE architectural and structural advantages of wall type plumbing fixtures for rest rooms are sound . . . and many. Planning such rooms around completely bare floors gives you greater freedom of design. Furthermore, rest room floors that are intact and free of obstructions create a pleasing effect of spaciousness. They look more modern . . . and, because they are easier to keep clean and maintain, they stay modern through the years!

Yes, American-Standard wall-type plumbing fixtures installed with and supported by Zurn engineered carrier systems insure against the untimely obsolescence of the rest rooms you plan. In addition, this time-tested combination permits you to lower ceilings, use less space for walls, and use practically any type of floor construction. Your foresight also saves your client money on construction material, time and labor! For a comprehensive discussion of modern rest room ideas, write for the booklets shown below.

American Radiator & Standard Sanitary Corp., Pittsburgh, Pa.

J. A. Zurn Mfg. Company, (Plumbing Division) Erie, Pa.

Send for these FREE BOOKLETS



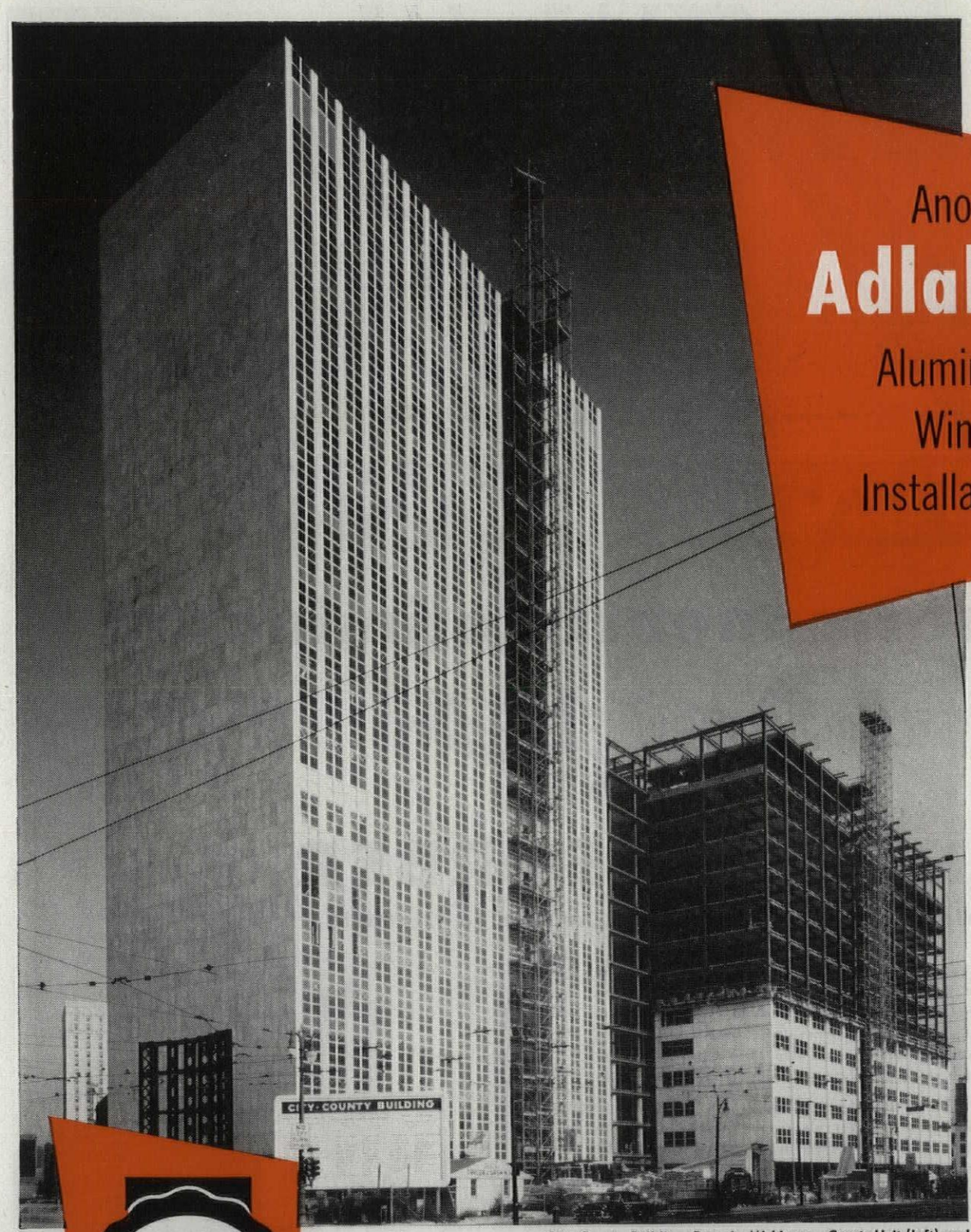
American-Standard
Dept. AF-94, Pittsburgh 30, Pa.

Please send me the 2 booklets: "BETTER REST ROOM GUIDE" and "YOU CAN BUILD IT FOR LESS A NEW WAY."

Name ..... Title .....

Company .....

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



Another Adlake Aluminum Window Installation

City County Building, Detroit, Michigan—Courts Unit (left) and Office Unit (right)
Harley, Ellington & Day, Architects—Bryant & Detwiler, General Contractors.

Adlake
PROVEN QUALITY WINDOW

This window meets or exceeds all quality industry specifications for aluminum windows.

THE Adams & Westlake COMPANY
Elkhart, Indiana

97th year
of serving the transportation and building industries

When buildings like Detroit's City County choose ADLAKE Aluminum Windows, you can be sure their builders have satisfied themselves that *there is no better window on the market!*

- **Minimum air infiltration**
- **Finger-tip control**
- **No painting or maintenance**
- **No warp, rot, rattle, stick or swell**
- **Wool woven-pile weather stripping and exclusive patented serrated guides**

The Adams & Westlake Company

Established 1857 • ELKHART, INDIANA • Chicago • New York

Also Manufacturers of ADLAKE Mercury Relays and ADLAKE Equipment for the Transportation Industry



WATER HAMMER

permanently eliminated

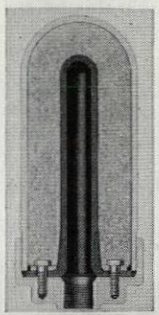
with the NEW Josam

SHOCK ABSORBER

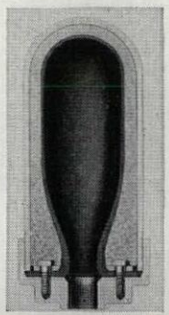
simple...trouble-proof...easy to install!

● **Now, you can provide permanent protection against the annoyance and destructive action of water hammer—with the new Josam Shock Absorber. Water hammer is unpredictable. It happens in the finest installations—it happens without warning! It is a common problem on pipe lines where there are quick closing faucets and valves, spring operated mechanisms and similar devices.**

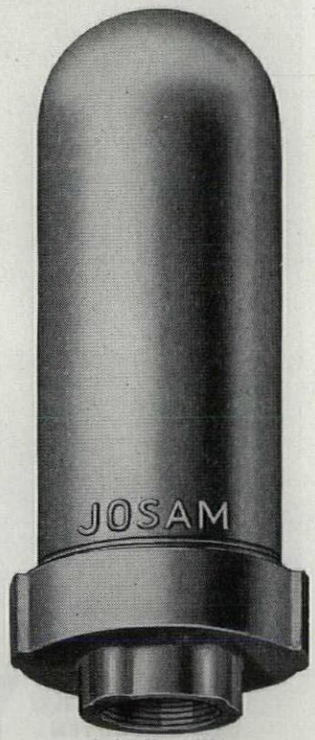
The new Josam Shock Absorber gives you "hospital quiet" in all plumbing lines. Due to the specially designed Absorbo tube and insert, the Josam Shock Absorber dissipates the thrust and impact of the water entering the tube. As the shock recedes, the tube and insert regain their original form, ready to receive the next shock impulse. To eliminate water hammer permanently . . . specify them on all piping installations. Send coupon for descriptive literature.



Cutaway view showing Absorbo tube and insert in normal position.



Showing how Absorbo tube and insert expand to absorb shock.



Series No. 1480

JOSAM MANUFACTURING COMPANY
DEPT. A. F. • MICHIGAN CITY, INDIANA

Please send free copy of new folder on Shock Absorbers

NAME .....BUSINESS .....

FIRM .....

ADDRESS .....

CITY .....ZONE ..... STATE .....

JOSAM MANUFACTURING COMPANY

GENERAL OFFICES AND MANUFACTURING DIVISION
MICHIGAN CITY, INDIANA

Representatives In All Principal Cities

West Coast Distributor
JOSAM PACIFIC CO., San Francisco, Calif.

Canadian Manufacturers
JOSAM CANADA LIMITED, Toronto, Canada

Specify this new 2-Temperature Water Heater to fill ALL needs in commercial buildings!

Its ONE TANK simultaneously provides water at 180° for sanitizing, 140° for general uses!

Commercial buildings needing sanitizing water (such as restaurants or laundry operations) must have a great volume of hot water at *two* different temperatures: *sanitizing* hot water for the operations needing it; *regular* hot water for faucets.

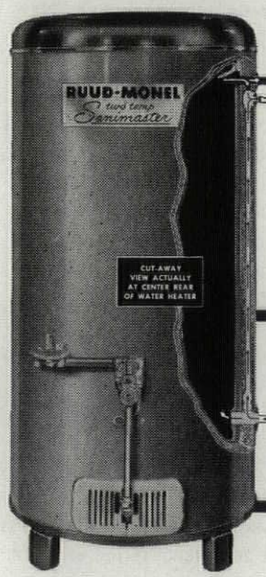
The new Ruud-Monel two°°temp Sanimaster automatic GAS water heater supplies both these needed temperatures *from the same tank at the same time!*

IT'S EXPANDABLE, TOO!

Specify what is needed now. Additional units can be installed if hot water needs increase. And Sanimaster is a compact, self-contained, space-saving unit—no external or auxiliary storage tank.

RUST-PROOF MONEL—the *high-nickel, lifetime* metal

—safely holds water at 180°! Will not rust, ever. Ruud-Monel Sanimaster, with its solid Monel tank, provides sparkling clear hot water for years and years.



180° SANITIZING HOT WATER is piped directly into automatic washing machines, dishwashers and other operations that need it. Perfect sanitation.

140° GENERAL-USE HOT WATER is always on tap for showers, lavatories, utility sinks and all other hot water uses.

FREE CONSULTANT SERVICE!
A Ruud specialist will gadly analyze specific hot water problems in any buildings you are designing. Or, if you prefer, we will send you Ruud-Monel literature.

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☐ Please send me literature.
☐ Please have a water heating specialist call on me.

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Firm_____
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City_____ State_____

TECHNICAL PUBLICATIONS

CEILINGS

Acusti-luminus Ceilings. Five booklets on office installations (12 pp.), store installations (12 pp.), airline ticket-office installations (4 pp.), bank installations (4 pp.) and drafting-room installations (4 pp.). All 8½" x 11". Luminous Ceilings Inc., 2500 W. North Ave., Chicago 47, Ill.

CEMENT

Corobond . . . An Improved Bonding Cement for Brick and Tile. The Cellcote Co., 4843 Ridge Rd., Cleveland, Ohio. 4 pp. 8½" x 11"

CONCRETE REINFORCING

Steeltex—Backbone of Concrete, Plaster, Mortar. Pittsburgh Steel Products Co., Grand Bldg., Pittsburgh 19, Pa. 24 pp. 8½" x 11"

DRAFTING EQUIPMENT

Chart-Pak Method of Prefabricated Charting of Statistical Charts, Organization Charts and Office Layouts. Chart-Pak, Inc., 100 Lincoln Ave., Stamford, Conn. 16 pp. 8½" x 11"

FLOORING

For Modern Industry—Brick Floors for Safety, Service, Economy. Metropolitan Brick, Inc., Canton 2, Ohio. 14 pp. 8½" x 11"

FOUNTAIN EQUIPMENT

SK Fountain Nozzles, Bul. 6A-FN. Schutte & Koerting Co., Dept. J-L, Cornwells Heights, Bucks County, Pa. 8 pp. 8½" x 11"

GLASS BLOCK

P. C. Glass Blocks for Industrial, Commercial and Public Buildings. Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22, Pa. 24 pp. 8½" x 11"

HEATING, VENTILATING AND AIR CONDITIONING

The Acme Flow Temp Heat Pump, Bul. No. FT-50-A. Acme Industries, Inc., Jackson, Mich. 4 pp. 8½" x 11"

Application of Gas Unit Heating, Bul. SA-541. Reznor Mfg. Co., Mercer, Pa. 20 pp. 4" x 9"

Calrod Electric Heaters and Heating Devices 1954, Catalogue GEC-1005E. General Electric Co., Schenectady 5, N.Y. 60 pp. 8½" x 11"

Dravo Heater Case Study Reports. Dravo Corp., 1203 Dravo Bldg., Pittsburgh 22, Pa. 9½" x 11¾"

Electrol Finest in Oil Fired Equipment since 1918. Electrol Burner Mfg. Co., Inc., 22 Union Ave., Rutherford, N.J. 8 pp. 9½" x 11½"

"R-Z-U" Junior, Catalogue No. JR-10-2. Fitzgibbons Boiler Co., 101 Park Ave., New York 17, N. Y. 6 pp. 8½" x 11"

Ray Forced Draft Packaged Burner, Catalogue Unit "Y." Ray Oil Burner Co., 1301 San Jose Ave., San Francisco 12, Calif. 6 pp. 8½" x 11"

"Spotaire" Air Conditioning System for Hotels, Motels and Apartments, Bul. No. C-4-23. Drayer-Hanson, Inc., 3301 Medford St., Los Angeles 63, Calif. 4 pp. 8½" x 11"

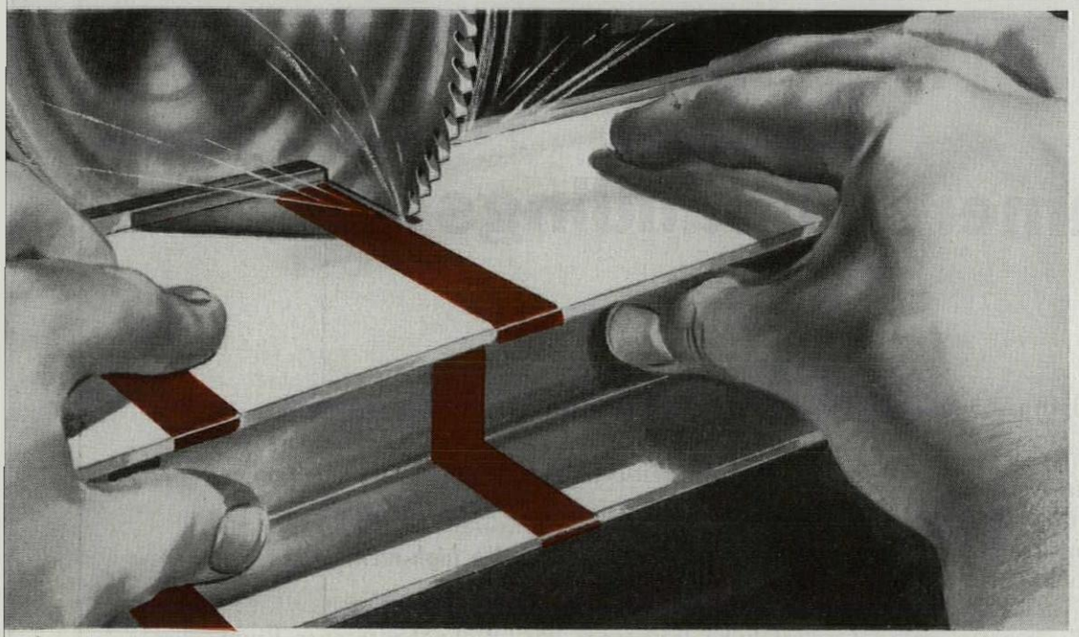
Staynew Automatic Filters, Bul. No. 500, Collinger Corp., 11 Centre Park, Rochester 3, N. Y. 12 pp. 8½" x 11"

Tentative Standard Code for Testing and Rating Steam Coils, Bul. Nos. 200 and 201. Heating & Cooling Coil Manufacturers Assn., 2159 Guardian Bldg., Detroit 26, Mich. 16 pp. each. 8½" x 11"

MAINTENANCE

Multiclean Florule (for floor finishing and maintenance). Multiclean Products, Inc., 2277 Ford Pkwy., St. Paul 1, Minn. 2 pp. (slide rule). 4" x 6"

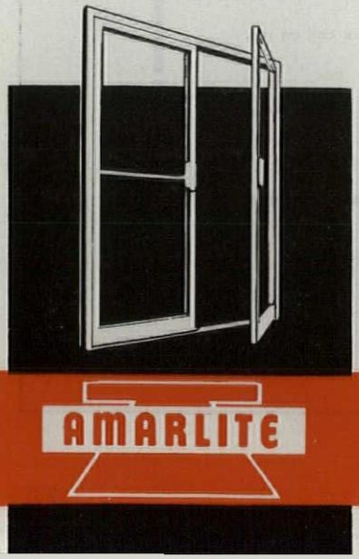
continued on p. 246



When *red tape* means perfection

Every piece of extruded aluminum that is processed for Amarlite Entrances is inspected before each operation. At any stage of manufacture, the slightest flaw is banded by red tape, the imperfection cut out, and the usable material returned to the assembly line.

Perfection in every detail of production is the inflexible rule. Standardized in no small part from the requests and recommendations of architects, the Amarlite Aluminum Entrance has to be perfect. From buffing to polishing to anodizing; from cutting to fitting to final assembly, it is precisely engineered to meet the exacting requirements of the architect and his client.



This is one of the special features behind the manufacture of Amarlite Entrances.

For full details and the 1954 Amarlite Catalog, write American Art Metals Company, 433 Bishop Street, N.W., Atlanta, Georgia.

AMARLITE

aluminum entrances

ATLANTA • BROOKFIELD, ILL.
DALLAS • ENGLEWOOD, N. J.

3 OUTSTANDING EXAMPLES OF ARCHITECTURAL CONCRETE

Contractor praises workability of concrete made with Duraplastic*

Contractor for John Moses Veterans Hospital in North Dakota, E. V. McGough, reports: "Duraplastic gave us a very good finish... required less water and vibration."

Duraplastic air-entraining portland cement helps make a more plastic mix that aids proper placement in forms.

John Moses Veterans Administration Hospital, Minot, North Dakota; Contractor, McGough Bros., St. Paul, Minn.

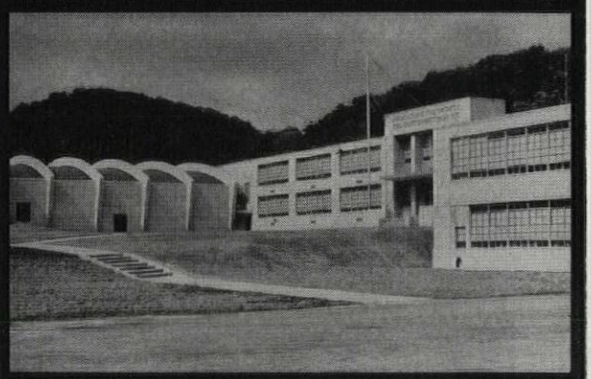


Duraplastic provides trim appearance for Pennsylvania school

Modern design is the keynote at Theodore Roosevelt Junior High School in Williamsport, Pa. Its trim lines feature concrete made with Duraplastic cement.

Minimized water gain and segregation with Duraplastic help produce an attractive surface—free of honeycomb and streaks. Its air-entraining feature fortifies concrete against freezing-thawing weather.

Contractor, Lundy Construction Company; Architect, D. H. Grootenboer—Williamsport, Pa.; Engineers, A. W. Lookup Co., Philadelphia.



Owner-builder reports lower costs with Duraplastic

W. C. Smith, whose firm is contractor and owner of the Mount Royal Manor Apartments in Duluth, says: "Concrete made with Duraplastic cement has better workability that helps lower costs."

Duraplastic makes concrete that is durable in any climate. When you design for or build with concrete, keep in mind the advantages of Duraplastic.

Mount Royal Manor Apartments, Duluth, Minn.; Contractor-Owner, W. C. Smith, Inc.; Architect, A. Reinhold Melander—Duluth.



DURAPLASTIC gives you all these advantages at no extra cost

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For more information and a descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, New York.

*"*Duraplastic*" *is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.*

ATLAS®

DURAPLASTIC

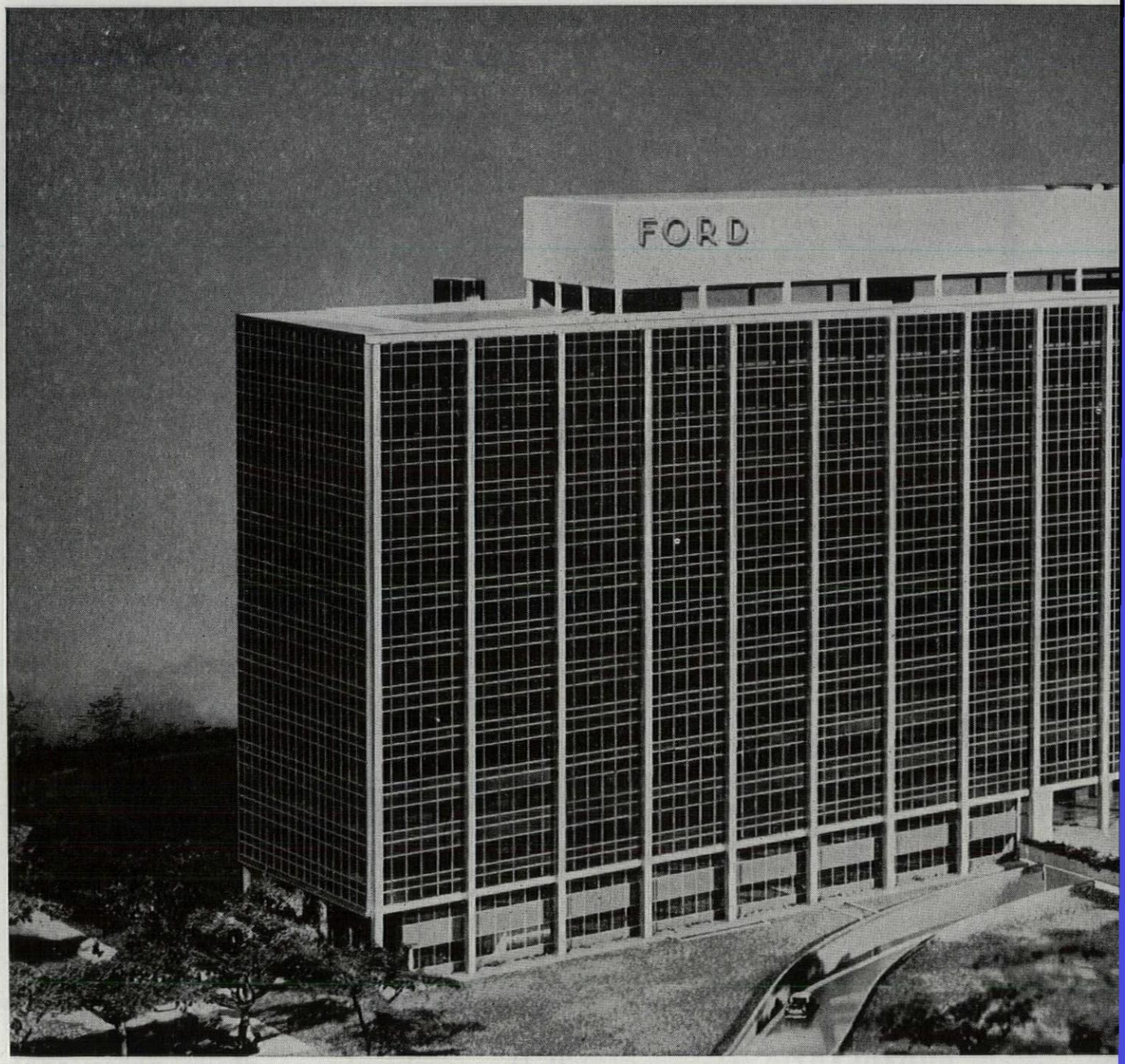
AIR-ENTRAINING PORTLAND CEMENT

AF-D-161

A UNIVERSAL ATLAS PRODUCT

Makes Better Concrete at No Extra Cost

UNITED STATES STEEL HOUR—Televised alternate weeks—See your newspaper for time and station.



Ford Motor Company, Central Staff Office Building, Dearborn, Michigan.

Architects:
Skidmore, Owings & Merrill, New York, Chicago, San Francisco

General Contractors:
Bryant & Detwiler Co., Detroit

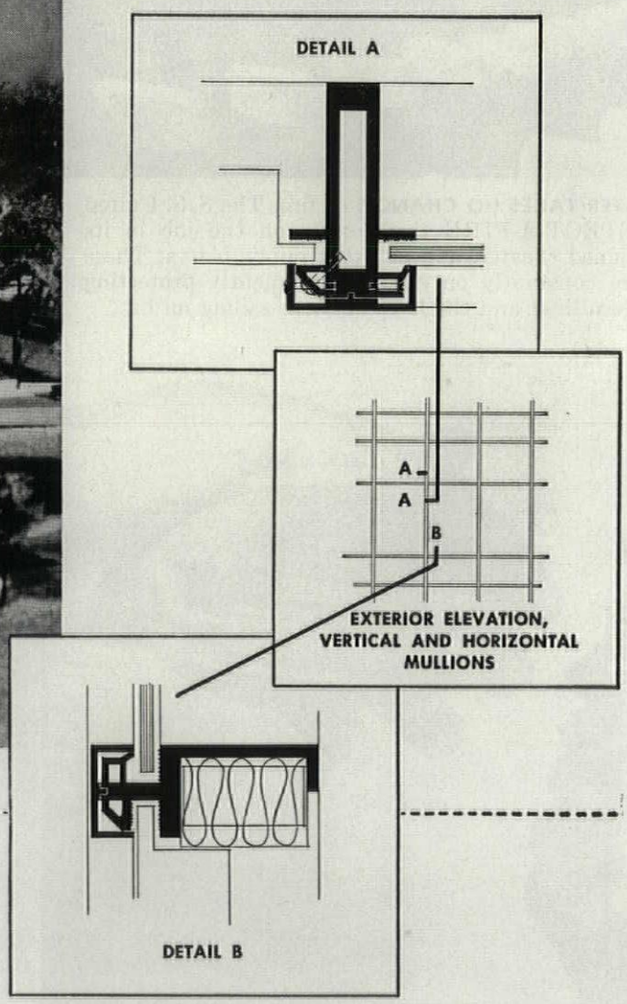
Architectural Aluminum Fabricators:
Moynahan Bronze Co., Inc., Detroit

Aluminum Applications In This Building:

Copings • Fascia • Stair Rails • Column Covers
Vertical and Horizontal Mullions • Louvers • Interior Trim

REYNOLDS





REYNOLDS ALUMINUM SERVICE TO ARCHITECTS

Reynolds Architect Service Representatives offer specialized assistance on aluminum design problems, on applications of standard aluminum mill products, and on the use of commercially fabricated aluminum building products. They can help to coordinate varied aluminum requirements for procurement efficiency and economy. Please address inquiries to...Architect Service, **Reynolds Metals Company,** Louisville 1, Kentucky.

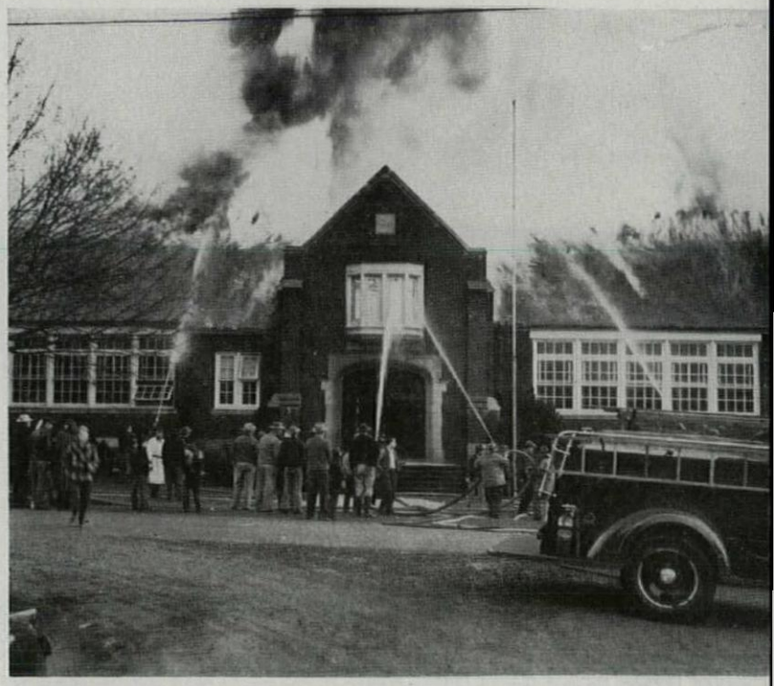
SEE "MISTER PEEPERS," starring Wally Cox, Sundays, NBC-TV Network.

ALUMINUM

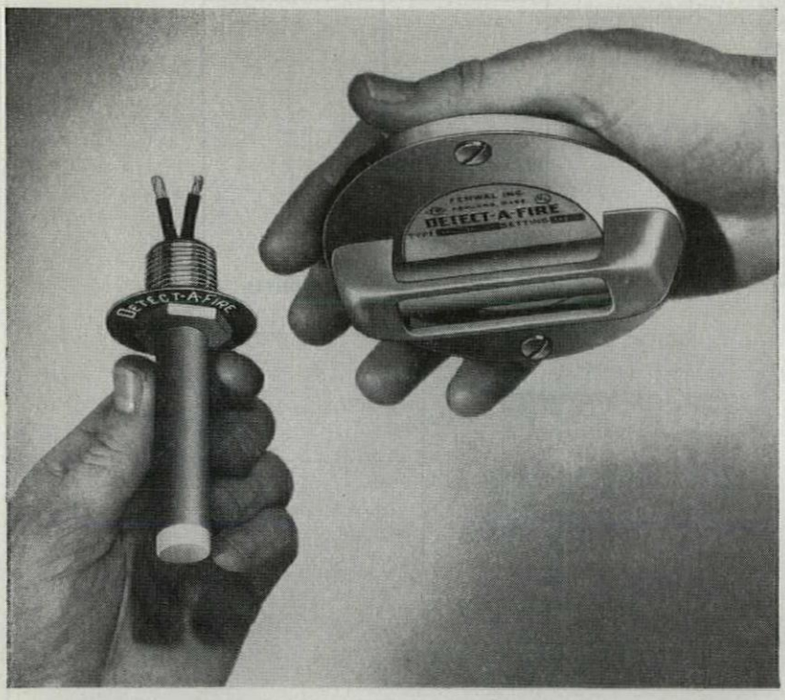
The MOST DEPENDABLE, PERMANENT detector for fire alarm or release systems is DETECT-A-FIRE®



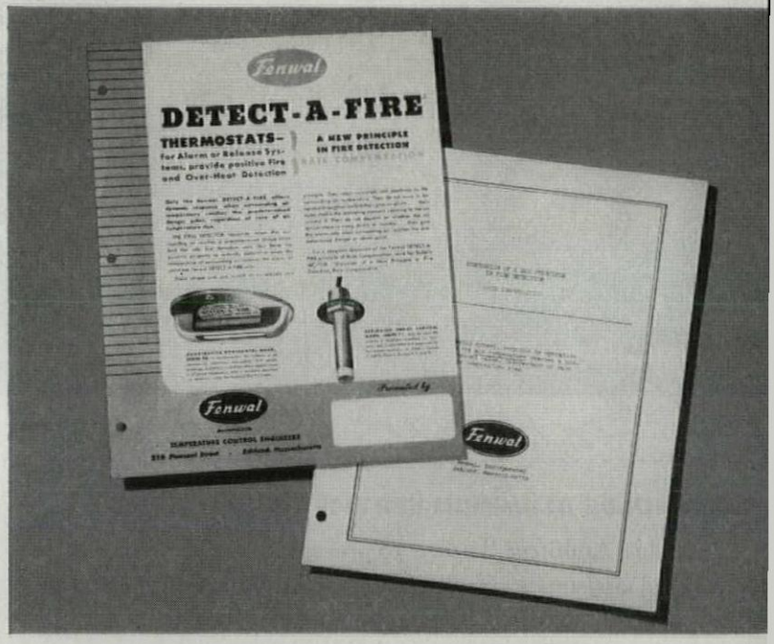
1. SHIP'S THEATER TAKES NO CHANCES on fire. The S. S. United States has DETECT-A-FIRE thermostats on the job in its beautifully designed theater, and all other public places. These thermostats are constantly on guard, permanently protecting this most modern liner and the lives of those sailing on her.



2. WHY RISK CHILDREN'S LIVES? The menace of school fires, like the one shown in the illustration above, need no longer exist. The protection of lives and valuable property should be of prime consideration in planning construction of all public buildings.



3. AUTOMATIC FIRE ALARM SYSTEMS are a permanent installation and must always be ready to function immediately and repeatedly as fires occur. Fenwal DETECT-A-FIRE units are worth the slight extra cost since they pay for themselves in two ways — Greater Safety — Permanent Dependability.



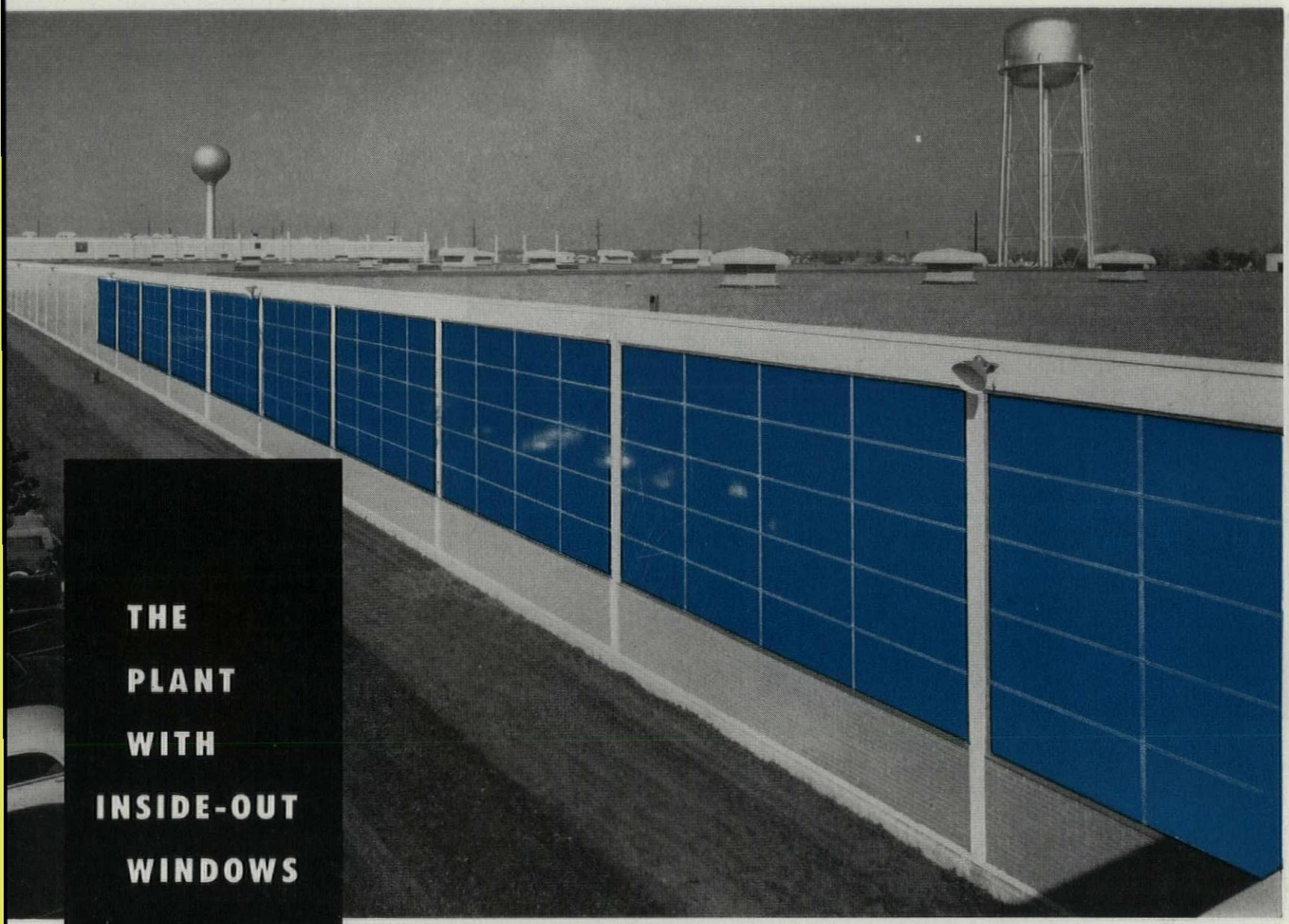
4. FREE BULLETINS (above) contain complete details on Fenwal DETECT-A-FIRE thermostats, the only unit bringing you the benefits of Rate-Compensation Actuation, a unique principle of fire detection. Fenwal engineers will gladly work with your system installer so that you will enjoy the advantages of *full* fire protection and *long term* economy. Write Fenwal Incorporated, 259 Pleasant Street, Ashland, Mass.

Fenwal

DETECT-A-FIRE®

Thermostats

DYNAMIC, RATE-COMPENSATION ACTUATED FIRE DETECTORS



THE PLANT WITH INSIDE-OUT WINDOWS

Luxlite Coolite (glare reduced) installed in sidewall sash of Sawyer Biscuit Company, Melrose Park, Illinois. Skidmore, Owings, Merrill, Architects, George A. Fuller Co., Gen. Cont., Hamilton Glass Co., Glazing Cont.

Plant Exterior of Unusual Beauty and Utility Achieved By Novel Installation of Coolite Glass

By installing the pattern side on the *inside*, the windows reveal an exterior color of deep blue porcelain... an effect so attractive that the architects involved are continuing to use the technique in other construction. From the inside, Coolite Glass combines all of its recognized light distributing qualities . . . floods work areas with glare free softened natural illumination . . . plus affording Coolite's acknowledged heat absorbing qualities.

Coolite filters out unwanted factors in "raw" sunlight, helps keep plant interiors cooler, more comfortable. Workers see better, feel better, work better in natural daylighting that has been Coolite-conditioned.

CONSIDER COOLITE FOR YOUR CONSTRUCTION

In your plans for new construction or modernization, specify Coolite Heat Absorbing Glass... the glass that helps fight employee eye fatigue, reduces rejects, boosts morale. Get the facts about this amazing glass that pays for itself in increased efficiency and economy. See your Mississippi Glass distributor today.



Write today for free catalog.
Samples on request.

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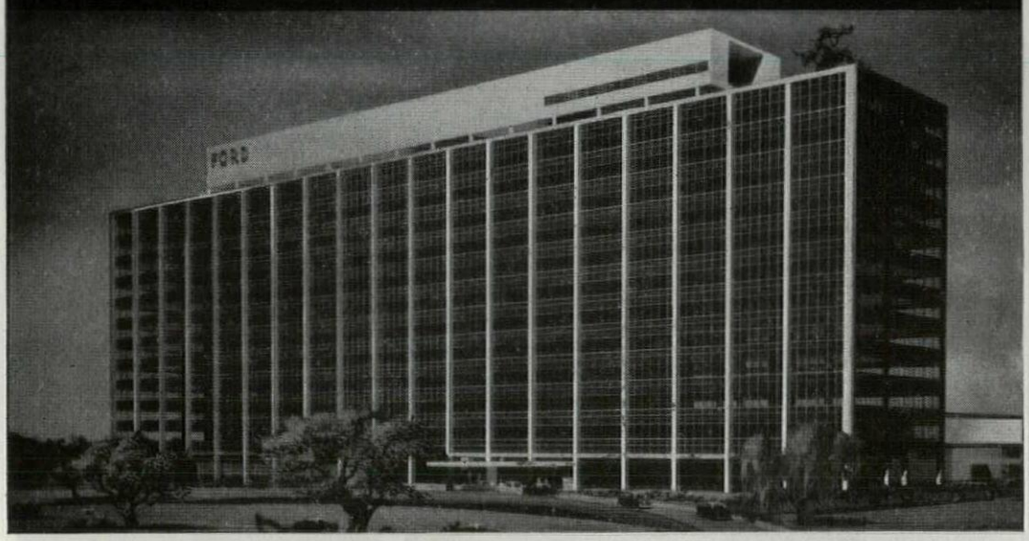
see our catalog in S or write for copy

WORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

Q-FLOOR helps make Ford's new Dearborn office building as modern as its cars



Ford Motor Company..... ...Dearborn, Michigan
Skidmore, Owings and Merrill.....Architects
Bryant & Detwiler Company....General Contractors
Weiskopf & Pickworth.....Structural Engineers

Shown above is the Ford Motor Company's magnificent new administration building soon to occupy a 90-acre site in Dearborn, Michigan. When it is completed, it will provide nearly 950,000 square feet of floor space, approximately 500,000 square feet of which will be Q-Floor and on which 3,000 employees will work in the comfort of the latest in modern lighting and air conditioning.

Architects Skidmore, Owings and Merrill carefully designed the building to prevent obsolescence due to changing conditions in the years to come. Interior partitions will be movable to provide maximum flexibility in floor arrangements, and Robertson Q-Floor construction will be used to permit complete freedom of power and telephone outlet changes and additions at minimum cost. Only with this weight-saving, cellular steel structural floor can every exposed 6″ square area be the potential location of a convenience outlet.

Robertson Q-Floor construction also saves time and money. Its weight-saving factor means lower cost of foundation and structural steel. It immediately becomes a safe storage and working platform for the benefit of all trades. And because no combustible forms and falsework are required for the concrete fill, there has never been a construction fire on a Q-Floor job.

With all these remarkable features, it is easy to see why Q-Floor will help make and keep this fine new building as modern as the Ford of tomorrow.

Use the coupon on the opposite page to write for literature.

Robertson
Q-Floor

a product of **H. H. Robertson Company**

2403 Farmers Bank Building • Pittsburgh 22, Pennsylvania
In England—Robertson Thain Limited, Ellesmere Port, Cheshire
In Canada—Robertson-Irwin Limited, Hamilton, Ontario
World-Wide Building Service

TECHNICAL PUBLICATIONS

continued from p. 240

Preservation and Restoration of Masonry Structures. Case studies. The Penetryn System, Inc., 2294 Scranton Rd., Cleveland 13, Ohio. 24 pp. 1″ x 8½″

Quick Reference Guide (to products and methods used in maintenance and construction). The Tremco Mfg. Co., 8701 Kinsman Rd., Cleveland 4, Ohio. 24 pp. 8½″ x 11″

MATERIALS HANDLING

Link-Belt Foundry Equipment, Book 2423. Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill. 40 pp. 8½″ x 11″

Materials Handling Cost Cutter. Automatic Transportation Co., 101 W. 87th St., Chicago 20, Ill. 90 pp. 8½″ x 11″

PIPES AND COVERINGS

Adhez-A-Kote Lagging Adhesive and Coating, Bul. 5307. General Paint Corp., 2627 Army St., San Francisco 19, Calif. 4 pp. 8½″ x 11″

Yardley Clear Stream Pressure Rated Plastic Pipe, Bul. 36. Yardley Plastics Co., Columbus 15, Ohio. 4 pp. 8½″ x 11″

Piping for Permanence. A. M. Byers Co., 1501 Clark Bldg., Pittsburgh, Pa. 32 pp. 8½″ x 11″

PLUMBING

Leeden Plug Valve Actuators, Bul. 3020. Ledeen Mfg. Co., 1600 S. San Pedro St., Los Angeles 15, Calif. 8 pp. 8½″ x 11″

Supremo Perfect Seal Cleanouts and Access Covers. Manual No. 54-4. J. A. Zurn Mfg. Co., Plumbing Division, Erie, Pa. 32 pp. 8½″ x 11″

PORCELAIN ENAMELED ALUMINUM

A Performance Specification for Architectural Porcelain Enamel of Aluminum Alloys. Ingram-Richardson Mfg. Co., Beaver Falls, Pa. 4 pp. 8½″ x 11″

PAINTS AND PROTECTIVE COATINGS

Celite Flatting Agents and Pigment Extenders. Johns-Manville, 22 E. 40th St., New York 16, N.Y. 16 pp. 8½″ x 11″

Check List of Metal Protective and Paint Bonding Chemicals and Processes. American Chemical Paint Co., Ambler, Pa. 8 pp. 4″ x 8¾″

Hi-Heat Resisting Finishes, Bul. 5311. General Paint Corp., 2627 Army St., San Francisco 19, Calif. 4 pp. 8½″ x 11″

Properties and Application of Complete Ironite Line of Primers for Metal Surfaces. Technical Bul. No. 5401. General Paint Corp., P.O. Box 3474, Rincon Annex, San Francisco 19, Calif. 4 pp. 8½″ x 11″

Protective Coatings by Ceilcote, Catalogue No. C-150. The Ceilcote Co., 4843 Ridge Rd., Cleveland, Ohio. 8 pp. 8½″ x 11″

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Stylon Tiles, No. 151. Price list and conditions and terms of sale. Stylon Corp., Box 341, Milford, Mass. 8 pp. 8½" x 11"

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WALL PANELS

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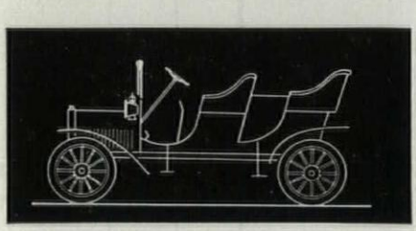
Floors, like Fords, have seen change over the years

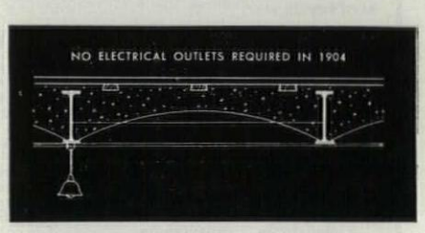


For over a half century the automobile has been a chief topic of conversation, and the improvements made over the years have been critically analyzed by every prospective purchaser.

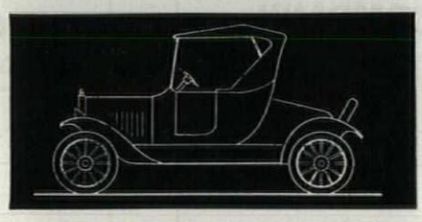
As every architect and engineer well knows, the floor construction of office buildings has undergone a similar period of development, moving from cumbersome tile arch construction to the modern electrically available cellular steel floor. The basic chronology of floors and Fords up through Q-Floor and the Y-Block engine is shown below.



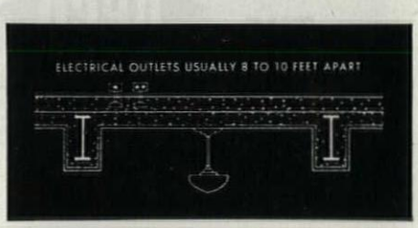
1904 The 4-cylinder, 20-horsepower forerunner of the fabulous Model T was a sensation this year. It featured two speeds forward, gas headlamps, and a handy crank for starting.



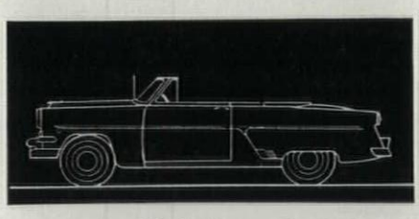
1904 This year, electricity was just finding its way into commercial buildings and was used only for lighting. Floor construction, at best, was a dead monolithic slab.



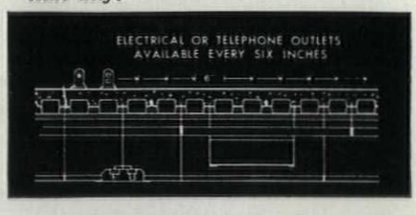
1924 Ford was now producing as many as 2,000,000 cars a year, all painted black. Wide tolerances in bearings, gears, and other interchangeable parts made every Model T owner his own repairman.



1924 The increasing use of electricity found many office buildings sadly lacking in convenience outlets for the new electrical equipment. Early attempts at "in-the-floor wiring" were adequate for that day.



1954 Today's car is designed for comfort and convenience. There is little left to do but steer. Mechanically, it is made to cope with every requirement of its owner.



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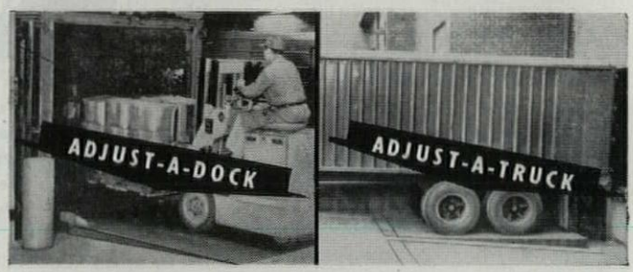

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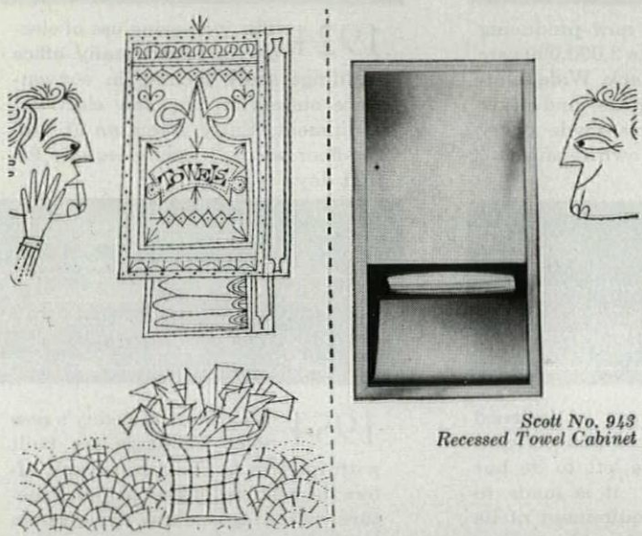

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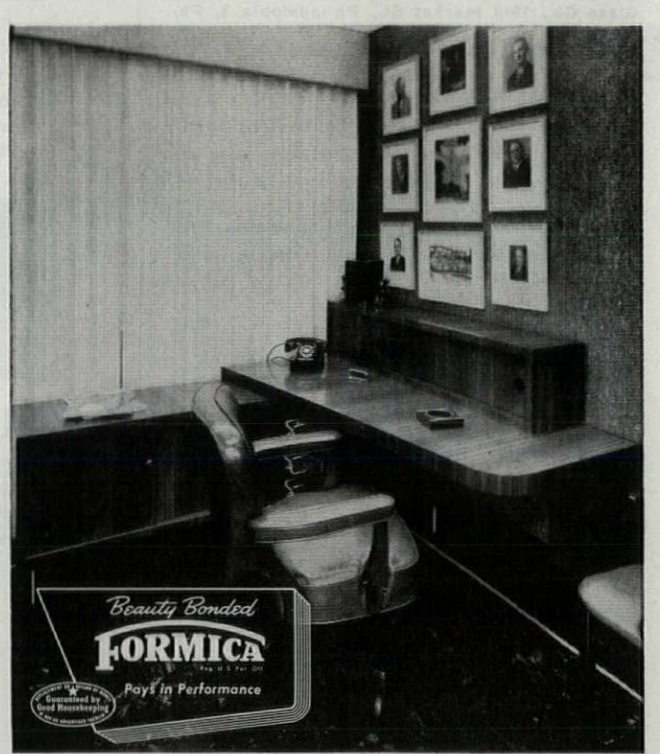

Cincinnati, Ohio: This custom built-in desk for a doctor uses a walnut grain Formica Realwood (R). It combines rich dignity with the practicality of long wear and easy maintenance.

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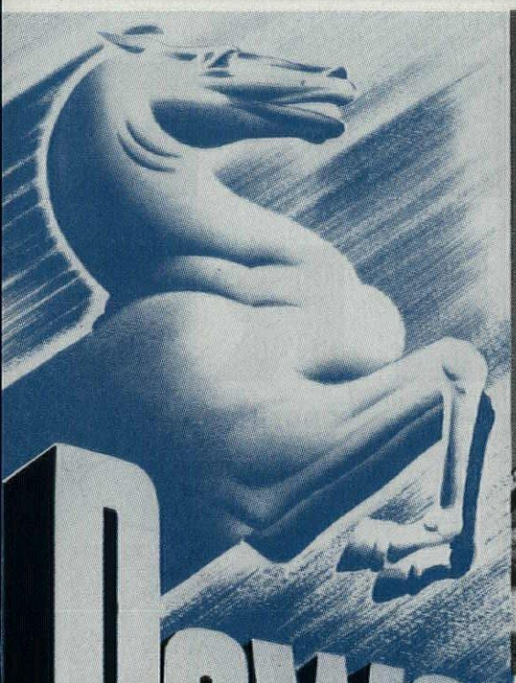

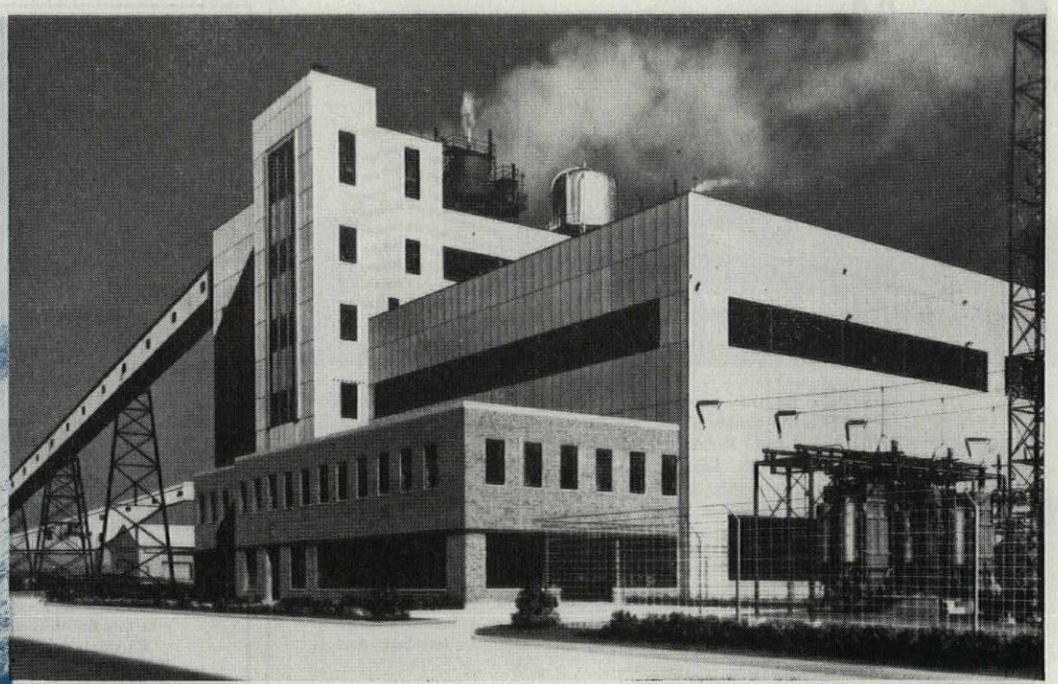

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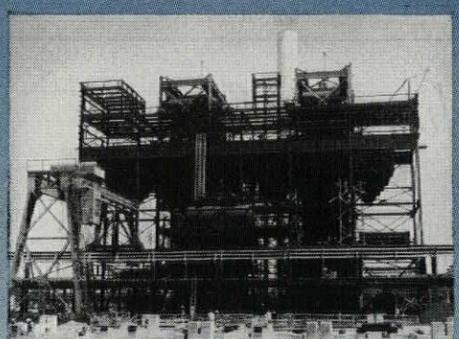

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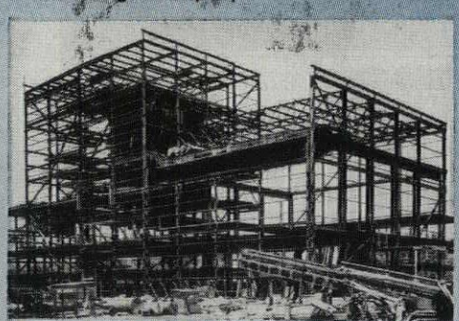

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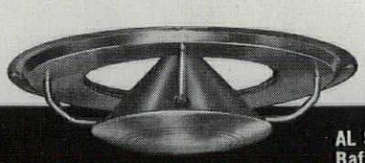

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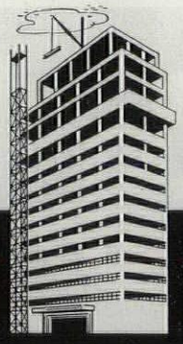

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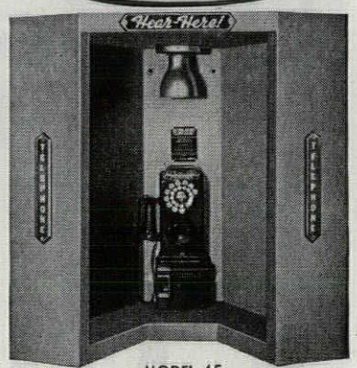

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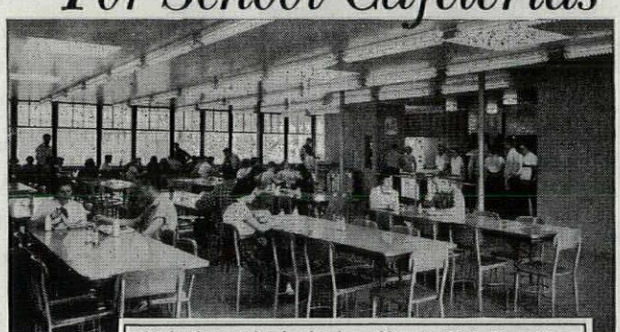
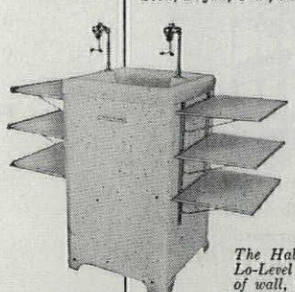


Modernly appointed cafeteria at Norman High School, Norman, Okla. ARCHITECTS AND ENGINEERS: *Caudill-Rowlett-Scott, Bryan, Tex., and Perkins & Will, Chicago.*
(Hedrich-Blessing Photo)



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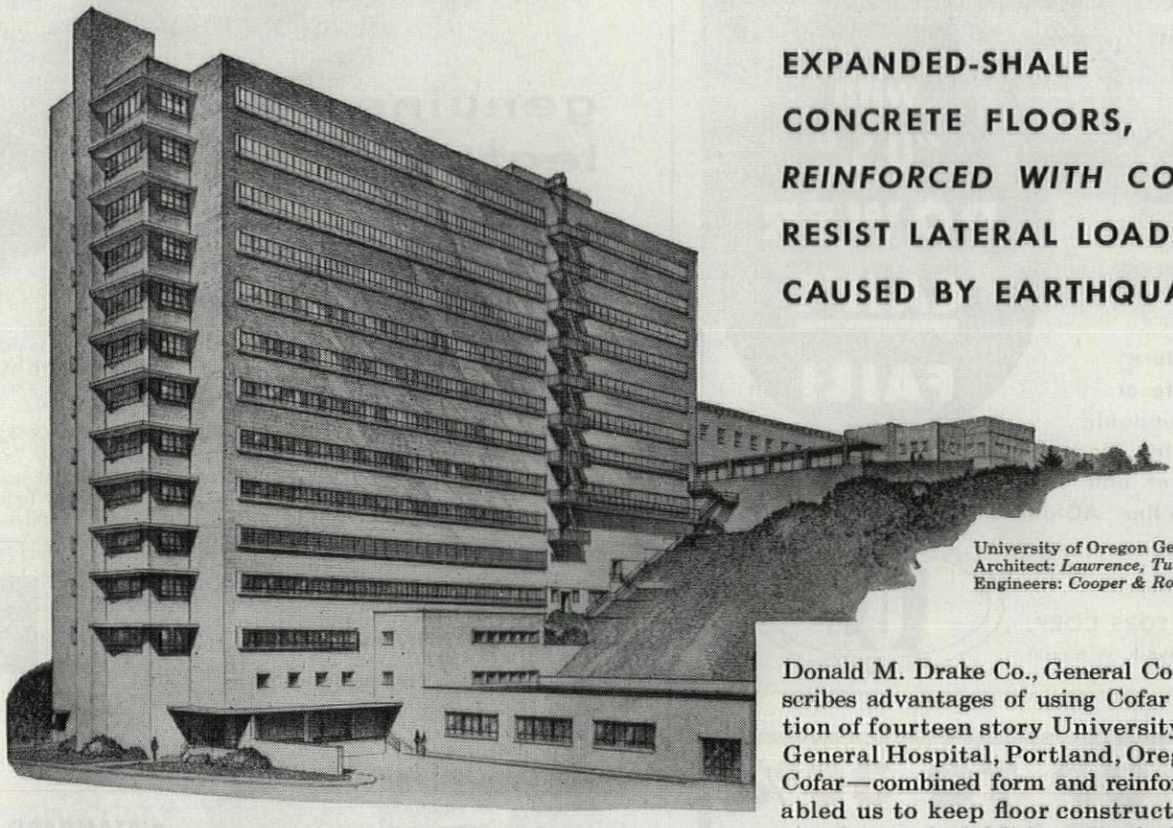

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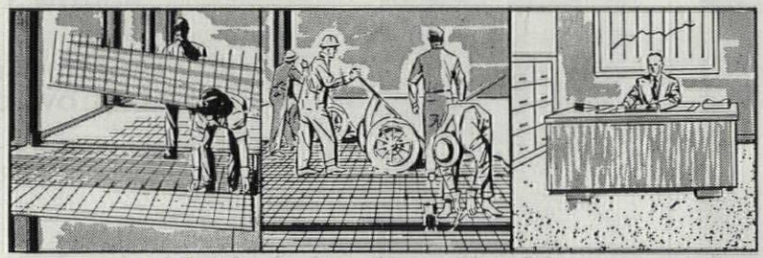

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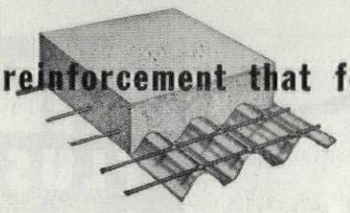

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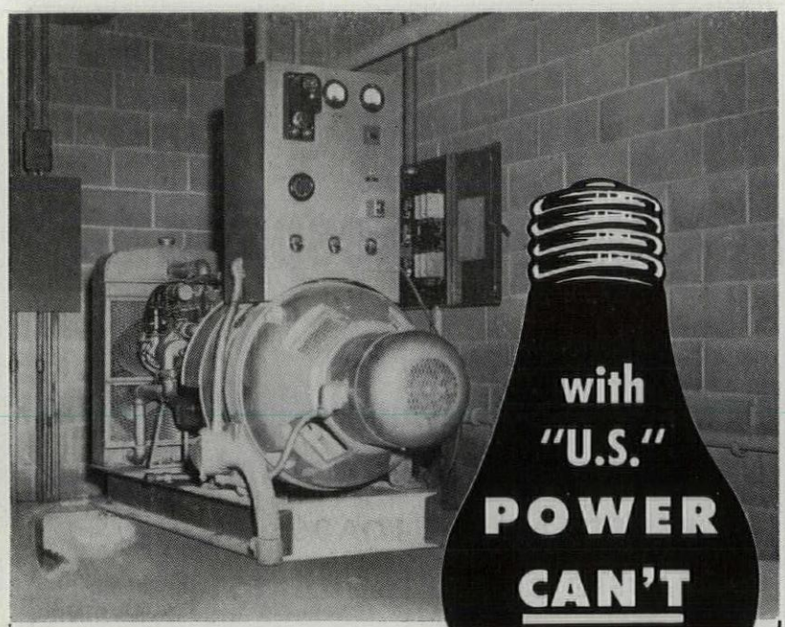

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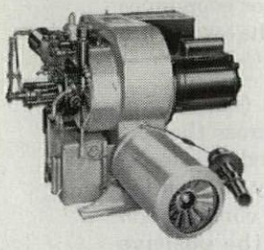

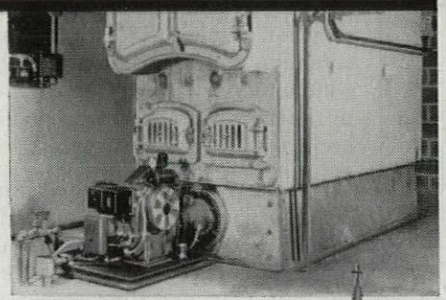

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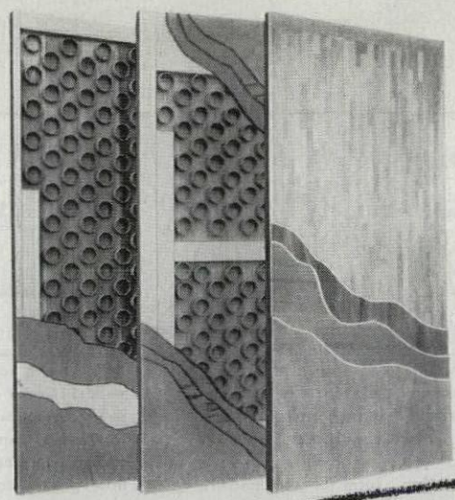

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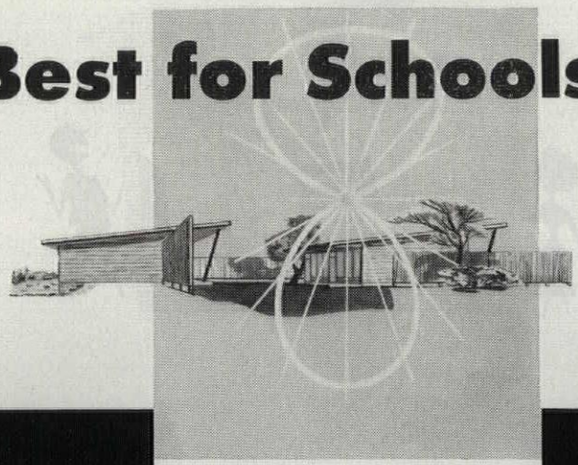

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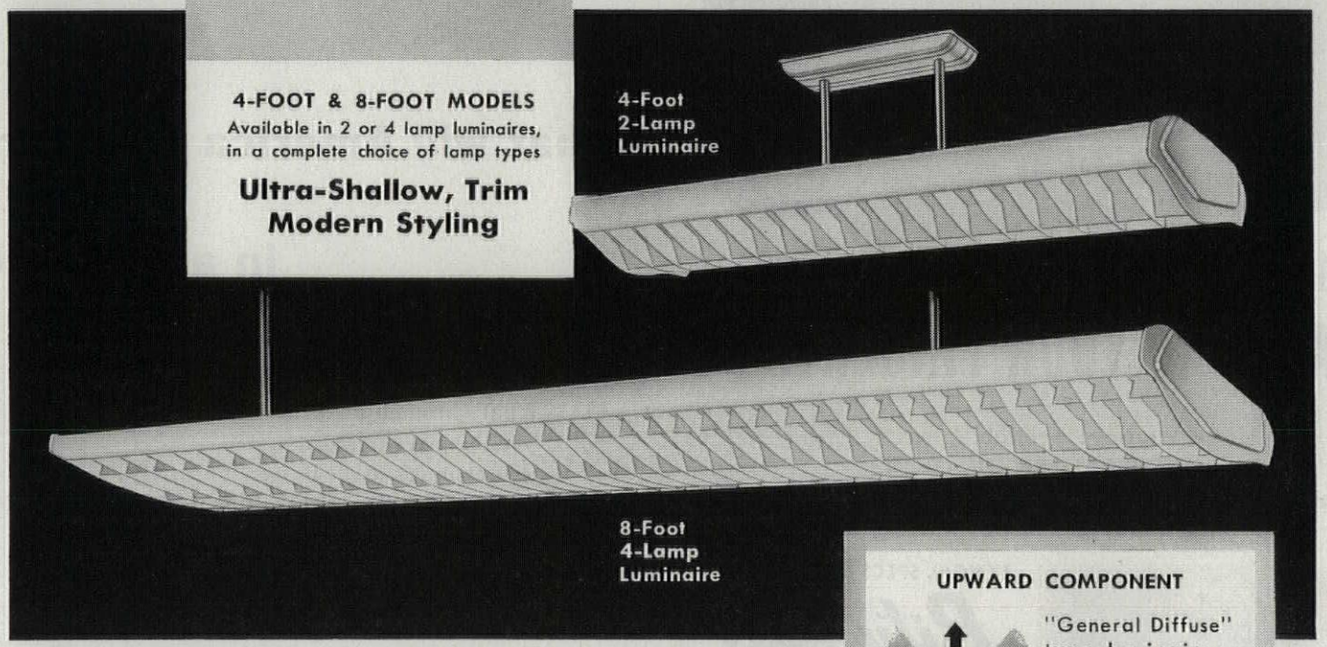

modern lighting planned for today's schools— superior illumination with low cost maintenance

MITCHELL engineering perfects a new standard for school lighting. The "LODESTAR" Luminaire offers abundant light distribution with an absence of glare to approximate daylight conditions. This important lighting advance is attained by the substantial upward component with its "general diffuse" lighting effect, the semi-translucent side panels with pleasing low brightness contrast, and the superior louver design (35°/25°* cutoff) which delivers properly shielded illumination to working areas. Smooth styling, very low maintenance factor and surprisingly low cost make the MITCHELL "LODESTAR" Luminaires the wisest choice for School Lighting.

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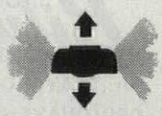

"General Diffuse" type luminaires; approximately half the light goes up to be reflected from ceiling or upper walls for comfortable, glare-free, uniform lighting.

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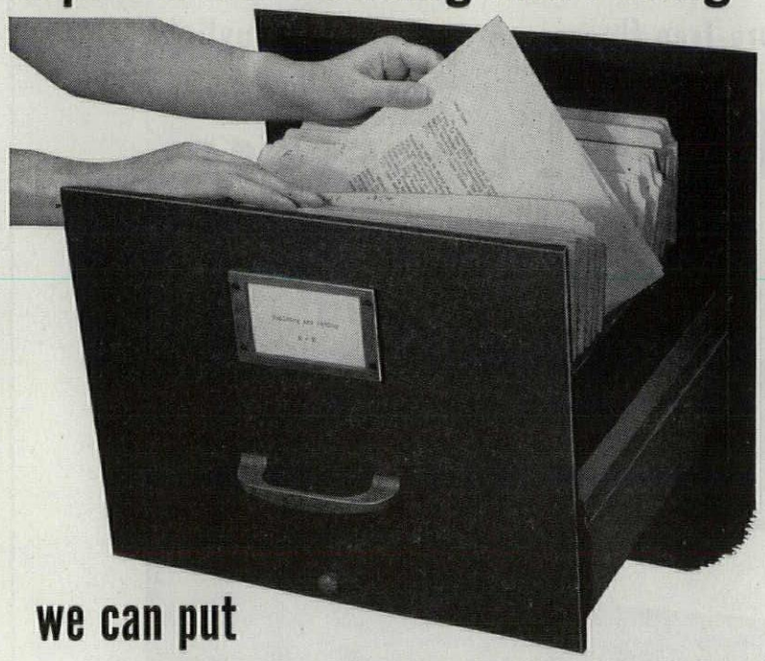

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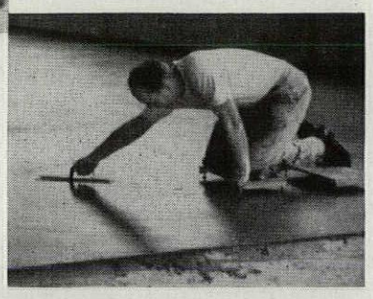

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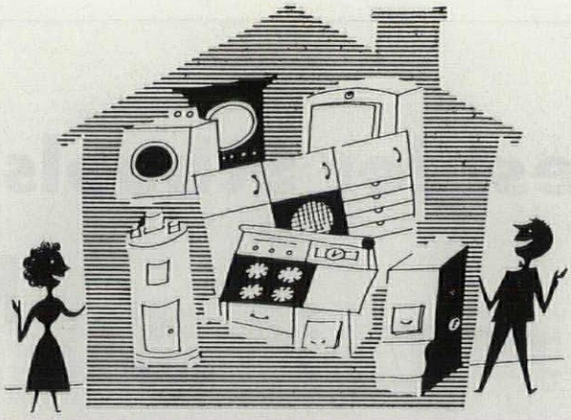

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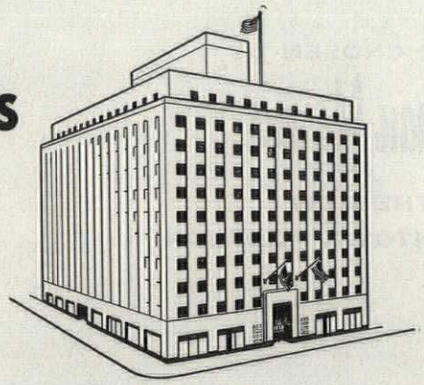
Why a leading firm of architects puts Monel louvers on top in Dun & Bradstreet Building



The owners of a new building ought to be able to forget about louvers for *years*.

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The architectural firm of Reinhard, Hofmeister & Walquist wanted Monel for the louvers of the Dun & Bradstreet Building pictured here. So they got a quotation and, finding the price right, specified its use.

Monel, of course, is well suited for many jobs in addition to louvers. You can specify it for flat, batten and standing seam roofs. And for flashings, skylight frames, penthouse siding, gutters, cornices, down-spouts and ventilators.

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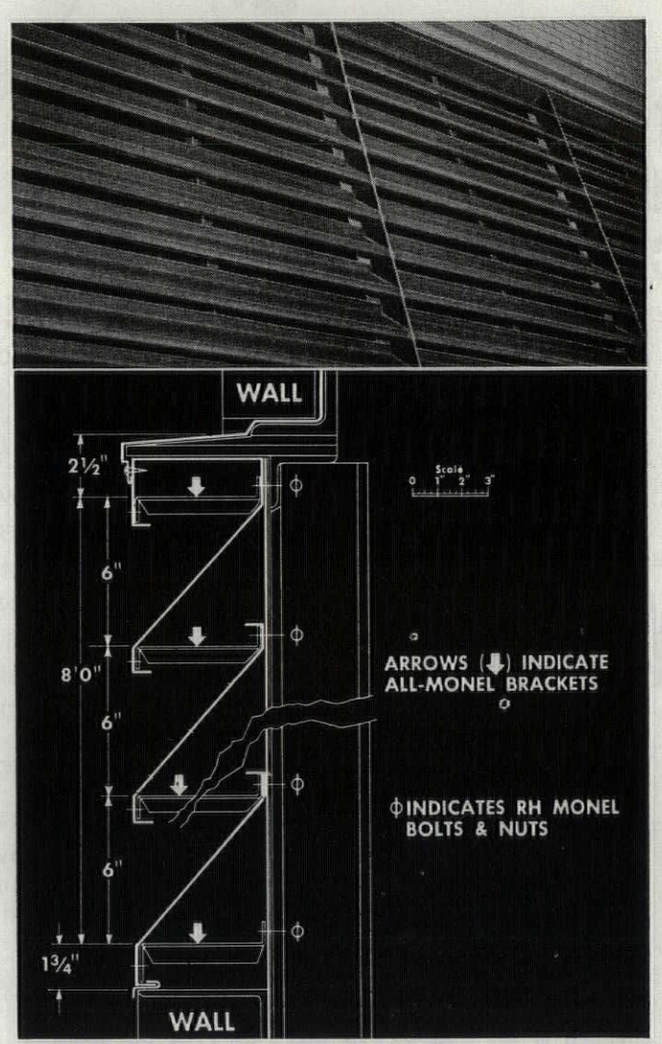
Completed in 1951, the Dun & Bradstreet Building in New York City is regarded as one of the most modern and efficient office structures in the country. It won honorable mention in Office Management's Office-of-the-Year competition. Louvers, concealed behind ornamental grilles on both sides of entrance, are Monel. The air conditioning enclosure on the roof also has Monel louvers, through which fans exhaust the air from the building. Architects: Reinhard, Hofmeister & Walquist, New York. Sheet metal work: Jacob Ringle & Son, Inc., Jersey City, N. J.



Construction of the all-Monel louvers using .031" Monel Roofing Sheet for the top blade, .025" for the other blades, and .062" for bracket braces.

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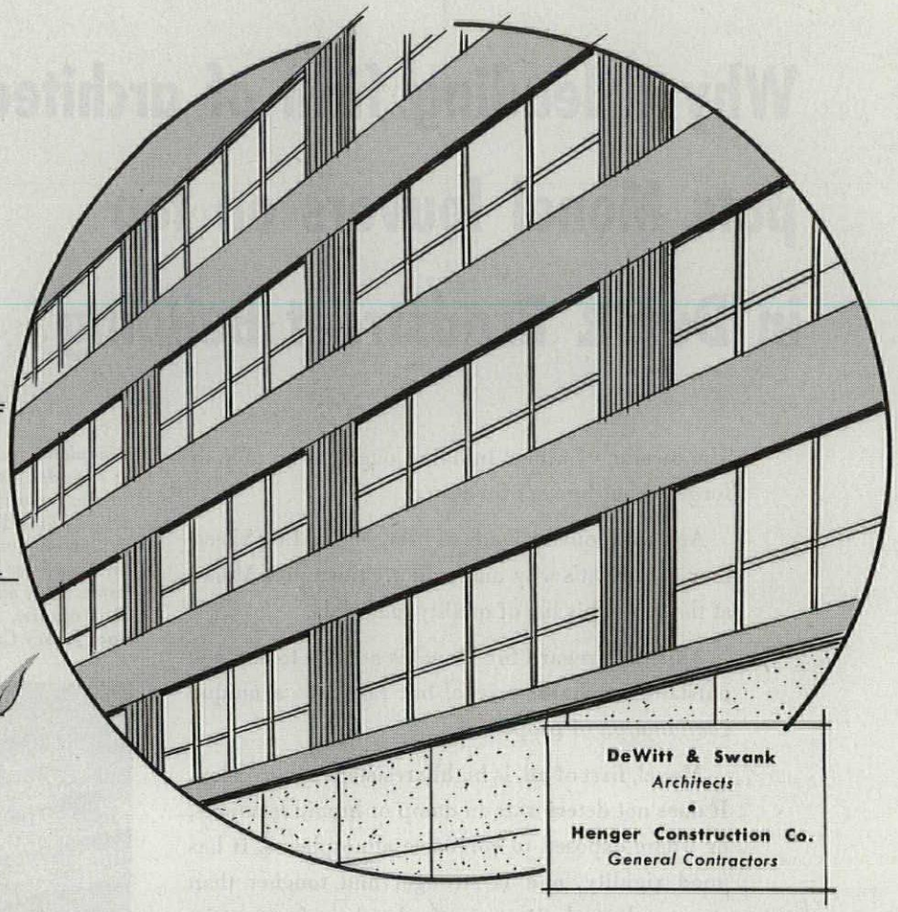

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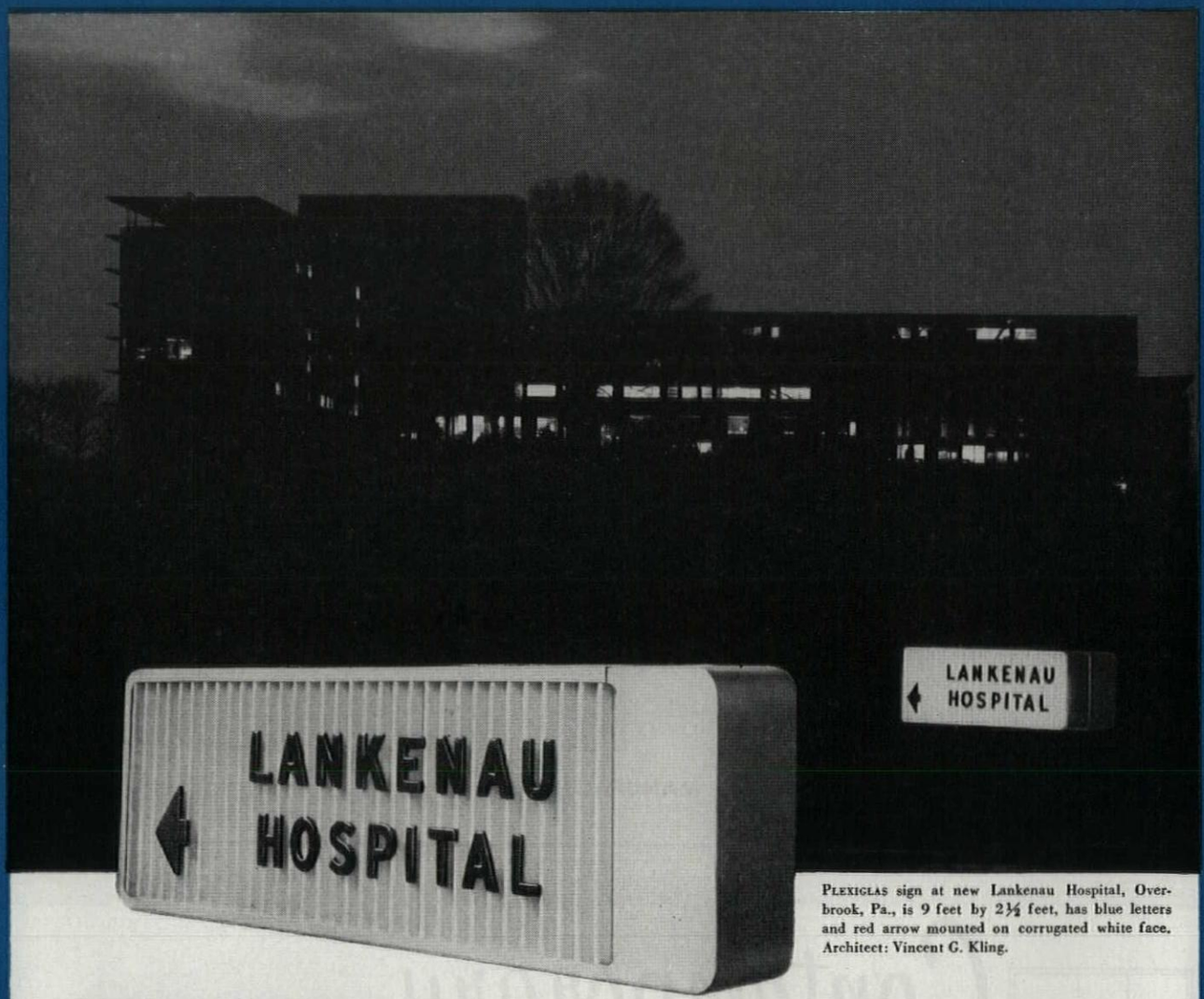

PLEXIGLAS sign at new Lankenau Hospital, Overbrook, Pa., is 9 feet by 2½ feet, has blue letters and red arrow mounted on corrugated white face. Architect: Vincent G. Kling.

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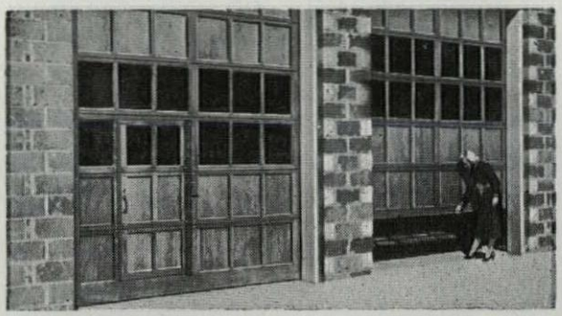

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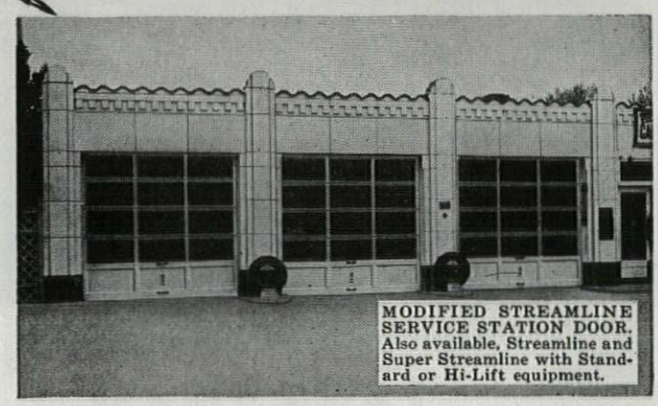

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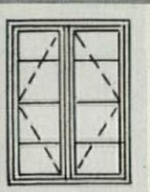

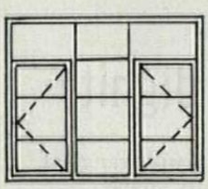

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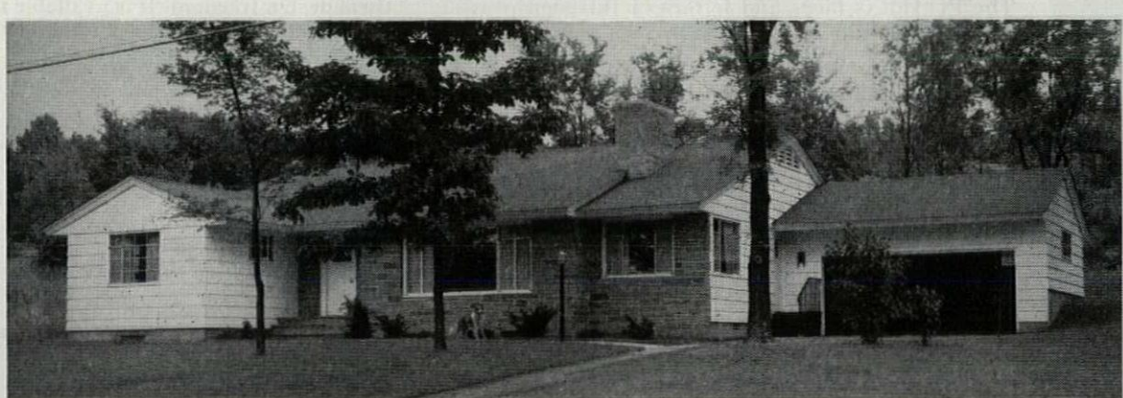

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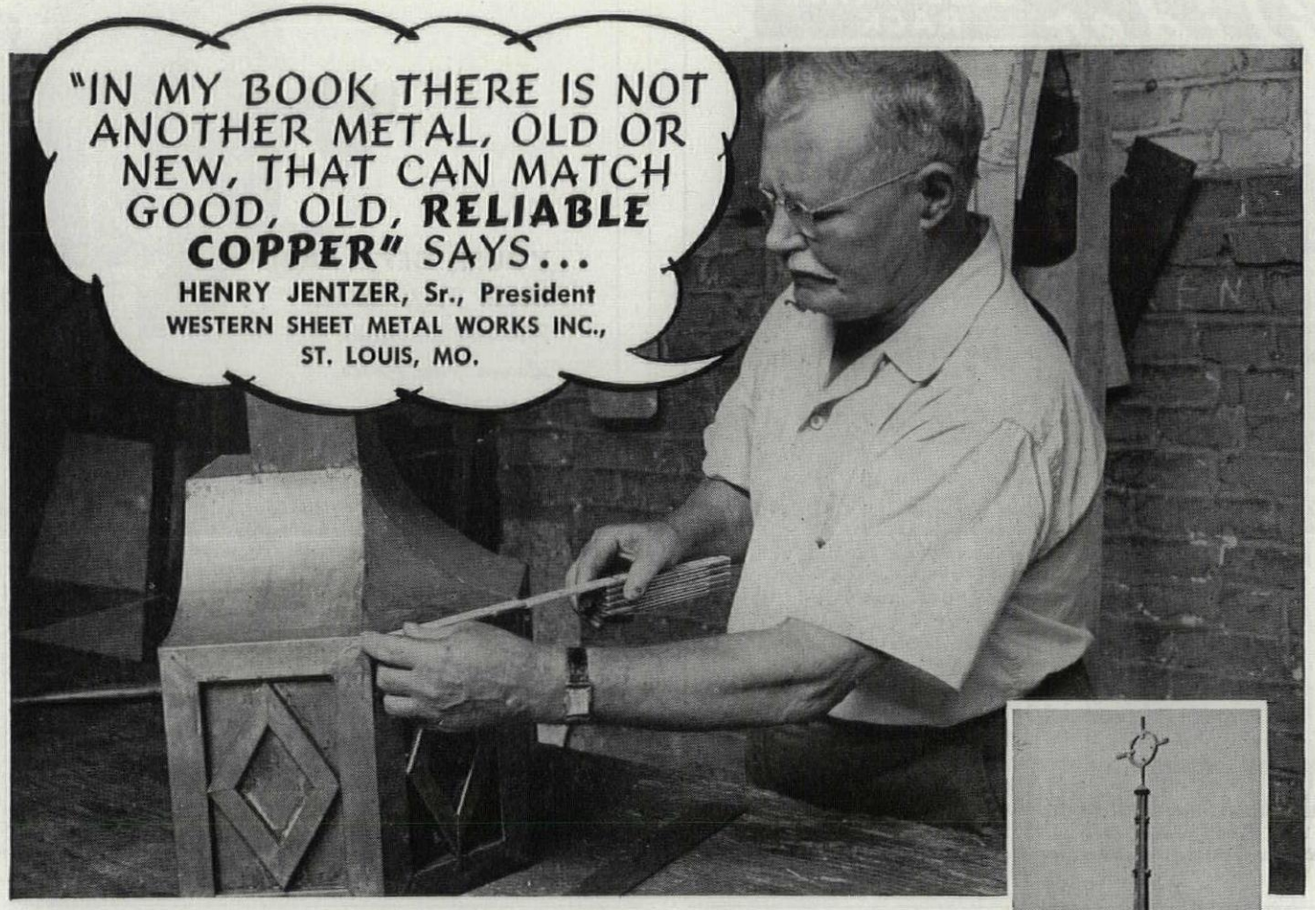

"Ive been in the sheet metal business for 60 years . . . was an apprentice at 12 years of age. During that time I've worked with every kind of metal and alloy. Some have one or two good features, others have other good points, but there's not one of them that has *all* of the outstanding features of copper.

"Maybe I'm old-fashioned but I like to work with materials that have proved themselves. That doesn't say that I don't test new materials when they come along . . . I do. But I don't use a new material just because it's new. It has to prove itself. I guess you might say 'I'm from Missouri.' Well, I am.

"And when it comes to working with copper any good sheet metal man will tell you it's his favorite metal. You can form copper into just about any shape or design the architects can think of, and it solders perfectly without a lot of fussing around. Then, too, when you install a copper job you don't have to worry about its rusting. I guess the best proof of what I think of copper is the all-copper roof I put on my new home."

Mr. Jentzer's enthusiasm for copper in building is typical of what sheet metal men think of this "ageless" metal . . . there is not another single metal that has all of the desirable construction characteristics of copper.

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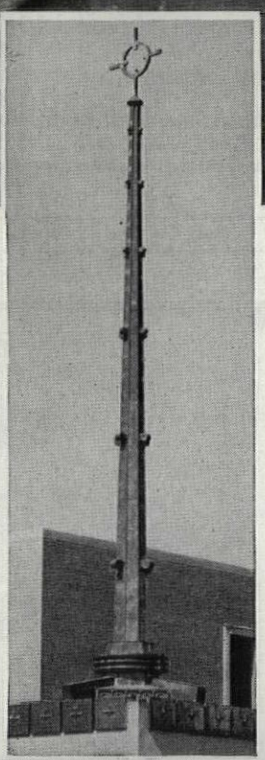

(Right)

ONE EXAMPLE of the intricate designs that can be fashioned due to the workability of Revere Copper is this spire made by WESTERN SHEET METAL WORKS, INC., for the House of Philosophy, Society of Jesus, Missouri Province. *Architect:* LEO A. DALY COMPANY, St. Louis, Mo., and Omaha, Neb.

(Below)

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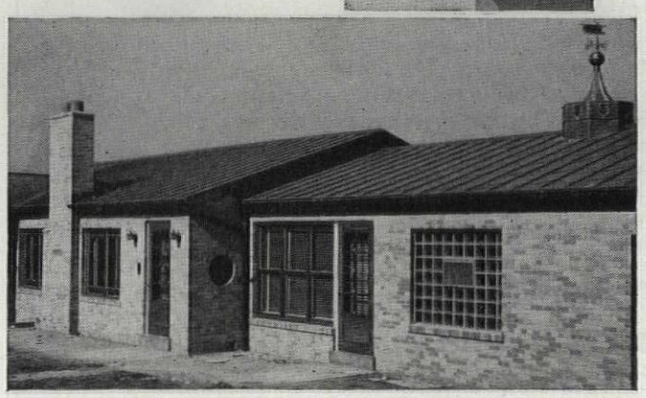

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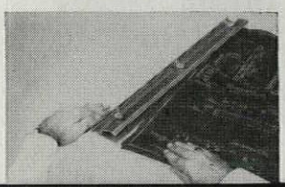

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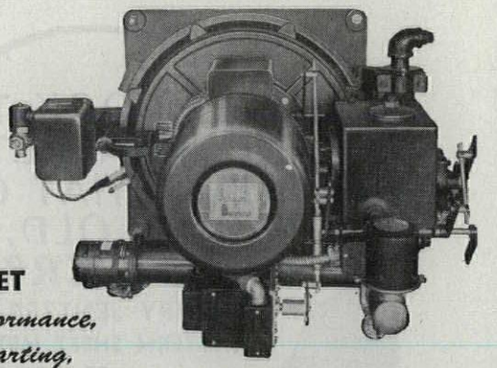

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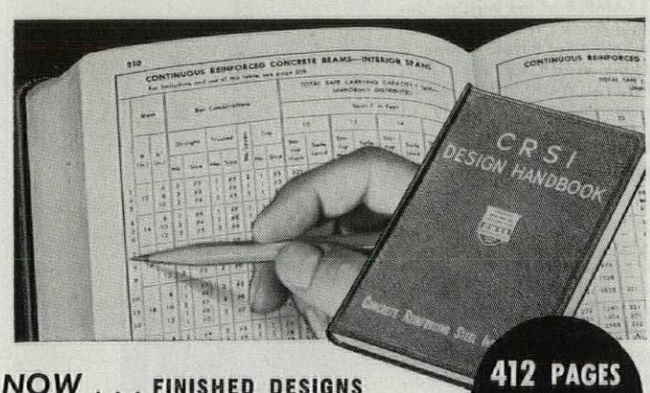

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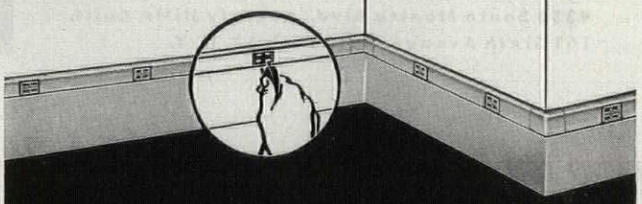

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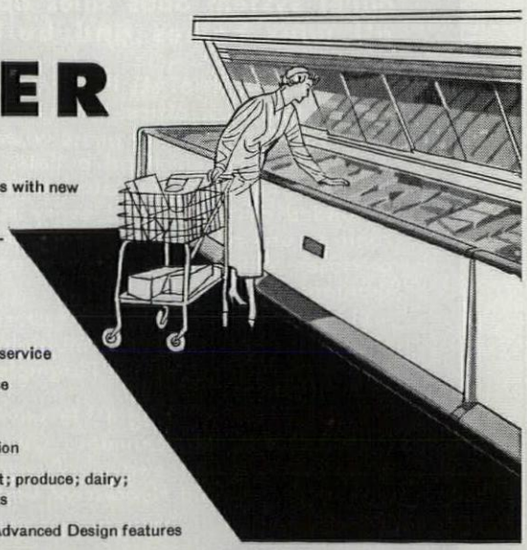

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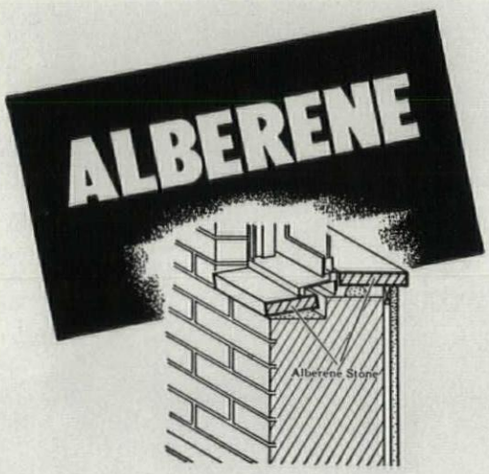

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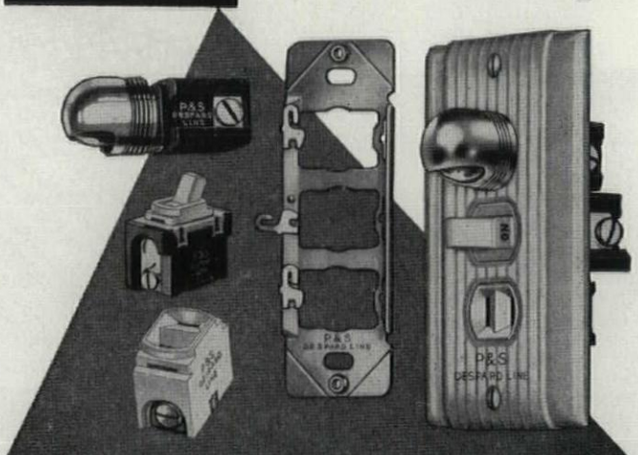

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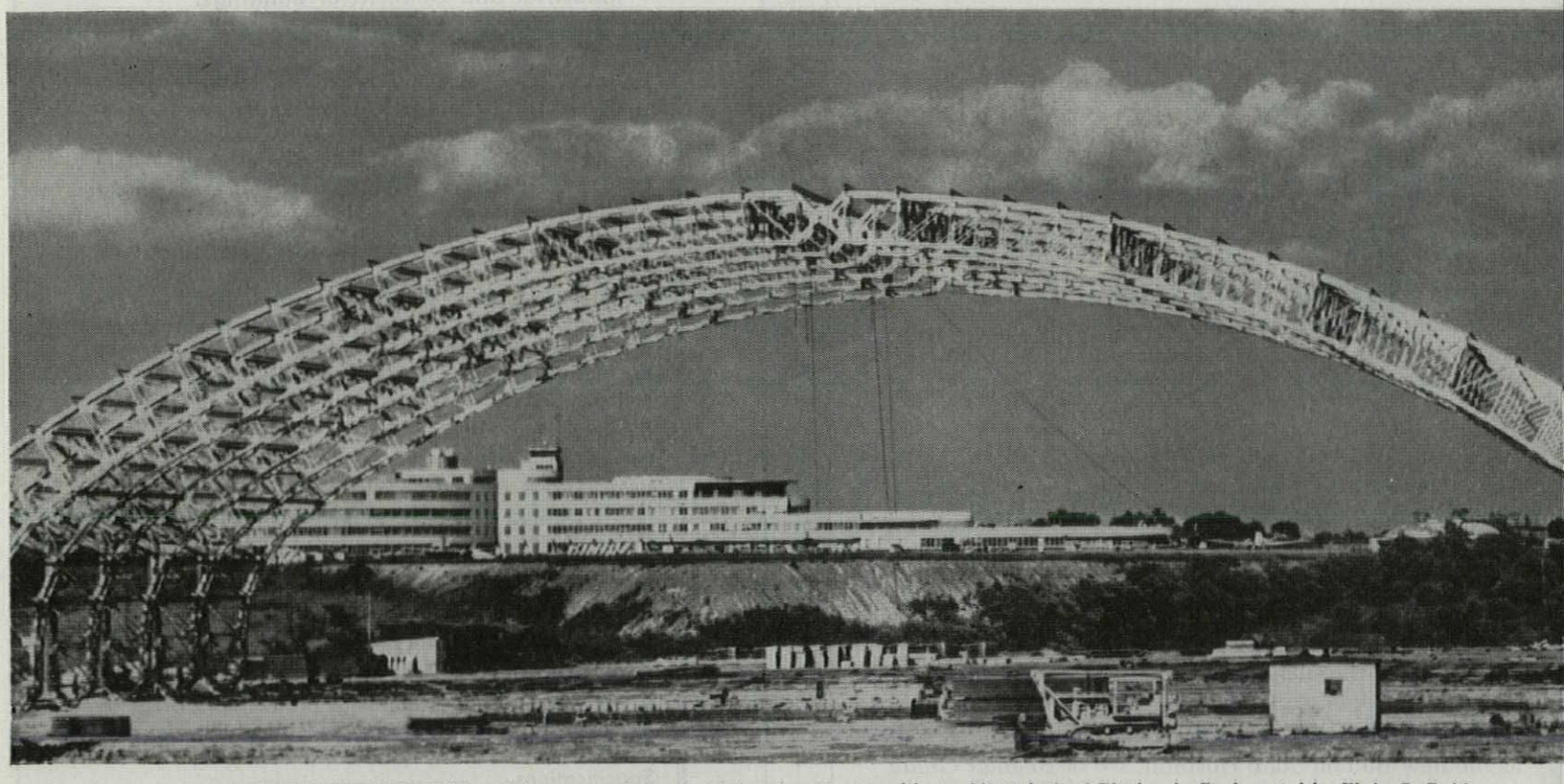

THE HANGAR SUPERSTRUCTURE and doors were designed, fabricated and erected by Ideco Division, Dresser-Stacey Co., Columbus, Ohio, in co-operation with Leland W. Cook, consulting engineer, and Joseph Hoover, consulting architect—both of Pittsburgh. Steel erected by Elwin G. Smith & Co., Pittsburgh. General Contractor was Allegheny Building Co., Pittsburgh, Pennsylvania.

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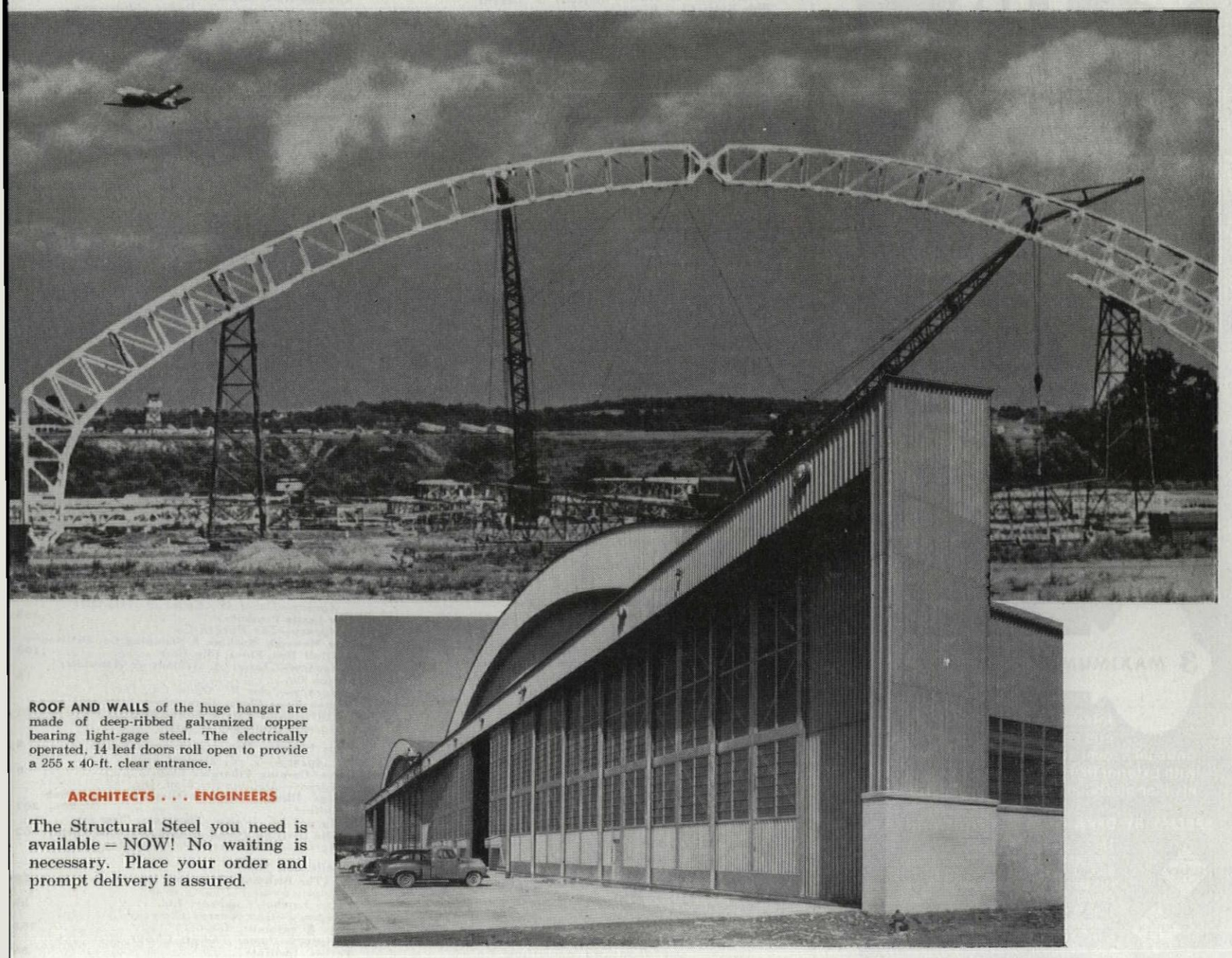

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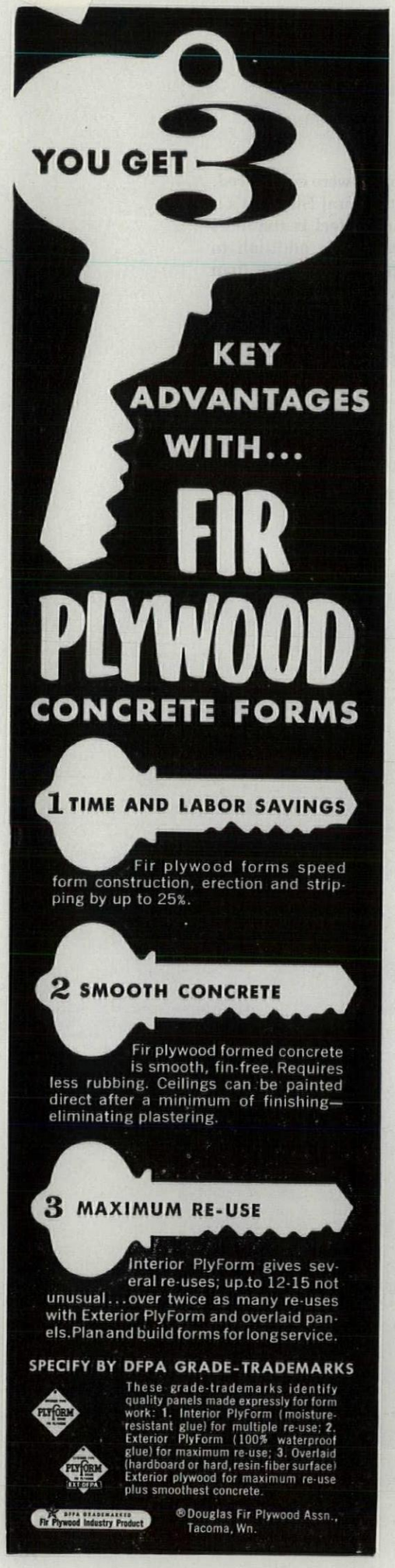

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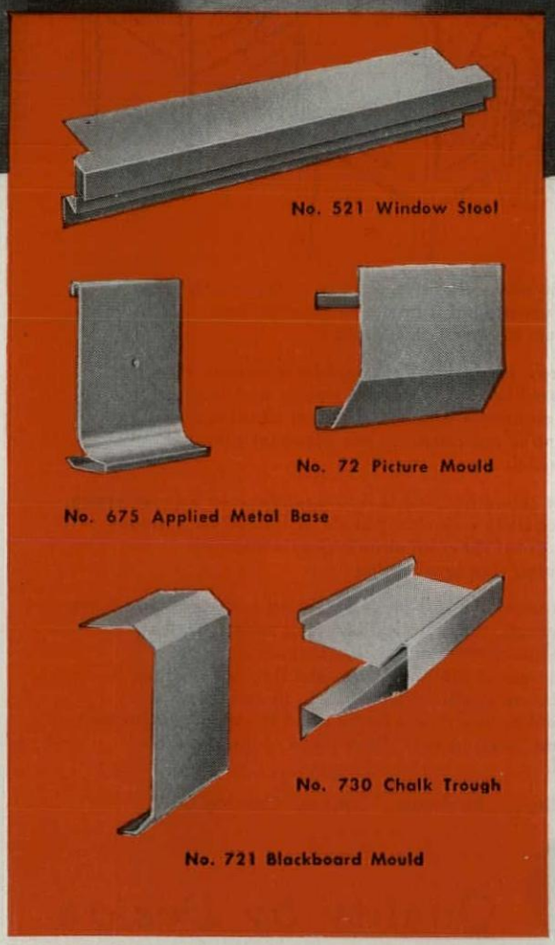

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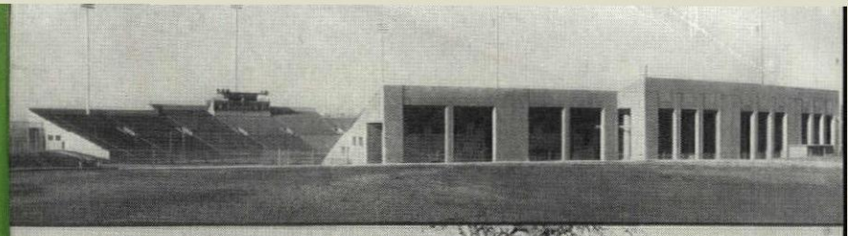
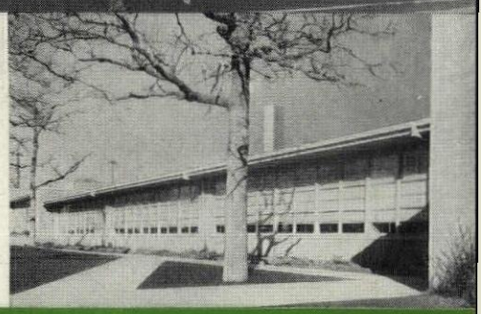






Men's dormitory, girls' gymnasium, and stadium—North Texas State College, Denton, Texas
Architect: Buford and Feinberg
Plumbing Contractor: Scheader Plumbing Company

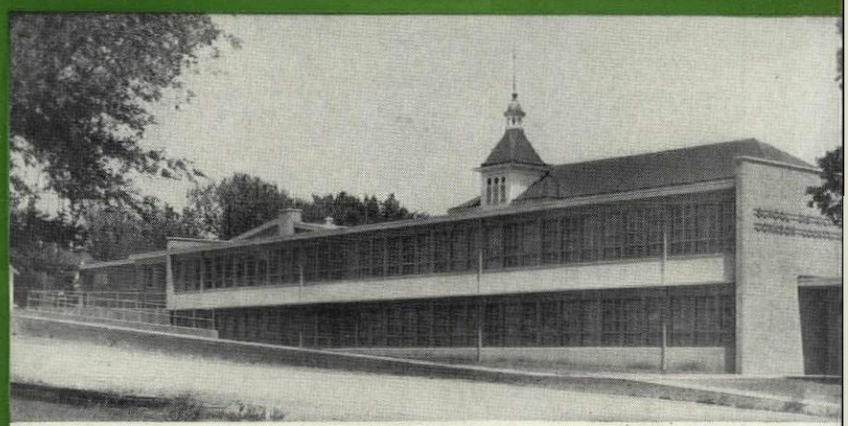
PLUMBING FIXTURES: ELJER



mos School,
per Darby Township, Pa.

Architect: Norman T. Mansell
General Contractor: Laub Construction Co.
Plumbing Contractor: Jerry R. Smith

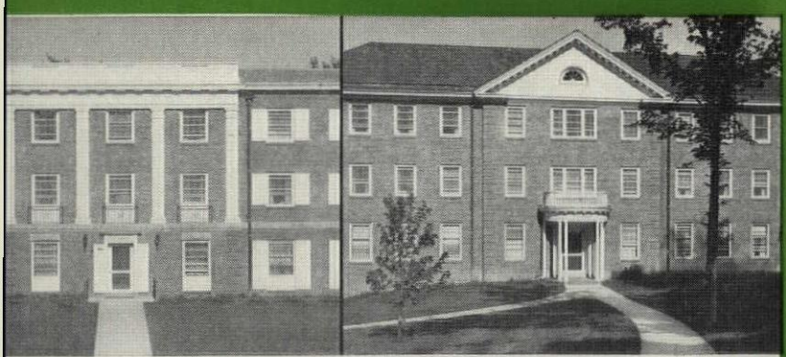
UMBING FIXTURES: ELJER



Grade School, De Soto, Kan.

PLUMBING FIXTURES: ELJER

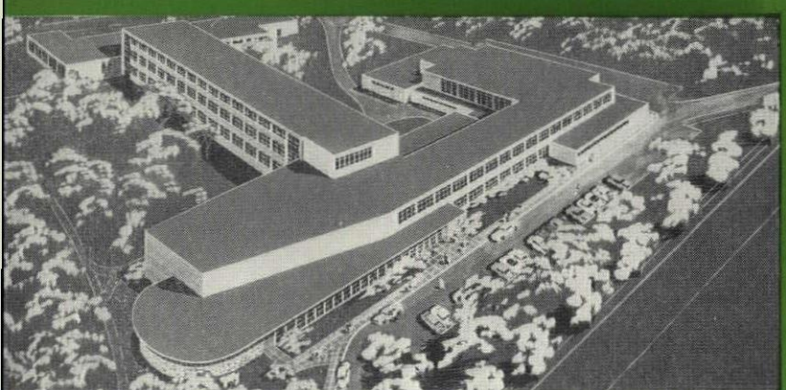
Architect: Maurice C. Keys
General Contractor: Haren & Laughlin Contracting Co.
Plumbing Contractor: Guntert Plbg. Co.



rmitories, University of
nsas

MBING FIXTURES: ELJER

Pearson Dormitory, Stephenson Hall
Architect: Ray Coolidge
General Contractor: Martin K. Eby
Plumbing Contractor: Guntert Plbg. Co.



mp Curtin Jr. High School,
rrisburg, Pa.

UMBING FIXTURES: ELJER

Architects: Lawrie & Green
General Contractor: H. B. Alexander & Son, Inc.
Plumbing Contractor: S. H. S., Inc.

* Among the many outstanding examples of modern institutional construction to feature Eljer plumbing fixtures are the schools shown.

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