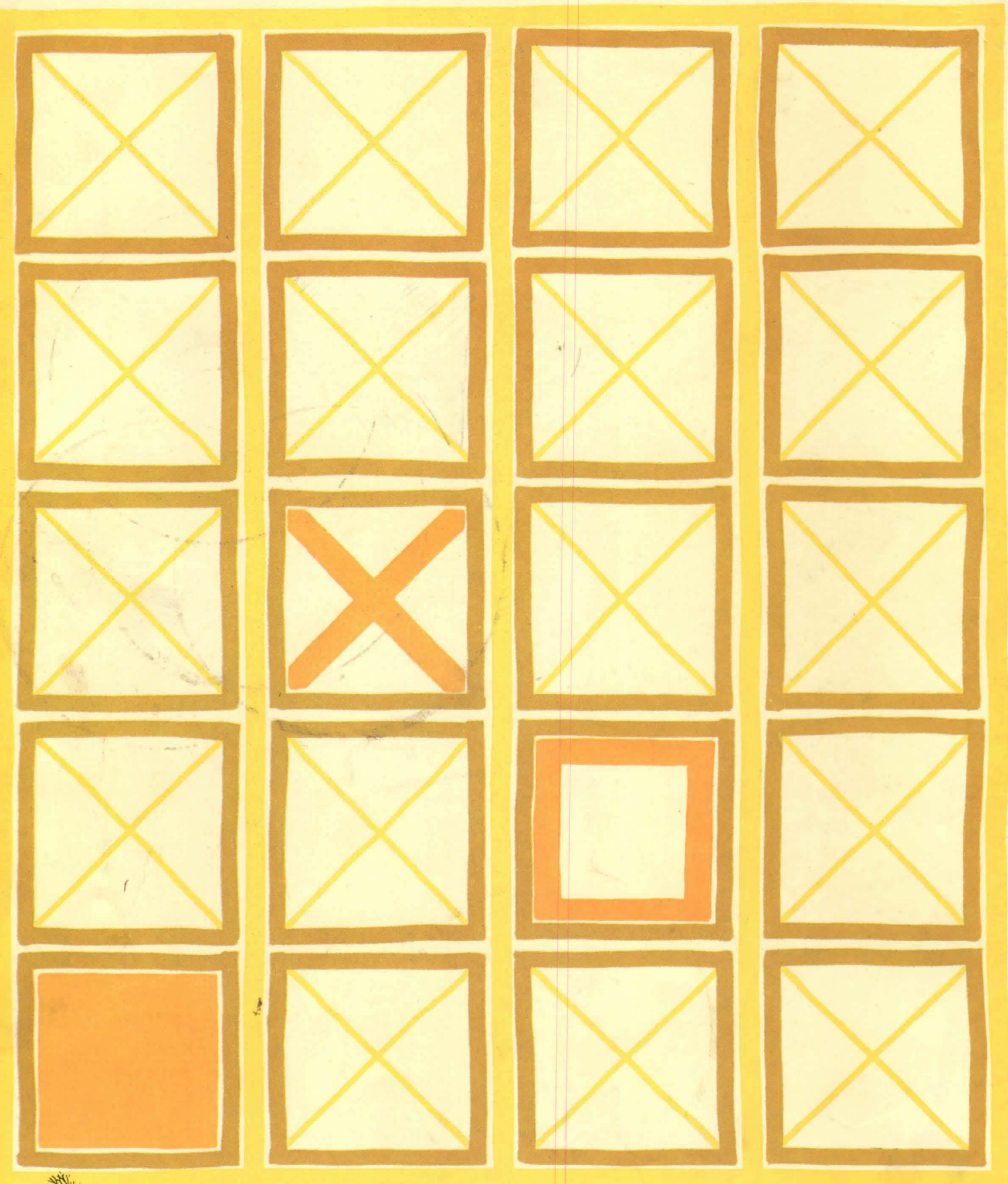


New
from
Armstrong

DORELLE VINYL CORLON

the effect of monochromatic floors without the maintenance problems they cause.

If you are one of the many architects who have asked for more monochromatic effects in flooring, you may want to take a look at Dorelle Vinyl Corlon by Armstrong. Its graining is so subtle that when viewed in large areas it seems to blend into the background. Yet there is enough pattern detail to avoid the maintenance problems of perfectly solid colors.

Dorelle is well suited for use in large commercial areas for other reasons, too. Not the least of these is price. Dorelle costs only about 70¢ sq. ft. installed, far less than other commercial-weight sheet vinyl floors. Yet Dorelle is a heavy gauge material (.090″) and will outperform battleship linoleum in durability, economy of maintenance, and resistance to heel indentation, staining, and alkali. In addition, application is not limited to suspended subfloors; Dorelle's Hydrocord Back allows it to be installed above, on, or below grade*.

Because it comes in 6′ rolls up to 90′ long, Dorelle can be installed with a minimum of seams, as compared to tile, and can be curved up the wall to eliminate baseboard crevices—important advantages in hospitals, white rooms, and other interiors where cleanliness is essential.

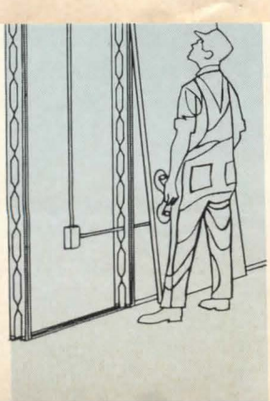
Six of the seven Dorelle styles are shown opposite. If you would like a closer look at some actual samples and more information, call your

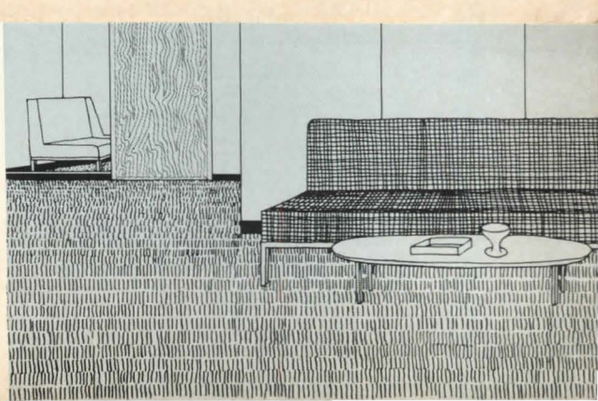
Armstrong Architect-Builder Consultant in the nearest Armstrong District Office, or write Armstrong, 306 Watson St., Lancaster, Penna.

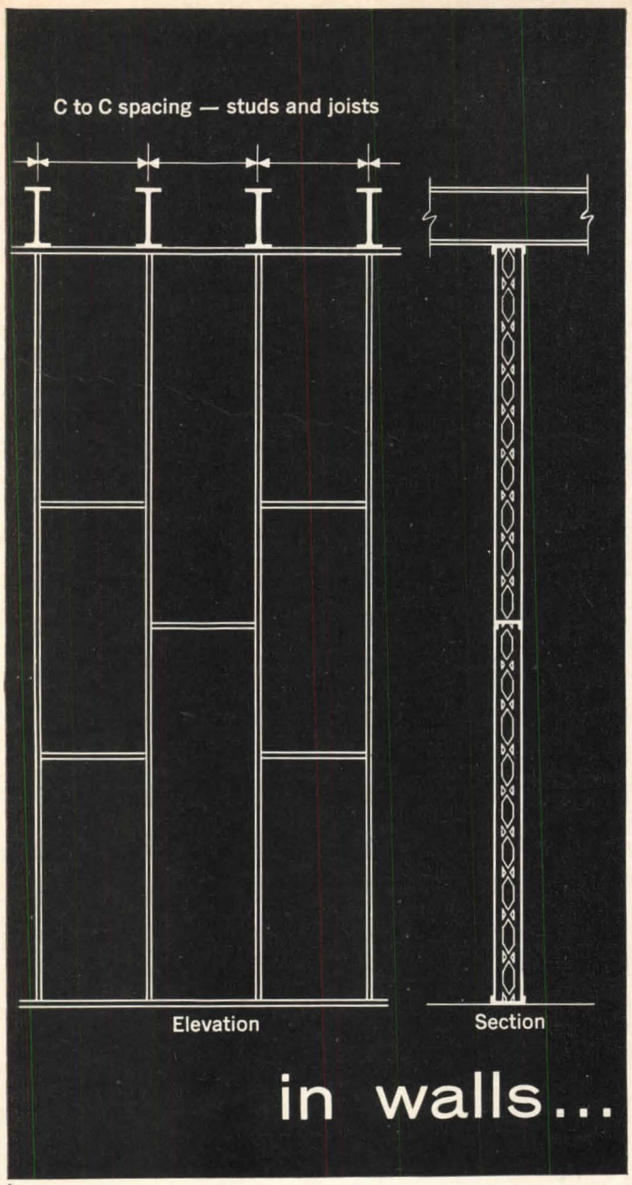
Armstrong FLOORS

* Except where excessive alkali or hydrostatic pressure makes the installation of any resilient floor impractical.

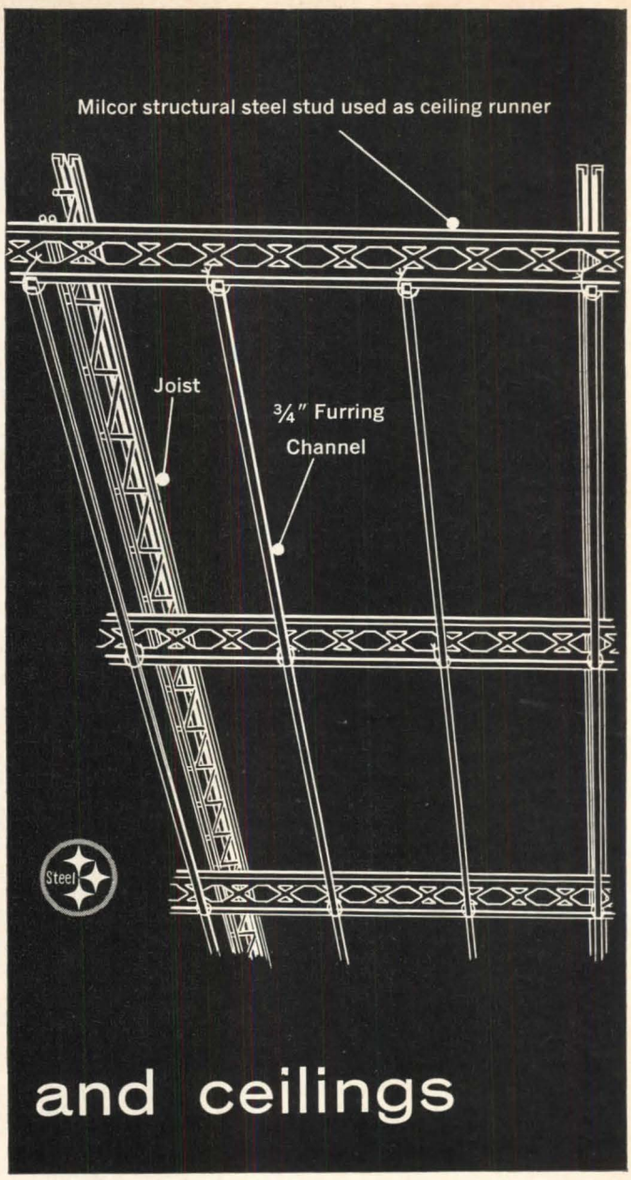
Dorelle, Corlon®, and Hydrocord® are trademarks of Armstrong Cork Company.



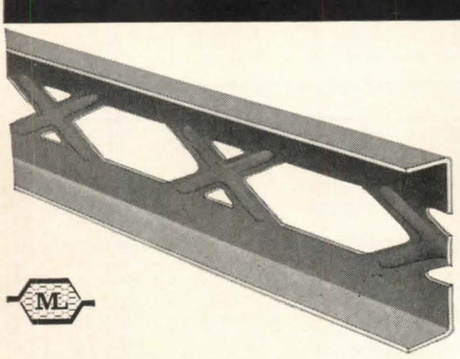


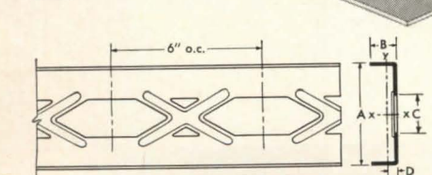


in walls...

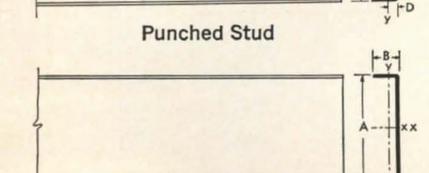


and ceilings





Punched Stud



Unpunched Stud, Track, and Bridging
(See catalog for dimensions)

Milcor Structural Studs can carry the load

Many load bearing conditions encountered in a structure can be handled effectively and economically by Milcor Structural Steel Studs—no need to specify heavy construction materials. ◆ These strong, lightweight, incombustible structural members are easy to work with — leave little, if any, site debris. They provide sound construction, with worthwhile savings on installation time and foundation requirements, when used for: interior and exterior load bearing walls, spandrel and curtain walls, ceiling runners, door buck reinforcement, cloakroom and book shelf headers, etc. Five sizes, in lengths up to 25-ft., offer a wide range of capabilities. ◆ Specify Milcor Structural Steel Studs for your next project. For technical data see Sweet's, section 2a/In, or write for catalog 713-2.

ML-70

Member of the INLAND Steel Family

MILCOR®

Inland Steel Products Company
Dept. F, 4069 W. Burnham St., Milwaukee, Wisconsin 53201

BALTIMORE, CHICAGO, CLEVELAND, KANSAS CITY, LOS ANGELES, MILWAUKEE, NEW YORK, SAN FRANCISCO

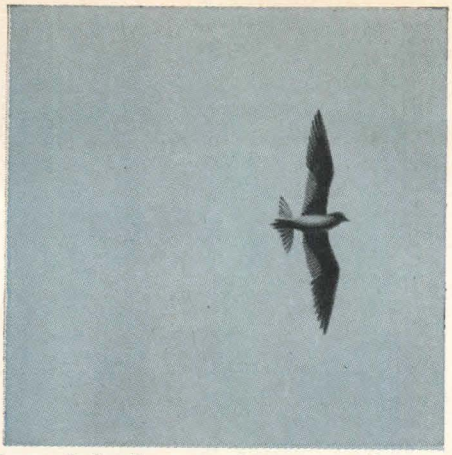
For more information, turn to Reader Service card, circle No. 351

THIS MONTH IN P/A

PROGRESSIVE ARCHITECTURE is a member of the Reinhold Group for BUILDING DESIGN, ENGINEERING AND CONTRACTING that also includes AMERICAN ARTISAN AND HEATING, PIPING & AIR CONDITIONING

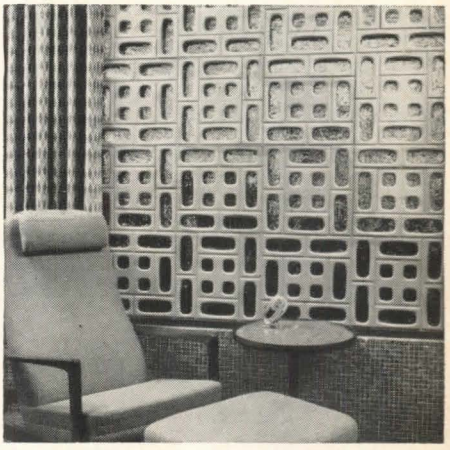
PROGRESSIVE ARCHITECTURE published monthly by REINHOLD PUBLISHING CORPORATION, 430 Park Avenue, New York, N.Y. 10022. Ralph W. Reinhold, Chairman of the Board; Philip H. Hubbard, President and Treasurer; Fred P. Peters, Executive Vice President; Kathleen Starke, Secretary and Assistant Treasurer; D. Bradford Wilkin, William P. Winsor, Vice-Presidents. Executive and Editorial offices, 430 Park Avenue, New York, N.Y. 10022. Subscriptions payable in advance. Publisher reserves the right to refuse nonqualified subscriptions. Subscription prices to those who, by title, are *architects, engineers, specifications writers, estimators, designers or draftsmen* and to Government departments, trade associations, above title groups on temporary military service, architectural schools and architectural students—$5.00 for one year; $8.00 for two years; $10.00 for three years. All others—$10.00 a year. Above prices are applicable in U.S., U.S. Possessions, and Canada. All *practicing architects* and *engineers* outside U.S., U.S. Possessions, and Canada—$10.00 for one year; $16.00 for two years; $20.00 for three years. All others—$20.00 a year. Single copy—$2.00, payable in advance. Printed by Publishers Printing Company, New York, N.Y.

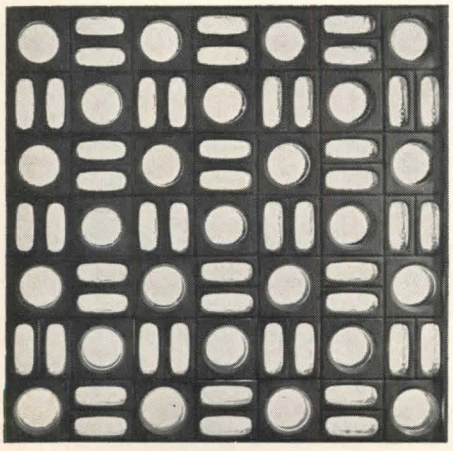
Indexed in Art Index, Architectural Index. Second-class postage paid at New York, N.Y.
VOLUME XLV, No. 6

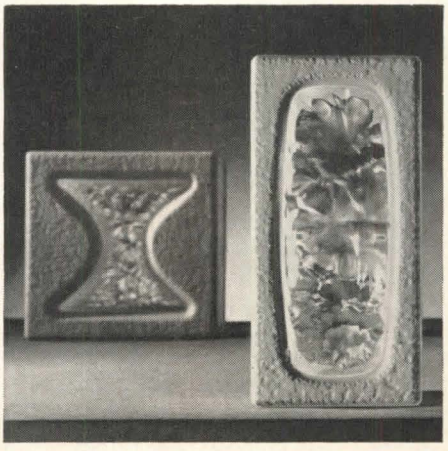


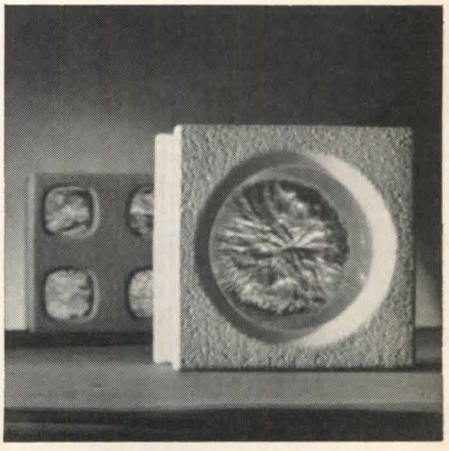
A screen wall that birds can't nest in...

kids can't climb on...

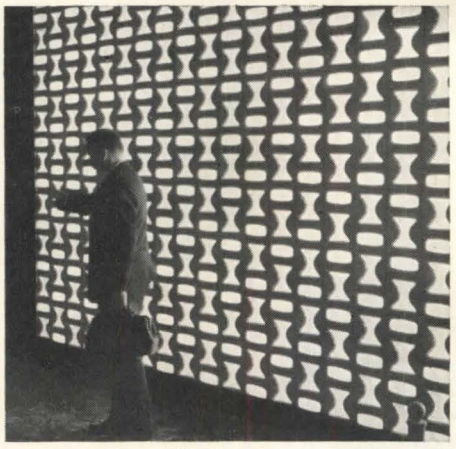








refuse can't collect in...

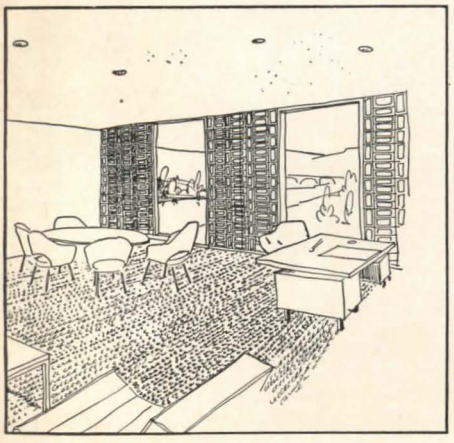


A screen wall with no voids. A glass wall with pattern and texture. An insulating wall that combines the classic values of glass with the appeal and function of the grill. All this in one material. Intaglio glass wall units.

Four designs: in three units 8″ x 8″ x 4″, and one 4″ x 8″ x 4″. Both faces of each unit have a fired on ceramic finish in the color and texture of concrete, patterned to let light pass through artfully shaped areas of antiqued glass. All in one all-glass building product.

Kids can't climb it—or deface it. Birds can't nest in it—or fly through it. Refuse can't collect in it—or behind it. Now glass and grill are one. Write for the new Intaglio brochure: *Pittsburgh Corning Corporation, Department PP-64, One Gateway Center, Pittsburgh 22, Pennsylvania.*

Now glass and grill are one...INTAGLIO glass wall units



PITTSBURGH

PC®

CORNING

VIEWS

More Common Sense

Dear Editor: You wrote a splendid Editorial in the APRIL 1964 P/A.

We need more down-to-earth common sense and less super-silly ideas of equalization in housing and other fields of endeavor.

JOSHUA D. LOWENFISH
New York, N.Y.

"Before and After" Government Buildings

Dear Editor: I thought that the R&D facility on which we are working might be a worthwhile project for publication. However, by now it has been sufficiently emasculated by the owner, in order to comply with the purposefully nondescript Government design standards, that it has lost all architectural distinction.

Why don't you do an issue on "Before and After" design of buildings for Government use. Titled "This Was the Work That Was" in contrast to "This is the Illness That Is," it would suggest that buildings being constructed with public funds need not be determinedly mediocre as presently designed. Such structures reflect the abilities of the architects creating them as much as they do the backward bureaucratic preconceptions of the various agencies commissioning them.

In this particular case, specific operational criteria were established by the various internal users. While complying with their program, we created a somewhat unconventional and economic building whose prime individuality was a complete mirroring of a distinctive technical operation. Incredible as it may seem, in order to comply with the external design preconceptions of the funding agency, several basic technical operational methods were amended in order to contort the structure into an approvable shape.

In addition, we were told, "We don't want a building of distinction. The rest of the complex is a mess and we don't want to have this one any different than the others. We are happy with the low budget, but put some of the money back in order to make it look as badly as its neighbors."

As a result, I think I'll have to forego sending this project to you. I still keep hoping—better luck next time.

ANONYMOUS

[*For the obvious reason that the writer of this letter must protect his interests on an as yet uncompleted project, his name is being withheld.*—ED.]

A Lack of Depth

Dear Editor: My comments on P/A as of a month ago would have been:

(1) The works published, with few exceptions, are not worthy of publication. If it is a question of providing so many pages of printed matter, I would say the following: Architects, generally, are interested in a variety of things and are capable of understanding and appreciating many more. When it appears that not enough good work is available to publish, substitute good coverage of some more

continued on page 12

Modern Door Control by

LCN

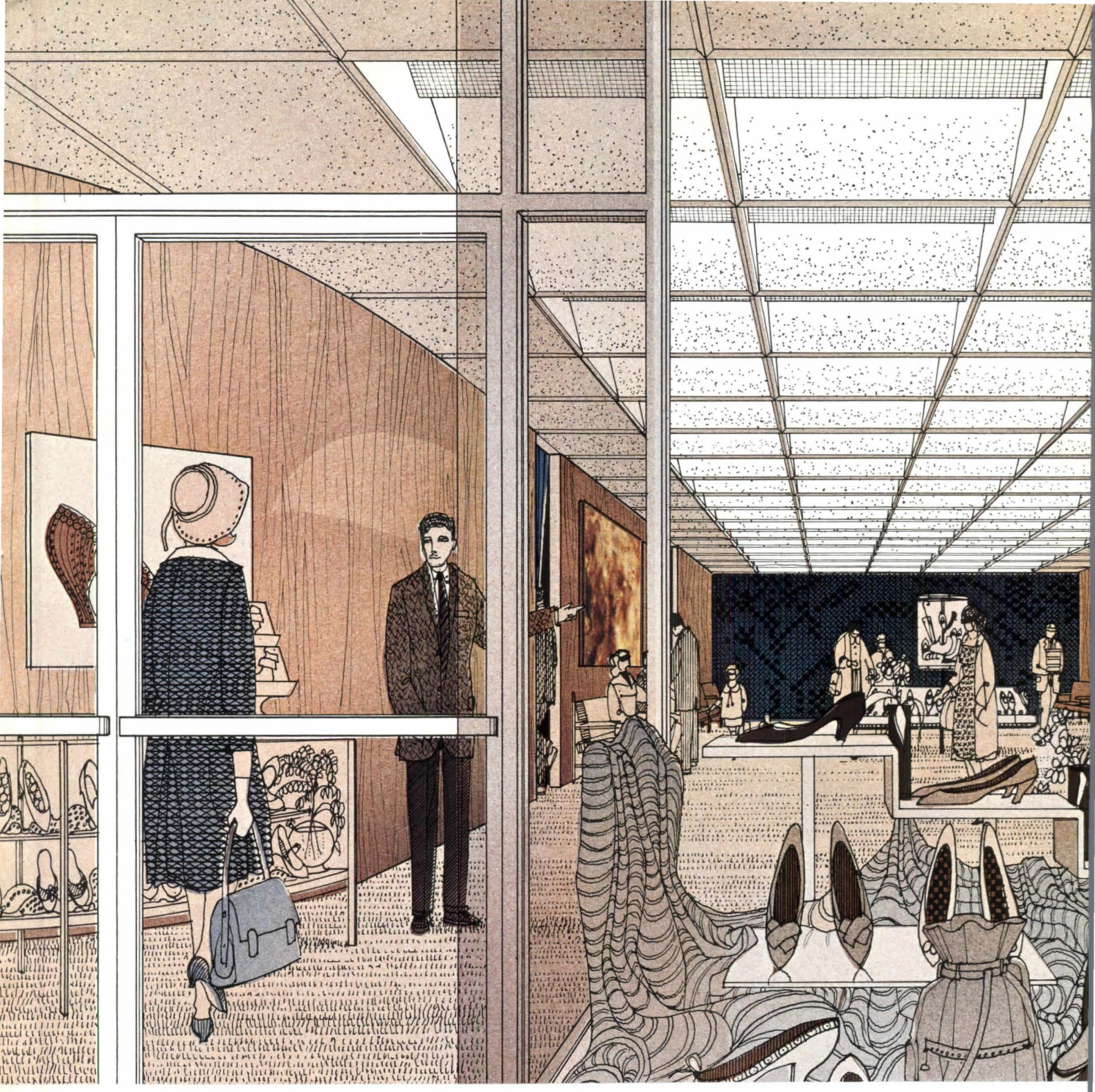
SMOOTHEE® Door Closers

McNeil Laboratories, Inc.,
Fort Washington, Pennsylvania

Vincent G. Kling, FAIA, Architect

LCN CLOSERS, PRINCETON, ILLINOIS

Application Details on Opposite Page



At work in Baton Rouge:

THE Armstrong LUMINAIRE CEILING SYSTEM

Ceilings never again will be the same. Now, the Armstrong Luminaire Ceiling System does what many architects have long maintained a ceiling should do. In a finished ceiling assembly, it integrates a dramatic new design effect with superior lighting, air distribution and acoustical efficiency.

This rendering shows Bob's Juvenile Shoe Store, Baton Rouge, La. Before it was built, architect and owner visited a nearby Luminaire installation. As a result, they changed the original ceiling plans to the Armstrong A-50 Luminaire System.

They're enthusiastic about the system's bold modern looks—the way it dramatizes the whole store. They're also delighted with the uniform air distribution, the acoustical control.

All Luminaire components are available from one supplier, supported from one grid. Each 50″-square module is its own light and air-distribution source. Here, 2-lamp, shielded fixtures provide a desired 150 footcandles. With Luminaire, lighting levels can range from 50 to well over 200 footcandles.

Flat ceiling panels allow the system's adaptation to any size or shape room. Specially designed to accommodate ceiling-high partitions, the system offers limitless layout flexibility. Further design variation is possible with the new B-48 Luminaire modification. This system achieves an open folded-plate effect, creates continuous bands of light. For complete information on both systems, write to Armstrong, 4206 Watson Street, Lancaster, Pa.

CREDITS: Bob's Juvenile Shoe Store, Baton Rouge, La.
Owner-Operator: Mr. & Mrs. R. J. Baudry, Baton Rouge, La.
Architect: John A. Bani, A.I.A., Baton Rouge, La.
Consulting Engineer: Ingram-Barbay, Baton Rouge, La.
General Contractor: Buquet & Le Blanc, Inc., Baton Rouge, La.
Ceiling Systems Contractor: J. Paul Smith & Co., Inc., Baton Rouge, La.

Armstrong CEILING SYSTEMS

For more information, turn to Reader Service Card, circle No. 300.

Continued from page 8

general phase of architecture, painting, sculpture—past, present, or future—or of subjects even further afield. Judging from issues such as the one dealing with sea shells, this would appear to have been the policy of such a publication as *Wendingen.*

(2) Aside from graphics and photo reproductions, which are excellent, the presentation of works published are far too pictorial, many more clear, reasonably sized drawings are needed to be able to understand and judge any work.

(3) Your annual P/A Design Awards issue provides a wonderful opportunity for many small architects; again, however, I don't see why only the small percentage worth serious consideration can't be published without the other sophomoric fill-ins.

The foregoing is of small significance with the advent of your February issue and its incredible aura of "silver screen." With a performance of this kind, one begins to wonder where architecture and the performing arts part company. The coverage given this building by all the major publications makes it appear to be a three-way, two-dimensional contest of one-upmanship, which P/A has won this month, hands down. A comparison of the space given a truly significant and successful work such as Carpenter Hall shows most clearly the lack of depth and distortion of perspective in the American journals.

PETER HENDRICKSON
New Haven, Conn.

Preserving Our Architectural Past

Dear Editor: On pages 74 and 75 of the MARCH 1964 P/A, there are two interesting examples of contemporary construction designed to preserve a major piece of architectural matter from the past. I refer to the addition to Roosevelt University in Chicago (Perkins & Will) and to The Bank of California, N.A., in San Francisco (Anshen & Allen).

It is most heartening to observe our leading practitioners paying a sensitive regard to the exciting fabric of noteworthy earlier buildings and to see that our leading architectural journals consider this trend as newsworthy and worth attention.

I sincerely hope many new examples of creative coexistence of the old and the new will be forthcoming, and reviewed in your pages sometimes, with major treatment.

ROBERT C. GAEDE
AIA
Washington, D.C.

NOTICES

New Branch Offices

HERMAN MILLER INC., now has a showroom at 1730 M. St., N.W., Washington, D.C.

OCCIDENTAL ENGINEERING COMPANY, 16944 Ventura Blvd., Encino, Calif.

STEELCASE INC., has two new showrooms: 280 Park Ave., N.Y.; and La Mirada, Los Angeles, Calif.

JOHN STUART INC., and JOHN WIDDICOMB COMPANY, showroom, 205 E. 58 St., New York.

New Addresses

CHLOETHIEL WOODARD SMITH & ASSOCIATES, Architects, 1056 Thomas Jefferson St., N.W., Washington, D.C.

CROW, LEWIS & WICK, FAIRFIELD & SCHMIDT, Architects & Engineers, 419 Park Ave., S., New York, N.Y.

WILLIAM L. CROW CONSTRUCTION COM-

Continued on page 252

Why Kawneer CORE™ Building System is better

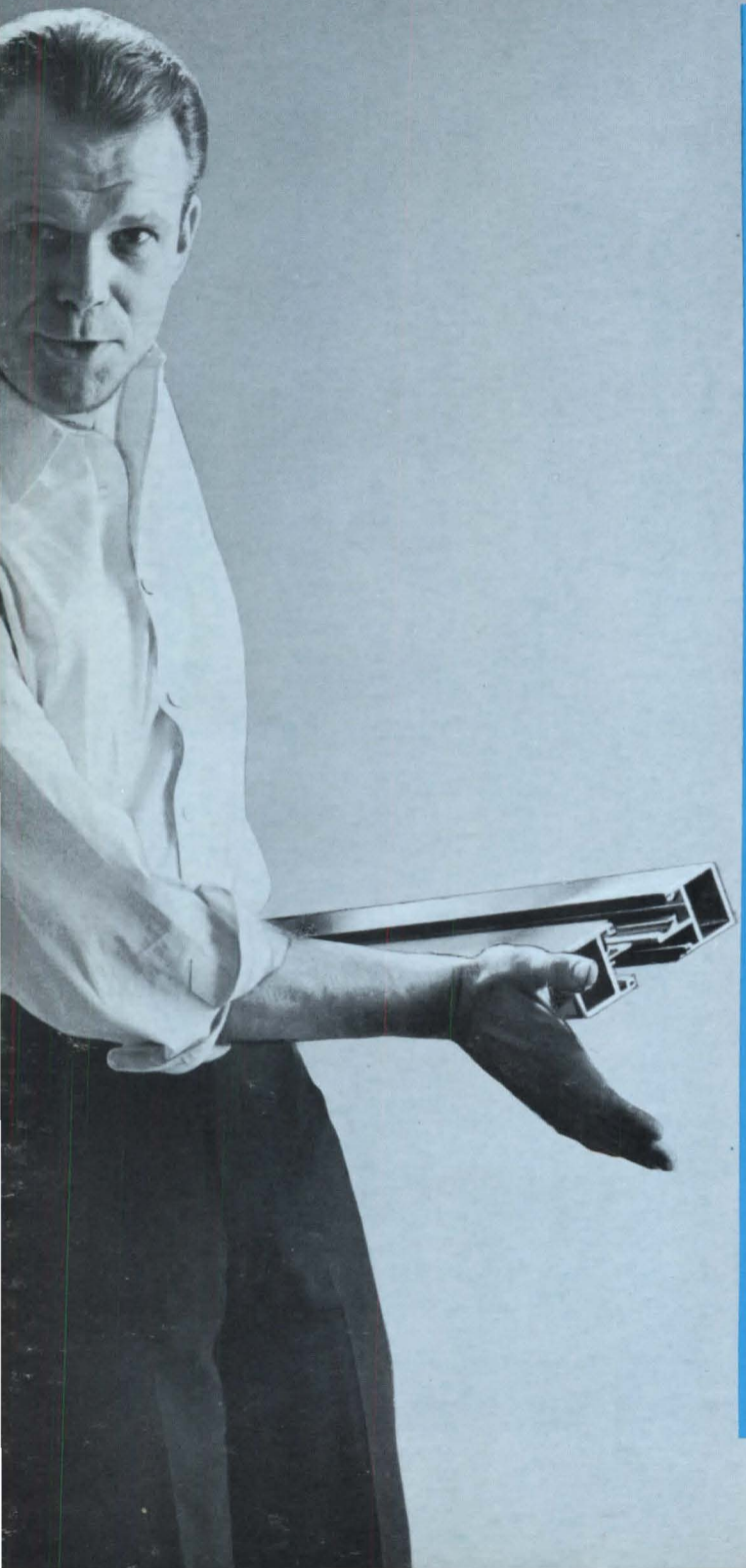
LOOKS BETTER

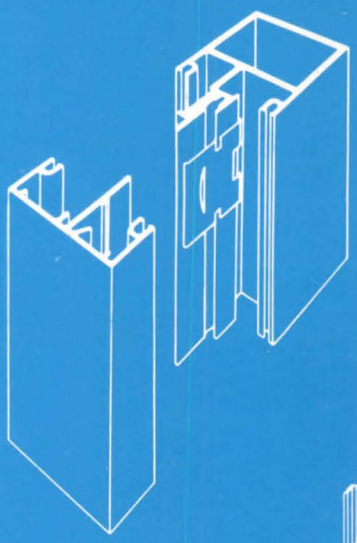
Interesting design ideas come off cleaner . . . easier . . . with Kawneer Core. The First Christian Church of Omaha, Nebraska, is one example of many striking buildings done in Core.

Why Kawneer CORE System is bette

INSTALLS FASTER

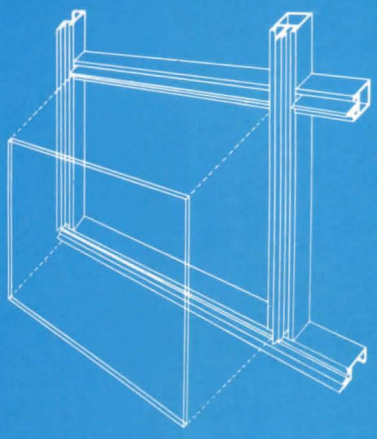
Core is designed to eliminate waste motion on the job. Kawnee dealers, experienced with Core, report significantly faster erectio Exclusive engineering features, such as snap-on glazing, straight-i face glazing, and self-aligning anchors, make this possible.





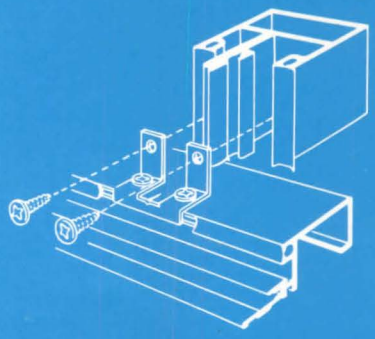
SNAP-ON GLAZING

A secret to speedier installation is the patented Core *clip* that snap-locks the face member to the gutter. Eliminates glass stops, screws and putty mess. Glass replacement costs are reduced, too.



STRAIGHT-IN FACE GLAZING

Dealers tell us the glass setting in Core is up to 30% faster than previous settings. Much faster than pocket or stop glazing. Simplifies cutting and setting. Less breakage.



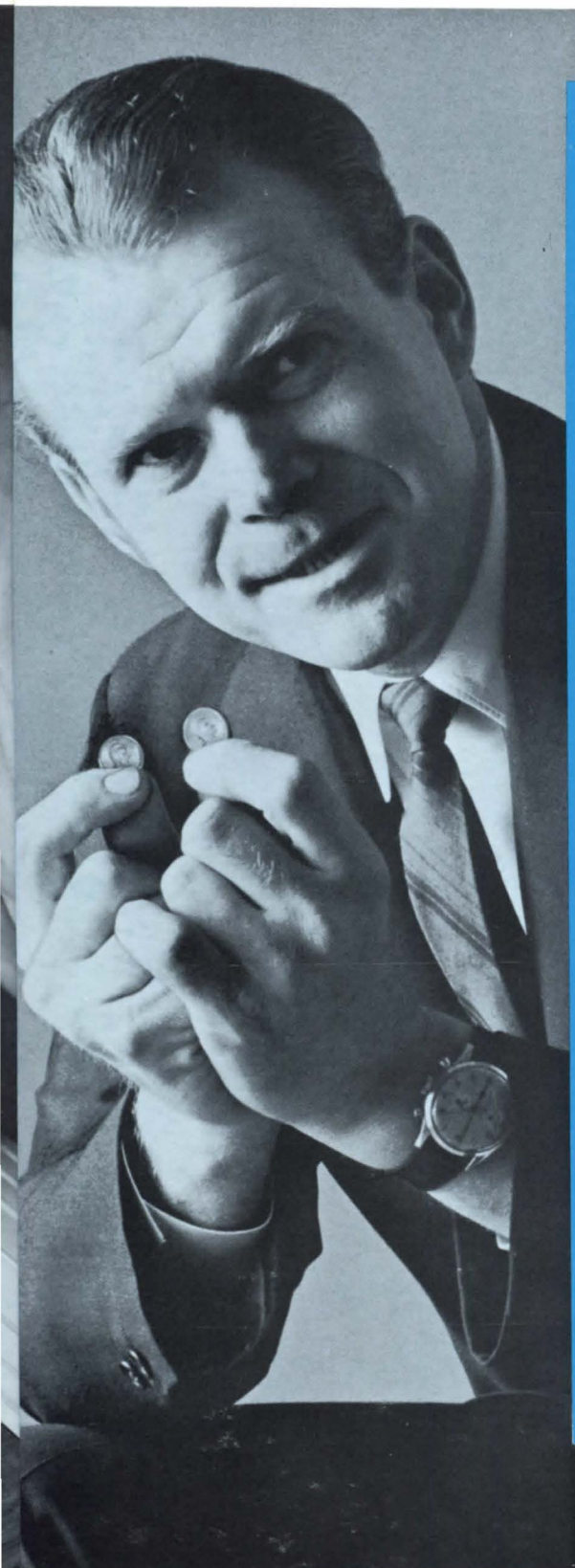
SELF-ALIGNING ANCHORS

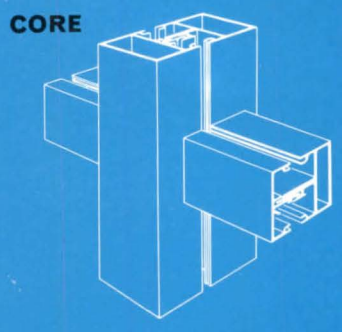
It's a template and anchor in one. Permits locating anchor with centering notch . . . locating and drilling for screws in one fast operation.

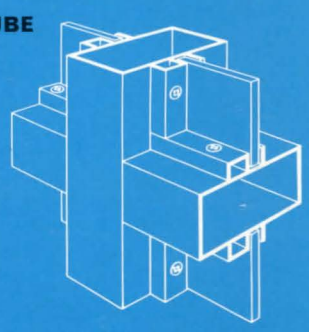
Why Kawneer CORE System is better

COSTS ARE SMALLER

Compared to conventional tube, in a typical application, Core will have a lower installed cost. Whether remodeling or new construction, costs are less for 2 reasons: less installation time and lower metal costs from this uniquely engineered system.

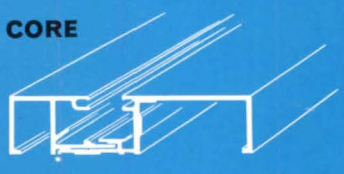


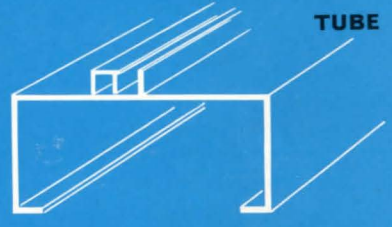




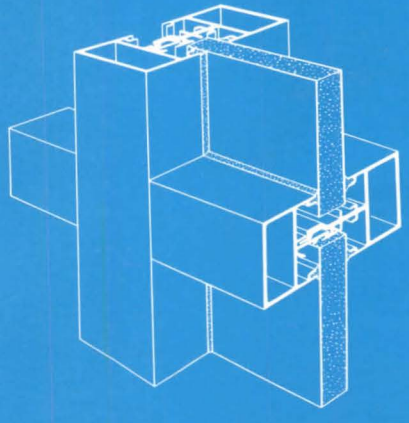
CORE REDUCES METAL COSTS

Smaller Horizontal—you can lower metal cost with optional smaller horizontal members and at the same time create a vertical accent or fin design. AND—any Core member can be a vertical or horizontal, increasing cutting possibilities and reducing cutting losses.





Smaller Perimeter—why use more metal than is required to achieve the load strength or architectural design? Core gives you the same "family resemblance" appearance while using less metal.



SETS PANELS FASTER

There is no faster way to set panels. And, Core's snap-on glazing makes it as fast and simple as setting glass.

Why Kawneer CORE System is better

PERMANODIC™ COLOR

You can use Kawneer anodic hard color finishes to add warmth and richness to the building. Kawneer Permanodic finishes are created from alloys—not dyes. They resist corrosion, abrasion and the dulling effects of weather and industrial atmosphere. They are especially practical where traffic is heavy . . . entrances, railings.

AVAILABLE IN ALUMILITE AND EXCITING TONES OF ANODIC HARD COLORS

Core is available in a variety of finishes, in tones that enhance the natural beauty of the aluminum itself. You may specify from a range including light bronze, medium bronze and black. And Core is also available in Alumilite, for years the favorite finish where quality was a prime consideration.

Colors shown are as accurate as printing process will allow

LIGHT BRONZE No. 26

MEDIUM BRONZE No. 28

BLACK No. 29

ALUMILITE No. 204 A1 R1

Kawneer

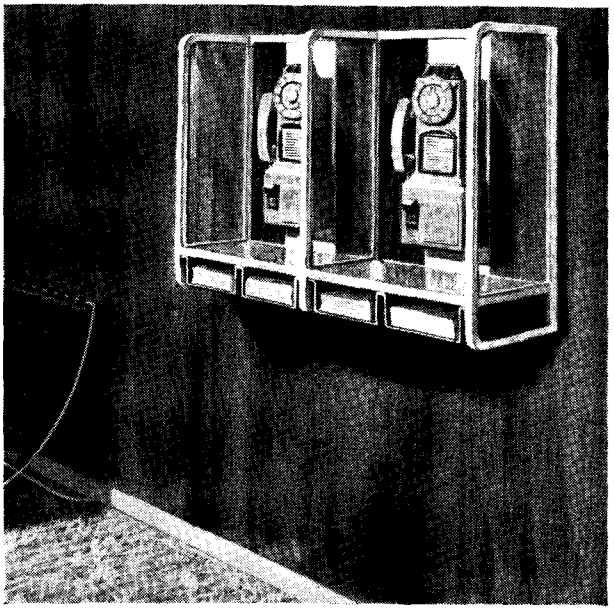
Kawneer Company, a Division of American Metal Climax, Inc.

Niles, Michigan • Richmond, California • Atlanta, Georgia
Kawneer Company Canada Ltd., Toronto, Ontario • Showa Kawneer, Tokyo, Japan • Kawneer de Mexico, S. A. de C.V., Mexico City • Kawneer Company (U. K.) Limited, London • Kawneer GmbH, Rheydt, Germany

Printed in U.S.A.

Form No. 64-0558

HOW MANY? WHICH? ...AND WHERE?



For general information on telephone planning, see Sweet's Architectural File, 33a/Be.

Are you planning for enough public telephones in your commercial buildings? Choosing the right booths in terms of your decor? And locating them so that they're easy to find?

There's an easy, sure way to get the right answers to these and any other questions about public telephone installation. From a Bell System Public Telephone Consultant! His knowledge is comprehensive and up-to-date, and his help can be invaluable if you call him in early enough.

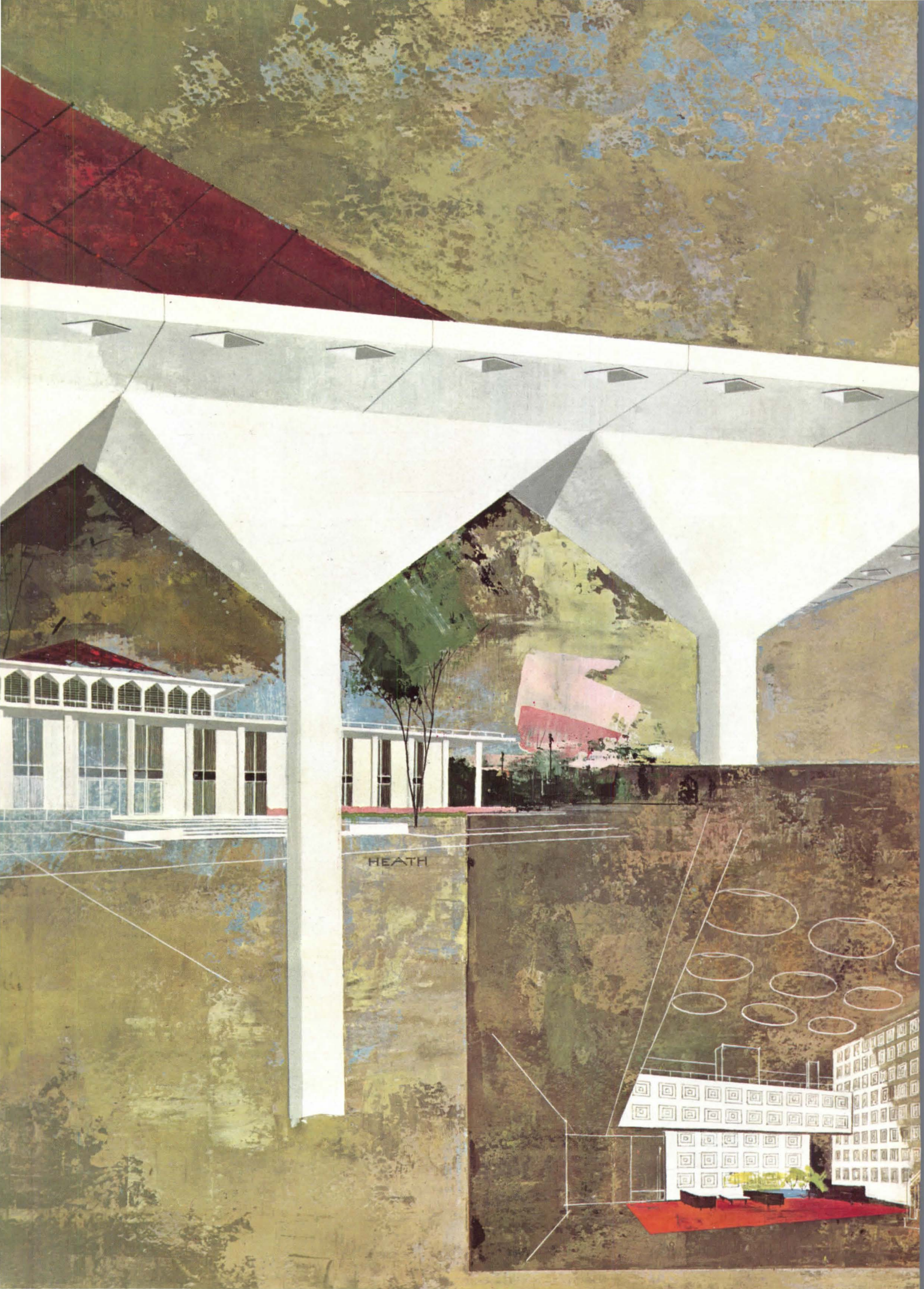
Visitors always appreciate attractive, easily accessible public telephones. And your client will be pleased with the profitable income they produce.

Be sure to call your Bell Telephone Business Office and ask to have a Public Telephone Consultant contact you as you plan your next building.

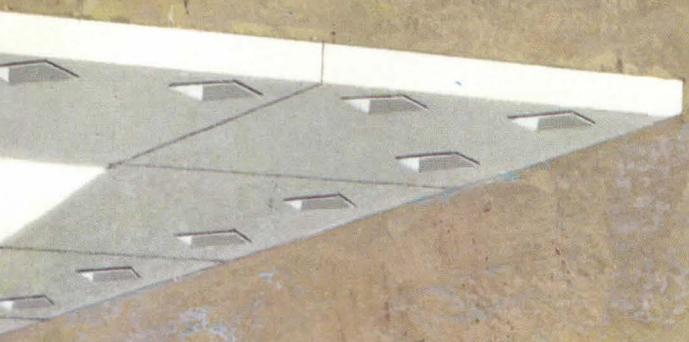
Bell Telephone System

Serving you

For more information, turn to Reader Service card, circle No. 321


HEATH

EDWARD DURELL STONE



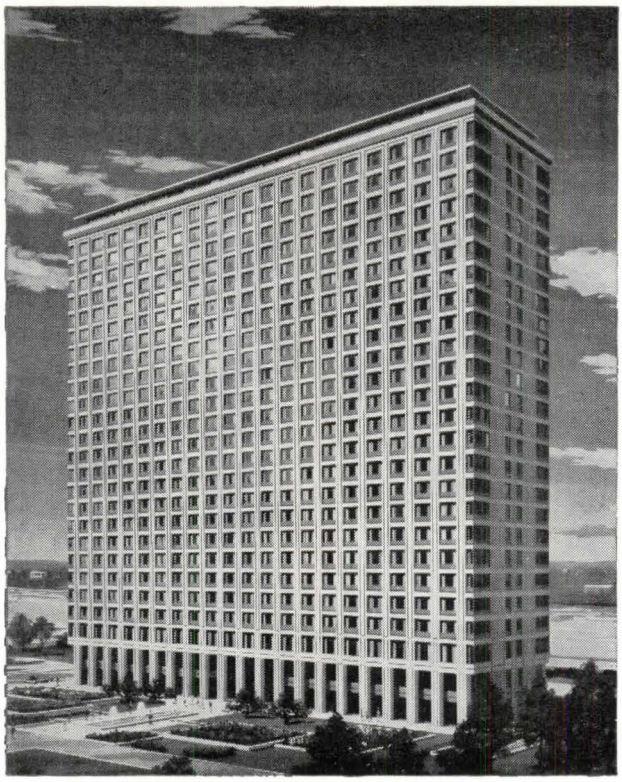
"The light of nature, even as the light of reason, is of fundamental importance to all life and its survival. The importance of physical lighting is evidenced by a child's fear of the dark, and by our own heightened joy when lighting conditions are pleasing to the eye. Such psychological aspects merit serious appraisal when considering the overall-building plan. After all, buildings are designed to encompass various forms of human activity. And, wherever people congregate, their positive or negative emotions can, to a high degree, be shaped and controlled by lighting. Perhaps more than any other structural component, lighting offers an area of exploration that has tremendous and exciting possibilities."

Day-Brite is dedicated to the philosophy that there is more to lighting than mere fixtures. It is our endeavor to provide architects and engineers with materials which can make a vital contribution to the over-all creative concept of imaginative and functional architectural design.

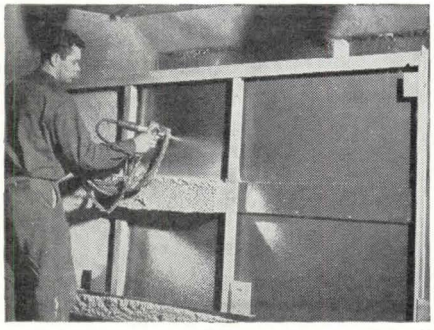
DAY-BRITE®

DAY-BRITE LIGHTING • A DIVISION OF EMERSON ELECTRIC

5411 BULWER AVE., ST. LOUIS, MO. 63147



Improved urethane foam system provides more insulation in less space in Pittsburgh's new Gateway Towers



Urethane is sprayed on, foams in place to fill every void. Material is self-adhering to panel.

Moisture-resistant urethane eliminates need for separate vapor barriers in complex louver shapes.

Panels are bolted in place at the job site. No fussy handling is required to avoid damage.

savings begin before the walls go up

Original specifications for the 1101 insulated aluminum spandrel panels used on this new luxury apartment building called for 1" thick fibrous insulation. But, after thorough analysis, it was decided to use urethane foam insulation to realize these advantages:

* **75% reduction in insulation application time and labor.**
* **Improved insulation value at half the standard thickness because of urethane foam's superior thermal resistance.**
* **Closed-cell, moisture-resistant urethane foam eliminates need for hard-to-fabricate vapor barriers.**
* **Self-bonding urethane prevents shake-down damage to insulation during panel shipment and installation.**

Urethane foam is the advanced insulation system: lightweight, fire resistant; will not shrink, warp, rot or swell; may be applied easily in fabricating shop or job site. For data and sources of supply, write Mobay Chemical Company, Code PA-8, Pittsburgh, Pa. 15205. Mobay is the leading supplier of basic chemicals used in urethane foam systems.

URETHANE CHEMICALS

MOBAY

For more information, turn to Reader Service card, circle No. 369

For more information, circle No. 312

BREAKTHROUGH

KOH-I-NOOR

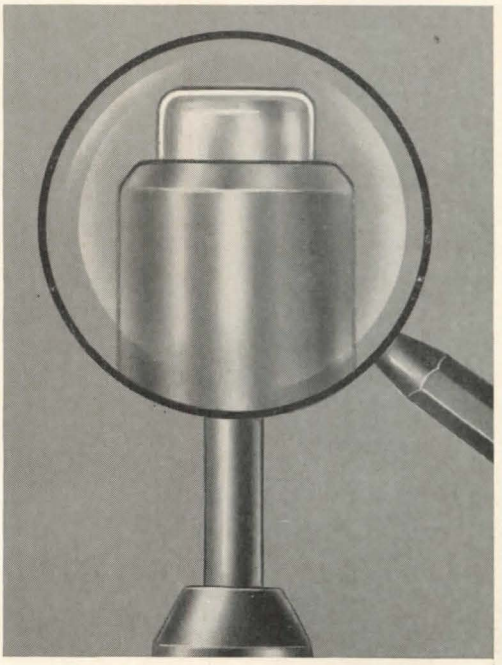
PRESENTS SENSATIONAL NEW DRAWING POINT WITH

JEWEL TIP

Draws thousands of feet of line.
Outperforms all present pen tips 100 to 1 on drafting film.

The company that originated and pioneered the technical fountain pen now introduces a drawing point with precision Jewel Tip. Years of intensive research went into this revolutionary development.

SAVINGS The KOH-I-NOOR Jewel Tip means enormous savings in drafting costs wherever film is used. By actual test, it will draw "over a mile on Mylar*." Even after extended use, the self-polishing characteristic of the Jewel Tip point provides an unbelievable velvetness of touch. The jewel glides smoothly over the drafting surface, without "scrape," "chatter" or "skip."



New KOH-I-NOOR Jewel Tip will draw "over a mile on Mylar*."

*(*DuPont registered trade mark)*

The new Jewel Tip points, made in U.S.A. and covered by patents, are now being manufactured for Rapidograph technical fountain pens and drawing point sections in all sizes. Full production will be reached before the end of the year. Rapidograph hard-treated stainless steel points, unmatched in quality by any competitive product, will continue to be the standard for all regular drafting work.

KOH-I-NOOR

is the company that concentrates on fulfilling your professional needs. Complete line of drawing leads, holders, drawing pencils, templates, lettering guides, chalks and pastels, and other specialized materials for engineers, draftsmen, architects and artists... INCLUDING the world's most comprehensive line of coordinated technical fountain pens (Rapidograph, Acetograph, Brushograph) and accessories. See your KOH-I-NOOR dealer or, for descriptive literature on the new Jewel Tip points, write KOH-I-NOOR, INC., Bloomsbury 25, New Jersey.

Contempo-Wall Partition System

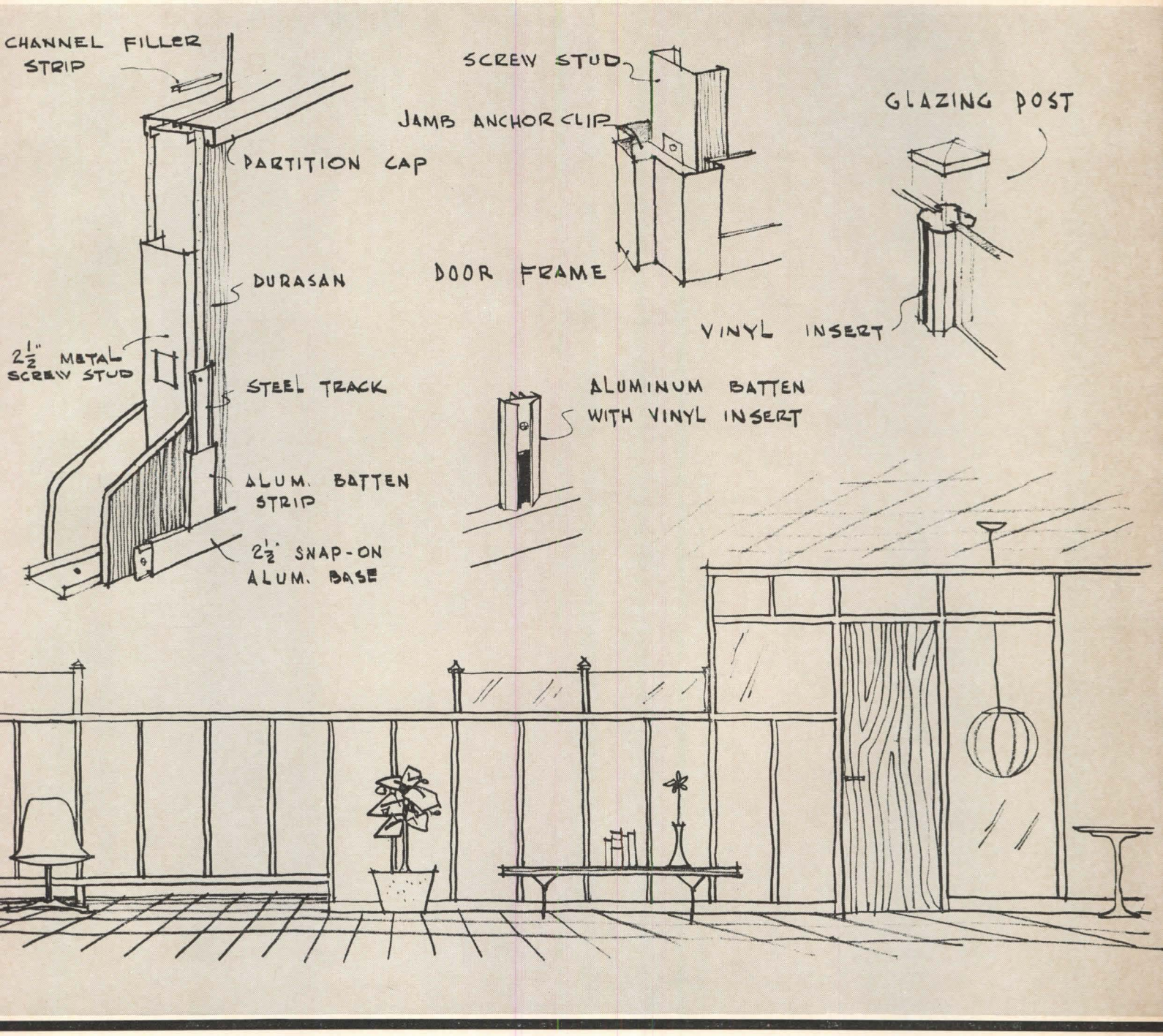
The Gold Bond difference:

Speed!

This office wasn't here 6 hours ago

Fast. Clean. Good looking. That's Contempo-Wall... the new Gold Bond demountable, *re*mountable partition. Gives tenants "instant" office layout. Provides flexibility, too, when there's a change in plans. Alter space arrangement or partition heights as needed. A minimum number of parts is required to erect Contempo-Wall. Start with simple U-shaped floor track and aluminum ceiling trim channel. Slip the steel studs in place and you're ready to panel with

offers flexibility in 3 basic heights



Gold Bond Durasan®—the tough, vinyl-surfaced gypsum wallboard. Available in fashionable decorator colors, or Presidential Walnut as pictured at the left above. It's a cinch to fasten panels to steel studs. Self-drilling screws quickly connect both the anodized-aluminum batten strips *and* wall paneling to the steel studs. Screw heads are concealed with a snap-in vinyl insert strip. Neat. Quick. Low cost. Contempo-Wall is available in three heights: cornice, floor-to-ceiling, and bank screen or rail. Anodized-aluminum door frames match batten strips, base and other accessories. Special batten strips provide one-hour fire rating, where required. Your Gold Bond® representative has complete information and technical literature. Or write Dept. PA-64, National Gypsum Company, Buffalo 25, New York.

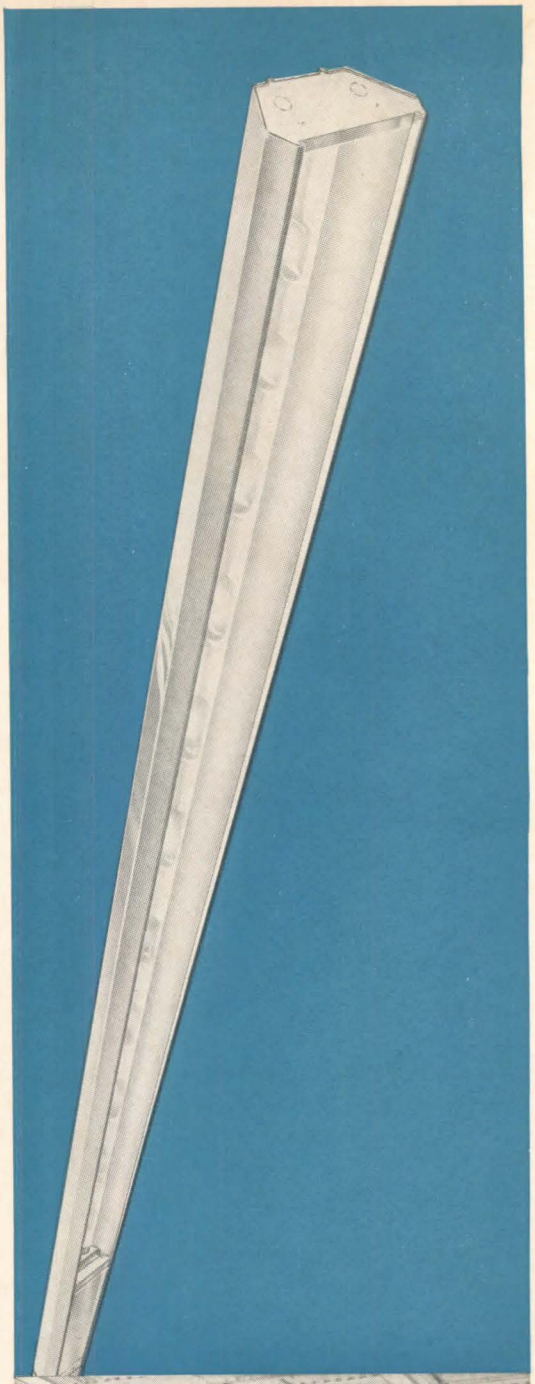
Gold Bond
CONTEMPO-WALL

Gold Bond materials and methods make the difference in modern building

For more information, turn to Reader Service card, circle No. 371

6 "MAKES-SENSE" REASONS WHY

UNO TRADE MARK INDUSTRIAL IS A LIGHTING NATURAL FOR YOUR PLANT



1 Utilizes 1500 Milliamp lamps for the 50 to 100 F.C. Industrial jobs.

2 Saves up to 20% in Installation Costs as proved by a St. Louis Electrical Contractor.

3 Saves up to 35% in Overall Costs compared to 40-watt Rapid-Start Systems.

4 Fewer Lamps (1 against 4 or 5); fewer Ballasts (1 against 4 or 5) to maintain. 1500 Milliamp lamps are more economical. 17' long unit with just two lamps and one ballast.

5 Engineered for today's lower ceiling heights.

6 Provides easy-ballast access for maintenance.

Uno — the new single lamp industrial luminaire for 800 or 1500 Milliamp lamps.

Write for your free copy of the new Uno brochure and cost comparison study.

Guth LIGHTING since 1902

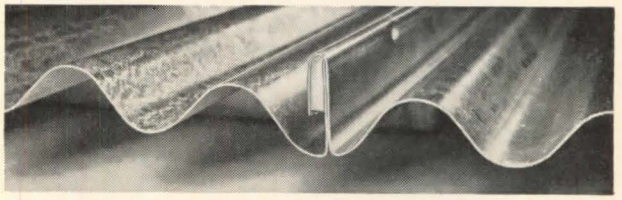
THE EDWIN F. GUTH COMPANY

BOX 7079 ST. LOUIS 77, MO.

Would YOU buy a metal roof like this

Every screw fastener is a potential leak when expansion, contraction, vibration, snow load and wind load works it loose. Capillary action pulls water *between* the sheets on this old-style side lap, too.

when you can get a *LEAK-PROOF* ROOF at virtually the same cost?



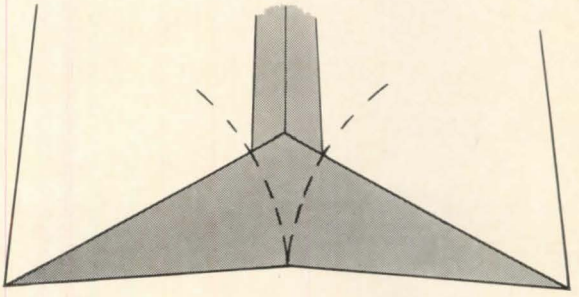
Rib-Seal has no holes, no screws. Its factory-caulked, interlocking side joint is die-clinched. The seal is higher than the corrugation crests—water can't get in—even with low roof pitches of virtual dead level.

Compare...

a lapped joint with a drilled hole and a sheet metal screw every 16 inches

...with

Rib-Seal,* a vertical joint nested in caulking, with no holes, no screws, no end laps for spans to 40 feet



Steep roof pitch has one main purpose—to minimize leakage. Leakage is already minimized—yes, *eliminated*—by Rib-Seal. You can drop your pitch to virtual dead level without chance of leaks, and save the gable end areas and up to 10% of roof area and the heat loss for both. You eliminate *all* the useless air space above the actual work space—an important factor in heating and air conditioning. And, of course, Rib-Seal is airtight, too.

Rib-Seal — another Smith "first" — is designed for both roof and wall installation. The new wider panel (up to 45") reduces the number of side joints. Available in greater lengths, it eliminates end laps for roof spans to 40 feet or more. It costs substantially the same as old-style corrugated sheeting.

Rib-Seal has a vastly improved appearance in addition to absence of side lap fasteners. The high joint imparts an attractive architectural accent line to roof and wall. Rib-Seal has so many points of superiority, and none of disadvantage, its exclusive use is clearly indicated.

Rib-Seal is available in 2⅔" x 9/16", 2⅔" x 7/8" and V-beam corrugations. You can get it in galvanized or aluminized steel, stainless steel or aluminum. It comes in all mill finishes, with Colorgard® the Smith factory-enamel in durable color, or with DuPont Tedlar® coating.

Insulated roofs and walls are provided by sandwiching rigid fiberglass insulation between an outside Rib-Seal panel and an inside flush panel or plain corrugated sheeting.

*Patent applied for

"Smitty builds walls for Keeps"

Write for Bulletin 64C or see Sweet's Architectural or Industrial Construction File 8b/Sm

ELWIN G. SMITH & CO., INC. Pittsburgh 2, Pa. / Detroit • Chicago
Cincinnati • Cleveland • New York • Atlanta • Toledo • Philadelphia

For more information, turn to Reader Service card, circle No. 439

specify MAHOGANY—nature's top wood, now available in quantity...

From the Architect of the Universe has come one wood closer to perfection than all others filling the forests of the earth. It's magnificent mahogany, the wood of the ages, finding use in a thousand tasks in the Twentieth Century.

As the world's largest importer and manufacturer of Genuine Mahogany, we handle only *Swietenia Macrophyalla* from Central and South America. It's yours quickly in any quantity at prices that will please you—and at lengths up to 20 feet, widths to 24 inches, and thicknesses to 4 inches!

You'll get the same magnificent material that tests by the U. S. Forest Products Laboratory and Cornell University show superior over all other popular hardwoods in nearly all properties for mortising, boring, planing, warping, shaping and turning. You'll have the same wonderful wood that remains unchanged, uncracked, unwarped in the Cathedral of Ciudad Trujillo built in 1514. You'll be relying on the same rugged material the government puts in invasion gliders, PT boats, and landing craft. And you'll join America's top architects who chose Genuine Mahogany recently for the interior of the luxurious Hotel Sheraton in San Juan, the Professional Golf Association's (PGA) clubhouse in Palm Beach, and the Library at the University of Chicago.

For name of our nearest dealer to you, write today. Free mahogany kit on request. Contains samples with finishes in red, yellow, green, blue, brown, and violet, plus mahogany fact book with mechanical stresses and other information.

For more data circle 350 on Inquiry Card.

QUALITY GENUINE

WEIS-FRICKER MAHOGANY

PENSACOLA, FLORIDA

Terrazzo is for the ages.

The flooring chosen for the new chapel at Manhattanville College of the Sacred Heart has proved itself in centuries of service. Jointless terrazzo is as beautiful as marble, as durable as concrete. It cannot curl, lift or wear thin...never needs waxing or buffing. Maintenance savings alone can pay entire construction costs of a terrazzo floor in 10 years or less. And the floor will outlast the building! ■ When you plan distinguished, long-life terrazzo floors, specify a matrix of ATLAS WHITE portland cement. Its uniform whiteness brings out the true color tone of aggregates and pigments. Complies with ASTM and Federal Specifications. Ask your local terrazzo contractor. For terrazzo brochure with color plates, write Universal Atlas, 100 Park Avenue, New York, N. Y. 10017.

Terrazzo flooring made with ATLAS WHITE portland cement. Chapel, Manhattanville College of the Sacred Heart, Purchase, N. Y. Architects: Eggers & Higgins. General Contractor: The George A. Fuller Co. Terrazzo Contractor: D. Magnan & Co., Inc., Mt. Vernon, N. Y.

Universal Atlas Cement
Division of
United States Steel

"USS" and "Atlas" are registered trademarks WT-102

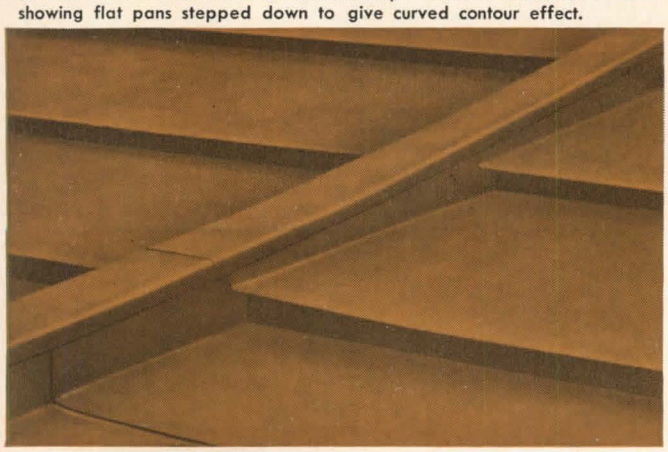
MODERN COPPER

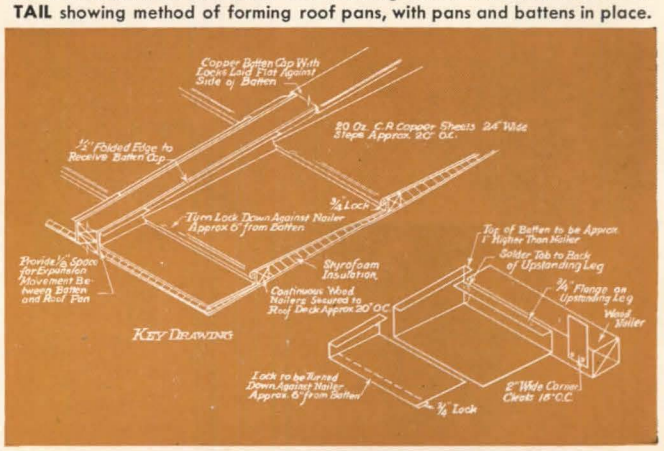
Revere Sheet Copper enables Architect to combine beauty and long life in a striking, modern roof design . . .

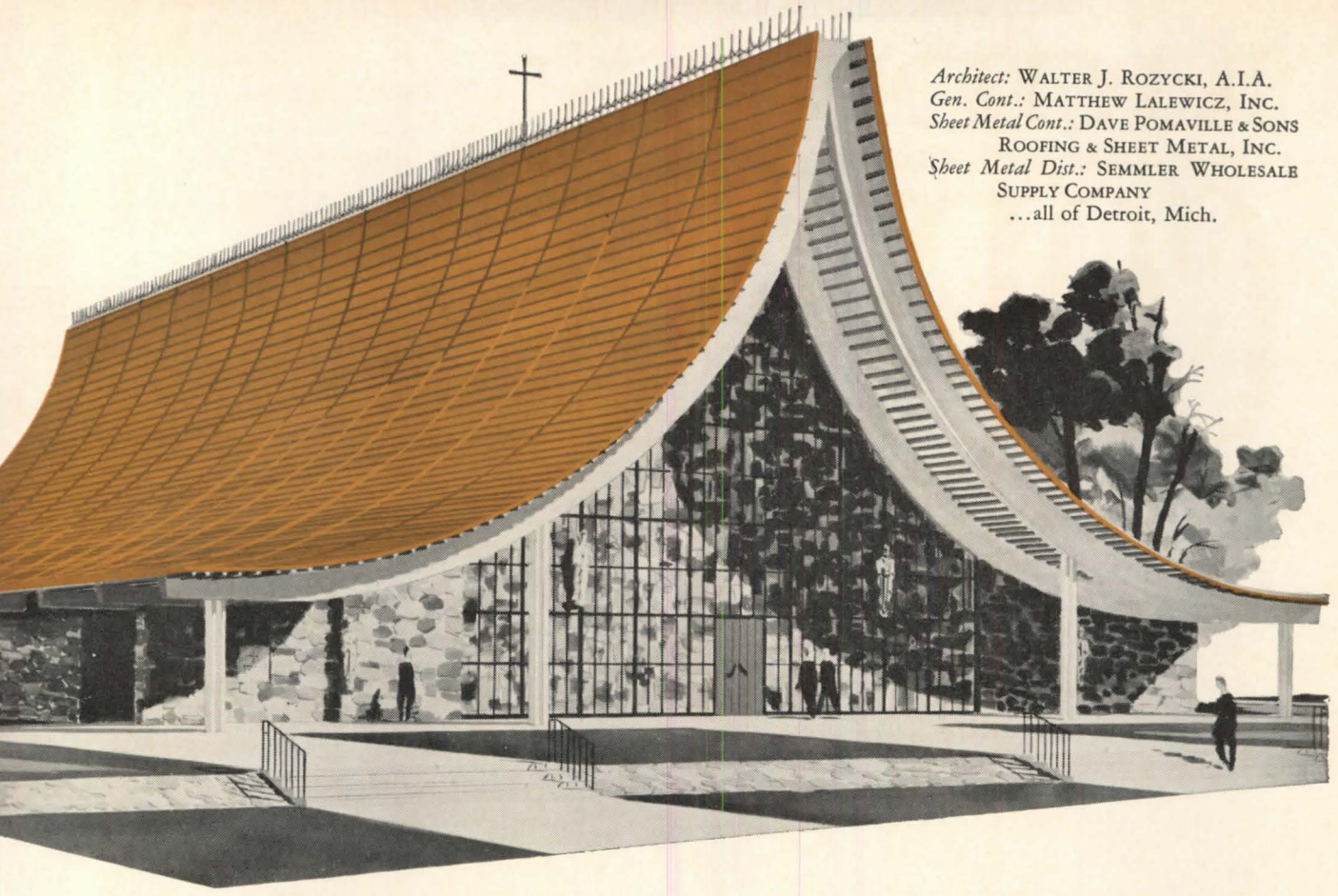
FOR SHRINE CHAPEL OF
OUR LADY OF ORCHARD LAKE,
DETROIT, MICHIGAN

(above) **VIEW OF REAR** of the Shrine Chapel. (below) **CLOSE-UP** of roof showing flat pans stepped down to give curved contour effect.

(above) **HERE YOU SEE** batten covers being affixed. (below) **ROOF DETAIL** showing method of forming roof pans, with pans and battens in place.







Architect: WALTER J. ROZYCKI, A.I.A.
Gen. Cont.: MATTHEW LALEWICZ, INC.
Sheet Metal Cont.: DAVE POMAVILLE & SONS ROOFING & SHEET METAL, INC.
Sheet Metal Dist.: SEMMLER WHOLESALE SUPPLY COMPANY
...all of Detroit, Mich.

In conceiving the design of this structure the architect, Walter J. Rozycki, visualized the bold, soaring sweep of the roof as the commanding element of the overall structure, both in size and contour. Said he, "Such a roof, without the use of copper and its characteristic design flexibility, would have been virtually impossible."

Other contributing factors in the selection of copper were its permanence, handsome appearance, and ease of fabrication.

Mr. Rozycki's plans called for flat, stepped-down pans. While this is a novel method of sheet metal construction, Mr. Rozycki, in collaboration with the Revere Research and Development Department and Technical Advisory Service, worked out a technique which enabled the sheet metal contractor to install these pans using only standard tools.

Details of construction are shown in the accompanying illustrations. The 4″ x 4″ vertical battens are spaced 10′0″ on centers; the 2″ high steps running horizontally between the battens are spaced approximately 20″ apart. Horizontal roof pans are of 24″ wide sheets of 20 oz. cold rolled Revere Sheet Copper. A tapered layer of rigid roof insulation is laid between the horizontal steps.

All told, 35,000 lbs. of Revere Cold Rolled Copper were used in 24″ x 120″ sheets. The versatility and design flexibility of copper is abundantly evident in the unusual details and the final striking results.

For unusual and beautiful architectural effects, remember: "Design with Copper in Mind". Revere's Technical Advisory Service will be happy to work with you.

SEND TODAY for free copy of "Copper and Common Sense," Revere's 140-Page Brochure illustrating the design principals and techniques of sheet copper construction. Also free companion piece, "The Revere System of Copper Flashing," for the complete weatherproofing of masonry buildings. Address Dept. "P-4" at address below.

REVERE
COPPER AND BRASS INCORPORATED
Founded by Paul Revere in 1801
Executive Offices: 230 Park Avenue, New York 17, New York
Sales Offices in Principal Cities. Distributors Everywhere.

For more information, turn to Reader Service card, circle No. 383

A NEW HIGH IN SAFETY at the lowest cost on the market!

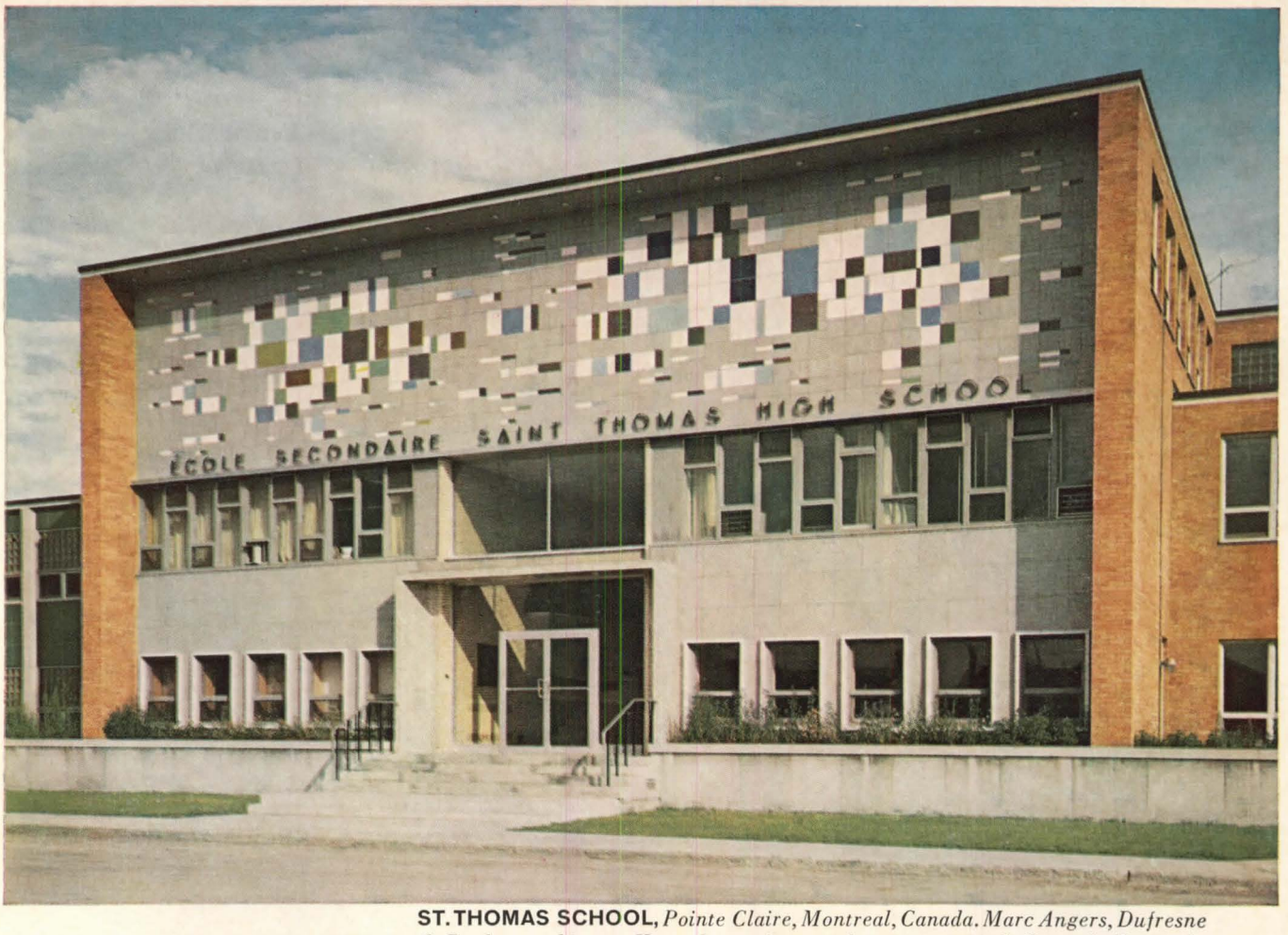
Another Bestwall First

Underwriters Laboratories approval for a 2-hour fire-rated assembly using "FIRESTOP-120" suspended in a fire-rated grid, with recessed lights and ventilation openings in the ceiling. Bestwall's famous 24″x24″ gypsum tile has already been providing the lowest cost 2-hour fire-rated ceiling. Now, with this new official approval, benefits are even greater to all architects, contractors and building owners. Reinforced with higher glass fiber content than ever before, "FIRESTOP-120" provides great resilience, strength, handling ease—plus a high degree of noise transmission loss. Get full details on this great value from

BESTWALL GYPSUM COMPANY, PAOLI/PA.
PLANTS AND OFFICES THROUGHOUT THE UNITED STATES

FIREPROOF GYPSUM
BESTWALL
BUILDING PRODUCTS

For more information, turn to Reader Service card, circle No. 326



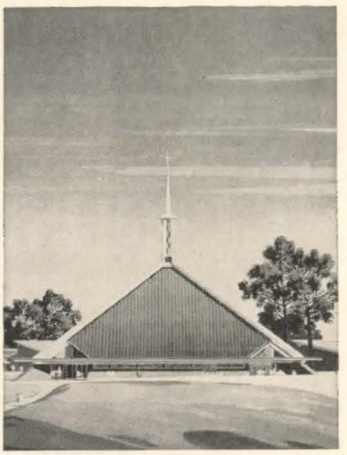
ST. THOMAS SCHOOL, *Pointe Claire, Montreal, Canada. Marc Angers, Dufresne & Boulva, architects. Huge decorative panel over entrance is Ceramic Veneer in a carefully designed variety of sizes and colors. Spandrels on all elevations are faced with Ceramic Veneer units 21½" x 17⅝" in mottled divot green.*

Color accents creative expression when you specify Ceramic Veneer

FEDERAL SEABOARD TERRA COTTA CORPORATION
10 E. 40th St., New York 16, N. Y.
Plant at Perth Amboy, N. J.

F S T C

Choose your color from Ceramic Veneer's broad spectrum—delicate tints or dominant hues, monochrome facings or polychrome panels. Select smooth, roughened or tooled textures... bevelled, fluted or scored forms. Specify ornamental sculpture or bas-relief, intricate trim or repetitive patterns. And if you're planning a colorful perforated facade or room divider, look over the twelve smart grille designs available in Ceramic Veneer. Besides versatility, custom-made Ceramic Veneer offers other important advantages to the architect and owner—proved permanence, lasting color, moderate price and minimum maintenance. Construction detail, data, estimates and advice on preliminary sketches involving the use of Ceramic Veneer will be sent on request. Write today.



Concordia Lutheran Junior College
A College of the Lutheran Church,
Missouri Synod—Ann Arbor, Michigan
Architect: Vincent G. Kling, FAIA
Philadelphia, Pa.
Roofing Contractor: Detroit Cornice
& Slate—Detroit, Michigan

ROOFS, ARCHITECTS, AND IMAGINATION. On the one hand, there is a renewed interest in visually significant roofs. And on the other, there is a notable increase in the specification of Follansbee Terne. We believe that both of these trends happily reflect a greater emphasis on purely imaginative elements in contemporary architecture, a welcome departure from the "anti-septic line". And both are essentially interdependent, for terne is unique among roofing materials in that it provides maximum creative latitude at relatively modest cost.

FOLLANSBEE STEEL CORPORATION Follansbee, West Virginia *Follansbee is the world's pioneer producer of seamless terne roofing*

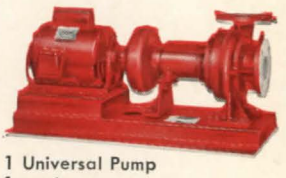
For more information, turn to Reader Service card, circle No. 340

B&G *Hydro-Flo* PRIMARY-SECONDARY PUMPING

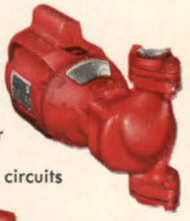
GIVES EACH TENANT COMPLETE CONTROL OF TEMPERATURE

THE BUILDING: Crystal Tower, San Francisco, Cal.
OWNER: Crystal Court Apartments, Inc.
ARCHITECTS: Schram & White, A.I.A., San Francisco, Cal.
ENGINEER: D. Coddington, San Francisco, Cal.
BUILDER: Peter Kiewit & Sons Co., San Francisco, Cal.
CONTRACTOR: Mitchell Plumbing & Heating, San Francisco, Cal.

B&G products used in the hot water heating system in this modern apartment building include—



1 Universal Pump for primary main

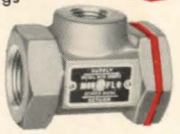


84 Booster Pumps for secondary circuits

1 Series 1522 Pump and 3 all-bronze Boosters for domestic hot water

1 Series 1531 Pump for pressure boosting

84 Flo-Control Valves



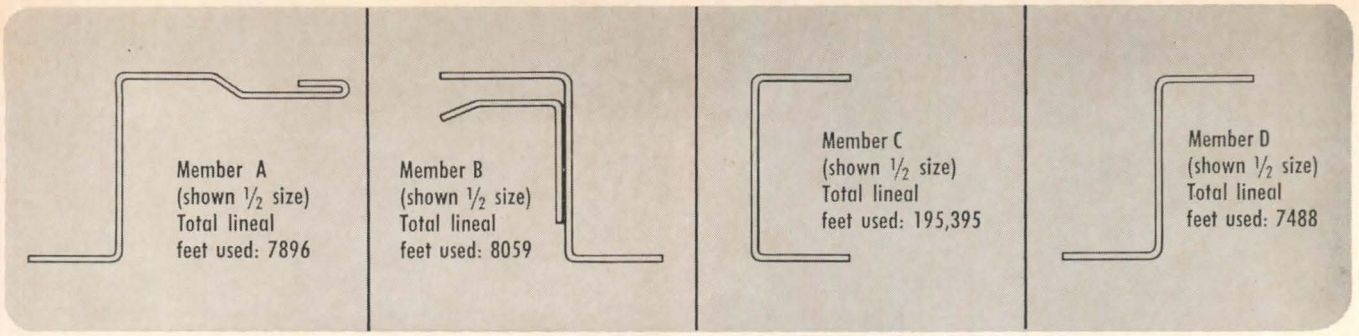
324 Monoflo Fittings

In this apartment building, the problem of providing comfort for *all* tenants is solved with a B&G *Hydro-Flo Primary-Secondary* pumping system. This method of zone control, as developed by B&G engineers, is proving the ideal way to provide automatic, balanced temperature control in multi-unit buildings. In the Crystal Tower, each apartment is on a separate zone, with its temperature individually controlled by a B&G circulating pump.

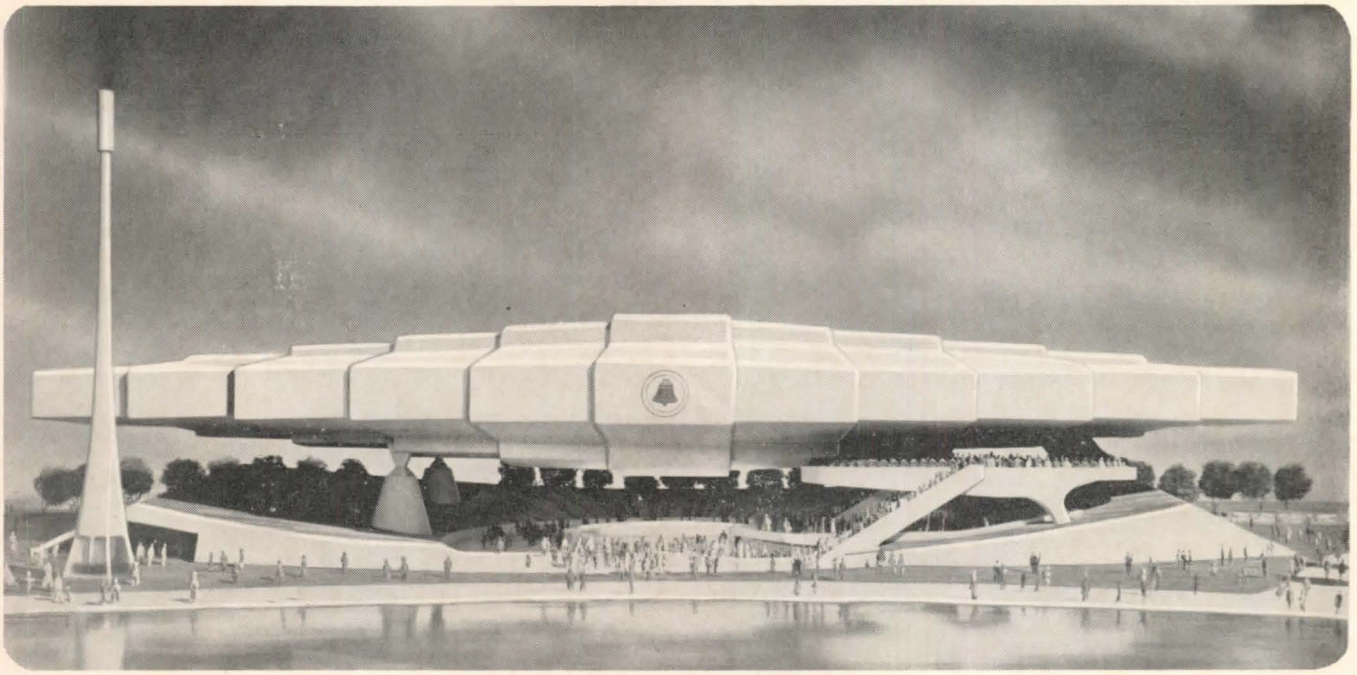
Zoning with pumps offers many exclusive advantages. Pumps do not require complex adjustments and assure positive control of circulation in secondary zones, even with high head pumps in the primary circuit. By designing the system with higher temperature drops, a substantial reduction in pump sizes and power requirements can be made.

For Primary-Secondary Pumping Design Data, write ITT Bell & Gossett Inc., Morton Grove, Illinois, Dept. IB-37.

ITT BELL & GOSSETT INC.
A SUBSIDIARY OF INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION



over 41 miles of Penmetal products go into Bell Pavilion at World's Fair



Among the fair's most impressive structures is the "floating wing" housing the Bell System exhibit. 400 feet long, 200 feet wide, it cantilevers from just four pylons.

The entire building is sheathed in glass-fiber-reinforced plastic panels. 450 of these cover 185,000 square feet of area. One eighth of an inch thick, they range in size up to 40 by 12 feet, and are framed with special Penmetal structural-steel members.

To provide stability against deflection under wind load, the panels are braced with the channel marked "C" in the drawings. Made from 16-gage steel with minimum yield point of 50,000 psi, these members are spaced on two-foot centers across each panel. Members "A" and "B" are used to join the panels together. Plastic was attached to the steel by sprayed adhesive.

This glass-fiber-enclosed "wing" contains a chair ride carrying visitors through a series of theaters illustrating the world of communications. The 1000-foot ride lasts approximately 12 minutes.

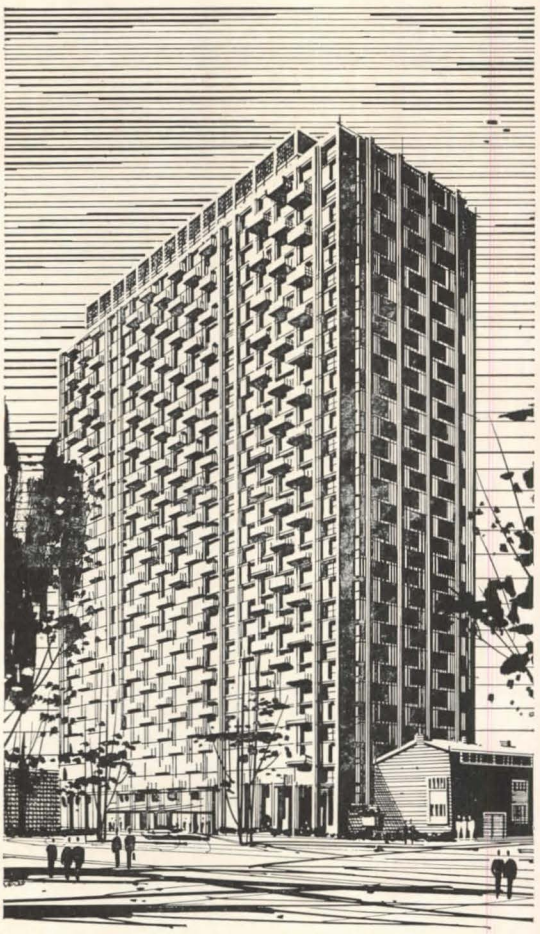
For a description of Penmetal's standard line of structural framing, write for a copy of catalog SS-47.

PENN METAL COMPANY, INC.

Sales Office: P.O. Box 1468, Parkersburg, W. Va. 26101
Executive Offices: 40 Central Street, Boston, Mass. 02109
Plant: Parkersburg, W. Va.
District Sales Offices: Boston, Chicago, Dallas, Detroit, Houston, Little Rock, Los Angeles, New York, Parkersburg, Philadelphia, Pittsburgh, St. Louis, San Francisco, Seattle

METAL MARK Penmetal 1869 OF QUALITY
a name to remember

PM-301



HAUGHTON ELEVONICS*

Brings TOTAL ELEVATOR AUTOMATION to Philadelphia's Newest Prestige Apartment . . . HOPKINSON HOUSE

Total Elevator Automation at luxurious new Hopkinson House means that elevator availability is matched precisely to traffic demand 'round the clock.

A remarkable new automatic computer-control system, created by Haughton Elevonics, constantly monitors traffic demand . . . and relays calls for service instantly to the car-control system in the elevator machine room. Response is immediate. Thus, elevator service is never more than just a few seconds away on any of Hopkinson House's 34 floors. What's more, the ride is a revelation in velvety smoothness and quiet comfort.

Include Haughton **Total Elevator Automation** in your plans for building or modernization. Ask your Haughton Sales Office (listed in the Yellow Pages) to consult with you, or write to us.

HAUGHTON ELEVATOR COMPANY
Division of Toledo Scale Corporation
Toledo, Ohio 43609

Hopkinson House Apartments
Washington Square South, Philadelphia, Pa.
Winner in 1963 of the AIA Philadelphia Chapter Award for finest design in residential structures, Philadelphia area

Architect: Stonorov & Haws, Architects Building, Philadelphia.

Builder: R. M. Shoemaker Company—Hopkinson House, Inc.
245 South 24th Street, Philadelphia.

* Haughton's advanced program in systems research and engineering, with specific emphasis on the creative application of electronic devices and instrumentation for betterment of systems design and performance. Registered in U.S. Patent Office.

For more information, turn to Reader Service card, circle No. 346

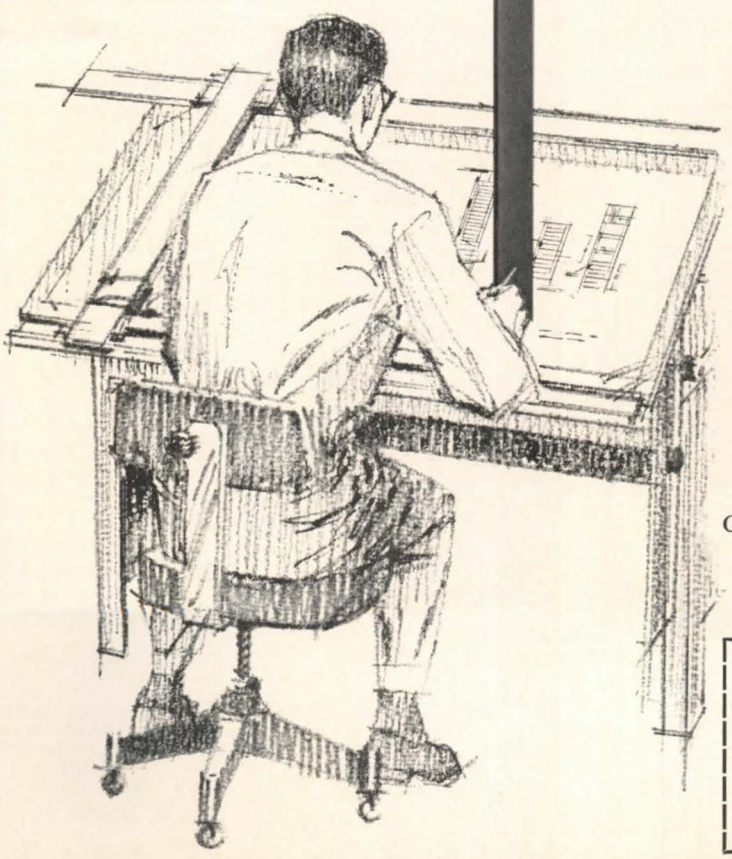
How to avoid for good the leaks in structural JOINTS

Specify sealants based on Thiokol's LP® polysulfide polymer. They have demonstrated ability to keep joints maintenance-free for 20 years and more.

Building leaks can be disappointing, troublesome, costly to you—and your clients. You can keep the problem from ever arising by including LP® polymer based sealant, either 2- or 1-part systems, in original joint design.

The compound, in effect, welds itself chemically to all structural materials—brick, concrete, stone, wood, metal, glass—in any combination. Elongation in working joints in excess of 100%—repeated expansion and contraction—will not break its steel-grip bond, or weaken its leak-stopping serviceability.

Sealant using LP® polymer (synthetic rubber in liquid form) stands up like a thoroughbred to sun, wind, rain, freeze, ozone, aging. It will not dry out and crumble from joints and seams. When this sealant goes in, the chance of leakage is wiped out—and stays out.



American Standard Specification A116.1 (July, 1960) and Federal Specification TT-S-00227a (GSA-FSS) (Sept., 1963) set quality and performance standards for polysulfide base sealant. Thiokol Chemical Corporation is the sole supplier of liquid polysulfide polymers. Names of sealant manufacturers on request.

Thiokol

CHEMICAL CORPORATION
780 North Clinton Avenue
Trenton, New Jersey 08607
In Canada; Naugatuck Chemicals Division,
Dominion Rubber Co., Elmira, Ontario

THIOKOL CHEMICAL CORP., Dept. PA-6
780 N. Clinton Ave., Trenton, N. J. 08607
Gentlemen: Please send further information about polysulfide base sealant ☐ 2-part ☐ 1-part, and free copy of Application Handbook.

Name_____
Firm_____
Address_____
City_____ State_____ Zip_____

EXTRUDED QUARRY TILE RESISTS EVERYTHING

Only *extruded* quarry tile offers so much resistance to wear, weather, abrasion, stains, acids, impact and dents. Only Summitville offers a complete Quarry Tile line...colors, textures, glazes and murals. Ask your ceramic tile contractor for the full story.

QUARRY TILE BY

Summitville

TILES, INC.
Summitville, Ohio

Member: Tile Council of America, Inc.

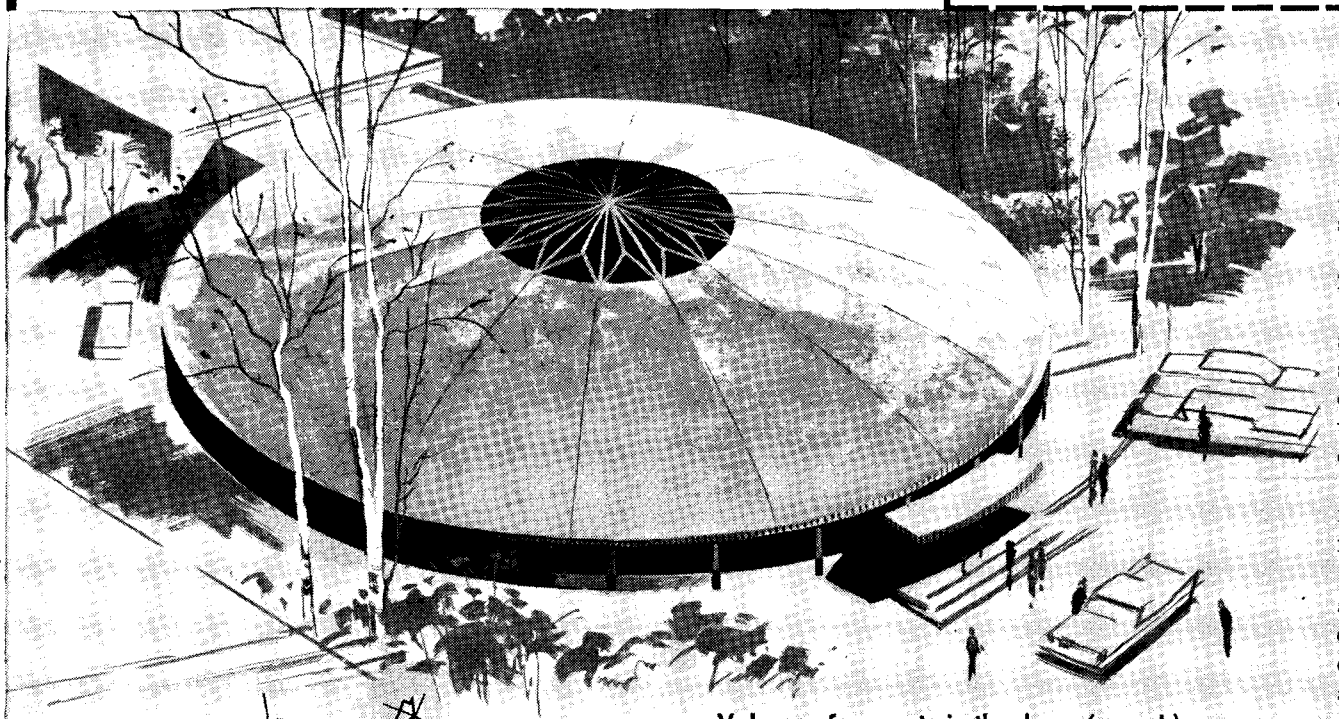
UNRETOUCHED PHOTO OF SUMMITVILLE TILE INSTALLATION

dome shell roofs

a.i.a. file: 4-a

Prepared as a service to architects by Portland Cement Association

Clip along dotted line



Designing for long spans and column-free space. The basic dome shell of concrete is architecturally important today for both practical and esthetic reasons. Because strength is inherent in the shape, shell roofs in the United States are being designed with thicknesses of as little as 2½ inches.

Dome shells are especially suitable for structures such as gymnasiums where spans are long and column-free space is required. As seen from the table below, shell thickness varies with length of span and curvature of dome.

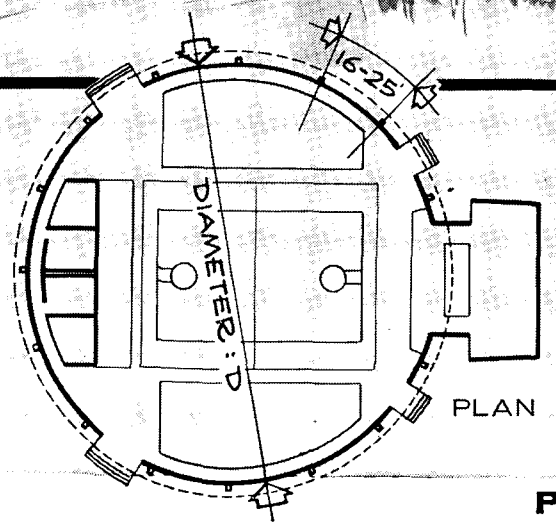
Domes may be pierced as desired for natural light, or appropriate domed or flat-fixed lights may be used.

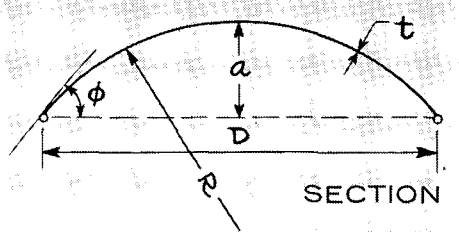
Get complete technical literature on additional aspects of concrete dome shell design, as well as other applications of concrete. (U.S. and Canada only.) Send a request on your letterhead.

Volume of concrete in the dome (cu. yd.)

$$\frac{D^2 (t+1)}{360}$$

D in feet, t in inches





DOME/SPAN DATA

D	t*	ϕ	a	R
100′	3″	30	13.4′	100′
		45	20.7′	70.7′
125′	3″	30	16.8′	125′
		45	25.9′	88.4′
150′	3½″ (3″)	30	20.1′	150′
		45	31.0′	106.0′
175′	4″ (3½″)	30	23.5′	175′
		45	36.2′	123.7′
200′	4½″ (4″)	30	26.8′	200′
		45	41.4′	141.4′

*Note: Shell thickness "t" is usually increased by 50 to 75 per cent near the periphery.

PORTLAND CEMENT ASSOCIATION

33 West Grand Avenue, Chicago, Illinois 60610

A national organization to improve and extend the uses of concrete

For more information, turn to Reader Service card, circle No. 378

For more information, circle No. 311 ➤

walnut panels with v-grooved pecan inlays

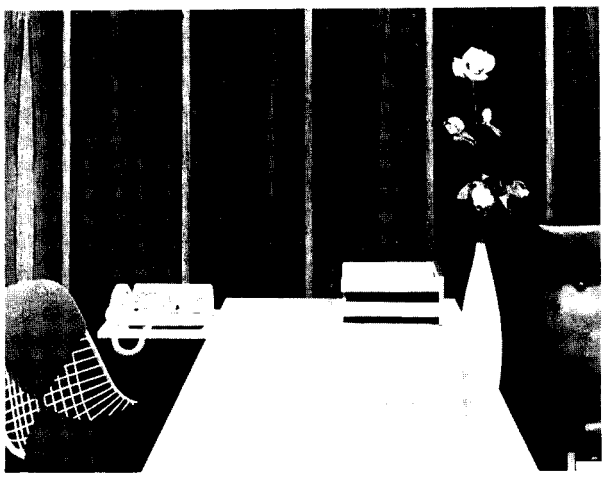
This luxurious new GP Georgia-Pacific Inlaid paneling will fit any budget!

(hardwood plywood panels with hand-rubbed look)

turn the page for details ❯

AIA FILE NO. 23L

What you should know about new Georgia-Pacific factory-finished Inlaid paneling



Beauty on a budget

Until now, only custom carpentry could achieve the luxurious look shown in color on the reverse page. Georgia-Pacific has just put Inlaid paneling within anyone's budget limit by producing it in factory-finished plywood panels. Retail price is from $26.95 to $29.75 per panel. G-P Inlaid paneling provides the full beauty of custom inlaid work, combined with the practicality of quick, easy installation and a protective, attractive factory-applied finish.

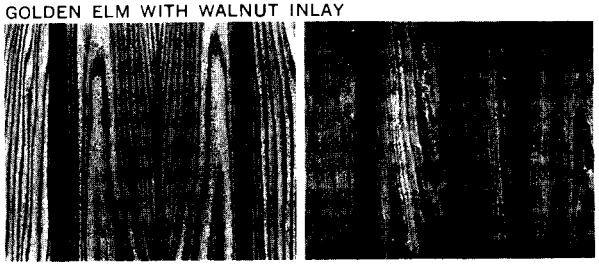
New Acryglas® finish gives hand-rubbed appearance

Both Inlaid and Gold Crest lines feature G-P's exclusive Acryglas catalyzed resin finish in a new application that gives the appearance of a hand-rubbed oil finish. The Acryglas finish is baked on in a 3-coat process, as per government specifications for finishing institutional furniture. This finish reduces flame spread up to 50% as compared to untreated veneers. It resists soils, stains and scuffs.

Specifications

Sizes and Species. Available in 4′ x 8′, 9′ and 10′ panels of 3-ply ¼″ hardwood plywood. (Panels of other thicknesses available on special order). Species: Golden Elm with Walnut inlay, Walnut with Pecan inlay, Pecan with Walnut inlay and Heirloom Cherry with Walnut inlay (this features a "distressed"* finish on the Cherry).

GOLDEN ELM WITH WALNUT INLAY

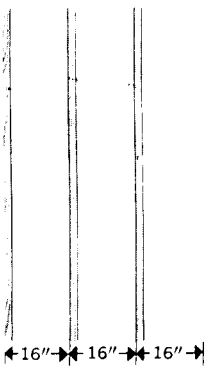


DISTRESSED CHERRY WITH WALNUT INLAY

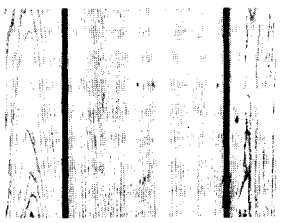
Face Veneers and Inlay. All face veneers are flat sliced and book matched on 14¾″ sections, 3 sections per panel, separated by 1¼″ wide inlaid strips. An inlaid strip is also provided at one edge of each panel for balanced installation.

V-Grooves. V-grooves are used at each joint between the inlaid strip and the sections. Grooves are accent finished.

Backs. Backs are hardwood veneers conforming to the requirements of CS 35-56 and are sealed to minimize moisture absorption.



Also new... Gold Crest paneling



GOLD CREST GOLDEN ELM

Specifications are the same as the Inlaid line, with the exception that ½″ channels, painted mocha brown, are used instead of inlays. Veneer patterns available are Golden Elm, Walnut, Pecan and Heirloom Cherry with "distressed"* finish.

*Note: "Distressed" Cherry has an antique appearance with Acryglas finish.

SEE INLAID PANELING AND OTHER GEORGIA-PACIFIC BUILDING PRODUCTS AT THE NEW YORK WORLD'S FAIR "HOUSE OF GOOD TASTE"

Mail this coupon for full details on new G-P INLAID Paneling:
Georgia-Pacific Corp., P.O. Box 311, Portland, Ore. 97207

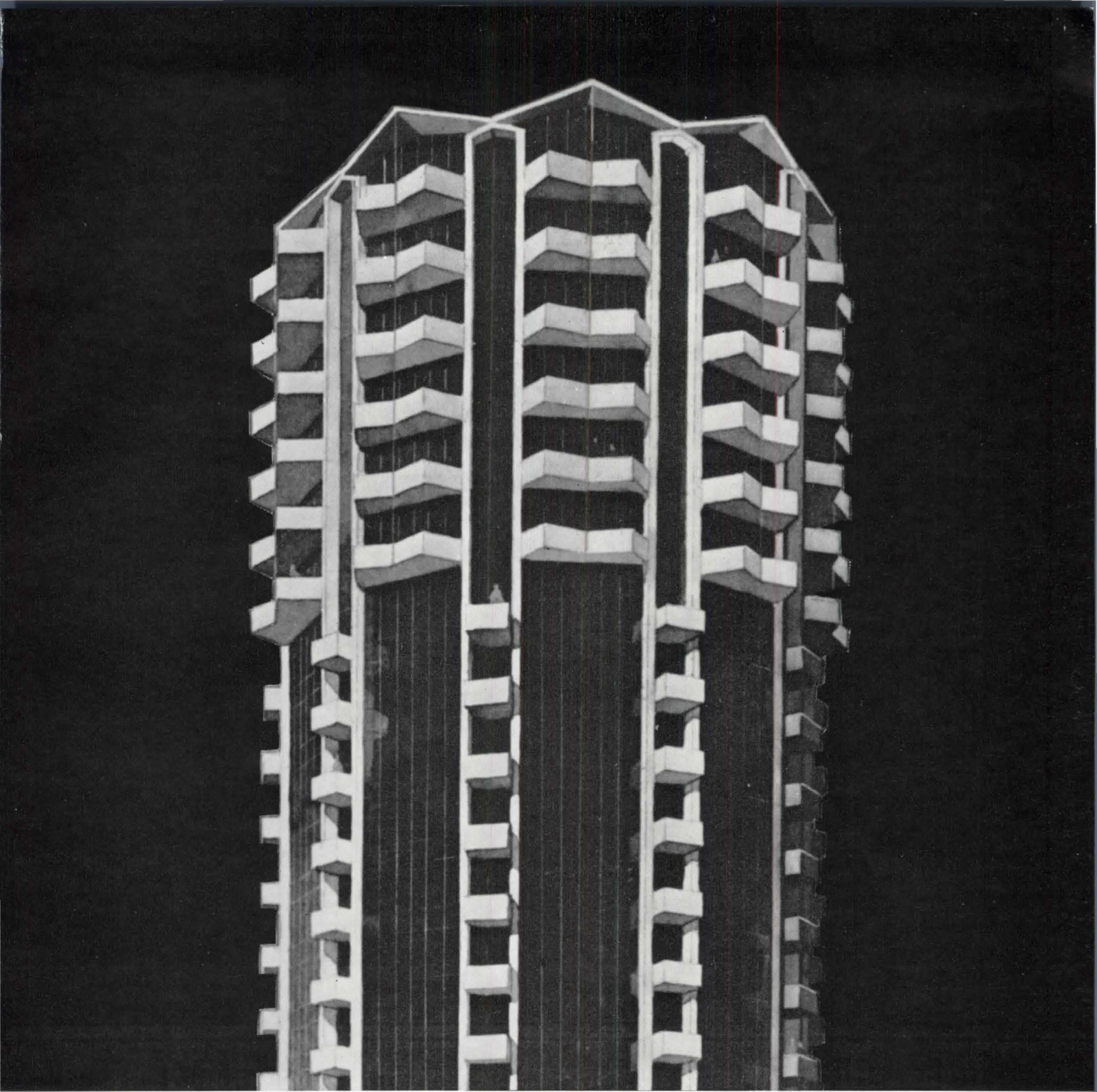
☐ Send full color brochure ☐ Have salesman call

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

GP
GEORGIA-PACIFIC
plywood • paper • chemicals • lumber



ARCHITECTS/ENGINEERS: HUDGINS, THOMPSON, BALL & ASSOC., INC. • MECH. ENGINEER: WILLIAM J. COLLINS, JR. • MECH. CONTRACTOR: KAY ENGINEERING CO. • GENERAL CONTRACTOR: B & G CONSTRUCTORS (ALL OF OKLAHOMA CITY)

The building's in Oklahoma. The climate's anywhere the tenant wants it because of Carrier and Gas!

Two Carrier Gas-Powered absorption refrigerating machines, with a total capacity of 550 tons, have custom-climatized every room in the new, striking United Founders Life Tower in Oklahoma City. Because of the system's Bypass Weathermaster® units, tenants can dial their own favorite climate. Management is getting in on the advances of Carrier, too, with top savings. The initial expense of the system is rockbottom because it uses the same boilers already on hand for heating. And operating expenses are low and kept that way because of the economical service-free fuel, Gas. Oklahoma has it. You can, too. Just call your local Gas Company. Or write Carrier Air Conditioning Company, Syracuse 1, N.Y. AMERICAN GAS ASSOCIATION, INC.

For heating and cooling Gas is good business!

SEE THE CARRIER GAS-POWERED ABSORPTION OPERATING EXHIBIT AT THE FESTIVAL OF GAS PAVILION—N.Y. WORLD'S FAIR 1964-1965

For more information, turn to Reader Service card, circle No. 319


THE GREAT SEAL OF
THE CITY OF WOOSTER OHIO

LUPTON CURTAIN WALL PLAYS A BIG PART IN THE BEAUTY OF SMALLER BUILDINGS, TOO

The new Municipal Building in Wooster, Ohio, is an outstanding public structure. Designed to serve as a center for varied municipal activities, it has achieved gracious beauty with the help of LUPTON curtain wall. This is also true in hundreds of other buildings, large and small, all across the country—because many noted architects call on Michael Flynn curtain wall experts for assistance in helping them to realize their creative concepts.

What's more, whenever LUPTON products and services can be of use, you can leave it to us to take care of details and to satisfy every curtain wall and window requirement just as you planned. Our reliability and skill in meeting the most exacting conditions with curtain walls are backed with many years of experience. LUPTON is noted for one-source responsibility—from plans to final construction. For information, contact our local representative, or call any office listed below.

LUPTON

MICHAEL FLYNN MANUFACTURING COMPANY

Main Office and Plant: 700 East Godfrey Ave., Phila., Pa. 19124; West Coast Office and Plant: City of Industry (Los Angeles). Sales Offices: San Leandro, California; New York; Chicago; Cleveland; Cincinnati; Austin; Dallas. Representatives in other principal cities.

Municipal Building, Wooster, Ohio. Architect: Dalton & Dalton Associates, Cleveland, Ohio. Contractor: Freeman Construction Co., Cleveland, Ohio.

Other Lupton Products of Outstanding Excellence: Aluminum Windows and Sliding Glass Doors

Bold lines reflect design for today's needs, speak of quality backed by years of experience. These doors and windows install easily, give lasting and trouble-free service. LUPTON understands budget needs, too. For excellence in quality, design, variety and service . . . for up-to-the-minute features to keep clients happy —select LUPTON, *and be sure!*

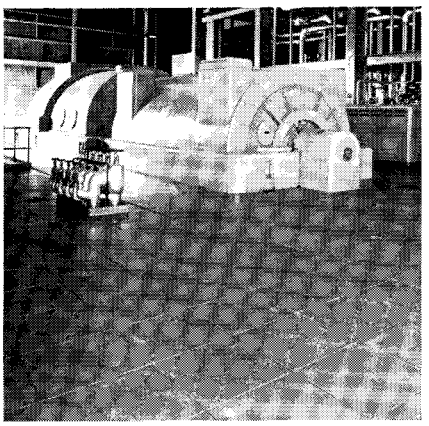
Notes on floor specification

THE designer or contractor who plots floor finishing costs against ultimate hardness or durability recognizes the almost straight-line ratio between material cost and desired results. Despite overlapping claims from a multiplicity of products, no one product is a cure-all. The key to long-range performance and cost reduction lies in tight specification of the hardener, curing method and sealer.

Simplification of the labor process and reduction of "dead time" for curing are as important as selection of the proper hardener. Engineering which avoids "second step" finishing is both desirable and practical in reducing costs and meeting performance requirements.

Where possible, a good metallic or emery hardener can be incorporated into the surface of a freshly placed floor to provide abrasion resistance, hardness and safety. While the advantage of this monolithic method lies in a single curing and finishing requirement for the base slab and its surface treatment, the same products can be utilized in toppings where necessary. Colorant hardeners fall in this category also, and are ideal for commercial and light industrial applications, particularly where dustless floors are desired.

Metallic hardeners (1) provide high resistance to rolling and crushing loads; emery hardeners (2) deliver abrasion resistance and safe footing even when wet or oily. Colorant hardeners (3) in addition to decorative effects, should be considered for permanent, low-maintenance color coding of safety zones and other floor areas.



Horn Colorundum colorant hardener produced this handsome, linoleum brown powerhouse floor which has outstanding appearance and wear characteristics.

After six years this packing house floor is a solid testimonial to Horn Ferro-Fax metallic floor hardener.

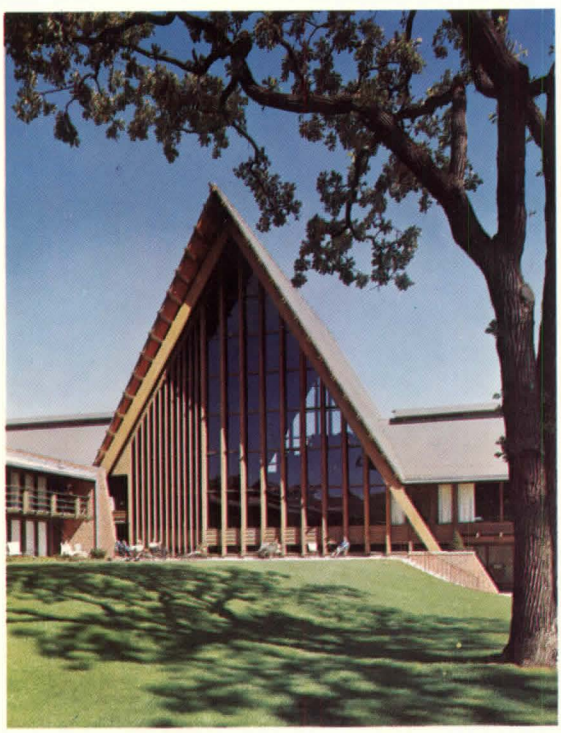
Curing can't be over-emphasized in any concrete work and is of particular importance in the durability of floors. Once again, where the floor is monolithic, a combination curing agent, hardener, dust-proofer and sealer (4) can eliminate extra steps and shorten "dead time". Such a curing agent can be used in conjunction with other hardeners or on plain concrete. For the after-treatment of virgin concrete, fluosilicate hardeners (5) provide increased durability at low cost.

Grace Construction Materials has the industry's broadest line of quality floor materials. Consult A. C. Horn Products in Sweet's Catalog for details. Or for specifications and suggestions on the best hardener, sealer or treatment for your requirements, write to: W. R. Grace & Co., 62 Whittemore Avenue, Cambridge 40, Mass. Literature available on request: (1) FERRO-FAX *Form CMD-111;* (2) DURAFAX *Form CMD-899;* (3) COLORUNDUM *Form CMD-136;* (4) HORN CLEAR SEAL *Form CMD-1714;* (5) HORNOLITH/HORNSTONE *Form CMD-112.*


VISUAL DRAMA
WITH
GLASS

PURPOSE AND CONCEPT differ in these two buildings. Yet both designs find their solution in Glass— proving once again the versatility and adaptability of Glass as an architectural design material.

THE ABBEY. The name itself suggests the desired atmosphere— refuge, dignity, serenity.



An eighty-foot A-frame forms the dominant mass of the front elevation. Within this lofty angle, glass exposes the interior . . . extends a tacit invitation to the passing traveler. And because the glass is PPG Solargray® Plate Glass, the effect is achieved while protecting guests from solar heat and glare.

The Abbey Motor Hotel and Resort, Fontana, Wisconsin
Architect: A. Epstein and Sons, Inc., Engineers and Architects, Chicago, Illinois
Glazing Contractor: A. O. Bauer Glass, Inc., Delavan, Wisconsin

A CIRCLE OF GLASS forms the wall of McConaughy Hall, the striking new freshman dining hall at Wesleyan University. The natural beauty of the setting, equally dramatic in any direction, is reflected by glass to add visual interest to the exterior design of the building.

McConaughy Hall, Freshman Dining Hall,
Wesleyan University, Middletown, Conn.
Associated Architects: Brown, Lawford and Forbes and
Warner Burns Toan Lunde, New York, New York

Here again PPG Solargray® Plate Glass made possible the exploitation of the site without sacrificing interior comfort. Its transparency adds to the feeling of spaciousness; its heat and glare reduction improves the interior atmosphere. And its light weight contributes to overall building economy.

PPG makes the glass that makes the difference

Dramatic yet cheerful and friendly is the effect achieved with PPG Solargray. The dignity of glass combines successfully with the qualities of every conceivable building material to create new effects.

Solargray is but one of the many special PPG products created to serve both function and design in today's building. For further information, contact your nearest PPG branch office or distributor, consult Sweet's Architectural File, or write Pittsburgh Plate Glass Company, 632 Fort Duquesne Boulevard, Pittsburgh, Pennsylvania 15222.

PPG makes the glass that makes the difference

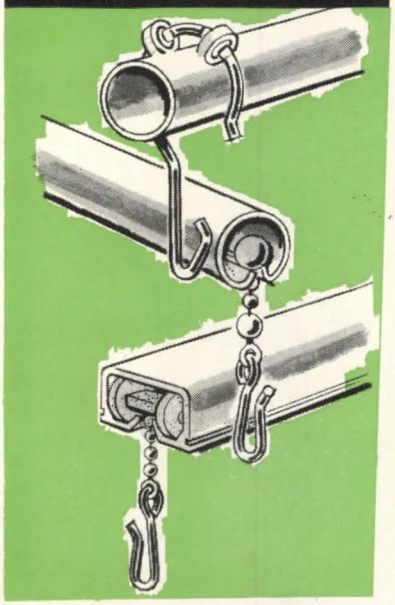
Send for your free copy of Technical Service Report Number 101.

Recommendations for all glass products to meet structural requirements—Sonic booms, Underwater windows, Wind loads, Skylights and floors.

Write to A. G. Jensen, Pittsburgh Plate Glass Company, One Gateway Center, Pittsburgh, Pennsylvania 15222.

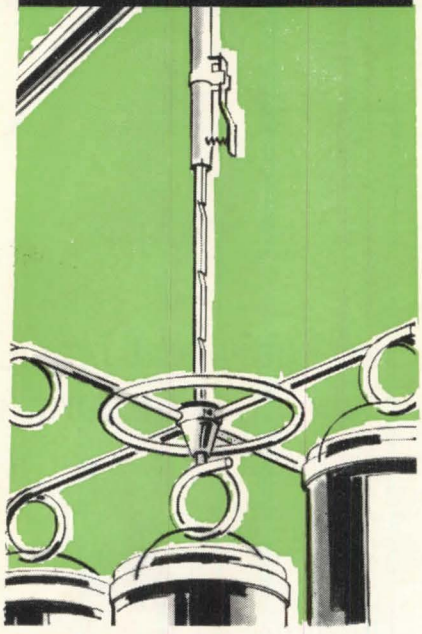
Surface mounted, recessed or suspension track types, available with all accessories.

CUBICLE TRACKS



Intravenous feeding device with overhead track for mobility and vertical position settings for gravity flow.

I.V. FEEDING SYSTEMS



Curtains are available in wide range of colors. Permanent vat dyes insure color fastness. All curtains are sanforized.

CUBICLE CURTAINS

GRANT / *for the hospital*

The care given to details, the concern for quality, the prompt servicing of customers' needs; part and parcel of Grant Hospital Products. Why not write for Grant's important new Hospital Products Catalog.

Send for Grant's new Cubicle Hardware Catalog. Clear, compact data and description on the full line.

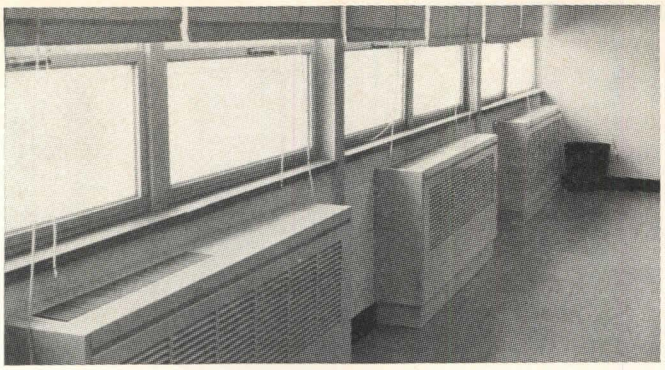
GRANT PULLEY & HARDWARE CORPORATION ■ EASTERN DIVISION / 49 High Street, West Nyack, N. Y. ■ WESTERN DIVISION / 944 Long Beach Ave., Los Angeles 21, Calif.

This small southern school has first-class heating-ventilating -yet the cost was low!

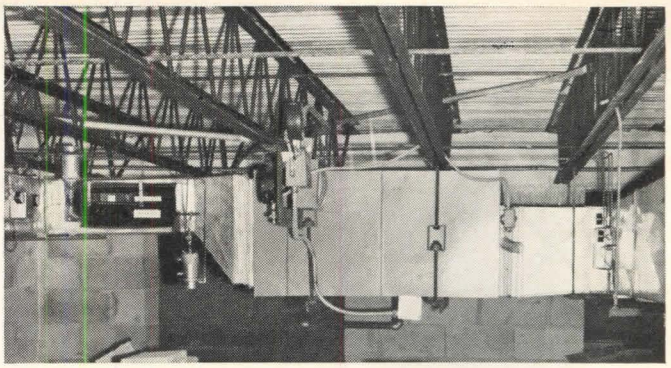
Expert design and Carrier equipment provide full future climate control and partial air conditioning now at $1.58/sq. ft. cost

Wilmington Road Junior High School, Fayetteville, North Carolina

Architect: MacMillan and MacMillan, A.I.A., Fayetteville. *Consulting Engineer:* P. H. Brown & Associates, Raleigh. *General Contractor:* Player, Inc., Fayetteville. *Mechanical Contractor:* McGirt Plumbing & Electrical Service, Maxton. *Superintendent of Schools:* C. Reid Ross. *Principal:* J. W. McCoy



Cool air from a central source is fed at the rate of 1200 cubic feet per minute to each classroom through three Carrier Weathermaster air terminals. Room air is induced into the front of the cabinet, warmed as needed by the hot water coil, and mixed with central air.



Carrier fan-coil units like this in crawl space condition air for groups or zones of classrooms. Motor-operated dampers at left control the amount of outside air admitted for ventilation or free cooling. Duct leads to air terminals to the right.

This junior high school cost only $9.70 per square foot to construct and yet has a first-class central heating-ventilating system convertible to year-round climate control.

At $1.58 per square foot, the central air system designed around Carrier equipment cost slightly less than heating-ventilating systems previously used in the area, yet offers many advantages in performance and future adaptability.

The school is of conventional design with double loaded corridors. The first stage, which consists of 11 classrooms, library, lunchroom, kitchen, and administrative area, was completed in 1963. Further construction will add 20 classrooms, including science and home economics facilities, a large library and gymnasium.

The present library and administrative areas already have economical, year-round air conditioning with Carrier packaged equipment. This functions independently of the Carrier Classroom Weathermaster® system installed for heating and ventilating the 11 classrooms. Performance advantages of the system are described separately here. The system also provides for the low-cost addition of year-round climate control—estimated, in this case, at about $500 a classroom, or 70 cents a square foot.

Whatever the design and size of the school you are contemplating, Carrier offers a broad line of matched major components to do the job most economically and efficiently. Equally important, when the job is done, Carrier has the service to back up the installation. For Carrier and its dealers maintain the most experienced service organization in the business. And the largest—more than 12,000 men strong.

For information about components for *any* school, call your Carrier representative. Or write Carrier Air Conditioning Company, Syracuse 1, N. Y. In Canada: Carrier Air Conditioning (Canada) Ltd., Toronto 18.

Advantages of the Carrier Classroom Weathermaster System

This system is ideal for any school where exterior walls and windows must be swept with warm air in winter to prevent cold downdrafts. All cooling, air cleaning and air movement is done from a central single-zone Weathermaker or from a central built-up air treatment station. A single-duct system delivers air to the two or three Classroom Weathermaster units located in each classroom. Each of these units contains a hot water or steam coil which makes temperature adjustments as directed by the room thermostat.

1. Classroom air is completely changed in every room up to 10 times per hour, preventing stuffiness.

2. All moving parts, filters and fans are centrally located for easy maintenance without entering the classrooms.

3. Single-duct, low-pressure system minimizes sheet metal work and fan horsepower required to move air.

4. "Free" cooling is obtained by circulating up to 100% outside air in intermediate seasons.

5. Classroom units operate as ordinary radiators to heat on weekends and nights. Central fan need operate only in severest weather.

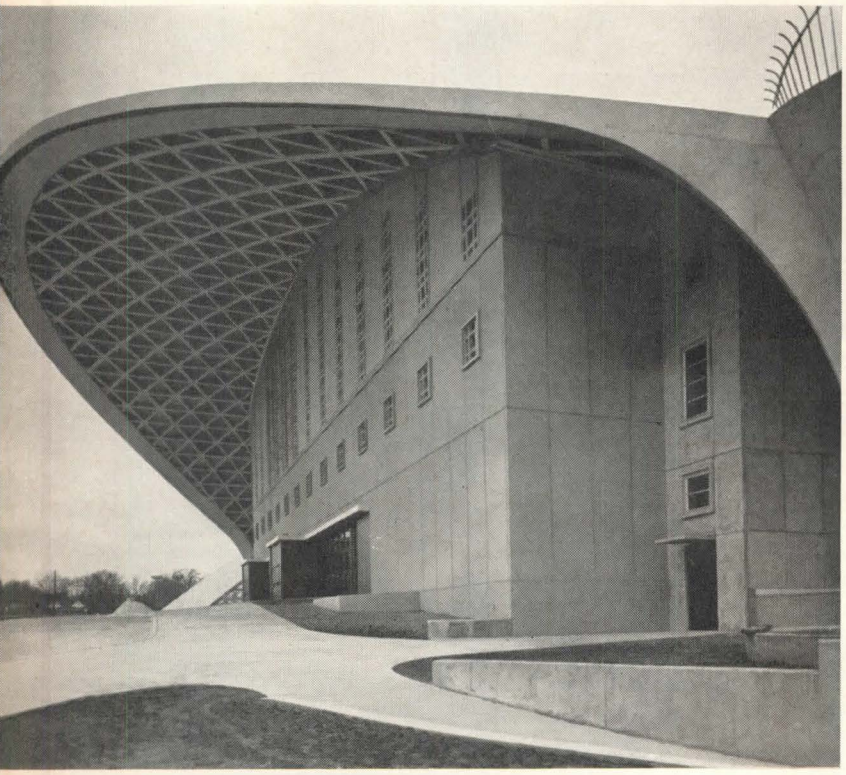
6. With no moving parts in the classroom, sound levels are low, uniform and easily held within acceptable limits.

7. The system can provide heating and ventilating only and be converted to full air conditioning economically later.

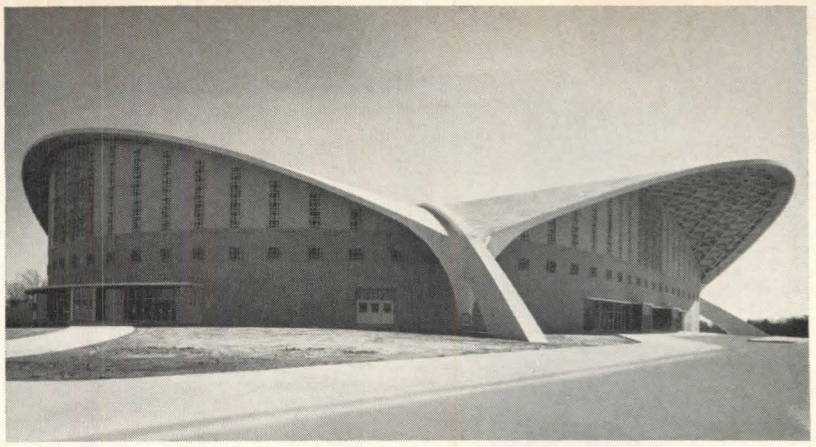
Carrier

Air Conditioning Company

The most versatile concrete



University of Georgia Coliseum, Athens, Ga. • Architect: Cooper, Barrett, Skinner, Woodbury & Cooper, Atlanta, Ga. • Consulting Engineer: Chastain & Tindel, Inc., Atlanta, Ga. • General Contractor: Thompson & Street Co., Atlanta, Ga. & Charlotte, N. C. • Pozzolith Ready-Mixed Concrete: Jackson Ready Mix Co., Athens, Ga. • Lightweight Aggregate Supplier: Georgia Lightweight Aggregate Co., Atlanta, Ga.



Example of versatile concrete with POZZOLITH. The 400-ft. clear span roof seems to hover over the 4-story arena like a great umbrella. POZZOLITH provided the precise concrete control which allowed the reality to match the concept.

is made with Pozzolith

Controlled performance concrete made with POZZOLITH gives you predictable benefits. One of these is greater versatility than plain concrete or concrete made with any other admixture.

Design freely. Mold cast-in-place concrete to express your concept. Synthesize precast components into dramatic shapes. Take your choice of standard or lightweight concrete. Use steep slopes or flat expanses, crisp smoothness or textured roughness, thin shells or brute masses. Be creative — but, benefit with POZZOLITH.

POZZOLITH improves concrete three vital ways: reduces water content, controls rate of hardening and improves durability. It gives you positive control over concrete in all its many forms so that the reality will match your design. The benefits POZZOLITH can add to your project are exemplified by the University of Georgia Coliseum shown here, a massive yet graceful union of cast-in-place supporting members and 9200 precast elements.

Greater versatility is only one of many POZZOLITH benefits. POZZOLITH also improves strength, workability and durability; reduces water permeability and cracking; assures lower cost in place. For details, call your Master Builders field man. The Master Builders Company, Cleveland, Ohio 44118.

MASTER BUILDERS®
a construction materials division of *MARTIN MARIETTA*
POZZOLITH*

*POZZOLITH *is the registered trademark of The Master Builders Co. ingredient for concrete which provides maximum water reduction, controls rate of hardening, and increases durability.*

For more information, turn to Reader Service card, circle No. 364

Sperry-Rand Building, N.Y.C., managed by Rockefeller Center. Architects—Emery Roth & Sons. Consulting Architects—Harrison & Abramovitz. General Contractor—Uris Buildings Corp. Revolving Doors—International Steel Co.

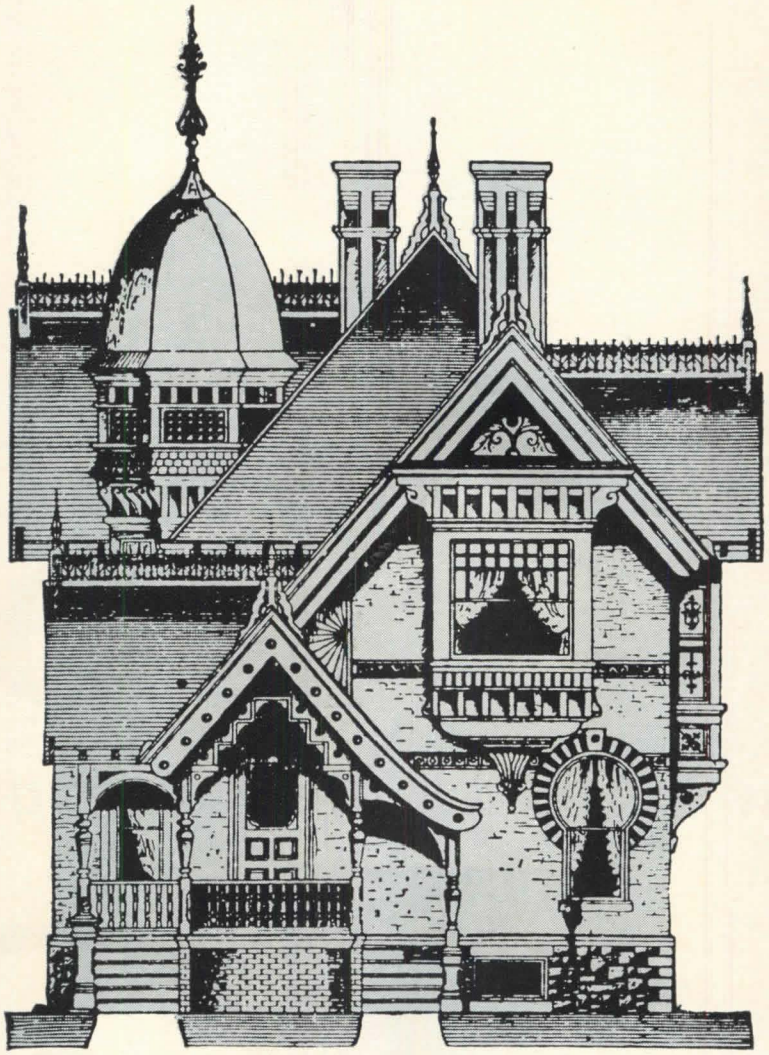
A Stainless Steel door is beautiful, strong, corrosion-resistant, durable, easy to maintain, competitively priced.

No other material combines all the characteristics of nickel stainless steel. Its outstanding strength permits the use of thin members where desired, as in these revolving doors. Stainless steel has a subtle sheen that stays attractive for the life of the building with occasional detergent and water cleaning. Under normal conditions, it won't corrode, pit, tarnish or deteriorate. And since it's solid right through, there's no coating to scratch or discolor.

Why not specify the practical advantages and lifetime beauty of stainless steel for all your door and entrance designs. For helpful information and a list of door manufacturers, write for Inco's set of four "Architectural Guide Specifications for Stainless Steel Doors" covering revolving, swinging, sliding and rolling doors.

The International Nickel Company, Inc. 67 Wall Street, New York 5, New York

INCO



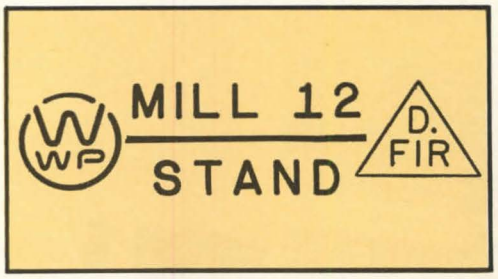
if you, too, yearn for self expression...

If you're bored with structural formalism, fatigued with modular measure, contemptuous of mere utilitarianism, suffocated by ethnocentric cultural limitations . . . if you feel the need of a little spatial complexity, or a touch of surface enrichment here and there . . . in short, if you're going to be a real swinger, there may be a few—well—a few problems. Like where does the TV antenna go. But there is one problem we can help you with—that's the lighting.

Gotham Lighting Corporation, 37-01 thirty-first street, long island city 1, new york

WATCH FOR

a new hallmark of lumber quality



This is the new grade mark which will soon be found on Western lumber. It has been adopted by the WESTERN WOOD PRODUCTS ASSOCIATION—a group of leading manufacturers, formerly members of the West Coast Lumbermen's Association and Western Pine Association, who have combined into one progressive organization in order to serve you even better than before.

The new WESTERN WOOD PRODUCTS ASSOCIATION includes manufacturers in 13 Western States, an area producing more than 65 per cent of all the softwood lumber in the United States.

The new grade mark, that will appear on lumber produced by the combined member mills, is an assurance of lumber quality for specifiers, sellers and users of lumber.

The same practical variety of grades will be available, using the same names. The only difference will be that the one new hallmark of quality will appear on all of them, as your assurance of satisfaction.

The high ethical standards and integrity of both organizations will be combined and continued in the new Association.

The new grade mark will appear on the following species: Douglas Fir, Engelmann Spruce, Idaho White Pine, Incense Cedar, Lodgepole Pine, Larch, Ponderosa Pine, Sitka Spruce, Sugar Pine, Western Hemlock, Western Red Cedar and White Fir.

For further information, write:
West Coast Lumbermen's Association
1410 S.W. Morrison St., Portland, Ore. 97205

For more information, turn to Reader Service card, circle No. 401

Fabricator: American Bridge Division of U.S. Steel Corporation

HOW LONG SHOULD IT TAKE TO ENCLOSE A BUILDING?

The five men putting up these panels weren't out to set a record.

They worked at normal pace. Yet, in just under four working days they erected the 50 sturdy panels needed to completely enclose three open sides of this building addition.

The 24′x4′ panels go up fast. Big and strong as they are, they are also lightweight and easy to handle.

They're made of Hetrofoam®-based polyurethane foam 2⅝″ thick poured in place between steel skins by American Bridge Division, United States Steel Corporation.

The Hetrofoam-based foam adds rigidity and dimensional stability to the panel and has an insulation value double that of ordinary insulating materials. Its k factor, initially as low as .11 at 75° F, stays remarkably stable. **Won't support combustion.** Fire retardance is inherent in the chemistry of Hetrofoam systems. It adds nothing to the cost. They are rated nonburning on ASTM D-1692-59T.

For more information on Hetrofoam and its architectural applications, please write Durez® Plastics Division, Hooker Chemical Corporation, 7706 Walck Road, North Tonawanda, N. Y., 14121.

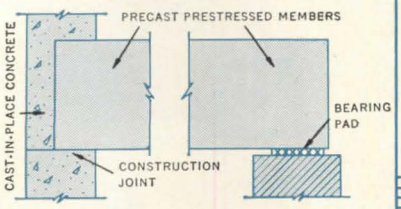
DUREZ PLASTICS DIVISION

HOOKER CHEMICALS® PLASTICS

THERE ARE SIMPLE
PRESTRESSED CONCRETE CONNECTIONS
FOR EVERY STRUCTURAL APPLICATION

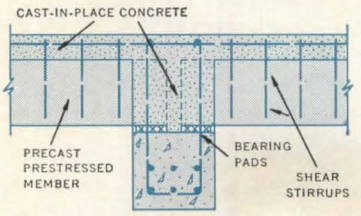
There are many different ways to connect prestressed concrete members. And they're accomplished with common operations like welding, bolting, or cast-in-place concrete requiring only normal construction skills. This wide choice of field-proven connections permits broad flexibility in design. Designers are able to rely on economical standardized connections ranging from simply supported to fully fixed—or develop new solutions. Connections are just one aspect of prestressed concrete's versatility.

These are examples of basic concepts ready for completion by the designer.



GRAVITY

Flexible bearing pads allow for even load distribution, provide for joint rotation and are inexpensive insurance against adverse stress conditions occurring in the bearing area. If moment transfer into the wall is not needed flexible pads can be placed at points of contact where the beam enters the wall. However, with proper reinforcing into the cast-in-place section, continuity can be provided.

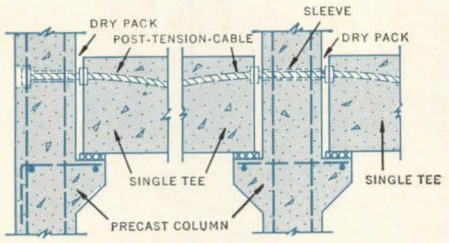


CAST-IN-PLACE

This connection has the appearance and behavior of monolithic concrete. At an interior connection, the top bars may be long enough to extend over the full negative moment area, or the bars may be lap spliced. Close length tolerances of the beams are not required.

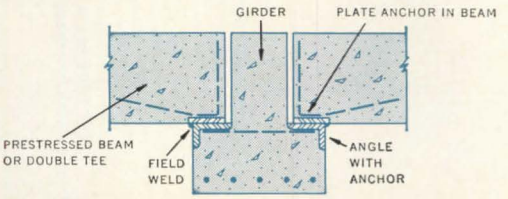
POST-TENSIONED

Post-tensioned connections are good for the resistance of high moments. All post-tensioning anchorages and devices should be installed in accordance with manufacturer's recommendations. The conduits containing the tendons should be grouted except where deterioration is prevented by other means. A small chamfer at the outer edge of the concrete haunches will reduce spalling. Also, bearing pads will help prevent cracking of haunch corners.



WELDED

This type of all weather connection can be quickly erected. It is useful where moment carry-over to adjacent spans and stress reversals are to be avoided. If heavy dead loads are to be placed on the beam, make tack welds during erection and provide full fillet welds after all dead loads are in place, thus reducing stresses in the welds. Consideration may be given to a welded connection at the top of the beam, with a flexible bearing pad where the beam bears on the girder, resulting in partial restraint. Prestressed beams tend to shorten slightly over a period of time, and if frame is inflexible one end of each beam should be left free to slide.



Connection Details for Precast-Prestressed Concrete Buildings, just published, is the result of more than two years study by the PCI Connection Details Committee. Purpose of this publication is to assist designers in selection of appropriate connection details. Detailed schematic drawings show all established types of connections grouped in four main sections: column base, beam-to-column, beam-to-girder and bearing wall. Illustrated and described are welded, cast-in-place, dowelled, bolted and post-tensioned connections. **Price: $4.50**

PRESTRESSED CONCRETE INSTITUTE

205 WEST WACKER DRIVE • CHICAGO, ILL. 60606

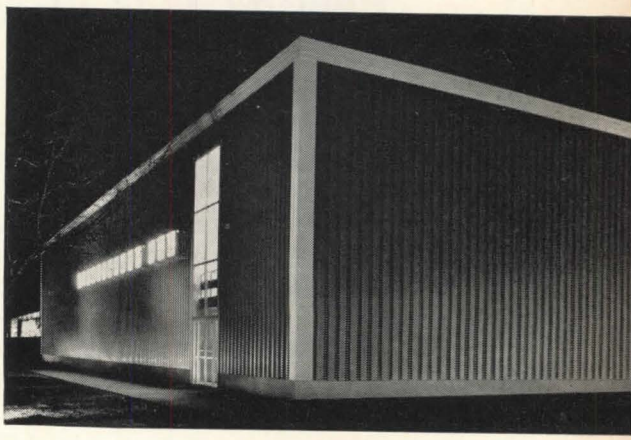

THE WHITE HOUSE

NOW: architectural panels surfaced with Du Pont TEDLAR®

A finish of TEDLAR* PVF film was specified for these architectural building panels. Typical of the increasing number of building products available with TEDLAR, these "Shadowall"† panels by Elwin G. Smith Co. offer the architect flexibility in design and practical application. They look good, go up fast, cost relatively little and combine inner and outer walls and insulation in each modular unit.

More and more architects are specifying TEDLAR on siding and roofing. This film finish is available on standard building products as well as on building panels and accent panels produced by custom fabricators to the architect's original design.

Find out more about TEDLAR. Write Du Pont Film Dept., Box 602-C, Wilmington, Delaware 19898.



Channellock Inc., Meadville, Pa.
Architects-Engineers:
Lauren & Lenn Reagle, Meadville, Pa.
General Contractor:
Associated Contractors of Conneaut Lake, Pa.

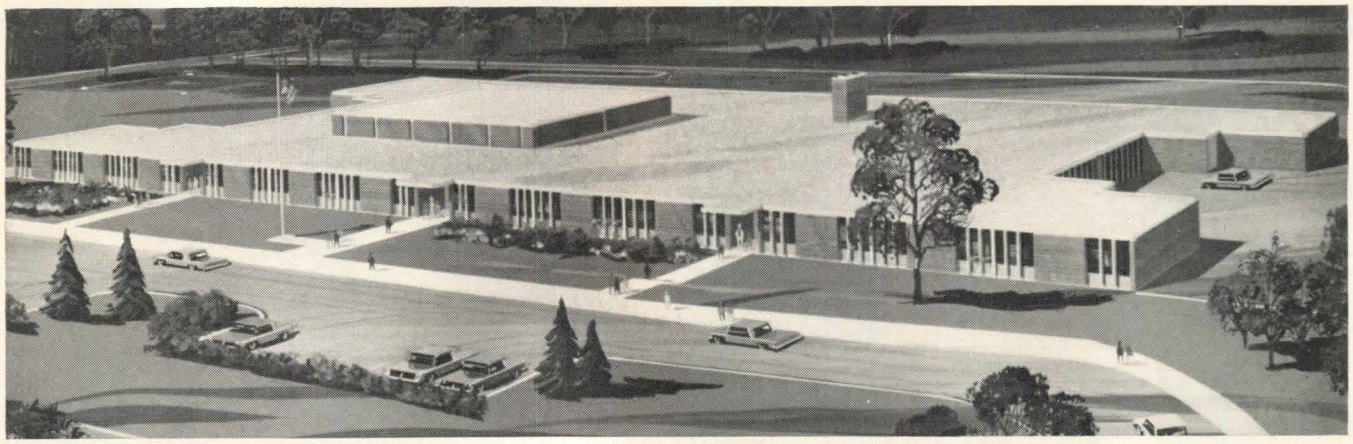
*Du Pont registered trademark.
†Elwin G. Smith Co. registered trademark.

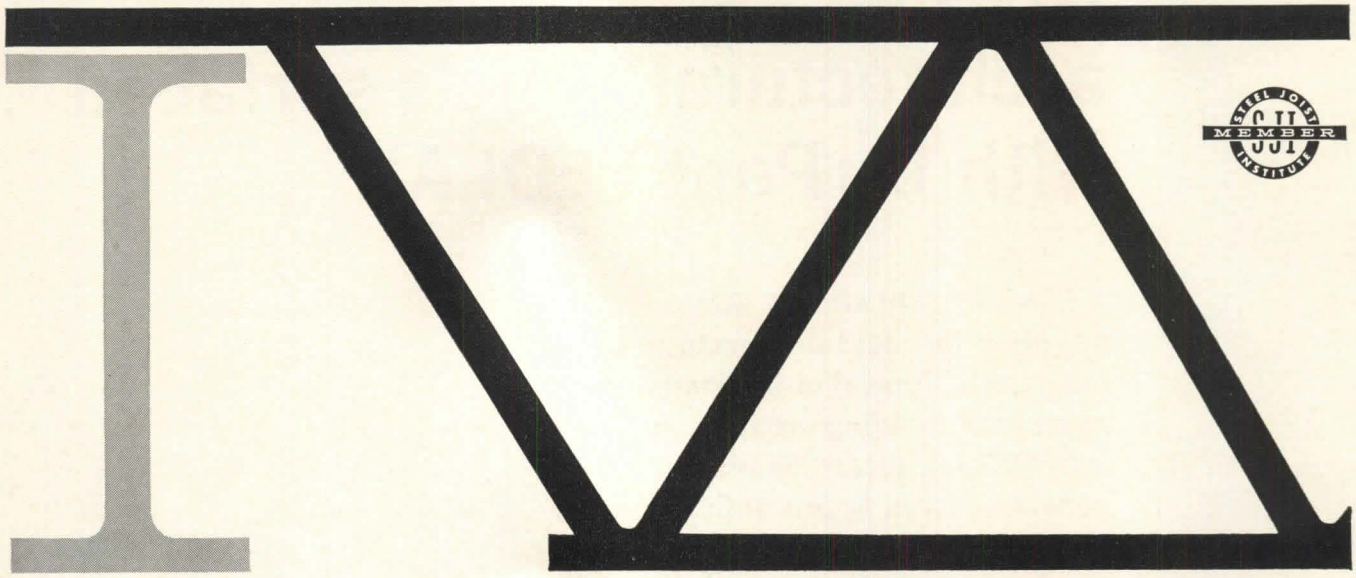
DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

For more information, turn to Reader Service card, circle No. 337

Architects: Monroe and Lefebvre, Kansas City, Missouri
Owner: Elementary School District No. 49, Overland Park, Kansas
Structural Steel Fabricator: Havens Structural Steel Company, Kansas City, Missouri
Contractor: R. L. Henry Construction Company, Grandview, Missouri





How 52 tons of steel joists cut weight in this school

Roof structure for this new elementary school in Overland Park, Kansas, consists of 499 Sheffield Open Web Steel Joists. They are high strength joists—H-Series—made with modern Sheffield Steels having a minimum yield strength of 50,000 psi. Total deadweight is 52.5 tons. Because the architect elected to use the most modern design concept, employing the high load-carrying capacity of H-Series Joists, deadload was substantially less than with the older, widely accepted J-Series Joists.

Designing with high strength H-Series Sheffield Joists can bring economies to structural frame designs and foundations, too. There's less deadweight to hold up in the air. For data on Sheffield Open Web Joists, including H-Series and J-Series, see our catalog in Sweet's Architectural File, or write for your copy of the latest Sheffield Joist Catalog. All Sheffield Joists meet the widely accepted specifications of the Steel Joist Institute. **Sheffield Division, Armco Steel Corporation, Department S-1154, 7000 Roberts Street, Kansas City, Missouri 64125.**

ARMCO Sheffield Division

TORGINOL
DURESQUE

SEAMLESS-RESILIENT FLOORING

CONTINUOUS FLOW OF SEAMLESS-RESILIENT FLOORING WITH PERMANENT BEAUTY

Hospitals, recreational centers, office, apartment buildings, and homes now can be beautified with a permanent flow of wall to wall seamless beauty that will not collect dirt, moisture or germs . . . Torginol *Duresque* is a combination of scientifically prepared colored chips and liquid glaze that can be solidified over new or existing floors of wood, concrete, and most other firm surfaces. Torginol *Duresque* can be applied to exteriors as well as interiors and utilized as a coving and wainscot providing a monolithic tough thin wearing surface not attacked by most acids, alkalies or hydrocarbon solvents. Exterior *Duresque* is cushioned with Torginol's rubber-like substance, "Torga-Deck" that waterproofs and furnishes elaborate elongation characteristics.

This majestic flow of three dimensional permanent beauty can be obtained in any combination of colors and patterns giving the architect and decorator desiring uniqueness in flooring design . . . *design latitude.*

For further information, check the Yellow Pages for your nearest Torginol Dealer or write:
Customer Relations Department, Torginol of America, Inc., 6115 Maywood Avenue, Huntington Park, California.
508 Old Country Road, Hicksville, L.I., New York

IF IT'S MODERN IT'S SEAMLESS. . . . IF IT'S SEAMLESS IT'S TORGINOL. EIGHTEEN YEARS OF WORLD-WIDE ACCEPTANCE.

TORGINOL
OF AMERICA, INC.
Subsidiary of Western Industries, Inc.

For more information, turn to Reader Service card, circle No. 396

One good

Mo-Sai®*

job deserves another

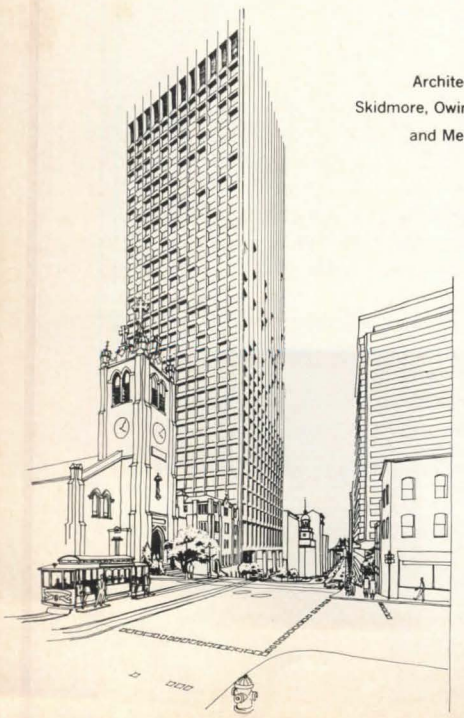
The International Building, designed with Mo-Sai concrete splayed panels, added a new landmark to the San Francisco skyline.

Now a distinguished new neighbor, the 33-story Hartford Building rising across the street, also makes use of Mo-Sai's design versatility and erection speed.

The Mo-Sai precast concrete windowall units —typically 10′ x 12′ x 2′ and a fine-texture and buff color — lend three-dimensional design effect in addition to their function as window frames and sunshades.

Recesses for fixed window glazing were integrally cast into the Mo-Sai windowalls. The units were made under precise quality controls in a franchised Mo-Sai plant.

*Mo-Sai precast concrete panels and windowalls



Architects:
Skidmore, Owings,
and Merrill

MO-SAI INSTITUTE, INC. Office of the Secretary: 15 East Franklin Street, Richmond 7, Virginia

BADGER CONCRETE CO.
P.O. Box 1068, Oshkosh, Wisconsin

BEER PRECAST CONCRETE, LTD.
110 Manville Road,
Toronto, Ontario, Canada

BUEHNER & CO., INC.
P.O. Box 936, Mesa, Arizona

BUEHNER CONCRETE PRODUCTS CO.
301 West 60th Place,
Denver 16, Colorado

CAMBRIDGE CEMENT STONE CO.
P.O. Box 41, Allston 34, Massachusetts

ECONOMY CAST STONE CO.
P.O. Box 3-P, Richmond 7, Virginia

FORMIGLI SALES CO.
6 Penn Center Plaza,
Philadelphia 3, Pa.

GEORGE RACKLE & SONS CO.
Newburg Station, Cleveland 5, Ohio

GOODSTONE MANUFACTURING CO., INC.
470 Hollenbeck Street, Rochester 21, N.Y.

GRASSI AMERICAN CORP.
111 South Maple Avenue,
South San Francisco, California

HARTER CONCRETE PRODUCTS, INC.
1628 West Main Street,
Oklahoma City 6, Oklahoma

OLYMPIAN STONE CO., INC.
1415 N.W. Ballard Way, Seattle 7,
Washington -
Vancouver, British Columbia

OTTO BUEHNER & CO.
640 Wilmington Ave.,
Salt Lake City 5, Utah

PLASTICRETE CORPORATION
1883 Dixwell Avenue,
Hamden 14, Connecticut

SOUTHERN CAST STONE, INC.
P.O. Box 1669, Knoxville 1, Tennessee

SUPERCRETE, LTD.
P.O. Box 80, St. Boniface,
Manitoba, Canada

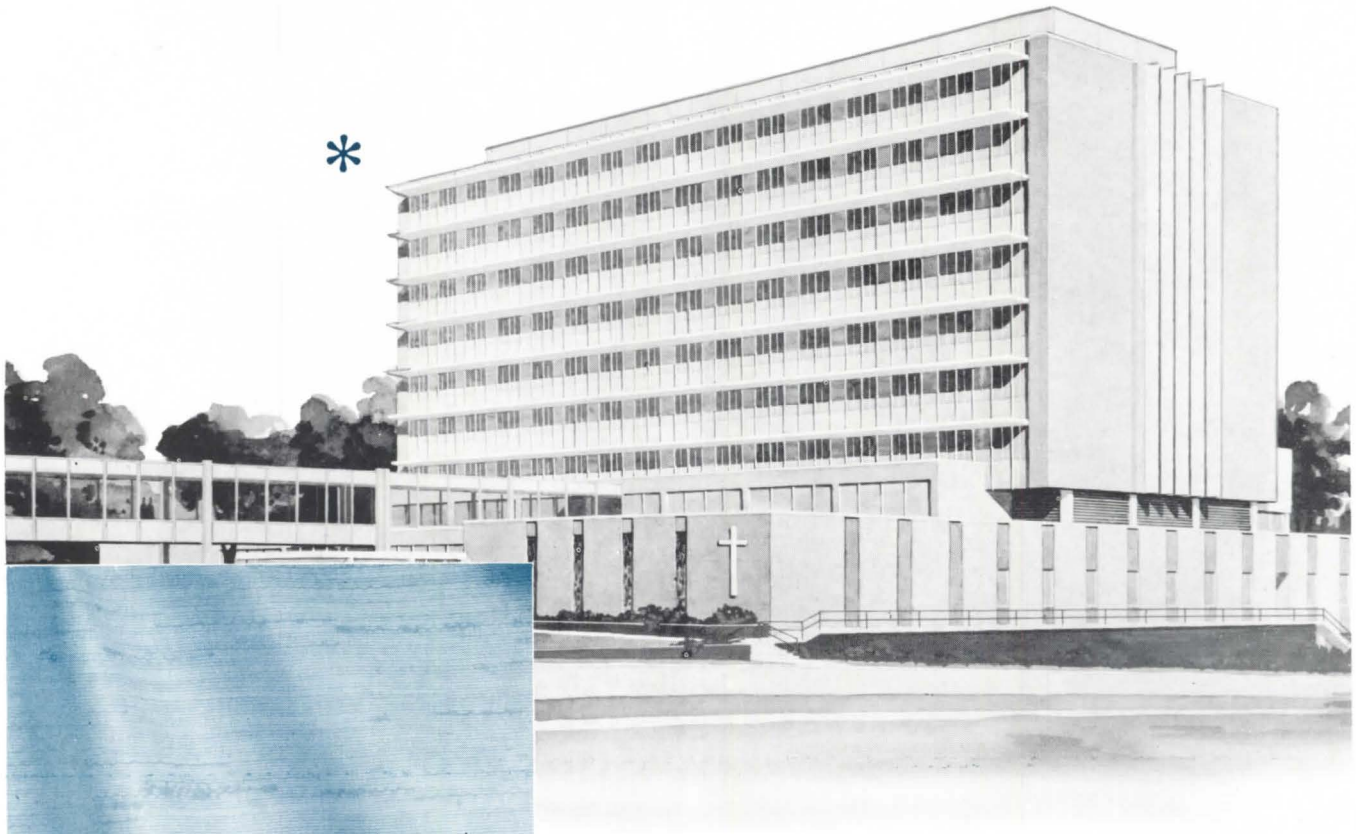
TEXAS INDUSTRIES, INC.
P.O. Box 400, Arlington, Texas

THE RACKLE COMPANY OF TEXAS
P.O. Box 15008, Houston 20, Texas

WAILES PRECAST CONCRETE CORP.
11240 Peoria Street, Sun Valley
(Los Angeles), Calif.

WILSON CONCRETE CO.
P.O. Box 56, Red Oak, Iowa
P.O. Box 208, South Omaha, Nebraska

PERMON® 3-Ply Vinyl Wall Covering combines breath-taking beauty...abuse resisting performance



Small wonder that more and more leading architects and designers are specifying Vinyl's "First Three": FABRON, HEAVY-DUTY and SUPER-DUTY PERMON for America's foremost building interiors.

Hospitals, hotels, motels, schools, institutional and commercial buildings whether of new or of old construction are benefiting from FABRON's and PERMON's abuse resisting "locked-in" beauty . . . the result of their unique 3-Ply construction of virgin vinyl, featuring a heavy clear top film that permanently protects color and print.

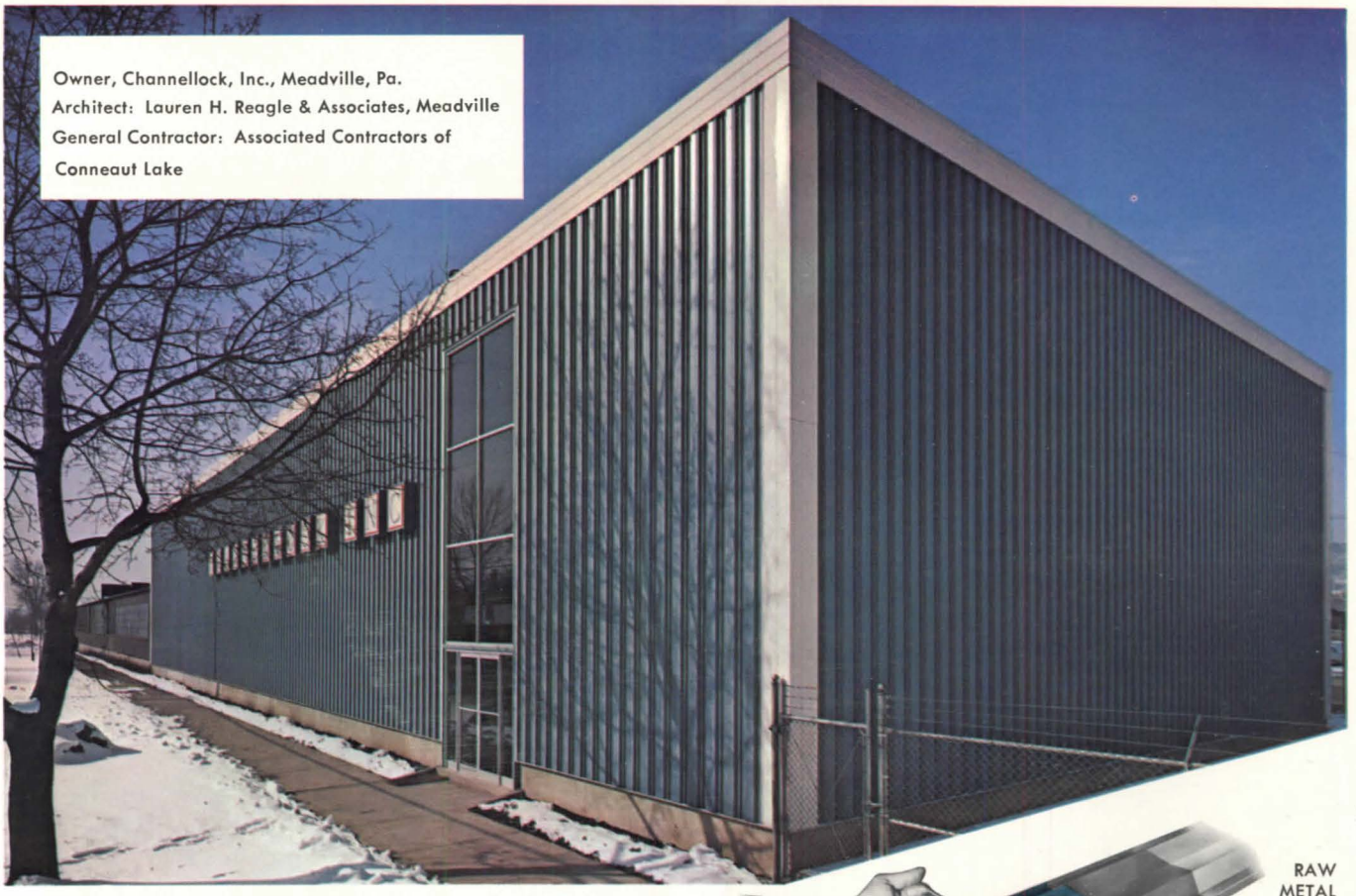
A new range of 600 colors, textures and prints . . . survey-selected by prominent architects and interior designers, offers you a vast decorative range second to none. Write for catalog No. 6364 so you, too, can specify with confidence . . . for breath-taking beauty and enduring performance.

**Permon being applied in all surgical corridors and some rooms and nursing stations of the New Mercy Hospital, Denver, Colorado, a 300 bed hospital designed for the Sisters of Mercy of Colorado by Linder, Wright & White, Architects.*

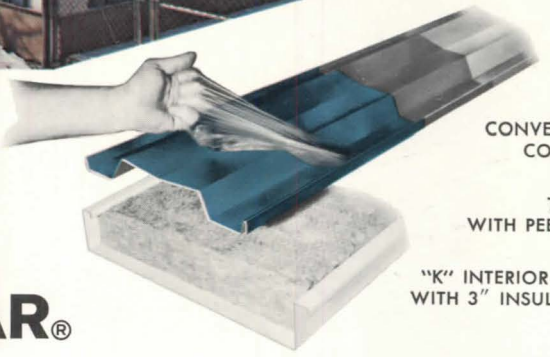
FREDERIC BLANK
& COMPANY, INC.
Est. 1913 • Oldest in Permanent Type Wall Coverings
P. O. Box 388, Passaic, New Jersey

For more information, turn to Reader Service card, circle #309.

For more information, circle No. 392 ➤



Owner, Channellock, Inc., Meadville, Pa.
Architect: Lauren H. Reagle & Associates, Meadville
General Contractor: Associated Contractors of Conneaut Lake



NOW: SMITH INSULATED METAL WALL PANELS WITH LONG-LIFE TEDLAR®

Yes! Now you can have the excellence, durability and architectural good looks of Smith insulated metal walls with the lasting beauty and protection of a Tedlar color surface.

Tedlar* by Du Pont, bonded to a Smith panel contour of your choice, is a new exterior finish of fluoride film. By a special bonding process, Tedlar becomes a part of the metal it protects. It's tough; it resists staining, ordinary airborne chemicals and even harsh cleaning agents. It won't blister, peel or crack.

And, as with all Smith panel finishes, Tedlar is protected during forming, shipment, storage and erection by Peelcote®, a strippable clear plastic coating.

*Tedlar is a DuPont trademark

The Channellock building walls pictured are Smith K-Panel: Shadowall® exterior panels for pleasing architectural lines, with 3" of glass fiber insulation encased in a metal back-up panel. It provides a smooth interior wall with a durable baked-on enamel finish in a choice of color.

On top of all this, you buy Smith Metal Walls in a single package, including engineering, structural drawings, manufacture, shipment and storage in Smith trailers and quality erection by Smith specialized crews. Many Smith Walls "repeats" with nationally known companies attest the economy and dependability of a contract with the nation's foremost wall specialist.

"Smitty builds walls for Keeps"

See Sweet's file 3b/Sm, or write for Bulletin 64W for details.

ELWIN G. SMITH & CO., INC. Pittsburgh, Pa. 15202 / Detroit • Chicago
Cincinnati • Cleveland • New York • Atlanta • Toledo • Philadelphia

United of America Building

Chicago, Illinois

41 stories—world's tallest marble skyscraper

Owned, operated and supervised by the United Insurance Company of America

Shaw, Metz & Associates
Architect

A. L. Jackson Company
General Contractor

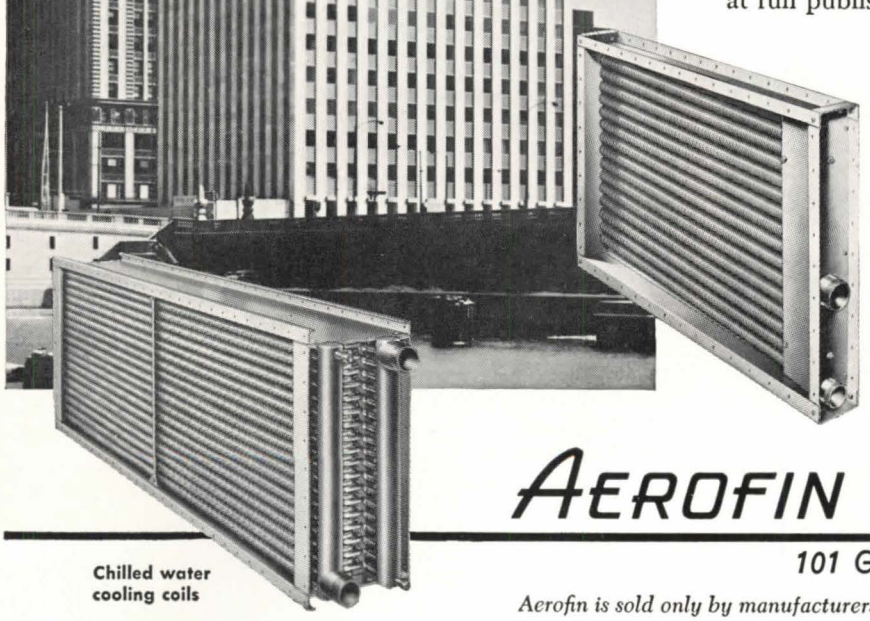
John Dolio & Associates
Mechanical Engineer

Economy Plumbing & Heating Co., Inc.
Air Conditioning Contractor

AEROFIN INSTALLED

Modern smooth-fin design of Aerofin coils permits ample heat-exchange capacity in limited space – permits the use of high air velocities without turbulence or excessive resistance.

Aerofin performance data are laboratory and field proved. You can specify Aerofin Coils at full published ratings.



Non-freeze steam heating coils

Chilled water cooling coils

AEROFIN CORPORATION

101 Greenway Ave., Syracuse 3, N.Y.

Aerofin is sold only by manufacturers of fan system apparatus. List on request.

ENGINEERING OFFICES IN PRINCIPAL CITIES

3 Stallpack units, Metzler Hall, McPherson College, McPherson, Kans. Arch: Mann & Co., Hutchinson.

Stallpack® keeps solving partition problems with durable marble and rustproof hardware

A COMPLETE PACKAGE. Stallpack gives you the unique durability of solid marble partitions precut to standard size, predrilled ready to assemble, and offered in a package unit complete with door and chrome-plated non-ferrous hardware. These package units are ready to be shipped immediately.

EASY TO SPECIFY. Just indicate water closets 2′ 10″ on centers on your drawings, then specify Stallpack. With that one easy specification you give the toilet rooms of your building the lasting beauty and trouble-free durability that cannot be had with any material but marble.

PERMANENT. Stallpack marble partitions will not rust or deteriorate. They will never need refurbishing. Washing with mild soap and water is all it takes to keep Stallpack marble partitions in perfect, shining condition. Imagine the total savings in upkeep expense!

EASY TO CLEAN. These partitions are easy to keep clean because they are solid marble. Flush construction with solid marble leaves no inaccessible hollow places around the base of the stiles to breed germs and retain odors.

New!

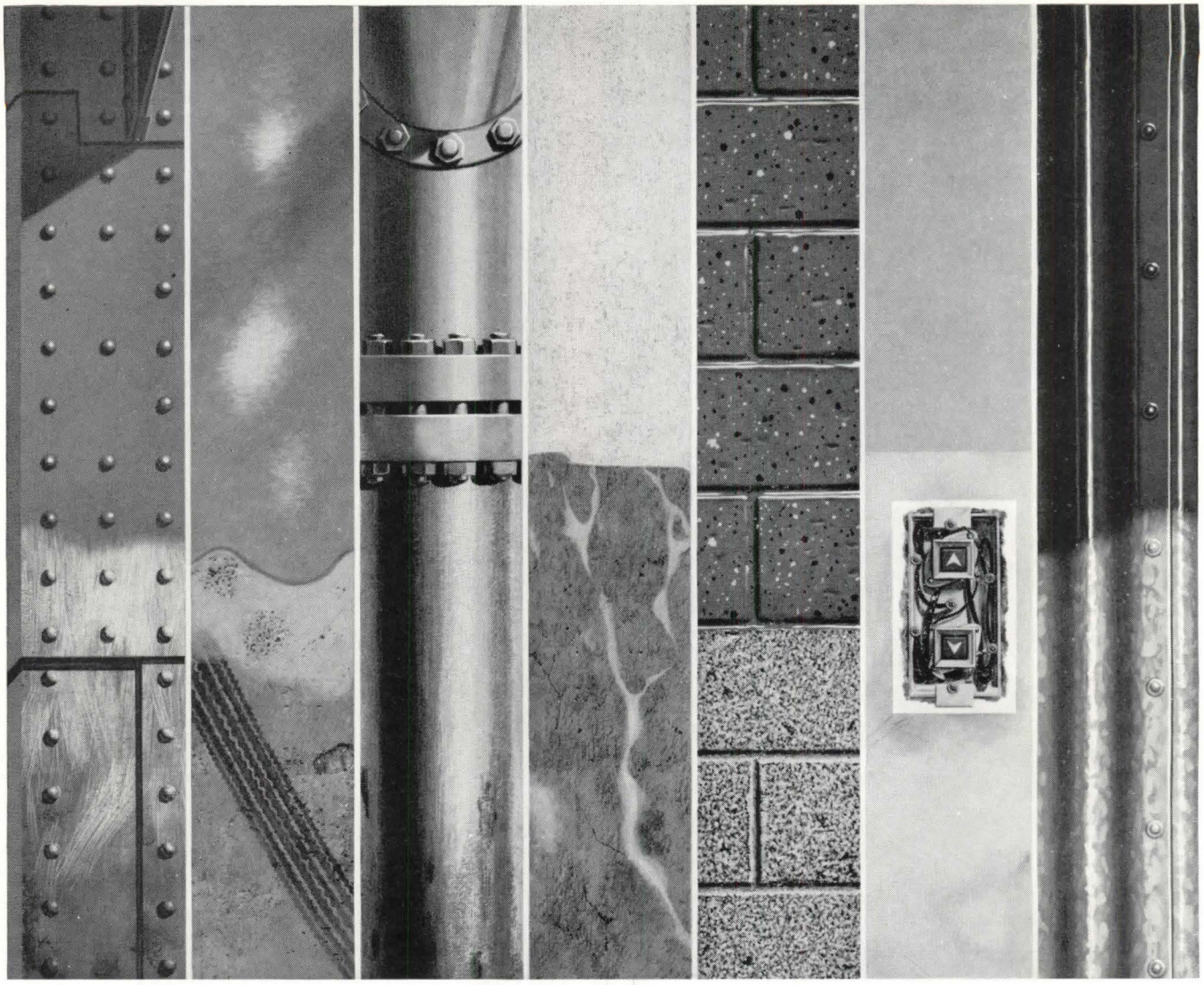
THEFT-RESISTANT spanner head machine screws now fasten the exclusive Carthage Marble clip-angle. It takes a special two-pronged screwdriver to remove the screws. This slotted clip-angle saves hours of setting time because it adjusts to out-of-line floors and walls.

UNIVERSAL COLOR. Stallpack partitions are made of fine Ozark Grey Veined marble. This lustrous light grey marble blends beautifully with any color scheme, stays beautiful as long as your building stands!

ECONOMICAL. High sales volume enables us to polish Stallpack marble partitions on an automated production line and to purchase top quality doors and hardware in carload lots. Stallpack is priced to compete with other types of partitions, yet it offers the durability that marble alone can give. Over the years that durability will mean true economy for the building owner.

Specify Stallpack from Sweet's Architectural File, Section 22b/Ca, or write Carthage Marble Corp., P. O. Box 718, Carthage, Missouri 64836.

CARTHAGE MARBLE CORPORATION



BAR-OX
Superior quality coating system for maximum protection of iron and steel.

GRANITEX
Tough epoxy resin-based transparent material preserves and seals concrete floors.

SPEED-REX
Multi-purpose, one-package epoxy formulation for interior surfaces, equipment.

RE-NEW-COAT
Most effective masonry resurfacer—inherently stronger than the masonry itself.

TRU-GLAZE
Vitreous glazed surfacing system—filler coat based on patented waterproofer.

WONDER-TONES
Vinyl-base flat finish for interior surfaces. Fast-drying, self-priming, washable.

CHEMFAST
Epoxy resin coatings—protect surfaces from fumes, alkalis, other corrosive elements.

Whatever the surface and whatever your problem DEVOE has the right finish

Steel, concrete, cement block, wood, wallboard, plaster—these are some of the surfaces for which you must specify protective finishes. Naturally, you want all the information you can get on product performance and application.

The Man with the Answers from Devoe-Truscon can help you here. He has accurate data on the use, maintenance, costs, durability and performance of hundreds of finishes—from conventional paints (most of which are available in over 1,000 colors in the Devoe Library of Colors® system) to special industrial finishes that protect against erosion or corrosion. What's more, you're assured of quality-made, specially-formulated, performance-proved products when they're from Devoe-Truscon.

To reach *the Man with the Answers* in your area, write or phone the Devoe-Truscon office nearest you.

DEVOE TRUSCON

DEVOE & RAYNOLDS CO., INC.
Industrial Maintenance Division

Atlanta • Boston • Charlotte, N.C. • Chicago • Cincinnati • Cleveland • Cos Cob, Conn. • Dallas • Denver • Detroit Honolulu • Houston • Los Angeles Louisville • Moonachie, N.J. • New Orleans • New York • Philadelphia Pittsburgh • Portland, Ore. • Richmond, Va. • Sacramento • St. Louis • Salt Lake City • Warehouses in all principal cities, coast to coast.

THE GARY STORY

"Gary's first all-steel structures are outstanding for their architectural beauty and durability. The interior design of these schools and the structural materials provide low-cost operation and maintenance from which the community will profit, in savings, for years to come."

—Mrs. Dina Adams, President, Gary, Ind. School Board

"The building solution is gratifying in offering beauty of design, precision workmanship, rapid construction, lowest possible maintenance costs for years ahead, and the highest degree of flexibility to adapt to curriculum and instruction changes."

—Mr. Eugene D. Straight, Architect, Bennett & Straight, A.I.A.

(represented above by Mr. James A. Robertson, Chief Field Supervisor)

"I consider these schools to be our most outstanding in structural beauty, function, and durability. The Board is also pleased with the per pupil cost —far under the average for new secondary schools built in Indiana during the same year."

—Dr. Leroy W. Bingham, Past President, Gary, Ind. School Board

For the inside story of the Gary Schools, turn the page . . .

The Gary Story: two junior high schools for 2700 students ready for occupancy 41 weeks after contract award —built with USS Ambridge Coordinated Building Components

The Bailly and Beckman Junior High School buildings for Gary, Indiana, were ready for occupancy 41 weeks after the construction contract award. As a result of the AmBridge Coordinated Building Component system, erection time was reduced to a minimum and precision field assembly was assured.

Fast erection. The USS AmBridge system enabled inclusion of the structural steel framework, exterior panels, interior partitions, doors and frames, and metal roof deck in one bid. The modular steel frame and steel roof deck were completed in only one month. Erection of exterior panels was completed within 3 months. Interior panels were installed in less than four months. Had it not been for a six-week building trades strike, these dates would have been even more impressive.

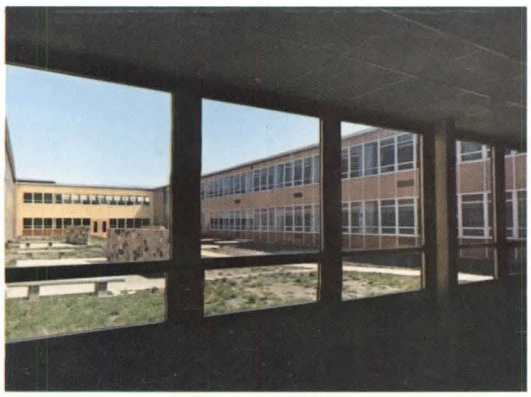
Expandable and flexible. Both the Bailly and Beckman Junior High School buildings were designed for expansion. Each department can be increased physically to meet growing enrollments. Accommodations include classrooms, administration and consultation areas, eleven science labs, five art rooms, six home economics rooms, kitchens, four gymnasiums with electrically-operated partitions, two libraries, six music rooms, seven industrial arts and drafting rooms, two cafeterias with stages, and other facilities.

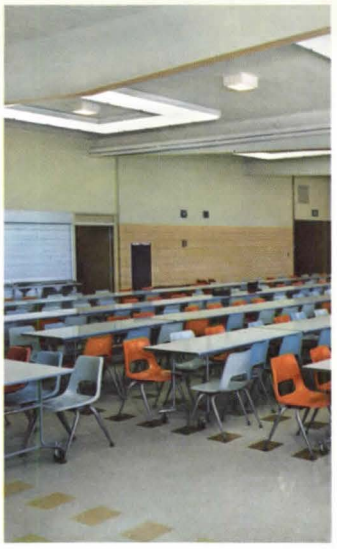
Interior steel partitions can be altered with ease (and with 100% salvage) to meet changes in curriculum and teaching methods. The AmBridge partitions have highly effective sound retarding qualities and, being clad in vinyl, are virtually damageproof.

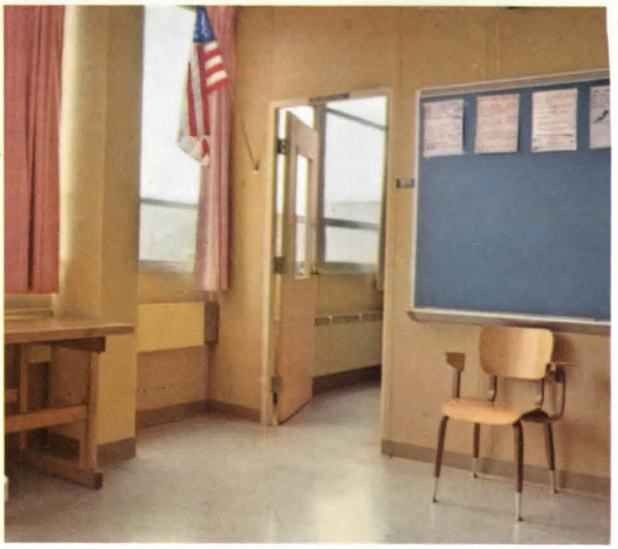
Low maintenance. The USS AmBridge exterior panels are porcelain enameled to specifications of the Porcelain Enamel Institute. Panels are kept looking like new with only occasional mild detergent cleaning. Vinyl-clad interiors are easily cleaned with just soap and water. The steel doors and panels can't shrink, warp, or crack. All components offer weathertight, verminproof, noncombustible construction. Gary school officials expect maintenance costs to be rock botttom.

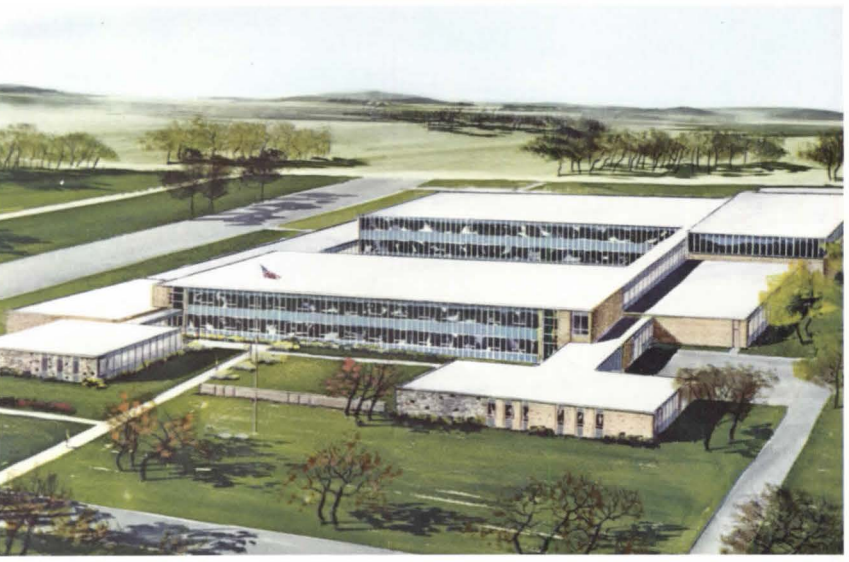
Beauty and the Best. USS AmBridge Coordinated Building Components offer the highest quality construction available, yet at modest cost (the Gary schools were built with per-square-foot and per-pupil costs well below the national average). Exterior panels offer a choice of 47 porcelain enamel exterior colors, rigidized stainless steel, and 26 interior or exterior baked enamel finishes. Only AmBridge offers eight vinyl-finished interior colors *at no extra cost*. These panels allow varied expressions of color, texture, and design, which may be combined with other building materials for striking aesthetic effects. The structural frame can be varied to fit the architect's desire, permitting folded plate or hyperbolic paraboloid structures. Fenestration can be varied to produce pleasing facade treatments. And AmBridge Components permit expansion without marring the school's original appearance, assuring perfect color match between the original building and the addition.

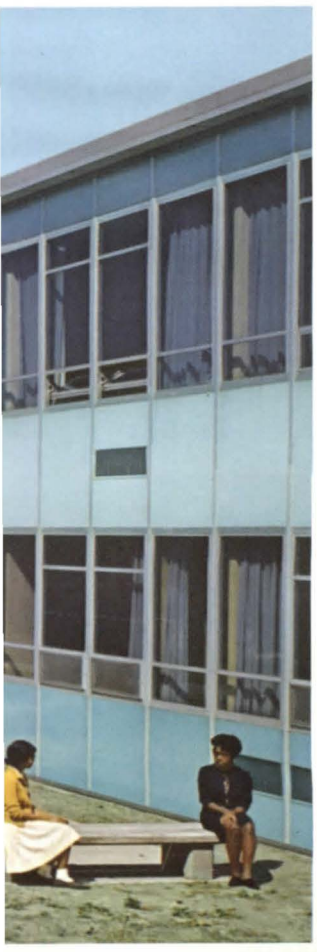
For more information about USS AmBridge Building Components, write American Bridge Division, Room 1831A, 525 William Penn Place, Pittsburgh, Pa. 15230.





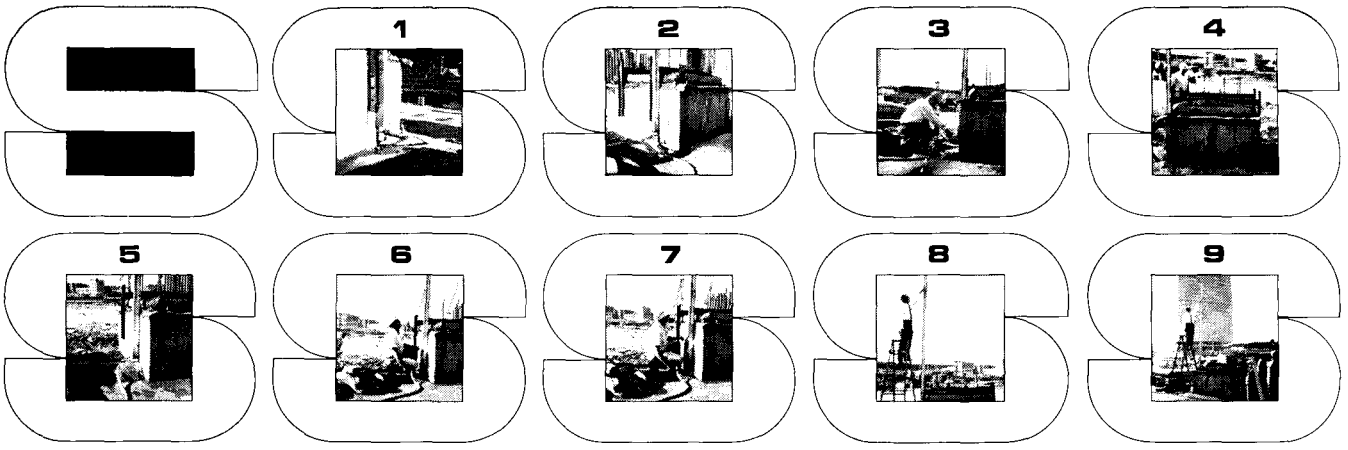






American Bridge
Division of
United States Steel

TESTING



POLY-TITE®

10

A 10 foot hydrostatic head of water was stopped by Poly-Tite in an on-the-job test where the building foundation is 6 feet below the water table. Engineered to withstand severe water pressure and the most extreme temperature changes, Poly-Tite performs as a sealant at only 50% compression. Poly-Tite has been tested in all kinds of structures and climates, and has proven completely water and weather tight below or above grade. Permanently flexible and resilient from −20°F to +190°F, Poly-Tite can be directly applied to any expansion joint even when the temperature is below freezing.

Please send for details of tests showing that Poly-Tite can solve your sealant problems.

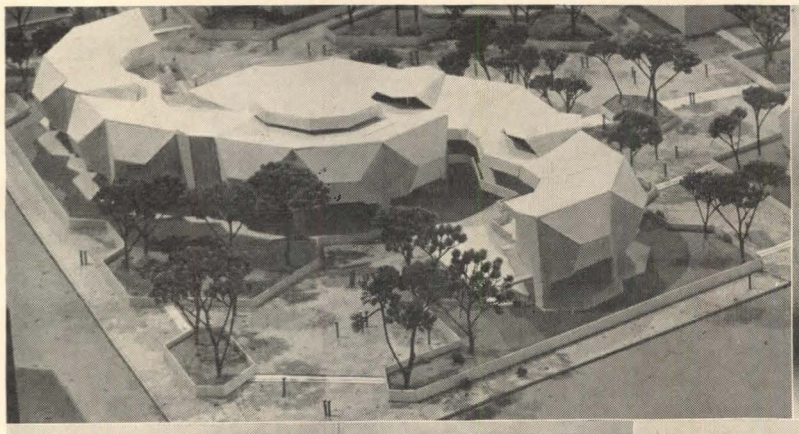
FOR FURTHER INFORMATION WRITE TO: **SANDELL** MANUFACTURING COMPANY, INC.

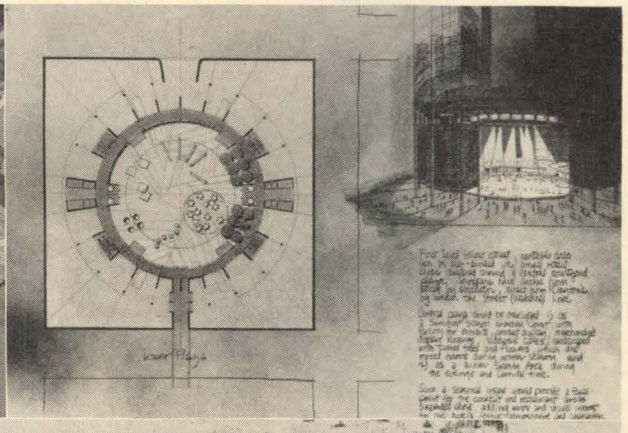
84 SHERMAN STREET, CAMBRIDGE, MASSACHUSETTS 02138 • PHONE (617) 491-0540

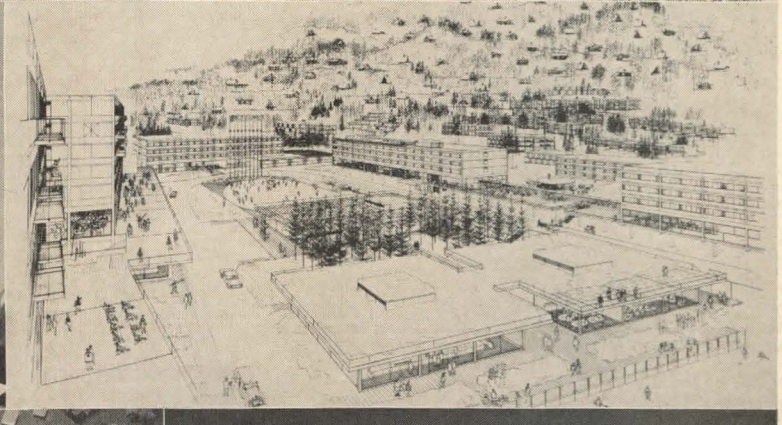
PROGRESSIVE ARCHITECTURE JUNE 1964

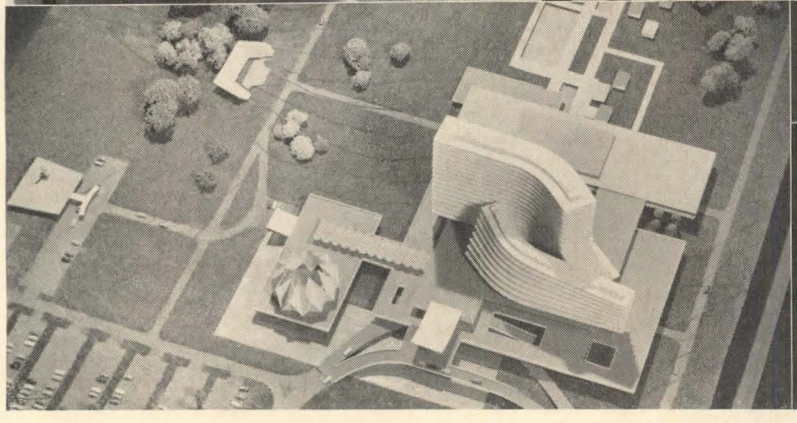
NEWS REPORT

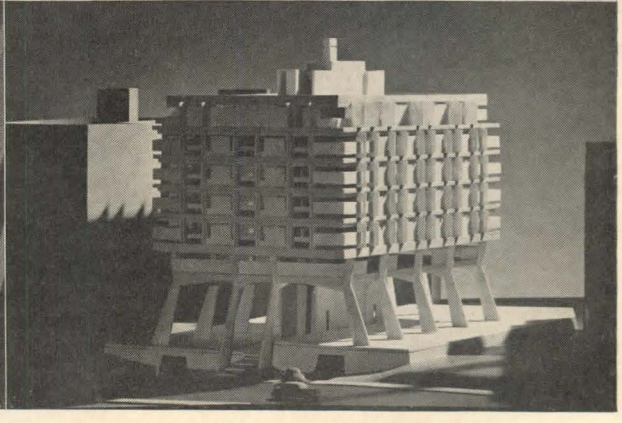
Architecture's Monthly News Digest of Buildings and Projects, Personalities, New Products





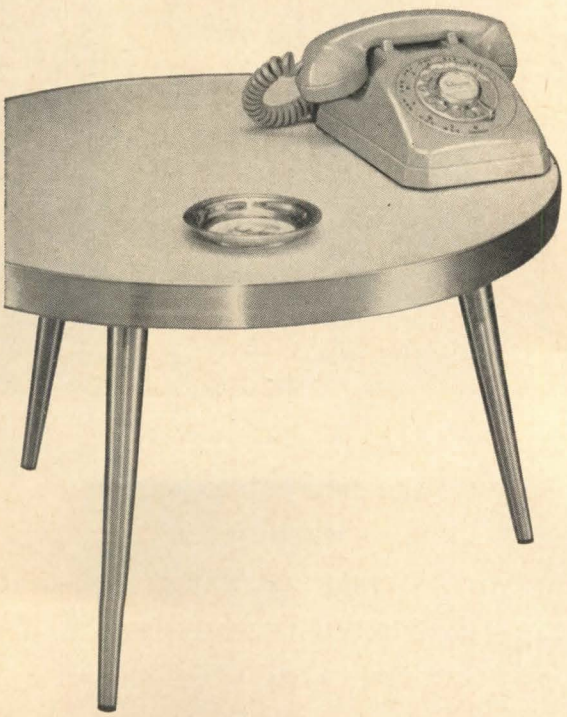






New home office for Protection Mutual . . .

sound planned with WEBSTER ELECTRIC Telecom



The exterior of this contemporary headquarters for the Protection Mutual Insurance Company at Park Ridge, Illinois, combines the functional and aesthetic qualities of black face brick, aluminum curtain walls, mosaic panels, glare-reducing glass.

The interior is *sound planned* with a complete Webster Electric Telecom intercommunication system!

A 100-line Telecom installation provides fast, direct voice contact between key personnel and all departments. It saves steps, valuable time — at substantial savings over utility phone intercom service.

Telecom provides the privacy of a telephone-type intercom, yet it's easily adapted for paging, code call, speaker phones, dictation adaptor, conference circuits. Operation is the same as your utility phone, wiring is simple — maintenance low. Self-contained, *completely automatic* switchboard hides in a corner or closet.

Telecom can be purchased, or leased on a low-cost plan. See your Telecom dealer* for details and a demonstration in your office. *See Yellow Pages — "Intercommunication Systems"

COMMUNICATIONS DIVISION

WEBSTER ELECTRIC

RACINE · WIS

In Canada: Webster Electric (Canada), Ltd., Kitchener, Ontario

PRIVATE DIAL TELEPHONE • LOUD-SPEAKING INTERCOM • SOUND & PAGING SYSTEMS • TAPE RECORDERS & TEACHING LABORATORIES

M-180-R

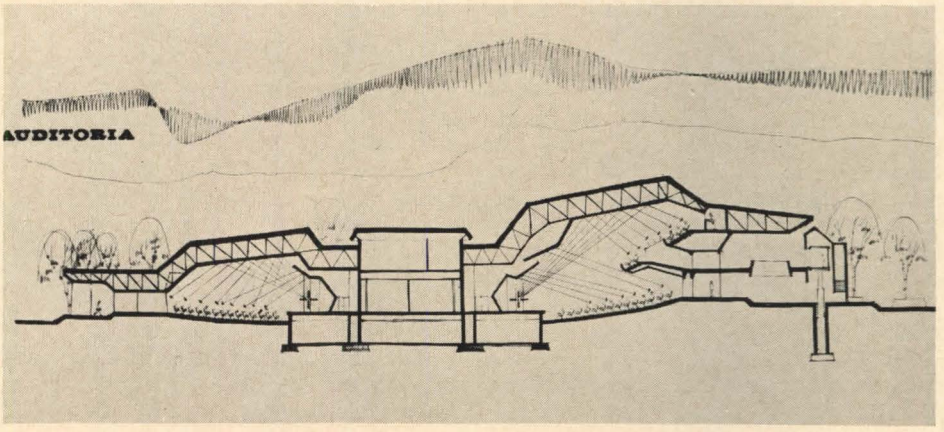
School Proposed to Advance American Jazz

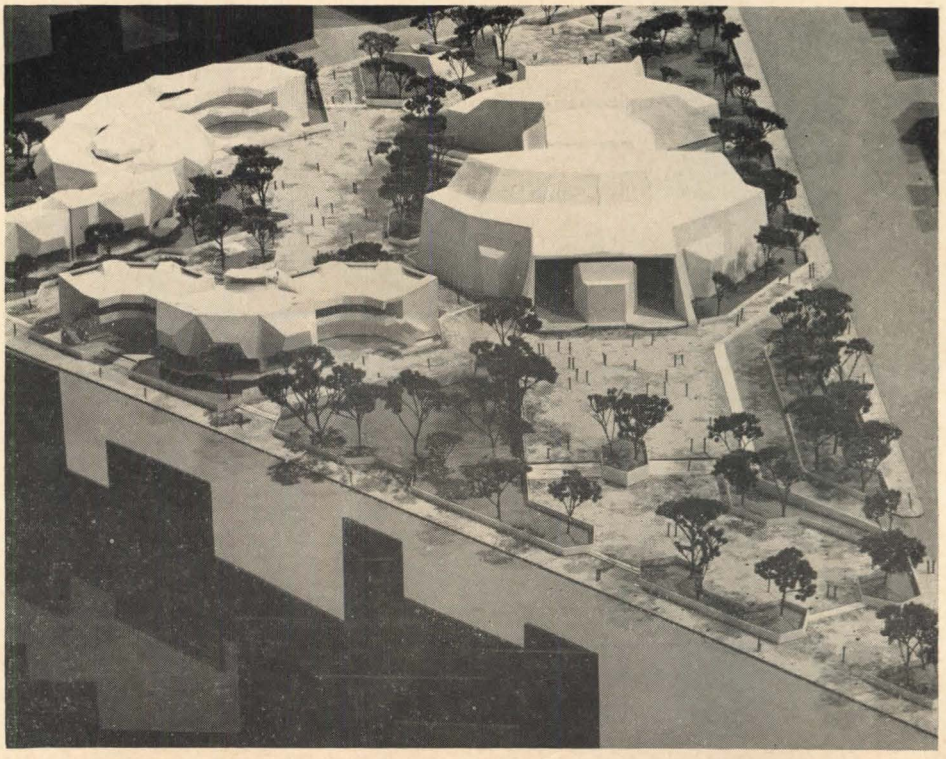
STATE COLLEGE, PA. "Jazz is America's only original art form. . . . Yet, nowhere in America does there exist a place where the jazz musician may study his chosen art and enjoy the same scholarly respectability as students in any other creative field."

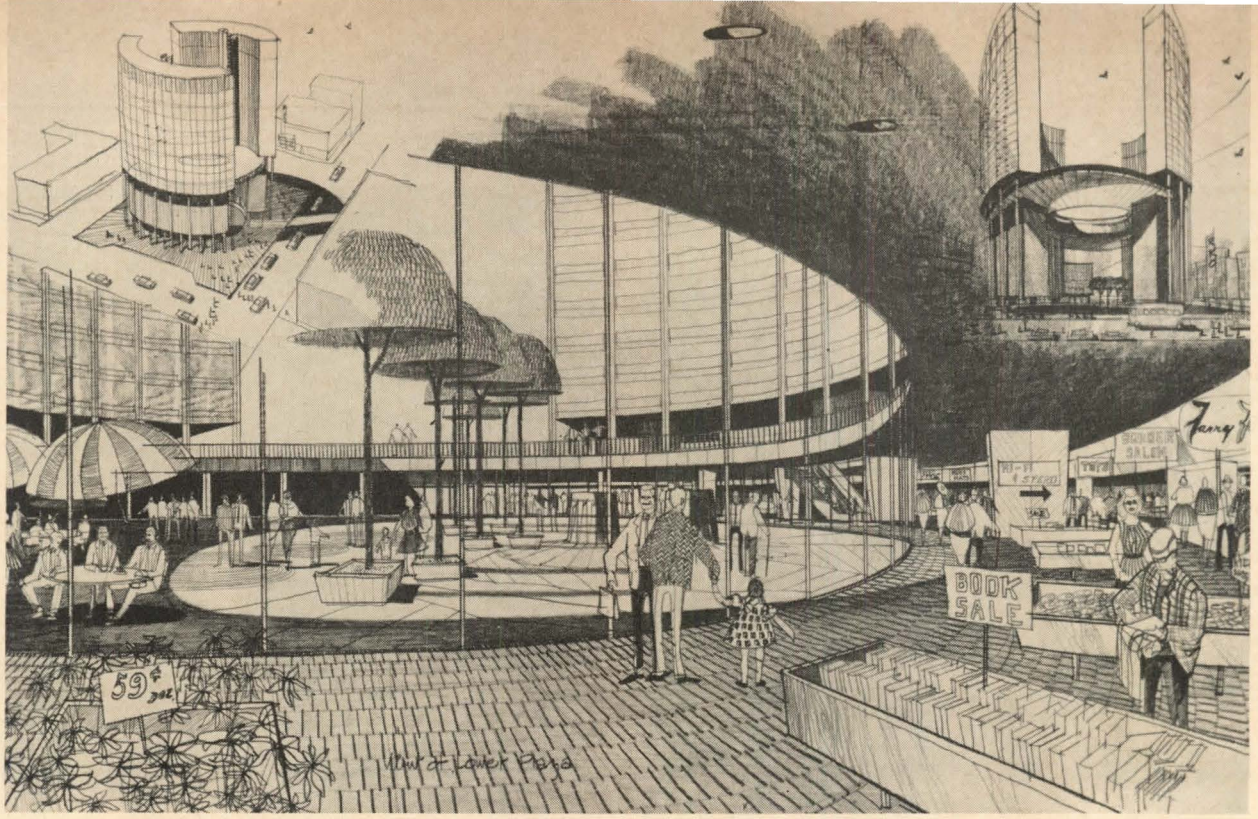
So says Robert Jon Napier, architect and active jazz buff, who, to remedy the situation, has designed a proposed "Conservatory of Music and Jazz Workshop," with the proposed site to be in New York's Greenwich Village. The school would give gifted musicians the opportunity not only to study with prominent practicing jazzmen, but also to record, to practice in especially designed studios, to have access to large tape and record libraries of jazz performances, and to participate in public performances of jazz music. Napier adds to his proposal the suggestion that "modest but healthy" housing be provided nearby for the student body.

The school is designed for 200 students, emphasizing studio spaces (*semicircular elements above*) where one to three students could consult and practice with individual artist-teachers. The only large classes would be for general humanities. The library (*rear, model photo above*) would be in three elements, each with its own staff and facilities: music library, with space for 20,000 scores; record library, with provisions for 10,000 recordings and 20 phonographs; and book library, with a 10,000-volume capacity.

A major element of the school would be the public-performance areas (*section, right*), which would have a main auditorium with variable seating for 700 to 1200 and a recital hall for 400 listeners.





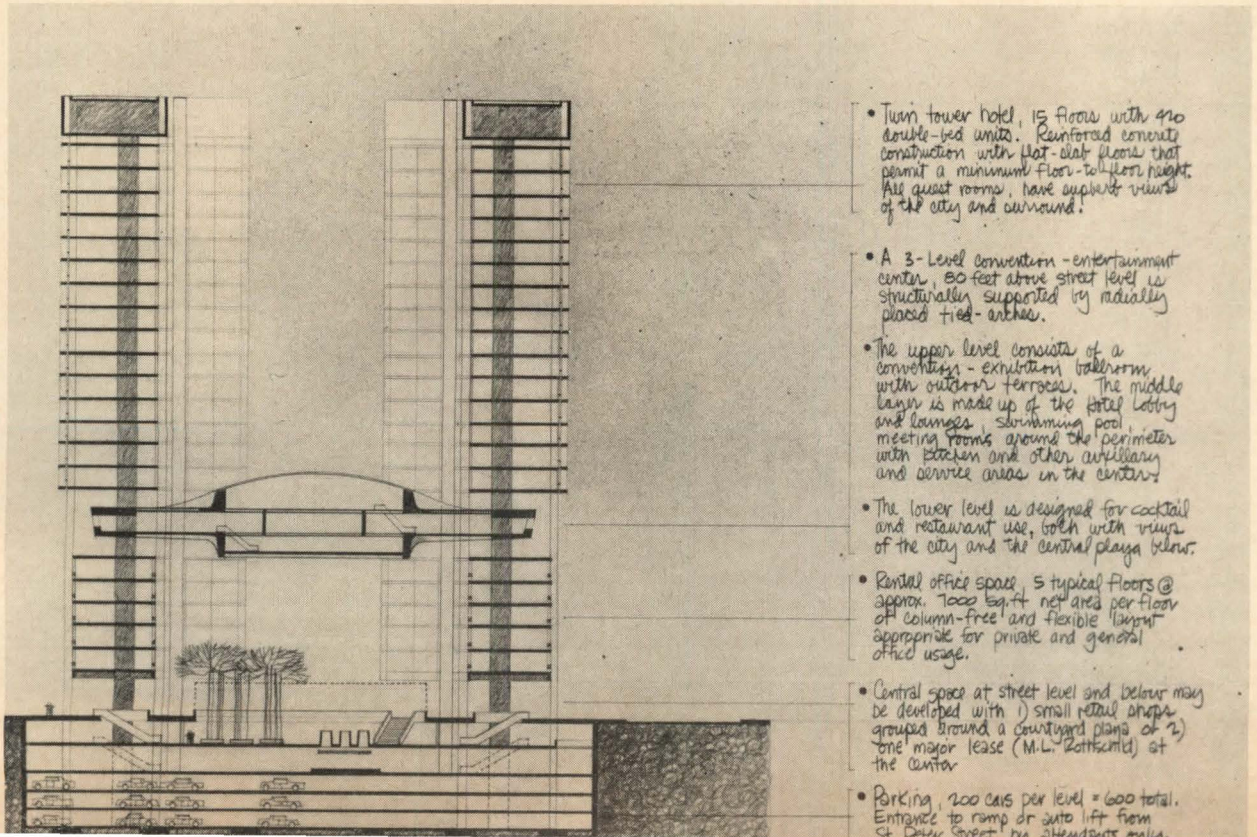


Curvilinear Buildings Support Convention Hall

ST. PAUL, MINNESOTA A unique proposal for a building complex integrating a hotel, convention and exhibition facilities, office spaces, parking, retail establishments, and a generous midtown plaza, has been designed by Progressive Design Associates for William Baumeister Construction Corporation of St. Paul, the developer.

Instead of four-square buildings that would consume the whole city-block site, the PDA design features two semicircular high-rise buildings rising from a sunken plaza and suspending a three-level convention-exhibition center 80 ft above street level. In this way, corners of the site are freed for easy pedestrian movement to merchandise and display kiosks and to escalators leading to the sunken plaza. The space between the twin towers is related to the open space of a small public square across the street, and is parallel to major downtown streets. The architect proposes that the central plaza be developed as a garden court during warm weather and as a skating area in winter.

Considered from the bottom up, the project, dubbed "Intown Center," would consist of three underground levels for parking of 600 cars; the plaza level surrounded by either small retail shops or one major leasor; five floors of office space in each building; the three-level, suspended structure containing cocktail lounge and restaurant, hotel lobby and entertainment facilities, and the convention-exhibition center; and the twin tower, 15-floors of hotel space.



La Guardia Airport Gets New Terminal

NEW YORK, NEW YORK One of the best Harrison & Abramovitz designs of recent years was unveiled recently with the opening of the new terminal building of La Guardia Airport. It is a straightforward, no-hokum curtain-walled structure whose arc shape reflects the bi-level roadway system serving it (*above*).

The terminal comprises a four-story central section, two three-story wings, and four bi-level arcades leading to 36 aircraft gate positions. The classic finger plan is used for plane loading and unloading. The two-level plan separates incoming and departing passengers. Those leaving New York enter from the upper roadway, are checked in, and proceed through the proper arcade to their loading position. Deplaning passengers descend from the arcade by ramps to baggage claim areas and ground transportation. Each of the seven airlines using La Guardia Airport has its own operating space and aircraft gate positions. Design of these spaces was left to the individual tenants. First- and second-floor lobbies of the central section contain obligatory shops and services catering to the needs of passengers. An open area in the second floor at the center of the terminal looks down upon an indoor ground floor garden.

A rooftop observation deck, its roof slanted up and facing the field for a more dramatic view, extends the length of the building. Atop the central section is LaGuardia Terrace Restaurant, which overlooks both sides.

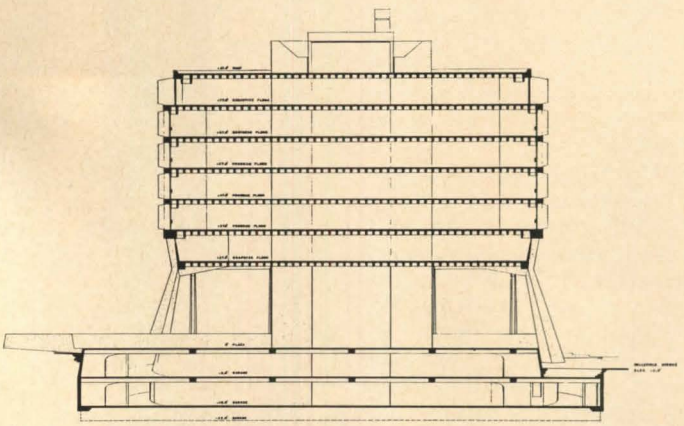
Dedicated at the same time as the terminal were the semiparabolic concrete control tower by Harrison & Abramovitz (*right, center*) and an almond-shaped garden at the lower entrance to the terminal by the Port of New York Authority design staff (*right, bottom*).

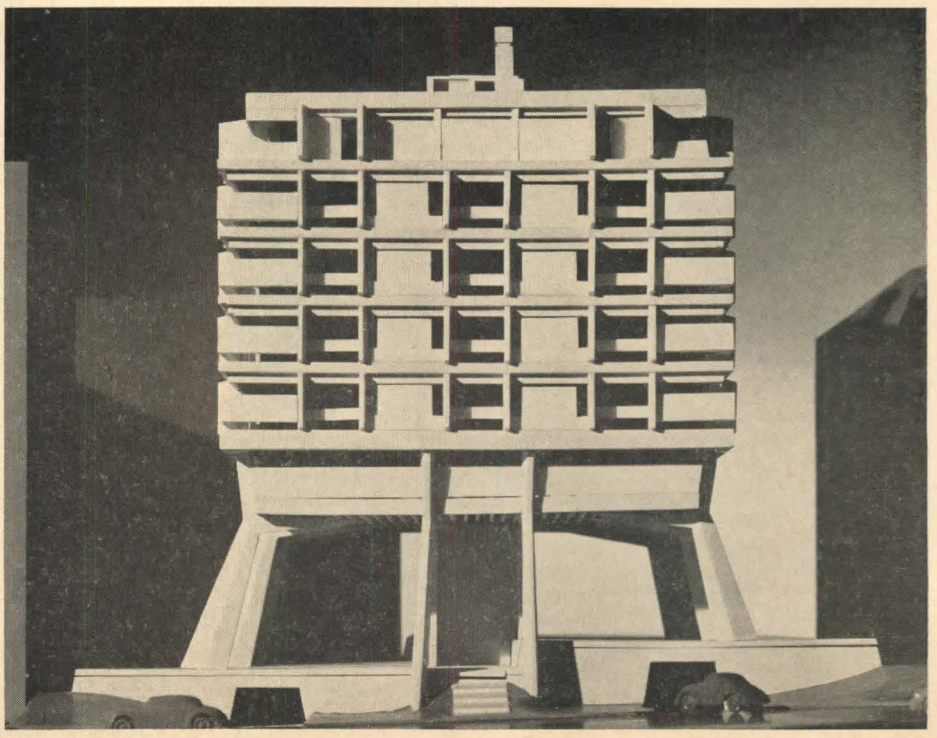
Fortress Think Tank for Pittsburgh

PITTSBURGH, PENNSYLVANIA Speaking of his proposed building for the American Institute for Research in the Oakland cultural section of Pittsburgh, architect Tasso Katselas says, "Socrates sitting under a tree expounding to his students is probably the only historical prototype for a research center." In form, certainly, Katselas' version of such a center would amaze the peripatetic scholar as it probably will some contemporary thinkers who still consider the cloistered tower the preferable environment for activities of a cerebral nature.

The Institute is an organization primarily devoted to psychological research (some of it in programs for the Federal Government), but also requiring graphics and printing facilities. The building, which is separated from its neighbors, stands on a platform. Reception and security desks are on the lowest floor, set in from the buttress-like columns which support the upper floors. Printing, graphics, and labs are on the second floor, and staff research areas are on floors three to five. A business floor is on the sixth floor, while the executive floor, containing offices, conference room, and library, is at the top level, "where a slight indentation of the structural elements permits definition within the hierarchy of the building." Parking is provided for in five underground levels. Reinforced concrete is used for coffer floor slabs, columns, beams, and panels.

Katselas notes: "Here is no simple rectangle into which function upon function is jammed. Here is natural growth of a structure from its site, allowing the essential nature of the building to express itself as a bold individual statement."



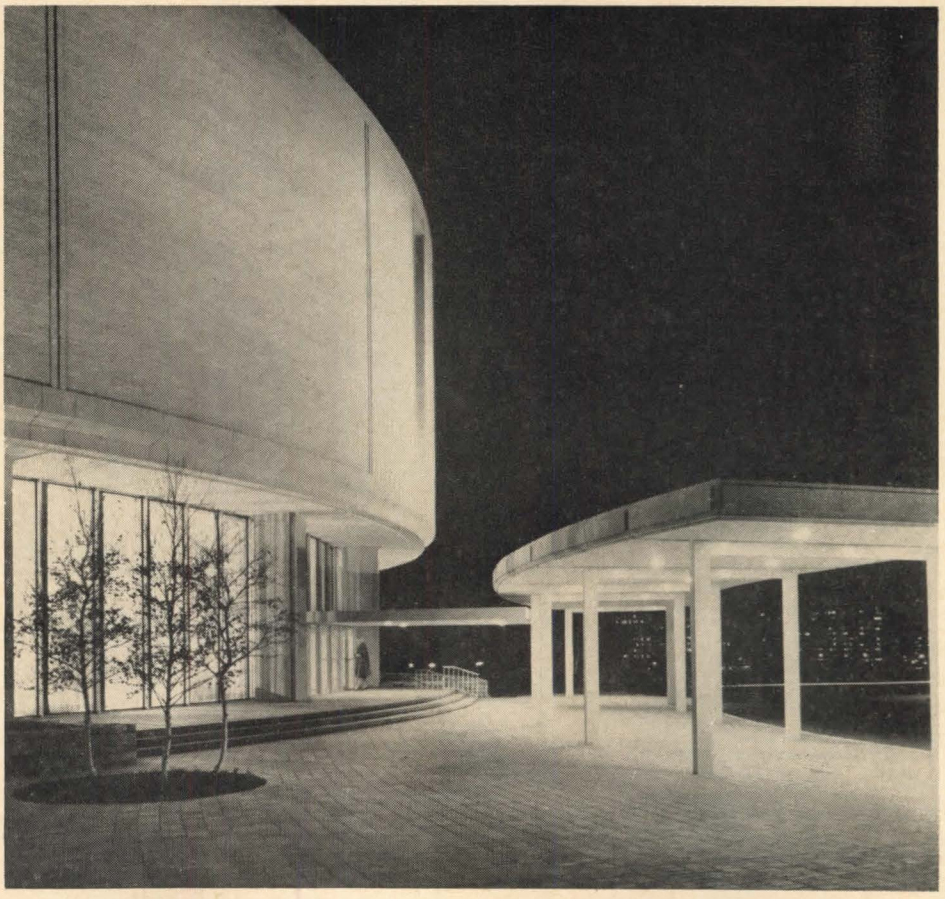


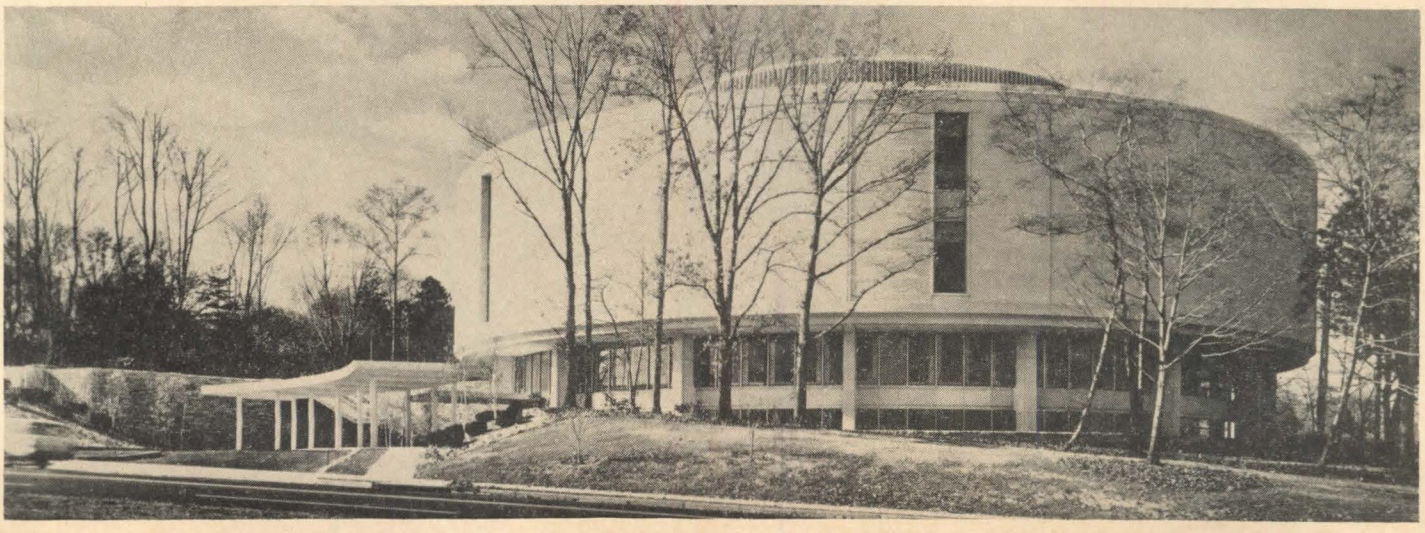
KLING DESIGNS A ROUND TRIANGLE

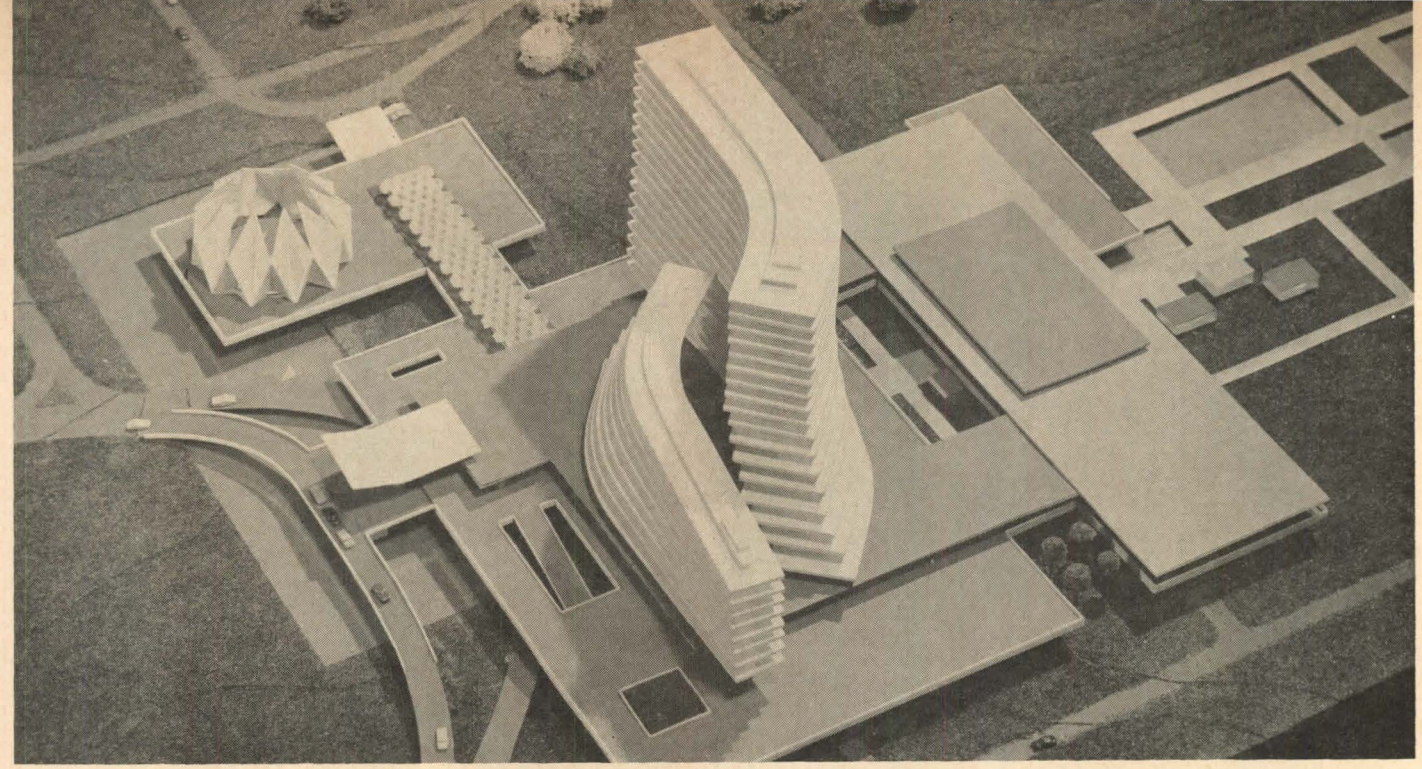
PHILADELPHIA, PENNSYLVANIA Forty-two years ago, WFI, the parent station of the radio and TV outlets of Triangle Publications, Inc.—the Philadelphia *Inquirer* and *Daily News;* magazines *TV Guide* and *Seventeen;* radio and television stations in Pennsylvania, New York, Connecticut, and California—began broadcasting from Strawbridge & Clothier's department store. Today, Triangle Broadcast Center, designed by Vincent G. Kling, acts as home of Triangle's Broadcasting Division and the WFIL stations.

The circular form of the building was chosen as the one to make most economical use of a centrally located master control core (*right, center*). The three largest TV studios extend from this core in wedge shapes, with the curved outer walls acting as permanent cycloramas. The circular-hub scheme is further notable in that it provides increased vision for control, economies in wiring and duct work, and shorter walking and "dollying" distances for casts and crews.

The sloping terrain makes it possible to enter the building on the level containing the three main studios, thereby easing the ingress and egress of large scenery, equipment, and props. The two lower levels contain administrative offices, and the top floor houses an interview-size TV studio, two radio studios, and other radio and television production activities. Major materials are masonry and cherry wood paneling, designed to be in sympathy with the wooded site. The four-acre site is appropriately triangular, and all possible major trees were preserved. Additional landscaping involved the addition of terracing and some 100,000 new ground plantings of various species.





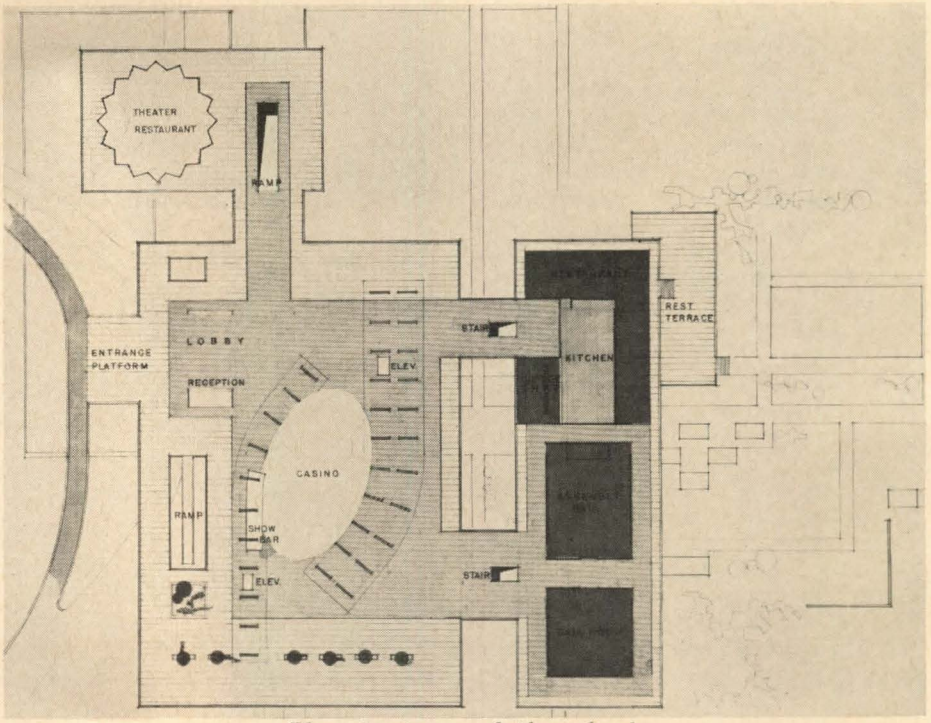


RENO TOWERS TO EMBRACE GAMING CASINO

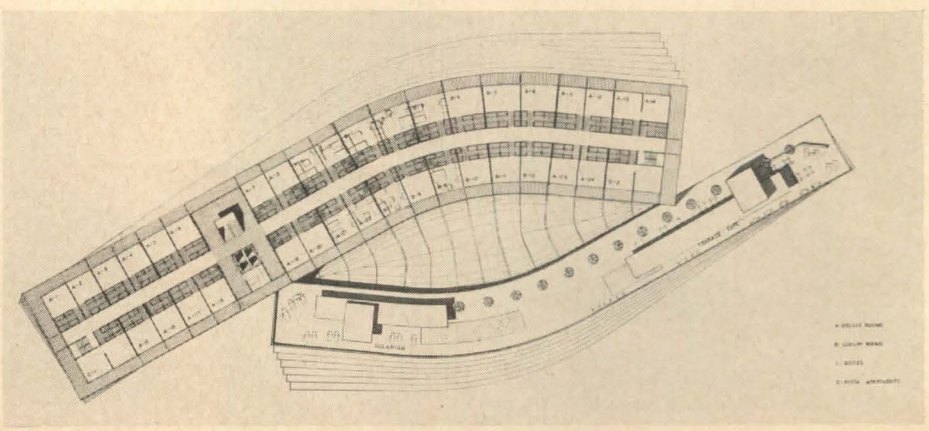
RENO, NEVADA For some time, Reno has aspired to have a "strip" devoted to gaming, entertainment, and luxury hotels such as the famous one in Las Vegas. "The Cliffs" is a proposed gambling-showplace-hotel center that could be the fulfillment of that ambition.

Designed as a joint venture by architect Tallie B. Maule and engineer H. A. Kuljian & Company, the project consists of 650 hotel rooms, a 70,000-sq-ft gaming casino, a 450-seat theater-restaurant, convention facilities, parking garage, 18-hole golf course, swimming pools, and a heliport. The 9- and 18-storied hotel towers are wrapped in compound curves around the gaming casino, which is intended, of course, as the profit-making center of the whole development. The plan directs almost all traffic through or adjacent to the casino. It is overlooked by balconies from the hotel towers, ensuring continuing interest in the gambling activity and eliminating the need for the usual "false floor" for supervision of the dealers. The theater-restaurant is so situated as to attract interest and patronage from the highway. It is surrounded by a moat and approached by a bridge which, naturally, leads easily to the casino to encourage visitors to take before and after showtime flyers.

The site is 200 acres of flat land facing South Virginia Avenue (U.S. Highway 395) 1 mile from the Reno Airport and 2½ miles from the center of the city. Reno's new Convention Hall is rising directly across the highway. The dramatic form of "The Cliffs" is intended to attract attention both from the highway and from those approaching the airport overhead.



Plan at entrance platform level.



Eighth-floor hotel tower plan.

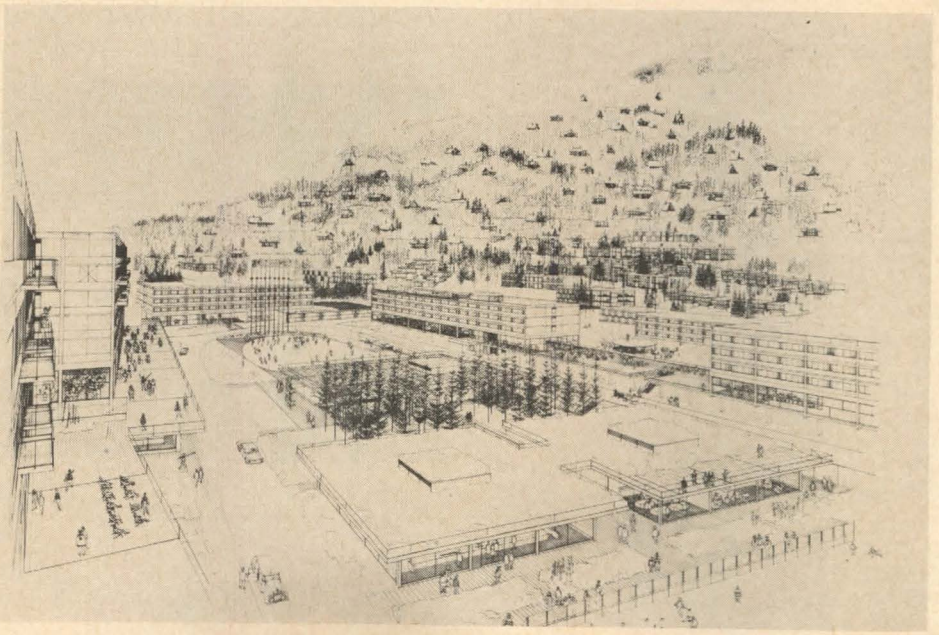
WINTER RESORT FOR YEAR-ROUND USE

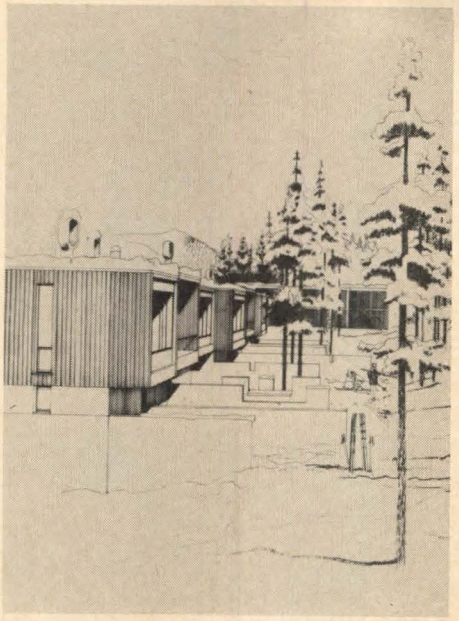
"Sugarloaf Village," an enterprise of the Bigelow Corporation of Kingfield, Maine, will provide, on 1738 acres near famous Sugarloaf Mountain ski area, a village center and resort area that will be a mecca for the slalom crowd, as well as creating facilities that will make the area a more popular recreation and tourist center in warm weather.

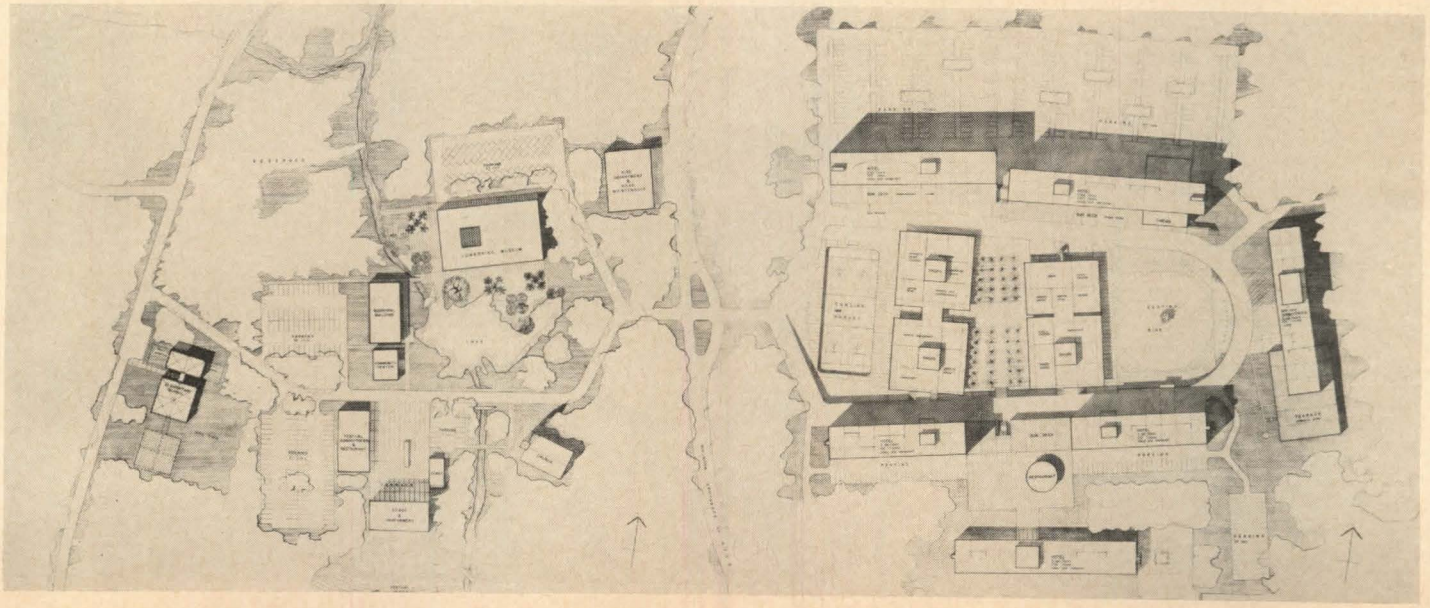
The center of Sugarloaf Village, bisected by the road to Sugarloaf Mountain, will be developed in two sections: the village center (*right, below*) and the civic center (*left, below*). The village center (*rendering, above*) will have about 1009 guest rooms in five hotel blocks and an inn-dormitory building. Other amenities will include shops of all sorts, a restaurant, a curling and hockey rink, a skating rink, and generous parking spaces.

The civic center will include such municipal structures as community center, municipal building, fire department and road maintenance building, church, and an elementary school, as well as such tourist attractions as a festival theater with large terrace, festival administration building and restaurant, a lumbering museum, lake, and extensive parking.

Sketches at right give an idea of the type of private residential development hoped for by Bigelow and Sugarloaf's Architect and Master Planner Richard G. Stein (Associate: Leopold Berman).



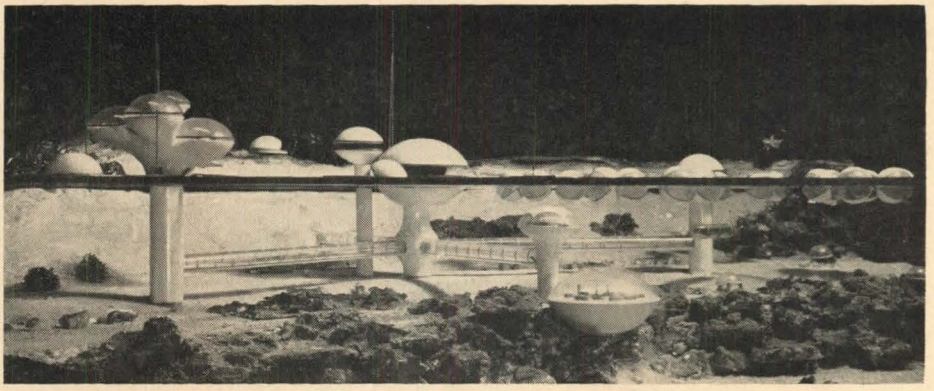


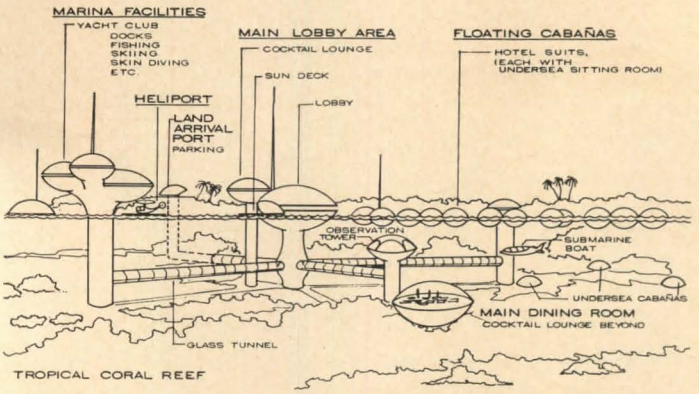


Resorting to Underwater

"Way-out" may be replaced in American slang by "way-under" if this under-wave hotel-village proposed by Puerto Rican-based architect William F. Sigal catches on. In this hotel, tourists could sample underwater living by day but sleep above surface in upper levels of floating duplex cabanas. The visual treats usually reserved for snorklers and skindivers could be enjoyed in submerged restaurant, lobbies, observation lounge, and lower-levels of cabanas or while ambling from station to station via transparent corridors. At night, tropical coral and submarine life would be illuminated by underwater lights. The village would include above-surface marina, cocktail lounge, sundeck, "lily-pad" heliport, and a deck for guests arriving via *terra firma*.

All units—concrete sprayed on steel nets and glazed with plastic or glass—would be prefabricated on land, pressurized, and anchored to underwater foundations. Fresh water, electricity, and sewage would be carried through cables and pipes under submerged walkways. Sigal predicts that this concept could eventually be applied to housing and office facilities.

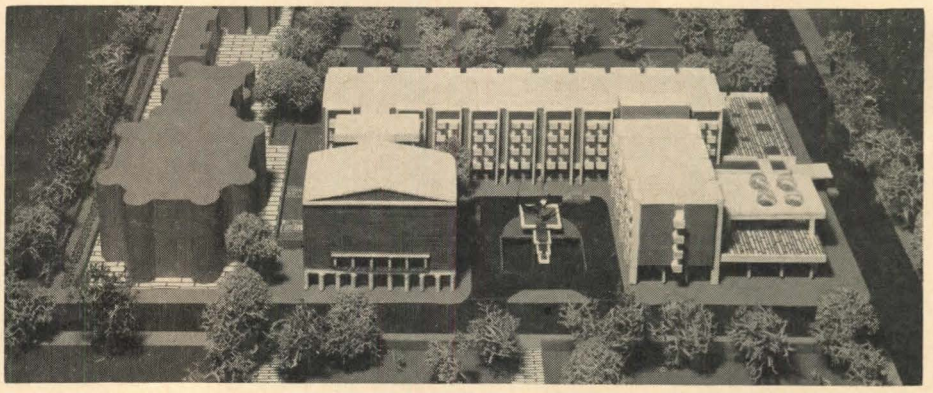


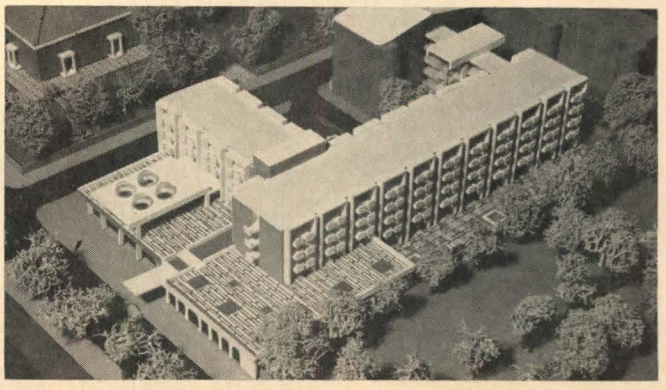


BUILD-THE-NEW BUT SAVE-THE-OLD IN PHILADELPHIA

PHILADELPHIA, PA. New Shoyer's Motel by Otto Reichert-Facilides will incorporate two existing structures in its design: the Merchant's Hotel *(see top photo)*, designed by William Strickland in 1830, and, on the opposite end of the site, the one-story Shoyer's Restaurant. An Old Philadelphia environment has been set by Old Christ Church Cemetery on the west and Friend's Meeting House on the east. Future neighbor, adjacent to Merchant's Hotel, will be Lou Kahn's Mikveh Israel Synagogue.

Merchant's Hotel, featuring a restored second-floor ballroom and balcony, will be linked to the new structure by a glass-enclosed entryway. Traditional red brick of the old hotel will be repeated on the end walls of the new exposed concrete building. First story of new motel will have expanded dining facilities of Shoyer's Restaurant; existing restaurant will be roofed by terrace and covered pool. Views will be open from entrance court through dining area to a formal garden on the cemetery side of hotel *(bottom photo)*. Ramps from entrance court will lead to underground parking.





Culture Center Imbroglio

The Washington-Metropolitan chapter of AIA, in an act of civic-mindedness and courage rare in such organizations (see the feeble actions of the New York chapter in a similar situation, p. 60, DECEMBER 1963 P/A), came out with a statement critical of the siting and scope of Edward D. Stone's John F. Kennedy Center for the Performing Arts, in the nation's capital. The responsibility of local AIA chapters to act as watchdogs for better architecture and planning is more often honored in the breach than the observance, so it is a pleasure to reprint the Washington-Metropolitan chapter's statement here:

"The plan to build a center for the performing arts as a memorial to President Kennedy has widespread support, in which we wholeheartedly join. But the form which the project is taking still provokes bitter criticism. This criticism grows out of a realization that, if the Center is built in the form and on the site now contemplated, we will not have achieved what most of us want and hope for —a memorial to John F. Kennedy which is as vital and as close to the main current of the nation's life as he was himself.

"Even at this late date we believe the concept of the Center should be re-examined.

"A project of this importance and size should be considered in the context of the plan and the activities of the city as a whole, not relegated to an inadequate site arbitrarily formed and restricted by the boundaries of an interstate highway system. It should be a generating force in the development of the cultural life of the city. As it is now conceived, the Kennedy Center will be remote and isolated from our daily lives; gigantic and inaccessible, it will be a mausoleum of the performing arts, surrounded by a moat of concrete ramps and interchanges.

"How might the Kennedy Center be made a vital addition to the nation's capital? We believe that several principles are fundamental.

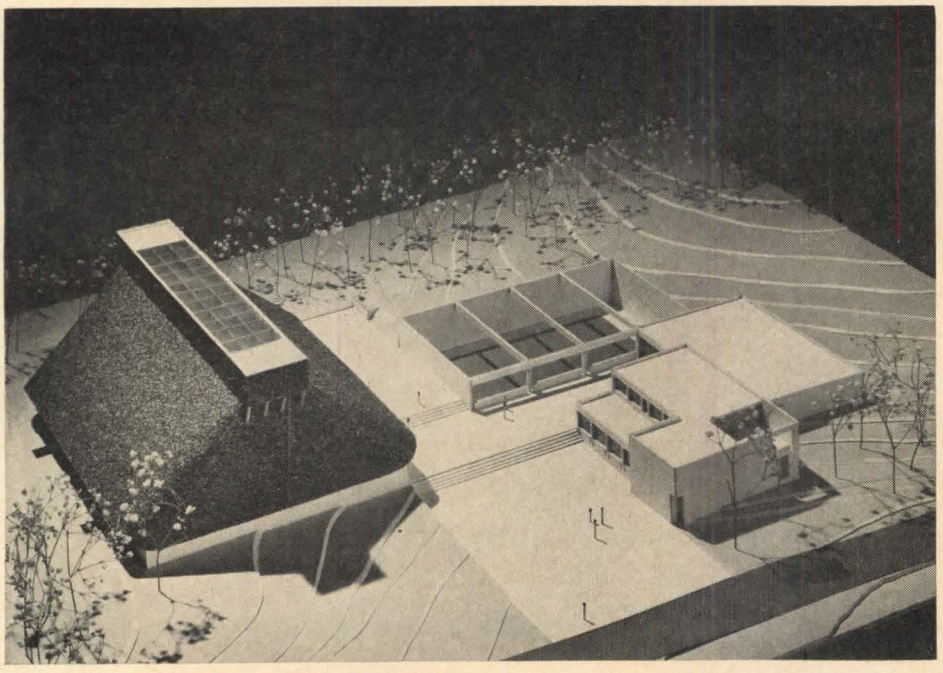
"First, it must be *approachable*. This involves the whole conception, not just the location. In every possible way, we must make it easy, exciting, and rewarding for visitors to enjoy the Center. There must be things to see and do even when no performance is going on. Exhibitions, restaurants, gardens, places to walk, to read, to eat, to rest—these things would bring life to the Center and would bring the Center to life.

"Second, the environs of the Center must be as much a part of the design as the project itself. The Center must reach out into the surrounding city just as the city must extend into the Center. Around a truly vital cultural nucleus related activities will develop, and they should be encouraged. Private art galleries, book shops, music stores, important works of sculpture in a handsomely landscaped park, arcades, outdoor cafes, fountains, hotels—in these things, through thoughtful planning and sensitive design, the Center could extend its spirit and influence, binding itself close to the life of the nation and the hearts of its people.

"If this is the sort of Kennedy memorial we want, we must abandon the idea of an enormous supertemple of culture, remote both in spirit and in fact. A truly living memorial will be an organic complex of buildings and open spaces, skillfully related so that each part enhances the beauty and vitality of the whole. Such a center would vividly symbolize the important place of the arts in our lives while giving the nation's cultural activities new vigor and prestige.

"We refuse to believe that the high cost of urban land is an insuperable barrier to the realization of an idea of such magnitude and grandeur. Something is radically wrong with our values if this is a decisive factor. Sites are available, or can be made available. The ideal site is still waiting for those who will make a serious search for it—those who are determined to find the means of acquiring it, refusing to be defeated by the problems which make acquisition inconvenient or expensive.

"Nor do we believe that the choice is between the wrong sort of Kennedy Center and no Center at all. A reappraisal will inevitably involve some delay and some expense. This is not a high price to pay for a creation which could nourish the spirits of men for a hundred, or perhaps a thousand years."



Center for High School Students

The simple form of a gymnasium roof will dominate the new student center by Walk C. Jones, Jr., for French Camp Academy, Mississippi. This roof, shaped to control diffused sunlight for even illumination of the playing court, will have steel framing with wood decking and cedar shake roofing. Gymnasium will contain a stage, dressing rooms, and seating for 350. The student center, part of a campus providing secondary education for 165 pupils from broken homes, will also include a sunken all-weather swimming pool (*center*), and (*right, foreground*) a complex for various student and faculty activities. Locker facilities, common to gym and stage, are placed between gym and pool. Pool will be covered in winter.

Anti-Noise School

A new Roman Catholic parochial school proposed for Queens, New York, will be close by John F. Kennedy International Airport, creating quite a problem in jet noise. Architects Perisch & Giacopelli of New

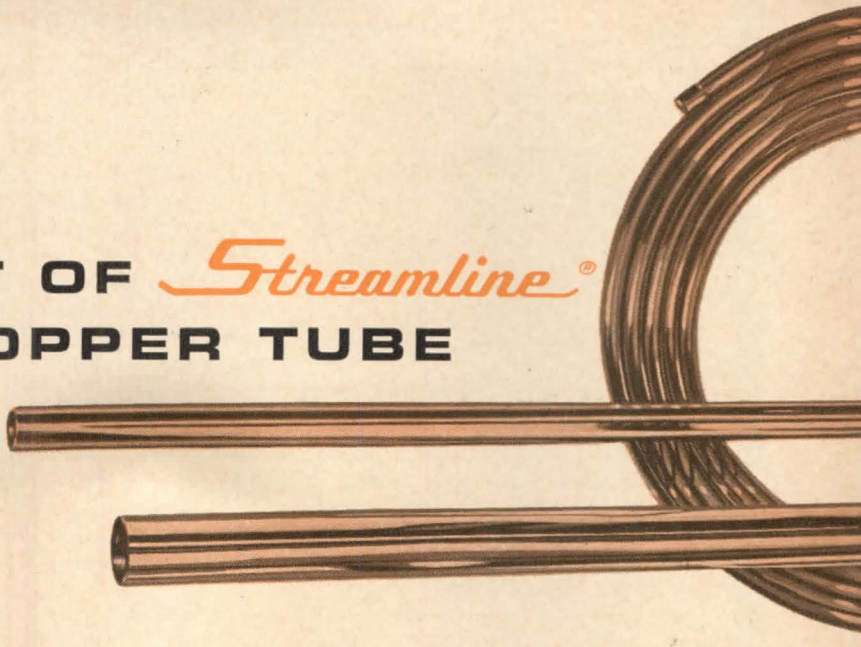
Continued on page 92

Beautiful 5 million dollar San Francisco high-rise apartment building equipped with MUELLER BRASS CO. Streamline® plumbing and heating products throughout

Laguna Eichler Apartments developed and built by Eichler Homes • Architects: A. Quincy Jones, Frederick E. Emmons & Associates, A.I.A. • Mechanical Contractor: Currie Heating and Plumbing Co. • Landscape Design: Royston, Hanamoto, Mayes & Beck

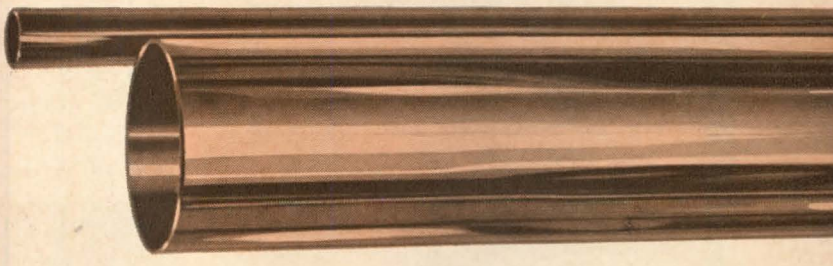
MUELLER BRASS CO. 1965 LAPEER AVE. PORT HURON, MICHIGAN 48061

104,120 FEET OF Streamline® TYPE L COPPER TUBE

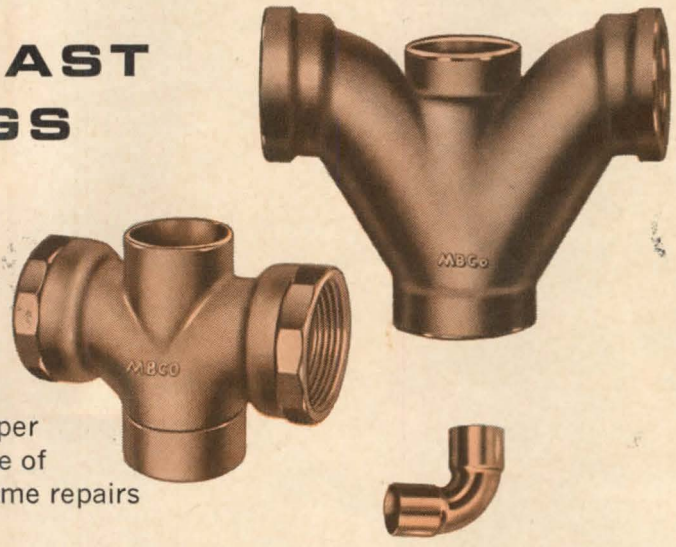


19,000 FEET OF Streamline® DWV* TUBE

(DRAINAGE, WASTE AND VENT)



1,000'S OF Streamline® CAST AND WROT FITTINGS



Everything about the new and exciting Laguna Eichler apartment project in San Francisco is crisp and modern . . . including the all-copper radiant heating installation, and the supply and drainage plumbing systems. Streamline copper tube and fittings, manufactured by the Mueller Brass Co., were used exclusively for all above-ground installations. Copper fits perfectly into this scheme of gracious living because of its dependability and long service life without troublesome repairs caused by rusting, leaking or clogging.

Streamline copper tube and fittings offer many other advantages, too. They are easy to handle, require fewer connections because of the convenient 20 foot lengths of tube, and a compact copper system actually adds available space because no furring out to accommodate bulky fittings and cumbersome pipe is needed.

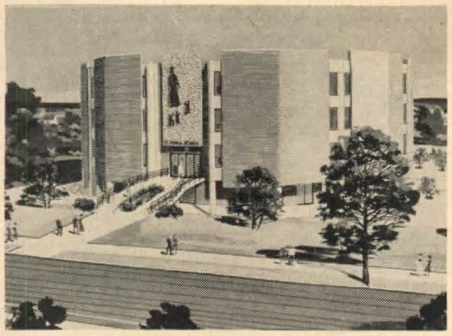
Compare materials and you'll find that copper offers more on every count . . . for high-rise apartments or single story structures, Streamline copper tube and fittings are best for fabricating modern plumbing and heating systems.

Write today for our latest Catalog.

For more information, turn to Reader Service card, circle No. 370

403

Continued from page 89



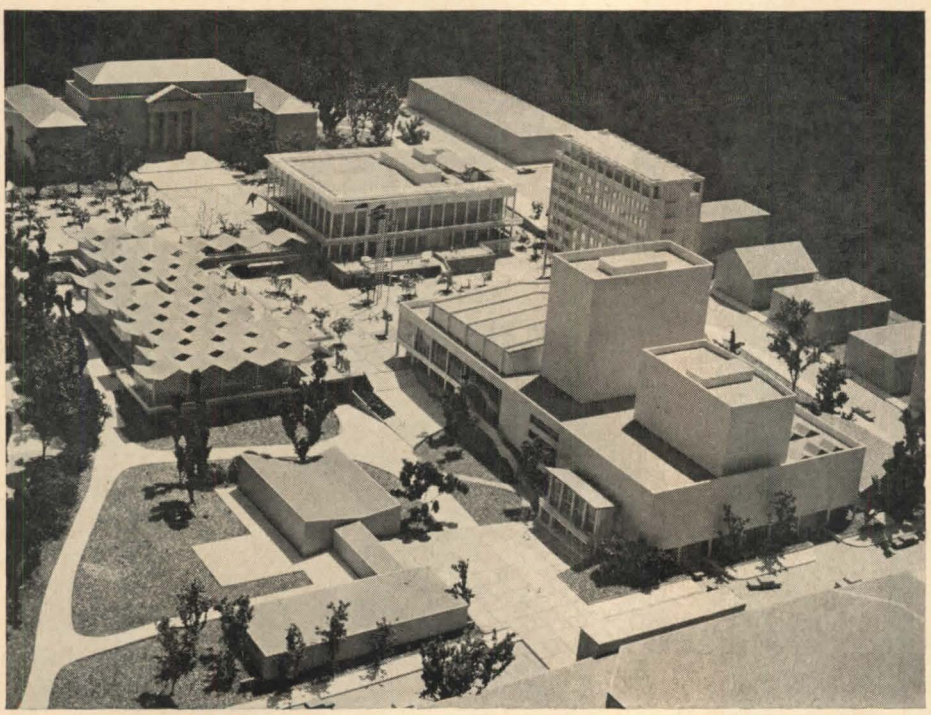
York propose to combat the racket with a circular structure featuring brick screens, which—hopefully—will bounce the noise off the building. Circular form and screens also will present fewer exposed walls at a time to jet noise waves. Double sash windows will furnish some sound insulation.

Co-ordinating House Data

The Producers' Council, Inc., and the National Association of Home Builders have announced an industry-wide effort to co-ordinate product data directed to home builders. Elliott Fulton, Manager, Architect-Builder Advertising, Floor Division, Armstrong Cork Company, and Richmond (Va.) builder William Kayhoe, co-chairman of the East Coast task force of the NAHB-PC Joint Committee, expect that manufacturers following the approved formats in the brochure produced by their committee will benefit themselves and the users and specifiers of products for home building.

School News

A U.S. Air Force contract for research in "Unique Expandable Shelter Concepts for Limited War Application" has been awarded the University of Cincinnati College of Design, Architecture, and Art. Under the one-year contract, faculty members James M. Alexander, Joseph M. Ballay, Karl Merkel, and Bruce E. Goetzman will seek new design and materials for functional support structures...."Education and Environment" was discussed May 15 at a seminar marking the 50th anniversary of the University of Washington College of Architecture and Urban Planning. Alumni speakers included Paul Hayden Kirk, Fred Bassetti, James D. Braman, Jr., Gerald Williams, and Minoru Yamasaki...A graduate program in Architectural History has been established by the School of Architecture of the University of Virginia. This program is an outgrowth of the school's undergraduate program in architectural history established in 1958... A College of Architecture has been formed at the University of Arizona with Sidney Wahl Little as Dean; study of architecture was formerly part of the curriculum of the College of Fine Arts. Emphasis will be on the problems of architecture in arid regions and on those of the contemporary architect ...Joint Center for Urban Studies of MIT and Harvard has received a two-year $100,000 grant from the Olivetti Foundation of Boston for basic research on problems of urban and regional development. First study undertaken will be of the development of the enterpreneurial spirit among the urban middle class.



Making the Campus Scene

Concrete auditorium-theater (right-foreground in photo) for University of California Berkley campus is by Hardison & DeMars. Design provides two halls: a 500-seat multiform little theater (entrance, foreground) is flexible and can be used as proscenium, full-round, or several intermediate phases. The larger 2000-seat hall facing existing Student Center Plaza will be used for concerts, meetings, drama, opera, and ballet. Facilities for workshops, FM and TV production and broadcasting, are included.

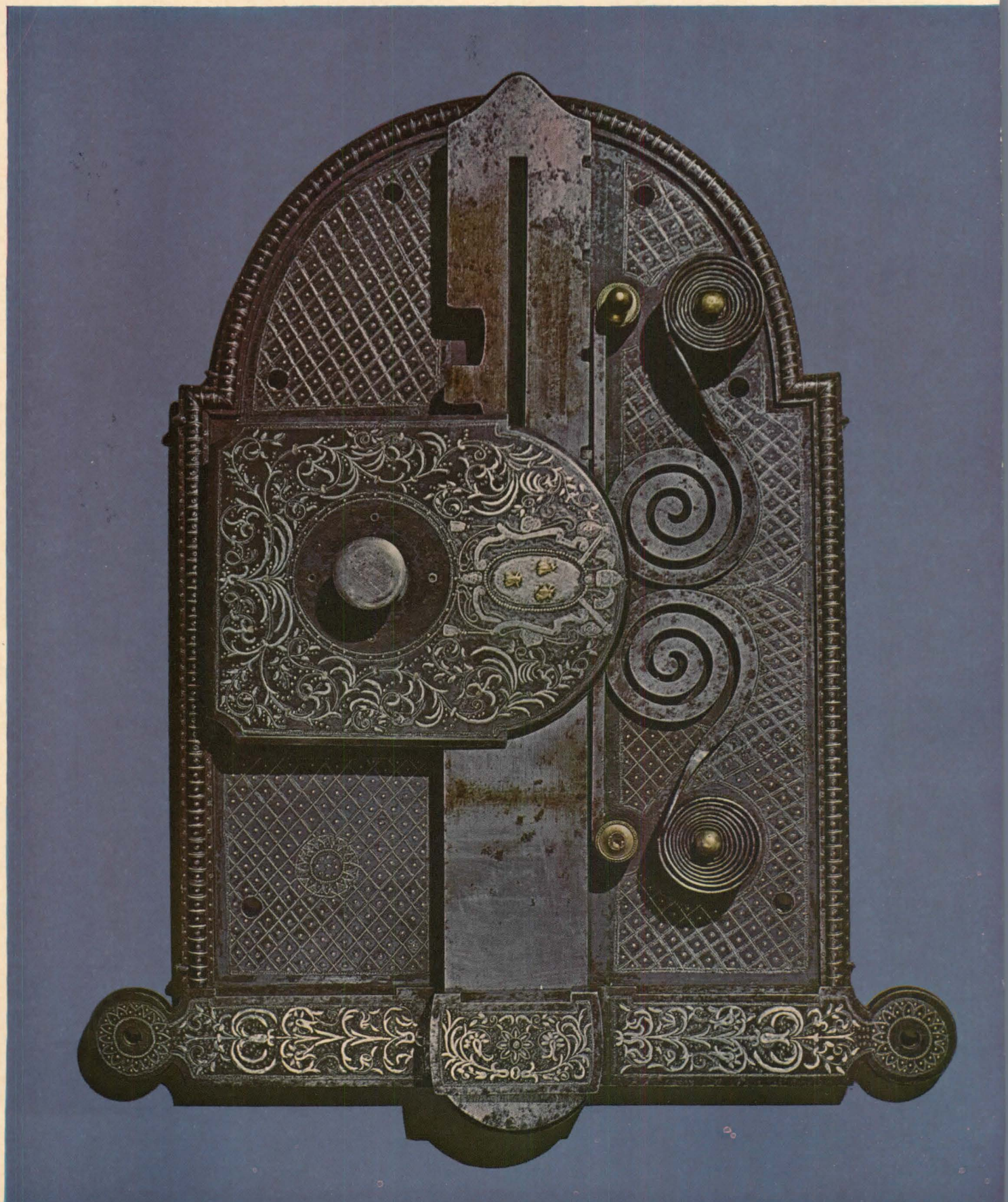
Competitions

FHA will again sponsor Honor Awards for Residential Design in categories of single-family house, multifamily project, and nursing home or housing for the elderly. Project must have been completed on or after January 1, 1959. Invitations have been mailed to architects and home builders; entrance deadline is July 1, 1964 . . . Submissions for the 20th Annual AID International Design Awards are being received. Program seeks to commend designers and manufacturers in the interior furnishings field. Business furniture, hard-surface floor coverings, wall coverings, lamps and lighting, and research and development are among the categories being considered. Entry forms available from AID National Headquarters, 673 Fifth Avenue, New York, New York 10022. . . . The Urban Renewal Administration has introduced a design awards program for completed redevelopment projects sponsored by individuals and local public agencies. Information and entry forms are available from HHFA Regional Offices or Urban Renewal Administration, Washington, D.C. 20410. Deadline for entries is July 1, 1964.

Interior Design Experiment

"Room for the Future" is one of ten rooms on display at Armstrong Cork's Product Center in Rockefeller Center. This hypothetical bedroom is demonstrated through use of a complex light-

Continued on page 96



Iron damascend lock, *with silver arms of* Barberina — Italian, 1623-1644. Approximately 18 inches high. (Metropolitan Museum of Art, New York City)

BEAUTY THAT ENDURES

. . . in ventilating ceilings that are as desirable functionally as they are aesthetically.

Lo-Tone Ventilating Acoustical ceilings combine the ultimate in both beauty and function. Their magic is the scientifically designed jet orifice.

This adjustable orifice combats all three major causes of room discomfort: drafts, temperature variations and stratification of air.

It also eliminates diffusers and dirt-soiled areas common with conventional air distribution systems.

Lo-Tone's advantages over other ventilating ceilings are just as significant. Unlike systems based on tiny perforations, Lo-Tone provides optimum air mixing and distribution.

Tiny perforations can move a volume of air, but not an effective mass of air. The result is often poor room air entrainment and discomfort.

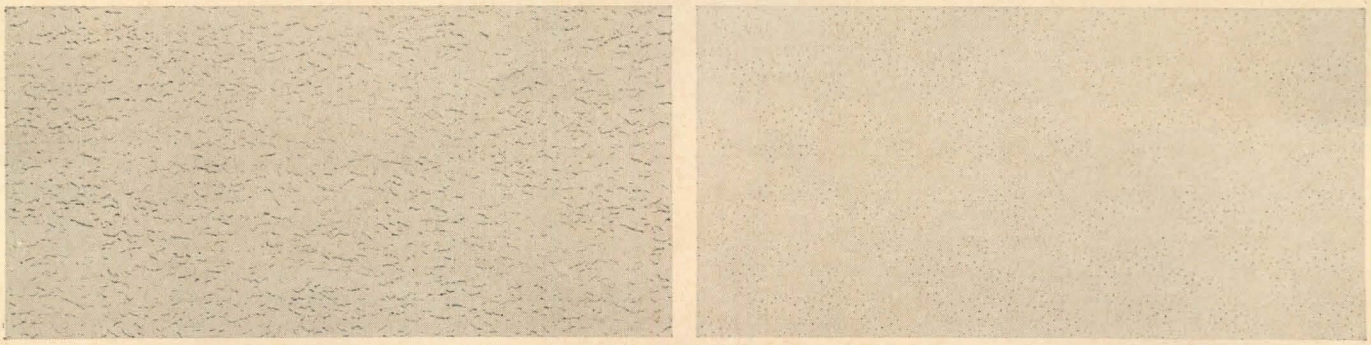
Lo-Tone's jet orifice design solves this problem with balanced air volume and mass.

Room air induction takes place well below the ceiling, reducing concentration of dirt deposits on the ceiling. Mixing of primary and room air occurs above the occupied level and produces optimum air movement in the occupied zone.

Each Lo-Tone jet can be provided with a concealed (optional) control spline which permits fast, easy regulation of air flow from beneath the ceiling.

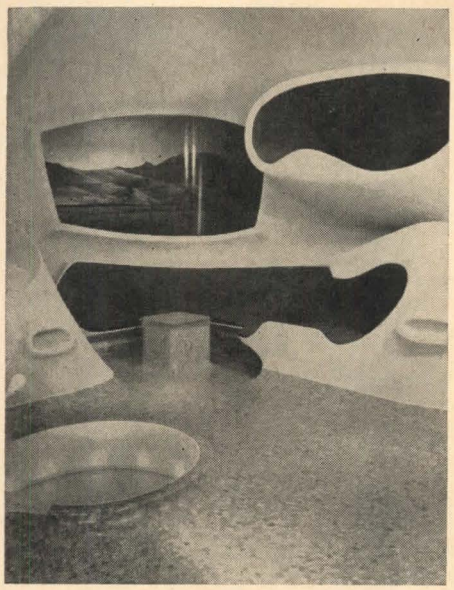
Get all the facts. See AIA File No. 39-B in Sweet's Catalog and write today for a product sample and a free copy of *"Lo-Tone Ventilating Ceiling Engineering Data."* Address: Wood Conversion Company, St. Paul 1, Minnesota.

LO-TONE®
VENTILATING
ACOUSTICAL CEILINGS



New FISSURA pattern (left) and CONSTELLATION (right) available in Fire-Rated, high attenuation factor and standard mineral tile and board.

Continued from page 92



ing system (a moving spot of light represents the boy of tomorrow) and accompanying sound track. Curved, built-in furniture can be used for climbing or hiding, and a sliding board terminates in a small pool. Day ends with star-like ceiling lights and a luminous floor acting as a night-light. Products in this room are not intended for the market.

Preservation Problems in Chicago and St. Louis

Contributions toward the restoration of Wright's Robie House passed the $40,000 mark by the end of 1963, leaving more than $200,000 still to be collected. Essential repairs — costing about $1000—were made to the structure to prepare it for winter. Deductible contributions should be sent to the Robie House Committee, 1006 City Hall, Chicago 2, Illinois, and should be made payable to Robie House Restoration Fund of University of Chicago.

Robie House, incidentally, was the only one of 48 buildings and sites recently made National Registered Historic Landmarks by the U.S. Department of Interior to be cited for architecture. Secretary of the Interior Stewart L. Udall presented a certificate and plaque to Chicago Mayor Richard J. Daley at the famous house.

In other historic preservation news, the St. Louis Chapter AIA has issued a strong plea for the preservation of that city's Old Post Office, now threatened with demolition by General Services Administration to make room for a new Federal Office Building. The resolution declared the chapter "without qualification in favor of preserving the St. Louis Old Post Office Building, its interior remodelled to gain space and install efficient facilities, its exterior to remain substantially in its historic character, in keeping with enlightened practices of adaptive uses of historic structures." The chapter said it is "willing to lend its good offices in an advisory capacity toward such ends."

Architects wishing to comment on this threat should write to Karel H. Yasko, Assistant Commissioner of Design and Construction, General Services Administration, Washington, D.C.

Saarinen Arch Proceeds

The late Eero Saarinen's great stainless-steel arch will not be completed in time for the AIA Convention in St. Louis this month, but visiting architects will get to see a dramatic sight anyway. When this photograph was taken, the north leg (right) had passed the 260 ft mark, and the south leg was a few sections behind. Both should be at the 300-ft-level by now. This is the point where concreting of the arch walls stops and only steel completes the arch. A spreader arch is being used during construction.

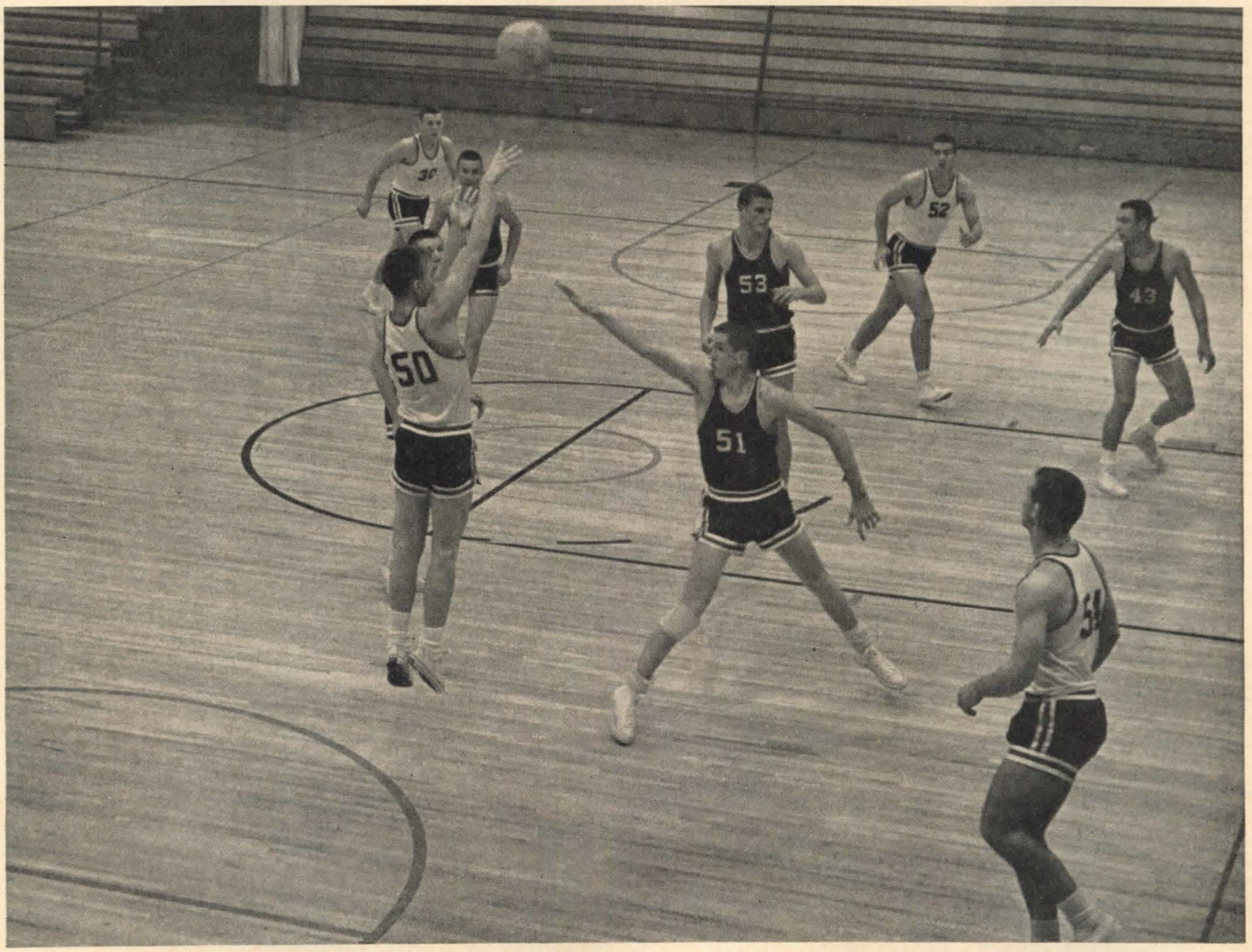
Personalities

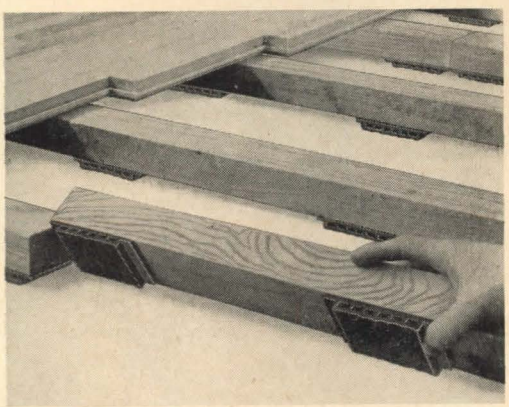
In Tokyo, ANTONIN RAYMOND was awarded the Third Class of the Order of the Rising Sun at the order of Emperor Hirohito "in recognition of [his] distinguished contribution of more than 35 years to the development of modern architecture in Japan"... Chicagoan HARRY WEESE received the Arnold W. Brunner Memorial Prize in Architecture of the National Institute of Arts and Letters last month; LOUIS I. KAHN and RICHARD NEUTRA were made members of the Institute and OSCAR NIEMEYER was made an honorary member of the Institute and the American Academy of Arts and Letters; LEWIS MUMFORD is now president of the Academy...LOUIS I. KAHN has been named to develop the concept and plans for the new campus of the Philadelphia Museum College of Art...Winner of AIA's Kemper Award for significant contributions to the profession, presented in St. Louis this month, is DANIEL SCHWARTZMAN of New York... G. PAUL FRAHM of Warner, Burns, Toan & Lunde won the James Stewardson Fellowship, a $2000 grant presented annually by New York Chapter AIA . . . FREDERICK J. WOODBRIDGE, former president of the New York chapter, has been elected president of the Fine Arts Federation of New York...New president of the Construction Specifications Institute is TERRELL R. HARPER of Dallas... DR. FRANK STANTON, president of CBS, was given the Michael Friedsam Medal of New York's Architectural League for contributions to advances of art in business and industry... MILTON MOLLEN, chairman of New York's Housing and Redevelopment Board, was named to a newly created post putting him in charge of all housing policy for New York; this will probably be the most powerful planning position in the city . . . LEWIS MUMFORD and his *The City in History* are subjects of six half-hour films

Continued on page 100

ROBBINS permaCushion*

FREE FLOATING MAPLE FLOOR





The PERMACUSHION Floor floats on special GR-S resilient cushioning pads attached to preservative-treated sleepers. These pads prevent contact with slab: no moisture transmission, unobstructed expansion control and complete air circulation beneath the flooring and sleepers. Power-nailing gives fast and proper installation.

The guaranteed floor for gyms, auditoriums and multi-purpose rooms

It takes three things to give you this activity floor with uniform resiliency, dimensional stability and lasting economy: (1) A floor system that has been proven by thousands of successful installations. (2) Precision milled, tough-fibered Northern Hard Maple flooring. (3) Guaranteed installation by a competent, authorized applicator. For specifications and the name of the nearest franchised installer, write: Robbins Flooring Company, Dept. PA 6-64, White Lake, Wisconsin.

*Registered Trademark

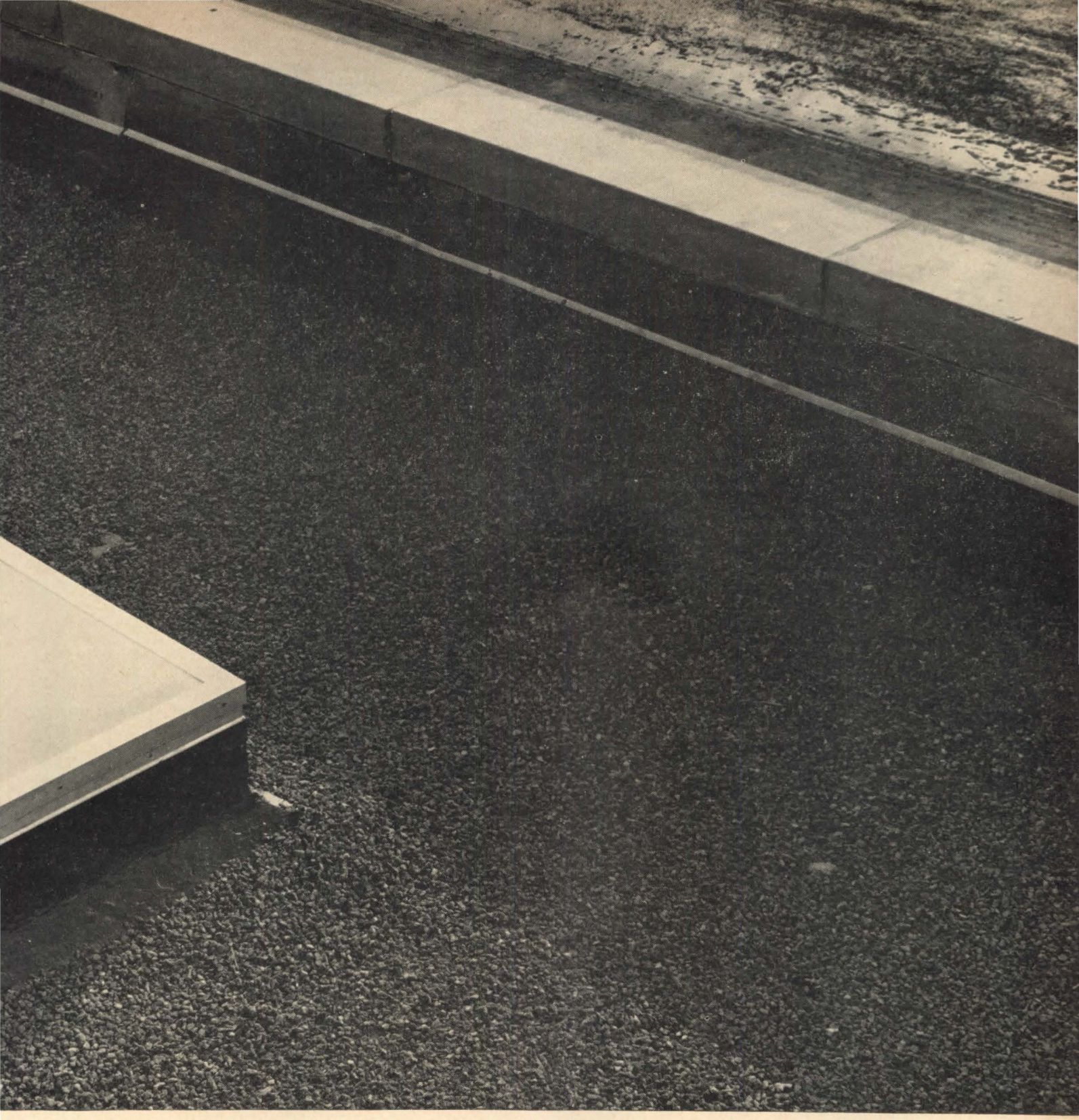
ROBBINS flooring company

BRUCE®

Dept. PA 6-64 White Lake, Wisconsin

SUBSIDIARY OF E. L. BRUCE CO., MEMPHIS, TENNESSEE

Remember Styrofoam.



OK. Now forget it.

Once a roof has been insulated with Styrofoam® RM brand roof insulation, you won't have to worry about that insulation again. Forget it.

And the same goes for Styrofoam FR for masonry walls. Or Styrofoam SB for slabs and foundations. Or Styrofoam anywhere.

But remember to specify Styrofoam next time you want an insulation that can't soak up water. An insulation that serves as its own vapor barrier. An insulation that won't rot, mold, deteriorate—ever.

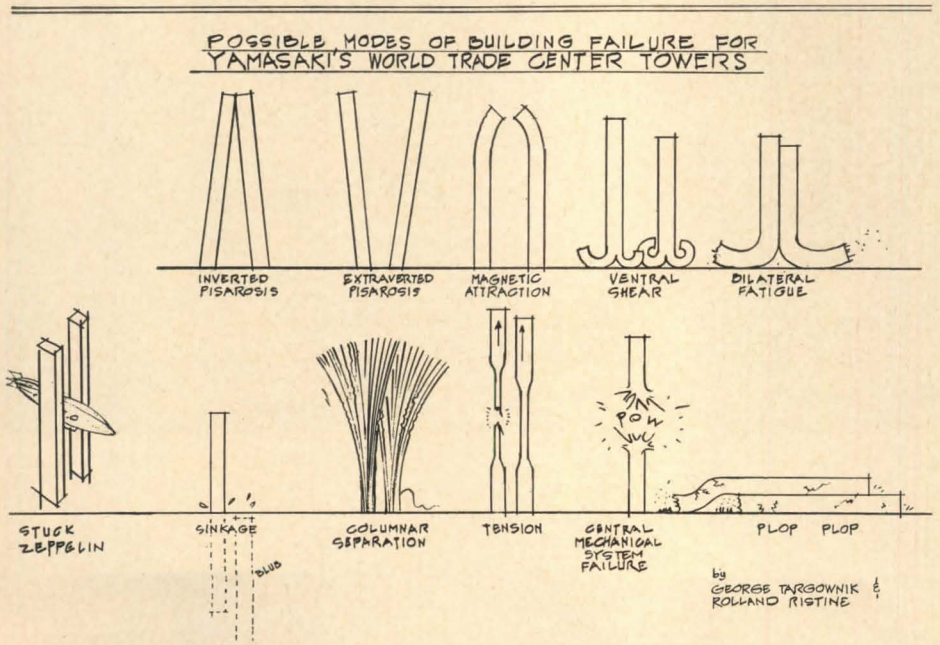
To help you remember Styrofoam, we've included some information in Sweet's Architectural File 10a/Do and 8a/Dow. Or you can write us. The Dow Chemical Company, Plastics Sales Department 1310EB6, Midland, Michigan.

Styrofoam is Dow's registered trademark for expanded polystyrene produced by an exclusive manufacturing process. Accept no substitutes . . . look for this trademark on all Styrofoam brand insulation board.

DOW

Continued from page 96

called "Lewis Mumford on the City," produced in Canada by the National Film Board of Canada, and distributed in this country by Sterling Educational Films, an affiliate of Walter Reade/Sterling Group . . . P/A Contributing Editor HAROLD J. ROSEN, Chief Specifications Writer of Kelly & Gruzen, received a Fellowship from the Construction Specifications Institute at its Dallas convention . . . DR. EVAN H. TURNER will become director of the Philadelphia Museum of Art in September. His successor as director of the Montreal Museum of Fine Arts will be DAVID G. CARTER, who is resigning as director of the Rhode Island School of Design Museum of Art to take the post... AIA headquarters celebrated the 200th anniversary of BENJAMIN HENRY LATROBE with an exhibition of "Early Architectural Drawings for the United States Capitol." In addition to original work by Latrobe, the show featured drawings by WILLIAM THORNTON and THOMAS U. WALTER ...University Presbyterian Church, Rochester, Mich., by LINN SMITH ASSOCIATES, Birmingham, Mich., was adjudged best in show at the 25th National Conference on Church Architecture in April...MICHAEL G. BOBICK of Katz, Waisman, Blumenkranz & Weber was awarded the $3000 LeBrun Traveling Fellowship of the New York chapter AIA...ROY MOYER has been promoted from assistant director to director of the American Federation of Arts ... DR. TONY F. W. EMBLETON of the Acoustics Section, Division of Applied Physics, National Research Council of Canada, has received the Biennial Award of the Acoustical Society of America...RANIERO G. CORBELLETTI, Professor of Architecture at Pratt Institute, will teach next year at the Middle Eastern Technical University in Ankara, Turkey, under a Fulbright lectureship...Also at Pratt, freshman HAROLD FRANCIS was the recipient of the first grant in a special scholarship program of the New York chapter AIA to help Negroes in obtaining an education in architecture. Mayor ROBERT F. WAGNER of New York lauded the program, and said he was exploring the idea of asking similar organizations to follow New York AIA's lead...A total of 59 members were advanced to Fellowship at the AIA Convention in St. Louis this month, leading some to the observation that perhaps the honor is being spread a little thin ... NORMAN BIENENFELD, General Manager of The Alumiline Corp., was elected president of the National Association of Architectural Metal Manufacturers . . . Winners of 1964 Koppers Architectural Student Design Competition are LUIS PERELMAN, Columbia University; LARRY W. HESS, Georgia Institute of Technology; ROBERT J. NOAH, DAVID SHAW, and FREDERICK SUN, Pennsylvania State University; OSVALDO BRICENO, University of Houston, CHARLES A. ALBANESE, University of Illinois; SHUN R. KANDA and HENRY T. IRIE, Western Reserve University; and ALEXANDER PURVES, Yale University. Prizes—scholarships for fifth-year study—were awarded for hypothetical design projects.



Trade Center "Failures"

While the architects and engineers of New York's proposed World Trade Center seriously discussed the structure of the project with interested parties, Rolland Ristine and George Targownik, draftsmen in a local office, envisioned a number of possible building failures for the world's tallest buildings. Messrs. Yamasaki, Roth, and Skilling may wish to take these under advisement to prevent such dire consequences as shown here.

Obituaries

Otto R. Eggers, FAIA, co-founder of Eggers & Higgins, died April 23 at the age of 81. Eggers and the late Daniel Paul Higgins were associates of John Russell Pope, and, after his death in 1937, completed the National Gallery of Art and the Jefferson Memorial in Washington, D.C., under the firm name of Eggers & Higgins. Other well-known projects by the firm are Payne Whitney Gymnasium and Silliman College at Yale University, and the Theodore Roosevelt Memorial Wing of the Museum of Natural History in New York. Eggers' talent for rendering and sketching, for which he was well known, drew the enconmium from *Pencil Points* (now *Progressive Architecture*) in 1937, "He has exerted more influence on the development of architectural draftsmanship and rendering in this country than any other man of his time." He is survived by his widow, the former Bessie Pierce; twin sons Richard and David, both partners in Eggers & Higgins; Mrs. Dorothy Eggers Tichenor, a daughter; and 12 grandchildren. Request was made that, instead of floral offerings, contributions be sent to The Architectural League of New York Scholarship Fund, 115 E. 40 St., New York, N.Y.

A. Conger Goodyear, co-founder (with Mrs. John D. Rockefeller, Jr., Mrs. Cornelius J. Sullivan, and Miss Lillie P. Bliss) of the Museum of Modern Art, died April 23 at age 86. He was the museum's first president.

CORRECTIONS:

• The story on the ANTA-Washington Square Theater (p. 68, MARCH 1964 P/A) should have listed Marco Longo of Freeport, N.Y., as the architect of record; photographs were by William A. Stuart for *The Philharmonic Hall Program.*

• P/A's obituary on Walter A. Taylor (p. 78, MARCH 1964 P/A) was in error in listing his college affiliation. Mr. Taylor was director of the School of Architecture at Ohio University, Athens, Ohio. Mr. Taylor was, as all AIA members know, the former Director of the Department of Research and Education of the Institute.

Shortage of Technologists?

by E. E. Halmos, Jr.

Serious doubts that a national shortage of scientists and engineers actually exists have increasingly been the subject of public comment in Washington.

Of course, it depended on what kind of engineers and scientists were meant, and who was doing the talking. The president of one electronics firm, for example, told a meeting of the Armed Forces Management Association that newly graduated engineers this year had best resign themselves to "pushing papers" (if they find jobs at all) or concentrate on selling.

In the field of general science, witnesses before a House subcommittee investigating the need for a central scientific data processing center implied to Congressmen that if only the vast flood of published scientific information could be classified, coded, and made available, technical men could save enough time to make up for any possible "shortage." (The bill before the House—HR 1946—would set up a center at Chicago to receive information on any or all scientific matters published anywhere, and store the information for use by inquirers.)

These developments, however, are of a piece with a growing belief in the capital that the "engineer shortage" may be in the class of the "missile gap" of the 1960 political campaigns. Particularly in construction, opinion has been hardening that if any shortage exists, it is a result of a misuse of architectural and engineering personnel, not of a lack of manpower.

Earthquake Manual

The Alaskan earthquakes have provided an unmatched "laboratory" for building designers, and the Army's Corps of Engineers was quick to take advantage of this.

The Corps, which is now engaged in preparing a manual for earthquake design, sent a nine-member team of experts (all but four C of E staff men) to the stricken state within a few days of the 'quakes. Many of the Government-owned structures in Anchorage and other areas incorporated earthquake-design features, and the "team" was armed with complete design specifications of these and many other structures in shock areas, for comparison of actual effects against designed safeguards. Indications are that maximum tremors in the 'quakes reached 8.5 on the Richter scale—producing structural stresses that reached the upper limits of design tolerances specified in military structures.

The Corps' "Earthquake Design Manual" may be completed before the end of the current year. It will be available to architects and engineers, whether or not they are actually engaged in Army work. (Those seeking California registration, take note.)

Disaster Inventory

In connection with the Alaskan tragedy, the Corps of Engineers, in collaboration with Navy's Bureau of Yards and Docks, is also starting a nationwide inventory of construction equipment in some 70 categories, to try to pinpoint availability in the event of war or natural disasters.

The inventory will produce a list that resembles—although it will be considerably more detailed—ones already available under "Plan Bulldozer" of the Associated General Contractors, Inc., which has organized its contractor-members for disaster service for more than four years. (All of Alaska's contractors, with more than 100 pieces of heavy equipment and more than 500 men, were at work, on a voluntary basis, in stricken Alaskan cities within hours of the tremors.)

The inventory is being taken under the aegis of the Office of Civil Defense, but its principal purpose is service for natural disasters.

Buildings in Barrels

Government researchers think they see a vast new market in construction for foamed plastics—both as actual building materials and as insulation.

Army Engineers, for example, dub the prospect "Buildings in Barrels." "The vision of shipping 'construction' materials in liquid form in barrels or drums, and expanding them in the field to 30 times their shipping volume, presents an amazing logistic advantage," said an Army spokesman. An example was a fabricating plant set up at a remote Greenland location, which created plastic structures for erection in ice and snow tunnels. Such structures (expanded polyurethane foam with glass fiber-resin facings) have now been in use more than two years, and show no signs of deterioration.

Other suggested uses, particularly in underdeveloped areas of the world, are application of the plastics to lightweight structures in a variety of architectural schemes.

Architects can get copies of papers on the subject (for $4) from the Office of Technical Services, U.S. Department of Commerce, Washington, D.C. Ask for "Foamed Plastics, PB 181 576."

FINANCIAL

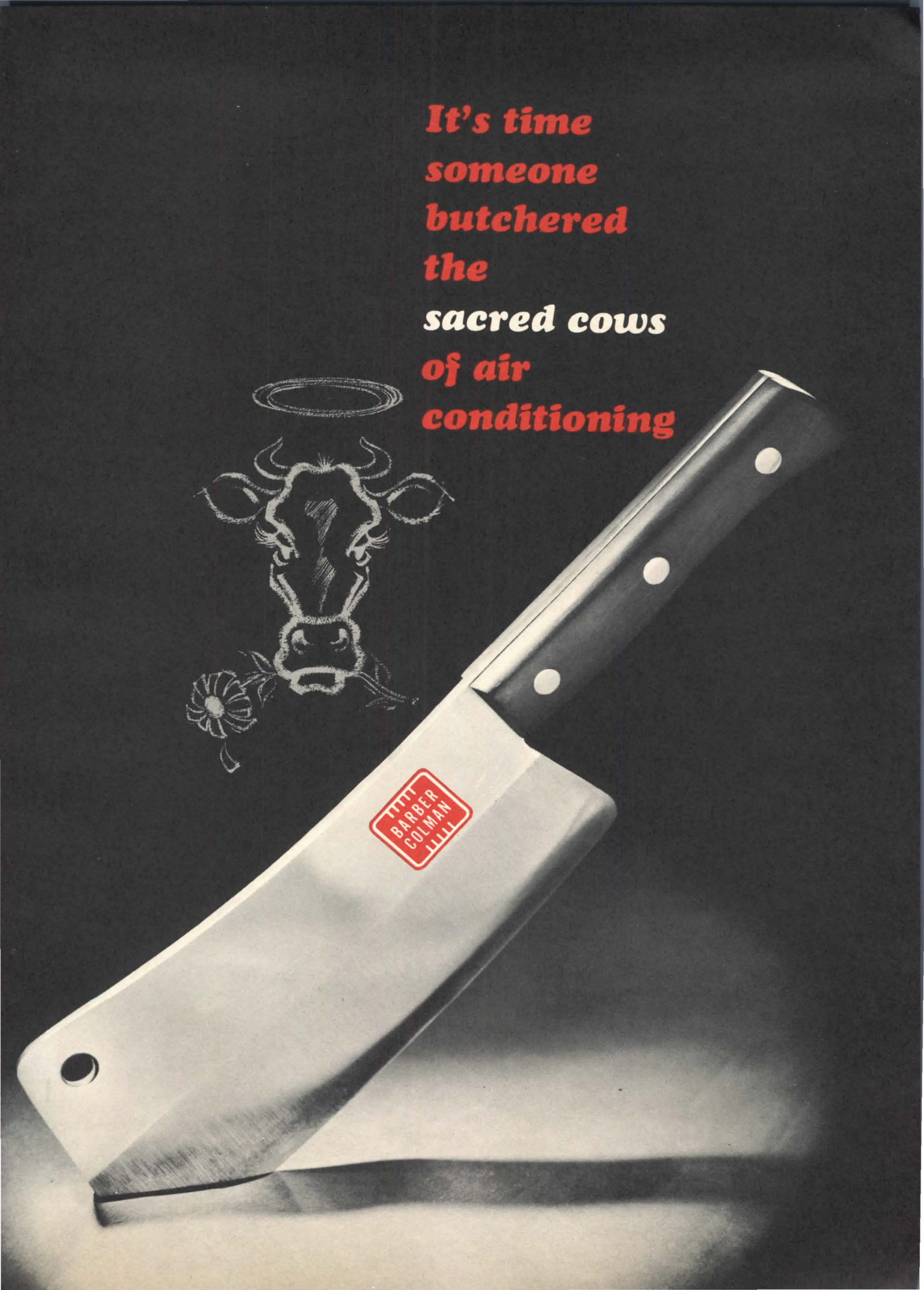
Moving along with an apparently booming general economy, the construction industry seemed well on the way toward the predicted all-time high of $66 billion gross business for 1964.

In fact, according to the Census Bureau's monthly measure of construction expenditures, the industry was slightly ahead of predictions. In March, said Census, value of total new construction put in place was $4.7 billion—up 9 per cent over February 1964 and 12 per cent over March, 1963. Significantly, that rate would indicate a total for the year of about $67 billion.

As usual, housing was pacing the gain, with privately-owned starts running at an adjusted rate that would indicate 1.648 million units for the year. That figure tallied with other reports showing that sales of new one-family homes (in February) were running well ahead (26 per cent) over those of a year ago.

Providing added fuel for the industry's head of steam was the continuing heavy support of municipal construction spending. The Investment Bankers Association reported that in February, local voters okayed 74 per cent (a total of $207.5 million) of all construction bond issues presented to them. Heaviest support continued to go to new schools and other educational building programs.

A nagging background note, however, was the continuing evidence of increases in construction costs. The Public Health Service's sewage treatment plant cost indexes edged upward again—for the third consecutive month—by fractions of a percentage point, to reach 109.53. That was up about .08 over the February figures.


It's time
someone
butchered
the
sacred cows
of air
conditioning
BARBER
COLMAN


"Automation is only for BIG buildings"
"Every building needs a boiler" (or some other fuel-burning heat source)
"Light heat is air conditioning load"
"Room thermostats belong on the wall"
"Air conditioning systems steal usable space"
"All air outlets clutter and intrude"

These six sacred cows can cost you money on your next building

Barber-Colman introduces a new environmental system that cuts the costly fat out of air conditioning.

"Every building needs a boiler" (or some other fuel-burning heat source) Nonsense!

What's really needed in more of today's commercial buildings is a way to use the heat already there. Heat generated by people, equipment, lights.

That's what our new Heat-of-Light system does.

It puts waste heat to work for you—warming exterior zones . . . offsetting building heat losses.

Best of all, you realize major savings in the cost of air conditioning.

Other advantages?

Sometimes the heat-generating equipment can be eliminated entirely. Heat recovery suddenly becomes practical and economical in cities like Minneapolis and Milwaukee.

Modern? As tomorrow.

"Automation is only for BIG buildings" Balderdash!

Automation is for any building that needs it. Office buildings. Hospitals. Schools.

With Barber-Colman, you buy only the automation you need. Simple, centralized control functions such as temperature indication and adjustment . . . start-stop control of mechanical equipment . . . time programming of system operation.

Centralizing these functions reduces manpower requirements. Running around by operating personnel is largely eliminated. One operator can often supervise an entire building.

"Light heat is air conditioning load" Ancient history!

Harness it— with the Barber-Colman Heat-of-Light system.

Light heat is used. Not wasted or thrown away. You pay for it, why not use it?

Simple principles. Use light heat to temper cold air—to heat at the building perimeter.

Our customers like it for many reasons. It eliminates hot air ducts, reheat coils, and piping. It requires less insulation. System design and installation is simplified.

We would like to use it everywhere it is practical.

Wouldn't you?

"Room thermostats belong on the wall" Ridiculous!

A thermostat works best in a moving air stream. That's where it belongs. That's where Barber-Colman put it—concealed inside the light/air diffuser.

The Dynamic Sensing Element responds up to 15 times faster than thermostats on the wall.

Changes in temperature are detected and acted upon instantly. Temperature control is more uniform and accurate.

With off-the-wall thermostat mounting, room partitioning is completely flexible. Walls and panel dividers can be easily moved.

This is the first really new idea in thermostat design in 30 years.

Don't you agree?

"All air outlets clutter and intrude" Baloney!

Some are practically invisible. The combination light/air diffuser, for example. It blends beautifully with any modern ceiling system.

And its beauty is more than skin deep.

It lights . . . diffuses air . . . returns air . . . extracts heat . . . it's an air exchanger. An electronic thermostat (usually found on the wall) is an integral part of the fixture.

Many Barber-Colman diffusers are designed to blend architecturally. Not intrude. May be customized to fit most any requirement.

Do you need something special? Ask us.

"Air conditioning systems steal usable space" Says who?

The Heat-of-Light system is single duct, high velocity. It eliminates hot ducts, reheat coils, and piping. It lets you get the most possible air conditioning in the least possible space.

There are several more unique benefits of our system we would like to tell you about. One is its economical cost.

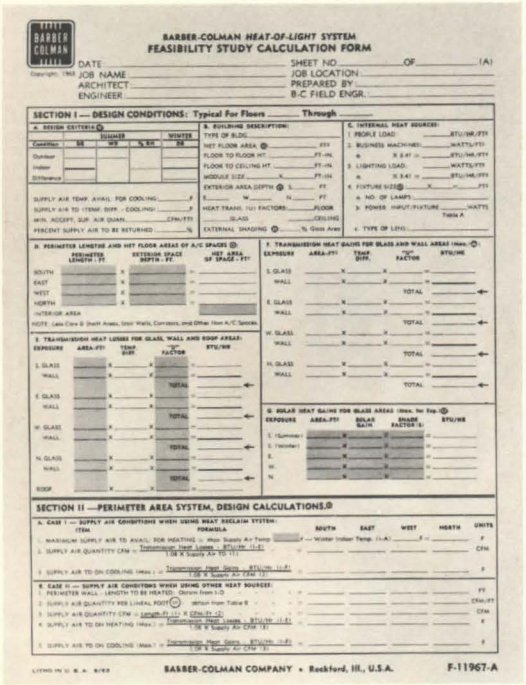
Call us for more details on the others.

BARBER-COLMAN COMPANY

. . . where originality works for you

NOW...

take the guesswork out of air conditioning



BARBER-COLMAN *HEAT-OF-LIGHT* SYSTEM
FEASIBILITY STUDY CALCULATION FORM

DATE ____ SHEET NO. ____ OF ____ (A)
JOB NAME ____ JOB LOCATION ____
ARCHITECT ____ PREPARED BY ____
ENGINEER ____ B-C FIELD ENGR. ____

SECTION I — DESIGN CONDITIONS: Typical For Floors ____ Through ____

A. DESIGN CRITERIA ⓐ — SUMMER: DB, WB, % RH — WINTER: DB
Condition
Outdoor
Indoor
Difference

SUPPLY AIR TEMP. AVAIL. FOR COOLING ____ F
SUPPLY AIR TO ITEM 7 (SUM - DIFF. - COOLING) ____ F
MIN. ACCEPT. SUP. AIR QUAN. ____ CFM/FT²
PERCENT SUPPLY AIR TO BE RETURNED ____ %

B. BUILDING DESCRIPTION:
TYPE OF BLDG. ____
NET FLOOR AREA ⓑ ____ FT²
FLOOR TO FLOOR HT. ____ FT.-IN.
FLOOR TO CEILING HT. ____ FT.-IN.
MODULE SIZE ____ X ____ FT.-IN.
EXTERIOR AREA DEPTH ⓒ S. ____ FT.
E. ____ W. ____ N. ____ FT.
HEAT TRANS. (U) FACTORS: GLASS ____ FLOOR ____ CEILING ____
EXTERNAL SHADING ⓓ ____ % Glass Area

C. INTERNAL HEAT SOURCES:
1. PEOPLE LOAD: ____ BTU/HR./FT²
2. BUSINESS MACHINES: ____ WATTS/FT²
a. ____ X 3.41 = ____ BTU/HR./FT²
3. LIGHTING LOAD: ____ WATTS/FT²
a. ____ X 3.41 = ____ BTU/HR./FT²
4. FIXTURE SIZE ⓔ ____ X ____ FT²
a. NO. OF LAMPS ____
b. POWER INPUT/FIXTURE ____ WATTS (Table A)
c. TYPE OF LENS ____

D. PERIMETER LENGTHS AND NET FLOOR AREAS OF A/C SPACES ⓒ

	PERIMETER LENGTH - FT.		EXTERIOR SPACE DEPTH - FT.		NET AREA OF SPACE - FT²
SOUTH		X			
EAST		X			
WEST		X			
NORTH		X			
INTERIOR AREA					

NOTE: Less Core & Shaft Areas, Outer Walls, Corridors, and Other Non A/C Spaces.

E. TRANSMISSION HEAT LOSSES FOR GLASS, WALL AND ROOF AREAS:

EXPOSURE	AREA - FT²		TEMP. DIFF.		"U" FACTOR		BTU/HR
S. GLASS		X		X		=	
WALL		X		X		=	
					TOTAL		
E. GLASS		X		X		=	
WALL		X		X		=	
					TOTAL		
W. GLASS		X		X		=	
WALL		X		X		=	
					TOTAL		
N. GLASS		X		X		=	
WALL		X		X		=	
					TOTAL		
ROOF		X		X		=	

F. TRANSMISSION HEAT GAINS FOR GLASS AND WALL AREAS (Max.) ⓒ:

EXPOSURE	AREA - FT²		TEMP. DIFF.		"U" FACTOR		BTU/HR
S. GLASS		X		X		=	
WALL		X		X		=	
					TOTAL		
E. GLASS		X		X		=	
WALL		X		X		=	
					TOTAL		
W. GLASS		X		X		=	
WALL		X		X		=	
					TOTAL		
N. GLASS		X		X		=	
WALL		X		X		=	
					TOTAL		

G. SOLAR HEAT GAINS FOR GLASS AREAS (Max. for Sep.) ⓒ:

EXPOSURE	AREA - FT²		SOLAR GAIN		SHADE FACTOR ⓓ		BTU/HR
S. (Summer)		X		X		=	
S. (Winter)		X		X		=	
E.		X		X		=	
W.		X		X		=	
N.		X		X		=	

SECTION II — PERIMETER AREA SYSTEM, DESIGN CALCULATIONS ⓒ

A. CASE I — SUPPLY AIR CONDITIONS WHEN USING HEAT RECLAIM SYSTEM:

ITEM	FORMULA	SOUTH	EAST	WEST	NORTH	UNITS
1. MAXIMUM SUPPLY AIR TO AVAIL. FOR HEATING = Max. Supply Air Temp. ____ F — Winter Indoor Temp. (1-A) ____ F =						F
2. SUPPLY AIR QUANTITY CFM = Transmission Heat Losses - BTU/HR (1-E) / 1.08 X Supply Air TD (1)						CFM
3. SUPPLY AIR TO ON COOLING (Max.) = Transmission Heat Gains - BTU/HR (1-F) / 1.08 X Supply Air CFM (2)						F

B. CASE II — SUPPLY AIR CONDITIONS WHEN USING OTHER HEAT SOURCES:

1. PERIMETER WALL - LENGTH TO BE HEATED: Obtain from 1-D						FT.
2. SUPPLY AIR QUANTITY PER LINEAL FOOT ⓒ obtain from Table B						CFM/FT
3. SUPPLY AIR QUANTITY CFM = Length (1) X CFM/Ft (2)						CFM
4. SUPPLY AIR TO ON HEATING (Max.) = Transmission Heat Losses - BTU/HR (1-E) / 1.08 X Supply Air CFM (3)						F
5. SUPPLY AIR TO ON COOLING (Max.) = Transmission Heat Gains - BTU/HR (1-F) / 1.08 X Supply Air CFM (3)						F

LITHO IN U. S. A. 8/63

BARBER-COLMAN COMPANY • Rockford, Ill., U.S.A. F-11967-A

"It's time someone devised an accurate way to evaluate an air conditioning system before it's installed."

We have!

It involves: (1) a one-page feasibility study (2) a short discussion between one of our field people and the design engineer, and (3) a few minutes work for our computer.

It gives an accurate evaluation of the Heat-of-Light system for any building. You get an answer quickly. Without obligation.

The computer studies each floor in the building. It evaluates many different factors to assure you the best air conditioning system available.

It calculates many design parameters. Like heating and cooling air temperatures for perimeter air systems . . . the number of light fixtures required . . . the supply air quantity and temperature for interior areas . . . and primary air quantities.

Many of our customers and prospects are finding this service invaluable.

Want more information? Write us.

this simple feasibility study...

plus our TRANSAC 2000 computer...

help you determine how the Heat-of-Light system can best be adapted to your particular building

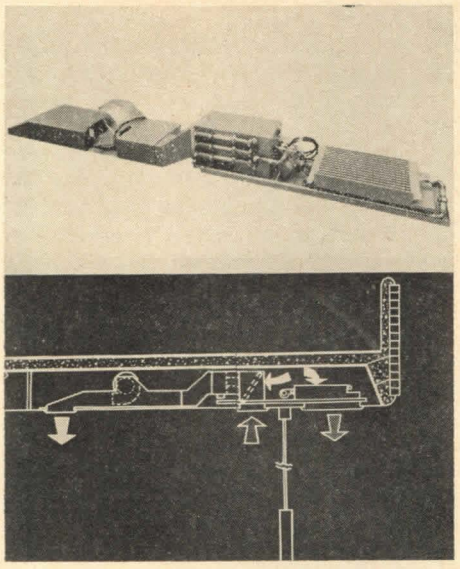
BARBER-COLMAN COMPANY
ROCKFORD, ILLINOIS
In Canada: BARBER-COLMAN OF CANADA, LTD.
Toronto, Ontario

BARBER COLMAN

... where originality works for you

For more information, turn to Reader Service card, Circle No. 310.

ACD-641



Thermoelectric Air Conditioning

For the first time, thermoelectric air conditioning has been sold commercially. Equipment of this type conditions 28 executive offices in the Johnson's Wax building at Racine, Wis. Thermoelectric air conditioning eliminates compressor and refrigerant coils characteristic of conventional air-conditioning units. When system is in operation, room air enters through a grille in the ceiling, passes through a filter and over air fins in thermoelectric panel assembly where it is either cooled or heated. Tempered air then is drawn from the thermoelectric assembly by a fan and sent into the office space below through another grille. Water is used to absorb the heat from the panel assembly and takes it to a rejection coil set into the ductwork presently serving the building. Air, passing through the ductwork, takes the heat and discharges it through a third grille into an immense workroom located outside the office.

Thermoelectric units, 13″ high, fit into 14″ space above the 7′-high ceiling. Unit width is 15″ and length, including all necessary ductwork, is 10′-3″.

Two alternatives were considered: one was to install fan-coil units against the outside wall of each office; and second to install fan coil equipment in the ductwork between the office ceiling and the mezzanine floor. First alternative would have been incompatible with the design of the offices. To get an air supply, one would have to cut through 20″-thick outside wall. Second alternative would have required installation of four large insulated pipes for warm and chilled water to each of 28 units in ducts over the offices. This would have been difficult because of the 14″ space in the 7′-high ceiling. Further, units and piping would have seriously impaired air flow through the duct serving the large work room.

Thermoelectric air conditoning has few moving parts, thereby assuring low noise level, long life expectancy, and low maintenance costs. System eliminates costliness of major structural and installation work. Each unit has cooling capacity of 4000 Btu/hr and heating capacity of 6000 Btu/hr. Capacity control automatically shifts from cooling to heating and modulates output to maintain preselected set-point temperature. As yet, this system is not competitive with normal air-conditioning situations. Carrier Corp., Carrier Parkway, Syracuse, N.Y.

On Free Data Card, Circle **100**

Anticipating Elevator Traffic

"Autotronic Unlimited Elevatoring" is a system that *anticipates* elevator traffic patterns and directs cars where they are needed. System is engineered to requirements of a particular building by incorporating number of standard modules, each of which performs specific supervisory functions. Service in older buildings may be brought up-to-date without adding elevators. Electronic sensing elements continuously transmit data on elevator performance and traffic to supervisory computer. Its solid-state operational amplifiers process data to control each elevator in step with anticipated traffic loads.

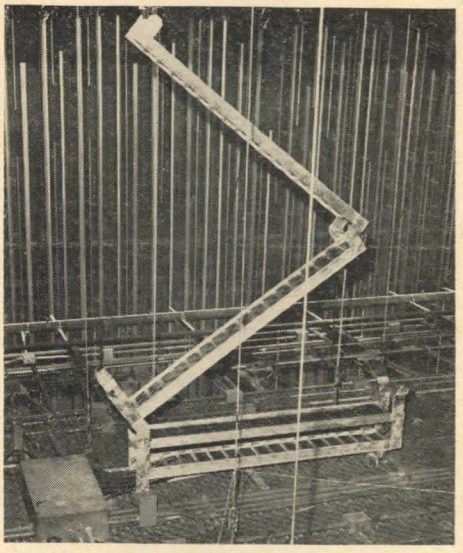
Two types of elevator group supervision have been introduced: To handle lighter traffic without necessary elevator travel, "multiple zoning" divides building into zones and assigns calls to available cars. Free elevators park where system predicts next calls will originate and not where passengers have left them. For heavier traffic, "variable interval programming" keeps cars operating or in readiness in controlled distribution to match service to demand. For optimum service, computer modules continuously predict elevator work-load and concentrate elevator capacity where heaviest traffic is anticipated. Otis Elevator Co., 260 Eleventh Ave., New York, N.Y.

On Free Data Card, Circle **101**

Cable Ladder for Lincoln Center

Specially designed folding aluminum cable ladders are utilized in electrical cable installation at Lincoln Center's Philharmonic Hall. Electrical cable system serves the lighting, microphone, and other outlets on a movable canopy. Each cable-ladder assembly consists of four 9′-long ladder links (television links are 9″ wide and power links are 12″ wide).

Two ladders are employed—one for 120-v lighting circuits and one for

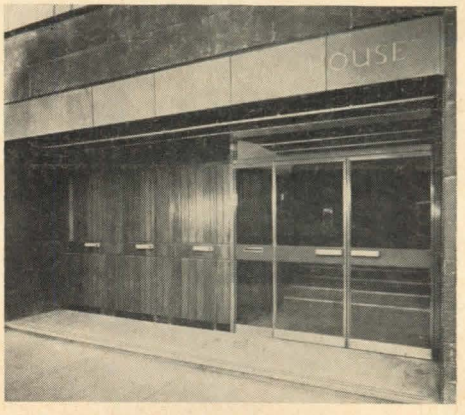


audio, microphone, and possible future television camera cables. All power cables are extra flexible stage-type multiconductor cables that originate in dimmer boards and from a patch panel. A total of 11 multiconductor cables are installed in ladder and secured with PVC tie wraps to cross rungs. On each alternate ladder link, cables are secured to bottom of rungs because of inverted "z"-shaped side members and because of hanging arrangement of ladder. T. J. Cope, Collegeville, Pa.

On Free Data Card, Circle **102**

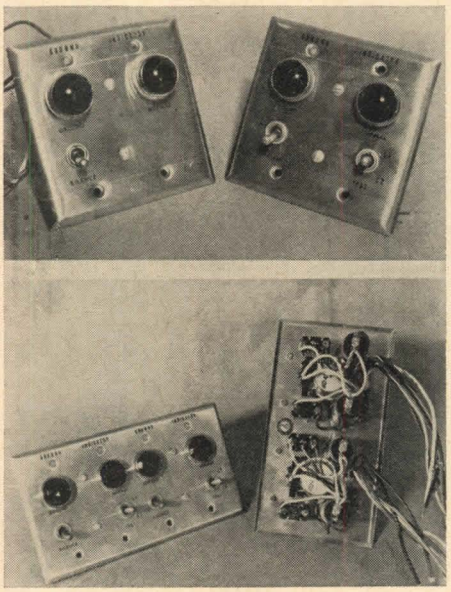
Infill Panels for Door Rails

"Twinstile Continental" stainless-steel doors with glass panels feature 7″-wide middle rail framed in satin-finish stainless steel to match push



and pull bars. Rail includes infill panels of marble, wood, mosaic tile, plastic, and other materials that extend across full width of door between door stiles. Schacht Assoc., 1175 E. 156 St., Bronx, N.Y.

On Free Data Card, Circle **103**



Ground Detection for Hospitals

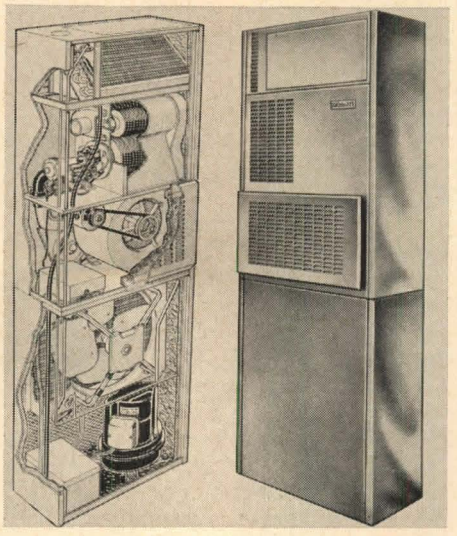
Recently introduced are complete, pre-engineered, prepackaged, ungrounded distribution systems including ground detection. These systems include all components needed to equip one or more operating rooms with fully isolated, ungrounded circuits, and ground-contact-indicator devices. Electrical elements are centralized in compact panel or cabinet that can be installed in any convenient location near operating room or surgical suite. Remote indicator panels (*shown*) are located in each operating room served by system, with additional remote indicators at operating room supervisor's desk or wherever else they are required. If any circuit becomes grounded, green lamp goes out, red lamp lights, and an audible signal is sounded. Edwards Co. Inc., Norwalk, Conn.

On Free Data Card, Circle **104**

Grid System for Domes

"Triax" domes consist of three-way grid of intermeshing circle ribs. System is suitable for spans from smallest up to 400 ft in diameter. Domes are erected by assembling rib sections starting at crown and successively lifting partially assembled dome with several gin holes while adding increments of subsections. This eliminates need for crane. Depending upon curvature and spacing of intermediate framing, plywood or 1″ or 2″ T & G lumber is suitable for sheathing. Opening for skylights, vents, etc., can be cut into the sheathing. Timber Structures Inc., 3400 N.W. Yeon Ave., P.O. Box 3782, Portland, Ore.

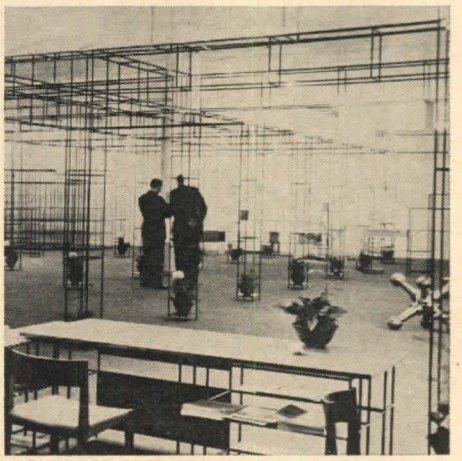
On Free Data Card, Circle **105**



Vertical Heating and Cooling Unit

Self-contained central heating and cooling system packs 10 per cent more operating efficiency during heating cycle into one-half floor space required by units of same capacity. According to manufacturer, "365 Conditionair (model UG-824)," is first vertical-type unit to combine heating and cooling. Savings of 30 per cent or more have been achieved with this system over installed cost of conventional central heating and cooling systems of same capacity. Unit provides 80,000 Btu/hr of input heating capacity or 23,000 Btu/hr of cooling capacity at ARI test conditions. It measures 80″ high, 13″ deep, and 30″ wide and fits into less than 2¾ sq ft of floor space. Unit can be installed in outside wall, flush to wall, or in a closet or alcove. Depending on application, cold-air return can be ducted or nonducted; supply air can be taken from top or front of unit. System is equipped with fail-safe operation. Delco Appliance, Div. of General Motors Corp., 391 Lyell Ave., Rochester, N.Y.

On Free Data Card, Circle **106**



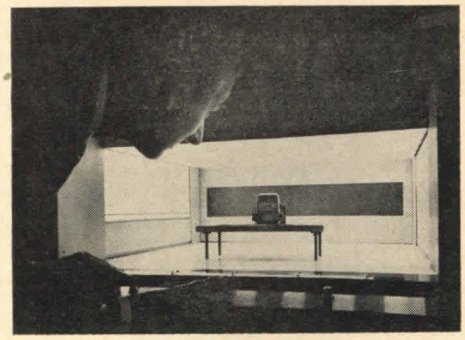
Modular Structural System

"System Abstracta," a modular structural system that can be used for display, fixturing, exhibitions, and the like utilizes two basic components: steel tubes and cast steel connectors. Tubes slip over knobs of connectors, which are available in seven different configurations of from two to six legs. Structures can be easily assembled or disassembled without tools. Panels and shelves of several types are possible. This versatile three-dimensional system can be used for rectilinear structures of various configuration and sizes. Folder includes photos, details, and descriptive material. Price list is also available. Nissen Corp., 930 27 Ave., S.W., Cedar Rapids, Iowa.

On Free Data Card, Circle **107**

Better Lighting Through Sidewalls

A recent study conducted at Southern Methodist University in association with Libbey-Owens-Ford Glass Co., analyzes the effect of visual performance on direct lighting from a side window wall. About one half as much illumination is needed if side window walls are employed as a primary source of light rather than artificial overhead



lighting as a supplementary source.

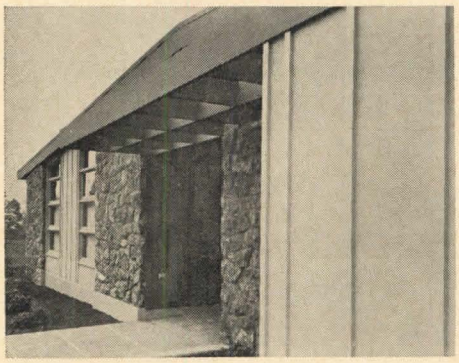
Time, size, brightness, and contrast are four factors that enable one to see. Eye fatigue and poor performance result if any one of these factors are reduced. This loss of vision is alleviated by changing one or more of the other factors to maintain equal visibility. For example, tests show that for each 1 per cent loss in contrast for a typical school classroom, 10 per cent more illumination is required to make up this loss in vision. Additional illumination cannot be obtained by increasing the brightness of the luminaires without increasing the loss of contrast between what one writes and what one visualizes. Loss in contrast is based upon: (1) diffuse reflectance, or the reflectance from a uniform light source of large areas; and (2) specular reflectance or reflected brightness of the lighting source. Specular reflections work against the diffuse reflections in producing the total contrast visible to the eye. As artificial overhead lighting increases in brightness, the contrast becomes less for any given level of illumination. Therefore, daylight spreading onto one's pencil marks at low angles from a side window wall, does not reflect specularly into one's eyes as much as artificial light. Thus, the contrast is higher for most writing tasks when the major source of illumination is from windows in the sidewalls. Libbey-Owens-Ford Glass Co., 811 Madison Ave., Toledo, Ohio, 43624.

On Free Data Card, Circle **108**

Atomic Energy Powers Exit Signs

Nuclear-energized source of light, called "Krypton-85," is used in exit identification signs. They eliminate wiring and require neither external nor standby power sources. Exit signs are hung on the wall. They always remain on and require neither maintenance nor bulb replacement. Signs are guaranteed for 10 years and are replaced at no cost if brightness level decreases. They have same face as standard exit signs but are only 2″ deep. Exitolite Corp., 450 Seventh Ave., New York, N. Y.

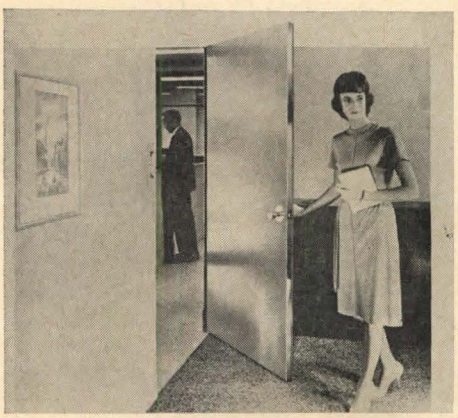
On Free Data Card, Circle **109**



Overlaid Plywood

"GPX Overlaid Plywood" is covered with thermoplastic resin that is pigmented with weatherproof colors. Finish will not burst, bend, tear, rust, or corrode. It is available in red, blue, green, and white. Georgia-Pacific, Equitable Building, Portland, Ore.

On Free Data Card, Circle **110**



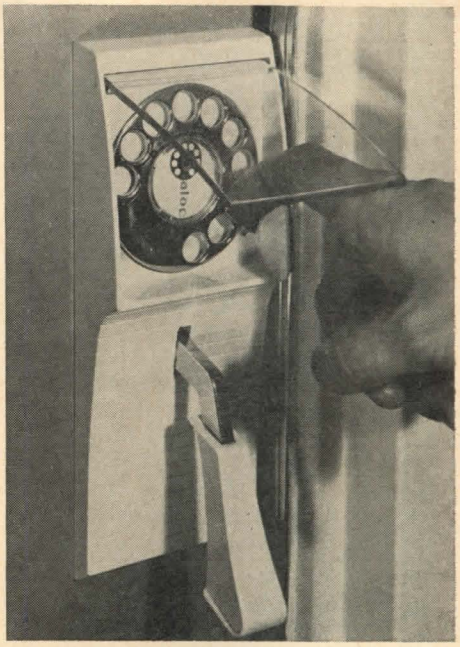
Stainless-Steel Door

Stainless-steel door and frame has recently been introduced. Stainless steel cannot be chipped, corroded, or worn away. These doors offer unlimited flexibility in use of hardware, are applicable to any type of installation, and are available in wide range of sizes. Steelcraft Manufacturing Co., 9017 Blue Ash Rd., Cincinnati, Ohio.

On Free Data Card, Circle **111**

Dial Lock

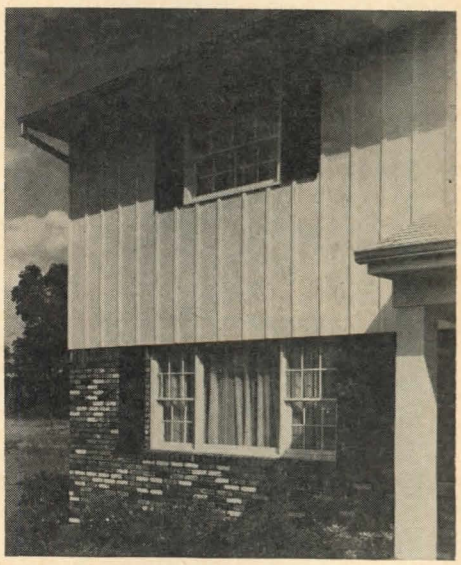
Recently developed lock is operated by dialing correct sequence of four numerals. It is relocked from outside by pressing outside handles, or from inside by turning inside handle counterclockwise. Outside and inside handle as well as the dial are made of impact-resistant plastic. Lock has "deadbolt" feature that prevents forced entry through use of knife blades or metal or plastic strips. Combination may be changed. Lock fits any standard 1⅜″ or 1¾″ door and is available in six colors. Dialoc Corporation of America, 3120-46 Ave., North, St. Petersburgh, Fla.



On Free Data Card, Circle **112**

Prefinished Plywood

Prefinished plywood siding needs no painting for minimum of 15 years. "Weldwood PF-15" siding is surfaced with DuPont's "Tedlar," a polyvinyl



film. Siding has three to five times the abraison-resistance of lacquer or enamel, and 25 to 50 per cent more chip-resistance than any other siding finish. It is available in white, grey, green,

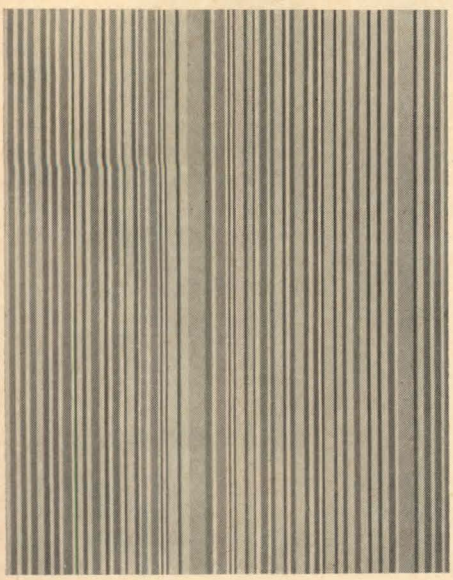
beige, and yellow, as well as in three styles. U.S. Plywood Corp., 777 Third Ave., New York, N.Y.

On Free Data Card, Circle **113**

Instant Lettering

Dry lettering process includes 17 recently designed symbol and drawing sheets. Drawings represent true-to-scale reproductions of cars, trees, figures, electrical symbols, linear scales, and preset words. Transfer sheets measure 15″x10″ and are designed in two identical halves. Sheets are available at $1.50 each. Arthur Brown & Bro. Inc., 2 West 46 St., New York, N.Y.

On Free Data Card, Circle **114**



Resistant Siding

"Deep-Tex" sidewalls have a mineral finish called "Plasticrylic." It is impervious to fire, weather, rot, termites, or corrosion. Siding will not dent or warp and never needs paint. Deep-Tex sidewalls are available in six colors. National Gypsum Co., Gold Bond Building, Buffalo, N. Y.

On Free Data Card, Circle **115**

Pull Down Shelves

"Ease-Down" cabinet hardware permits uppermost wall and cabinet shelves to swing down through finger-touch control to set at shoulder level. These shelves convert previously unused or hard-to-reach spaces into readily accessible storage areas. Movement of all-steel hardware is completely noiseless without any chance of items on shelves tipping or spilling, because they are always parallel to ground. Special set of these shelves is available for unusual loads of 150 or 200 lbs. Applications include residences, apartments, hospitals, schools, libraries, and retail stores. Winco Inc., P.O. Box 66672, Houston, Tex.

On Free Data Card, Circle **116**

Stainless-Steel Screen

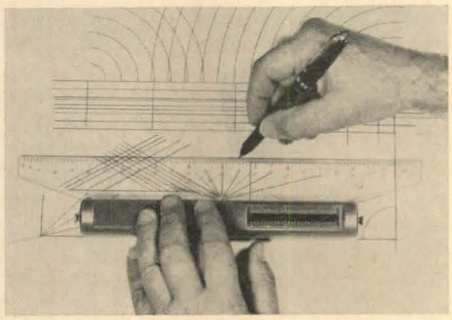
This metal-screened parking garage was designed for White Plains, N. Y., by Abbott-Merkt, Architects-Engineers. Type 201 stainless steel and fabricators for the screen were suggested by Union Carbide's Metals Division. The resulting design was a stainless-steel screen consisting of 410 8′ x 4′ panels of alternating rows of embossed and plain stainless steel. Republic Steel Corporation supplied the embossed stainless steel, which was rolled into patterned squares by Ardmore Products Inc. Then Trio Industries, Inc., of Bridgeport, constructed the panels utilizing the patterned stainless steel from Ardmore and plain stainless steel from Allegheny Ludlum Steel Corporation. Stainless-steel screen allows ample ventilation in the garage for automobile exhaust and eliminates the glare of the headlights from within the building, which faces an apartment house. Union Carbide Metals Company, 270 Park Ave., New York, N. Y.

On Free Data Card, Circle **117**

Concrete/Masonry Finish

Concrete and masonry preservative finish prevents dampness on interior surfaces. It is formulated for use on exterior above-grade construction in wide range of materials. It resists moisture, smog, salt spray, freezing, and thawing. Finish guards against leakage at head joints and prevents separation cracks, initial shrinkage cracks, and volume change cracks. It prevents cracking in masonry caused by expansion and contraction. Coating is available in clear or in different colors. Gillespie-Rogers-Pyatt Co., Inc., Gilstop Div., Capital Plaza Bldg., 6200 Annapolis Rd., Hyattsville, Md.

On Free Data Card, Circle **118**



Combination Ruler

Drawing ruler includes 12″ combination triangle, T-square, parallel ruler, and double scale. Scales are calibrated in $\frac{1}{16}$″ and $\frac{1}{10}$″ for drawing vertical, horizontal, and angular parallel lines in automatically measured distances. Circles and arcs can be drawn up to a diameter of 22″. Ruler employs non-smearing tips for use with drawing pen. Rol-Ruler Co., Riegelsville, Pa.

On Free Data Card, Circle **119**

Water Fountain

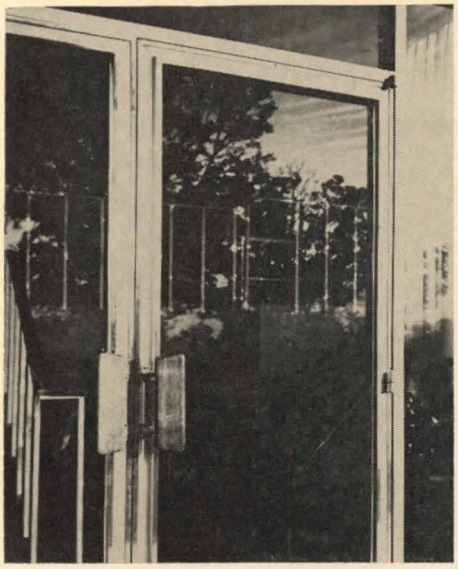
Indoor-outdoor water fountain is made of copper rather than plastic or concrete so as to enhance sound of falling water. Sealed electric motor-pump, which according to manufacturer is guaranteed for life, is hidden in base of single-piece major basin. Since this is a recirculating fountain, it is only necessary to add water lost by evaporation. Fountain is 28″ in diameter and 14″ high, and is available in three different water displays. The Madeira Co., 8950 Given Rd., Cincinnati, Ohio.

On Free Data Card, Circle **120**

Sealing Compound

Calking-sealing-glazing compound called "Polylastic" has been announced. Material securely seals joints, seams, and openings in glass, metal, wood, stone, porcelain, plastic, concrete, aluminum, and masonry. It is impervious to weather, gas, and moisture. Compound has high adhesive strength. Manufacturer says its strength and life-expectancy is five times that of the best oil-base calking compound. Polylastic is one-package ready-to-use compound requiring no mixing, additives, or thinning. Avadan Corp., 29 E. Centre St., Nutley, N.J.

On Free Data Card, Circle **121**



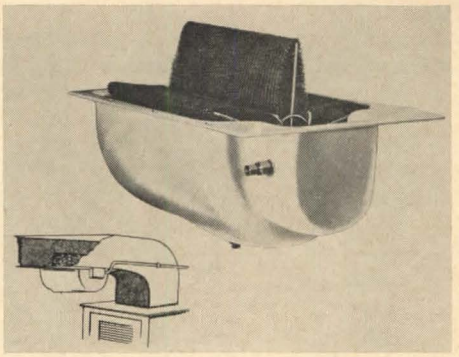
Thinner Door Trim

Thinner door trim frames have advantages of not "wrapping" masonry openings and permitting variations in anchoring devices. "Thin Trim" frames allow for variation in door sizes and provide greater useable wall design. With these units, larger doors may be used for greater ease of entrance and egress without altering building's modular dimensions. Variety of different door framing techniques may be employed in conjunction with Thin Trim. Overly Mfg. Co., 847 West Otterman St., Greensburgh, Pa.

On Free Data Card, Circle **122**

High-Capacity Humidifier

"Nu-Aire" high-capacity humidifier circulates up to 75 gals of water per day. It is self-cleaning, thereby eliminating humidifier clogging and dust in forced-air systems. Housing, 18" x



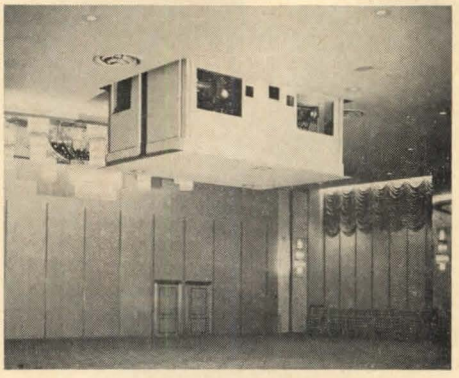
14", fits any heating duct. Since water is not atomized, there is no danger of introducing solid particles in water of hot-air stream. Nu-Aire Co., 625 Factory Rd., Addison, Ill.

On Free Data Card, Circle **123**

Polyurethane Foam Insulation

Improved rigid polyurethane foam insulation has low thermal conductivity, dimensional stability, low vapor permeability, and is lightweight. "Celthane" resists oil, gasoline, and most solvents, and acids. Adhesives, paints, plaster, and other coatings can be applied directly to Celthane. It is available in various sizes, blocks, and billets in regular and flame-retardant grades. Dacar Chemical Products Co., Dacar Chemical Bldg., McCartney at Wabash St., West End, Pittsburgh, Pa.

On Free Data Card, Circle **124**



Suspended Movie Booth

Movie projection booth installed in ceiling of Imperial Ballroom of New York Hilton Hotel is a 17′ x 10′ x 9′ unit. It is lowered and raised by two 10″-diameter hydraulic jacks that have a 6½′ stroke and are mounted in horizontal concrete beams. When raised, the booth's bottom surface becomes part of ballroom ceiling. Dover Corp., Elevator Div., 1054 Kansas St., Memphis, Tenn.

On Free Data Card, Circle **125**

Prefab Folding Doors

Prehung, preassembled, and prefinished folding door units have been developed. Doors are resistant to staining, marring, scuffing, and scratching. They are made of thermosetting resins. When open, doors fold and lie flat

against wall, taking up minimum wall area. Doors are prehung in heavy-gage aluminum frame with white finish that is painted and baked on. Six different sizes of two-panel units range from 2′ to 3′ widths; 6′-9″ and 8′-0″ heights. Six different styles of four-panel units range from 4′ to 6′ widths; 6′-9″ and 8′-0″ heights. Folding doors are available in four patterns. American Screen Products Co., 20 No. Wacker Drive, Chicago 6, Ill.

On Free Data Card, Circle **126**

Wood Coating

Wood coating made of clear polyurethane is recommended for industrial floors, panelling, doors, trim, exterior siding, and other wood surfaces. It has good abrasion resistance and adhesion to wood. "Marathane Heavy Duty Coating 3200" resists weather, water, alcohol, food acids, and detergents. Marblette, 37-31 13 St., Long Island City 1, N. Y.

On Free Data Card, Circle **127**

Quick Start Ballast Kit

Change-over from old preheat to modern rapid start ballasts is made easier with recently developed "Quik-Change Kit." Each kit includes two-lamp 40w rapid start "Bonus Line" ballasts, which are prewired to four lampholders. Mounting screws and snap-in inserts to cover empty starter holes are also included. Bonus Line ballasts feature rapid starting and

nonresetting protection against leaking and smoking at end of life of ballast. General Electric Co., Danville, Ill.

On Free Data Card, Circle 128

Concrete Bonding Agent

"Weld-Crete" is liquid, resinous emulsion for bonding wet concrete to existing concrete floors or any other structurally sound surface. Nontoxic emulsion eliminates patching with noncementious materials. Roughing up, undercutting, or acid etching are not necessary. Weld-Crete is brushed, sprayed, or rolled on; the film is allowed to dry one hour; and then the new cement is poured. Tools can be cleaned in water. Industrial Products Div., Larsen Products Corp., P.O. Box 5938, Bethesda, Md.

On Free Data Card, Circle 129

Soundproof Wall

Moveable wall panel is employed when sound isolation is desired. "Aco-Wall" panels, when assembled, form wall that is supported and conveyed on concealed overhead track system. No floor track or plate is necessary. Both automatic and manual operating systems are available. Three basic models of wall panels include: (1) STC 42 db wall that provides same noise reduction as 4″ dense concrete block; (2) STC 48 db wall that provides same noise reduction properties as 6″ dense concrete block wall; and (3) STC 38 db wall designed for less critical sound requirements. Engineered Products Inc., Sound Control Div., 998 Farmington Ave., West Hartford, Conn.

On Free Data Card, Circle 130

Vinyl Siding

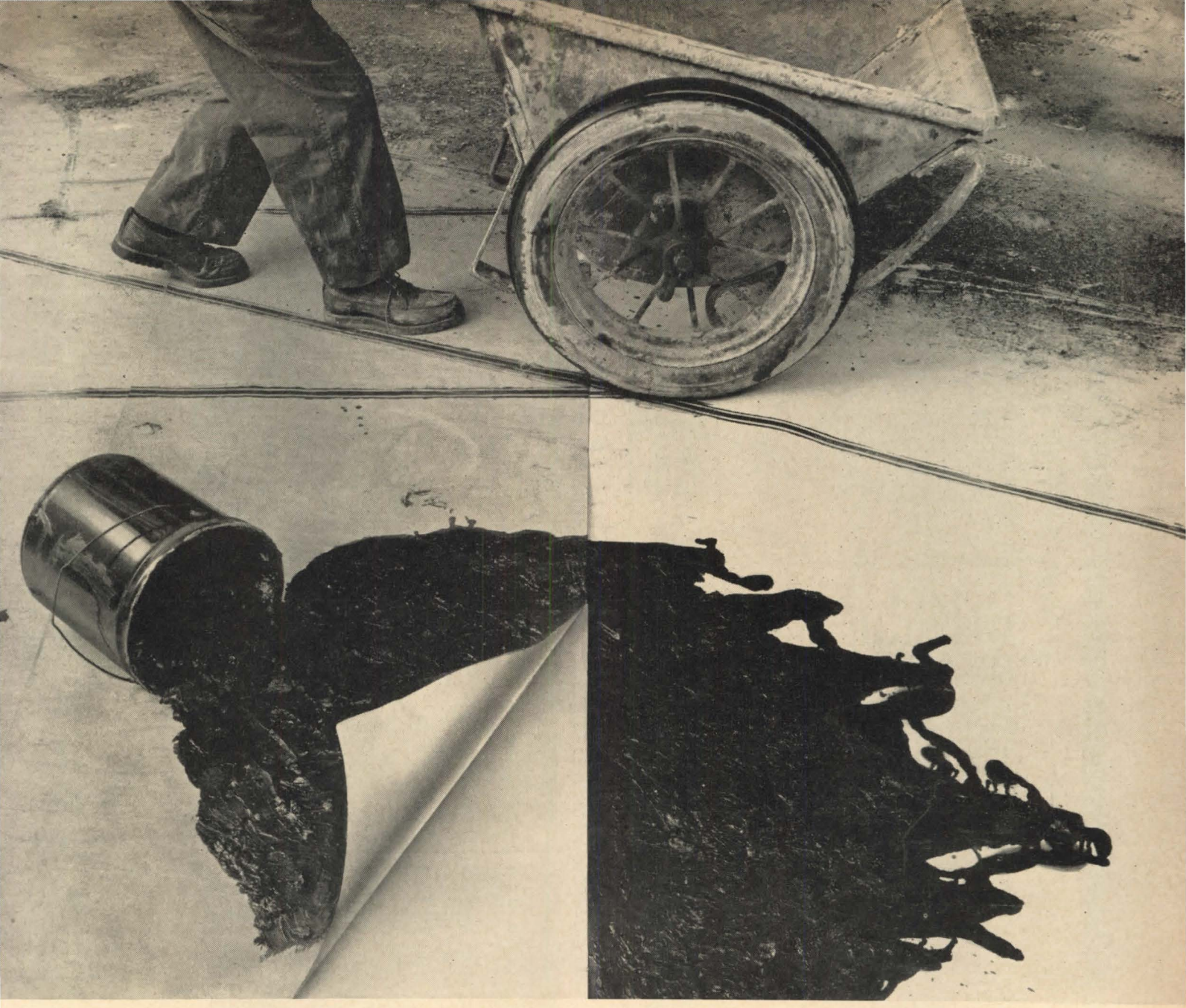
Factory-finished siding carrying 10-year guarantee of maintenance-free performance has been developed. "Insulite Vinyl Bond Siding" has dimensional stability with joints that stay butted as well as eliminate expansion and contraction. It has resistance to impact damage, peeling, chipping, and repeated cleanings. Insulite is available in horizontal lap 12″x16″, and in vertical plain 4′x8′ and 4′x9′ panels. Metal battens with matching vinyl colors snap-on firmly to concealed fasteners. Sealers, adhesive, corners, battens, and calking are all included in this exterior wall siding package. Minnesota and Ontario Paper Co., Northstar Center, Minneapolis, Minn.

On Free Data Card, Circle 131

Vinyl Surface Doors

Interior panel doors have vinyl surface. Each of three styles is available in two or four door unit sizes, and in wide range of colors. Each pair of doors is hinged. Vinylform Panel Corp., 421 Ferry St., Pontiac, Mich.

On Free Data Card, Circle 132

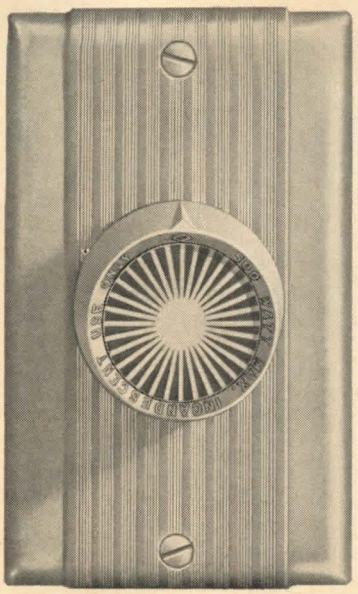


Protects against the abuse other methods can't stop during curing!

SISALKRAFT REINFORCED CURING PAPER

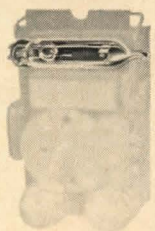
AMERICAN SISALKRAFT DIVISION
St.Regis PAPER COMPANY

It's a rare job when concrete floors aren't subjected to abuse during curing. That's why it really pays to specify reinforced Sisalkraft. It protects concrete with a tough, waterproof 5-ply barrier. Results in fast, minimum-cost cleanup. Helps deliver dense and dust-free clean concrete. Provides frost protection during cold weather pouring. Available in widths up to 8′ and special "blankets" 26½′ wide. A booklet entitled: "Curing and Protection for Better Concrete" will give you all the details . . . send for your copy, today. American Sisalkraft, 56-0 Starkey Avenue, Attleboro, Massachusetts. Branches at Cary, Illinois and Tracy, California.



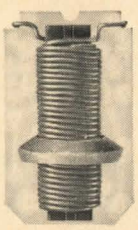
Safer Longer Lasting Quiet Brightness Control

Now specify the new 500-DS with confidence. It's the first, full wave, electronic dimmer with positive overload protection. Installs simply and quickly in both new construction and replacement.



AUTOMATIC RESET CIRCUIT BREAKER
Exclusive with P&S 500-DS. Protects dimmer against overload and excessively high ambient temperature.

NYLON SHAFT FOR SAFETY
Completely insulates control knob and plate. Use any switch-plate; plastic or metal. Rated 500 watts AC (incandescent)



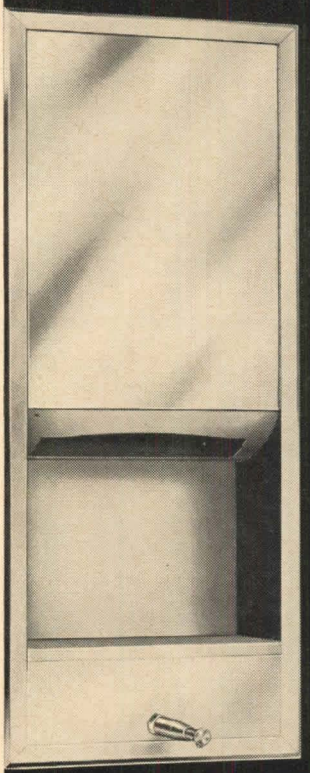
OVERSIZE FILTER
Mounted on a Neoprene shock absorber for elimination of AC resonance.

PRINTED CIRCUIT BOARD
No jungle of wires. All connections are wave-soldered automatically to give lifetime performance.

Send for color brochure, Dept. PA 664

P&S PASS & SEYMOUR, INC.
SYRACUSE 9, NEW YORK
BOSTON • CHICAGO • LOS ANGELES • SAN FRANCISCO

For more information, turn to Reader Service card, circle No. 375



confined ?

No need to be . . . let your best design ideas take wing when you specify **AMERICAN'S FULL LINE of STAINLESS STEEL "RECESSED" WASHROOM ACCESSORIES.**

Select from a wide range of Recessed Soap Dispensers & Tanks, Towel Dispensers, Waste Receptacles. Multi-duty units? Consider the handsome Stainless Steel combination Towel Dispenser, Mirror, Soap Dispenser & Shelf illustrated. Want to see more? . . .

WRITE TODAY for ARCHITECT-ENGINEER MANUAL

AD **AMERICAN DISPENSER COMPANY, INC.**
860 BROADWAY • NEW YORK 3, N. Y.
WESTERN SALES OFFICE:
PHILIP SHORE & ASSOC., 7701 E. Compton Blvd., Paramount, Cal.

For more information, turn to Reader Service card, circle No. 317

A beautiful deal for those on the move

Modern H. Series Partitions in Kent County Airport, Grand Rapids, Mich. Architects: J. & G. Daverman Co.

modern PARTITIONS INC
HOLLAND MICHIGAN

Write for literature

Ask Modern to quote on the partition requirements for your next structural move—new construction, remodeling, expansion, modernizing. See how much more proved value you get for your dollar. Genuine wood veneers, painted panels, acoustical control panels, and other types.

Representatives Nationwide

Movable partition systems for business on the move

For more information, turn to Reader Service card, circle No. 412

Push-Button Combination Lock

Keyless push-button combination lock has been developed for both inside and outside doors. Combination can be changed to nondetectable combination, using any or all of five push-buttons. Lock can be installed in wood or hollow metal doors 1⅜″ to 1¾″ thick. Adapter kit expands metal doors to 2⅛″ in thickness. Lock includes foolproof, automatic release that makes it impossible to force control knob. Both models are guaranteed against freezing and are finished in either satin chrome or brass. Simplex Lock Corp., 150 Broadway, New York, N.Y.

On Free Data Card, Circle **133**

Laminated Light Posts

Recently developed laminated lighting standards, called "Unit Light Rigers," are used for lighting streets, airports, shopping plazas, school areas, and parks. Three models are pressure-treated for protection against termites and decay. Manufacturer guarantees standards for 20 years against failure to carry original design load due to termite and decay attack. Standards are available in 25′ and 30′ mounting heights. They cannot rust, oxidize, or tarnish; they do not have to be painted; and they have good insulation properties and safety characteristics. Koppers Co., Inc., Forest Products Div., Unit Structures Dept., 750 Koppers Bldg., Pittsburgh, Pa.

On Free Data Card, Circle **134**

EMENDATION

The new Koh-I-Noor jewel point for use on drafting film will *supplement* the well-established hard-treated stainless-steel points of the company rather than supersede them as inadvertently implied in last month's Products section, page 87. The new point, which will outlast any other point on "Mylar," is the product of five years of research. KOH-I-NOOR, Inc., Bloomsbury, N.Y.

AIR/TEMPERATURE

Apartment Unit

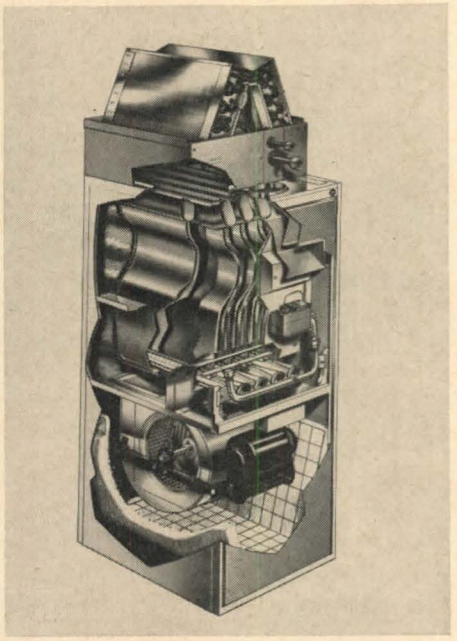
Recently developed "Climatrol 750" apartment unit is described in six-page brochure. It is completely self-contained forced-air unit which employs electric cooling and gas heating. Unit uses sealed combustion principle that eliminates need for chimney. Specs, capacities, applications, and drawings depicting both heating and cooling cycles are given. Worthington Air Conditioning, Climatrol Div., 2005 W. Oklahoma Ave., Milwaukee, Wis.

On Free Data Card, Circle **200**

Enclosures

Enclosures for mechanical equipment are available in various metals and alloys that include steel, stainless steel, vinyl-coated steel, aluminum, bronze, and others. Individual, free-standing, and wall-to-wall enclosures all have adjustable components to compensate for irregularities in field conditions. Specially featured is "EC-1000" enclosure with lift-out front panel. Its design permits installation of partitions without alteration. Details, photos, and specs of all types of enclosures are given. Enclosures by Consolidated, Inc., 19-10 Hazen St., Jackson Heights, N. Y.

On Free Data Card, Circle **201**



Curved Heat Exchanger

Recent line of gas furnaces features "Duracurve" heat exchanger. It improves gas flow control, eliminates resonance and ticking problems, and requires no sliding seal. Internal size and shape, which control gas flow and combustion quality, remain constant through heating and cooling, with absolutely no ties of any kind between right and left surfaces. This allows all metal surfaces to move freely upon heating and cooling. Exchanger is short enough in vertical height so that over-all furnace cabinet is about 4' high. Heating section of Duracurve handles 27,500 Btuh input. Furnaces can handle from 1½ to 7½ nominal tons. Booklet contains photos, sketches, and descriptions of various parts. Lennox Industries Inc., 200 So. 12 Ave., Marshalltown, Iowa.

On Free Data Card, Circle **202**

Gas Air Conditioning

Revised 89-page edition of "Guide to Gas Air Conditioning" has recently been published. Handbook discusses such topics as temperature duration data, some typical installations, descriptions and specs of gas air-conditioning equipment, rates for gas air conditioners, and typical cost compari-

6414

In this unusual bath, a single 5-foot-wide Marlite Mural covers the tub wall from corner to corner.

Only Marlite paneling offers your clients such a wide choice of colors and patterns

No matter how imaginative your client's decorating tastes may be, you'll find a beautiful Marlite color and pattern to please him. All are styled by Faber Birren, authority on color trends and preferences.

With Marlite paneling, you can choose an authentic Trendwood® reproduction, a distinctive decorator pattern, a subtle solid color . . . or one of the new Marlite Murals. These new 5-foot-wide mural panels are crafted in gold on a white background. Nine designs in all, they were created by outstanding artists to add a dramatic new dimension to any room.

And every Marlite panel has an exclusive soilproof plastic finish that resists heat, moisture, stains and dents. It goes up over old or new walls; never needs refinishing; stays like new for years with an occasional damp cloth wiping.

For complete information on new Marlite Murals and other Marlite paneling, see your building materials dealer, consult Sweet's Files, or write Marlite Division of Masonite Corporation, Dept. 614, Dover, Ohio.

Marlite®

plastic-finished paneling

ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

MARLITE BRANCH OFFICES AND WAREHOUSES: 204 Permalume Place N.W., Atlanta 18, Georgia • 18 Moulton Street, Cambridge 38, Mass. • 4545 James Place, Melrose Park, Illinois (Chicago) • 8908 Chancellor Row, Dallas 7, Texas • 1657 Powell Street, Emeryville, California (Oakland) • 3050 Leonis Blvd., Los Angeles 58, California • 39 Windsor Avenue, Mineola, L. I. (New York) • 2440 Sixth Avenue So., Seattle 4, Washington

son. The People Gas Light and Coke Co., 122 South Michigan Ave., Chicago, Ill.

On Free Data Card, Circle **203**

CONSTRUCTION

Glass Blocks

Glass blocks are described in 12-page catalog. Units include "Intaglio" glass wall units, which provide unusual grille arrangements, sculptured glass modules, color glass blocks, 4″ x 12″ rectangular blocks, and standard units. Photos, details, section on "How To Select," and specs are given. Pittsburgh Corning Corp., One Gateway Center, Pittsburgh, Pa.

On Free Data Card, Circle **204**

Aluminized Steel

Type 2 aluminized steel combines atmospheric corrosion resistance of aluminum with strength of steel. Coating on this material outlasts that of unpainted zinc-coated steel sheets by at least 4 to 1. By using aluminum-coated steel in place of aluminum of equal thickness, material costs can be cut 29 to 45 per cent, depending on thickness and type of aluminum alloy used. Aluminized steel can be used for air-conditioning housings, acoustical tile, ceiling panels, building panels, corrugated roofing and siding, curtain walls, prefab buildings, and other applications. Booklet gives photos and descriptions of properties. Also available is 28-page research report. Armco Steel Corp., Dept. AD-5361, P.O. Box 600, Middletown, Ohio.

On Free Data Card, Circle **205**

Movable Walls

Movable walls are described in 36-page catalog. Tabular guide lists partition thicknesses, base design, ceiling design, and cost comparisons for each of five product lines. Mills Co., 965 Wayside Rd., Cleveland, Ohio.

On Free Data Card, Circle **206**

DOORS/WINDOWS

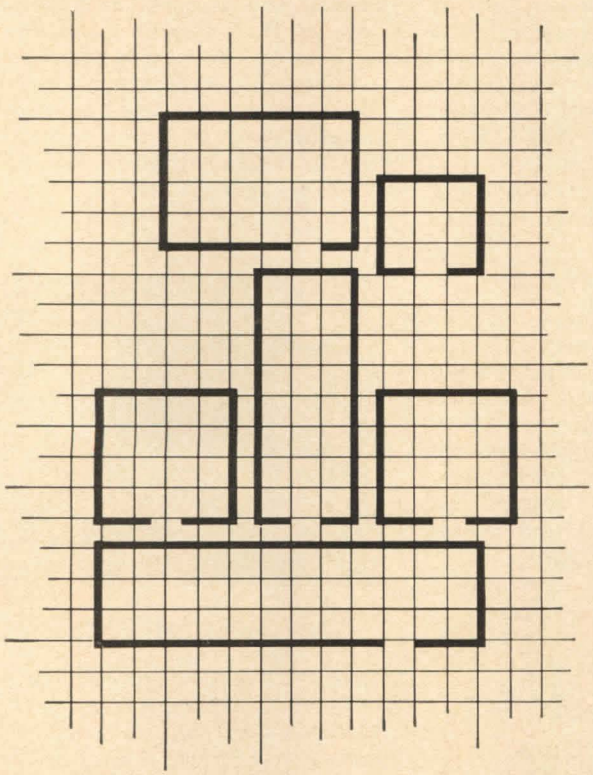
Rolling Doors

Rolling wood patio doors are described in 4-page folder. Doors use rigid vinyl extrusions coupled with Western Pine, which eliminates problems of heat transference and condensation at temperature extremes. Two types of snap-out wood grilles are featured. Doors are available in 6′ and 8′ widths. They are pre-glazed with ⅝″ insulating glass. Joseph C. Klein Inc., Voorheesville, N.Y.

On Free Data Card, Circle **207**

Window Glazing

Shatterproof window glazing, called "Kayrex," is a laminate of specially sized and treated wire mesh embedded

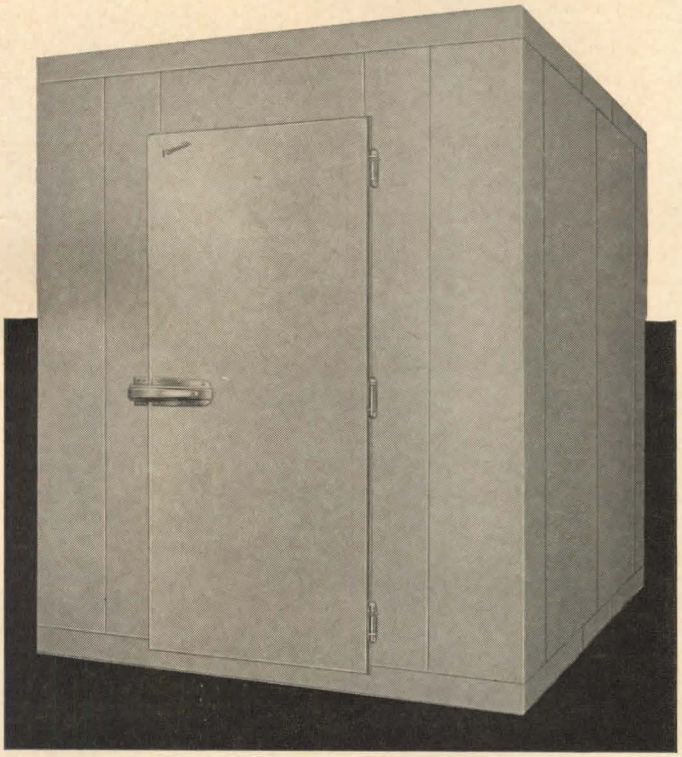


FLEXIBLE REFRIGERATION

pre-fabricated, all-metal

NORRIS WALK-IN COOLERS, FREEZERS, COMBINATIONS

quickly provide refrigerated space by the foot



Flexible refrigeration describes Norris walk-in coolers, freezers, or cooler-freezer combinations, for Norris walk-ins offer you complete installation versatility. They're pre-fabricated in two- and three-foot wall sections, four-foot door sections (7½′ high), and can be set up in one-foot increments in any size . . . in virtually any space . . . in new or existing buildings. Best of all, the only tool required is a light hammer.

The modular panels of Norris walk-ins are all-metal—no wood to absorb moisture—and extremely light weight. Standard exteriors are bonderized steel finished in grey baked enamel, interiors are 22-gauge galvanized metal, with custom exteriors or interiors optional at extra cost. Ideal for every institutional, commercial, or industrial refrigeration need, Norris walk-ins can be supplied with the proper self-contained or remote refrigeration equipment to meet any application.

Your Norris representative has full details, or write Norris for descriptive literature.

Light weight—as low as 4½ lbs. per sq. ft.—reduces freight costs!

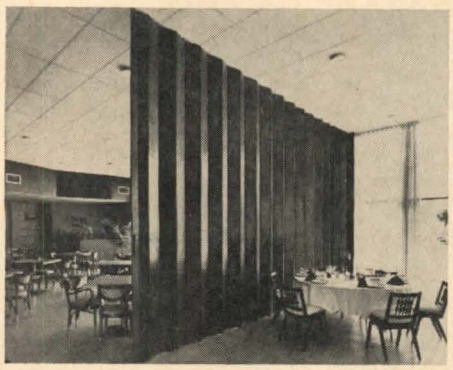
Norris

NORRIS DISPENSERS, INC.
2720 LYNDALE AVENUE SOUTH
MINNEAPOLIS 8, MINNESOTA

NORRIS—THE *FIRST* NAME IN MILK SERVING AND STORAGE EQUIPMENT!

between rigid vinyl sheets. It is glare-reducing, weather- and corrosion- resistant, noncombustible (flame spread of 25), and lightweight. Use of wire reduces coefficient of expansion in comparison with other plastic glazing panes. Three sample pieces, standard pane sizes, and recommendations on thicknesses for various size openings are included in six-page folder. Kaykor Products Corp., Yardville, N.J.

On Free Data Card, Circle **208**



Folding Partitions

Heavy-duty wood-folding partitions feature ball-bearing wheels. They are constructed on 8″ wide panels of laminated solid wood veneers, which include cherry, maple, mahogany, walnut, oak, birch, pine or ash. Partitions can be stacked in minimum area. Color photos, details, and specs are given. Panelfold Doors, Inc., 1090 E. 17 St., Hialeah, Fla.

On Free Data Card, Circle **209**

Door Closers

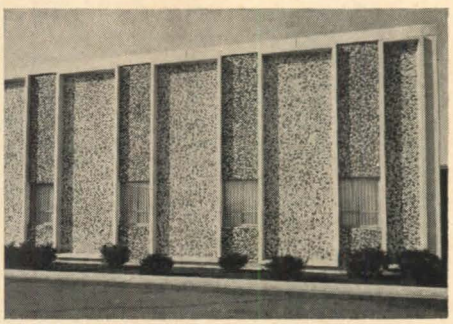
Series of three brochures describe door closers: (1) "Smoothee" door closers for exterior and interior doors are available in eight sizes. Also shown for this type are brackets, drop plates, and arms; (2) and (3) "Series 2000" and "Series 5000" are compact overhead concealed door closers. All brochures include details and photos. LCN Closers, Princeton, Ill.

On Free Data Card, Circle **210**

Stainless-Steel Door Specs

Suggested guide specs cover four different types of stainless-steel doors: (1) revolving doors; (2) rolling doors and grilles; (3) sliding doors and frames; and (4) swinging doors and frames. Each folder contains two copies of specs, one for permanent file and other intended as work copy. Each spec lists names and addresses of manufacturers. Readers' Service Section, International Nickel Co., 67 Wall St., New York, N. Y.

On Free Data Card, Circle **211**



Vinyl/Steel Windows

Steel "CECOCLAD" windows are coated with corrosion-resistant vinyl, which does not calk or blister. Eight colors are available: white, light green, dark green, brown, black, blue, gray, and coral. Coatings eliminate surface

Use this AMERICAN TEAM

To fabricate and install store display equipment of quality, call on American.

National acceptance of American craftsmanship is seen in the finest chain stores and small, smart shops that are "furnished American" coast to coast.

American fabricates metal, wood, plastic, glass . . . permanent or flexible fixtures with patented TRIMlok assembly features that permit rapid seasonal change-over.

ONE SOURCE, ONE RESPONSIBILITY, ONE FINE QUALITY, . . . AND IT'S ALL AMERICAN.

Write or phone:

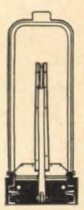
AF AMERICAN FIXTURE INC
TRIMLOK STORE EQUIPMENT

2300 LOCUST ST., ST. LOUIS, MO. 63103 • Area Code 314 GArfield 1-2170

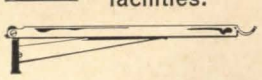
For more information, turn to Reader Service card, circle No. 318

NOW...a handy PULLDOWN SHELF

for restroom booths



A safe place for purses, gloves, packages, hats, coats, and briefcases. Attractively designed . . . quality built . . . self-clearing. Easily installed with just 2 bolts. A plus-factor in any building with public restroom facilities.



$11.95* F.O.B. Indianapolis
Finished in lustrous chrome
*Slightly higher in the west

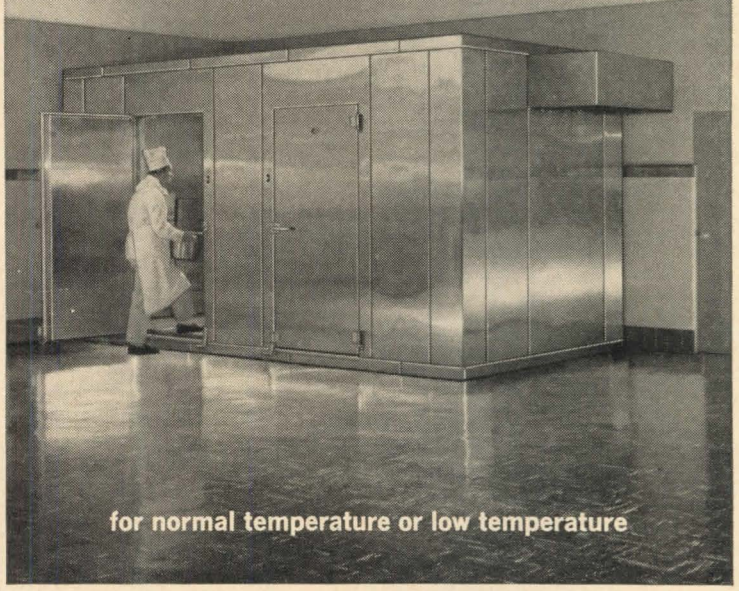
Send for free specifications, price list and installation instructions.

The **NIK-O-LOK** Company
422 East New York Street
Indianapolis 2, Indiana

For more information, turn to Reader Service card, circle No. 409

Specify Bally all-metal sectional walk-in refrigerators

(with features you can't get in "built-ins" and at lower cubic foot cost than "reach-ins")



Bally Walk-Ins can be assembled in any size or shape from prefabricated sections. Easy to increase size by adding sections . . . easy to disassemble to relocate. New design features!

1. 4-inch moisture-proof urethane "foamed-in-place" equals 8½-inch fibreglass **2.** Urethane's strength eliminates need of wood structure . . . reduces weight more than half **3.** Patented Speed-Lok makes assembly accurate, fast, easy **4.** Lightweight door with automatic self-closing hinges . . . improved hand lock (inside safety release) and foot treadle . . . opens and closes easily **5.** Self-contained refrigeration systems . . . factory-tested and hermetically sealed . . . eliminate service problems **6.** Galvanized or aluminum interior and exterior assure maximum sanitation. Stainless steel available.

Because of mass-production, Bally Walk-Ins cost less than built-ins constructed by building trades. And cubic foot cost is less than half that of reach-ins.

Available everywhere through thousands of dealers and contractors . . . no need to ever accept a substitute.

Bally

Write for 12 page brochure and sample of urethane wall.

Bally Case and Cooler, Inc.
Bally, Pennsylvania

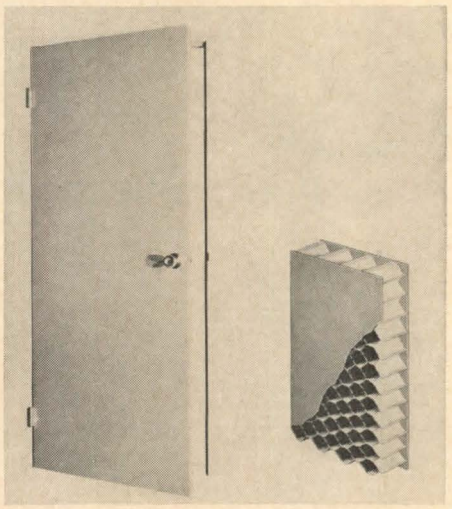
For more information, turn to Reader Service card, circle No. 324

fatigue and oxidation. All hand-operated hardware is solid bronze. Ceco Steel Products Corp., 5601 West 26 St., Chicago, Ill.

On Free Data Card, Circle **212**

Door Facings

Booklet, 12 pages, presents honeycomb-core steel doors. They are prefinished

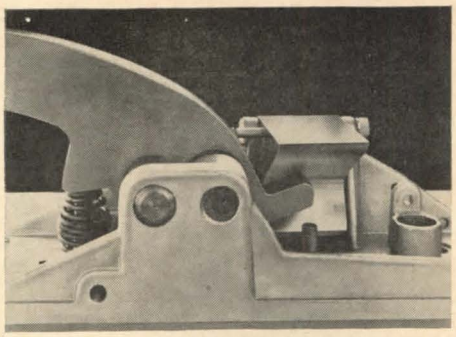


with full flush facings in choice of three wood grain vinyl laminates, epoxy-based enamel colors, or two stainless-steel finishes. Color illustrations, dimensional charts, and descriptions are included. Ceco Steel Products Corp., 5601 West 26 St., Chicago, Ill.

On Free Data Card, Circle **213**

Exit Fixtures

Exit fixtures are presented in 21-page catalog. Contents include mortise lock and vertical rod exit devices, fire-exit hardware, trim, double-door combinations, and accessories. Photos, details,



and specs are included. Sargent & Co., New Haven, Conn.
On Free Data Card, Circle **214**

ELECTRICAL EQUIPMENT

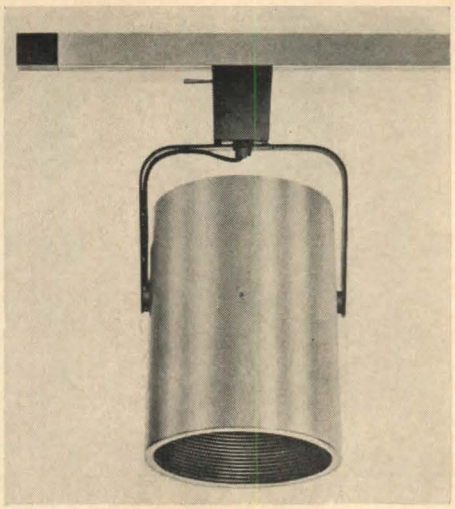
Landscape Lighting

Landscape lighting fixtures include "Lumalite" 5300 series of decorative heads, multipurpose aluminum cones,

tree lights, flush-mounting ground kits, wall brackets, house numbers, and post lamps. Color photos and sketches are given. Prescolite Mfg. Corp., 1251 Doolittle Drive, San Leandro, Calif.
On Free Data Card, Circle **215**

Spot/Floodlighting On Electrified Track

"Lytespan" is spot and floodlighting based on recently developed electrified track. System is specifically designed to be recessed as well as stem-mounted. It can be installed horizontally or vertically, and can be joined at corners with 90° connector. Tracks extend from single electrical outlet to provide



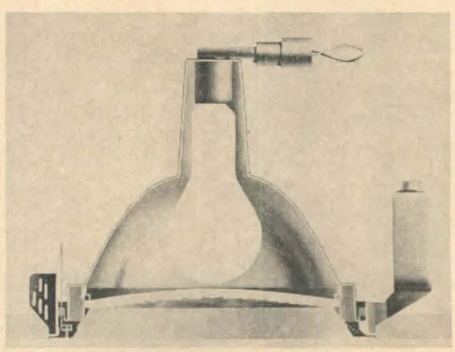
continuous lengths in 4' modules. Each lighting fixture attaches both mechanically and electrically *at any point* in track. Fixtures offer range of intensity from 30 to 300w and are available in wide variety of shapes, spread, and throw of light beam. Series of interchangeable color filters makes multiple color effects possible. Details and lighting data are included. Lightolier, Jersey City 5, N.J.

On Free Data Card, Circle 216

Lantern Lights

Brochure, 7 color pages, illustrates 13 lighting fixtures. Units include bracket, chain, and post lanterns with straight, bent or bound glass panels; eight or sixteen-light chandeliers with one or two tiers; cast wall brackets with torch globes; and coach lanterns with two bent crystal panels. Samples of eight metal finishes are given. Carr Lighting Co., Inc., 463 N. Robertson Blvd., Los Angeles, Cal.

On Free Data Card, Circle 217

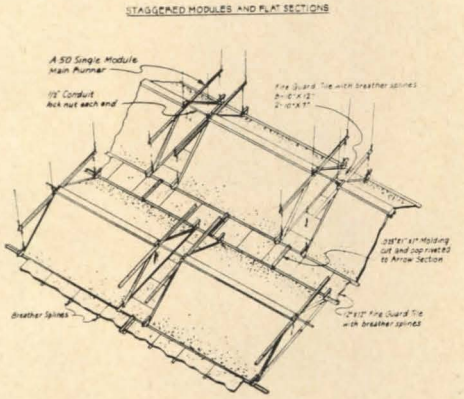


Rust-Proof Mounting Ring

Architectural, stage, and studio lighting fixtures are described. Architectural fixtures (*shown*) utilize easily

installed, rust-proof, die-cast aluminum mounting ring with bars and brackets. "Insulite" mounting ring is adaptable to plaster or dry ceilings with or without junction box and for either bottom or top access. Special section describes lighting-control equipment. Photos of all fixtures and control equipment are shown. Century Lighting, 521 West 43 St., New York, N. Y.

On Free Data Card, Circle 218



Lighting/Ceiling System

Booklet gives latest information on lighting, air-distribution, and acoustical performance of "Luminaire A-50" ceiling system. Included is ETL data giving lighting efficiency and coefficients of utilization for ceiling system incorporating one, two, or three lamp fixtures. Armstrong Cork Co., Lancaster, Pa.

On Free Data Card, Circle 219

Prismatic Lenses

Acrylic plastic lenses, called "Lo-Brite Controlens," are available in sizes 1″x 4″ (6010) and 2′x2′ (6024). Color photos show lighting fixtures utilizing ceiling-flush lenses, which are installed singly and end-to-end in pairs, triplets, and continuous runs. Other applications shown are ceiling-attached fixtures, lenses arranged side-by-side, and luminous ceilings with wall-to-wall lenses. Booklet includes photo-

metric curves and design data. Holophane Co., Inc., 1120 Avenue of the Americas, New York, N.Y.
On Free Data Card, Circle **220**

FINISHERS/PROTECTORS

Finishing Plywood

Booklet, 24 pages, details methods of finishing structural plywood. It contains six pages of charts that provide reference for any type of finishing for interior and exterior plywood. Types and applications of exterior paint including latex paints as well as penetrating and opaque stains. Suggestions about repainting procedures and methods of obtaining special effects are also discussed. American Plywood Assn., 1119 A St., Tacoma, Wash.
On Free Data Card, Circle **221**

INSULATION

Roof Deck Insulation

"Crete" insulation is used for roof decks, re-roofing, parking decks, promenade decks, ice rinks, and underground piping. Seamless insulation has k factor of .40. It is applied hot and dry, even in freezing weather, and can be pitched to drains. Silbrico Co., 5901 West 66 St., Chicago, Ill.
On Free Data Card, Circle **222**

SPECIAL EQUIPMENT

Hinges

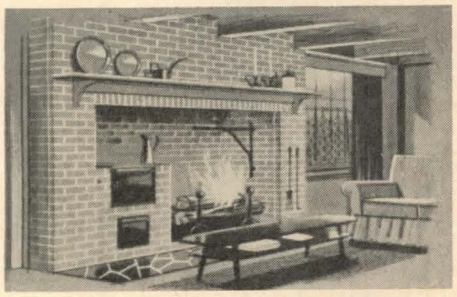
Hinges for wood, hollow metal, kalamein, and special doors are described

in eight-page folder. Included is section entitled "How To Select the Proper Hinge." Hager Hinge Co., 139 Victor St., St. Louis, Mo.

On Free Data Card, Circle 223

Fireplace Handbook

"Book of Successful Fireplaces," 100 pages, presents history of fireplaces. Other topics include planning and construction of conventional and contemporary fireplaces; types of fireplaces, accessories, and furnishings; and prevention and treatment of fireplace difficulties. Handbook is available at $1 per copy. The Donley Brothers Co., 13900 Miles Ave., Cleveland, Ohio.



Filing System

"Conserv-a-file V" filing system consists of inner cradles that roll out and outer cradles suspended on guide rails that move laterally to either side. Manufacturer states that according to tests, speed and efficiency are increased to 35 per cent. It accommodates side or top tab folders, hanging file folders, and card trays, all within the same unit if necessary. System is available in legal and letter sizes in 5-, 6-, 7-, and 8-tier heights measuring 64″, 76″, 88″, and 100″ respectively to any length. Units are available in decorator colors. Price list of all unit sizes and explanatory folder are available. Supreme Steel Equipment Corp., 50 St. and Second Ave., Brooklyn, N. Y.

On Free Data Card, Circle 224

SURFACING

Extruded Quarry Tile

Catalog, 20 pages, offers extruded quarry tile, textured quarry tile, frostproof glazed quarry tile, and heavy duty acid-resistant floor brick. Also featured is ceramic "Customurals," a process that transcribes illustrations of any size, technique, and color into ceramic glazed quarry tile. Included in catalog are patterns,

two pages of color chips, trim unit data, specs, and installation details. Summitville Tiles Inc., Summitville, Ohio.

On Free Data Card, Circle **225**

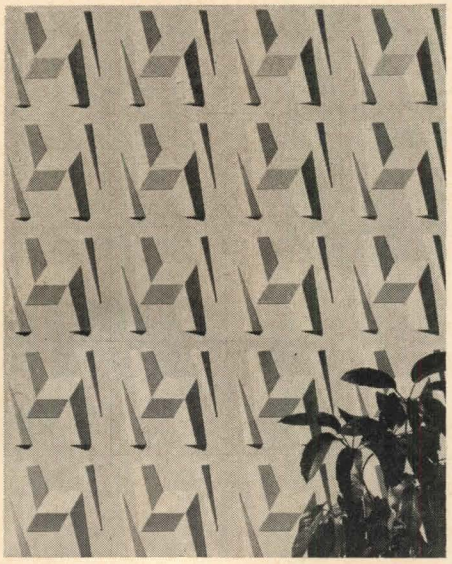
Laminated Plastics

Booklet gives information on laminated plastics with applications ranging from walls and partitions through display cases to kitchen cabinets. Performance chart, details, and 77 color samples are included. Formica Corp., 4601 Spring Grove Ave., Cincinnati, Ohio.

On Free Data Card, Circle **226**

Sculptural Wall Tile

Tiles in six designs are utilized as decorative wall treatment. They meas-



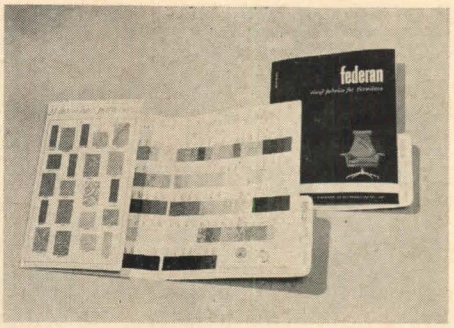
ure 12″ sq and are formed to depth of about 1″ from wear-resistant white thermoplastic material. Tile is available in white matte finish and can be painted with latex paint, either sprayed or brushed on. Contura Inc., 23184 Keller St., South Bend, Ind.

On Free Data Card, Circle **227**

Epoxy-Resin Floor Covering

"Epo-Chem," glass-fiber reinforced epoxy-resin pregrouted floor covering is shown in 2-page color chart. It is available in either brick or slate textures. Covering is permanently resilient and will not indent. It is available in 48″x48″ sheets, and in five patterns as well as nine colors. Chart also gives dimensional data, physical properties, and installation features. Chemtronics, Inc., 2040 South Hamilton Rd., Columbus 27, Ohio.

On Free Data Card, Circle **228**



Vinyl Fabrics

File folder presents 200 color samples of "Federan" vinyl fabric in 21 patterns for furniture. Vinyl is scuff, scratch, and stain resistant. It is easily washed with soap and water. Airco Plastics Products, Div. of Air Reduction Co., Inc., 150 East 42nd St., New York, N.Y.

On Free Data Card, Circle **229**

Floor Covering Portfolio

Samples of laminated plastic floor tiles are presented in portfolio containing 44 solid color choices. Citation collection costs 90¢ per sq ft and is available in sizes 4′x8′, 5′x12′, and 3′ x 10′, as well as in all standardized sizes. The Formica Corp., 4614 Spring Grove, Cincinnati 32, Ohio.

On Free Data Card, Circle **230**

Vinyl, Vinyl Asbestos, and Asphalt Tile

Three booklets illustrate vinyl asbestos, solid vinyl, and asphalt tiles, respectively. Each booklet contains color photos of installations and individual patterns of tiles. Kentile, Inc., 58 Second Ave., Brooklyn, N. Y.

On Free Data Card, Circle **231**

PROGRESSIVE ARCHITECTURE NEWS REPORT

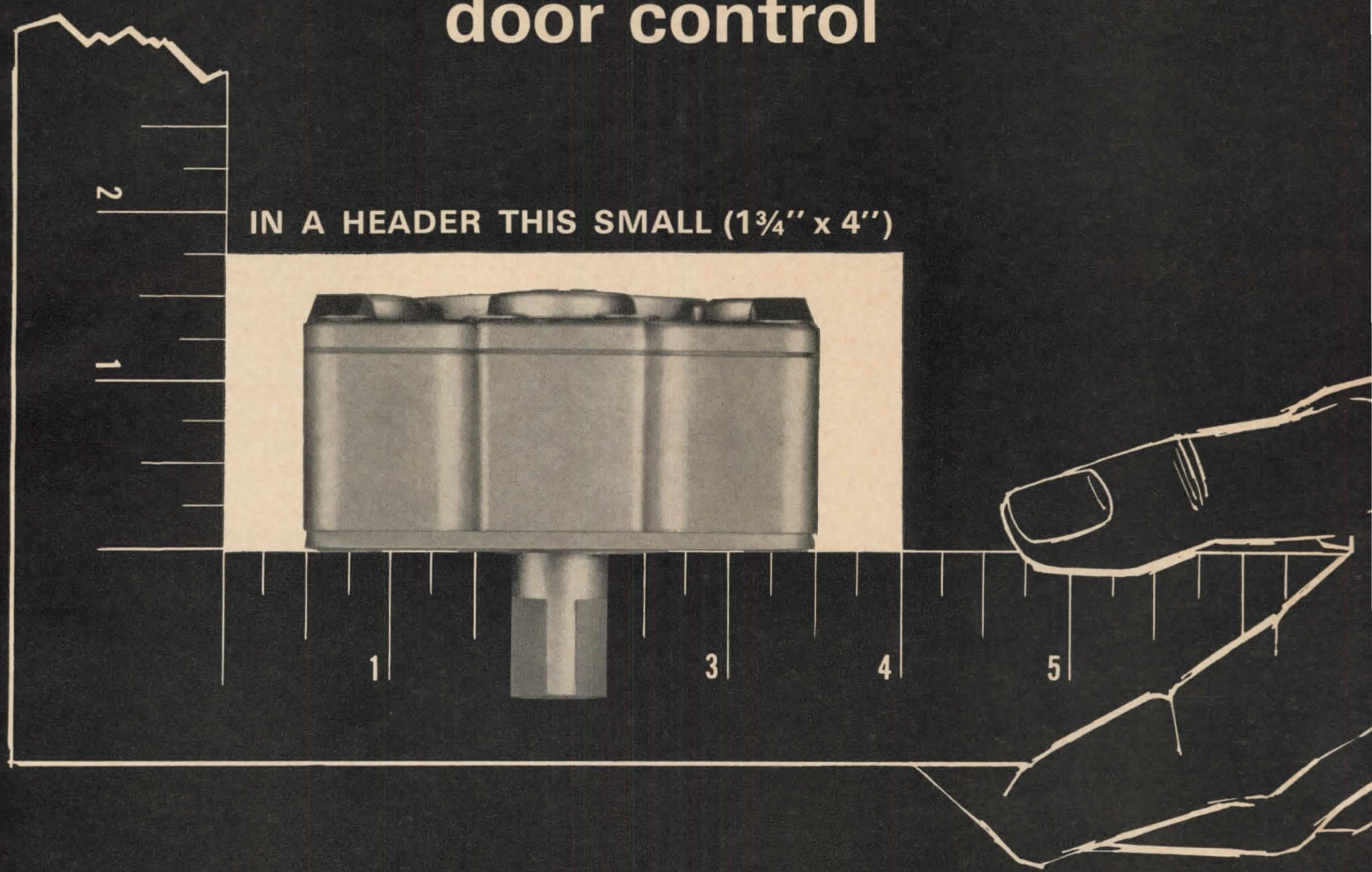
REINHOLD PUBLISHING CORPORATION
430 PARK AVENUE, NEW YORK, N.Y. 10022

News Editor.....James T. Burns, Jr.

Publisher ..... D. B. Wilkin
Associate Publisher ..P. H. Hubbard Jr.
Editor.....Jan. C. Rowan
Advertising Sales Mgr. W. R. Evans, Jr.
Production Manager..Joseph M. Scanlon

For more information, turn to Reader Service card, circle No. 329

Dependable rack-and-pinion door control



Norton series 1900 overhead concealed door closer

For the beauty of completely concealed door control and the dependability of the famous Norton rack-and-pinion construction—specify Norton Series 1900 overhead concealed door closers.

All Series 1900 closers, except those having the fusible link feature, are non-handed. A variety of arm styles suitable for all types of pivoting is available to meet almost every installation requirement.

CHOOSE FROM THREE BASIC STYLES

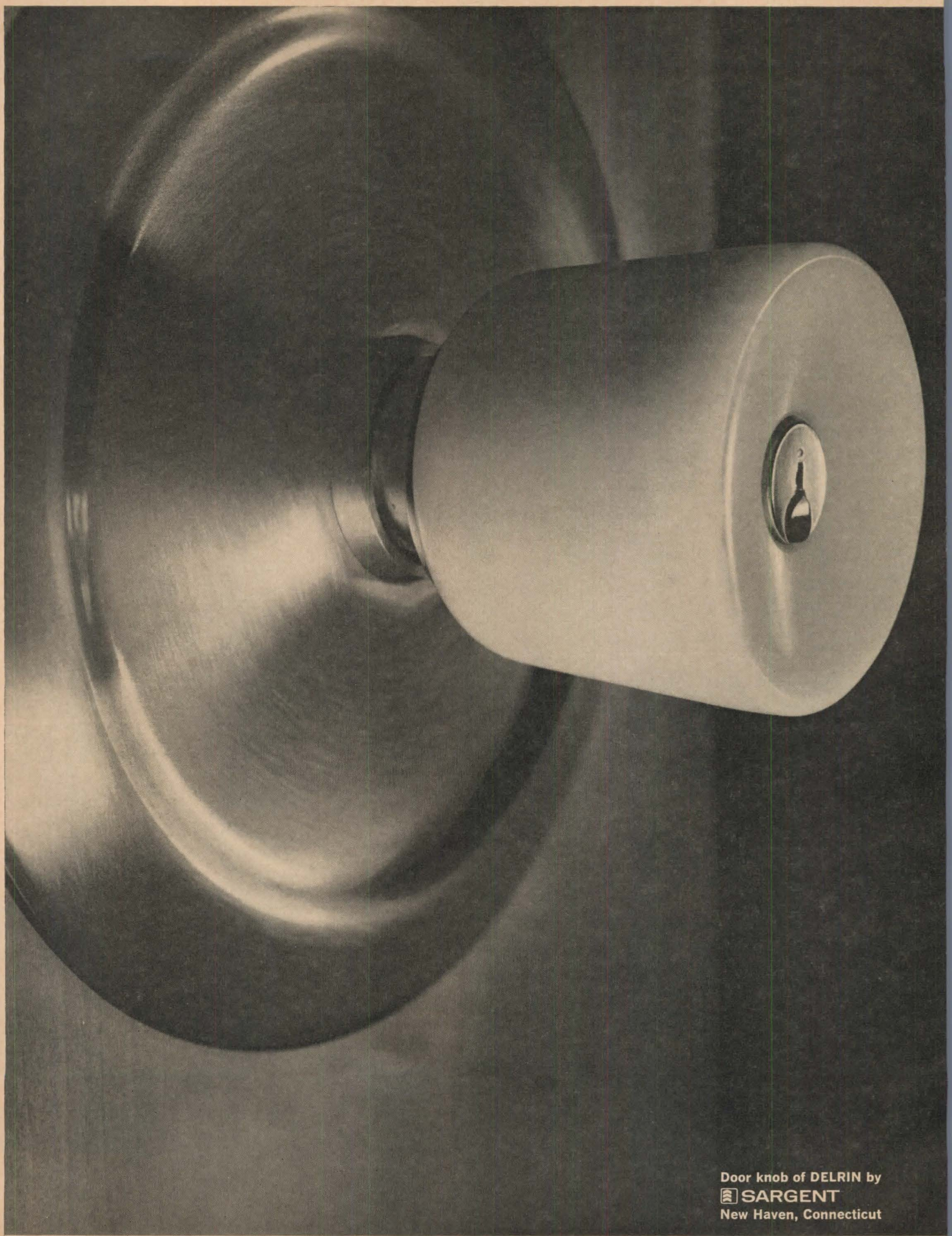
1078

SERIES 1900
WITH CONCEALED ARM

SERIES 1940
CENTER PIVOTED

SERIES 1920
WITH EXPOSED ARM
(requires 4½" header)

NORTON® DOOR CLOSERS 372 Meyer Road, Bensenville, Illinois



Door knobs of DELRIN® ACETAL RESIN add the warm touch of lasting beauty

Americana Hotel

Sheraton Motor Inn

Summit Hotel

A bold new look of beauty and styling comes to builders' hardware with door knobs molded of Du Pont DELRIN acetal resin. And the look is here to *stay*—because these attractive door knobs resist stains, abrasion, corrosion and chipping...and will not tarnish. They're pleasantly warm to the touch and, because DELRIN is non-conductive, they are free from annoying static-electricity shocks.

Door knobs of DELRIN are easily molded into shapes appropriate to any décor and are available in a range of attractive colors. You'll find them an ideal choice for quality homes to add a final note of distinction. Building owners, too, are impressed by the attractive appearance and low maintenance of door knobs of DELRIN. They're used, for example, on interior doors in the three modern buildings shown above—the Americana Hotel, the Summit Hotel and the Sheraton Motor Inn, all in New York City. (Architects: Lapidus-Liebman Associates.)

For new styling and performance, why not investigate door knobs of DELRIN? Keep informed on these and other new developments on Du Pont Plastics by sending for ENGINEERING DESIGN, quarterly Plastics Department publication. For your free subscription, write: Du Pont Company, Dept. PA-6, Room 2507D, Nemours Bldg., Wilmington 98, Del. *In Canada:* Du Pont of Canada Limited, P.O. Box 660, Montreal, Que.

PLASTICS DEPARTMENT

DU PONT

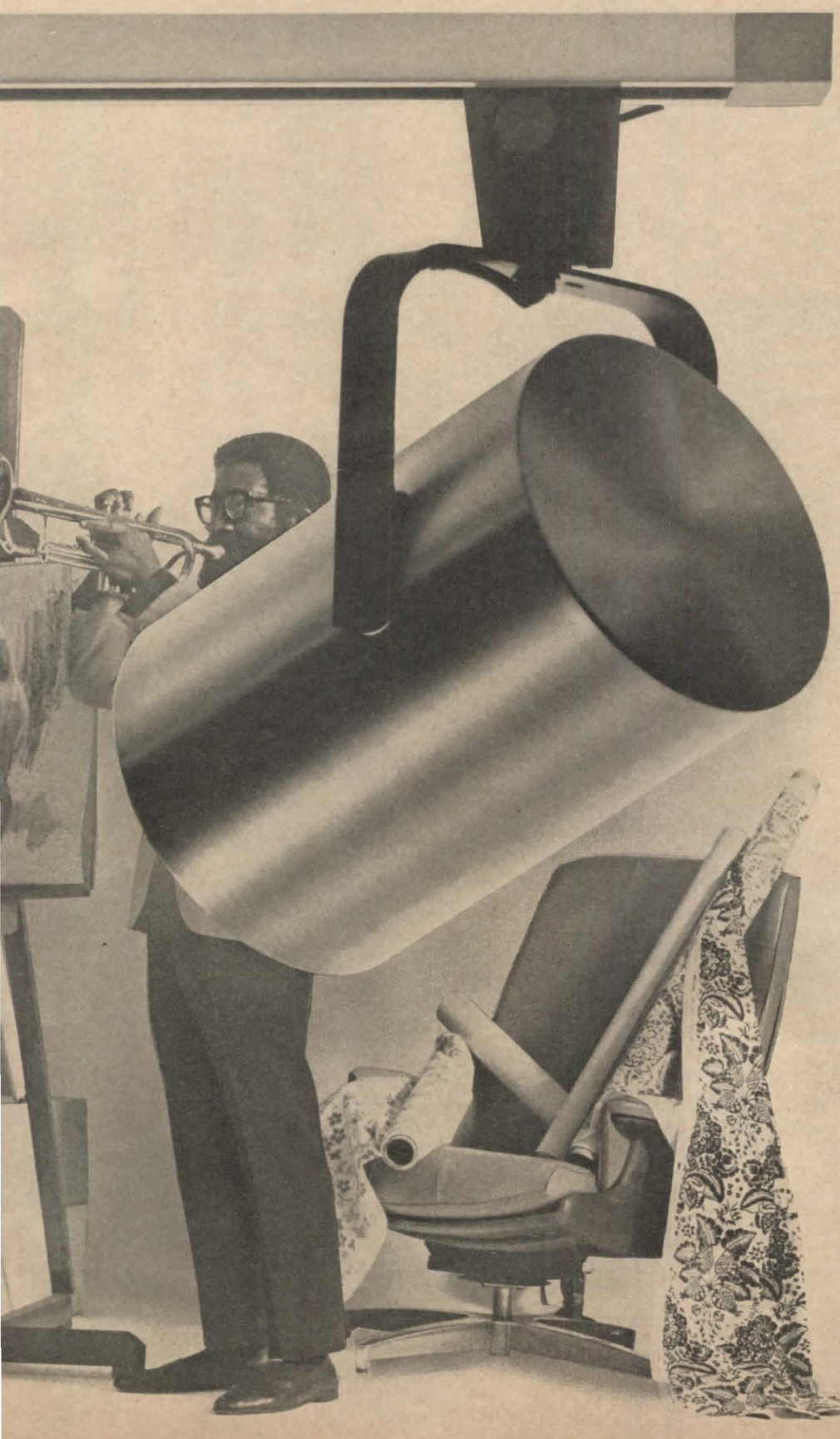
REG. U.S. PAT. OFF.

Better Things for Better Living
...through Chemistry

For more information, turn to Reader Service card, circle No. 430

If you want flexible spotlighting you don't have to hide,

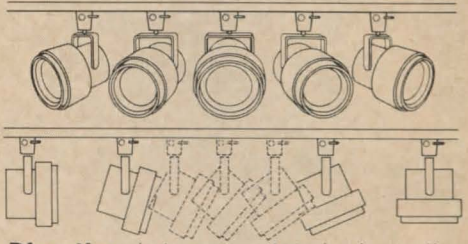
for window and in-store displays, specialty shops, showrooms, museums, galleries, exhibition halls, libraries, schools, motels, hotels, nightclubs, reception rooms, lobbies, lounges or living rooms... **you've come to the right spot.**



CHAIR—HEYWOOD-WAKEFIELD, SHOES—CAPEZIO

Lytespan is the first lighting distribution track designed as an integrated, architectural lighting system. It is the first track which can be recessed, or mounted on surface or stems.

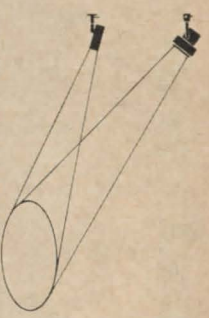
LYTESPOT FLEXIBILITY FEATURES

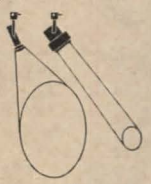


Direction. Lytespots rotate horizontally, pivot to any angle vertically. Pivot mountings are permanently tensioned and include a built-in 360° stop.

Position. Lytespots can be quickly clipped on and slid along the electrified track to any point desired. Thumbscrew rigidly secures unit, prevents sag or droop. Most Lytespots have individual switches. Spots can be stored on track when not in use.

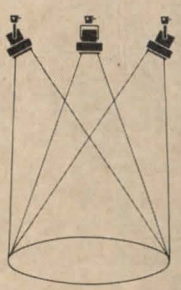
Intensity. Lytespots accommodate a variety of R and PAR lamps ranging from 30 to 300 watts. Dramalux Lytespot with Intensitrol dimmer provides continuous intensity control from zero to 32,000 candlepower. Heat filters are available where high lighting levels at close range make display temperature critical.





Beam Spread. Ranges from a "pin spot" of 5½° to a flood of light at 110°. The flexibility in the throw of light ranges from two feet to twenty-seven feet (for 100 foot-candles).

Beam Shape. Round or elliptical. An adjustable beam monitor permits changes in orientation of elliptical beams from horizontal to vertical. A spread lens alters the shape of any light beam, making it tall and narrow, or short and wide. Stippled lens design eliminates filament image and softens the beam-edge.



Color. Using basic hues of the spectrum, a vast variety of shades is achieved by blending colored beams of light. One-piece color filters are made of borosilicate (heat-resistant) glass. Optical stippling eliminates filament image. Intensitrol dimmer controls intensity of any hue.

LYTESPAN® BY LIGHTOLIER®!

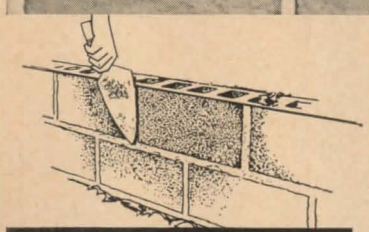
Write to LIGHTOLIER, Jersey City, N.J. for Brochure No. 40. Or see the Yellow Pages for your nearest Lightolier distributor. Showrooms: 11 E. 36 St., New York; 1267 Merchandise Mart, Chicago; 2515 S. Broadway, Los Angeles; 1718 Hi-Line Drive, Dallas.

IT'S NEW!

Trinity White

White Masonry Cement!

NON-STAINING



White mortar can do a lot for a wall. Through *contrast* it gives dark masonry units richness and added beauty. If an uninterrupted white effect is desired, white mortar assures it.

This new white masonry cement is the quick and sure way to a beautiful white mortar. It is ideal for all masonry walls including those of concrete brick, block, split concrete veneer, clay brick, tile, glass block and natural stone.

Trinity White Masonry Cement takes pigment perfectly. Use it as the base whenever you want a colored mortar.

The mason will like the way Trinity White Masonry Cement handles. It works well under the trowel. It is non-staining.

Trinity White Masonry Cement is now available at building materials dealers.

Trinity White Products...

- PLAIN WHITE
- WATERPROOFED WHITE
- HIGH EARLY STRENGTH WHITE
- WHITE MASONRY

OFFICES: CHICAGO • CHATTANOOGA • DALLAS • FORT WORTH • HOUSTON • FREDONIA, KAN. • FORT WAYNE JACKSON, MICH. • KANSAS CITY • TAMPA • MIAMI • LOS ANGELES

General Portland Cement Company

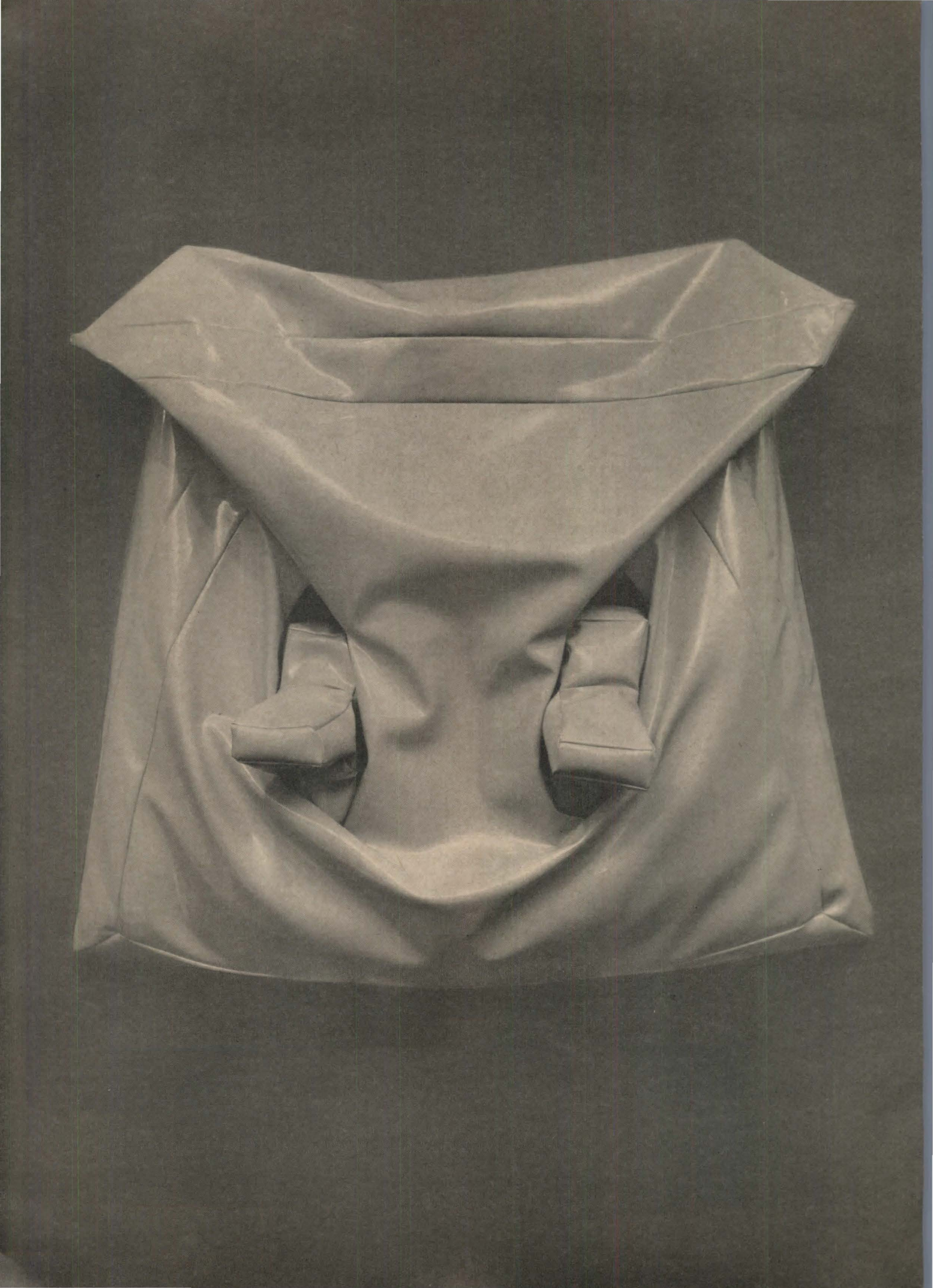
GPCC®

For more information, turn to Reader Service card, circle No. 398

◀ For more information, circle No. 359

June 1964 **PROGRESSIVE ARCHITECTURE** ®

REINHOLD PUBLISHING CORPORATION
430 PARK AVENUE, NEW YORK 22, NEW YORK



How architects feel about some building products, which they have to specify, is well illustrated by the parody of a light-switch shown on the facing page. This sickly comic creation, made of shocking-pink plastic, is one of the latest pop sculptures conceived by artist Claes Oldenburg, recently exhibited at New York's Janis Gallery.

Of the many products shown in this issue, some bring to mind Mr. Oldenburg's visual pun. There are hundreds of items on the market today that are more suitable for a dadaist exhibition than for incorporation into a building. And yet incorporated they are. Quite often, it seems. Otherwise manufacturers would not produce them.

Why this dearth of well-designed building components? The British seem to be faced with a similar problem. Last year's report of their *Council of Industrial Design*, after noting that there is a "widespread unrest at the prevailing mediocrity in architecture and design," goes on to make recommendations for improving the situation by citing four *needs:*

The first one is "to replace the tendency to denigrate even the best design and designers with a positive, creative and knowledgeable patronage."

The second is to replace low-bid mentalities with something "more aspiring and ambitious, to persuade people to make and buy not down to a price but up to a standard, not down to a convention but up to a tradition of experiment and development, so that quality in its widest sense, which includes design, should again become our yardstick."

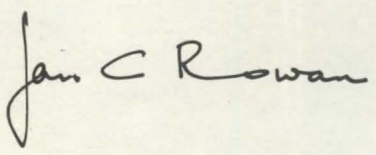
The third need is "to demand yet higher standards from our designers themselves, and this goes back to their training and further to their schooling."

And the fourth need "is for industry and commerce to give more study to problems of design management: to accept in the first place that design is a function of top management; then to see that realistic design budgets are provided, since the days of design being paid for out of the petty cash should have passed long ago; then to make sure that proper time is allowed for designing, since too often development is skimped and half-baked solutions are put on the market simply because the designer has been working against the clock; and finally to ensure clear chains of command and communication, since design management, particularly in large organizations, is more than a matter of individual inspiration and enthusiasm."

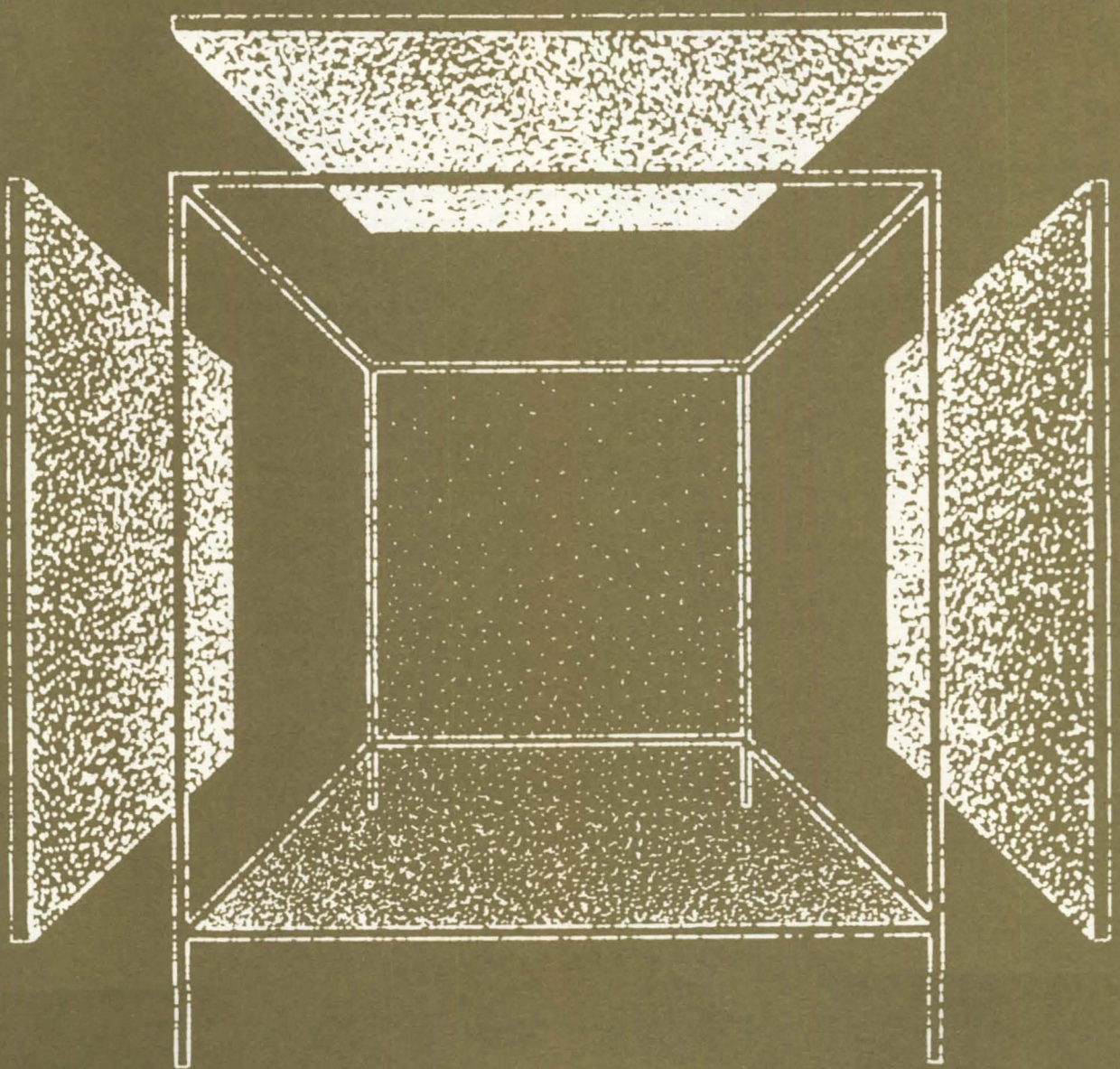
After stating the four points, the Council goes on to say that in the future it must "increase its pressure on government departments, public authorities and large organizations to raise design standards in their bulk purchasing, since the influence of the corporate buyer is tremendous for good or ill and has not yet been properly harnessed in the cause of good design."

Well said! And I would like to add that, when it comes to building products, the "bulk purchaser" is the architect. Therefore, it is he who should raise the design standards—in what he himself designs and in what he incorporates into his design by purchase.

Until this happens, until all architects become good designers who demand well-designed components for their buildings, we can only say about architectural building products what Polly said to her daughter in Dylan Thomas' *Under Milk Wood:* "Poor child, you're no better than your mother." ■



The Design of Building Products



There can be little doubt that in developing designs for their commissions, architects have become increasingly dependent on the producers of building components. A judgment of future design and construction would be that the practice of specifying assembled components and entire systems will become even more familiar. These circumstances, then, denote a partnership of some degree between architects and producers in the design of buildings, a function once the prerogative of the architect. Phil Will and others, when discussing the subject of architectural product design, have implied that a greater use of architects as consultants in the development of components would materially improve the capabilities of their end use. Observations of this sort cause one to question whether architectural products as now available are designed in a sufficiently comprehensive manner, or, indeed, if many of them are even appropriate for specification in good contemporary buildings. To evaluate these questions faithfully, it becomes necessary to explore the entire process of architectural product designs: who are the designers who actually create today's building components; what are their views on the tasks they perform; and how do manufacturers utilize the talents of these designers within the scope of their proprietary operations?

To produce the report on architectural product design that follows, the Editors have corresponded with many manufacturers, architects, industrial designers, and engineers. In addition, specific manufacturers and designers, known to have had successful records of design collaboration, were interviewed personally. As expected, many variations in approach to product design and manufacture are to be found. Some of these represent purely personal viewpoints, while others reflect principles governing a particular manufacturing operation. From these reports, however, the fundamental problems associated with product design become evident.

"Designing for the Market"

BY RALPH CAPLAN

From the observation post of a noncombatant, this author surveys the problems that beset designers and manufacturers, and the limitations placed upon them, in the common American practice of "designing for the market." Caplan, now a free-lance writer, was formerly the editor of a magazine serving the field of industrial design.

A WORLD OF MADE
IS NOT A WORLD OF BORN
e. e. cummings

Two of the nation's most celebrated moral philosophers—Edgar A. Guest and Polly Adler—argued compellingly that a house is not a home. What these sages did not say (although I suspect Miss Adler knew it) is that, for all practical purposes, a house is not even a house. It is an abstraction, conceptually manageable but seldom enjoyed in substance. Some architects speak of the house as a "spatial totality," but it is given to very few of us to live in one of those.

Instead we occupy what, for lack of a more pretentious term, might be called a "temporal partiality." That is, we know the house as a series of dynamic details: the flooring we pace, the knob we turn to open the door we slam, the plumbing we listen to. And probably that is how we experience *any* building.

Recently a group of us malcontents were grumbling about New York's Pan Am Building, when suddenly it occurred to me that only the day before, on the way to and from a lunch date, I had passed through that notorious edifice twice without even realizing it. Could a building so blandly encountered be the monstrosity we were claiming? Of course, what *is* monstrous is the callous intensification of the area's problems: too many people, too little sun. But these are routine city problems, and in its unapologetic contribution to their growth the Pan Am Building may be the quintessential statement of urban design. In any case, we can cope with it better than we had feared, for it is less than the sum of its parts. This is because the parts are all we ever come in contact with, and standardization assures that most of them will not impinge upon our consciousness. (This sug-

gests the way in which the late C. S. Lewis approached the problem of pain in Christian theology. Lewis reasoned that there is really no such thing as "all the suffering in the world," because no one person has to suffer it. The implications for architecture are consoling: perhaps there is no Pan Am Building, since no one person has to suffer all of *it*.)

Not only do we experience the whole of a building in terms of the part we happen to confront; we also tend to identify the part as the whole. To disguise the obviousness of what I am saying, I have coined the phrase *palpable synecdoche*. Here is an illustration of the phenomenon it describes: to a postman, the Seagram Building is really the plaza and the bronze mailbox doors.

Detailing, then, is crucial. Yet this is where the architect is thwarted by product design. For at precisely this point—the vital detail—a building's designer is required to relinquish control, and specify rather than create.

These activities, to be sure, need not be mutually exclusive; indeed, our culture finds its origins in creative specification. The ultimate set of specifications is the first chapter of "Genesis," but that was in another country, and there was no concession made to the contractor. One cannot imagine the command: "Let the earth bring forth grass or equal." No, He specified with every assurance of getting exactly what was wanted. This divine avenue is not open to the contemporary architect, who may realize that a particular product design is not good, but has to use it anyway, because nothing better is available on the market.

The market is the heart of the matter, for it is where we have to go in order to make mass production compatible not only with design excellence but with minority tastes. Our production technology has been a mixed blessing; but what other kind of blessing is there? The question is: how can the mixture be enriched? I think the market can be made to yield more satisfactory answers than it has thus far, but only if designers can put it out of their minds for awhile. This, in an age when designers boast of being "market oriented," will not be easy. For the very nature of the product designer's role in industry tends to militate against his effectiveness. He is schooled—and presumably motivated—to design things for people; but he is retained to design things for the market.

This may seem like quibbling over words. It isn't. Words in this case are extremely important, if only because they make it possible for us to conceal meaning. I do not suggest that this is necessarily conscious, but a designer may perpetrate a folly in the name of "the market" that he could not defend if he broke the market down into such concrete components as, say, his mother or his barber. It is a semantic commonplace that, by contriving phrases that conjure up no precise images, we can avoid seeing the implications of what we are doing. No manufacturer is so insensitive as to say (or think): "I make products that are inefficient and unsafe, and ugly. People have bought them in the past without complaining much, why risk a change?" Instead, he says: "In a highly competitive situation, design must be at the level of consumer acceptance." Which —just look around you—frequently means the same thing. ("Acceptance!"—in other words, *literally* whatever the market will bear.)

Designers sometimes say defensively, "I don't design for the museums, I design for the marketplace." Why on earth should anyone design for either of these institutions, when both are agencies for bringing what has been designed within reach of those it ought to have been designed for? Of course, no one does design for museums, but a great many products are designed for the market, and for nothing and for no one else.

When the designer concentrates his energies on the process of distribution, and lets that shape his work, his designs become less relevant to people. Curiously, at the same time he is likely to become less immediately concerned with *things*. An intriguing detail in the play *Death of a Salesman* is that the product Willy Lohman sells is never identified; it is simply the universal stuff of the marketplace. This omission takes on a significant negative weight: what matters is the very fact that the product does not matter. The merchandise is subordinate to the process of buying and selling. The "market oriented" designer is, like Willy Lohman, "a man way out there in the blue, riding on a smile and a shoeshine."

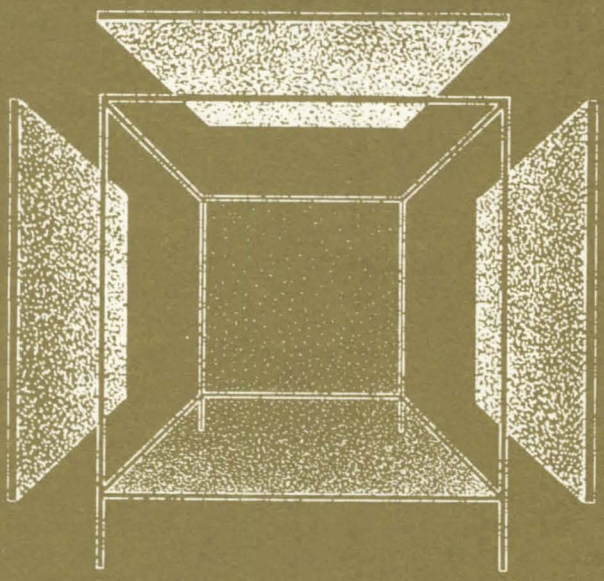
Rebuking product designers is a socially useful activity, and it can be a lot of fun, but the designer's remoteness from the consumer is the result of circumstance rather than choice. He, like his ultimate customer, is hamstrung by anonymity. The most tyrannical corporation head, the most indecisive suburban couple, the most timid school board, the greediest and most short-sighted developer—all these clients are tangible. The architect can see, love, and hate them. He can even ask them just what it is they want. The product designer, however, creates wares for a vast, impersonal crowd. All the more reason not to try to be a crowd pleaser? Yes. However, all but the very best designers of any kind fall before this temptation. And, when the product designer falls, he does not know where he will land. He must rely on guesswork and market research, and hope that they are not always the same thing. Who can blame him if he seeks that warm amorphous lap, the market, especially if, in so doing, he can make the excuse that he is simply being "responsible."

To design for an existing market is to bet against change. But a virile industry thrives by betting *on* change, and using design to enhance the odds. That this is no secret has never prevented companies from failing to factor it into their production plans. Knowing better is not in itself enough to prevent anything. I would not be surprised to learn that ostriches have known all along that sticking one's head in the sand doesn't make one invisible. They do it because ostriches are chicken. So are many manufacturers, and they make their own sand.

Any discussion of architectural product design brings up the question of when the world will be ready for mass-produced buildings. The question is academic. Just as in hide and seek, here it comes, ready or not. The house is already largely mass produced, because the components are; but the design is compartmentalized. The result is as absurd as it would be to produce a boat by having one outfit design the hull, and another the power unit, with no communication between the two. As a matter of fact, that *is* how many of our boats are manufactured.

Both the product designer and the architect are involved in reconciling the mass-made object with the personal requirement. They already collaborate blindly and by default, like it or not—and no one does, or will, until the collaboration is also by design.

Architectural Products by Industrial Designers

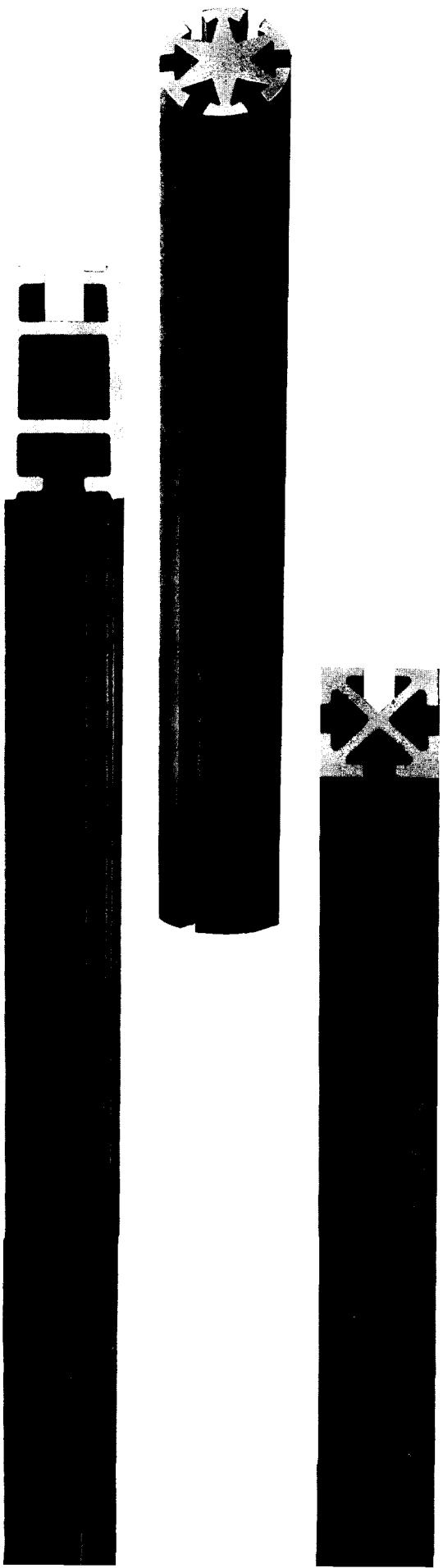


Of the industrial designers questioned, surprisingly few, it appeared, were involved in the design of products for architecture. Several who had "long lists" of such products, were unable to provide photographs and descriptions: some could not release "classified" information; others could not be identified with their designs because of "legal considerations" or because the "clients did not want publicity at this time." The effect was to make one question whether industrial designers as a group are, indeed, called upon to design products for architecture.

The majority of those who said they had worked in this area, however, either reported having architect-trained personnel or believed that a combination of architectural or engineering training combined with a knowledge of manufacturing procedures was the most desirable experience for such work. On the other hand, the inclination to analyze, as an over-all approach—"flair for design and interest in solving problems"—was mentioned at times as being more important than background and training.

P/A interviewed several of those independent industrial designers who have worked in this activity recently, and their comments, along with descriptions of how they arrived at certain of their designs, are presented on the following pages.

P/A asked them about the process of design—what the client said he needed, if and how the designers worked with technical consultants—and about the merits of available products generally. Among the questions asked of the industrial designers in particular were, "Why do we have so many brittle, tinsel control panels and sleazy, amoeba-flecked plastics? Why do we have so much superficial styling?"



"Styling is a fact of life," says GEORGE NELSON, who sagely reminds us that there is good and bad in all professions and that the real contributions are made by only a very small group.

"Styling is a fact of life. If a plumbing manufacturer has been working for some years with a domestic w.c. and is satisfied with how it works but not with how it looks, he goes to someone who can make it look better.

"We are interested in any phase of design activity. If someone said, 'Will you recreate the bathroom in a new image,' we would vastly prefer it. But you don't refuse to make the w.c. look good. You do not turn down a job at one scale because you have visions of another scale. You do what you can. On the other hand, we do not think design work is valid unless it has some relationship to the problem.

"For instance, let us say that all respectable bathtubs on the market function properly: you can take a bath in them; you don't drown in them; they are about the right size for most people; and so on. But it suddenly turns out, for some reason, that you can't sell tubs in white or any other plain color. So somebody might then go to a designer and say, 'Look, we might go out of business if we don't do something about this situation. We want a tub covered with cabbage roses.' The problem then would be not how do you make a better bathtub, but how do you make it more acceptable to some people.

"You might come up with an enamel that felt like wet plush. We wouldn't take a job like that because it isn't our cup of tea, but if we did, we would try to find out first why people were sick of white bathtubs. And probably we would learn that there was something wrong with the way the bathtub worked, which needed to be changed, and that the color didn't have anything basic to do with people's dissatisfaction. This is the problem.

"Now, instead of 'bathtub' read 'radio' or 'TV set.' And this is what happens in most cases. When I worked with G.E. some years ago, they often thought they had styling problems, but it really turned out that the appliance was not yet as good as it could be.

"I don't see why some people think that architects should be more involved in this design of building components. In the early days of industrial design, the limited number of people who did this kind of work were architect-trained—because there weren't any design schools. Now there are many design schools. I was trained as an architect and have worked off and on as an architect, but more and more I have worked in other areas. Well, our firm should design them all, of course.

"There are moments when architects put their touches on the interior and on things, but I don't think they ever had control of these building products. I don't think they ever designed them in the industrial design sense.

"You are fond of citing Robert Adam. Adam was in a different trade; he wasn't in architecture. He was a kind of Nash and Kahane combined—a speculative builder and a decorator, I mean. He put a new face around a building and added a lot of delicate plaster work to the interior and made some beautiful furniture. But he wasn't really in architecture.

"An architect designs buildings. A designer is accustomed to operating with industry. A designer is a professional type who does products that industry makes.

"Architects are generally not in this business. Architects who get interested in a chair or door can have a superior product, but then it becomes a personal matter for them to design these things. They do it because they like to do it. But then they operate as designers, not as architects of buildings.

"In a lot of categories today—huge office buildings, for instance—the responsibilities are breaking down, and talking about architects vs. designers becomes meaningless. Today, office buildings are governed so much by real estate and legal and space planning considerations that there really isn't much opportunity for the architect to design even the building—as we have seen here recently. So there is hardly reason to expect him to design all the components.

"Who *should* design them? The one most interested and competent. The architect who works for industry but has no architectural experience might prove difficult. The stylist who has no experience of architecture may turn out things that are not suitable for buildings. Designers should have knowledge of the facts of life as they exist in this area; you must always

go back to the program. The best combination of backgrounds is experience and interest.

"But you cannot criticize the professions generally. Most professionals in any occupation are unimaginative and incompetent. This goes for any profession you can name. The contributions are made by a group that, probably at its most utopian, would not take in more than 5 per cent of the population. It almost goes without saying that it should be like that.

"Besides, components get designed in a number of different ways. We had a foray into the building field when this office was first opened—about 1946. We had a job to do a showroom in Chicago, and when I arrived the afternoon of the opening, all the lighting equipment was still in boxes on the floor. With only one helper—and not an electrician—I lighted the entire showroom in 45 minutes. We covered the ceiling with trolley duct, which was completely unknown outside industry. In factories, it was used to plug tools into at various places along assembly lines. This ultimately became an accepted way of getting flexible lighting. Then this year, Lightolier got an award for a design of this kind of system.

"Building component design is not all bad, by any means. Once in a while you see things in catalogues that are terribly good. You can get anything you want these days—particularly if you get onto a big building. These things seem to come out looking like pretty high-class stuff.

"For instance, the supply of doorknobs around the world is extraordinarily good. Also, I think most elevators are sort of sensational. As a painless, fast, silent device, the standard elevator is generally a very well designed item. Some architects get involved in the cab design—mostly a styling problem, since they never bother the mechanism; others just buy stock models.

"You can't call *the people* who produce the mediocre designs irresponsible. Most people are preoccupied with making a living. Then you have a smaller number who are haunted by dreams of glory and by visions, and they work harder and push. But can you criticize the clod because he acts cloddish? I don't see why.

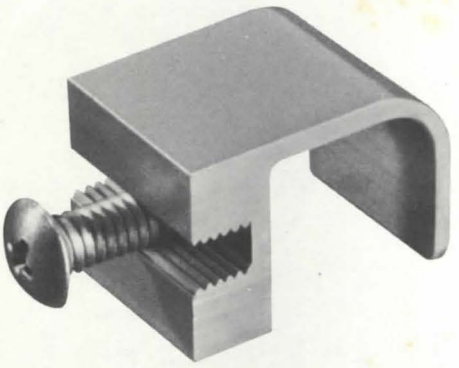
"Not many manufacturers feel a sense of responsibility to produce good design, but they are not irresponsible either. They are responsible for making a living at the corporate level. If they threw over the designs that were selling well, and scrapped their tools, and started over with the most progressive, avant-garde design, it might not sell well immediately. And that would be irresponsible to their corporations. So they are slow about changing. For many years, Matisse and Mondrian kept repeating themselves. Companies do the same thing.

"The critical role of the architect and designer at the creative level is to change this.

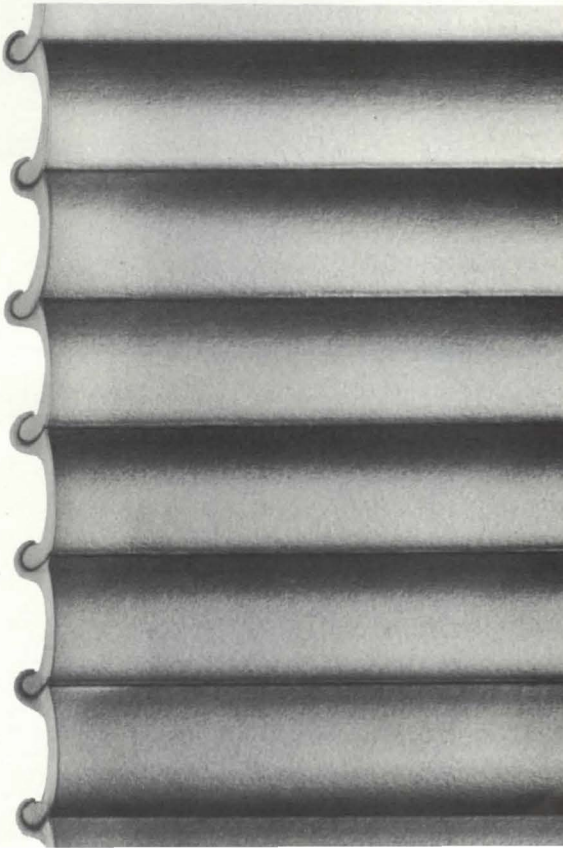
"For example, the door is one of the most interesting objects, potentially, in the whole building. The modern architects in the 30's fought the old, customary paneled door—and I was one of the people who did. So, presently, all doors became flush doors—metal or wood, or glass—as close to invisible as anybody could make them. Now, because the door has reached the point of uniformity, I say to a manufacturer, 'I sense an inadequacy in doors. They should be able to give you pleasure when you look at them. Nature abhors a vacuum, and I do not like it less. But also, doors leak: they leak water and air. Yet the refrigerator door doesn't leak; why should the others? And why must door surfaces be parallel? With new materials available and new methods of forming, I say it's time to design a better door.' But the manufacturer I've been talking to listens only if he thinks his sales are falling off.

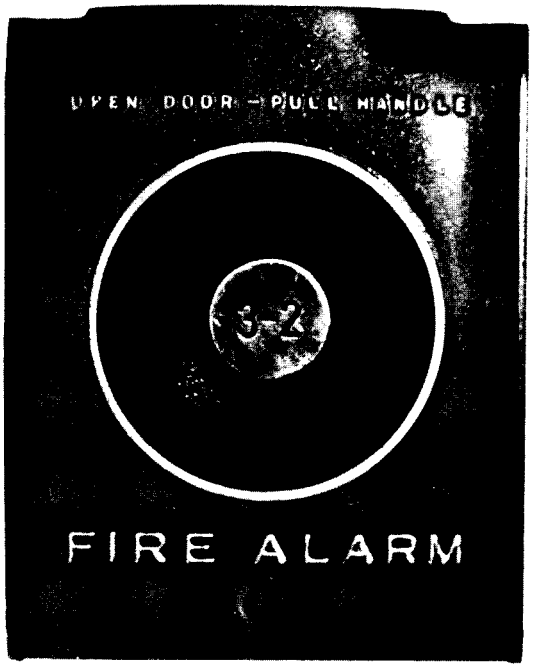
"Occasionally he will listen if he wants to find a way to make a market for a new use of a product. Some time ago, Superior Electric wanted to put dimmers in lamps —before dimmers were used for anything other than theatrical installations. We were working on three houses and tried out three dimmers in them. The Luxtrol wall unit is the result of the work we did on the lamps for those houses. We did not design the dimmer or style the plate; those were both realized later. But we sensed the inadequacy.

"All the moves that come about are the result of someone's dissatisfaction. Just as someone was curious once and asked, 'Why do they pile up this limestone for skyscrapers?' And so the steel frame was born. The contributions come from people who are irritated and discontented. We've done a fair amount of pushing in this area, and as a matter of fact this seems to be where the major satisfactions lie."



The work of George Nelson & Company illustrates the broad potential of design for industry. The firm has developed structural systems, has reanalyzed items in terms of both function and manufacture, and has made imaginative use of new technologies. Nelson designed a modular experimental house with component floors and ceilings in 1958 and subsequently designed three prefab houses for production. His systems include storage-and-display systems, such as Omni and Herman Miller's CSS, the poles of which are made by Aluminum Extrusions, Inc., (facing page). *His reanalysis of the drawer pull for Herman Miller produced a pull* (above) *that eliminates tapped or threaded holes: a single aluminum extrusion, which has an integral thread, is sliced off "like sausages" to provide individual drawer handles. His reanalysis of tambour produced an extruded aluminum roll top for a desk* (left) *in which the hinge, formerly the weakest link in tambour, became the strengthening member. A single extrusion used in combination without backing forms top and hinge* (below).

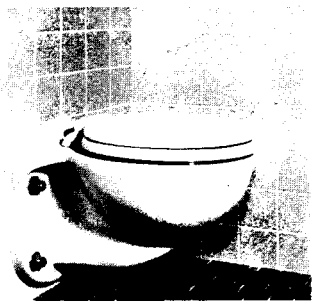


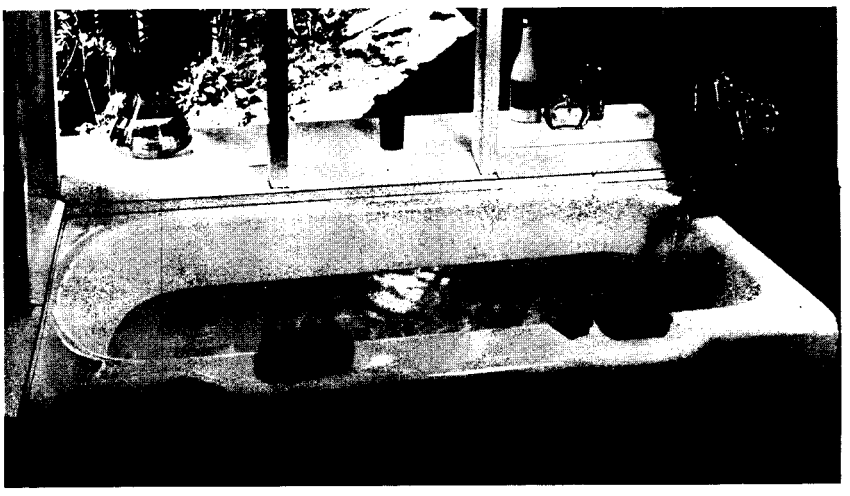


Two fire alarm boxes (left) *were designed by George Nelson for the Acme Fire Alarm Co., Inc. Since the designers felt that the conventional bright red box with silver letters had become almost invisible, they put a black bull's-eye in the middle of a red surround. The aesthetic required a balance between visibility and unobtrusiveness: a contrasty color scheme was chosen for visibility, but a symmetrical, geometric design was evolved so as to make the unit acceptable and pleasant without being obtrusive—so that one would recognize the alarm and then dismiss it.*

"We designed a w.c. for the Ingersoll-Humphryes Division of Borg-Warner a while back," Nelson says (right). *"They came to us with the first wall-hung toilet with in-wall tank for domestic use. This had been difficult for them to work out. We just styled up the pot. We had nothing to do with the real creative design—the engineering of it.*

"Ingersoll-Humphryes also came to us once to do a new bathtub (bottom). *Being architects as well as industrial designers, we reanalyzed the over-all context of the bathroom. Most bathtubs spoil the scale of the room, I think, so we decided to do a sunken tub, to make the room look better. And we found that, simply by cutting one side of a tub already in the firm's line, we could solve the problem without expensive retooling."*





George Nelson's use of new technologies includes the novel adaptation of a plastic that was originally devised for the mothballing of naval ships. Continuous elastic plastic is sprayed over and around a dry-assembled wire frame in the way that cocoons are made, to produce the renowned spray-form bubble lamps for Howard Miller Clock Company.

"First we communicate with the needs of the human being," says WILLIAM SNAITH about the approach of Raymond Loewy/William Snaith Inc., one of the world's largest industrial design firms. "If . . . architects would go back to that as a beginning, they would learn what good design is all about."

"The mainstream of our endeavor in the design of components is for the buildings manufacturer. To us, components are a group of units that can be pre-assembled before installation so that you are not left with bringing in a lot of separate items—such as a buck and a door and a handle and a sill.

"We work to improve the function of the item, to reduce its cost, and to increase the speed with which it is installed, and to do so in the nature of the design that is agreeable to current tastes.

"Good tastes? I am not sure what is good. If what we have to have is a modular ceiling, that is what we have to have. If less is more, then that is what the taste is. Anyway, it's all cyclical. Years ago, clocks used to be put in Venus' stomach; now they're put in blocks of wood. First we had 'Form follows function,' then the 'machine for living'; now we have 'Function follows form.'

"Whose function did they mean? Function of the structure first, then function of the material. There was an outer skin of glass and an inner skin of venetian blinds, and we had hothouses. Now we are moving toward concrete grottoes. When do architects think about the function of the human being?

"Architects talk piously about industrial designers styling refrigerators. I think everybody is styling office buildings today. They are not designing them, they are styling them—I mean the architects. I think Nervi and Candela are designing buildings, but these other men are styling. Where do you get off talking about refrigerators?

"Based on our research into needs and operations, we developed the modern department store. Buying is a major part of our lives. And one of the great problems of designing a store, we determined, is that light is the enemy of good storekeeping. Anyone who designs a good store winds up with a masonry rectangle, and any departure weakens the function of the building.

"Our current style in architecture, however, is built around the glassmaker's heaven. Stores are styled with glass facades. But because of the greater lack of light control, these stores must have a second, arbitrary wall behind the glass wall so as to give the building a solid core for its proper function. This is certainly an instance of function following form.

"Planning is planning when it harnesses functions. Styling is whatever you impose on that harnessing of functions. And design is that kind of beautiful final thing that comes from the requirements of function, from recognizing the needs, and from having that recognition grow into a form, an appearance—a design.

"I think that most architects impose function and need by their designs. I could point to a couple of airport buildings. Today, people react to great psychological needs—for quiet, as an example. And several airport buildings hardly satisfy those functional requirements.

"Like our work on department stores, another area of our design activity is the bedroom. The only thing new about the house in the last 100 years is that they have moved the plumbing inside and have added a bit of climate control. We are looking into and analyzing the bedroom in terms of sleep. We want to make it a better room for sleeping. We need to make it quiet, for instance.

"That is our view of looking at building components. The world outside can look at it as putting little lines on masonry and machinery. We think that is what the architect does. Our aesthetics grow out of the object and its needs, rather than being borrowed from a piece of sculpture.

"Architects are fond of citing the control panels on most appliances as styling jobs. The reason for control panel design is that the market is glutted with goods, so the options are many. Why should the buyer choose one appliance over the other? There are few really different benefits for him to base a choice on. A new self-cleaning oven will give a firm a one-year lead on the other manufacturers, but the next year they will all have that great new benefit. Another functional benefit for the user would be to have electric ranges work on rheostats so as to control the heat with the fine gradations that are possible with gas ranges. All that is basic improvement by functional design. All these promises and benefits of infinite control can be indicated only in the control panel. So we have to make the experience—'control of cooking'—visually important. Panels fill a human need for that psychological experience. That is what design is.

"And that kind of good design sells appliances. One should not feel compelled to defend the need for selling. Buying and selling are basic to our lives.

"Now, it is styling to make it black or red or plastic. Unnecessary elements are bad design. I'm not talking about decoration; that's not always unnecessary. For example, we altered the whole development of contemporary china, in the days when all dishware was supposed to be plain white, with our styles for a china company. We put a simple spencerian rose on a plate, and the idea sold like hotcakes. We brought decoration back.

"The chrome strip on the automobile, also, is sometimes absolutely necessary because it hides a joint or acts as a protective fender against scratching the whole side of the car.

"I can give you instances of where what is thought of as styling is basic to function: In a restaurant we designed, there are a half dozen different rooms in different styles, different décor, but all the rooms use a single menu and price list. Now, after the place has been in operation for a while, we know that there is a consistent average check within each room, different from the average check in the other rooms, even though the prices and choices of food are the same. One room gets the highest checks; one gets the lowest; and the others fall in consistent places in between. Each room attracts people who eat a certain way and therefore receive checks of a consistent average size. It shows that these different room styles are basic to the function of the restaurant.

"Some things are straight psychological styling. A hot-dog machine we designed had to have a light added to it that would go on when you put your money in so as to tell the buyer that his hot dog was cooking. With the speed of the infrared heating element, there wasn't much of a time lag, but a visual device proved necessary to symbolize the cooking time. That visual device was a marketing need. It was animated packaging, in a way.

"But that was design. Styling would be merely rounding the corners. That light on the hot-dog machine filled the same function that the fireside does when the President speaks. Why should the President sit by a fireside? His house is warm enough. But he sits there to show that he is relaxed and comfortable—just like you and me.

"By and large, then, we consider good design to be an outgrowth of the shape that was developed by the need, its manufacturing requirements—and in the mass market, mils make a difference—and by the choice of materials.

"Acceptance is very important to design for manufacture and marketing. We have better toilet systems than the washdown toilet, for instance; the jet system is superior. But it is not generally accepted by those who do the buying. We have

enough revolutionary things around that are not used; we don't have to go out and invent a new toilet. We first have to get acceptance of what is known but not used.

"People will react to quality, but in matters of taste—well, that is variable with the individual. Look, good conservative design doesn't sell—because you can't see it. So they have things for flash. You have to have something that says, 'This means quality.' You need rhinestones. Within the limits of judgment and tastes, you try to get things shiny, golden, and large. These are the great American words: *new* and *large*.

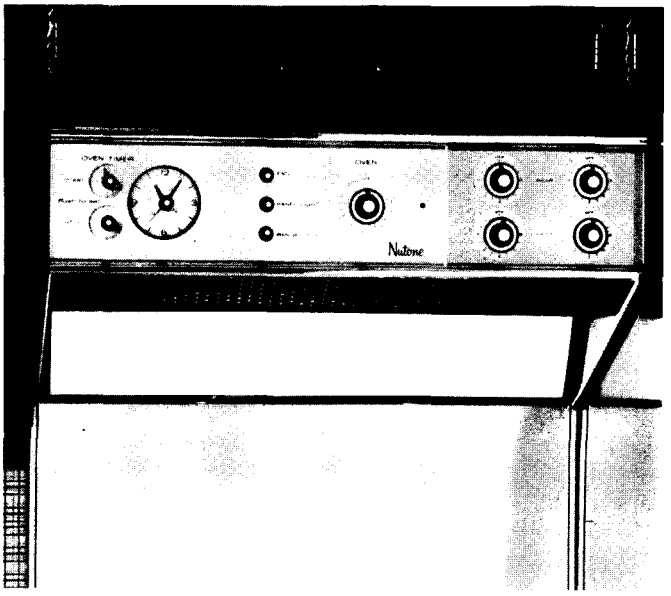
"And with judgment and taste, as I say, you have to design for an acceptable taste level in this country. The market, after all, has three or four levels. See what you have in ranges of furniture: Good design is sold to a miniscule section of the population, and really vulgar design is also sold to only a miniscule section. The great weight of the designs that are sold are the mediocre designs. And we know that we would be irresponsible to our marketing tasks if we put any of our manufacturers in an unmarketable position.

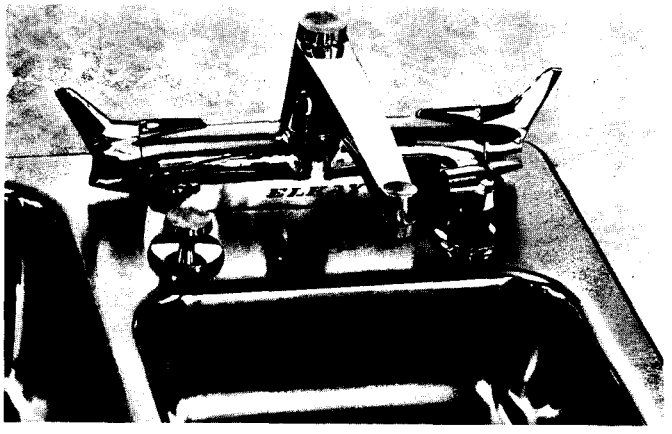
"Most so-called tastemakers do what they do because they wish to separate themselves from the rest of unrefined, vulgar humanity. So they say that the shiny, the golden, and the large are not good taste. But if what they now say is good taste were suddenly accepted by everybody, the next minute the tastemakers would go to gold tinsel. The most important thing is for them to be different.

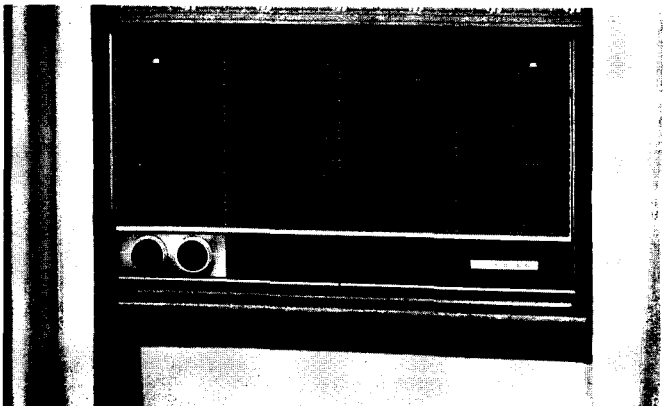
"You ask me what good design is. After all, what the hell kind of question is that? But if I tried to formulate my credo in a minute, I'd say that the trouble today is that painters and sculptors and architects think too much about aesthetics. That's all they think about. They worry about the shape, and whether it should have an arm sticking out, and so on. But they've forgotten about communicating. After all, we've lost all those things we used to have to hold on to—we've lost God, and the single tax—and now all we can hang on to is the fact that we are human beings with human needs.

"That's what we consider when we design—first, the needs of the person who is going to use the article: what his functional requirements are. And second, the needs of the item itself: what it needs to function properly. And third, a choice of materials. Then we try to work an aesthetic out of all that.

"But first we communicate with the needs of the human being. If painters and sculptors and architects would go back to that as a beginning, they would learn what good design is all about."







Loewy/Snaith "has tackled the incongruities of bathrooms that are waterproof in only a few areas immediately around the fixtures." The component bathroom (top) *they designed for Owens-Corning utilizes Fiberglas reinforced plastic wall panels that have built-in medicine cabinet and towel bar, sink and toilet as built-in integral units, and a one-piece shower enclosure. Looking toward the future, Snaith says, "Still to be improved upon in prefab bathrooms is the knock-down aspect. Unless we can improve aesthetics to get people to accept non-vertical walls, we won't be able to nest the units easily for compact shipping. Acceptance is very important to design for manufacture and marketing."*

Kitchen range control panel (second from top) *designed by Loewy/Snaith for NuTone, Inc.*

Elkay says of its "Cuisine Centré" that "A styling gem is its striking Tiara faucet with design matched wing handles." Loewy/Snaith, who designed the Tiara faucet (third from top), *explains the mechanism as having "a heart of MicraCore, a device that dials water flow with precision accuracy. Both wing-style controls glide into position, only a quarter turn from full 'off' to full 'on.'" As Loewy/Snaith says, "The new Tiara 'crowns' the kitchen sink with outstanding beauty."*

Air conditioner control panel and case (bottom) *designed by Raymond Loewy/William Snaith, Inc., for Carrier Corporation.*

PETER MULLER-MUNK, who heads his own industrial design firm in Pittsburgh, warns that, "Unless we combine the resources of different creativities, no single profession has a ghost of a chance to make an effective contribution to the commonweal."

"I gather from P/A Editorials that its opinion of industrial designers is not very flattering and that we are thought of as a group of superficial stylists who are infiltrating the privileged territory of architecture. In a certain sense, I can understand how one can arrive at these conclusions, although some equally critical judgments could be leveled at architects. For every Mies or Rudolph, there are dozens of barely competent technicians, or so it seems to me, looking out of my office window or at the houses in the neighborhood in which I live. Heaven knows, there are too many who call themselves designers whose professionalism leaves much to be desired; nevertheless, I know from first-hand experience that the core of our profession is sound.

"The time has come, I believe, when any one profession had better stop kidding itself that it, any more than any other, can control the total environment. I am tired of the word 'total'—total design, total environment, total architecture. It might be a step forward to strike the word 'total' from our vocabulary. I don't think any one profession is able to handle the work of the world on its own. Today's problems are so complex that the professions interweave and overlap, and it is unavoidable and very necessary that they do so.

"As a matter of fact, the fight for professional privileges is becoming very boring. It is a fight for prerogatives that, I think, is regrettable, and we industrial designers are just as bellicose as anyone else. This is a result of antiquated education that pigeonholes subjects into degrees and academic packages. In Europe, of course, most designers are architects by training; so there, sovereignties are not so precise.

"Maybe we should all start off on a new tack and try modesty for a while. When Mies and Rudolph and Corbu talk, we listen, and we say OK. But the run-of-the-mill architect talks with the same authority, and he really is not of the same caliber.

"We could begin to improve the situation if the upper echelon of architects would give the upper echelon of designers their good will. And, conversely, designers should see themselves in their proper relation to architects.

"We might meet in small groups and seminars of the AIA and ASID and kick around this problem of supplementing each other's work. What, for instance, is SOM's feeling about components? Do they really feel they can do them all themselves? And even if they could, would this be the best use of their time and talents?

"Further, my colleagues would be delighted to show our concepts for architectural components to a panel of, say, a dozen architects before we present the designs to our clients. This kind of consultation would help to insure that forward-looking architects can get what they need from manufacturers. A glass block, a furnace, an electrical outlet—you have a look before we show it to our client and say whether it speaks your language. Or, it would be fine to have architects on the design team from the beginning.

"You see, industrial designers usually get most of their information second-hand. Our clients tell us architects will not want this and will not want that. And I am not at all sure that we get the correct information. So we say to the manufacturer, 'Let us talk to the architects.' 'No,' they say, 'we have already done that. We have 35 pages of survey.' So we try to double-check with the architects. We have found a polite but not too constructive reception. The attitude has been, 'Oh, we know what we are going to get from industrial designers, so talking with them won't do much good; and, anyway, our time is valuable.' Seminar meetings and consultation should help to change this.

"I don't think the architect should divert his attention from the over-all building to the design of all the components. The designer is the logical liaison with the manufacturer. To design an industrially mass-produced component is generally plain hard work. It takes time and money and development and is meant to serve more than one need and one kind of guy. This is why it is called a standard component; usually, there is an ultimate solution that does serve the maximum of conditions, persons, and functions. This is a time-consuming job, where people must know something about the client's production and about designing. And they must also know something about architecture.

"I would not presume to say that I know the problems of putting up a building, but I do know intimately the problems connected with the lock on your door and with the window frame. In addition, the manufacturer does not like to redesign his products and systems for just one building. When an architect asks him to make up a custom product, the manufacturer first asks himself, 'Could this become my next line?' And if it seems too difficult, he says, 'I am dealing with buildings, not with just one building.' Or, 'I would have to invest an entirely new capital equipment to make this, and I can't afford to.' Or, 'He is crazy anyway, because he needs three screws, and he shows only two.' Or, 'Sure, this is good looking, but we can't polish it economically.'

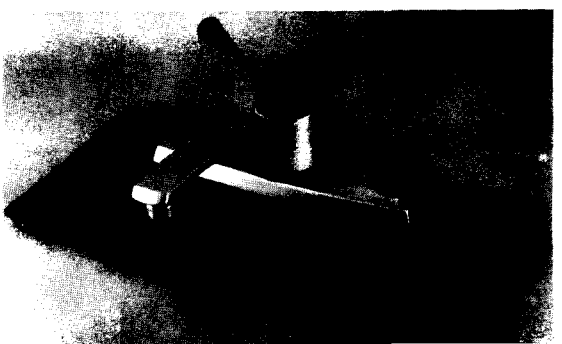
"So, in the end, because the architect has other problems to deal with, he takes what is available.

"It is the job of the industrial designer to make these architectural components industrially viable. We can make them viable aesthetically, too; however, this can only be done when there is a continuous dialogue between architecture and design.

"After all, both architects and industrial designers ask themselves why the standard building component has to be so ugly. I am positive that the top strata of architects and the top strata of industrial designers would agree without any difficulty about what is ugly and what is not.

"Beyond all this, there is a problem in design that architects do not share with industrial designers. In architecture, the monuments are single monuments. We designers hardly ever deal with that; we deal in multiples. With industrial-design commissions, we come up with two or three solutions, and one of them will be the one chosen to be produced, as in architecture. But when I think of 500,000 of them spreading across the country, I really have something to worry about. If there were 100,000 Seagram Buildings

A line of single-control faucets designed by PMMA for the Sterling Faucet Company.



scattered across the country, would they all seem as beautiful as the original? Even if you design a room air conditioner that is acceptable, after you see buildings and buildings and buildings plastered with them, there might come a moment of surfeit. And there is all the other necessary junk—thousands of fire hydrants, street lamps, signage—that clutters things up. Would 20,000 duplicates of the Parthenon have the same effect as the one in Athens? You see, I think architects and industrial designers have somewhat different problems—in degree.

"Now, as to 'styling.' You know there is an awful lot of 'styling' in architecture, too. What is the difference between Mies, Corbu, Wright, and others? The Masters have developed a completely consistent vernacular; they do not try to interest me or to convert me. They make absolute statements. Only important people can afford to do that. They play endless variations on a theme that, in other hands, would become trite. So, aren't most of the others who use their idiom merely stylists?

"That is what you call the designer of dashboards and control panels. But there couldn't be a really good dashboard without the whole car being considered. One must start with the person who operates the car before one can redesign the dashboard. On the other hand, note that on industrial equipment there are control panels of much higher design standards than those on cars and on appliances. In the design of household appliances, we are still exposed to 'the battle of the backguards.' In industrial equipment, however, we see serious attention being given to the function of the machine and its relation to the operator. And the newest type of machine always shows this most clearly.

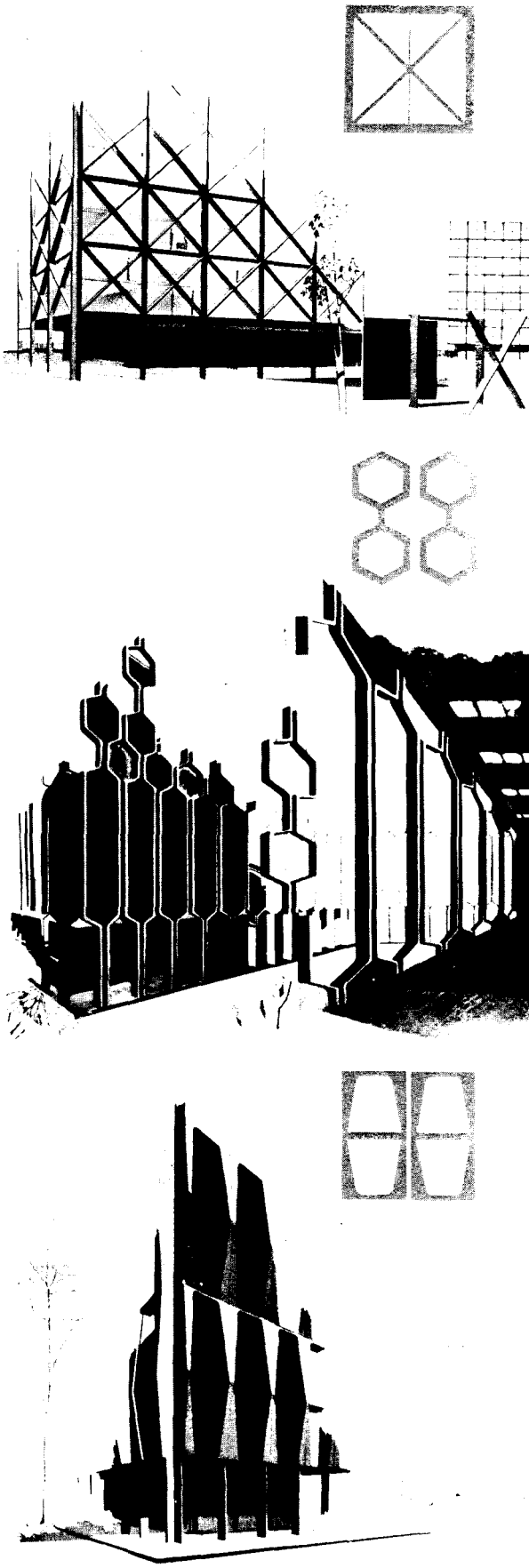
"The greater the breakthrough in technology, the more sophisticated the engineering. The breakthrough gives a new form. And when you work on such a technological advance, you are not just redesigning—you are really designing.

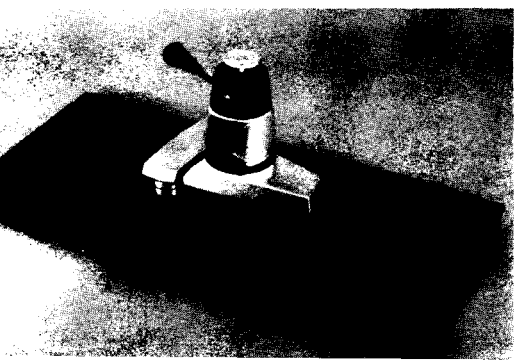
"Let us say that a firm that manufactures plastic tape comes to you because they want a new dispenser to compete with other firms' dispensers. If they say, 'We want you to redesign our dispenser,' then they will get another dispenser. But if they say, 'We are in the business of selling tape; how do we make this useful?' they might get a result that had little relation to the usual dispenser. It depends a great deal on how the problem is defined and how the client poses the problem to the designer. If you are asked to design another refrigerator, that is what you end up with. If you are asked, 'How do we preserve food?' you may turn out something quite different.

"The definition of a problem, however, is not the only important step in the design process. Your analysis of the problem must also lead to a tangible solution. An industrial designer has no business acting like some psychoanalysts who tell you what is wrong with you and then leave you alone with your troubles while they go on to the next case.

"For instance, there are civic redevelopment projects for which the big outlines are fine. But I am not convinced that when these projects get built we have anything substantially better than what we had before. The plans are fine, but the execution and the details are not; and one of the main reasons is the poor quality of the essential components. This is where industrial design should come into the picture: to see to it that these components—street signs, lighting, traffic signals, toll booths, and all the thousand-and-one pieces of public hardware—are part of the original concept and contribute to its order and efficiency. The participation of industrial design in this dry-cleaning process of our environment hasn't even begun. This is one of our tasks for the next decade, in a joint venture with those professionals whose knowledge supplements our own.

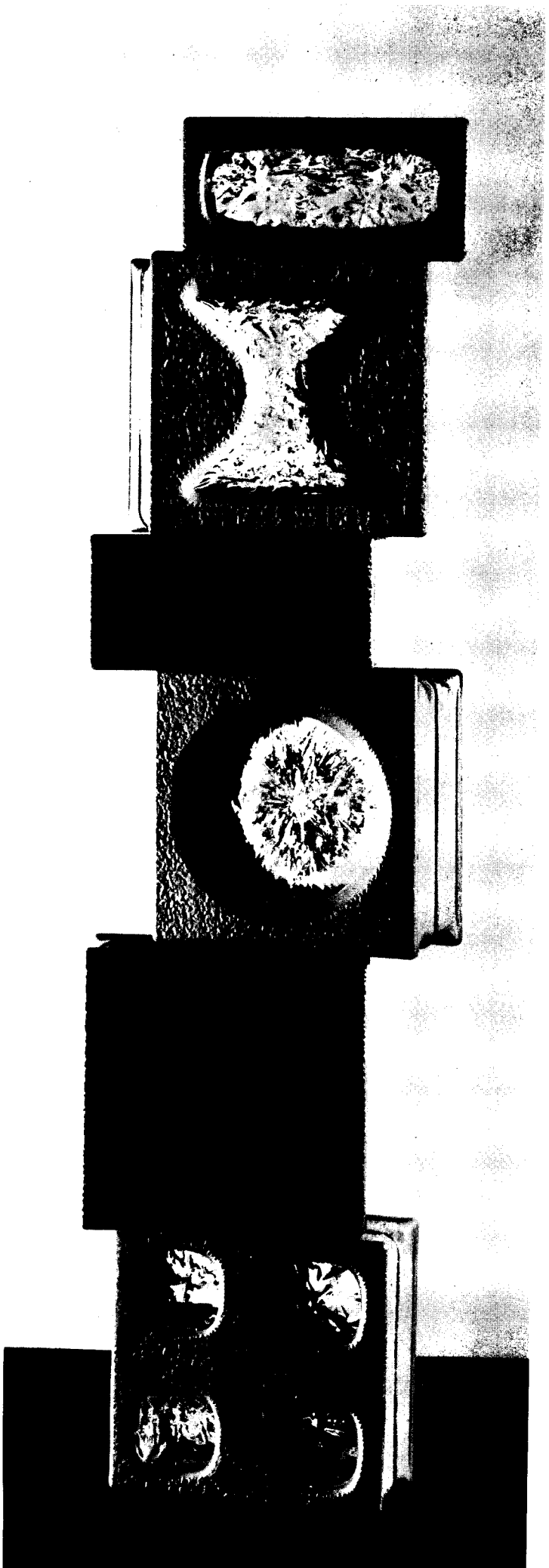
"I submit that we are at the end of an era when a given set of circumstances can be controlled by one set of professional and managerial abilities—by the military, by religious or political dogma, by diplomacy, and, today, by science. This reliance on one combination of skills or on one body of knowledge is no longer enough; and unless we combine the resources of different creativities, no single profession has a ghost of a chance to make an effective contribution to the common weal. Since we now have the Common Market, the time has come for industrial design and architecture to join in a Common Cause."





In the area of building component design, Peter Muller-Munk Associates have worked on a project for U.S. Steel to explore the possibilities of structural steel components that could be used as exposed frames of buildings. The idea was to go on from the I-beam and develop other load-bearing components that would form handsome façades.

"It was our job to demonstrate this concept to architects," Muller-Munk emphasizes, "while avoiding any implication that we were telling them how to design their buildings. By developing a variety of functionally sound new structural forms, we tried to stimulate architects to think in terms of new ways to use steels. We wanted to enlarge the vocabulary of architects without trespassing on their professional function."



Peter Muller-Munk Associates also designed the "Intaglio" line of glass blocks for Pittsburgh Corning Corporation. "Pittsburgh Corning came to us," recalls Peter Muller-Munk, "and said: 'Look, glass block has been used since 1932. It is a sound outer-wall material. It allows light to enter a room. It is an excellent insulating agent, due to the air space in the block. But, in recent years, it has not kept pace with present design requirements. Is there anything your office can do to it, while retaining the functional character of the product, to change its design character so that it will meet the needs of today's architects.

"Our approach was twofold: (1) we checked with a number of leading architects to learn what they were looking for and what they objected to in the customary glass block; (2) we investigated the manufacturing of the product to find out its potentials for standard production. As a result, we developed several different designs that can be used singly, in combination, or with other materials to provide a variety of wall patterns and textures and that will allow the architect to adjust the intensity of light admitted to an interior.

"While the shape of the new unit remained rectangular or square to facilitate lay-up, different patterns were developed by overlaying an opaque, textured ceramic frit on the outer surface." What looks like a concrete block pierced by holes that are filled with glass is, in fact, a glass block, unchanged in basic composition, but with an overlayed opaque pattern. "The raised frit surface of the unit," Muller-Munk continues, "closely matches the color of mortar joints; thus, the joints drop out, and the translucent glass pattern becomes the design element.

"Now, you might say that this is nothing but styling," Peter Muller-Munk admits. "However, if we succeed in giving some real style to a product, a material, or corporation that didn't have it before, then what's wrong with styling?

"You see, we meet industries in various stages: when they need basic new ideas, and when they need only a new look. If a product is sound but our client can't sell it because it is not up to date in the opinion of creative architects, we try to develop new forms that will fit their needs. Perhaps this is only a little step forward, but it is still a real step forward in design."

"To do industrial design," according to HENRY DREYFUSS' organization, "you really get thoroughly involved with the engineering; otherwise you would just be putting a slipcover on something."

The Honeywell "Moduflow" Thermostat (*second from top*), designed by Henry Dreyfuss' industrial design firm in New York, was planned to be "the Tiffany" of the line. Since many of Honeywell's thermostats have a silver-bronze painted finish, the Dreyfuss organization recommended that the Moduflow have a metallic gold finish.

The program was to get the best instrument possible. "We felt," says James Burlin of the Dreyfuss firm, "that we wanted to get it as small as possible—to put it in the minimum package within reason—and still have legibility of the numerals. And we recommended that the best instrument have a gold-plated finish, to show quality—the Cadillac line."

The designers had already done one round model for Honeywell (*top*). Prior to that, all thermostats had been rectangular. Since most of them seemed to get put on the wall crooked, Henry Dreyfuss wanted to know why they couldn't be round. They seemed to lend themselves nicely to being in a circular form, and this would eliminate sloppy installations. Their first round one could be painted the color of the wall.

The Moduflow is a smaller control than even that first hemispherical model, and it is also less obtrusive, the designers feel —except for the finish.

The entire unit projects much less, yet there are two knobs on the instrument: one is a small center button, which sets the nighttime temperature; the other is on the perimeter of the dial and controls the setting for daytime temperature. Both knobs are knurled to permit them to be turned easily.

The instrument is designed primarily to provide automatic, prefixed temperatures around the clock for the home; all operating equipment is remote from the control, usually in a box in the basement.

Since the Dreyfuss organization wanted the smallest possible thermostat, says James Burlin, "we started with the components. The switch function had to be miniaturized by the Honeywell engineers, with whom we worked closely. They were responsible for getting this down into a small package. We suggest arrangements and miniaturization, but that is their responsibility. We prefer not to do any engineering—we don't have the technical department within our organization—but we come up with ideas for them and work in collaboration with them.

"To do industrial design, you really get thoroughly involved with the engineering; otherwise you would just be putting a slipcover on something.

"When a product like the Moduflow is in development, there may be 30 models made. And the development goes back and forth between our office and the Honeywell engineers. The manufacturer has to iron it out in terms of cost, and that often produces big changes. And the engineers say they have to have a bi-metal of certain size. So if you want to tuck one of them up in the smaller knob as we did, the diameter and projection of that knob are affected."

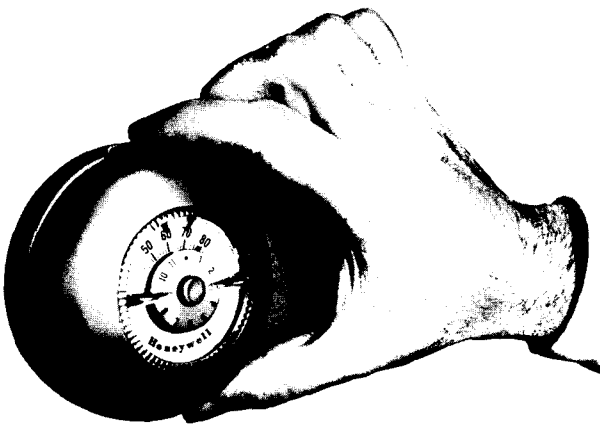
In answer to a question about their work on the graphics for the Moduflow, Berlin replied, "Often these units are located in places where there is little legibility; therefore, you need contrast, and you have to maintain certain minimums for ease of setting. These come from standards that we created from information gathered over the years: the calibration, the width of the pointer, and the contrast ratio between background and lettering. Here, a silver etched scale plate is played off against gold lettering for visibility.

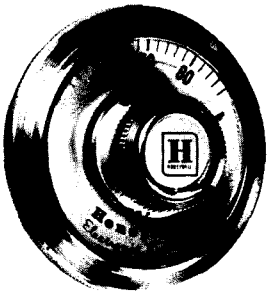
"So far as the trademark is concerned, we did a manual some time ago to show standard uses of their marks and emblems. This is a design thing that goes along with what you do. Note that the 'H' on the little knob does not turn around when you turn the knob."

In reply to the charge that the Moduflow may be too much an advertisement for the manufacturer when it is installed, instead of being anonymous, Berlin said, "I would not say it was anonymous. It is a minimum-appearing control instrument that looks to us as if it is going to do a job for you. And you read quality into it as an instrument.

"Perhaps from a long-range standpoint there shouldn't be anything showing. If you can have the job done automatically, that is, why have it? Most people, however, want something to check on without running to the basement, and many just want something to fiddle with.

"I think there is a need for the architect to express a desire about finish of hardware, not just to pick it. There should be a great many more good products available. In general, the situation is improving, but I think there is still a lot to be done to get better things without costing an arm and a leg."





New "Trimline" telephone, now undergoing field tests, was designed at Bell Telephone Laboratories with Henry Dreyfuss as consultant.

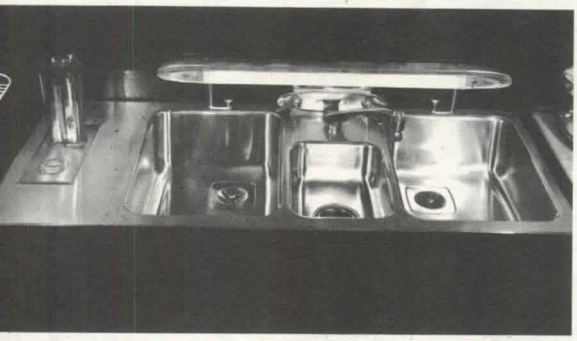
"We refuse commissions of any kind only if we feel we cannot make a contribution to the program," says industrial designer JON W. HAUSER.

Jon W. Hauser, Inc., industrial designers of St. Charles, Illinois, have designed a line of stainless-steel sinks and accessories for Elkay Manufacturing Company, and toilet seats for Sears, Roebuck & Company. They admit that they "style products to contemporary or traditional tastes to meet consumer demands," and say that they undertake marketing surveys "to check out the validity of a design direction before proceeding with tooling."

"None of our designers are architecturally trained," says Jon Hauser; "in regard to the background of training, I believe a complete understanding of materials and uses is important."

The "Cuisine Console" (*top*) and "A la Carte" (*bottom*) sinks they designed for Elkay are typical of the type of work the firm does and how they do it, Jon Hauser feels.

In developing these products, they worked with the president and vice-president of Elkay, who made available "extensive market research" that had been conducted by Elkay and its advertising agency. It was established that about 70 per cent of the homemaker's time in the kitchen is spent in front of the sink—preparing food and cleaning up. "In conference with Elkay," Jon Hauser says, "basic market aims and philosophies were developed, and features that would best fill these needs were outlined in general terms."



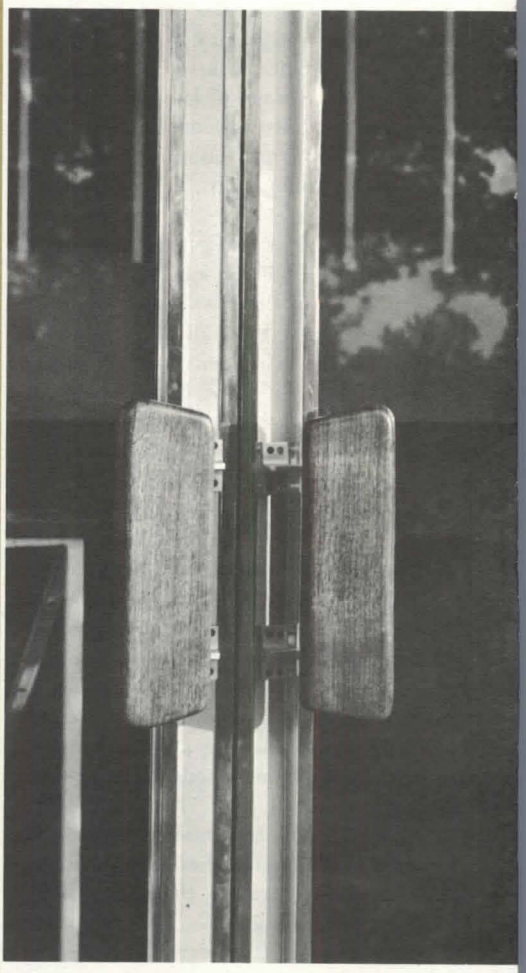
The designers then took these outlines, and, "through sketches and cardboard models, submitted proposals for consideration. Sketches and models were first discussed and refined, then submitted to engineering and production for their consideration so that the designs could be fitted into Elkay's manufacturing facilities." The Federal Huber Company also was consulted, since they were to be responsible for manufacturing the fixtures for Elkay.

The "Cuisine Console" was developed to provide better illumination over the sink and greater flexibility by the use of two-bowl (left- or right-handed) and three-bowl versions. The elevated back control panel includes water controls, switches for light and disposer, and appliance outlets at each end. Pop-up drain knobs are located in the bases of the panel. The spout is a dual spout: a spray head is incorporated immediately above the swivel nozzle. "This eliminates the unsightly 'black snake' of the conventional spray," Jon Hauser says. The disposer is located in the small bowl. Other available features of the sink are a cutting board that fits over one of the large bowls (which are large enough to accommodate big roasting pans), a vegetable basket, and extended deck models that incorporate a Nu-Tone unit.

The "A la Carte" sink is described as a further development that features a dropped ledge at the tops of the bowls "to control water, splash, and overflow," and softened corner contours, "for a more pleasing appearance." The single-lever faucet was designed "for maximum flexibility" and to carry on the family resemblance originated with the "Tiara" fixture for the "Cuisine Center." The other units carry out this theme and include a spray, pop-up drain control, lotion or soap dispenser, and soap dish.

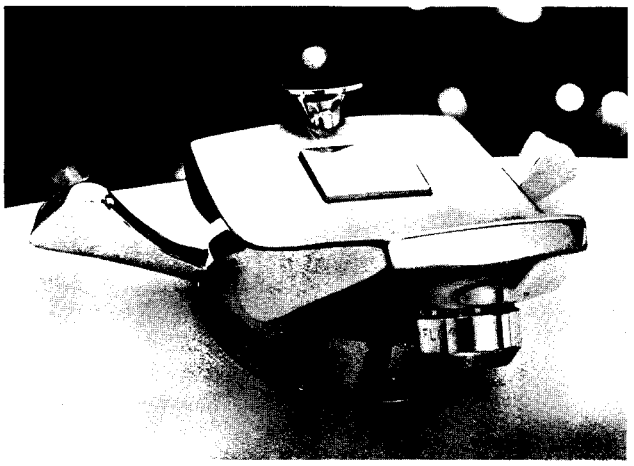
"The homemaker has the option of including as many or as few of these units as she desires in customizing a sink to her own tastes and needs," Jon Hauser says. "This is a general picture of how we operate and what we've done."

"In general, architectural design training would be the best possible background in the design of building components," says industrial designer MONTGOMERY FERAR.

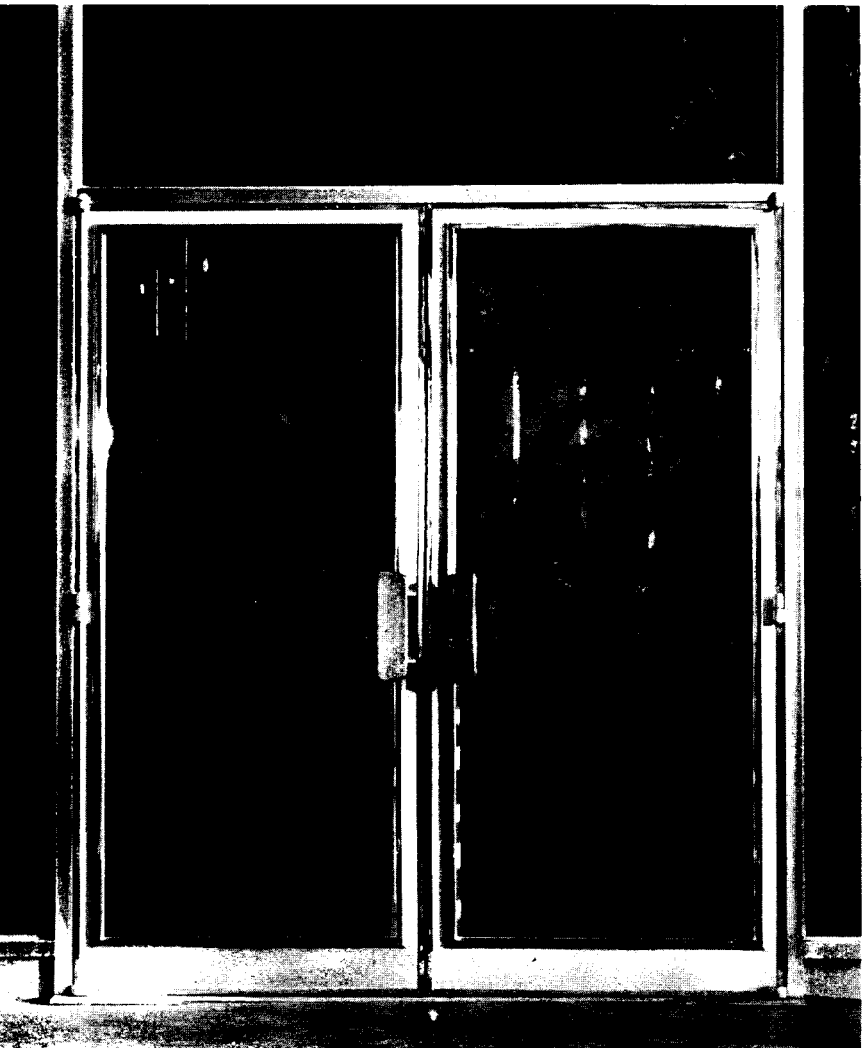


Sundberg-Ferar, Inc., industrial designers of Southfield, Michigan, have designed plastic doors and panels for Woodall Industries, Inc., architectural applications of nickel for The International Nickel Company, household appliances for the Whirlpool Corporation, and bathroom fixtures and accessories for American-Standard, Hoover Ball Bearing Company, and Universal Rundle Corporation.

The door designs (above and facing page, bottom) *by Sundberg-Ferar for the Overly Manufacturing Company feature a rectangular tube construction developed by Overly engineers. "Using this as the frame and finishing it in satin aluminum," Montgomery Ferar explains, "we added polished stainless trim to the inner and outer frames to give a handsome two-tone effect."*



Sundberg-Ferar also designed a line of "Galaxie" fixtures and sculptural wash basins (above) *for Universal Rundle Corporation. "After selection from preliminary sketches," Ferar notes, "these designs were modeled in clay, and, during this process, certain changes were suggested by the client's staff to facilitate manufacturing and to satisfy plumbing code requirements. A definite effort was made to give a strong family identity to all the components of this line and to get price differentiation by size and type of brassware. The crisp sculptured look," he notes, "is in keeping with contemporary trends."*



Primarily, Sundberg-Ferar, Inc., "both develop products to fill new needs and develop new products so as to meet old needs more efficiently," says Vice-President Montgomery Ferar.

To do this work, Ferar notes, "we usually accept the marketing surveys of our clients," yet they also report consulting with architects other than those on their own staff, 10 per cent of whom are architecturally trained.

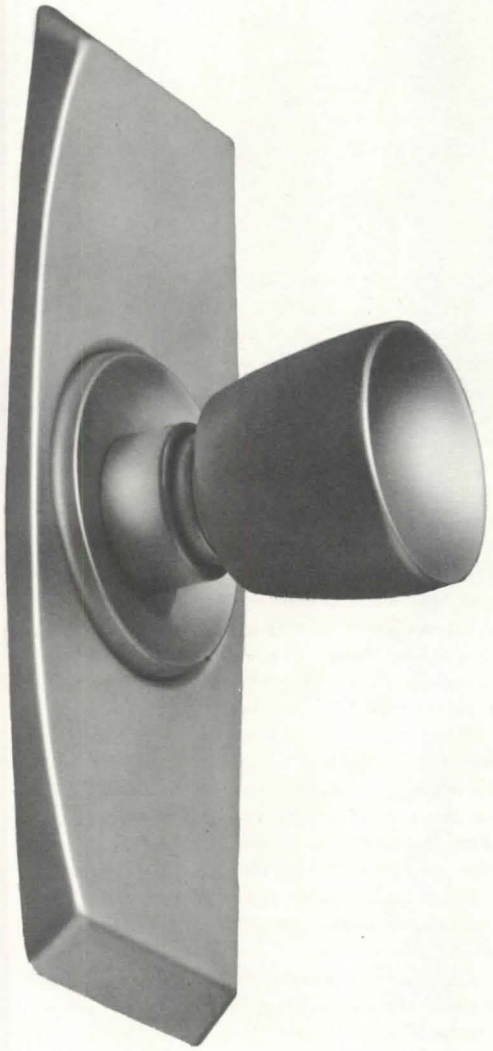
The "Unitub" (above), *which they designed for Universal Rundle, is an integral tub-and-shower enclosure made of reinforced plastic.*

Since the unit is a composite, there are no cracks to collect dirt and to be cleaned only with difficulty. An optional reinforced plastic ceiling, which has a built-in light and fan, creates the joint line visible at the top of the unit. Installation of the 2'-8" x 5' unit is simple: it is merely nailed into place by a carpenter. There is room under the sump for attaching the drain over a concrete slab construction.

As far as the design process was concerned, Montgomery Ferar says, "After selecting a theme from preliminary sketches, a quarter-size model was shown to the clients, and certain changes were made on this for technical and aesthetic reasons before going to the full-size model."

"An effort was made in the design," Montgomery Ferar continues, "to express the moulded nature of the material in the integral decoration, the flush curved walls growing out of the functional plan of the tub, the built-in recess for grab rail and soap, the wide seating area on the front tub rim, and the beveled front frame." Whether the "integral decoration" will collect as much dirt as actual joints would have done, Ferar did not say.

Three members of WALTER LANDOR & ASSOCIATES, industrial designers in San Francisco, have some architectural training in addition to their industrial design training. The firm also believes that crafts training is desirable.

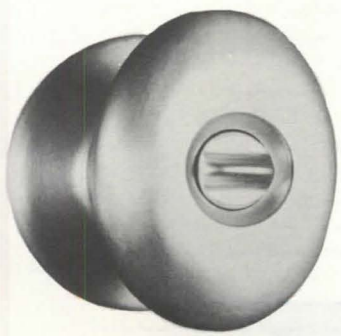


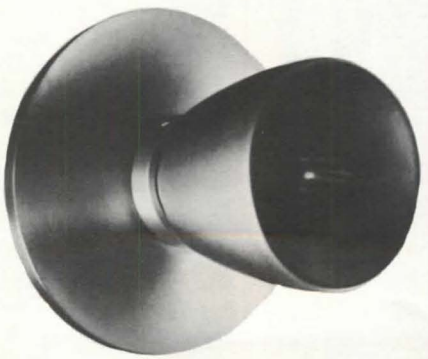
Walter Landor & Associates have developed a push-button knob and various escutcheons for Schlage Lock Company that are representative of their approach to the design of building components.

"Consultation with the client was of particular importance in this case," says Terry Roloff. "An engineer from Schlage was assigned to work with the Landor design team to help with technical problems during the design development. Only after the designers fully understood the technical problems did the designs begin to come from the drawing boards.

"The sketches that met with tentative client approval were sent to the workrooms of Master Models, a Landor affiliate, and there the drawings were translated into clay or wood models. Further, to insure the highest correlation between design and technology, the models that seemed most successful were trial cast by Schlage to simulate production pieces. Then the final choice of design was made."

Some of the escutcheons are notably restrained; some are right fancy. The "Savoy" escutcheon is fairly long so as to make it useful in remodeling installations where the holes made by a previous blackplate need to be covered.





"Available components are not all of high quality in design," says W. DORWIN TEAGUE, "for two fundamental reasons: first, some of them have received the attention of industrial designers and some haven't; and second, there are good and bad designers."

Walter Dorwin Teague Associates has designed a variety of building components, among them a complete line of bathroom fixtures for American Standard, folding doors for both Columbia Mills and the Hough Manufacturing Company, doors and partitions for Simpson Timber Company, grilles for Tuttle & Bailey, and a series of lenses for flush area lighting for the Phoenix Glass Company.

"In almost every case," the firm says, "we work with the president or chairman of the board as well as with the personnel of the various departments directly concerned. We do not undertake elaborate marketing surveys, but often do our own simplified ones. We utilize the clients' data when available, but we feel that all surveys must be used very carefully; otherwise they can be extremely misleading."

The firm consists of seven partners, each of whom has his own specialty. Dorwin Teague says, "We have ten graduate architects on our staff, three of them registered, but in developing components a natural ability for development is much more important than formal training."

"Building components are one of the main reasons for the existence of industrial design," Dorwin Teague continues. "Available components are not all of high quality in design, for two fundamental reasons: first, some of them have received the attention of industrial designers and some haven't; and second, there are good and bad designers."

"This question of *styling* is a matter of honest design as opposed to . . . I don't know what to call the other school. The latter designers use clichés that serve no purpose whatsoever. It is the same sort of thing that makes a good or bad design in the over-all building. The fellow is too lazy to figure out what he should do, so he tries to cover it up with some hasty idea. But we *shouldn't* be too hard on him, because maybe he has a family to support, and his boss told him to do it that way, or some such.

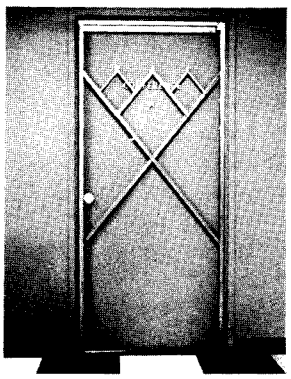
"All these components are designed to meet certain objectives: the clients who are going to manufacture it come to us to answer certain questions they have. Some

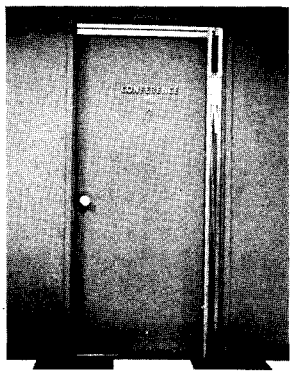
questions are better defined than others. Sometimes they want us to design something to compete with an item already on the market and to beat the other manufacturer's patents. Sometimes they want us to design something brand new.

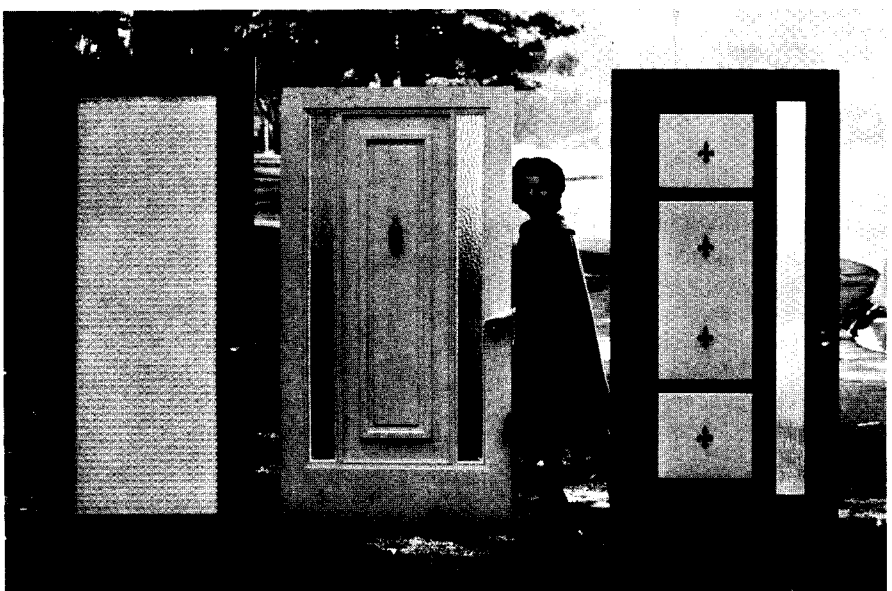
"It is better for us as designers not to try to improve on other people. It is also a disadvantage if you have previously designed one of whatever the client wants. How do you do another one for a competitor that won't plagiarize but will be an improvement on your first one? If there is a change in basic approach, it helps. It makes a difference, for instance, if the manufacturer requires a much less expensive item.

"When you start, you must ask, 'What is the ideal thing to do to accomplish what I want to accomplish?' But first you have to ask, 'What is it I want to accomplish?' It really isn't obvious always. Then we say, 'If we didn't have to worry about the price or anything else, what would be the ideal way to do this?' Then, when we think of some ways, we start feeding in the process of simplifying it, so that the design will be as simple and inexpensive as possible. And then we start refining, so that it will be as refined as we can make it. Next we make full-scale models of the prototype, so that when we show the thing to the client, we don't have to give him a fancy sales pitch: we can show him exactly what it is going to do.

"The important thing is to avoid the temptation to make a lot of pastel sketches before you think through thoroughly what you are going to do. So many people think that the process of design is to make sketches till the impression strikes. This thinking is the antithesis of good design. You should go through the thinking process before you get trapped in sketches. It is the same whether we are doing a building or a fountain pen."







The first demountable accordion folding door, which can be put up and taken down by one man in minutes, was designed by Walter Dorwin Teague Associates for Columbia Mills. (The patents were later purchased by Hough Manufacturing Company.) WDTA had previously designed a folding door for Hough; when Columbia Mills came to them to do another, their requirements were that it be less expensive and that it might be simpler to install.

"We still went at it the same way," Dorwin Teague remarks. "It isn't obvious what a folding door must do, so we asked what sizes it must fit, decided it should leave a minimum gap at top and bottom, and that installation could be simplified."

The door that was developed (left) *has an overhead rail that snaps into place and is held in compression; this contacts a fixed channel at the hinge side that similarly slips into place. The overhead rail does not support the door, it serves merely as a guide track. This is made possible by a new pantograph system, which the designers engineered. The usual accordion door works on a pantograph that has arms of equal length; since these mechanisms tend to slope downward from the hinge side, they have to be suspended from an overhead rail. WDTA's new pantograph has one major cross-arm pantograph with auxiliary smaller arms in between. This mechanism is rigid enough so that even without overhead support the door does not slope.*

While it was admitted to WDTA that this is an interesting design story, the objection of many had to be repeated that folding doors are not especially handsome. "That is all a matter of appreciation," Dorwin Teague replied. "We know what has gone into the Rolls Royce, and we like it. The same is true when you know what goes into a folding door."

"But if that is the most interesting part," he was asked, "why doesn't someone expose it and make it the most interesting part visually also?"

"Some people think that the skeleton of the body is the most interesting part of the human design," Teague replied, "but I don't know of anyone who has regretted that we don't have transparent skin."

The "Hospitality Doors" (bottom) *designed by WDTA for Simpson Timber Company were, admittedly, more of a decorative project than a functional redesign, yet they sucessfully solve a problem peculiar to manufacturing and to sales that is not ordinarily shared by architecture—the problem of inventory. All the doors have the same frame, but a number of different inserts and side lights can be combined and placed in different ways to give a degree of individuality.*

"This project," Dorwin Teague says, "was an exercise in ingenuity to provide a pleasant design series with a maximum amount of variety and a minimum inventory." When asked to comment about the aesthetic of the design, he replied, "I think these doors have to speak for themselves. They had to be acceptable to a wide variety of homeowners and to a wide range of types of houses."

RONALD BECKMAN, a young, architect-trained industrial designer with George Nelson & Company, questions why more use has not been made of the formal yet richly expressive component systems of Wachsmann and Fuller that indicate "industrialization is just about reaching its classical period."

"The designer who designs for and with industry has to know the problems of industry—that is, of manufacture. He has to know about the cost of molds, the most general market, and popular acceptance. Far from feeling hampered by these considerations, he should welcome the 'restrictions' of designing for the mass market and for mass production as part of the challenge of his program.

"He can't go to the quarry and hack out one piece of beautiful marble. Industrial production turns out, let us say, one piece every 20 minutes. These things pile up fast. So there has to be a container or package of some kind waiting that will keep the item safe in transit. And there must be a truck waiting to take them all away so they won't pile up, and there must be someone waiting to use them.

"The whole thing started with Gutenberg. After his press had been made, it was impossible to turn around and continue transcribing things in a monk's carrel.

"We have, in general, refused to face this as a challenge. And buildings have become more and more esoteric—made of bronze, or zinc, or lodestone. This is a retreat from the problems of mass production and automation, and from that even more pressing contemporary problem—the population explosion. Furthermore, this approach takes no advantage of the potentialities of new, inexpensive, and readily available materials such as durable paper and plastics.

"The question is raised that there is no art in manufacturing. However, Wachsmann and Fuller and Katavolos and others are all convinced that there is an art of manufacture. It is just that the scope and the dynamics of the program for manufacturing are different from those for conventional architecture.

"In the old days, for instance, the architect did a chair, and then if a manufacturer liked it, he figured out some way to reproduce it. Eames and Nelson have changed this reproduction approach to furniture. They did so by finding a synthesis of use and manufacture to create *production* furniture. That is, they found a way to make furniture that directly relates to the way it is used. The clearest example might be the stacking chair: thousands of bases are made in one shop and are stacked for shipping; the shells are made in another shop and are stacked for convenience of manufacturing and shipping. And then when the chairs are used, they can be stacked in auditoriums and the like. That is a synthesis. The flexibility of this design for manufacture also accrues to the person who uses it. I call this production furniture.

"The same is true of the storage wall system: it is made so that it can be inventoried by the manufacturer—produced, stacked, catalogued, and shipped conveniently. And that convenience is also passed along to the user. It also has a design flexibility that permits it to be assembled in a number of different ways to fill the needs of the user. And the creative designer can express himself with it too. It is limited only by the imagination of the designer or the architect who makes use of it.

"Nowadays, we design a curtain wall, and a manufacturer reproduces the wall in the same old way to make it available to others. It's like reproducing a Colonial Williamsburg chair. But there are a few men, like Wachsmann, who are designing *production building components*. His production walls have flexibility for both the manufacturer and the architect built into them; they have universals built into them. Buckminster Fuller's systems have universal flexibility that permits them to be varied by the imaginative architect. And the George Nelson and Gordon Chadwick experimental house was designed of industrial components with this kind of flexibility. The intention was that it would require an architect to assemble it artfully. With this house, we wanted to provide architects with tools—with thoroughly analyzed and engineered equipment. We saw the architect as a general practitioner with a number of different clients who rely on him to prescribe the proper remedies available.

"Similarly, the Butler Company's buildings, quonset huts, and silos have flexibility. And the architectural quality and potential of mass-produced hangars and oil-cracking towers is beginning to be recognized. The Triodetic Connector, developed in Canada, is a true production component with which buildings of different types and configurations have been built—disk antennas and shipping docks among them. Louis Kahn's triangulated tower is conceived in terms of such a universal system. Another example is the extruded concrete structural member.

"The production component is relatively inexpensive; it permits variable lengths of extrusions and has allowable tolerances in the connectors; it permits a dry assembly and simple tooling costs; and it has a geometrical configuration so that it is self-locking. All these factors combine in a good system to produce infinite variety within economical means.

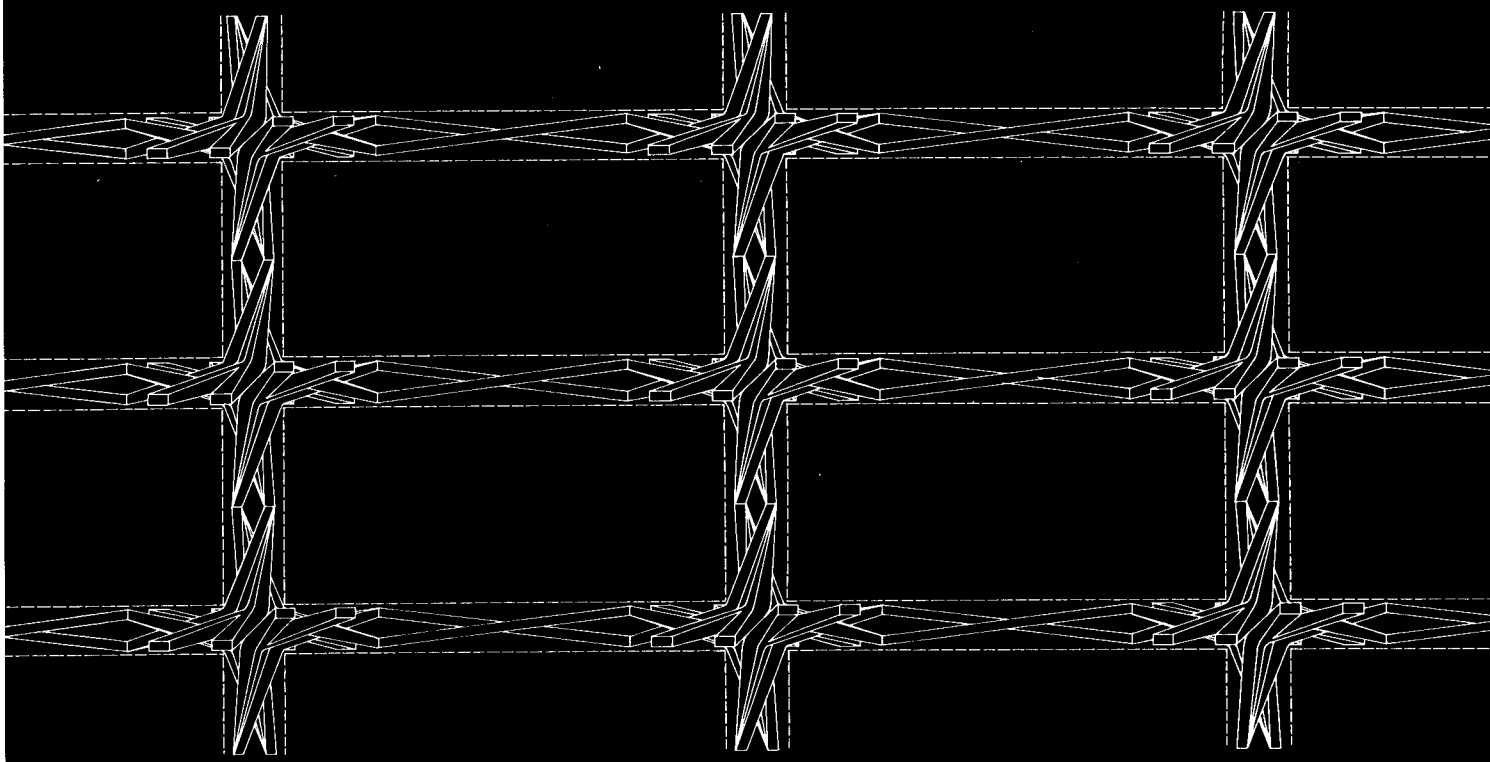
"Why haven't we made greater use of these systems?

"Such components have practical merits, both in terms of economics and flexibility; they also permit aesthetic variety within the system. And that variety is considerable. The Greeks, it should be remembered, all wore the same toga, in the main; their fashion pace-setters were those who could wear it with the most style, who knew how to drape it and carry it well. We don't seem to have many people interested in this kind of aesthetic variety today. Instead of succeeding through reinterpretation and style, we change from the toga one year to the tuxedo the next. For some people, that shock technique is easier than trying to wear the toga better. But the two are not the same and cannot be judged on the same terms.

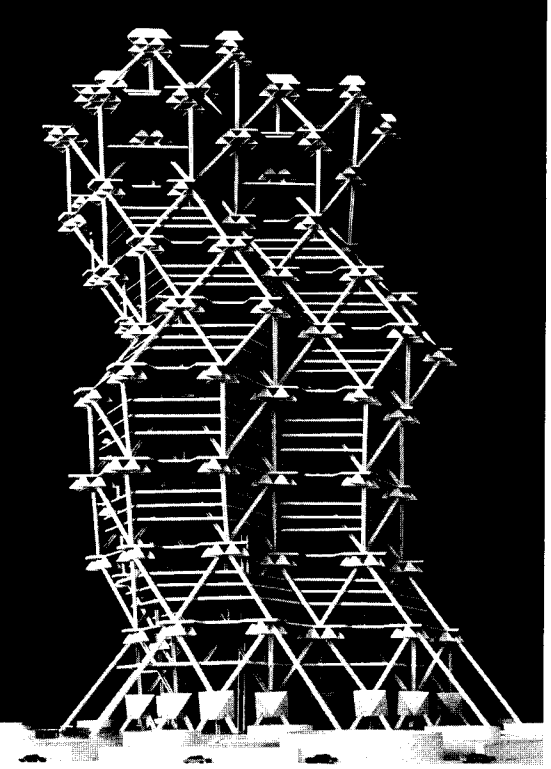
"In the age of baroque music, when themes and forms were given by the composer like a kitchen recipe, it was left to the artful performer to vary and ornament those elements into a personal production. The same thing was true of other activities in classical ages. Poets manipulated the pastoral theme, the epic, and the elegy. Architects worked with orders and systems. I think industrialization is just about reaching its classical period.

"If architects were not wooed and led by manufacturers to accept what is available but led them by specifying what they want and refusing to take anything less, then building component design might be improved. Manufacturers would be forced to improve their products by good design. If the architect increased his own selectivity and specified only the best products available, then the stylists would fail, and the universal would thrive. Further, if architects really understood mechanization, they would have a better ability to choose industrially produced things. If they understood the potential of the universal production building component and accepted its challenge, they would recognize the importance and validity of manufacture. They would embrace its classical potential.

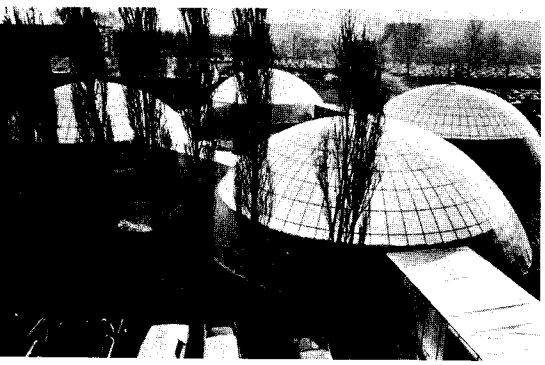
"We have the means and the materials; we have the systems. We are now capable of feeding, clothing, and housing the impoverished and exploding populations of the world—if we want to. This approach to manufacture as an art also has within it the potential for a fantastically rich and varied architectural expression. The real challenge, then, is to accomplish our social tasks as we realize this aesthetic potential."



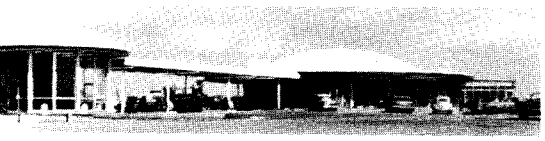
Conrad Wachsmann has designed a structure (section above) *in which a single, three-legged, twisted component is used in combination to produce midfloor-to-midfloor columns and partial slabs; intermediate slabs are hung between the projections from the columns. Below, Buckminster Fuller's joint for the Octet Truss, erected in the garden of the Museum of Modern Art.*



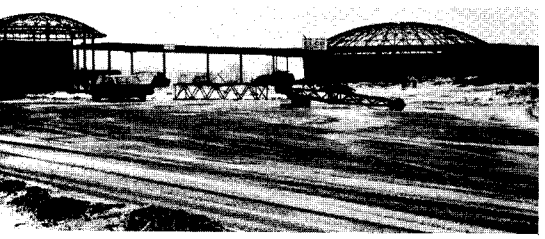
1



2

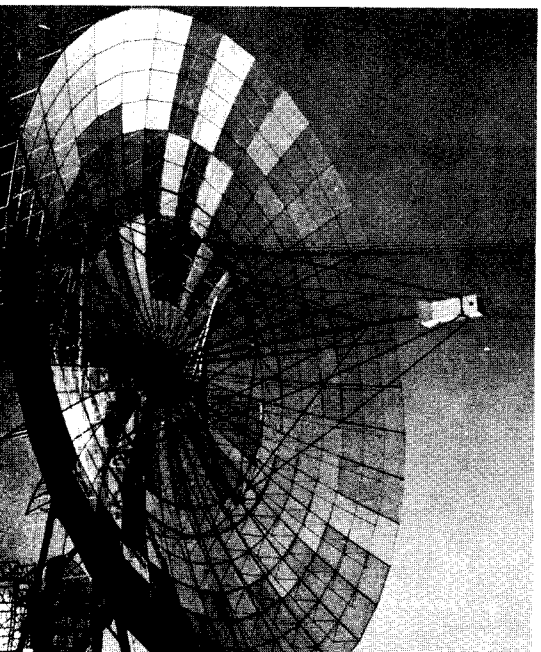


3



4

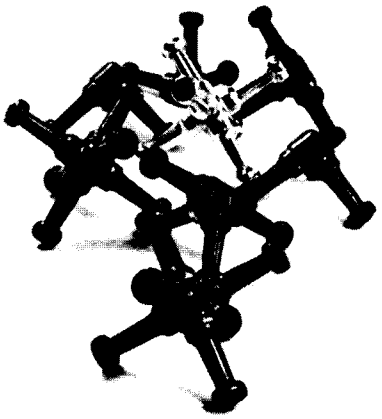
5



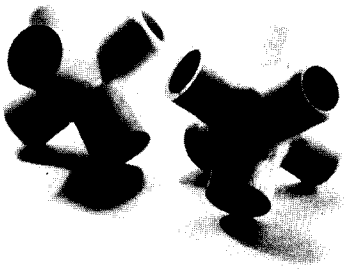
Structural systems such as Ronald Beckman discusses are being produced in gradually increasing number today, although, as he points out, use of them is not yet widespread. The reason seems to be that manipulation of these systems into buildings with configurations other than domes does not immediately appear possible.

Louis Kahn's model of a "triangulated" tower ***(1)*** *is said to be constructed using such a system.*

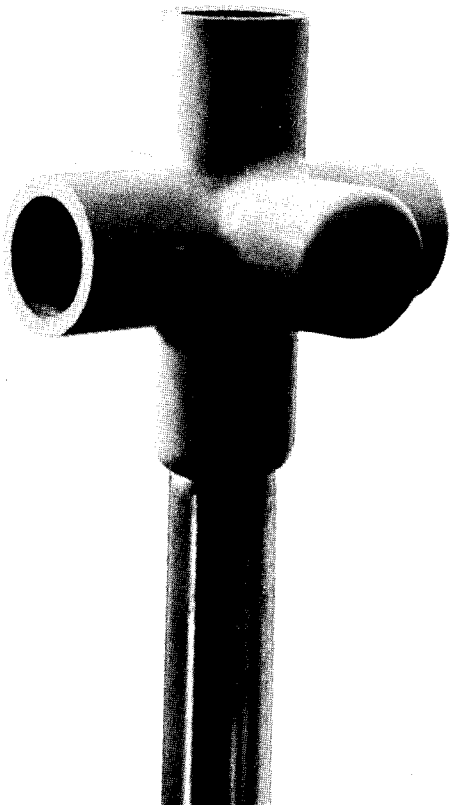
Four knock-down systems currently manufactured are illustrated on these pages. "Palakeen" ***(8)****, designed by Taliesin-trained architect Eric Nyland, has sleeve-like connectors made of slightly flexible plastic* ***(7)****. The "Jiffy Joint" system, designed by Norman Cherner for the Reynolds Feal Corporation, has two mechanical screws that tighten a metal sleeve connector* ***(9)****.*



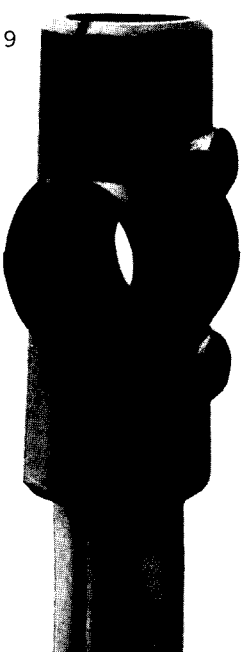
6



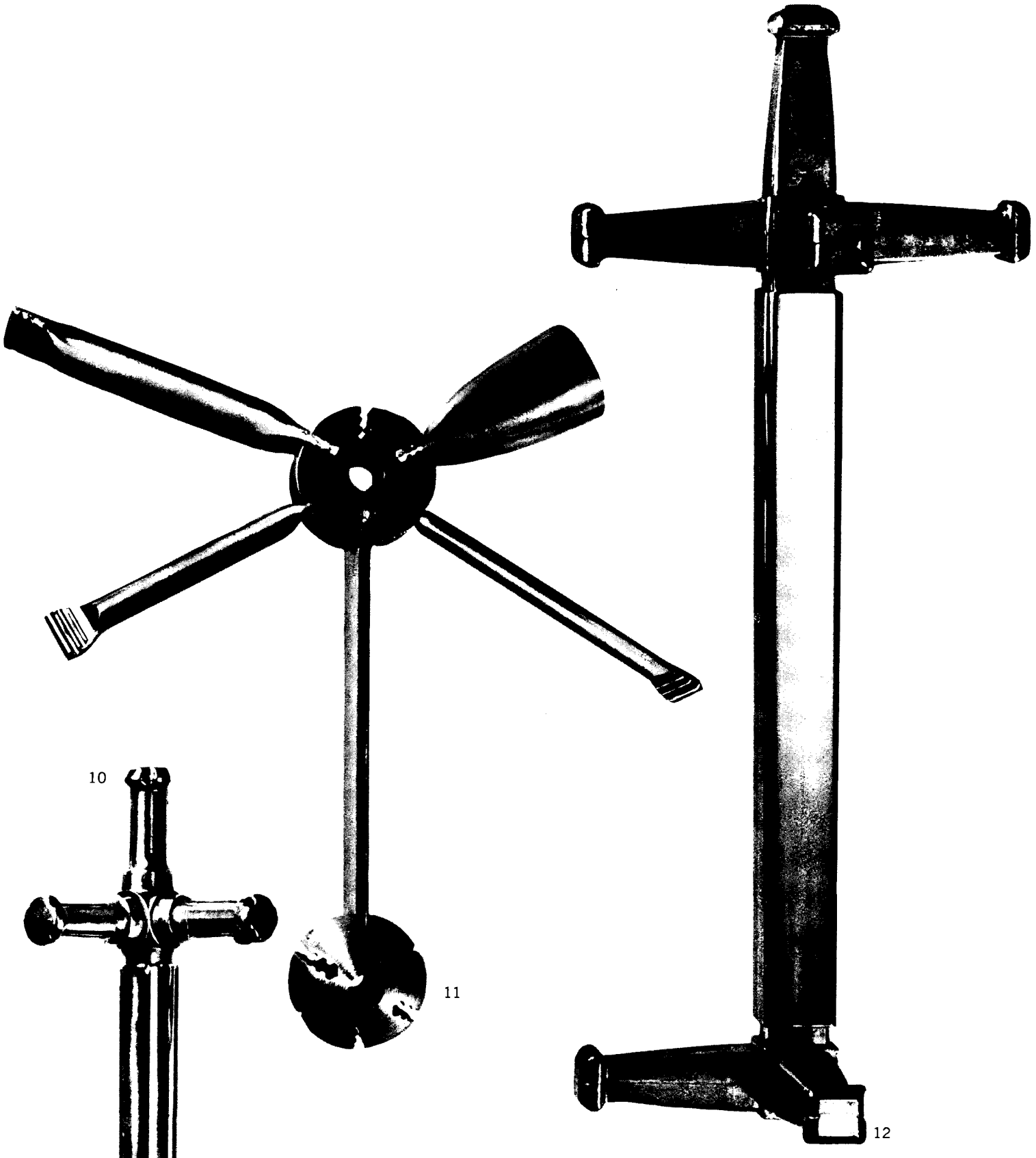
7



8

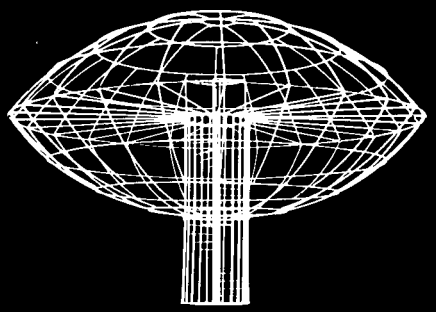


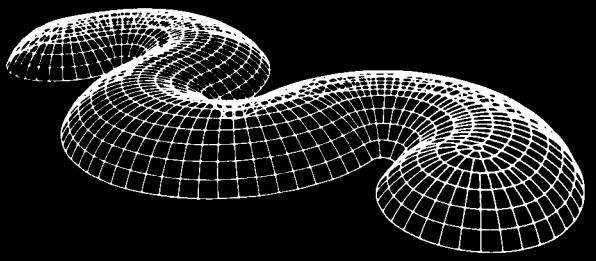
9

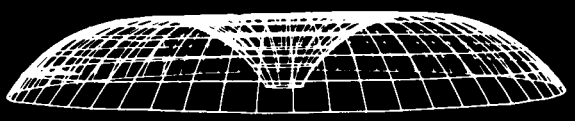


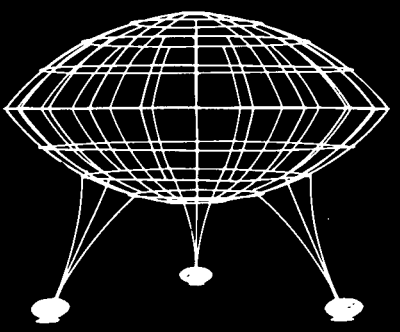
"System Abstracta," designed by Danish architect Poul Cadovius and now manufactured in this country, has cast steel connectors ***(6)*** *that slip inside steel tubes* ***(10)*** *to become nearly invisible when joined. A four-domed exhibition hall with connecting links* ***(2)*** *is built entirely of Abstracta. A square-tube version of Abstracta is also produced* ***(12)***.

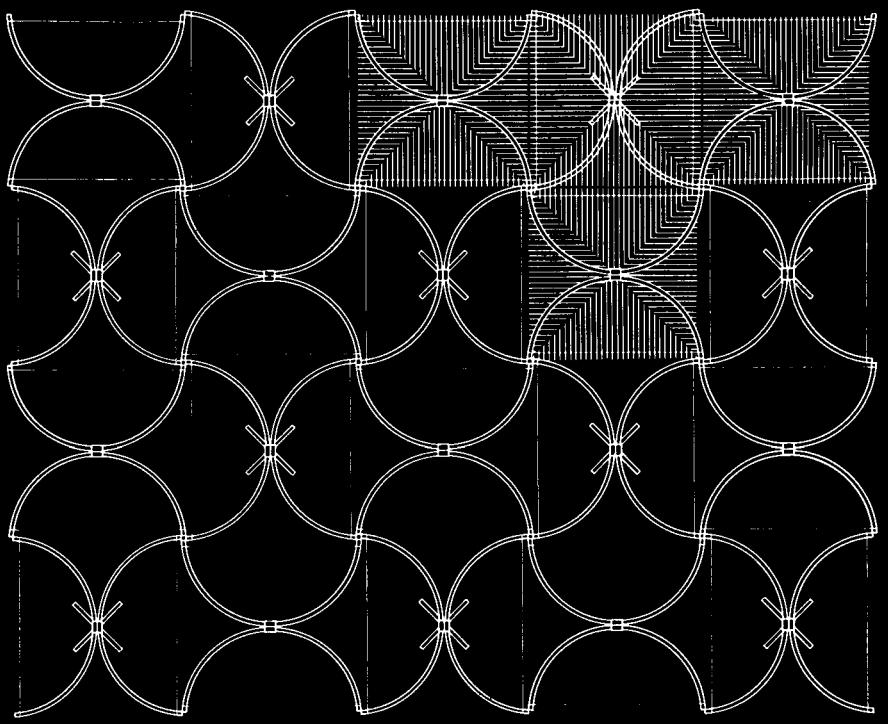
The "Triodetic" connector, developed in Canada by F. Fentiman & Sons Ltd., can be used to connect tubes, rods, bars, or angles of different weights and lengths ***(11)***; *connectors are either cylindrical or spherical. An auto service station in Canada* ***(3, 4)*** *is a Triodetic Structure; so also is a paraboloid antenna* ***(5)*** *constructed for the Canadian Defense Research Board.*





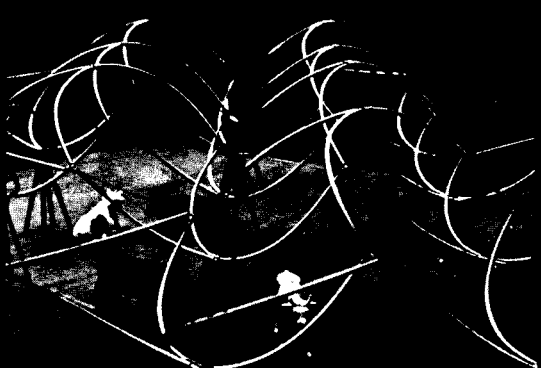




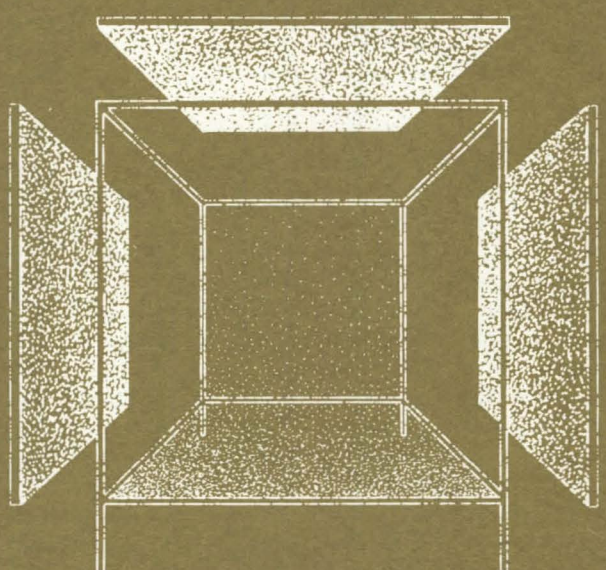


Industrial designer Ronald Beckman designed a tension-compression shelter structure (left and below) to demonstrate that an absolute right angle, rectilinear pattern need not be the sole result of a modular system. He wanted to show that "such ordered, rigidly controlled systems can permit linear richness and provide different rhythmic effects." The components are: a double arch joined at the apexes, each arch held with a tension wire; connectors composed of two interlocking, opposed V's; and "quadpod" stands. The entire system is dry assembled. All components and connectors can be stacked. Canvas would be stretched within the double arches.

Sketches (top) suggest some variety of building configurations that are possible with the "Abstracta" system.



The Role of the Architect



The architect has a complex part to play in the design of building products. He may be commissioned by a manufacturer to design a component, but only a very few architects actually get such commissions. Far more frequently, he designs custom components for specific buildings, which are then added to the manufacturer's line.

His unique role, however, is that of selector and specifier of products, a position that gives him a powerful indirect influence over their design. He also makes contributions in the related field of design criticism, for which he is often consulted, since he alone understands the context in which the product will be used.

Most of the architects interviewed in the preparation of this issue seem to agree on one point: to perform well in any of these diverse roles, the architect must understand the problems—economic as well as technological—involved in the manufacture and marketing of building components.

PHILIP JOHNSON'S object in designing custom components is not "exclusivity" but the attainment of "better norms" for standard products.

"The art of designing objects for use in architecture is today in a parlous state. This is because of the paralysis of our large corporations, who wish—for obvious profit motives—to make the same object over and over and over again—plus their also understandable desire to please the lowest common denominator of the market. Specialties are annoying and expensive for them.

"The architect is given no choice. Take an example—plates for light switches are made, not by the gross, but by the million. The assembly line cannot be stopped for a second, I imagine. At any rate, the architect must specify the plate with a bevel. Now, in modern architecture, no building designer wants bevels. But we are told we have to and we do.

"One would think there would be competition; but no—that, also, would be too expensive. As in the field of automobile design, difference can mean bankruptcy. Take Studebaker or that famous Chrysler Airflow. Only in Europe are there companies small enough to be willing to compete and change their products. Mass production has made us in America affluent but conformist.

"In the Seagram building we managed —except for switch plates—a few things. Our aim throughout was not for special design, but for reform of design. We did not wish exclusivity—quite the contrary. We wanted better norms—better design that would then be available to other architects.

"The most obvious are the lever handles on the doors. No company wished to make the attempt. The arguments were legion. Finally, Yale & Towne realized that their German plant could make them, so why couldn't they. The design was originally a Mies design, slightly modified for our use. Plenty of manufacturers now suddenly can make them.

"The faucet handle on the wash bowls was more difficult. Yes, they could be made, but how to re-order them, how to keep them in stock. It seemed there was no demand (a favorite way out of a complicated nuisance of a design!). But now, lo and behold, they are on the market (by Speakman).

"Worse luck with the flush valves on the toilets. The design looks like some 1910 plumber's assemblage of spare parts. Apparently it *cannot* be redesigned. We lost the battle.

"The taupe-colored plate glass was a struggle. The big companies proved to us how uneconomic it was to stop all their important work (automobile windshields) to work out a new color for us. It was finally made by a small company, Franklin Glass. Now, however, seven years later, bronze color and gray are standard with the big companies.

"The washbowls were exactly the same story. We had them made—to meet our special requirements for shape, size, and support—by a small company, Richmond. With some persuasion, they have at last put them in the line—even improved them somewhat. Inertia, I suppose it is called.

"Are there any well-detailed components on the market? Some, certainly; more, every day.

"The bathroom fixtures are at the bottom. The big boys won't make a good bathtub or a toilet, but George Nelson has designed one fine toilet unit for Borg-Warner. A good bowl is available from Graning. A peculiar but fascinating shower is produced by Swan. But these cannot be sold in quantity. They are too peculiar. Mass Levittowns have to use easily replaceable, ultra-reliable, and lowest-common-denominator-taste objects. These qualities you get only from the big companies.

"Tile walls ditto. In our office we specify a Japanese product. How silly can we get?

"There are some good things: sliding window walls by many companies, aluminum door frames by Pittco, Kawneer and others, vertical blinds by Vertivane and others, plastic skylights.

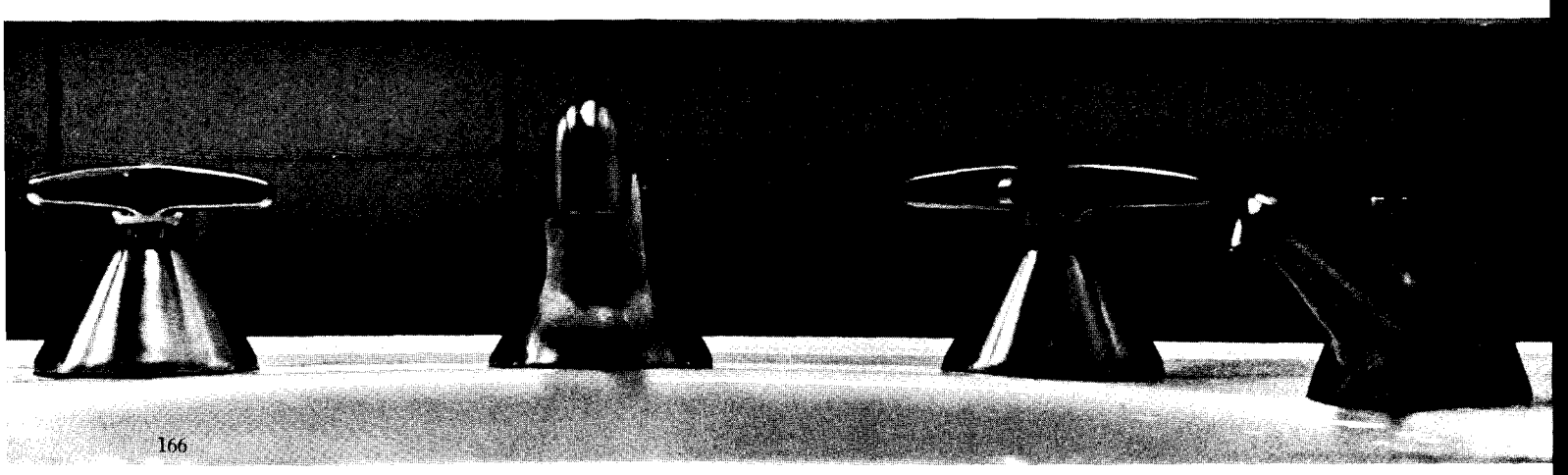
"Kitchen cabinets are well done. (Stoves, etc., for Frigidaire are unfortunately subject to 'styling,' since Frigidaire is a division of a well-known automobile manufacturer.) Refrigerators took a long time getting flat on top, but recently (except again for 'styling') are better.

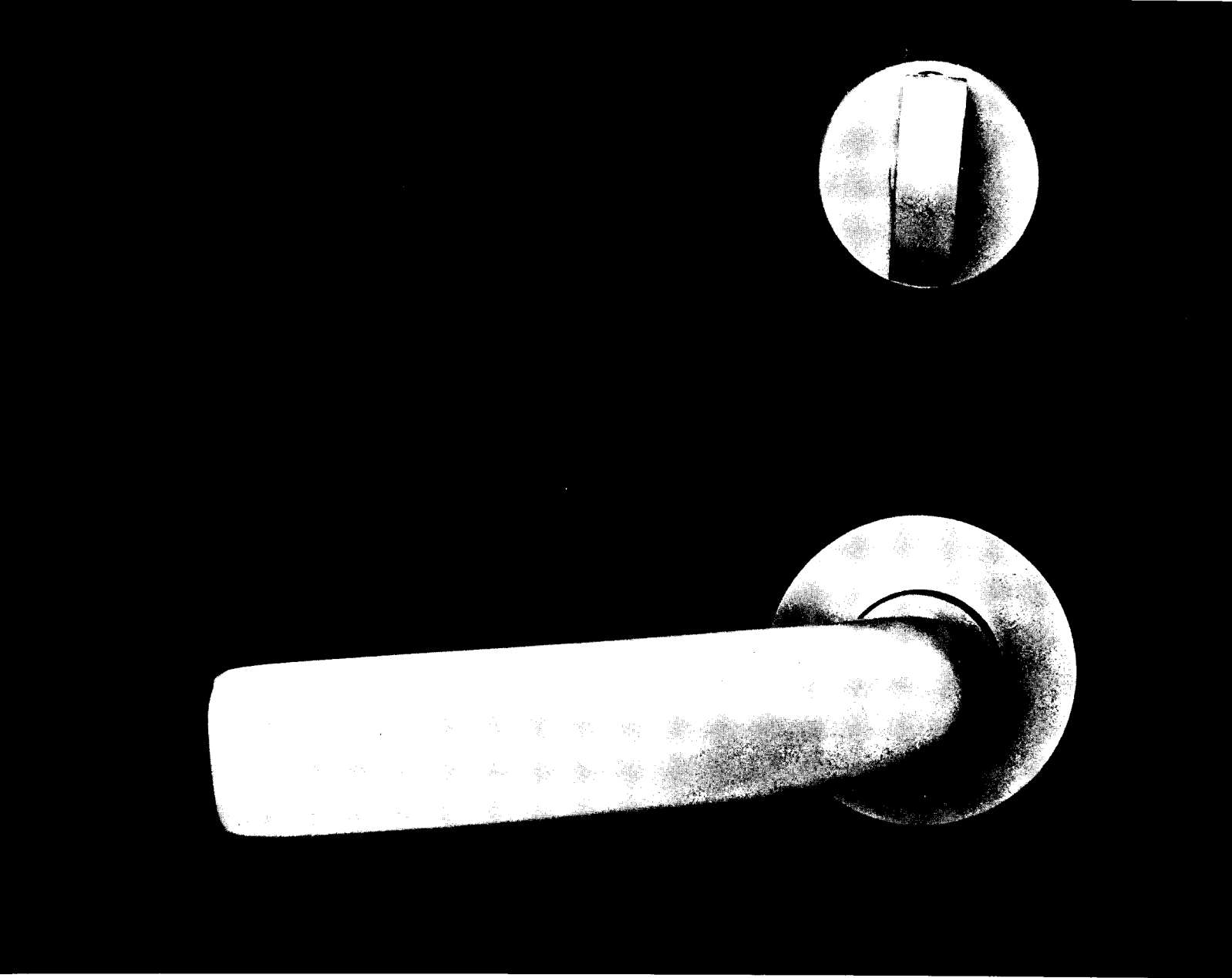
"Who ought to design these building products? People like Nelson, for instance, (instead of fooling around with clocks)—people who understand both architecture and industrial design. The trouble with most industrial designers is their attitude. They do 'styling,' which always has to 'look new.' Really good design remains good: a good 18th-Century spoon cannot be improved on.

"Architects are as capable of designing building components as anyone else. They may not be familiar with the production process, but they can learn that as they go, just as the industrial designers do—even the manufacturers themselves. When I worked on the door handle with Yale & Towne, we just went through repeated testing. The manufacturer couldn't predict the results any better than I could.

"There are good reasons why architects now do so little of this work. For one, they don't have the patience for it: a chair requires more painstaking design than a building. For another, they want too much money for it; they want to take much more time than the industrial designer and at a higher rate of pay. This is especially true of 'good architects,' most of whom are just too busy to take on such commissions. I know I wouldn't. Of course, for some components—wall systems, for instance—you really need an architect.

"Perhaps one answer is for companies to commission younger architects, with fresh minds, who might take on this work at a modest fee for the sake of experience."

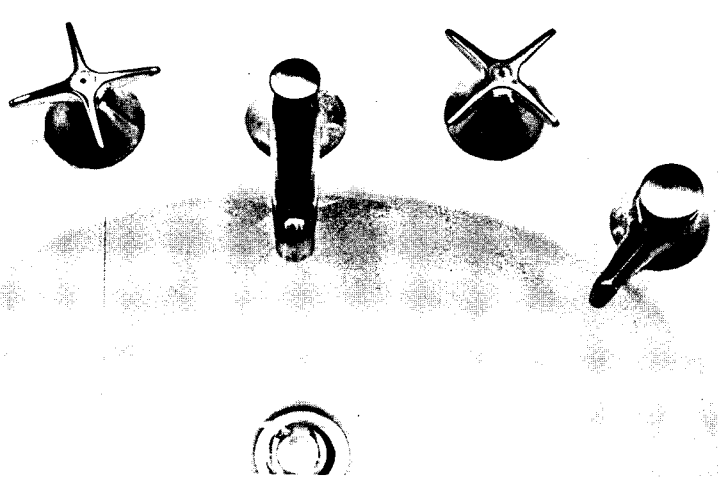


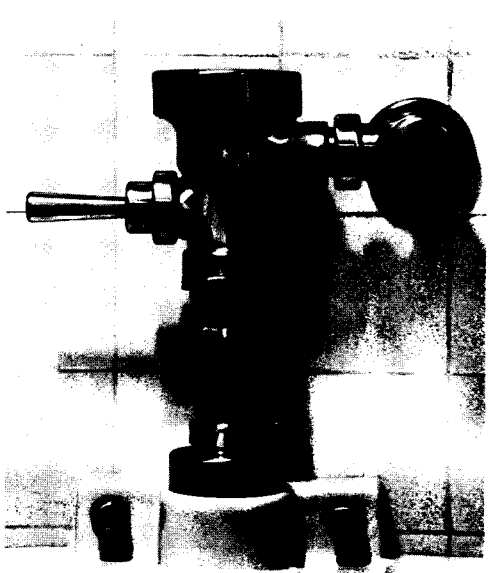


Johnson's design for the lever door handles (above) *in the Seagram Building was based on a design by Mies. They are now available from Yale & Towne as standard items.*

Washbasins and hardware for Seagram's (below left and facing page) *were both designed by Johnson. The spigot and faucets are now standard items (Speakman) as are the basins (Richmond). Johnson also designed shower-heads for the executive shower rooms, which are now in the standard Speakman line.*

Johnson considers the flush valves designed for Seagram's (below right) *less successful than other items. They are not now available on the market.*





"Architects generally have great misconceptions about how industrial designers operate," says ELIOT NOYES, whose practice is evenly divided between the two fields.

"I consider myself both an architect and an industrial designer, but I put 'architect' first. Any good architect can easily learn the manufacturing process; there are only a few basic processes—such as casting of metals and plastics, milling, extruding, stamping, fabricating—and you get familiar with them after several jobs. Anyway, you always have immediate access to people who are experts in production processes.

"That doesn't mean that you let these experts have the last word. You can often foresee possibilities they haven't considered. The manufacturer is inclined to settle for the tried-and-true process; with a little prodding, he may reconsider and find a new way of doing it—often more efficiently and economically.

"An understanding of manufacturing processes is only one prerequisite for good industrial design, however. Anyone undertaking industrial design work, whatever his basic profession, must be concerned with the visual consistency of everything in our environment. He must question every feature of the object he is designing—every contour, connection, texture, and so on—with this criterion in mind.

"Architects generally have great misconceptions about how industrial designers operate and how much money they make. Of course, there are many different attitudes and approaches among industrial designers; some of them put marketing standards above design standards, letting marketing surveys determine the form of things. (There are architects, too, who freely admit that their design is determined solely by financial considerations.)

"The normal firms, however, follow procedures and fee structures substantially the same as those of architects. Royalty agreements, for instance, are very rare in the industrial design field. Few industrial designers make fortunes; most just get an adequate return.

"Our firm does not receive royalties for anything. Our fees for industrial design are comparable to our architectural fees. Our fee structure—based on standard multiples of hourly wages—is the same, in fact, as that of some architects. We charge $18 per hour for associates' time, $15 for designers, and $10 for junior designers, plus additional costs. The making of mock-ups and prototypes often costs substantially more—in hourly wages—than the comparable phases of architectural design.

"For each job we make a preliminary estimate, based on hours and predictable costs, relying on previous experience; we find that these estimates are accurate to within 10 to 15 per cent—either way.

"For most architects, the major obstacle to obtaining industrial commissions is the inability to foresee the design process involved, hence to give a reasonable estimate. Only experience enables one to predict work and expenses involved.

"Our fees are the same, by the way, for all clients. The only difference is that IBM and Westinghouse obtain my personal services on a retainer basis, whereas other clients pay for my time by the job.

"My title at both IBM and Westinghouse is Consultant Director of Design. IBM, of course, produces no building components (although for large installations, we have to consider the effect of equipment as a working environment).

"Westinghouse manufactures everything from atomic generators to light bulbs. Its building components include elevators and electric stairs, air conditioners, and Micarta plastic laminates.

"It is such a vast organization that it is impossible to maintain the kind of close supervision over product design that I can maintain for IBM. It isn't even possible for me to review every new design—as I do at IBM—since Westinghouse produces hundreds of thousands of different items. My approach is therefore one of conditioning attitudes, establishing criteria, setting examples, and making spot criticisms. I travel around talking to executives and designers, discussing their general problems and giving slide shows.

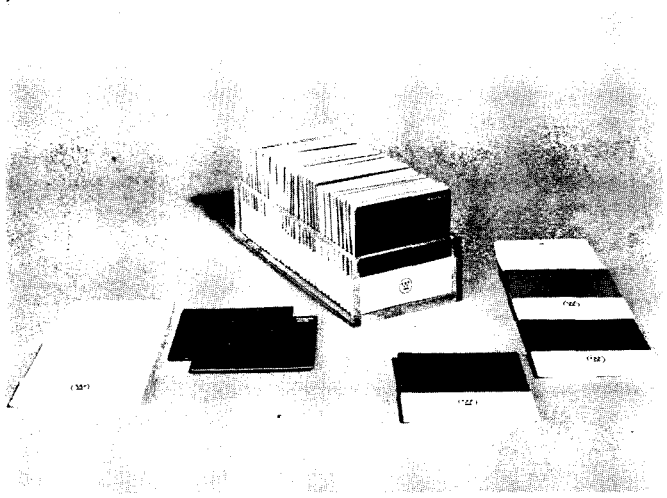
"The many divisions of the company have traditionally been almost autonomous, even in the area of design. Our principal contact has been with the corporate executives—as it must be for any effective design program—and we are gradually penetrating to the far-flung divisional echelons. Design policies had usually been decided by division executives, who are often engineers or marketing men by training, with the guidance of 'consumer surveys.' Staff designers had little prestige, and designers from different divisions did not even know each other. We have established contact between them and given them opportunities to broaden their cultural horizons. One of the things we do is to take all of the design managers to the annual International Design Conference at Aspen at company expense. Little by little, we are raising the quality of design thinking throughout the company. Almost all of the actual design, however, is done by company designers or outside industrial designers.

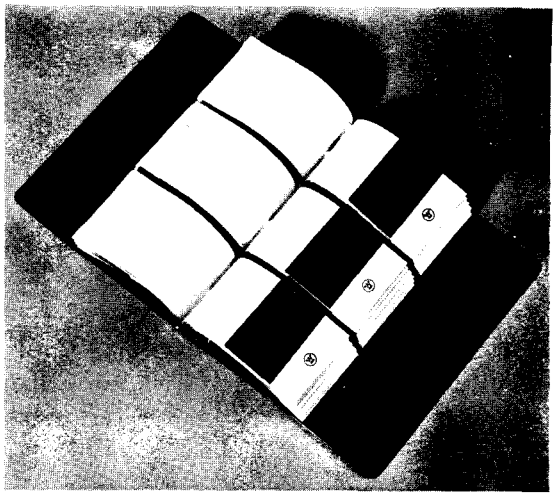
"Our office may get specific commissions—either for consulting or complete design—in any of several ways: sometimes I find a problem in a design under review and recommend that my office study it; sometimes the department executives come to me with a problem, knowing I advise on design policies at the corporate level. As at IBM, the company urges divisions to turn to me for design advice.

"I have a staff of about 30 people altogether. Of these, 12 are architectural designers (all of them professionally trained and several of them registered) and 12 are industrial designers (*two of* them architecturally trained). I call upon the services of outside consultants, such as engineers and graphic designers, whenever appropriate.

"The composition of our office provides an unusual opportunity for close collaboration between architects and industrial designers within the firm. A large proportion of our work involves the contributions of both disciplines.

"We recently did an interior for an executive airplane, for instance, which was the primary responsibility of the architects and our interior design department (of which my wife is in charge); the industrial designers, however, were involved in the design of dining trays and implements and in various items of custom hardware. The new electric stair for Westinghouse was primarily an industrial design problem, with architectural consultation on problems that involved structural clearances, connections, and passenger traffic patterns. Our World's Fair Pavilion for Westinghouse is, of course, an architectural problem, but the display equipment was done by our industrial designers. At the same time, the industrial designers are working independently on such diverse projects as diesel engines, vending machines, and rapid transit systems, while the architects are designing houses, warehouses, and office buildings."





Noyes's office has just completed the selection of a new line of plain colors in Micarta plastic laminate and the design of new sample kits (photos above) *for this line, both of them specifically intended to meet the needs of architects.*

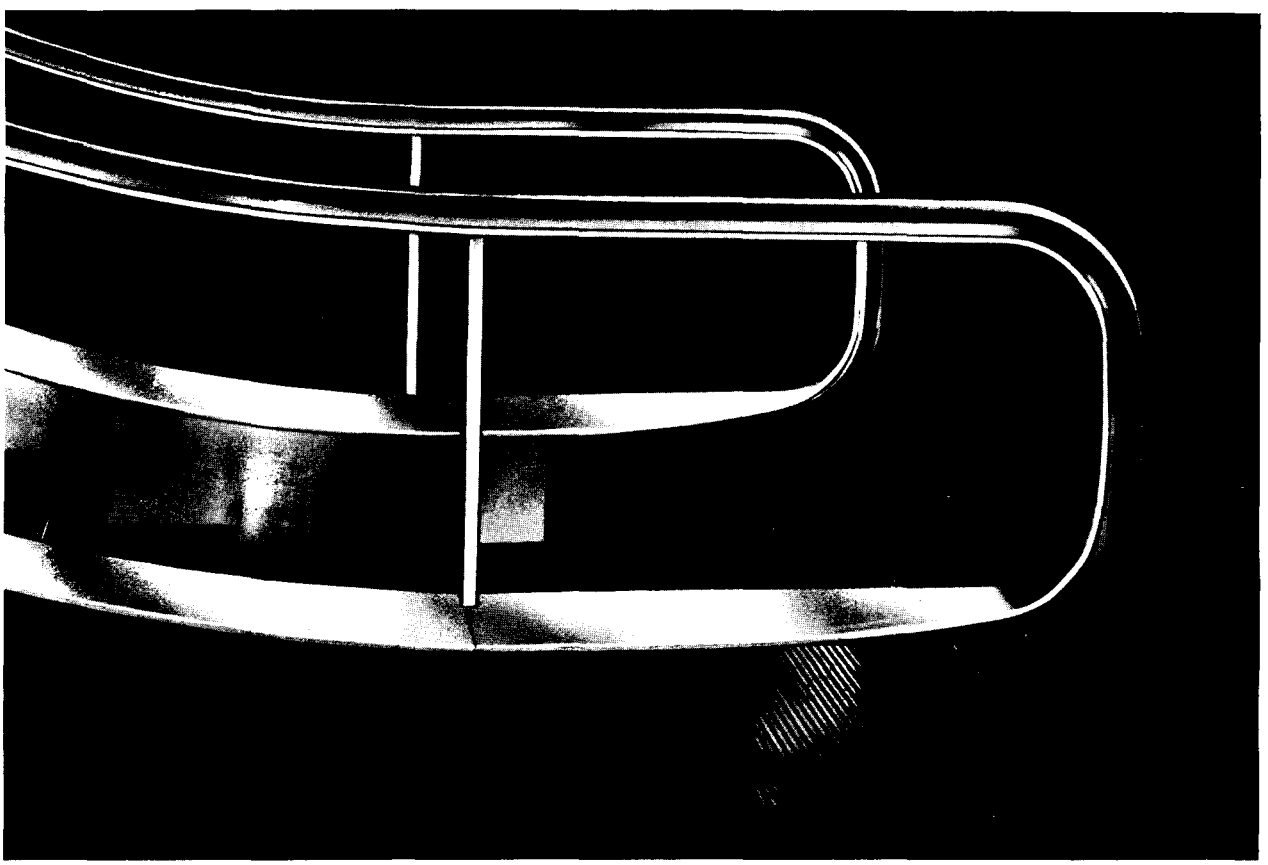
The new color line allows the architect to make subtle distinctions among neutral colors, such as grays and browns, and offers vivid colors of more firmly established usefulness than the latest annual home-decorating palette. All colors have been correlated with colors of fabrics and other materials most likely to be used by progressive architects and with the Container Corporation of America color system. This selection of plain colors is to be the first in a series that may include textures, wood-grains, and possibly even patterns.

The new sample kits have several features that architects may appreciate: the samples are larger than usual, have little printing on the front, and are not connected to anything. Instead, they slip into envelopes that are assembled in a variety of ways—in boxes, in looseleaf binders of two different sizes, and on wheels—each type intended for a particular area of use.

The new electric stair (below) *designed by the Noyes office for Westinghouse was commissioned in response to a competitive situation that required the design of a model with transparent balustrades.*

Although these transparent panels are the most striking visible features of the design, Noyes's office also participated in the redesign of the mechanism. Noyes points to the elimination of "grossly mechanical" touches, such as exposed screwheads, as a significant feature of the design. His office is still considering the selection of handrail colors and side-panel materials (transparent, translucent, and solid) to be offered.

As evidence of the economic power of good design, Noyes cites the substantial volume of orders already received for this model, which is just going into production, despite a price higher (at least at present) than that of its major competitor.



ROBERT ENGELBRECHT, a young architect who is also engaged in product design, urges architects to learn the hard facts about manufacturing.

"Architects can't take a 'holier than thou' attitude about designing building components. They must accept the challenge, with all of its ugly problems of production and marketing, if they are to have any influence in this field.

"As it stands today, the manufacturer's influence on the architect's work is much stronger than the architect's influence on the manufacturer. The architect's most influential role is as a critic of product design. His judgment of a product may affect the manufacturer economically in terms of sales, or reach him more directly in the form of criticisms relayed to the company through its sales personnel (who seem to have become more knowledgeable, hence more effective in this connection, in recent years).

Companies may formalize this kind of critical review by retaining architects as consultants; many architects serve in this capacity who do no actual design at all. Of course, the vast majority of building components that are designed by architects are first done as custom components for specific jobs. The opportunity to design such components depends on whether an architectural commission exceeds the critical size at which custom design becomes economically attractive.

"In any case, the major contribution of the architect is his ability to see the component in relation to a whole building; it is this frame of reference that makes him a better judge of building products than any other professional.

"Industrial designers, on the other hand, are inclined to think of each item as an end in itself, without any real awareness of its eventual role. One effect of this orientation is that their designs are often too complete. I find, for instance, that when I specify stock windows, I have to specify that the trim be deleted; I can then design or select trim that is compatible with the architectural context in which it will be placed. Similar problems arise with many other components.

"The manufacturer is in business to sell products at a profit, and anyone working in the area of product design must accept the fact. He will not introduce a new product or refinement unless it can be proved saleable and sufficiently profitable to offset costs of retooling, promotion, marketing, etc.

"His preoccupation with these problems, however, produces some tendencies that may be detrimental not only to the design quality of his products, but also to his economic well-being. For one thing, he may be overly reluctant to retool for a new or revised product, even when the alternative is a sharp drop of sales or loss of an entire market. I know of one firm that introduced a prefabricated, prefinished wall panel in 32-in. widths; when it failed to sell—as any architect might have predicted—they refused to make the relatively minor additional investment required to change the width to 48 in. and eventually gave up the product, thus loosing their entire investment.

"Another dangerous tendency—which may be more damaging, although its consequences are less clear-cut—is the effort to make a product meet too wide a range of applications. The designer is often pressed to modify his design to appeal to a 'broader market,' thus reducing its effectiveness for any single application. Then huge amounts are spent in promoting the product for this broader market, trying to overcome understandable sales resistance. The net effect of these hard-won sales is often disillusionment on the part of the buyer, who finds he is not getting the optimum value for his money. If some of the money squandered on promotion of inappropriate applications could be spent on design, both the pro-

The exhibition pavilion commissioned by the U.S. Department of Commerce for a trade show in Sydney, Australia (left), *will be used for other such shows throughout the Far East. The structural system was designed for minimum weight, because it will be shipped repeatedly, and maximum flexibility, since various plan configurations may be desired for different installations and parts of the pavilion may even be erected in one country while the rest is in another.*

The extruded aluminum framework, manufactured by Olin Mathieson, is clamped together. The roof is of stressed-skin plywood panels, with only a single plane of plywood to minimize weight. Wall panels have two layers of translucent plastic in aluminum frames.

The building weighs only 1¾ lbs per sq ft of surface, so little that holding it down was a more critical problem than holding it up.

The building and components were designed and fabricated in a period of only two months, using products by several manufacturers who had not previously collaborated. Engelbrecht has applied for a patent on the structural system and is now working on new versions of it.

The house Engelbrecht designed for Crown Aluminum Industries (facing page) *was intended to demonstrate the potentialities of aluminum components in the residential field. It employs both existing standard materials and newly designed components.*

Standard mass-produced aluminum siding has been used for walls and roof, over a wood structural frame. These materials had found only limited acceptance for new construction because of the difficulty of cutting them on the site and their tendency to warp because of differential expansion.

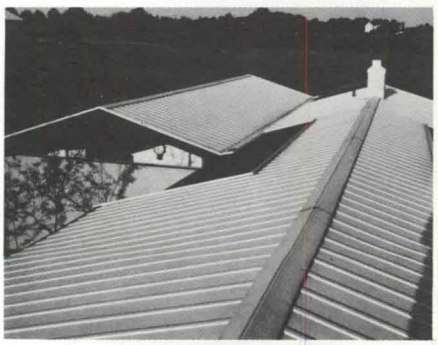
Engelbrecht's design eliminates on-site cutting by limiting solid walls to rectangular areas of modular dimensions, with glass at gable ends and in floor-to-ceiling windows. Roof dimensions are determined by maximum sizes of board-and-batten siding, which is used with a baked-on vinyl coating as a finished roof surface.

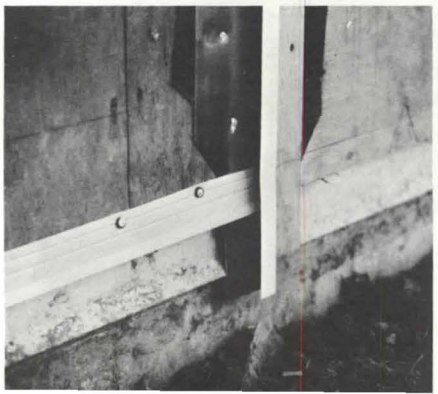
To overcome problems of expansion, the aluminium wall panels have been anchored only at the center; other connections are made with nails inserted through elongated, gasketed holes, so that the panels can expand and contract freely. End conditions required new design for expansion trim, now produced as a standard product.

ducers and the consumers would benefit.

"Even without this striving for too broad a market, the varied and unpredictable uses of any given product introduce the economic waste of over-design. The manufacturer of an air-conditioning unit, for instance, must provide a substantial margin of reserve capacity to allow for errors, unforeseen conditions, or simply overoptimism on the part of the specifier. The same is true of a manufacturer of beams or trusses or any other components. This problem of over-design to provide a safety factor can be minimized through the design of integrated systems of components for entire buildings, each component filling a predictable function.

"One area in which the manufacturer can achieve substantial, legitimate economies—with the help of sound design counsel—is in reducing the number of variations, sizes, colors, etc., of the components that go into his products. With the help of a good designer, it is often possible to produce a broader line of products—each one tailored to a specific need—with a drastically reduced inventory of basic components and materials. This reassessment of the manufacturer's line and its component elements is the most promising area in which the designer can collaborate with the manufacturer."





WENDELL LOVETT, an architect who has designed a mass-produced fireplace, feels that most architects are too ready to accept standardized components.

"The question of how much to design and how much standardized material to borrow is one that each architect must decide for himself. Certainly all must use some standardized elements: a brick, a 2 x 4, a flush door, or perhaps a wall system.

"The danger, however, as I see it, lies in the extreme case of overindulgence or 'specification designing'—neatly avoiding all detail decisions about cabinets, stairs, handrails, lighting fixtures, fireplaces, etc. The dull buildings that result from this approach dominate our landscape.

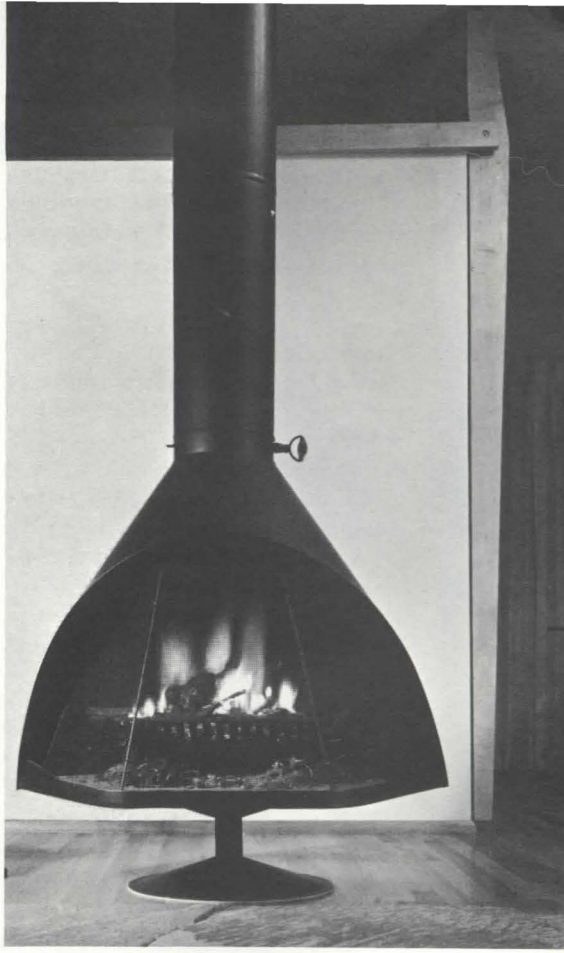
"To see how truly boring such structures are, one might contrast a typical example with any of Aalto's buildings or with Asplund's Law Courts Addition in Gothenberg, Sweden. Every part of this building conveys evidence of the love and care of the architect. The major interior space is a dynamic spatial experience, and, at the same time, a beautiful exhibition of carefully evolved design—the work of one man. The lighting fixtures, tables, chairs—even the drinking fountains of clear acrylic plastic supported on elegantly formed chrome steel brackets—are all evidence of design challenges accepted and nobly met. This, in my opinion, is true design.

"To me, design is not design if one simply repeats oneself or assembles components. It may be quick and easy (the fee is the same whether one designs or merely specifies), but there is certainly much less satisfaction. I have been surprised, in most instances, to find that the special design costs little more than the production item.

"It is fortunate for me that most architects disagree. The wide acceptance and use of my prefabricated 'Firehood' never ceases to amaze me, perhaps because I have used it so little—only once or twice—without modification. It isn't that I don't like it, only that I feel compelled to move on to other solutions.

"One further reason for doing your own designing is that you never know when you may discover something—like Firehood—worth sharing with others. One of my subsequent variations on the Firehood is now being considered for manufacture.

"This reminds me how difficult it was, at first, to find a manufacturer for Firehood, and then to find interested sales outlets. Now the major problem is discouraging the copyists from flooding the market with inferior approximations. Perhaps it was ever thus."



The design of the Lovett's Firehood (above) *is based on the transformation of a flat, rectangular sheet of steel into a conical form without cutting. This conical element was designed by Lovett while he was working in the office of Bassetti & Morse. He later developed the cast-iron hearth, folding screen, and pedestal. With the co-operation of his former employees, he obtained a patent on the complete assembly in his name, with interests assigned to Bassetti, Morse, and Van Horne, his associates in the original design. The unit is manufactured by Condon-King, Inc., of Seattle. In some of his own houses, Lovett has used the standard version, and in others he has developed variations* (below). *The unit has appeared in many outstanding houses such as Charles Moore's house at Boulder Creek, California* (MAY 1964 P/A).

Leon Lipshutz of CARL KOCH & ASSOCIATES advocates systems of components for entire buildings as the best means of obtaining the benefits of mass production.

"Architects often fail to realize the distinction between the mass-produced items and those that are actually produced to order, since they may be treated similarly in the catalogue; the difference may show up in the price, however. A window-wall manufacturer, for instance, steadily turns out a few of the most popular sizes on an assembly line. When an order comes in for any of the numerous other sizes offered in the catalogue, it means an interruption in the operation, with its attendant paper work, etc. The architect who wants the economic advantages of mass-production should know which items are really mass-produced before he designs.

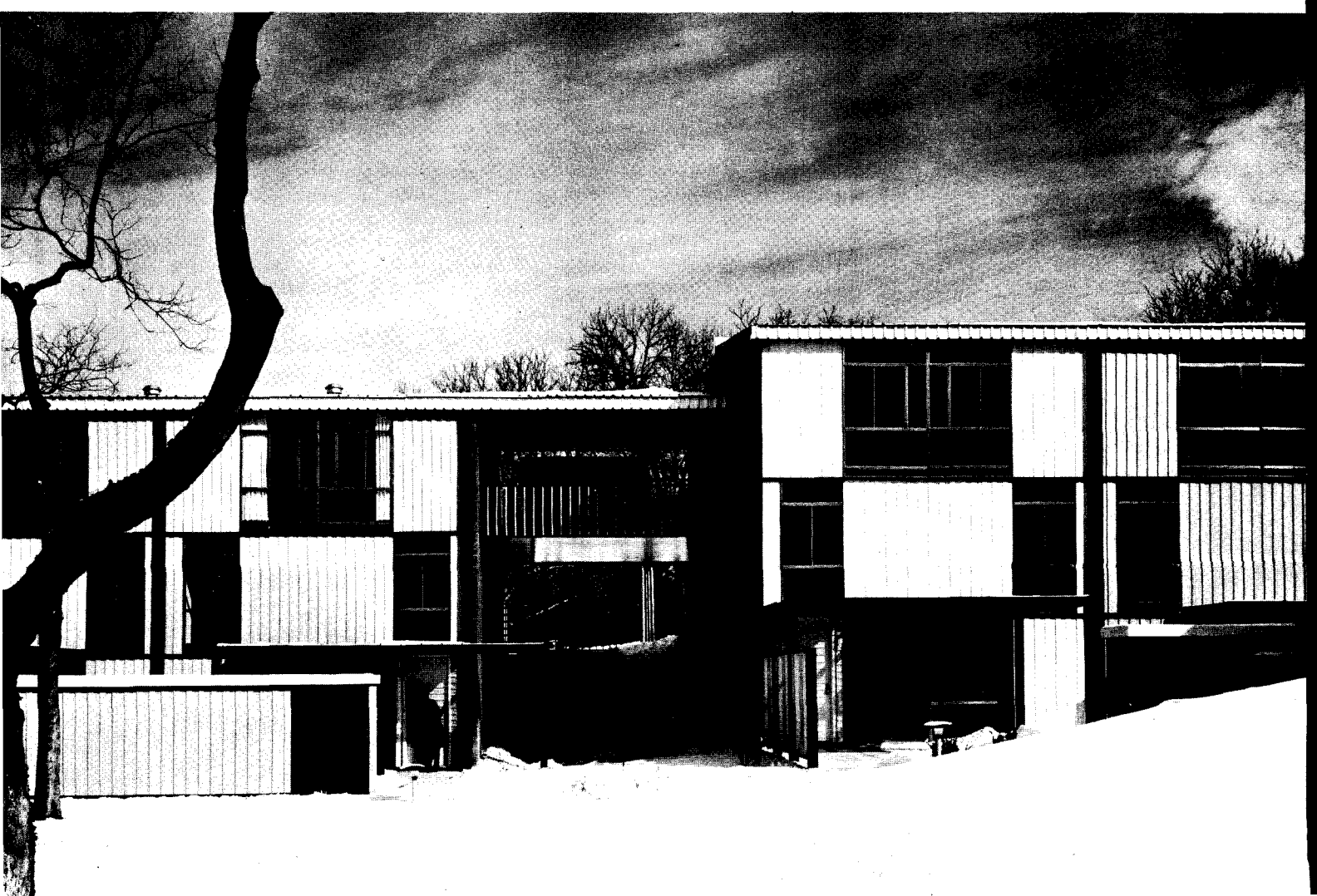
"Design of whole building systems to be marketed as related units is the best way to obtain the real benefits of mass production. It eliminates the costs of modifications, shop drawings, engineering, redundancies and extra site work, all of which cost money—either as fees or as part of the product price. For an off-the-shelf building, even parts that are not supplied, such as foundations, can be pre-engineered.

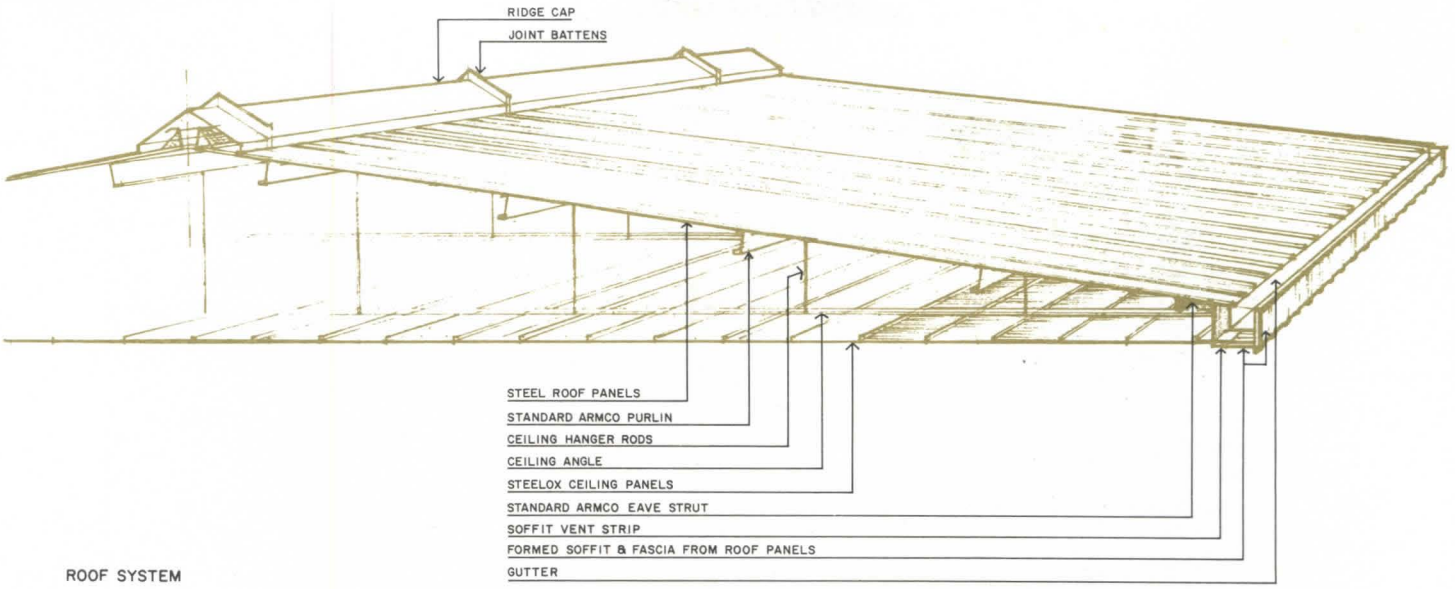
"Koch's experience in industrially produced components goes back to the prefabricated Lustron House of 1949, which had a steel frame and porcelain-enamel wall panels. Our office has worked on the Acorn House—a prefab in wood—and the Techbuilt system, now on the market—a wood panel system that provides great versatility using fairly conventional components.

"Back in 1952, we worked with a manufacturer on a luminous ceiling of corrugated vinyl sheet for the Fitchburg Youth Library; this was probably the first large area of luminous ceiling ever installed. The design was based on a system developed at M.I.T., which used small sheets of corrugated acrylic plastic. The vinyl sheet has to be replaced periodically, but it is more economical initially and its replacement cost must be considered in relation to the maintenance costs of permanent materials. It is still being produced in substantially the same form by Luminous Ceilings, Inc., of Chicago.

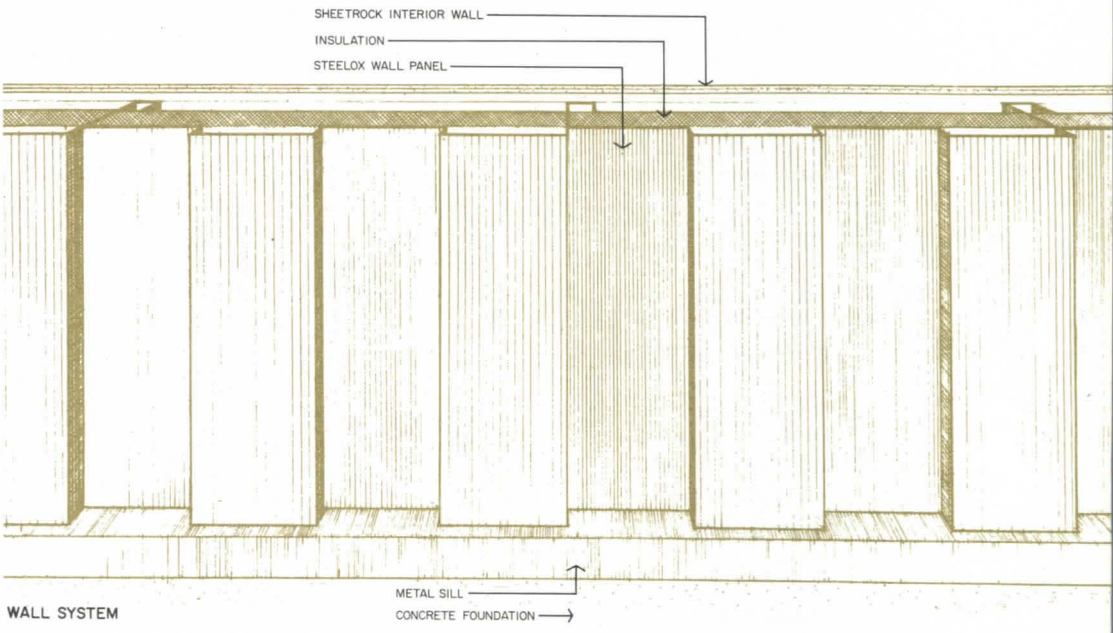
"The office has worked on steel systems for houses, apartments, dormitories, etc., with National Steel and Armco. In our work with National Steel, the problem of marketing house components was considered. The company was producing industrial building packages, which were marketed through their building dealers. They were also marketing studs, joists, beams, and siding through other outlets —mainly metal fabricators. This required individual selling, engineering, and shop drawings. It was felt that neither of these outlets would be a satisfactory local outlet for a system of pre-engineered building components. There are long established local distribution systems for wood products, etc., but none for small-scale metal structural components.

"For Armco we developed two related systems, one for houses [p. 154, FEBRUARY 1963 P/A] and the other for garden apartments and other larger-scale housing types. These designs were based on Armco's existing line of off-the-shelf industrial and commercial buildings. The modification of these components to fit residential needs and their integration with residential mechanical systems is typical of the kind of design that can be done only by an architect."



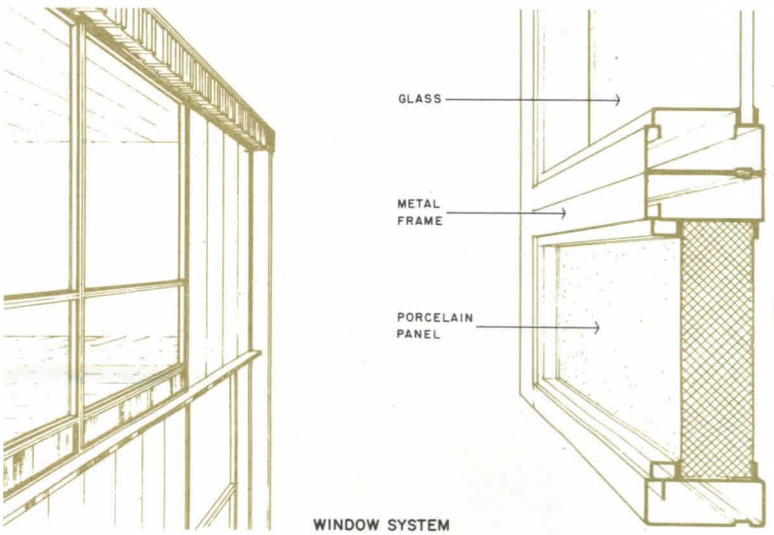


ROOF SYSTEM

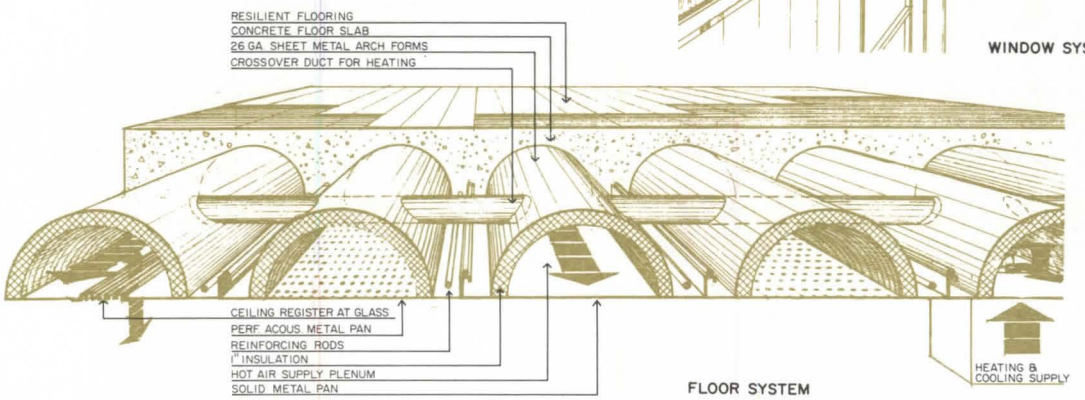


WALL SYSTEM

A system of components for low-cost garden apartment construction, developed by Koch's office for Armco Steel, is based on elements of Armco's existing line of off-the-shelf buildings. The roof system is designed for a maximum span of 20 ft between masonry party walls. The wall panels are similar to Armco's standard "Steelox" panels, except that changes of plane at 4-in. intervals have been introduced to prevent "oil-canning"—and incidentally to provide a texture of residential scale. The complex floor system, which incorporates an air-distribution system, provides excellent fire resistance and sound isolation for its cost. It is an example of the kind of multipurpose components that can be designed when the entire building is taken as a product design problem—a problem that only the architect is qualified to solve. A related system for house construction (p. 154, FEBRUARY 1963 P/A) *had a truss roof, spanning between side walls, in which roof and ceiling panels served as the upper and lower chords of the truss.*



WINDOW SYSTEM



FLOOR SYSTEM

Carter H. Manny, Jr., a partner in the Chicago firm of C. F. MURPHY ASSOCIATES, describes their collaboration with two manufacturers on the design of a single item.

"We realized early in the O'Hare Airport project (pp. 102–111, AUGUST 1963 P/A) that the baggage scales would be important design elements in the ticket counter areas. Existing scales were not very attractive and differed widely from one manufacturer's line to another's.

"We approached the Airline Technical Committee for O'Hare, a group of facilities men, some of whom had had architectural training. Surprisingly, they agreed to our proposal for a uniform scale design, provided that: (1) we could get the cooperation of more than one manufacturer to assure a competitive price structure; (2) prices would be no higher than for existing models; and (3) the approved design would permit the same choice of sizes and special audio-visual features as existing models.

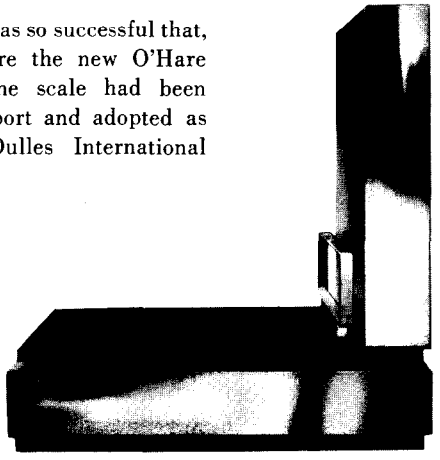
"We then proceeded to contact the three manufacturers who were then furnishing scales to the airlines. Two of them—Detecto Scales, Inc., and Triner Scale and Manufacturing Company—agreed to participate in the design program. After familiarizing ourselves with the problem, we prepared a design for a new envelope which was submitted to the manufacturers for further discussion.

"Eventually, both manufacturers prepared mock-ups and presented them to the airlines with cost data. The airlines approved and we then proceeded to make further refinements and set up uniform specifications based on the best details of both manufacturers' proposals.

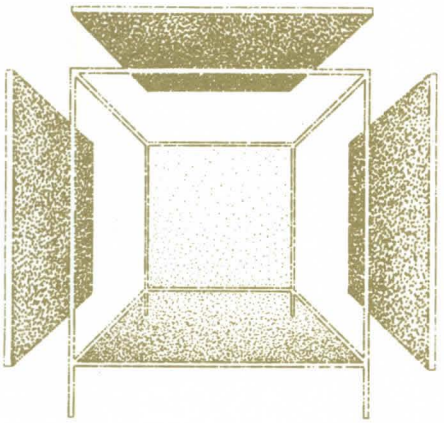
"There was considerable discussion at this point of such small details as the corners of the housing; finally, relieved corners were adopted. There was also extended discussion about the platform material. We proposed a very hard black rubber, which made the stainless-steel upright portion of the scale take on a rich gleam. In this, we were overruled by the airlines, who were concerned that rubber would pose a maintenance problem after long service. Rubber and stainless steel remained permissible options, but in the end the airlines unanimously chose stainless.

"During the development of the design, one of the manufacturers undertook the complete re-engineering of his scale mechanism, a side benefit of our visual re-evaluation.

"The final design was so successful that, several months before the new O'Hare terminals opened, the scale had been used at Atlanta Airport and adopted as the standard for Dulles International Airport."



Contributions of Other Professions



Architects and industrial designers are not the only independent professionals involved in the design of building products. Engineers and consultants of various types are often brought in as third parties in the design of components, whether they are originally designed for mass production or for use in one specific building. In other cases, they may initiate new designs and seek manufacturers for them.

The work of mechanical and electrical engineers in the area of building components is too specialized and involved to be considered here. Brief discussions of the work of a firm of acoustical consultants and a structural engineer, however, shed some light on roles of other professionals in building product design.

Members of the firm of BOLT, BERANEK & NEWMAN comment on their own role as acoustical consultants on component design and on the need for architects to understand the manufacturer's position.

"We have been involved in the development of many building components, often as consultants on the acoustical aspects of components for specific buildings (partitions, curtain walls, and ceiling systems, for instance), many of which later became standard production items. The original staff members of our firm included physicists, electrical engineers, and architects, and the firm now includes a variety of allied professions that can be called on to solve acoustical problems posed by present-day building technology.

"We have been consulted on the design and evaluation of movable office partitions and ceiling systems at almost every step in the evolution of these products. We always have to recognize the interrelationships between the acoustical characteristics of various components—pointing out, for instance, that increasing the noise production of air-conditioning diffusers might be more practical than increasing the acoustical isolation of walls and ceilings—or that increasing the sound isolation of the wall above that of the ceiling is wasteful.

"These considerations led us to develop design techniques that allow consideration of all the significant variables in a given acoustical problem. One such design tool is the 'Speech Privacy Design Analyzer' developed for Owens-Corning, which gives the architect or designer an assessment of the magnitude of his problem, as well as valid comparative information on office wall, ceiling, and mechanical components of many manufacturers. Using it, he can choose a balanced system

of components to solve speech privacy problems. Access to such realistic technical information is critical, especially with mass-produced lightweight movable components, since no system can perform well if individual components are improperly selected and used.

"The architect's attitude toward building components on the market is often based on an inadequate understanding of the manufacturer's problems. It is characteristic of young architects, in particular, to condemn mass-produced components in general.

"We are often consulted by architects who have an idea for a new product. Many of them find it difficult to understand why a manufacturer will not give immediate acceptance and support to an untested product idea. We have to point out that someone has to pay for the long and tedious process of design development, testing of prototypes, retooling, promotion, marketing, etc., and still take the risk that the product may not sell.

"We are familiar with these problems because we have designed building components for which we have sought manufacturers. Some of them, such as a package sound-attenuating unit for air-conditioning ducts and a translucent sound-absorbing material for luminous ceilings, have been successfully produced commercially. Other components, for which we supported lengthy developmental programs, may never be accepted for production."

Structural engineer T. Y. LIN tells why his firm designed a series of precast concrete beams and how they deal with its producers.

The Lin Tee beams originated around 1957, when our firm sensed a need for standardization in precast-prestressed structural components. We realized that in the totalitarian countries standardization in concrete components had progressed much faster than in this country, where standardization cannot be imposed. The lack of leadership from industry, government, or the professions thrust the responsibility on us, as pioneers in the field of precast concrete construction.

"Since we had no commission from a client to design these components, we had to make it a self-supporting endeavor. We did not feel, however, that we could patent these components, because our purpose of standardization would then be defeated by the reluctance of architects and engineers to specify patented products. Hence, we decided not to apply for a patent, but to hold a copyright on the name Lin Tee.

"Thus anyone can make an identical beam, but only those holding franchises from us can use the name Lin Tee. Franchisees pay only a lump sum of about $1000, for which they get a set of key tables giving the standards for prestressing steel and the right to use the name.

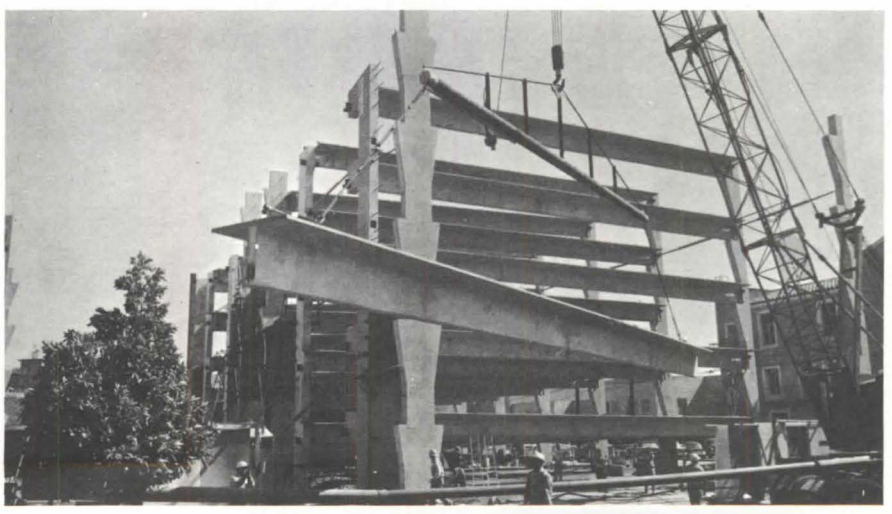
This fee is low enough that producers have generally been willing to pay for the convenience and the name. It is barely enough, however, to cover our costs in the developing of the components.

"We are often asked why we were interested in this effort if it did not make any money for us. The answer is simply that we felt it was needed and it gave us a good name as contributors to this field. It has also given us some trouble, however, since some architects and engineers think we are Lin Tee producers, which we are not.

"There are now some 50 franchised producers of them in the U.S. and Canada. These producers often come to us for additional technical or promotional advice. As a result, we obtain consulting work that adds to our practice. It also adds valuable experience for our engineers, who thus have direct contact with producers and their production facilities.

"After the franchise is granted, the only fees we receive from producers are for consulting. We get no royalties; if they produce 1000 Lin Tees without consulting us, we do not get one cent.

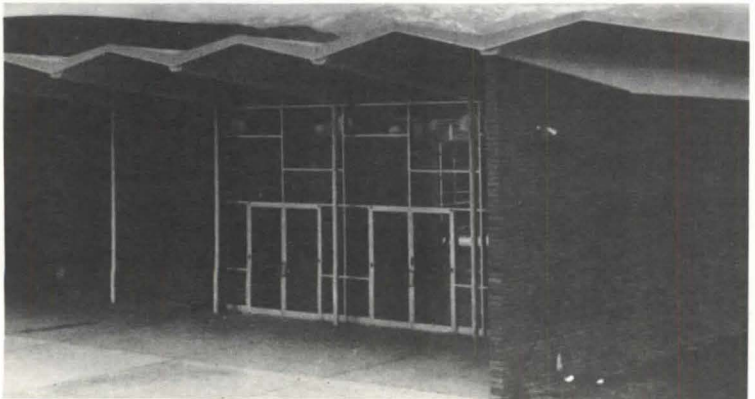
"On rare occasions, some of the franchised plants have produced defective beams, and they have been held financially responsible for them. There is no question of the adequacy of the design, as it has been proven time and time again. Of course, the engineers who incorporate them in their structures have to understand their behavior and use them properly, as they would any other component."



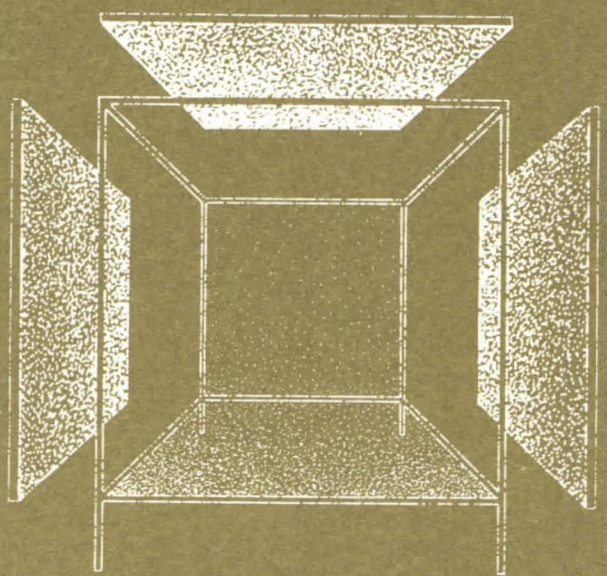
Lin Tees (right) *can be made in depths from 12 in. to 48 in., in widths from 4 ft to 10 ft, and in lengths up to 120 ft. Stems are 8 in. or more in thickness, to insure adequate concrete cover for fire resistance.*

The success of the Lin Tees led to the development of the Lin "Y" for roofs (below), *which has flanges tilted from the horizontal at angles adjustable by 5° increments between 15° to 35°. Due to its superior sectional properties, the Lin "Y" will span further than a Lin Tee of comparable dimensions and reinforcing.*

A single adjustable form (below right) *is now available for producing both Tees and "Y's" in the full range of sizes.*



Manufacturers' Design Process



The architectural designer and specifier thinks of building products in terms of fulfilling an individual need, but the manufacturer is concerned about standardization and the multiple use of his equipment. This point of view establishes basic limitations on the design of building components. The manufacturer, in addition, is often limited by the caliber of design talent he can attract to his organization, since top designers often prefer to devote their talents to other areas of artistic expression. To what extent a manufacturer can successfully take advantage of outside design consultants depends upon many factors. The firms interviewed for this section of the issue reported the following as their principal sources for establishing new designs: the internal design group; the use of architectural, industrial, and engineering consultants; employment of an architectural service organization; and reliance on employees possessing a high degree of ingenuity. In general, the most successful product designs were found in those organizations that have developed competent internal design groups whose members possessed a comprehensive background of training and experiences.

"Product development," says Richard F. Smith of ARMSTRONG CORK COMPANY, "is not an isolated activity conducted by a single department, but is in fact an intensely collaborative one."

Armstrong's four primary divisions are concerned with building products, flooring materials, packaging, and industrial products. Since the spring of 1963, all styling and design activities for these divisions have been headed by Director Richard F. Smith, who in turn reports to the office of the Company's president. This newly created Product Styling and Design Department, comprising about 45 people, is centralized in a Design Center at Lancaster, Pa., where Armstrong's headquarters are located. Those who make up this group have various backgrounds in the arts and represent a diversification of design talents. Approximately two-thirds are professionally trained, with the remainder being clerical employees and technicians. New designers are recruited from design schools and universities in the eastern half of the United States. (Smith himself holds a Bachelor in Fine Arts from Yale and a Master's Degree in Fine Arts from the University of Illinois.) At present, there are no architecturally trained designers on the staff, but future plans include this logical move. In addition, the design department has the advantage of working closely with the company's architectural group (a part of the Central Engineering Department) on various projects where an interchange of thinking could prove helpful.

There are five related aspects to product development at Armstrong: research and development, marketing, engineering, production, and product styling and design. Product development, therefore, is not an isolated activity conducted by a single department, but is in fact an intensely collaborative one.

Product ideas can and do originate in these and other areas of the company. Early in the product development process, a model prototype is made that illustrates the proposed appearance and specifications of the target product. Members of the development team then evaluate possible problems related to their individual areas or skills. The prototype can also be used as a medium to solicit opinions from eventual specifiers and end-users. Thus a prototype model analysis becomes a key activity.

There are inherent advantages in having an internal design group. In addition to the close working relationship outlined above, there is a useful continuity in letting a group of designers concentrate on a particular product area over a period of time. To combat any negative effects of continued specialization and to insure that designers have exposure to sources of inspiration, Armstrong's Design Center has a library that makes available about 35 magazines and periodicals and a growing collection of books on a broad range of visual arts subjects. Modest collections of nature specimens and artifacts have also been started, and designers regularly visit museums, new buildings, and exhibitions as part of a planned program.

For several years, Armstrong has made a practice of inviting architects to Lancaster via company plane to visit its production, styling, and research facilities, and to participate in round-table discussions on building industry needs.

When products reach the late stages of development, more detailed surveys of architectural and end-user opinions are conducted by the company's Market Research Department, using test samples which are indicative of actual production quality. These surveys have often proven helpful in refining final appearance or functional characteristics to an optimum degree. Experience has shown, however, that there is sometimes a disparity between what architects say they prefer in open discussion, and what they actually select in practice. Therefore, Armstrong does not rely solely on these research results. Additional factors that help shape the goals of the product development program include reports from field sales organizations, and field trips taken by marketing, design, and research personnel.

Smith explains that an elementary difference exists in the point of view of the specifier and the manufacturer. The former is largely concerned with the appropriateness of the product for a specific project, while the latter is principally concerned with the product's possible use in a great number of varying building types and locations. It is essential, therefore, that the industry take a broad view in developing products, distribution, and sale. This may possibly explain why some products seem inappropriate for a particular application. It is difficult to make universal products that will be appropriate to every situation.

With reference to the future, Smith feels that the rate of product modification and technological change will continue to accelerate. There will be more products to choose from, and a greater degree of difference between them. Increasingly, manufacturers will perceive that they are not only competing with suppliers of similar products and materials, but with those who produce significantly different materials that offer alternative ways to satisfy building requirements.

Smith expects that it will be increasingly difficult for building products companies to chart their new product development course. The design group at Armstrong normally works on projects expected to be achievable in a two- or three-year period, but many of the Research Center projects may be expected to stretch out 10 years before they can be successfully realized. In the years to come, Smith believes that many more designers and architects will take their place alongside the research scientist and the engineers as full-time members of manufacturing organizations.

A continuing program of product development makes it necessary to arrange goals in a logical sequence and to employ a generally evolutionary method. The specific example of ceiling products developed for the contract market illustrates Armstrong's concept of continuity in product development.

Prior to 1957, acoustical ceiling products for the commercial and institutional market consisted primarily of tile items having only one function—sound absorption **(1)**. In 1959, Armstrong pioneered the concept of a time-design rated ceiling, marking the first significant step in the process of functional integration. Time-design rated ceilings offered a second function: fire protection to the structural members located above the ceiling **(2)**. As such, they eliminated the need, in most instances, for a separately applied fireproofing material on the structural members themselves. This resulted in substantial building economies.

Function number three—a fully engineered means of utilizing the ceiling and the space above it to control and distribute conditioned air—was introduced late in 1961 **(3)**. The advantages again were self-evident in that: (1) air distribution was quieter and more uniform; and (2) a great deal of ductwork and diffusers could be eliminated. Two significant Armstrong developments were involved in the ventilating ceiling concept. One was a workable engineering procedure that answered many of the me-

chanical and engineering problems associated with plenum air supply. Today, this procedure is the standard by which plenum air supply and ventilating ceilings are used and specified. The other significant contribution was the attention devoted to product appearance. Armstrong designers were successful in blending the ventilating perforations into the pattern of the tile itself so that the openings were virtually invisible. The result was a nearly monolithic ceiling appearance, unbroken by any type of air distribution outlet whatsoever.

By now, the approach to new product development was clear. The company's over-all objective was to continue developing multifunctional ceiling systems that offered measurable advantages to both the specifier and ultimate building occupant. This is when their researchers began to look seriously at lighting.

The first question the company asked was, "What place, if any, does lighting have as a function of our business?" It was immediately determined that there was a relationship simply because of the physical proximity of lighting components and their aesthetic relation to the ceiling. It was then asked, "Is this relationship such that it could be considered a logical and worthwhile business endeavor?" The answer again was almost self-evident: few ceiling installations were being installed that did not incorporate some type of lighting. The design team realized that the problem was one of determining the best possible relationship aesthetically, mechanically, and from an economic point of view, between the light source and the ceiling product.

In analyzing possible solutions, a thorough study of commercial lighting, as it was currently offered on the market, was undertaken. Certain factors became apparent. The best-looking recessed troffers on the market were quite expensive, quite heavy and bulky, and required independent hanging to achieve satisfactory installation. The lighting efficiency and quality of these units also left something to be desired.

Therefore, the development of a lighting system superior to *anything* currently on the market was established as a goal. It was decided to retain, if possible, the fire-resistant, ventilating, and acoustical properties of the earlier ceiling systems. Specific performance goals and requirements for the new system were set down by research and development personnel. Design personnel were educated in the basic technology of lighting and lighting characteristics from an aesthetic point of view. Rough mock-ups, prototypes, models, and sketches were worked out, reviewed, and developed to full-scale prototypes for performance testing. Company engineers participated by maintaining an evaluation service to review construction feasibility and installation, as well as electrical and mechanical requirements of the various proposals and options. Factors of cost, appearance, installation, and performance were constantly reappraised and adjusted to find the optimum solution. As the basic system started to emerge, several steps were taken to insure the widest possible acceptance from a performance and aesthetic point of view. In particular, it was determined that at least three different lighting fixtures must be offered, so that a variety of illumination levels could be achieved. Also, it was recognized that a variety of lensing media would be necessary to control brightness and to meet various aesthetic requirements. Since the Luminaire system offered wide potential for specialized installation techniques, preliminary steps were taken to work out several different design possibilities. These included positioning a group of Luminaire modules among flat ceiling panels, or "floating" the Luminaire ceiling with no visible border panels whatsoever. Other possibilities included alternating the Luminaire modules with flat modules, or alternating lighted modules with unlighted modules.

The designers believe that the Luminaire system more than adequately fulfills the goal established in the developmental stage (4). From a lighting point of view, the system is substantially more efficient than conventional recessed troffers and offers exceptional quality. The acoustic and ventilating features of earlier systems have been retained, and it is only a matter of time until the Luminaire system achieves an official fire-protection rating.

The Luminaire system offers a complete ceiling package that relieves the architect of many of the problems traditionally associated with ceiling design and installation. Complete information on all ceiling functions is available from one source, and there is only one contract responsibility. The previous problem of reconciling dissimilar products has been permanently eliminated, allowing the architect more time for planning and programming functions.

1 Straight acoustical

2 Fire Guard

3 Ventilating

4 Luminaire

"One measure of a manufacturer's success," according to William F. Blitzer of LIGHTOLIER, "is his ability to produce fresh designs that anticipate the trends of his market."

Lightolier, a 60-year-old company, produces and sells the two basic types of lighting devices: fixtures and lamps. Its Design Department is headed by William F. Blitzer, Vice-President; chief designer of the Architectural Lighting Division is Noel Florence. Nine other designers are also members of this staff. Five members of this design group have educational and vocational backgrounds in engineering; one has an architectural background; and three have had industrial design training.

According to Blitzer, "the design department plans new merchandise in conjunction with the merchandise managers. It plays a major role in determining product policy and in making merchandising decisions. Its basic responsibility, however, is product design."

Designs for Lightolier's new architectural products are generally created within the company and outside consulting services are used only to a minor degree. Inspirational ideas that may spark the development of a product, however, may come from any number of external sources of influence. In developing their products, new manufacturing processes and new uses of new materials are extremely important to the designers. Aluminum extrusions, die-castings, two-color plastic extrusions, and molded plastics of many types (which Blitzer calls "the most challenging material of our time") are materials that hold special interest.

A review of some of Lightolier's better known products will illustrate some of the ways in which its fixtures are conceived and take form. "Lyteline," for example, was inspired somewhat more than 10 years ago by two basic designs **(1)**. One was from the interior design work of an architect practicing abroad, and the other from the design of an American architect who needed a custom lighting solution to solve a specific problem of wall lighting. The two concepts were united and developed into the fixture illustrated.

The idea for "Shelflite" originated in a study of desk lighting by the Illuminating Engineering Society. Lightolier's design group took the basic recommendations and developed them into a mass-produced, efficient lighting product giving optimum visual comfort **(2, 2A)**.

While visiting the home of a friend, one of Lightolier's designers was intrigued with a shoji screen, placed to conceal an unimportant view. The reticulated wood elements of the shoji grid seemed to present a promising means of supporting the diffuser for a wide shallow fluorescent fixture, and thus an aesthetic impression was translated into a functional use. This wafer-thin fixture, called "Corona," was developed in five sizes and shapes to provide large-area surface mounted units. It has come into wide use partly because its introduction of wood added a new note of softness and richness and partly because its shallow depth gives the illusion of being built-in. An additional advantageous feature was that, being a surface-mounted fixture, it required a less complicated ceiling construction. This also made the fixture appropriate for modernization work. Its fluorescent lamp sources are placed fairly far apart and the shoji grid conceals the "bright" streaks in the diffusing element.

It was reasoned that if this design concept could be made more efficient, its application could be extended to more types of commercial and institutional use. To do this, it was decided to replace the opal diffuser with a prismatic lens having higher efficiency and better brightness control. To achieve a new character, the frame and grid were made of extruded aluminum rather than wood. The "Diplomat" has a medium bronze anodic finish, and natural aluminum and other anodic finishes are available to special order **(3)**.

In working with architects on custom-lighting installations, the design group plays an important part in the effort to refine the joints between the fixture and ceiling. At the same time, they are able to eliminate many of the problems in connection with on-site installation and avoid the clumsy appearance of many installations where many trades involved interfere with one another. "Prismalux" was the result of many lighting schemes developed for the Chase Manhattan Bank in collaboration with architects Skidmore, Owings & Merrill **(4, 4A)**. The evolution proceeded from a luminous ceiling solution to a fixture application. The architects' design called for the narrowest possible flange that would at the same time be flush with the ceiling. Success in this design was in large measure due to the architects' relentless plugging for what they wanted. Satisfied with its success, SOM has specified this fixture on a number of other large projects, as well as for some small-scale commissions. The system combined air-conditioning diffuser elements that can be placed at needed locations.

The "less is more" reaction of architects to recessed lighting in general has stimulated a constant search at Lightolier for the cleanest integration of the fixture with the ceiling. Die-casting and compression molding offered more precision and versatility than the conventional spun and stamped sheet metal approach; and being familiar with these techniques through its production of functional lamps, the design staff used them to develop the "Duo-Cast" group of "Calculites." These downlights get their refined appearance from the die-cast trim system **(5)**, which is reversible in the field to produce either a narrow flange for dry ceilings or a completely flush (and rustproof) installation in plaster ceilings.

The "Lytespan" concept was born in 1956 in the form of a pole lamp, a continuously electrified floor-ceiling column along which, at any point, it was possible to attach any one of a number of lighting devices **(6)**.

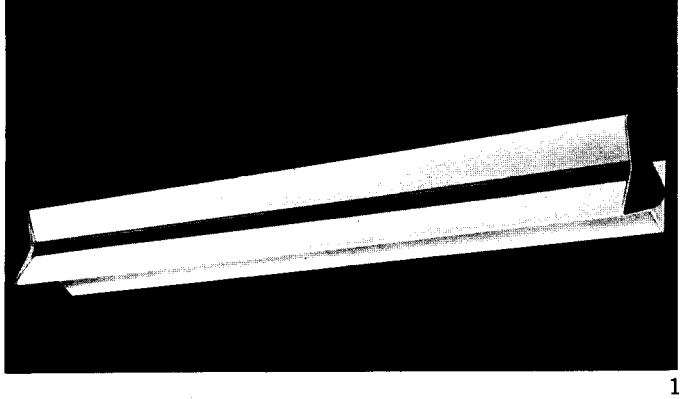
Shortly after the introduction of the Lytespan pole lamp, there were indications of interest from architects and engineers for the use of this lighting method on the ceiling or on the wall, as a fixed element rather than as a pole lamp.

The concept of an electrified track had been introduced some years earlier as an industrial product for use in feeding electric hand tools in assembly areas. This same product had been taken by a few architects and used for store lighting. Like any product, however, which is conceived for one use and then adapted to another, it did not serve the secondary use as well as the original intended purpose. Significant improvements were considered possible using Lytespan construction principles based on aluminum extrusions, as opposed to light-gage steel rolled sections. These areas of improvement were: appearance, greater versatility in installation, ease of maintenance, and electrical accessibility.

During the design process, which extended for a period of over five years, there were frequent conferences with architects. To a considerable extent, these meetings influenced the way in which the product was to be installed (on stems, surface-mounted, recessed, right-angle connection, etc.), its finished appearance, and the detailing of joints.

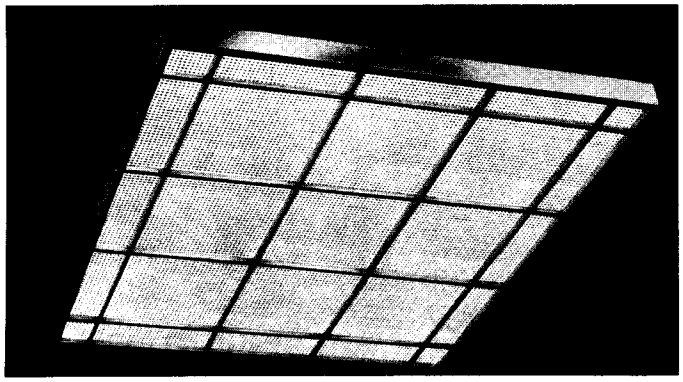
The excessively long development time for this product was due, to a considerable degree, to the necessity of obtaining Underwriters' Laboratories approval on a product for which standards had not yet been written.

In developing the spotlights for this system, Lightolier worked with several consultants: an architect, an electrical engineer, and a display lighting specialist. The resulting group of "Lytespots" is versatile in performance and clean in appearance **(7)**.

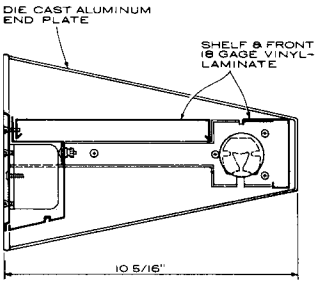


1

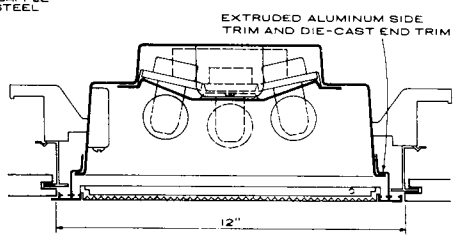
2



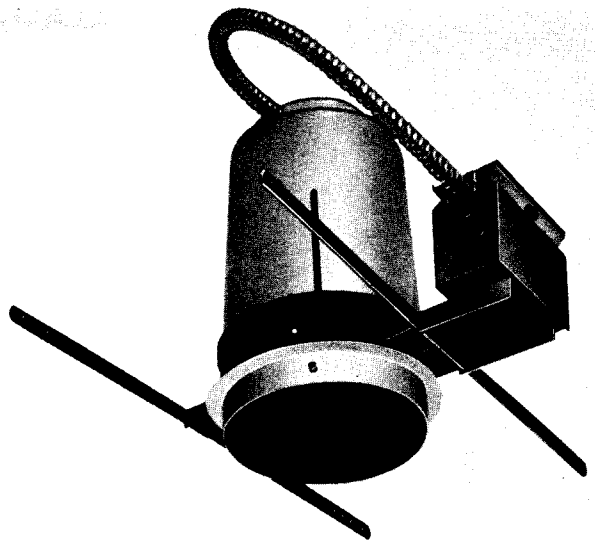
3



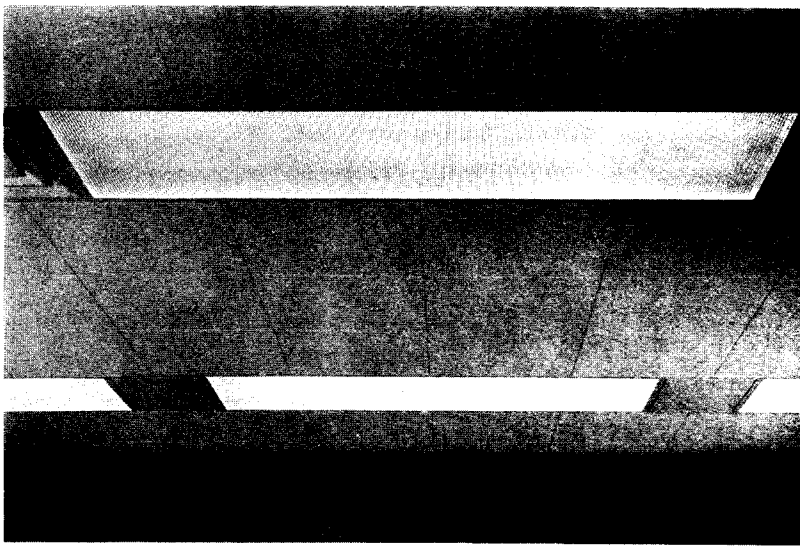
2A



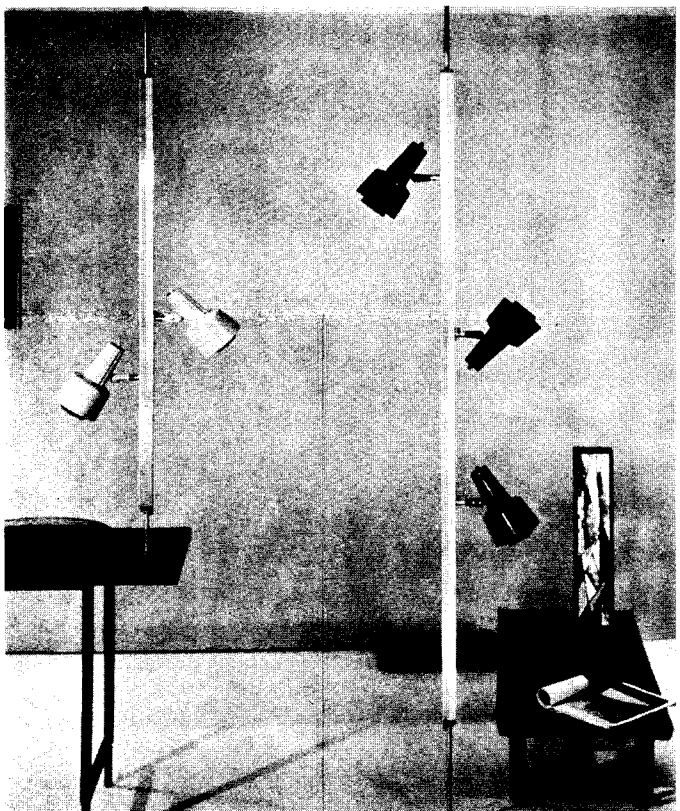
4A



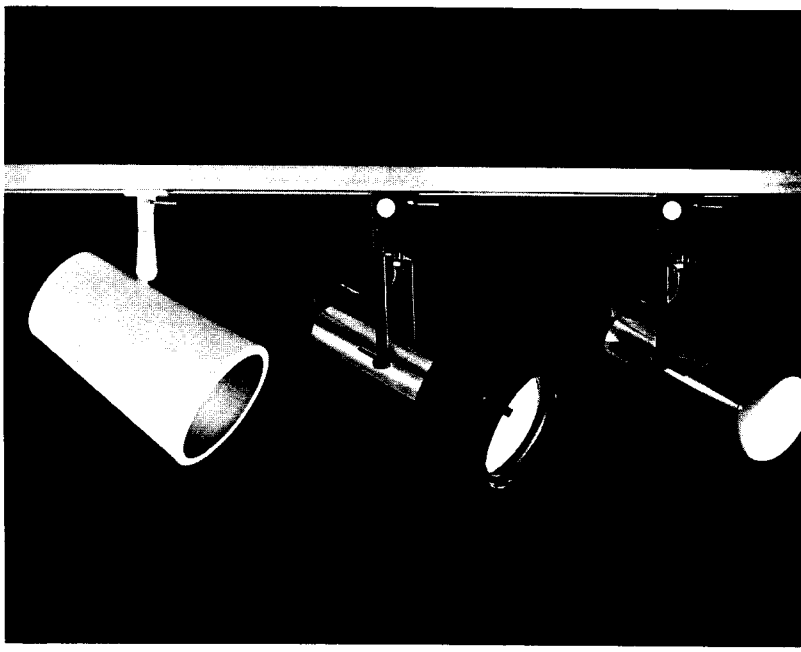
5



4



6



7

Because of its constant quest for new related component developments, JULIUS BLUM AND COMPANY engaged the services of a small but unique organization devoted entirely to the problems of architectural marketing.

In contrast to industrial complexes that have highly organized design departments and develop an array of new products annually, there are the smaller producers of architectural components who, in addition to continually refining their line of products, make use of outside services. One example of such a case is the development history of "Curtainscreen," manufactured by Julius Blum and Company, Carlstadt, N. J. Because of its constant quest for new railing developments, this company originally requested that Seery & Company, of Louisville, Kentucky, design additional components that would satisfy a variety of decorative railing problems. At that time, Seery & Company, which is a small but unique service organization devoted entirely to problems of architectural marketing, prevailed upon its client to investigate a broader system that would accomplish this end, and, in addition, be applicable for screening applications. At the time, there was no such system being marketed and the company readily accepted this suggestion.

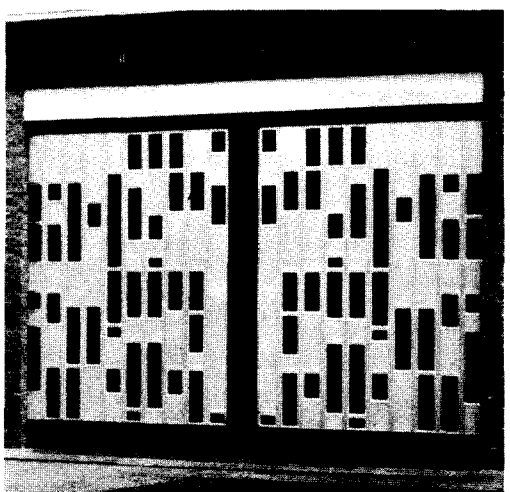
In developing the product, several alternate approaches were possible. One was to use pre-formed sheet that would be slipped together and braced with channels and angles. Another approach was to employ bar stock of varying dimensions and spacings manufactured in the manner of gratings. Still a third possibility was the use of aluminum extrusions—the system that was eventually accepted and under which it is marketed today. Early investigations were made of mock-ups of designs in sheet, bar stock, and aluminum extrusions. It was discovered that the first two systems were limited in their application flexibility. Consequently, the decision was made to continue investigation of the screening system in extrusions that did have the advantage of greater flexibility.

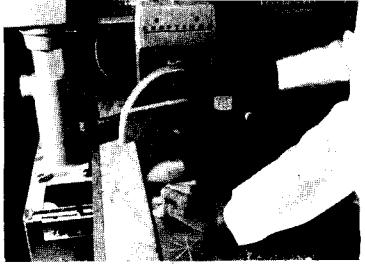
First attempts in designing with aluminum extrusions proved to be too heavy. The desired flexibility, however, was present. As a result of having built the dies and prepared a first mock-up, it was decided to alter the extrusion design to employ a thinner mullion that would be visually more acceptable, lighter, and would still retain the advantages of flexibility.

Once the design of the individual components was accepted, the next goal was to create applications for various end uses for the system: vision screens, partition screens, space dividers, railings, solar screens, fences, and identification facings. The initial system is illustrated.

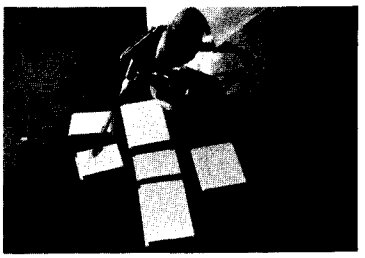
After the system had been marketed for two years, stock was taken of its sales effect. It proved to be very satisfactory. Seery reports that "One of the encouraging results of this development was that, while we tried to design a system that would give the utmost flexibility, we were surprised that architects had used the system in ways that we had not originally envisioned—for example, the doors and check booths used in the Marine Exchange Bank, in Milwaukee, by Harrison & Abramovitz [*bottom, left*], and Pasche Schroder Sprancy & Associates, and the garage doors in Monterey, California, by architect Wallace Holm [*bottom, middle*]."

Representing Julius Blum and Company in the deveolpment of this product was William Thurnauer, President, who has had three decades of experience in the architectural metal business and was responsible for most of the design and implementation of product development at Blum prior to the time Seery & Company was hired for other marketing services. Seery was educated as a civil engineer, has practiced architectural engineering, and was active in the architectural metals industry before founding his own firm. It is difficult to characterize his company, yet it has a unity of operation due to a self-imposed scope of confining its services exclusively to clients who produce or merchandise architectural products.



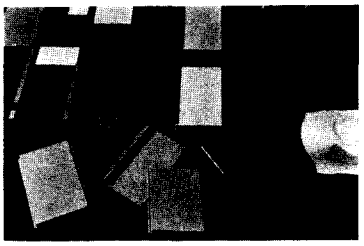


Cutting components to size.



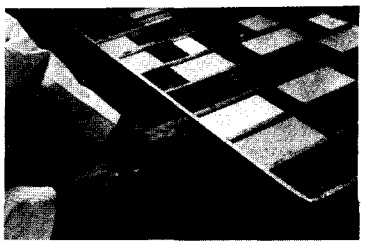
Spray enameling in desired color.

Partly assembled framework; panels are inserted into mullion grooves at determined position.



Filler rods inserted into mullion grooves assure accurate placement of panels according to design.

Holes are drilled in top bar before it is fastened to remainder of frame.



Top bar is attached with self-tapping or machine screws.

Closure is inserted into grooves of top mullion to complete assembly.

Movable partitions manufactured by the E. F. HAUSERMAN COMPANY have been evolving for several decades in response to changing design criteria and technology, with custom-designed systems setting the pace. Their newest system is, surprisingly, less industrialized than its antecedents.

The E. F. Hauserman Company began to manufacture and install prefabricated steel and glass partitions during the period of World War I as a logical extension of their original specialty—prefabricated steel sash. Most of the partitions installed during those years were located in industrial plants and had a strong family resemblance to steel sash.

It soon became apparent that prefabricated movable partitions would be of great value in office buildings as well. As business became more tightly organized, the economy of re-usable partitions and the time saved in installing them began to outweigh their greater initial cost. For office buildings, however, a less industrial-looking product was required.

The first Hauserman office partition, used in the Chrysler Building in 1928, had large glass panels (without the grid of mullions that appeared on previous models) and solid panels $\frac{3}{8}$-in. thick, composed of two sheets of steel glued to a mineral board core. The framing members and trim had complex profiles obviously imitative of typical wood molding details. The simulation of woodwork was carried to the point of offering simulated wood-grain finishes. A modification of this type—with $1\frac{1}{2}$-in. thick solid board cores in the panels—was installed in the Empire State Building (1) and throughout Rockefeller Center.

During the 1930's, the company introduced flush and semiflush partition types with improved acoustical isolation value. These types had baked enamel finishes and accommodated lay-in wiring in bases and posts. They were the standard for office use for 25 years, and still constitute a significant part of Hauserman's volume.

After World War II, there was a great demand for movable office partitions, which by then had become almost universal. It was not until the early 1950's that architects began to question the standard, available partition designs. Eero Saarinen's General Motors Technical Center (1955) was the first major project on which Hauserman collaborated with an architect on the design of a new custom-designed partition (2). Panel widths—previously limited to a maximum of 4 ft—were increased to 5-ft to correspond to the architect's module. The choice of elevations, previously limited to all solid panels or glass above a 30-in. chair-rail, was broadened to include floor-to-ceiling glass and panels with glass above an 84-in. solid panel (still called a "chair-rail" by the manufacturers). The problem of fitting doors into a 5-ft module was solved by designing door panels with full-height glass sidelights. Most of the details were worked out through the joint efforts of the company and the architect.

The partitions designed in 1957 for SOM's Connecticut General Building (3) represented an even greater departure from past standards. Panels were increased in width to 6 ft. Panel surfaces were of plastic laminate, with real woods, painted steel, and various types of glass used in some panels for variety. Double feature strips at 6-ft intervals reiterated the planning module. A later version of this partition, used in the Union Carbide Building, has a universal post that allows partitions to be erected at right angles to any other partition, starting at any panel joint. On these custom-designs for SOM, the architects generally established the desired profiles, dimensions, surface materials, and performance standards; Hauserman did the detailed design and engineering.

These custom installations set a new standard in design, but were too expensive to be repeated in the typical office building. Design, engineering, tooling, and manufacturing costs all had to be charged against a single project, and later orders for additional partition elements were even more expensive. There was an obvious demand for standardized partition systems of the same caliber, offering the same latitude for the architect.

In 1958, the company established an organized, permanent research and development program. Previously, research had been initiated as a response to particular requests; at this point, it was divorced from sales and aimed at anticipating the needs of architects, rather than following them.

To accomplish this, the company's veteran design staff was supplemented by younger designers, engineers, chemists, and others. New facilities were created for construction and testing of mock-ups. Information on acceptance and performance of products is now passed from sales personnel to the research and development department through an organized system of information exchange. The company also has a policy of consulting architects to discuss general trends or proposed innovations.

The first effort of the newly reorganized department was to design a new wall to sell at a price competitive with other movable partitions on the market, but offering greater design freedom and greater sound control. It also had to be thinner than the existing 3-in. types, with universal posts and space for electrical wiring.

The result was two distinct but related partition types—the Signature and the Delineator—both $2\frac{1}{4}$ in. thick. Air space between the two faces of the partition and gaskets around the panels increase acoustical isolation.

The two systems differ in visual effect: Signature (5) is a completely flush system, with posts identified subtly, but unapologetically, by hairlines where they meet the panels; Delineator (4), on the other hand, emphasizes the panels by revealing a recessed feature strip at each joint. The choice between these two systems for any given application would be conditioned by many factors: whether panel sizes are uniform, whether glass panels are to be used, whether distinction between movable partitions and fixed walls is to be emphasized, etc. An important feature of the two lines is that they are compatible—that they can be combined in the same job, and that many of their parts are interchangeable.

The company next turned to the problem of extending its range of markets, in particular into the field of schools, where a strong demand for operable and movable walls was developing. Although there was clearly a demand for operable walls, the acceptance of movable partitions for schools depended largely on the development of a system comparable in price to fixed partitions. Partition systems such as Signature and Delineator—and comparable products by other companies—cost roughly twice as much as fixed walls.

The company realized that if a less expensive partition were developed, it would not only be suitable for schools, but would reach a far broader range of office applications. Cheaper movable partitions could be offered to tenants by building owners as part of the lease at no extra cost. They might also be used in areas that might otherwise have fixed partitions, or no partitions at all.

In re-examining the production and installation of movable partitions, company designers realized that all previous movable metal wall systems—by Hauserman and others—had had several characteristics in common. While they were prefabricated and produced in volume, they came in a great variety of designs, dimensions, and colors, and had to be delivered

to the job-site ready for installation. Each job had to be precisely measured and engineered to yield a definite order, which might involve dozens of distinct items produced to order in varying quantities.

In order to take advantage of the capacity of production lines and eliminate detailed engineering, Hauserman developed the Double-Wall system **(6)**, which is produced in prime-coated panels of three heights and only one standard width —40 in. They are cut and fitted on the job site to meet design requirements, and finished in any color desired—and the choice can be made after installation.

The Double-Wall panels are made of steel sheet laminated to gypsum cores; two such panels secured to either side of steel posts make up a section of wall. The 3-in. air space between them can accommodate piping and electrical wiring.

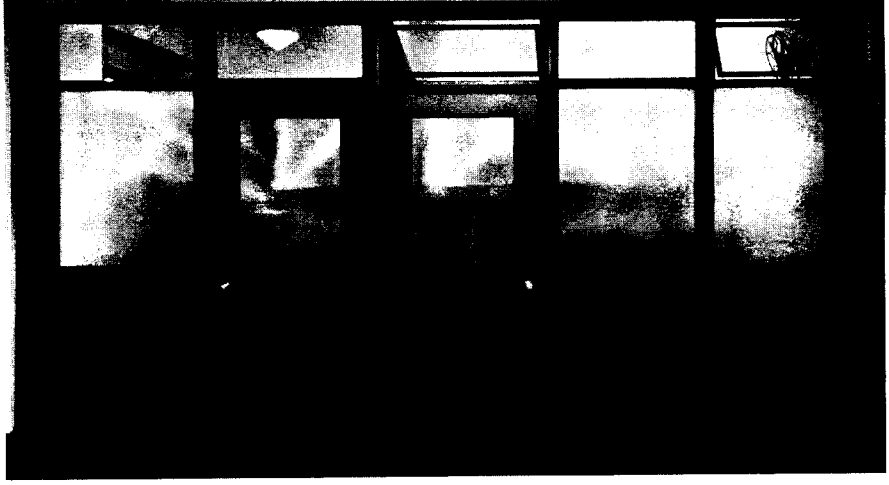
This system depends heavily on an experienced installation force, a valuable asset that the company originally developed for the installation of steel sash.

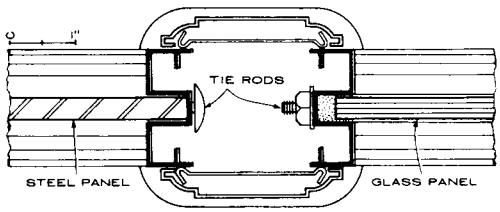
Because the Double-Wall system is somewhat more massive than the more refined, engineered types of movable partition, it has slightly better acoustical properties and a higher capacity for supporting the loads of shelves and other wall-hung items that might be desirable in a schoolroom.

In the year since this product has appeared on the market, it has found even greater acceptance than expected. It was selected, in almost exactly its standard, marketed form, to meet the exacting specifications of the School Construction System Development program, sponsored by the Educational Facilities Laboratory and a group of California School districts. Selection in this program guaranteed the company an order of approximately $2.3 million worth of Double-Wall.

This new system does not, of course, replace the company's "engineered" partition systems. In line with the basic design policy, it is intended to supplement them.

It is a most interesting commentary on the economics of industrial design that the search for a distinctly cheaper, yet equally effective, movable partition led to a product less highly industrialized than its predecessors—one that leaves the factory in a condition not unlike that of lumber and wall-board, its final dimensions and finish to be determined on the site. Unlike lumber and wall-board, however, it is installed by the manufacturer and can be disassembled and rearranged to meet new needs with hardly any waste.

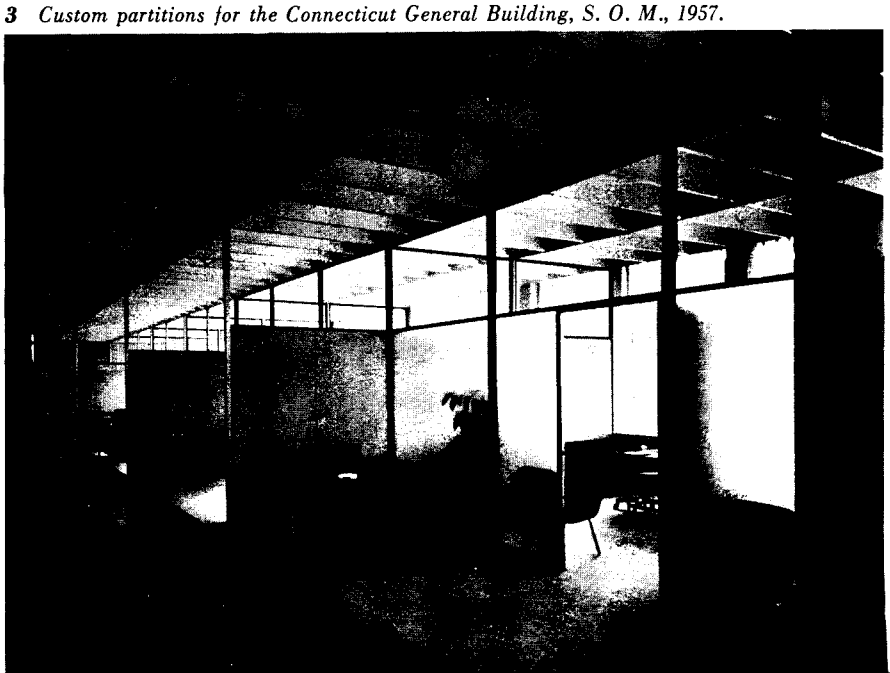


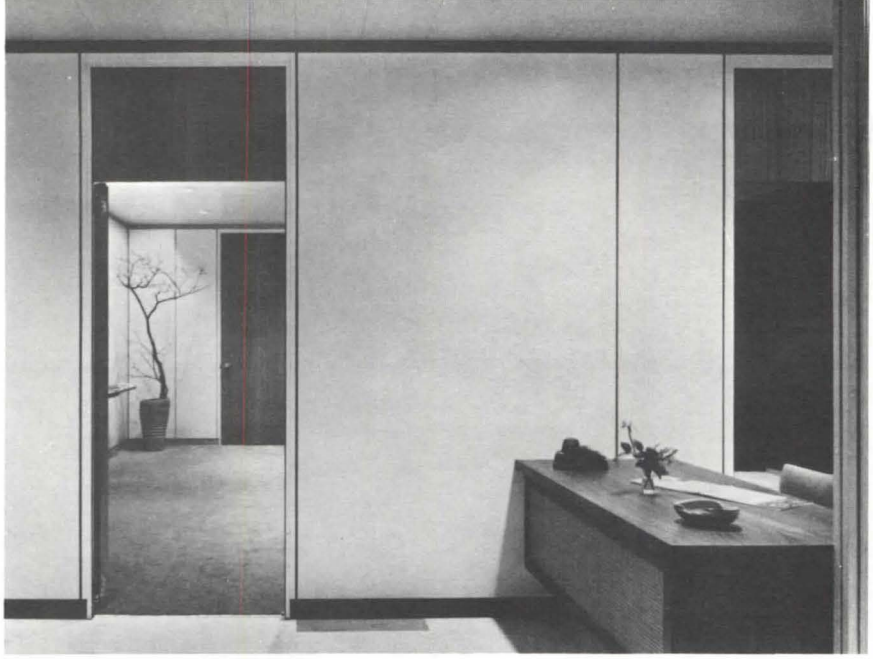


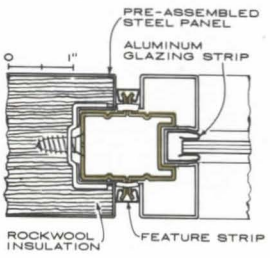
***1** Hauserman steel partitions simulating wood in the Empire State Building, 1932.*

***2** Custom partitions for the General Motors Technical Center, Eero Saarinen, 1955.*

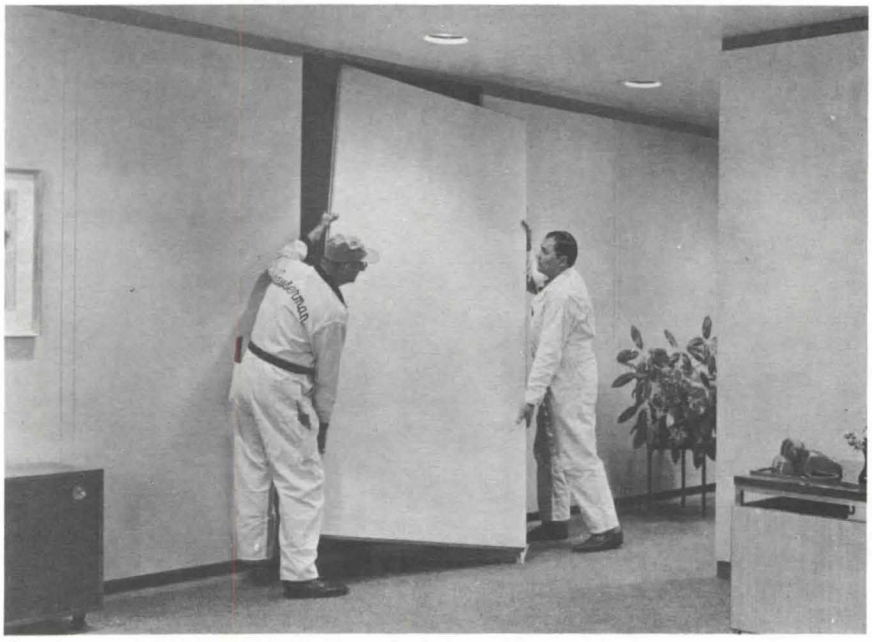
***3** Custom partitions for the Connecticut General Building, S. O. M., 1957.*

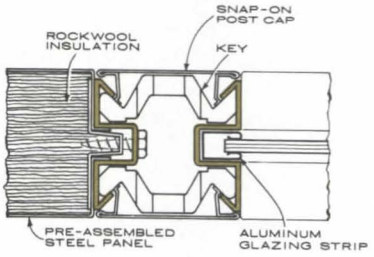






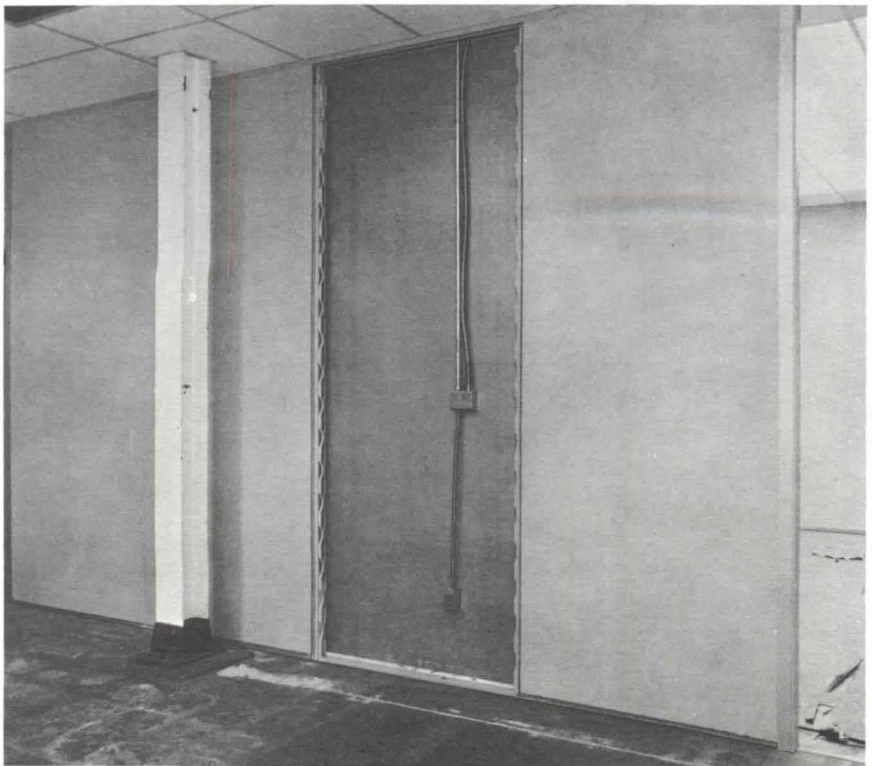
4 The Delineator system has recessed strips around panels.

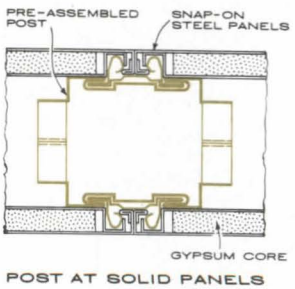




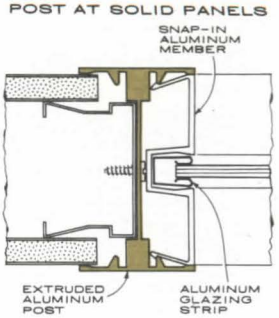
5 The Signature system, a current standard Hauserman partition, has only hairline joints.

6 In Hauserman's newest system, Double-Wall, much of the work previously done in the factory has been transferred to the job-site.





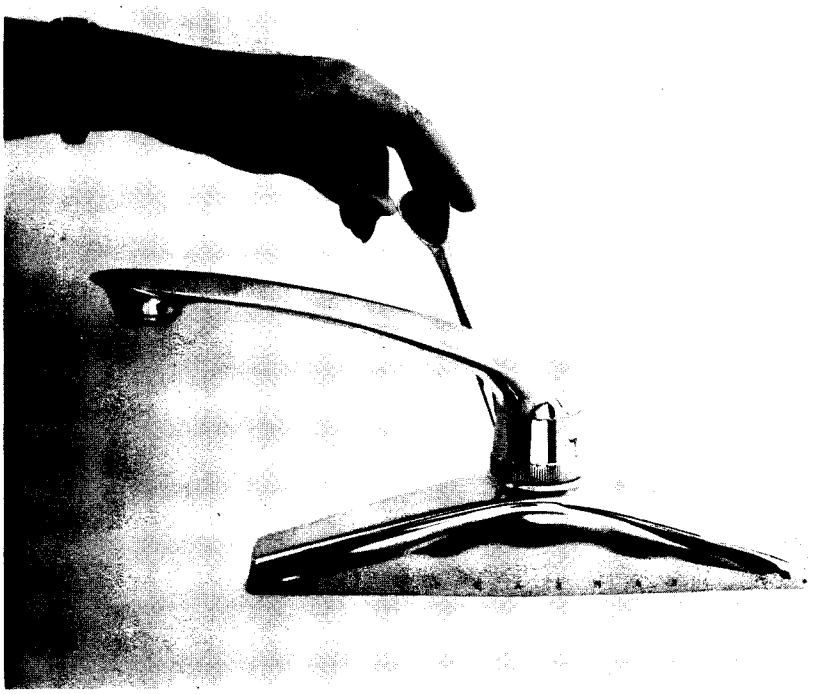
POST AT SOLID PANELS

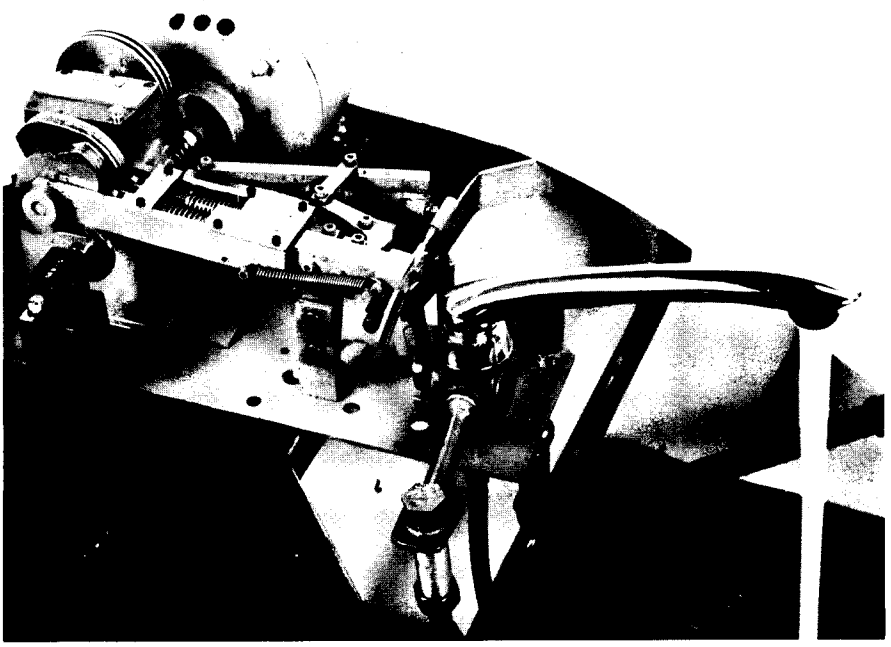


POST AT GLASS PANEL

In designing a plumbing fixture for the SPEAKMAN COMPANY, the contribution of an industrial designer was primarily aesthetic in nature rather than mechanical.

The original thinking behind the development of "Solitaire," a new single-handle sink faucet being manufactured by Speakman Company of Wilmington, Delaware, was first formulated by James Fraser, former vice-president in charge of manufacturing, now retired. Fraser, a tool and die maker by trade, for many years helped his company to pioneer countless products and improvements in the firm's showers and plumbing fixture fittings now fundamental to the company's present line of components. The basic idea for Solitaire, which is similar to others on the market, was actively initiated late in 1958. To begin the design phase of this new fitting, Harper Landell Associates, industrial designers, were commissioned to style the first model. Their contributions were aesthetic in nature rather than mechanical. The over-all development, however, was a joint group effort involving many people within the company, and was headed by John G. Pecis, vice-president in charge of research and development. (Pecis, who holds a B.S. degree in mechanical engineering, is a registered professional in two states and has served in various engineering capacities in the plumbing, heating, and industrial products engineering fields.) Late in 1959, following considerable research and development, field test samples were built and installed in homes across the country from Florida to California. Additional developments involved the manufacture of pilot units to prove out the tooling. Actual mass production was started in early 1963. Several of the production units were tested in compliance with the proposed plumbing standards that require a 1000 psi hydrostatic pressure test, as well as a 50,000-cycle nozzle swing test and a half-million accelerated on-off-hot-cool wear test approximating 20 years of service using the faucet 50 times per day. This faucet, which is available with or without a thumb control spray hose for rinsing, has subsequently been approved by the City of Los Angeles in accordance with test regulations of the Western Plumbing Officials Association of 14 Western states. It takes advantage of a new diverter that is completely self-contained in a stainless-steel shell.

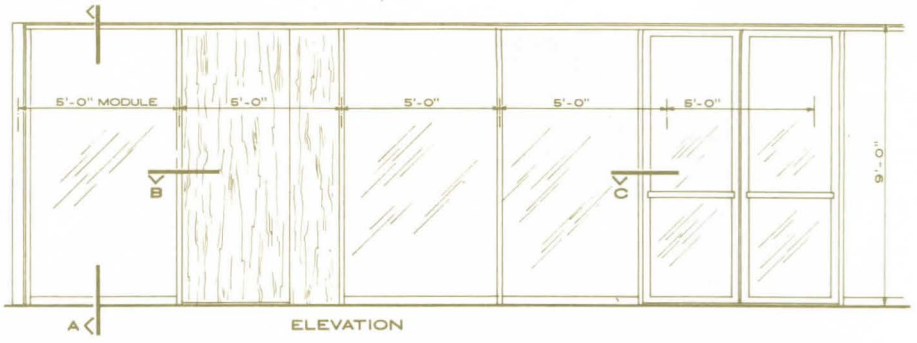




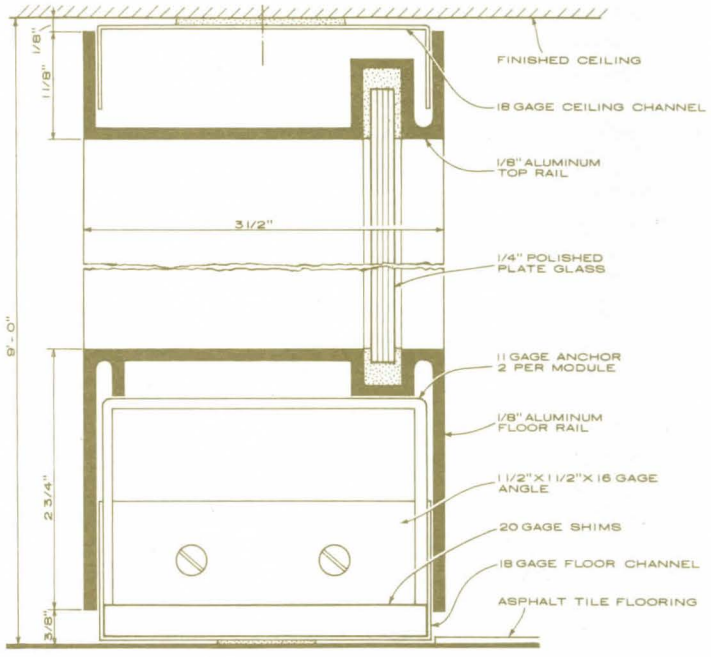
"Solitaire" has elevated swinging nozzle 8 in. long (above). *Fits all sinks with thickness up to 1⅛". Mechanism used to test faucet* (below) *in compliance with proposed PBI-PFMA plumbing standards.*

"In developing a custom-designed product," says Raymond Graff of AETNA STEEL PRODUCTS CORPORATION, "the manufacturer must bring creativeness and imagination to the solution and must identify himself with the architect's wishes."

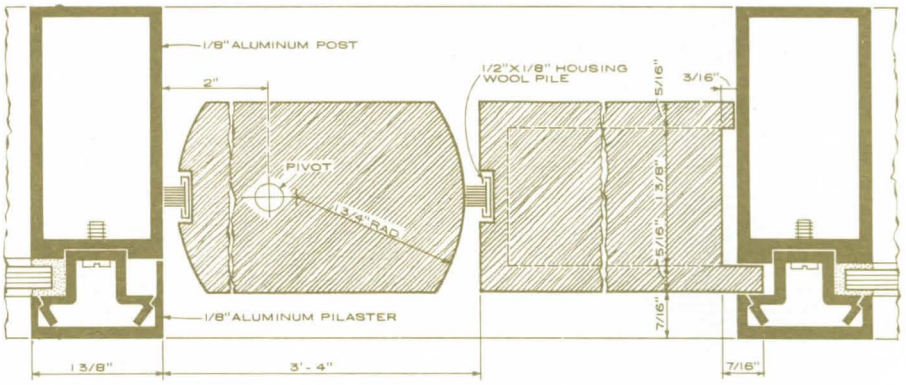
The designs for partitions to be installed in the new I.B.M. Corporate Headquarters Building, in Armonk, New York *(shown)*, reflect the close relationship required between architect and manufacturer to develop a custom-designed product. Architects Skidmore, Owings & Merrill originally had an idea for a slim-line partitioning system that they had mocked up in wood and glass. They approached Aetna Steel Products Corporation and inquired whether their designs could be produced in steel. After preliminary studies were completed, the manufacturer recommended the use of aluminum extrusions in order to retain the desired sharp arrises. Raymond Graff, an architect who is in charge of design for Aetna, states that at this point "the manufacturer must bring creativeness and imagination to the solution and must identify himself with the architect's wishes. Further, the manufacturer must have a flexible plant operation that permits many kinds of fabrication to implement a variety of ideas. Also, a variety of installations should be part of the fabricator's experience so as to provide the architect with assurance of ability to perform in a strictly custom way." The architect and manufacturer must agree on final profiles. These place certain limitations on the voids where functional items will occur. Features that must be concealed are clipping devices, means of anchorage, and special characteristics needed to insure structural stability. At this stage, the product development department must concern itself with problems of constructability, demountability, stability, and practicability. Specific items to be solved are: provisions for hanging and operating ceiling-high doors; simple methods of glazing and erection; and provisions for adequate rigidity. When the completely workable design is established, the manufacturer invests in extrusions made for final study. A full-scale mock-up of sample materials affords checks of snap fits, slide fits, squareness of sections, and dimensions. After fabrication costs are weighed against field erection costs, the final design is adjusted accordingly and over-all costs are fixed for bidding.



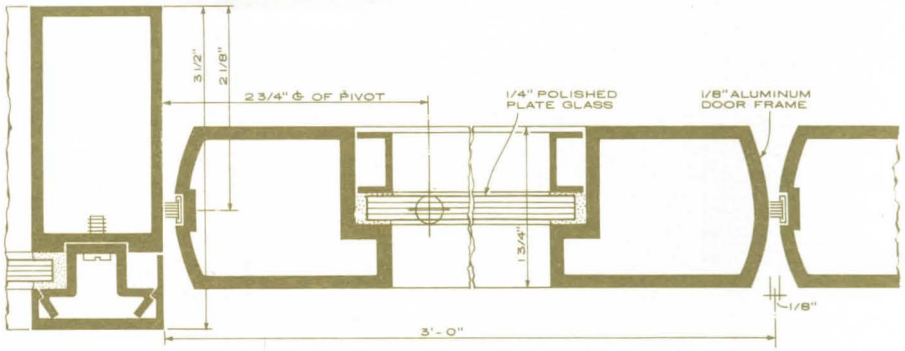
ELEVATION



VERTICAL SECTION AT A



PLAN SECTION AT B



PLAN SECTION AT C

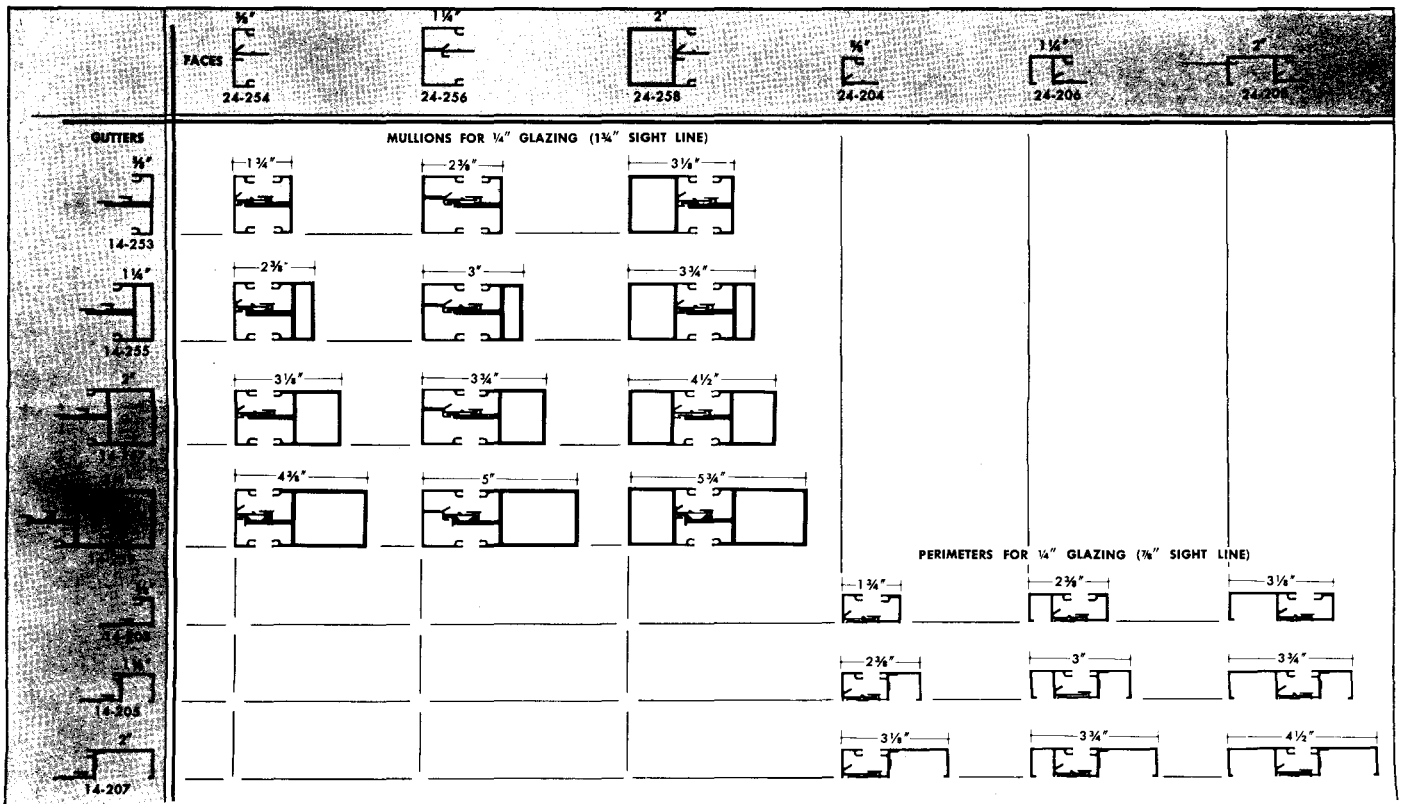
Having perfected the systems concept for the factory fabricated curtain wall, the KAWNEER COMPANY then turned its attention to bringing the same systems concept to bear on store front design.

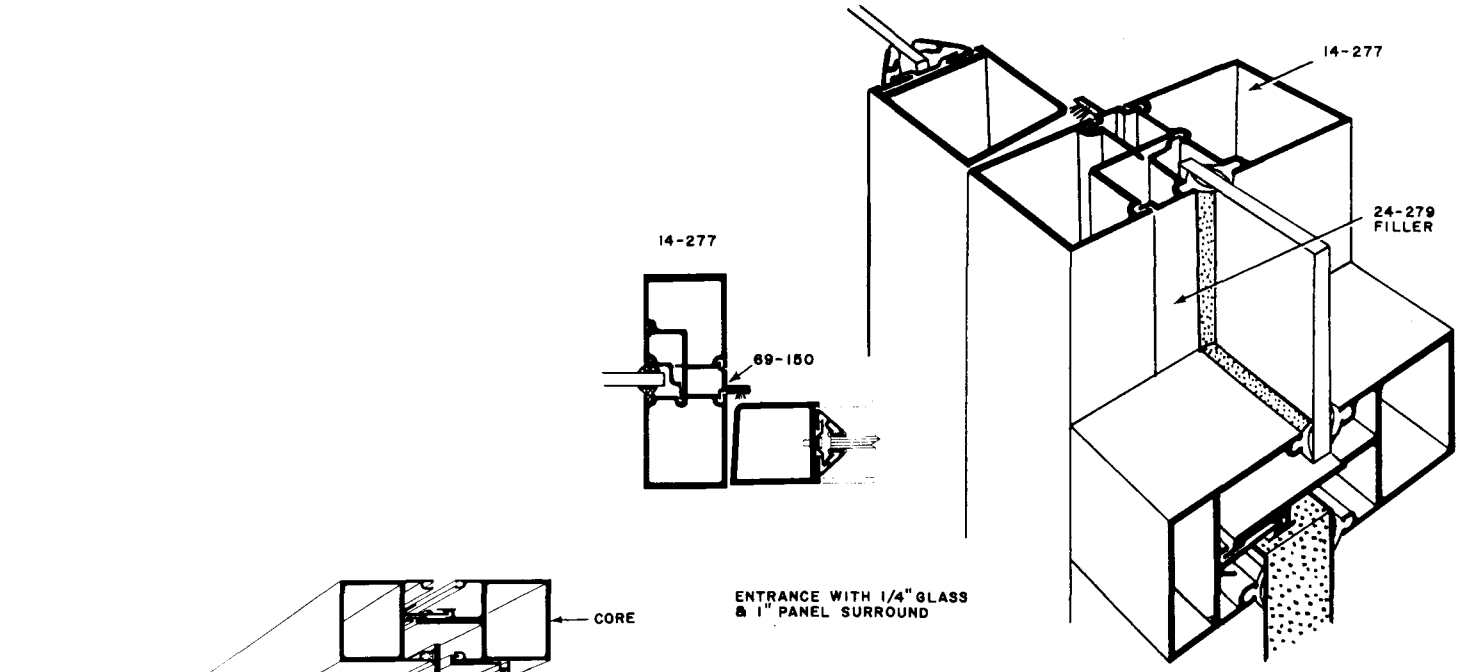
Between 1948 and 1958, exterior aluminum building products experienced a rapid growth in the booming postwar construction market. During that period, there was a rapid expansion in the several types of applications for aluminum: first came store fronts, followed by windows, then entrances, and finally curtain walls. Accompanying these developments was a rapid change in production methods. Cold-rolling, for example, was largely replaced by extruding techniques. In the rush to fill these growing aluminum applications, product designers too often failed to pay attention to integration with other components of the façade. The entrance area had little appearance or functional relationship to the facing or veneer areas, which in turn had small family resemblance to glass framing components, or to the operating windows.

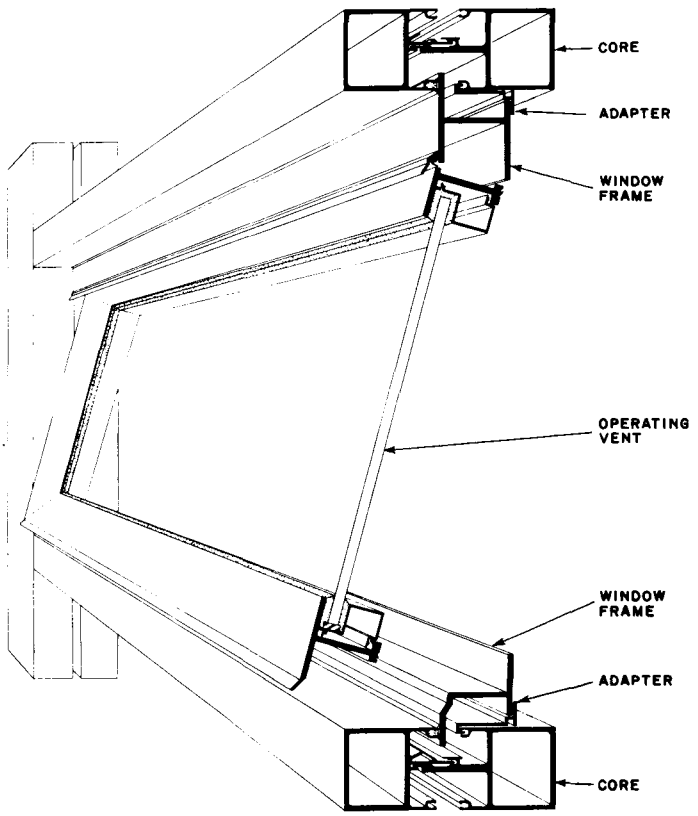
Perhaps the first break with this diversity came in 1956, when Kawneer Company, of Niles, Michigan, applied the systems concept to the factory fabricated curtain wall. Within a modular system, wall panel units, window units, and entrance units took on a look-alike, function-alike design. Noting this success, the company's marketing and research people then turned their attention to bringing the same systems concept to bear on store-front and stick-wall products. Administrator and co-ordinator of the research and development program, of which this project was an important part, was J. M. Boehm, Director of R & D since 1952. (Boehm's academic training was in mechanical and electrical engineering. During World War II, he was a member of the team that developed the Norden bombsight.) By 1958, a research team of engineers, technicians, and designers had begun to work on a new store-front system. Directly in charge of this project was a man who had been an architectural designer before joining Kawneer. In establishing the criteria for the new system, he was primarily concerned with introducing unity of appearance and function to substitute for the "bits and pieces" approach prevailing in most existing products. Secondly, he realized that the cost of construction labor was increasing rapidly, and that the new system must provide more efficiency in order to reduce the number of man-hours required for installation. Finally, the market-research team wanted more flexibility and interchangeability of components that would not only broaden the architectural design options, but that would also give more flexibility to the economics of the system. In the two years of development, numerous ideas were tried and rejected. At key stages, architectural consultants were called upon for criticism and suggestions. The final result was identified as the "Core" system and appeared on the market in 1960. It squarely met all of the original design criteria, as well as additional advantages that the team was able to work into the system.

Key to the flexibility of the new exterior grid was making each vertical and horizontal bar a combination of a gutter and a face piece, which was snap-locked into place after the infill component—glass, window vent, facing panel, or insulated panel—had been set into the gutter. This permitted numerous combinations of the faces and gutters to meet varying wind and weight load requirements, depth of sight-line, and various infill components. Grids surrounding the glass, panels, doors, or windows were all compatible in appearance. No out-of-character adaptors and tacked-on stops were required, reducing the cost as well as improving appearance. Neoprene gaskets replaced the need for putty compounds in the glazing. Joinery of verticals and horizontals was accomplished with concealed anchors, completely eliminating exposed screws. The entire system was compacted into 20 individual extruded shapes that the local store-front contractor could inventory to fabricate *any of thou*sands of different architectural designs. Subcontractors participating in job installation tests before the new system was marketed confirmed that their installation time had been reduced from 10 to 30 per cent. The development and design process was a team effort of many men with varying backgrounds and talents, ranging from experienced glaziers, market-research men, architects, engineers, and trained designers.

Chart showing some of the basic grid members of the "Core" system illustrates how the face-gutter combination provides numerous combinations for the desired appearance and economics.

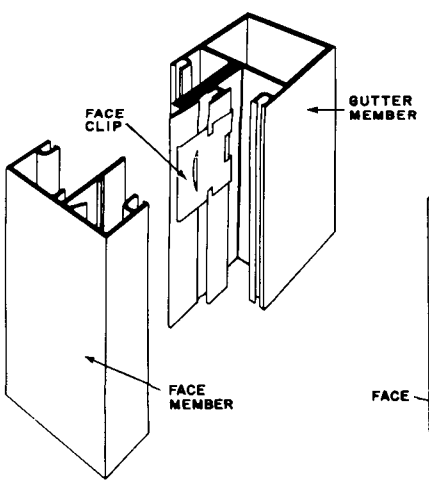




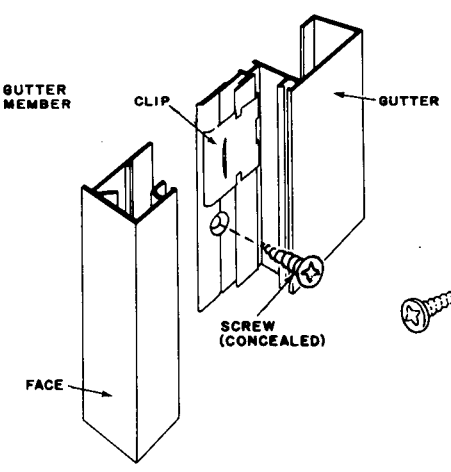


Several basic wall components windows, panels, glass, and entrances are snap-locked together in completely compatible aluminum grid configurations (left and above). This overcomes the "bits-and-pieces" cluttered look Kawneer found in façade construction when the company's marketing and research team began developing an integrated system.

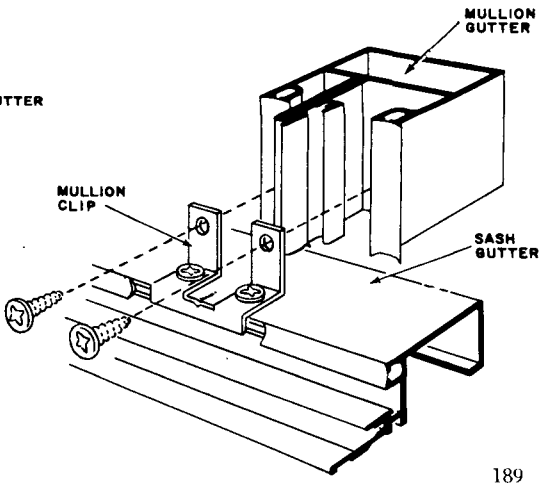
Key to the new system was the idea of a stainless-steel clip that permitted numerous face and gutter combinations for flexibility of design (bottom). The sash perimeter next to the masonry opening can be one-half the width of the mullions if the architect prefers less metal reveal. The open tube design of the gutter affords a joinery technique that is neatly concealed, and also efficient in labor time.



TYPICAL MULLION



SASH PERIMETER



TYPICAL JOINT

The ANDERSEN CORPORATION finds it necessary to unite its products into larger systems in order to meet the increasing necessity for this kind of assembly in today's construction market.

Manufacturers who have a long history of producing quality components that possess a relatively restricted field of application, are of necessity compelled to find broader uses for their components. Or, they must unite their products into larger systems in order to meet the increasing need for this kind of assembly in today's construction market. The Andersen Corporation, of Bayport, Minnesota, represents a good example of this kind of product growth as it is reflected in its "Strutwall Window Unit." Strutwall was quite a natural development for this organization, as it started many years ago with the manufacture of just plain wood window frames. Subsequently, it advanced to the complete window unit idea in order to more fully provide its benefits to the building market. It is a matter of record that Andersen was among the first—if not *the* first—to supply a unit that included not only the window frame, but also the glazed sash that was fitted at the factory along with the weather stripping, operating hardware, screen, and double-glazing panel. This transition took place in the early 1930's. With this kind of background, and having been gradually brougt to the idea of thinking in terms of more complete and useful window products, it was natural that E. C. Andersen, President, should begin to seek answers to questions that had much to do with the starting of the Strutwall development. His thinking began to turn in this direction in the 1950's. The design work that followed in this development was carried on largely by the company's own product designers. They were assisted by a qualified structural engineer, who calculated the proper load-bearing requirements that eventually led to FHA approval, as well as that of the New York State Building Code Authority, and others. President Andersen reports that "as several of our other product innovations, the Strutwall idea resulted essentially from specializing in the field of windows and window components for many years. As with all companies, such as ours, any idea must be developed, criticized, changed, redeveloped, and changed again before it is ready for the market. This certainly was true of Strutwall."

Builder/Manufacturer Research

Due to its dissatisfaction with many of the building products available, one large realty and construction company established its own research corporation. A review of its first four years of operation is made.

For years, Tishman Realty & Construction Company, Inc., one of the nation's largest real estate development firms, had distinguished itself by its innovations in equipment, design, and materials used in its building operations. As technological progress after World War II became more rapid, building materials manufacturers introduced with increasing frequency a wide variety of new products. However, because they did not fully understand the needs of builders and the problems that they faced in attempting to utilize the new products, the manufacturers found considerable customer dissatisfaction with their products.

Tishman Realty's solution to the problem had been to inform manufacturers why certain products were objectionable, and to suggest the kind of changes that should be made to permit their use. All of this was done on a completely informal basis as the situation dictated. Because this was a slow and haphazard process and Tishman Realty was not getting what it wanted when it needed it, it set up Tishman Research Corporation as a wholly owned subsidiary to concentrate on the kind of products needed to simplify construction operations and to lower costs.

In a short while, several major building product firms expressed interest in working with Tishman Realty, to enable them to produce the kind of products that would be more practical to builders and would justify their large investment in research and development programs. When Tishman Research decided to provide services to others, it also decided to limit the number and type of clients, in order to minimize conflict of interest and to achieve a closer and more productive relationship. Its program has been expanded continuously and it now includes grants and consulting retainers from Union Carbide's Plastics Division, Aluminum Company of America, E. F. Hauserman & Company, Owens-Corning Fiberglas, and the York Division of the Borg-Warner Company.

Under the direction of John L. Tishman, president, who is also vice-president in charge of construction of Tishman Realty, and Joseph H. Newman, general manager, Tishman Research has in only a two-year period of working with manufacturers helped one of its clients (and, of course, itself) achieve a major breakthrough in the field of low-cost movable metal interior walls. This was the development of the Hauserman "Co-ordinator Double-Wall." The Double-Wall consists of two identical panels which snap into rigid posts to form a double wall (1). The panels consist of durable, impact-resistant steel, completely covering a gypsum core, and can be easily cut on-the-site to fit any condition. The flexibility of the Double-Wall system makes possible unlimited choice of colors or wall surface treatment, woods, vinyls, or other covering materials. Panels are shipped with baked-on prime and finish painted after installation. The zipper-tight connection of panel-to-post eliminates sound and light leaks and assures tight, clean vents. Openings in the posts provide plenty of room for standard wiring and utilities. Double-Wall's minimum sound transmission classification of 43 (ASTM: 90-61) assures privacy. Although all components are incombustible to meet fire safety requirements in most cases, the wall can be adapted to provide a full one-hour rating.

The Double-Wall is low in cost because it comes in only one width (40 in.). As a result, Hauserman has come close to the concept of being a total interior contractor, assuming complete responsibility for product and installation in the wall and ceiling field. Tishman Research has encouraged them in this approach and believes that the day is coming when this will be the only practical way of doing business.

At present, Tishman Research has projects underway in the general areas of flooring, ceilings, walls (exterior and interior), plumbing, lighting, and air conditioning. Some developments involve complete systems. Others involve components and techniques. According to Newman: "Some developments will be ready shortly for full-scale acceptance, like Double-Wall; others for prototype evaluation. Some ideas may not prove suitable for market. Other ideas originating out of our activities with producers may be put to use in structures or adapted to components under development. Because many of our projects are being undertaken for clients with proprietary interests, we can only talk about them when they reach fruition."

As an indication of the progress already made by Tishman Research, Newman revealed that it had pioneered in the use of a picture window with a built-in venetian blind between two panes of glass, result-

1

ing from its activity with Alcoa. The parent organization is now installing them in Gateway Towers, a 27-story luxury apartment building which it is building in the Golden Triangle in Pittsburgh **(2)**. The windows are 5'-6" and weigh 375 lb each.

Another development—for which Tishman Research did the basic evaluation—involved an extruded asbestos cement for outdoor applications. The resulting product is now being used successfully as a one-piece, maintenance-free balcony divider **(3)** in Horizon Homes, a deluxe group of high-rise buildings being erected by Tishman on the Palisades of the Hudson River at Fort Lee, N. J.

Another successful research project involved a new approach to low-cost, cold-weather, outdoor lighting. By making use of a plastic sleeve and two end caps **(4)** to fit over a standard fluorescent light tube, it was possible to obtain up to 300 per cent more light in zero temperatures. Replacement cost for the "storm window" device is $1.30, compared with a price of $10.50 for a fluorescent tube built into a shield as has been used in the past. When the fluorescent tube inside the fixed covering burns out, the entire fixture has to be replaced. When the tube burns out in the Tishman fixture, the plastic shield can be opened and a new tube inserted.

Exclusive production and marketing rights have been assigned to Wheatland Electrical Products Company, of Carnegie, Pa., which markets the device as the "Wepco Light Shield." One of the firm's major distributors predicts that it alone will sell up to a million units a year. Shield applications include open garages, vehicular tunnels, service stations, airports, outdoor parking areas, shopping centers, and mill buildings.

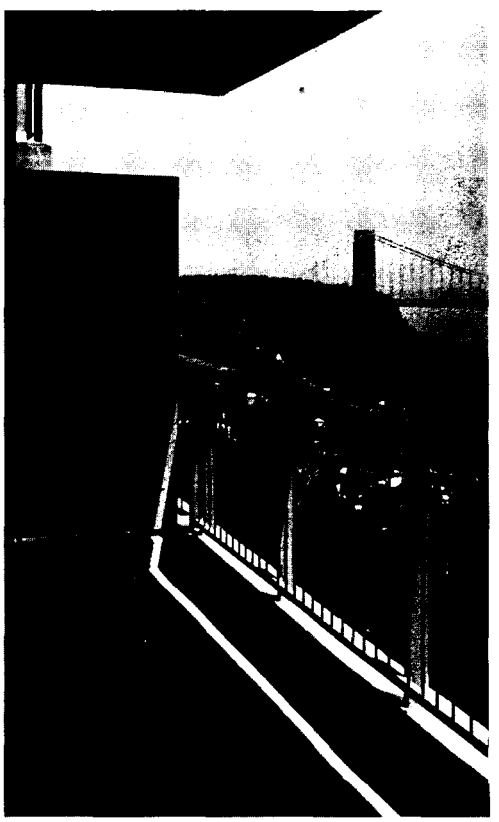
Another area of investigation involves a dry ceiling that will be more durable and can be installed more easily than any now available. In still another area, work is proceeding toward the development of a floor system that will solve the noise impact problem. Newman emphasizes, however, that it is still too early to discuss either of these projects in terms of effectiveness.

Tishman is plowing back some of its profits into researching non-product oriented concepts. The best-known of these to-date is "Tierpark"—a prefab prestressed-concrete parking structure, which was put into operation in the fall of 1960 for the A & S Department Store in Hempstead, Long Island. One 600-car unit was built in 12 working days; a second 600-car unit was put up in three days, with work proceeding around the clock. Because Tierpark consists of standardized components, it is more economical to build than other parking structures. They can be assembled into either single or multi-tier structures. Due to its modular design, Tierpark can be adapted to most sites that are suitable for parking.

Thus, by utilizing the entire operation of Tishman Realty & Construction Co., Inc., with its diverse and far-flung building projects and its full complement of technicians, Tishman Research has at its disposal what is, in effect, one of the most extensive research and testing laboratories in the world.

"It is reassuring to know," Newman states, "that a conscious effort is being made, even in a modest way, by some of the diverse elements in the construction industry. We hope others will follow."

2



3

4

Proprietary Protection

It is widely believed that an individual who has invented a new product or created a new design, enjoys some proprietary protection to its use—at least for the period of time guaranteed by law upon the issuance of a patent or copyright. The true situation, however, is somewhat different. Experts in the field have long recognized the inadequacy of present laws and the need for new legislation that will provide effective protection to creative design. Significant progress has been made, however, and a program to obtain effective and equitable design protection has been initiated. As a result of agitation on the part of numerous individual manufacturers and designers, a bill (S. 776) was brought before the United States Senate and was passed on December 6, 1963. This bill, which calls for the protection of original ornamental design and useful articles, along with identical counterparts, was introduced in the House of Representatives for hearings by the Subcommittee of Patents, Trademarks, and Copyrights of the House Judiciary Committee. As of this writing, the National Committee for Effective Design Legislation is urging all interested in the passage of this bill to write to Representative Edwin E. Ellis or their own Congressman (both, care of the House Office Building, Washington 25, D.C.).

A recent Supreme Court decision further emphasizes the need for legislation that will provide designers with the same degree of protection enjoyed by inventors and authors. A pole lamp was the subject of the dispute. The Supreme Court's ruling arose from a litigation between Sears, Roebuck and the originator of the pole lamp, the Stiffel Company of Chicago. Following Sears' introduction of an identical lamp in 1957, the originator's sales volume slumped to such a degree that it felt obligated to take the matter to court. A Federal court found Sears guilty of unfair competition. Its decision was founded upon an Illinois common law that prohibits exact copying of another party's merchandise, rather than upon a patent infringement. The ways of jurisprudence are sometimes mysterious. Having found that Stiffel's lamp was not sufficiently unusual to have been protected in the first place, the court proceeded to invalidate the company's patent. When the dispute reached the Supreme Court, the latter sustained the lower court's invalidation of the pole lamp patent, but decreed that Sears had been improperly charged with unfair competition: Should a patent on a product no longer exist, held the court, others enjoy the right to reproduce an exact replica and should not be restrained by state unfair competition laws.

One designer whose work is widely copied, Charles Eames, summed up his feelings about plagiarism this way: "I have zero resentment and even admiration for someone who takes an idea of mine and improves on it. What makes me a little ill is to see a gross nonimprovement. There are very few cases where someone picks up an idea and carries it beyond the original."

The article that follows presents the personal views about the value of patents of one structural inventor who has had a good deal of experience with patents and patents research.

BY KENNETH SNELSON

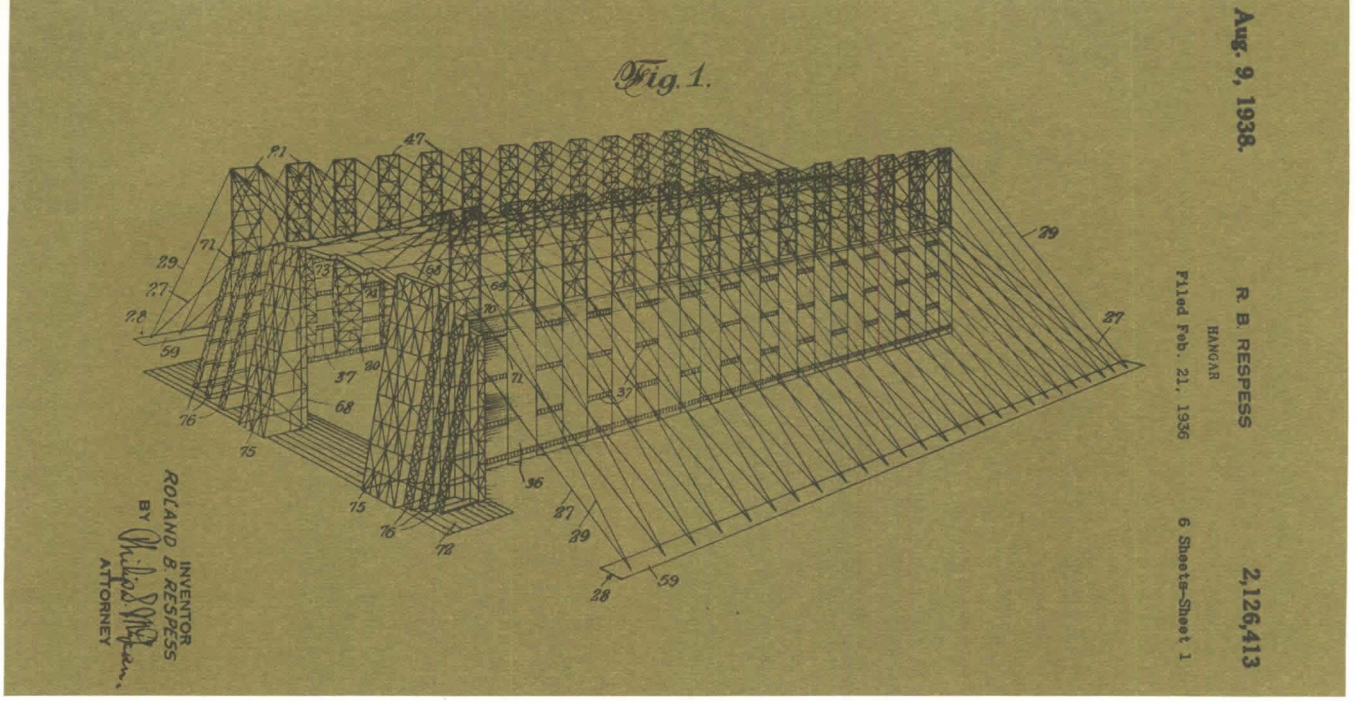
An attorney once told me that a patent search would cost only $30; however, I decided to do my own searching. My invention was an idea for splicing motion picture film. I brought to Washington an oversized model made of cardboard—two flat pieces designed to look like strips of film which were linked together by my new and secret method. The model looked especially significant, since it bore a handwritten declaration from a friend: "On January 14, 1958, I saw this joint and understood its operation—Otto Fried." The attorney had told me such a signature was advisable for dating the invention, should the question ever arise of identical claims by different inventors.

By the time the plane landed at the Washington airport, I was certain that all passengers aboard were also on the way to the patent office with an invention identical to mine.

The enormous brown library hall of the patent search room has rows and rows of desks where hundreds of searchers are often at work thumbing through piles of worn, marked-up copies of patents. Some searchers are Government employees, some are from law firms or from business corporations, and some are just citizen inventors like me. To one side of the room, the great ceiling drops abruptly, more intimately, to enclose the stacks—steel shelves containing copies of all patents issued in most categories of invention dating from the founding of the United States Patent Office in 1790. The stacks have the mysterious aura of a great sorcerer's filing cabinet.

Having no idea where to begin, I was forced to unveil my invention to the clerk at the desk. He did not seem astounded, as I had imagined, but simply said that most likely my idea would be found in the "paper box arts." He referred to one of the large volumes, and then announced: "Paper receptacles—class 229, subclass 16. Suggest you check there." I went to the stacks, located the section, and found in this subclass alone a pillar of documents more than 5 ft high, dating from 1875.

It took two-and-a-half tortuous hours to be fairly certain that mine was an original idea. On this whole planet, in all human history, I was the first one, I gloated, to have made this magnificent discovery.



1

I went back to the librarian with this information. He said I ought next to try class 46, subclass 31—connection sheets with cross-reference to buckles, buttons, and clasps; and also try paper clips and paper fasteners from subclasses 66 and 67.

I skipped lunch and finished these categories by 2 P.M. When I returned to the librarian's desk, his warmth of manner was more strained than before, but he wrote on a slip of paper: class 24/205.13, zippers; later on, 24/22, bale ties and package ties, metal bands, separate connections; one piece. By 4 P.M. I had also gone through 17/270, sheet material associating or folding; 11/1, mailing, stapling and clip clenching; 24/38, belt splicers; 54/33, harness fasteners; 2/325, garments; 229/82, envelope closures, sealing, perforated. By five o'clock I was unsure what classes I had treated thoroughly and I returned to class 24, strap-end attaching devices, subclass 265.

Suddenly it was finished—among the files on barrel hoops, one of the drawings looked terribly familiar. A stamp in red ink said: "Cross Reference, Motion Picture Film, filed October 30, 1943, patented, December 30, 1947." It was precisely my invention—not for a barrel hoop or a wrist watch strap or a bale tie: "This invention relates to certain improvements in and relating to film splicers. . . ."

The librarian explained that experience had taught him that one will probably find things in unlikely places and for this reason he had ignored the likelihood of looking for a film splicer under Film Splicers, class 154, subclass 42.1.

Since the film splicer incident I have gone through the patenting business several times and spent several thousand dollars in the process. I have sifted through reams and reams of patent papers containing all varieties of brilliant, banal, profound, fanciful, useless, and curiously ingenious ideas. It is evident that the patent mystique holds the same fascination as the deep sea treasure hunt or the Irish Sweepstakes, with about the same chances of rich reward.

The patent offers the inventor 17 years of legal defence against exploitation. But the great majority of patents are not richly marketable, being either ahead of their time, out of date, or simply impractical. After legal expenses, the cost of drawings, and the investment of several years attention to letters from examiners and amendments costs, all of which seldom amounts to less than $1000, the inventor usually has gained no more than an official-looking patent citation from the Government as evidence that he is an inventor.

Even if the invention is marketable, it usually takes several years and many thousands of dollars in order to put the product on the market. Often, by the time this happens, the 17-year term of protection has passed, and, since patents are not renewable, the invention is in the public domain. The film splicer, of which I was the (second) inventor, has never been marketed, even though it is a useful idea. The reason probably is that the inventor was either unable to manufacture it himself, or he could not find anyone who believed it to have sufficient advantage over competitive products to justify tooling and marketing costs.

Patenting has been called an invitation to litigation. Legal suits for patents are not only expensive, but time-consuming. Even if the patent claims stand in court, the inventor usually emerges with no more than an order for the infringer to cease infringing, or to pay the inventor the customary royalty.

Thus, I have come to the view that patenting is of less value to an inventor than it is to the nation, and to the world, as a comprehensive library of ideas. When an inventor applies for a patent, he is required to set down his idea in unambiguous language, and to show with formalized drawings all properties of the invention to which he wishes to make claim. Patent writing is precise and specific, and must be clear to "all those skilled in the art," to use its own vernacular.

The claims that follow the description of the invention are the legal teeth of the patent and are laid out like property rights in real estate with an aim to defining the boundaries. The inventor cannot extend his claims beyond areas defined in other patents, nor into areas already in the public domain.

As a continuous record of applied physical principles, the patent files are a record synchronous with the history of social and political ideas. They reveal the fascinating stories of architecture, mechanics, electronics, aviation, medicine, and all industries of man during the past few hundred years. As problems have presented themselves, inventive minds have found multiple solutions. An entire era can be understood in a new way by the spirit of the inventions that it nurtured.

There was the emergence of giant clearspan structures—the largest that man has imagined—for the purpose of housing aircraft and dirigibles **(1, 2, 3, 4)**. They reached a peak in the 30's, in the middle of the depression. There were also small prefab buildings, years ahead of their time, such as a small knock-down steel igloo of 1898 **(5)**.

Similarly, there was a steady stream

Jan. 12, 1932. K. ARNSTEIN ET AL 1,841,321

AIRCRAFT HANGAR AND METHOD OF BUILDING IT

Filed Mar h 28, 1929 3 Sheets-Sheet 1

Fig 1

Fig.2

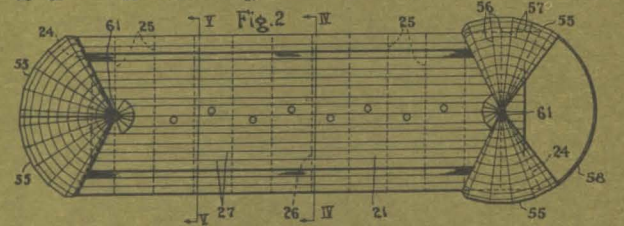


Fig.4

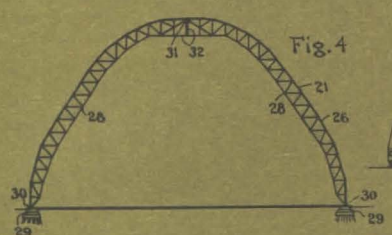


Fig.3

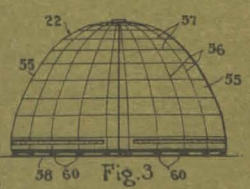
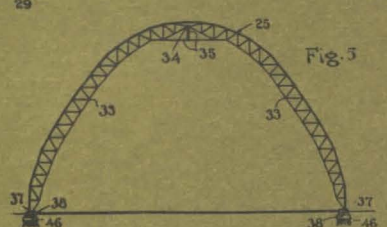


Fig.5



Inventor
Karl Arnstein,
Paul Helma,
& Wilbur J. Watson

Attorney

2

Jan. 12, 1932. K. ARNSTEIN ET AL 1,841,321

AIRCRAFT HANGAR AND METHOD OF BUILDING IT

Filed March 28, 1929 3 Sheets-Sheet 2

Fig.6

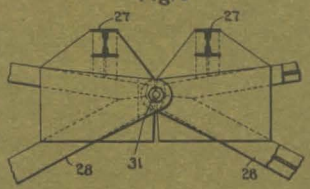


Fig.7

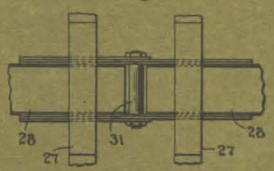


Fig.8

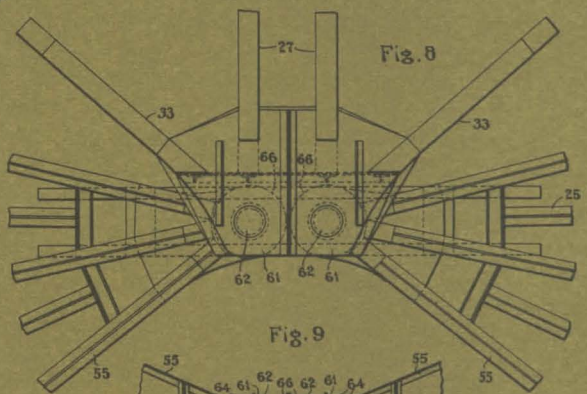
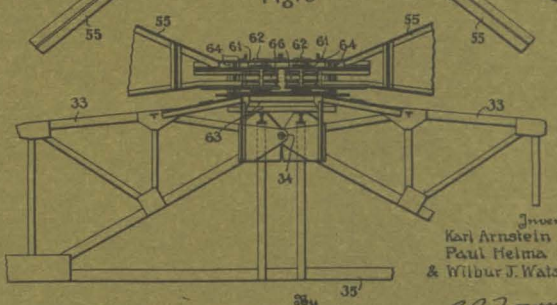


Fig.9



Inventor
Karl Arnstein
Paul Helma
& Wilbur J. Watson

Attorney

4

3

5

Aug. 26, 1930. C. PANTKE 1,773,851

SPACE COVERING STRUCTURE

Filed March 6, 1929 5 Sheets-Sheet 1

Fig. 1

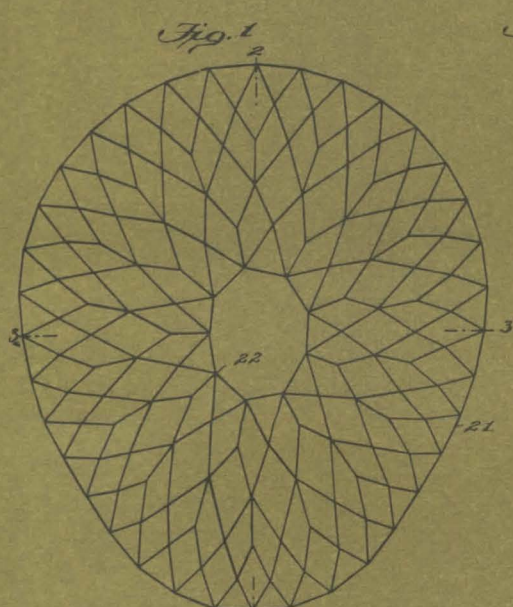


Fig. 2.

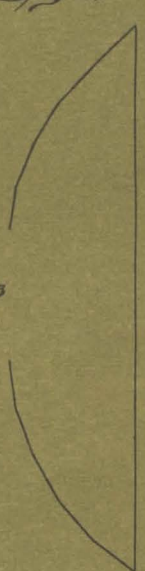
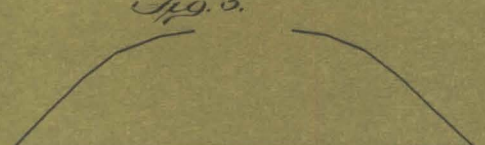


Fig. 3.



INVENTOR
Conrad Pantke
BY
James L. Morris.
ATTORNEY

(No Model.) 3 Sheets—Sheet 1.

P. A. TOFFT.

KNOCKDOWN HOUSE.

No. 604,277. Patented May 17, 1898.

Fig 1

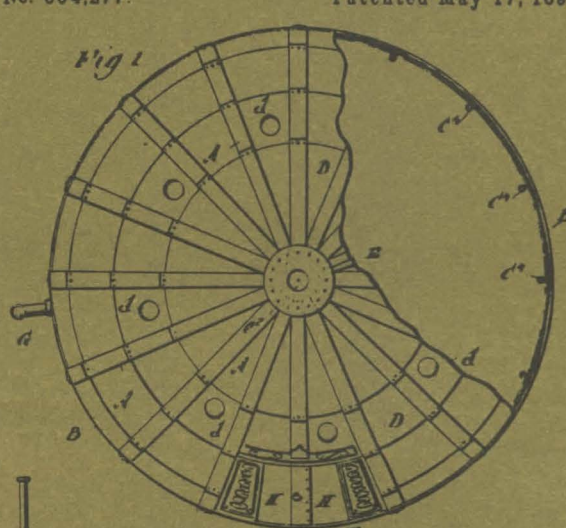


Fig 2

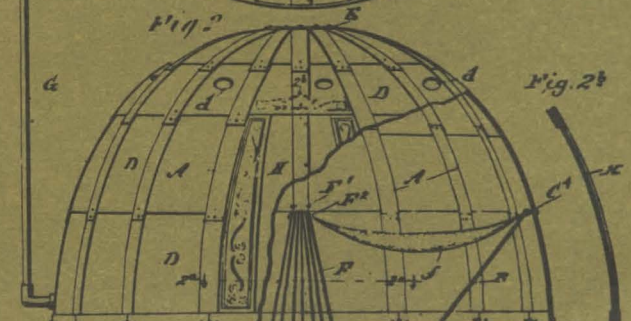
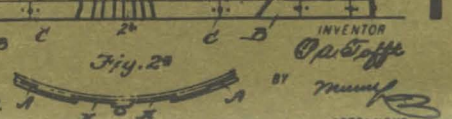


Fig. 2a



WITNESSES
Paul Jabel
H. L. Reynolds.

INVENTOR
P. A. Tofft
BY
Munn & Co

of inventions for tower structures resembling a restless striving to reach higher or stand taller, or perhaps as a substitute for actually taking flight.

When the new high-rise (six-story) tenements of the big city emerged in the late 19th Century, the inventors were ready with an amazing assortment of self-rising fire-fighting platforms. Here, the telescoping hydrolic tube and the lazy-tong principles **(6, 7, 8)** were advanced much beyond the imagination and a good deal farther than their mechanical possibilities.

The marvelous character of patent records is that they are not interpretive history in which an author has chosen and excluded subjectively. The nonsense of the time is recorded along with the profound discoveries.

Almost anything can be patented if it can be shown to be new and useful, and it is evident that there has always been the broadest interpretation of what is "useful." There is a flying machine that looks like a submarine **(9)**, with flapping fins on springs to keep it aloft. There is anti-sex armoured clothing to prevent and cure insanity attributed to self-abuse. There is the pathos of a patented cueing device for music to accompany the silent films **(10)**—granted the year that talkies came out.

One can't help wondering what history would be like if we had patent office records from ancient China, Sumeria, Greece, or Rome. We would surely have a most intimate and fascinating picture of those worlds.

Although we have not concentrated on the archive value in applying for patents, but rather on the "get rich with new ideas" principle, we have unconsciously built a detailed picture of our civilization, much as did the Pharoahs, who also left behind time capsules for future civilizations to study.

The records are all there, set down with the air of immediacy out of fear of theft; the opening of a patent disclosure even sounds like the legal language of a will. There is perpetual publication and anyone can own a copy of any patent for a quarter. The greatest unsolved difficulty is the millions and millions of accumulated documents, due to the patent explosion of this century, and the drudgery of sifting through great mountains of paper. The inventors are at this moment busy arriving at a solution.

9▶

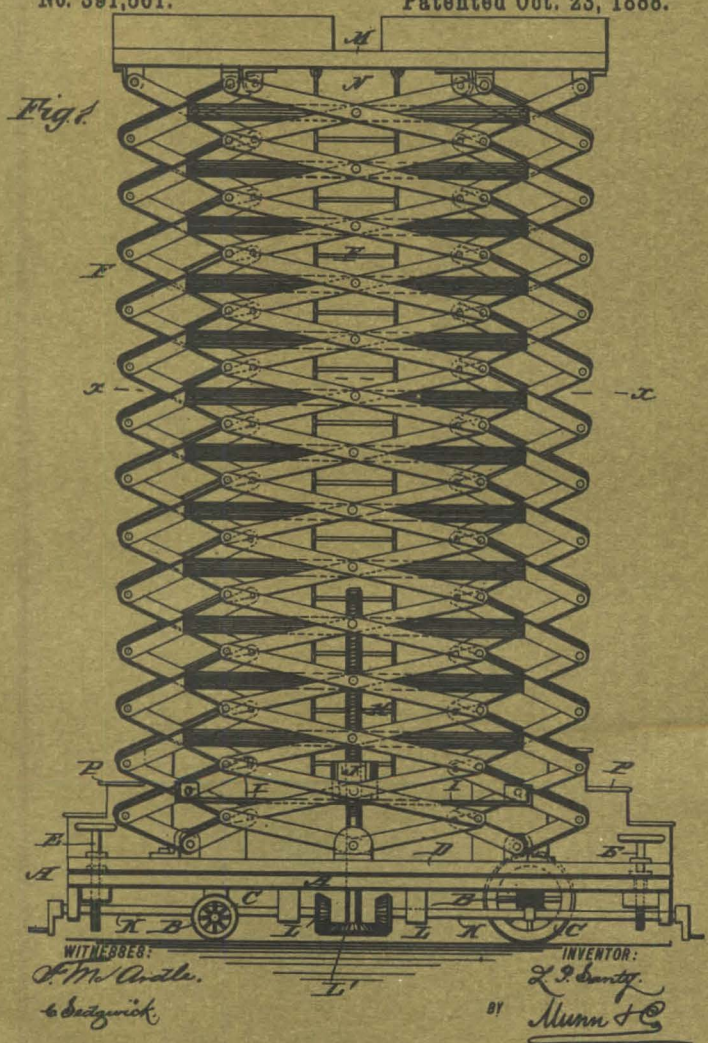
(No Model.) 2 Sheets—Sheet 1.

L. P. SANTY.

FIRE ESCAPE.

No. 391,561. Patented Oct. 23, 1888.

Fig. 1.



WITNESSES: INVENTOR:

L. P. Santy.

BY Munn & Co

No. 669,492. Patented Mar. 5, 1901.

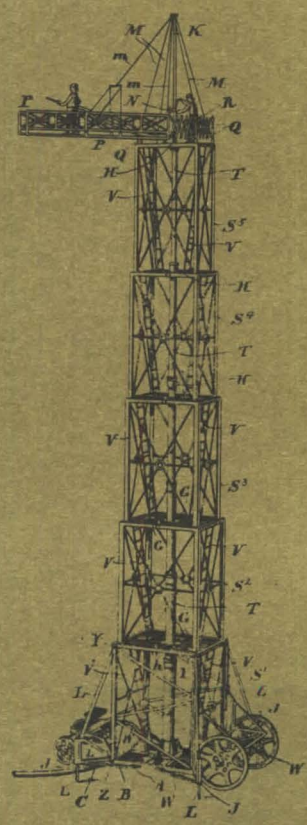
L. W. GILL.

FIRE APPARATUS.

(Application filed Nov. 22, 1899.)

(No Model.) 5 Sheets—Sheet 5.

Fig. 7.



Witnesses:

Inventor:

Lester W. Gill.

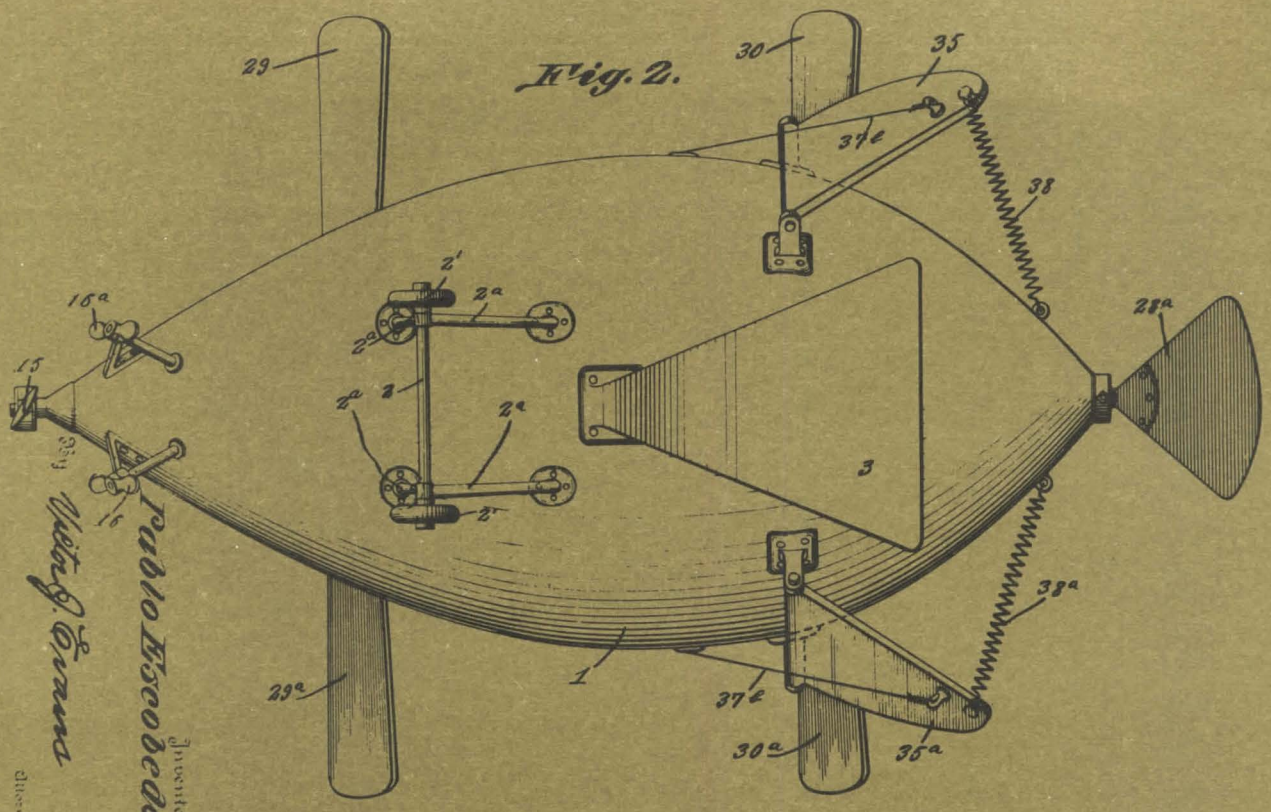
by Munn & Co. Atty.

Dec. 3, 1929. P. ESCOBEDO 1,737,963

FLYING MACHINE

Filed March 12, 1928 6 Sheets-Sheet 2

Fig. 2.



Pablo Escobedo, Inventor

By Walter G. Evans Attorney

8

E. MAGLIOCCA.

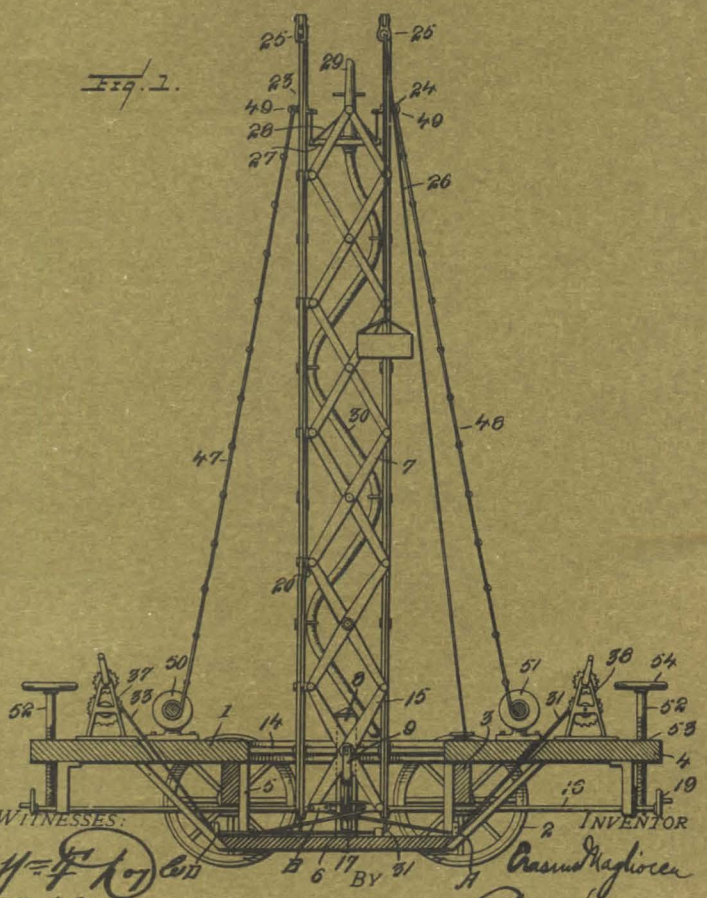
COMBINED WATER TOWER AND FIRE ESCAPE.

APPLICATION FILED MAY 29, 1909.

1,003,967. Patented Sept. 19, 1911.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

L. T. Callahan

INVENTOR

Casmo Magliocca

BY

Robert H. Young

Attorney

10

C. F. PIDGIN.

MOTION PICTURE AND METHOD OF PRODUCING THE SAME.

APPLICATION FILED JULY 19, 1916.

1,240,774. Patented Sept. 18, 1917.

Fig. 1.

Fig. 6.

Fig. 5.

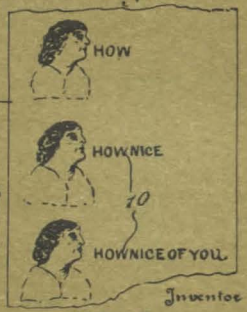


Fig. 2.

Fig. 3.

Fig. 4

Witness:

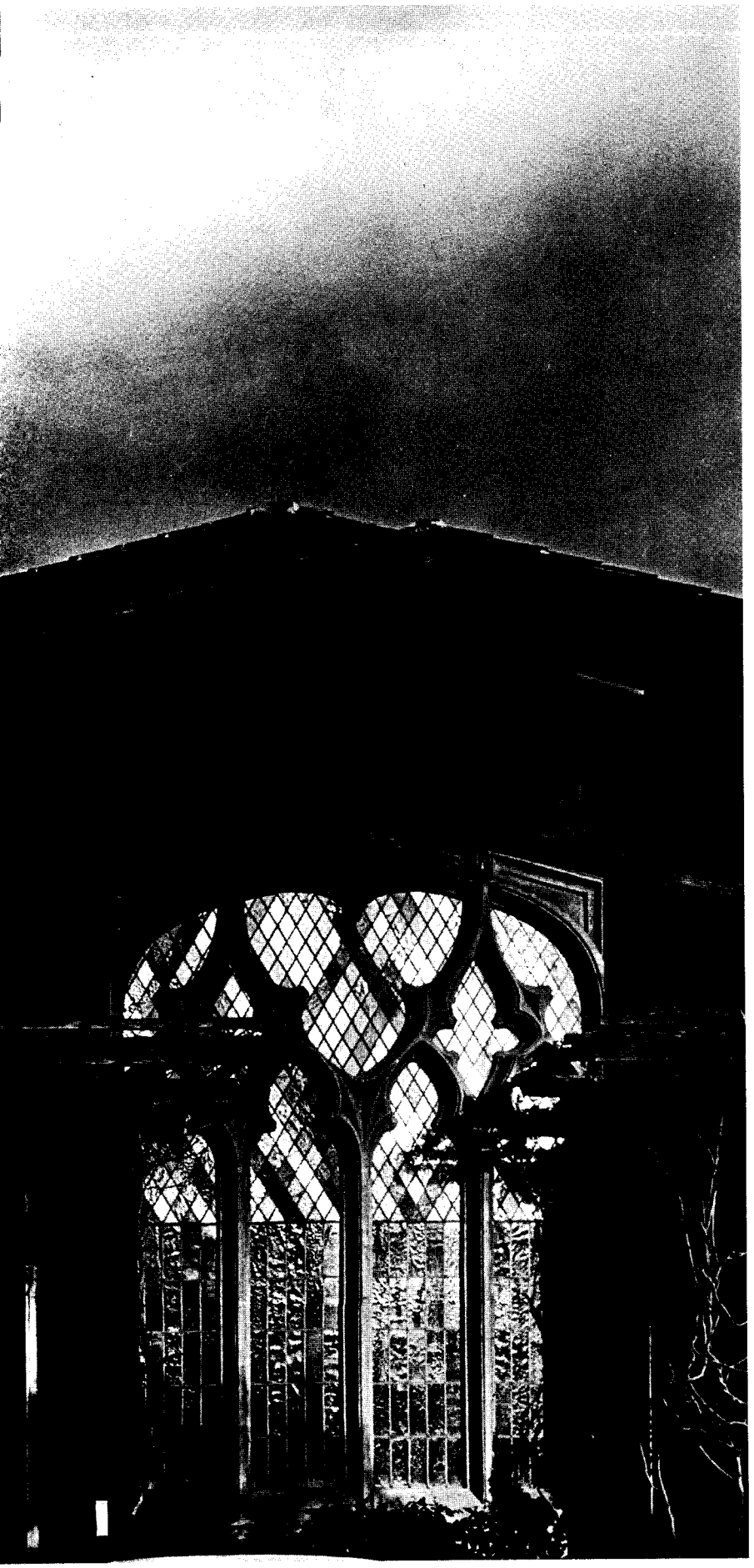
J. P. Fallen.

T. F. Riley

Inventor

C. F. Pidgin.

By A. Randolph Jr. Attorney



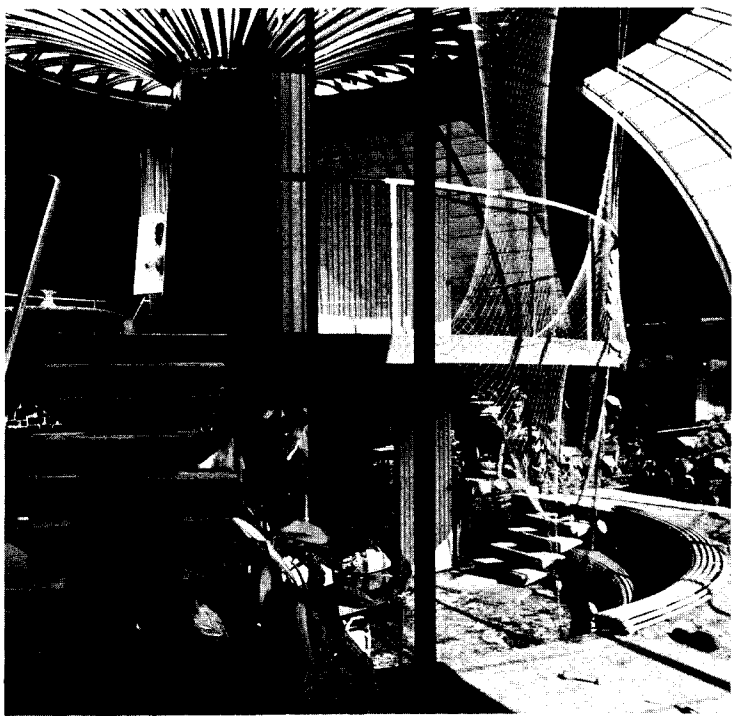
Uncommon Uses of Common Components

A good architect can choose well-designed building components and apply them appropriately. A gifted architect, however, can sometimes use such elements in unexpected ways to produce a custom-designed effect. Economy is almost always the motivation behind such applications, but the result—as illustrated in the following examples—is often great richness.

All of the windows in Bernard Maybeck's First Church of Christ, Scientist, in Berkeley, California (1910)—except for the tall, Gothic style ones—are made up of standard factory sash, with additional leaded joints introduced between panes of obscure glass to give them more delicate scale. Walls are of gray asbestos sheet, held in place with diamond-shaped pieces of red asbestos. The operable section at the center of each unit of sash is emphasized in the interior view.

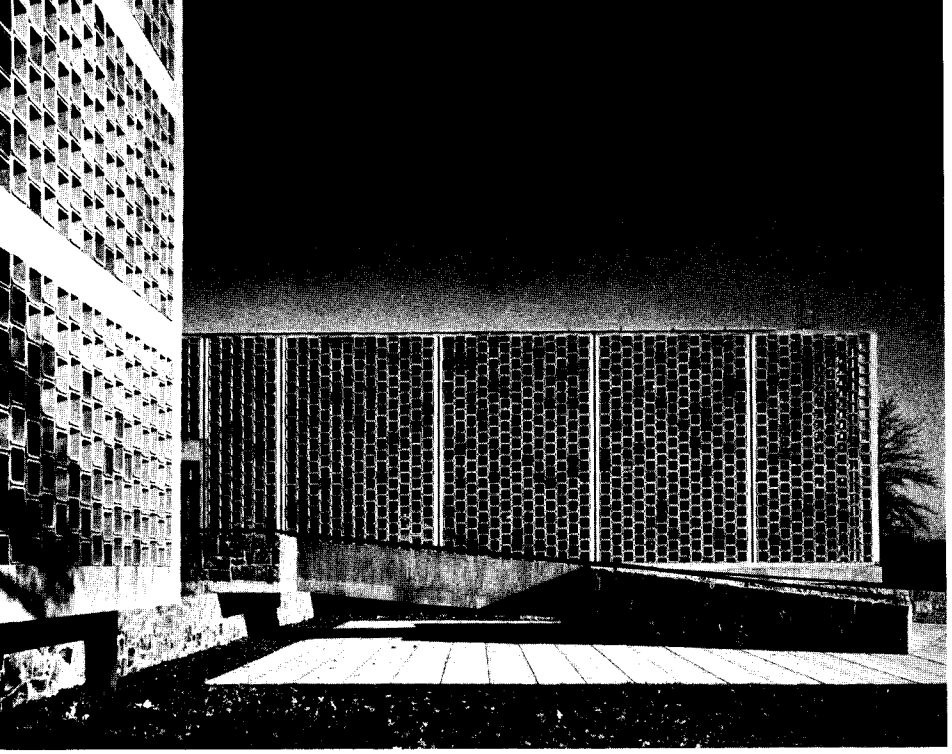
In 1949, Charles Eames built a house in Santa Monica, California (above and left), *to demonstrate the design potentials of standardized components. Steel windows from standard manufacturer's catalogues are combined with wall panels of steel, plywood, and asbestos cement to form controlled compositions. One of the steel roof joists forms a decorative fascia at the end of the house.*

In an apartment building (right) *by Rafael Soriano in Los Angeles (1951), corrugated plastic sheet is used in balcony fronts and fences. Note the crossing of vertical and horizontal sheets to form the fences.*

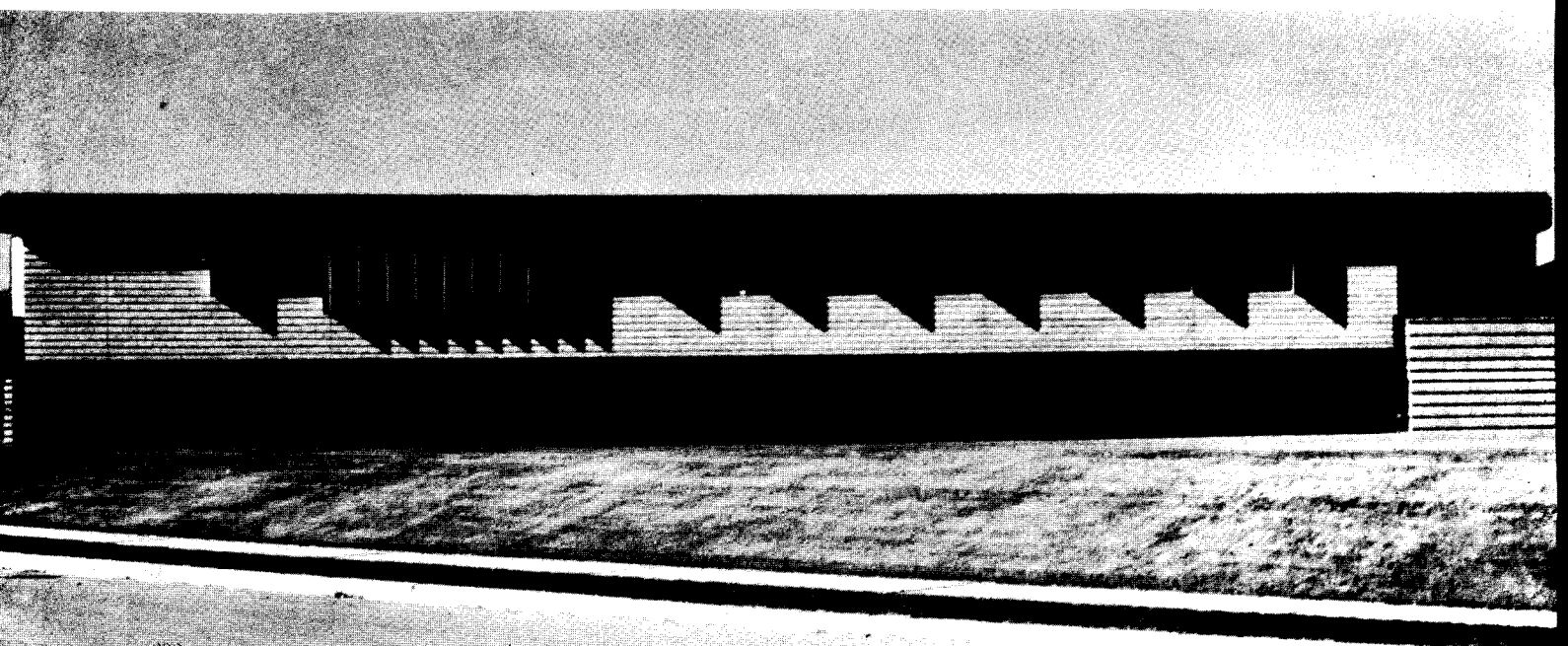


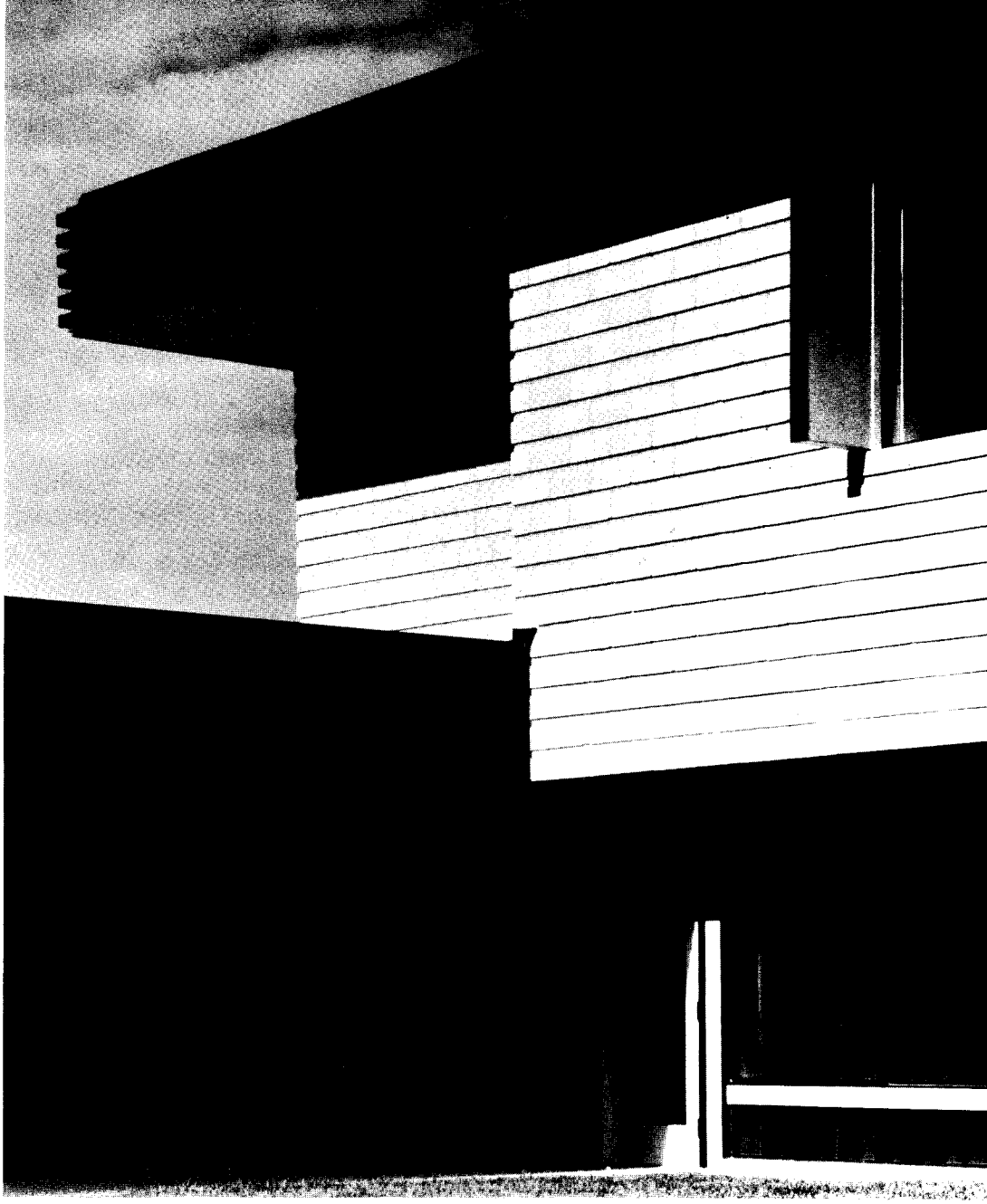
Bruce Goff's Ford House in Aurora, Illinois (photos above), *built in 1950, made sensational use of structural ribs from the then all-too-familiar Quonset hut. One third of the bulbous central dome is enclosed only by flyscreening; the two satellite wings are framed with Quonset ribs of shorter radius. Goff's circular Garvey House in Urbana, Illinois* (below), *has structural columns of spun concrete sewer pipe, painted salmon pink.*

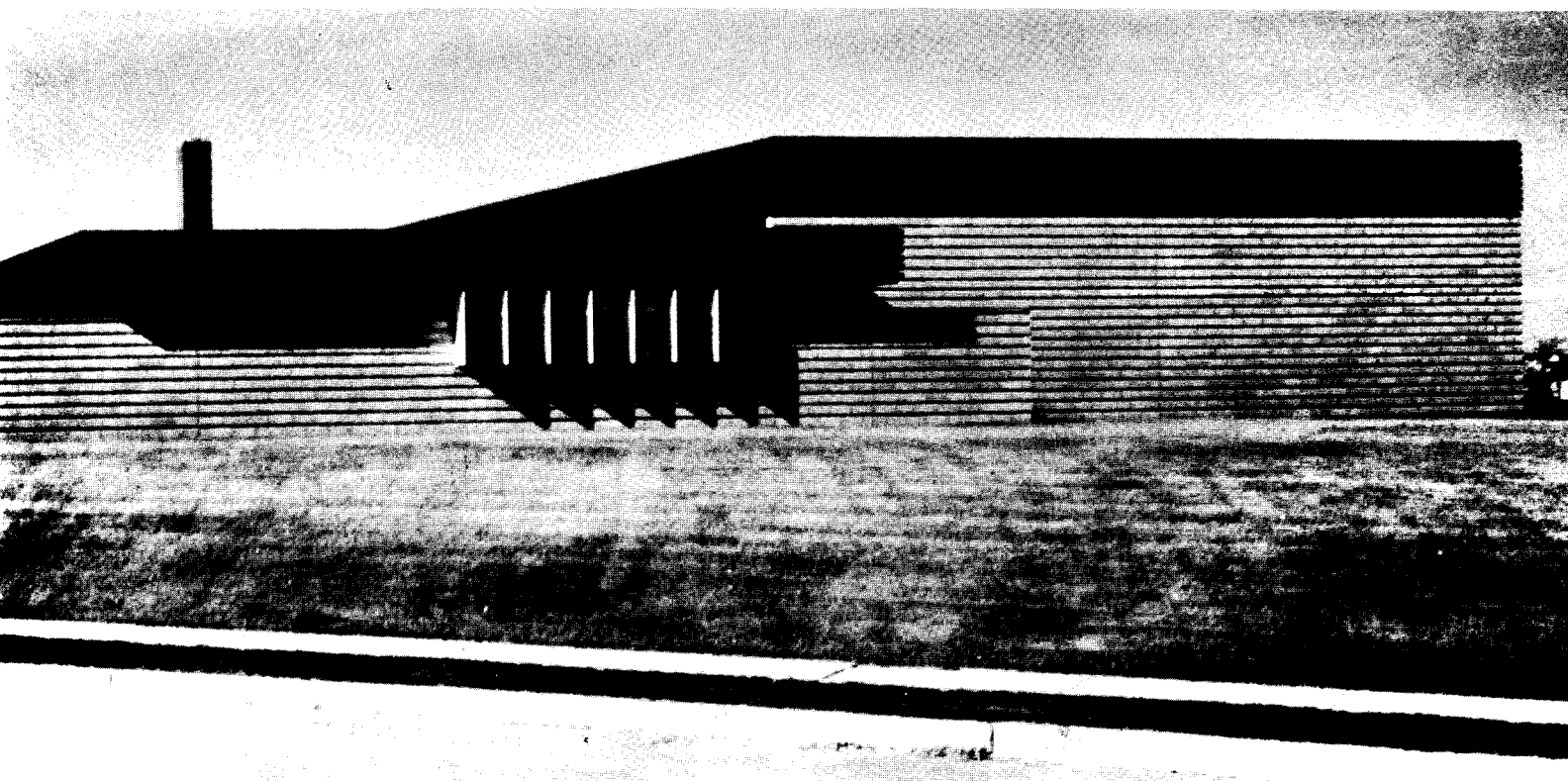
Herb Greene's own house at Norman, Oklahoma (right), *has wall and ceiling surfaces of red cedar shakes in the upper-floor living area. Balustrades of the stairs leading down to the lower floor and up to the penthouse crow's nest are made of ordinary steel reinforcing rods.*



Marcel Breuer made use of ordinary flue tile in his sunscreens for Hunter College Library (above) *in the Bronx, New York (1960). In publishing the building, P/A commented, "The sections of square flue tile make a handsome repetitive design that is neither banal nor brutal." In his design for* Arts & Architecture's *1958 Case Study House* (right), *Pierre Koenig used steel decking as an exterior wall, set within the steel structural frame. In the new Oxford University Press Building, Don Mills, Ontario* (facing page and below), *by Fairfield & DuBois, fascias are of standard metal decking. The strong horizontal emphasis is sustained in the walls, which are of standard concrete block, modified by a reveal that produces the visual effect of wide mortar joints.*







The Design of Building Products: Conclusions

The findings of this report make clear that most manufacturers of building components do their own product design, while a relatively small number seek the aid of outside design sources. Practically all feel that their primary responsibility is to develop products to fulfill new needs, or to meet old needs in a new way—both approaches reflecting, presumably, greater efficiency in product application and thereby greater market acceptance. Approximately half admitted to the practice of styling products to either contemporary *or* traditional tastes, merely for the sake of change or to meet competition. As for the talents of their staff designers, manufacturers in the main rely on those with engineering backgrounds, and relatively little on architectural or industrial design consultants. Some, surprisingly, still depend upon research personnel, product managers, and merchandising departments. For outside design aid, engineers and industrial designers are used more frequently than consulting architects. Basically, however, if a manufacturer uses the services of outside industrial designers at all, it is primarily for styling rather than to take advantage of their talents for research, understanding of production problems, and the manufacturer's interest in standardization. Similarly, the consulting architect's experience in interrelating products with contiguous components is insufficiently exploited. The services of interior decorators, color consultants, and other specialists are used only sporadically. Although most manufacturers reported having research facilities of their own, a variety of outside facilities are also used. The practice of field testing is universally accepted.

Industrial designers who have worked on architectural products expressed two basically different opinions about the quality of designs for building components. Some feel that styling is, fundamentally, bad design—and that architects are just as guilty of this failing as industrial designers. Others, doubtlessly with a more realistic viewpoint, believe that styling is one valid, if incomplete, aspect of design and therefore that there can be both good and bad styling. Good styling, they feel, means making an improvement in the visual appearance of a product. One question that arises involves the choice between anonymity and obtrusiveness. If certain items should be unobtrusive, it must be assumed that those items should not be designed to be visually handsome in themselves. The fire alarm or air-conditioning grille, no matter how well designed, is still, in the main, felt to be an intrusion on the over-all design of a building or an interior. Perhaps as long as a society feels it necessary to clothe itself for reasons other than warmth and protection, we shall feel the need to cover architectural devices that are basically functional and mechanical, such as grilles and alarms. On the other hand, this problem will perhaps be resolved if it is approached in terms of the skillful use of such components in an over-all design, rather than in terms of the design of the component itself.

As to the question of who is best qualified to design architectural products, several industrial designers claim that inclination and intellectual approach, if not talent, are more important to the evolution of good designs than training and professional affiliation.

Our survey shows clearly that the architect's primary function in the field of building components is how he uses them. He is the one who ultimately selects and specifies them, modifies them, or elects to design custom components instead. Thus he has a unique understanding of the requirements of components in the context of over-all building design. His judgment of product design may be transmitted to the manufacturer directly, by professional consultation, or affect him indirectly in terms of sales—the strength of this influence varying from product to product, depending on the extent to which sales are based on architects' specifications. Any person actually designing a building component has to understand more than its desired characteristics, however. He must also understand production and marketing. This is not so much a matter of the manufacturing process itself—which can be understood relatively easily—but of retooling, promotion, distribution, and other management problems. The manufacturer can often use advice in these areas—and their relation to design—before he can make constructive changes in his line. Since all these business problems must be taken into consideration, it is not surprising to find that few architects design building components for manufacturers. Most of those who accept such commissions are specialists in this area, and many of them work in other areas of industrial design as well. Even the architect who does not design standardized components may find that an understanding of production and marketing processes is of great value in selecting proper components or designing custom items. With sufficient background, he may even find opportunities to obtain custom components at mass-production prices by persuading the manufacturer to market the item as a standard one. Some architects with considerable experience in the design of building components advocate systems of components for entire buildings as the only way to obtain the full economic advantages of standardization. It is in the design of such integrated component systems — where structural, mechanical, and architectural requirements must be considered together—that the architect is uniquely qualified.

Many products are on the market today that were not designed by professional designers at all; and it is here that the most critical area of architectural product design lies. More than a hundred years after the Industrial Revolution, manufacturers still are not entirely sold on the value—indeed, the necessity—of good design.

To improve the process of education, both for manufacturers and users of architectural products, several recommendations might be suggested: first, there is clearly a need for a permanent Center of Good Design where good design would be encouraged and where incentive would be given to both manufacturers and designers. If the influence of the Museum of Modern Art's Good Design Exhibitions a decade ago is any evidence, then something on the order of the British Council of Industrial Design would almost certainly be of benefit to this country. Such a center would be able to disseminate information, would be able to sponsor seminars for consultation on the subject between architects, industrial designers, and manufacturers, and might even be able to re-educate popular thinking and to correct such misconceptions as that novelty is more important than 20,000 reproductions of something already perfect.

Finally, it seems indisputable that the extrapolation of a new idea is of the highest value in any product design. Although building product manufacturers pay lip service to the value of the trained designer, especially those with architectural experience, it seems apparent that most have not begun to utilize the capacity of their potential contributions to building product design.

THE EDITORS

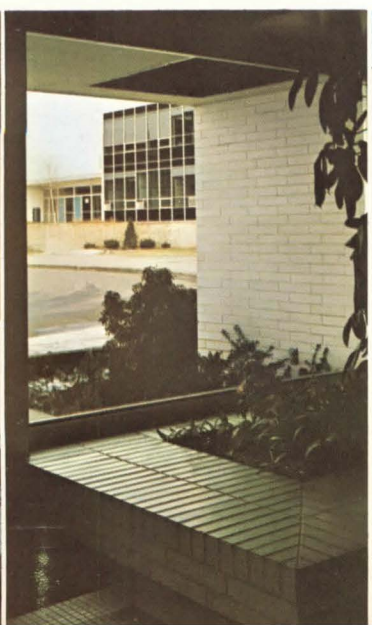
Warren Area High School, Warren, Pennsylvania ■ Architect: Meyers, Krider, Werle & Ellenberger, Erie, Pennsylvania
Duramic® Glazed Brick—White with Brown Speck Shade 712 ■ Duramic® Glazed Tile—Grey Mottle Shade 772 in hallways
Green Mottle Shade 749, Cream and Buff Mottle Shade 745, Cream Speckle Shade 763, Light Blue Shade 731,
White with Brown Speck Shade 712 in classrooms and other interior areas.

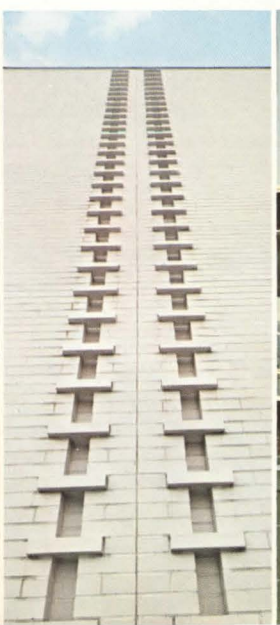
WASH & WEAR

Wash and wear . . . a very important reason for specifying HANLEY Duramic® Glazed Brick and Tile. On the outside, rain keeps it clean . . . inside, a damp cloth does the job. Think of all the time saved. HANLEY Brick and Tile is available in a wide selection of colors (30 brick shades, 21 tile shades) that will not fade. For quality facing material that is durable as well as economical, specify HANLEY . . . the ideal choice in schoolhouse construction.

HANLEY COMPANY

One Gateway Center, Pittsburgh, Pa. 15222
Sales Offices: New York • Buffalo • Pittsburgh





Projecting Mechanical Demands

BY WILLIAM J. McGUINNESS

Results of a study to determine the best and most economical method of acquiring and operating mechanical and electrical equipment for a college are discussed by the Chairman, Department of Structural Design, School of Architecture, Pratt Institute.

Grand Valley State College at College Landing, Allendale, Michigan, has four completed buildings and two under construction. Ten years from now it should have 30 buildings. The increasing demand for such services as heating, cooling, domestic hot water, and electricity will pose problems, most of which have already been solved.

The solutions have been achieved by the architects, the engineers, the Building Division of the State, and the Board of the College. The architectural firm of Meathe, Kessler & Associates, Inc., of Grosse Pointe, Michigan, reports a maximum co-ordination of effort and pays special tribute to the judgment, foresight, and encouragement of the Building Division of the Department of Administration of the State of Michigan. The engineers are Hyde & Bobbio.

The expensive replanning and updating of equipment in older universities is in sharp contrast to the economies possible in the relatively short term maturing of Grand Valley.

Making the most of this opportunity, the planners investigated every foreseeable contingency and evaluated each available method. In a 70-page report, the architects and engineers have defined their objectives and summarized their conclusions. The scope of the study included:

(a) *Heating and Cooling Plants.* The feasibility of employing a single, unified plant serving the entire campus through a distribution system was compared with two other methods. One of the latter was a proposed "cluster" design in which a number of smaller plants would service a group of buildings (up to eight). The third was a scheme for placing an individual plant in each building.

(b) *Fuel to be Used.* In deciding between coal, oil, and gas, unit quantities and prices obtained from similar studies or from rates obtained from local utility companies were used. As in the case of all comparisons, practical considerations ran parallel to those of economy. These included such items as cleanliness and future availability of fuel.

(c) *Distribution Systems.* This study is related largely to a comparison of first cost, upkeep, and flexibility advantages. These included a comparison of walk-in pedestrian tunnels carrying pipes and conduits, with the alternate choice of "direct burial," in which the pipes and conduits would be placed in a trench and buried by earth above their necessary protective covering and insulation.

(d) *Distribution Medium.* For both a central plant and a cluster plant, steam at 125 psig was compared with high-temperature hot water at 150 to 225 psig and 350 F. For individual plants, low-pressure steam was evaluated against low-temperature hot water.

(e) *Electric Generation.* The possible solutions in this category were: no generation; partial generation; and full generation.

Recommendations

(a) *Build a Central Plant.* Although the cluster and individual plants revealed a lower first cost, it was apparent that the central plant offered the greatest flexibility during the total physical development of the college building program. Some of the other advantages of this selection will be the localization of noises, odors, and debris to a perimetric campus location and later expansion without relocation of the heating and cooling facilities.

(b) *Use Gas.* Gas on an interruptable basis, using heavy oil as a standby fuel, was the preference. Although coal was indicated as being cheaper, items such as constant delivery and ash removal made gas a preferred selection. The boilers will be chosen for easy conversion to coal in case conditions change.

(c) *Employ Walk-In Tunnels.* Despite the lower first cost of direct burial, the tunnel scheme was recommended as affording easier and lower cost possibilities for maintenance, repair, and expansion.

(d) *Use Steam.* Although comparable in many respects, steam was preferred over high-temperature hot water. It was felt that steam would eliminate the complex operational and pressurization problems. It is also handled with greater facility in the case of leaks. Finally, it is more easily extended and expanded without disrupting its balance or adjustment.

(e) *Generation—An "Open-Door Policy."* Studies of this item were not conclusive, beyond the recommendation of methods of generation if it should be considered at a later date. These are: steam boiler and turbine *or* gas-reciprocating engine plant. The general plant as designed will enable the college to provide electrical generation at minimum expense, should it prove economical at a later date.

An index of the depth of the entire study is its utilization of enrollment statistics and projected enrollment estimates for Michigan's 10 state-supported colleges. Also used was the analysis of unit load data for items such as heating, cooling, and domestic hot water established at Wayne University, in Detroit, and other universities in the state.

Five year growth-periods, 1963-1968 and 1968-1973, were separately considered. Grand Valley's plan to schedule four quarter terms, including a full summer term, justify the inclusion of cooling. An economical space budget, (100 sq ft per student in academic buildings), and the use of interior spaces without windows add to the proposed economies.

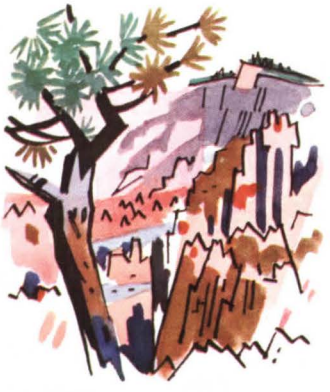
In Color-Rich Utah, Leading Architects Specify Pratt & Lambert Paint

a LOUNGE, UTAH STATE UNIVERSITY, Logan, Utah. Sterling R. Lyon, Architect. P&L products used in LDS Student Living Center include Vapex Wall Primer, Lyt-all Double Duty Primer, Lyt-all Stippling Eggshell, Cellu-Tone Satin, Tonetic Wood Stain, "38" Pale Trim Varnish.

b MILLCREEK 8th AND 11th WARDS CHAPEL, CHURCH OF JESUS CHRIST OF LATTER DAY SAINTS, Salt Lake City, Utah. John N. Clawson, Architect. P&L products used: Vapex Wall Primer, Primafil, Lyt-all Stippling Eggshell, Tonetic Wood Stain, "38" Pale Trim Varnish, Pratt & Lambert House Paint and Primer and "61" Lacquer.

c CAFETERIA, ST. BENEDICT'S HOSPITAL, Ogden, Utah. Completely finished with P&L Vitralite Enamel Eggshell.

d COLLEGE UNION, WEBER STATE COLLEGE, Ogden, Utah. Keith W. Wilcox & Associates, Architects. P&L products used include: Lyt-all Double Duty Primer, Lyt-all Stippling Eggshell, Tonetic Wood Stain.



To complement the natural beauty of the state, Pratt & Lambert products are widely specified in Utah for both interior and exterior application. Architects appreciate the ample range of distinctive, decoratively correct P&L Calibrated Colors® and the unfailingly satisfactory results they get from Pratt & Lambert products.

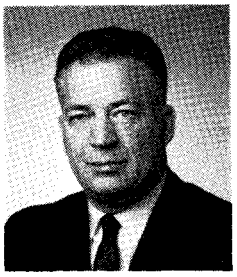
The knowledge and experience of your Pratt & Lambert representative are most helpful, too. You can be sure the finishes he recommends will add beauty and provide maximum protection. He will welcome an opportunity to give ideas on color-styling your next job. Ask him. Or write the Pratt & Lambert Architectural Service Department nearest you —

3301 38th Ave., Long Island City, N. Y. 11101
75 Tonawanda St., Buffalo, N. Y. 14207
4900 S. Kilbourn Ave., Chicago, Ill. 60632
254 Courtwright St., Fort Erie, Ontario

CRAFTSMANSHIP IN THE PACKAGE

PRATT & LAMBERT-INC.

NEW YORK • BUFFALO • CHICAGO • ORANGE, CAL. • FORT ERIE, ONTARIO



Concrete Admixtures — Part 1

BY HAROLD J. ROSEN

Properties and descriptions of various types of concrete admixtures are discussed in the first of two articles by the Chief Specifications Writer of Kelly & Gruzen, Architects-Engineers.

Two recent publications deal with the continuing investigation of concrete admixtures and update our knowledge in this area. One has been prepared by the American Concrete Institute, "Admixtures for Concrete," and the other, "Admixtures for Concrete," by the Portland Cement Association.

For the most part, these studies are primarily intended for the engineer concerned with the effect of admixtures on the structural qualities of concrete. However, in many respects, certain properties of concrete that are affected by these admixtures are of concern to the architect and the specifications writer.

Concrete admixtures are defined in ASTM Spec. C-125 as "a material other than water, aggregate, and portland cement (including air-entraining portland cement and portland blast-furnace slag cement) that is used as an ingredient of concrete and is added to the batch immediately before or during its use."

If properly designed, proportioned, and handled, concrete should not require the use of an admixture. The proper design mix and the selection of suitable materials should result in workable, durable, watertight, and finishable concrete. However, there are instances when an admixture is desirable: i.e., when special properties are required that cannot be obtained by normal methods, or not as economically. Certain special properties that are primarily of interest to the architectural specifications writer include the following: (1) retarding or accelerating the time of set; (2) accelerating of early strength; (3) increase in durability to exposure to elements; (4) reduction in permeability to liquids; (5) improvement of workability; (6) bonding of gypsum and portland-cement plaster; (7) antibacterial properties of cement; and (9) coloring of concrete.

Certain special properties that can be controlled or achieved through the use of admixtures, and which are of interest to the structural engineer, include the following: (1) control of alkali-aggregate expansion; (2) reduction of heat of hydration; (3) modification in rate of bleeding; (4) decrease in capillary flow of water; and (5) reduction of segregation in grout mixtures.

It should be stated unequivocally that admixtures are not a substitute for good concreting practices. When special properties are required, and the use of an admixture is decided on, then those admixtures being considered for use should conform with applicable ASTM or Federal Specifications. Since admixtures affect more than one property of concrete, sometimes affecting desirable properties adversely, trial mixes should be made that reproduce job conditions, using the admixtures with the design mix. The compatibility of the admixture with the other concrete ingredients is then observed, including its effects on the properties of the fresh and hardened concrete.

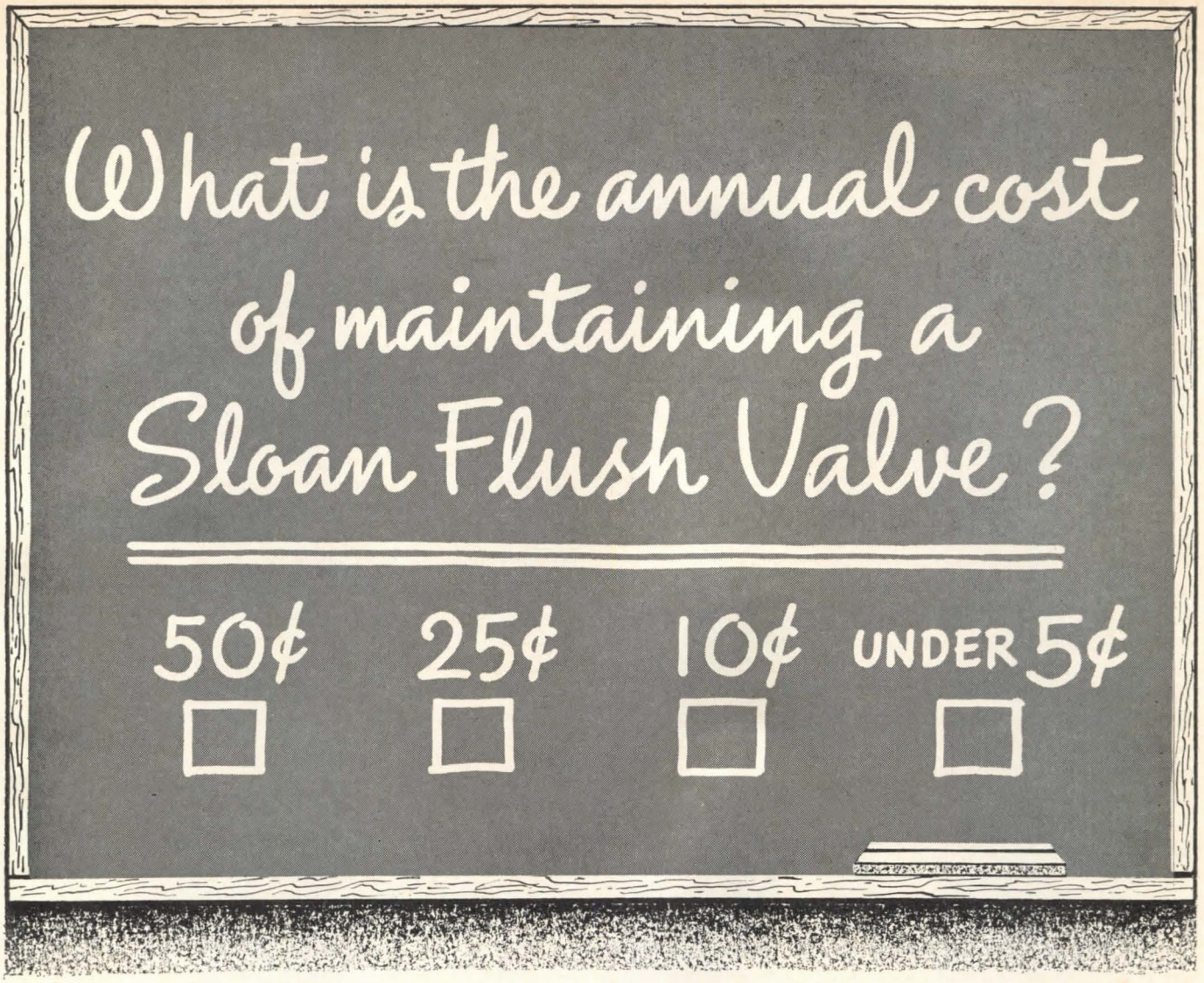
The properties of concrete that admixtures affect or control have been enumerated above. The classification of admixtures can be established rather broadly—insofar as the architectural specifications writer is concerned—as follows: (1) air-entraining admixtures; (2) retarding admixtures; (3) workability agents; (4) accelerating admixtures; (5) damp-proofing and permeability-reducing admixtures; (6) bonding agents; (7) fungicidal, germicidal, and insecticidal admixtures; and (8) coloring agents.

Air-Entraining Admixtures

The admixture that has obtained the widest recognition and use to improve durability of concrete exposed to a combination of moisture and cycles of freezing and thawing, is an air-entrainment agent. The mechanism through which air-entrained concrete resists the disruptive effects of frost action is in the large number of minute air bubbles that are distributed uniformly throughout the cement paste.

Entrainment of air may be produced by means of air-entraining admixtures added to the concrete ingredients before or during the mixing of concrete, or through the use of an air-entraining portland cement. The materials used for air-entrainment include natural wood resins, fats, and oils that have been chemically processed. Air entrainment admixtures should meet the requirements of ASTM Spec. C-260. Conformance with these specifications will assure that the admixture functions as an air-entraining agent, that it can effect a substantial improvement in the resistance of concrete to freezing and thawing, and that none of the essential properties of the concrete are seriously impaired.

The use of air-entrained concrete has become so widely accepted that cements containing air-entraining admixtures are included in ASTM and Federal Specifications. The admixture is interground with portland cement during the manufacture of air-entraining additions; air-entraining cements should conform to the requirements of ASTM Spec. C-226 and C-175, respectively.



Does 1½ cents per valve per year surprise you?

Such a low, low figure just has to be one of the smallest items in any building maintenance budget—one important reason why Sloan Flush Valves are found to be the overwhelming choice for the vast majority of the nation's fine buildings.

In addition to low maintenance, Sloan Flush Valves are unequalled in over half a century for dependable operation, long life and water economy.

Your building, too, can have this same SLOAN quality. Merely specify Sloan Flush Valves with confidence—most people do.

SLOAN VALVE COMPANY • 4300 WEST LAKE STREET • CHICAGO, ILLINOIS 60624

For more information, turn to Reader Service card, circle No. 391

The Lien Law and the Non-Owner Client

BY BERNARD TOMSON AND NORMAN COPLAN

P/A's legal team discusses a recent case that emphasizes the importance of an architect assessing a client's financial stability, when contracting with a party not the owner of the property to be improved.

In many states, the lien law affords some measure of protection to the architect whose fee is jeopardized because of the insolvency of his client or for some other reason. Where services are rendered, however, to someone other than the owner of the property, lien rights may not be available to the architect, even though the services resulted in an improvement of the owner's property. For example, architectural services furnished to a tenant for alterations to leased space in a commercial building may or may not create the right of lien against the landlord's property, depending upon the lien law of the particular state involved and upon the relationships between the parties.

In a recent New York case (*James E. Mitchell & Son, Inc.* v. *Blessington*, N.Y.L.J., Vol. 151, No. 52, p. 15), an architectural firm sought to foreclose a mechanic's lien for alleged architectural services rendered to premises in the Borough of Manhattan, City of New York. These services were performed for Plummer, Ltd., a tenant in the building. The architectural firm alleged that these services were furnished with the "approval and consent" of the owner of the building.

The lien law of the State of New York provides that "a contractor, subcontractor, laborer, materialman, (etc.) who performs labor or furnishes materials for the improvement of real property *with the consent* or at the request of the owner . . . shall have a lien for the principal and interest of the value, or the agreed price, of such labor or materials upon the real property improved or to be improved." Where work or services, therefore, are performed at the request of a tenant for the improvement of real property, a lien against that property is available only if the owner furnished his "consent" to the performance of such services. The vital issue to be determined by the Court in this case, therefore, was whether in fact a consent had been given by the owner that would entitle the architectural firm to a lien.

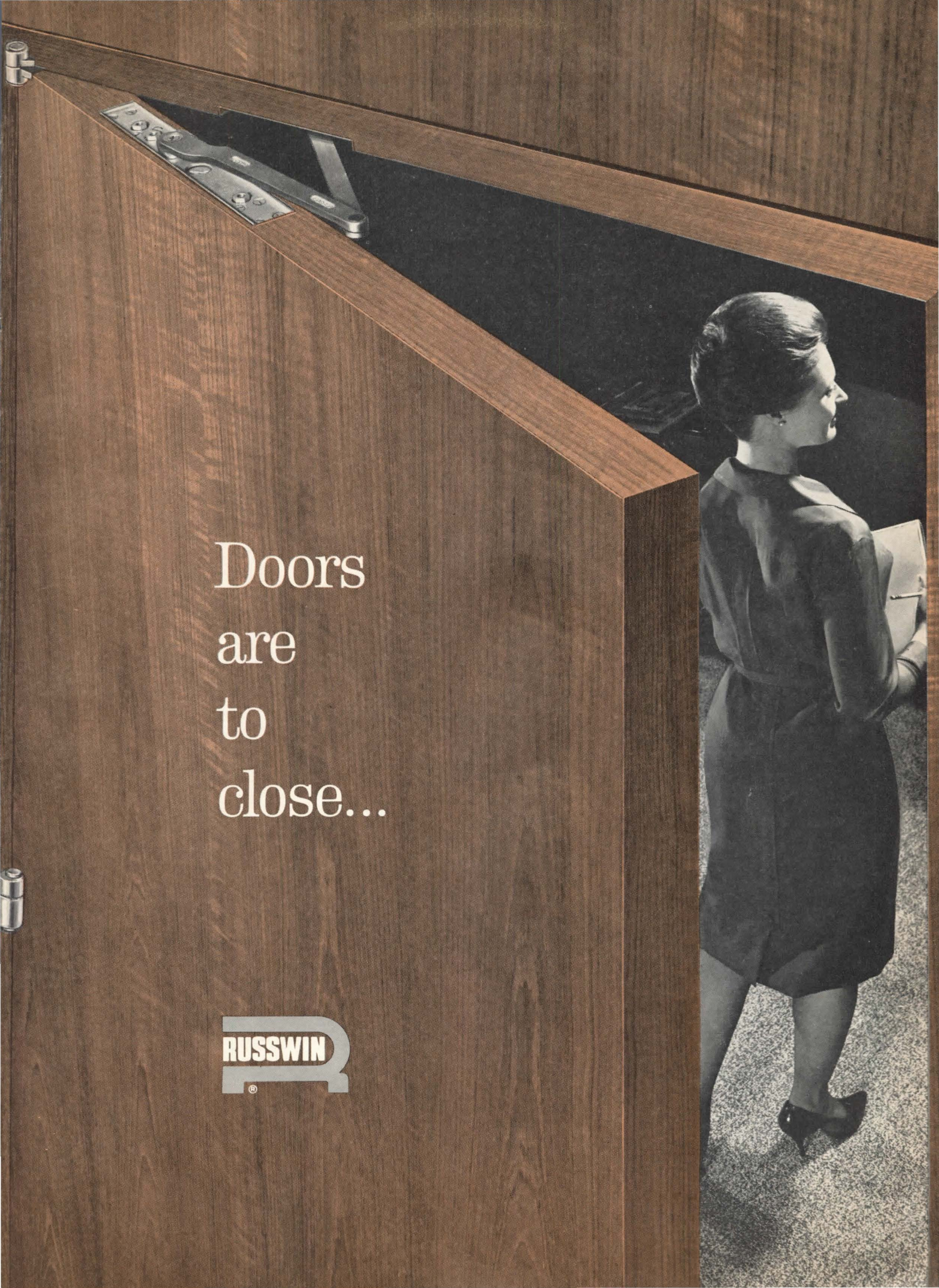
The owner of the building in question entered into a 30-year lease of the building, with two renewal options of 10 years each, with Plummer, Ltd., as tenant. This lease provided that any contract for labor, services, or materials that might be entered into by the tenant in connection with any alteration or improvement to the building, which would contemplate a total expenditure exceeding $50,000, should provide "that no lien or claim shall therefore be created or arise or be filed by anyone thereunder upon or against the demised premises." The lease further provided that, before the commencement of any work, the tenant should deliver to the landlord a duplicate original of such contract, or a written waiver by the architect, engineer, contractor, etc., of all right of lien he might otherwise have against the demised premises. The lease further provided that under no circumstances would the cost of alterations made by the tenant constitute a liability of the landlord and that the tenant would be solely and wholly responsible to contractors, etc., furnishing and performing labor and material.

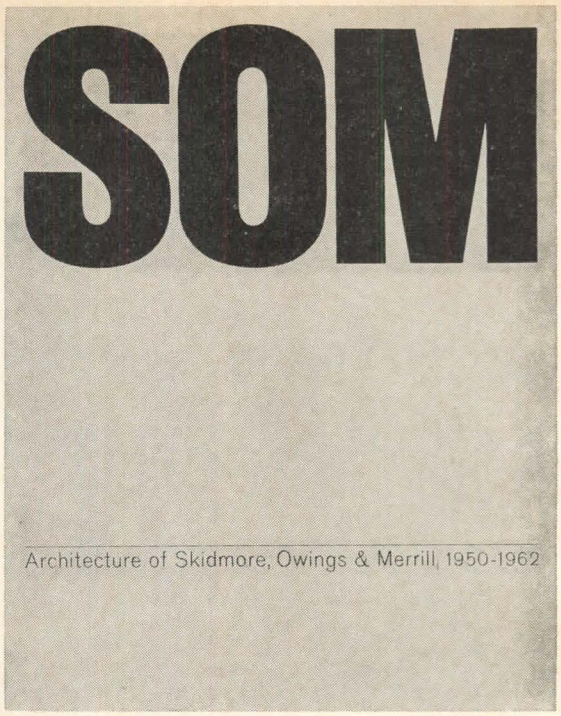
The agreement between the tenant and the architectural firm did not contain those provisions of the lease that would have constituted a waiver of lien on the part of the architect, and apparently the architect did not know of these provisions, nor did he investigate the terms of the lease between his client and the owner of the building. The architectural agreement merely provided that the tenant, Plummer, Ltd., retained the architect to perform the necessary services in connection with alterations, and agreed to pay for such services.

At a time when the client owed the architect more than $200,000 for architectural and other services, the tenant was adjudicated a bankrupt. As a consequence, the architectural firm sought to impose a lien for the moneys due upon the owner's property. It was, however, incumbent upon the plaintiff-architectural firm to establish that the owner had consented to the rendering of the services in question. To establish this, the plaintiff relied upon an approval of certain plans that had been submitted to the owner's architect. The owner's purported approval was in the form of a stamp on the back of these plans, which stated, "Approved for general conformity to architectural design." These particular plans showed intended structural changes only. In addition to these plans, there were about 130 pages of additional blueprints and approximately 300 sketches relating to the alterations that were executed by the contractor but never exhibited to the owner, nor was it specifically claimed that they were approved by the owner. The Court concluded that the stamped approval of the owner's architect on some of the plans was not sufficient to spell out a consent to the services for which a lien was sought. The Court said:

> "The plan . . . which was shown to the defendant's architect was not a detailed working drawing nor did it show a finished product of the store as it was to ultimately look. Aside from this stamp on the plan, the evidence is barren of any other contact or communication between the lienors and the owners of the building. During the course of the alteration, the owners were neither in possession or control of the premises. Nor is there any evidence of the owners ever having been present during the course of the alteration. . . ."

The denial of a lien in the foregoing case illustrates the fact that, when contracting with a party not the owner of the property that is to be improved, the architect must show care in assessing the financial stability and reliability of that party.


Doors
are
to
close...
RUSSWIN



Imitators in the Noblest Sense

BY PETER COLLINS

SOM: ARCHITECTURE OF SKIDMORE, OWINGS & MERRILL, 1950-1962 *with an introduction by Henry-Russell Hitchcock. Published by Frederick A. Praeger, 111 Fourth Ave., New York 3, N.Y., (1963, 220 pp., illus. $18). Reviewer is Professor of Architecture at McGill University.*

Most readers of P/A will find pleasure in this lavishly illustrated volume, because the vast majority of buildings shown in it are so pleasant to look at. This may seem a trite remark to make about an album of architectural photographs, but the quality of beauty is in fact relatively rare in modern architecture, especially in the period covered by this book. Of course, all today's "Masters of World Architecture," and those who aspire to that title, are searching for aesthetic kicks of one sort or another. But many are seeking qualities other than beauty, such as intricacy, complexity, surprise, roughness, and other characteristics of sublimity and picturesqueness, first identified by the romantic philosophers of the late 18th Century. There are even some who follow the lead of the mid-19th Century anti-aesthetes, and uncompromisingly search for downright ugliness. Thus among the acknowledged leaders of the profession today, those who unashamedly seek beauty are relatively rare, and those who—like Skidmore, Owings & Merrill—achieve it, are rarer still.

Art critics who find no interest in an architect's work unless he is a pioneer of some new form or other will doubtless dismiss the work of SOM as simply variations on the "paradigm" devised by Mies van der Rohe. It is undoubtedly true that the honor of applying classical doctrines to steel and glass belongs in the first instance to Mies; but a close inspection of the illustrations in this book provides ample evidence that SOM are certainly not plagiarists, but imitators in the noblest and most creative sense of the word. Moreover, they have undoubtedly developed technological aspects of this kind of architecture much further than any lone pioneer could have done by himself.

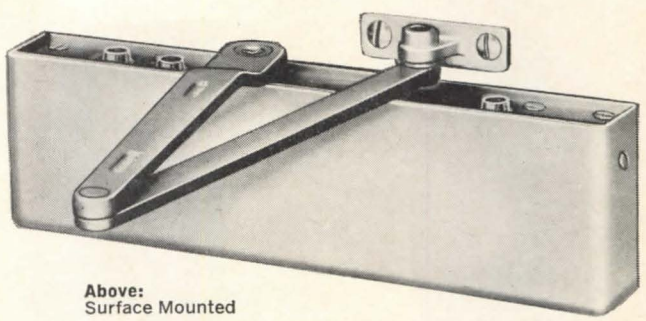
In this respect, another pleasure to be derived from perusing this book results from the fact that the nature of the SOM organization (comprising 17 partners and many associates) precludes a biographical approach to the presentation of their work. Not that there is anything intrinsically wrong with biographical architectural histories; indeed, there is no doubt that, with respect to certain personalities (such as Frank Lloyd Wright), the biographical approach has proved the most illuminating way of explaining the vital qualities of the kind of architectural creativity involved. But the method of biographical analysis, in contemporary architectural *criticism*, has the disadvantage of relating architectural forms more

Continued on page 216

To help you close doors with simplicity... Top-Railer® Door Closers by RUSSWIN®

Door closers needn't spoil the appearance of doors or interiors. Not if your closers are Russwin Top-Railer Door Closers. These closers can be semi-concealed or fully-concealed. Even where surface-mounted, they are neat and inconspicuous. Dual closing and latching controls provide complete adjustability. High-strength, full rack and pinion design assures efficient, full-range control. Other Top-Railer features: adjustable backcheck; precision needle bearings for long-wearing, low friction operation; one location regardless of door size. See your Russwin supplier. Or write Russell & Erwin Division, The American Hardware Corporation, New Britain, Connecticut.

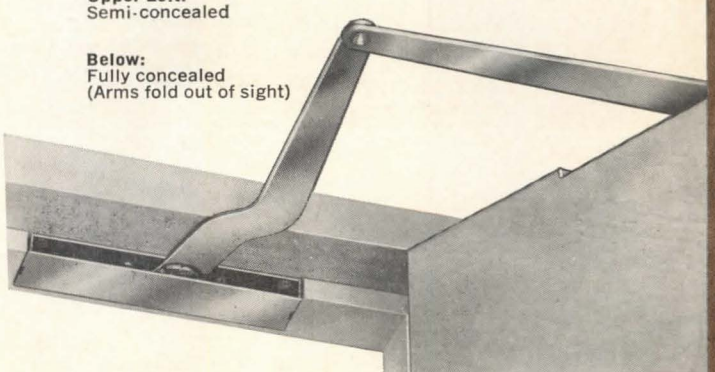
For more information, circle No. 388



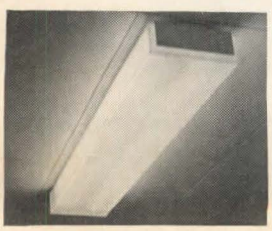
Above:
Surface Mounted

Upper Left:
Semi-concealed

Below:
Fully concealed
(Arms fold out of sight)



Light



Simple, low-cost Cleer-Vue easily fits any new or modernized construction. Cleer-Vue luminaires' simple design makes it easy to install. Back-up plate protects lampholders from breaking during installation and maintenance. Exclusive Westinghouse Opti-Kube prismatic lens gives a wide diffusion of soft light. Provided with or without metal trim. Just right for any kind of new construction

by Westinghouse

or modernization because of the combination of low-cost and attractive design. Whether the installation is in a narrow hallway, an office area or a classroom, there's a Cleer-Vue size to fit. ■ For more information on the low-cost, attractive Cleer-Vue luminaires, contact your Westinghouse Lighting Sales Engineer or write to Westinghouse Electric Corporation, Edgewater Park, Cleveland, Ohio.

J-04009

You can be sure if it's Westinghouse

Continued from page 212

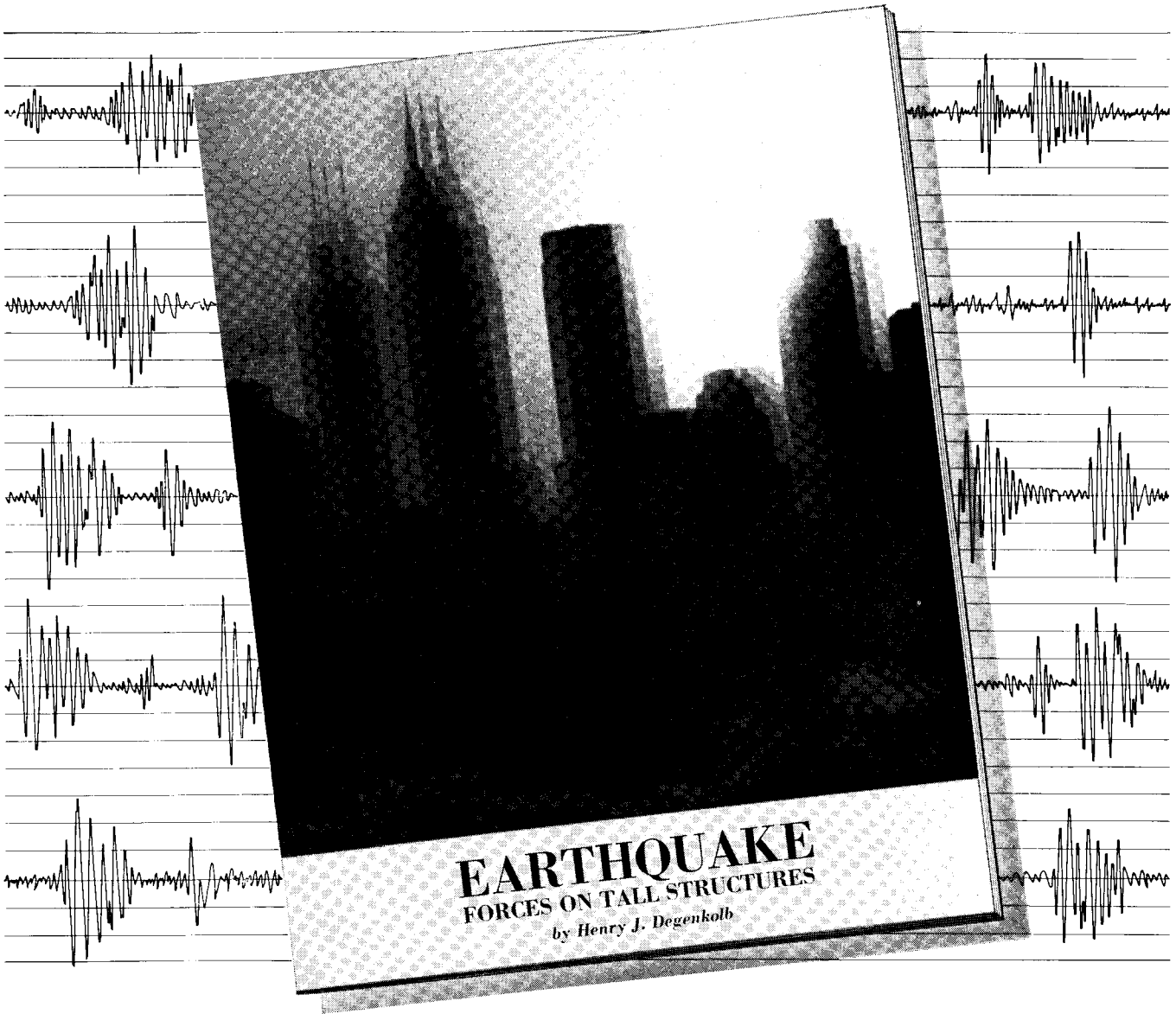
to the evolution of each architect's own personality than to the evolution of tectonic form as such, and hence it militates against *the kind* of evolution which Gropius foresaw when he demanded an anonymous architecture (this was the kind of evolution idealized by all the more rational theorists who demanded a new architecture in the mid-19th Century).

In *The Architecture of Skidmore, Owings & Merrill*, all the designs are anonymous, not merely in the sense that one is not told which partner was responsible for which building, but in the sense that one is not told anything about the partners' personalities at all. The reader is asked to judge simply from the photographic evidence submitted to him, and since the aesthetic merits of these buildings depend almost entirely on elegant structural systems, on graceful proportions, and on delicate detailing, this is all to the good. Moreover, since SOM's achievement lies mainly in the evolution of structural refinements, rather than in developments in planning, it was probably wise of the editors of this book to arrange all the buildings chronologically (a method usually associated with the purely biographical approach) rather than according to building types, even though the latter system is, in general, to be preferred.

Cynics may regard this volume as simply an expensive publicity brochure, and so to some extent it is, although the same criticism could be made of every collection of designs published by an architect since the time of Palladio. At least, *The Architecture of Skidmore, Owings & Merrill* lacks the self-congratulatory puffs and blurbs which are such a wearisome feature of Le Corbusier's *Oeuvre Complète*. The text is short and factual, confining itself to descriptions of the problems, of the accommodation provided, and of the structural means of achieving the final building. Another of the book's merits (again in striking contrast to Le Corbusier's *Oeuvre Complète*) is the liberal provision of large-scale structural diagrams, which should be of great assistance to those who believe, like Julien Guadet, that progressive architecture is cumulative, and that the greatest architectural achievement is to do more perfectly what others have already done well.

Taken as a whole, then, this volume not only provides striking evidence of the way a large architectural firm can provide a stabilizing influence on contemporary architectural design, but the way in which that design tends to assume traditional classical qualities. Those who are hostile to classicism, and who prefer something more emotional and individualistic, will doubtless see the architecture of Skidmore, Owings & Merrill as simply an artificial aesthetic straitjacket imposed by the inability of the partners to find a more varied tectonic vocabulary acceptable to their differing tastes. Those who sympathize with classicism, and who welcome it, will on the contrary see in the architecture of SOM the results of a rigorous, vigorous, and civilizing discipline reminiscent of the greatest eras in the history of Western architecture. Henry-Russell Hitchcock, in his admirable introduction, is probably not exaggerating when he finds a parallel between the consistently high quality of SOM's classicism and the classicism produced by the office of Jules-Hardouin Mansart. Admirers of Skidmore, Owings & Merrill can only hope that their influence will endure, flourish, and propagate itself long enough to create an architectural era similar in quality and consistency to that which has proved the most enduring memorial of the Age of Louis XIV.

Continued on page 220



DESIGN PRIMER ON EARTHQUAKE FORCES

In this 24-page, illustrated booklet Henry J. Degenkolb discusses the earthquake-force design code that represents the collective viewpoint of the vast majority of structural engineers most active in the design of major structures in California. For your free copy, fill in and mail coupon.

About the Author: HENRY J. DEGENKOLB
Mr. Degenkolb, H. J. Degenkolb & Associates, San Francisco, California, is a lecturer in the University of California's Engineering Extension program and in the University's College of Engineering.

He is a member of the American Society of Civil Engineers, the Earthquake Engineering Research Institute, the Seismological Society of America, the Society of American Military Engineers, Tau Beta Pi, and Chi Epsilon. He is a member and past-president of the Structural Engineers Association of Northern California, and the Structural Engineers Association of California. He is active on the Building Code Section of the San Francisco Chamber of Commerce, and has served as its chairman.

Bethlehem Steel Company, Bethlehem, Pa. Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Advertising Department
Bethlehem Steel Company
Bethlehem, Pa.

Send me your new booklet
EARTHQUAKE FORCES ON TALL STRUCTURES.

Name.....

Company.....

Street.....

City.....

Zone.....State.....

Steel

Glowing Huewhite crowns a modern factory

This office wing is the focal point of a factory distinguished by the un-factorylike elegance of its design: a crisp composition of uncluttered planes of brick, wood and glass.

Architect Don Erickson gave prominence to the office section by raising it over the entrance drive and topping it with a luminous crown of ASG's light-diffusing Huewhite® glass. This striking roof line is a major element in the building's design. A bold horizontal of soft white by day, it glows by night with a warm lantern effect.

Ceilings inside the offices are actually a continuation of the glass panels sheathing the fasciae and underside of the roof. Fluorescent lamps set behind the movable Huewhite ceiling panels supply gentle, evenly diffused illumination to work areas. A similar Huewhite ceiling on the underside of the office section lights the factory's entrance area at night.

Architect Erickson chose Huewhite to play practical and esthetic roles in his design for three reasons: its superior light-diffusing qualities; its availability in large spans (up to 60" by 132"), and its ease of maintenance—Huewhite doesn't attract dirt, cleans quickly and easily.

Huewhite is only one of the many versatile ASG glasses available to help the architect turn his creative ideas into exciting reality. For complete information about ASG's full line of plate, sheet and patterned glass, see your local ASG distributor, or write: Dept. E-6, American Saint Gobain Corporation, Box 929, Kingsport, Tennessee, 37662.

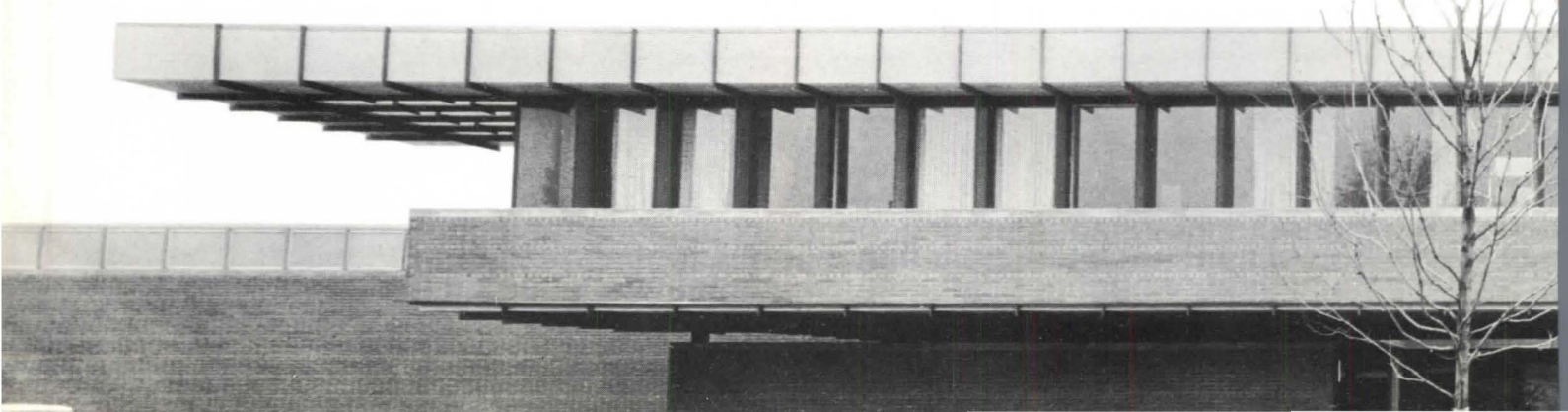
COURTYARD EFFECT (left) is created by open-rectangle plan of raised office section. Huewhite panels are supported by oak members suspended from steel trusses. Note uniform alabaster tone of Huewhite.

SIMPLICITY of design (below) is apparent in head-on view of office wing. Factory sections stretching out of picture at right and left are glazed with bands of ASG's Finetex® patterned glass. Finetex admits light, maintains a uniform exterior appearance.

Decorel Corporation
Office and manufacturing plant
Mundelein, Illinois
Architect: Architectural Enterprises, Ltd.

AMERICAN SAINT GOBAIN

ASG
CREATIVE IDEAS IN GLASS



Continued from page 216

A Controversial Vision

BY ROBERT DYCK

CITIES IN THE SUBURBS *by Humphrey Carver. Published by the University of Toronto Press, Toronto 5, Ont., Canada (1962, 120 pp., illus. $4.95) Reviewer is a research planner for the West Virginia Center for Appalachian Studies and Development.*

The title of this book provides the key to its contents on several different levels. Because of the number of people living there, the suburbs have become, in recent years, a new kind of city. Whereas the suburbs lack many desirable city attributes and provide a few desultory compensations, there has been no clear vision about what kind of city they could or should be, or whether they should be cities at all. When Carver finishes with what they should be, however, there are *real* cities in the suburbs, and that is why this is an important book.

Humphrey Carver, who is Vice-President of the Town Planning Institute of Canada, begins with a description of the economic disorganization, social uniformity, and architectural pointlessness of most Canadian suburbs today—all too familiar to us in the United States. He properly cites mass automobile ownership and Federally insured home mortgaging as the principal agents of the technical and social revolutions which have made such suburbs possible.

Recognizing that there has been no historic precedent for this new kind of "spread city," i.e., the essential dissolution of the city as it has been known, Carver sets about to determine what basic city purposes, honored without exception in cities of the past, still have validity in our cities today. Not unexpectedly, he concludes that the basic function, aside from the economic, is broad *social* function.

For the fulfillment of this function, Carver posits continued need for the sense of belonging to a community and identification with its central focus. He criticizes the typical "neighborhood" development as excessively limited by a population of too-similar age distribution living in too-similar dwelling types, thus discriminating against families younger, older, or poorer than the given norm. But he accepts the neighborhood, at its best, as a basic constituent of city structure, and proceeds to an examination of the desirable relationship of the total city, composed of such neighborhoods, with its surrounding region.

Carver concludes that the concept of a satellite city in a greenbelt does *not* represent the most desirable relationship that can be achieved and that, in fact, the satellite city has no relevance to the solution of urban scatteration (at least in North America) if one accepts the automobile and the mobility for work and play that go with it. First, the satellite's economic and social focus is excessively limited and isolated. Second, the greenbelt attains only limited value as a recreative area for a mobile population in the regional context of a country, with magnificent reserves of open land and forests within easy driving distance. Third, satellite cities consume excessive amounts of land—land that would better be conserved for agricultural, scenic, and recreational purposes.

Instead, Carver proposes that population growth be accommodated in neighborhoods developed accretively as deliberate extensions of the suburbs, with the important qualification that every three to five such neighborhoods (with a total population of 15,000 to 25,000) should have a municipally owned and operated "town centre," so-called. Schools, churches, municipal buildings of all sorts, the highest density housing, and

Continued on page 226

Have you explored Consoweld's new world of color?

CONSOWELD®
LAMINATED PLASTIC

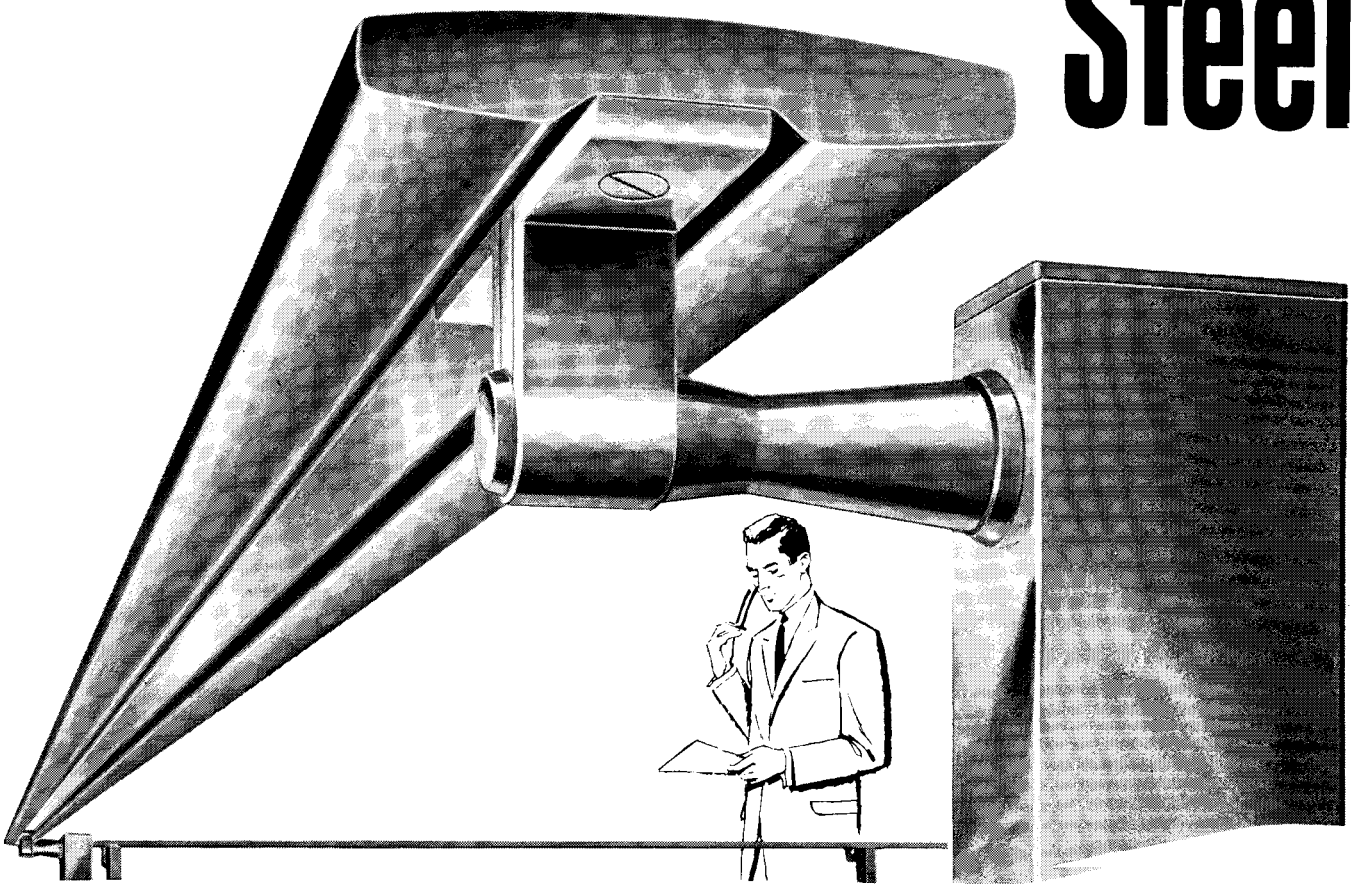
Here are 24 beautiful Decorator colors in Consoweld Laminated Plastic for surfacing wainscotting, walls, cabinet faces, toilet partitions, doors, desks, counters, table tops, fixtures, moveable partitions . . . anywhere you want exciting colors plus the durability of laminated plastic. Each color is designed to blend with the others for complete color harmony throughout the line.

Whether you visualize a dash or a roomful of color, in either vertical or horizontal applications, specify Consoweld Laminated Plastic . . . for offices, schools, airports, restaurants, and all other modern buildings.

Write today for a sample ring to Consoweld Corporation, Wisconsin Rapids, Wisconsin, (AIA File 35-C-12 and 23-L).

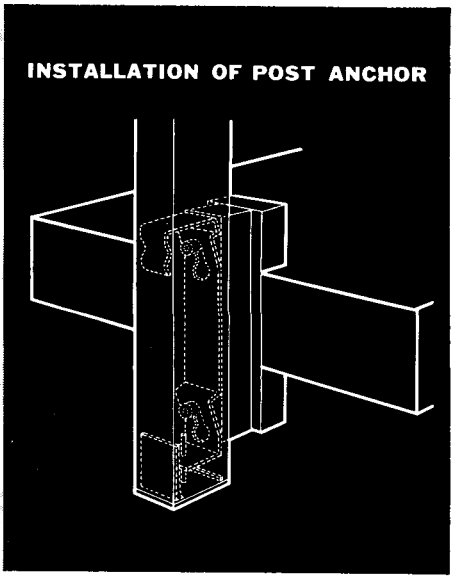
22-A

Stainless Steel



Carlstadt® Stainless Railing System

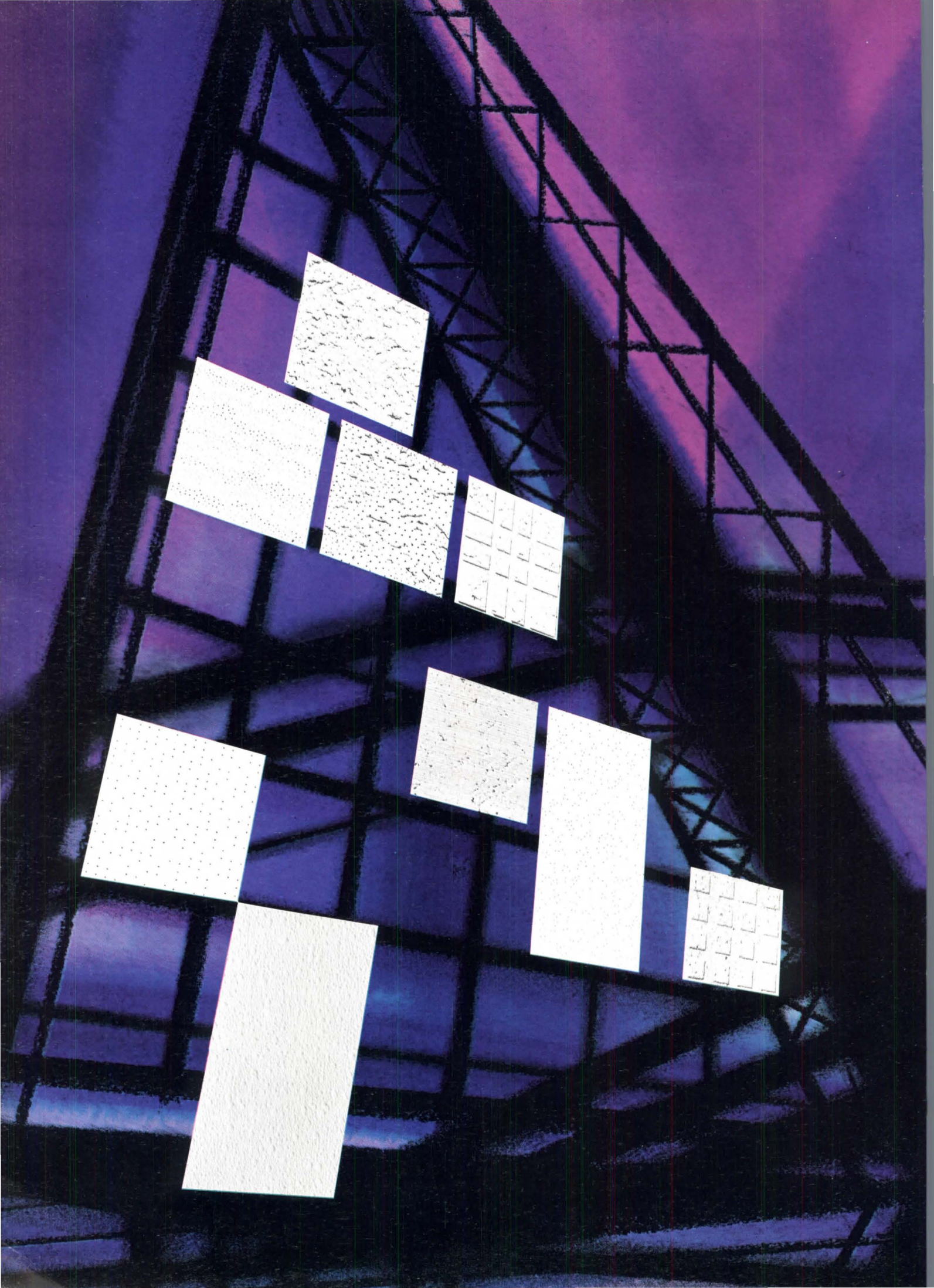
For the first time a stainless steel railing system is available in **stock components.** Now Julius Blum offers the beauty and durability of stainless steel in JB's **Carlstadt** railing system in which structural soundness and handsome styling provide unexcelled performance and appearance at a practical price. Fasteners are concealed for post assembly and mounting which insure a slim-line design affording crisp accents. The system also provides simple adjustments to normal variations of field conditions. Complete stainless system details and other Carlstadt components are shown in Sweet's Architectural File 6e/Bl and Industrial File 6b/Bl. The complete range of JB architectural metal components appear in Catalog No. 9.

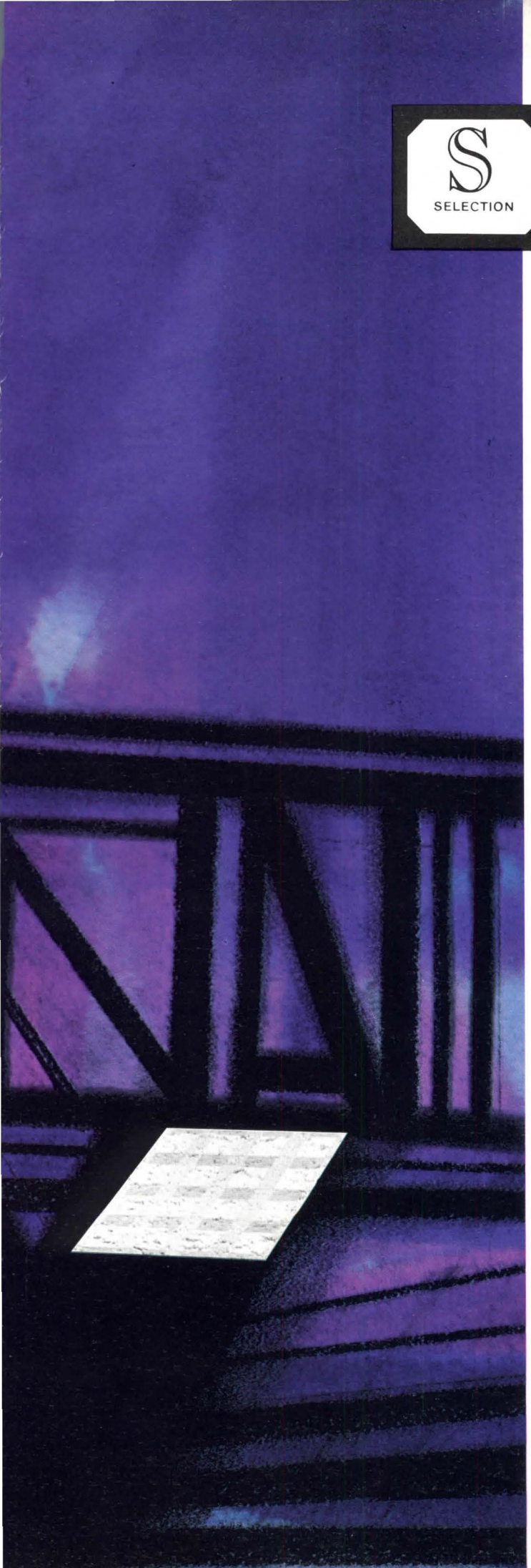


JULIUS BLUM & CO., INC., CARLSTADT, NEW JERSEY

Write for Bulletin #3122 describing all Julius Blum Stainless Steel Stock Components

PHONES: Carlstadt, (Area 201) GE 8-4600; Philadelphia, (Area 215) MA 7-7596; New York, (Area 212) OX 5-2236





S SELECTION
P PIONEERING
E EXPERIENCE
C CONSULTANT–DISTRIBUTORS

Acousti-Celotex ceiling products mean more usable technical help on the job from consultant-distributors

Acousti-Celotex distributors know building codes, zoning laws, fire regulations. They're expert estimators. They can save you valuable time with technical assistance in design, engineering and installation of acoustical and ventilating ceilings.

Consultants in their own right, they offer you additional consultant service from The Celotex Corporation — pioneer and builder of the world's largest body of experience with esthetic sound control.

Acousti-Celotex products offer you today's widest choice in acoustical ceiling materials and systems . . . hundreds of variations to give you unprecedented freedom of design.

Find your Acousti-Celotex Distributor in the Yellow Pages. Call him for consultation on any problem—large or small—connected with acoustics. No cost, no obligation.

ACOUSTI-CELOTEX REG. U.S. PAT. OFF. PRODUCTS

Problem-solver in esthetic sound control

THE CELOTEX CORPORATION
120 S. La Salle St., Chicago 3, Illinois
Canadian Distributor: Dominion Sound Equipments, Ltd., Montreal

Continued from page 220

complete shopping facilities would form the central nucleus, shared in a central location by all the neighborhoods comprising the "town." Such a "town centre" would be similar to the best suburban shopping centers in respect to provision for parking and loading, pedestrian activity, day and night liveliness, etc., but would be different in the much wider scope of activities that would be carried on there. Residential areas would be owned and developed privately, as at present, but municipal ownership of the "town centre" would be desirable from the standpoints of:

1. Proper time-phasing of the development (e.g., churches would not be built as soon as shopping facilities, but land would have to be reserved at the outset).

2. Control of over-all design so that the "town centre" would express in a *permanent way* the life of the constituent, but ever-changing neighborhoods.

3. Sharing the value of the land occupied by the "town centre" (which value in fact is created by the agglomeration of the surrounding residential neighborhoods) by all property owners constituting its basis of operation.

The strength of this book, and its best recommendation, is the fervor and eloquence with which its author transmits his vision of what the city is for and how suburban development should reflect this. As one might expect in a book devoted to the promulgation of a vision, it does not systematically solve all the problems of metropolitan growth in the fashion of a technical treatise, but neither do technical treatises provide all the answers. One serious question to which the book devotes too little attention, however, is the relationship of a city's growth pattern to its mass transit system (if any) and its other basically *internal* circulatory systems.

Assurance that this book will meet with a controversial reception is provided by no less a figure than Dr. E. A. Gutkind, in his recent book *The Twilight of Cities*, which argues for wide regional dispersal of population into semi-urban villages. The idea of the satellite city in a greenbelt is not defunct, either, as may be seen in a handsome pamphlet published in 1962 by the Maryland State Planning Department and the Baltimore Regional Council, entitled *Metrotowns for the Baltimore Region*. But still another publication, *The Planning of a New Town*, put out by the London County Council in 1961, documents the discard of a proposal for a new town of 100,000 at Hook, Hampshire—a most extraordinary proposal, incidentally, designed on the basis of universal car ownership, yet providing an urban character totally different from that of the other new towns—when it became clear that Londoners could be provided homes and work more quickly by expansion of vigorous existing communities in the vicinity of Hook.

An Ambitious Exploration

BY PAUL WEIDLINGER

ZUGBEANSPRUCHTE KONSTRUKTIONEN (TENSILE STRUCTURES) *by Frei Otto and Rudolf Trostel. Published by Ullstein Fachverlag, Frankfurt. Distributed by George Wittenborn, Inc., 1018 Madison Ave., New York 21, N.Y. (1962, 319 pp., illus. $38.50) German text. Reviewer has been a major contributor in the development of structural engineering.*

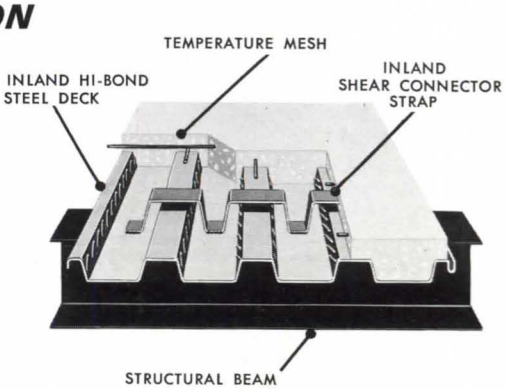
Frei Otto's *Zugbeanspruchte Konstruktionen* (Tensile Structures) is the first volume of an ambitious, long-term exploration of the current status and future implications of this type of construction. This first volume concerns itself with inflatable structures, and is divided into two parts. The first part is essentially de-

Photograph by Pohlman Studios, Inc.

NEW ECONOMIES IN COMPOSITE CONSTRUCTION

Inland Hi-Bond Composite Design gives you more strength per pound of steel and, therefore, greater savings in composite slab/beam construction. ■ Inland Hi-Bond Floor Deck permits significant floor slab economies through its integral lugs which lock steel deck and concrete to act as a unit. ■ Now, the expanded Inland Composite System includes shear connectors* between the slab and supporting beams, providing a total composite design for the entire structure. Lighter floor slabs, beams and columns do the work of heavier non-composite elements, result in significant savings. Write for more information.

*NELSON® stud shear connectors shown in the illustration above.



ALTERNATE: INLAND SHEAR CONNECTOR STRAP is welded through Inland Hi-Bond Deck to the beam below.

member of the INLAND steel family

Inland Steel Products Company *Engineered Products Division*

4089 W. BURNHAM STREET, MILWAUKEE, WISCONSIN 53201

ATLANTA, BALTIMORE, CHICAGO, CLEVELAND, DALLAS, DETROIT, FREMONT (CALIF.), HOUSTON, KANSAS CITY (KANS.), LOS ANGELES, NEW ORLEANS, NEW YORK, ST. LOUIS, ST. PAUL, SAN FRANCISCO

EP-41

REALISTIC SOLUTIONS IN TERMS OF TODAY'S NEEDS

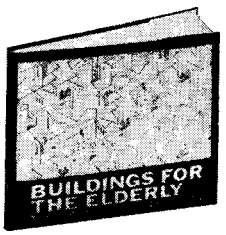
A Problem Concerned with 10% of the U.S. Population

BUILDINGS FOR THE ELDERLY

By NOVERRE MUSSON, Architect and HELEN HEUSINKVELD, Delegate to the White House Conference Housing Section

216 pages, 8¼ x 10½

300 illustrations, 1963, $15.00



Designed to stimulate the thinking of architects and laymen concerned with the problem of providing adequate care for the elderly, this book carefully isolates those factors which are purely or primarily architectural in nature and examines them in light of the work presently being done in all parts of this country. About half the book is devoted to photographs, plans and drawings of some 65 existing or projected homes, with complete data on each, including capacity, costs, facilities provided, charges and services, materials of construction, site development, and the like. Another section treats architectural details, including plan types and relationships, typical room requirements, and special furniture and equipment. In their introductory chapters the authors explore the statistical, financial, sociological, and philosophic problems that confront any would-be builder of housing for senior citizens that will truly meet today's needs. They answer the questions of who should build, what to build, where to build, and what the project will cost to build (and run). They summarize prevailing viewpoints on questions of group size, programs, integration with community, amount of care and nursing facilities, and psychiatric problems. Their study is not limited to any particular economic segment of the community but examines the problems of retirement in luxury as well as on social security alone. A variety of architectural solutions are posed for each group.

ORDER FORM

REINHOLD BOOK DIVISION
Dept. M-402, 430 Park Avenue
New York 22, N. Y.

Please send me_____copy(ies) of *Buildings for the Elderly* $15.00 (each) under the following terms.

☐ Purchase price enclosed (Reinhold pays all regular delivery charges)
☐ Bill me (plus delivery charges)

NAME.....
(please print)
ADDRESS.....
CITY.....
ZONE.....STATE.....

Save Money! Enclose $15.00 with order and Reinhold pays regular delivery charges. Please include sales tax on Calif., Ohio, Penna. and N.Y.C. orders. Send Check or Money Order only – do not enclose cash!

scriptive, outlining some of the principles and various geometries of these structures and illustrating them with excellent photographs of models and a few executed structures. The second part concerns itself with the mathematical analysis of membranes and includes a section on anchorage, which, in this type of structure, plays an important role.

It is perhaps not possible to evaluate the usefulness of this book and of the whole undertaking without taking a position regarding the probable future usefulness of these structures. Tensile structures in general, and inflatable structures in particular, represent a new development in building construction. If this type of construction becomes widespread in the future, the book will be hailed as a first significant contribution. On the other hand, if this direction turns out to be a dead-end or only a minor branch in future developments, the book at best will be classified as a "straw in the wind."

The author obviously believes that pneumatic structures will find a wide application in the future and such possibilities are illustrated by a series of imaginative sketches.

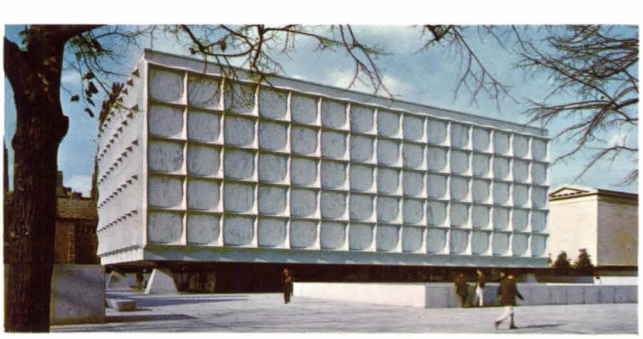
Inflated structures can be regarded as prestressed thin shells in which the pretensioning force is provided by means of internal air pressure of sufficient intensity to insure that the entire surface remains in tension under all foreseeable conditions. This procedure, consequently, eliminates the possibility of over-all buckling of the surface (although local ripples are not necessarily excluded), and permits the use of extremely thin membranes. The best-known current application of this principle is found in radomes and in other similar structures of spherical geometry. The sphere is a natural form for inflated membranes, since a uniform internal pressure will produce such a surface if no other constraints are applied. Other more complex and interesting shapes can be achieved by constraint of the edges or introduction of internal constraint in the form of cables or other stiff elements. The book provides illustrations of a variety of such geometries that could be achieved in this manner.

Unfortunately, it is not a simple matter to predict analytically the geometry that will result from the introduction of constraints, and the book and its illustrations mostly offer a qualitative guidance. Obviously, for real applications (as compared to models), more details and more precise information would be needed.

Beinecke 250 window panels of Vermont Montclair Danby Marble create a translucent building. Within this shelter rise the stacks of Yale University's Beinecke Rare Book and Manuscript Library.

Each more than 7′ square, yet only 1¼″ thick, these slabs of Vermont's Montclair Danby serve as a natural finish for the exterior facade as well as the interior walls. Admitting subdued daylight throughout the Library, they also serve to filter out the heat and the harsh rays of the sun, preventing damage to Yale's irreplaceable rare books and original manuscripts.

Vermont Marble Company – in its 85th year of service to the art of American architecture – is the world's leading producer, fabricator and importer of foreign and domestic marbles for every use. Proctor, Vermont.



Beinecke Rare Book and Manuscript Library at Yale University, New Haven, Connecticut. Architects: Skidmore Owings & Merrill. Contractor: George A. Fuller Company. Photographer: Ezra Stoller.

There are other equally important problems on which the book is silent. The dimensional stability of a pneumatic structure is inherently poor because of sensitivity to variations in temperature and barometric pressure. The control of dimensional changes within tolerable limits (or at least the prediction of expected changes) represents a rather difficult analytical, technological, and practical problem.

The anchorage of the guys is discussed in the book and various types of earth anchors or "dead men" are illustrated. However, the treatment of this problem is again only qualitative, i.e., no information is given regarding the actual capacity that the various types of anchorages can provide, although these problems at the present are very often the limiting factors in the design of some of these structures.

In addition to anchorage into the ground, the connection of the membrane itself to the supporting structure or constraining cables is a major and fraquently unresolved problem. The treatment of this topic is missing in the present volume.

Finally, the aerodynamic and flutter properties of some of the very complex shapes are entirely unknown at the present time. Only wind-tunnel experiments could provide such information.

The author probably should have emphasized that the above-mentioned problems exist, and that they need to be resolved before application to the many imaginative and delightful shapes shown in the model photographs can be achieved. This would have been especially important since it is quite certain that these questions can be answered, although the solutions obtained may somewhat limit the scope, size, form, and shape of air-supported structures.

The illustrations and discussion in the book, therefore, should be used as points of departure—as inspiration for possible but not necessarily probable or practical geometry for such structures.

The second part, by Rudolf Trostel, presents conventional membrane theory, which has been rather exhaustively discussed in the literature of thin shells by such outstanding authors as Flugge and Wlassov. The problems presented here are not new, and the solutions, as far as this reviewer could determine, follow mostly well-trodden paths. The presentation does have merit in being brief and encyclopedic, covering a great variety of surfaces. It will permit a designer to obtain, rather easily, basic information

Continued on page 234

This is wool.
It's beautiful.

This is Acrilan®.
It looks like wool.
But it stays beautiful longer.

For many reasons. Carpeting made with Acrilan acrylic fiber in the pile is more resilient than wool. It retains its deep pile longer. Resists shedding. Colors are purer and remain that way—Acrilan resists fading; Acrilan is easier to clean than wool.

More?

Acrilan is born moth-proof. Non-allergenic. Will never mildew. These are some of the reasons why architects all over the country are specifying Acrilan for important installations.

Let us tell you more.
Write Contract Carpet Merchandising, Chemstrand,
350 Fifth Avenue, New York 1, N.Y.

These are among the mills now licensed by Chemstrand for Acrilan: Barwick, Bigelow, Cabin Crafts, Callaway, Coronet, Crestline, Downs, Forrest, Hardwick and Magee, Hightstown, Karagheusian, James Lees, Loomweve, Magee, Masland, Monarch, Philadelphia Carpet, Roxbury, Wunda Weve. In Canada: Harding Carpets.

ACRILAN®
acrylic fiber
CHEMSTRAND


UNITED
N7015U

Just arrived...

THE NEW GF 40/4 CHAIR, designed by David Rowland, may change your whole concept of mass seating. So comfortable you have to try it to believe it. Imagine! 40 chairs will stack just 4 feet high. Gang and stack in rigid rows of 6. Set up a room in minutes. It's the chair that fits anywhere—dining and meeting rooms, hotels, motels, cafeterias, schools, institutions, lounges and lobbies. For descriptive literature, write The General Fireproofing Company, Youngstown, Ohio 44501.

GF 40/4 CHAIR

designed by david Rowland

Continued from page 230

regarding the analysis of membranes that may arise in connection with the design of air-supported structures. This section of the book also avoids the more difficult and sophisticated analytical problems which arise in the actual and detailed design of such structures.

In spite of the shortcomings of this work, mostly in the nature of omissions, the entire book offers an interesting and exciting view of future possibilities. The approach used by the author lends itself to the qualitative and illustrative treatment of the subject, but quantitative consideration would no doubt have resulted in a less interesting and inspiring book.

It is surprising to note the small number and variety of air-supported structures actually executed. This scarcity probably indicates that there are some very difficult, unresolved problems, and it probably also excuses some of the omissions. Clearly, much further work and research will be needed before we can anticipate a widespread application of the principle of inflatable structures. No doubt, the publication of this book will provide an impetus for this and may ultimately present architects and engineers with a new and exciting tool.

A Fine Working Tool

BY CALEB HORNBOSTEL

MODERN ARCHITECTURAL DETAILING *edited by Konrad Gatz. Translated by Thomas E. Burton. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y. (1963, 300 pp., illus., $16.50). Reviewer is an architect whose own books,* Architectural Detailing *and* Materials for Architecture, *have received widespread acclaim.*

This beautifully edited book uses a large number of photographs, in color and black-and-white, to illustrate the finished building or finished section of which the architectural detail is a part. Each detail is graphically shown with plans, sections, elevations, and other data, and the important components and materials of the detail are keyed by letter to a listing located adjacent to the drawings or included as part of the description of the building.

The book is divided into four main sections: Structural Details, Exterior Details, Interior Details, and Unity in Detail, with each section marked by a light-blue insert so that it can be easily located. Each section is further divided into general subsections; Unity of Detail is subdivided on the basis of specific

Continued on page 238

new miller M-1 LENS PATTERN

. . . for INVISIBLE FRAME* . . . Frameless, and Metal Framed Doors

Now you can combine a pleasing appearance with high lighting efficiency. Featuring a new conical prismatic design, the Miller M-1 lens gives excellent lamp concealment with precise light control for low brightness and complete visual comfort. The M-1 is available in permanently clear acrylic plastic or a light stable grade polystyrene.

This interesting new lens pattern is available for three different door designs.

M-1 INVISIBLE FRAME DOOR is featured for use in the Miller Surfaceline and Versaline fixtures for surface or recessed mounting. This new door conceals or hides the metal frame . . . offers a clean rectangle of light with more light transmission from each fixture. The Miller M-1 Invisible Frame Door is completely self-supporting with positive metallic hinging and latching from either side.

M-1 FRAMELESS DOOR is offered exclusively in the Miller Grid-Line, a new line of fixtures designed specifically for mounting "in or on" grid-type ceilings. Complete absence of a metal door frame or visible hinges and latches means more light transmission from each ceiling opening plus enhanced lighted appearance.

M-1 LENS is also available for use in conventional steel framed doors with both the Miller Surfaceline and Versaline fixtures.

For complete specification, performance and ordering information on the new M-1 lens, write Dept. 113.

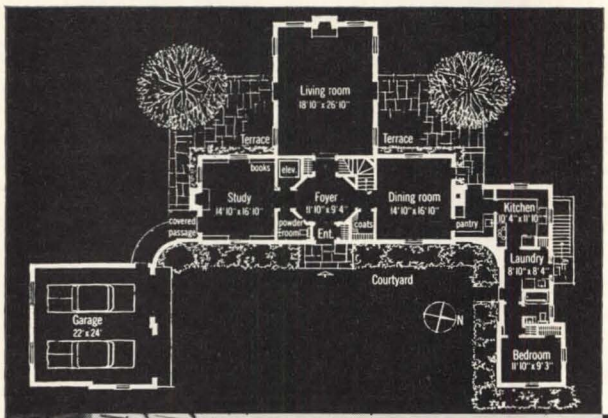
miller LIGHTING SINCE 1844

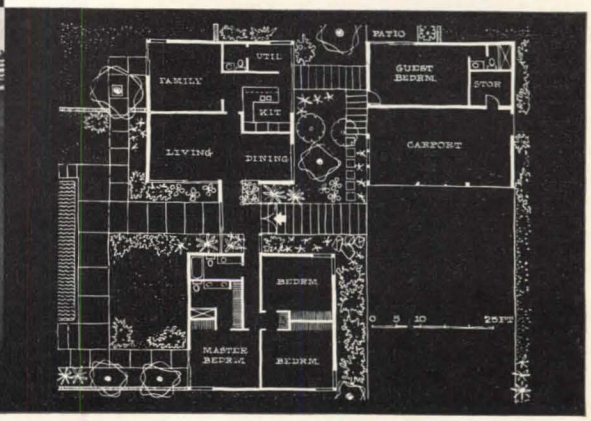
THE miller COMPANY
MERIDEN, CONNECTICUT • UTICA, OHIO
For more information, circle No. 441

The spectrum of texture:

Red Cedar Shingles & Handsplit Shakes

Ranging from the smooth elegance of shingles to the rugged roughness of handsplit-resawn shakes, this is a versatile material. But, beyond aesthetics, it is also remarkably strong, lightweight, insulative and long-lived. In fact, a cedar roof lasts for decades. And, because it is the real thing, cedar ages gracefully, gaining beauty and character with the years. Always specify Certigrade, Certi-Split and Certigroove labels. If you would like more information about this classic material, write: Red Cedar Shingle & Handsplit Shake Bureau, 5510 White Building, Seattle, Washington 98101; 550 Burrard Street, Vancouver 1, B.C.





Above left: **Residence / Greenwich, Connecticut. Architects: George Hickey III Associates. The mansard roof is Certigrade No. 1, 16″ Fivex shingles with a 5″ exposure.**
Below, left: **Residence / Scottsdale, Arizona. Architects: Alan Dailey Associates. The roof is Certi-Split 18″ x ¾″—1¼″ handsplit-resawn shakes with 5½″ exposure.**

For more information, turn to Reader Service card, circle No. 381

THE CROWNING TOUCH OF QUALITY • RED CEDAR SHINGLES & HANDSPLIT SHAKES •

Continued from page 234

buildings. In this latter section, more intensive coverage is given to various details within a single building to show the unity of detail in relation to the over-all design concept of that building.

Perhaps the most important feature of this book is its use of concise and pertinent descriptions to explain various points—design concept, or difficulties inherent in the problem, or the actual instruction of the detail. From the viewpoint of architects and students, it is these descriptions that make the book a fine working tool. Thus, if a detail stimulates the imagination, it is possible not only to see the finished product in a photograph and to study a drawing of the components used to accomplish it; but through the description it is possible to learn the basic reasoning and inherent problems from which the detail was evolved.

Unfortunately, this book's one weakness is that many of the examples chosen represent construction technologies and climatic extremes quite different from those of the United States. The book's chief virtue lies in the myriad ideas located within its covers, making it a document that any student or architectural office can use to advantage.

Unposed Questions

BY CHARLES W. MOORE

MODERN CALIFORNIA HOUSES: CASE STUDY HOUSES 1945–1962 *by Esther McCoy. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y. (1962, 215 pp., illus., $12.50). Reviewer is Chairman of the Department of Architecture at Berkeley, and winner of several P/A Design Awards for his own brand of "modern California houses."*

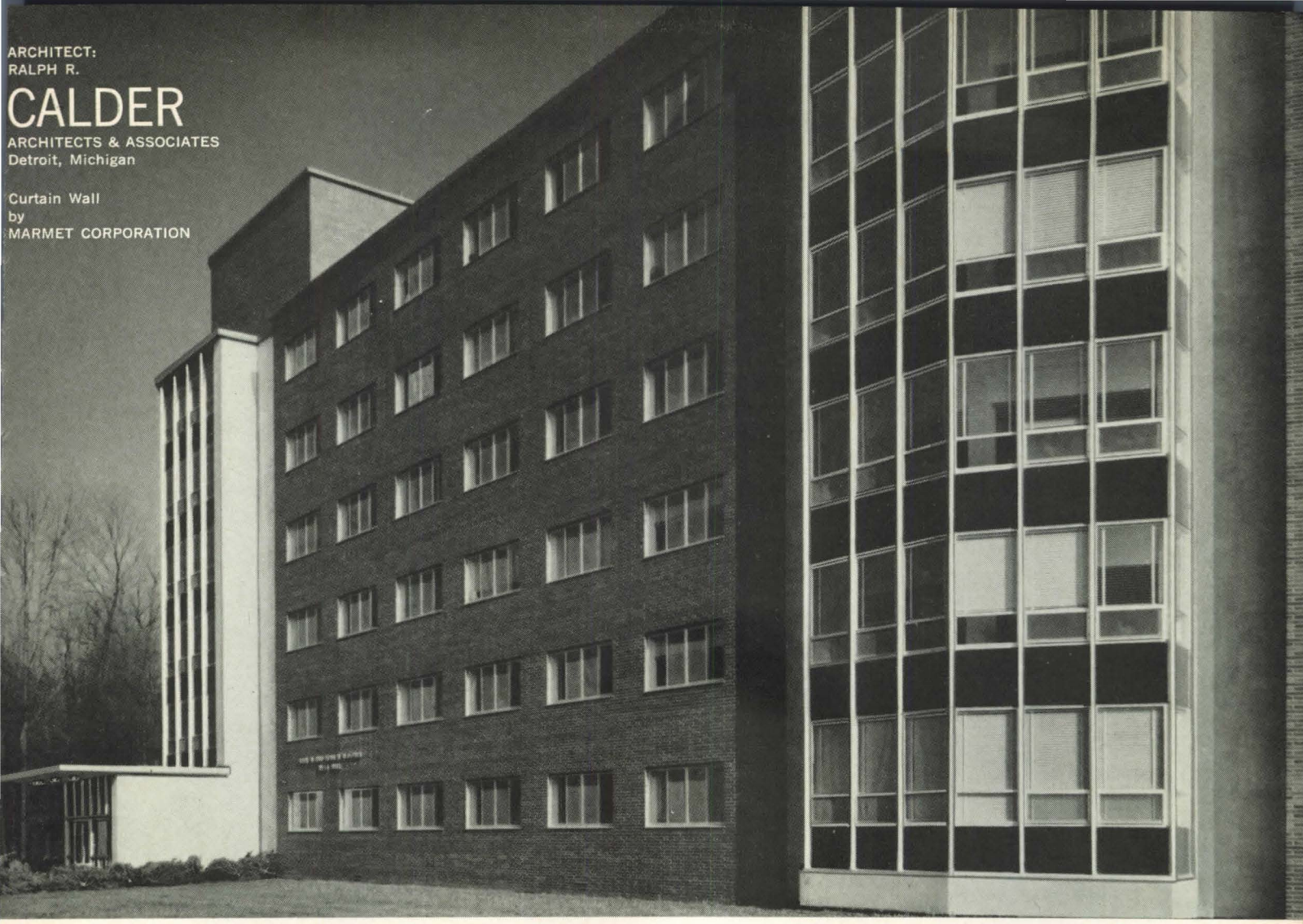
Connoisseurship in the arts is high-speed activity these days; a goodly number of critics manage to stay close on the heels of junk artists, pop artists, and other apostles of the new, traveling light and casting off last week's ideas without a backward look. But some heavily laden historians manage to remain in the van as well, freighting the products of the season with the significances of a long past.

It is fair to wonder, when a book subtitled *Case Study Houses, 1945–1962* appears, what effect that 17-year lapse of time will have on the book's writer—are houses of 1945 a still-integral part of the present, are they far enough past to be charged with historical meaning, or are they merely passé, without point,

Continued on page 244

ARCHITECT:
RALPH R.
CALDER
ARCHITECTS & ASSOCIATES
Detroit, Michigan

Curtain Wall
by
MARMET CORPORATION

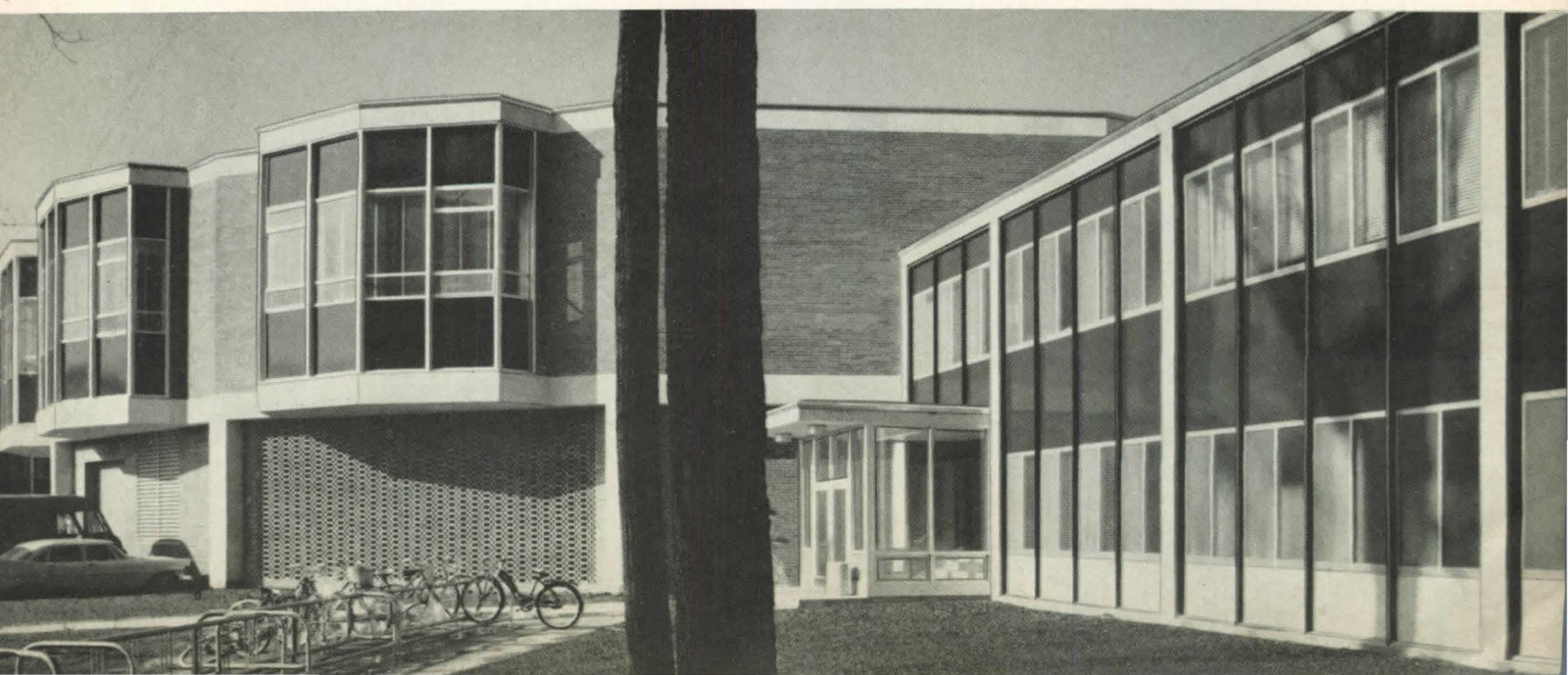


Photos by Dick Reed

MARMET goes to Michigan State

McDonnell Hall above . . . a typical high rise student dorm, illustrates the interesting contrast the architect has achieved with curtain wall against the sweep of masonry. The 5212 series rises resplendently from ground to roof at the point where the curving "dorm" building makes a gentle bend.

Dining rooms connecting to McDonnell Hall (below) have smartly shaped MARMET bays which match the 5212 series curtain wall on the high rise section. The contemporary entrances are MARMET 1000 series entrances with MARMET aluminum doors fabricated to the architect's specifications for extra wide style design . . . especially suited to the hurried goings and comings of student swarms.



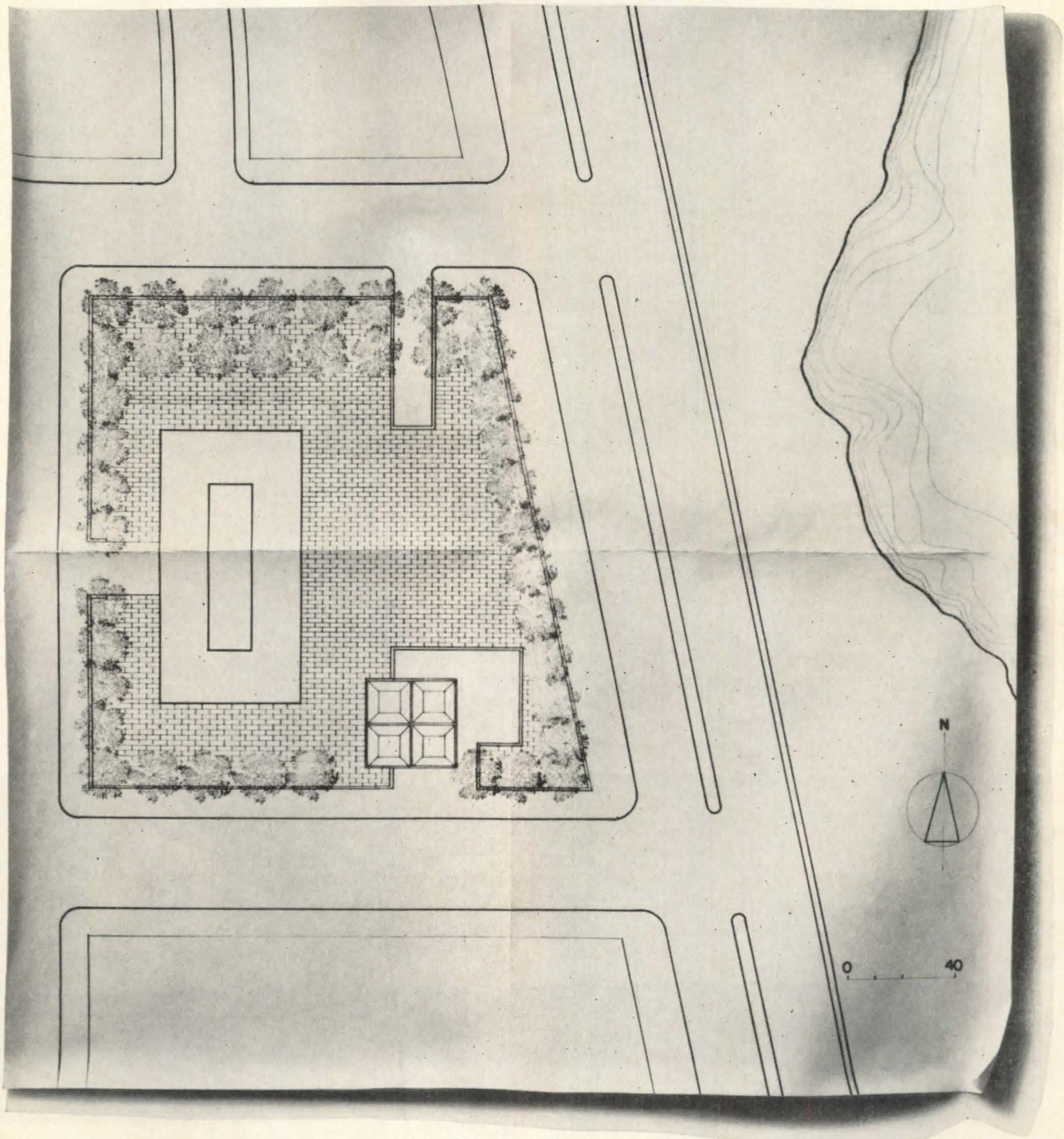
Glass Conditioning*

(a systematic plan for controlling indoor environment with PPG glass products)

Hypothetical Assignment: A projected office building in Chicago, facing Lake Michigan per client's request. Building dimensions: 300 feet high by 100 feet by 50 feet.

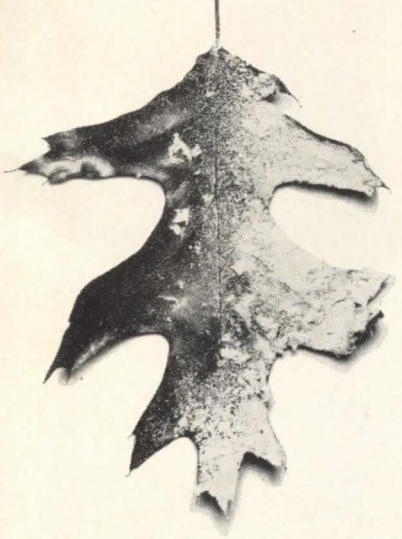
Site Conditions: Latitude subject to extremely low temperatures, severe winters with high winds, hot summers. Heating season: approximately 6300 degree days. Air conditioning season: 120 days of which 90 would have an average of 80F for a 12-hour air conditioning period. Indoor temperature to be maintained at 70F.

*Service Mark



Eastern Exposure Site Conditions: Direct morning sunlight, intensified by reflection from lake. Low winter temperatures combined with lack of sun, aggravating afternoon heat loss.

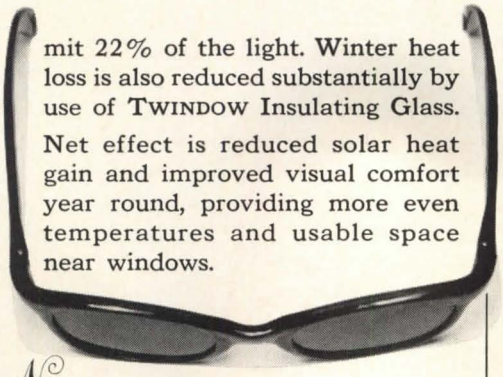
Glass Conditioning Recommendation: SOLARGRAY® TWINDOW®—TWINDOW Insulating Glass to reduce heat loss to a "U" factor of 0.6, significantly reduce downdrafts and cold areas near windows. ¼-inch SOLARGRAY Plate Glass transmits 42% of visible light (37% when combined with clear glass in a TWINDOW unit), to give natural daylight with substantial softening of sun and lake brightness.



Western Exposure Site Conditions: Strong afternoon sunlight in all seasons, with substantial indoor heat gain.

Glass Conditioning Recommendation: LHR(TM) 140 SOLARGRAY TWINDOW—LHR (Light and Heat Reflective) coating on air space side of the outdoor glass of TWINDOW will reduce heat gain to 90 BTU/sq.ft./hr. maximum, transmit 22% of the light. Winter heat loss is also reduced substantially by use of TWINDOW Insulating Glass.

Net effect is reduced solar heat gain and improved visual comfort year round, providing more even temperatures and usable space near windows.



Northern Exposure Site Conditions: Little sun exposure.

Glass Conditioning Recommendation: TWINDOW—to reduce heat loss and heat gain through conduction. Result: More even indoor temperatures, increased occupant satisfaction, and lower comfort maintenance costs.

Southern Exposure Site Conditions: Extensive sunlight, summer and winter, introducing solar heat gain as a factor which will be welcome in winter, but will significantly increase air conditioning requirements in summer.

Glass Conditioning Recommendation: SOLARGRAY Plate Glass—to reduce heat gain substantially during summer, and soften brightness in all seasons, while providing better control of indoor temperature and environment.

Human Factors: Personal comfort is, after all, the main goal of environmental control. To this end, Glass Conditioning produces pleasant working conditions by improving visual comfort and lessening seasonal extremes of solar heat and severe cold. Glass Conditioning, then, by providing both operating economies and a more attractive working atmosphere, will stimulate rentals and reduce turnover.

For more complete information on PPG Products for Glass Conditioning, consult the PPG Architectural Representative nearest you. Pittsburgh Plate Glass Company, Pittsburgh, Pennsylvania 15222.

LIGHT TRANSMITTANCE AND THERMAL CONDUCTIVITY DATA

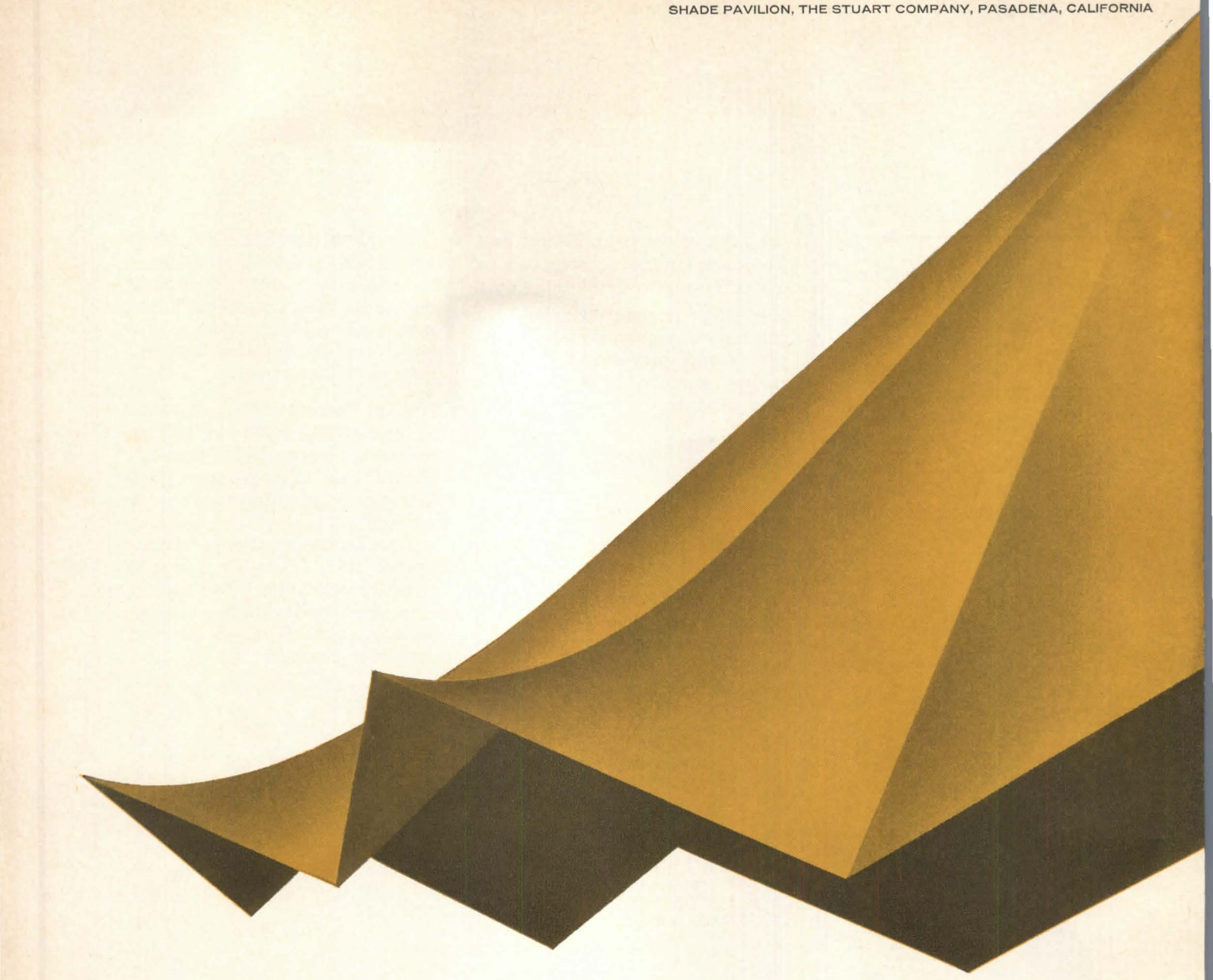
		Visible Transmittance %	Thermal* Conductivity U	MAXIMUM** Heat Gain BTU/hr/sq ft
(PLATE GLASS)				
Regular	¼	88	1	200
Solex	¼	75	1	150
Solargray	¼	42	1	150
Solarbronze	¼	51	1	150
(SHEET GLASS)				
Clear	7/32	89	1	205
Graylite "31"	⅛	31	1	170
Graylite "61"	3/16	61	1	195
Graylite "56"	7/32	56	1	190
Graylite "14"	7/32	14	1	150
Graylite "52"	¼	52	1	185
(INSULATING GLASS—1" Metal Edge Twindow—½" air space)				
Clear ¼" Glass, both sides		77	0.6	170
with ¼" Solex, 1 side		65	0.6	115
with ¼" Solargray, 1 side		37	0.6	115
with ¼" Solarbronze, 1 side		45	0.6	115
with ¼" LHR Solargray, 1 side		22	0.6	90
with ¼" LHR Solarbronze, 1 side		25	0.6	90

*BTU/hr/sq ft/ degree F indoor-outdoor temperature difference.
**BTU/hr/sq ft/ for July 21 Design Day 40° N. 4 P.M. West Elevation.

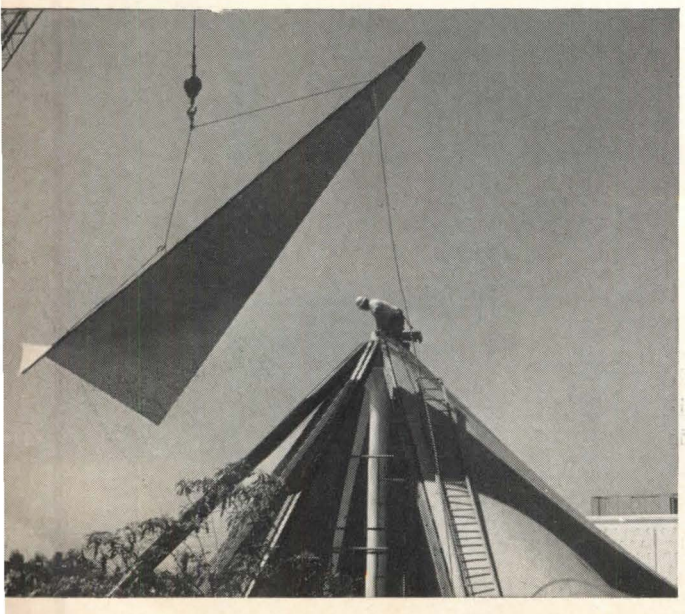
PPG makes the glass that makes the difference

For more information, turn to Reader Service card, circle No. 428

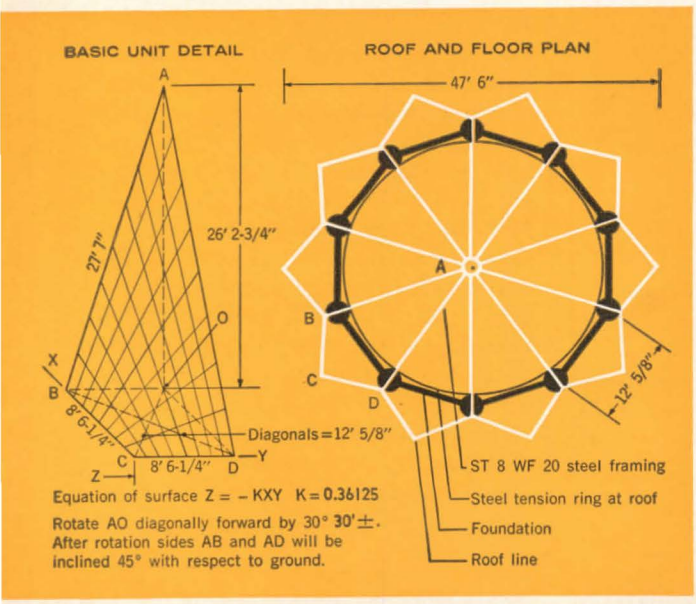
SHADE PAVILION, THE STUART COMPANY, PASADENA, CALIFORNIA



the most exciting ideas take shape in plywood



EDWARD D. STONE, ARCHITECT/HALL, PREGNOFF & MATHEU, ENGINEERS/WELDWOOD STRUCTURES DIVISION, UNITED STATES PLYWOOD, FABRICATOR



The sculptured curves of this pavilion look as though they could have been shaped only with a plastic material. Instead they were achieved with flat panels of plywood. ■ Each roof unit is a hyperbolic paraboloid, laminated from four layers of 1/4" plywood and bolted to steel "T" sections rising to 28' at the center. Despite the complex curvatures, in-place roof cost was only $3/sq. ft., one-fifth that of aluminum and well below steel or concrete. ■ For information on plywood building systems write (USA only) American Plywood Association, Tacoma, Washington 98401

AMERICAN PLYWOOD ASSOCIATION

The new name for Douglas Fir Plywood Association.
Quality-tested by the Division For Product Approval.

TESTED DFPA QUALITY

For more information, turn to Reader Service card, circle No. 425

Continued from page 238

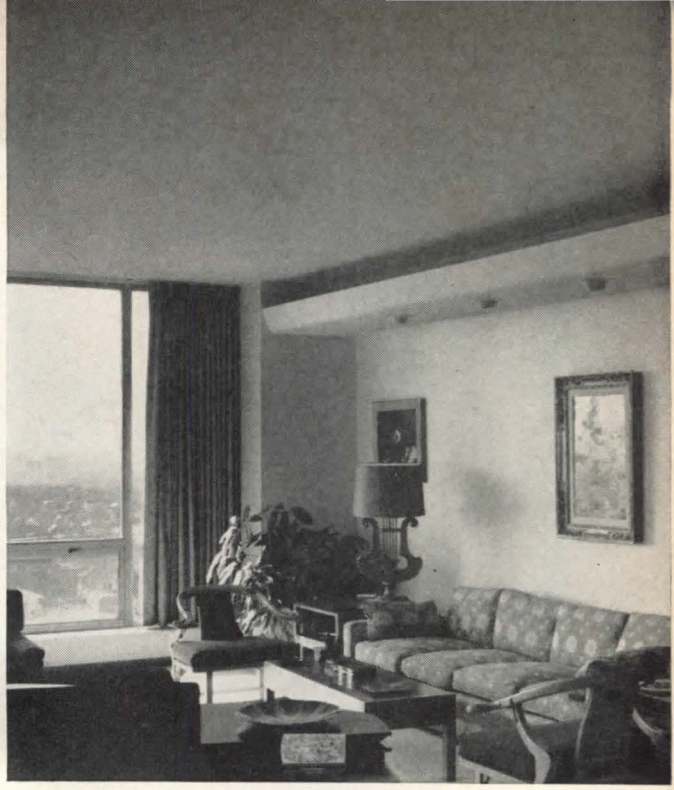
like the contemporary pages of my high school annual? Miss McCoy plays it cool; she juxtaposes houses of immense importance, already a part of our history, with houses not especially distinguishable from the tract houses they preceded, with houses of the most foppish and evanescent preciousness. What is more, she has selected photographs (mostly exceedingly handsome ones by Julius Shulman) that render it very difficult to tell one level of accomplishment from another.

Modern California Houses, surveying a fascinating phenomenon—editor John Entenza's patronage of the art of architecture in southern California since the Second World War—arrives at the threshold of many interesting questions that are never asked. Perhaps they shouldn't be. Perhaps it is quite enough to regard this volume as the description of a vision, as a celebration of the longevity and importance of Entenza's *Arts and Architecture* Case Study House program. There is reason to be grateful for documentation of this remarkable set of 23 houses and 8 projects, but it would have been fun to see their juxtaposition animated by a clear point of view (as, for instance, Vincent Scully in *The Earth, the Temple, and the Gods* animates the differences among some Greek temples that look to the uninitiated every bit as much alike as these southern California Houses do).

The Eames-Saarinen steel houses, finished before 1950, qualify as among the major architectural monuments of our time, in addition to being a fascinating contribution to the art of building in steel. But it would have been interesting to learn why, after 1950, the program regarded steel as morally essential for the short horizontal spans required in houses, in spite of the extra trouble and expense that are extensively described; while on vertical surfaces any old pretechnological material was regarded as good enough—brick or board or block or stone—as long as it didn't hold up the roof it was perfectly capable of supporting. Other interesting questions accompany architect Raphael Soriano's "leap from the particular to the general, from the personal to the impersonal, from the isolated case to the prototype." When is a prototype not a stereotype? And why do these houses on their way from the particular to the general keep getting bigger? Is this in response to some unspecified social shift?

I make a point of these unposed questions because the works described seem

Co-operative Apartment Building, 801 Skinker Blvd., St. Louis, Mo. Architects: Richard Haffner and Herbert Waldman of Architectural Design Associates, St. Louis. Plastering Contractor: Lee Bros., St. Louis.



Typical living room in units which sell for $30,000 to $60,000.

Fashionable restaurant on mezzanine is open to public. Columns have ceramic chips imbedded in the plaster.

The Gold Bond difference:

Nailable steel studs and machine-applied plaster speed construction of deluxe apartment building

This 17-story, $2-million apartment building features Gold Bond partition and ceiling systems that go up fast, are economical and extremely practical. For partitions, base-coat plaster was machine-applied to gypsum lath which had been attached to Gold Bond nailable steel studs. The plaster was mixed on the ground and pumped to the various floor levels. This plastering system saves about 15% in time over transporting plaster by hoist and hod carriers. And because the machine method applies more pressure to compress the plaster, you get denser, higher quality walls and ceilings. The finish coat is troweled on by hand. National Gypsum Company, manufacturers of Gold Bond building products, has developed many such fast, economical and practical partition systems. Check with your Gold Bond® Representative, or write to Dept. PA-64, National Gypsum Co., Buffalo, N.Y. 14225.

Gold Bond®
PARTITIONS

Gold Bond materials and methods make the difference in modern building

For more information, turn to Reader Service card, circle No. 372

to be sufficiently related and sufficiently important to bear questioning. *Modern California Houses: Case Study Houses 1945–1962* is full of pretty pictures that are nice as reminiscenses; but it is on the verge of being much more interesting and useful.

OTHER BOOKS TO BE NOTED

Architectural Designs—Housing for the Elderly: The European Approach. Compiled and edited by Dr. Robert B. Rutherford and Arthur J. Holst of the Forest Park Foundation. Howard Company, 200 North East Perry, Peoria, Ill., 1963. 101 pp., illus. $12.50

Generous photos and drawings on extra-large pages illustrate selected projects for the elderly in Western Europe. Because of differences in needs between Europe and the U.S., the book is offered "not as a final authority, but as a stimulant to the thinking of those who carry the responsibility for planning such a project." Emphasis is placed on avoiding "institutional character." Almost half the book is devoted to the works and commentary of Swedish architect Ake E. Lindqvist; work of other architects is also presented, accompanied by their comments.

Cape Cod: 1980. Blair Associates, Inc. College Hill Press, Inc., 36 Exchange Place, Providence, R.I. 103 pp., illus. $6

Presentation of plan, spurred by the opening of the Cape Cod National Seashore, to control development of a 400-sq-mile area around Cape Cod. Initiated by local citizens and carried out by specialists, the study is a thorough analysis of the impact on the area of a projected daytime population of 500,000. Proposals for historic village centers, resort zones, and conservation areas are illustrated by land-use maps.

Country Furniture of Early America. Henry Lionel Williams. A. S. Barnes & Co., 11 E. 36 St., New York 16, N.Y., 1963. 138 pp., illus. $10

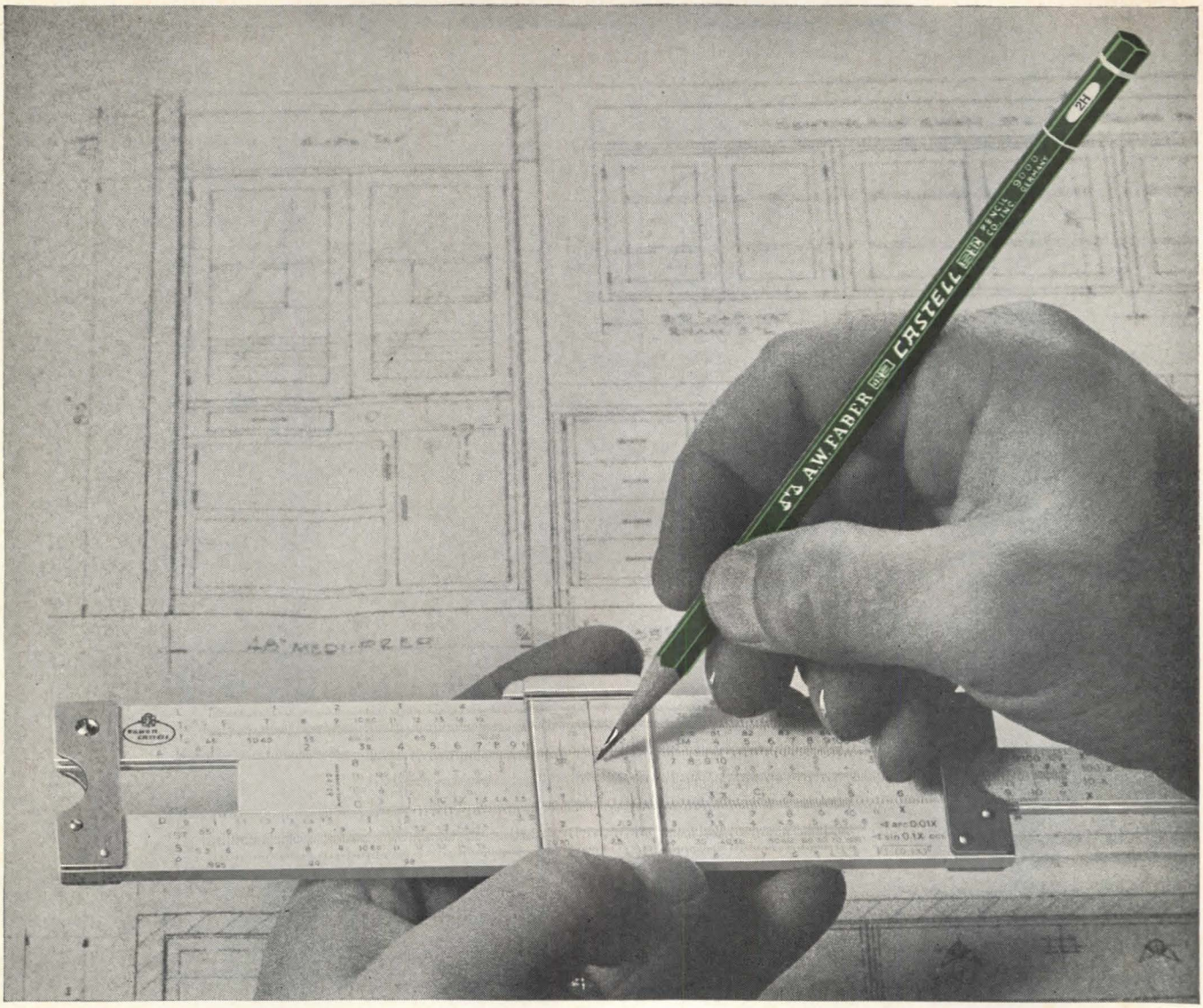
Examples of American furniture represent styles prevalent up to the mid-18th Century. Over 100 pieces are presented through photos, captions describing materials and techniques, and detail drawings. Introduction includes an explanation of basics of furniture craft and numerous illustrations of joint details.

Essays on Problems Faced in the Relocation of Elderly Persons. Joint study by the Institute for Urban Studies, University of Pennsylvania and the National Association of Housing and Redevelopment Officials. Sponsored by the Ford Foundation, 1963. 223 pp. mimeographed $3

Eleven professionals in the field of relocation present their views on the problems faced by elderly relocatees. The need for a broader than usual definition of "just compensation" is indicated by the reduced physical strength, loss of mental stability, more frequent illness, and economic pressure characteristic of this group. Emphasis throughout is on case-by-case diagnosis, plus the cooperation of social agencies and relocation agencies.

Guide to Chicago and Midwestern Archi-

Continued on page 250



What makes Castell so extra-ordinary?

20 degrees with slide rule accuracy

A.W.FABER-CASTELL drawing pencils range from 8B to 10H. This in itself is not unusual. But CASTELL'S uniform grading is unique. Each degree is held to rigid standards, as accurate as the markings on your slide rule. Compare any degree in CASTELL'S complete range—8B to 10H—with the same degree you used months or years ago. It will produce the identical, fully opaque, solid black non-feathered line.

Smooth-gliding, grit-free CASTELL imparts new confidence to your drawing and drafting skills. This 99% pure graphite is CASTELLSEALED—bonded-in-wood for immensely greater point strength, with enough reserve to keep the lead from breaking or splitting inside the wood under abnormal pressure.

All good dealers carry CASTELL, but we'd be just as happy if you preferred to try before you buy. Simply fill out the coupon, attach it to your company letterhead, and A.W.FABER-CASTELL will send you samples of the degrees you use in your daily work. Okay?

A.W.FABER-CASTELL

Pencil Co., Inc., 41-47 Dickerson Street, Newark 3, New Jersey

Please send me a sample each of Castell #9000 Drawing Pencils in____ ____ ____ ____ degrees for testing purposes.

MY NAME IS_____ TITLE_____

COMPANY_____ ADDRESS_____

CITY_____ ZONE_____ STATE_____


Capitol
Federal
Savings
Capitol
Federal
savings

Steel brings this new building to life quickly, keeps it "young," and saves money

At Capitol Federal Savings and Loan in Topeka, all interior walls are steel, and are movable. Space is infinitely adaptable. Rooms can be given new dimension easily, quickly, economically, without destruction during alteration.

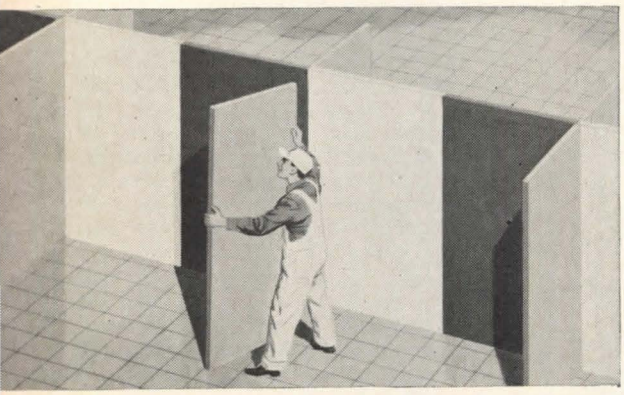
All subfloors are cellular steel through which electric and communications wiring is distributed. Simply drill a hole and you have a neat outlet where you need it in minutes. Electrical flexibility is invisible, but available for life! Other steel channels in the floor are ducts for heating and air conditioning. By actually being built-in ducts for the flow of warm or cool air, such a floor saves tremendous extra cost.

These interior movable steel walls and quick-in steel floors are products of Republic's ingenious customers. Their imaginative use of steel helps adapt space immediately to changing tenant needs, saves time, reduces maintenance costs. And, it keeps the building earning up-to-date rates.

Other Republic Steel Corporation customers offer equally vital building products: doors, shipped to the site ready to slip into frames in minutes; steel sandwich exterior wall panels complete with insulation that bolt into place in minutes so that entire buildings can sometimes be covered in a day. Often, the on-site insurance savings alone more than justify this quick-in steel construction.

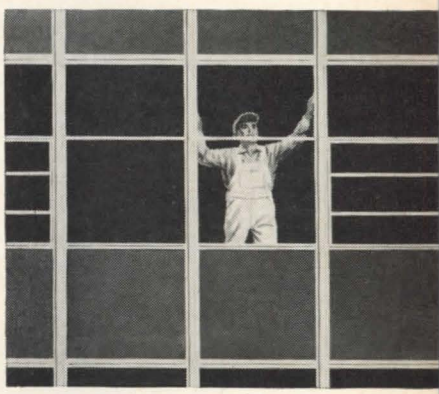
Every building designed in steel comes to life quickly, stays young longer, saves money for owner and user.

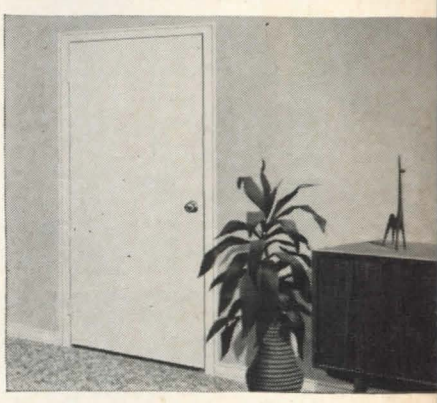
Movable interior steel walls now are available in a wide choice of colors, textures, finishes.



Cellular steel subfloors provide invisible electrical flexibility, with outlets where you want them, anytime. Larger cells function as secondary supply ducts in the air conditioning system.

Steel insulated curtain wall panels—fastest, easiest way to enclose new building space.





Steel doors and frames can be erected and fitted in minutes, without carpentry.

You Can Take the Pulse of Progress at

REPUBLIC STEEL

CLEVELAND, OHIO 44101

This STEELMARK of the American Steel Industry on a product assures you it is made of modern, versatile, economical Steel. Put it on the products you sell. Look for it on the products you buy.

Continued from page 246

tecture. Burnham Library of Architecture, Art Institute of Chicago, Michigan Ave. at Adams St., Chicago 3, Ill., 1963. 28 pp. 25¢; 30¢ if mailed.

Main portion of this booklet is a complete list of all Frank Lloyd Wright buildings in the states of Illinois, Wisconsin, Indiana, Michigan, Minnesota, Iowa, and Ohio. Unfortunately, there are no drawings or photos, and little description beyond the street address, owner's name, date, materials of construction, and any alterations. A brief selective guide to Chicago architecture emphasizes the work of Sullivan, Jenney, Burnham, et al, and includes a few notable monuments by Mies.

Images of American Living. Alan Gowans. J. B. Lippincott Co., East Washington Square, Philadelphia 5, Pa., 1964. 498 pp., illus. $16.50

To be reviewed.

Landscape Vocabulary. Warner L. Marsh. Miramar Publishing Co., 1300 W. 24 St., Los Angeles 17, Calif. 320 pp., illus. $8.50

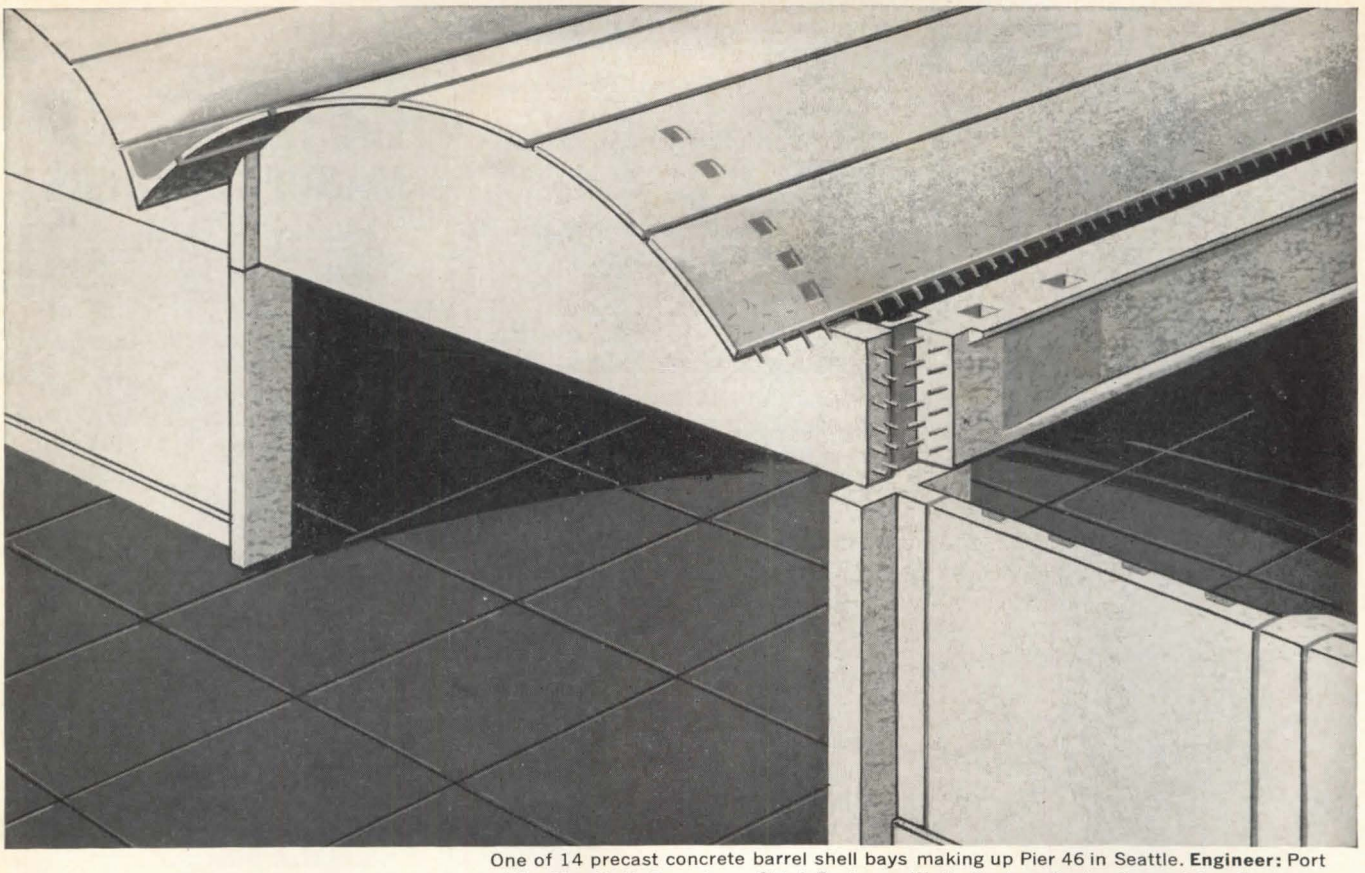
Terms are drawn from such fields as biology, engineering, and architecture and defined specifically for the landscape architect. A reference list correlated with many of the terms directs the reader to more detailed information. Author is Consulting Landscape Architect to the State of California.

Law and Land. Charles M. Haar. Harvard University Press and MIT Press, Cambridge, Mass., 1964. 290 pp. $7.50

A comparative study of the legal control of land use in England and the United States is based on a 1960 seminar of lawyers specializing in land-use planning practice. Individual papers fall into four categories: theory and framework of planning; formulation of land plans; relation of the individual to the machinery of planning; and the regulation of private losses and gains through land planning. An appraisal of the ideas concludes the study.

Le Leiu Théâtral dans la Société Moderne. Edited by Denis Bablot and Jean Jacquot in collaboration with Marcel Oddon. Editions du Centre National de la Recherche Scientifique, 15 Quai Anatole-France, Paris VII, France 1963. 248 pp., illus. 25 francs.

Series of essays in French on a wide range of social aspects of theater by a distinguished roster of theater experts: Mielziner, Piscator, Ruhnau, Southern, Unruh, and Vilar among them. Articles discuss city planning and theater, theater for the masses, theater architecture; included is a block of plates with plans of the most progressive of today's theaters chosen with a perceptive eye that makes the collection the best concise pictorial primer available on the modern theater.

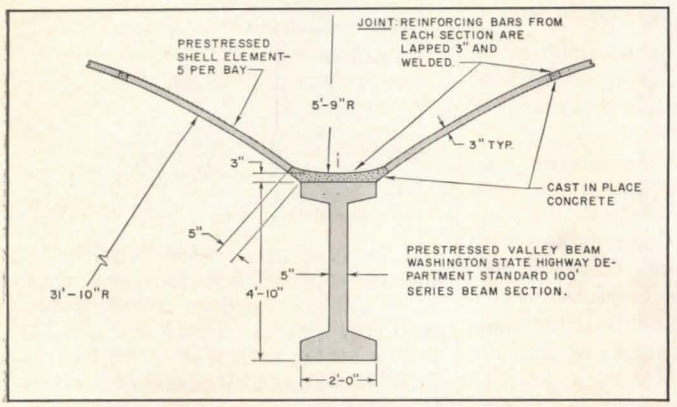


One of 14 precast concrete barrel shell bays making up Pier 46 in Seattle. **Engineer:** Port of Seattle—S. C. Dearstyne, Chief Engineer, W. H. Rucker, Senior Supervising Engineer; General Contractor: General Construction Company, Seattle; Prestressed Concrete Design by Anderson, Birkeland, Anderson and Mast, Tacoma; **Prestressed Concrete Work by Concrete Technology Corp., Tacoma.**

Prestressed concrete barrel shells provide 91,000 sq. ft. of column-free area for Port of Seattle pier

Precasting 150-ft.-span barrel shells proved a fast, economical way to roof 91,000 sq. ft. of column-free area for a transit shed on Port of Seattle Pier 46. The basic method of building, featuring precast barrel shell units, was pioneered by Concrete Technology Corporation. However, the magnitude of the spans on this job were over double any previous project.

The transit shed measures 560′ x 162′ in plan, and consists of 14 barrel shell bays, twelve of which are 40′ x 162′ and two of which are combined to obtain an end bay without an exterior column under the end of the interior valley beam. Making up each barrel shell are five precast shell units 3 inches thick and 8 feet wide and the valley beam, a 60 inch deep I-section. The units are 162 feet long, cantilevering about 6 ft. beyond precast walls connecting the exterior columns. All columns, spandrel beams and walls were precast at the construction site, while the concrete fabricator provided the valley beams, shell elements and field post-tensioning.



Typical cross-section of valley beam and shell connections.

Erection speed and economy for virtually any type of building are but two of the important advantages offered by prestressed concrete. Others include: elimination of supporting columns for maximum floor space and unobstructed traffic flow—fire resistance—design flexibility —minimum maintenance.

continued from page 12

PANY, 250 Park Ave., New York, N.Y.

DOBUSH STEWART BOURKE, Architects & Consultants, 345 Victoria Ave., Montreal 6, Can.

DOUGHTIE & PORTERFIELD, Architects, Suite 811, First Pasadena State Bank Bldg., Pasadena, Tex.

HOLABIRD & ROOT, Architects-Engineers, 300 W. Adams St., Chicago, Ill.

New Firms

AMESTOY & FLANDERS, Architects, 170 E. California Blvd., Pasadena, Calif.

ARCHITECTURAL INTERIORS, 176 S. Van Brunt St., Englewood, N.J.

GEORGE A. DIAMOND ASSOCIATES, 660 Madison Ave., New York, N.Y.

WILLIAM A. HALSEY, Architect, 134 Mt. Auburn St., Cambridge, Mass.

HARRISON • BRAUER • RIPPEL has been re-established as two firms: BRAUER & ASSOCIATES, INC., Box 6187, Edina, Minn.; and HARRISON AND RIPPEL, Box 328, Ames, Iowa.

THE RESTAURANT DESIGN GROUP, 527 Madison Ave., New York, N.Y.

ROBERT WANSLOW, 2815 S. "Q," Ft. Smith, Ark.

New Partners, Associates

BEDAR AND ALPERS, Architects, announce the appointment of DWIGHT W. SARVER as partner.

The firm of BURKE, KOBER & NICOLAIS has made W. C. WILKINSON vice-president and director of interior planning and design.

HEERY AND HEERY, Architects and Engineers, announce the following new associates: JOHN A. COCHRANE, RICHARD B. ELLIS, JACK D. HAYNES, WILLIAM B. HOLLAND, and CHARLES T. OWEN.

I.S.D., INC., interior space design division of Perkins & Will, architects, has made ALLAN O. BEDFORD a member of the staff.

I.M. PEI & ASSOCIATES has made WERNER WANDELMAIER an associate. Former associates VINCENT PONTE and DEAN MCCLURE continue as consultants.

Elections, Appointments

BURKE, KOBER & NICOLAIS, architectural and engineering firm, has made MILLARD J. ARCHULETA vice-president in charge of production.

THE ENGINEERS COLLABORATIVE announces CHARLES G. NOVAK as new Project Engineer in charge of the State of California School Component System Development Program. ARTHUR G. JONES has been made Chief Draftsman.

LIPPINCOTT & MARGULIES, INC., has made DANTE BENCIVENGO director of interiors and store planning.

REYNOLDS METALS DEVELOPMENT CORPORATION has elected ALBERT M. COLE

TWO HOUR FIRE RATING

with steel roof deck

New Underwriters' Laboratories assignment permits wider use of fast, economical steel construction, with important insurance savings!

U. L. two-hour fire rating for steel roof deck *without concrete covering* means that now you can save as much as ten to twenty percent over conventional fire resistive roof construction! Equally important, you gain the advantages of lighter weight, quick installation, and earlier occupancy.

SEND COUPON FOR FREE BOOKLET or contact your local MRDTI member

METAL ROOF DECK TECHNICAL INSTITUTE

53 WEST JACKSON BOULEVARD • CHICAGO, ILLINOIS 60604

Airtherm Manufacturing Company • Bowman Steel Corporation • Ceco Steel Corporation • Fenestra, Inc. • Granco Steel Products Company • Inland Steel Products Company • Macomber, Inc. • The R. C. Mahon Company • Plasteel Products Corporation • Republic Steel Corporation, Manufacturing Division • H. H. Robertson Company • Sheffield Division, Armco Steel Corporation • Wheeling Corrugating Company

METAL ROOF DECK *mrdti* TECHNICAL INSTITUTE

METAL ROOF DECK TECHNICAL INSTITUTE
53 West Jackson Boulevard • Chicago, Illinois 60604
Send new, complete booklet on two-hour fire rating for steel roof deck.

Name_____ Title_____

Company_____

Address_____

City_____ State_____ Zip_____

For more information, turn to Reader Service card, circle No. 367

president. DAVID P. REYNOLDS was made chairman of the board of directors.

Design firm SAPHIER, LERNER, SCHINDLER, INC., now has SIG UDSTAD as director of design.

SIMMONS COMPANY has recently appointed WILLIAM M. SCHMIDT contract division designer.

PHOTO CREDITS

Pages 146-147:
Courtesy George Nelson & Company

Page 148:
top, left; bottom: Courtesy George Nelson & Company
middle, right: Courtesy Ingersoll-Humphryes Division, Borg-Warner Corporation

Page 149:
below, left: Prince Studio
all: Courtesy George Nelson & Company

Pages 150-151:
all: Courtesy Raymond Loewy/William Snaith, Inc., except
second from top: Courtesy NuTone, Inc.

Pages 152-154:
all: Courtesy Peter Muller-Munk Associates

Page 155:
top: Courtesy Henry Dreyfuss
second from top: Helge Photo Studio
bottom two: Dennis Purse, Courtesy Henry Dreyfuss

Page 156:
left, middle: Pics Chicago, Courtesy Jon W. Hauser, Inc.
right: Photo Balthazar, Courtesy Sundberg-Ferrar, Inc.

Pages 156-157:
bottom left: Photo Balthazar
top, right: Oscar & Associates, Inc.
all (except as noted above): Courtesy Sundberg-Ferrar, Inc.

Page 158:
all: Courtesy Walter Landor & Associates, Inc.

Pages 158-159:
bottom: Moulin Studios
all (except as noted above): Courtesy Walter Dorwin Teague & Associates

Page 161:
bottom: Courtesy Museum of Modern Art

Pages 162-163:
(1) Robert Damora;
(2) Courtesy System Abstracta;
(3, 4) Courtesy Triodetic Structures;
(5) Bob Simpson, Courtesy Triodetic Structures;
(6, 7, 8, 9) Maud Dorr;
(10, 11, 12) Helge Photo Studio

Page 164:
sketches: Courtesy System Abstracta
photos, bottom: Courtesy Ronald Beckman

Pages 166-167:
George Cserna

Page 169:
top: Malcolm Smith
bottom: Courtesy Westinghouse

Page 170:
Ern McQuillan, Courtesy Robert Engelbrecht

Page 171:
left: Kal Weyner, Courtesy U.S. Plywood Corp.
top right: Dearborn-Massar
bottom right: Charles R. Pearson

Page 172:
Bill Engdahl, Hedrich-Blessing

Page 174:
Hedrich-Blessing

Page 175:
upper: Courtesy T. Y. Lin
lower: Both, courtesy Central Premix, Spokane

Pages 198-199:
Roy Flamm

Page 200:
Julius Shulman

Page 201:
top left: Courtesy Bruce Goff
middle left: Wayne Williams
bottom left: Ed Wojtas
right: Julius Shulman

Pages 202-203:
top left: Ben Schnall
top center: Julius Shulman
top right and bottom: H. R. Jowett

On The Opposite Page

We ask your momentary indulgence in noting the advertisement that appears on the opposite page. Originally prepared for appearance in the advertising press, it calls attention to a publishing event that is of considerable interest to advertisers of environmental building products. As you can see, the event is the 100th Anniversary Issue of our sister publication, AMERICAN ARTISAN.

It is indeed rare for *any* professional enterprise to look back upon 100 years of continuous and significant service to its constituency — in this case, the warm air heating, air conditioning and sheet metal industry and its contractors. It is in this sense that we feel the AMERICAN ARTISAN advertisement is significant and worth your attention.

D. B. WILKIN
Vice President and Publisher
PROGRESSIVE ARCHITECTURE

Affiliated with AMERICAN ARTISAN and HEATING, PIPING & AIR CONDITIONING

AMERICAN ARTISAN

Regular space rates

100TH Anniversary Issue

June 20 closing date

Advertising buy of a century

American Artisan's July Centennial Issue offers unparalleled opportunities for advertisers to generate more sales, develop new customers in the warm air heating, air conditioning, and sheet metal fields.

From its founding in 1864 to its superb Centennial Issue coming in July, American Artisan has made exceptional and substantial contributions to the healthy industry it serves.

A special 24-page editorial section will highlight this publishing rarity . . . this unique span of service to an ever-growing field . . . the development of warm air heating, air conditioning, and sheet metal contracting.

Here is an opportunity for you, too, to tell *your* story of quality maintained over the years . . . to emphasize *your* industry contributions . . . to review the products you offer today's market. Many advertisers grew up with American Artisan. They will be on hand, with younger companies of the field — all taking advantage of the perfect environment for advertising provided by the July Centennial Issue.

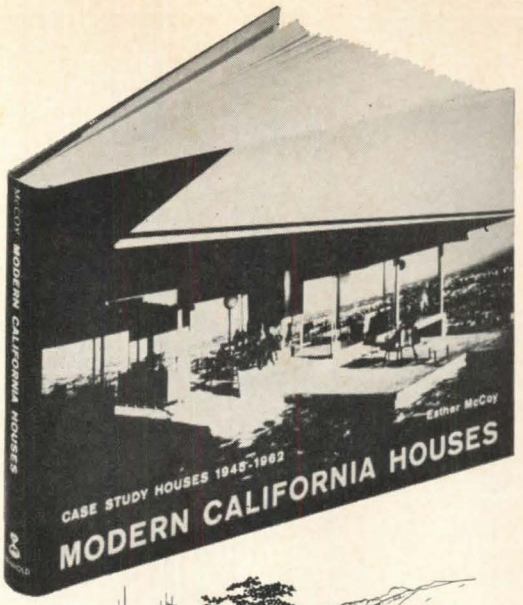
In addition to its unmatched paid circulation of the *volume* dealer-contractors in this field, American Artisan will expand its coverage of the important manufacturers to give you bonus coverage in July. Most assuredly, the Centennial Issue will command extra attention, making it a plus-value investment for you. Reserve your space now. Keeney Publishing Company, 6 N. Michigan, Chicago 2. Phone: Area Code 312, 782-6916. Subsidiary of Reinhold Publishing Corporation.

complete documentation—

MODERN CALIFORNIA HOUSES:

Case Study Houses 1946-1962

By ESTHER McCOY
Author of *Five California Architects*



Read—
the first book to provide a permanent record of the most unorthodox and influential building program ever attempted in the United States. Find complete reference material on the famous *Case Study Houses:* how they were designed and constructed, their suitability, and as time passes, their significance. Every phase of the houses and projects is considered from a technical, spatial, and aesthetic point of view — an analytical survey of innovations and designs that have set a pace in modern residential architecture for three decades.

> "... the houses collected in this book will be a source of many concepts and details that have been endlessly used by others, but seldom so well carried out as in these prototypes ..."—Thomas Creighton, Editor of *Progressive Architecture* Magazine.

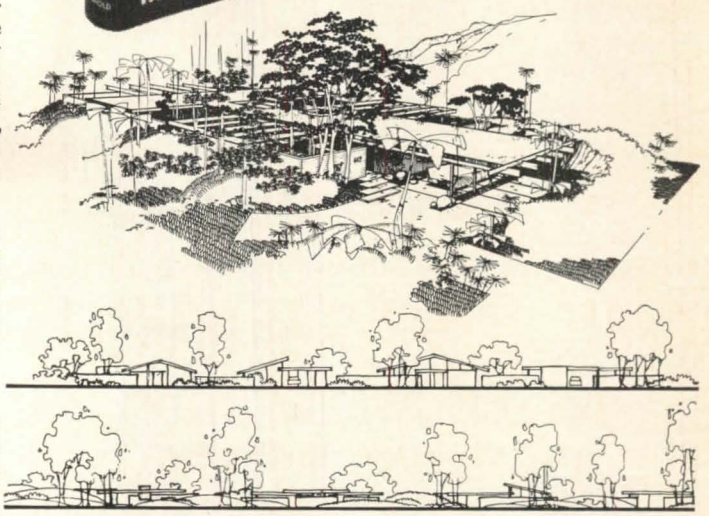
Find—
■ a fully-indexed compilation of data on the *Case Study Houses* from 1946 to the present time ■ a pictorial record with detail and section drawings, as well as photographs of work in construction and completed projects ■ an emphasis on application of modern technology—steel framing and mass produced components.

Discover—
the story behind the Case Study Houses Program as it was instigated by John Entenza — a building program sponsored by *Arts and Architecture* Magazine at a time when no individual client dared. Study the unhampered experiments in design which made of innovation a tradition. Become aware of housing designed with full approval of an interested public educated in contemporary planning. Understand the continued effectiveness of this program as you study projects on the board for the decade ahead — future trends in terms of world needs for community housing.

At the back of the book find biographies and photographs of renowned architects who have contributed to the Case Study Houses Program:

> Thornton M. Abell, Conrad Buff III, Calvin C. Straub, Donald C. Hensman, Charles Eames, Eero Saarinen, J. R. Davidson, A. Quincy Jones, Frederick E. Emmons, Don R. Knorr, Edward A. Killingsworth, Jules Brady, Waugh Smith, Pierre Koenig, Kemper Nomland, Kemper Nomland, Jr., Richard Neutra, Ralph Rapson, Raphael S. Soriano, Whitney R. Smith, Sumner Spaulding, John Rex, Rodney Walker, William Wilson Wurster, Theodore C. Bernadi, Craig Ellwood.

More than 260 captioned illustrations:
150 photographs; 110 floor plans,
perspective drawings, and diagrams.
10 by 7 inches. 216 pages. $12.50



CASE STUDY #24—project in work. 260 houses in a 140-acre tract. Houses to be below grade: individually 'slipped' into excavation. Soil excavated mounded in landscape forms. By A. QUINCY JONES AND FREDERICK E. EMMONS.

OTHER BOOKS FOR YOUR REFERENCE SHELF

CONTEMPORARY HOUSES: Evaluated by Their Owners by Thomas H. Creighton (Editor of Progressive Architecture). The owners of 36 custom-designed houses report, frankly, on what they do, and don't, like about their new homes. 3⅜" x 10½", 224 pages, 209 photographs and floor plans, $11.50.

THE AMERICAN HOUSE TODAY by Katherine Ford and Thomas H. Creighton. A round-up of 85 best U.S. homes, each evaluated in terms of cost, site, space, appearance, etc., and is described in detail with the use of plans drawings, and photographs. 8⅝" x 10¾", 235 pages, 500 illustrations, $3.95.

30 DAYS FREE EXAMINATION OFFER

Please send me:

....copies MODERN CALIFORNIA HOUSES $12.50
....copies CONTEMPORARY HOUSES $11.50
....copies THE AMERICAN HOUSE TODAY..... $3.95

Name (please print).....
Street .....
City..... State..... (Zip).....

Check the terms that suit you best:

☐ Total payment enclosed (Reinhold pays all regular delivery charges)
☐ Bill me (plus delivery charges)

Please include sales tax on all California, Ohio, Pennsylvania, and New York City orders. Important; send check or money order only—do not enclose cash!

Department 390
REINHOLD PUBLISHING CORPORATION
430 Park Avenue, New York, N. Y. 10022

The **Controlled Air Entrance*** on this Chicago lake front apartment unit gets a major test year around as high winds swirl against the front of the building. Even during the windiest weather, the **Controlled Air Entrance*** stops drafts and keeps the lobby completely comfortable.
Architect: Loewenberg & Loewenberg.

CONTROLLED AIR ENTRANCE*

gives "Windy City" luxury address

draft-free beauty

With 60 m.p.h. winds sweeping off Lake Michigan, freedom from drafts was a basic requirement for this luxurious apartment unit in the "jewel box" area of Chicago's lake front. That's why the International *Controlled Air Entrance** Revolving Door was selected. The *Controlled Air Entrance** STOPS DRAFTS as no other entrance can. Always open, yet always closed — closed to drafts *completely,* but open *always* to people. Always inviting. Turns with just a few ounces of push, even when high winds or "stack draft" virtually "lock" swing doors shut. Built to architects' specifications, this stainless steel revolving door becomes an integral design feature of the discreetly elegant exterior — adding beauty to a distinctive entrance. *Trademark

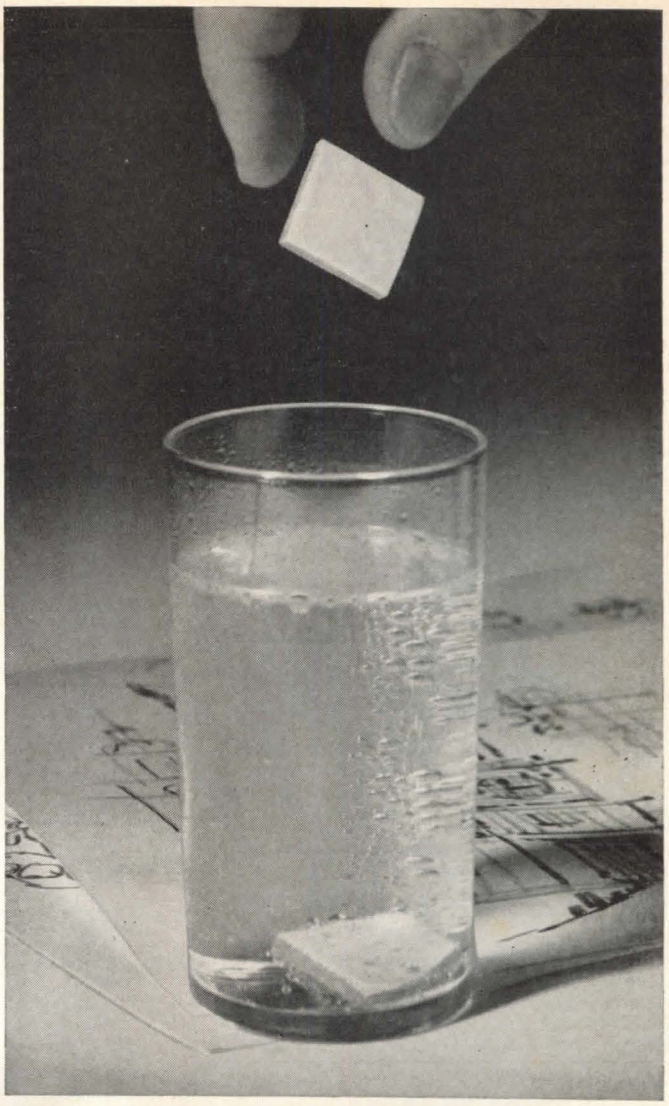
CONTROLLED
ALWAYS OPEN ALWAYS CLOSED
AIR ENTRANCE

Dare us to prove what we claim. Write today for free 54-page book, **The Controlled Air Entrance,*** based on an authoritative ASHRAE study of air infiltration.

75 YEARS MAKERS OF REVOLVING DOORS

INTERNATIONAL STEEL COMPANY
1531 Edgar Street — Evansville, Indiana 47707

For more information, turn to Reader Service card, circle No. 352



DESIGN HEADACHES?

RELIEF IS JUST AN INQUIRY AWAY...when you send that inquiry to or call Cambridge Tiles' Design Department here in Cincinnati. You see the Cambridge design staff has had extensive experience in working closely with architects—translating their ideas into ceramic tile mosaics. Under the direction of George Limke, our design staff is ready and anxious to assist you with your tile design or layout problems. Send us your plans or elevations for suggested tile applications, or let us put your own tile designs into layout form. Address your inquiry to Dept. PA-46

THE CAMBRIDGE TILE MFG. CO.

P. O. Box 15071,
Cincinnati 15, Ohio

Producers of SUNTILE wall and floor tiles, SUNTILE mosaics, HORIZON tile and CERATILE 800.

For more information, turn to Reader Service card, circle No. 330

SITUATIONS OPEN

ARCHITECT—Immediate opening for graduate architect who is a creative designer. Permanent position with a well established Midwest consulting firm. Salary commensurate with ability. Moving expenses paid. Box #788, PROGRESSIVE ARCHITECTURE.

ARCHITECT — Not over 45 years old. Registration preferred. To act in liaison capacity, client contact, and contract negotiations, for a Mid-West architectural firm. Give complete educational and experience background and salary requirement. Box #789, PROGRESSIVE ARCHITECTURE.

ARCHITECT — Registered Pennsylvania or NCARB registrations for position as Job Captain (future promotion) with progressive architectural firm in South Central Pennsylvania. Also architectural draftsmen capable of developing working drawings with minimum supervision. Send resume, salary required and references. Box #790, PROGRESSIVE ARCHITECTURE.

ARCHITECTURAL CHIEF DRAFTSMAN — And architectural draftsmen to participate in the development of a wide range of commercial, educational and governmental projects. Immediate openings for experienced personnel in a diverse and active architectural practice. Salary commensurate with ability. Mills, Petticord & Mills, 1735 K Street, N.W., Washington 20006, D.C.

ARCHITECTURAL DRAFTSMAN—Salem, Oregon. Over 35 years of age, permanent position. Prefer ten years experience. Position that of senior draftsman concerned chiefly with the production of working drawings. Diversified practice. Write resume and salary expectations to: Groom, Blanchard, Lamen & MacCollin, A.I.A., 2974 - 12th S.E., Salem, Oregon.

ARCHITECTURAL POSITIONS AVAILABLE—For youthful architects, experienced draftsmen, architectural graduates in training to assist in the further development of an established thirty-year old firm. Needs are for two working drawings draftsmen; also for a young architect to lead as a Project Architect; also for several graduates with some office experience to train as Project Architects and for office management. Neat offices, cooperative staff, comprehensive insurance program, profit sharing, company cars, modern office machines and progressive spirit makes this firm one where opportunity abounds. If you have the qualifications needed, please write or call C. S. Buchart, Buchart Associates, 611 West Market Street, York, Pa. Tel 8-1567.

IMMEDIATE OPENINGS—Available in up-state New York state registered architect or ten years experience draftsman with company specializing in turn key industrial and commercial projects. Position is permanent and salary subject to increase for right man. Submit resume of experience and salary requirements. Box #791, PROGRESSIVE ARCHITECTURE.

LONG TERM EMPLOYMENT—And advancement opportunity. One of the oldest architectural firms in the area has openings for experienced chief draftsmen with the proper qualifications. Preferably between the ages of 25 & 45. Office staff of 25 presently designing shopping centers, retail stores and general commercial work. Excellent schools and living accommodations available within one mile radius. Send complete information to Ainsworth-Angel-McClellan, Architects, 1199 East Walnut Street, Pasadena, California.

Advertising Rates

Standard charge for each unit is Five Dollars, with a maximum of 50 words. In counting words, your complete address (any address) counts as five words, a box number as three words. Two units may be purchased for ten dollars, with a maximum of 100 words. Check or money order should accompany advertisement and be mailed to Jobs and Men, c/o Progressive Architecture, 430 Park Avenue, New York 22, N. Y. Insertions will be accepted not later than the 1st of the month preceding month of publication. Box number replies should be addressed as noted above with the box number placed in lower left hand corner of envelope.

OPENINGS—In established, young, and progressive firm in Honolulu, for creative graduate architect, akin to the Philadelphia School. Three or more years, institutional and commercial experience in design and working drawings. Send resume and samples of work. Salary commensurate with ability. Box #792, PROGRESSIVE ARCHITECTURE.

PROJECT MANAGER—Graduate Architect or Engineer, preferably with advanced degrees, thoroughly experienced in design and construction of all types of buildings for industry and government. Assignment requires proven administrator with polished professional skills to direct every phase of consulting service with established firm. Salary open. Moving expenses paid. All replies will be acknowledged and treated in confidence. Write Box #793, PROGRESSIVE ARCHITECTURE (An equal opportunity employer).

SITUATIONS WANTED

ARCHITECT—Age 35, married, registered New York, NCARB, diversified experience, last three years private practice, speaks four languages, seeks responsible position leading to associateship, or as chief architect for progressive developer. Capable in all phases of practice. Experienced in commercial, housing, urban renewal projects and FHA programs. Box #794, PROGRESSIVE ARCHITECTURE.

ARCHITECT—Now practicing in Florida, experienced in all branches of architectural work wishes to associate with South Florida architect. Can invest in the business. Box #795, PROGRESSIVE ARCHITECTURE.

ARCHITECT—Of broad experience seeks employment or association with architectural firm, with duties in design or not so heavily administrative as to exclude design. Thirty years architectural experience, including fifteen as principal in architectural practice, in commercial, public, eduational, religious, residential, and specialized work including research laboratories and large scale food service facilities. Client contact, planning, design, site planning, working drawing production, specification writing, coordination with building mechanical systems and exterior utilities, supervision of construction. Architectural direction of projects to $5 million. University graduate, registered, A.I.A., age 54, excellent health, married, family. Income requirement $15M range. Box #796, PROGRESSIVE ARCHITECTURE.

ARCHITECT—Registered in California and Nevada. 18 years diversified architectural experience including 6 years of private practice. Age 40, single. Desires top position with responsibility and future. Interest in extensive travel or location outside U.S.A. Former Army Officer with top security clearance. Box #797, PROGRESSIVE ARCHITECTURE.

ARCHITECT—31. Married, 2 children. Clean cut, personable & energetic. Educated in Ireland & U.S. 9 years well rounded experience with architects, owners & contractors, on projects to 25 million. Capable of taking responsibilities & making decisions. Seeks representative position in New York. Would also consder Great Britain or Europe. Box #798, PROGRESSIVE ARCHITECTURE.

ARCHITECT—32, married with family, two college degrees. Seven years experience in all phases of design, construction, and office practice. Registered in Pennsylvania. Presently partner in active Eastern firm. Interested in discussing mutually advantageous association with established Florida architect. Excellent references. Box #799, PROGRESSIVE ARCHITECTURE.

GRADUATE ARCHITECT—University of Pennsylvania. Pennsylvania registration. Desires position in small progressive office in Harrisburg-Lancaster-York area. 6 years experience in office with particular interest in churches. Age 33, married, family. Resume upon request. Box #800, PROGRESSIVE ARCHITECTURE.

PROFESSOR—Of structural and architectural engineering to teach structures, concrete, prestressed concrete, shells, mechanics, design; excellent teaching and consulting experience, artistic background; research, writing; seeks progressive institution. Box #801, PROGRESSIVE ARCHITECTURE.

REGISTERED ARCHITECT—Age 29, B.Arch., M.Arch. Over 4 years varied experience in architectural offices. Desires responsible position with promising future in office doing progressive architecture. Reliable, all around interest. Would prefer East or West Coast but will consider any location. Box #802, PROGRESSIVE ARCHITECTURE.

STRUCTURAL ENGINEER—California registration. Age 35, desires associate position with architectural firm in California. (Prefer the San Jose, lower Peninsula area but will consider all). Box #803, PROGRESSIVE ARCHITECTURE.

MISCELLANEOUS

ARCHITECTURAL & DESIGN AGENCY—Architects, desgin or production experience $6M to $25M. Muriel Feder maintains close contact with the entire Architectural & Design field. The "professional Consultant" for confidential, nationwide, & international coverage. Specializing in personnel ranging through all phases of the architectural office for the past 15 years. 667 Madison Ave., at 61st St., New York City, TE 8-3722.

CAREER BUILDERS-RUTH FORREST—Over 15 years of quality applicants and service to quality firms in Architectural, Interior and Industrial Design, all Home Furnishings and related fields. Trainees to top executives. Professional screening and personalized service. Interviews by appointment. 515 Madison Ave., New York 22, N.Y. PLaza 2-7640.

CONTACT PERSONNEL AGENCY-LILLIAN FOX —A highly personalized and discriminating service for top-flight architects. Architectural and interior designers, production and draftsmen, in all phases of architecture. Confidential interviews by appointment. 18 East 41st St., New York, N.Y. MUrray Hill 5-1674.

HELEN HUTCHINS PERSONNEL AGENCY—Specialist: Architecture, Industrial Design-Interior Design and Home Furnishings. Interviews by appointment. 767 Lexington Avenue. New York 21, N.Y. TE 8-3070.

DIRECTORY OF PRODUCT ADVERTISERS

SALES, SERVICE AND CIRCULATION

PROGRESSIVE ARCHITECTURE — REINHOLD PUBLISHING CORPORATION

D. B. WILKIN — VICE PRESIDENT AND PUBLISHING DIRECTOR
PHILIP H. HUBBARD, JR. — ASSOCIATE PUBLISHER
WILLIAM R. EVANS, JR. — ADVERTISING SALES MANAGER

BURCHARD M. DAY — RESEARCH AND PROMOTION MANAGER
JOSEPH M. SCANLON — PRODUCTION MANAGER
DAVID N. WHITCOMBE — CIRCULATION MANAGER
SUE FELDMAN — SUBSCRIPTION MANAGER

NEW YORK OFFICE
430 Park Ave., New York 10022, N. Y.
MUrray Hill 8-8600
ROBERT L. BASSINETTE — DISTRICT MANAGER
HARRINGTON A. ROSE — DISTRICT MANAGER
DONALD W. THOMPSON — DISTRICT MANAGER

PITTSBURGH OFFICE
Porter Bldg., 601 Grant St., Pittsburgh 15219, Pa.
ATlantic 1-9421 Area Code 412
ALBERT E. McCLIMANS — DISTRICT MANAGER

CLEVELAND OFFICE
East-Ohio Building, 1717 E. 9th St., Cleveland 44114, Ohio
PRospect 1-4011-12-13 Area Code 216
JOHN F. KELLY — DISTRICT MANAGER

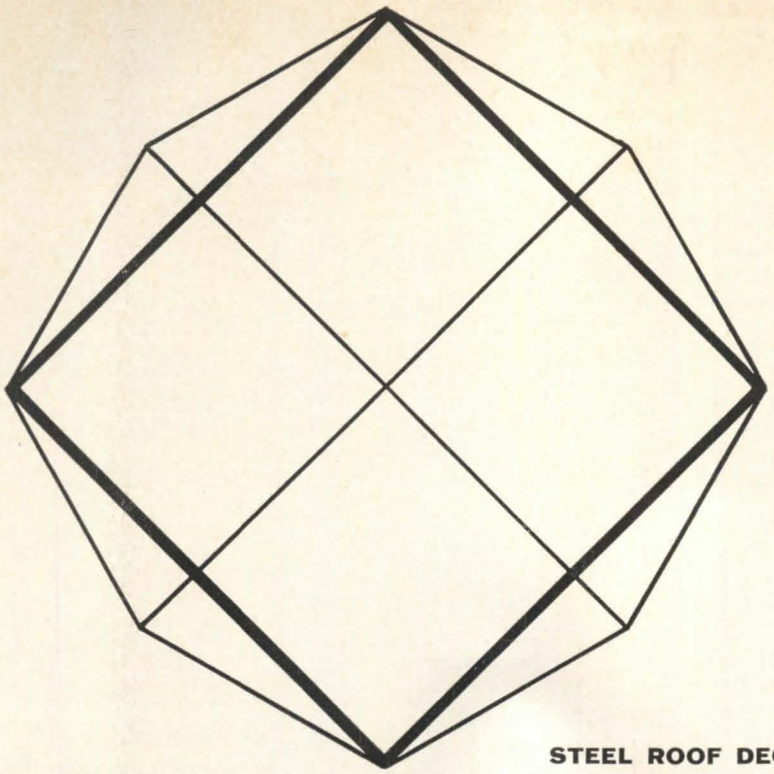
CHICAGO OFFICE
111 W. Washington St., Chicago 60602, Ill.
RAndolph 6-8497 Area Code 312
JERRY B. LITTLE — DISTRICT MANAGER
CARL J. NOLTE, JR. — DISTRICT MANAGER
CHARLES A. ULLRICH — DISTRICT MANAGER

WEST COAST ADVERTISING REPRESENTATIVES
Jobson, Jordan, Harrison & Schulz, Inc.
57 Post St., San Francisco 94104, Calif.
EXbrook 2-6794 Area Code 415
CHARLES S. HARRISON
CYRIL B. JOBSON

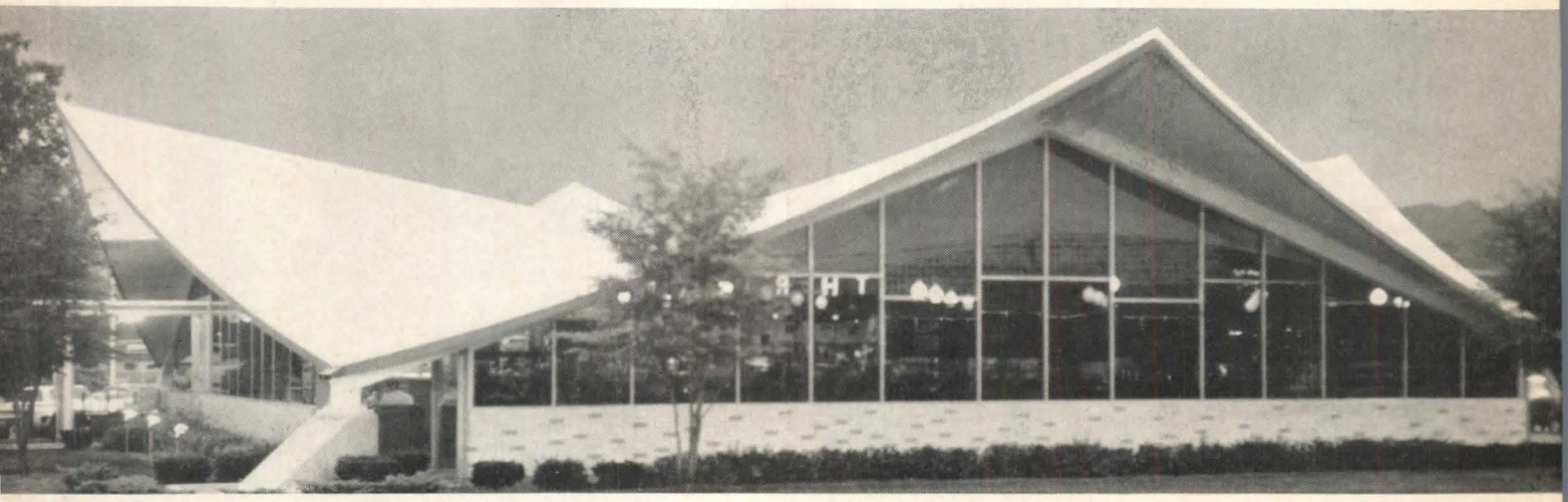
Jobson, Jordan, Harrison & Schulz, Inc.
1901 W. 8th St., Los Angeles 90057, Calif.
HUbbard 3-8530 Area Code 213
DAVID CLARK
PETER SCHULZ

SOUTHERN ADVERTISING REPRESENTATIVE
Robert L. Watkins Associates
505-805 Peachtree Bldg., Atlanta 30308, Ga.
TRinity 4-6427 Area Code 404
HARMON L. PROCTOR
ROBERT L. WATKINS

United States Steel USS

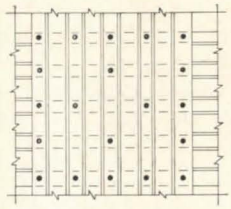


STEEL ROOF DECK FORMS HYPERBOLIC PARABOLOID

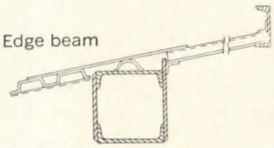


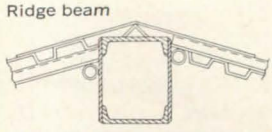
The owners of Frisch's Restaurant, Cincinnati, wanted a striking structure, a square open floor plan, and moderate cost. These requirements were fully satisfied with an economical thin-shell hyperbolic paraboloid roof of steel deck. ☐ Here's how it was done: two layers of steel deck were placed at right angles to each other and welded together to form a hyperbolic paraboloid quadrant. The roof structure consists of four quadrants, each 33'6" square having a common column in the center and four corner buttresses. Each paraboloid has a tapered overhang with a maximum cantilever of 9'6" at the peaks. ☐ The design load analysis considered the basic square quadrant acting alone and computed the overhang as a simple *beam between* the edge beam and the fascia beam. The dead load was 22 psf and the live load 25 psf. Design of the decking followed the AISI Manual on Design of Light Gage Formed Steel. ☐ The cost of the completed roof structure, deck, insulation and built-up marble chip roofing was slightly over $3 per square foot. Similar structures in steel have since been built for about $2 per square foot. ☐ For more information on the USS Family of Steels for design, write United States Steel, Room 6791, 525 William Penn Place, Pittsburgh, Pa. 15230. USS is a registered trademark.

PHOTO: Frisch's Restaurant, Cincinnati, Ohio ☐ Architects: Woodie Garber & Associates, Cincinnati, Ohio ☐ Structural Engineers: Hanley and Young (now Truman P. Young & Associates), Cincinnati, Ohio ☐ General Contractor: William Guentter & Son, Inc., Cincinnati, Ohio ☐ Roof Deck Contractor: Imbus Roofing Company, Cincinnati, Ohio ☐ Structural Steel Fabricator: George Rehm Company, Inc., Cincinnati, Ohio ☐ Roof Deck: H. H. Robertson Company, Pittsburgh, Pa.



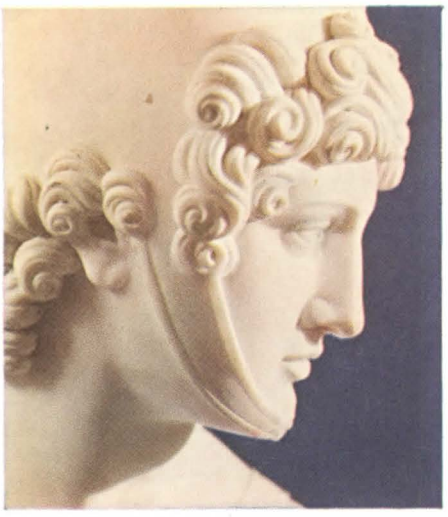
Weld pattern for decking. 18 gage lower layer, 20 gage upper layer of 1½" steel decking, plug welded at each intersection.





Edge members and ridge members were made of channels and plates to form box sections. The decking was connected at the beams by welding to pipe sections and angles which formed easy-to-weld seats.

The beauty of marble...



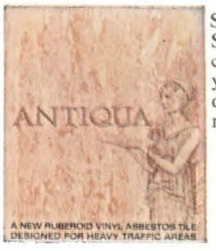
The quality touch of Ruberoid...

The tile shown is "Fruitwood" Antiqua.

New...Antiqua Vinyl Asbestos Floor Tile.

Here's marbleized beauty that can't wear off or wear out, because the pattern goes through the full thickness of the tile. Random shading, veining and swirling provide the flow and classical luxury of true marble...complement any decor. Specify Ruberoid's ANTIQUA as a beautiful answer to your heavy traffic problems.

Sizes: 9"x 9" in 1/8" and 3/32" gauge.
12"x 12" in 1/8" and 3/32" on special orders.



SAMPLER AVAILABLE. Shows all 8 superb colors. See or call your distributor or Ruberoid representative.

RUBEROID
FINE FLOORING
The RUBEROID Co.
733 Third Ave., New York, N.Y. 10017

For more information, circle No. 387

Systems automation by Johnson can save your clients thousands of dollars.

The Johnson approach to efficient building operation is based on the well known business concept called "Management by Exception." It provides for automatic control of mechanical and electrical equipment, with centralized monitoring of all vital points in the total building operation.

Unlike others, however, Johnson enables the engineer to concentrate supervision and management only on those points or conditions which are off-normal — the exceptions. He does not waste time and money constantly checking conditions that are perfectly normal.

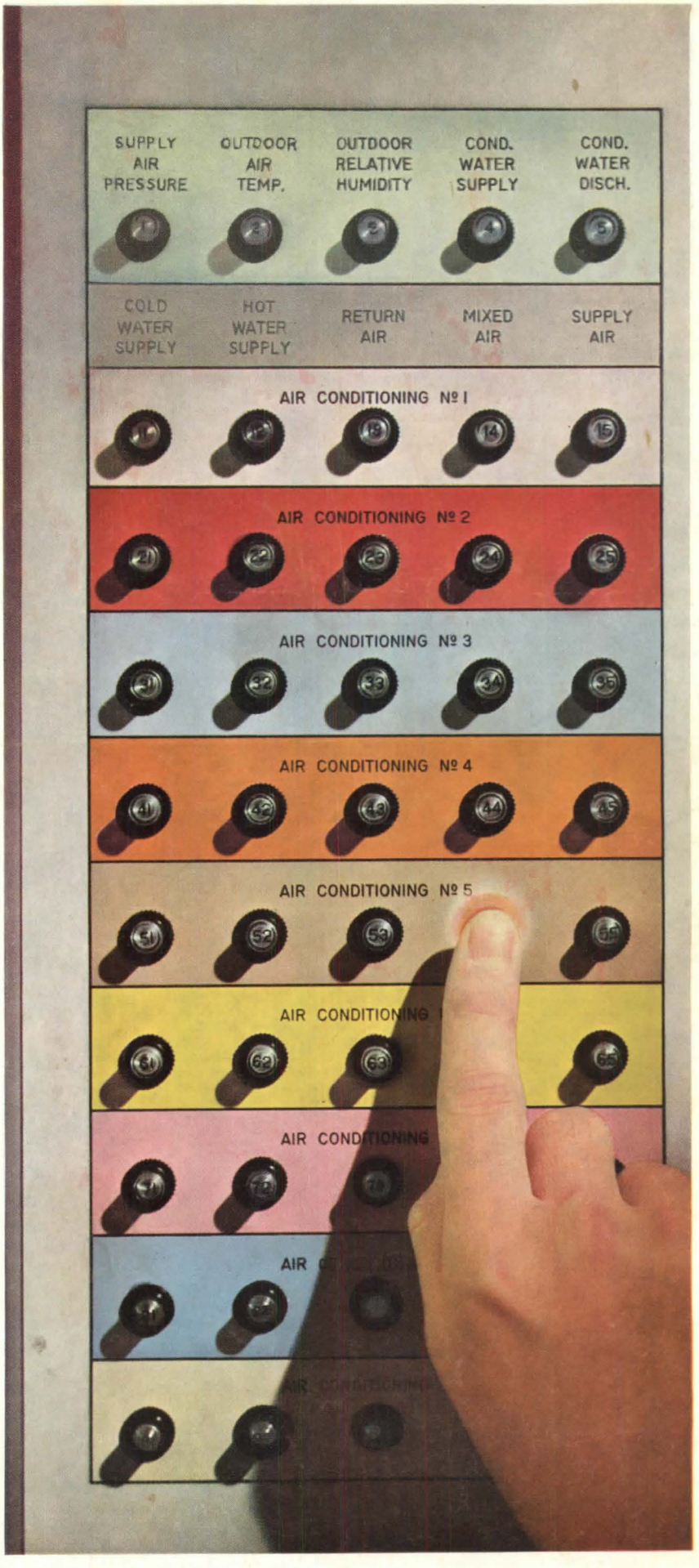
Automated procedures based on "Management by Exception" were originally developed by Johnson for controlling air conditioning, heating and ventilating systems.

MANAGEMENT by EXCEPTION

But now systems automation can be applied with equal success to virtually all building equipment and functions. Besides air conditioning, this includes building security, equipment surveillance, illumination, intercommunications, programming, fire and smoke protection, and processing operations.

On your next project, find out how Johnson's "Management by Exception" approach can increase efficiency and save money for your client. Ask your nearest Johnson branch office for details. And write for Publication No. 2014. Johnson Service Company, Milwaukee, Wisconsin 53201.

1350



JOHNSON CONTROL
AUTOMATIC CONTROL SYSTEMS

For more information, turn to Reader Service card, circle No. 353