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LOS ANGELES: A PLAN FOR THE UNPLANNED CITY

A NEW HOUSING CONCEPT: PAUL RUDOLPH UPGRADES THE TRAILER

BUILDING TYPES STUDY 382: SHOPPING CENTERS TODAY AND TOMORROW

FULL CONTENTS ON PAGES 4 AND 5

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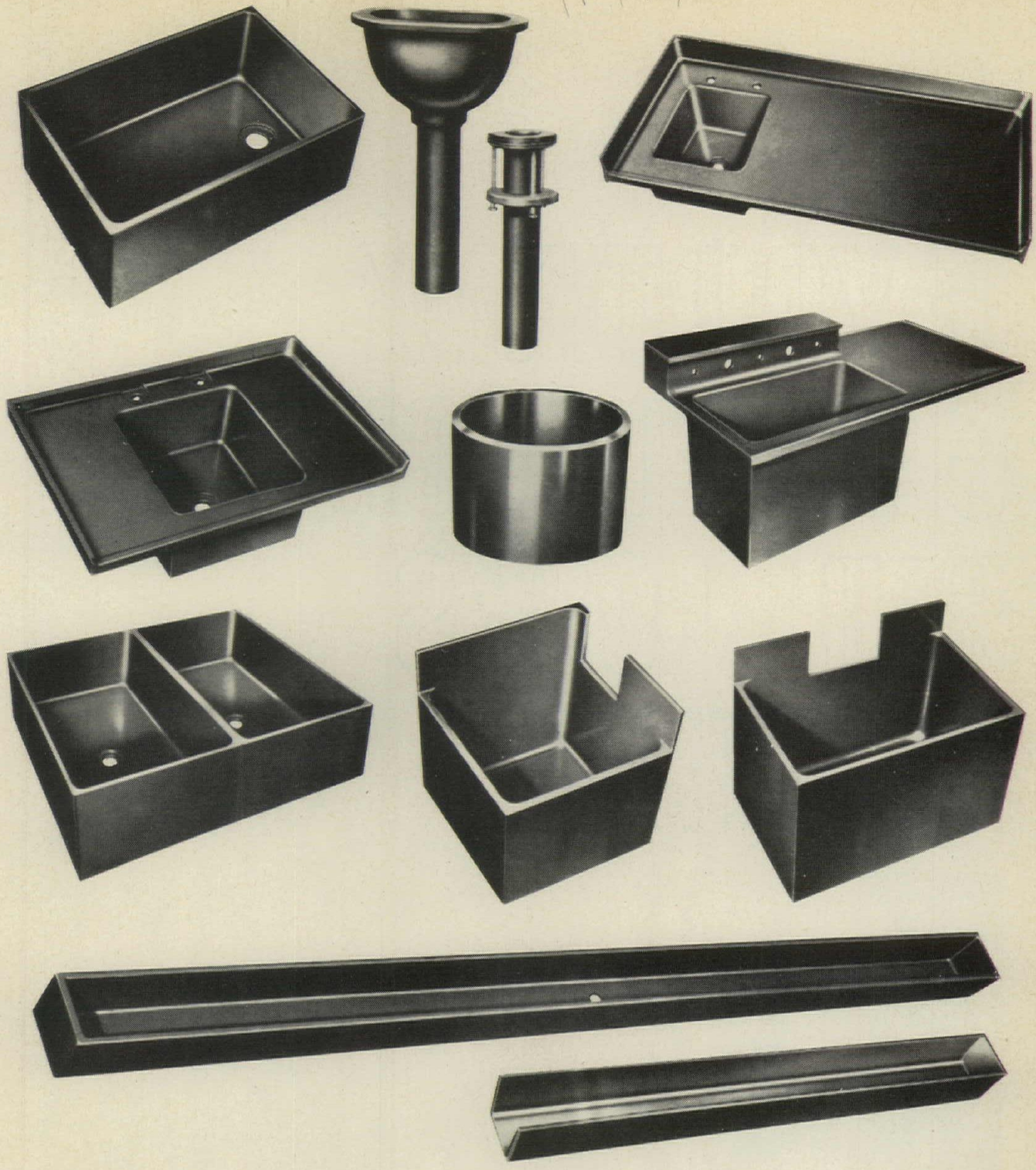
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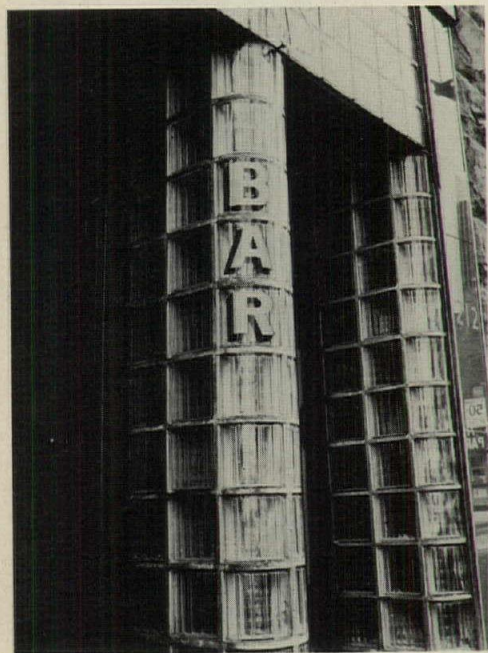
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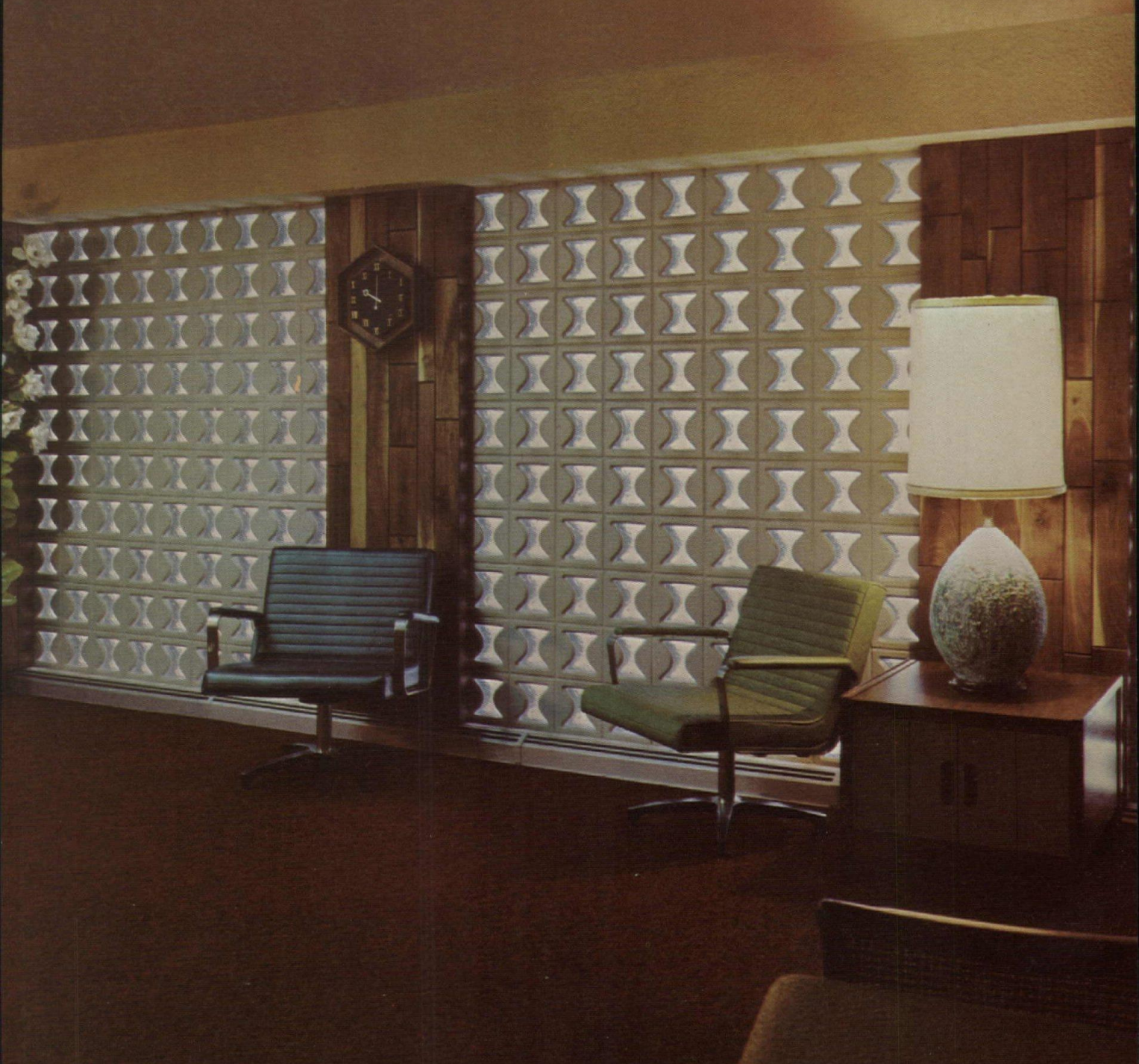
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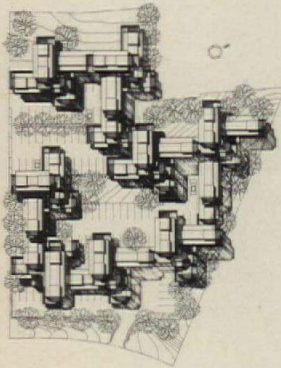
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Washington, D.C.
Architects: John Carl Warnecke and Associates
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BUILDING TYPES STUDY: ARCHITECTURE FOR INDUSTRY

Laboratories and special facilities for computerization and distribution are prominent in the plans of industry for current construction, while manufacturing facilities register steady if more modest gains. The Building Types Study for May reflects these trends and looks into some of the problems with which architects must deal in today's competitive market place.

AN ARCHITECTURE AT ONCE INNOVATIVE AND RESPONSIVE

The work of Kevin Roche John Dinkeloo and Associates is notable for a response to building program which is both inventive and appropriate. A wide variety of building types are represented in next month's presentation, which will feature very special architectural drawings.



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Ain't nobody here but us old new-technology lovers

It seems we stirred up a bit of a hornet's nest two months ago talking about new technology and the hope it holds out for cutting the high cost of building. Many of the letters received (some beginning page 48 this issue) in response to McGraw-Hill's "Business and the Urban Crisis" report (February, page 80C) have, in one way or another, taken us to task for a "defeatist attitude" and urged us to "reverse your stand and adopt a more positive policy towards the need for research and development in construction."

The statement that did the hornet-stirring was in the housing section of the report, and argued that "It is unrealistic to count on some magical breakthrough in technology to solve the cost problem. . . . Yet industry leaders and government officials from HUD Secretary Robert Weaver on down keep calling for the breakthrough—thus delaying a commitment to solve the problem with the building tools already at hand."

The key point we wanted to make is the last statement: ". . . thus delaying a commitment to solve the problem with the building tools already at hand." In the face of the enormous volume of new housing and other new construction that is needed I feel certain that we should (as argued at length in the report) face the fact that housing costs more than the people who need it can afford to pay, set up programs to fill that gap, attract the money needed to finance the construction into the capital pool, unwind the red tape, and start building the best we already know how. The point is not that we're against (or even defeatist about) a

technological breakthrough; the point is that while we can hope for it and work for it, we can't wait for it or count on it. I guess it didn't go without saying that as new building technology comes along to cut costs by saving materials or labor or time, whether it be from architect, engineer, builder, or manufacturer, we're for adopting it forthwith.

I looked back through issues of RECORD for the past three years and found that we've published no less than 40 articles on system developments which, if they cannot be described as breakthroughs, were steps in that right direction. In the last four days alone, I 1) had a visit from Elliot Krane, who is president of Modular Facilities of Old Bridge, New Jersey, which is factory-building two-story row houses which make use of three different "sub-systems" developed by three different manufacturers, and which can be delivered in one 7-ton piece by helicopter; 2) received release material from Laurel CEBUS, Ltd., a company set up to introduce a European system of room-size concrete panels into the United States; 3) had a long phone conversation with architect Bob Engelbrecht, who was chairman of the BRI conference on manufactured building modules: "The Case for Instant Space," and 4) talked with architect Paul Rudolph about his continuing experimentation with room-size modular units for high-rise buildings. In short, I could not help but form the impression in talking with architects and engineers and construction men and manufacturers that more and more meaningful experi-

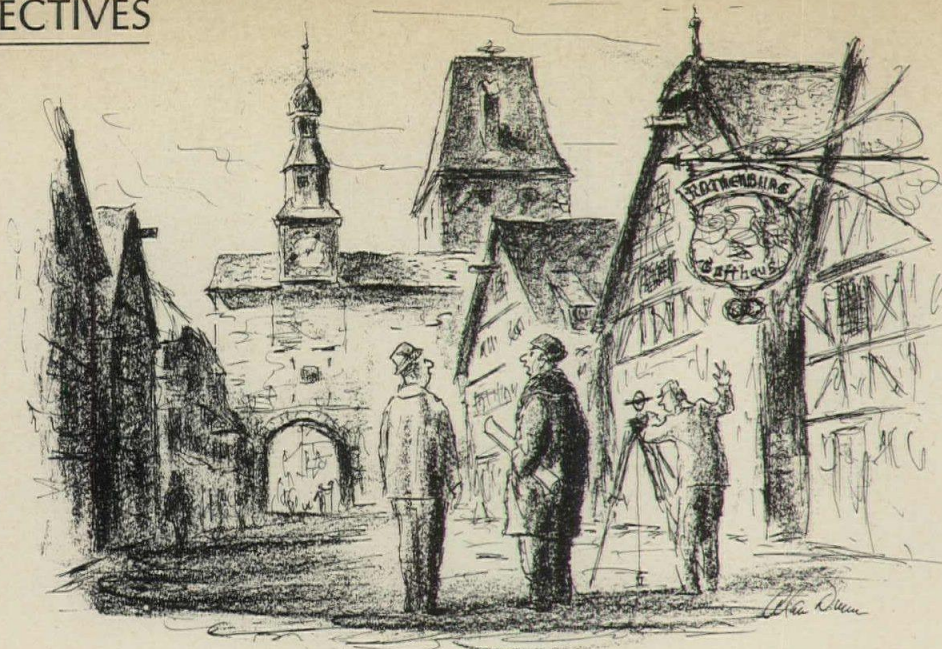
mentation and development is going on.

If this new push is to be sustained and the breakthrough found, one of the things we must find are ways to finance failure. We've got to find ways to build (not just make sketches of) more projects like architect Moshe Safdie's Habitat—which should not be dismissed (as it is by many) because it cost a great deal more than anyone thought it would, but studied because some of the lessons learned in that "failure" are already generating second-generation Habitats that may very well work.

And if this new push is to result in the kind of buildings that all of us would like to live in, we've got to have more architects involved in the development process. For example, with their Techcrete system (RECORD, March 67) architect Carl Koch and engineer Sepp Firnkas have shown how design excellence and almost complete design flexibility can be an integral part of a highly engineered and mechanized building system. And perhaps the most intriguing possibility of what is possible when the varied skills within the industry work together is Paul Rudolph's proposal (page 137 of this issue) for combining the home-grown but well-proven technology of the mobile-home manufacturer with some very sophisticated engineering to support clusters of "trailers" 150 stories in the air, and some extraordinarily exciting architectural concepts.

What is needed now is constant attack on every scale—from attempts to improve existing systems to bold forays into totally new systems—by architect, engineer, builder and manufacturer alike. Only this total effort will lead to constant improvement, perhaps lead to that technological breakthrough, and (lest we forget the name of the game) create better environments in which to live.

—Walter F. Wagner, Jr.



"Since the American tourist trade is being discouraged we decided to go ahead with that 40-story glass office building."

Environments: hostile vs. safe

Speaking to the architectural students at Pratt Institute recently, Philadelphia's Edmund Bacon asserted that design must learn to serve the ghetto and suggested that architects will need some new environmental terms of reference for that task. What happens when you think in terms of "hostile" and "safe," "ingrowing" and "outgrowing" environments? If minimum exposure means minimum danger, how do you design for security and "outreach"? Slides showed the beginnings of a notation system for analysis of such factors in design development. Mr. Bacon's illustrations also included some wonderful slides of medieval castles and towns and of work of that continuing influence on Mr. Bacon's design philosophy, Paul Klee: "full of implications for very fundamental relationships with environment." When a student asked if designers are not barred by "the political system" from taking any real responsibility for the problems of the city, Mr. Bacon had an explosive reply: "Oh, political system be damned!"—it is "the great illusion of designers," he said, that it is the system that is at fault; what is lacking is a willingness on the part of designers to take on the heavy responsibilities of thinking and working "in terms of larger systems of order."

From "I can do it cheaper" to "I can do it better"?

An optimistic note from a conversation with Robert F. Hastings, head of Smith, Hinchman and Grylls, one of the largest architectural firms in the country. Anybody who tries to sell the future on the basis of "I can do it cheaper" is going

to get clobbered, he believes: "The will of the people is changing and people are beginning to demand a higher level of environment." Mr. Hastings points to the automotive industry as one which learned that price is no longer a sufficient competitive tool. He notes that the new environmental quality demanded goes far beyond the walls of a house and the perimeter of a site. To get all of the environmental satisfactions they seek, he thinks, in fact, that "people are almost ready to buy houses as they buy cars—to use but not to keep"—to pass on or exchange or perhaps even (ultimately) "to throw away."

Would you believe the architect, Mr. Lessing?

"He has to be interested in tackling broad problems from unorthodox angles. He is broad but not shallow, trained to some depth in a specialty—electrical engineering, mathematics or whatever [underscoring ours]—but able to trace boundary lines into other disciplines and talk knowledgeably with specialists. This universalistic quality of systems men [underscoring ours] is the major reason for hoping that their technique can be fruitfully transferred to cities, where a major part of the challenge is to order and control sometimes conflicting situations." This quotation from an article by Lawrence Lessing in the January issue of *Fortune* might well seem to be a description of the architect—it would certainly be accepted by most architects as such—if the word *architecture* were substituted for *whatever*, and the word *architects* for the phrase *systems men*. Mr. Lessing is, of course, only engaged in the currently fashionable pursuit of the "systems" mystique as the panacea for any really (or ap-

parently) insoluble problem. But when will the real potential of the architect's role begin to get equal attention outside the field of architecture? Perhaps not before some new techniques of communication are developed—and practiced—by the profession.

A recollection of Hudnut: intimations of humanity

In the last of the many of his eloquent essays on architecture published in the *RECORD*, the eminent educator and critic Joseph Hudnut, who died January 15 at the age of 81, wrote in our October 1958 issue of "Architecture and the Individual." He said: "That spirit which in each epoch is the secret arbiter of architecture takes as its prime instrument the understandings and intuitions of its architects. . . . There can be no supreme excellence in any building except as its architect, at some moment in the progress of his design, discovers in his heart intimations of beauty in the human scene of which his building is to be a part—and knows these to be true. From that moment all the complex elements of his design—program, plan, structure, expediency and the human factor—must assume new relationships and directions conformable to that secret word. . . . We are in the midst of a building boom which is crowding our great cities with the tedious uniformities of a technological architecture. . . . Nevertheless, our age is not a technological age. Beneath these surface phenomena lie the great rhythms of freedom and justice, of progress and humanity, of eagerness and delight. These, too, are integral to that spirit which is the arbiter of architecture. . . . If we believe this—and I do believe it—we need not despair of architecture." —J.D.



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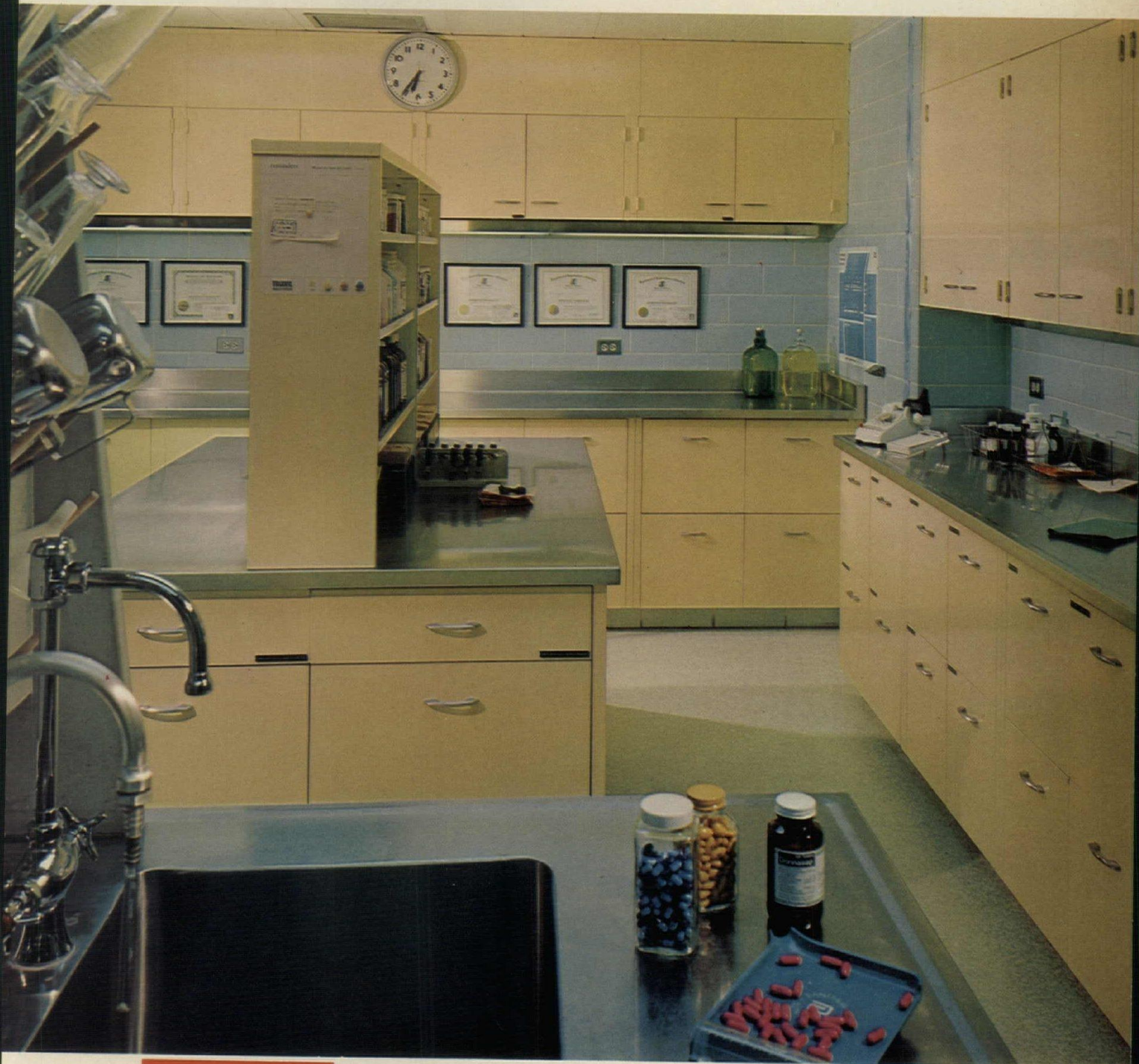
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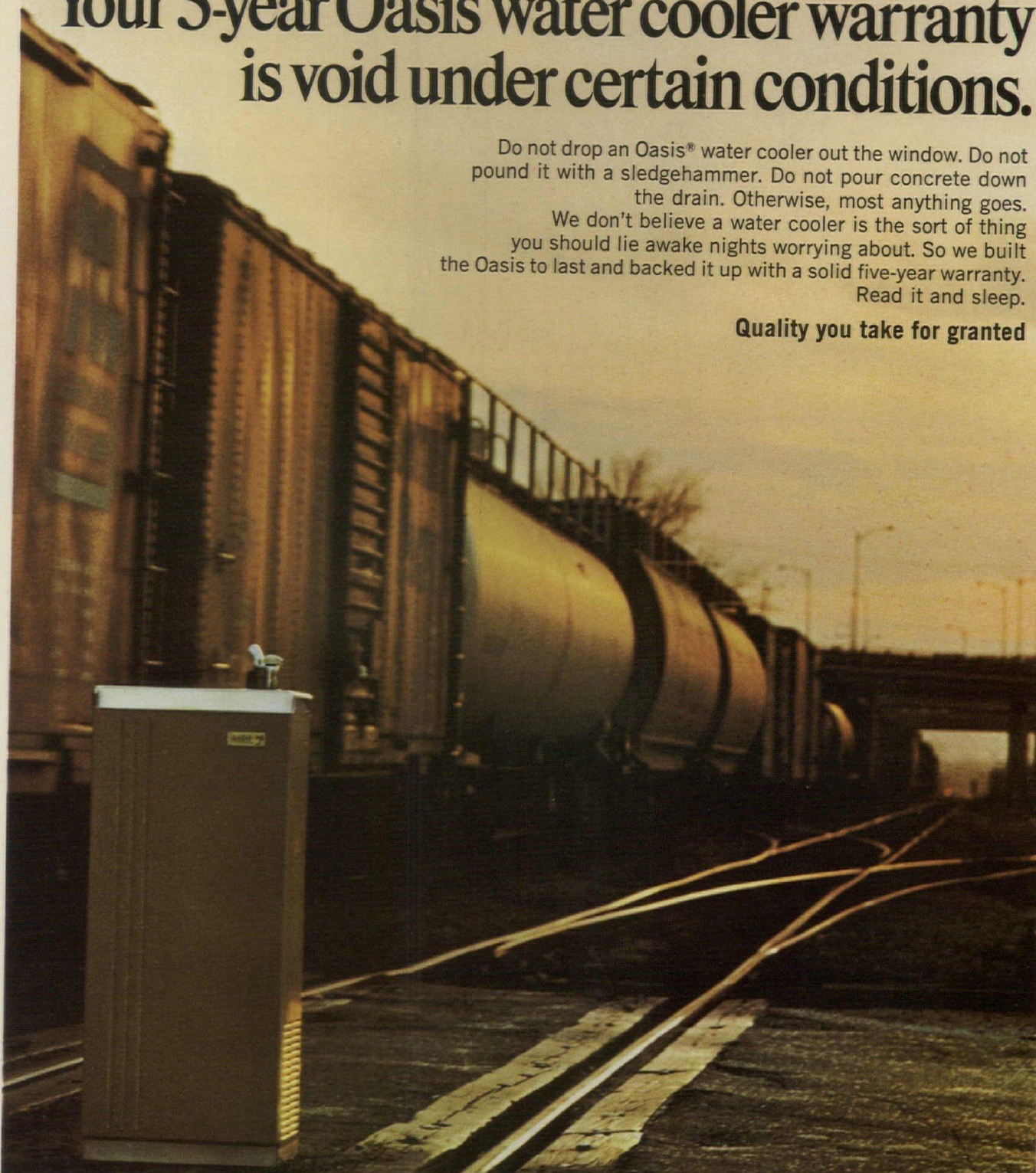
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We don't believe a water cooler is the sort of thing you should lie awake nights worrying about. So we built the Oasis to last and backed it up with a solid five-year warranty. Read it and sleep.

Quality you take for granted



Oasis Five-Year Warranty

EBCO MANUFACTURING COMPANY warrants this entire water cooler to be free from defects in material and workmanship under normal use and service for a period of FIVE YEARS from date of original installation. Ebco's obligation shall be limited to repairing or replacing any defective part which Ebco's examination discloses to be defective in material and workmanship and under the conditions as hereafter stated.

The complete water cooler should be returned to the factory, if any of the following parts fail:

1. Any part of the hermetically sealed refrigeration system.

2. Cooling tank and coil assembly.
3. Precooler assembly.
4. Any water leak in the insulated upper half of the cabinet.

A complete water cooler should NOT be returned to the factory for the repair of a water leak at one of the top plumbing fittings.

Any of the replaceable parts that fail during warranty, should be removed and returned separately to the factory. Examples of these parts are as follows:

Cold control, fan motor assembly, starting relay, overload, hot or cold faucet, water regulating valve, bubbler valve body assembly and any other remov-

able parts. A bubbler valve body assembly may NOT be returned to the factory for replacement under this warranty due to stoppage, limes up condition or leaking due to improper adjustment. This warranty does NOT apply to any part which has been subjected to accident, alteration, abuse or misuse, nor does it provide for service calls to make adjustments, remove water stoppages, delime Hot or Cold models or other attention required by the water cooler, except as herein stated.

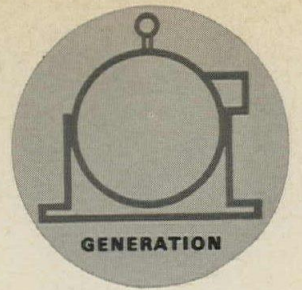
This Five-Year Warranty includes freight or postage (not express) within the continental limits of the United States of America and Canada and is in lieu of all other warranties and obligations.

OASIS® WATER COOLERS • HUMIDIFIERS • DEHUMIDIFIERS

See Sweet's, or write
Dept. AR-10, 265 North Hamilton Rd.
Columbus, Ohio 43213

For more data, circle 8 on inquiry card

SQUARE D MOVES IN ELECTRICAL CIRCLES

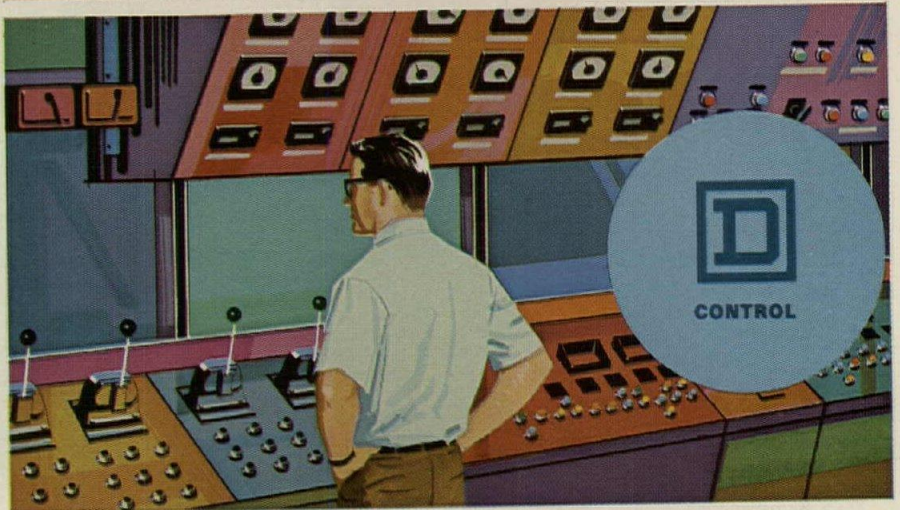
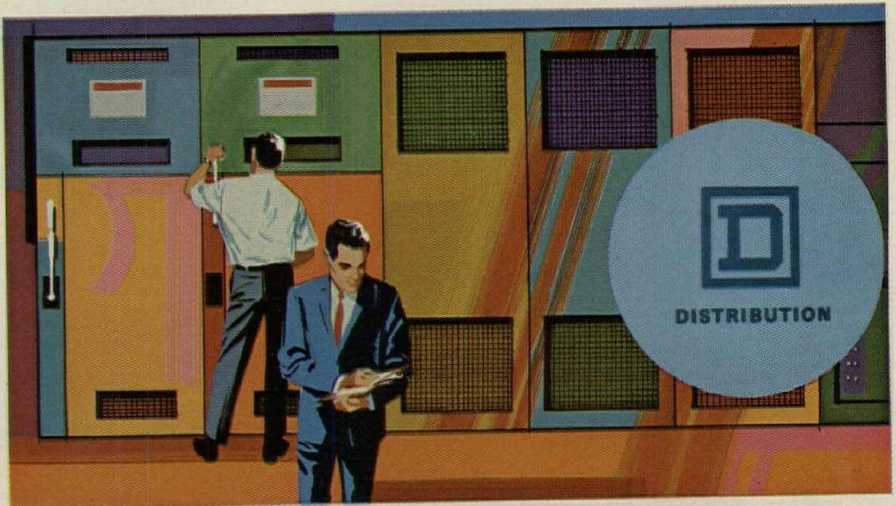


The electrical industry is divided into five distinct segments—generation, transmission, distribution, control and utilization. The name Square D is synonymous with distribution and control.

Square D distribution equipment carries electrical power for today's commercial, residential and industrial needs. Your home can be protected by Square D circuit breakers built to the same exacting standards we apply in designing huge switchgear for high rise apartments, office buildings and factories. Industry relies on Square D for safety switches, busways, switching systems and related product lines.

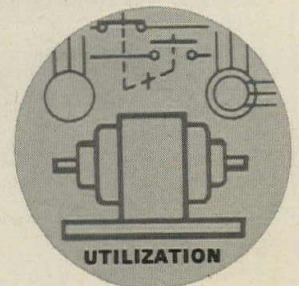
Square D control equipment ranges from a single push button to complex solid state control systems. Between these extremes are motor starters, crane controls, limit switches, relays and many other products.

Square D maintains an international field organization and distributor network to serve you. Look for Square D wherever electricity is distributed and controlled.



SQUARE D COMPANY

Executive Offices • Park Ridge, Illinois



For more data, circle 9 on inquiry card

These are the commanders.



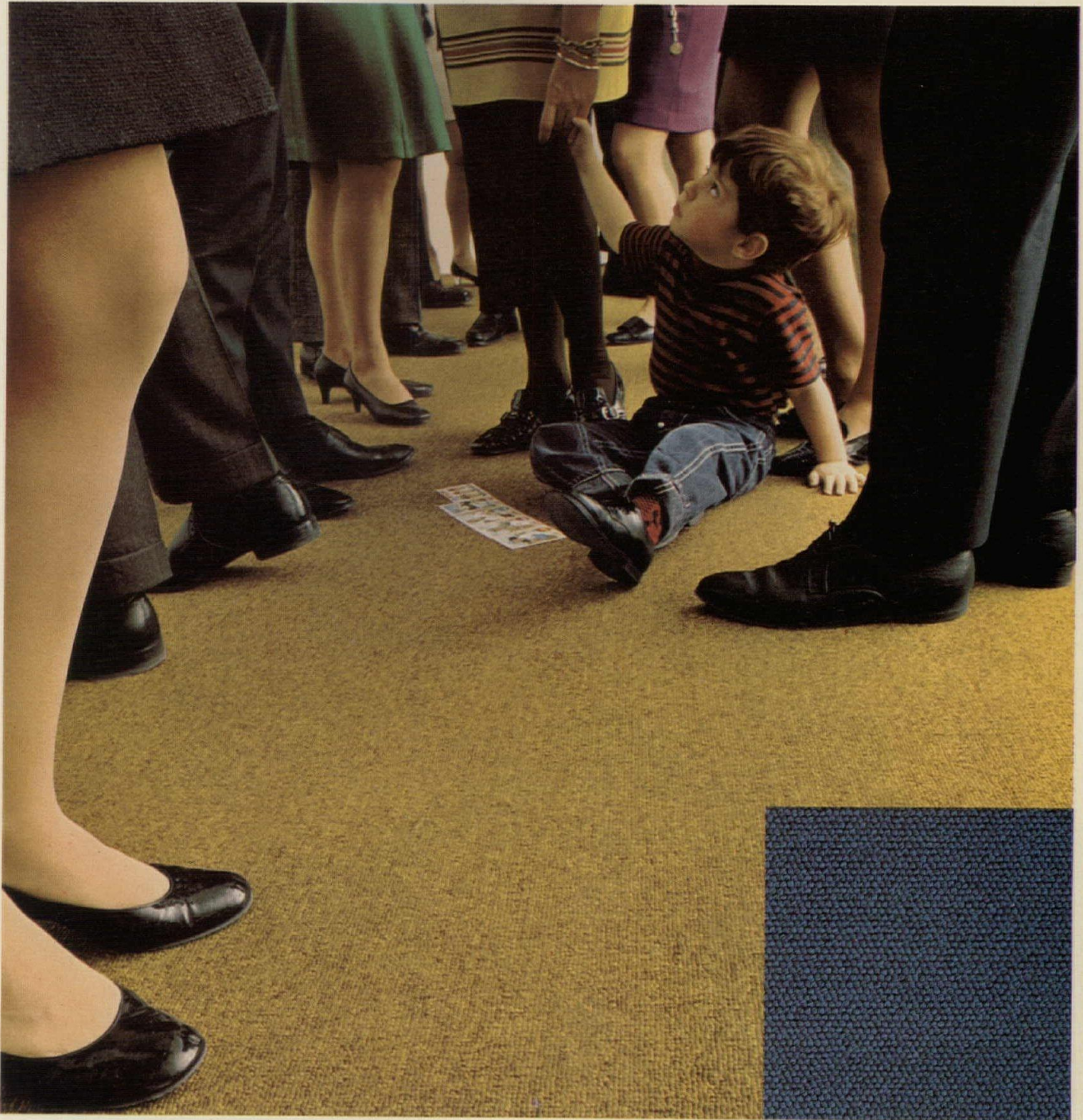
They're the ones who gave Allied Chemical
top command of commercial carpeting.

Allied Chemical commands in commercial carpeting.

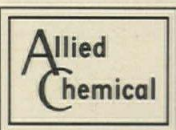
6 years ago, Allied Chemical saw the commercial carpet market as a potentially fantastic booming area. Allied Chemical took command immediately with sound product know-how and a total-range market plan. They created a unique new carpet fiber. Not a fiber adapted from residential use, but a round cross-section nylon, specifically engineered for commercial conditions.

Today, 6 years of vital experience with every commander from technologists to the man who actually buys carpeting of Allied Chemical nylon has solidly given ALLIED CHEMICAL TOP COMMAND OF COMMERCIAL CARPETING.

Proven performance commands.



Allied Chemical nylon fiber has proved itself in conditions far more demanding than the most severe lab tests. For 6 years it has stood up where it really counts. In office buildings, cafeterias, supermarkets. In lounges, restaurants, hotels, industrial installations. In day-to-day living where excessive demands are made, Allied Chemical nylon fiber has met every demand. Its color lasts longer, it wears better, it cleans more easily. In short, it performs. Example: This unretouched photograph of the actual carpet that covered the floor of a major pavilion at the New York World's Fair. If you think you may have some special carpeting problem, take another look. 16,000,000 people walked on this blue carpet!



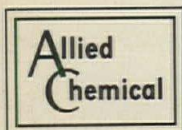
In top command of commercial carpeting.

For more data, circle 10 on inquiry card

Product innovation commands.

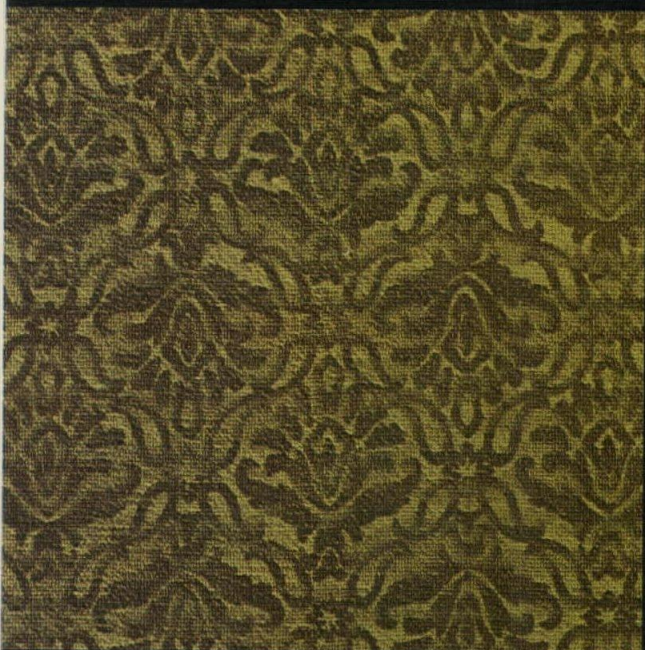


Standing by the dye beck is Lee Rush, technical director at Allied Chemical's Research Center in Petersburg, Virginia. Under examination is a sample of their new tri-dye fiber . . . unique in that it requires only a one-step color bath to achieve a brilliant three-color effect! This is only one of the many new processes developed at the Center which are opening up new styling and performance possibilities for the commercial carpet market . . . another example of how Allied Chemical works consistently toward tomorrow's most contemporary applications.



In top command of commercial carpeting.

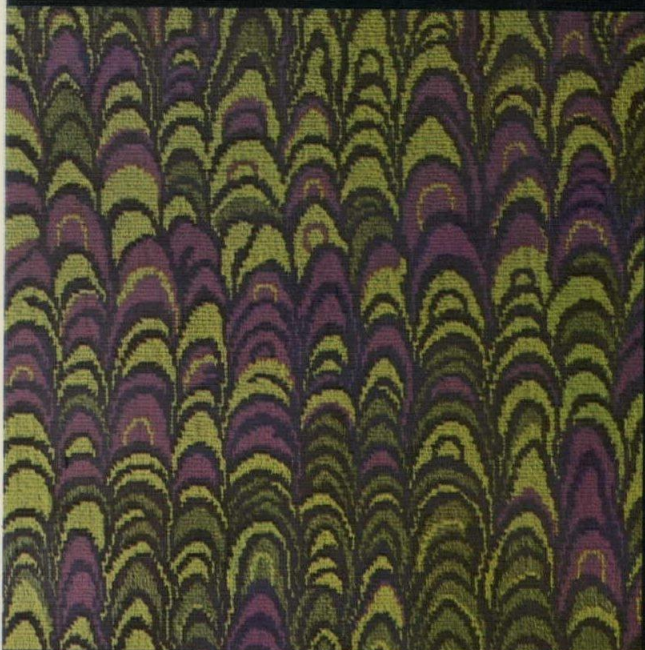
Design leadership commands.



From Monarch Carpet Mills: The "Viscount" printed pattern.



From Langhorne Mills. Flowered 6-frame woven Wilton carpet.



From Langhorne Mills: A modern flame-stitch 5-frame carpet.



From Hardwick & Magee Mills: Custom-designed in the Aubrey Beardsley style, a striking woven jacquard in black and white.

The incredible versatility of Allied Chemical nylon fiber has made it leap into excitingly fresh new design areas. Color so intense . . . because Allied Chemical's round cross-section fiber has superior dye-affinity . . . methods of creating carpet constructions uniquely different . . . these singular properties have created a totally new arena for non-residential carpeting. Beyond Allied Chemical's own talented design staff, now come the mills themselves with inspired ideas! This is leadership. A fiber so distinctive it is in command of continually new design potentials . . . so distinctive it is commanded by others for creating the best of looks in commercial carpetings.

Allied
Chemical

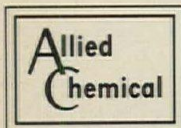
In top command of commercial carpeting.

For more data, circle 10 on inquiry card

35 progressive mills command.

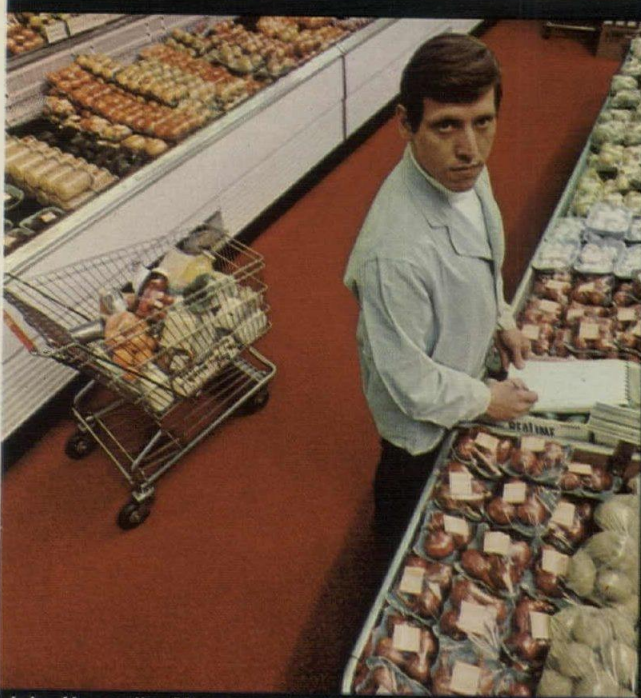


This employee at Barwick Mills, La Fayette, Georgia, is overseeing one of the more recent and progressive developments in the carpet industry. A machine which produces complex 5-screen printed patterns. Barwick Mills is only one of the 35 aggressive mills producing various styles—tufted, woven, printed, dyed—for you to choose from. In fact, because of the limitless capacities of Allied Chemical nylon fiber, these 35 mills produce over 100 fabrics used for commercial purposes!



In top command of commercial carpeting.

Forward-thinking people command.



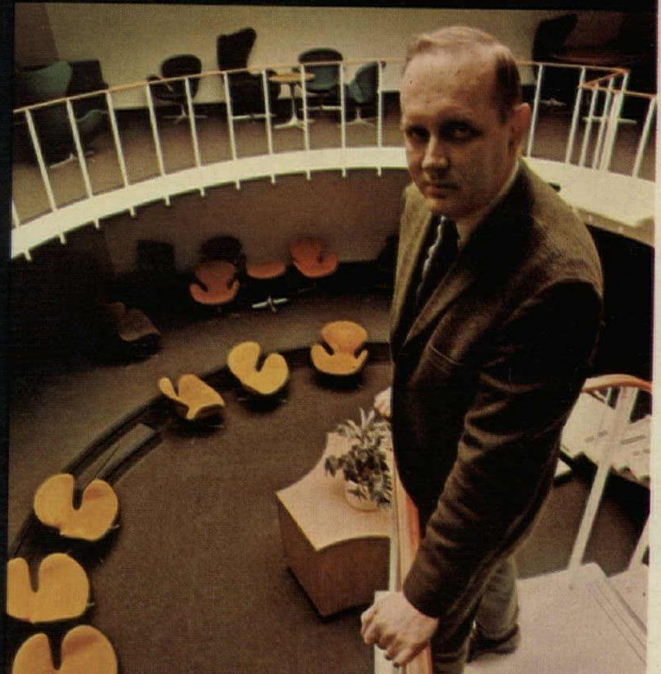
John Vacarello, Manager of the Mary-D IGA Supermarket, in Scarsdale, N.Y.



Al Carlsen, Contract Sales Manager for Ray Lang Interiors, in the Ramada Inn, Atlanta, Ga.

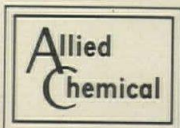


Charlie Bellflower, Manager of Davis Bros. Cafeteria, Atlanta, Ga.



Ralph Frost, architect for Lacy, Atherton & Davis, in the Wilkes College Lounge at Wilkes-Barre, Pa.

People with a sound sense of the future choose carpeting made of Allied Chemical nylon fiber. An interior design group chooses it because of its incredible durability against heavy traffic. A cafeteria manager chooses Allied Chemical nylon fiber carpeting because of easy, inexpensive maintenance. Specifiers and users alike choose carpets made of Allied Chemical nylon fiber. They command the best in styling, warmth, color, endurance, maintenance.



In top command of commercial carpeting.

For more data, circle 10 on inquiry card

A.C.E. commands.

Uniquely. Constant testing, proven performance, design innovation, years of total-market experience. All these have led to the A.C.E.® Guarantee.

Three year guarantee

This Carpet is guaranteed by Fibers Division, Allied Chemical Corporation, against excessive surface wear for three years when properly installed and maintained. The guarantee will cover surface wear to the extent of loss of more than 10% (per square yard) of pile fiber. If the carpet fails to perform as guaranteed, it will be replaced at our expense upon request of the customer.

The guarantee does not cover tears, burns, pulls, cuts or damage due to improper cleaning agents or methods.



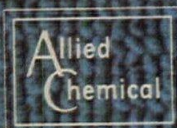
T.M. A.C.C.



ALLIED CHEMICAL CORPORATION
NEW YORK, N. Y. 10006

Allied Chemical is the only fiber producer to back its labelled carpeting, the A.C.E. label, with an unprecedented 3-year guarantee. Mill, specifier, retailer are "guaranteed"—because Allied Chemical and Allied Chemical only is responsible for the quality and performance of A.C.E.


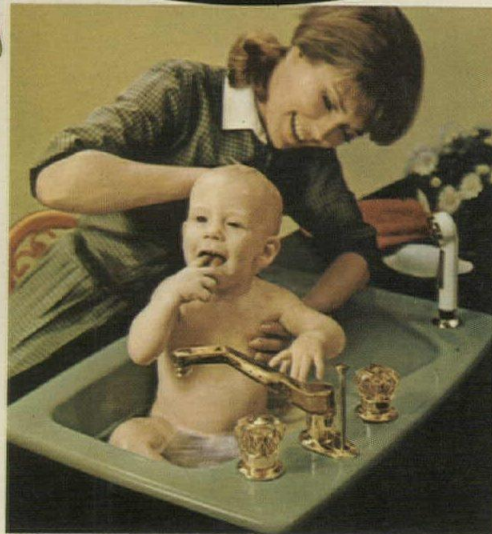
Become a Commander. Specify A.C.E.® nylon on your next commercial carpet contract. For more information, write to Allied Chemical Corporation, No. 1 Times Square, New York, New York 10036, or call: (212) HA 2-7300, Ext. A.C.E.



In top command of commercial carpeting.



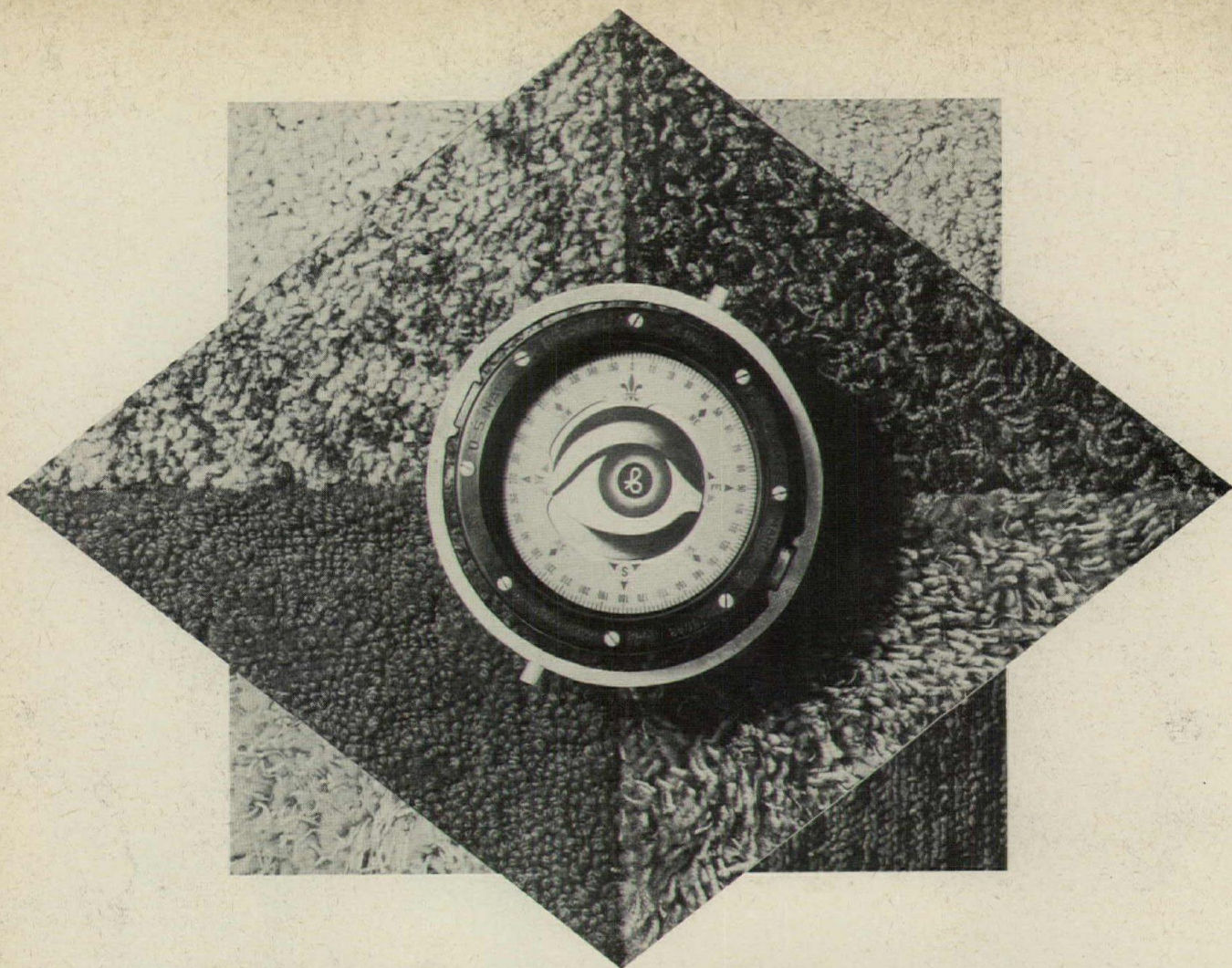
**THE
BOLD
LOOK
OF
KOHLER**

This is our new Lady Fair lavatory in vitreous china: Avocado, with gold electroplated fittings. Frankly, we designed it as a shampoo center: that's why the big, wide basin, the built-in spray arm. But now our test families tell us it makes an ideal baby bath. Pop grabs it for shaving ... the twins use it side by side. Seems it's a bathroom laundry, too: just the thing for washing out lingerie. One woman writes that she and hubby snack by the bedroom TV—and guess where she rinses the plates! (Wonder if it would take a Volkswagen?)

KOHLER OF KOHLER
Kohler Co., Kohler, Wisconsin

For more data, circle 11 on inquiry card



you see so much more in carpeting when you call in Berven of California

Need a good pilot who knows the shoals and deep waters of carpet qualities? Who can box the compass for you on acrylics, nylons, polyesters, polypropylenes, wools, rubber-backs, jute-backs, you-name-'ems? We do indeed mean ourselves. Being both manufacturers and distributors, we offer you one of the Nation's widest selections in carpeting qualities and services. In both stock broadloom, as well as Custom-tufted floor fabrics. Perhaps you'll accept this as strong assurance we have no advantage to gain in steering you down any pre-conceived quality channel. Why not pipe a Berven man aboard and see?

THE BERVEN OF CALIFORNIA RANGE
Manufacturers of: *Tufted Broadloom; Custom Tufted Rugs and Carpet; Stock Design and Custom Designed Handmade Rugs and Carpet; Hand-loomed Reversible Chenille; Custom-braided Rugs; Hand-loomed Reversible Broadloom.*

Distributors of: **Roxbury Broadloom (Axminster, Velvet, Knitted, Tufted); *Loma Loom Rubber-backed Carpet; *Ozite Outdoor-Indoor Carpet, Carpet Tile, Rubber and Felted Lining.* *WESTERN STATES

BERVEN OF CALIFORNIA
General and Administrative Offices: 2600 Ventura Avenue, Fresno, California 93717 • (209) 268-0771 • Sales Offices and Showrooms: Chicago • New York • Miami • Minneapolis • Dallas • Houston • Denver • Phoenix • Seattle • Spokane • Portland • Sacramento • Fresno • Los Angeles • National City • San Francisco • Honolulu



E6

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For more data, circle 13 on inquiry card

SOLUX-F32

Controlled illumination
plus elegant appearance
plus easy maintenance

Simple
When
know

Know-how. The Solux F32 has been used for over 20 years. Created with a unique shallow-design fluorescent luminaire. Matching its design is an ingenious injection molded one-piece prismatic lens. And—because the lens must be replaced occasionally—it is self-hinging, with no latches, springs or other devices, reducing maintenance to seconds. SOLUX-F32 combines every wanted feature in one fluorescent luminaire. Because Solux knows how.



Write for data on the new SOLUX-F32.

 solux CORPORATION

58-17 28th Avenue, Woodside, New York 11377 • (212) 726-1300

in lighting... it's solux



Even if they solve only 80% of your problems, it's still worth mailing this coupon.

I'd like to know how you can help me with:

- 1. Product availability on hardwood paneling, flush doors, laminated products and exterior siding.
- 2. Engineering assistance on wood structures.
- 3. Erection service on wood interior walls, exterior walls and roof systems to my specifications.
- 4. Estimating assistance on Weyerhaeuser products.
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To: Weyerhaeuser Company
Architectural Specialty Dealer Service
Box B-2753
Tacoma, Washington 98401

Send me the name of your representative in my city:

Name _____

Address _____

Firm _____

City _____ State _____ Zip Code _____

Weyerhaeuser introduces a brand new Johnny-on-the-spot architectural dealer service.

We have more than 150 Architectural Specialty Dealers around the country. In cities like Los Angeles, Chicago, Philadelphia, Dallas and Pewaukee, Wisconsin. These are local independent businessmen. With first-hand knowledge on hardwood

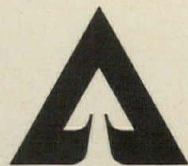
doors, laminated beams and decking, hardwood paneling, prefinished siding, and a host of other Weyerhaeuser products.

Many inventory the products in their own warehouses. In your city. They have quick access to most

anything you may need.

Their purpose in life: shortcut all red tape and slowness of dealing with somebody out of town.

If you'll mail the coupon, we'll put you in touch with your Johnny-on-the-spot. Not just any Tom, Dick or Harry.



Weyerhaeuser



DIXIE SQUARE SHOPPING CENTER
 HARVEY, ILLINOIS
 BUILDING: MONTGOMERY WARD & CO., INC.
 CHICAGO, ILL.
 ARCHITECT: HORNBACH-STEENWYK & THRALL, INC.
 GRAND RAPIDS, MICHIGAN
 CONTRACTOR: INLAND CONSTRUCTION INC.
 MORTON GROVE, ILLINOIS
 DISTRIBUTOR: SCHUHAM HARDWARE CO.
 CHICAGO, ILLINOIS

Norton Series 6120 Uni-Trol door controls were used for all public entrance doors on both the exterior and interior doors. Shock absorber in the holding mechanism prevents damage to door and frame at full open position. Built-in holder can be engaged to hold the door open for customers. Note how the attractive styling blends with the door and frame.

FOR CONTROL and SAFETY Montgomery Ward specifies NORTON® UNI-TROL DOOR CONTROLS

To control doors under all circumstances and to protect both customers and doors, Montgomery Ward has specified Norton Uni-Trol door controls. The tremendous traffic experienced by these stores at their public entrances demands that the doors be under perfect control at all times and all situations. In addition, safety to both customers and the door is an utmost concern.

All of these important considerations were met very successfully with the Norton Uni-Trol, a combination door closer and door holder. For normal to medium heavy traffic, the unit functions as a normal door closer. When traffic is heavy, the door holder is engaged to keep the doors open. The spring in the holding mechanism serves as a cushion as the door is opened. Strong winds or energetic customers cannot harm the door or frame when the unit is opened too quickly.



Norton Uni-Trol controls prove particularly valuable to the satellite Automotive Center. Items purchased at this store are more likely to be bulky. Customers appreciate the convenience of an open door when they leave with their purchases.

1121
 AR-48

SEND COUPON
 FOR PRODUCT
 DEMONSTRATION



NORTON DOOR CLOSER DIVISION
 372 Meyer Road, Bensenville, Illinois, 60106

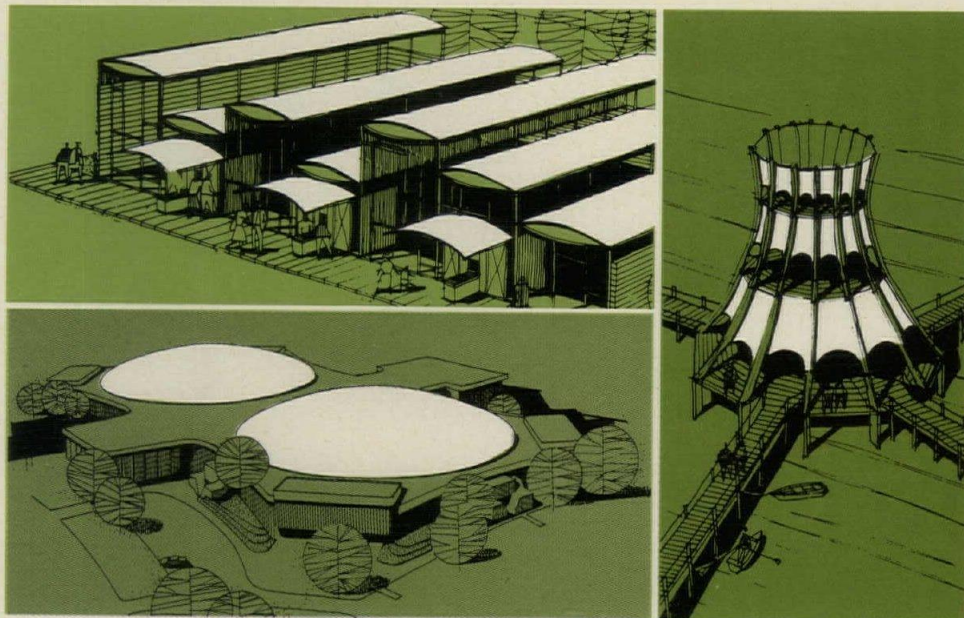
- Have your representative make an appointment to demonstrate.
 I'd like the information I've checked:
 Norton Uni-Trol Door Controls Complete Norton Line

Name _____ Title _____
 Company _____
 Address _____
 City, State & Zip _____

For more data, circle 15 on inquiry card

AN
OPEN
CHALLENGE

Design a roof that
can't be covered
efficiently, durably,
beautifully... with



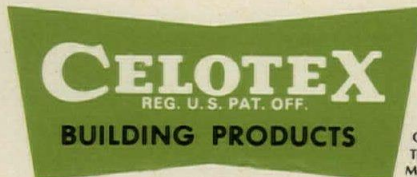
Barrett® CHEM-PLY*

ROOF SYSTEM

Design flexibility is inherent in Barrett Chem-Ply — a true one-ply system. The roofing sheet is made of heavy-duty chlorinated polyethylene reinforced with glass fiber and laminated to flexible urethane foam. It follows any line you can draw — can be applied to any roof shape or slope from dead level to vertical.

And beauty is part of Chem-Ply System's versatility. It's pure white. Reflects 85% of solar heat, reducing thermal cycling and thermal shock. The foam backing acts as a ventilator for vapor pressure, minimizing possibility of blistering. Chem-Ply System is unaffected by temperatures from -50°F to +150°F. . . protecting against cracking, shrinking and splitting. Write for sample and specifications today.

Innovations (such as the Chem-Ply-System) are a part of the 114 year old Barrett tradition of leadership. Whether the job calls for the unusual or the conventional, you can't do better than Barrett proven products, total systems, specifications and expert consultation service. Challenge us.



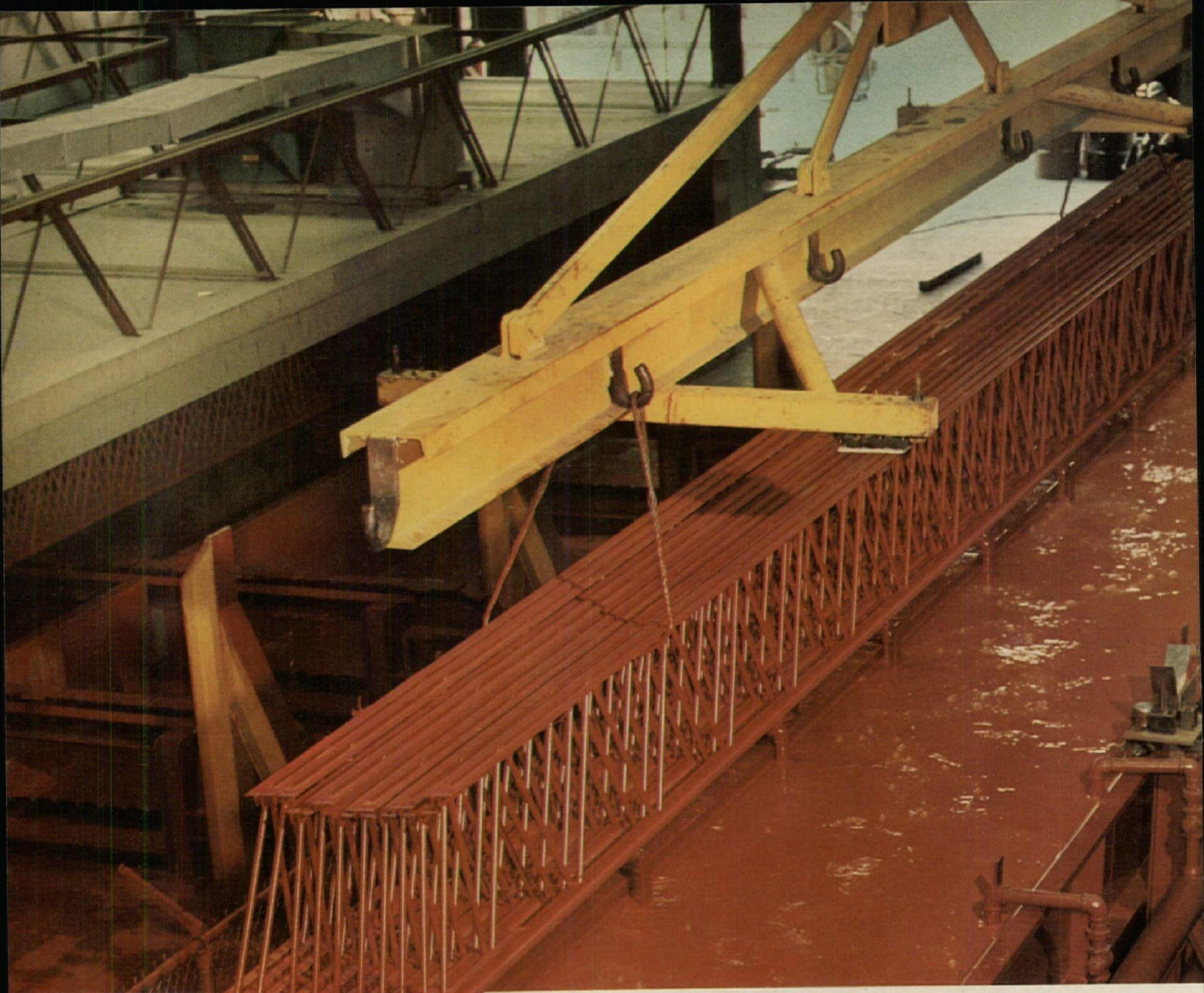
CONTRIBUTING
TO THE PROGRESS OF
MAN THE BUILDER

THE CELOTEX CORPORATION

1500 North Dale Mabry • Tampa, Florida 33607
Subsidiary of Jim Walter Corporation

*Trademark

For more data, circle 16 on inquiry card



NEW ELECTROPAINTING PUTS TOUGH, UNIFORM PROTECTIVE COATING ON LACLEDE JOISTS

One of the most advanced painting methods available is now used to apply a highly durable and uniform protective coating on Laclede Open Web Steel Joists.

The new process, called electroplating, uses the same principle employed in electroplating. The positively-charged joists, immersed in a bath, attract the negatively charged paint particles, which build up on the surface of the joists in a tight, dense coating of uniform thickness. Thickness of coating is directly proportional to the applied voltage, and can be closely controlled throughout the painting process.

The coating applied by this process has many advantages:

1. Coverage is uniform and complete, including sharp edges, corners and hard-to-reach nooks and crannies
2. There are no tears, drips, runs or excess paint
3. Excellent weatherability and abrasion resistance are obtained
4. Painting is consistent in quality from batch to batch

5. Finish coats may be easily applied over the primer
6. The coated joist has excellent finished product appearance

The electroplating process in a red finish is now standard on all shop coated Laclede open web steel joists. Specify Laclede electroplated steel joists for your next construction job.

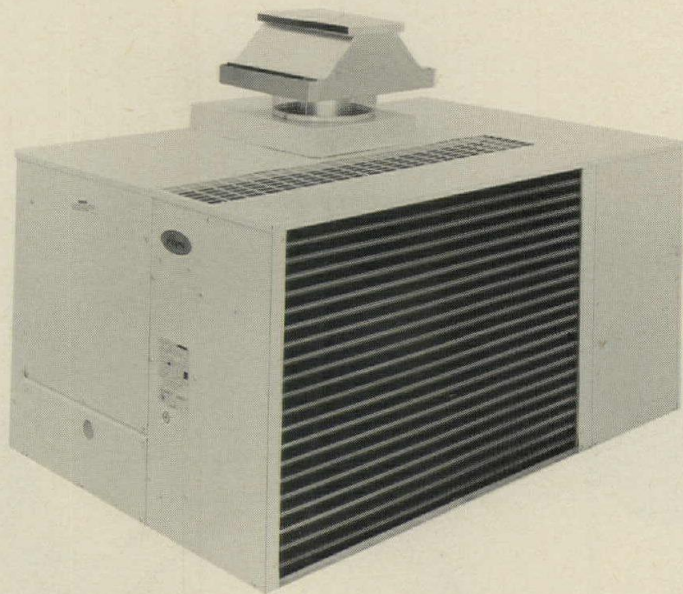


LACLEDE STEEL COMPANY

St. Louis, Missouri 63101

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Which roof top air conditioning unit is really ready for outdoor duty?



Payne.

The Payne Econoair®—with protection that is *more* than skin deep. Beneath its weather-resistant casing you'll find a heating element protected with exclusive Astrogard®—a special ceramic coating fused to metal at 1600°F. As a result, the Econoair is ready to withstand all weather—outside from the climate, inside from condensation—with maximum resistance to rust and corrosion • Payne's popular Econoair gas/electric units give you a great number of such advantages, in the widest choice of capacities, available in their field (from 1½ to 30 tons of cooling and 40,000 to 800,000 BTU heating). Easily accessible control shelves with relays vertically mounted so dust is not a hazard. Field serviceable semi-hermetic compressors. Low ambient controls and 2-stage heating input in units above 5 tons. Exceptionally low profiles. And—exceptional reliability • The Econoair is part of Payne's complete line of air conditioning equipment—packaged, split, heat pump and combination units—backed by over 50 years' experience. Think of Payne first for your commercial and light industrial needs. Payne technical literature will help you plan your next jobs—and it's yours for the asking. Write for your file copies.



THE PAYNE COMPANY
855 Anaheim-Puente Road
La Puente, California 91747

name _____

firm name _____

address _____

city _____ state _____ zip _____

For more data, circle 18 on inquiry card

Another big one goes all-electric.

The advantages of the all-electric concept for commercial buildings

are demonstrated once again. This time, in Montgomery Ward's com-

bined Metropolitan District Office West Coast Buying Offices and related facilities in Rosemead, California.

Montgomery Ward, Rosemead, is one more important name on the long list of all-electric buildings owned and operated by major corporations.

Electric space conditioning systems can save builders 30% to 50%



in first cost installation. In most cases, expensive stacks, and boiler rooms are eliminated, often saving the equivalent in space of whole floors. There's more freedom of design in all-electric buildings. Less room is required for the main space-conditioning plant. The result is a low cost, low maintenance building with very

competitive per square foot operating costs. Add up all the advantages and savings. The all-electric building invariably has the lowest total annual cost.

Montgomery Ward, Rosemead, was designed by architects Mazzetti, Leach, Cleveland & Associates, Ron Cleveland, A. I. A. It goes into our files

as one of the hundreds of case histories of all-electric buildings in Central and Southern California.

Our Marketing Engineering Department will show you how to apply the all-electric concept to your project for remarkable savings. Write: Marketing Engineering, Box 62, Terminal Annex, Los Angeles, California 90051.

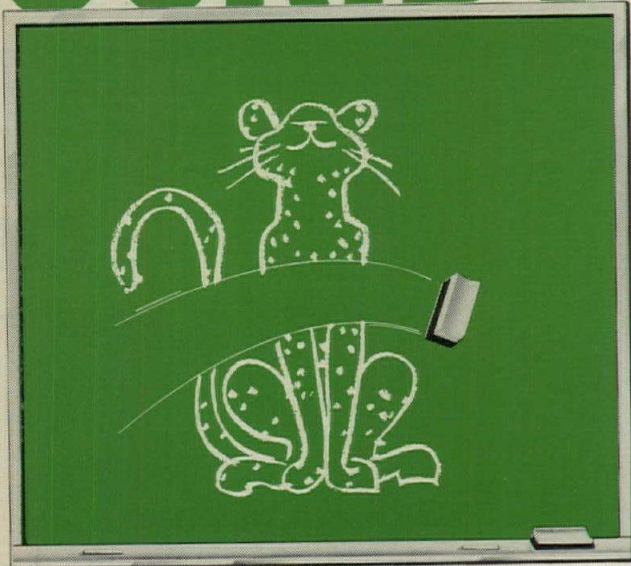
SCE

Southern California Edison

Montgomery Ward, Rosemead



SCRIBO CHALKBOARDS

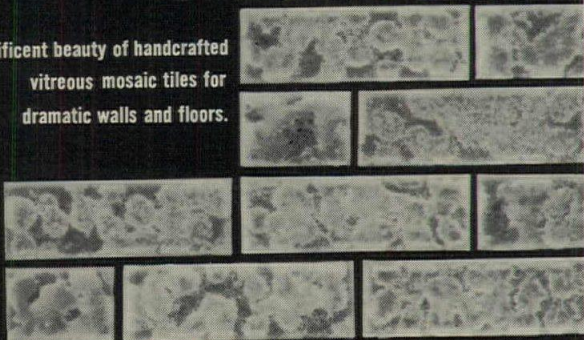


EASY ON - EASY OFF. Scribo Chalkboards have a baked alkyd amine enamel surface for clear writing, ghost-free erasing and damp cloth cleaning. Your choice of three types — ¼" Hardboard — ½" Particleboard — 24 ga. Steel — in five standard colors. Write for samples and specifications.

Bestile MANUFACTURING COMPANY
P.O. BOX 71, ONTARIO, CALIFORNIA 91764
For more data, circle 19 on inquiry card

facet

Magnificent beauty of handcrafted vitreous mosaic tiles for dramatic walls and floors.



Select from a range of rich decorator shades. Install vertically or horizontally. Dimensions 1½" x 4½". Impervious to the elements — use both inside and outside. Individually handmade, yet more economical than most competitive mass-produced tiles.

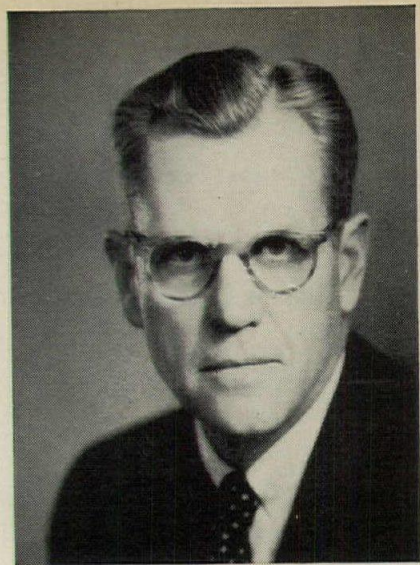
Facet is mesh-mounted on 12" x 12" interlocking sheets with various surface type trimmers, coves, caps and half tiles.

Ask for Facet colored catalog and spec sheets from

Latco
PRODUCTS

3371 GLENDALE BOULEVARD • LOS ANGELES, CALIF. 90039
TELEPHONE: (213) 664-1171

For more data, circle 20 on inquiry card



"It's good business to help colleges"

"Our colleges and universities must have enormous quantities of new money almost constantly if they are to be enabled to serve society as it needs to be served. Every business institution benefits today from the money and labors that those now dead have put into the building of these institutions. We are all dependent upon them for future numbers of educated young men and women from which to choose, and for the continued expansion of man's knowledge of the world he inhabits.

"We owe these institutions a great debt, and we can pay this debt in two ways: By supporting them generously with contributions of money and time, and by upholding their freedom to remain places of open discussion, and to pursue truth wherever it is to be found.

"Last year our company contributed to colleges and universities more than \$310,000 which represented 1.2% of profit before tax."

J. Irwin Miller, Chairman
Cummins Engine Company

A major problem in the education of students is rising costs. If companies wish to insure the availability of college talent, they must help support colleges with financial aid.

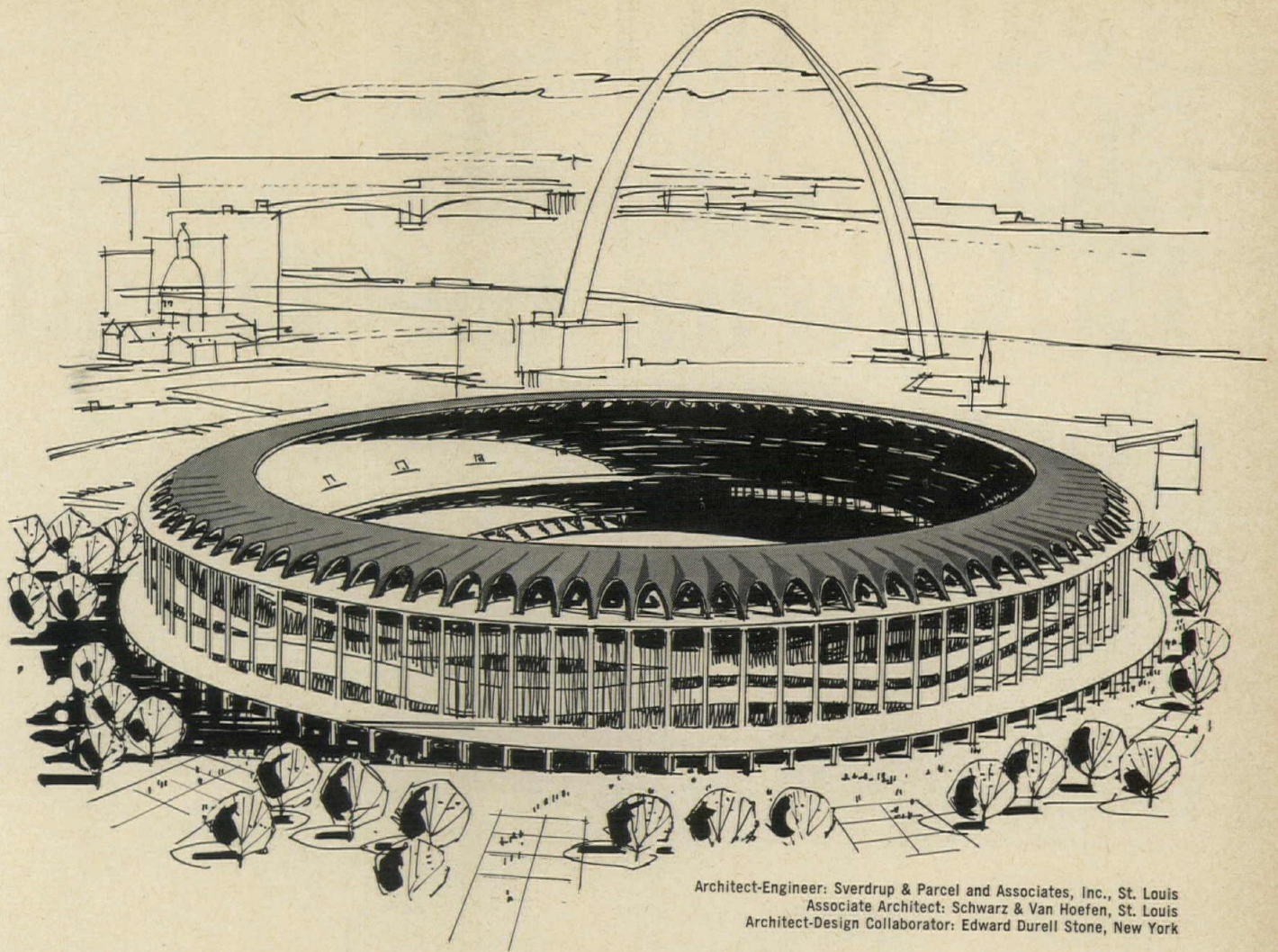
SPECIAL TO CORPORATE OFFICERS — A new booklet of particular interest if your company has not yet established an aid-to-education program. Write for: "How to Aid Education—and Yourself", Box 36, Times Square Station, New York, N. Y. 10036



**COLLEGE IS
BUSINESS' BEST FRIEND**



Published as a public service in cooperation with The Advertising Council and the Council for Financial Aid to Education



Architect-Engineer: Sverdrup & Parcel and Associates, Inc., St. Louis
 Associate Architect: Schwarz & Van Hoefen, St. Louis
 Architect-Design Collaborator: Edward Durell Stone, New York

Fluid roofing is as flexible as your roof design

This is one of the important reasons fluid roofing was specified for Civic Center BUSCH MEMORIAL STADIUM in St. Louis (home of the baseball and football Cardinals).

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Theater complex "designed without formal intent" expresses functions discretely

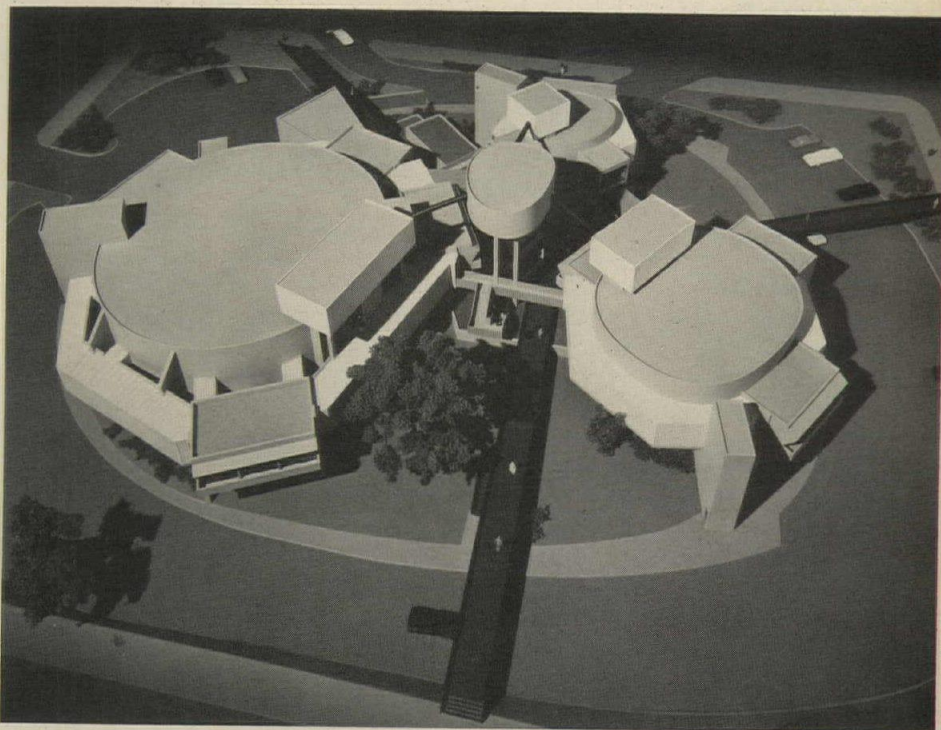
John Johansen's design for a theater complex for the Mummer's Theater in Oklahoma City, which was made public last month, provides the repertory company with two theaters, a theater school, facilities for outdoor performances, and back-up facilities.

Johansen says that the design is intended to express explicitly as many of the separate elements of the program as possible, and to let the elements develop their size, shape and relationships to each other from their functional requirements without formal intent on his part. The clear expression of their connections is also critical. Above all he wants the complex to "honestly reveal itself" and "to invite the public to take part". He thinks the part will encourage people to use it as a public place, and expresses the hope that the "brash" colors for the metal facing will be chosen not by himself, but perhaps by some random passerby, and will be changed periodically.

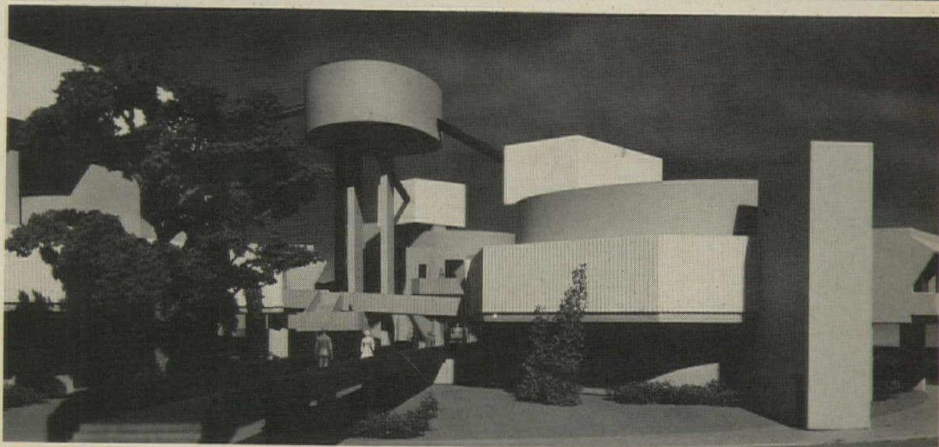
Individual elements within the complex are: a theater in the round, seating 250; a theater in three-quarter round, seating 600 (see photo below); the theater school and managerial offices; and a stage for outdoor performances under the water tower (the tallest element in the photo at right).

The material for the basement level and the main buildings is concrete. Painted, fluted metal will be used for the lighter-weight stair systems and ambulatories.

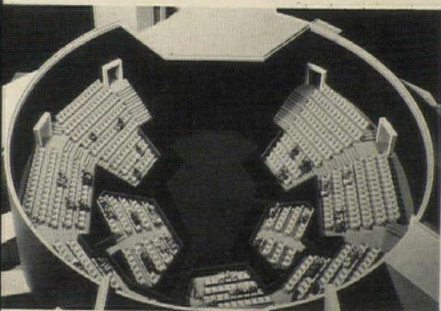
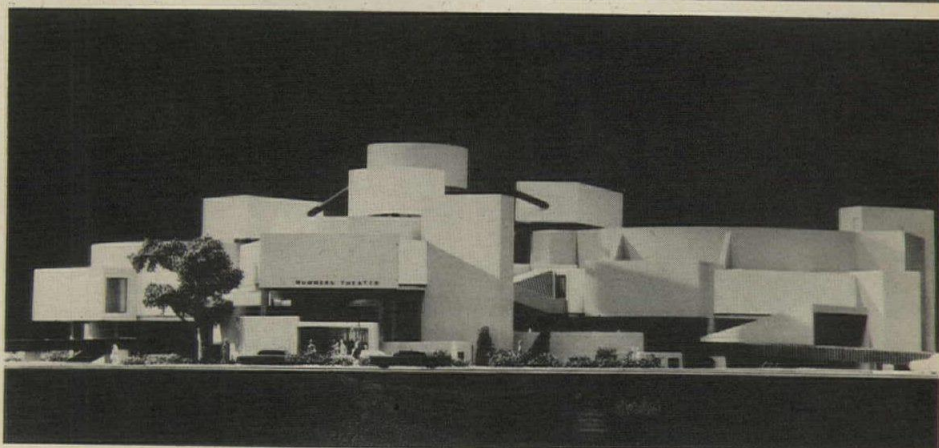
The site is being made available through urban renewal. Construction costs will come in part from \$750,000 raised within Oklahoma City, with the remaining \$1.75-million supplied by a Ford Foundation grant.



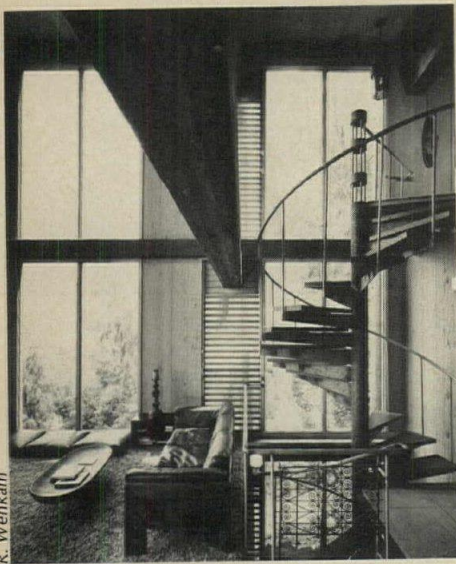
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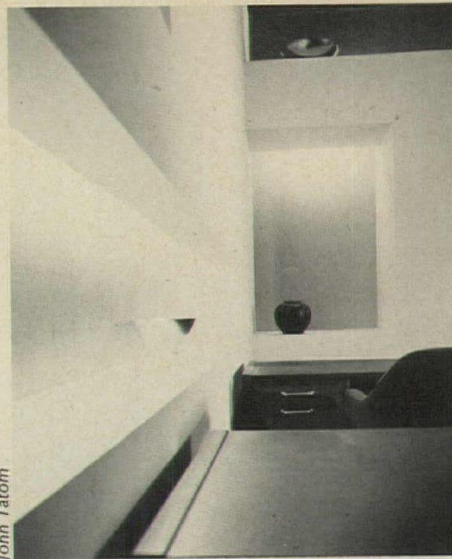


Honor awards and Pan Pacific Citation presented at Hawaii Chapter, A.I.A., banquet



R. Wenkam

Honor award: Residence for Mr. & Mrs. Edward M. Brownlee, Pacific Heights. Architect: Wimberly, Whisenand, Allison & Tong; project architect: George M. B. Tong; contractor: Watanabe and Kondo.



John Tatom

Honor award: Interior design of Castle and Cooke Travel Agency office, Honolulu. Architect: Office of John Tatom; project designer: John Hara.

The presentation of five honor awards, an allied arts award, and the installation of new officers took place at the annual banquet of the Hawaii Chapter of the American Institute of Architects. Also presented was the Pan Pacific Architecture Citation, which went to Geoffrey Bawa of Colombo, Ceylon.

Serving on the jury for the award program were architects Thomas Creighton, chairman, J. Hugh Burgess and A. Bruce Etherington. The chapter presented their Allied Arts Award to Tom Lee, of Tom Lee Design, Inc., for "his contribution to the overall improved visual appearance of our cityscape through his design of graphic material."

The new officers and directors for 1968 are: Donald D. Chapman, president; Herbert K. C. Luke, vice president; Gerald Allison, secretary; Howard M. Y. Wong, treasurer; and Joseph Farrell, Lewis Ingleson, Charles R. Sutton and Edward Sullar, directors.



James Young

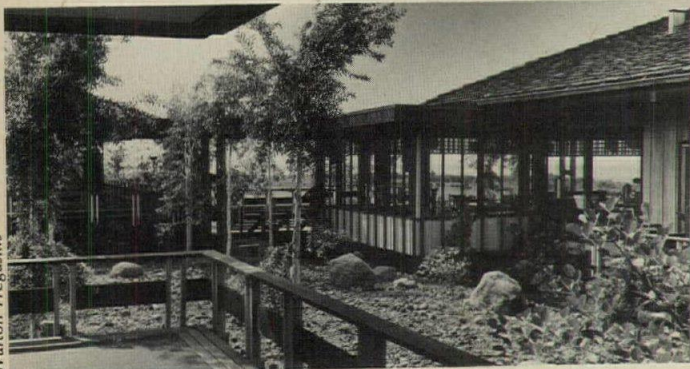
Honor award: Residence for builder-client Hirata Builders on Chaminade Heights. Architect: Charles J. Chamberland.



Pan Pacific Citation from Hawaii Chapter, A.I.A., and The State Foundation on Culture and the Arts: to architect Geoffrey Bawa, a partner in the firm of Edward, Reid and Beggs of Colombo, Ceylon, for "excellence in design." Shown here is the Infirmary at the Good Shepherd Girl's Town, Hannella, and on page 5, at bottom, the smokehouse and curing facilities at Girl's Town.



At award presentation: Geoffrey Bawa, center, with architect Alfred Preis, executive director of the State Foundation on Culture and the Arts, left, and Edward Sullar, 1967 president of Hawaii Chapter.



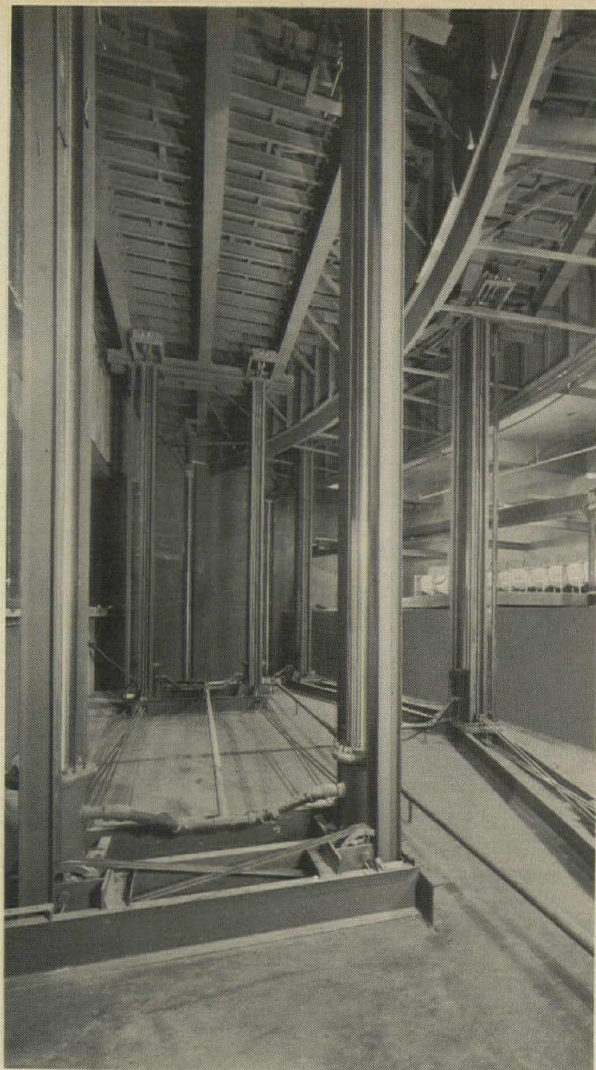
Walton Tregaskis

Honor award: Royal Kaanapali Golf Course Clubhouse, Kaanapali Beach, Maui. Architect: Wimberly, Whisenand, Allison & Tong and Vladimir Ossipoff and Associates; project architect: Gerald L. Allison.



R. Wenkam

Honor award: Residence for Mr. and Mrs. Kurt Johnson on Kaneohe Bay. Architect: George T. Johnson; contractor: Kasuo Fujimoto.



Below-stage view shows part of the lifting equipment designed and built by Dover for the Jesse H. Jones Hall for the Performing Arts, Houston, Texas.

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Cambridge, Mass.
University of
California
Los Angeles, Calif.

Atlantic City
Convention Hall
Atlantic City, N. J.
Jesse H. Jones Hall for
the Performing Arts
Houston, Texas
Brigham Young
University
Provo, Utah
Americana Hotel
New York City
Clowes Memorial Hall
Indianapolis, Ind.

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Aurora, Ill.
Grady Gammage
Memorial Auditorium
Tempe, Ariz.
Xavier University
Cincinnati, Ohio
East-West Center
Honolulu, Hawaii
University of
New Mexico
Albuquerque, N.M.

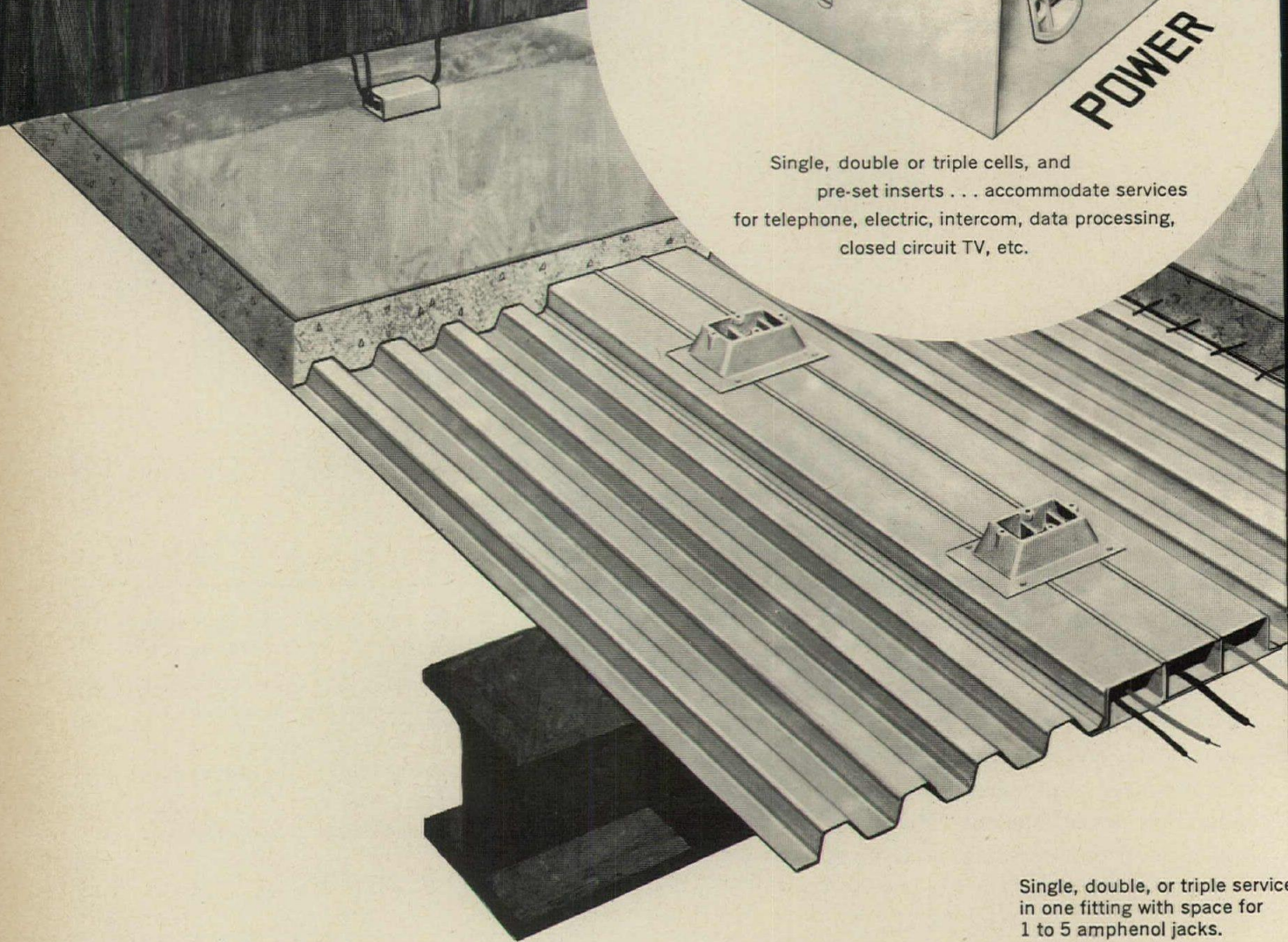
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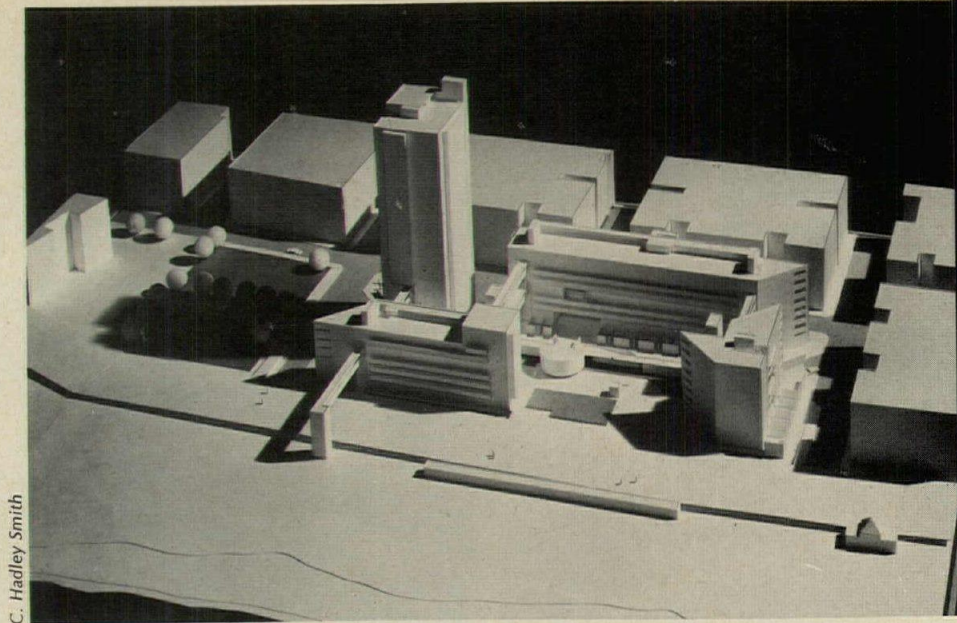
For more data, circle 23 on inquiry card



Inter-connected complex wins housing competition for Brooklyn waterfront site

The architectural firm of Wells/Koetter of Ithaca, New York, have won a competition for their design of a middle-income residential complex (60 per cent of the units for the elderly) to be situated on Brighton Beach in Brooklyn, New York. The winning design and other premiated entries are shown on this page. The competition was sponsored by the Brooklyn and New York Chapters of the American Institute of Architects at the request of the Housing and Development Administration of the City of New York. Professional adviser was architect B. Sumner Gruzen.

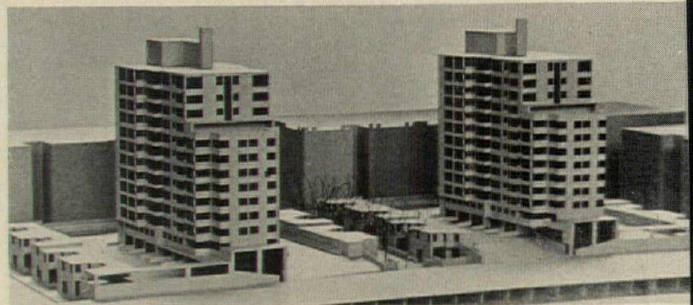
Serving on the jury were architects Philip Johnson (chairman), Romaldo Giurgola, Donlyn Lyndon and Jose Luis Sert, builder Richard Ravitch, planner Charles Abrams, and city administrator and architect Samuel Ratensky (*ex officio*).



C. Hadley Smith

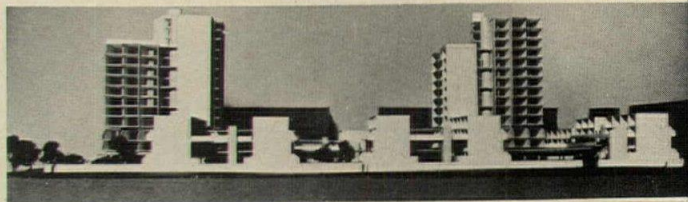
First prize of \$5000 (over and above the fee for the contract) went to the architectural firm of Wells/Koetter for a complex of four buildings semi-enclosing a multi-level court which faces the ocean. The four buildings are: a 25- and six-story tower both containing efficiency and one-bedroom apartments; and two eight-story structures containing two- and three-bedroom apartments. The buildings are connected by horizontal walkways running continuously between and through the fourth and seventh floors. Almost all apartments have a view of the ocean. The jury called the design a "rich and satisfactory solution" and praised its handling of public spaces.

Paul Rice

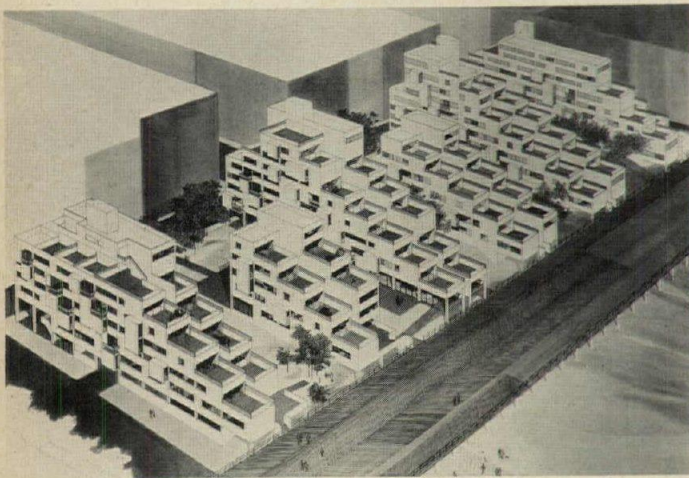


Third prize of \$1000 went to Venturi & Rauch, Architects, and Gero Clark, Frank Kawasaki and Denise Scott Brown Associates for a design comprised of two 14-story towers and 28 two-story townhouses. The scheme is unified by the street connecting the two halves, say the architects. It "is a positive element—an interior beach road for the public, a civic space as well as a private one."

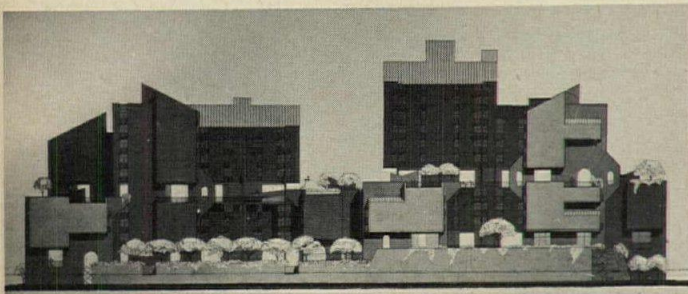
Paul Rice



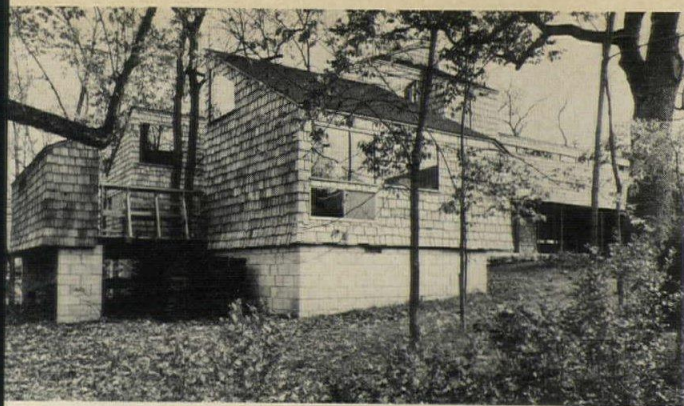
Fourth prize of \$1000 was awarded to architects Donald and Marja Watson for a complex comprised of two 14-story towers and various four-story duplex over duplex units. The architects developed the site plan to achieve spaces of different qualities—"groups of family units [in duplexes] around identifiable neighborhood spaces; informal spaces, some for children, others where individuals could find quiet and active public areas that would be busy and lively."



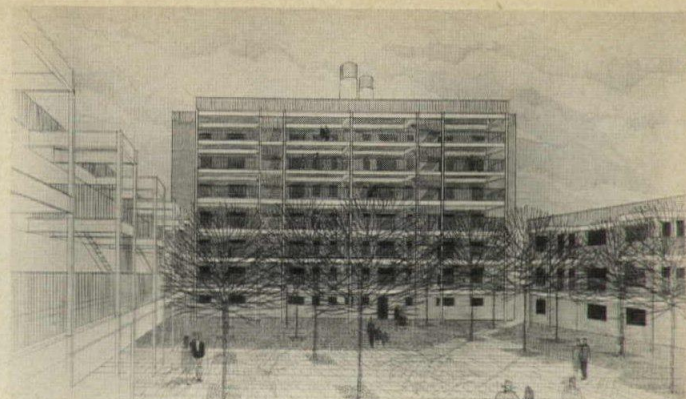
Second prize of \$3000, awarded to architects Berman, Roberts & Socfidio & Stromsten, places six parallel buildings perpendicular to the boardwalk stepping down towards the ocean to provide terraces. The six buildings (four having six stories and two having four stories) each have centrally-located, double-loaded corridors with main lobbies on the street side and exterior steps at the end of each corridor leading directly down to the boardwalk.



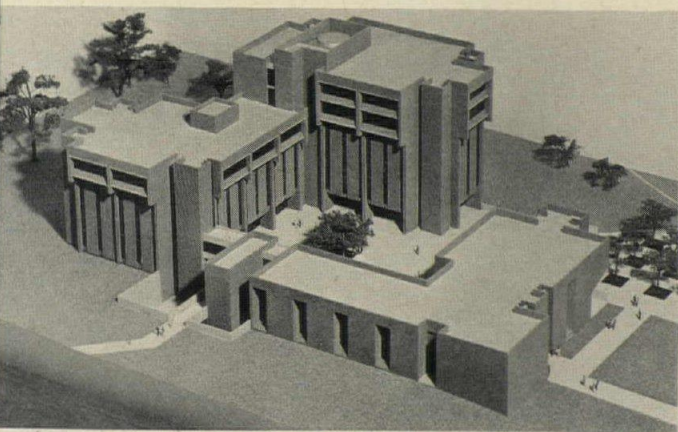
Honorable mention went to Bentel and Bentel, Architects, for a 10-building complex—one nine-story, one eight-story, two seven-story, two six-story and four three-story. The design has two communal spaces at terrace and plaza levels, which, say the architects, "recaptures for the resident social use of the ground space taken by the building." These levels, served by two sets of elevators, become his "street," related to his apartment as well as to the beach.



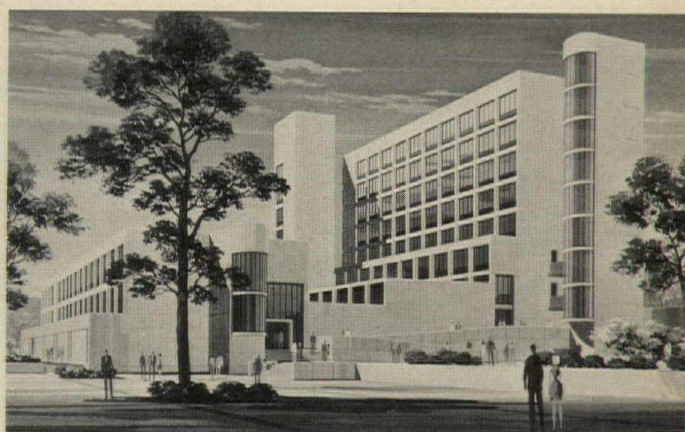
The Faulkner Hickerson house, Nashville, designed by Burkhalter, Hickerson and Associates—Clay Hickerson, designer, son of Faulkner Hickerson, principal in the firm—has won an award of merit, the only award presented, in the awards program of the Central Tennessee Chapter of the American Institute of Architects. A three-man jury (architects Bill N. Lacy and Francis Gassner and RECORD Editor Walter Wagner) praised the house for its "intriguing plan."



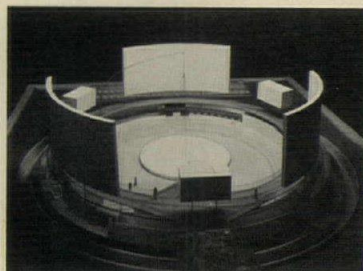
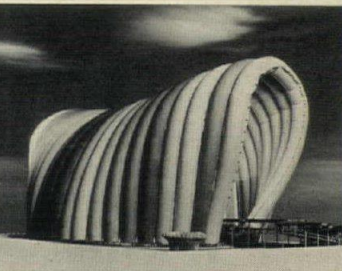
Essex Terrace, Brooklyn, New York, a 104-unit middle-income housing complex, will consist of a six-story building and three three-story townhouse sections organized around a courtyard. Apartments in the \$1.9-million complex will range in size from three to six and one-half rooms, with more than 90 per cent of the units having balconies or patios. Architect for the project is Norval White and contractor is Gotham Construction Company II, Inc.



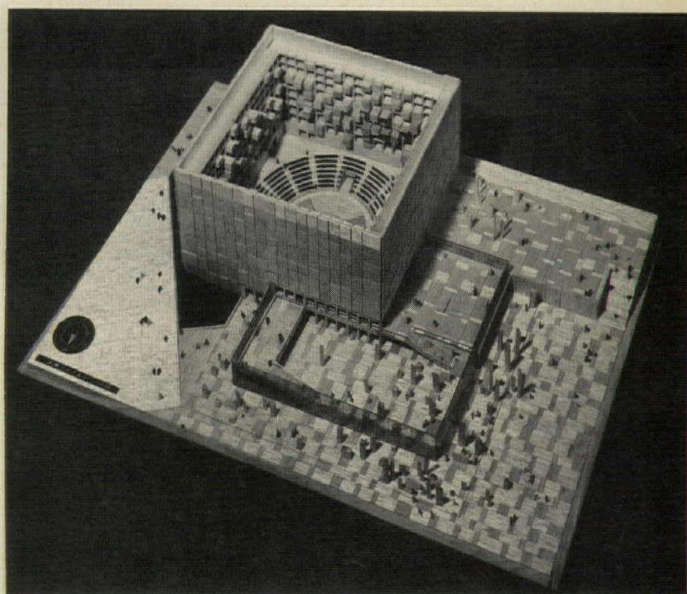
A Mathematics-Statistics-Computer Center at the University Heights Campus of Rutgers University, Piscataway Township, New Jersey, designed by Warner Burns Toan Lunde and associated architects Kaweck and Tarafdar, will be a dark brick complex varying in height from two to nine stories, with the elements arranged around a semi-enclosed plaza. The buildings will have reinforced concrete frames with reinforced concrete floors and roof decks.

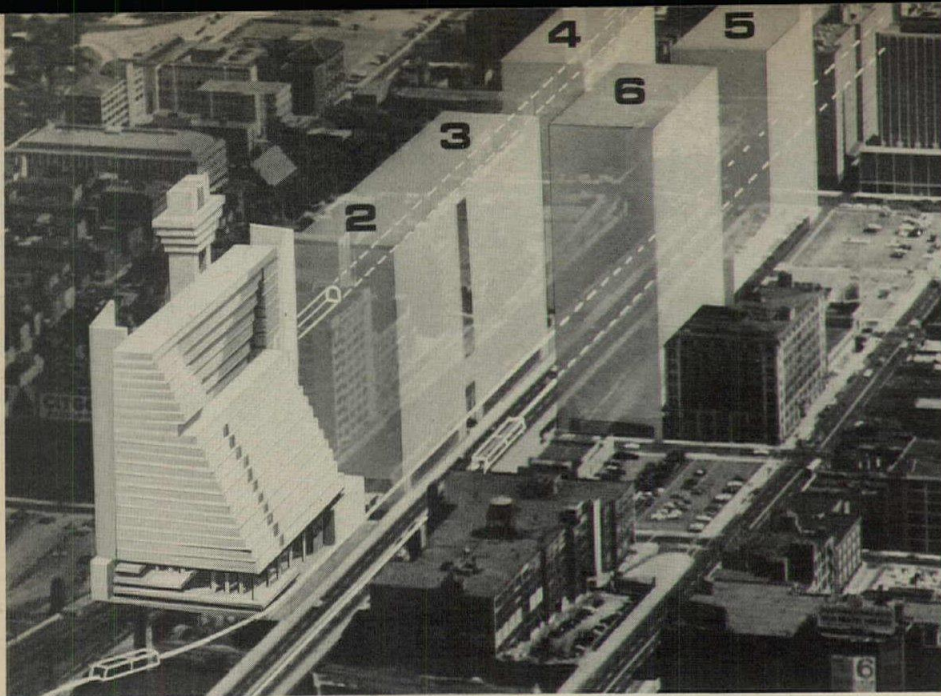


A classroom-office building at the Newark campus of Rutgers University, designed by Geddes, Brecher, Qualls and Cunningham, architects, will be an eight-story building designed for a sloping site. On the first plaza level will be five large lecture rooms (one having 133 seats, the others 88), nine classrooms, four laboratories, and a student lounge. On second plaza level and third floor will be classrooms and offices with other departmental offices above.

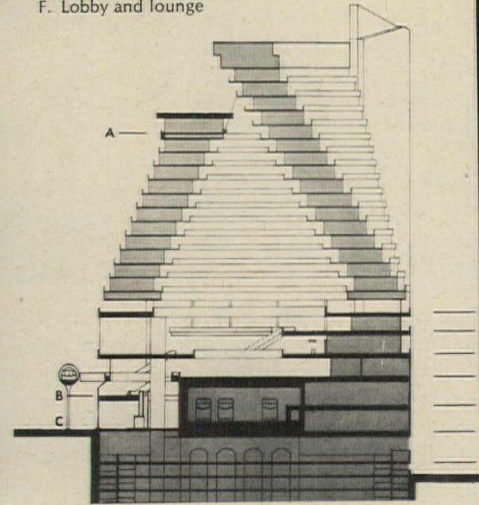


Two pavilions for Japan's World Exposition to be held in Osaka in 1970 are a huge pneumatic structure for the Fuji group of enterprises (above) and the Iron and Steel Pavilion under the sponsorship of Japan's Iron and Steel Federation (right). The pneumatic structure, designed by architect Yutaka Murata, will be a row of 24 huge inflated air beams bent into a "U" shape and anchored to the ground, creating a space 115 feet high. The interior structure will be a circular exhibit area of 12,870 square feet, with three huge curved projection screens. The Iron and Steel Pavilion, designed by Kunio Maekawa and Associates, will be a large auditorium, 98 feet high and 131 feet wide, and an outdoor sculpture court.



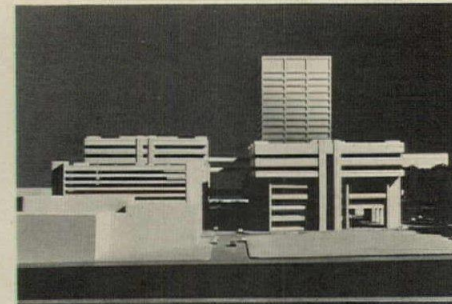
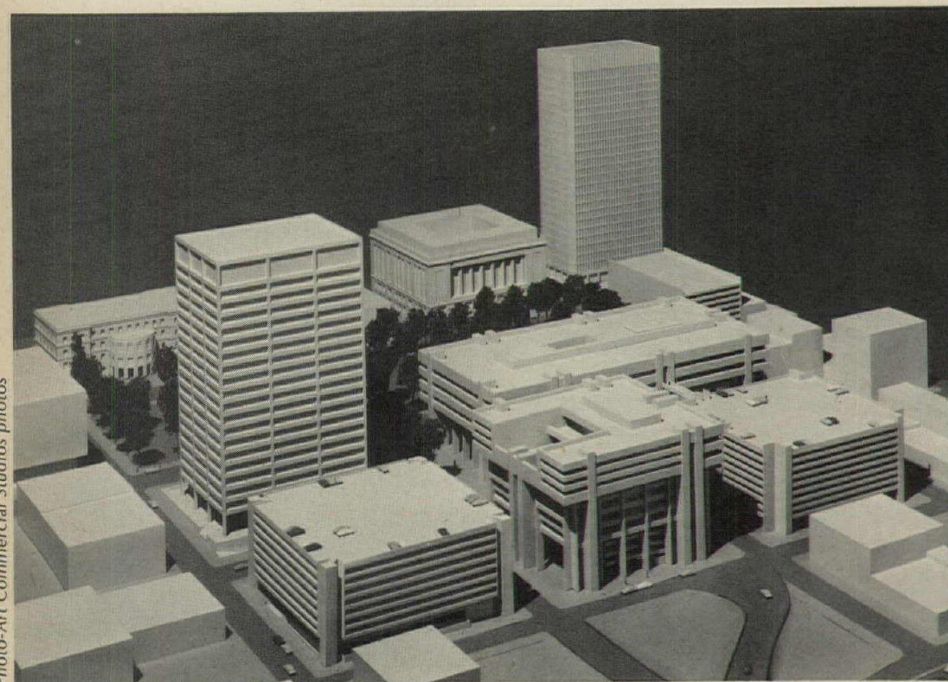
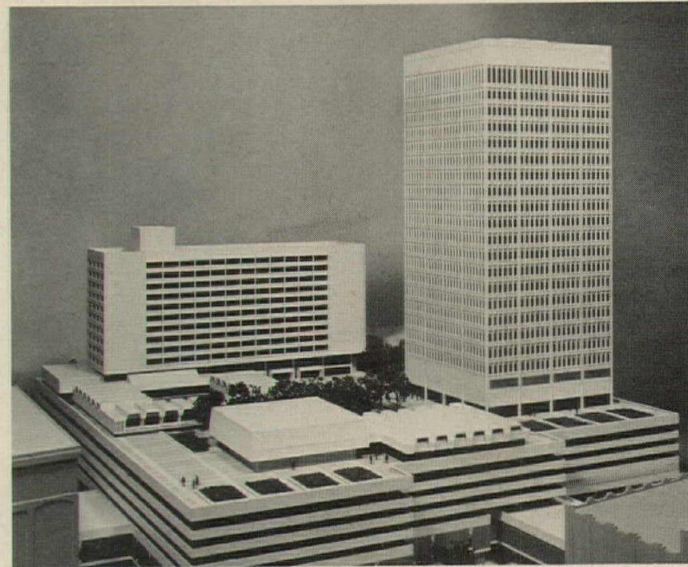


- A. Skywalk and lounge
- B. Shopping Mall
- C. Foyer-arrival
- D. Exhibition terrace
- E. Cocktail lounge and function rooms
- F. Lobby and lounge
- G. Dining rooms-ballroom
- H. Employees-maintenance
- I. Mechanical
- J. Departure



A 28-story hotel with mutually supporting surfaces in the form of two hyperbolic paraboloids enclosing a 14-story high skylighted lobby, will be the first phase of a six-building hotel-office-commercial and residential complex—called Century 21—planned for downtown Philadelphia. Each of the 750 rooms in the hotel will have interior and exterior balconies. The \$200-million complex will be interconnected by a four-level enclosed mall, minirail and skywalk running the length of the project. Jung/Brannen Associates in association with Pietro Belluschi are architects for the hotel, with John Portman as consultant. Mr. Belluschi is coordinating architect for the entire complex, with Sasaki, Dawson, DeMay Associates as physical planners and architects, and John Portman, consultant to the developer.

Baystate West, a \$40-million office-commercial-hotel complex in Springfield, Massachusetts, designed by architects Pietro Belluschi and Eduardo Catalano, will consist of two main buildings organized on a podium. The two large structures are a 29-story office building that will provide 300,000 square feet of rentable space and an eight-story, 300-room motor hotel. Below podium level will be two levels of retail space and three parking levels for 1400 cars. On top of the podium will be a fully landscaped roof plaza with swimming pool and convention and dining facilities.



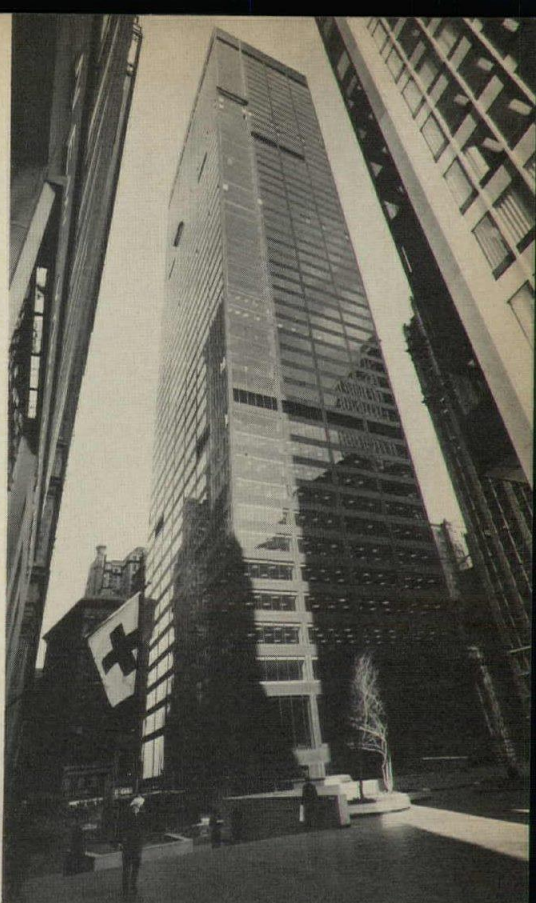
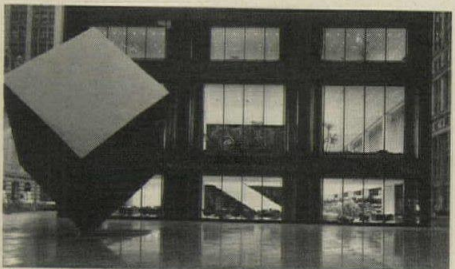
The government center in Portland, Oregon, designed by Wolff-Zimmer-Gunsul-Frasca-Ritter, Architects, with Pietro Belluschi as consultant, is a \$28-million project which will add three buildings: a two-block courts building containing 330,000 square feet; a police facility containing 280,000 square feet; and an 11-level parking structure for 900-1000 cars. Other buildings within the complex will be another full-block parking structure, a 20-story Government Services Administration Building and the new 29-story Georgia Pacific Building (September, 1966, page 40).

Photo-Art Commercial Studios photos

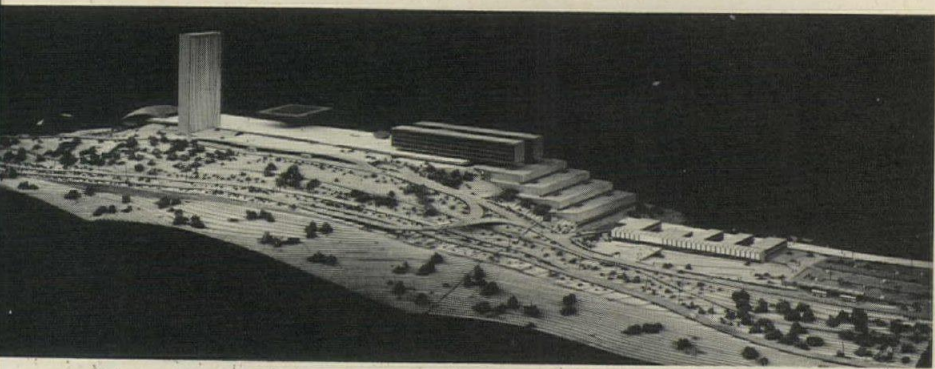
The recently completed **Marine Midland Building**, at 140 Broadway in downtown New York City, designed by the New York office of Skidmore, Owings & Merrill (Gordon Bunshaft, partner in charge of design), is an elegant, sheer tower of 52 stories. Marine Midland occupies 12 floors plus parts of three others and two basement floors; but this is a commercial office building and, according to Harry B. Helmsley, Partner, 140 Broadway Company, the owners, the building's architectural values were the key factor in attracting "prestige tenants" to pay higher rental for "prestige" space. The building occupies 21,000 square feet of a 47,338-square-foot site, and rises directly from a great travertine plaza. Highlight of the plaza is a 28-foot-high "cube" sculpture (16 x 16 x 16 feet) designed by sculptor Isamu Noguchi in collaboration with Gordon Bunshaft. The bright red metal sculpture (steel interior frame covered with one-half-inch sheet aluminum) complements and acts as a foil to the matte-black anodized aluminum and bronze-tinted glass facade of the building. The structural system is an all-welded steel frame. The tower, trapazoidal in plan, provides more than 1 million square feet of office space. General contractor was the Diesel Construction Division of Carl A. Morse, Inc.



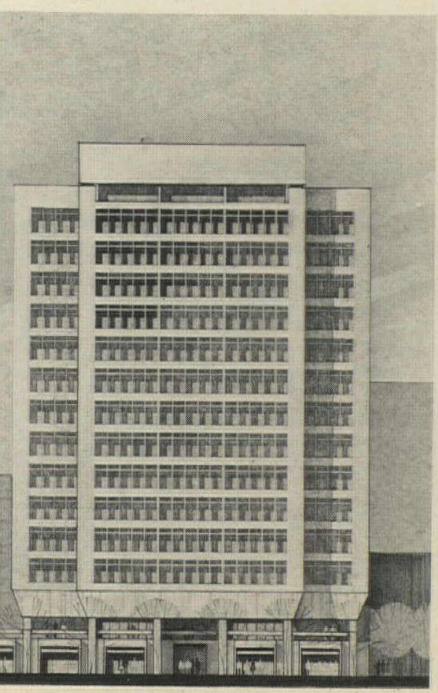
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J. Alex Langley



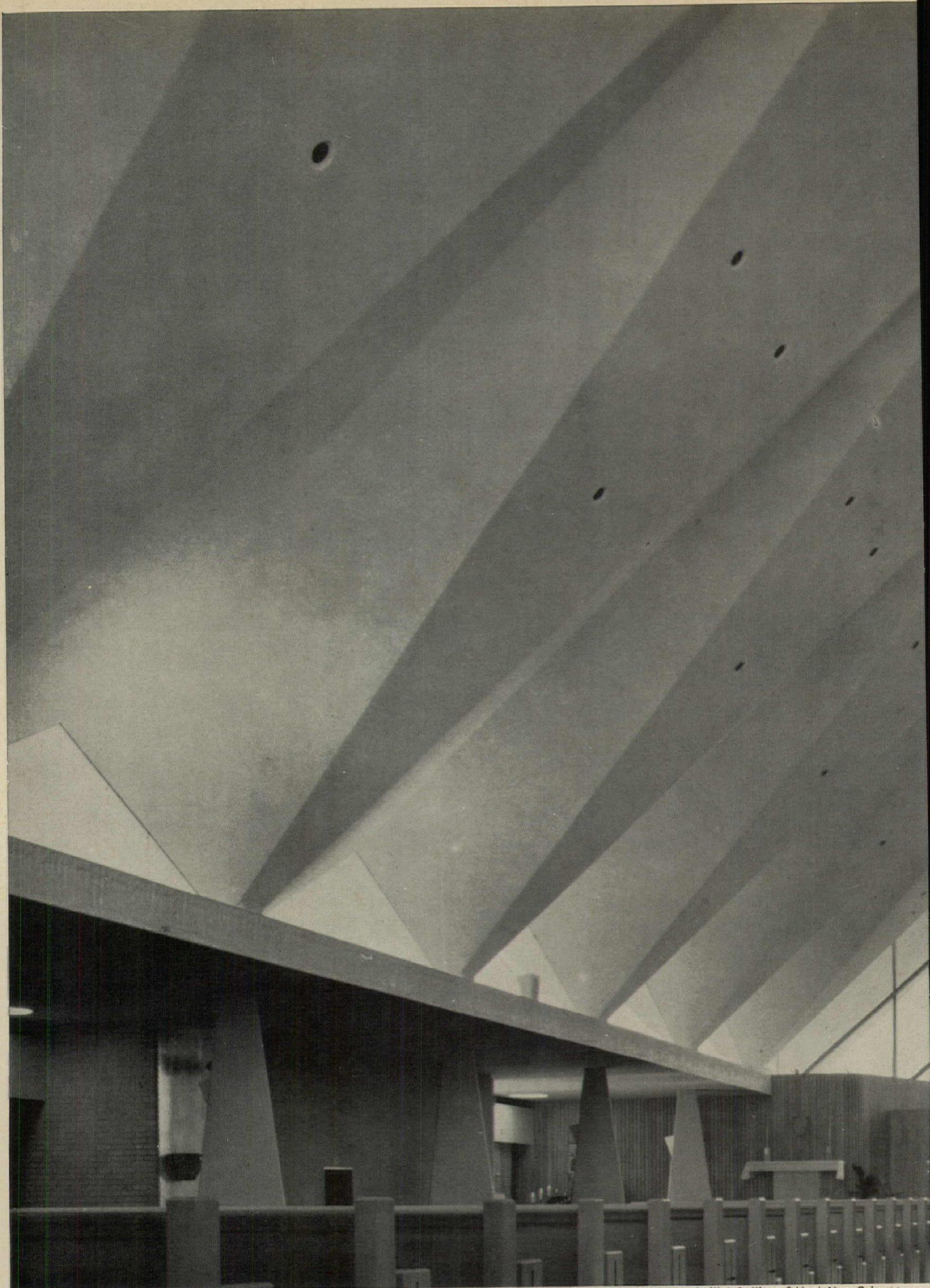
The **University of Haifa campus**, located on the Carmel Heights overlooking Haifa, Israel, has been designed by Oscar Niemeyer as a continuous two-story structure 300 yards long and 70 yards wide. Facilities disposed on the long structure include, from left, a sloping auditorium, administration tower, a library with inverted pyramid roof, and two parallel classroom buildings. A scale model of the campus and other pertinent material are on display until April 25 at the Brooklyn Museum in New York.



The **International Life Insurance Building**, Nairobi, Kenya, (left) designed by Dalglish Marshall & Associates of Nairobi, and Gruzen & Partners of New York, associated architects, will be a 16-story office tower of reinforced concrete construction. The building has a Greek cross plan to bring maximum light into the core, with five-foot-deep concrete overhangs for sun protection. In the plaza area is a completely open three-story galleria of shops, a restaurant, and a bank beneath the building's tower.

A **30-story office building** built over air rights in downtown Chicago, designed by Ludwig Mies van der Rohe, will rise from a two-acre plaza. Below plaza level will be a shopping concourse and three levels of parking for 300 cars. The building will be sheathed in dark aluminum and tinted glass. The \$40-million project will contain a total of 1,103,000 square feet on 29 office floors, a three-story lobby, and the other facilities. General contractor is Tishman Construction Company.



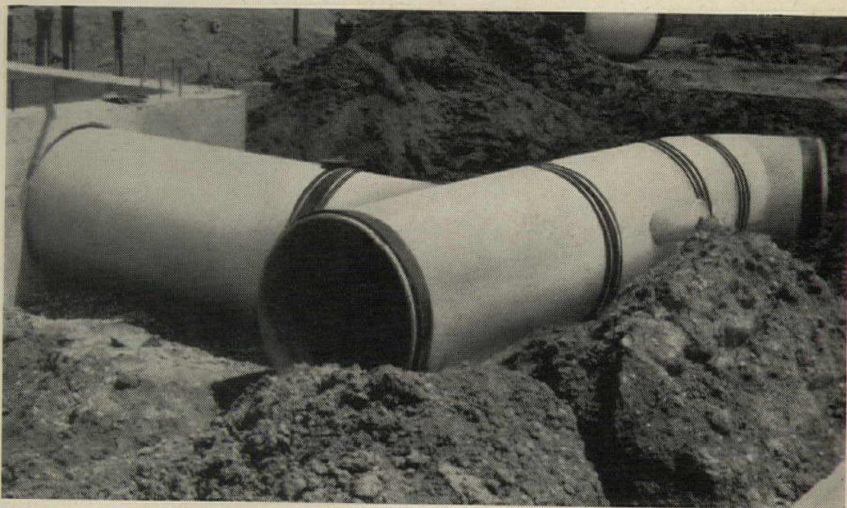


Immaculate Conception R.C. church, Marrero, Louisiana. Architect: Curtis & Davis, New Orleans. Consulting engineer: Guillot, Sullivan & Vogt, New Orleans.

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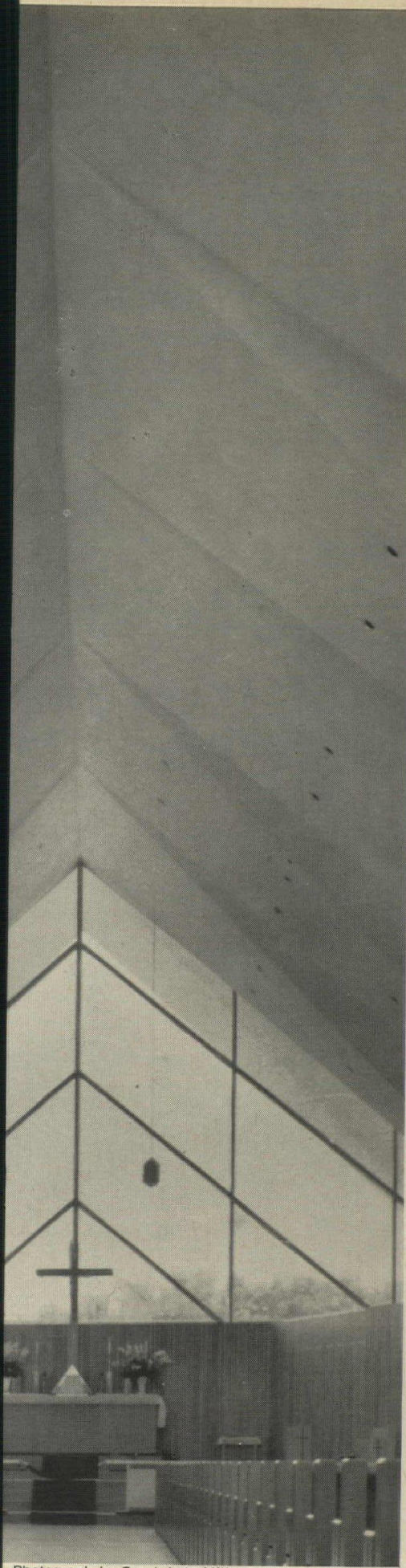
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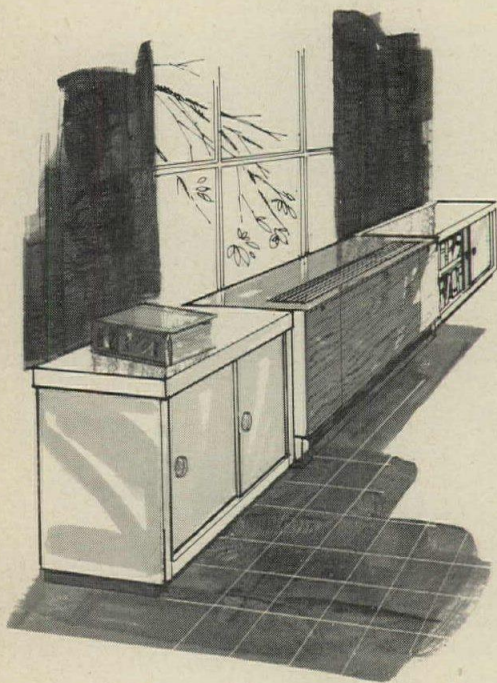
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Photograph by Frank Lotz Miller.

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on resilient mountings. Blowers gently circulate fresh air. And thick insulation further deadens sound.

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Not ready for complete air conditioning? Install Valedictorians for heating and ventilating only. Then add cooling later without spending a dime to convert the unit ventilators.

Either way, take a close look at Modine. And listen, too. Call your Modine representative or write: 1510 DeKoven Ave., Racine, Wis. 53401.



MODINE



New technology and cost cutting

We read your excellent report "Business and the Urban Crisis," but disagree completely with the statement that it is unrealistic to count on cutting costs through new technology.

At several occasions you have reported on our activities in the areas of system and industrialized building and the fact that the primary "raison d'etre" of this new technology, used on a vast scale in Europe, is to save cost.

While it is true, as stated in your report, that it is unlikely that research will find new materials cheaper than wood, brick, cement and gypsum, system building has proved, at least with cement, that substantial savings can be materialized by converting this material through industrialized processes into the finished product, namely the dwelling.

Your statement that it is unlikely that labor practices can be changed in any effective way, also applies, in our opin-

ion, only to conventional construction methods. It does in no way apply to industrialized building, which has proved in many countries to be the only realistic means to give labor guaranteed year-round employment and many other benefits not obtainable in conventional "craft" building.

You rightly point out that for years one innovator after another, often aided by federal grants, has tried to put housing on the assembly line, and that these attempts have failed to cut costs. The reason for this failure has been simple: that the objective, to put housing on the assembly line, was never accomplished. It is very naive to assume that technological ingenuity used in most of these instances, can be a substitute for industrial tooling, which is the prerequisite for assembly line production. The demonstration projects to which you obviously refer, were for such small production runs that it was neither possible to create mechanized production machinery, such as routinely used in Europe by more than 300 plants, nor to use industrial programming techniques as used in all our mass production industries.

Our studies on specific projects of our drafting boards, indicate that fireproof housing can be built with savings of 7 per cent of the construction cost, if the shell consists of exterior and interior load bearing precast concrete walls produced in mechanized plants and assembled using advanced industrial programming techniques. Further savings amounting to another 7 per cent to 8 per cent are possible by integrating the mechanical and electrical systems into an overall system—and last, but not least, there are savings in the order of 5 per cent to 6 per cent of total cost by cutting the construction time of projects in half. This means that there are total savings of at least 20 per cent construction cost possible through industrialized building—provided that the necessary industrial tooling is created.

We recently made a study of problems created in Canada through accelerated urbanization and found that capital investments of \$300 to \$400 million are necessary for dwelling factories alone, to respond to the Canadian housing demand for the next decade. In the U.S. this figure is almost 10 times higher. But such an investment would result each year in savings at least equivalent to that of the original investment.

Guy G. Rothenstein
ASPAD, Inc.
Astoria, N.Y.

more letters on page



Rosewood is one of the many beautiful panels now available from Marlite in low flame-spread ratings.

6806

**Marlite Fire-Test panels:
fire-retardant
and beautiful, too.**

Why sacrifice beauty to get fire protection? New Marlite Fire-Test Panels pass ASTM E84-61 Tunnel Tests—still satisfy your client's good taste. Choose from three flame-spread ratings: 0 to 25, 26 to 50 and 51 to 75.

Other Marlite advantages: Fire-Test Panels go up fast, need no finishing. Soilproof, wash-and-wear finish stays

like new for years—even in heavy traffic areas.

See Marlite's complete line of Fire-Test Panels in Sweet's File or write Marlite Division of Masonite Corporation, Dept. 405, Dover, Ohio 44622.



Marlite
plastic-finished paneling

For more data, circle 26 on inquiry card



A new architectural vocabulary
In bare steel, architects and artists have discovered a new freedom of expression. Strength, lightness, permanence, function, order, nobility, simplicity—all are being communicated today in the fresh and frank language of bare steel.

The steel is USS COR-TEN High-Strength Low-Alloy Steel. As an architectural material, it is as basic and natural as a, b, c—or 1, 2, 3.

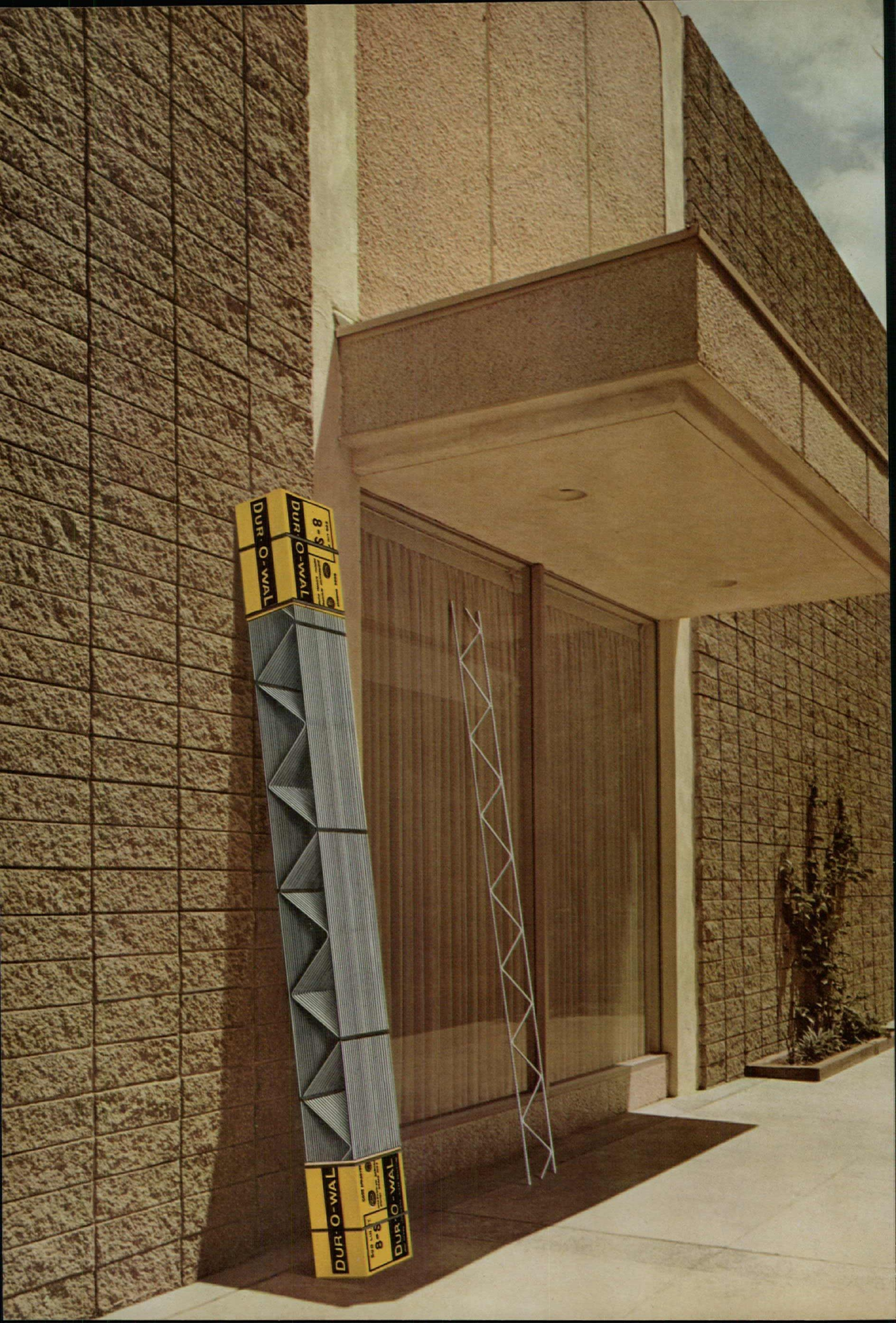
USS COR-TEN Steel is strong. It protects itself from the weather. It is self-maintaining. It develops its own color. And it grows more beautiful with age.

It is also inexpensive.
For details on the architectural use of USS COR-TEN Steel in the bare condition, contact a Construction Marketing Representative through the U. S. Steel Sales Office nearest you, or write United States Steel,

P.O. Box 86 (USS 5267), Pittsburgh, Pa. 15230. USS and COR-TEN are registered trademarks.


This delightful yet rugged work is appropriately located at P. S. 36, New York City. It was designed by Frederick G. Frost, Jr. & Associates, Architects, and sculpted by William Tarr.

 **Cor-Ten**
High-Strength Low-Alloy Steel



DUR-O-WAL
8-6
DUR-O-WAL

DUR-O-WAL
8-6
DUR-O-WAL



Take out a life insurance policy for beautiful masonry walls

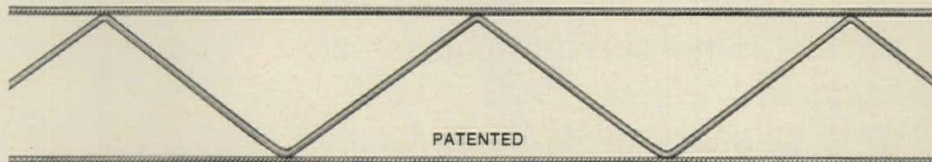
Specify Dur-O-wal[®] Truss masonry wall reinforcement

Masonry walls are more beautiful, more versatile than ever. And more numerous. Close to 700 million dollars' worth this year. That's a lot of masonry walls. And you can protect nearly every one of them with a Dur-O-wal "life insurance" policy.

All kinds of walls, too—single wythe, cavity or composite. Dur-O-wal Truss not only controls cracking, but also ties wythes in cavity and composite walls. All this from one product.

Dur-O-wal stands back of the policy with material approvals from many national and local code organizations.

Specify the original. Specify the best. Take out a Dur-O-wal life insurance policy on masonry walls. Need evidence? Write Dur-O-wal, P.O. Box 368, Cedar Rapids, Iowa 52406.



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THE ORIGINAL MASONRY WALL REINFORCEMENT WITH THE TRUSS DESIGN

DUR-O-WAL MANUFACTURING PLANTS • Cedar Rapids, Iowa, P.O. Box 368 • Syracuse, N. Y., P.O. Box 628 • Baltimore, Md., 4500 E. Lombard St. • Birmingham, Ala., P.O. Box 5446 • Aurora, Ill., 625 Crane St. • Pueblo, Colo., 29th and Court St. • Toledo, Ohio, 1678 Norwood Ave. • Mesa, Ariz., 213 So. Alma School Rd. • Seattle, Wash., 3310 Wallingford Ave. • Minneapolis, Minn., 2653 37th Ave. So. • Also manufactured in Canada.

For more data, circle 27 on inquiry card

*continued from page 4***FHA—red tape or vast improvement?**

I want to compliment you on your recently published special report "Business and the Urban Crisis." However, the "Housing" section fails to recognize the vast improvement the Federal Housing Administration has made in its multiple family processing. Also, there are some inaccuracies which should be corrected.

FHA's 221 (d) (3) program, for example, has not "ground to a halt" as your article reported. In fact, in the last half of 1967, FHA received applications under the below-market interest rate program for 230 new projects with some 25,000 dwelling units. During the same period we issued mortgage insurance commitments on 300 projects involving more than 30,000 units, and insured 116 projects with 16,000 units.

The reason given in your article for the supposed lack of popularity of the 221 (d) (3) program was "fantastic red tape involved in getting projects through local FHA offices." Experience in New York City was cited as the basis for the statement. There have been cases which have taken far too long to process. Some times this has been due to FHA, and there certainly has been room for improvement. Other times, however, the delays were attributable to the sponsor or otherwise beyond the control of FHA. The improvement in FHA processing in the last several months and the time limits given sponsors to get underway have resulted in these programs moving forward rapidly. But even before this, I believe it is inaccurate to say that it took two years to process a 221 (d) (3) project in New York. No doubt this did happen in some instances, due to delays by FHA, the sponsors and others. But there are other examples of very speedy processing. One example makes the point. The below market interest rate rehabilitation project at 114th Street involving 37 buildings and 457 units was processed from application to start of construction in less than three months in 1965.

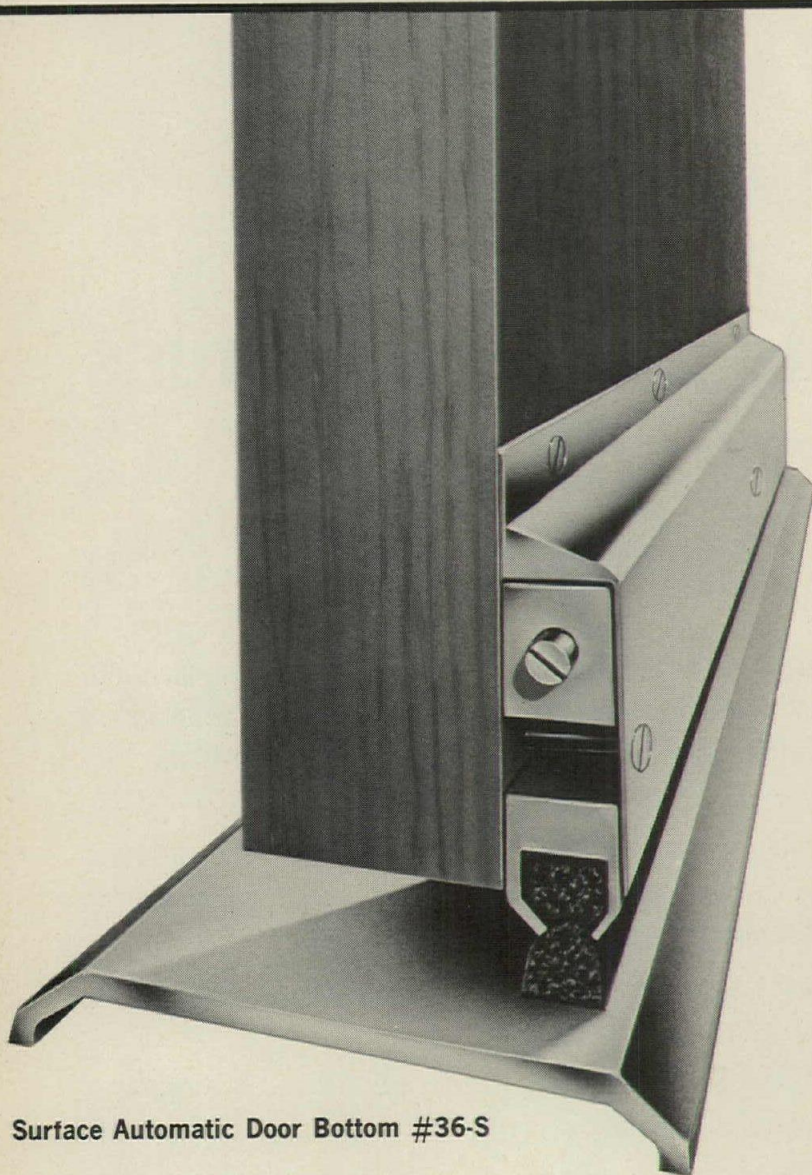
On a national basis, a recent survey of 200 multi-family projects indicates an average FHA processing time of less than one year. Under a new processing system recently put into effect in a number of offices we have cut that time in half.

On the subject of rehabilitation, I would like to call your attention to a multi-million dollar program currently underway with FHA mortgage insurance in the Roxbury-Dorchester area of Boston. This involves over 2,000 dwelling units scheduled for complete rehabilitation by July 1968—about six months after

more letters on page 4

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BY
ZERO

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ZERO #36-S Surface Automatic Door Bottom shown above is only one of 175 full size drawings to be found in the new 1968 catalog. Write for your copy today.

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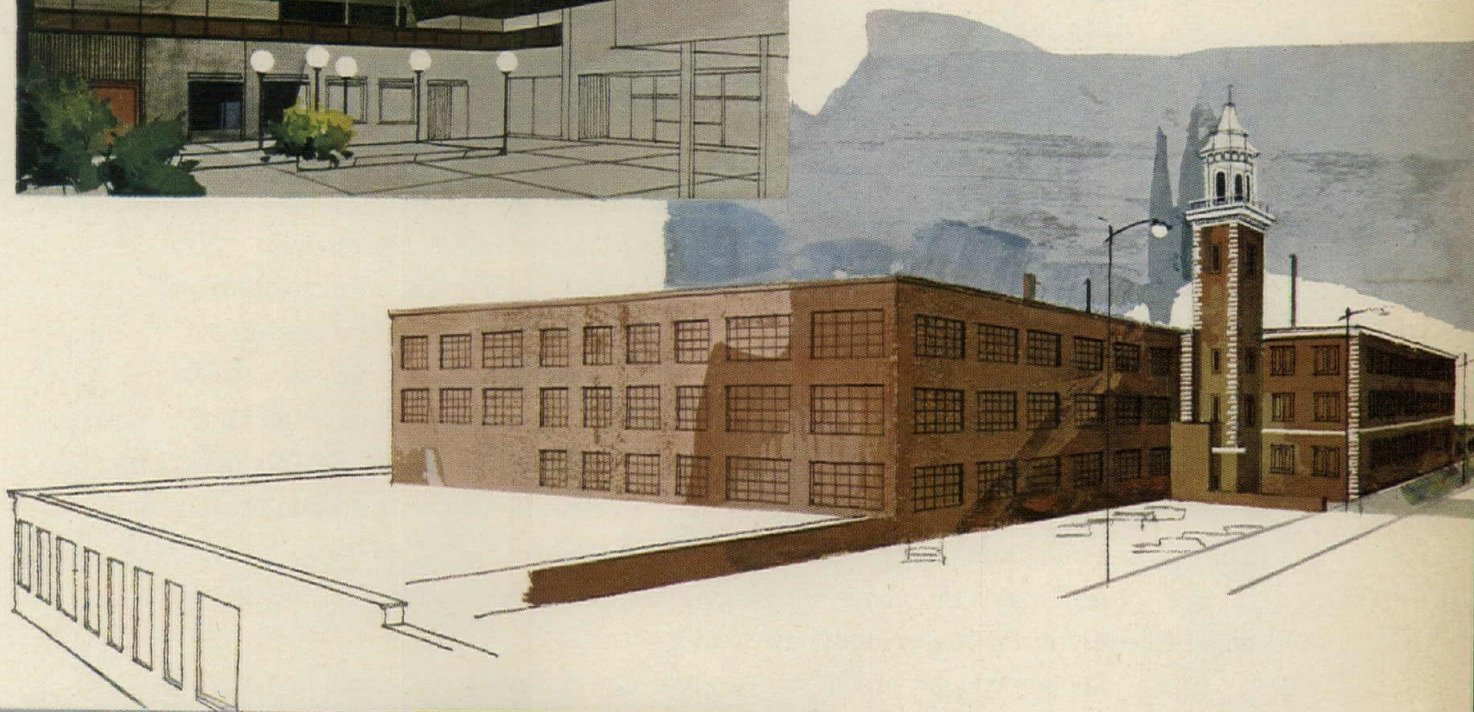
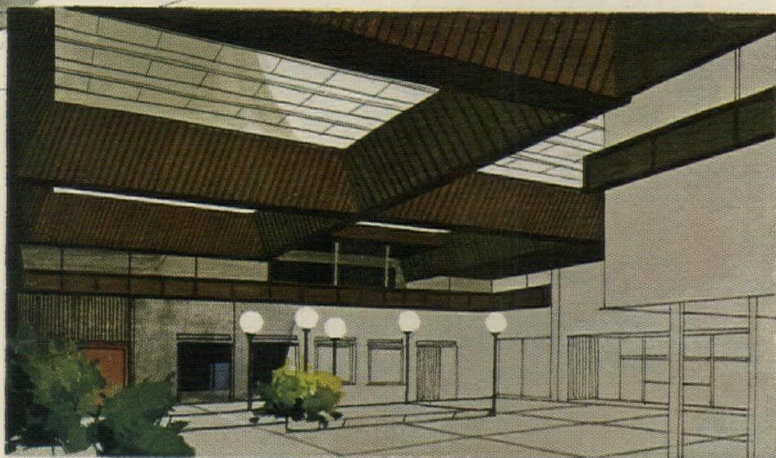
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**Lennox
modular central
systems:**



**the
“micro-climates”
concept for
any building**



For more data, circle 29 on inquiry card

Lennox systems' flexibility protects design freedom, boosts comfort performance, holds cost line

We air condition people in schools, offices, apartments, motels, plants, clinics, shopping centers, homes. And the people problems often can be as complex as the buildings themselves.

For instance: fat people and thin ones. Younger ones and older. Active and quiet. Emotional and calm. Crowded together or apart. Doing all manner of different things . . . at the same moment . . . in the same building. On the sunny side. Or the shady. Hot days or cold. Bright or cloudy. Windy or still.

No wonder that only the most sophisticated air conditioning systems can create the infinite variety of "micro-climates" to meet the people problems. Lennox modular central systems have that sophistication. Whatever the number and size of the "micro-climates" required for your planning, Lennox has the system—or combination of systems—to match.

Examples: the Lennox Direct Multizone System (DMS) for either rooftop or multi-story installation; DMS with dual ducts and mixing damper boxes for an infinite number of "micro-climate" comfort zones. And for single-zone areas, the Lennox GCS3 combination gas-heating/electric-cooling system; Model CHA air conditioning, with add-on heating; and Lennox condensing units combined with coil-blower units.

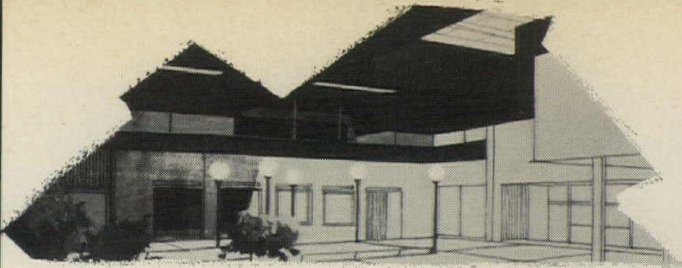
All Lennox multizone and single-zone systems are compatible, and may be combined easily where such requirements exist.

Lennox systems are factory-assembled, wired and tested, including controls. And they offer Lennox single-source responsibility.

Whatever the building you're planning, consider the people problems . . . and the "micro-climate" advantages provided by Lennox modular central systems.

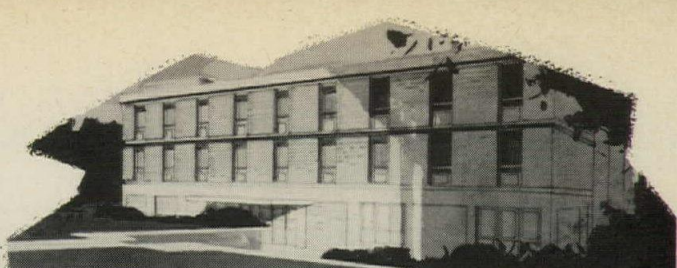
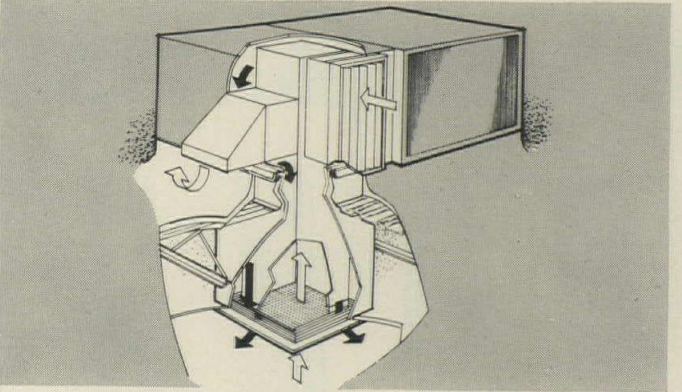
For details, see Sweet's—or write Lennox Industries Inc.,
327 South 12th Avenue, Marshalltown, Iowa 50158.

LENNOX
AIR CONDITIONING • HEATING



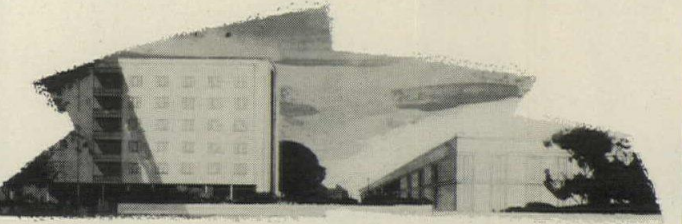
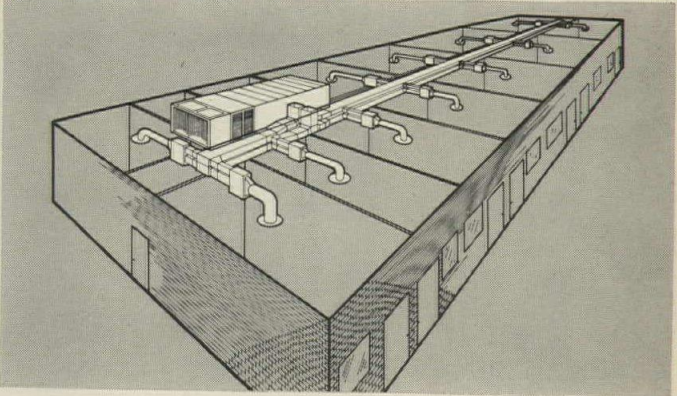
Example: This modern shopping center, where single-package Lennox Model CHA rooftop air conditioning units provide "micro-climates" required for the varied comfort control zones. Stores, bakeries, music shops, drugstores, restaurants and malls are among the relatively large, undivided areas with high-occupancy people problems. The versatile, simple-to-install CHA is available in cooling capacities ranging from 25,000 to 273,000 Btuh. Easy to add either electric or gas heating.

Rooftop unit with POWER SAVER™ fresh air dampers and combination ceiling supply and return air.



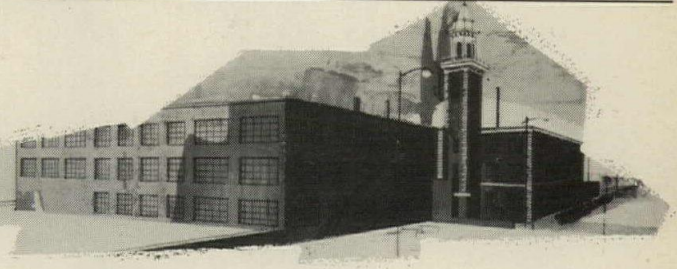
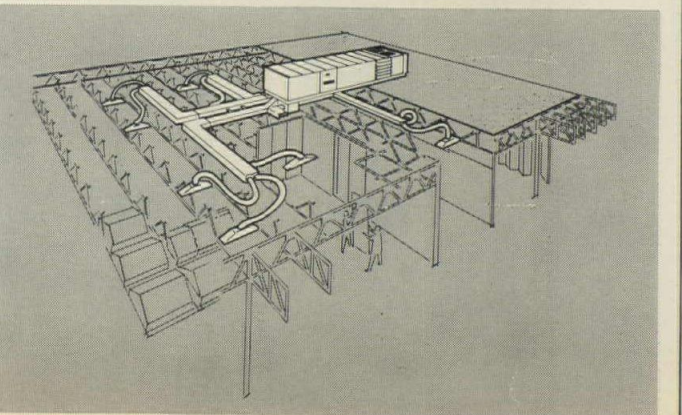
Example: Efficiency in a nurses' dormitory. This entire 3-story building is heated, cooled and ventilated by just two Lennox DMS rooftop units. Use of dual ducts and individual mixing damper boxes make possible a precise individual temperature control—hot-and-cold-running air for 57 separate "micro-climate" zones, including nurses' rooms, lounges and housemother's apartment. The DMS can ventilate with 100% outside air, cools free when that air is below 57° F. And it permits inside walls to be changed—moved, added or eliminated—as needs change.

Dual-duct system with Lennox DMS rooftop unit adds to number of individual comfort zones possible.



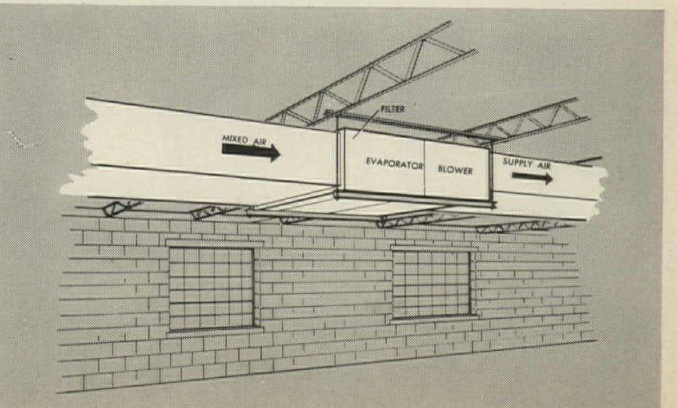
Example: This new junior college, where 20 DMS (Direct Multizone System) units provide comfort for 94 zones of individual temperature control. Here are 409 tons of cooling and 7,000,000 Btuh heating for a 135,000-sq. ft., 208-room area that includes classrooms, lecture halls, laboratories, vocational shops, library and offices. The Lennox DMS can heat some areas while cooling others, with up to 12 "micro-climate" zones per unit. Thermal response is instantaneous, compensating for changes in weather, occupancy or activity.

Ceiling distribution system from rooftop unit serves top floor, also can be ducted to floors below.



Example: Offices of a large publishing company. Lennox unitary systems—rooftop condensing units coupled with coil-blower units—were chosen as the most efficient means of installing nearly 400 tons of air conditioning for the 600-plus people in this 55-year-old building. Total comfort zones: 23—each served by a separate unitary system. Individual condenser capacities: 7½ to 25 tons. Unitary Lennox systems have definite maintenance advantages over the large central system: servicing is simpler, and affects only a single "micro-climate" zone each time.

Indoor fan-coil unit is mounted in ductwork and coupled with outdoor condensing unit.



**It had to be
more than aluminum.**

**It had to be
Alcoa.**

Take vertical lines of white marble, contrast them with blended lines of aluminum and glass, and you have the dramatic new 50-story General Motors building in New York. (a) Towering columns of marble climb quickly skyward. Glass and aluminum blend together as an entity in the dimensional window bays. An innovative advance, creating an exciting building.

Alcoa was charged by the architect with blending bronzetone aluminum with bronze solar glass. We had the resources, capabilities, imagination and experience to completely oversee this vital aspect of the project. Alcoa had total responsibility for the appearance of the aluminum used on the exterior of the building. This includes the vital metallurgical processes of extruding and color control achieved

**Change for the better with
Alcoa Aluminum**

 **ALCOA**

a



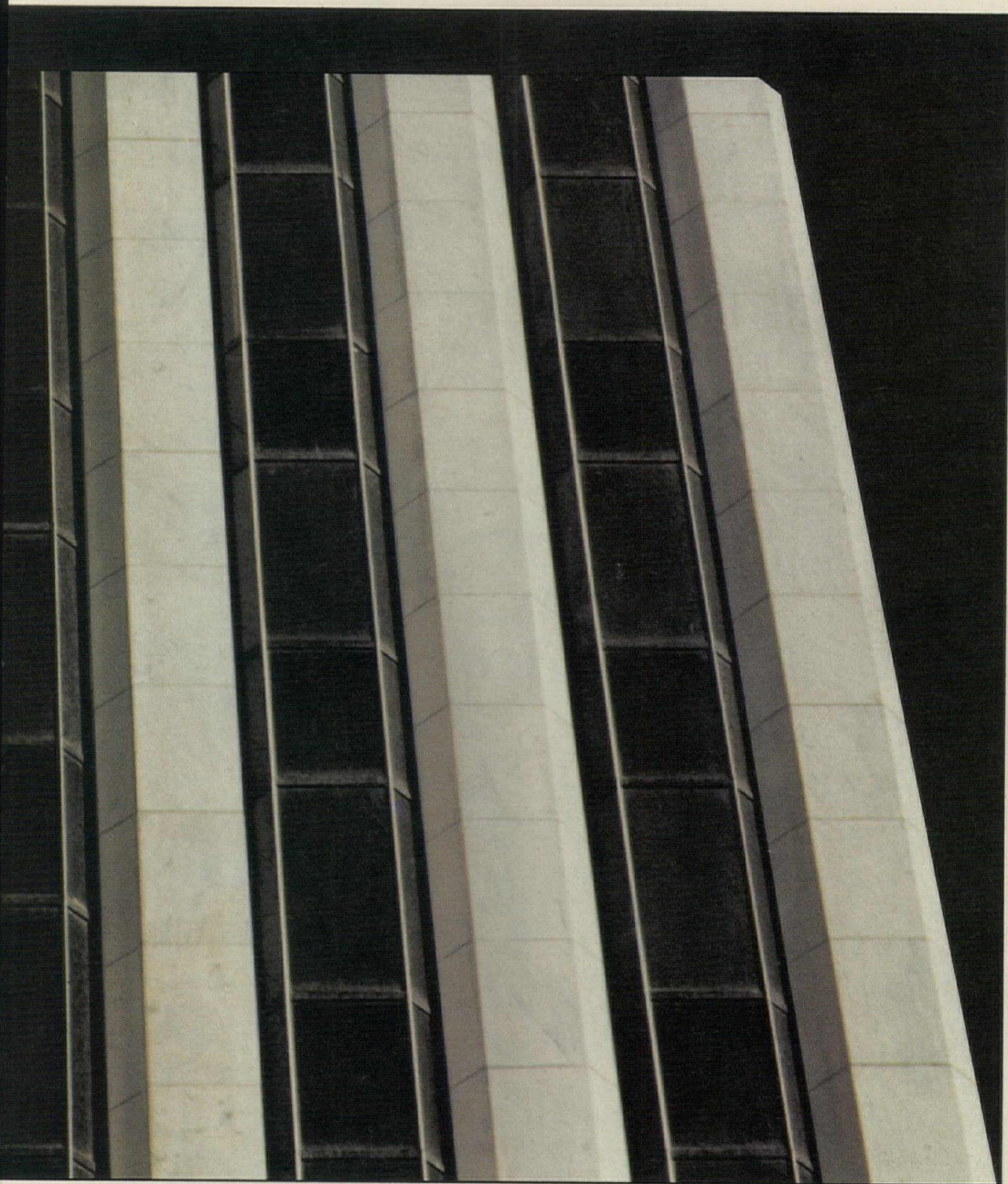
rough the Duranodic* 300 process. tal quality control: the key element anned and executed by Alcoa. e metal: Alcoa® Aluminum with an coa Duranodic 300 finish in medium onze tones, carefully complement- g the bronze solar glass. Duranodic 300 was specified cause the *original* color and beauty ust last with a minimum of mainte- nce. The rich Duranodic color is an

integral part of the metal oxide that permeates its cell structure, and provides natural protection of up to 1.2 mils. Corrosion and abrasion resistance is greatly increased. At the General Motors building, Alcoa was there from the planning stages—the best time to call in Alcoa. We have the capabilities to work with you from concept to conclusion. Alcoa stands ready to supply you

with a whole lot more than aluminum. Call your local Alcoa sales office, and talk to Alcoa at the tissue talking stage.

*Trade Name of Aluminum Company of America

Architect: Edward Durell Stone and Emery Roth and Sons
General Contractor: George A. Fuller Co.
Aluminum Wall Fabricator: General Bronze Corp.
Aluminum Finisher: Hankins & Johann
Aluminum Louver Fabricator: Arrow Louver and Damper Corp.



b

continued from page 52

the program was announced. We agreed to commit for mortgage insurance on this project in about a month's time, and some 700 dwelling units in 32 buildings are now undergoing rehabilitation. Several private developers are participating, including the parent corporation of the Boston gas utility.

In Pittsburgh, Action Housing, Inc., was instrumental in forming a private housing rehabilitation corporation sponsored by such major companies as U.S. Steel, Westinghouse Electric Corporation, Alcoa, Equitable Life Assurance Company, Duquesne Light Company, Koppers Company, Inc., Pittsburgh Plate Glass Industries, Peoples Natural Gas Company, and many others. These companies have subscribed several million dollars to form the profit-motivated corporation which expects to build to a level of rehabilitation of about 1,000 units a year. FHA has already committed to insure the first element of the corporation's initial project.

I believe this is substantial evidence of the interest of private enterprise in rehabilitation as a valuable housing tool and one that can produce a profit. Many problems remain in meeting the urban crisis, but the Federal Housing Administration is making a substantial and effective contribution toward this goal.

*P. N. Brownstein
Assistant Secretary-Commissioner
Department of Housing and Urban Development
Washington*

"A fantastic training ground"

The Neighborhood Commons Corporation is a non-profit corporation working in a slum section bounded by Armitage, Halsted, North Avenue and the Chicago River. The resident population is \pm 7,000. The Corporation is sponsored by Meadville College which supplies two Unitarian professors of theology as staff, assisted by their students. Rather than build another church they see the problem as outlined by you in "Business and the Urban Crisis" as their concern.

The management functions of the Corporation are in the hands of the slum dwellers themselves and is a fantastic training ground in itself. Its function is the purchasing of neglected housing, investing sweat equity in bringing them up to code, renting them out or developing them into condominiums for low income families. And in the process, learning to read and act upon appraisals, architect's recommendations and acquiring experience with proper materials and working habits, communication and personal re-

more letters on page 74

70 ways to light building facades



GE Profitable Variety '68

Example: choice of Quartz-Flood™, Powerflood® and narrow-beam units for any type of exterior illumination to accent architectural styling and landscape design. Units available for all modern lamp types.

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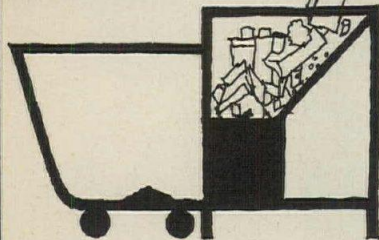
GENERAL  ELECTRIC

Hendersonville, N.C. 28739

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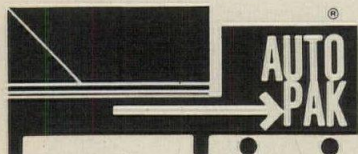
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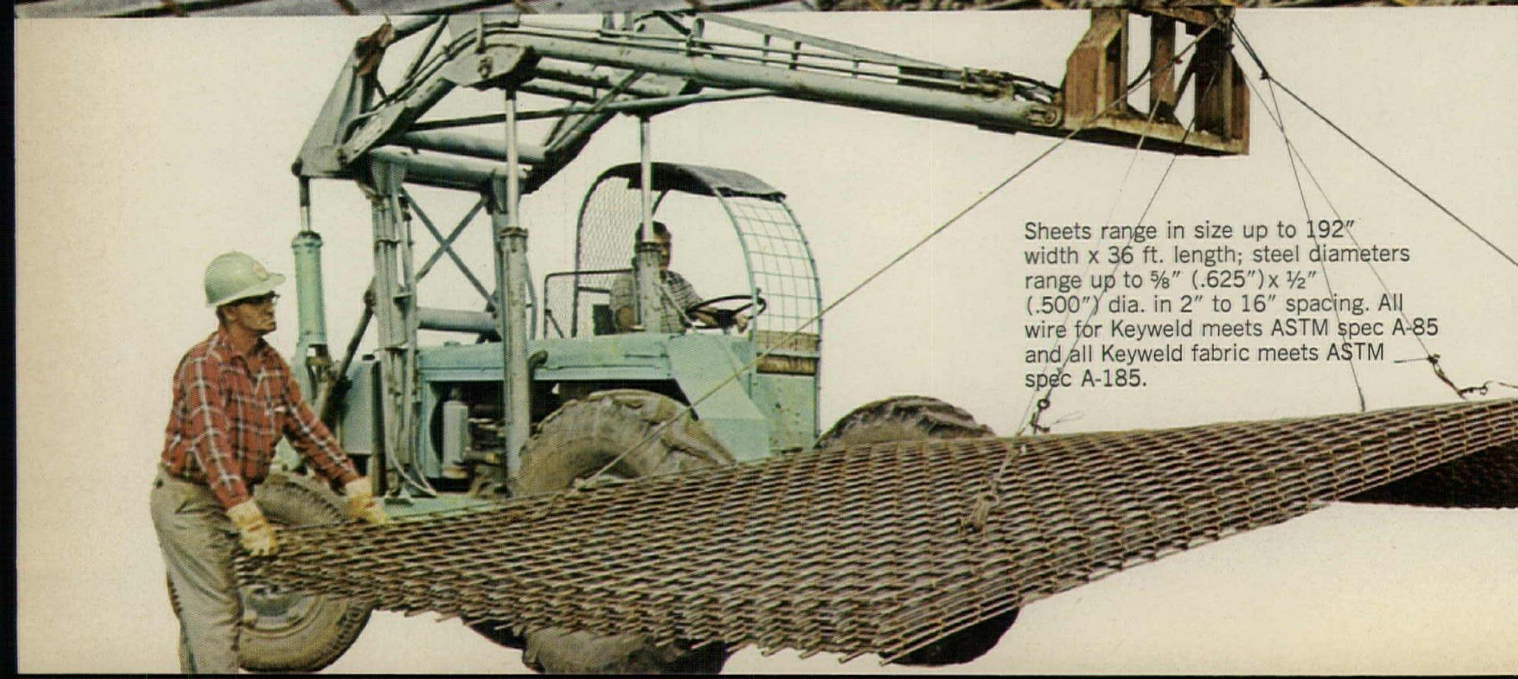
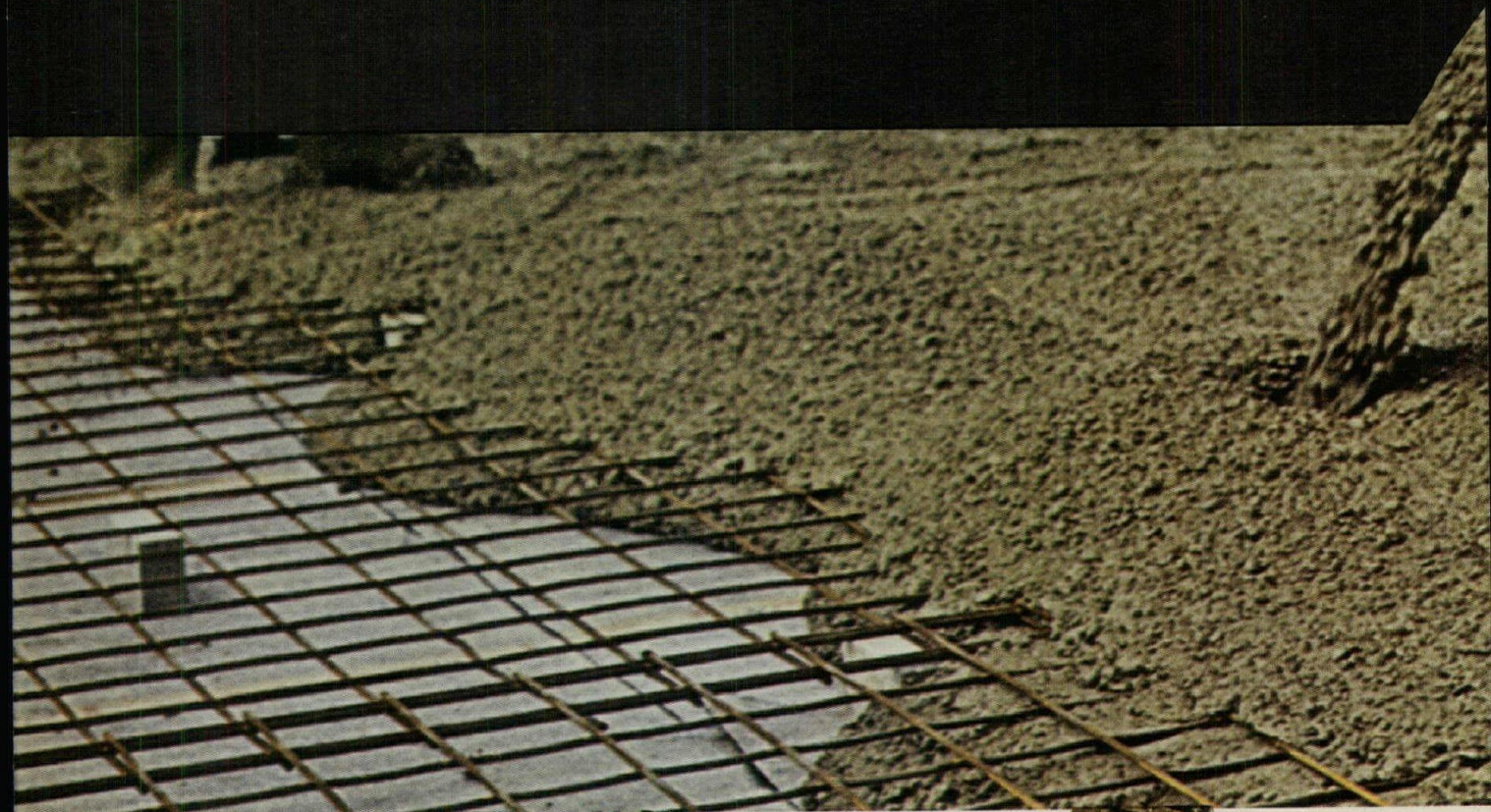
**inner
strength
FLOORS**

from **Keystone**

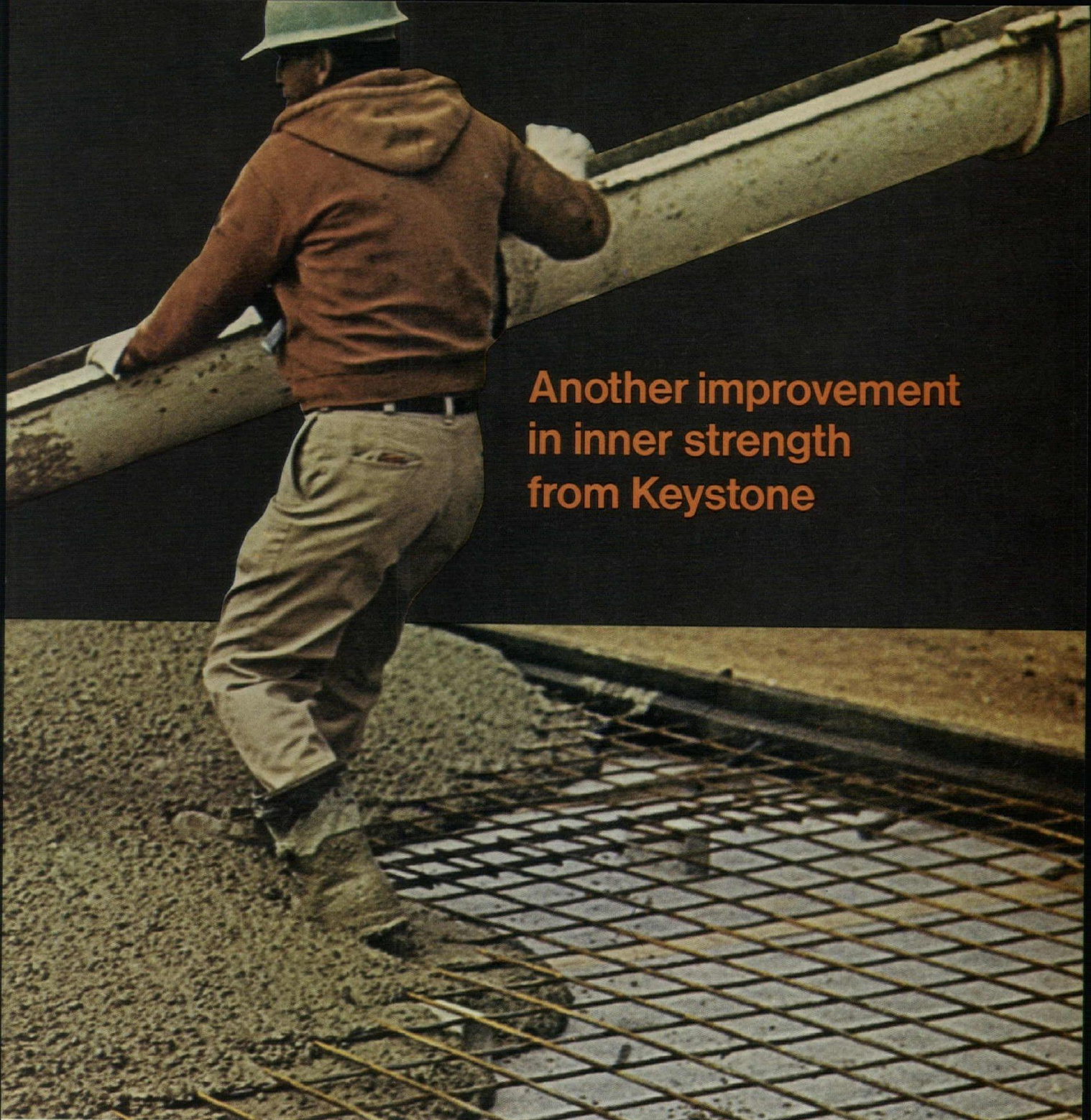
Hiram Walker & Sons, Inc. whiskey maturing warehouse, Delavan, Illinois. Architects: Smith, Hinchman & Grylls Associates, Inc., Building Work Contractor: Geo. D. Johnson Company. Concrete slab reinforced with Keyweld Fabric—designed to carry forklift and truck traffic plus heavy storage loads.

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insure that your concrete is reinforced as specified
cut hours off your inspection time.



Sheets range in size up to 192" width x 36 ft. length; steel diameters range up to $\frac{5}{8}$ " (.625") x $\frac{1}{2}$ " (.500") dia. in 2" to 16" spacing. All wire for Keyweld meets ASTM spec A-85 and all Keyweld fabric meets ASTM spec A-185.



Another improvement in inner strength from Keystone

Keyweld sheets and rolls are fast replacing hand-placed, hand-tied rebars to reinforce concrete slabs on grade, floor slabs and walls.

They are shop fabricated exactly to your configuration; steel sizes and spacings are accurate.

This precise shop fabrication and color coding saves you days of on-site inspection

time. The color coding shows you that each mat is going in where it's supposed to. The prefabrication allows Keyweld to be put in place in 25% of the time required to place and tie rebars. And because all pieces are welded, there's no measuring.

For complete information, call your Keystone representative. Or write Keyweld, Keystone Steel & Wire Company, Peoria, Ill. 61607.

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**inner
strength**
ROOFS • WALLS • FLOORS

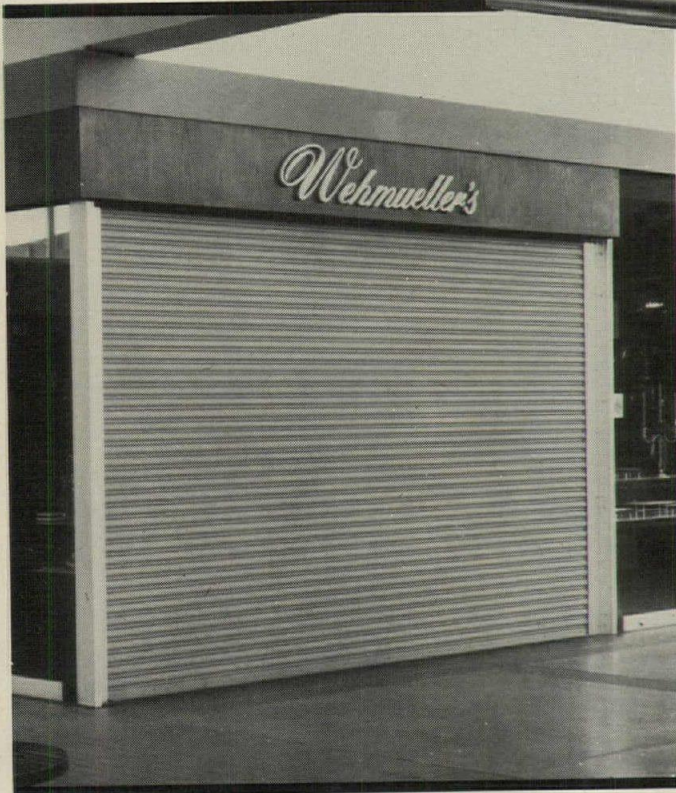
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Always modern! Whether it's for store fronts—or for any large service doorway or wall opening—nothing has ever been devised that excels Kinnear's Interlocking Steel Slat Door for down right tough, rugged protection against any hazard. When locked closed it's practically impenetrable even with tools. It's fire-proof and weatherproof. The steel slats with a zinc coating of 1.25 oz. per sq. ft. coupled with Kinnear Paint Bond and added primer and field finish coat provide triple protection against the elements. And yet its flexible design permits it to coil compactly — and concealed — in a minimum of space over the opening or display window. It can be built to the exact required size, and for maximum operating convenience provided with an electronically controlled

power operator. Its reliability has been proven, under practically every possible user test, for more than 70 years. If you're not thoroughly acquainted with Kinnear Rolling Doors and their merits for present day security needs, write today for complete details.

Kinnear Rolling Metal Grilles — also offer an excellent barricade for locations where it's desirable to have air, light or vision.

Also manufacturers of Rolling Fire Doors and Shutters, Rolling Counter Shutters, Overhead Type Doors and Electric Door Operators.



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New from Ozite...lowest priced pattern carpet ever!



It's Ozite Outdoor-Indoor Pattern Carpet! Now get all the proven features of original Ozite Outdoor-Indoor Carpet made with Vectra fiber...and striking patterns, too! These aren't burned-in designs that catch and hold dirt. They're actual patterns...three in all...*Brick, Wrought Iron and Mosaic*...and each pattern comes in different colors. We call it Ozite Fiesta Carpet. Amazing Vectra fiber is colorfast...won't rot. Dense, firm surface resists soiling, is not affected by mildew. Low-cost installation. Seams beautifully. Face yarn will not ravel or sprout. There's no finer decorative carpet value for commercial and residential installations...indoors or out!



Solid colors with rubber back! There isn't a more solid carpet value than Ozite Town-Aire Carpet! All the durability of Ozite Outdoor-Indoor Carpet, but with built-in high density foam rubber back for indoor use. Outstanding dimensional stability. Easy to install and maintain. See new Ozite Fiesta Carpet and Town-Aire Carpet at your Ozite dealer now.



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Ozite® is the registered trademark of the Ozite Corporation, Merchandise Mart, Chicago, Illinois.

Vectra®, olefin fiber is manufactured by Enjay Fibers and Laminates Company, Odenton, Maryland, a division of Enjay Chemical Company. Enjay makes fiber, not carpets.

For more data, circle 34 on inquiry card

Designing a motel, hotel or apartment complex?
Give your client a built-in rental advantage.

**Witness: Eljer's slip-resistant
Perma-Mat[®] textured tub.**

With rental competition as keen as it is, your client appreciates any fringe benefit you can design into his building.

A good place to start is the bathroom. Renters appreciate the added measure of security reflected by Eljer's Perma-Mat textured tub with its slip- and slide-resistant surface.

You can specify it in any Eljer tub, in white or pastels. Perma-Mat comes in the elliptical pattern

(shown), in cast iron and in a rectangular-shaped area in formed steel tubs.

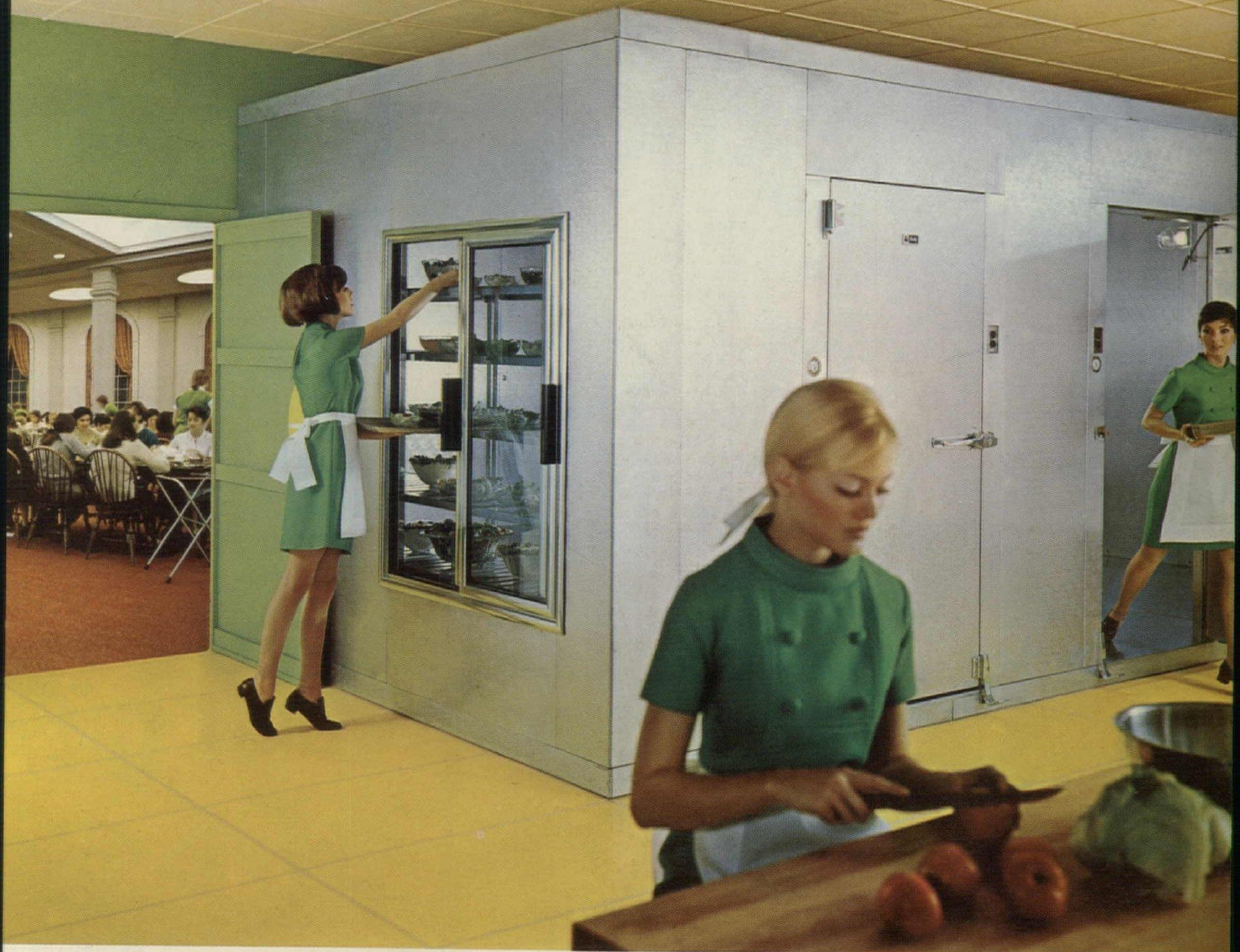
For further information call your Eljer representative or write Eljer, Dept. AR8, P.O. Box 836, Pittsburgh, Pa. 15230.



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A Bally Walk-In . . . meets the challenge of mass feeding's growing needs. Today's kitchens demand the most modern equipment and advanced techniques. The emphasis is on fewer kitchen personnel . . . turning out more and better food . . . for a growing number of diners.

At the heart of these modern food preparation centers Bally prefab Walk-Ins, with an entirely new design concept, fill every critical refrigeration need.

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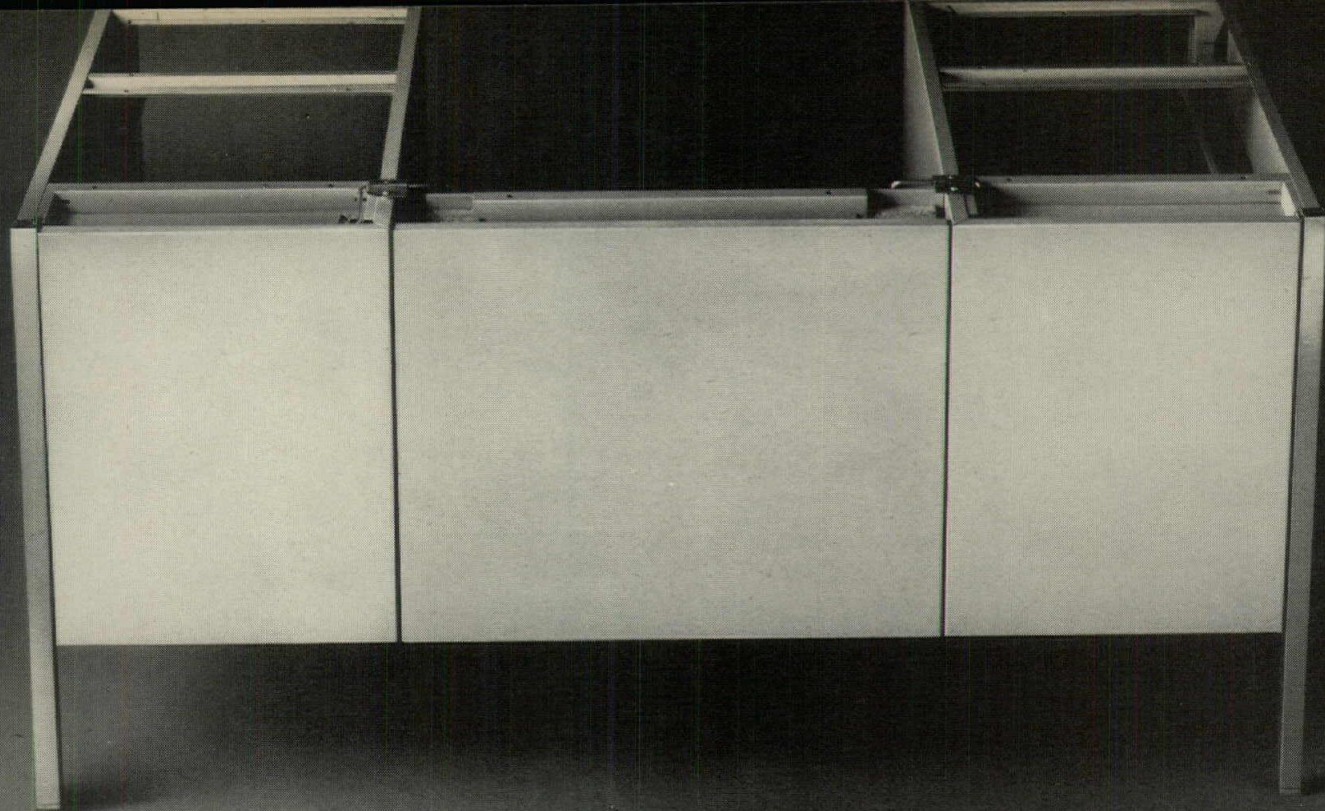
There's an evolution in the kitchen

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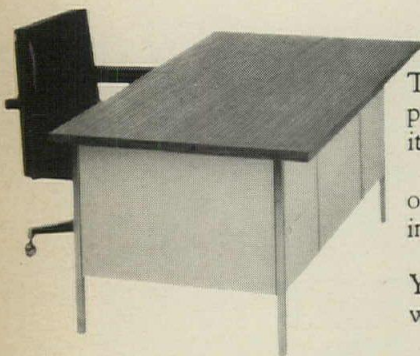


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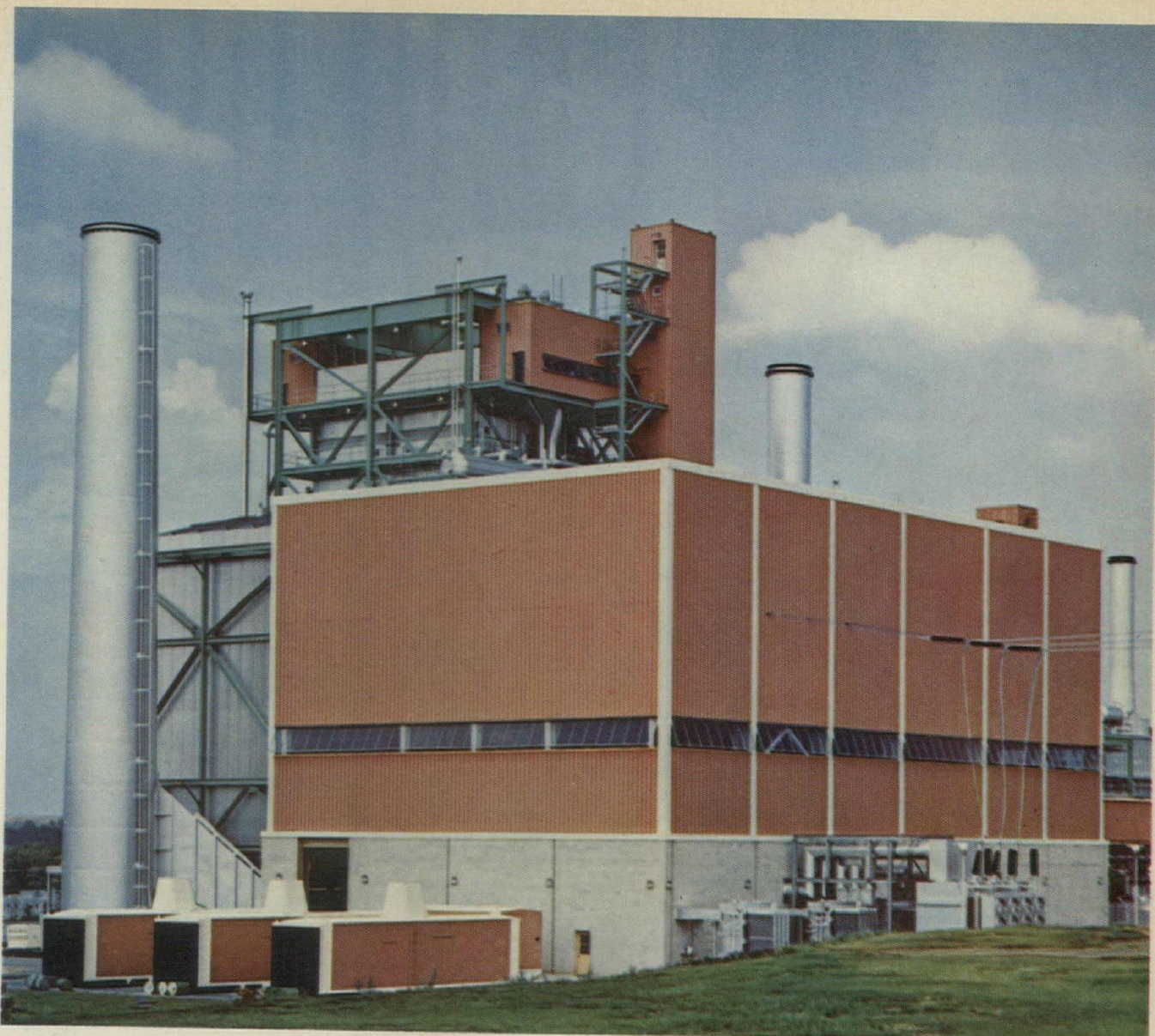
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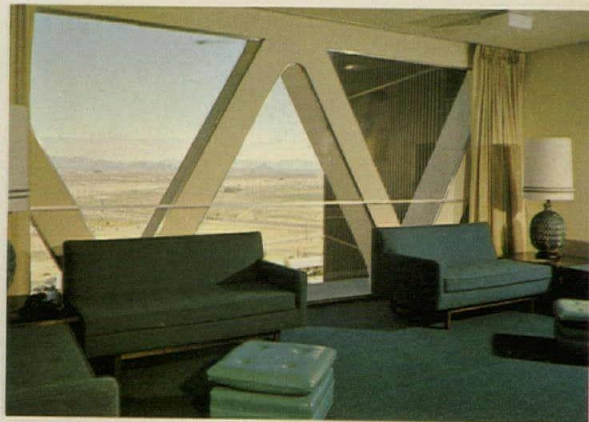
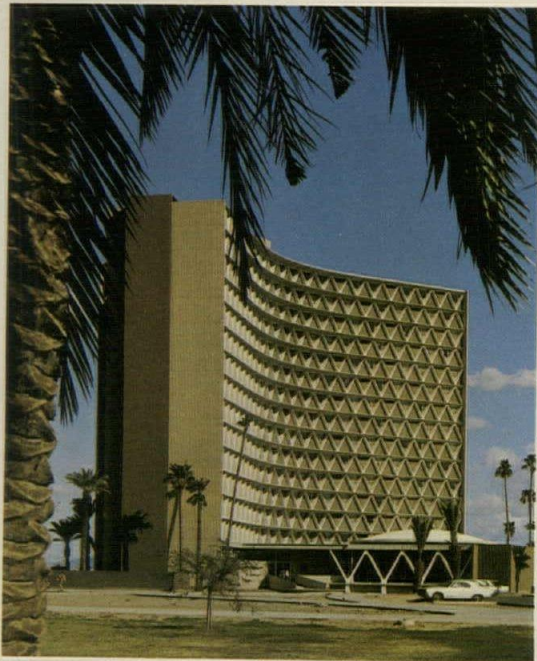
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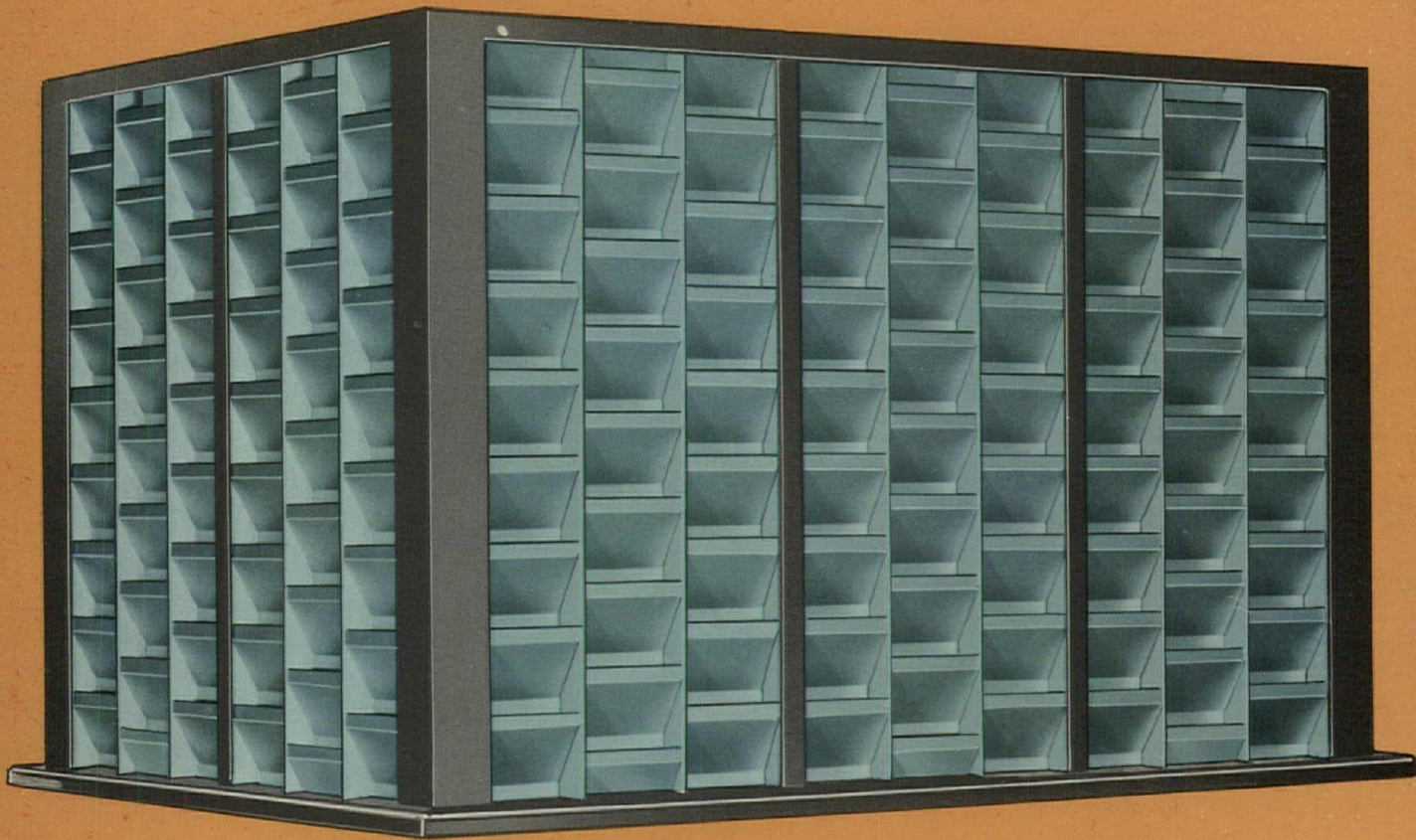
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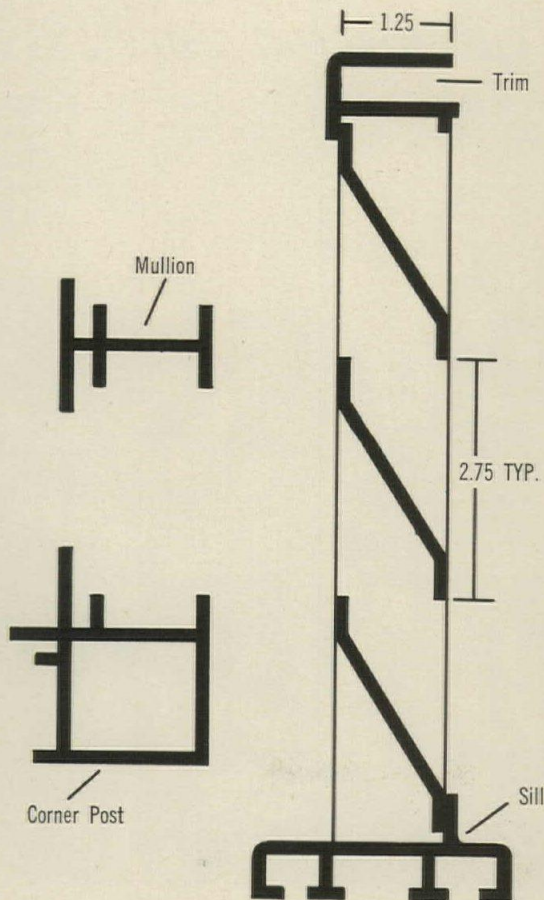
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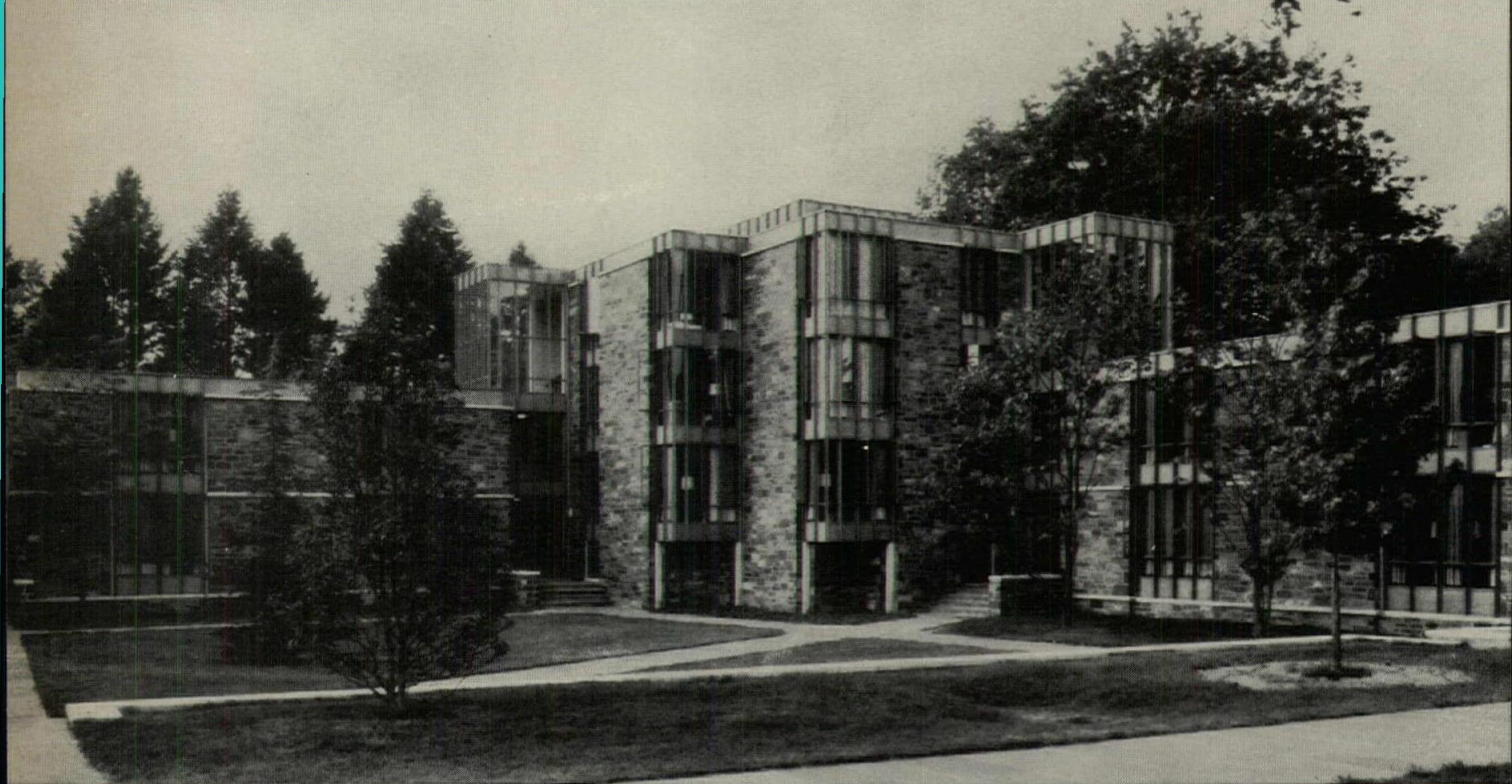
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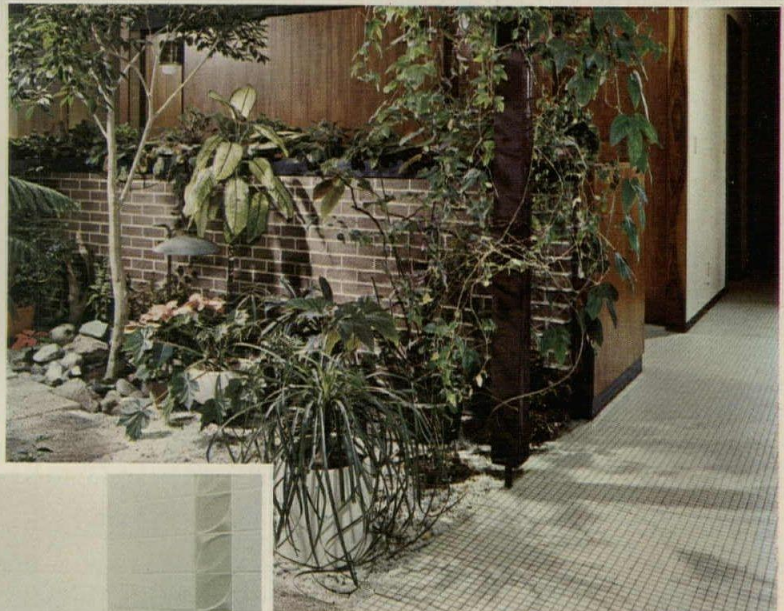
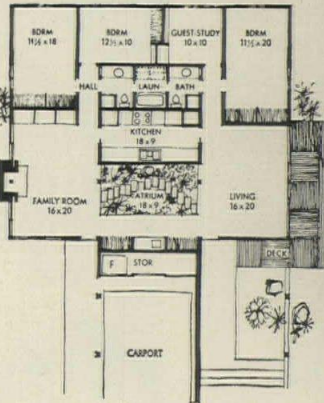
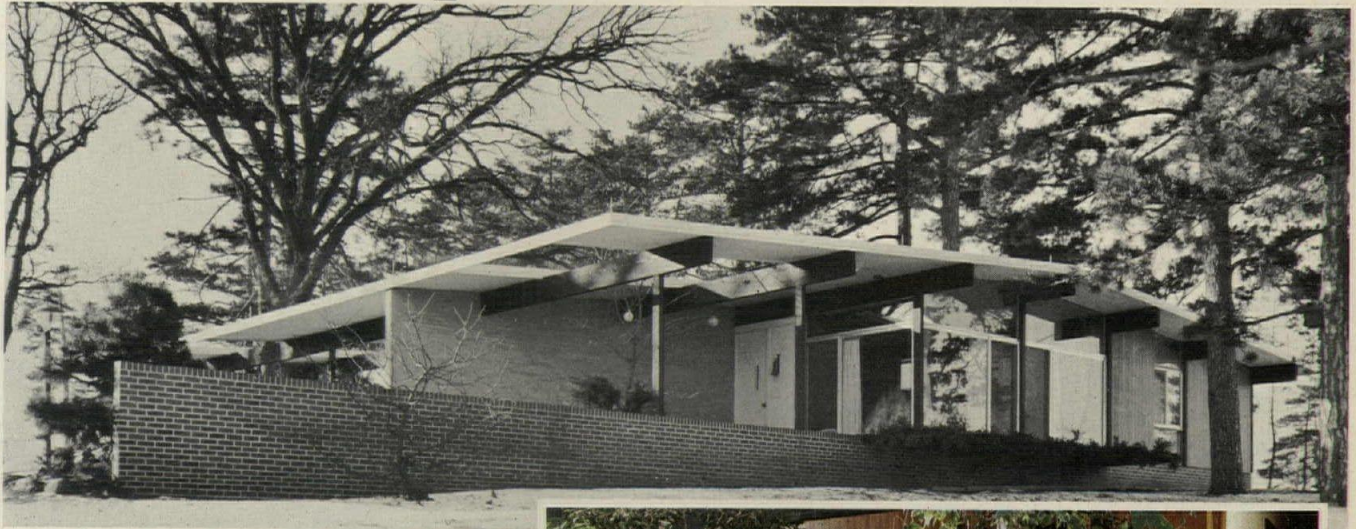
When Holder Hall was built at Princeton University 58 years ago, Hope's windows were specified and installed therein. A partial list of other buildings at the University in which Hope's windows are also installed follows below:

- | | | | |
|------|---|------|--|
| 1910 | Holder Hall <i>Architects: Day Brothers & Klauder</i> | 1962 | John Foster Dulles Library of Diplomatic History <i>Architects: O'Connor & Kilham</i> |
| 1913 | Graduate College <i>Architects: Cram & Ferguson</i> | 1963 | Woolworth Center of Musical Studies <i>Architects: Moore & Hutchins</i> |
| 1925 | Isabella McCosh Infirmary <i>Architects: Day & Klauder</i> | 1963 | John C. Green Hall (re-designed) <i>Architects: Francis Roudebush</i> |
| 1929 | Henry C. Frick Laboratory <i>Architects: Charles Z. Klauder</i> | 1963 | Henry C. Frick Laboratory Addition <i>Architects: O'Connor & Kilham</i> |
| 1930 | Dickinson Hall <i>Architects: Charles Z. Klauder</i> | 1964 | Undergraduate Dormitories <i>Architects: Hugh Stubbins & Associates</i> |
| 1947 | Herbert Lowell Dillon Gymnasium <i>Architects: Aymar Embury</i> | 1964 | Guyot Hall — Geology Addition <i>Architects: O'Connor & Kilham</i> |
| 1952 | Edward S. Corwin Hall <i>Architects: Voorhees, Walker, Foley & Smith</i> | 1965 | Magie Apartments <i>Architects: Ballard Todd Associates</i> |
| 1960 | Dormitories and Social Hall Complex <i>Architects: Sherwood, Mills & Smith</i> | 1965 | McCormick Hall — Art Museum <i>Architects: Steinmann & Cain</i> |
| | | 1968 | L. Stockwell Jadwin Gymnasium <i>Architects: Walker O. Cain & Associates</i> |
| | | 1968 | Physics Building <i>Architects: Hugh Stubbins & Associates</i> |

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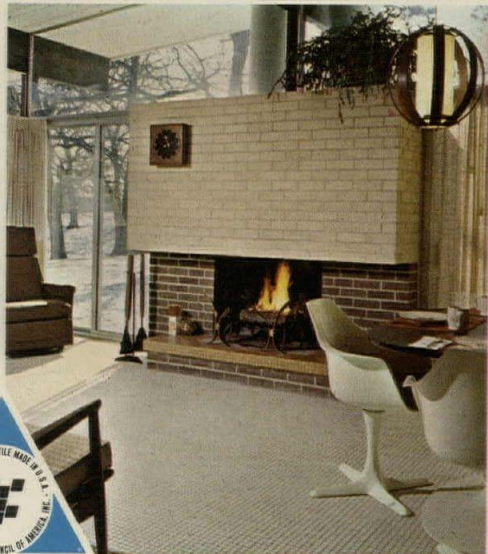


The pleasures of an indoor garden are obvious. But, an atrium is often gained at the expense of convenience, or given a self-defeating "fish bowl" treatment.

Architect Ray Heuholt, A.I.A., solved this dilemma by combining living things and a natural material — ceramic tile — in this Des Moines, Iowa home. A ceramic mosaic floor surrounds the atrium and covers the family room, entranceway, kitchen, bath and halls. The atrium can be maintained simply, without worrying about water, soil, spilled gravel or falling leaves.

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LETTERS

continued from page 58

lations. A full-time work crew exists of trained skilled workers who accept unskilled trainees otherwise unemployed. In addition to working on the corporation's properties, it takes on rehab assignments from local homeowners on a labor, material and overhead basis. Up till now it was practically impossible to get small scale rehab work done here without being gouged.

Also on the agenda are: the purchase of a neglected school from the Board of Education; rehabbing it; leasing it back to them for their time slot; run a top enrichment program after hours and during vacation time with the help of talents from local industries and universities; establishing a home connected with the school for those students whose home situation is their major problem.

We hope to develop teenage cottage industries for which we are busy trying to design the right products, develop the right training methods, distribution channels and funding. We hope that the graduates from this experience will become valuable employees and small businessmen.

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Integrated Creative Services
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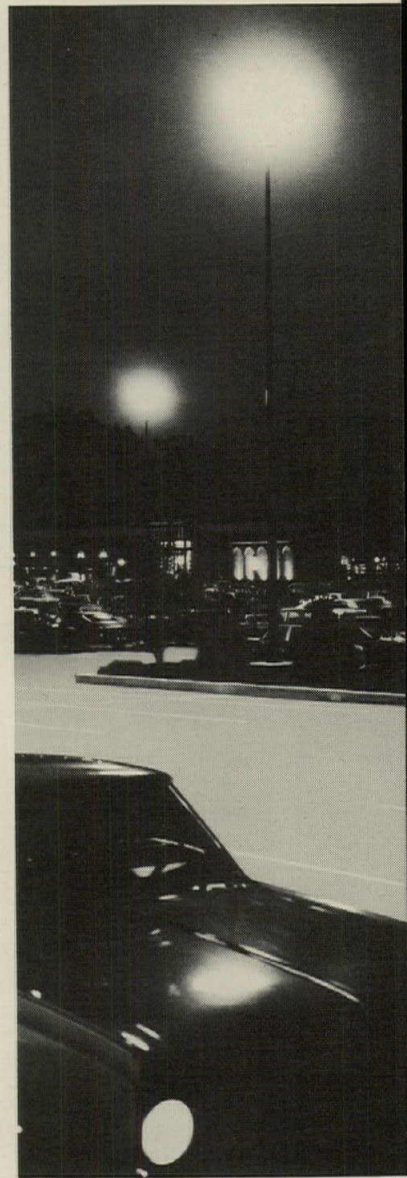
The need for research

You are to be complimented for your progressive action in presenting the Special Report. There were two points, however, upon which I should comment.

On page C10 you indicate that "some new form of government subsidy" is needed to finance the staggering need for potentially profitable low-income housing. The need for this type of housing is beyond question and we concur wholeheartedly with you that this market presents opportunity for profit almost beyond comprehension. We recognize, furthermore, that government subsidy would bring shelter units within the reach of many people who would otherwise be unable to afford adequate housing. It is our opinion, however, that in the long run the true concept of widespread, effective low-income housing will only be achieved when the developments are capable of standing on their own merits as a profit making enterprise. Our plans are to completely phase out all of our conventional construction activity in residential subdivisions and develop our undiluted efforts to the intriguing, worthwhile, and potentially profitable low-income housing market.

Secondly, on page C11 you indicate *more letters on page 90*

46 ways to light parking areas



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For more data, circle 42 on inquiry card

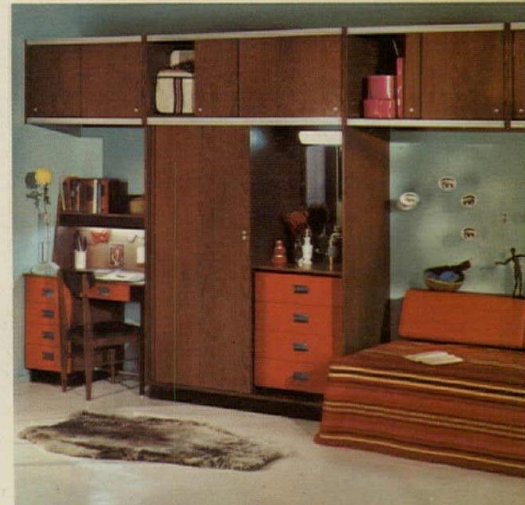
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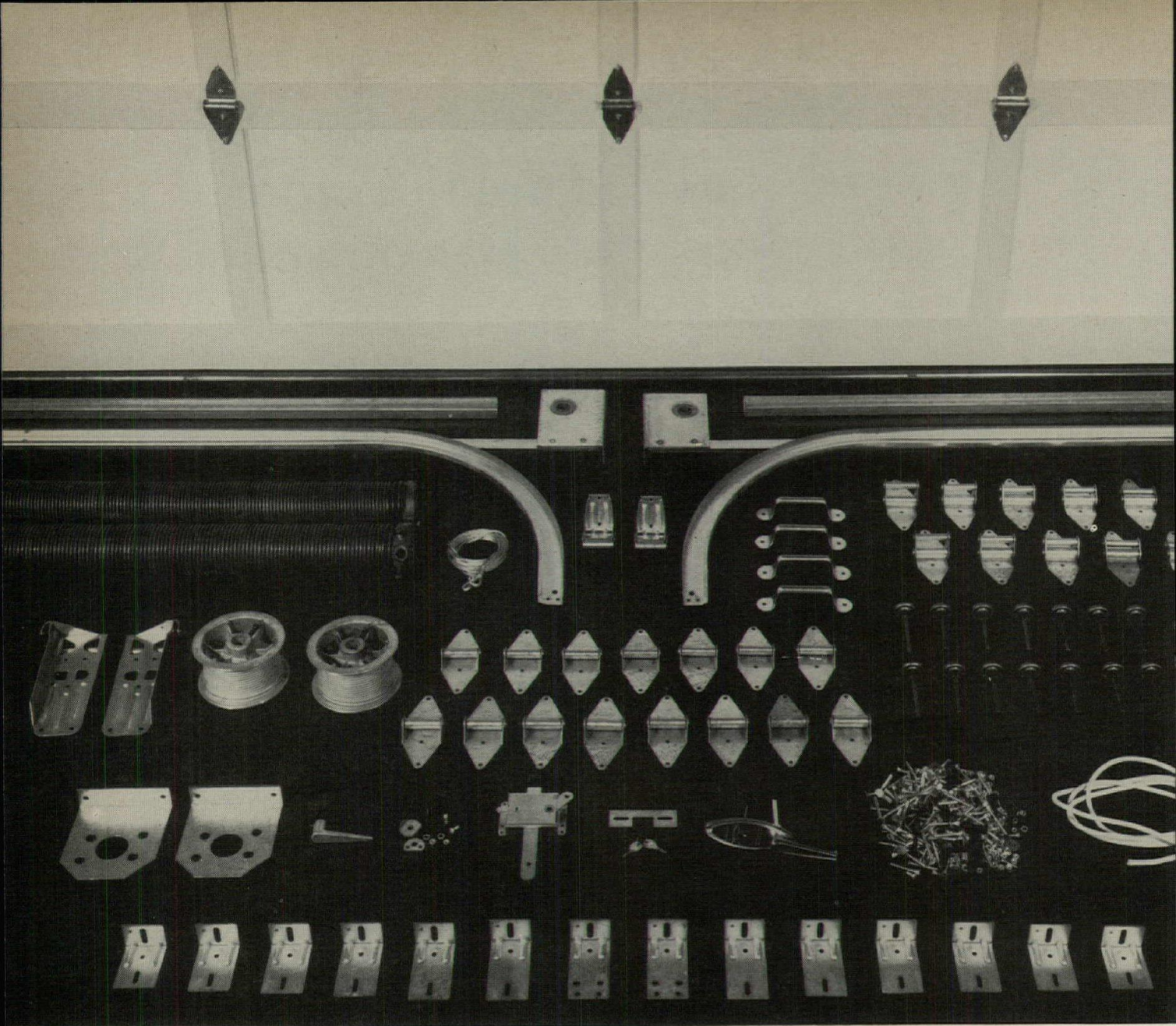


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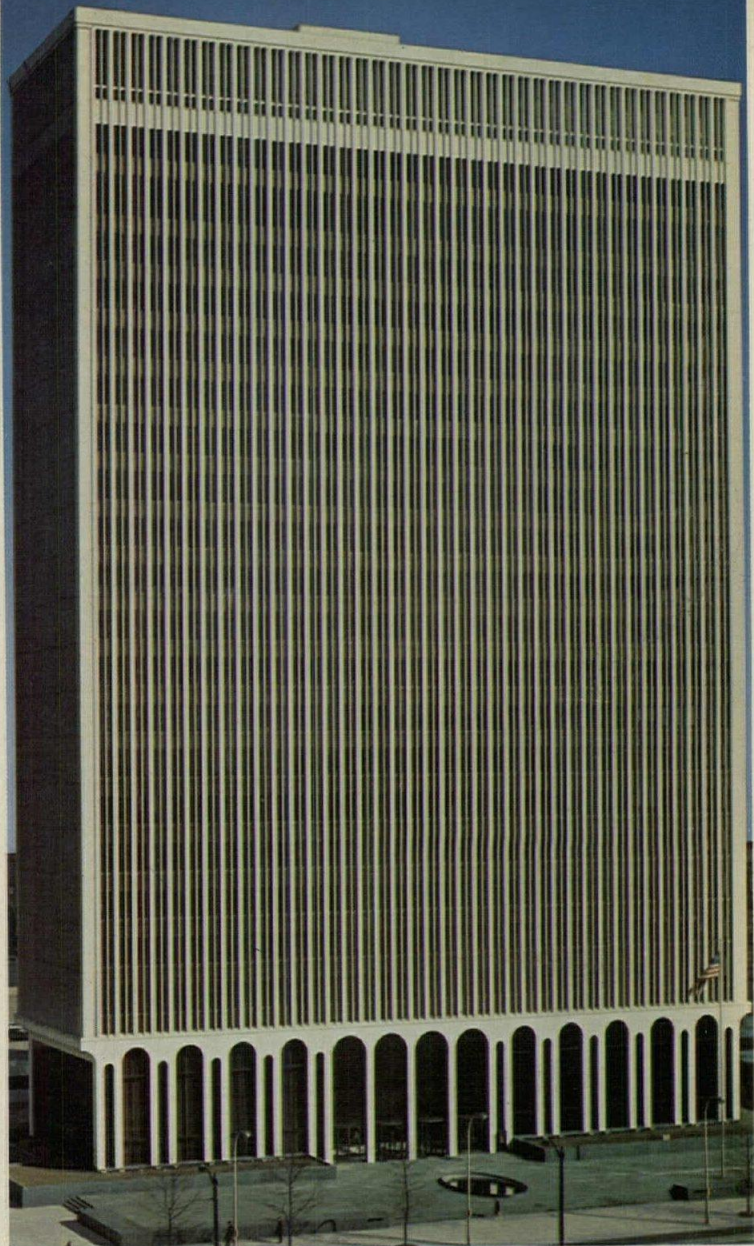
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LBJ promises lots more housing—if Congress approves

Congress goes along with President Johnson's ambitious housing program he outlined last month in his "cities" message, homebuilding would become the biggest boom industry in the nation.

The President's goal: 20 million new or rehabilitated dwelling units in 10 years, privately financed, plus 5-million partially subsidized units also built with private mortgage money.

That means an average annual production rate of 2-million starts. Three years ago, before the money crunch descended, builders were rejoicing over a 1.5-million rate. Today, they hope for a 1.3-million rate if money doesn't keep getting tighter.

The President didn't say where all the money would come from, although he did ask for some reforms in the secondary mortgage market to encourage investments. Nor did he explain just where the added capacity of the industry, and the labor supply, would solve. But the A.I.A. quickly pointed out some reasons why the nation might not respond quickly to the program.

Architects volunteer services while others invent subsidies

To fully realize the promise of modern technology, the skill of labor, the ability of contractors, and the talents of the design professions, our law and regulations must be drafted to encourage experimentation," A.I.A. first vice president George Kassabaum told the Senate housing subcommittee on March 12. "Certainly our 30 years of public housing experience, heightened by recent riots and dissatisfaction, should be sufficient testimony to the fact that a system that emphasizes only economy and quantity does not perform satisfactorily."

A.I.A.'s subsidy: Kassabaum outlined proposals now under discussion for providing the talents of the nation's architects to people who wanted to upgrade their neighborhoods. These proposals would "provide architectural services individually or through neighborhood design centers to anyone needing design advice," Kassabaum said in offering "a creative response to achieving the President's goal." He added the nation's architects would do this for a fee to the client who can pay, "but if he cannot he will still be served if it is physically possible."

[New York Chapter A.I.A., meanwhile, had announced continuation of a service launched in the late 1940's to provide the public with free advice by phone or mail on residential architecture and consultation in person at \$15 per hour.] Kassabaum also referred to technical assistance programs in Cambridge, Philadelphia, Pittsburgh, Washington and San Francisco.

LBJ's subsidy: For the most part, the President's subsidy schemes were variations on existing themes. Uncle Sam would continue to fuss with mortgage terms, aiming at reduction of financing costs to bring the monthly payment within reach of the poor and near-poor.

He proposes to phase out the popular 221d3 program of 3 per cent interest rate mortgages and suggests instead a

plan using market-rate mortgages with partial subsidy payments direct to the mortgage lenders.

This new scheme, based somewhat on a similar one worked out by Senator John Sparkman (D-Ala.) and his Senate housing subcommittee last year, (see Record, December, page 81) would also be applicable to single-family home ownership for poor people.

Percy's subsidy: When HUD Secretary Robert Weaver marched up to Capitol Hill to fight for the President's program, he ran headlong into Senator Charles Percy (R-Ill.) whose "Home Ownership Foundation" plan provided the headline excitement helpful in getting spending schemes through Congress.

Percy claimed Weaver was very unfair, if not downright partisan, in decrying his Republican idea last year while endorsing the Democratic President's concept this year.

New town subsidy: A.I.A. called for non-partisan support behind the new Federally guaranteed "cash flow" debenture idea, designed to underwrite (up to \$50 million) new town developments.

A.I.A. suggested eliminating the existing new town FHA insurance on the grounds that it was encouraging only larger housing subdivisions, not truly integrated "new towns."

A.I.A. also endorsed the much expanded public housing program with emphasis on privately sponsored work. It supported the new urban renewal concept, whereby Federal funds would be allocated each year for city projects rather than on the basis of one huge grant allocation that would be spread out over many years.

Money market subsidies: Perhaps the most significant, and certainly the most

ARCHITECTURAL BUSINESS THIS MONTH

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complex, changes proposed in the President's program pertain to the secondary mortgage market. The proposed changes are three:

- Lift the present 6 per cent ceiling on interest rates allowable on government-backed mortgages;

- Create a new kind of Federally-underwritten bond, or certificate, that represents part of a pool of FHA-insured or VA-guaranteed mortgages, to attract capital from sources that don't want to be bothered with servicing mortgages directly;

- Spin off the major part of "Fanny Mae," the Federal National Mortgage Association, which pumps money into the secondary mortgage market whenever overall money gets tight. The new all-private Fanny Mae could do the same thing, at a profit, while it would no

longer be crimped by Federal budget strictures.

These ideas, plus some others, are kicking up a fuss in Congress. Representative Wright Patman (D-Tex.) and the AFL-CIO claim raising the 6 per cent ceiling would only let interest rates spiral higher and higher.

Planning subsidy: Buried in the huge omnibus housing bill (HUD estimates its price tag at \$6 billion) are a couple of changes designed to improve the several ways by which Uncle Sam supports local planning efforts.

Debate about the mortgage manipulations will crowd out any national discussion of the planning subsidies (the 701 program, metro areawide planning grants, etc.). It's also likely to crowd out Congressional concern about what A.I.A. feels is one of the biggest roadblocks

to effective urban subsidies: red tape.

Experimentation is almost impossible, said Kassabaum. HUD should be required to pledge that it will not destroy worthwhile programs—such as the proposed Federal aid to non-profit housing sponsors—"by delay and red tape." And Kassabaum further asked that the negative "no frills" law on public housing be reversed into a more positive statement that the design will "contribute to the general betterment of living consistent with prudent budgeting."

Sadly, political observers doubt Congress would have much time for "general betterment of living" when the huge and expensive housing bill comes up for its key votes—just before election, right after the summer riots, and quite likely in the face of increased pressures for a tax hike.

Durham calls for united action on liability problems

The president of the American Institute of Architects last month called on all professions and groups in the construction industry to unite in a broad effort to solve the industry's growing damage and injury liability problem.

Robert L. Durham, addressing a symposium on liability at the annual convention of the American Concrete Institute, said damage and injury claims are an increasingly serious problem for everyone in the construction industry, and that efforts by individual groups within the industry to ease their own liability difficulties without reference to other industry groups have been ineffective.

Architects and engineers, Durham said, are particularly affected by recent changes in the legal concepts of liability. "The design professions," he said, "have moved from the early English Common Law era in which the architect or engineer was not held legally liable for even his own negligence in making decisions, into an era when the architect or engineer may have to pay up because of someone else's negligence."

Changes in concepts of liability have occurred for several reasons, Durham said, including "the development of a social philosophy, or morality, which holds that individuals injured or damaged

through the operations of society must be compensated by someone." He said this philosophy has resulted in a legal trend "in which compensation or redress is held due an injured or damaged person without regard to negligence," and to the steady abandonment of the legal principle of "privity of contract" which holds that a contractual relationship must exist for one party to be included within the scope of another party's liability. The effect of the latter development, he noted, has been to make architects liable for injury or damage to third parties outside the construction contract.

The architect, Durham said, wishes to solve liability problems in order to protect himself from unjust or excessive claims, and to preserve his ability to design without letting "the quality of his creativity be dulled because of the fear of future claims."

But the A.I.A. president said that problems of this nature are not limited to designers—they extend to contractors of all kinds, building product manufacturers, and labor groups. For this reason, he said, the industry should launch a single campaign to solve liability problems (see page 93).

"The tactical and strategic justification for mounting this kind of attack on

the problem of liability is obvious," Durham said. "The moral justification for doing so is, at least to me, equally clear. I have said it before, but it bears repeating, that in the long run the owner pays the entire cost of construction: He pays for your liability insurance as well as mine."

Durham said the construction industry, therefore, "should be morally committed to keeping the cost of our collective liability at the lowest point commensurate with our social and community obligations. We can best do this, I am convinced, by ceasing to argue among ourselves, and by beginning to cooperate to create industry unity on the liability problem."

A.I.A., Durham pointed out, is concerned with the need to develop answers to the liability problem that will apply even when the inter-relationships of members of the construction team change. The Institute has already launched a task force study of changing construction industry legal relationships, he noted, and the study may "tell whether an effort to revise construction law is feasible, and how we might accomplish it." He invited other construction organizations to join the A.I.A. in conducting this study.

Rehab loans are seen as a reasonable investment

The first FHA insured, limited-profit, rehabilitation mortgage loan on a 40-year term at 3 per cent allows for "reasonable enough return to merit the attention of builders," says Erwin A. Salk, president of Salk, Ward & Salk, Inc. The Chicago-based mortgage bankers are financing

\$595,600 for the complete remodeling of two apartment buildings on Chicago's north side. While work is in progress, tenants will be housed in empty apartments of the buildings. "From an economic point of view," says Salk, "it is not only less costly than the kind of

sweeping urban renewal that bulldozes entire blocks, but also does not involve the disruption of families and communities to force their removal from their homes. Architects Swann and Weiskopf have scheduled the work for completion by the end of 1968.

CURRENT TRENDS IN CONSTRUCTION

George A. Christie, Chief Economist
F. W. Dodge Company
Division of McGraw-Hill, Inc.

Improving the quality of the housing stock

In the eight years beginning with 1960, a total of nearly eleven and a half million new housing units have been built. Over the same period, the growth in the number of households (i.e., families and individuals who occupy dwelling units) has been a bit less than eight million. A simple division of the larger number by the smaller shows that for every two new households that have come along since the decade began, three new dwelling units have been built.

This surplus of new housing over the basic amount needed to accommodate population growth suggests that something good may be happening to the quality of the nation's stock of housing. The tangible result is that by the end of last year there were nearly nine million more homes in good condition than existed in 1960. But upgrading the housing stock requires not only adding good, new dwellings; it also means getting rid of the substandard units. Some recent estimates by HUD indicate that not enough progress is being made at this end of the problem. A total of about eight and a half million of the dwellings occupied in 1960 were substandard. Up to last year,

this number had been reduced by only three million.

The single biggest factor in the reduction of substandard housing has been its outright removal—either by demolition or by fire, storm, and similar causes. In many cases, though, below-par housing can be brought up to standard. Thorough rehabilitation has been shown to be practical in selected experimental projects. And due to the extension of sewer and water facilities to rural areas, some two million basically sound structures which were formerly classed as substandard solely for sanitary reasons have now been made respectable.

Yet, there has been an outstanding lack of progress within the hard core of truly dilapidated housing units. Nearly two and a half million such dwellings were in use back in 1960, and very close to two million are still occupied today.

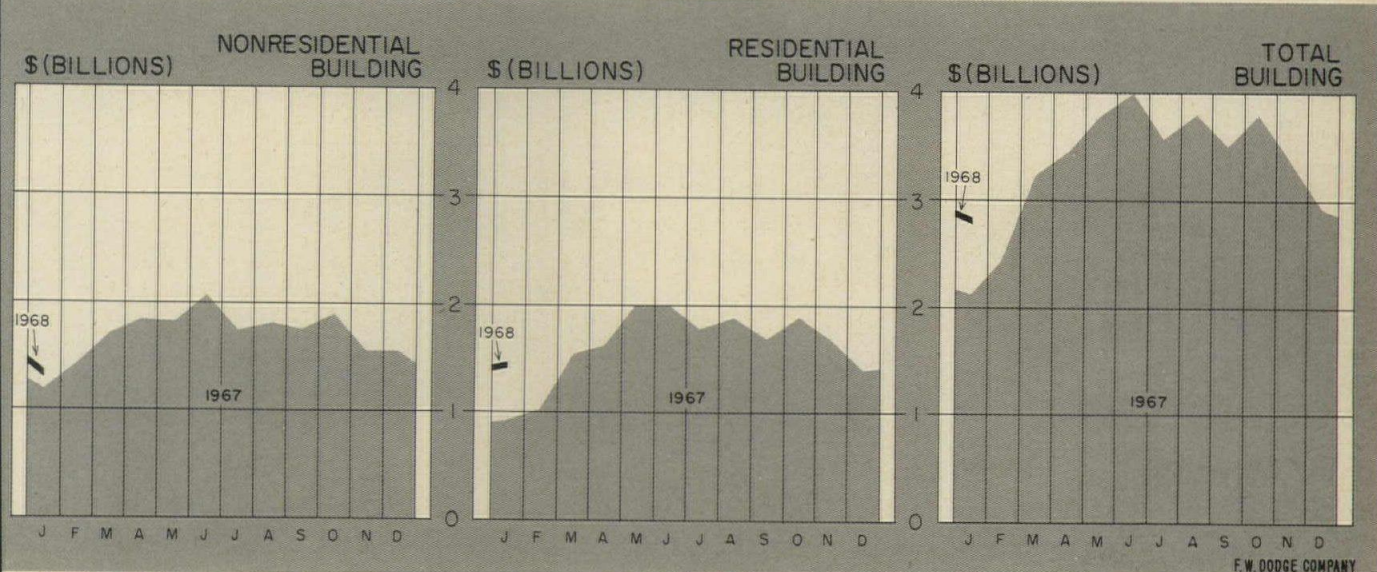
The root of the persisting problem of dilapidated housing has been migration. As very low income families left southern rural areas to settle in major eastern and mid-western cities they left behind them a large quantity of some of the worst housing in existence. Most of

these structures were abandoned and eventually eliminated.

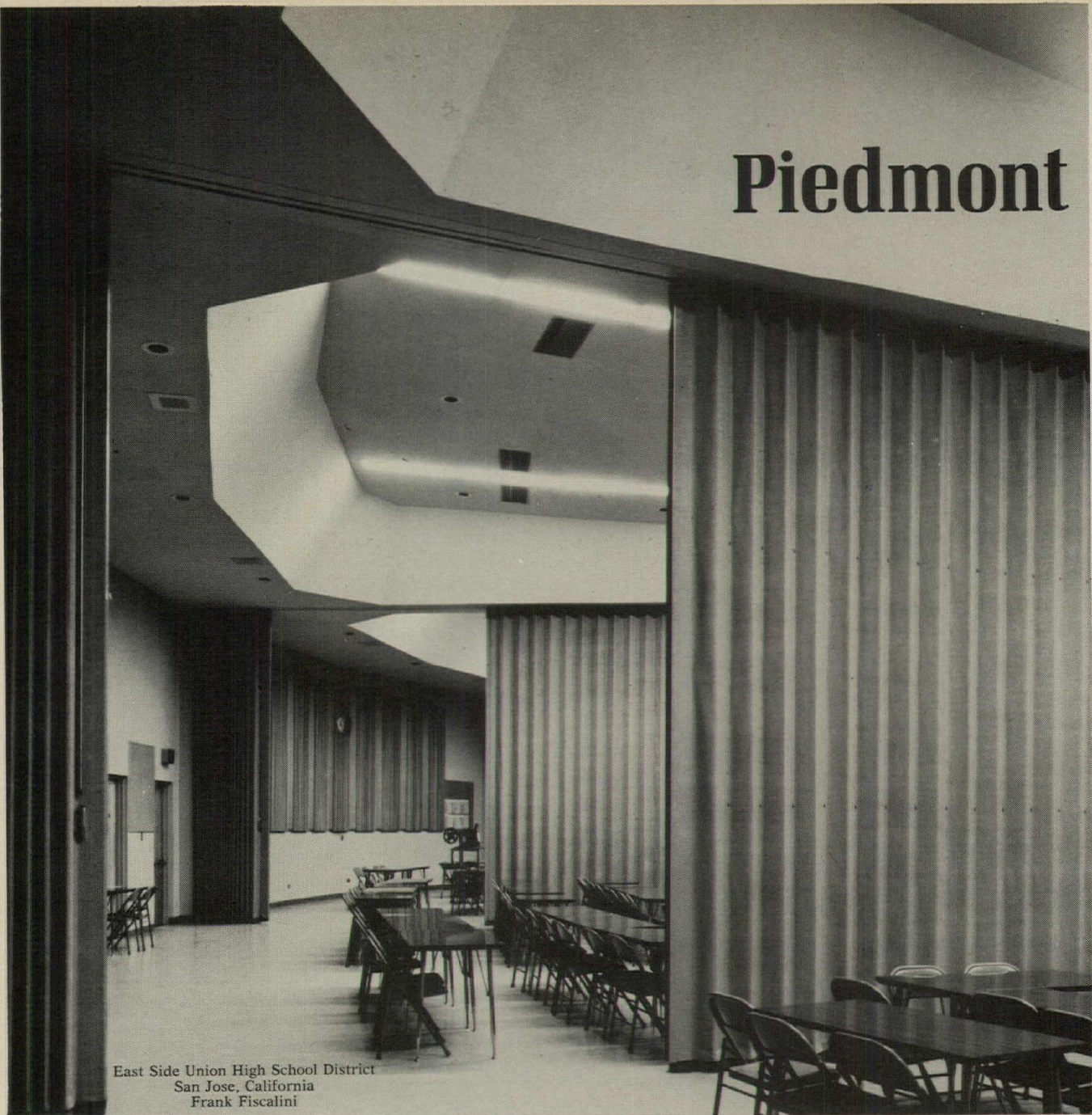
In the cities, however, much of the improvement in housing quality that came from new building was offset by the accelerated deterioration of existing housing. In some cities there has been an actual increase in the occupancy of dilapidated dwellings despite the wave of new construction since 1960.

Right now the emphasis is heavily on urban housing needs. Latest goals call for six million new low- and middle-income units to be built in the nation's metropolitan areas over the next 10 years. New programs like Rent Supplements and Model Cities have been developed to expand the limited scope of long-existing ones like public housing and urban renewal. Specially appointed Presidential committees are carefully investigating additional ways and means of meeting urban housing needs. No one could argue with the idea that new housing should have top priority among the many needs of our blighted cities. But in our earnestness to provide it, let's not lose sight of the need to preserve the still-useful urban housing that we now have.

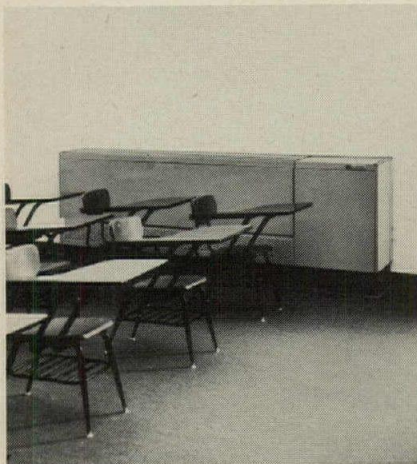
Building activity: monthly contract tabulations



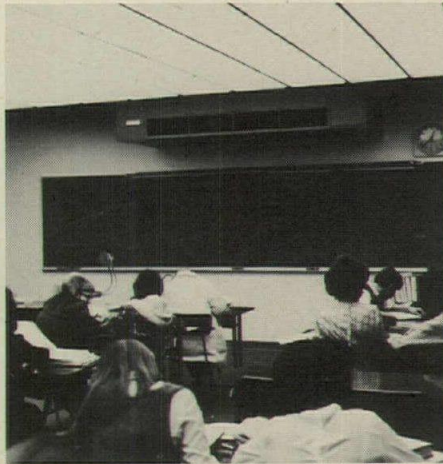
Piedmont



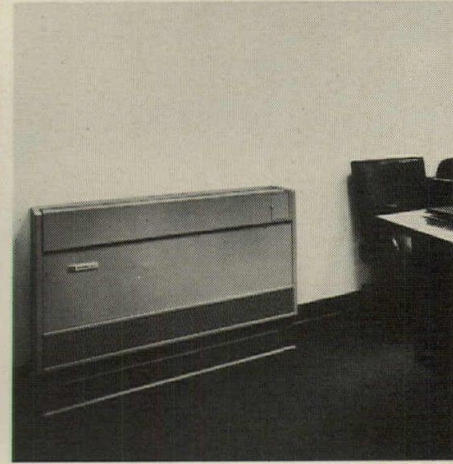
East Side Union High School District
San Jose, California
Frank Fiscalini



SC UNivent—classroom unit ventilators featuring self-contained refrigeration—are used in perimeter classrooms to provide ideal year-round thermal conditions on a room-by-room basis.



SG Ceiling unit ventilators, chosen for larger core classrooms, save floor space while they provide the desired thermal atmosphere.



A smartly-styled SC NELSON/aire terminal air conditioner with self-contained refrigeration was selected for smaller areas, such as the school's conference and faculty rooms.

Hills: a school air system with a split personality points the way to the future.

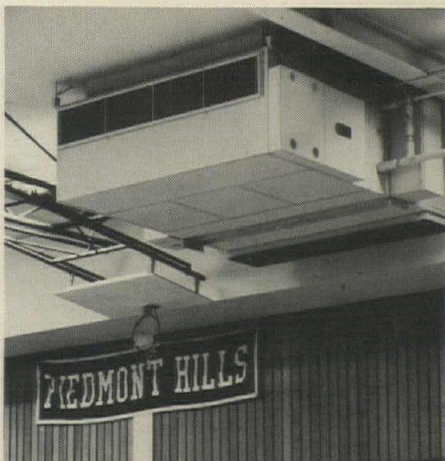
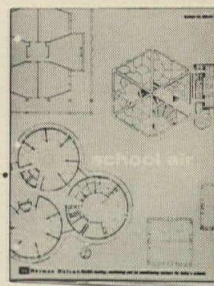
With the exception of the universal need for good classroom ventilation, virtually no two schools' "school air" problems are alike.

Innovative school planners, in the East Side Union High School District at San Jose, California, are finding they can incorporate a *variety* of heating, ventilating and air conditioning equipment and arrive at a school-air system that meets their precise needs. The Piedmont Hills High School is a perfect example of using split systems to cope with the school's exact thermal needs.

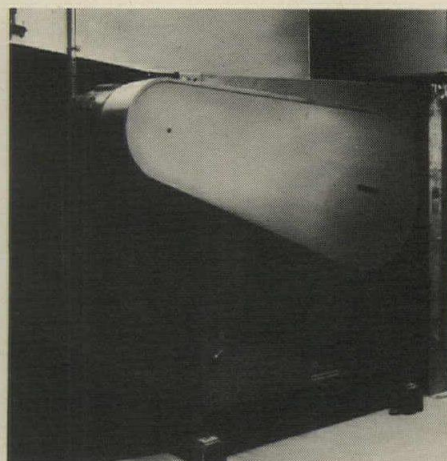
AAF Herman Nelson unit ventilators with self-contained refrigeration are used in exterior classrooms. A central station air handling unit provides thermal control for the school's hexagonal central building that houses the library, flexible team-teaching rooms (large picture upper left), and other multi-purpose rooms. SC NELSON/aire self-contained air conditioners with electric resistance heating were used in selected administrative offices . . . ceiling unit ventilators in core classrooms . . . and an AAF Audivent ultra-quiet unit ventilator in the auditorium.

Result: A well-integrated, balanced atmosphere for teaching and learning. When your school needs thermal "analysis," why not call us? We're specialists who carry a *complete* line of school air equipment. In the meantime, let us send you FREE a copy of our booklet, SCHOOL AIR, which gives you a more detailed idea of how AAF system planning can help you.

AAF Herman Nelson
SCHOOL PRODUCTS DIVISION



A ceiling-mounted specialized unit ventilator, the AAF Audivent, supplies the large volumes of air needed in the school's auditorium.



This central station air handling unit is mounted in the ceiling above the team teaching rooms shown upper left, and provides a central source of heat and cooling through ductwork for the library and other multi-purpose rooms as well.

Please send a copy of "SCHOOL AIR" brochure.

Please have a representative call.

TO: "School Air"
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215 Central Ave. • Louisville, Ky. 40208

Name _____

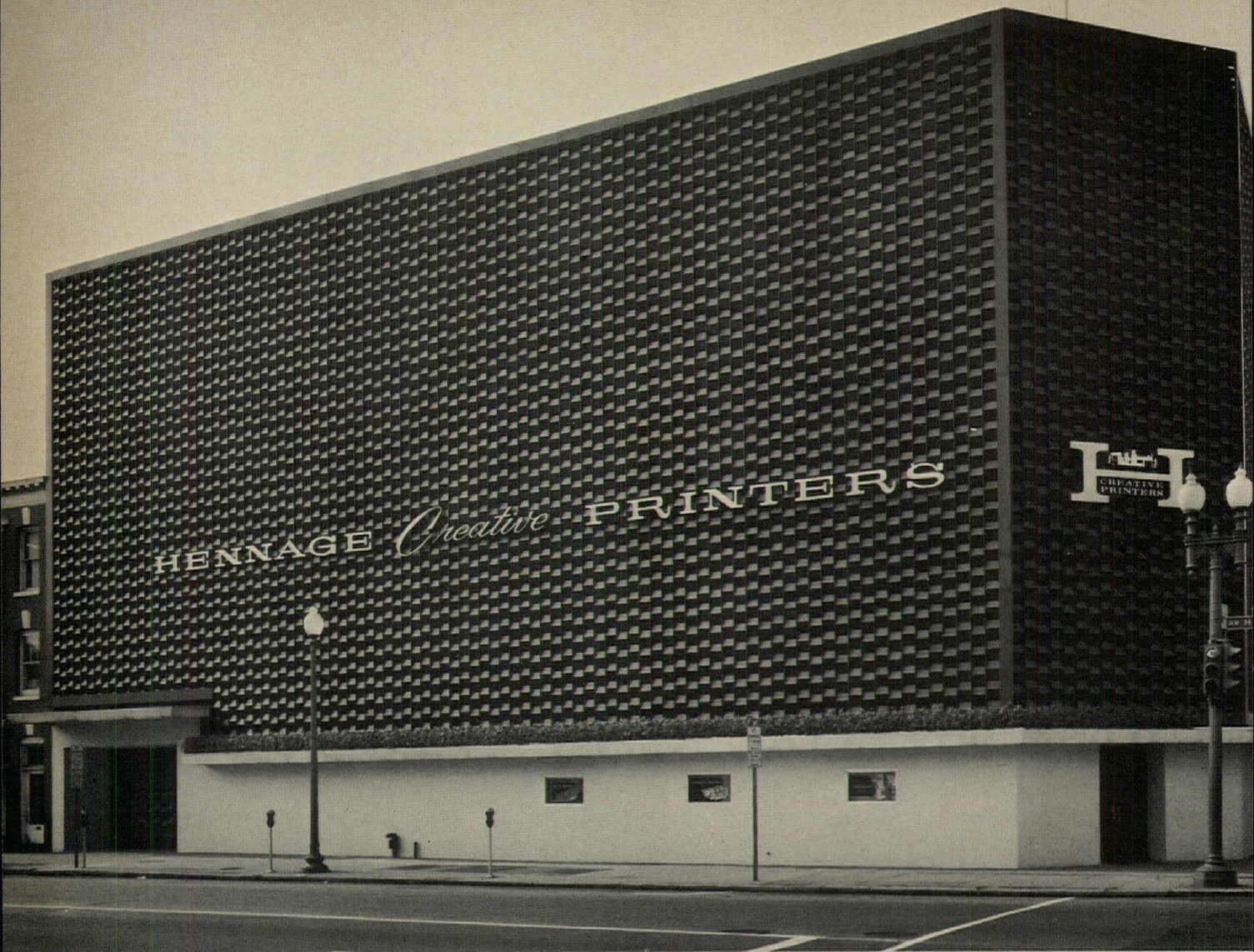
Organization _____

Address _____

City _____ State _____ ZIP _____

Title _____

For more data, circle 47 on inquiry card



ARCHITECT: S. THOMAS STATHES, A.I.A., KENSINGTON, MD.

"MONUMENTAL"—LARGE SCALE BORDEN DECOR PANEL

The aluminum facade shown on the eye-arresting Washington, D.C. building which houses Hennage Creative Printers is a special custom design, using Deca-Grid style Borden Decor Panel in one of Borden's bold new large-scale patterns known as "Monumental".

Using "T" bars for greater spans and greater strength, these large patterns allow as much flexibility in design as do the smaller versions of Deca-Grid, but add greater scope to the

architect's creative design and provide strong visual impact at greater ranges.

The facade illustrated is the result of close cooperation between Mr. Joseph Hennage, head of the printing firm, and Borden's architectural department. This new design uses structural tees at 12" o.c. and large 7" reversing tabs which give approximately 80% closure to the screen. The resultant strong shading effect nearly eliminates vision of the building behind the screen.

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Battelle's prefab study reaches debatable conclusions

Prefabricated construction in this country has never achieved the role of importance it plays in Europe. Proponents of prefabrication, both of the "component" and "packaged unit" type, see this fact as an indictment of U.S. construction practices and the building codes which enshrine them. The implication of course is that prefabrication will permit better, cheaper, or more quickly constructed buildings but that these advantages conflict with the economic interests of contractors, the building trades, and the design professions by eroding their respective roles in the construction process.

To determine if prefabrication does represent a potential economic "threat", the Building and Construction Trades Department of the AFL-CIO initiated a comprehensive study of prefabrication and its probable long-range effects on the construction industry. The results of this study, prepared by the Battelle Memorial Institute, have just been released.

Understandably, emphasis is given to the projected impact on jobs—the transference of work from job site to factory—but much of what is said (and some of the debatable conclusions) has meaning for architects, engineers, building material manufacturers, and other members of the construction industry.

Battelle concludes that a breakthrough is unlikely

The study concludes that prefabrication will make only gradual advances over the next few years. But more widespread use is not, they state, being delayed by a technological lag. Indeed, Battelle asserts that the present state of prefabrication technology is at least ten years ahead of U.S. practice. The lag is attributed to the essentially conservative structure of the industry and a reluctance on the part of the public to accept a rapid change from traditional methods. To support this conclusion they cite the numerous techniques that have been developed and are already being used in Europe, where, they estimate, industrialized building accounts for about 25 per cent of all construction.

The main problem:

"resistance to change"

Because slow public acceptance is considered to be a strong factor, Battelle doubts that the growth of prefabrication in low-rise residential buildings will be significant over the next few years. They do foresee more widespread developments in prefabrication in non-residential and high-rise apartment construction. They feel that the constraints on innovation are not so strong in this sector, primarily because consumer acceptance is less influential. In both sectors they find that the structure of the construction industry—decentralization, numerous firms, diffusion of project responsibility, present bidding procedures—inhibits the use of prefabrication.

The study cites a host

of "formidable obstacles"

Still other factors, Battelle contends, will be "formidable obstacles" to the wider use of new methods, although to a lesser degree. These are: building codes, zoning, architects, unions, transportation and capital requirements. The study is more explicit in its analysis of these factors but in terms that are frequently oversimplified, inconsistent, or outdated.

Any talk of restraints of course presupposes a movement to be constrained and some incentive for such a movement. The impetus to wider employment of prefabrication must be economic but it is in this area of analysis that the report is weakest.

Battelle does approach one side of the question. They estimate that a number of factors will influence the growth of prefabrication over the next few years. These are: labor, material and land costs, availability of labor, packaging and transportation activity. But labor shortages, they maintain, are the only current justification for the system's building approach in Europe. And, "without the government's support, the system sponsors would not have been able to survive in most of the countries."

It is undoubtedly true that these factors will increase the cost of construc-

tion over the next few years but no insight is given as to the savings that may be realized by full-scale adaption of prefabrication or if these techniques are in fact the best answer to increasing costs. Battelle points out that "it was impossible to obtain any useful cost figures during this investigation" and while "there is much cost information available . . . its validity for comparison is questionable."

This inconclusiveness concerning costs is unfortunate, particularly in light of the criticism the report levels at architects in general.

Architects come in for harsh (and mostly unjustified) criticism

For example, the study sees a potential area of conflict arising from "the construction industry's current procedure for rendering architectural fees. Since this is geared to the cost of construction, any time a substantial reduction is evoked as a result of new methods and/or techniques, the architect's fee is reduced. It will be virtually impossible", maintains Battelle, "to optimize design so long as this procedure prevails."

The conclusion which seems most unresearched (or at least outdated): "under the present construction process, the architect has to be considered as a constraint to the future growth of prefabrication. By education the architect is not oriented to systems engineering but rather to designing in terms of aesthetics, art and expressing his personality. Any change in the area of new products or methods that restricts his freedom to express, or decreases his selection of building components, is a potential 'threat' to his profession."

Architects favor prefabs that foster design flexibility

This statement would suggest that the architect is an obstacle to progress. Yet in the wider context of the report this does not seem to be the intent. For in the very next sentence it is stated that, "to date, most of the architects have readily accepted well designed preassembled components that lend themselves to design flexibility." And in the summary of the report, one major reason supporting the belief that greater advances will occur in the non-residential sector is that, "More architects will start to take advantage of the opportunities afforded to them by the preassembled and prefinished building components."

There is an apparent contradiction in these statements. In one the architect is portrayed as a "constraint" to innovation and in the others, as a receptive user of new techniques. Omitted is the

idea that many technological advances were conceived and developed by architects themselves.

A partial explanation may be found in the distinctions made among the various degrees of prefabrication, primarily between "unit" and "component" prefabrication. Because the latter permits the retention of a good degree of design flexibility, the architect is seen to favor improvements in this area. This is not the case with "unit" (totally prebuilt in the factory) prefabrication. His reluctance to accept this approach, they state ". . . is understandable since there is little architectural input required on these types of buildings."

But unfortunately the report does not always make a clear distinction when indicating how the architect acts as a "constraint" to advances in prefabrication, i.e., that he will resist the innovation of certain types, specifically "unit" prefabrication. And since the products of this approach have been frequently dull and unimaginative, there is little wonder that he has.

Unions are portrayed in milder terms

In contrast to this analysis, the role attributed to the unions is understated. For example, the report states that "to date, the unions as a whole have generally accepted prefabrication and have attempted to take advantage of its benefits, especially year around employment and better working conditions. However, certain locals have resisted specific advances with moderate success." Philadelphia door men, take notice.

To most observers, the instances of resistance by certain locals are probably more apparent than any evidence of overall general acceptance.

The study does qualify this analysis by noting that unions "will probably be cautious of changes . . . that reduce manpower and eliminate skill requirements", and they feel that ". . . the recent Supreme Court decision pertaining to work preservation can be a definite deterrent to advances in prefabrication if the union wishes to take advantage of this ruling". Battelle projects that an equal number of trades will benefit from advances in prefabrication as will be adversely affected.

It might be concluded therefore that unions will develop more flexible attitudes toward prefabrication in the light of these findings. As for the architect, he will find that the report is quite informative as to the techniques and practices of prefabrication in Europe. But some hard questions on the economics of prefabrication still remain unanswered.

INDEXES AND INDICATORS

William H. Edgerton
 Manager Dodge Building Cost Services
 F. W. Dodge service

APRIL 1968 BUILDING COST INDEXES

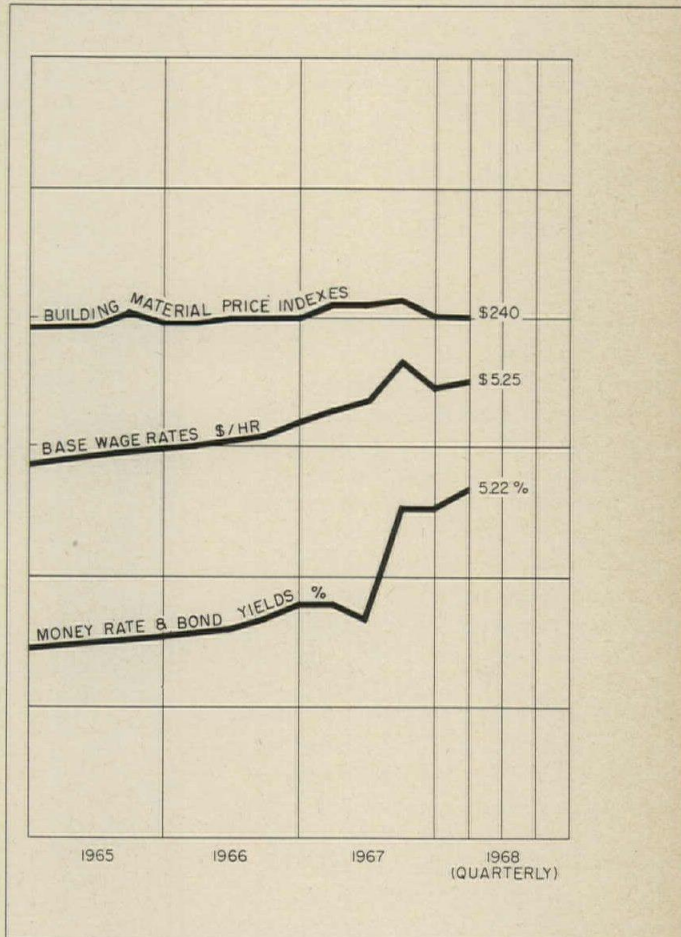
1941 averages for each city = 100.0

| Metropolitan area | Cost differential | Current Dow Index | | % change year ago |
|-------------------|-------------------|-------------------|--------------------------|-------------------|
| | | residential | non-res. res. & non-res. | |
| U.S. Average | 8.5 | 288.2 | 306.2 | +3.01 |
| Atlanta | 7.2 | 330.0 | 350.1 | +3.97 |
| Baltimore | 7.9 | 289.9 | 308.3 | +4.30 |
| Birmingham | 7.3 | 278.5 | 282.4 | +2.05 |
| Boston | 8.5 | 258.0 | 273.1 | +2.43 |
| Chicago | 8.9 | 317.9 | 334.3 | +2.81 |
| Cincinnati | 8.8 | 278.0 | 295.5 | +4.56 |
| Cleveland | 9.6 | 302.2 | 321.2 | +5.50 |
| Dallas | 7.5 | 266.3 | 275.0 | +1.76 |
| Denver | 8.1 | 290.3 | 308.5 | +2.45 |
| Detroit | 9.2 | 298.1 | 312.9 | +3.76 |
| Kansas City | 8.2 | 256.3 | 271.2 | +2.57 |
| Los Angeles | 8.3 | 291.7 | 319.2 | +2.77 |
| Miami | 8.4 | 282.8 | 296.9 | +3.42 |
| Minneapolis | 8.7 | 285.6 | 303.6 | +2.74 |
| New Orleans | 7.8 | 259.0 | 274.4 | +3.16 |
| New York | 10.0 | 300.7 | 323.5 | +2.10 |
| Philadelphia | 8.5 | 282.7 | 296.8 | +2.16 |
| Pittsburgh | 9.1 | 269.4 | 286.4 | +3.97 |
| St. Louis | 9.1 | 281.1 | 297.8 | +1.17 |
| San Francisco | 8.5 | 370.6 | 405.5 | +2.14 |
| Seattle | 8.4 | 263.0 | 293.9 | +3.51 |

Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second; if the cost differential of one city (8.0) divided by that of a second (8.0) equals 125%, then costs in the first city are higher than costs in the second. Also, costs in the second city are 80% of those of the first (8.0 ÷ 10.00 = 80%) or they are 20% lower in the second city.

The information presented here indicates trends of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). Information is included on past and present costs, and future costs can be projected by analysis of cost trends.

ECONOMIC INDICATORS



HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES

1941 average for each city = 100.00

| Metropolitan area | 1967 (Quarterly) | | | | | | | 1968 (Quarterly) | | | | | | | |
|-------------------|------------------|-------|-------|-------|-------|-------|-------|------------------|-------|-------|-------|-------|---|---|---|
| | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1st | 2nd | 3rd | 4th | | | | |
| U.S. Average | 259.2 | 264.6 | 266.8 | 273.4 | 279.3 | 284.9 | 286.6 | 292.7 | 293.7 | 295.5 | 297.5 | 301.5 | — | — | — |
| Atlanta | 289.0 | 294.7 | 298.2 | 305.7 | 313.7 | 321.5 | 329.8 | 332.4 | 333.4 | 334.6 | 335.7 | 345.6 | — | — | — |
| Baltimore | 272.6 | 269.9 | 271.8 | 275.5 | 280.6 | 285.7 | 290.9 | 290.4 | 291.5 | 294.9 | 295.8 | 302.9 | — | — | — |
| Birmingham | 240.2 | 249.9 | 250.0 | 256.3 | 260.9 | 265.6 | 270.7 | 272.9 | 274.0 | 273.8 | 274.7 | 278.5 | — | — | — |
| Boston | 232.8 | 237.5 | 239.8 | 244.1 | 252.1 | 257.8 | 262.0 | 262.9 | 263.9 | 264.8 | 265.7 | 269.3 | — | — | — |
| Chicago | 284.2 | 289.9 | 292.0 | 301.0 | 306.6 | 311.7 | 320.4 | 320.4 | 321.3 | 327.3 | 328.4 | 329.4 | — | — | — |
| Cincinnati | 255.0 | 257.6 | 258.8 | 263.9 | 269.5 | 274.0 | 278.3 | 278.7 | 279.6 | 287.3 | 288.2 | 291.4 | — | — | — |
| Cleveland | 263.1 | 265.7 | 268.5 | 275.8 | 283.0 | 292.3 | 300.7 | 300.0 | 301.3 | 302.6 | 303.7 | 316.5 | — | — | — |
| Dallas | 239.9 | 244.7 | 246.9 | 253.0 | 256.4 | 260.8 | 266.9 | 267.6 | 268.5 | 269.5 | 270.4 | 272.3 | — | — | — |
| Denver | 257.9 | 270.9 | 274.9 | 282.5 | 287.3 | 294.0 | 297.5 | 297.6 | 298.5 | 304.0 | 305.1 | 304.9 | — | — | — |
| Detroit | 259.5 | 264.7 | 265.9 | 272.2 | 277.7 | 284.7 | 296.9 | 298.0 | 299.1 | 300.1 | 301.2 | 309.2 | — | — | — |
| Kansas City | 237.1 | 237.1 | 240.1 | 247.8 | 250.5 | 256.4 | 261.0 | 260.8 | 261.9 | 263.4 | 264.3 | 267.5 | — | — | — |
| Los Angeles | 263.6 | 274.3 | 276.3 | 282.5 | 288.2 | 297.1 | 302.7 | 303.6 | 304.7 | 309.0 | 310.1 | 312.0 | — | — | — |
| Miami | 256.5 | 259.1 | 260.3 | 269.3 | 274.4 | 277.5 | 284.0 | 283.4 | 284.2 | 285.2 | 286.1 | 293.1 | — | — | — |
| Minneapolis | 260.0 | 267.9 | 269.0 | 275.3 | 282.4 | 285.0 | 289.4 | 292.0 | 293.1 | 299.2 | 300.2 | 300.0 | — | — | — |
| New Orleans | 242.3 | 244.7 | 245.1 | 248.3 | 249.9 | 256.3 | 259.8 | 262.3 | 263.4 | 266.7 | 267.6 | 270.6 | — | — | — |
| New Orleans | 242.3 | 244.7 | 245.1 | 248.3 | 249.9 | 256.3 | 259.8 | 309.4 | 310.6 | 312.5 | 313.6 | 315.9 | — | — | — |
| Philadelphia | 262.8 | 265.4 | 265.2 | 271.2 | 275.2 | 280.8 | 286.6 | 287.1 | 288.1 | 292.8 | 293.7 | 293.3 | — | — | — |
| Pittsburgh | 243.5 | 250.9 | 251.8 | 258.2 | 263.8 | 267.0 | 271.7 | 272.2 | 273.1 | 274.1 | 275.0 | 283.0 | — | — | — |
| St. Louis | 251.9 | 256.9 | 255.4 | 263.4 | 272.1 | 280.9 | 288.3 | 290.3 | 291.3 | 292.3 | 293.2 | 293.7 | — | — | — |
| San Francisco | 327.5 | 337.4 | 343.3 | 352.4 | 365.4 | 368.6 | 386.0 | 388.1 | 389.2 | 389.6 | 390.8 | 396.4 | — | — | — |
| Seattle | 237.4 | 247.0 | 252.5 | 260.6 | 266.6 | 268.9 | 275.0 | 276.5 | 277.5 | 282.6 | 283.5 | 286.2 | — | — | — |

Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (150.0) divided by the index for a second period (100.0) equals 150%, the costs in

the one period are 50% higher than the costs in the other. Also, second period costs are 66.7% of those in the first period (100.0 ÷ 150.0 = 66.7%) or they are 33.3% lower in the second period.

continued from page 74

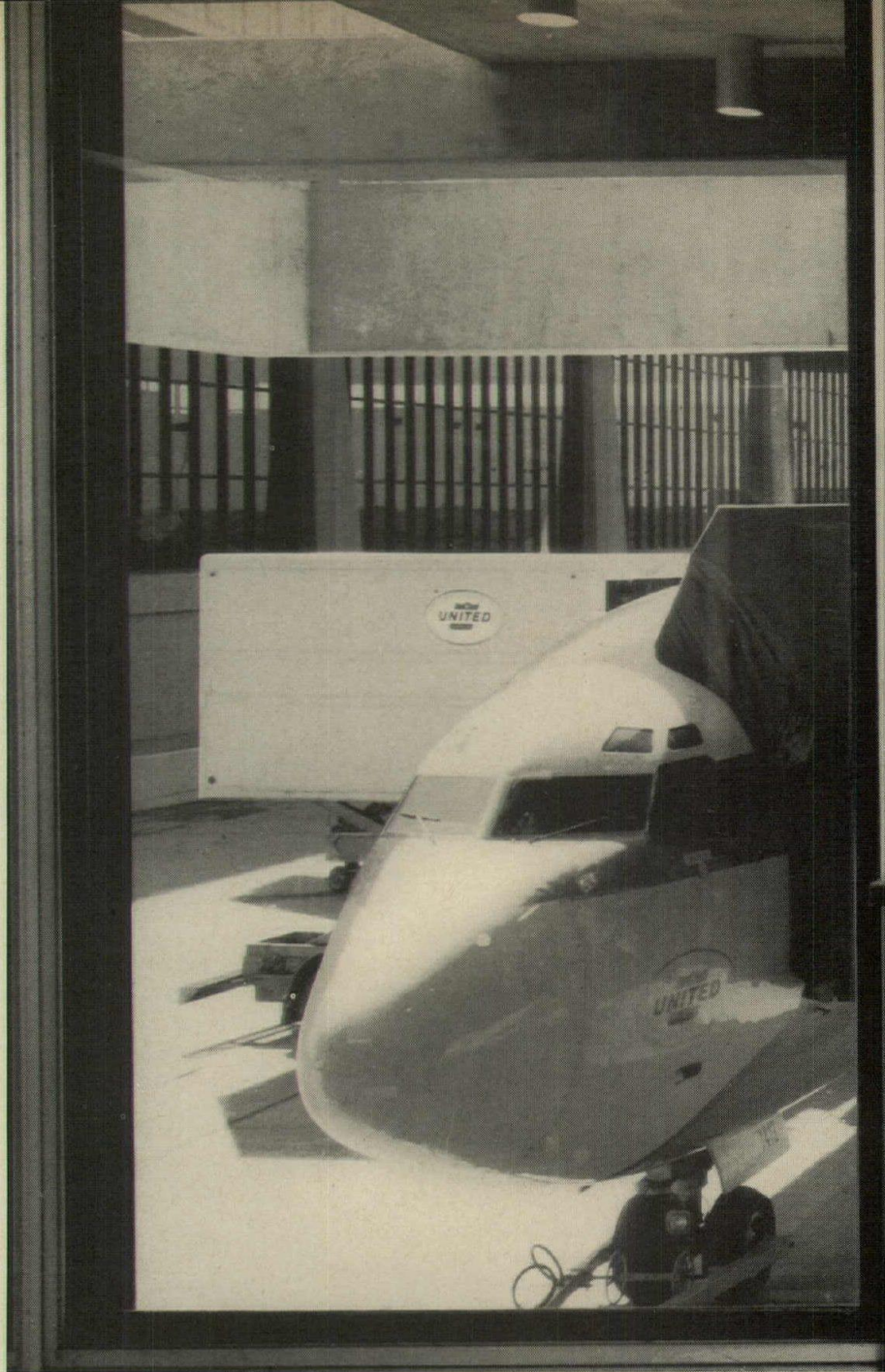
that new technology can not cut costs; research is unlikely to find cheap, new materials; and that labor practices are not likely to be changed in any way. In this day and age, with \$24-billion spent in 1967 on research and development in the United States, it is hard to conceive that the building industry would not benefit from scientific study, application of industrialized methods, and utilization of sophisticated technological systems. Certainly the advantages of research and development have been obviously demonstrated in virtually every other industry, why would it not be successful in the building industry?

Granting that savings in construction cost of the shell of a building would only insignificantly affect the total sale price, as you point out, we still must strive for technological breakthroughs for numerous other reasons. New techniques of production are necessary to circumvent the increasing qualitative and quantitative shortages of labor, to facilitate the introduction of improved quality control, to reverse the trend of reduced rates of production, and if not to lower construction costs, at least to inhibit their continuing upward trend. While new materials may never be developed that are "cheaper" than wood, brick, cement, and gypsum, as you stated, research and development could conceivably yield new materials that would be effectively cheaper by virtue of reduced "in-place" costs and low maintenance factors.

While the currently used conventional systems of construction have served us well in the past, they are not compatible with today's labor conditions, spiraling costs of required materials and building products, the need for increased rates of production, and emphasis on quality, durability, convenience, and comfort. Current construction practices continually increase in cost. New construction systems will decrease in cost as they are improved and as the volume of application is increased. As the old systems increase in cost and the new systems decrease, the gap between them becomes smaller until eventually it is bridged and the new systems have to emerge as the best and most economical methods for shelter construction.

Bearing these factors in mind, it is our ambitious intention to initiate a comprehensive research program leading to the development and application of low-cost construction to the production of low income housing. We intend to give particular attention to the achievement of cost saving design; the utilization of

more letters on page 96

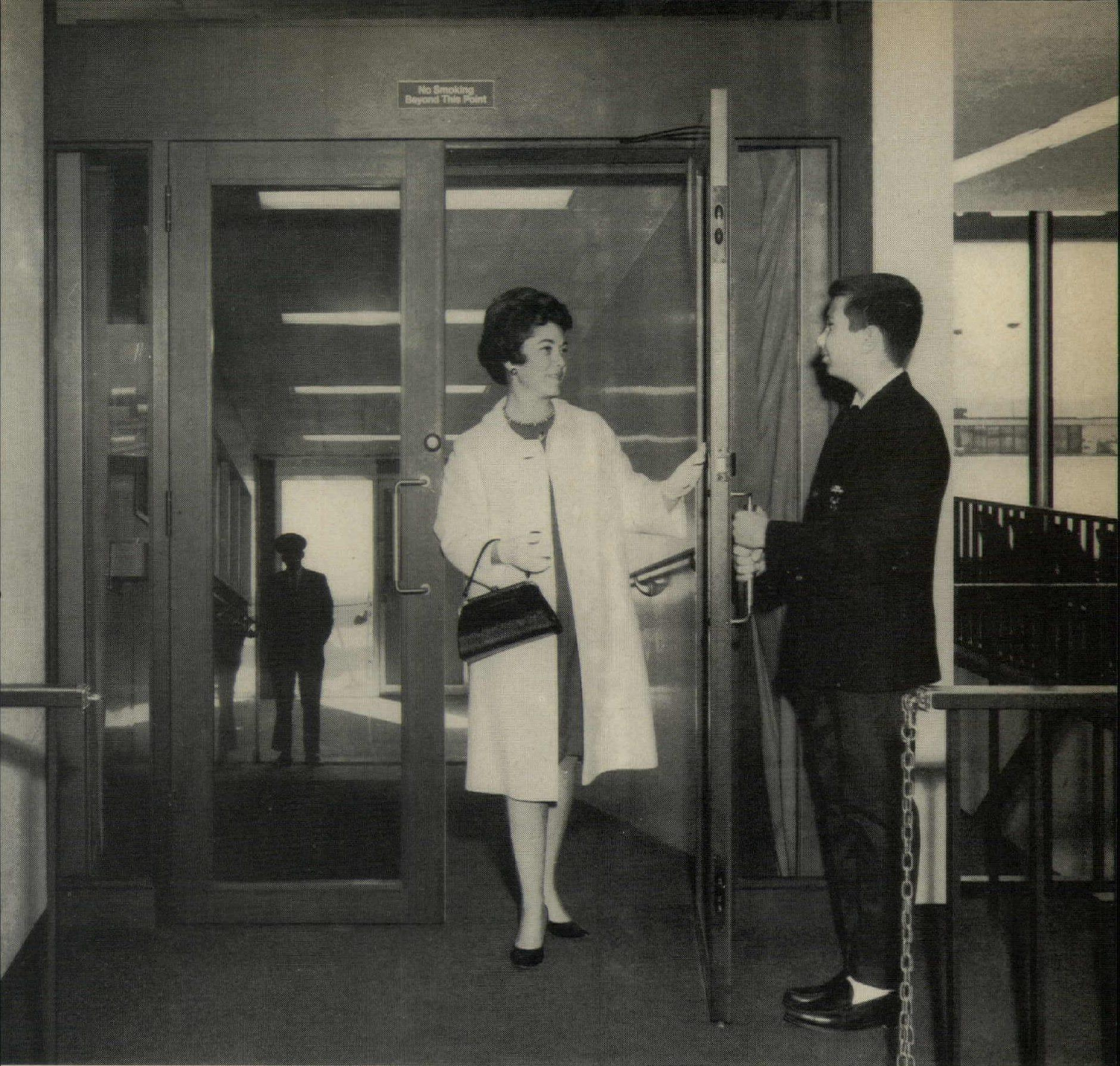


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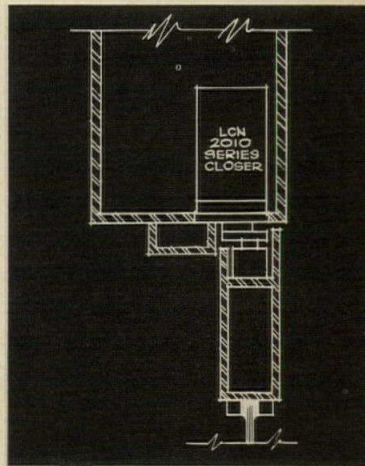
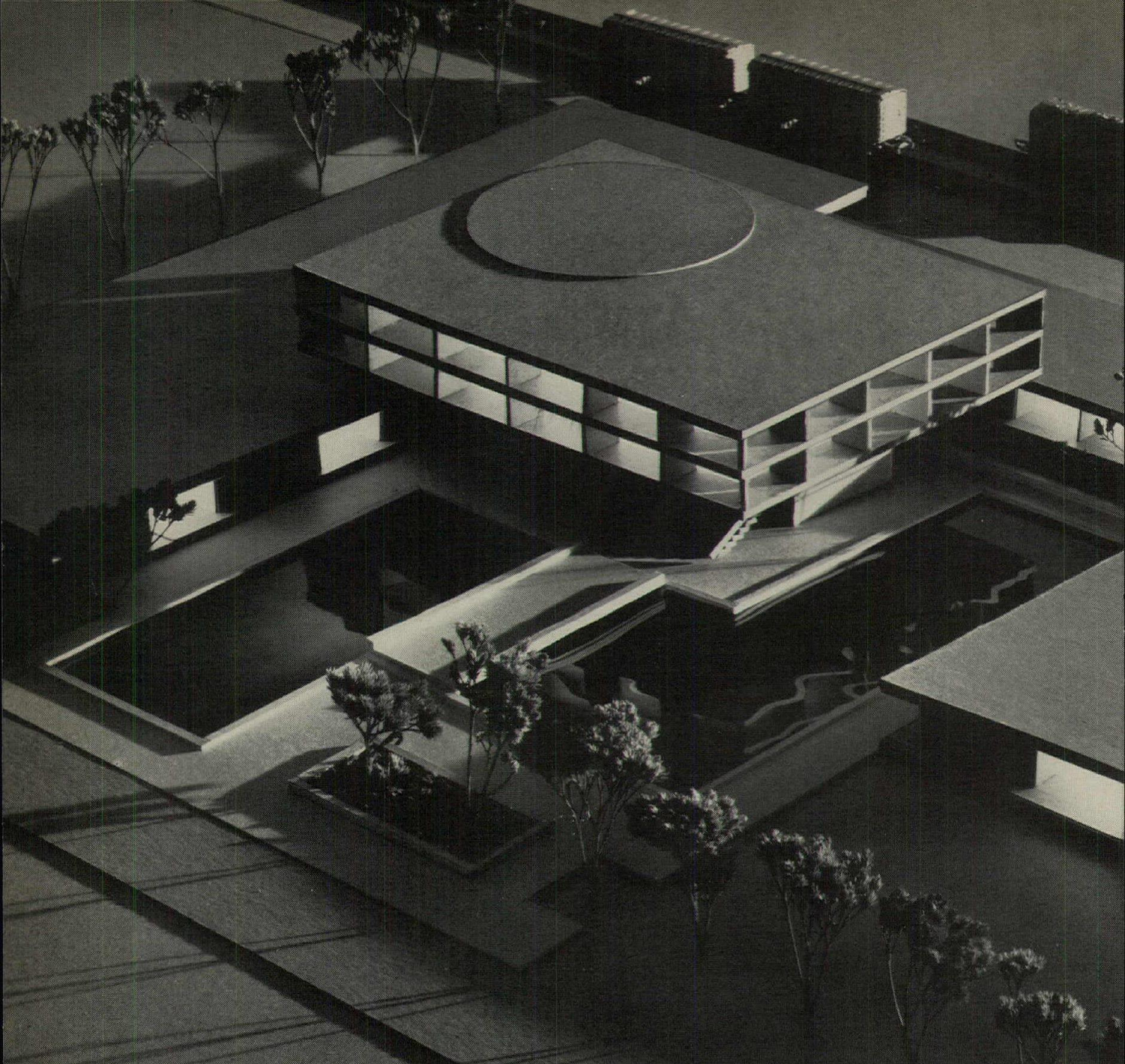


PHOTO: Detroit Metropolitan Airport, Detroit, Michigan; Architects: Smith, Hinchman & Grylls Associates, Inc.

468



OBSOLETE

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Legal pitfalls flagged in book for architects and engineers

LEGAL PITFALLS IN ARCHITECTURE, ENGINEERING AND BUILDING CONSTRUCTION. By Nathan Walker and Theodor K. Rohdenburg. McGraw-Hill Book Company, 330 West 42 Street, New York, N.Y. 10036. xxvii/270 pp. \$11.95.

In litigation, common words take on an inflexible precision of special meaning that can leave an architect or engineer with unexpected burdens of liability. The word *including*, for example, is a limiting word in such contract language as: "... acts beyond the architect's control, including fire and flood." On the basis of such phrasing, courts have found architects liable for acts other than those following the word *including*. The phrase should have read: "... including but not limited to ..."

That is perhaps the simplest sort of trap contained in this book on legal pitfalls, but it illustrates the authors' unusual sensitivity to language barriers and special meanings. The book is not written in "legalese" but conveys the sense of precision and awareness of legal thinking that can be even more useful than the wealth of detail as to court interpretations that it does in fact contain.

Information is easy to find. Chapters contain logical categories of pitfalls, and virtually every numbered point is listed in a 10-page table of contents backed up by subject index. Part two offers special forms of contract provisions.

Attorney Nathan Walker has specialized for many years in the law of architecture, engineering and construction, serving as counsel to the New York chapters of A.I.A. and C.S.I. and to the Architectural League of New York. Theodor Rohdenburg, a practicing architect, is associate professor of architecture at Columbia University.

At the risk of losing in condensation some of the exact comprehensiveness which is a virtue of this book, the following extracts of Chapter 1 may provide

a useful summary of some of the pitfalls in the owner-architect agreement.

Professional responsibilities in general. Each professional (architect and engineer) has an obligation to protect the interests of a larger segment of society than that made up of his clients. In addition, he must be guided by an inflexible sense of fairness in his relationships with contractors and with other professionals and must provide society in general with buildings which are safe and stable.

In the preparation of his plans and specifications, and in the supervision of the job as well, if either architect or engineer has the requisite skill and does not use it, he is chargeable with negligence; and if he does not possess the requisite standard of skill, he is liable because of the lack of it. However, these professionals are not held to absolute accuracy in performing their professional duties. They may be charged with the consequence of errors only where such errors have occurred for want of reasonable skill or reasonable diligence.

In soliciting work, or in accepting a commission, each professional represents: 1) that he possesses the requisite skill; 2) that he will use reasonable care and diligence; 3) that he will be guided by his best judgment; 4) that he will be honest. Should he fail in any one of these areas, and injury to person or property results, he may be liable under the law for any damages sustained.

The professional's most obvious and immediate duty, of course, is that established by contract or law. The client has a right to rely on his professional adviser to provide a building which will merit the standards set by the community in order to safeguard life, health, and property. Although the appearance of his buildings is a matter of primary concern to the architect, he does not guarantee to produce a design endowed with beauty,

nor one which will be in accord with his clients' esthetic tastes.

Importance of written agreement. The right of the architect or engineer to compensation presupposes that there is an express or implied contract between him and his client. Ordinarily, the contract may be verbal. However, in certain jurisdictions, (and under some circumstances) the contract must be in writing. The writing is merely evidence of verbal understanding, as a note is evidence of a debt; the indebtedness exists quite apart and independent of the note itself.

Client may assert that services were free. The principal reason for insisting upon a written contract is that an oral agreement may not leave both parties with the same understanding of its terms.

One young architect arranged to provide plans and specifications without having a written agreement. Before construction was completed, a difficulty arose, and the architect was discharged. Forced to sue for payment for preparing plans and specifications, the architect testified that his client had expressly agreed to pay him well for his services. However, the client testified that the architect had solicited the job, saying that it would be a great help to him in starting out in his business, and had offered to do all the architectural work without any charge whatsoever. Though the architect was awarded judgment, there can be no assurance that under comparable circumstances the same favorable result would follow. Each case rests upon its own factual foundation.

Death of client may bar proof of oral agreement. Another important reason for a written agreement is that in certain jurisdictions, a partisan witness is prohibited from giving his version of a transaction with another who is deceased, since when death silences one, the law will silence the other.

Danger in starting work before contract is signed. A more common mistake, also resulting in a loss to the architect, is to start work on a commission before an agreement has been signed. A single instance, except in detail, is typical of many: An architect sent a written agreement to a prospective client for a large residence, meanwhile starting work on the basis of an oral authorization. Although several reminders failed to evoke more than promises to return the signed agreement "as soon as I find time," the architect completed the preliminary drawings and asked for a conference to discuss them. The client requested deferment of the conference, pleading his wife's illness. It finally appeared that the wife's illness was more severe than had been thought, and the client decided not to build at all—and not to pay his architect, as no written agreement had been signed. Such instances occur so frequently that the architect is well advised to say, "No, I have not started sketches yet, but I am anxious to start. Will you please send back the signed agreement so that we may begin to study this interesting project?"

Necessity for stipulating compensation. Where there has been no request for services, the architect or engineer may not recover compensation unless his services are accepted. One who officiously prepares sketches in the hope of securing employment is regarded in the eyes of the law as being a mere volunteer who may not claim compensation unless his services subsequently are accepted by the client. A request by an owner for services, followed by the rendition of the services, creates an obligation to pay. In the absence of any understanding regarding the specific amount of his compensation, the law will imply an obligation on the part of the client to pay the reasonable value of his services. If the reasonable value of his services is disputed, he would be obliged to entrust the duty of appraising the value of these services to the sagacity of a judge, jury, or arbitrator.

Extra compensation for additional services may be challenged. Is an architect entitled to additional compensation for extra services when his contract is silent on this point? At least one court has denied such compensation under these circumstances. In another case the architect was awarded further compensation for extra services despite the absence of any express agreement to compensate him therefor. The architect agreed to prepare plans and specifications for a building and superintend its construction for a stipulated sum. After accepting plans and specifications prepared under this agreement, the client ordered new plans for an entirely different building on the same

site, but on completion of this extra work, refused to pay the architect more than the original sum stipulated in the contract. In this case, the court held that the architect was entitled to additional compensation for the extra work.

In order to avoid any question as to whether the changes involve merely an alternative of the original design, it is apparent that the contract always should include a provision for additional compensation to cover changes of any nature. The standard form of agreement contains such a protective provision.

Unenforceability of agreement to agree. The profession's written agreement with amount to be paid or the measure of his client should state specifically the compensation. If perchance it is not reasonably possible to agree in advance upon the compensation, it should never be stated that "the fee shall be such sum as the parties hereafter shall agree upon," for such an understanding is nothing more than an agreement to agree and usually is considered so indefinite that it is legally incapable of enforcement. But an agreement which is silent as to the amount of compensation is considered in exactly the same light as one which expressly fixes the standard of measure as the reasonable value of the professional man's services, and thus is enforceable.

Agreements with corporations and public bodies. Even a written agreement clearly indicating a meeting of minds will not always insure the payment of compensation. Particular care should be taken when entering into a contract with a private corporation. First, the legal right of the corporation to enter into contract should be verified. Corporations are formed for certain specific purposes, and legally they may do only those things which are authorized by their charters. Second, even though it is determined that the corporation has a legal right to make a certain contract, the right of an officer to sign for the corporation should be verified, since in the final analysis it is the directors who normally must approve contracts. Given the opportunity, the professional should obtain a certificate from the secretary or assistant secretary of the corporation, certifying that the officer signing the contract on its behalf was authorized to do so by the directors. If this is not possible, every effort should be made to obtain the signature of the president, rather than a lower ranking officer, since it is usually presumed that the president of a corporation has the authority to enter into ordinary contracts on its behalf with express authority of the directors.

Similarly, caution should be exercised when entering into a contract with a public body; agreements which do not

come within its charter or enabling act may not be enforced by law, and often the expenditure of public funds must be approved by the voters.

The foregoing sampling from *Legal Pitfalls* covers less than half of chapters one which goes on to take up such topics as maximum-cost construction agreements, accuracy of estimates, determining compensation, extra work, etc. Spack allows only the following list of "don'ts" concluding chapter 1 (there are eight such lists concluding other chapters):

1. Don't neglect to have a written agreement signed by the client before beginning work or undertaking additional or extra work.

2. Don't fail to state in the agreement the amount of the professional compensation, or the method of computing it.

3. Don't enter into a contract with a private corporation, or a public body without verifying its right to make the contract and the authority of the signing officer to represent it.

4. Don't use unqualified contract words or phrases to which your client may attribute a meaning other than the one you intend.

5. Don't permit a cost limitation to be established in your agreement, either expressly or by implication, unless you are willing to accept the responsibilities involved.

6. Don't fail to restrict your obligation when it is necessary to include in the contract a reference to cost limitation, but it is recognized that you are not to suffer any penalties if actual cost exceeds the limitation.

7. Don't guarantee construction costs or permit a guarantee to be implied.

8. Don't overlook the importance of neutralizing unfair contract stipulations making your compensation subject to conditions beyond your control.

9. Don't select a basis for the professional's compensation which is inappropriate to the project at hand.

10. Don't fail to include specific rights and remedies to safeguard you against possible default in payment of compensation, especially in contracting with a foreign client.

11. Don't fail to be definite regarding compensation for prolonged contract administration.

12. Don't neglect to provide for appropriate payments to the professional in the event of abandonment of the project.

13. Don't fail to exercise the most advantageous remedy in case the client repudiates the agreement.

14. Don't forget that, unless specifically anticipated, a change in the membership of a partnership may dissolve an existing agreement with a client.

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continued from page

building materials that offer a proper balance between unit cost, in-place cost and maintenance factors; and the application of labor saving methods of material handling and fabrication techniques. The resultant design and structural systems will be integrated with dwelling techniques to provide an aesthetically appealing, economically feasible low-income shelter/environmental package that with proper management can be of lasting sociological value.

Stuart E. Penner
Delta Building Corp.
Virginia Beach, Virginia

Park Village: greenery and space

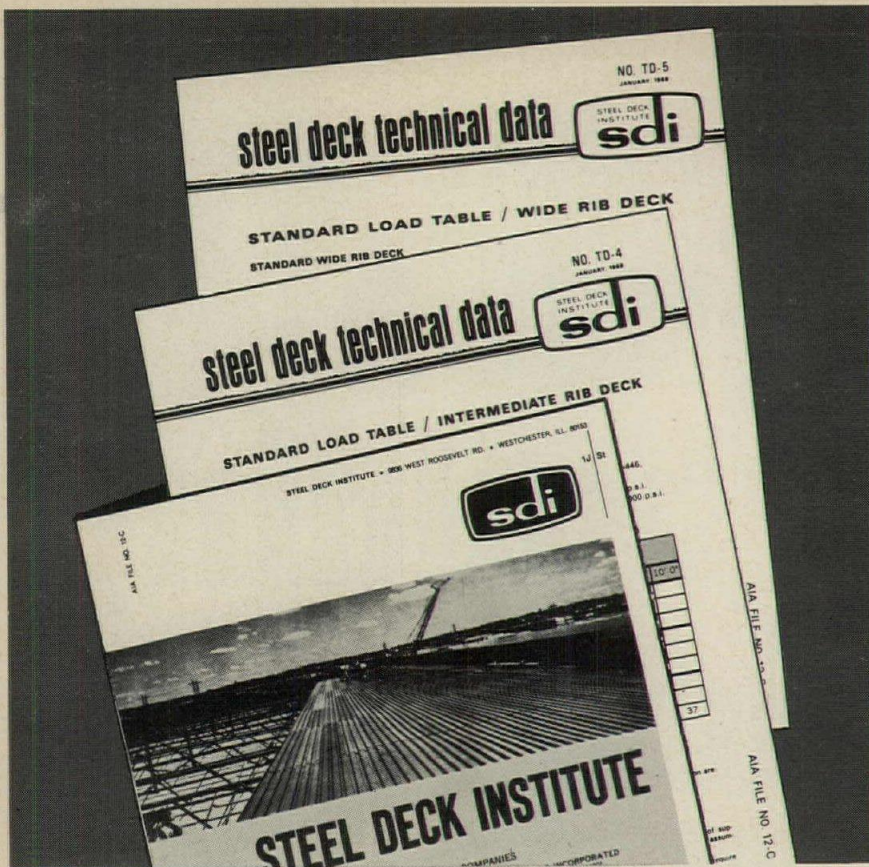
Beneficial Standard Life Insurance Company has taken a large positive step providing low cost housing via Park Village. We acquired this seventy acre housing development in the changing community of Compton, which practically borders Watts, immediately following the riots, and it was done with private capital. We rehabilitated 480 dwelling units and contemplated redevelopment with about double the number of units when we were stopped by the high cost of long-term financing. We are now pursuing the development under F.H.A. 221(d)(3) because it is only through this below market interest rate offered under this program that we will be able to provide the low cost housing which is needed.

But equally important, if not more so than the economics, is the operation and management of a housing community such as Park Village. It requires people of dedication who are willing to become involved in the community and in its problems with its people, not merely someone in an administrative capacity. We have worked long and hard providing as many activities as we could for all our residents. In addition, we carefully screen applicants so that we do not introduce undesirable elements into our community. We have tried in every way to gain acceptance in the minority community, and that we have accomplished this is attested to by the absence of vandalism and destruction which many developments experience.

Our residents at Park Village are happy with us; we are delighted with them and look forward to redeveloping our site to accommodate many hundreds of additional such families who can enjoy living amidst greenery and open space.

Gerald I. Mallen
Assistant Vice President
Beneficial Standard Life Insurance Company
Los Angeles, California

more letters on page



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continued from page 96

consin takes steps

would like to share some of the ideas on projects that we have underway to delineate the role that Wisconsin government plays in strengthening our cities.

Perhaps one of the most exciting bills passed by the 1967 Wisconsin Legislature was one which creates an indemnity fund to provide reinsurance for state insurance written to cover loans made to finance multiple-unit and other housing in congested urban areas. This law is designed to encourage private contractors in lending institutions to improve slum area housing. In addition, our approach to improved housing for low-income families builds on the partnership between the free enterprise system and government. At the same time, the Wisconsin Legislature has enabled Milwaukee to create a housing and urban development authority. The project and programs of this authority will be in slum clearance, blight elimination, urban renewal and housing projects.

Concerning direct aids, we have recently earmarked over a million dollars for special projects within Milwaukee's urban core. Likewise Wisconsin has developed a new Department of Local Affairs and Development to coordinate state, local and federal programs.

In addition we are moving forward to assist the urban schools. Legislation passed this year has enabled the Milwaukee school board to raise the limit on the maximum mill tax rate for school operations. At the same time, an Emergency School Aid grant of over \$4.7 million has been provided to the Milwaukee school district in an attempt to bolster and improve the educational programs of the urban core.

I might point out that I have personally contacted approximately 300 Milwaukee area industries and business organizations requesting them to make more job opportunities available to the unemployed in the inner area. It was heartening for me to learn that many of these employers had been working through the Urban League and other groups and had already been alerted to a number of programs such as Jobs Now, on-the-job training, Skills Bank, Job Fairs, Youth Opportunities Centers, etc. I am encouraged by industry and business support for these many programs which not only provide people for employment but also help them get jobs and upgrade their skills on the job, making them eligible for promotions and substantial living wage increases.

Warren P. Knowles
Governor
The State of Wisconsin

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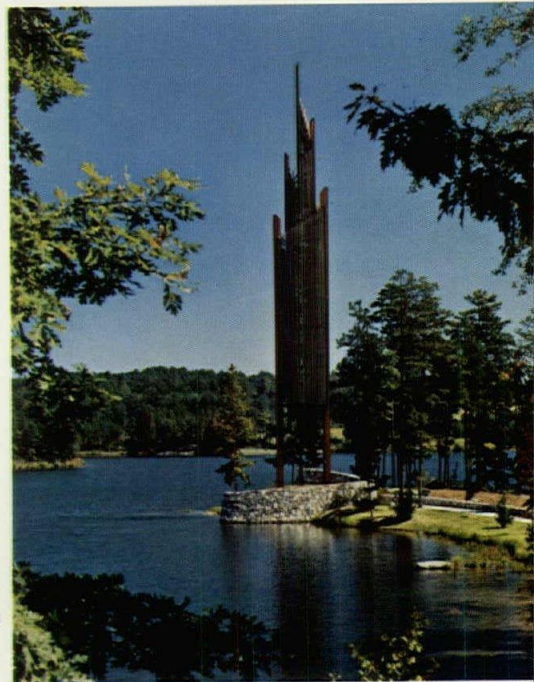


Washington & Lee High School Gymnasium
Montross, Virginia

“The main body of the building is very finely designed. The exterior reveals its purpose and is a wonderful expression of what happens in the building. The result is an extraordinarily honest design.”

Carillon
Stone Mountain, Georgia

“The Carillon is appealing—it suggests a baroque organ and seems a suitable expression of the purpose of the building. It fits nicely into its setting, and the color that is achieved by the exposed ‘weathering’ steel will contribute to its effectiveness. The materials, steel and wood louvers, have been left in their natural form; they will age well together. This is really an attractive piece of architectural sculpture.”



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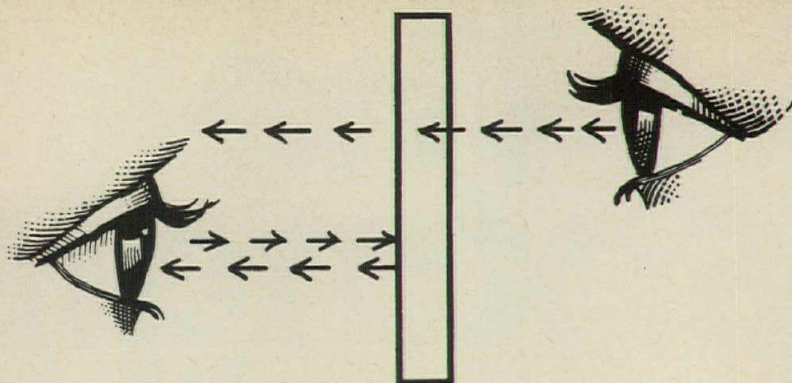
And, although many architects insist that it looks like a fine hand-split wood shake, it isn't. It's fire safe and won't rot, warp, shrink or split. It's truly a new concept in roofing. It combines the deep sculptured beauty of a shake and the long life of a high quality asphalt shingle. That's why many people call it "The shangle."

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The architectural firm of **Phelps Barnum and Son** was recently reorganized, with **William Milo Barnum** assuming the role of principal administrator and chief design. The new firm, **William Milo Barnum Associates**, continues at its present offices at 250 Park Avenue, New York. **Phelps Barnum** continues as a partner in the firm.

John D. Caproni, A.I.A. has joined the staff of **Stone, Marraccini & Patton**, San Francisco architect-planners.

Alva R. Dittrick has been appointed Executive Vice President of the **Research Council of the Great Cities Program for School Improvement**, Chicago.

Alvin Fingado & Associates, Architects announce the acquisition of the Oakland, California firm of **Alvin Fingado & George T. Kern, Architects**. **V. L. Hall** and **Norman D. Tilley, A.I.A.** remain with the successor firm in charge of production and design, respectively.

Frederick G. Frost, Jr., F.A.I.A. and **A. Corwin Frost, A.I.A.** have announced the formation of a partnership. The new firm, **Frost Associates**, continues its practice at 30 East 42nd Street, New York.

Arthur D. Greenfield, A.I.A., Marvin K. Geasler, A.I.A., and Ray E. Cumrill, A.I.A., have been made partners of the New York based architectural firm **Sharp & Handren**. The firm's name is now **Handren, Sharp and Associates**.

Norman K. Brown, John M. Healy, Richard W. Miller and Eugene R. Wilkerson are now associate partners in the Springfield, Illinois consulting engineering firm, **Walter E. Hanson Company**.

Akio Itamura is now **Director of Interior Design** for **William L. Pereira & Associates**, architects and planners of Corona del Mar and Los Angeles.

Deeter Ritchey Sippel Architects have appointed **Aristides J. Millas** as associate in the firm, directing urban design and planning.

Robert H. Levine has been appointed Senior Associate Member of the **Perkins and Will Partnership**, architectural firm of Washington, Chicago, and White Plains, New York.

Ratcliff, Slama, Cadwalader, Architects, announce that **Donald T. Kamoto, Architect**, and **Peter Gray Scott, Architect**, are now associates of the firm.

Ben L. Stahlheber has joined **Sylvester R. Shemitz & Associates, Lighting Consultants** of New Haven, Connecticut. **Stahlheber** was formerly with **Clark, Dickson & Associates, Consulting Engineers**.

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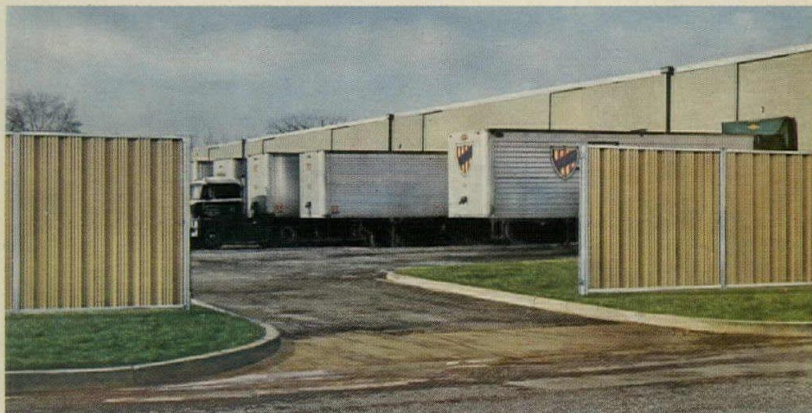
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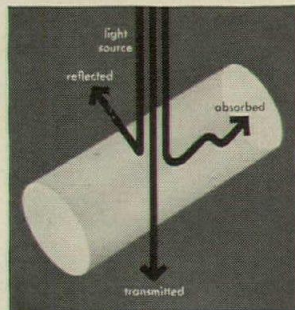
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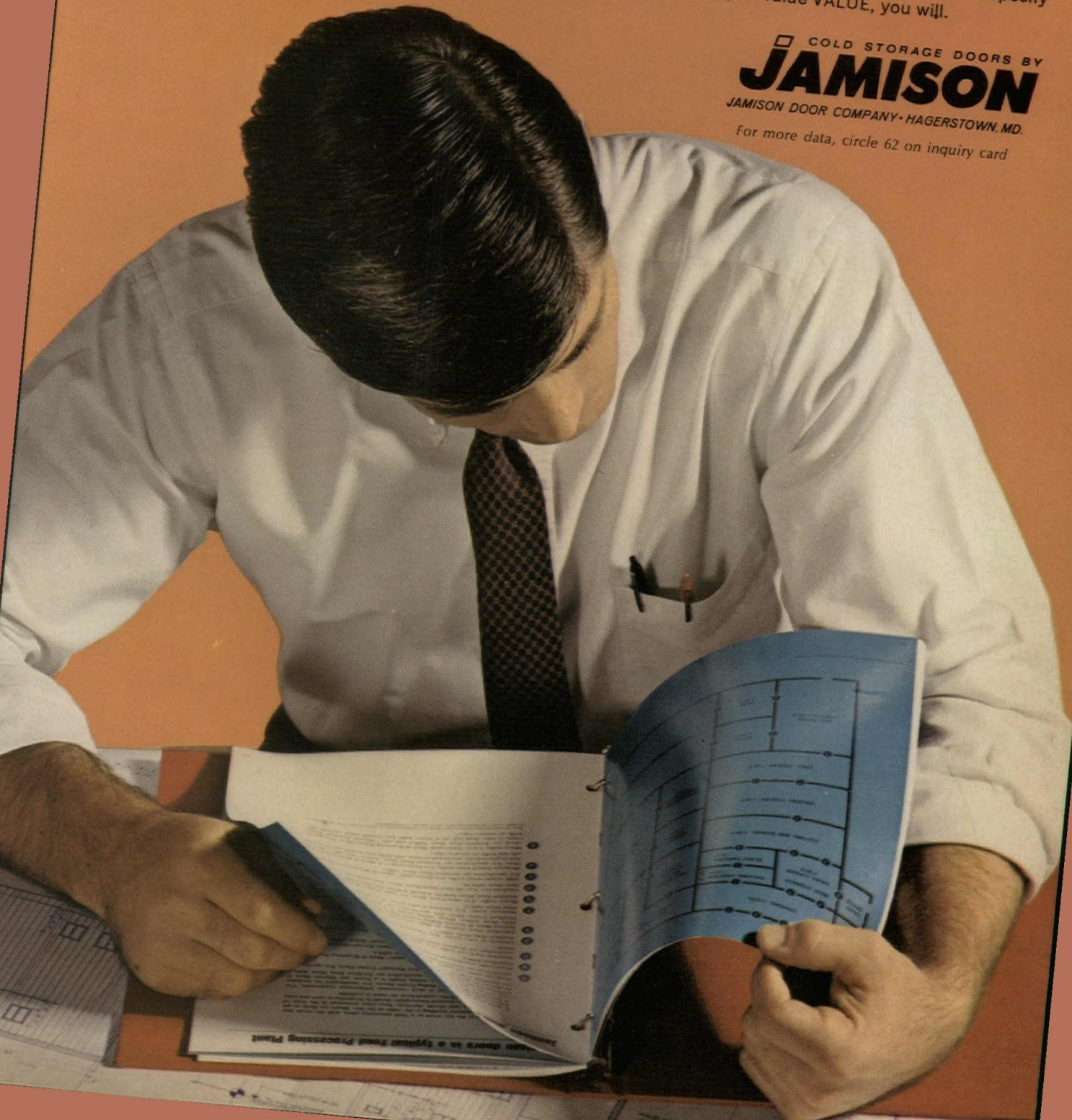
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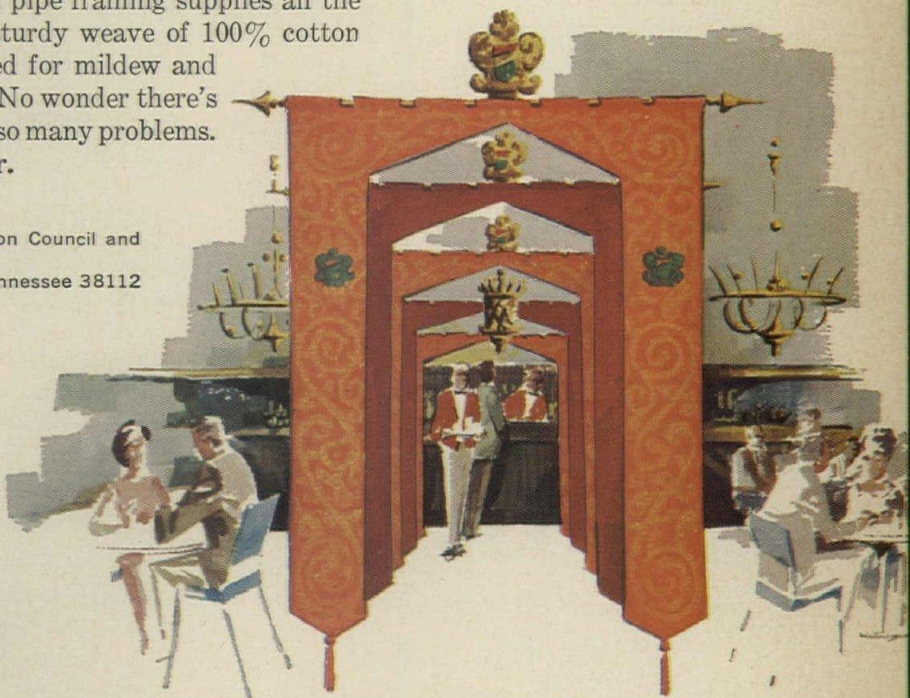
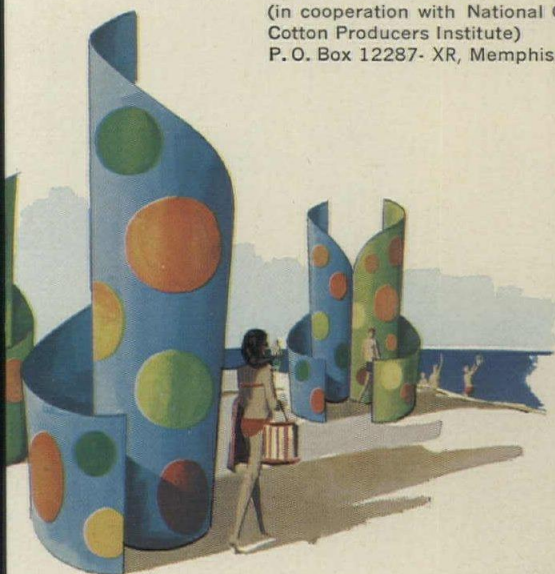
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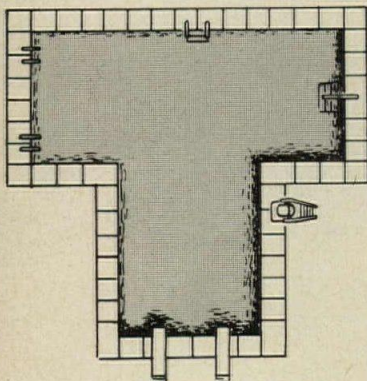
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continued from page 116

Raymond M. Stapert, A.I.A., Herman J. Pratt, A.I.A. and George W. Sprau, A.I.A. announce a change in their firm name to **Stapert-Pratt & Sprau, Inc., Architects**. The firm, formerly **Stapert-Pratt-Bulthuis & Sprau, Inc.**, is located at 410 W. Walnut St., Kalamazoo, Michigan.

Thomas E. Stanley, Dallas-based architects and engineers, have appointed **Deane Manning, Bill Barnett and Orville Summey** as associates.

Lee Karney, Architect, is now an associate in the firm **Van Bourg/Nakamura & Associates**, architects and planners of Berkeley, California.

Waldron & Dietz, Architects, announce the withdrawal of **Robert H. Dietz** from the firm. The practice continues, under the name **Waldron & Pomeroy, Architects**, at 215 Eighth Avenue North, Seattle.

NEW ADDRESSES

Henry J. Campbell, Jr. and Associates, Consulting Engineers, 9 Northern Boulevard, Greenvale, New York 11548. The firm's Suffolk office remains 2025 Brentwood Road, Brentwood, New York.

Stanley M. Brent, A.I.A., and Associates, 11950 San Vicente Boulevard, Los Angeles.

Peter Flack, Consulting Engineers, 100 Allens Creek Road, Rochester, New York 14618. The New York City office remains at 45 West 34th Street.

David Hiat, P.E., Consulting Engineer, 112 W. 42nd St., New York 10036.

Gale A. Hill & Associates, Architects, Creve Coeur Bank Building, 11901 Olive Boulevard, St. Louis 63141.

A. M. Kinney Associates, Inc., Architects and Engineers, 4747 Dempster Street, Skokie, Illinois 60076.

Morton L. Levy, Jr., A.I.A., Architect, 3461 W. Alabama, Houston 77027.

Muller, London & Snyder, Architects, 155 East State Street, Westport, Connecticut 06880.

New York Chapter A.I.A., 20 West 40th Street, New York 10018.

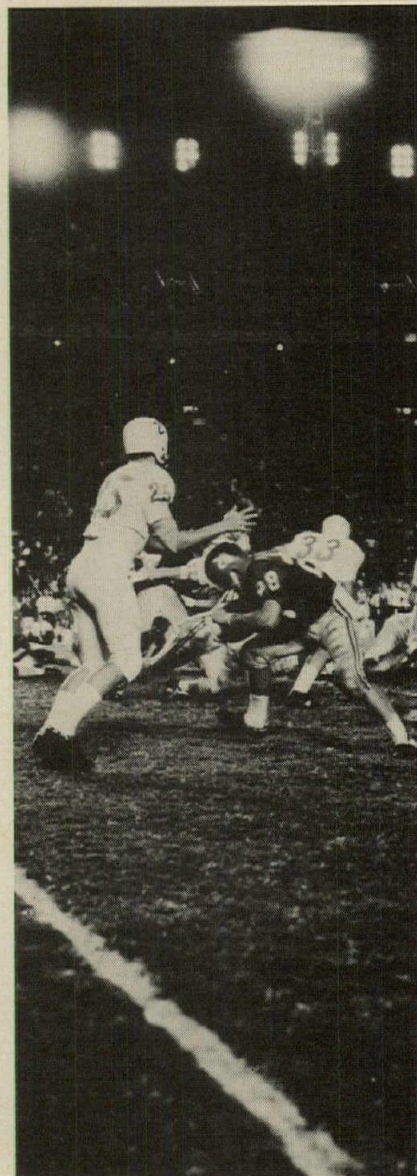
Pisani & Falco Associates, Architects and Planning Consultants, 33 West 54th Street, New York City 10019.

Schupack & Associates, Consulting Structural and Civil Engineers, 2701 Summer Street, Stamford, Connecticut 06905.

L. E. Spellman and Associates, Inc., Architects, 11715 Administration Drive, Westport Business Campus, St. Louis County, Missouri 63141.

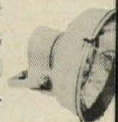
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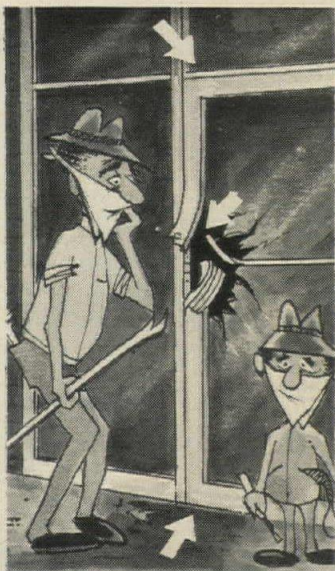
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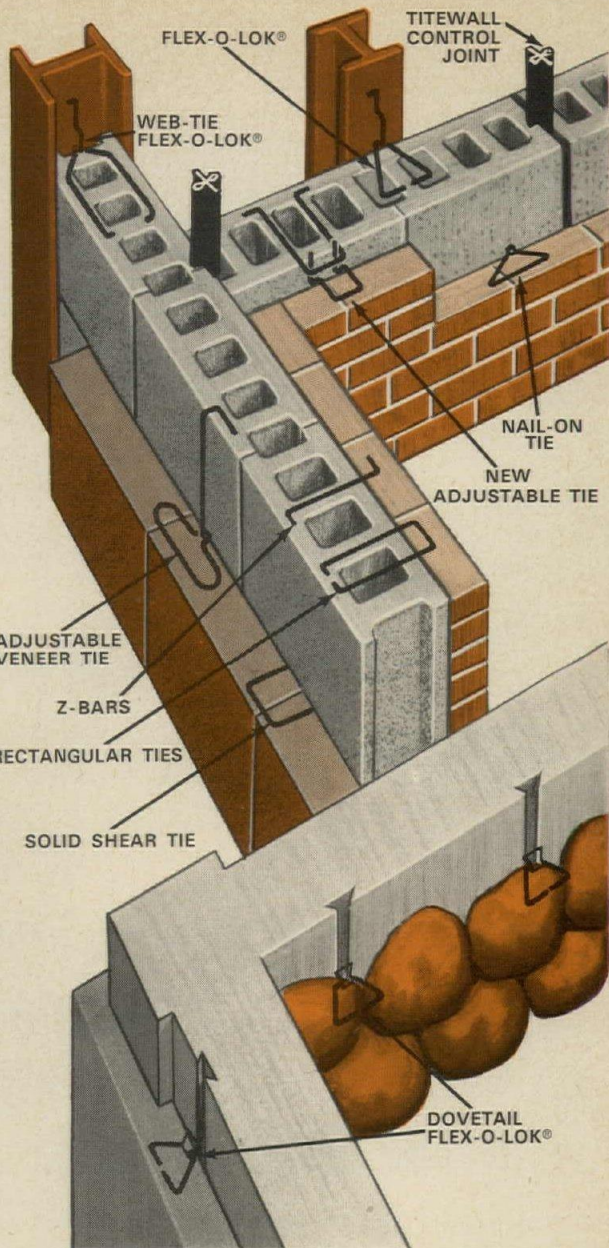


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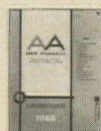
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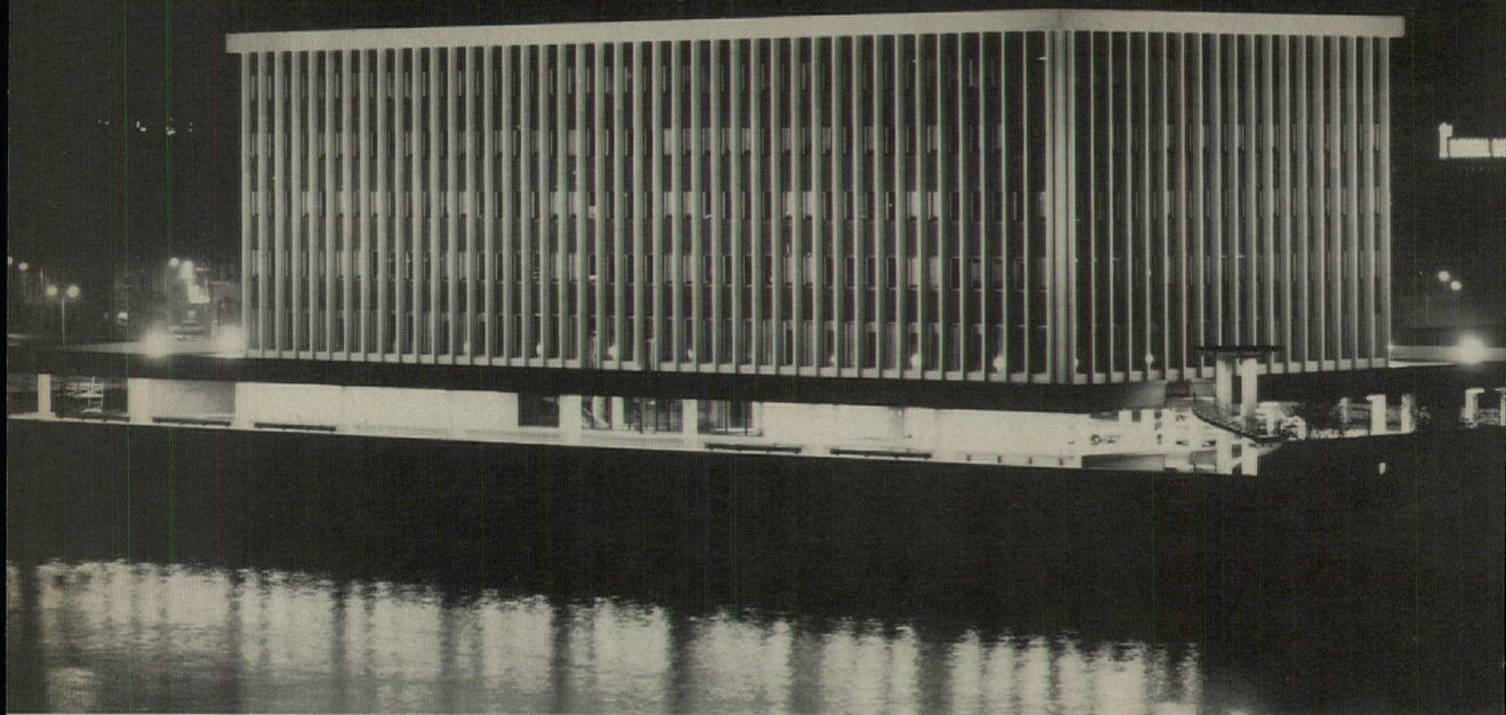
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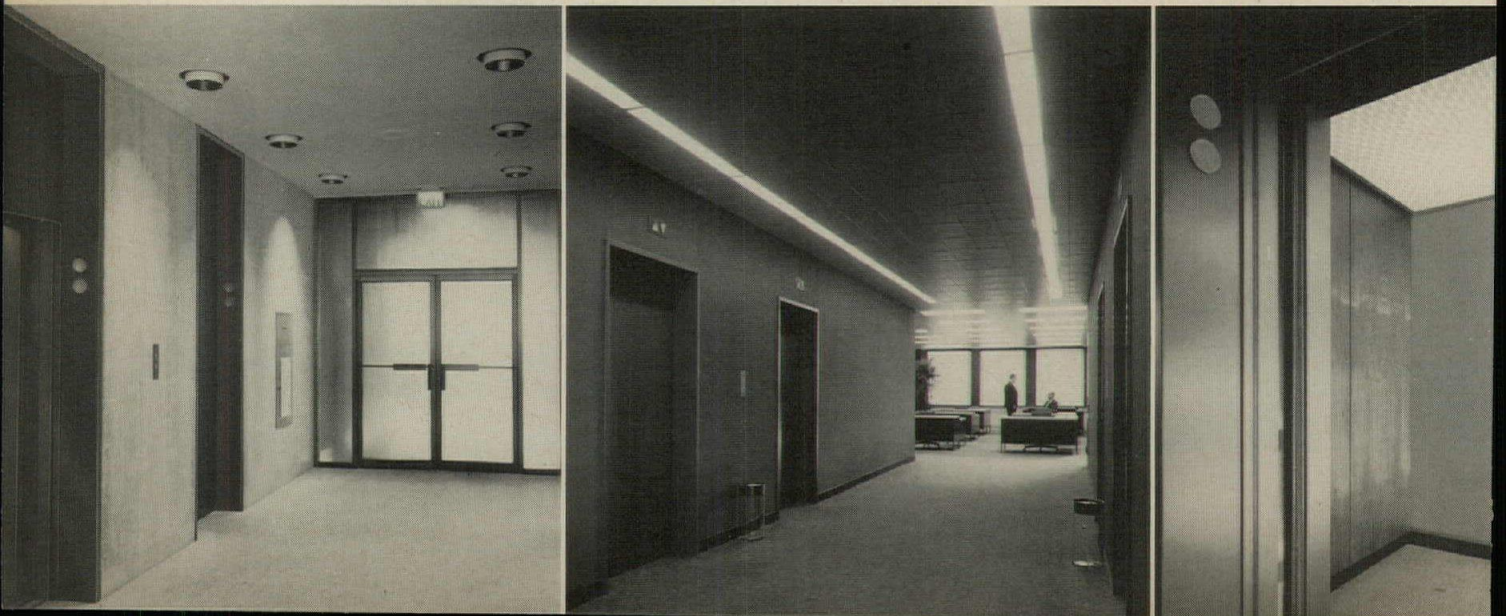
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urethane in building

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Thin-wall urethane insulation cuts electric heat costs, increases room size, keeps apartments comfortable

A savings of 10% in forecast power requirements was realized in a new, all-electric, air-conditioned, 72,000 sq ft apartment building in Akron, Ohio last summer.

The high insulating ability of rigid urethane foam which was used on the building's masonry bearing walls is credited with reducing the cooling costs, making possible thinner exterior walls that added up to 10 sq ft to each apartment and contributing to the overall comfort of tenants.

Irving Botnick, owner-builder of Hampshire House, the 8-story, 65-unit luxury apartment house, said that the 1"-thick urethane foam insulation provided the same thermal resistance as 2-4" of other standard insulating materials.

Electric heating and cooling is used in Hampshire House, Mr. Botnick said, for several reasons: 1) The system made possible savings of 35% of the initial cost of any conventional heating and cooling system, 2) The space normally required for a boiler room is utilized for other purposes, 3) Operating on one electric meter, Hampshire House buys the electricity required for lighting and other purposes at a lower unit cost because of the volume rates available to all-electric users and 4) The heating and cooling system is clean, easy to maintain and provides year-round comfort.

Power consumed for lighting and cooling from July 1 to September 30, 1967, the peak cooling season, was 166,000 kwh at a cost of \$2994.87 or about 10% less than the \$3322.40 estimated for this 3-month period by Ohio Edison Co., prior to occupancy.

The cooling system was so effective, the owner-builder said, that not once during the summer was it necessary to turn on the air conditioning for the lobby and the first-floor office.

The exterior walls at Hampshire House consist of 4" brick on 8" cement blocks. The 1"-thick urethane boardstock was placed against the blocks, furred in place by 1" x 2" furring strips. The furring was installed over the joints at 4' intervals, then covered by 5/8" wallboard attached to the wood furring.

The walls were designed with a "U" factor of 0.10; the urethane has a k factor rating of 0.15 @ 75°F mean and an R thermal resistance, per inch thickness, of 6.67.

"The installed cost of the urethane foam insulation was slightly less than other materials," Mr. Botnick said.

Total installed cost of 1"-thick urethane foam



Savings made possible by use of urethane foam boardstock in luxury apartment house began at the construction stage, promise to pile up year after year as urethane's excellent insulating ability reduces consumption of electric power.

boardstock, 1" x 2" wood furring and 5/8" wallboard was \$.45 per sq ft. A closed-cell material with extremely low (.9 perm rating) moisture vapor permeability, the rigid urethane boardstock required no special vapor barrier, such as would be needed with vermiculite and other insulating materials.

"We always are ahead when we can handle one material instead of two," the owner-builder said. Further savings were realized because a much smaller bulk quantity of insulation was required with urethane, and this resulted in reduced handling and shipping costs. About 21,000 sq ft of urethane boardstock, in 4' x 8' sheets, was used.

"Aside from the various savings realized," Mr. Botnick said, "the greatest satisfaction is that tenants have been pleased with the efficiently operating, comfortable air-conditioning. We expect the same reaction during the heating season.

"If we had used conventional insulating material there would have been a heat transfer through the walls," Mr. Botnick said. "But there is little or no heat loss with urethane. Another factor contributing to the perfect heat seal we obtained is that we were able to insulate to the very top of the joints which cannot be done with blown insulation such as glass fiber or mineral wool. Also, the cellular urethane material was convenient to use during construction.

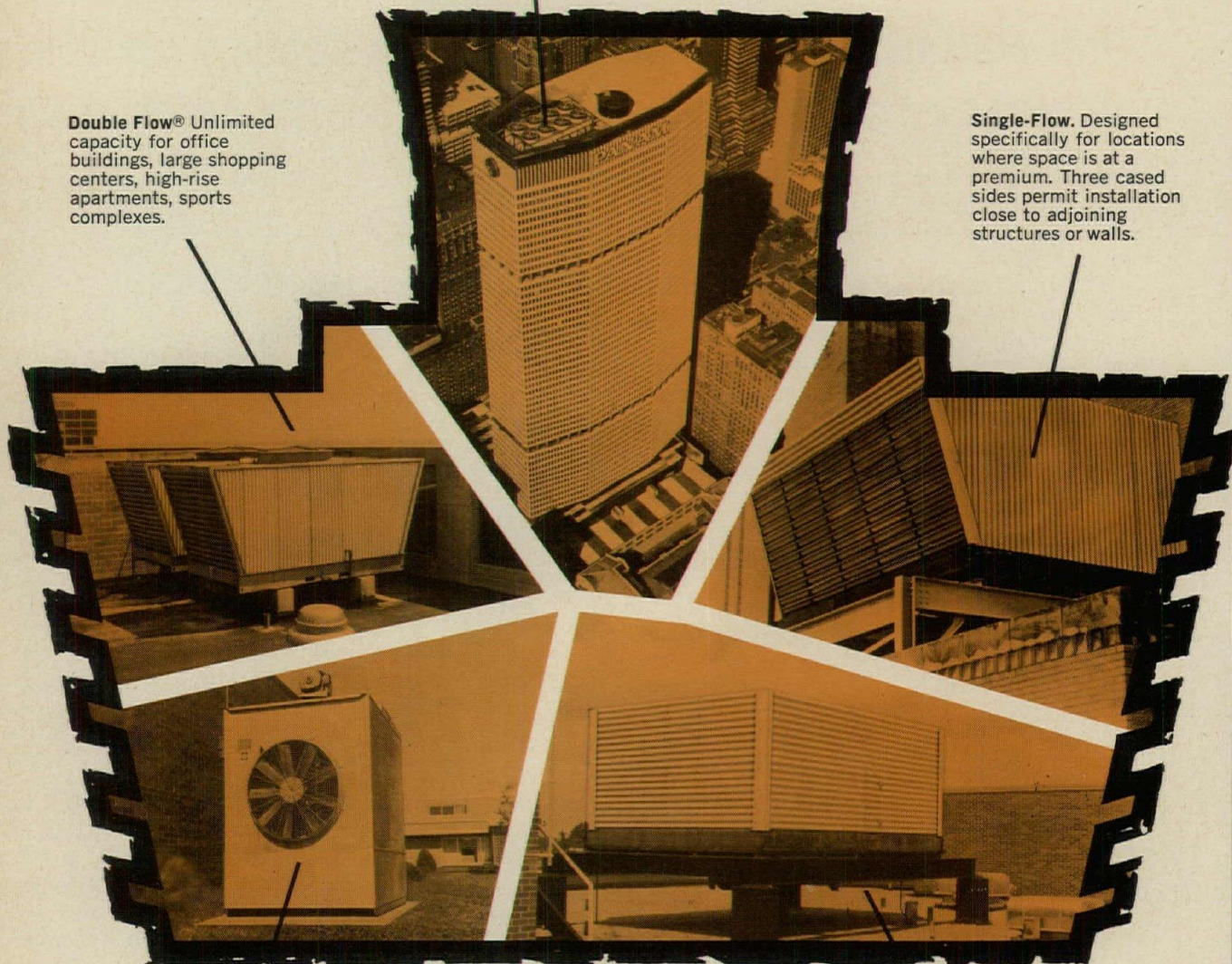
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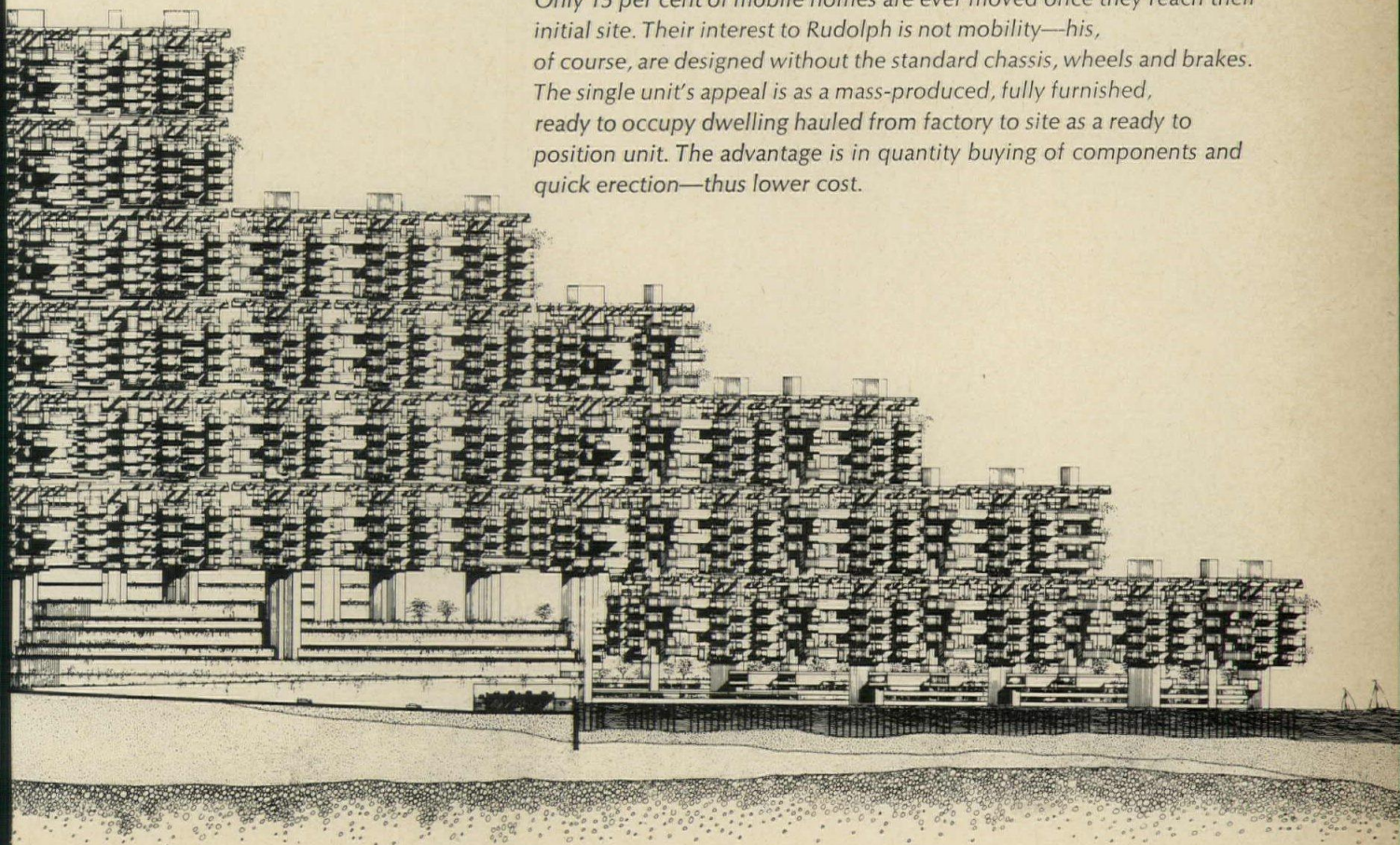
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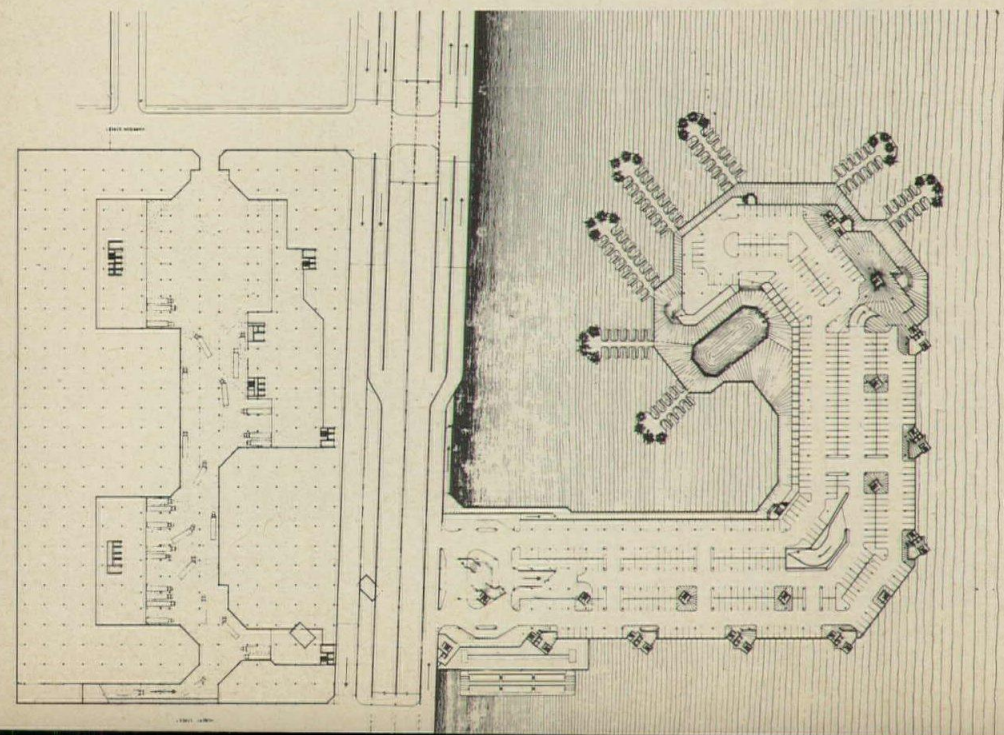
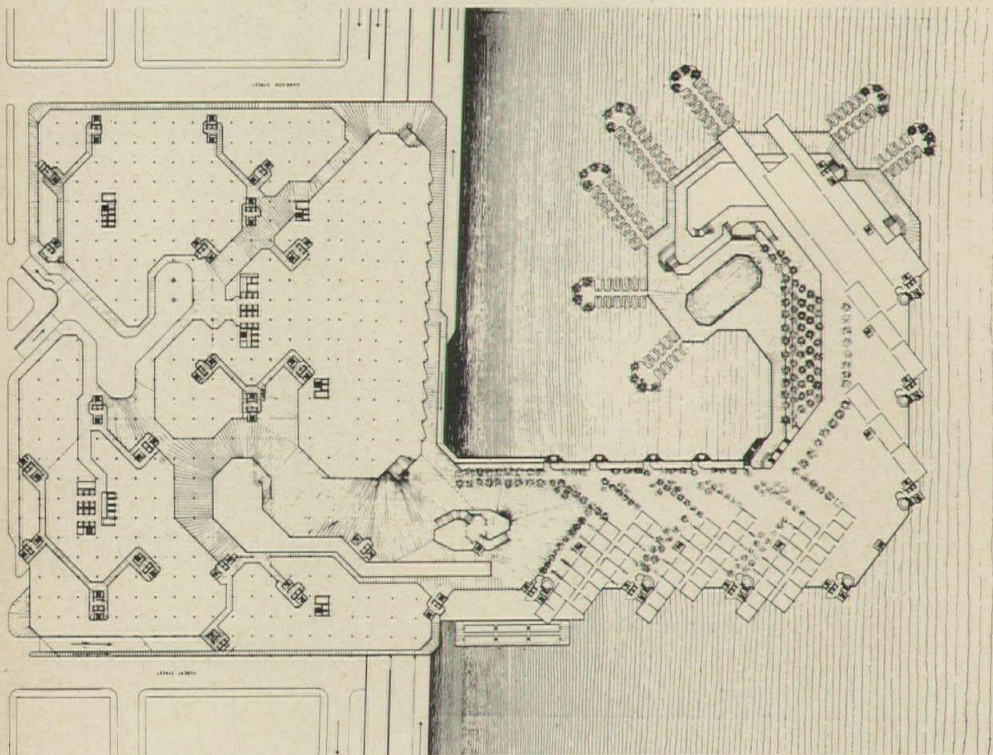
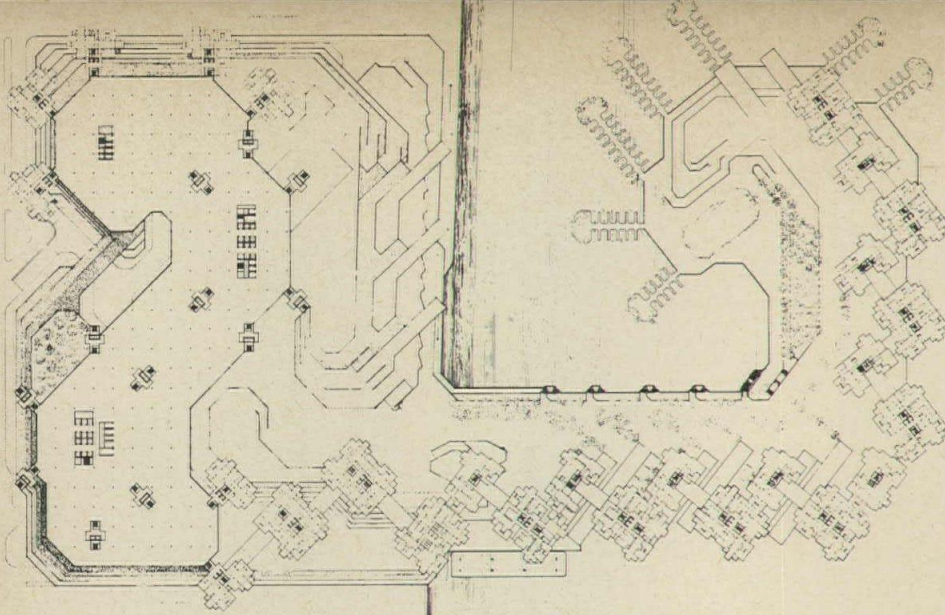
APRIL 1968

THE MOBILE HOME IS THE 20th CENTURY BRICK"

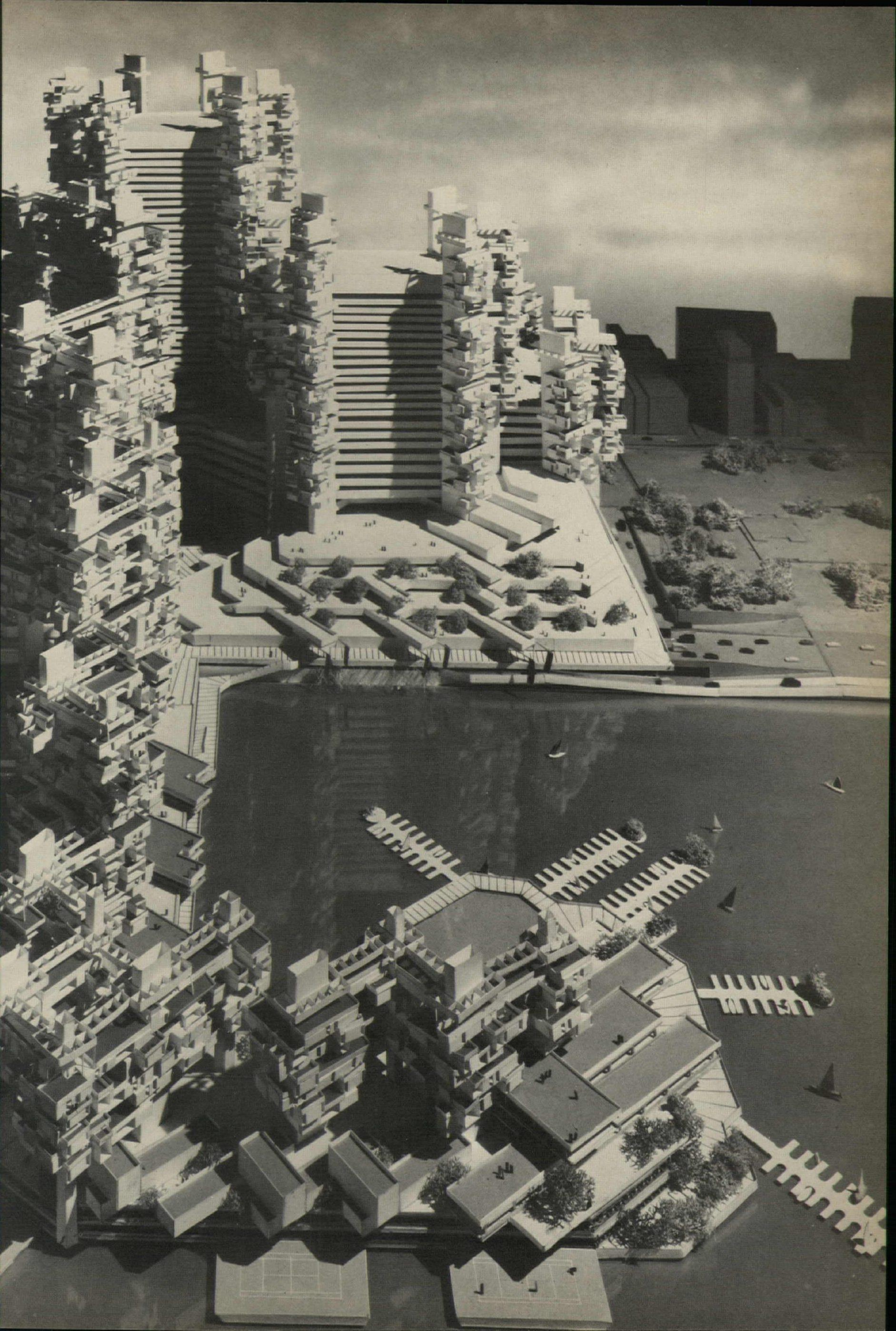
says Paul Rudolph who is eager to transform this humble pre-fab on wheels into a "plug-in-capsule" resembling the visions of Archigram. If the Graphic Arts Center, designed for the Amalgamated Lithographers of America, and shown in the drawing below and on the pages which follow, ever gets built, the mobile home industry will have transformed itself. Lower Manhattan's Hudson River skyline, also dramatically transformed, will be enhanced by 4,050 dwelling units, mass produced like trailers, but trailers no more. These will cluster about 26 service cores, in a remarkable complex planned to include industrial, commercial and office space in addition to the apartment units.

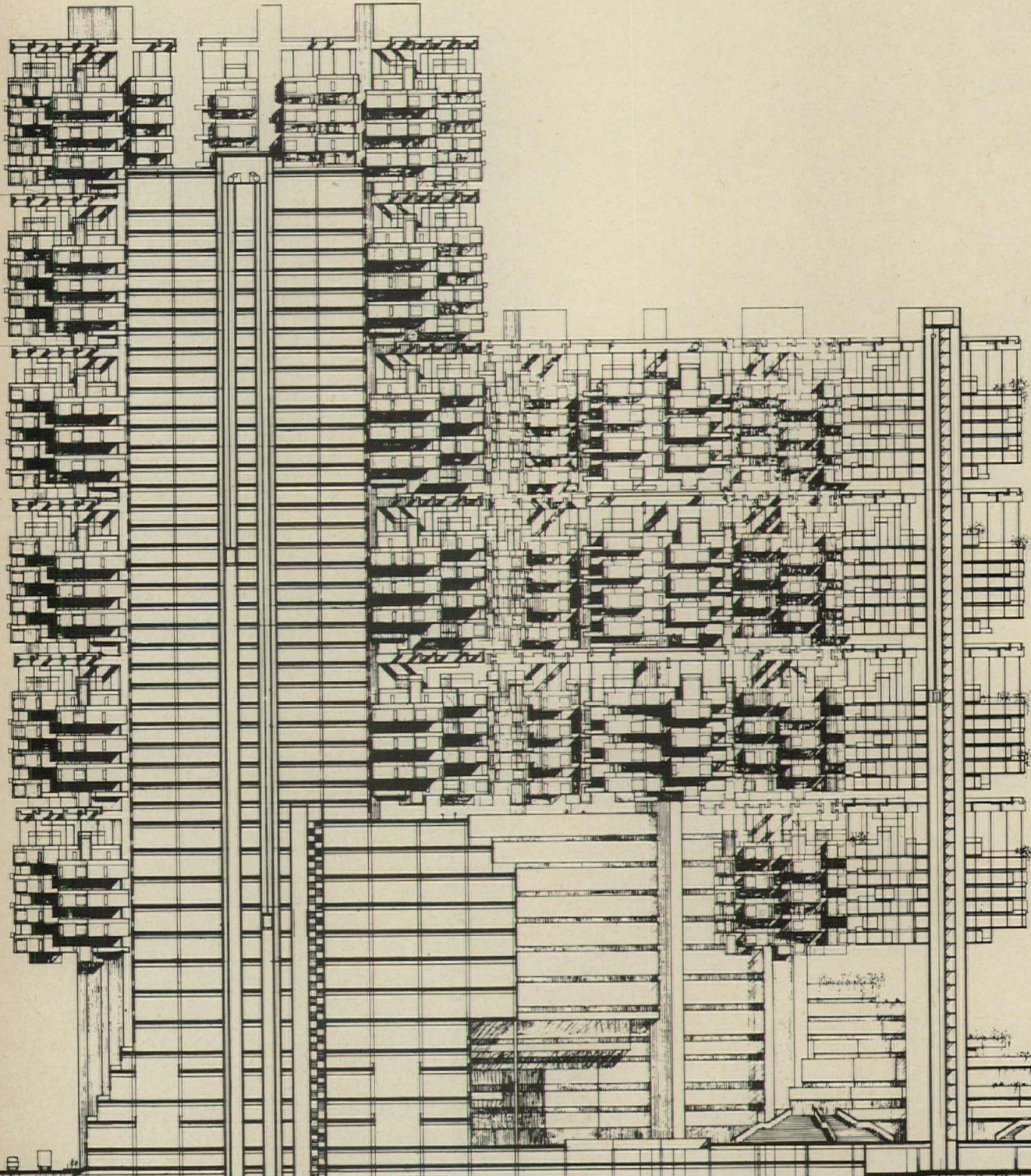
The mobile home industry leads the low-cost housing field. The Mobile Homes Manufacturers Association now claims approximately one out of every four single family housing starts. Rudolph believes that given the opportunity to properly design, upgrade and test its product as the basic unit for a project of the magnitude of the Graphic Arts Center, the mobile home industry could become the leader in light-weight steel box frame technology, meeting this nation's and the world's great need for handsome, well-engineered low-cost dwelling units. Mobile homes already cover more of the United States than their present hideous design could ever justify. Huddled together in "mobile home parks" without benefit of site planning, most of these communities resemble the squatter favellas in developing countries. Since local zoning ordinances which endeavor to control unsightliness, forbid the creation of these parks except on undesirable land adjacent to commercial or industrial areas, attractive land is hard to come by. It is also expensive. The industry therefore realizes it must redesign for higher densities, while upgrading quality for wider public acceptance. Only 15 per cent of mobile homes are ever moved once they reach their initial site. Their interest to Rudolph is not mobility—his, of course, are designed without the standard chassis, wheels and brakes. The single unit's appeal is as a mass-produced, fully furnished, ready to occupy dwelling hauled from factory to site as a ready to position unit. The advantage is in quantity buying of components and quick erection—thus lower cost.



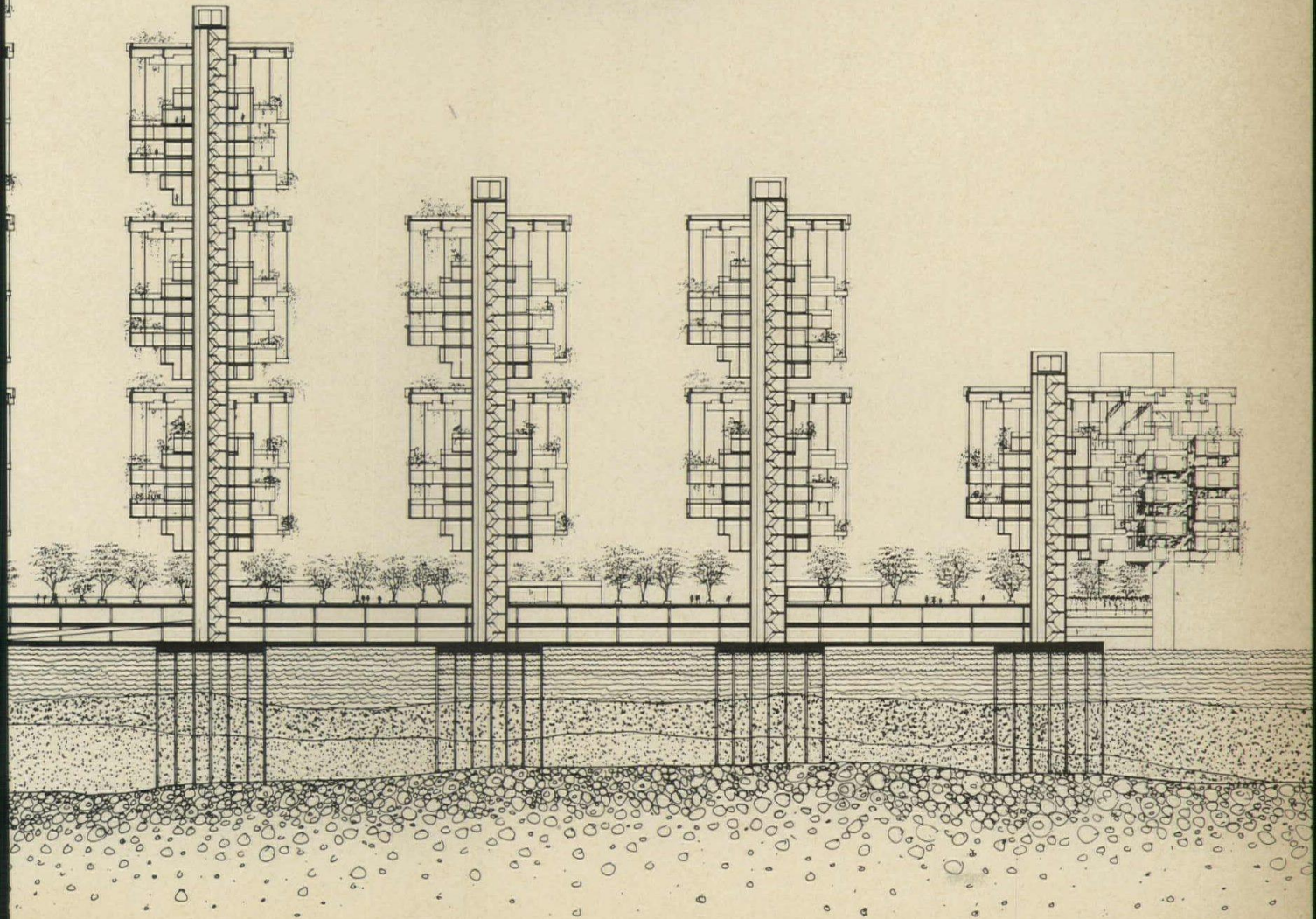
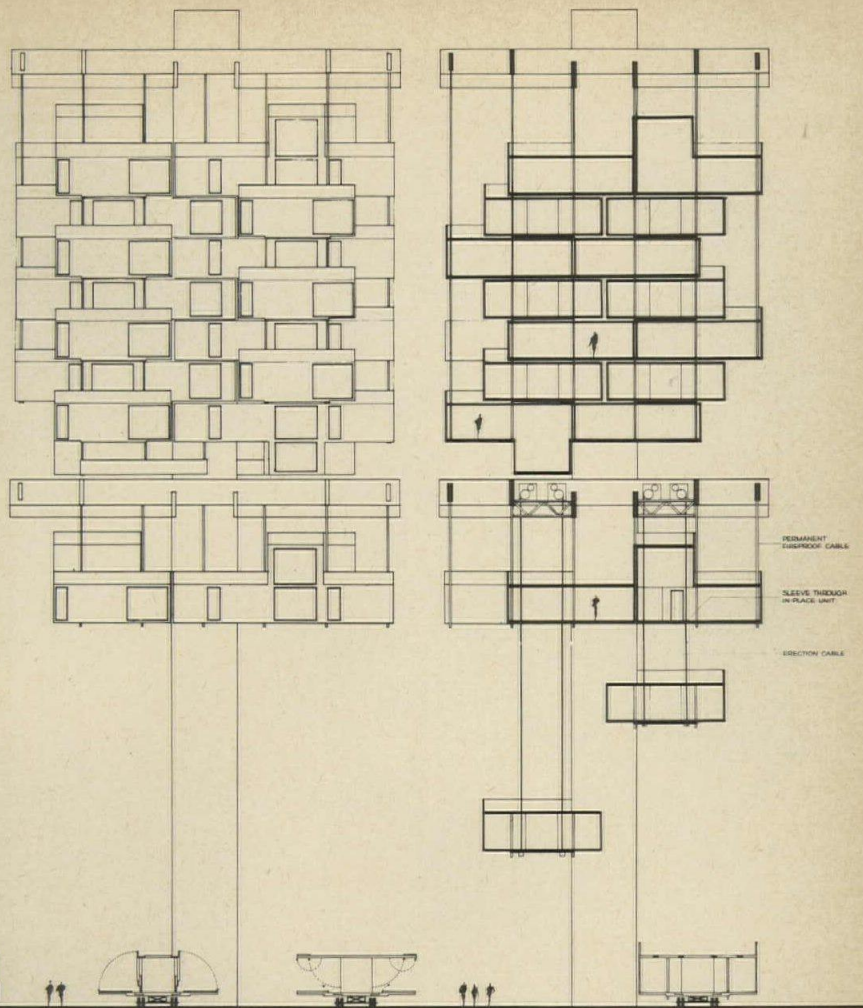


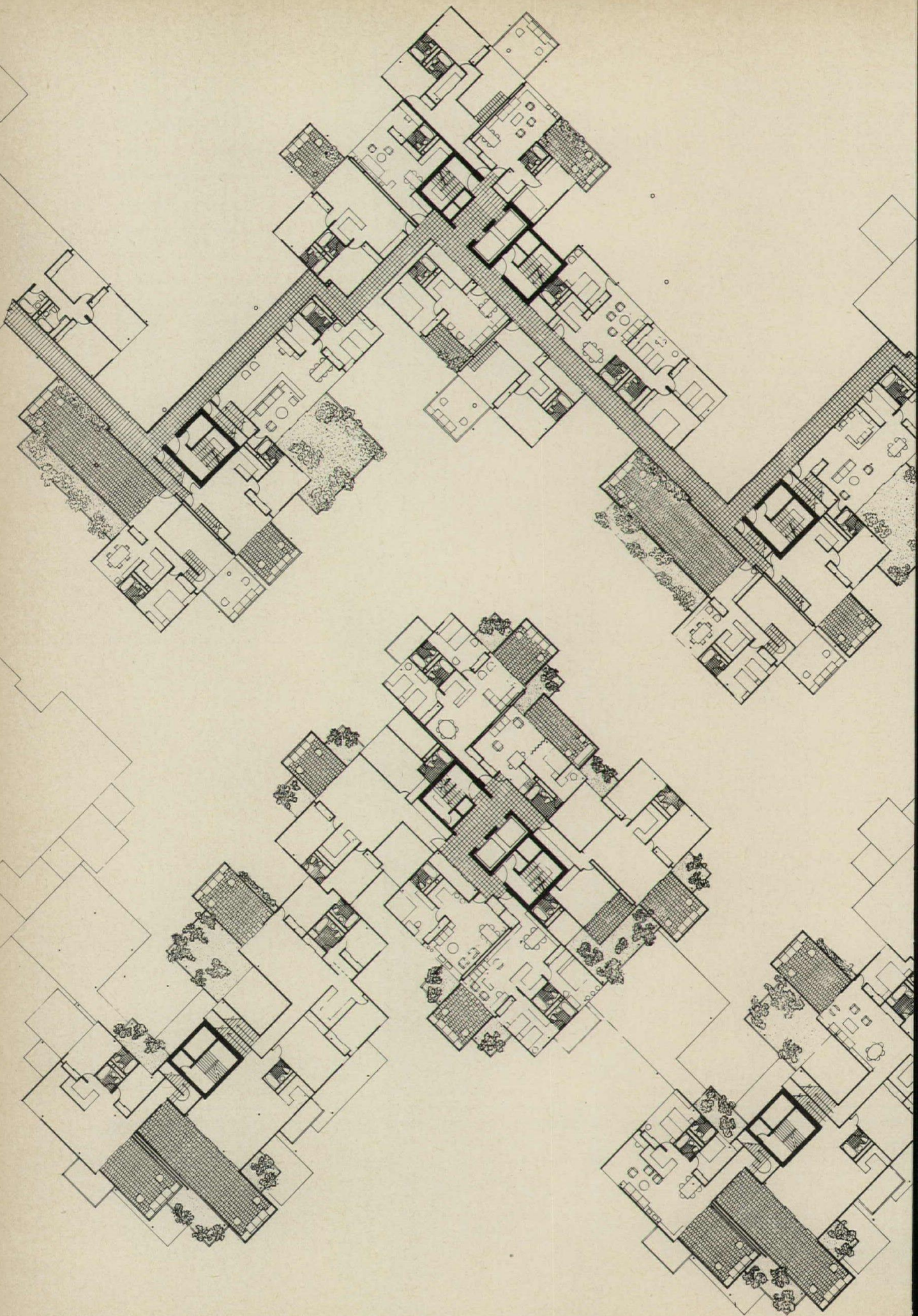
The Lower Manhattan Plan calls for increased residential use of land at the water's edge. In this proposal for a Graphic Arts Center, the West Side Drive would be lowered and bridged over by pedestrian walkways connecting the inner commercial areas with the residential towers located above the pier deck which extends 820 feet into the Hudson River. The complex includes high quality industrial spaces for legal and financial printers and color lithographers. This space is arranged to create a man-made hill, forming a series of terraces for residential and commercial uses. At the base of this man-made hill, one level below grade, is the 520,000-square-foot trucking-service floor (bottom left). There are dock spaces for 56 trucks and extensive storage areas. The second level (not shown) is allocated for parking, as are three levels under the pier deck. Spaces are provided for 2,100 cars. The main pedestrian concourse is on the third level (middle left). Here one will be able to walk through a series of plazas and traffic-free streets onto the pier deck which will have an elementary school, a community center, a swimming marina and a series of restaurants and shops. This level also contains 386,000 square feet of industrial space for the color lithographers. The next four floors also comprise lithography space. This space is constructed in such a way that every other floor is moveable or removable. Five different ceiling heights are possible—a 9-foot ceiling suitable for office space; and 11-, 15-, 16- and 28-foot ceilings, where appropriate. Above the lithography floors are seven floors of 200,000 square feet each for the legal and financial printers, and on top of these are two office towers. To complete the community are the 4,050 dwelling capsules gathered in clusters around their service cores (top left).



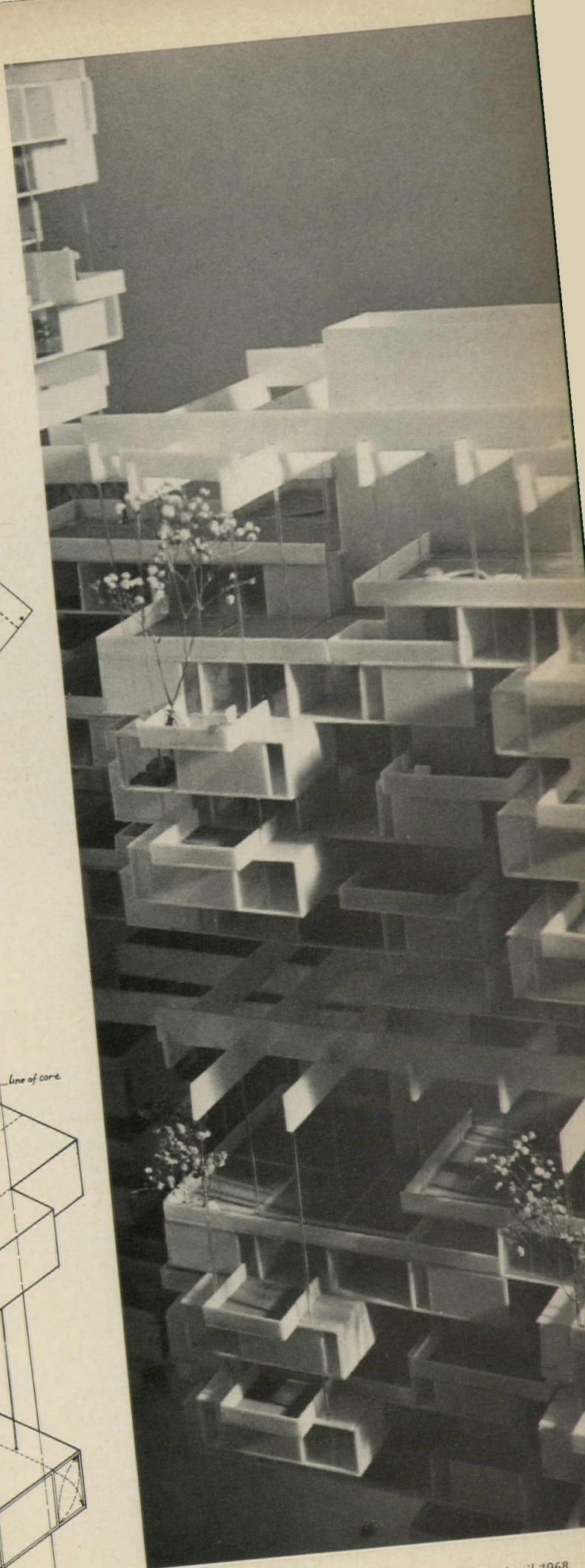
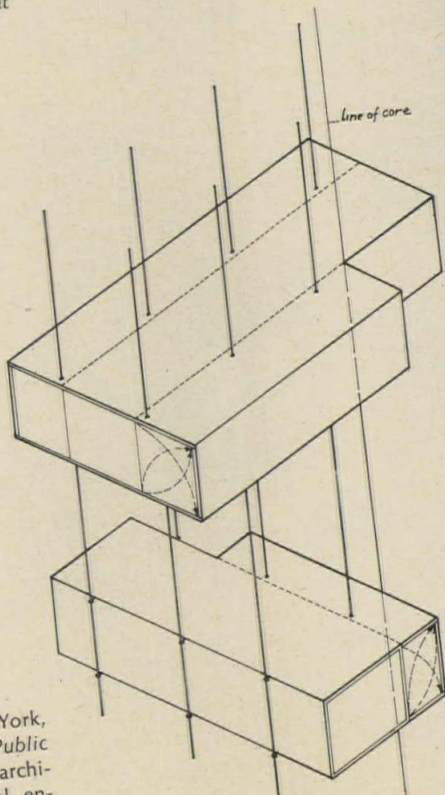
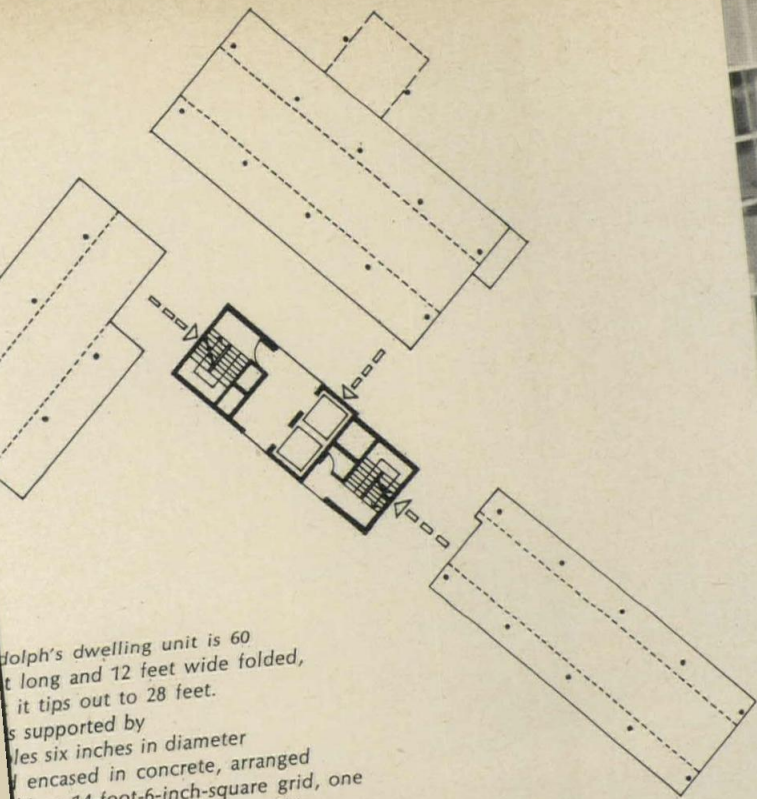


Unlike other designers of dwelling capsules, Rudolph prefers to "hang," rather than "cage" his plug-ins. Steel trusses cantilevered from a central core carry 10 stories each by means of steel cables encased in concrete. The mobile units arrive on flat bed trucks, and "tip-outs" (added space within the standard 12 foot towing width) are unfolded and locked into place. The units are hoisted by hydraulic lifts attached to the main truss and are joined to adjacent sections and to the central core tower.

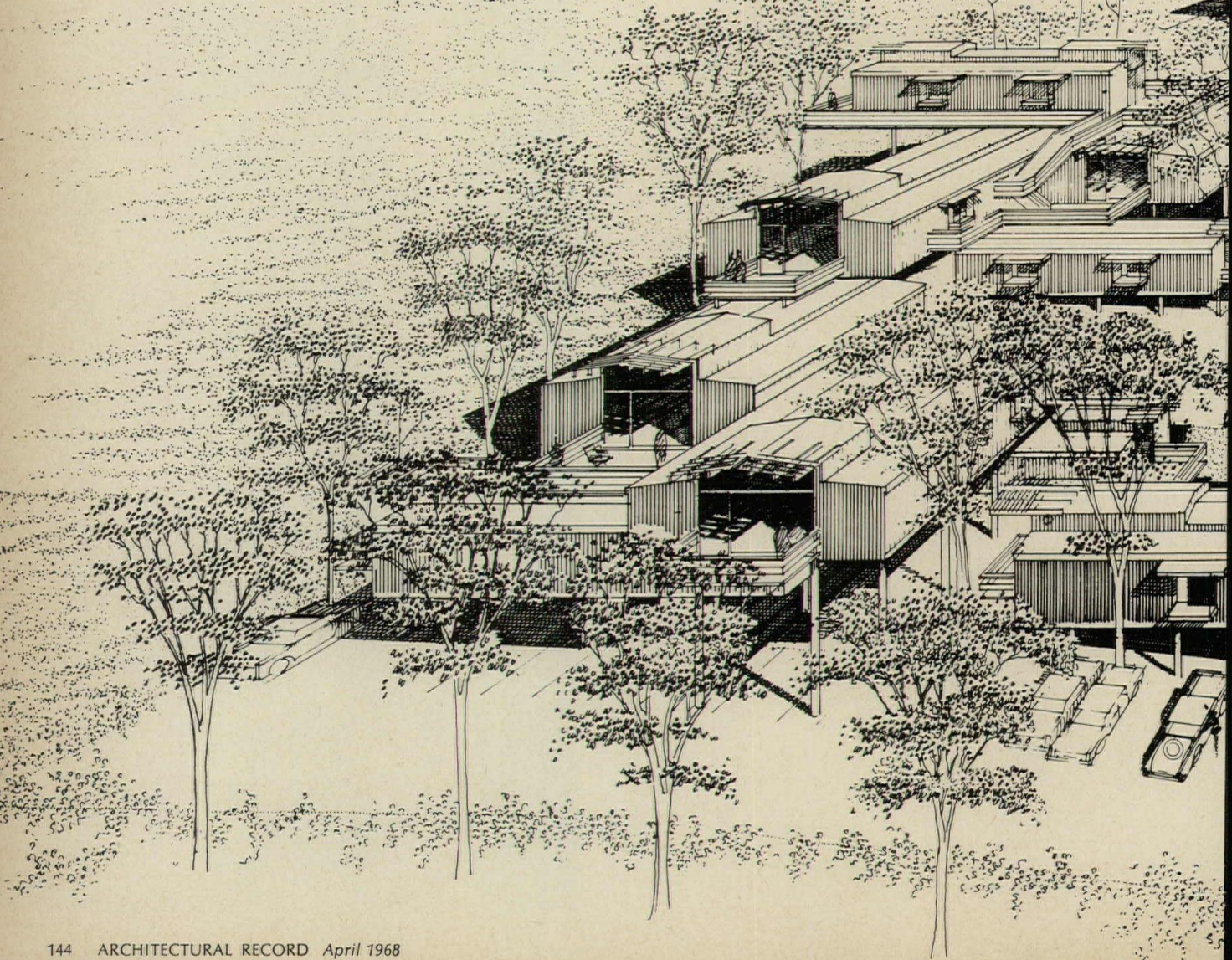
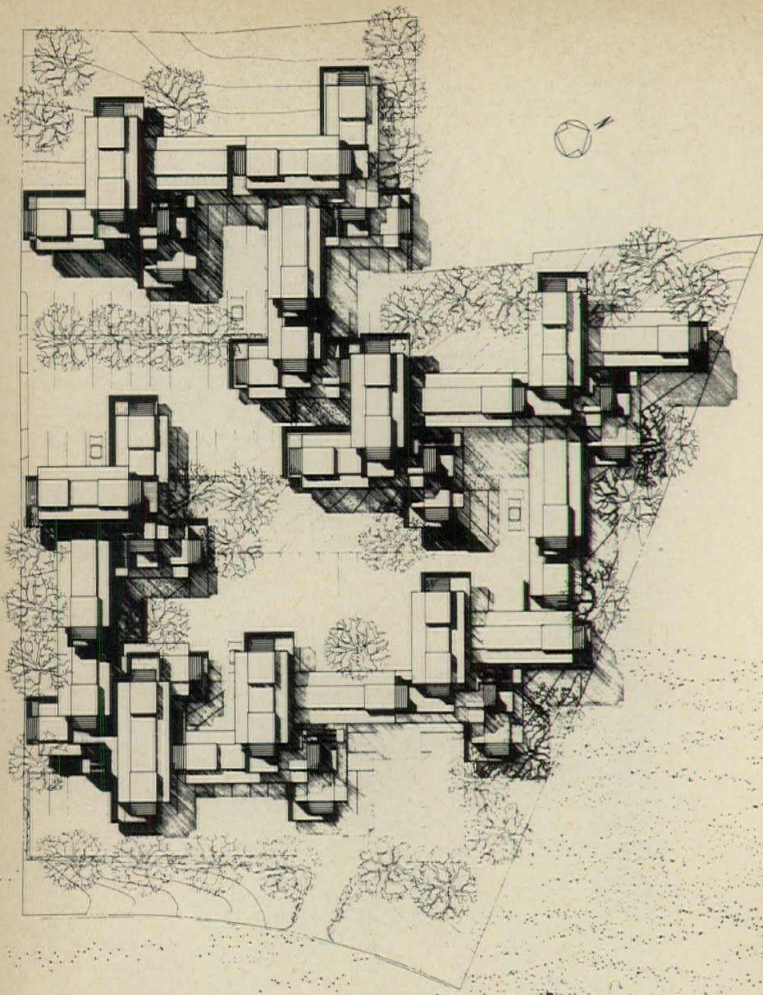




Rudolph's dwelling unit is 60 feet long and 12 feet wide folded, but it tips out to 28 feet. It is supported by columns six inches in diameter, encased in concrete, arranged within a 14-foot-6-inch-square grid, one wide and four bays long. This grid module permits a 12-foot-wide element to pass between the columns. Two parallel hinges at the top and two at the roof divide the unit into three elements—the center is 12 feet wide and the tip-outs are 8 feet each. The hinges are located 1'-3" from the unit after it is unfolded in place. The units themselves are arranged on a pinwheel and connected to the service core. "One of the interesting things about a pinwheel," says Rudolph, "is that it hides the repetitive nature of the building." Apartments overlap so that the roof of a lower unit forms a terrace for the one above. Each service core contains elevators and stairs. These cores are placed at right angles to each other, allowing each to brace next against wind loads.



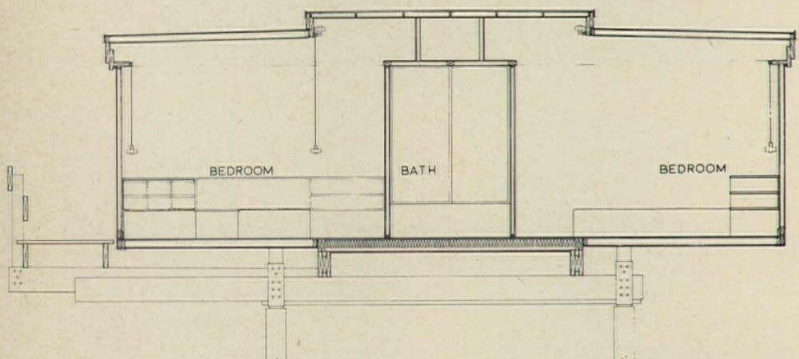
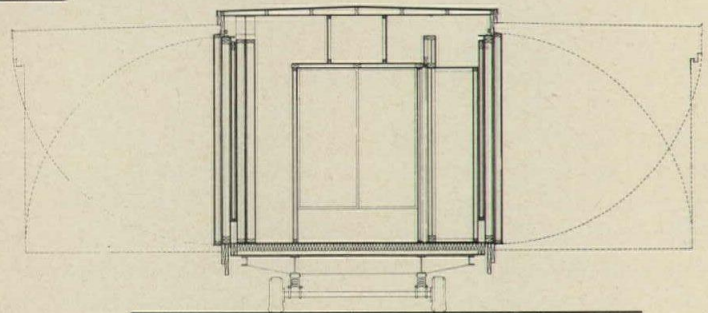
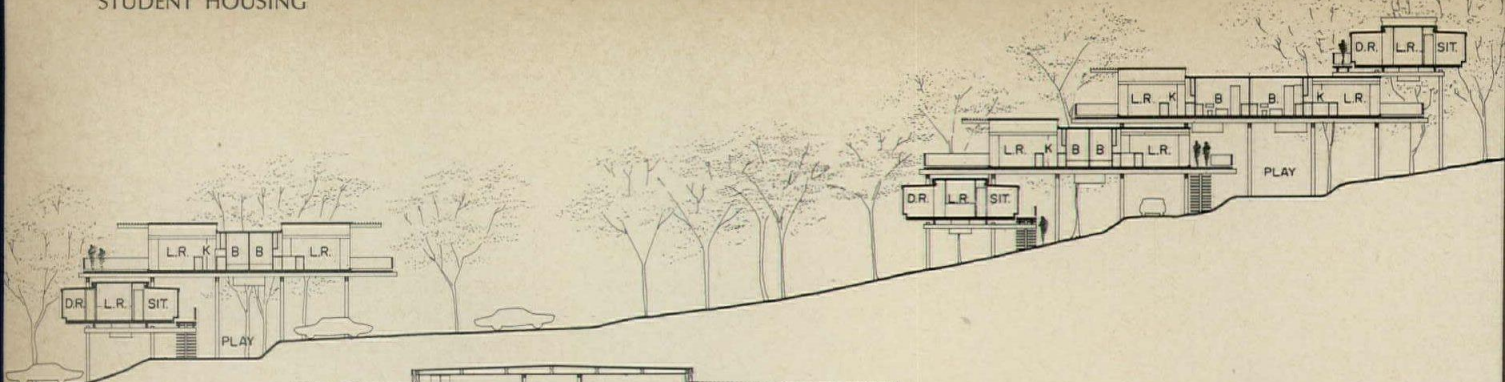
PHILIP H. PHILIP ARTHUR CENTER, New York,
 Client: New York City Public
 Development Corporation; archi-
 tect: Paul Rudolph; structural en-
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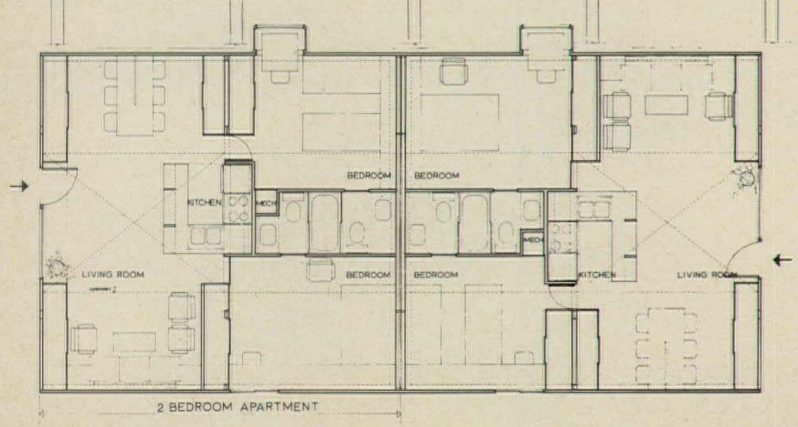
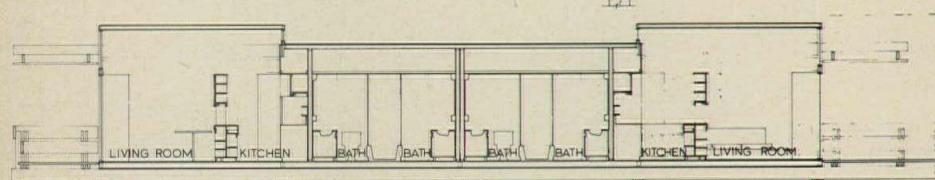
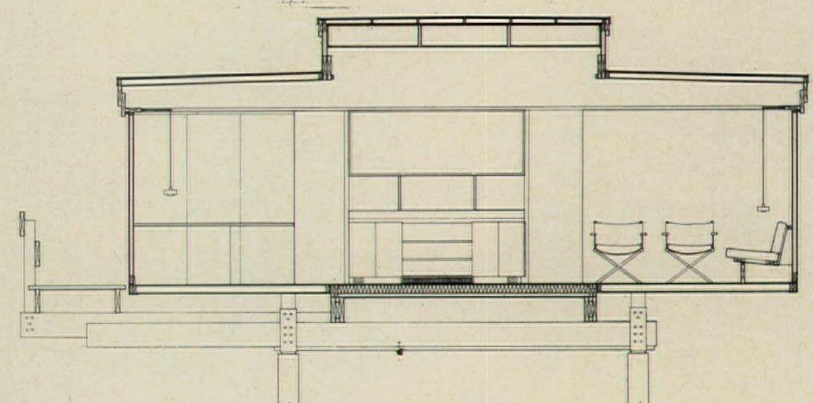
"A MOBILE HOME BY ANY OTHER NAME"

says Rudolph, "could be a useful solution to the low-cost housing problem." Although Rudolph's mobile home module bears no resemblance to the trailer house of the thirties, the phrase "mobile home" evokes in conservatives an image of transience and impermanence which limits acceptance. When their opposition combines with the building trades' resistance to change, good projects gather dust. The scheme shown below was to have housed married students at the University of Virginia and was to have been constructed not by the University, but by a private developer from units which the mobile home industry has the capacity to produce. It is an all-wood stressed-skin prototype of the all-steel Graphic Arts Center dwelling module—is dimensioned the same (28 feet by 60 feet), folds the same and was designed first. Unit cost of a two bedroom apartment module without site work and structural frame would have been \$6,050 at the time that cost estimates were made. This design, vetoed by city officials as inappropriate for Charlottesville, will eventually be built somewhere else.

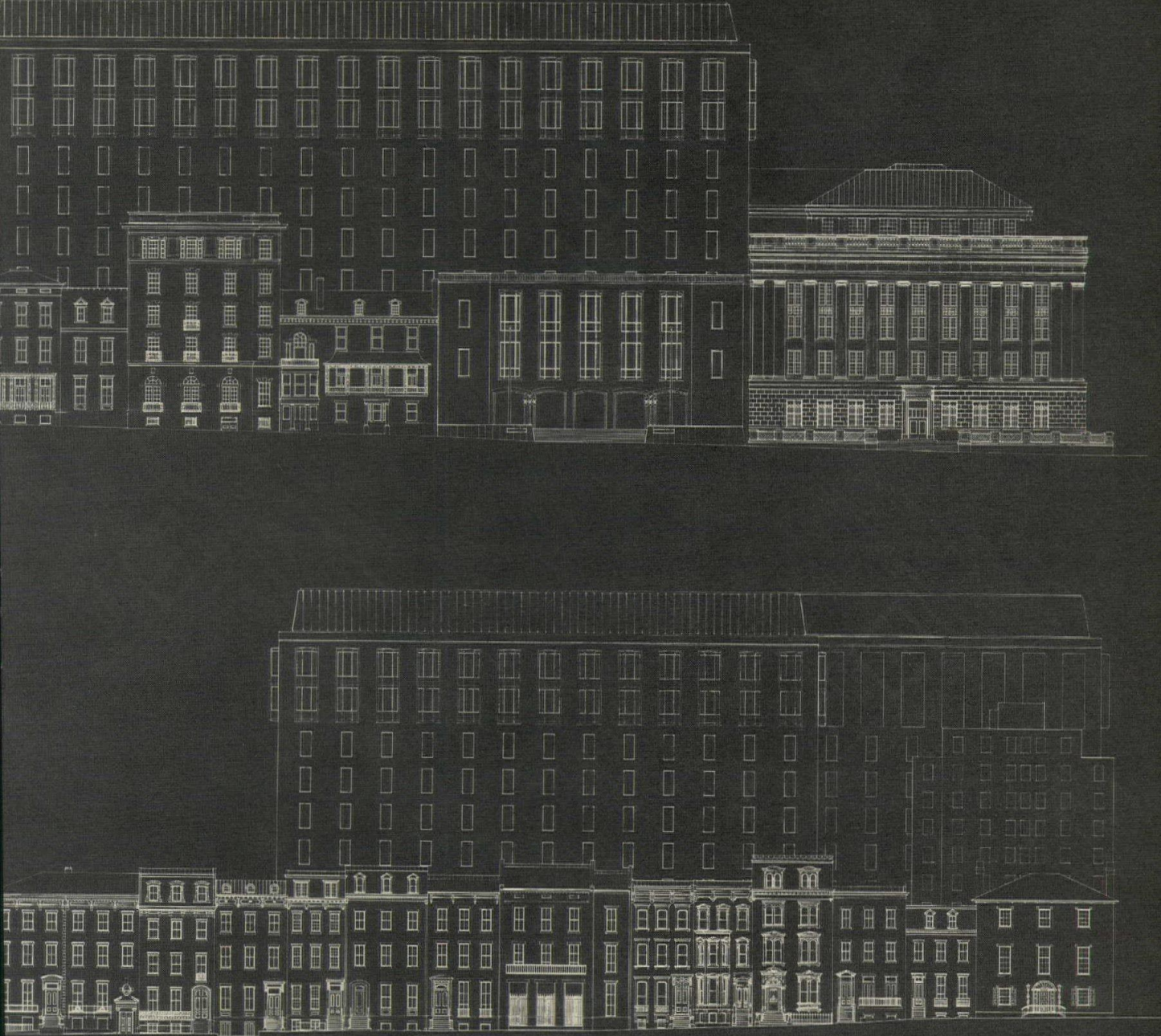




Sections are taken through the bath and bedroom element (above) and through the living room (right). Projecting windows, trellises, stairs and access ways are not "tip-outs" or "roll-outs." They are added later, after the modules are in place. These units are designed to support the weight of one unit above and walls are strengthened at points where the loads are transferred.



MARRIED STUDENT HOUSING
Charlottesville, Va.; client:
Development Company; archi-
tects: Paul Rudolph; structural engineer:
Paul Gugliotta; chief assistant:
drawings: Makoto Miki.

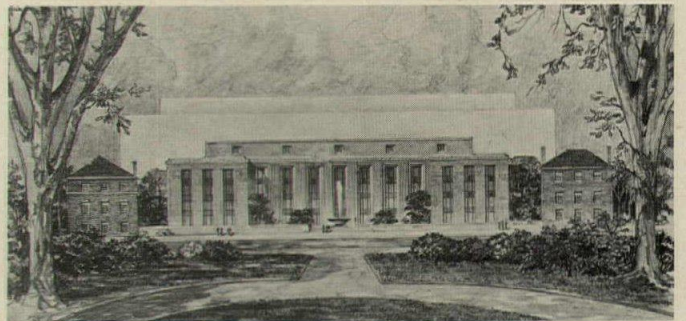


Elevations of the two new buildings on Lafayette Square by John Carl Warnecke and Associates. The top drawing shows the Court of Claims on the east side of the Square, and the other drawing shows the Federal Office Building and the row of restored houses on the Square's western face.

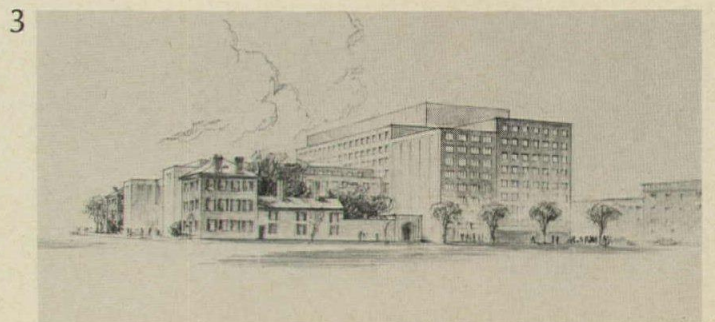
THOSE NEW BUILDINGS ON LAFAYETTE SQUARE

Adding two large new buildings to a historic 19th-century square that is also the forecourt of the White House poses some particularly sensitive problems of scale and expression. The architectural result deserves evaluation, not only in terms of the special character of the problem, but also in terms of the process—involving Presidential intervention—through which it came to be.

by Jonathan Barnett



Aerial photo at top shows Lafayette Square before construction began. Drawing (1) shows an earlier proposal by a consortium of Boston architects for the Court of Claims Building on the east side of the Square. Drawings (2) and (3) show their design for the Federal Office Building.



When President John F. Kennedy took office in January 1961, one of the first problems awaiting his decision was the placement of two new government buildings along Lafayette Square. According to the painter, William Walton, who frequently advised Kennedy on matters concerning the arts and who is now chairman of Washington's Fine Arts Commission, the new President took an immediate personal interest in the fate of the square that is a forecourt for the White House.

The President had chosen an extremely difficult problem for his initiation into the art of architecture. The complexities of the situation had their origins in the history of the place, and represented a series of conflicting ideas—each of which had to be respected.

In the 19th century, the buildings fronting on the square had all been residential, except for St. John's Church, designed by Latrobe in 1815. It seems unlikely that the square ever had much coherence as an architectural form, because of the small scale of the buildings in relation to the large park area, but it must have had a certain consistency.

There was no building there, however, that Cass Gilbert felt would be worth saving when he drew his plan for Lafayette Square just before the First World War. Gilbert envisaged a monumental ring of stone buildings, in the French academic tradition, that would be a fitting termination for the academic fades of Pennsylvania Avenue.

The Treasury Annex on the east corner of the Square represents the first implement of the Gilbert plan. Unfortunately, it was also the last. Not in itself a distinguished building, the Treasury Annex would have been acceptable as a part of a larger plan. Alone, it simply deployed the old-scale relationships without defining anything new.

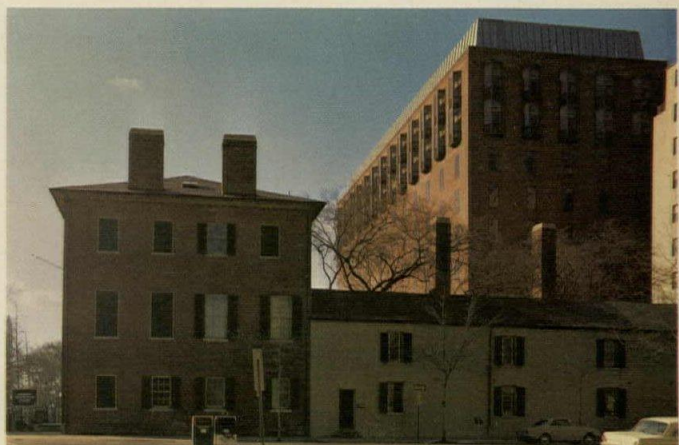
During the 20's, other new buildings grew up around the Square. Some, like the Veterans Administration building in the northwest corner, were in conformity with some aspects of the Gilbert plan. Others were just piecemeal development.

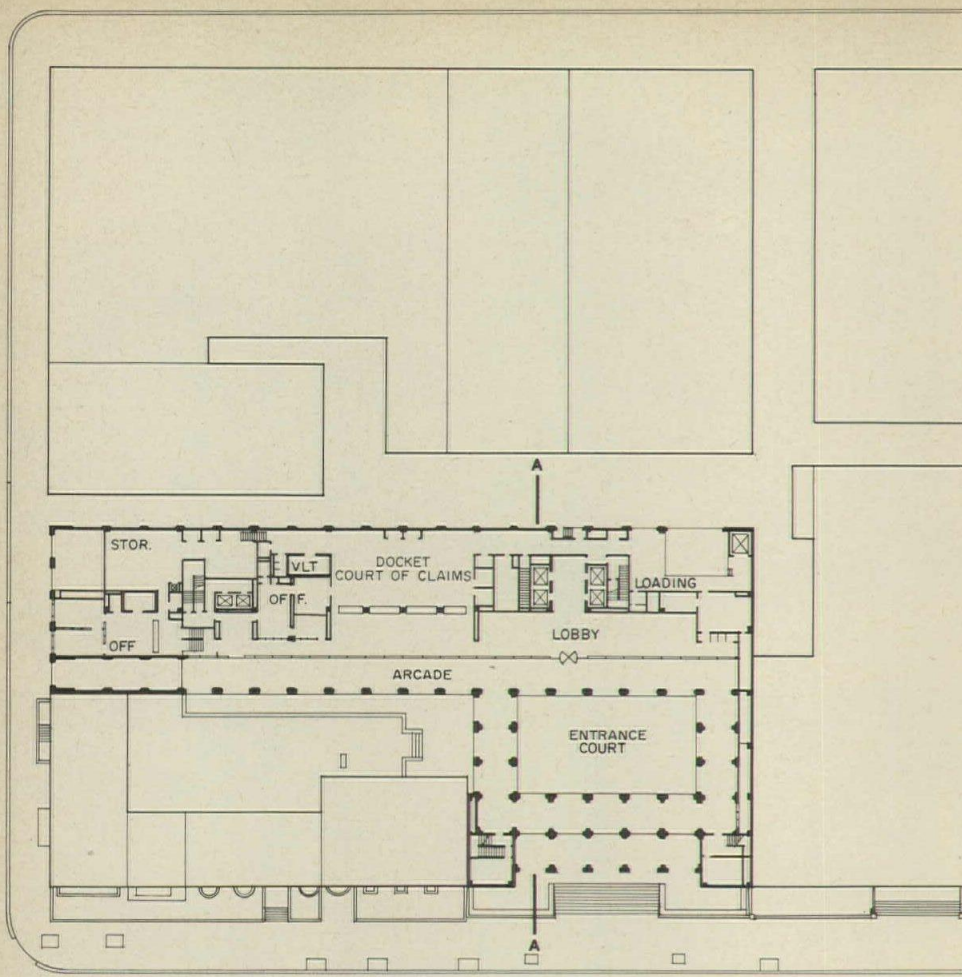
In 1942 President Roosevelt intervened to make sure that the Government purchased and preserved the Blair and Catbur houses, because there was already talk of using the west side of the square for a Federal office building. Roosevelt acted, he said, because "there are a few houses left that are at once distinguished and possess historic and cultural values."

President Roosevelt's view reflected a general enlargement of historical awareness created by events like the Wilmsburg restoration. Gilbert, looking at buildings on the square through the eyes of the Ecole des Beaux Arts, could



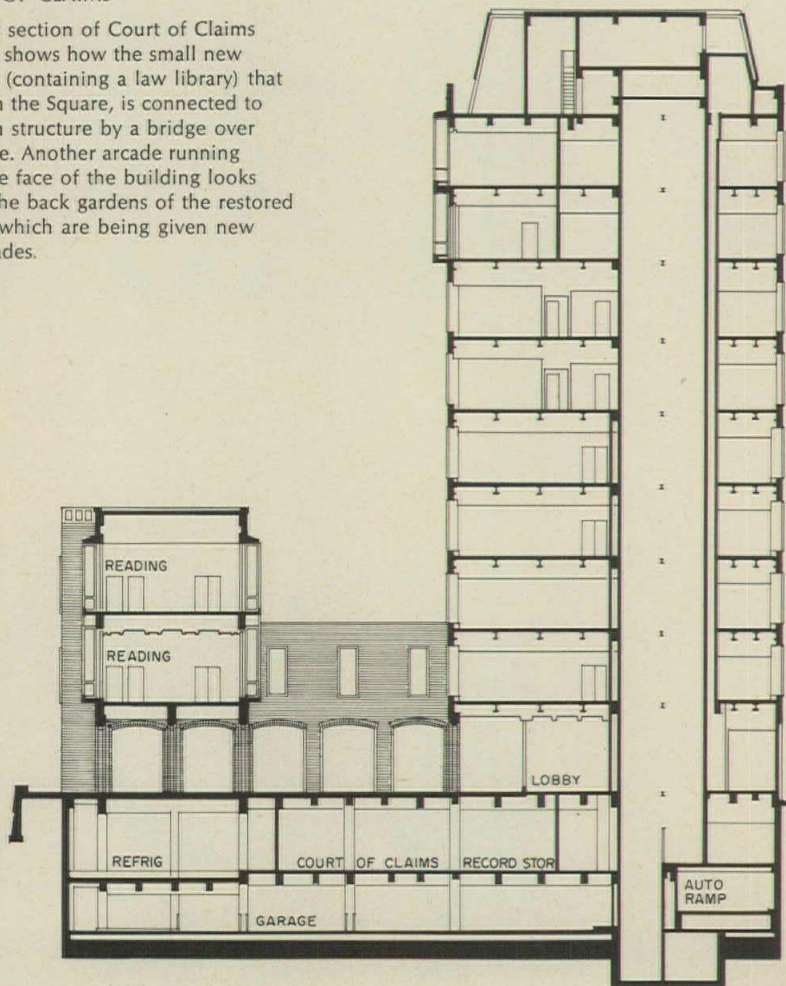
Jerry Spearman photos





COURT OF CLAIMS

Plan and section of Court of Claims building shows how the small new building (containing a law library) that fronts on the Square, is connected to the main structure by a bridge over an arcade. Another arcade running along the face of the building looks out on the back gardens of the restored houses, which are being given new rear facades.



SECTION A-A

see them as provincial and undistinguished. Now they became valuable themselves, and a permanent opposition between Gilbert's scale and the early buildings was the result.

The aerial photograph on page 1 shows the state of the area when Congress authorized a Federal office building on the west side of the square and a new home for the Court of Claims on the east. The space requirements voted by Congress were larger than could have been accommodated at Gilbert's scale, much less Latrobe's; and the architects, a consortium of Boston firms, struggled with the problem for years.

Their solution was to accept Gilbert's cornice line and white building on the east, and the Decatur House's height and red color on the west. The Court of Claims, (1) on page 148, would have been a massive structure which attempted to conceal its bulk behind a scaleless arcade. The Federal Office Building, (2 and 3) on page 148, would have had a large red brick structure fronting on the Square and replacing most of the houses, with a massive white building behind. The architectural expression sought a compromise between the old and the new, something that would be both modern and in harmony with the past.

According to Walton, President Kennedy knew instinctively that something was wrong. A long-time Georgetown resident, he regretted destruction of old houses. The architects, with working drawings well along, and heavily committed by decisions made during the Eisenhower administration, had difficulty adjusting to new requirements. A long series of consultations, with Walton serving as intermediary, proved fruitless.

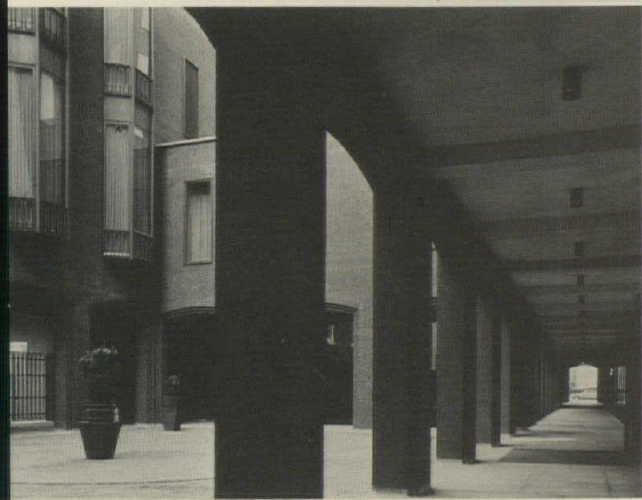
Then the President suddenly took the situation into his own hands. One night, quite by chance, he met John C. Warnecke at a cocktail party. The President, after the manner of people meeting architects at parties, asked Warnecke for advice on Lafayette Square. Warnecke was unaware of the history and status of the two buildings and felt that, when the President of the United States asks you for advice on a question of public policy, you must answer. He replied that he would try to keep all the old houses in place, the new structures behind them. This concept appealed to the President, and before Warnecke knew it, he had been given the job of carrying it out.

Of course, most of the problems remained to be solved. The Treasury Annex was still there, the program was massive, and a harmonious architectural expression had to be found. Now, though the restoration of some of the houses is yet to be completed, it is possible to evaluate the results of Warnecke's



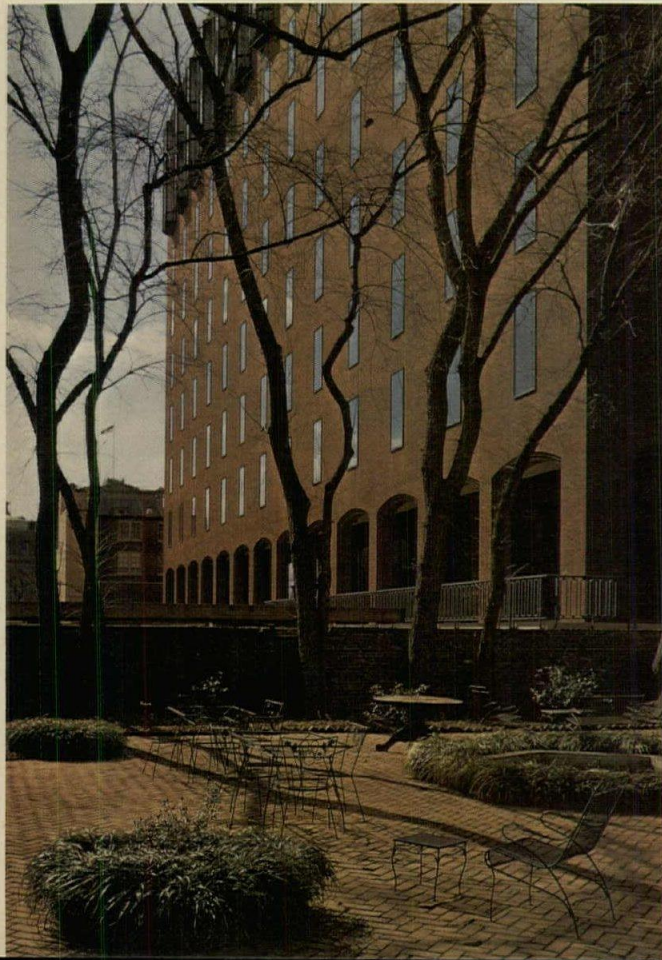
Jerry Spearman photos

COURT OF CLAIMS





FEDERAL OFFICE BUILDING



design and the President's intervention

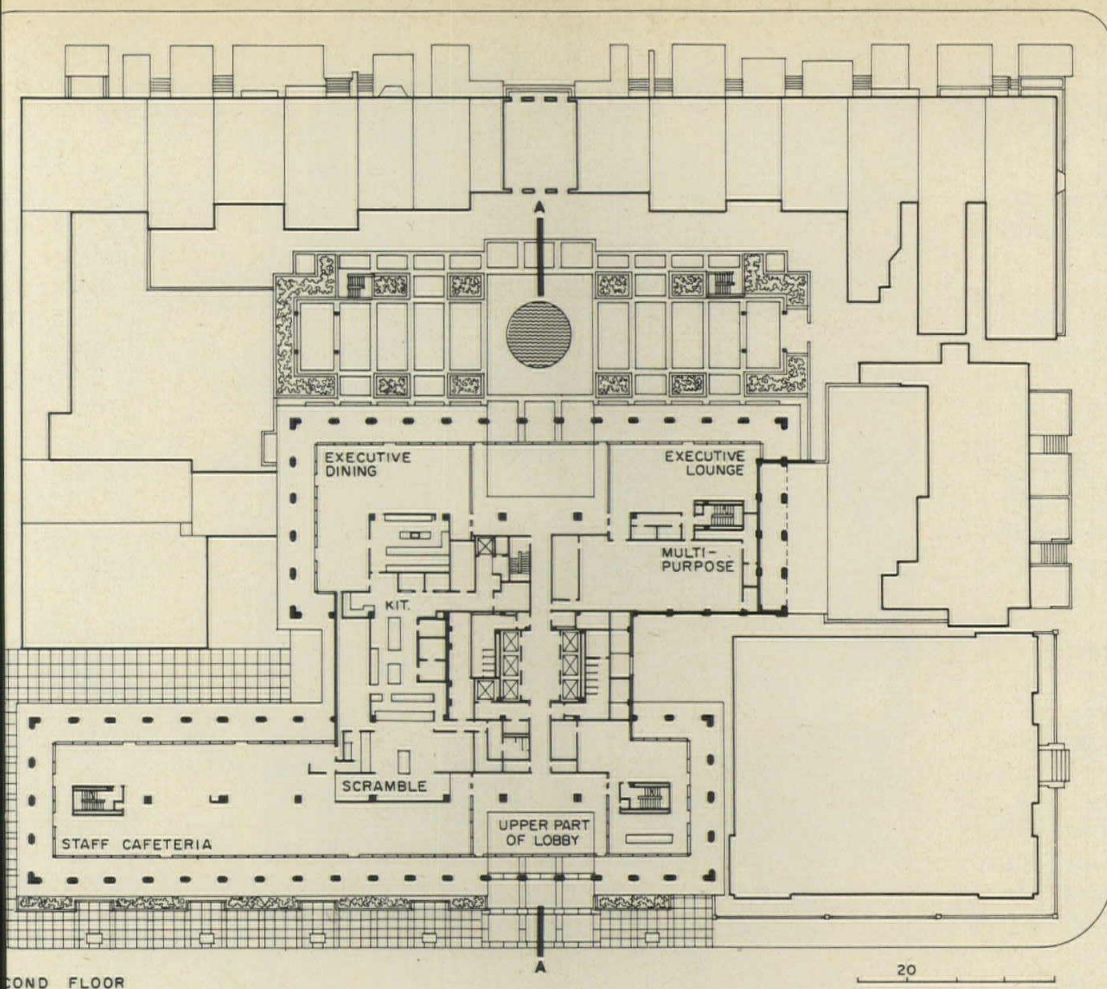
The first thing that Warnecke did, which seems clearly a correct decision, was to treat both the east and west sides of the Square in a similar way. On the east side of the square he designed a new, low building, in red brick, to replace the false-front theater building put up in the 1920's. The new building serves to link the Treasury Annex with a row of houses (including the Dolly Madison House) which the Boston architects had planned to move. On the west side of the square Warnecke unabashedly chose to face new versions of the houses that had been replaced by bigger buildings during the 1920's, giving a more or less consistent row of facades along the whole west front (see elevations on page 147).

On both sides of the Square the basic plan of the new construction was set back with Warnecke accepting a greater height in return for a smaller area per floor. (The over-all square footage required by the program could not be changed.) The size and shape of the Court of Claims building set the Federal office building's design, which was articulated into an off-center H shape to keep its size comparable to the much smaller Court of Claims.

So far, there can be little argument that Warnecke's solution is both intelligent and sensitive. The questions that arise concern the building's color and architectural expression.

The color was obviously chosen to harmonize with the mellow brick of the old houses on the west side of the Square. The photograph (4) on page 147 shows how successful this color harmony turned out to be. Warnecke says in addition that a dark building tends to recede and become less conspicuous. Nevertheless, no matter how much the building may recede when viewed from Lafayette Park, they are quite prominent when seen as part of the skyline—from the steps of the Jefferson Memorial, for example, or just walking near the Square.

Despite certain exceptions, like the Smithsonian Institution, major public buildings in Washington have traditionally been built of light-colored materials. The question is whether this tradition should always be observed. If you take a view of urban design similar to Cass Gilbert's, and feel that each new building is a fragment in an ideal composition that will eventually be realized, then each new building should probably be what Warnecke's view is more pragmatic. He feels that times change, and that large-scale compositions are seldom completed as planned. This circumstance doesn't worry him. In fact, he likes variety to be found in Georgetown, and finds the consistency of the Federal angle dull by comparison.



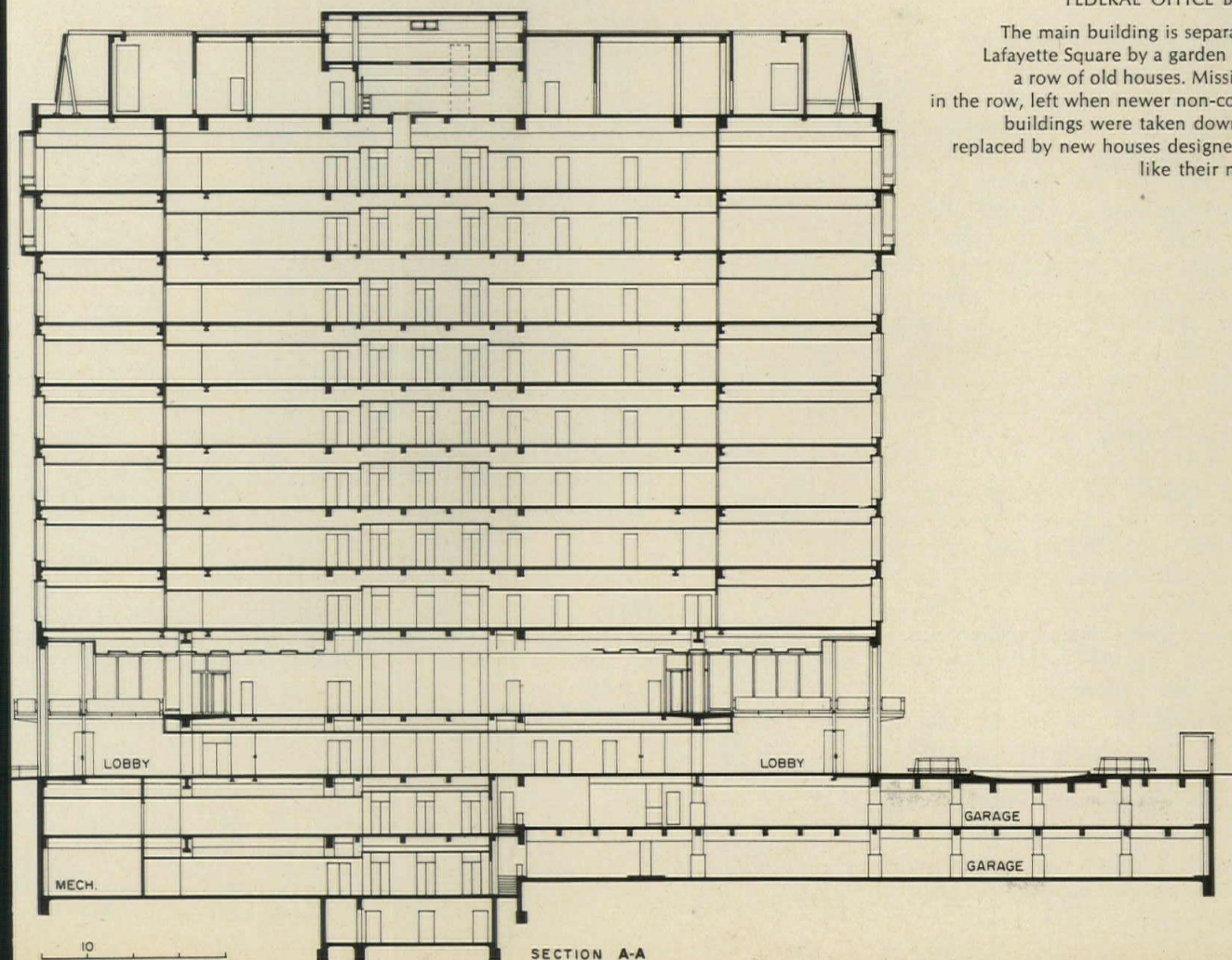
COND FLOOR

20

A

FEDERAL OFFICE BUILDING

The main building is separated from Lafayette Square by a garden court and a row of old houses. Missing places in the row, left when newer non-conforming buildings were taken down, will be replaced by new houses designed to look like their neighbors.



10

SECTION A-A

As a practical matter, it would have been difficult to design a consistent treatment of the Square in white materials without painting or stuccoing the houses, particularly the Decatur house, which was a given in the situation. Warnecke feels that such a design treatment would have compromised the uniqueness of the White House.

The other question—the problem of architectural expression—was essentially the familiar one of “keeping in keeping.” Warnecke’s design, with its bay windows and mansard roofs, certainly captures something of the cranky silhouette of the 19th century buildings near the square; and, from a scenographic point of view, is quite a successful composition. However, it is my view that the main buildings possess a scale-less and empty character. They are too prominent to settle into the background without having enough character to stand out on their own.

Part of the problem may be the colored mortar, specified in an attempt to match the close jointing of older masonry. It counteracts the scale of the brick, making the building appear monolithic. The real problem, however, is that the building’s interiors are standard government issue, and the architect had little opportunity to influence them, much less express their character. The architect was caught in a paradoxical situation; the nature of the site prevented him from designing an appropriate building that would be a simple envelope, but the fact that the buildings are in fact only envelopes becomes apparent in any case.

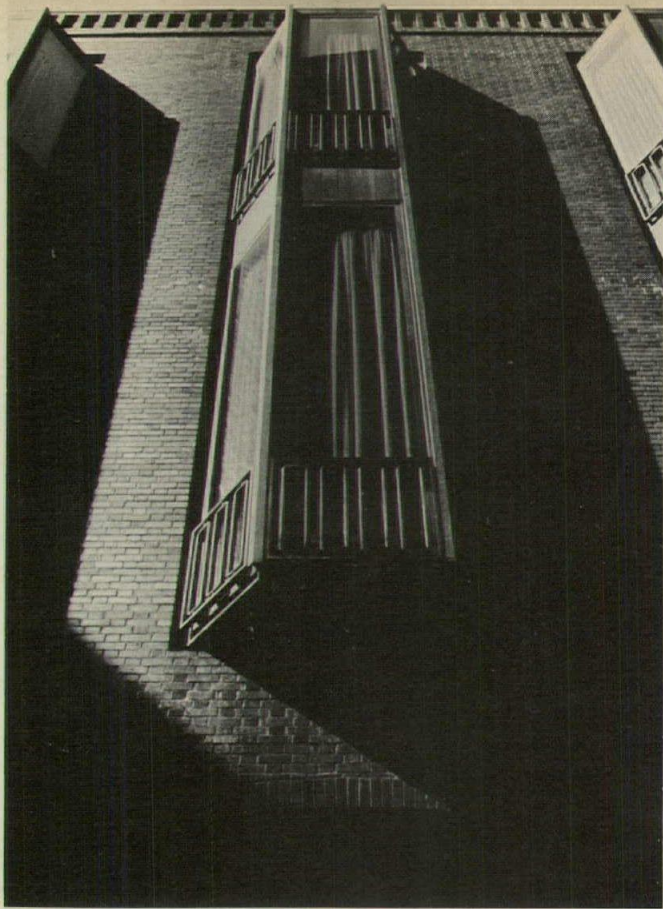
The importance of President Kennedy’s intervention therefore turns out to be not so much the preservation of old houses, or an insistence on “good” architecture, but an official recognition that complex problems require complex answers. To the limits of his involvement, which concerned the exterior appearance, Kennedy was able to set up a situation which over-rode the “impracticalities” of restoring (or inventing) old houses, and changing around floor plans for exterior effect.

In an article in the *Washington Post* published soon after Kennedy’s assassination, William Walton told of the many hours that the President spent on Lafayette Square:

“At one moment I apologized for interrupting his crowded day with a matter less than global in content.

“‘That’s all right,’ he said. ‘After all, this may be the only monument we’ll leave.’”

Lafayette Square is far from John Kennedy’s only monument; but, showing, as it does, the difference that a high-level concern with design can make, it is certainly not a bad one to have.



FEDERAL OFFICE BUILDING NO. 7 AND THE U.S. COURT OF CLAIMS AND COURT OF CUSTOMS AND PATENT APPEALS BUILDING, Washington, D.C. Architects and landscape architects: *John Carl Warnecke and Associates*; structural engineers: *Chin & Hensolt, Associates*; mechanical and electrical engineers: *Keller & Gannon*; general contractor: *Blake Construction Company*.

HOODED SKYLIGHTS ENRICH EXTERIOR

and create a varied and dramatic sequence of bold interior spaces

A phantasmagoria of shed roof skylights creates an ever-changing and picturesque composition of elevations in this large house for a Canadian diplomat, his wife and their son. The skylights, called "light-grabbers" by the architect, Hugh Hardy, are used to dramatically emphasize important interior spaces. Their use was motivated by a compact site closed on the east and west by neighboring houses, by the owner's wish to have no windows open onto the street side at the north, and by the inappropriateness of using large expanses of glass where the temperature dips to 40 degrees below zero.

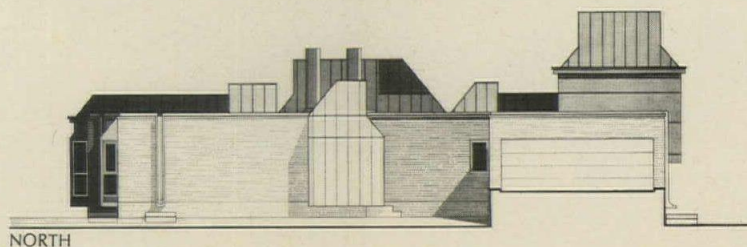
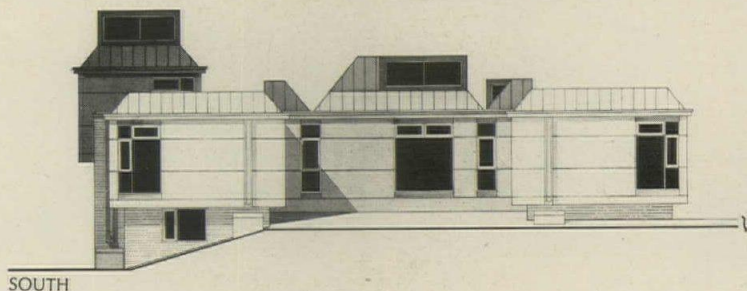
The resulting plan for this \$120,000 house is a series of distinct pavilions developed on essentially one level. Only the west wing is expanded to two stories to provide extra bedrooms, storage and playroom below with dining room, kitchen, study and garage above. The identity of the pavilions is further enforced by capping them with separate mansard roofs, some also having skylight roof forms.

The exterior walls are intended to create a sequence of changing profiles and the fenestration is a series of "hole-punchings" determined by interior requirements. For ease of maintenance, poured-in-place reinforced concrete walls are used on the exterior in two contrasting finishes. The pavilion walls were given a smooth finish by plywood forms, while the remainder of the house has a rough finish created by rough-sawn board forms. The "light-grabber" roofs are sheathed in standing-seam copper, while the flat roofs are built-up construction.

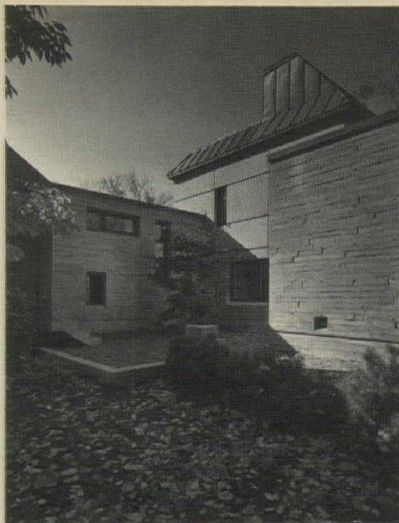
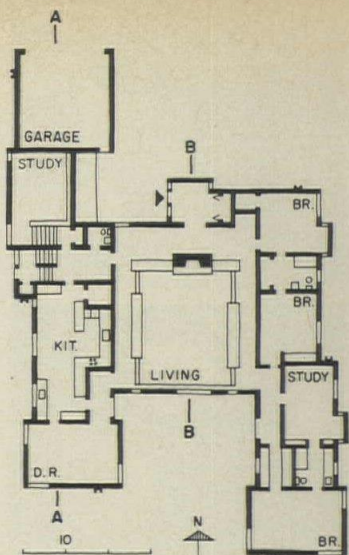
The plan generates a deep central living room which looks south into a



man McGrath photos





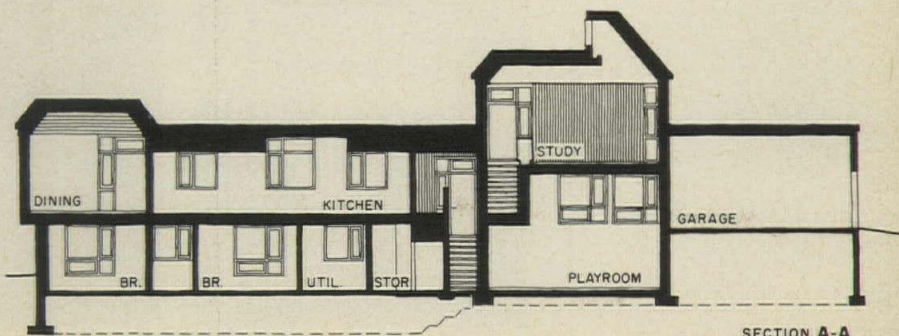


The north facade facing onto the street was kept closed at the owner's request. The entrance, *above left* continues this idea by facing west, its double doors only implied from the street. A prominent "light-grabber" on the west facade, *above and below*, is built up to light a second-floor study. The house, hemmed in by neighbors to the east and west, and closed off to the north, opens out onto a courtyard, *left*, which becomes an extension of the living room.

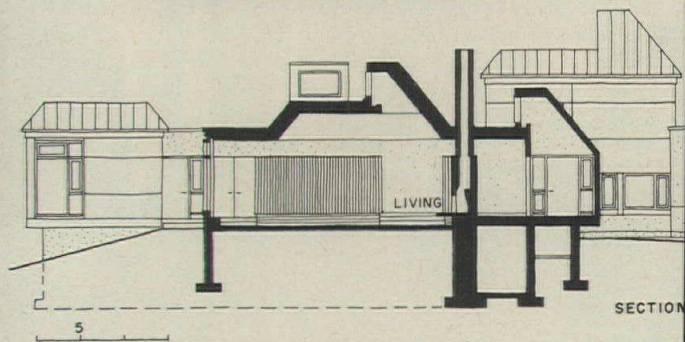
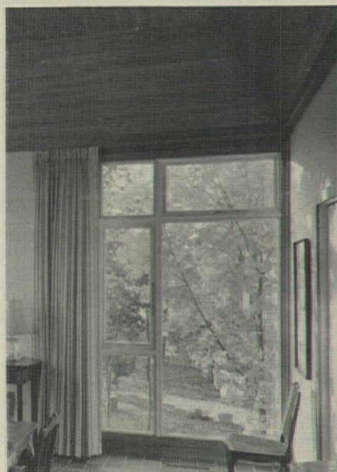
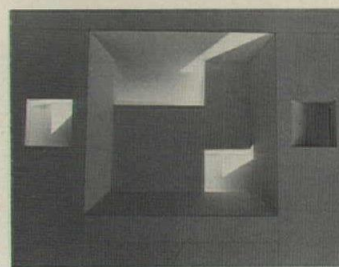
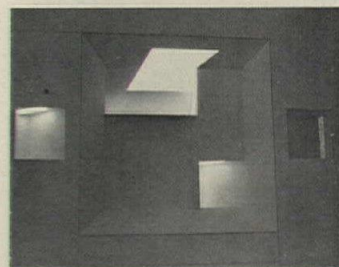
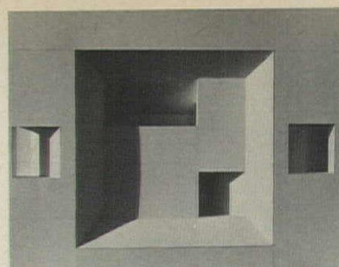


...rtyard whose fourth wall is implied
 a separate wooden summer house,
 going the geometry of the living room
 pavilion. The large and grand living
 room—with its faceted ceiling and skylights—is intended to provide a suitable
 environment for the owner's collection
 of Canadian painting and sculpture. The
 light grabbers are raised from the roof
 to bounce south light off north walls for
 a variety of changing lighting effects. To
 create a lively and interesting space,
 the living room pavilion is shaped in four ways—a change of
 floor levels; free-standing bookcase elements;
 an articulated ceiling; and the
 skylights.

DESIGN for Mr. and Mrs. Peter Dobell,
 Cliffside Park, Ottawa, Ontario. Architect:
 Hugh Hardy & Associates; associated architect:
 Peter & Heaton; structural engineer: Henry
 J. J. J.; mechanical engineer: Brais, Frigon and
 Co.; landscape architect: D. W. Graham &
 Associates, Ltd.; contractor: Taplen Construc-
 tion Ltd.



Ceiling treatment, used by Hugh Hardy for functional as well as esthetic reasons, plays an important role in shaping the sequence of interior spaces. Three lighting studies for the articulated planes of the living room ceiling, at right, show the variety of effects at day and night which enliven the room and provide a changing background for the owner's collection of painting and sculpture. At night, the ceiling is washed by indirect light from the top of free-standing bookcase elements, *bottom right*. The dining room, at *bottom*, and the master bedroom have triple exposure and are dominated by their dark ceilings which are edge grain hemlock tongue and groove flush board. Other walls and ceilings are plaster, with service areas such as the kitchen, having a flat roof.

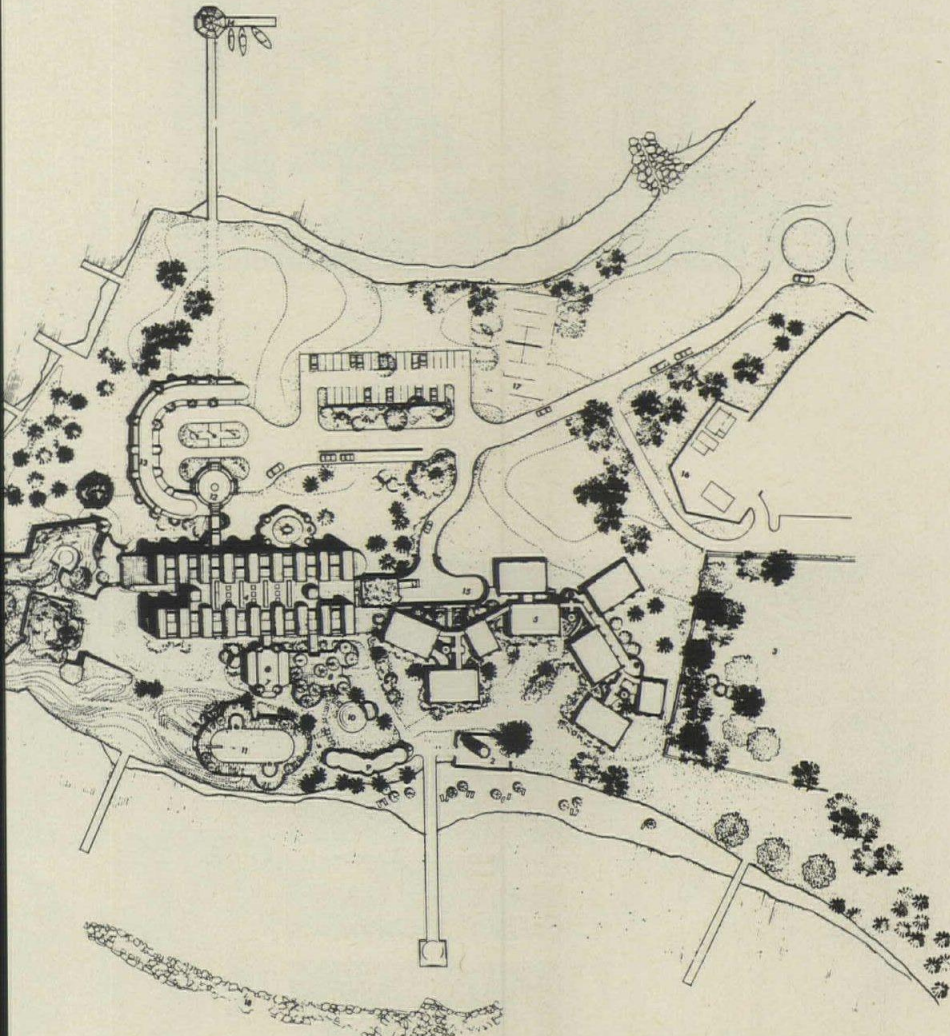


The island of Barbados gets a Hilton

—this one worth a visit just for its architecture

Most travellers, including architects, will agree that days spent in adventurous discovery of things exotic, beautiful and strange, should end in the secure ambience of familiar comforts and unaccustomed luxuries—and this is why we need to have resort hotels. Because of their generally mediocre design, however, typical luxury hotels are rarely found in the architect's slide collection or sketch book. The Barbados Hilton may turn out to be a noteworthy exception to this rule. On an island which holds much for architects to see—17th to 19th century buildings which include sturdy old sugar mills, military garrisons and warehouses, an occasional fine plantation house, a lovely Georgian church for each parish and a noble theological college founded in 1710—the only good 20th century building is the Hilton.

One of the principal reasons for its success as architecture was the decision made by architects Warner Burns Toan and Lunde to construct the hotel within the best native building traditions of Barbados and to make extensive use of coral stone, a beautiful material indigenous to the Caribbean. In addition, since the island now has an excellent precast concrete industry, precast elements were selected to form the basic structure. Another key reason for the esthetic success of this hotel is the intelligent manner in which the natural and man-made advantages of the site have been utilized and enhanced. The bastions and cannon of an old fort, and a handsome lighthouse have been preserved. A brand new coral reef, just offshore, attracts the tropical fish—providing a fine ichthyological viewing ground for moderately venture-some snorkelers.



Port Charles
 Old lighthouse
 Military cemetery
 Main building
 Tennis
 Main dining room
 Bar & cocktail lounge
 Outdoor dining terrace
 Gazebo
 Dance floor & bandstand
 Pool
 Entrance pavilion
 Shopping arcade
 Quatic shop & pier
 Call service yard
 Mechanical yard
 Tennis court
 Reef

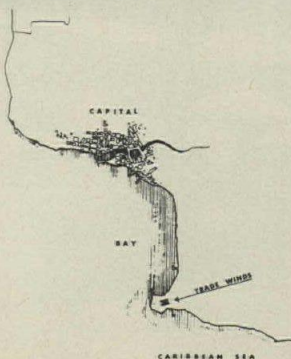
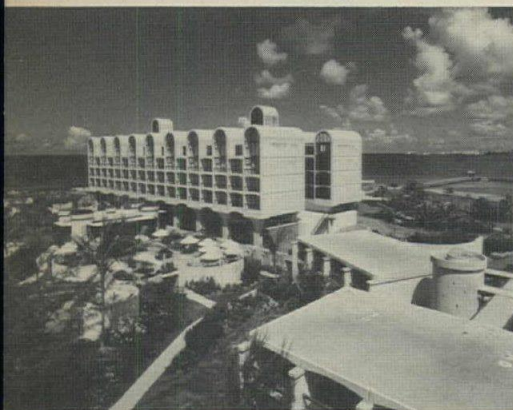


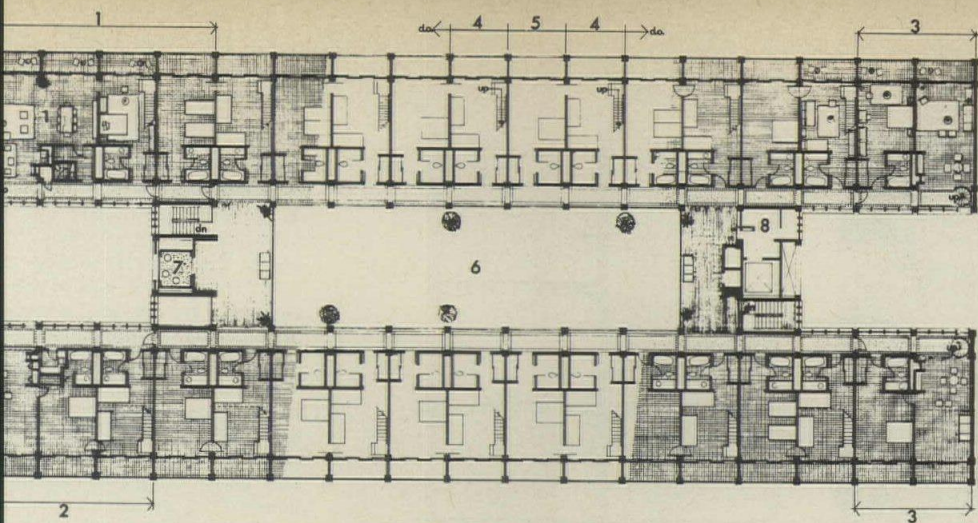
Marc Neuhof photos

The photograph directly below was taken from the lighthouse tower looking toward the point. Bridgeton, the island's capital, can be seen across the bay to the right. A shopping arcade, parking, and the principal entrance are located on the bay side toward the town. In the foreground of the photo are two-story lanais interconnected at the second-story level by bridges which are reached by circular stair towers. As the site plan on the preceding page indicates, the portion of the land to the south which overlooks the Caribbean Sea and the swimming beach is the most intricately and richly landscaped. The heart of the scheme is the five-story lushly planted, interior sky-lit court shown in plan (1), section and in the photograph at right. The other major interior space is the terrace cafe (3) which overlooks the outdoor terrace (4) and is shown in the photograph at the bottom of the opposite page. Neither of these interior spaces is air conditioned. They are directly in the path of the trade winds which enter through louvered screens assuring a pleasant temperature. The ceiling fans, in the terrace cafe, like most of the lighting fixtures, railings, furniture, fabrics and finish materials were native-made. They slowly revolve in the gentle breeze. All other spaces are air conditioned including the elliptical dining room (6), a space defined by a series of cusps of varying sizes the larger of which form dining alcoves, a band stand and a space for displays of native cooking. The smaller serve as vertical windows. The exterior appearance of these cusps is shown at the top of this page. Bedrooms are of two kinds. On the third bedroom floor are two-story duplexes with a pre-cast concrete barrel vault which gives an even greater vertical space bonus. These units, containing stairs and a mezzanine, are extremely handsome, but because of their height in relation to their size, are difficult to photograph adequately. The duplexes alternate with the standard single-story units shown in the photo second from top on the opposite page. These are used throughout the lower floors and in the lanais. On the third floor the roofs of these units serve as private terraces adjacent to the duplex mezzanines. These terraces can be seen in the section and top photograph.

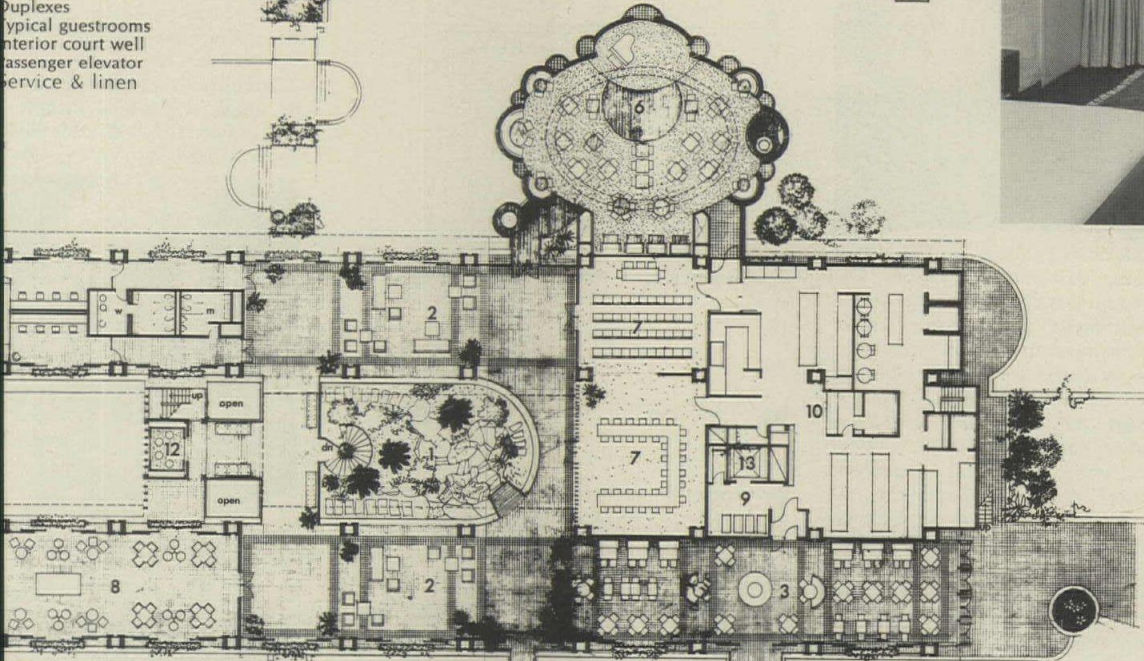


Marc Neuhoft photos



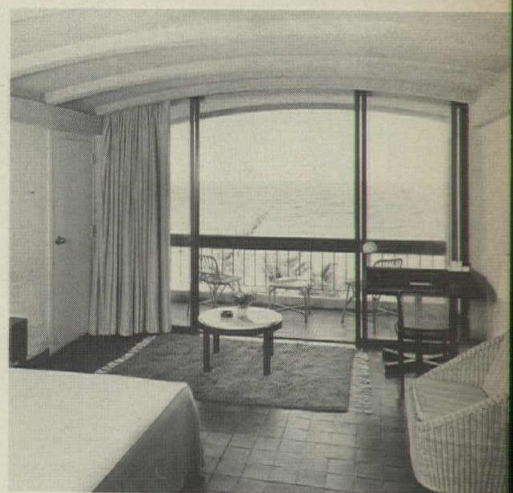
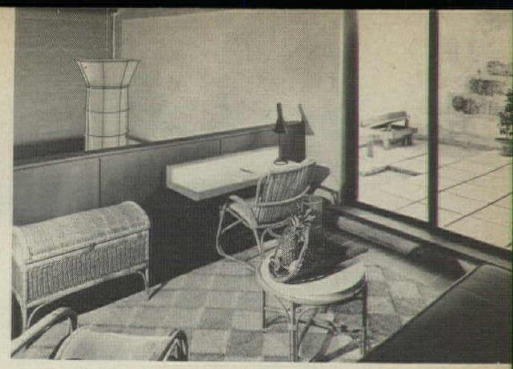
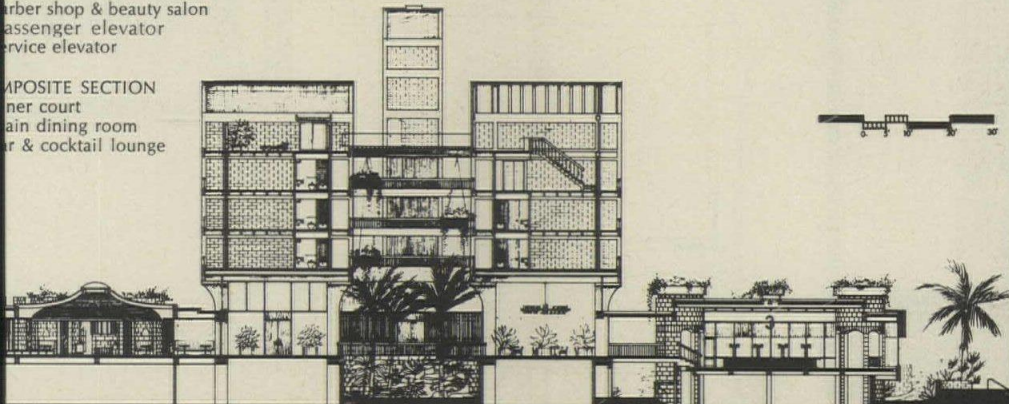


DUPLEXES AND SUITES LOWER LEVEL
 residential suite
 Deluxe suite
 suites
 Duplexes
 typical guestrooms
 interior court well
 passenger elevator
 service & linen



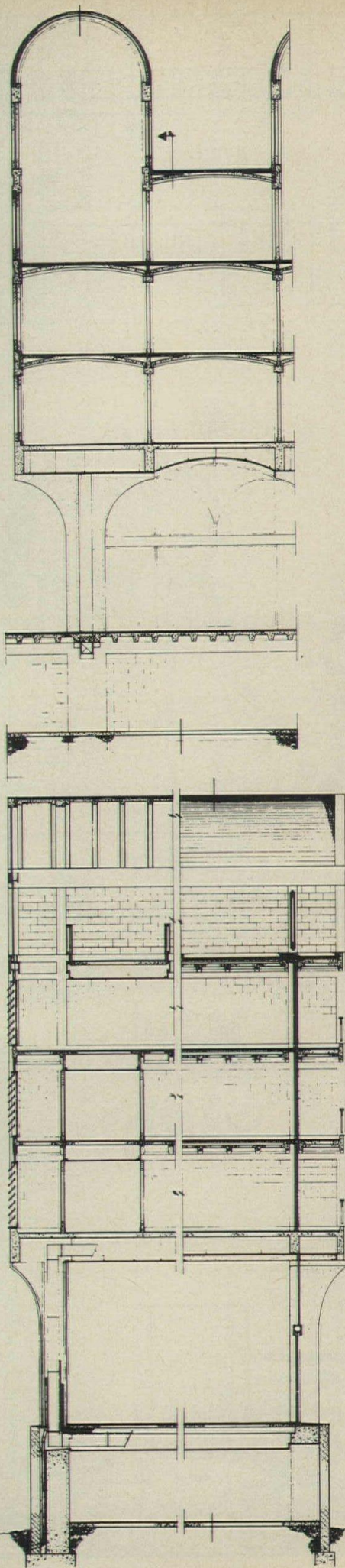
UPPER FLOOR PLAN
 upper part of inner court
 lounge
 covered terrace dining &
 lounge
 open terrace dining
 lounge & cocktail lounge
 main dining room & night club
 function room—opens
 to main dining room
 game room
 room service
 kitchen
 barber shop & beauty salon
 passenger elevator
 service elevator

COMPOSITE SECTION
 inner court
 main dining room
 lounge & cocktail lounge

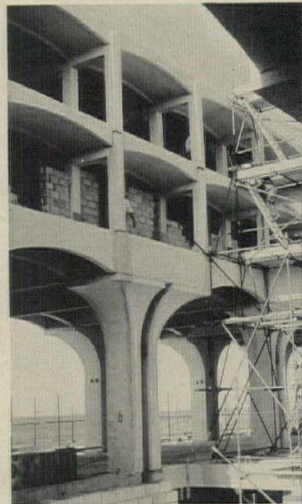




BARBAROS HILTON HOTEL, Christ Church, Barbados, W.I. Owner: *The Barbados Development Board for the Government of Barbados*; lessee: *Hilton International Co.* Architects: *Warner Burns Toan Lunde*—project associate: *Bernard Ehrlich*; interior design: *Bernard Ehrlich and Klaus Muller*; landscape design: *Frithjof M. Lunde*; structural engineers: *David E. Key & Partners*; mechanical engineers: *Cosentini Associates*; lighting consultants: *Wheel-Garon*; project horticulturist: *Richard Coghlan*; general construction: *Barbados Development Board (project manager: Alwin T. Wason) and Token Construction Co.*; precast concrete superstructure: *International Construction Ltd.*

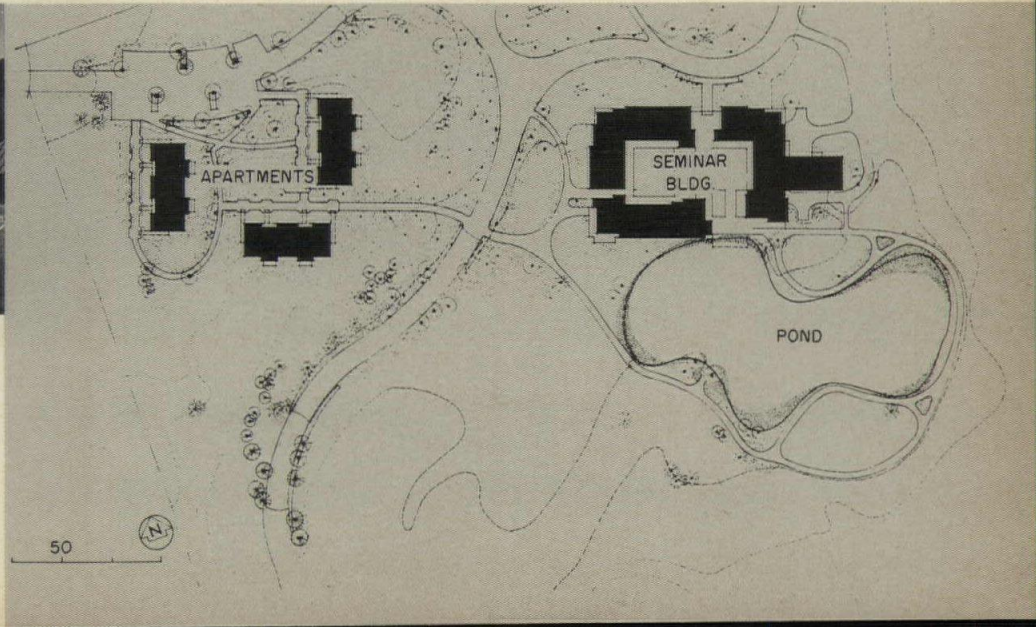


The major precast elements and coral stone infill can be seen in the drawings and photographs. The masonry piers are cast in two parts which surround the vertical mechanical ducts. These piers carry the main transverse beams at their outer edges. The precast ribbed slabs which form the ceilings of the second, third and terrace floor roof balconies and corridors are generally arched for esthetic effect only. They actually function as flat slabs. There are no true arches, and except for the aforementioned slabs, the precast barrel vaults and the curved ceiling caps, all structural elements are essentially linear. The photograph of the wall helps to indicate the basic construction which in turn clearly reveals the interior plan. The long spans follow the long axis of the hotel rooms while the short spans define the balconies on one side and the corridors on the other. Cooling is circulated through the bedrooms by supply and return ducts located within furred ceilings over the bedroom and entry.



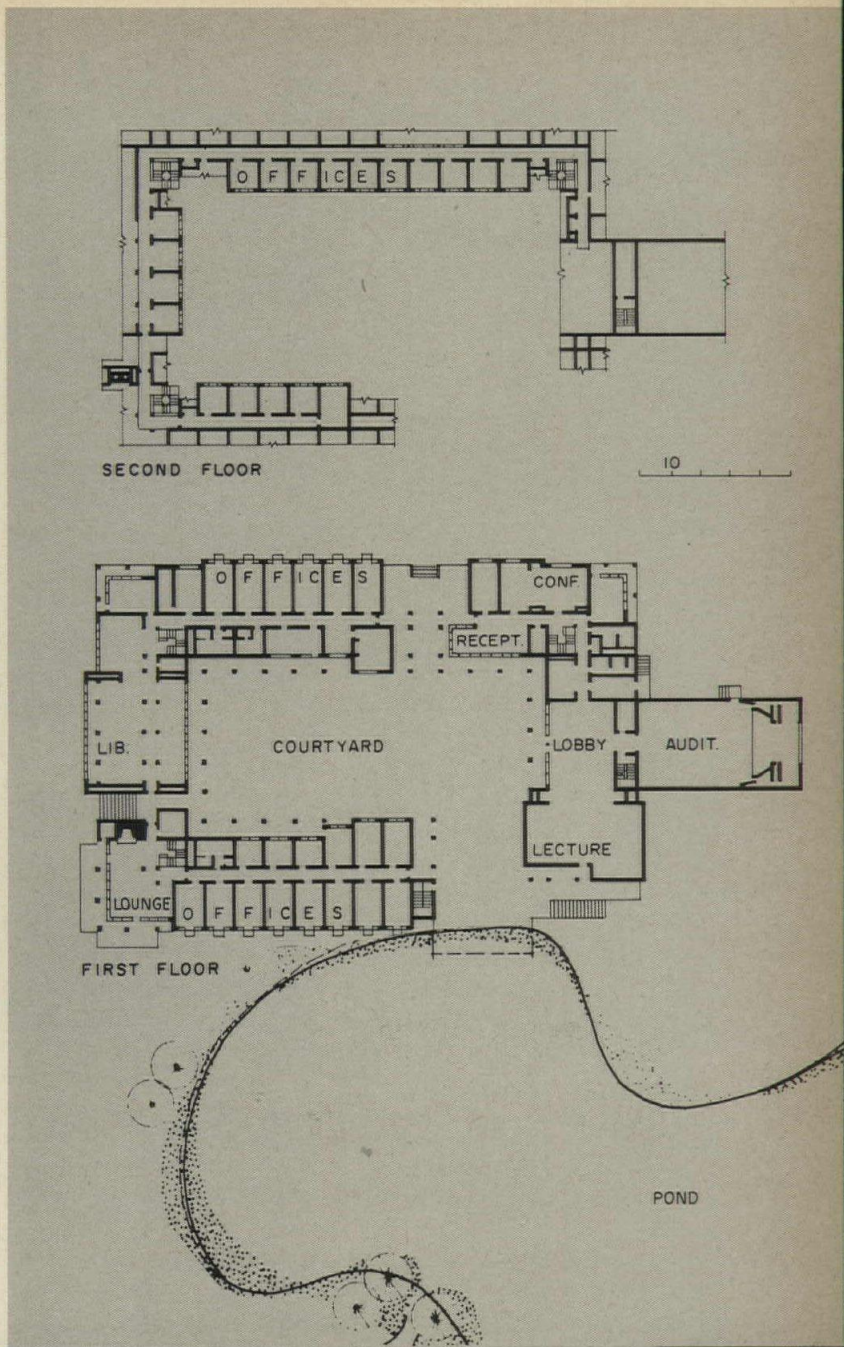


THEORETICAL RESEARCH CENTER
SITED—AND DESIGNED—FOR BOTH
RURAL AND URBAN AMENITIES





Thinkers need peace and quiet so a contemplative environment is traditionally a rural retreat. But there are advantages. Access to major universities, libraries, scientific institutes and other resources can make an urban locale not only attractive but highly desirable. The Battelle Seattle Research Center, a center for theoretical research, study and seminars, was fortunate in its site. It offers the best of both worlds: an undeveloped 18-acre plot contiguous at one corner to the University of Washington campus and located in a pleasant residential neighborhood of Seattle. The first phase of the Center's construction includes an office and seminar building, three apart-



Buildings and the handsome development of the site around a large pond.

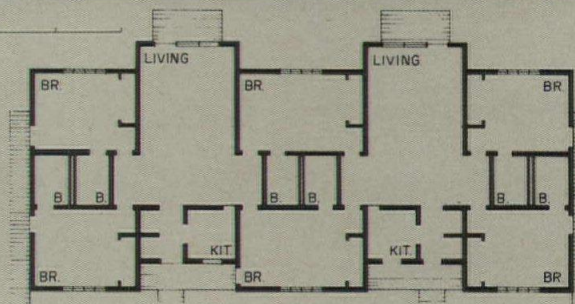
The pond, focal element in the site plan and an idyllic note in the grounds, was feasible because it covers a natural depression left when Lake Washington was drained from this part of the city. The fact that the entire site is lower than the surrounding area—it drops 20 feet from perimeter to center—contributes to the serenity which was a requirement of the program, but it also makes the roofs conspicuous to residents of the hills above. Pitched roofs with monitors (angled in the apartment buildings to direct sunlight to interiors) are clad with weathering steel.





TYPICAL APARTMENT

The three one-story apartment buildings each contain two three-bedroom units, which can be rearranged to provide one, two, three or four bedroom apartments; or a single room and bath can be used individually. All bedrooms have outside access. Dining rooms at the center of the building make a common space which can be used for discussions.



The research/seminar building contains office-studies for 41 visiting and permanent staff members, library, five conference and seminar rooms and a 100-seat lecture hall, which can be used by other than the Center's staff without violating the privacy of the staff office areas. The buildings are grouped around a court which opens to the pond.

BATTELLE SEATTLE RESEARCH CENTER, Seattle, Washington. Architects: *Naramore, Bain, Brady & Johanson*; structural engineers: *Skilling, Helle, Christianson, Robertson*; mechanical and electrical engineers: *Bouillon, Christofferson & Schairer*; landscape architect: *Richard Haag & Associates*; contractor: *Farwest Construction Company*.

NEW APPROACH FOR SHOPPING CENTERS

Shopping centers have been extravagant consumers of land ever since the first center was built. Now, suddenly, the "vast sea of asphalt"—never acceptable esthetically—is no longer economically justifiable. Soaring land values and decreasing amounts of urban land point up the fact that what land is available must be more efficiently used. Undoubtedly this will mean that it will be more profitably used as well. So far these pressures have had little effect on shopping center design, as the centers on the following pages—selected from the finest of today's centers—attest. But the shopping center of the future may be required to respond to those pressures, and the future rule of commercial centers may be compactness and multiple use of land. The impact that this could have on cities deserves thorough and imaginative study by architects and planners. From being the 20th Century's odd new building type, the shopping center may well become a strong force for urban renaissance.

—Elisabeth K. Thompson



1. Westland Center, Nankin Township, Mich. Victor Gruen Associates, architects. 2. Del Monte Center, Monterey, Calif. John Carl Warnecke & Associates, architects. 3. Schilling Motors, Inc., Memphis, Roy Harrover & Associates, architects. 4. Fashion Island, Newport Center, Irvine, Calif. Welton Becket & Associates, architects.



A NEW LOOK AT PAST, PRESENT AND FUTURE SHOPPING CENTERS

By Victor Gruen, F.A.I.A.

The regional shopping center that wants to be ahead of its competition at the time it reaches its full potential—about 10 years after design—must be based on planning concepts which look forward to conditions that will exist some 15 years later. For instance, a center planned in 1968 probably would not open for business even in its first stage before late 1971. Second and third stages may be added about 1976. It will reach its full potential about two years later. To be ahead of its competition then, it should be pre-planning now for 1984.

Two trends—already apparent not only in planning now under way in the offices of architects and planners but in those of great corporations and by public agencies—suggest strong competition for the shopping center as we know it today. The first of these is the revitalized and strengthened downtown core, served by improved public and private means of transportation; enhanced by such amenities as pedestrian areas; served by well-designed, well-located terminal facilities for both private cars and public transit; enriched in their viability by nearby high-density housing and a complete co-mixture of all urban functions—cultural, spiritual, educational and artistic, with entertainment, shopping, office and civic facilities.

The second competitor will be found within the framework of "new towns" developed within the metropolitan region. Plans and designs now on the boards for such new towns feature town centers which attempt to duplicate, on a smaller scale, all the values mentioned above for revitalized city-cores. This trend is clear in such new towns as Reston and Columbia in the East, Litchfield Park and Valencia in the West, and many others. There can be little doubt that in the next 15 years not only these but many other such projects will be under way all over the U.S.

Competition to the regional shopping center will take full advantage of all the innovations used by the conventional suburban regional shopping center but it will also avoid the mistakes made in even the best of today's regional shopping centers. In the light of this developing competition it might be a good idea to reassess the conventional center, its strengths and its weaknesses.

Conventional centers have strong points

All of the strong features of the regional shopping centers show the effect of the strict separation of pedestrian traffic from automobile traffic (once the building cluster has been reached), and the separation of service and trucking activities from shoppers' automobile and pedestrian traffic. These features—probably best exemplified in Southdale, still considered a highpoint in regional shopping center design—include one-stop shopping for all types of merchandise; the protected, air-conditioned, attractive and enjoyable shopping environment with comparatively short walking distances within a compactly arranged center; and cultural, educational and community as well as commercial values.

... but they have drawbacks

The appearance of most shopping centers—seen from surrounding streets and highways and from the parking area—is inferior, lacking strength of expression and unity of design. We have succeeded in making shopping itself a pleasant experience in a center like Southdale, but we have not succeeded in making the walk from the parked vehicle to the building cluster and back to the automobile anything better than sheer drudgery. On paper, walking distances are usually kept within 600 feet, but actual walking distances are much greater. Sixty to eighty per cent of the total available land area in the average conventional regional shopping center is used for on-ground parking and the necessary circulatory roads and drives. The use of land in this way is uneconomic and wasteful; it is annoying and inconvenient for customers. Worse, on-ground parking creates an environment which repels good residential—and other—development in the area.

Fringe development spoils many

In most cases, shopping center developers have given no attention at all to the problem of development in the surrounding area, and the result has been pirating competition, sub-standard development, or development which is outright hostile to the functions and purposes of the shopping center. Even in Northland and Southdale, where farsighted developers acquired control of

surrounding land, the hopes which influenced this acquisition have remained either fully or partly unfulfilled. At Northland, for example, a comparatively vigorous development has taken place in the so-called fringe area: high-rise apartment buildings, office buildings, hotels, a legitimate theater, a movie theater, research laboratories, plants for light industry. Although some of these developments may have resulted in favorable real estate deals for the original shopping center developer, it is a question whether the "urban growth" around Northland has created more advantages or more problems for Northland Center itself.

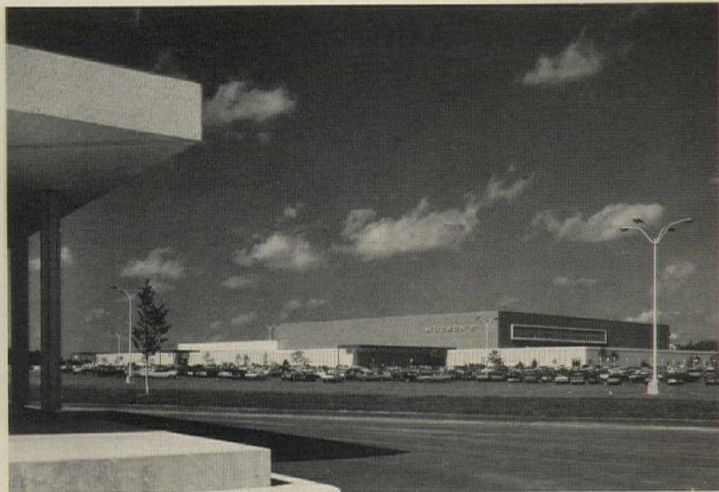
Not only is the Northland building cluster itself surrounded by a vast parking area and a network of freeways and highways but each individual structure and group of structures in the fringe area is in turn surrounded by its own parking and road network.

Thus there is no special advantage being located in an office, an apartment or any other building within viewing distance of Northland because going to the Center from these buildings (or vice versa) is both hazardous and bothersome on foot and it therefore becomes a vehicle, not a pedestrian, trip. This creates high traffic densities and a need for further road building and road widening; in the near future it might well also require an internal public transportation system which would probably have to be subsidized. With an individual parking area for each building or group of buildings some parking areas are underused many times and overused at others.

Urban sub-centers will be the next step

The next 15 years will be an era of urban population explosion, with the large number of future urbanites attracted to existing metropolitan regions. The regional pattern may respond to this either by additional unplanned spreading or by the growth of new satellite towns, but also most likely by increase of density within existing suburban areas.

Large tracts of land within the existing suburban area will become increasingly more difficult to find and to acquire. However, a land area of 100 acres will have to be utilized to create not just a shopping center but a compact and complete *urban sub-center* encor

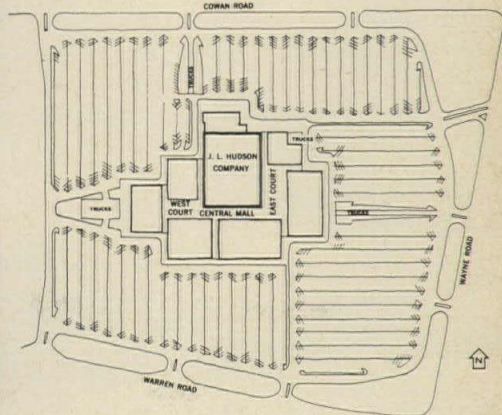


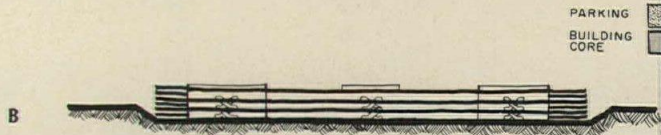
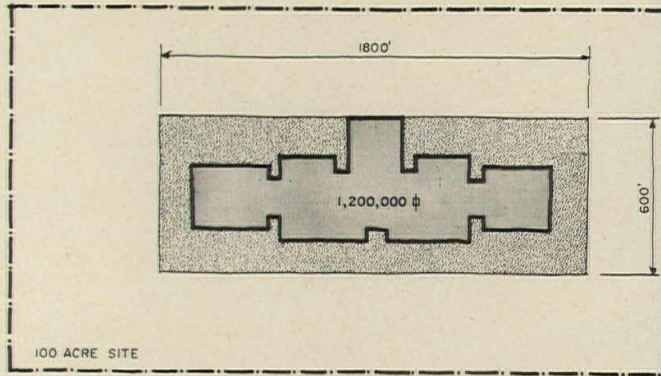
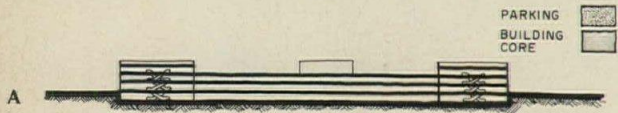
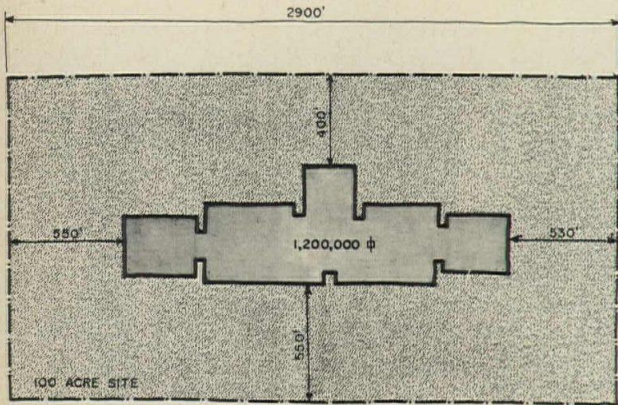
TODAY'S CENTER REFINES BASIC PRINCIPLES

Westland, a large center near Detroit, Michigan, is a handsome development of the enclosed-mall type. Its enclosed, air conditioned environment provides a place for community activities, exhibitions and events which attract customers. Its public areas, landscaped and furnished with a variety of customer amenities—sculpture, benches, lockers, drinking foundations—are exceptionally pleasant. Parking for 4500 cars is provided around the building cluster, with access through arcades to the central mall which separates the east and west courts. Most stores face onto malls and courts, thus minimizing competition for attention through signs on the exterior of the center.

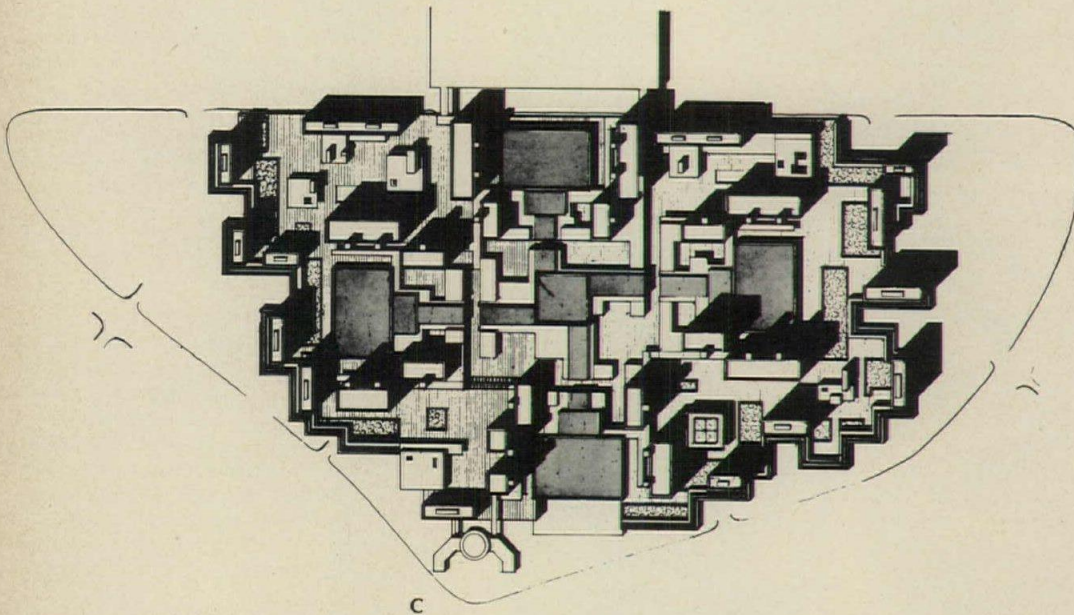
WESTLAND CENTER, Nankin Township near Detroit, Michigan. Owner-developer: *Shopping Centers, Inc.*, architects: *Victor Gruen Associates*—*Karl O. Van Leuven, Jr.* partner in charge; associate architect: *Louis G. Redstone*; mechanical engineers: *Robert E. Hattis*; general contractor: *Darin and Armstrong*.

Balthazar photos





TOMORROW'S CENTER BREAKS BARRIERS TO HIGH-INTENSITY LAND USE

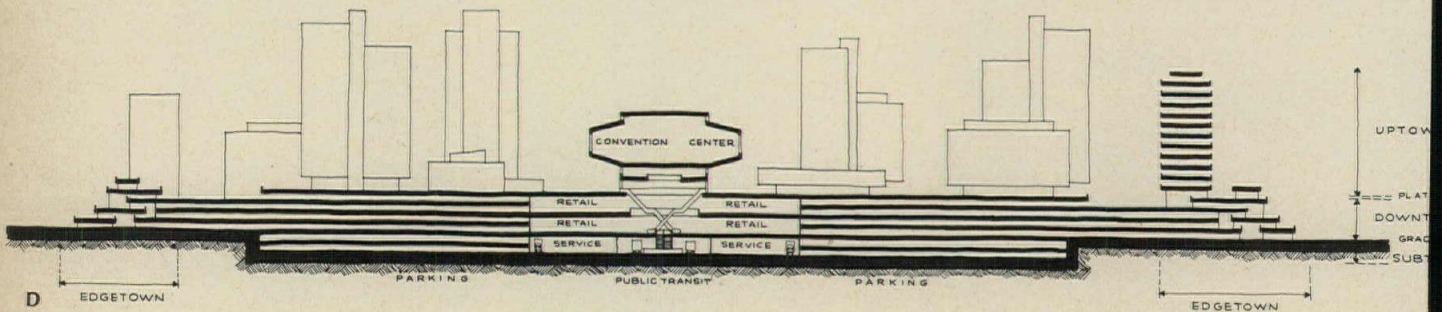


A
Standard shopping center: productive area 1,200,000; ground coverage 430,000 sq. ft.; land area 4,360,000 sq. ft.; density 0.36.

B
Compact shopping center, with deck parking: productive area 200,000 sq. ft.; ground coverage (buildings and pedestrian area) 430,000 sq. ft.; land area 1,080,000 sq. ft.; density 1:1 (3 times standard center).

C
Valencia city center, platform level: productive area 14,150,000 sq. ft.; land area 4,050,000; density 3.5.

D
Conceptual study for City Center new city of Valencia, California. platform is base for UPTOWN high-rise office and apartment building. DOWNTOWN is multi-purpose commercial level, with services in tunnel below; EDGETOWN is low-rise residential. Concept details are being modified as project moves toward preliminary design. Architects: Victor Gruen Associates.



...ssing all urban functions, residential
its, office buildings, cultural and edu-
tional facilities, hotels, amusement ac-
tivities, churches, community facilities,
pic facilities, etc. All these urban func-
ns could be so intimately connected
th the shopping function, and with
ch other, that the automobile would
unnecessary and impossible within the
ban sub-center complex. If this can
accomplished, high land values for
e use of high- and medium-rise apart-
ent rental units or cooperatives, high-
d medium-rise office buildings, banks,
stitutions, etc., could be created be-
use in contrast to the pattern of fringe
velopment (as occurred in Southdale),
e adjacency of these buildings to each
ner and to the regional shopping cen-
ter would not be illusory but factual.

o-centers would have many advantages

...e advantages to a shopping center and
its department stores of a densely de-
veloped and intimately connected com-
munity surrounding would include:

- A captive shopping population could be created consisting of the resi-
dents of the apartment buildings, the em-
ployees of the office buildings, hotel
guests, etc., which could reach the center
and the department stores without using
cars, and which would increase the sales
volume from 15 to 20 per cent.

- The attractiveness of the center
itself would be enhanced and the radius
of its influence zone would be expanded.

- It would encourage the introduc-
tion and efficient operation of a public
transportation system, thus making pos-
sible either a reduction in parking area
or a higher sales income per square foot.

- The urban sub-center would be
better able to withstand future competi-
tion of town centers or new satellite
towns, since it would be offering basi-
cally the same advantages.

Center planning needs a new approach

...The basic difference between the con-
ventional regional shopping center ap-
proach and the urban sub-center ap-
proach consists in the employment of
those measures which make an inten-
sive land use possible. This involves:

- *The planning of the shopping cen-
ter cluster itself.* Here I don't think one
can go much further than we did in

Southdale and many other shopping cen-
ters which we have designed since—
namely to utilize for purposes of the
shopping center three full levels: a lower
level fully or partly underground, a mid-
dle level on or slightly above ground
level and an upper level raised one floor
above the middle level. A fourth level
could be reserved for future expansion
of some or all of the department stores.

- *A radically different approach to
the parking arrangement.* Parking could
surround the tight building cluster on all
sides in a band of about 120 feet in depth
and five to six levels high. The lowest
level would be reserved for employees,
others would lead shoppers to the lower
or upper selling levels. Such a parking ar-
rangement would cut walking distances
for the shopper to one-fifth the distance
in the conventional parking arrangement
on ground level; it would provide for a
walk to and from the car in a sheltered,
protected environment; and it would
protect the car from all weather influ-
ences. It would also effect savings in up-
keep and maintenance of pavement.

The roof of the top parking level
would be on the same level as the roof
of the upper level stores so that one
large platform would result, a platform
which could be utilized for the construc-
tion of office buildings, high rise apart-
ment buildings and other structures.

An intensive land use such as this
would result (for a shopping center of
about one million square feet rental area
including the needed parking areas) in a
land usage of approximately 20 acres.
Thus approximately 80 acres would re-
main on which a community consisting
of high- and medium-rise apartment
buildings, possibly low-rise patio or row
housing units, restaurants, theaters,
amusement places, churches, community
buildings, office buildings, hotels, etc.
could be constructed. In addition, the
largest part of the platform (let us say 12
acres) on top of the shopping center
would also be available for such build-
ings. The buildings would be arranged
so that they are connected by pleasant
walkways with each other and with the
shopping center.

... and presents some problems

Most shopping center developers and, in
all probability, the major lending institu-

tions, will be reluctant to proceed along
completely new approaches involving
not only unusual expenditures (such as
for multi-level parking structures), but
also broadened activities in aspects of
land economics and real estate which are
less familiar than those presented by the
regional shopping center. There are dif-
ficulties and complications, not only for
the architect and planner whose task will
become infinitely more complicated, but
also in regard to staging, economics, tax
implications, and possibly zoning. How-
ever, it should be remembered that
Northland, at the time of its inception,
was poorly rated by economists who
warned against the high costs of its novel
features; not a single financing institution
could be persuaded to make a loan be-
fore construction started. At Southdale—
except for Dayton's—everybody felt that
the scheme was impracticable and "way
out," and many-sided resistance had to
be overcome before the architectural
proposals could be implemented.

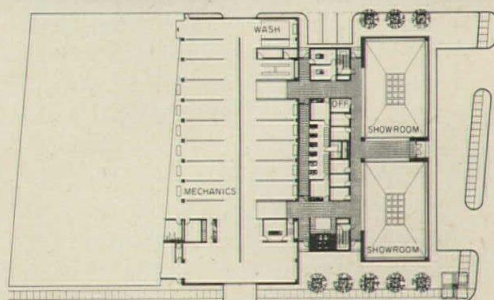
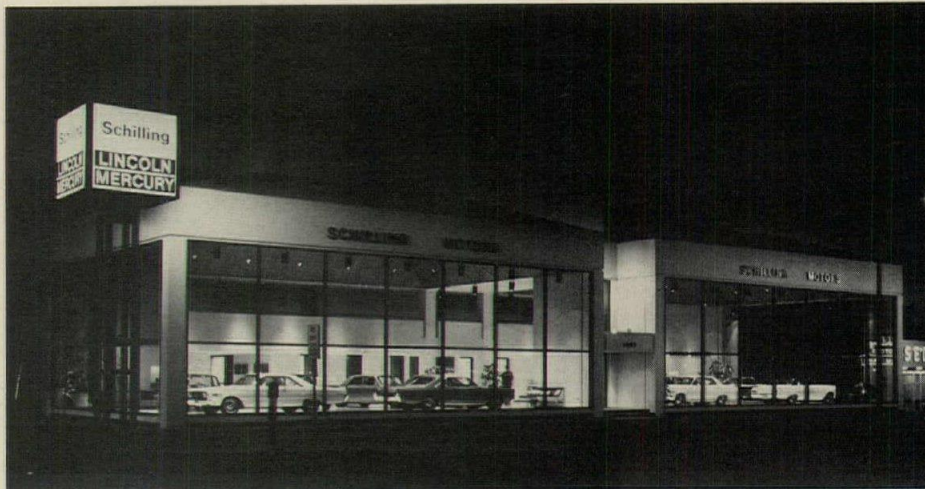
There are other shapes of the future

Looking ahead to the not too distant fu-
ture, I predict that the trend toward re-
centralization, clearly expressed in the
hundreds of downtown revitalization
projects under way or on the boards, will
be even further developed. The one-pur-
pose shopping center of today will give
way to the integrated multi-function
center which will range in size from in-
tegrated neighborhood centers to in-
tegrated town centers and metropolitan
centers. We will learn to use land more
economically, through a three-dimen-
sional planning approach which will
permit using the land several times over,
with the different elements of a center
placed above and below each other, not
side by side as now. We will store auto-
mobiles in multi-deck garages, using
their top surfaces for "productive" struc-
tures—including residences—and urban
open spaces. With a density pattern of 1
to 3, some 7.5- to 13-million square feet
of productive area can be provided on
land where today we place between
600,000 and 1 million square feet of re-
tail facilities. The importance and size of
such a center will be a justification for
introduction of mass public transporta-
tion. The large, all-purpose, integrated
urban center is the shape of the future.

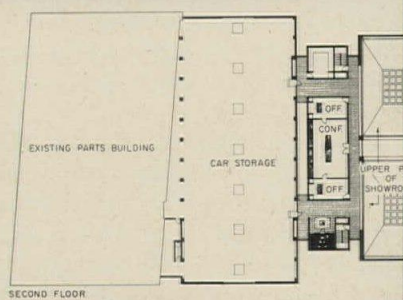
AUTOMOBILE DISPLAY, SALES AND SERVICE CENTER: A RARE EXAMPLE

This elegantly simple building for Schilling Motors, Inc., in Memphis, Tennessee, with its controlled graphics, well-organized office functions and dramatically lighted display spaces, shows how effective architecture can be in a building type generally marked by lack of restraint. In this instance, the architects were given a completely free hand by the client, who asked only that they design a showroom "unlike any other". The open pyramidal roofs with their skylights do indeed provide unique showrooms for the cars Schilling sells. So pleased was the owner with the first two showrooms, that he has added, a block to the west, a smaller but similar show room for display of a single Lincoln Continental. All three showrooms use high-intensity lighting for maximum effect. The Lincoln showroom is carpeted; the other two, shown here, have an impervious finish over epoxy terrazzo. The plans organized in three parts: display, office and service. A curved skylight, running almost the length of the building, daylight the office area and is a visual separation between sales-office area and service garage. Offices for owners and manager, and a conference room, are located on the second floor of the sales-display-office building. A balcony overlooks the display area. The garage building is air conditioned. Its second floor is for car storage, reached by a ramp from an existing adjacent building also owned by Schilling Motors. Exterior walls of the building are of brick or concrete block cavity construction; used brick and stucco finish the garage building walls, one of which is left exposed in the office area. All graphics were designed by the architects to incorporate the trademark lettering of the automobile manufacturer.

SCHILLING MOTORS, INC., Memphis, Tennessee. Architects: Roy P. Harrover and Associates—Tommy Polk, project designer; structural engineers: S. S. Kenworthy & Associates; mechanical engineers: Office of Griffith C. Burr; landscape architect: Duke Moody; contractor: M. C. White Construction Company.



FIRST FLOOR



SECOND FLOOR

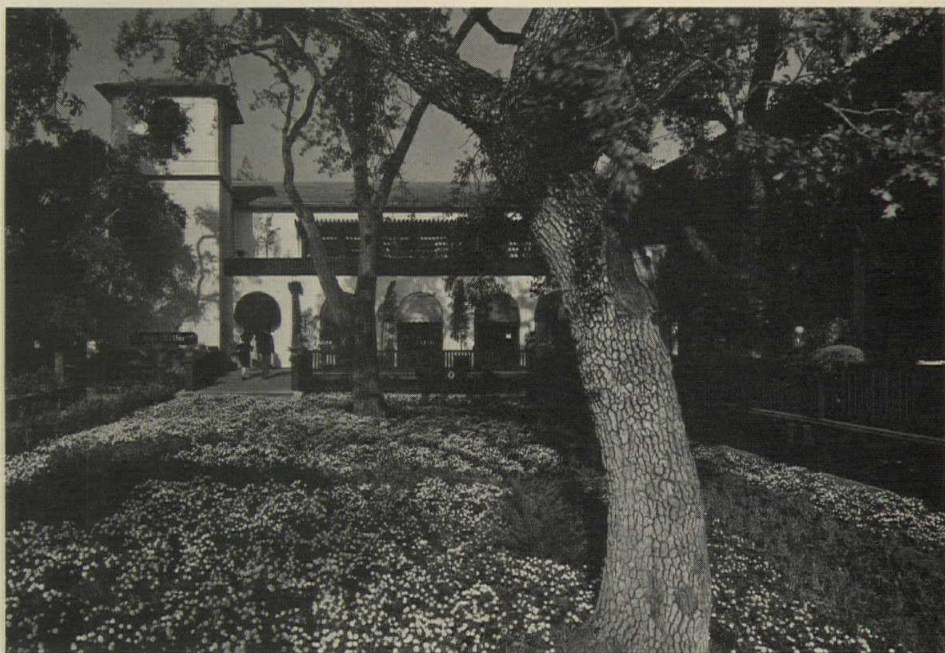
The program required showroom space for a minimum of 10 cars. The solution provides two identical two-story-high spaces with open pyramidal ceilings topped with skylights. By day and by night, lighting is dramatic. A balcony along the second floor, where executive offices are located, overlooks the showrooms.



SHOPS AND STUDIOS IN A REMODELED SCHOOL BUILDING

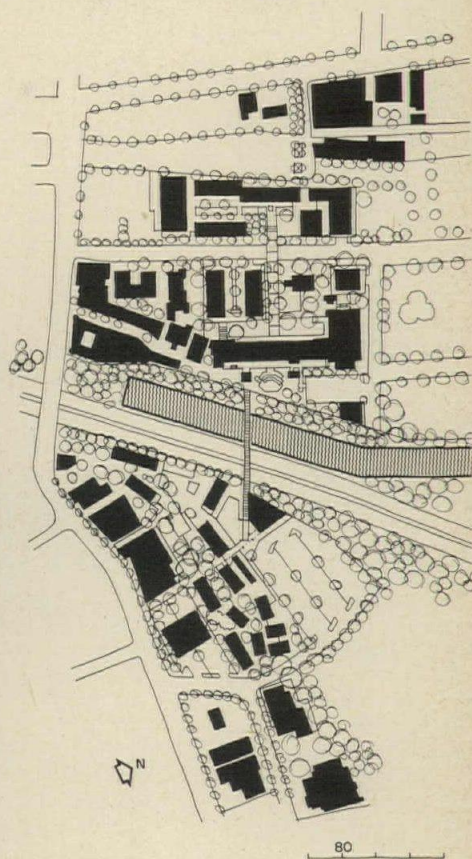
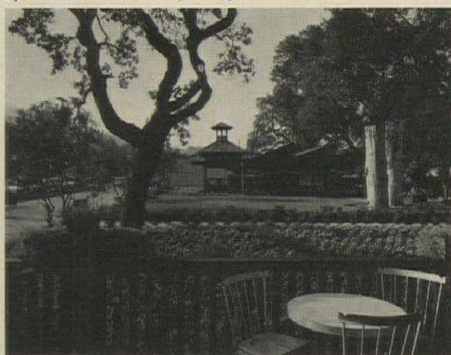
Old Town, a commercial and fine arts center in Los Gatos, California, some 50 miles south of San Francisco, preserves and imaginatively exploits the scale and character appropriate to a small town. Here a shopping center of typical dimensions would have violated the particular quality of the area. Old Town fits right in to the town and contributes its own kind of visual and cultural delight to the community. Admittedly a specialty center, Old Town has exceeded the developer's most optimistic expectations that the first phase, shown here, will soon be augmented by phases two and three. The building around which the center is being developed is a 1923, Mission-style school building, sold by the district in 1957. Remodeling the building is not inexpensive, says the architect, but it not only netted greater height and more space than new construction could have provided, but it preserved a community landmark. The architects added wood decks, trellises and balconies, and extended the roof in some portions to provide covered access to upper level shops. The conference room—a new building visible in the photograph at bottom—is available to the community for lectures and meetings and is a part of promotional activities of the center. These are generally cultural in nature, and attract large numbers of potential shoppers. An outdoor amphitheater at the rear of the old school building is used for summer programs. Future expansion of the center will include remodeling of the old mill will be restored as a mill and bakery; a church will be remodeled to resemble the old railroad station and will be used as a banquet room.

OLD TOWN, Los Gatos, California. Owner-developer: Max Walden; architects: Frank Laufen & Associates; civil engineers: Honholdt Sweany; landscape consultant: Paul McMullen; general contractors: James A. Mason (exterior work), Frans A. Laulainen (interior work).



Joshua Freiwald photos

Shops, studios with artists at work, restaurants, an outdoor amphitheater and a theater-auditorium make up Los Gatos Old Town, a center of specialty shops whose main building is a remodeled schoolhouse. The old school-auditorium-theater (shown, remodeled and with a new bandstand addition, immediately below) is now used for conferences, exhibitions, musical and dramatic events. Shop exteriors and signs were controlled by a group headed by the architect, who was also responsible for many shop interiors.



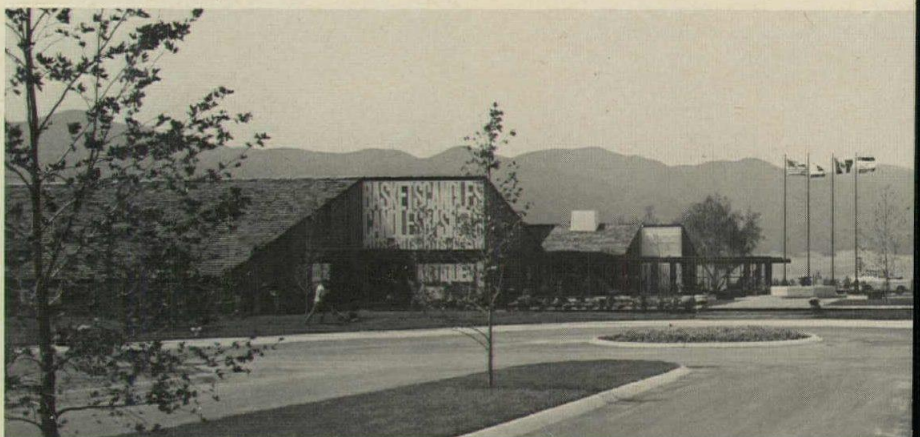
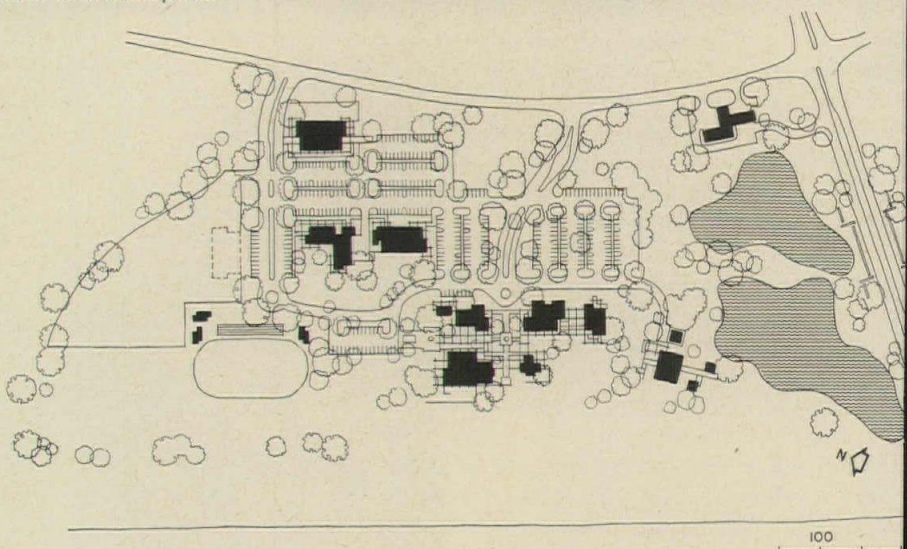
SHOPPING CENTER FOR RANCHERS AND TOURISTS

Rancho California Plaza is the commercial center for an 87,500-acre development uniquely oriented toward agricultural uses and destined eventually to contain community facilities of a wide variety. The Plaza serves residents of the development but is designed to attract visitors and customers from U.S. Highway 395 which runs through the development and along one side of the Plaza. The program called for buildings which would reflect the ranching character of the development. With this requirement and a tight budget to meet, wood (rough sawn cedar) became the most appropriate material to use. The buildings, built at a cost of \$9 per square foot, are deceptively simple, their sophisticated design relying on a play of planes against each other. Boardwalks and heavy timber trellises connect the various buildings and cut the rising lines of the shed roofs. Exterior texture is derived from the use of board and batten on vertical surfaces except where walls are used for graphics, painted on plaster surfacing. This first phase of the Plaza includes specialty shops (some feature local crafts), a refreshment stand, a market and two land-sales buildings. An existing building was remodeled by the architects for use as a general store and post office. A second phase will contain additional shops, a bank, drug store, restaurant and offices.

RANCHO CALIFORNIA PLAZA, Highway 395, Riverside County, California. Owners-developers: Macco Realty Company (a subsidiary of The Pennsylvania Railroad Company), Kaiser Aluminum and Chemical Company, and Kaiser Industries Corporation; architects: Killingsworth, Brady & Associates, Inc.; structural engineer: Carl A. Hart; electrical engineers: Lee-Ishii Associates; landscape architects: Linesch & Reynolds, contractor: Richard Gabriel.



Robert C. Cleveland photos





ing of buildings, casual open
ces and extensive use of wood,
mbined with sophisticated design,
ke this "country store" complex
opping point for tourists and a
asant place for local residents
m Rancho California and nearby
ns) to shop. The Plaza includes a
e rental stable and a children's
ground with a lake.



A "SUPER REGIONAL" CENTER IN A DEVELOPING NEW CITY

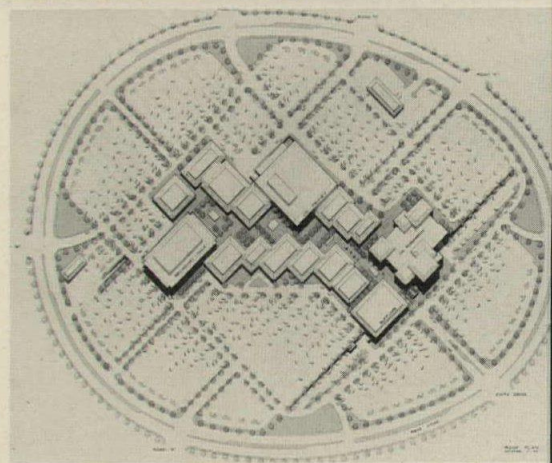
Fashion Island is the largest shopping center built so far in the West, the size of 68 football fields, with almost a million square feet of store area. Its location in a fantastically expanding part of the coast of Southern California seems to warrant size, number and variety of stores, and its developers expect it to gross \$35- to \$50-million in annual sales within three years of its opening. It was fully rented five months before it opened. But Fashion Island is one part of 622-acre Newport Center, the business section of the developing city of Irvine, whose impetus is the new campus of the University of California. Fashion Island has the potential for the kind of quality fringe development mentioned in his article by Victor Gruen, and the managerial organization to make it happen. The land around Newport Center—88,000 acres—is owned by The Irvine Company which is the developer.

Fashion Island is set on a man-made mesa. Its 56 stores—four of them major department stores—open onto a series of courts, each different from the others in appearance and use, and it is the courts which give Fashion Island its special quality. The mall shop fronts are offset to form the courts, and the courts are offset from each other. This plan provides more corner area, important in customer attraction; it shortens the length of the mall by some 200 feet; and it offers changing visual experiences. One court, or plaza, is a sunken square, paved with blue and white tile, used for exhibitions; its good-sized stage is used for a variety of events. Another has a reflecting pool with benches along its length. Still another is a children's play court, and a fourth contains display cases. The fifth, with its raised fountain, opens to a view over Newport Beach to the Pacific Ocean and is used for fashion shows.

FASHION ISLAND REGIONAL SHOPPING CENTER, Newport Center, Irvine, California. Architects: *Welton Becket and Associates* (master plan, mall buildings and Buffum's Store); *William L. Pereira & Associates* (J. W. Robinson's store); *Charles Luckman Associates* (J. C. Penney and Broadway stores); civil engineers: *Quinton Engineers*; landscape architects: *Sasaki-Walker & Associates*; graphics consultants: *Usher-Follis Associates*; contractors: *Diversified Builders* (site work, mall shops, The Broadway), *Allison Honor Co.* (J. C. Penney), *Jackson Brothers* (Buffum's), *C. L. Peck* (Robinson's).

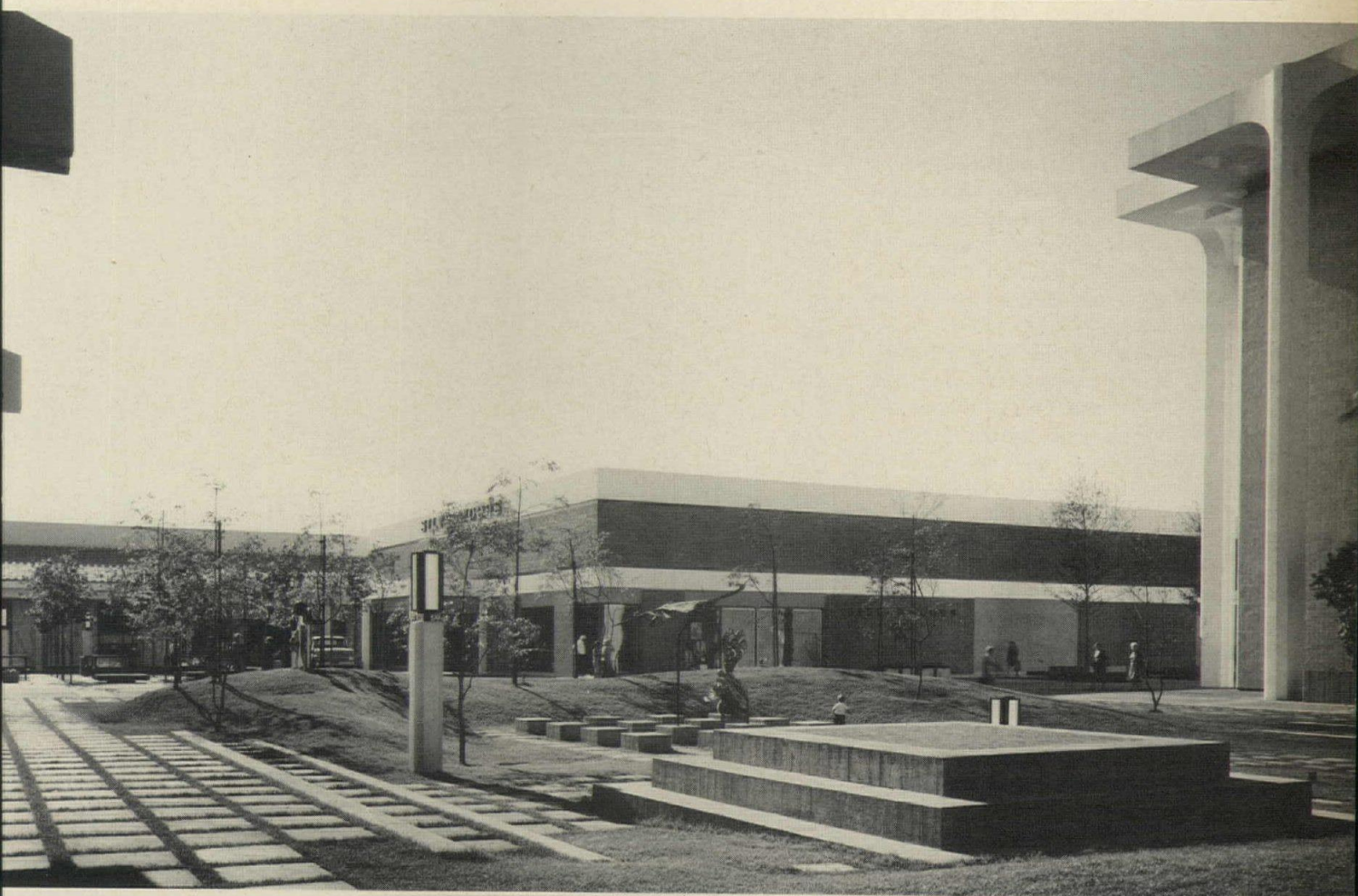


Fashion Island's plazas are its distinctive feature. Arranged in a sort of rambling path through the center, they lead the shopper through a variety of visual experiences, some formal, some informal. All, however, have a double purpose: to make shopping a pleasure and to make a customer of the shopper. Thus every plaza is different, and by offsetting the mall buildings to form the plazas, more corner locations—always desirable in merchandising—are created. The plazas also give scale to a center which is so huge. No over-all impression of the center itself is possible; the entrances (one is shown above) are flanked by the large stores of the center.

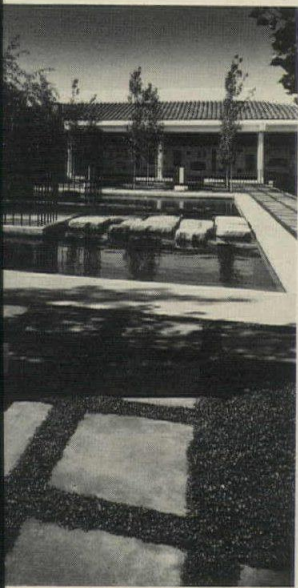


Marvin Rand photos





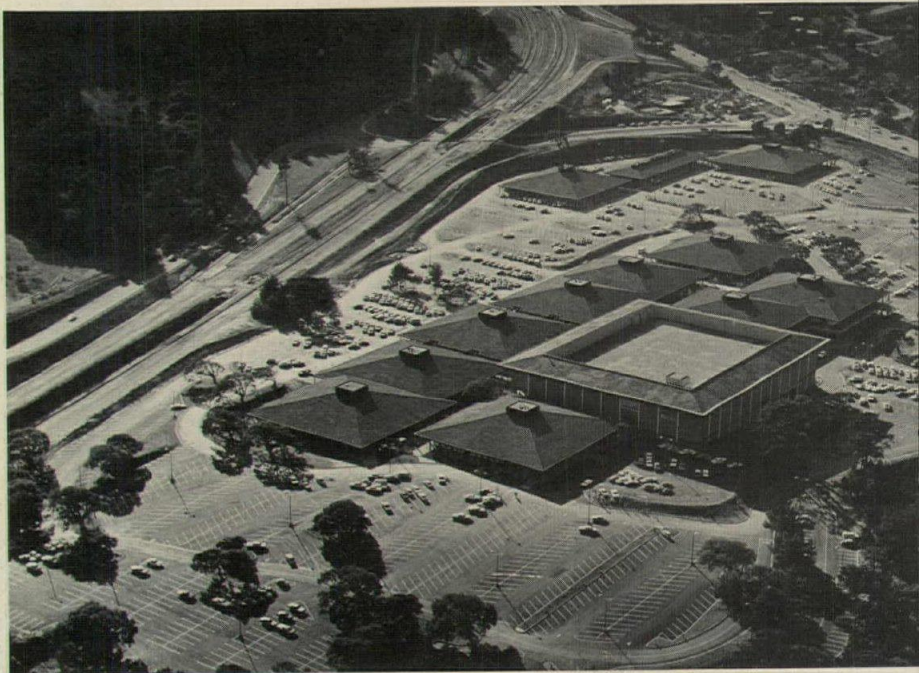
l furniture was designed by the
itects: benches, lights, display
es, fountains. Sculpture court,
n permanently installed "Three
ers", is used for exhibitions; it
has a stage. Tile roofs add color
white columns.



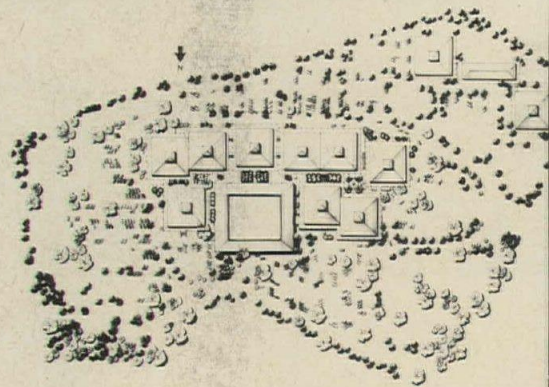
INTIMATE SCALE, "HILL VILLAGE" CHARACTER FOR A REGIONAL CENTER

At Del Monte Center, buildings and site have a rare affinity. Although this is a regional shopping center, it has the character of a compactly developed village and the scale of a neighborhood center. It was, in fact, originally designed as a small center, but the growth of the Monterey, California area (which this center serves) indicated need for a center of regional size and scope. The location of a regional shopping center on a site of such natural beauty was, however, a very sensitive matter, for the site is just outside Monterey on a hill beside the road to Carmel. The residents of the region were strongly opposed to any building which would change the scale and character of the area. As built, Del Monte Center recognizes the special qualities of the site, its design following the spirit, scale and character of the original small center. Its 10 buildings are clustered on the site and related to each other so deftly that even near the major department store which serves as anchor for the center, there is a sense of intimacy. The buildings are of various sizes, and their roofs vary in height; the covered walks and landscaped malls, the large oak and pine trees, and the fountains and plazas all contribute to visual pleasure of the center. Parking for 2400 cars is distributed on terraces throughout the site so as to minimize their presence by reducing their number in any one place; some existing trees were retained, others were added, to break the expanse of asphalt. Materials used on the buildings—adobe, slumpstone and redwood panels—were chosen for their reflection of the Monterey tradition of masonry and wood construction.

DEL MONTE CENTER, Monterey, California. Owner: *The Draper Companies*; architects: *John Carl Warnecke & Associates*; structural engineers: *Simpson, Stratta & Associates*; mechanical engineers: *Charles & Braun*; electrical engineers: *Edward S. Shinn & Associates*; civil engineers: *Kirker, Chapman & Associates*; landscape architects: *Lawrence Halprin & Associates*; contractors: *Dillingham Construction Corporation and Rothschild, Raffin & Weireck*, joint venture.



The center's 10 small buildings, with their tile covered hipped roofs, range along both sides of the irregular line of the mall. The large building is the center's one department store. Despite the size of the center—it has 408,000 square feet of store area—it manages to retain the kind of human scale more often found in a smaller center. Major roads bound the site; parking layout uses rolling terrain and some existing trees to break the 2400-space area into smaller components. Adobe and slumpstone facings for buildings recall traditional local construction.





furniture, benches, drinking
 fountains, waste receptacles, plant-
 beds and tubs, graphics (for the
 building, not store and shop signs)
 and lights—were designed by the
 architects and are handsome, and
 not intrusive, parts of the setting.



Morley Baer



Arcades encircle each of the mall buildings and give covered access to all parts of the center from the parking area. The tapered, faceted columns are of precast concrete, left natural. The climate, mild almost the year around, does not require an enclosed center; the design of the open mall makes the most of the site's natural beauty.



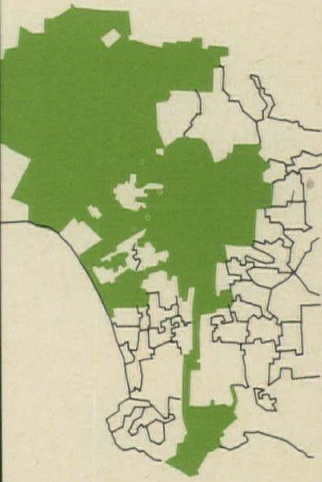


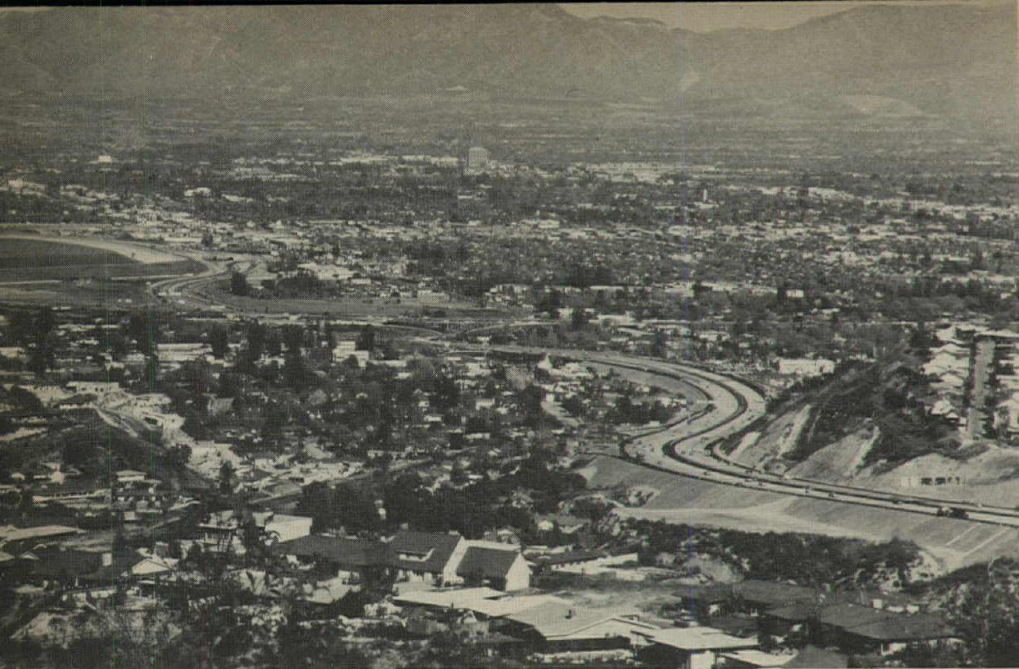
city of Los Angeles
 or area on map below)
 one of 76 political entities in
 Angeles County.

Geotronics—a Teledyne Co.

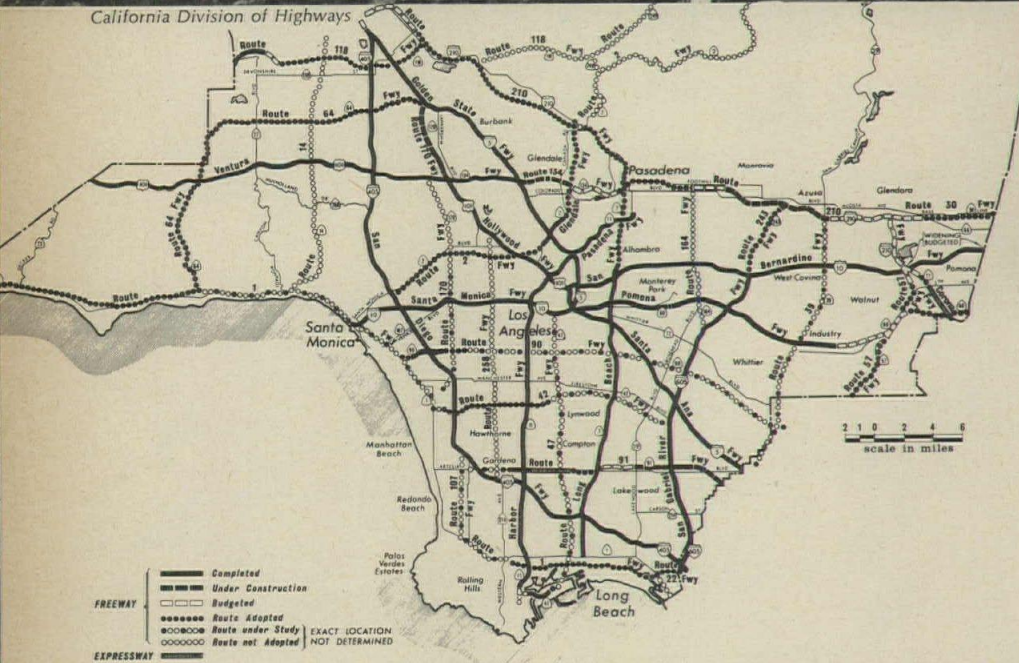
LOS ANGELES

Unique, individualistic, idiosyncratic, Los Angeles is the super-contemporary city. Vigorous, vital, exciting, fast-paced and sometimes chaotic, it has evolved an urban pattern, a mode of living and a degree of individual mobility peculiarly appropriate to its location and to its time. Los Angeles could happen only where it did and does happen: in a still-new part of the New World, unhampered by the traditions and prejudices that sometimes fetter older cities. Growth is life to Los Angeles, even with the problems it generates. Undaunted by the most rapid population expansion and physical development ever experienced by a city, it courts even more growth. But from now on it will grow by plan, not by accident, for it has devised new and exceptional ways to make a plan that is of the people and by the people.—*Elisabeth K. Thompson*





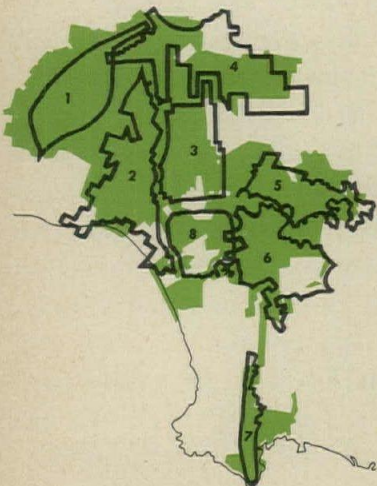
California Division of Highways



The extensiveness of the Los Angeles basin led to prodigal use of the land for low-rise buildings, principally single-family houses, leaving little space for public parks. The city has 1.8 acres of parkland per thousand residents (a reasonable standard is 15 acres per thousand). One reason is the individual plot and yard. Another is that Angelenos are being mobile about other activities. They are equally mobile about recreation, leaving town on weekends to go to beaches, mountains and desert within easy driving time. Los

New dimensions in the horizontal city: taller buildings, more and faster freeways—a

The City of Los Angeles' 463-square mile area could hold combined areas of St. Louis (1), Cleveland (2), Minneapolis (3), Milwaukee (4), Boston (5), Pittsburgh (6), Manhattan (7), and San Francisco (8) with a total population of 6,591,000. Los Angeles' present population is 2,799,500.



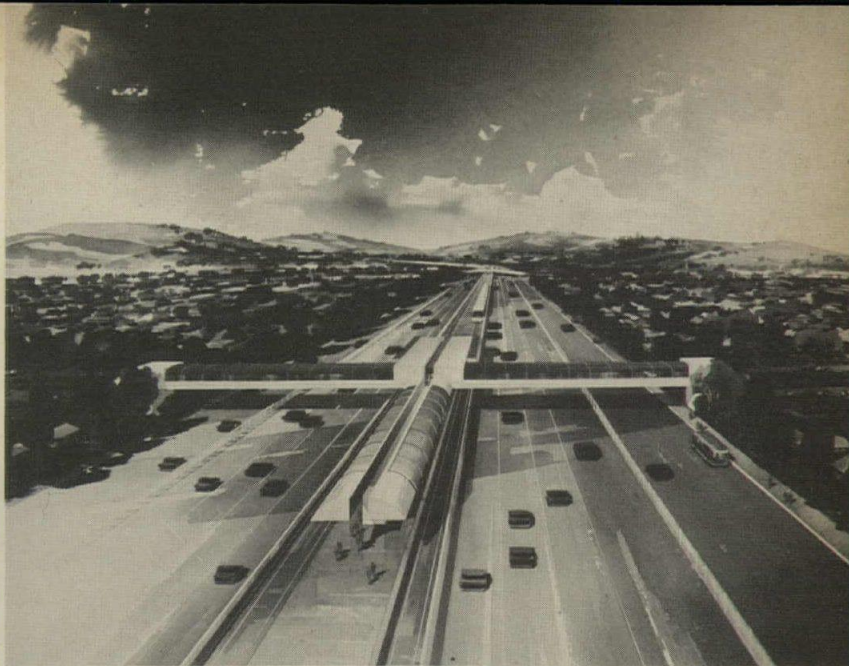
From the air, Los Angeles is magnificent, breath-taking—and shocking. The great basin below, from the Pacific Ocean to the San Gabriel Mountains 40 miles inland, from the Santa Monica Mountains on one side to the Puente and Chino Hills and the Santa Ana Mountains on the other, is carpeted with buildings. As far as the eye can see there is no break—except for the wide streets and broad swaths of the freeways—in the solid pattern of urban development. It is a sight to see, even to dismay—but not to ignore. Los Angeles is unique, a city of cities, a new order of metropolis. It is today's city today and, some are beginning to say, tomorrow's city as well.

Other cities have larger populations—Los Angeles with 2,799,000 is third in the United States, and far behind Tokyo and London—but Los Angeles has the largest area: 463 square miles. The com-

bined land areas of eight major U.S. cities could fit within its boundaries. But the city of Los Angeles, large as it is, is only part of the even larger, 4,083-square-mile county of Los Angeles with its 7 million residents, and that in turn is part of metropolitan area, also known as the Los Angeles basin, which comprises parts of adjacent Orange and Ventura counties and the hither parts of San Bernardino, Riverside counties. To distinguish the parts as visual entities is impossible; they flow into another more smoothly from bay into ocean. Climate and terrain vary greatly, from very hot and dry to cold and damp, from desert to mountain, from plain to beach. But from the air the variations are not discernible.

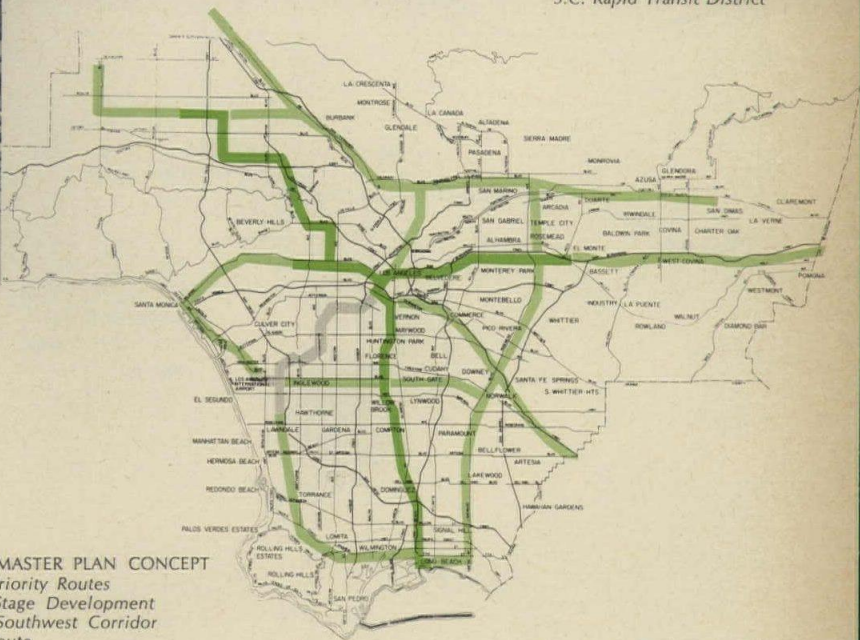
The scale, too, is confusing; so many small parts in so vast a whole: miles and miles of low buildings punctuated here and there by taller buildings.

es' organization is based on mo-
ty and on the freeways which are
city's badge of feasibility: they
ke possible the widespread dep-
ment, yet through them even
farthest community is within
nutes of the city's center. When
1500-mile freeway network
nned by the state division of
hways is completed in 1980, some
tions of improved design will re-
te travel time even more.



S.C. Rapid Transit District

5-billion mass transit system, to
voted on in November, would
the city its greatest single stim-
for change. Along initial 62-
e route high-rise development
ld intensify land use, permit
patterns of urban living and dis-
tute future growth throughout
ropolitan area. In-depth study
his regional impact, however,
yet to be made. Reduction in
way commuter traffic is esti-
ed by regional transportation
ly at 11 to 50 per cent, by rapid
sit district at 25 per cent.



RAPID TRANSIT MASTER PLAN CONCEPT
■ Initial Priority Routes
■ Future Stage Development
■ Airport-Southwest Corridor Study Route

Perhaps mass transit—for continued growth

element in scale with the place is
freeway. It gives form where there
ould otherwise be none; the sweep of
path, broad and relentless, is the strong
ntif against background pattern of
dings. Looking down on the enormity
his development and pondering the
vailability of its further development,
is constrained to wonder whether
city-region will *shape* its future or be
ulved by continuing *laissez-faire*.

Los Angeles, more than most cities, is
at it is by accident, not by plan. What
ould have been had there been a
ster plan to guide its development
ing the period of its greatest growth
he last 25 years—can be only specu-
on. It might have been very different;
—you realize as you study its form—it
ht have been essentially the same.

For entirely by accident, Los Angeles
almost a textbook example of the

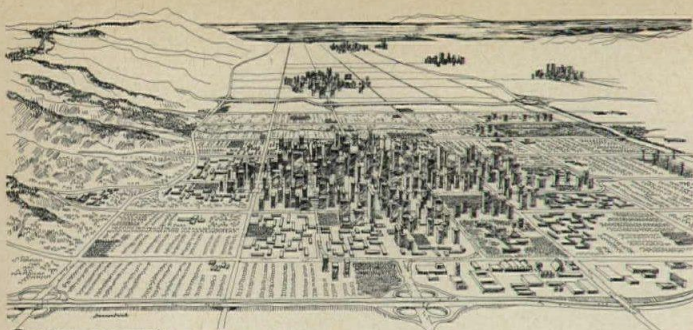
classic satellite plan. The interstices have
been filled, and there are no greenbelts,
but the basic relation of center city and
satellites is nevertheless clear. The multi-
cellular city breaks down the urban size
into components which permit individual
scale. The cells could multiply as many
times as terrain and resources (water,
services, government) would allow with-
out forfeiting this individuality. As popu-
lation increases and cities across the
country become larger, Los Angeles' ac-
cidental solution is something to ponder.
But in the future, no such haphazard ac-
tuations are intended to prevail.

A master plan, called for in a charter
amendment in 1941 but never formu-
lated, is in the making and due in 1970—
late, but still in time to influence another
critical period in the city's development.
Not only Los Angeles and its immediate

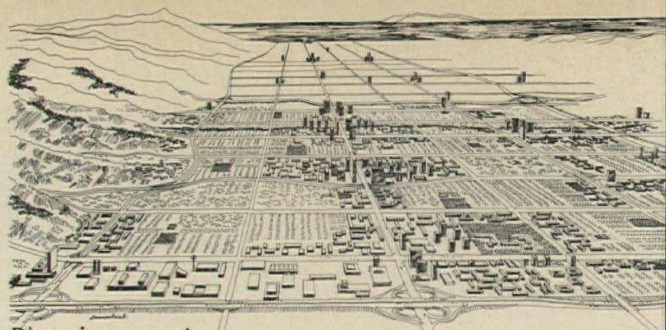
surroundings but all of Southern Cali-
fornia is expected to continue the growth
of the past decade. While Los Angeles'
master plan is specifically for the city, it
considers and in some ways will affect
the area it touches. The direction of
change will be slow to become visible,
but it may not take as long as has been
anticipated. Already a feeling of change
is in the air, although its evidence is as
yet scattered and desultory.

Of the problems whose solutions
will change Los Angeles and with which
the master plan must deal, two are basic:
density and transportation-circulation.

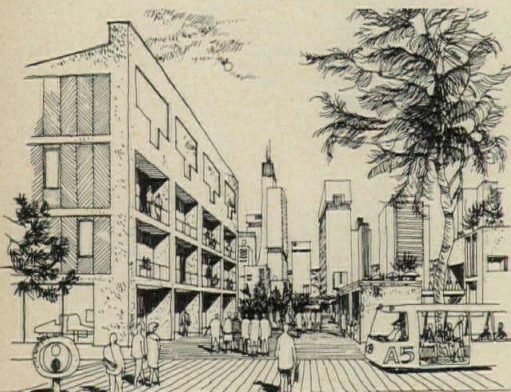
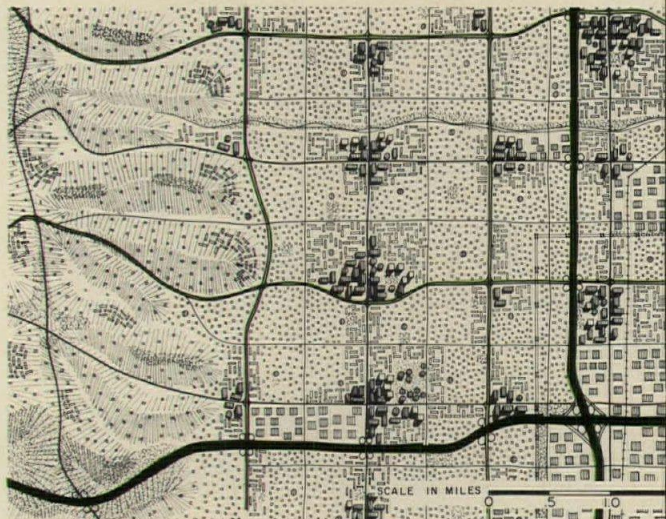
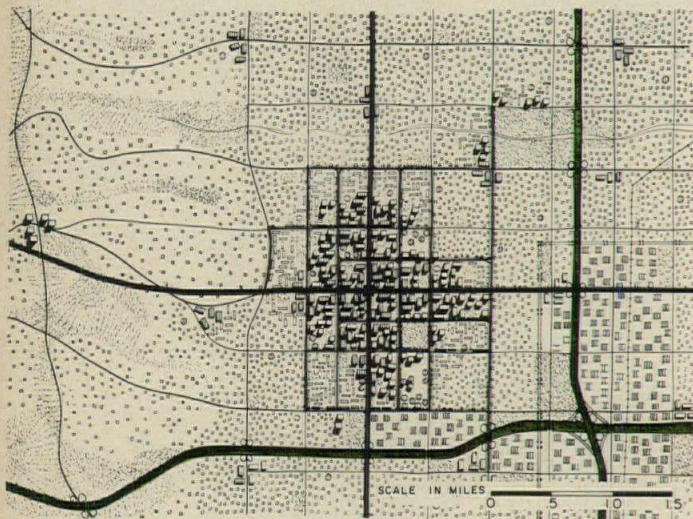
Density in Los Angeles (6,475 per square
mile) is less than half that of East-
ern cities. This makes for conditions of
urban living that are exceptional. But if
the city is to double in population by the
year 2000, as the City Planning Depart-







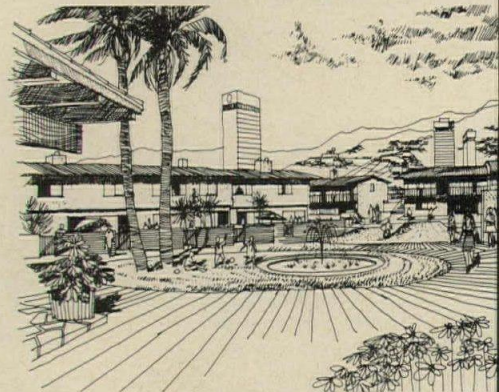
Centers concept



Dispersion concept



-  FREEWAY
-  EXPRESSWAY
-  MASS TRANSIT & STATION
-  LOCAL MASS TRANSIT



A new approach to drafting a master plan: citizens have voice in setting goals, and

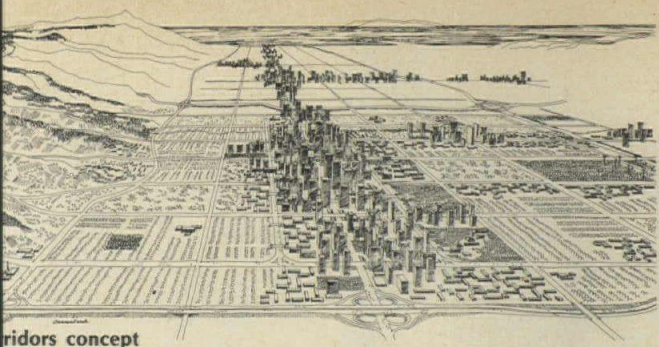
Four alternative concepts for a master plan were evolved from responses to the Goals program, combining choices in housing, employment and services, transportation and open spaces. *Centers* concept suggests highly urban character in 30 residence and employment centers, preserves present single family areas in suburbs, depends on rapid transit to connect centers; *Dispersion* also minimizes travel from home to work, emphasizes town houses and limited high-density housing, uses highways and freeways but no rapid transit; *Corridors* has a maximum housing choice in very urban environment with high-density development at rapid transit stations, little change in land use; *Low density* preserves present residential pattern, limits population growth to 4 million total, has minimum rapid transit system. All concepts recognize problems in getting additional large public spaces: *Centers* and *Corridors* propose acquisition of large outlying areas for parks; *Dispersion* and *Low density* intensify use of present open spaces, suggest acquisition of small spaces in cities.

ment predicts (or even if it is to add the almost half a million people that can be expected by 1980) where can it put these new residents?

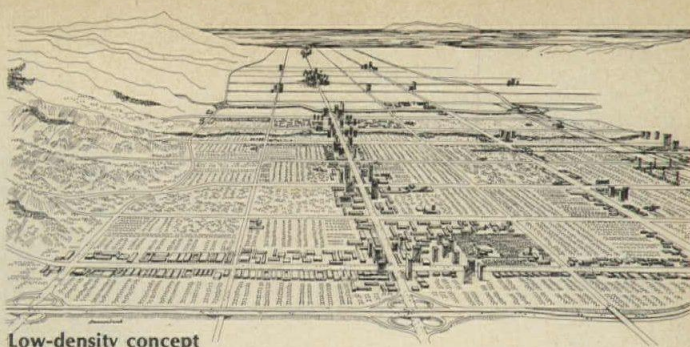
Most of today's millions, in the city, the county and the region, live in single-family houses and enjoy a degree of privacy and individuality rare for so large a number of city dwellers. What they have is for many the fulfillment of "the American dream": a house of one's own, on a piece of land separate from one's neighbors, with front and back yard (or patio, in Angeleno parlance) and, for many, a swimming pool. In the benign climate (floods, slides, brush fires and water shortages are anguish to the many but disaster to a comparative few; even smog does not daunt a true Angeleno) it is indeed the good life. If for some the dream is tarnished, most would not exchange the life or the location for any other.

But if the single-family house is favored residential unit in Los Angeles there is little land left for more of them near the center city. Only far out the Fernando Valley, or toward Pomona, in Orange and Ventura counties is there still room for this kind of dwelling. In the city itself it is the multi-story building which is the key to continued growth. Office buildings as well as residential buildings have made Los Angeles a horizontal city. Now both types of buildings must go tall, like it or not.

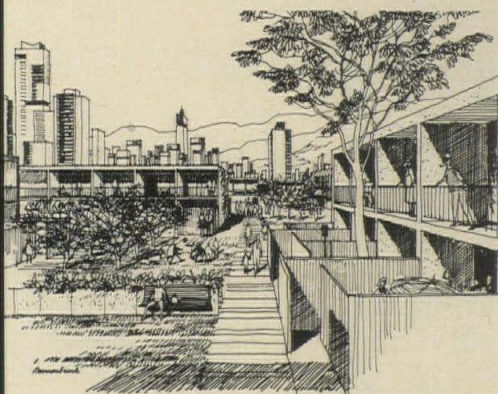
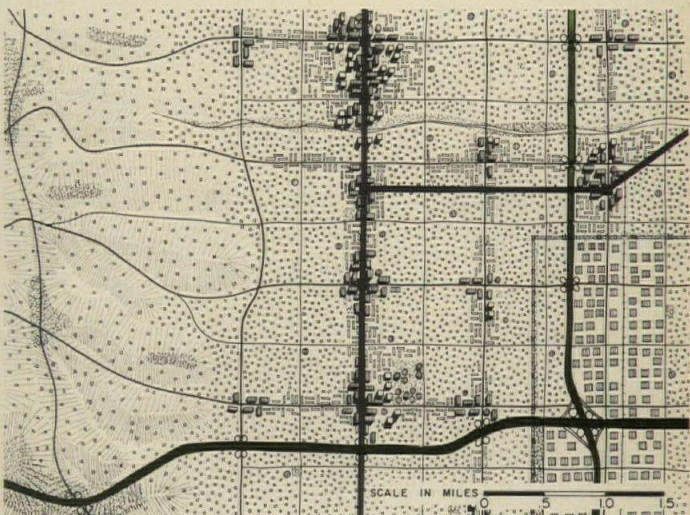
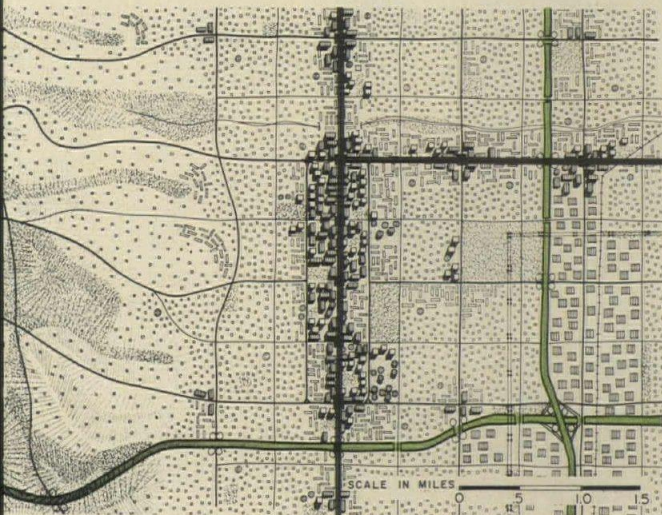
Many people in Los Angeles do not like the prospect. They fear what high-rise buildings will do to the city, with some reason. There are few buildings in the whole of Southern California, and there is little opportunity close at home to experience their effect. Los Angeles itself has been slow to take advantage of the lifting of the 13-



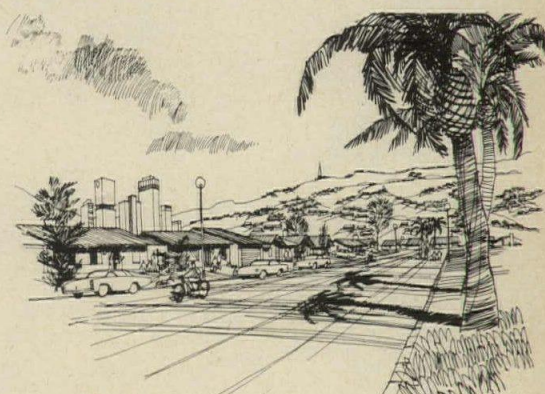
Corridors concept



Low-density concept



— FREEWAY
 — MASS TRANSIT & STATION



Choosing between alternate concepts

height limit which had been an important factor in the city's horizontality. In 11 years since the law was changed, many buildings have gradually gone higher even now the tallest building in the city is the 42-story Union Bank Plaza in Bunker Hill redevelopment project. Soon 55-story towers will rise in the same part of the city. Apartment buildings, too, have gradually increased in height.

Some examples of planning for increased density—and greater open space to exist in Los Angeles, but they are in the making. Bunker Hill, a \$500 million redevelopment project in the central business district, combines office and residential buildings with elevated walkways and open areas between the 30, 40, and 42-story buildings. Century City, which has privately developed "city in a park" on 180 acres of the old Twentieth Century-Fox studio lands, does the same.

With their emphasis on site planning and well-designed buildings, these two projects should do much to alleviate the public's dislike of the tall building.

But the tall building, like the freeway, is no unmitigated blessing. Tall buildings mean more people, more people mean more cars, more cars mean more parking. By 1980 the central business district of Los Angeles will need 18,910 new spaces for cars (exclusive of Bunker Hill, which will need 13,120 spaces). Already today there is a deficiency of 5,080 spaces in the same district. Ominous as this sounds, expensive as it is to build parking garages, ugly as are the ubiquitous parking lots today, no one worries about the outcome: there will be a solution. And certainly no one intends to give up his car.

The automobile and the freeway are

what make Los Angeles possible. There are 3,500,000 cars registered in Los Angeles county, one car for every two persons; not even the worst traffic jam deters their owners from using them. For one thing, there is, literally, no other means of transportation. It is not only that each person prefers to drive his own car, he would be immobilized without it.

Besides giving form to the Los Angeles cityscape, the freeway has created a way of living, a way of thinking ("freeway mentality", one journalist calls it), and a new way of measuring distance. The freeway makes its users forget distance in miles; they think in minutes, not miles: 30 minutes from the Valley or the beach to downtown Los Angeles, 15 minutes from Hollywood to Pasadena, 21 minutes from West Covina to Civic Center. What do miles matter in a city always on the go? It is the time it takes to go



Julius Shulman

Century City is a residential and commercial development of 100 acres of the old 20th Century-studio lot. Its handsome buildings, fine public spaces and landscaped streets make it a showplace of modern and taller buildings. Now one-fourth complete, Century City will eventually have 12,000 residential units and a day population of 20,000. Numerous large structures and a number of smaller office buildings have been built. Left: Gateway buildings (extreme left and right), Welton Bedouk & Associates, architects (also master plan); Century Towers Apartments (in distant left), I. M. Pei Associates; Century Plaza Hotel (center), Minoru Yamasaki & Associates; 1901 Building (right), Harry Muth, Obata & Kassabaum. Supervising architects for Century City are Charles Luckman Associates.



Private redevelopment: "city in a city" shows Los Angeles a new scale

A 13-story height limit kept Los Angeles a horizontal city until 1956. Prudential Building (1948) was 13 stories; California Federal (1964) is 28 stories.



L.A. Chamber of Commerce

from place to place that matters.

But not everyone has an automobile. A whole segment of the population of this most mobile city is scarcely mobile at all since it must depend on public mass transit—and the present bus system is ironically called Rapid Transit. It is slow and inadequate, and it serves by no means all the public which needs it.

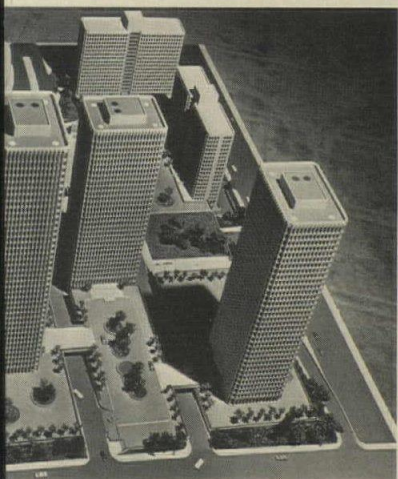
Public transportation was not always so poor. When the city was less crowded and newer, the Pacific Electric trains (always called the PE) gave excellent service to outlying residential areas and made their development possible, as freeways later made possible development of areas much farther away. The buses which replaced the PE make a two-and-a-half-hour trip out of a 21-minute drive on the freeway. Is it any wonder that everyone who can possibly afford one has a car?

For 20 years and more, Los Angeles has been talking about a rapid transit system but until now there has been no talk. Now a system has been proposed, routes chosen, equipment and operation studied. All that is needed is financing. The 62-mile initial phase will cost an estimated \$1.5 billion, and the South California Rapid Transit District has committed itself to a vote on financing the line increase next November. There is powerful opposition to rapid transit, but the need is so desperate, not only to serve the public without cars but to decongest the freeways, that if rapid transit fails, some alternative must be found.

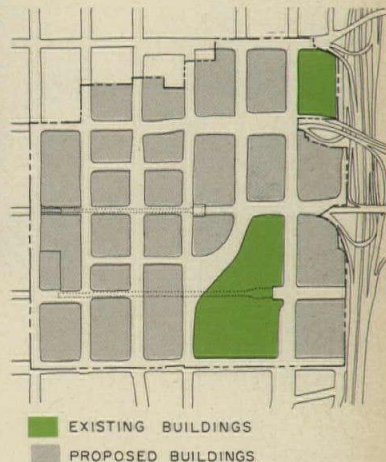
Whatever the vote on rapid transit, there will be more freeways. By 1970 the state Division of Highways will complete its planned network of freeway in the Los Angeles area: 1,500 miles, of which over a third have been completed.



Community Redevelopment Agency



Bunker Hill redevelopment complex in downtown district was slow to start, still has only one major completed—but handsome—building to show: Union Bank Plaza (far left; Harrison & Abramovitz and A. C. Martin & Associates, architects), a 42-story office building. Under construction are three of five projected apartment buildings in Bunker Hill Towers group (below left; Robert E. Alexander & Associates, architects). Project area is directly across from Music Center, strategic for developing new vitality in downtown district. Other renewal areas in various stages of development are Watts, due to start this year; Hoover, near U.S.C. campus; Vernon-Central; and Beacon Street.



All buildings and plazas in a downtown redevelopment area hint at future

The new routes will reach far into the adjacent counties, connecting there with other freeways, extending Los Angeles city-region to other smaller cities. In the future, one huge urban conglomerate, miles long and a varying number of miles wide, depending on topography.

Every metropolitan region needed regional planning, it is surely Los Angeles. Yet the Regional Planning Commission of the county is concerned with other aspects of regional government: physical planning, and the Southern California Association of Governments (S.C.A.G., modeled on the San Francisco Bay Area's ABAG) has no power to plan but can only recommend to the cities represented. There are numerous citizen groups, some made up of design and planning professionals, others with busi-

ness community members, lay citizens and a sprinkling of professionals. The trouble is there are too many of these organizations, and they do not speak with one voice. Struggling to make itself heard, and with a good chance of alerting the public to the problems of piecemeal planning and no planning at all, is the Regional Plan Association, which enjoys active support from the area A.I.A. chapters.

The real ray of light for the future of the whole area is the master plan which the City Planning Department of Los Angeles is preparing under a program of citizen participation throughout the county and in other communities as well as in the city itself. This broad involvement in the planning process, and the influence of Los Angeles' plan when adopted, suggest that some day planning on a trans-boundary basis may be done.

The Goals and Concepts programs are major experiments in planning by the people of a city. Great planning decisions of the past have been autocratic and authoritarian. In this country, the method generally used is less autocratic, but far from democratic: people may comment on and perhaps modify a plan but are seldom involved in the actual planning process. What Los Angeles is doing has never been done before in a large city, and the outcome of its program may well influence far more than the region around the city of Los Angeles. For the first time, the processes of democracy have been offered to the citizens in the initial stages of a planning project of the most comprehensive kind. If the people have been slow to respond—and they have—it is in part due to the usual public apathy on governmental decisions, in part to ignorance of the plan-



Marvin Rand

In its explosive growth periods, Los Angeles showed no public cultural motivations. But in the last two years two major cultural centers have been opened, surely a record for any city: The County Art Museum (below; William L. Pereira Associates, architects), an unusual museum building beautifully adapted to southern California; and the Music Center (above, by Welton Becket & Associates, architects), a handsome group of buildings, landscaped plazas and fountains which includes an opera, symphony hall and two theaters. Placed at the high end of the Civic Center Mall (Adrian Wilson Associates, architects), with the award-winning water and power building (bottom far left; A. C. Martin & Associates, architects), and adjacent to Bunker Hill, this civic and cultural complex gives the city the strong focus it hitherto lacked.

Julius Shulman



In Los Angeles' next eras of growth, culture will have a part

ning process, in part to frustration. Nevertheless, some 6,000 persons have already turned in questionnaires on the goals and concepts they think desirable for the city. By the end of the program, planning director Calvin Hamilton, who initiated the programs, expects to have 100,000 responses on which to base further planning studies leading to the comprehensive plan. Small though this percentage may be of the total population included in the program, the number of responses is far greater than any other city planning program has ever had.

The Goals program—first phase of the master plan process—seeks to know what people and organizations in various fields (such as social work, religion, environment, labor, commerce, etc.) want in the way of housing, employment and education, and in discussion groups to define, quantify and analyze each goal

as to its social, economic and physical effects. The implications of these effects are then studied and government implementation policies are outlined.

The Concepts program—phase two—brings the Goals program into sharper focus by offering four alternative planning possibilities for achieving the goals. Phase three is a Townscape study, due this summer, whose data will suggest visual form policies for the future city.

Once Los Angeles' cultural lacks were the butt of San Francisco's jokes, but the jokes never really bothered Los Angeles. It was moving too fast to stop and listen. Now, however, the jokes are silenced since completion of two major cultural centers: the County Museum of Art in Hancock Park and the three-building, multi-faced Music Center at the high end of the Civic Center mall and across from Bunker Hill's apartment complex.

Culturally, Los Angeles has come alive not only for the wealthy donors of handsome buildings, but for an increasing number of the city's people. In the first 10 days of the museum's operation over 600,000 persons visited it, and a steady flow patronizes it daily.

Only a few years ago, planner Kenneth Lynch interviewed Los Angeles residents in a survey and found that they described their city as "formless" and "spread out." But the latest Townscape interviews and the first Goals responses make it clear that this is no longer their primary concern. They are specific about the problems: smog, traffic congestion, lack of good public transportation and park space. They like the weather and casual way of life, the new cultural opportunities and the single-family residential environment. And three to one, they are in favor of continued growth.

Not-so-distant rumblings in the earthquake field

Scientists are worrying these days about earthquake activity in various parts of the country, and mounting concern over increased building in potential trouble spots is spurring a new look at earthquake design—and the lack of it.

Alarm was sounded in California early this year where slight but constant slippage in the land is reported south of San Francisco. The creeping terrain may be causing a strain buildup that has been predicted already to exceed that prior to the great quake of 1906 that brought down San Francisco. If fear has been overdramatized, concern is justified: new housing subdivisions have been discovered built directly over the fault's line of slippage since the 1906 quake.

Noting the current helter-skelter approach to land planning for earthquakes, engineer Karl V. Steinbrugge at a recent colloquium of California experts urged for "an interdisciplinary approach establishing land-use risk criteria," and urged a teaming of experts—geologists and engineers, seismologists and architects—with proper zoning of land as the first, critical goal.

While land use planning lags, progress is being achieved in structural design. An example is the ductile reinforced concrete frame for the new Sheraton-Universal Hotel in Los Angeles shown in this issue. It is the first such structure to be designed under new provisions in the Los Angeles building code. On another front, a team of civil engineers at Lehigh University is producing laboratory-controlled earthquakes in a continuing effort to refine plastic design steel frame buildings. In the tests, sponsored by the American Iron and Steel Institute, and directed by Lehigh's

Dr. Le-Wu Lu, an unbraced 3-story steel frame is subjected to man-made tremors generated by hydraulic loading equipment. Through such experiments, the researchers claim, it is possible to describe the plastic behavior of large-scale frames under controlled conditions.

Meanwhile, stepped-up efforts by seismologists to predict earthquakes and pinpoint their causes are producing as a byproduct detailed information on earthquake mechanics that is invaluable to structural design. While 20 years ago, such research got little support, now vast government-sponsored research programs grind out quantities of data from recording stations in elaborate networks throughout the country. The Commerce Department's Coast and Geodetic Survey has for a number of years drawn isoseismal maps after each quake from data collected by its 161 watchdog stations. Last year, a new National Center for Earthquake Research was set up by the Department of the Interior to monitor tremors and strain signals with highly precise new distance measuring devices. It is this new program's research that has been spotting the current land warping south of San Francisco.

But there is a long way to go, and human error added to nature's unpredictability doesn't help matters. Scientists in Denver, for example, are presently wondering what to do about earthquake tremors threatening the vi-

city. The tremors are caused by pumping contaminated water down a giant well drilled for the propose by the U.S. Army into 12,045 feet of unstable rock. The question scientists are asking themselves is if the hole is left there, will the tremors persist or will filling it up provoke a major quake.

Prefabrication: where it stands; where it's going

Prefabrication will definitely grow during the next decade; however, the growth will be evolutionary, not revolutionary. Much of this growth will be based on the increased acceptance of existing methods and techniques, rather than the development of new methods. There will be more opportunities for advances in non-residential construction than in any other segment. These are a few of the conclusions of a new research report, "The State of the Art of Prefabrication in the Construction Industry," prepared for the Building and Construction Trades Department of A.F.L.-C.I.O. by Battelle Memorial Institute, and released last month.

Authors of the report expect no radical changes in materials and/or products in the next 10 years. Most manufacturers' research and development programs, the report states, are directed toward new markets and new applications for existing materials rather than the development of new materials and/or products.

The current state of the art of prefabrication is much more advanced than most people realize, the report suggests. But to date, reductions in initial building costs derived from prefabrication have not generally met expectations. The two greatest constraints, the authors believe, are 1) lack of public acceptance based on tradition and 2) the existing "struc-

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ture" of the industry. Technology is not lagging, they say, as the capability exists of producing almost anything the market demands.

High-rise building systems similar to those used in Europe (industrialized systems) will be introduced between now and 1975, but they will make little impact upon the market place, according to the report. This is how the report analyzes the industrialized approach:

There are hundreds of building systems available in Europe. Many systems are similar, with differences being in overall dimensions, joint details, and materials involved. The key to success seems to be a company's ability to manage, organize and market its system. Many people in the business feel that the organization of the company is more important than the technical aspects of its system. There is little doubt that the dominant factor in the success or failure of many building systems in Europe has been encouragement by the national government. In France, for example, a number of major sites were allocated for experimental purposes. System building has made rapid progress in France, largely because much of the building program has been controlled by the central government. Thus two essential ingredients for economic operation were provided: 1) concentration of demand and 2) continuity.

What about the economics of industrialized building? The report states that, apparently, little is known about the economics of system building, even by the system sponsors themselves. As a general guide, a central factory requires an annual program of 500 to 1,000 dwelling units per year over a period of five years, within a certain predetermined radius. The minimum size of any one site would not normally be less than 200 dwellings. Site factories usually can be justified by smaller programs, but the minimum size site must be greater than that required when there is a central facility. The economic area of operation for a central factory appears to depend on: 1) weight of the component, 2) road and traffic conditions, 3) distance to site, and 4) degree to which the component is prefabricated. The limit of economic area of operation for most of the heavy precast systems is about 30 to 40 miles. This figure might be reduced in a large metropolitan area, and is usually increased if water transportation is available. The more complex the unit (thus less site work involved), the greater distance it might be transported. For example, the Heart unit (Sweden's prefabricated bathroom-kitchen unit) is occasionally shipped up to 200 miles. It is the consensus in most countries that the heavy precast systems are

probably 5 to 10 per cent cheaper than traditional construction for apartments. In the United Kingdom, system building has been shown to be approximately the equivalent to traditional cost for low-rise apartments, and about 5 per cent cheaper for those above four stories. According to the report, the principal disadvantage cited of the Heart unit is that it imposes severe design limitations on an industrialized building system—the whole system usually must be designed around the unit. The unit is 8 by 14 ft, weighs about 10 tons, and includes a bathroom, toilet, boiler room, and part of the kitchen. It costs about \$2,800.

Three principal reasons are given why the European countries are using industrialized building systems: 1) shortage of labor, 2) reduction in cost, and 3) speed of erection. The only justification for use of this approach in Europe, the report states, appears to be the shortage of labor in specific trades. There is little reduction of cost over traditional methods. Reason is that expensive capital equipment is being substituted for relatively low-cost labor.

What about prospects for industrialized building systems in the U.S.? According to the Battelle study, the main factor affecting their use appears to be demand—when demand is great enough, certain building systems may be used in the U.S. This might occur if: 1) the demand for housing exceeds the ability to meet it with existing methods; 2) the government creates demand by allocating much more money to the public housing sector; or 3) the government changes the bidding procedure on some very large jobs, or allocates extensive funds for building entirely new cities. What are the major constraints? According to the report: 1) intense competition presented by existing construction methods; 2) current traditional construction practices, such as bidding procedures, and design flexibility required by architects; 3) building codes; 4) cost of setting up new plants for building components and paying royalty fees; 5) maintaining proper volume and continuity of flow.

What about the estimated state of the art of prefabrication by 1975? Here are a few of the report's prognostications: 1. more effective utilization of labor will be achieved by: a) shifting labor from job site to factory wherever feasible, b) employing more effective managerial techniques, c) using tools and equipment designed to increase worker output, d) using larger components in the building process; 2. dwelling units will change very little in overall appearance or shape; 3. more architects will take advantage of preassembled and prefinished building components; 4. sub-systems, such as

integrated ceilings, will continue to make rapid inroads; 5. the "systems design" concept (team approach by manufacturers to develop large sub-systems from inter-acting building components) will create some interest throughout the next decade, but only a small number of projects using this concept will be initiated by 1975.

Design for life safety from fire in housing the aging

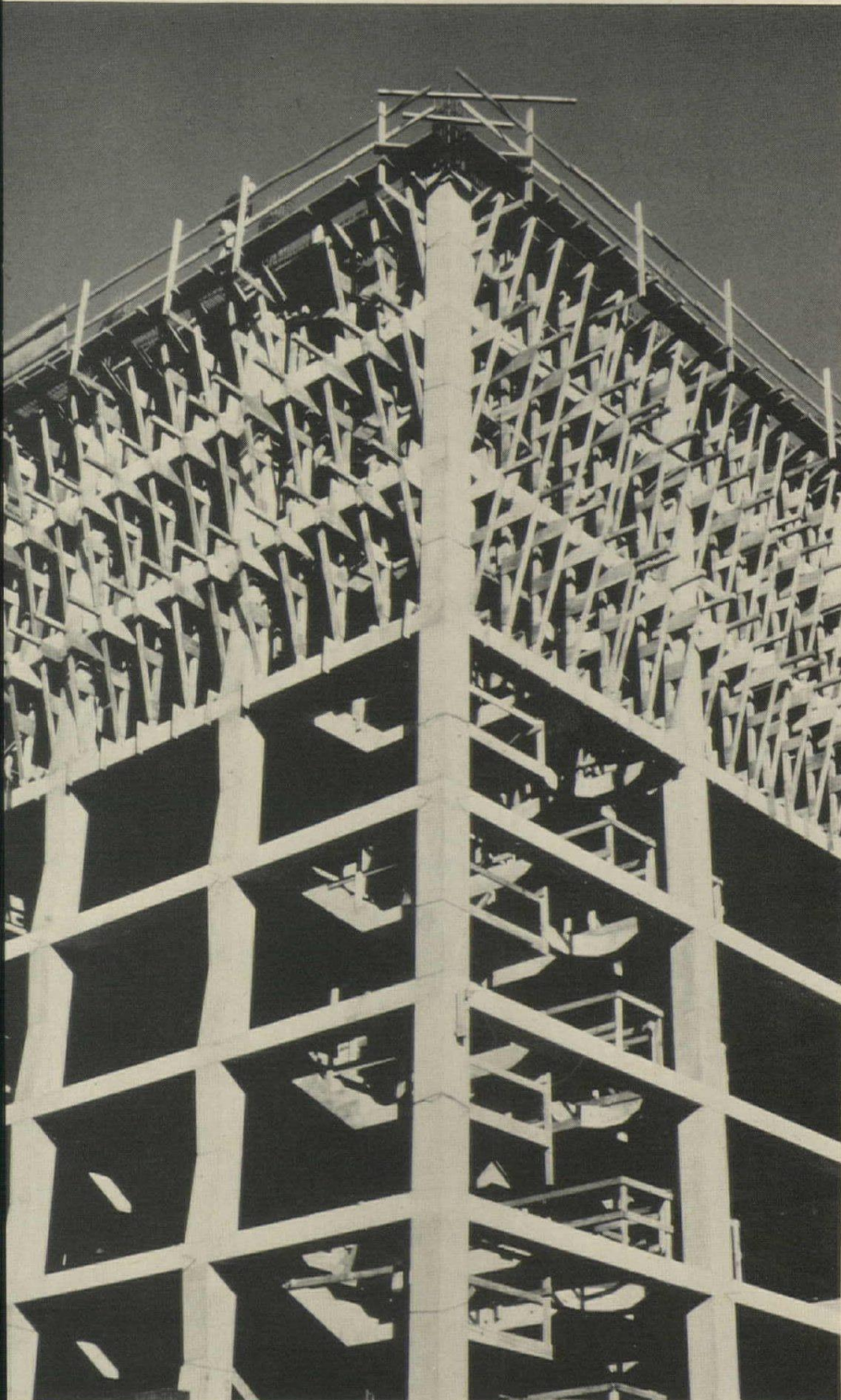
Responsibility for life safety in fire is shared by many well-intentioned people who do not clearly understand their exact responsibilities. For this reason, according to a new report prepared by the Center for Architectural Research at Rensselaer Polytechnic Institute, the vagueness and sometimes omissive, approach is often the direct cause of life loss in fire occurring in housing for the elderly. What are some of the other reasons? The report states that one is the proliferation of codes and regulations on fire safety which have discouraged analysis of fire problems peculiar to any one building type by spelling out requirements for buildings. Another reason is the fragmentation of effort in study of fire: "Laws are made but not enforced; sophisticated alarms are installed, but no detection apparatus is used; great emphasis is devoted to drafting board details while basic planning is overlooked, and so on."

What should the architect do? Here are some suggestions contained in the report: 1) assist the owner in making basic planning decisions related to life-safety design; 2) remember the "minimum standard" aspect of building codes; 3) refrain from relying on plan reviews by building officials to detect problems and errors in design and planning; 4) recognize that an automatic detection system can be justified only when escape or protection of the occupant is possible or assistance is assured; 5) not confuse detectors with alarms or sprinklers; 6) consider the possibility of an auxiliary power supply to operate the alarm system if normal power should fail; 7) select materials which contribute little fuel and produce little smoke for building elements; 8) select materials which produce little smoke and have low flame-spread ratios for use in circulation and exit areas; 9) consider the use of sprinklers as control mechanism, particularly in hazardous areas.

This 90-page study, "Life Safety from Fire—A Guide for Housing the Elderly," which was prepared for the Architectural Standards Division of the Federal Housing Administration, has one chapter devoted to planning for escape and refuge and another to planning for confinement

CONCRETE FRAME IS MADE "FLEXIBLE" TO ABSORB EARTHQUAKE LOADS

By Wayman C. Wing, Consulting Engineer



The recent news of catastrophic earthquakes in Venezuela, Chile and Sicily make it evident that architects and structural engineers should have at least a general knowledge of what seismic design involves. This article briefly reviews the nature of earthquakes and the structural approaches for resisting their effects in buildings. It also describes the design for the 21-story concrete frame for the new Sheraton Universal Hotel in Los Angeles, currently under construction for which William B. Tabler is architect. This is the first high-rise building over 160 feet to be designed and built in concrete based on the flexible, shock-absorbing, ductile-frame concept, under the new provisions of the Los Angeles Building Code.

Nature of earthquakes

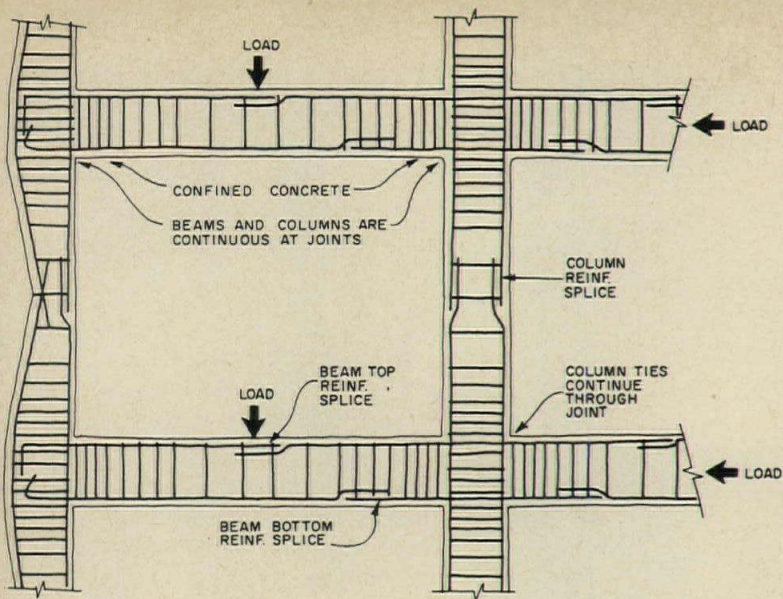
Earthquakes generally are the result of shifting of the earth's crust due to the rupturing of the great masses of rock many miles beneath the surface. Movement is mostly horizontal. This generally develops along a line which becomes known as a fault. Repeated ruptures usually occur along these faults because of the extreme pressure exerted on the rocks at their contact bearing points. The pressures are due to the cooling of the earth, convection currents, load changes on the surface, and the pull of gravity.

Basic design approach

A designer faced with the problem of producing a seismic resistant structure normally must take the following steps:

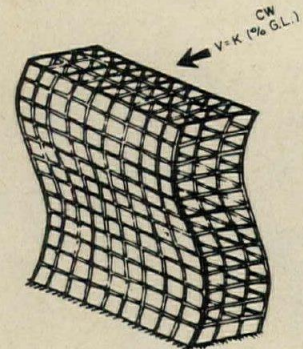
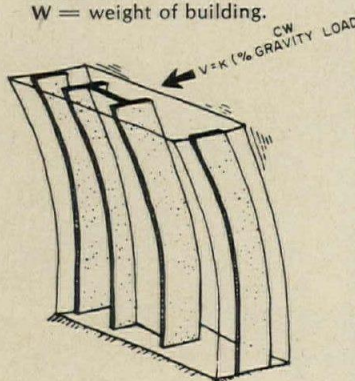
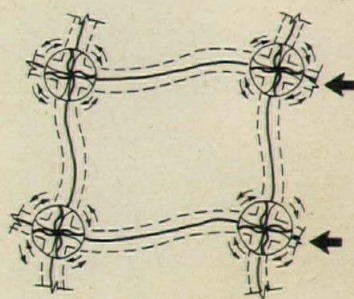
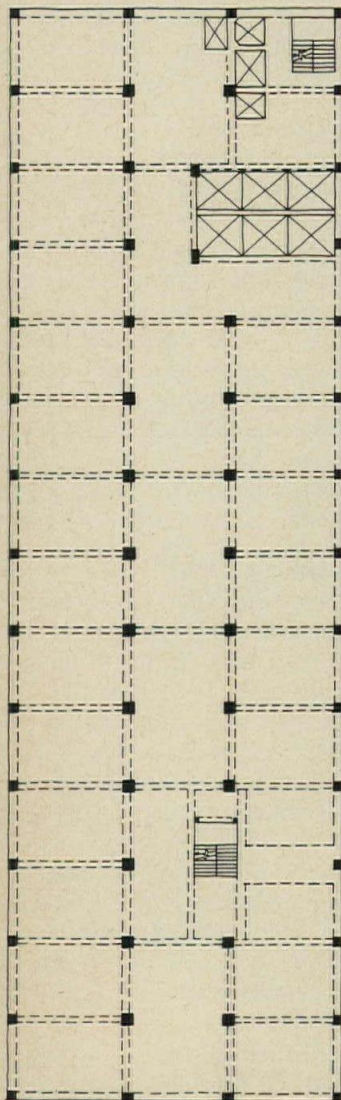
1. Investigation to determine the intensity of the earthquakes that are normally expected in the particular area.
2. Investigation to determine the most suitable economical materials that are available.
3. Architect and structural engineer must then work closely together to come up with the most desirable building configuration that will be seismic resistant as well as functionally and esthetically acceptable.
4. The structural elements are then analyzed and the seismic resistant details are incorporated into the construction.

limited to steel, the ductile-frame concept is now being applied to concrete buildings. This approach is exemplified in the new 21-story Sheraton-Universal hotel in Los Angeles, the first high-structure of its type to be built under new provisions in this city's building code.



To make the concrete frame "flexible," the columns and beams were designed with maximum strength at the column and beam joints, while points of contra-flexure were weakened relatively. An analogy of behavior of the joints might be the balance wheel of a watch (right).

Floor plan shows column and beam layout of Sheraton-Universal hotel



A moment-resisting frame can take considerably more earthquake load than a more rigid shear wall type of structural system. For example, with the box system shown below, the horizontal force factor K is 1.33, while for the moment-resisting space frame K is 0.67, or only half as much. This means that—due to its built-in ductility—the moment-resisting space frame can be designed for half as much lateral load as the box system.

Total Base Shear, $V=KCW$

K is determined by the structural system.

$$C = \frac{0.05}{3T}$$

where T is the fundamental period of vibration of the structure.

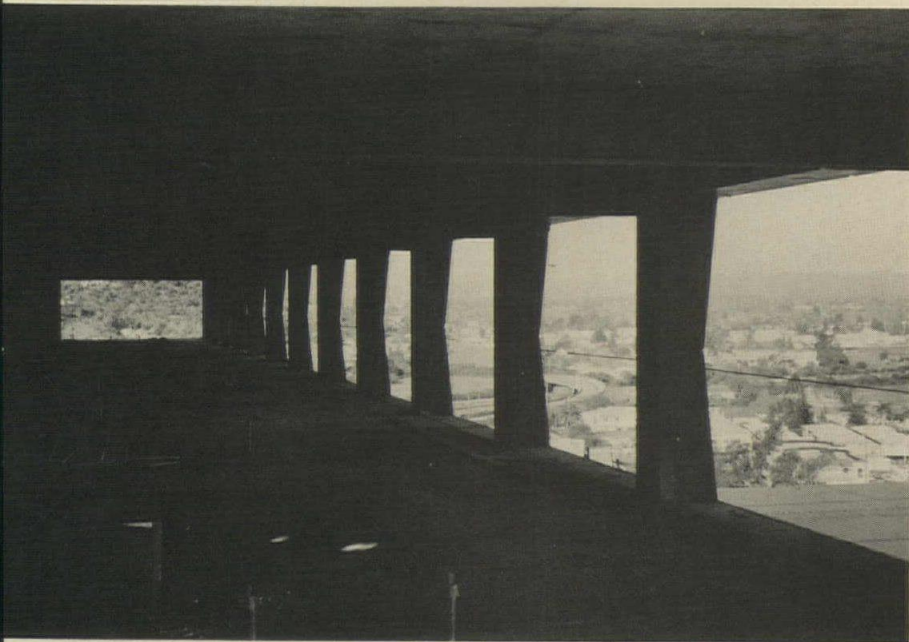
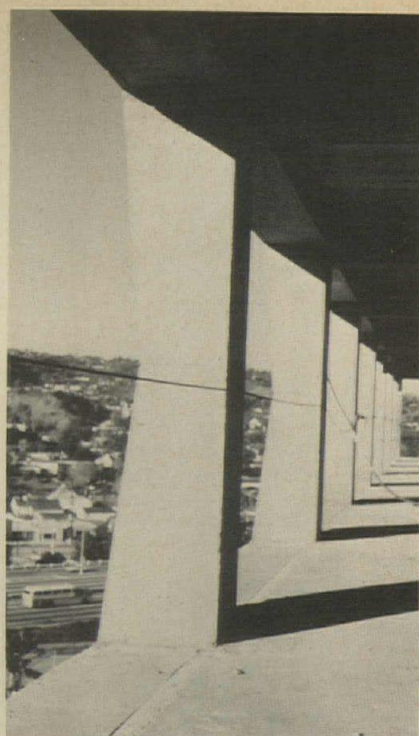
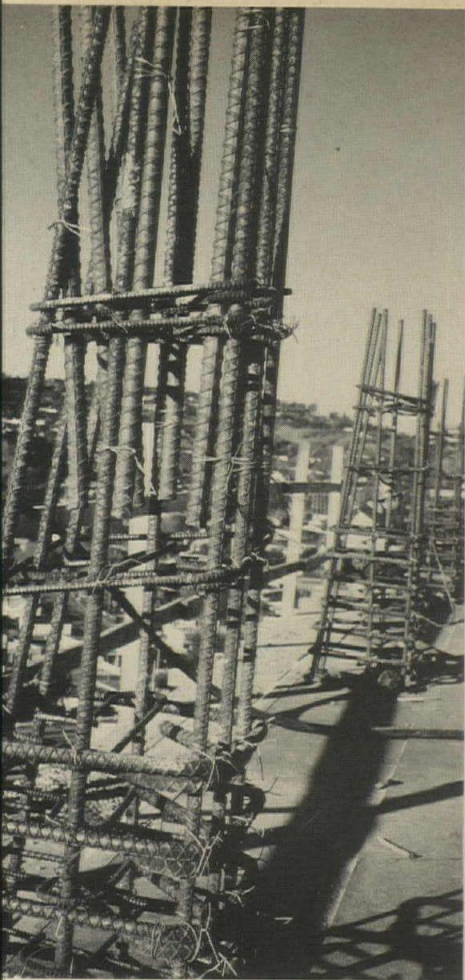
W = weight of building.

How choice of system affects lateral force for which it must be designed

" K " values required by Uniform Building Code and Los Angeles Building Code

| | K Value |
|--|---------|
| MOMENT RESISTING SPACE FRAME that will resist 100 per cent of the total required lateral forces in the frame alone when assumed to act independently of any other more rigid element..... | 0.6 |
| COMPLETE HORIZONTAL BRACING SYSTEM that will resist all lateral forces, including a moment-resisting space frame that will resist at least 25 per cent of the total required lateral force when acting independently | 0.8 |
| BOX FRAMING SYSTEM | 1.3 |
| ALL OTHER FRAMING SYSTEMS | 1.0 |

BOX SYSTEM is a structural system that resists the required lateral forces by shearing stress in the vertical elements or by axial stress in bracing.
 SHEAR WALL is a wall designed as a lateral-force resisting element. Braced frames subject to axial only shall be considered as shear walls.
 SPACE FRAME is a structural system composed of individual spaced members other than shear or bearing walls which are interconnected and laterally supported such as to function as a complete self-contained unit, with or without the aid of horizontal diaphragms or floor-bracing systems.
 MOMENT-RESISTING SPACE FRAME is one that resists a required lateral force by bending moment in the individual members and joints.



Exterior columns of the structural frame for the Sheraton-Universal Hotel were shaped to express the ductile-frame design. As pointed out earlier, the reinforcing bars in the columns were spliced at mid-height to create flexibility in the frame (top left photo). Interior columns were kept straight, but, again, column reinforcement is spliced at mid-height.

Structural concepts

Basically there are two ways to engineer a building to safely withstand a major earthquake. First, the generally accepted method is to design into the structure a bracing system which has sufficient strength to respond within the elastic range. The second is to design into the structural frame properties that will offer ductility and energy absorption beyond the yield level into the plastic range during a major earthquake. The latter, of course, also must be moment resisting in the elastic range. It is apparent that the first method is more expensive than the second. In the second method we draw on the reserve strength in the plastic range. Research has borne out that if a moment resisting frame is incorporated in the second method, we can safely use a lower value in the calculation for determining the total seismic or base shear.

Seismic intensity and the resultant effect of lateral forces on structure

Local building codes have incorporated much of the research knowledge that the seismologists have accumulated. This has been boiled down to working steps which the practicing architect or engineer can use in his design calculations. Basically the prognosticated seismic intensity of any given area is based on geological data and historical intensities which are translated by the Richter Scale, Mercalli Scale, or simply as minor, moderate and major damage zones. Quantitatively the lateral force applied to the building varies not only proportionately with the intensity of the zone, but also must be adjusted for the "period" of the building. The period is the time it takes the structure to sway back and forth. It is dependent upon the structure's height and plan dimensions. In practice this force used in design is further modified to reflect the type of bracing system. Experience has shown that certain types of buildings (i.e., a box frame system) have relatively indeterminate periods and should be designed with an increased force. However, a building with a moment resisting space frame can be designed based on a lower force than common types of framing.

It should be pointed out, however, that the flexible theory is not always applicable when the over-all building design is considered. For example, in the 20-story Auckland Intercontinental Hotel, Welton Becket, architect, the structure was developed around an economical solid concrete end wall facade. Hence a rigid shear wall structure was used and was economical in the over-all picture.

The flexible ductile frame

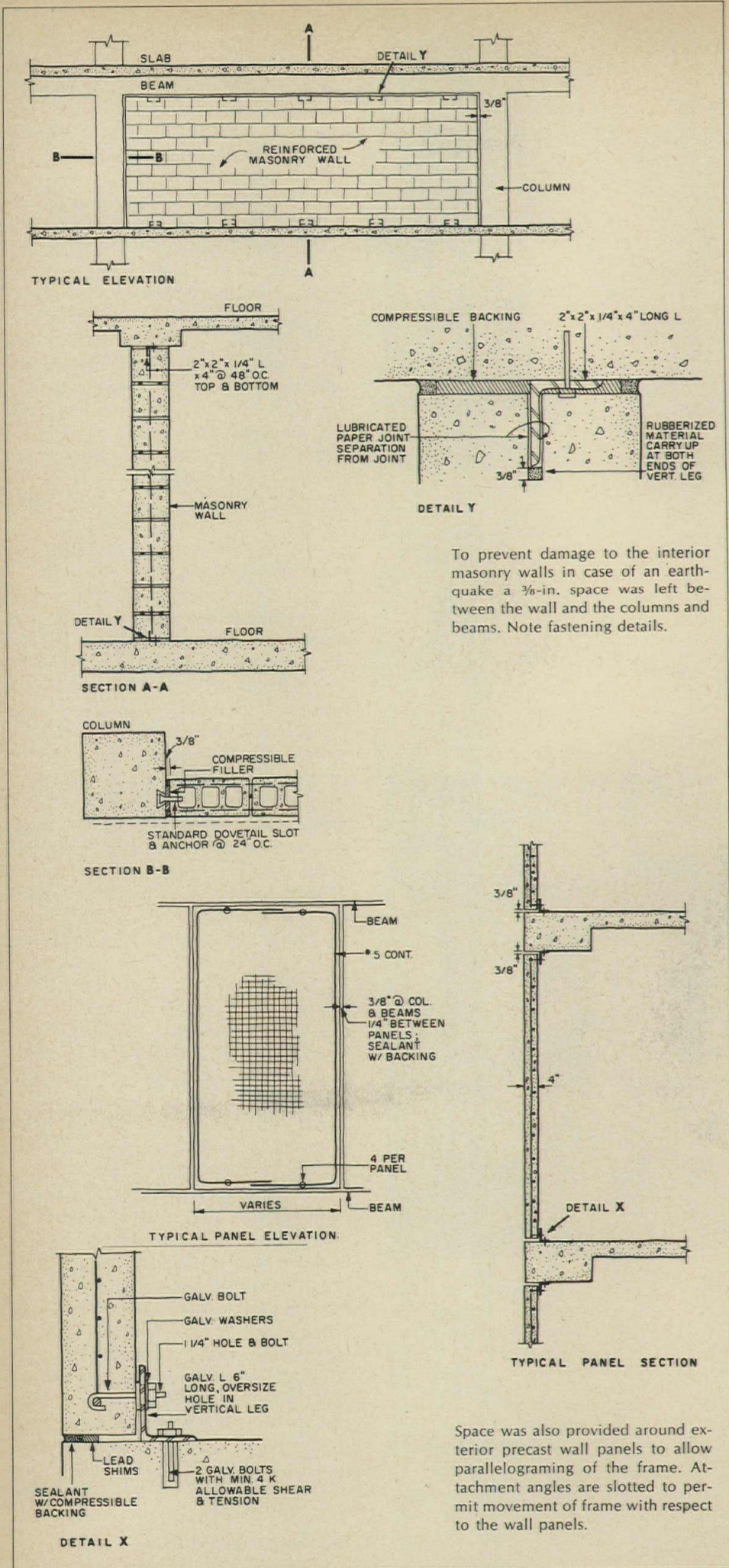
It is far more economical to design a

building with an energy-absorbing, moment-resisting ductile frame than with a stiff rigid frame. It is the latest thinking in seismic design and can be accomplished with either reinforced concrete or structural steel. Energy absorption in a ductile frame is accomplished by converting the kinetic energy of the earthquake imparted to the structure into strain energy. The idea is to design the frame, usually in the beams, where this strain can take place without resulting in a complete failure. The columns must always be stronger than the beams and respond in the elastic range while strain in the plastic range takes place in the beams. Thus the strain results in plastic hinges and stresses will be transferred elsewhere to members having residual capacity. In effect, a flexible ductile frame is stressed less severely than a more rigid structure that relies on bracing or shear walls.

In the case of the 21-story Sheraton Universal in Los Angeles, the design was lengthy involving thousands of hours of calculations and delineation, plus more before the city officials were satisfied. This, of course, was due to the fact that the project was the first of its kind. Many interesting problems were encountered such as how to accommodate a rigid precast concrete facade and masonry walls which are supported by the frame. This was done by a system of cushioning as shown in the details.

The columns and beams were sized, reinforced and detailed so that maximum reserve strength was in the column and beam joints. Also, points of contra-flexure were weakened relatively to purposely create flexibility. This was accomplished by splicing all column bars at mid-story rather than at the conventional floor line. The mid-height dimension of the exterior was reduced for architectural expression of the moment-resisting ductile frame. A basic criterion is that the response of the frame in the plastic range should occur in the beams rather than the columns to prevent collapse of the building. The steel must yield before the concrete fails in compression, which necessitated under-reinforcement in many of the beams.

Congestion of the reinforcement was a problem at the connection between beams and columns, the confined concrete area. In some places, strict interpretation of the code requirements would have made it physically impossible to place the steel, particularly the hook ties. However, adequate practical solutions were accepted by the building officials as it was understood that the reinforcement might cause the concrete to fail in shear before the effective yield could take place.



To prevent damage to the interior masonry walls in case of an earthquake a 3/8-in. space was left between the wall and the columns and beams. Note fastening details.

Space was also provided around exterior precast wall panels to allow parallelogramming of the frame. Attachment angles are slotted to permit movement of frame with respect to the wall panels.

Elevator noise: architectural and mechanical considerations

by J. E. Sieffert, General Field Engineer, Otis Elevator Company

Like other electromechanical equipment in buildings, elevators have always made noise. But the problem and its control are receiving increasing attention as a result of recent trends in building construction, design and utilization. The new construction practices usually produce a building structure of less mass than conventional methods, so that noise is more easily transmitted. At the same time, buildings are going higher, necessitating faster elevators, and higher elevator speeds tend to raise noise levels. Elevator noise that might not bother people at work in a 60-story office building could well bring complaints in a tall apartment tower.

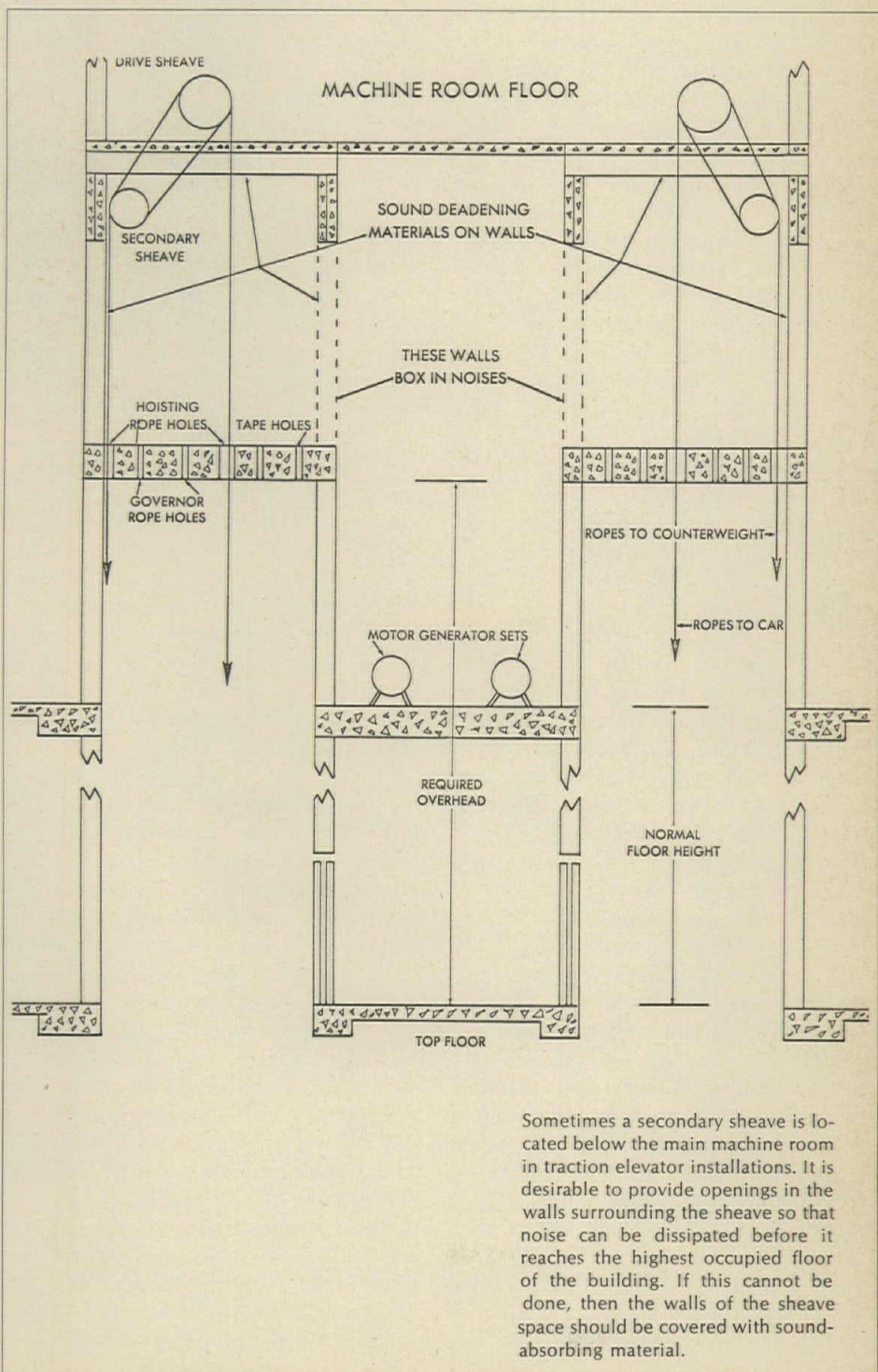
New zoning laws encourage construction of towers that rise in unbroken vertical lines from an open plaza. In the older, setback buildings, machine rooms for elevators serving lower floors of a building were often on the terraces formed by this design. But in the sheer building, all machine rooms except those for the highest-rise elevators are likely to be next to occupied space.

On the job or at home, people are becoming more insistent on a quiet environment. Completely air-conditioned buildings are now the rule, with windows either permanently sealed against outside noise, or at least closed much of the year. Shutting out street noise makes occupants more sensitive to noise from inside sources, including the elevators.

In the electric traction elevator, principal sources of noise are the operation of equipment in the machine room and the movement of the car in the hoistway. In the slower hydraulic elevator, noise usually comes primarily from the motor-driven pump and the hydraulic cylinder.

Partial separation isolates elevator noise

Space relationships in a building may be planned to minimize the impact of noise on people. In some recent commercial buildings, elevators have been located in



Sometimes a secondary sheave is located below the main machine room in traction elevator installations. It is desirable to provide openings in the walls surrounding the sheave so that noise can be dissipated before it reaches the highest occupied floor of the building. If this cannot be done, then the walls of the sheave space should be covered with sound-absorbing material.

a separate service tower, primarily to leave large, clear floor areas. This arrangement also pays an extra dividend in effectively separating occupied areas from possible elevator noise.

The more usual arrangement is still a utility core, including elevators, centrally located within the main structure. Elevator groups should then be surrounded by stairways, service closets and other installations that will help attenuate sound.

It may be possible to plan the occupied areas so that those where noise is most critical are farthest from the elevators. In an office building a mechanized accounting group, for example, could adjoin elevator hoistways, with general offices in a naturally quieter zone. In an apartment or hotel building, bedrooms would be located away from hoistways or machine rooms. The power unit of a hydraulic elevator may be installed in a basement space as far as possible from critical areas.

But spatial separation is not always possible. Then steps must be taken in design and construction to minimize sound transmission. Obviously tenants of premium-rental penthouse apartments or office suites are not likely to tolerate noise from nearby elevator machinery. Worst problems: machine room and hoistway.

What to do about a captive machine room

If plans call for a "captive" elevator machine room, surrounded by occupied space, there is a possibility that machinery noise may be transmitted by the building structure.

Sound isolation of gearless elevator machines is more economically planned as part of the original installation, since field labor costs may become appreciable if the work is attempted after machines are in service. A machine is set on rubber pads inserted between its bedplate and the machine support beams. The beams must be set in the correct position, horizontally aligned with each other to evenly distribute the load of the machine over the rubber pads.

Geared machines, motor-generator sets, controllers and hydraulic elevator power units may be similarly sound-isolated from the building. But mounting a geared machine to minimize transmission of vibration to the surrounding structure will not eliminate airborne noises from worm and gear misalignment. The worm and gear should be realigned if possible and replaced if too badly worn.

Air transmission of noise from equipment in a captive elevator machine room may prove objectionable to occupants of surrounding spaces. Possible

sources of sound include rotating elements of driving machines or motor-generator sets, brushes, switches and brakes. Whatever the source of airborne noise, successful control often lies in proper acoustical design of the machine room.

There are several ways to quiet machine room noise

Airborne noise can be absorbed by double wall construction for the sides of the machine room next to occupied space. Doors through the double wall should also be double, installed in tandem.

A more economical but less effective means is to cover ceiling, wall and door areas with fibrous insulation or similar sound-absorbing material.

Air-conditioning ducts sometimes transmit noise from captive machine rooms to other parts of the building. In such cases a single-ply canvas section attached to the metal duct where it enters the machine room has been found to reduce noise transmission through the duct system.

In some traction elevator installations, the secondary sheave is located in a space just below the main machine room (see sketch on previous page). Hard-surfaced walls around this space reflect noise caused by the ropes running on the secondary sheave. Much of the noise is transmitted down the hoistway, the easiest escape path.

One way to reduce noise from this source is to eliminate part of the walls (broken lines in sketch) under the supporting beams. This change opens a larger space in which the sheave noises are dissipated before they can reach the highest occupied floor of the building. If the secondary sheave space cannot be opened up, the inside of the walls on all sides should be covered with sound-absorbing material.

Hoistway noise and its control is a more complex problem

Noise from a machine room is likely to bother people only on the same floor, and possibly on the floors directly above and below it. But noise generated in the hoistways and carried by the building structure or through the air can cause complaints on every floor the elevator serves.

In one high-rise apartment building of concrete construction with continuous wall and floor construction, tenants in apartments adjoining the rear wall of the elevator hoistway reported noise from that source. Investigation showed that the building structure was transmitting noise from the counterweight running on its guide rails. Specially designed sound-isolated mountings for the rails were installed to solve the problem.

Air noise can be produced by a high speed elevator traveling in its hoistway. Fortunately, the noise tends to be noticeable only in a single-elevator hoistway and not with two or more cars in adjoining hoistways open to each other, a more usual arrangement in the tall buildings served by grouped elevators.

An elevator moving rapidly in a single hoistway builds up air pressure ahead of the car, forcing air to flow around the car and creating turbulence and noise. The noise is louder when the elevator is running down, against the normally upward flowing air current (stack effect) in the hoistway. Varying directly with elevator speed and height of rise, this kind of noise seldom becomes appreciable in buildings under 30 stories.

When noise proved objectionable in one high-rise building with a single-elevator hoistway, part of the concrete wall in the elevator pit was removed. Air under the down-traveling car could then escape to adjacent hoistways, reducing noise somewhat. Greater relief was obtained in another building by removing the lower portion of the wall between two adjacent single hoistways so that air could flow from one to the other.

With the more usual double or triple hoistway, air noise is seldom troublesome at present or prospective elevator speeds.

At speeds much higher than today's 1,800 fpm maximum, cars passing each other in a hoistway might cause sharp but unpleasant puffs of sound. This could be reduced by aerodynamic aprons of plastic or metal on the bottom and top of the car. Cars with domes of this type are already in use, on the Space Needle in Seattle and in other outdoor installations.

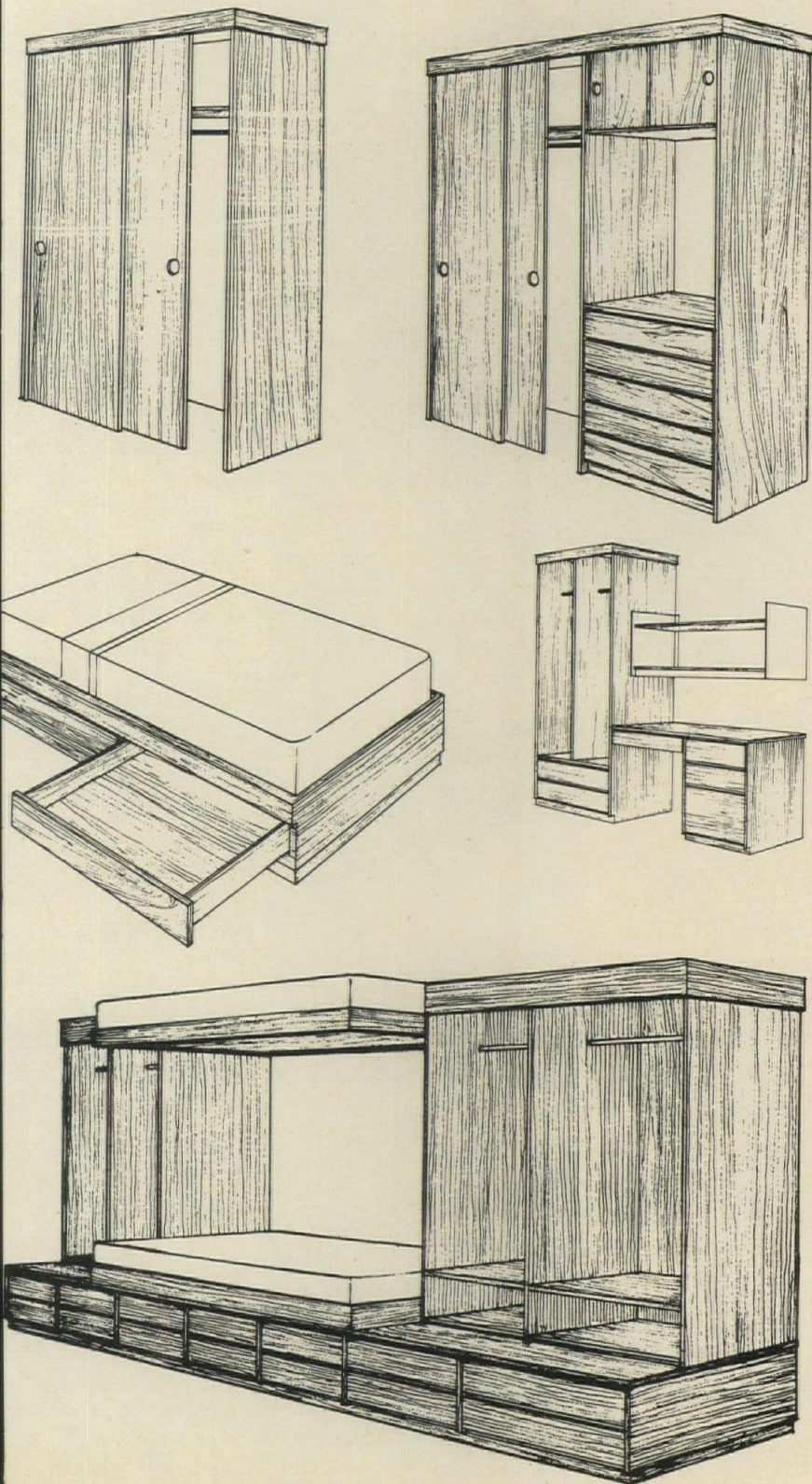
Aerodynamic characteristics of the hoistway may cause noticeable "puff" noise as an elevator runs, even at speeds below 1,000 fpm, past door sills, beam saddles or other projections in the hoistway. The noise may be created by air column shearing at the edge of the door or other projection as the front edge of the car passes by. Building the hoistway walls flush largely eliminates puffs from this cause.

This survey of recent experience with elevator noise suggests how various are its possible causes and cures.

Design of an elevator installation with the desired acoustic, architectural and functional characteristics is seldom the accomplishment of a single discipline. Especially when conditions like those reviewed in this report are likely to prevail, early consultation of the architect with the elevator engineer and the acoustical engineer should prove beneficial.

For more information circle selected item numbers on Reader Service Inquiry Card, pages 303-304

Built-in dormitory furniture fights tight space problem



Built-in furniture for college dormitories has come a long way from the days when "built-in" meant ordinary free-standing furniture that is bolted to the floor or wall. Today, built-in furniture is engineered and designed to provide a maximum of utility in a minimum of space, to be good looking, and to be structurally sound—to increase the capacity of a building and the life of the furniture.

Built-in furniture can now be considered part of the structure of the building, and as such, qualified for long-term financing under government loan programs. And since loans can cover a 40-year period, the furniture should be built with the same concern for longevity as the building itself.

Shown here are a variety of designs ranging from simple to complex. Basic are wardrobes, chests, desks, and beds, some of which can be combined. For example, the simplest wardrobe design is the sliding door closet. A chest of drawers may be built into the wardrobe and a variation can include a vanity with a lavatory. Two such units can be combined side by side or back to back, making up a non-load-bearing wall.

In still another variation, a wardrobe, bunk bed, and desk are one integral unit. Or a double bunk can have a wardrobe at each end.


Obvious economies that result include the side of the wardrobe acting as the headboard for the bed, while the other end of the bed supports the work surface of the desk.

Furniture is built to order for specific installations. Sizing is exact and specific needs are considered. For example, if the room is for girls, larger wardrobe requirements are met.

The furniture shown includes steel framework for all case goods (dressers, chests, and desks). Folding doors have full-length piano hinges. Exteriors are plastic laminate bonded to high-density resin cores and drawer fronts are double thickness. ■ Corco, Inc., Chicago.

Circle 300 on inquiry card

more products on page 208

An aerial photograph of a city skyline, likely New York City, featuring several prominent skyscrapers. A white rectangular text box is overlaid on the lower-left portion of the image. The text inside the box is in a bold, black, sans-serif font. The background shows a dense urban landscape with various building heights and styles, and a body of water visible in the distance.

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OFFICE LITERATURE

more information circle selected item numbers on Reader Service Inquiry Card, pages 309-310

SEATING / Literature describes various concepts for classrooms, lecture halls, and audio-visual facilities. ■ Uni-Se Corporation, Grand Rapids, Mich.

Circle 400 on inquiry card

COUPLINGS AND JOINTS / An 8-page booklet, "Ideas to Design By," claims better ways to connect, join or assemble structural components, closures, tubing and piping. The booklet is an album of problems solved by V-Band Couplings and Flexmaster Joints. It illustrates ways saving in costs, time, accessibility, weight and mass. ■ Marman Division, Equip Corporation, Los Angeles.

Circle 401 on inquiry card

WATER HEATING / Instantaneous electric water heaters with increasing applications in industrial process heating and space heating are the subject of a 24-page booklet. The booklet includes descriptions of built-in contactors, fuses, control circuit transformers and multi-stage thermostats. ■ Industrial Engineering & Equipment Co., St. Louis.

Circle 402 on inquiry card

WOOD PANELS / Four new woodgrain patterns and four new decorator colors included in a 16-page color brochure on Videne panels. These panels are described as "reverse-printed polyethylene film, factory-laminated to various substrates for commercial application." Other Videne-surfaced products for commercial construction, including movable partitions, portable partitioning, laboratory furniture, store fixtures, and architectural grade doors are described in the booklet. ■ The Goodyear Tire and Rubber Company, Akron, Ohio.*

Circle 403 on inquiry card

CHURCH SOUND / A 6-page brochure, "Sound Systems for Churches," covers sound and reinforcement systems and equipment in all types of religious structures. ■ Altec Lansing, Anaheim, Calif.*

Circle 404 on inquiry card

MINNESOTA STONE / "Family of Fine Stones" is an 8-page booklet with 41 color plates showing stone and marble finishing from highly finished to extremely rough work. Typical applications are described, such as flooring, wall facing, sculptured panels, and a variety of uses in religious architecture. ■ Better Stone Company, Kasota, Minn.*

Circle 405 on inquiry card

ELECTRIC UTILITIES / A 16-page brochure, "A Planning Guide for Engineers and Architects," presents a list of services that utilities may provide to aid in site selection, as well as other ways in which electric utilities may be of assistance. One section promotes all-electric space conditioning and gives data on several all-electric commercial buildings. ■ Edison Electric Institute, New York City.

Circle 406 on inquiry card

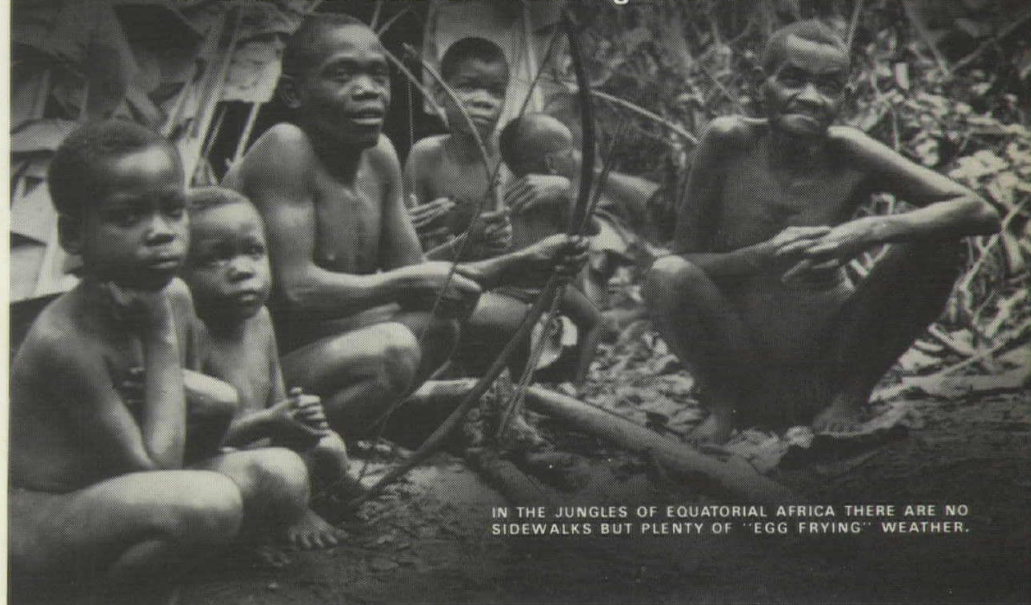
SOUND-VIBRATION ISOLATION / An 8-page pamphlet provides details on designing and applying floating floors, resiliently suspended ceilings, and isolated partitions to appreciably increase sound transmission loss from one area to another. ■ Consolidated Kinetics Corporation, Columbus, Ohio.

Circle 407 on inquiry card

* Additional product information in Sweet's Architectural File

more literature on page 247

WHEN IT IS HOT ENOUGH TO FRY EGGS ON THE SIDEWALK
imagine what thermal reaction is doing
to the roof and all building elements.



IN THE JUNGLES OF EQUATORIAL AFRICA THERE ARE NO SIDEWALKS BUT PLENTY OF "EGG FRYING" WEATHER.

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Extremes of heat or cold can hardly be prevented but roof leaks at eaves and expansion joints due to thermal cycling can be stopped. Cracked roofing felts cause 90% of these leaks; the cracks occur because the felts are mopped directly to copper or aluminum. The Hickman System (patented 1958) by mopping felts to a galvanized steel water dam, neutralizes the expansion and contraction, thus preventing cracked felts and giving positive control of roof water at eaves. (The roof is probably the most important part of the building in protecting the client's property from adverse weather conditions).

*Flexibility of design is provided by free-floating, extruded, aluminum fascia systems in various graceful profiles and sizes and colorful * finishes; also the Systems guard your exteriors from tar drippings and water stains which otherwise would mess them up.*

* Kalcolor, Vinyl-Cote, Fluoropon (Kinar 500) and baked enamel colors.

For the "how" of the Systems, plus a partial list of important installations and the roster of area sales representatives refer to SWEET'S 21G Hi and check our number on the card for additional technical data.



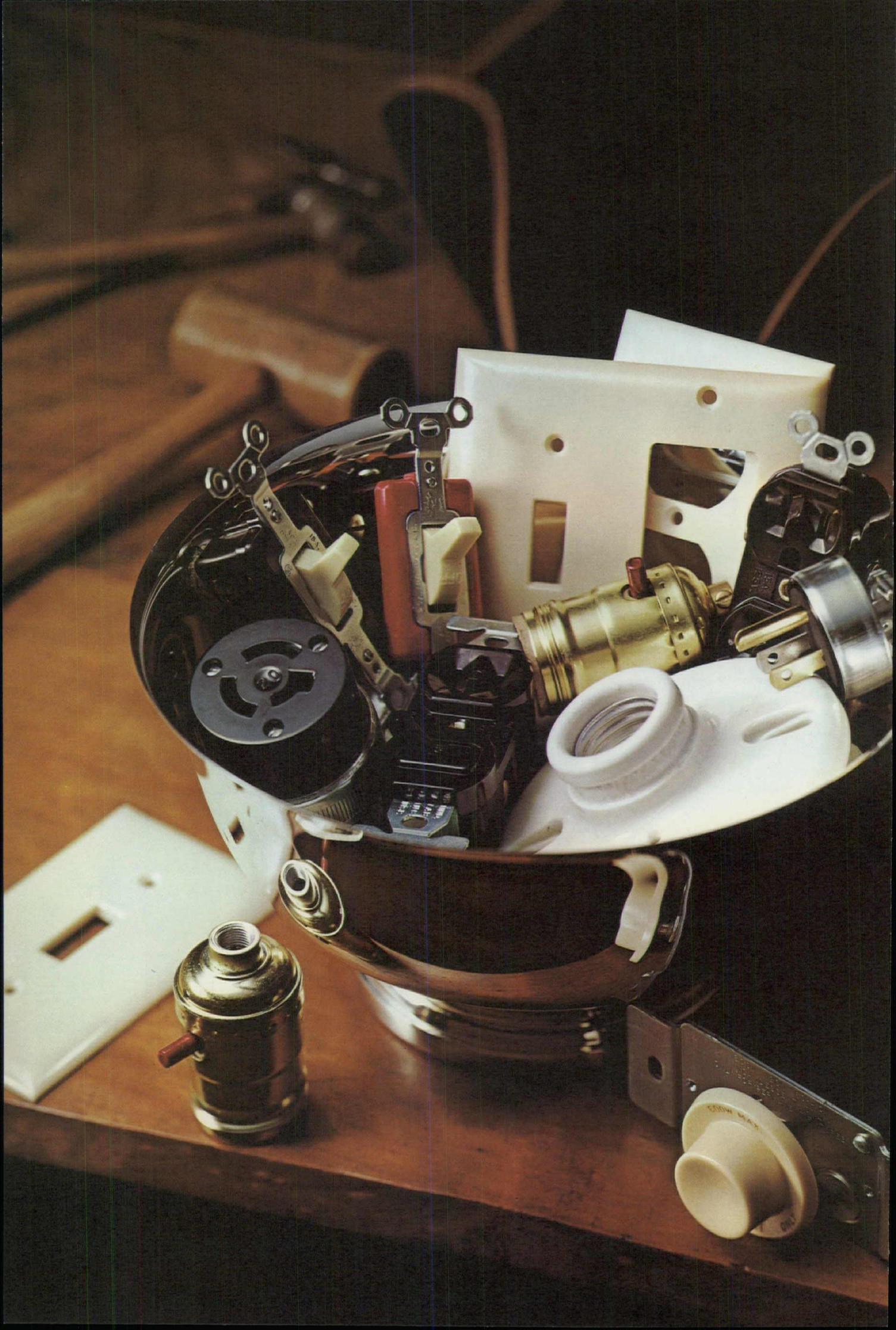
HICKMAN Safeguard

**fascia and water dam systems
and expansion joint systems**



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Waverly Farms
Village of Golf, Florida

Architects: Bywaters & Duemmling
Fort Lauderdale, Florida

Roof: Designer Early American
by Ludowici-Celadon Co.

The Architects selected Ludowici's
Designer Early American pattern
Roofing Tile in a range of Dark Gray

for the roof of this gracious residence
and several other buildings on the estate.

They chose this prestige material for its beauty—
its durability—its non-fading colors.

Architects can offer their clients this superior
roofing material of hard-burned clay tile
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surfaces, all architecturally correct.

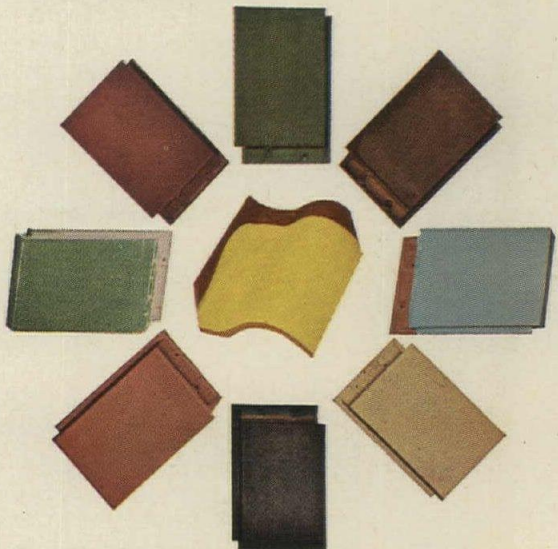
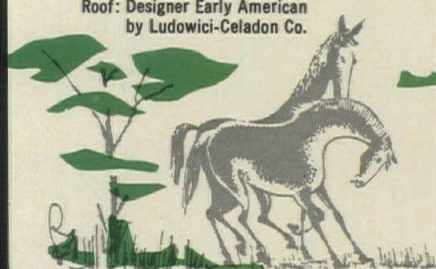
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75 East Wacker Drive • Chicago, Illinois 60601

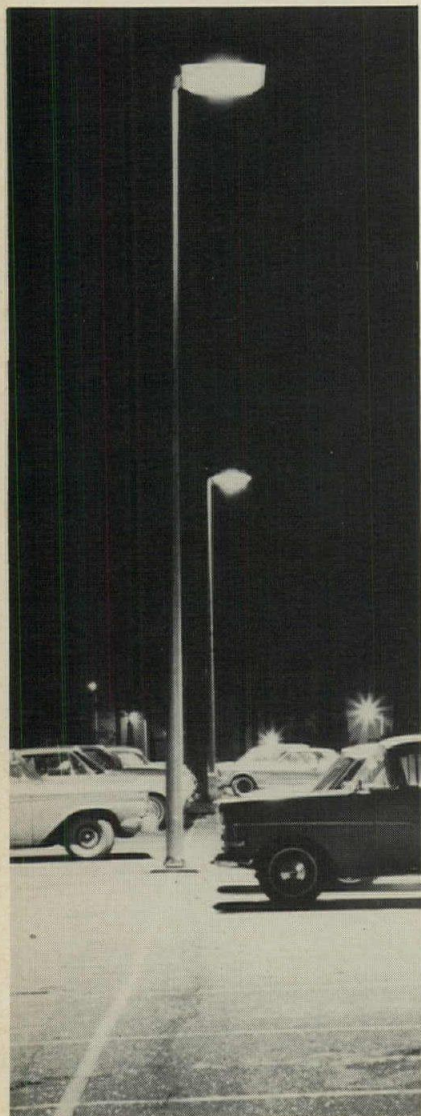
*Manufacturers of quarry tile, the nation's largest producer
of roofing tile and NAILON Facing Brick.*

WIDE SELECTION OF OTHER PATTERNS,
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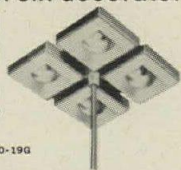


22 ways to light high-style & high-level



GE Profitable Variety/68

Example: New Space-Lite™ luminaires bring unequaled styling to high-level lighting applications. Designed for attractive modular mounting in pairs, trios, quads— or singly. Available in six decorator colors, square and round shapes, and utilizing mercury, Multi-Vapor™ or Lucalox™ lamps. 460-19G



GENERAL ELECTRIC
Hendersonville, N.C. 28739

For more data, circle 86 on inquiry card

continued from page 208

HOSPITAL CONVEYORS / The Material Management and Pharmacy departments of St. Mary's Hospital in Orange, N.J. are using electric revolving storage conveyors to speed the location of stored items. In the Material Management department, patients' personal kits, sterile treatment trays, surgical dressing supplies, and intravenous solutions are just some of the items stored in bins on the conveyor. In the pharmacy department the conveyors locate drugs and medicines. ■ White Machine Company, Kenilworth, N.J.

Circle 303 on inquiry card



FIBERGLASS CHAIR / Solar chair, designed by Carlo Bertoli, has an unbroken surface of uniform thickness. It is molded as a complete load-bearing unit, designed for durability and economy of production. The low-slung silhouette, which is shaped to fit the natural body curve, requires no cushioning. Available in white, orange or mustard. ■ Stendig, Inc., New York City.

Circle 304 on inquiry card



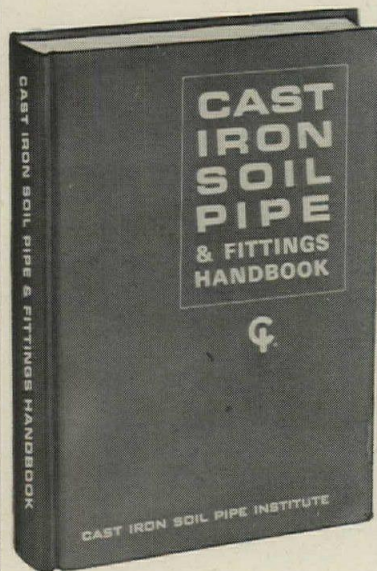
CLAD METAL / Copper-clad stainless steel is a new material for roofing, flashing, gutters, downspouts and other metal components in buildings. *Ti-Guard* type S is reported to have a lower coefficient of thermal expansion than copper; and to be strong, light, and competitive in cost. The metal has a life expectancy of 25 to 35 years and does not require maintenance. ■ Texas Instruments Incorporated, Attleboro, Mass.

Circle 305 on inquiry card

more products on page 220

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they come up clean and
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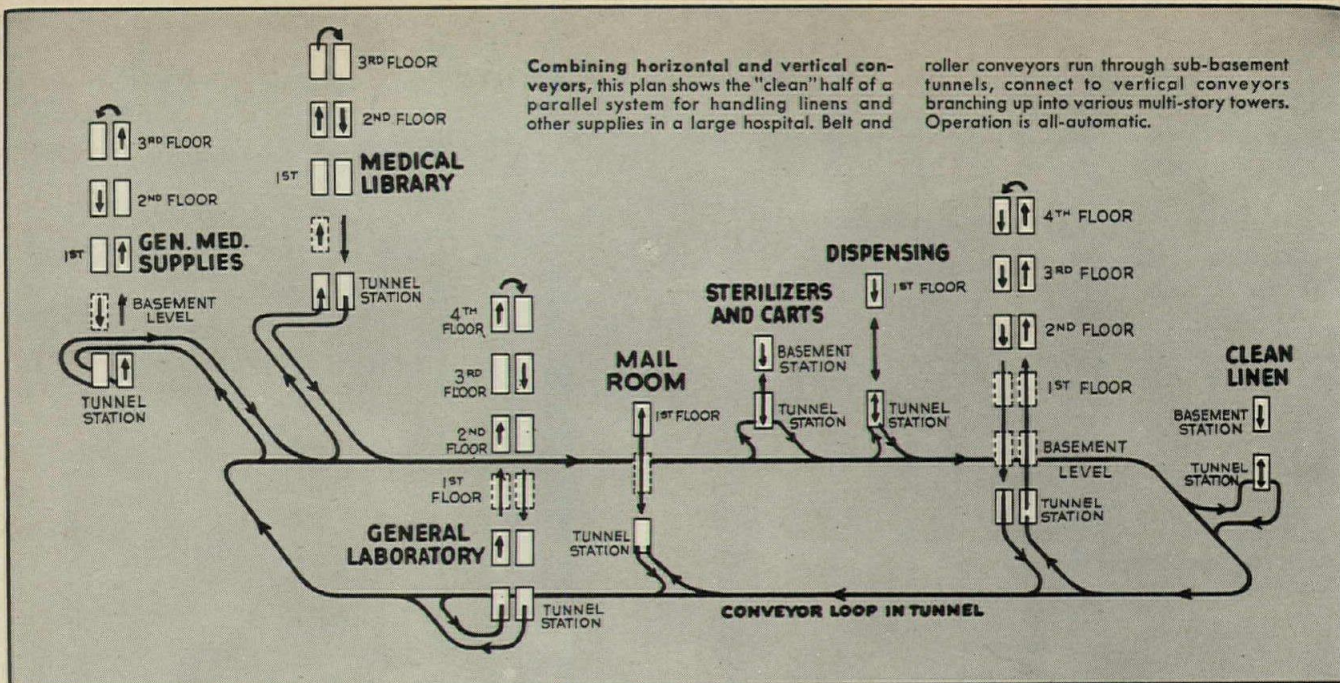
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Pushbutton conveyor system speeds hospital supplies to any of 17 stations



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Operation is fast and automatic. Operator simply loads the basket, places it on the loading station, pushes the proper button for the desired destination—and away it goes!

PLANNING for materials handling in multi-story buildings can become an easy matter—when you specify a STANDARD CONVEYOR Recordlift System.

A Recordlift System unifies a building. General supplies, mail, records, files and other materials go up, down, and throughout the building at the push of a button. The cost and congestion of inter-floor messengers is saved—speed and efficiency are gained.

Ideal for hospitals

Widely used in office buildings, banks, libraries, etc., Recordlift Systems have long proved ideal for handling hospital supplies.

The plan above, for example, shows the "clean" portion of an extensive double Recordlift System being designed for a new 700-bed hospital.

Has two-lane traffic

Two separate horizontal-vertical conveyor systems will run side-by-side throughout the building complex. One will handle clean linen; the other, soiled. The systems will also handle mail, books, records, forms, publications, medical supplies, instruments and lab specimens.

There are 17 pushbutton stations on the clean system, 14 on the soiled. The entire double system has about 4,300 feet of conveyor—3,000 feet horizontal. The vertical footage includes 8 Recordlifts and 12 reciprocating lifts.

Provisions are included for adding 7 more stations to the clean system and 8 more to the soiled.

Dispatching is simple

Any station can send to any other station in each separate system. For reasons of cleanliness, the two systems do not connect at any point.

Dispatching is simple, fast and selective. The operator merely loads the 20½" x 17½" x 10" container (2 will hold a complete change of linen for 3 beds), pushes the button for the proper station, and the system delivers it.

Write for data file

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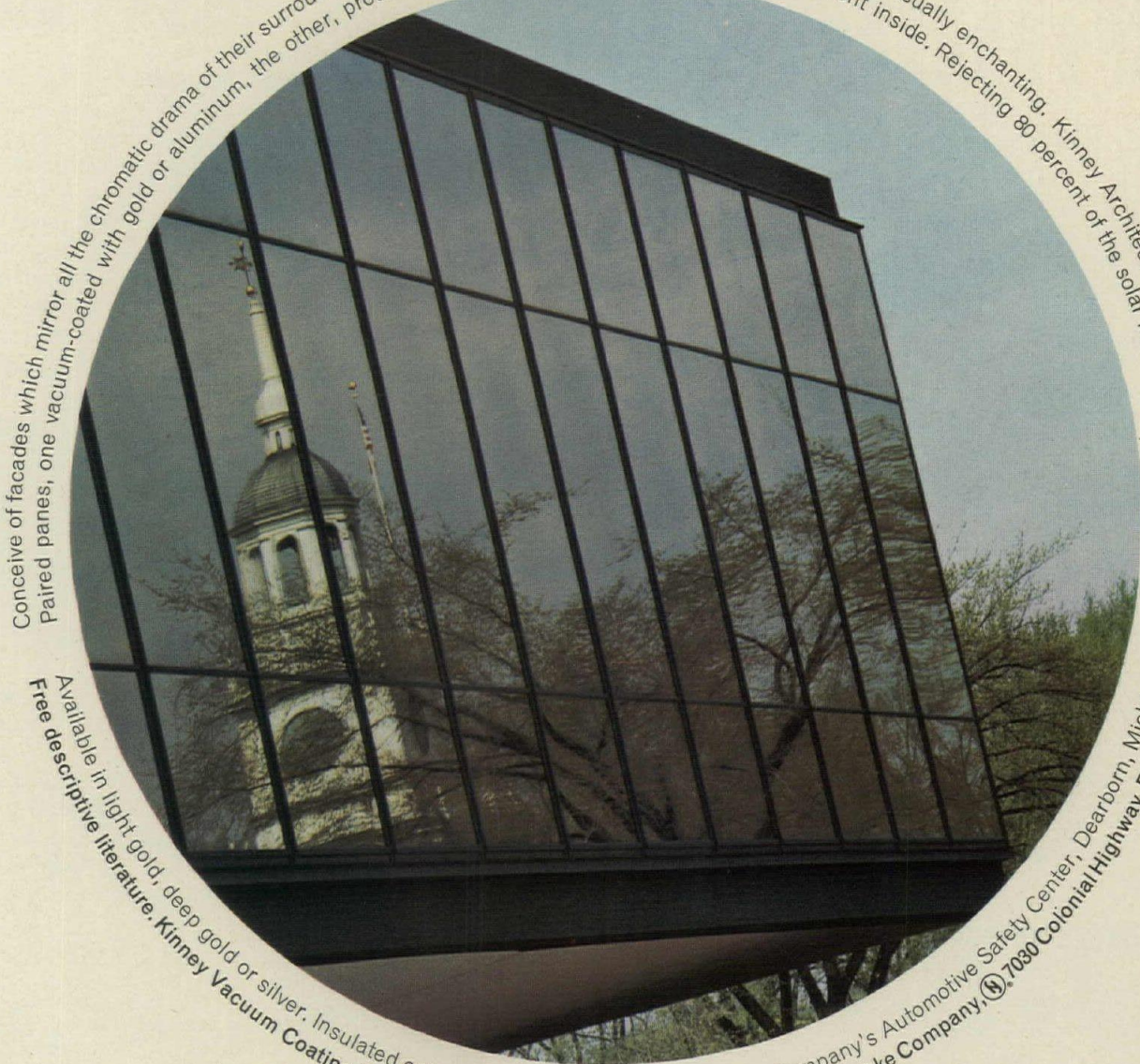
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The lite fantastic

cloud by cloud, leaf by leaf, season by season. Visually enchanting. Kinney Architectural Lites.
In daytime, reflective outside, transparent inside. Rejecting 80 percent of the solar heat.



Conceive of facades which mirror all the chromatic drama of their surroundings . . . cloud by cloud, leaf by leaf, season by season. Visually enchanting. Kinney Architectural Lites.
Paired panes, one vacuum-coated with gold or aluminum, the other, protective.

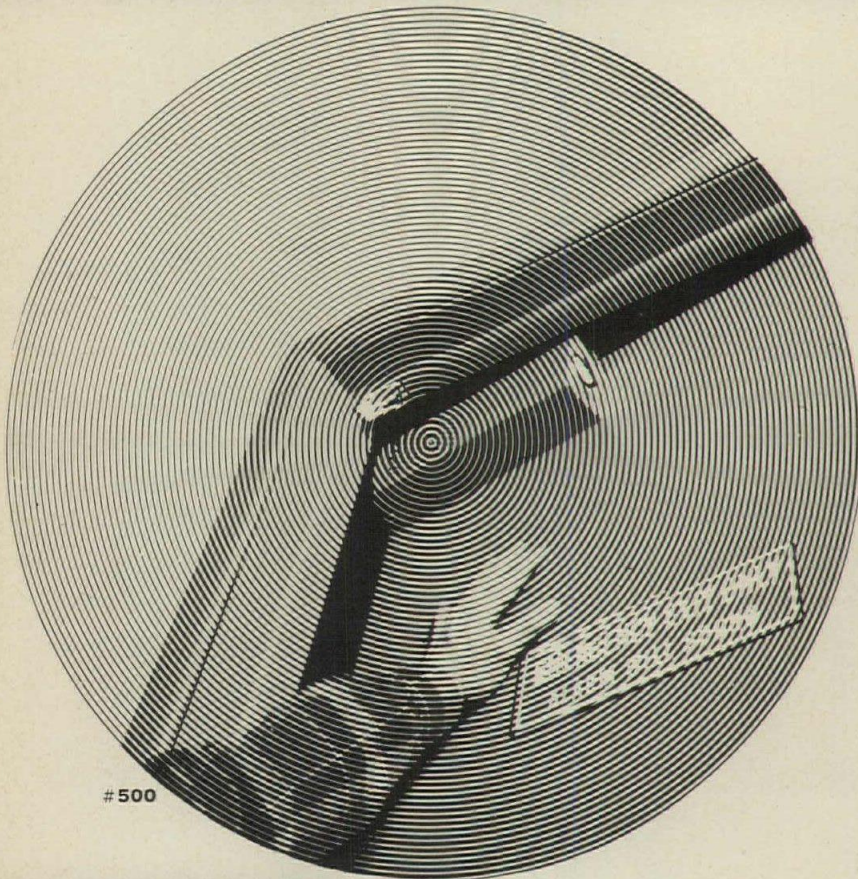
Available in light gold, deep gold or silver. Insulated or laminated safety units. Ford Motor Company's Automotive Safety Center, Dearborn, Michigan, Nordstrom & Sansom.
Free descriptive literature. Kinney Vacuum Coating Dept., Kinney Vacuum Division, The New York Air Brake Company, 7080 Colonial Highway, Pennsauken, N. J. 08109, (609) 665-9364.

Available in light gold, deep gold or silver. Insulated or laminated safety units. Ford Motor Company's Automotive Safety Center, Dearborn, Michigan, Nordstrom & Sansom.
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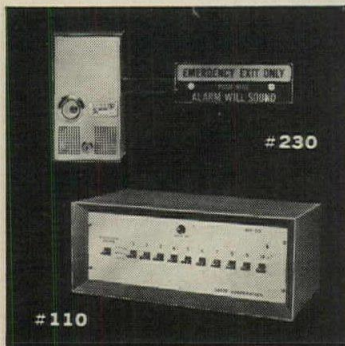
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continued from page 2

How to control exits



500



Exit Control Lock #230 Dead-bolt opens and alarm sounds when panic bar is pushed. Key disarms alarm. **Exit Alarm #500** Used where door already fitted with "panic" hardware. Key prevents sounding of alarm. **Remote Indicating Panel #110** Local alarms, above, may be wired into annunciator panel which monitors use of all protected doors.

- without spending a fortune

Detex Coordinated Security System effectively control use of exits — especially those which **must** remain "open" for emergency use — at a very modest cost for each protected door. Also controls unauthorized use of internal doors while authorized personnel go in and out freely. On-site and/or remote alarms. With and without "panic" hardware.

Write for free 12 page Door Security Catalog, price schedule, and application information.

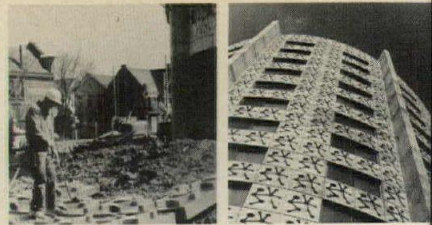


Detex Corporation

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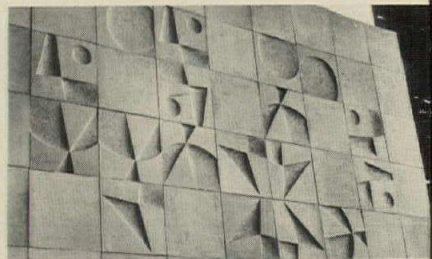
Detex is also America's leading manufacturer of watchmen's supervisory equipment.

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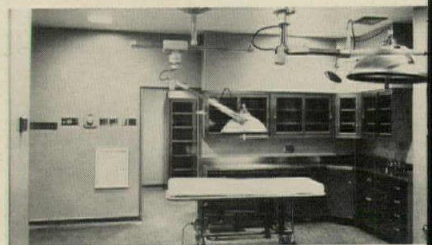
CONCRETE "COOKIE CUTTER" / Fiberglass-reinforced plastic forms resembling giant cookie cutters achieved a sculptured 3-in.-deep design in concrete. The exterior of the building, one of two circular 12-story apartment units in Milwaukee housing project, is poured-in-place concrete. A workman (left) cleans the forms. ■ Economy Form Corporation, Des Moines, Iowa.

Circle 306 on inquiry card



MURALS / "Spatial Negatives," the newest of the *Ceramic Design Palettes*, involves standard designs to produce original mural and non-repeat walls. The hollowed-out forms give the effect of being carved into a wall surface. Each wall is designed to meet the architect's requirements. ■ Design-Technics, New York City.

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Circle 308 on inquiry card

more products on page 2

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Ask for your catalog today. Haws Drinking Faucet Company, 1441 Fourth Street, Berkeley, California 94710.

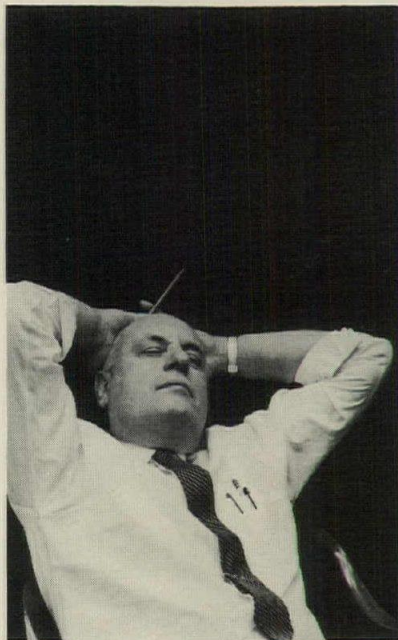


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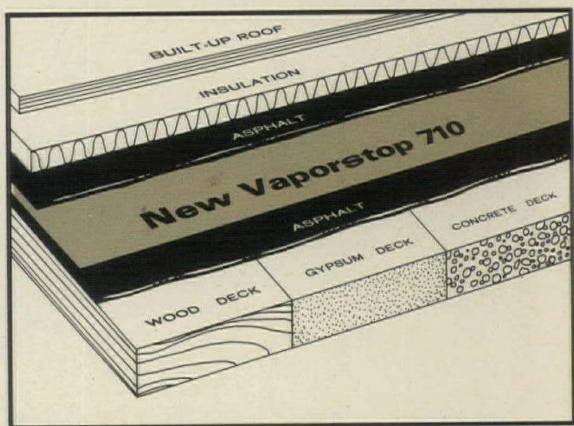
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Vaporstop 710 is a prebuilt vapor barrier for all roof decks other than Class I. This means continuous, low perm protection is already built-in, and uniform protection is not dependent on how asphalt and felt are laid down. Roof load is 85% less, too.

Vaporstop 710 makes it easy for the roofer to provide this uniform coverage which you know is vital for keeping destructive moisture out of roof insulation.

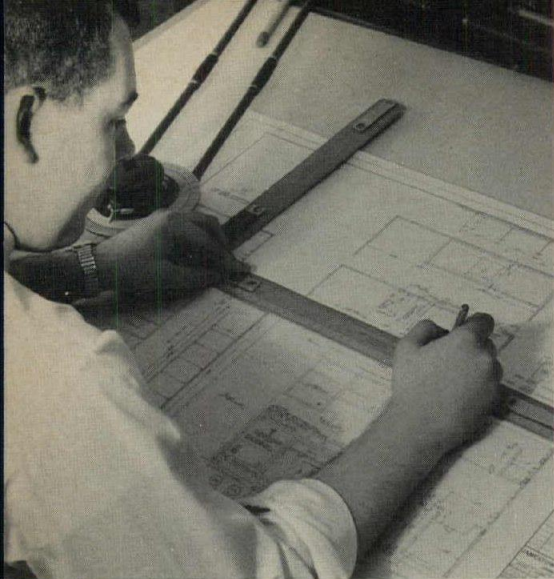
Vaporstop 710 saves money, too. One ply installation has shown it can reduce applied costs by as much as 25%.

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SISALKRAFT DIVISION **ST REGIS**

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continued from page 220



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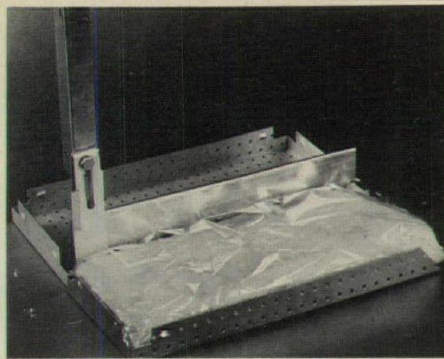
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ACOUSTICAL CEILING / A system combining aluminum snap-in panels and a washable sound-absorbing polyvinyl chloride pad is finding increased use in hospitals, nursing homes, and industrial laboratories where bacteria, odor and moisture control are prime considerations. The pad, which is installed above the aluminum panel, separated by light-gauge aluminum spacers, can be removed easily from the snap-out panels, and cleaned. The system is also being selected for schools, indoor swimming pools, kitchens, rest rooms and prisons. ■ Simplex Ceiling Corporation, New York City.

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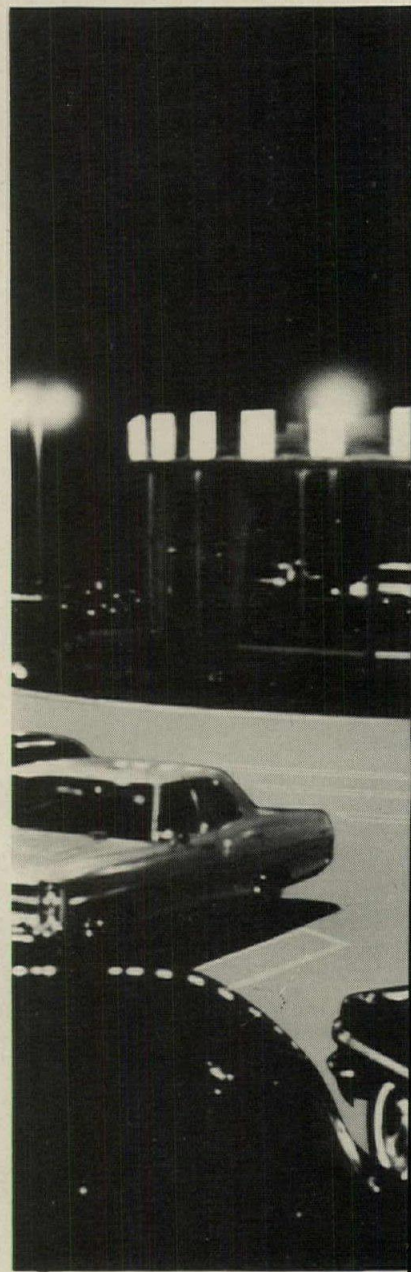


INDUSTRIAL SIDEWALL PANEL / ACE (asbestos cement extrusion) *Corspan* is an industrial sidewall panel. Besides being lightweight and economical, the panels are free of veins and stratifications. Their cored construction affords strength and insulation value. Panels will not burn and are highly resistant to corrosive action of salt air, fumes and gases. They are unaffected by moisture or high humidity and will not deteriorate when exposed to the elements and thaw cycles. ■ Johns-Manville, New York City.

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more products on page 246

45 ways to light car lots



Profitable Variety/68

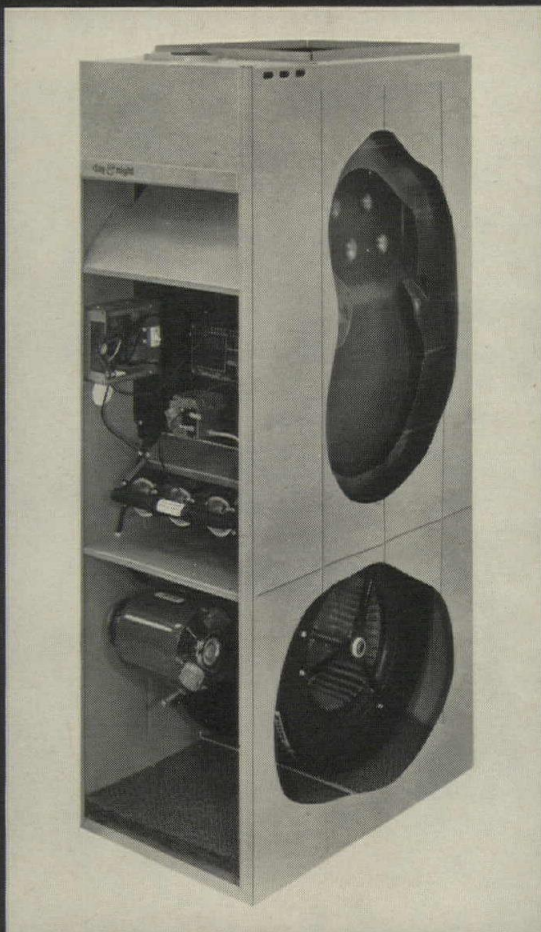
Example: Powerflood® luminaires on front row and perimeter areas, plus Quartz-Flood™ units and distinctive Powerglow® luminaires, give automobiles sparkling appeal. 460-19E

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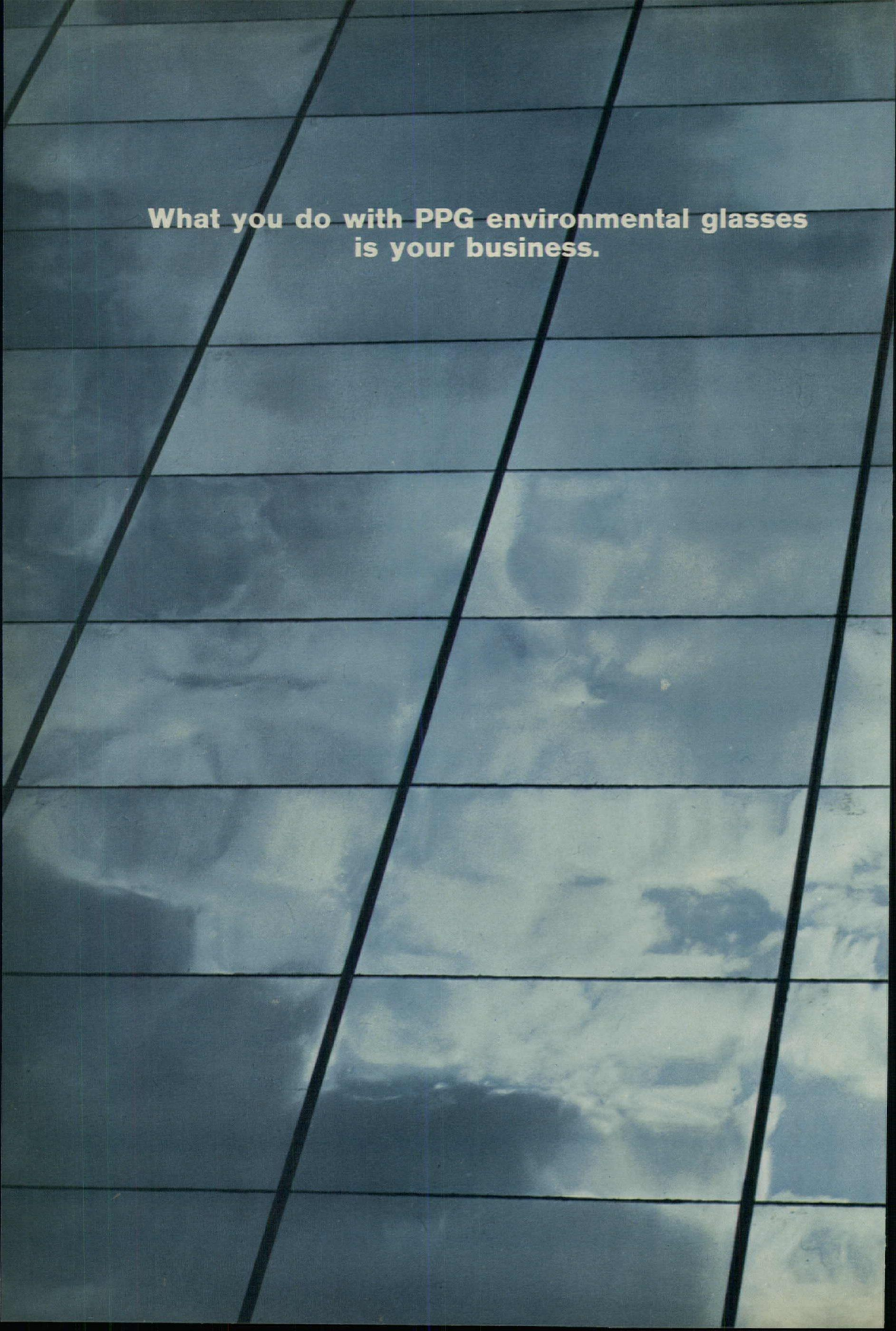
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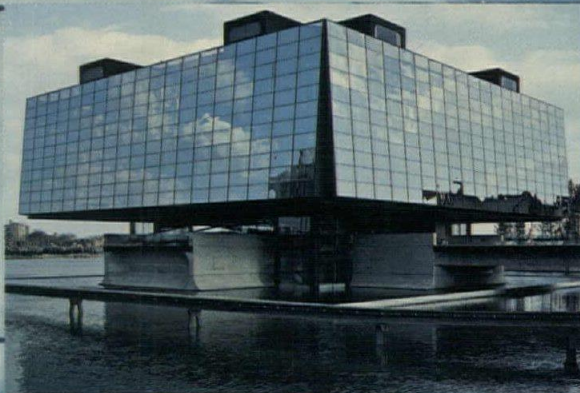


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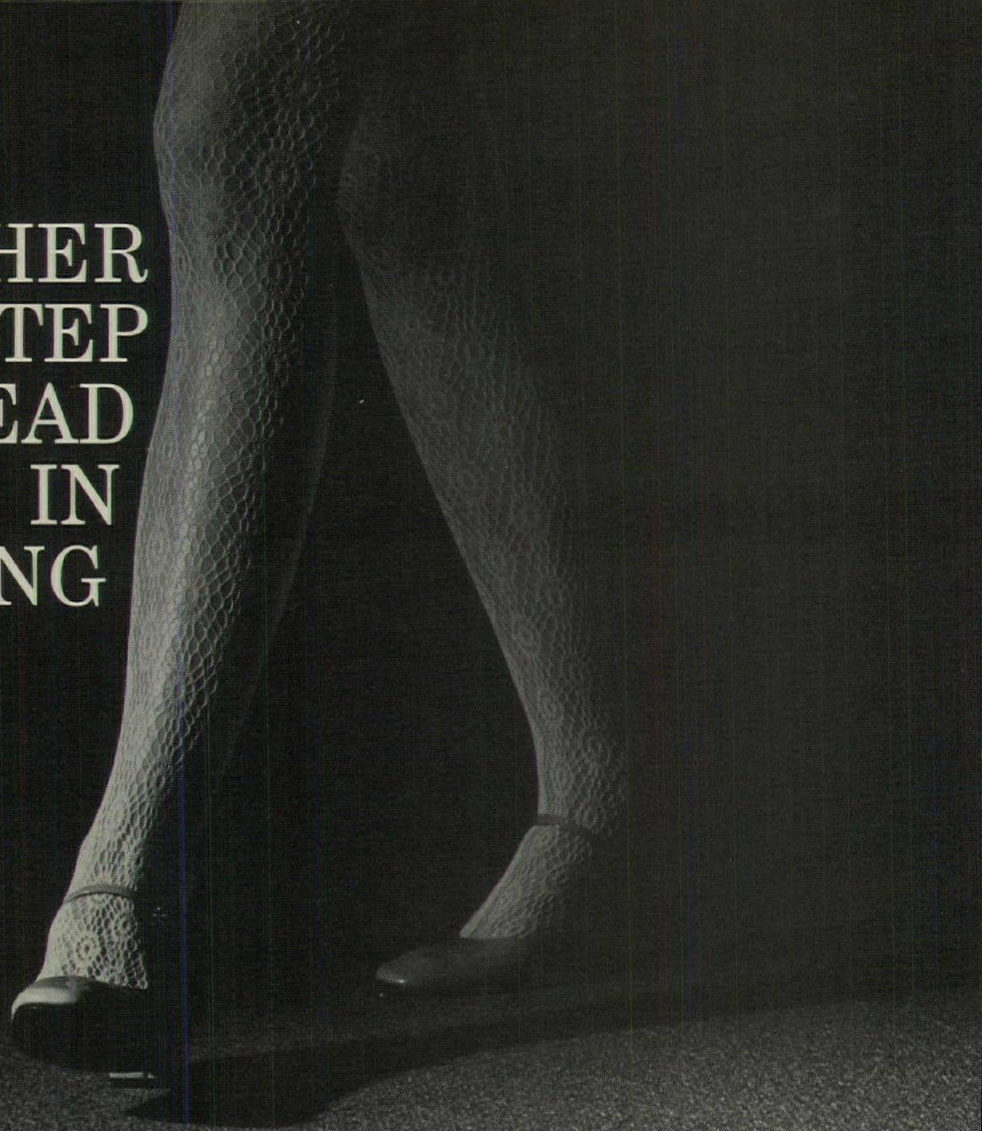
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Architect: Papineau/Gerin-Lajoie/LeBlanc, Montréal
Associate Architect, Luc Durand, Montréal



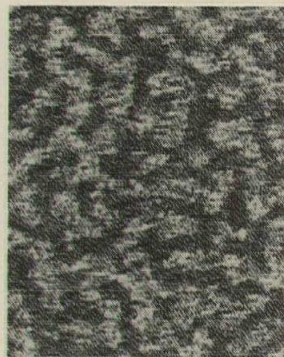
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UNIVERSAL STAR TREK • STAR TREK is 100% virgin wool spun with BRUNSMET®, a metallic fibre by Brunswick that eliminates static electricity. Of extremely high density construction, STAR TREK is made on Universal's 2400 needle, $\frac{5}{64}$ " gauge tufting machine. And STAR TREK's tweed blends are available in five decorator colors—Martian Green, Galaxy Blue, Rocket Red, Orbit Orange and Venus Gold—all in 12' widths.



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For details, see Sweet's Architectural File 13A. Or write to us. MASONITE CORPORATION, Dept. AR-4, Box 777, Chicago, Illinois 60690.

* Quick Change is a registered trademark of Glen O'Brien Movable Partition Company, Inc.

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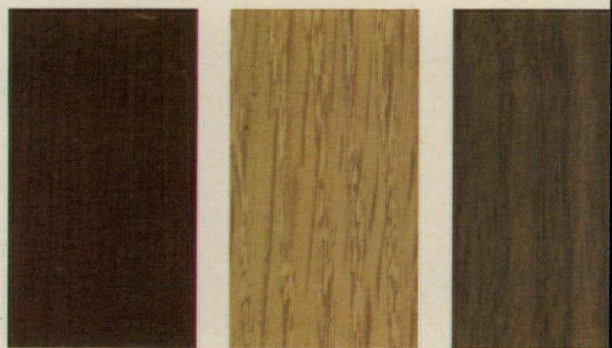


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The "President" 300 Series—48-inch console of selected hardwood finishes only, twin electric cooking units, one-piece stainless steel countertop with integral recessed sink, refrigerator, freezer, storage plus optional food waste disposer and automatic ice maker.



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CRANE

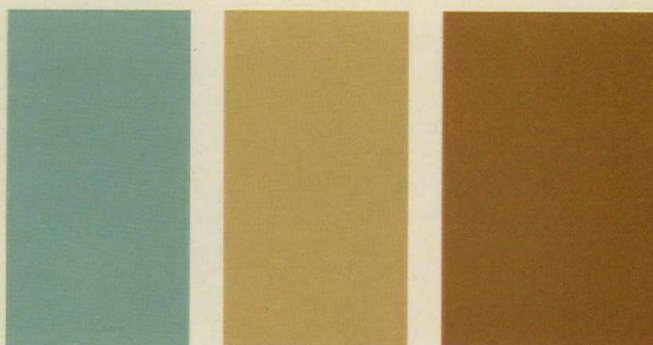
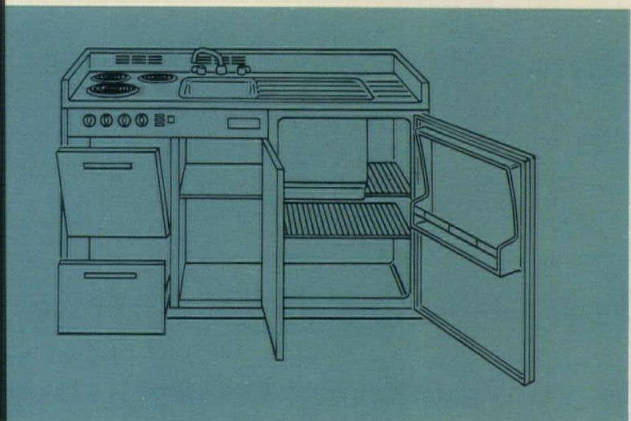
VALVES • PUMPS • FITTINGS • WATER TREATMENT
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"Supreme" 872 Series—range, oven, broiler, automatic-defrost refrigerator, full-size sink, storage plus food waste disposer and optional features. 72 inches.

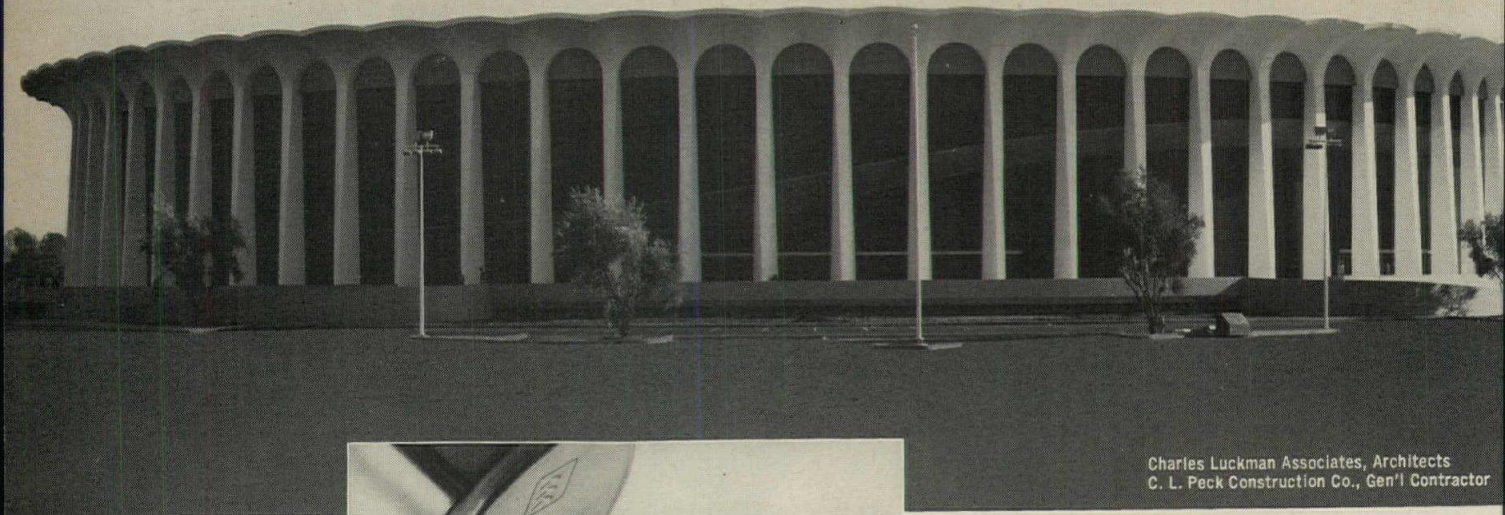


The "Medallion" 529 Series — range, full sink, Crane refrigerator with full length freezer, handy door shelves and push-button defrost, left or right-hand, flush-opening door. 29 inches.

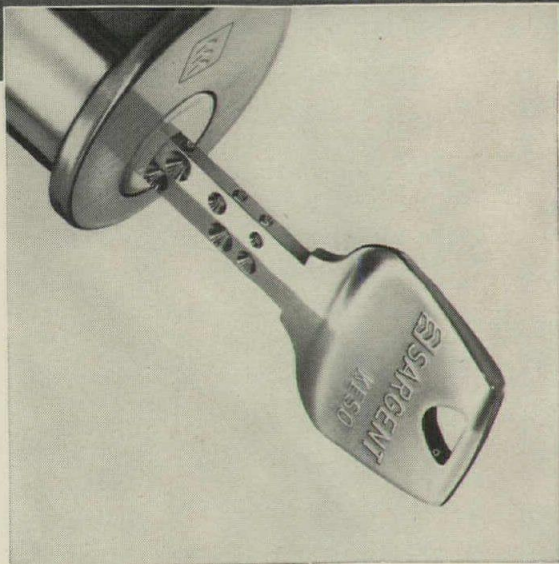


All Crane Chefs except President Series are available in gleaming white, pastel turquoise or tan, or rich coppertone to blend with today's popular decorating trends.

For more data, circle 111 on inquiry card



Charles Luckman Associates, Architects
C. L. Peck Construction Co., Gen'l Contractor

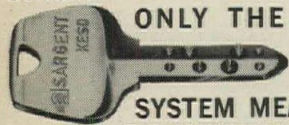


Key Factor in new L.A. Forum:

Sargent Maximum Security System

The management of The Forum was presented with a mammoth problem in lockset security. As in all sports arenas, large amounts of cash would be on hand, negotiable pre-printed tickets would be on the premises, and vandalism would be a constant problem.

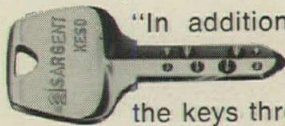
Moreover, a great degree of flexibility would be required to accommodate the fluctuating storage and space needs of converting The Forum from an exhibition hall to sports arena and entertainment center.



**ONLY THE SARGENT
MAXIMUM
SECURITY
SYSTEM MEASURED UP
TO THESE CHALLENGES.**

"The pick-resistance of these new lock cylinders helped make up our minds," commented Robert Church, Forum Director of Operations. "When you play host to 19,000 people in the building

at any given time, you want all the protection you can get. And those three rows of interlocking pins give us the highest possible level of security.



"In addition, we know that possession of the keys throughout the building will be confined to authorized personnel only—because you can't readily duplicate these keys, with their milled depressions, on 'corner store' key cutting machines."

Group sectional control will remain well defined. Exhibits, storage areas, restaurants, service and maintenance areas are accessible only to those people who have business there.



With the hundreds of locks in The Forum, the additional levels of master-keying possible with the Sargent Maximum Security System were another factor in its selection.

In this proprietary system, removable core cylinders were selected so that entire sections can be reallocated overnight to fit the needs of the coming event.

Since The Forum opened its doors, the Sargent Maximum Security System has fully stood the test. The flexibility and security of the system is demonstrated week by passing week.

For complete information on the Sargent Maximum Security System for your next job, write to Sargent & Company, 100 Sargent Drive New Haven, Connecticut 06509 • Peterborough, Ontario • Member Producers' Council.

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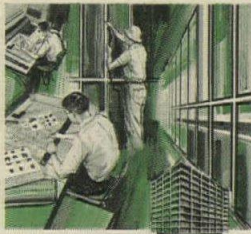
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MAKE EVERY WINDOW A
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UNOBTRUSIVELY.

WE TOOK CONVENTIONAL
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A DIET AND SLIMMED
THEM TO MINI-SIZE.

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PORTS ARE ALMOST
INVISIBLE. TILT CORDS

DISAPPEAR ENTIRELY. WE
REPLACED THEM WITH
GRACEFUL TRANSPARENT
RODS (WE CALL THEM
"MAGIC WANDS").

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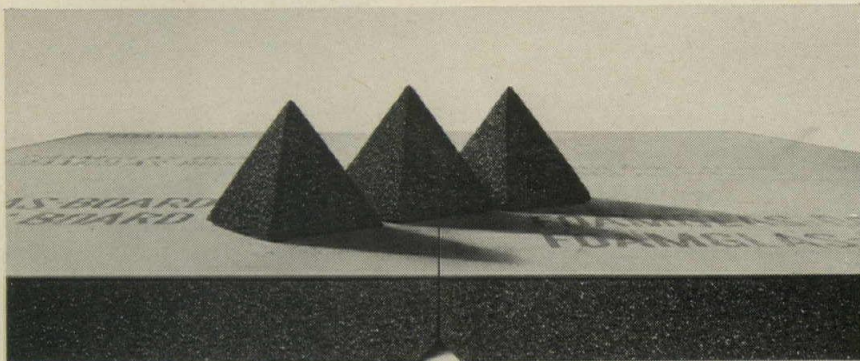
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WITH THE MAGIC WAND TILTER

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FOAMGLAS[®]-BOARD roof insulation



In FOAMGLAS insulation, dry air is trapped inside millions of water-proof, closed cells. And, because it's cellular glass, it has very high compression strength and dimensional stability, and provides a rigid base for built-up roofing.

The beveled edges form continuous passages to relieve vapor pressure which can cause wrinkling and buckling of the roofing.

Only FOAMGLAS is guaranteed to

retain its insulation value, compressive strength and incombustibility, and not to absorb moisture for 20 years. Send for a copy of the guarantee and a sample of FOAMGLAS-BOARD, the ideal insulation for roofs, floors, plazas and parking decks.

Write Pittsburgh Corning Corp., Dept. AR-48, One Gateway Center, Pittsburgh, Pa. 15222. In Western Europe, contact Pittsburgh Corning de Belgique, S.A., Brussels.

The Insulation People



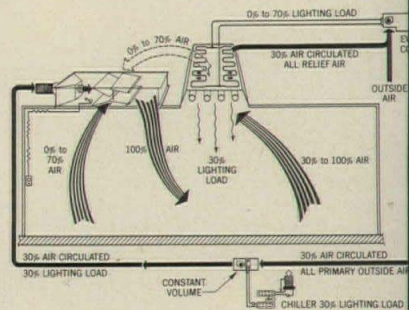
For more data, circle 115 on inquiry card

continued from page



LIGHTING / Geometric area luminaires have been installed in four wedge-shaped 300-seat auditoriums in the new Law Hall at Southern Illinois University. The building, designed by Mittelbusch Tourtelot, is said to house one of the most advanced audio/visual facilities in the country. The 48 2-ft by 4-ft fluorescent luminaires, surface-mounted in a staggered pattern, were installed in combination with incandescent downlights. The luminaires are die-formed of heavy galvanized cold rolled prime steel, finished in a two-stage bonderizing process for maximum corrosion resistance, and then finished with white enamel. Minimum reflectance factor is 90 per cent. The luminaires were furnished with drop enclosures, housed in 18 gauge steel frames that are hinged to open from either side. ■ Good Manufacturing Company, Inc., Chicago.

Circle 311 on inquiry



SMALLER DUCT SIZE / Air Induction System offers smaller duct size and provides lower operating costs. A new constant volume air induction box provides zone temperature control and proper circulation rates at constant volume. The new box is a component of the Lite-Therm environmental control system that integrates lighting, heating, and cooling. Primary supply duct work has been reduced to an absolute minimum. No distribution duct work is required on the handle outside fresh ventilation air at the cooling capacity necessary for space temperature and humidity control. The system is packaged in the ventilation air. ■ Environmental Systems Corporation, Marietta, Ga.

Circle 312 on inquiry

continued from page 203

MENT-CONCRETE TERMINOLOGY / A pocket sized glossary covers most-used terms. 144 pages; \$3. ■ American Concrete Institute, Box 4754, Detroit.

INCINERATOR SYSTEM / Automated system expressly for high-rise buildings fully outlined in a 4-page brochure. Joseph Goder Incinerators, Elk Grove Village, Ill.*

Circle 408 on inquiry card

WATER COOLERS / A complete line of pressure water coolers and accessories described in an 8-page brochure. ■ General Electric Company, Chicago Heights, Ill.*

Circle 409 on inquiry card

HEAVY DUTY DOORS / An 8-page brochure gives construction details, suggested uses and hardware flexibility. ■ Weld Building Products, Niles, Ohio.*

Circle 410 on inquiry card

INDIANA LIMESTONE / An 88-page publication contains complete data on standards and practices, specifications, maintenance and a complete detail section illustrating various anchoring methods. There is also a "case history" section showing application of limestone in various buildings. ■ Indiana Limestone Institute of America Inc., Bloomington, Ind.*

Circle 411 on inquiry card

COMPUTER DRAWINGS / A 12-page booklet presents an integrated computer system for the production of piping isometric fabrication drawings. The objective of the system is to condense the time required to complete engineering drawings and advance the start-up of operating refinery plants. ■ Sun Oil Company, 1608 Walnut Street, Philadelphia, Pa.*

Circle 412 on inquiry card

SCHOOL FURNITURE / Color catalog features twelve different series of school desks, tablet arm chairs, chair desks, front desks, lift-lid desks, study tables and tables. ■ Poloron Products, New Rochelle, N.Y.

Circle 413 on inquiry card

MOISTURE CONTROL / An 8-page booklet describes a variety of construction methods and materials for wood-framed bars. ■ Western Wood Products Association, Portland.

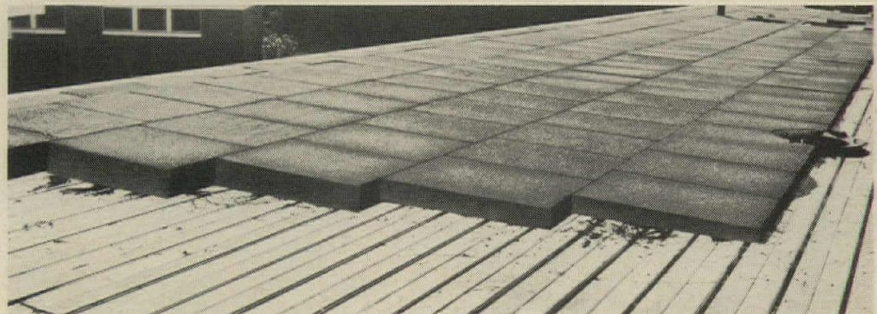
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Additional product information in Sweet's Architectural File

more literature on page 254

New insulation system automatically slopes a flat roof deck for drainage.

Tapered FOAMGLAS® insulation



Start with a flat roof deck. Place the pre-cut tapered FOAMGLAS insulation blocks in sequence. You've got a perfectly sloped roof.

Unlike fills, tapered FOAMGLAS is cellular glass, absolutely waterproof. The roofer himself can install it and roof over it immediately.

When tapered FOAMGLAS roof insulation is installed, you can be sure it will

stay waterproof, and will retain its original insulating efficiency, compressive strength and incombustibility. That's guaranteed in writing for 20 years.

For a free sample and literature, write Pittsburgh Corning Corp., Dept. AR-48, One Gateway Center, Pittsburgh, Pa. 15222. In Western Europe, contact Pittsburgh Corning de Belgique, S.A., Brussels.

The Insulation People



For more data, circle 116 on inquiry card



Dear Findley,
Cadwell and Belton, A.I.A.*

You certainly do know women. You even know that a lot of us use tampons rather than sanitary napkins. So those nice built-in machines that have both are appreciated by one and all. Thanks for thinking of us.

Sincerely,

Us lucky girls on the

13th floor.

Mary, Joan, Ginny, Jackie

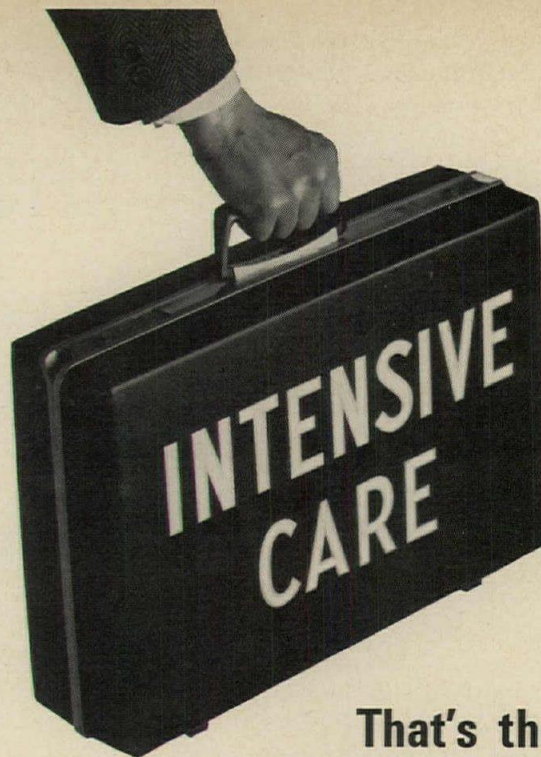
Almost half the women today use tampons. That's why we suggest you specify built-in, dual vend machines. Bobrick Dispensers, Inc. makes some beauties that dispense both Kotex® napkins and Kotex tampons. Send for free catalogue or see Sweet's File No. ^{23c}/_{KI} or Bobrick's File ^{25e}/_{Bo}. True, you may not end up with a letter from the girls, but you'll know you did right by them.



Kimberly-Clark Corporation
Commercial Department, Neenah, Wisconsin

*The names are fictitious, but the gratitude isn't.

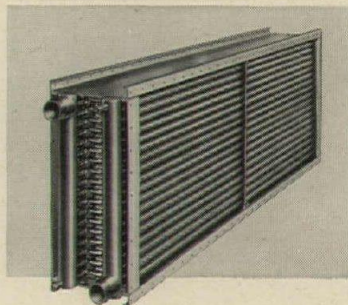
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AeroFin is very strong on field service! Knowledgeable sales engineers representing Fan System Manufacturers—Heating and Air Conditioning Distributors—and AeroFin Headquarter principals—are ready to work with you on the most efficient application of AeroFin Coils.

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Your AeroFin Specialist delivers his "Intensive Care" all the way from preliminary planning to operational performance. And that's a fact!

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Lynchburg, Virginia 24505

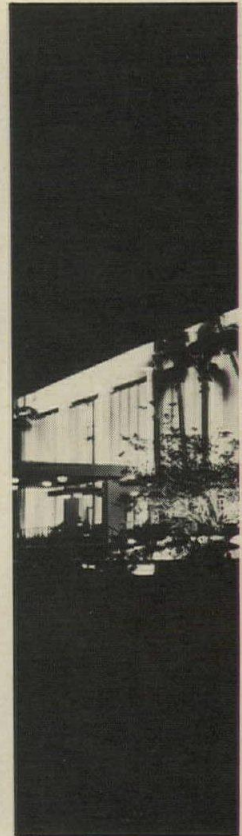
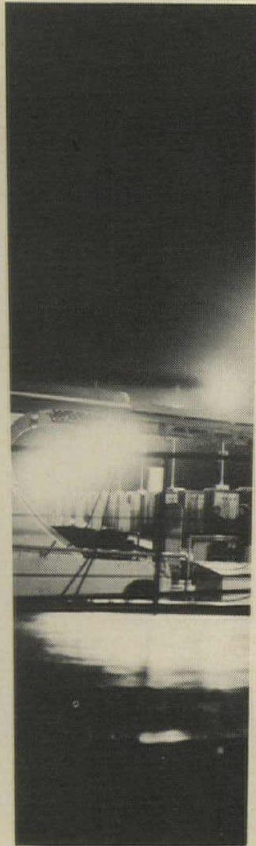
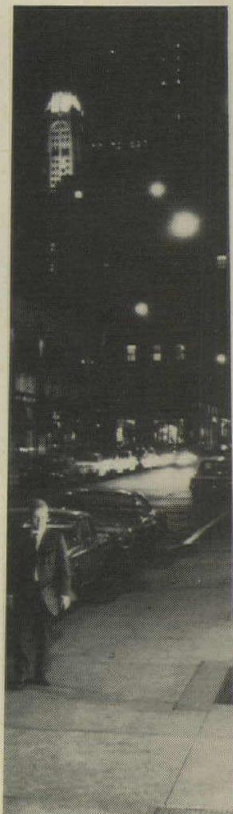
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means more ways to do more jobs



Outdoor and industrial lighting jobs are plentiful now—and will be coming up in greater numbers than ever. And now, General Electric offers more products and ideas to get them done.

A big line-up of luminaires means you can provide the "just right" product for almost any

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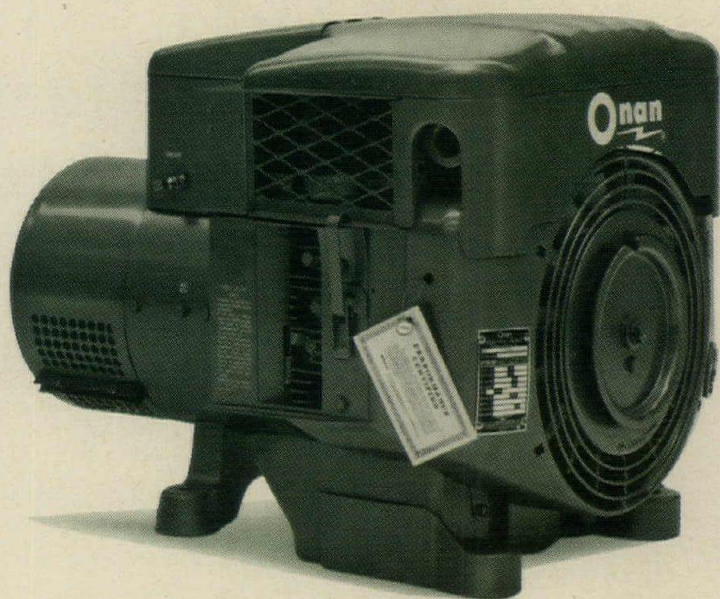


**PERFORMANCE
CERTIFIED**

We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.

ONAN

Here's Onan's promise. No double talk. No fine print.



You'll find it on every generator we ship. And behind the performance promise on that little tag, there's an independent testing authority that verifies our right to make it.

Often, and always without advance notice, a team of representatives from J. B. Calva and Company visits the Onan plant. They select generators for testing *at random* from our production line, and carefully put them through their paces.

Of course, before we ever put that tag on in the first place, every Onan plant

is run in for 2 to 8 hours under full load. Engines and generators are thoroughly tested together before they're OK'd for shipping.

But because J. B. Calva and Company double checks us, our tag isn't just a *claim*, it's a certified promise that your Onan plant will deliver every watt of power the nameplate promises . . . every watt you pay for.

Why don't you take a few seconds and read the large print promise on that tag right now? You won't find one like it on any other generator.



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We build our future into every Onan product.

For more data, circle 120 on inquiry card

If you are a self-employed architect—

**you owe it to yourself
to learn about
Continental's new
Target Program
Reduces current
income taxes, increases
usable income, while
building your
retirement dollars!**



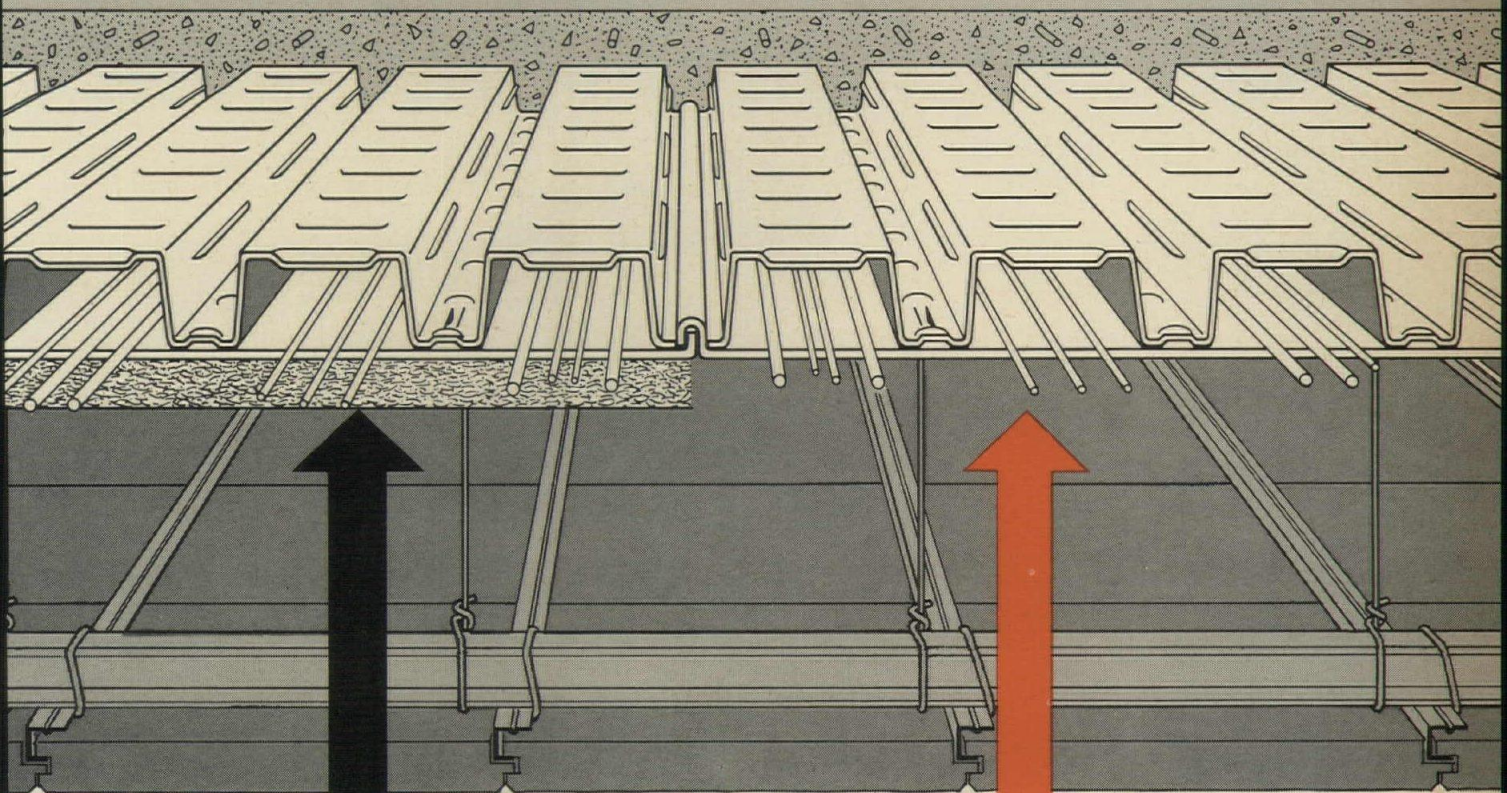
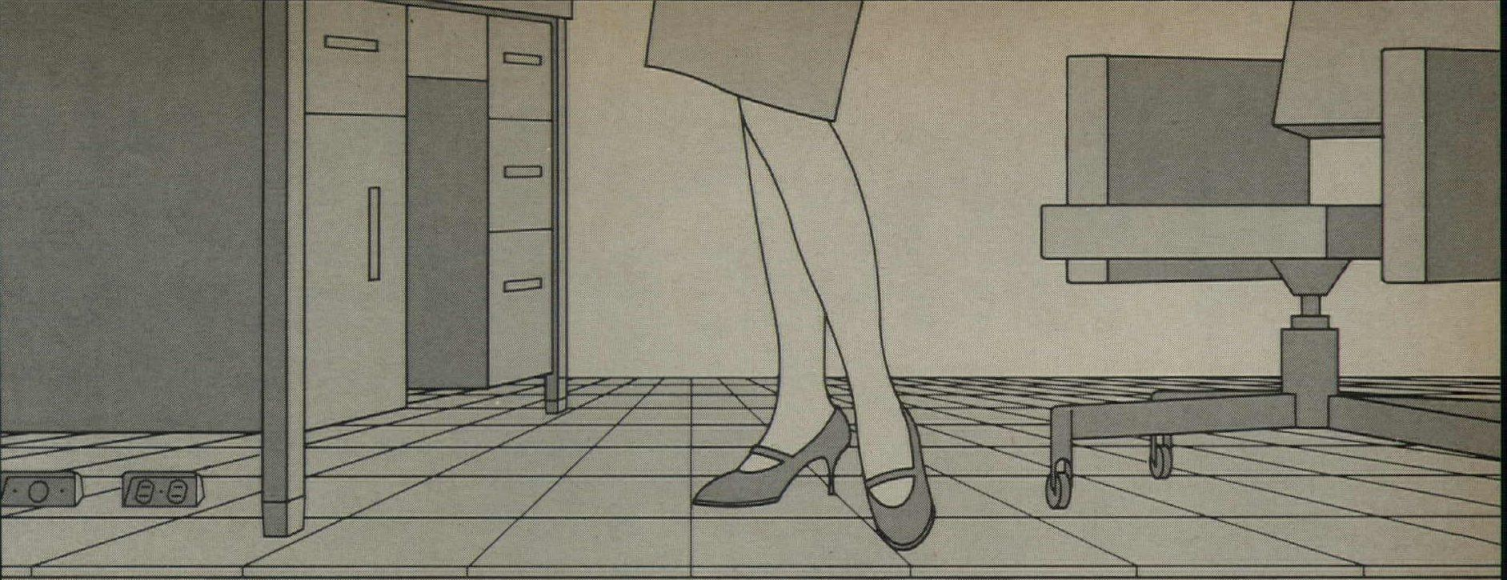
The amended Keogh Bill, or HR-10, allows you to start a tax-deductible retirement program. Continental's new TARGET PROGRAM permits you to take advantage of this legislation through one of up to eight different methods of funding. A TARGET PLAN can currently reduce your taxable income 10%, up to \$2,500 each year. And this can often increase your usable income — even after a sizable contribution to your retirement fund. To find out how much you can reduce your income taxes this year, write Robert M. Powell, Asst. V.P., Continental Assurance Co., 310 So. Michigan Ave., Chicago 60604, Dept. 112.



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Creative Financial Planning

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**Formerly . . .
you had to spray on
fireproofing here.**

**Now . . .
Robertson Q-Lock[®] Floor
gives you 2-hour fire rating
without fireproofing underneath.**

H. H. Robertson Company's research and development group is constantly searching for new ways to improve construction and lower costs. Q-Lock Floor is a good example. Since its design made structural partners of concrete and steel, new fire tests became feasible. Underwriters' Laboratories Floor & Ceiling Design No. 267 tested and classified it a 2-hour fire rated floor construction without the underfloor fireproofing previously required. When an incombustible ceiling is used, this new 2-hour floor construction can result in considerable savings in time and money. Write for complete Q-Lock Floor literature.

SPECIFY ROBERTSON Q-LOCK FLOOR

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PLANTS IN AMBRIDGE, PA., CONNERSVILLE, IND., LOS ANGELES & STOCKTON, CAL.
SALES OFFICES, AGENTS AND PLANTS IN 60 COUNTRIES AROUND THE WORLD

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continued from page 2

PLUMBING-HEATING BLUE BOOK
Fast selection of "accepted equals" both plumbing and heating products and equipment are provided by a new 1968 comparison book. There are over 18,000 listings representing 200 leading manufacturers. Indexed and tabulated in 34 product classifications, the listings are grouped by comparable specifications (similar in size, construction, type, style or capacity). The products are for commercial, industrial, institutional and large residential projects. \$20. ■ Industrial Creations, Inc., P.O. Box 110, Madison, Wis.

DUCT SILENCERS / A 16-page guide to the selection of duct silencers describes cylindrical and rectangular models. Comprehensive tables detail dynamic insertion loss ratings, self-noise power level, face area adjustment factors, aerodynamic performance, and comparative rating methods. ■ Joy Manufacturing Company, New Philadelphia, Ohio.

Circle 415 on inquiry card

FAN COIL UNITS / Completely updated information and engineering specifications for large capacity *Seasonmaker* conditioning fan coil units is available in a 50-page catalog. ■ McQuay, Inc., Minneapolis, Minn.

Circle 416 on inquiry card

AIR POLLUTION CONTROL / Brochure presents standard line of *Packed Tower Gas Scrubbers* for the removal and recovery of gaseous fumes and entrained droplets. A selection chart enables size of unit to be calculated according to specific gas and volume emitted in the manufacturing process. ■ Airetron Engineering Corporation, Midland, Pa., N.J.

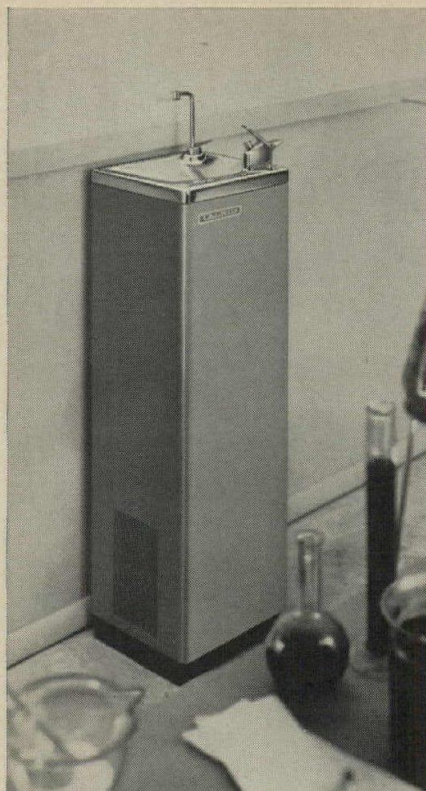
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AIRPORT WALK / A 4-page brochure describes the *Skybus* solution to the "long walk" problem of air terminal passengers. The brochure tells of the Tampa airport concept of separate terminal facilities into two distinct elements—a central passenger service area and a series of outlying areas for loading and unloading planes. The *Skybus*, automatic horizontal transporter, travels the 1000-ft. trip between the two. Westinghouse Electric Corporation, Pittsburgh.*

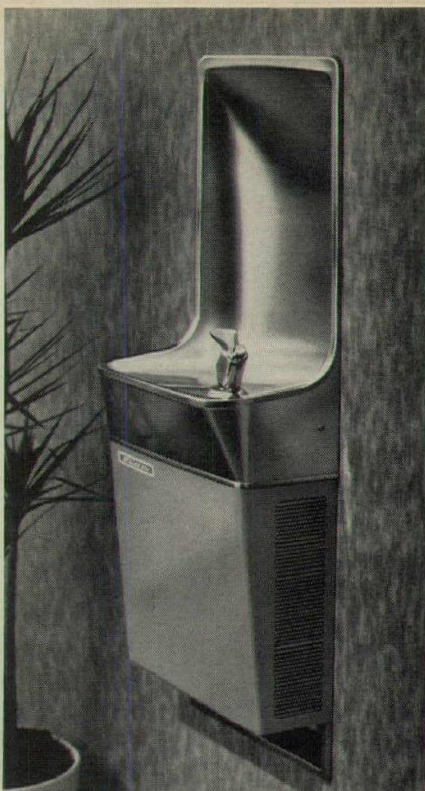
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* Additional product information in Sweet's Architectural File

more literature on page



Cordley "Compact"—just 12" square and priced to please.



Cordley Semi-Recessed—styled to enhance any wall area.

Plain or fancy interiors... there's a Cordley Cooler that fits!



Cordley Bottle Cooler—all they require is an electrical outlet.

When it comes to cooling drinking water, better come to Cordley. Here you'll find a host of advanced design and engineering features. Plus a complete selection of types, styles, models and capacities to meet every requirement!

Flush mounted and semi-recessed wall-hung water coolers for neat and clean off-the-floor installations. Standard and compact floor style units in your choice of bottle or pressure types. Convenient compartment coolers that incorporate over one cubic foot of refrigerated storage space, dispense either hot and cold or cold water only. Plus packaged water chillers that can be installed in any remote location to service one or more fountains or supply fresh cold water for a range of commercial and industrial processing applications.

The point to remember is this: Whatever your needs may be, there's a Cordley quality cooler that fits—*exactly!*



Cordley Wall-Flush—designed and built for years of service.



Cordley Wall-Hung—trim and neat and remarkably versatile.



Cordley "Hot & Cold"—instant choice, ice and storage space.

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Over 75 years of specialized water cooling experience

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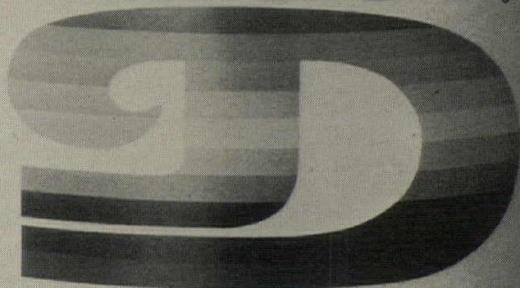
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When we get involved, we really get involved



DEVOE



You've got more important things to worry about than painting.

We don't. We like to dive into a painting assignment when specs are being written, and we don't dry out till the building walls do.

From specs to inspection, we stay involved in your job. Keeping your technical data and color selection materials as fresh as this morning's

paper. Making sure you have nothing but the latest product information.

Then we stay on top of things to make sure your painting contractor has the supplies he needs. We're close by to solve technical problems. To make sure colors turn out the way you visualized them. And that coats hide the way they should.

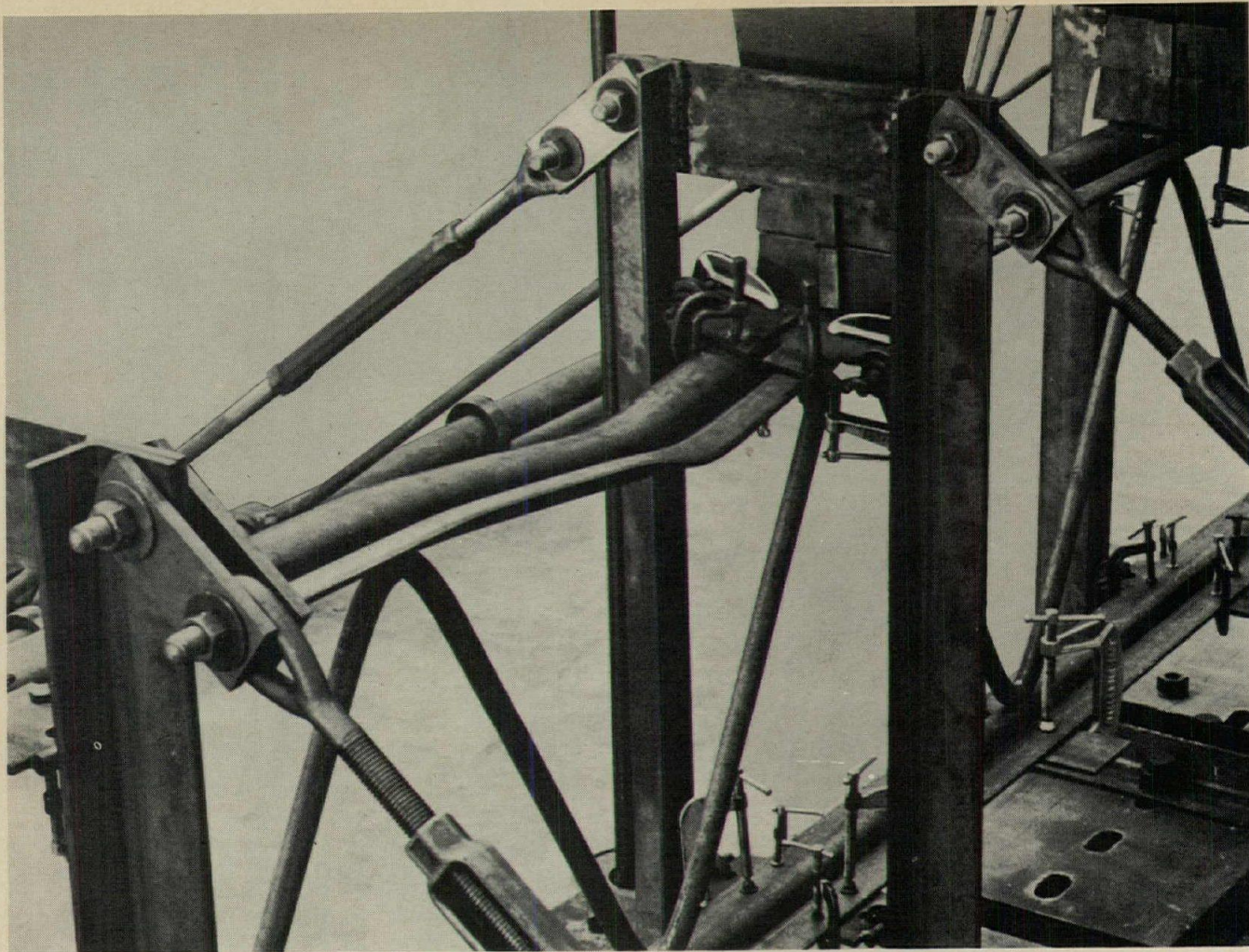
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Let your painting problems turn our hair gray. You've probably got other things to take care of yours. All over the country, this is the way we work. That's why . . .

Architects who know Devoe

GO DEVOE

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The Cold **Hard Facts** of Lab Research: Starting Point for Steel Joist Improvement

An aggressive program of research and development by the Steel Joist Institute has played a big role in the continuing improvement of open web steel joist designs and their acceptance by the building industry. For many years the Institute has sponsored R & D projects on steel joists at leading university engineering laboratories.

The photo above is a case in point. In this project, performed at the University of Kansas, tests were conducted to determine the ultimate strength and load-bearing capacity of compression chords in variously designed joists under concentrated and uniform loads. Manufacturers can also have investigations conducted on their J- and

H-Series joist designs to determine conformance with SJI standards and specifications. New ideas in joist materials and design are also carefully checked out before standards are established.



The Steel Joist Institute has just published a new edition of the SJI standard specifications and load tables. It's a practical working handbook for anyone specifying or using open web steel joists. Write today for your complimentary copy.



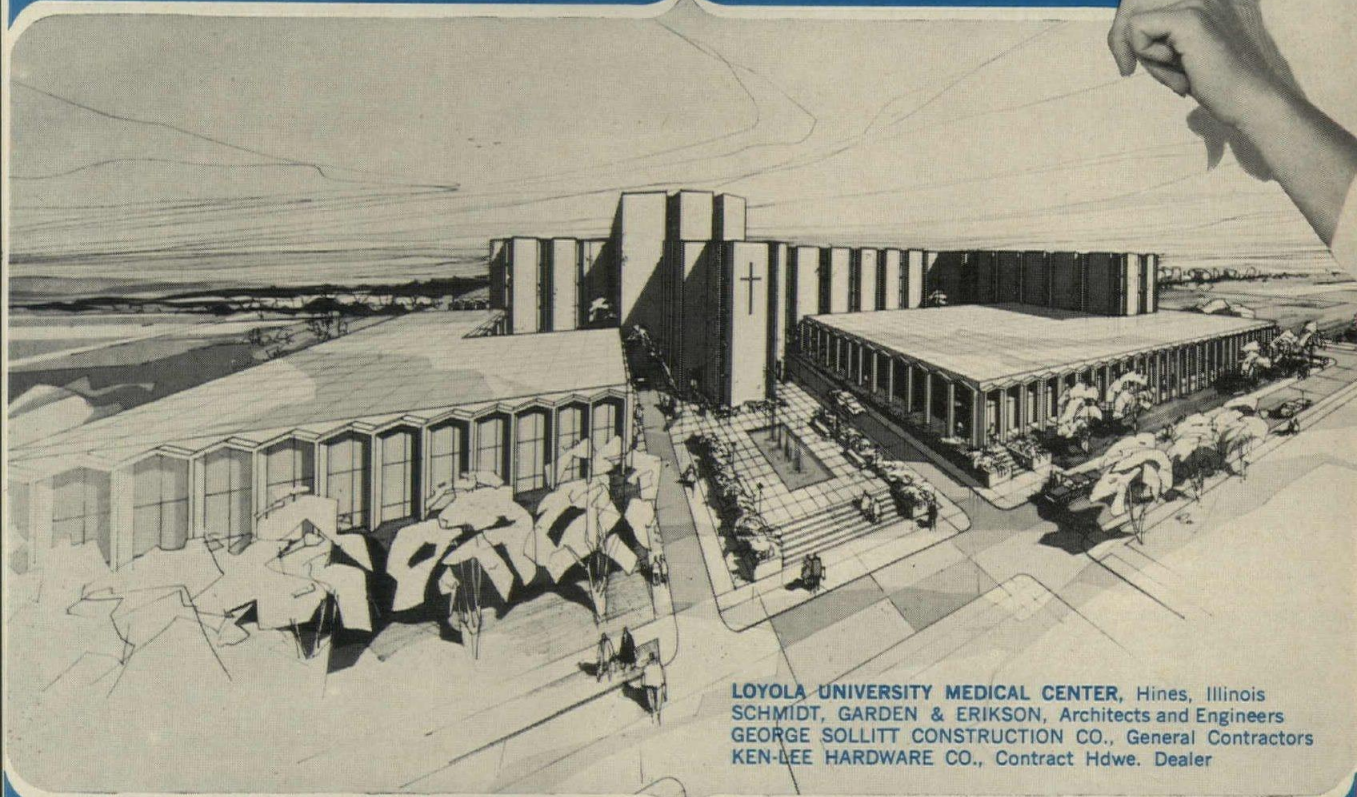
STEEL JOIST INSTITUTE

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is vital...
THE CHOICE IS

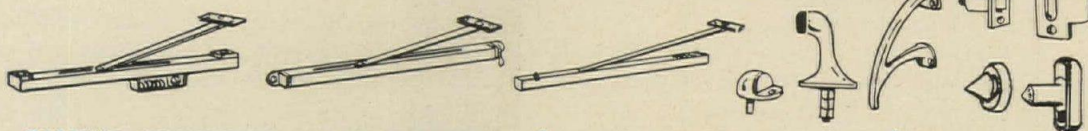


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Yes, anyway you look at it... economy or function...
GJ door control hardware is a favorite in hospitals every-
where. Whether it's door stopping, door holding, or
cushioning the stop, you can always depend on the silent
function of GJ products... year after year... reducing
the cost of maintenance to a minimum.

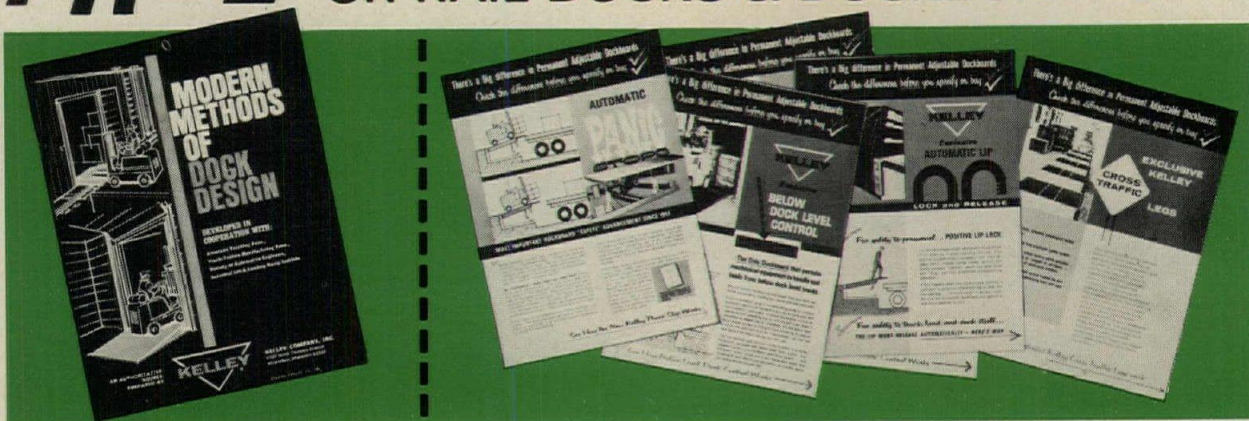
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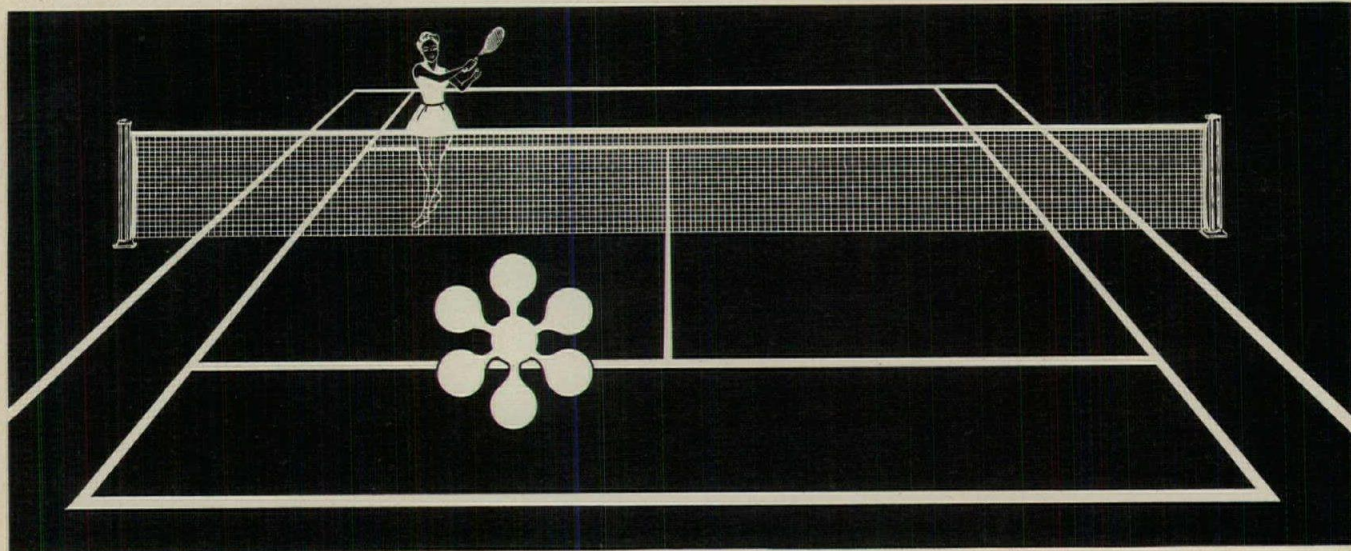


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OFFICE LITERATURE

continued from page 254

CONCRETE AND MORTAR / A 16-page catalog gives basic data on water-reducing set-controlling admixtures, dry-shake material for iron-armored heavy-duty floors, and non-shrink grouts, mortars and concrete. Other descriptions include air entrainment, curing, sealing, waterproofing and coloring of concrete. Graphs and charts give performance information, estimating data, and suggested specifications. ■ Master Builders, Cleveland.*

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MASONRY REINFORCEMENT / A 16-page booklet presents prefabricated reinforcement especially designed for embedment in the horizontal mortar joints of masonry. The functions are described as "practical means of minimizing shrinkage, temperature and settlement cracking in masonry." The booklet also explains why this system "assures a predictable horizontal flexural and axial tensile wall strength." ■ Dur-O-Wall National, Inc., Cedar Rapids, Iowa.*

Circle 420 on inquiry card

SIDING FINISHES / Literature explains Du-Lite fluoropolymer finishes for metal building siding and other pre-coated components. Subjects treated include durability, color retention, and resistance to air pollution. ■ E. I. du Pont de Nemours & Company, Wilmington, Del.*

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HOUSING LIT INDEX / The first annual index of periodical literature in the field of homes, housing, and home building is designed to simplify finding articles published during the year, from acoustics to zoning. More than 3,500 articles are arranged by subject. ■ The National Association of Home Builders, Washington, D.C.

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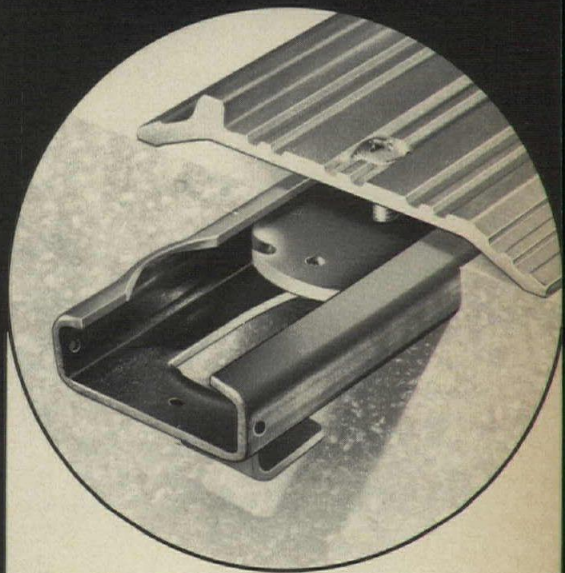
TRANSLUCENT PANELS / An 8-page catalog describes SANPAN panels and curtainwall systems in schools, factories, churches and office buildings. ■ Panel Structures, Inc., East Orange, N.J.*

Circle 423 on inquiry card

FLOORING / The 1968 resilient flooring products catalog contains full-color illustrations of all colors and patterns in vinyl asbestos tile, asphalt tile, feature strip, and cove base. ■ Azrock Floor Products, San Antonio, Texas.*

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* Additional product information in Sweet's Architectural File



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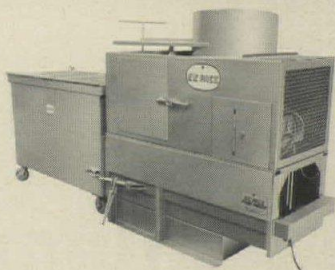
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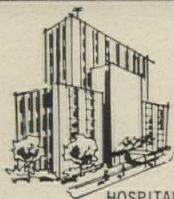
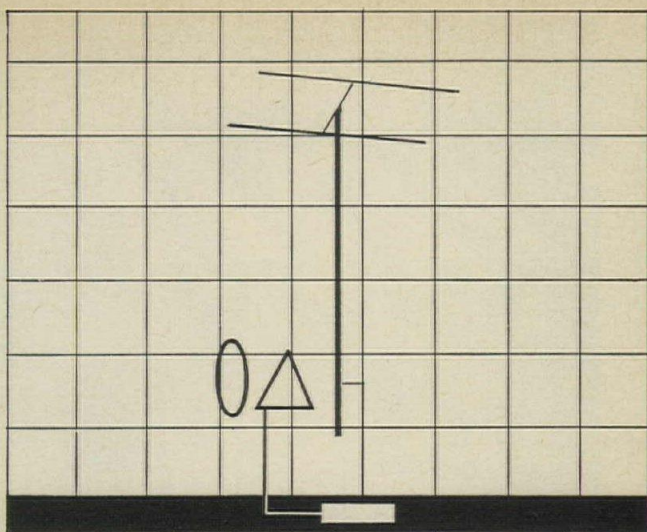


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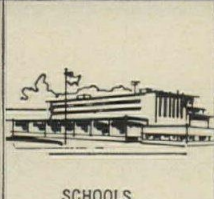


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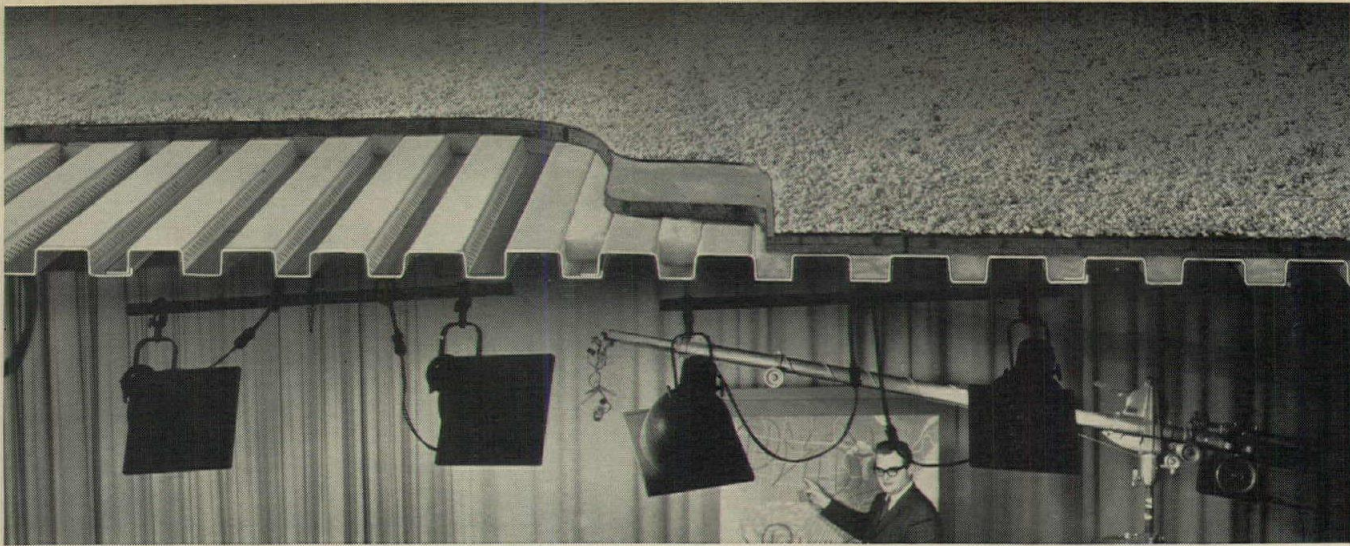
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Here's a sleeper some designers haven't discovered yet—a steel roof deck, acoustically treated, which performs simultaneously as an acoustical ceiling with NRC ratings up to .70.

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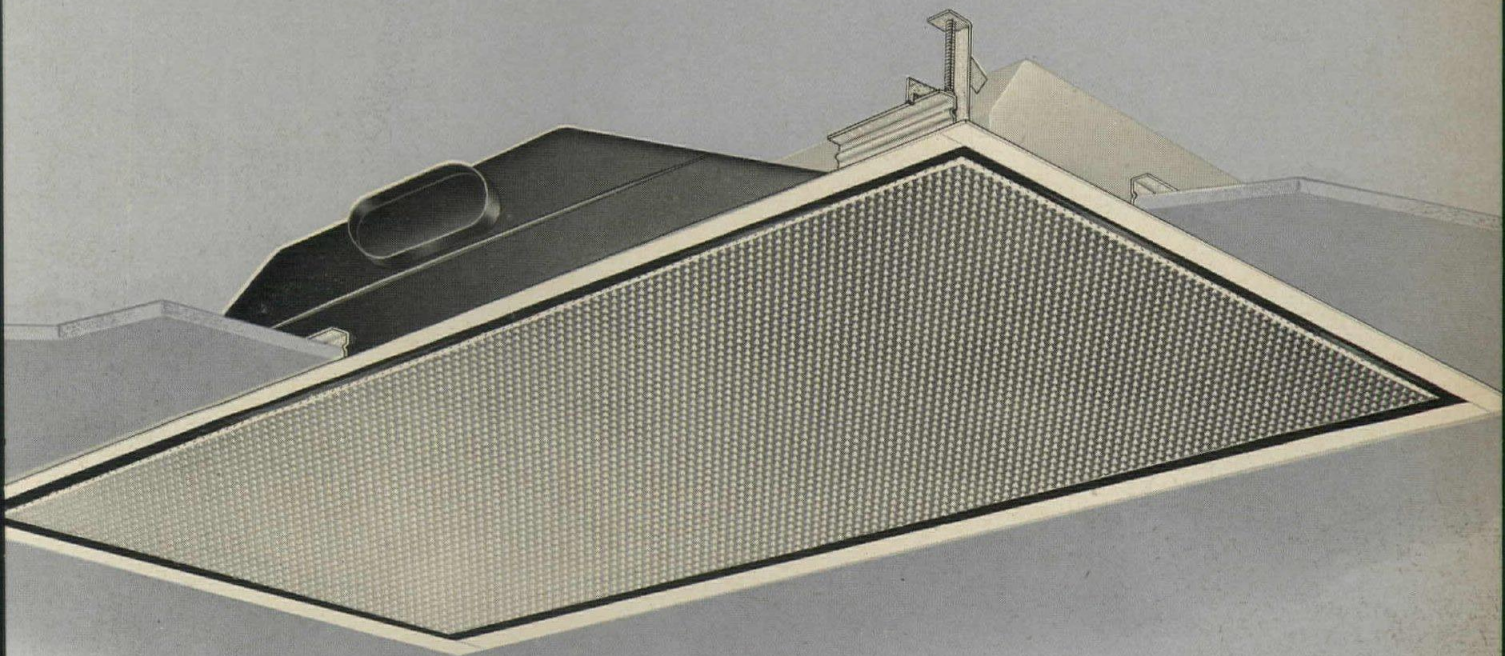
Every building starts with ideas. Inland can help you with new ideas in building.

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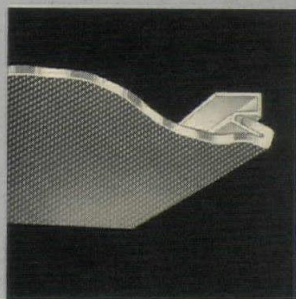


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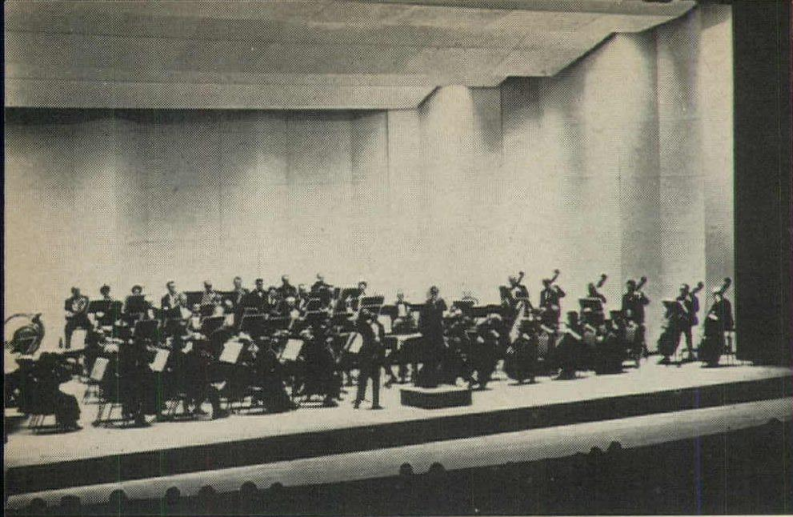
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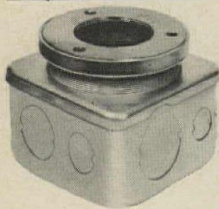
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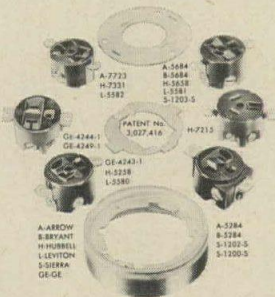


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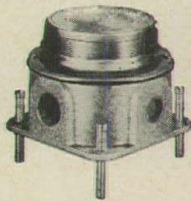
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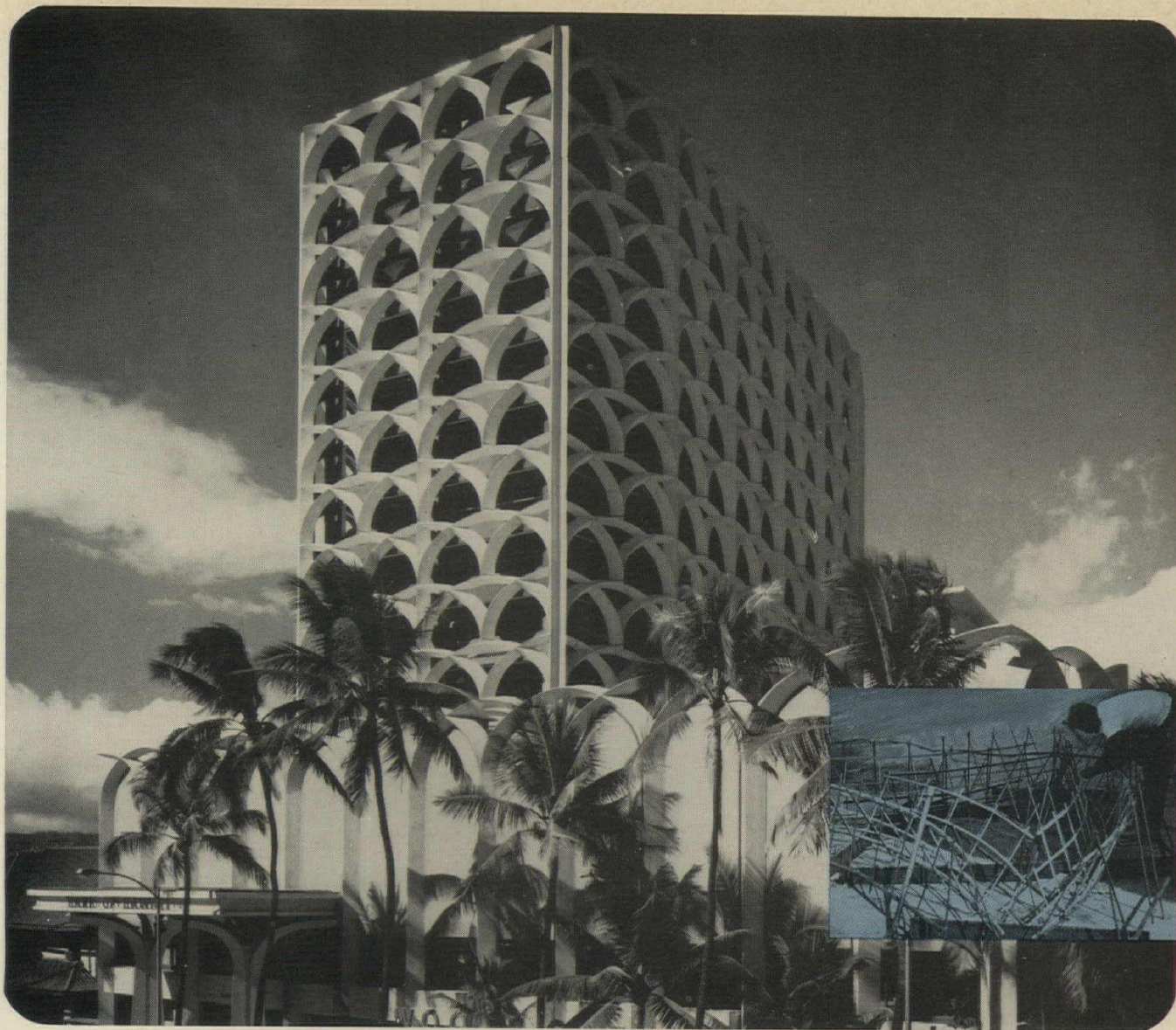
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The deposit is on galvanized reinforcing rod used in the precast concrete grillework of the new Bank of Hawaii branch in Waikiki. The zinc coating prevents "under-cover" rusting which could eventually "bleed" through and discolor the surface. It also eliminates surface cracking or spalling from internal pressures caused by rust build-up. And the zinc coating on the rods actually provides a better bond with the concrete than is possible with uncoated steel. □ About 50 tons of hot dip galva-

nized rebar were used for the 15 story, 5 million dollar bank building, designed by Wimberly, Whisenand, Allison & Tong, Architects Ltd. As shown in the inset photo, rebar cages for grille sections were preformed of #3 size hot dip galvanized steel at the casting yard. □ When you specify materials, remember that no other material gives you the proven combination of strength, corrosion resistance and economy found in galvanized steel.

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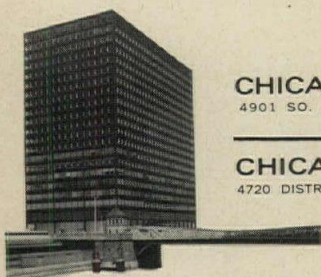
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Mexico

BUILDERS IN THE SUN, *Five Mexican Architects*. By Clive Bamford Smith. Foreword by Jose Villagran Garcia. Architectural Book Publishing Co., 151 East Street, New York, N.Y. 217 pp., illustrated, \$12.95.

In the 1920's and 30's Mexico was vigorously in step with modern architecture—the International Style. It was at a point that Esther Born's survey of the Mexican scene led to her publication *The New Architecture in Mexico*, an important contribution to architectural literature of the 30's. Thirty years later *Builders in the Sun* has appeared, and we see a sequel to the architecture of that period.

Clive Bamford Smith, an English journalist now living in Mexico City, limits his presentation to five architects active on the contemporary Mexican scene: Juan O'Gorman, Luis Barragan, Felix Candela, Mathias Goeritz and Mario Pani. (One might ask, what about Pedro Ramirez Vasquez, architect of the anthropological museum in Mexico City.) The five chosen, however, serve well to illustrate the artistic vitality of Mexican architecture today.

The book is capably introduced by architect-teacher Jose Villagran Garcia who seeks to pinpoint certain constants in Mexican architecture. The author himself has not tried to relate one architect to another—or to the larger scope of either Mexican or Latin American architecture. Each architect is presented through photographs, biographical information, quotations and some pertinent facts on his architecture. The captions to the photographs supplement but do not tell as much about the buildings as many a reader, especially an architect, might like to know. Nonetheless, the book does excite one's enthusiasm for Mexico's rich contemporary architecture.

continued on page

For more data, circle 142 on inquiry card

problems and solutions behind . . .



planning efficient refuse disposal facilities

FOR APARTMENTS . . . COMMERCIAL and PUBLIC BUILDINGS

Many relatively new buildings are currently undergoing expensive alterations to provide more efficient refuse storage and disposal facilities. Solving problems caused by this un-ending flow of voluminous material requires enlightened planning and extensive knowledge of laws, trends and the techniques of the people who must ultimately dispose of it.

More Legislation Coming

Federal, state and local concern over air pollution is breeding a rash of legislation and statutes that impose strict standards on private and public incinerators. Many apartments and other buildings have had to shut down their incineration systems; and the shift to another disposal method has required extensive alterations to provide storage areas and access passage for the refuse collector.

Vast Technological Change

In addition to switching from incineration, other factors have forced major changes in refuse disposal practices. Mushrooming urbanization and suburbanization added to the population explosion have pushed once nearby disposal sites many miles outside the city. This has caused many vast technological changes in the techniques of refuse storage, collection and disposal.

Bulk Handling Techniques

To achieve economical payloads, handlers have turned to large-scale containerization and compaction equipment which mashes and reduces the refuse to a fraction of its former volume. Some of this compaction equipment is truck-mounted, some of it is stationary and mashes the refuse into large portable containers. All of it requires two things: provision for storage space and access passage for a container, a truck or a conveyor.

The Architect's Dilemma

With handling methods varying widely from city to city and with new conditions and laws causing frequent, major changes, the architect is hard-put to design a lastingly efficient refuse system for his project. One answer is to seek the assistance of a knowledgeable expert in future refuse trends, techniques and handling equipment.

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A coast-to-coast network of Dempster Refuse Consultants is currently collaborating with leading architects to provide workable systems for a multitude of widely varying types of projects. Their counsel is also available to you, without cost or obligation of any kind. Your nearby consultant can help, even after the walls are up, but it's better to talk to him while it's still on the drawing board. He reads blueprints and can check out several projects in a short time, giving you specifics, optional courses or a pat on the back for a job well done.

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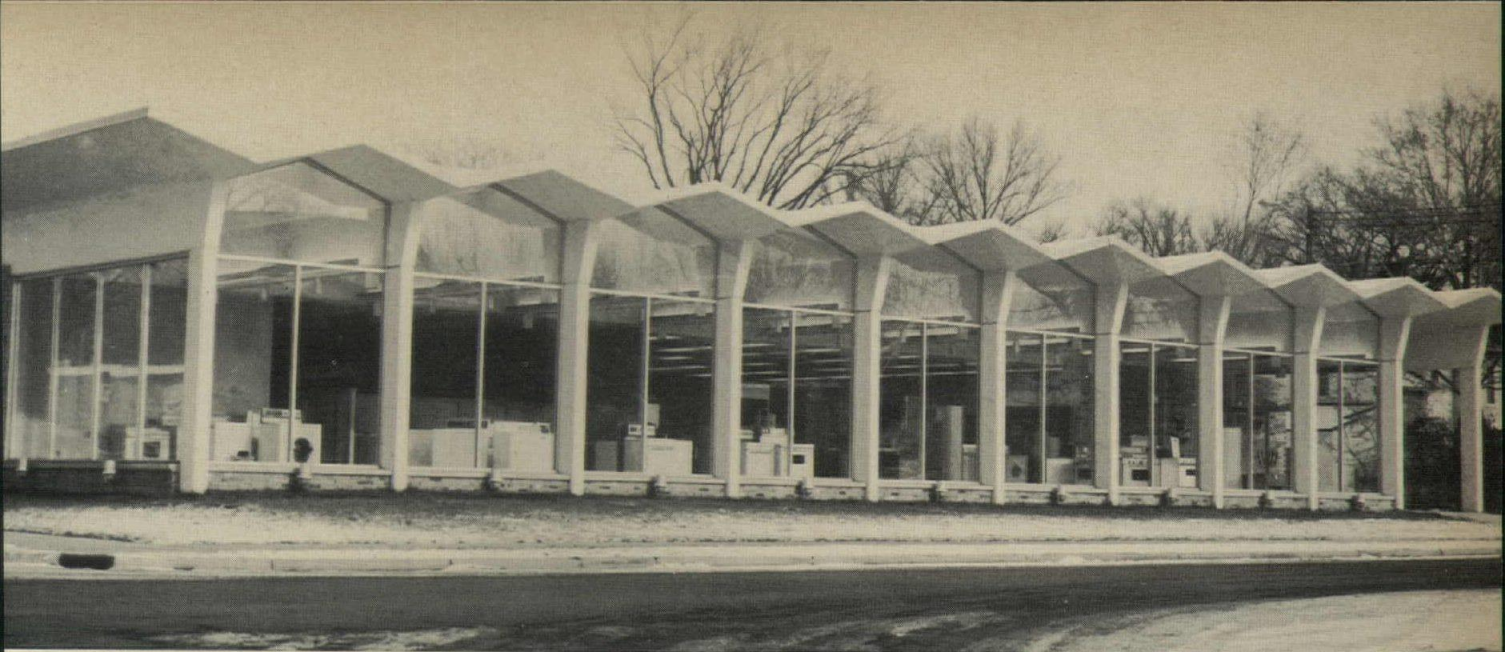
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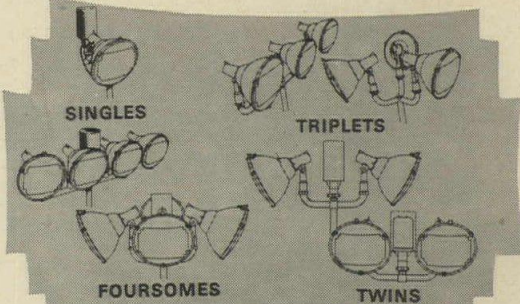
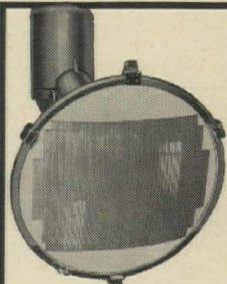
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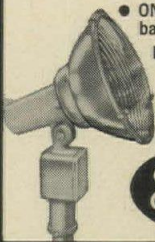
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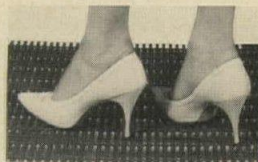
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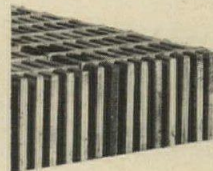


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SPECIFICATION AND HOW TO APPLY: Floor must be thoroughly cleaned and free of stains. Agitate material until uniform. Apply in thin even coat with lamb's wool applicator. Let dry, not to exceed 20-30 minutes until pressure of the fingers pulled across the surface produces a squeaking sound. Buff each coat after application to provide greater lustre. Apply second thin coat and buff.

COVERAGE: 600 square feet per gallon first coat, 900 square feet per gallon second coat.

TECHNICAL DATA: NVM—10.5% minimum. Film properties: Drying time—45 min. maximum; Appearance—free from particles—semi-transparent; Tackiness—none; Water resistance—no loosening of film, no removal of gloss. General Appearance: Color—light, shall



Makes final clean-up fast and easy—

contain no pigments or dyes; Odor—non-objectionable at any time; Viscosity—heavy-bodied liquid mixture.

GUARANTEE: When applied in accordance with manufacturer's directions, it is guaranteed to meet all claims made for it in the proper sealing and finishing of terrazzo floors.

EXCEPTION: For white terrazzo or other white masonry floors, specify White Onex-Seal.

MAINTENANCE: Sweep daily with a Super Hil-Tone treated dust mop (do not use an oily mop dressing). Buff periodically. When floor is soiled, clean with Super Shine-All, a neutral chemical cleaner. Traffic lanes may be patched in and buffed to blend in with the rest of the floor. Reseal as needed depending upon traffic and kind of use.

APPROVALS: This is the type of a penetrating seal recommended for use by the National Terrazzo and Mosaic Association. U/L listed relating to fire hazard and slip resistance.



For floor beauty that helps gain acceptance

REFERENCES: Hillyard A.I.A. File 9
Terrazzo 1968
Sweets Architectural File
Spec Data Sheet
Available

Free follow-up "job captain" service protects your specifications. A trained Hillyard Architectural consultant will gladly consult with your specification writers on proper, approved procedures and materials for the original treatment of any type floor you specify. Write, wire or call collect.

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The most widely recommended and approved treatments for every surface

For more data, circle 146 on inquiry card

AN ARCHITECT LOOKS AT TERNE: Percival Goodman, one of the foremost living designers of ecclesiastical buildings, has this to say of the eighty thousand square feet of Terne metal roofing recently installed on Shaarey Zedek, the world's largest synagogue: "To be entirely frank, we had originally wanted to use a considerably more expensive material than Follansbee Terne. Now that the latter is in place, however, we are satisfied that no better choice could have been made. Terne not only afforded the widest possible latitude in form and color along with time-tested functional integrity, but it did all this at a figure well below preliminary estimates for a metal roof."



Congregation of Shaarey Zedek, Southfield (Detroit), Michigan
Architects & Engineers: Albert Kahn Associated Architects & Engineers, Inc., Detroit, Michigan
Associated Architect: Percival Goodman, F.A.I.A., New York, New York
Roofing Contractor: Firebaugh & Reynolds Roofing Company, Detroit, Michigan

Follansbee is the world's pioneer producer of seamless terne roofing



FOLLANSBEE STEEL CORPORATION

Follansbee, West Virginia

For more data, circle 147 on inquiry card

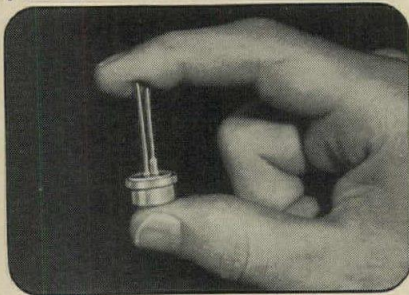
A Honeywell summary of recent developments in electric heating

Like most new developments, electric heat has both advantages and disadvantages: Knowing when to consider it, what effect it has on heating and air conditioning systems, and how to best control it. Those are some of the challenges facing today's consulting engineer, along with keeping abreast of rapidly changing developments!

In this brief review, Honeywell scans some highlights of what's been happening within the industry in electric heating controls. Significant trends, ideas, developments—most of them new within the last few years.

Solid-state electronics

New solid-state proportional controllers, used with electric duct heaters or with radiation units, now provide infinite control for many types of commercial jobs. They offer new flexibility, either as part of a total or partial electrical heating system. For instance—



Silicon controlled rectifier for proportional electric heat control.

In heating and air conditioning systems, you can efficiently blend solid-state electronic controllers with standard pneumatic or electric control systems. Or—when combined with an electronic thermostat, these controllers offer a truly sensitive, highly reliable all-electronic system.

A changing situation

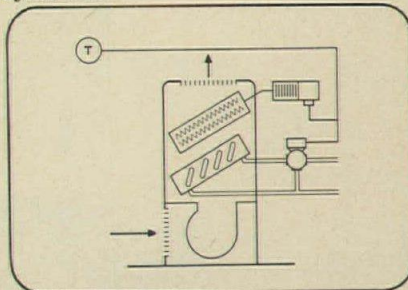
A few years ago, when we first introduced solid-state controls to the commercial electrical heating field,

it was more economical to break down large loads into small units, and to control them individually.

No longer! This situation has now changed, due to advances in solid-state technology, and availability of lower cost high-capacity silicon controlled rectifiers. Solid-state control can now be applied to the largest electric heating loads economically.

Applications

Now consider how use of electrical heating applies to some of the more familiar types of air conditioning systems:



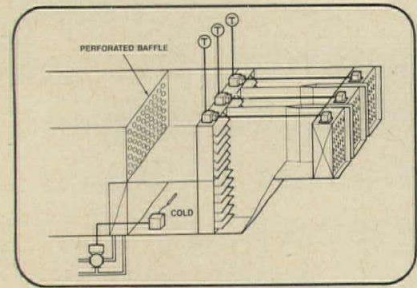
Fan coil unit with electric heating coil.

With fan coil unit, electric heat provides a very easy and economical solution. The addition of an electric heating coil and controls to a 2-pipe unit provides the automatic change-over capabilities of a 4-pipe fan coil unit.

Reheat systems with solid-state electric proportional controls lend themselves ideally to electric heat, since electricity can be distributed efficiently, and at low cost to a large number of small reheat coils scattered throughout a building.

In primary air systems, electric heating eliminates the problem of heating coil freeze-up—it's no longer necessary to operate the pre-heat coil at full capacity at low outside temperatures.

Of course, there are always pros and cons in any new developments. When applying electric heating coils



Multizone with reheat.

in multizone units, for example, there's an increased possibility of coil burn-out at reduced air flow. However, an ideal solution is proportional control. With reduced air flow, power to all elements is reduced in unison, thus reducing the chance of burn-out.

Heat from lighting

With increased lighting levels in buildings, lighting becomes a significant local source of heat. Reclaiming heat from light and controlling its use is an interesting engineering problem, involving specialized individual control applications.

There are several control techniques to consider—the runaround cycle, the split condenser, the thermal wheel. Honeywell is deeply involved in control of all systems—and will be glad to go into detail on them with you any time you like.

We break the pattern!

In electric heating, just as in many other fields, Honeywell engineers are always in the vanguard of new developments. Always searching for new pattern-breaking devices to give your customers better building systems. Ask our local Commercial Division office for the full story. Honeywell, Commercial Division, Minneapolis, Minnesota 55408.

Honeywell
AUTOMATION



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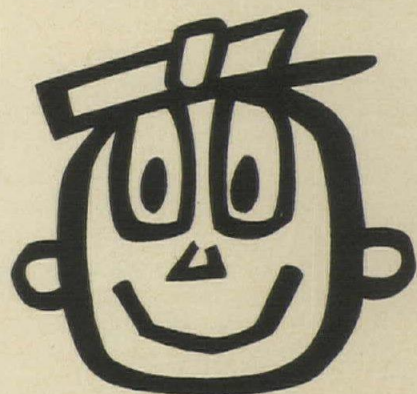
You should — it's absolutely the greatest! Dimensionally stable; guaranteed against shrinkage. (See VPI's installation instructions.) Beautiful: 10 preferred decorator colors. Wide selection: Cove base in 1/8" and .080" gauges... 2 1/2", 4" and 6" heights... straight base 4" height... 48" lengths and 120' rolls... plus pre-formed cove and straight base outside corners and stringer material.



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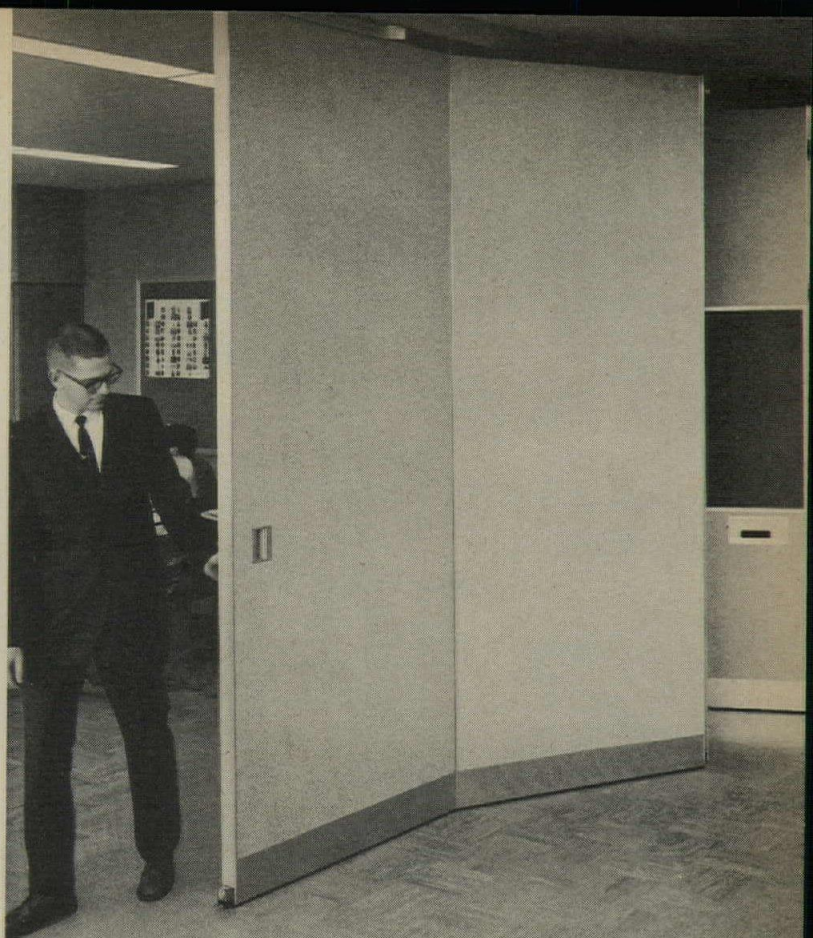
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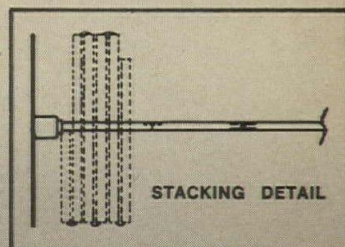
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The FolDoor Model 2000 Folding Wall does more than divide space. It separates sound. The manually operated wall features a moving jamb which automatically seals panel perimeters, at the same time locking the wall firmly in position. No unsightly bolts, keepers, or floor tracks are needed. Five point vinyl compression seals on all vertical panel edges, continuous contact vinyl sweep seals on top, and fully automatic self-adjusting compression seals on the bottom help give the Model 2000 superior STC ratings. No exposed screw heads or washers mar the beauty of panel faces, even when chalkboard, tackboard and chalk troughs are required. For more details on the "Quiet One," contact your FolDoor distributor or write to Holcomb & Hoke Manufacturing Company, Inc., P. O. Box 1965, Indianapolis, Indiana 46206.

Holcomb & Hoke Mfg. Co., Inc.
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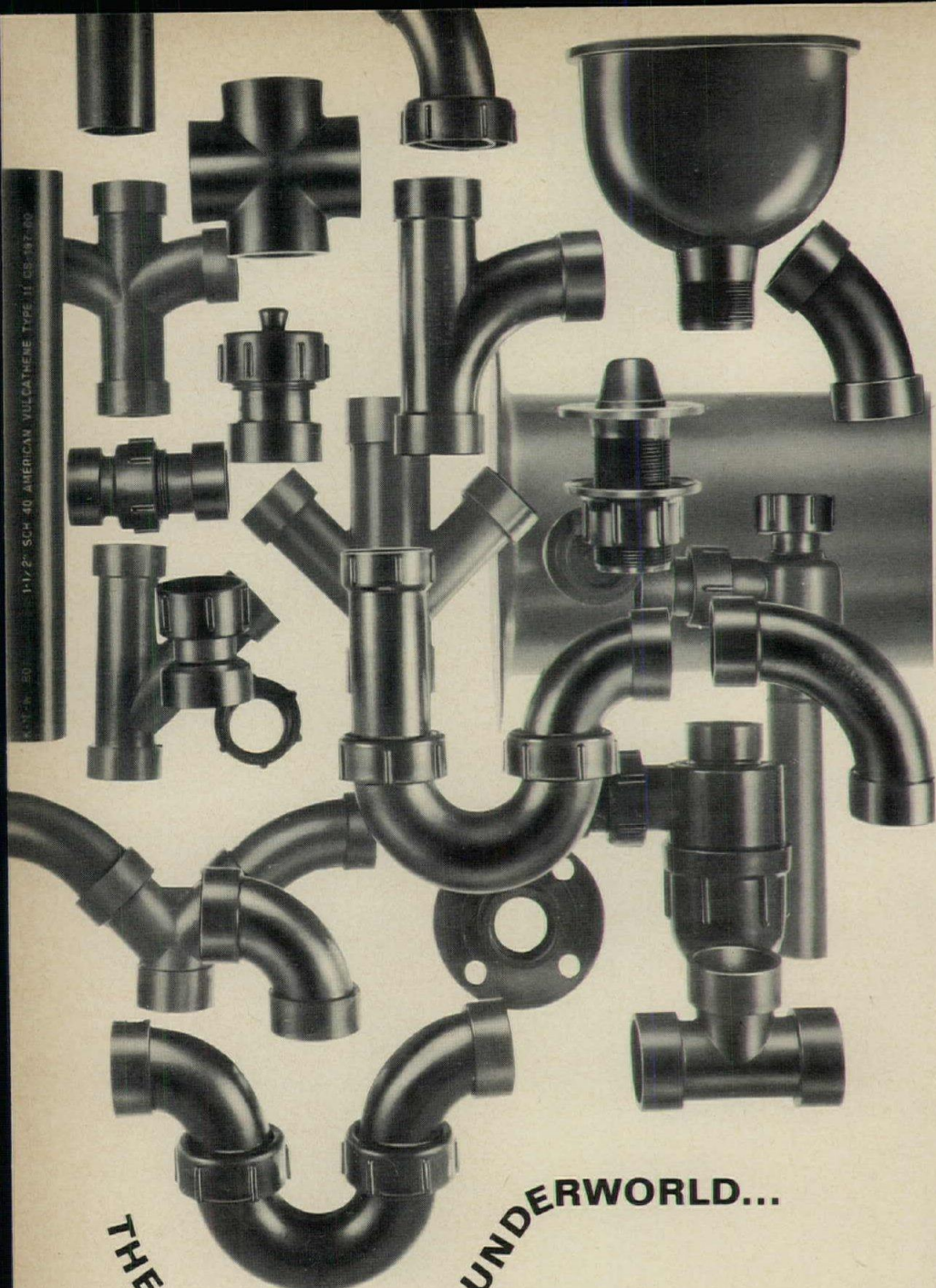
continued from page 2

O'Gorman is a striking example of one who designed under the spell of the "new architecture" in the 1920's and 30's, then grew to regret the period. Feeling his way toward a more organic (and highly decorated) architecture, he wished that Frank Lloyd Wright rather than Le Corbusier had been their guiding influence. The mosaic-incrusted structures which O'Gorman has been building since around 1950 seem almost to mock his earlier translations of Le Corbusier's functionalism and show a conscious return to a peculiarly Mexican idiom. His busy colorful mosaics effect a transition between native Mexican motifs and the mural painters' storytelling.

Rock is the physical heart of Mexican architecture. Both O'Gorman and Luis Barragan have designed homes in Mexico City's Pedregal (Stony Place). While O'Gorman uses natural-colored stones in his mosaics and literally carved much of his own house out of the volcanic stone, Barragan has worked rough flowing rock formations into the marvelous landscaped gardens of Il Pedregal and into fountains about the city. Barragan has also molded man-made rock-concrete—into buildings whose expanses of plain solid wall possess a restraint and beauty complete unto themselves.

Spanish-born and educated Federico Candela is, as we know, a master of concrete shell construction in the company of Torroja and Nervi. His bold churches and other structures have mushroomed in Mexico—and beyond into Cuba, Puerto Rico, Venezuela and Peru, even the western United States. "My principal task," Candela modestly explains, "is to simplify, to convince people that success does not depend upon building extravagant forms but only, on the contrary, upon making simple ones, and studying the details with care and love."

For Mathias Goeritz, a German who first came to Mexico in 1941, architecture must be a psychic force, awakening emotions latent in man. Goeritz maintains a sure control over his expression in forms. Towers of painted concrete, the tallest rising to 190 feet, stand as symbolic pronouncements before the Ciudad Satelite on the Mexico City-Queretaro highway. El Eco, an experimental museum, is intended to express itself by severe, towering walls of concrete including a freestanding one in the park and a pair following a nearly converging path in an interior corridor. The human proportion is both dwarfed and elevated in Goeritz's repeated theme of the tower. Much of his work is published

continued on page 2


THE SHAPE OF THE UNDERWORLD...

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"This Powerbond Pile Vinyl is guaranteed by Collins & Aikman against excessive surface wear for five years from date of installation when properly installed and maintained. Excessive surface wear means more than 10% loss of pile fiber per square yard. If the pile vinyl fails to perform as guaranteed, the affected area will be replaced at our expense upon request of the customer. This guarantee does not cover tears, burns, pulls, cuts or damage due to improper cleaning agents or methods."

This unusual guarantee can't be matched. But then, neither can Powerbond Pile Vinyl.

Because it's the only floor covering that combines

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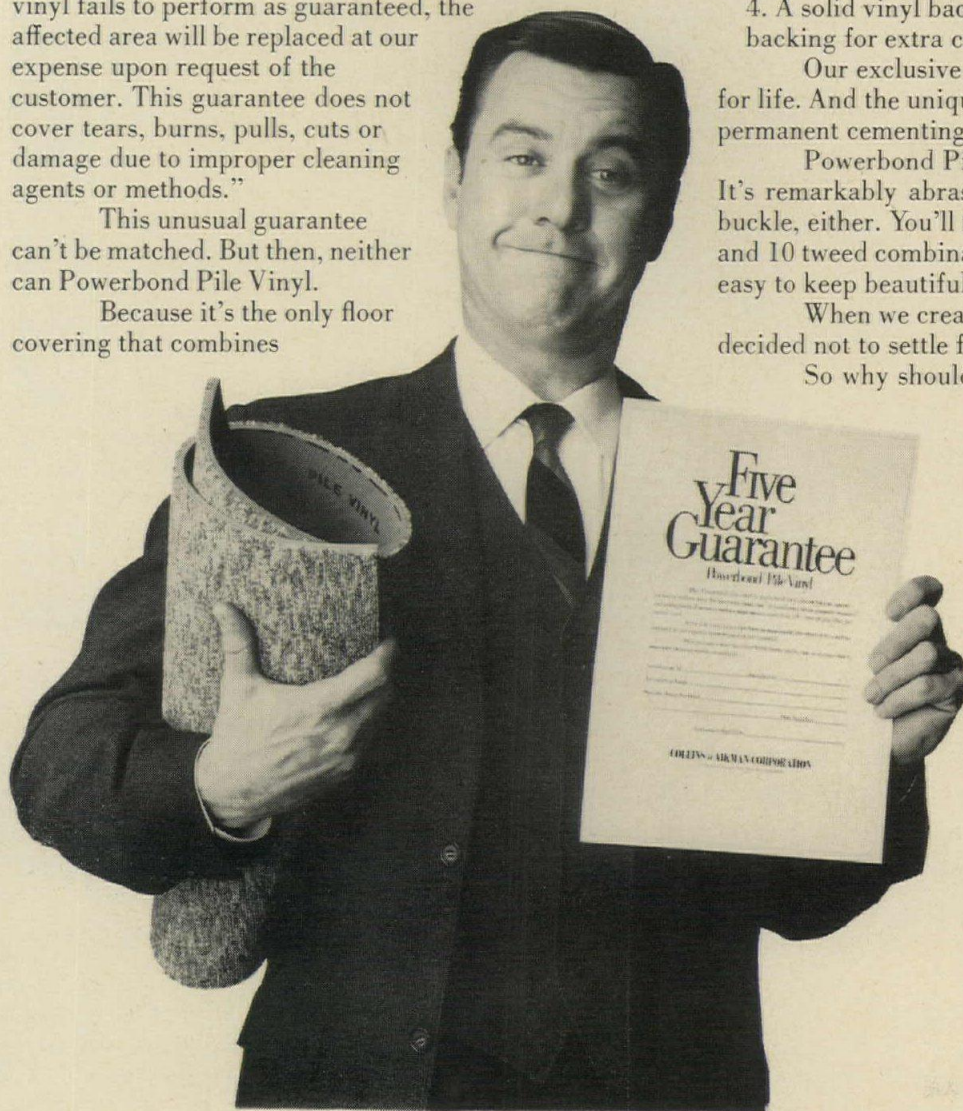
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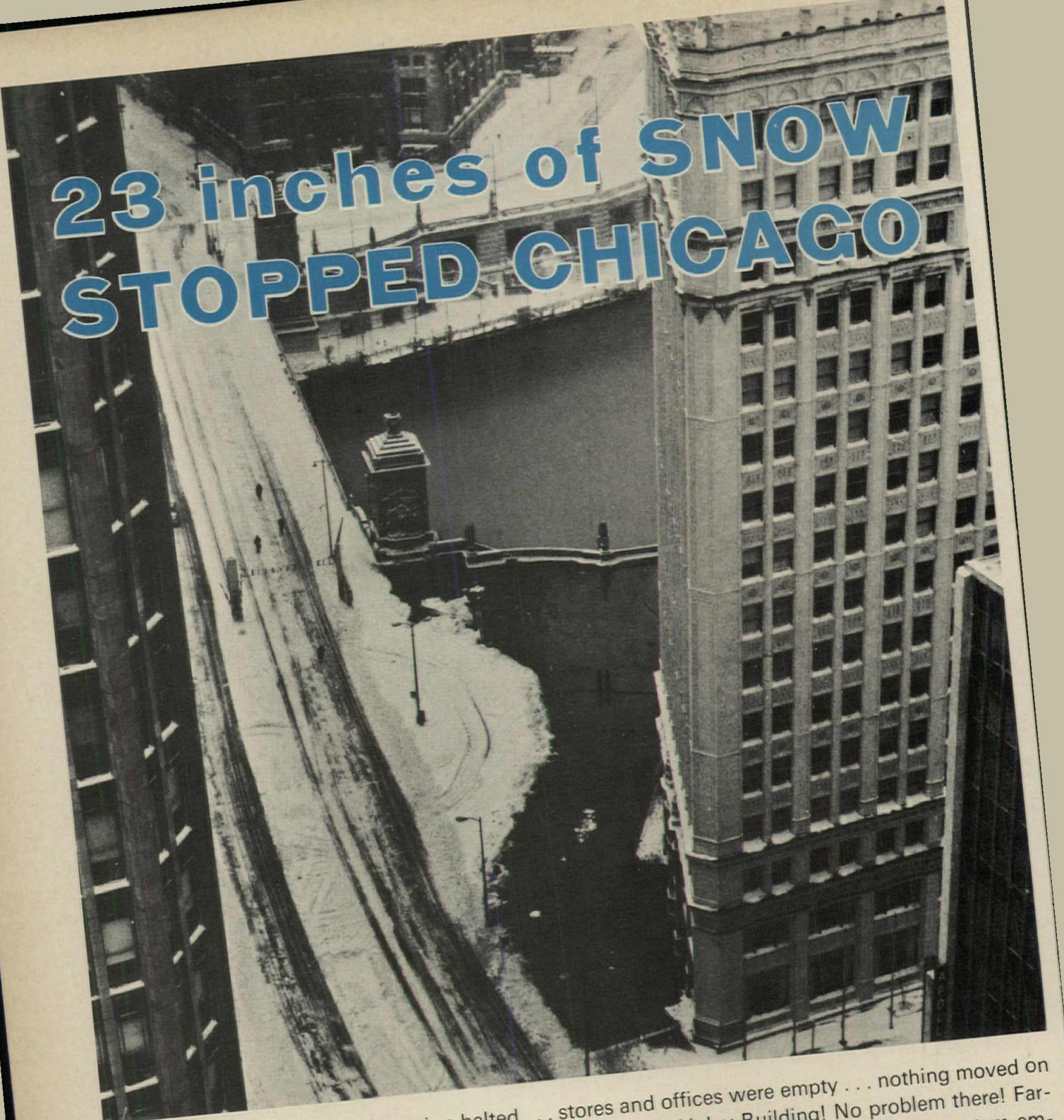
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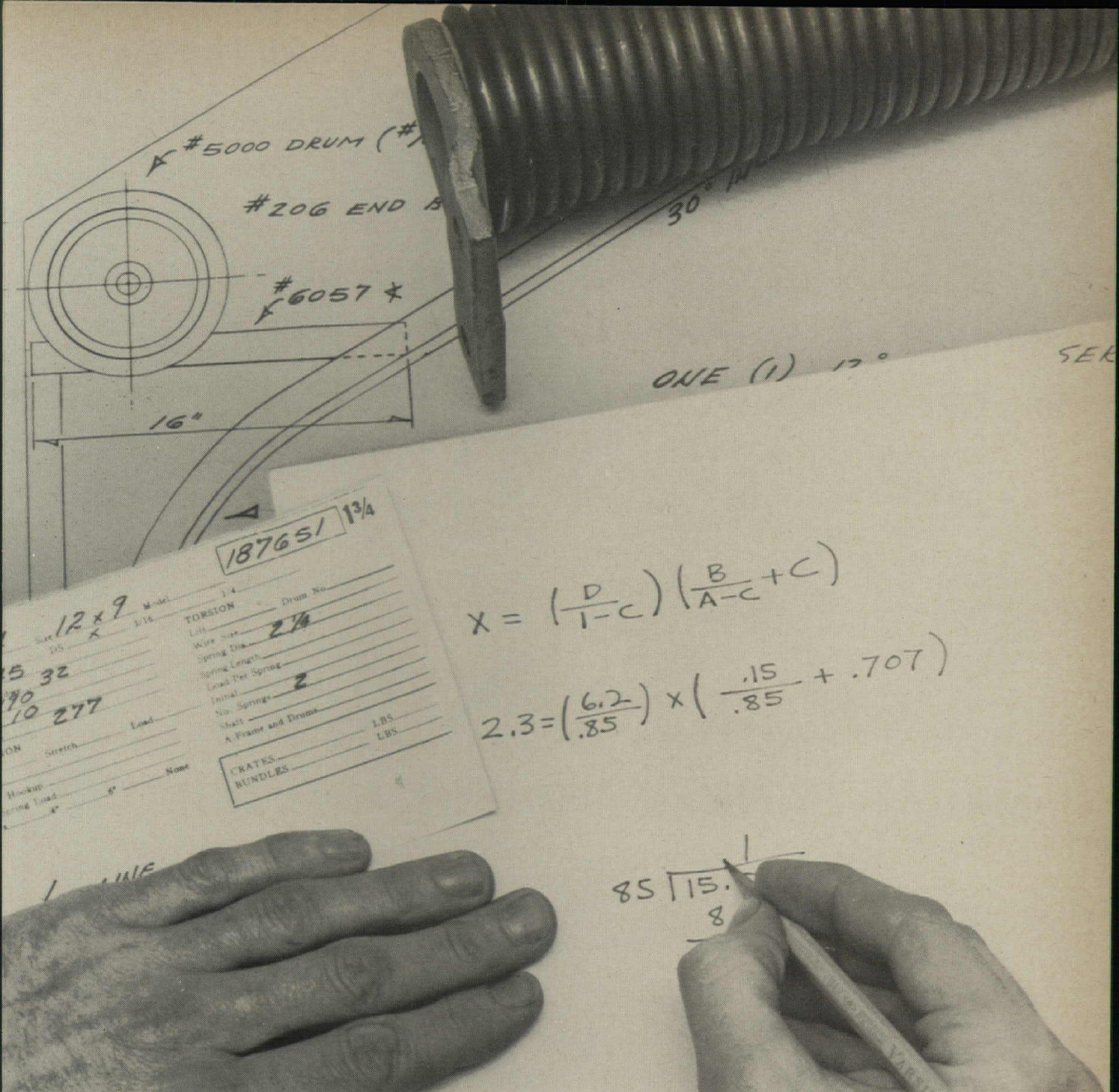
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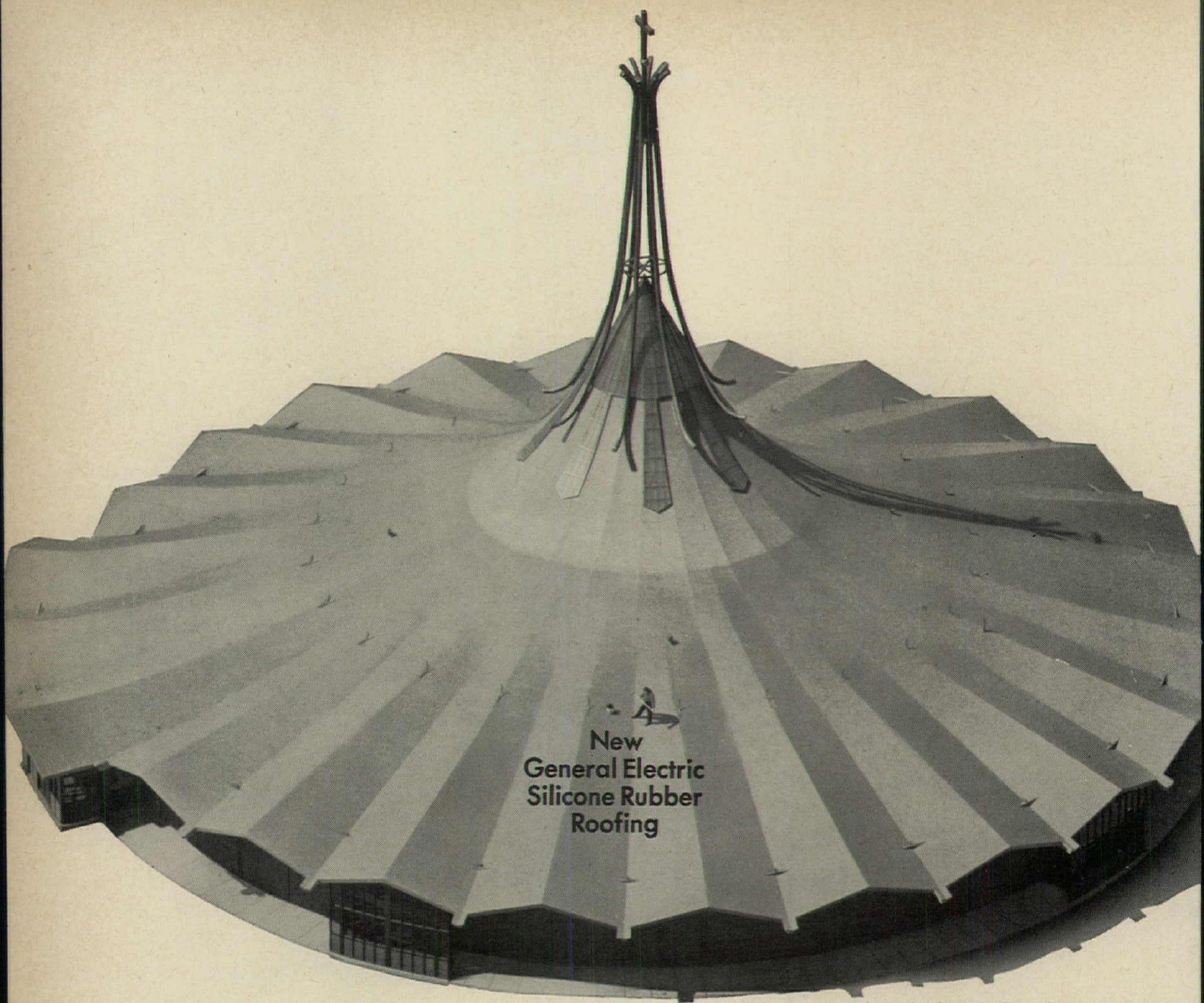


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And both are glass. Glass won't yellow. Glass won't burn.

CONVENTIONAL PLASTIC PANELS

Other panels, like the one used here for comparison, attempt to control direct glare by refracting (C) the light. But note the undesirable rays (D) in the glare zone at the lens face.

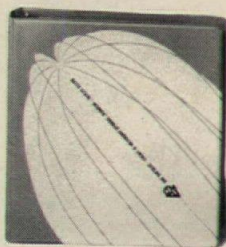
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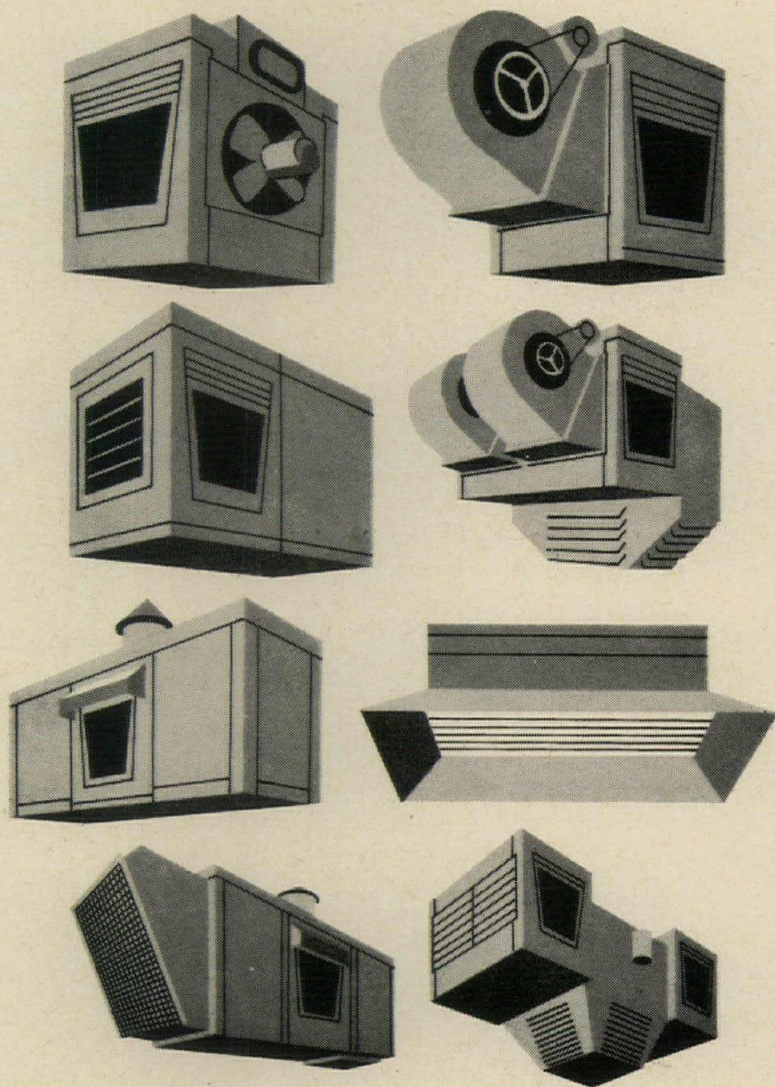
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continued from page 282

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sculpture, "emotional architecture" of stone, polychromed iron and wood. Like Barragan, Goeritz is particularly sensitive to light, and often his forms create new shapes through reflection and shadow.

Architecture cannot always stay within the province of the personal, emotional, sculptural. It must also be frankly and rationally multiplied to meet the needs of ever expanding city populations. Mario Pani is an architect who has found himself in the urgent role of planner in Mexico; he is the man behind much of the vast housing and other large planning projects of Mexico City.

At first glance, the extensive creations of Tlaltelolco, the Presidente Aleman Urban Center, and University City, designed by Beaux-Arts trained Pani, appear as coldly repetitious high-rise buildings, echoes in the 1960's of Le Corbusier's city in the park, and one wishes the architect had never seen the Ecole des Beaux-Arts. Yet it is this very coordination (with repetition) by Pani's French-trained hand that holds such extensive communities of structures together. And upon closer examination a number of the buildings reward the observer with fine textures of Mexican stone (Presidente Aleman Urban Center) and patterns of window framing that are rhythmic, sometimes quite complex, and skillfully played against the mass of each building.

—Sandra Kocher

BOOKS RECEIVED

EARLY HOUSES OF NEW ENGLAND. By Norman B. Baker. Charles E. Tuttle Co., Publishers, Rutland, Vt. 144 pp., illus. \$7.50.

THE ARCHITECTURAL INDEX FOR 1967. By Ervin Bell. The Architectural Index, Box 2399, Norman, Okla. 73069. 77 pp. \$5.00.

FLOORS AND FLOOR MAINTENANCE. By Bernard Berkeley. The Cornell Hotel & Restaurant Administration Quarterly, Statler Hall, Cornell University, Ithaca, N.Y. 14850. 108 pp., illus. \$3.00.

ANTONIO GAUDI. By E. Casanelles. New York Graphic Society, Greenwich, Conn. 252 pp., illus. \$10.00.

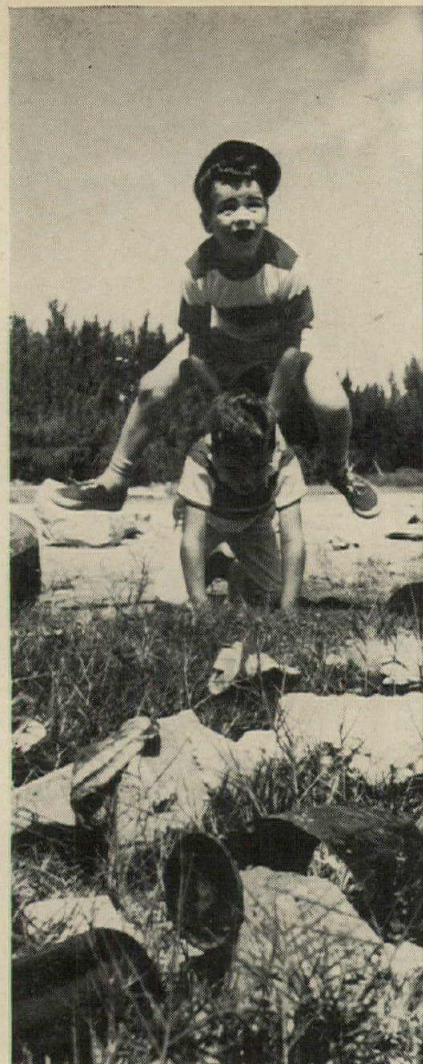
REDOING AMERICA. By Edmund K. Faltermayer. Harper & Row, Publishers, Keystone Industrial Park, Scranton, Pa. 18512. 242 pp., illus. \$6.95.

FOUNDERS AND FRONTIERSMEN, *Historic Places Commemorating Early Nationhood and the Westward Movement, 1783-1828*. Edited by Robert G. Ferris. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. 410 pp., illus. \$3.00.

CURTAIN WALL CONSTRUCTION. By Konrad Gatz. Frederick A. Praeger, Publishers, 111 Fourth Avenue, New York, N.Y. 10003. 174 pp., illus. \$15.00.

MY PLEASURES AND PALACES—*Memoirs of 40 Years in China*. By Harry Hussey. Doubleday & Company, Inc., 277 Park Avenue, New York, N.Y. 10017. 384 pp. \$6.95.

MUSEUM WITHOUT WALLS. By Andre Malraux. Doubleday & Company, Inc., 277 Park Avenue, New York, N.Y. 10017. 252 pp., illus. \$4.95.



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No astragal on "B" and "C" label doors!**

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ARMCO STEEL



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Steel Fabricator: Jim Doyle Co., Inc., Houston
Developer: Joe A. McDermott, Inc., Houston
Town and Country Village, Houston, Texas, showcases Armco Joists in gable roof, hip roof and, in background, multi-story flat roof.

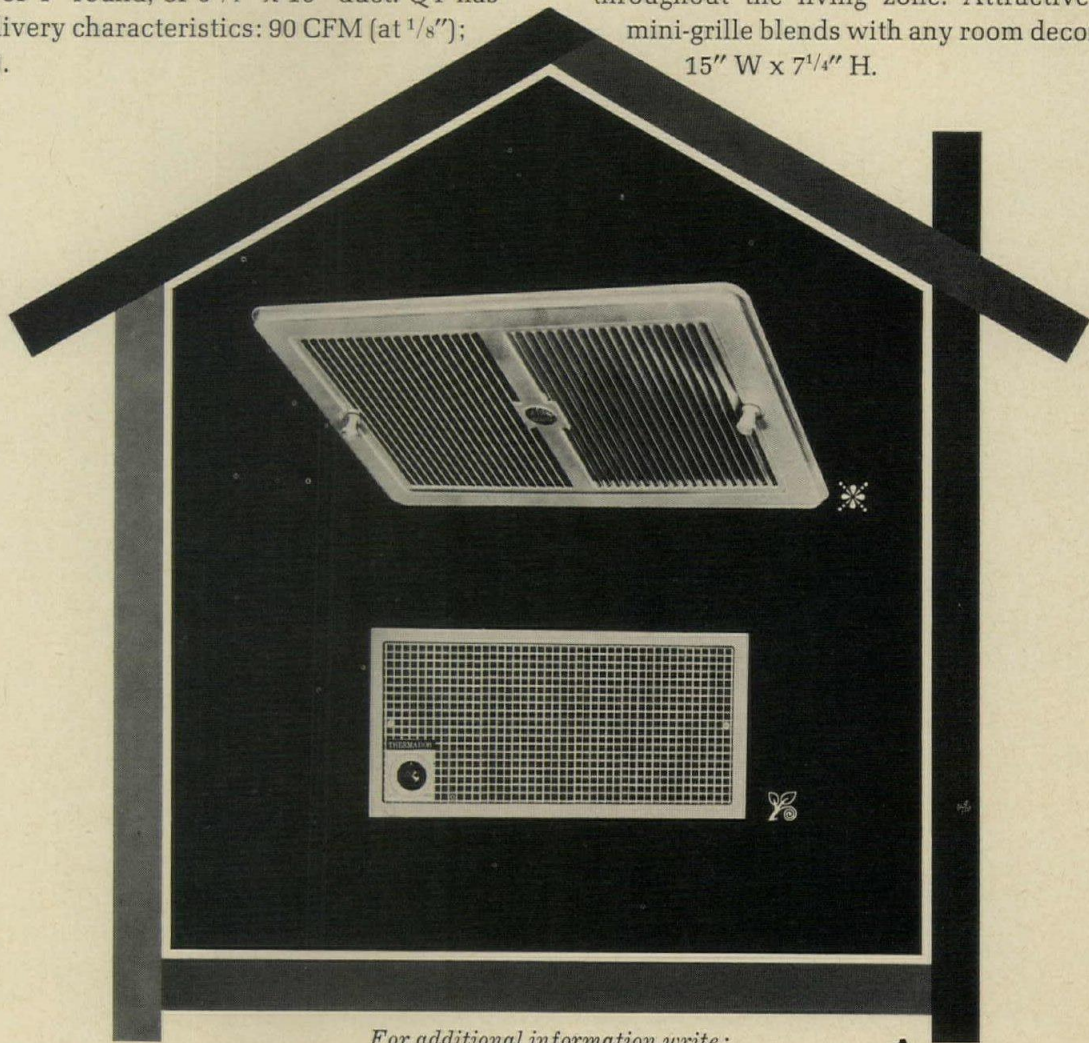


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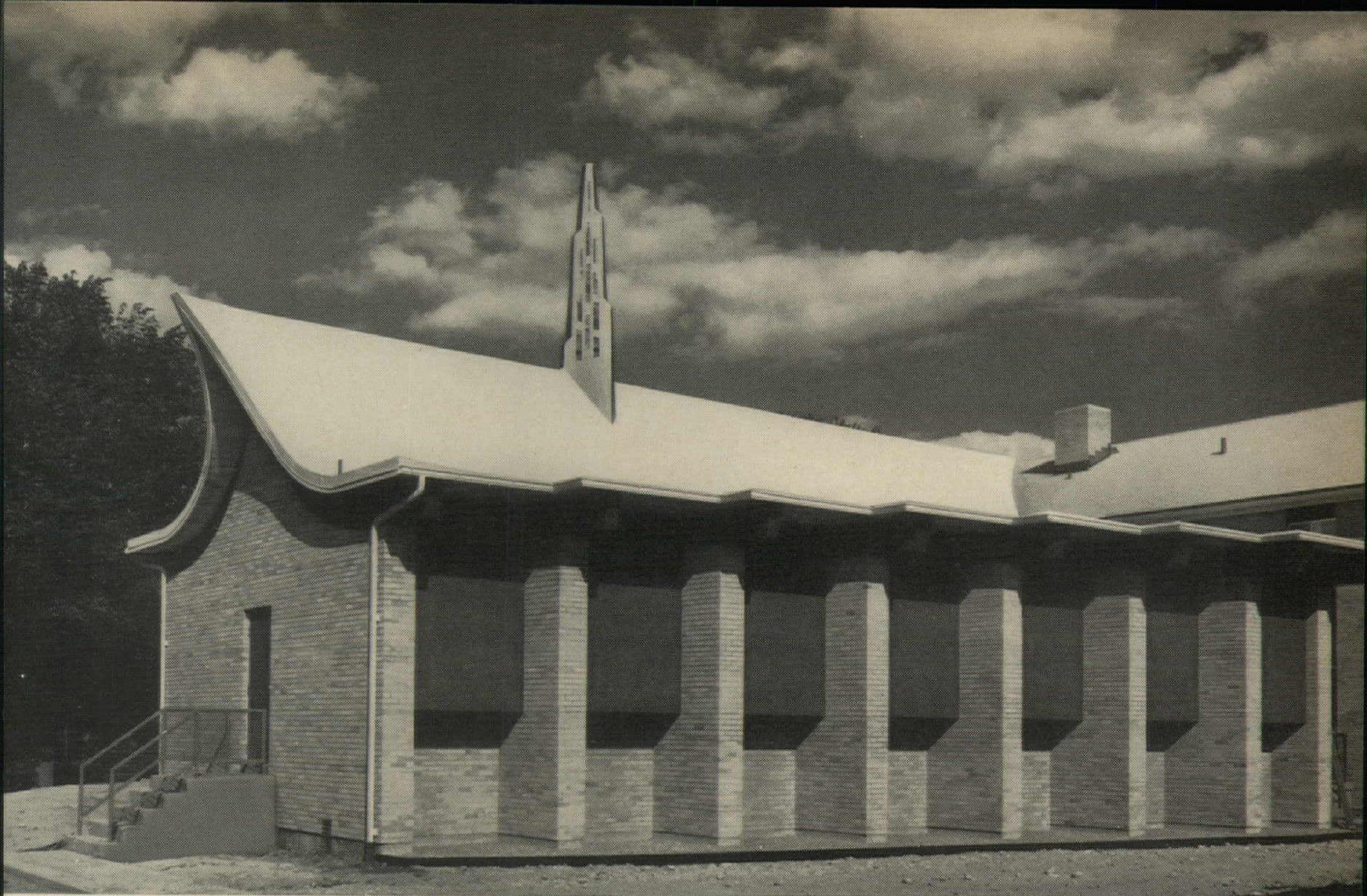
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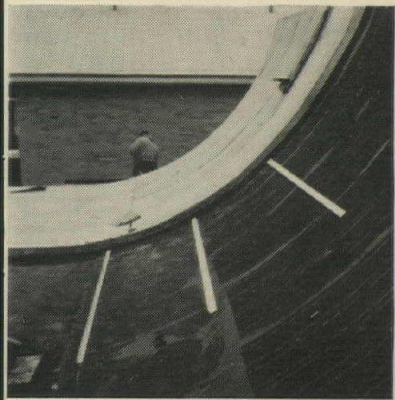
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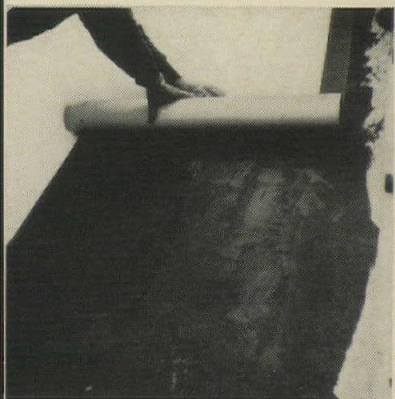
**For roofs of unexcelled beauty and durability ...
specify T/NA 200® roofing (with Du Pont TEDLAR*)**



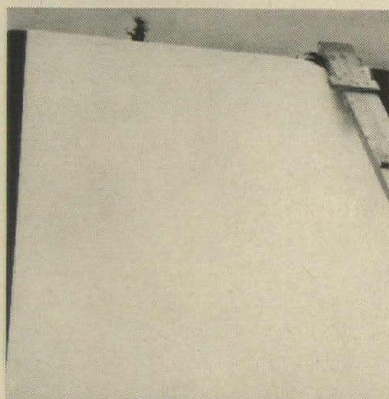
1. On any contour, any slope.



2. Easy, quick to apply.



3. Cements directly to underlayment.



4. Forms a smooth, clean attractive surface.

The bold sweeping curves of this roof for the New Chapel for the Sisters of Mercy of Notre Dame High School in Elmira, New York illustrate the remarkable effects that can be achieved with a roof of Ruberoid® T/NA 200.

As functional and maintenance-free as it is attractive, this gleaming white pre-finished roof membrane will stay weathertight and beautiful for years and years. It's the ideal roofing material for roofs of unusual contour, on any slope.

The roof was fabricated by Hall Roofing & Sheet Metal Co., Inc., of Elmira and the T/NA 200 membrane was applied on the site. The smaller photos show some details of the construction.

Haskell & Connor were the architects and Welliver Construction Co., Inc., both of Elmira, were the General Contractors.

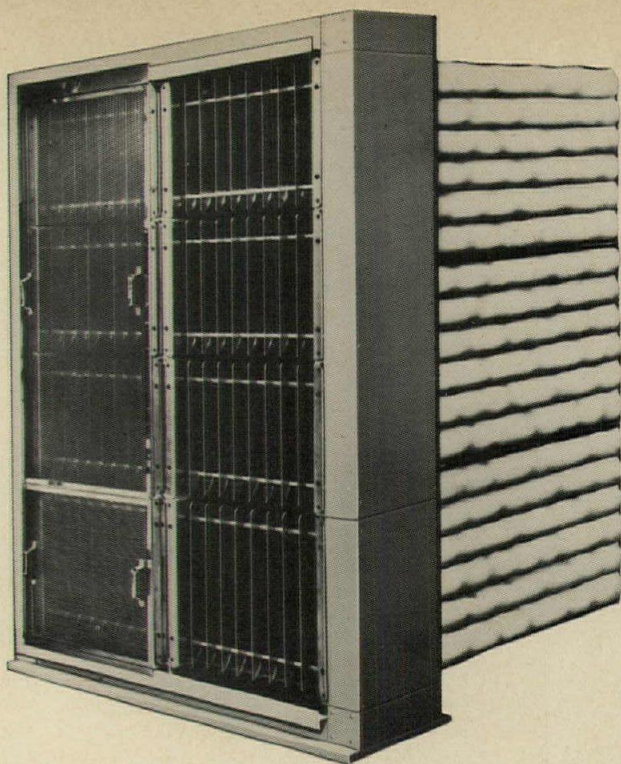
Write today for full information on this unusual roofing material. Also available in pastel grey or green.

* DuPont's registered trademark

gaf Ruberoid
Building Products

GENERAL ANILINE & FILM CORP.
TECHNICAL SALES & FIELD ENGINEERING DEPT.
733 Third Avenue, New York, N. Y. 10017

When we put this agglomerator in front of high-efficiency cartridge filters, maintenance costs are slashed to the bone

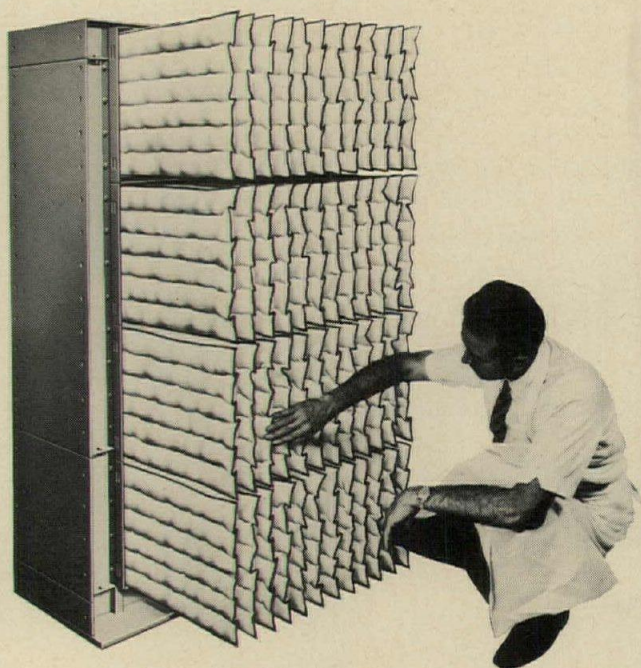


AAF Electro-Pak air filter combines 95+% cleaning efficiency with maintenance economy and extra-long filter service.

Here's how the Electro-Pak works. Electrically charged particles — as small as pollen, bacteria and smoke — collect on the dry plates of the agglomerator section. The particles build up (agglomerate) on the collector plates and are eventually swept off by the air stream. These agglomerates then pass to the storage section of the Electro-Pak and are deposited on the giant-size media surface of the collapsible, disposable cartridge.

The Electro-Pak virtually eliminates maintenance. Wiping or brushing of the grounded ionizer struts and wires approximately every 2,000 hours is the only maintenance required on the agglomerator section. The agglomerator principle provides maximum operating economy by extending the storage section cartridge life four to five times.

See your local AAF representative, or write for Electro-Pak Bulletin 246. Address: Robert Moore, American Air Filter Company, Inc., 389 Central Avenue, Louisville, Kentucky 40208.



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BETTER AIR IS OUR BUSINESS

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Ask questions first, shoot later.



What is the Ramset system?

Basically, a tool, a powder charge, and a line of over 100 drive pins, eyepins and threaded stud fasteners. And a way to fasten wood and steel to concrete and steel in one easy operation.

Why use it?

It's fast—50 or more fastenings per hour. Without pre-drilling, chipping, plugging or detailed layouts. It's light enough to use with one hand and there are no wires or hoses to trip over. (It carries its own power with it). Not only is it faster and more accurate than other methods, but your in-place fastening costs are much lower.

Is it safe?

Not only does every model have all the safety features you'd expect, we'll also supply an expert to teach you or your men how to use the Ramset® system. And how *not* to use it. On request, of course.

What about holding power?

There are four basic Ramset systems which hold anywhere from 1,500 to 10,000 pounds in steel and 2,000 to 7,000 pounds in concrete.

Who approves of it?

The U.S.A. Standards Institute, Underwriters' Laboratories, Inc., Factory Mutual and National Board of Fire Underwriters, The Federal Housing Administration, The Veterans Administration, The General Services Administration, The U.S. Army, Navy and Air Force, The International Conference of Building Officials and The Southern Building Code Congress, among others.

How to find out more about it.

Clip the coupon. We won't pester you—we'll just send you the details. They'll speak for themselves. And we'll come out to your job for a demonstration, if you wish.



Send to: Ramset Fastening Systems
289 Winchester Avenue
New Haven, Connecticut 06504

Dear Ramset: The details, please.

Name _____

Title _____


Firm _____

Address _____

City _____ State _____ Zip _____

 **Ramset®**

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This lamp won't live a normal life nor die a normal death.

It's virtually shatterproof, completely waterproof and 70% more breakproof. We nicknamed this GE Tuff-Skin lamp—"Tuffy." It figures. After all, "Tuffy" can be dropped, smashed or crushed—but it won't splatter. Cleanup is simple. And there's less trouble on the job.

No. General Electric didn't wrap "Tuffy" in transparent rhinoceros skin—but the effect is almost the same. It has 70% greater chance of surviving any punishment you can dish out.

Knocks. Drops. Even a splash of molten solder or a flash of welding splatter gets the cold shoulder from the GE Tuff-Skin lamp. So does rain, snow, extreme heat or cold.

Making strong dollar sense to you yet? Then ask your General Electric Large Lamp Agent to show you the lamp that bounces when dropped. Just ask for GE Tuff-Skin lamps.

Or write to us at: General Electric Co., Dept. C-801, Nela Park, Cleveland, Ohio 44112. This is one lamp we don't mind your knocking.

GENERAL  ELECTRIC

See more for your dollar with GE lamps

For more data, circle 169 on inquiry card

For more data, circle 168 on inquiry

This striking Flintkote® tile floor was installed in 1957.



Jewel Tea Supermarket, Chicago, Ill.
Installed: 1957
Photograph taken: January, 1968 (Unretouched)

This unretouched photograph was taken after 10 years, 9 million shoppers, millions of shopping cart trips and countless spills...

Would any other floor covering still look this new? When we say that FLINTKOTE floor tile lasts for years, we can show you job after job that proves it—under all kinds of traffic conditions. And we can give you case histories on maintenance costs that are facts. (Write us, we'll be happy to send them

to you!) Moreover, you can use FLINTKOTE vinyl asbestos tile on, above or below grade, even in difficult areas where oil and grease spills are a problem. Available in many handsome colors.

When you specify FLINTKOTE flooring products you can do so with complete confidence.



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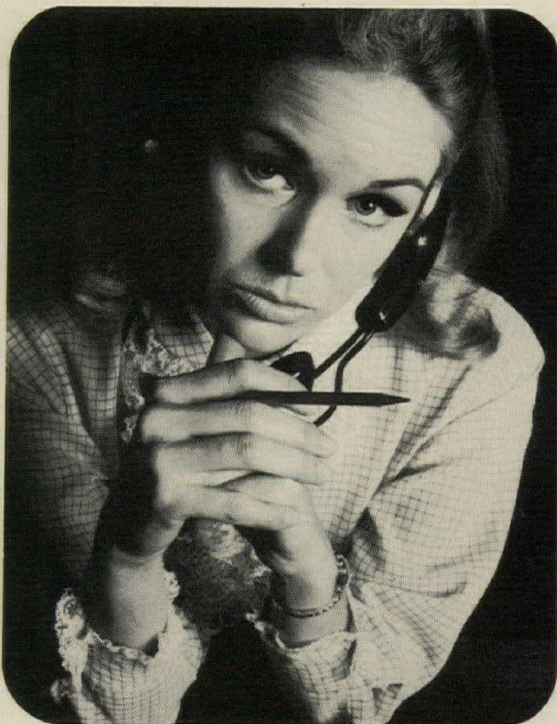
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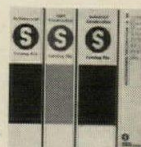
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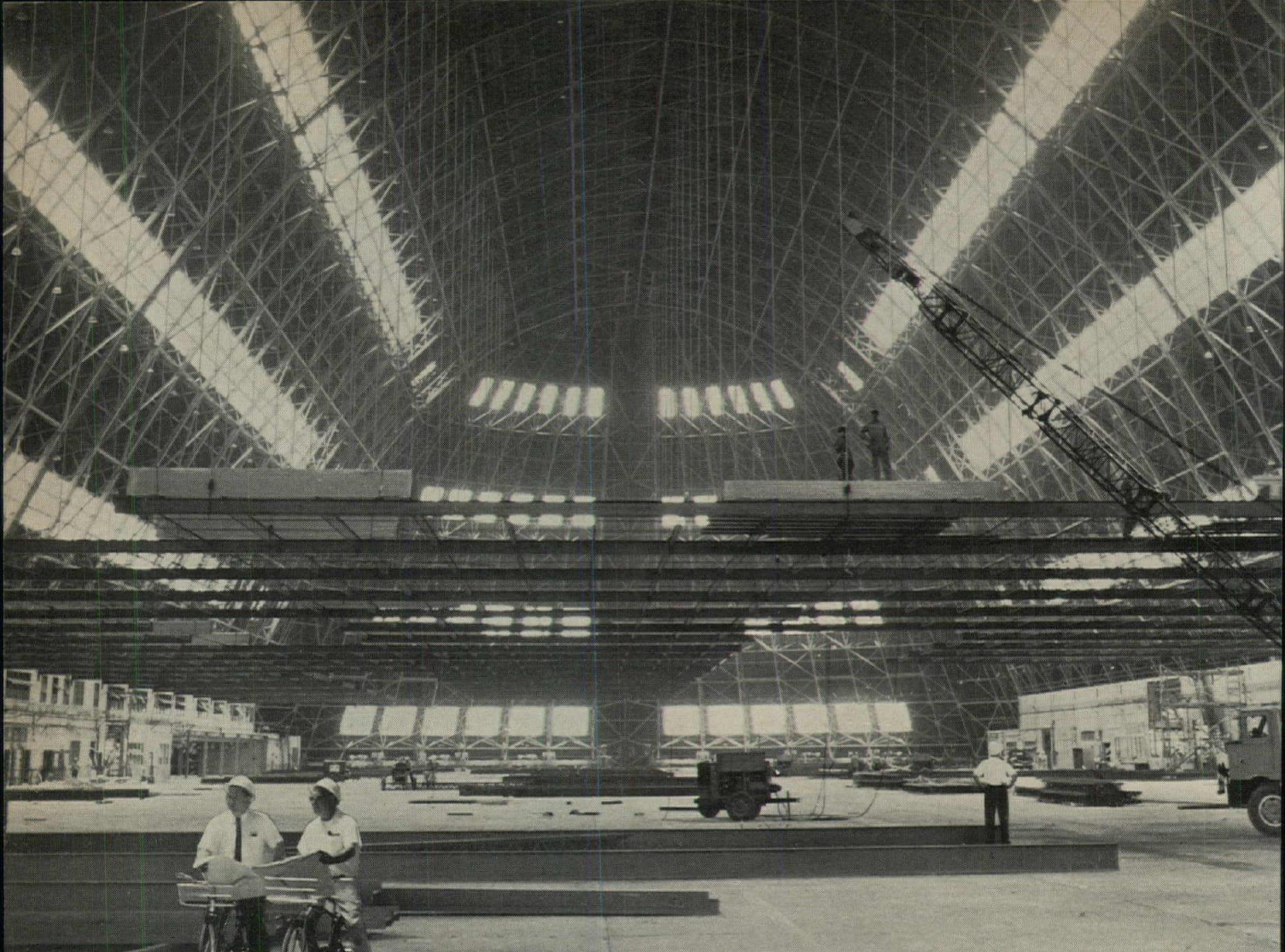
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Sweet's works.



Cable-roof suspended inside blimp hangar permits conversion to cabinet factory.

There was one overriding requirement when a World War II dirigible hangar, near Elizabeth City, N. C., was bought by Westinghouse Electric Corp. for its I-XL Furniture Co. And that was control of weather inside the 300,000-sq-ft, 190-ft-high structure . . . necessary because regulation of temperature and humidity is critical in any furniture plant.

The problem was solved with a plan devised by architect-engineer, Wiley & Wilson. They suggested the *interior* cable-suspended roof which now "hovers" 24 ft above the floor of the entire hangar. The roof actually hangs from the arched roof of the main structure on 214 Bethlehem cable assemblies, which vary in length to match the curves of the arches.

"Building a real roof, instead of simply an inner ceiling," the architect-engineer explained, "was less expensive than trying to maintain . . . completely weatherproof conditions . . . in the entire hangar."

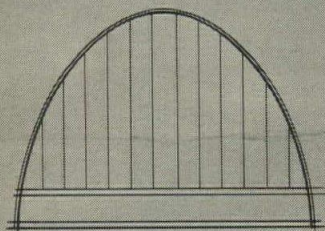
The cable assemblies required 25,000 ft of $\frac{5}{8}$ -in. extra-high-strength, galvanized strand with swaged clevis terminals on each end. And the actual roof is a grid of 14-in. steel beams and joists covered with steel roof deck, rigid insulation, and two plies of felt and asphalt. Bethlehem supplied all 251 tons of structural steel beams.

Another immediate need was speed, for the quicker the roof was up, the earlier the plant could be in production. This design, as installed by the general contractor, Basic Construction Co., fulfilled that need.

This unusual structure demonstrates the versatility of steel cables and how well they can be adapted for roof supports. If you are planning a cable roof, you may want to take advantage of our technical assistance on cables and fittings. Just call our nearest office, or write: Bethlehem Steel Corporation, Bethlehem, Pa. 18016.



Steel for Strength



Cross-sectional view of hangar

BETHLEHEM STEEL

