

AN ARCHITECT'S GUIDE TO EXPO '70

BUILDING TYPES STUDY: COMMUNITY COLLEGES—OPPOSITE OF IVORY TOWER

THREE ADVANCES IN CONCRETE TECHNOLOGY

SEMI-ANNUAL INDEX

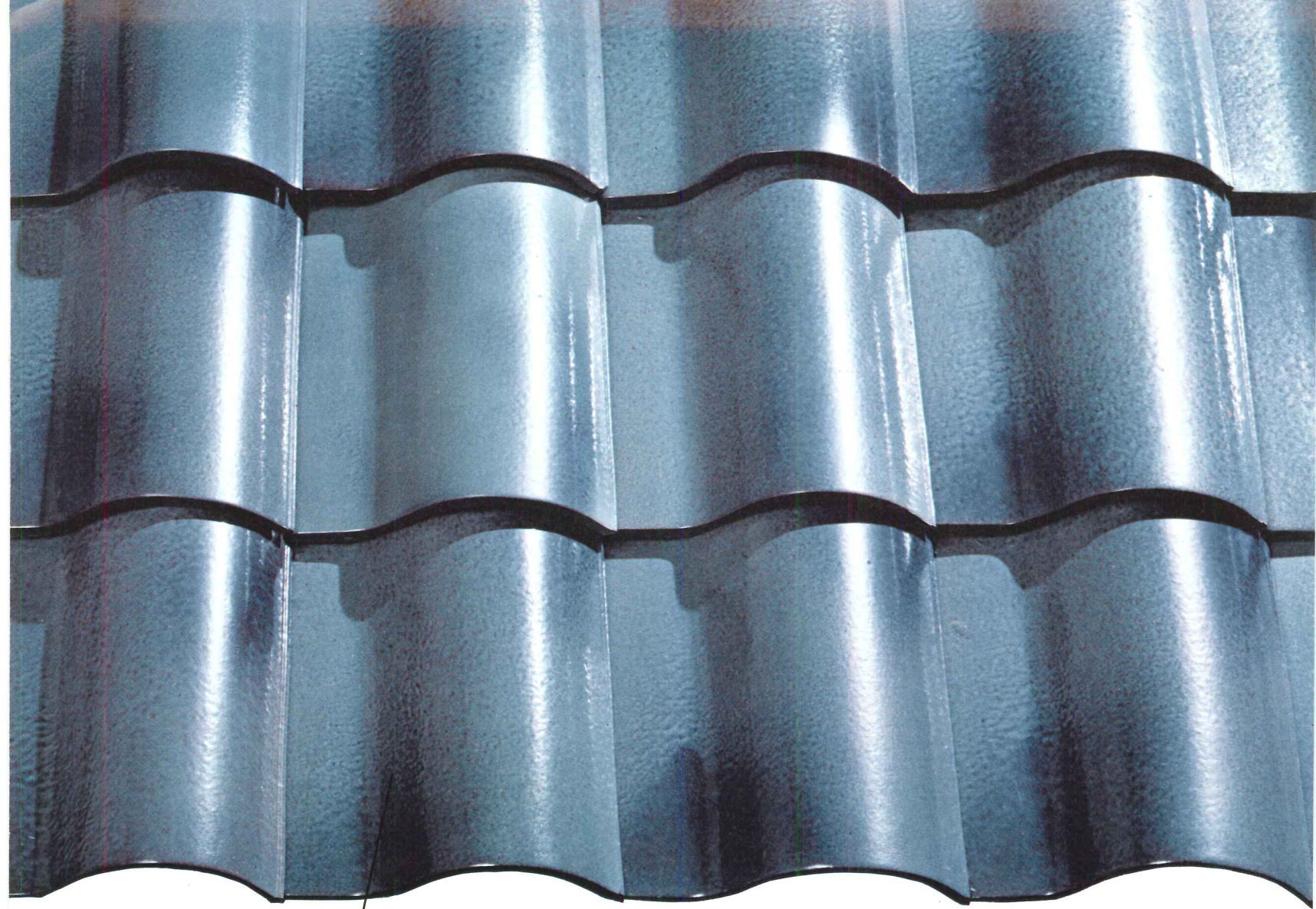
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ARCHITECTURAL RECORD

JUNE 1970

6

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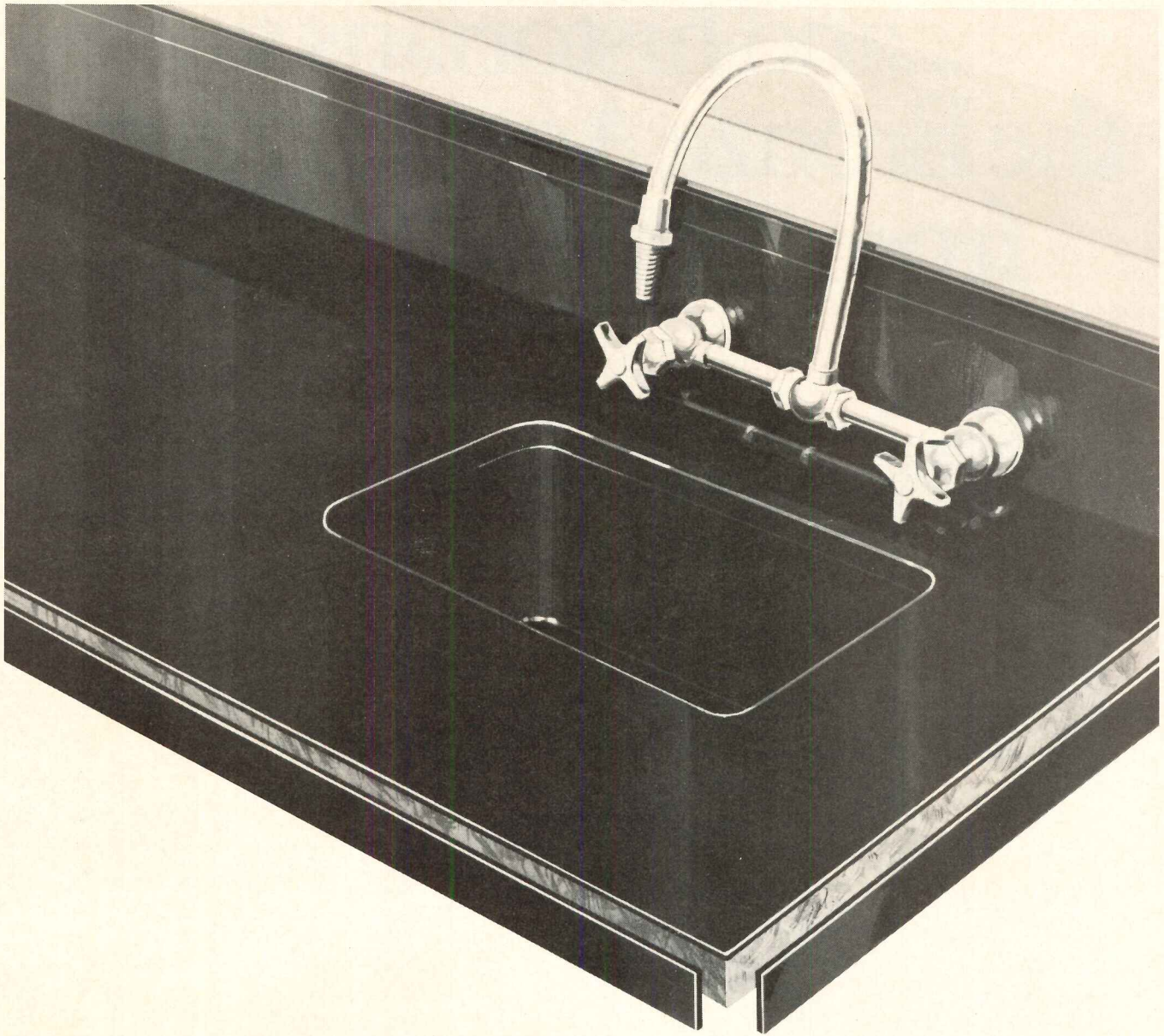
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...and historians say the Bronze Age only lasted from 3500 to 1000 B.C.



The bronze lobby ceiling lights, which can be seen from the exterior, complement the overall building design.

The First National Bank of Chicago, by architects C. F. Murphy and Associates and The Perkins and Will Partnership, is one of the newest buildings in the Loop, yet its bronze beauty is timeless.

The thoroughly contemporary impact of this sixty-story structure is due, in part, to the bold use of bronze for the handsome curtain wall that rises five stories from the street.

A light statuary finish of bronze, the ageless copper alloy, was also chosen to accent the interior.

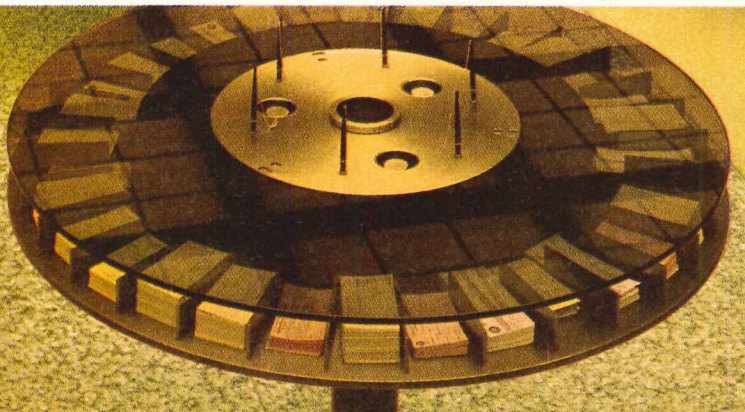
The warm beauty and dignity of bronze are primary reasons for its selection. But equally important are its durability and easy maintenance.

Rich, elegant bronze.

You might just say it's the beginning of a new Bronze Age.



The beauty of bronze adds to the interior effect as escalator siding and railings.



Even the writing tables weren't overlooked. Here, versatile and easily cleaned bronze was used for penholders and waste containers.

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Bank B



Cover: Detail of Canadian Pavilion, Expo '70
Osaka, Japan
Architects: Erickson/Massey
Photographer: Mildred F. Schmertz

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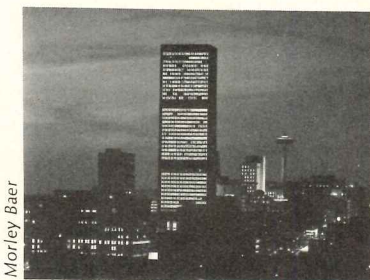
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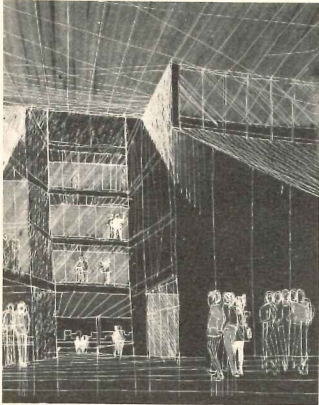
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ARCHITECTURAL ENGINEERING



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COMING IN THE RECORD

NEW DIRECTIONS IN JAPANESE ARCHITECTURE

The leading architects of Japan are among the best in the world, and the Japanese architectural avant-garde known as the Metabolists are among the most interesting of the so-called visionary groups—designers of prototypical environments of the future. The July issue will include examples of Metabolist work as well as a selection of some of the most important and most recently completed Japanese buildings.

BUILDING TYPES STUDY: OFFICES

Office towers are still going up around the country faster than most other building types, and they are becoming more expensive as clients become aware that their "image" is at stake. Next month's Building Types Study will present three office buildings created by combining excellent design talent with sufficient budgets, thus producing in these buildings the image of "best" that the owners were hoping to achieve.



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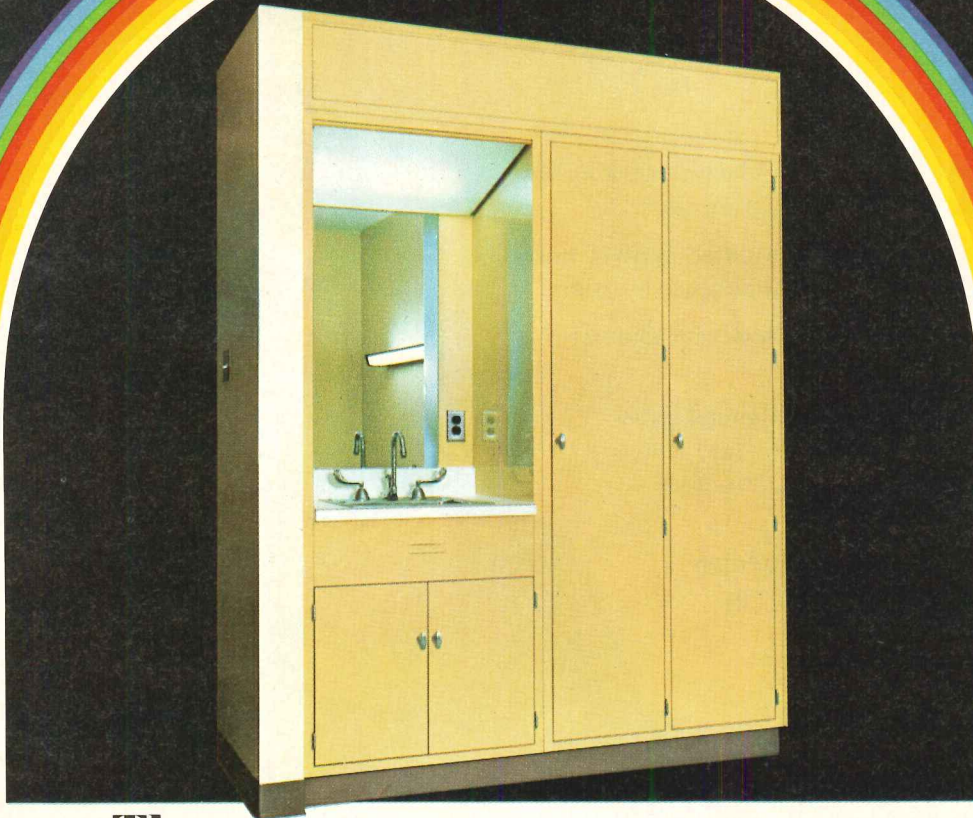
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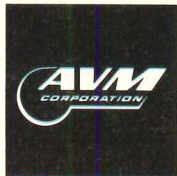
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Isn't the best way to cut costs to cut time (to recoin a phrase)?

There is much talk—indeed a considerable amount of action (churning?)—these days about cutting construction costs. Everyone agrees they are too high (exorbitant is perhaps the most used word) but no one seems to know exactly what to do about it.

Of course, there is no one thing to be done about it. There is no doubt, for example, that the Administration is on an all-out effort to get interest rates down—which could cut the real cost of a building at an astonishing rate (to put it in its simplest terms, the increase in the mortgage yield rate over the last four years, from 5.64 per cent to 8.62 per cent, has had the effect of adding over \$10,000 to the cost of a \$20,000, 25-year house mortgage). In this issue (page 137) Albert Mayer makes a compelling and well documented case about the terrible effect on costs (and therefore all building) of land-price speculation. All kinds of efforts (including most notably Operation Breakthrough) are being made to reduce building costs by more efficient management and reduction of the labor input by in-plant construction.

But of all these, isn't the most do-able (and perhaps the most effective) way to cut costs to cut building time?

This is no new idea, of course. Years ago, every writer and editor (including this one) was writing about "the terrible costs of red tape", which can tie up government-aided projects for years while the meter on labor costs and material costs keeps ticking. Many kinds of clients—and perhaps especially hotel operators and developers of speculative office space—have long understood that, when a project is delayed, not only do costs go up but income doesn't

come in.

But I'm moved to write one more time on the subject by a front-page story in The New York Times of May 11th. The headline a calm one for these uncalm days: "Study by City Finds Delays in Building Schools Costly." But the lead sentence tells it like it really shouldn't be: "Five high schools being planned for the city are on the average more than a year behind schedule . . . and each working day's delay adds an average of \$13,700 to each school's final cost." Further "the 13 intermediate schools allotted construction money in this and last year's capital budgets are an average of 32 weeks behind schedule, with construction costs rising by about \$5,700 for every working day for each school." The figures of 16 elementary schools: 36 weeks behind; cost per day each, \$3,200. Finally: "By computing these delays in months and multiplying the total estimated cost of each school by 1.5 per cent—the average monthly rise in construction costs here—the study concludes that \$30 million [enough to build 1,500 or 2,000 new housing units, say] has been added this year to total building cost of all schools currently planned." The report, done by the City Planning Commission, has of course been criticized, attempts being made to spread the blame all over the place (including, quite properly, to some architects). But no matter who's to blame, the costs are real; as every architect knows who has gone back to "trim" a design that was bid over the budget, and watched costs go up faster than he can possibly manage to cut them down.

What's to be done?

Recognize the real cost of delay and

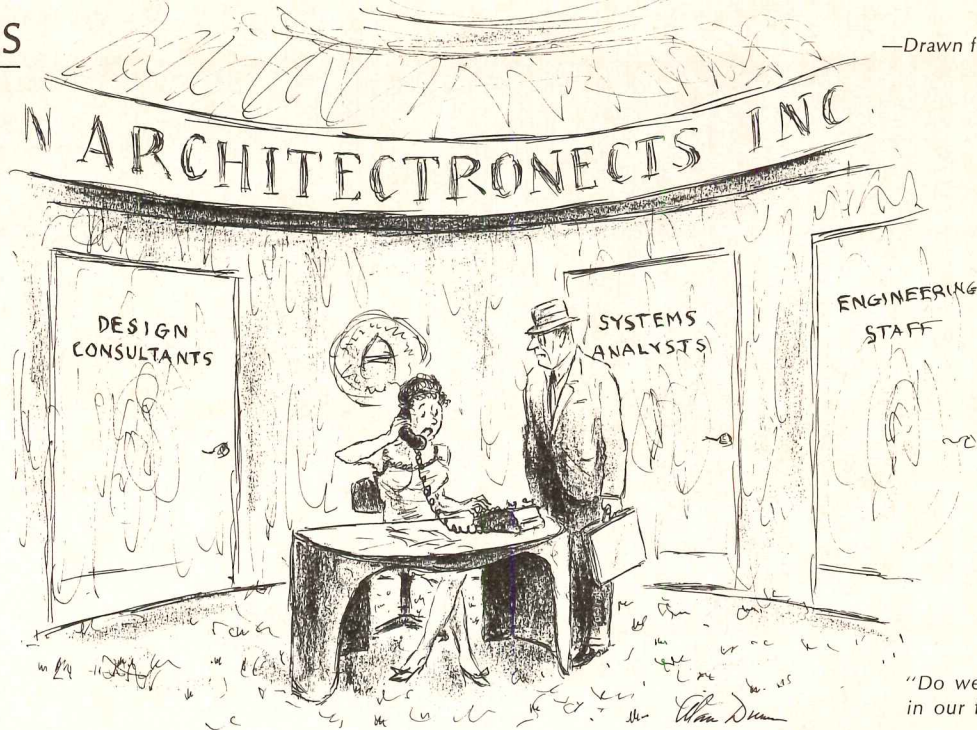
work to eliminate delay at every stage of the process—from program writing to Certificate of Occupancy. And that is already happening, of course, in some projects; though surely not as many as possible.

Item (from a release of May 10th from the GSA): "Streamlined procedures for constructing Federal buildings were implemented today by the General Services Administration. . . . Thirty-two specific recommendations for change were contained in a recent study of the construction contracting systems used by [GSA] . . . The report found the present system too time-consuming. 'Obviously,' observed [GSA Administrator Robert L.] Kunzig, 'in the present climate of steadily-rising construction costs, a saving of time means a saving of money.'" The emphasis of the new GSA procedures, apparently to be implemented immediately, is on "centralizing project responsibility, reducing design and construction time, utilizing phased construction . . . and expeditious processing of paper work." Let's hope that new leaf stays turned. . . .

Another example of the importance finally being given to time-saving (from the March 30th Newsletter of Building Systems Information Clearinghouse): "On March 4, 1970, the Board of Union Free School District No. 25, Merrick, Long Island, awarded final contracts for the construction of additions to three elementary schools . . . only four months after the Board commissioned the design. . . ." To meet the tight schedule within a limited budget, the architects (Caudill Rowlett Scott) employed fast-track scheduling, among other management techniques.

Well, the point is a simple one. Should we not put as much emphasis on management techniques and red-tape clearing—thus saving time at, for instance, \$13,700 a day—as we do in programs for developing new technologies that may, or may not, work? "Time is money" is an old and oft-quoted saw: It still cuts like mad.

—Walter F. Wagner, Jr.



"Do we have a 'registered architect' in our firm, sir?"

Can action on the environment really help?

Many ecologists concerned with the continuing damage to our resources of air and water (to mention The Big Two) are pretty pessimistic. But a report from a research unit of the Greater London Council reports some news that is not just encouraging for London, but suggests that if we get on with our efforts, we may achieve results. Says the report:

The amount of sunlight that penetrates to London's city streets has increased by 50 per cent compared with 10 years ago. Smoke concentrations are down by 80 per cent compared with 1958. Winter visibility has increased at least threefold. Less scientific, but happily: Nearly 140 varieties of birds—twice as many as 10 years ago—have been seen in London last year.

The same report estimates that these benefits in purer air have "been achieved at a cost to the average Londoner of 36 cents per year."

Do people really live in and like their RECORD HOUSES?

Around the RECORD office, we think of RECORD HOUSES as "laboratories of design." We choose them not as homes, but as houses that explore ideas in architecture that, in a few years, may be turning up in entirely different building types. We think, I guess one must confess, of the owner only when it comes time to write the official credits. But last week, we were invited—along with the architects, Lo Yi Chan and Tim Prentice, the engineer, Harold Hecht, the landscape architect, George Cushine, and builder, Donald Smith—to a party at the home of Mr. and Mrs. Peter McSpadden; a RECORD HOUSE OF 1970 (page 36). We liked the house as architecture; the McSpaddens clearly love it as a place to live. Which is, of course, an ideal situation. Many happy years, McSpaddens.

Nothing new under the sun: polluted rivers department

The current edition of "economics et cetera", an internal newsletter of McGraw-Hill Information Systems Company, carries this poem by Samuel Taylor Coleridge (1772-1834):

In Cologne, a town of monks and bones,
And pavements fanged with murderous stones,
And rags, and hags, and hideous wenches,
I counted two and seventy stenches,
All well-defined, and separate stinks!
Ye nymphs that reign o'er sewers and sinks,
The river Rhine, it is well known,
Doth wash your city of Cologne;
But tell me, nymphs, what power divine
Shall henceforth wash the river Rhine?

The big question: "How much influence do you want . . ."

After two days of speeches and discussions on "The Architect As Developer" (hot subject!) at the Michigan Society of Architects convention in Grand Rapids, Jeanne Davern, ex-managing editor of RECORD and moderator of the convention, summed up a lot of good sense in six sentences:

"The architect is and isn't, will be and won't be a 'developer' either in the sense of management control or financial control or both. He is, and he will be, when and only when he develops the organization and management capability to deal with the larger spectrum of disciplines the role of 'developer' (or leader, or catalyst, or originator) demands. Many architects will prefer to practice in more traditional ways, and will; but those who wish to expand the role of architecture to deal with environmental problems at their new scale will move toward a new kind of architectural leadership. The interdisciplinary team as it is being used for public and private development has, in fact, no discipline on it with more experience, or as much—at

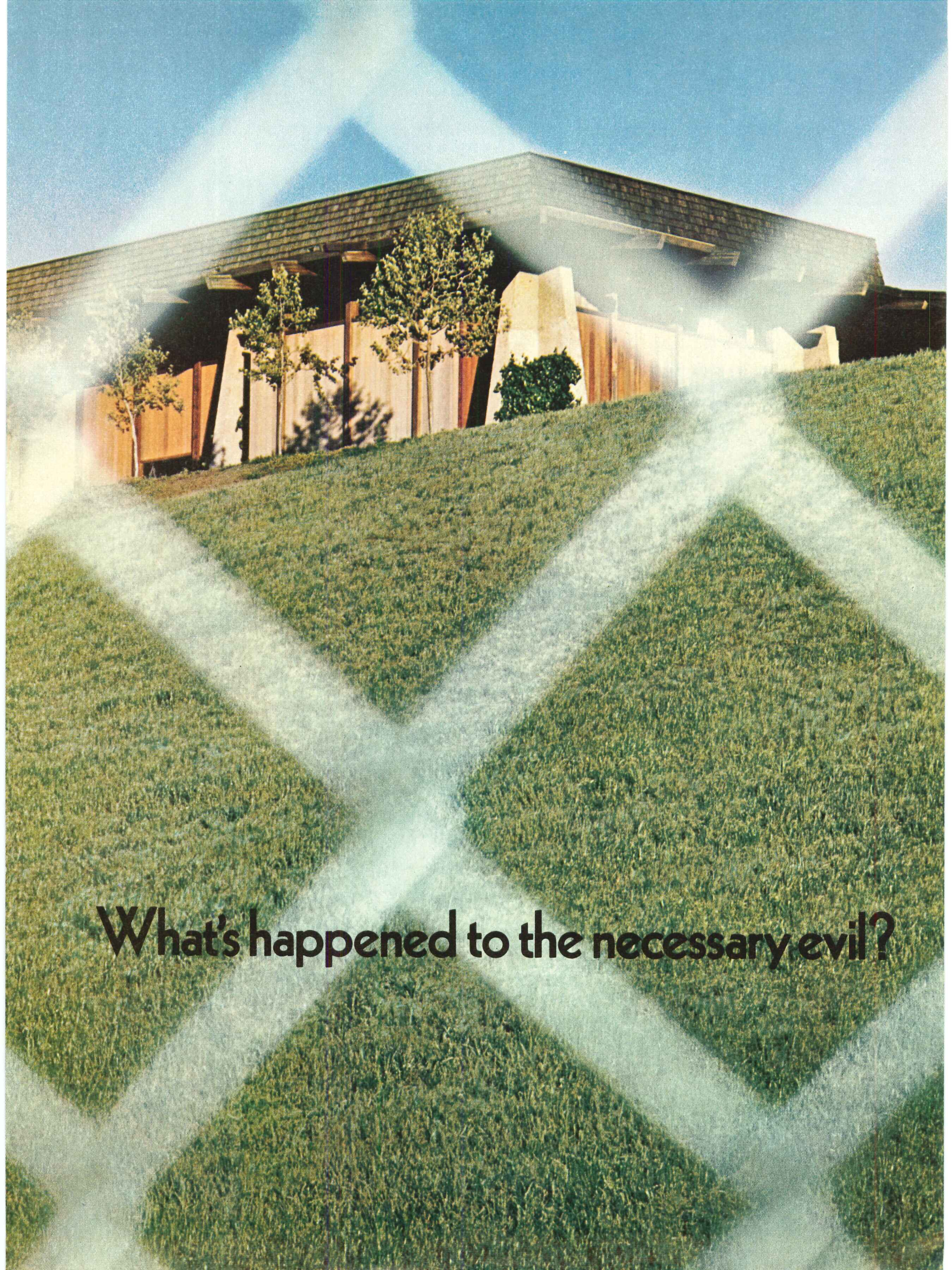
interdisciplinary coordination. Perhaps the question for the architect is: How much influence do you want to have on the decision-making process, and are you interested enough in that much influence to organize to exert it?"

Elegant understatement: architects and the city

Not long ago, an inquiry was made to the New York Chapter of the A.I.A. asking why many of the most competent architects were not interested in doing city work. Herewith a portion of the response written by Chapter President David F. M. Todd: "A true, long-range policy on public construction must look deep into the whole matter of goals. In the dynamics of social change, both the public agency and the architect may find that techniques of programming are the most crucial instruments of all towards defining the goals. A statement of requirements may be so interlocked with the physical solution that the two phases become indissoluble. The architectural profession is finding it necessary to recast its assumptions regarding the definition of the 'quality of the environment.' Within the context of this challenge may lie the ultimate key to attracting . . . talent.

"What is crucial, both in long run and short run, is attitude and spirit. For too long there has prevailed in some parts of the City administration an attitude that architectural services are a commodity to be purchased on the basis of the lowest possible price. In contrast, there has been the recurrent—and often successful—appeal to the conscience and public spirit of the architect. While the expediency of the latter is obviously to be preferred to the negativism of the former, the appeal carries with it the risk of disillusionment, anger and counter-reaction. A system which makes no effort to rid itself of unnecessary aggravations will defeat itself." Hear, hear, bureaucrats everywhere!

—W.W.

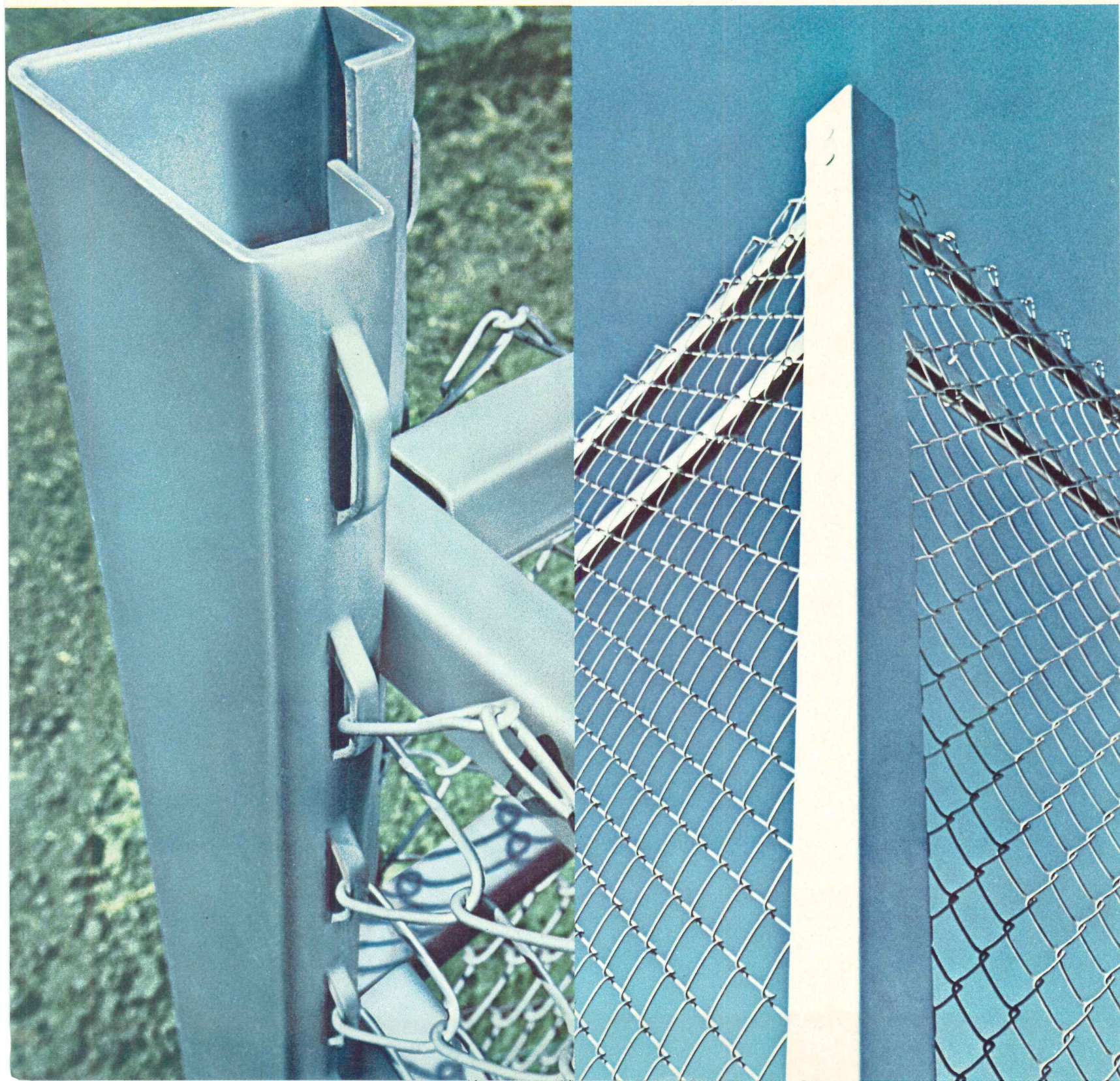


What's happened to the necessary evil?

There's a whole new technology to the necessary evil...the fence. Take 1½ minutes and catch up with it.

The usual chain link fence uses pipe posts. Not USS CYCLONE Type II. Look at this terminal post. It's one-piece, box beam construction. No hidden places where moisture can collect and cause corrosion. And notice the fabric isn't just fastened on . . . it's woven right into lock loops, each with 1200 lbs. holding power.

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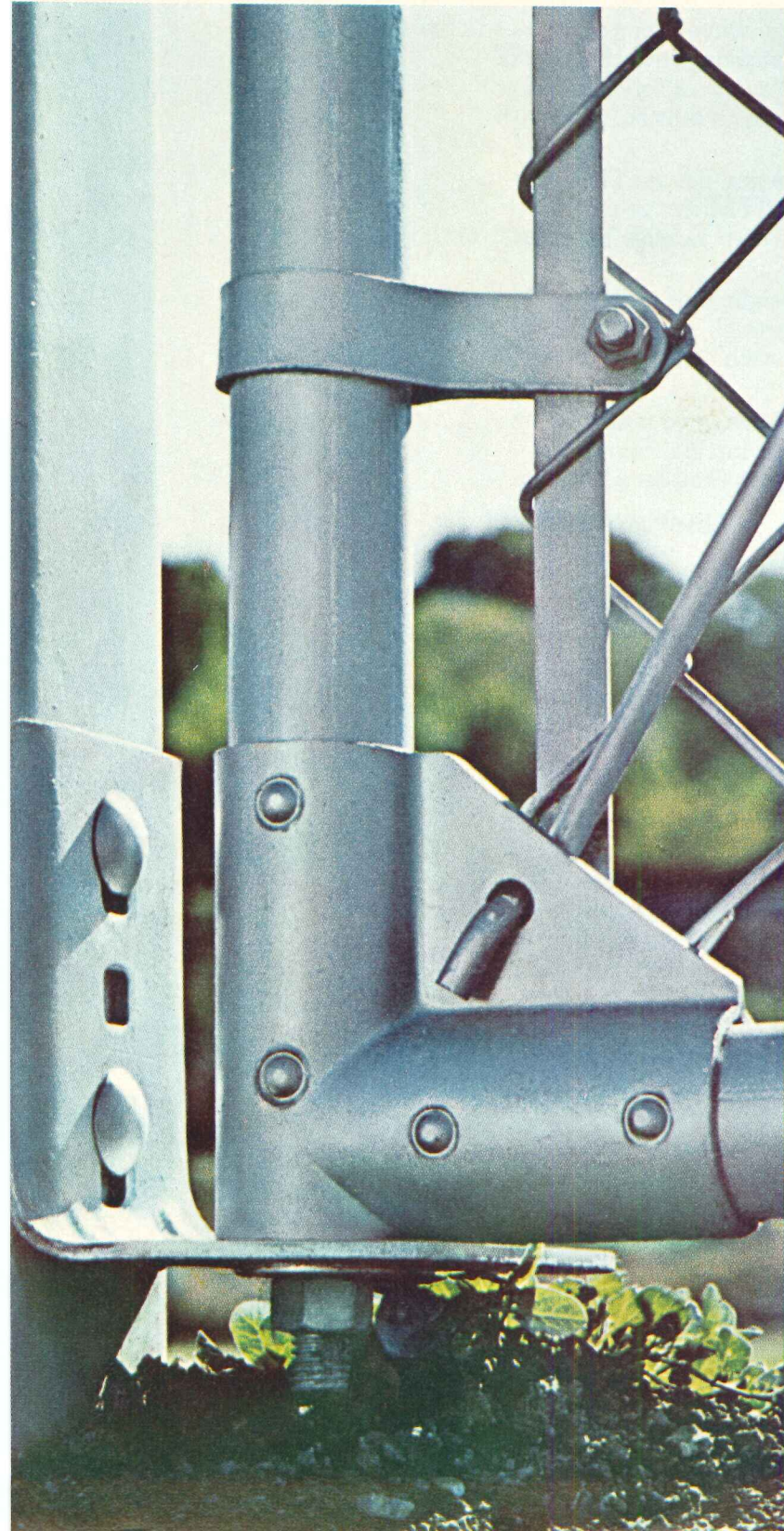


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How to specify the new technology in fence:

Basic Specifications* (Circle one of each):

Height: 6', 7', 8', 9'

Fabric 2" mesh: 6 ga., 9 ga., or 11 ga.

Barbed Wire: 3 strands, 6 strands, none

Top rail or Top Tension wire, Bottom rail or Bottom Tension Wire

Line Posts: 2.7#H or 4.1#H

Fabric shall be zinc coated class II chain link per ASTM specification A-392-68 or shall be aluminum coated per ASTM specification A-491-68. Fabric shall be connected: to line posts with 6 ga. wire clips every 14"; to top rail with 9 ga. wires every 24"; to terminal, corner, and gate posts by integrally weaving into the post or by using 1/4" x 3/4" tension bars tied to the post every 14" with 11 ga. 1" wide steel bands and 3/8" diameter bolts and nuts; to tension wire with 11 ga. hog rings every 24".

Barbed Wire shall have a class 2 aluminum coating per ASTM A-585-69 or a class 3 galvanized coating per ASTM A-121-66 and consists of two 12 1/2" gage stranded line wires with 14 gage barbs and a 4 point pattern on 5" centers.

Top rail shall be 1 1/4" (1.66" O.D.) standard weight pipe or 1 5/8" x 1 1/4" roll formed sections. Top rail shall pass through intermediate post tops and form a continuous brace within each stretch of fence and be securely fastened to terminal posts.

End, corner, and pull posts shall be 2 7/8" O.D. pipe, 5.79 pounds per foot, or 3 1/2" x 3 1/2" roll formed sections with integral fabric loops, 5.14 pounds per foot. Posts for swing gates shall be according to the following gate leaf widths:

		Lbs. Per lineal Foot
Up to 6'	3 1/2" x 3 1/2" roll formed section or	5.14
	2 7/8" O.D. pipe	5.79
Over 6' to 13'	4" O.D.	9.11
Over 13' to 18'	6 5/8" O.D.	18.97
Over 18'	8 5/8" O.D.	24.70

Gate frames shall be 1.90" O.D. pipe connected with fittings riveted at each corner. Each frame shall have 3/8" diameter adjustable truss rods. Gates shall have positive type latching devices with provisions for padlocking; and drive gates shall have a center plunger rod, catch, and semi-automatic outer catches.

All posts, rails, and appurtenances shall be hot-dipped zinc coated steel per ASTM specifications A-120-65, A-123-66 or A-153-65, whichever is applicable. Pipe posts shall have tops which exclude moisture. End, corner, pull, and gate posts shall be braced with the same material as top rail and trussed to line posts with 3/8" rods and tighteners. Each post shall be set in a concrete foundation of 1-2-4 mix having a minimum diameter of 9" or three times the diameter of the post and at least 36" deep. Line posts shall be evenly spaced 10' or less apart.

Standard tolerances apply. Installation shall be by experienced fence erectors, on lines and grades furnished by owner.

*Non-restrictive specifications

USS Cyclone Fence
USS & Cyclone are registered trademarks

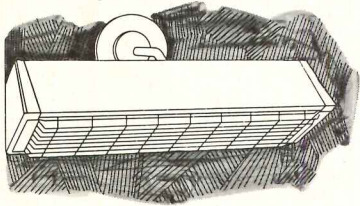


Add solid comfort on the spot.

Ceraglo. The trouble- free, solid state heater.

Our new infra-red spot heater is as versatile as aspirin. It brings quick comfort to chilly workshops and utility rooms. To farm buildings and garages. To loading docks, guard shacks, in-plant cold spots.

But Ceraglo cures a lot more than the chills. It ends your installation



headaches and relieves maintenance troubles.

The secret ingredient is a totally new heating element.



A 3M discovery. It lets this 1500-watt unit operate safely and efficiently on 120 volts. Allows simple, direct mounting with standard junction box, wiring and switches. Ceraglo's heating element is a strong, solid state

ceramic designed for a long, healthy life. With no fragile internal filament or resistance wires to break or burn out. Operates in any position.

We've engineered other comforts, too. Like compact size. Choice of mounts for wall or ceiling. And a tough acrylic finish that guards against rust and corrosion indoors or out. Contact your local electrical distributor for full details.

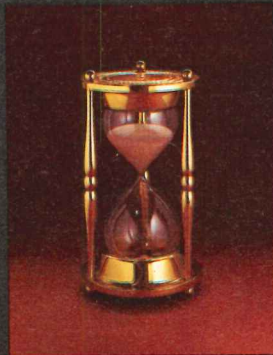
We build Ceraglo to put heat where your customers want it. And to take the heat off of you.

3M. We make it hard to go wrong.

3M
COMPANY

For more data, circle 7 on inquiry card

It's about time.



Span-Deck's story is about time . . . like in "time is money." And in Span-Deck's story, we mean lots of money.

We're talking about "time costs" that have become so important, such as . . .

- . . . interest on construction loans
- . . . uncompleted-job site vs. income producing property
- . . . supervision and overhead hours
- . . . architect's inspections and phone time
- . . . weather and labor hazards
- . . . fluctuating material costs

Span-Deck minimizes time costs . . . for while a job-site is being prepared, structural elements can be plant-produced off-site. Span-Deck floors and roofs erect at 10,000 to 20,000 square feet per day, wall panels at 5000 square feet per day. This is the kind of speed that has cut "time costs" in half.

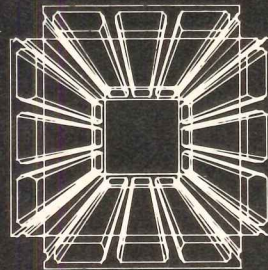
The Span-Deck story is also about design flexibility, fire-safety, acoustics, low span-depth ratio, dimensional accuracy, nationwide availability and the finest, most precise, prestressed concrete, hollow-cored decking unit (requires no topping) made in the United States, Canada or England.

If *your* time is valuable, it's about time for Span-Deck.

For the complete Span-Deck story and the name of the producer nearest you, contact: Span-Deck, Incorporated,
P. O. Box 99, Franklin, Tennessee 37064.

For more data, circle 8 on inquiry card

span deck®





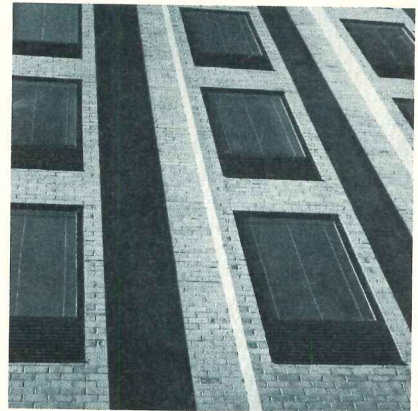
What doesn't each occupant get from this Type 45 Thru-the-Wall Air Conditioner?

**Noise -
Air, odors,
smoke from
adjacent rooms -
Seasonal cooling or heating only.**

The other side of the coin is what each occupant **does** get. Like a quality air conditioner that resembles an attractive piece of furniture more than anything else . . . A thermostat to control comfort level, independently, any season of the year . . . Fresh, filtered ventilation air any time, whether heating or cooling . . . A sturdy unit that won't see many maintenance men and will probably outlast anything else in the room . . . And a whole lot more, besides.

Find out about all the reasons why the Type 45 means comfort for each room in any building—new or renovation. And comfortable occupants make buildings pay off—for everybody.

Contact your American-Standard Sales Representative, or write for Bulletin 22-03 to:



Working with air to keep people comfortable.



COMMERCIAL AIR CONDITIONING DIV.
1300 Federal Blvd., Carteret, N.J. 07008.

For more data, circle 9 on inquiry card



Goodbye, Mrs. X— and about \$1300 worth of merchandise.

She's going out a side door.

She's plausible and charming. Nobody's looking. The door is unattended.

Say goodbye to your \$1300.

Part of the tragedy is that Mrs. X (or whoever) may well be a favorite employee.

The other part of the tragedy is that it all might have been avoided—with Trim-Gard™ on duty.

Trim-Gard is a simple (but sophisticated) door alarm for commercial premises. Put Trim-Gard on any door (either in- or out-swinging) and turn it on with a key.

It won't reach out and grab anyone by the collar, but it will alert you whenever the door is opened.

It will protect you against Mrs. X. It may well protect Mrs. X against herself.

Consider two unfortunate facts. By far the largest single category of crime in the country today is employees stealing from their employers.

And right after that category, comes shoplifting. Employees, obviously, aren't your only concern; Mrs. X may just be a visitor.

Trim-Gard is concise, efficient,

business-like. It's narrow surface-applied profile (1 3/4" X 12") even allows unobtrusive installation on narrow stile doors. This unique feature combined with heavy duty construction and solid-state circuitry makes Trim-Gard a practical answer to your security problems.

Count the number of unattended doors in any commercial establishment. Consider what may be going out those doors. Money. Inventory. Profits.

Now you know what to do. Install Trim-Gard.

It does the job.



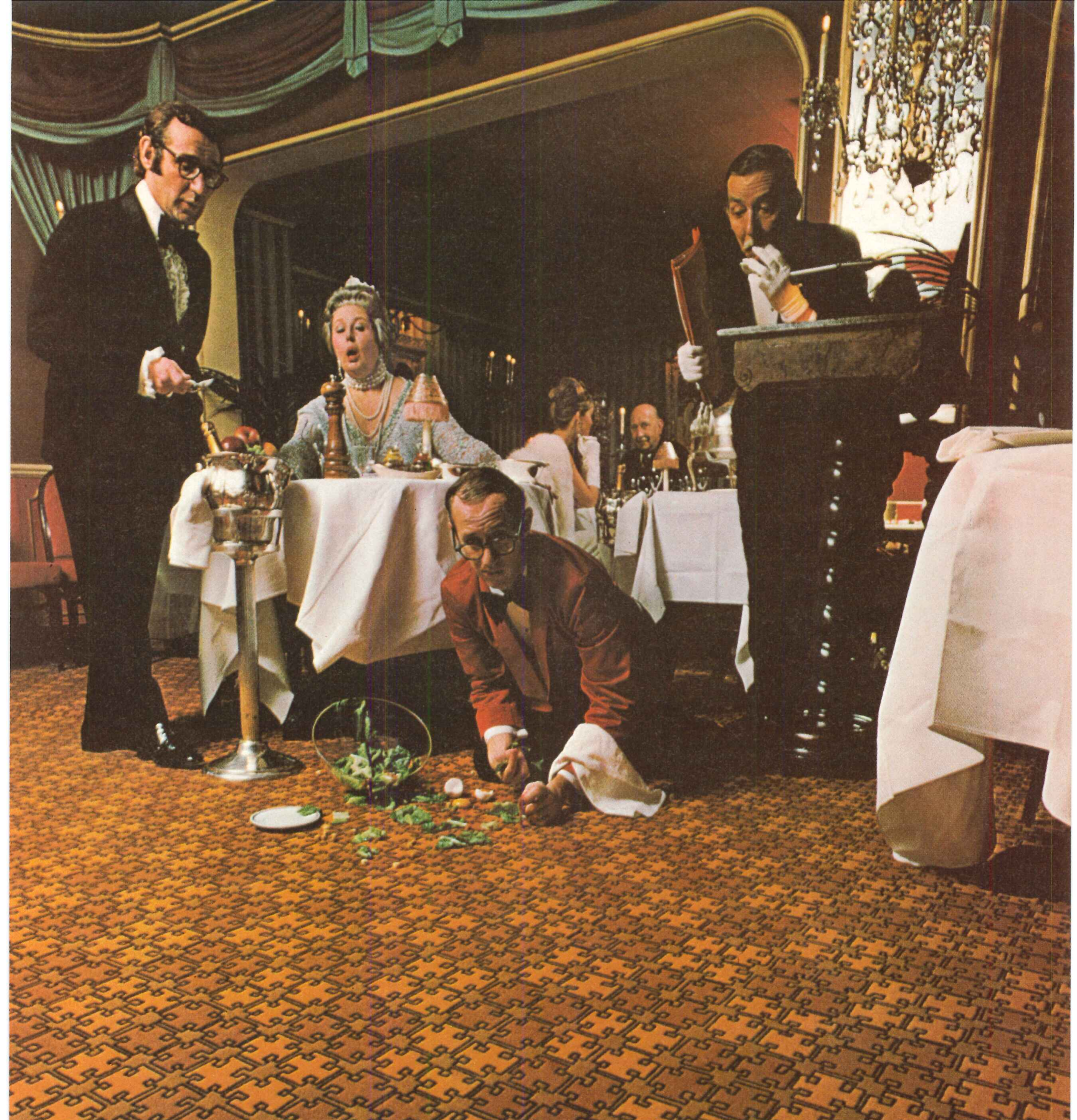
Trim-Gard by
TM

Continental Instruments Corp.

3327 Royal Avenue, Oceanside, New York 11572

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New Anso vs. Mrs. Caesar's Salad.

It's Mrs. Caesar's favorite salad. And what a masterpiece it was. Now it's a tossed salad. And Harold the waiter is in shock. Poor Harold may never recover. But that printed carpet will. It's made with new Anso—the nylon fiber that fights back. New Anso isn't about to take anything laying down. It's tough enough to resist anything a waiter

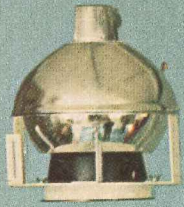


can dish out. Yet new Anso is beautiful. It has color and texture you'd never expect in a commercial carpet. And it wears so well, Allied Chemical guarantees it for five years.* If you'd like to know more about Anso® nylon, write to Allied Chemical Corporation, One Times Square, New York, New York 10036.



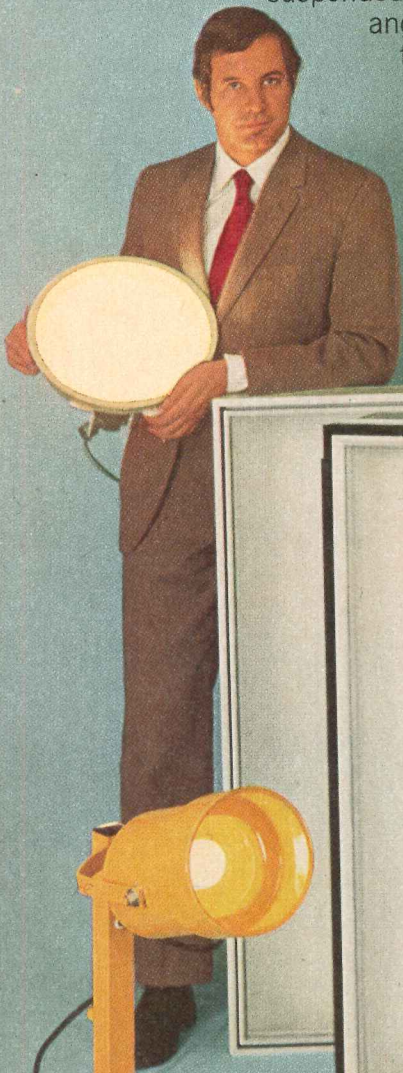
THE VERSATILE CARPET FIBER THAT'S MADE TO FIGHT BACK.

*This carpet is guaranteed by the Fibers Division of Allied Chemical Corporation. If it is properly installed and maintained and the surface pile in any given area wears more than 10% within 5 years, it will be replaced at our expense. The guarantee does not cover tears, burns, pulls, cuts, or damage due to improper cleaning agents or methods. Carpet shown: "Scandia" by Environmental Carpets, Marietta, Georgia.



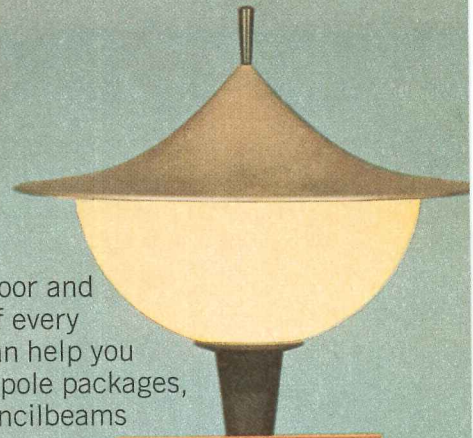
SMITHCRAFT LIGHTING

Another broad line of architecturally specified lighting for offices and plants, ranging from suspended and surface fluorescents and recessed aperture units to advanced heat-removal troffer designs.



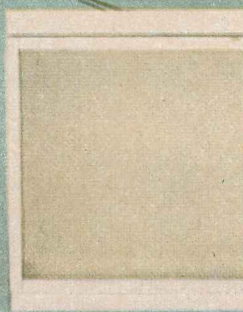
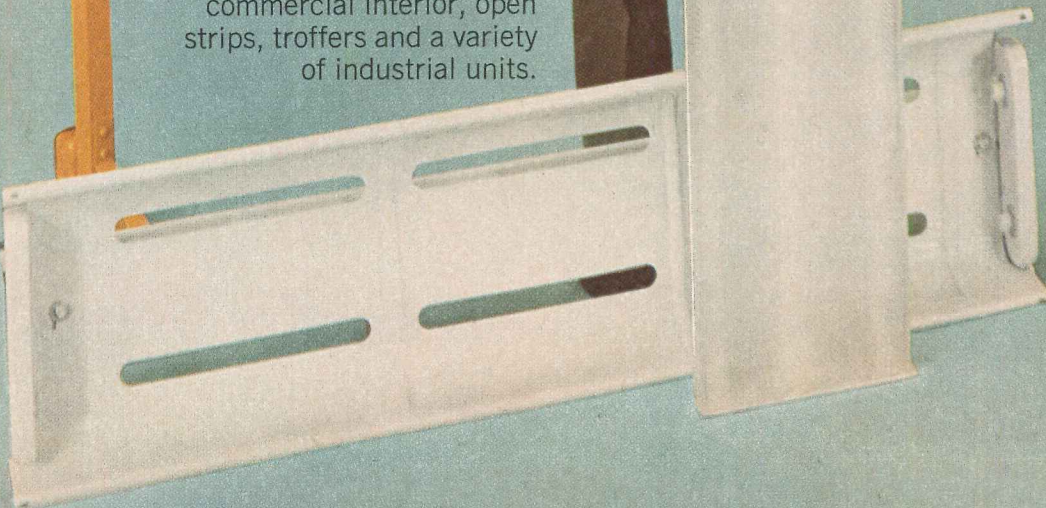
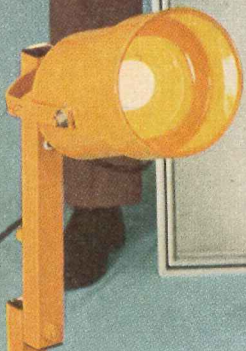
STONCO LIGHTING

Beautifully styled outdoor and area lighting fixtures of every type. Stonco experts can help you combine units such as pole packages, decorative orbs and pencilbeams to highlight buildings, patios and plazas.



L&P LIGHTING

A quick, off-the-shelf source of economical fluorescent fixtures coast to coast—including commercial interior, open strips, troffers and a variety of industrial units.



SECHRIST LIGHTING

A complete high-quality line of commercial lighting equipment, including air- and light-handling units, recessed and pendant lighting fixtures in hundreds of styles and finishes.



In area and fluorescent fixtures, one name says it all: Keene Lighting.

Working on a commercial or industrial building that requires many types and grades of specified lighting fixtures? Have a hurry-up need for off-the-shelf, economical fluorescent fixtures? Looking for ways to achieve dramatic outdoor or area lighting effects?

One of the four Keene lighting lines offers just what you need—and can deliver it to you on time anywhere in the country at competitive prices. Their names are among the best known in lighting: Sechrist, Smithcraft, L&P, Stonco. Each makes one of the most complete lines of lighting in its field, with the accent on what's new—troffer designs for handling both light and air, new vandal-proof outdoor lighting, new flexibility in adapting fixtures to meet custom designs.

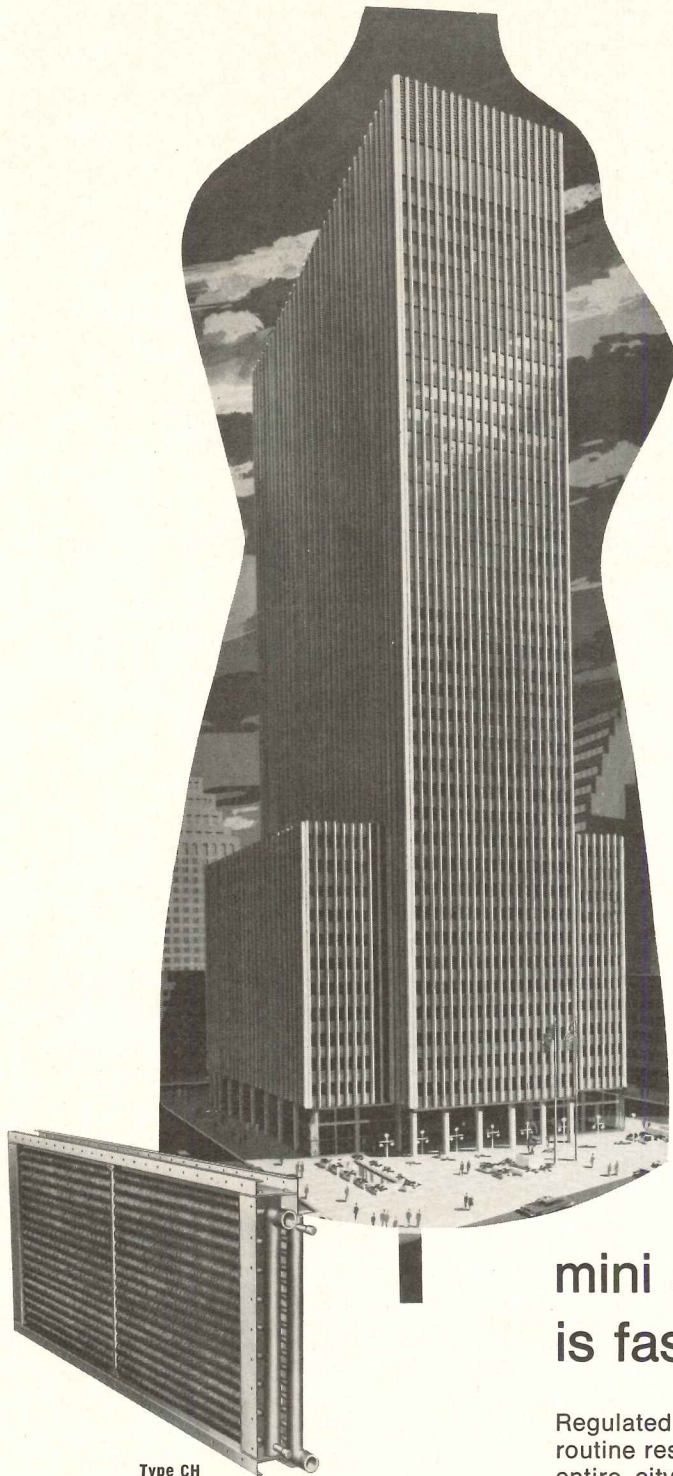
And each is now backed by the reputation and full resources of Keene, a major manufacturer of modern building products. For all you need to know about the lighting fixtures you need, write to:

- Keene Corporation, Sechrist Lighting, 4990 Acoma St., Denver, Colo. 80216
- Keene Corporation, Smithcraft Lighting, Industrial Way, Wilmington, Mass. 01887
- Keene Corporation, Stonco Lighting, 333 Monroe St., Kenilworth, N. J. 07033
- Keene Corporation, L&P Lighting, Olive Branch, Miss. 38654

KEENE
CORPORATION

We've just begun to grow.

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Type CH
Hot Water Coil
Aerofin Coils come in many
types, many configurations.

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“The World’s Fashion Center”

where

mini and maxi climate control
is fashioned by Aerofin Coils

Regulated temperature and humidity of 1411 Broadway is the routine result of Aerofin Heat Transfer Coils. 1411 occupies an entire city block in the heart of New York’s great garment industry, housing many leaders in the fashion field.

Aerofin’s advanced, smooth-fin design delivers optimum performance heat transfer capability and capacity in compact duct space — allows the use of high air velocities without excessive turbulence.

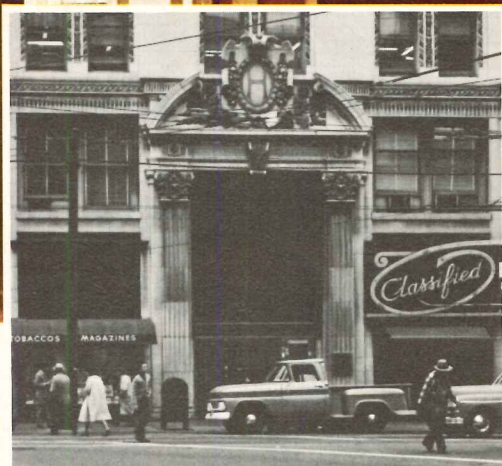
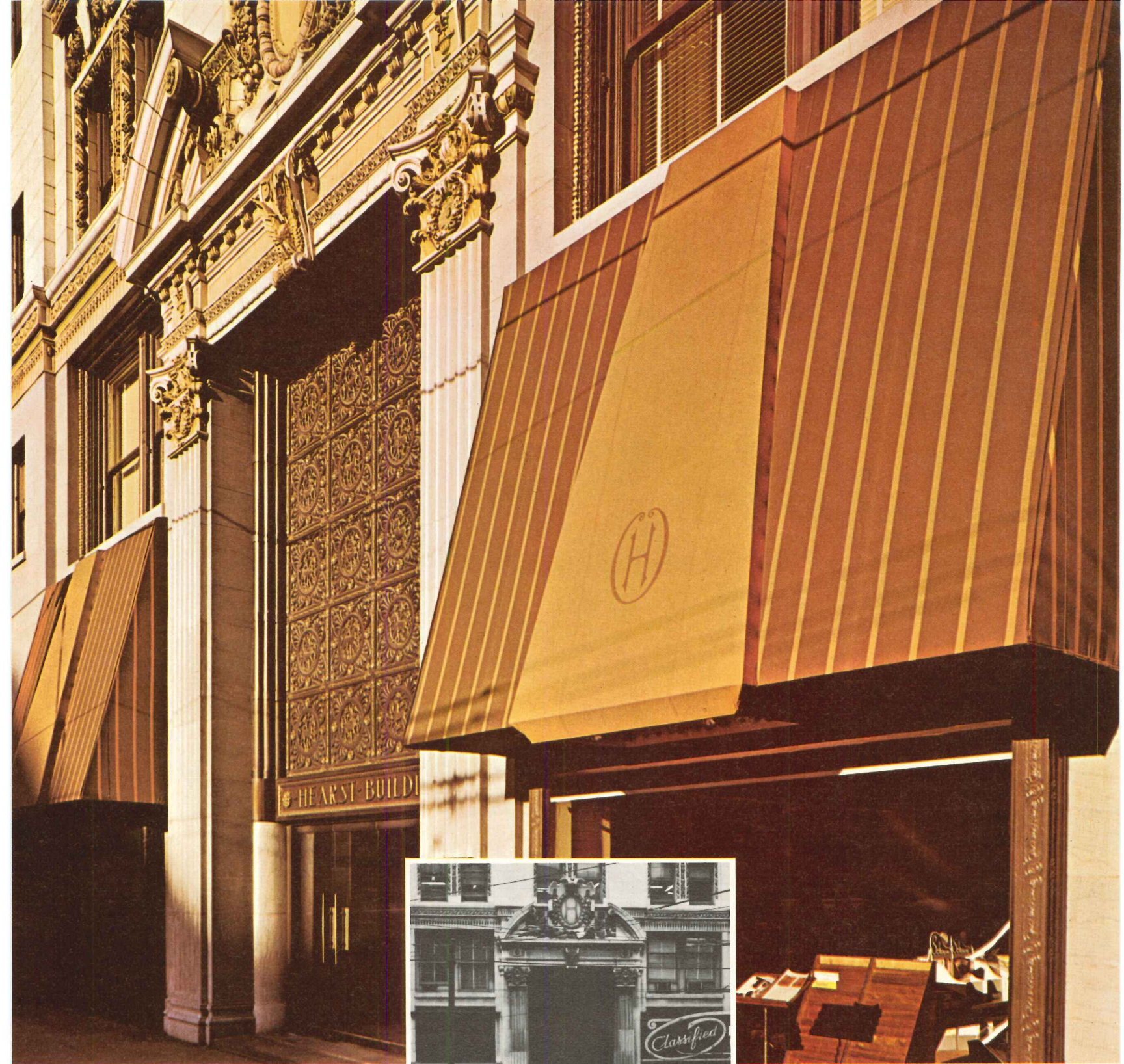
Enlist Aerofin’s broad heat exchange technology for your next custom tailored job.

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CORPORATION • LYNCHBURG, VIRGINIA 24505

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The \$1200 face lift

Here's how M. Arthur Gensler, Jr. & Associates, Architects, lifted 60 years off the appearance of the Hearst Building in San Francisco. Instead of making costly structural changes, they used canvas to cover the multiple store signs that cluttered the street floor. The result: a fresh, clean, unified look in keeping with the character of the fine old building.

Steel tubing with welded connections provides all the

support needed, so there's greater design freedom at far less cost than with heavier building materials. The fabric is a 10.10 ounce, all-cotton army duck, acrylic painted and treated to weather any outdoor job.

Whenever one of your remodeling projects calls for a complete face lift, talk it over with a canvas products manufacturer. He has what it takes to handle the whole operation without a wrinkle.

AMERICAN CANVAS INSTITUTE AND COTTON PRODUCERS INSTITUTE
Memphis, Tennessee



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FOR RENT

MODEL APT.

Our off-the-shelf elevators could help you start renting sooner.

Tenants in a garden apartment expect to enjoy "all conveniences."

And that includes elevators.

Now builders can order pre-engineered Otis hydraulic elevators.

Right from stock. Off-the-shelf.

This simplifies elevator planning and installation. And makes it possible to plan and hold a tighter construction schedule. To finish earlier.

And start renting sooner.

And to *stay* fully rented. That's another way our off-the-shelf elevators can help you.

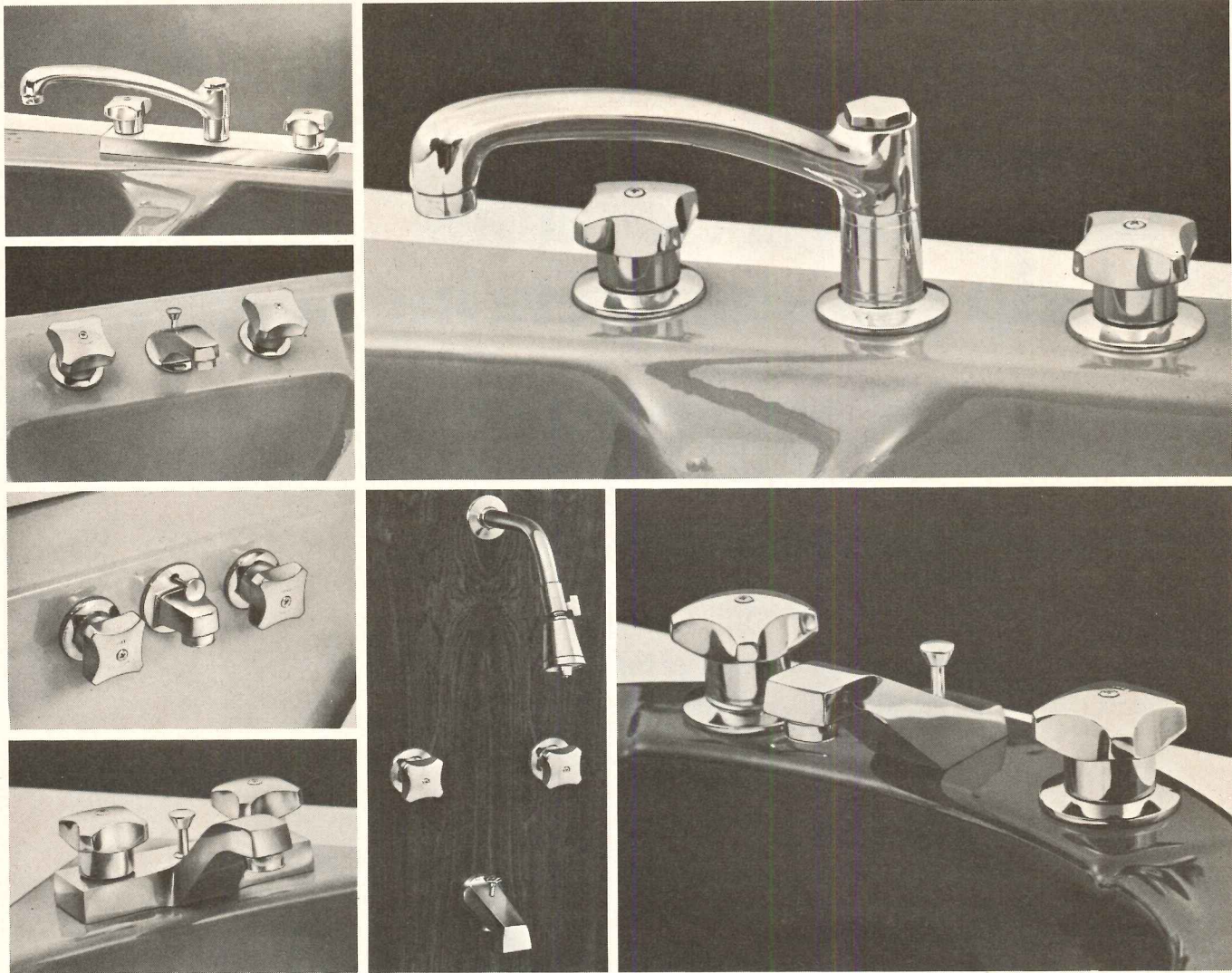
Our brochure on pre-engineered low-rise elevators gives the details.

Write on your letterhead to Dept. 16,
260 Eleventh Avenue, New York, N. Y. 10001.

Otis[®]

The Elevator Company

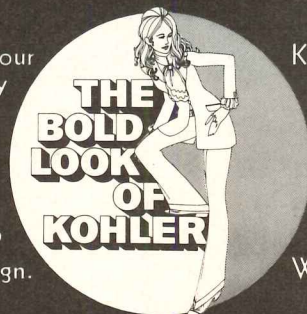
Economy. Class.



You get both with Kohler's new Triton II series.
Superb brass fittings for bath and kitchen.

Triton II. Fittings with elegance enough for your smartest baths and powder rooms. Practicality enough to team with a hard-working kitchen sink. And economy that lets you select Triton II for all three.

Top two photos show installations on Kohler kitchen sinks. Below, a variety of lavatory and shower-wall installations. What's common to all? The skilled engineering, craftsmanship, and design.



Kohler quality is your assurance of lasting value. For rugged durability, we begin with brass construction. Faucets and fittings are nickel-plated, then chrome-plated for longer, brighter life. Another plus: fittings come with Kohler's Valvet[®] unit. It prevents dripping, virtually eliminates wear on washer and seat. Triton II — another Bold Look idea that helps you sell. Write Kohler Co., Kohler, Wisconsin 53044.

Kohler Co., Kohler, Wisconsin 53044

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For more data, circle 15 on inquiry card

Quieter design by Lyon says you care!

People respond to the rich serenity of Lyon steel office furniture. Just thump any flat surface. Hear the muffled sound of double-wall construction, lavish use of honeycomb filler. See how desk drawers float soundlessly on smooth, DuPont Delrin™ glides. See how softly they close against cushiony rubber bumpers. Here too, is *personalized* comfort. With Lyon modular design, you join basic components to suit the *individual*. And whatever your choice, fresh clean lines express beautiful taste. What's more, the exclusive Lyon "lock-in-top" controls *all* desk drawers. And the smooth, lustrous finish is 100% acrylic enamel. See your Lyon dealer. Hear the sound of elegance!



Showrooms: New York, Los Angeles, Boston, Aurora, Ill.

LYON OFFICE FURNITURE®

Show how much you care-write today!

Lyon Metal Products, Inc.
651 Monroe Ave., Aurora, Ill. 60507

- I'd like the name of my nearest dealer
- Send my free copy of your full color brochure

Name _____

Address _____

City _____ State _____ Zip _____



Self-adhesive

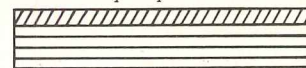
Tar bucket waterproofing is dead. Suddenly rubber sheeting and sprayed-on waterproofing methods are as old-fashioned as tarpaper.

The new way to waterproof concrete is Bituthene. Bituthene combines two of the best-known waterproofing materials — polyethylene and rubberized asphalt. One's been around for 20 years, the other for 30. But only Grace had the idea of putting them together in one factory-controlled, self-adhesive membrane.

You simply roll Bituthene out on any horizontal or vertical concrete or masonry surface and the job is done. Unlike rubber sheeting, Bituthene needs no tricky tapes — seams are self-sealing. If accidentally punctured, Bituthene heals itself and fits smoothly, easily around drains and other contours.

Bituthene's uniform thickness eliminates "puddling" and inadequate

10 mils Polyethylene Film



60 mils Rubberized Asphalt



Bituthene[®] is born.

coverage on high spots, common faults of sprayed-on waterproofing. It can withstand a 75-foot head of water; won't rot, mildew or harden; is unaffected by acids, alkalis, concrete and soil chemicals and has a water vapor transmission rate of practically zero.

Bituthene can be applied for substantially less than the cost of rubber membrane systems and sprayed-on waterproofing.

Millions of square feet of Bituthene have been used in major jobs in England, the U.S. and Canada — without a leak!

No wonder we'll guarantee it in

writing for five years whenever requested for specific construction projects.

For complete specs, write us on your letterhead. W.R. Grace & Co., Construction Products Division, 62 Whittemore Ave., Cambridge, Mass. 02140.



Just say Grace

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The no-show carpet.

Even 30 million people at McCarran International Airport can't make a carpet of Antron® look worn and dirty.

At Du Pont, we were sure Antron* nylon was the ultimate carpet fiber for any heavy traffic use. But we were absolutely positive after we got the following report from Bonded Services, the maintenance firm at McCarran International Airport in Las Vegas:

"The carpeting is wearing like iron. One area has been subjected to approximately 30,000,000 traffics and it has yet to show a single sign of wear.

"'Antron' has proved highly resistant to the appearance of soil. The actual cost of maintaining the carpeting versus tile has been at least 40% saving in labor and material. At this date, we don't anticipate replacing the carpet. It might even double our original five-year wear prediction."

Can you have any doubts after this kind of rave? Wherever you're considering carpet, consider "Antron". No matter how light, how bright the color, no matter how hard the wear, a carpet with pile of "Antron" will keep looking cleaner, fresher, newer longer than you ever thought possible. If you have any questions, get in touch with us. Du Pont, Contract Carpet Specialist, 308 E. Lancaster Ave., Wynnewood, Pa. 19096. We're convinced. Let us convince you.

*Du Pont registered trademark. Du Pont makes fibers, not carpets.



Better things for better living...through chemistry



Tectum Full-Span Corridor Panels. They're even kid-proof.

You know how boisterous students can be. They even bounce books off ceilings. So you need a material that can take it. Tectum can. Available in natural or painted finish, its textured surface of resilient wood fiber offers a degree of protection not found in any other acoustical product.

And Tectum holds down noise, too. Tectum® Full-Span Corridor Panels

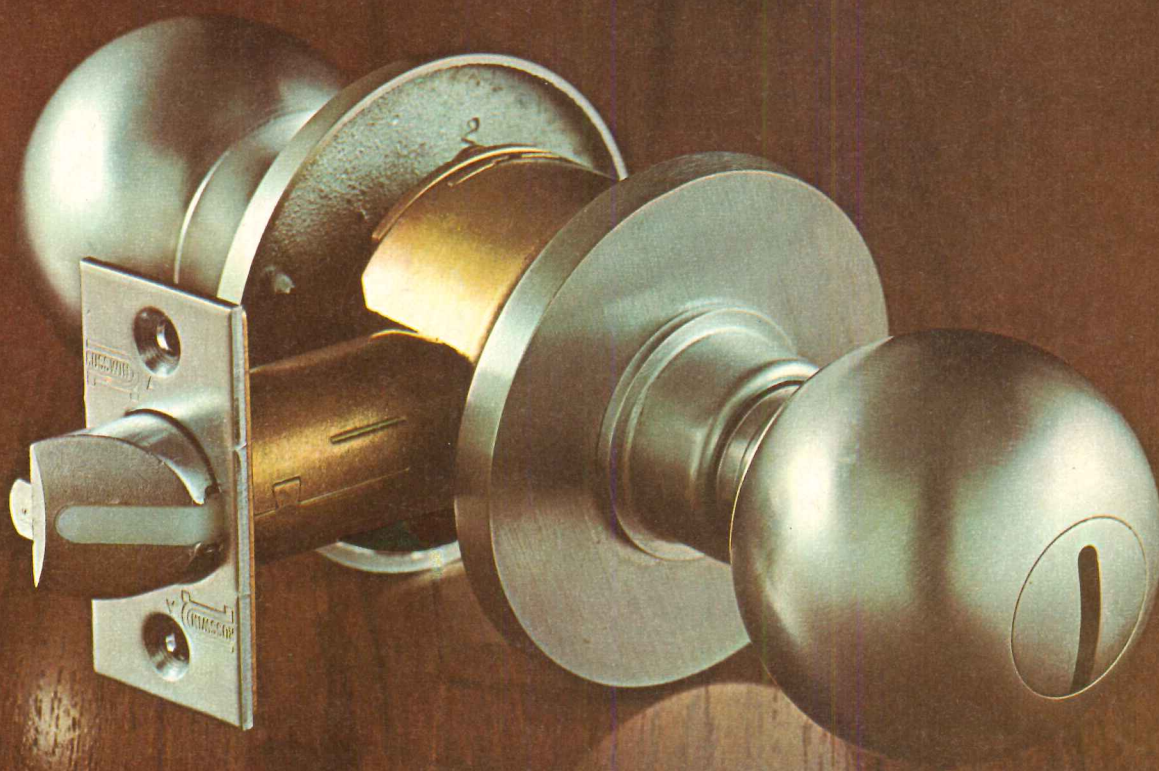
Coping with kids is a National responsibility.
Gypsum Company

are non-combustible and completely accessible. Reaching services in the plenum is a simple matter for two men.

Length of panels ranges from 6 feet all the way up to 12 feet long. They go up fast. Easily worked on the job to accommodate recesses and light fixtures. So versatile and practical you'll want to specify them for offices, public buildings and high-rise apartments, too.



The name Gold Bond identifies fine building products from the National Gypsum Company. For further information on Tectum Full-Span Corridor Panels, write Dept. AR-60T, Buffalo, New York 14225.



Well rounded

Smoothly sculpted to please as well as protect, the STILEMAKER[®] lockset is a beauty for all-around heavy duty service in schools, apartments, and office buildings. Unmistakably Russwin.

Russwin, Division of Emhart Corporation, Berlin, Connecticut 06037.

In Canada — Russwin, Division of International Hardware. Ronde Design.



Keep the bad guys out!

Here's good news for owners and tenants of shopping centers, shipping terminals, warehouses, apartment house garages...and their insurance companies.

A Square D security control station can make it virtually impossible for anyone to tamper with the opening or closing of any electrically operated door.

You're protected two ways. First, this new industrial quality control station is supplied with a key which must be used to open or close the door.

Second, even if someone removes the cover screws in an attempt to jumper the electrical mechanism, a special mechanical interlock will hold the cover securely in place.

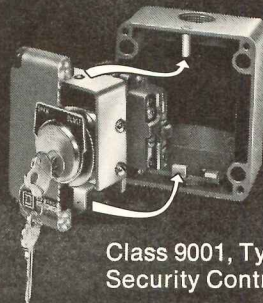
There's no way around it. And the only way you can release the interlock is with the key.

A standard builder's hardware type lock is furnished with the station. This permits keying into other locks, if desired.

Both flush-mounted and surface-mounted stations are available, with or without a push button to stop the travel.

Be sure to specify Square D security control stations for your doors. And get a good night's sleep.

For more information, write Square D Company, Dept. SA, Milwaukee, Wisconsin 53201.



Class 9001, Type KY-198
Security Control Station.

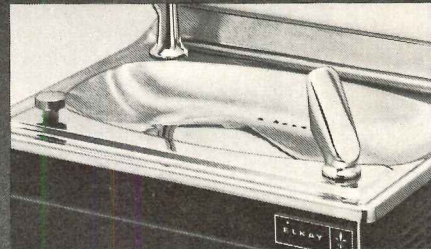
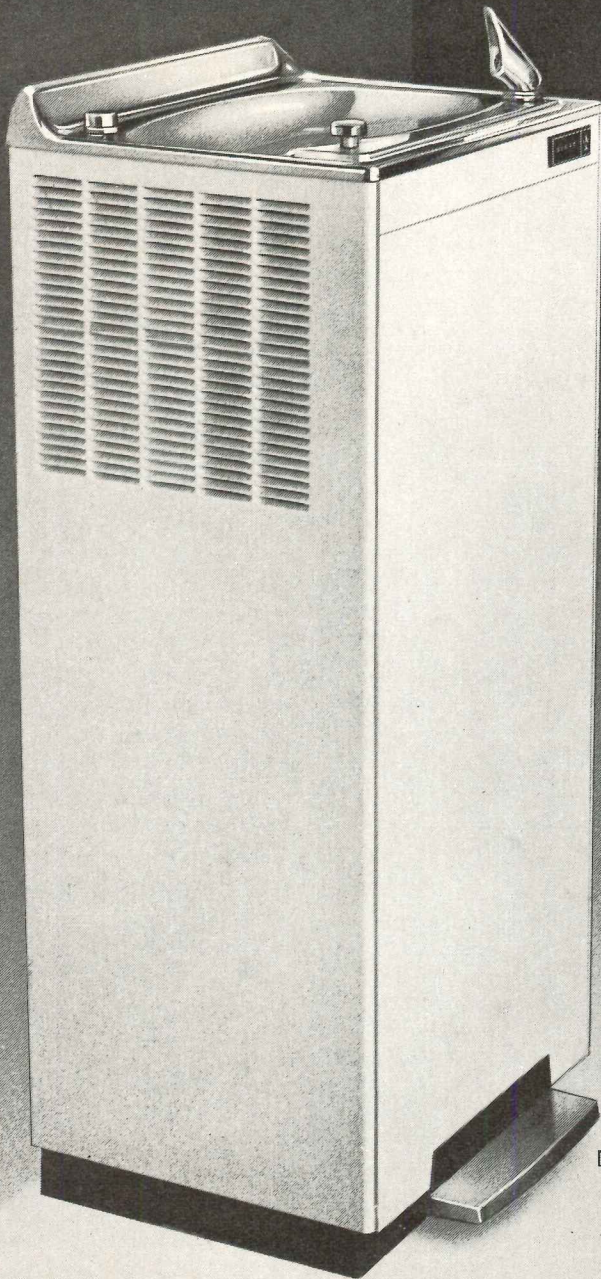


SQUARE D COMPANY

Wherever Electricity is Distributed and Controlled

Elkay water coolers can be as colorful as you like. Nine vinyl colors, and two in baked enamel are immediately available and offer almost infinite decorative variety at no extra charge. Use this new idea in color flexibility on corner models, floor and wall models, as well as semi-recessed coolers. Lustrous stainless steel panels are available at a small added cost. Accessibility of plumbing and electrical connections on all models provides new ease of installation. In fact, the easiest—and fastest.

from the ELKAY® family of firsts




Cascade design, anti-splash basin with vandal-proof drain. Sanitary hooded stream projector with remote control button

Dual foot control



For complete information write for Catalog No. DFC-4 or call Customer Service Dept., Area Code 312-681-1880. ELKAY MANUFACTURING COMPANY, 2700 S. Seventeenth Ave., Broadview, Ill. 60153

see our catalog in Sweet's 

For more data, circle 25 on inquiry card

News in brief

Architects attending the 1970 convention of the American Institute of Architects in Boston June 21-25 will be asked to vote on a major revision of the A.I.A.'s ethical standards, a proposed dues increase to finance expanded services to membership and government-related programs, and a proposed expansion of membership to permit related professionals to join the A.I.A. as Allied Professional Associates. A.I.A. President Rex W. Allen said, "We want to . . . set up a legislative information service to pool legislative information and strategy on the state and municipal level, and we plan to strengthen and expand our public relations and advertising programs."

The Dodge Construction Index remained at a record high of 208 in March (the average of 1957-59 is the 100 base for the index). However, the much expanded volume of non-building construction accounted for much of the rise. Dodge's chief economist, George Christie, predicts housing will recover later this year, while the pace of industrial and commercial building will slacken. Mr. Christie says there will probably be a small decline this year in over-all construction. The seasonally-adjusted Dodge Index of architect-planned construction declined in March for the second consecutive month to 266, still about even with the average level for 1969.

We face a "housing calamity", says the American Institute of Architects, unless Congress funds housing programs more fully. Architect Jeh V. Johnson, an A.I.A. witness before a House Appropriations subcommittee said, "Every architect I know who is involved in housing has in his office several hundred, in some cases several thousand, units of housing ready and waiting for Federal funds." More than 130 housing bills have been introduced in this Congress. It is probable that two dozen of these will get primary attention after House subcommittee hearings this month.

Funds for HUD's Office of Research and Technology have been slashed by the House Appropriations Committee, providing only \$30 million for this year, just over half the requested amount and \$5 million less than needed for Operation Breakthrough alone. HUD remains optimistic, however, that the Senate will raise the amount. HUD still has enough money to sign contracts with 22 Breakthrough housing producers.

The Public Buildings Service of the General Services Administration has been advised to press for Congressional approval of lump-sum appropriations or for a revolving fund for all future projects. The study group report which made these recommendations for "phased construction" argues piecemeal funding can cause year and a half lapses between selection of a project and commencement of design, and suggests architect and engineer selection be made before funds for design are appropriated.

Federal support for 10 new communities in the next five years has been urged in a report by HUD and the President's Urban Affairs Council. Administration experts have suggested a \$220 million program for cities from 75,000 to 100,000. Democrats in Congress have several new town proposals of their own, some of which certain HUD officials estimate could cost as much as \$22 billion in the same five-year period.

Restrictive building codes may be on the way out, according to FHA Commissioner Eugene A. Gullledge. Mr. Gullledge said HUD's Operation Breakthrough was one of the reasons codes were being re-examined, pointing out that some 70 cities had expressed willingness to waive all building code restrictions if they received one of the Breakthrough sites—and 10 cities had so far received the designations and waived the codes.

The American Institute of Architects has announced no replacement speaker for Walter Reuther at its June convention. Mr. Reuther was killed in a plane crash May 9. It is expected Senator Edmund Muskie will make the only guest speech (May, page 35). Architect Oskar Stonorov died in the same crash (see story on page 36).

The 1970 Shinkenchiku residential design competition will accept applications from August 1 to August 31. A total of one million yen (\$2,777.00) will be awarded. Write Shinkenchiku-sha Co., Ltd., 31-2, Yushima 2-chome, Bunkyo-ku, Tokyo, Japan.

SoHo: artists move into New York's cast iron district

New York City may be "the art center of the world," but try finding a place to paint in! The artists have found that the lofts of SoHo (for "south of Houston Street") make ideal live-in studios, but it has been an uphill fight to get the right to use them. The area, which contains many of the country's finest examples of cast iron construction, is zoned for light industry. A major reason for its preservation was the plan—on the books for forty years—to put a crosstown expressway through it. Land values stayed low, and developers looked elsewhere. That plan was defeated last year, adding a new element of risk—possible rezoning and demoli-



Jonathan Hale

but landlords have sometimes used it as an excuse to evict the remodeler and double the rent. In such cases, there is theoretically no recourse for the illegal tenants, although the SoHo Artists Association is now giving legal aid. Many artists are continuing to lay low until the city puts their right to live in SoHo in writing, as was the case with the owner of the space above, who asked to remain anonymous. But the residents of 16-18 Greene Street used their buildings as the center of a SoHo Artists Festival last month. Twelve artists own the two buildings co-operatively, each having bought and remodeled a floor through. Ceiling heights range from 19 feet on the ground floor to 11 feet on the top. A 20x100 foot loft at number 16 cost artist Michael Green about \$4,500 plus maintenance and another \$10,000 in remodeling; the bare necessities, he said, cost about \$3,000. In SoHo these days, that's beginning to look like quite a bargain.

Stonorov killed in Reuther crash

Oskar Stonorov, architect, city planner and sculptor, died May 9th in the plane crash that also killed Walter Reuther. They had been on their way to the newly-completed United Auto Workers Family Education Center near Onaway, Mich., which Mr. Stonorov had designed. Mr. Stonorov also designed the union headquarters in Detroit.

Oskar Stonorov was born in Frankfurt, Germany in 1905. He came to the United States in 1929, where, in 1933, he designed the first major public housing project of the New Deal in Philadelphia; he continued to design public housing with such partners as George Howe, Louis Kahn and Alfred Kastner. Mr. Stonorov was active in civic and professional organizations in Philadelphia and was a member of the American Institute of Planners.



Jonathan Hale

tion—to the lives of the illegal artist inhabitants.

Artists suggested a way out of the delicate situation would be for the city to declare art a light industry, with residence a concomitance. This would keep residential developers out and preserve the industries. The city says it is behind the artists, and, for the moment, is leaving them alone until the planning commission can decide how best to modify the zoning. The SoHo Artists Association is making a survey for the city to find out exactly how the area is used.

The luckier artists buy their "raw space" and remodel it. Remodeling and installation of fixtures is almost always necessary,



Jonathan Hale

Before coming to the United States, Mr. Stonorov studied with sculptor Aristide Maillol. He made many sculptures in recent years, often embellishing his own buildings (below).

In 1953, he joined in partnership with J. Frank Haws in Philadelphia.



Sculpture by Oskar Stonorov at the Plaza Apartments, Philadelphia, designed by Stonorov and Haws

Pittsburgh bridges recorded

Three bridges being demolished in Pittsburgh have been recorded in photographs and measured drawings in a joint project of the Pittsburgh Chapter of the Pennsylvania Society of Professional Engineers, the Pittsburgh History and Landmarks Foundation and the Department of the Interior's Historic American Engineering Record (April, page 41). H.A.E.R. intends the project to be a prototype for the nation, and will publish the material as a book.

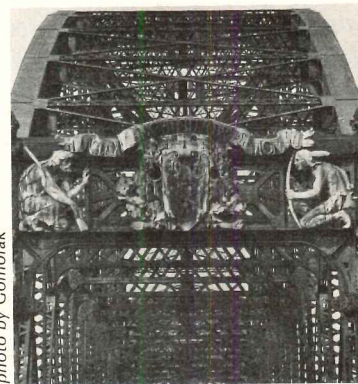


photo by Gomolak

The Rise of an American Architecture, 1815-1915, exhibition opens

A traveling exhibition organized by architectural historian Edgar Kaufmann has opened at New York City's Metropolitan Museum of Art. The show is exten-

sive, but streamlined (Frank Lloyd Wright coined the word) so it can be easily transported; it consists almost entirely of large color and black and white transparencies.

Rather than diffuse itself in a general survey, the exhibition concentrates in detail on a relatively small number of examples. Among commercial buildings, the 1828 Providence Arcade (below), by Warren and Bucklin, Adler and Sullivan's Auditorium Building in Chicago (1886-90), and Daniel Burnham's Flatiron Building (New York, 1902) are emphasized. The domestic architecture section concentrates on Andrew Jackson Downing, Henry Hobson Richardson, and Frank Lloyd Wright. Parks, an often-neglected high achievement of 19th-century design, include



Elliott Ewitt

New York's Central and Prospect Parks, by Frederick Law Olmsted, and the Chicago park system.

The show ends with a six-screen film sequence, produced by Cinemakers, Inc., showing architectural monuments toppling under the wrecking ball to the accompaniment of a tolling bell.

The exhibition is sponsored by The National Trust for Historic Preservation and the New York Chapter of the American Institute of Architects as well as the Museum.

Mr. Kaufmann has edited a book by the same title, published by Praeger, which consists of four essays: "The American Influence Abroad," by Henry-Russell Hitchcock, "The American City: The Ideal and the Real" by Albert Fein, "A New View of Skyscraper History," by Winston Weisman, and "American Houses: Thomas Jefferson to Frank Lloyd Wright," by Vincent Scully.

Architects march for Indochina peace

In what almost amounted to a spontaneous demonstration, about 1,000 architects carrying hastily made black banners marched down New York City's Fifth Avenue one day last month.

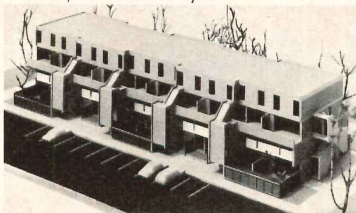


Norman McGrath

Boston community gets the housing it wants

After years of struggle and controversy, the North Harvard Urban Renewal Project (below), PARD Team, architects, is taking form near Boston. The 5.7 acre site was first designated in 1964 for high-rise, high rent apartments by the Boston Redevelopment Authority. But local residents, mindful of a huge recent Boston renewal project which had leveled a low-middle income neighborhood, the West End, replacing it with luxury towers, fought the proposal. The B.R.A. backed down, and the neighborhood formed a non-profit corporation made up of two Protestant churches, two Catholic churches, a synagogue and several local civic associations. Even then, six families living on the site fought eviction all the way to the U.S. Supreme Court, where they were denied a hearing.

PARD designed a 212 unit project of duplexed row housing clustering tightly around a central green space, turning its back on nearby industrial buildings. In order to expand on the minimum of space and amenities allowed in the FHA 221(d) (3) program, an economical system of prefab components was used for virtually the entire building, from bearing walls to floors, to stairways.

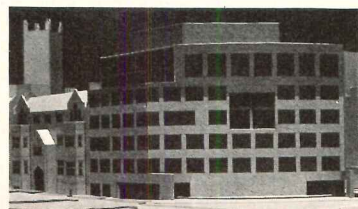


A.I.A. Student Chapters to urge strong birth control stand

"Human proliferation is an emergency problem bordering on non-reversibility," begins a position paper to be presented at the American Institute of Architects' June convention by the Association of Student Chapters/A.I.A. The paper urges the A.I.A. to endorse all methods of voluntary birth control and development of an economy not contingent upon increasing consumption. A.I.A. president Rex Allen has expressed a similar economic view (February, page 36). The paper asks that individual architects commit themselves to having families of two or fewer children. It points out the U. S. population could be as high as 361 million in thirty years, according to Census Bureau projections. "In response to . . . this," says the paper, "planning, including that of the A.I.A., seems to progress as though the forecasts are inevitable, a procedure that can lead to self-fulfilling prophecies."

Venturi and Rauch win Yale Math competition

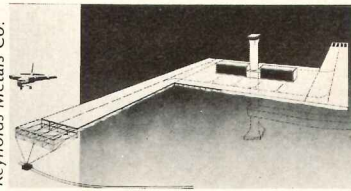
Yale will build Venturi and Rauch, Architects' Mathematics Building design, the result of a national competition (October, page 35). The building, while fitting on an extremely restricted site using railroad air rights, is designed to harmonize with the older structure to which it is an addition, and to keep the scale of its surroundings, preserving trees and a garden. 468 entered.



Student STOL port wins prize, meets need

Two students at the University of California, Berkeley have won a \$5,000 architectural prize for their design of a floating airport in San Francisco Bay for "Short Take-off and Landing" aircraft (above right). Reynolds Aluminum gives out the prize; the

American Institute of Architects administers the competition. The students, Joe Y. Eng and



Reynolds Metals Co.

John P. Ahrendes, designed the airport as a way to meet the urgent need for expansion of facilities in the area. The floating airport is basically an aluminum space frame, with added strength provided by struts and high-tension cables. Large inflated bags would give buoyancy. It could be rotated 90 degrees. Said the A.I.A. jury, headed by Walter B. Sanders, F.A.I.A., "The design met all utilitarian requirements, yet showed remarkable ingenuity in its adaptation to the site, the conservation of land and the preservation of the natural environment."

A three-day demonstration of vertical and short take-off and landing aircraft was held in San Francisco last month, sponsored by a group of civic, business, and government leaders. They are looking into the feasibility of constructing a V/STOL facility or facilities as part of an integrated Bay Area transportation system. A Stanford Business School task force is compiling statistical data on V/STOL feasibility for the area.

Symbol denotes handicapped accessibility

Buildings providing for the physically handicapped—now a legal requirement in many states—can denote the fact with a symbol (below) officially adopted by Rehabilitation International. The sign was designed by a student at the Scandinavian Design Seminar in Stockholm.



A.I.A. and N.C.A.R.B. recommend major registration reforms

Major revisions in the licensing and registration of architects have been recommended by study panels of the American Institute of Architects and the National Council of Architectural Registration Boards. Recommendations include: permission for an architect "to have a financial interest in the manufacture, sale, or installation of a component or process that might be used in a structure for which he is the architect;" minimum age to practice of 21; no U. S. citizenship requirement; permission to practice out of state; and radical simplification of state registration examinations.

Reformers go to court, get backing

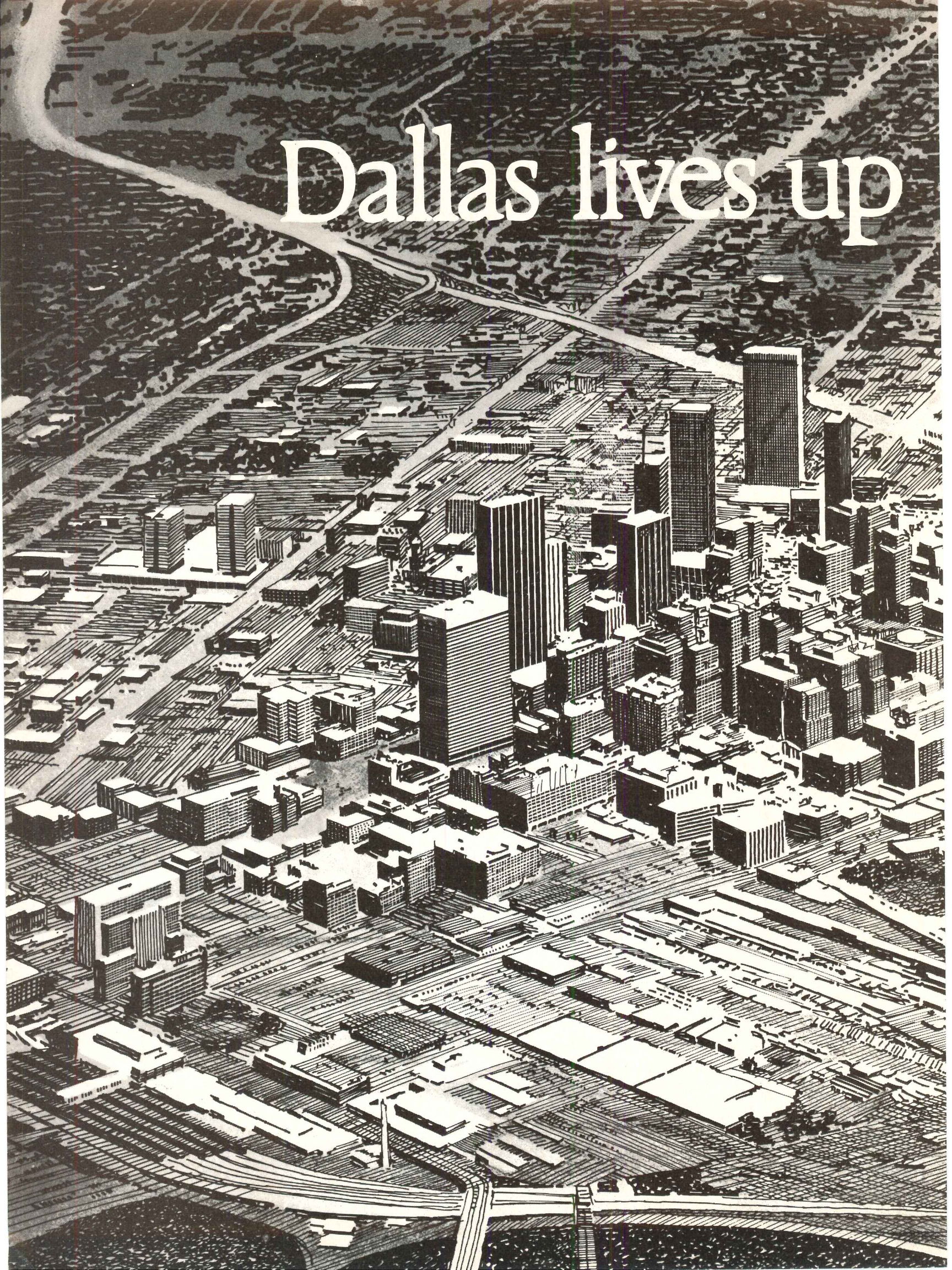
Ten young Cambridge, Mass. architects have gone to court to reform Massachusetts registration laws now, unwilling to accept NCARB's mid-1970's deadline (March, page 36). They have the strong support of 11 prominent New England architects, including Hugh Stubbins, José Luis Sert, Charles Moore, and Benjamin Thompson. A hearing was held in Boston's Federal Court last month. The group is now awaiting a ruling by the three judge court.



Sullivan chandeliers weighed in place

The 18-foot chandeliers of Louis Sullivan's Security Bank and Trust Co. in Owatonna, Minn. have been in place since 1908. As part of a general check of the building's soundness, it was recently decided to weigh them. The Owatonna Tool Co., a designer and manufacturer of hydraulic equipment, made the measurement by lifting a chandelier 1/32 of an inch. It weighed 4,942 pounds. The bank was found to be in mint condition.

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FOURTEEN RECEIVE THIS COUNTRY'S HIGHEST ARCHITECTURAL AWARDS—

The American Institute of Architects' 1970 Honor Awards will be presented at the Boston convention this month. They were chosen from a record 478 entries by a jury composed of Francis D. Lethbridge, F.A.I.A., Edward C. Bassett, A.I.A., Nathaniel C. Curtis, Jr., F.A.I.A., Hugh Newell Jacobsen, A.I.A., and I. M. Pei, F.A.I.A. Following the precedent set last year, each of the buildings was visited by at least one of the jurors before its ultimate selection. According to the A.I.A., the jury was disappointed that relatively few large residential projects were submitted, and that many of those it did receive suffered from too restrictive programs. All the winners shared "a recognition of the inherent qualities of the site, a clear, consistent use of materials, the development of form as a response to the nature of the problem, and that indefinable extra measure of wit, art, or skill which lifts a superior performance above those that are merely competent," according to the jury.

Several winners not shown on these pages were previously

published in the RECORD. **Lake Point Tower** (October, 1969) Schipporeit-Heinrich, Inc., architects, "creates . . . a fantastic image which is anonymous, technological, and, above all, a visual instrument responding constantly to the sky and light," according to the jury. The jury said of the **Herman D. Ruth Residence** (February, 1970, page 127), Donald E. Olsen, architect, "There is a sure and knowing hand in the massing, quality of space and the general detailing—thoroughly comfortable and at home in the employment of a recognizable contemporary vernacular." Of Marcel Breuer & Associates' **Whitney Museum of American Art** (October, 1966, page 40), the jury said, "A bold manipulation of form and space, this building employs handsome materials appropriately and is beautifully detailed." The jury was impressed by the fact that the interiors of the **Milwaukee Center for the Performing Arts** (November, 1969, page 148), Harry Weese and Associates, Ltd., architects, "strive . . . for an air of festive opulence."

Ernest Braun



The Cannery, San Francisco, Joseph Esherick and Associates, architects, was converted from a Del Monte fruit cannery into a complex of eating, drinking, shopping, and entertainment areas in the middle of the city. Signs were played down, letting the architecture do the selling and the multiple levels and complexities of the old buildings were used to create a feeling of richness and excitement.

W. Cox and S. Cox



Phillips/Brewer Residence, Chevy Chase, Maryland, by Hartman-Cox, architects, is according to the jury, "a tour de force, a 'once only' design which springs directly from the

program and the problems posed by an almost impossible site. The plan and section are not only creative but almost fiendishly ingenious." Privacy was a major design factor.

Jeremiah O. Bragstad



Julius Shulman



Squaw Valley Cable Car Terminal, Olympic Valley, California, Shepley Bulfinch Richardson and Abbott, architects, had to be a fireproof, earthquake-resistant building, supporting all the motive machinery for two 120-passenger cable cars, while serving as the anchor for the whole system, also providing ancillary facilities such as a ski rental shop.

W. J. Milligan Vacation Residence, Sea Ranch, California, by McCue Boone Tomsick, architects, was conceived to be an unobtrusive part of the landscape. "Placed on a site of exquisite beauty, this house is an excellent example of architecture being appropriately modest," said the jury.



Orlando R. Cabanban

Lincoln Elementary School, Columbus, Indiana, Gunner Birkerts and Associates, architects, provides an urban K-6 elementary school plus six education classes for mentally retarded and physically handicapped children, while lending itself to various community uses, such as public meetings and play facilities. "Plan, section, general development, and detailing are very original in quality," said the jury.

Norman McGrath



Robert Jacobson

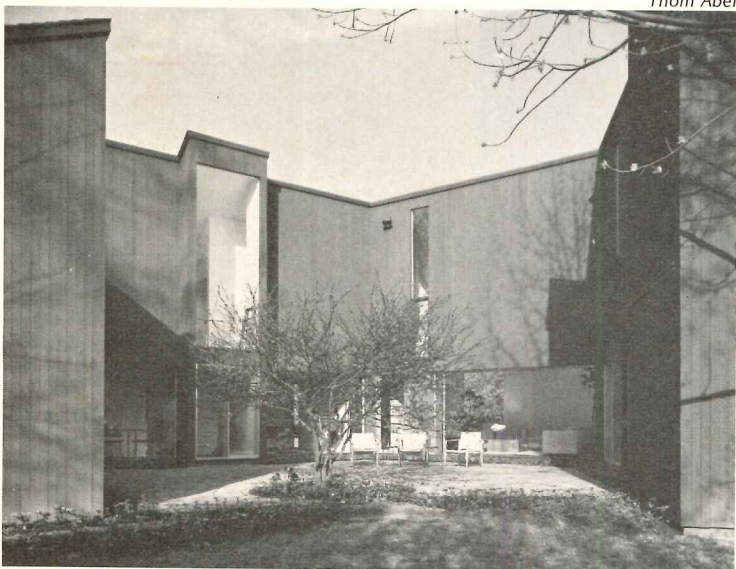
Pedestrian Skyways, Minneapolis, Minn., The Cerny Associates, Inc., architects, has a quality of design which "makes it not only worthy of celebration but, one hopes worthy of emulation as a prototype," according to the jury. "Especially important in this case are those details which permit the design to remain intact while at the same time adjusting to necessary changes in elevation and alignment."

cording to the jury. "Especially important in this case are those details which permit the design to remain intact while at the same time adjusting to necessary changes in elevation and alignment."



National Collection of Fine Arts and National Portrait Gallery, The Smithsonian Institution, Washington, D.C., Faulkner, Stenhouse, Fryer, and Faulkner, architects, preserves the old Patent Office building, which was transformed from office use to a museum for two important collections without changing its essential character. The jury called it "a noble Greek revival building with remarkable interior spaces," whose preservation is "to the everlasting credit of the Smithsonian Institution."

George Cserna



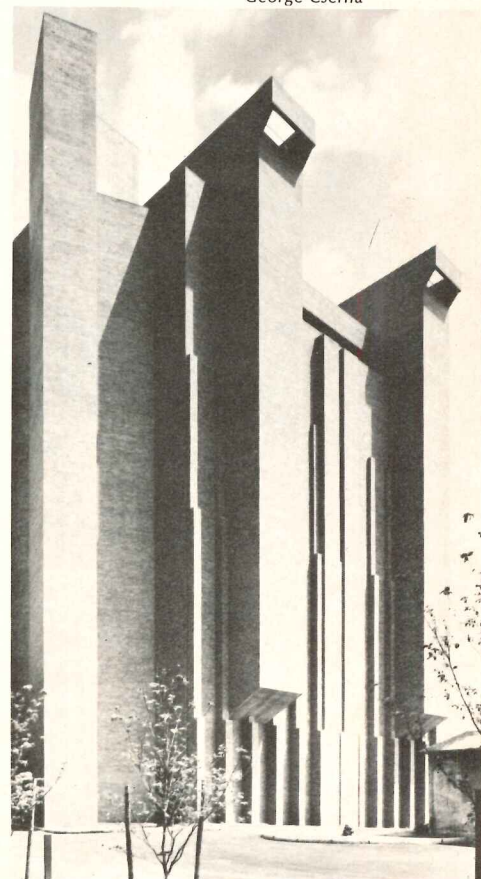
Thom Abel

Don M. Hisaka Residence, Shaker Heights, Ohio, Don M. Hisaka and Associates, architects, "attempts to resolve architecturally a contemporary residence to relate comfortably with the mature, conservative atmosphere of the neighborhood," according to the architect. The jury's comment: "to recognize the species is to know that this solution is the result of an inordinate amount of work, far more than shows."

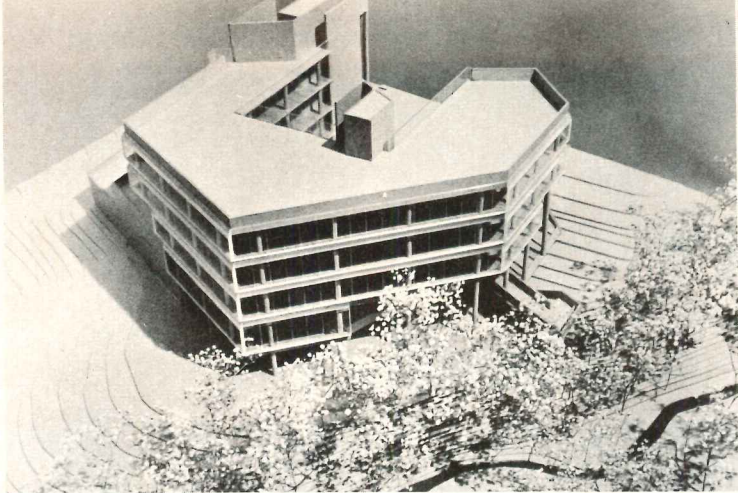
Becky Young



Bancroft Elementary School, Andover, Mass., by William D. Warner, architect, "manages to be fanciful and imaginative within the child's context without becoming overtly corny. . . . It deserves a special commendation for crawling out on architectural limbs," said the jury. The program called for a public school for 550 pupils with special spaces for the mentally retarded, the physically handicapped, and the exceptionally bright.



Bradfield and Emerson Halls, Cornell University, Ithaca, New York, Ulrich Franzen & Associates, architects, "involves a complicated program containing 210,000 square feet of graduate research laboratories, administrative offices, undergraduate teaching laboratories and related spaces within a strict budget."



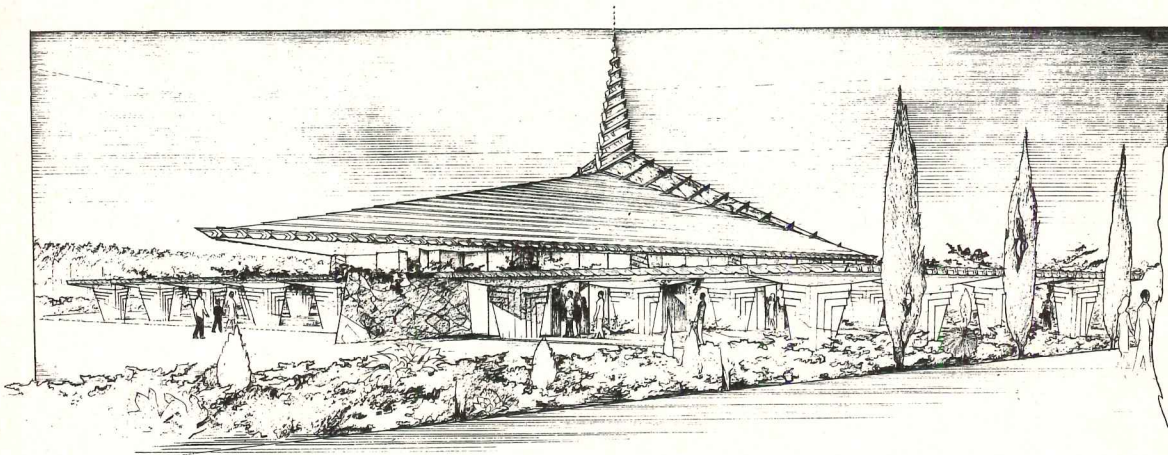
Adult Learning Laboratory of The American College of Life Underwriters at Bryn Mawr, Pa., Mitchell/Giurgola Associates, architects, will contain advanced electronic equip-

ment and experimental facilities. The building will house educators, researchers and technologists, and will include a T.V. studio, all by the side of a picturesque pond.

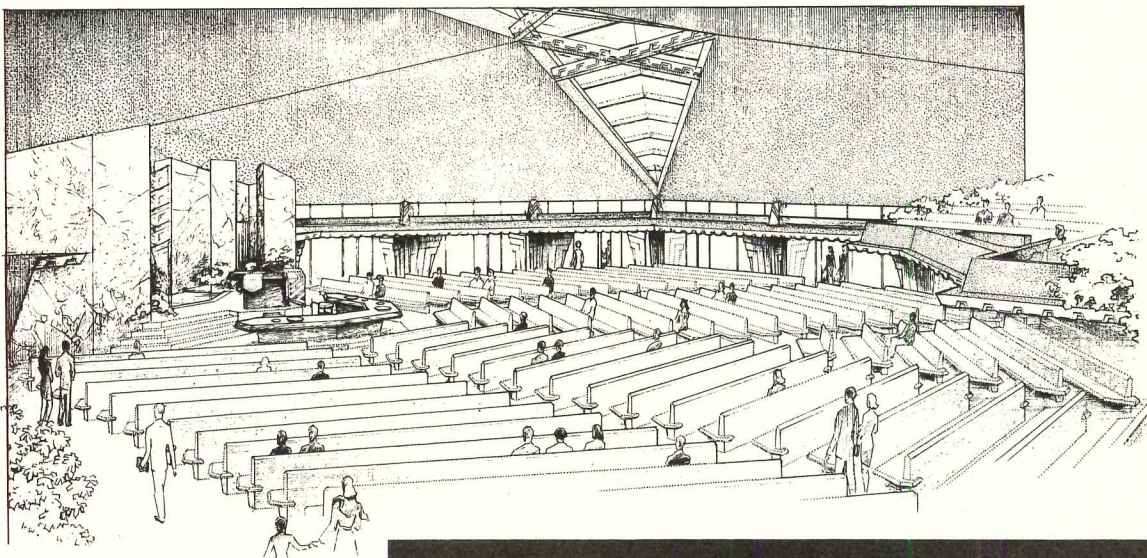


J. Alexander

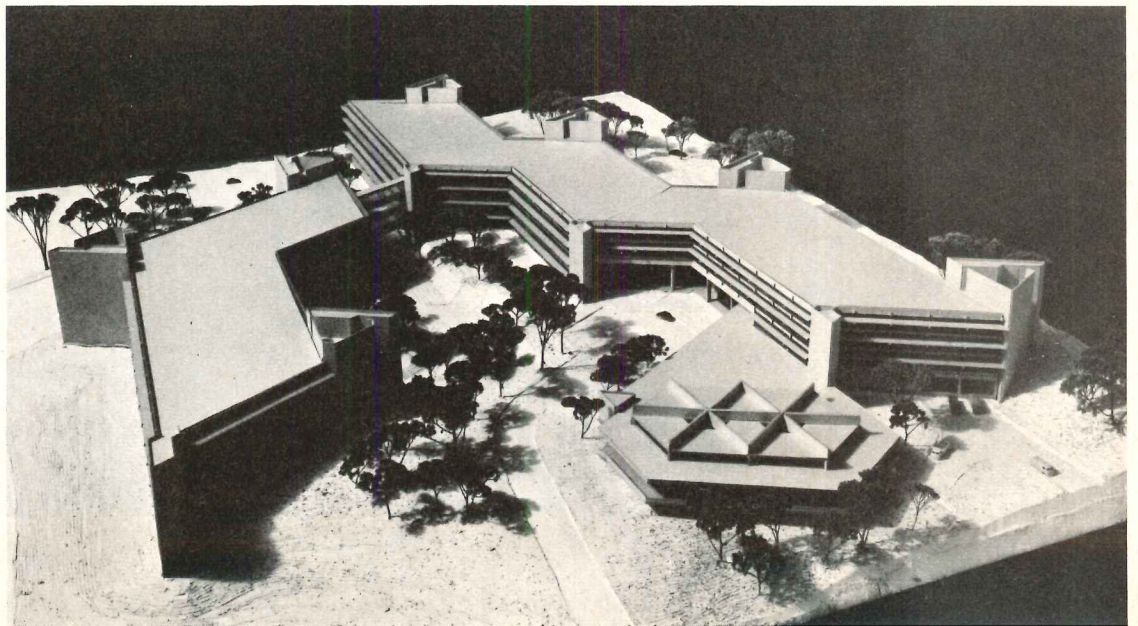
Library at Georgetown University, Washington, D.C., by John Carl Warnecke, is designed to harmonize with its Victorian neighbors. The library, whose modernity raised some controversy, seats 1500 people and can house a million volumes. It will also contain faculty offices and an audio-visual center. Acoustic insulation from low-flying jets was a major consideration.

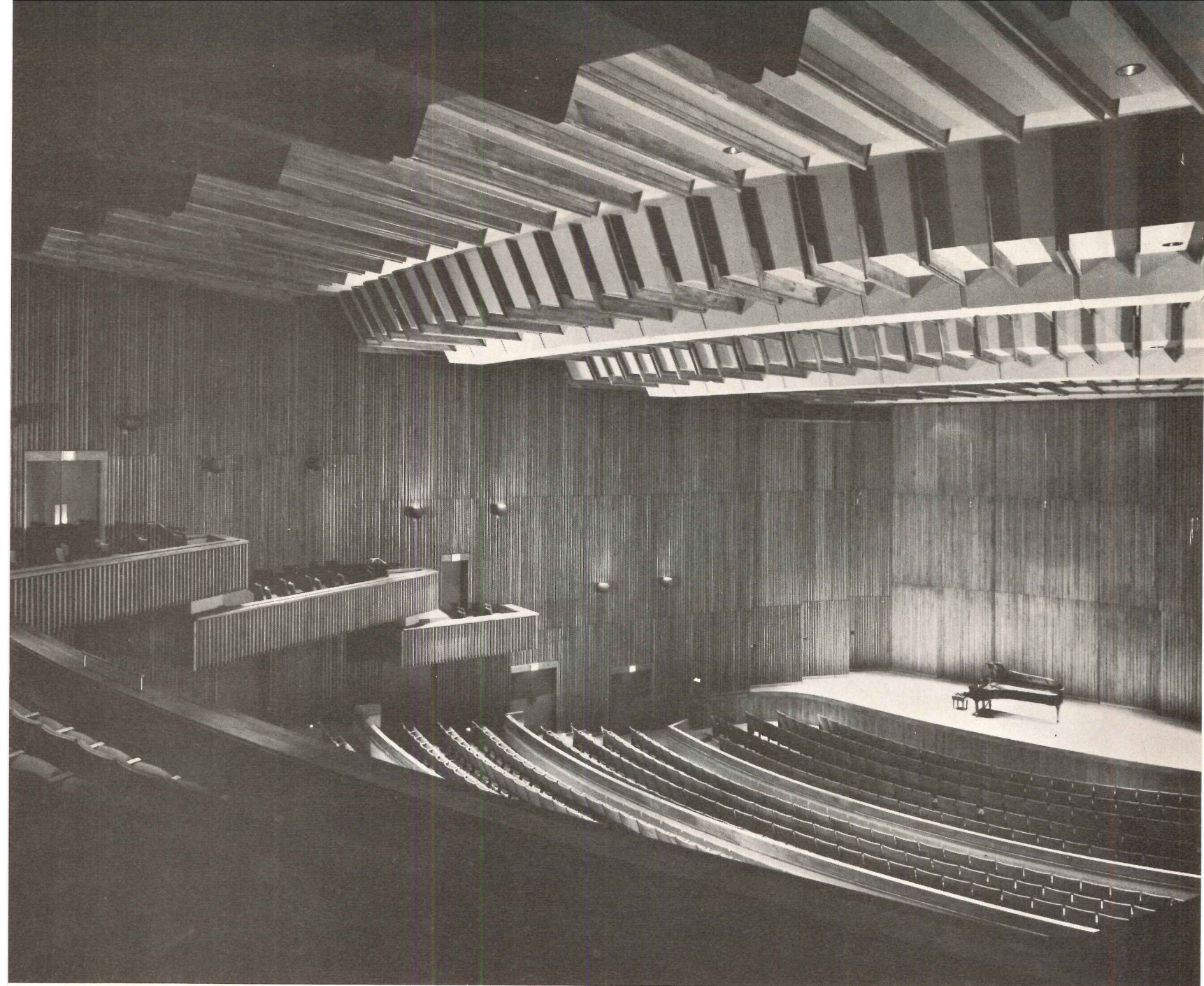


The First Christian Church of Phoenix, Arizona, now being built, was designed in 1950 for the Southwest Christian Seminary by Frank Lloyd Wright. The 1000-seat sanctuary is sheltered by a gently pitched roof terminating in a stained glass lantern-spire. "Desert Tree" piers define exterior and interior space. Desert masonry with strong natural colors will characterize the structure. The buildings will also include a Bible school and a free-standing bell tower.



Prudential Insurance Company of America Central Atlantic Home Office, Upper Dublin Township, Pa., Vincent G. Kling and Associates, architects, is based on 60-degree triangular modules. The resulting rhomboid shapes were chosen to fit into an irregular site and enliven interior office spaces. The exterior is bronze glass and bronze duranodic aluminum. The building will contain extensive recreation facilities for the 1800 employees.

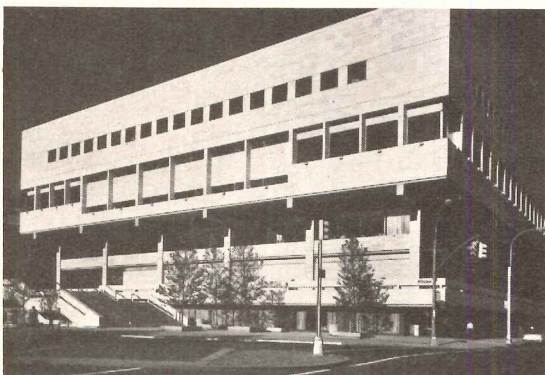




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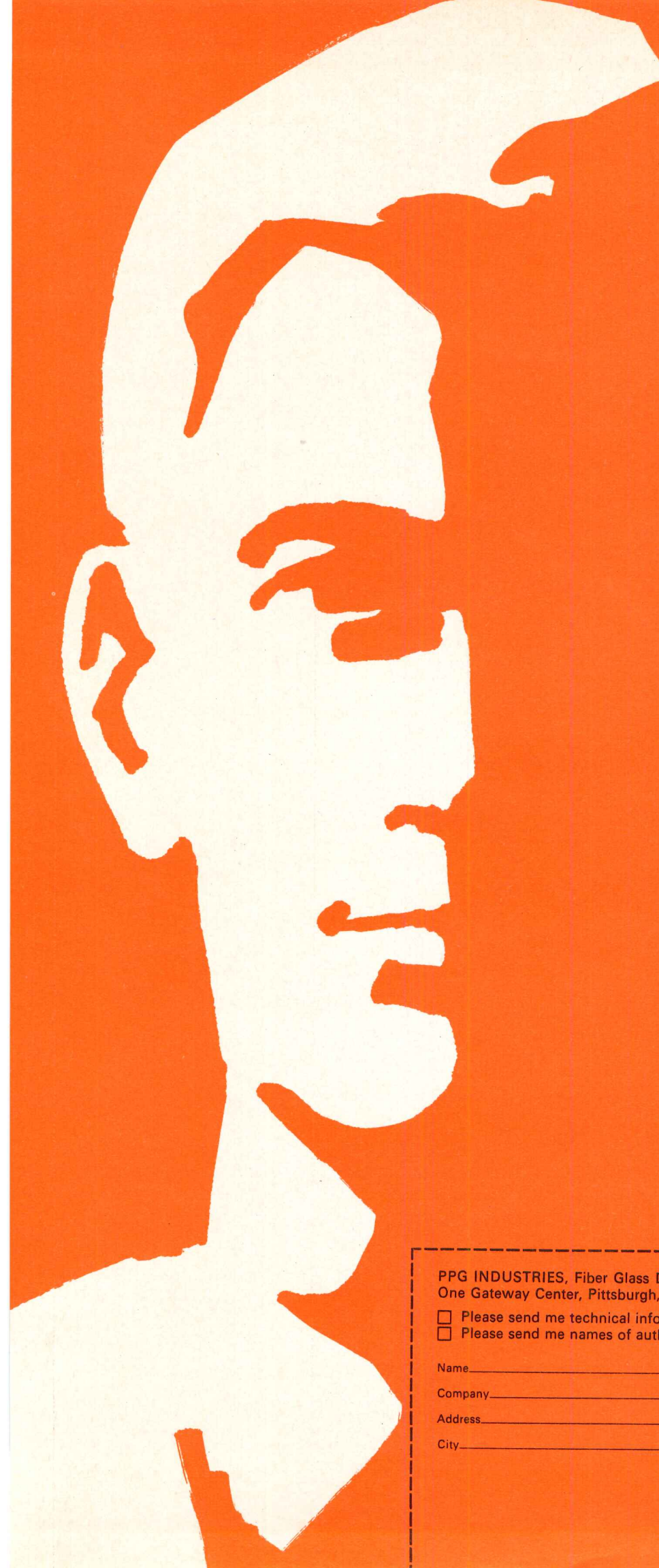
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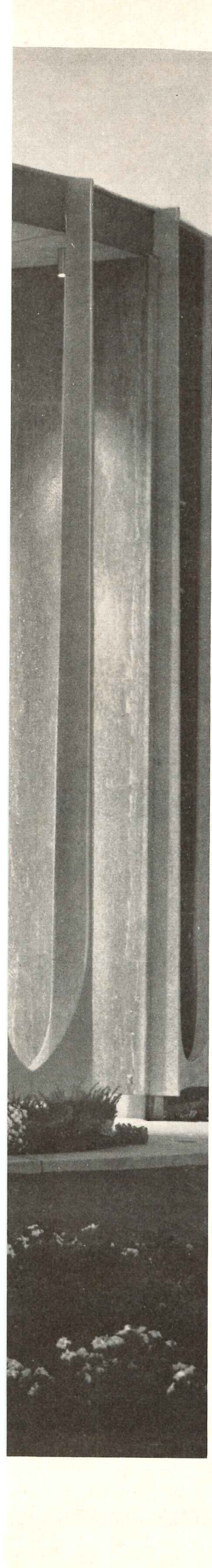
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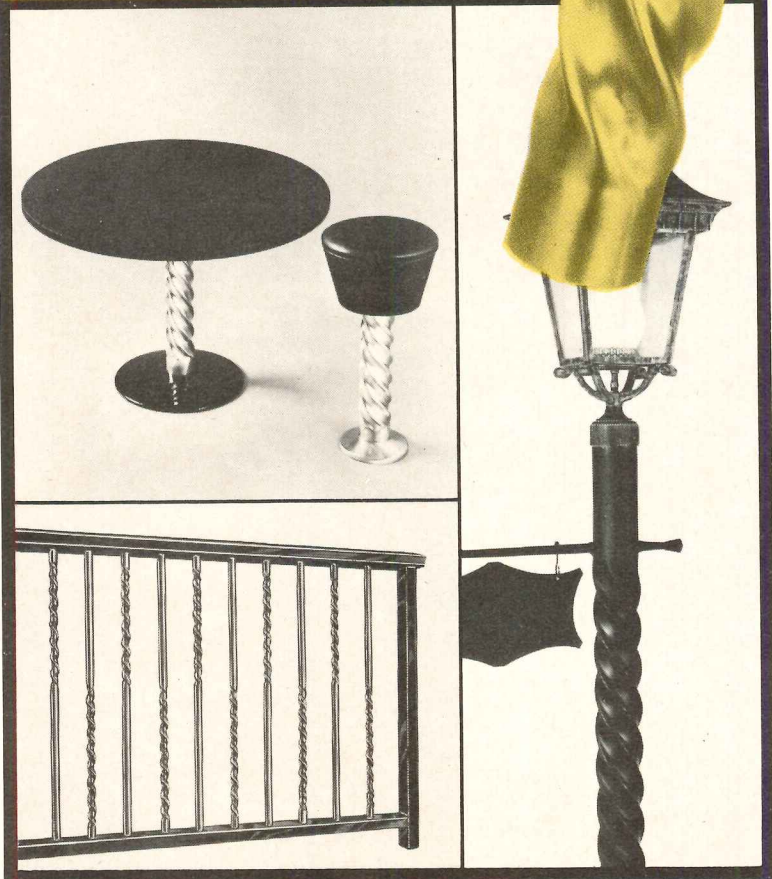
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Massey put it together.

A new chair with a one-piece moulded plastic back. The Polaris chair. Massey put a lot of thought into the Polaris chair. To make it just right.

They put it together with a one-piece back. Because it's stronger. Looks better. Because they could eliminate ugly seams and exposed screws that snag clothing. And because there's no fold to catch dust and candy wrappers.

They put it together with 2" of foam on the back and a foam cushion over springs on the seat. Because they knew it would sit better. Be more comfortable. Hour after hour.

They put it together of moulded plastic. To keep its beauty for a lifetime. To keep it from getting scratched and marred in heavy day to day traffic.

They put it together to give you a chair that can meet the public. Over and over again. Put it together yourself. If it adds up. Write Massey and get together with their new Polaris chair.



Massey
seating co.
NASHVILLE, TENNESSEE 37208

For more data, circle 31 on inquiry card

You could specify Jewel Crest or equal. But it has no equal. Even our sheep live in splendid isolation, grazing wild to produce the sturdiest wools in the world. Which we spin into yarn ourselves, and dye into 16 special colors.

Nobody else even tries to make the grade.

We go to these lengths before we even start on our looms, so you can imagine the care we take making the carpet. Using a tight 4-ply, woven through the back construction, to produce a dense, luxurious carpet, the texture of sheared velvet.

It bears the wool mark . . . mark of the world's best . . . pure wool pile. Jewel Crest.

For any installation that deserves it.

Carpet by Roxbury

Framingham, Massachusetts
For more data, circle 32 on inquiry card



The Woolmark is your assurance of quality tested carpets made of PURE WOOL PILE

**From the radical
and the daring
comes the
revolutionary.**

They're here to revolutionize treatment of walls and ceilings. To give interiors a radically different look. To break traditional paneling barriers.

Element I™ from U.S. Plywood. Five exclusive concepts in which veneers of a wide variety of wood species are used as they've never been used before.

Panels of mismatched or random-matched veneers. Panels which retain the rough natural textural beauty of wood. Panels joined in new ways with plastic or built-in reveals. Panels or battens that are available in many widths to vary surface treatment.

For a breakthrough in the use of wood for interior design, U.S. Plywood's Element I includes:

Butcherbloc™—a paneling of dramatic impact inspired by the counter of the neighborhood



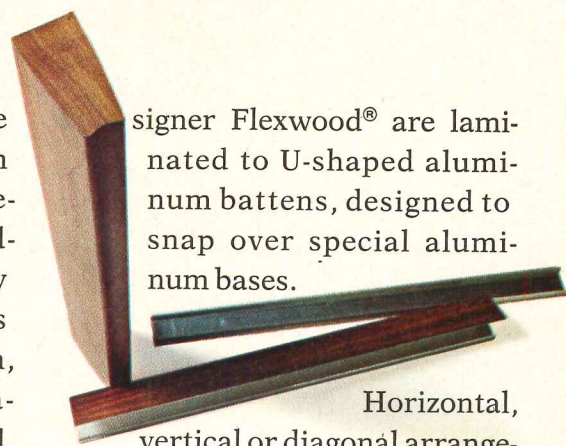
butcher shop. Cedar veneers are laid end-to-end in vertical rows to reproduce the handsome look of heavy board inlay. Veneers are random length, in a variety of natural color tones and grainings. The overall effect is solid and audacious—in keeping with the paneling's namesake.

Collage™—choice wood veneers of birch, elm, oak, walnut, pecan, teak and rosewood are overlapped in random arrangements across each panel face to form a syncopated pattern of wood grains and color shadings. Veneers vary in length and width, texturing the surface of each panel in bold three-dimensional relief. A special bonding process has been devised to retain this unique and strikingly beautiful sculptured appearance.

Ionic®—a matchless architectural paneling in which smooth wood veneers alternate with "black olive" vertical reveals of plastic. This arrangement creates a pattern of classic simplicity. The effect is reminiscent of the slender, fluted columns of ancient Greece. A masterpiece of graceful paneling.

Palisade™ batten & trim—an unconventional decorating material in which veneers of De-

signer Flexwood® are laminated to U-shaped aluminum battens, designed to snap over special aluminum bases.



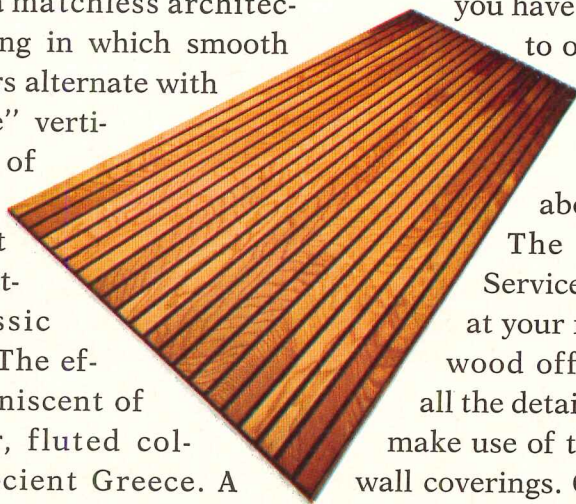
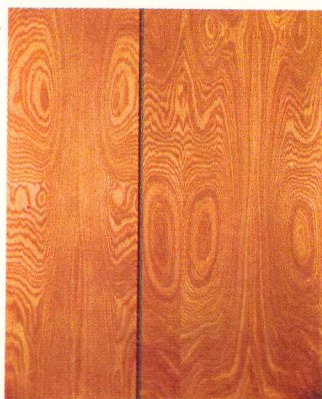
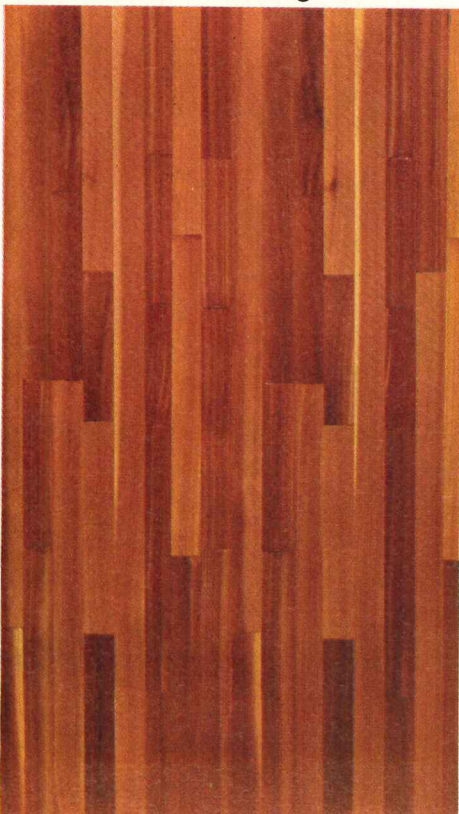
Horizontal, vertical or diagonal arrangements produce a limitless range of arresting visual effects. A novel, versatile, unique decorating material.

Concept 32™—a stark, beautifully basic interior paneling in which natural grain patterns of walnut, ash, teak and rosewood swirl unfettered across 32-inch wide panel faces, accented by charcoal black or deep chestnut

brown reveals. Faces are mismatched and flush. The look is modern, symmetrical, fundamental.

Element I. Because of its radical departure from tradition, it may be the kind of wholly different wall or ceiling treatment you've always wanted to specify, but one that you have never been able to obtain until now.

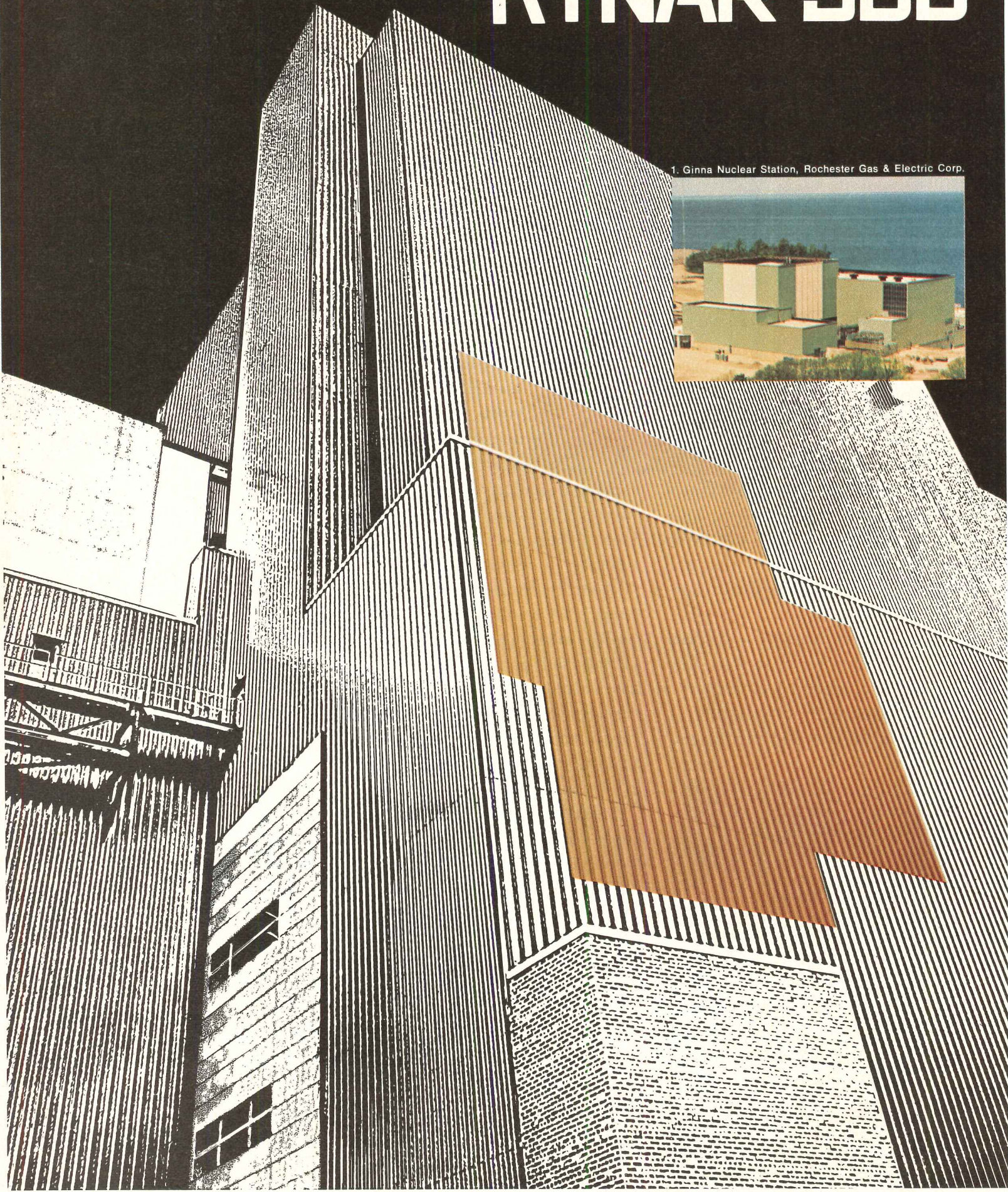
So why not get more complete information about Element I? The Architectural Service Representative at your nearest U.S. Plywood office can supply all the details you'll need to make use of these innovative wall coverings. Or, if you'd prefer, simply write to U.S. Plywood, 777 Third Ave., N.Y., N.Y. 10017.



U.S. Plywood
A Division of U.S. Plywood-Champion Papers Inc.
777 Third Avenue, New York, New York 10017

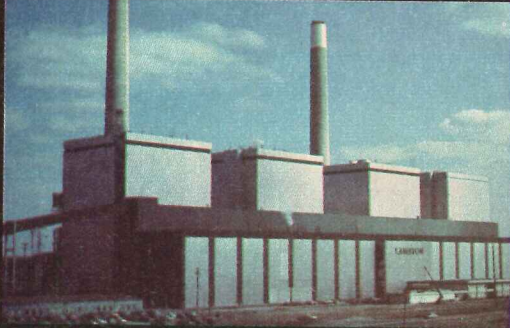
KYNAR 500®

1. Ginna Nuclear Station, Rochester Gas & Electric Corp.

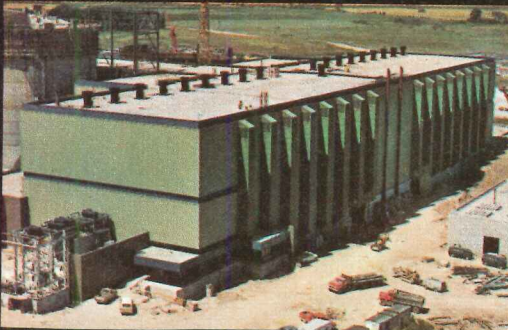


for a colorscape that lasts and lasts.

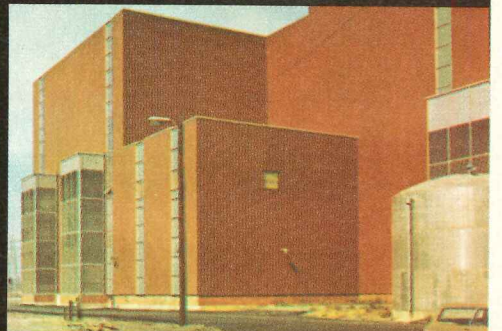
2. Lambton Station, Ontario Hydro Electric Power Commission.



3. Point Beach Nuclear Plant, Wisconsin Electric Power Co.



4. Trenton Channel Plant, Detroit Edison.



The color-coated panels on these metal-walled power plants are made to stay fresh . . . even after years of exposure to attack by weather and sun.

Only long-lasting finishes containing Kynar 500 . . . the best of the color coatings . . . are good enough to protect your next metal-walled building.

You can choose from dozens of colors, ranging from bright pastels to subdued bronzes. And match your color, exactly, panel after panel.

Coatings made with our fluorocarbon base, Kynar 500, are as durable as they are impressive. They resist chemicals, corrosive atmospheres and mortar stains; won't crack or craze; and take abrasion in stride. In fact, accelerated tests by Pennwalt project 30 years of maintenance-free life.

Banish the dull and ordinary. Build a colorscape, with finishes containing Kynar 500. Contact Pennwalt Corporation, Pennwalt Building, Three Parkway, Philadelphia, Pa. 19102.

1. Ginna Nuclear Station, Rochester Gas & Electric Corp.
Design engineers: Gilbert Associates.
Panel manufacturer and erector:
Elwin G. Smith & Co., Inc.
Finish: Nubelar® (Glidden-Durkee).

2. Lambton Station, Ontario Hydro Electric Power Commission.
Architect: Ontario Hydro.
Finish: Nubelar® (Glidden-Durkee).
Panels: Robertson-Irwin Ltd.

3. Point Beach Nuclear Plant, Wisconsin Electric Power Co.
Designer and Builder: Bechtel Corp.
Finish: Fluoropon® (DeSoto)
Panels: Inland-Ryerson.

4. Trenton Channel Plant, Detroit Edison.
Architect: Detroit Edison.
Finish: Fluoropon® (DeSoto).
Panels: Walcon Corporation.

®Kynar 500 is Pennwalt's registered trademark for its vinylidene fluoride resin.

Make your base specification **KYNAR 500®**

PENWALT
ARCHITECTURAL COATINGS

It took time, but we have now designed an automatic flush bolt to the toughest specifications in the industry.

How tough? Well, we were told that the actuator body and face, plus the trigger bolt, as well as sill and soffit strikes, all had to be of drop forged bronze. No other device has this built-in quality.

The latch bolt had to be extruded bronze with a nylon coating to minimize friction and assure long wear. No other device has that, either.

In addition, the latch bolt guide, the latch bolt safety trip, and the ratchet all had to be cadmium-plated, case-hardened steel.

The dead lock had to be channel-shaped stainless steel.

And all springs had to be compression type, also stainless steel.

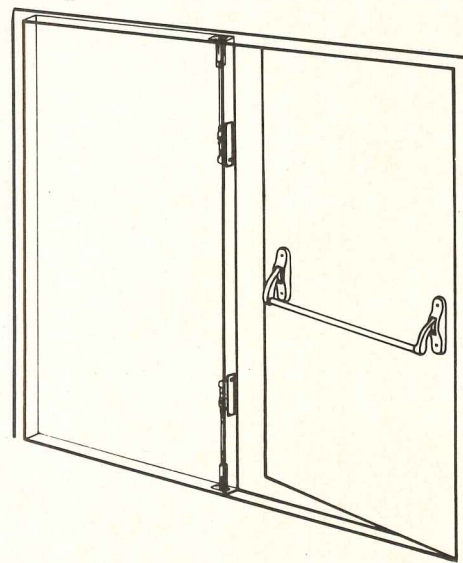
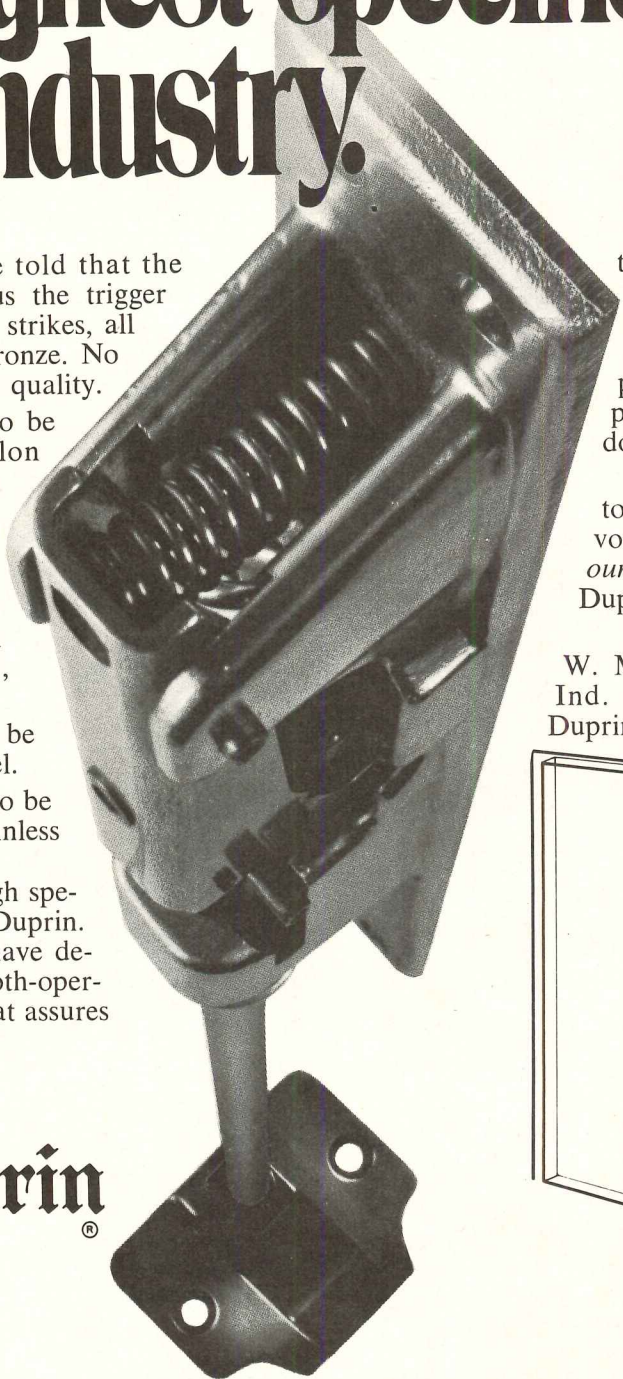
Those are pretty tough specifications, even for Von Duprin. But we met them, and we have designed a long-wearing, smooth-operating automatic flush bolt that assures

the effortless opening of an inactive door, without the need for a handle to push or a release lever to flip . . . plus automatic latching for proper fire protection when the doors close.

That should be enough to make Von Duprin *your* favorite line. So we'll close with *our* favorite line: Think of Von Duprin devices first. They last!

Von Duprin, Inc. / 400 W. Maryland St. / Indianapolis, Ind. 46225 / In Canada: Von Duprin Ltd.

Von Duprin®



For more data, circle 35 on inquiry card

LENNOX PRESENTS

a season for shoppers

...the modular concept
in year-round comfort



In Beachwood, Ohio—
a Cleveland suburb—LaPlace
shopping center blends
New Orleans elegance with modern convenience and year-round comfort
in some forty businesses such as (clockwise from lower left): the Inner Circle restaurant,
Le Potpourri gourmet shop's wine cellar, the mall, and Park View Federal
Savings & Loan Association. (See next page for credits.)



The modern merchant recognizes the sales value of shopper comfort. Storewide or through an entire mall, it's good business to keep the temperature even, the air fresh, the comfort continuous. And the economics are especially sound where the comfort comes from Lennox modular heating and air conditioning systems. With comfort designed in from the start.

... continued overleaf



The 83,000-sq. ft. LaPl ce shopping center utilizes the modular comfort concept of heating/cooling/ventilating each shop or office with its own unit or units. Among the 180 tons cooling installed, Lennox equipment serves comfort needs from the rooftop—single-zone, single-package air conditioning with electric heat elements in the cabinets. Architect: Andonian & Ruzsa. Owner: Park View Federal Savings & Loan Association (James W. Male, president). General contractor: The Bolton-Pratt Co. Heating & air conditioning contractor: The Brewer-Garrett Co.

continued...

shoppers' season: a modular comfort concept

In shopping center planning, Lennox modular heating and air conditioning systems offer everything that's needed: comfort, economy, flexibility, design freedom. For initial cost savings, there are Lennox rooftop flash-in-place mounting frames, shortened duct runs. Plus time-and-labor savings from factory assembly, wiring and testing—including electric or pneumatic controls. For predictable long-range savings: quality-built systems with long life, little maintenance. And extended guarantees on critical components.

The modular nature of Lennox equipment prevents a total system breakdown. If failure occurs, only one area is out of service. And, because repairs usually are simpler, recovery is faster. Then, there's Lennox single-source responsibility for equipment and controls; if anything does go wrong, it's on our back.

Compact, low-silhouette Lennox units protect your design freedom. Modular concept simplifies future growth. Scores of systems to choose from. All capacities. Single-zone or multizone. Rooftop or ground level. Compatible combinations. Any fuel. Before planning your next development, consider the esthetics, the comfort, the economics, when the comfort's from Lennox.

*See Sweet's 29a/Le, or write Lennox Industries Inc., 803 S. 12th Avenue,
Marshalltown, Iowa 50158.*

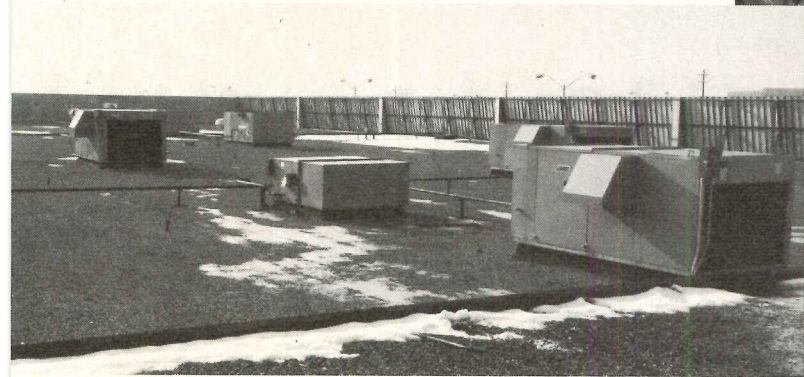
LENNOX
AIR CONDITIONING • HEATING

For more data, circle 36 on inquiry card



Glamorous Centre Laval in Montreal is 400,000 sq. ft. of patron convenience and comfort—in fifty stores, six restaurants and the mall itself. The major portion of its shoppers' season—all-year heating/cooling/ventilating—comes from Lennox single-zone modular equipment: 53 combination rooftop gas/electric units and 17 remote cooling units. Lennox supplied the units for all the allied stores for a total capacity of 433 tons cooling, 15,970,000 Btuh heating. And some 90% are equipped with POWER SAVER™ which cools free when the outside air temperature is below 57°F. Architects: Mayers and Girvan. Mechanical Engineer: Levine & Jonas. Owners: Centre Laval, Inc. Owner/Developer: Frego Construction, Inc.

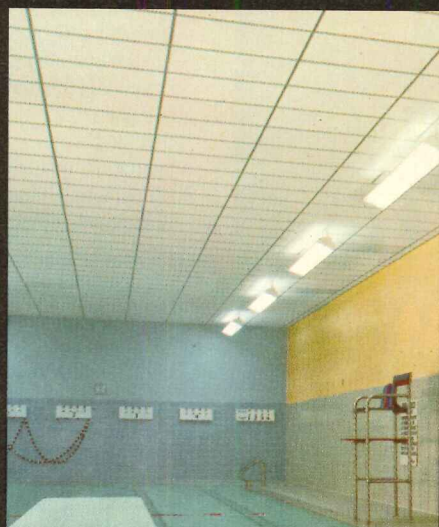
Phase II of The Mall was a major expansion, almost doubling the original 332,000 sq. ft. of the giant Louisville, Kentucky, shopping center. Shoppers' comfort in eighteen of the twenty stores, plus the mall, is assured by Lennox single-zone combination gas heating/electric cooling units. The twenty rooftop units, rated 3 to 22 tons, provide more than 200 tons cooling capacity. Architects: Katzman & Associates, New York City. Owner/developer: The Rouse Company, Columbia, Md. Heating/air conditioning contractor: Hussung Mechanical Contractor, Inc.



Design for beauty



with our designs for quiet.



Almost limitless design freedom is yours with the Celotex selection of acoustical ceiling systems and products. There are textures, finishes, and patterns to enhance any interior—ranging from natural fissured tile with truly monolithic effect, to boldly textured lay-in panels designed to accent the recessed grid pattern. And glazed total ceramic panels. And Vari-Tec* luminaire systems.

The range of technical specifications met by Celotex products and systems is equally complete. NRC's to .90. Designs for UL time-rated assemblies of 1, 2 and 3 hours. Even a product with 0-0-0 Fire Hazard Classification. Densities, sizes, and thicknesses for every budget, every project—from banks to locker rooms.

Look to Celotex when you design for beauty and performance. Your Acousti-Celotex contractor/distributor will welcome your call for specifications, samples and estimates.

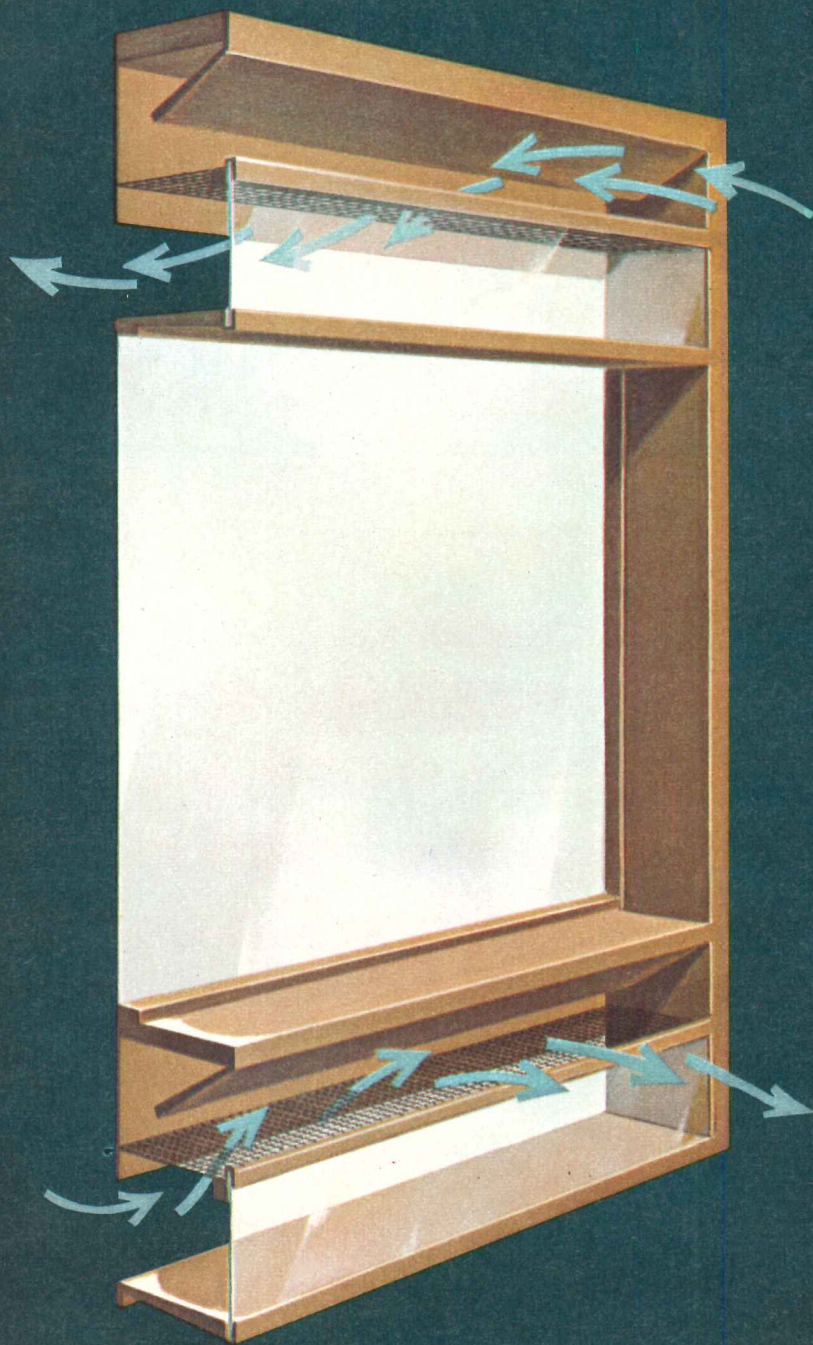
*Trademark



THE CELOTEX CORPORATION
Tampa, Florida 33607
Subsidiary of Jim Walter Corporation

Write for copy of new 1970 manual of Celotex Acoustical Products.
For more data, circle 37 on inquiry card

Kawneer has just re-invented the window ...Ventrow



From the exterior, open or closed, Kawneer Ventrow appearance doesn't change. No operating hardware. No protrusions. Invisible, hidden screen. It's burglarproof, fall-out-of-proof and throw-things-out-of-proof to maintain a building's security . . . eliminate all worry about leaving windows unlocked or open.

Kawneer Ventrow is the aluminum window that delivers fixed window performance, yet ventilates in a unique way. It is designed to be left open, even during driving winds, rain or snow. Without leaking. Without gusts. Without drafts. Air movement, using natural air circulation principles, is always controlled and even. An easy pull shuts vent tight. In fact, the harder the wind blows, the tighter the seal.

Natural selective ventilation is always possible!

Get full details on the Permanodic® maintenance-free aluminum window you have to see to believe —Kawneer Ventrow. Write Kawneer Product Information, 1105 N. Front St., Niles, Michigan 49120.



Warren Packaging, Ltd.
Scarborough, Ontario

Architect: Brian T. E. Atkins M.R.A.I.C.
Toronto, Ontario

General Contractor: Kannakko Construction, Ltd.
Scarborough, Ontario

THE KAWNEER CONCEPT:
Attention to detail

KAWNEER
ARCHITECTURAL PRODUCTS

AMAX
ALUMINUM

Kawneer Company, Inc., a Subsidiary of American Metal Climax, Inc.
Niles, Michigan • Richmond, California • Atlanta, Georgia • Bloomsburg,
Penn. • Harrisonburg, Va. • Kawneer Company Canada, Ltd., Toronto

VENTROW IS A TRADEMARK OF KAWNEER/AMAX. PATENT APPLIED FOR.

For more data, circle 38 on inquiry card





RALSTON PURINA COMPANY
CHECKERBOARD PLAZA TOWER OFFICE, ST. LOUIS.
Architect: Hellmuth Obata & Kassabaum, Inc.
Contractor: J. S. Alberici Construction Company, Inc.

NEW DESIGN FREEDOM!

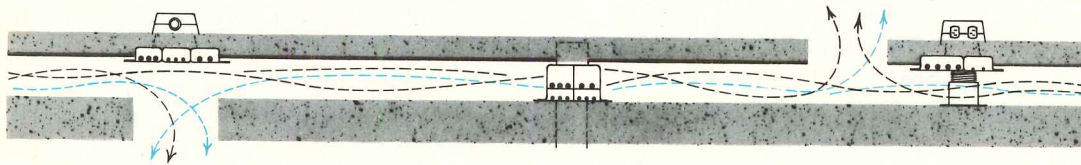
A-E System Delivers Air and Electricity THROUGH THE FLOOR SLAB

Ugly, bulky ducts, piping and other obstacles to design freedom need no longer stand in your way. Granco's A-E (Air-Electric) Floor System puts all mechanical and electrical services into a slender sandwich floor slab. Air, telephone, power and signal distribution are artfully concealed.

Now you can incorporate waffle ceilings. Design floor-to-ceiling windows. Select exterior skin designs formerly denied. Or make the basic structure a strong design element and expose it openly. Use luminous ceilings, balconies, overhangs and comfort-conditioning systems to their fullest esthetic and functional capabilities.

A-E Floor gives you new freedom to create and to innovate. *It's the only system compatible with both concrete and steel frame construction.* It's the only system that gives you such scope for expressing your most advanced architectural concepts.

Send for our new A-E Floor Systems brochure. This 24-page, award-winning booklet shows how A-E Floor brings new versatility and freedom to architectural design. Granco Steel Products Company, 6506 North Broadway, St. Louis, Missouri 63147. A subsidiary of Granite City Steel Company.



IMAGINATION IN STEEL

For more data, circle 39 on inquiry card



Delta faucet: the versatile valve. Fits virtually any installation.

You just can't find a more accommodating valve than Delta.

All Delta faucets exhibit our original concept of one single handle operated with only one moving part. Which means easy operation for your customers. And fewer costly return trips for you.

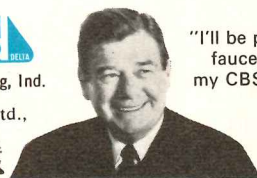
But there the similarity between Delta faucets ends. We've taken the trouble to design separate lines to handle any installation you may come up against.

Got a customer who wants widespread bathroom beauty and single handle efficiency in the same faucet? We've got the new Delta Fjord. How about the customer who simply wants a great-looking, hard-working

kitchen faucet? Give her a Delta 100. Or how about a mother concerned about her children turning on the hot water by mistake? Show her the Delta-Temp pressure-balanced shower valve.

The point is this. We make faucets for kitchen sinks, lavatories, tubs and showers. In finishes from chrome to brushed gold. In models with the widest variances in the industry. To fit almost any application known today. How about tomorrow when new applications are discovered? We're not worried . . . our versatile valve will evolve.

DELTA 
Div. of Masco Corp., Greensburg, Ind.
In Canada:
Delta Faucet of Canada, Ltd.,
Rexdale, Ontario



"I'll be plugging Delta faucets regularly on my CBS radio show."

For more data, circle 40 on inquiry card



Before fire makes it too hot for steel, talk to Zonolite about the kind of fire insurance you spray on.

It's Zonolite® Mono-Kote, the compound that fireproofs steel and concrete. And does it so well that its fire-resistance ratings range up to 5 hours, depending on the structural system it's part of.

Mono-Kote comes ready to use. Just add water. And spray. It pumps easily—as high as

50 stories. Goes on fast. Delivers a bond strength of more than 500 pounds per square foot.

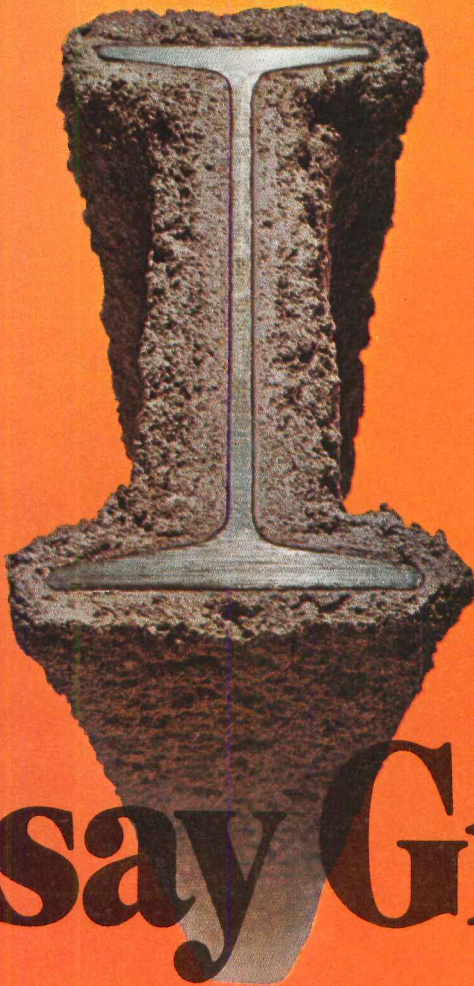
Other features? Indeed! Like zero erosion, after being tested in 100 m.p.h. winds for 87 hours. Result: no "dusting" in air-conditioning and ventilating systems. Also, its use permits

reduction in the thickness of concrete floors. Cost? Very little.

Want all the facts and figures from the Zonolite fireproofing experts? Say the word.

ZONOLITE

W. R. GRACE & CO.
62 Whittemore Avenue
Cambridge, Mass. 02140



Just say Grace.

For more data, circle 41 on inquiry card

When modern buildings go up, qualified electrical contractors go in . . . with the ready capability, latest equipment, specialized experience to install electrical systems correctly. Systems for heating. Cooling. Lighting. Communications. Systems adding up to the building's modern Electro-environment. It's an environment of comfort, convenience, efficiency and esthetic appeal for the people who will live or work inside for years to come . . . thanks to the qualified electrical contractor.

He'll safely satisfy a new building's power distribution needs, and keep pace with needs as they change. Many factors contribute to the ready

capability he can put to work for your benefit. Among them, he has the best-trained manpower, the work-force flexibilities and the awareness of local codes to keep electrical problems from developing. To keep all electrical systems functioning efficiently. Economically. Reliably.

And remember: when he installs electrical systems, he *guarantees* electrical systems . . . for one full year. A qualified electrical contractor takes a lot of pride in his work. And you can count on it.

National Electrical
Contractors Association
Washington, D.C. 20036



**The electrical
promise of
tomorrow needs
the
electrical
contractor
of today.**

New construction. The building won't be complete until a qualified electrical contractor provides for its modern Electro-environment.


WOODSCAPE^{*} LIGHTING...INSPIRATION


of classic form. 3 Line cylinders are a perfect accent when used in natural settings of trees and shrubs, complementing brick, stone or wood. An exciting example of mcPhilben's concept of lighting continuity, this luminaire of rugged unitized cast aluminum construction is satin ground and anodized for lasting beauty. Designed with four light controls: open baffle, louver guard, prismatic lens and prismatic ring for mercury vapor or incandescent lamps. This pure form of satin aluminum combines with the warmth of beautifully crafted wood standards to inspire greater design achievement!

^{*}
Trademark of Weyerhaeuser Company

For more data, circle 42 on inquiry card

mcPhilben Lighting



 **mcPHILBEN LIGHTING**
EMERSON ELECTRIC CO.
EMERSON
270 LONG ISLAND EXPRESSWAY/MELVILLE, N.Y. 11746
CANADA: 2275 MIDLAND AVE., SCARBOROUGH, ONTARIO

Weathersealing installation flange



Welded insulating glass

Rigid vinyl sheath over core of wood

Read about this window before you design your next building.

It could save your clients a pile of money and a whole lot of grief.

This is the Andersen Perma-Shield® Casement—a remarkable new kind of window.

The core is made of warm natural wood.

But the exterior is encased in a sheath of rigid vinyl. (Just like a coat of armor.) So it doesn't need painting. Nor scraping and puttying. Won't warp. Can't rust or corrode. Doesn't need storm windows either, if you specify welded insulating glass.

Just imagine . . . the money it can save!

Think of maintenance costs, for example. With ordinary windows, it costs up to \$10 per window to have the exteriors painted.

With Perma-Shield Casements, it doesn't cost a cent to have them painted. Their weatherproof vinyl sheath just doesn't need it . . . stays new-looking indefinitely.

Consider fuel costs, too. Since this window has a core of wood (nature's best insulator), and it's built to such close tolerances, it's up to 4 times more weather-tight than an ordinary window. So it can save up to 15% on heating costs. (Quite a tidy sum.)

But, Perma-Shield saves more than money.

It saves a lot of trouble, too.

You won't have people complaining that these windows are cold and drafty. Their unique combination of wood, vinyl, welded insulating glass, and weather stripping makes Perma-Shield wonderfully snug and weathertight.

Yet, they're easy to operate . . . smoothly. No sticking or binding. No changing shape with the weather. No rattling, leaking or balking.

Very simply, they don't bug people. So people won't bug you.

Actually, we could go on forever telling you about Perma-Shield windows—how they come in 4 styles and hundreds of sizes.

But we're running out of space.

So, why not get the rest of the story from your Sweet's Catalog, or your nearest Andersen distributor or dealer. Or send for our free booklet.

And read on.

Tell me more. Please send free Perma-Shield literature.

I'd like a Perma-Shield demonstration in my office. Have a distributor call me.

Name _____

Title _____

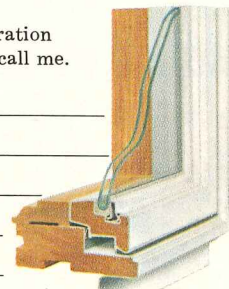
Firm _____

Address _____

City _____

State _____ Zip _____

Mail to: Andersen Corporation, Bayport, Minnesota 55003



Perma-Shield Cross Section

Andersen Windows
Window beauty is Andersen.



Andersen Corp., Bayport, Minnesota 55003

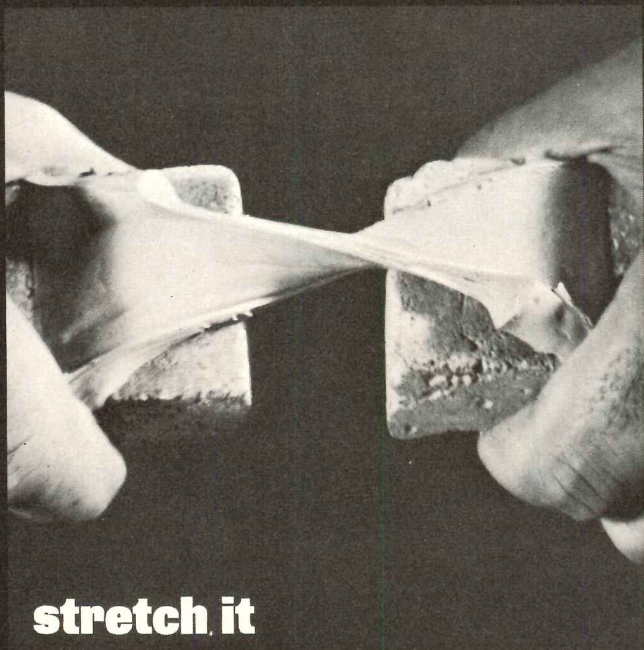
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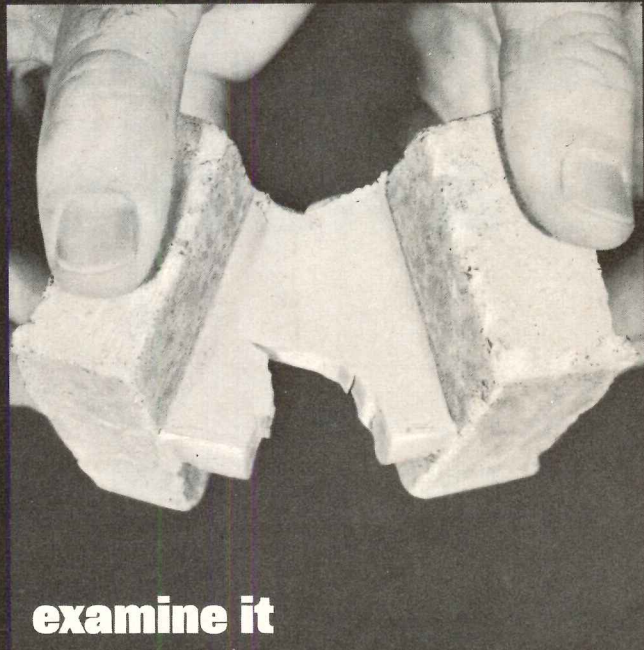
cut it



twist it



stretch it



examine it

New GE Silicone Sealant 1600 outholds and outstretches polysulfide. Yet it's priced almost as low.

Briefly, there are four important points to remember about our new 2-part Silicone Sealant 1600.

First. Low cost. 1600 is based on a technological breakthrough that puts it in the 2-part polysulfide price range without sacrificing silicone's traditional advantages in weather, temperature and aging resistance.

Second. High extensibility. 1600 can expand 8 to 10 times its contracted size. Which is at least twice as good as competitive sealants.

Third. Joints won't fail. Even when cut, 1600's knotty tear characteristic turns the tear in the direction of exerted force, which relieves stress at the point of puncture.

Fourth. All-weather application. 1600 flows easily at any temperature. Without sagging. Needs no primer on concrete and several other materials.

For more information and your distributor's name, write Section BG6334, Silicone Products Dept., General Electric Co., Waterford, New York 12188.

GENERAL  ELECTRIC

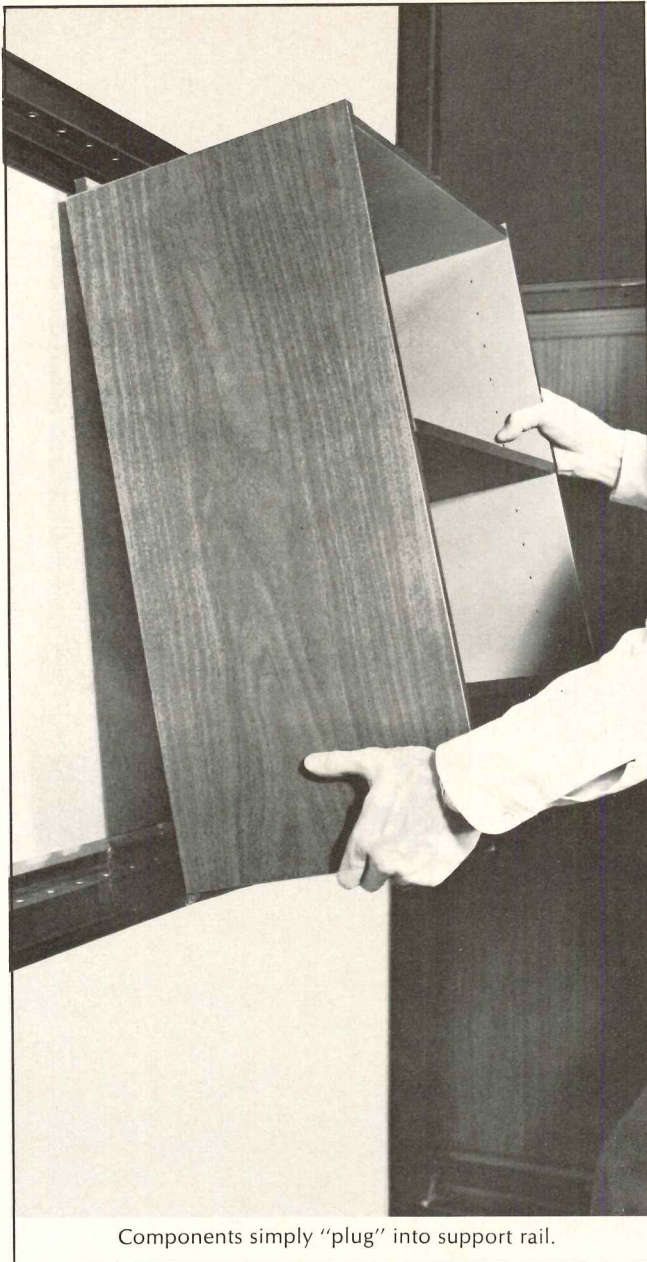
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4726 Corbin... where the crowd moves with safety

When you take off with Corbin, you're going with the best. Corbin exit devices are renowned for their whisper quiet dependability combined with the ultimate in thin line design leadership. If safety is a factor in your next project, contact a Corbin distributor for information and service or write P & F Corbin, Division of Emhart Corporation, Berlin, Connecticut 06037. In Canada, Corbin Lock Division.



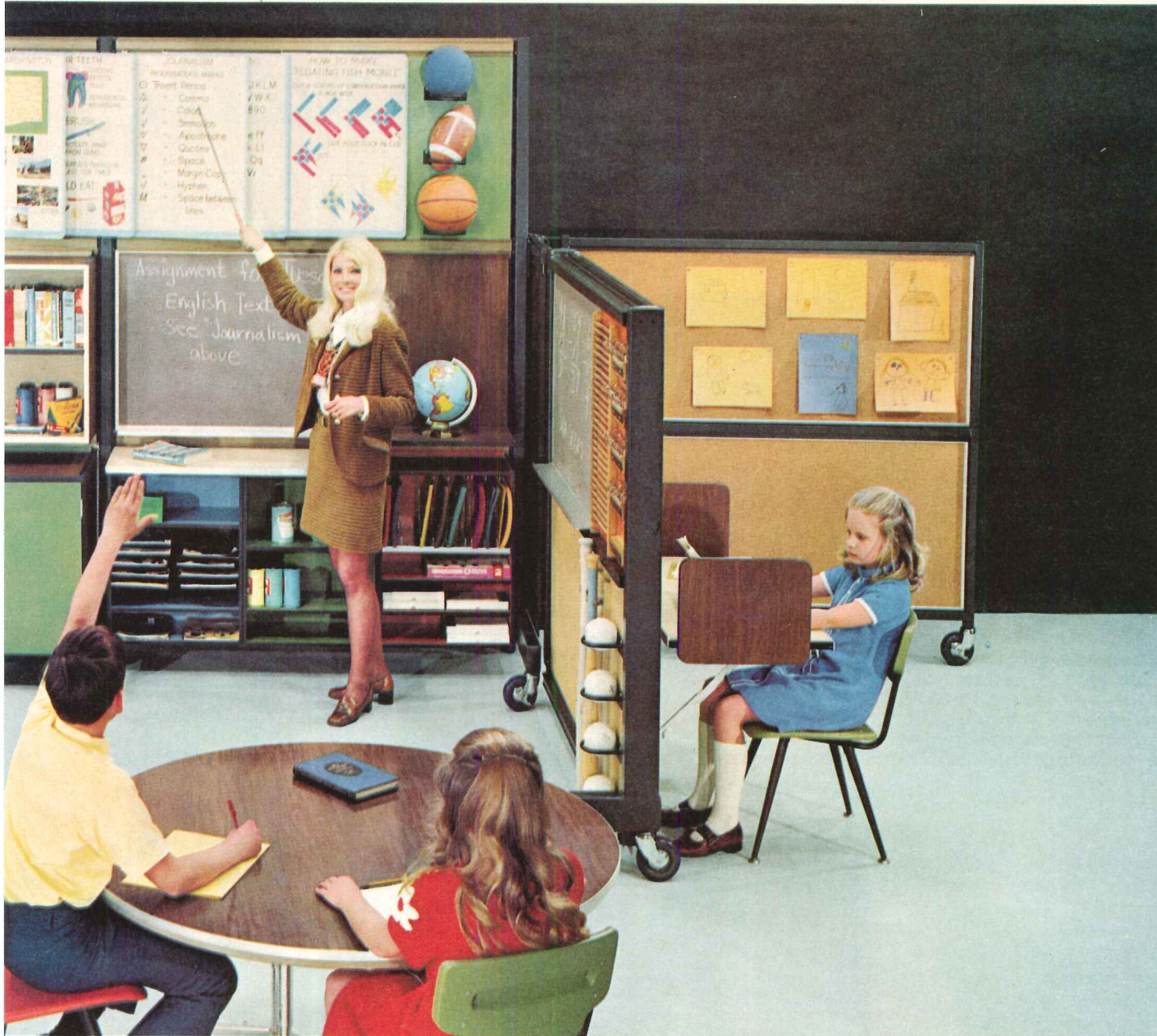
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Components simply "plug" into support rail.



Introducing VUE...
the most flexible low-cost
learning wall system ever devised.



Visual Unified Environment system... for an architect it solves the problem of what to do about walls in an open school. For, VUE combines the flexibility of a room divider system with the multiple advantages of a structural wall.

As the name implies, the prime purpose of VUE is to keep basic learning tools in view at all times. It is a low-cost learning wall system. Components are easily attached to fixed walls with an aluminum support rail, and just as quickly removed, rearranged or replaced by the teacher. Used as mobile wall units, components can serve as both dividers and integral parts of the learning situation.

There are storage cabinets, chalk boards, tack boards, reusable learning panels, racks, counters and more — all can be color coordinated with classroom furniture. Electricity can be installed at any time with conventional wire molds.

VUE opens a whole new area of freedom for architect and teacher alike. **Write for our VUE brochure. Dept. AR-714, American Seating Co., Grand Rapids, Mich. 49502.**

for the Environment of Excellence



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Get the lead out of your DWV system.



Replace it with Tyler TY-SEAL® Joint Gaskets.

Lead slows down a DWV system installation. For one thing, it takes about a half an hour just to heat up the lead pot.

In that time, two men using TY-SEAL Gaskets can lay about 100 feet of cast iron soil pipe.

And that's the name of the game. Get the job done. Get it done right. Get it done as economically as possible. Get it done on time.

TY-SEAL does it all... safely.

It does the job because TY-SEAL has been proven in uses covering every known type of drainage job in residential and commercial construction.

It does the job right because TY-SEAL seals immedi-

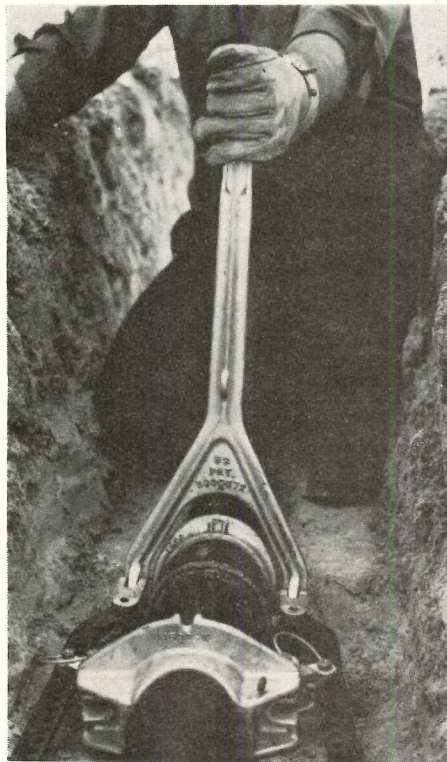
ately on application, it's leakproof and highly resistant to waste line compounds, deterioration and decay.

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Things like a complete line of DWV specification products from our Wade Division and waterworks and municipal fittings from our Utilities Division.

If it goes into a cast iron DWV system, Tyler makes it.




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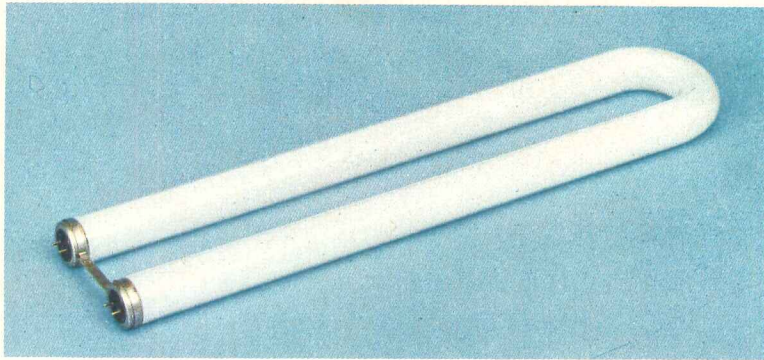


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One great idea

Now there's a way to put all the exciting advantages of 40 watt U-tube fluorescent lamps to work in a new decorative 2' modular. U-LUME from Benjamin.

Benjamin engineers designed U-LUME with adaptability and appearance in mind. They began with a 20-gauge steel housing that fulfills UL requirements for low-density ceilings—

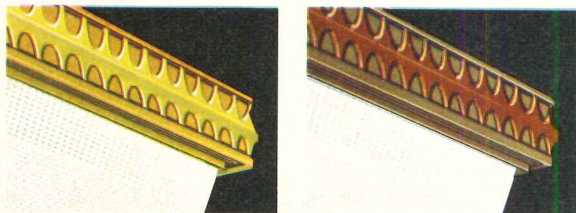
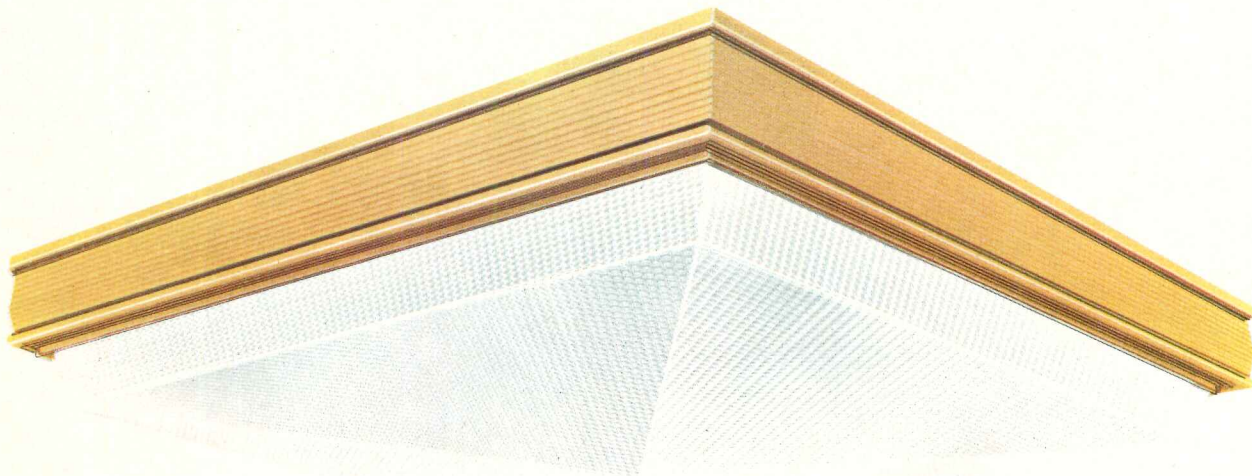
one that takes any make of 40W U-lamp.

They trimmed it with stylish-extruded aluminum, finished in soft gold or brown suede (or standard white). Then they added an optional, decorative, snap-in panel of impact-resistant material to further enhance the appearance.

Finally, HOLOPHANE was commis-

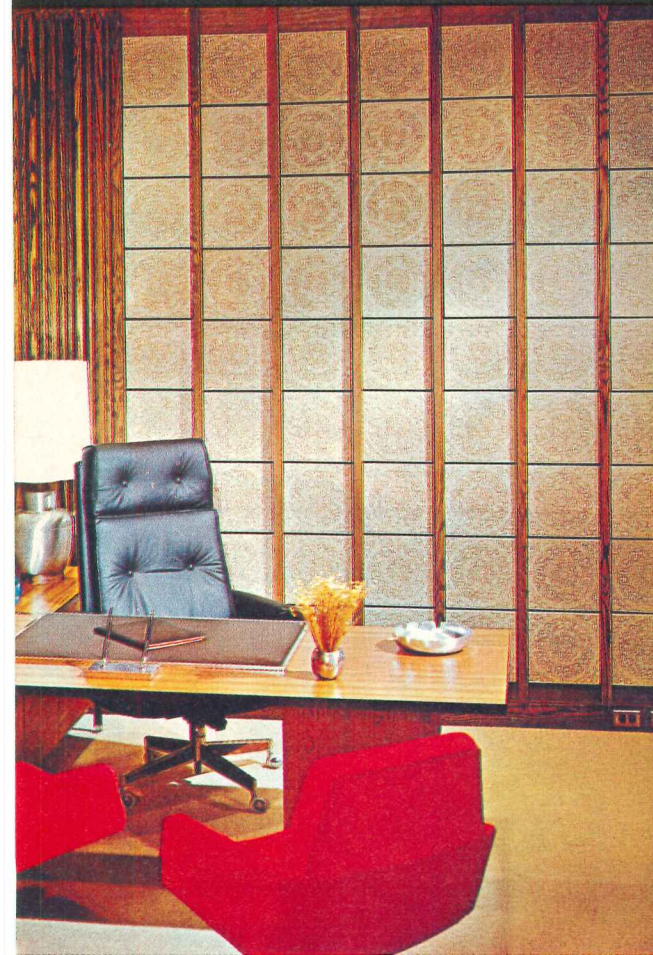
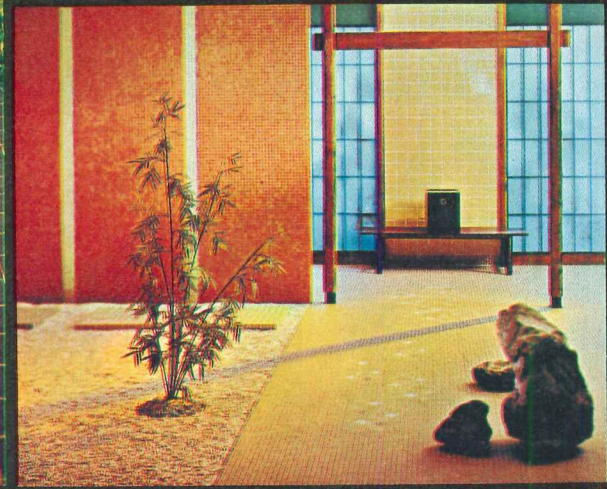
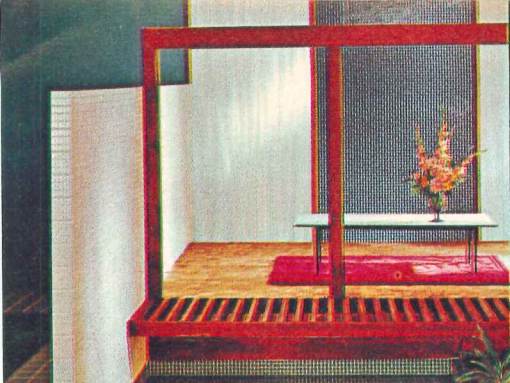
sioned to design an optically perfect Controlens for the modular. U-LUME is a brilliant idea wherever decorative modular lighting is needed. And best of all, U-LUME can be shipped complete with lamps. For more information about U-LUME, write Benjamin Products, Thomas Industries Inc., 207 E. Broadway, Louisville, Kentucky 40202.


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BENJAMIN PRODUCTS**

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You can do more, creatively, with ceramic tile.

Will tomorrow's architects and interior designers find themselves stuck with merely selecting modules? Merely choosing between one standard unit and another?

While there may be a possibility of such a trend developing, the ceramic tile industry is counting on *both* creative drive and the growing *need* for individuality to sustain the increasing demand for ceramic tile. It offers a literally unlimited variety of treatments in terms of size, color, area of use (both interior and exterior), texture, pattern, curvature. Not to mention new, improved grouts and faster installation techniques.

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Another intriguing aspect of ceramic tile is its ability to add a measure of sales appeal far beyond its actual cost. Once a tile contractor is on the site, the cost of each additional square foot of tile just isn't that great . . . but the effect is.

We've looked at some recent efforts to create convenient little boxes as substitutes for ceramic tile and other high quality building products. Despite our bias as manufacturers of ceramic tile, we feel that boxes are great . . . for products . . . but not for people.

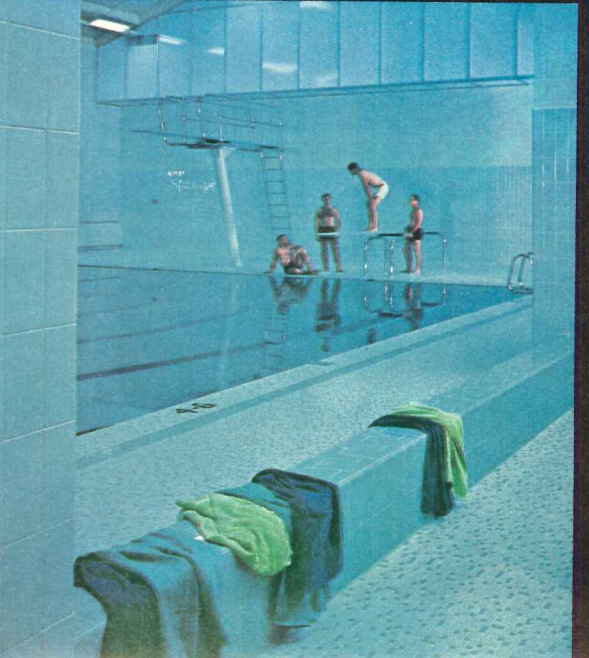
Tile Council of America Inc., 360 Lexington Ave., N.Y., N.Y. 10017

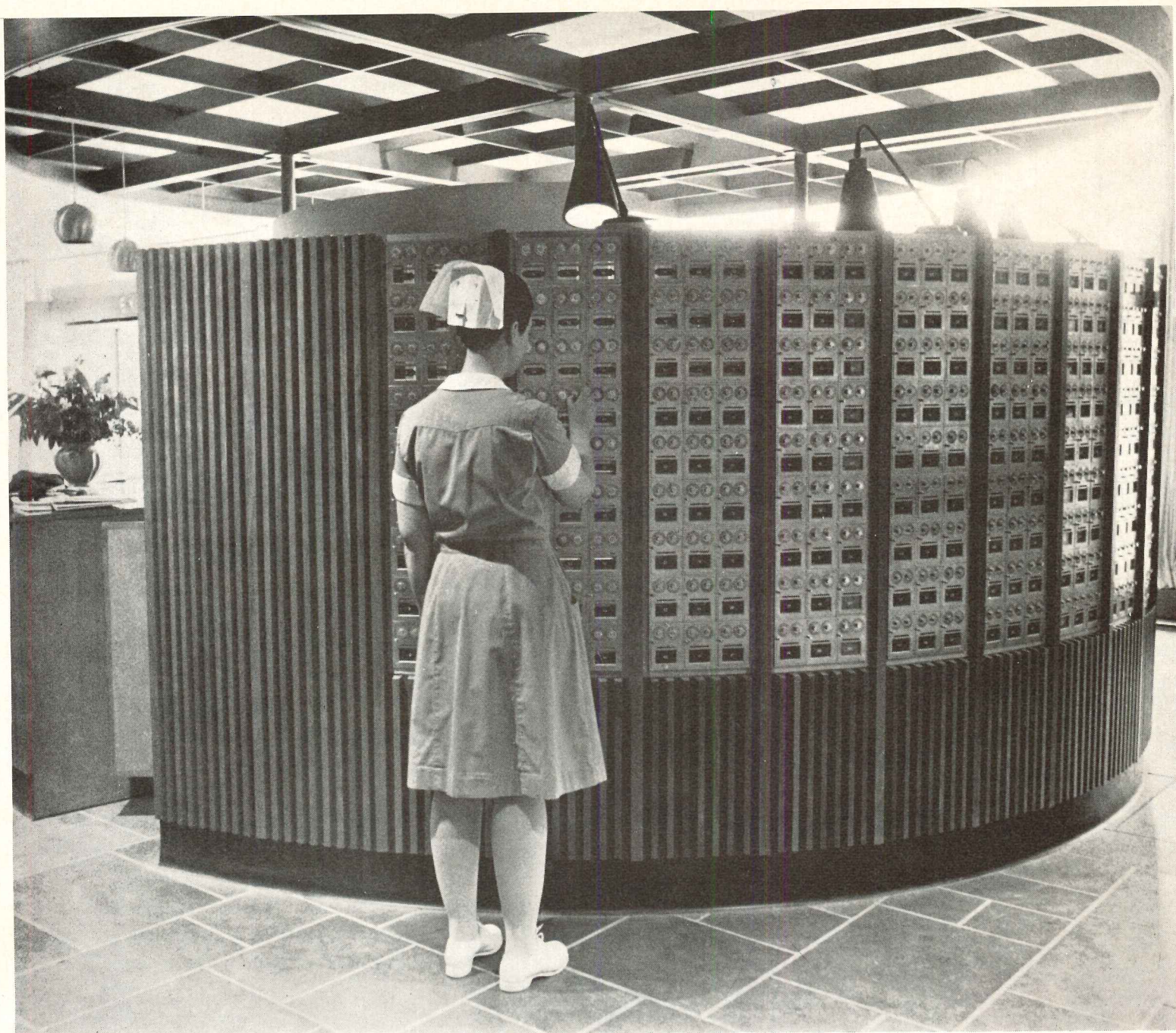


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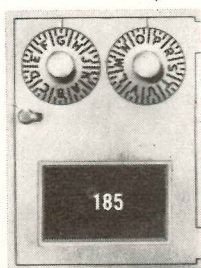
Ceramic tile - as new as your next idea

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DELIVERY ROOM



This modern "mailroom in the round" completely fabricated by Wood Products takes the labor out of receiving, sorting and delivery of mail. Assures fast, foolproof service while perfectly complementing the contemporary interior of this nurses' residence.

Compact sorting tables, strategically located behind the scenes, get mail moving. Sleek "Double Dial" letter boxes *keep* it moving with maximum efficiency and convenience. There's top security too: flush hinges, inaccessible hinge pins, recessed-in-frame doors and automatic throw-off so lock can't be left on combination. The Model #185 boxes, installed here for rear loading, are also available for front loading.

Complete installation plans furnished free of charge. Simply send rough sketch, showing space available and type, size and quantity of boxes desired.

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DIVISION OF EMHART CORPORATION
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...and the revival of metal roofing

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Des Moines, Iowa Residence Featured in Record Houses
Architect: John D. Bloodgood
Roofer: Iowa Sheet Metal Contractors, Inc., Des Moines, Iowa



Bright ideas



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from Bradley!

Leader in Washroom Fixtures and Accessories

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Of course what we installed isn’t really a “rug.” It’s 128,000 square yards of Antron® nylon carpet which went into the building that houses the entire U.S. Department of Transportation.

Aldon won this record contract in competition with just about every other major carpet manufacturer in the country.

Because what Nassif wanted from us wasn’t just our fine Aldon carpet.

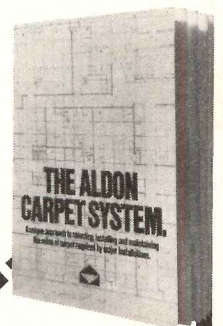
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The famous System that takes over the entire job.

We have top engineers and technicians on our staff who will supply you with a detailed program of your total operation. From specifying the right carpet according to traffic-and-use areas, right on through installation and maintenance. All of it planned to save you miles and miles of money every inch of the way.

But the full story is too big to be told here. So we’ve prepared a brand new booklet. Send for it.

The Aldon Carpet System features Antron® nylon and 501* nylon. *DuPont certification mark.



V. P., Commercial Carpets
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New York, N. Y. 10016

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Please send me your booklet,
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AR4

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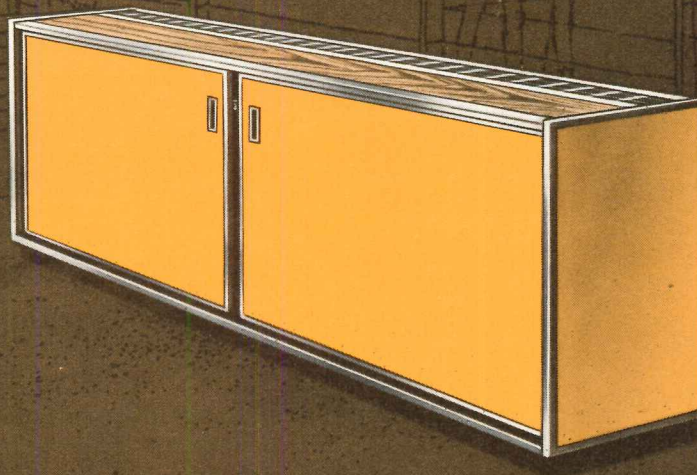
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WHEN YOUR
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MODINE

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Cost knowledge: tool for budget, program and design

By Bradford Perkins, McKee-Berger-Mansueto Inc., Construction Consultants

The estimate is not an end point. The square-foot vs. the "systems" estimate. The percentage fee: a moral issue

An experienced New England firm retained a professional cost consultant to make a single estimate at the end of design development. At that time, the project was still within the budget. However—during the period between design development and bids—the bidding climate changed, several seemingly minor design changes were made, a minority training program was added, and a number of other decisions with cost implications were modified. The resultant bids were 20 per cent over the budget.

Obviously, part of the error in this case was failure to consider the cost ramifications of the changes. This part of the error, however, was due to less visible underlying problems—the common view of estimates as an end product.

The construction cost estimate has been a valuable tool for many cost management programs. It is, nevertheless, a tool. By itself, it is often an inadequate basis for meaningful cost control.

In today's complex and inflationary construction industry, most architects and engineers should be seeking something more from their in-house or consultant cost managers. Although every project will have different requirements, a typical, complete construction cost management program would include:

1. Evaluating the economic feasibility of project goals.
2. Establishing economical project parameters.
3. Establishing realistic budgets.
4. Evaluating alternative design approaches.
5. Making periodic assessments of total project cost.
6. Helping develop the most economical contract award strategy.
7. Evaluating change orders.

Clearly, such a program is something far more than a series of estimates. Most of the potential cost savings on the average project must be achieved in the earliest phases of planning and design. Estimates,

however, are only one of the tools necessary to achieve them. Even the remainder of the potential savings requires something in addition to a detailed and accurate assessment of total project cost. Therefore, it is worth examining in some detail how an architectural firm should employ its own or outside cost expertise to achieve an effective cost management program.

All too often projects are not evaluated for cost feasibility until the end of schematic design. Wherever there is any reason for doubt, it is worth everyone's while to have a realistic assessment of the probable net costs or revenues of a new project.

In some cases this assessment is not made because no one wants to risk killing the project before it has developed some momentum. At one recent conference, a group which hopes to sponsor a new race track commented that the last chart in the architect's presentation (the one showing the probable cost) was all they needed to see. The project the group had contemplated could not be justified on the basis of cost. Not to have calculated that unpleasant truth at this time would have resulted in a nice programming fee for the architect, but it would have been a misuse of the architect's efforts and the owner's money.

A good feasibility analysis will not halt most projects. The race track in question is going ahead on a more realistic basis. The feasibility study formed the basis for re-evaluating the project in terms of its program, potential revenue, operating costs and financing arrangements.

In order to make such a study useful to most owners, the costs must be presented in a manner which facilitates decision making. In other words, the cost of each optional item should be noted. In the case of the race track, such items as the stable cost per horse, the cost of enclosing and air conditioning the entire viewing area, the variable cost per seat, probable annual

maintenance costs and many other factors were all important in the development of the final program. In other words, this information is most useful when it is structured in a manner which presents both a realistic picture of the initial approach and a means of developing the feasibility of alternative approaches.

Most projects are feasible, but they are often not programmed within the context of a set of economical project parameters. It is often at this point that the major portion of the potential savings is won or lost.

Someone should question the bid and completion dates as to whether they are so unrealistically tight that they will cause bid premiums, fail to take advantage of a slack period in the local construction industry, or are not timed to avoid adverse local weather conditions. Someone should also be able to advise on other areas such as the cost implications of materials options, the potential savings of alternative net-to-gross ratios, and the cost of optional program elements such as air conditioning.

This advice should coincide with a careful budgeting period. Systems budgeting is an important refinement of traditional budgeting techniques. Instead of over-all square-foot cost, the architects and engineers should have cost goals for each of the major systems—HVAC, exterior wall, floor, etc.—so that judgments can be made with minimum constraint on design objectives.

Cost knowledge relates to budget, scope and design development

The most important advantages of the systems technique are seen during schematic design, but the advantages of realistic budgets are felt throughout the project. This point was made in some detail in the January article.

Throughout programming and budgeting, the cost expert can play an important role by directing the project's development toward realistic approaches. During schematics, moreover, the in-house or outside cost manager can support the architect's creative role by demonstrating cost consequences of various design approaches.

Increasingly today, project managers are sitting with their cost experts to establish

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the cost limits of alternative design approaches. As one project manager noted recently, "The most valuable part of the cost management program was being able to ask 'What wall systems can I get for \$3.00 per square foot, what additional ones can I get if I have \$3.50 per square foot to spend, and what ones do I lose if I have only \$2.75?'" If this systems approach is established early, the designer is able to decide on the systems in context with the project budget.

Systems evaluations are also valuable techniques in the later phases of design. Detailed cost knowledge should be brought to bear on the increasingly detailed alternatives being evaluated. For example, in the later stages of design, and in contract documents, the relative costs of alternative details, structural systems, and other final design decisions require a more detailed evaluation than that provided by square-foot systems cost estimates.

The role of the cost expert at this point usually involves detailed quantity take-offs and pricing of real alternatives, since the exact cost options are increasingly important as the design is refined. If, in advanced design phases, it still becomes necessary to find means of reducing over-all project costs, the cost manager's role in this area is to advise the designer of less-costly alternatives to various parts of the design. In extreme situations, this may involve drastic materials substitutions or even compromise of the mechanical or space programs of the building.

Value engineering: new name for doing it right the first time

In recent years, a newly-labeled technique called value engineering has been applied in the cost management process in order to minimize the negative effects of more simplistic paring operations associated with many cost-reduction programs. The goal of value engineering is not just to reduce cost; it aims at achieving unimpaired program results for minimum cost. Thus, a system which has been successfully value-engineered will still satisfy the same performance criteria as other more costly alternatives. In its simplest application, this technique has been used to check for over-design of structural members of unnecessarily complex, hidden details. In more sophisticated applications, it involves refinements in project specifications to eliminate costly contradictions and restrictions, detailed evaluations of mechanical systems, and careful refinements of the internal composition of major details.

The five essential steps to genuine cost control

All of these techniques require the ability to take off quantities and apply prices—the basic procedure of the cost estimator. The major use of these techniques is, of course, in the development of periodic assessments of probable total project cost. None of the assertions made in the preceding paragraphs

should minimize the absolute importance of these assessments or estimates.

The basic guidelines for estimating as a tool for effective cost control include developing and organizing the level of detail necessary for decision making, clearly noting the local market conditions which will affect the final contract price, and timing the estimates to reflect significant changes in the nature or amount of information available for the estimate.

No two projects will have identical estimating requirements, but the major parts of the average full estimating program are the following:

1. A budget estimate based on the program and a study of local construction market conditions. This estimate establishes the systems cost goals and also identifies the potential strengths and problems of the local construction environment.

2. A second estimate is based on schematic drawings to check the general feasibility of the systems selected.

3. An estimate is made as soon as the design has been developed sufficiently to permit a detailed quantity take-off. This estimate should give the owner and architect their first detailed look at the probable cost system by system.

4. A fourth estimate should be made as soon as the mechanical and electrical designs are developed sufficiently to permit detailed take-off. This estimate should be accompanied by an updated market study which can be used for planning contract award strategy.

5. The fourth estimate should be updated in a manner which will permit the owner, architect and cost manager to make a detailed evaluation of the contract price.

Market studies used for planning contract award strategy should identify the potential bidders and their level of interest, problems which can affect bidder interest, pending labor negotiations and the many other factors which can affect the timing and success of the contract award period. Cost advice on such areas as negotiated contracts, construction management and the other variations of traditional contracting procedures can be invaluable.

Cost knowledge is equally essential during the evaluation of the final contract price. Many bids, for example, can be negotiated downward if the negotiations are begun from a position of real knowledge.

The same strength in knowledge is true for change orders. Only someone who can make a detailed evaluation of the actual time and cost ramifications of an approved change can successfully negotiate a change order.

All of the above elements, from feasibility studies to change order analysis, are essential parts of a full construction cost management program. In addition, all of these services clearly provide a more meaningful level of control and a far greater potential for significant savings than the single estimate.

The percentage fee: a costly moral issue

On a certain large job, a midwestern architect recently questioned his client on the wisdom of insisting on the percentage of construction cost method of compensation. As he pointed out, "If I do a good job and bring the job in under the budget, my fee will be reduced and the money will be used to pay the increased fee of a firm which overruns its construction budget." Unfortunately, that is exactly how it worked. The preliminary estimates revealed that his project, because of its design, could be built for at least five per cent less than the budget. The subsequent loss in fees represented most of the architect's projected profit. As a result, the design team had a strong incentive to use up the entire budget.

Most design professionals will ignore this incentive if they know how it exists. Nevertheless, the percentage of construction cost still nurtures the assumption that every penny of the budget should be spent.

Both the incentive to spend the full budget and the assumption that this is what is appropriate are wrong for most projects. As a first step toward correcting this long-standing problem, the architectural and engineering professions must make a concerted effort to divorce themselves from the concept that their compensation is in some way directly related to project construction costs.

The percentage of construction cost is the most common method of compensation and also the major problem. It has survived as the path of least resistance, but it has almost no virtues. Among its major flaws are the facts that:

1. It is arbitrary; fee curves in neighboring A.I.A. regions often vary by more than 50 per cent for identical projects and the direct costs of architects in the same region vary by more than 50 per cent for projects with identical fees.

2. It sometimes provides the same compensation for an exceptional degree of service as it does for a minimum program.

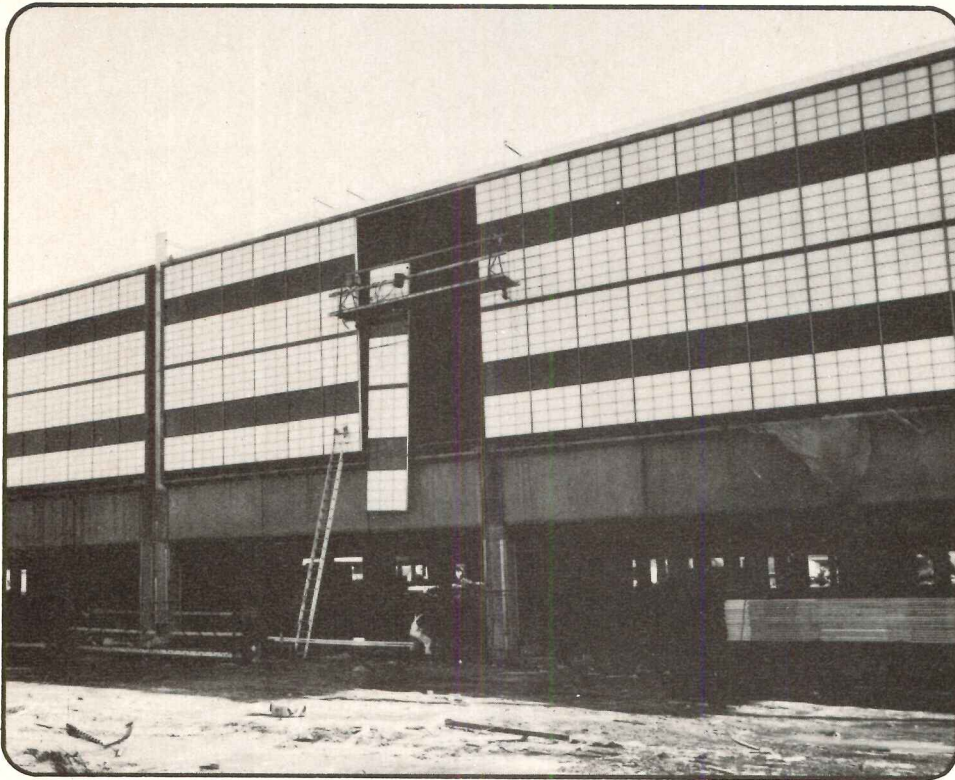
3. And worst of all, it impedes the profession's commitment to genuine cost responsibility.

This last point is the most costly for architects and engineers both in terms of reputation and dollars. In addition, experienced design professionals should be well aware of the vagaries of the U.S. construction industry today. With this in mind it is hard to understand why anyone would willingly peg his own compensation to something over which he has so little real control.

The only solution is for architects and engineers to discourage the use of all of these methods as a commitment to a professional approach to construction cost control. The professional fee plus expenses, lump sum, multiplier and several of the other methods outlined in the AIA's publication, *Methods of Compensation for Architectural Services*, are all preferable.

Building costs go down because lightweight Kalwall® panels, sash and other wall components, factory assembled into modular wall units, require less substructure and foundation. Cranes, conveyors and complicated scaffolding aren't needed so erection crews can be substantially smaller. And, installation is fast with just hand tools.

Year-round building costs go down too because Kalwall®'s high insulating values keep heating and air conditioning bills low. Completely pre-finished, Kalwall® does not need painting or finishing, inside or out. Blinds, shades, drapes or curtains aren't needed either.



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Bulletin KW-70 has complete information. Write or phone (collect) for a copy — we'll also send you the name of a nearby installation. Bruce Keller, Kalwall Corporation, 88 Pine Street, Manchester, N.H. 03103, Phone 603-627-3861.

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All the advantages of wood concrete forms over Tensiform.

I. Wood costs less than steel

Generally—not always—but generally, the price of wood is lower than the price of steel.

All the advantages of Tensiform over wood concrete forms.

1. Less concrete needed.

When you use Tensiform steel forms, you use about 20% less concrete than when you use wood forms. Which means you save about 20% on the concrete costs. Not only that, concrete cures better with steel forms.

2. Less time and labor spent in laying Tensiform.

To lay Tensiform, all you do is drop the sheets across the supports. Two men can do it in a matter of minutes. Again, money saved.

3. No time or labor spent in stripping Tensiform.

Since Tensiform is a permanent concrete form, you don't have to strip it. More money saved.

4. No time or labor spent in erecting scaffolding.

Since you don't need any scaffolding when you lay Tensiform, you don't spend any time erecting it. More money saved.

5. No time or labor spent in dismantling scaffolding.

Since you don't erect any scaffolding when you lay Tensiform, it follows that you don't have to dismantle any. Which again saves you money.

6. Other trades can work on Tensiform before pouring.

Tensiform sheets, when laid across the supports and spot-welded, are sturdy enough for workmen to walk on. Which means electricians, plumbers and other trades can do their work and move on before the concrete is placed. These trades earn too much money to sit around waiting for concrete to set.

**If you feel this comparison is unfair or exaggerated,
we invite you to use Tensiform in your next building
and prove us wrong.**

Wheeling Tensiform.[®]

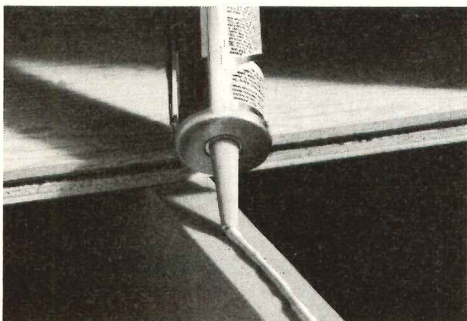
Wheeling Corrugating Co., Div., Wheeling-Pittsburgh Steel Corp., Wheeling, W.Va.

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Shhh.

American Plywood Association quietly announces the no-squeak floor for commercial buildings.



The APA Glued Floor System began in the home.

Now it's being specified for townhouses, apartments, schools, and all kinds of commercial buildings.

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Quite a set of claims? Yes.

But we've got the facts, figures and APA test results to back them up. New how-to photos. Diagrams. Span tables and charts. Case histories. DFPA plywood grade-use guides. Glue recommendations and supplier lists. Send coupon. (Lab report 118 on structural and adhesive tests available on request.)

The no-squeak floor is just one more example of the dozens of timesaving, efficient building systems developed by American Plywood Association. You can depend

on it. Just as you can depend on the DFPA grade-trademark on plywood. That means it meets the rigid standards of the oldest quality-testing program in the forest products industry. American Plywood Association.

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Can you really keep floors from squeaking? Prove it. Please send me all the facts.

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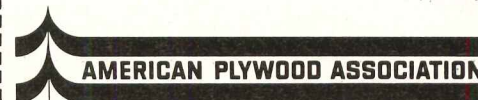
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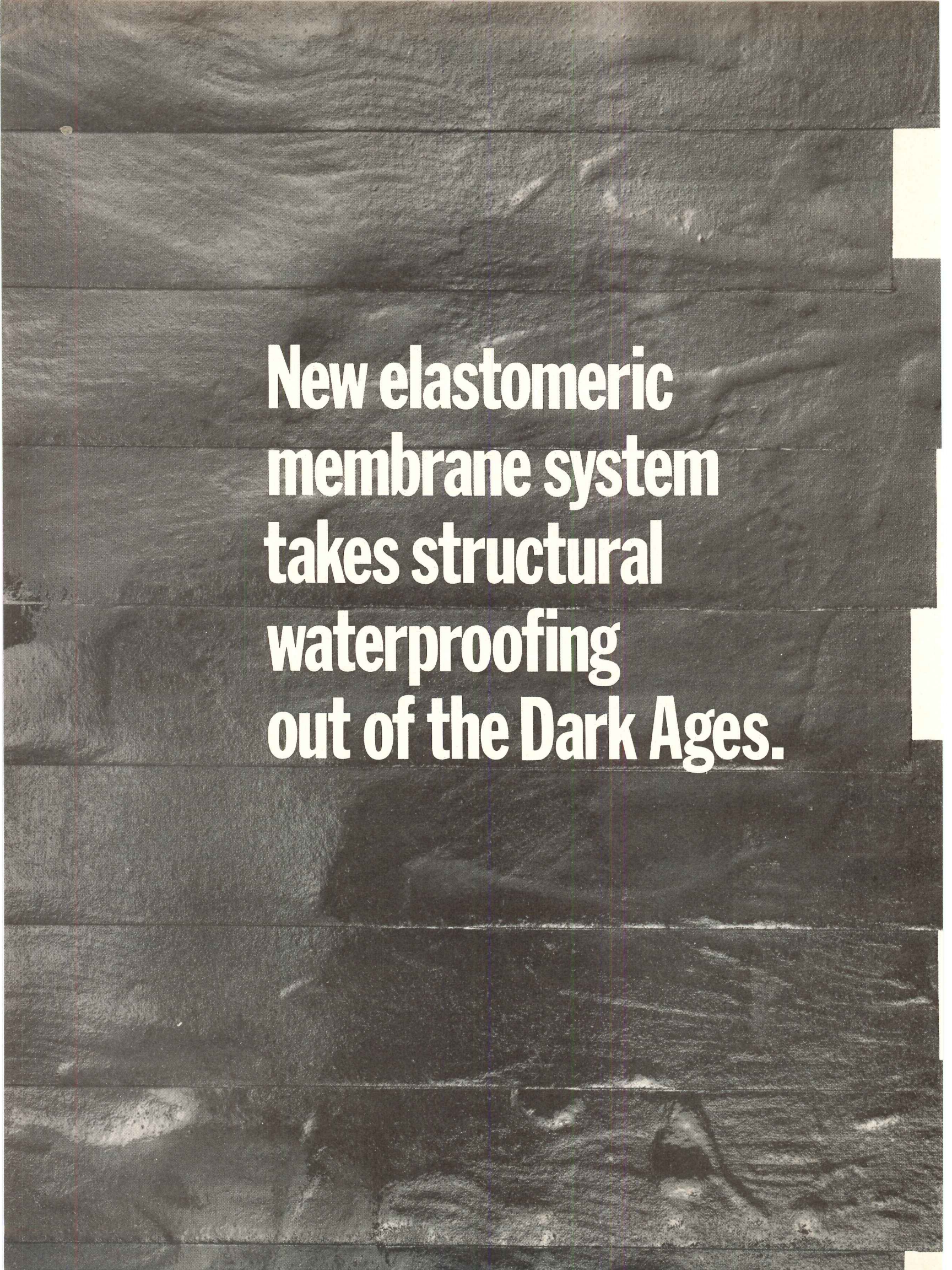


Plywood quality-tested by the Division For Product Approval.



AR-060

For more data, circle 57 on inquiry card



**New elastomeric
membrane system
takes structural
waterproofing
out of the Dark Ages.**

Black, hot-mop asphalt—and conventional membranes—are now 'way out of date. Thiokol technology has put waterproofing in step with building today.

Our new elastomeric waterproofing membrane system is a two-component, LP® liquid polysulfide base compound. Available from licensed formulators, who display the Thiokol membrane trademark.

This unique system is designed for both machine mix/spray application and hand mix/hand application. It takes a lot of the time, trouble, cost and wishful thinking out of waterproofing concrete and other structural materials for roofs, decks and foundation walls. Which you might expect. For it's based on Thiokol's LP polysulfide polymers...the materials that set the standard for the sealant industry.

For more information, and the name of your nearest Thiokol licensed formulator, write to Mr. Dan Petrino, Thiokol Chemical Corporation, P.O. Box 1296, Trenton, N.J. 08607.

One-step application

No need to prime the concrete. The liquid membrane also eliminates splicing, sealing tapes, adhesives and other time-consuming methods required by conventional waterproofing systems. Result: easier, faster application that cuts labor costs and speeds work schedules.

Seamless... even around pipes

Forms a continuous, 60-mil thick rubbery membrane on any configuration of vertical or horizontal surfaces.

Impermeable... even under water

An inert membrane that protects its underlying areas from water penetration. For above or below grade applications. Totally waterproof...even when immersed in water.

Bonds to substrate

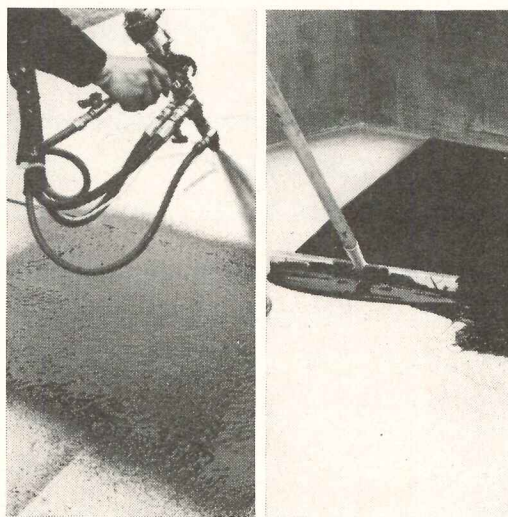
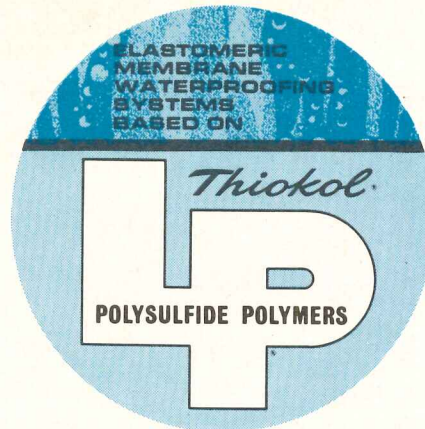
Develops an adhesive bond to concrete and other structural materials as it cures. Even if membrane were mechanically pierced, there would be no lateral movement of water between membrane and substrate.

Unsurpassed flexibility

Expands and contracts with the substrate. Won't crack or become brittle. Maintains its bond and waterproofing properties in temperatures as low as -40° F.

Chemical and bacteria resistant

Offers high resistance to bacteria and the effects of oil, gasoline, jet fuels, dilute acids, and alkali solutions.



Apply by sprayer or by hand.



Seamless membrane goes up to and on pipes and conduits.

Thiokol

CHEMICAL CORPORATION

For more data, circle 58 on inquiry card

Bally urethane foam insulation first in nation to pass UL Fire Test for walk-in refrigerator panels

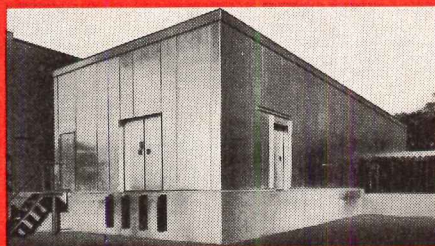
For the first time ever, Underwriters' Laboratories (UL) has granted a 25 low flame spread rating to a urethane foamed-in-place Walk-In refrigerator panel. It was awarded to Bally and now in most states qualifies their panels to receive the same low rate which insurance authorities apply to masonry refrigerated structures.

Bally's low flame spread 25 rating meets the most stringent building codes of major cities . . . earns substantially reduced insurance rates (ask your insurance broker) . . . and, most important, provides a vastly increased measure of safety in hospitals, nursing homes, schools and colleges, hotels and motels, restaurants and clubs . . . wherever masses of people congregate and maximum fire protection is critical.

This major advance in design is the culmination of four years of extensive Bally research. Success results from combining the chemistry of higher cost pour-type (not frothed) urethane and the mechanics of foaming it in place with complex thermal controlled high-pressure molds.

Look for the UL label. . . it is assurance of a 25 low flame spread rating. You will find it on every Bally panel. Architects, Food Service Consultants, Specifiers . . . to make sure your clients get the advantages of this new urethane, use this paragraph for insulation specifications:

Insulation shall be 4" thick rigid urethane foam (poured-in-place, not frothed). It shall conform to ASTM Fire Hazard Materials Test #E-84-61 and have a low flame spread rating of 25 or less with a certifying UL label on every panel. The expanding agent shall be only Freon 11 with an inherent pressure of 38 PSI when foam is heated to 150°F. Thermal conductivity factor ("K") shall not exceed 0.118 BTU per hour (Square Foot) (Fahrenheit degree per inch). Overall coefficient of heat transfer ("U" Factor) shall not exceed .029. The insulation must remain stable at a temperature range of -90°F. to +250°F.



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Address All Correspondence To Dept. AR-6

Bally Case and Cooler, Inc., Bally, Pennsylvania 19503

For more data, circle 59 on Inquiry card

CURRENT TRENDS IN CONSTRUCTION

Robert M. Young
Senior Economist
McGraw-Hill Information Systems Company

Where is the money coming from? Part 2: possible solutions

A lot of changes are going to be taking place both within the construction industry and in the money markets that will strongly influence the financing of new building in the Seventies. The most apparent (and most talked about) of these is the sharp increase in demand for new housing. The Housing Act of 1968 sets a goal of 26 million new and rehabilitated housing units for the decade ending in 1978, which would require new starts to climb over the three million mark by the end of this period. This goal compares with a total of fewer than 15 million units built in the previous decade, with a peak year production of only 1,641,000 housing units. Even if new census figures or a reassessment of the need causes a downward revision in the goal, it is clear that housing will command a much larger share of construction resources than it has in the past. At the same time, there is no let-up in sight for commercial, industrial and non-building construction.

The changing mix between single-family units and apartments is as important as the expected growth in total new housing. As recently as 1960, one-family houses, including mobile homes, accounted for 79 per cent of total output. This proportion had dropped to 64 per cent in 1969. This trend is expected to continue into the late Seventies, especially if mobile home production is phased into the manufacture of modules for low-cost apartment construction. This means that single-family home construction might amount to only 1.0 to 1.2 million units in the late Seventies—fewer than during most years of the Fifties.

The shift into apartment housing has important implications for the financing of all construction in the next decade. For one thing, it will take pressure off the traditional sources of funds for single-family houses—savings and loan associations, mutual savings banks and commercial banks. These are the same institutions that experience the greatest difficulty in attracting long-term savings during periods of high interest rates (a situation that could be changed if regulations were revised to permit competitive interest payments on deposits). At the same time, it will put a large part of residential financing into direct competition for the funds that have traditionally gone into commercial, industrial and other types of non-residential construction. Thus, the market

for apartments will expand rapidly, but the competition for the money to put up these buildings will also increase.

Traditional investors in mortgages for commercial and large apartment projects include insurance companies, commercial banks and individuals. A growing but largely untapped source of funds is the private pension reserves, which currently hold assets in excess of \$100 billion. An increasingly larger share of the investments that these institutions—especially the insurance companies—make in real estate is going into direct equity or combination mortgage-equity arrangements. The demand for office, retail and apartment space in most urban areas has increased the income potential on these properties to the point that ownership participation is often more attractive than the mortgage yield. There is no reason to believe that this situation will change soon.

Hand-in-hand with this trend in institutional investment has been the development during the past decade of a new form of participation in construction for the *small* investor—the real estate investment trust. Similar to the mutual fund's role in stock purchases, the real estate trusts pool the resources of individuals for either direct investment or long-term mortgages in large apartment, office building or shopping center projects. This gives the individual the protection of a diversified portfolio for a minimal investment; for the sponsors it opens up opportunities to channel funds in a way that gives them special tax advantages (no corporate profits plus accelerated depreciation on apartments); and for the developers it provides a new source of capital. Still relatively small—about \$2.5 billion in assets right now—this form of financing, or something similar, has the potential for becoming a major source of funds.

Just as the real estate investment trusts may provide a means of financing large projects from small individual savings, the Government National Mortgage Association (Ginnie Mae) has developed a new means of providing large pools of funds to finance small mortgages. By issuing large-denominations of mortgage-backed debentures (which would trade freely on the market), Ginnie Mae hopes to attract to the home mortgage market large institutional investors who would not otherwise want to bother with small individual loans.

Many of the current and potential methods of financing construction are largely offsetting, in the sense that they channel existing investible funds from one type of building activity to another. If the housing goals of the Seventies—including low-income apartments that may not be attractive private investments—as well as other construction needs are to be met, the ultimate solution probably lies in a reordering of political, rather than economic, priorities. Present Federal government lending and guarantee programs may temporarily encourage housing, but by relying on the private money market they ultimately contribute to the distortions that reduce the availability of funds for all types of construction today.

FIRST QUARTER CONSTRUCTION CONTRACTS

Despite record interest rates, tight monetary policy, reduced government spending and a generally unfavorable outlook, contracting for major architect-designed building rose 10 per cent over the volume for the last quarter of 1969, after adjustment for seasonal variation, and 12 per cent over the year-ago total. On a year-to-year basis, the gain was highlighted by increase of over 40 per cent in manufacturing and hospital contracting, while commercial, recreational, apartment and miscellaneous building posted gains close to the average. Public, educational, religious, and hotel building responded to monetary conditions and showed small declines from last year's first quarter.

The first quarter gains are expected to be sharply eroded during the remainder of the year. Financing for office and manufacturing buildings will become increasingly more difficult, especially if corporate profits follow the looked-for downward trend. State and local government spending (including school bond issues) will suffer from unfavorable bond market rates, and Federal government building programs will remain sharply reduced.

F. W. DODGE CONSTRUCTION CONTRACTS ARCHITECT-DESIGNED BUILDINGS

	First Quarter Contracts (millions of dollars)		Per Cent Change
	1969	1970	
Office Buildings	1,319	1,449	+10
Other Commercial	960	1,089	+13
Manufacturing	910	1,286	+41
Educational	1,216	1,147	-6
Hospital and Health	581	840	+44
Public Buildings	205	170	-17
Religious	149	126	-15
Amusement & Recreation	240	270	+12
Miscellaneous Nonresidential	188	243	+29
Apartments	1,707	1,837	+8
Hotels, Motels, Dormitories	328	306	-7
TOTAL	7,803	8,763	+12

INSTANT POWER STATION

*a new compact, self-contained
gas turbine generator station*

A new 800-KW modular package is being produced now by Solar to supply emergency electrical power. It includes a gas turbine-driven generator and all ancillary equipment required.

This completely self-contained unit is designed for "plug-in" installation to bring users money and time-saving advantages never before available.

Solar is producing this simplified "instant power station" for the communications industry and for such general applications as industrial plants, offshore drilling platforms, hospitals, high-rise office and apartment buildings, and

airports—wherever low-cost, reliable emergency electrical power is needed.

Each 800-KW station is prefabricated, easily portable, and can be installed quickly on rooftop or at ground level, including parking lots, etc. The station requires only minimal foundations... comes in weatherproof enclosure... is virtually vibrationless... and can be operated either automatically or manually. There is space within the enclosure for a technician to provide routine maintenance.

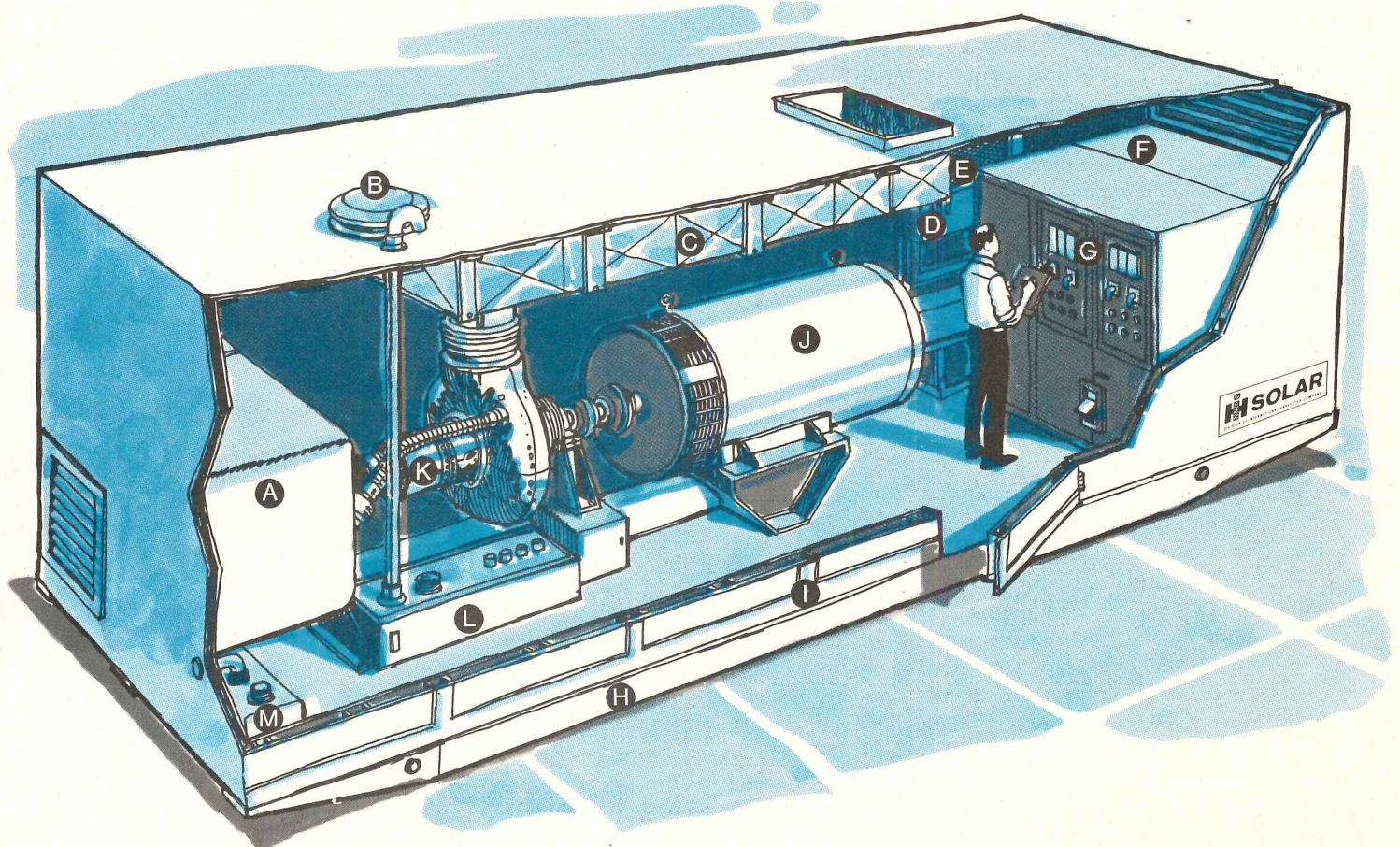
The generator set starts quickly and accepts full load without

warmup. Where installations require additional generating capacity, two or more Solar sets may be easily joined together.

Solar's new 800-KW generator stations are powered by 1100 hp Saturn® industrial gas turbines which have proven their reliability in more than 9 million operating hours throughout the world.

For more details on Solar's new 800-KW "instant power station"—the most advanced gas turbine-driven emergency generator for nearly every type of application, write: Solar, Division of International Harvester Company, Dept. S-286, San Diego, Calif. 92112.

- (A) AIR INLET FILTER (B) VENTILATION FAN (C) EXHAUST SILENCER (D) BATTERY RACK (E) OIL COOLER (F) SWITCH GEAR (G) CONTROL PANELS
(H) STEEL SKID (I) REMOVABLE PANELS (J) 800-KW GENERATOR (K) SATURN GAS TURBINE (L) LUBE OIL TANK (M) FUEL DAY TANK



For more data, circle 60 on inquiry card

INDEXES AND INDICATORS

William H. Edgerton
Dodge Building Cost Services
McGraw-Hill Information Systems Company

COSTS—THE OUTLOOK IS BECOMING CLEARER

Builders of commercial and industrial structures around the country report that in this period of very tight money they are absorbing some of the smaller—and recent—cost increases they have experienced. Difficult as this is to believe with ever-increasing building costs, such reports have come in sufficient numbers to indicate a trend. However, the general consensus is that when money loosens and demand increases “. . . there is a big bang to come!” How much of a bang the industry can stand is presently an unanswerable question. Hefty increases in labor rates appear to continue unabated in the face of a recession, rising unemployment, and a falling stock market, perhaps because union leaders foresee a large backlog of projects that are stalled by high interest rates and the general unavailability of mortgage money. When the situation eases, we will probably see unprecedented demand for construction and much higher annual increases in the cost to build.

Building cost indexes

The information presented in the tables indicates trends of building construction costs in 35 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.

The indexes are computed on a basis of 40 per cent labor rate and 60 per cent materials price. Wage rates for nine skilled trades, together with common labor, and prices of four basic building materials are included in the index for each listed city.

Differences in costs between two cities can be compared by dividing the cost differential figure of one city by that of a second.

1941 average for each city = 100.00

Metropolitan area	Cost differential	Current Index		% change year ago res. & non-res.
		residential	non-res.	
U.S. Average	8.5	303.2	323.1	+ 7.79
Atlanta	7.5	382.9	406.2	+ 9.71
Baltimore	7.6	310.5	330.3	+ 3.77
Birmingham	7.2	286.9	308.6	+ 5.07
Boston	8.4	288.7	305.6	+ 7.95
Buffalo	9.2	335.3	357.1	+ 9.02
Chicago	8.8	350.5	368.6	+ 6.32
Cincinnati	9.0	318.3	338.4	+ 7.30
Cleveland	9.8	344.5	366.1	+ 7.29
Columbus, Ohio	9.0	324.1	345.2	+ 7.18
Dallas	7.7	304.4	314.4	+ 7.98
Denver	8.3	327.8	348.4	+ 8.20
Detroit	9.5	343.4	360.5	+ 8.60
Houston	8.1	296.6	315.9	+11.18
Indianapolis	8.8	287.9	306.6	+ 6.41
Kansas City, Mo.	8.3	289.9	306.8	+ 7.30
Los Angeles	8.3	324.7	355.3	+ 6.89
Louisville, Ky.	8.1	299.4	318.9	+ 8.57
Memphis	7.6	290.0	308.9	+ 5.55
Miami	8.6	327.2	343.5	+ 9.10
Milwaukee	9.2	357.9	381.2	+ 8.27
Minneapolis	8.9	326.1	346.6	+ 9.85
Newark	8.9	298.7	318.1	+ 7.81
New Orleans	7.9	293.1	310.6	+ 6.84
New York	10.0	335.2	360.5	+ 7.94
Philadelphia	8.6	317.9	337.7	+ 7.85
Phoenix	8.2	168.7	179.6	+ 6.69
Pittsburgh	9.1	302.5	321.6	+ 6.57
St. Louis	9.2	321.6	340.8	+ 9.16
San Antonio	8.1	122.6	130.6	+ 7.70
San Diego	8.2	123.0	131.0	+ 7.67
San Francisco	8.9	426.7	466.9	+ 9.45
Seattle	8.6	299.9	335.1	+ 9.79
Washington, D.C.	7.9	278.5	296.6	+ 8.22

Cost differentials compare current local costs, not indexes.

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

1941 average for each city = 100.00

Metropolitan area	1962-1968							1969 (Quarterly)				1970 (Quarterly)			
	1962	1963	1964	1965	1966	1967	1968	1st	2nd	3rd	4th	1st	2nd	3rd	4th
	Atlanta	298.2	305.7	313.7	321.5	329.8	335.7	353.1	364.2	365.9	382.8	384.0			
Baltimore	271.8	275.5	280.6	285.7	290.9	295.8	308.7	311.4	313.0	321.8	322.8				323.7
Birmingham	250.0	256.3	260.9	265.6	270.7	274.7	284.3	288.4	289.9	302.4	303.4				303.5
Boston	239.8	244.1	252.1	257.8	262.0	265.7	277.1	278.2	279.6	294.0	295.0				300.5
Chicago	292.0	301.0	306.6	311.7	320.4	328.4	339.5	340.4	342.1	354.9	356.1				362.2
Cincinnati	258.8	263.9	269.5	274.0	278.3	288.2	302.6	309.8	311.5	324.8	325.8				332.8
Cleveland	268.5	275.8	283.0	292.3	300.7	303.7	331.5	334.9	336.7	357.1	358.3				359.7
Dallas	246.9	253.0	256.4	260.8	266.9	270.4	281.7	287.2	288.7	307.6	308.6				310.4
Denver	274.9	282.5	287.3	294.0	297.5	305.1	312.5	317.9	318.5	337.9	339.0				343.4
Detroit	265.9	272.2	277.7	284.7	296.9	301.2	316.4	326.8	328.5	351.8	352.9				355.2
Kansas City	240.1	247.8	250.5	256.4	261.0	264.3	278.0	281.0	282.3	294.5	295.5				301.8
Los Angeles	276.3	282.5	288.2	297.1	302.7	310.1	320.1	323.7	325.4	343.0	344.1				346.4
Miami	260.3	269.3	274.4	277.5	284.0	286.1	305.3	309.6	311.2	328.3	329.3				338.2
Minneapolis	269.0	275.3	282.4	285.0	289.4	300.2	309.4	310.6	312.2	330.1	331.2				341.6
New Orleans	245.1	248.3	249.9	256.3	259.8	267.6	274.2	285.5	287.1	296.6	297.5				305.4
New York	276.0	282.3	289.4	297.1	304.0	313.6	321.4	324.9	326.6	343.4	344.5				351.1
Philadelphia	265.2	271.2	275.2	280.8	286.6	293.7	301.7	304.6	306.2	320.0	321.0				328.9
Pittsburgh	251.8	258.2	263.8	267.0	271.7	275.0	293.8	297.0	298.6	310.0	311.0				316.9
St. Louis	255.4	263.4	272.1	280.9	288.3	293.2	304.4	306.8	308.3	323.7	324.7				335.2
San Francisco	343.3	352.4	365.4	368.6	386.0	390.8	402.9	415.6	417.5	439.9	441.1				455.4
Seattle	252.5	260.6	266.6	268.9	275.0	283.5	292.2	296.1	297.5	316.8	317.8				325.4

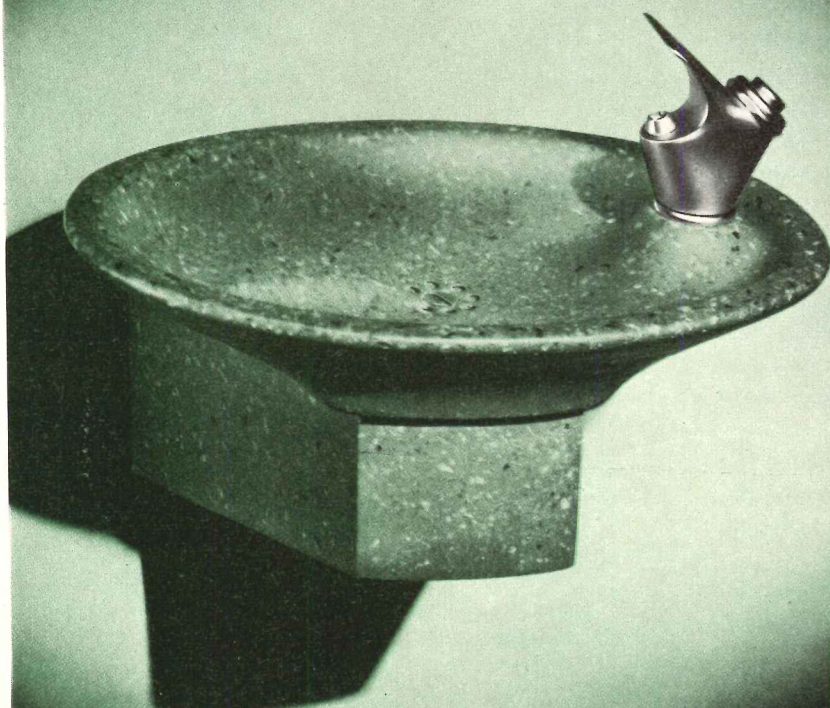
Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.0) divided by the index for a second period (150.0) equals 133%, the costs in

the one period are 33% higher than the costs in the other. Also, second period costs are 75% of those in the first period (150.0 ÷ 200.0 = 75%) or they are 25% lower in the second period.

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LETTERS

Pros and Cons on Breakthrough

Mr. Robert Jensen's article "Operation Breakthrough" in the April, 1970 issue of *Architectural Record* is most interesting and informative. I am Housing/Urban Renewal Specialist for the State of West Virginia, and being directly involved in our State's Breakthrough program my attention was directed to this article by a consulting engineer in this building.

Although Mr. Jensen's article is concise, he makes a number of points that, I think, paint a most objective picture of Operation Breakthrough. There are three points which especially interest me.

Concerning codes and zoning ordinances, it is refreshing to see the positive and constructive side of these controversial items stated in comparison with the negative. Hopefully, HUD, through Breakthrough, will use its "leverage" to prove the value of codes and zoning by eliminating the negative.

Secondly, "program of friendly persuasion" is not a common view of the Federal Government, but a welcome one. I particularly like Mr. Jensen's mention that Breakthrough intends to increase local "control", although I think "responsibility" may be more fitting since that seems to be what we in the U.S. seem to have abdicated.

The third point is one of disagreement. Mr. Jensen seems to imply that with funding, Breakthrough can reverse the housing crisis. I think that labor as well as industry or management has responsibility in all of their facets to help reverse the housing crisis since housing, directly or indirectly, involve a myriad of disciplines (e.g. health, education, utilities, transportation, etc.). In sum, local responsibility.

E. B. Henry
Housing/Urban Renewal Specialist
Community Affairs Division
Federal/State Relations Office
Charleston, West Virginia

Building is Land Death?

The shopping centers of Harrell & Hamilton promise to provide some of the most exciting spaces in Dixie but they share with all other U.S. architecture, including my own, one sad feature: land death. Can you imagine what those three sites, totalling over 400 acres, mean in terms of run-off, wildlife destruction, altered microclimate, and greendead, not to mention the soul-crushing effects of so much asphalt on the human psyche?

Isn't it time to stop? Isn't it time America's architects vow to touch no site unless it can be improved, rather than degraded, ecologically?

Malcolm B. Wells
Architect/Conservationist
Cherry Hill, New Jersey

309

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St. Charles Manufacturing Company, St. Charles, Illinois

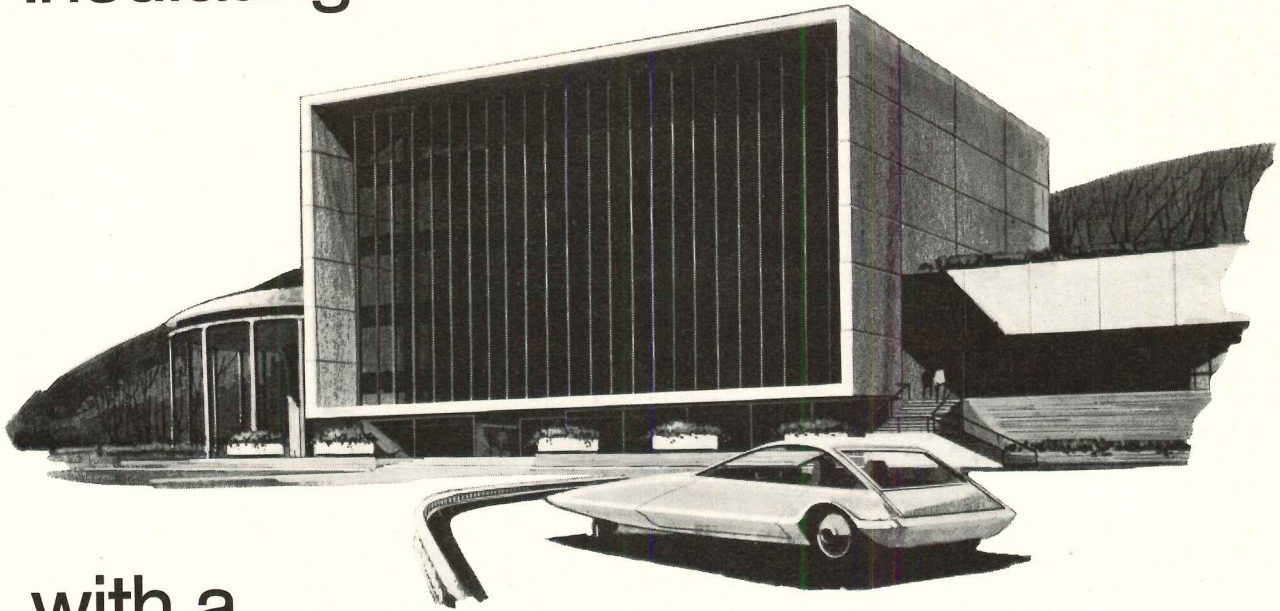
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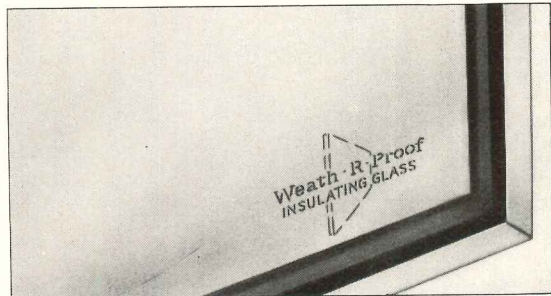
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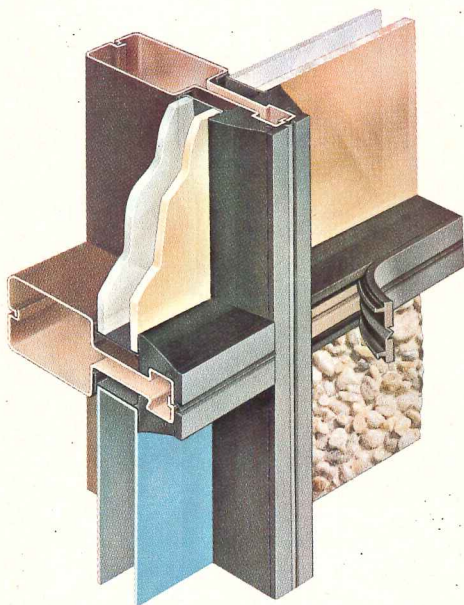
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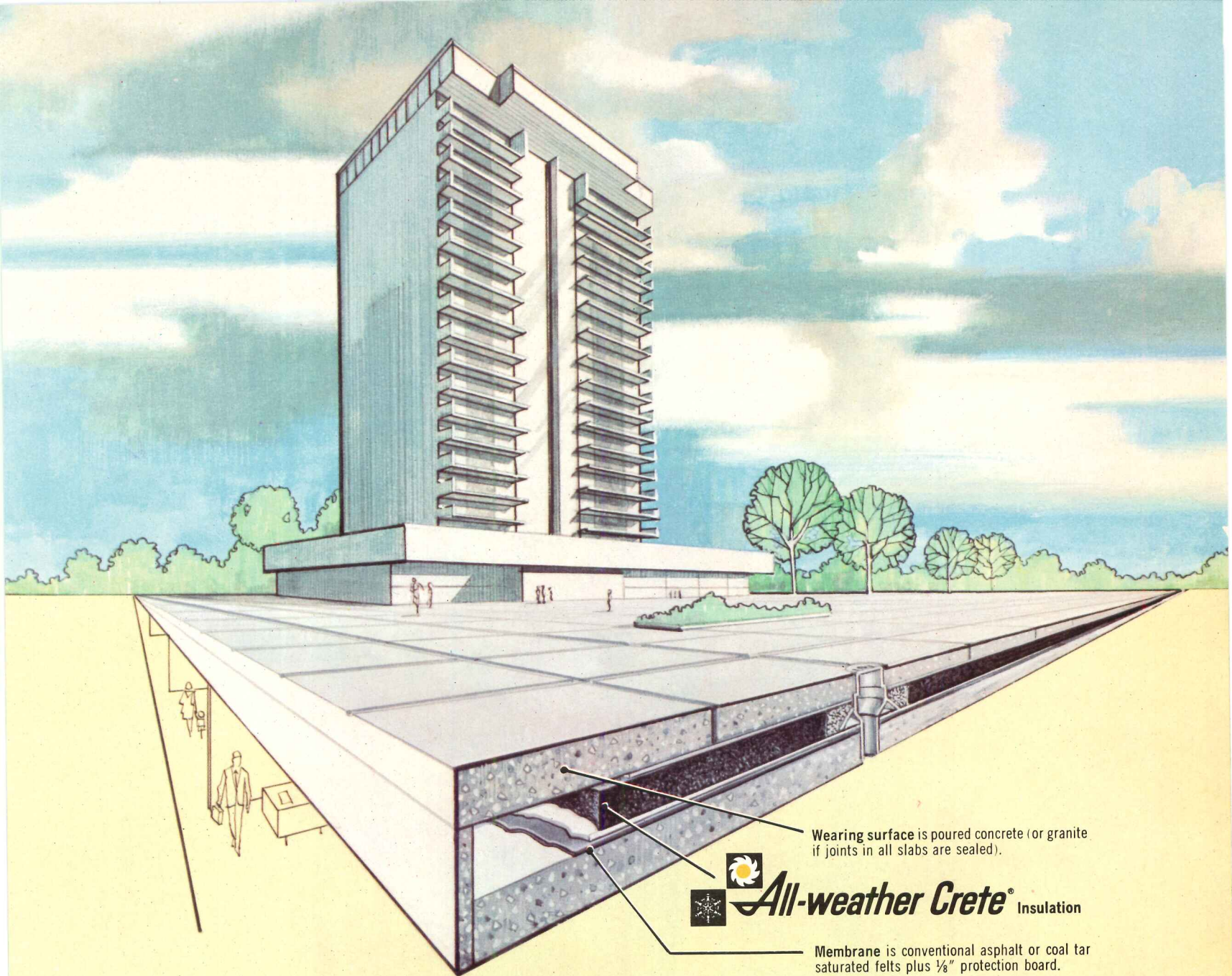


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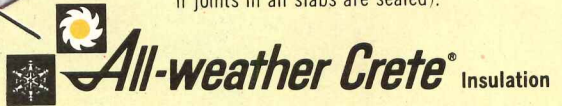


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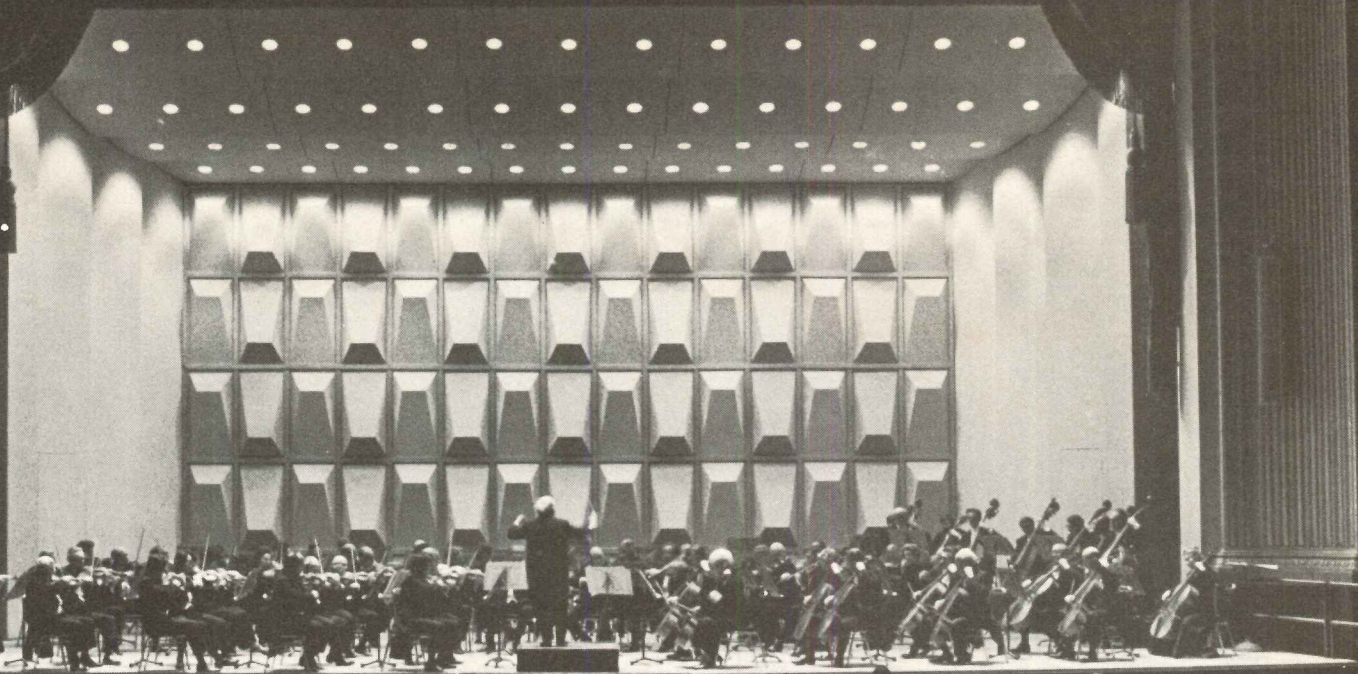
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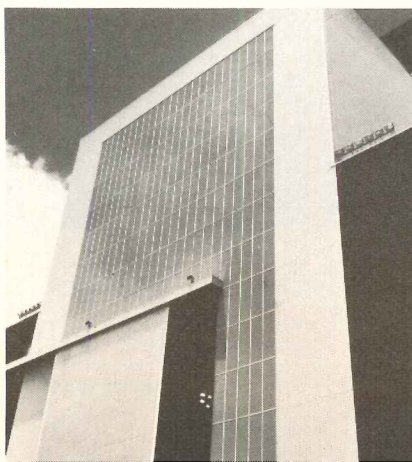
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AR 6

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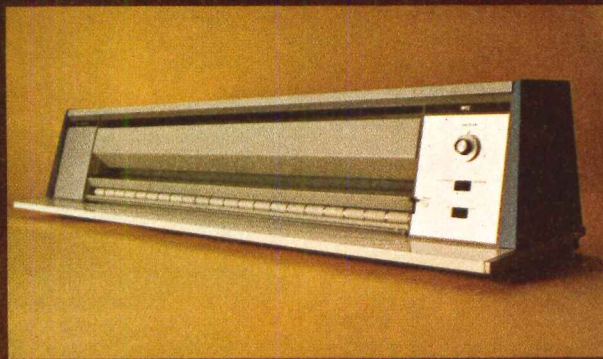
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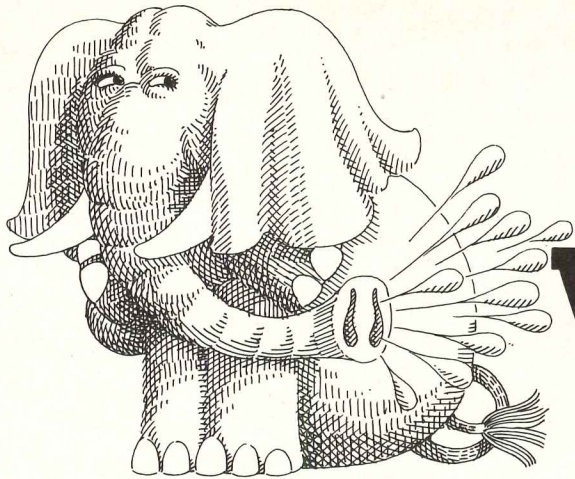
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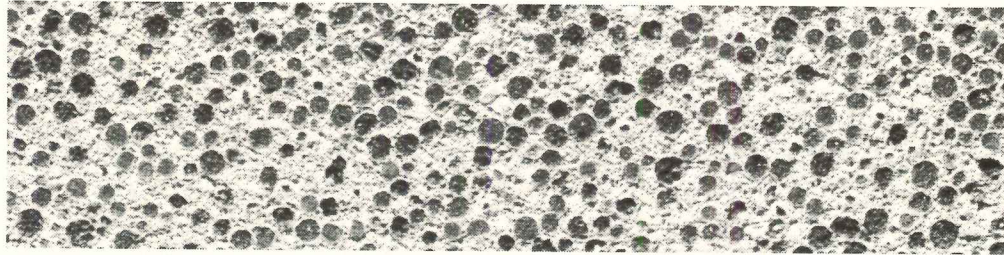
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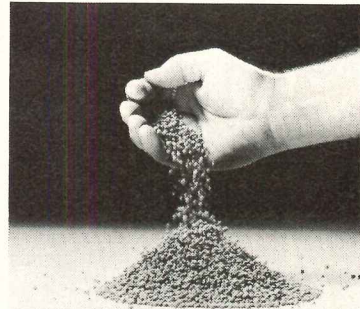
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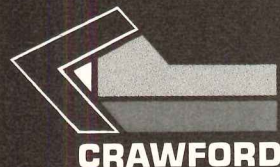
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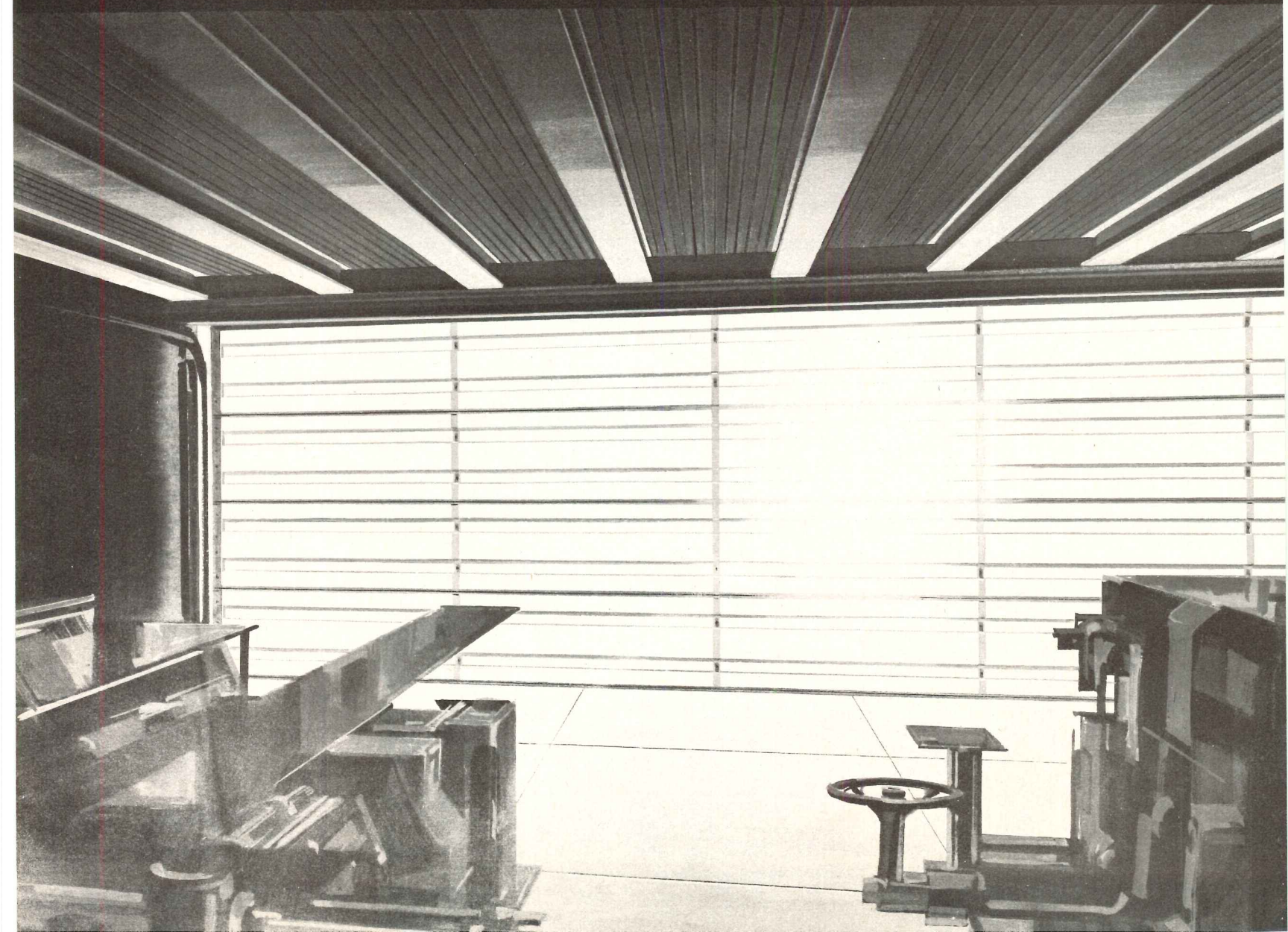
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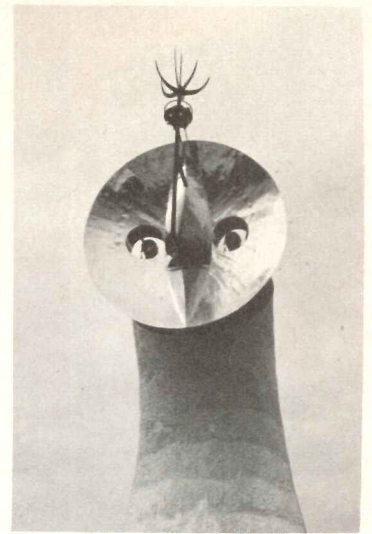
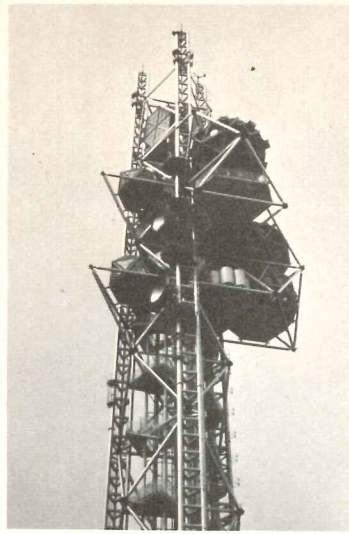
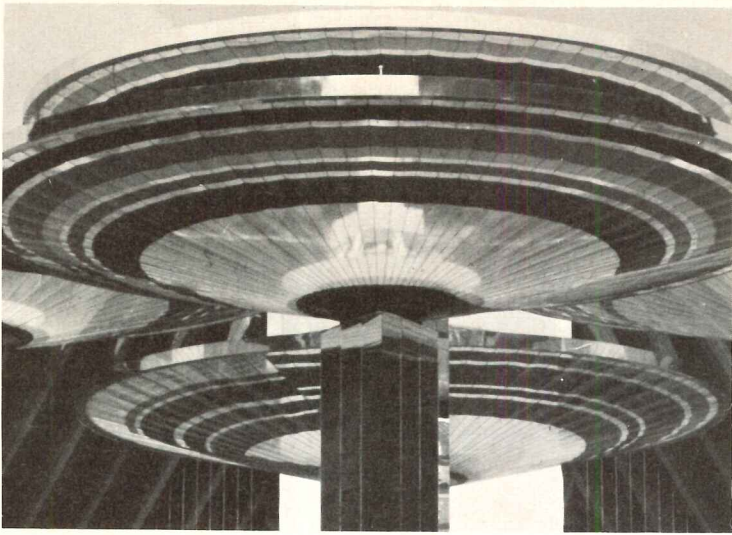
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EXPO'70

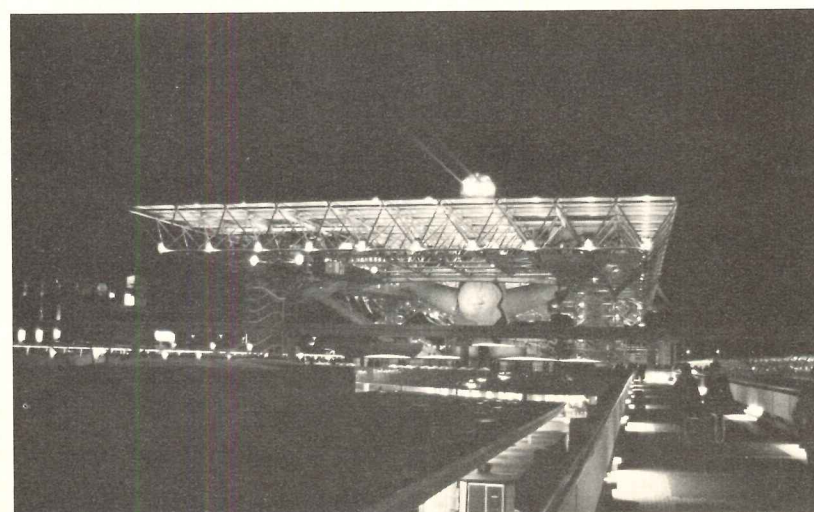
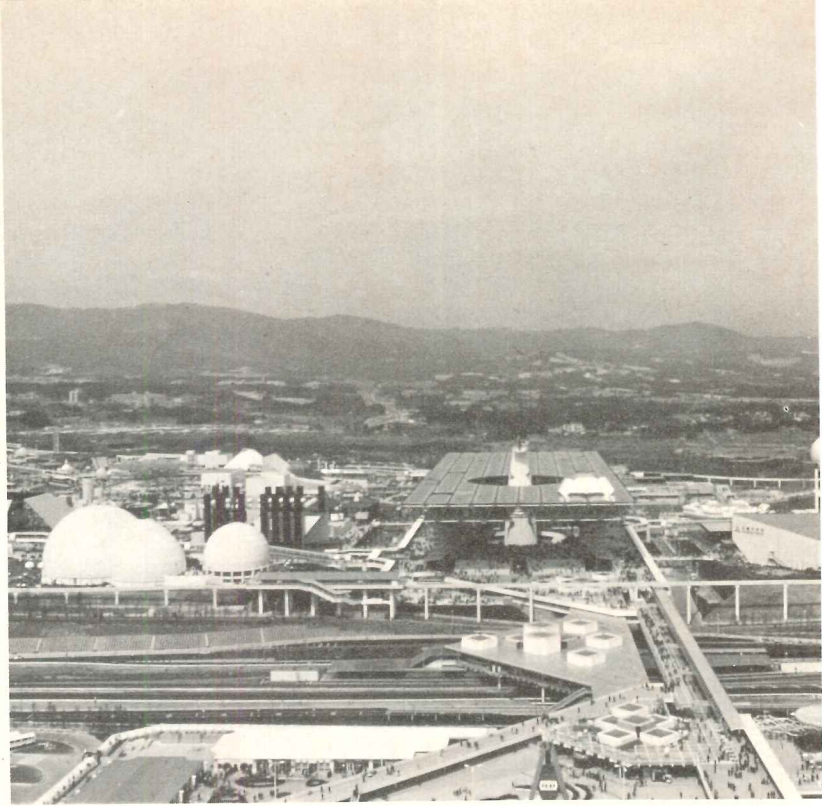
The first world's fair to be held in Asia is alive with the vitality, energy and humor of the Japanese people, the strength of their artistic traditions and the apparent durability of their faith in technology. As such, Expo '70 is a triumph for Japan's architects and artists who turn out to be very good indeed at doing fairs, because they are skilled in the creation of the physical symbols which make a fair a fair. Japanese designers, for an example, have concocted visionary structures which express the essence of hoped-for technological advance, as in the Expo Landmark Tower (top center) by Metabolist architect Kiyonori Kikutake, an affirmation of the belief among the Japanese architectural avant-garde that man should and will eventually live in capsules plugged into endlessly expandable infrastructures.

Expo '70 has its share of symbolic structures of more primitive significance handled with a typically Japanese gaiety and verve. The detail of the head of the Tower of the Sun by sculptor Taro Okamoto (above right) suggests an alert bird which, when seen in context, appears to grow out of an inverted tap-root—a symbol of the primordial natural forces which have not been neglected in this technologically oriented fair. The Tower of the Sun thrusts its way upward through the great space-frame roof of Kenzo Tange's magnificent Theme Pavilion. At night its eyes become a pair of powerful beams aimed at the crowds entering the main gate.

Japan's rich decorative arts tradition has been a strong source of inspiration for the designers of this fair including those from the West. Vancouver architects Erickson and Massey, designers of the Canadian Pavilion, have created the apotheosis of the Japanese parasol in five transparent rings called spinners (above left) in multi-colored transparent plastic. These revolve slowly at the center of the beautiful mirrorsheathed pavilion and have become the most photographed objects at the fair.

The most important symbol of the fair, however, is the site plan itself and the Theme Pavilion which forms its central spine. According to Tange, who was responsible for the basic master plan, the fair has been designed as a living city with a daytime population of 400,000 people and the Theme Pavilion with its vast space frame, and its multi-level circulation network has been designed to be the ordering and harmonizing spine or trunk for this city. Indeed it is Tange's hope that this spine will become the core of the real city which will eventually begin to grow in the broad plain which has become the fair site.

Text and photographs by Mildred F. Schmertz





The site plan of Expo '70 in Osaka is inevitably being compared to Expo '67 in Montreal, and does suffer by contrast. The Montreal site was vast, interlaced with a network of river channels, canals and parkland and connected by a far-flung circulation system of express trains, mini-rails, vaporettos in canals and Hovercraft in the St. Lawrence River. These wound sinuously around and through pavilions over miles of track and waterways deliberately lengthened and made intricate to increase the length and pleasure of the ride and to provide the best possible views.

The Osaka site by contrast, is much smaller in size, it has no water ways and its mechanized circulation is tight, rather than generous. Budget restrictions reduced the number of moving sidewalks originally planned and limited their length.

The Canadian fair had few 'dead' spaces because foreign, local and commercial pavilions were intermixed with shops and other attractions. At the Japanese fair, pavilions are grouped by category, some categories are less interesting than others and, at least during opening week, some areas of the fair seemed undervisited and therefore dead.

Most unfortunate is the fact that at Osaka, almost all the green space is concentrated in one huge Japanese garden to the north of the site, and water is similarly confined to small areas. These were not site planning errors on the part of Tange and his fellow master planners, but simply reflect constraints imposed by the Japanese government and the budget. For an example the government wanted the enclosed Japanese garden, instead of meandering green space, so that a specific recognizable area would exist to which the government could attach its name. Further, an enclosed

garden is in keeping with the Japanese tradition that beauty must lie within the temple or palace precinct, be enclosed by the garden wall, sheltered within the house. The idea that beauty can belong to the public at large in streets and open parks is a western notion still alien to the Japanese, as their chaotic cities prove.

The Montreal fair, masterplanned with its key facilities designed by French and English Canadians and émigré architects from Czechoslovakia, Hungary and Poland, was European, cosmopolitan and graceful. Expo '70, in contrast, is independently and aggressively Japanese and never more so than in its relentless emphasis on technology. As such, after the comparisons to Montreal have been made, the Japanese fair should be examined on its own terms. As the site plan indicates, Expo is organized around a great spine or trunk called the Symbol Area. At the southern end of the trunk is the Expo Tower designed by Kikutake as the fair's landmark and as a prototype control tower for a visionary city. From this tower it is possible to look straight down the spine of the fair as in the photograph (opposite page top). From there one can see the Kita-Osaka Express Electric Railway which leads to the main gate station, the main gate and the roof of the Theme Pavilion and the Festival Plaza. From another vantage point within the tower one can see the amusement area (opposite page middle).

The structure of the tower consists of a steel pipe framework connected by cast steel ball joints which permit the struts to be attached at a number of different angles as in the detail photo (second from top right). The structure weighs 950 tons, is 400 feet high and is visible from all points on the fair site in-

cluding the entrance plaza of the Theme Pavilion.

Approximately 2,000 people per hour are transported by two elevators to visit the capsules which contain exhibits.

At the northern end of the spine are the Expo Museum of Fine Arts, the Expo Concert Hall and the Japan Folk Crafts museum, all of which could form the core of a future city on the site. The Expo Museum of Fine Arts, one of the best designed buildings at the fair, houses an excellent collection of Western and Eastern art.

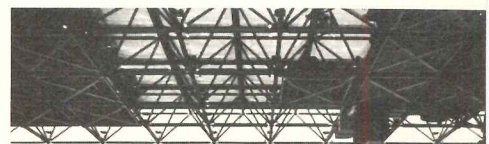
Branching to the east and west of the trunk or spine are the moving sidewalks which form the branches of Tange's tree analogy. Trunk and branches are in colors of white and silver to distinguish them from the pavilions which Tange describes poetically as the blossoms on the tree.

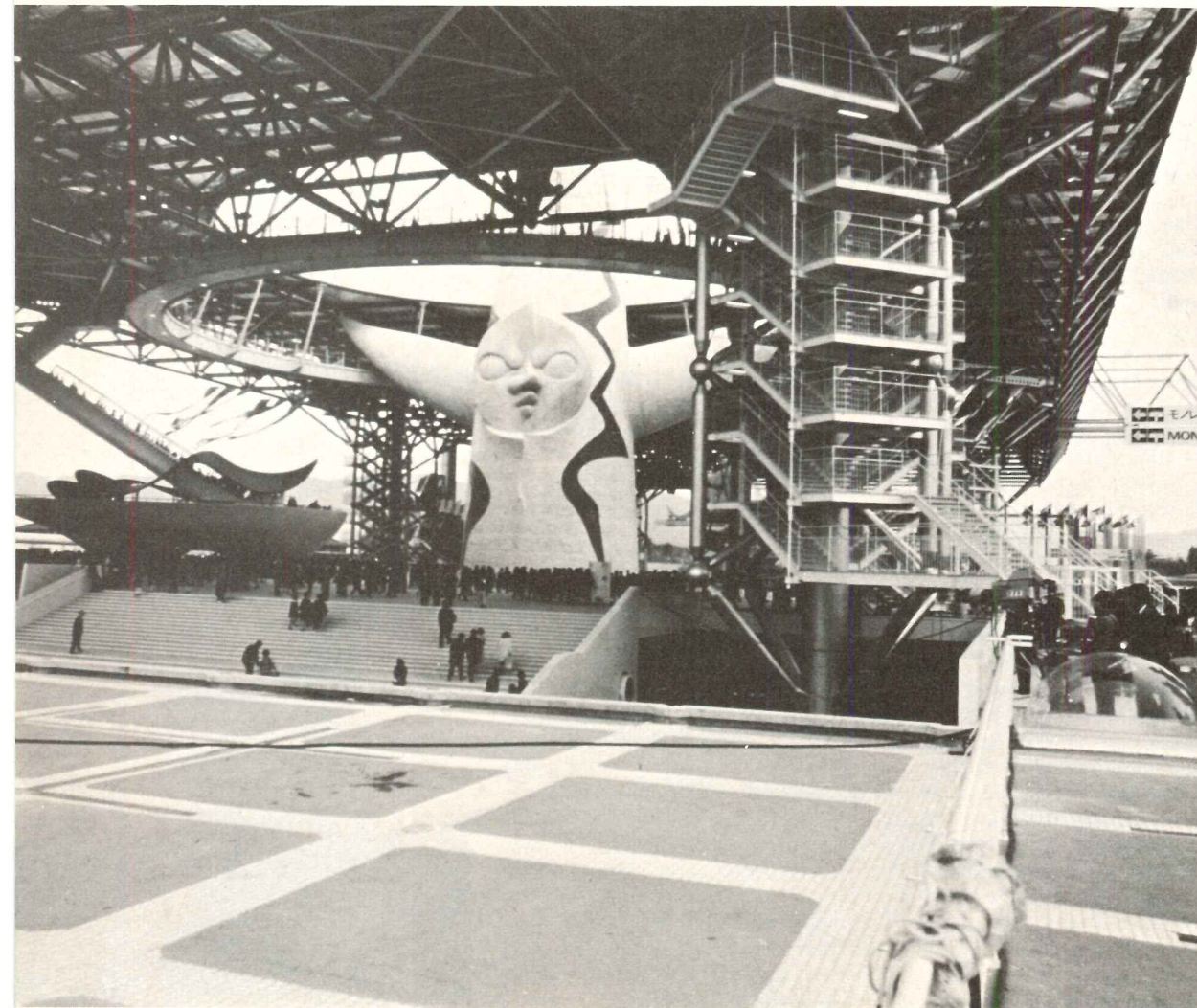
The pavilions are grouped in three major categories—Japanese government, Japanese commercial and foreign. A monorail circles the site and an aerial cableway connects the west and east gates. The fair has a plaza for every day of the week, and these are named accordingly.

The photograph (top) shows the approach toward the main gate of the fair. Here the densest crowds congregate. The fair throughout is characterized by exceptional attention to detail. When mistakes have been made, they are minor.

Expo '70 is magnificently lit at night as the photograph (opposite page bottom) can only suggest.

Expo '70 like all fairs has a big share of pavilions which range from mediocre to awful, but somehow the bad ones are less objectionable at Osaka possibly because the strong frame work of Tange's site plan renders them ephemeral, like the blossoms of his analogy.

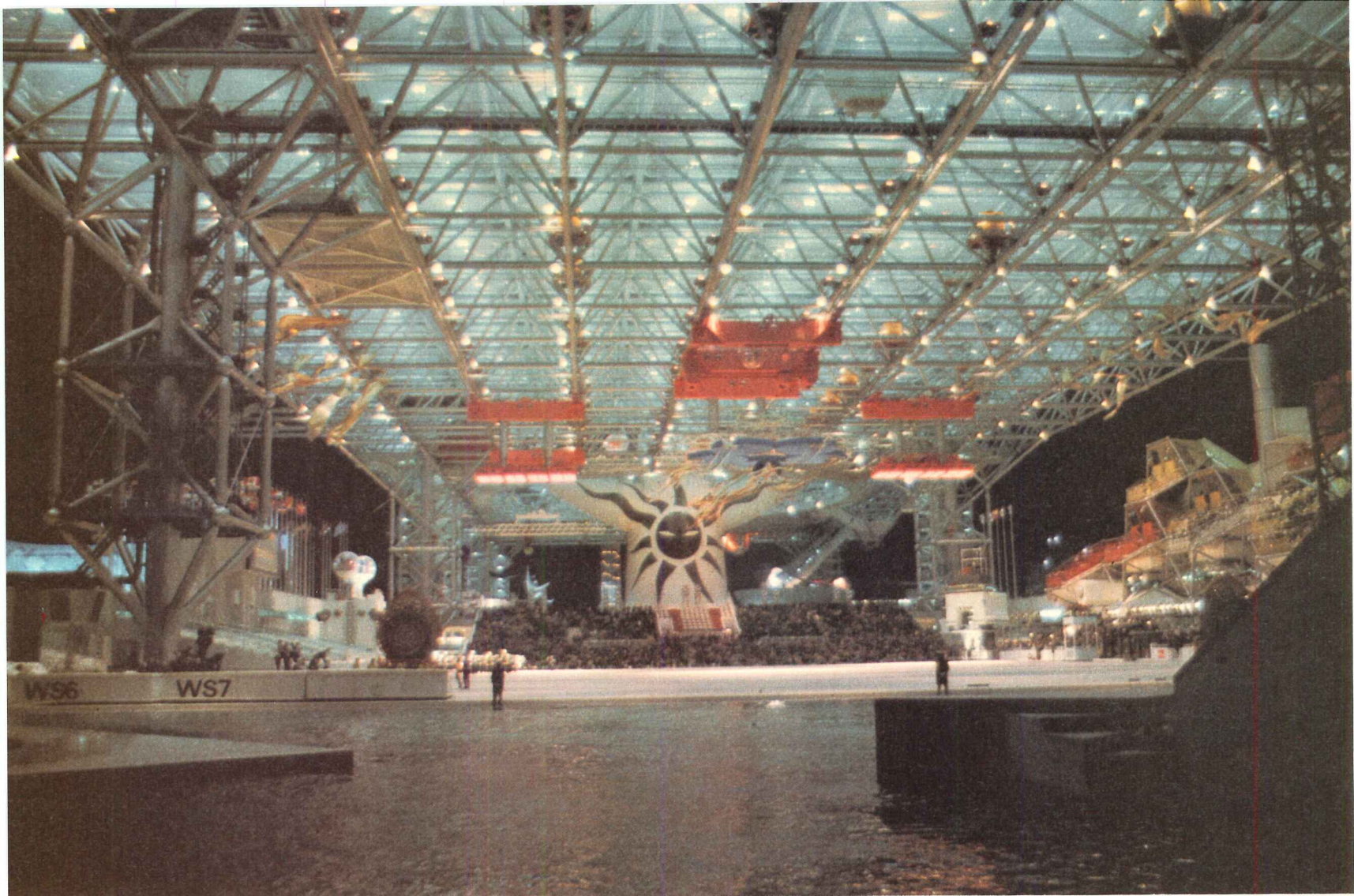




The Theme Pavilion designed by Kenzo Tange with Koji Kamiya, Tomoo Fukuda, Atsushi Ueda and Arata Isozaki is of colossal scale. It can be grasped if one imagines the Piazza San Marco roofed over but open at the sides. Covered by a great steel space frame weighing 6,000 tons, supported by six widely spaced columns and protected by an inflated plastic roof, it is a superb structure enclosing one of the most powerful and compelling spaces ever created. Facing the entrance gate is Taro Okamoto's Tower of the Sun (bottom left) flanked by his Tower of Maternity and the Tower of Youth (not shown). Okamoto's Tower of the Sun, instigated, approved, defended and supported by Tange, was vigorously opposed by most of Tange's architect collaborators during the planning and construction phase. It is still attacked by those who do not understand, or, understanding, fail to be amused and pleased by Tange's and Okamoto's brilliant juxtaposition of this deliberately overscaled primitive religious symbol with the technologically triumphant space frame.

The night photographs (above) were taken at opposite ends of the Festival Plaza. The space frame is wonderfully lit and a remarkable range of theatrical lighting is available for the performances which go on in the Plaza.

The Theme Pavilion grand-

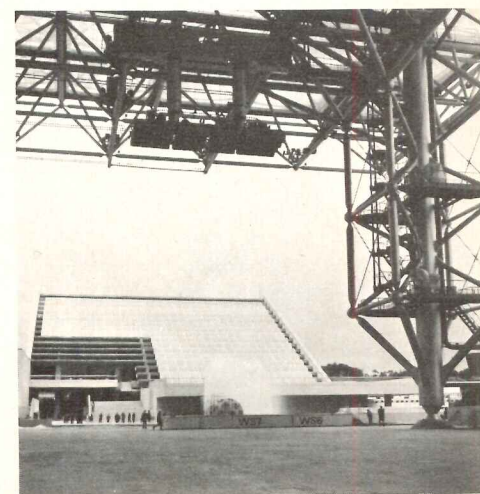
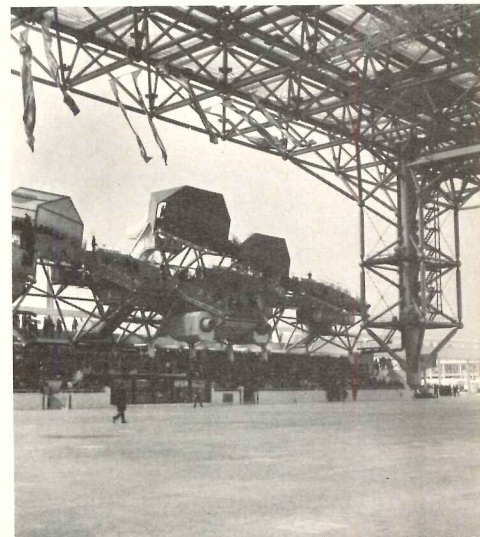


stands (right middle), designed as capsules inserted in a space frame and protected by cocoon-like brightly-colored canvas awnings, are airy, light and beautiful. At the northern end of the Symbol Area, beyond the Festival Plaza, is the Expo Museum of Fine Arts (right bottom) by Kiyoshi Kawasaki and Associates. It has been built as a permanent structure in reinforced concrete. Natural light is admitted through horizontal slots in the steeply pitched roof.

The space frame roof of the Theme Pavilion is reached by means of ramps and escalators within the Tower of the Sun. Visitors thus walk through the space frame past images and capsules designed by a team of young architects selected by Tange to suggest a future aerial city. The capsule designers include Noboru Kawazoe, Fumihiko Maki, Koji Kamiya, Noriaki Kurokawa, Archigram, Gian Carlo de Carlo, Hans Hollein, Yona Friedman, Areksei Gutnof and others.

Archigram presents a "Dissolving City," Kurokawa and Kamiya have each produced "Capsules for Living," Gian Carlo de Carlo has created a "City of Participation," and Gutnof a "Spiral City."

The photograph (left) was taken from within the space frame looking toward the exit escalator and the circular terrace overlooking the entrance to the Theme Pavilion.



The best designed foreign pavilions include those of The Netherlands (top), Czechoslovakia (middle), Great Britain (bottom), Switzerland (opposite page top), the Republic of China (opposite page bottom left) and Italy (opposite page bottom right).

The Netherlands Pavilion designed by Jacob B. Bakema, Jr. and Carel Weeber with co-architects Masachika Murata and Associates is sheathed in asbestos cement panels painted in silver and elegant shades of blue and orange. Supported by four central cores, it is 98 feet high. These cores contain the staircases, elevators and equipment shafts. Like most of the pavilions at the fair, this one relies on sound and films for its exhibition effects and the interior is not perceived as architectural space, being quite dark and lit by lamps set close to the floor.

The Czechoslovakia Pavilion by architects Vladimir Palla, Viktor Rudis and Ales Jencek with co-architects from the architectural staff of Taisei Construction Co. Ltd., who were the builders, is an extremely elegant one-story structure. The roof is a simple steel-framed grid which establishes the module of the entire building. The exterior walls are of Czechoslovakian glass and among the chief exhibits are large works of art created in glass.

The British National Pavilion is the work of Powell & Moya & Associates with co-architects Hidehiro Takaki and Jeremy Dodd. Designed in the shape of the Union Jack (the British flag is painted on the roof and can be seen from the skyride) it consists of four exhibition spaces suspended from four steel towers over 120 feet high. Beneath the suspended exhibition spaces is a garden concourse.

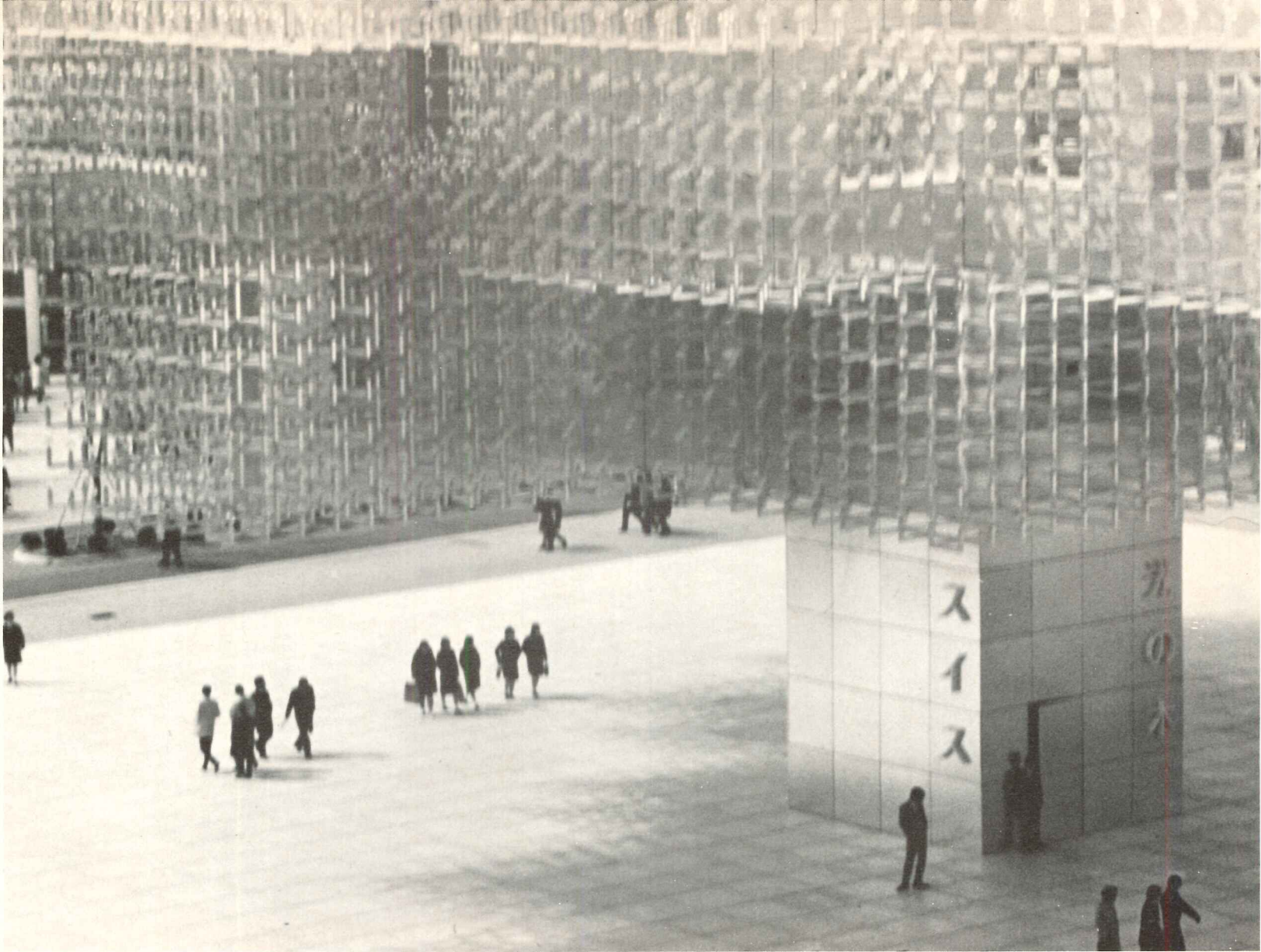
The Swiss Pavilion by architects Walter, Schmid and Leber consists of a highly stylized steel tree (shown in the photo), an exhibition pavilion and a restaurant. The surface of the tree is sheathed in aluminum plates. It supports 32,000 glass spheres which reflect the sunlight by day and shine as electric lights in the evening.

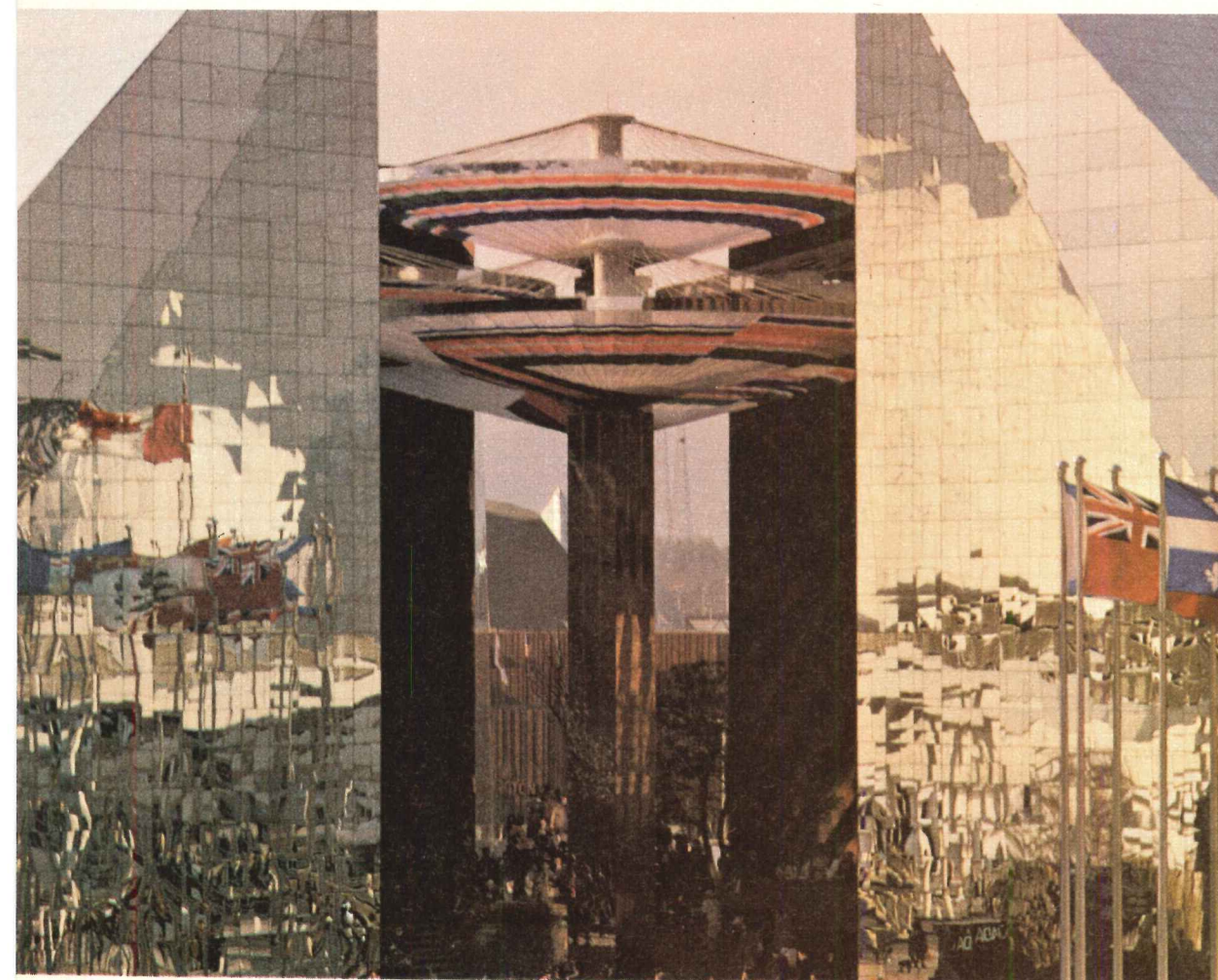
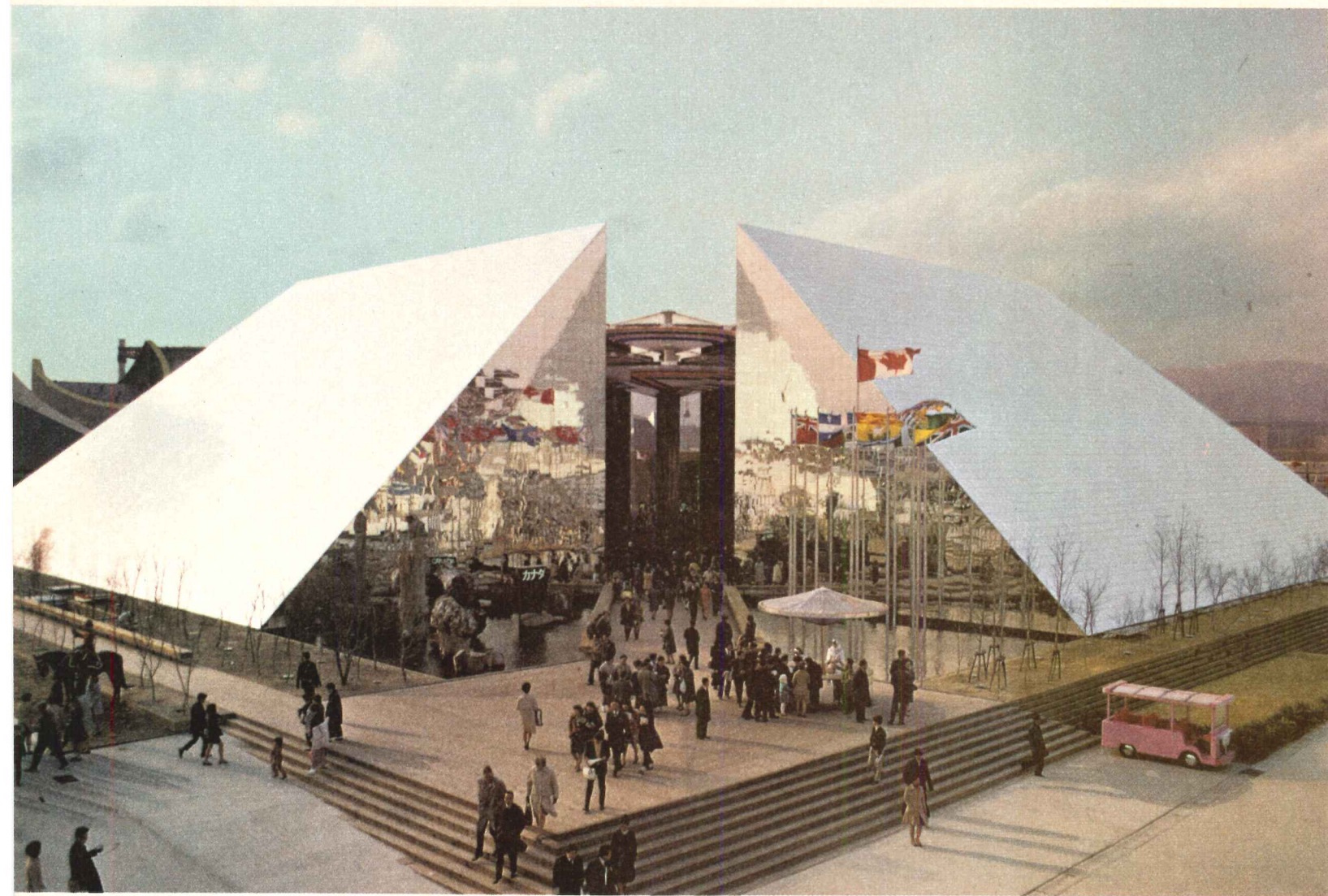
The Republic of China Pavilion designed by Yin-hsuan Peng and Chu-yuan Lee with I. M. Pei as coordinator consists of two triangular towers which form a deep and high gateway which symbolizes the exchange of culture between the Chinese and other Eastern peoples including the Japanese.

The Italian Pavilion is the work of Tommaso Valle and Gilberto Valle with Yoshinobu Ashihara & Associates as co-architects. Designed in four interlocking levels and constructed in steel and glass it provides exciting silhouettes when viewed from almost every angle.

Inside are spacious well-lit exhibit areas, whose exhibits, unfortunately are not up to their setting.







The Canadian Pavilion and sculptor Isamu Noguchi's fountains rank with Tange's Theme Pavilion as major works of art at Expo '70. Sheathed in mirrors which reflect everything—the sky, trees, people, flags and the reflections of these—and reduce them to shimmering Cubist images, the Canadian Pavilion (top and left) is remarkably beautiful in a way which appears to have a broad appeal for all fair-goers. Designed by Erickson/Massey with Nikken Sekkei Komu Co. Ltd. Architects and Engineers, it consists of four A-frame structures slanted inward at forty-five degrees. The wood frame construction is left exposed on the inside slopes of the A-frames in soft, warm and effective contrast to the hard, cold and brilliant mirrored surfaces. Jeffrey Lindsay was special design consultant to Erickson/Massey for this pavilion.

Five parasols called spinners which are 39 feet in diameter and made of multi-colored plastic slowly revolve. These were designed by painter Gordon Smith.

Noguchi's fountains are in a pond adjacent to the Theme Pavilion, which can be seen in the background of the photo (right). They are wonderful partly because they surprise—the water plunges downward instead of spurting up.



Some excellent pavilions designed for Japanese industry include: **The Toshiba IHI-Pavilion** (top) by Noriaki Kurokawa, consisting of a space frame from which a 300-ton red dome is suspended. It contains a theater for film projection. The framework consists of 1,338 tetrahedral metal units of four basic types welded together. The dimensions of each basic type and the total number of units was determined by computer. The dome is completely supported by the space frame and deformation of the latter is prevented by the dome's torsional rigidity.

The Automobile Manufacturers Pavilions (middle) by Kunio Maekawa and the **Sumitomo Pavilion** (opposite page, top right) by Sachio Otani were separately sponsored but, because their architects collaborated with one another in the design of the spaces between, these pavilions form the only well-integrated private group at the fair.

Maekawa's pavilions each consist of a cylindrical steel-framed mast supporting a sloping steel ring from which a network of cables are stretched to an outer ring at the base. The cables support a fabric roof.

Otani's Sumitomo Pavilion is made of nine elevated steel-framed discs which contain exhibitions, or provide views of the fair. Since each disc has its own vibration system their connections presented new problems in structural analysis. Otani considers the discs and their supports as prototypes of the future city, and believes that the technical solution of these problems will have broad applications for the future.

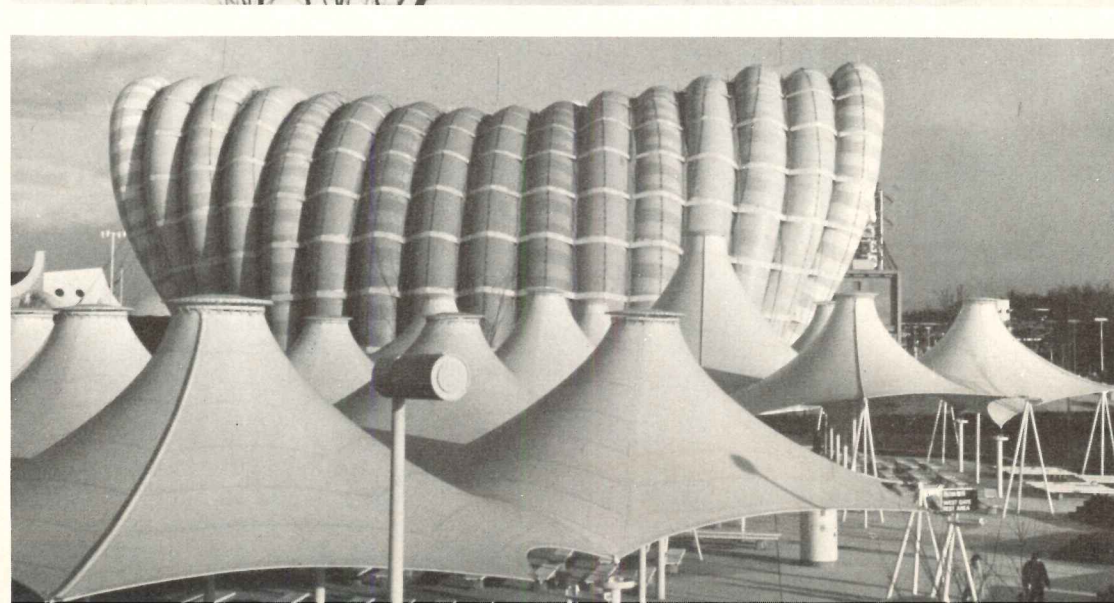
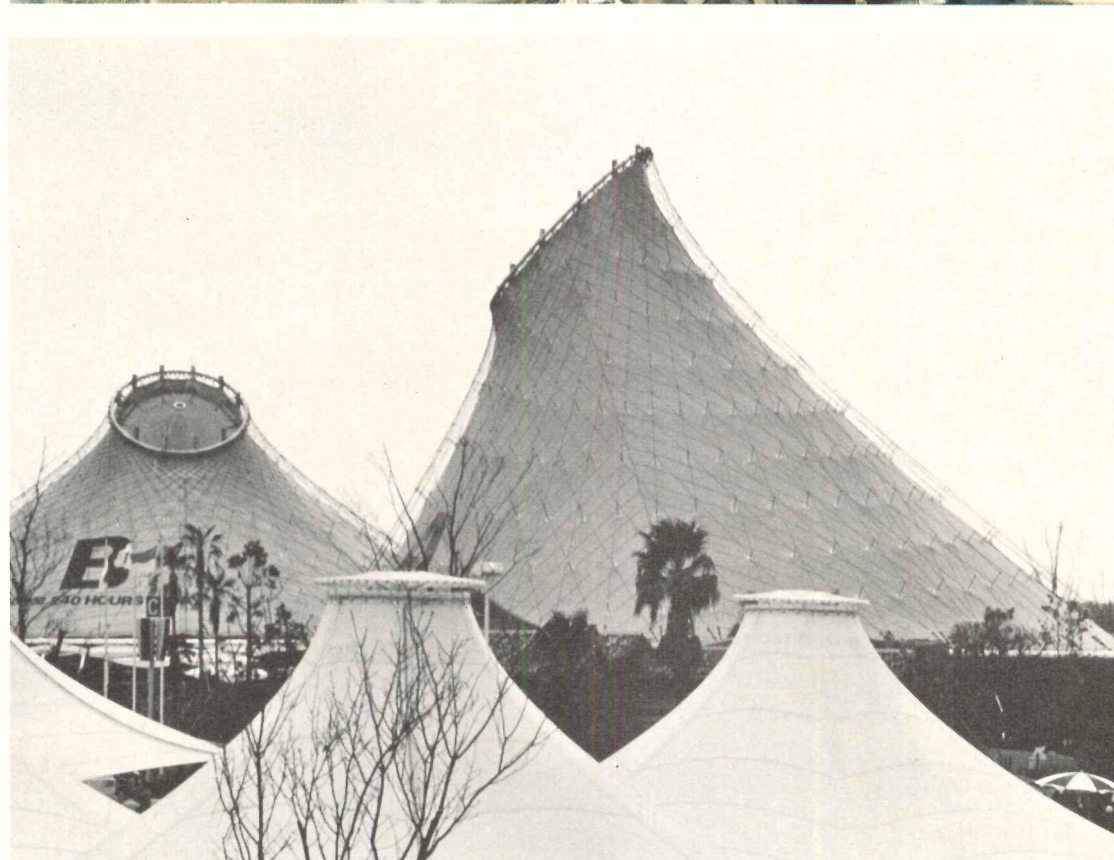
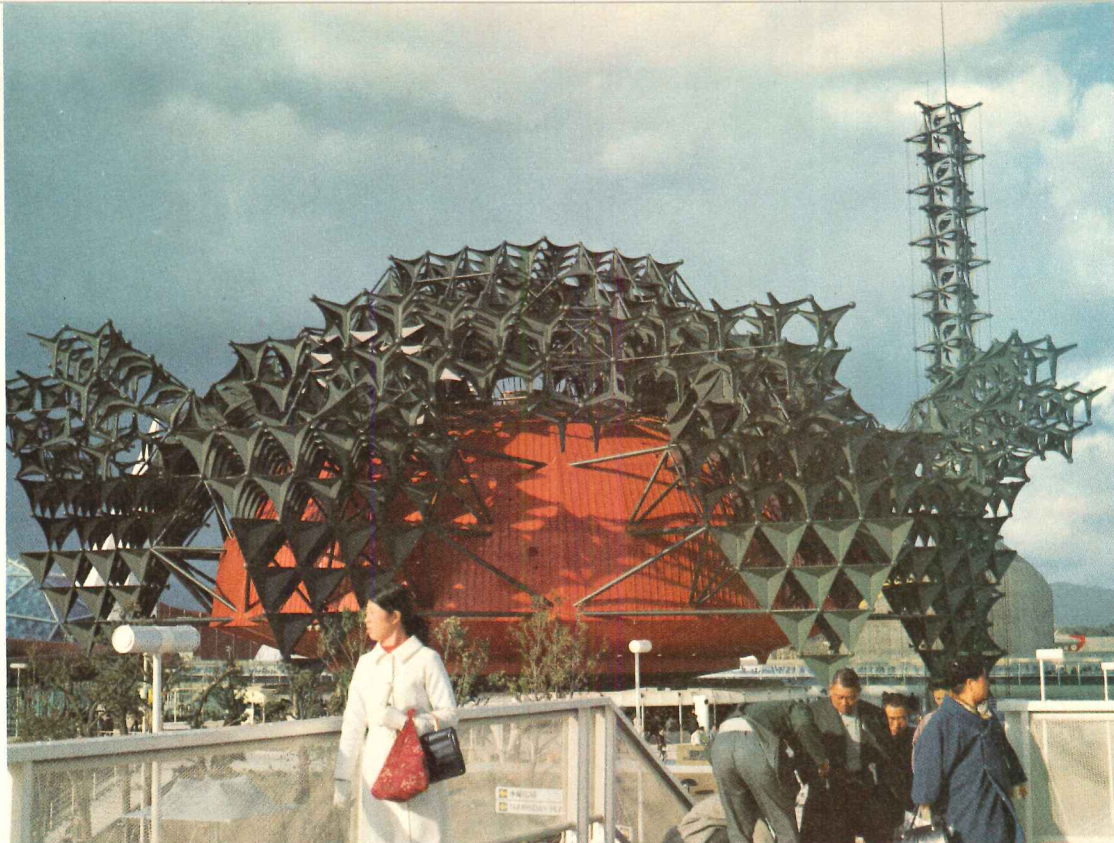
The Takara Beavilion (opposite page, top left) by Noriaki Kurokawa has a structural skeleton which consists of clusters of steel pipe, four in number, strengthened at the corners by steel webs. The system is infinitely expandable. The capsules inserted in this infrastructure are of stainless steel.

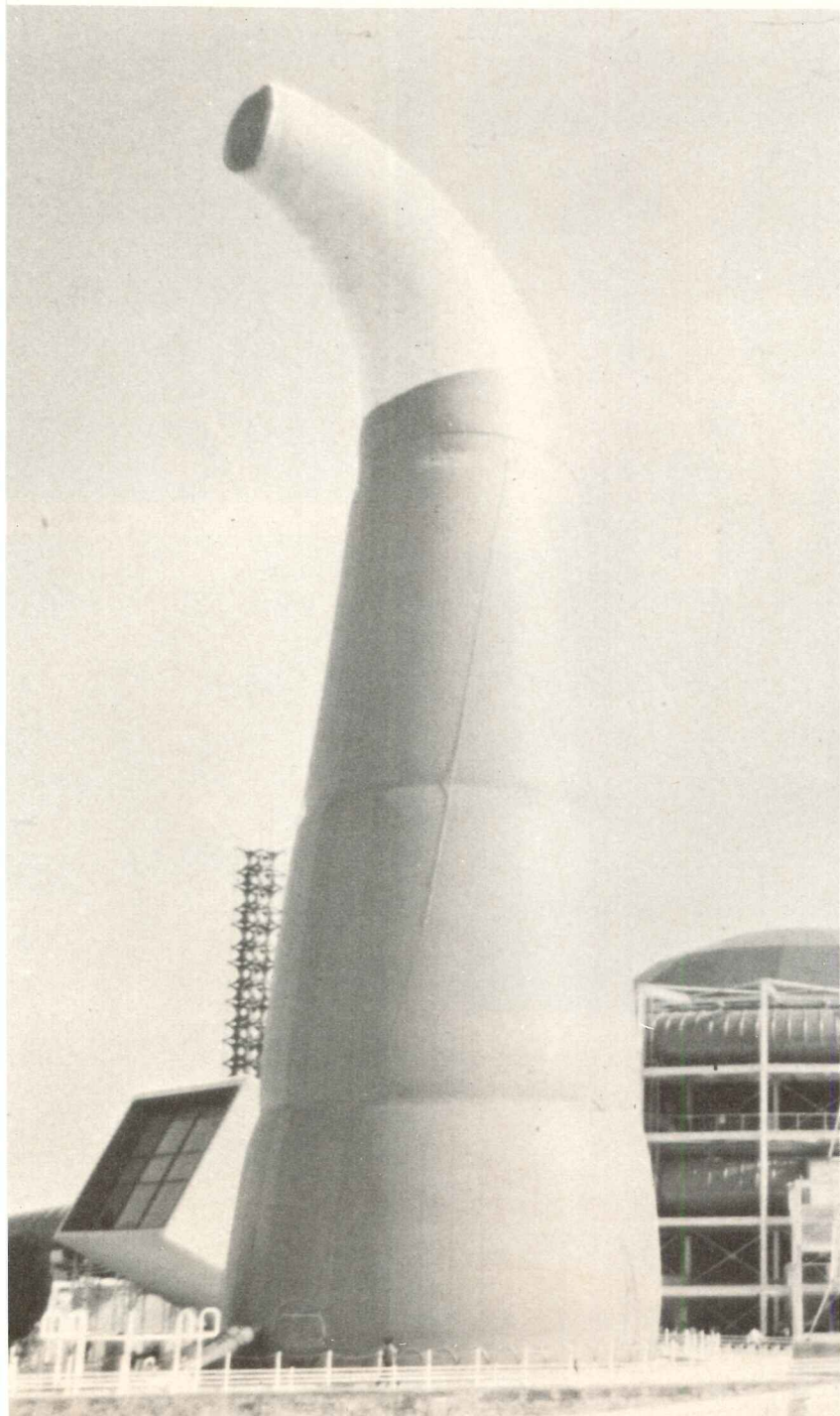
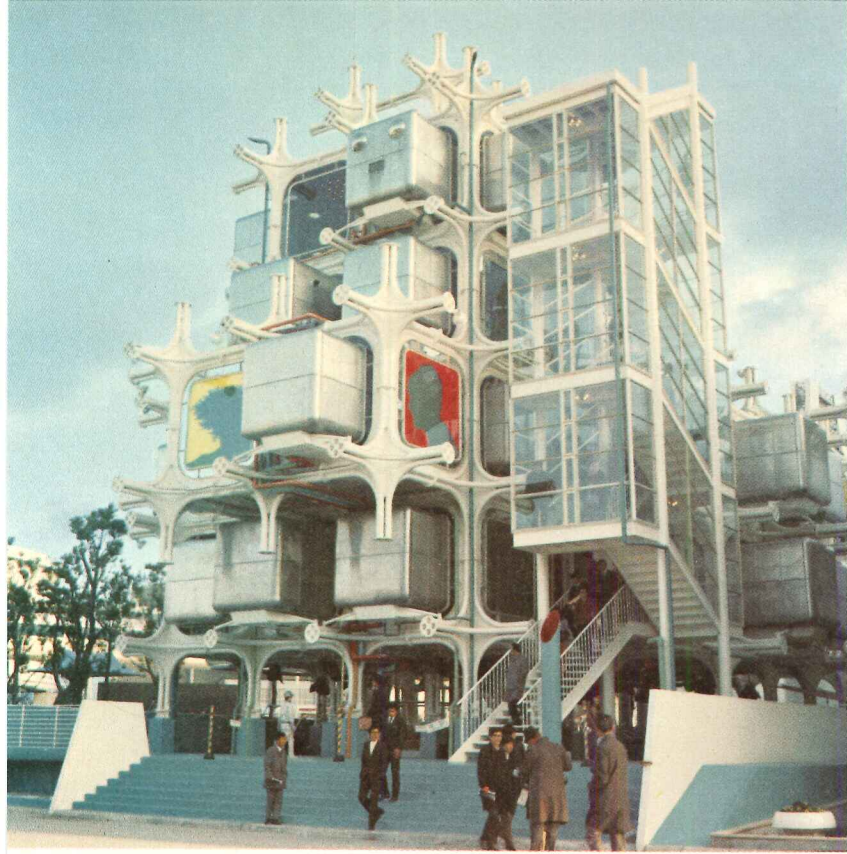
The Mitsui Group Pavilion (opposite page, bottom left) designed by Takamitsu Azuma boasts a rather singular pneumatic landmark.

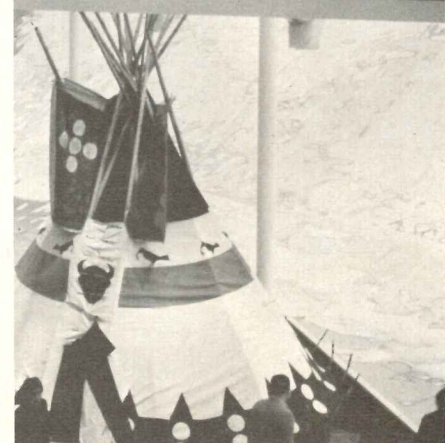
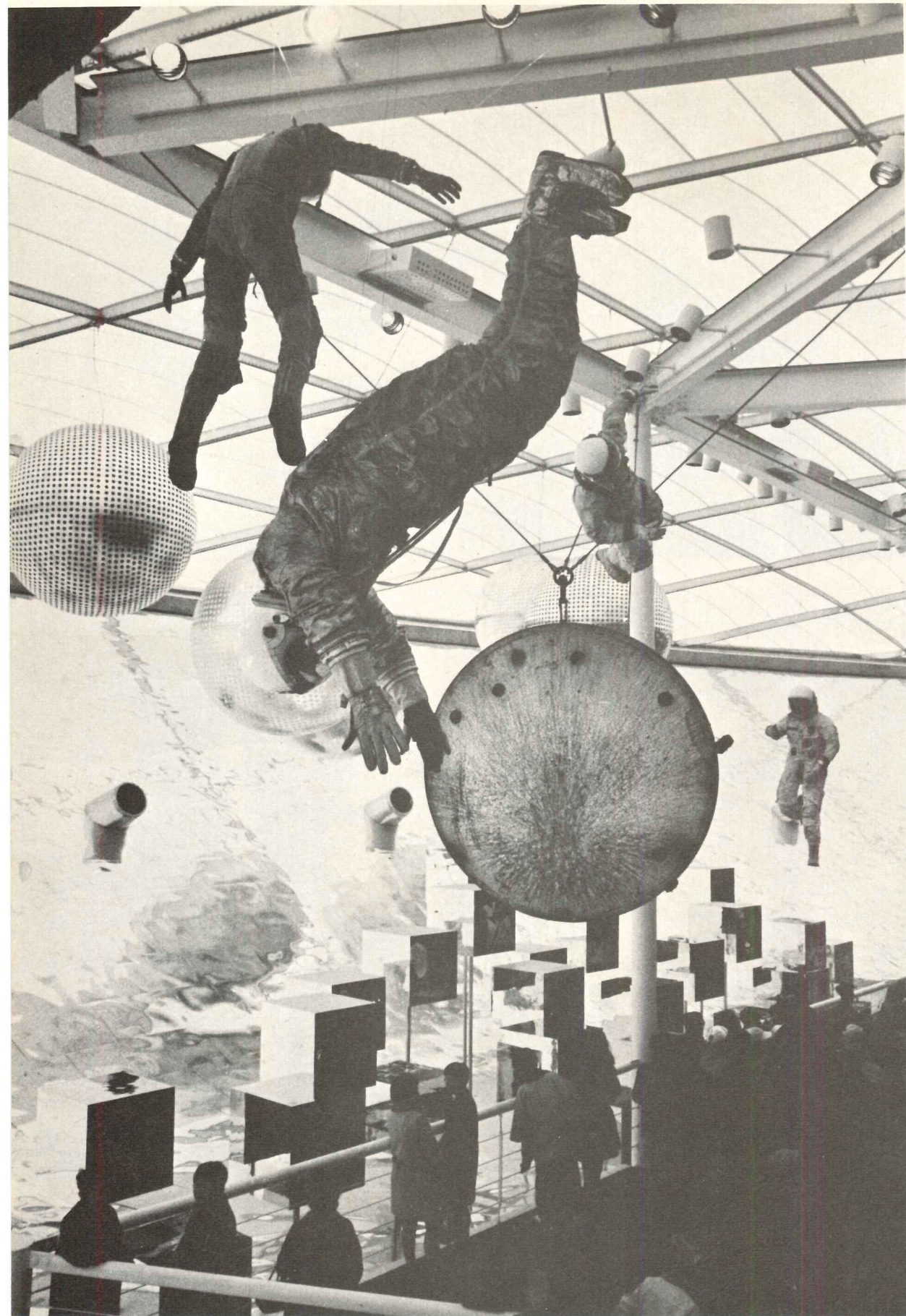
The Fuji Group Pavilion (bottom) designed by Yutaka Murata, which resembles a giant Conestoga wagon, is constructed of 16 air beam arches tied together with horizontal belts.

The Electric Power Pavilion (opposite page, middle right) by Junzo Sakakura is a 1,000 ton glass-sheathed building suspended from a steel framework. Included is a floating theater consisting of three air beam arches covered with a plastic roof membrane. The theater was designed by Yutaka Murata.

The Telecommunication Pavilion (opposite page, bottom right) designed by Tsubasa Asano looks like a great yellow caterpillar, but consists of a plastic membrane stretched across a network of steel.







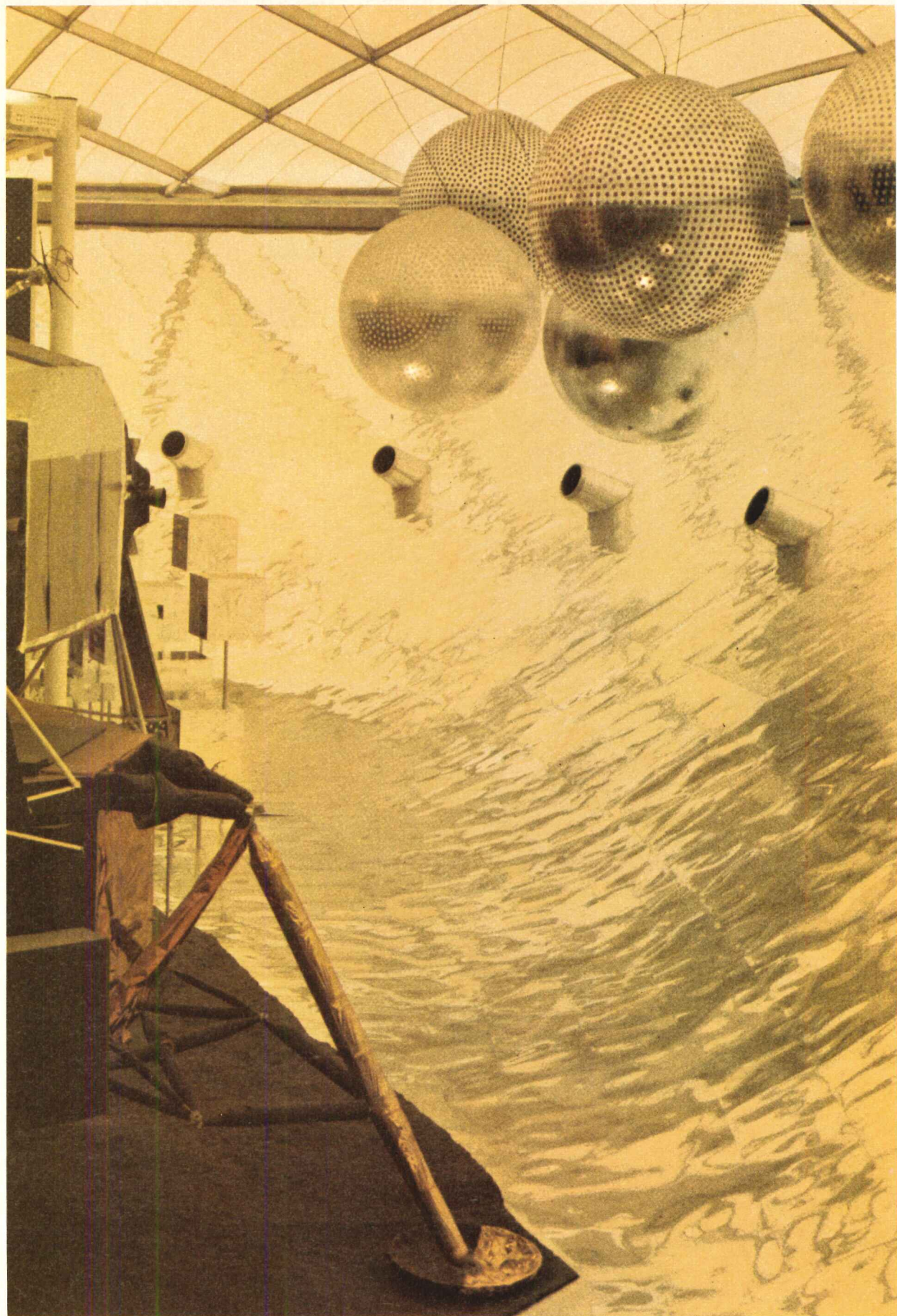
The United States Pavilion at Osaka, while not as stunning a structure as the great geodesic dome produced for the U.S. exhibit in Montreal, is nonetheless one of the most interesting and important buildings at the fair, and the exhibition itself is brilliant. From the beginning the pavilion and the exhibition within it were conceived as a single entity by the exhibition design team, the principals of which were architects Lewis Davis, Samuel M. Brody and Alan Schwartzman, and graphic designers Ivan Chermayeff, Thomas H. Geismar and Rudolph De Harak. The collaboration was eminently successful, everything works, and fairgoers willing to stand in line for over four hours to receive the U.S. message are reached by communication techniques even more sophisticated and subtle than those in the U.S. Pavilion at Montreal. (Chermayeff and Geismar had major roles in the design of the latter pavilion and many of the themes which proved effective at Montreal have been restaged in Osaka).

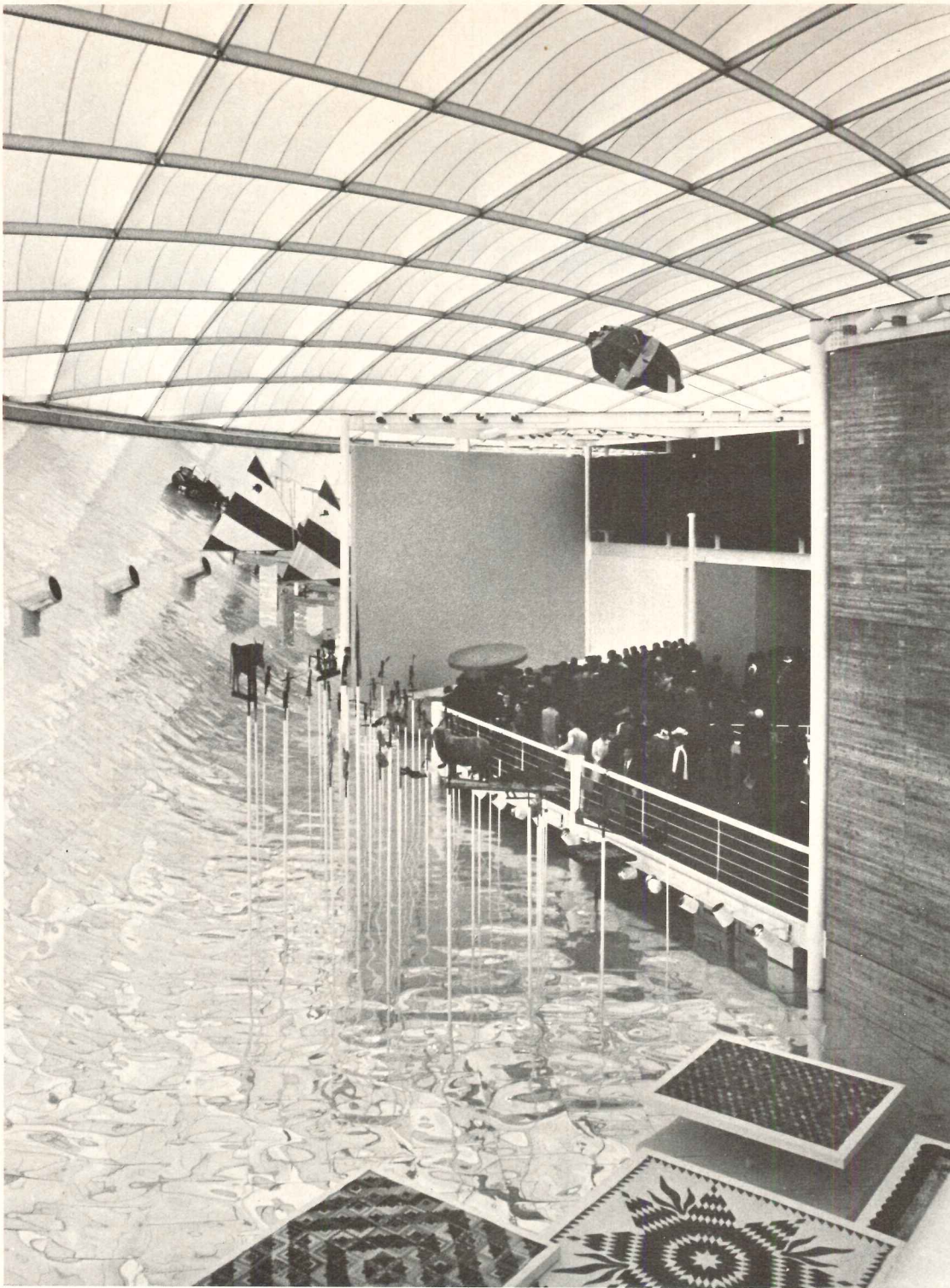
Most of the pavilions at the Osaka fair rely heavily on multi-screen projection and the emphasis is on advanced cinematic techniques. While technically brilliant, these films are fatuous more often than not and the spaces in which they are projected are dark caverns with no architectural character whatsoever. For this reason many pavilions which are extremely handsome on the exterior are hardly worth going into. Against this background of mediocrity the U.S. Pavilion is a marvel of intelligence and clarity, as an interior space and as an exercise in international communication. As an exterior form it scarcely exists—it lies as low as a Japanese quilt and looks like one. Everyone has to ask where it is, but they do ask, and it has proved to be the most popular pavilion at the fair.

The U.S. Pavilion is a single wall air-supported cable roof structure covering the size of two football fields. Measuring 274 feet by 465 feet, this super-elliptical enclosure is the largest clear span, air-supported roof ever built and the lightest. In principle it is similar to a child's balloon or a beachball.

The structural engineers with key roles in the design were David Geiger—Horst Berger.

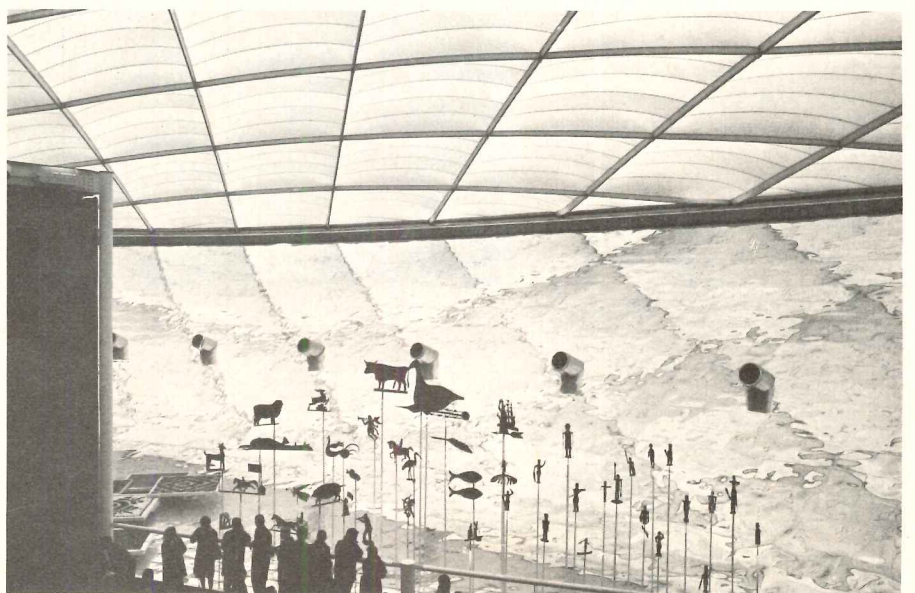
As the photographs indicate, the vinyl-coated fiberglass fabric membrane roof is translucent, admitting sunlight during the day and reflecting a soft glow at night from interior light. The floor of the pavilion is saucer shaped and lined with Mylar which becomes a shimmering silver sea in which the exhibits appear to float. Shown on this and the opposite page are sections of the space exploration exhibit, and portions of the photography and folk art exhibits. Landscape architects were M. Paul Friedberg & Associates.

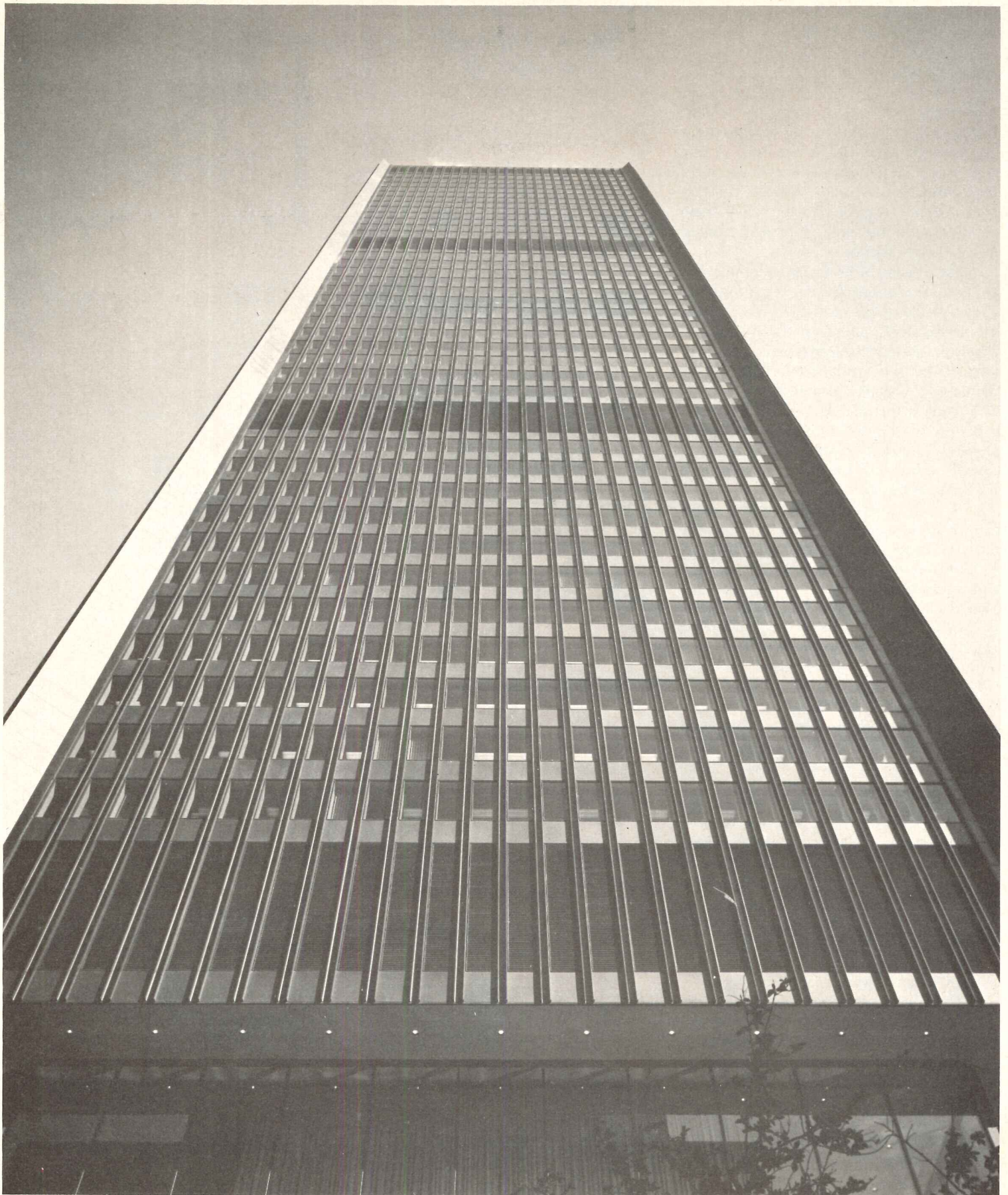




The U.S. exhibit emphasizes aspects of American life which we share with the Japanese—sport, photography, fishing, farming, folk art. There is no boasting about our culture, our productivity or our military and economic might. Even our space exploration exhibit is modest and the emphasis is on objects actually used in flight. Throughout the exhibit only real things are shown—real baseball shirts worn by great stars, real boats and genuine examples of our best folk art.

A "New Arts" section features avant-garde works including a giant red patent leather ice bag by Claes Oldenburg shown in detail (below) and in the photo (left).





Morley Baer photos

SEATTLE'S "TALL ONE"

Naramore, Bain, Brady & Johanson's headquarters building for Seattle-First National Bank is a sophisticated structural and architectural statement and a powerful new focal point on the city's skyline.

Seattle's first very tall office building, the Seattle First National Building, looms large on the city's skyline today—but it was not designed to dominate the city. Its ultimate role, the architects intend, will be as an important—and still individual—element among many elements on the skyline, some undoubtedly taller and larger. Fifty stories high, the building looks down on even the Space Needle, relic of the World's Fair, and until recent adaption of the city's new building code, the only structure to break the old height barrier.

The process of its design, although not unique, was unusual. The client put together a team at the outset of the project, consisting of architects, structural engineers, mechanical and electrical engineers, and contractor (and two special consultants on tall buildings). All these professionals worked as a team in the analyses, design and construction of the building. The result—an elegantly detailed, handsome and functionally efficient building—is evidence of the value of the method.

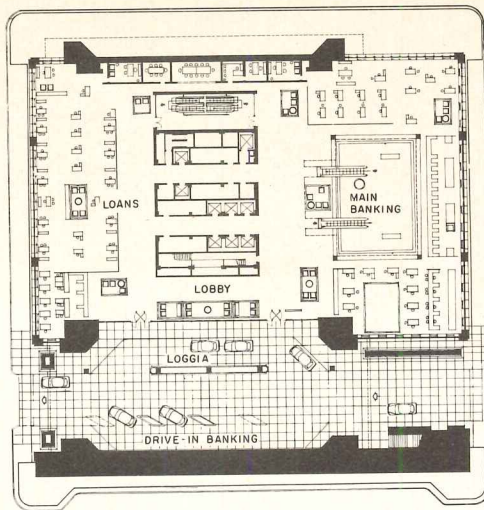
The site is a large one, and its slope from Fourth Avenue to Third (47 feet difference in elevation) proved advantageous in handling the requirements for parking and for easy access by car or on foot to a banking floor. There are four levels below the Fourth Avenue Plaza, and an important entrance to the building on Third Avenue as well as at the Plaza level. The tower rises from the massive base.

Although zoning regulations in the site area permit a 10 to 1 floor area ratio, the building setback and its plazas—landscaped, and with fine additions of sculpture—provided bonuses which resulted in a 13.75 to 1 ratio. With all services in the central core, the 36 typical office floors are column free on all four sides. The tower has three subdivisions, determined by elevator and mechanical considerations. Mechanical floors, at floors 6, 19, 34 and 48, are 24 feet high, a dimension—required by air-conditioning equipment sizes—which permits incorporation of elevator machine rooms with no loss of rental space on office floors.

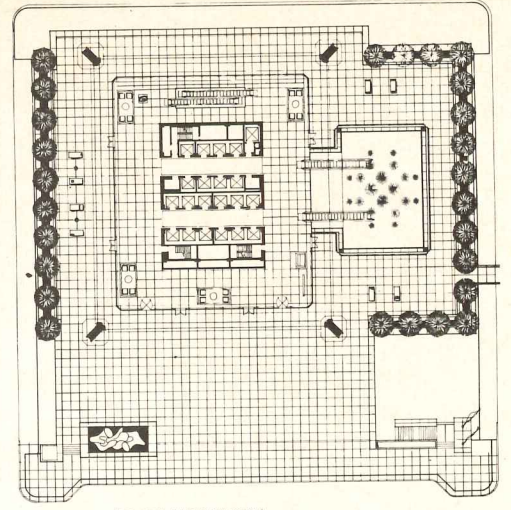
The Fourth Avenue Plaza level was designed with a look at the immediate and long-range future of the city. A bridge at this level will connect the adjacent building (for which the same firm is architect). The building also recognizes the possibility of an eventual rapid transit system along Third Avenue, and a system of elevated pedestrian walkways throughout the downtown core area.

A helistop tops the building, and a restaurant is located just below that level. Executive offices for the bank occupy upper floors of the tower. There is an observation gallery as such, but on the 47th floor corner lounges, open to the rest of the floor, will provide views of the magnificent scenery on all sides.

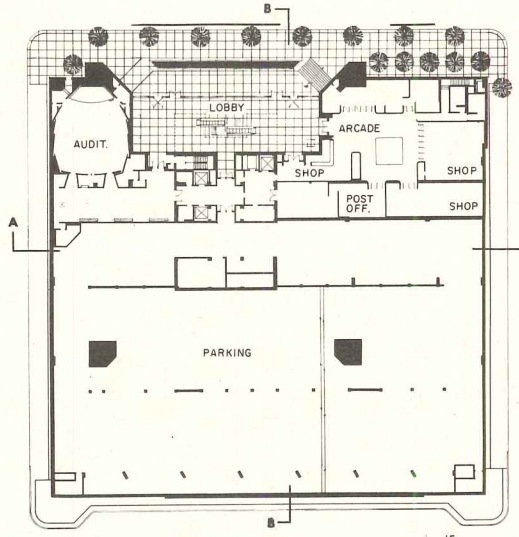
Precision of detail is an outstanding aspect of the building. The steel skeleton of the building is repeated in the anodized aluminum cladding of each external mem-



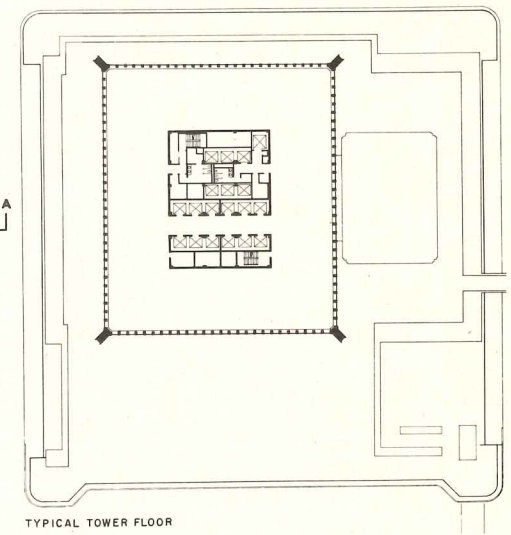
FOURTH FLOOR (MAIN BANKING)



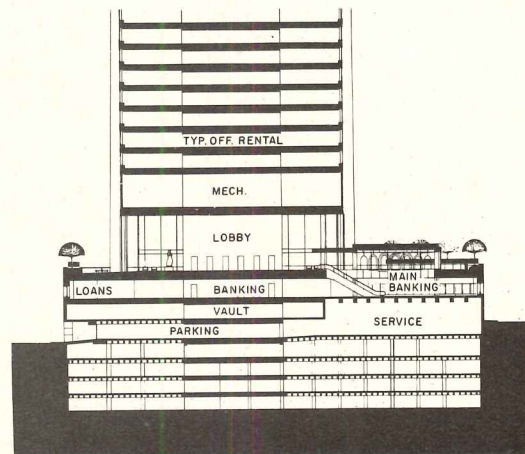
FIFTH FLOOR (FOURTH AVE. ENTRANCE)



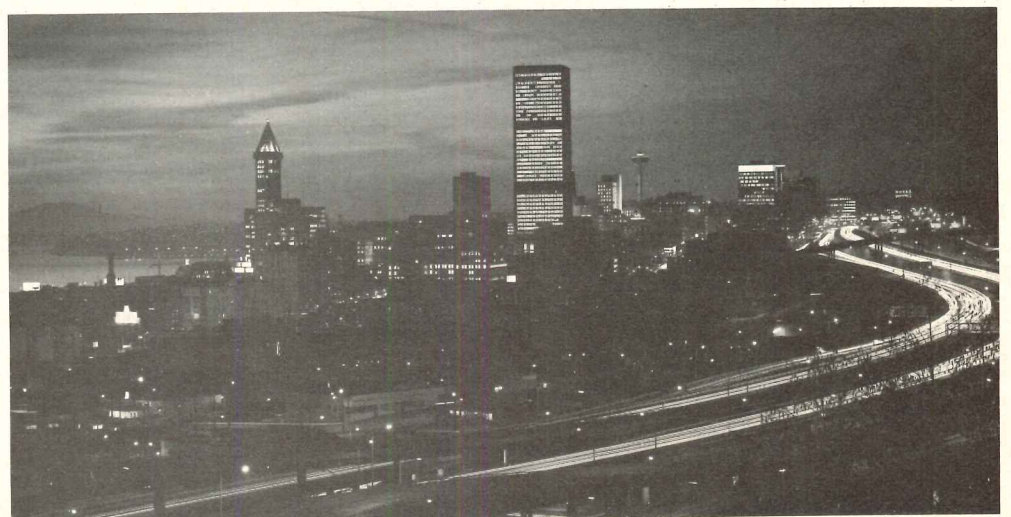
FIRST FLOOR (THIRD AVE. ENTRANCE)



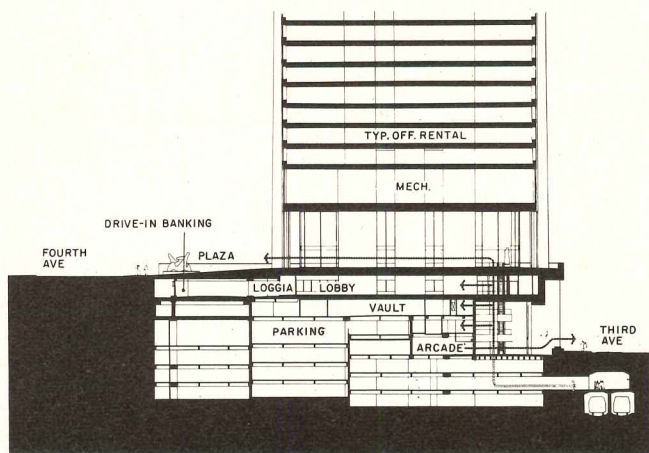
TYPICAL TOWER FLOOR



SECTION A-A







SECTION B-B



ber, and the covering for the tapered corner piers clearly expresses the elements it encloses. Other major materials used include thermal textured granite, polished granite, travertine, and bronze glass for tower glazing. Clear glass is used in the two lobbies.

The tower is a "shell wall" concept

The tower structure, based on a "shell wall" concept, is unusual: the four exterior walls actually form a very stiff box, each side of the box being designed as a vertical Vierendeel truss. Lateral wind and earthquake forces are carried down to the sixth floor level where trusses within the plane of the floor transfer these loads to the core—the core walls act as vertical plate girders. Exterior walls carry vertical load of the floors down to the sixth floor, at which point the load is transferred to the corner columns and thence to the foundation.

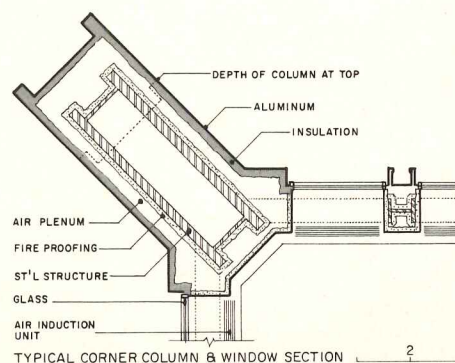
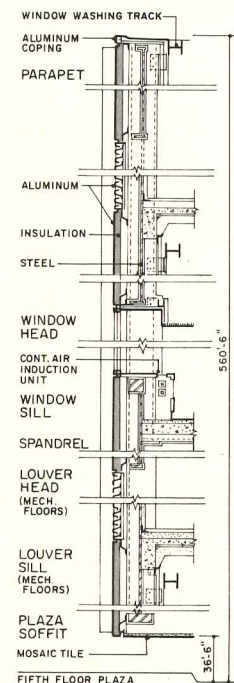
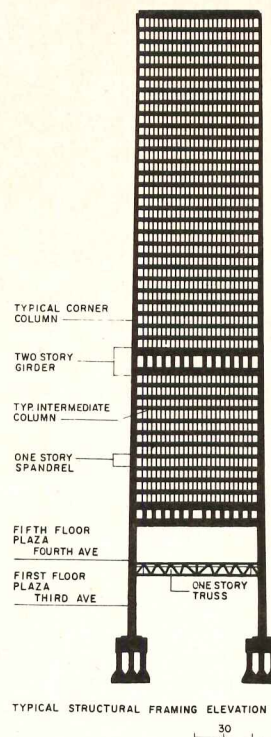
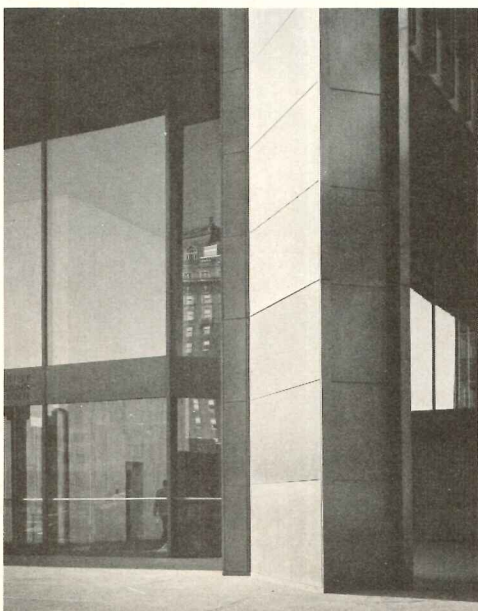
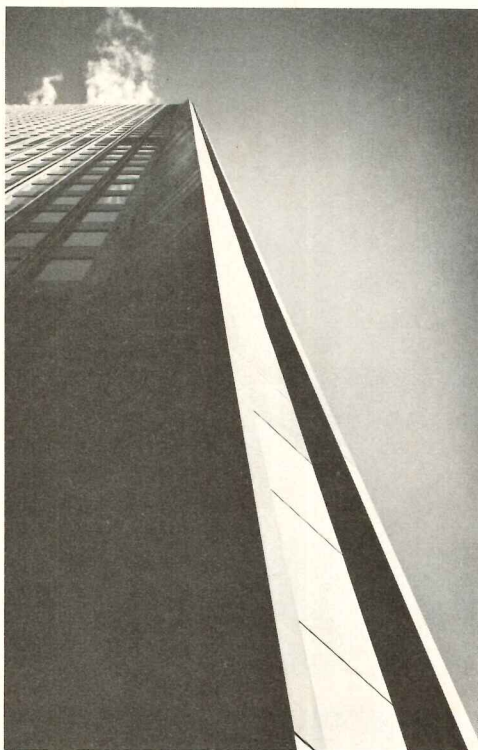
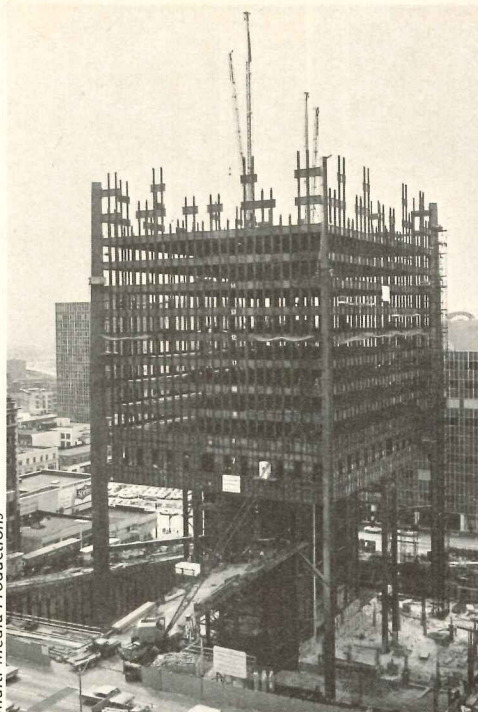
Each exterior wall is composed of 10 WF vertical members spaced 4 feet, 8 inches on center, and spandrels of solid steel 3 feet, 10 inches deep at typical floors. These, along with the spandrels for each floor, were fabricated in panels four stories high and two modules (4 feet, 8 inches) wide.

The columns are both architecturally and structurally significant. Clad in anodized aluminum, their outward form is designed to reflect the actual form of the enclosed steel: two plates (4 inches thick by 96 inches wide at base) separated by vertical webs (19 inches wide at base) fabricated as a box column, and located outside the building line. Between the columns at plaza level the area is dramatically kept open, the glass cage of the elevator lobby emphasizing this openness. Above the sixth floor, the columns (and the cladding) taper; at the top they are considerably smaller than at their base, as the detail (right) shows. Structurally, they continue as box columns to the 35th floor, from which point on they are normal 14 WF sections.

The aluminum cladding serves to enclose a space around the structural column which acts as a plenum, an unusual function—but exceptional conditions required an unusual solution. These columns are air conditioned with tempered air supplied at the four mechanical floors, which is circulated the length of the column to keep them at the same temperature as the core columns. This solution, plus insulation of the inside skin of the exterior walls, prevents expansion and contraction which could otherwise cause as much as a two-inch difference in length between exterior and core columns. Core columns, made up of 14 WF members, carry vertical loads only. All services are located in the core, freeing floor areas.

The tower rises from a 240-foot square reinforced concrete base, four levels high on one side, which acts as a long retaining wall for the soil load on the opposite side. In the base are three levels of parking, a vault floor for the bank, main banking lobby and service levels.

Multi-Media Productions



A favorable electricity rate (7 mills per kilowatt hour) made electric heating the most economical system. The building is the largest in the West to be so heated.

The interiors form setting for modern art

Interiors throughout the building, from the lobby on the lower level to the bank's executive offices in the tower, are enhanced by the remarkable collection of modern and contemporary art which the bank owns. Most of the 200 works of art were selected by a committee on which two of the architects, Perry Johanson and Donald Winkelmann, served. Others, like the mosaic (page 136) on the terrace on the Third Avenue side, the Bertioia hanging wire sculpture in the main banking room, and carved benches and fountain on the plaza, were commissioned. Antoine Bourdelle's "Penelope" stands at the end of the lobby on the south side; a Jacob Epstein head is on the executive floor. The openness of the floor spaces lets everyone see the displays.

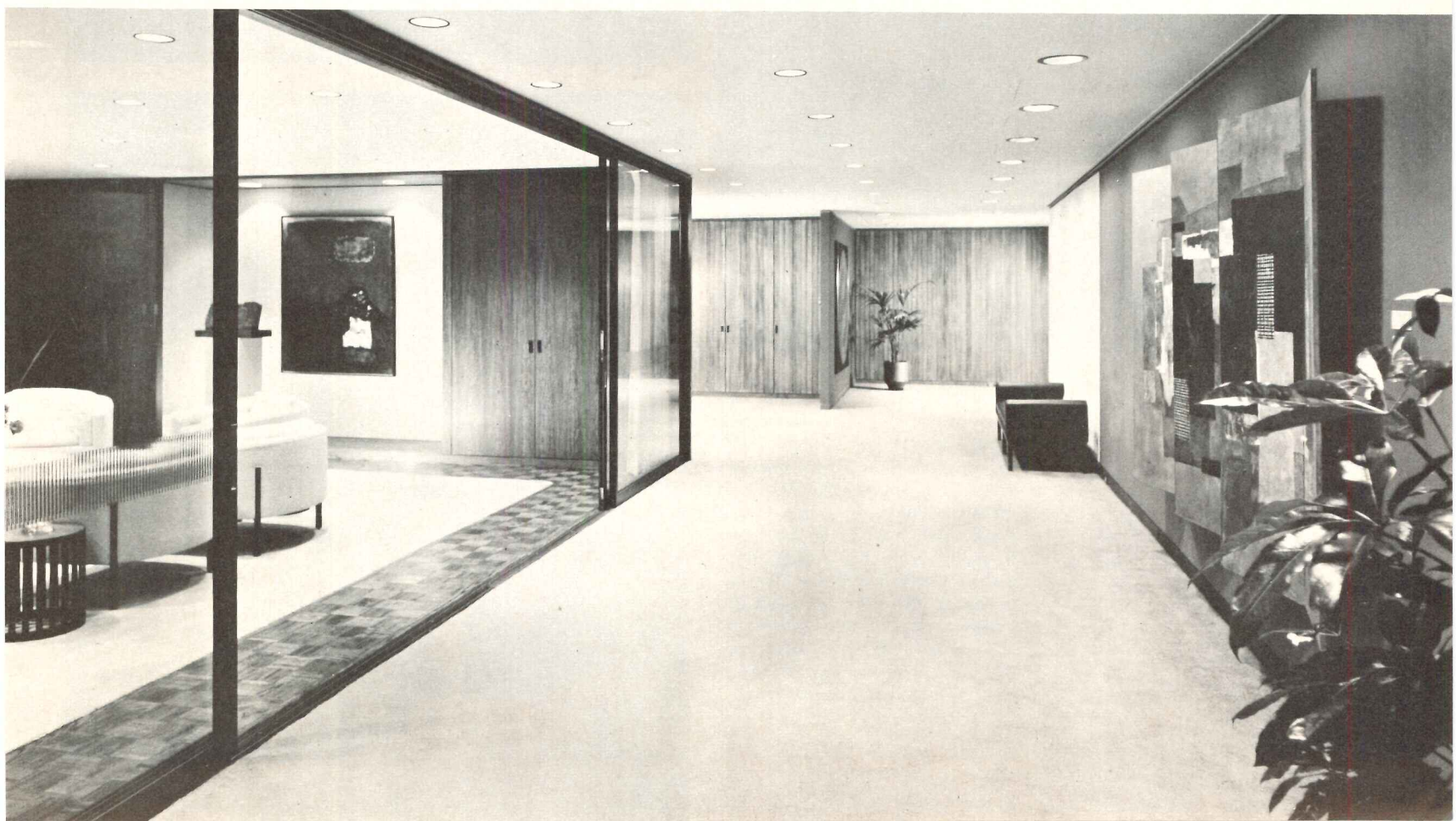
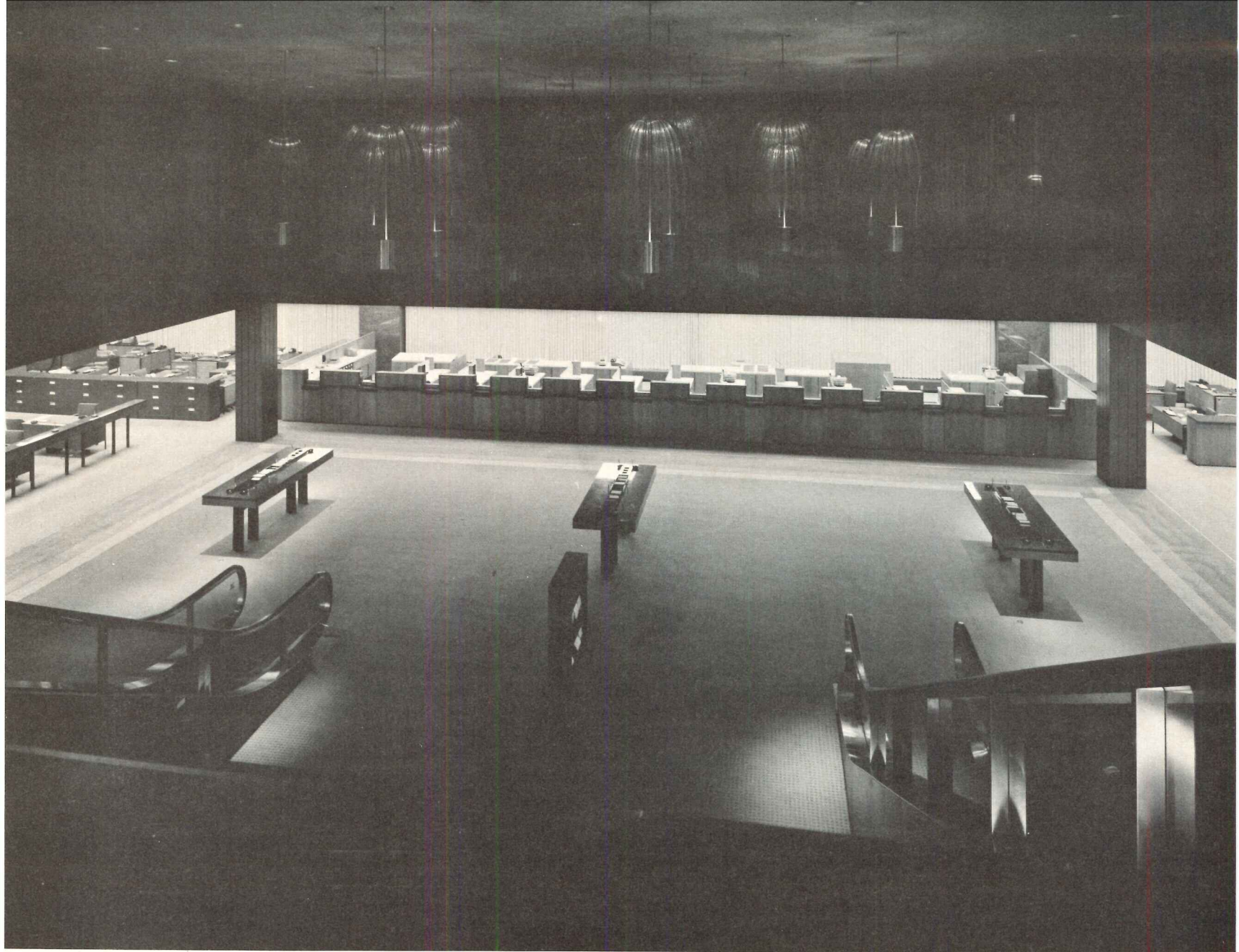
The banking offices, designed by the building's architects, are handsome, inviting and unusual spaces. The main space, reached by escalator from the Plaza lobby, is below grade, but because of its location outside the building line, windows at grade on three sides make it visible from the plaza and admit daylight to the room. The drive-in offices on the same level are glass-enclosed along one side and open to view from the driveway. Warm earth colors are used both in offices and in the conference rooms along the connecting corridor.

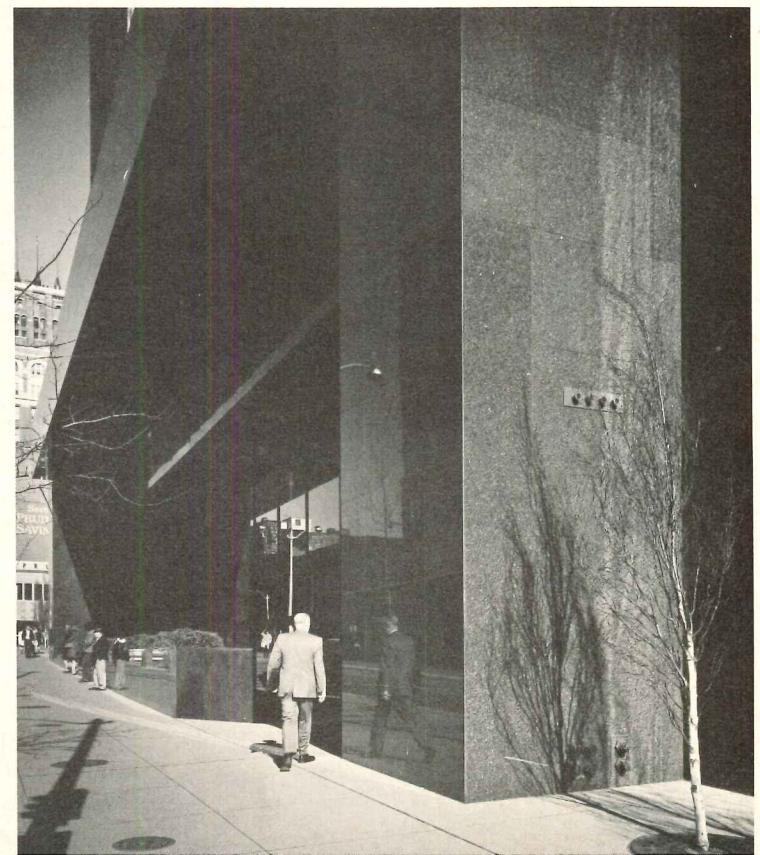
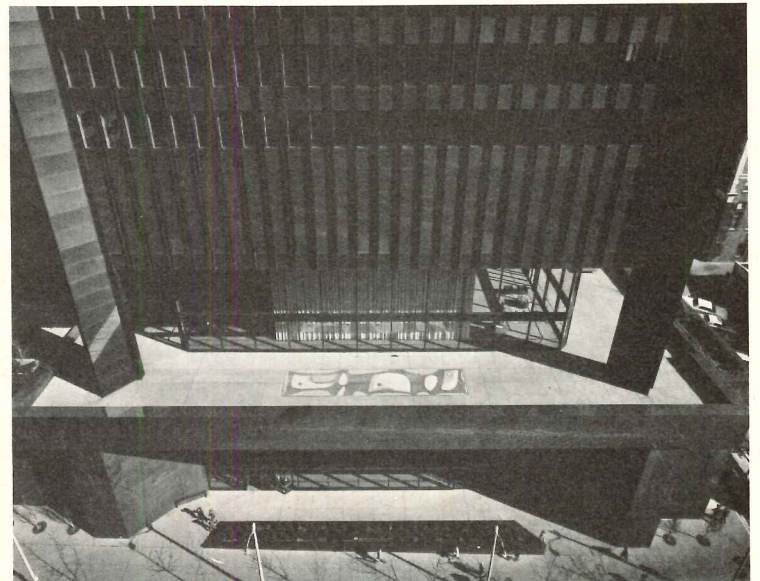
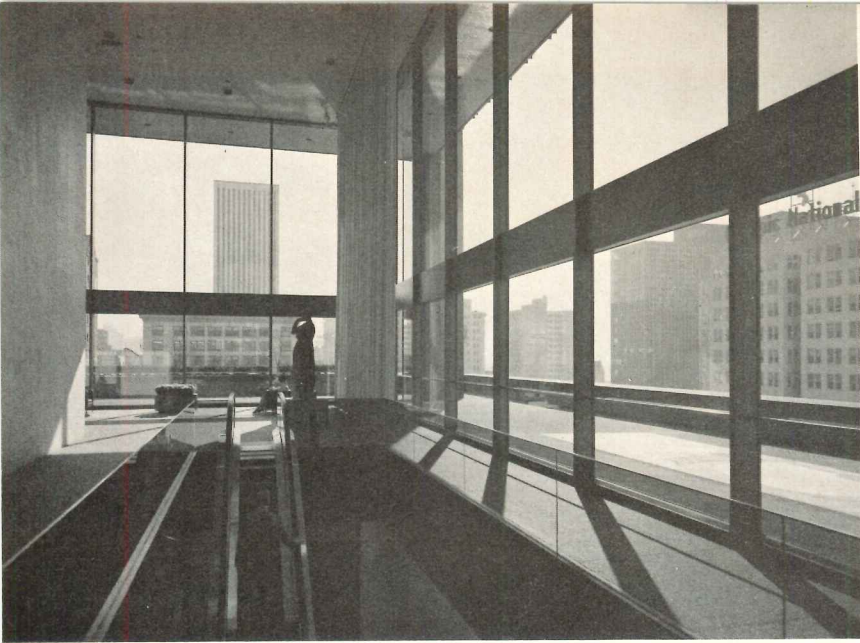
Office space on executive floors (and on some rental floors) for which Morganelli-Heumann were architects is, for the most part, completely open and partitionless, with all desks—even those of some vice presidents—in the same space. For more private transactions, however, a bank of conference rooms against the building core is available for bank officers. This arrangement, and the open lounges opposite elevator lobbies, make the superb view of Puget Sound, and the mountains to east and west, a part of everyone's experience. A few private offices are provided.

The only shops in the building are in the arcade off the Third Avenue lobby where they are easily accessible. Naramore, Bain, Brady & Johanson designed all of them, each with its own character. Entrance to the drug store, shown here, is by a "flow-through" wall of glass panels in chrome frames which pivot at the center.

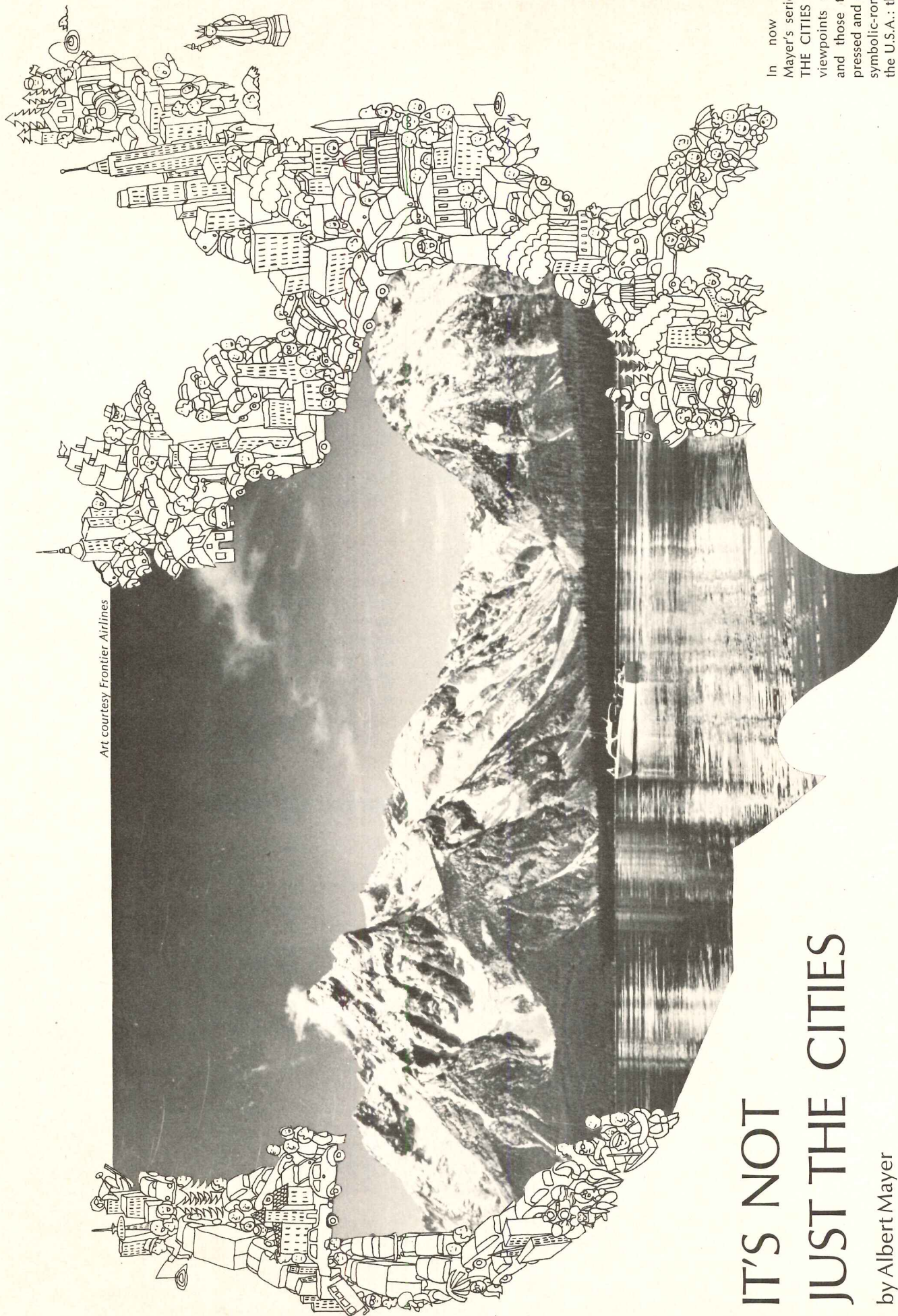
SEATTLE-FIRST NATIONAL BANK. Seattle. Washington. Owner: Seattle-First National Bank. Architects: Naramore, Bain, Brady & Johanson—Perry B. Johanson, partner-in-charge; Robert J. Pope, project architect; Donald A. Winkelmann, project designer. Engineers: Skilling, Helle, Christiansen, Robertson (structural); Valentine, Fisher & Tomlinson (mechanical and electrical); consultants: Jaros Baum Bolles (air conditioning); Pietro Belluschi; Carl Morse, Inc. (construction); landscape architect: William Teufel; contractor: Howard S. Wright Construction Company.







The escalator from the lower level of the building is a dramatic element of the Third Avenue entrance lobby, since it rises through a well to serve all four floors between Third and Fourth Avenues, and makes a direct connection to the Plaza level. Just inside the lower level lobby are the arcade shops and a 225-seat auditorium. The entrance on this level has been designed to give it importance; the glass-walled lobby is set back from the street, and the approach to it angled from the sidewalk.



Art courtesy Frontier Airlines

IT'S NOT JUST THE CITIES

by Albert Mayer

Part Four: Uncovering and surfacing the gut issues

In now resuming Albert Mayer's series IT'S NOT JUST THE CITIES he signalizes the viewpoints already expressed and those to be further expressed and elaborated, by this symbolic-romantic portrait of the U.S.A.: the over-developed areas; and, between, what he calls the New Regions. These are areas and opportunities for 20th and 21st century pioneering; and, by relieving pressures, they make possible the rebirth of over-developed areas.

In Part 1 of this series (which has run in the June, September, November and December 1969 issues) Albert Mayer began: "The environmental crisis in this country is not only a matter of the city: it is an interrelated continuum of malaise and deterioration all the way from rural areas and small towns through metropolitan areas and possible megalopolis. . . . Coping adequately with the extent and the

emerging visible severity of deterioration, of crisis, of near-crisis and of pre-crisis in this national continuum demands a massive scale and immediacy of funding and operation, both public and private, far beyond any present appropriations or indications of intent. . . ." In this article he outlines what he feels are the gut issues essential to any program to enhance the environment.

Issue 1: Land as a Public Resource vs. Speculative Commodity. See details, following pages.

Issue 2: Miracles by Sloganease. Can we really "do it by private enterprise, do it like NASA, or do it by systems analysis"—or do we need new institutions and instrumentalities that include their relevant aspects, and the urgency of private élan with the driving mission of public purpose?

Issue 3: The Extent of Community Participation. Must we continue to struggle with pragmatic limitations and two-way frustrations; or can we spell out and hammer out new formulations for getting things built? Also: who is the community?

Issue 4: Archaic Doctrines. A consideration of two images: the independent, self-contained "decolonialized" neo-ghetto principality concept, vs. fresh winds, fresh opportunities, ex-ghetto, and a "normal" degree of ethnic aggregation.

Issue 5: Recently "Self-Evident" Good Goals—To What Extent Are They Still Valid? Examples to be considered: metropolitan government; integration; and home rule. The question: What to do when, as frequently happens in these fast-plunging decades, the public-action legislative solutions lag behind and—when finally won—are inadequate for the now-further gangrened or changed disease.

Issue 6: Trends Can Change. The questions: Are we over-building for the past? Are we overdoing and over-intensifying rebuilding of the inner city? Is Negro migration into the inner city now substantially over, and will there now be significant movement by blacks to the suburbs?

Issue 7: Revised Doctrine of Dynamic Growth: In Place of Booster-Boom; Re-Direction and Built-In

Limitation. A look at the possibility of correlating-synchronizing employment and community, particularly in new and expanding towns. Is correlation possible on a total scale?

Issue 8: Side Effects and Millennial Effects. A study of the dangers of passionate espousals for one-track benefits, as in the cases of D.D.T. and Thalidomide; narrow streets encroached upon by construction crews and Venice sinking into the sea. Required: a new kind of anticipatory Ombudsman.

Issue 9: Man's Created Environment. Must it continue to react mainly to the needs of the rich and powerful in competitive show, with a residuum of third-rateness for others? Or can there be pervasive decentralization of excellence?

Issue 10: Race and Minorities—a pervasive and overriding issue; a challenge we can meet.

Issue 11: Diffusion of Culture, New Action Cultures, and Re-Radiation—the chance of a successor to stale metropolitan sophistication, giantism, self-aggrandizement and consumer-spectator culture. Fresh winds, from "new areas" and old-new slums.

Issue 12: Climax—Enlisting and Multiplying Creative Moral Forces. Conservation and its fervor begin at home, in daily sensitivity and determined ethics, as well as in remote wilderness. To reach the brave new world, miles of deep, deep trenches have to be recognized and regained and advanced over; evoking new intensities of allegiance and vast multiplication of personal commitment and its renewing rewards. And FINALLY: Illustrative Synthesis. The design of selected nodes of the environment as they evolve, enhanced, first, from the web of these gut issues, and from the symbols that grow from and with them.

Issue 1: Land as a public resource vs. speculative commodity

Whatever particular aspect of environment and development concerns us, we find that land speculation gets in the way, by spectacularly steep price rises, or haphazard development that physically stands athwart needed undertakings. Consider some specimen examples from a number of fields:

In the case of housing: Land prices have risen much faster even than construction costs. Prices for suitable land have doubled in 10 years. Construction costs rose a steep 38 per cent from 1961 to 1968. Land much more so: land cost for average FHA-insured houses increased over three-fold—by 264 per cent and from \$1035 to \$3766 from 1950 to 1967—from something like 10 per cent of the cost of a home to over 20 per cent on the *higher* cost of the home at the end of the period. . . . In my study *Greenbelt Towns Revisited*¹ this case is documented:

1935. Original cost to government of land for the town of Greenbelt: \$97/acre.

1965. After numerous re-sales among land speculators and developers, the appraised value of a typical piece of land was \$16,000 an acre. Personal checking with knowledgeable local people placed the value at somewhere between \$8,000 and \$16,000.

This means an increase of either 80-fold or 160-fold—i.e., land price increase of about 250 per cent or 500 per cent per year!

In the unspectacular town of Stoughton, Mass., sites for middle income housing increased 66 per cent in price in the four years from 1962 to 1966.

If one's interest is in National Parks: consider The Point Reyes National Seashore. \$14 million, appropriated in 1962 to purchase all the private land needed, succeeded in buying only half because of the rising real estate prices. As of 1968 it would have taken \$45 million to purchase the rest.² By August, 1969, only 22,000 acres of the 53,000 acres contemplated had been acquired, the money having run out. It was expected acquisition of the remainder would be at double the rate per acre.³ Generalizing as of 1969, land prices for park purposes had been escalating at rates of 12 to 20 per cent per year.

¹ *Journal of Housing*, Jan., Feb., March 1967. Republished as a separate study by U.S. Department of Housing and Urban Development, Oct. 1968.

² *Christian Science Monitor*, July 7, 1968.

³ *New York Times*, Aug. 31, 1969.

As to airports: Arthur D. Little, the research firm, in a report issued in January 1967, noted that property suitable for airports in larger metropolitan areas had been increasing at a rate of up to 30 per cent annually; and recommended large advance purchases for airports.

As to highways: The State of California has a \$30 million revolving fund to finance advance acquisition of land. Between 1952 and 1966 California spent \$62.5 million for advance acquisition. The Division of Highways estimates that if the same properties had been acquired later on—i.e., at the time when actually needed—the cost would have been \$380,500,000⁴ (Much of the saving is due to forestalling private development which would have had to be purchased and demolished.)

Each of us knows about these land price escalations in his own field. But it is not generally or fully realized that these land price escalations occur, in fact, in *all* fields; and everywhere. Not only in cities and near cities but in the countryside where highways run or will run, and in the remote areas of the national parks. The situation is so universal that land speculation and profit may be thought of as a sort of private levy or dollar tax collected on *all* development. And in the vast majority of cases, those who collect the profit have made no contribution of improvements toward enhancing the value of the land. They have simply bought cheap and held for profit, with no social contribution. Most frequently, they benefit from public developments with which they had nothing to do—or simply as payment for their anticipatory sense. . . . This is a worsening situation against which a many-sided all-out campaign must be mounted.

1 Land: Whipping up the tides of speculation. The toll we pay

To underline the motivations and the rapidly widening extent of this land speculation, note these typical cases of popularizing and whipping up speculative frenzy—in addition of course to the permanent ample corps of professional speculators:

Sylvia Porter, financial writer, did a series of four articles in the *New York Post*.⁵ She opens by citing phenomenal gains in land prices, such as that "the price of a single acre of land in certain areas around Phoenix has since the 40's zoomed from \$3 to \$20 thousand." She goes on:

"Today, fortunes, large and small, are being made in land—for suburban housing developments, vacation resorts, shopping centers, industrial plant sites and even in reclaimed swamp and desert land. What's more, a great variety of investors seems to be getting involved, from individuals to corporations to land developers, etc.

"But how can you, the amateur investor, get a piece of the action in real estate now? In this and the next three columns, I'll try to give you precise guidelines. . . ."

⁴ Letter from Rudolph Hess, chief right of way agent, California Division of Highways. Cited in report "Advance Land Acquisition by Local Governments," by Donald C. Sharp and Ruth P. Mack of the Institute of Public Administration, New York, August 1968.

⁵ Aug. 11-14, 1967. Quotations are from Aug. 11.

The Practising Law Institute of New York City conducted a program Feb. 8-10, 1967, entitled "Land." One subject:

"TECHNIQUES OF LAND SPECULATION. Advantages and disadvantages of acquiring land at this time for speculation, holding and future development. The professional land trader—what he does, how he does it and why. Making speculation pay—going into established or untried locations. Rapid turnover vs. long term holding." And, "PLI ANSWERS YOUR QUESTIONS ON LAND: What steps can be taken to increase profits from land speculation?"

Prentice-Hall, the publishers, in pushing their bi-weekly *Real Estate Opportunities*, offer as a bonus "a special 12-page report that shows you just how to proceed to turn this opportunity into a fortune." This is because "America is on the verge of its greatest of all real estate booms—a giant boom in raw land—a boom so large it dwarfs anything that has gone before."

These are just three examples among a host. Also, many Wall Street houses have been creating major-scale operations in this same field and vein. The fact is these people are right, regardless of whether as always many small part-time investors are wiped out. With the prospective 100 million increase in population in 30 years or so, with our greater leisure and mobility, causing even many times greater increase in demand for recreational facilities and land, with modern schools and colleges and factories each demanding ever more land, there is indeed escalating demand. There already is a tremendous boom as the cited ubiquitous examples of price rises show. And there will increasingly be a monstrous boom, unless new concepts in land ownership, new massive legislative and financial stopgaps—public and private—are quickly tooled up and put into action to mitigate it, buying time for and leading into ultimate institutional changes. Otherwise all of us will, as we now are increasingly doing, pay tribute to a handful of people who take a heavier and heavier bite out of the quality of our environment, or force us to pay much higher prices for it; or both. . . . There is tremendous indignation about inflation, and drastic unpleasant measures taken to brake it. There are all kinds of proposals including Operation Breakthrough to counter the rising costs of construction, and rightly so. But land prices, which are very far out in front of both and which make the least sense of all, are curiously endured; as we have seen, encouraged; for many barkers are urging it forward still faster. All of us are victims in one way or another, most of us in multiple ways: in our homes, or quest for a home, in our recreation, in school and college; travelling by road, travelling by air.

Let us recognize the squeeze, and move in multiple ways to rectify this crass condition. . . . The house owner who is offered a fantastically high price and profit thinks if he reads this: "What nonsense. This is all to the good." But let him try to find or build an equivalent—because he's got to live somewhere. Then he too takes it on the chin.

The great puzzle to me is: why not more, more widespread, anger, indignation, demand for effective action; and action? This recounting isn't new. Maybe it's as old as history. Henry George eloquently identified it many years ago. But not even the *pro bono publico* housing groups, national and locally around the country, nor the professional planning associations, nor such pronouncements as by AFL-

"... in the vast majority of cases, those who collect the profit have made no contribution . . . They have simply bought cheap and held for profit."

"The situation is so universal that land speculation and profit may be thought of as a sort of private levy or dollar tax collected on all development . . ."

"The great puzzle is: why not more anger, indignation, demand for effective action; and action?"

CIO, on the whole, quite on the side of the angels, are urgently hammering at this.⁶

We are in general preoccupying ourselves with important individual superstructure measures and devices, such as urban renewal, Model Cities, building code enforcement—all of them important. But we must also with determination tackle the universal sub-structure: LAND. It is now much more serious than ever because for the first time there are the two factors, much more drastic and acute than before in history:

2 Land: Unprecedented need. Beginnings of new answers.

Consider the unprecedented population explosion—50 per cent more people here within thirty-odd years from now. And the *unit* requirement of *land per person* is even far more drastically increasing: for recreation, for education, for industrial production, for automobile transportation and parking. Thus, the problem is not 50 per cent more land for 50 per cent more people, but more probably of the order of 300 per cent more land. And thus, the total problem is much greater and more pressing than ever in the past. We can still manage with some margin *if we realize that we must manage*, sharply control. What we have got to recognize is that land is not a commodity of which we can manufacture more, and more of the same quality, as we can of a commodity. And that while modern transportation, communication, cultural diffusion vastly increase our viable areas, locations and distances—within this much bigger total ambit there are practicable viable points and nodes and convenient relationships that unbridled speculation and odd development can fatally interfere with physically; or impose on all what is in effect a heavy private toll.

There is sharp awakening to these dangers and actualities; mostly only in specific situations, specific areas or functions. This is hopeful in several senses. The amazing growth, determination, power, numbers involved in the conservation movement, are inspiring—both in result to date, and in their increasing political influence. The increasing acquisition of national seashores and national park sites of the Redwoods area: such developments as these are immensely encouraging, though not sufficient. Even more encouraging are two specific examples: the success in the San Francisco Bay Area, where the acquisition and constant indiscriminate filling in of bay shores by private development interests, including recent plans by a prestigious syndicate including leading bankers, has been halted, and a creative plan adopted there; and the probable ultimate success in preventing the harmful aviation and commercial development in the Miami area around Everglades Park. I say these are even more encouraging because these two are not remote areas, but actual clashes near at hand with the combination of civic boosterism and powerful private development interests—a hitherto almost invariably invincible combination. They are the product of increasing alertness on the part of increasing hundreds of thousands of active dedicated participants; and impressive numbers of cooperating organizations.

"We can still manage with some margin if we realize we must manage . . . What we have got to recognize is that land is not a commodity."

⁶ AFL-CIO calls for a national land policy, as do others. But quite unemphatically; what I call fine print.

This is further encouraging because it means that excitement, determination, financial contributions, long-lasting persistent action have been marshaled on largely ethical and spiritual issues (though one recognizes of course that sportsmen's interests in hunting and fishing have played a considerable part)—which is just what must be developed as a vital attitude toward the much broader issues of total development and total land. But the question is whether the transition and transformation from the ethical, spiritual, ecological worries and actions, in single-function cases and single areas, can be transplanted into this total question; and can be telescoped in time, before it is too late. If we can do that job, and if we can deepen the outlook of the many concerned housing and urban groups nationally and around the country, into a poignant realization that the land issue is a major factor underlying the effectiveness of all our "super-structure" programs, we may not be so far from momentous progress-into-action.

The rallying cry for all of us is:

CONSERVATION BEGINS AT HOME, in all the nodes, in the human communities-to-be. A rather minor but significantly crass instance—as an epitome of the fact that conservation begins at home and the relation of land price to it—is found in my study *Greenbelt Towns Revisited*, already referred to. In the initial development of the town of Greenhills in Ohio by the Resettlement Administration, while land prices were still quite low, the natural topography and characteristics of land in an attractive stream bed were observed and preserved. Later, after divestment by government, after further sales and resales, land prices had risen, private developers decided it would pay to fill in this attractive feature and build on it; and did. So, disappearance of the feature. So, conservation did not begin, or have any place, at home! This is but an index of the whole wide question: creation of regard for land as the basis and symbol of sensitive civilized environment.

If I have made a compelling case for a new attitude about land, there are two ways to implement it:

One is massive and skillfully located advance acquisition of land so as to substantially forestall speculation in critical places. This does not necessarily erase land speculation as an institution, as it were. But it will be a powerful short run or interim measure. This will need to be combined with development in new areas, where speculative bid-up and vested assessments haven't yet taken such strangleholds.

The other will be in a longer run, to eliminate speculation, totally or to a very considerable extent, by a new institution or set of institutions. We deal only with the first.

3 Land: Advance acquisition, before sales and resales take over. Potent examples:

There are some notable, and some less notable but significant, examples of purchase for public use by government or private philanthropy or citizen subscription, forestalling later impossible prices or unavailability because of private development. These are for individual functional purposes, or for over-all land requirements. Proportionate to the whole im-

minent environmental problem, the onrush of demand for land, the violent spread of speculation, we have little indeed to cite, but enough to show convincing examples and convincing benefits.

The examples fall into three categories:

■ For specific purposes, even though in some cases vast in scale and in glory of conception: National Parks and Monuments, wildlife preserves, nature centers for instruction and refreshment; land around road interchanges, or extra taking along roads for public and housing purposes; land for recreation. Two remarks about this. In National Parks, though the Government has been expanding more liberally, rises in land costs have been so steep that purchases have had to be pared down to a point where rising population and exponentially rising demand has caused existing parks to be so over-used that the authorities have had to restrict access; and the public (the middle-class car-owning public for once, not just the poor) have less per capita use than before! The other point is that by failing to buy land around interchanges during development of the 41,000 mile Interstate System, possibly the largest opportunity in generations has been lost to the public benefit and public amenity.

One of the happiest and most gratifying examples is the Redwoods National Park in California, a joint operation, over a span of 51 years, of the 45,000-member Save-the-Redwoods League and the U.S. Government: always staying inches ahead of private land-buyers and owners whose prices have prevented full acquisition. Another: Palisades Interstate Parkway in New York-New Jersey, of 66,308 acres, the marvelous breath of life in the New York area put together years ago, which could not now have been acquired at any price. On less individually massive scale, but totally and locally splendid: 33,000 acres in western Pennsylvania, in 11 counties and over 100 cities, as beauty spots, nature rarities, wild life reserves, by the Nature Conservancy. The case is worth noting in this connection, of Suffolk County's 9,300-acre Land Bank: "For the last eight years [reports the N.Y. Times of March 23, 1967] the county officials have been in a race with private land speculation trying to buy enough recreation land for the projected needs. . . ."

■ For more generalized purposes, but still somewhat specific: Land for greenbelts around cities, partially to preserve open land just as open land, to refresh city life, to retain or regain contact with nature; partially for functional (usually recreational) use. The classic largest-scale example is London's Greenbelt.

The most massive case of this character on this continent is the 41,000-acre greenbelt around Ottawa, funded by the Canadian Government. . . . Much smaller but in a way more spectacular, because it underlines citizen awakening and commitment, the case of the greenbelt around Boulder, Colorado, 13,000 acres (added to an original 5,700), in the course of being purchased by the city as part of a special citizen-voted one cent addition to sales tax.

■ The first classification serves specific functional purposes, especially for conservation and recreation. There are, happily, many and multiplying instances. In the second case, generalized-specific, there are fewer, we are just beyond the beginnings.

But in the climax—the most forward and upward-outward reaching and future-oriented of all: Only over-all advance land acquisition will make it fully possible to *develop freely* the best and most generous plans and aspirations of which we are

capable for total human and ecological development, for all aspects of environment, not constricted by speculative land price or pre-emption by narrow arbitrary development. This is full *development*, more actively and totally creative than even conservation, preservation. One may think of this climactically as the most sacred attribute of land, as well as the most pragmatically fulfilling.

The famous archetype is Stockholm, which began in 1904 the policy of buying land which now houses over half of the city's population. Not only did the prices paid ultimately represent enormous savings, but the ready availability of their large areas at reasonable prices or leases for building, naturally held down speculative prices elsewhere—thus had a price effect quite beyond the large holdings themselves. And control of so much properly located land permitted and permits drawing an optimum master plan with close coordination to optimum transportation, with the assurance of carrying it all out optimally, as indeed any student or observing visitor to Stockholm can attest. Copenhagen's policy and experience were in general similar. Note too that this large and pervasive control avoided the to-us-familiar dis-economies of arbitrary spot developers, necessitating premature extensions in various directions of utility lines, road networks, transit. Their general leasing out of land for development, or equivalent disposition to co-op and other public interest groups, reserved value increment for the public benefit. (Contrast this with our practice, for example, in urban renewal. Land is purchased by government at greatly reduced prices by virtue of heavy public subsidy from the Federal government. It is sold to developers at the same low prices, with no limitation as to re-sale: so, a new escalation begins.)

One may also classify the above examples of public-use land acquisitions by identifying the sources of funds that made them possible:

■ By philanthropy. The gift by Rockefellers and others of the Palisades Interstate Parkway is a *beau idéal*. This source doesn't seem to be increasing. It should; as diversion from, say, the vanity-prone givers of the million-dollar Rembrandts and Monets; and other forms of conspicuous exposure such as exposed by \$2 million jewel robberies. Let us trumpet forth the equal or superior gratifications of elements of nature.

■ By voluntary public subscription, sometimes with the cooperation of large gifts by individuals or by foundations. The upward course of this source of sensitive consciousness is stirring, gives me much hope. Save-the-Redwoods League has 45,000 contributing members. The rise in numbers and activity of the Nature Conservancy is even more spectacular. Numbers are emphasized because it means ever-widening ethical-financial concern and commitment. Additionally, the Ford Foundation has placed a revolving sum of \$6 million at the disposal of the Conservancy; and Laurance Rockefeller a large sum in the spectacular Maui Island acquisition in Hawaii of 4,300 acres.

These two fund-sources are appropriately suited to the compelling appeal of the unique situation, the once-or-never opportunity, the temporary standby for quick purchase until government gets around to vote and to appropriate money; and particularly as escalating proof of rising dimensions in citizen imagination and determination.

But the sphere in which we need to leap from almost nowhere and nothing over here to very

"There are two ways: One is massive and skillfully located advance acquisition of land. . . ."

"The other will be in a longer run, to eliminate speculation, totally or to a very considerable extent. . . ."

large operations indeed, and what this section of the paper is mainly about, requires political determination and government action on great scale, because it must be pervasive, and by its scale and many future-strategic locations assure:

4 Land: Massive advance acquisition for total excellence of living. New towns, satellites, other nodes

Varied examples have been cited to show the increasingly accepted principle and practice of purchasing land to forestall its loss due to being preempted by private development, or to forestall price rise. That is, to prevent its becoming unavailable, or out of reach in price, where figures are already astronomical. Examples have come from every level of government, and every kind of location (except of course over-developed areas!). So that there is no longer anything strange about this, or untried. What it has depended on is establishing the acute feeling of acute urgency in single cases. The population explosion, and companion explosions in exponentially multiplied related requirements for land, seem to me to offer the sufficient climate of urgency for total land—as it has done in Sweden and Denmark. Or, we must further work it up, so as to produce strident demand for action. We cannot of course buy up all land. How to sew up enough so that we will not be hampered? Remember all the time that if we can manage to work out acquisition of substantial individual pieces and total amounts, we can satisfy our total development purposes; and with this large reserve hanging over the market, speculation altogether will be damped. Prices will not boil over.

Consider some suggestions leading into a possible course. They are not offered as anything like a detailed program, but as an urgent starter or suggestive springboard. One needs to leave it to detailed expertise and legal draftsmanship to closely effectuate. This latter is the usual presentation, at much length, from experts to experts, and for other experts. It is presented here briefly, because it is so essential to uncover this normally considered esoteric-professional subject matter. The citizen-reader has got to discover its all-pervasive importance, place it in the forefront of his priorities. What is given here is in the spirit of the continuum and its effectuation, to arouse the citizen from non-awareness of this "total land problem", to hunger for action. Another purpose is to show orders of magnitude, to show that the costs are not wild, indeed surprisingly moderate, feasible.

■ *For New Towns and Cities.* Let the Federal government acquire sites averaging 10,000 acres, an average of three per state. Criteria and possible sites to be identified by a Land Commission, for these as well as the other types of sites to be noted. Any state desiring such advance purchase would need to contribute, say, 20 per cent. If this is not forthcoming from any state, the unused allotment could be taken up by a state willing to do so. At an average of, say, \$500 per acre, the average site would be \$5 million, a total for 150 sites of about \$750 million. Spread over five to 10 years, this would mean \$75-150 million per year: chicken feed. This would be appreciably reduced because some of the land would come from the huge acreage now in the public domain under the Department of the

Interior. What it would mean in control of environmental destiny and human enhancement! And, much of the land would bring in agricultural and other income until used for its ultimate purpose.

■ *Satellite sites relating to (chiefly middle-size) metropolitan areas.* Two hundred sites, say 2,000 to 3,000 acres each, at \$1000 per acre average. Average site cost \$2-3 million. Total cost: \$400-\$600 million. Incidentally, the town of Lysander, outside of Syracuse, under way in 1969, by N. Y. State Urban Development Corporation, is of about this scale and cost. Only, the new policy here proposed would not re-sell the land, in any of these categories. Disposition would be by way of long lease, so that increment in land value goes not to the private developer, but for the public benefit.

These two categories could provide land for up to some 20,000,000 population over 5 to 10 years, starting now. This total provision would not be too much below the population growth projection—which indeed may dampen down. Also additionally:

■ *For Other Nodes and Miscellaneous.* These would have some similarly very rough under-equivalence for the other levels of nodes, for interchanges, national parks, etc. One need not go through each, for any semblance of rigor at this point would be pointless and misleading.

5 Land: Summary and meaning

It would be confusing the issue, especially at this initial stage, to try to pinpoint areas, dollars, locations. But the point is clear: for a really modest investment—particularly in terms of the order of magnitude in which we are accustomed to think for Federal commitment—a working control can be gained over development of our environment in the two essential ways:

We have our land with enormous cost savings.

And instead of having to squirm around the prowling alert speculators and spot developers, we can assure optimum and imaginative development commensurate with our technical progress and social and ecologic insights. The presently customary each-time defeat or necessary diversion or the each-time frenetic struggles—each half-victory and half-defeat—will be replaced by generally predictable success of a generally rational and far-flung development plan and program.

There is no contention here that rational and predictable control of land assures gifted planning and development. What it does assure is that gifted planning and development will not be thwarted by profit-escalating development-throttling land anarchy. Our visions will not be thwarted by obsolete land games, can be effectuated free of land-profit obstacles. Propulsive impetus and release of the full creative intentions and energies.

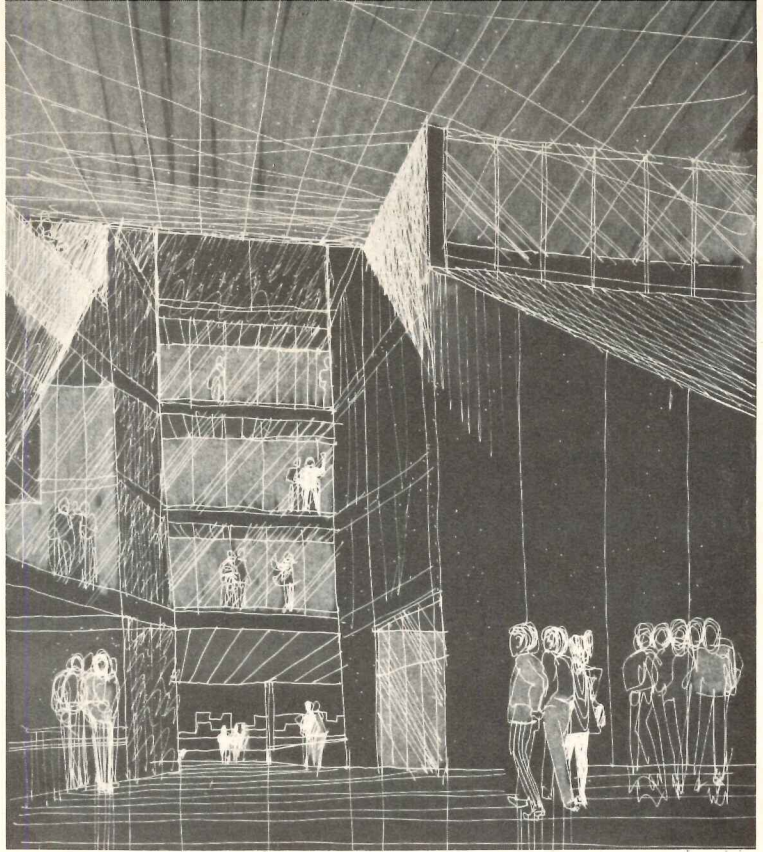
And finally, one step further.

There is another aspect. One might call it the mystic aspect. Land is not a detail of development and in life, but an index of man, as it were. We have seen that land must cease to be regarded as only a commodity, but as a public utility. And beyond that, it would be well, very well indeed, if land came again to be regarded as a sacred resource, with feeling of reverence, as in the expression Mother Earth.

"Remember that if we can manage to work out acquisition of substantial individual pieces and total amounts, we can satisfy our total development purposes . . ."

"And beyond that, it would be very well if land came again to be regarded as a sacred resource . . . as in the expression Mother Earth."

OPPOSITE OF IVORY TOWER: THE

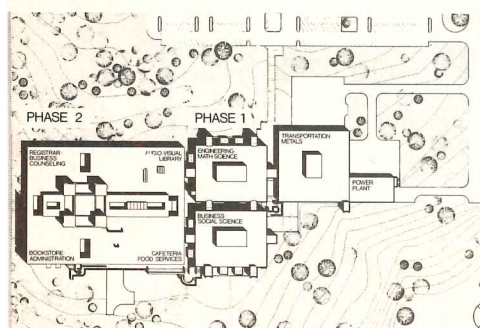
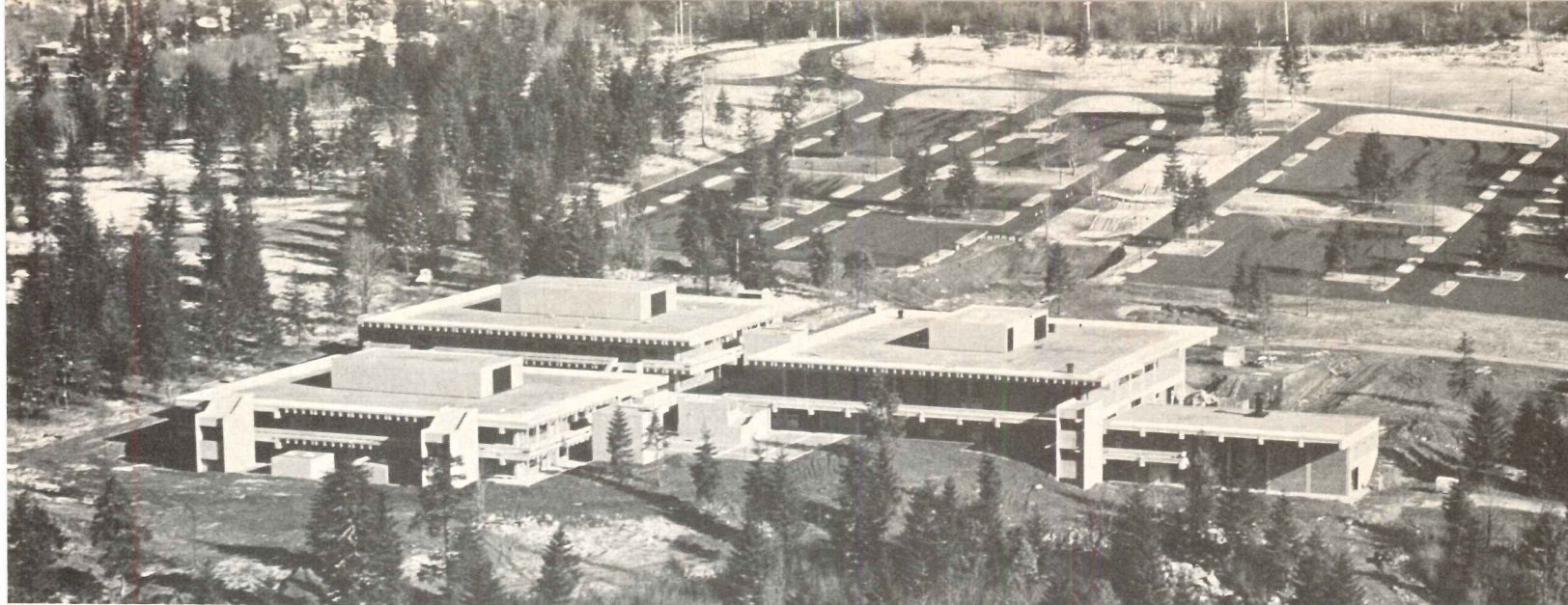


Manhattan Community College. Caudill Rowlett Scott, Architects

COMMUNITY COLLEGE

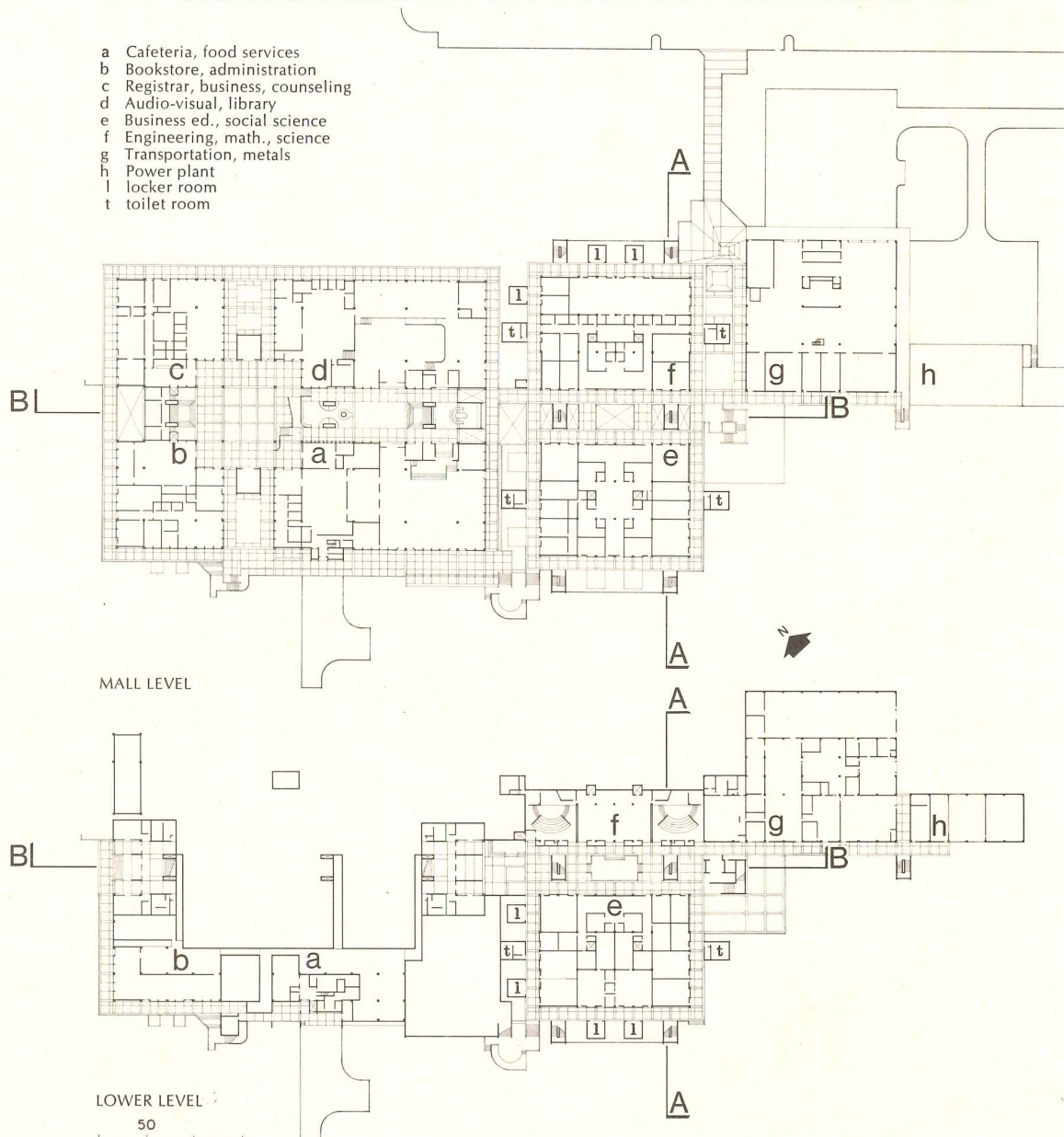
A community college is many things to many people: to the black student a chance to study his black heritage in his own neighborhood; a return to the classroom for the mother, now that her children are in nursery school; a chance for the still deliberating teenager, or one with a less than brilliant high school record, to "try college;" for one wise enough to know that B.A. does not stand for "Bliss Assured," the opportunity to learn a trade or skill; as well as being the first two low-cost, live at home years of a regular college program for thousands (hundreds of thousands more every year) of young people; and a center for continuing studies for adults of all ages in their various professions and avocations. The list is long, the possibilities virtually endless. Obviously each community college is, or should be, as unique as the special needs of the particular place and people dictate. But if one characteristic (besides their handsomeness) can be said to apply to the varied selection of community colleges on the following pages it is that their universal open door policy has been carried over to become a main element of each school's program, plan and design. They are open to, and integrated with, their physical surroundings, whether that be open country, suburbia or inner city. Nature, the neighborhood, the non-student population, none of these are excluded .

—Donald-David Logan



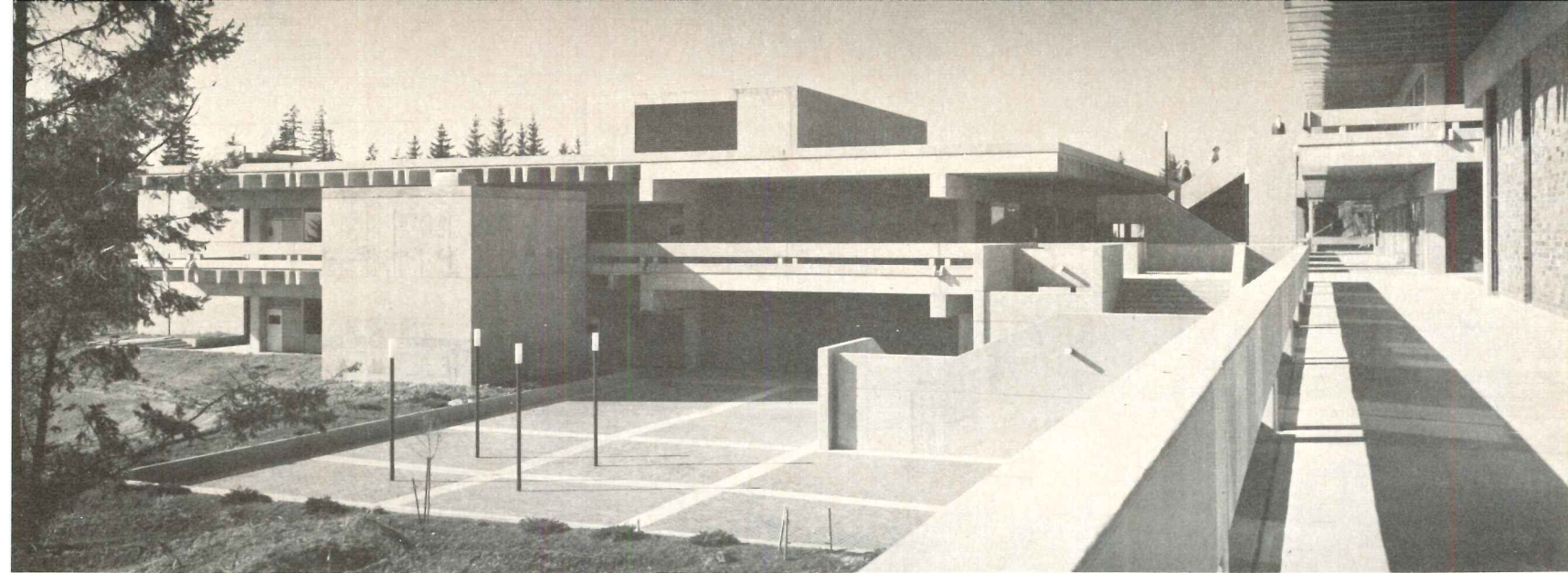
The plan of the college is a complex of six departments clustered about a central mall in shopping center fashion. The instructional facilities of each department are in turn centered on a "resource center" (a division of the main library and connected to it electronically). At this departmental core are also found easily accessible faculty and staff offices. But instead of linking the various spaces with interior hallways, access is via an outside system of open corridors. Building services (stairs, lockers, restrooms) are separate structures linked to this exterior corridor system. Open brick-paved plazas occur at corners. These are popular suncourts and natural meeting places. They are open, as are the corridors, and even the stair towers with their horizontal openings, to the beautiful views. In addition to reducing wasted space, and thus cutting construction and maintenance costs, the outdoor corridors, because of their openness to the countryside, seem uncrowded even at busiest class-changing times. This system is possible of course only in a benign climate like Oregon's, with its moderate temperatures and little snow.

- a Cafeteria, food services
- b Bookstore, administration
- c Registrar, business, counseling
- d Audio-visual, library
- e Business ed., social science
- f Engineering, math., science
- g Transportation, metals
- h Power plant
- l locker room
- t toilet room



Portland Community College Wolff · Zimmer · Gunsul · Frasca · Ritter

□ The plan of the new Mt. Sylvania campus of Portland Community College and the school's educational philosophy are one and the same. And one word may be said to describe them both: an all pervasive *openness*. The architects have expressed this openness in a number of different ways in their design, each of which pairs off with one of the administration's goals. The first is *visibility*. President Amo De Bernardis sought a college that in its entirety—offices (faculty, administrative and counselling staffs), instructional facilities (classrooms, labs, workshops) as well



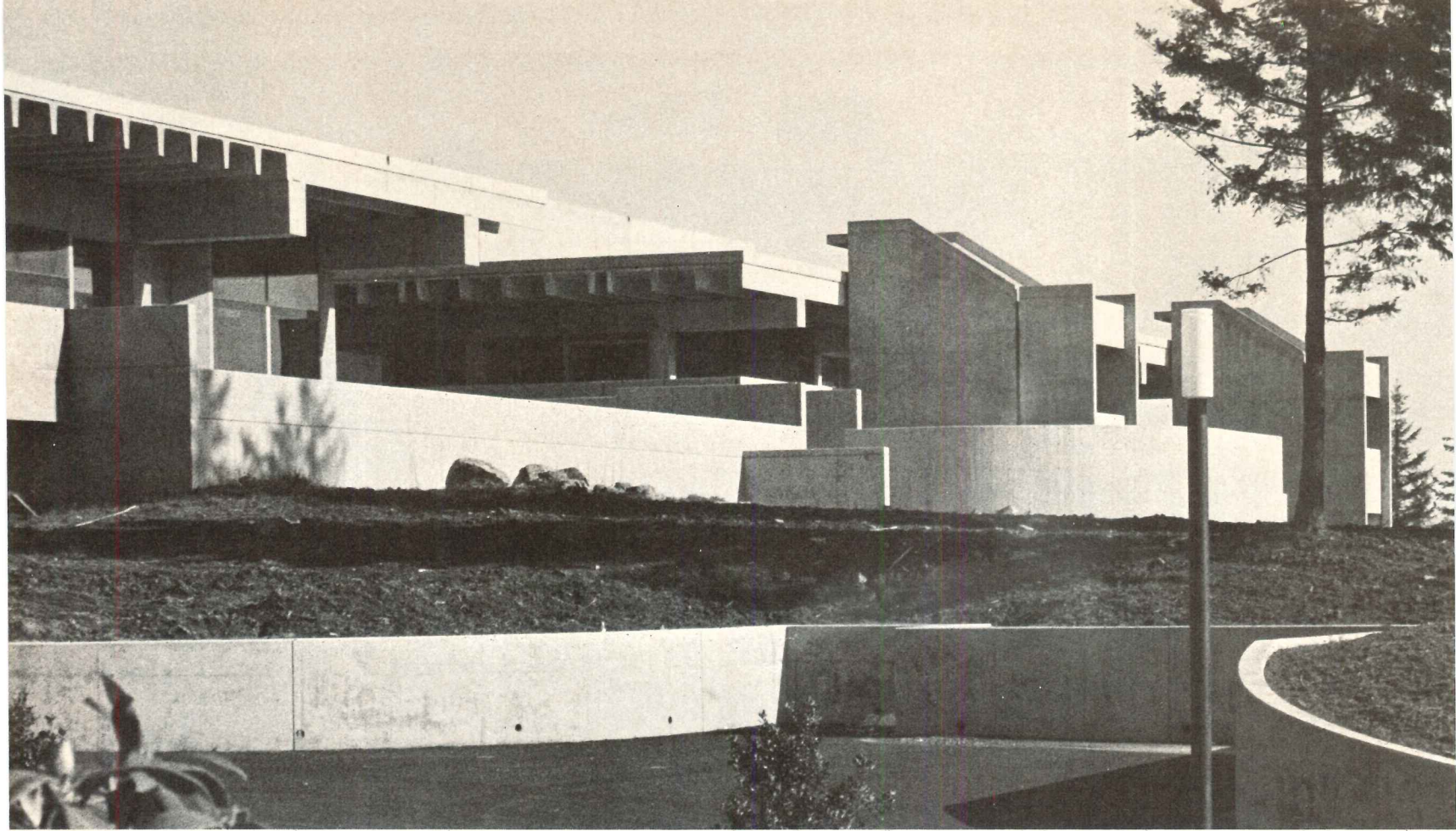
Art Hupy



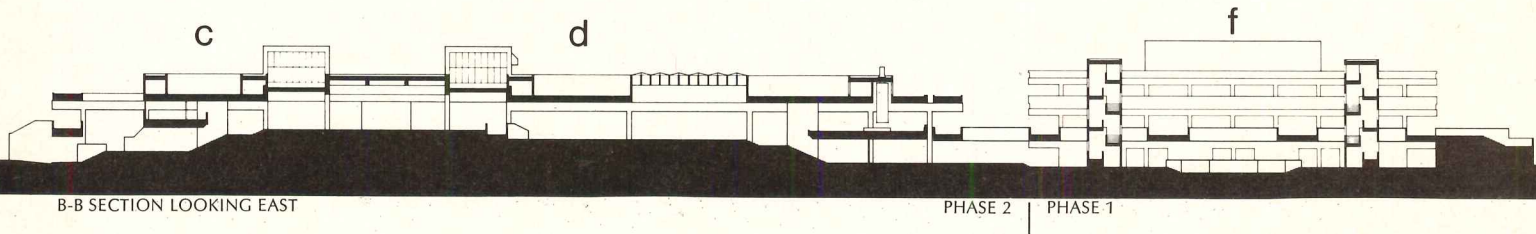
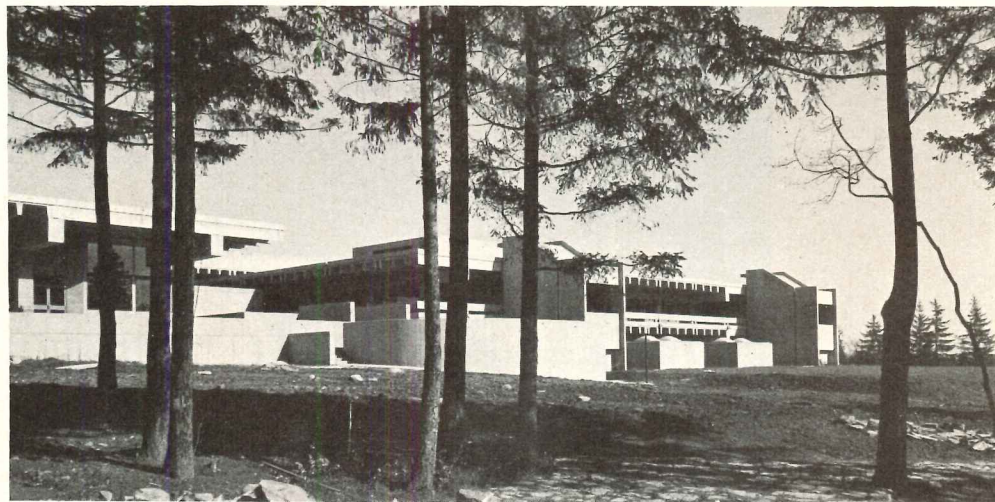
Art Hupy

as library, study and lounge spaces—would be on display to a great extent. The architect's answer was an educational "shopping center" where almost all the building's spaces have large glazed areas opening onto interior courts and malls or, more often, onto an exterior system of plazas and outdoor corridors ("promenades") that serves as the pedestrian traffic system for linking the various elements of the growing complex. All the elements connected with the educational process are "look-in" facilities. Although questions may rise as to the degree of added concentra-

tion necessary to work or study in such an atmosphere, this type of visibility planning has been found, in use, to have a number of positive benefits and results. The large windows, together with the plant layout, encourages student contact with a variety of learning areas. This has been found to stimulate students into taking courses they otherwise might not have considered. It is also conducive to forming personal combinations of courses into new programs. Portland, like all community colleges, has an open-door admissions policy. The visual openness of the facilities



PORTLAND COMMUNITY COLLEGE



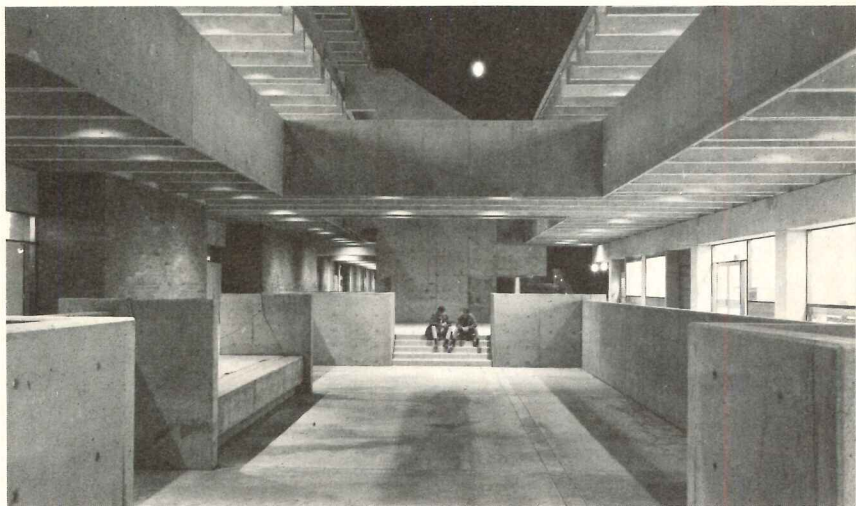
thus becomes the physical expression of this policy. The visitor, whether taxpayer/shareholder or prospective student, is free to wander around and observe at his leisure; is automatically, so to speak, shown what is going on and where. The carefully worked-out plan also results in a high degree of *accessibility*. Faculty, administration and counselors' offices, besides being highly visible, are readily accessible spaces distributed throughout the complex. Most often they open onto the departmental "resource centers" (library/study and self-teaching facilities). Even

the president has an office with a large "department store" window. The fact that instructional areas open onto exterior corridors enables a student to go in the most direct manner possible from parked car to classroom. There is also the matter of what might be termed *indivisibility*. A large number of students at Portland are involved in vocational and trade programs. The administration was determined that, society's general attitude to the contrary, no distinctions would be made between these people and the students in more academic programs. Everything that

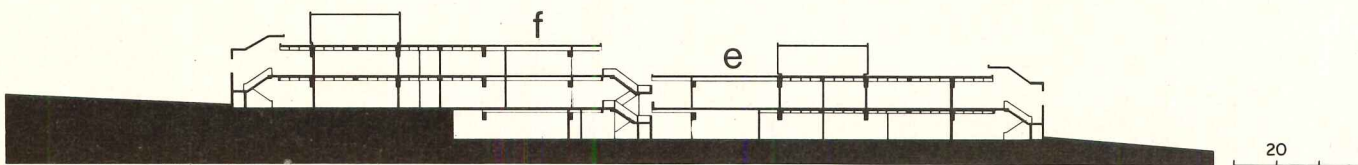


Phase I of the college was occupied in January, 1968. Phase 2, above, in late 1969. The latter mainly consists of supportive functions and central facilities clustered about a large mall (nearly completed, right). It will serve as the crossroads of the eventual entire complex. It is contemplated that Phase 3 will consist of facilities for health, life sciences, communication and the performing arts.

PORTLAND COMMUNITY - COLLEGE, PHASE II, Portland, Oregon. Architects: *Wolff • Zimmer • Gunsul • Frasca • Ritter*; engineers: *Rose & Breedlove, Inc.* (structural); *Thomas E. Taylor* (mechanical); *Grant Kelley & Associates* (electrical); contractors: *Todd Building Company* (general); *Lord Brothers Contractors, Inc.* (mechanical); *Bohm Electric Company* (electrical).

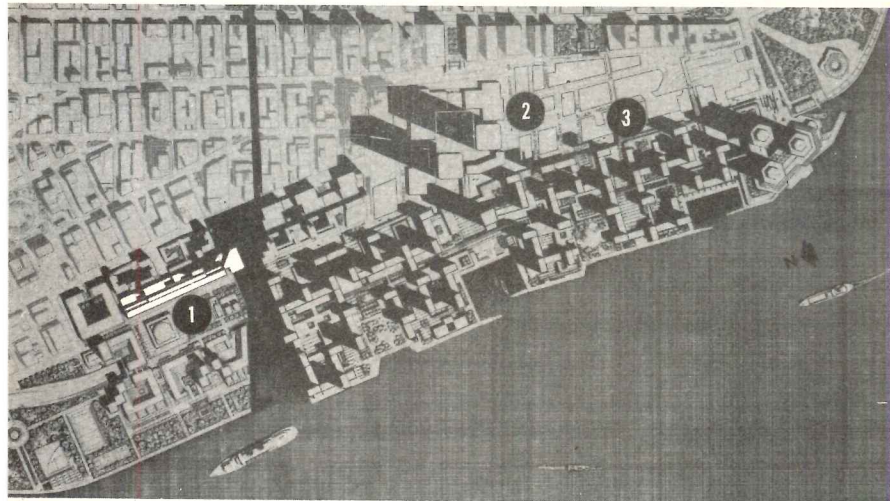
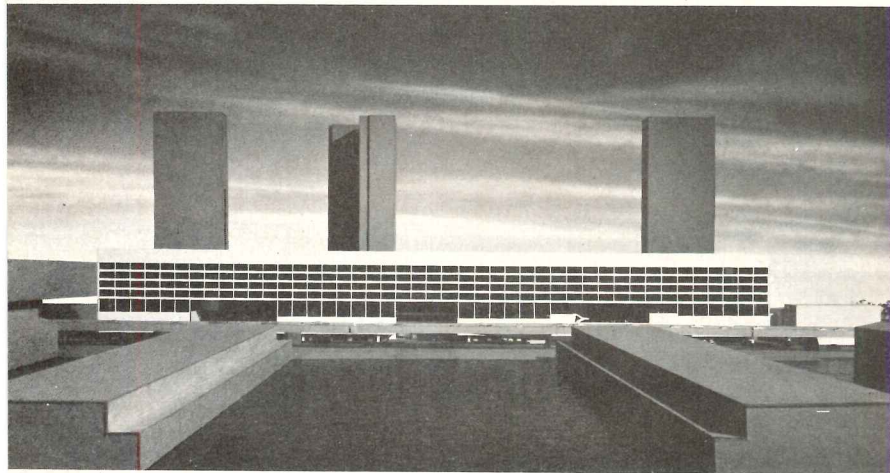
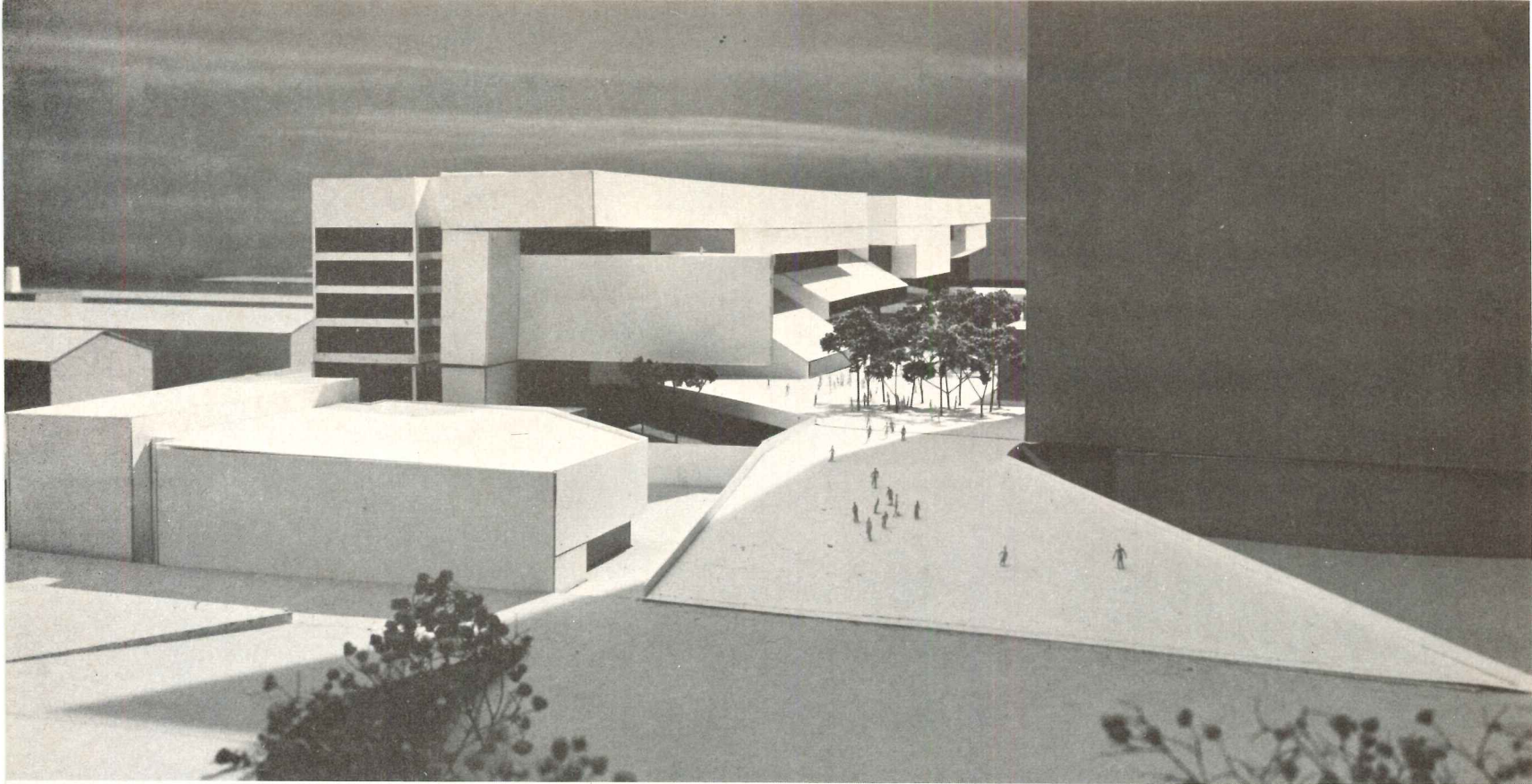


Art Hupy photos



has already been described contributes to this. In addition, there is communal instruction in related coursework irrespective of the individual student's overall program. President De Bernardis also feels that the handsomeness and high quality of the school's design makes a major contribution to the updating of the vocational students' image, both in their own eyes and the community's. Fourthly and finally, there is yet another facet of the openness theme at Portland, but one that is extremely difficult to communicate in words or pictures. It has to do with the open

plan, which has philosophic overtones in that it gives students a much greater and more direct and deliberate role in course choices (versus a computer-concocted curriculum), and with the college's openness to the beautiful pine-studded site and breathtaking vista of the magnificent Tulatin Valley. The plan, the buildings' design, the site, the relationship of each of these to the others, contribute to the student's sense of freedom and self-determination. This Portland firm has given its hometown a college that is both gutsy and serene, both serendipitous and solid.



Louis Checkman photos

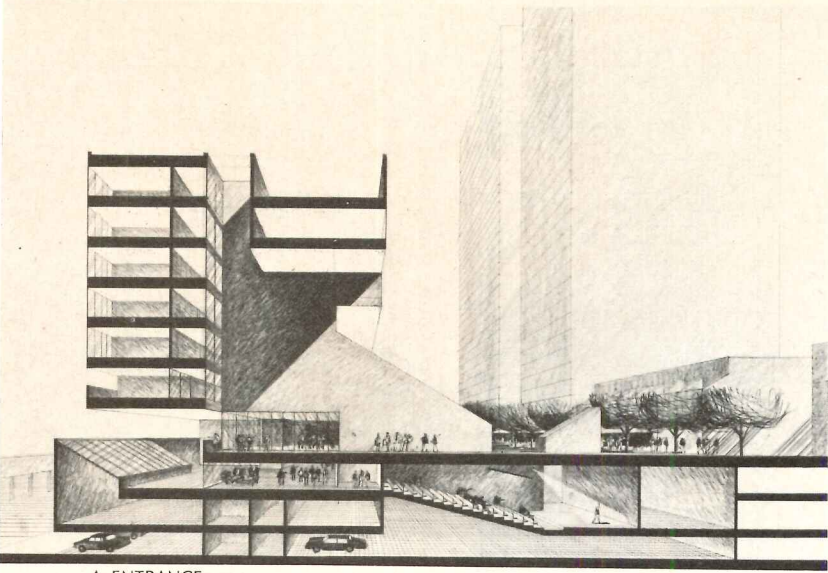
- 1 Manhattan Community College
- 2 World Trade Center (under construction)
- 3 Battery Park City (on future land fill)



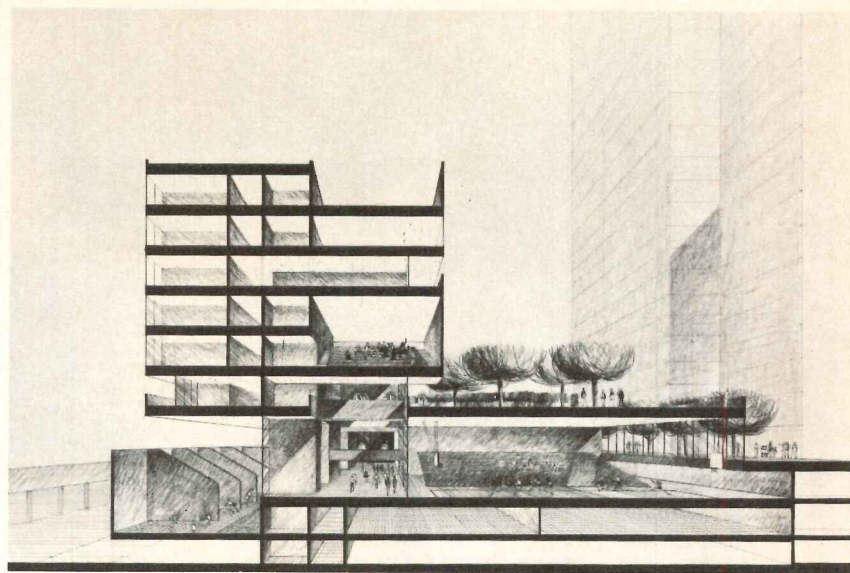
The comprehensive master plan for Manhattan Community College calls for the design of a college for 5,000 full-time day students and 10,000 evening students on a 4.3 acre site in lower Manhattan. The major design consideration is to provide a viable, stimulating environment on a limited urban site, while reinforcing the planning concepts of the City Planning Commission's Lower Manhattan Plan. Located in the Washington Street Urban Renewal Area north of the World Trade Center, the site is bounded on the west by the West Side Highway and Hudson River. Battery Park City, a development including extensive new housing, is to be built on landfill in this area, replacing docks shown in mass model, left. The building on this side is being designed with passing highway and river traffic in mind, as well as the view from the New Jersey shore, giving a strong unified impression at high speeds or at a distance. Projected housing towers to the east are by Oppenheimer and Brady. A major new urban space, Chambers Plaza, is created as the focus of an existing east-west street. From plaza, ramp rises to the fourth or main pedestrian level of the college complex, above service and existing traffic levels and patterns.

Manhattan Community College Caudill Rowlett Scott

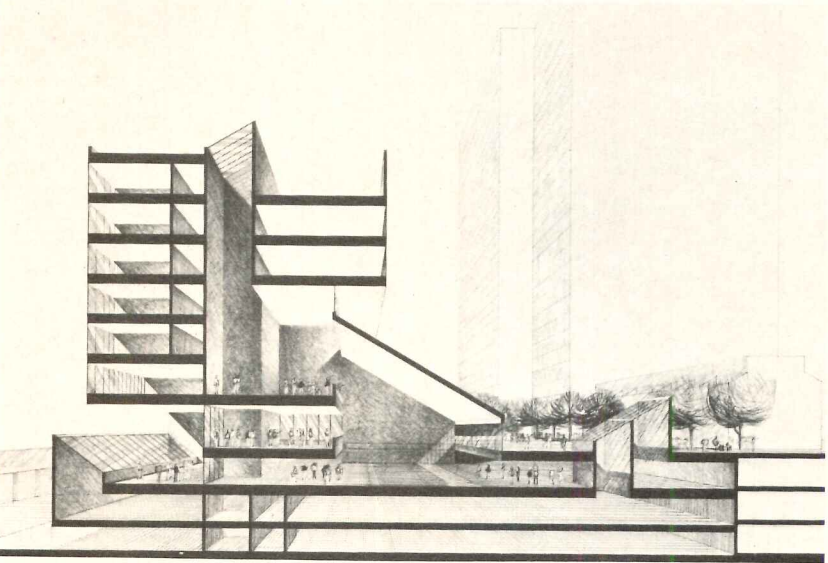
□ To generate ideas and suggestions toward the planning of their new Lower Manhattan high-rise campus, Manhattan Community College, with financing provided by the Educational Facilities Laboratories, held a series of six seminars in which members of the college's administration and faculty and their architects-planners, Caudill Rowlett Scott, were joined by a number of other architects, urban planners, prominent educators, business and professional leaders, politicians and others. The group represented, in fact, a cross-section of the urban community leader-



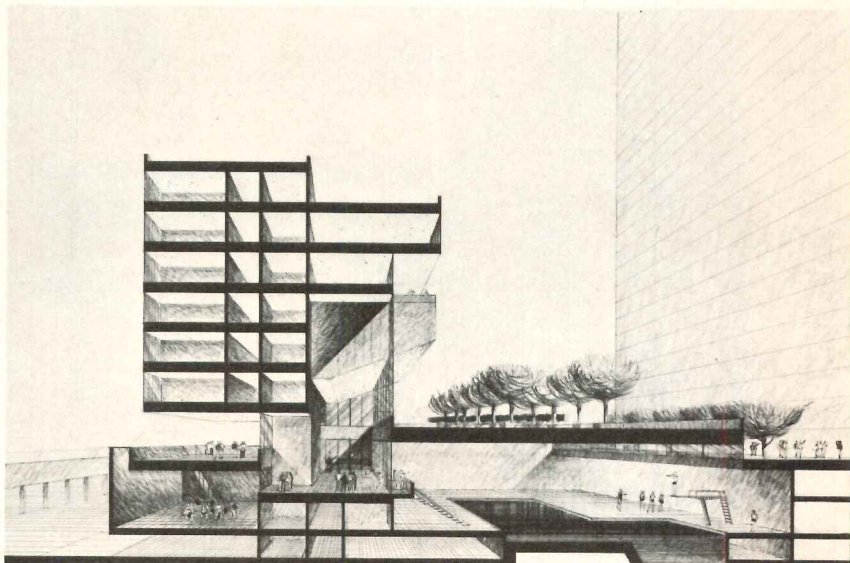
A ENTRANCE



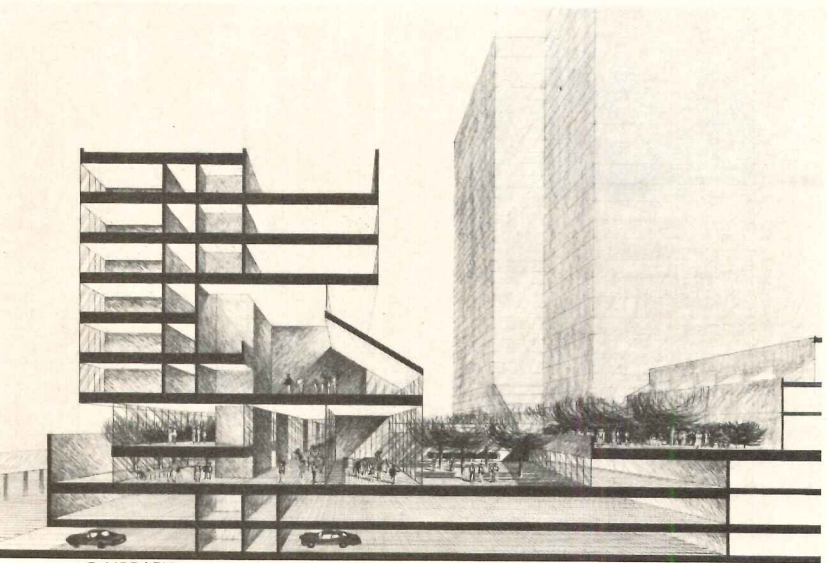
D GYMNASIUM



B CONCOURSE/COMMONS



E SWIMMING POOL

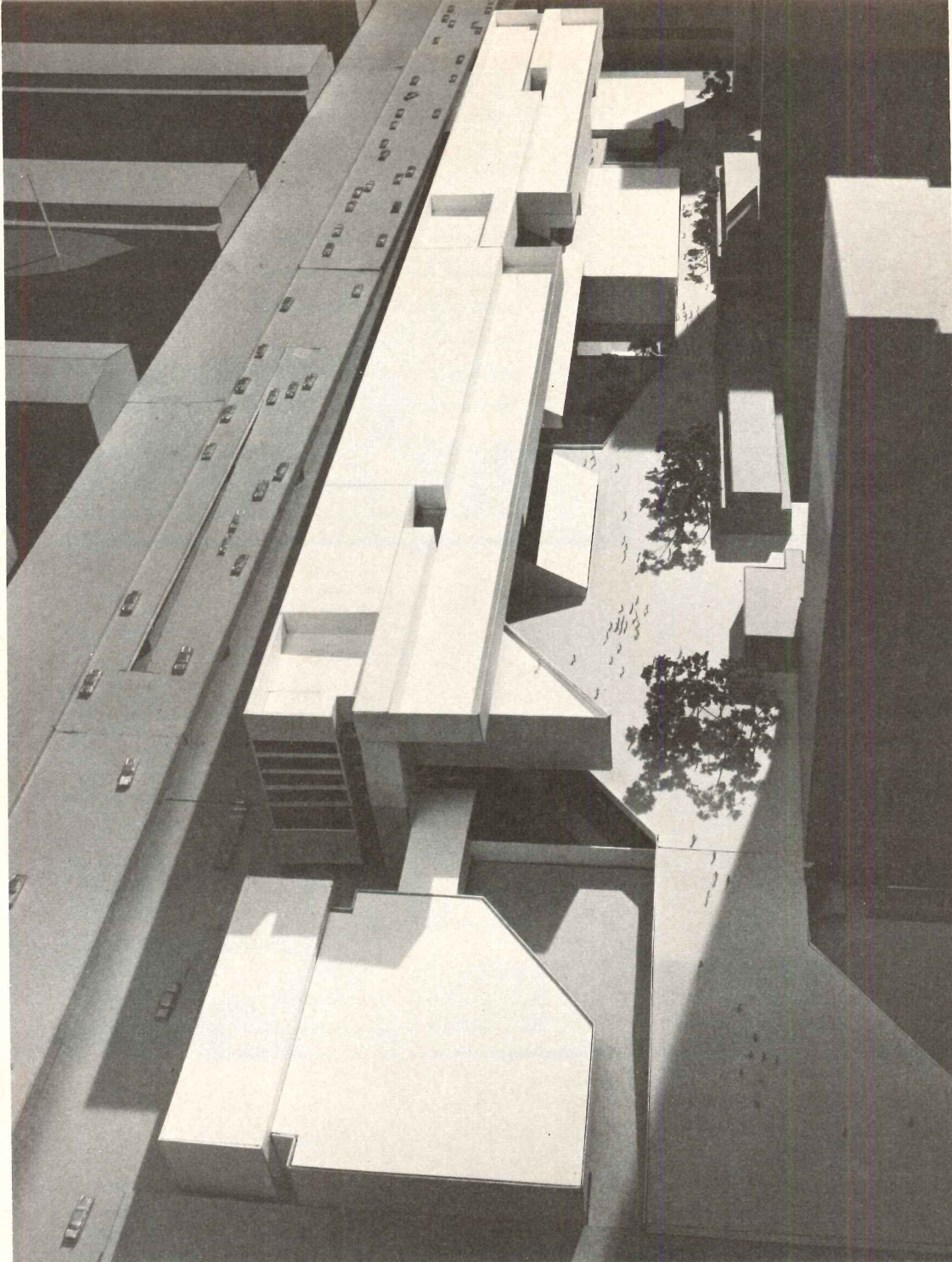


C LIBRARY

Section drawings allow one to follow major student concourse, an enclosed pedestrian mall, through the complex. This concourse is the major social interchange space linking main entrances, vertical circulation points, student activity spaces, dining areas, physical education facilities, and academic instructional space. The large spectator gymnasium, D, and the swimming pool, E, both of which will be shared with the community, can be viewed from student concourse as well as from tree-lined elevated pedestrian easement (extreme right in all drawings) that runs length of site between college and proposed adjacent housing and leads into new public space, Chambers Plaza.

ship, for MCC and CRS firmly believe that a full-scale community college should be responsive not only to the educational needs of its students, but also to the increasingly urgent and complex needs of its urban community. The thoughts that repeatedly claimed center-stage attention at each of the meetings were later published in a handsome booklet (which joined a growing list of distinguished CRS publications) with a quotation on its cover by American Association of Junior Colleges' executive director, Dr. Edmund J. Gleazer, Jr.: This College is the Community its

People its Problems its Issues Aspirations and Goals in an Organized Expression of Learning. The following excerpts from this report, given under their original section headings, have been selected as being most germane to the architects' role, for it is only the architects who can give these laudable aims meaningful and pleasing form. □ Reaching Out into the Neighborhood. In contrast to the ivy-clad cloistered college, many educators today feel that the place to study the human condition is in the midst of it. . . . Participants in the seminars were of a single mind on



MANHATTAN COMMUNITY COLLEGE

An exciting interplay of many different kinds of spaces characterizes the college's eastern, or community, orientation. The design, which is still in the study stages, stems from the architects' triple-goaled desire to make the facility open, inviting and attractive; to orient it to, and integrate it with, the community of which it is a part; and, by means of openings through the buildings' entire width, to permit vistas of the river and beyond despite the structure's large size.

- 1 A Parking
B Receiving
C Storage
D Mechanical
E Lower pool

- 2 A Audio-visual
B Little theatre
C Administrative offices
D Dining
E Kitchen
F Data processing center
G Mechanical
H Building services
I Women's locker rooms
J Men's locker rooms
K Outdoor PE Courts
L PE multi-purpose space
M Swimming pool

- 3 A Auditorium
B Activity courts
C Student services
D Lecture theatre
E Student commons
F Bookstore
G Dining
H Gymnasiums
I PE courts
J Multi-purpose
K Swimming

- 4 A Pedestrian easement
B Entry platform
C Student services
D Dining
E Activity deck

- 5 A Circulation
B Stacks
C Reading/study
D Workrooms/study
E 24-Hour Center
F Lounge
G Activity deck

- 6 A Classrooms
B Faculty offices
C Reading/study
D Lecture hall

- 7 A Classrooms
B Faculty offices
C Lecture hall

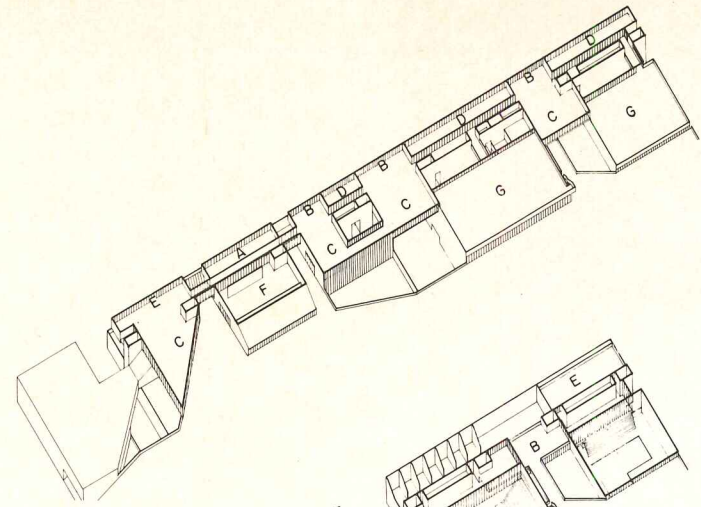
- 8 A Classrooms
B Faculty offices
C Labs

- 9 A Classrooms
B Faculty offices
C Labs

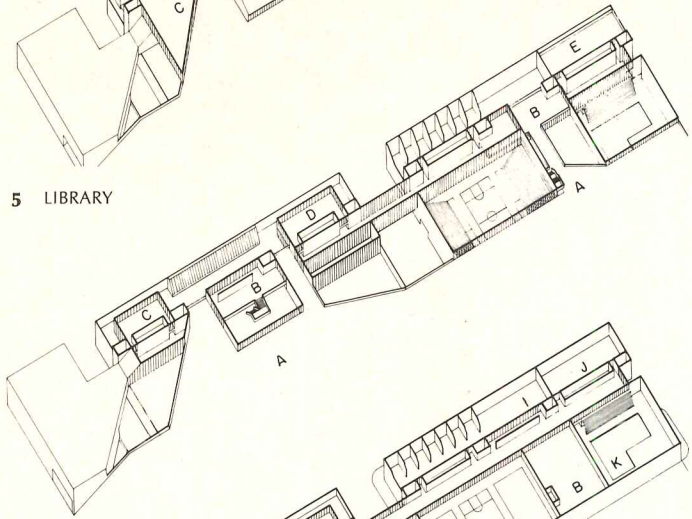
- 10 A Administrative offices
B Faculty offices
C Mechanical

this point: no barriers, either physical or symbolic, must be erected between college and community. Moreover, the college must reach out into the community. . . via pre-admission counselling outposts throughout the greater metropolitan area. . . . Other outposts for recreation and special research further expand the college into the community. □ New Educational Technology. In the past, high-rise educational buildings have not been economically feasible. The elevator systems become far too costly if designed to handle torrents of students all moving simultaneously

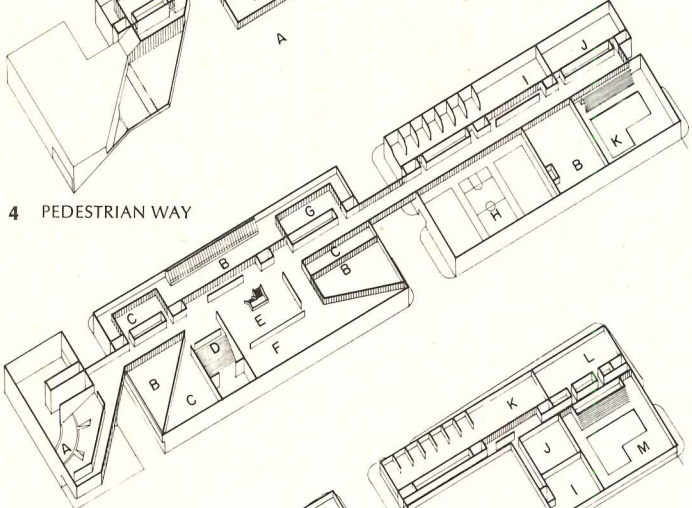
at class breaks. With the substitution of P. I. (*Programmed Instruction, an electronic communications system whereby a student, controlling the dials of a console unit, can see and hear pre-recorded lectures, practice a foreign language, etc., at his own convenience.*) for more conventional scheduling, peak traffic times are reduced and fewer elevators can move a steady trickle of students efficiently. At last educational buildings can rise above surrounding commercial structures to claim their share of sun and sky. □ Physical Education in the Urban Setting. *There was general*



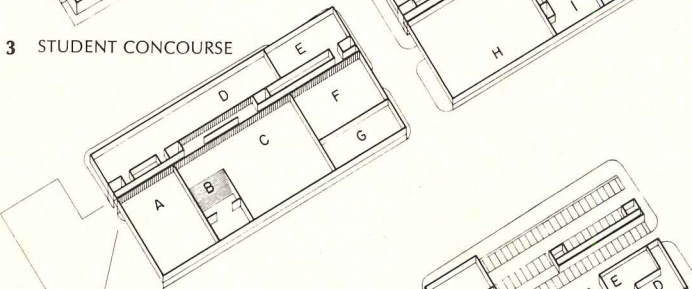
5 LIBRARY



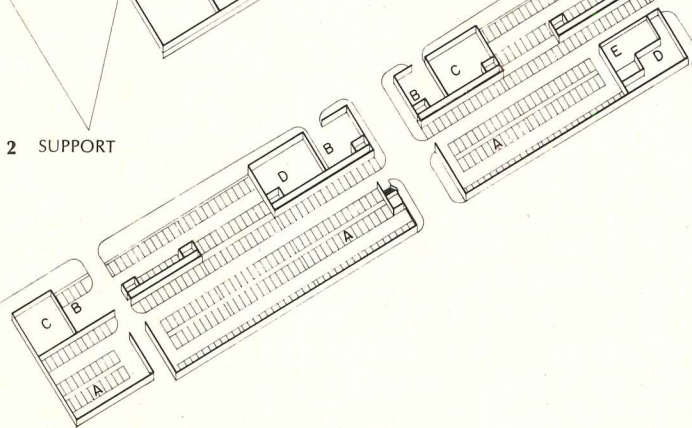
4 PEDESTRIAN WAY



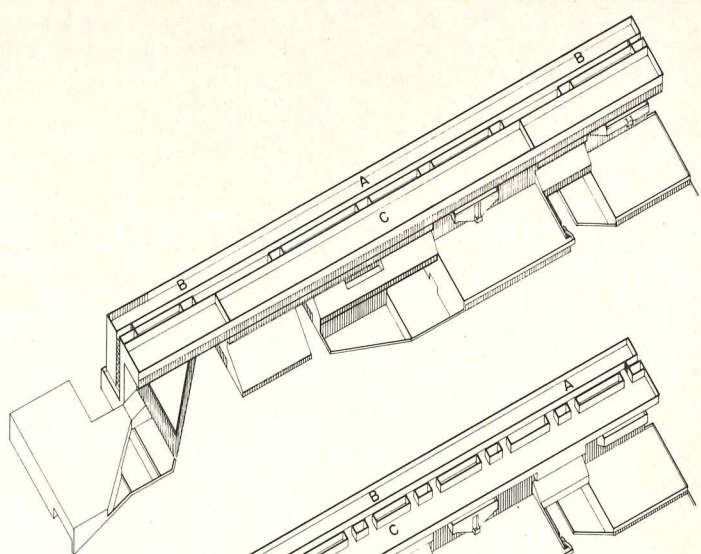
3 STUDENT CONCOURSE



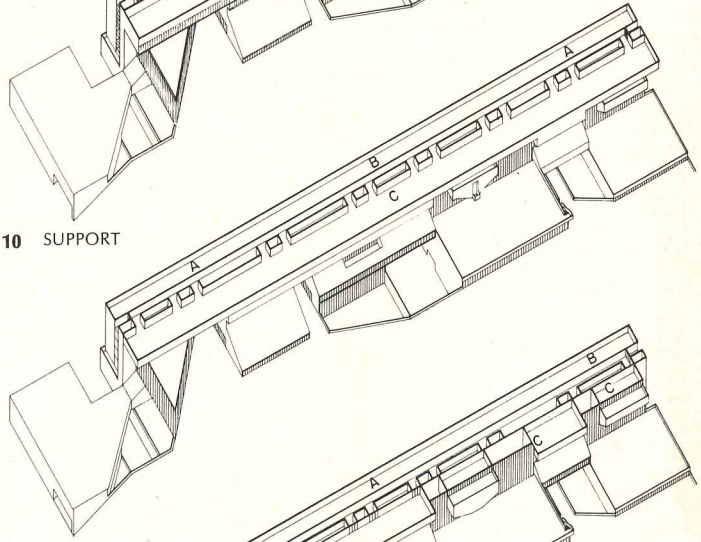
2 SUPPORT



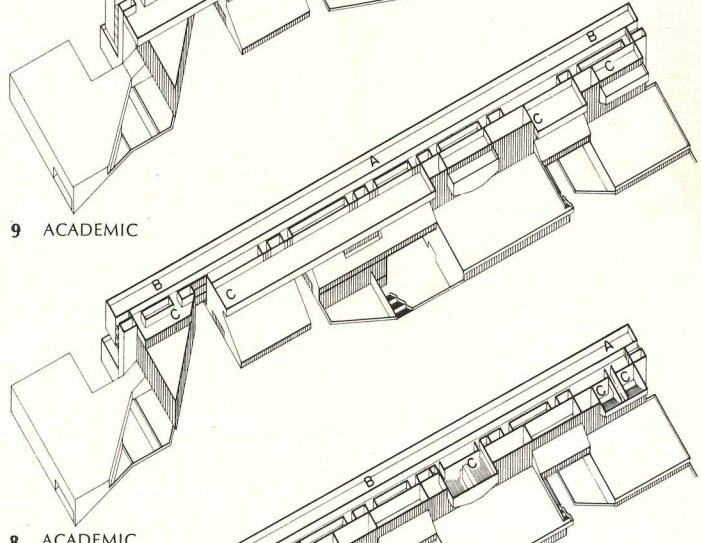
1 SERVICE/PARKING



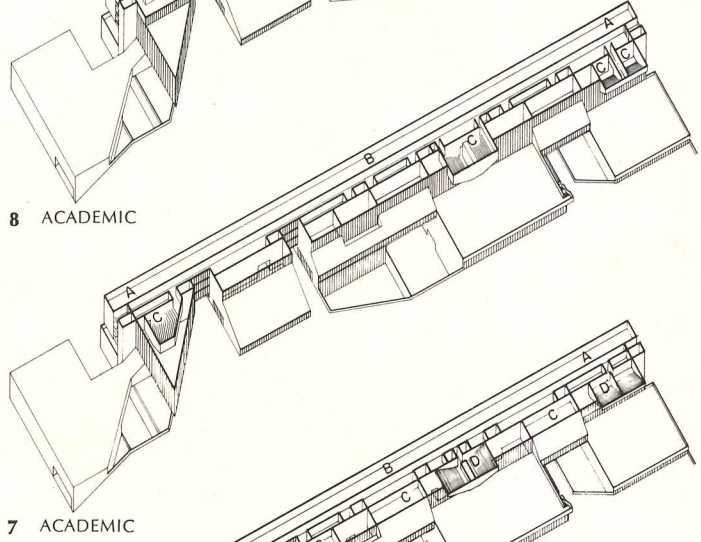
10 SUPPORT



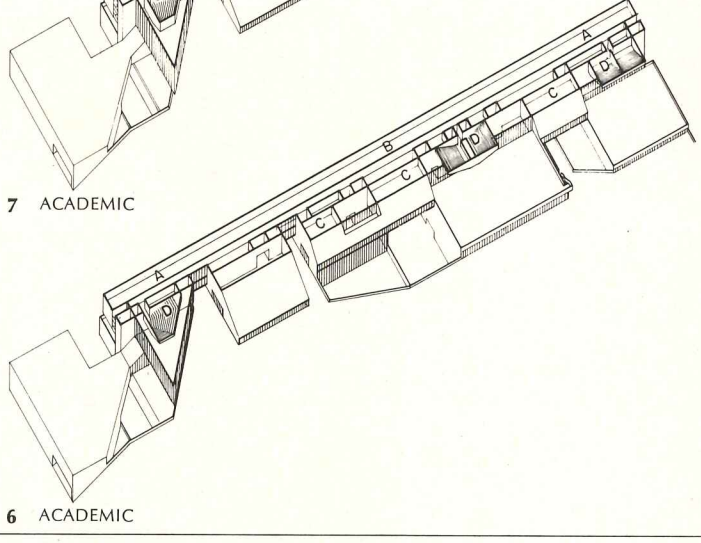
9 ACADEMIC



8 ACADEMIC



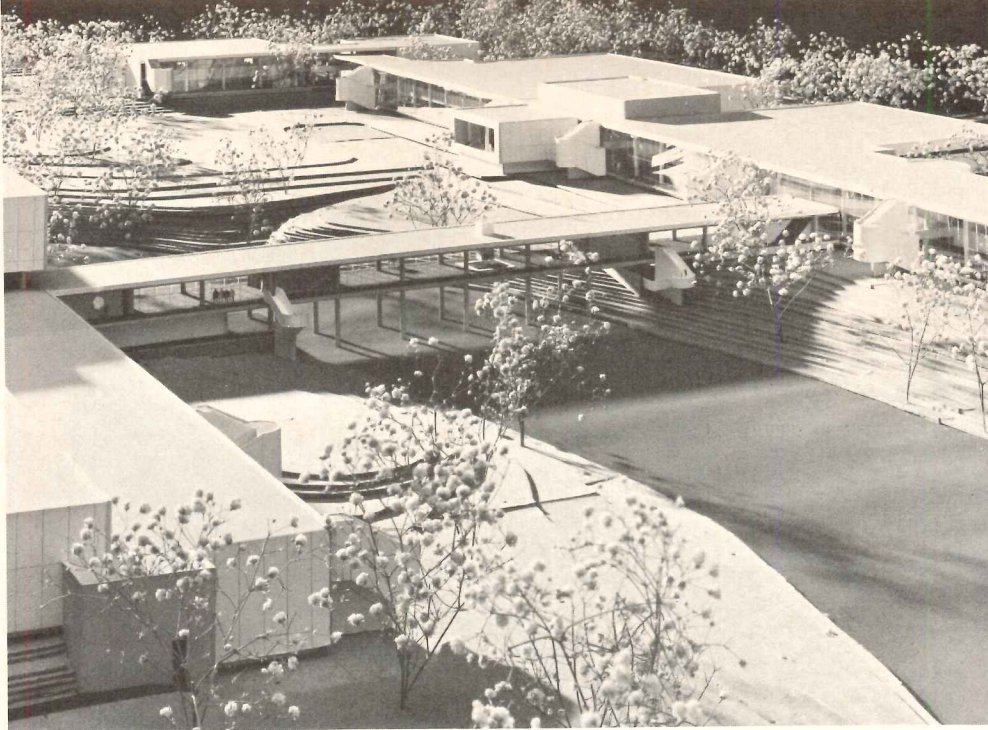
7 ACADEMIC



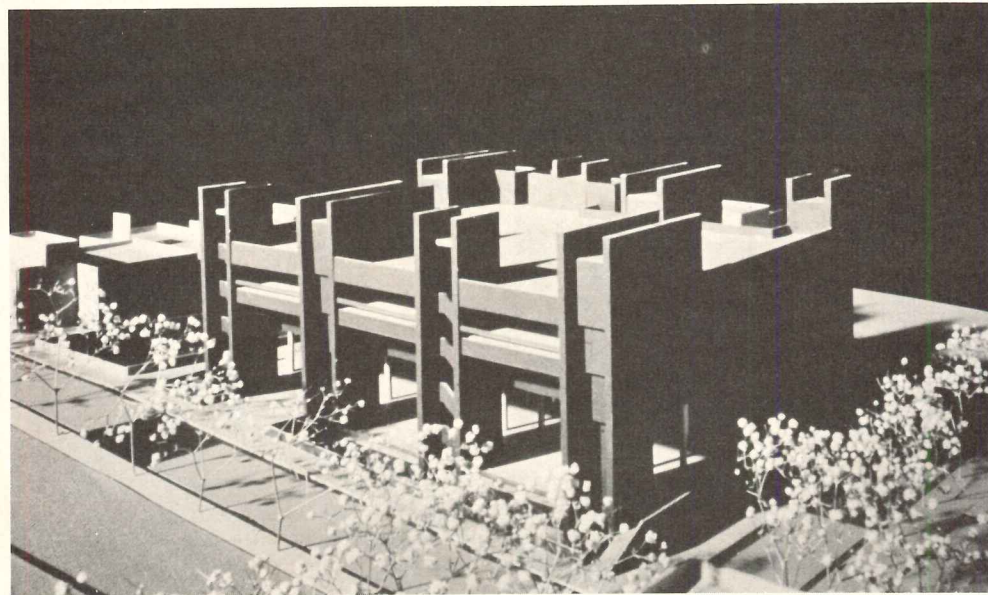
6 ACADEMIC

agreement among the seminar participants that the site generally excluded the idea of spectator sports, and that an emphasis on "doing" rather than "watching" would lead to healthier urban Americans. This led to the proposal of physical education facilities not unlike those of an urban health club. Informal use and easy accessibility will be paramount concerns to the student whose time is closely bracketed between work and study. Athletic spaces normally developed in generous amounts about a campus periphery, must here be concentrated for effectiveness. Some, like

squash courts, should perhaps be carried underground. Others, however, require more prime space, and the college should give thought to developing its external spaces high above ground in a sequence of roof gardens and lounges. The removal of commercial piers, coupled with massive allocation of state funds for reclamation of the Hudson River, promises rich potential for a redeveloped waterfront. The creators of the Lower Manhattan Plan propose a marina as an integrated part of the Washington Street Renewal Area. Initially, such a facility would offer boating

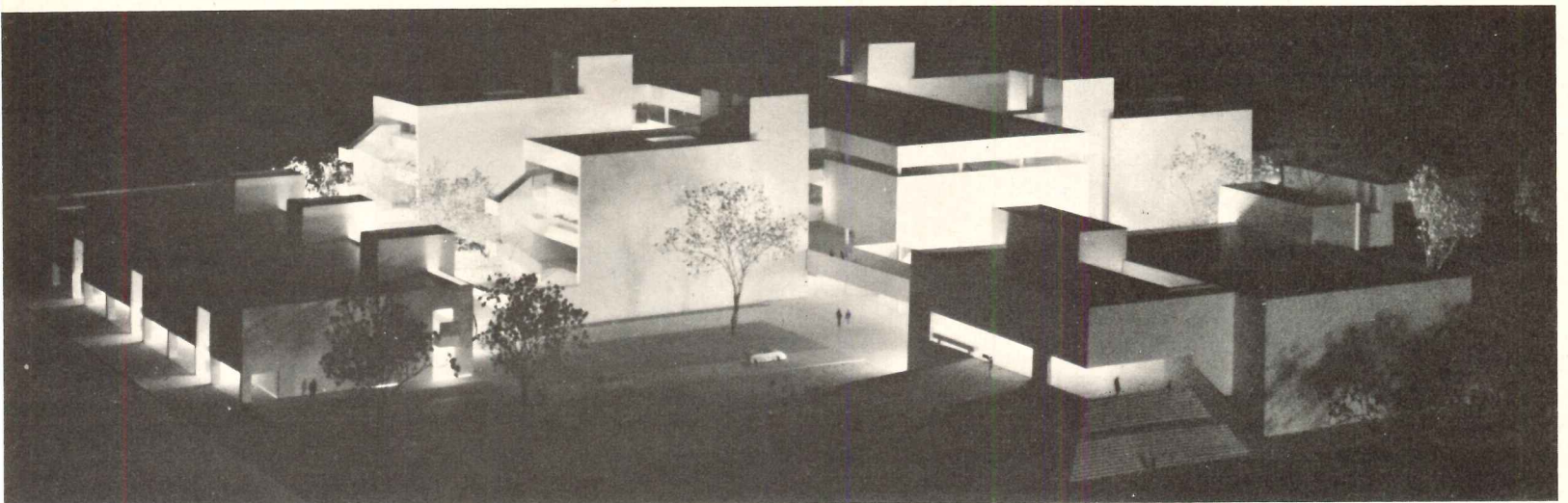


Joliet Junior College, Joliet, Ill. To give an idea of the range and diversity of community and junior college planning at CRS, three other 2-year schools (taken from the 31, in 13 states, where the firm is involved) are presented here. To preserve a beautiful lakeside site, at Joliet the edge of the lake and two other high ground wooded areas were made no-building zones. A 360-ft-long student union/bridge connects buildings on both banks. On south bank a 2-story-high glass-walled concourse/display area runs full length of the buildings. Second-level balcony classrooms overlook concourse, lake below.



Delaware Technical Community College, Wilmington, Del., is developing a comprehensive community college program with strong emphasis on job-oriented training. This, the first building in a multi-phased building program, fronts on downtown Market Square. A public pedestrian plaza will contain displays demonstrating educational programs available. Spacious, 2-story main level establishes openness to the community.

Northampton County Area Community College, Bethlehem, Pa. The commuter students at Northampton belong to "living centers," groups of several hundred students, 15-20 faculty members and a counselor. The classrooms, offices and lounges of each living center are grouped around a central resource center and auditorium-size instructional areas. Recognizing the high rate of nighttime use the architects have given particular attention to the artificial lighting systems.



of all kinds. In the future, a full complement of aquatic sports facilities may also be offered. □ *Twenty-four Hour Learning Centers. To provide for the individual personal schedules of the students, almost all of whom work at least part time, a new type of educational center was proposed. It would not be student union, library, cafeteria, or classroom building, but a combination of each. It may be thought of as synoptic—as a campus in miniature—with facilities for quiet study, research, socializing, recreation, eating and perhaps even napping. In its present loca-*

tion on West 51 Street, the college's stairwells and corridors serve as prime socializing spaces. On the new campus, the 24-Hour Learning Center will provide a proper setting for these important, but unplanned activities. The whole campus should represent quality planning and quality design, but nowhere is this more imperative than in the 24-Hour Center. Lounges will be not only the living rooms of the whole campus but in an extended sense the living room of the whole neighborhood. These lounges will be opened up periodically to the whole community for meetings

THE COMMUNITY COLLEGE: REVIEW AND PREVIEW

By James Hughes and Bob Reed
Associate partners, Caudill Rowlett Scott

In the 1960's the community college became well established, in terms of numbers and public acceptance, as an innovative form of higher education. Its growth and development have been impressive: new campuses have risen across the country, especially in the cities, to provide opportunities for thousands whom a chance for an education had previously passed by.

The comprehensive community college in general retains a flexible attitude which allows it to adapt to the changing educational needs of its community. Its main feature is the diversified student body it serves—the university bound student who enjoys the convenience and economy of living at home during his first two years of college; the occupationally oriented student whose goal is a job after completing the requirements of a certificate or an associate degree in one or two years; the high school drop-out or the slow learner who needs special work; and a variety of adults whose interests range from the professional man who needs a "retread" in a certain course to the mother with grown children who always wanted to learn another language.

Few colleges begin their first day of classes in facilities on a new campus. When most community colleges are first organized, the pressures preclude waiting the time it takes to plan and construct new buildings. Most start operations in makeshift quarters—old or abandoned school buildings and department stores, warehouses, store fronts on Main Street, old theaters and a variety of similar temporary facilities. Generally open, fast growing enrollments make shortage of space a constant dilemma.

When planning new campuses, the goal is to make them as much a part of the community as possible. What does this mean in terms of programming? It means goals for planning solutions which invite and encourage participation by the community in the various activities of the college and which make the community feel an integral part of the college. These activities include social and cultural events,

on matters of community concern as well as for student recitals and other social and ceremonial activities. *For ease of access and successful use*, this center should lie at the heart of the campus both physically and symbolically. More important still, this is the faculty that all students, regardless of schedule or discipline, will have in common. It is here that students from every background can meet and flow together in one democratic social stream. □ Housing Requirements. MCC should be in the housing business. . .providing a broad spectrum of housing

conferences and seminars, the use of library and athletic facilities.

Educators differ as to whether there should even be a formal campus. Some hold that the college should be spread about the community—where the action is. Others see a value in the image created by a campus proper, the opportunity to enjoy a physical environment different and more dramatic than many of the students have ever experienced before. Many urban colleges have both—a parent campus, with satellite operations in business or industry, neighborhood shopping centers or elsewhere—wherever there is sufficient demand to start a new program.

The role of the community college as an institution to help solve social ills is being recognized by many educators and civic leaders. In urban areas, for example, special programs have been designed to reach the underprivileged, and to offer them a better way of life by means of opportunities available to them through the resources of the college. Such programs are often carried out in locations remote from the parent campus, using such methods as mobile vans that visit needy neighborhoods. Other colleges have established neighborhood centers with specially trained staff who make door to door contacts to enlist students.

Some community colleges have become proving grounds for innovation. Bound by no traditions, governing boards have been receptive to the new ideas of bright young administrators. New theories in the learning process and new techniques in instruction are being tested in many colleges. New and different ways of organizing disciplines and teaching staff to boost the degree of interchange and communication among faculty and between students and faculty are being explored. Counselling and guidance programs, among the most vital functions of community colleges, are constantly being re-evaluated. Many students need professional direction to steer them into programs leading to jobs best suited to their particular abilities and interests. Student personnel experts are also taking a sharper look at the need for facilities for the special needs of the commuter student.

Public community colleges depend on public funds, and inflation is having serious effects. Funds for new construction are becoming scarce. Increasing faculty salaries and higher operational costs are straining the limits of local taxing authority and state contributions. The general attitude of voter resistance to increasing taxes and the re-

duced rate of bond approvals compounds the problem. Expanding numbers of colleges are having to place more and more demands on already limited appropriations. State agencies responsible for setting up guidelines for the construction of new facilities are legislating tougher controls on the construction dollar.

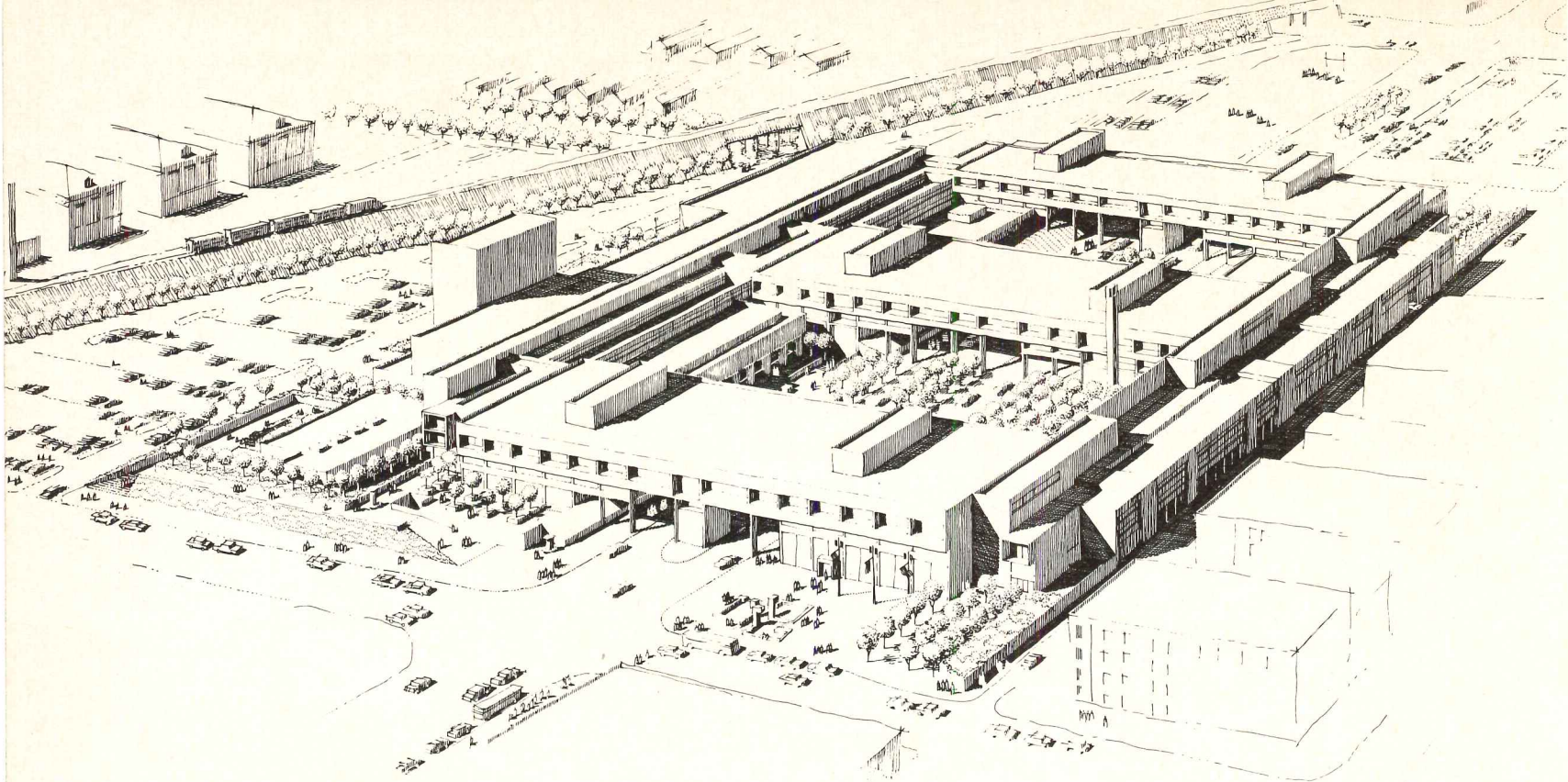
These problems will undoubtedly force community colleges into new methods of operation. Ways must be found to get more student benefit out of fewer instructors by means of mechanized instructional methods, and scientifically improved tools for scheduling use of learning spaces.

Architects and planners, too, must adopt new methods to help solve the problems of time and money. The traditional processes of planning and building a new campus are now too slow and too costly. Already in the mill are ways of overlapping the programming, design, construction documents and construction phases to achieve significant reductions in the total timetable for a new campus. Such methods can mean real savings in construction costs in an industry that has a yearly inflation rate from 8 to 12 per cent; and, more often than not, these innovations will mean the difference between success or failure in meeting critical schedules. State agencies and other governing bodies must adopt administrative policies which will allow these new procedures to be broadly applied.

Flexibility must also be a key word in planning community college facilities. The future of the community college is unpredictable, if the past decade is any indication. Still not settled in any fixed pattern, it will undoubtedly continue to change with the needs of a changing social, economic and cultural structure. A certain function housed by a building today will very likely be obsolete tomorrow. Concepts of open planning in response to new instructional methods are needed to make facilities more receptive to change. The flexibility features of recently developed integrated building sub-systems (especially for ceilings, lighting, air distribution and partitions) allow functional changes to be made on a modular basis with a maximum of economy and in minimum time.

For the immediate future, the best guess is for a continued urgent scramble for space—new, old, any kind, anywhere. The trend will continue to dispersion and diversification of facilities, but with a majority of planners adhering to "the campus" in some form.

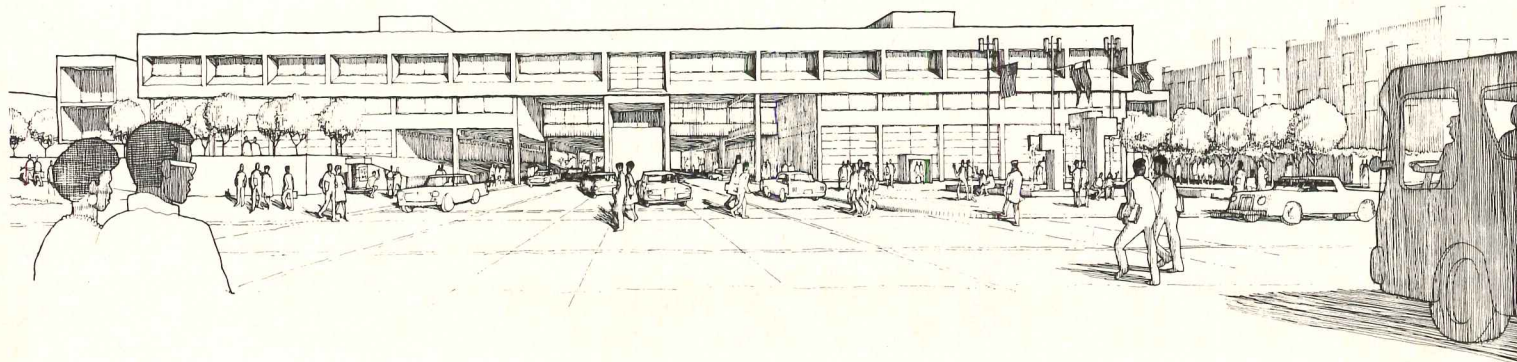
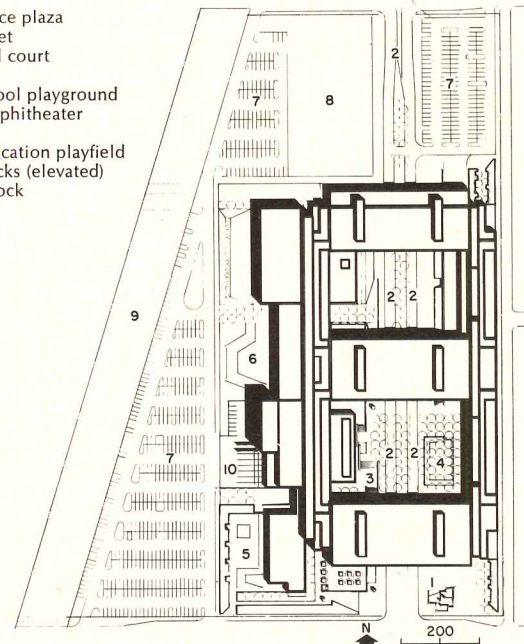
types. . .from apartments. . .to metered rooms for students who . . .need to nap. . .such as a modified form of the rest cubicles provided at Expo '67 or the "fresh-up" rooms furnished by airports. □ A New Urban Fabric. *Keenly aware of the Washington Market area's former charm and integrated activity, and equally aware that a single institution is not strong enough to transform an esteemed old neighborhood into a new one, the seminar participants looked hopefully to the Lower Manhattan Plan. Within its larger framework, MCC is a related sub-unit.*



The three-story, multi-level community college will be built on an 18-acre Chicago urban renewal site from 67 to 69 Streets. Rock Island Railroad is at top. Three large rectangular teaching structures, containing loft-type teaching spaces for maximum flexibility, span Wentworth Avenue, enclose garden spaces, and are tied together by north-south "spines." The right vertical spine contains vocational shops; the left one encloses a pedestrian street. Easily accessible faculty offices line its length. Special use facilities also plug into these corridors (see sections). Rooftop terraces will be available for art and architecture classes. 1972 opening is planned.

KENNEDY-KING COMMUNITY COLLEGE, Chicago, Illinois. Architects-Planners: *Fitch Larocca Carington Jones*; partner-in-charge: *Robert W. Carington*, project architect: *Julian Sondin*; job captain: *Roland Kehe*; consultants: *Crain & Crouse, Inc.* (structural); *Harry O. Hefter Associates, Inc.* (mechanical/electrical); *Ciorba, Spies & Gustafson* (civil); *Eldon S. Miller & Assocs.* (food service); *Specialized Area Consultants, Inc.* (science); *H. K. Davis & Associates, Ltd.* (media); *M. Paul Friedberg* (landscape); *Bolt Beranek and Newman, Inc.*, *Christopher Jaffe & Assoc. Inc.* (acoustics); *Silas Edman* (theatre).

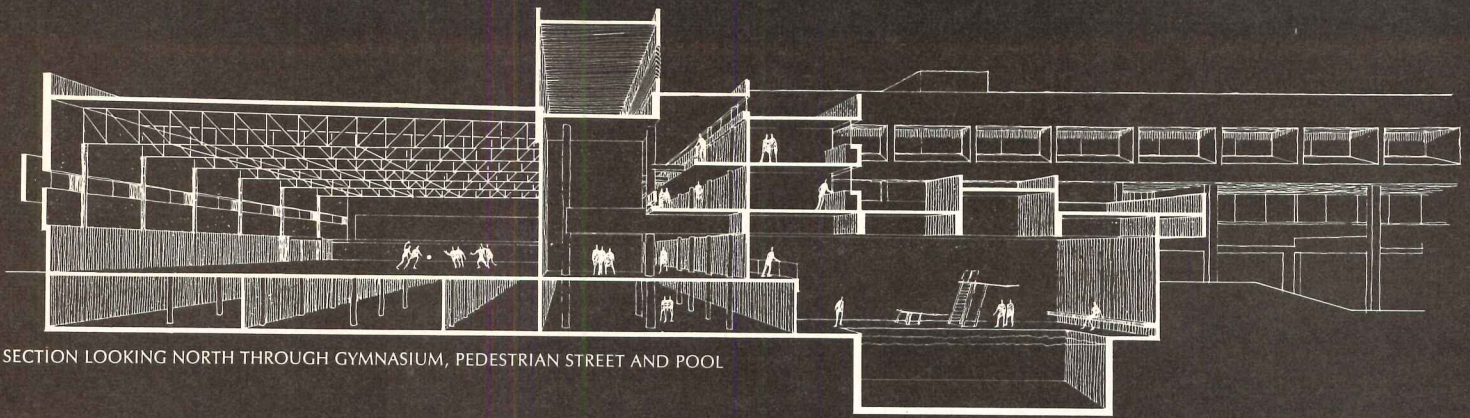
- 1 Main entrance plaza
- 2 Arterial street
- 3 Sunken pool court
- 4 Study court
- 5 Nursery school playground
- 6 Outdoor amphitheater
- 7 Parking
- 8 Physical education playfield
- 9 Railroad tracks (elevated)
- 10 Receiving dock



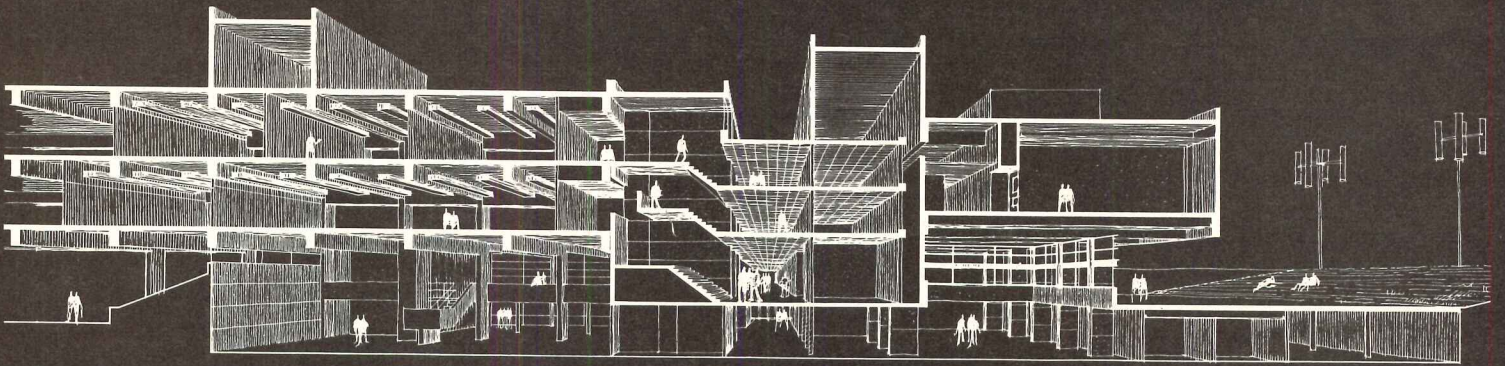
Kennedy-King Community College

Fitch Larocca Carington Jones

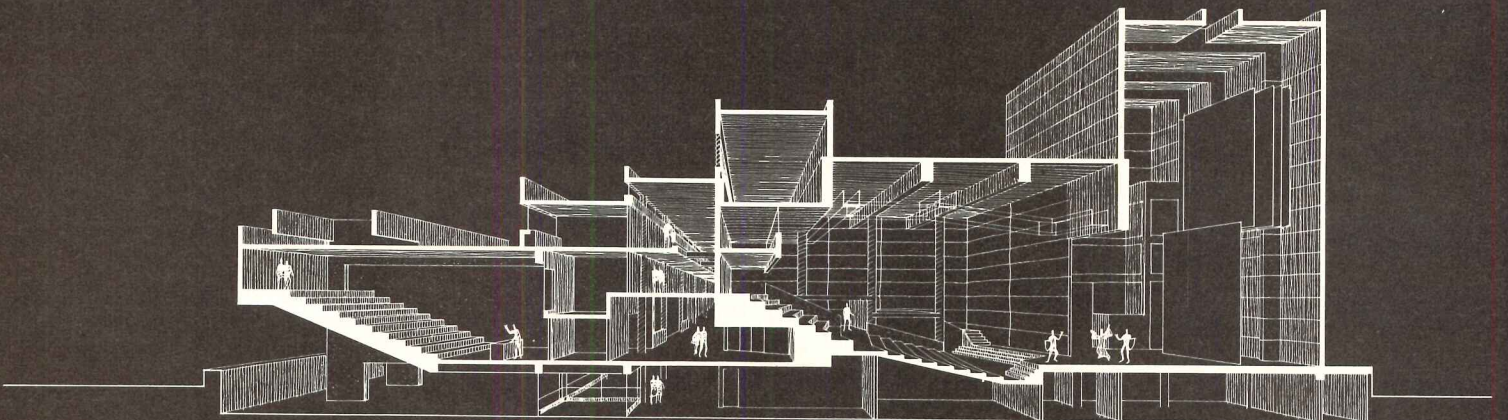
□ If you want to design an urban community college that is expressively open to the area it serves, and that area is the badly deteriorated Engelwood section of Chicago's South Side, do you do so anyway? This outstanding Chicago firm says yes, in fact, all the more so. The community needs the college all the more, and needs extra and every encouragement to use and feel at home with this new arrival which hopefully offers help for some of its problems. Working toward this goal of openness and integration, the architects decided that, although they could have had it cir-



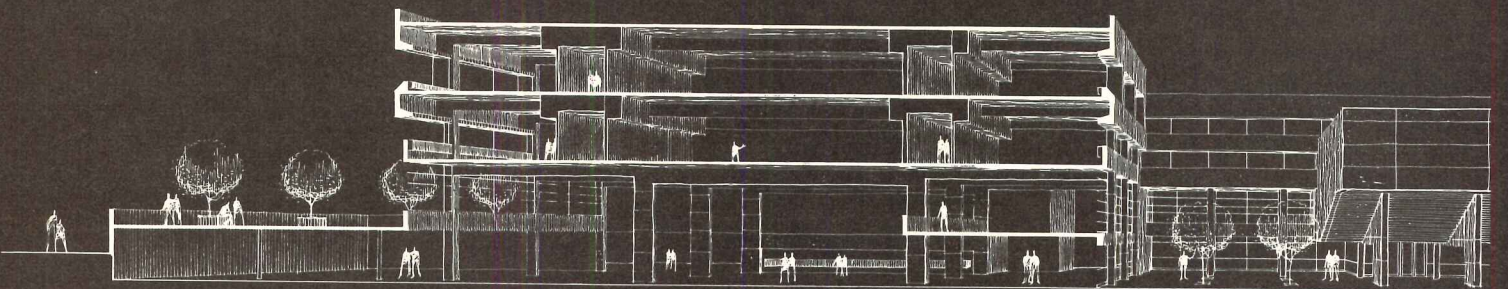
SECTION LOOKING NORTH THROUGH GYMNASIUM, PEDESTRIAN STREET AND POOL



SECTION LOOKING SOUTH THROUGH CLASSROOMS, PEDESTRIAN STREET AND MUSIC DEPT. (ABOVE) AND LIBRARY (LOWER)



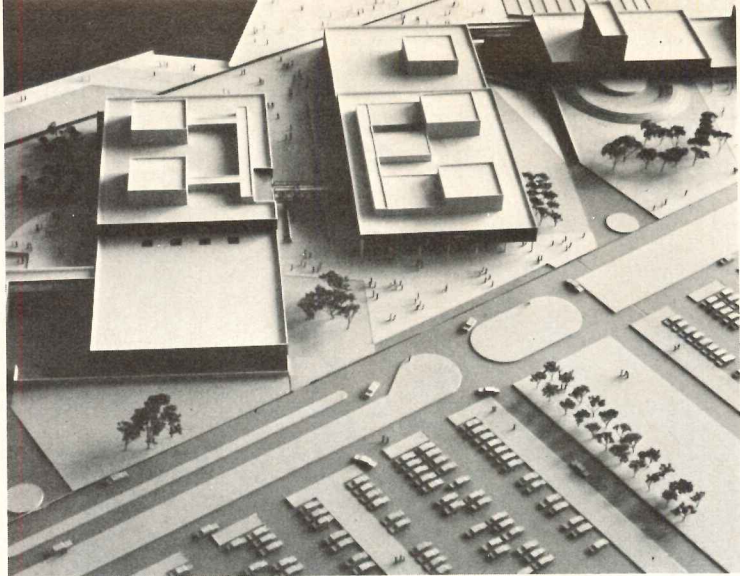
SECTION LOOKING SOUTH THROUGH LECTURE ROOM, PEDESTRIAN STREET AND THEATER



SECTION LOOKING EAST THROUGH TYPICAL CLASSROOM LOFT (ABOVE) AND STUDENT DINING ROOM (LOWER)

cumvent the site, Wentworth Avenue, a major Chicago traffic artery, would flow through and be tied into the design of the college as a major device not only to open the school to the community, but to maintain vital ties with it. Whether they have specific business there or not, a great many people—in buses (there is a bus stop within the complex), cars and on foot—will traverse the campus each day. It is not a walled or roped off somebody-else's-turf item in the community. And chances are that, coming into daily contact with the college, more and more of the community

will come to use it. It has certainly been designed with this goal in mind. Because community facilities are so desperately needed, a number of areas on the first two levels—one of which is about 5 ft. below sidewalk level, the other 5 ft. above—will be open to the community. These include a cafeteria, dining and meeting rooms, a library, swimming pool, gym, nursery school and adjacent playground, theaters and lecture halls. In addition, a variety of courtyards and pleasant sitting areas, for students and community alike, none of them behind fences, walls or gates, are

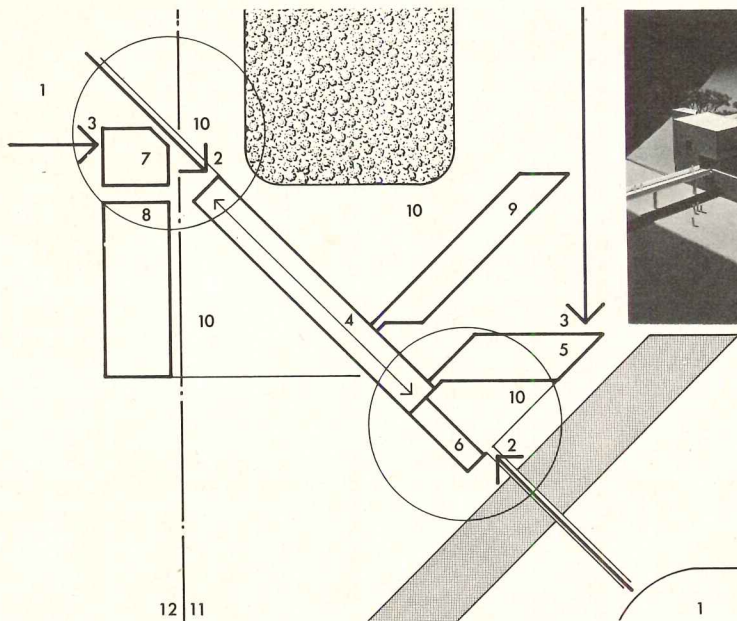


Orlando R. Cabanban photos

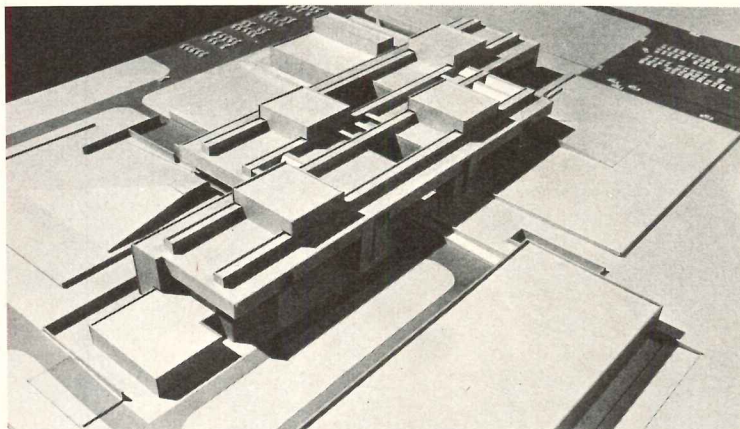
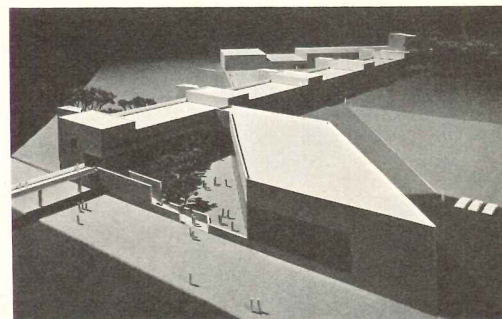
Lincoln Land Community College, Springfield, Ill. Fitch Larocca Carington Jones are involved in the design and planning of eight community colleges, all in Illinois. The strongly horizontal, "prairie-hugging" buildings of Lincoln Land, south of Springfield on a 200-acre site, will be clustered near a man-made lagoon, upper left, and interspersed with protected landscaped plazas and gathering places in the triangles formed by placing the buildings at an angle to the primary road—at their best and most inviting view to the community. Both student dining room and library open onto plaza bordering lagoon.

Olney Central College, Olney, Ill.

Olney, on a 130-acre wooded site along the Wabash River, is the most recent of the firm's community colleges, and Michael Gelick, Design Director, considers it the strongest of their rural schemes. Phase 1 consists of an administration/academic building (reached by a bridge which crosses a pond to link the existing interim campus with the new facilities) and a library/student union. The space between these becomes a "crisp" entry plaza, in contrast to other "soft" or garden exterior areas, such as a large existing grove of trees, which have been carefully incorporated into the total design. The long narrow form of the academic building provides for maximum adaptability in the form of extensions and future plug-in units.



- 1 Parking
- 2 Entry-pedestrian
- 3 Service-vehicular
- 4 Linear academic building
- 5 Library/student union
- 6 Administration
- 7 Theater
- 8 Physical education
- 9 Future academic building
- 10 Exterior space
- 11 Phase One
- 12 Phase Two



Thornton Community College, South Holland, Ill.,

is a multi-level single-entity large scale complex whose articulated interior arrangement belies its simple low-slung prairie silhouette. On a flat 102-acre suburban site south of Chicago the firm has provided for 5,000 day and 10,000 night students (and 5,000 cars) in a scheme whose central feature is an undulating interior pedestrian artery linking all major areas and five major levels. Open plazas, skylights, ramps and covered walks add to the spatial zest. Built-in expansion is similar to Olney.

located off the "main" street. Neither are there any of the more subtle, psychological barriers such as broad lawns, imposing facades and formidable staircases. Ramps will facilitate access to upper levels. Most of the academic areas are found here, with student facilities that generate a high degree of traffic located on the lower, community/student levels. Space has been planned for the conventional courses offered in a two-year college, in both the liberal arts and vocational programs (with no segregation or distinction between the two types of students). Special facilities

have been allocated to fit specific community needs and interests. For example, the nursery school will train workers for Head Start, a preschool training program, and other child development activities. Parents participating in an extensive adult education program will be able to leave their children in the nurseries or supervised playlots. Hopefully, the excellence of Kennedy-King will also attract whites from outside the immediate area. The firm finds that experience elsewhere indicates otherwise, but if so here, it will not be because they have not tried.

Circular prestressing cuts slab thicknesses and costs in a circular tower

Post-tensioned design permits a slab of 8 in., instead of 12 in. as would have been required with ordinary reinforcement. Slab works as a series of prestressed beams spanning between radial beams.



Grid of curved prestressing beams and of three of the supporting columns can also be seen. Just over half of the slabs have been post-tensioned and de-centered in the photo, right.



A change in structural design from ordinary reinforced concrete to post-tensioned concrete floor slabs yielded major cost savings in this 20-story low-rent housing unit for the elderly in Boston's Roxbury district. The change from 6 lb per sq ft of mild reinforcing steel to 1 lb per sq ft of post-tensioning steel was about a standoff in cost, but the circular slabs were reduced one-third in thickness—from 12 in. to 8 in. This gave a direct saving in amount of concrete for slabs, and in size of columns and foundations. Further, economy was achieved in exterior walls and interior partitions. An ancillary advantage of the post-tensioning was that it controlled deflections and prevented cracking.

This structure is believed to be the first to be built in this country using concentrically located slab tendons—made possible by terminating the tendons at interior block-outs in the slab. By using these elongated block-outs to accommodate the stressing equipment, it was possible to use conven-

tional end-stressed tendons.

The tendons toward the exterior of the slab were stressed from both ends; those more inward were stressed from one end only. Tendons were lapped past each other to provide adequate prestress force in the area of the block-out. Variation in prestress force was accomplished by: 1) adjusting tendon size, and 2) adjusting tendon spacing. Spacing was wider toward the center of the building, which made it possible to easily accommodate openings through the floor for piping.

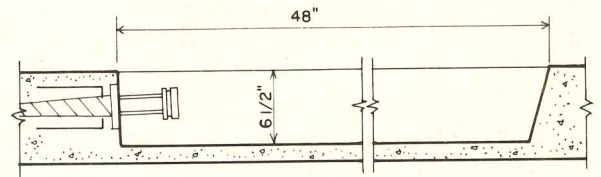
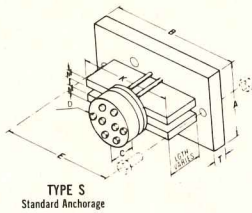
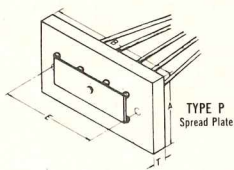
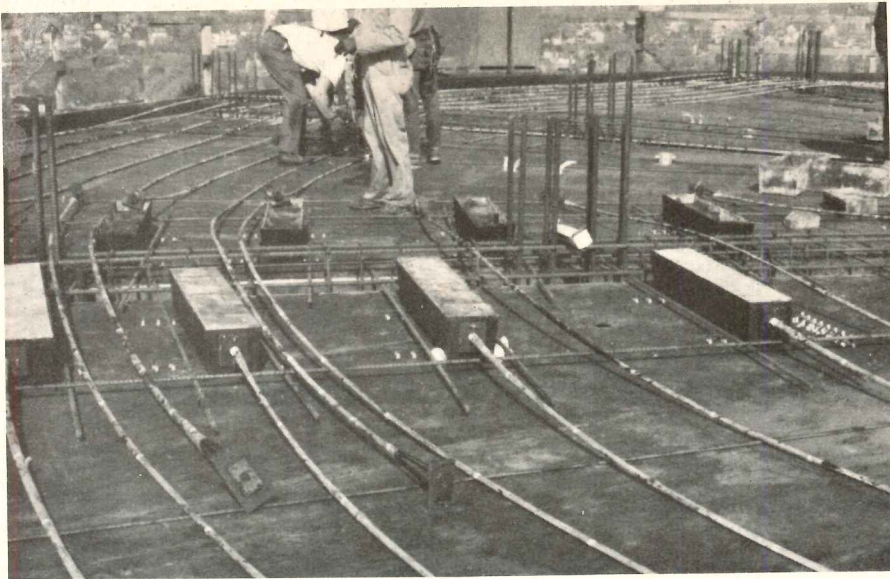
The tendons are comprised of button-headed wire, end anchorages and slippage sheathing. End anchorages consist of stressing ends and spread plates. The tendons in this structure are unbonded, being coated with a rust-inhibiting compound that provides lubrication and prevents bonding.

The circular structure has a radius of about 46 ft and is divided into nine sectors (apartment units). Radial beams and their supporting columns are located in the plane

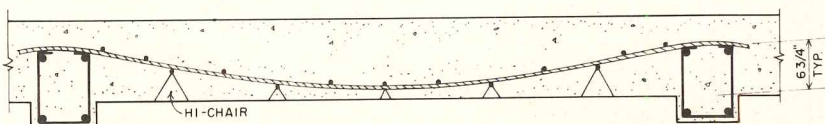
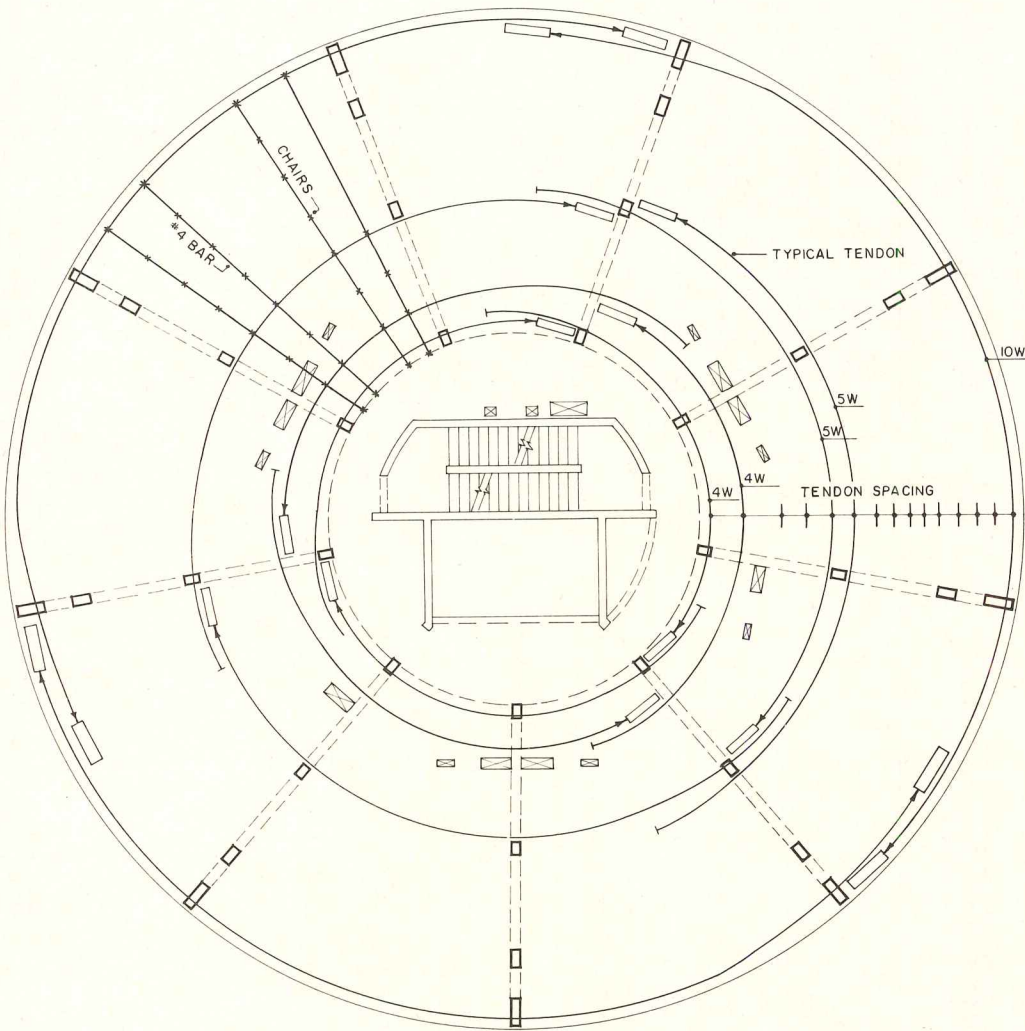
of the dividing partitions between apartments. The pie-shaped form of each apartment was utilized by gathering the kitchen, bathroom, entry and closets into the narrow portion, and placing living, dining and bedroom areas toward the perimeter.

Beyond the cost savings made possible by the post-tensioning design, the initial costs were further cut through the use of electric heating. To minimize heat loss, a cavity-type wall construction was used consisting of 4-in. face brick, 1-in. air space, 1-in. of urethane foam slab insulation and 6-in. concrete block back-up. The double-hung aluminum windows have a separate double sash to provide double glazing. Interior partitions generally are gypsum wall-board on metal studs, with party walls having batt insulation between metal studs to provide sound attenuation.

HOUSING FOR THE ELDERLY, Boston. Architect: Isidor Richmond and Carney Goldberg; structural engineer: Patti Associates; general contractor: Perini Corporation



7-9-10 WIRE TENDON POCKET DETAIL



5-9-10 WIRE TENDON PROFILE

Post-tensioning tendons have been laid out in their approximate geometrical pattern in the photo above, left. At one end of the tendons can be seen the small block-out forms that leave pockets in the slab for insertion of the hydraulic ram which tensions the wires. The stressing anchorage is attached to this small form. At the other end of the tendons are the spread plates, which, as their name implies, distribute the force over the area presented by the plate itself.

Tendons are being stressed in the slab shown in the photo above, right. A hydraulic ram and its associated hoses can be seen in a pocket just beyond the flat column. The stressing washer and button-head ends of the tendons can be seen in the center pocket. A typical pocket and a tendon anchorage are shown in the section above.

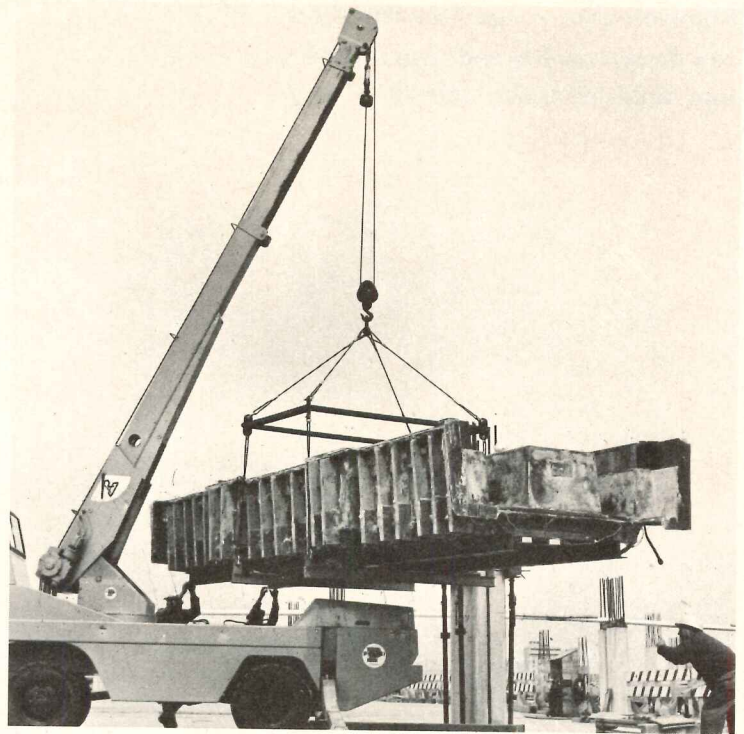
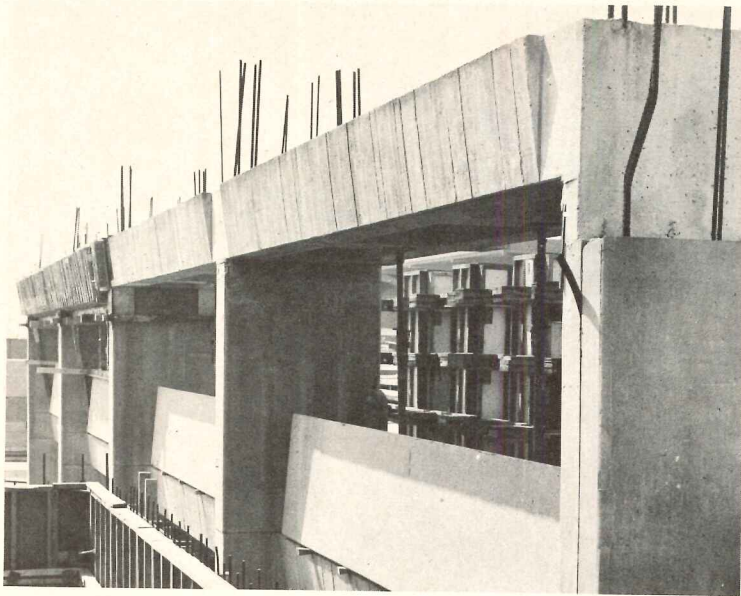
Because the span from radial beam to radial beam, and thus the load, increases the farther the distance from the core, the spacing between tendons gets less and less toward the perimeter. In addition, the number of wires in each tendon is increased from 4 to 5, then to 9, and finally to 10.

Tendons are overlapped at the pockets to maintain a uniformity of stress throughout the slab.

The section, left, shows the drape in the tendons and the location of radial bars as well as beam reinforcement.

Fiberglass reinforced plastic forms have electric heat to "cure" concrete

Resistance wires embedded in the plastic forms provide thermostatically controlled heat that cuts off 5 hours' time from the curing period, and assures better quality



Forms have been stripped from a section of the two-story addition to a public parking garage at Boston's Logan Airport (above). Note the wood-grain finish the FRP forms produced. A section of formwork is being hoisted by crane for placement atop columns (above, right). Note wood stiffeners used to brace forms during handling and placing of concrete.



A new type of form of fiberglass reinforced plastic has built-in electric heating wires to speed up and control the curing of concrete. The reinforced polyester resin forms have resistance wires installed in a false back of the form, separated from the front of the form by an air space. Electric current in the wires heats the "heat chamber" (the wired back and air space), thereby heating the face of the form which is next to the concrete.

These forms are being used for the first time in adding two additional parking levels to the Logan Airport parking garage in Boston by architects Desmond and Lord. Tests showed that the 4000 psi concrete being used achieved a strength of 2500 psi in 20 hours at which time the forms could be removed. For many typical concrete structural elements, this is a reduction of five or six hours.

There are 12 forms measuring 25 by 5 by 4 feet to mold the main sections of concrete and four smaller forms to mold the

end sections. Wood ribs are used on the outside of the forms to stiffen the forms and to make them easier to handle with light equipment.

Conformco, the manufacturer of the new form, originally tried molding electric wires directly into the back of the forms, but with this arrangement the wires heated the concrete unevenly, and their pattern was permanently imprinted on the face of the concrete. Now the wires are separated from direct contact with the concrete and each form has its own thermostatic control.

The Perini Corporation, the contractors for the airport project, found that while the initial cost of the form is higher than more traditional types, there are several significant cost savings: 1) construction time and labor are reduced; 2) weather does not interfere with the process since the heating wires control the temperature of the forms; 3) the forms last longer than wood and, if of a "standard" shape, are reusable on other

jobs; 4) they are easy to handle, even with light equipment; 5) fiberglass forms are more versatile than forms of other materials in that they can be molded into any shape and texture. For finish on the parking garage, Desmond and Lord specified a wood grain texture, and it was molded into the forms.

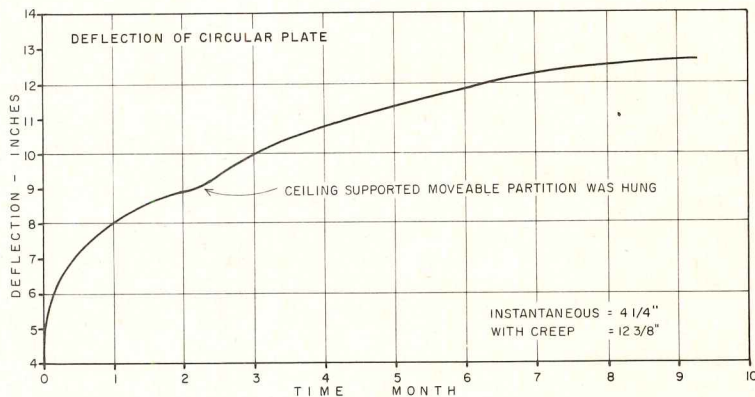
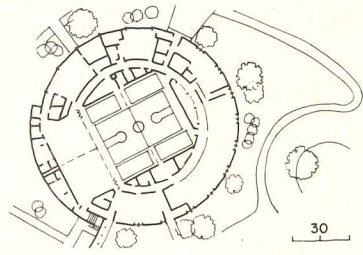
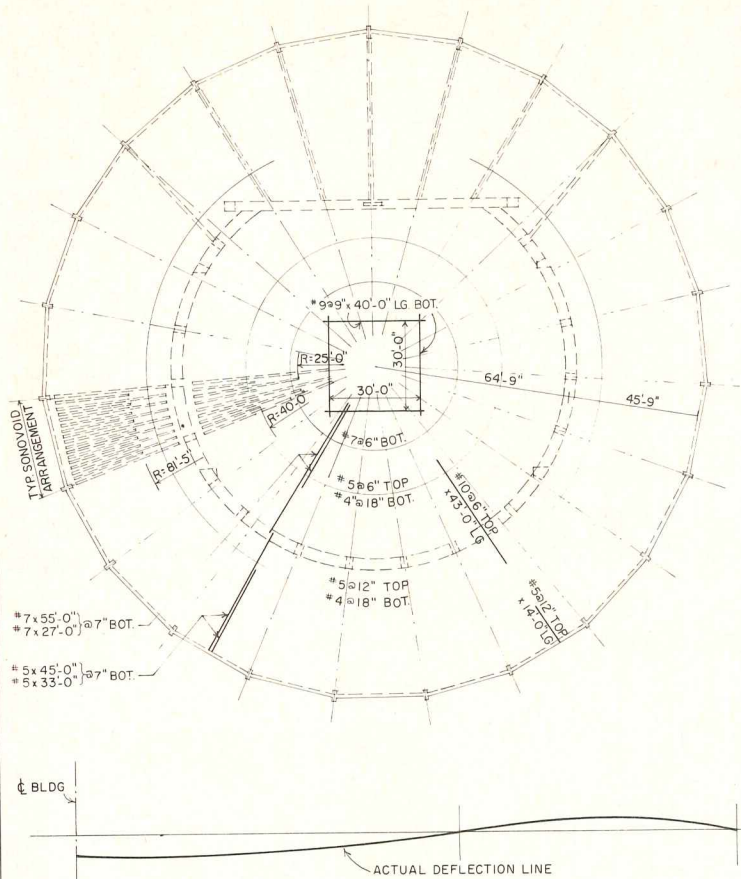
Coordination of labor and materials was difficult at first because the forms out-distanced other operational elements. But by standardizing reinforcements and by pre-fabricating electrical hook-ups, coordination was once more made possible.

The \$6½ million Logan Airport addition will enclose a total of 700,000 sq ft of parking space for 2000 cars. Work was begun in April and will be completed by the end of the year.

THE LOGAN AIRPORT PARKING GARAGE, Boston, Massachusetts. Architects: *Desmond and Lord*; structural engineers: *Nichols, Norton and Zaldastani*; contractor: *Perini Corporation*.

"Thinnest" circular concrete plate spans 130 ft to roof a gymnasium

Engineers take a sophisticated approach to "plate" theory, and design rigidity and continuity into the supporting structure to permit a slab only 20-in. thick.



The engineers predicted an over-all deflection of $11\frac{7}{8}$ in. Actual measurements showed that deflection over 9 months was $12\frac{3}{8}$ in. A large, heavy acoustical partition was hung after about $2\frac{1}{2}$ months which accounted for an increase, for a short time, in rate of deflection. The curve above shows actual deflection line from center line to perimeter.

The gymnasium roof of Lebanon Senior High School is a circular concrete plate spanning an unsupported distance of 130 ft with only a 20-in.-thick slab. This is believed to be the thinnest such plate ever constructed, considering the ratio of slab thickness to its diameter. It was made possible by two design factors: 1) the torsional rigidity of the ring beam with its 40-in. deep supporting columns, and 2) the continuity of the slab which spans from the ring beam to perimeter beams and columns. If the plate had been simply supported, calculations indicated that the plate would have had to be 4-ft thick.

Engineering studies during preliminary design included steel and concrete radial members from 4- to 6-ft deep. The structural engineers, Lev Zetlin Associates, found the flat plate scheme to be more economical by at least 20 per cent.

The concrete mix was given special attention because of the need to minimize shrinkage cracking and long-term creep.

An important point the engineers proved was that plate deflections closely followed the theory which assumes the material to be homogeneous and elastic. Further, they showed that the long-term creep of lightweight structural concrete is comparable with that of stone concrete—actually the difference is only 7 per cent.

The engineers' calculations predicted that eventual deflection at the center of the plate would be $11\frac{7}{8}$ in. At the end of nine months, when deflection due to creep appeared to have stopped, field measurements showed that actual deflection was $12\frac{3}{8}$ in.—a difference of only $\frac{1}{2}$ in.! The roof was cambered 18 in. to make sure that after the slab had fully deflected there would be at least 4-in. residual camber for drainage.

Concrete strength of 5000 psi was specified to insure that concrete stresses would be well within the elastic limit. Deflection calculations were based upon the modulus of elasticity of lightweight concrete at 28 days, thus the contractor was required to

keep the formwork under the entire plate for this period of time.

To lighten up the slab, 8-in. diameter voids were formed through use of fiber-board-tube forms, spaced as shown in the plan above.

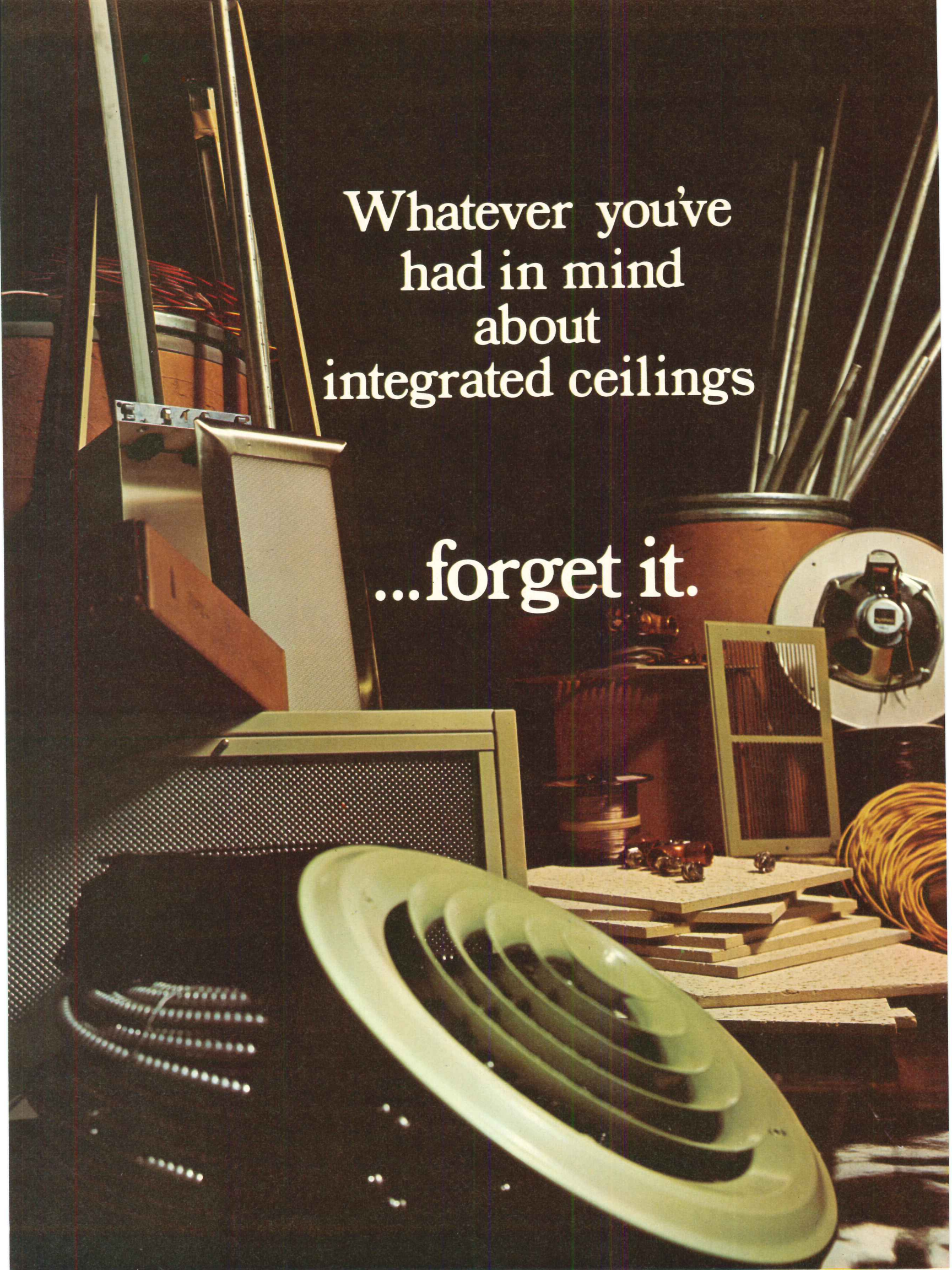
The total project consists of three circular, two-story buildings. In the centers of the other two buildings are the library and the auditorium, with classrooms on the perimeter. The library has a 4-in.-thick concrete dome spanning 66 ft, rising to 8 ft, with a 24-ft circular opening at its crown for a skylight. The edge thrusts of the dome are resisted by a radial beam connected rigidly to the horizontal roof slab. Because of the relatively shallow slope of the shell and the high stiffness of the supports edge bending was practically eliminated.

LEBANON SENIOR HIGH SCHOOL, Lebanon, Pennsylvania. Architects: Lacey, Atherton and Davis; consulting structural engineers: Lev Zetlin and Associates, Inc.; general contractor: M. L. Halderman and Sons.

COLONIAL HILTON INN
Northampton, Massachusetts
Warner, Burns, Toan, Lunde, Architects



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For more on COMPAC, please turn page.

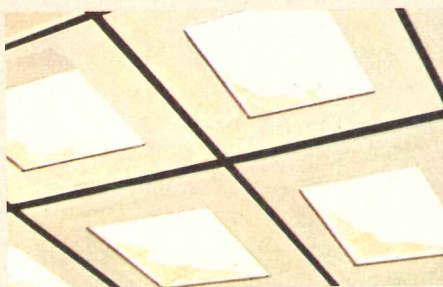
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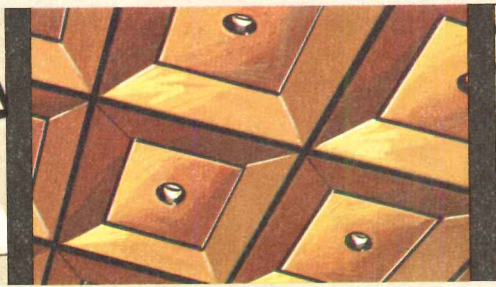


MISSISSIPPI STATE COLLEGE
FOR WOMEN: Columbus, Mississippi
ARCHITECT: Fred L. Harrison,
William I. Rosamond & Associates, Architects

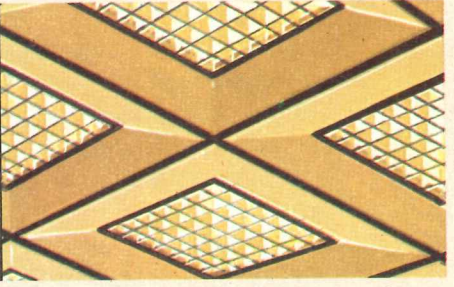
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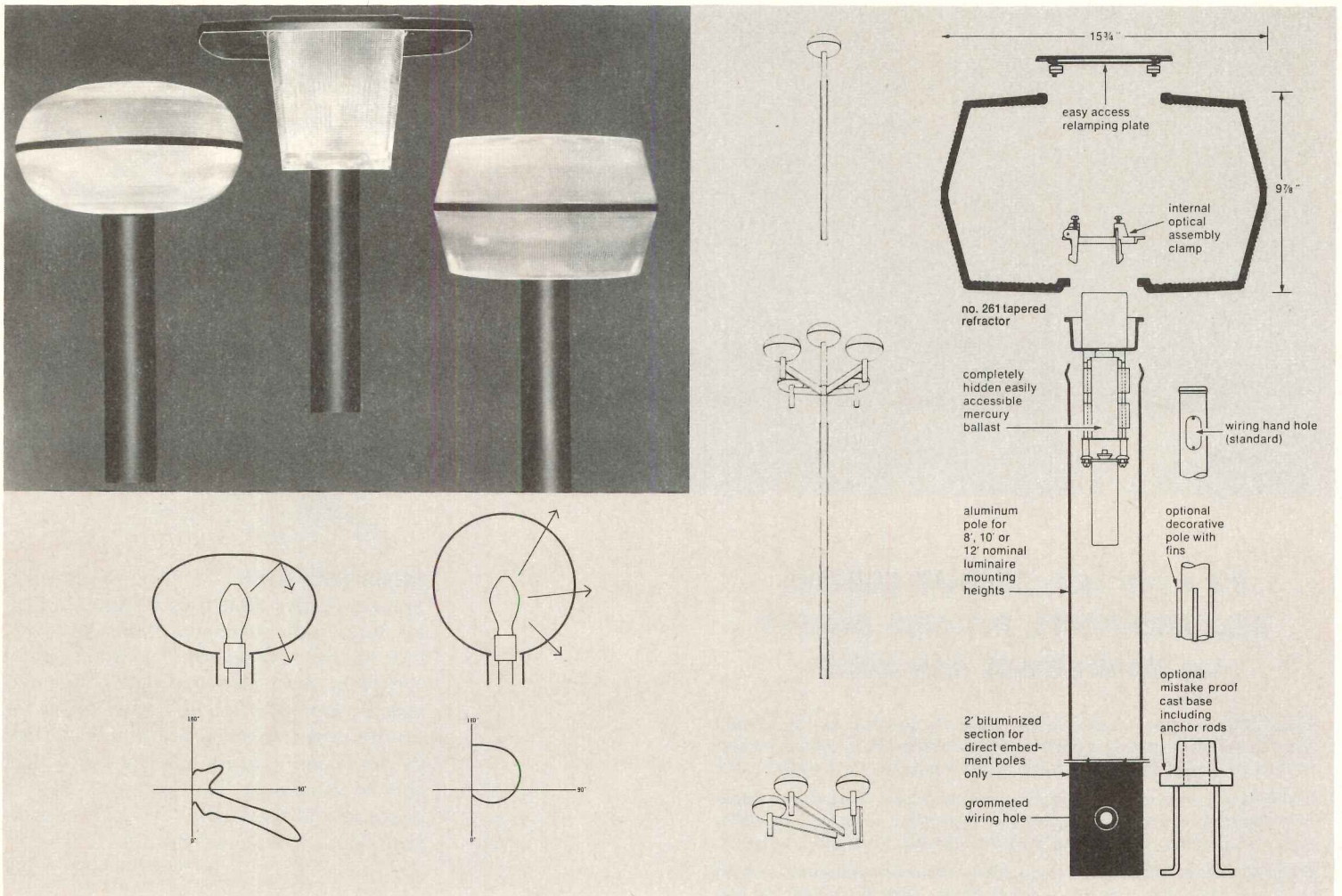
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Outdoor luminaires with prismatic lens enclosures direct light to increase source efficiency



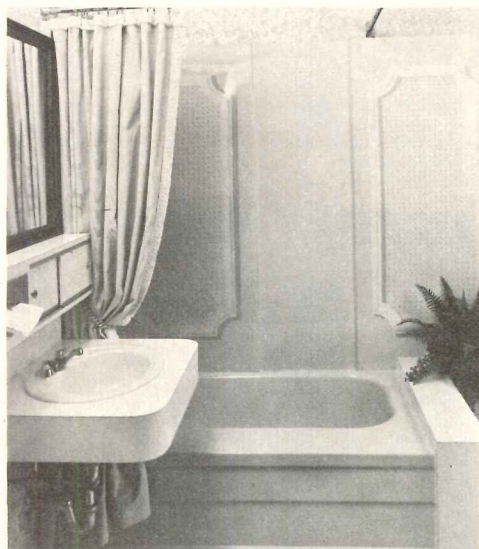
Vista III outdoor luminaires use a prismatic lens enclosure to direct light to where it is most needed: the ground plane. The light-distribution diagram (see above) indicates how the lens produces an efficient light distribution, directing light down and outward. Not only does the lens make use of as much available light as possible, but it cuts down on glare as well. A standard clear or white plastic enclosure, by comparison, directs much of the light upward.

Vista III has three lens enclosure shapes: the "Ellipse", the "Square" with an inverted, truncated-pyramid refractor and the "Tapered" drum type. Five of these luminaires may be mounted on any pole (there are four pole heights, two bases) and as many as three on wall brackets.

Installation is simple and exposed parts are protected against corrosion. The enclosures are gasketed and sealed. ■ Holophane Co., Inc., New York City.

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more products on page 166

continued from page 165



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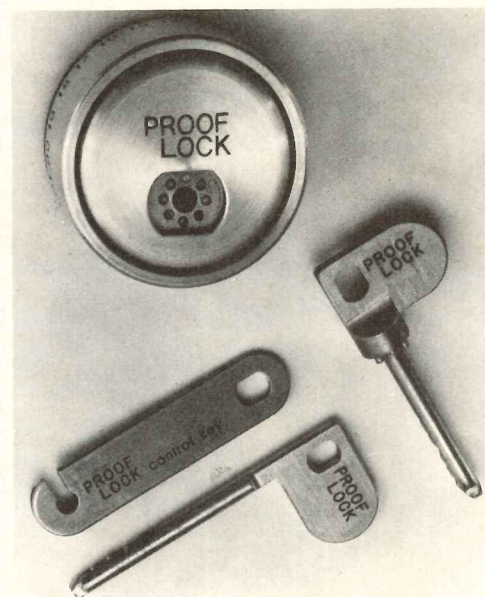
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Circle 303 on inquiry card



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more products on page 176

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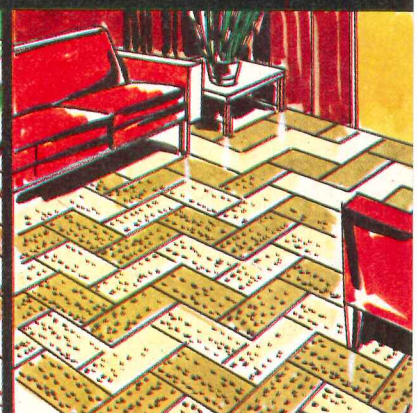
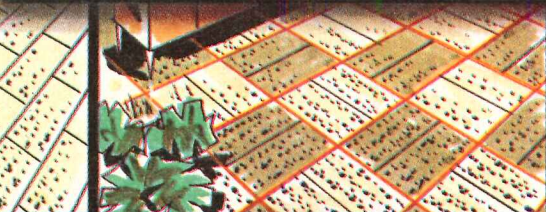
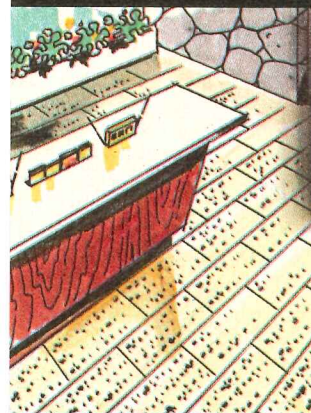
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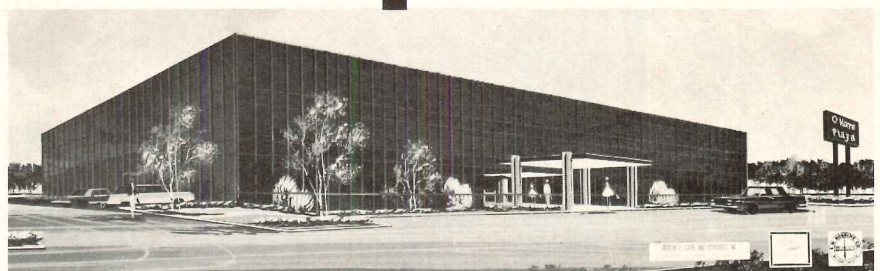
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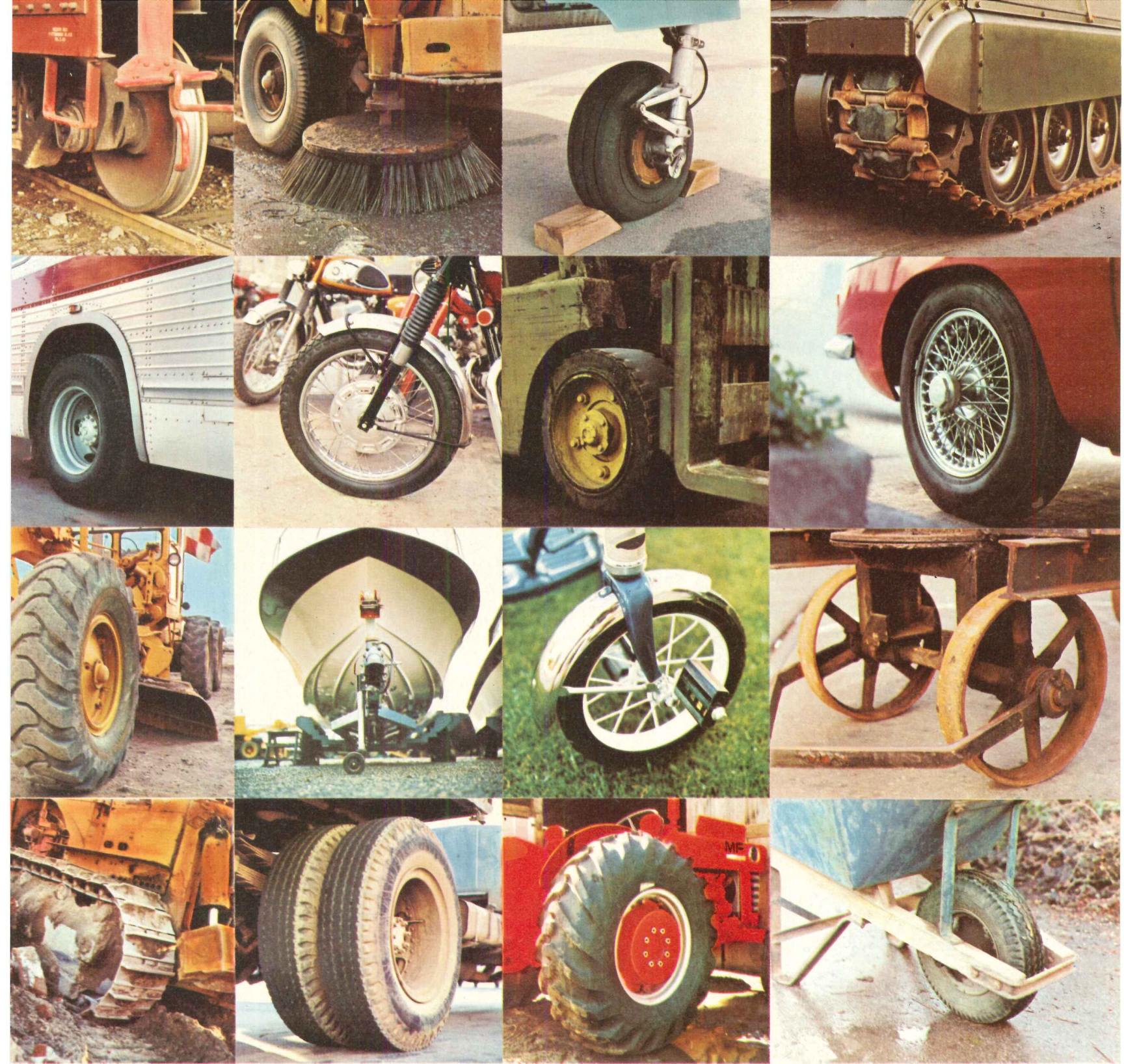
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Leasing & Managing Agents: Nardi and Podolski
Contractors: Inland-Robbins Construction, Inc.

Soundtropane® is the ideal glass for installations, close to large metropolitan airports, where excessive noise is a negative environmental factor. The location of the new O'Hare Office Plaza required a glass that would effectively reduce the noise of jets on take-offs and landings, and be strong enough to withstand shattering due to jet vibrations. Soundtropane® filled all the requirements.

Dearborn is also the manufacturer of Tru-Site non-glare glass and variant forms of glass for industry and architecture.





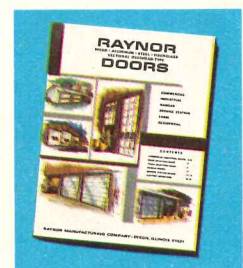
Raynor builds garage doors for anything that rolls!

Highest quality overhead-type sectional garage doors for virtually every application. Residential. Commercial. Industrial. In every material... wood, aluminum, fiberglass, and steel. All backed by the finest guarantees in the industry; guarantees made possible by complete manufacturing control, exhaustive product testing, rigid quality control, and incorporation of the latest engineer-



ing advances. Such as data film registration for permanent parts-list records. Custom-wound springs. Extra heavy tracks. Customized hardware to fit all installation situations. Electric operators for every door. You name it, Raynor has it. For selection, delivery, and quality... depend on Raynor Manufacturing Company, Dixon, Illinois 61021.

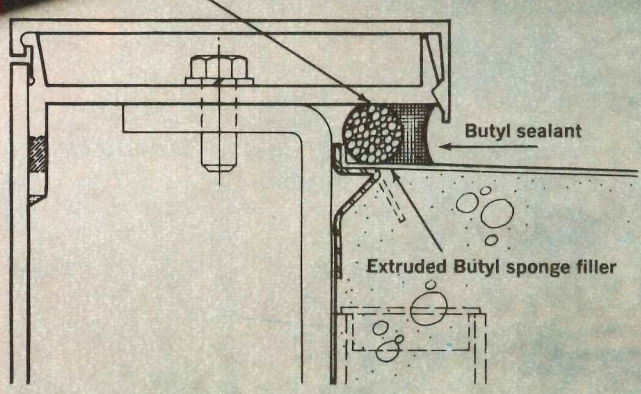
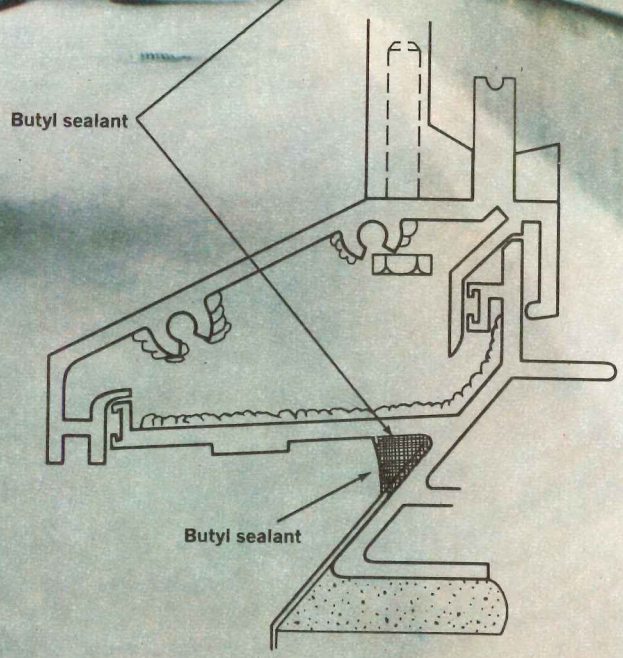
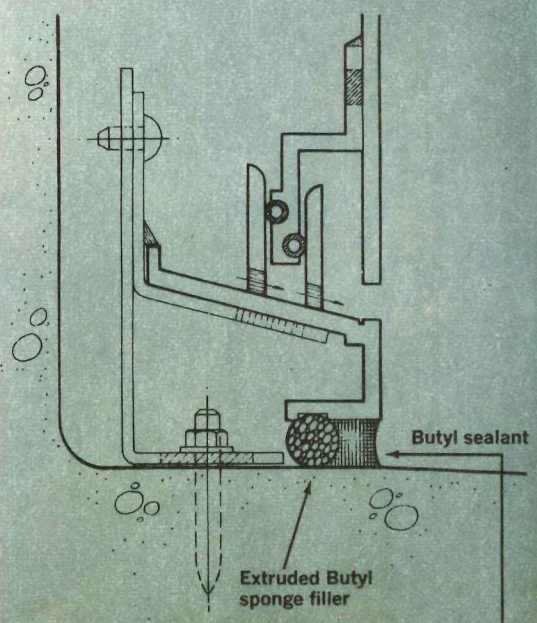
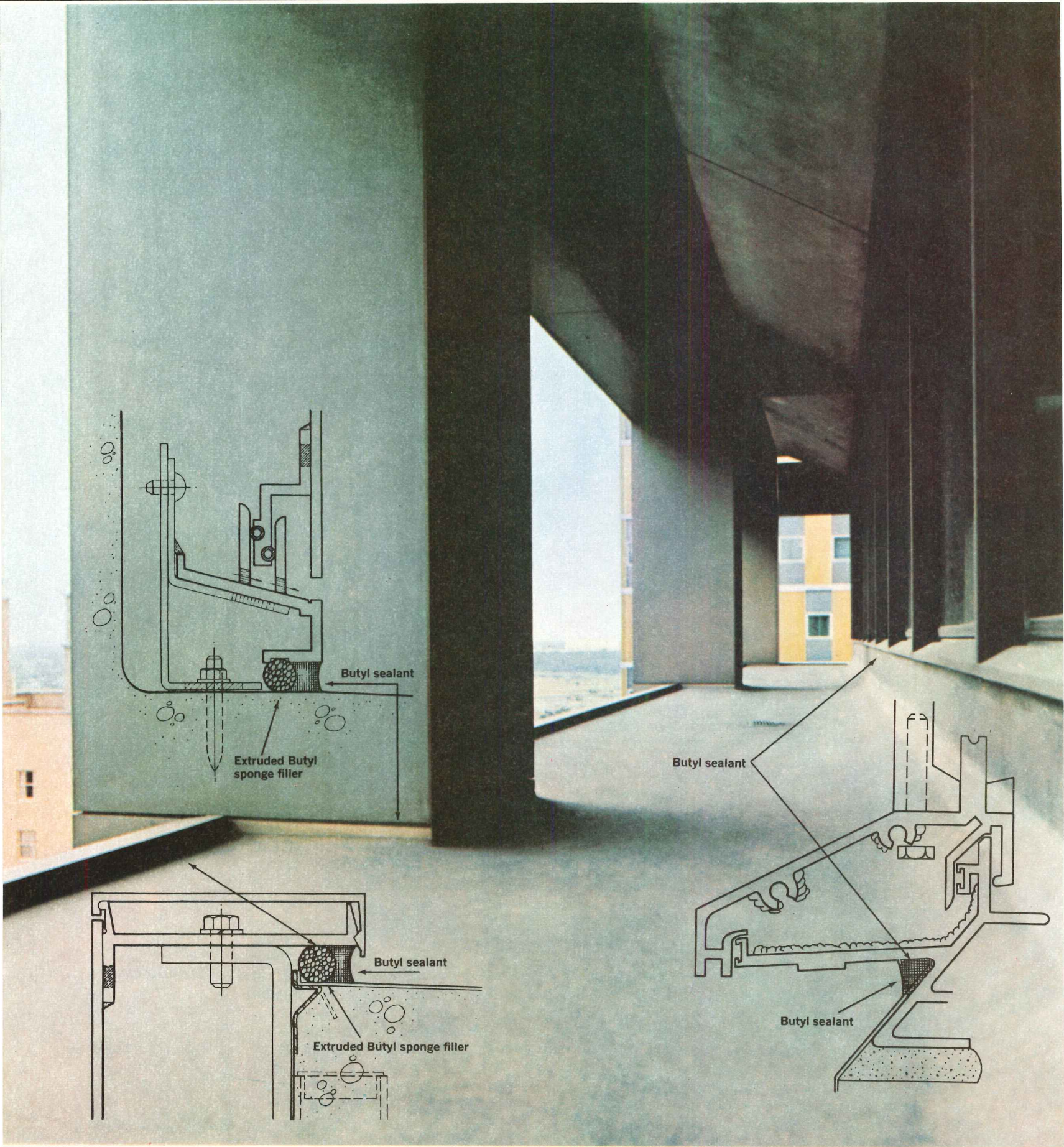
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RAYNOR[™]

The Brand You Can Depend On

For more data, circle 82 on inquiry card



Butyl rubber sealants help striking Houston landmark keep its cool.

Extruded sponge fillers and sealants based on Enjay Butyl rubber used extensively for the durable weatherproofing of this unique building.

The Tenneco Building—a notable feature of the Houston, Texas skyline—owes much of its distinction to its unusual sunshaded facades which permit setback of the glass walls four and five feet.

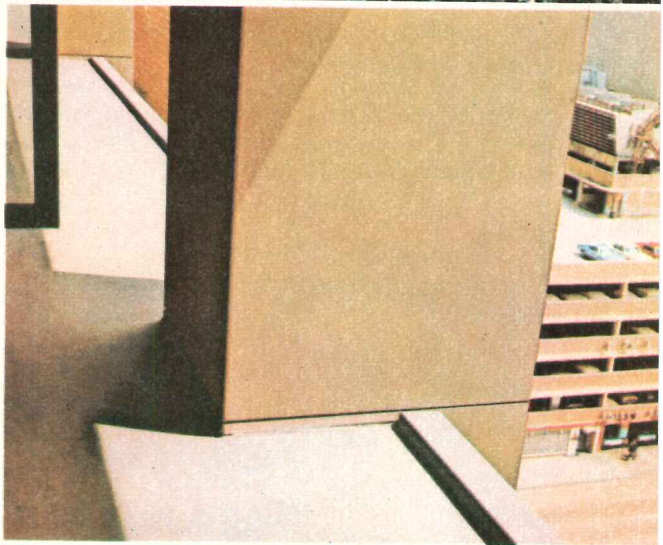
A compound based on Enjay Butyl rubber was used exclusively to seal three key joints on each setback. The photo at left shows all three—the long snap-on aluminum copings at the outer edge of the setback floor, the supporting column base joints, and the under-sides of the slanting sills below both the windows. An extruded sponge void-filler made with Enjay Butyl rubber was first pressed into position under the aluminum floor copings and at the column bases and then covered with the Butyl sealant.

The Butyl sealant was chosen because it has excellent adhesion to construction materials and is non-corrosive to metals. It provides outstanding weatherproofing and long life over a temperature range of -20°F to 200°F . It has little heat conductivity, cures with minimum shrinkage. The one-component compound has excellent container stability and is easily applied with conventional tools. It can be colored to match other materials.

Enjay Chemical Company, Synthetic Rubber Division,
60 West 49th Street, New York, N.Y. 10020



Owner: Houston National Company
Architect: Skidmore, Owings & Merrill
Sealing Contractor: Kawneer Company, Inc., a subsidiary of American Metal Climax, Inc.
Sealant: Construction Products Div., W. R. Grace & Co., Cambridge, Mass.



For more data, circle 83 on inquiry card

MODULAR AIR HANDLING

Through competitive analysis and first-hand experience . . .

Quaker Oats chose
Multi-Vent® high capacity air diffusers

. . . designed for modular installation and continuity of ceiling appearance

Interior wall and desk arrangements would be subject to change—these were the requirements which made movable, modular air diffusers a must as Quaker Oats set about to modernize its offices in the Merchandise Mart, Chicago.

The final choice was to use Multi-Vent High Capacity Air Diffusers. The reasons were several:

Prior investigation plus installed experience

The company's impressive computer center had previously been equipped with 24" x 48" high capacity Multi-Vent diffusers. Thorough field and laboratory investigation preceded the installation. Performance under super-critical requirements was flawless. In the new areas to be modernized, there could be no compromise with performance—"blend-in" appearance was a must.

12" x 12" diffusers unobtrusively blend with overall design decor

When you look up, you don't really see air diffusers. Eye-appealing angular throw apertures keep moving air from soiling ceiling tile. And the blend with the lighting fixtures is beautiful as this photograph of the engineering offices demonstrates.

Again, a check before purchase

Though recommended because of prior performance, the more compact modular design was laboratory evaluated. A trip was also made to an Atlanta bank to inspect an actual installation.

Installation economy bonuses are many

For instance: Multi-Vent diffusers are interchangeable with the ceiling tile. Duct work was planned and installed to accommodate future interior wall changes knowing that moving and attaching Multi-Vent units are not only a quick process but would cost less.

Time-saving air distribution balancing is a simple adjustment of a readily accessible set screw. Air loads can be re-distributed easily when needed in the event of greater concentration of personnel in a given area.

The time-saving sequence of installation alone reduced the overall cost.

To learn more about this and other successful installations of Multi-Vent air diffusion systems, do as The Quaker Oats Company did . . .

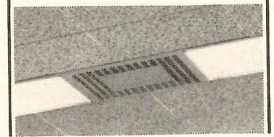
Write:

MULTI-VENT PRODUCTS DIVISION
Dynamics Corporation of America
1400 North Kostner Avenue
Chicago, Illinois 60651



Threaded attachment of flexible air duct from above.

Blending modular appearance as seen from below.



Mechanical Contractors: R. B. Hayward

For more data, circle 84 on inquiry card





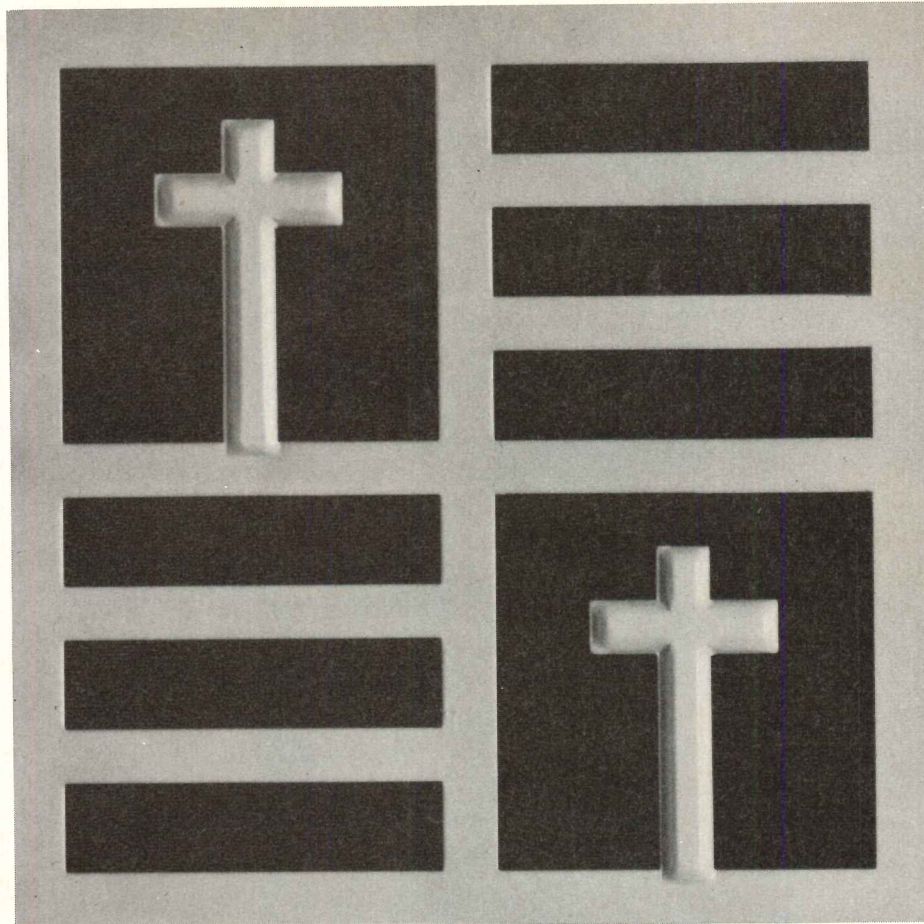
Series 4000

*An office should be a place of beauty and comfort,
as well as efficiency. The executive sees more
of it than he does of his own home. Don't
condemn anyone to days of drabness if you can
help it—and you can. Only a man's signature
says more about him than his office.*

alma

See this and other Alma Series in our showrooms in High Point and Chicago (Space 1140, Merchandise Mart). You may consult our catalogs in Sweet's Interior Design File or write Alma Desk Company, Dept. AR-03, Box 271, High Point, N. C. 27261.

CHURCH GRILLE

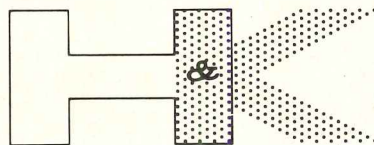


Design Patent No. 209086

Illustration actual size

Another Exclusive **PERFORATED PATTERN**

by

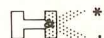


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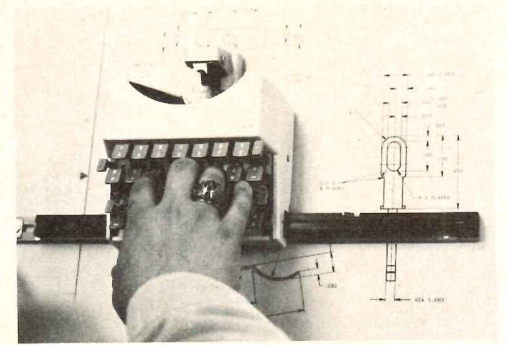
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90 PARK AVE., N.Y., N.Y. 10016



... since 1883, the symbol of quality, service and dependability in the perforating industry.

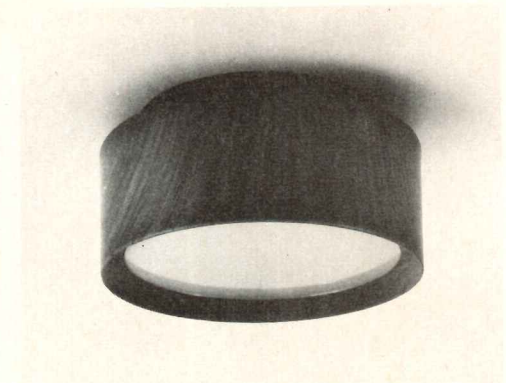
*TRADEMARK

For more data, circle 85 on inquiry card



LETTERING TYPEWRITER / A typewriter which can be used by individual draftsmen for lettering drawings will be exhibited at the products exhibit at the A.I.A. Convention. The typewriter weighs 2 lbs. and can be moved easily over the surface of drawings. ■ Mechanical Enterprises, Inc., Alexandria, Va.

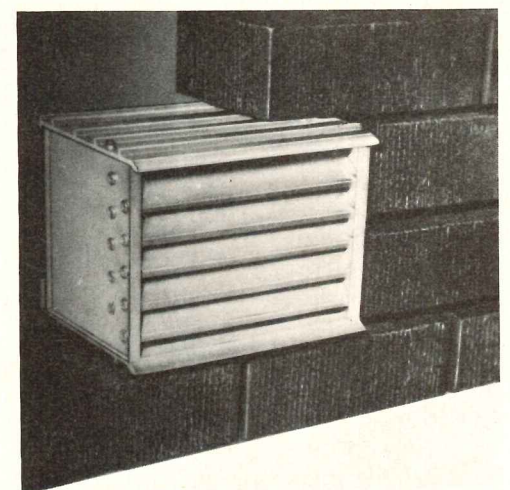
Circle 305 on inquiry card



ROUND LUMINAIRE / Round Lumes have a seamless aluminum housing with walnut grain finish and recessed bent opal glass for soft wide-angle lighting. They are mounted on torsion springs for easy bulb replacement and cleaning and are available in four sizes.

■ Markstone Manufacturing Corp., Chicago.

Circle 306 on inquiry card



BRICK VENT / This vent is designed to prevent water staining of brick by diverting rain water and drippings. It is flangeless with integral cast drip at both top and bottom. ■ Sylro Products Corp., Merrick, L.I., N.Y.

Circle 307 on inquiry card

more products on page 194

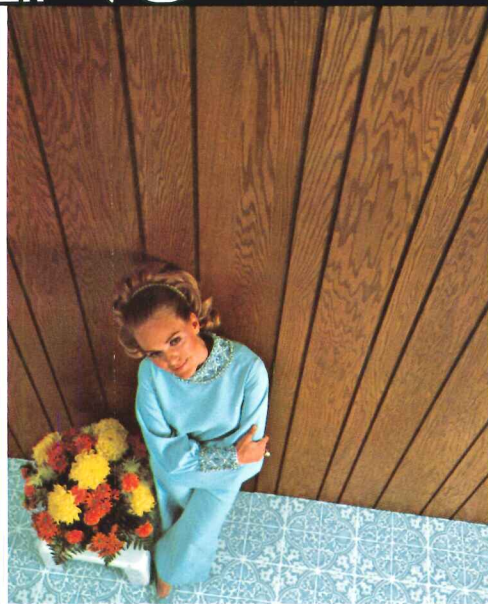
BOLD!
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 NEW!
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 GROOVY!
 ELEGANT!

DIMENSION ∇TM
 PANELING



OAK

Dimension V: Patent Pending



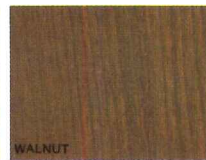
BRASILIA
 DRIFTWOOD



BRASILIA
 SUNTAN



BIRCH



WALNUT

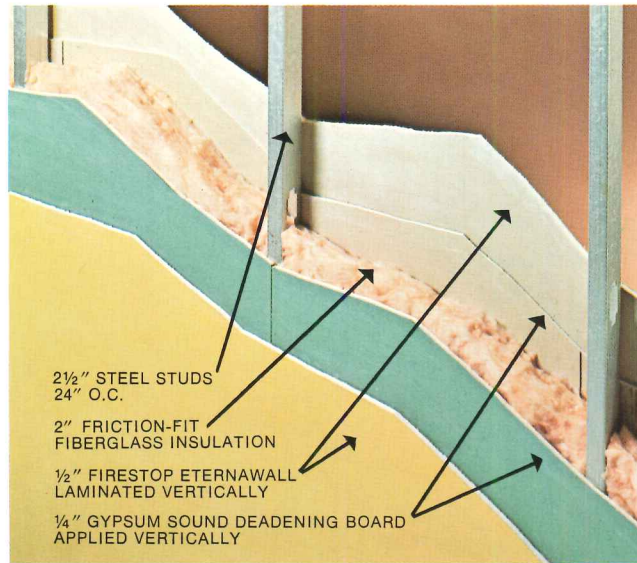
Georgia-Pacific announces a major breakthrough in wood wall paneling: Dimension ∇. This new paneling has a look totally different than any you've seen before. Because the grooves are deeper and wider!

Dimension ∇ is unique, distinctive, elegant. Use it in any private or commercial building. You'll get effects never before possible with paneling. It gives a mood that is at once masculine and delicately beautiful.

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For free sample of Dimension ∇ paneling, or any other panelings or sidings shown in G-P 1970 Sweet's paneling and siding catalog, wire your request night letter collect: Georgia-Pacific Corporation, Instant Sample MA, Portland, Oregon.





U.L. DESIGN NO. 32

This system has it all!

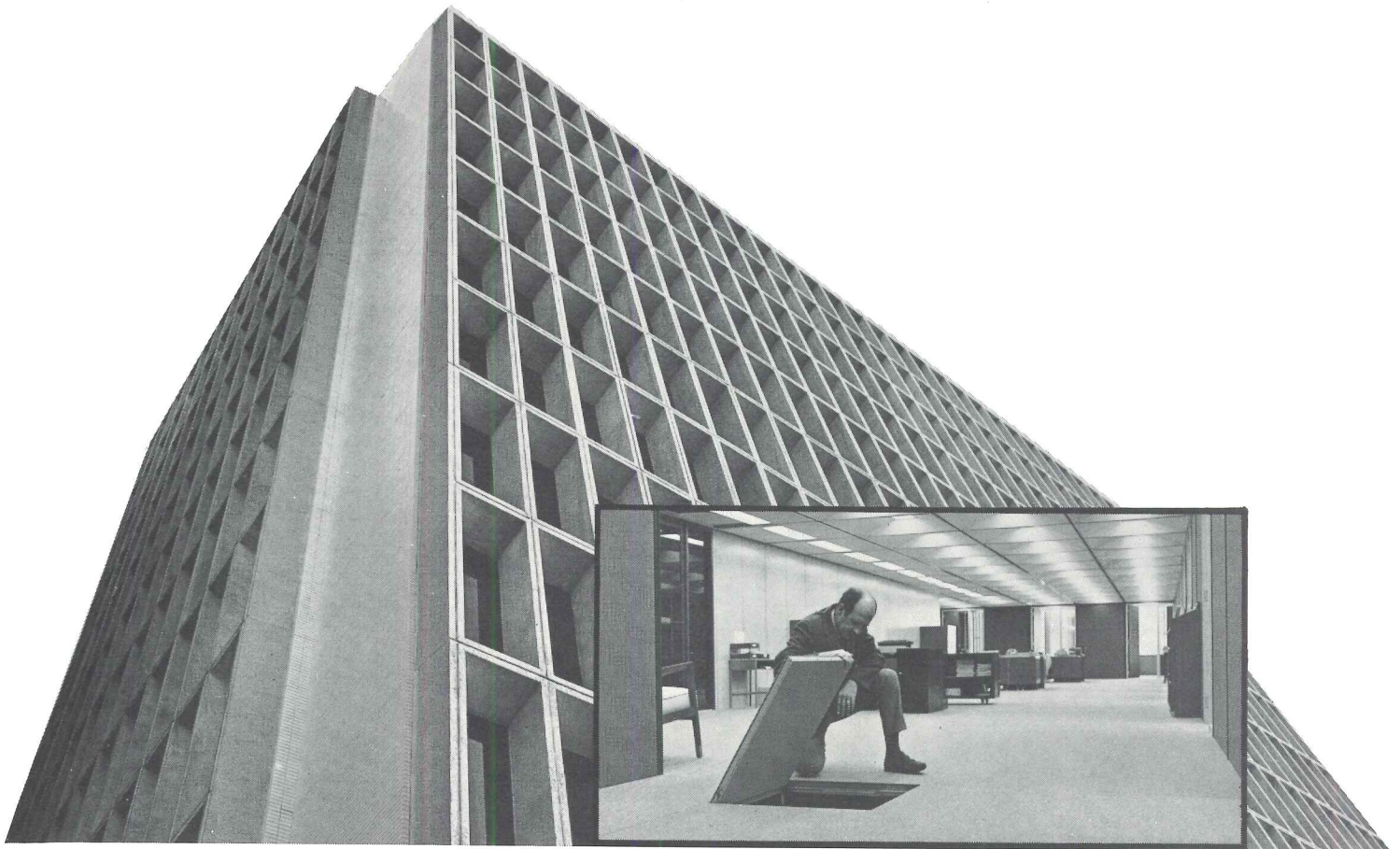
- ▶ **STC of 50**
- ▶ **1 hour fire rating**
- ▶ **Resists scuffs and stains**
- ▶ **Finish layer installs without battens or fasteners**
- ▶ **Costs less than regular vinyl covered wall systems**



It's Georgia-Pacific Firestop® Eternawall™ vinyl covered gypsum wallboard laminated to 1/4" Incombustible Gypsum Sound Deadening Board over steel studs. Ask your G-P representative about it today.

To get your free Eternawall sample wire your request, night letter collect: Georgia-Pacific Corporation Instant Sample MA, Portland, Oregon

128,300 sq. ft. of free-access Weberfloor . . .



pays off in new 12-story Chicago office building.

Typical of the growing trend toward access flooring in general construction is the American Hospital Association's new building, designed by Chicago architect, Richard O. Evans of Schmidt, Garden & Erikson.

The structure's 128,300 square feet of free-access Weberfloor, 90% of it carpeted, was installed for less than \$2.00 per square foot exclusive of floor covering. Most of this figure will be offset by a combination of immediate savings in construction costs and future maintenance economies.

By providing ample, fully accessible underfloor space for electrical services, the Weberfloor system completely eliminated the cost of headers and raceways in the floor slabs. Pedestals were installed on the semi-finished slabs and then adjusted for height. Power troweling was eliminated. Floor slabs were poured as soon as formwork and reinforcing were in, with mechanicals installed later on top of the slab. Result: a shorter pour schedule that moved completion ahead a full month.

Future savings and complete flexibility in use of the building's floor space are even more attractive. Because Weberfloor panels can be raised and interchanged at will, electrical and telephone lines can be reached and relocated economically, without slitting carpets or drilling concrete.

Write for free booklet. The use of free-access Weberfloor in two major applications and its significant advantages for general construction are covered in detail. Write for your copy to Weber Architectural Products, Division of Walter Kidde & Company, Inc., 1340 Monroe Avenue N.W., Grand Rapids, Michigan 49503.

For more data, circle 92 on inquiry card



Architects for the Armstrong Rubber Building were Marcel Breuer and Robert F. Gatje. General contractor: The Dwight Building Co. Structural engineer: Paul Weidlinger. Mechanical engineer: Segner & Dalton/Consulting Engineers. Steel fabricator: The Standard Structural Steel Co.

Four-story office tower suspended from overhead steel trusses

This is the new corporate headquarters and research and development laboratories of Armstrong Rubber Co. in New Haven, Connecticut. In order to emphasize the two separate functions of the building—research laboratories and executive offices—yet express their interdependence, the architect has hung the office tower from seven huge steel trusses over the two-story research and development wing.

The seven steel trusses from which the tower is suspended weigh about 50 tons each. From the end of each truss, a 14-WF steel column drops 52½ ft, the height of the four office floors. These hanging columns are held in place by single pins measuring 4½ in. in diameter and 19 in. in length. Thus, the four floors are suspended by 14 huge pins. The structural steel for the four floors is connected to the columns that support the trusses, and to the hanging columns as well. The steel is Bethlehem A36 structural shapes.

Steel is versatile, adaptable, economical. It can lighten a structure, shorten construction time, provide more usable floor space. We'd be happy to discuss your next building with you. The Sales Engineer at the nearest Bethlehem office is available to talk with you at any time. Or write us at Bethlehem, PA 18016.

BETHLEHEM STEEL



Emphasizing the separate functions of headquarters and research, the office tower is suspended over the laboratories.

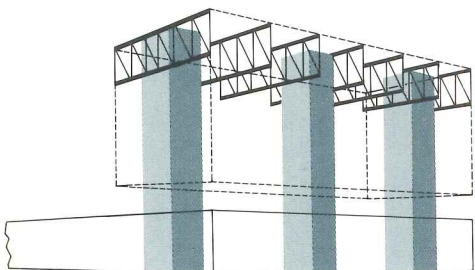
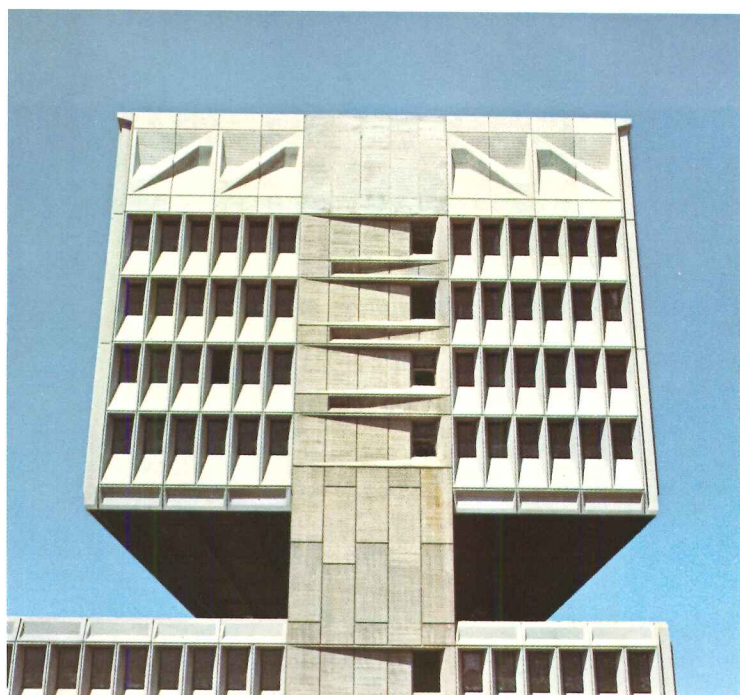
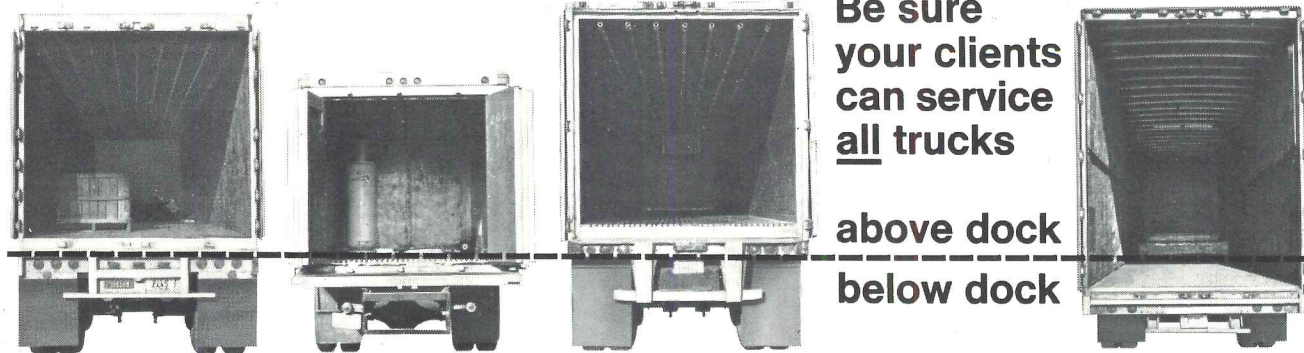


Diagram shows the cantilevered trusses and suspension system of the office tower.





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Kelley Permanent Adjustable Dockboards easily accommodate trucks with bed heights from 36" to 60" above ground. Effectively link trucks and docks to provide smooth, efficient, safe loading and unloading under all conditions.

Kelley Dockboards give you access to the full width of trucks; have sufficient length for proper incline; won't slip or slide; han-

dle even the heaviest load; are always in place, ready to use.

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55-363R

For more data, circle 93 on inquiry card

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NEW

Spectra-Glaze

glazed masonry units
DESIGN SERIES

(not an alternate for
any other material)

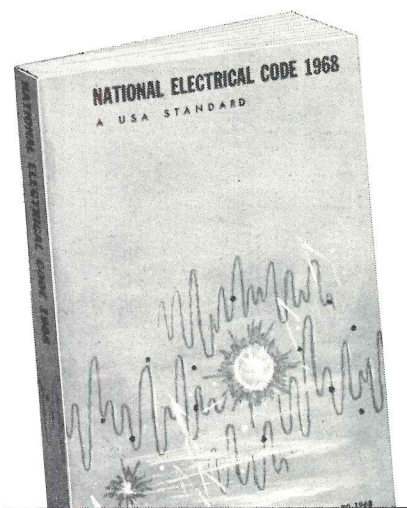
Your choice in *color, texture, form, scale and pattern* . . .

Select from a variety of scored units to reduce scale with the economy of large 8x16 block . . . Build, decorate and finish in a single operation. Thru wall, load bearing units eliminate expense of back-up wall . . . Specify **SPECTRA-GLAZE**® glazed concrete units in your base bid to realize their unique advantages of design flexibility combined with lower-in-the-wall costs . . . Local delivery, world-wide.

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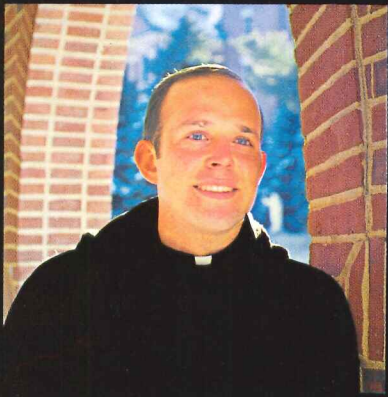


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“Carpet withstands winter weather.”

Father Luke, Director of Maintenance, St. Anselm's College, Manchester, N. H.



Vanguard Carpet by Viking

When Father Luke had carpet of Creslan® acrylic fiber installed last February, we told him certain things would happen.

We told him the carpet (especially in the entrance lobby) would stand up beautifully to the rigors of a New Hampshire winter. And he tells us it certainly did.

A reception was held at the college when the carpet was but a few weeks old. A very heavy snowstorm struck. A large turn-out tramped in and tracked snow,

slush and mud all over the brand new installation.

With very little effort, the carpet was restored to its fresh, new, clear appearance. As we had said it would. The test was immediate, the performance flawless.

We said that choosing Creslan for the first-time use of carpet in the college was a wise choice. And Father Luke agreed it has been a very satisfactory experience. Every claim we made for that carpet proved out. So you can see how true it is that

Creslan keeps its promise

Creslan acrylic fiber is a product of American Cyanamid Company, Wayne, New Jersey.





THINK SQUARE

Go Modern — Add a soft new look to lighting with KSH-18 panels.

A louver and a lens. It combines the lamp-hiding power of opal material with the glare control of prismatic.

The square-on-square design, accented with aluminum lines, creates a functional grid. It reflects light back into the panel, producing a soft new look for modern interiors.

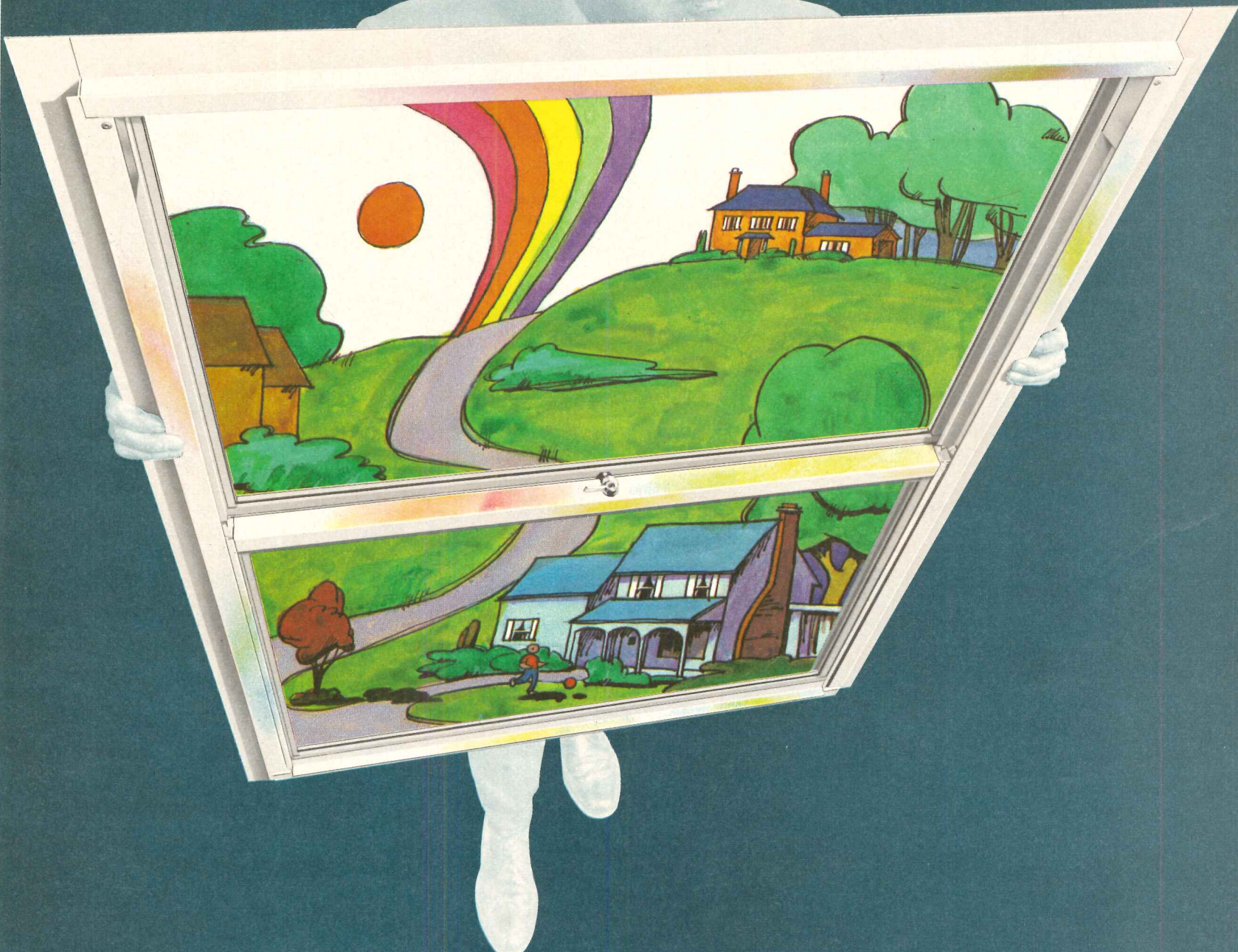
KSH-18 is .250" thick. Sizes are 1 x 2, 1 x 4, 2 x 2, 2 x 4. WRITE FOR CATALOG SHEET K1-642.

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frames, protects, and
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Specify aluminum with PPG Extrusion Coatings. White coating on aluminum windows, for example eliminates unsightly pitting and dulling. Washes clean and smooth. Keeps its original beauty year after year.

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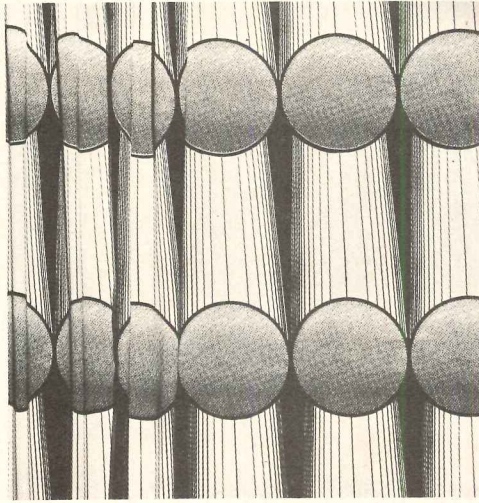
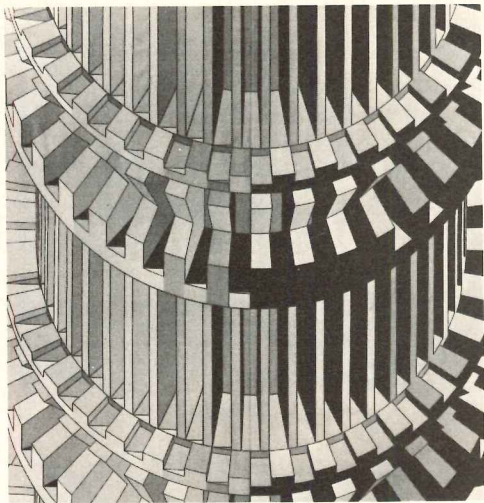
increase the value of your construction, write Product Manager, Extrusion Coatings, Department 16W, PPG INDUSTRIES, Inc., One Gateway Center, Pittsburgh, Pa. 15222.

PPG is Chemicals, Minerals, Fiber Glass, Paints, and Glass. So far.

Extrusion Coatings
PPG
INDUSTRIES

For more data, circle 98 on inquiry card

continued from page 176



BOLD PRINTS / The *Countdown Collection* designed for Heal Fabrics Ltd. of London includes 22 patterns in 4 to 8 colorways. Several of the patterns are intended for architectural application, coming in repeats as wide as 30 in. All are 100 per cent cotton, 48 in. wide, in plain jacquard crepe or cotton satin finish. ■ Unika-Vaev Corp., New York City.

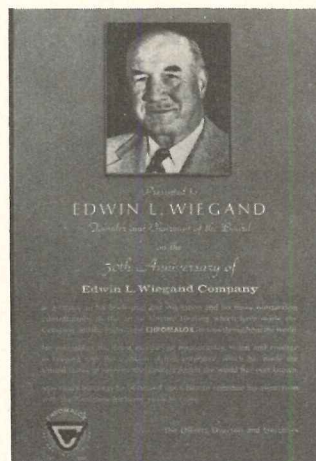
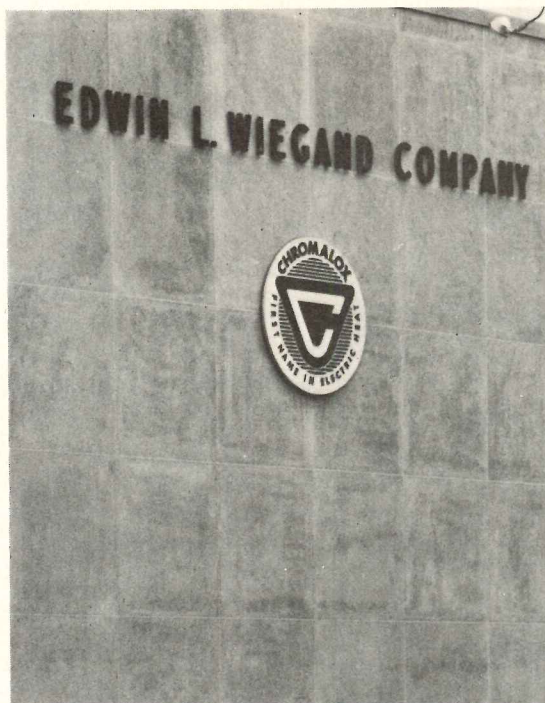
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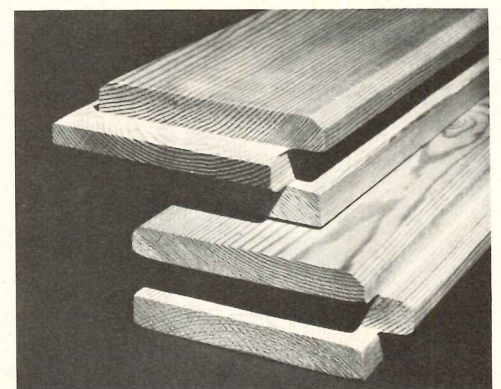
1315 W. Liberty Ave., Pittsburgh, Pennsylvania 15226
PLANTS IN PITTSBURGH, PENNSYLVANIA; SEARCY, ARKANSAS; MILTON, ONTARIO
SUN CITY, CALIFORNIA; SENECA FALLS, NEW YORK; EL MONTE, CALIFORNIA.

For more data, circle 99 on inquiry card



INTERIOR PLANTERS / This collection of deep-drawn polished stainless steel planters is designed for interior, and especially office, use. The bases are of walnut, teak or rosewood for use with contemporary furniture. ■ Martin Design Consultants, Los Angeles.

Circle 309 on inquiry card



LAMINATED DECKING / This new decking has a face laminate of Ponderosa pine, Engelmann spruce or Douglas fir/larch bonded to two layers of a softwood species. It has a relatively constant moisture content which minimizes in-place twisting and cupping. Shrinking, checking and warping are reduced by the balanced construction. ■ Boise Cascade Building Products, Boise, Idaho.

Circle 310 on inquiry card

* Additional product information in Sweet's Architectural File

more products on page 198

Bright idea



Handsome new addition to pre-assembled Bradpack wash centers: vinyl-laminated, stainless steel panels that harmonize with virtually any motif or color scheme. Now you can specify space saving Bradpack wash centers with either walnut-grained vinyl or conventional stainless steel panels. Gives you a beautiful new option in design coordination. And what's more, you can still specify the right combination of integrated accessories that make Bradpack wash centers so versatile. Model B includes lavatory, sanitary foot control, temperature selector, storage cabinet, light, mirror, electrical outlet, paper towel dispenser, and cup dispenser. Choose from four basic, space-saving models: two with foot control, one with single-control faucet, another with wrist blades for wheelchair patients. Where can you use Bradpack wash centers? In hospitals, nursing homes, schools, medical offices, and dormitories just to name a few. See your Bradley washroom systems specialist. And write for literature. Bradley Washfountain Co., 9107 Fountain Boulevard, Menomonee Falls, Wisconsin 53051.

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Leader in Washroom Fixtures and Accessories

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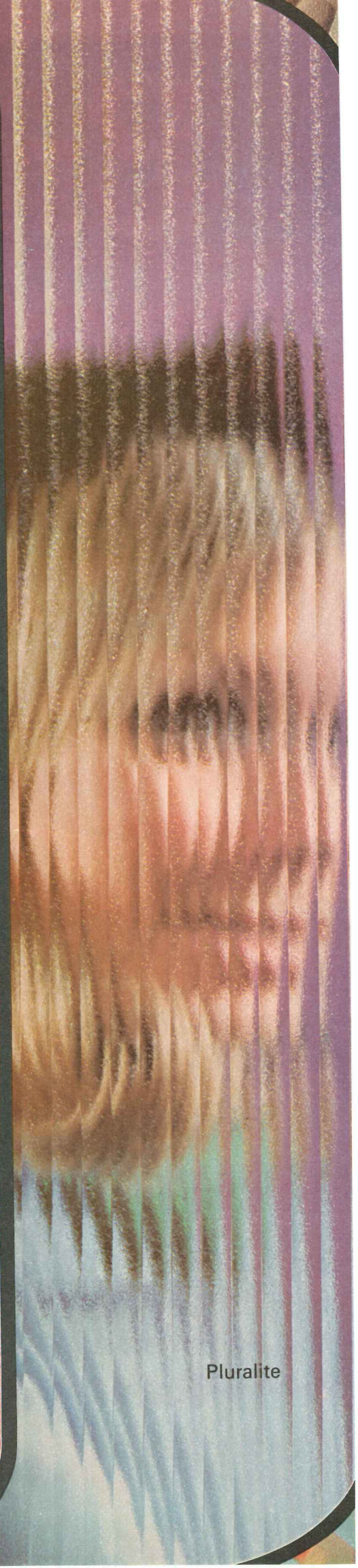




Hylite



Syenite



Pluralite

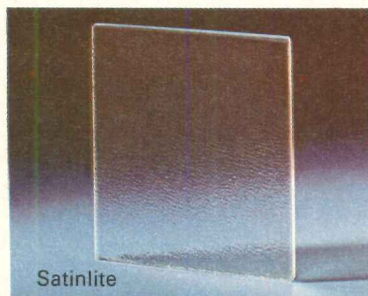
Selections
that give
imagination
full sway

MISSISSIPPI

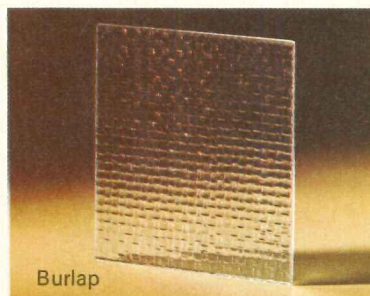
PATTERNED GLASS

BY **CE GLASS**

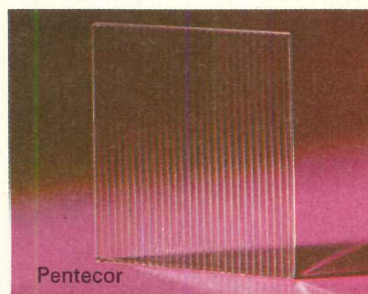
Let light work for you through patterns that give every object exciting new angles of interest. Panels and partitions reveal the passing view. But textures blend with lights and colors to soften the image and give design emphasis. Mississippi patterns by CE GLASS give refreshingly new concepts to windows and walls. Obscure patterns are available to give privacy to any desired degree. CE GLASS has the wide range selections so there's never a limit. Imagination can have full sway whether for contemporary or traditional, or for strictly functional or highly decorative purpose.



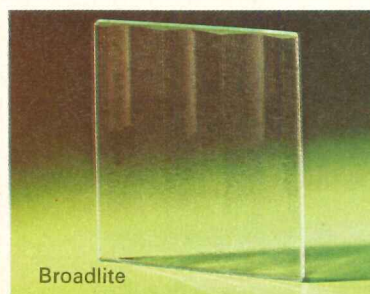
Satinlite



Burlap




Pentecor



Broadlite

Mississippi patterned glass by CE GLASS is available from leading distributors of quality glass in the principal cities of the United States and in Canada from Canadian Pittsburgh Industries, Ltd., Glass Division. For further information or samples, contact our office nearest you or write CE GLASS, 825 Hylton Road, Pennsauken, N. J. 08110 or call 609-662-0400.

See our catalog in Sweet's 

Smooth Rough

CE GLASS

For more data, circle 101 on inquiry card

The movable wall that doesn't look movable.

Divide your rooms and multiply usable space with Kwik-Wall, the permanent-looking, but very movable, partitions. Ceiling track-mounted or fully free-standing, these sound-retardant partitions can be erected or stored in minutes by anyone. A simple, one-hand twist-of-the-wrist mechanical lock assures complete rigidity. Over 1500 decorator-inspired panel facings to match any decor. Send for details.

See Kwik-Wall at Western Nat'l Restaurant Convention
 Sept. 13-16, 1970, San Francisco, Calif.
 KWIK-WALL CO., Box 3267, Dept. AR
 Springfield, Illinois 62708

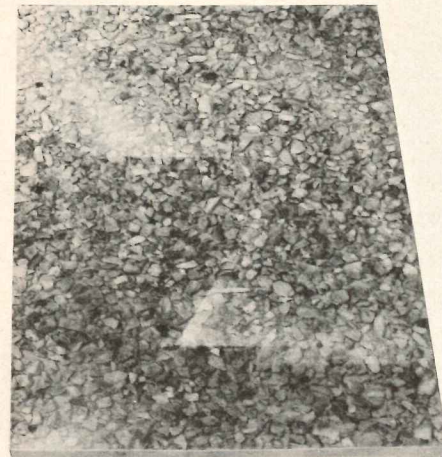


The permanent look in movable walls

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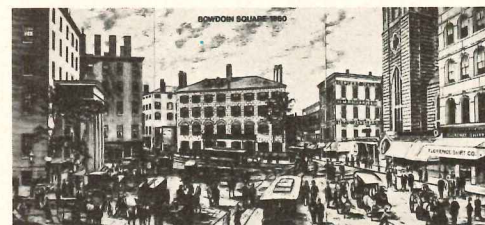


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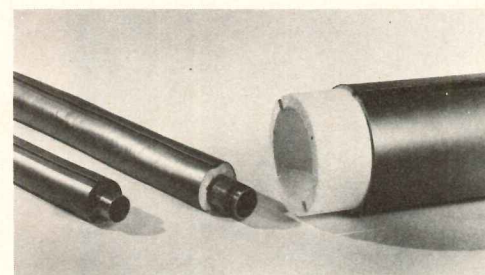
AGGREGATE PANELS / *Glasshield* is an in-laid building panel for interior or exterior application. It has a cement asbestos backing board, silica sand/resin matrix, quartz or granite aggregate material and a transparent resin top layer giving the panel a smooth surface. They are sized according to specification, and come in standard colors. ■ Martec Corp., Erie, Pa.

Circle 311 on inquiry card



PORCELAIN ENAMEL MURALS / A method for reproducing drawings, paintings, lithographs, photographs, "anything seen by the eye" onto porcelain enamel murals has been developed. The murals can be any size and in as many as eight colors. Mountings are hidden. The murals are said to be durable, and impervious to weather and abrasives. ■ Bettinger Corp., Milford, Mass.

Circle 312 on inquiry card



NOISE-REDUCING JACKETING / *Thermazip* noise-insulating jacketing for piping systems, ducts, flues, tubing, etc. has a self-locking fastener to snap it in place. The PVC jacketing is insulated in either polyurethane foam or fiberglass. No maintenance or painting is required. ■ Accessible Products Co., Tempe, Ariz.

Circle 313 on inquiry card

* Additional product information in Sweet's Architectural File

more products on page 203

Devoe announces a line of colors you can stick with.

Now that we've re-formulated our entire color system to jibe with the fashions and fabrics of the seventies—we've made specifying our colors easier, too.

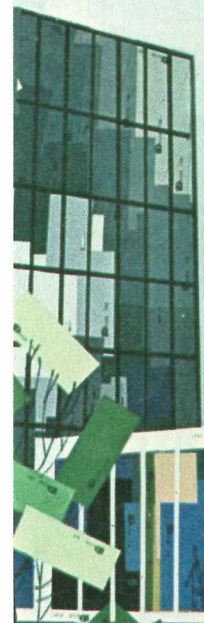
The new Devoe color index book is cross-referenced to a bound set of color chips with self adhesive backs. You don't have to paper clip chips anymore, or tape them or staple them. Just peel them off the page and stick them to your specs.

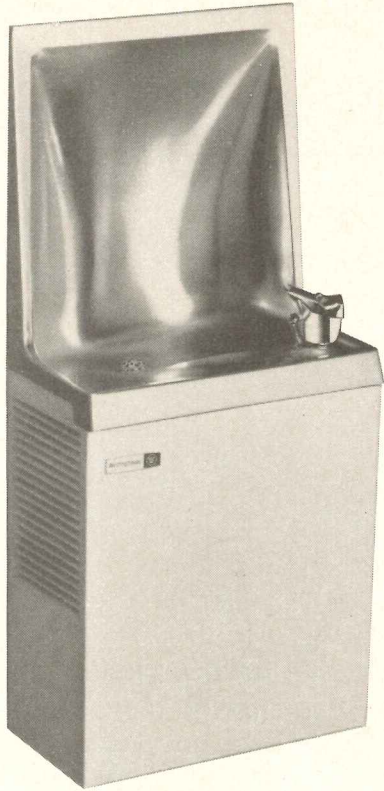
Ask your Devoe man about the Colors of the Seventies—available in all paint finishes, from flat to gloss, for any job. Produced with high-hide bases for improved coverage and greater performance.

See your Devoe man.
Devoe Paint, Division of
Celanese Coatings Co.,
224 East Broadway, Louis-
ville, Kentucky 40202.

For more data, circle 103 on inquiry card

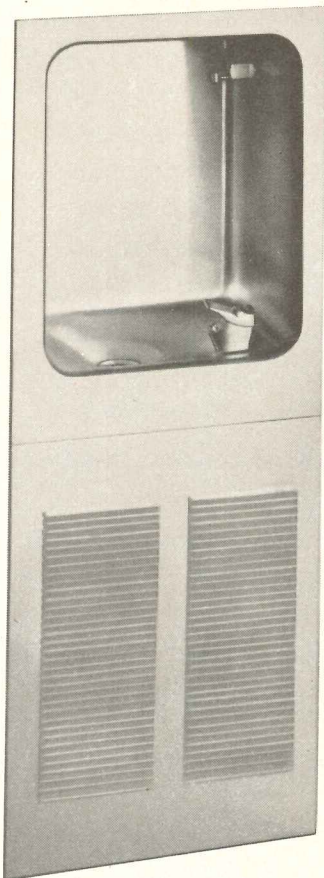
First with the fashion paint colors of the 70's





This slim, trim, Semi-recessed Water Cooler is a big help in saving aisle space. Projecting only 9 1/2 inches from the wall, it has a smart, brushed stainless steel basin and one-piece cabinet, finished in beige vinyl, beige enamel or brushed stainless steel. Also available in over-all bronze finish. Installs easily and economically. All plumbing goes into the enameled steel wall box and is installed before the cooling system is hung into position. Cooling capacities in 8 and 12 G.P.H.

Aisle-openers.



No bumping in the aisles when you install this Westinghouse Totally Recessed Water Cooler. It's completely flush to the wall. Ideal for hospitals, schools, or public buildings. Stainless steel or bronze-finish basin, grille and bubbler. Plenty of headroom. And our exclusive mounting box lets you reverse the cooling system so the grille won't show when you put this cooler in a location backed by a utility room or closet. 10 G.P.H. cooling capacity.

Both coolers are backed by famous Westinghouse Nationwide Sure Service. For complete details, see Sweet's Files. Or refer to "Water Coolers" in the Yellow Pages. Westinghouse Water Cooler Dept., Columbus, Ohio 43228.

You can be sure...if it's

Westinghouse 

For more data, circle 104 on inquiry card

**An airport should set a traveler's emotions into flight
before he's airborne.
As the architect, you chose concrete.
The result: A design exactly as you conceived it, thanks
to Fiberglas*-reinforced plastic construction forms.
Strong, versatile Fiberglas, the new basic material.**

Illustration: Houston Intercontinental Airport Terminal Building.

Design Features: Coffered ceilings and compound shapes of concrete.

Architects: Golemon & Rolfe and Pierce, Goodwin & Flanagan, Houston, Texas.

Let Fiberglas-reinforced plastic construction forms increase your design

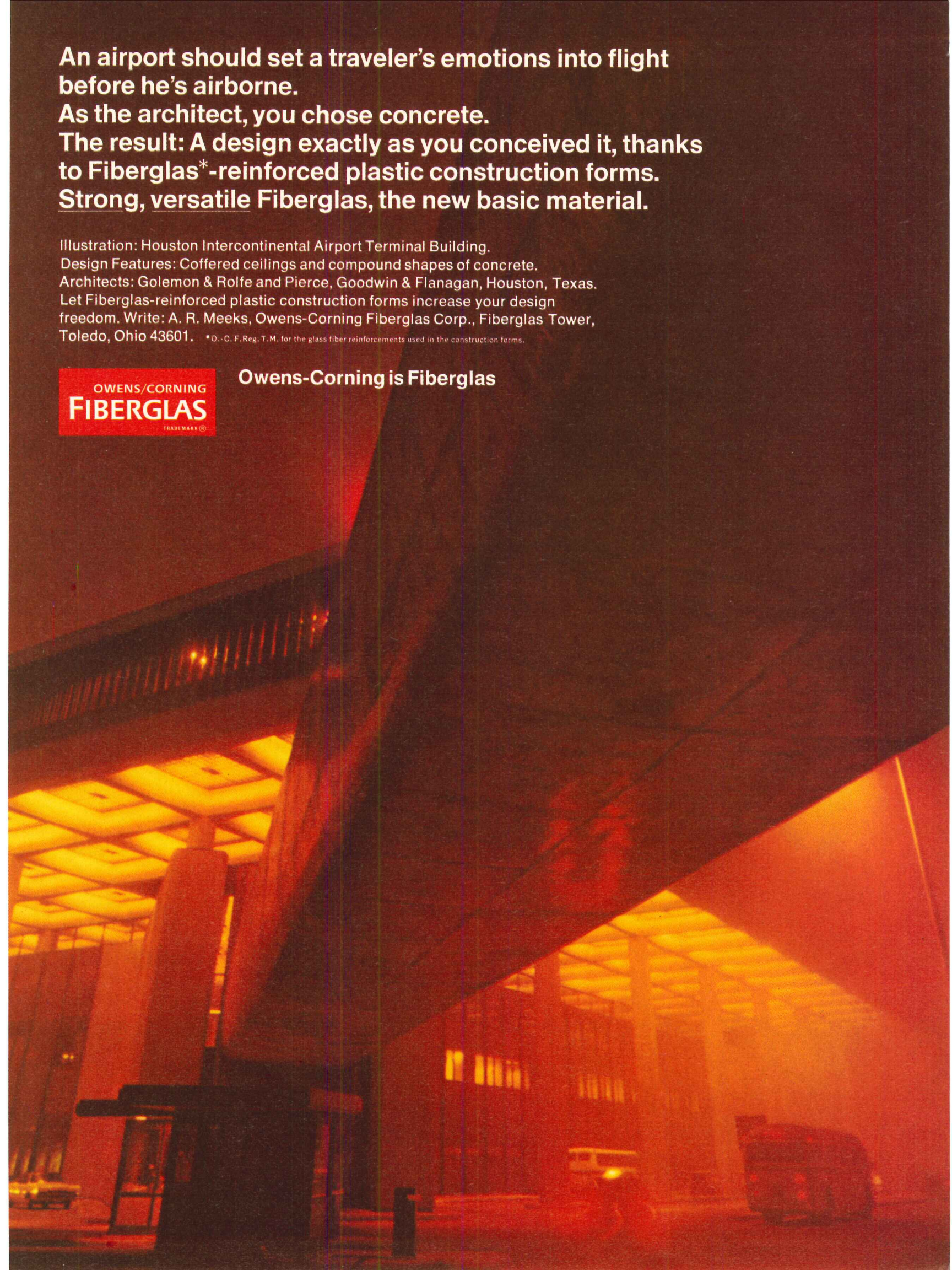
freedom. Write: A. R. Meeks, Owens-Corning Fiberglas Corp., Fiberglas Tower,

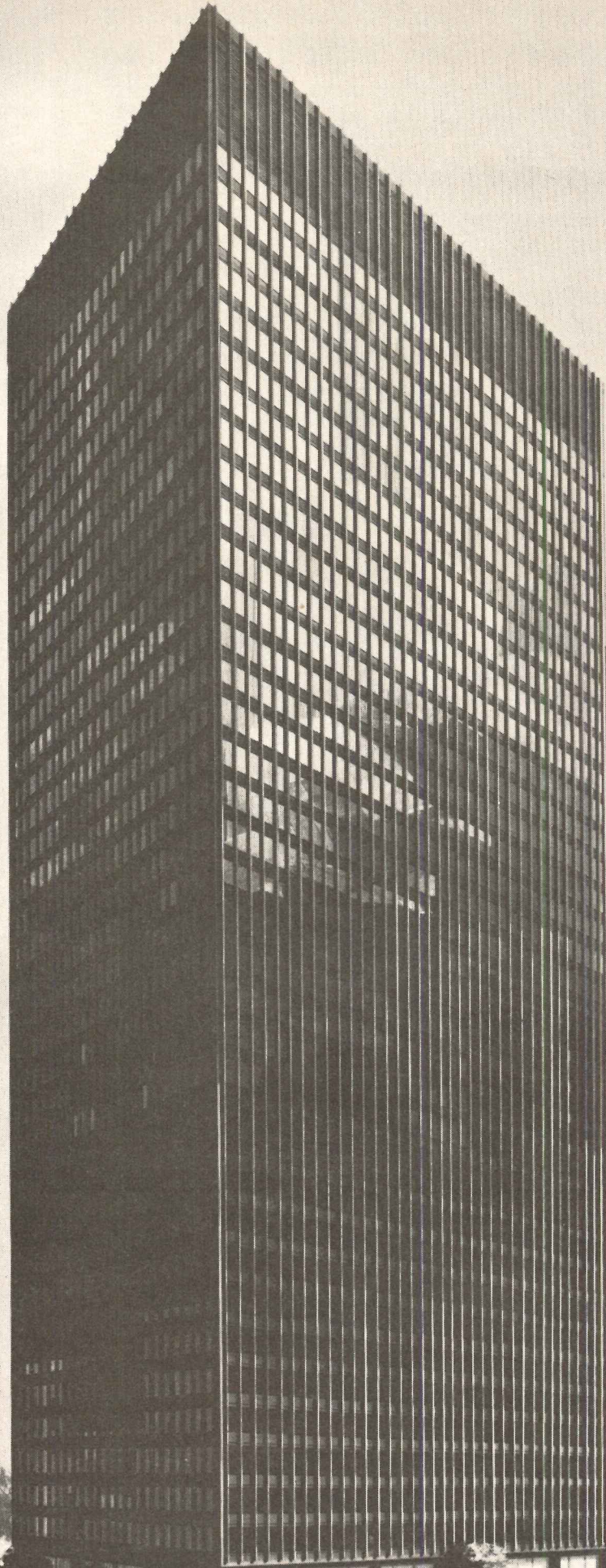
Toledo, Ohio 43601. *O.-C. F.Reg. T.M. for the glass fiber reinforcements used in the construction forms.

OWENS/CORNING
FIBERGLAS

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Owens-Corning is Fiberglas





**Another building
built to last with
glazing gaskets
of Du Pont Neoprene.**

They are neat . . .
for better appearance.

They are resilient . . .
to keep a tight grip.

They are Du Pont Neoprene . . .
for dependability.

Neoprene has proven resistance
to sun, weather, heat, cold, ozone,
chemicals and physical wear.

And, Neoprene won't propagate fire.

Du Pont makes Neoprene, not gaskets.
For more information on the architectural
uses of Du Pont Neoprene, write the
Du Pont Co., Room 6857, Wilmington, DE 19898.

For more data, circle 106 on inquiry card



StanLock
Neoprene gaskets
manufactured by the
Standard Products Co.

One Oliver Plaza Building
Pittsburgh, Pa.
Architect: William Lescaze
and Associates

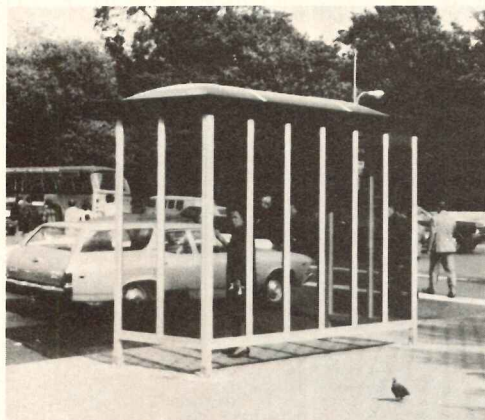


NEOPRENE

continued from page 198

COMPLETE DOORS / *Packaged Doorways* are entire door units including insulated door, weather-stripping and adjustable door bottom. The non-warping steel clad door is prehung and the assembly comes with aluminum sill and threshold. The wood parts are treated and primed. Nine door styles and five sidelights are available. ■ F. E. Schumacher Co., Hartville, Ohio.

Circle 314 on inquiry card



BUS SHELTERS / 50 of these transparent Plexiglas shelters have been installed at bus stops in New York City and, since public response has been favorable, many more will be used. They have a prefabricated anodized aluminum frame and 6 back panels and sidepanels of tinted breakage- and weather-resistant plastic. The shelter comes in a variety of sizes and design variations. ■ Columbia Equipment Company, New York City.

Circle 315 on inquiry card



DANISH STACK CHAIR / This molded plywood stack chair is a new version of a best-selling Danish chair. It has a flared back, chrome-plated steel base, and a choice of plain or upholstered shell. ■ Fritz Hansen Inc., New York City.

Circle 316 on inquiry card

* Additional product information in Sweet's Architectural File

JUST FOR KIDS



MODEL SW-8A or SW-13A

NEW SW SERIES MINI-COOLERS —

Only 20½ inches from fountain top to bottom of cabinet. Can be mounted at low level for small children.

Two Capacities — 8.0 and 13.5 G.P.H. of 50° water.

Cabinets — Vinyl-clad steel, silver spice, and mocha brown; also stainless steel and gray baked-on enamel.

SPECIAL FEATURES — Can be vandal-proofed. Two-stream, mound-building projector is squirt-proof.

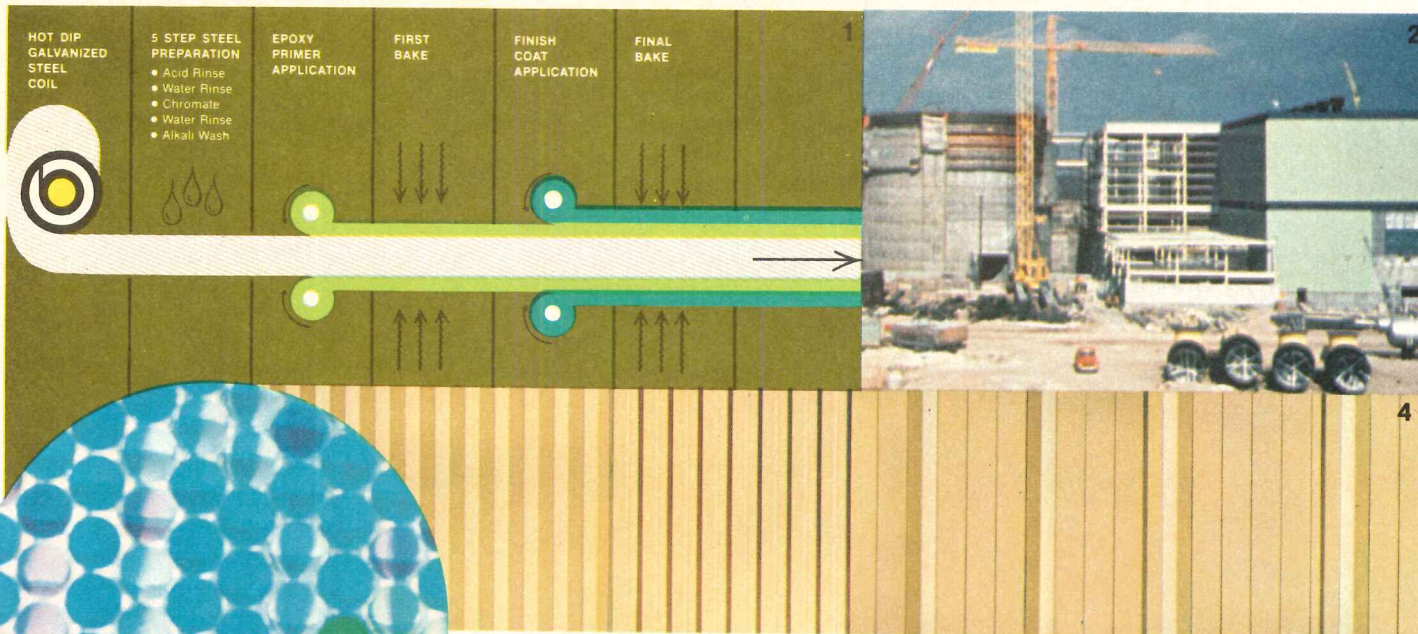
Write for Catalog and specifications.
THE HALSEY W. TAYLOR COMPANY
 1560 Thomas Road, Warren, Ohio 44481
 SUBSIDIARY • KING-SEELEY **KST** THERMOS CO.



For more data, circle 107 on inquiry card

**Inryco:[™]
the wall panels
that shun
corrosive smog.**





New Duofinish 500™—a polyvinylidene fluoride coating that's highly resistant to chemical pollution and slippery enough to shed dust, smoke and abrasive particles found in airborne industrial wastes. Designed to maintain color fidelity for 20-plus years, Duofinish 500 provides exceptional resistance to chalking and fading. When chalking does ultimately occur, it will be in the same color as the base paints, since Duofinish 500 uses inorganic earth pigments.

Withstands severest exposure tests.

In actual laboratory tests, this surprising finish has shown outstanding resistance to fumed nitric acid and concentrated hydrochloric acid. When subjected to Twin Arc and Sunshine Arc tests, Duofinish 500 showed no signs of color change or chalk face development after thousands of hours of exposure. Alkyd and Acrylic finishes showed deterioration in one fourth the time. In sand abrasion, Duofinish 500 proved to have better than a seven to one advantage over ordinary finishes.

This remarkable performance is due to a great extent to the Duofinish 500 two-coat process. (See process diagram in Figure 1.) The first coat, applied over chromated galvanized steel, is an epoxy primer, noted for its superior adhesion to the base metal. This primer forms a pliable film that stretches under impact and absorbs the stresses of forming. This second coat (polyvinylidene fluoride), available in a wide range of colors,

is an organic resin consisting of millions of microscopic particles that melt and fuse into a continuous finish. (This is shown in symbolic form in Figure 3.) *For details and full description of test data, send for the Duofinish 500 Catalog.*

Non-fade panels pay off on long term construction. Many structures, such as power plants (as shown in Figure 2), are under construction for five years or more. Produced with the highest standards of quality control, Inryco wall panels can be added to the structure throughout these extended periods without variations in appearance.

Duofinish™—a finish that combines economy and durability. New improved Inryco Duofinish provides a hard, weather-resistant surface. Like Duofinish 500, this is a two-coat finish with epoxy as the first coat. The second coat, in this case, is a modified silicone polyester with good strength and hardness characteristics.

This weather resistant surface has a color retention life of ten years or more. Duofinish is available in a wide range of standard and selected preformulated colors. *For details, send for the Duofinish Catalog.*

For added design freedom a wide range of panel profiles.

New IW Series for true blendability. Available in six 12" wide profiles that can be used in any combination for countless kinds of textural and shadow effects. (An example is shown in Figure 4.) Unique U-shaped lock system assures weather proof tightness, conceals wall fasteners for a beautiful appearance.

New M Series combines attractiveness with economy. Four styles of wall panels provide interesting variety of surface effects. Broader widths (30" and 36") cover wall

areas faster, reduce erection time.

More series to choose from. The 24" AW and the 12" wide EW, either insulated or uninsulated. And the insulated factory assembled YYW panels. More proof that Inryco wall systems do offer optimum design flexibility.

Inryco responsibility based on complete control. The exclusive ten step strip coil finishing process shown above is typical of Inland-Ryerson's approach to wall systems production. Inland-Ryerson engineers realized that superior adhesion and surface hardness could not be achieved by a single coat of paint, and since no two-coat finishes were available at the time, they developed a unique continuous process painting technique that fulfilled the two-coat requirement with exceptional efficiency.

Besides in-plant painting, Inland-Ryerson assumes total responsibility for quality in all phases of wall system production. This begins with the mining of raw materials through steel production, coil rolling, painting, shipping and handling. It even extends, when desired, to installation. Single source responsibility pays off in maintaining controlled quality, and this assures a consistently reliable product to meet your most demanding specifications.

Inland-Ryerson Construction Products Company. General Offices: Chicago, Illinois. Address inquiries to Dept. F, 4033 West Burnham Street, Milwaukee, Wisconsin 53201.

INLAND RYERSON
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A member of the INLAND steel family



TUFF-LITE® IS A BIG PUT-ON

It's big with people who put exposed aggregate on walls.

It's Tuff-Lite — an epoxy-based wall matrix that won't cop out: it has held larger rocks (and more of them) for a longer time than any other epoxy matrix! And its holding power has been proven in temperature cycles of -40° F. to $+135^{\circ}$ F. for periods of up to 8 years.

Drop us a line for complete details on Tuff-Lite Epoxy-Based Wall Matrix. Or, if you're more concerned about floors than walls, ask us about Fuller's complete line of epoxy floor systems: Tweed-Tex® Epoxy/Ceramic-Granule, Tuff-Lite Epoxy Terrazzo (both conventional and conductive), and Heavy-Duty Epoxy Floor Topping. Refer to Sweet's.



HB FULLER COMPANY

CONSTRUCTION DIVISION

2400 Kasota Avenue, St. Paul, Minnesota 55108 Dept. U-6

For more data, circle 109 on inquiry card

Carpet marches on

No static-shock with Zefstat™ anti-static yarn



Carpet's progress: non-static, non-shock comfort. Made possible with Zefstat anti-static yarn, developed by Dow Badische Company.

Zefstat yarn dissipates static so effectively, it comes with a guarantee for the life of the carpet (or 5 years). It doesn't affect a carpet's aesthetics. It does improve cleanability by holding down electrostatic attraction of dust and dirt.

Quality mills all over the country are now work-

ing with Zefstat. One of them is Collins & Aikman, introducing a luxurious anti-static line, "H.E.F. 500". A rich, dense construction in a high performing yarn developed by Dow Badische called Zefran® CR-4 (67% Zefran acrylic, 29% nylon, 4% Zefstat).

Make the informed choice. Ask for Zefstat in your next carpet. Call or write Dow Badische Company, 350 Fifth Avenue, New York, New York 10001 (212) 244-6000.

Carpet with anti-static Zefstat, new from Collins & Aikman

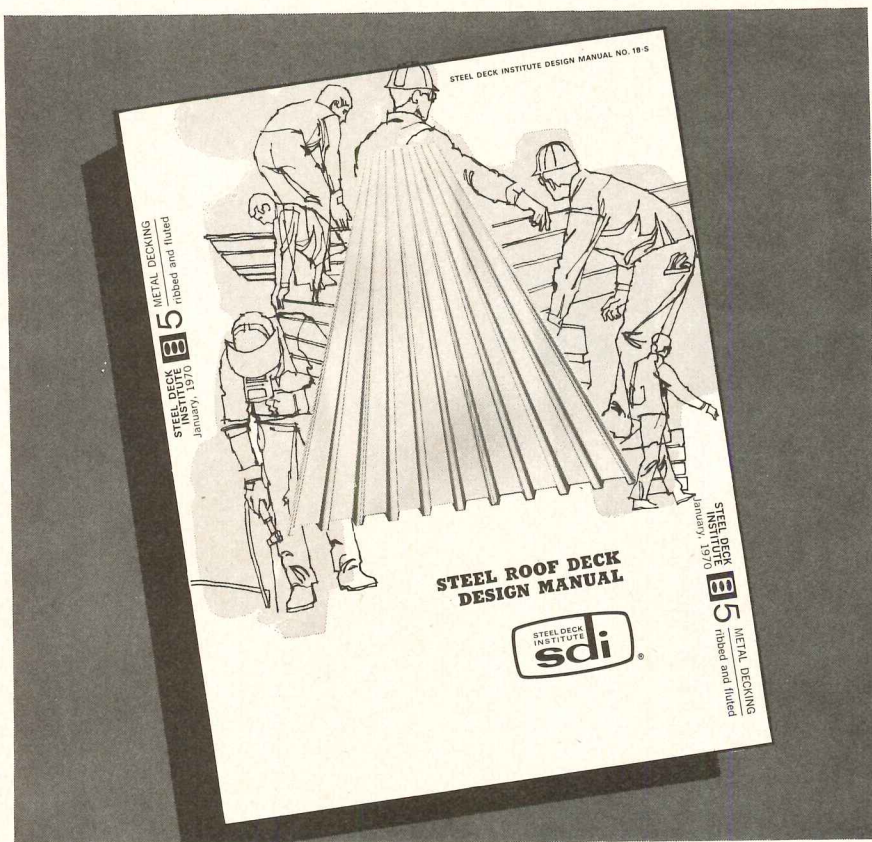
ZEFSTAT™
ZEFSTAT ANTI-STATIC YARN



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For more data, circle 110 on inquiry card

For more information circle selected item numbers on Reader Service Inquiry Card, pages 249-250



1970 DESIGN MANUAL FOR STEEL ROOF DECK...

New 12 page design manual contains standard load tables, complete list of fire ratings... latest revision of the Basic Design Specifications and SDI Code of Recommended Standard Practice... and suggested Architects Specifications.

For the first time, information on Site Storage, Erection and Accessories is included... the 1970 Manual will serve as a reliable reference for your future roof designs.

STEEL DECK INSTITUTE



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Please send me the 1970 Steel Roof Deck Design Manual

NAME _____

TITLE _____

SCHOOL LIGHTING / "Contrast Rendition in School Lighting" is the title of a 104-page report showing results of a survey in which measurements of contrast rendition on desks were compiled in a variety of classroom lighting situations in an attempt to establish guidelines for effective lighting in prospective schools. ■ Educational Facilities Laboratories, New York City.

Circle 400 on inquiry card

INSULATION PANEL / A 4-page catalog describes a rigid urethane foam panel designed for wall, roof and slab insulation. Size listings and specification data are included. ■ Apache Foam Products, Linden, N.J.*

Circle 401 on inquiry card

STEEL STRIP / A 6-page pamphlet gives data on edge width tolerances of a stainless steel strip and shows available thicknesses, finishes and protective coatings. Included is a guide to the selection of alloys. ■ Allegheny Ludlum Steel, Pittsburgh.*

Circle 402 on inquiry card

GREENHOUSES / "Glazed Enclosures and Greenhouses", a 16-page catalog, describes in detail 28 horticultural buildings. Specifications are included. ■ Ickes-Braun Glasshouses, Inc., Deerfield, Ill.*

Circle 403 on inquiry card

HOSPITAL FLOORING / A complete line of health care flooring systems products is described in a 12-page brochure. The line includes carpets, rubber tile, cove base, conductive tile, traffic resistant tile, stair treads and accessories. ■ Burke Rubber Company, San Jose, Calif.*

Circle 404 on inquiry card

OFFICE FURNITURE / A 20-page brochure illustrates a line of double and single pedestal desks, convertible storage units, credenzas and tables. ■ Steelcase Inc., Grand Rapids, Mich.*

Circle 405 on inquiry card

KITCHEN EQUIPMENT / A line of products including humidity chambers, ovens, furnaces, walk-in incubator rooms and walk-in cold rooms is described in a 6-page bulletin. ■ Hotpack Corp., Philadelphia.*

Circle 406 on inquiry card

HOSPITAL COMMUNICATIONS / "How to Design Hospital and Nursing Home Intercommunication Systems" is the title of a 16-page brochure describing in detail the installation of one hospital and one nursing home voice intercommunication system. ■ Altec Lansing, Anaheim, Calif.

Circle 407 on inquiry card

* Additional product information in Sweet's Architectural File

more literature on page 218

For more data, circle 111 on inquiry card

Visual drama with PPG glass



In Westport, Conn.

At the point where the Saugatuck and Aspetuck Rivers and the west branch of the Saugatuck meet, there is a new office building. The Glendinning Companies' complex.

Ralph Glendinning picked the country place because he wanted the informal, bucolic surroundings such a site afforded. And he wanted an informal, gently rustic sort of solution that would fit into the site and carefully preserve the trees. And the water, which is all around.

The architect's solution was a three-story fieldstone and glass building. The glass-walled entrance pavilion and the two major wings are

connected by glass-enclosed walkways. A stream flows under one of the walkways.

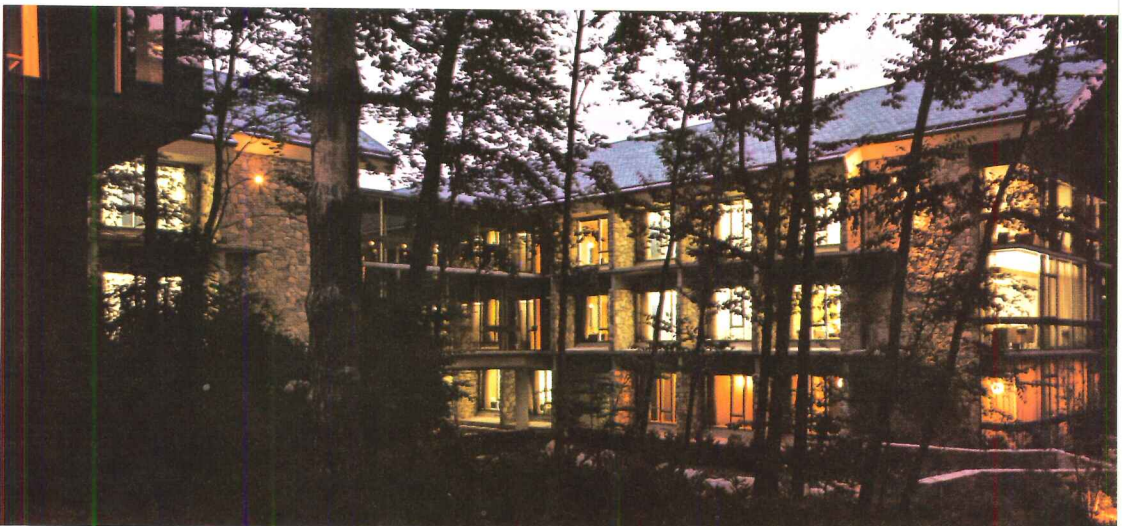
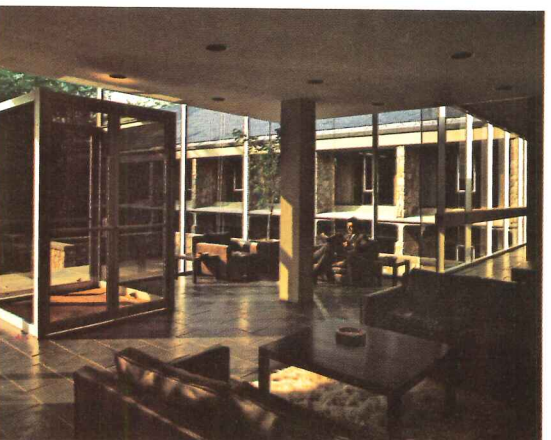
The architect used the fieldstone because he wanted a natural, rustic feeling for the building. And he used PPG SOLARBRONZE® plate glass because he wanted something that would blend harmoniously with the stone. He says, "In this case, it tied in very nicely with the rusty, brownish-hue fieldstone. And, of course, we wound up with the more practical aspects. . . ." The more practical aspect of PPG SOLARBRONZE plate glass is that it provides brightness control for visual comfort. The SOLARBRONZE glass

together with an overhang forms a frame that provides some shading to reduce the sun's heat entering the building in summer.

Another contribution to the architectural unity of the building is the PPG T-WALL® framing system. The T-WALL system presents exceptionally narrow sightlines. In the case of the Glendinning complex, for instance, only 1½" of T-WALL vertical is exposed between the vision areas.

PPG makes a broad line of architectural glasses, and framing systems to go with them. One or more of them might be just what you need. Talk to us.





Glass wall construction gives you openness, reflectivity and color. And the design possibilities are endless. For full details, contact your nearest PPG Architectural Representative, consult Sweet's catalog file, or write PPG INDUSTRIES, One Gateway Center, Pittsburgh, Pa. 15222.

Glendinning Companies, Glendinning Place, Westport, Connecticut 06880.

Architect: Bruce Campbell Graham Associates, New York City

Consulting Electrical and Mechanical Engineers: Fred S. Dubin Associates, New York

Interior Designer: Roth-Robertson Interiors, New York City



PPG is Chemicals, Minerals, Fiber Glass, Paints and Glass. So far.

INDUSTRIES



Have you seen our big electric power line?

Now there are seven Allis-Chalmers Diesel Electric Systems to see for standby or continuous power. Starting with the 35-KW DES-35. And ranging on up to 45, 60, 90, 125, 200, 250-KW models.

All designed for easy paralleling of two or more units for unlimited KW capacity. And offering unmatched dependability as a source of electric power.

Voltage response is three to four times faster than with any others! Quick voltage recovery, high momentary KVA. And voltage regulation accuracy from no load to full load—only plus or minus $\pm 1\%$!

Fast frequency response time with minimum transient dip. In most cases 3 to 5% regulation from no load to full load is obtained with a simple mechanical governor. Steady state regulation of $\pm .25\%$ is standard.

All these systems are powered by high-torque, fuel-saver Allis-Chalmers diesels in a compatible, compact match of engine, generator and controls. With parts and service responsibility from one source. Allis-Chalmers.

And backed by one of the most generous warranties in the industry. Two years or 3,600 hours of operation as standby power—one year or 3,600 hours of operation on continuous duty! Ask your Allis-Chalmers Engine Dealer about it. Refer to Sweet's Architectural File Number 30d/ALL. Or send the coupon.

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on Selection, Planning, Installation of Diesel Electric Systems is yours for the asking. Just tell us where to send it.

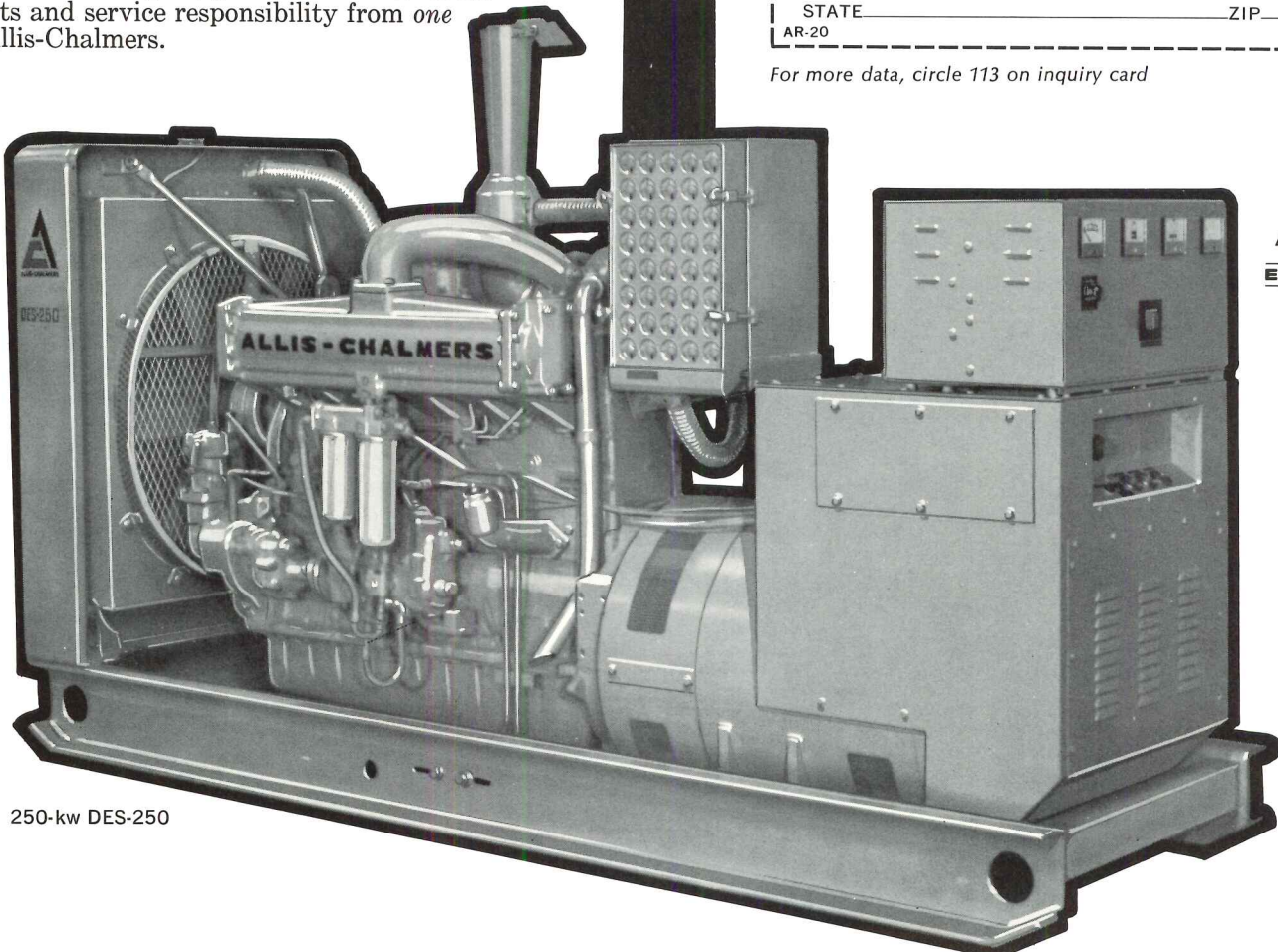
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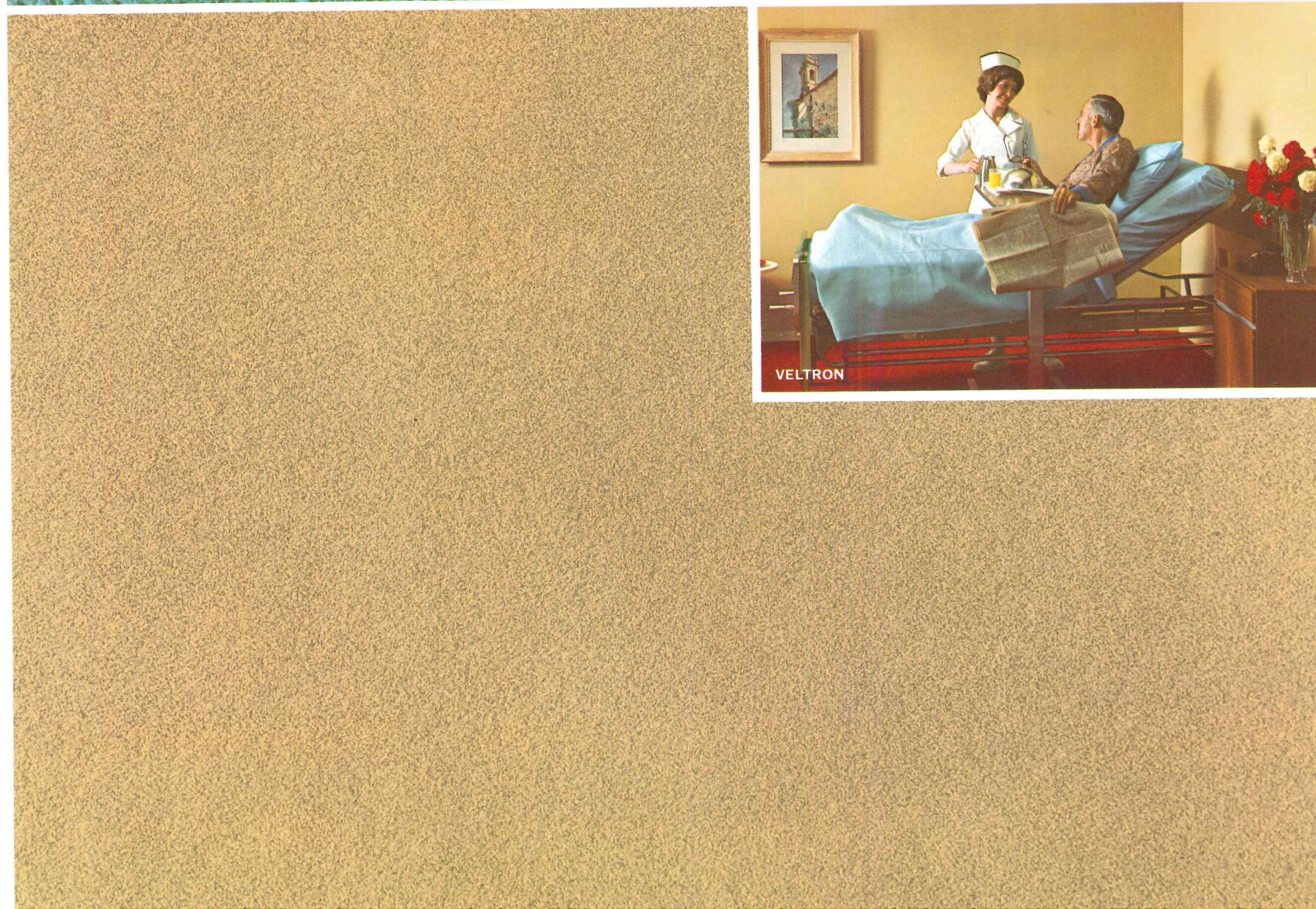
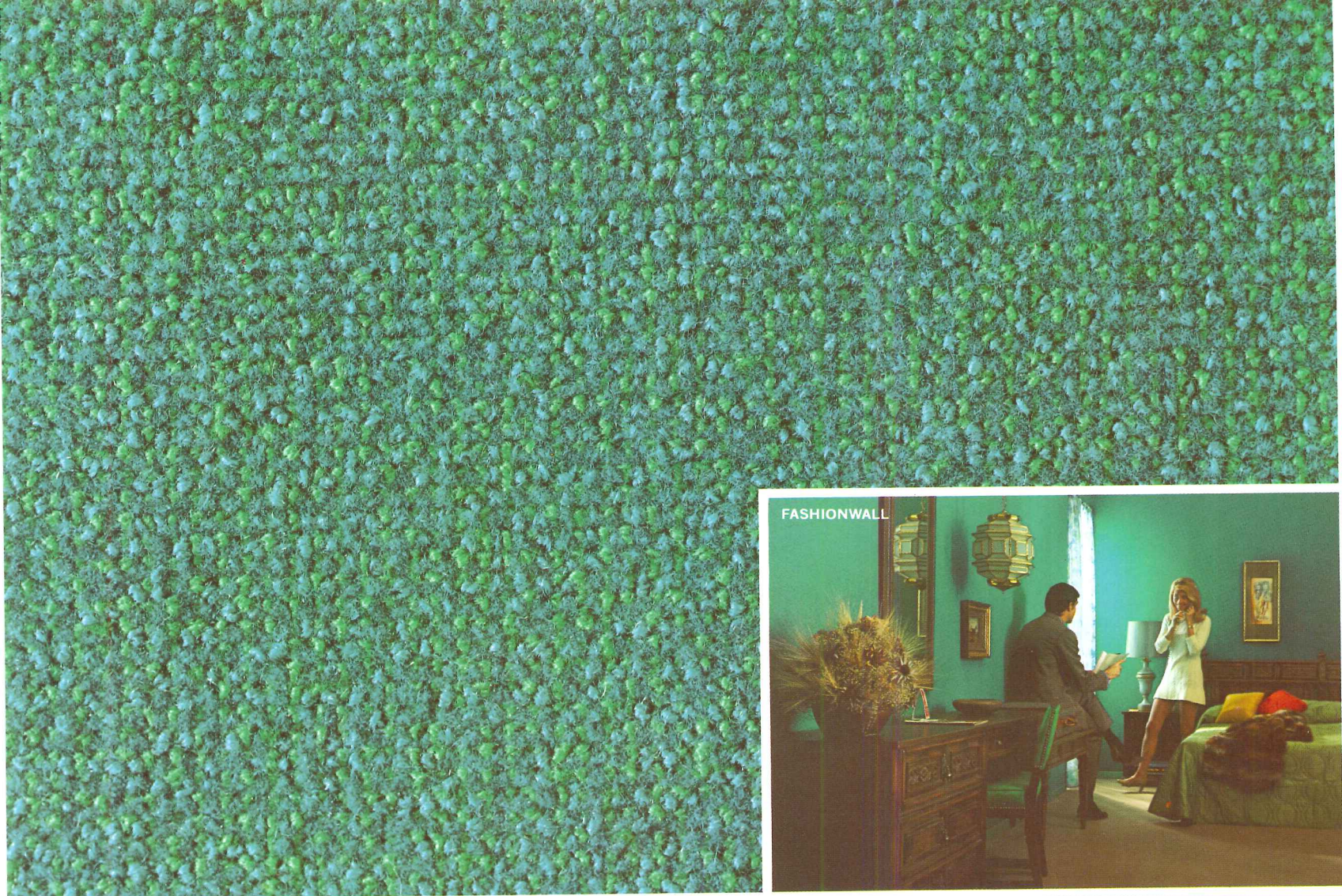
AR-20

For more data, circle 113 on inquiry card



250-kw DES-250





The building sealant that's guaranteed for twenty years.

The only one.

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Building sealants from

DOW CORNING

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Rule: All walls must be vertical.

Why look for trouble? Walls have been straight up and down for years and nobody ever complained.

So why experiment? Why not just stay with the commonplace? For one thing, it's easier. And for another, you'll save yourself the time it takes to read the rest of this ad. Because what we have to say will be of interest only to men of imagination.

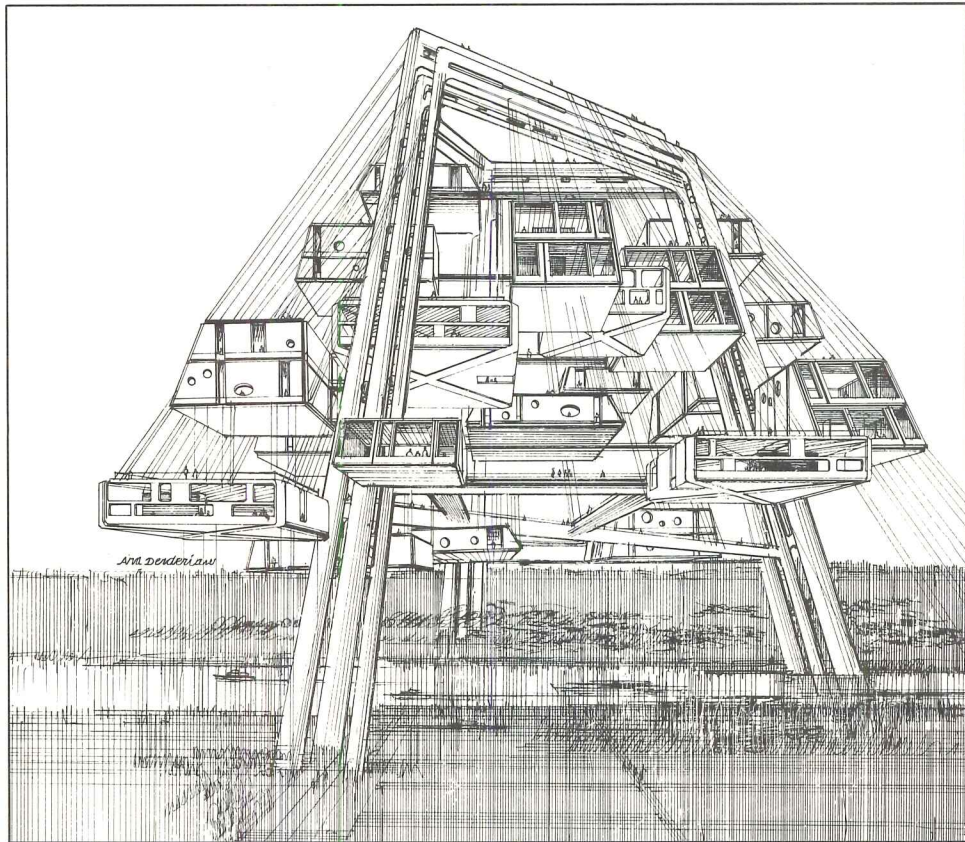
Men like Architect Ara Derderian, who parlayed vertical wall and sloped wall cable-hung units into this visionary exhibition center.

And, to accompany his unconventional sloped windows, we've developed an unconventional method of hanging the only window covering he could use to combine light-and-air control with privacy: blinds.

Looking ahead with Ara Derderian, we've determined that thin wires, threaded through the blinds' tips, would

enable them to parallel the sloped windows, yet still leave them free to tilt, raise and lower.

In this way, we repeal the law of gravity. And indicate to you that our imagination can keep up with yours. If only you'll let it.



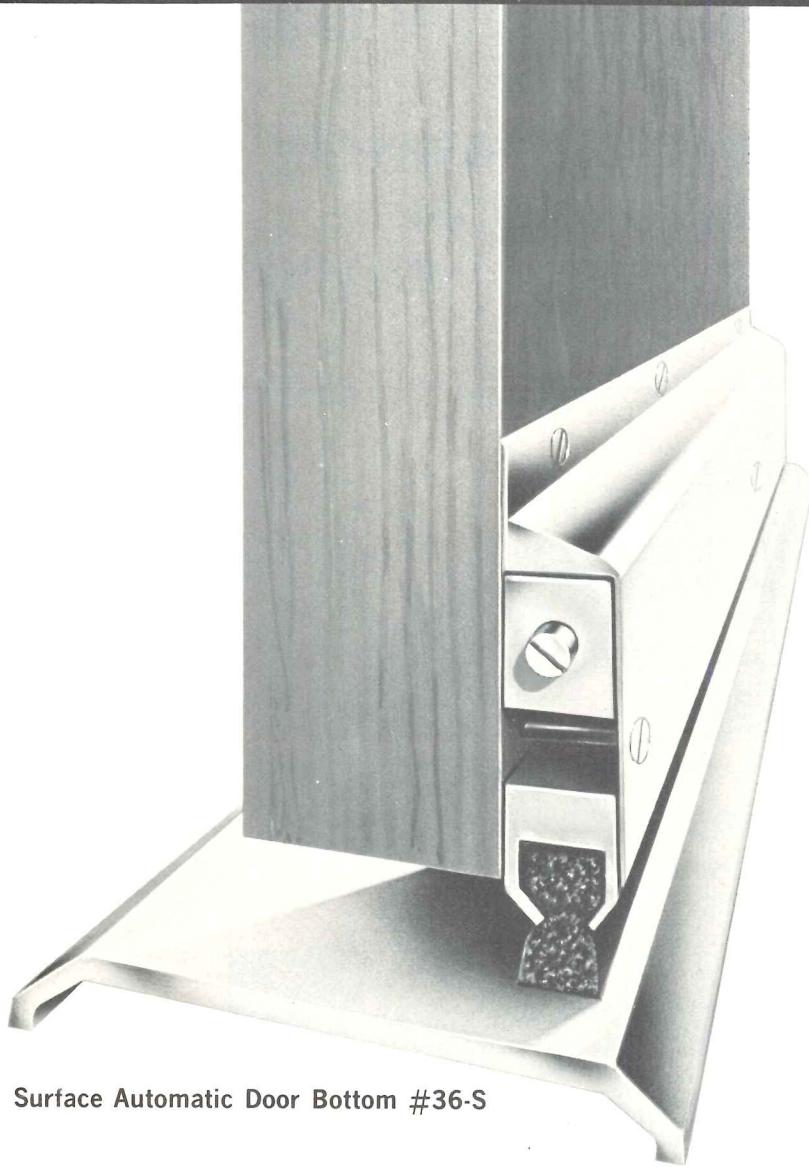
Levolor Blinds. For architects who break the rules.

ARCHITECT ARA DERDERIAN'S VISIONARY EXHIBITION CENTER MAY NEVER BECOME A REALITY. YOUR "VISION" MAY. □ DISCUSS IT WITH US NOW, BEFORE YOU HAVE TO START COMPROMISING. □ LEVOLOR LORENTZEN, INC., 720 MONROE STREET, HOBOKEN, NEW JERSEY 07030

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Weather-Stripping Sound-Proofing Light-Proofing Thresholds



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ZERO #36-S Surface Automatic Door Bottom shown above is only one of 177 full size drawings to be found in our new catalog.

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415 Concord Avenue, Bronx, N. Y. 10455 (212) LUdlow 5-3230

WASHROOM EQUIPMENT / Described in a 24-page catalog is a complete line of washroom equipment including stainless steel framed mirrors and shelves, cabinets and lights, paper towel dispensers and waste receptacles, lather and liquid soap dispensers, and ventilating fans and heaters. Detailed drawings, materials and specifications are included. ■ Philip Carey Corp., Cincinnati.*

Circle 408 on inquiry card

CONTAMINATION CONTROL / A 16-page bulletin gives the elements of efficient clean room design and contamination control with detailed descriptions of air flow control and major clean room components. Complete general specifications are included. ■ Weber Showcase & Fixture Company, Grand Rapids, Mich.*

Circle 409 on inquiry card

CONCRETE ACCESSORIES / A complete set of product catalogs shows drawings and specifications for recommended use. ■ Meadow Steel Products, Birmingham, Ala.

Circle 410 on inquiry card

STUD WELDING / A 20-page brochure gives 50 applications of stud welding in construction. Design information and equipment specifications are included. ■ Nelson Stud Welding Co., Lorain, Ohio.

Circle 411 on inquiry card

METAL WALL SYSTEMS / A 20-page brochure features a line of metal wall systems. Complete specifications, properties and load tables for both single-skin and insulated panel construction are included. ■ The Binkley Company, Warrentown, Mo.*

Circle 412 on inquiry card

FREEZERS / A 36-page catalog illustrates a complete line of mobile refrigerators, freezers, dual temps, heated cabinets and convertible hot/cold cabinets. Shipping weight, electrical and dimensional data are given. ■ Foster Refrigerator Corporation, Hudson, New York.

Circle 413 on inquiry card

STEEL EQUIPMENT / Described in a 64-page catalog is a line of steel equipment and shelving. Each product section shows a variety of complete models with a single ordering number for each unit. ■ Columbia-Hallowell, Hatfield, Pa.

Circle 414 on inquiry card

DOORS / A 16-page guide presents a complete line of rolling doors, grilles and shutters. ■ The Crawford Door Company, Ecorse, Mich.*

Circle 415 on inquiry card

* Additional product information in Sweet's Architectural File

more literature on page 222

For more data, circle 121 on Inquiry Card

Audio-visual aid: glass block by Pittsburgh Corning



Architect: J. James Eugenides, A.I.A.

We put the first audio-visual aid in Lowell, Indiana's Library—glass block by Pittsburgh Corning.

Because silence is golden in a library, the architect wanted a sound-insulating material, yet one which would create a striking visual effect on both the interior and exterior surfaces.

Pittsburgh Corning's Chiaro pattern was a natural.

Each glass block contains a partial vacuum that cuts down the sound. Heating and air-conditioning costs, too.

Chiaro creates provocative light patterns during the day, interesting silhouettes by night. And all the while, they're great vandal resisters.

If you happen to be designing a library—or practically any type of building—look into a volume of beautiful, practical glass block, by Pittsburgh Corning.

PITTSBURGH
PC[®]
CORNING



For the well-



The sidewall prismatic lens.

It's by Holophane. And it's one in a new family of injection-molded acrylic lenses called "Perm-Align."

This model—with 1-inch sidewalls—directs light upward and outward as well as downward. It delivers balanced illumination that eliminates dark areas on ceilings and walls. And, because of its esthetic appeal, the lens is a design element in itself.

Perm-Align lenses—there is a flat, ceiling-flush model, also—are self-framing. In addition to side rails, these lenses have end rails,

too. So they seat themselves firmly on *four* sides: resting lengthwise on the ledge of the troffer and, at the ends, on the troffer's special seating hinges.

They won't sag. Won't leak light. Can't fall or be knocked out.

They're structurally engineered with minute cone prisms for quality lighting. That means greater lamp obscuration. Low brightness. Maximum uniform illumination—and comfort.

Maintenance? As simple as with any lens. There's no metal frame to remove before washing. Nothing that will rust or be scratched.

Relamping? The retractable end supports simply fold back into the troffer and the Perm-Align lens swings down on two hinge pins.

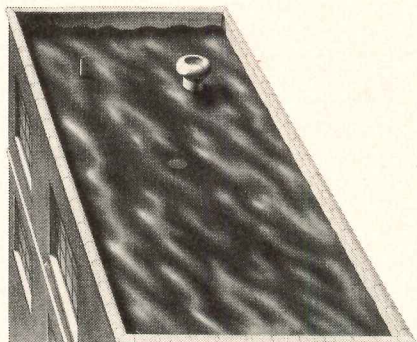
For complete information on Perm-Align lenses write: Dept. A6, Holophane Company, Inc. 1120 Avenue of the Americas, New York, N.Y. 10036

HOLOPHANE

Perm-Align . . . the all-acrylic prismatic lens that seats itself on *four* sides.

For more data, circle 126 on inquiry card

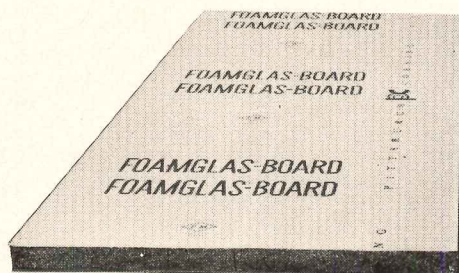
dressed ceiling

continued from page 218D

DON'T LET THE INSULATION MAKE WAVES ON YOUR ROOF. [®] SPECIFY FOAMGLAS

Most insulations expand and contract with temperature changes and humidity, so they'll buckle or split your roof. Not FOAMGLAS. It's dimensionally stable—expansion and contraction are negligible. And FOAMGLAS is waterproof and has high compressive strength. It's the only guaranteed insulation.

For more information and a free sample, contact Pittsburgh Corning Corporation, Dept. AR-60, One Gateway Center, Pittsburgh, Pa. 15222.



For more data, circle 124 on Inquiry Card

PITTSBURGH
pc
CORNING

ROOFTOP PARKING / "Rooftop Parking for Low-Rise Buildings" is a 4-page pamphlet describing various concrete roof framing systems for one-story buildings. Featured is the pan joist and beam method, for which technical design information is included. Details of a two-lane access ramp are included. ■ Portland Cement Association, Skokie, Ill.*

Circle 416 on inquiry card

AIRPORT PASSENGER VEHICLE / A vehicle designed to transport airline passengers between terminal areas and aircraft is described in a 16-page brochure. Detailed information including dimensions, weights, and performance characteristics are included. ■ The Budd Company, Philadelphia.

Circle 417 on inquiry card

WALLBOARD / A gypsum wallboard systems manual includes information on new Federal performance criteria for three grades of acoustic environment. ■ The Celotex Corporation, Tampa, Fla.*

Circle 418 on inquiry card

HARDWARE / A 32-page hardware products catalog contains complete descriptions of shelf lines of locks and hardware. Product application guides are included. ■ Eaton Yale & Towne Inc., Rye, New York.*

Circle 419 on inquiry card

FURNITURE / A line of office furniture, Image 2000, is presented in an 8-page brochure. The line includes executive desks and chairs, credenzas, side chairs, tables and storage units. ■ Design Products, Inc., Boulder, Colo.

Circle 420 on inquiry card

SMOKE DAMPER / A 2-page bulletin describes a combination smoke and fire damper operated via electro-thermal actuation. The damper, the brochure reports, meets all fire damper requirements and provides a tight smoke seal. Specifications are included. ■ Air Balance Inc., Chicago.

Circle 421 on inquiry card

OUTDOOR LIGHTING / Enclosed luminaires for lighting alleys, suburban streets, industrial parks, city parks and open parking garages are described in a 4-page bulletin. The applications and design features of one kind of luminaire are included. ■ Westinghouse Electric Corp., Pittsburgh.*

Circle 422 on inquiry card

STEEL / A 6-page stainless steel sheet specification guide gives information on size, flatness and gage tolerances, and available finishes. ■ Allegheny Ludlum Steel, Pittsburgh.*

Circle 423 on inquiry card

* Additional product information in Sweet's Architectural File

more literature on page 230A

*Not just
another
pretty face.*

Nevamar has forced us all to take another look. At solid color plastic laminates.

Let's face it, they've always been beautiful . . . durable, economical, all the rest of it, too. And now they're designed to hide the scratches . . . so you aren't left with a scar, or a blemish.

Intaglio finish, originated by Nevamar, gives beauty a buffer zone. The dimensional surface works as a cover-up for scratches and stains . . . and adds new life to colors, too. Send for samples and see for yourself . . . the many creative applications.

Intaglio . . . another example of Nevamar's leadership in dimensional finish laminates.

Nevamar: not just another pretty face . . . but a real beauty through and through.



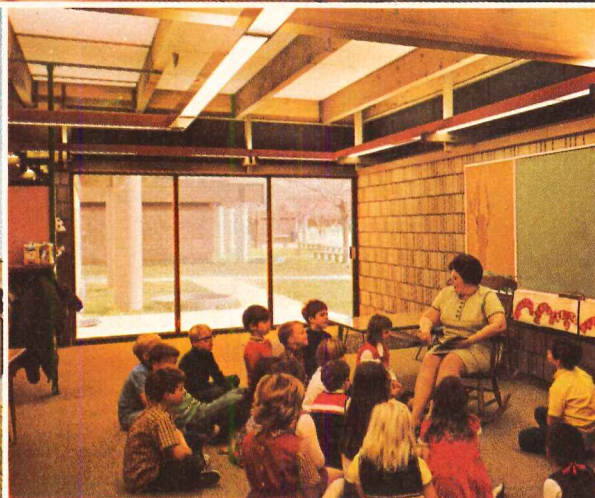
NEVAMAR
newest look in Laminates

Enjay Fibers And Laminates Company
Odenton, Maryland 21113
A Division of Enjay Chemical Company

INTAGLIO

Dimensional finish plastic laminate

For more data, circle 125 on inquiry card



Architects: Frederick Confer & Associates, Concord, Calif.

Breakage resistance and safety

PLEXI

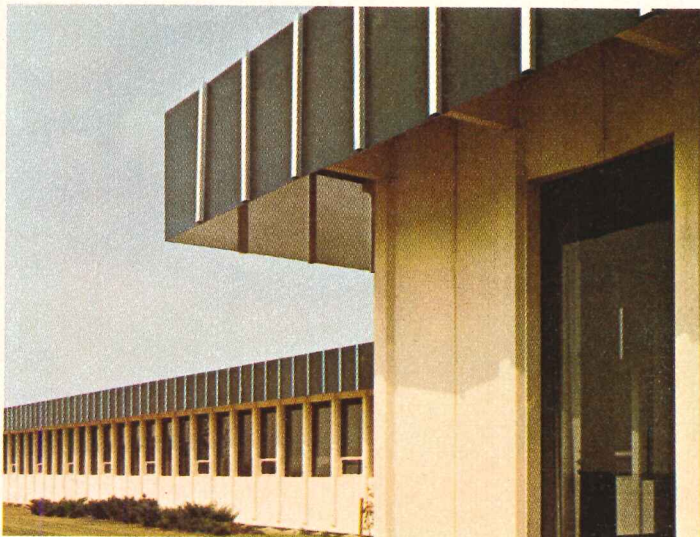
Castle Rock School, Walnut Creek, Calif. (left). Schools, plants, office buildings, and commercial establishments all across the country are putting Plexiglas acrylic sheet to excellent use as safety window glazing. Shatter-resistant Plexiglas sheet drastically reduces breakage and the costs of replacement. Additional advantages of Plexiglas in window glazing are the control of solar heat and glare through the use of gray and bronze tints in the Solar Control Series.

Hilton Inn, Northampton, Mass. (upper right). As no other material can, Plexiglas acrylic plastic captures and controls daylight. Because of its light weight and strength, Plexiglas is a practical and graceful material to use in large dome enclosures. Heat and glare are controlled in such structures through the specification of one of the transparent gray or bronze colors in the Plexiglas Solar Control Series.

Cumberland School, Camp Hill, Pa. (lower right). Effective solar heat and glare control and a distinctive appearance result when Plexiglas sheet is used as sunscreens. Pleasant atmospheres conducive to work, play, or learning are created because Plexiglas sunscreens reduce objectionable glare. Balanced combinations of light transmittance, glare control and solar heat reduction can be achieved by choosing from a range of gray and bronze tints in the Solar Control Series. The light weight of Plexiglas sheet in combination with a wide range of available thicknesses makes possible window and sunscreen clear areas up to 10 feet without intermediate support.



Control of solar heat



Architects and Engineers: Bender Burrell Associates, Camp Hill, Pa.

Daylight without glare

GLAS®



In dome enclosures, in sunscreens, and in windows, Plexiglas acrylic plastic gives you a combination of benefits that can't be equaled by any other type of transparent material—toughness, safety, glare and solar heat control, formability and rigidity that make possible large daylight openings that resist wind and snow load. More than a quarter century of successful outdoor use has proved the ability of Plexiglas to retain its clarity, color stability and strength in all environmental conditions.

Investigate in detail the advantages of using Plexiglas sheet in dome enclosures, sunscreens, and window glazing. Use the coupon to request the information you need.

**Rohm and Haas Company, Plastics Department
Independence Mall West, Philadelphia, Pa. 19105
Attn: Mr. R. R. Rorke**

I am interested in learning more about Plexiglas® acrylic plastic for dome-enclosure, sunscreen, and window-glazing applications. Please send material checked.

- Solar Control Series Brochure
- Solar Control Series Sample Chips
- Local Sources of Supply
- Have local Rohm and Haas Building Products Specialist telephone for appointment.
- Window Glazing Brochure

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For information on bare USS COR-TEN Steel, the original weathering steel, contact a USS Construction Marketing Representative through the nearest USS sales office, check your Sweet's Architectural File, or write to United States Steel, Box 86, Pittsburgh, Pa. 15320. USS and COR-TEN are registered trademarks.

For more data, circle 62 on inquiry card

For more data, circle 127 on inquiry card

**As of May 1, 1970
Celanese no longer has
just a contract division.**

As of May 1, 1970

Celanese has Cela-System

Cela-System...A Total Service Program Incorporating Products and Services for the Special Needs of the Contract Buyer

Celanese as one of the world's largest fiber producers has always been involved with contract business. The range and versatility of our fibers make them ideal for the creation of durable and beautiful floor coverings, curtains and draperies, and domestics. Furthermore, our testing program (which tests fibers in finished fabrics and/or the end-use product) supports performance standards vital to contract specifications.

And now, to meet the growing need for an organized program specifically created to help all those involved with designing, specifying or purchasing products for contract use, Celanese introduces CELA-SYSTEM.

CELA-SYSTEM is a completely new service concept of Celanese.

CELA-SYSTEM consolidates interior furnishings products and services for the contract market.

CELA-SYSTEM is staffed by people experienced in solving the problems and complexities of contract buying.

CELA-SYSTEM provides information relating products to job specification.

CELA-SYSTEM is backed by the Celanese Testing Program—the most respected testing program in the fibers industry.

CELA-SYSTEM encompasses a range of products including the following:

Floor coverings: Broadloom and area rugs of Fortrel polyester and of Celanese Nylon.

Sleep products: Pillows filled with exclusive Fortrel 7 continuous filament polyester. Mattress pads filled with Fortrel 7 or with Celacloud Acetate. Sheets and pillow cases of 50% Fortrel/50% cotton blends. Bedspreads of Fortrel polyester and of Celanese Acetate.

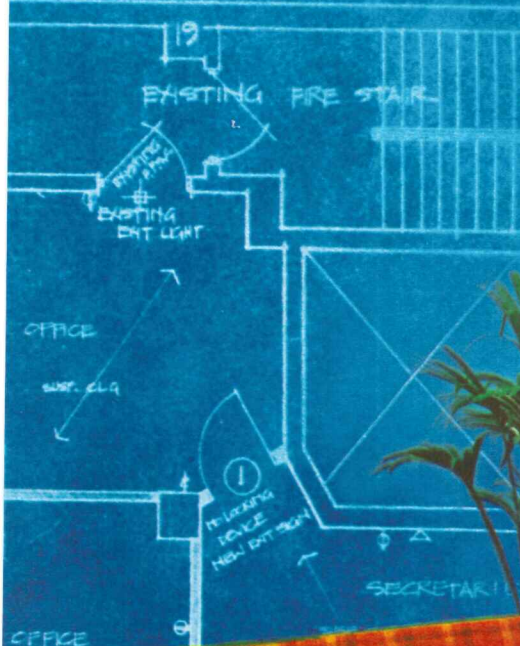
Window furnishings: Curtains in Fortrel polyester. Draperies in Fortrel/cotton blends (many featuring permanent press and stain-resistant finishes) and draperies with Celanese Acetate.

Furniture coverings: Upholstery fabrics of Fortrel blends and Celanese Acetate blends.

Multi-purpose fabrics: Permanent press fabrics of 50% Fortrel/50% cotton, specially suited for many contract uses: draperies, upholstery, window shades, bedspreads, wall coverings.

CELA-SYSTEM services include helping the buyer locate the right product to meet his needs and specifications. **CELA-SYSTEM** can help color-coordinate different products from different manufacturers. And **CELA-SYSTEM** can provide this service quickly and efficiently.





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 TO BE INDEPENDENTLY MAT
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 26-267, D.C.
 TO BE TO COMPLY WITH SECT.
 FEDERAL LAW 486/65.
 TO BE FLOOR AND CLG SLABS
 TO BE CONFORM
 2.4.103 OF BDC. CODE.



23

Make CELA-SYSTEM your information
center for products and services
relating to the contract field.



For further information, write:
Celanese Fibers Marketing Company
522 Fifth Avenue, New York, N.Y. 10036
Attn: CELA-SYSTEM

continued from page 222

ELECTRIC-HEAT CONTROLS / A 16-page catalog describes a complete line of electric-heat controls for commercial, industrial and institutional buildings. The line includes one-room controllers at 8.3 amperes up to 570-ampere current valves. Sections include descriptions of step/proportional controllers and extended life contactors. ■ Honeywell's Commercial Division, Minneapolis.

Circle 424 on inquiry card

FLOORING / A floor product line is described in detail in an 8-page catalog. Steel panels, a *Snap-lok* grid system and pedestals, and a stringer-free system are presented. Featured is a vinyl no-glue edging which interlocks with the panels and is mechanically gripped in place. ■ Waco Floor, Baltimore.

Circle 425 on inquiry card

GYPSUM WALLBOARD / An 8-page catalog describes a line of gypsum products. Regular, fire-resistant, foil-backed, predecorated and vinyl-faced gypsum wallboards are shown in addition to backer board products including water-resistant tile base, gypsum sound deadening board, core board and gypsum studs. Presented is a complete line of accessories including metal studs, track, corner bead, and vinyl joint compounds. ■ The Celotex Corporation, Tampa, Fla.*

Circle 426 on inquiry card

MASONRY REINFORCING / A complete line of masonry wall reinforcing is described in a 12-page guide. Correct reinforcing methods are shown for all types of masonry wall. Complete information on sizes, finishes and detailed specifications are included. ■ AA Wire Products Company, Chicago.*

Circle 427 on inquiry card

FIREPROOFING / Complete information on a sprayed fireproofing material for one-application fireproofing, soundproofing and thermal insulation is given in an 8-page catalog. The material can be applied to steel beams, columns, floor and roof assemblies. Charts and specifications on fire retardant ratings, fire hazard classifications, light reflectance and sound absorption are included. ■ Philip Carey Corp., Linden, N.J.*

Circle 428 on inquiry card

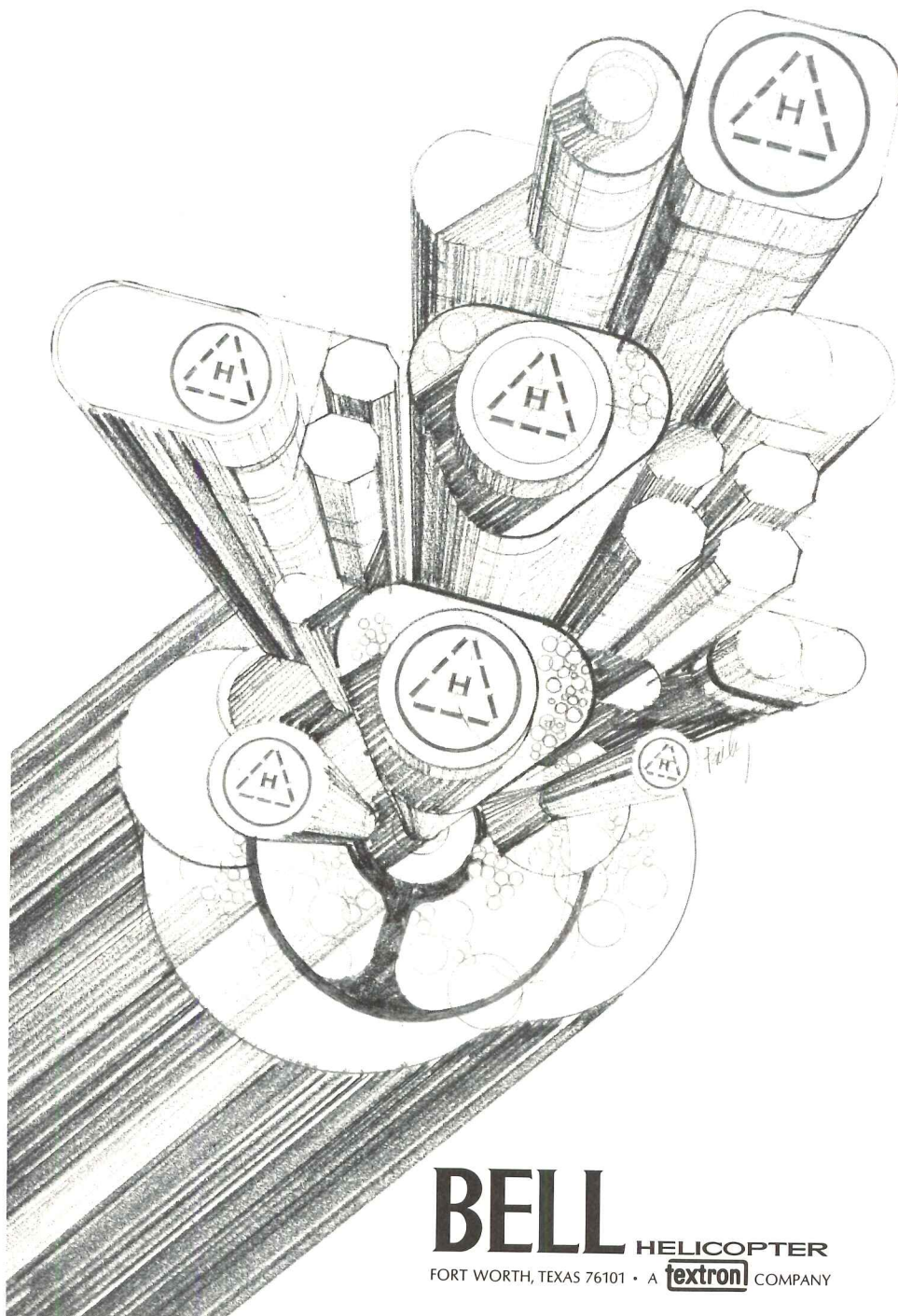
MARINA DESIGN / "Marina/Design and Construction," a 28-page manual, shows the uses of creosote pressure-treated timber and wood for marina design and construction, piling, bulkheads, piers and catwalks, and on-shore structures. Diagrams of various design ideas are included. ■ U.S. Steel, Pittsburgh.*

Circle 429 on inquiry card

* Additional product information in Sweet's Architectural File

more literature on page 234

**If you're planning
a new building
or industrial park
or maybe a new city,
remember
to include a heliport.**



BELL HELICOPTER
FORT WORTH, TEXAS 76101 • A **Textron** COMPANY

For more data, circle 143 on Inquiry Card



Every night at sundown something happens to good old American ingenuity.

We Americans have the best highways in the world but only during the daytime. At night headlight glare virtually puts us back in the dark ages. There was never any adequate answer before but now we've invented one: Glare Barrier.

Glare Barrier is a new kind of anti-glare screen for divided highways and it costs less to install and less to maintain than anything else. But it's not the only thing we make for the

building and highway construction industries. We make more than 120 other products.

We make Bridge Form, for example. It's used in the construction of road surfaces on bridges. Besides being a big money-saver—compared to wood forms—it's faster and safer to work with.

And, for another example, we make Steelcrete—a fiendish tangle of expanded metal and concrete reinforcing bars. It's

also another money-saving product. It stops bank vault robbers from robbing bank vaults.

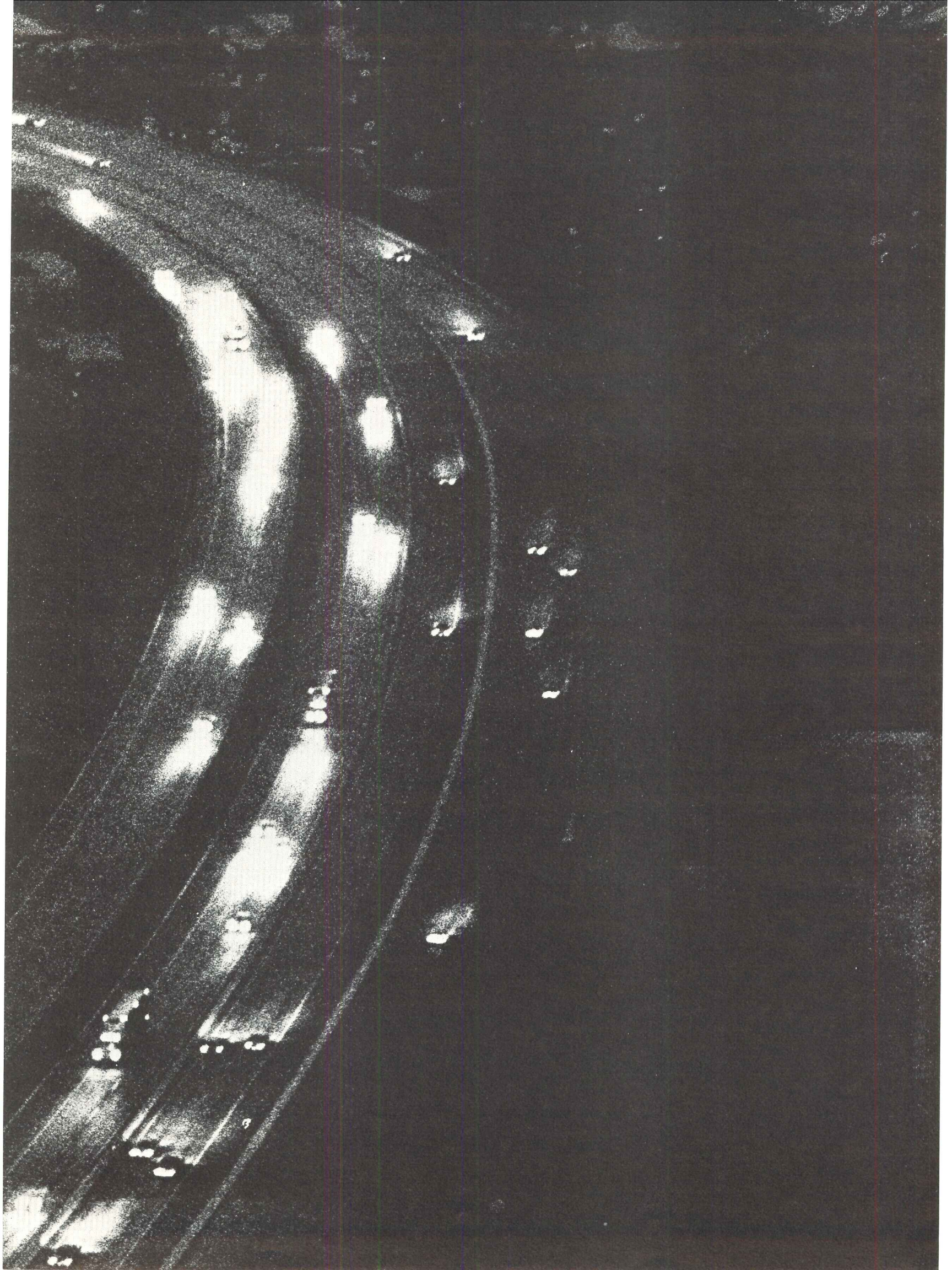
But just saying we're big isn't enough. Here are some facts: We have 53 sales offices, warehouses and fabricating plants covering every major marketing area in the country. Plus a field force of nearly 300 people.

And our research staff is busy working on 28 new products. So take advantage of our size. And our ingenuity. Specify Wheeling.

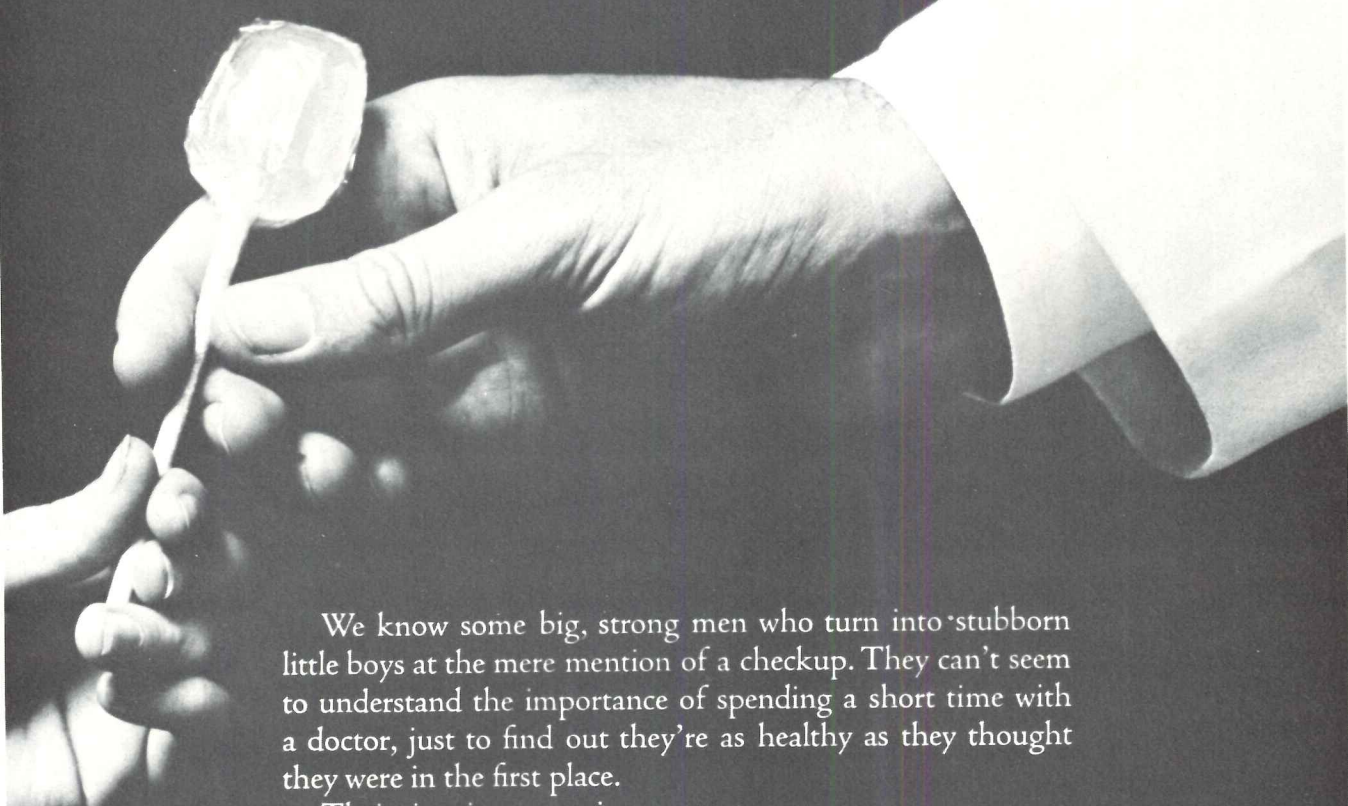

Wheeling Corrugating Company
A DIVISION OF WHEELING-PITTSBURGH STEEL CORPORATION

96% of what we make builds highways, buildings and reputations.

For more data, circle 144 on inquiry card



Did your Mother take you for your last checkup?



We know some big, strong men who turn into stubborn little boys at the mere mention of a checkup. They can't seem to understand the importance of spending a short time with a doctor, just to find out they're as healthy as they thought they were in the first place.

Their time is too precious to waste.

Hah.


If you stopped going for checkups when you stopped getting lollipops for your trouble, we think you're old enough to learn the truth.

What you may consider a bother is one of your best defenses against cancer. Checkups help your doctor keep tabs on you. So if anything looks even the least little bit unusual to him, he can do something about it. Fast.

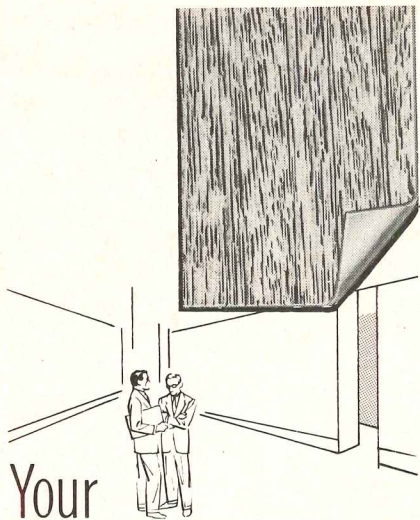
200,000 people were saved last year. Annual checkups can save thousands more.

What are you waiting for?

Are you going to go like a big boy, or do we have to call your mother?

Help yourself with a checkup. And others with a check. American Cancer Society 

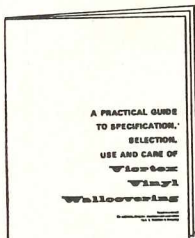
continued from page 230A



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The VICRTEX representative who helps you when you're working with vinyl wallcovering is a professional perfectionist. He'll follow through on the job after you write specs—you'll find him on the installation site checking wall preparation, hanging and inspection. Your VICRTEX Man is knowledgeable about every aspect of vinyl wallcovering—he can show you a whole world of color availabilities, three-dimensional textures and design-conscious installations similar to the one you're working on. Depend on him to be alertly on the job before, during and after specifying time. It's easy to work with the best vinyl wallcovering—VICRTEX. You get top quality, easy application and maintenance . . . and conscientious service from your personal VICRTEX Man. Find out for yourself why many leading architects and designers believe VICRTEX is an unbeatable combination of product and people. At your service from Hawaii to the Caribbean.

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R. B. ADLER, INC.: Santurce, Puerto Rico.

For more data, circle 130 on inquiry card

TRAINING ROOM DESIGN / "How to Set Up an Effective Training Room" is a 16-page guide to planning a training room, covering points such as space estimation and the creation of a preliminary floor plan. A line of training room furnishings is described. ■ Brunswick Contract Furniture, Kalamazoo, Mich.*

Circle 430 on inquiry card

COMPUTER GRAPHICS / A 29-page booklet describes the function, applications and components of an interactive computer graphics system for architects. AIDS (Architectural Interactive Design Systems) integrates a range of computer programs. Fourteen programs are described and illustrated. ■ Design Systems, Inc., Boston.

Circle 431 on inquiry card

FREEZER DOORS / A 6-page brochure describes a line of lightweight cooler and freezer doors for food service applications. ■ Jamison Door Company, Hagerstown, Md.*

Circle 432 on inquiry card

AIR CURTAIN / The operation of an air curtain and the components of one air curtain system are described in a 5-page brochure. The brochure reports the ability of this air curtain system to change automatically the direction and velocity of air flow to compensate for changing velocity of outside winds at entranceways. Dimensions and applications are included. ■ The Stanley Works, New Britain, Conn.*

Circle 433 on inquiry card

EXPANDED METAL / A line of expanded metal products and gratings is described in a 16-page brochure. Included is a classification of products by their various structural, decorative and ornamental uses, a listing of finishing techniques employed, and an identification list of metals used in composition. A chart of shearing tolerances, and sizes, dimensions and weights for gratings, standard expanded metal, flattened expanded metals and square gratings for telemetry applications are included. ■ Keene Corporation, Parkersburg, W. Va.*

Circle 434 on inquiry card

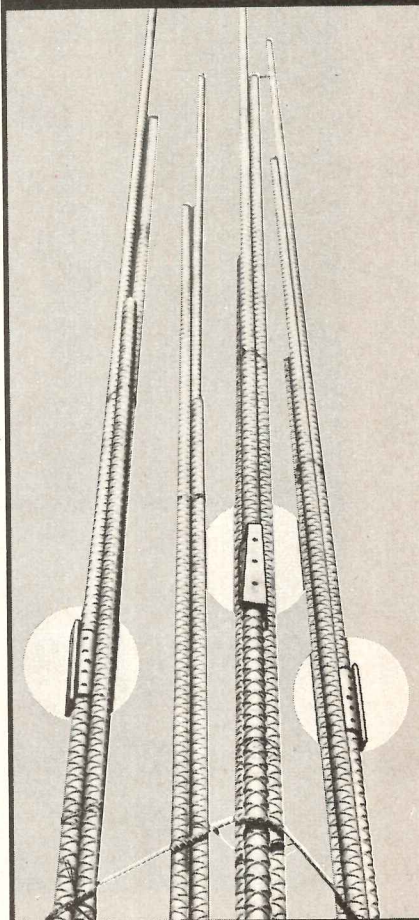
COMPUTER ROOMS / A 4-page bulletin describes in detail the components of computer rooms including raised flooring systems, movable walls, ceilings and air conditioning systems. ■ Westinghouse Electric Corporation, Grand Rapids, Michigan.*

Circle 435 on inquiry card

COLOR SLIDES of both black & white and 4-color photographs shown in the special report on Expo '70 may be ordered from The Architectural Record Slide Library, 330 West 42nd Street, New York, N.Y. 10036. Cost is \$5.00 per slide.

* Additional product information in Sweet's Architectural File

G-LOC SPICES USED WITH BUNDLED RE-BARS



The GATEWAY System of splicing two reinforcing bars with G-LOC's has become standard practice with Engineers and Designers throughout the United States and Canada.

GATEWAY is now taking advantage of the provisions of the ACI Code for designing TENSION in columns by using G-LOC Splices with Bundled Bars.

G-LOC Splices guarantee concentric axial alignment of each bar within a bundle, and holds the bars free-standing to facilitate in-place assembly of the reinforcement cage.

Wiss, Janney, Elstner and Associates have conducted tests which confirm the ACI recommendations for both tension and compression, and these test reports are available from Gateway.

Write for our NEW HANDBOOK No. 3 containing information for the designer, detailer, re-bar fabricator, contractor and steel setter.

GATEWAY BUILDING PRODUCTS
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the system



so easy to handle, so quick to erect... "the building was framed-in four times faster"

It happened at Rossmoor Leisure World in Laguna Hills, California. The project; a group of luxury condominiums, each building containing 24 apartments. Job Superintendent, Roy Bishop, knew the TRUS JOIST system would speed construction but he didn't know how much. So he decided to find out. The first three story building went up with regular frame construction. The second identical building used the TRUS JOIST roof and floor structural system. "I kept a careful check," said Bishop, "and the TRUS JOIST building went up four times faster. Since then we have constructed several more and the average time for framing-in a building, including all walls, TRUS JOISTS and sheathing, is ten days."

Ten days.

With interim financing and labor costs what they are today, you save big dollars whenever you save time. But that's just one TRUS JOIST feature. Nailable wood chords for easy fastening of low cost roof decking and ceiling materials is another.

Open webs allow fast installation of ductwork, wiring and plumbing, and the light weight means less dead load, less costly footings, foundations and bearing walls. TRUS JOISTS are quality engineered and manufactured in almost any profile and available in spans to 150 feet. They've been proven in thousands of apartments, schools, office buildings, shopping centers and commercial structures of every type from coast to coast.

More information? A free cost estimate or complete design manual?

Just drop us a card.

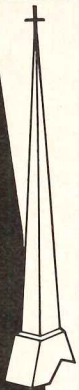
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Plants in: ■ ARIZONA ■ CALIFORNIA ■ IDAHO ■ IOWA ■ OHIO ■ OREGON ■ CANADA (Alberta)



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In unit - molded fiberglass for extra strength and durability. High gloss finish. Graceful designs . . . built to inspire, impress, endure.



From Wiedemann, the originator of the fiberglass baptistry . . . and leading Baptistry Specialist . . . comes quality that is unsurpassed in the church building and remodeling field.

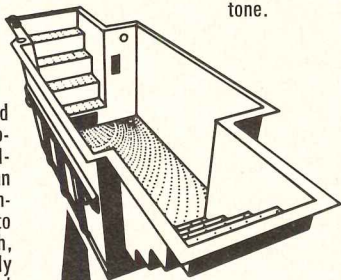


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Aluminum church lighting in five styles, to compliment any style of architecture. Available in natural aluminum or anodized in gold, brass or copper tone.

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Over 150 shapes and sizes of fiberglass baptistries available. FIBERSTRESSING is an exclusive process of interlaminated bridging to give superior strength, lasting beauty. Fully automatic heaters and many optional features available.



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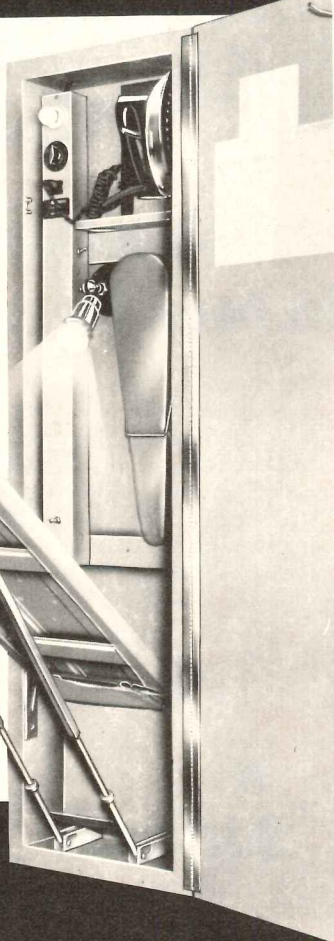
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For more data, circle 134 on inquiry card

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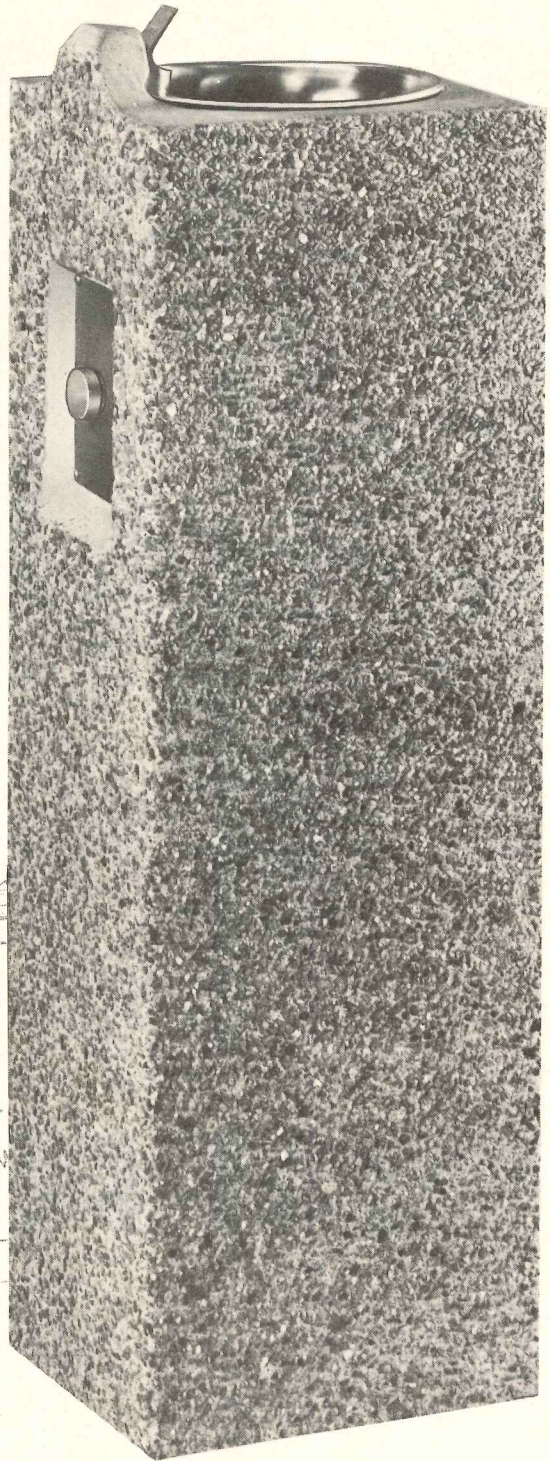
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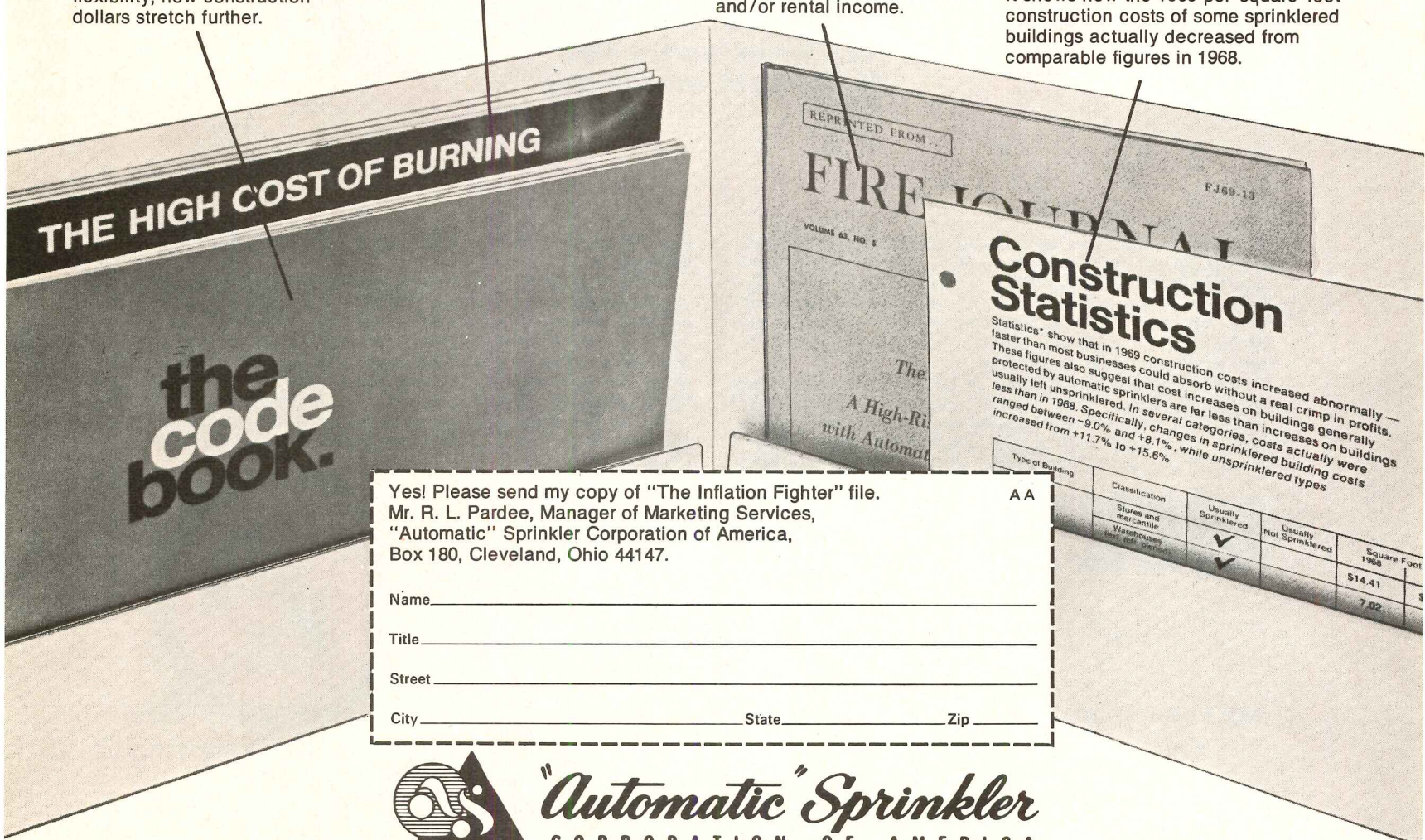
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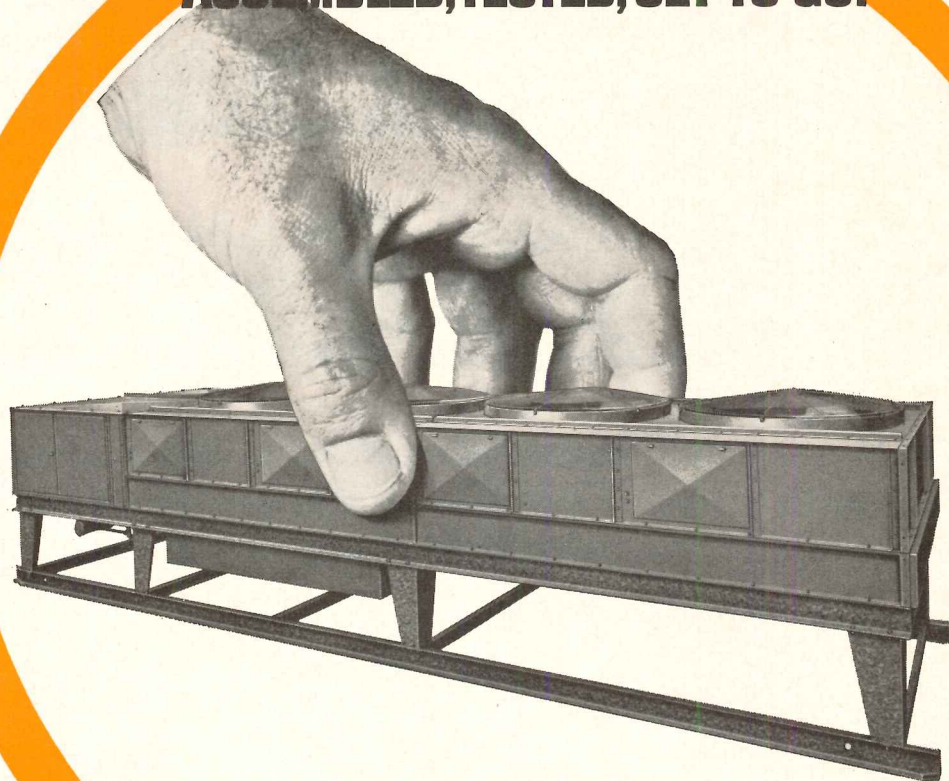


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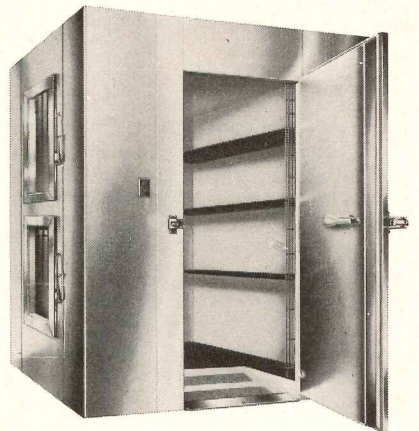


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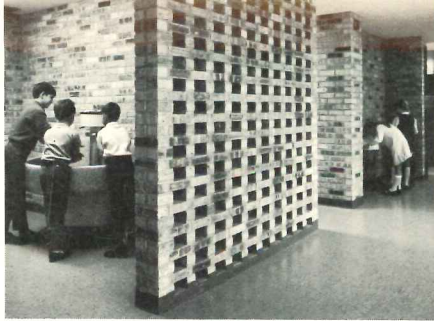
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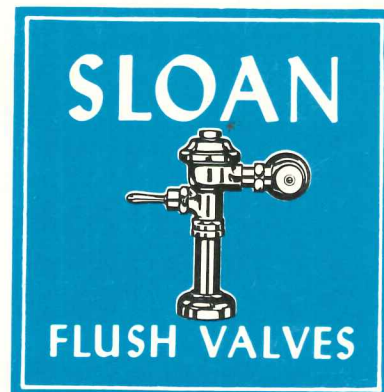


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