

# FORUM

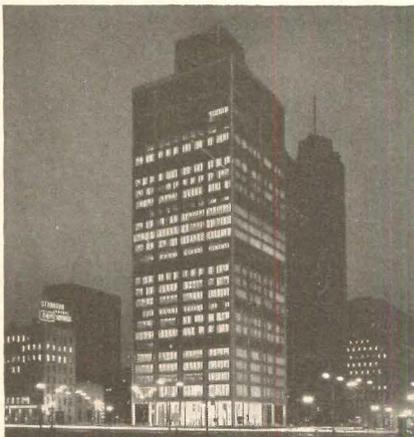
ARCHITECTURAL FORUM THE MAGAZINE OF BUILDING OCTOBER 1963





Michigan Consolidated Gas Company Building, Detroit  
Associate Architects and Engineers:  
Minoru Yamasaki, Birmingham, Michigan  
Smith, Hinchman & Grylls, Detroit  
Interior Designers: W. B. Ford Design Associates, Inc., Detroit

## Of all the hundreds of floors made today, why was Armstrong Rubber Tile picked for the Michigan Consolidated Gas Company Building?



The architects and designers have provided the interiors of this building with structural features and architectural details to surprise and delight the eye. They have given them an atmosphere of quiet, comfort, and tranquility. These are interiors designed to please people.

Armstrong Rubber Tile fits into this design scheme with unusual appropriateness. It, too, pleases the eye. It has a look of richness without being gaudy. Its lustrous satin finish diffuses light softly without glare.

Rubber Tile is quiet, too. It's noted for the way it cushions the sound of footsteps. And it's comfortable to

walk on because it is especially resilient.

Along with these characteristics which suit this particular building so well, Armstrong Rubber Tile offers a number of other advantages you may find worth knowing about.

### DECORATIVE ADVANTAGES

**Three styles.** A rich marbled design (shown in the color picture), a terrazzo-like design called Imperial®, and plain black, all in 9" x 9" and 12" x 12" sizes. The surface on all designs is satin smooth.

**Many colors.** Over twenty. From restrained to brilliant.

### PRACTICAL ADVANTAGES

**Durable.** 1/8" thick vulcanized rubber. Excellent resistance to abrasion. Resistant to indentation from heavy furniture: with properly designed furniture rests, sustains loads up to 200 lbs. per square inch. Design runs through the thickness of the tile, ensuring long pattern life.

**Dimensionally stable.** Seams stay tight, won't peak. Guaranteed to equal or exceed requirements of Federal Spec. ZZ-T-301a.

**Easy to maintain.** Sweeping and mopping keep Rubber Tile clean of ordinary dirt. Usual commercial maintenance

keeps it fresh looking. Its resistance to grease and alkalis is excellent.

**Can be installed anywhere.** Above, on, or below grade—on subfloors in direct contact with the ground (except where excessive alkali or hydrostatic pressure makes the use of any resilient floor impractical).

**Moderate initial cost.** 60¢ to 70¢ per square foot installed. Due to durability and easy maintenance, long-range cost is low.

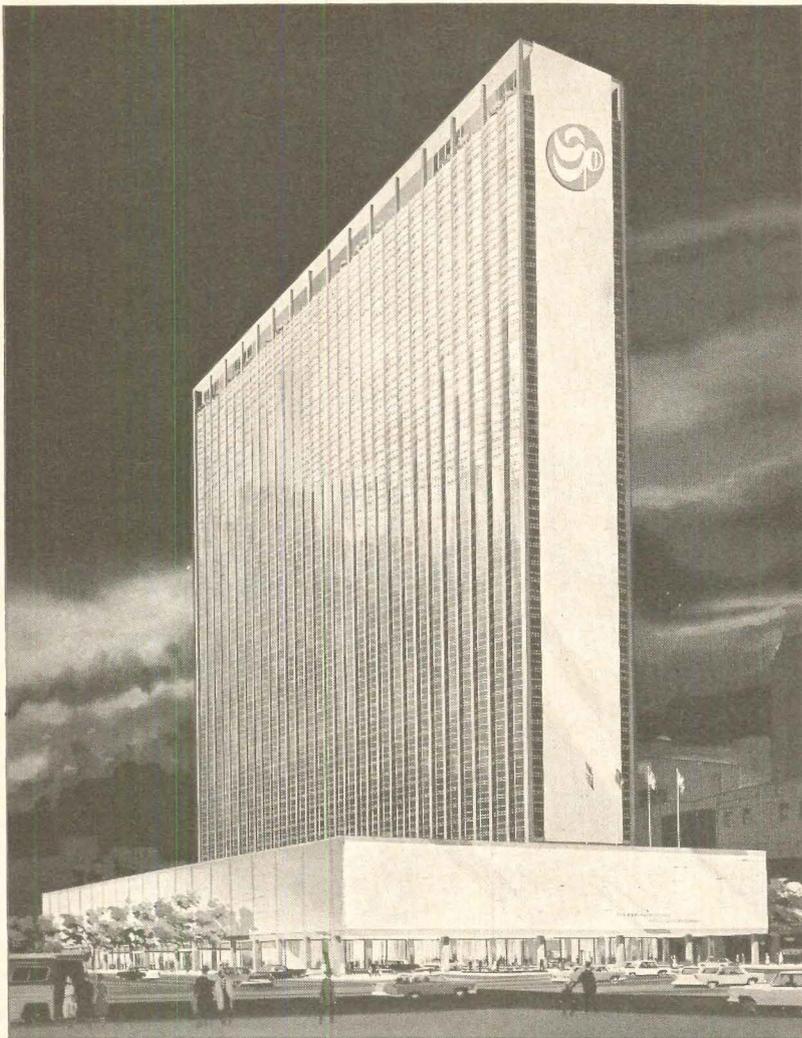
These benefits, then, are what led to the selection of Armstrong Rubber Tile for this important new building.

### SPECIFICATIONS, COMPLETE DATA, SAMPLES

Call your Armstrong Architect-Builder Consultant. A flooring expert, he can help you solve almost any flooring problem you encounter. He can also get you further assistance from Armstrong research, installation, and technical advisors. And since Armstrong makes a complete variety of resilient flooring materials, he can make unbiased recommendations for any interior. Call him at your nearest Armstrong District Office, or write direct to Armstrong, 610 Rooney St., Lancaster, Pennsylvania.



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*architect*

HARRISON & ABRAMOVITZ  
*consulting architects*

CONSENTINI ASSOCIATES  
*mechanical engineers*

URIS BUILDING CORP.  
*builder*

WACHTEL PLUMBING CO., INC.  
*plumbing contractor*

GLAUBER, INC.  
*plumbing wholesaler*

KOHLER COMPANY  
*fixture manufacturer*

## The New York Hilton

at Rockefeller Center

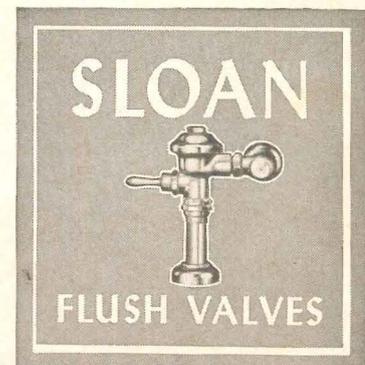
—*Ultimate in  
Hilton Hospitality  
Famous the World Over*

•With the recent opening of The New York Hilton at Rockefeller Center, world-famous Hilton hospitality now comes to the Avenue of the Americas in midtown Manhattan. Millions of dollars worth of luxury is embodied in this fabulous hotel to provide the ultimate in patron comfort, convenience and service.

Sloan Flush Valves are part of the thoughtfulness given to product selections for this new Hilton property. Reason: their excellent performance in the Conrad Hilton and the Palmer House, Chicago; the Waldorf Astoria, New York, and the vast majority of other Hilton Hotels here and around the world.

Your building, too, can have this same Sloan quality. Specify Sloan Flush Valves with confidence—most people do.

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*Contractors' margins squeezed (below)*  
*Praise—and blame—for California (page 7)*  
*Zurich unveils Corbu museum (page 9)*  
*Battelle gathers materials data (page 11)*

## PROFITLESS PROSPERITY IN MIDST OF BOOM

Even though the over-all economy faltered a little last month (industrial production and employment declined slightly), construction continued to rise toward another annual record (of \$63 billion)—the third new peak in a row following 1960's decline. But in the midst of the boom, there was rising concern over one of building's strangest paradoxes—the continuing poor state of contractors' profits.

### Too much competition and not enough profits in contracting

The problem has plagued the nation's largest industry throughout most of the postwar building boom, but within the past year or so, it has become so serious that contractors are devoting most of their attention to this problem in industry meetings. Last month, the occasion was a meeting of the Building Congress in Washington, D.C., which solemnly faced these gloomy facts:

▶ Contractors' profit margins (after taxes) have declined to less than one half of one per cent.

▶ Bankruptcies in contract construction are now at their highest figure ever, and over 1,000 more firms are expected to go out of business this year, with liabilities of over \$250 million.

The building boom itself is at the root of these difficulties. If the construction industry were not so busy, it would not attract the amateurs who frequently go out of business. Old-line contractors are now convinced that something should be done to curb such prac-

tices as bid-shopping, particularly by the fly-by-night, one-shot amateurs. Another point of agreement is that the AFL-CIO's Building Trades Department must set its house in order and devise a workable formula to eliminate costly jurisdictional disputes, which last year made up a large share of the near record 913 work stoppages, and resulted in over 4 million man-days of idleness during that year alone.

All signs point to a continuance of the building boom: through the first eight months of the year, total construction was running 4 per cent ahead of 1962, with both the private and public sectors showing healthy gains.

Predicted Johns-Manville Vice President F. E. Dutcher last month: new construction will account for over \$63 billion in 1963, repair and maintenance of existing structures for another \$22 billion—making all expenditures in the building industry total a record-breaking \$85 billion.

## FHA ESTABLISHES FAIR EMPLOYMENT RULES

Last month, FHA took a long anticipated new step in its drive to eliminate discriminatory hiring practices in building.

The Administration now requires all builders, contractors, dealers (or mortgagors if the property is a multifamily housing project) to sign a certificate expressly forbidding job discrimina-

tion on FHA-insured new construction, rehabilitation, and repair work. Anyone failing to comply with the new rules, which cover only those loans greater than \$10,000, will be ineligible for further government or federally assisted contracts. To cut down on red tape, the certificate need only be signed once to be binding over the years.



## FRENCH HOUSING VIEWED BY A U.S. BUILDER

In apartment building at least, says U.S. Builder Frederick P. Rose, all nations "have much to learn from each other and much to teach."

This was one conclusion Rose reached after a recent visit to Europe as one of three American delegates to the Housing Committee of the U.N. Economic Council for Europe. Casting a critical—and informed—eye over the situation in France, Rose, who is well known for his large apartment complexes in and around New York, submitted a report, by request, to the French Minister of Housing.

What could France teach the U.S.? Design, said Rose. "Variety in shape, texture, height, and orientation of buildings within one project has been achieved in most cases without losing beauty and harmony" (see photo of Marseilles apartments, above).

And what could the U.S. teach France? a lot of things, including: *Better mechanical systems.* French heating, plumbing, and ventilation systems are definitely not up to U.S. standards.

*Long-range planning.* New apartments in France are not well-

wired, for example, though there is a growing demand for electrical appliances.

*Safety standards.* Both in actual construction and in finished buildings, the French do not insist on such protections as safety controls for machinery, interior doors for elevators, and railings or parapets for rooftops.

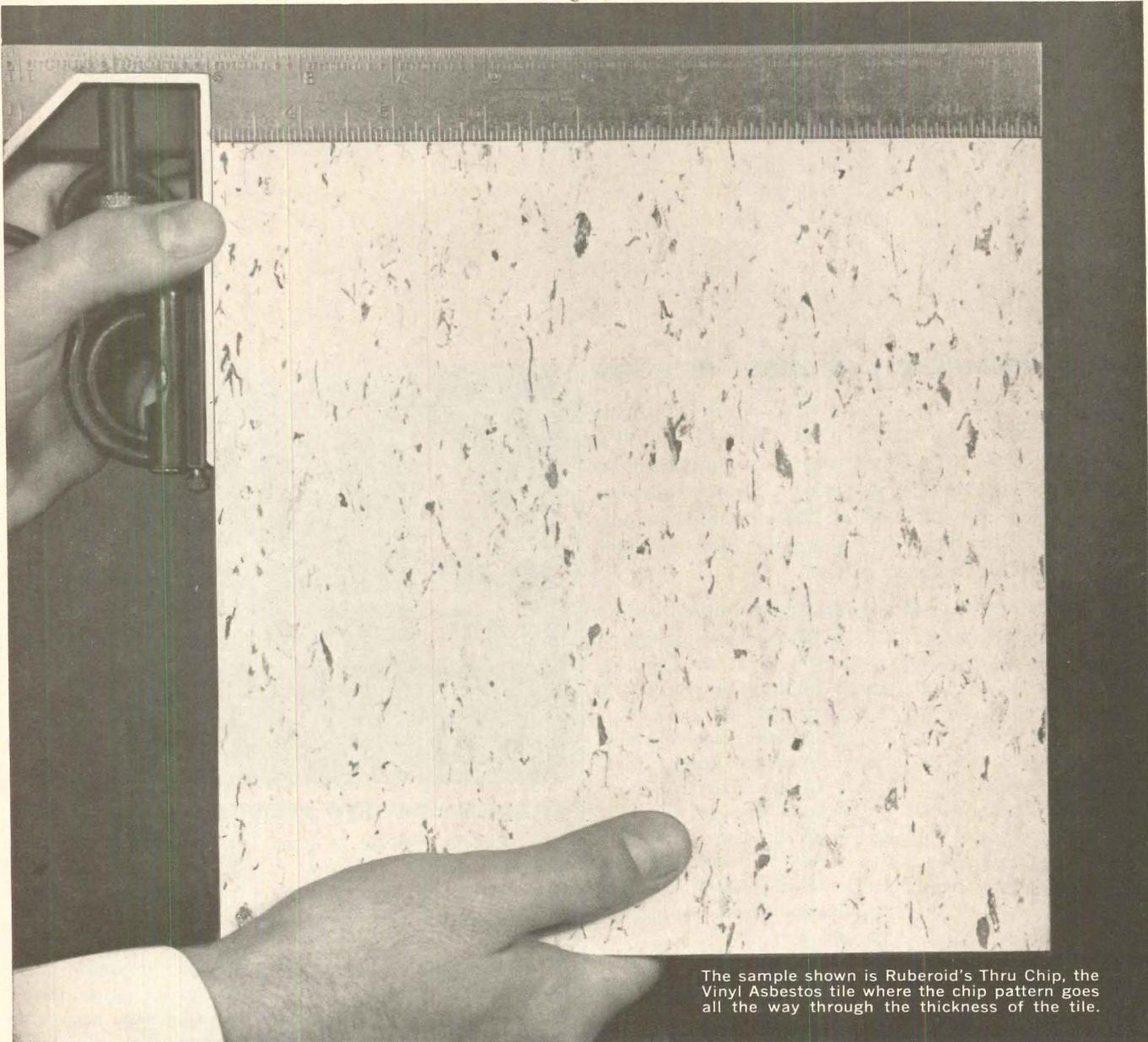
*Apartment layout.* Storage areas should be built into the apartments. Residents should not have to walk through the living room to get to the bedrooms (in higher-income developments).

Rose also swung into an area which the U.S. builders have long mastered: economy. The French could learn, he said, from study of the way Americans lay out the cores of apartment buildings. One lesson would be the use of coordinated high-speed elevators to service more apartments faster.

Also, the French might use to their advantage such a U.S. labor-saving method as the flat-plate system of completing a reinforced concrete floor in two days.

Other economy factors suggested by Rose included better re-use of concrete forms, use of deformed reinforcing bars to im-

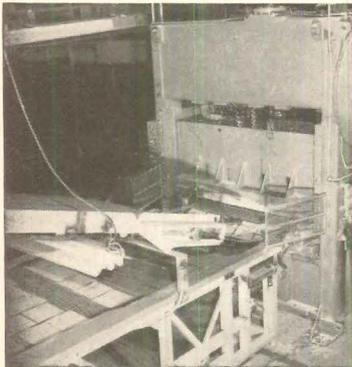
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The sample shown is Ruberoid's Thru Chip, the Vinyl Asbestos tile where the chip pattern goes all the way through the thickness of the tile.

## Ruberoid quality cuts floor costs...

You can depend on Ruberoid Floor Tile for clean cut edges and square corners. This means tile that fits together properly—resulting in lower cost of installation and a tightly fitted, sanitary floor.



Ruberoid's new electronic quality control equipment also helps assure a tight smooth surface—dimensional stability—resistance to indentation—good maintenance features.

Depend on Ruberoid, too, for fresh new styling, original patterns and textures, color consistency. For quality—beauty—service—specify: *Ruberoid Vinyl-Asbestos Floor Tile*.

Tracked conveyors guide tile sheets through press, insure squareness and clean cut.



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FINE FLOORING

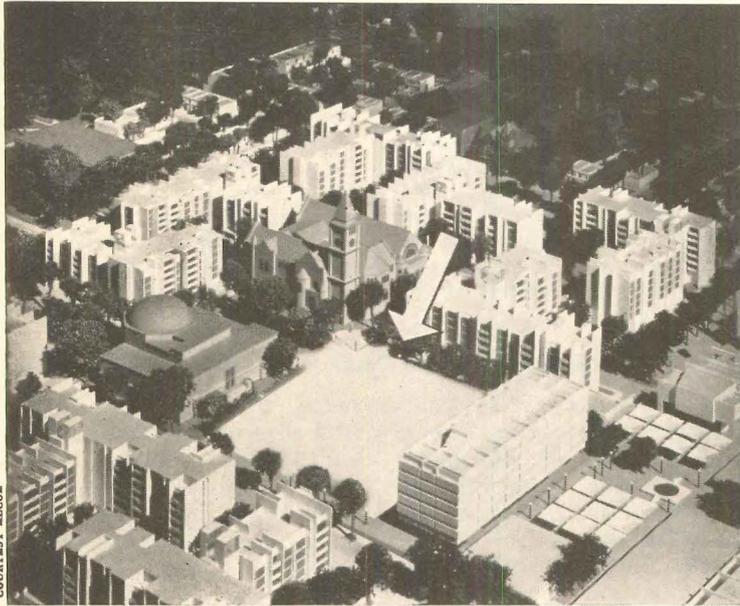
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prove the bonding of reinforced concrete, and a system of prefabricated, welded-steel mesh in concrete slabs for the bottom layer of reinforcing (in place of individually tied bars).

Rose had a word of warning to French builders, too. After viewing much balcony work, he said

that a "narrow [50 centimeters] balcony is all but useless, and a two-meter width should be the minimum. The largest cost is the door, railing, drainage, and waterproofing. . . . Either do the thing properly," he concluded knowingly, "or don't go to the expense of a half measure."



### PITTSBURGH HOLDS URBAN DESIGN CONTEST

When Pittsburgh's Urban Redevelopment Authority announced an "unprecedented international competition" a few weeks ago, it lived up to its reputation as an innovator in handling the city's specific renewal needs. With the competition, it also posed one of the most sophisticated problems to come before urban designers in years: the creation of a dignified public square.

The site consists of 3 acres of empty space in the Allegheny Center renewal area in north Pittsburgh (photo, above). On one side is the Center's residential area, on the other, the business district. All around are new buildings designed by the local firm of Deeter & Ritchey, interspersed with such old edifices as the North Side Carnegie Library (left of arrow) and the Buhl Planetarium (dome).

The problem is to design a public square that will be used as a transitional area between districts—all the while mindful of the anticipated heavy pedestrian

use, of the surrounding buildings, and of the historic overtones of the site (there was a public square on this site in the 18th century).

The competition has been approved by the HHFA, URA, AIA, the American Institute of Landscape Architects, and the International Union of Architects. Its first stage will terminate on April 13, 1964, when five finalists, each to receive \$5,000, will be selected to make further submissions. The grand winner (if his plan is feasible) will receive the commission for the design of the \$600,000 square. Construction is scheduled to begin in the fall of 1964.

Jury members are Landscape Architect Hideo Sasaki, Architects Gordon Bunshaft and Dahlen K. Ritchey, plus prominent Pittsburghers H. J. Heinz and Adolph W. Schmidt. Registration forms (before November 15) and further information are available from Professional Advisor Paul Schweikher, head of the Department of Architecture, Carnegie Institute of Technology.

### CALIFORNIA: HIGHEST LIVING—AND A MESS

Q: Where do the good things of American life flourish in the midst of chaos and disorder? A: In California, of course.

This widely held notion received considerable documentation last month in two studies. One of these indicated that Los Angeles, epitome of unplanned growth and confusion, also has higher standards of living in several respects than its biggest competitors. The other report resoundingly condemned the sprawling slurbs which characterize the state, and the jumble of local governments which compounds the physical mess.

#### L.A.: more like other cities

The first report, written by Leo Grebler of UCLA's Graduate School of Business Administration, analyzes 1960 Census figures and from these derives a striking statistical portrait. Population growth, two-thirds of it from im-

migration, was the leading characteristic of the 1950-60 decade, and this set the city apart from New York and Chicago more surely than any other single statistic (see table below).

Even though L.A. continues to sprawl as it grows, its central area is nevertheless becoming more densely populated while other central cities become less crowded. High-rise offices and apartments are key elements in the concentration giving the city more of the appearance of the older urban centers, and leading Grebler to surmise that "the current development of Los Angeles indicates the future shape of cities in the U.S."

Given the advantages Los Angeles already enjoys, as reflected in the summary of some leading indicators below, it could indeed become the ideal American city—if it would get around to cleaning up the mess. Here is the evidence:

LOS ANGELES . . .	Los Angeles	New York	Chicago	All U.S. cities
<b>IS GROWING FASTER . . .</b> (pop. increase 1950-60)	54%	14%	22%	26%
<b>AND RICHER . . .</b> (rise in family income, 1959 vs. 1949)	94%	81%	81%	84%
<b>HAS BETTER JOBS . . .</b> (per cent of professional jobs)	14%	12%	11%	12%
<b>BETTER HOUSING . . .</b> (per cent sound units)	93%	88%	88%	86%
<b>BETTER SCHOOLING . . .</b> (school years completed)	12	10	10	11
<b>BETTER JOBS FOR NONWHITES</b> (per cent professional jobs)	8%	5%	5%	5%
<b>AND MORE EDUCATION . . .</b> (per cent in college)	9%	4%	4%	3%
<b>AND HIGHER INCOMES . . .</b> (median family)	\$5,163	\$4,484	\$4,786	\$3,161
<b>AND BETTER HOMES</b> (sound units).	83%	58%	60%	n.a.

#### Causing the mess in California: six "phantom cities"

Life might be nice in L.A., but no one is kidding himself about the total picture of state-wide ugliness. This became obvious last month when the second report came out. Entitled *The Phantom Cities of California*, it is written by a little nonprofit organization named "California Tomorrow."

This group, which is "dedicated to a productive and beautiful California," attracted nationwide attention last year with an anguished outcry against what it called the "slurbs"—those "sloppy, sleazy, slovenly, slipshod, semicities" (*News*, Mar. '63).

With the new report, C.T.

zeroed in on those it considered most to blame for the contributed mess: much more often than not, said C.T., local governments are incapable, or unwilling, to take preventive measures. Thus, highways snake through choice land; subdivisions sprawl toward each other; municipal open land is filled up willy-nilly; established downtowns deteriorate.

Although most Americans are aware of these conditions, nothing is done to change them. Authors Samuel E. Wood and Alfred E. Heller explain why: there are six types of "phantom cities," containing 90 per cent of the state's

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18 million people, in which overall planning is at best difficult, and at worst, impossible. The six phantoms are:

▶ The unincorporated city. This is, says C.T., "the home of the galloping slurbs . . . lacking a center, a fixed boundary, a city government, a discernible urban purpose, any clear relation to adjoining cities or farmlands." Located on the outskirts of established cities, the unincorporated city is governed by the county in which it is located and several "special districts."

These special districts are created and administered by people pursuing one specific interest: e.g., water supply, garbage removal, road improvement. Special districts tend to pile up, says C.T., "like an uneven stack of pancakes"—with the citizen living in these areas paying taxes to each district plus his county.

▶ The special-interest city. This incorporated phenomenon also serves to solve a particular local problem. Some attract industry (Emeryville, Vernon); some exist on retail sales (El Sobrante); others are purely residential (Woodside, Los Altos Hills), and still others are devoted to cows (Dairyland, Cypress). The special-interest cities contribute to the "hopeless scattering of government responsibility for . . . regional concerns."

▶ The contract city. It is "carved . . . out of the sprawling urban mass of the county" and contracts to buy such service packages from the county as fire fighting, police protection, water, and recreation. Like all of the phantom cities, this one is neither autonomous nor concerned with the larger implications of its actions.

▶ The seasonal city. Devoted to recreation, it swells in certain sea-

sons, "is virtually unpopulated most of the year, and ungoverned all of the year." This phantom city is caught in a fiscal bind (since state assistance is based on permanent population), and in a political bind (since the permanent residents make their living off the tourists). Thus, concludes C.T., its growth is haphazard and sloppy—and getting worse.

▶ The legitimate city. Its name is San Francisco, Los Angeles, Sacramento. While it does have a good deal of civic responsibility, it cannot cope with such problems generated beyond its borders as smog, and congestion.

▶ The regional city. This phantom is not so nefarious as the others because it has to consider a wider area. Examples are regional sewage-disposal authorities, the Bay Area Transit District. Although it is clear that the regional city is presently devoted to one purpose, C.T. feels that "county, city, and special district governments are incapable by themselves of maintaining or producing a sane and amicable life for their citizens. The regional city . . . might be able to help them turn the trick, if it were given the breath of life."

In indicting California's fragmented local governments, C.T. proposes a cure—regional governments. But first: "The strengthening of local governments will mean nothing unless the people decide that the beauty and productivity of California's land must be conserved."

The C.T. pamphlet has already caused a stir; as intended, it struck an exposed nerve in the public conscience of California—and perhaps, elsewhere across the nation—when it asked: "If free peoples cannot sustain the good life here, where can they?"



LOS ANGELES LANDMARK IS THREATENED BY ZONING CHANGES

*William Dodge house (above), designed by Irving Gill in 1916, and distinguished both as a precursor of the modern style and as an early example of the potentialities of reinforced concrete, was recently included in a zoning change which allows its site to be redeveloped for apartment housing. Also, the present owners, the Los Angeles Board of Education, have in-*

*dicated that they are no longer interested in keeping the building. Thus, unless a suitable organization is soon found to take over the Dodge House—and the Southern California Chapter of the AIA is looking hard for new owners—it will be bought and demolished by some real estate developer to make way for a "more economic" land use. Outlook: still uncertain.*

## CONSERVATION PLANNED FOR TUXEDO PARK

The urbanization of New York's environs has swept away many a cherished landmark and turned quiet, semirural towns into roaring, auto-infested suburbs. But one village has so far survived: Tuxedo Park, that stout-walled bastion of wealth and privilege nestling in the Ramapo hills 38 miles to the northwest of the big city itself.

Over the past decade, of course, change pressed around Tuxedo Park. For one thing, much of the surrounding agricultural land has been sold off to home builders. For another, the 20,000-acre Sterling Forest residential and research project is well under way just north of the village.

Meanwhile, within the village's walls, the population has increased from a smattering of well-bred families before World War II to some 700 people today: automobiles now use the narrow, winding roads that were designed for horse and buggies; and a few new houses put added pressure on the original sewer system.

Against this background, Tuxedo residents, led by Mayor Trescott A. Buell and Robert Whyte, obtained an urban renewal Section 701 planning grant in 1961, called in Planners Candeb, Fleissig & Associates to prepare a master plan. Primary objective: to preserve the special, residential character of Tuxedo Park.

Such conservation, in Tuxedo Park's case, means a certain

amount of change. Soon after the 1,900-acre community was created in 1885 by Tobacco Tycoon Pierre Lorillard IV (with the help of Architect Bruce Price, 1,800 laborers, and a cool \$1.5 million), it became a fashionable, year-round enclave for the socially prominent, featuring some of the finest examples of mansion architecture in New York State. Today, however, most of the remaining stately houses represent a heavy burden to their owners, and an impractical land use. The planners' solution: tear down some of the mansions before they fall down, convert others to multi-family dwellings, and sell still others to research companies. Similarly, it is proposed that the old race track be changed into a recreation area.

Perhaps the most significant proposal is the annexation of some 300 acres of peripheral land as a residential "green belt" between the Park and its neighbors. The annexed land would be zoned for low-density (4-acre) housing.

Next month, Tuxedo Park residents will meet to review the planners' recommendations and to vote on them. Predicts Whyte, who heads the Village's Planning Board: "There doesn't seem to be much question about it. The plan will be approved." Explains Mayor Buell with conviction: "We have a beautiful village, a paradise for dogs and children, and we're trying to keep it that way."

## WHEN IS A ROOM NOT A ROOM?

The answer to the question is when it's a balcony, a foyer, or a terrace. Yet in New York (and other cities) such nonrooms have been called rooms for a long time, particularly in real estate advertising. Several weeks ago, New York's Better Business Bureau offered some guidelines for defining just what is a room, and shortly afterward, the Real Estate Board of New York came up with an official definition, which all mem-

bers must follow by January 1.

Under the Real Estate Board's new definitions, an apartment with a living room, bedroom, bathroom, balcony, and kitchen area would not be three and a half or four rooms as frequently advertised, but would be considered only two and a half rooms. A kitchen is counted as a room only if it measures at least 71 sq. ft. in area and is fully equipped with sink, range, and refrigerator.

## NEW PARK APPROVED

After a battle that lasted for years—and waxed fiercest over the past six months—the Maryland State Board of Public Works, headed by Governor J. Millard Tawes, has approved plans for federal development of Assateague Island. Called the “best remaining portion of shoreline in the Middle Atlantic states,” 31 miles of the 33-mile-long sand strip is thus on its way to becoming a National Seashore Park. (The other 2 miles would become a Maryland state park.)

Up to the very end, last month, the park scheme was in trouble. Maryland’s Worcester County officials and a group of Assateague land owners strenuously opposed public takeover, picketed hearings with signs reading “Don’t give away Worcester’s Gold Coast.” But, as the photo (right) shows, private development would have been both hazardous and expensive. Reason: Assateague is so low-lying that large storms carry the sea inland, destroying property. (Another objection to private development is that home



KEN KAYE—LIFE

owners would have a very hard time digging cesspools in the marshy ground.) Cost of erosion protection alone would run over \$35 million—and the private developers could not have raised their half of that amount. The next step: introduction, already promised by Maryland’s Senators James G. Beall (R.) and Daniel B. Brewster (D.), of enabling legislation into Congress. Outlook, if Congress gets around to such a bill, is considered good.

## N. Y. COURT OKAYS A CENTRAL PARK CAFÉ

After three years of wrangling in and out of Manhattan courtrooms, the Huntington Hartford-sponsored, Edward Durell Stone-designed café on the fringe of Central Park seems set to go ahead (*News*, July '63).

The green light was given by N. Y. Supreme Court Justice Jacob Markowitz who ruled that the 1,000-seat commercial restaurant legally might be built on municipal parkland. In so ruling, he redefined the law pertaining to “proper use” of city parks.

A group of taxpayers, including Tiffany Chairman Walter Hoving and two Manhattan hotels, had brought a suit against the City, charging that the proposed café-pavilion on the southeastern corner of Central Park was clearly an improper use of parkland. The City argued that it had done nothing illegal in accepting an \$862,500 gift from the Huntington Hartford Family Fund to cover construction of the “Hartford Pavilion.” The Parks Commissioner, said the City, has the authority to determine what should be done to parks—and has exercised this authority in dozens of cases over the past few years.

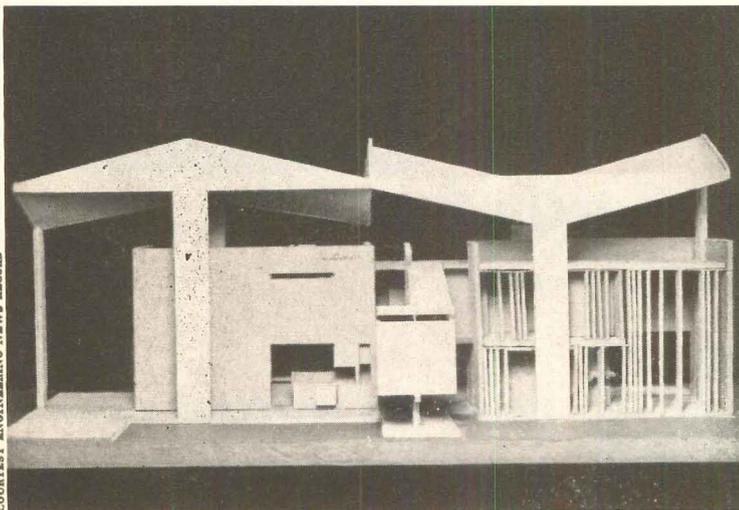
Beyond these flat statements, the City presented no defense in the recent trial. Instead, it treated the proposed facility as a pleasant *fait accompli*. Ex-Parks Commissioner Robert Moses, who originated the whole idea in 1960, pointed out that such a restaurant could not succeed financially

at any other location. Newbold Morris, the present Parks Commissioner, added that the building would create a “land of light,” thus enhancing the safety of the park after dark.

The taxpayers called in such experts as Minneapolis Parks Administrator Charles Edward Doell, Architect and Municipal Arts Society President Giorgio Cavaglieri, and Conservationist William H. Whyte. They agreed that the pavilion should not be built because it would fulfill neither a primary park use (outdoor recreation in a rural setting) nor an incidental park use (something that helps the public enjoy the primary use).

Justice Markowitz neatly solved the problem by deciding that “as times change, park uses change.” The real test of park use nowadays, he wrote, is whether “the facility concerned offers substantial satisfactions to the public which would only be possible in a park setting. . . . The savor of a meal, a snack or an *apéritif* in a park setting is a unique one.”

While gourmets might smack their lips at the decision, park-lovers were left wondering just what would not fit into Justice Markowitz’s definition. Editorialized *The New York Times*: “A few more victories for ‘culture’ like this and the war to save Central Park from the beneficial bulldozer would be lost.” Meanwhile, the taxpayers’ group debated whether to appeal the decision to a higher New York court.



## IN ZURICH, LE CORBUSIER DESIGNS A MUSEUM FOR LE CORBUSIER

The small (40 by 80 foot), sculptural pavilion shown in the model photograph (above) is Le Corbusier’s first building in Zurich, Switzerland. Though financed with private funds, it is to be sited on municipal parkland—and, 50 years hence, will be given to the city.

Fittingly, the building is intended to commemorate Corbu’s own work; it is both a home and a museum for his paintings and

sculpture. The structure consists of two canopies supported on six columns, sheltering a series of varying interior spaces and levels. To the right is the main exhibition area, two stories high; to the left, a spacious living room. A protruding ramp (center) leads to a second-floor library and apartment facilities, then continues to a rooftop garden for outdoor sculpture. Construction begins next spring.

## BRIEFS IN THE NEWS

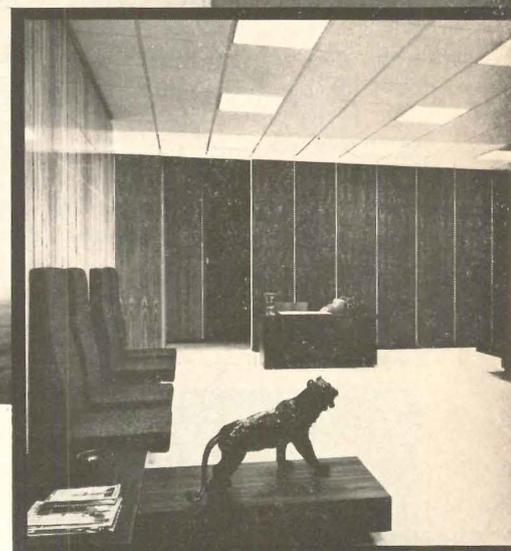
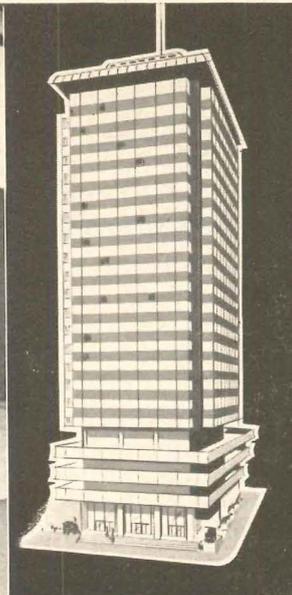
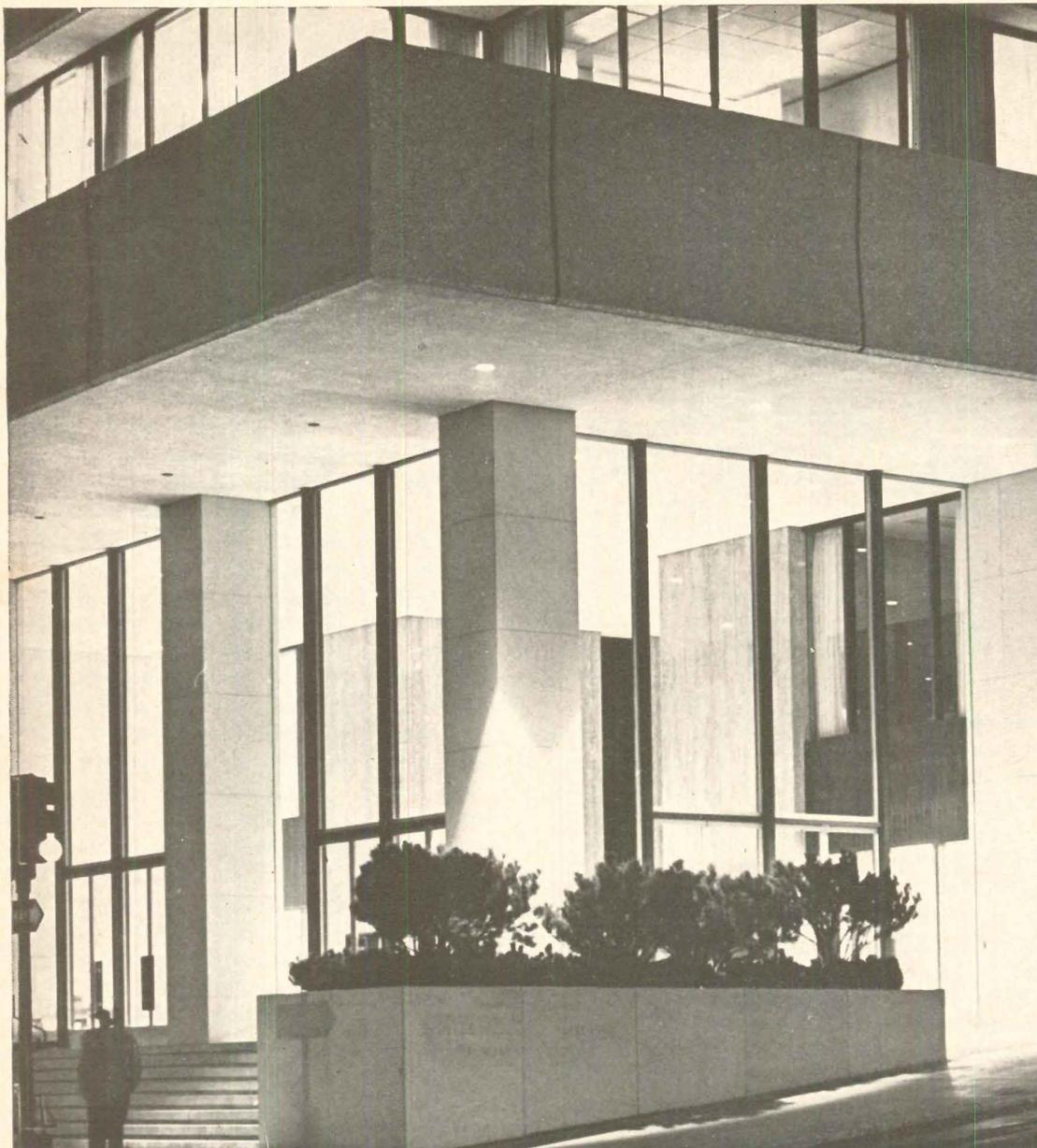
**California colleges.** In 1961 after a long and bitter fight to break the California Division of Architecture’s monopoly on the design of all state buildings, private architects won the right to design new structures for California State’s burgeoning college campuses.

Although the results have been commendable, the State Division of Architecture (through the powerful State Employees’ Assn.) last month went to the courts to get back the massive job. Outlook:

private architects will keep the work they have been doing so well (*FORUM*, Mar. '63).

**Tax relief for architects.** The House Ways and Means Committee recently followed President Kennedy’s suggestion for giving Americans with volatile incomes a tax break. Architects, artists, writers, etc. will be allowed to average out a windfall year (i.e., a year when income is at least one-third higher than the preceding four years’ average) over the next five years. Next step: Congressional approval.

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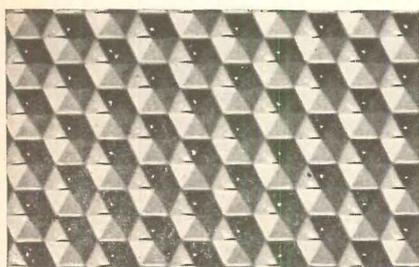
## INTERNATIONAL BUILDING • SAN FRANCISCO

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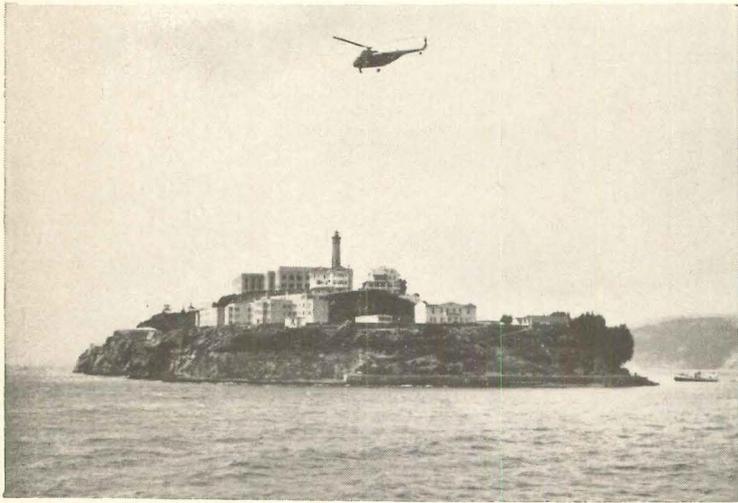
K-5 PATTERN ILLUSTRATED

For this finely appointed office building, the architect desired a final touch of soft lighting, which would also provide the full visibility required. To meet these exacting lighting specifications and yet satisfy the esthetic quality desired, K-Lite Prismatic Lighting Panels were specified in combination with COLUMBIA Lighting fixtures. In this installation, as in hundreds of others, K-Lite meets all specification requirements for the illumination levels, provides low glare with no hot spots.

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continued from page 9



JON BRENNIS—LIFE

### BAY AREA ARCHITECTS DREAM OF ALCATRAZ

Alcatraz (above) is not a bad place—at least in the opinion of the Northern California Chapter of the AIA. Before the maximum-security federal prison was abandoned by the federal government last spring, the architects decided not to let the 12-acre island off San Francisco go to waste. Accordingly, they conducted a “search for ideas” about what to do with it—assuming, of course, that the government could be persuaded to hold off selling the place to the highest bidder.

Sixteen architects participated in the “search,” and the surprising results were revealed recently: one proposal, by Franklin Page Jr., would install a giant pump and nozzle on the island. A constant jet of water would shoot up “above the usual low-lying bank of summer fog,” and the falling spray would gradually cause the buildings to disintegrate. Other suggestions: a new site for St.

Mary’s Cathedral (itself the center of a local design squabble); a symbol of Peace; a college for the “intellectual élite”; a 600-foot-high beacon; and a marina. Architect Germano Milono recommended that an International Center for the Humanities be built on “The Rock,” suggesting as an alternative that Alcatraz could always be used as “a gambling casino or a pigeon refuge.”

All the ideas will be passed along to the Board of Supervisors, which is reportedly considering a resolution on the subject, and may (or may not) take the 16 suggestions seriously. Even the architects have conceded that perhaps the best solution lies in doing nothing at all—thus permitting scientific advances to overcome such present obstacles as lack of fresh water and hard access. In the meantime, the General Services Administration minds Alcatraz for the Bureau of Prisons.

### BATTELLE TO SURVEY BUILDING PRODUCTS

One of the construction industry’s great needs is reliable information about the market for building materials. Last year, the Battelle Memorial Institute of Columbus, Ohio, a private, nonprofit research organization, announced that it was starting a major building-materials survey program to fill that very need. Objectives included the discovery of “the day-to-day practices of builders, the amounts of various materials being used, and gains or losses among

competitive materials.” The first step was to find out whether such a program was feasible.

It is. B.M.I. last month released a brochure describing its “Proposed Research Program,” and disclosing that the last 18 months’ work has already been very fruitful. It has established the solid skeleton of a nationwide information-gathering system, which was underwritten by such leading private companies as American Cyanamid, Bethlehem Steel, Ceco

Steel Products, Inland Steel, Union Carbide, U.S. Steel, Weyerhaeuser, and Battelle itself. Each sponsor contributed some \$10,000 to the program so far. And B.M.I. fully expects at least six more companies to join the survey in the next few months.

Heart of the new system is what B.M.I. calls the “Construction Information Center” to collect, store, and disseminate data on the use of building materials. To do this, B.M.I. takes a representative sample of 700 buildings each year and the specific materials used in them. The information is now based on the objective (and subjective) reports of some 163 general contractors from their jobs in eight regions across the nation. The number of contractors reporting is expected to reach 300 by the end of next year. Finally, special analyses are prepared for, and distributed to, the sponsors.

According to B.M.I., a sponsoring company interested in marketing glass might find information on: “1) the current and expected total market for exterior wall materials; 2) the share of that market held by glass and the trend in the use of glass; 3) the share of that market which is held by each of the competitive materials and the respective trends; 4) the technical requirements for materials and products made necessary by new methods of construction; 5) the technical and economical trends affecting the construction industry; 6) the long-range expectations of the construction art.”

To be sure, the program has not reached this scope yet; it is still very young. But, with B.M.I.’s continuing efforts, the construction industry will finally have access to valid information, comprehensively collected by experts.

### SAARINEN’S M.I.T. DOME GETS A COMPLETELY NEW ROOFING

Bostonians passing along Memorial Drive in Cambridge last month saw that Eero Saarinen’s first great thin-shell structure, Kresge Auditorium at M.I.T., had acquired a new look. It had been completely reroofed just eight years after its opening (see photo, below).

Even before the structure was built, its engineers had worried about the roofing material over the huge concrete dome. The architects wanted to use a sheet-metal covering (lead-coated, diamond-shaped copper plates), but this was found

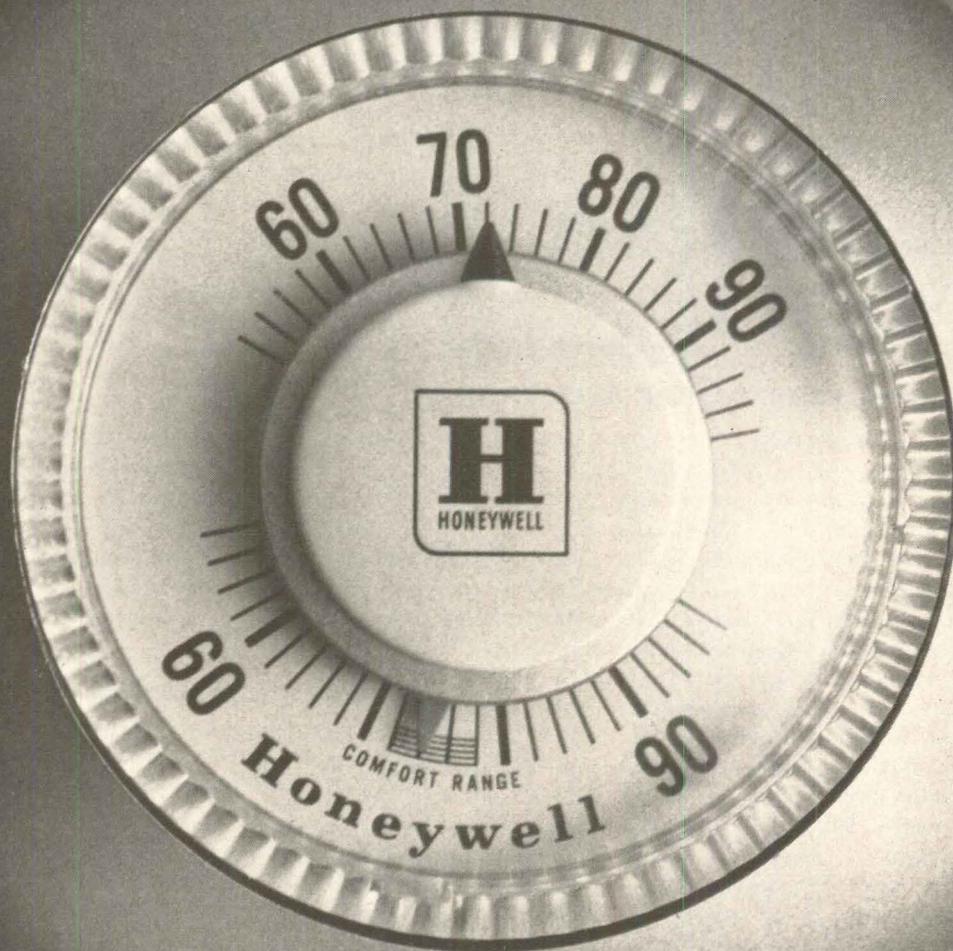
to be impractical because of problems at the seams. In 1955, then, an acrylic stucco was applied. It proved inadequate, however, developing cracks, stains, and bubbles. M.I.T.’s maintenance engineers studied the situation for months, hit on a new solution, and finally chose the George A. Fuller Co. to do the reroofing job.

Over the past five months, Fuller applied a time-honored material to the roof: large lead shingles. Result: a stable sheath which further enhances the building’s looks.



M.I.T. PHOTO

continued on page 15



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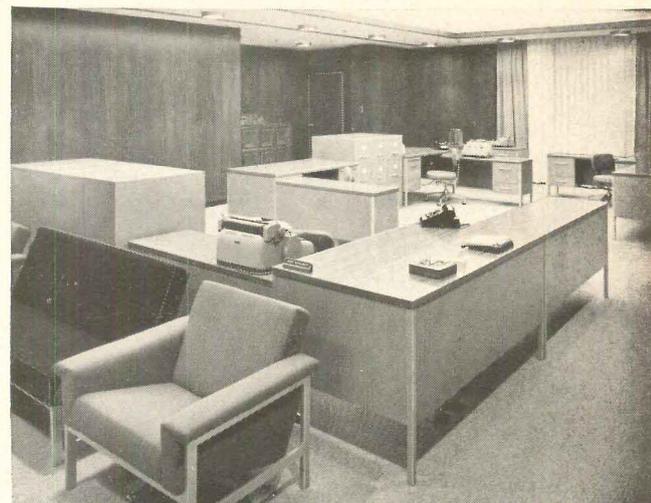
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Top Illustration: Executive and executive secretarial area. Above Illustration: The Peerless Olympic Line desks installed throughout the general offices of A. H. Robins Company, Inc., Richmond, Va.

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## People in the News

## QUOTE . . . UNQUOTE

"We dirt movers have our place, however humble, in the ultimate scale of things."—*Robert Moses.*

"The fact is, 80 to 90 per cent [of Los Angeles architecture] is terrible. It's the ugliest city in the world. It's like sitting in a garbage pail."—*Movie Actor Jack Lemmon.*

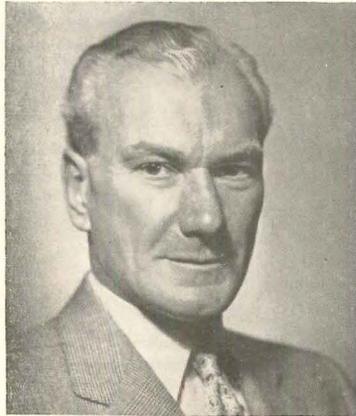
"It might be perfectly all right for the art iconographers to hold an International Conference to decide in how many cases the Virgin carries the Christ Child on her left biceps, and in how many cases on the right. . . . Architecture [however] is a matrix of life and not a piece of carrion to be dissected into narrower and narrower strips of dead tissues. . . ." —*Architectural Historian Sibyl Moholy-Nagy.*

"It is impossible to say when art ends and science begins."—*Herbert Spencer.*

"[Architect Philip] Johnson has been getting on the nerves of all those who take modern architecture very seriously but can't design as well as he can. . . . I am not one to demand that he spend the rest of his life designing low-cost integrated housing for relief projects in the Ozarks just to pacify other people's consciences. . . ." —*Critic Reyner Banham.*

"The authors of the present [NYC building] code had no concept of the cacophony produced without limit by a disharmonic symphony of radios, television, hi-fi sets, washing machines, air conditioners, fans, laundromats, and dishwashers which now thoroughly inundate our apartment houses." —*NYC Building Commissioner Harold Birns.*

"As for the disposition of Washington's present surfeit of statuary without discrimination—perhaps a Forest of Monuments could in chronological order line the highways into the city. It would give commuters something to look at as they waited for the traffic jams to move."—*Rodney Gilbert in the N.Y. Herald Tribune.*



**BALLARD HEADS NYC PLANNERS**

After a search for the right man that lasted nine months and went as far afield as Washington, D.C., New York's Mayor Robert Wagner appointed Architect and civic leader WILLIAM F. R. BALLARD to be Chairman of the influential City Planning Commission. He is the first architect to head the Commission, which considers land uses and screens capital budget requests for city construction projects.

Ballard brings to his new job a wealth of experience. He was one of the principal authors of New York's much praised zoning proposals of more than a dozen years ago (FORUM, Sept. '50), which formed the basis for many of the new zoning regulations finally put into effect in 1961, under the leadership of Ballard's predecessor, JAMES FELT. Ballard also has designed several large projects in the city, including Queensbridge Houses, and a low income public housing complex to be located on the site of the Polo Grounds in upper Manhattan. His other work in the city includes several years service with the New York City Housing Authority (1934-35, 1941-42), and, more recently, the chairmanship of the Citizens Housing and Planning Council, and of the New York AIA's technical and housing committees.

**WHO'S FOR D.C. COMMISSIONER?**

Under the District of Columbia's strange governmental system, three District Commissioners administer the city of Washington under Congress. All three are Presidential appointees, but one of the jobs goes automatically to an officer

of the Corps of Army Engineers.

Last month, it began to seem that one of the remaining two posts might go to that long-time friend of architecture, POLLY SHACKLETON. For years AIA's legislative specialist in Washington, she has worked with the Pennsylvania Avenue Advisory Council and is now Democratic national committeewoman for the District of Columbia.

Whether she gets the job depends on two things: 1) incumbent Commissioner WALTER N. TOBRINER must decide to step down—which he seems to want to do; and 2) Mrs. Shackleton must get the nod over District Citizens Council Chairman TILFORD E. DUDLEY, who is also the head of the Democratic Precinct Assembly. All decisions will be made before next March, when Tobriner's current term expires.

**LONG BEACH FAIRMEN FOR 1967**

While the \$1 billion New York World's Fair 1964-65 is straining noisily to meet its opening date next April 22, Long Beach, Calif. is more quietly going about the business of putting its \$400 million, two-year (six months each) show together for an April 1967 and 1968 opening.

Recently appointed chairman of the Board of Directors was Industrialist and former Secretary of the Navy DAN A. KIMBALL



(above), with the energetic mayor of Pomona, Calif. HARRY FAULL as vice chairman. Others in the Long Beach line-up include Architect CHARLES LUCKMAN, who is responsible for the master plan and design coordination, and Long Beach Banker NELSON MC-

COOK, JR. who is president of the nonprofit Fair Corporation. The manager of design and construction is Del Webb Corp.

Already, Long Beach is building a 2-mile-long pier as part of the fair grounds (which will encompass a total of 550 acres). Meanwhile, in Canada, still another World's Fair is scheduled to take place in 1967 in Montreal.

**HULT SUSPENDS P.S. 90**

The New York City Board of Education recently rocked the construction world by ordering that all faulty work on partly built P.S. 90 be removed and replaced. The man behind this unprecedented action: the Board's Head of Design, Construction, and Physical Plant, EUGENE E. HULT.

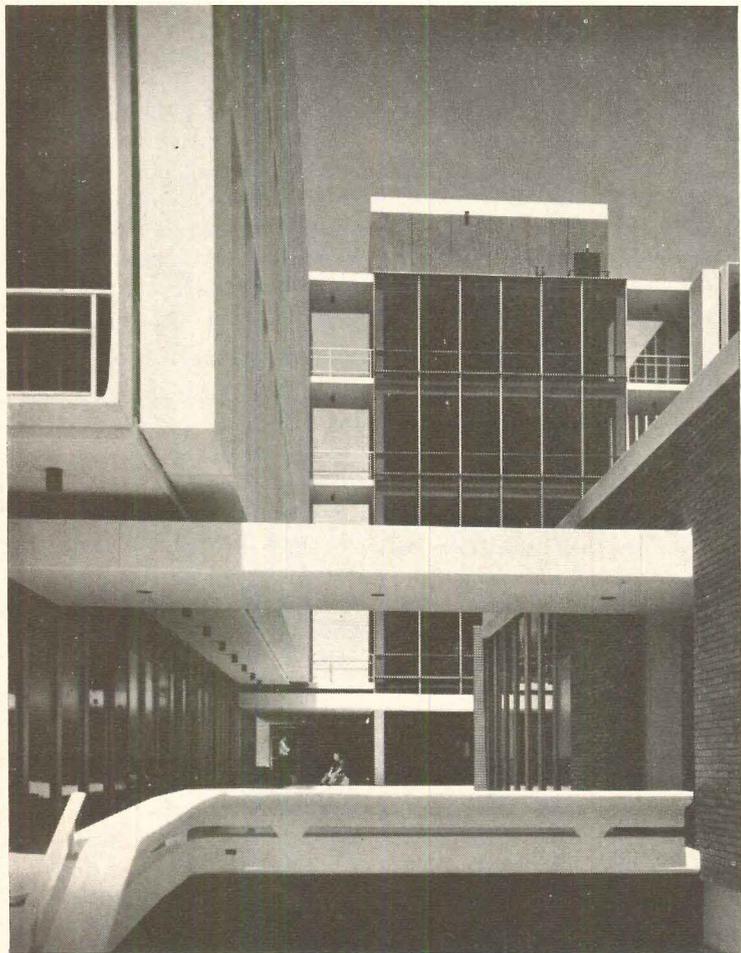
Hult's reason: The concrete used by Builders Mars Associates and Normel, Inc. was shown to be about 40 per cent below the required strength (2,100 psi instead of 3,500 psi). Hult, who came to the Board some 15 months ago after 17 years as building consultant to the Roman Catholic Archdiocese of New York, was apprised of this last March. Further tests and an analysis by Consulting Engineers Praeger - Kavanaugh - Waterbury proved by mid-August that "the quality and workmanship" of most of the concrete was "poor."

Everybody, including Hult, fully expected to be involved in "extended litigations"—but last month, the builders complied with the order, began to remove and replace the faulty concrete.

**BUNSHAFT IN WASHINGTON**

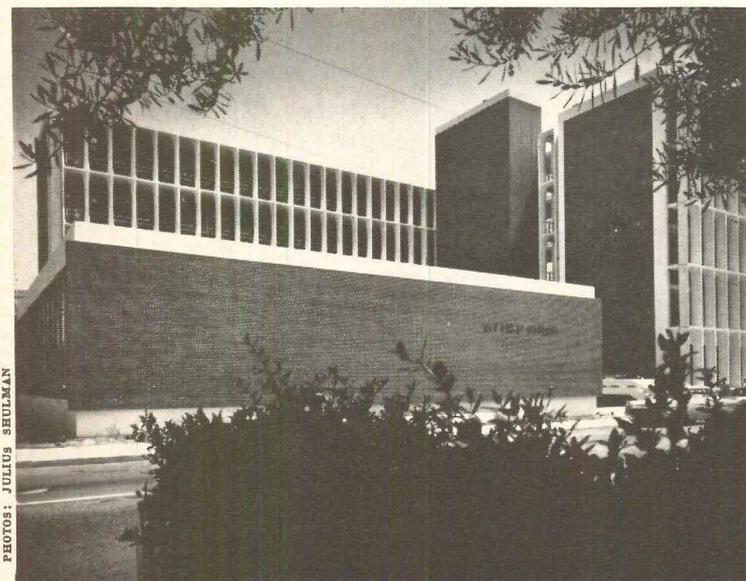
President Kennedy last month rounded out the Commission on Fine Arts in Washington, D.C., with the appointment of Architect GORDON BUNSHAFT. Partner in charge of design in Skidmore, Owings & Merrill's New York office, Bunshaft is credited with such notable buildings as Lever House in Manhattan (FORUM, June '52), the Albright-Knox Art Gallery's new wing in Buffalo, N. Y. (Mar. '62), headquarters for the Emhart Manufacturing Co. in Connecticut (July '63), and Yale's just completed Beinecke Rare Books Library.

*continued on page 16*

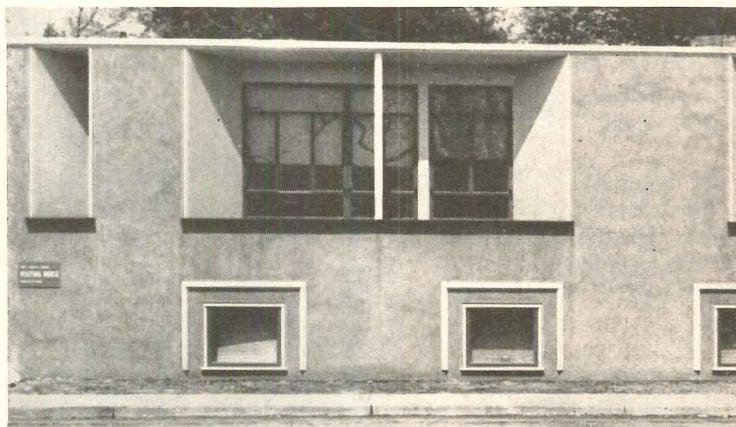


**CALIFORNIA COLLEGE.** The boldly composed group of buildings shown above and below forms the Olin Hall of Engineering, the first element to be completed in Architect William Pereira's master plan for the University of Southern California in Los Angeles. The \$2.2 million complex, donated by the Olin Foundation, consists of two five-story class-

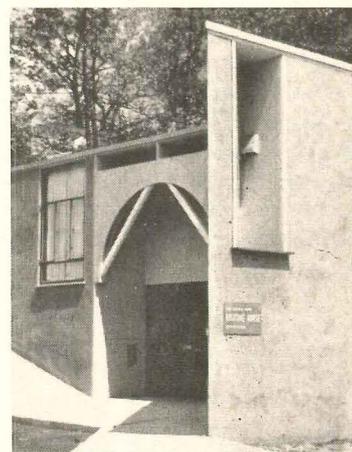
room buildings, joined by bridges to a central circulation tower (above), and two one-story buildings, one for labs, the other housing the library. Galleria-like exterior corridors are faced with richly patterned precast sunshades (below). Engineers: Brandow & Johnson (structural), J. S. Hamel (mechanical, electrical). General contractor: Myers Brothers.



PHOTOS: JULIUS SEULMAN



**PENNSYLVANIA CLINIC.** The designers of this unusual little building for the North Penn Visiting Nurse Association in Ambler, Pa., set out to "destroy the box" both in shape and surface, and to create a bold scale to compensate for larger buildings nearby. A jutting corner shielding the entrance (right), deeply inset windows, and applied wooden moldings are the rather novel tools. An interesting question: Where does this kind of architecture go from here? Architects: Venturi & Short. Contractor: Edmund A. Moyer. Cost: \$15.45 per square foot.



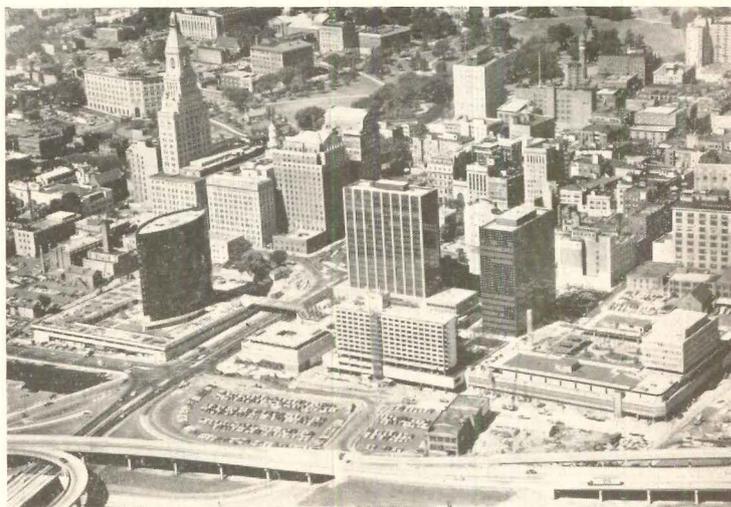
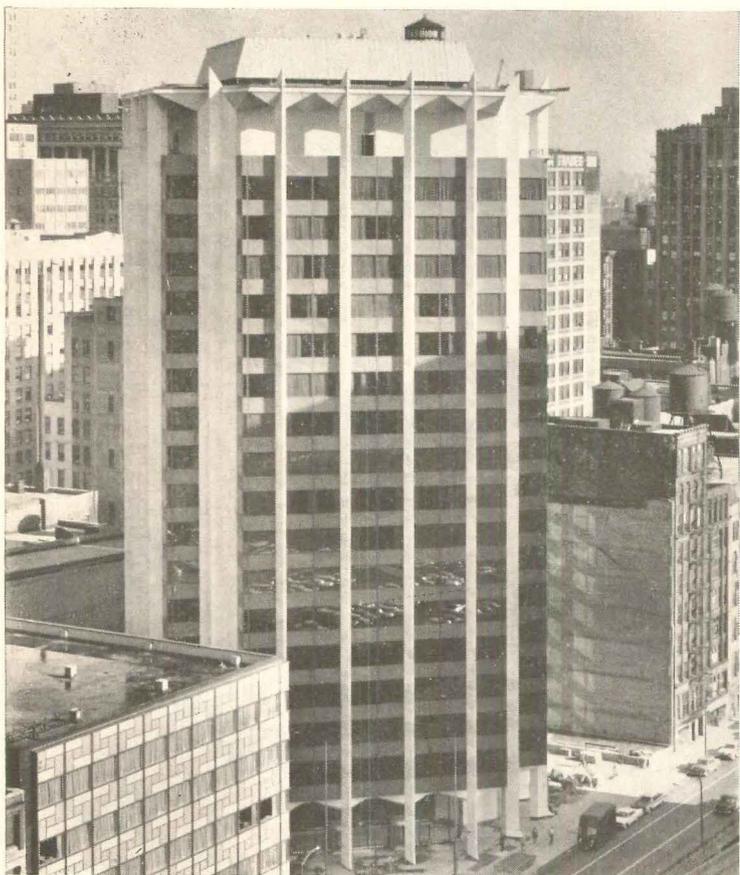
**NEW YORK UNION.** The nearly completed Manhattan headquarters of the National Maritime Union also "breaks up the box" but in quite a different manner. Overhanging floors with scalloped edges add depth and shade; the glass is set back from the precast panels, forming balconies which

will contain greenery. Hiring halls occupy the first floor, with offices above. Architect: Albert C. Lerner. Engineers: R. P. Linfield (structural), Guillot, Sullivan & Vogt (mechanical, electrical). Contractor: J. Alexander Stein, Inc. Estimated cost: \$4 million (\$25 per square foot).

CARTER WINTER

**CHICAGO TOWER** (below). U.S. Gypsum's new \$7.5 million, 19-story headquarters at the western edge of the Loop was set diagonally across its site "to gain good natural light and free plaza areas at the base." Some observers ques-

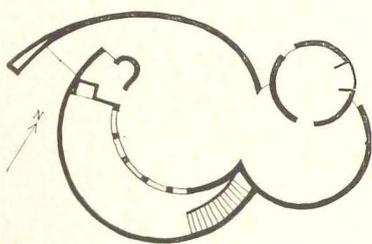
tion this eccentric siting and the building's crown—where the spur-footed columns end in decorative finials—as little more than an attempt at novelty. Architects and engineers: Perkins & Will. Contractor: A. L. Jackson Co.



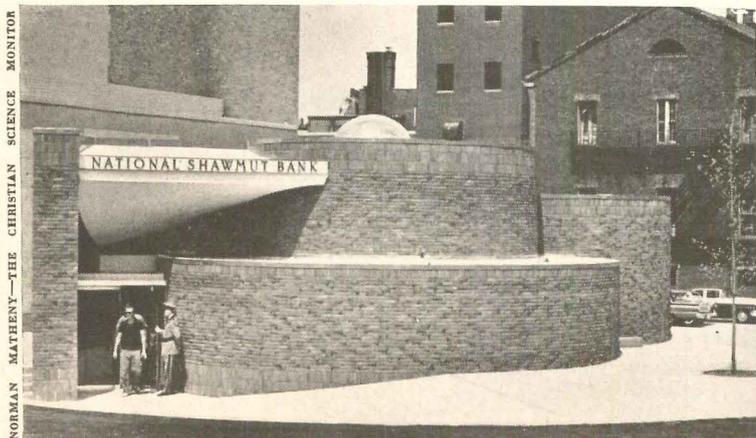
FAIRCHILD AERIAL SURVEYS

**NEW HEART FOR HARTFORD.** All eight buildings of Hartford, Connecticut's \$40 million Constitution Plaza are now up, even though final completion of the ambitious urban renewal project will not be until spring. Between the buildings, mostly offices, a busily landscaped plaza (below) is raised a story

off the ground to accommodate parking for 2,000 cars, with pedestrian bridges spanning the streets which run through the 15-acre site. Overall project architect: Charles DuBose. Landscape Architect: Sasaki, Walker & Associates. General contractor: F. H. McGraw & Co. **END**



**BOSTON BANK** (below). The first completed building in Boston's new Government Center, a temporary branch of the National Shawmut Bank, will also be the first vacated (in about eight years). Its playful form results from intersecting brick cylinders of different sizes (left). Architects: Imre & Anthony Halasz. Contractor: Tredennick-Billings.

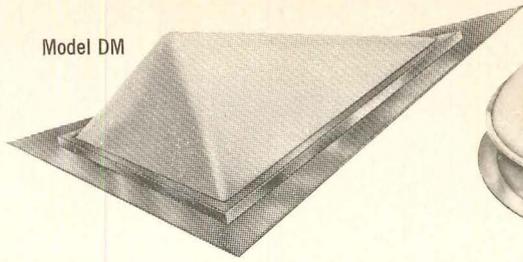


NORMAN MATHENY—THE CHRISTIAN SCIENCE MONITOR



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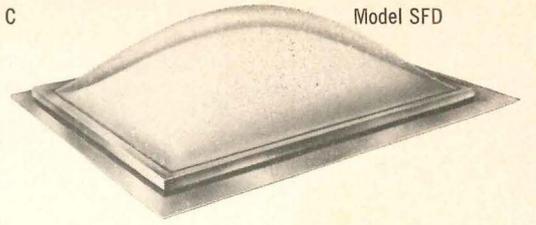
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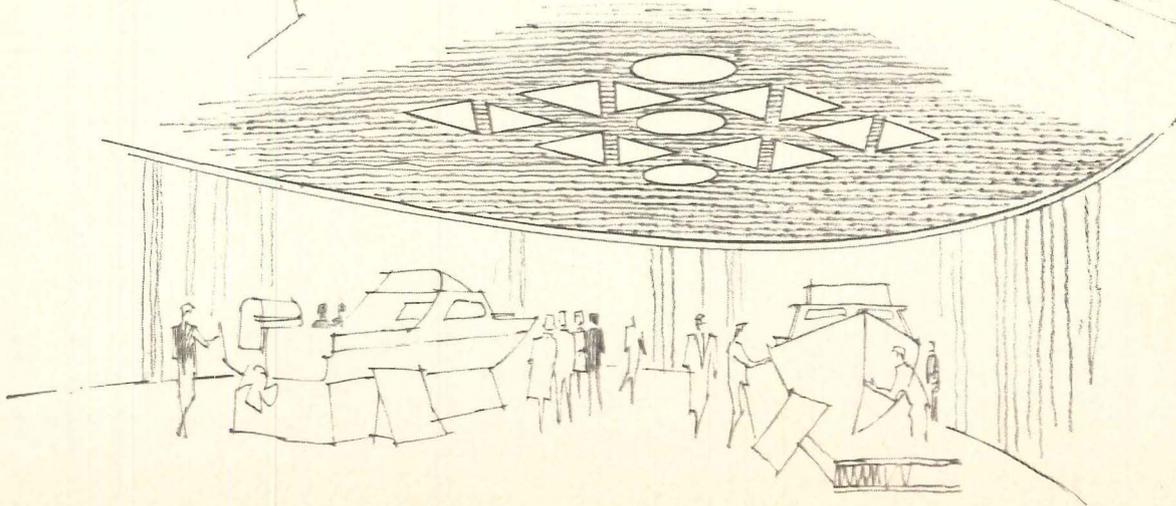
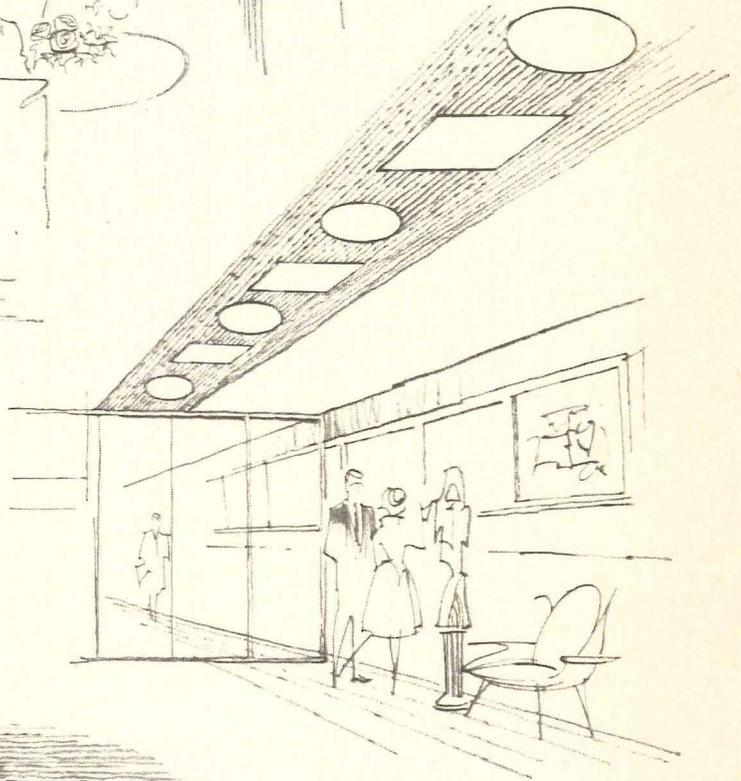
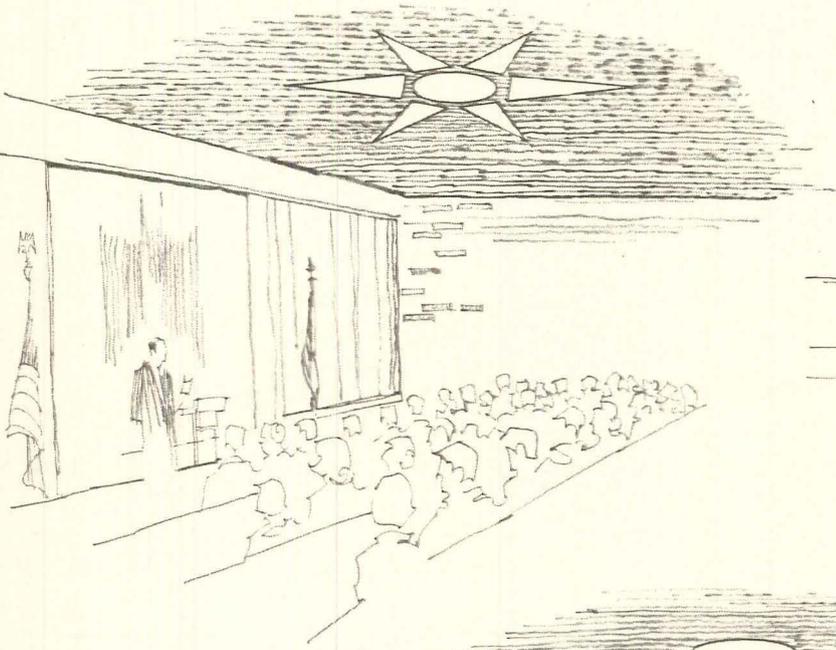
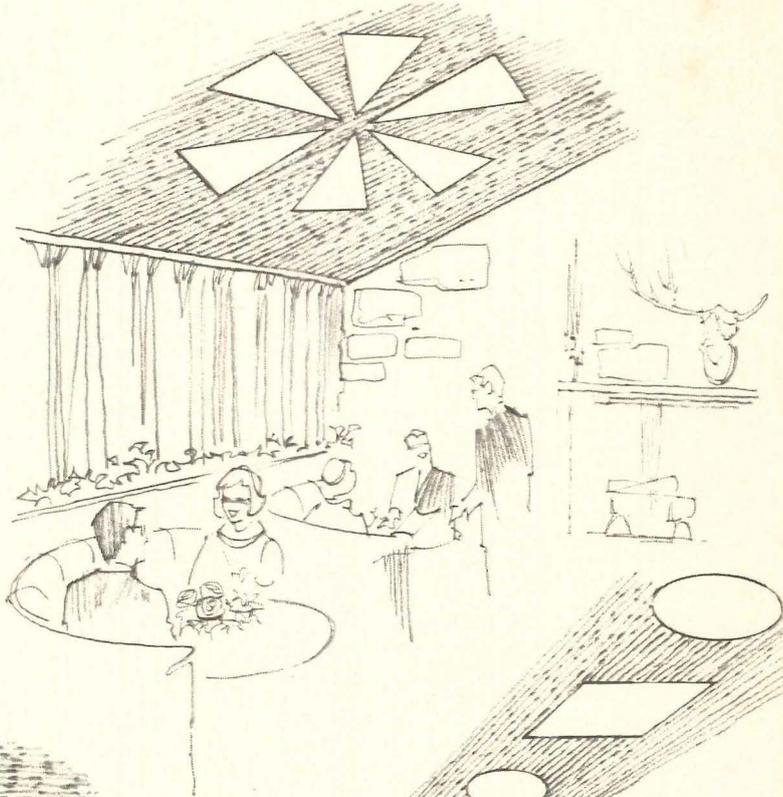
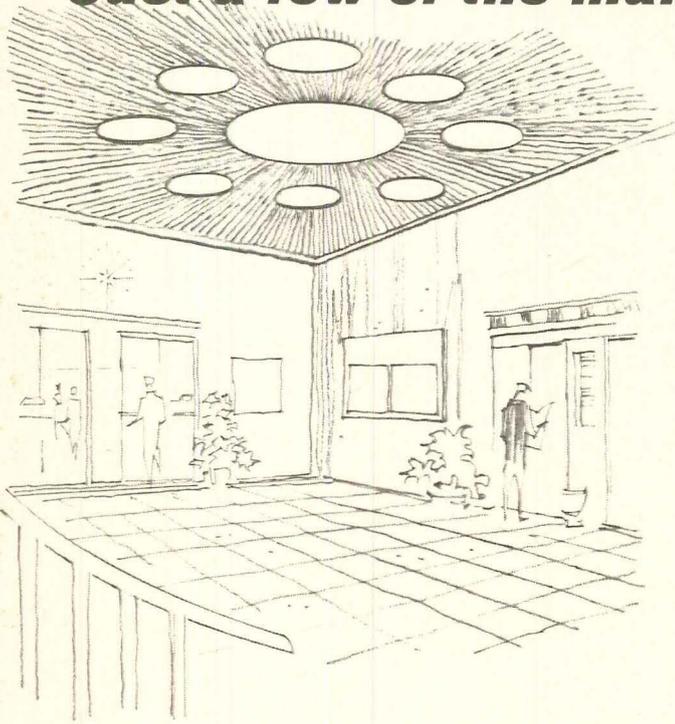
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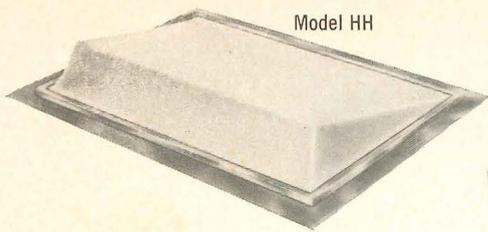


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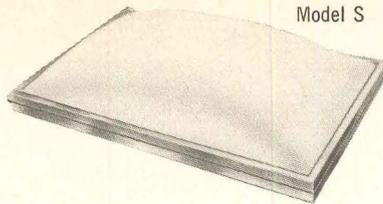




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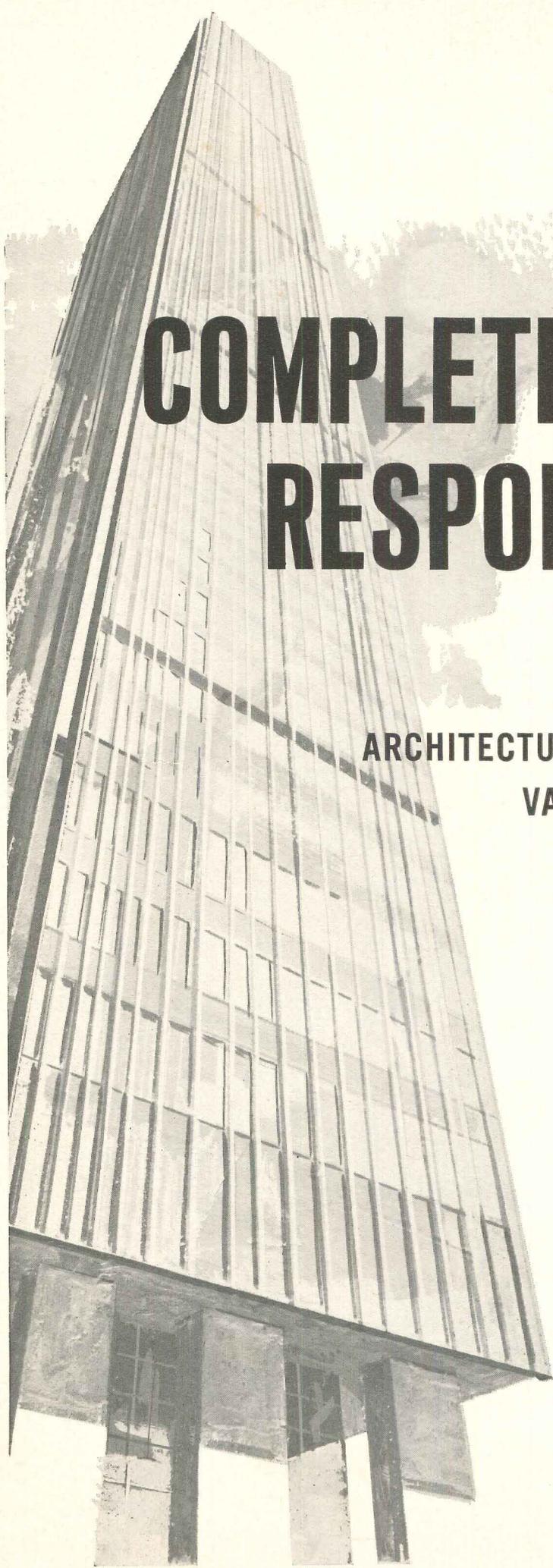
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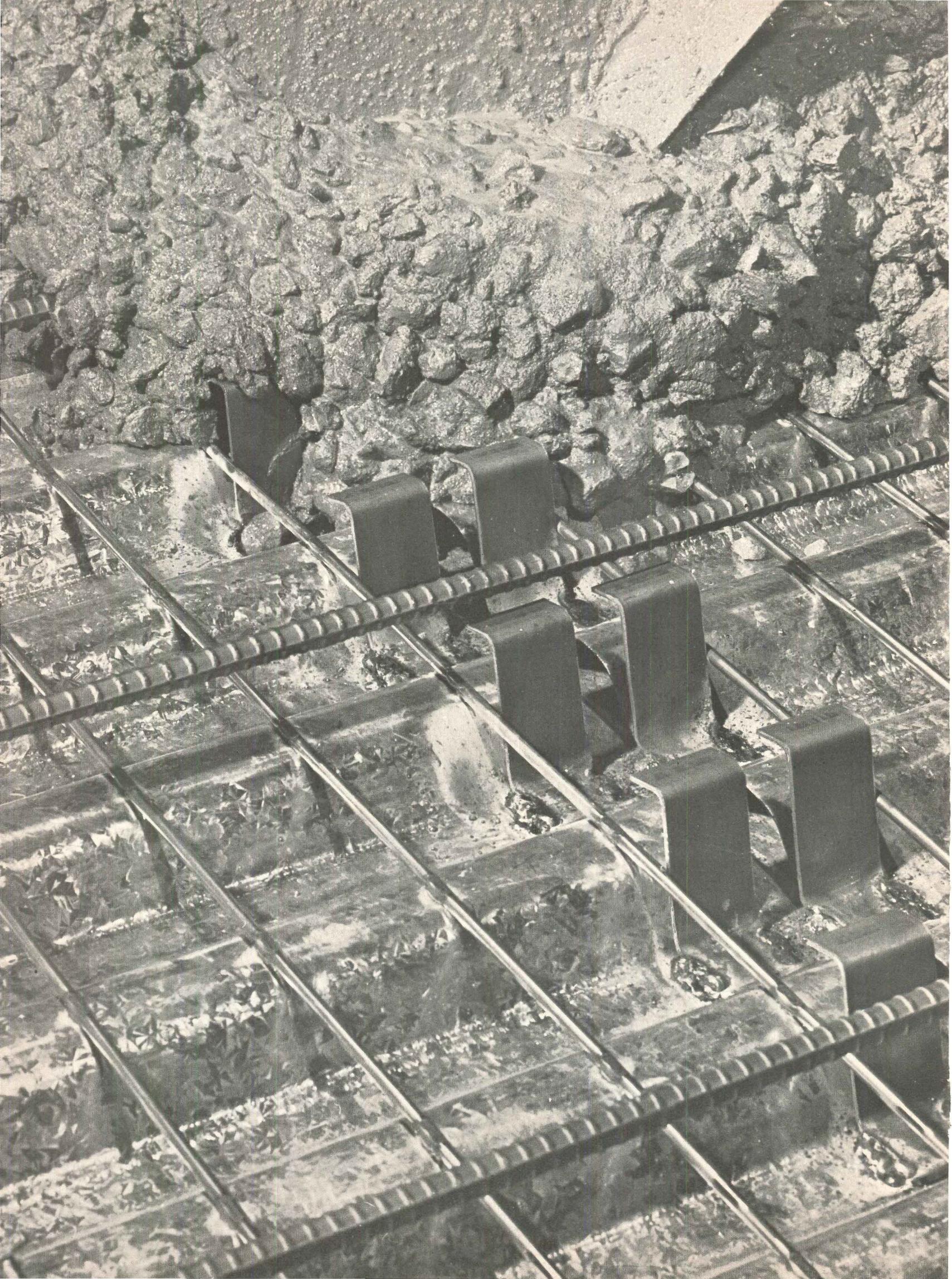
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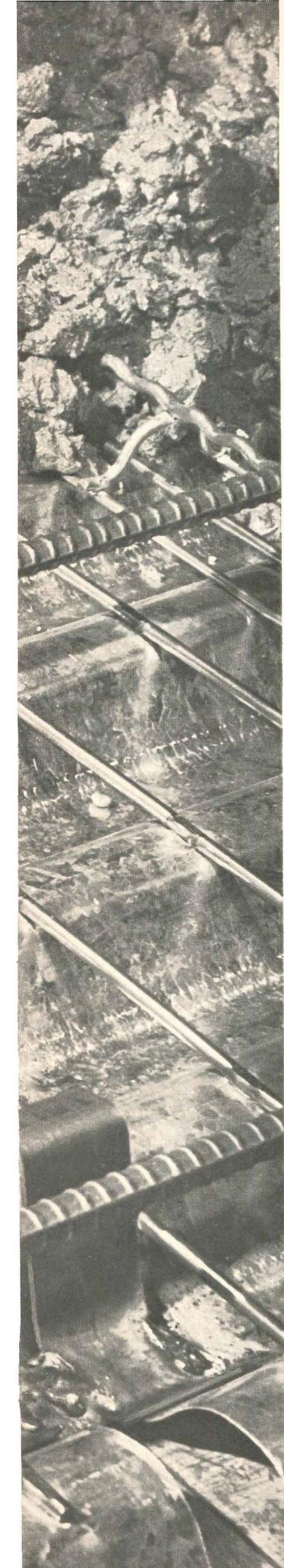
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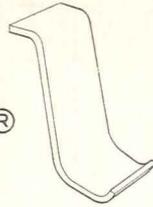


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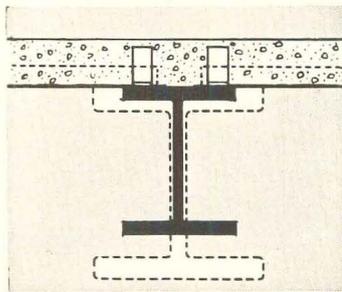


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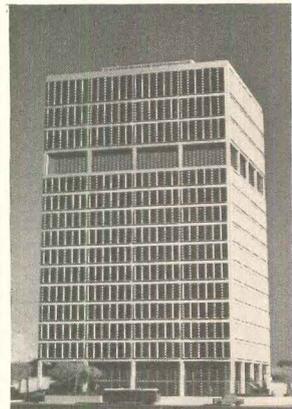
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*Illustrated at right:* 16-story Pierre Laclede Building, now under construction, Clayton, Missouri, which utilizes Cofar composite construction.



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Architects — Furbringer and Ehrman (Memphis); Structural Engineers — T. Y. Lin & Associates (Chicago); Contractor — J. M. O'Brien & Co. (Memphis); Holiday Inn Architects — William W. Bond & Associates (Memphis).

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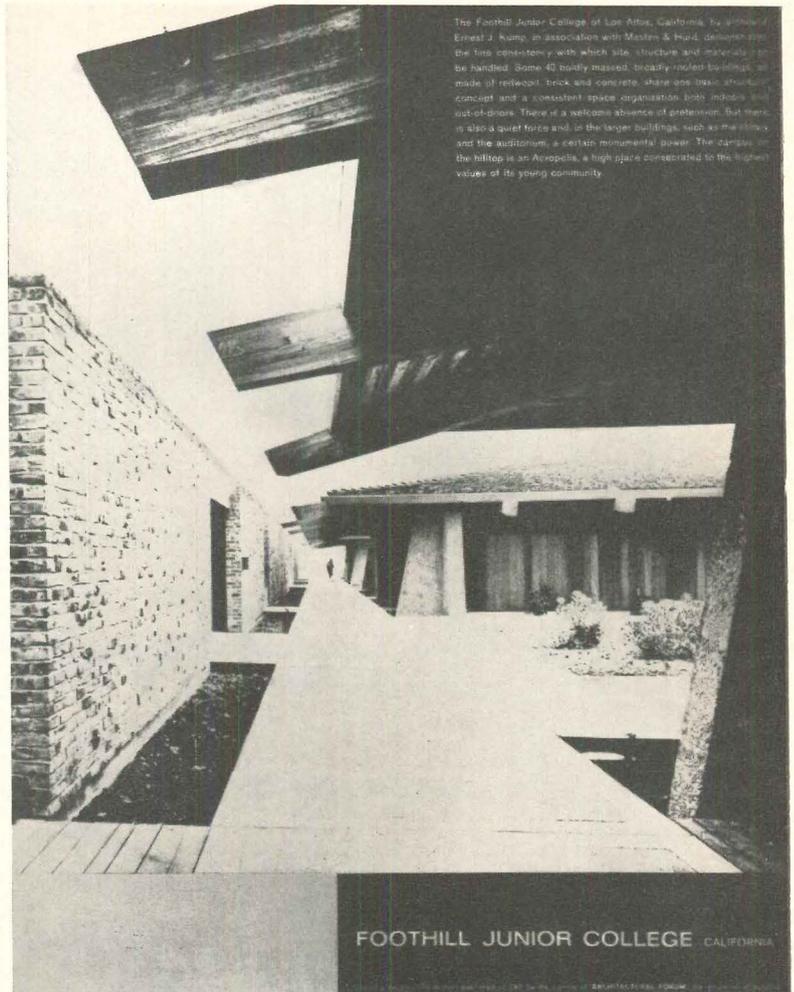
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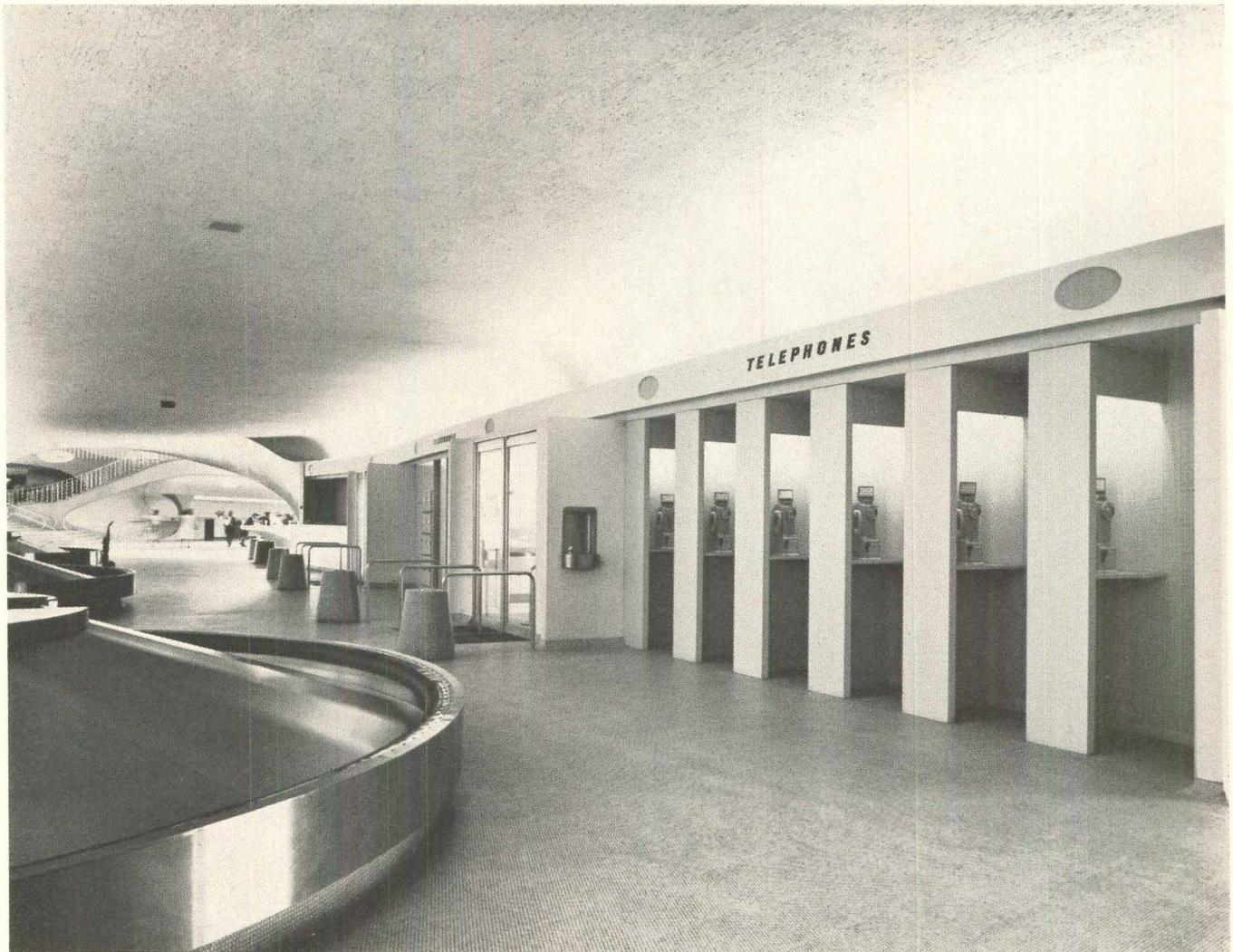
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Designed by John Martinez, a leading graphic artist, the ten posters are particularly suitable for display in schools, colleges, libraries, museums and other public areas such as convention halls, banks and department stores.

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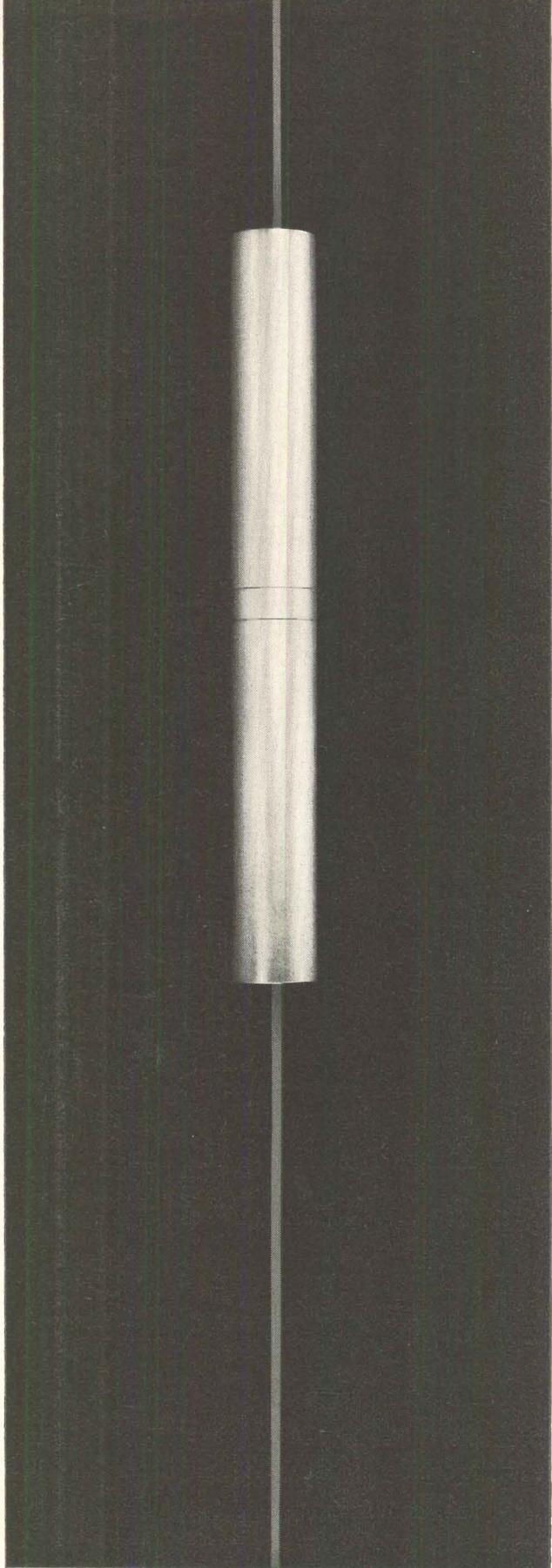
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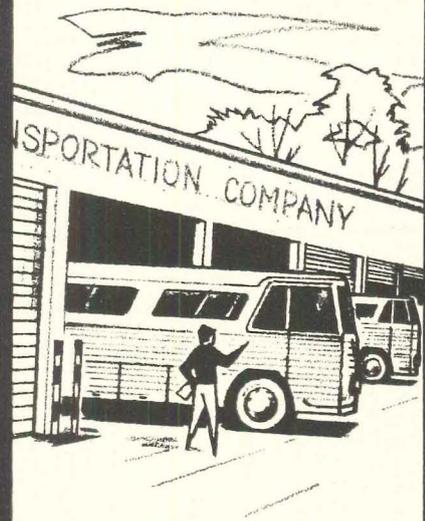


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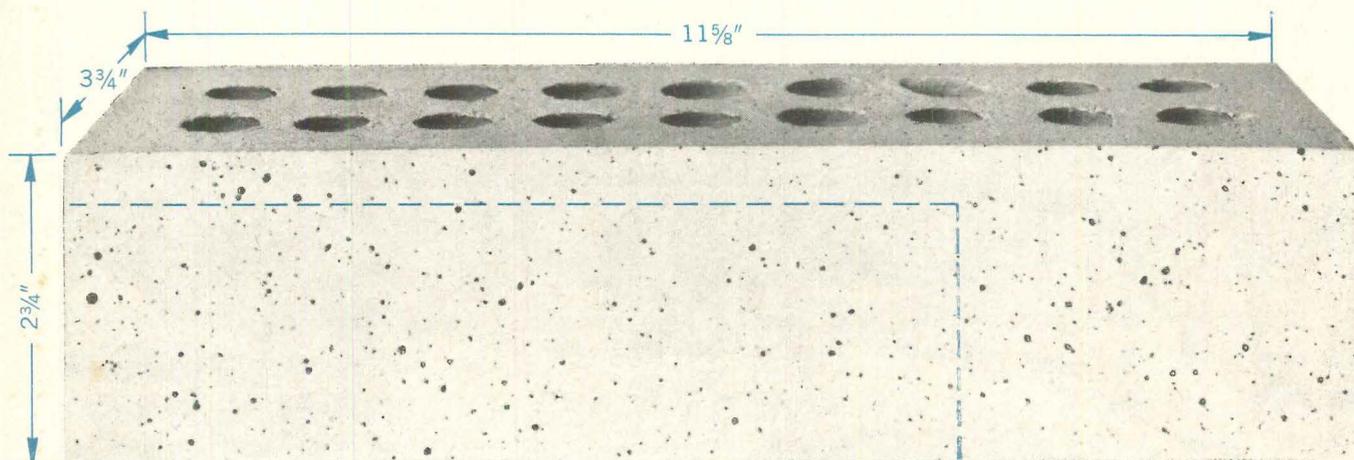
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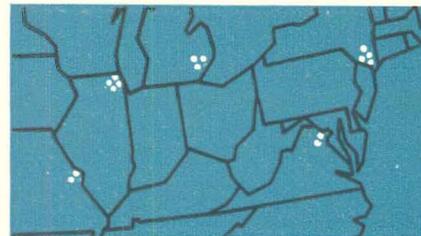


The dotted line represents a  
standard size brick (8" x 2 1/4" x 3 3/4")

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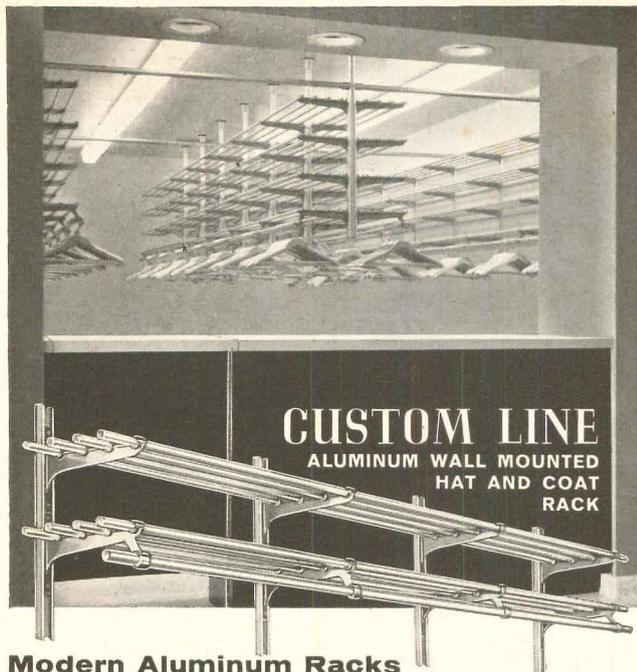
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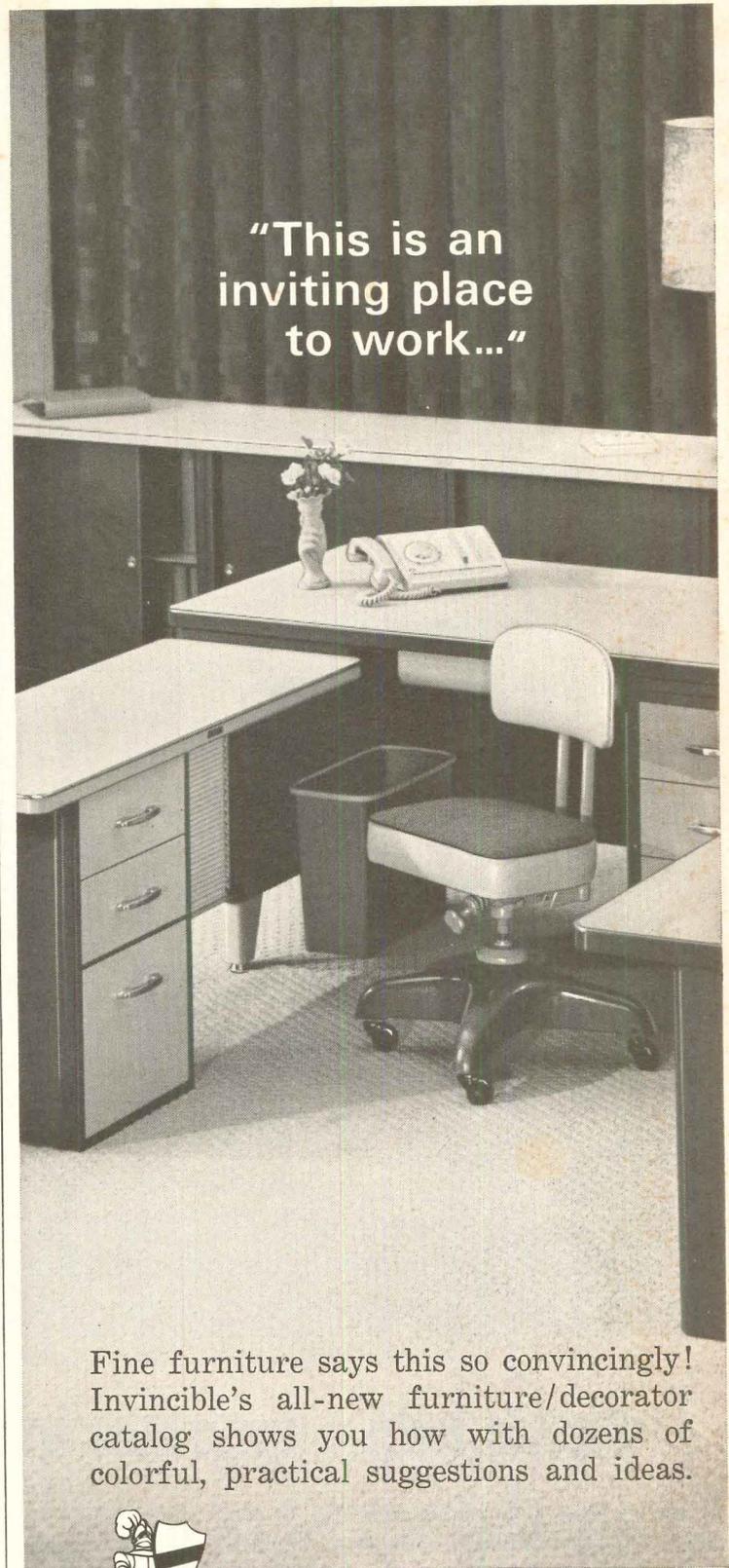
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## Panels help a luxurious building go up in record time

This modern apartment building is Park City West in Philadelphia. Samuel I. Oshiver, Developer, credits panels with helping him set a construction record by having this 350-unit building ready for its first tenant a year to the day after ground breaking. In addition to helping create the luxurious appearance of Park City West, these panels promise a bonus in low maintenance and more usable floor space.

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is 20-gauge zinc grip steel. The balcony panels have a 1/8" fiberboard core sandwiched between 24-gauge stretcher-level, porcelainized steel skins. The outer skin has a unique coat-of-arms design, applied in gold (see photo).

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**"PLUG-IN" SCHOOLS**

Forum: Your article on "Plug-in" Schools (Aug. '63) brings together a number of exciting developments and relates them to school plant and architectural planning in a very meaningful way.

There is a certain inconsistency between the general conclusions and the impossible aim of the Natick architects to develop a design for school which will get maximum "seat-by-seat" utilization. People are just onerous enough to be different and the percentage of enrollment in any group working together must differ at least year by year, unless we are to have some form of state prescription.

The Grand Valley experiment in unorthodox plant and organization is worth encouragement and observation; there should be a considerable impulse toward, and efficiency with, directing one's own learning activities. This development will lead to an increasing specialization in the teaching profession.

Washington, D.C. ARCHIBALD B. SHAW  
*American Assn. of School Administrators*

Forum: The "plug-in" school concept was overplugged.

The long development of electronic machines to aid education has received a great deal more publicity than application. Teaching devices, no matter how sophisticated, will remain a curiosity until we define the proper role of programmed learning.

The use of machines lends itself best to formalized, highly structured learning activities. It cannot easily replace a lab experiment, student research, a field trip, social contacts, or the sensitive communication between teacher and student.

We also remain skeptical about your statement, "They [machines] transfer the burden of flexibility for future changes in program from the school building to the machine itself." There is every chance that progress in school plant design will contribute more to the future development of education than machines.

Sacramento, Cal. CHARLES D. GIBSON, *Chief*  
CLAIR L. EATOUGH, *Senior Architect*  
*Bureau of School Planning*  
*California Department of Education*

Forum: I am convinced that "plug-in" schools are indeed a strong and practical possibility. I am equally sure that the educational establishment will tend to resist these improvements quite strenuously, and I worry that the necessary financial support and administrative facilitation may be slow in coming.

Forum is to be commended for having presented such a readable and well-illustrated discussion of a technical and complex matter. I strongly commend your article to school people at all levels.

Cambridge, Mass. ROBERT H. ANDERSON  
*Professor of Education*  
*Graduate School of Education, Harvard*

**THE BUILDING BEAT**

Forum: I was reading the editorial, "Is anybody covering this beat?" (July '63), and nodding and snorting the most emphatic agreement, when I blushing encountered the generous reference to my modest efforts in the *Post-Dispatch*.

It is sadly true that the American press has been inexplicably blind to most of the issues of urban renewal, beyond the obvious bricks-and-mortar, rent-and-tax-return kind of attention.

FORUM's energetic goading should have good effects. Meantime it is setting many good examples of where and how to look for news in urban and architectural design.

GEORGE MC CUE  
*St. Louis, Mo.*

Forum: Although your July editorial spanked us rather sharply, I feel no pain. Only gratitude, for the stories you have been kind enough to give us in the past, and for those I hope you will continue to give us in the future. No one admires FORUM's "alert" newsmen more than I do.

On stories like the Seagram Building tax decision, where we can offer even wider publicity and support for a critical cause, we are delighted to pick up a story and follow FORUM's lead. I might add two other cases where the *Times* and I owe the FORUM a debt: the East Front of the Capitol and the U.S. Pavilion at the New York Fair.

When there are axes to grind, let's continue to grind them together.

ADA LOUISE HUXTABLE  
*Architectural Critic*  
*The New York Times*

New York City

**GOODSPEED OPERA HOUSE**

Forum: It was wonderful to see such an excellent article and picture coverage of this Victorian restoration of which all of us in East Haddam, are so proud (Aug. '63).

JAMES R. WYNN  
*East Haddam, Conn.*

Forum: I visited the building just after completion of the restoration and found an over-emphasis on gaudy decoration and the use of reproductions. It must have been a splendid sight with falling plaster and flyspecks—but I suppose that would have brought in the wrong type of customer and would have limited the project to a minority group.

The exterior is almost beyond reproach, though, and one tough winter should remedy this minor fault.

I wish there were more like this one.

CHARLES ADDAMS  
*New York City*

Forum: I enjoyed your article "A Charming Folly Restored."

As you know, I had a small part to play in the restoration. So, I was pleased and proud that your article will permit Americans everywhere to know about Connecticut's Goodspeed Opera House.

ABRAHAM RIBICOFF  
*United States Senate*  
Washington, D.C.

Forum: I, too, had my small joy in helping to bring this restoration about. I have implored three successive governors of the state to do something about this building, ending with Abraham Ribicoff. One governor never even bothered to answer my letters; another gave me a nice pat on the back and told me to go play nicely with my dolls. But Mr. Ribicoff showed us a way to get some sort of financing from the Commission for the Preservation of Historical Buildings. That was at least a beginning. The final result of all our combined efforts is the most beautiful theater in the U.S.

PEGGY WOOD  
*Stamford, Conn.*

**THOSE PARTY WALLS**

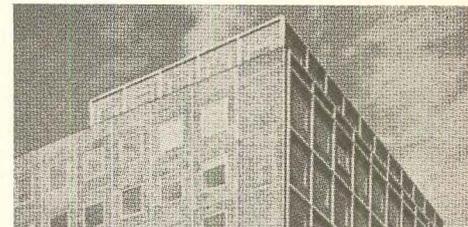
Forum: You may well be right in taking to task in your September *Editor's Note* those architects who design tall buildings with gross disparities between the main facade and the party wall, but you are wrong in saying that it is through ignorance of the lesson of Louis Sullivan. This is precisely what Sullivan did himself!

A juxtaposition of your photograph at the foot of page 132 with a comparable view of either the Wainwright Building in St. Louis or the Guaranty (Prudential) Building in Buffalo will demonstrate this quite clearly.

PETER COLLINS  
*Professor of Architecture*  
*McGill University*

Montreal

■ Sullivan's doctrine still stands, though no Guaranty (bottom) of all his works.—ED.



DOUGLAS HASKELL



U. OF MINN. PRESS

**SERIOUS CRITICISM?**

Forum: "Portico to the Jet Age" (July '63) glibly comments "... the enormous scale of plan circulation in an American airport has been finally disentangled from the unchanging human scale of pedestrian circulation. . . ." It never seems to notice that the plan indicates no provision for line-up space for waiting passengers about to enter the mobile lounges. The height of the "chess-piece" control tower is statistically and meaninglessly recorded, but its total incongruity and negation of the terminal itself is not deemed worth writing about.

THEODORE MATOFF  
*Architect*  
Mill Valley, Calif.

continued on page 29



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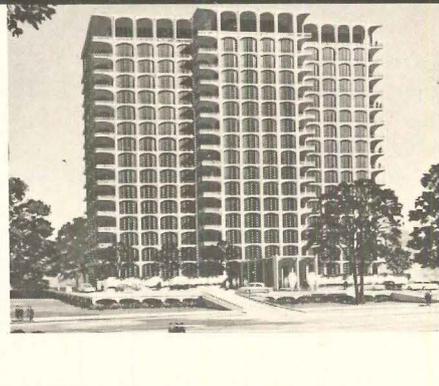
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continued from page 27



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■ For those occasions when a mobile lounge is not already at its dock, there is a space at least 50 feet deep where passengers may group in front of the gates, without blocking circulation in the waiting area—ED.

### VIVID COVER

Forum: We would like very much to get a reprint, suitable for framing, of your August cover by Graham Redgrave-Rust. With its vivid colors, it is truly a work of art.

WILLIAM F. BERNAUER  
Philadelphia President, Mal-Ber Mfg. Co.

### SWITZERLAND ABROAD

Forum: I have known and admired your splendid magazine for a long time, as do many of my colleagues here in Switzerland.

How else but through FORUM could we have heard about the design proposed by the so-called "Swiss Exhibits, Inc." for the New York Fair (*Projects*, Aug. '63)? It came once again as a shock to see that Switzerland is still represented abroad as an old-fashioned, darling country of yodeling tribesmen distributing watches, chocolates, and other goodies, preferably in music-box-chalets mixed with exotic pyramids (probably representing the snow-capped mountains). It is true that there are some Yodelers left; and much photographed they are. But Switzerland happens to be a very cultured, highly industrialized country and it also happens to have the third highest standard of living in the world.

Why doesn't FORUM help us fight this candybar-Disneyland image of Switzerland by devoting an issue to the excellent and exciting architecture that is currently being produced all over this country, especially in the field of schools and public buildings?

Zurich  
GREED KUENZLE  
Architect

■ See the *Gewerbeschule* in Basel (*FORUM*, June '63) and *Abroad every month!*—ED.

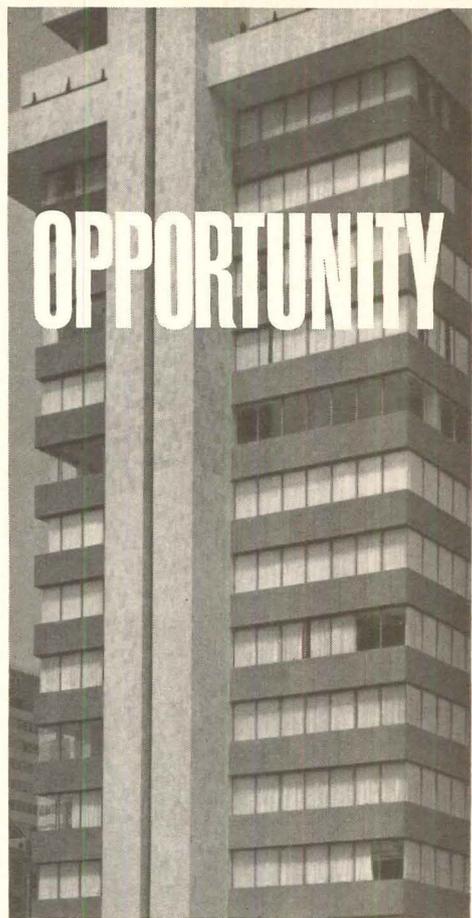
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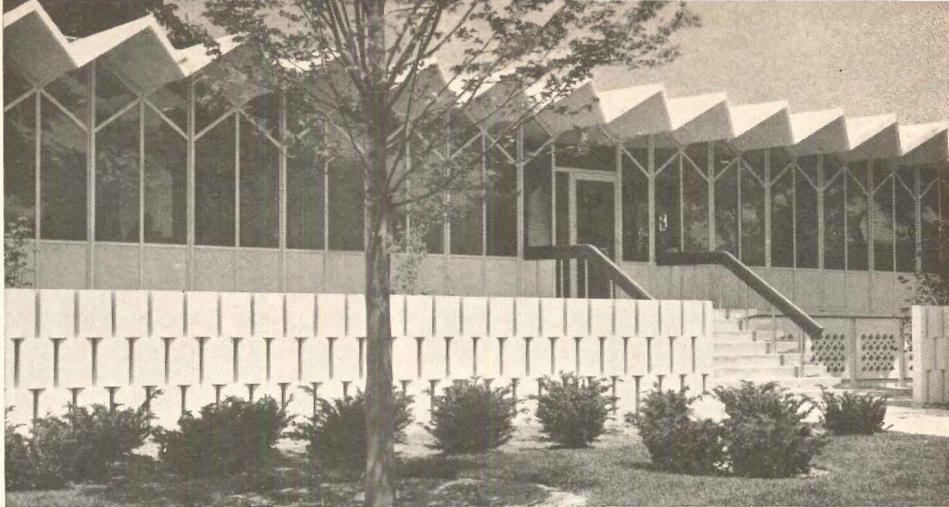
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**BESTWALL  
CERTAIN-TEED**

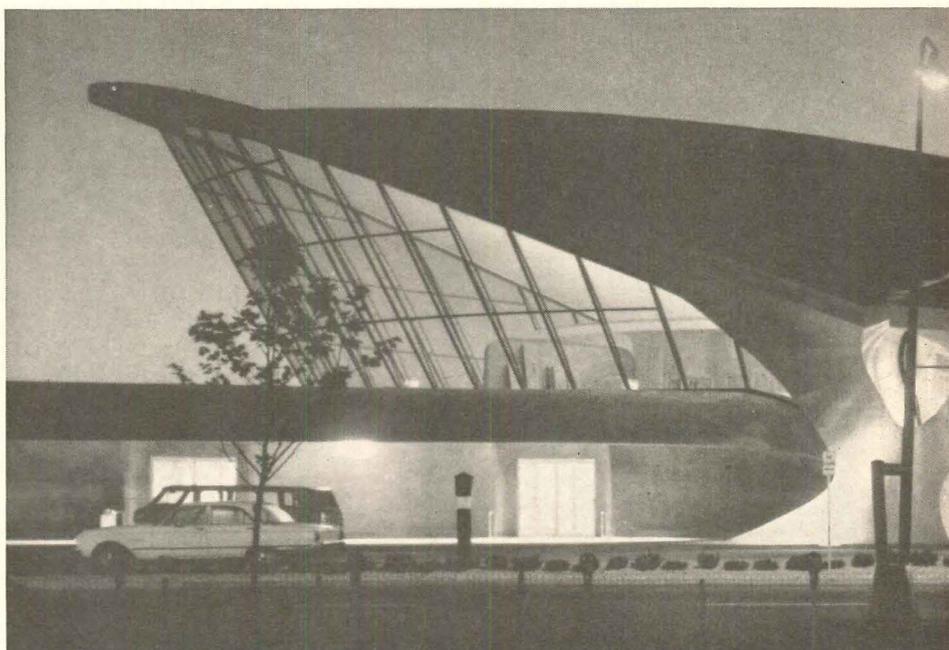
## FOLDED

American Concrete Institute Headquarters, Detroit. Architects-Engineers: Minoru Yamasaki and Associates. General Contractors: Pulte-Strang, Inc. Oildraulic Passenger Elevator.



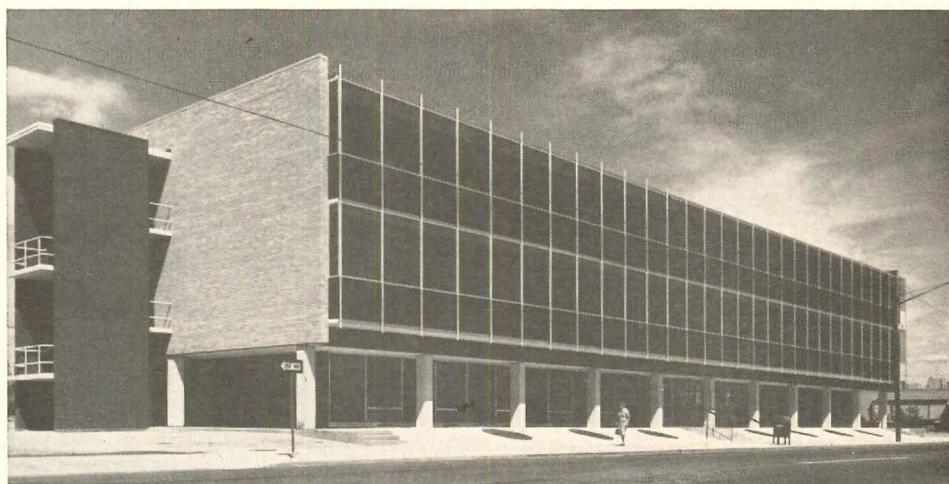
## CURVED

Trans World Flight Center, New York City. Architects: Eero Saarinen & Associates. General Contractor: Grove, Shepherd, Wilson & Kruge, Inc. Oildraulic elevating equipment installed by Burlington Elevators, Inc.: two passenger elevators, freight elevator, Levelator Lift, two Leva-Dock Ramps.



## FLAT

General Electric Office Building, 201 University, Denver. Architect: Moore & Bush, Denver. General Contractor: N. G. Petry Construction Co., Denver. Oildraulic passenger elevator installed by Dover Elevator Co.

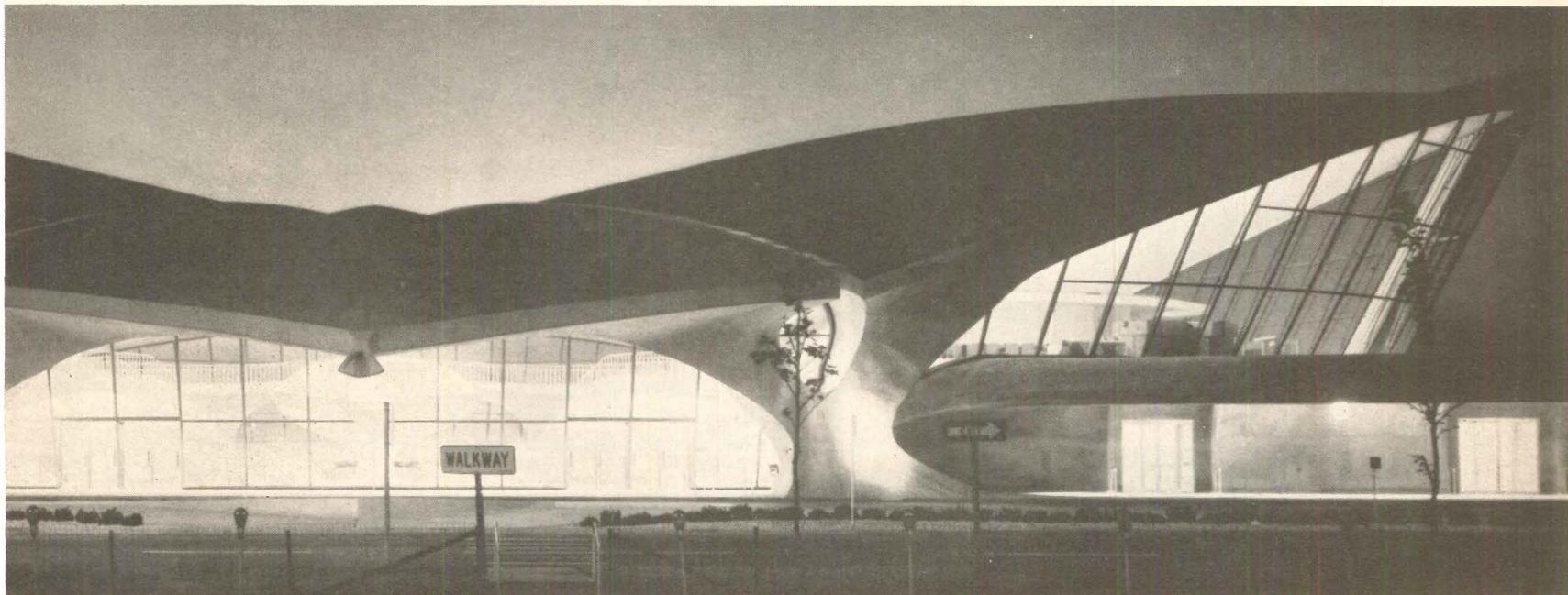


## PEAKED

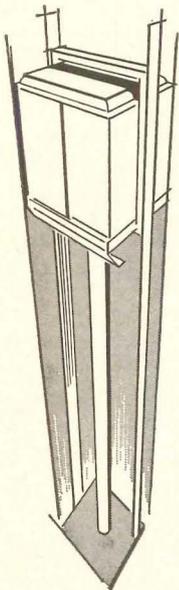
Allstate Insurance Company, Dallas. Architect: George L. Dahl, Architects and Engineers. General Contractor: Inwood Construction Co. Oildraulic passenger elevator installed by Hunter-Hayes Elevator Co.



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In addition to this esthetic freedom, the Rotary Oilraulic Elevator offers several very practical advantages. Construction costs are reduced by elimination of the penthouse and by use of lighter shaft walls that need not be load-bearing. The Oilraulic power unit may be located at some distance from the shaft; you make best use of available space. Building owners will benefit from the Rotary Oilrau-

lic's efficient, economical operation and low maintenance requirements.

For your new buildings to seven stories, consider the design freedom and practical advantages offered by the Rotary Oilraulic Elevator. See our catalog in Sweet's or send the coupon below for more information.

### MAIL FOR INFORMATION

**DOVER** Dover Corporation, Elevator Division  
1011 Kentucky, Memphis 2, Tenn.

Please send information on Rotary Oilraulic Elevators to:

Name \_\_\_\_\_

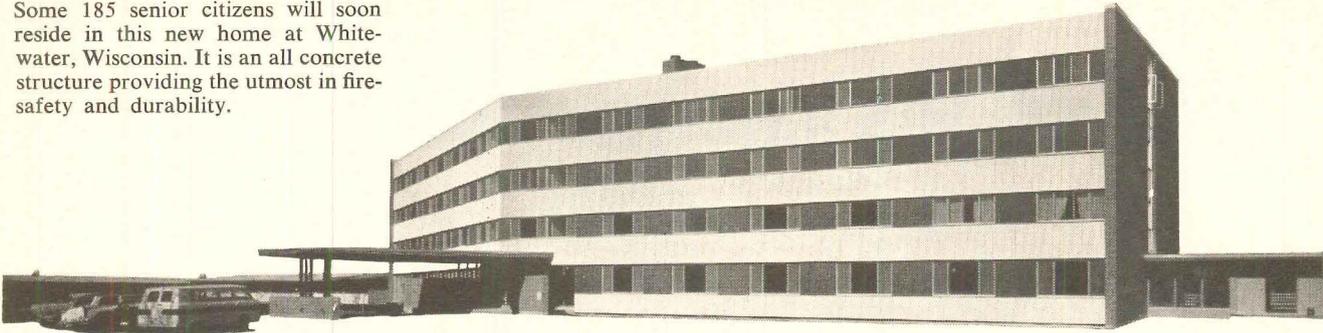
Company \_\_\_\_\_

Address \_\_\_\_\_

**ROTARY OILDRAULIC ELEVATORS** • Passenger & Freight

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Some 185 senior citizens will soon reside in this new home at White-water, Wisconsin. It is an all concrete structure providing the utmost in fire-safety and durability.



## PRECAST STRUCTURAL CONCRETE ... for Senior Citizens' Residence

Fairhaven Home is built almost entirely of precast concrete. Its structural frame consists of precast columns, beams and roof girders. The floors and roof are flexicore slab units. Even the exterior walls are precast panels with special textured surfaces, making the structure completely fire-resistant as well as architecturally pleasing.

### LEHIGH EARLY STRENGTH CEMENT BENEFITS EVERY MEMBER OF THE TEAM

Mid-States Concrete Products Company made all precast units in this structure with Lehigh Early Strength Cement. Here, as in almost any concrete work, this cement provided important benefits for manufacturer,

contractor and architect alike. Through quicker reuse of forms. Earlier availability of units. Assured on-time delivery for smoother planning.

*Owner:* Fairhaven Corp.—Under the auspices of Wisconsin Conference—United Church of Christ (Wisconsin Congregational Conference)

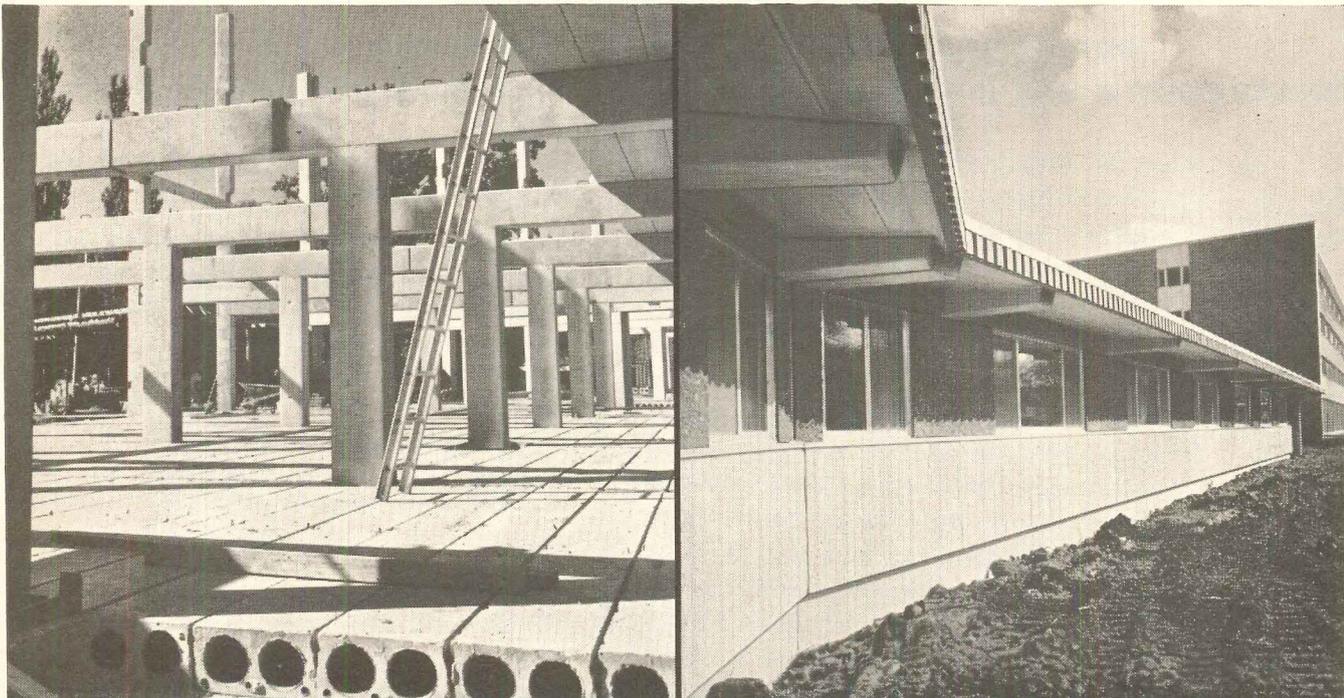
*Architect:* Waterman, Fuge & Assoc., Fort Atkinson, Wisc.

*Contractor:* T. S. Willis, Janesville, Wisc.

*Precast Concrete:* Mid-States Concrete Products Co., South Beloit, Ill.



Lehigh Portland Cement Company, Allentown, Pa.

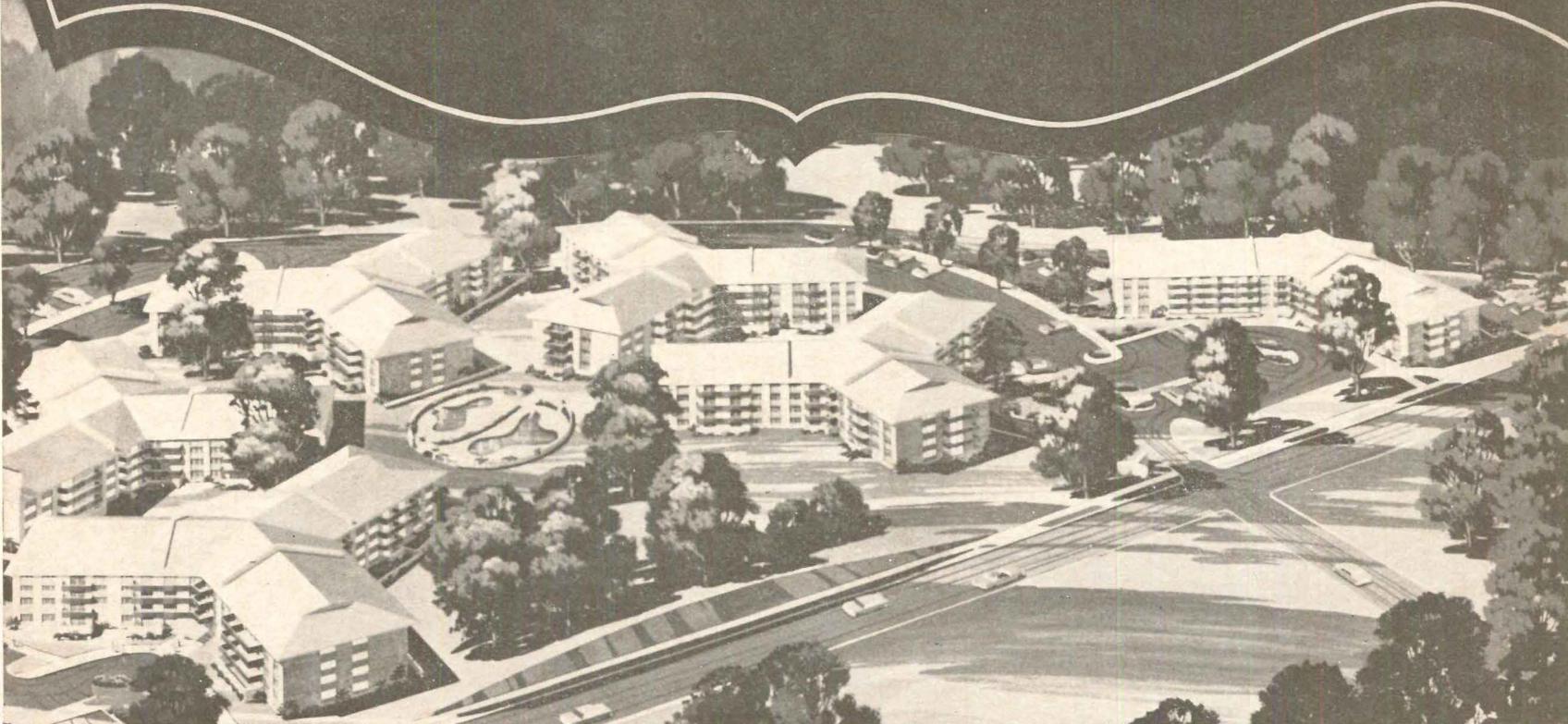


Precast concrete columns and beams are 12" x 16". Maximum height of columns is 37'4". Maximum length of beams is 27'1½". Roof girder beams were cast to provide a 2' rise in roof slope and cantilever 4'6". Flexicore floor units are 8" x 16"; roof units 6" x 16".

Textured surface of light panels was made with heavy brush. The dark panels have an exposed aggregate surface using a grey stone. Light panels are 7⅝" thick including 2" of shop applied styrofoam. Dark panels inset between windows are 4" thick.

# APARTMENTS

## WAITING LIST ONLY



Lenox Forest, Atlanta—Tremont Corp.

**MAKE YOUR MARQUEE READ LIKE THIS! INSTALL FLOAT-AWAY CLOSET SYSTEMS!**

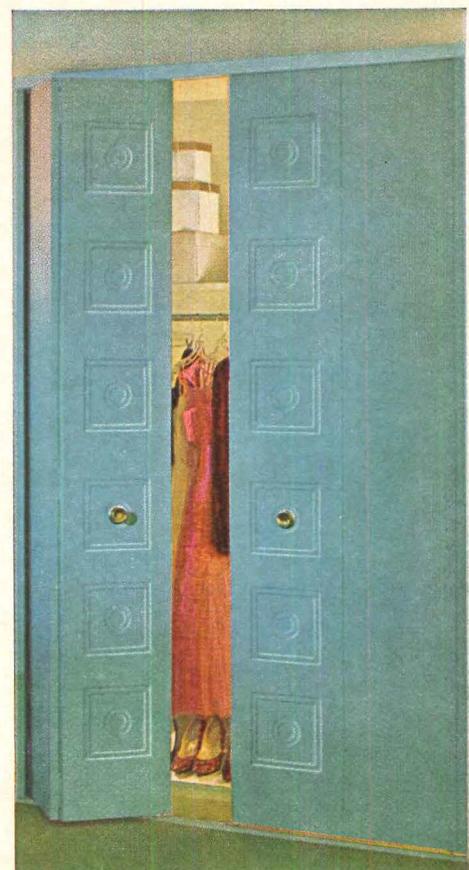
Beat the competition! Plan the extras today's tenants want! One of the most important—adequate storage. *Plus* smart design. Get them with Float-Away Closet Systems.

Here are just a few of the cost-cutting, problem-solving features Float-Away offers:

- Exclusive!** Unlimited Flexibility—Doors to fit any height, any width—can even be job-measured!
- Exclusive!** Heavier #23 Gauge Steel—10% heavier than any other metal bifold door.
- Exclusive!** Color Selection—6 custom colors in special quantities, or standard decorative off-white primer.
- Exclusive!** Trim Systems—All trim and hardware furnished—no door frames required!
- Exclusive!** Rust Proof—Doors are zinc electroplated and bonderized steel! Warp-proof, too.

Many more exclusive features that only Float-Away gives you!

Write now for Float-Away's 12-page color brochure showing new developments, typical applications and decorating possibilities; also for folder of tracing details and architectural specifications.



The Georgetown: only one of six attractive designs.

**FLOAT-AWAY DOOR COMPANY**

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NO OTHER CLOSET DOOR EVEN OFFERS ALL THE FEATURES FLOAT-AWAY GUARANTEES



Colors: 980 Shibui Dusk, 981 Shibui Dawn, V-300 Black, V-304 White

## Vina-Lux **shibui** Series

*subtle floor beauty that won't "walk off"...*

The Japanese **shibui** feeling for design, form and color is uniquely captured in Vina-Lux Shibui Series . . . another exclusive styling in vinyl asbestos tile with patterning distributed through the full thickness of the tile. Shibui makes a beautiful, yet rugged floor for heavy traffic areas—can be installed over concrete—above, on or below grade, or over wood or plywood subfloors. May we send you samples and detailed architectural specifications? Azrock Floor Products Division, Uvalde Rock Asphalt Company, 505A Frost Building, San Antonio.

Magnified view shows pattern distribution through full thickness of tile.

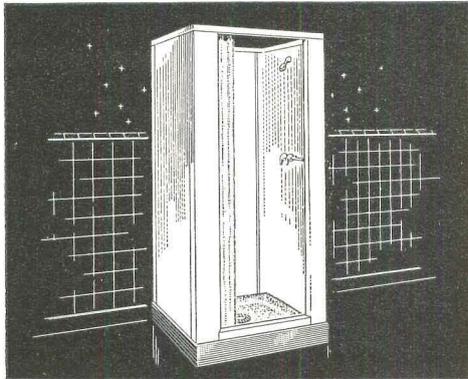
Gauge:  $\frac{1}{8}$ ". Standard size: 9" x 9". Modular size: 12" x 12" available in quantities of 9000 square feet per color—at no extra charge.

an exclusive styling by **AZROCK**<sup>®</sup>

# QUICK FACTS FROM **FIAT**

...a handy guide in selecting the proper product for each application

SHOWER CABINETS



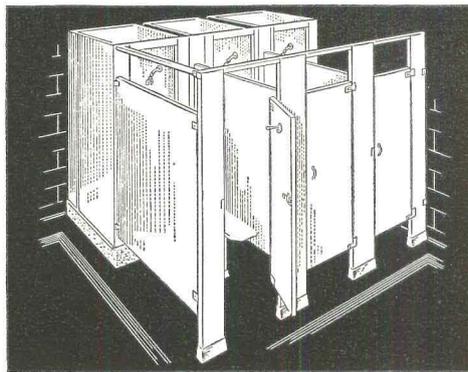
**PRODUCT** CADET SHOWER STALL

A versatile cabinet that fills a wide range of requirements. Bonderized-galvanized wall panels are prefabricated with precision to provide easy installation and leak-proof service. Square, corner and recessed models available—come in white or choice of colors. Cadet is one of many Fiat models—see Sweet's Architectural File 22b/Fi for details on all models.

**APPLICATION** HOME/SCHOOL/CLUB

Cadet is the key to economy in planning for showers: Saves cost of carpentry (no lumber needed); saves cost of sub-pan (uses Pre-Cast Terrazzo floor); saves on call-backs (over 2,000,000 Fiat showers prove value and performance in new homes, remodeling and institutions). Contractors claim they save 2/3 the cost of built-on-the-job showers.

DRESSING STALLS



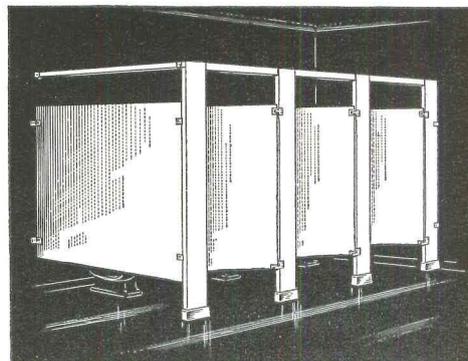
**PRODUCT** DRESSING ENCLOSURE

Designed with rugged, flush type panels, Fiat Dressing Enclosures combine with and augment the service of any shower stall. Bonderized-galvanized steel is finished with a long-lasting baked-on enamel. These quality enclosures may be specified for use with Fiat or other make shower cabinets, either with doors or with curtain rod and curtain. Hard wood seat optional.

**APPLICATION** ADDITION TO SHOWER

The usefulness of shower cabinets in institutions, factories, and clubs is greatly expanded when installed in combination with dressing enclosures to provide convenience and privacy in a wide variety of single and battery arrangements. Both should be by the same manufacturer to assure design and color harmony, and both should be placed in the same section of the specifications.

TOILET ENCLOSURES



**PRODUCT** TOILET ENCLOSURE

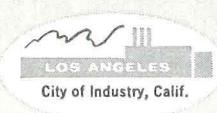
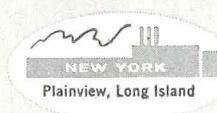
Duro headrail-braced model shown is the most simple and hence the least expensive toilet enclosure to install. It was deliberately designed to meet popular concepts of clean, modern design and yet was engineered to economize on details that do not detract from its appearance, nor lessen its performance or long-life.

**TYPES AND APPLICATION**

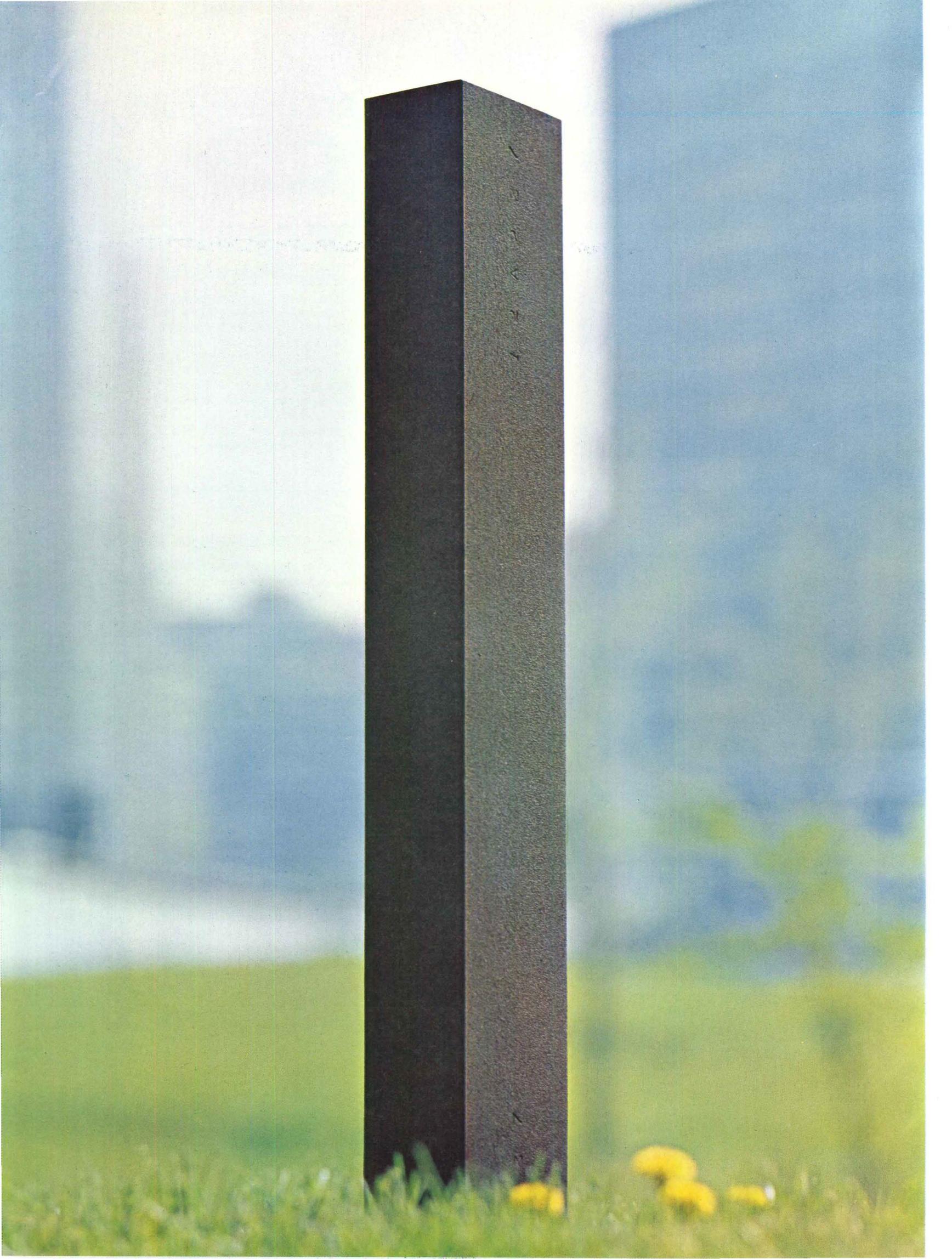
The Duro model is ideal for replacement, remodeling projects as well as new construction. No special reinforcement of floor, wall or ceiling required. Ceiling-hung and floor-braced models are also available with the "years-ahead" features that have earned a reputation for durability, low maintenance and easy installation.

©1963, Fiat Metal Mfg. Co., Inc.

See Sweet's  $\frac{22B}{Fi}$  and  $\frac{26C}{Fi}$  or write nearest Fiat office for literature.



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USS COR-TEN Steel angle exposed for 30 months in a semi-industrial atmosphere. The history of our corrosion studies of COR-TEN goes back 30 years.

## ***THIS STEEL PAINTS ITSELF***

When used bare on building exteriors, it weathers to a rich, earthy color of natural beauty, and if it is scratched, it heals itself. USS COR-TEN Steel is the name of this versatile material.

The oxide coating that forms on bare COR-TEN Steel is extremely dense and adherent, inhibits further corrosive attack and preserves the structural integrity of the member. Its brown-red-blue color gradually darkens with exposure to the elements and develops a fine-grained texture—a character only nature can give, as with stone or timber.

USS COR-TEN Steel is a high-strength low-alloy steel. It is up to 40% stronger than structural carbon steel, so it can be used in thinner sections to cut weight. It

is readily weldable. And, when a color scheme *requires* painting of steel members, the paint will last twice as long because the oxide film is nonflaking. COR-TEN Steel is available in all rolled steel products—plates, structurals (including wide-flange), bars, sheets, strip and tubular products. For more information, write for our new folder, "COR-TEN Steel for Architectural Applications." United States Steel, Room 6774, 525 William Penn Place, Pittsburgh 30, Pa. USS and COR-TEN are registered trademarks.

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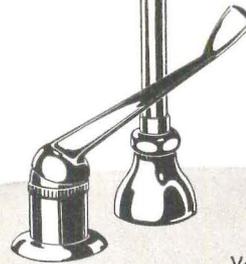
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Valve with Gooseneck  
Spout and Aerator

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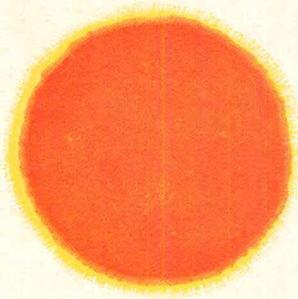
GREENSBURG, INDIANA

DELTA FAUCET OF CANADA LTD. — 48 SHAFT ROAD — REXDALE, ONTARIO

## **FORUM Directory of the 100 Biggest**

1962 was a record construction year for the 100 biggest architectural firms, the 100 biggest contractors and the 100 biggest corporate clients. The architects accounted for an imposing 17% of the total national dollar volume; the contractors 12%; and the corporate clients 11% of commercial, industrial and utility buildings.

Who are these 300 firms? What did they build? What are their prospects for this year? Architectural FORUM's Directory of the 100 Biggest is now available. 50¢ per copy prepaid. Send your order to Architectural FORUM Directory, Room 19-39, Time & Life Building, New York 20, New York.



**ANNOUNCES A  
MAJOR ADVANCE IN  
GLASS TECHNOLOGY**

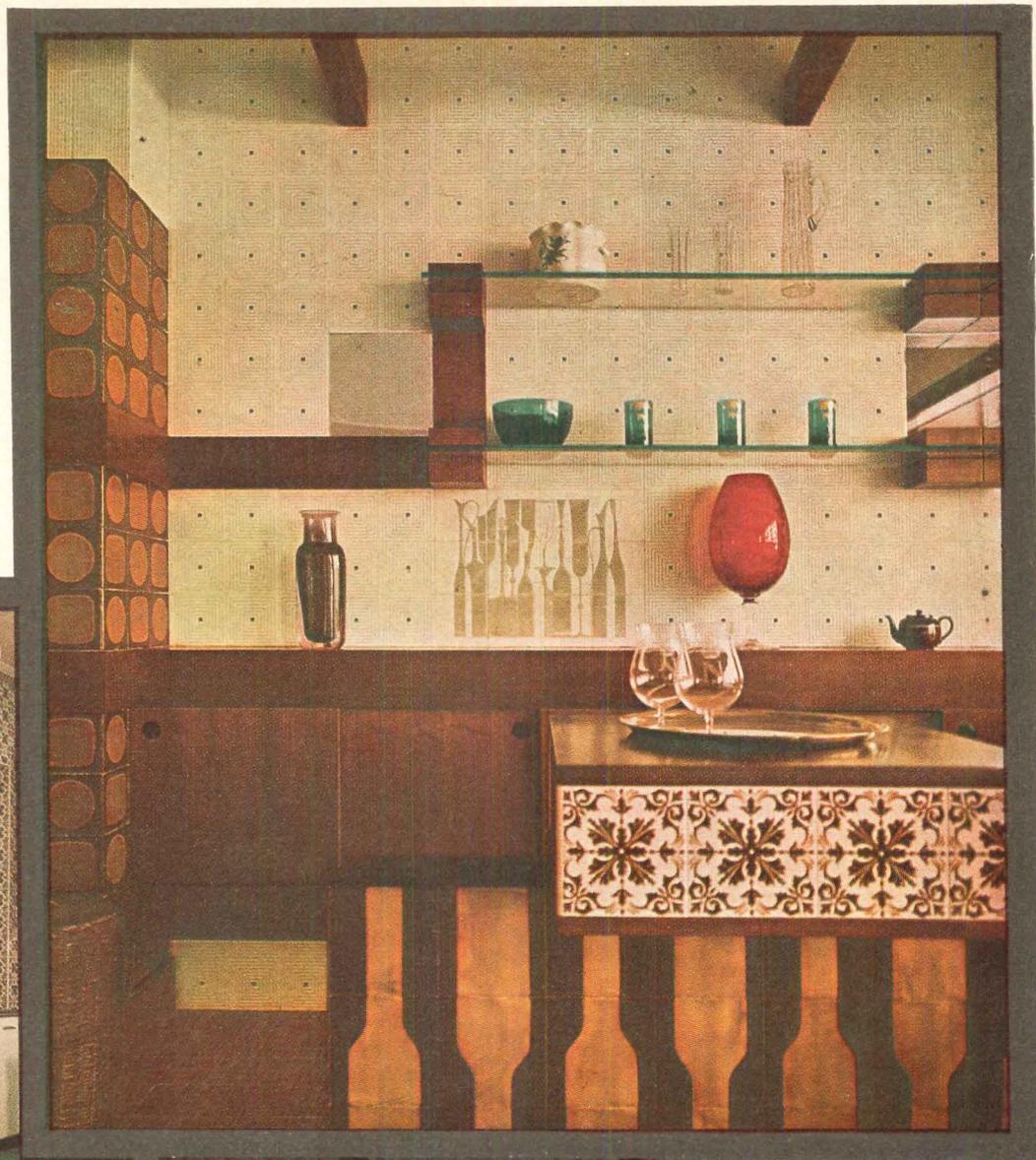
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**LHR Coated Glass that both re-  
flects and absorbs solar energy**

A new metal oxide LHR (Light and Heat Reflective) Coating for glass has been developed by PPG research to provide more effective control of solar energy transmittance. ■ Tests indicate this *reflective* coating affords a unique reduction in radiant heat transmittance even over extended periods of direct solar exposure. While transparent, the weather-durable coating also substantially reduces visible light transmittance, thereby effecting a high degree of glare-control. In addition, the glass is heat-strengthened during the coating process. ■ Practical effects of installation: reduced solar heat load on air conditioning equipment, with subsequent reduction in operating costs; increased comfort as sun, sky and cloud brightness and glare are reduced. Specific data for LHR-coated Solargray, Solarbronze, Solex and clear glass is available upon request. ■ LHR Coated Glass is now available for TWINDOW installation, and in limited quantity, for single glazing. For details, contact your local PPG Architectural Representative or write Pittsburgh Plate Glass Company, Room 3503, 632 Fort Duquesne Boulevard, Pittsburgh, Pennsylvania 15222. ■

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 by **Ginori** of Italy  
 Costs No More!



By now you know there's nothing quite like Ginori Tile. The extensive variety of unique printed and embossed patterns, the refreshing Italian colorings, provide unlimited inspiration for dramatic decor. But did you know that the TOTAL cost of a Ginori installation, figuring both tile and labor charges, can compare most favorably with an ordinary installation? Let us prove it to you . . . as we have proved it in numerous installations throughout America, in home and apartment developments, in hotels and commercial buildings!

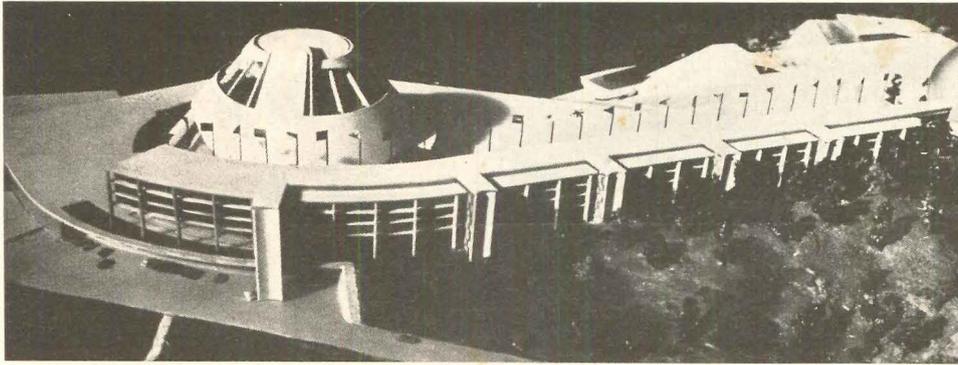
  
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*International peace center in Japan (below)*

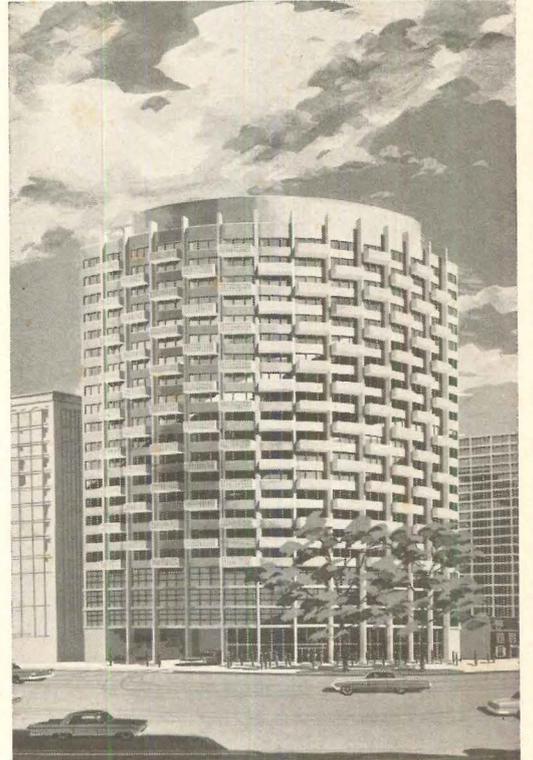
*Tower addition to Sullivan's Chicago Auditorium (page 45)*



1



2



3



4



5

**1. JAPAN PEACE CENTER.** Wilson Reis Netto of Brazil, former assistant to Oscar Niemeyer in the planning of Brasília, has designed an ambitious project at Hakone, Kanagawa Prefecture. Nearby Mt. Fujiyama and Lake Ashi inspired the form of his International Congress Palace, a conical, 2000-seat hall surrounded by water. It will be the center of a proposed Asian Geneva; intended for international conferences of all kinds, the Palace is planned with bridges to connect it to a plaza, an annex with apartments and

offices for conferees, and a spherical planetarium.

**2. SPACE AGE PLANT.** For Arrowhead Products, a rapidly expanding member of the aero-space industry (e.g., space suits, fueling systems), John Kewell & Associates has designed a low-slung, streamlined production plant with "T.V. tube" windows in Los Alamitos, Calif. The pre-cast concrete structure will be poured in textured forms.

**3. ROUND APARTMENTS.** Cylindrical structures seem to be one of the current fads in building cir-

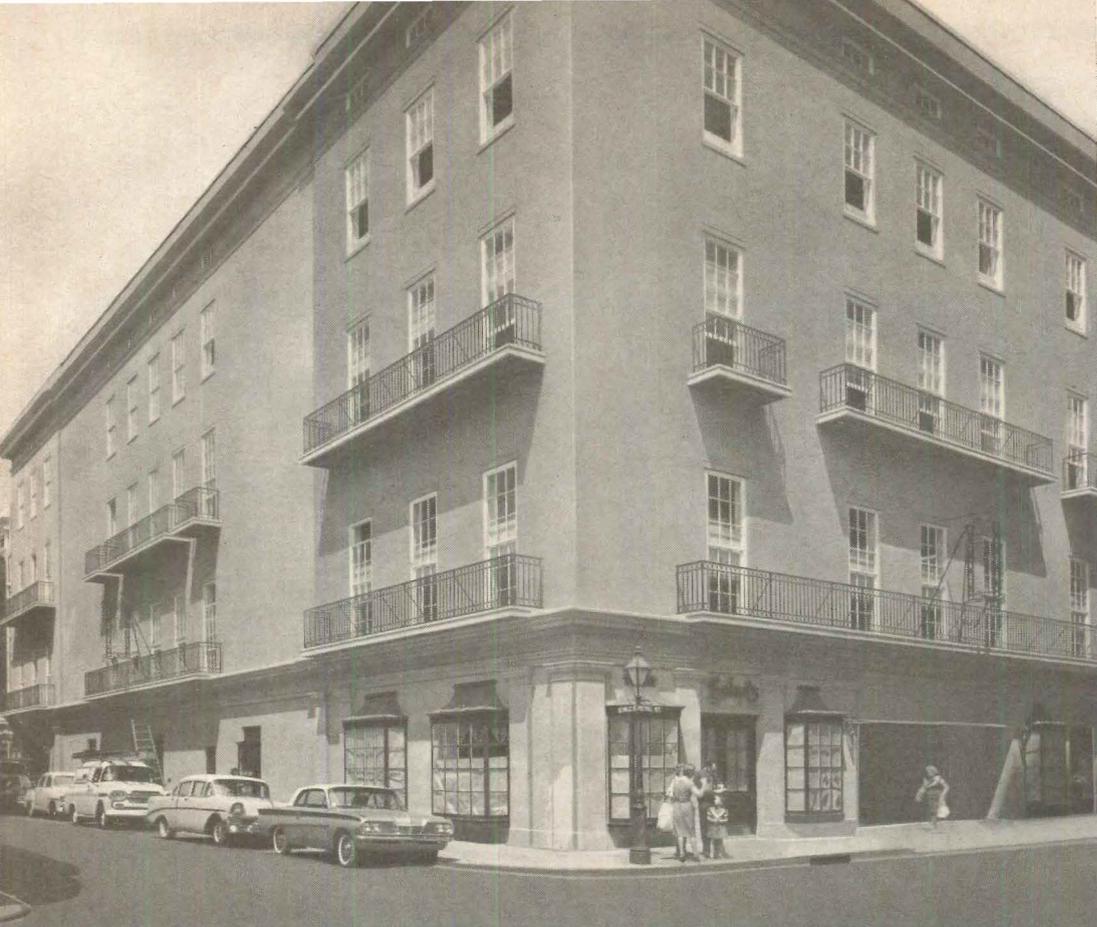
cles. This latest one in Philadelphia is actually a semi-circular apartment project for an irregular site on Benjamin Franklin Parkway. Sanctioned by the city's Art Commission (after some initial balking), the "Windsor" tower will have three floors of garage space above the ground-floor lobby. Architect: Aaron Colish.

**4. CANTILEVERED OFFICE.** Considering his clients, it is not surprising that Architect John H. Sullivan has chosen poured concrete for a future office building in Silver Spring, near Washington,

D.C. The two-story building, sheathed in panels of white quartz aggregate, will house the National Ready Mixed Concrete Association, and the Concrete Plant Manufacturers Bureau.

**5. SERRATED LIBRARY.** This scheme for Jacksonville's new Main Library features an undulating line of vertical concrete fins around the two top floors. Architects Hardwick & Lee have designed a partially open plaza for the ground level, with sitting areas made by walls and benches curved around sidewalk trees.

*continued on page 45*



*The  
inside  
story  
of a  
French  
Quarter  
secret*

Exterior of Solari Building typifies traditional Vieux Carré architecture required by local law and custom. On first floor is famed Solari Delicatessen. Above are 7 parking levels. Owner: A. M. & J. SOLARI, LTD. Architect: DIBOLL, KESSELS & ASSOCIATES. General Contractor: GRANITE CONSTRUCTION CO., Houston, Tex. Prestressed Concrete Sub-Contractor: BELDEN CONCRETE PRODUCTS, INC. Project Consulting Engineer: R. P. LINFIELD. Consulting Engineer on Precast Structure: W. J. MOUTON, JR. Lone Star Ready Mixed Concrete: JAHNCKE SERVICE, INC. (All of New Orleans, except where indicated).

To the passerby, New Orleans' new Solari Building in the city's French Quarter seems simply another example of the neighborhood's traditional Vieux Carré architecture.

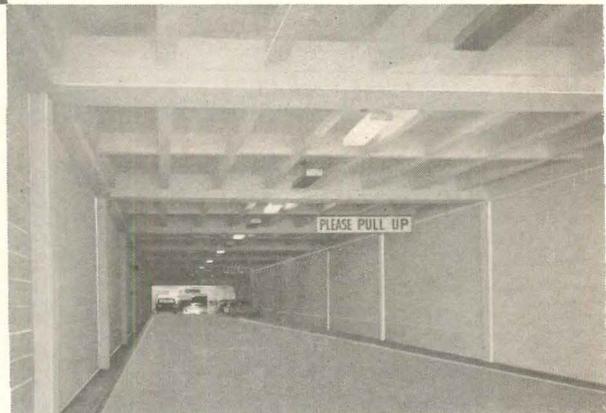
The interior, however, presents quite another story...a functional prestressed concrete parking garage, in ultimate-strength design—the first multi-story prestressed building in the area.

An intriguing contrast, certainly, and with a construction history that bristled with problems. No working or storage space at the site. A tight schedule. And weather hazards that defied prediction.

"Incor" 24-hour portland cement was used for all precast components. Incorpor's high early strength permitted daily reuse of the forms, for maximum production efficiency and economy.

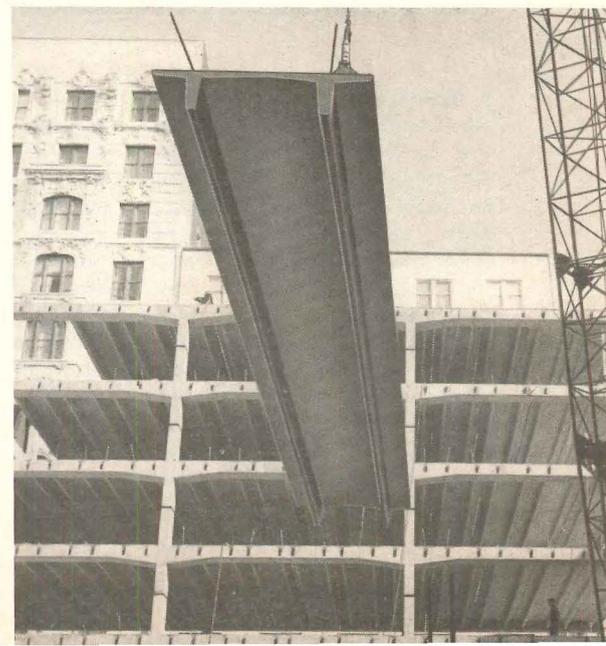
LONE STAR CEMENT CORPORATION, NEW YORK 17, N. Y.

 **INCOR**  
**24-HOUR**  
**CEMENT**

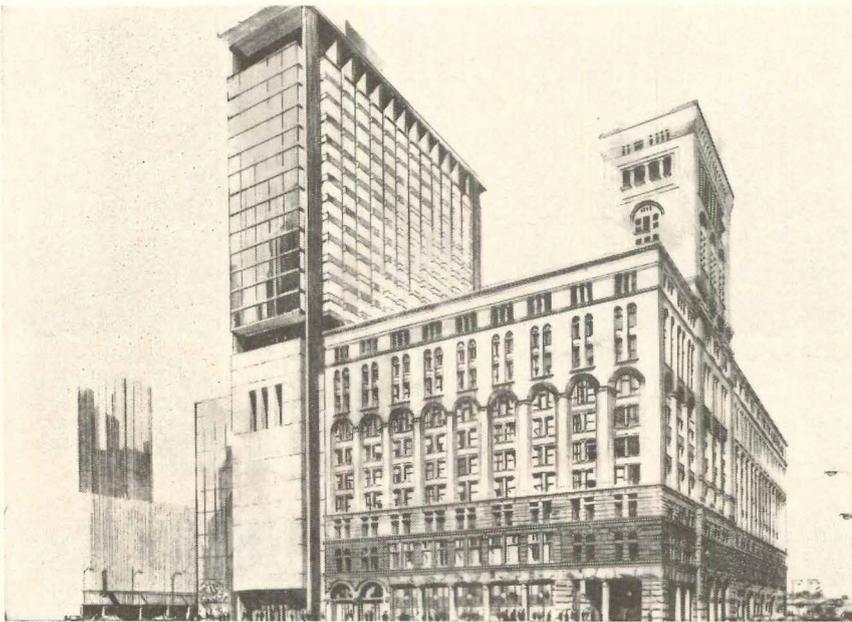


Interior view shows double tee and concrete masonry construction.

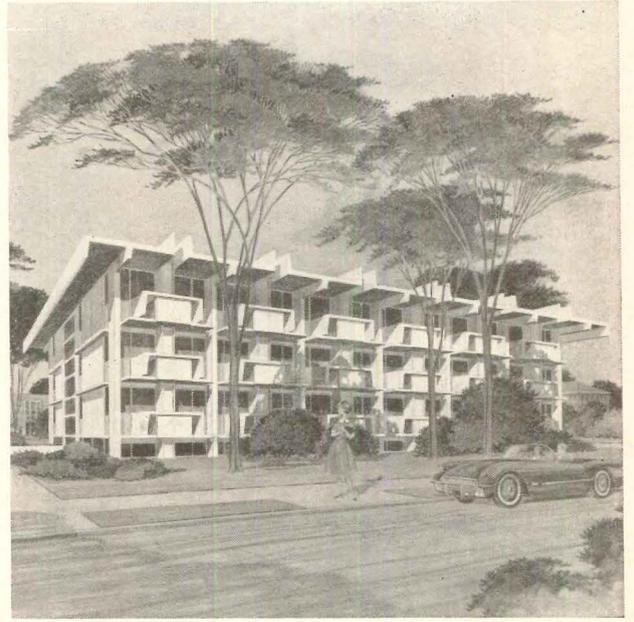
Key structural members are 72-ft. continuous bents extending full width of building. Each is comprised of 3 beams plus upper and lower halves of 2 interior columns. Prestressed 34-ft. double tees fit into slots cast in bents. "Incor" high early strength cement was used for all precast members.



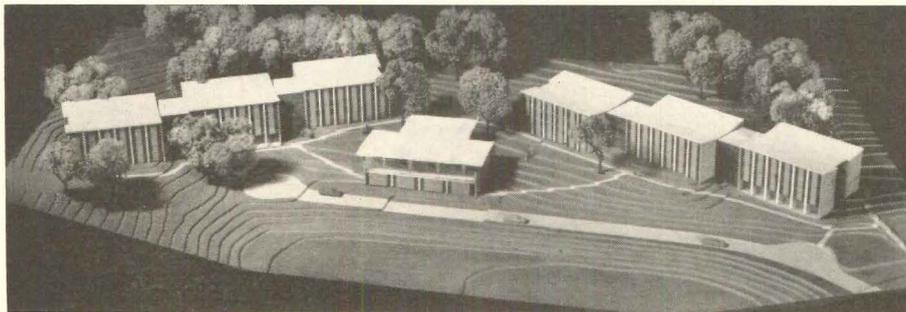
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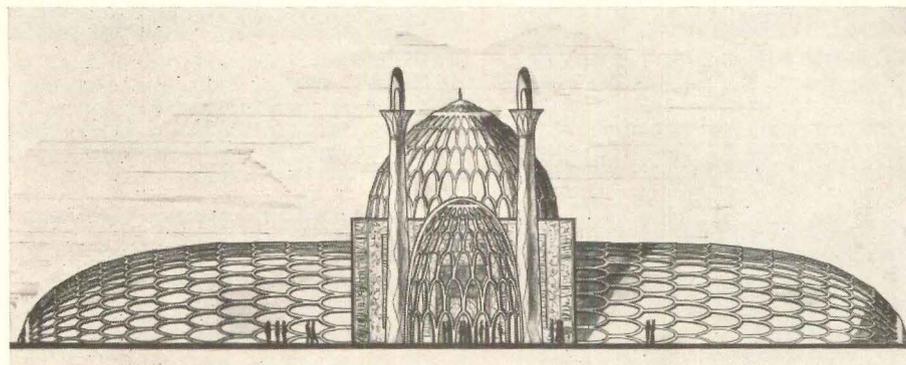
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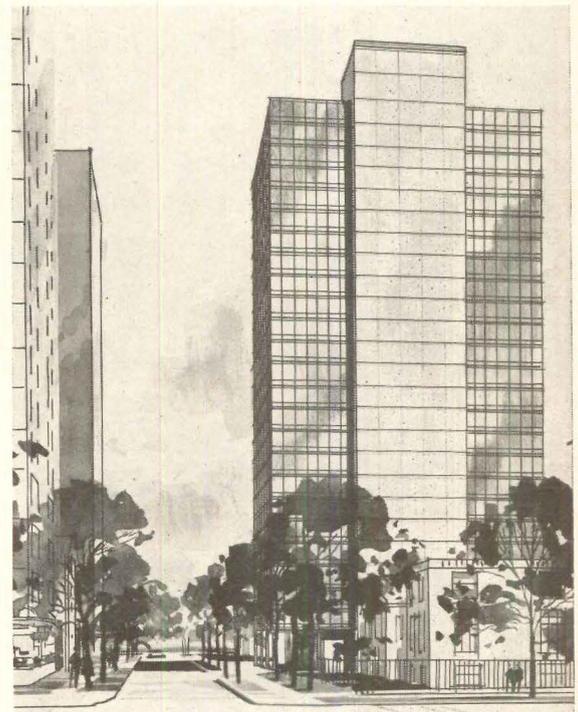
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10

**6. CHICAGO EXPANSION.** For designing an educational-residential tower to stand cheek-by-jowl with Louis Sullivan's great Chicago Auditorium of 1889, Perkins & Will deserve at the very least a chapter in "Profiles in Courage." Their bold 20-story skyscraper for Roosevelt University is strongly demarcated on the exterior to indicate 10 dormitory levels on top and lower floors intended for labs, library, and classrooms.

**7. PENNSYLVANIA DORMS.** A V-shaped cluster of six residence halls with a central student union

building has been designed by Triggs, Myers, McQuade & Associates for the 116-year-old St. Vincent College campus at Latrobe, Pa. The \$1.5 million complex for 400 students will replace facilities destroyed by fire.

**8. LOS ANGELES MOSQUE.** Only a *mezzuin* to call the faithful to prayer will be lacking when this arresting mosque for the 8000 Moslems of Greater Los Angeles is completed. Designed by E. Nader Khalili and Moira Moser with W. F. Ruck as consulting architect, the mosque will com-

bine such traditional features as minarets, arches, and a dome with a precast concrete structure.

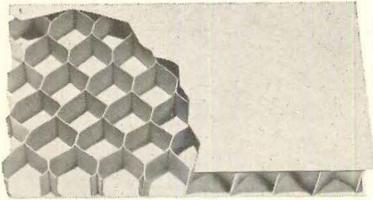
**9. UNIVERSITY RESEARCH LAB.** Complexity of scientific study and research dictated the ectoplasmic design for the University of Nebraska's Physics Research Laboratory by Architects Steele, Weinstein & Associates, Inc. Among "bones and arteries" designed for the exterior are vertical chases to feed all types of mechanical and electrical service connections into the interior. Outside air conditioning units also will help create

flush walls inside laboratories.

**10. 1ST CHICAGO CONDOMINIUM.** Illinois' Condominium Act became effective only three months ago and already a high-rise project has been designed by Fridstein & Fitch for 72 owner-residents. Scheduled for February completion, the 26-story building overlooking Lake Michigan and Lincoln Park will be "neither extreme nor staid in design," says Architect Marvin Fitch. Prices for one-to four-bedroom units in the white concrete and tinted glass building: \$21,200 to \$53,850.

continued on page 47

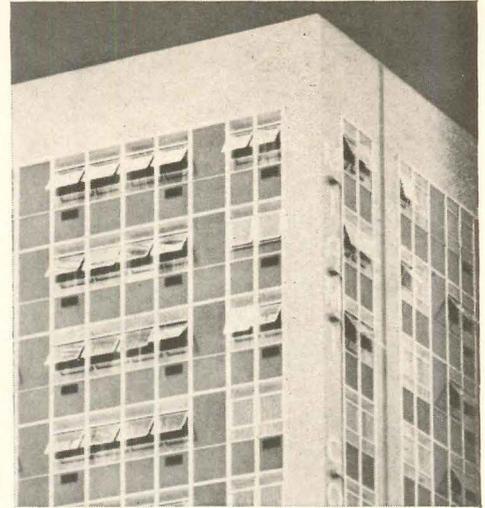
# How many ways can you use Union Honeycomb core?



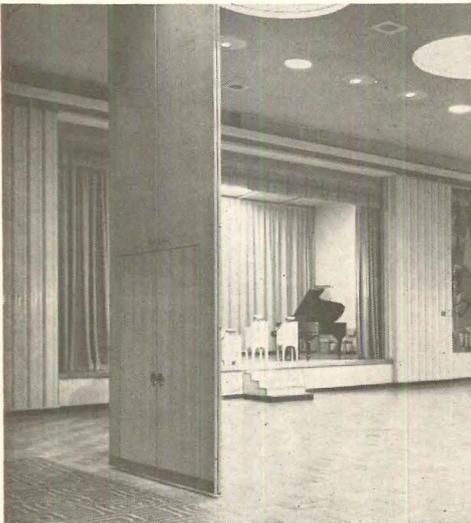
**The versatile sandwich core that combines economy with exceptional strength.**



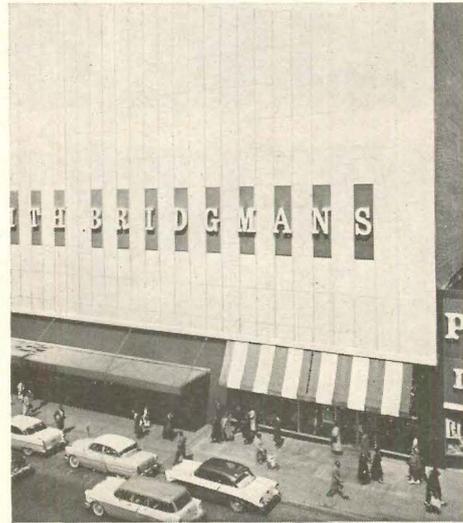
**1. FLUSH DOORS** One of the most popular applications for Union Honeycomb today. Standard door cores weigh only .66 to 1.39 lbs. per door depending on core grade and door size. And they insure flatness and resistance to warping.



**2. CURTAIN WALLS** An excellent external use. Even sub-zero to 200°F. temperatures will not appreciably affect Union Honeycomb components. After years of exposure, structures remain sturdy, dimensionally stable and fully serviceable.



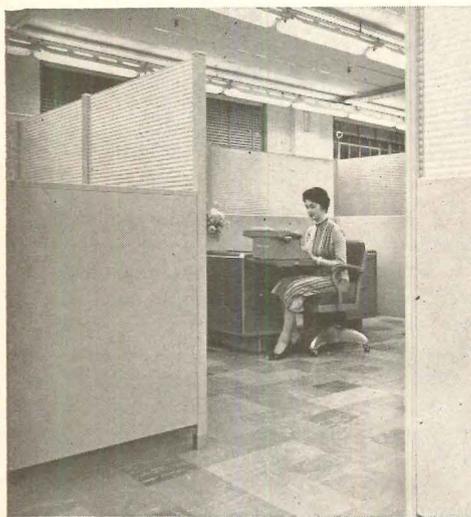
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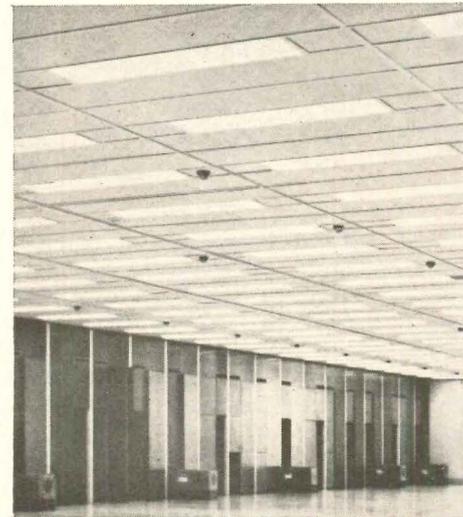
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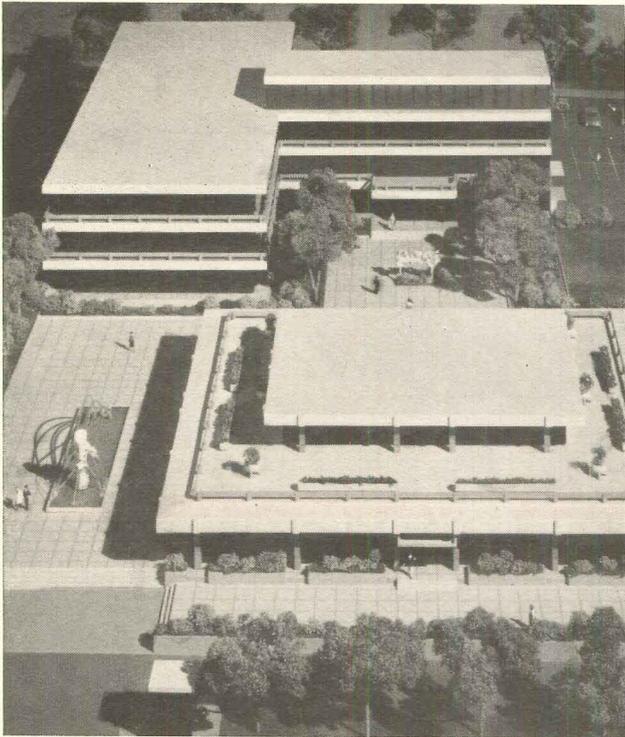
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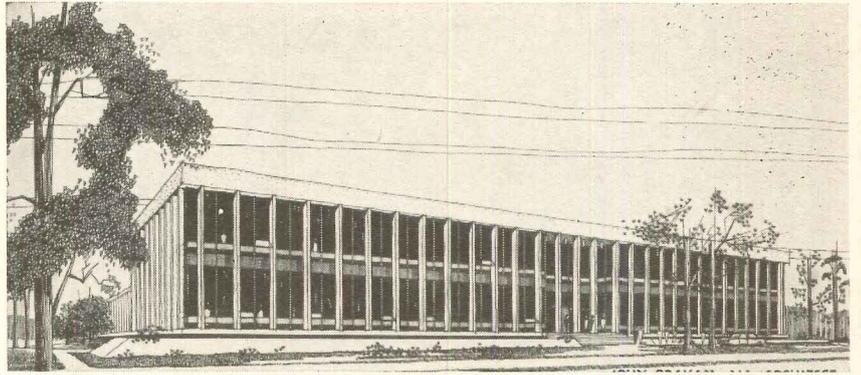
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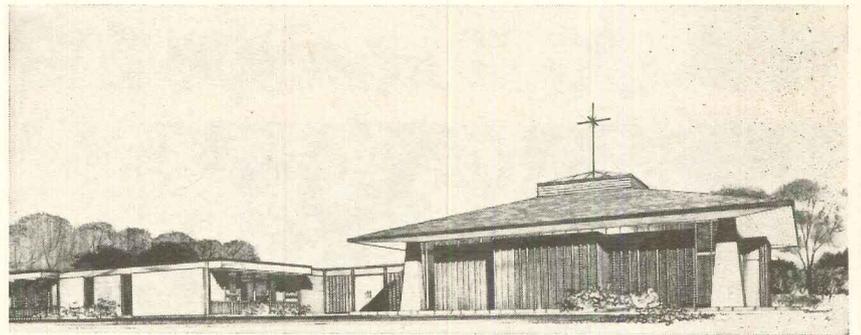
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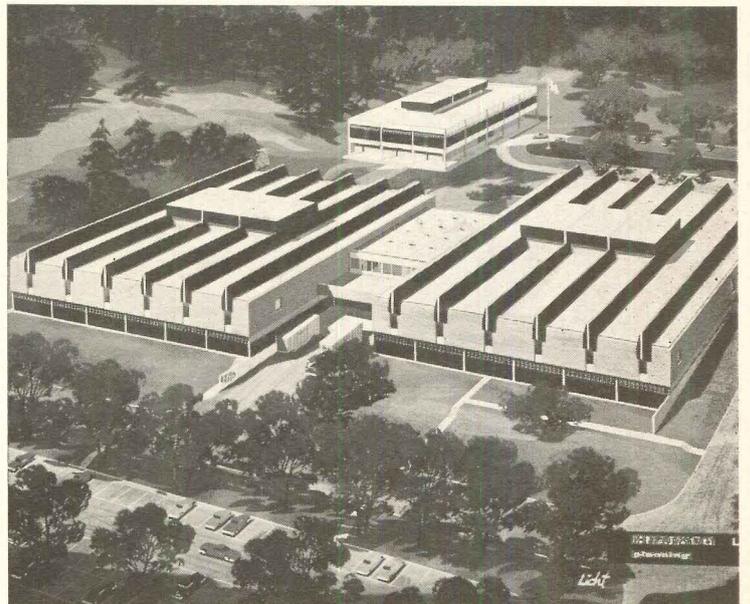
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12



15

**11. NEW JERSEY OFFICES.** Adjacent to its existing headquarters in Summit, N.J., Ciba Pharmaceutical Co. is planning to build new office and cafeteria buildings. A landscaped plaza with reflecting pool and sculpture will tie the structures together and provide views through tinted glass curtain walls. Each building has been designed by Eggers & Higgins on a 5-foot module with uniform columns supporting reinforced concrete slabs.

**12. CALIFORNIA SAVINGS.** The Mutual Savings and Loan Association

will occupy one of Pasadena's tallest office buildings when this nine-story, \$4.2 million project by Welton Becket and Associates is completed. A garden plaza on the ground level continues under colonnades formed by a 12-foot cantilever on the north and south. Typical upper floors in the poured-in-place concrete structure are designed on a 4-foot, 8-inch module with a central elevator core.

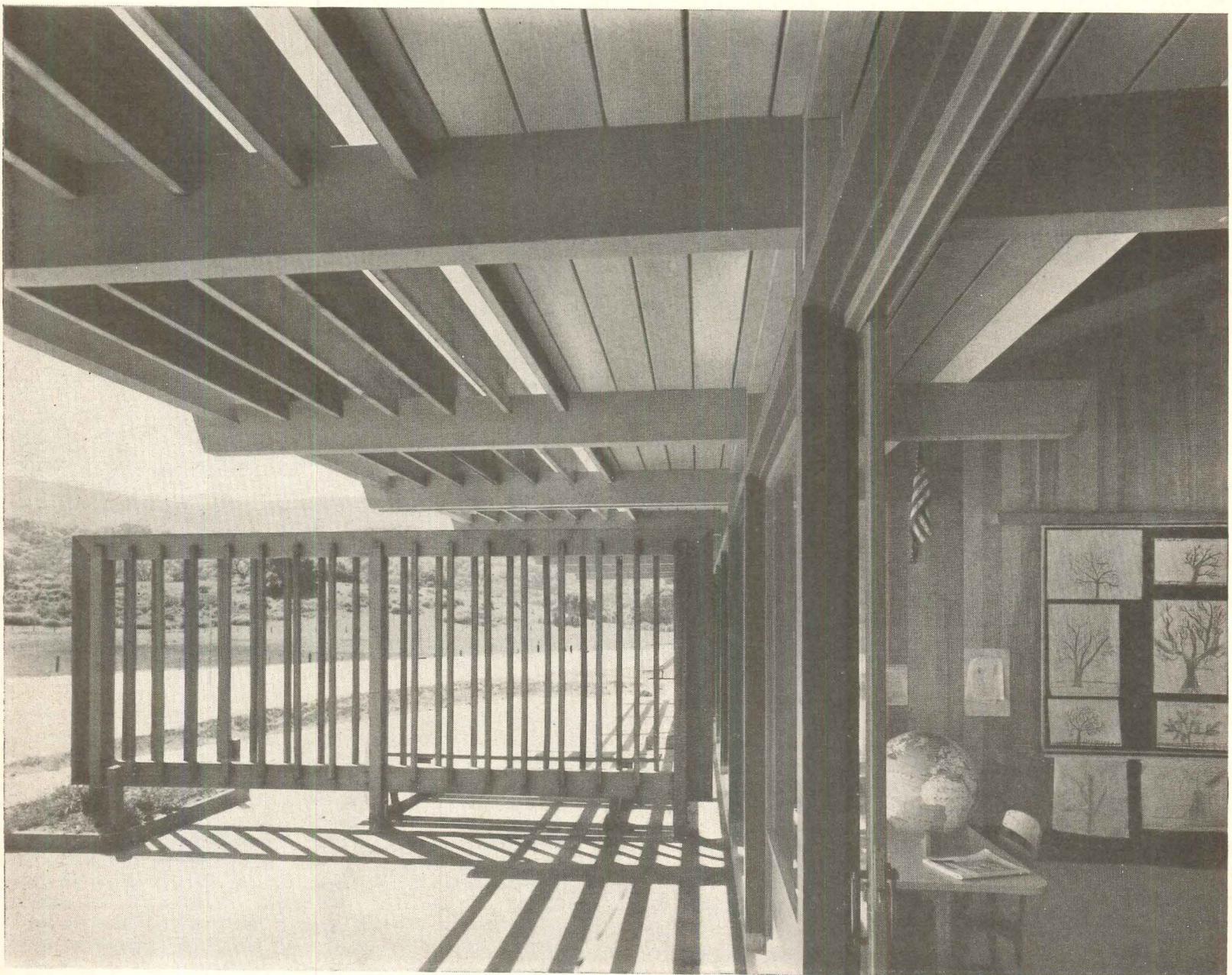
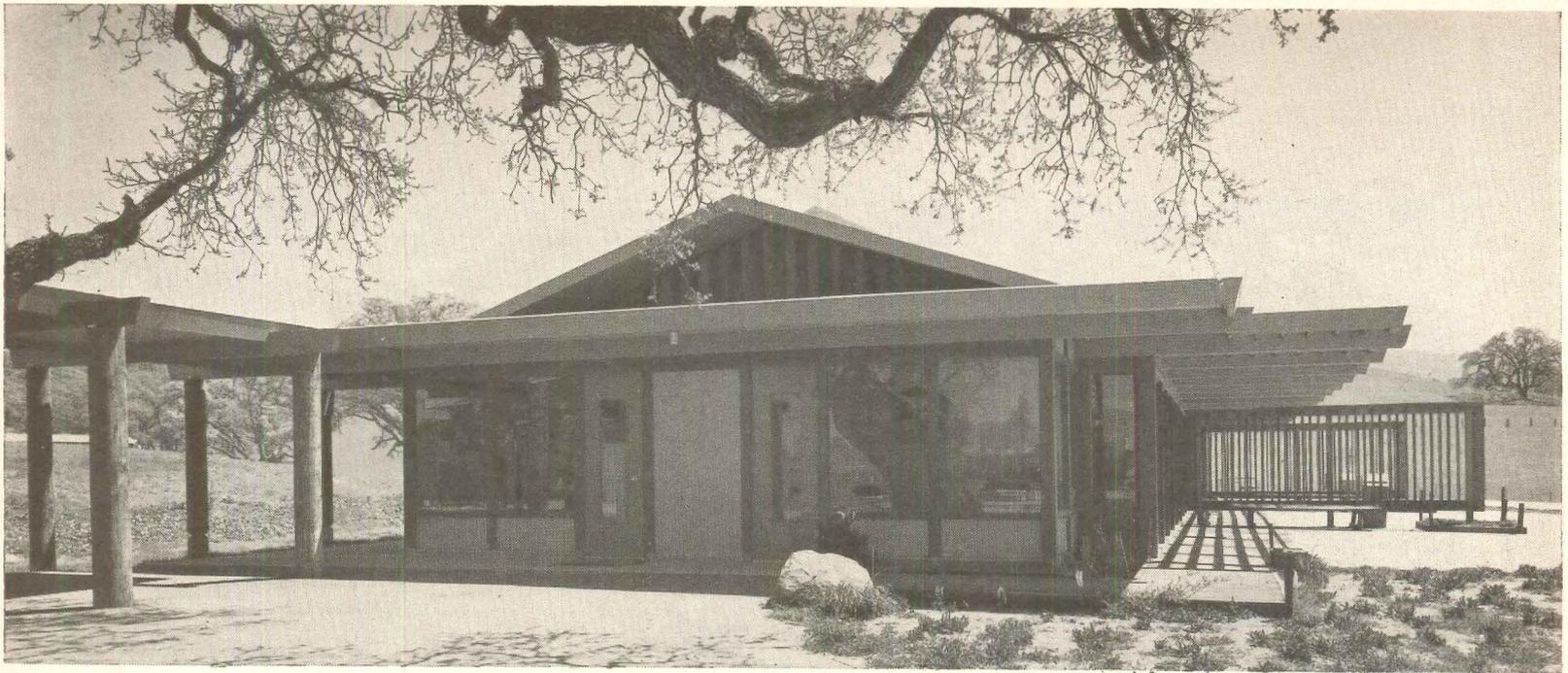
**13. DOW JONES IN JERSEY.** In South Brunswick, N.J., some distance from Wall Street, this of-

fice building designed by John Graham will house departments of Dow Jones & Co., publishers of *The Wall Street Journal*. Circulation, accounting, and production facilities will occupy the two-story precast concrete structure.

**14. INDIANA CHURCH.** Already the recipient of a fistful of prizes, including a joint citation from the National Council of Churches and the Guild of Church Architects, the Lakeside Presbyterian Church is scheduled for construction this fall in Gary, Ind. Architects Cooley & Borre have de-

signed a square nave with central altar, connected by a glass-lined narthex to a four-classroom Sunday-school building.

**15. MASSACHUSETTS LABS.** Of an eight-building master plan in Bedford, Mass., by Charles Luckman Associates, these two laboratories and an administration building are slated for first construction. Edgerton, Germeshausen & Grier, a research and development company, will occupy the plant, a horseshoe arrangement of buildings on several levels to allow minimal grading. END



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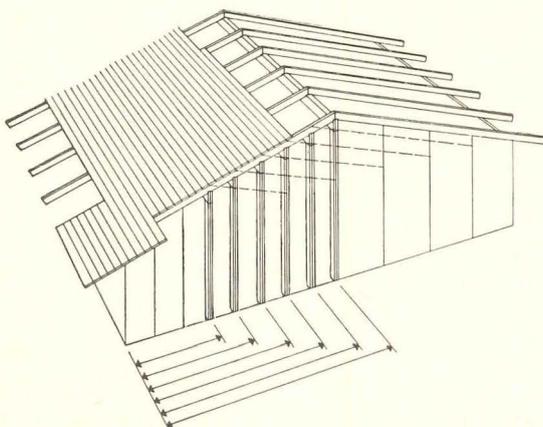
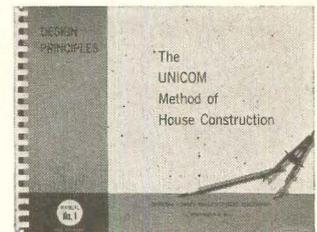
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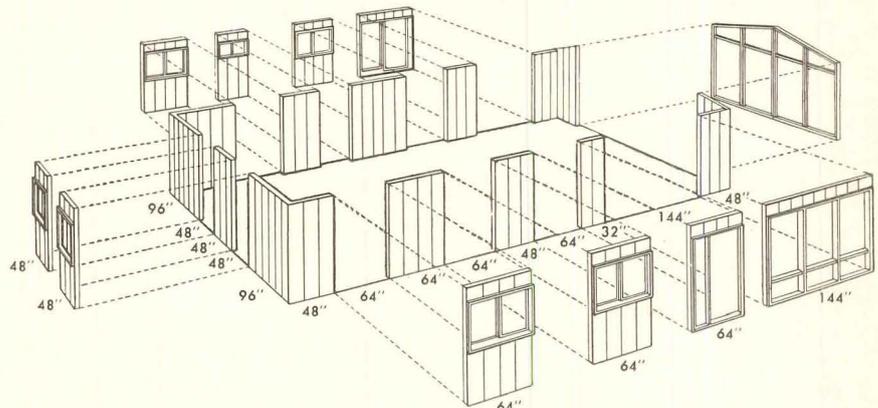
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Molded chairs, tiny desk fan, executive group



1



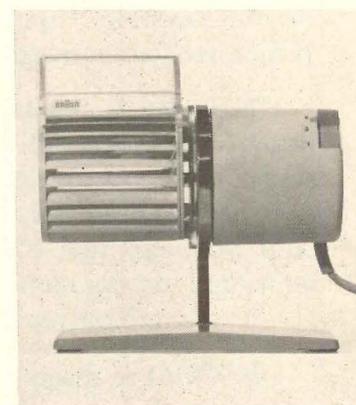
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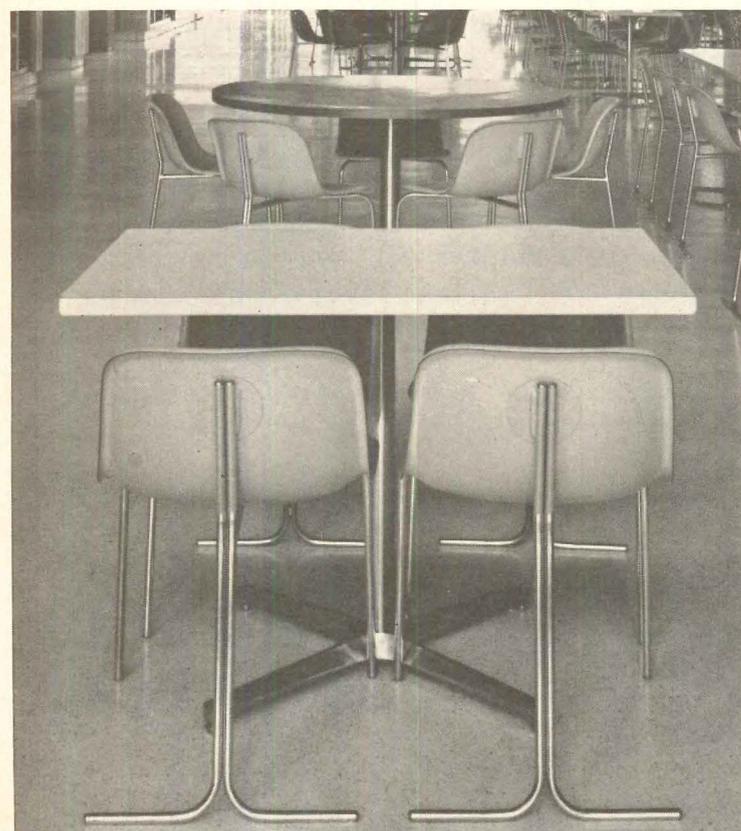
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3

**1. MOLDED ARMCHAIR.** A crisply detailed frame of polished chrome supports the upholstered seat and back of this chair designed by John Yellen for the I. V. Chair Corp. of New York. The chair comes covered with vinyl or fabric, with arm rests of matching upholstery or walnut. Cost: \$225.

**2. MOLDED STACK CHAIR.** Safely storable in piles up to 12 feet high, this chair has foam cushioning bonded to a glass fiber shell and covered with Naugahyde. It is available in six standard colors

from Krueger Metal Products Co. of Green Bay, Wis. Cost: with black enamel legs, \$37; with chrome, \$40.

**3. CAFETERIA GROUP.** A molded plastic copolymer shell is supported on a tubular base of polished chrome in these cafeteria chairs manufactured by C. I. Designs of Boston. The chair comes in black, white, gray, or beige and costs \$33. The accompanying table has a plastic laminate top 30 by 48 inches on a cast base with a satin chrome finish. Cost: \$99.

**4. TABLE-DESK.** Suitable as a small conference table or an executive desk is this design by Harvey Propper of New York. Its 3- by 6-foot top rests on a polished stainless steel base and comes in rosewood, teak, walnut, or plastic. Cost: \$689.

**5. PEDESTAL CHAIR.** Also designed by Harvey Propper, this desk or conference chair has a pedestal base and comes in fabric, Naugahyde, or leather. Shown here in fabric on a stationary base, the chair costs \$248 plus cover yardage. It is available on

a swivel base at \$265.

**6. PORTABLE DESK FAN.** From Switzerland comes this tiny (2½ by 5 by 5 inches), two-speed 110-volt electric fan. It costs \$19.95, with a 6-foot cord, and is distributed by Braun Electric America, Inc., of Toledo, Ohio.

**7. EXECUTIVE GROUP.** The L-shaped desk, designed by Selje & Bond for Costa Mesa Furniture Co. of Anaheim, Calif., has metal legs and a top of laminated plastic or walnut. Cost: \$578. The swivel chair costs \$157 plus cost of cover yardage. END



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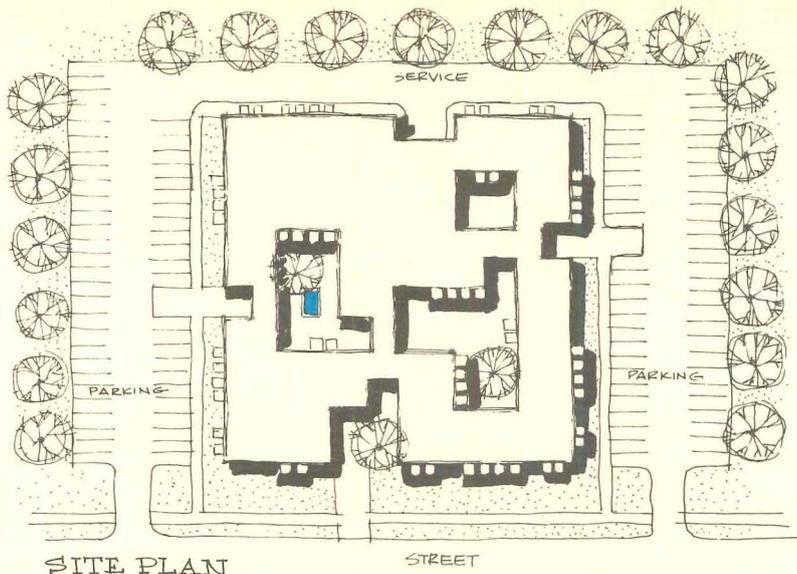


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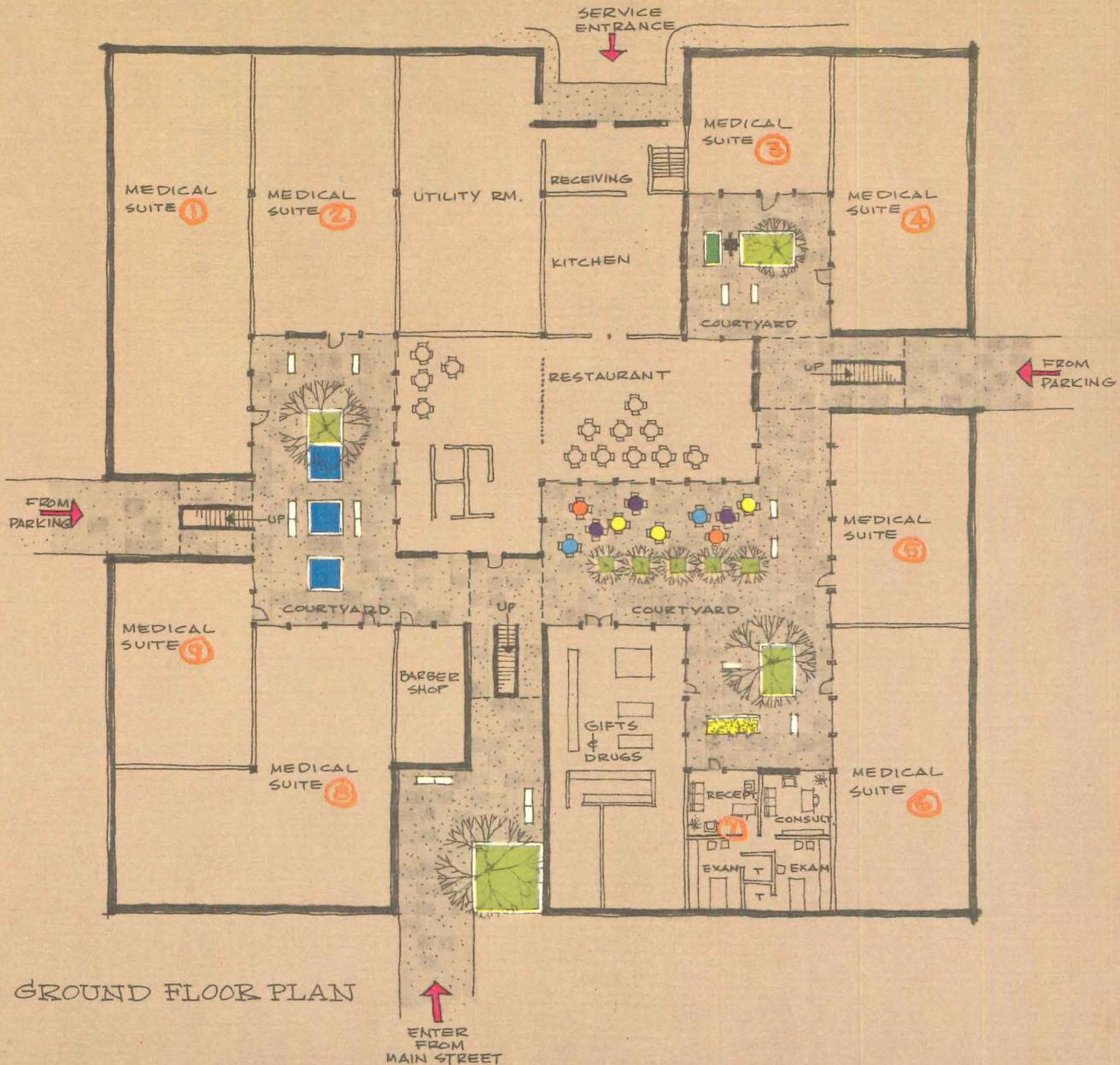
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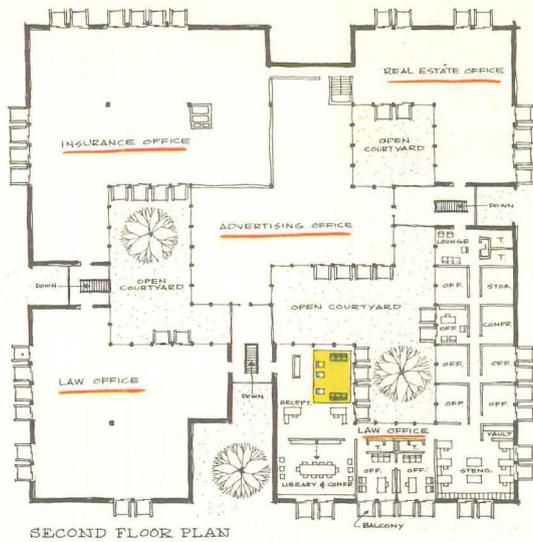
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illustration page 2) would be cast separately and attached to the main component. All glass would be L·O·F grey plate for comfort and glare reduction. *Parallel-O-Grey*® as the outer pane in *Thermopane*® insulating glass will effect heating and air-conditioning economies. *Parallel-O-Grey* sliding glass doors and panels will be heat-tempered *Tuf-flex*® to provide added safety. Matching grey rough plate glass in clinic partitions will provide privacy where needed, yet permit transfer of light.



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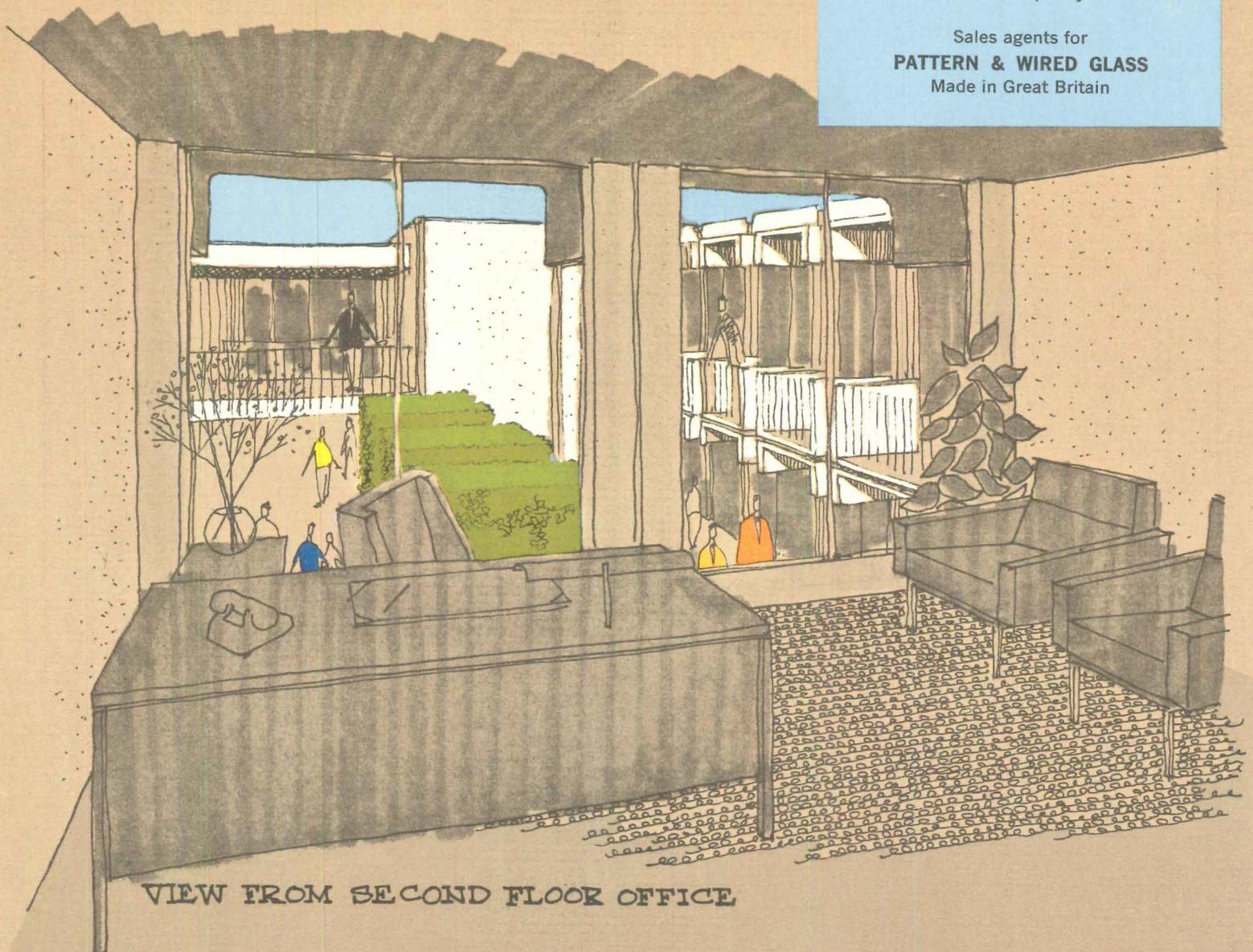
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## TRANSPORTATION AND THE CITY

The 34 pages which follow are strongly biased. It is not a bias for or against rapid transit, or freeways, or the automobile, or the highway engineer. The time for any such romantic prejudices is past.

It is a bias in favor of the city and its people. It is dedicated to the proposition that no major decision about transportation should be made without considering its impact on the city's life and form and pattern. It is based on the premise that transportation is a tool, not an end in itself; that the massive apparatus of travel must be constructed according to a design as large as the city and nation it serves.

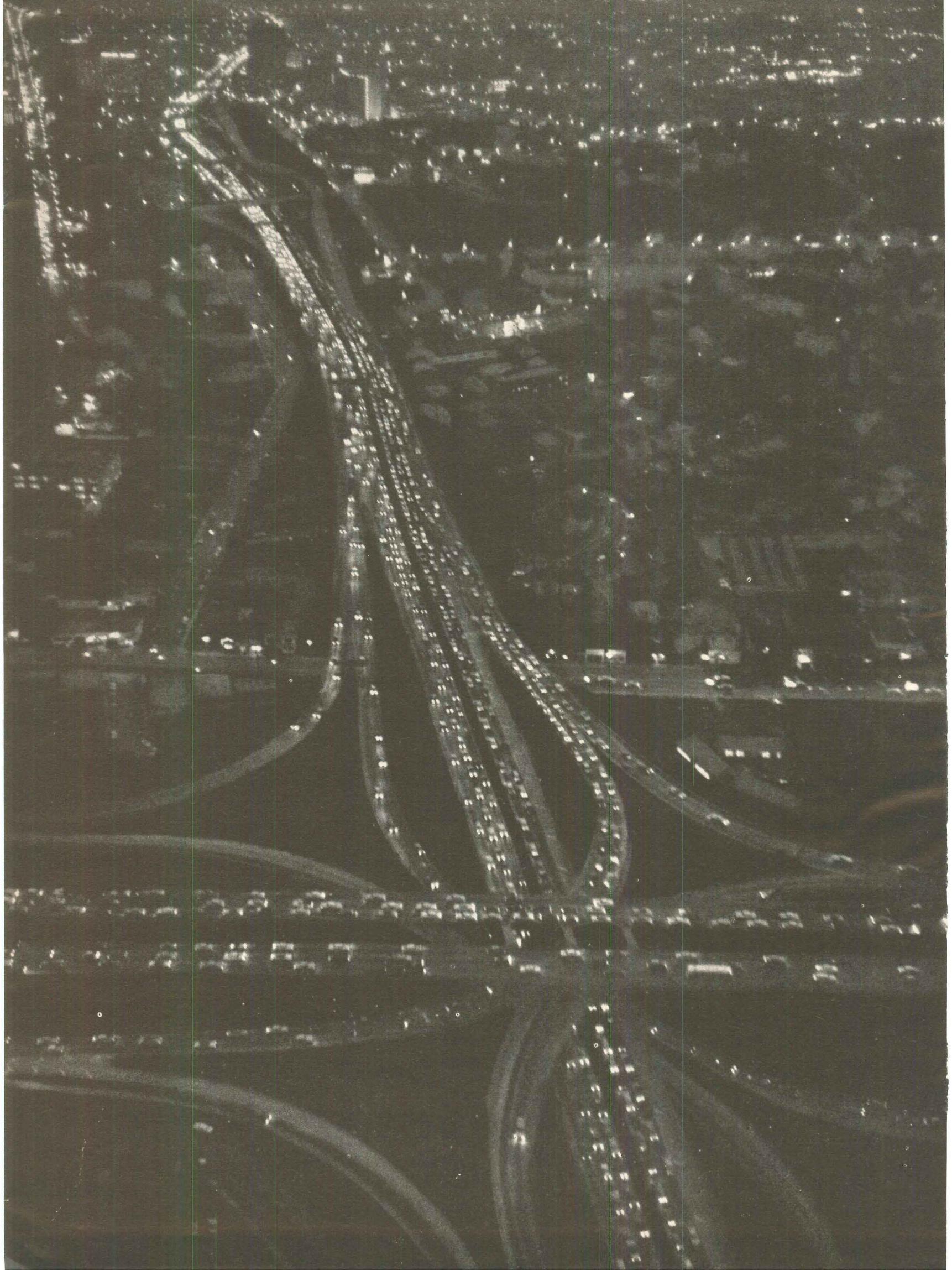
Happily, a good many others have come to share this bias, and they are not only architects and urban planners. There is a growing realization of the sheer power of transportation to reshape—and thereby revive—the core city. There is also a growing recognition of the limitless damage that can be done by a transportation system that is planned too fast, too narrowly, and too much according to the blindly “practical” laws of the slide rule.

With this awakening has come a new body of ideas, plans, and visions for harnessing the power of transportation for the city's benefit. These ideas go far beyond the conventional, cocktail-party wisdom that simply decries billboards and automobiles as “uncivilized,” or points to pretty pictures of European squares (which, in fact, are now jammed up with autos of their own). The most promising of these new ideas include:

- ▶ Guidelines developed by American cities to resolve two of transportation's toughest problems: the relationship between circulation and land use, and the explosive question of the “modal split” (pages 62–67);
- ▶ Some principles—agreed upon by both engineers and urbanists—for accepting the urban freeway and integrating it usefully and gracefully into the city scene (pages 68–73);
- ▶ A fresh way of looking at highways from the driver's seat, as an unfolding drama that can be controlled—and designed (pages 74–77);
- ▶ Realistic plans for sorting out the chaotic mix of people and vehicles that transportation arteries dump into the heart of the city (pages 78–83);
- ▶ The not-so-wild visions of an architect for transforming the bridge into sculptural forms appropriate to the grace and speed of travel itself (pages 84–87);
- ▶ New tools offered by technology, both in the form of futuristic vehicles, and of sophisticated methods for comprehensive transportation planning (pages 88–95).

Not that any of these ideas herald the arrival of the millenium. There are still too many hard-headed transportation planners and engineers; there are still too many soft-headed urban planners and architects who steadfastly refuse to face the facts of city development. And there are still too few cities which can provide a clear-cut statement of planning goals to guide the transportation engineers—a situation for which the urban design professions, the public, and the political structure must share responsibility.

But the ideas on these pages do represent the beginnings of an approach to true transportation planning and design—an approach which makes it possible to discuss the city's future with both realism and hope . . .



## CAN TRANSPORTATION SYSTEMS PUT OUR CITIES BACK TOGETHER AGAIN?

America today is making the greatest investment in any nation's history in its transportation network. The \$41 billion Interstate Highway Program is in high gear—this year another \$6.6 billion will be spent for highways, which represents about 35 per cent of all public spending. A bill is before Congress to provide \$1 billion federal aid for urban mass transit systems and it is estimated that over \$10 billion will be spent for rail rapid transit facilities in the next two decades. At the same time, states and cities are spending record amounts on streets and rural roads. There is so much activity that it is making those who care about the city actively nervous.

Around them they can see the results of the postwar spurt of highway construction in the thundering swirl of traffic (left). Will the vast new programs simply pour more and more vehicles into the already swollen city streets? Will they further stretch the city outward, until it becomes an even more shapeless, formless mass? Will the new arteries merely generate ever more traffic, rendering themselves obsolete soon after they are built?

Just before Labor Day, when 550 Americans killed each other on the nation's highways, some 75 leading planners, engineers, and economists met in a small New Hampshire hamlet far from the sights and sounds of traffic. There they came up with a striking notion: that new transportation systems probably offer the best single hope for repairing the metropolitan mess.

Some of the reasons why, and some of the systems themselves, are discussed below. What it adds up to, in the end, is that the question of whether the transportation boom will work for good or evil depends on the resolution of three key issues. They are:

1. The changing patterns of metropolitan circulation;
2. The interaction of transportation and land use;
3. The matter of how much rail and how much road each system should include.

### Planning for a declining central city

The planning of any transportation system must begin with some harsh facts of U.S. urban life. For example:

► In the last decade, central city populations have risen only 10 per cent, while suburban population has risen over 50 per cent. In the same period, 12 of the 13 largest core cities showed absolute population declines while their suburbs steadily grew. By 1980, central cities will hold less than half of the populations of the largest metropolitan areas.

► Shifts in employment indicate that in another decade or so there will actually be *more jobs in the suburbs than in the cities*. New York City, which had 61 per cent of its region's jobs in 1956, expects to have only 48 per cent in 1985.

► Urban populations are consuming more land as they spread out. In 1950, every square mile of urban land contained 5,410 persons, but by 1960, the figure had declined to

3,759 persons per square mile, and it continues to decline.

These measures of urban sprawl indicate what has been happening to central cities, but they don't say why. Sprawl has been the result of several factors: (1) changes in industrial technology which have made multistory plants in downtown locations less attractive; (2) increased incomes and more leisure time which, given the yen for suburban elbow room in the first place, have enabled people to find it; and (3) the lower user costs and higher speeds of today's transportation systems. The latter has been the key which opened up the metropolis and made land more desirable outside downtown, although the demands for that land had already developed.

These forces have tended to break down the old radial pattern of transportation, oriented toward the central business district, and in turn this is the most critical factor in transportation planning: in the future, there will be far less CBD-oriented travel. Studies in Chicago predict that while downtown trips will increase about 10 per cent by 1980, trips *around* downtown will increase more than 80 per cent. Washington, D.C., which plans a vast rapid transit network, expects downtown trips to grow 26 per cent, while inter-suburban trips will rise by 135 per cent. Pittsburgh shows a similar pattern: an 8 per cent rise in CBD trips, vs. 66 per cent for other travel. Other studies indicate that nearly three quarters of all peak-hour traffic in the largest cities is actually just passing through, forced unwillingly through the cities' street patterns. Take this traffic around downtown, say the experts, and much of the CBD congestion problem can be licked. Many cities, such as Boston, Chicago, and Washington, have been trying to develop systems to do this, but so far with rather unsatisfactory results.

The concern over these measures of the central city's decline makes it obvious that the real transportation "crisis" is downtown. In fact, some observers have recently begun to question whether or not the crisis, in terms of downtown's future, is not considerably overblown. They say that much of the concern comes from persons with a heavy stake in the CBD's economic health who are lobbying for transportation systems to serve the CBD, regardless of the evidence of its relative decline. Thus much of the furor over declining rail commuter service, this argument continues, comes from professional white collar workers with relatively high incomes; they want improved service, even if it means subsidies, so that they can continue to enjoy the comforts of a spacious—and racially segregated—suburb.

The validity of this argument, which is one being increasingly heard, is somewhat dampened by the fact that in most large cities, the decision to save downtown has already been made. The federal urban renewal program is pouring \$4 billion into the effort, and another \$20 billion or so of private funds is being committed, with more to come. The fact is that transportation systems will *have* to serve downtown more effectively than they do today, but they will also have

**CATS vs. Penn-Jersey:  
the two most significant U.S.  
studies point up a debate  
between travel and land use**

to do it out of a regional context. That is, service to the CBD must be a vital part of any system, but it is only one part, and certainly should not consume a disproportionate share of facilities.

The necessity for region-wide, rather than CBD-oriented, systems planning is being recognized. Two leading instances of such an approach are the Chicago Area Transportation Study (CATS), finished last year, and the Penn-Jersey Transportation Study, which probably won't be finished until next summer, if then. The two studies are the most significant yet made in the U.S., not only for the scope of their approach, but also because they point up the critical debate that has developed over the relationship between transportation planning and urban land use.

**Which end of the dog does the wagging?**

CATS is the most thorough-going, exhaustively researched transportation study in existence, and must stand as the model for all to come—at least until Penn-Jersey is finished. The CATS study gathered an incredible amount of data for its 1,200 square mile area, and derived a battery of significant correlations between various land uses and travel.

Planner J. Douglas Carroll, who directed the study, has said that "the objective of network planning is to serve land

uses," and his approach has drawn criticism from some. One report analyzing the CATS study said, for instance, that while CATS blazed trails in computerizing how land use affects travel, it devoted scant attention to how travel—and transportation systems—can affect land use.

As a result of their researches, the CATS planners recommended a huge grid system (map, below), with future construction concentrated heavily in new freeways to serve as links between suburbs. Projections of travel based on land use studies indicated that there would be only a 2 per cent rise in mass transit trips directed toward the CBD, while automobile trips, largely around the CBD, would double by 1980.

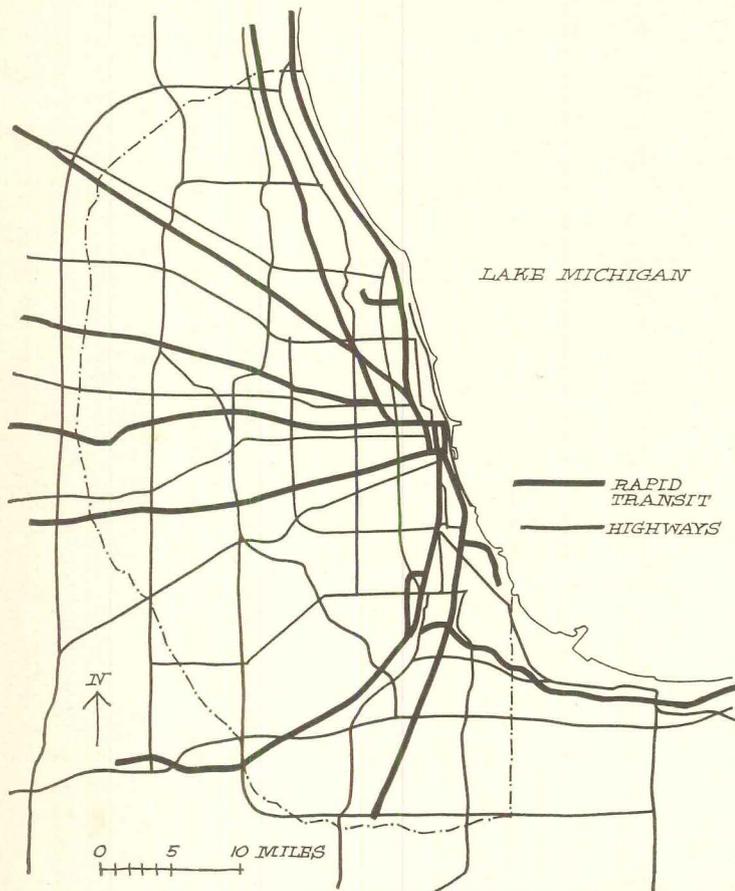
Carroll believes that it is not the planner's role to assume an ideal city in the absence of a clear community consensus about what sort of city it wants. Thus, he simply projects present trends and plans facilities accordingly. Carroll says flatly that "To try to use the remote lever of network planning so as to twist the shape of urban development seems an oblique approach to planning, like using the tail to wag the dog."

If this is true, the Penn-Jersey planners, for their part, have the tail firmly by the dog. Britton Harris, P-J Operations Director of the \$5 million (so far) planning effort, says "Our input is a given land-use pattern and our output is a transportation system design." Thus, having arrived at an optimum layout for the nine-county region around Philadelphia, P-J planners will attempt to derive from that the optimum transportation network.

How to arrive at the optimum land use scheme? P-J is doing it with what it calls a "regional growth model," which is a computer-built mathematical simulation of the area. The growth model is made up of five alternate schemes: one which, like the CATS study, merely projects present and past land use trends into the future; one with totally automated rail service; one with a mixture of transportation modes, closely patterned upon present plans; one which would retain present rail transit, but expand via express bus and auto freeways; and finally an automated highway system, with fewer freeways of heavier capacity.

Final choice among these alternatives is to be guided by an assessment of all costs and benefits. This, of course, involves attaching values to a great many intangibles, e.g., how much is it worth to a consumer to live in the Poconos and be able to travel over an automated freeway at 150 miles per hour into the CBD? What is convenience worth, and how does it compare in price with comfort?

Penn-Jersey is already experiencing some frustrations in attempting to measure consumers' travel preferences, and there are sure to be more. In fact, the great effort to sort, analyze, and treat the nearly 900 variables which have been considered in building P-J's growth model is primarily responsible for the fact that planning is now nearly two years behind schedule. Moreover, there seems a certain confusion about how good the data must be—the P-J planners are evidently nervous about using large aggregates of data for



**CHICAGO** has a plan for a giant grid of freeways, but little new rapid transit, to accommodate an increasing load of inter-suburban travel.

their projections, and would obviously prefer to do intensive household surveying, so as to have a firmer notion of consumer preferences and behavior.

It remains to be seen whether CATS or Penn-Jersey will turn out to be right in the controversy over the tail and the dog. Penn-Jersey seems at least to offer the possibility of putting transportation to a far more creative use in the reshaping of a metropolitan area, presuming of course that the consuming public buys its notions.

### The highly emotional question of the "modal split"

Both CATS and the Penn-Jersey study also serve to show the inseparable link between land-use objectives and the third of the major transportation issues: the question of how much rail and how much road, called by planners the "modal split." No single issue raises so much emotion among those concerned with transportation. To find a rational answer, it is first necessary to consider some of the folklore involved, particularly these three basic notions:

*Notion No. 1: Automobiles and highways have caused all the trouble and created urban sprawl.* The fact is that people and jobs began spreading out from central cities long before the automobile was a major factor on the American scene. (Some observers maintain that the period of greatest decentralization was from 1900 to 1920, when the automobile was still in its infancy.) Highways have hastened decentralization, but not created it. Besides, Americans love automobiles—and own 75 million of them. The average urban American drives 3,000 miles each year and spends 86 per cent of all travel expenditures—including air travel—on cars and high-

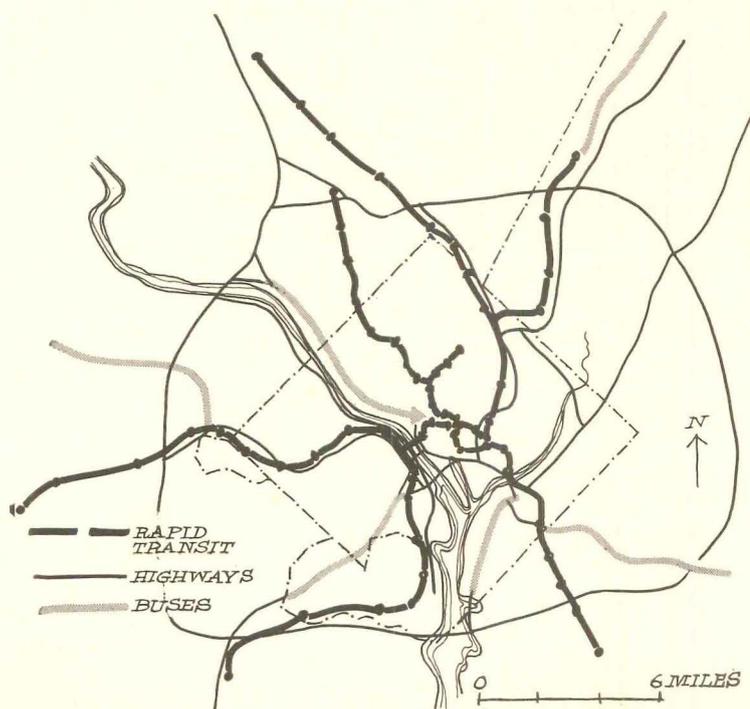
ways. Two-thirds of all urban workers now drive to work.

*Notion No. 2: The automobile, America's odds-on favorite among transportation modes, can do the job alone if the nation will get on with the completion of its highway system.* The fact is, of course, that there is no such thing as a "complete" highway system—as soon as a major link is completed, it often generates enough new traffic to choke itself, although the evidence shows that a new freeway will usually relieve congestion on older arterials. If the riders of public transportation were to take to private cars, today's level of congestion would seem idyllic in the resultant mess.

*Notion No. 3: Rail rapid transit can save the city because it can handle more passengers at peak load times with greater economy and efficiency than can automobiles.* While it is certainly true that rail rapid transit has much greater capacity than highways, it is also true that it appears to rank dead last (now that the 'rolley car is gone) in the average American's scale of travel preference. In the general decline of all mass transportation over the past decade, rail rapid transit has suffered most: the number of passengers has dropped 25 per cent, to about 1.8 billion riders annually, 1.3 billion of them in New York City. (Bus transportation now carries 75 per cent of all public transportation passengers.) At the same time, the commuter railroads have taken a pasting, too—rail passenger travel dropped more than 80 per cent from 1950 to 1960; in that period over a dozen railroads dropped commuter service altogether.

One of the most skeptical analyses of rail rapid transit appeared last year in the form of a paper, "Technology and Urban Transportation," prepared for the President's Panel on Civilian Technology by three experts in the field.\* Given the high costs of rail construction (particularly subways) and the decreased demand, the report comes out strongly for express bus service, on exclusive rights of way, as potentially the strongest, most flexible candidate for conveying passengers to work—except in those few cities where densities are high enough (over 100,000 persons moving in or out of the CBD in the rush hour) to support rail transit. There are only a handful of such cities and those with existing rapid transit—New York, Chicago, Philadelphia, and Boston—have all shown considerable passenger declines, although the trend shows signs of reversing in New York.

Based on the assumption that present jobs and housing concentrations in central cities are at their high water marks, the authors insist that peak-hour loads could be easily handled by bus. The trick is to develop arteries already in existence but not operating at anything like capacity; if this can be done, they contend that 250,000 persons per hour (more capacity than is needed for any cities except Chicago and New York) easily could be accommodated in buses using a total of only eight exclusive lanes of street or highway in the whole city.



WASHINGTON plans to build an 83-mile rail transit system, with buses serving suburban stations and subways serving the downtown area.

\* John R. Meyer of Harvard, John F. Kain of the Rand Corp., and Martin Wohl of M.I.T.

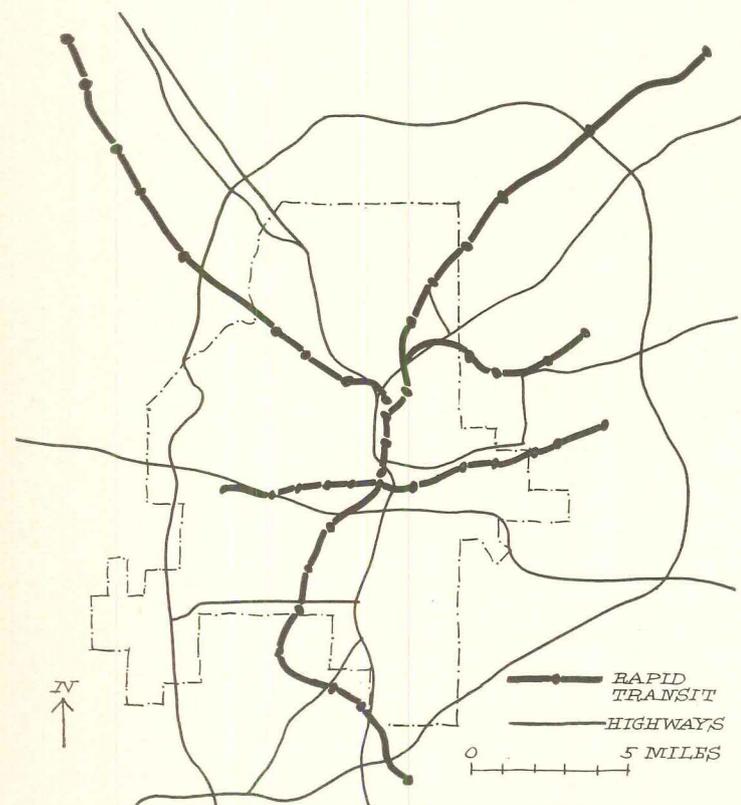
**In seeking balanced systems,  
six U.S. cities indicate the need  
for regional transportation  
to serve tomorrow's super-cities**

Finally, those who believe rail rapid transit can somehow save central cities from the forces of blight and economic depletion might ask themselves why such cities as New York and Chicago haven't looked healthier than a city such as Los Angeles, which, for all its storied traffic jams and freeway blight, has shown amazing growth. The answer might well lie with the fact that New York and Chicago are older and historically more congested, with a long-term trend of economic deconcentration—but it obviously does not lie solely in the existence or non-existence of a rail rapid transit system.

**Six cities in search of a balanced system**

It is equally obvious that rail rapid transit can do some jobs for some cities better than highways possibly could. The experts gathered in New Hampshire were unanimous in their feeling that either-or debates about the respective merits of rail vs. road were both unfruitful and unfashionable. What is needed, they agreed, is to strike a balance between the two based on a hard-headed but inclusive look at the needs of the individual city in question.

At the moment, six American cities—out of the dozen or so which could generate the densities needed to support rail transit—are in search of such a balance. Three of them are planning entirely new rail systems in the hopes of drastically changing journey-to-work patterns, and three others are reviving or expanding existing lines.



**ATLANTA** plans a 66-mile rapid transit system, much of it to be built on existing rights-of-way, plus a giant outer loop highway.

► *Washington, D. C.* has plans for a \$793 million, 83-mile transit system (including 19 miles of subways), along with \$826 million more of new highways. About 26 miles of rail transit will occupy a median strip in highways; another 24 miles will use existing rights-of-way. The CBD would be served by a loop system, connecting the Capitol, Union Station, the Federal Triangle, the commercial areas around F and G Streets, and the White House–Lafayette Park area. Surface line fingers (some with express bus extension) would reach into Virginia and Maryland, with much of the right-of-way built into special below-grade cuts, landscaped for a minimum of visual disturbance. While the plan is still subject to Congressional approval, the White House has come out strongly for it, even to the point of holding up some highway construction (and thus calling the entire automobile lobby to arms) until the plan can be implemented.

Washington's transit scheme has already been lambasted by the highway and auto people for overestimating demand and underestimating cost, as well as being "unrealistic" about the system's ability to pay for itself. Congressional critics have expressed support instead for a complete express bus system, as recommended in the Wohl-Kain-Meyer report. But the National Capital Transportation Authority, which made Washington's study, argues that it would be impractical to attempt to have a bus system with the same capacities, speed, and comfort as rapid transit, and that the eventual costs of such a bus network would surpass those for rapid transit, despite obvious differentials in initial capital costs. Washington's rapid transit system, despite strong backing from the Executive, still must wait on a dilly-dally Congress.

► *Atlanta* now has a recommendation for a 66-mile rail system, much of it to be located on existing rail rights of way. It would cost over \$280 million, including four miles of downtown subway. Traffic control would be by computerized central signaling, and the Metropolitan Atlanta Transit Study Commission is also considering monthly billing of commuters to cut fare-handling problems. Although it does not have the urban densities which most experts claim are essential for support of rail rapid transit (residential density is only 3,800 persons per square mile, one-third of Washington's), Atlanta has a high concentration of its jobs downtown. Its bus system is currently averaging 170,000 person-trips each workday, well above the critical 100,000 figured essential for rapid transit. (It is predicted that the system will carry 240,000 person-trips each working day by 1983.) Moreover, Atlanta is one of the fastest-growing metropolitan areas in the nation, with its present 1.1 million population expected to grow to 1.6 million in another dozen years. The Atlanta system, which still awaits approval by the city and surrounding counties, would be built in three stages, with the downtown subway and 18 miles of feeder routes scheduled first.

► *Cleveland*, which has built the only postwar rapid transit system in the U. S.—and is making money with it—plans to extend the system both to the east and west. Also under study

is a downtown subway loop, an extension to Hopkins airport, and a 7-mile extension to the southeast. Cleveland's surface system shows remarkable health in an age when railroads generally are in decline. Since it was finished in 1955, the number of passengers has climbed over 150 per cent, to nearly 19 million last year. The system paid off \$17 million of its 20-year bonds in ten years and is currently the only money-making municipal rapid transit line in the nation. Cleveland's success springs from two principal sources: it accommodates the automobile with parking at suburban stops, and, being municipally-owned, it pays no taxes. The latter is critical: as Arthur E. Baylis, vice-president of the New York Central, has said: "Private commuter railroads could show a substantial profit if they paid taxes on the same basis as publicly owned passenger facilities. . . ."

► *Boston and Philadelphia* are both talking about extending rail service while they subsidize commuter railroads just to keep them running. In Boston, the MTA is using nearly 10 miles of a former rail commuter line for rail rapid transit. Last year the city received \$3.6 million in federal funds to experiment with one of transit's chief unknowns—actual consumer demand. To do this it will subsidize lower fares and more frequent service on various commuter railroads to test the effects on revenues. New equipment is in service on the Cambridge line, and the state also has acquired the New Haven's abandoned Old Colony line for rail transit.

In Philadelphia, the city is subsidizing commuter fares on the Germantown-Chestnut Hill line, with a subsequent 41

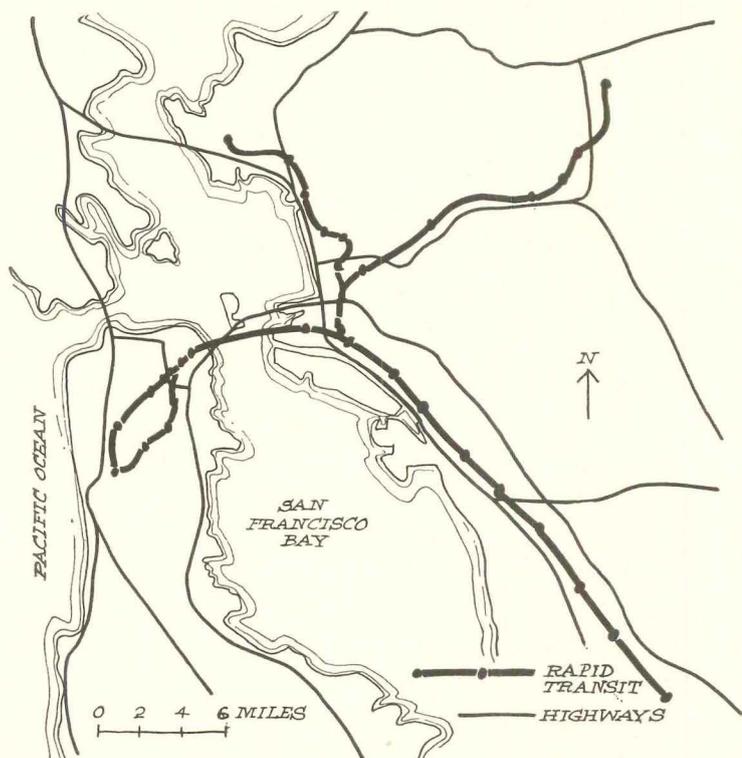
per cent increase in riders, which tells something about the possible elasticity of demand for transit services. Four other such subsidy programs have also stimulated impressive gains in riders, and citizens last year voted \$5.6 million for rail modernization.

► *San Francisco* has embarked on what one observer has called "a billion-dollar experiment to tell the rest of American cities whether new rail rapid transit can work, and pay for itself" (except Cleveland, which already knows). The plan was approved last November by the barest of majorities (60 per cent was needed for approval—the plan got 61.2 per cent). What is perhaps most remarkable about the vote, however, is that it carried at all—it will mean an 8 per cent increase in property taxes initially (e.g., \$27 more each year for the owner of a \$16,000 house). Another unusual facet of the San Francisco project is that auto tolls from the Bay Bridge will be used to build both a second deck on the bridge to accommodate the crush of automobile traffic and a rapid transit tunnel under the Bay.

The system has been designed by Parsons, Brinckerhoff, Quade & Douglas, who also did the Atlanta survey. Partner Walter Douglas points out that the Bay Area is peculiarly congenial to a rapid transit system by nature both of topography and concentration, with its urbanized areas crowded into corridors between the mountains and the sea.

The San Francisco project, however, is perhaps most interesting for the light it sheds on the "modal split" controversy. The planning engineers carefully considered a super freeway system as an alternative solution to rails. The comparisons are revealing: a freeway system with the same peak-load capacity as transit would cost more than five times as much to build (\$5.5 billion), eat up four times more land (1,360 acres vs. 325 for transit) and have double the annual operating and maintenance costs of the transit system. Moreover, Douglas points out, there simply would not have been room for all the interchanges and approaches in the major cities of San Francisco and Oakland. The engineers might have also been dismayed by the prospects of funneling still more auto traffic through the Bay Area's corridors—San Francisco already has over 7,000 motor vehicles per square mile, twice that of Los Angeles and probably the highest in the world.

The new transportation systems being created in Chicago, Washington, Atlanta, and San Francisco will have to cope with a whole new set of urban circumstances. These systems must be engineered with the full realization of the forces which are so quickly changing the metropolis. If it is true that the American city was largely created by the transportation patterns of the age of sail, steam, and rail, it has been at least partially destroyed in the age of the automobile. Now it appears that the American region, replacing the city, can become a workable reality through the most efficient and expensive transportation systems ever conceived—systems which, as soon as they are in existence, will pose a whole new range of super-urban problems.—DAVID B. CARLSON



**SAN FRANCISCO** will build a \$1 billion rail transit system to serve downtown, with new freeways to link the Bay Area's growing suburbs.



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## THE FIGHT TO TAME THE URBAN FREEWAY TAKES A POSITIVE NEW TURN

Seen on these pages are three of the very good reasons for San Francisco's now legendary freeway revolt. While the shining city slept, the State Division of Highways rushed to completion a series of new elevated roads which became the dominant man-made elements of its landscape, rivaled only by the natural prominence of the hills. Suddenly prideful San Franciscans found that the twisted, ungainly structures of what the State called "skyways" were using great chunks of precious land, and leaving others blighted and fragmented (photo left). Before the citizens awakened, blunt barriers had been raised in front of Architect Arthur Brown's masterful old City Hall—and worse, across the cherished anachronism of the Ferry Building and the Embarcadero (photos right).

That was going too far. San Francisco called a halt (leaving the uncompleted end of the Embarcadero Freeway hanging truncated in midair) and has only recently allowed resumption of the freeway program. This time the city plans to keep a close eye on what the State is up to, and this time the State is proceeding with a good deal more caution.

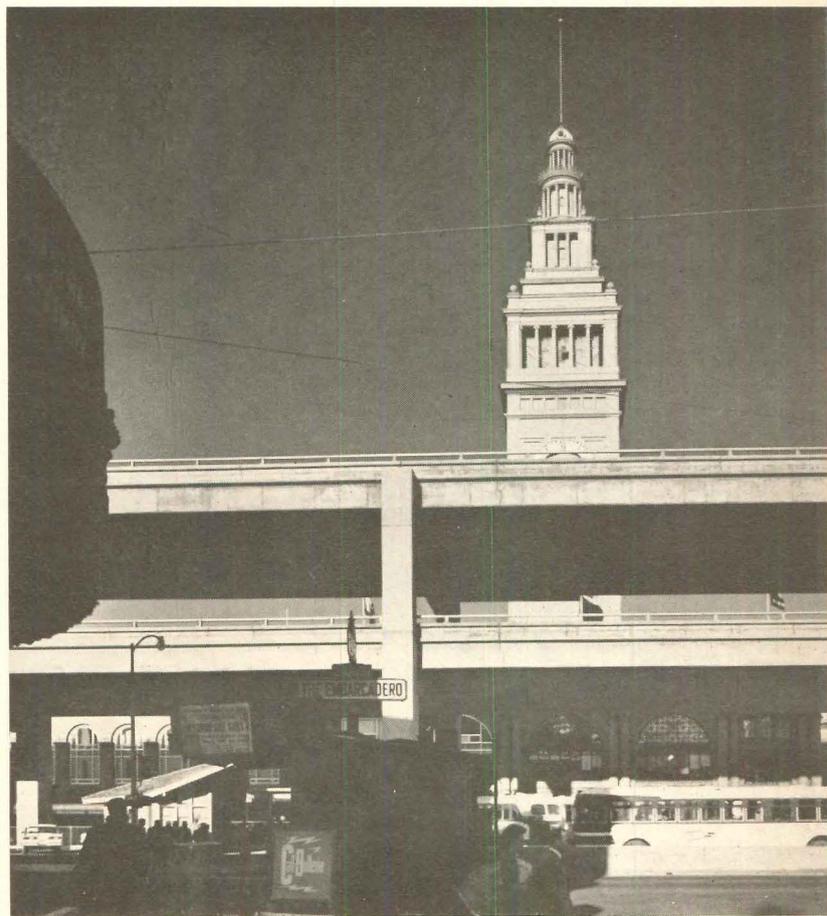
### *The short, stormy history of the freeway boom*

San Francisco is a particularly celebrated case, but much the same thing has been going on all over the country. The great postwar boom in freeway construction was based on the pressing needs of the growing automotive population. Freeways were fast, safe, convenient—and, thanks to special taxes on motorists, seemingly free.

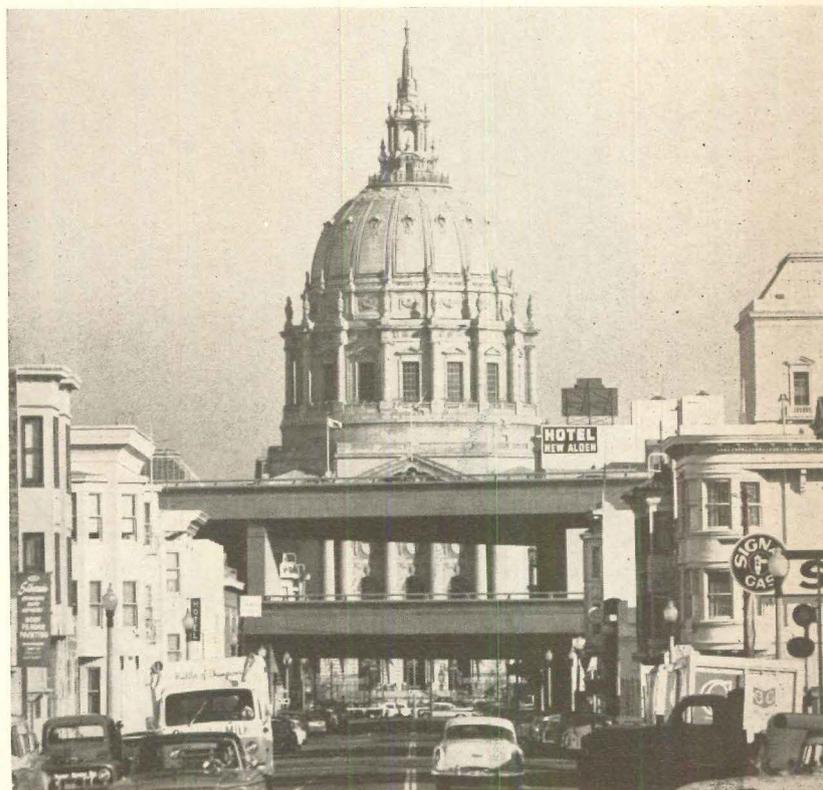
Then they began to penetrate the city's boundaries, and it became distressingly apparent that freeways could also be ugly and disruptive. Too often their design was crude and clumsy; too often they were located solely on grounds of economy and expediency (or political pressures) with little thought to their impact on the community. Highway departments, powerfully swollen by gas tax revenues, operated on the unshakable axiom that the shortest distance between two points was a relentlessly straight line.

At first there was a defensive reaction, as in San Francisco. It was strong enough to give the motorist second thoughts about his magic carpets, and to make even the most autocratic highway engineer think that perhaps he should pay a little more attention to what architects and urban planners had been saying about the appearance of his structures and the straightness of his lines. Public hearings became something more than perfunctory formalities before the clearing of a predetermined route. It reached the point where even the people in the U.S. Bureau of Public Roads and the Housing and Home Finance Agency, until then total strangers, began having lunch together.

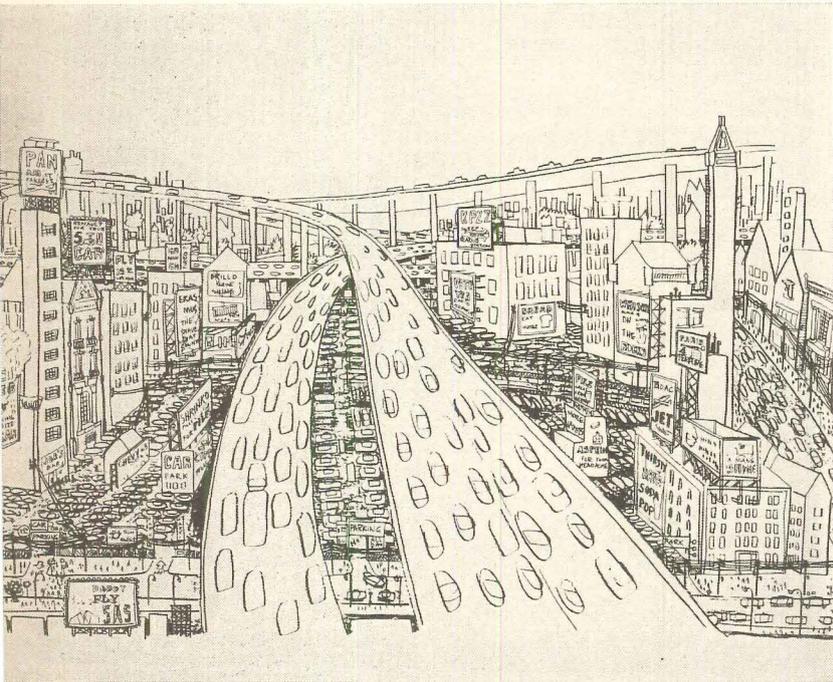
The situation now seems to be entering a new phase. The highway engineers, partly in self defense and partly through a genuine, if creeping, broadening of viewpoint, are coming to realize the heavy responsibility they bear for the future form of the city. The architects and planners, conversely, are com-



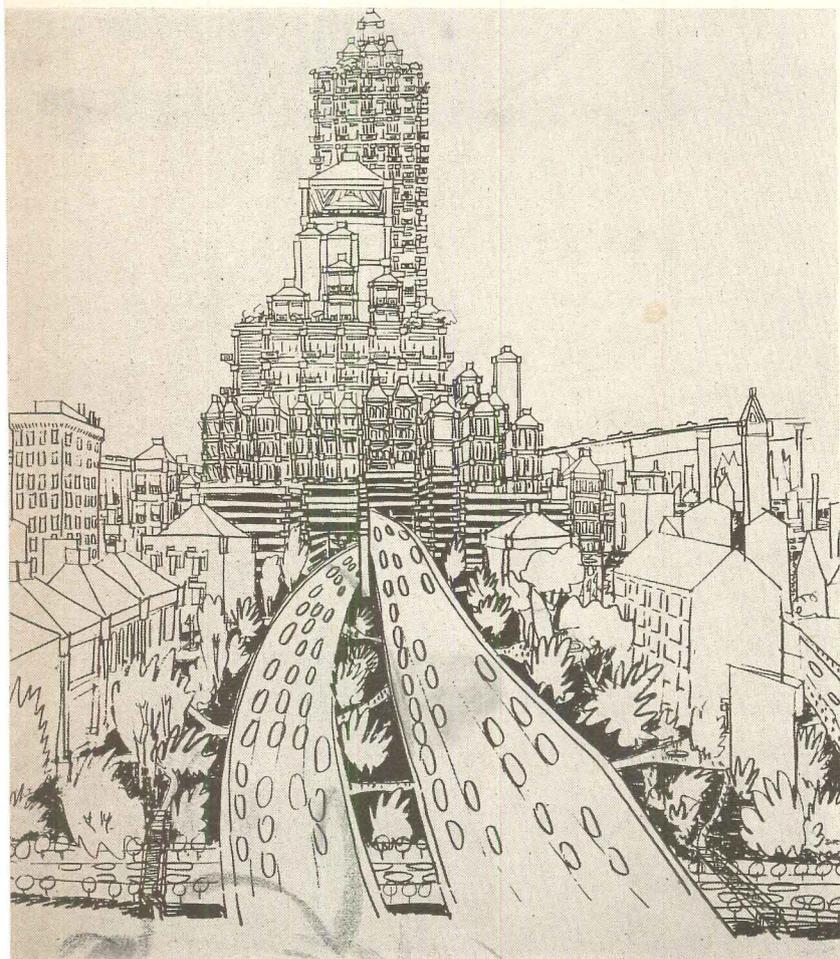
San Francisco's "skyways" scar Ferry Building (above) and City Hall.



**California hired a designer to study the "aesthetics" of two new freeways—and got more than it bargained for**



Halprin's "freewheeling" sketches show his view of freeways as they are (above) and as they might be tied into the city (below and opposite).



ing to realize that the freeway is a permanent fixture of the urban scene, one which cannot simply be wished away.

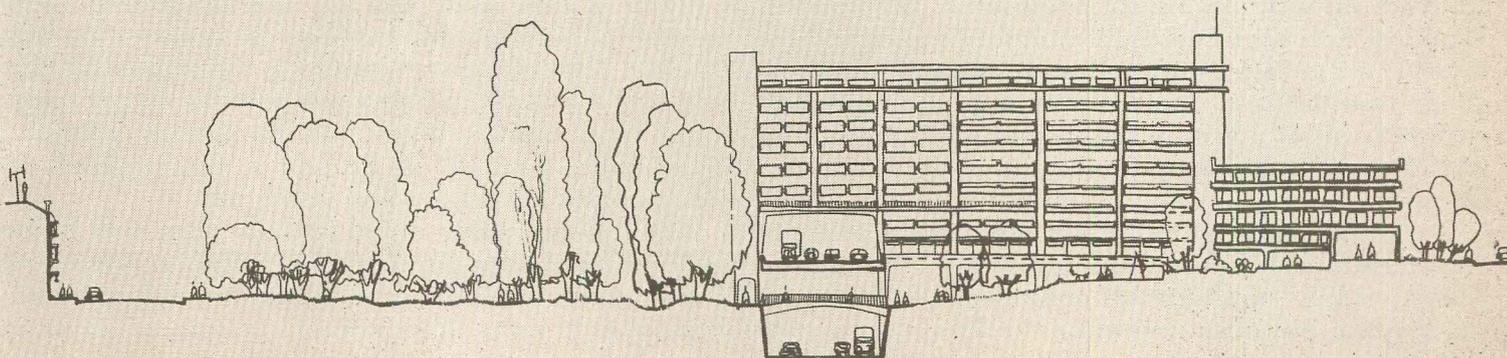
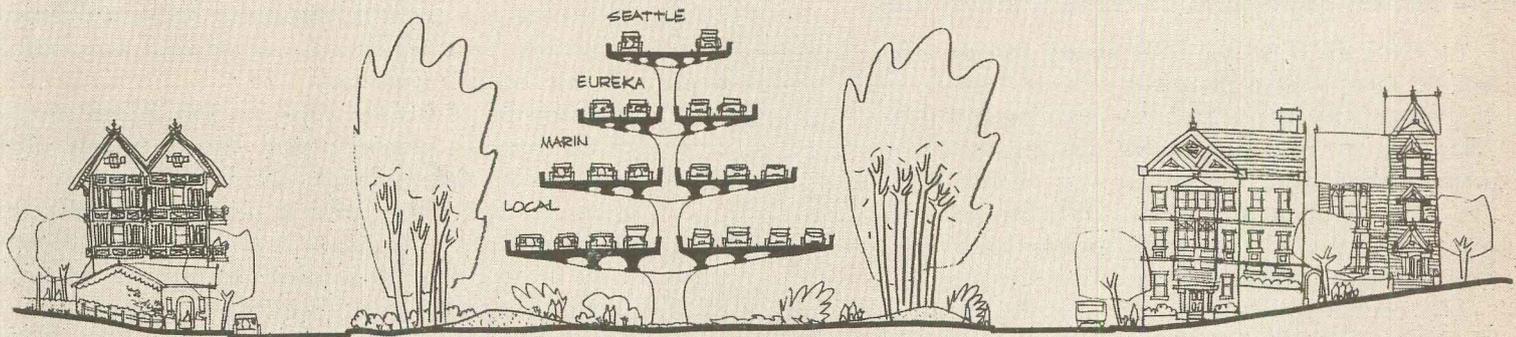
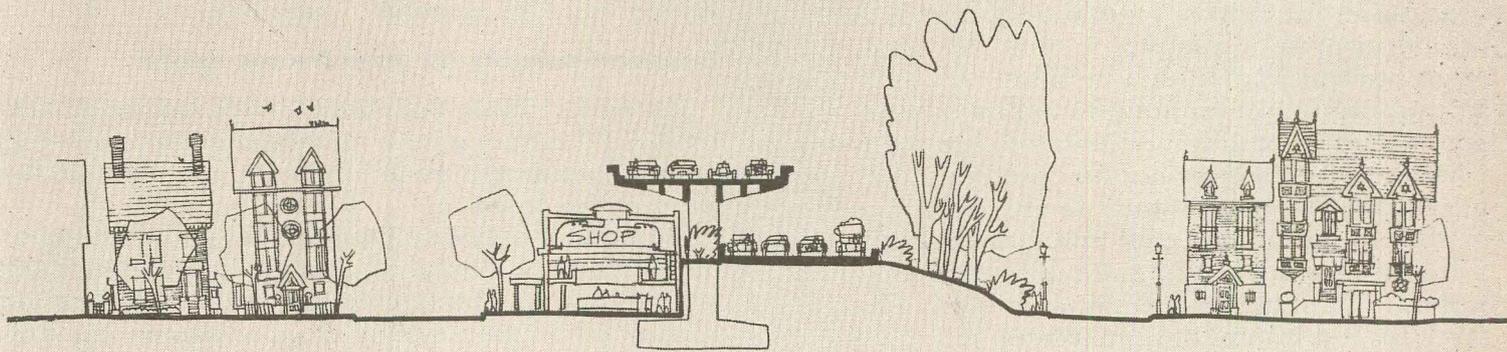
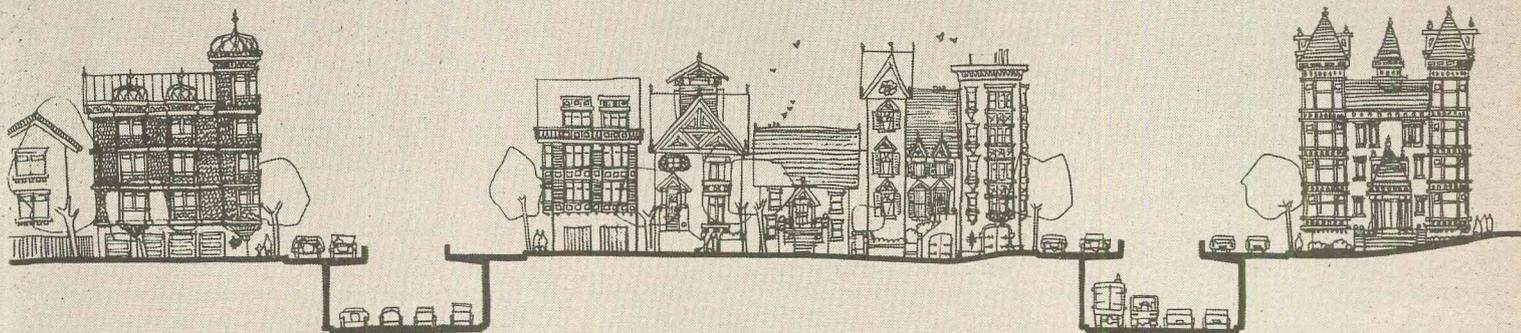
The result is a series of joint efforts, sporadic and scattered so far, to tame the urban freeway—not by fighting it, but by positive use of its latent power as a tool of urban design.

#### **The Halprin study: concentration and integration**

One such effort is taking place in San Francisco, and it is especially revealing of the way the atmosphere has changed. In planning two major new freeway connections to the Golden Gate Bridge, the State engaged Landscape Architects Lawrence Halprin & Associates as consultants on "aesthetics." Significantly, Halprin was brought in *before* the freeway routes were established, and was made "an integral part of our study team," in the words of one State engineer.

The State got perhaps more than it bargained for. Halprin found the literature of urban freeway design somewhat sparse, so he began by producing "a freewheeling, creative study" of the subject covering 16 closely typed pages, accompanied by the engaging sketches on these pages. At a progress report on the freeway plans presented to the San Francisco Board of Supervisors in late July, Halprin gave this six-point summary of the "design principles" he had found:

1. "The sinuous, curvilinear pattern of country freeways is on the whole inappropriate in the city. It cuts across the existing grid, disrupts neighborhood patterns, and leaves odd, difficult-to-integrate pieces. Urban freeways should follow the grid of the city."
2. "The wide right-of-way with variable median strips and planted verges and shoulders is inappropriate in cities because it wreaks havoc with existing structures, takes too much land off the tax rolls, and separates neighborhoods by great swaths cut through a city's fabric."
3. "Urban freeways should fit into existing and projected land-use and topographic patterns in a city, i.e.: they should go between neighborhoods, not through them, or they should go between two different land uses such as industrial and residential, or utilize topographic changes by sliding along below hills where they cannot be seen."
4. "Urban freeways should be condensed and concentrated, not spread out. They should employ urban, not rural aesthetics. Accordingly, they must use multilevel, split-level, depressed, and elevated groupings to facilitate concentration of the road bed. As a by-product, connections across freeways, from one side to the other, become much easier to achieve. (The objection to elevated freeways is, in large measure, due to the environment under them, which is usually ugly and unpleasant, devoted to parking lots, bus storage, and cyclone fences.)"
5. "Urban freeways should be integrated with the city and not simply be corridors through it. They should pass through buildings, have shops . . . restaurants and parking garages integrated into their structure."
6. "Freeways should be built as part of a total community



**A council of the warring parties  
drafted a set of guidelines  
that could—if followed—  
transform freeway planning**

development, not unilaterally. They can take the lead in generating amenity in a city in new or rebuilt areas by having parks and playgrounds pass under them, new structures built over them. Ultimately, it is the design of the *environment* of a freeway which counts more than the structure itself."

The specific locations and designs of the two new San Francisco freeways are now being developed, and it will be instructive to see how many of Halprin's principles they follow. "The final economic analysis," intoned one State engineer ominously after Halprin's presentation, "will necessitate evaluation of intangible esthetic considerations in terms of absolute costs, and will require decisions of a most difficult nature."

It is a sign of progress, at least, that a highway engineer regards esthetic considerations as "intangible," rather than untouchable. But Halprin was talking about more than mere beautification; he was talking, in great part, about matters which significantly affect the very life and health of the city. The working relationship between highway planners on one side and the urban design professions on the other remains inhibited by the persistent idea that "esthetics" can be applied to a freeway like a coat of paint, to make it more acceptable to public view. Obviously some new ground rules are needed.

It may come as a surprise to the engineers and urbanists as well that a set of such rules already exists—and, what is more, that it has been initiated by representatives of both camps. The story involves HHFA and the Bureau of Public Roads, whose luncheons had apparently begun to pay off.

**The Hershey conference: far-reaching ground rules**

In 1960, HHFA and BPR agreed to encourage comprehensive metropolitan planning projects through urban planning grants and federal highway planning and research funds. They also set up joint national and regional committees to promote such projects. And last year, they and the Automotive Safety Foundation bravely decided to bring together key representatives of all the warring groups concerned with urban freeways for a conference on location and design.

The conference, held in Hershey, Pa., had as its theme "Freeways in the Urban Setting." Cooperating organizations included the American Institute of Architects, the American Institute of Planners, the American Society of Civil Engineers, the American Society of Landscape Architects, the American Municipal Association, and the Institute of Traffic Engineers. It turned out to be one of those cases in which the whole was greater than the parts. Speakers from each group said their predictable pieces with varying degrees of good humor. But when it was all over, they produced a surprisingly far-reaching report.

The findings begin by noting that the urban segments of the interstate highway program, less than a third accomplished, provide "unprecedented opportunities to help shape and structure the urban community." Freeway construction "has massive impact upon the structure of the city. . . ."

The report then flatly states: "Freeways cannot be planned independently of the areas through which they pass. The planning concept should extend to the entire sector of the city within the environs of the freeway. The impact of the freeways must be considered in terms not merely of limiting adverse effects but also of achieving positive opportunities for appreciation of value, for development of new land uses, and for changing land use through urban renewal."

And, finally: "The construction of efficient, effective, and attractive freeways demands a total design concept. This means the integration of all aspects of design into a whole that is satisfying and effective, and integrated with its surroundings. . . . *This is a job not merely for the highway and traffic engineer, but for the architect, the landscape architect, the city planner, and other specialists*" (italics ours).

**Five commandments for urban freeway design**

Having laid down these ground rules, the report of the Hershey Conference goes on to recommendations for design. Some of its principles parallel Halprin's, and some take them a step or two further:

"Freeways should be integrated with other elements of the transportation system, including terminal facilities, arterial street systems, mass transit operation, and facilities for vehicle parking and for the movement of pedestrians into the downtown district.

"Freeway design should be in harmony with the existing or proposed land use patterns in the corridor. Where appropriate, the freeway can provide a boundary between different land use activities; in other cases it can be used as a design element to knit together land uses.

"Visual aspects of freeway location and design should be considered from the points of view of both the user and of the people in the areas through which it passes. . . ."

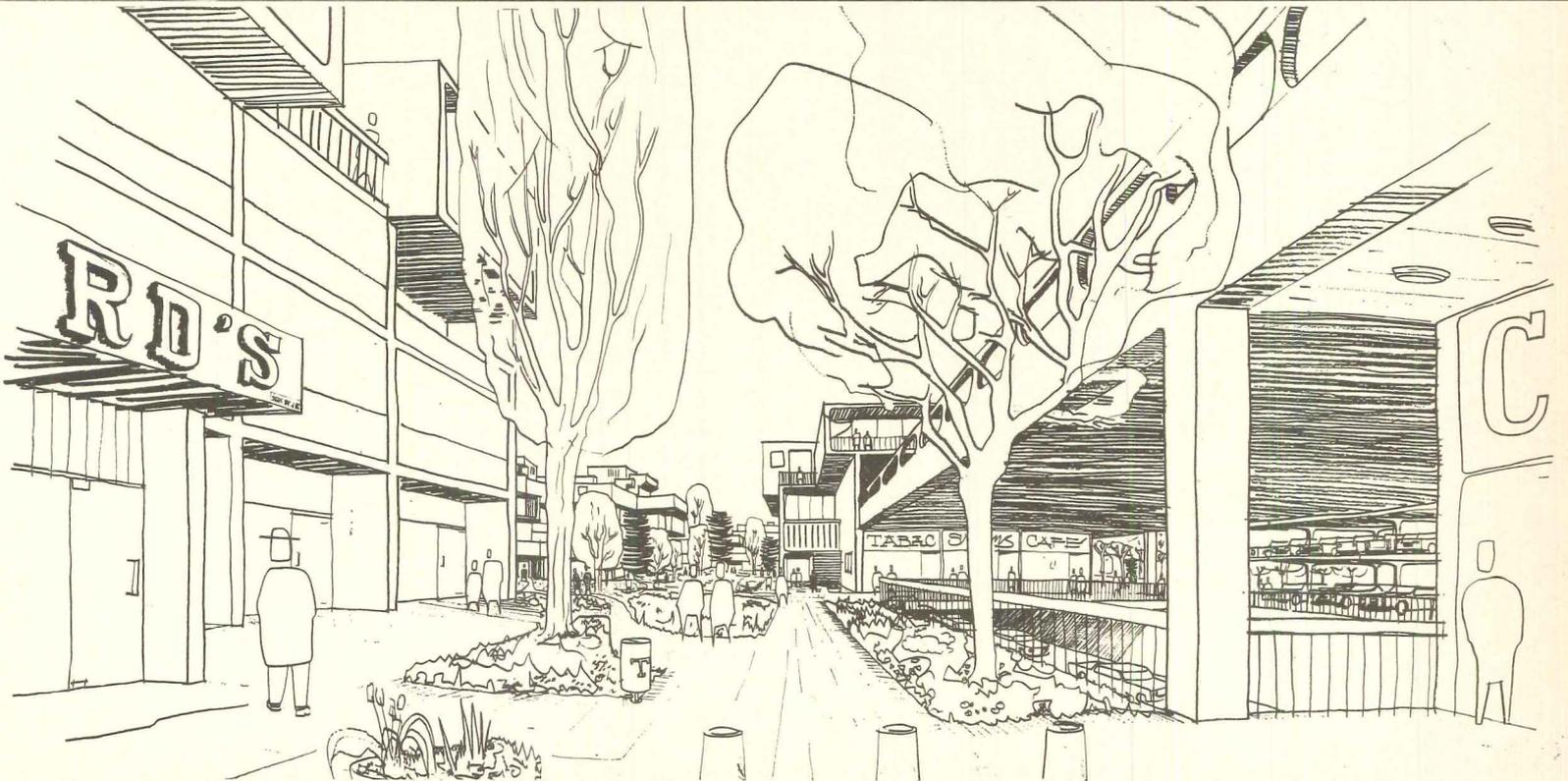
"Consideration should be given to the possibility of modifying design standards on freeways in the downtown district when greater flexibility in the location and design is required for the solution of specific local planning problems.

"Freeways should not encroach upon park land. They should add to rather than subtract from the city's open spaces."

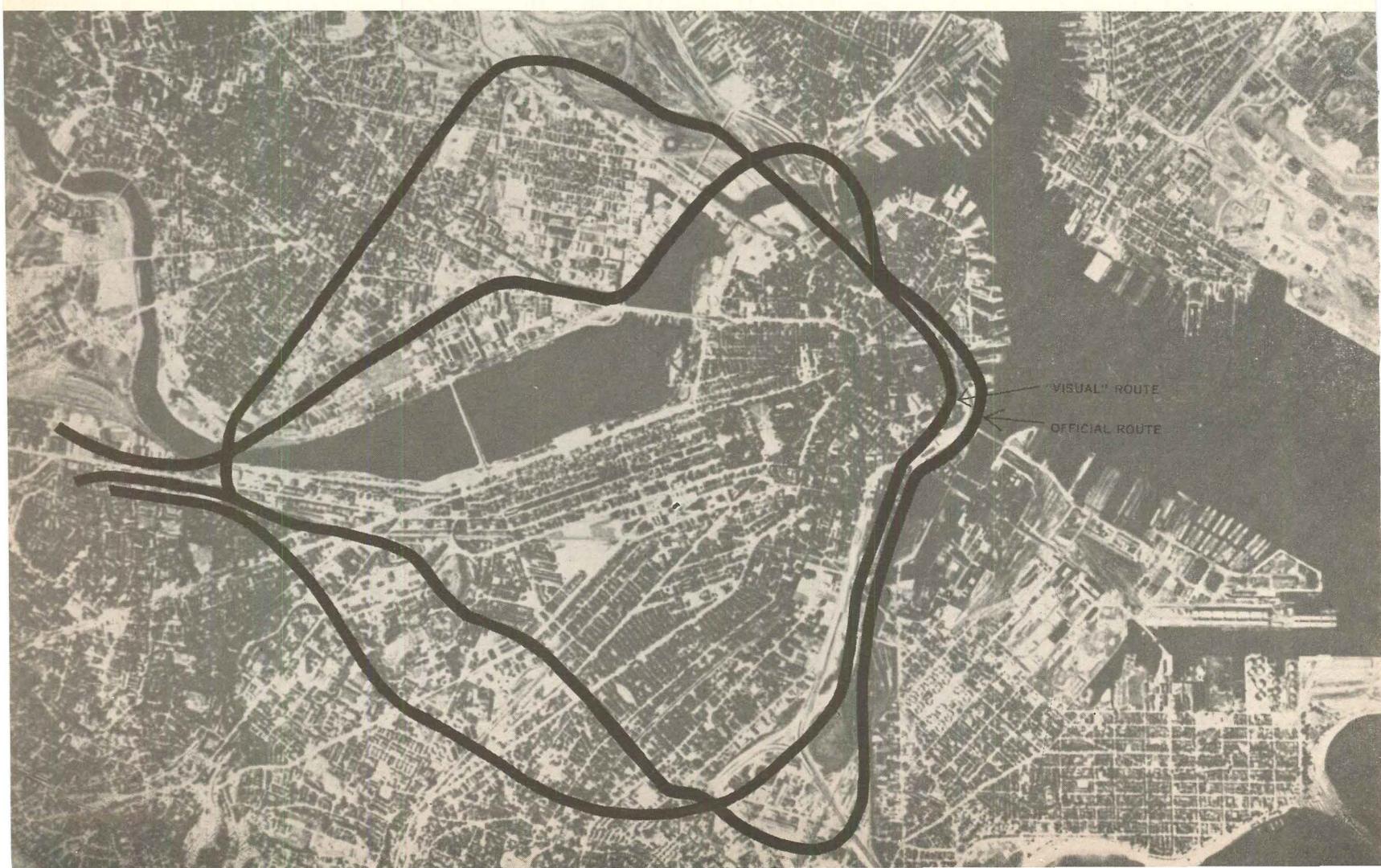
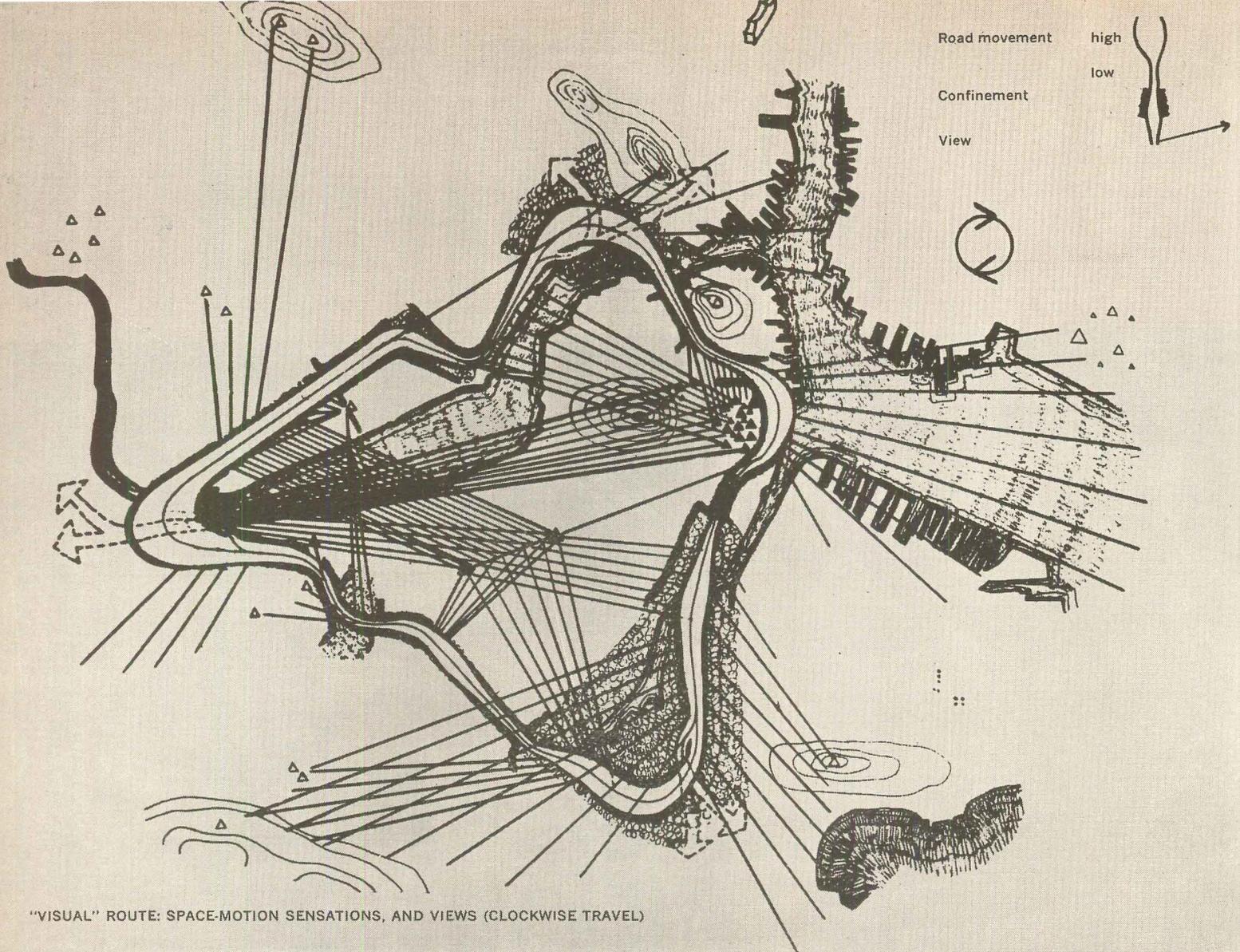
There is little doubt that the recommendations of the Hershey Conference could transform the nature of the urban freeway. The difficulty, of course, is in their implementation: they add a multiplicity of new factors to the already complicated art of highway design, and they demand a degree of humility and good will on the part of both engineers and urbanists that is still somewhat hard to find.

The true significance of the Hershey report is in its joint endorsement. For the first time, it commits all concerned with freeway location and design to the same set of comprehensive principles. It leaves little excuse for anyone to repeat the desecrations of the past.—DONALD CANTY.

MICHAEL E. BRY



LAWRENCE HALPRIN



## THE VIEW FROM THE ROAD: A HIGHWAY REDESIGNED FOR THE DRAMA OF DRIVING

*The authors of the following novel approach to highway design are Donald Appleyard, Kevin Lynch, and John R. Myer, respectively, Assistant Professor of Urban Design, Associate Professor of City Planning, and Assistant Professor of Architecture at Massachusetts Institute of Technology. Text and illustrations are condensed from their forthcoming book, "The View from the Road," to be published by The M.I.T. Press for the M.I.T.-Harvard Joint Center for Urban Studies. Their studies, begun under a Rockefeller Foundation grant, introduce a fresh, if admittedly rudimentary, system of highway analysis and notation which owes much to previous work of Philip Thiel and of Lynch's "Image of the City."*

Ugly roads are often taken to be a price of civilization, like sewers or police. Even those who are alarmed by the ugliness emphasize the repression of vice: roads should melt into the landscape; billboards should be controlled; the scars of construction should be disguised by planting. There is little discussion of turning the highway experience to any positive account. Yet roadwatching can be a delight. In an affluent society it is possible to choose to build roads in which motion, space, and view are organized primarily for enjoyment, like a promenade.

We began our studies by traveling repeatedly along several expressways, particularly the approaches to New York, Hartford, Boston, and Philadelphia. Tape recordings, films, photographs, and sketches were used to record everything the researchers found themselves looking at. An analysis was made; this was checked by analyzing the reactions of a group of 20 people riding along Route C1 in Boston, and a graphic language was developed with which to describe it. Finally, this language was refined by using it in designing the hypothetical freeway, an alternate Boston "inner belt," shown here.

Driving can be described as a sequence played to the eyes of a captive, somewhat fearful, but partially inattentive audience, whose vision is filtered and directed forward, concentrated particularly on the foreground at points of decision, or in sharply constricted spaces.

Beyond this concentration on near detail, the fundamental sensation of the road, continuously referred to by the experimenters, was the sense of motion and space: motion of self, apparent motion of surrounding objects, and the shape of the space being moved through.

Where surrounding objects are far off, or few, or featureless, or moving with the vehicle, then the sensation is one of floating, of no forward movement. This can be temporarily a pleasant relief, but the inability to reach any goal can soon lead to boredom. Objects might in such a case be placed alongside the road, just to reassure the driver about his real motion.

The sense of varied motion is inherently enjoyable if continuous and not too violent. The rhythmical humping of the turnpike across the New Jersey flats, or the sweeping turns of the approach to Boston over the Mystic River Bridge

possess such a quality of pleasant and smooth movement.

Because it predicts future movement, the shape of the road alignment is always of compelling interest. The "flowing" line now generally preferred is one sound technique for gaining a harmonious effect. But it is a technique rather than a principle. A kink, a sudden shearing off, a long straight slash may sometimes be part of the artistic content.

The apparent motion of objects can become a delight in itself. The welling up, splitting apart, and falling away of objects can become intricate dances when groups are seen together on a road of complex alignment. Landmarks may move across a background, rotate one way, then another, disappear and reappear, coincide or disperse. The road itself may feint, jog, swerve, or slide past them.

The distant view down the axis of a road, on which the driver can fix his attention without losing touch with his path, is a static experience. If the road is also sloping down at this point, it may be possible to present a view that is meant to be looked at carefully, and that in some way epitomizes the city or an important part of it. Such classical views as San Francisco across the Bay, or New York across the Hudson, are important experiences. Occasionally, when the road makes a sweeping turn or the view is very restricted, the visual field becomes a dynamic one, rotating, rushing, or growing. This is a powerful, if unsettling, effect.

In sequence, there can be dramatic contrasts between confinement and spatial freedom, such as the entry into Hartford from the Wilbur Cross Parkway, where the road descends toward the city, sinks into a cut, passes through a short tunnel, and bursts out into the central park.

### **The need for orientation, and visible goals**

The driver is constantly engaged in orienting himself to the environment, in building up some image of it. There may be one dominant goal constantly visible, with minor goals playing against it. Thus the towers of Manhattan indicate the eventual destination of the New Jersey Turnpike while it maneuvers through the monumental landscape peopled by oil refineries, the Newark Airport, and the Pulaski Skyway.

Beyond the sense of progression from goal to goal, one is concerned with orientation in the general environment, with locating its principal features and relating oneself to them. This is partly a practical, partly an esthetic activity. A clear image of the city structure is a necessary counterpart for driver orientation on the urban freeway. Reliance on signs is not enough. There is positive pleasure in being able to recognize the urban scene and fit it together. The shapelessness of Boston from the Mystic Bridge approach, for example, and the frequent periods of orientation blindness are disappointing and disquieting, whereas the edge of Manhattan, from either the East or West River Drives, is satisfying just because the relationship between city and water is made visible.

The image of the highway itself may also be clarified. Successive sections may be visibly differentiated so that they can

be recognized as distinct parts. Thus the motorist can see that he is "in the hilly part" as well as "approaching the center." The general alignment may be made to appear as a simple geometric form. Continuities of edge, surface, or rhythm may be used. Typical sequences and gradients may be developed, and the sequence in one direction may be made recognizably different from the sequence in the other. The road ahead may be exposed and strategic points may be articulated. The form of interchanges may be clarified, so that driving decisions become self-evident and the shape is congruent with the principal flow of traffic.

Finally, the driver seeks meaning in his environment. When the road makes apparently purposeless movements, or when a lively center of activity like Boston's food market is hidden from the road that passes overhead, an opportunity for contributing to an expressive environment is lost. Current efforts to "buffer" fast roads from the city by depression, distance, or landscaping are reducing the road experience to dull meaninglessness. The highway could become a sequential exposition of the city, by visually relating it to focal points, and picking out symbolic and historical landmarks. The most powerful experiences occur when space, motion, orientation, and meaning reinforce each other—when a landmark that is rooted in community history is the visible goal of a journey and the visible pivot about which the road turns. The pivot of motion on a highway today is all too likely a temporary shanty, and its goal a whiskey advertisement.

**Three rules, applied to a new Boston inner belt**

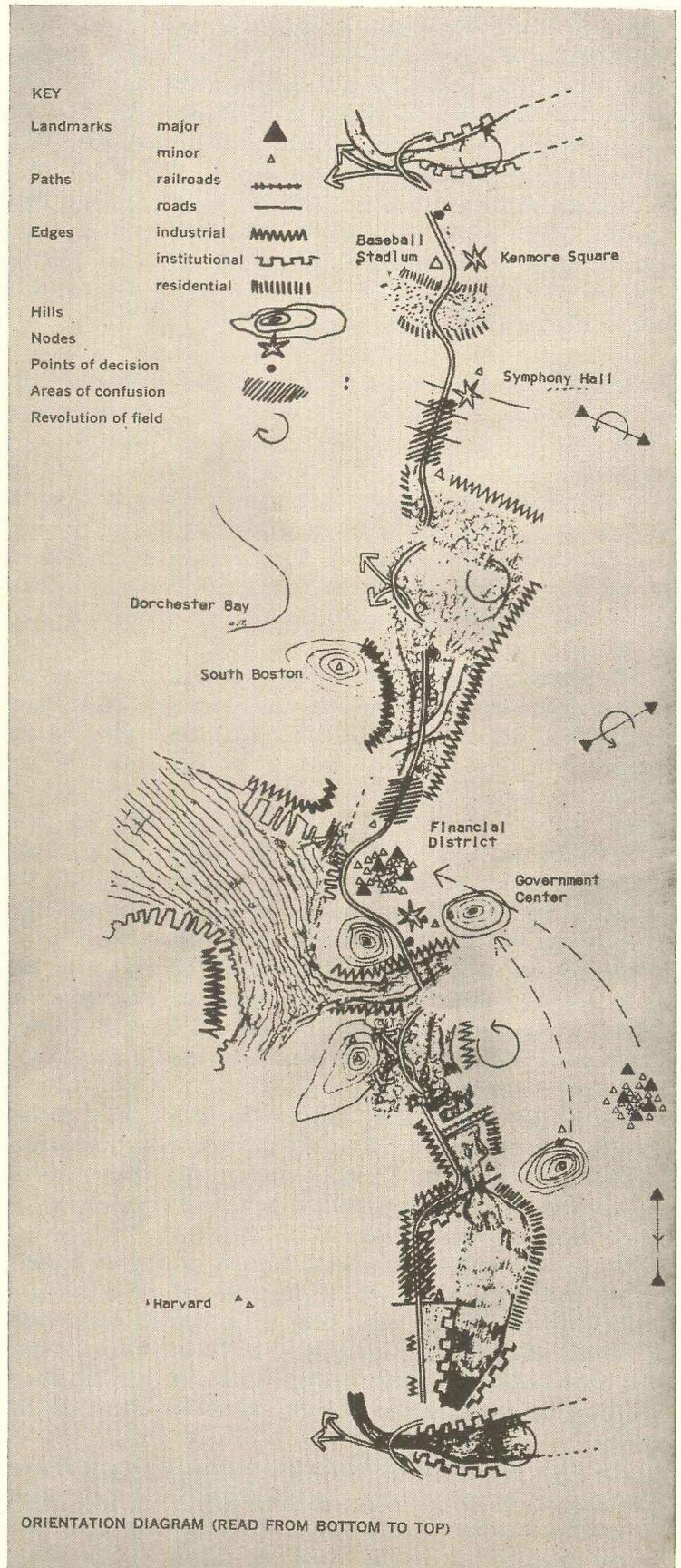
*The first objective* in shaping the highway experience, then, is to present the viewer with a rich, coherent sequential form, a form that has continuity, rhythm, and development, and that provides contrasts, well-joined transitions, and a moving balance toward a goal.

*The second objective* is to clarify and strengthen the driver's image of the environment, to give him a picture that is well-structured, distinct, and as far-reaching as possible. He should be able to locate himself, the road, and the major features of the landscape, to recognize those features with surety, and to sense how he is moving by or approaching them.

*The third objective* is to deepen the observer's grasp of the meaning of his environment—to give him an understanding of the use, history, nature, or symbolism of the highway and its surrounding landscape. The roadside should be a fascinating book to read on the run.

The drawings here show a hypothetical design for Boston's inner belt expressway. Current plans locate this route in a loose and shapeless ring about the downtown (map, first page), often too far out and suppressed to maintain orientation or visual contact with the center, and connected only sporadically to the incoming radials.

The redesigned road sets out to clarify three aspects of the environment for the road user: a) the natural features (in this case, the harbor, rivers, and hills around Boston); b)



the functional pattern of the city, particularly downtown; and c) the structure of the freeway system itself. The whole proposed route, shown in general form in the circular map on the first page, is analyzed in detail in the straight-line diagram (left). The sequence of sensations along the lower middle segment is suggested in the sketches (right).

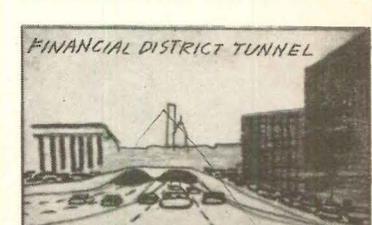
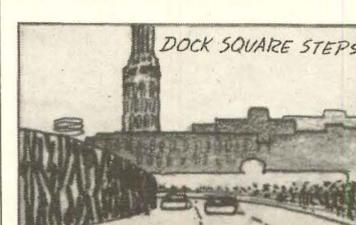
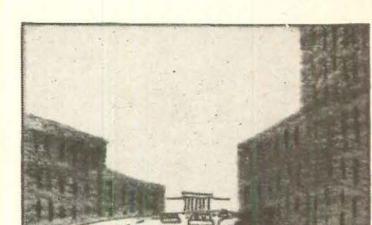
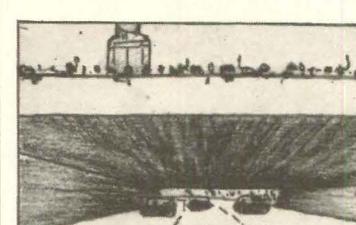
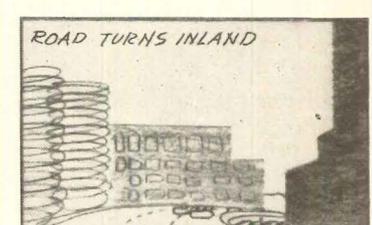
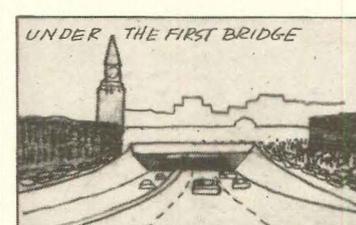
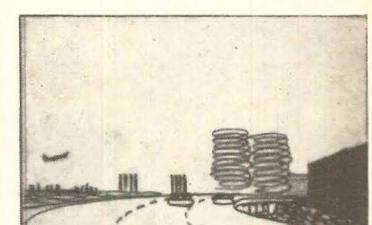
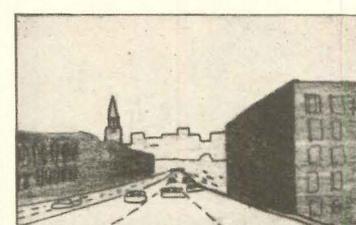
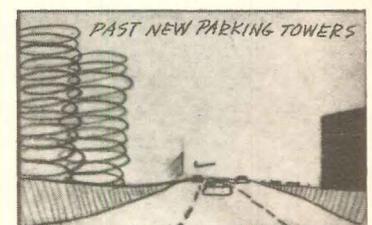
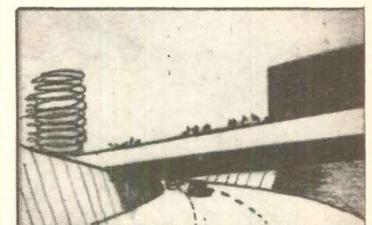
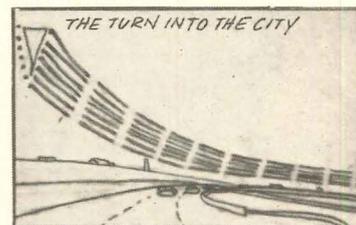
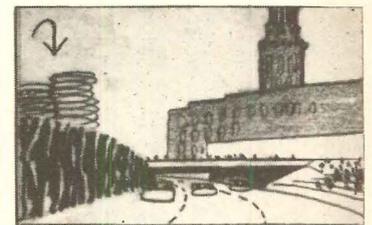
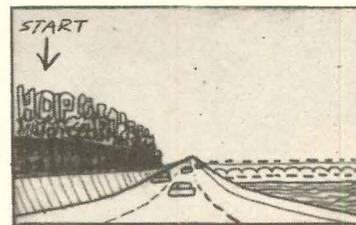
To overcome the difficulty of orienting on a circular route, three major intersections, leading to north, south and west radials, are proposed. These intersections, acting as strong forms in confused areas of the city, become apexes of a triangle, the sides of which are visually associated with that part of the city being traversed. These three legs are called the Riverway, Centerway, and Crossing, and each possesses a central climax. The Riverway (paved in white for easy driver identification) parallels the Charles River at some distance, then, at the center, kinks inward and downward to the water's edge with cross-views to Cambridge and the State House, before continuing its parallel course beside the river. The Centerway (paved in red) is directed towards the financial and shopping district with a central outward curve around the financial district allowing views across the harbor to the airport. This curve is articulated at both ends by descent into areas of visible activity—to the north, Boston's Italian market; to the south, through the Dover Street tunnel, where a tunnel restaurant is proposed. The Crossing (paved dark) passes quietly through residential areas except for a curving stretch through Fenway Park with Kenmore Square and the baseball stadium to the northwest, and a new symphony hall square to the southeast.

The whole route contains a simple basic rhythm of intersection-climax-*intersection* which is overlaid by another rhythm marked by the two major downtown destinations: (a) the financial district, government center, and retail shopping around the Hub, and (b) the new Prudential-John Hancock complex around Copley Square. These major goals are picked out for viewing with regular frequency and alternating emphasis along the route, so that eastern travelers relate to the Hub, western travelers relate to the Prudential-John Hancock group. Within these major rhythms lie those of secondary goals, particularly those of outlying centers (South Boston, Mission Hill, Cambridge, Somerville, Charlestown and Logan Airport) that provide rhythms of "inside to outside" viewing.

This study was motivated by the promise of the new world of vision inherent in the speed of movement, and by a desire to find a visual means of pulling together large urban areas. The crucial test will come in applying these ideas to actual design problems, and in evaluating the results obtained.

A road built for vision in motion—perhaps as a national experiment—would be a concrete example of what the highway experience could be, an example far more powerful and evocative than any number of paper projects.

Our highways are no mean achievements in the history of technology. Will they also be remembered as works of art?





DONT  
WALK

WAT TCHT SIR

## THE DOWNTOWN SNARL: A CASE FOR SORTING, STACKING, AND STORING

Resigned, dispirited, they stand waiting for the red light to halt the hurtling vehicles. They have learned that walking is not something to be done for pleasure; the narrow sidewalks are too crowded for that, the pace too fast, the sounds and smells of traffic too perilously near. It is not only the signal that forbids them to walk: it is the entire indiscriminate jumble of the modern city.

Some say that the people of the city have been sold out to the automobile. But alas, even the automobile is disadvantaged. Extravagantly swift (and designed to look even swifter), it is reduced to a plodding pace that a dray horse would disdain. It is thrown into a bitter struggle with darting taxis and huge trucks and buses simply to stay in motion. Endlessly stopping and starting, it stutters through the streets seeking a place of rest, only to find that parking lots and garages have been located not for its convenience, but solely according to the whims of the real estate market.

The city street has become the Great American Bottleneck: the clog, the snarl, the tangle. It is the point of convergence for the entire urban transportation network. It is also the point where the issues of transportation planning are fast becoming the issues of the city's survival.

A great deal of thought and money has gone into the network, but precious little has been done about handling the people—and the vehicles—that it brings into the city core. Emergency expedients have been tried: one-way streets, arcane sequencing of traffic lights, pedestrian scrambles, and even, where all else fails, law enforcement. But none have eased the congestion that swells inexorably with completion of each new urban freeway.

There is a growing suspicion that a more basic remedy must be sought—that some way must be found to sort things out. It must be a way that preserves the concentration of activities that is the essence of the city, yet allows for freer movement of both people and their vehicles. It must be a way that takes into account both the pleasures of pedestrianism and the new mobility that the automobile has encouraged—lest people use this mobility to leave the city behind.

### **The principle of salvation by separation**

The search for such a remedy has been going on for a good long time. Even Leonardo da Vinci tried his hand, proposing an ideal city in which there would be low roads and high roads. "The high-level roads," wrote Leonardo, "are not to be used by wagons or vehicles . . . but are solely for the convenience of the gentlefolk. All cars and loads for the service and convenience of the common people should be confined to the low-level roads."

Most present-day planners and architects would extend Leonardo's principle of separation. Any solution to the city's transportation problem, they would agree, must include four elements: separation of people and vehicles; separation of autos and service vehicles; separation of through and inter-

city traffic, and a more rational relationship between traffic distribution and auto storage. They would also agree that the problem can only be solved by a total strategy of design which takes all four elements into account.

The development of these ideas in the U.S. is neatly illustrated by proposals for those rival Texas siblings, Fort Worth and Dallas. The first to reach wide public attention was the Victor Gruen design for Fort Worth, probably the most famous plan gathering dust in the files of any American city.

Gruen proposed that the square-mile core of downtown Fort Worth be surrounded by a ring road tied into the city's freeway system. From this road feeders would take autos into great parking garages penetrating the core, and trucks into an underground network of service alleys. Surface streets would be completely closed to traffic (except for slow-moving shuttle cars like the "elephant trains" at world's fairs) and would become pedestrian malls and walkways.

The Fort Worth plan dramatized the comprehensiveness of approach needed to reshuffle the mix of people and vehicles downtown. Gruen, however, did most of his shuffling on a single, horizontal plane. Six years later, when Dallas got *its* plan, a significant dimension had been added to the mix.

### **A giant vertical sandwich of six layers**

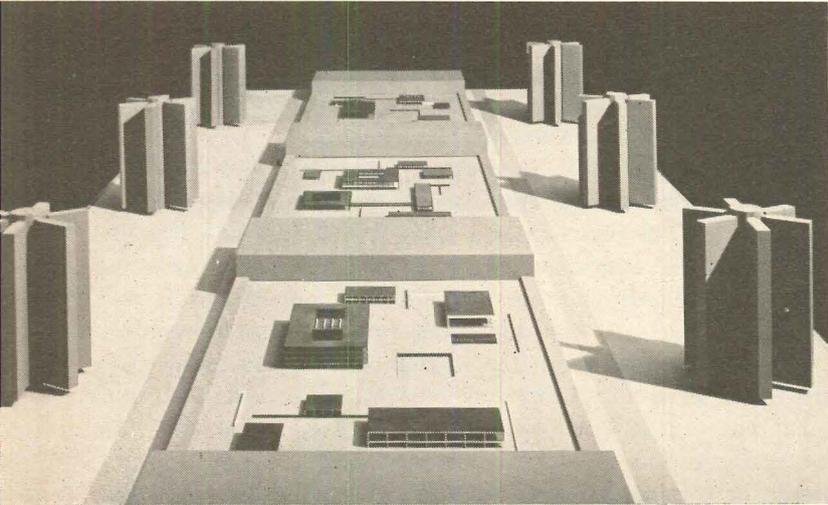
The Dallas plan was the work of a team of Columbia University economists and graduate students of architecture and planning under then Dean Charles R. Colbert. It consisted of a detailed design for a 9¾ acre development called "Main Place" and a proposed application of its principles to the city's core (FORUM, *Projects*, May '62).

The Columbia team's plan proposed that densities be increased, varied uses blended, and through traffic siphoned off by a ring road. But its essence was the *vertical* sorting of people and vehicles. Main Place was to be a single giant construction with a six-layer base: the bottom layer for buses and trucks; the second for self-parking; the third for autos and shuttle buses on the city's existing grid of streets; the fourth and fifth for pedestrians, with shopping ringing a great open square, and the sixth for recreation. Above this sandwich would rise a group of major buildings, including an enormous H-shaped tower. And beneath—down to 600 feet beneath—would be pits for short-term parking, with cars carried in continuous vertical conveyors.

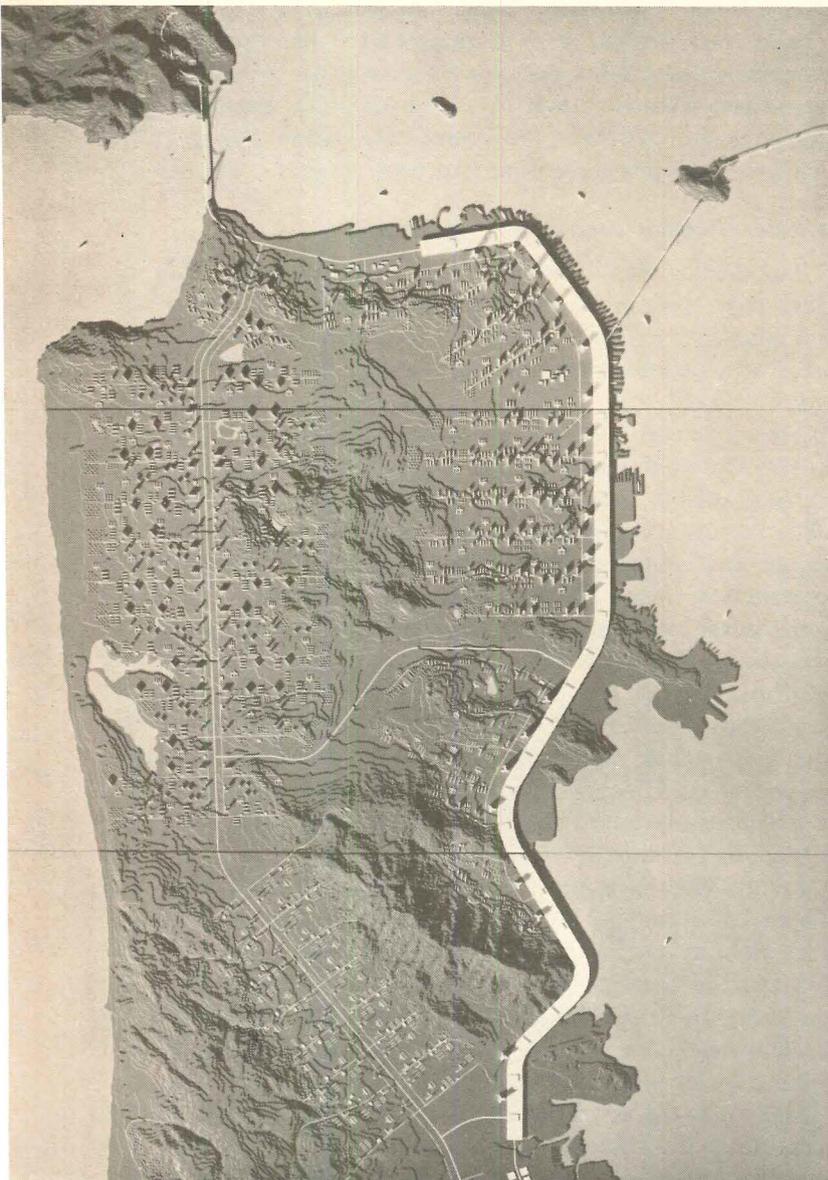
In the view of some urban theorists, however, even this scheme does not go far enough. Perhaps, they suggest, the new mobility has made the concept of a city core obsolete. Perhaps the focal points of city life—the stores and shops, the community buildings, the cultural facilities—should be not only stacked vertically, but stretched out along the lengthening arteries of the transportation network.

One such theorist is Reginald Malcolmson of the Illinois Institute of Technology's department of architecture and city planning, who sees the future city as a ribbon of buildings

**The future city: a compact, multi-level structure, or a long spine stretching to follow the patterns of the automobile?**



*Metro-Linear: in schematic form (above), and applied to San Francisco*



PHOTOS: RICHARD NICKEL

with major transportation routes its "vertebrae."

Malcolmson calls his city "Metro-Linear." Its spine is a continuous, six-level building a quarter-mile wide, flanked by parallel one-way highways. The four stories above ground are used for parking, and the two below for railroads, subways, and trucks. Blocks of commercial buildings rise above the roof level of the spine at half-mile intervals, and radial apartments sprout from its sides. The long ribbon of the roof itself is given over entirely to the pedestrian, with civic and cultural buildings opening onto a vast series of plazas.

#### **Reclaiming the wasted cubage of the core**

Still, it is the vision behind the Dallas plan which is exerting great influence on present-day urban design: the vision of a compact city core in which people and vehicles move on many levels, instead of crowding onto a single one.

The vision has obvious advantages over reality. The single-level street was conceived in the days when feet, both human and animal, were the primary means of transportation; it survives on the brink of suicide by strangulation.

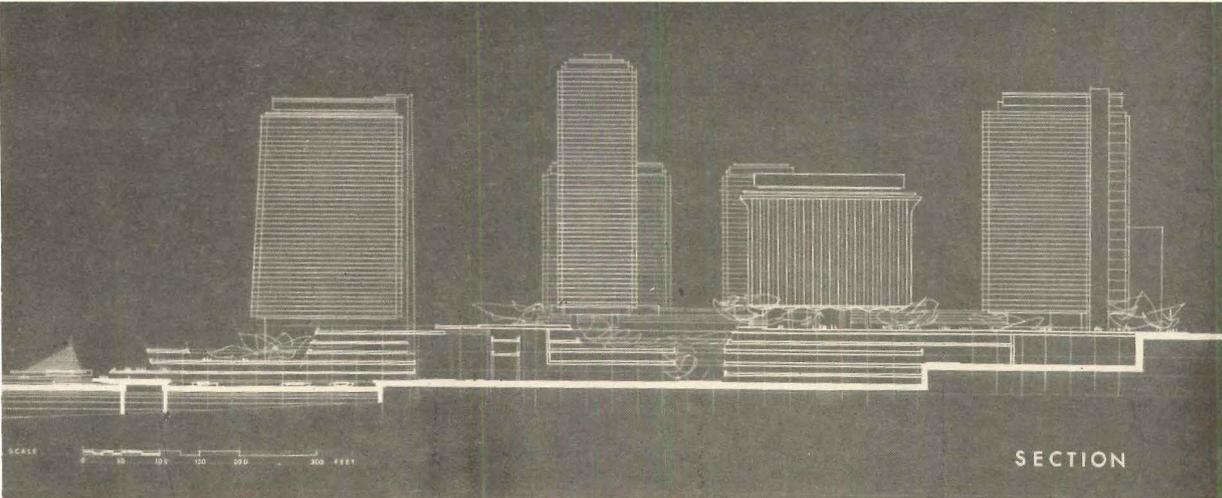
The conventional street, moreover, acts as a remarkably effective barrier. As Gordon Cullen has pointed out, it is as if great rushing rivers had been let loose between our buildings. (In Venice, which has real water to deal with, pedestrian bridges join the two sides of the canals; we use stoplights instead to try to stem the flood of vehicles.) The street system is a relentless gridiron of chasms, carving urban land into isolated islands destructive of a sense of community.

The single-level street is also economically wasteful, as Colbert pointed out at a transportation symposium sponsored by, of all people, the Automobile Manufacturers Association. "Real estate is more than a two-dimensional lot," he said. "It extends from the center of the earth outward to infinity; it is a volume, not a plane. . . . We are only slowly coming to realize that air rights—the volume of spaces—are essential attributes of what we call property."

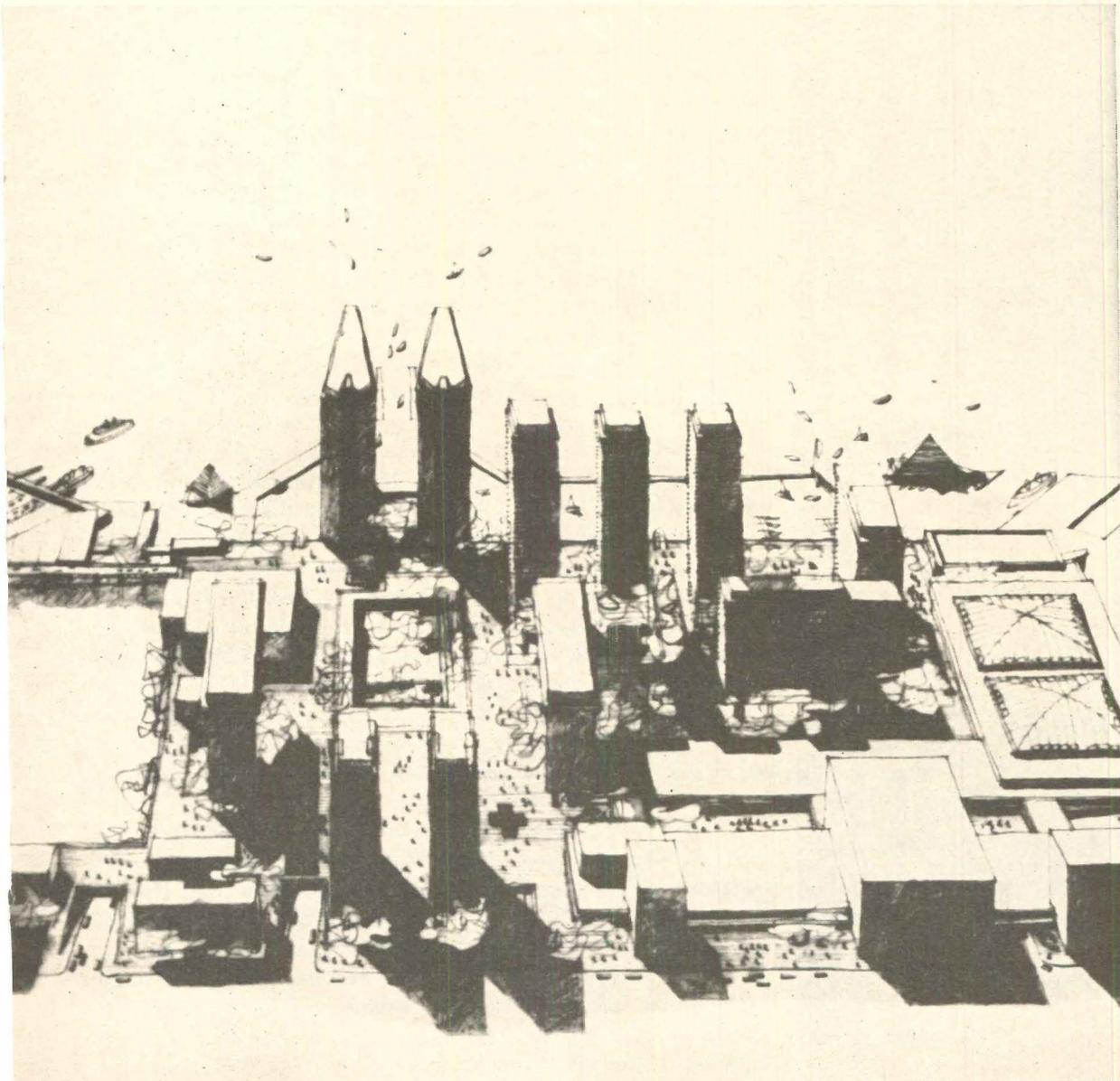
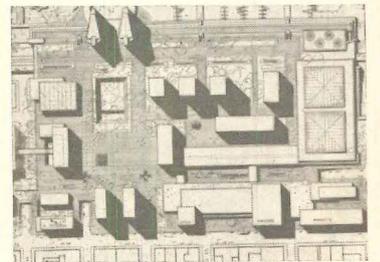
Consider now the vision, as expressed in the Dallas plan and, more recently, in Architect Paul Thiry's design for terracing much of downtown Seattle (right). It exploits this wasted cubage, making space out of air for plazas and promenades, digging space beneath the surface for unobtrusive storage of vehicles. It separates fast movement from slow (just as the early transit systems did by running their trains above or below the city's surface). And it allows existing street systems to be used with maximum efficiency.

History contains no record of Leonardo's ideal city ever being built. The Fort Worth city council approved the Victor Gruen plan, but the state legislature refused to pass the necessary enabling laws (prime opponents were the operators of private parking garages). The Dallas scheme is in abeyance, and there are no present plans for realization of anything quite like Mr. Malcolmson's Metro-Linear.

Such is often the fate of ideal cities when they bump up against some of the harsher realities of urban development



*Seattle's downtown gets progressively shabbier as it declines to the railroad tracks and highway viaducts at its waterfront. Architect Paul Thiry's dramatic remedy: build a great pedestrian platform roughly five blocks wide and four deep from Second Street out over the harbor. Above would be a whole new shopping and commercial core, including a 1,000-room hotel and a world trade center. Below would be the tracks, the viaduct, the future downtown loops of Seattle's freeway network—and acres of parking. Thiry feels the plan would "give the waterfront back to the city" and prevent construction of the downtown area by encircling transportation routes. He proposes that it be spurred by two major department stores in the area and privately financed by the lending institutions that are clustered along Second Street.*

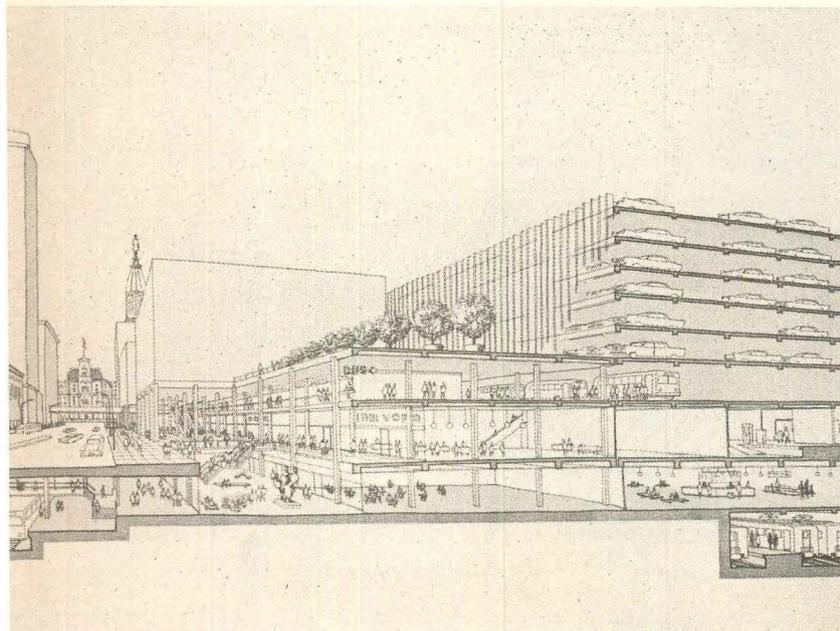


**Philadelphia puts the idea of separation to work—and a new Columbia plan shows how it can apply to smaller cities**

GEORGE ADAMS JONES



*Above, pedestrians in Penn Center; below, the Market East "mechanism"*



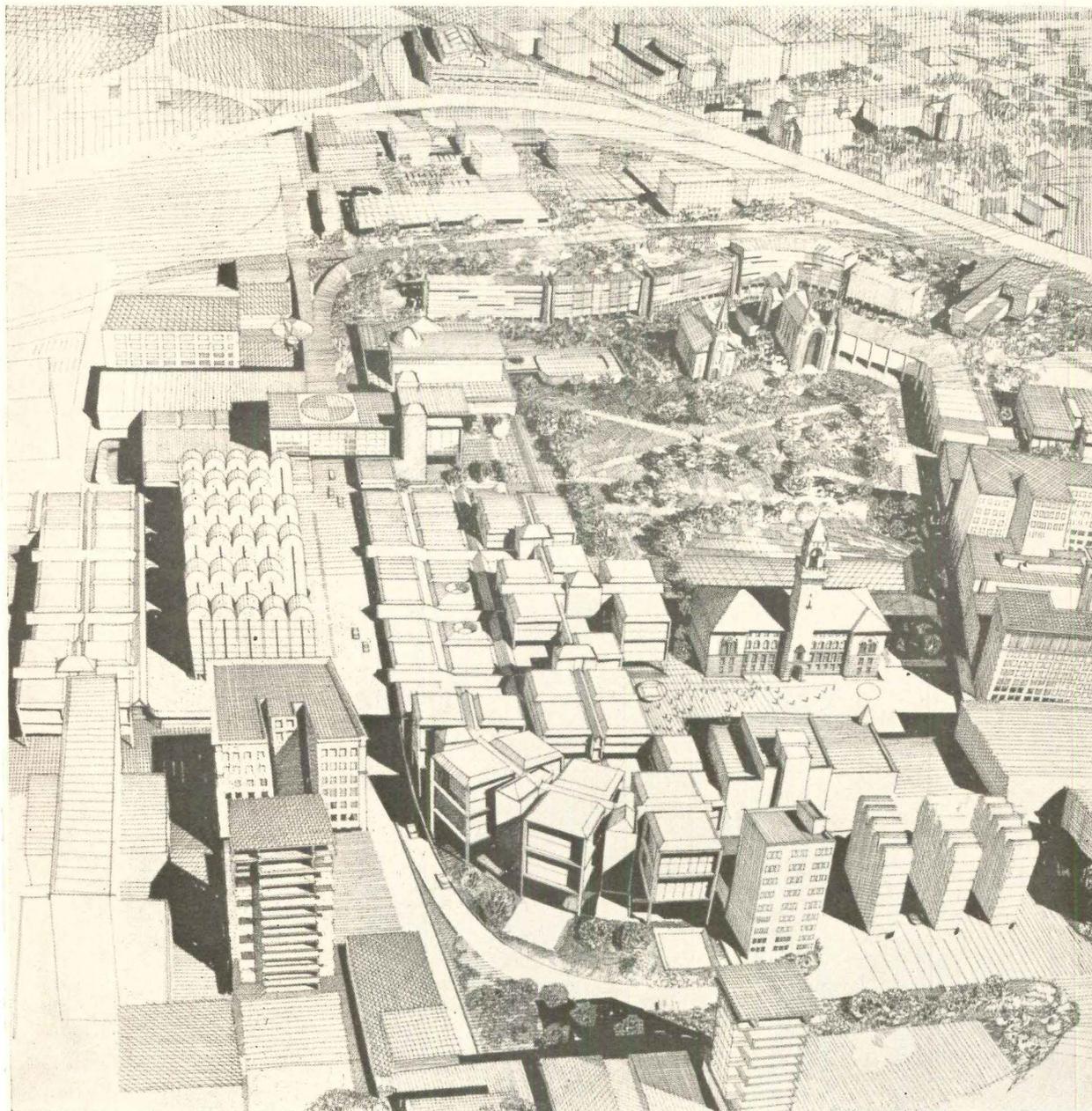
—particularly, it must be said, in a political democracy and a free-enterprise economy. Colbert acknowledged this before the auto-makers: the multilevel principle, he said, "requires a re-evaluation of man and his customs, of procedures and practices now almost universally accepted."

Perhaps no such sweeping re-evaluation will take place until the oft-predicted day when everything finally grinds to a complete halt, and the city is choked with its own congestion. That day may well come, but meanwhile the concepts contained in the far-seeing plans outlined above are finding increasingly widespread application in some very real projects, both public and private:

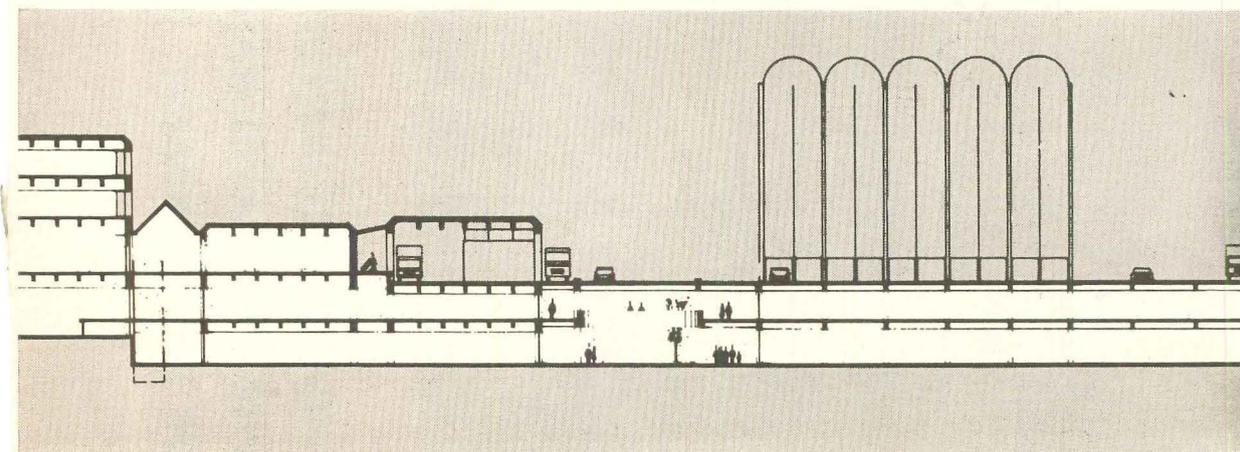
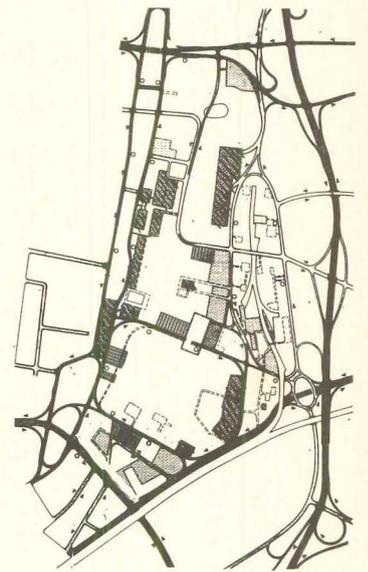
*In Philadelphia, Penn Center* (photo left) already offers the pedestrian what the Planning Commission brochure terms "fine broad open esplanades" above ground, and a concourse of his own below. Next step is completion of Market East, in which an eight-block spine between City Hall and Independence Mall will become a "transportation mechanism," in Planning Director Edmund Bacon's words, for Philadelphia's new core. Virtually all present modes of urban transportation will come together in Market East—trains, subways, buses, trucks, autos—and will be carefully separated from each other and from the pedestrian (see section, left).

*In Rochester, N.Y., the Midtown Plaza project* (FORUM, June '62) is giving a convincing demonstration of how the Gruen planning principles can revitalize a city's core. A narrow congested street was transformed into an enclosed, three-story pedestrian mall lined with shops, exhibit spaces, and meeting rooms; a three-story parking garage, its ramps linked directly to a surrounding ring road, was built below ground; service vehicles were relegated to the basement level; two existing department stores were thoroughly remodeled; and new buildings of four and 18 stories were constructed. The four-story building is all offices, but the 18-story tower is a city in itself: parking and services in three basements, banks and stores on the first two floors, offices on the next 12, a restaurant on the 14th, and a hotel on the final three. Midtown Plaza has been a resounding economic success, has spurred other new construction in downtown Rochester—and has brought an additional 25,000 persons a day, by Gruen's estimate, into the city center. Says Gruen, "Not even in our most optimistic moments could we have foreseen the extent to which the Plaza has become a focal point of civic, political, cultural and artistic life."

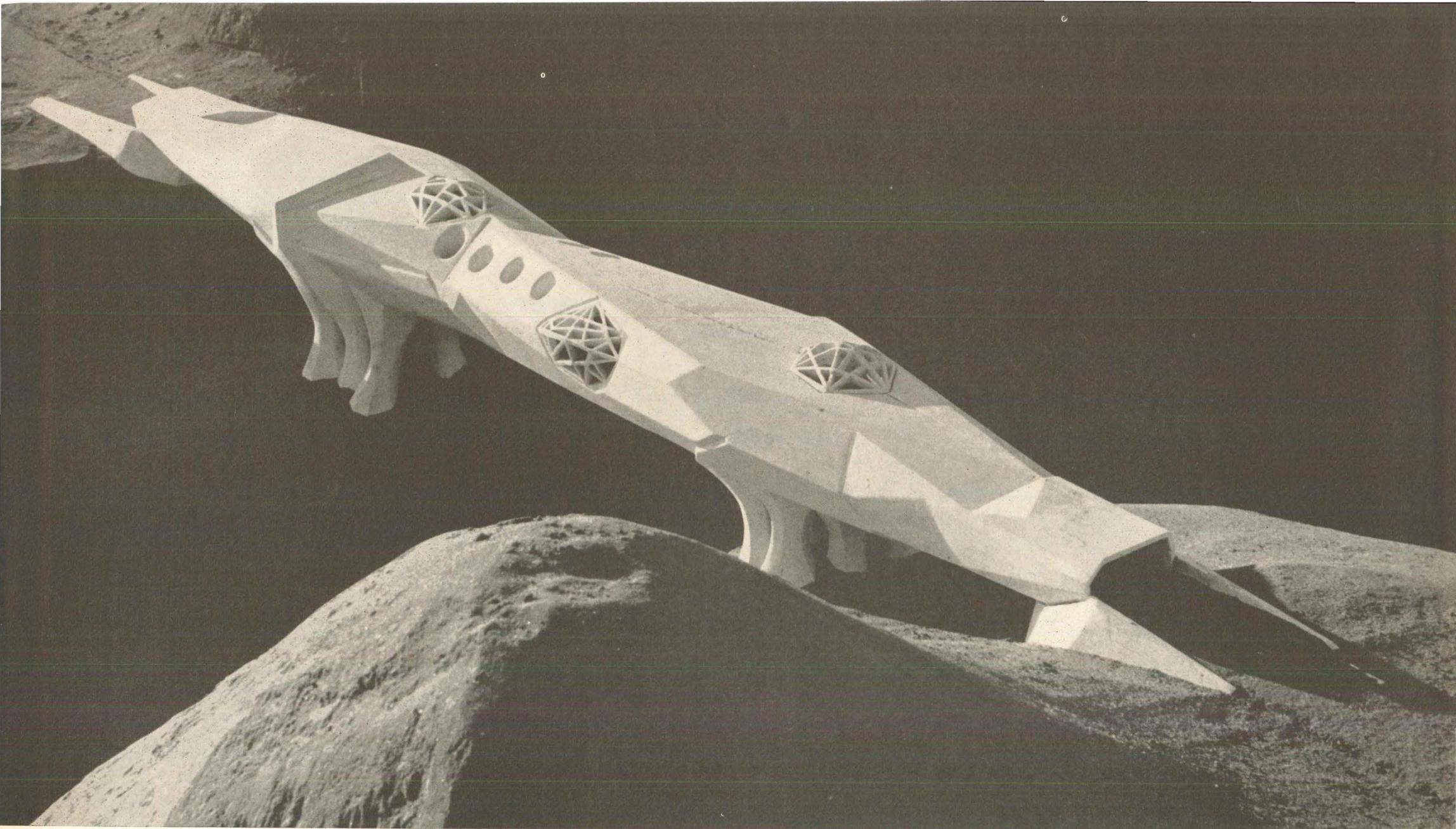
*In Worcester, Mass.,* city officials and downtown businessmen last month gave an enthusiastic reception to a plan prepared by another Columbia team under Colbert. Its key elements: closing streets to create a continuous web of walkways, construction of an elevated inner traffic loop with a two-level shopping mall beneath, moving-belt traffic conveyors (like those proposed for Dallas) placed above ground in vertical tubes. The Worcester plan (right) is a kind of summary, showing how nearly all of the principles of separation can be applied to the heart of a medium-sized city.



The Worcester plan bounds the downtown area with an outer loop of freeways and introduces an inner loop, flanked by parking, for distribution of traffic. The pedestrian network would expand the present City Hall Common (left) and make Main Street an open, landscaped shopping mall.



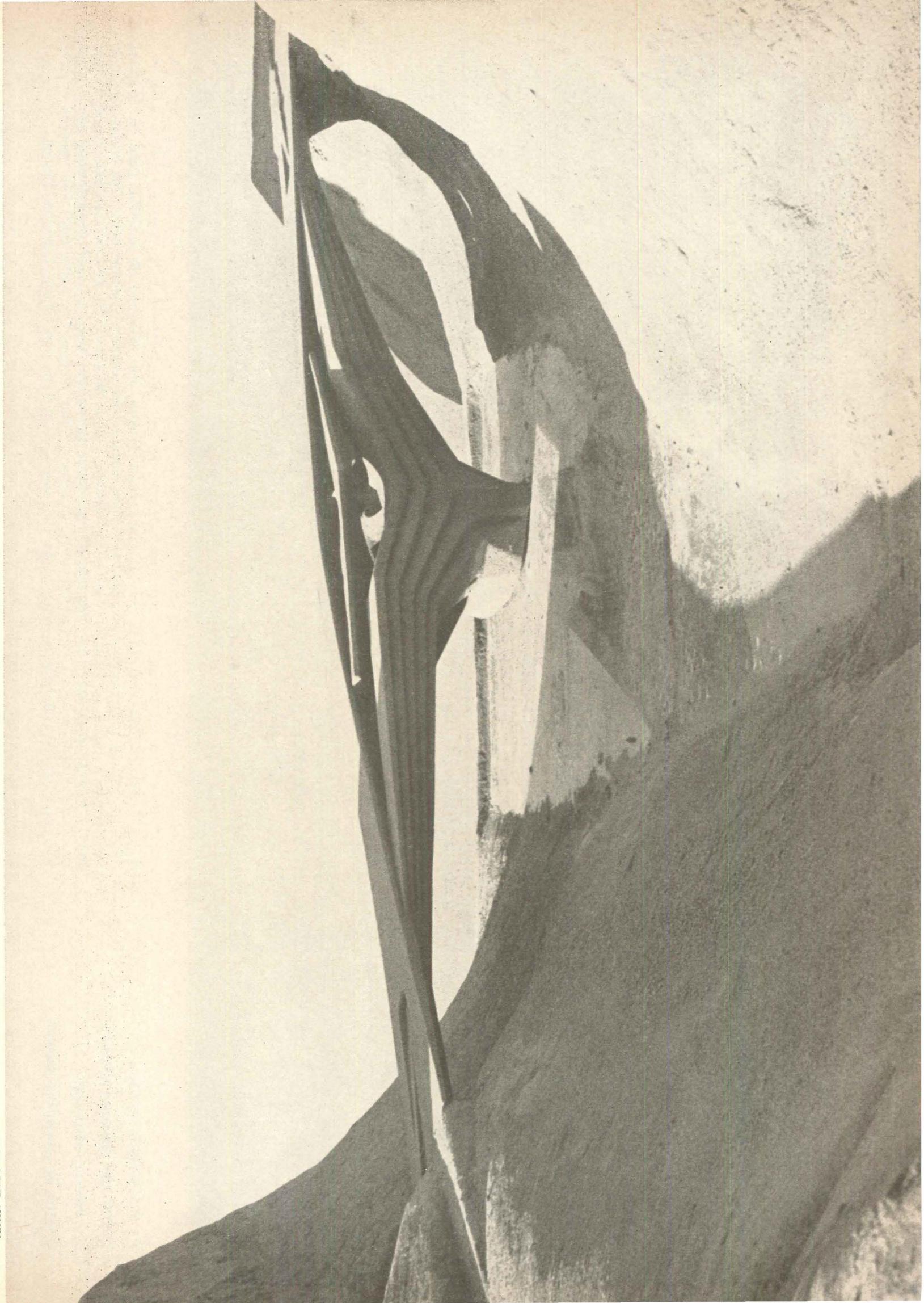
The inner loop would be elevated, but closely knit into surrounding buildings. Beneath it would be another pedestrian mall (section left) with shops on either side. Autos and service vehicles each would have their own lanes and ramps. Parking conveyors would occupy the tube-like structures shown in a row next to the loop.

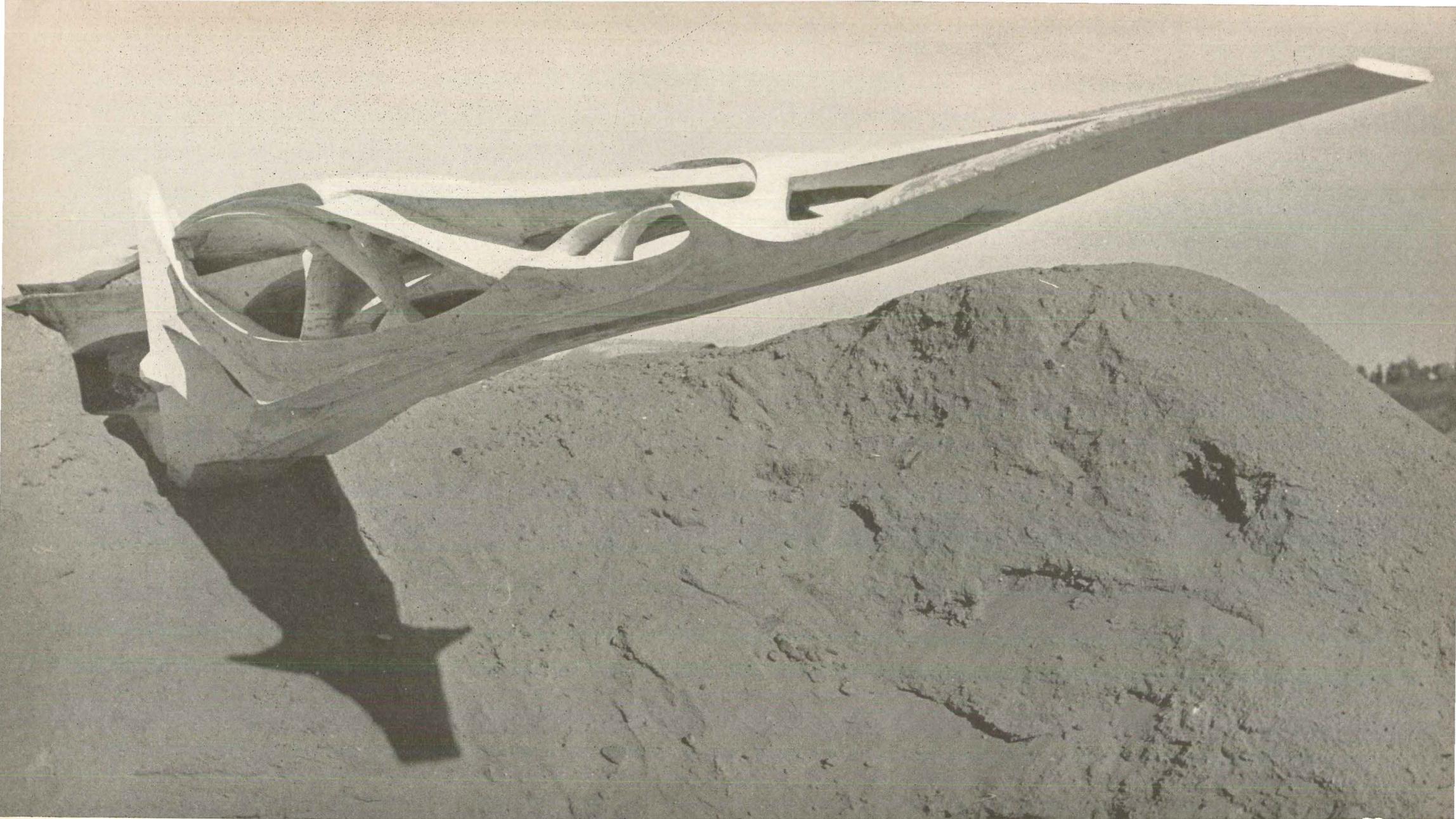


**HIGHWAY SCULPTURE:  
THE FANTASTIC BRIDGES  
OF PAOLO SOLERI**

In highway design, America's newest art form, the great and increasingly graceful roadway ribbons are still not equaled by their own details. Interchanges, ramps, service areas, and signs are often clean, but seldom more than utilitarian, structures; even the best new bridges can be visually dull. Some of the potential of the highway as architecture is suggested in these sculptured models of bridges by Arizona Architect-Artist Paolo Soleri. The one above houses restaurants and observation points behind big glass "bubbles"; below is a cantilevered structure with living quarters in the four main structures and a hydroelectric station built into its pier. So far these are only visions—but so were Maillart's bridges once.

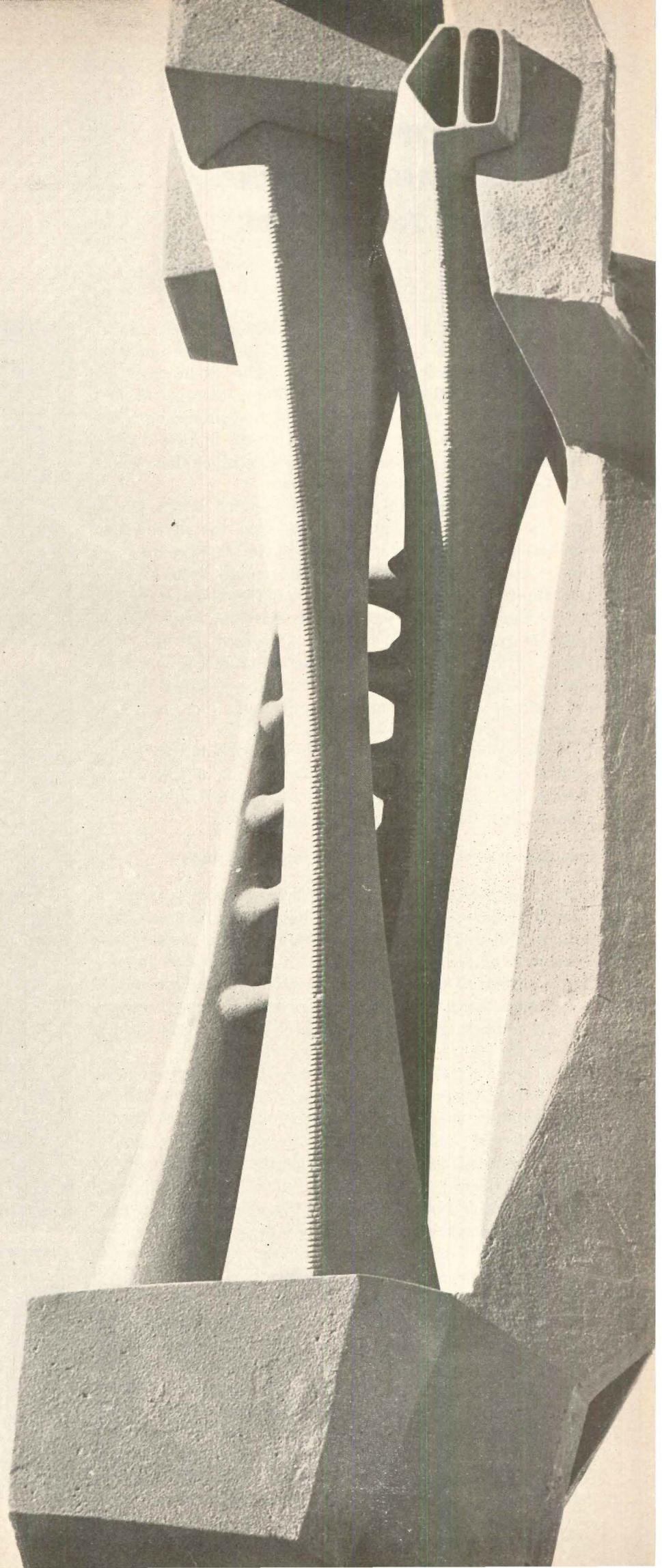
*continued*





***More visionary spans  
across the Arizona desert:  
the motion of travel  
caught in sweeping curves***

In his work, including the famed Arizona "earth house" (FORUM, Feb. '61) and his ambitious plans for Mesa City (March '61), Paolo Soleri has always managed to combine boldness with sinuously appealing forms. The bridges shown here were designed as part of his Cosanti Foundation, an idealistic, Taliesin-like school to be set in a square mile of rugged Arizona desert with workshops, cultural and living quarters for students and teachers. Above is a cantilevered structure with a highway on top and a ribbon-like access road curling to its base. Below: a bridge of three interlocking tubes with entrances at several levels, and travelers' facilities at key points inside. The bridges pictured vary from 1,800 to 2,300 feet in length.



## TECHNOLOGY: METHODS AND MACHINES TO SHAPE THE FUTURE

Dazzled by the rapid progress of past decades, Americans are inclined to look to technology to solve their transportation problems in one brilliant burst of invention. Some day technology may do just that, perhaps through some of the new devices shown on pages 92-93. But the most promising transportation research today is concerned with finding a more sophisticated way of making the tough decisions that will be with us until the Buck Rogers era comes.

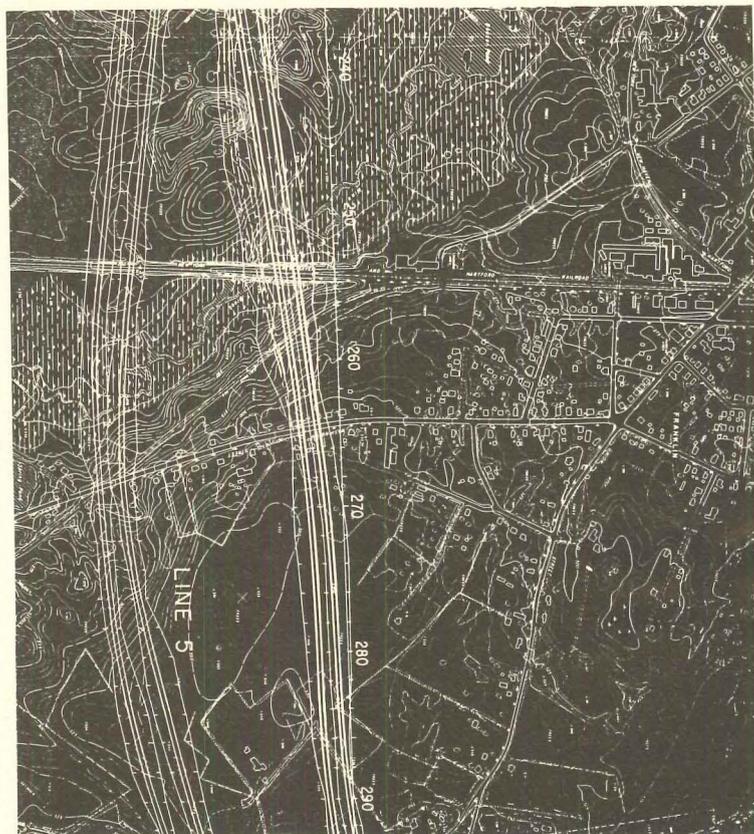
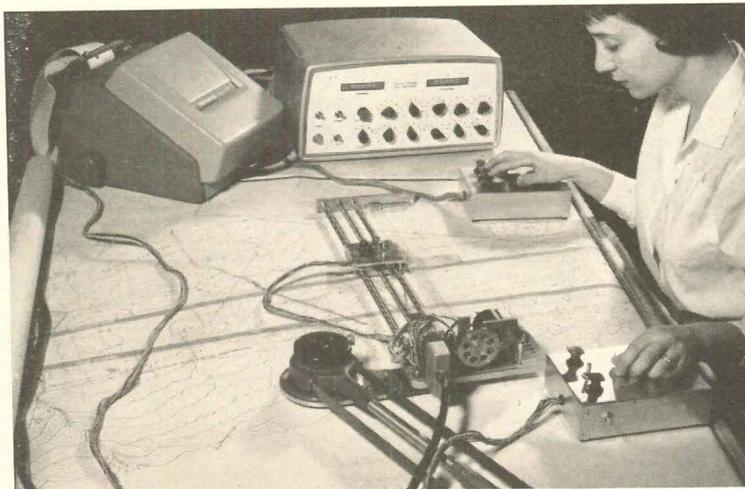
Up to now, the trouble has been that the design process used by transportation planners has been too narrow and cumbersome to take into account all the social, economic, and visual consequences of their deeds. But recently, from M.I.T.'s Department of Civil Engineering, and the Harvard-M.I.T. Joint Center for Urban Studies, there has come an impressive series of reports (many of them sponsored by the U.S. Bureau of Public Roads) which describe promising new techniques. While they vary in scope from the practical method for highway location analysis described on this page to a pioneering graphic approach (overleaf), the new methods have one element in common. All of them rely heavily on the digital computer to reduce vast quantities of information to a form that allows the designer to make decisions in a less arbitrary way than he has had to heretofore.

### Computers to help map the best highway route

M.I.T.'s Digital Terrain Model System (photos, right) is already being used by four state highway departments and a number of private consultants. The key to the system is the translation of the three-dimensional terrain map of an area into a pattern of digits that can be stored in the memory of a computer. Once this is done it is possible to analyze rapidly and economically not just one or at most two alternate routes through the area, but as many as a dozen.

The design process starts with the engineer sketching the centerlines of as many alternate routes as he wants to consider. The computer compares what each route would do to the original terrain, and finally, comes up with a summary of all construction and user costs—including the amount of gas, oil, and tire rubber that would be consumed. One of the subprograms that has been devised can also calculate the costs for the land to be taken for the right of way, and the number of people displaced by the alternate routes. (This analysis has not yet been used, since no area has assembled enough detailed data to feed into the computer.)

So far the M.I.T. program can only rank a large number of alternate routes in terms of cost. Other M.I.T. researchers are working on a more far-reaching approach that can account for social, esthetic, and other non-monetary values as well. Before an engineer can use the design method shown in the illustrations here, the much more complex and significant decision that a highway is to be built in a given area must somehow have been already made. The greatest challenge has been to work out a rational process for the basic plan



First step in using the Digital Terrain Model system is the translation of a contour map into digits that can be stored by a computer (top photo). Map (above), taken from M.I.T. report by Roberts and Suhrbier, shows computer-generated plans for two alternate highway routes, including the effect of road construction on existing contours (spiked outer line). With a special attachment, the computer also prints out vertical cross sections of proposed routes (left).

of a total transportation system, taking not only engineering and costs into account, but politics and other social factors as well.

Rapid changes in land use (and consequent traffic generation) have confounded some of the most ambitious highway systems, making them obsolete soon after they have been built. The fact is that highway planning and land use planning are two aspects of the same process, and the problem of relating the two goes beyond getting the separate agencies involved to talk to each other. What the planners have to come to grips with is essentially an endless series of interrelationships shown circling around in the diagram at right.

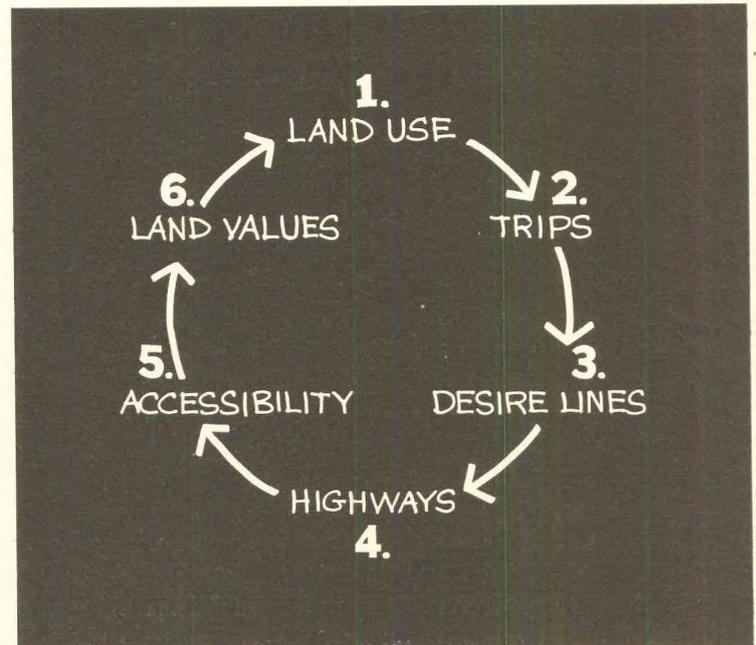
The search now is for ways to express the relationships between steps in this circle. The planner must analyze and fit mathematical formulas to the increasing amount of raw data that is being collected on the way each of the elements behaves in a city today. With a mountain of data on existing conditions, a set of mathematically expressed relationships between these conditions, and a set of formulas to project trends, however, the planner can call on the computer to calculate its way around the entire circle in a few hours. Thus he is able to work his way around many times in a series of successive approximations, to devise a plan that comes closest to fulfilling the goals of the particular community involved.

The basic elements of one such comprehensive design procedure devised at M.I.T. are illustrated in the block diagram at right. For a key step in this process, the making of policy decisions, there are, of course, no formulas that can be constructed. In a free society, this step must be based on the clearest possible expression of what the people want their city to become. But the planner must have this before he can do a competent job.

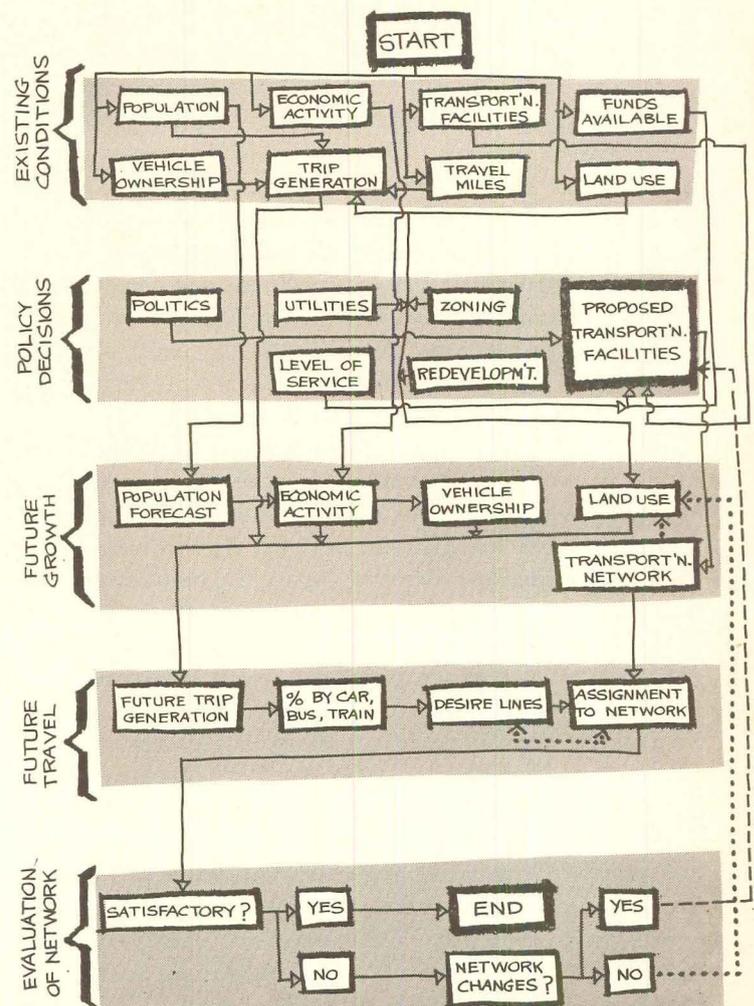
The expression in numbers of the complicated relationships between all the variables that act on a problem is called a mathematical model. The models that have been constructed so far are crude and inexact: the researchers simply do not know enough yet about how variables actually operate to establish many of the essential relationships. But as knowledge improves, this method of analysis could grow enormously in value; it provides the framework for measuring plans against a broad range of community needs and seeing just how well each plan will do.

**Twenty-six pictures to the top of the tree**

Easily the most fascinating experiment in the current search for a comprehensive method is the graphic technique proposed last year by Marvin Manheim, an M.I.T. researcher, and Christopher Alexander, then a Harvard Fellow. Although it has only been applied so far in the form of the preliminary solution shown overleaf (to the problem of locating a stretch of the Interstate Highway System near Springfield Mass.), it has opened up some exciting new paths for the planner. The most intriguing aspect of the graphic approach is that



Relationship of elements in the total transportation planning process



Source: M.I.T. Report No. 38, by Martin, Memmott and Bone.

**Technology: new graphic method  
gives highway planners  
a much needed tool  
for comprehensive design**

it eliminates the staggering task of deriving formulas needed for the mathematical model described above.

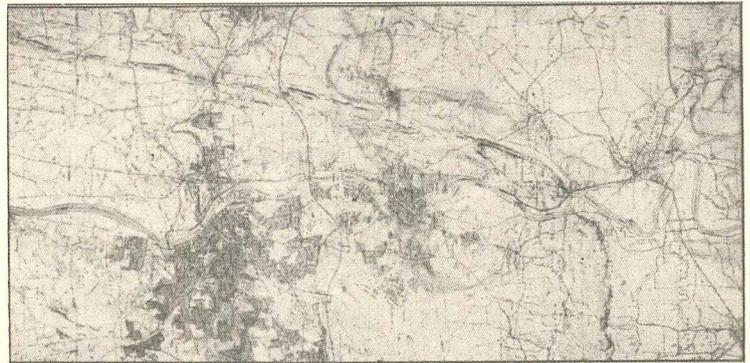
The designer's first step in applying the graphic technique is to isolate all of the requirements he wants to satisfy in working out his solution. In the example shown, 26 separate requirements are considered—a far broader approach to the problem of location design than current engineering methods are able to provide. For each of the design requirements, a graphic representation of relative desirability is made on a transparent overlay placed on the base map of the area. A simple scale of shading is used, from white for the least desirable locations to black for the most desirable. The result is the series of 26 symbolic maps shown on the opposite page.

**Organized by electronics, solved by eye**

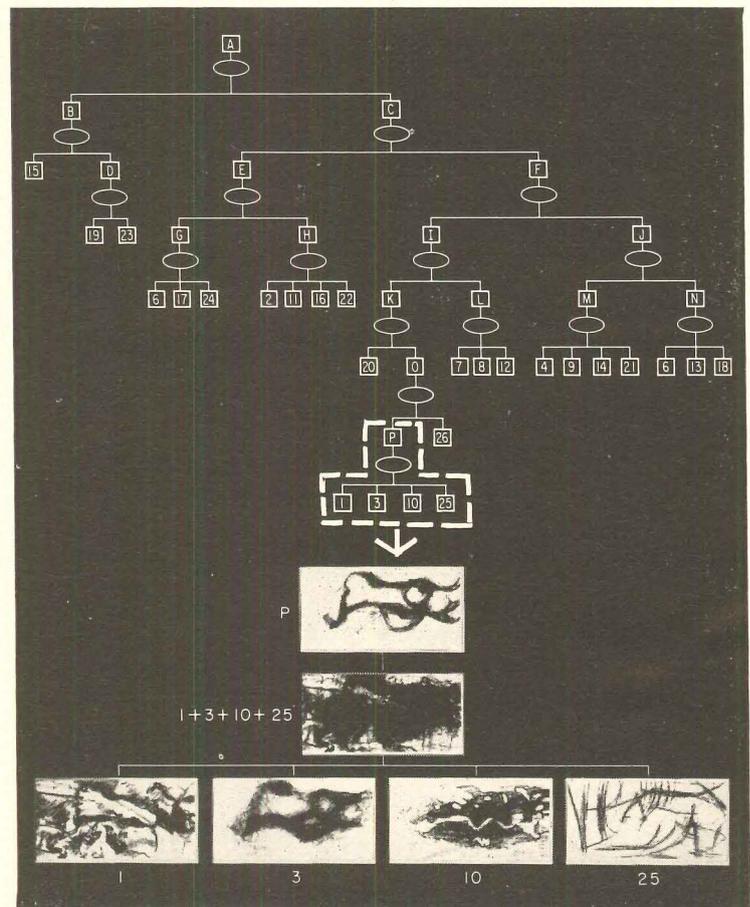
The next step seems almost magical, but is based on "set theory," a well established branch of advanced mathematics which Alexander applied to design problems for the first time in his doctoral dissertation at the Harvard School of Design. According to Alexander, the key to the design problem is "a set of conflicts which restrict the possible ways in which the requirements can be met simultaneously." If the designer can establish which of the requirements have inherent conflicts and which do not, he can then use Alexander's computer program (which has the imposing title: "The Hierarchical Decomposition of Systems Which Have an Associated Linear Graph") to sort out sub-groups of requirements which have the least conflict with each other. This produces the "tree" of related groups of requirements shown immediately at the right. If the designer's judgement of conflicts is correct, each of the sub-groups on the tree should be relatively easy to combine into a single solution. The difficulty of combination, of course, increases as one works his way up from the lowest level to the final solution at the top.

The least conflicting requirements in this problem (numbers 1, 3, 10 and 25) were combined graphically by making a composite photographic print of these four transparent overlays (oval symbol in diagram, right). By projecting this muddy combination on a drawing board, the resultant pattern of desirability was clarified in a new drawing ("P" in diagram).

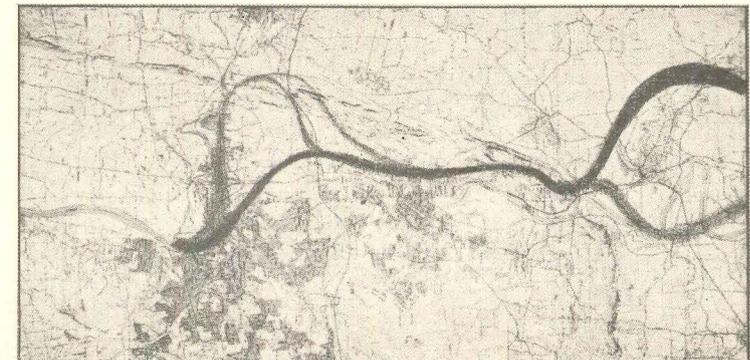
Manheim and Alexander found that it was remarkably easy for the human eye to detect the underlying common pattern in the composite print even though at first glance it might seem to be just a confusion of tones. According to the authors, the eye thus becomes in effect a "special-purpose computer" actually more powerful than any electronic device yet built. Continuing in this way, resolving a new composite photograph for every oval in the diagram, the top of the tree, pattern "A," was finally reached. This optimum location for the proposed highway, representing the simultaneous solution of all 26 requirements, is shown as a black path (along with grayer alternates) in the final area map at right.

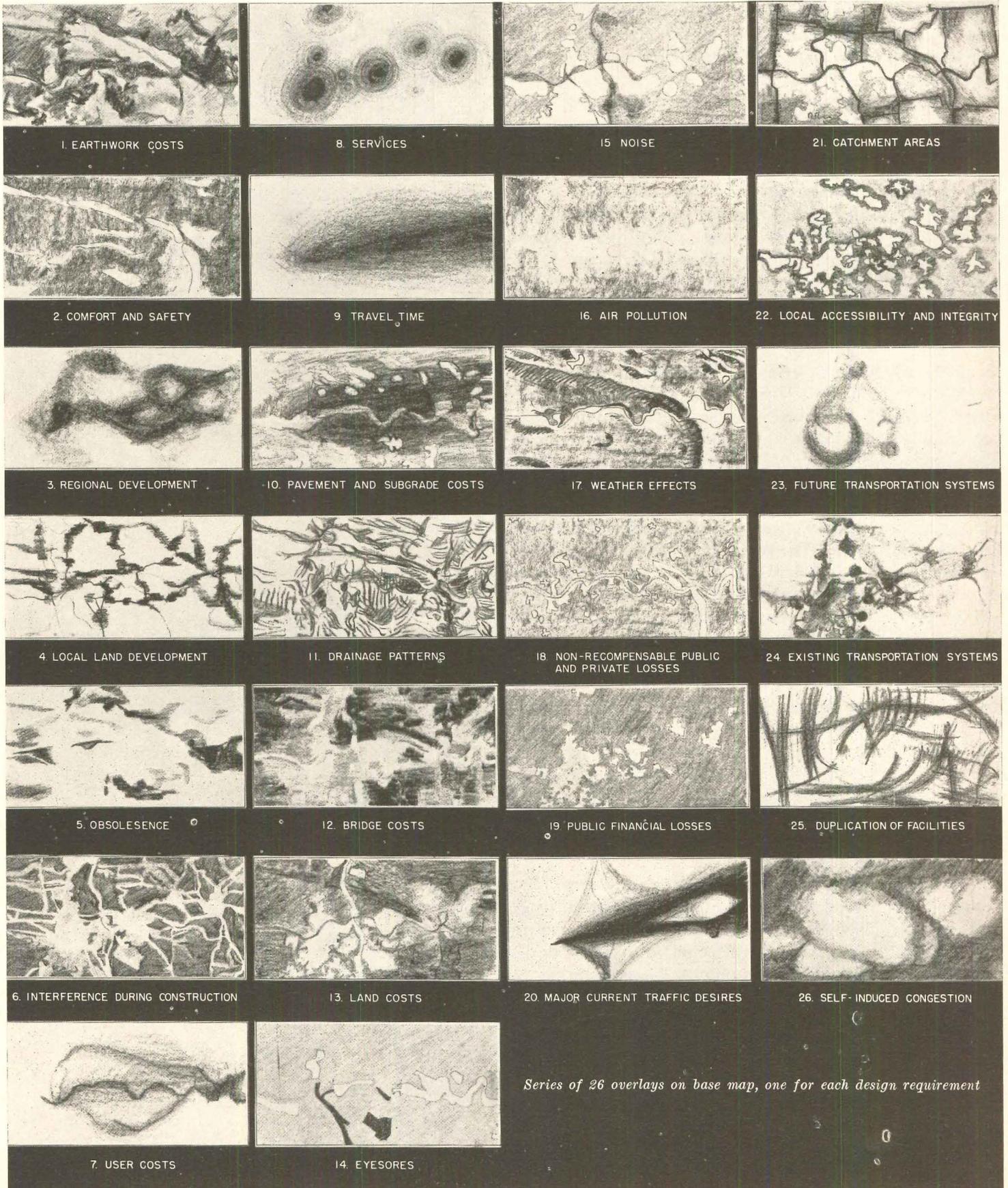


Base map of area studied, above; diagram of design process, below



Sample subgroup solution, above; final route location design, below





**Technology: automatic pilots  
to boost road capacity  
—and vehicles that  
may make highways obsolete**

Fifty years ago, had computer planning techniques been available, most of the transportation modes fed into the machines would have had bushy tails and four hooves. The automobile, which was to revolutionize the American way of life and travel, was a relatively new invention, a plaything of the wealthy. No one can say for sure that another new device won't come along to work a similar revolution in the next half century. If this should happen, it might well be the offspring of one of the inventions on these pages.

This time the device might not be a new vehicle, if only because of the huge investment America already has made in the automobile and its highways. A significant part of the current technology of transportation hardware, in fact, is concerned with increasing the capacity of existing routes.

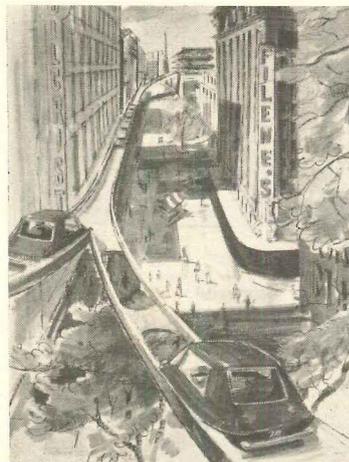
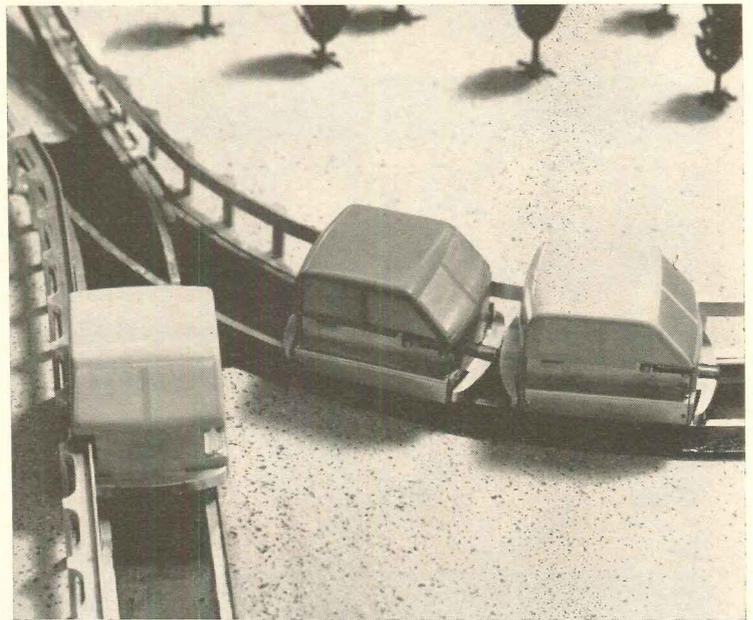
General Motors and Radio Corporation of America already have worked out prototype automatic-pilot systems that let the motorist sit back and relax as his car speeds along at 100 miles an hour in absolute safety. Both would take heavy new public and private investments, however: RCA's, for instance (top, right), would require the highway engineers to tear up miles of pavement for installation of control wires and millions of motorists to buy little black boxes to guide their cars. Just last month Westinghouse Air Brake Co. announced its automatic control system, designed for public transit vehicles with their own rights of way. The Westinghouse computer network, also costly, would allow buses or trains to run at 100 miles per hour with only 90 seconds headway between them.

One virtue of the automated roadway, of course, is that it allows existing vehicles to use existing streets for local travel, then hook onto the speedy trunk lines for longer hauls. Inventor William Alden has taken the idea a step further with his StaRRcar (for Self Transit Rail and Road), a tiny compact that can transform itself into a train. The StaRRcar (lower right) puts along the streets just like a normal auto. But when the driver wants to take the main line, he simply drives up a ramp to a special track, pushes a button on his dashboard to set his course—and automatically joins a 60 mile per hour train of other StaRRcars until he is automatically ejected at the preselected exit.

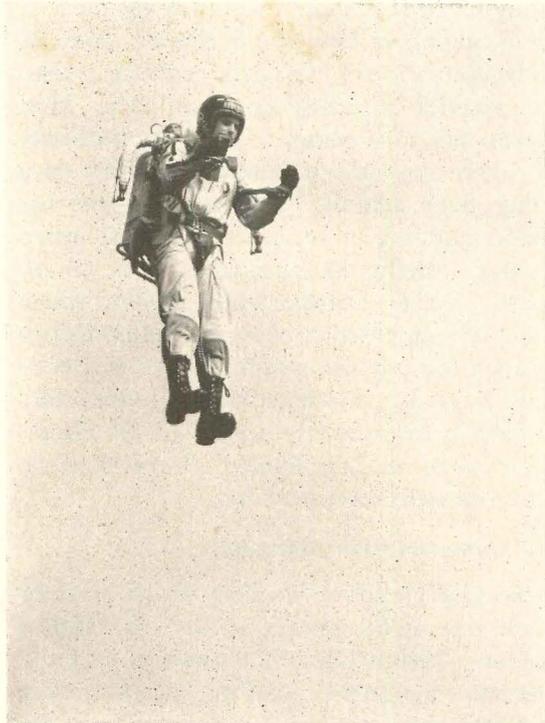
In the end, however, metropolitan congestion may force the opening of whole new transportation corridors through use of new air and water vehicles like those shown opposite. The helicopter already has attained popularity faster than did the auto in its early days; the number of heliports in the nation has doubled in the past two years and helicopter "taxis" (as well as "buses") are in regular service. New York and Seattle are experimenting with hydrofoils, the high-speed ferry boats of tomorrow, and Buenos Aires has them in daily use. Several prototypes of the GEM (ground effect machine) have been built; it moves over land or sea on a bubble of high pressure air, requiring no expensive rights of way. Even the "Buck Rogers" rocket pack is not such a wild dream, as the planeless pilot at right can testify.—BERNARD P. SPRING



COURTESY RCA LABORATORIES



*True auto-mobility: On RCA's test track (top), a driverless car is guided along by impulses from wires beneath the highway. Behind it is an invisible "electronic tail," which would automatically reduce the speed of a car following too closely behind. StaRRcar model (center) whips off its main track onto an exit ramp, obeying electronic instructions. Left: artist's conception of how a StaRRcar system might look in Boston. The light, narrow StaRRcar roadway saves on both cost and land utilization, and can be underground, surface, or elevated as shown here.*



F. MILLER—LIFE

1

Prospects for everyday vehicles of the future include the individual propulsion pack (1); "GEMs" like Curtiss-Wright's Air-Car (2) and Britain's Hovercraft ferry (3); the new Sikorsky S-64 helicopter carrying its detachable "people pod" (4); the speedy Buenos Aires hydrofoil ferry (5).



3

KEYSTONE



4

COURTESY SIKORSKY AIRCRAFT



ART BLEICH—LIFE

2



5

FRANCISCO VELA—LIFE

## **NEEDED: A PROMPT END TO THE OLD LUXURY OF LIMITED THINKING**

As the fine points of design are debated, as the computerized methods of planning are refined, the construction of roads and rails continues at an awesome pace. Huge new elements of the urban landscape are being fixed for lifetimes to come (Freeway Consultant Halprin points out that while many of Rome's classic buildings are in ruins, the roads of the Caesars remain, imposing their ancient pattern on the city). In this rage to build, mistakes are bound to be made. So, some planners are asking: "What's the rush?"

With the exception of congestion in the city core, they argue, there is no element of the urban transportation problem that could not be held at bay a while. People somehow manage to get to work and back, to take shopping trips, weekend trips, vacation trips. It might not be a bad idea, they say, to declare a hiatus on establishment of any new urban transportation system until the city (to paraphrase Louis Kahn) decides what it wants to be. To put it another way, no permanent harm would be done by waiting until the city, the state, and the federal governments get their transportation policies in order.

This may well be good advice—at least it is a welcome change from the endless exhortations to solve all of the nation's urban problems *now*. But it has one serious flaw: if America waits for the development of a clear decision-making structure and a coordinated transportation policy, it might well wait forever.

### **A patchwork of inconsistency and obsolescence**

In April, 1962, President Kennedy called on Congress to establish "a more coordinated Federal transportation policy and a less segmented approach." He painted a vivid picture of the present situation: "A chaotic patchwork of inconsistent and often obsolete legislation and regulation has evolved from a history of specific actions addressed to specific industries at specific times." The national welfare, the President said, "requires the provision of good urban transportation, with the properly balanced use of private vehicles and modern mass transport to help shape as well as serve urban growth."

What came out of the President's message was a bill to provide \$500 million in subsidies and \$500 million for federally guaranteed loans for development of urban mass transit systems—a mouse compared to the elephantine sums poured into federal highway aid. Even this modest bill was trimmed and hedged and stalled by Congress (its fate may have been settled by the time this is printed—the latest threat is an anti-urban revolt of Southern Democrats in retaliation for the Administration's civil rights program).

As for the "patchwork," it has been made slightly less chaotic by a few Executive orders (and a laudable new spirit of interdepartmental cooperation, such as that between HHFA and the Bureau of Public Roads). But Congress is still willing to vote millions upon millions in transportation

subsidies without any clear and stated overall objectives.

If anything, the situation is even more chaotic closer to home. Most state legislatures are even less concerned than Congress with the niceties of transportation policy. Most state highway departments have complete statutory authority to put their roads where they please, and many carry on a successful continuing fight against "diversion" of gas tax money for long-range planning or for other modes of urban transit. Most cities have "traffic commissioners" with no say whatsoever about the actual transportation *system* which creates the traffic they are supposed to control. And no metropolitan area in America has any meaningful degree of metropolitan government; even San Francisco's brand-new rapid transit system, covering a three-county area, will be administered by an agency with sharply limited powers and no control over the total transportation network.

### **Five parameters of transportation planning**

This kind of structural confusion is likely to be with us for a long time; it is one of the prices we pay for political and economic freedom. Meanwhile, the pressures to build now and worry later show no signs of abating. Together, these two facts mean that it is no longer possible to indulge in the luxury of limited thinking. The sins of the past have been sins of omission—significant "parameters" have been left out, as the computerists would say.

The previous articles, however, suggest five parameters that must *not* be left out in the future:

1. *The land-use objectives of the city and its surrounding suburbs must determine the location of transportation corridors and, to some degree, the choice of transportation modes.*
2. *No one mode of transportation can serve all of the needs of the city. A balance must be struck between roads and rails, based on a realistic assessment of the capabilities of each in relation to the city's circulation patterns and planning goals.*
3. *The urban freeway must be tightly—and gracefully—woven into the fabric of the city (and also be consciously designed as a visual experience for the motorist).*
4. *No transportation artery should be aimed at the city core without consideration of what to do with the people and vehicles once they get there.*
5. *The new electronically aided methods of planning should be used to the full extent of their development to sort and structure the mass of information that goes into the formation of transportation policy.*

Perhaps the most hopeful sign today is that those concerned with transportation planning are moving closer to agreement on precepts such as these. Agreement alone is not enough, but it is a necessary first step toward taking the ambivalence out of the relationship between transportation and the city—and hastening the day when, in the President's words, transportation will "shape as well as serve urban growth." END





# THREE OFFICE BUILDINGS: 1. VAULTING IN LOUISIANA

The new two-story headquarters of the Automotive Life Insurance Co. in New Orleans was intended to be a sign, celebrating the company's recent and rapid rise to local prominence. As a sign, this romantic building is apparently a huge success, particularly at night when it glows like a lantern in its dark, semi-residential neighborhood (below). According to estimates, some 200 cars stop each evening so their occupants can stare in appreciation.

As architecture, however, the building is somewhat less satisfy-

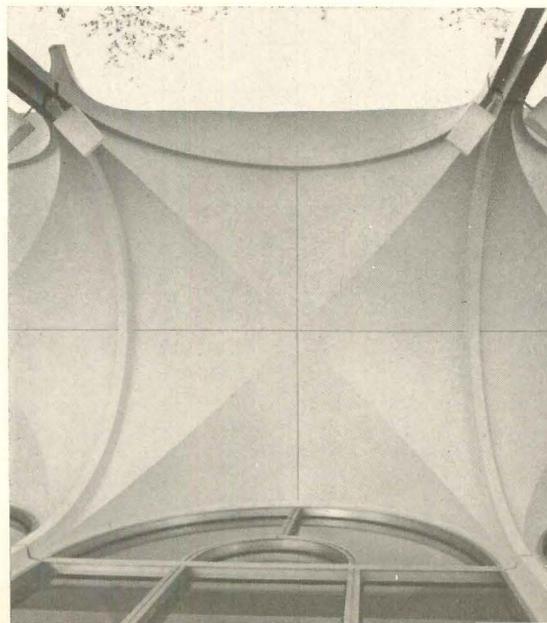
ing, despite good collaboration between Architects Curtis & Davis and their lighting consultant, Seymour Evans. The graceful groined vaults, which spring from cross-shaped precast columns to form the handsome portico (opposite) carry throughout the building in small-scaled bays 12 feet square. But the design loses a measure of integrity because the vaults are not structural, consisting instead of plaster on a steel skeleton beneath a flat roof. The architects did take alternate bids on precast and poured-in-place concrete, ei-

ther of which would have produced structural vaults. But, because local experience with new concrete construction methods lags behind other parts of the country, making the vaults of purely decorative plaster was the least expensive method.

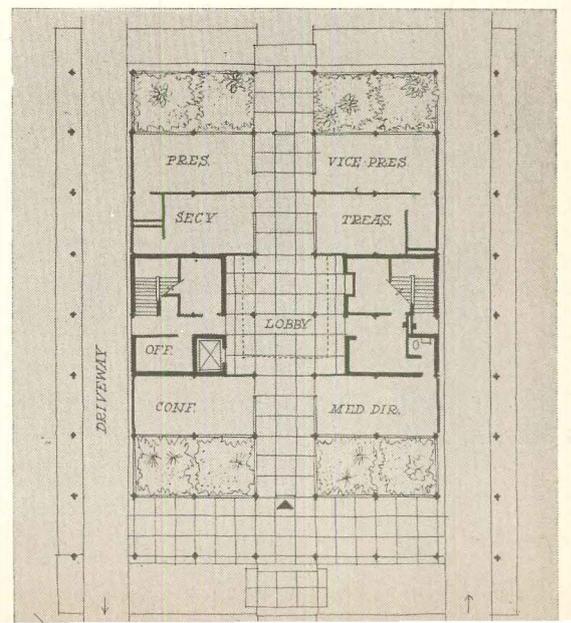
The building's single pavilion form masks rather than expresses the complexities within, complexities which are arranged in a well-organized plan. Entrance is through the portico, then through an exotic enclosed garden to a two-story reception area at the

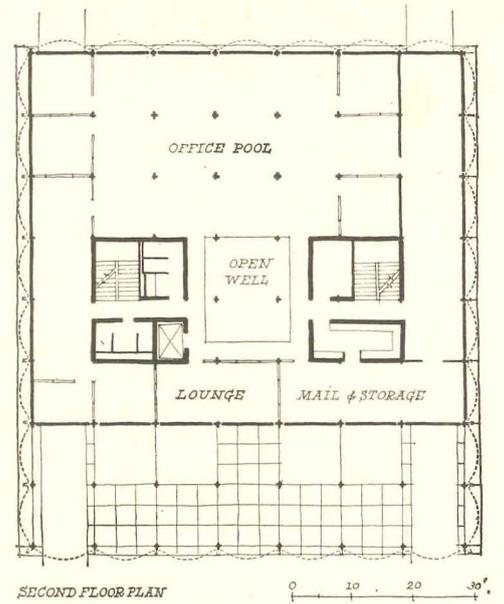


PHOTOS: FRANK LOTZ MILLER



The groined vaults which frame the portico (photo opposite; detail, right) carry throughout the building in small bays 12 feet square, producing an intimate, human scale—and executive offices which measure 24 feet long (see plan, right).





*Incandescent uplights attached to office columns provide "sourceless" lighting. The form of the vaults however, is marred by downlights and grilles.*



center (plan below, photos overleaf). Executive offices and conference rooms are laid out on both sides of the central corridor and are kept on the first floor to facilitate contact between salesmen and the public; general office areas take up the second floor. Horizontal expansion will be achieved by the addition of bays at the rear.

On the second floor, three distinct lighting systems were used in an effort to keep the vaulted ceiling uncluttered (the first floor has a conventional hung ceiling

with ordinary recessed troffers). General illumination levels of 68 foot candles in daytime and 45 foot candles at night are provided with the help of pencil-thin incandescent quartz tubes about 5 inches long, which produce 500 watts in special uplight reflectors attached to the columns at the spring-line of the vaults (photo opposite). Downlights recessed into the vaults provide supplementary lighting. To prevent uncomfortable brightness ratios between the vaults and the side walls, fluorescent wall washers

line the perimeter of the rooms.

The use of incandescent lighting for general office areas is almost unheard of today. They were used here partly to achieve a warmer quality of light, and partly to minimize the size of the light source. (Says Consultant Evans: "Source is the enemy of form.") With the uplights, the source is about as unobtrusive as possible. The recessed downlights, however, do break up the pure form of the vaults, which is marred still more severely by the linear air-conditioning grilles.

#### FACTS AND FIGURES

Head office building, Automotive Life Insurance Co., 4140 Canal Street, New Orleans, La.

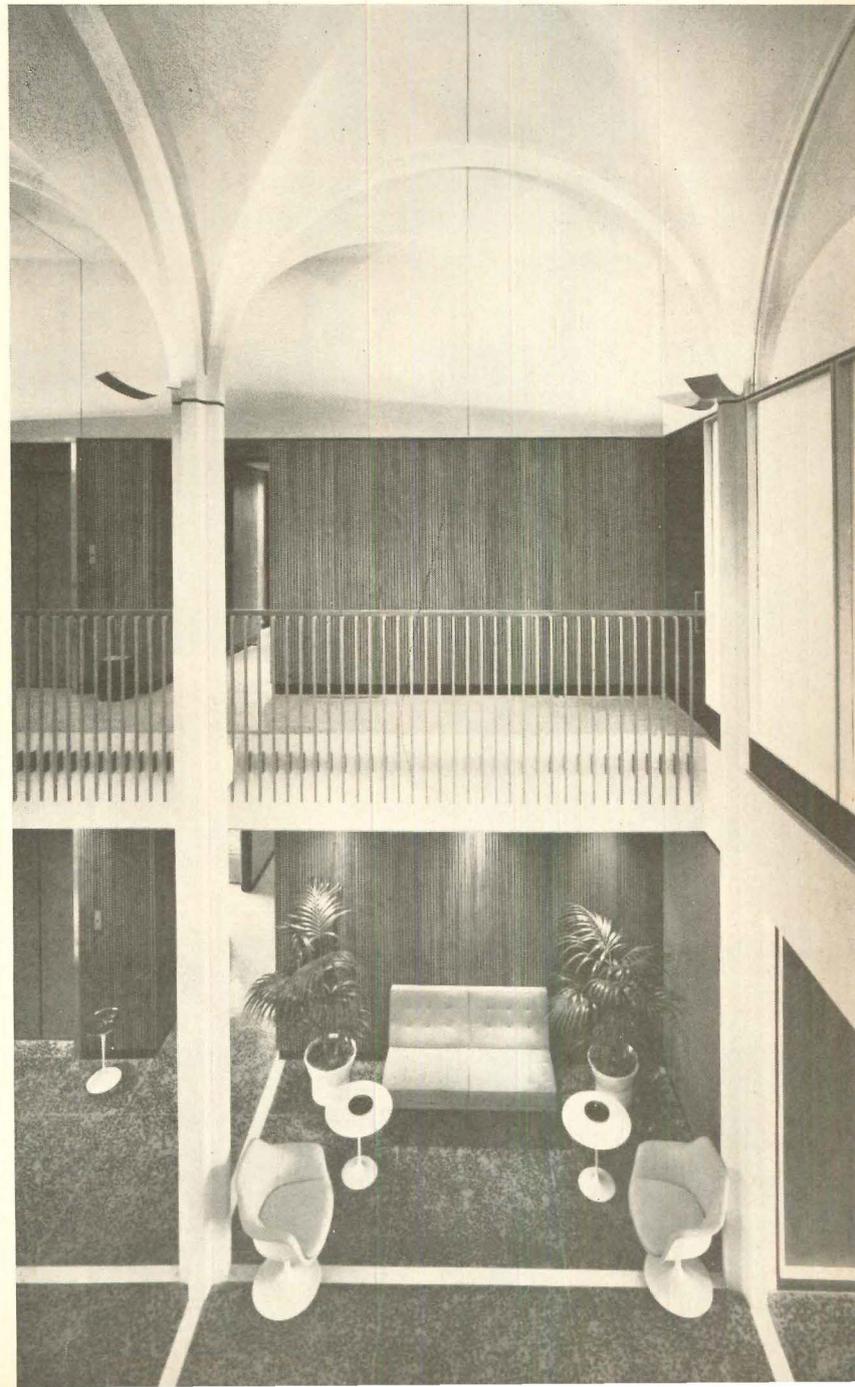
Architects: Curtis & Davis. Engineers: Ogle-Rosenbohm & Associates (structural), Leo S. Weil & Walter B. Moses, Inc. (mechanical, electrical). Consultants: Seymour Evans Associates, Inc. (lighting), Worthington, Skilling, Helle & Jackson (structural). General contractor: Haase construction Co.

Structure: Steel frame with concrete slab floors.

Building area: 15,000 square feet. Construction cost: \$450,000 (\$30 per square foot).

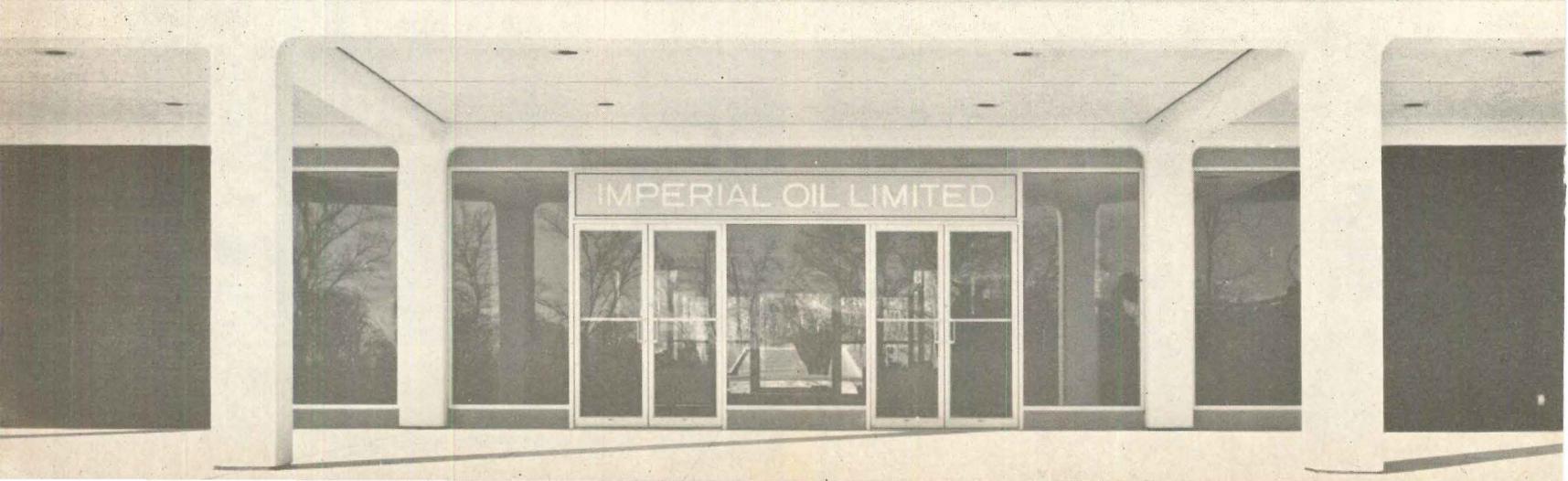
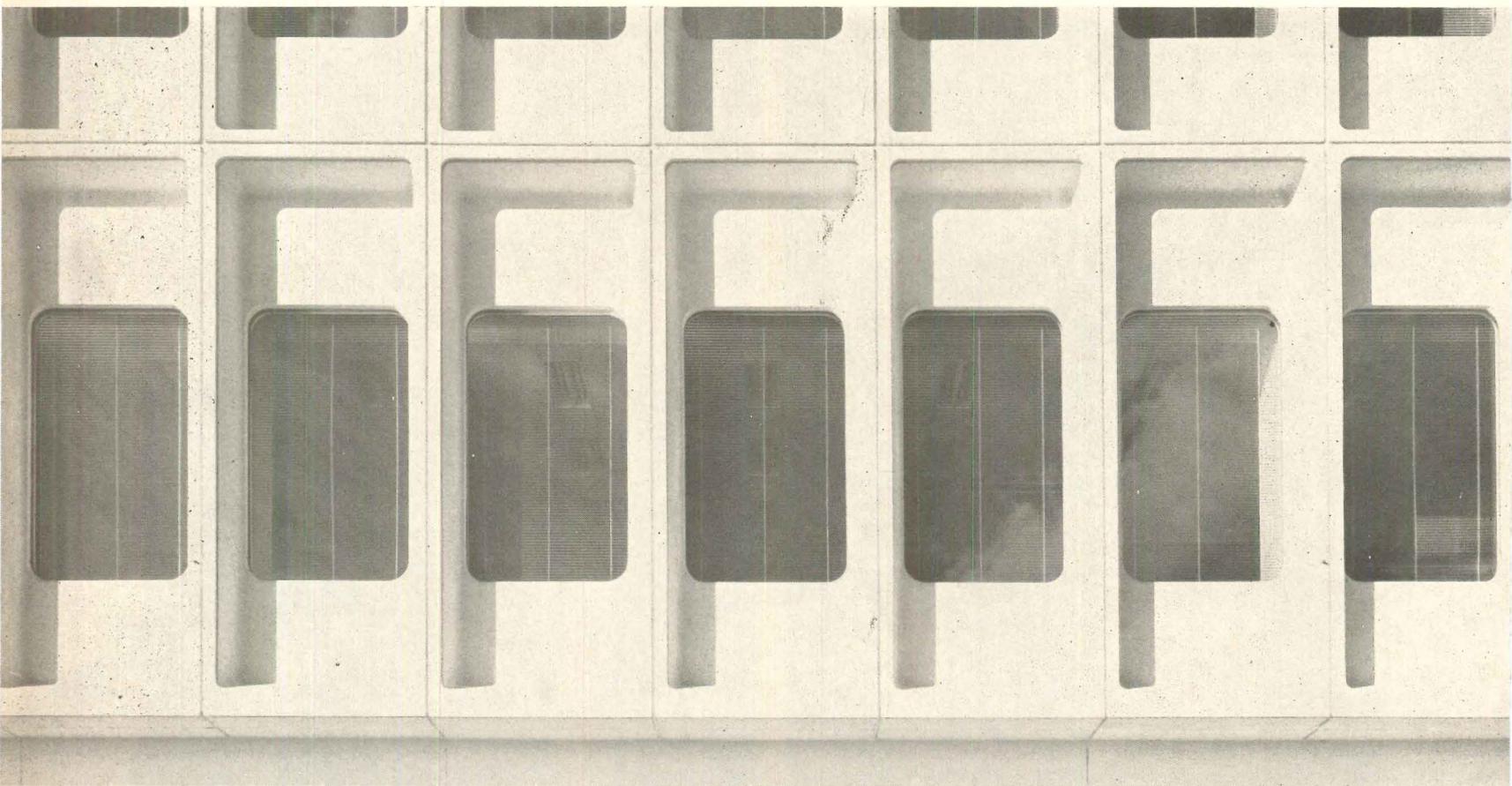
*Exotic interior garden, behind the portico, adds to the general romance.*

*At the heart of the building is a balconied, two-story reception room.*





PHOTOS: H. R. JOWETT



## 2. PRECAST PATTERNS IN ONTARIO

With the new office building for Imperial Oil, Ltd., Toronto's planned community of Don Mills continues to demonstrate that commercial and industrial structures can make fine neighbors for housing (FORUM, Jan. '61).

The slim, 350-foot-long building is raised on a low podium and in summer is screened from the road by a grove of trees (opposite). The top two office floors, which extend one full bay beyond a recessed base, are enclosed by clear glass set into precast, exposed aggregate wall panels 5 feet

wide, and backed by extra-narrow horizontal blinds (lower photo, opposite). All corners are slightly rounded off, softening the bold pattern of the façades.

Vertical circulation is provided by an elevator at the off-center lobby and by three stairs, one at each end of the building and one near the middle. A mechanical core, rising from the basement equipment area, ends on the roof in two circular stacks.

The recessed ground floor, walled in glass and plum-colored brick, is devoted largely to a sim-

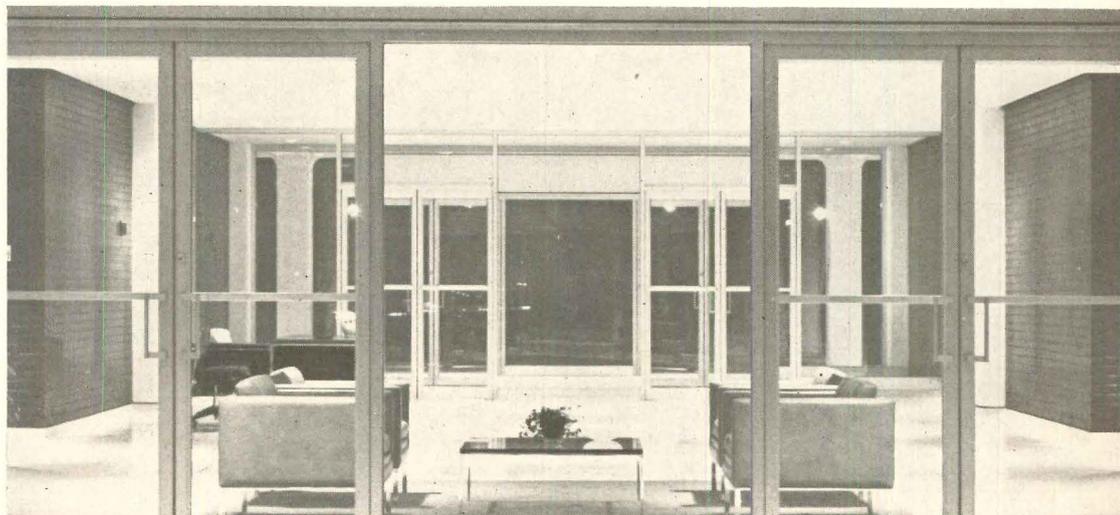
ple entrance lobby and a 220-seat cafeteria (photos below). On the wall which separates the cafeteria from its serving area: a photomural of wheeling gulls.

### FACTS AND FIGURES

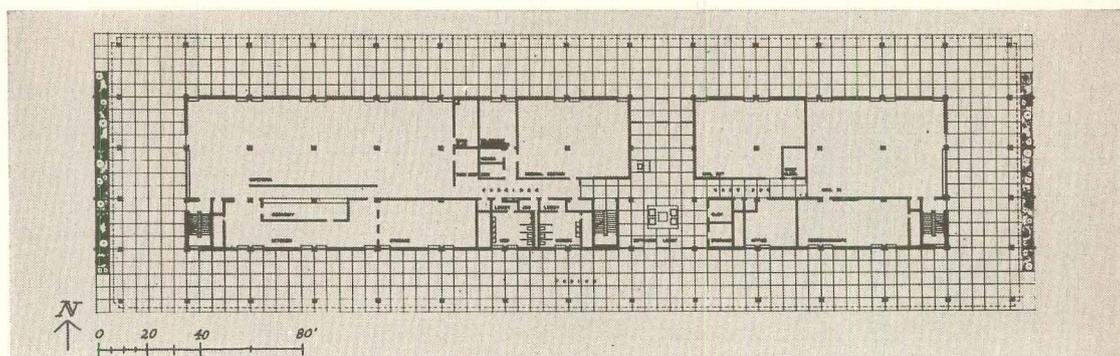
Office building, Imperial Oil, Ltd., Don Mills, Ontario.

Architects & Engineers: John B. Parkin Associates. Landscape Architects: Sasaki, Strong & Associates. General contractor: Eastern Construction Co.

Gross building area: 133,120 square feet. Construction cost: \$17.10 per square foot (Canadian dollars; \$15.80 U.S.)



H. B. JOVETT



Ground floor (opposite), is recessed 20 feet beneath upper floors, which are faced by precast wall sections and clear glass shielded by narrow horizontal blinds. Employee cafeteria (right) seats 220, has photomural screening service.



COURTESY KINGS HART, PUB. CO.



### 3. CRISP STEEL AND BRICK IN GEORGIA

As in the Toronto office shown on preceding pages, the crisp good taste of National Distributing Co.'s new Atlanta office-plant (wholesale liquor) sets it far apart from most buildings of its kind.

The two-story executive building, which has a small office floor above a deeply recessed glass lobby (lower photo, opposite), is linked by a somewhat taller elevator and stair tower to a one-story sales office building (upper photo), which is in turn connected to the warehouse and bottling

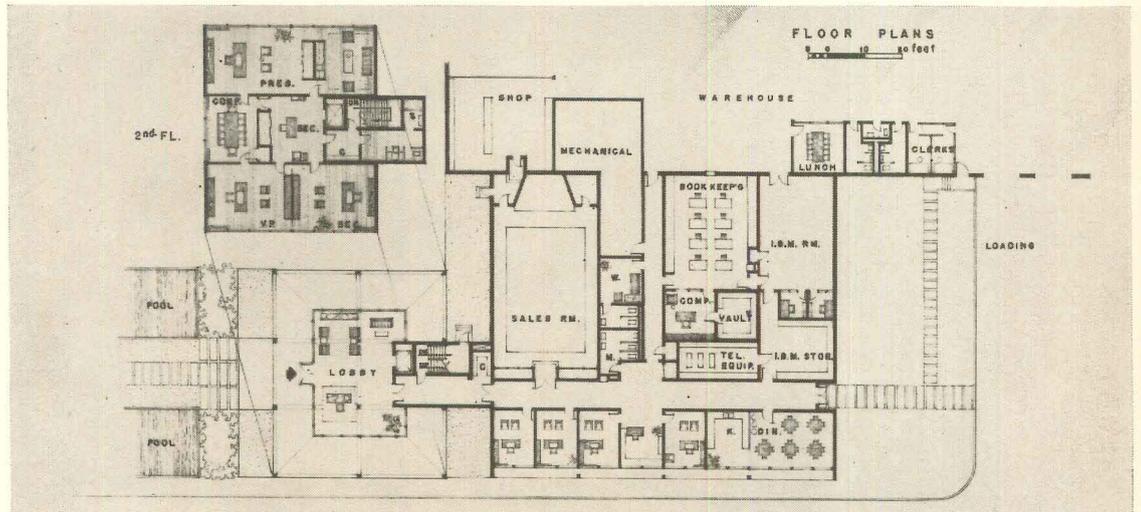
plant (not visible in photos—see plan below).

The complex is severe but colorful. Both office buildings are of exposed steel, painted a dark blue; the 18 by 23 foot bays are infilled with panels of white glazed brick. Walls of the stair tower are lemon-yellow glazed brick; those of the warehouse, buff-colored concrete brick.

The one-story building has offices for the sales staff, a dining room and kitchen, and a large sales meeting and instruction room with a stage at one end.

#### FACTS AND FIGURES

Regional offices, warehouse, and bottling plant, National Distributing Co., 1455 Ellsworth Industrial Boulevard, Atlanta, Ga.  
 Architects: Finch, Alexander, Barnes, Rothschild, & Pascal.  
 Engineers: Hugh F. Fenlon (structural), Lazenby & Borum (mechanical), Blakely-Daniels & Associates (electrical). Interior designer: Allan Ferry Designers.  
 General contractor: Newman & Co.  
 Gross building area (all three buildings): 50,656 square feet. Construction cost: \$16.86 per square foot (office portion); \$4.81 per square foot (warehouse).



*An exposed steel frame painted dark blue, panels of white glazed brick, and a recessed lobby walled in glass (opposite), present a crisp façade to visitors approaching from the parking lot. Right: sales meeting room with lecture stage.*

PHOTOS: GABRIEL BENZOR



## LE CORBUSIER AT HARVARD: A DISASTER, OR A BOLD STEP FORWARD?

Ever since the Carpenter Center for the Visual Arts opened at Harvard some six months ago, people have been arguing about this extraordinary building designed by Le Corbusier—his first in the U.S. The following debate is a fictitious reconstruction of some of these arguments; any resemblance of the imaginary participants to actual persons living or dead (as the saying goes) is entirely coincidental.—P.B.

**Moderator:** Well, here we are, and there it is (1). What do you think?

**Participant A:** The thing is monstrous—a major disaster in American architecture.

**Participant B:** Nonsense! It's the best thing that's happened to this campus in a long time. The best thing that's happened to the students!

**M:** Please explain yourselves.

**A:** Well, to start with it's a disaster in terms of urban design. You've got to remember that José Luis Sert, who runs the school at Harvard, and whose architectural firm executed the building for Corbu, likes to say that a university campus is a kind of laboratory for urban design. Just look at this mess: here is a campus with a definite pattern—quadrangles that open to one another, rectangular buildings, and so on (2)—and Corbu deliberately violates the pattern and plunks this strange object smack into the middle of a perfectly fine setting. There was no excuse for violating the pattern. This building is just Corbu's revenge against America!

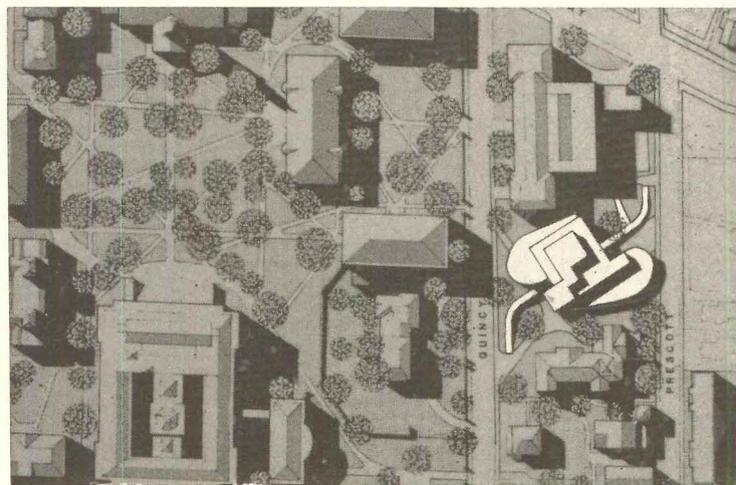
**B:** You're completely wrong—the building *does* relate to the Harvard pattern. But in a much more subtle way than most architects would have tried to relate it. How would you have done it?

**A:** Anyone with any respect for

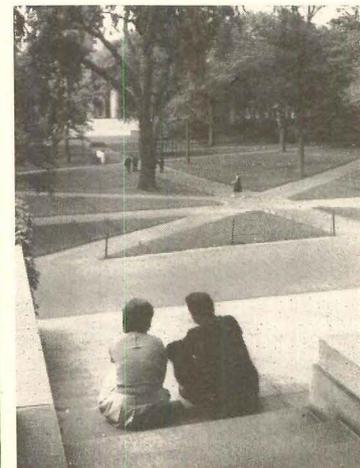


1

LAWRENCE LOWRY

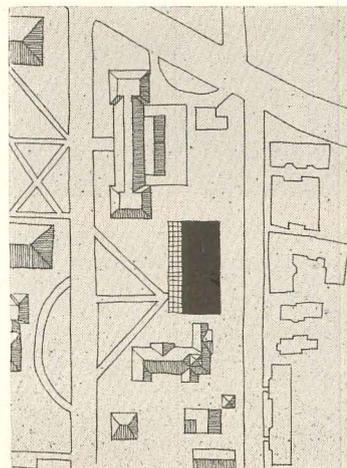


2



3

GARY GLADSTONE-LIFE



4

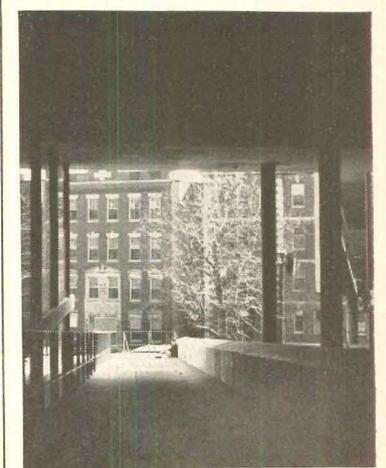
the existing campus would have started by trying to create another small court, possibly off Quincy Street, like this (4). And then try a rectangular building no higher than the Fogg next door.

**B:** Of course—the polite way, and the dull way. What Corbu did was much more valid.

**M:** How?

**B:** First of all, he *did* relate it to the Fogg in height. Second, he followed the pattern of the diagonal walks that cross the old quadrangles (2, 3) and dramatized them with his diagonal entrance ramp that shoots up to the third floor. And, finally, he related the building just as much to the *future* campus as to the past—by making it suggest an expanding university, something that is bound to grow beyond its present limits.

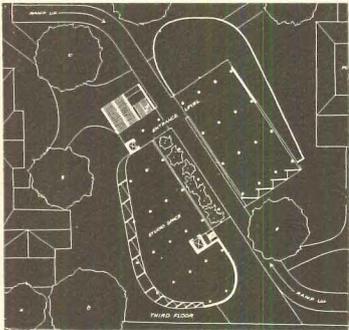
**A:** That's quite a rationalization! That diagonal ramp relates no more to the diagonal paths on the campus than the *brises soleil* relate to the Fogg. In fact, the ramp is dramatic to start with, and then turns into a monumental anticlimax. You start up the ramp and you feel like Hannibal crossing the Alps; but then you get to the top (5), and you expect to see all of Italy spread out at your feet—but all you see is Prescott Street!



5

**B:** Of course—but the campus will expand, and this ramp will become a gateway to the future campus.

Anyway, there is something else about the way Corbu related the building to its surroundings. You look at the plan, and it is a sort of square, with two banjo-shaped “ears” added to it (6). The square is askew, just as in an early Cubist painting, creating powerful tensions at the corners that nearly touch the neighboring buildings. One of the skylights inside the building has that same “twist” to it—a very typical and powerful Cubist mannerism (7).



6

JOSEPH W. MOLITOR



7

**A:** That’s just it—the Arts Center is a mishmash of left-over, warmed-over Corbu: a bit of Cubist painting (8), a few details from the Mill Owners’ Building at Ahmedabad (9), plus a dash of brutalism. The trouble is, there really was no program for the building, and it shows.

**M:** No program?

**A:** Well, Harvard thought it wanted a building by Corbu, and it

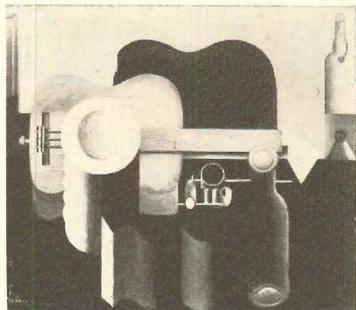
thought it needed a Visual Arts Center, and it had a little bit of land left over . . .

**M:** Admittedly, the site is pretty terrible.

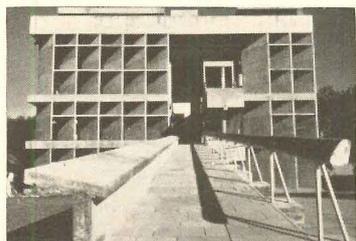
**A:** . . . and so the University just let him think up something that would fill this rather vague bill.

**B:** Oh, I don’t know! What is a Visual Arts Center for undergraduates, anyway? Shouldn’t it be something — above all — that will shake them up, give them an entirely new perspective on life? You may not like this building, but you can’t deny that it is stirring up quite a bit of controversy. Can you think of any other 76-year-old man who has recently got the Harvard undergraduates so worked up? Isn’t that what education ought to do?

**A:** It’s one of the things, perhaps, but it isn’t the most important one. Look around you—has America ever been such a mess as it is today? Shouldn’t a university set an example of a more civilized kind of order? If all you’re trying to do is get the undergraduates stirred up, you can send them down to New Jersey’s Route 22!

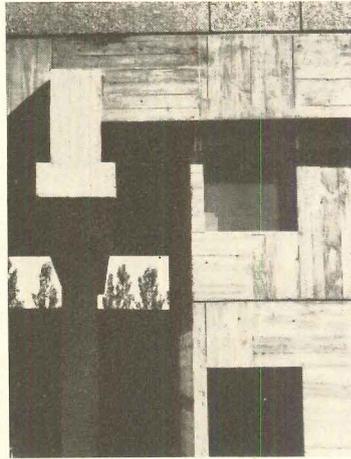


8



9

BRIAN BRAKE—MAGNUM



10

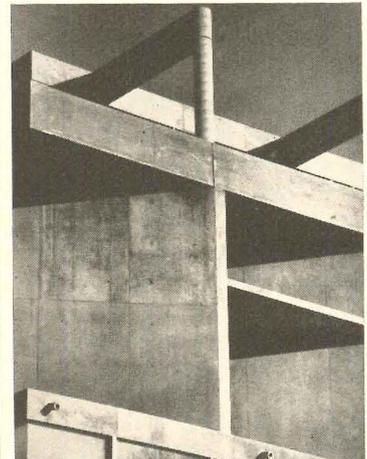
In any case, I don’t think the Arts Center is all that great as a piece of architecture.

**M:** Why, what’s wrong with it?

**A:** It isn’t very good Corbu. Take a look, some time, at his European or Indian buildings — where the concrete is *really* brutal, or *really* polished, and the glass is set right into the concrete (10), not into metal frames from a store-front catalogue, the way it was done here in several places. The building just isn’t detailed the way other Corbu buildings have been detailed—it looks like a caricature of a real Corbu building (11).

**B:** Okay, maybe you can’t beat American codes and practices and all that. But the spaces, the rooms —like that open space in the center of the building (12), and the way it relates to the studios and workshops on either side—there’s nothing inferior about any of that. Or take the studios: you know what a polite architect would have done? He would have built polite studios. But Corbu, who is a painter and sculptor, too, knows that you have to have a stimulating, off-beat, *rude* space to work in. That’s what he produced.

**A:** A rude space and a rude building that jostles its neighbors in a



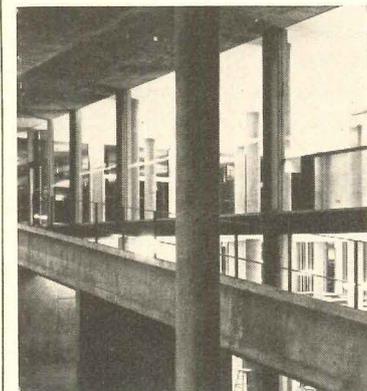
11

LOUIS REENS

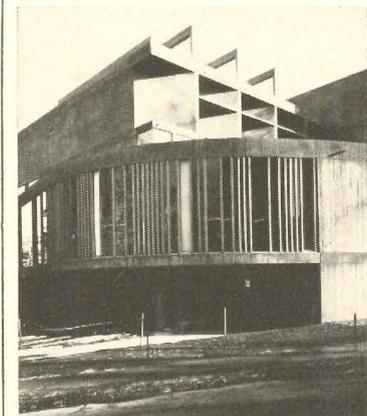
kind of everlasting “rumble.”

**M:** Well, there are lots of trees all around.

**A:** Thank heaven for that! And the big scale of the Arts Center, next to the small scale of



12



13

G. BARROWS

the buildings next door. Is that supposed to relate?

**B:** Strangely enough—yes. Since you really can't do a modern building today with double-hung windows and little window panes, Corbu did the next best thing—he used irregular vertical divisions (13), spaced according to the Modulor scale, and these are remarkably close in scale to the little window panes of the Fogg.

**A:** But what about the huge *brises soleil* (14)—and in a Massachusetts climate, too?

**B:** *Brises soleil* don't just keep out the sun. They also give you reflected and diffused light, which is what painters and sculptors like. And they do something else: each view out of a studio is divided into frames of different size and proportions (15), making a sort of collage of the surroundings, instead of one, great, big, bland view that gets very tiresome after a few minutes.

**M:** Anyway, here it is, right next to the Graduate School of Design. What do you think its effect will be on future architectural students at Harvard?

**A:** It will confuse them even more than they are now.

**B:** Good! Any student who is not confused is a stuffed shirt before his time. Let them be confused, bothered, and disturbed! It will make them ask questions, and it will force their teachers to try and answer those questions. Modern architecture is just another academy nowadays, and the trouble with the schools is that the students and the faculty are in perfect agreement about everything. I hope—for the sake of the students—that this building will sow discontent.

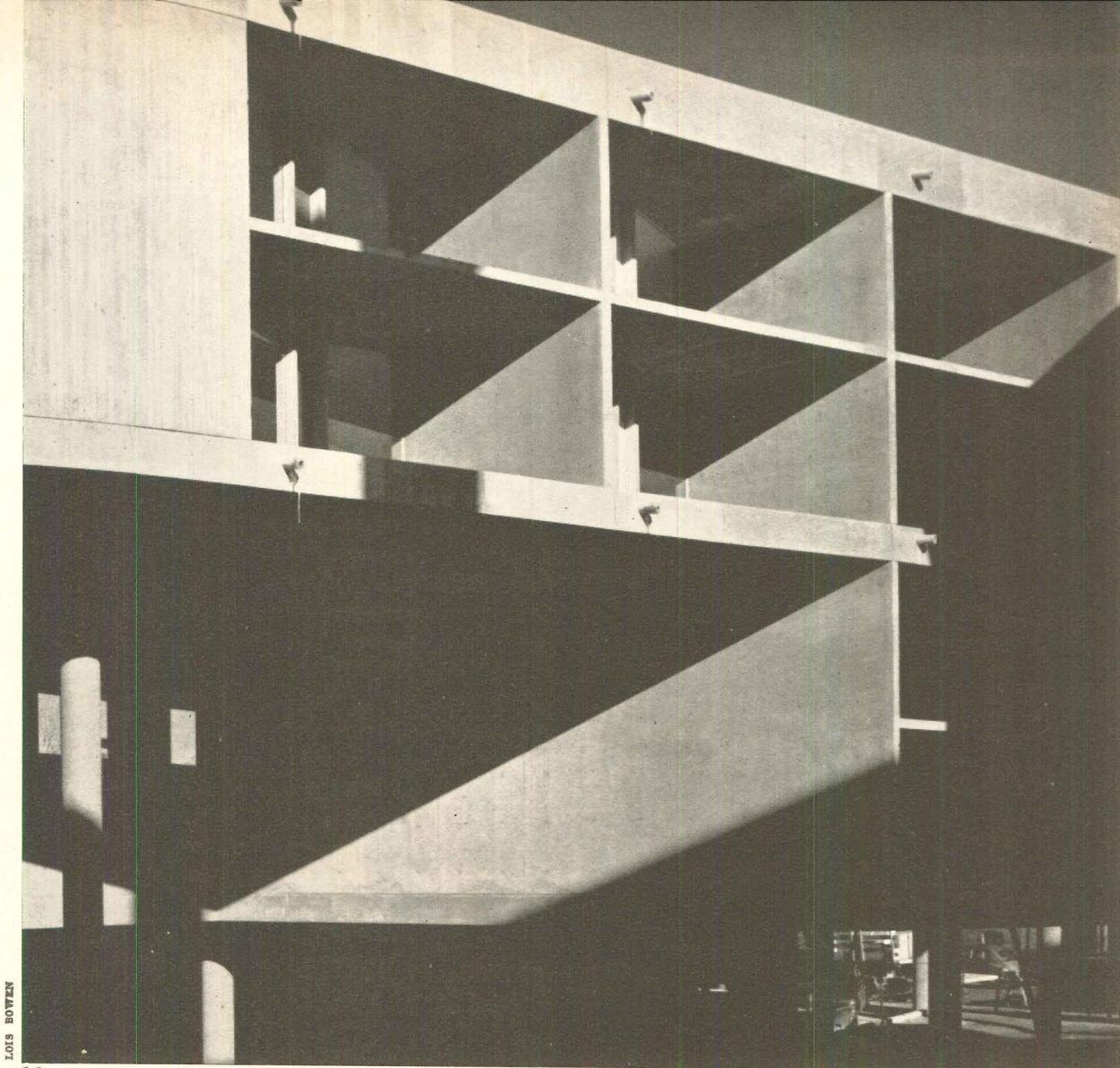
**M:** May I say something?

**A & B:** If you must.

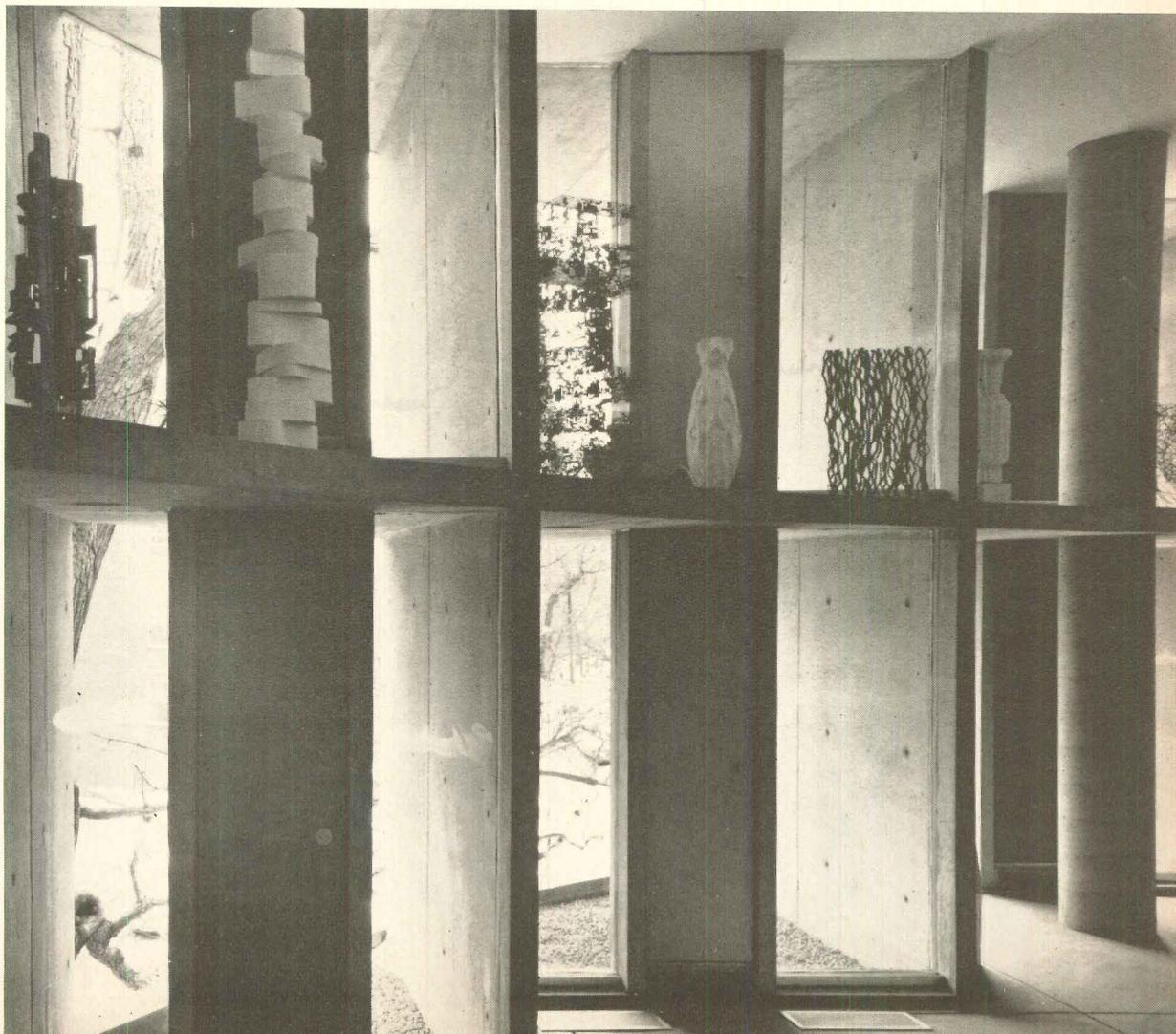
**M:** Thank you both.

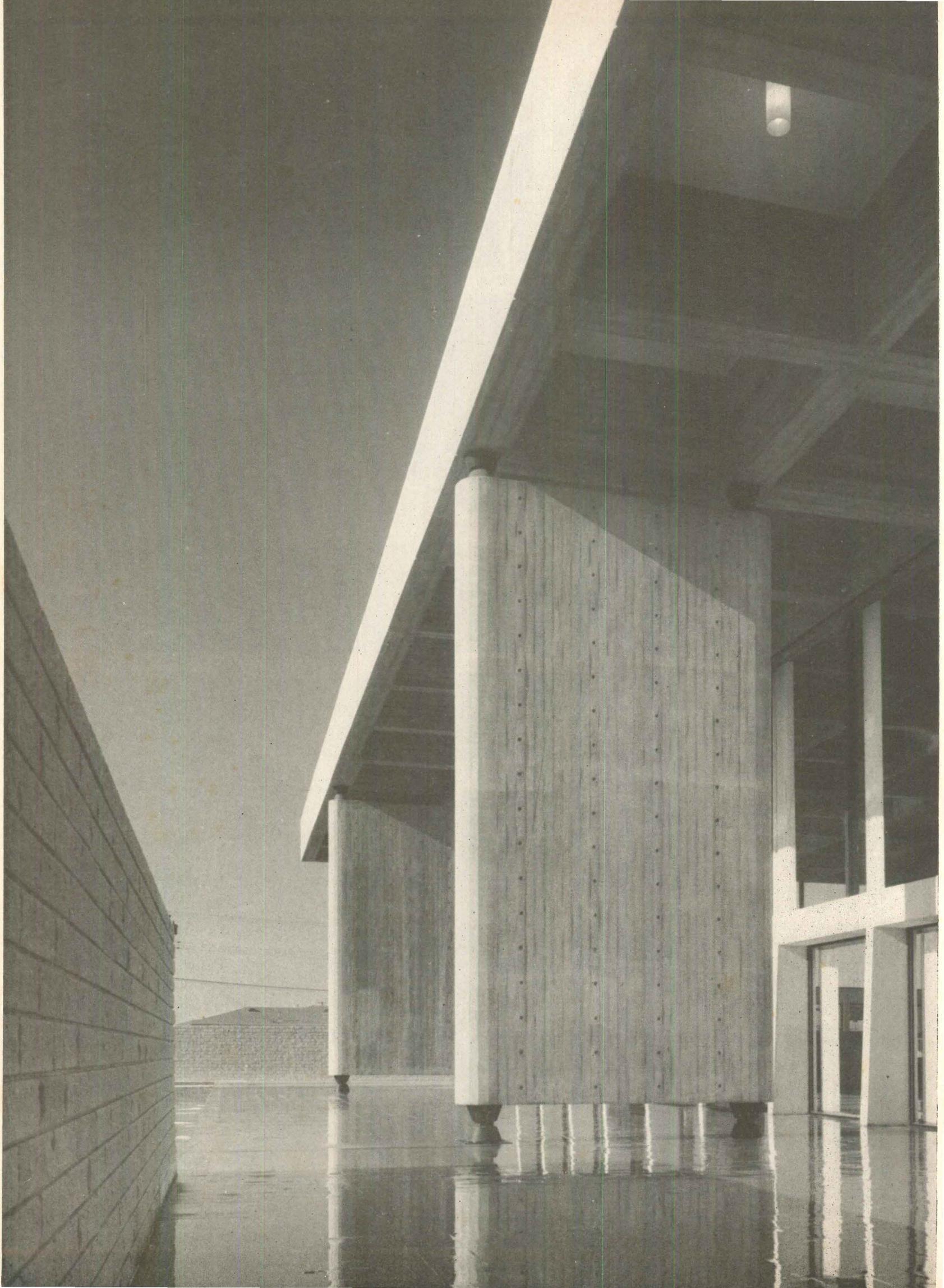
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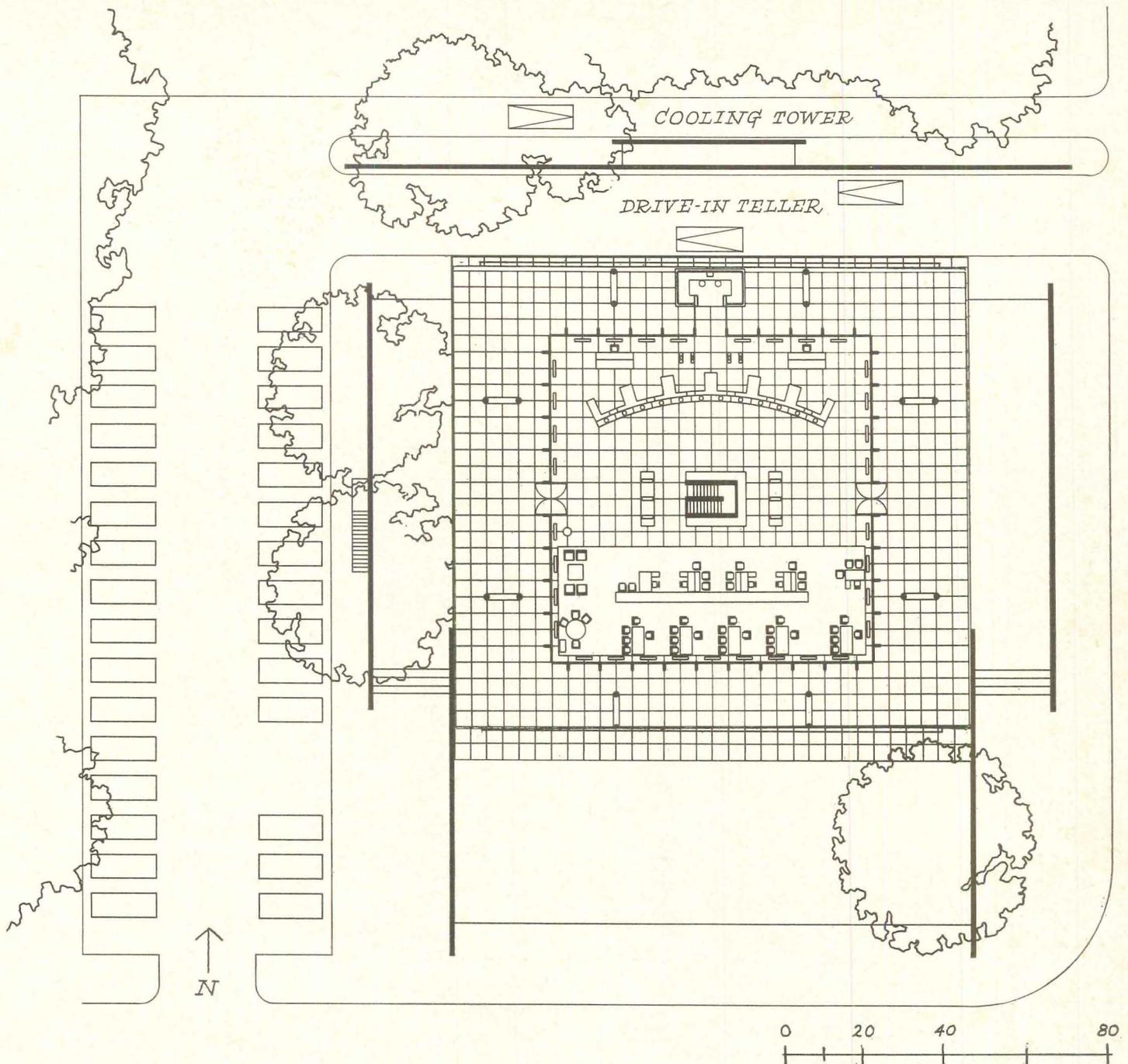
15



14







## SYMBOL FOR SAVINGS: MASSIVE PIERS AND A MIGHTY CONCRETE GRID

In the glittering commercial jumble of most American suburbs these days, it takes more than architectural exhibitionism to register an impression—especially in Los Angeles, where galloping roof-lines and sugary grilles are commonplace to motorists struggling along mile after miracle mile.

Like some modern businessmen who have given it a little thought, the officers of the Great Western Savings & Loan Association realized this; they wanted a sense of dignity as well as showmanship in their building program. So they

called on the San Francisco office of Architects Skidmore, Owings & Merrill to give it to them in a new prototype branch office for Gardena, Calif. The result, Miesian in elevation and Corbusian in profile, goes beyond a bank teller's most extravagant dreams.

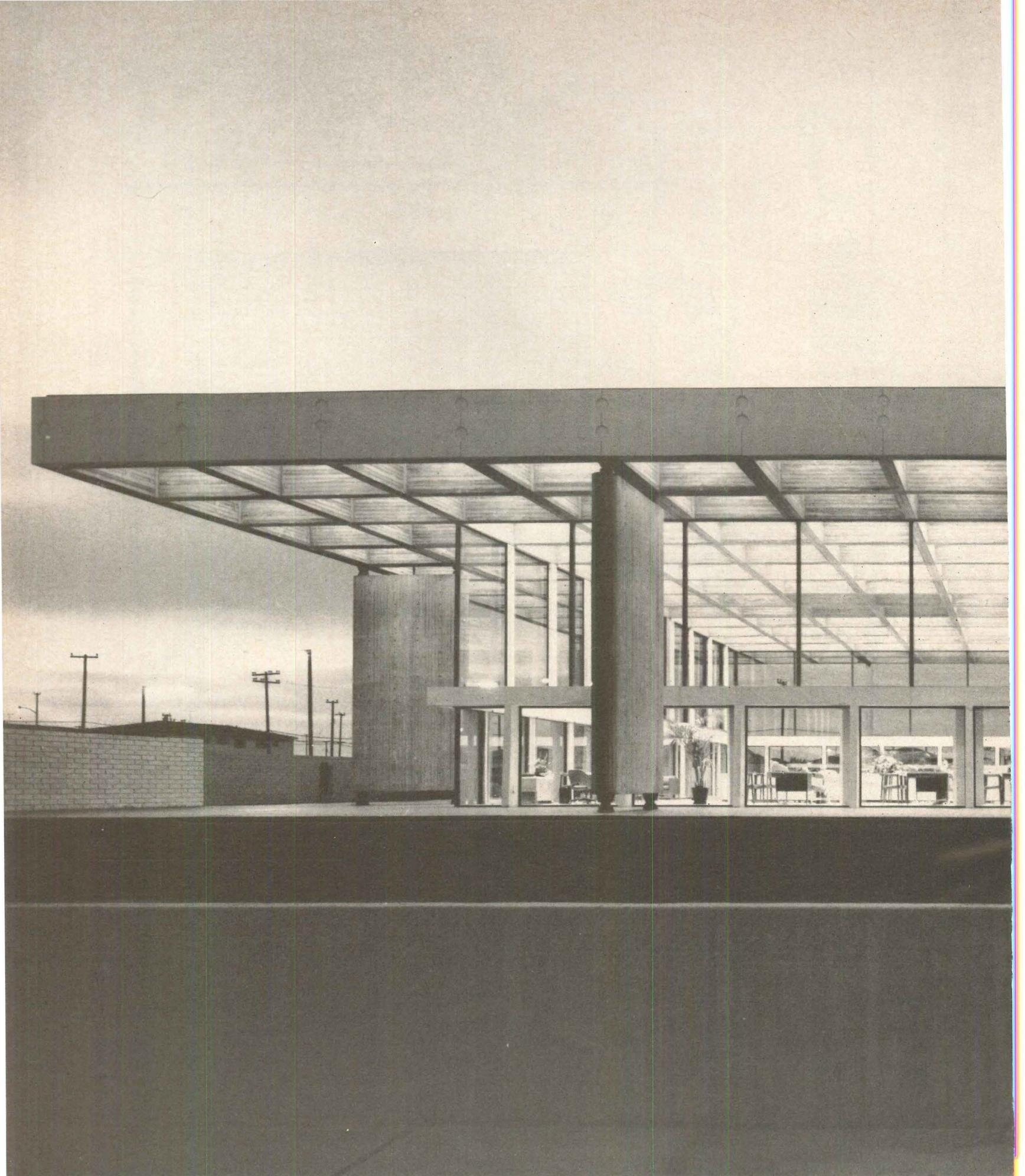
The building is all roof and piers—a burly concrete space frame 112 feet on a side—which looms stunningly yet quietly among flashier neighbors on the street. Set well back within its shade is a single banking room 80 feet square, enclosed in glass.

Customers approach from the street corner, or from a parking lot on the other side, ascending shallow steps between pairs of low, offset walls (plan above). The walls are subtle "blindings": once on the podium of red quarry tile that carries indoors, the visitor is in a pavilion garden, shielded from views of the busy corner, the parking lot, and more suburban chaos at the rear.

Inside, the big room accommodates an arc of counters at the back, from which any teller can easily step into a protruding booth

to serve drive-in customers at the rear. In the center, two check-writing counters flank a stairwell which leads to a basement containing a conference room, employees' lounge, washrooms, and air-conditioning equipment.

In the front of the building is the loan officers' carpeted platform, which has the only full, yet still controlled, view of the street. Though the roof is visible for blocks around, it is only here that the whole structure and its interior are strikingly revealed to the passerby (photo overleaf).

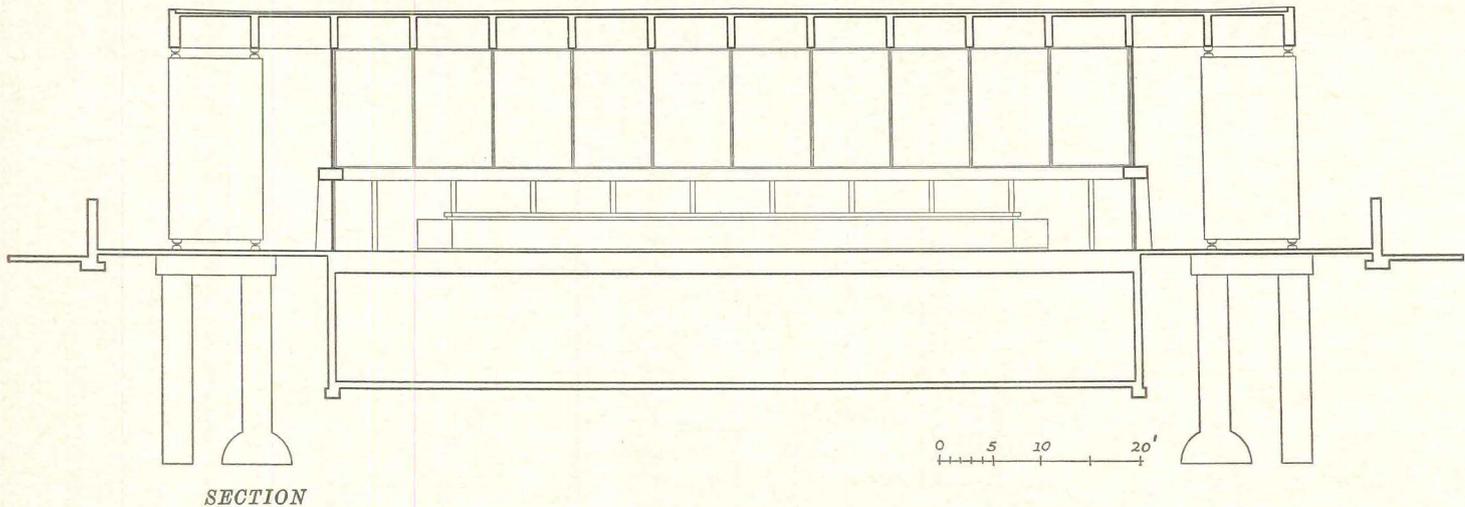


JACK LAXER

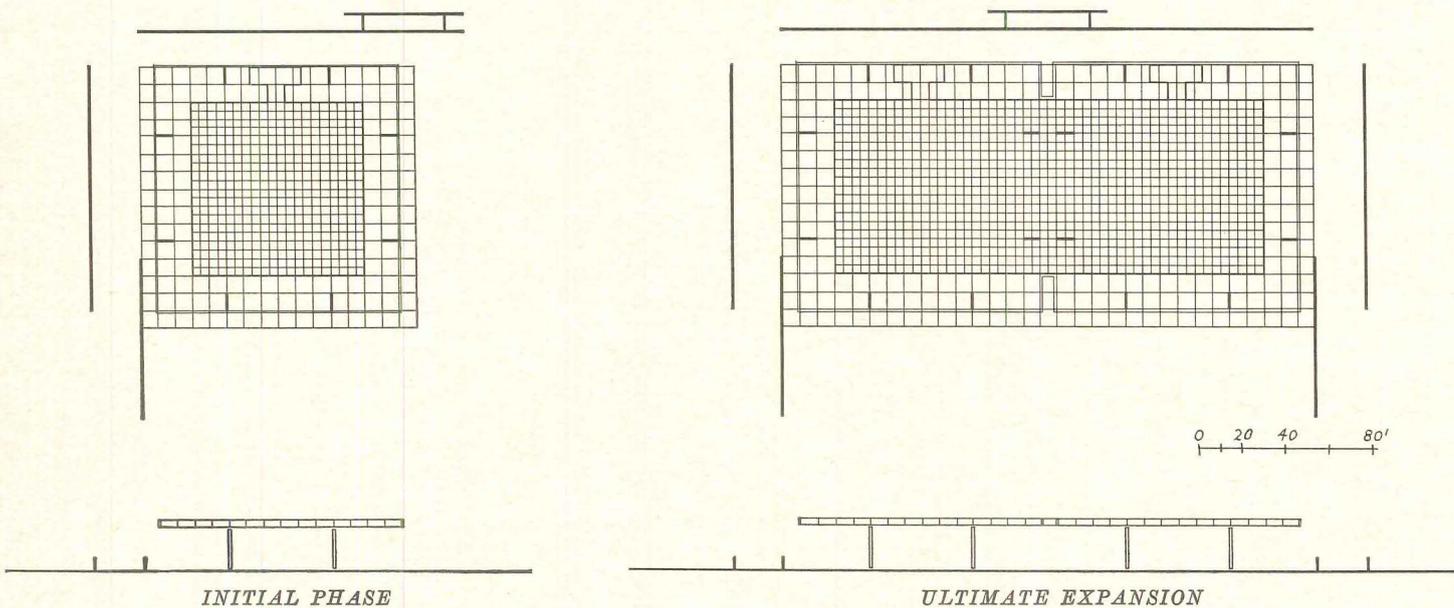


*The great roof of Great Western's Gardena branch, its 8-foot coffer* |  
*lighted at dusk, floats 20 feet* |  
*above the glassy banking space on* |  
*eight slim but massive piers. At* |

*the 7-foot level, a line of pre-* |  
*cast posts and lintels echoes the* |  
*roof and establishes a sense of* |  
*scale. A retaining wall and lawn* |  
*separate the building and street.* |



SECTION



INITIAL PHASE

ULTIMATE EXPANSION

### **The big roof: a structure designed for variation and expansion, engineered with a computer's help**

Great Western's giant eggcrate, cast in place, is 4 feet deep, spans 96 feet clear over the banking room between "bedstead" piers.

The roof, simple as it might look, had to be designed for vertical load stresses by means of a computer program, which stated for each rib intersection: 1) the rib rotation, 2) the direct bending moment, 3) the torsional moment, 4) the joint deflection.

The computer was especially helpful in calculating the proper configuration for the post-tensioning tendons draped within the

beams in both directions. The program also studied how the roof could be varied down to a 6-foot module or up to a 10-foot module if the prototype branch were repeated at a different size in another location. (The prototype was also designed so that it could be built as a single initial unit, then simply doubled in size.)

For earthquake protection, the eight piers were designed as vertically cantilevered shear walls, held with fixed "pins" at the base, movable ones at the top (these pins seem to be by now almost an

SOM trademark). Each inner pin at the top is a ball-and-socket joint that can rotate in any direction; each outer pin allows vertical movement only. The greater vertical load taken by the inner pins is transmitted to big bell-bottom caissons (see section).

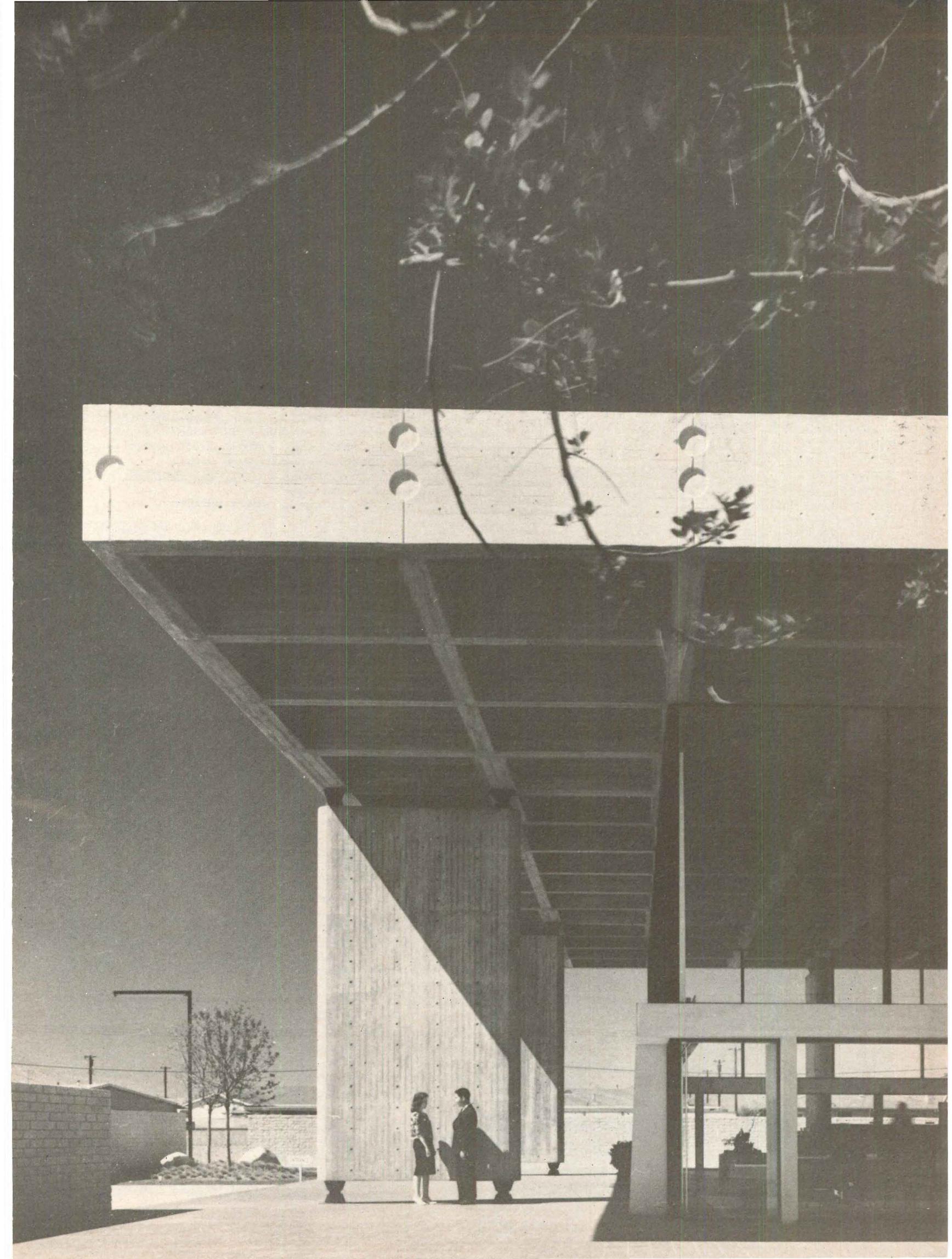
Structural finishes can be seen in the photograph opposite. Jacking pockets for the tendons were grouted and left as pairs of recessed fascia medallions. Similarly, ends of tie rods in the board-formed piers were aligned as pattern, fitted with recessed caps.

#### **FACTS AND FIGURES**

Gardena Office, Great Western Savings & Loan Association, Gardena, Calif.

Architects: Skidmore, Owings & Merrill and Robert E. Alexander Associates, associated architects (John O. Merrill, partner in charge; Walter H. Costa, project manager; Paffard Clay, project designer). Engineers: Skidmore, Owings & Merrill. General contractor: Encino Construction Co.

Building area: 12,800 square feet (within glass line; 6,400 square feet on main floor, same in basement). Construction cost: \$540,000 (\$33 per square foot, incl. terrace area, parking; excl. furnishings, fees).



SCIENCE OF SETTLEMENT

They have been coming back all fired up. They have a new vision. They are the people who joined the fabulous July cruise through the blue Aegean that was organized by the Greek planner Constantinos Doxiadis and that embraced people in a wide range of occupations, including mortgage banking—Stewart Bates of Canada's Central Mortgage and Housing Corp. Others came from still other continents and were as diverse as Britain's Barbara Ward Jackson, economist from Britain, our Buckminster Fuller, and Sir Robert Matthew, Scottish president of the Royal Institute of British Architects. Best known to this writer: Edmund Bacon, executive director of the Philadelphia Planning Commission.

There were 20 signers in all, of a summing-up declaration—the Declaration of Delos. It said essentially that there has to be a science of human settlement. Presumably it meant an art too. Some joked afterwards that foxy Doxi, whose pronouncements on *ekistics* the "declaration" resembles, got a good many more signatures after it was suggested that there would be a follow-up cruise next year for true believers. But without a doubt there was a strong consensus anyway.

The prologue can scarcely be disputed. Like FORUM's well known blast of September 1956 on the approaching "crisis in city pattern" in the U.S. owing to new babies and new automobiles, the Declaration of Delos spoke of an expected world-wide rise within 40 years to 7 billion

population, and of construction for the next 40 years exceeding all urban construction hitherto throughout history.

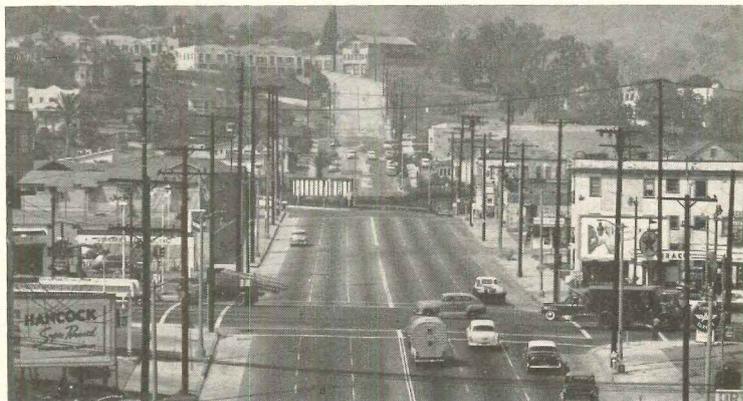
Before taking those figures cold one would like to be sure that the mistake was not repeated which was made in some accounts of FORUM's story. The *depreciated* value of existing construction was mistaken for the measure of its structural *volume*, which is something different and larger.

Nevertheless the human settlement problem grows in a frightening way, and the forms that cities are taking are still more frightening.

It's more difficult to put human settlement values on a "scientific" basis than to decide what is good for people in health and nutrition. What Mumford has called the "culture" of cities is involved no less than physical survival, and, in decisions what to do, art must aid science. Still, as they said at Delos, "We are the citizens of a world-wide city, threatened by its own torrential expansion, and at this level our concern and commitment is for man himself."

WHO IS MAN?

Some question remains of who and what is man in this context. Generally speaking he seems to be a datum to be studied, like an animal species whose ecology is under survey. In general, nice things are said about man in the course of the *ekistics* document, but here and there the inferences are startling. Thus we read that "his participation is essential in framing his own environment"—one of those assertions which



ERWIN LANG

seem so self-evident on the surface that the question is, why bring it up unless a special meaning is intended? And in this case the real meaning seems to be, "Man's participation *with us experts* in framing his own environment is essential *and permitted*."

All of us in this "democratic" age have the feeling that we are being managed more than ever, and this emerges out of published discussions in the excellent *Ekistics* magazine, put out by Doxiadis. Thus Margaret Mead declares that "purposive, controlled cultural change" underlies the "help" being given by industrialized countries to less advanced countries—an idea which is, she says, less than 20 years old. Her own doubts seem to cluster less around the desirability of this purpose than around the clumsiness with which such progress is organized.

An old hand is likely to be a bit abashed at the wholesale manipulation of people, and to ask more of a study of what *they* are doing that might be smarter than what learned people are doing. For example, under the immediate situation, a Rio de Janeiro "*favela*" seems like smarter housing for poor people than anything that American foundations have yet sponsored!

Our new life is popularly shaped, i.e. by "man." All of Roadtown, good and bad, has been popular, from tourist rooms in homes, to tourist cabins, to elaborate motels, to shopping centers, outlying factories, and general dispersion. So too are new jazz rhythms in music, so slow to enter architecture.

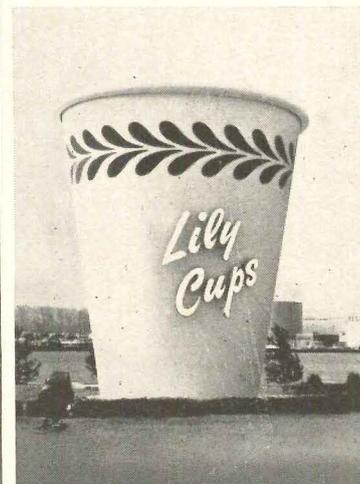
Maybe we have quite a bit to learn from "man" all around us, and not only from excavations, before "superior" ideas are tried out on him. Once upon a time

it was thought respectable to plan so that things happened well which people wanted to have happen anyhow.

It's a delicate interrelationship.

BABY CULTURE

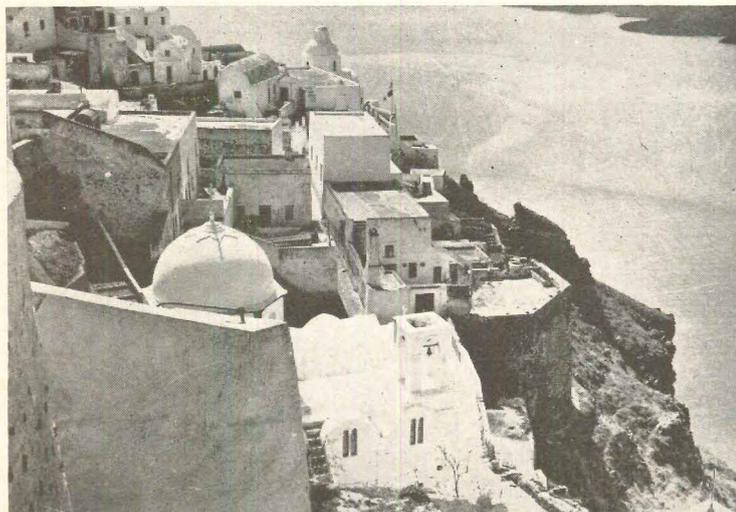
At the age of three, Gargantua, the giant baby, was said to have made for himself a nag from the beam of a wine press, and a mule out of a great oak, but never a cup from an industrial water tank. As for giant Paul Bunyan, young or old he probably just sucked up rivers when thirsty. Somebody else in the way of an oversized baby must have left stranded the big cup shown



here, in the vicinity of Holmdel, N. J. It clutters the landscape there. Although all of this was no doubt forgetfulness after a round of good clean baby fun, the parents should be called upon to clean up the place now for us ordinary-sized people to get around in—not a nursery.

Douglas Haskell

By white Aegean towns (below), planners talked of uglier tasks (above)





"THE BEST FAVOR OUR ARCHITECTS ever did us was to recommend total electric design," say owners Harry Kuhn (left) and Kermit Paxton on balcony overlooking their new motel.

## "TOTAL ELECTRIC DESIGN MEANS EFFICIENCY AND SAVINGS IN MODERN MOTEL CONSTRUCTION"

**Harry Kuhn and Kermit Paxton, owners of the Lincoln Motor Lodge, Gettysburg, Pennsylvania, report on the advantages of using flameless electricity as a single source of energy for all heating, cooling, water heating, and lighting.**

"When I talk about the benefits of total electric construction," says Harry Kuhn, "I'm speaking as a man who used to own a motel that *wasn't* total electric. So I can really appreciate the difference!

"Take our heating and cooling set-up, for example. In each room here we have individual electric baseboard units and through-the-wall electric air conditioners. This is the ideal—and economical!—combination for year-round comfort, and it also eliminates the possibility of a central system failure that could cause a total shutdown.

"Another thing I like is our 7-unit electric water heating system. By locating electric water heaters at the main points of use, we were able to do away with a central boiler room and inefficient long pipe runs. With this arrangement, we literally have a never-ending supply of hot water."

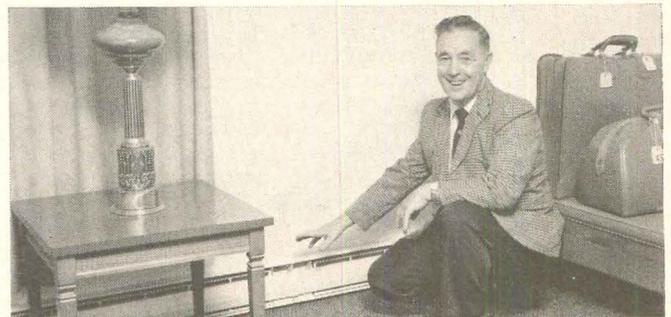
"Something else that's important," adds partner Kermit Paxton, "is the large savings on maintenance and installation that we realized by going total electric. Why, on heating equipment alone, co-ordinated planning by our architects, project designer, and electric utility company saved us more than \$5000 and when you figure that kind of money over a few years at, say 5%, it really adds up. All in all,

I'd say that Harry and I are pretty grateful to the people who suggested we look into the advantages of a total electric design."

For architects and consulting engineers, total electric construction offers the modern method of combining heating, cooling, water heating, and lighting into one efficient operation using a single source of energy. If you are interested in how it can help you in the design of commercial and industrial buildings, contact your local electric utility company. They will welcome the opportunity to work with you.

### **BUILD BETTER ELECTRICALLY**

Edison Electric Institute, 750 Third Avenue, New York 17



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AmBridge Coordinated Building Components are precision-fabricated. They are naturally usable as individual products, but better yet as a coordinated system of steel frame, curtain wall, partition, joist and deck construction all fabricated by American Bridge. The system is simple and fast to assemble—because every component fits perfectly. Biggest use so far for the AmBridge family of components is schools (where costs are often 13-18% less than average), but AmBridge Components have also been used successfully for power plant, bank, warehouse, laboratory and office buildings. Architects find that AmBridge Components readily lend themselves to the most modern modular design practices.

**(A) USS AmBridge Curtainwall** systems are available with exterior faces in a choice of 47 colors recommended by the Porcelain Enamel Institute; in 28 baked enamel colors, or in stainless steel. Interior surfaces are fully finished with vinyl (at no extra cost to you) or baked enamel to match or harmonize with the partitions. The steel panels are normally designed to a 4-ft. module and run continuously outside the columns. Standard panels are available in 1- 2- and 3-story heights. Panel frame members are cold formed galvanized steel. Face sheets are mechanically attached to the structural frame. Heat transfer is controlled with thermal breaks which prevent a thru-metal condition. Because the glass fiber insulation is held away from the exterior face by stainless steel clips, the panel is free to breathe, thereby minimizing condensation. AmBridge walls are so thin compared to masonry construction that you gain about 5% usable floor space. Yet the walls provide a tested thermal "U" factor of .168 that assures comfortable temperatures at reasonable cost.

**(B) Sash** are high quality 2" monumental projected or fixed-type, of stainless steel or aluminum. Vertical or horizontal sliding sash are optional.

**(C) Exterior Battens** are extruded metal sections with provisions for mechanical attachment without drilling. Battens are fitted with shop-applied neoprene gaskets that permit expansion or contraction while keeping joints weathertight. Custom-designed covers permit aesthetic variation in stainless steel, porcelain enamel finish or special extruded shapes.

**(D) USS AmBridge Open Web Steel Joists** support floors and roof. Joist and framing details have been designed to adapt to any specific load requirements. Like all AmBridge Coordinated Structural Components, joists meet specifications of the SJI, ASW, AISC and AISI latest adoptions.

**(E) Leave-in-place light-gage Steel Floor Forms** provide support during cure for the poured concrete floor.

**(F) Steel Roof Deck** specifically engineered to the structural requirements permits all-weather installation, receives insulation for built-up roofing and supports roof loads.

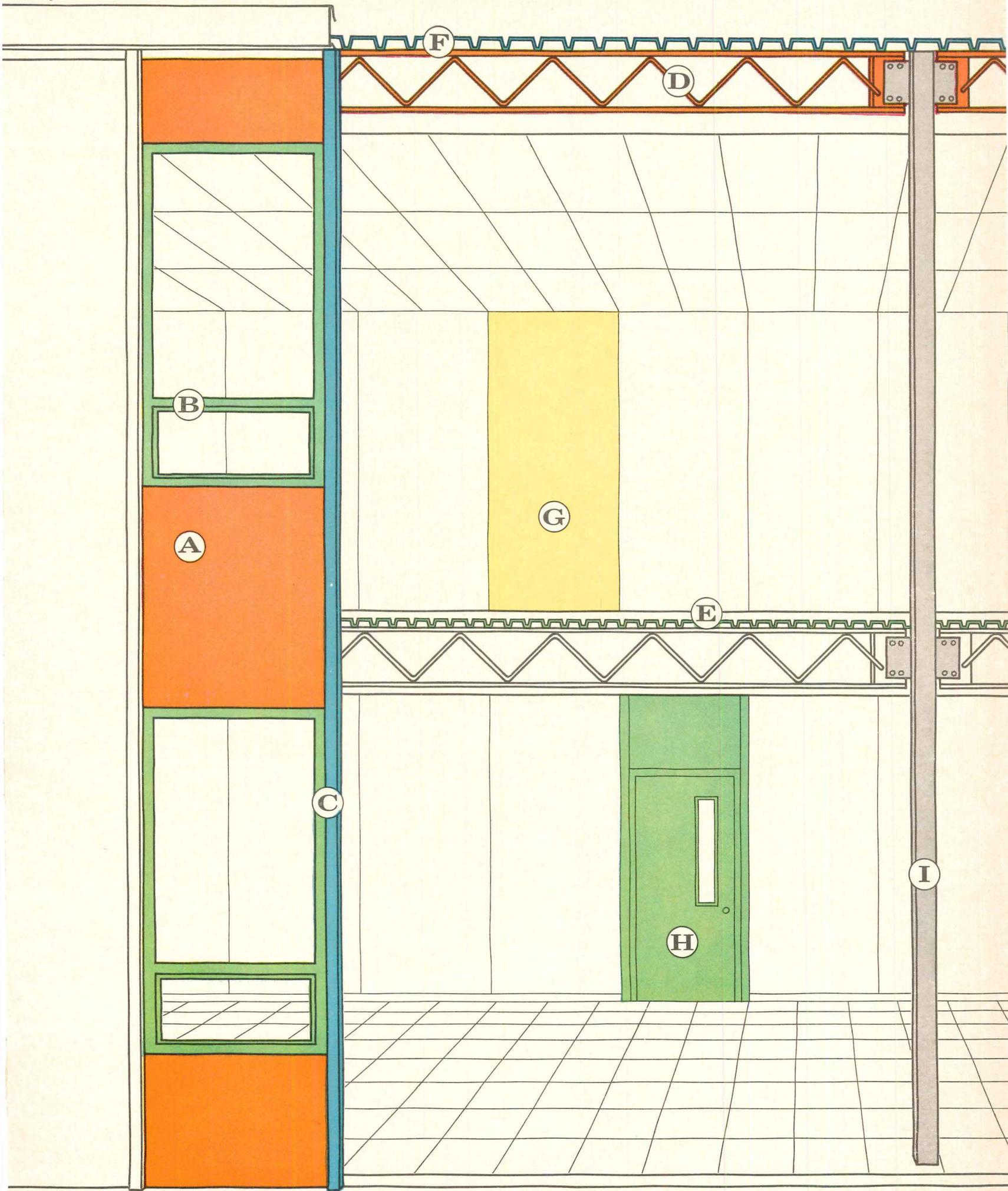
**(G) USS AmBridge Partitions**, like our curtainwall interiors, are available in six pastel vinyl finishes that cost no more than our 28 baked enamel colors. Both finishes are applied under factory-controlled conditions. Mild detergents easily keep surfaces clean and new-looking. The panels incorporate a cold-rolled steel channel frame with face sheets attached to each side. Partitions are insulated with glass fiber, and although only 2 1/4" thick, they provide excellent acoustical values. Test results show an attenuation of 45 decibels or more from room to room. Partitions are easily movable (just unbolt), to permit alteration of room size with minimum disturbance and cost. Interior battens are flush with the partition and are easily removable for simplified wiring.

**(H) USS AmBridge Steel Doors** with a corrosion-resistant polyurethane foam core are supplied as an integral part of exterior and interior panels. All doors are complete with pressed steel frames and hardware, baked enamel finish, and can be furnished with lights and/or louvers. Neoprene weather-stripping is furnished on all exterior doors to assure a storm-tight seal. Hardware of the finest quality approved by the architect—such as lock sets, closers, panic bars, and kick plates in various finishes—can be installed under supervision of experienced American Bridge personnel.

**(I) Square or rectangular Tubular Columns** are offered for maximum economy of section. In order to insure single contract responsibility, American Bridge can provide experienced erection crews. We'd like to give you more information. For our free full-color booklet, write to American Bridge Division, United States Steel, Room 1840, 525 William Penn Place, Pittsburgh, Pennsylvania 15230. USS and AmBridge are registered trademarks.

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United States Steel**







AGELESS...BECAUSE IT'S STAINLESS



Architects: Shreve, Lamb and Harmon Associates, New York, New York  
General Contractor: Turner Construction Company, New York, New York  
Stainless Steel Fabricator: Moynahan Bronze Company, Flat Rock, Michigan

## Where stainless steel cost only 6% more: United Engineering Center, New York City

The metal on this soaring curtain wall is nickel stainless steel. It cost only 6% more than the low curtain wall bid in another architectural metal...less than 1% more based on the total cost of the building. How? The architects designed the building for stainless steel from the beginning. They carefully detailed the mullions and column covers in light, economical gauges made possible by stainless steel's exceptionally high strength and rigidity. They

chose No. 4 polished finish stainless for mullions and windows and a newly developed architectural matte finish for the 24" wide column covers.

The owners, United Engineering Trustees, Inc.—people who know materials and value—preferred a stainless steel exterior and readily accepted the small additional cost. They knew that a 6% premium for stainless steel's greater strength, resistance to New York's corrosive atmosphere, and much lower expansion-contraction

rate was well worthwhile in the interest of long-term economy and maintenance. If you're interested in practical design information on curtain walls, windows, entrances or flashings of nickel stainless steel, or for assistance with specific problems, write to:

**THE INTERNATIONAL NICKEL COMPANY, INC.**

67 Wall Street  New York 5, N.Y.

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# The home where 100 people dial their climate on Zoneline Heat Pumps



Wychmere Nursing Home, Memphis, Tenn.

How do you keep 100 residents of a nursing home never too hot, never too cold all year round?

At Wychmere Nursing Center, co-owner Bob Pugh answered the question with General Electric Zoneline Heat Pumps.

"The prime concern here is for the patient," says owner Pugh. "We get a broad temperature spread in Memphis. Anywhere from zero to the low hundreds. Plenty of humidity, too. The Zoneline Heat Pumps allow us to fit the room temperature to the needs of the person who's staying in it. They do it quietly. They do it economically, no matter what conditions are outside. There are times when the Zoneline Heat Pumps are cooling on one side of the building and heating on the

other. In the morning and early evening, for example. You can't beat that for flexibility. Our people are very pleased with them. So am I. I am using them in a similar project at Knoxville, Tenn.

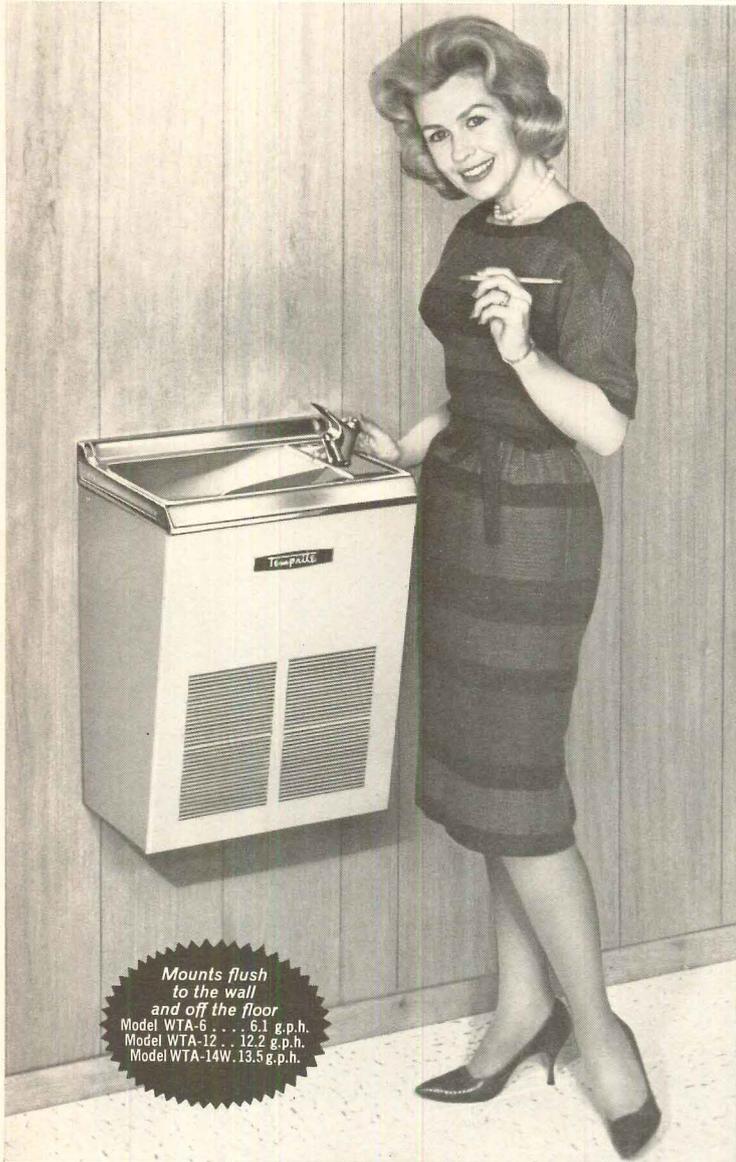
"Only there, I'm using twice as many."

More and more builders and owners are discovering the flexibility and economy offered by G-E Zoneline heating and cooling. How about you? Write Room Air Conditioning Department, General Electric Company, Appliance Park, Louisville 1, Kentucky.

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*the water cooler with*  
**COMPLETE VERSATILITY**  
*of APPLICATION*



*Mounts flush  
to the wall  
and off the floor*  
Model WTA-6 . . . 6.1 g.p.h.  
Model WTA-12 . . . 12.2 g.p.h.  
Model WTA-14W . 13.5 g.p.h.

**“WALL-TEMP”**  
by **TEMPRITE**

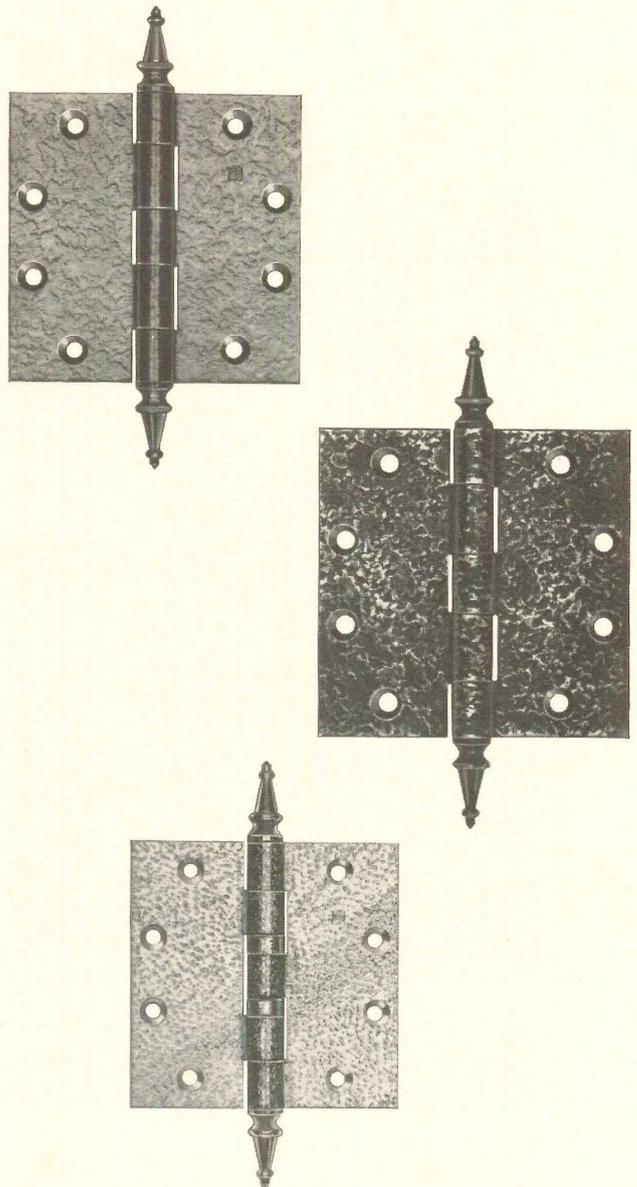
For numerous good reasons, make it a point to include the versatile “Wall-Temp” refrigerated water cooler in your building specs. □ Three models will accommodate the majority of commercial, institutional, or industrial applications. □ A remote connection lets you plan for an economical extra cold water bubbler outlet. □ Mount the “Wall-Temp” at convenient lower heights for children, where required — or use Temprite’s small auxiliary fountain, mounted adjacent to the “Wall-Temp.” □ There’s a full 19” of floor clearance beneath the cooler for ease of floor maintenance.

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**TEMPRITE**  
**PRODUCTS**  
CORPORATION  
East Maple Road  
Birmingham, Michigan

See “Wallbrook” and other Temprite water coolers in Sweets Architectural and Industrial construction files...or write for catalog.

Hager introduces  
a strikingly beautiful new hinge

**MODELÉ**



This daring departure from the conventional smooth hinge brings architects new design range in decorator-inspired door hardware. The random-pattern surface, in modified bas relief, suggests hand-hammered metal or a fabric finish of brocatelle. Application is indicated where luxurious installations require rich accents tastefully ornamental. Modelé offers a choice of fourteen different finishes including bright or satin tones of silver, gold, iron, brass, and bronze. Custom finishes also available. The selection includes all popular sizes with plain or ball bearings.  
HAGER HINGE CO., ST. LOUIS 4, MO.

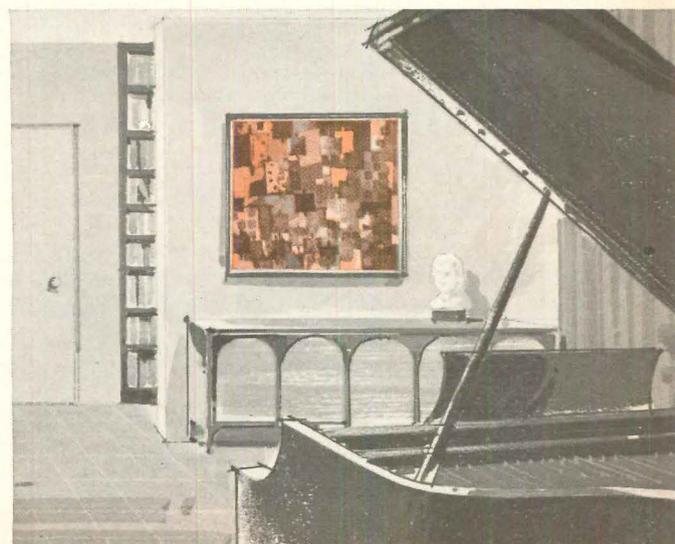
Everything Hinges on Hager



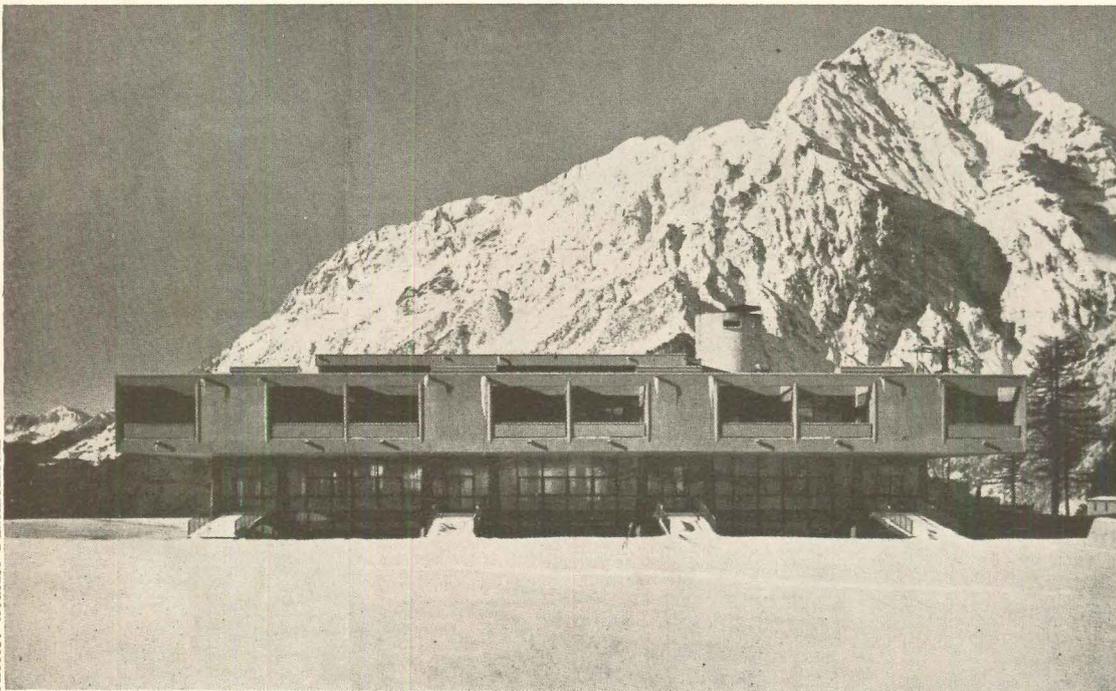


## Hager creates for the Ornatologist

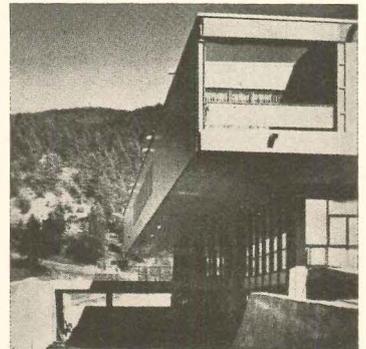
Where luxury is projected by traditional design, ornamentation must be rigidly disciplined. Architects who avoid ostentation yet make full use of the design freedom allowed deserve special identification. We call them *ornatologists* and entrust the use of the obviously artistic Modelé Hinge to their discerning judgment. This new hinge from Hager in a choice of rich finishes carries impeccable taste right to the doorway of traditional interiors. HAGER HINGE CO., ST. LOUIS 4, MO.



Everything Hinges on Hager



PHOTOS: COURTESY L'ARCHITETTURA



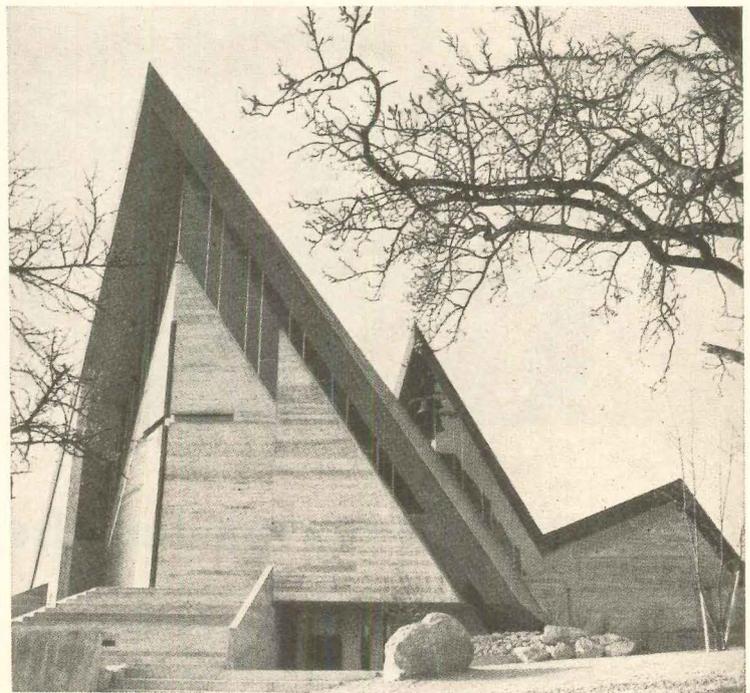
**ITALIAN CAMP.** The Montecchiario camp and school at Cesana Torinese lies low and neat in contrast with its soaring Alpine setting. A competition-winning design by Architect Renato Severino for an all-steel structure, the compact building accommodates 250 children of Italsider employees. A teachers' penthouse tops 16 dormitories, all amply lighted by setback balconies (above).

**ENGLISH FLATS** (below). Pilotis, vaults, and other Corbusian overtones are dominant features in these London apartment blocks designed by Chamberlin, Powell & Bon. Three new buildings, each featuring different apartment types, complete housing for 1,400 inhabitants in the vast Golden Lane Estate. The entire complex

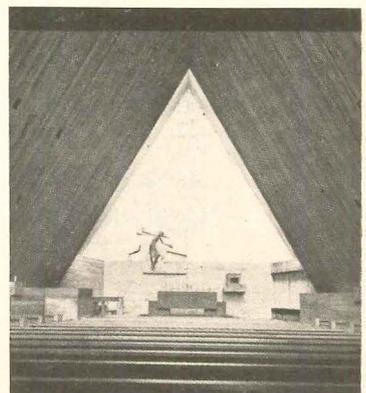
is based on a scheme by the same architects which won a 1952 open competition. All buildings are of load-bearing brick construction with concrete slab floors. Ground floor shops and a pub are included in the block of two-room flats (left). Adjacent is a six-story building (right) with 72 efficiency apartments.



COURTESY THE ARCHITECTURAL REVIEW



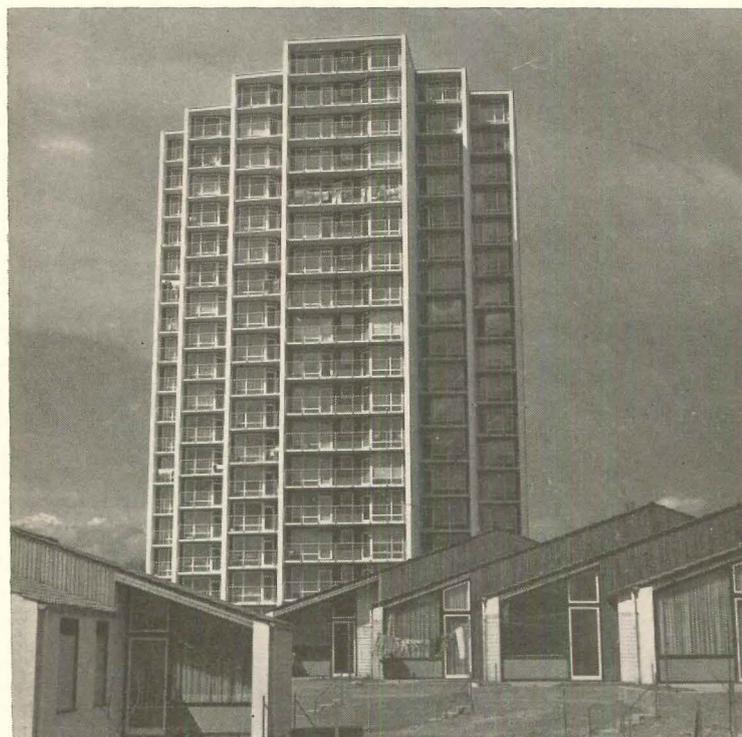
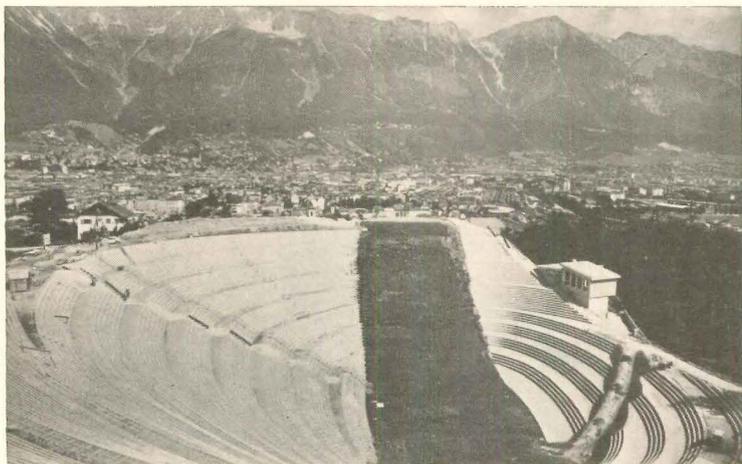
**SWISS CHURCH.** The tentlike form of St. Paul's Catholic Church near Zurich (above) is not only a handsome solution to a narrow and irregular village site; it is also a deliberate reminder by Architect Justus Dahinden that St. Paul was a tentmaker. Untreated concrete and larch wood create an exterior harmony; glazed strips just below the façade add an airy touch to the façade while providing a natural light source inside (right).



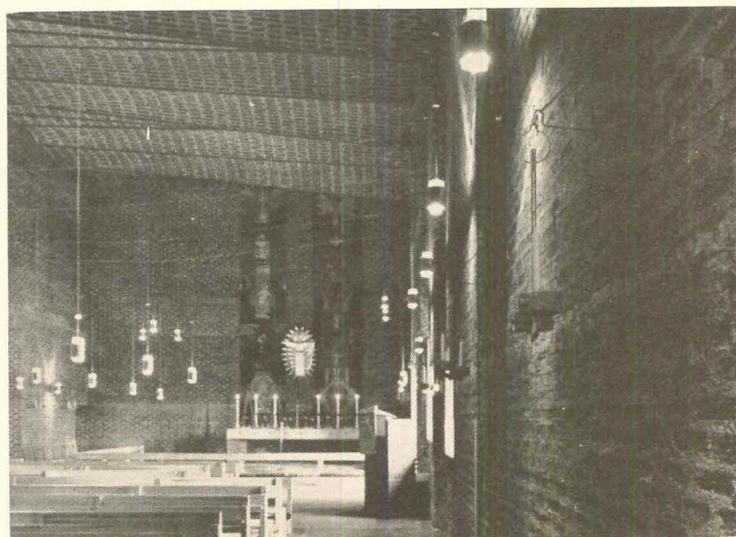
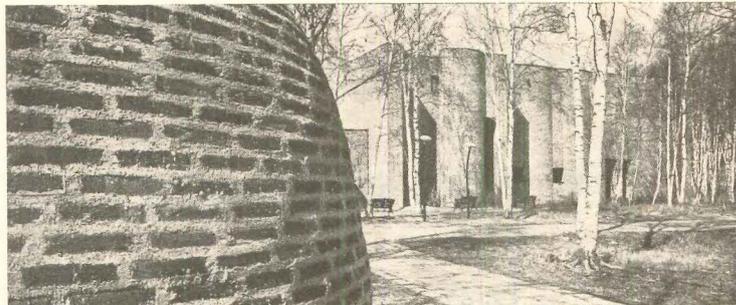
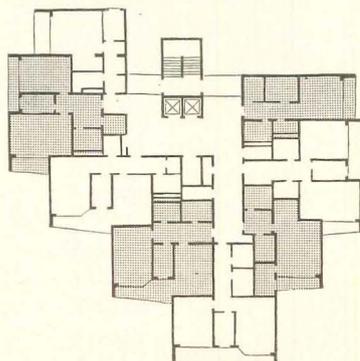
PHOTOS: COURTESY BAUEN & WOHNEN

**TYROLEAN SKI JUMP.** The scene below, in Innsbruck, Austria, was once the site of a bloody battle during the Napoleonic Wars. Today it is being transformed into a ski-jump stadium for the 1964 Winter Olympic Games. Architect Heini Klopfer, with En-

gineers Andreas Peyerl and Oskar Heinz, has created an amphitheater around a hill with a maximum jump of 310 feet. Sixty thousand spectators will watch from concrete bleachers, most of which are located opposite the average jumper's landing point.

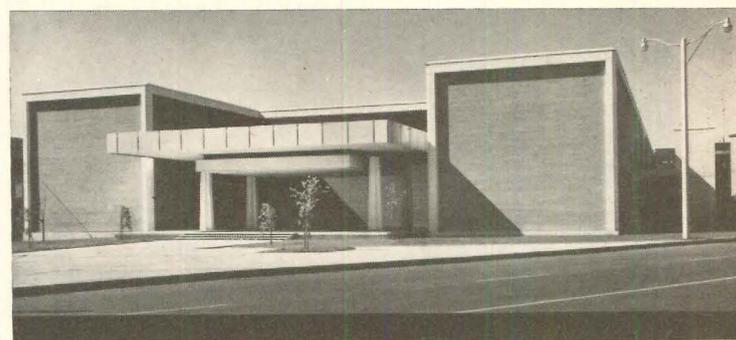


**GERMAN APARTMENTS.** To create a varied urban scene in Ludwigs-hafen's Edigheim Quarter, Architects Josef Lehmbruck and Wilhelm Tiedje studied 36 different housing types. This 21-story apartment house with balconied façade (above) is one of three finally chosen and built for employees of BASF, a chemical concern. Tower apartments have one or two rooms with an intricate corridor layout (see plan).



**SWEDISH CHURCH.** Architect Sigurd Lewerentz was so careful in building his Bjorkhagen Church near Stockholm that he made bricklayers practice on a small beehive structure (left in upper photo) before allowing them to

begin on the main church. Set in a silver birch grove, the curves of the sculptured walls are broken periodically by unframed windows and doors set directly into the brickwork. Inside, simple pews face a tapestried altar.



**CANADIAN SWINE HALL.** An exhibit center with a white-collar look (above) at Toronto's national fair grounds actually holds 324 swine pens and 400 sheep enclosures for annual livestock shows. Pressed metal and plywood pens (right) are arranged inside in horizontal rows but are demountable. The hall itself is an exposed reinforced concrete frame infilled with buff brick. Architects: John B. Parkin Associates; Earle C. Morgan. **END**



PHOTOS: COURTESY ARCHITECTURAL DESIGN

PANDA

*where the hardware schedule is complex,*

**this man specifies...assured of**

## **EXPERIENCED ORDER ANALYSIS**

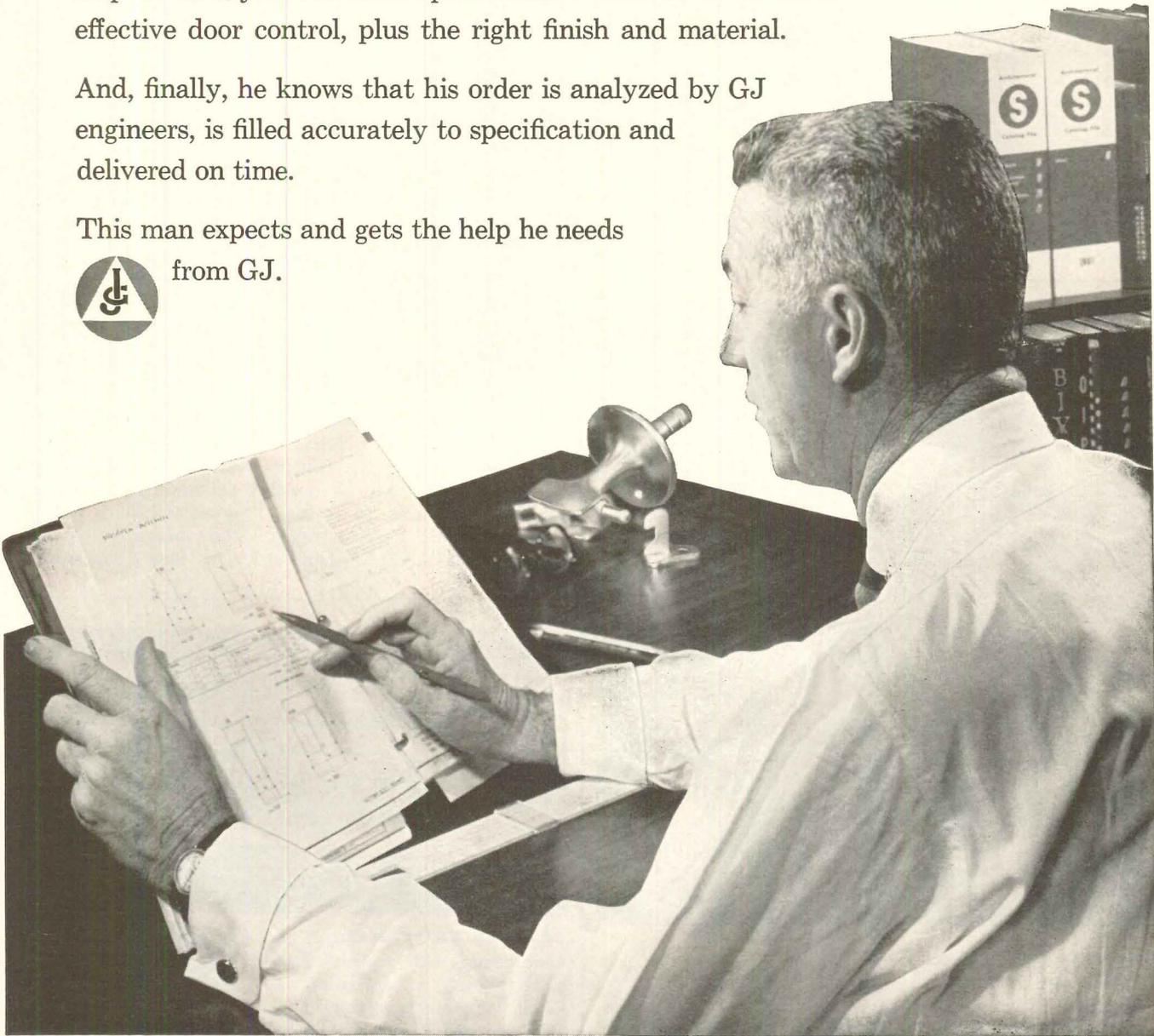
He knows that his GJ catalog offers a wide variety from which to make his choice. If there is a problem he welcomes the help of his Glynn-Johnson representative—assured of the most effective door control, plus the right finish and material.

And, finally, he knows that his order is analyzed by GJ engineers, is filled accurately to specification and delivered on time.

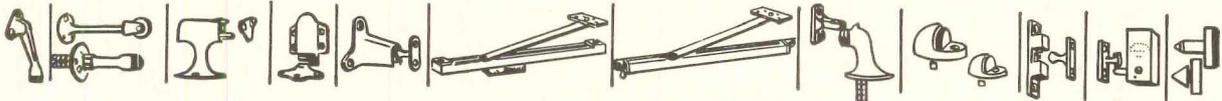
This man expects and gets the help he needs



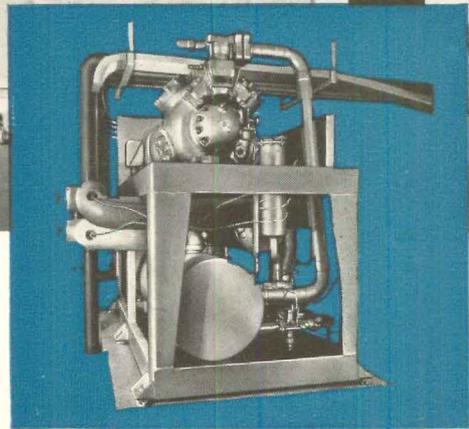
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in the Vatican by  
**B&G**<sup>®</sup> Package Liquid Coolers*

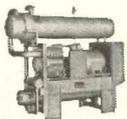
The choice of B&G Package Liquid Coolers to air condition both a five-century old tower within the Vatican walls and the Palazzo dei Propilei reflects the outstanding value offered by these units.

Many special features are incorporated which in similar products are "extras", or not available at all. A particularly notable feature is the compressor—a unit precisely engineered and built... basically superior because it is basically simpler.

The B&G Package Liquid Cooler can be specified for a wide variety of applications... either as a separate space cooling unit... or in combination with a forced hot water system... or for the numerous industrial processes requiring controlled cooling of materials. *All major parts are designed, manufactured and guaranteed by B&G... one responsibility for the entire package!*



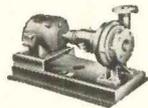
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Package Liquid Coolers



Refrigeration Compressors



Centrifugal Pumps



Heat Exchangers



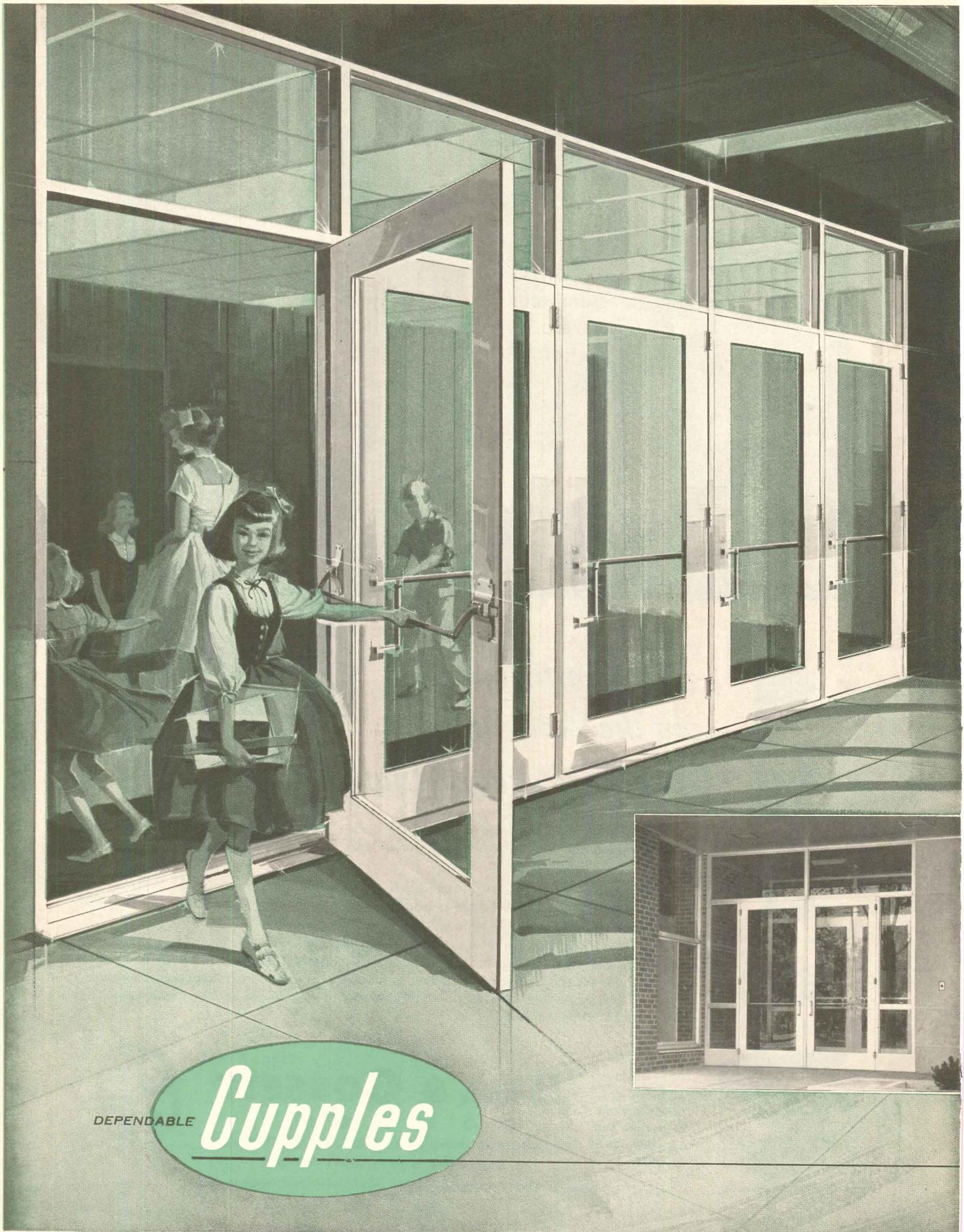
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three butt hinges and attractive outside pull handle. It's a door that will satisfy your toughest assignment. And, what's more, when compared with equal quality wide stile doors, this Cupples "Packaged School Door Unit" saves you approximately \$75 to \$100 on each unit.

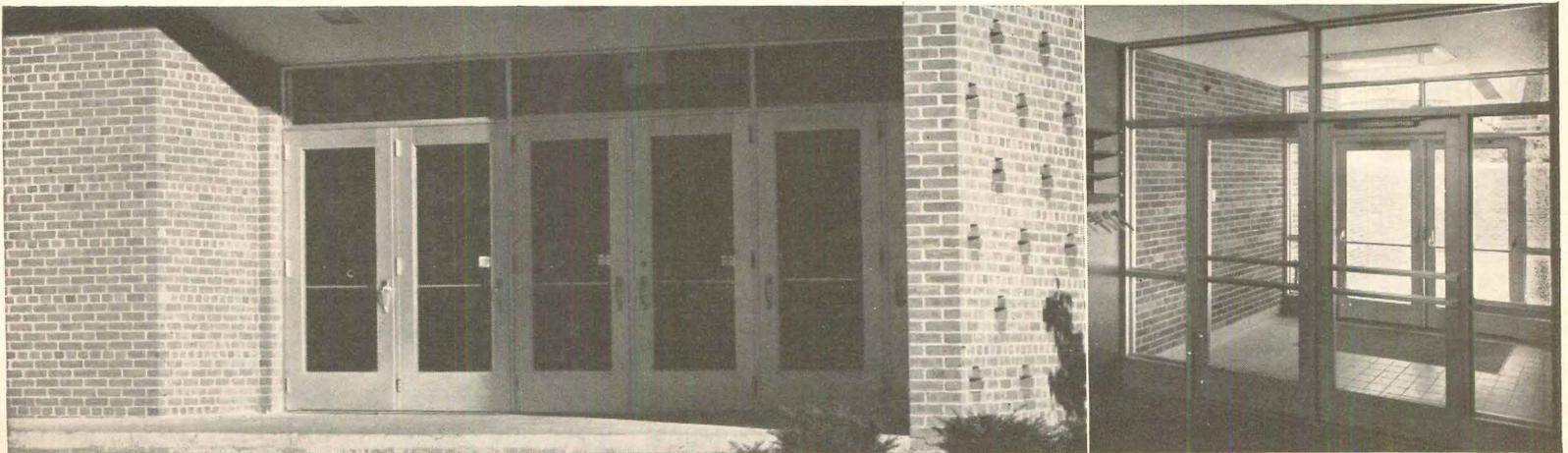
How do we do it? Simple. We offer this standard door package in only two sizes (36" and 42") — No specials — No exceptions. This standardization reduces our costs and we pass the savings on to you. Write today for complete information and details. Address Dept. AF 6310.

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*A complete line of custom and standard doors, store front metal, custom and stock curtain walls, stock projected windows, stock and special sliding glass doors. All Alumilited finishes are bonded and guaranteed.*



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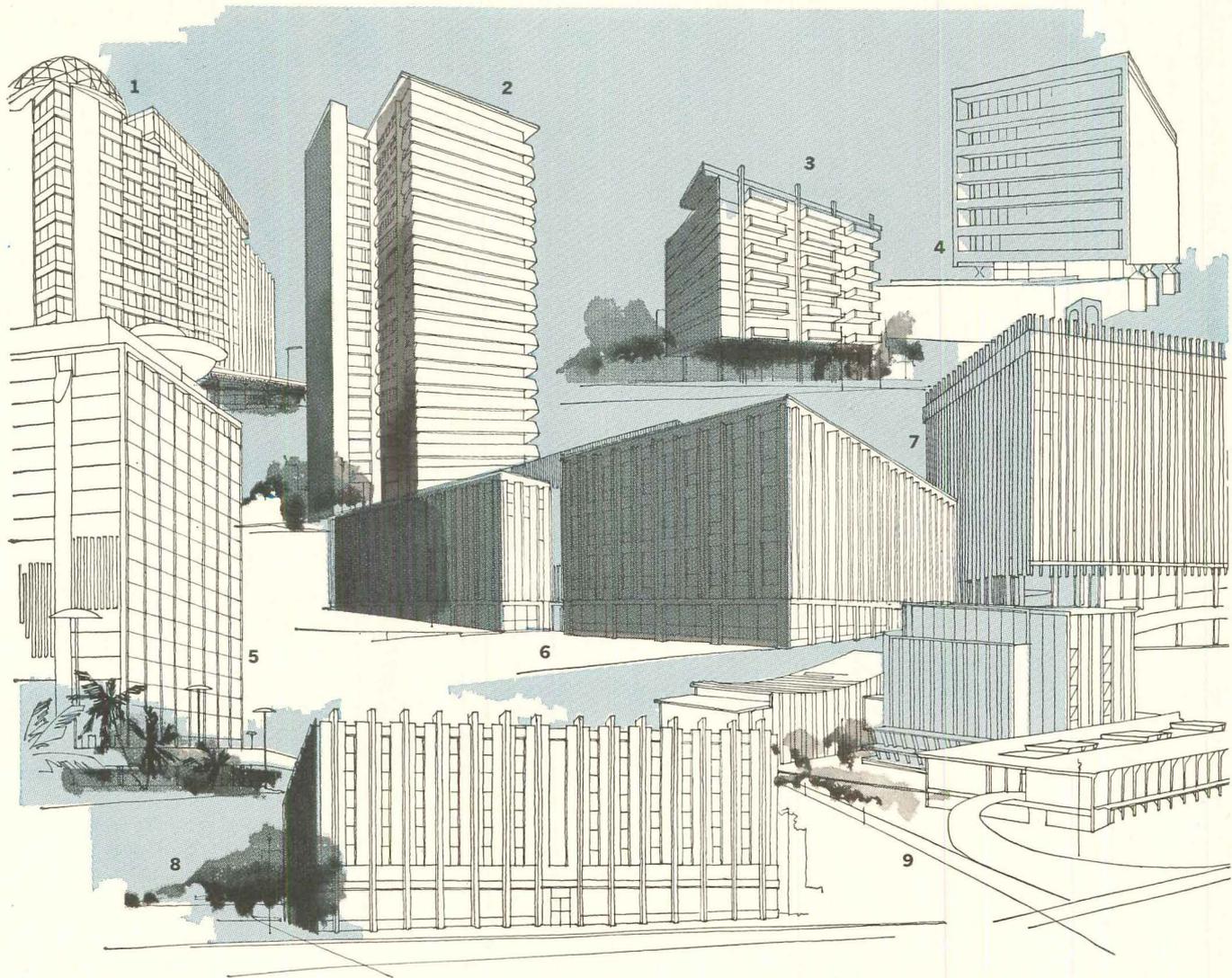
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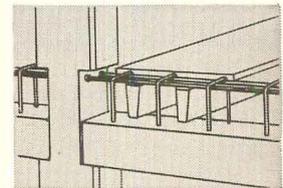
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& Asso. 6—Charlottetown Office Building, Charlotte, N. C. Architects: A. G. Odell, Jr. & Asso. Engineers: A. K. Durbachs. 7—Exhibition and Parking Facility, San Diego. Architects-Engineers: Tucker, Sadler & Bennett. 8—Doctors Building, New Haven. Architects-Engineers: Westcott & Mapes. 9—Toronto Parkway Vocational School, Toronto. Architects: R. P. G. Pennington. Engineers: K. H. Hatch. For information on framing systems, spans or connections on any of the buildings illustrated, write the Prestressed Concrete Institute.



*Illustrated is just one of many methods of assembly of precast elements used in multiple story construction. Cast-in-place concrete is used to complete the connection.*

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Before-and-after views of Sears, Roebuck & Co., Pittsburgh, using Vitralume in blue panels with contrasting white trim. **Architecture:** Scarlett & Mitchell, Pittsburgh, consultants working with Paul Gettys, head of Sears' regional architectural staff. **Contractor:** Charles F. Campbell, Inc., Pittsburgh. **Structural Engineer:** Martin Knabe.



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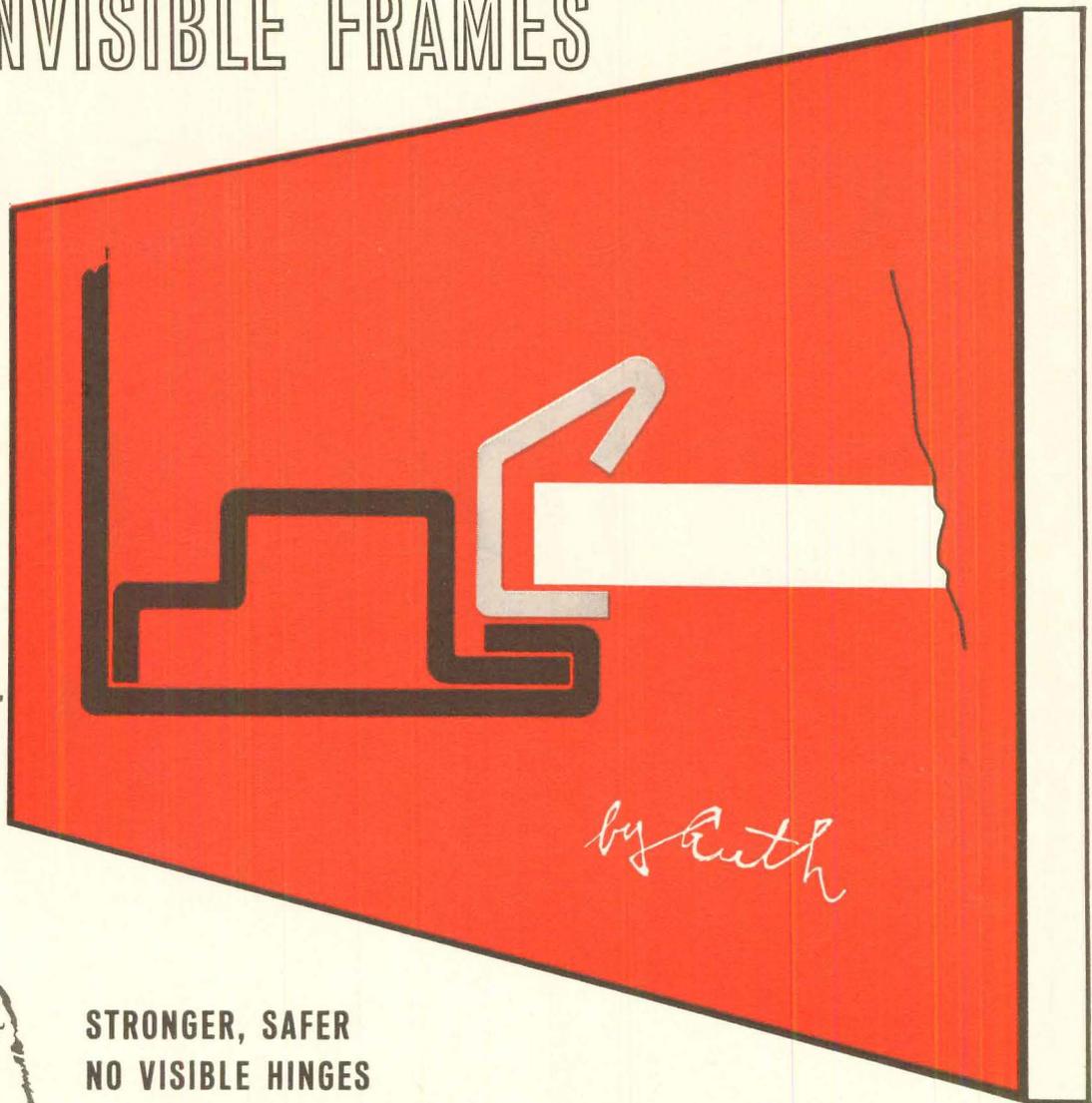
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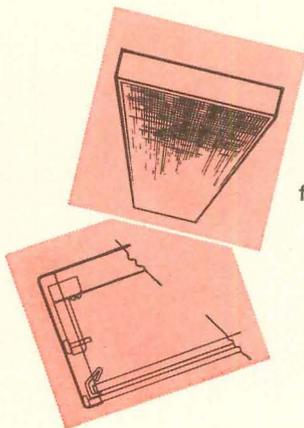
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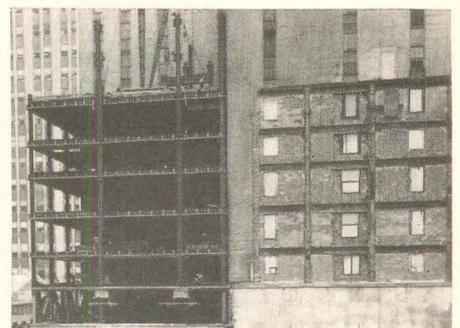
Old Tiffany Building,  
New York, N. Y.



Praetorian Life Building,  
Dallas, Texas



Wellington Apartments,  
Rittenhouse Square,  
Philadelphia, Pa.



Chemical Bank New York Trust Building,  
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... the architectural metal

The average age of buildings facing remodeling is a tender 15. The buildings shown here are only a few of many recent building rehabilitation jobs. Some are less than a dozen years old; others are old-timers. They all have one thing in common: a *steel* frame.

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In building occupancy, as with everything else, there is nothing as constant as change. And change at ever greater acceleration. So when you pay for a new building, *don't forget the change*. Build with steel.

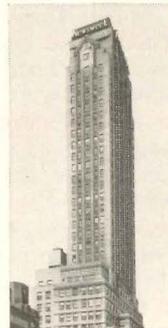
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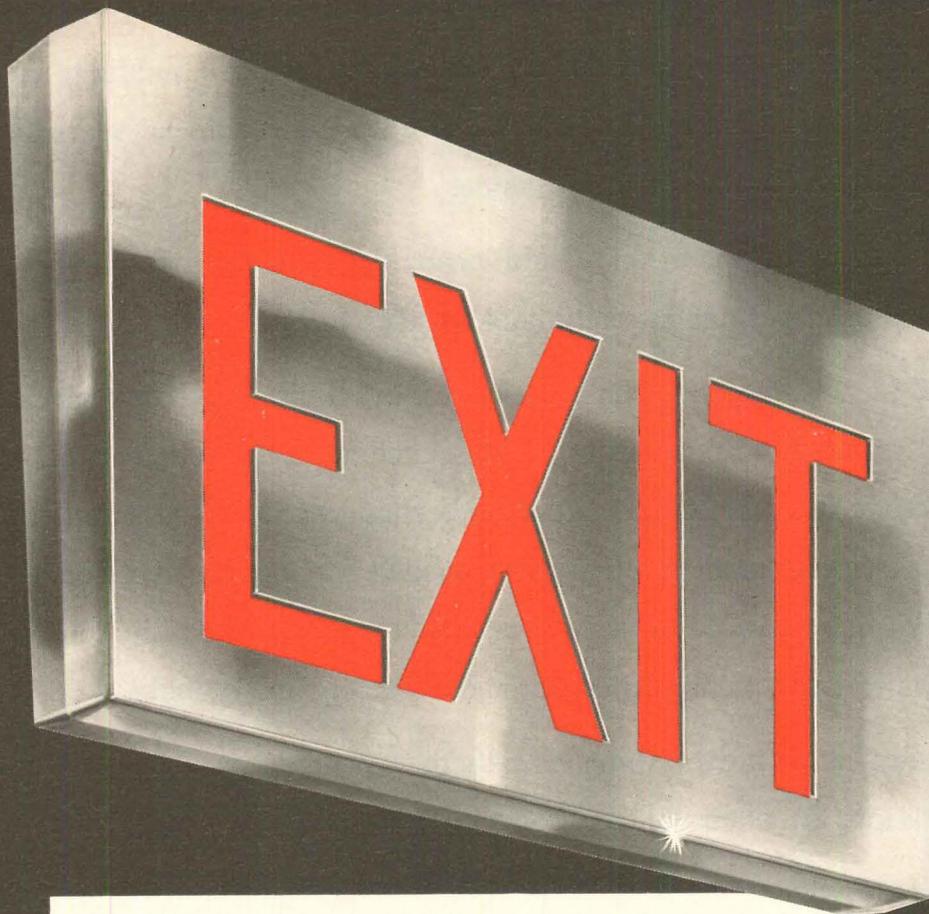


Houston Museum of Fine Arts,  
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**COMPACT HOUSING** tapers from 1 7/8" to about 1". Twin face units utilize same slender housing as single face units and require but one wiring assembly and one set of lamps.

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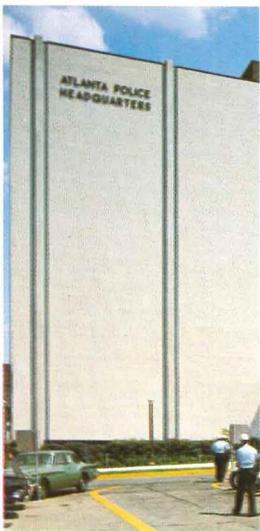
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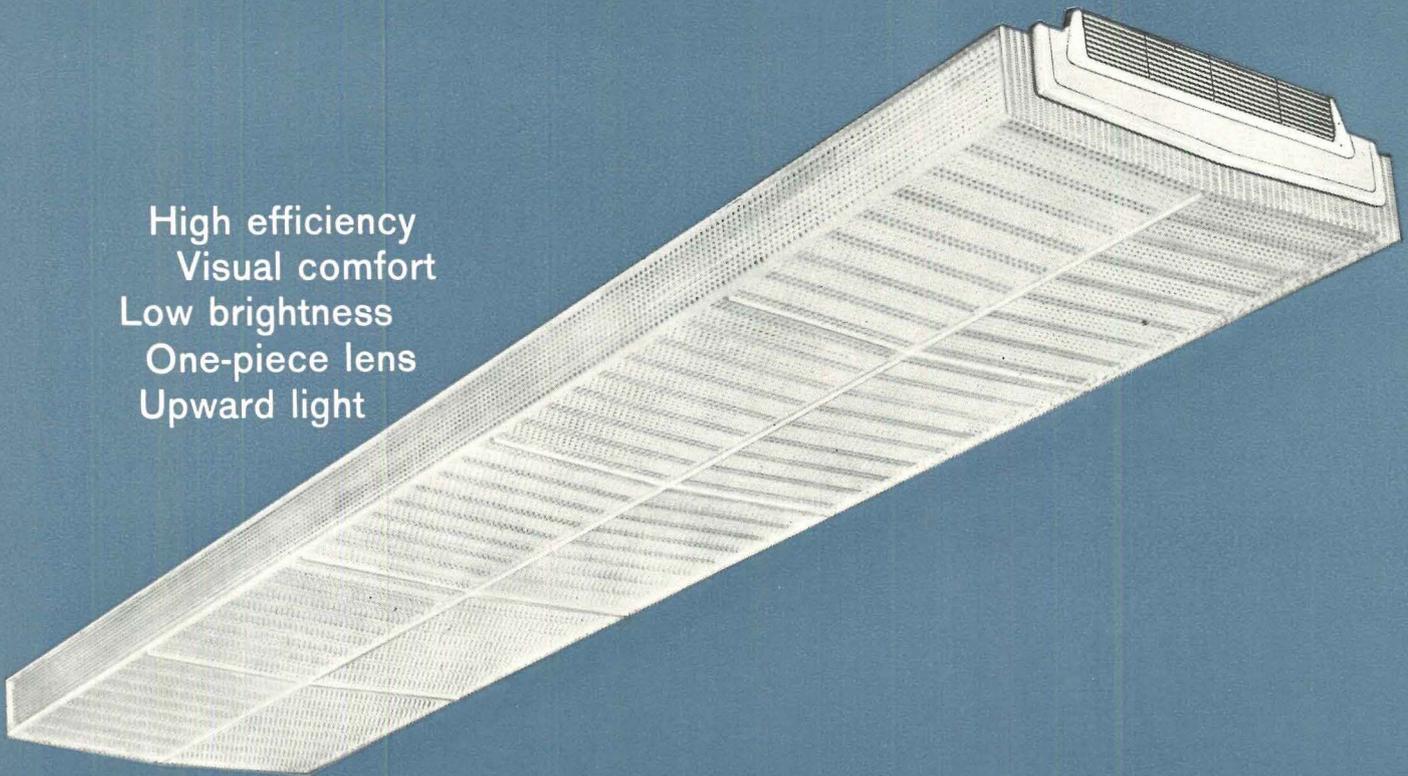
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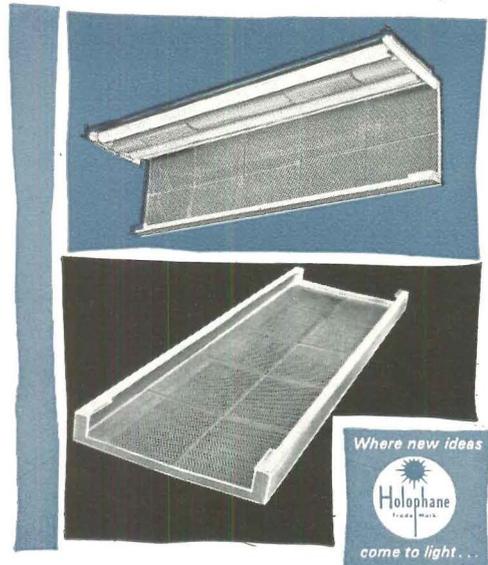
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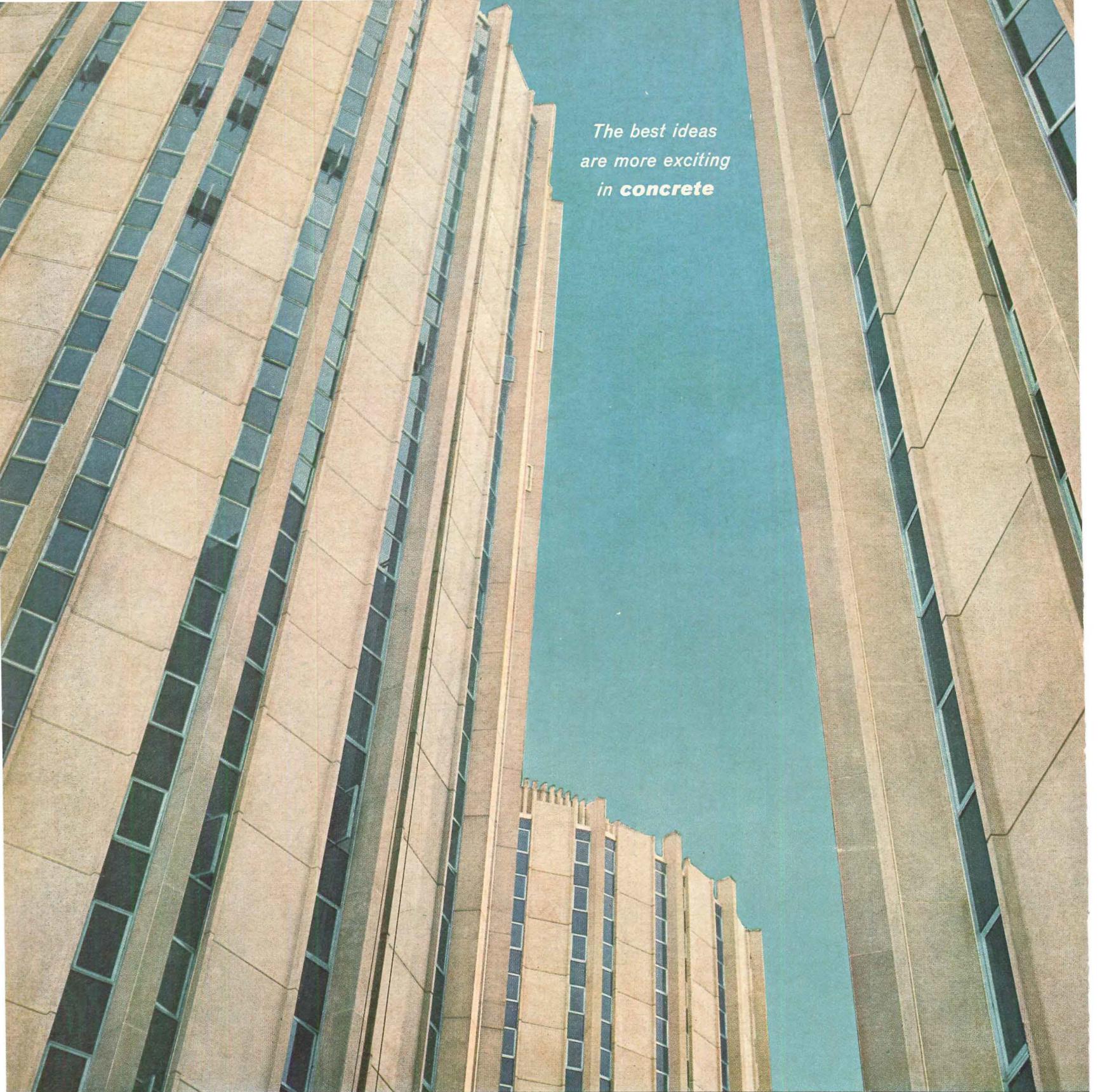
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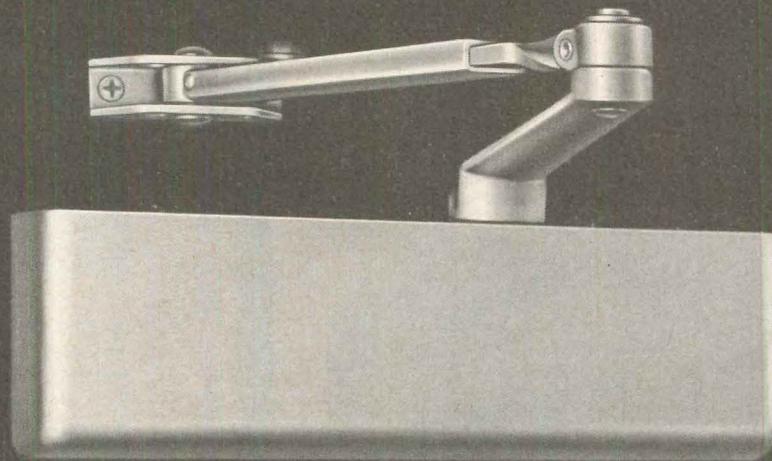
The new dormitory towers for men at the University of Pittsburgh adapt to the modern scene the traditional house system used in England for centuries. Here the "houses" are separate, self-contained units each 3 stories high, stacked one above the other in the circular towers. Each of the 1,868 resident students enjoys an outside room.

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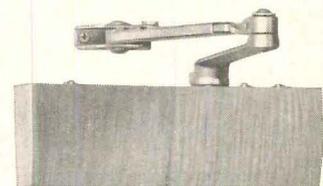
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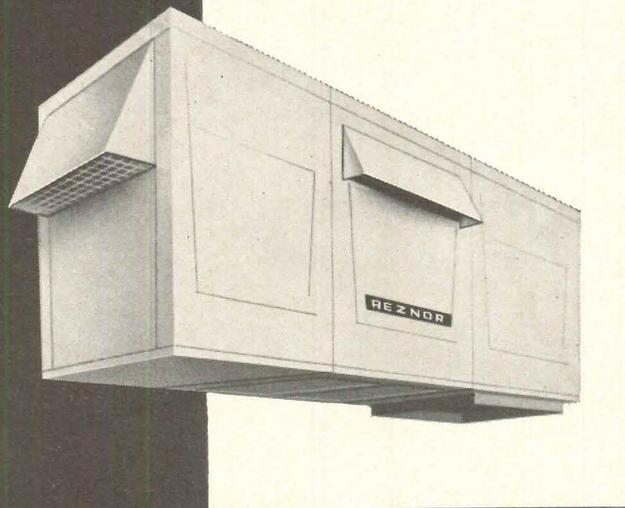
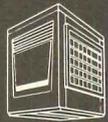
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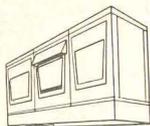
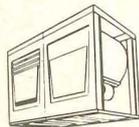
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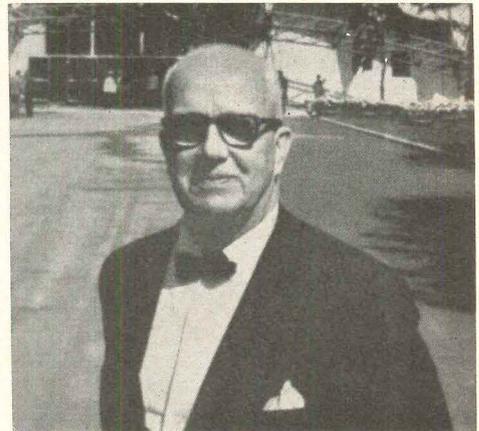
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**IDEAS AND INTEGRITIES.** A Spontaneous Autobiographical Disclosure. By R. Buckminster Fuller. Published by Prentice-Hall, Inc., Englewood Cliffs, N.J. 318 pp. 6" x 9". Illus. \$6.95.

At one time or another, Richard Buckminster Fuller has tried to re-invent almost every item in his environment—from his own spectacles to mathematics, automobiles, geography, the English language, anthropology, the re-utilization of scrap metal, diets, socialism, and bathroom plumbing. Once he even spent two years saying not a single word to anyone (including his wife) in order to force himself, as he put it, to "understand what it was I was thinking."

Actually Bucky Fuller, as he reveals in this astonishing autobiography, is five people rolled into one. He is, for example, the High Priest of the Geodesic Cult, and in this capacity he employs one of the standard devices of High Priests and Cultists—mumbo jumbo. Sample: "Tools were consummately wedded *principles*, as function couples, as variably functioning couples, differentiated out of experience, abstracted (or generalized), in terms of ratios of advantage and ratios of anticipated stress proportionment—all objectively translated into the mathematically manageable but infrasensorial principles governing synergetic chemical structures." (Is there a translator in the house?)

Bucky No. 2 is a charming, modest, kindly genius who can write, in this same autobiography: "What impressed me about me . . . was that I was so very average," and who can also write, heartbrokenly, and in very simple words, of the death of his first child—some 45 years after the event.

Bucky No. 3 is a brilliantly incisive critic who can point out, with unerring clarity, that the famed Bauhaus school's infatuation with technology was only skin-deep, and that the Bauhaus was concerned not with logic (or logistics) but with machine-aesthetics.

Bucky No. 4 is the dome-man, and most of us know Bucky for his domes. They are great, of course, especially if you happen to be operating a Distant Early Warning system, or if you are in urgent need of a great big train shed.

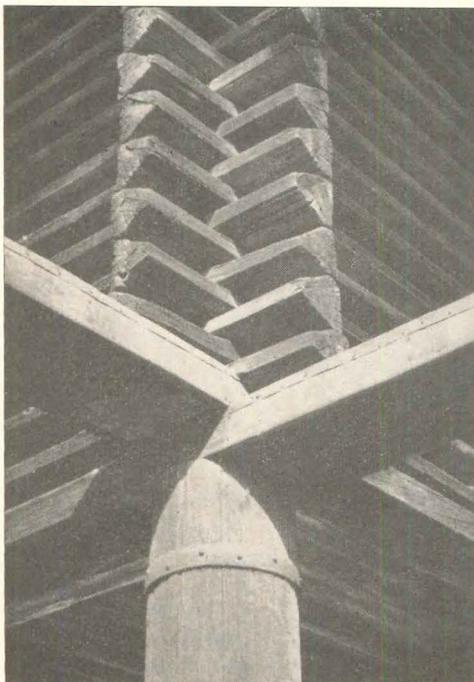
Finally, there is Bucky No. 5, one of the very few designers in this century to understand the nature of the world's basic problems. To this Bucky, mankind is about to explode to a 6 billion population (37 years from now). There are only two ways of coping with this explosion—thermonuclear war, or "comprehensive design," which means (a) strict conservation of our natural resources (shelter, for example, must be designed to produce as much performance-per-pound-of-material-invested as possible); (b) rational allocation and distribution of food, medicine, and other basic necessities throughout the globe; (c) the employment in all decision-making processes of people thoroughly familiar with the technological realities of our time. Today's politicians do not fit this description; after all, most recent political theories and preconceptions, Bucky points out, have been rendered obsolete by technological innovations.

This is a difficult book to read from start to finish; it is a much better book to read from finish to start. Each page is, in a sense, a statement of a contemporary problem, followed by a series of incisive, unexpected, wildly imaginative questions. The genius of Richard Buckminster Fuller is that he knows exactly what questions to ask, and in which order. But Bucky is, above all, a poet and an artist. And he is that rare contemporary poet who does not despair of the human condition—P.B.

**THE ROOTS OF JAPANESE ARCHITECTURE.**

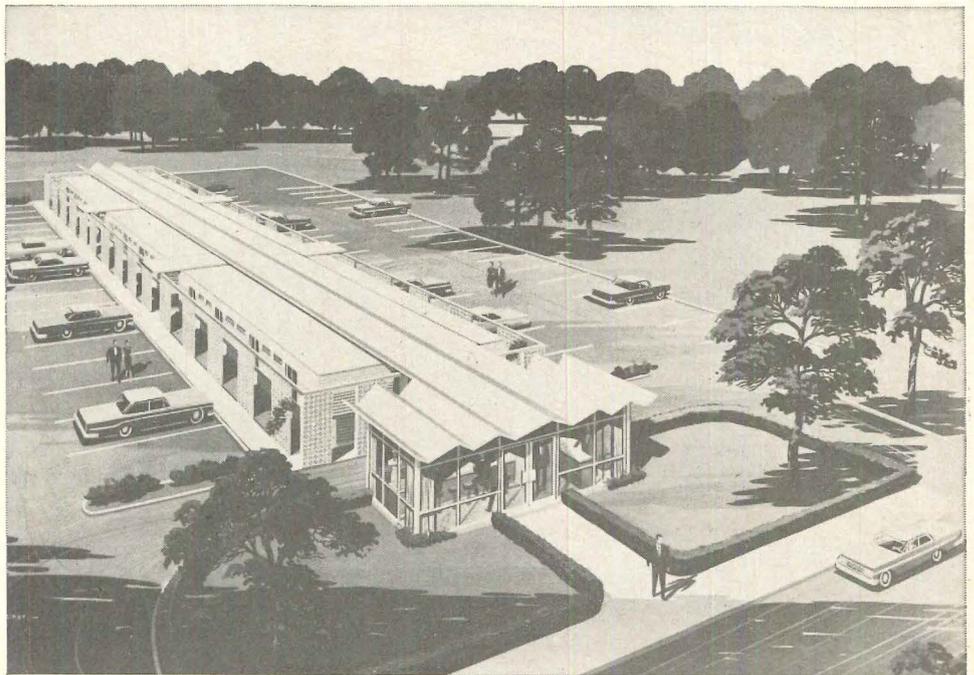
By Yukio Futagawa and Teiji Itoh. Published by Harper & Row, Publishers Inc., 49 East 33rd Street, New York 16, N.Y. 207 pp. 10 1/4" x 13 1/2". Illus. \$25.

In this truly beautiful book, produced in Japan, it is hard to say which is most striking: photographs, layout, text, or the



*continued on page 144*

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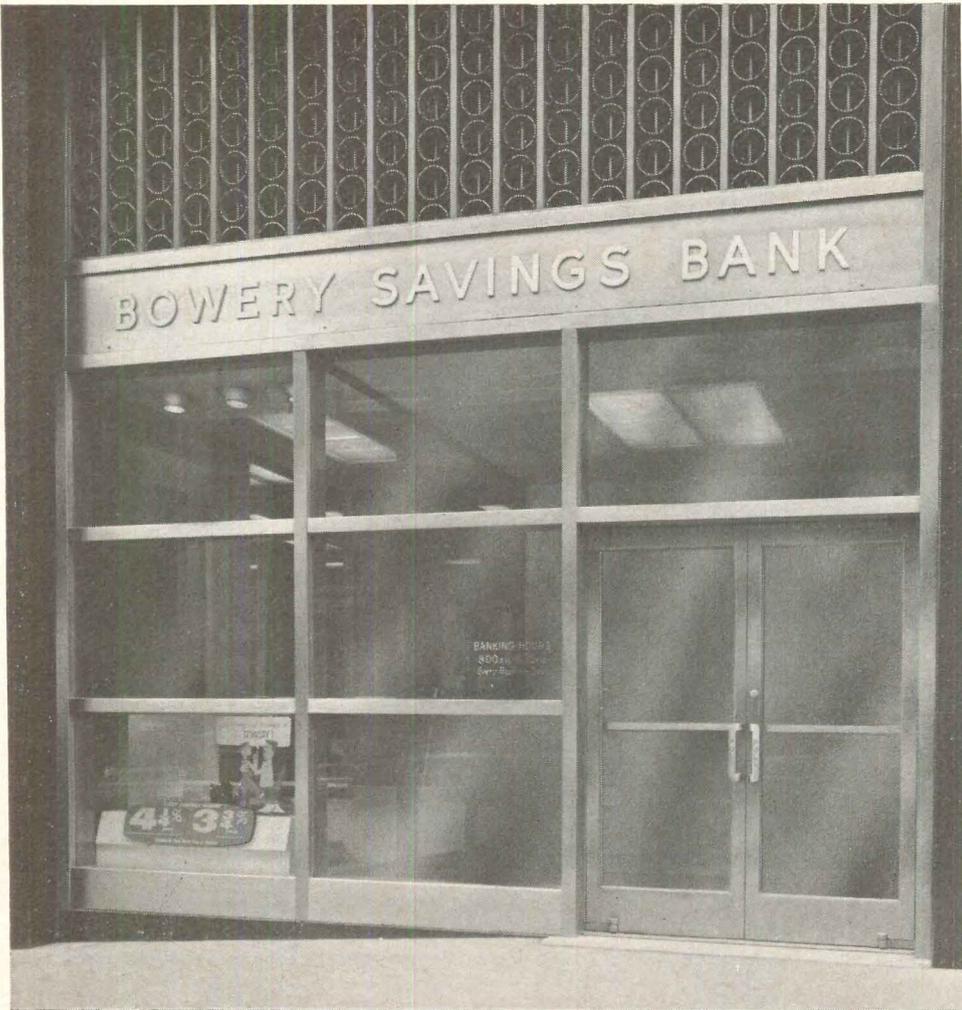


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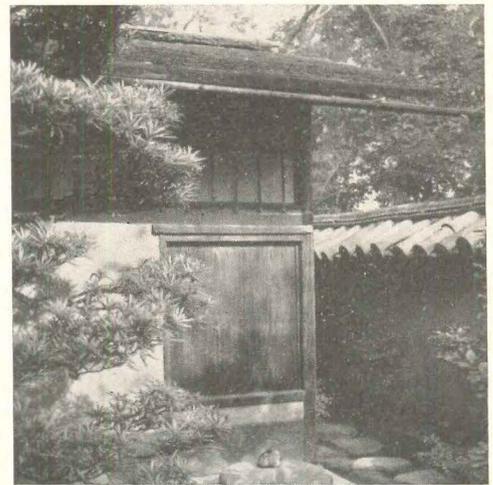
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organization of them all. The foreword by American Sculptor Isamu Noguchi accurately states the book's accomplishment: "its panoramic view has a shape and method which somehow goes beyond popularization to catch, however obliquely, the spirit underlying ancient Japanese concepts of architecture."

As Noguchi also points out, Yukio Futagawa's photographs are "an addition to esthetic experience . . . that some may even find more significant than the physical architecture they record." Even those readers already familiar with the shrines, villas, palaces, and farmhouses shown are bound to find new dimensions and unsuspected facets in Futagawa's magnificent scenes.

As for the text by Teiji Itoh (with translation by Paul Konya), it is perhaps not surprising that a Japanese critic's explanation of Japanese architecture can make a complex subject more comprehensible than many a long-winded Western interpretation. (Example: the Japanese enclosure "set a limit to infinity on the outside, and on the inside it recreates a miniature universe, a new infinity of its own."—A.P.C.)



**AN ARCHITECTURAL JOURNEY IN JAPAN.**  
 By J. M. Richards. Published by the Architectural Press, 9-13 Queen Annes Gate, London SW 1, England. 192 pp. 7 1/2" x 10". illus. \$6.

The rather factual little title which *Architectural Review* Editor J. M. Richards has chosen for his new book does it a disservice—if not an injustice. He has written a highly diverting account of a two-and-a-half week visit to Japan in 1962, which he made at the invitation of the Japanese Foreign Ministry "to look at buildings and meet Japanese architects." What he calls "simply my personal impressions" are just that—written in the form of a day-by-day diary with engaging candor and charm.

If anything, the reader might be afraid at first that Mr. Richards will never land (he spends four pages of small print describing the jet flight from London to Tokyo). His book is sometimes reminiscent of letters from the favorite nephew on his

first Grand Tour who tells you what he had for dinner everywhere, and what the temperature was. But, as in the case of the nephew, you forgive him because of his infectious enthusiasm and because he takes you into his confidence on so many interesting if unessential details (e.g., the Japanese do *not* all look alike; Japanese food is very different from Chinese food; Japanese architects are "refreshingly free from the arrogance architects often display in the West"; Geisha girls are "to the Westerner anyway, without much sex appeal").

Mr. Richards' book is also full of down-to-earth information. In spite of traveling at an exhausting clip, he gives a clear picture of Japan's outstanding post-war buildings. From Tange to the youthful "Metabolism" group of urban planners, he managed to meet a majority of the most active architects and see their work. Thumbnail sketches of 18 of these men are included in the back of the book.

Excellent photographs and drawings are distributed so as to correspond directly to the text—a most happy combination for readers tired of thumbing through pages to see what the author is talking about.

**STRUCTURE AND FORM IN JAPAN.** By Werner Blaser. Published by Wittenborn & Co., 91 Montgomery St., Scarsdale, N.Y. 207 pp. 9 1/4" x 9 3/4". Illus. \$15.

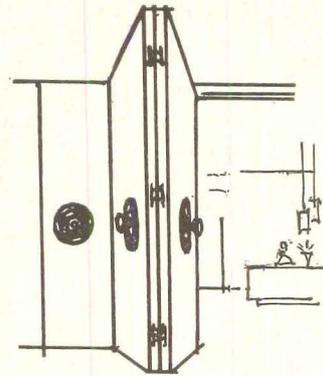
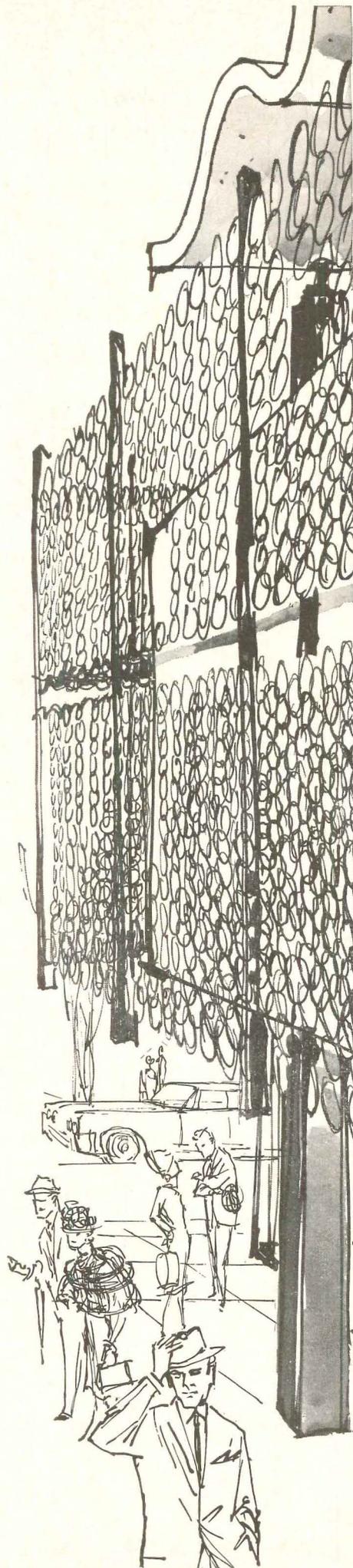
Japan's classic architecture, from the imposing Imperial Palace at Kyoto to the most delicate tea pavilions, is illustrated by a large selection of photographs and drawings in this attractive book. The text (in both German and English) does a straightforward job of trying to explain the intricate designs, and the "exquisite sensibility" with which nature and man, structure and form were integrated into mysterious (to Western eyes at least) yet infinitely pleasing buildings.

**ARCHITECTURE: FORMES & FONCTIONS, 1962-1963, VOLUME 9.** Edited by Anthony Krafft. Published by Editions Anthony Krafft, Lausanne, Switzerland. American Distributor: Wittenborn and Co., 1018 Madison Ave., New York 21, N.Y. 287 pp. 9 1/4" x 12". Illus. \$7.50.

American publishers must turn green with envy every year when Anthony Krafft produces another of his architectural annuals, printed on top-grade paper with beautiful photographs (many in color) presented page after page in first-rate layouts. To make it even more galling, Mr. Krafft can afford to offer all these attractions at a bargain price.

This year's edition presents a number of interesting and varied articles, among them: "The Aims of Architecture" by Marcel Breuer, with a photographic retrospective of his work from 1936 through the IBM Research Building at La Gaude, France (1962); a presentation of seven new U. S. embassies with an article about our foreign

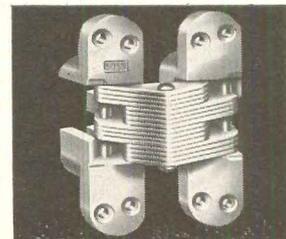
*continued on page 148*



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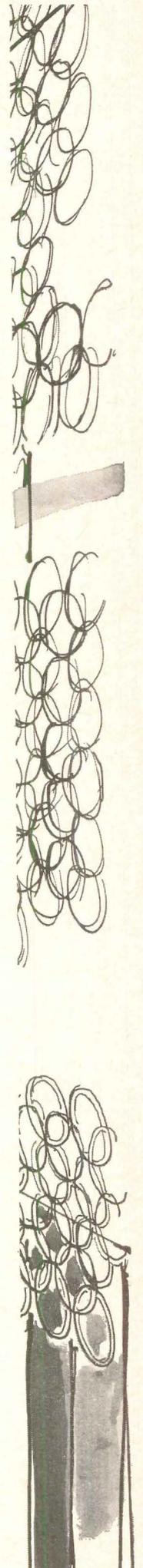


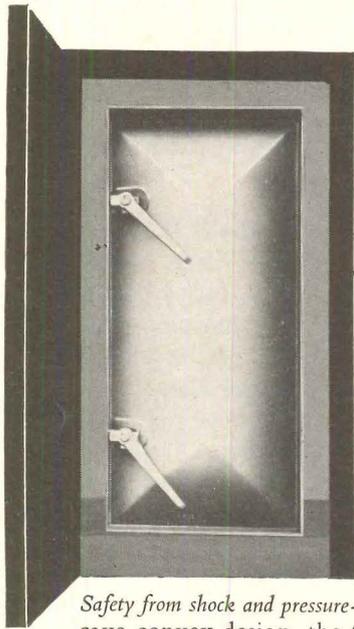
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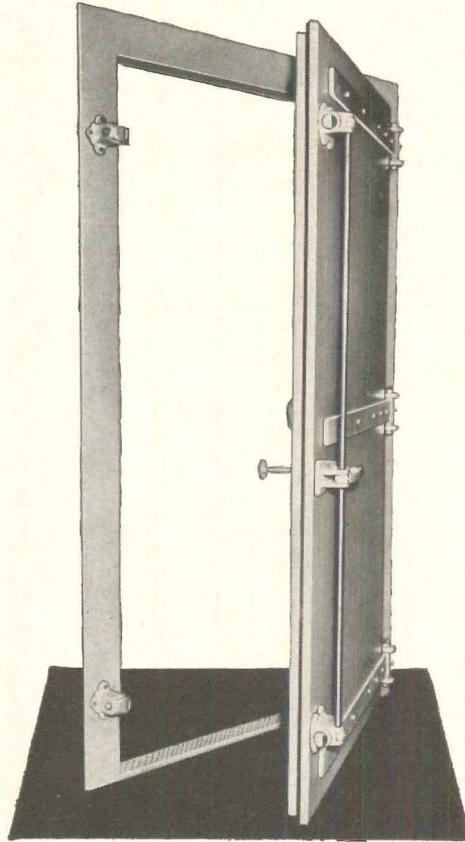
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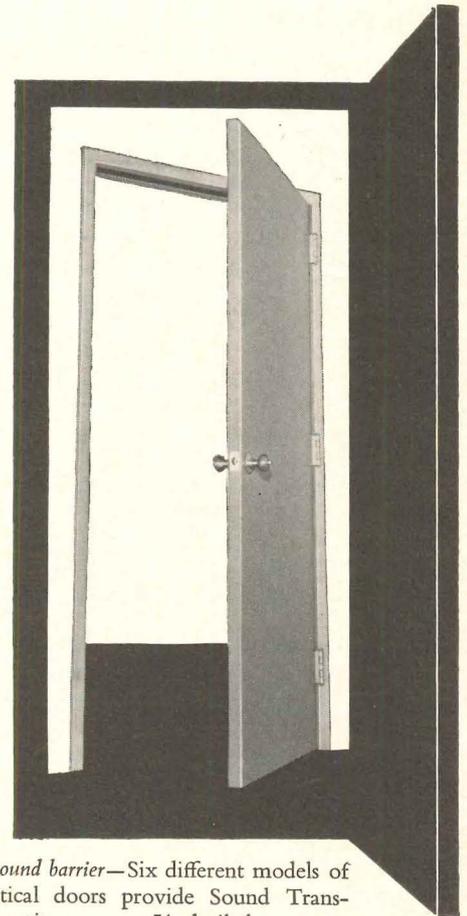




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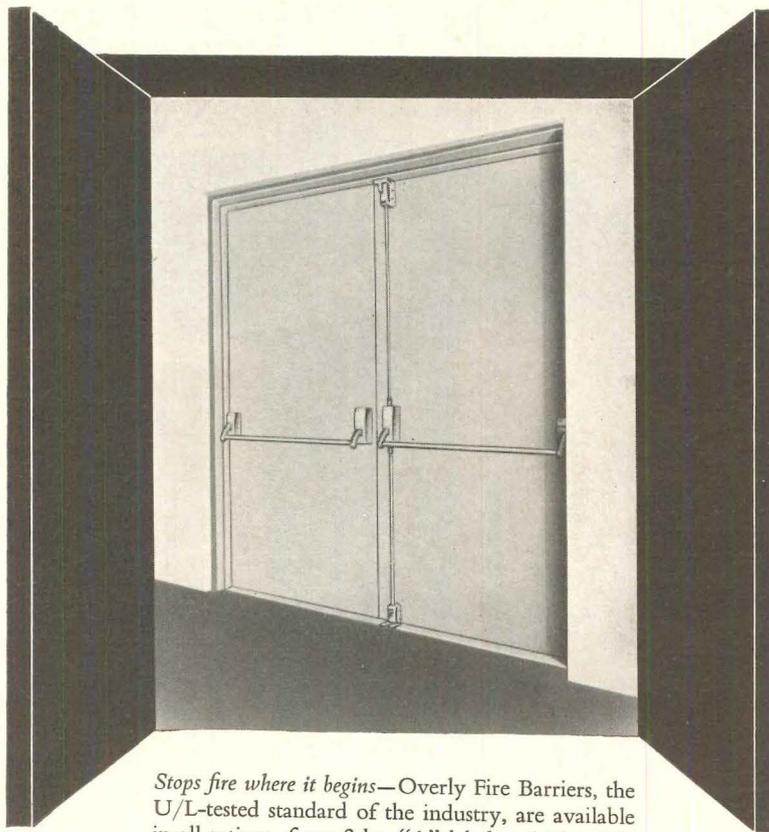


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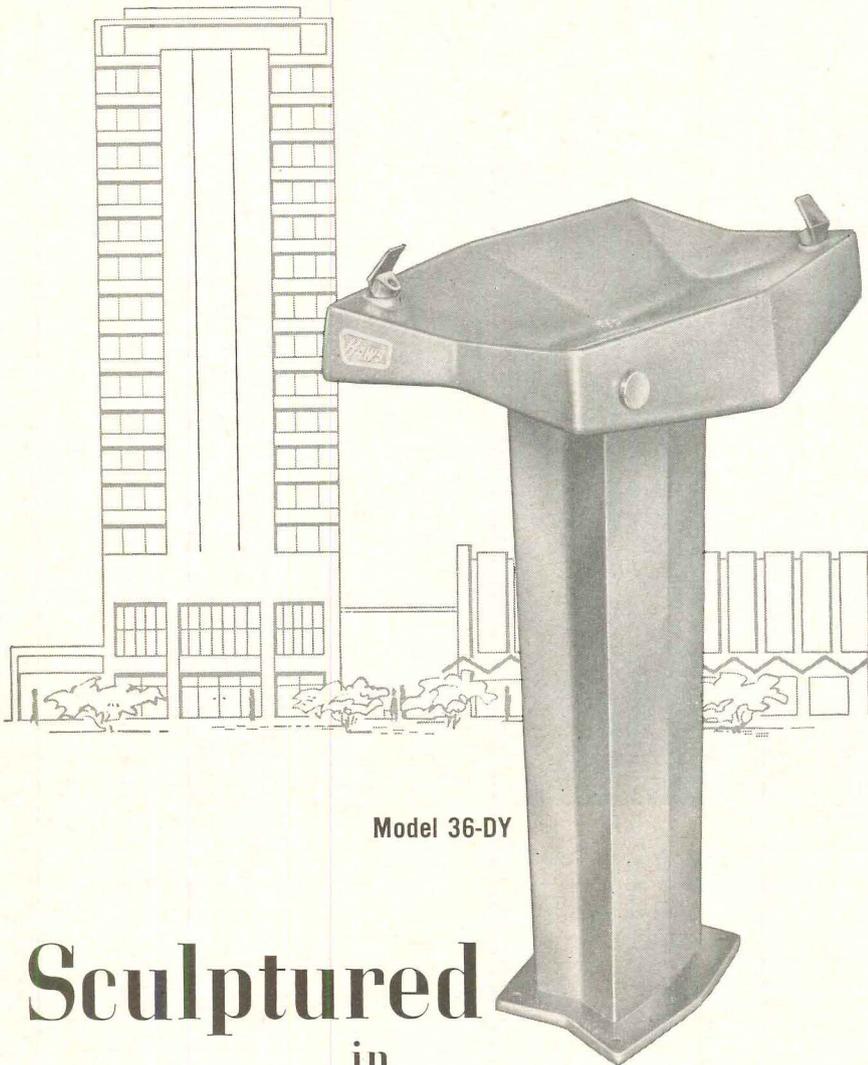
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building program; an account of the late Swiss Architect Jean Tschumi (1904-1962) and his work; "Relationships among the Plastic Arts" by André Bloc; articles on the post-war expansion of European cities and architecture of 18th and 19th Century Islam. Also included is the usual review of Swiss architecture, of which there are many excellent examples this year. The text is in French, but ample English translations are included.—A.P.C.

### A HISTORY OF ENGLISH ARCHITECTURE.

By Peter Kidson and Peter Murray. Published by Arce Publishing Co., Inc., 480 Lexington Ave., New York 17, N.Y. 256 pp. 6" x 9". Illus. \$5.95.

This novel-sized guide to English architecture begins, properly enough, with the Anglo-Saxons and ends with the rebuilding of Coventry Cathedral, although modern British architecture gets comparatively short shrift. The book is intended to guide visitors around the stately homes and cathedrals, armed with background on their history and that of the men who built them. The text is informative, yet it has the consistency of an English pudding—solid and filling, but not enough raisins. There are illustrations, to be sure, but it is frustrating to read about buildings, and especially design comparisons, without plans or photographs to illustrate the authors' points.

### ARCHITECTURE IN BRITAIN: 1530-1830.

Fourth Revised Edition. By John Summerson. Published by Penguin Books, Baltimore, Md. 391 pp. 7¼" x 10½". Illus. \$16.50.

This fourth edition of Mr. Summerson's volume in the Pelican History of Art Series has been considerably expanded and revised in accordance with studies made since the original book appeared a decade ago. The main text, illustrated with plans and photographs, describes British architecture from Early Renaissance to post-Waterloo Greek and Gothic Revival—including the work of Inigo Jones, Christopher Wren, Vanbrugh, Robert Adam, and John Nash. Architecture in Scotland and the American Colonies during the same period is included in two long, separate appendices.

**MANY GOLDEN AGES.** By Frank MacShane. Published by Charles E. Tuttle Co., Rutland, Vt., 264 pp. 8¾" x 8½". Illus. \$10.

For anyone contemplating a leisurely round-the-world tour, this book provides exhaustive detail on ruined temples from Egypt to Thailand, and such ancient cities as Persepolis and Angkor Wat, all generously illustrated in color and black-and-white photographs, drawings, and plans. There are ten chapters, each covering the ruins in one area, a summing up, and a short travel guide at the end. Nearly all the places visited lie some distance from the nearest town, so the author gives practical pointers on means of travel and places to stay. END

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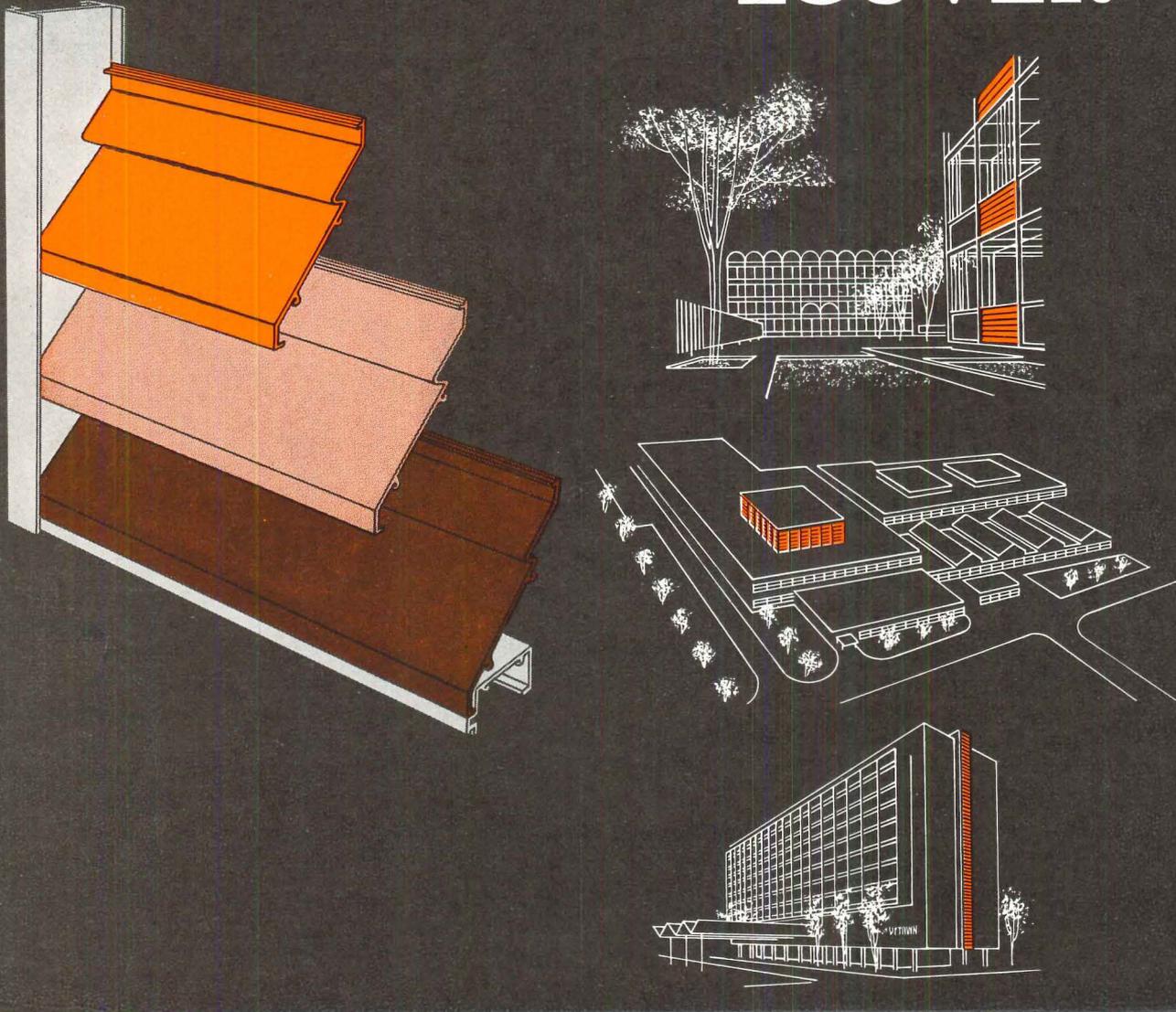
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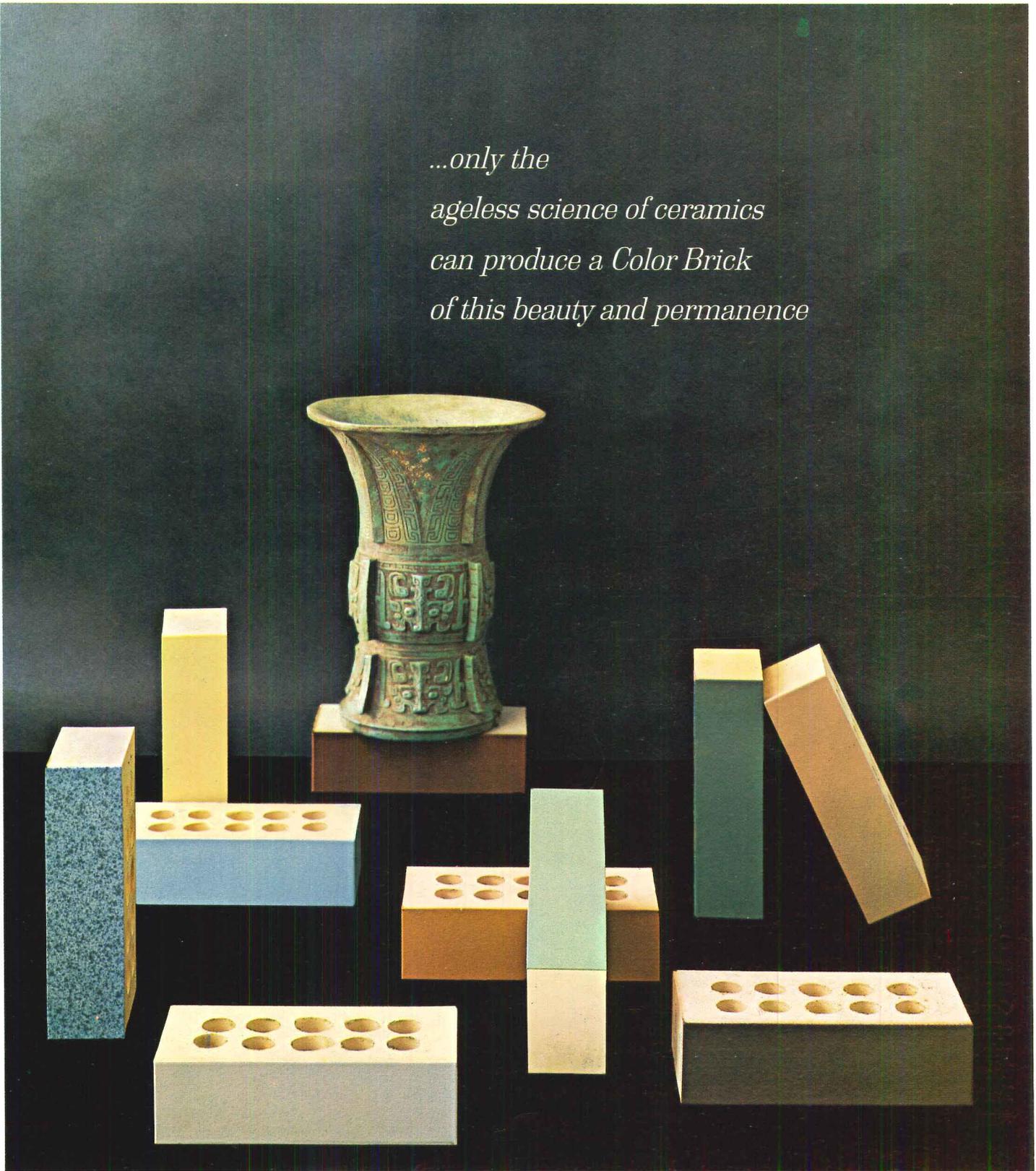


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*...only the  
ageless science of ceramics  
can produce a Color Brick  
of this beauty and permanence*



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*for the discriminating architect, designer and builder*

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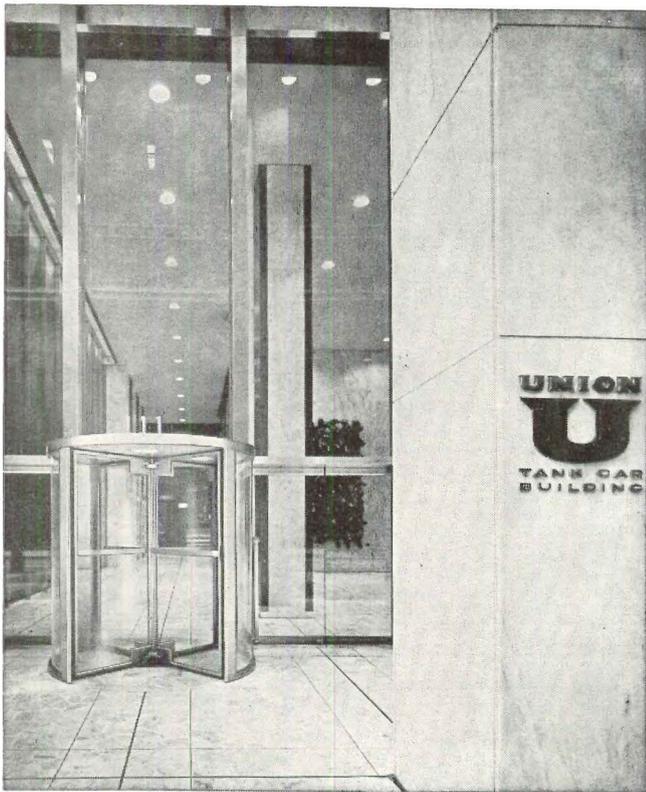
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 Architects: A. Epstein & Sons  
 Contractor: George A. Fuller Co.  
 Agent: Collins Tuttle and Company, Inc.  
 A winner of an "Office of the Year" award sponsored by  
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 the beauty of solid bronze  
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Panels of nonfading Glasweld echo the color of sky and deep water on this striking new high-rise apartment



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- Weldwood Doors catalog

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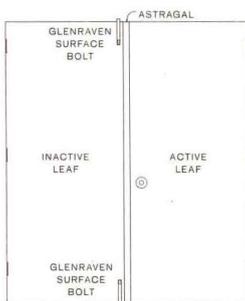
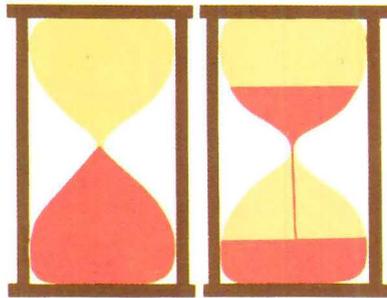
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Furthermore, the new 1½-hour-rated Fire Doors may be included in a complete schedule of Weldwood Doors, supplied machined and finished to your specifications.

*For technical data on the new fire doors and complete information on all Weldwood doors, send in coupon on the opposite side of this page.*

**WELDWOOD®**

**FIRE DOORS**

*Products of United States Plywood*

# NEW 60" WIDE COOLITE heat absorbing glass

*Fortified with MISCO, Diamond-Shaped Welded Wire*

Thanks to advances in manufacturing techniques, Mississippi has answered the demand for the production of Coolite glass up to 60" wide. To our knowledge this is the first time that domestically produced, heat absorbing, obscure wire glass has been made available in this width. In line with the trend toward larger glazed openings, it extends the field of usage in today's functional architecture for this attractive, blue-green pattern.\* And the inclusion of popular Misco, diamond-shaped welded wire, contributes added appeal to this long established and favorably regarded product—a recognized fire retardant. Specify Coolite, heat absorbing glass, the glass engineered to afford better light . . . better sight . . . greater comfort.

\*Recommended maximum size for Coolite wire has been increased from 10 sq. ft. to 20 sq. ft.

Send for new  
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Catalog. Free  
Sample, with  
or without  
special Glare  
Reducing  
finish, on  
request.



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*OF Beauty and Utility with...*

**COOLITE**  
HEAT ABSORBING GLASS



Coolite, Glare Reduced, installed in Pacific High School, San Leandro, California.  
Architect: Schmidts, Hardman & Wong, Berkeley, Calif. Glazing by W. P. Fuller & Company

**SPECIFICATIONS  
NEW WIDE COOLITE**

**1/8" LUXLITE COOLITE**

plain, maximum width 48";  
maximum length 132"

**1/4" LUXLITE COOLITE**

plain (not wired), maximum width  
60"; maximum length 144"

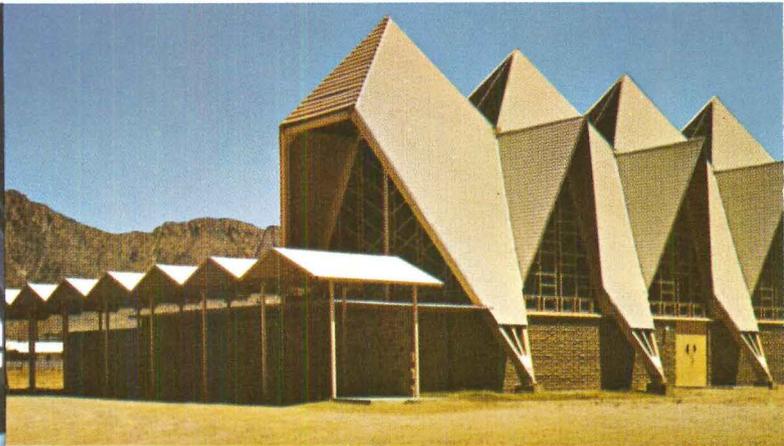
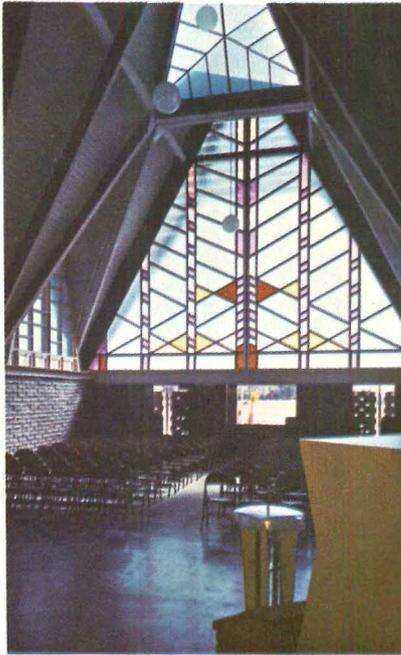
**1/4" LUXLITE COOLITE  
MISCO**

(diamond-shaped welded wire)  
maximum width 60"; maximum  
length 144"

**NOTE:**

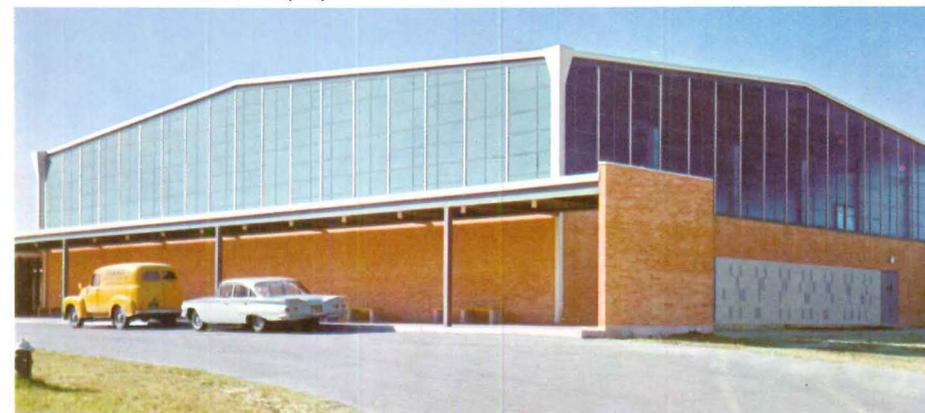
Recommended maximum size for  
Luxlite Coolite Misco (wire) has  
been increased from 10 sq. ft. to 20  
sq. ft. No maximum limit on 1/8" or  
1/4" Luxlite Coolite, plain.

Coolite, heat absorbing glass, controls light  
and temperatures in Parkway Consolidated  
School, St. Louis, Mo. Architect: Schwarz  
& Van Hoefen. General Contractor: Swan  
Construction Company.



Coolite wire glass graces Prince of Peace Lutheran Church,  
Phoenix, Ariz. Glazing Contractor: W. P. Fuller & Company.

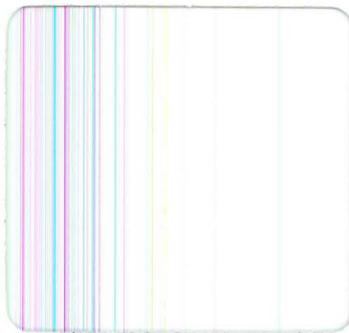
Coolite wire glass spans western elevation in  
Belleville Township High School gymnasium,  
Belleville, Ill. Associated Architects: Charles  
E. King & Wesley W. Chorlton.



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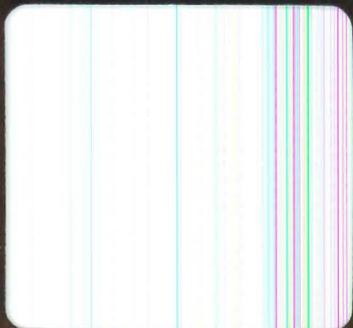
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SUPERIOR TO OTHERS



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hurricane winds and rain  
can make it leak!**

In tests conducted by an independent laboratory, the new Kawneer Sealair Window performance was far superior to that of other well-known windows of conventional design in both water and air infiltration.

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Sealair performance was also superior when tested for air infiltration . . . *less than .2 c.f.m.*  
. . . *far better* than industry standards.



\*Patent Applied For



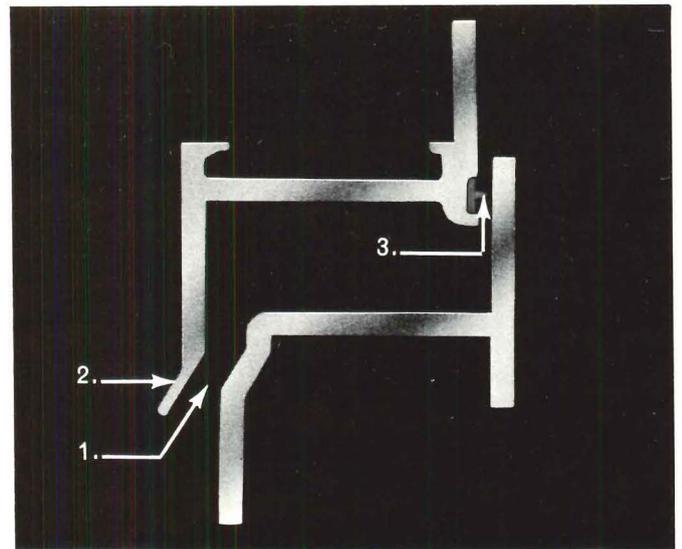
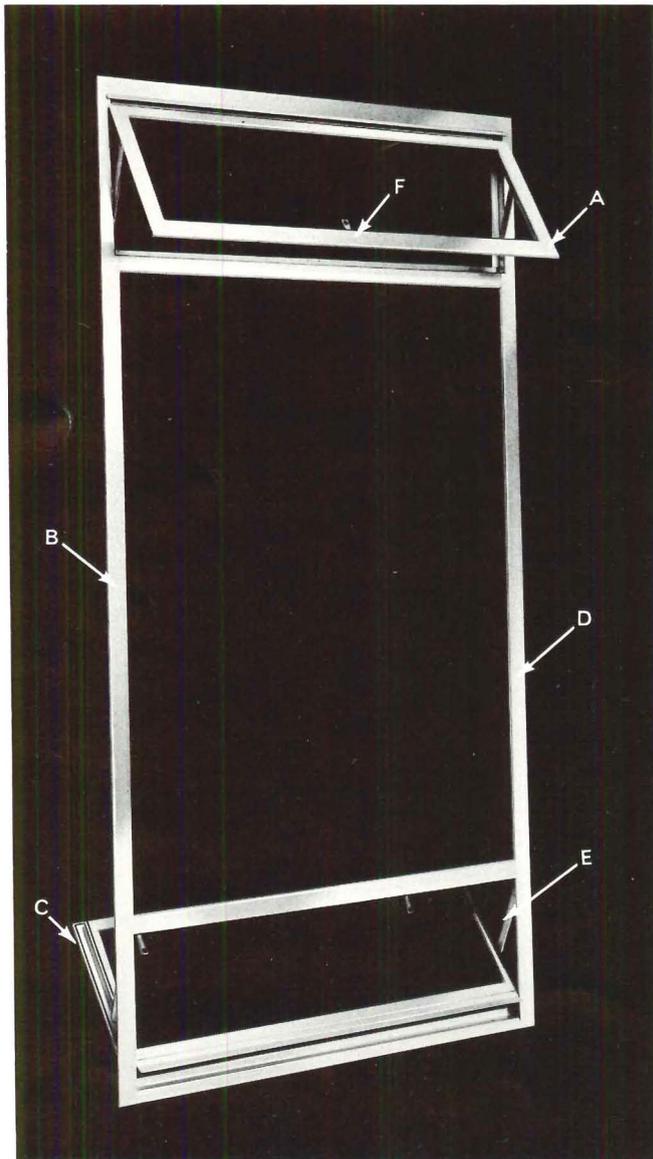
*Here's proof . . .*

## Here's how Kawneer Sealair Windows solve the weathering problem

Kawneer prevents leaking with exclusive Pressure Equalization Slot—When storm winds blow, air pressure inside a building is lower than outside pressure. Hence, conventional windows build up a partial vacuum within the window sections. Water is drawn through weatherseals and collects inside window sections faster than weepholes can drain it. The water flows over the window legs and damages building interiors.

Kawneer's Pressure Equalization Slot *keeps water out*. Pressure within the window sections is equal to pressure outside the building. No pressure difference—no partial vacuum—no leakage.

**Triple Weather Guard**—1) Pressure equalization slot, 2) integral drip, and 3) neoprene weatherstrip. The Sealair window offers triple weather protection . . . Weathering where needed . . . Scientifically designed.



## More reasons why the new Kawneer Sealair outperforms any other window

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**C. Continuous Neoprene Weatherseal**—Best available weatherstripping material, specially designed to prevent flattening. Applied continuously at corners by factory specialists to maintain positive protection against wind driven water, dust and air.

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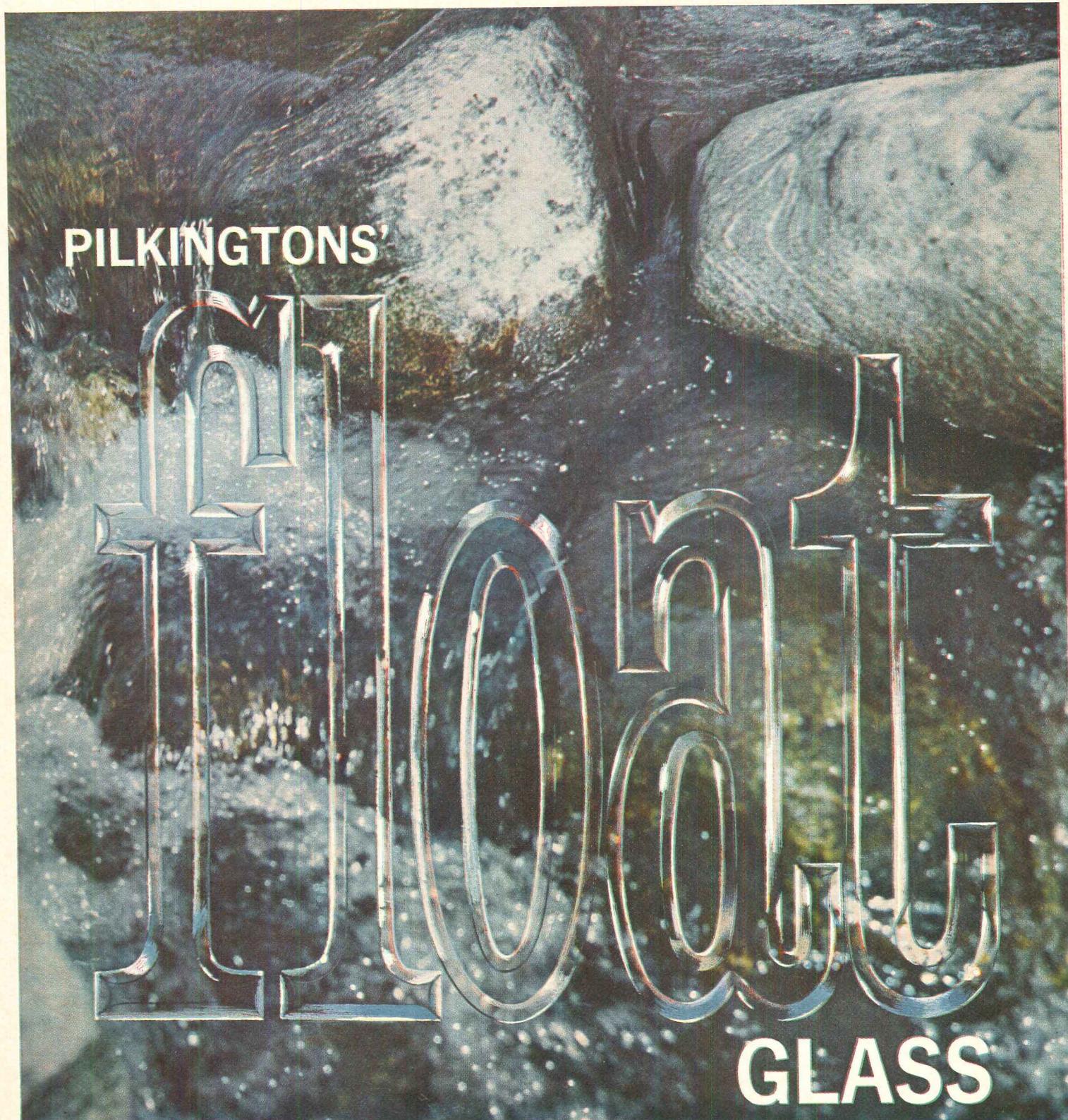


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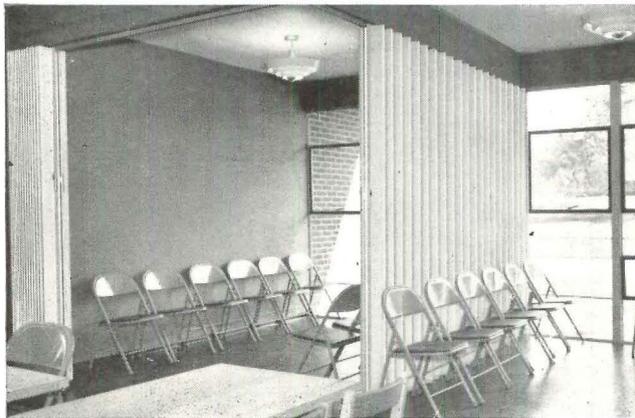
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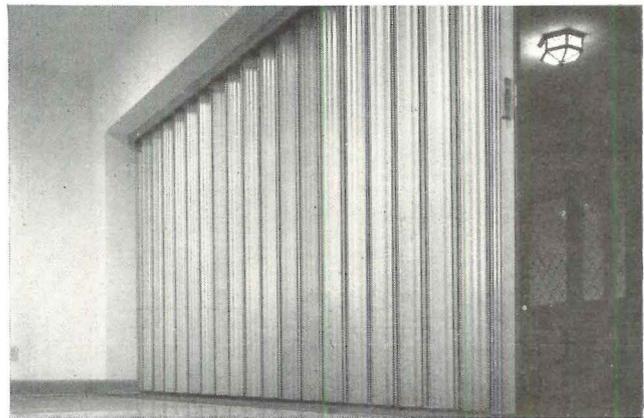
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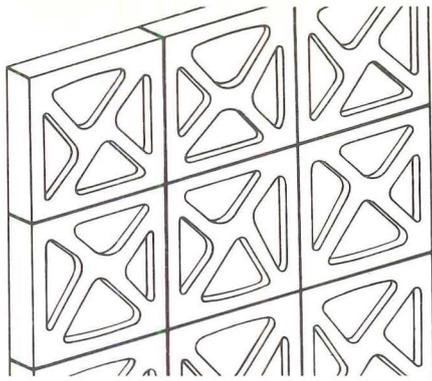
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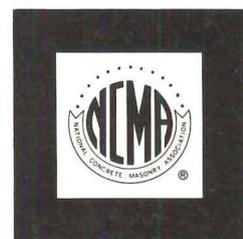
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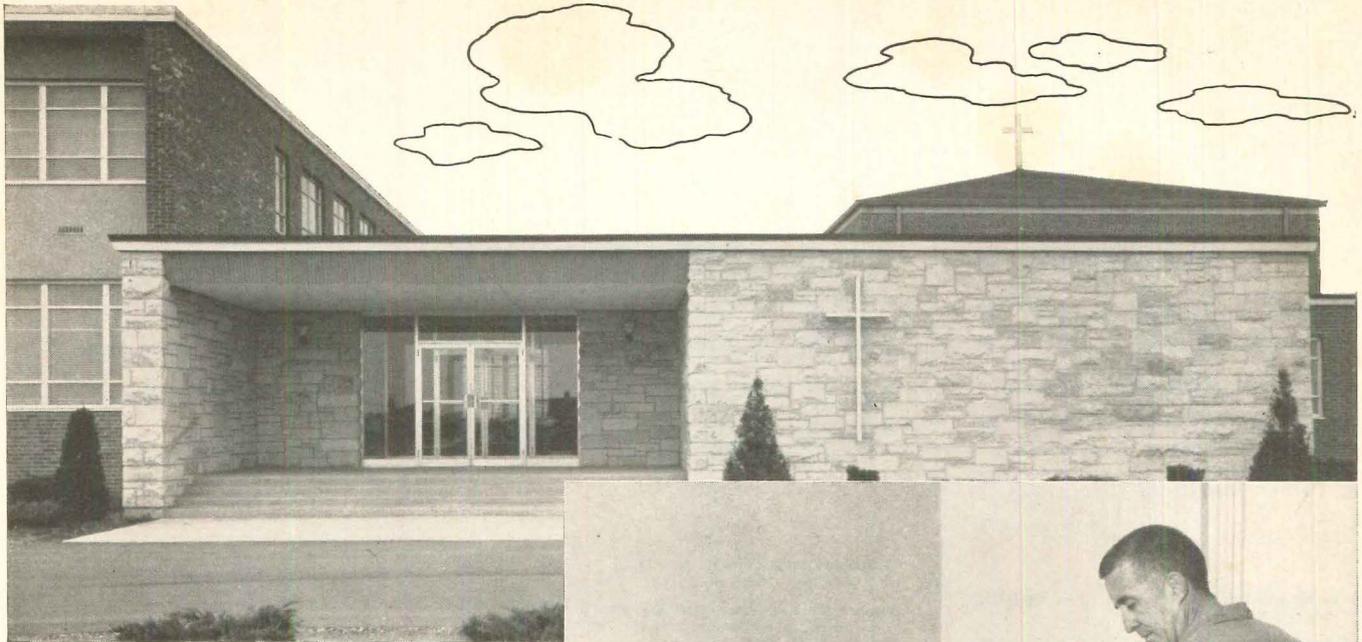
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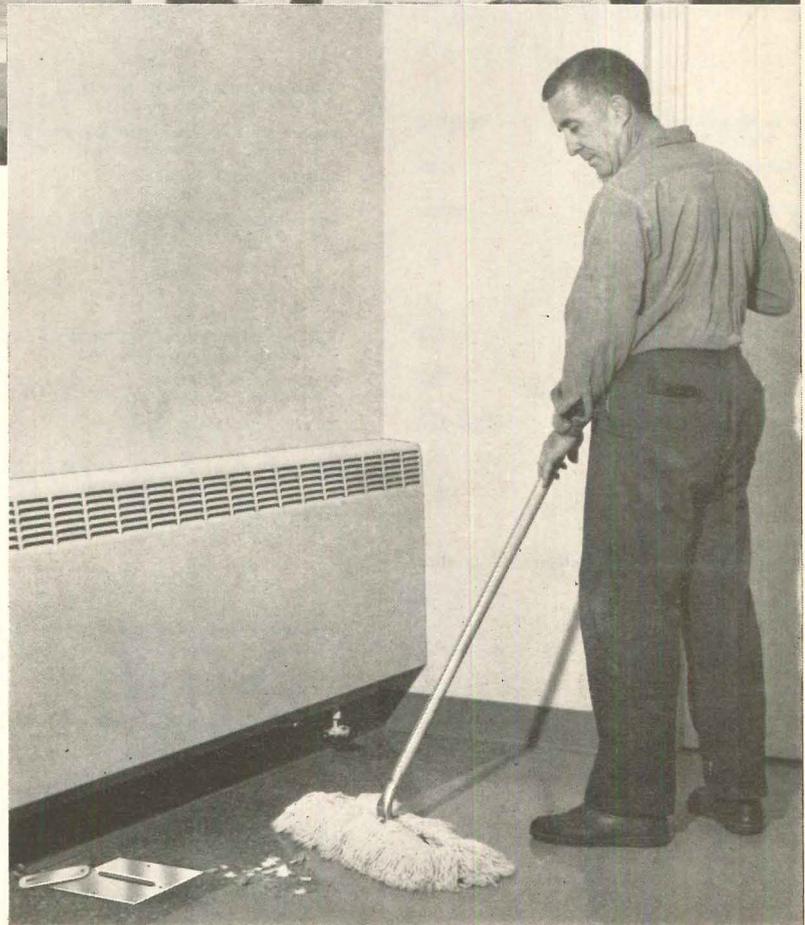
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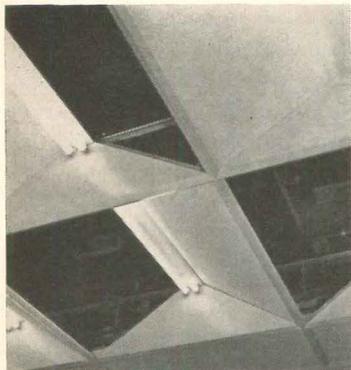
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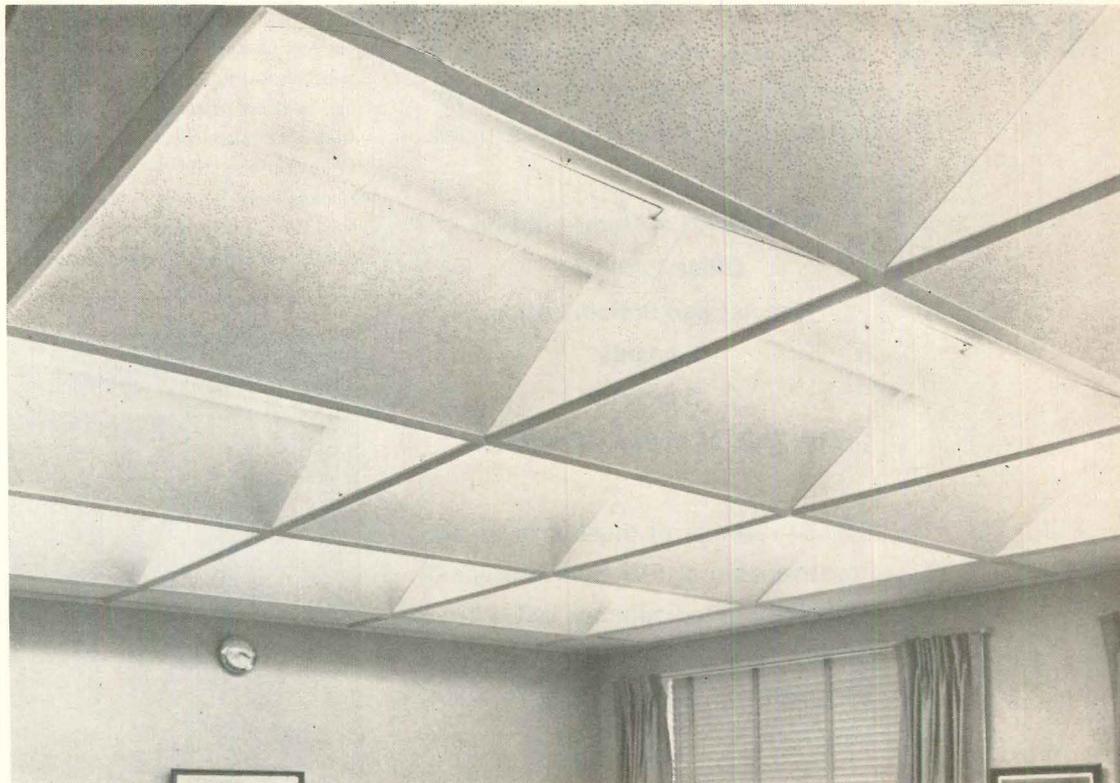
Two new ceiling systems (below)  
 Pressure-equalized window (page 170)



**INTEGRATED CEILING**

Armstrong Cork Co. has introduced a new, totally integrated ceiling, the *Luminaire A-50 System*, combining lighting, ventilating, and acoustical control in unusual inverted "V" modules 50 inches square (see photos). The Luminaire system is built on runners 100 inches long (detail) which support two modules and are hung from wires or rods. Light fixtures for one, two, or three standard 48-inch fluorescent lamps are set on top of the main runners, and cross tees inserted at the lower edge. Sloping panels of Armstrong's acoustical board, pierced with numerous holes for ventilating, are set on the metal framework.

Lamps can be left bare or covered by plastic shielding diffusers hung from the fixture.



The system offers the advantages of uniform, glare-free light, in varying brightness based on the number of tubes per module. Lighting efficiency is very high.

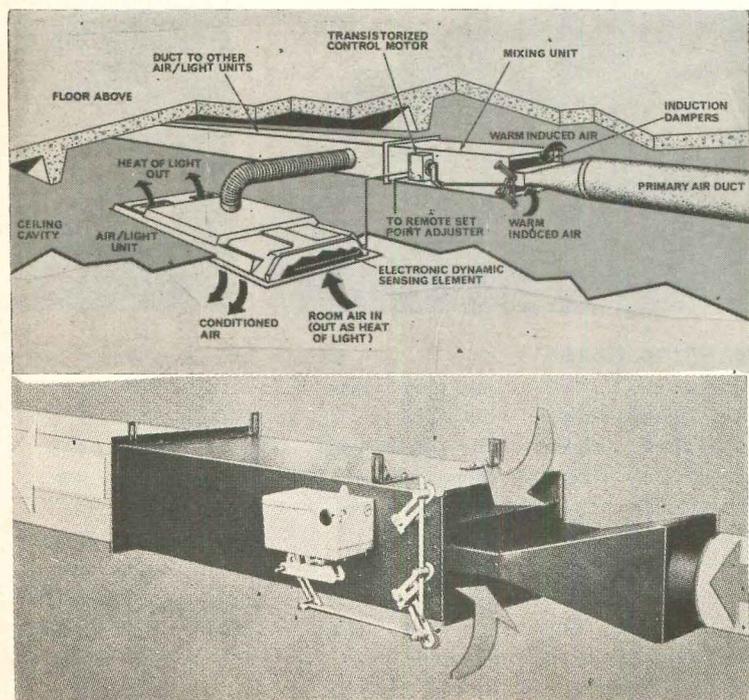
Air is forced in from a regular pressurized plenum system, which assures uniform air distribution and keeps the ceiling clean by keeping dust off it. The lamps

are also cooled to optimum operating temperatures.

Since each module is a complete lighting and ventilating unit, partitions can be placed under any point in a Luminaire ceiling grid without impairing its function. The cross tees and runners are 2 inches wide to accommodate most partitions. Maintenance

advantages result from the self-cleaning feature, ease of changing lamps (especially without diffusers) and the "push-up" acoustical panels which permit access to plenum equipment above. Cost of the complete system: about \$2.50 per square foot, installed.

Manufacturer: Armstrong Cork Co., Lancaster, Pa.



**"HEAT-OF-LIGHT" SYSTEM**

A new "Heat-of-Light" system has been announced by Barber-Colman Company, in cooperation with Day-Brite Lighting, Inc.

The system uses the Day-Brite/Barber-Colman *Clymatron* light fixture which circulates room air over the lights and returns heated air to the ceiling plenum. The new *Jetronic* air unit (photo) takes air from a cold supply duct and mixes it with the heated air from the lights. An electronic thermostat set in the *Clymatron*'s return air slot controls the mixture of warm and cold air.

The system removes heat from the lights, and it provides accurate local control of air temperatures through a dual-air system but avoids the expense of a second duct. The manufacturer

estimates savings of 10% over conventional systems.

Manufacturer: Barber-Colman Co., 1300 Rock St., Rockford, Ill.



**VERSATILE SAW**

From England comes the *Cengar Saw*, a 5½ lb. air-powered tool which, with its own *Cengar Green Blade*, cuts practically anything (stone, steel, plastic), anywhere (even underwater). The saw has

*continued on page 168*

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no motor: it operates on reciprocating pistons and uses 6 cubic feet per minute of compressed air or bottled nitrogen. A built-in silencer makes the saw practically vibrationless; the 1 3/4 inch blade strokes can be regulated from 0 to 1100 per minute. Although it can use ordinary hacksaw blades,

its own molybdenum Green Blade is highly versatile and durable (a special lubricating system increases blade life). Cost of the saw: \$289.50; Green Blades are \$59 per 100.

*Distributor:* Cengar U.S. Inc., 3112 Montrose Avenue, La Crescenta, Calif.



**AUTOMATIC SLIDING DOOR**

A new automatically operated door called *Auto-Slide* moves sideways into recesses when activated by an electronic floor mat. If power fails, the door can be pushed open manually on concealed hinges like a regular swing-

ing door; with this feature, it has building and fire code approval for public entrances. The doors are aluminum and glass, and come in widths of 2 1/2 to 8 feet. Cost: \$2,500 to \$2,800, installed.

*Manufacturer:* Dor-West, Inc., 1718 Broadway, Seattle, Wash.

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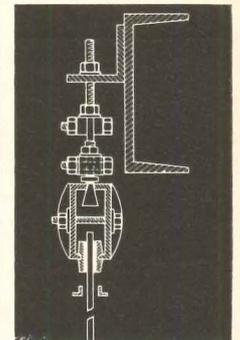
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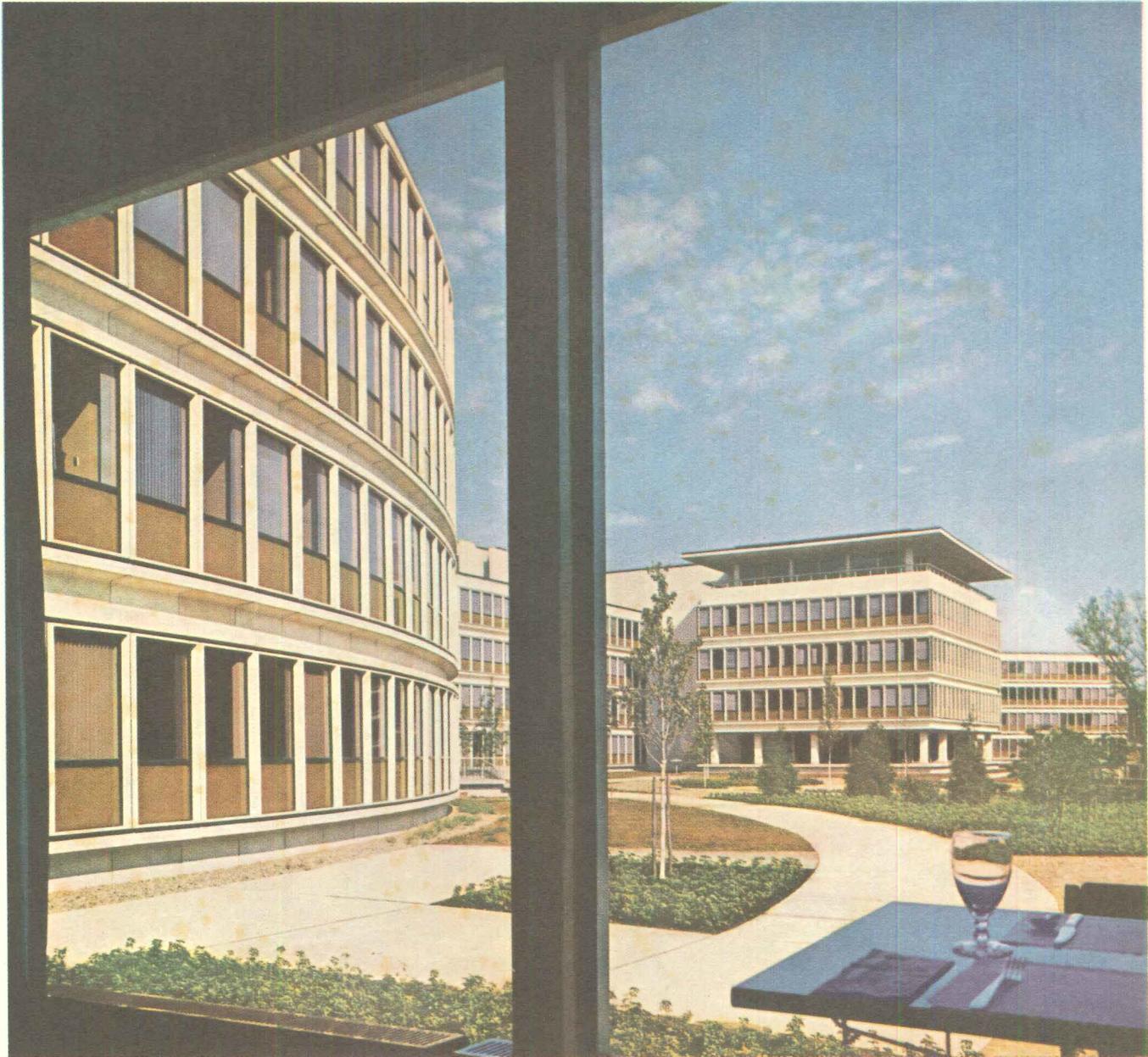


**HANGING GLASS**

A new glazing system imported from Europe suspends the glass from clamps which can be concealed in the roof edge (diagram above). The bottom of the glass rests in a non-load-bearing casing. Narrow glass crosspieces, also suspended, steady large glass walls as the joints, thus eliminating mullions, frames and all visible means of support.

Because the glass hangs free, there is no sight distortion due to the glass flexing from its own weight. There is also less danger of breaking from building motion, and larger lights can be used. The cost is greater than that of regular glazing, but savings are effected by eliminating mullions and frames. *Licensee:* F. H. Sparks Co. Inc., 49 West 45th St., New York.

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Headquarters for American Cyanamid Co., Wayne Township, N. J. Architect: Vincent G. Kling, FAIA. Structural Engineers: Severud-Elstad-Krueger Associates. Contractor: Frank Briscoe Co., Inc. Precast Concrete Manufacturer: "Schokbeton" by Eastern Schokcrete Corp., N. Y.

## VINCENT G. KLING, FAIA, chose precast white concrete

for this award-winning project at Wayne, New Jersey. The long faces of the low, curving building are horizontally scored with deep, concave bands of precast concrete spandrels made with ATLAS WHITE portland cement and exposed aggregate. The spandrel units were precast in 9-foot lengths to equal the width of 2 windows. They are supported on outriggers projecting 18 inches from the outer face of the columns. ■ The effect is a continuous band of dark glass set between the bold projections of concrete spandrels. White, gray and brown aggregates were used in the matrix of tan sand and white cement to produce a creamy-white finish. ■ Today, more architects are selecting precast concrete for the exciting departures it invites in form and color, along with important construction economy.

Any idea of size, shape, texture and pattern is attainable. For specific information about panels, facings and cast stone units, see your local precast concrete manufacturer. For a brochure on precast concrete, write Universal Atlas, 100 Park Ave., N. Y. 17, N. Y.



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