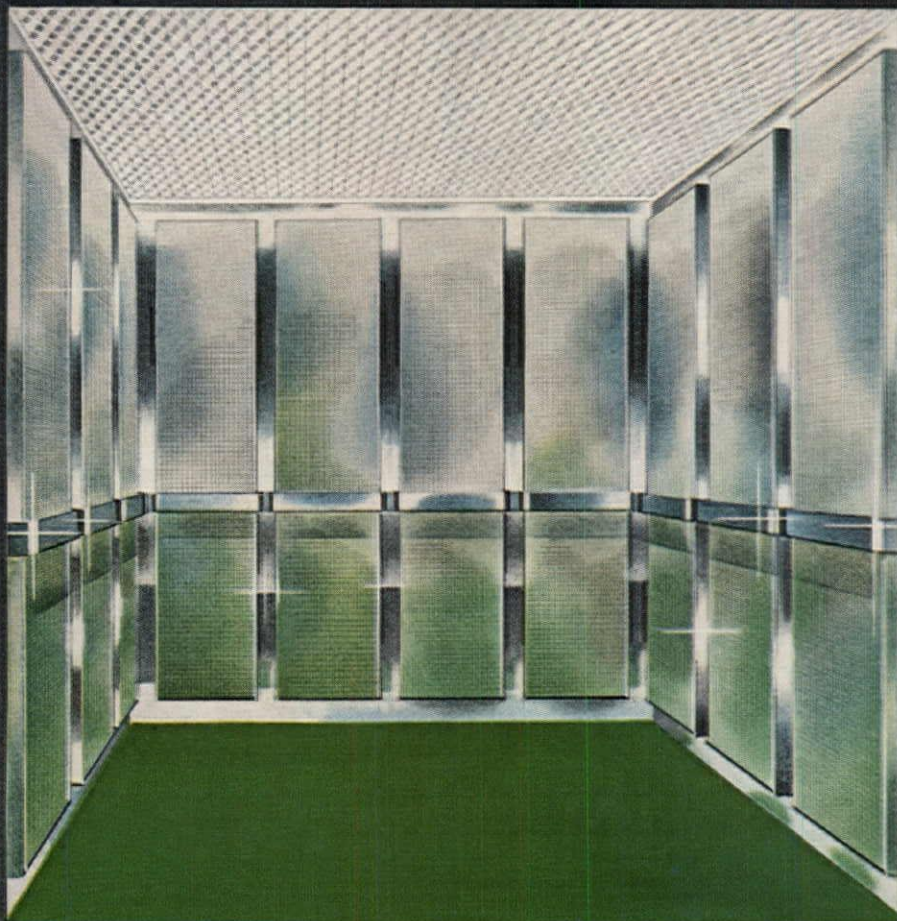


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Cover: Design by Ray Komai based on IBM Research Center; story, page 80.

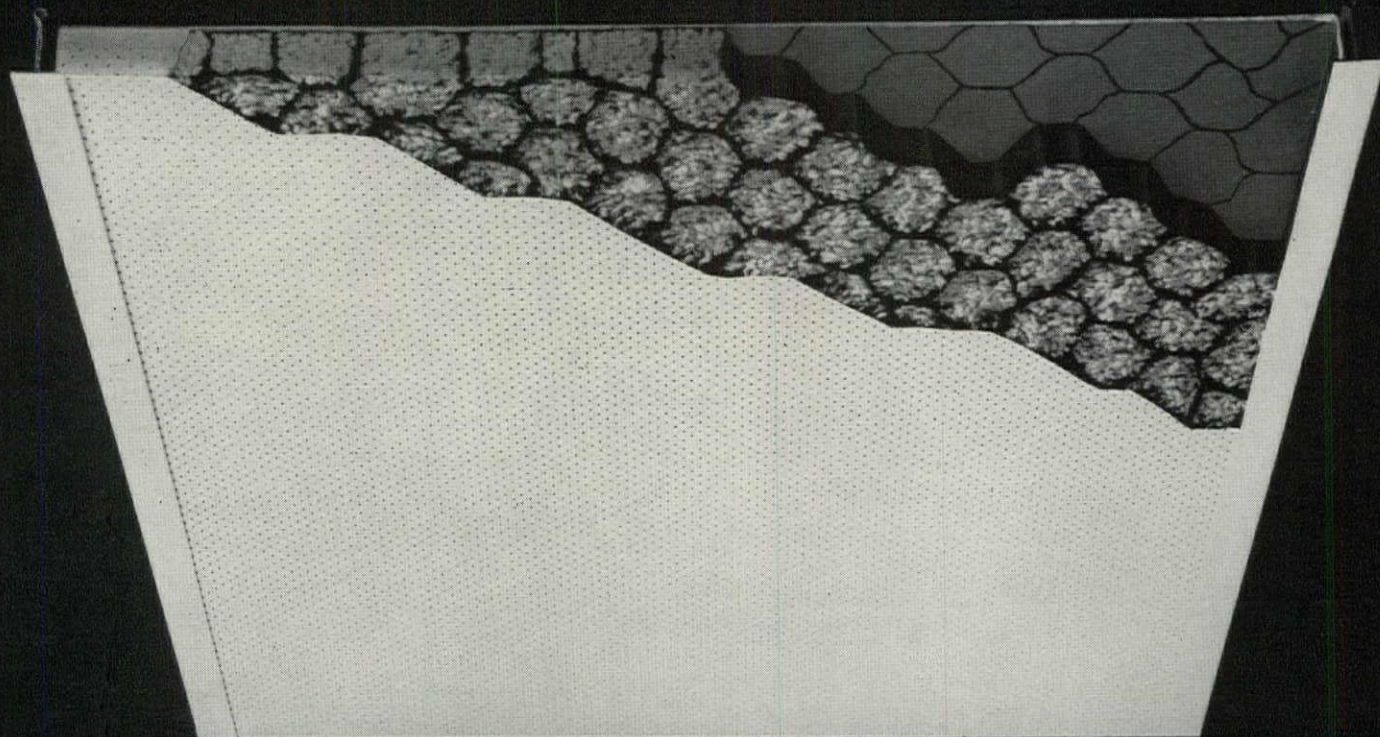
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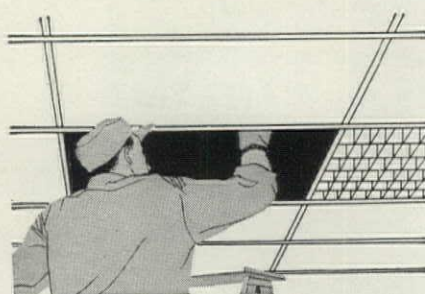
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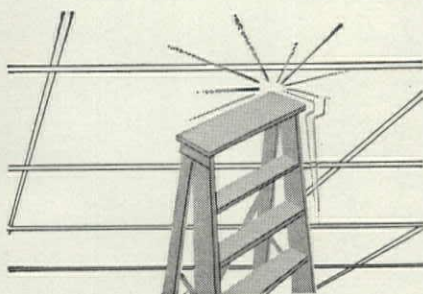
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Kennedy tax plan would cut net cost of building, spur modernization—but hit many investor owners

In President Kennedy's proposed new tax program, now being studied by Congress, are two major changes in the law that could produce substantial reductions in the net cost of many non-residential construction and rebuilding projects, but might also raise economic havoc for many investment real estate owners.

To stimulate greater investment spending for new construction and equipment, and for rebuilding the President proposes to allow taxpayers to take a discount of up to 30 per cent off their regular federal-income tax payments to help pay for such projects. There were qualifications, of course, but the basic formula for the proposed plan is relatively simple.* For capital expenditures for new nonresidential buildings and equipment having a tax depreciation life of at least six years, a taxpayer—individuals as well as corporations and partnerships—could deduct from his otherwise final federal tax bill a sum equal to 10 per cent of the first \$5,000 of approved spending, plus 6 per cent of his expenditures that were greater than 50 per cent of his normal depreciation allowance for the year, plus 15 per cent of his outlays that exceeded his total depreciation allowance for the year. The maximum deduction for any one year, however, would be 30 per cent of the amount he would pay if no such investment incentive plan existed.

Under this proposal a company or individual using mostly rental property and equipment, and thus having a very small depreciation account, but paying a very large annual federal tax, might be able to build or buy a new structure for virtually a 15 per cent discount; and perhaps a few years later it could still recover 100 per cent of its capital invested in the property under a sale and leaseback transaction. Or, to take another example, a large company paying \$7.6 million in taxes, and having an assumed depreciation allowance of \$2 million, could build or buy a new \$10 million office building, factory, or warehouse and obtain a tax reduction of \$1,260,500, or in effect pay only \$8,739,500 for the building—a 12.6 per cent saving.

Tax experts believe that major rebuilding projects in nonresidential structures would also qualify for tax savings under this plan, provided it would take at least six years to de-

preciate them for tax purposes and provided they involved new materials and equipment. The proposed law would permit an owner to pay a substantial part of his rebuilding costs with federal tax-discount dollars and then resell his property for a price reflecting its previous value plus the full cost of the modernization.

The section of the program that might raise economic havoc for investment property owners would strip real estate ownership of most of its present capital gains tax advantages. If enacted, it would allow the present favorable (25 per cent maximum) capital gains tax to apply only to the profit on the resale of a property above its original acquisition cost. Whereas in the past this capital gains rate has applied to the segment of tax-purpose profit between the tax-depreciated value of the property and its original cost, this profit would henceforth be taxed at regular income tax rates—up to 52 per cent for corporations and up to a whopping 91 per cent for individuals. This would at least double the ultimate tax liability on the resale of properties of all present investment owners, including the thousands of syndicate participants who have bought limited-partner interests in real estate in recent years. Currently, depreciation allowances provide "tax shelter" for most of the income from a building in the early years of its ownership. When most of a property's depreciation tax shelter has been used up, the property is usually sold, and only the maximum 25 per cent capital gains tax paid on the book-keeping or tax-purpose profit represented by the amount of depreciation that was taken. Assuming a resale at original cost or better, the proposed change would tax all of this previous "tax sheltered" depreciation income at regular tax rates. Its impact on both the long-range and short-range market for large investment properties would be terrific—and at this stage also literally incalculable.

Needless to say, the National Association of Real Estate Boards and other real estate interests are vigorously opposing this change before the House Ways and Means Committee, which is in charge of the tax legislation.

* A detailed analysis of the implications of the proposed tax law will appear in next month's FORUM.



CLEVELAND GIVEN FUNDS FOR MALL
Trustees of the Leonard C. Hanna Jr. Fund gave Cleveland \$2 million this spring to beautify the Civic Center Mall when it becomes the roof for a \$10 million underground exhibition hall that will be started this summer as an adjunct of the city's Public Hall (background in photo). Plans for the Mall reconstruction by Clarke & Rapuano, New York architects and city planners, have been approved by the Cleveland AIA chapter and will include a set of fountains in a large pool that will be a reservoir for the exhibition hall's air-conditioning system. Mall improvements will cost about \$1.5 million, and the other \$500,000 will be held in trust for maintenance expenses. Hanna, a nephew of Steel Tycoon Mark Hanna, died in 1957.

U.S. polices production of aluminum building items

To forestall the development of monopoly conditions in fabricated aluminum architectural products the federal government has filed civil antitrust suits against the Aluminum Company of America and the Kaiser Aluminum & Chemical Co.

The Justice Department wants Alcoa to divest itself of all interest in the Cupples Products Corp., of St. Louis, which it acquired in January 1960, by giving Cupples stockholders \$6.7 million worth of Alcoa stock. Cupples fabricates aluminum doors, curtain walls, windows, and other products, and in 1959 had sales of about \$6 million.

Against Kaiser, the Justice Department has taken steps to bar a pending merger of Kaiser and the Kawneer Co., of Niles, Mich., leading fabricator of aluminum store fronts. Kawneer's sales last year were \$39.4 million, and this merger would involve the issuance of about \$30 million worth of Kaiser stock to Kawneer stockholders. The government also wants Kaiser to give up the aluminum wire and electrical conductor business that it acquired

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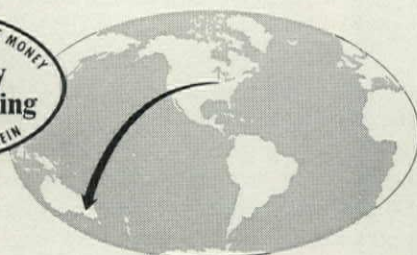
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Alcoa, Kaiser, and Reynolds Metals Co. produce 88 per cent of the nation's aluminum. But historically, the fabrication of various aluminum architectural products has been handled by a sizable number of small companies. If the primary producers begin absorbing fabricators, the Justice Department

fears that competition will lessen and monopoly situations be created in the sale and distribution of end products. Reynolds started making aluminum windows and exterior sheets in 1955, but has not been challenged on this, the government said, because it did not involve acquisition of existing concerns, but expansion from within.

AIA convention: Mumford raps monolithic urbanism; Zevi says terraced apartments could supplant houses

As the redesigning of urban America continues apace, it probably will be more for the better than the worse. That was the consensus of the principal speakers and critics who addressed themselves to this theme of the AIA annual convention in Philadelphia.

True to form, Lewis Mumford's tongue was the sharpest in condemning many of the worst shortcomings of contemporary urbanism. More temperate, less despairing, and holding forth more hope of progress, however slow and difficult, were the remarks by overseas guests Sir William Holford, president of the Royal Institute of British Architects, and Professor Bruno Zevi, of the University of Rome; and by Dr. Robert C. Weaver, new federal Housing and Home Finance Agency Administrator.

Softly but acidly, Mumford rapped the urban "confusion, congestion, or empty ostentation on the scale of New York's Lincoln Center," the expressways that have "half-destroyed the architecture of Washington," and the "large mass of urban renewal and public housing projects from New York to San Francisco," many of them benefiting "only big developers interested in big buildings and big profits." With few exceptions, notably in Philadelphia and Baltimore, Mumford declared, "these sterile improvements have too often removed the living organs of the city and replaced them with an extensive but profitable mechanical substitute. Too often under the illusion that they have assisted in an urban birth, the planners and architects have actually performed a hysterectomy." To help restore human scale to the city, Mumford urged government to give small builders a greater role in urban renewal and redevelopment and to provide for the creation of more "small informal spaces in which human contacts can be made. . . . The off-Broadway theaters and espresso bars have done more for New York culture than acres of pretentious estheticism."

Professor Zevi was not so severely critical of recent trends, and in outlin-

ing ways to make the city more acceptable again he suggested the creation of apartment buildings "planned not as a mechanical series of identical flats, but as vertical villas in the air, designed to provide privacy and offer small gardens for the owners." Urban design of this order, he declared, "would destroy overnight the American mythology of the detached house." At a joint press conference later, Zevi called the freestanding American house a "cultural lag" and an anachronism. Mumford countered with a suggestion that Zevi's terraced urban apartments were a "Mediterranean tradition," and that "centrifugal" housing was a "northern tradition." Neither changed his opinion.

Offering several lessons from abroad, Sir William Holford stressed the need for urban design that always considers the pedestrian, and indeed often gives him precedence. "Except as a pedestrian, you cannot experience architecture. And without architecture there is little point in the city as a form of civilization and culture." He also related how public opinion was aroused in London to prevent the use of a huge new building in Piccadilly Circus as a gigantic advertising sign, and how he eventually was asked to prepare a plan for an orderly reorganization of this area that will separate pedestrians and vehicles, and prevent any future "honky-tonk" development. "The moral," he said, "is that civic design has to be recognized and fought for. Otherwise it can easily drop out of the re-

development process altogether. Client and architect both have to care profoundly what the citizen and the visitor experience when they come to the center of a city."

In an address on "The Metropolitan Frontier," Dr. Weaver focused on the growing interdependence of the city and its suburbs. "The city today is the heart, and in a sense the soul, of a metropolitan area. The suburbs around it draw their life and their spirit from the city's economy and culture. We must revitalize the American city as the anchor holding our metropolitan areas." As evidence of federal support for better urban and metropolitan-wide development, Dr. Weaver cited the new administration's proposal for increasing federal assistance for urban and metropolitan planning from \$20 million to \$100 million; also, its proposed programs to provide help for metropolitan transportation, and assist communities to acquire open land reserves for future needs both for public uses and for more orderly private development when resold.

The most important action at the Institute's business meeting was the adoption, for a two-year trial beginning in 1962, of a new system of supplemental national dues. In addition to regular membership dues, this will consist of an assessment on each member's office or firm equal to 1 per cent of the federal Social Security taxes paid the previous year, or a maximum of \$2.88 per employee. This will mean that larger firms will pay a greater share of the cost of increased Institute activities. The convention also adopted new rules to limit future presidents to single terms of one year, the first and second vice presidents to no more than two one-year terms, and the secretary to two two-year terms. For this year, however, all incumbent officers were re-elected: Philip Will Jr., president; Henry L. Wright, first vice president; James M. Hunter, second vice president; J. Roy Carroll Jr., secretary; and Raymond S. Kastendieck, treasurer.

NEWS continued on page 8



OPENING SESSION SPEAKERS were (left to right): Sir William Holford, HHFA Administrator Weaver, and AIA President Will.



CULTURE OF THE CITY session, chaired by Henry L. Wright (1), heard Critic Lewis Mumford (center) and Historian Bruno Zevi.

New York gets plans for a brand-new city of 70,000, including 50-story towers, on island in East River

During the past 20 years New York builders and realtors have often looked at shabby Welfare Island in the East River (see map) and have casually commented on how ideal it would be for redevelopment. But they have been discouraged by the island's transportation drawbacks, its lack of any community facilities, such as schools and stores, and the difficulty of inducing the city to sell it for private development. Once known as Blackwell Island, the relatively isolated, elongated 167-acre tract was the site of a city penitentiary until the midthirties. Since the jail was closed, it has been used only for city hospitals, nurses' homes, and other public welfare institutions, and many of its decrepit old buildings have been left to rot and its open areas surrendered to debris and weeds.

Last month, however, city officials were informally considering the first comprehensive plan for turning the entire island into a brand-new city within a city—a new modern urban community of 70,000 population, complete with schools, stores, churches, its own new subway station (in one of the two under-river transit lines that go through the island), and improved connections with the Queensborough Bridge to Manhattan, which passes over it.

Sponsors of the bold proposal, a project that would cost a half billion dollars or more, were: Frederick W. Richmond, industrialist and financier, who fathered the idea; Planner and Architect Victor Gruen, who developed the architectural and planning concepts; and New York Realtor and Developer Roger L. Stevens. Associated with them as advisors are: Samuel I. Rosenman, attorney specializing in urban redevelopment law and former special assistant to President Franklin D. Roosevelt; Colonel S. H. Bingham (retired), engineer and transportation consultant, and Dr. Ralph E. Snyder, president of New York Medical College, consultant on medical and geriatric problems. As part of the plan, the city would continue to operate the Bird S.

Coler Memorial Hospital on the island, mainly housing geriatric patients, and in an adjacent area the developers would build one large apartment building designed especially for elderly people who would not require hospitalization but who could utilize many of the services available at the geriatrics center.

To be renamed East Island, the new community would consist primarily of eight 50-story apartment towers and a series of serpentine apartment structures varying from eight to 30 stories high running almost the entire 10,500-foot length of the island (model photos, right). Apartments would total about 20,000, primarily two- and three-bedroom units for middle-income families with children. Average apartment size would be 1,177 square feet; average FHA room count: 6:45.

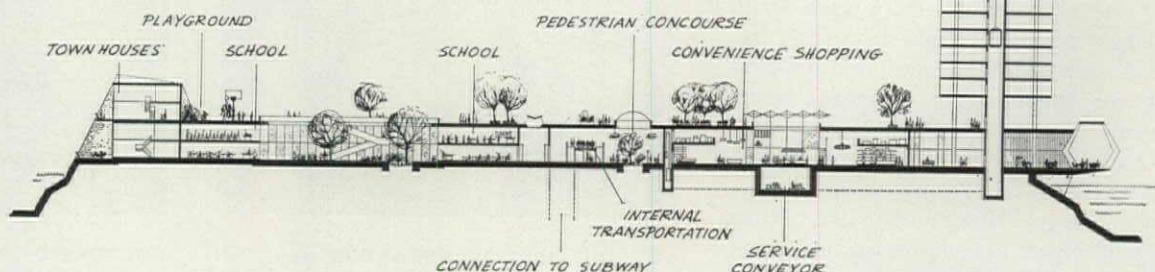
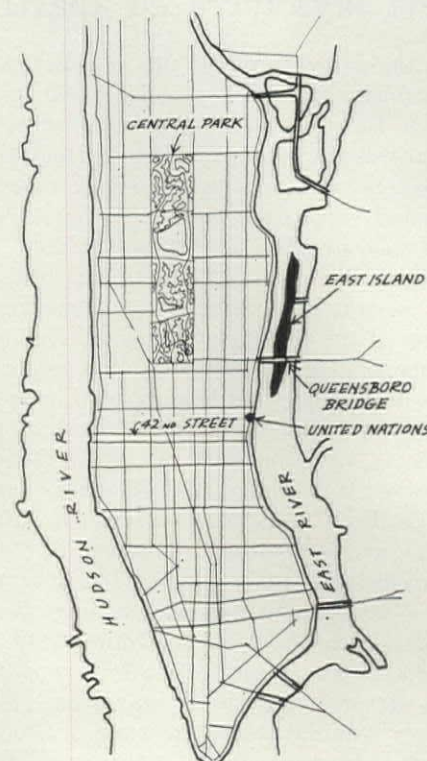
While population density on the island would exceed 400 per acre, this would be offset by two of its most unusual features: The site is surrounded by open water, and no private autos would be allowed on the island. Instead there would be a large parking facility on the nearby Queens mainland. But a bridge from Queens and a service road system would still allow vehicular access to the island hospital and circulation by police and fire vehicles.

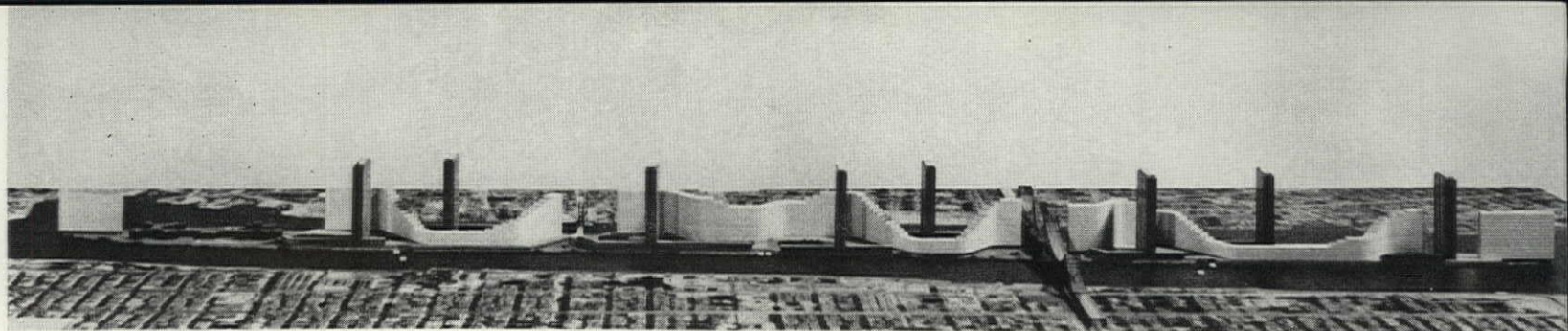
Structurally, the apartment buildings would all be erected on top of an immense concrete platform about 22 feet above ground level. The area beneath this platform would house all mechanical equipment, storage space, commercial facilities and the two-story basementless schools which would have rooftop playgrounds on the raised platform level. Under the platform there also would be an internal passenger transportation system for the island, such as a continuous moving belt, and a service roadway (see section below).

Between 1828 and 1844, New York City acquired the island for a total of \$52,500. If it sold or leased development rights for 20,000 apartment units at a minimum of \$3,000 per unit, its current value would be at least \$60 million.

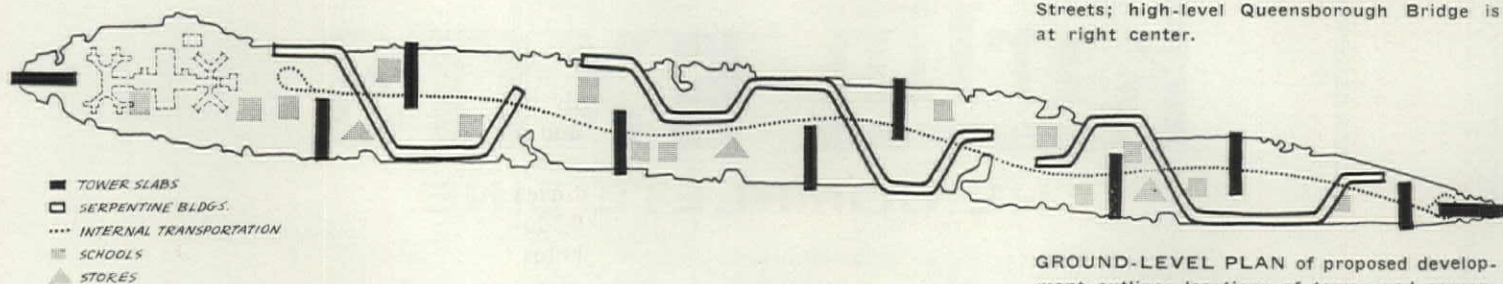


UNUSED ACREAGE on Welfare Island (above) is literally in the shadow of Manhattan's valuable and intensively developed midtown East Side (background), less than 1,000 feet away across the East River channel (see map below).





LOW-LEVEL VIEW of model shows how East River apartment city would appear from Manhattan. The island runs from 48th to 86th Streets; high-level Queensborough Bridge is at right center.



GROUND-LEVEL PLAN of proposed development outlines locations of tower and serpentine apartment buildings; it also indicates location of community buildings and routes for service road and internal passenger transportation system.



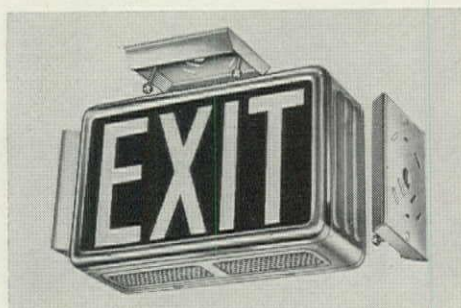
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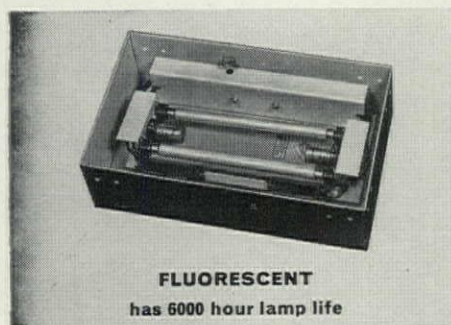
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New York state head hits renewal program faults

With an apology for his bluntness, James W. Gaynor, New York State Commissioner of Housing and Community Renewal, catalogued a whole series of deficiencies in the execution of urban renewal programs at a recent meeting of New York urban renewal directors. Warning that his agency will soon withdraw state assistance from cities that do not proceed with projects more promptly, Gaynor cited six main faults of local programs:

► Failure to live up to the federal requirement to enforce a "workable program" to prevent new slum growth. "To be sure, we complete an initial report and dutifully recertify it each year," said Gaynor, "but it is a farce and we know it."

► Inadequate local staffs and budgets. "We do not pay salaries high enough to attract the best men or to keep good men already employed. We do not view the position of urban renewal director with the importance it deserves."

► Piecemeal planning that too often concentrates on efforts to remedy specific sore spots, instead of combating deterioration on a community-wide basis.

► Excessive reliance on consultants. "Their guidance is welcome, but you can neither allow them to dominate your program and be its major representative in your community nor can you demand that they wet-nurse you whenever a minor crisis develops. They must not become the 'Rasputins' of your renewal efforts."

► Inept plans for the reuse of land. "We cannot plan for a certain type of development if there simply is no market for it. A significant number of projects have had to be replanned in the execution stage because of inadequate market studies completed by individuals catering more to the desires of the community than to the facts of the situation."

► Insufficient public participation. "We meet the letter of the law by the creation of citizen advisory groups, but the spirit of the law has been ignored. For the most part, citizen participation has been viewed as a ball and chain around the municipal official neck, and this has been true to a great extent, but the blame has been the municipal officials' and not the citizens'. . . Information is withheld from citizen advisory groups for fear that reaction to it would be negative; they are not permitted to participate in

basic policy decisions and so on. The lack of proper citizen participation has deprived the community of support when it is needed, has resulted in considerable delays . . . and deprived projects of guidance and intelligent criticism."

Late last month the New York state renewal boss, an appointee of Republican Governor Nelson Rockefeller, was not among the witnesses invited to testify on the new federal housing and urban renewal legislation being considered by Congressional committees.

Ralph Walker suing AIA to have censure expunged

In the latest development in the case of the five principals of Voorhees Walker Smith Smith & Haines, who were either suspended or censured by the AIA on charges of violating its Stand-

ards of Professional Practice (FORUM, May '61), Ralph Walker reported last month that he is suing the AIA in New York state court "on the claim that the evidence did not justify the penalty, that the AIA be directed to expunge from its records the determination finding me guilty of such violation and censuring me," and asking for other just and proper "relief" and court costs. Previously Charles S. Haines had said the matter was "closed" as far as VWSS&H was concerned.

Because of the expense, Walker also said he had sent his personal statement of the case only to members of the AIA's College of Fellows, but not to each member of the Institute, as previously reported.

In a further clarification of the initial report, both Walker and Architects Moore & Hutchins, who had made the complaint, pointed out that VWSS&H had not been charged with having "solicited" a commission in violation of AIA regulations. Rather, the AIA Board of Directors found that the VWSS&H principals "had attempted to supplant" Moore & Hutchins and had undertaken a commission "without conclusively determining that the original [Moore & Hutchins] employment had been terminated." The AIA censured Walker, Stephen F. Voorhees, and Benjamin Lane Smith. It suspended Haines and Perry Coke Smith for two and one years, respectively.

People

The abortive invasion that failed to overthrow the Castro dictatorship in Cuba had repercussions last month in New York City's large Lincoln Square redevelopment project. To prepare a critical review of U.S. cooperation with the invading force, and particularly the ill-starred role of the Central Intelligence Agency, President Kennedy drafted the project's president, General **Maxwell D. Taylor**, retired, former Army Chief of Staff. To return to temporary duty for the White House, General Taylor took a leave of absence from his job at the Lincoln Center for the Performing Arts, now in the middle of construction of its \$130 million center for the Metropolitan Opera, Philharmonic-Symphony, and other cultural organizations (photos, page 47).

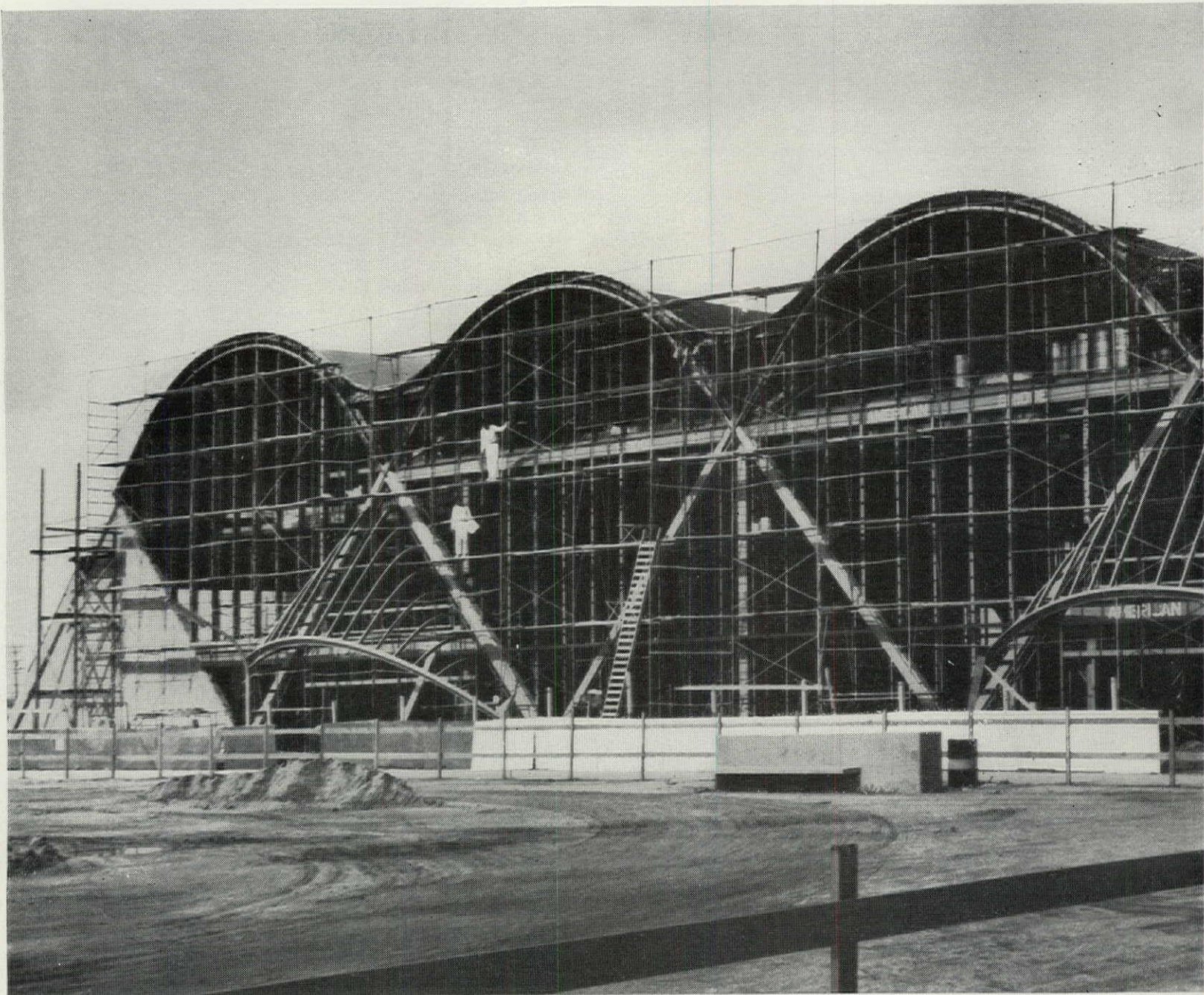
While New York redevelopment was losing a military commander, San Francisco redevelopment was gaining five art experts to serve as an advisory committee for its Golden Gateway project. To obtain the advice on the project's esthetic qualities "and make certain its amenities will fit well with the cultural and social tone of San Francisco," Perini-San Francisco

continued on page 14

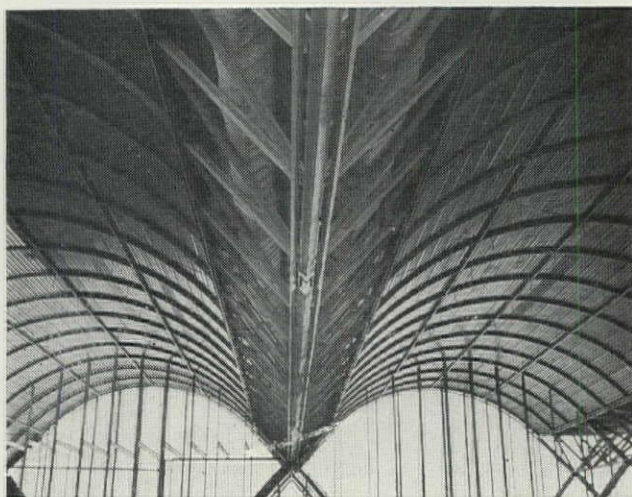


COMPETITION FOR CHARLES CENTER

Last year Jacob Blaustein, head of Baltimore's American Trading and Production Co., and McCloskey & Co., with Marcel Breuer as their architect, were one of the six competing combines that submitted proposals to erect the first office building in Baltimore's downtown Charles Center project (FORUM, Apr. '60). That award, however, went to Metropolitan Structures, Inc., of Chicago, which has now started a 23-story building, One Charles Center, designed by Mies van der Rohe (FORUM, June '60). Undeterred by the loss of the Charles Center award, Blaustein acquired an old department-store building diagonally across Charles Street and a month ago, again in conjunction with McCloskey & Co., announced plans for another office building that will top its Charles Center rival by five stories. Vincent G. Kling, of Philadelphia, is architect for this square, glass and metal tower, which will cost about \$11.5 million, including land, and will have gross floor area of 400,000 square feet.



Steelwork erected in less than four months. Gym measures 168' x 200' with all connections bolted or welded.



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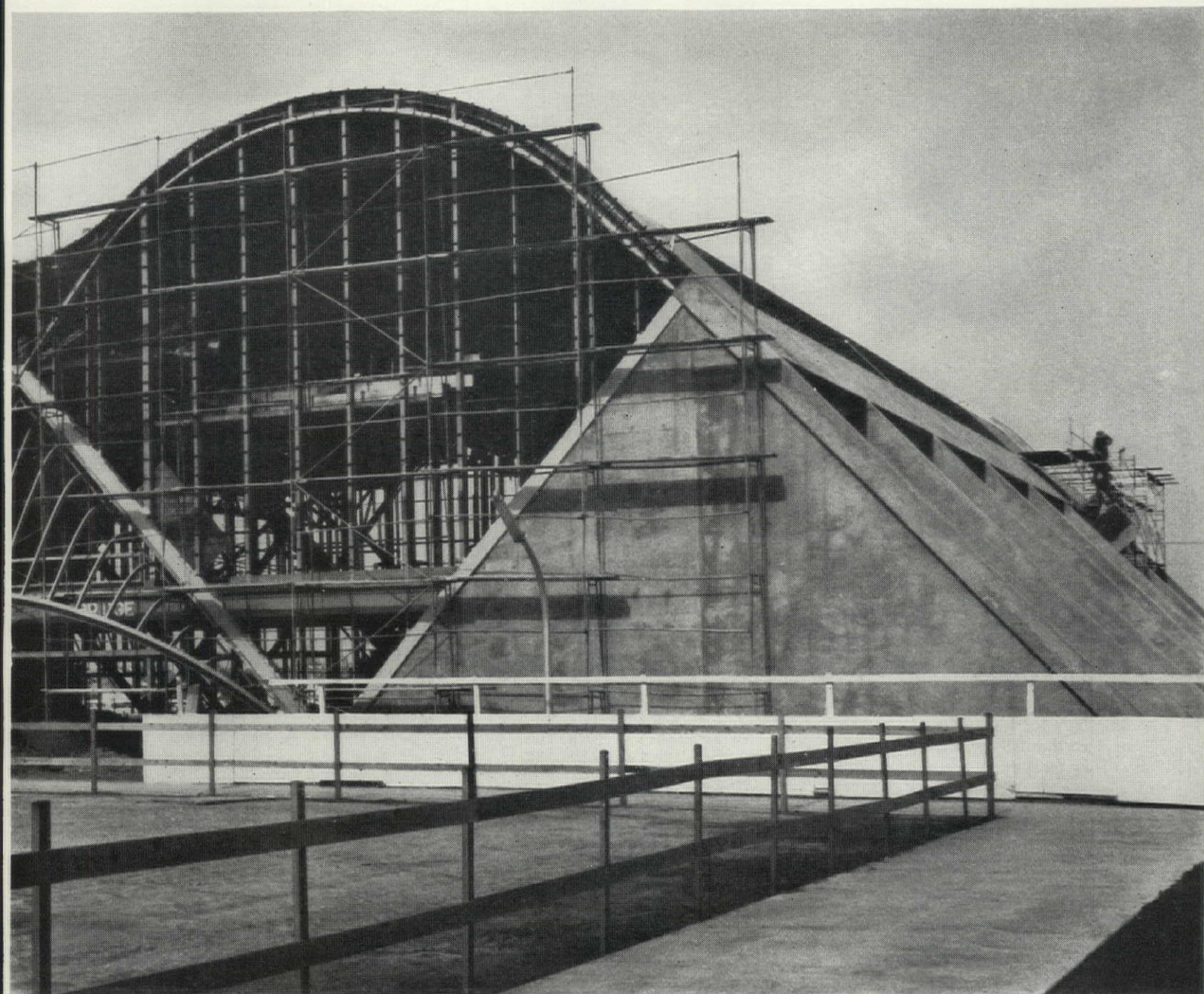
36,000 unobstructed square

There isn't a seat behind a pillar anywhere inside the spacious Cerritos Junior College gymnasium in Norwalk, California. There are no pillars. The roof is completely supported by four interconnecting structural steel arches and long-span cross members. Structural steel is ideal for unusual construction because its ease of fabrication permits complete design freedom.

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feet of gymnasium ... and every seat a good one

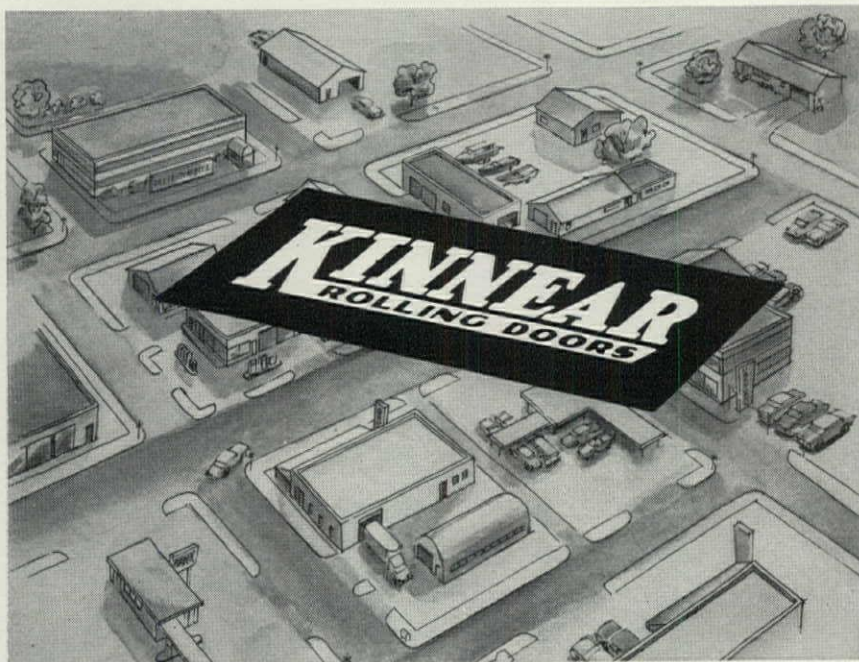
Connections were made by bolting and welding.

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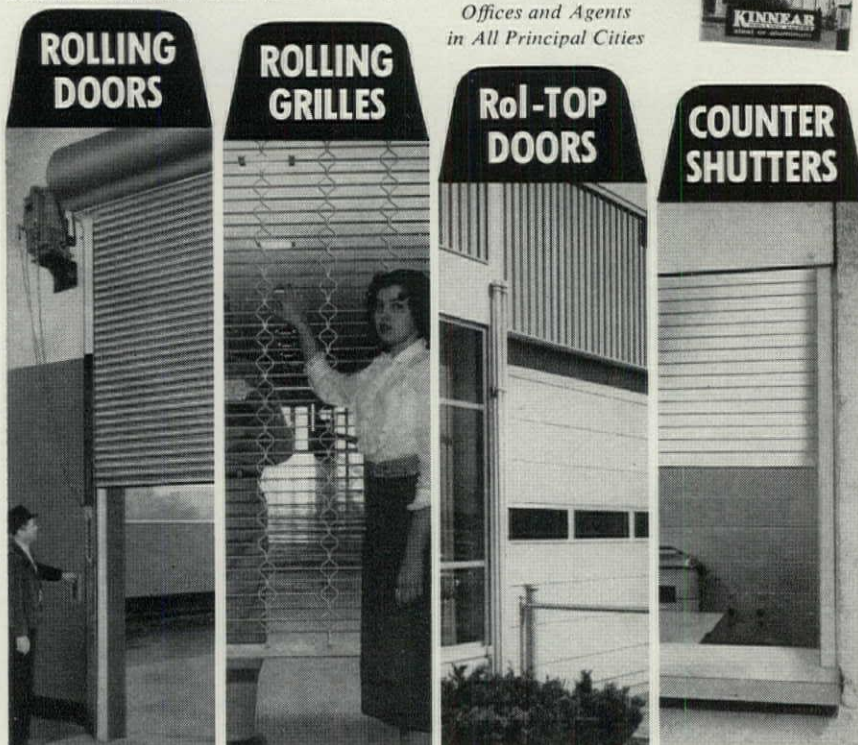
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Associates, the redevelopers, enlisted **George D. Culler**, director of the San Francisco Museum of Art; **Thomas C. Howe**, director of the California Palace of the Legion of Honor; **Gurdon Woods**, director of the San Francisco Art Institute; **Lee B. H. Malone**, who will become director of the De Young Museum on July 1; and **Mortimer Fleishhacker Jr.**, civic leader and one of the principals in the redevelopment firm.

ROSE FEELS RENEWAL'S THORN

The old adage about no roses without thorns can be applied to urban renewal on the expert testimony of author and former Burlesque Queen **Gypsy Rose Lee**. After she addressed the St. Louis Press Club a month ago, a member of her audience asked: "What really happened to burlesque? Was it lack of talent, change in people's taste, television, or what?"



GYPSY ROSE LEE

Stripped of nonessentials, Gypsy's reply was this: "One of the most fundamental things is this awful slum-clearance thing that is going on. For better or worse, and often for worse, they are bulldozing down the poorer and older parts of town. Burlesque is housed in the older parts of town where theaters were built especially for it. You tear down the older parts of town and burlesque theaters, and burlesque has no place to go. You can't do a burlesque show in a drive-in theater. . . ."

NEW WASHINGTON APPOINTMENTS

To inject more vigor into FHA's rental housing and urban renewal mortgage programs, Commissioner **Neal J. Hardy** has created a new office of Assistant Commissioner for Multifamily Housing Operations, headed by **C. Franklin Daniels**, 52, FHA career worker and previously a special assistant for urban renewal.

Still filling some of the key positions in the Housing and Home Finance Agency, Administrator **Robert C. Weaver** has named **Hugh Mields Jr.**, 38, formerly an assistant director of the National Association of Housing and Redevelopment Officials and of the American Municipal Assn., as Assistant Administrator for Con-

continued on page 16

WHO LOOKS AT THE ROOF?



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Roofing Contractor: Munder-Sobel & Kraus Corp.
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— Kenneth Franzheim, Architect

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gressional Liaison. To serve as director of the Division of Housing for the Elderly he has appointed **Sidney Spector**, 45, former researcher for the Council of State Governments.

HONOR AND AWARDS

The Graham Foundation for Advanced Studies in the Fine Arts (named for the late Architect **Ernest R. Graham**) has awarded nine grants of \$5,000 to \$7,500 each for projects in architecture and related arts during the coming year. The new Graham Fellows are: Professor of Architecture **Kenneth H. Cardwell**, University of California, Berkeley, who will complete a definitive work on the late Architect **Bernard Ralph Maybeck**; Sculptor **Milton Cohen**, University of Michigan, who will pursue studies on "light-sculpture and its applications to architecture"; Architect **David J. Jacob** and his Sculptress-wife **Miriam Jacob**, Birmingham, Mich., a project in correlating architectural free forms; Professor of Architecture **Louis I. Kahn**, University of Pennsylvania, a design study of Philadelphia's core; **Jules Langsner**, Los Angeles critic and lecturer in art history, preparing a series of five lectures; Los Angeles Architectural Sculptor **Malcolm Leland**, research on the creative development of form in structural and nonstructural components; **Reginald F. Malcolmson**, Illinois Institute of Technology, metrolinear city studies; Sculptor **Peter L. Nicholson**, of New York, experiments on the sculptural effects of water for the Lincoln Center of the Performing Arts; and **Paolo Soleri**, Arizona State College (FORUM, Mar. '61), a "City on a Mesa" project "embracing a complete concept of future city forms." **AMEN**

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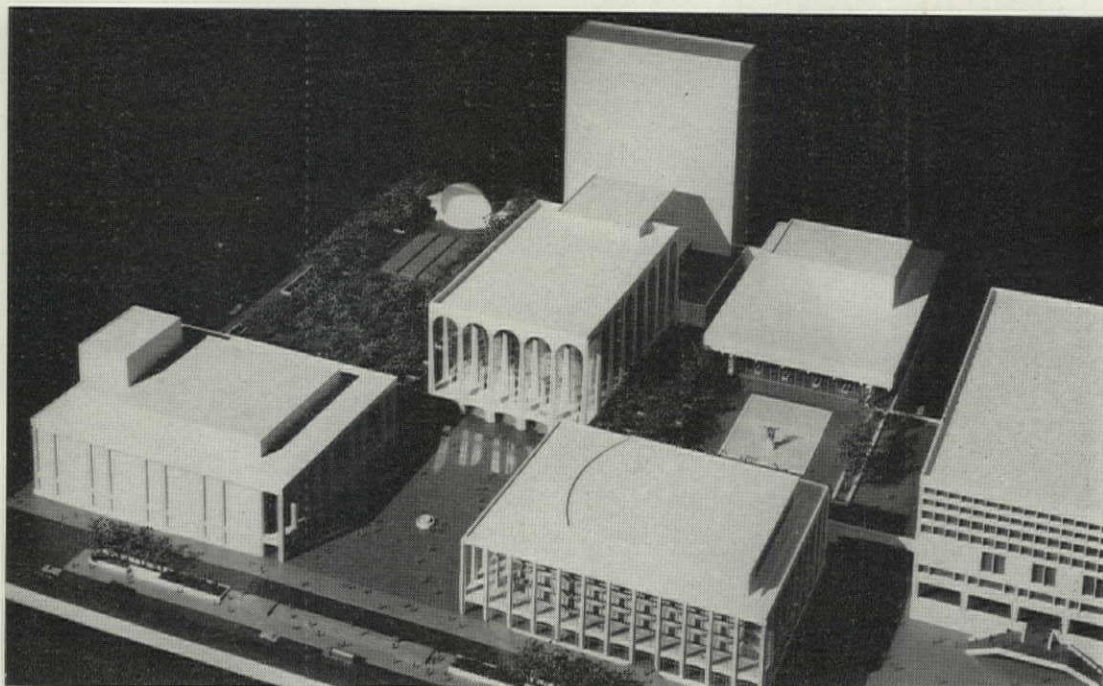
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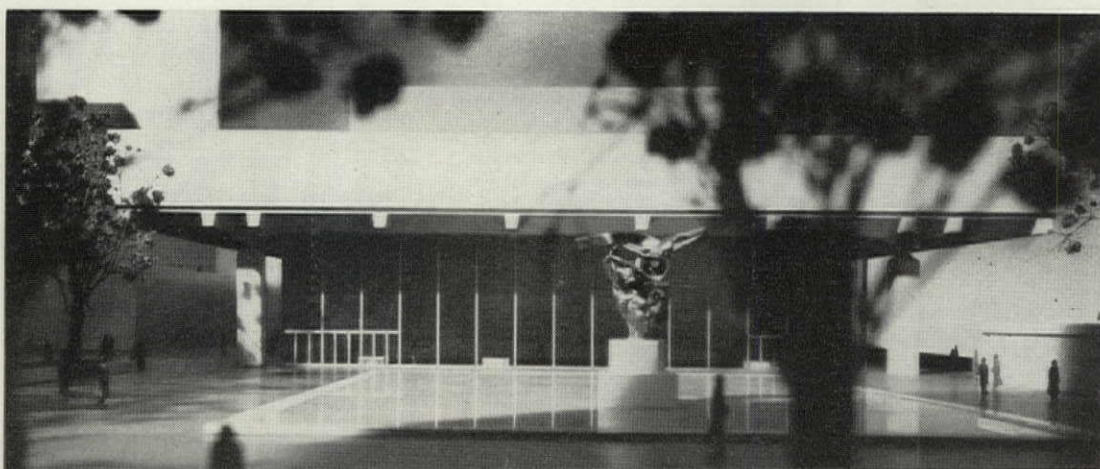
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A roundup of recent and significant proposals

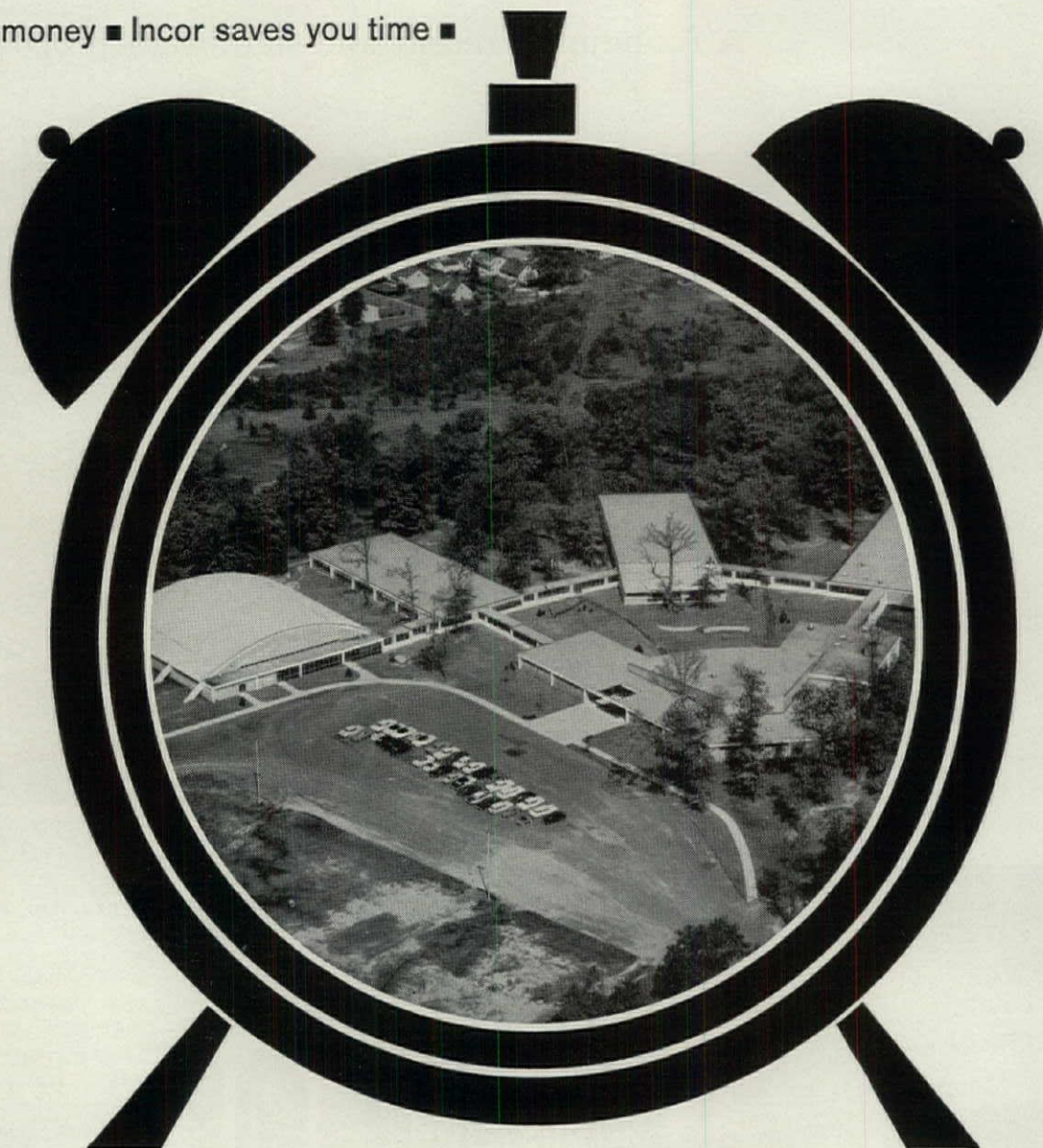


REVISED LINCOLN CENTER

Last month New York's Lincoln Center for the Performing Arts unveiled this revamped model which shows, left to right, Philip Johnson's Theater for the Dance and Operetta (close-up, left), renamed the New York State Theater in recognition of the state's contribution to the 1964 World's Fair; Wallace K. Harrison's Metropolitan Opera House, the towering slab at the rear housing the Center's air conditioning, offices, and workshops; Eero Saarinen's Repertory Theater-Library-Museum for the Performing Arts (close-up, below) in which Jo Mielziner is collaborating designer; Max Abramovitz' Philharmonic Hall; and Pietro Belluschi's Juilliard School.



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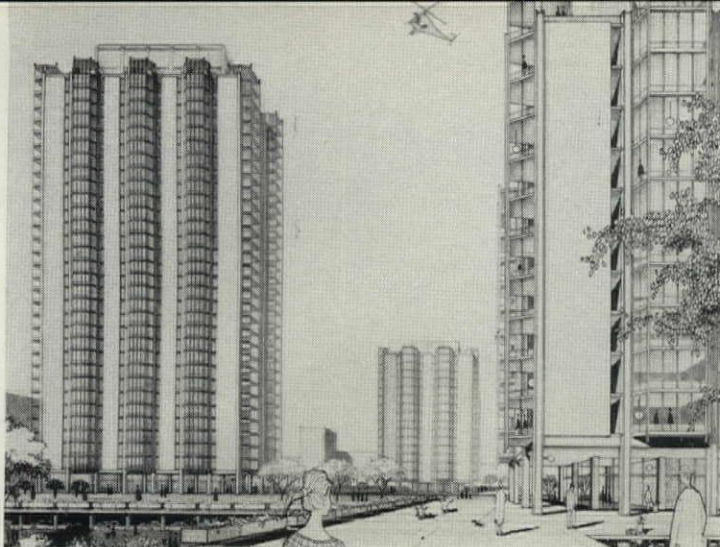
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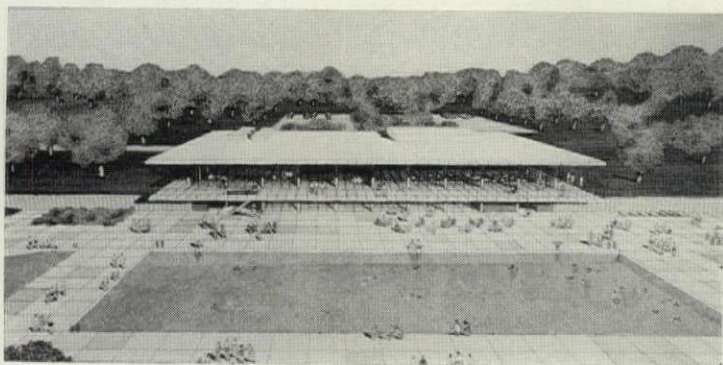
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THREE APARTMENT TOWERS IN DETROIT



Beaumont Towers, a three-building apartment project in Detroit, will be a close neighbor to Mies van der Rohe's Pavilion Apartments in Lafayette Park. Two of the new towers, 15 and 10 stories, will be cooperatives, and the tallest, 30 stories, will contain 400 middle-income rental units,

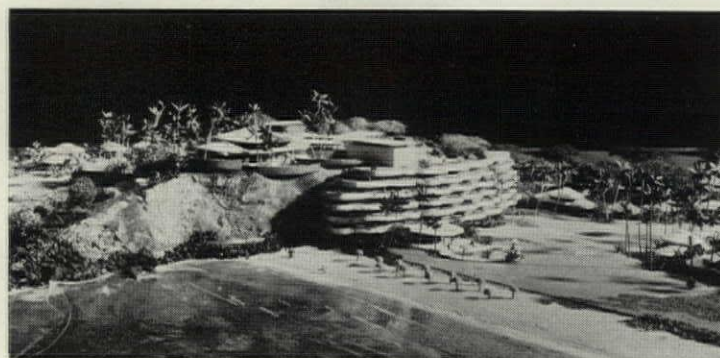
about half efficiencies. All the cooperatives and many of the rental apartments will have balconies, half hexagons in shape, enclosed by sliding glass doors so that the balconies are part of the living rooms all year round. Architects: Begrow & Brown and Stickel & Moody of Birmingham, Mich.



COUNTRY CLUB IN MISSOURI

Facilities for winter sports in this St. Louis County country club will be augmented by snow-making equipment to keep the sled, ski, and toboggan areas white, and there will be three skating rinks, the club's summertime swimming pools. Between seasons, members can turn to the all-weather tennis, volleyball, and

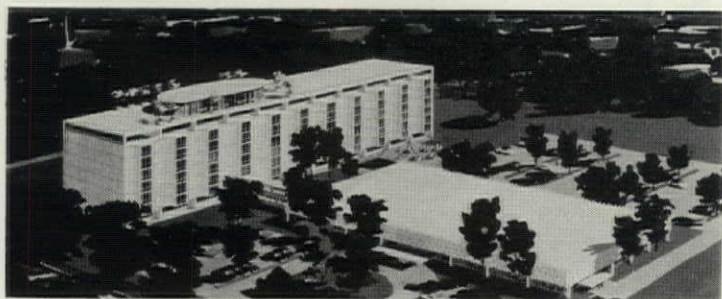
badminton courts. Inside the clubhouse, designed by Hellmuth, Obata & Kassabaum, the upper level will be entirely dining space, a large room for 400 and several small dining rooms, the lower level given over to a sun deck, a club room and snack bar, lockers, steam rooms, and conference rooms. Cost: \$1 million.



SOUTH-SEA SHERATON

Spilling down the face of an 80-foot lava outcropping, the latest Sheraton hotel (above), will be part of a new resort development at Kaanapali Beach, Maui, Hawaii. Two firms, American Factors, Ltd. and Pioneer Mill Co., Ltd., are developing 875 acres on which they will build a convention center, two championship golf

courses, cottage colonies, and beach and yacht clubs. Approached from a road through a golf course on the far side of the rock, the hotel will carry public areas on top, guest rooms projecting in rows beneath. Small cottages, a snack bar, and a swimming pool line the beach front. Architects: Wimberly & Cook of Honolulu.



BIGGEST HOTEL IN DUBLIN

Architect William B. Tabler is designing three hotels in Ireland, the largest in Dublin (above), and the others, 96-room motor hotels for Limerick and Cork, all owned by Irish and Intercontinental Hotels, Ltd. The Dublin Intercontinental, diagonally across the street from the new U. S. Embassy,

will provide such American luxuries as an Olympic-size outdoor swimming pool, two cocktail lounges (one on the roof), and a private bath with every room. This will be an eight-story structure with 320 guest rooms and 250 parking spaces, expected to cost more than \$4 million.

ST. LOUIS OFFICES

Early in 1963 Collins Tuttle & Co., Inc. expects to complete this new building in St. Louis, a 20-story structure which claims to be the first major new office building to go up in downtown St. Louis in 30 years. Behind a façade of glass and porcelain enameled steel, there will be approximately 250,000 square feet of rentable office space, all of it air conditioned. A. Epstein & Sons, Inc., Chicago architects, and Sverdrup & Parcel, St. Louis engineers, are the designers; Diesel Construction Co., New York City, consultant. Cost: \$9 million.





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PART TWO OF CULLEN CENTER IN HOUSTON

Massive concrete bents will lift 9 floors of guest rooms above a concourse in the Hotel America (right), the second unit in Houston's \$100 million Cullen Center. The hotel tower will be cantilevered 12 feet beyond each bent. In common with the plan for the whole Center, by Welton Becket & Associates, the first floors will be a cov-

ered plaza over the street and a main concourse lined with shops and restaurants. An air-conditioned corridor on the same level will link the hotel with a 21-story office building under construction in the Center. Cost of the hotel, to be operated by the Hotel Corp. of America, will be \$6 million. Construction begins in August.



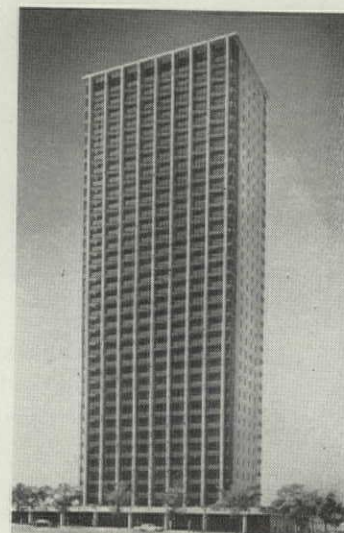
VAN NUYS JAIL

This two-part police headquarters and jail (left), designed by Daniel, Mann, Johnson & Mendenhall and Larsen, Kahn & Farrell, will get under way this fall in Van Nuys, Calif. The three-story administrative headquarters will have double-function east and west walls of precast reinforced concrete, acting as structural frames and as sunscreens for the fixed glass wall behind.



CALIFORNIA HOSPITAL

The outer circle of this community hospital in Martinez, Calif., is a nursing and administrative wing; next to it an elevator tower and a low rectangle containing surgery units. Charles Luckman Associates' scheme is similar to their award-winning circular hospital in Van Nuys, to which a round wing is being added. The Martinez hospital will cost about \$17,500 per bed. Associated architects: Confer, Willis & Anderson.



MANHATTAN APARTMENTS

On Manhattan's Third Avenue, where new buildings have been sprouting ever since the "elevated" came down, Tishman Realty & Construction Co., Inc. plans this handsome tower of cooperative apartments by Emery Roth & Sons. Rising 34 stories above a one-story base, it will occupy only a quarter of the site, leaving the rest for a garden and plaza. Apartments will be five to seven rooms each, four to a floor, all with corner exposures.

CRUCIFORM CITY OFFICES IN PHILADELPHIA

After 1964, Philadelphians will duck underground to pay their taxes in the 21-story Municipal Services Building (right), where a special block-big concourse will service the public, i.e., collect taxes and bills,

issue licenses and permits. Above the concourse, the Greek cross tower, set in a paved plaza, will be of reinforced concrete, faced with precast stone. Architect: Vincent G. Kling of Philadelphia.





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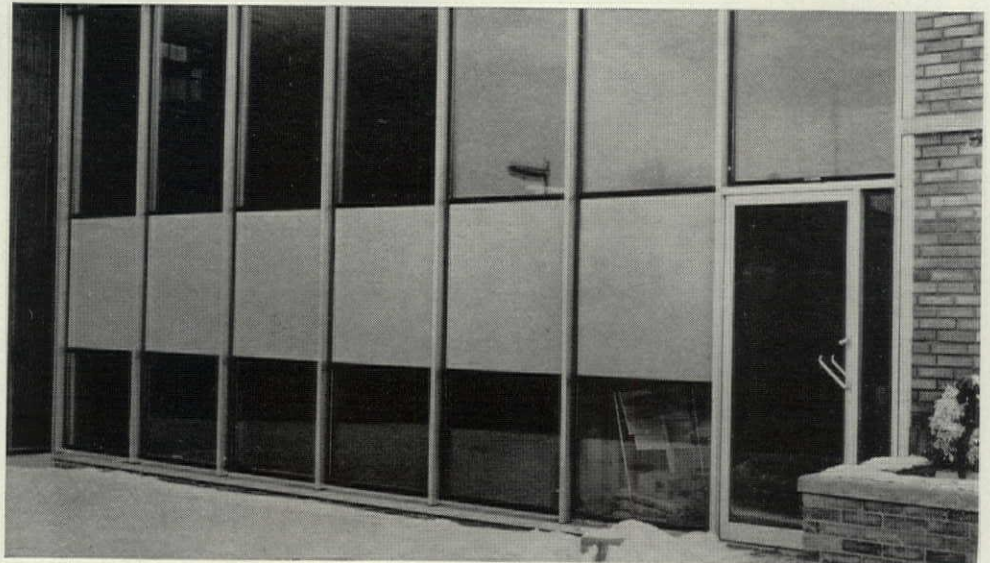
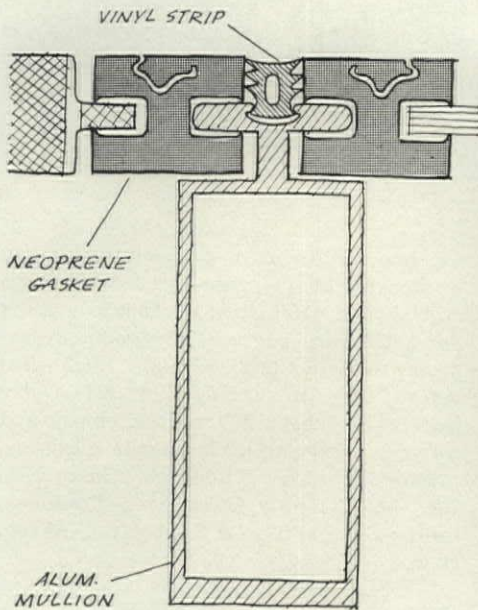
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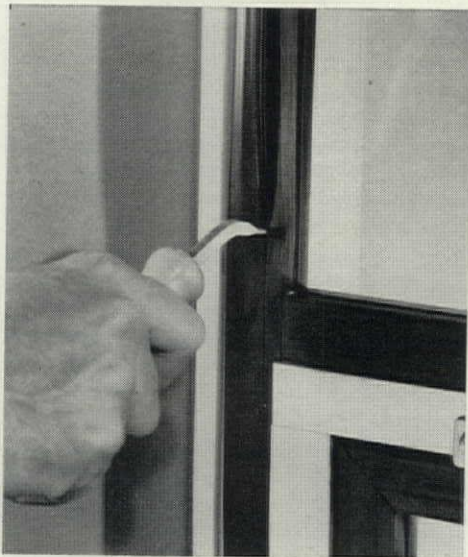
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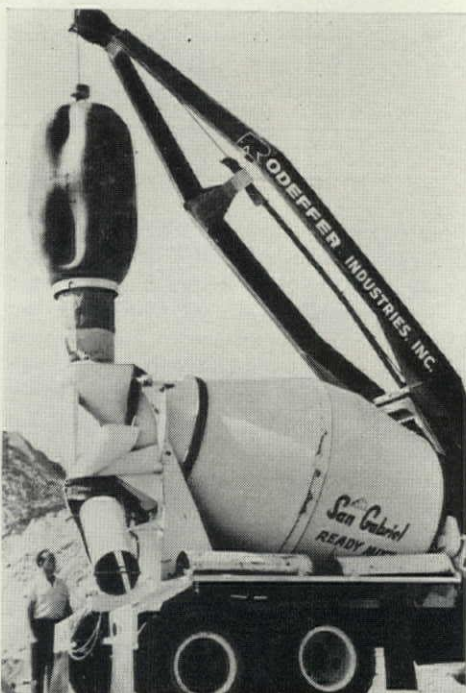
H-shaped neoprene weatherstripping, zipped in place, is the key element of a new low-cost wall system from Kawneer called *Zipperwall*. A hinged flap within the extrusion is open when installed and seals hermetically when a special hand tool is pulled along it, exerting pressure to keep the curtain-wall components in place. For one- and two-story buildings up to 24 feet high, the new wall system offers speedy assembly in the field, leak-proof construction and a neatly detailed appearance at a cost of \$2.65 to \$3.50 per square foot.

Besides the neoprene extrusions, *Zipperwall* consists of aluminum mullions, factory fabricated to specified lengths, aluminum sill and head runners, cut to size at the job, and adapter angles. These parts are bolted together to form the frame

for the curtain-wall panels and glass or sash, held firmly by the zipper gaskets. The neoprene strips are cut longer than the opening and then compressed to fit, the generous cut insuring positive pressure and a watertight seal. Small claws on the inside edge of the gasket grip the infill panels firmly, yet allow some expansion and contraction. The same zipping tool used to install the wall can, of course, be used to unzip it, if a window or a panel needs to be replaced. With the zipper open, the pressure against the claws relaxes enough to receive a new component, and the same gasket may be zipped up once more around it. A narrow vinyl strip insulator prevents condensation from forming inside the mullion.

Manufacturer: Kawneer Co., 1105 Front St., Niles, Mich.

INSTANT CONCRETE



The big rubber bag shown at left holds all the ingredients for a batch of concrete ready to be mixed. Precision mixes of cement are sealed into a rubber core, and aggregate and water are contained in an outer compartment. When needed, the bags are lifted and emptied into a mixer. Packaged in this manner, concrete can be dumped at the job site, like other building materials, and stored there until needed. Accurate inventory control and uniform quality are further advantages claimed for this method of packing and shipping concrete.

Rodeffer Industries, a West Coast producer of sand, gravel, and ready-mix concrete, developed the rubber bags experimentally for its own use and applied for patents on them; General Tire & Rubber

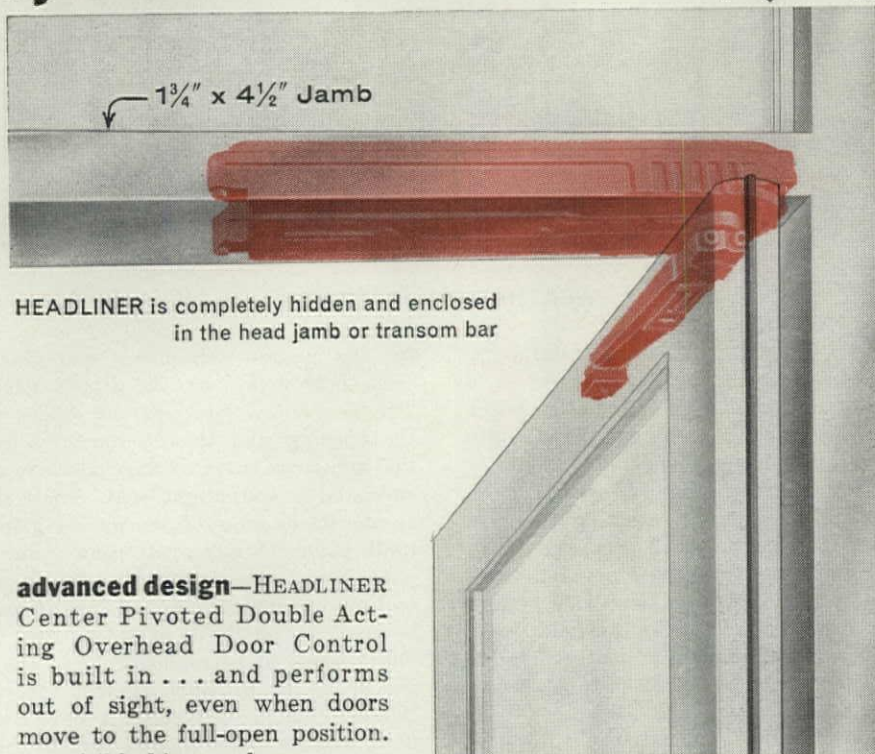
continued on page 54



positive overhead door control
that's hidden from view

Headliner®

by **DOR-O-MATIC**



HEADLINER is completely hidden and enclosed
in the head jamb or transom bar

advanced design—HEADLINER Center Pivoted Double Acting Overhead Door Control is built in . . . and performs out of sight, even when doors move to the full-open position. No visible hinges, closers, arms, or holders interrupt the beauty and clean lines of doors and frames. Here is highly efficient door control concealed in any head jamb or transom bar as slim as $1\frac{3}{4}'' \times 4\frac{1}{2}''$. HEADLINER sets the scene for good doorway design . . . entrance, vestibule, interior . . . in any building and at lower cost than with many other types of door closers.

performance—The advanced new HEADLINER Overhead Door Control operates smoothly and quietly. Cushioned positive back stop and optional hold-open may be obtained at either 90° or 105° . HEADLINER also features positive centering and no accidental hold-open. The HEADLINER provides positive control . . . throughout opening and closing cycles for double or single acting doors. Simple, accessible two-speed closing and spring force adjustments are provided.

installation—The HEADLINER is designed for packaged unit construction so the complete doorway—frame with pre-installed HEADLINER and door—is quickly installed. Gone is the usual time-consuming preparation. One trip completes the installation . . . the door is securely set in the frame in seconds with the HEADLINER Fast-Set Arm and Pivot.

For the full story, write to Dor-O-Matic today for HEADLINER literature.



DOR-O-MATIC

Division of REPUBLIC INDUSTRIES, INC.

7356 West Wilson Avenue • Chicago 31, Illinois

9820

CANADA: Dor-O-Matic of Canada, Ltd., 550 Hopewell Ave., Toronto 10, Ontario

Products contd.



Co. has put them in production. Having a capacity of $1\frac{1}{2}$ cubic yards, the bags cost around \$750 each, or about 50 cents per cubic yard per use. The company expects them to last through 1,000 uses before they wear out. The 6-foot-long bags weigh about 200 pounds empty and between 6,000 and 6,300 pounds filled.

Manufacturers: Rodeffer Industries, Inc., 965 N. Fair Oaks Ave., Pasadena, Calif.; General Tire & Rubber Co., Akron, Ohio.

VANDAL-PROOF PLASTIC

Owens-Corning Fiberglas, long a developer and supplier of glass-fiber reinforced plastics, is now producing a finished panel of its own. *Fiberglas Daylighting Panels* are the first to use 100 per cent acrylic resin as the bonding agent, sandwiching a heavy reinforcing ply between lighter surface mats. Like other reinforced panels, these are intended for skylights, siding, and partitions—and for windows subject to vandalism. In a New York City school, in an area where glass replacement was an ever recurring and expensive item, Daylighting Panels now replace much of the glass. Besides being shatterproof, the primary requirement here, they resist rot, rust, corrosion, and peeling.

Daylighting Panels are offered in corrugated and flat sheets in four colors: industrial frost, which has 75 per cent light transmission; white and light green, 65 per cent; and medium green, 55 per cent. In quantities over 5,000 square feet, costs run from 52 to 86 cents per square foot.

Manufacturer: Owens-Corning Fiberglas Corp., Toledo 1.

PRESERVED WOOD

To protect lumber and plywood from a number of hazards, ranging from ordinary decay to termites, Koppers has developed a new pressure treatment which does not affect wood's appearance in any way. In fact, a sample of Cellon-treated wood looks exactly like an untreated sample, but it is water and insect repellent, ready for painting, and dimensionally stable. There is some odor immediately following treatment, but this fades in 24 hours and is undetectable in a few days. All of these properties suggest Cellon's appropriate-

ness for plywood wall panels, outdoor seating, boardwalk decks and stringers, laminated beams, and tropical furniture. It can even be used underground. While Cellon-treated wood has been used in several small jobs, its first large-scale use will get under way next month, when workmen start installing seats in the new Washington, D. C. stadium, all Cellon-treated.

Unlike most pressure treatments for wood, Cellon is a dry process, in which the preservative (pentachlorophenol) is deposited deep in the wood fibers as a crystalline salt. Available now in semicommercial quantities, Cellon-treated wood competes in price with other pressure-treated woods.

Manufacturer: Wood Preserving Div., Koppers Co., Inc., 700 Koppers Bldg., Pittsburgh 19.

TRIMMER PREFABS

Two structural components have been added to Butler's pre-engineered metal buildings—a new wall system and a new wedge beam. At the same time, a redesign of the standard Butler buildings has resulted in neater trim, new colors, and longer standard bays.

Modular wall is a structural panel system for one- and two-story buildings. The panel is 4 feet wide and up to two stories high, and it may be combined with Butler's earlier Monopanl, which is 1 foot wide. The core material, polystyrene foam, is held in place by hardboard or cement-asbestos sheets bonded to aluminum faces. These panels are delivered to the site complete except for glazing, tilted into position, and anchored top and bottom. Battens inside and out conceal the fasteners and joints between panels. Butler says that the average in-place cost of the Modular wall is about \$5 per square foot.

The new wedge beam, available in 24 and 48 foot widths, costs slightly less than the company's "standard rigid" and "low rigid" frames and is designed for buildings in which wide clear spans are not essential.

Manufacturer: Butler Manufacturing Co., 7400 East 13th St., Kansas City 26, Mo.

continued on page 56



MILLIONS of square feet of **ELASTICRETE®**

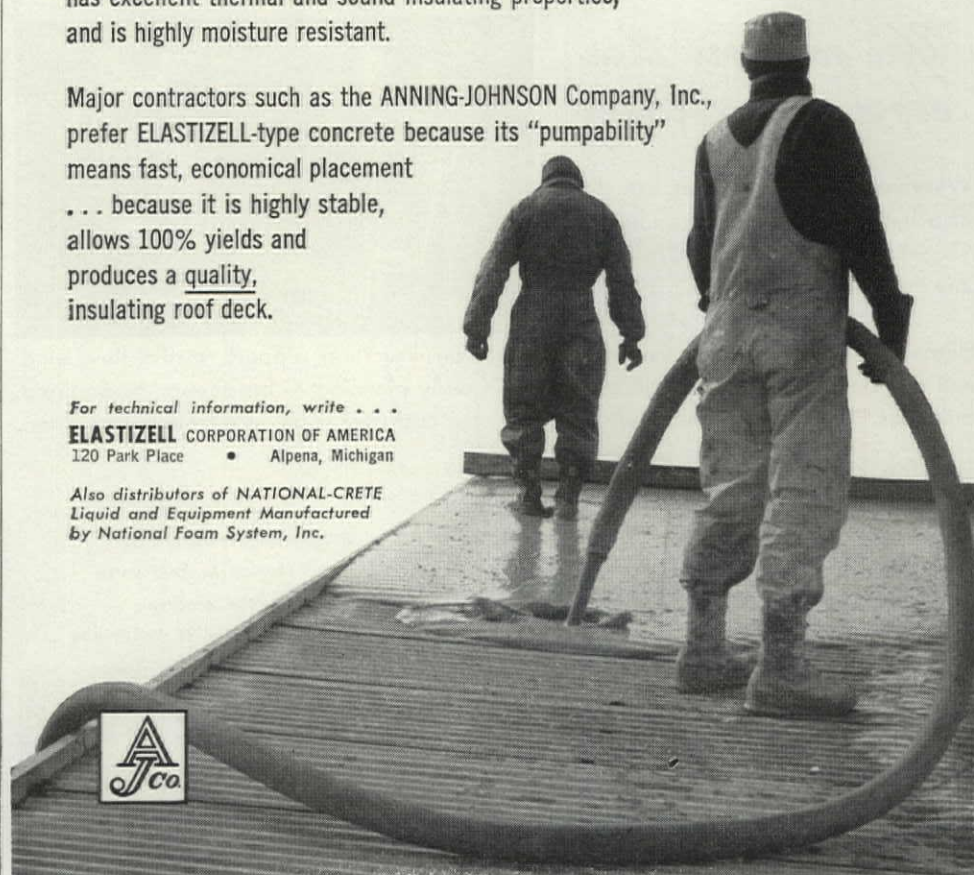
lightweight, insulating cellular concrete are being poured into roof decks this year. ELASTIZELL-type concrete is specified by architects because it offers absolute weight control from insulating through structural densities, has excellent thermal and sound insulating properties, and is highly moisture resistant.

Major contractors such as the ANNING-JOHNSON Company, Inc., prefer ELASTIZELL-type concrete because its "pumpability" means fast, economical placement

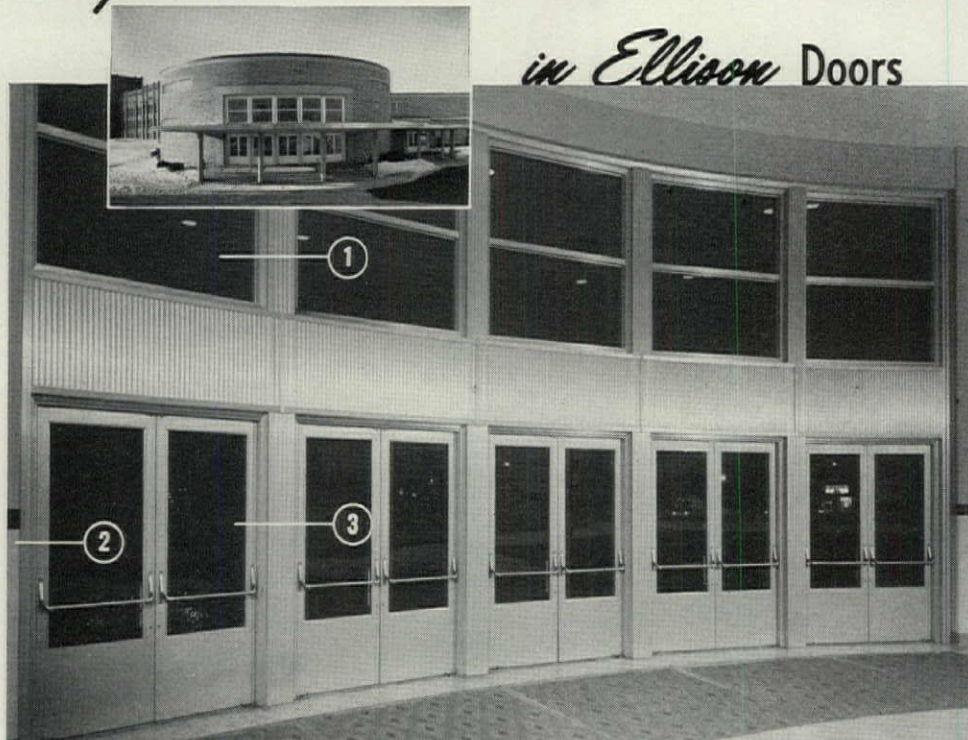
... because it is highly stable, allows 100% yields and produces a quality, insulating roof deck.

For technical information, write . . .
ELASTIZELL CORPORATION OF AMERICA
120 Park Place • Alpena, Michigan

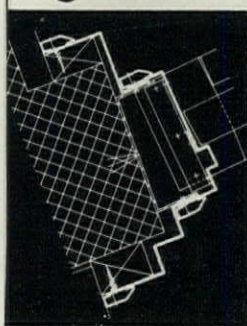
Also distributors of NATIONAL-CRETE
Liquid and Equipment Manufactured
by National Foam System, Inc.



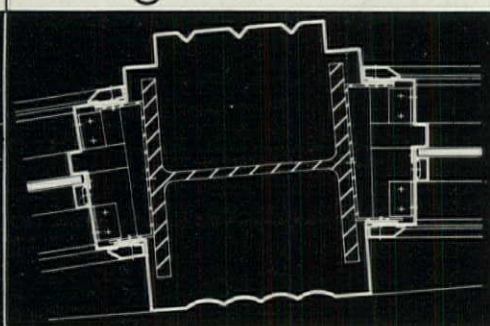
Engineered BEAUTY and PERMANENCE in Ellison Doors



② Side Jamb



① Transom Mullion



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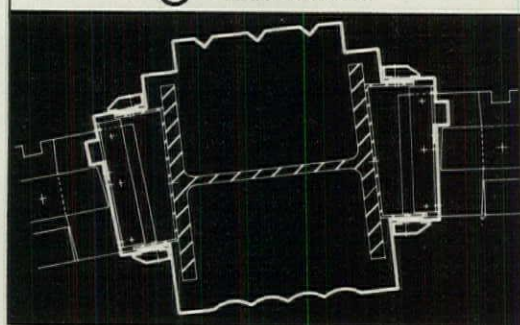
Tonawanda, N. Y.

Architect:

Mortimer J. Murphy

16 Ellison Vari-Stile Doors

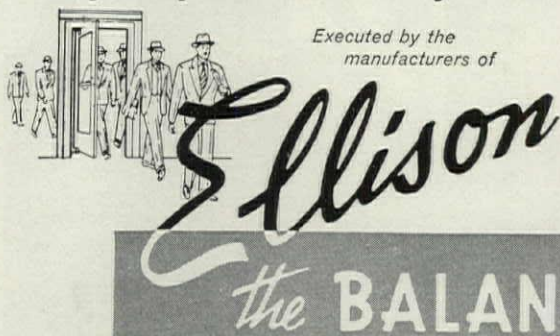
③ Door Mullion



*You get more than
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Whether you are planning one door or a battery of doors, Ellison has had 45 years experience that can help solve any entrance problem.

Ellison engineers can make recommendations on structural support, traffic flow, wind and suction conditions that will be helpful in early planning — for new or modernized buildings. Along with all these advantages — the customer receives a trouble-free door.



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representatives in 72 principal cities in U. S., Canada and Puerto Rico
ELLISON BRONZE CO., INC. • Jamestown, N. Y.

WOOD TILE

Heavy-gauge vinyl protects the walking surface of *Truwood Vinyl Flooring*, 9-inch tiles made of real wood veneers. These tiles are another thin-veneer product from the manufacturer who introduced Furnaflex veneers from Germany three years ago (FORUM, Feb. '58). The vinyl-finished veneer is backed with another vinyl film and a neoprene-saturated asbestos sheet, the four layers adding up to 3/32 of an inch. No special maintenance is required, but an occasional application of a good vinyl dressing is recommended.

Walnut, cherry, oak, and mahogany are the standard veneers. Other woods may be special ordered, but they will cost more than the standard veneer range, 28 to 40 cents per square foot. A gallon of the adhesive developed for these tiles costs \$4, enough to install 150 square feet.

Manufacturer: Wilcox-Woolford Corp., Spring City, Pa.

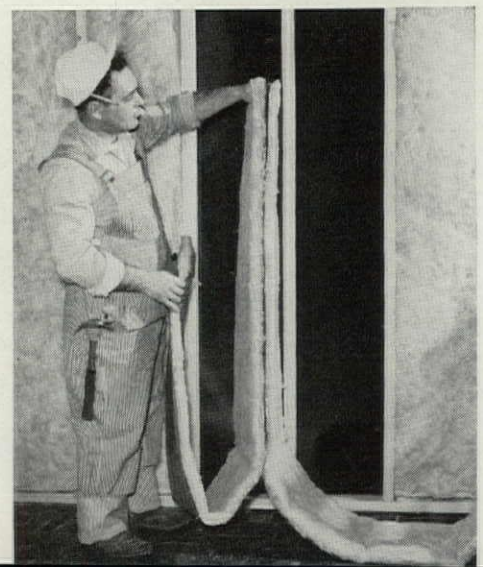
FIRE-RESISTANT LAMINATE

The addition of asbestos fibers to Micarta, the high-pressure decorative laminate manufactured by Westinghouse Electric Corp., has made the material fire resistant, enabling it to meet the code requirements of the Underwriters' Laboratories. Similar to a material developed for shipboard use, *Fire Resistant Micarta* is expected to find wide use in public buildings, where surface durability and fire protection are particularly important. Offered in all standard Micarta patterns, colors, wood grains, and sheet sizes, the material costs about \$1 per square foot retail.

Distributor: U.S. Plywood Corp., 55 W. 44th St., New York 36.

SOUND BLANKETS

A pair of fluffy Fiberglas blankets, developed by Owens-Corning, hang back-to-back, separated by an air space, to provide low-cost reduction of sound transmission in wood-framed motels, apartments, and office buildings. To cut down room-to-room noise, especially voices, the acoustical blankets hang limp between studs, stapled only at the headers and bottom



NEW SEAT DESIGN...



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exceeds
requirements
for
rugged
service*

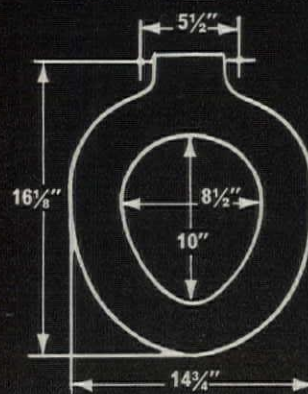
BENEKE 880

SOLID PLASTIC SOLVED THE PROBLEM

One-piece injection molded of solid, super-strength polystyrene makes both seat and cover of the new Beneke 880 virtually wear proof. Smoother sanitary surface won't ever crack, chip, peel, warp or discolor. Concealed hinge guards against corrosion. Design and production economies make 880 the one seat that meets the challenge of stamina and beats the battle of the budget squeeze.

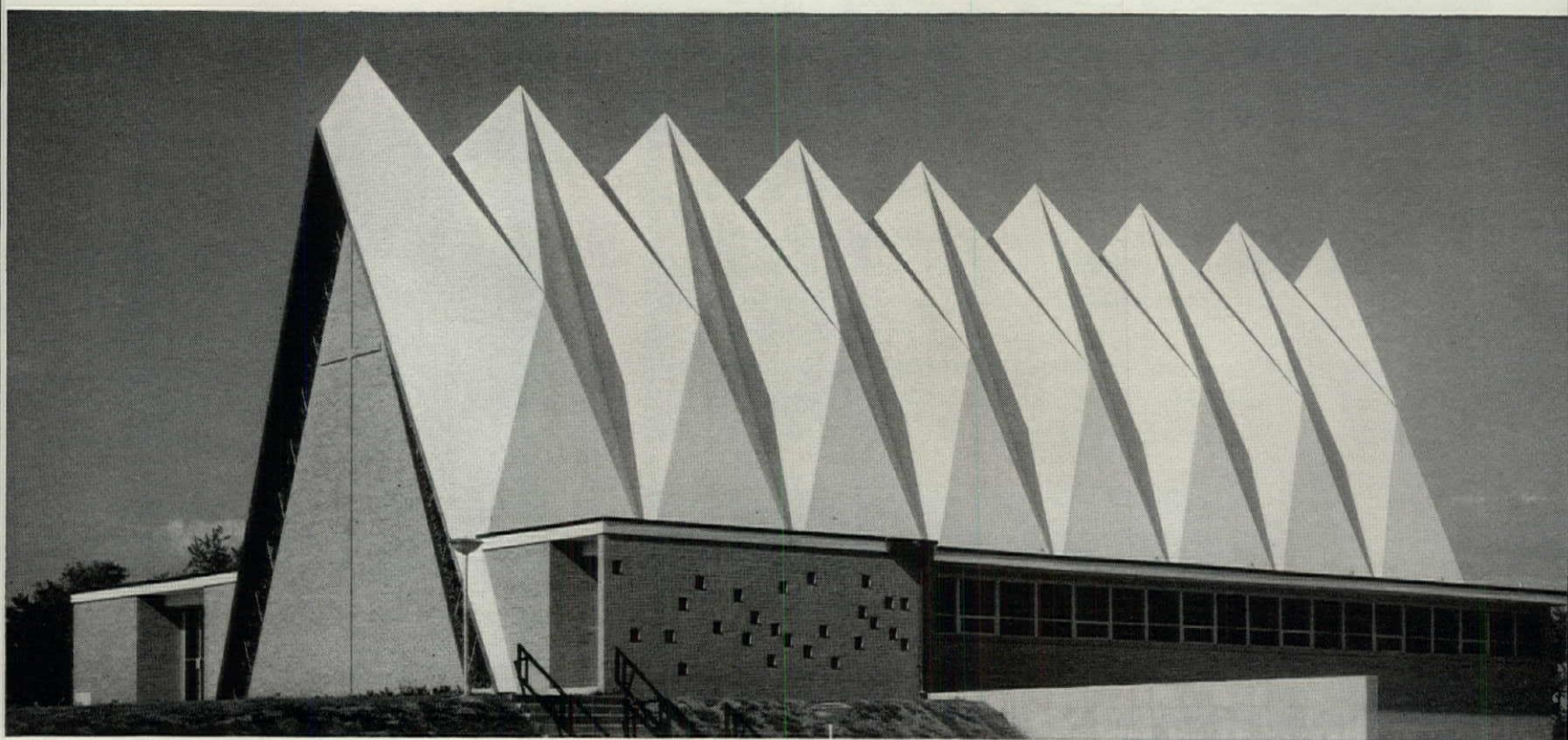
BENEKE CORPORATION
COLUMBUS, MISSISSIPPI

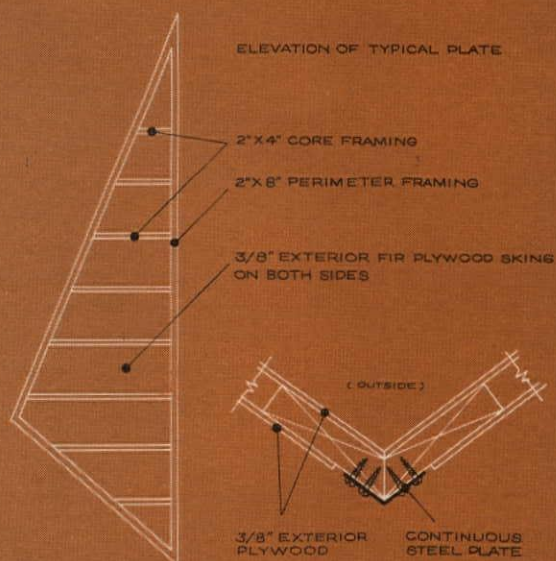
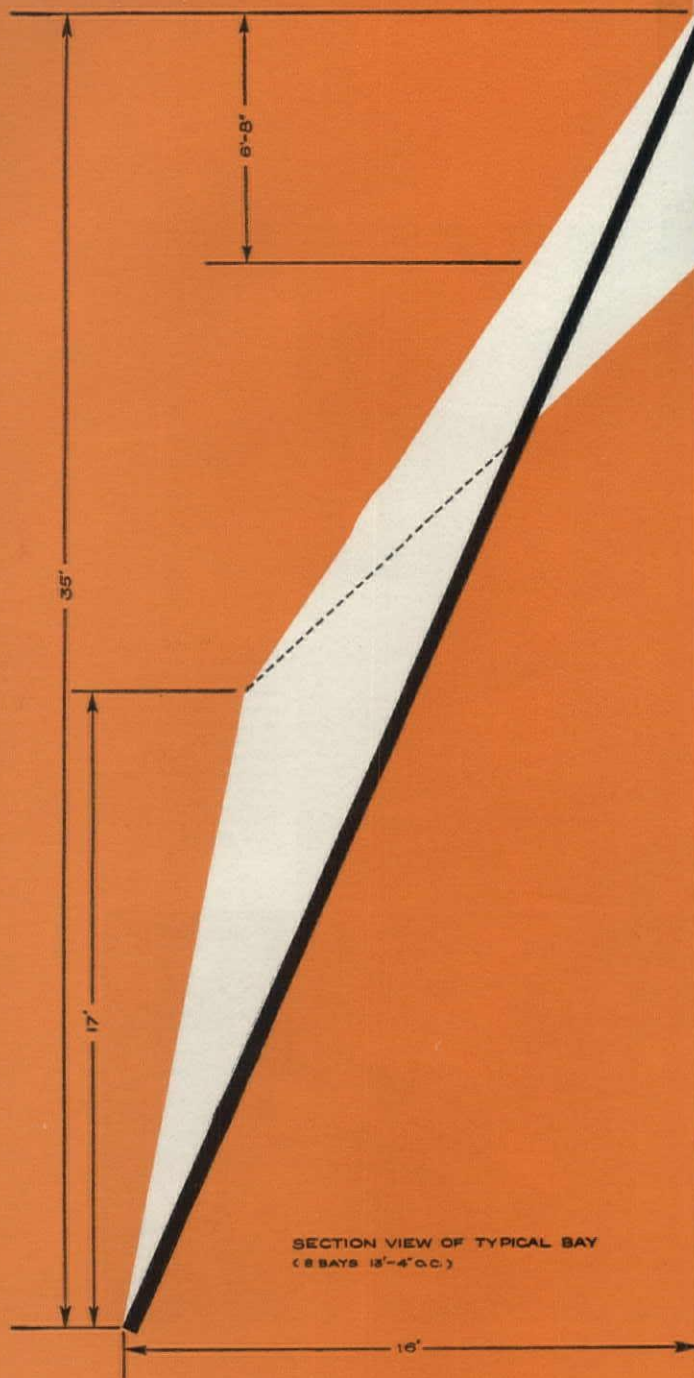
REGULAR RIM-EXTENDED BACK



CLOSED FRONT DESIGN

the most exciting ideas take shape in fir plywood





INDEPENDENT CONGREGATIONAL CHURCH

LOCATION: St. Louis
 ARCHITECTS: Manske & Dieckmann, St. Louis
 COMPONENTS: Roof Structures, Inc., Webster Groves, Mo.
 BUILDER: A. H. Haeseler, St. Louis

THE NINE SOARING PINNACLES of this church, recalling the boldness of Gothic arches, are a vigorous expression of advancing plywood technology. The roof is a space plane, a step beyond the folded plate with more versatility than any other clear-span technique using wood.

Like all folded plates, the space plane acquires strength and rigidity from interaction of inclined plywood diaphragms. But its components may take shapes other than rectangular, to create more complex designs. Here they are triangular stressed skin panels. Forces are transferred from one to another, and the entire multi-faceted roof becomes a lid-like shell, supported only at edges. Steel buttresses anchored to foundations absorb lateral thrusts. Clear-span area is 32' x 110'.

The absence of framework or posts is only one of several advantages this roof shares with space planes in general. It went up fast (15 days); huge plywood components were precisely fabricated to insure exact fit. Prefabrication also guaranteed close cost control and quality of workmanship and materials. In-place cost compared well with other means of obtaining a similar span.

For basic fir plywood design data, write (USA only) Douglas Fir Plywood Assn., Tacoma 2, Wash.



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DFPA TRADEMARKS



The huge Lloyd Center, Portland, Oregon—one of the nation's largest shopping centers. Round concrete columns used for supports throughout ground levels. Developers: Lloyd Corporation, Ltd. Architects & Engineers: John Graham & Co. Prime Contractors: Donald M. Drake Co. and Max J. Kuney Co.



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designs that feature round concrete columns formed with

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Through the years, the classic lines of round columns have been featured in many styles of architecture. More popular today than ever before, round columns *of concrete* are used for supports in many types of building designs...adding a classic, simple beauty that's forever modern.

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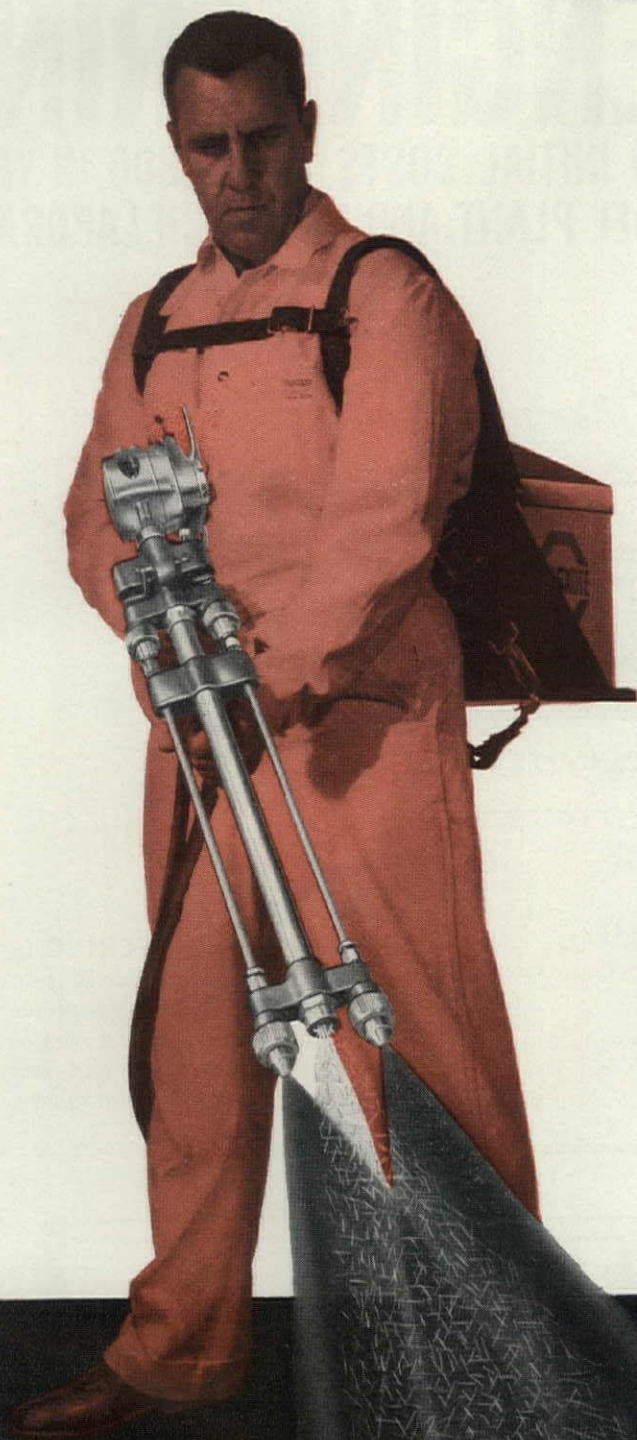
cially when you specify forming with SONOTUBE Fibre Forms. These low-cost, lightweight forms save time, labor, and money in a dozen ways—and provide the fastest, most economical method of forming round concrete columns. Sonoco SONOTUBE Fibre Forms are available in several types to meet various job requirements—sizes 6" to 48" I.D., standard 18' lengths or specified lengths.

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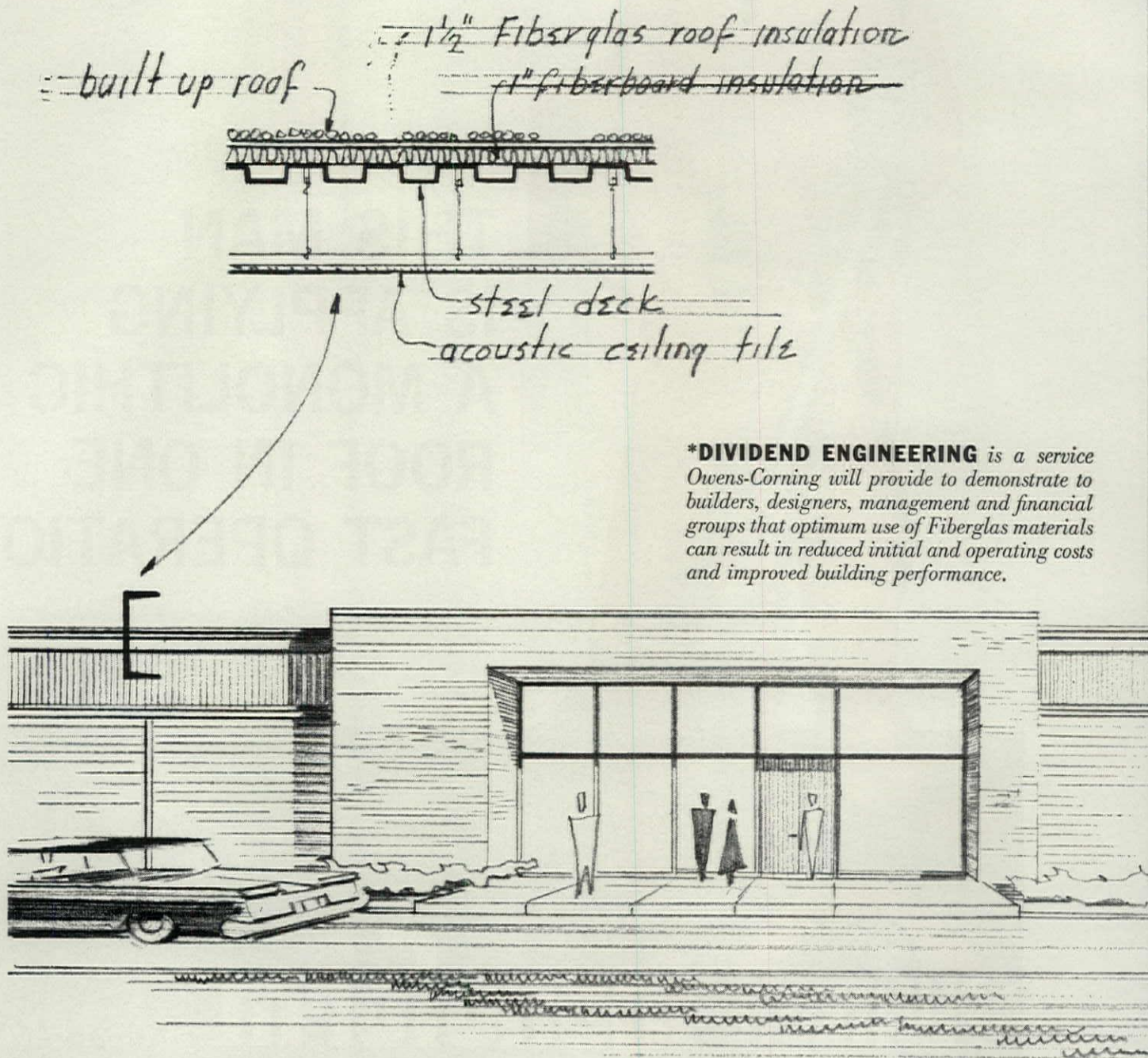
FLINTKOTE **monoform**^{*} **SYSTEM**[†]
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FORECASTS AN \$8,000 SAVING IN INITIAL COSTS AND \$1,800 IN YEARLY OPERATING COSTS AT NEW SPEIDEL PLANT AND RESEARCH LABORATORY



***DIVIDEND ENGINEERING** is a service Owens-Corning will provide to demonstrate to builders, designers, management and financial groups that optimum use of Fiberglas materials can result in reduced initial and operating costs and improved building performance.

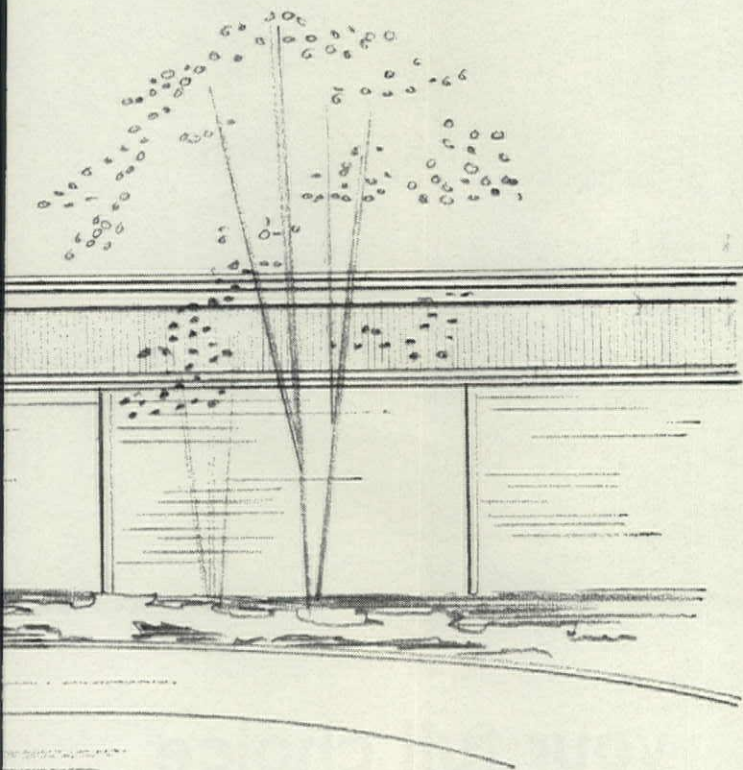
Plant and Research and Development Laboratory: Speidel Corporation,
Industrial Division, Warwick, Rhode Island
Engineers and General Contractors: Bowerman Brothers, Providence, Rhode Island

\$4,000 FOR ADDITIONAL INSULATION WILL BRING THESE ESTIMATED SAVINGS:

\$12,000 ON MECHANICAL EQUIPMENT—Original specifications called for one-inch fiberboard roof insulation. A Dividend Engineering analysis forecast that increasing the thickness to one and one half inches of Fiberglas† Roof Insulation would produce optimum heat savings. The added efficiency made it possible to predict a \$12,000 saving on the cooling equipment alone.

\$1,800 PREDICTED SAVING IN ANNUAL OPERATING COSTS—\$784 on power and water; \$700 on financing; \$316 on depreciation and insurance. Without a Dividend Engineering evaluation to point out the optimum "thermo-economic" performance of the roof, \$1,800 would be wasted every year.

Let us show you how Dividend Engineering forecasts significant savings, and makes the comfort benefits of year-round air conditioning an economic possibility for more and more industrial and commercial structures. Just talk to your Fiberglas representative, or write: Owens-Corning Fiberglas Corporation, Industrial and Commercial Div., 717 Fifth Avenue, New York 22, N.Y.



**DIVIDEND ENGINEERING
DOLLAR-SAVING PROPOSAL**

Cost of Heating

& Cooling Equipment

Original Specifications	\$32,000
Dividend Engineering Specifications	20,000
Predicted Saving	\$12,000
Additional Insulation Cost (in place)	4,000
Net Initial Saving	\$ 8,000

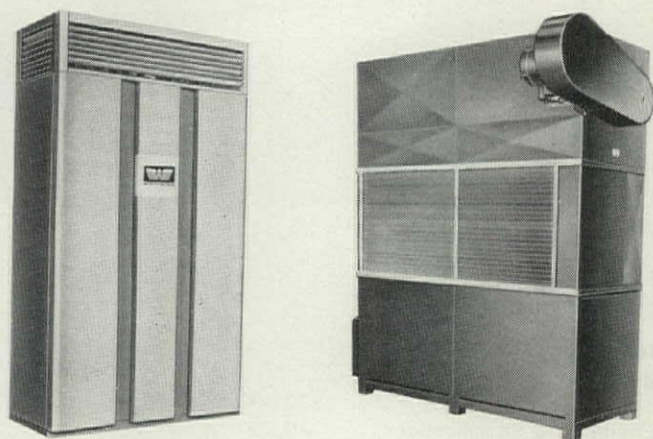
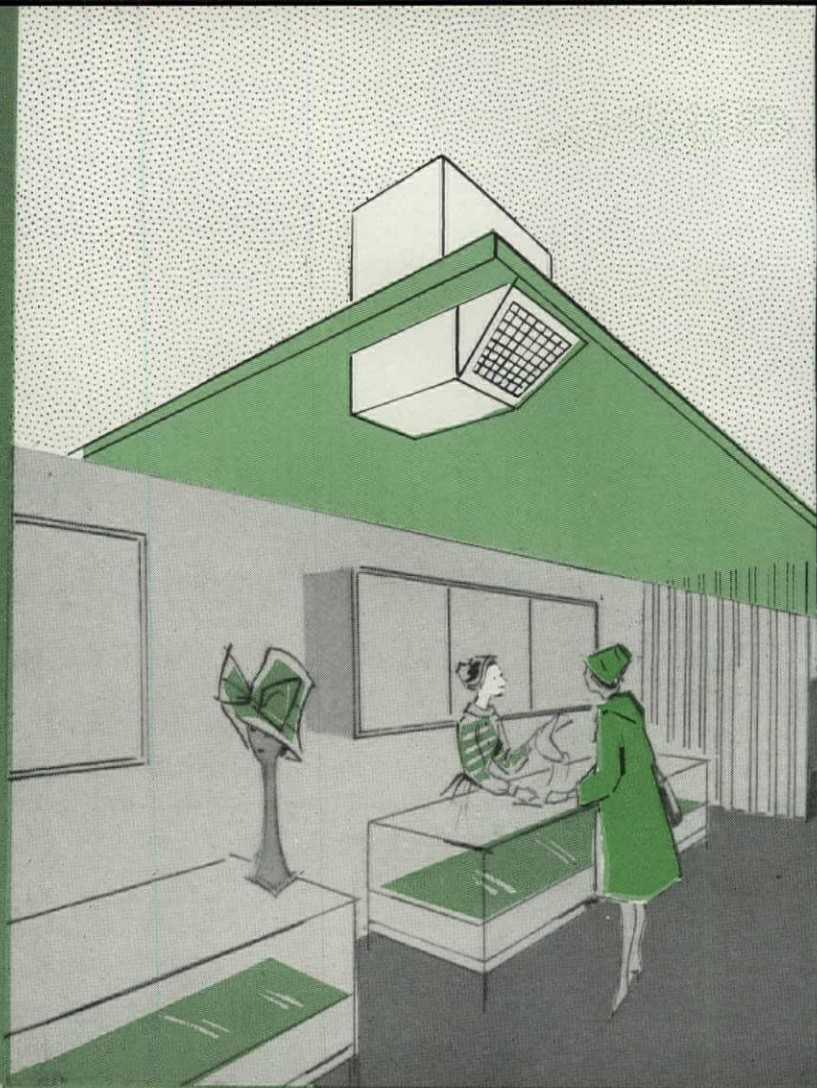
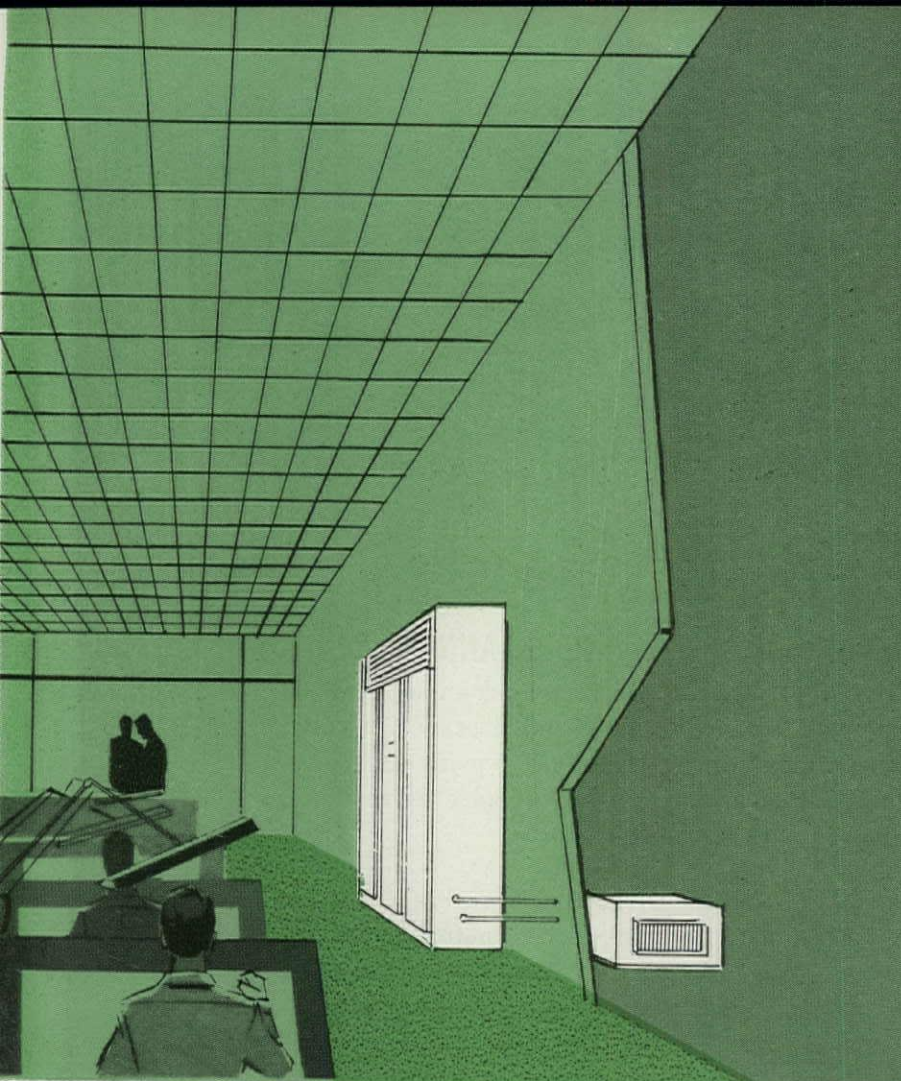
**Projected Annual
Operating Costs**

Original Specifications	\$ 9,947
Dividend Engineering Specifications	8,147
Annual Saving	\$ 1,800

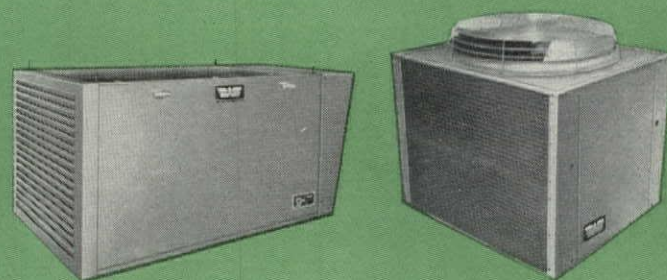
OWENS-CORNING RESEARCH pioneers new ideas in Fiberglas

OWENS-CORNING
FIBERGLAS

†T.M. (REG. U.S. PAT. OFF.) O-C. F. CORP.

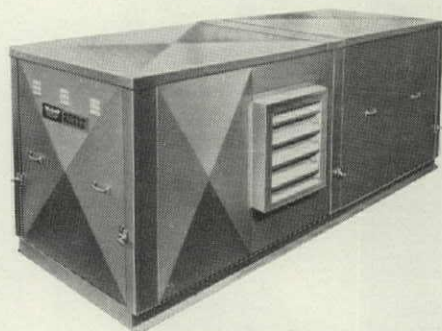
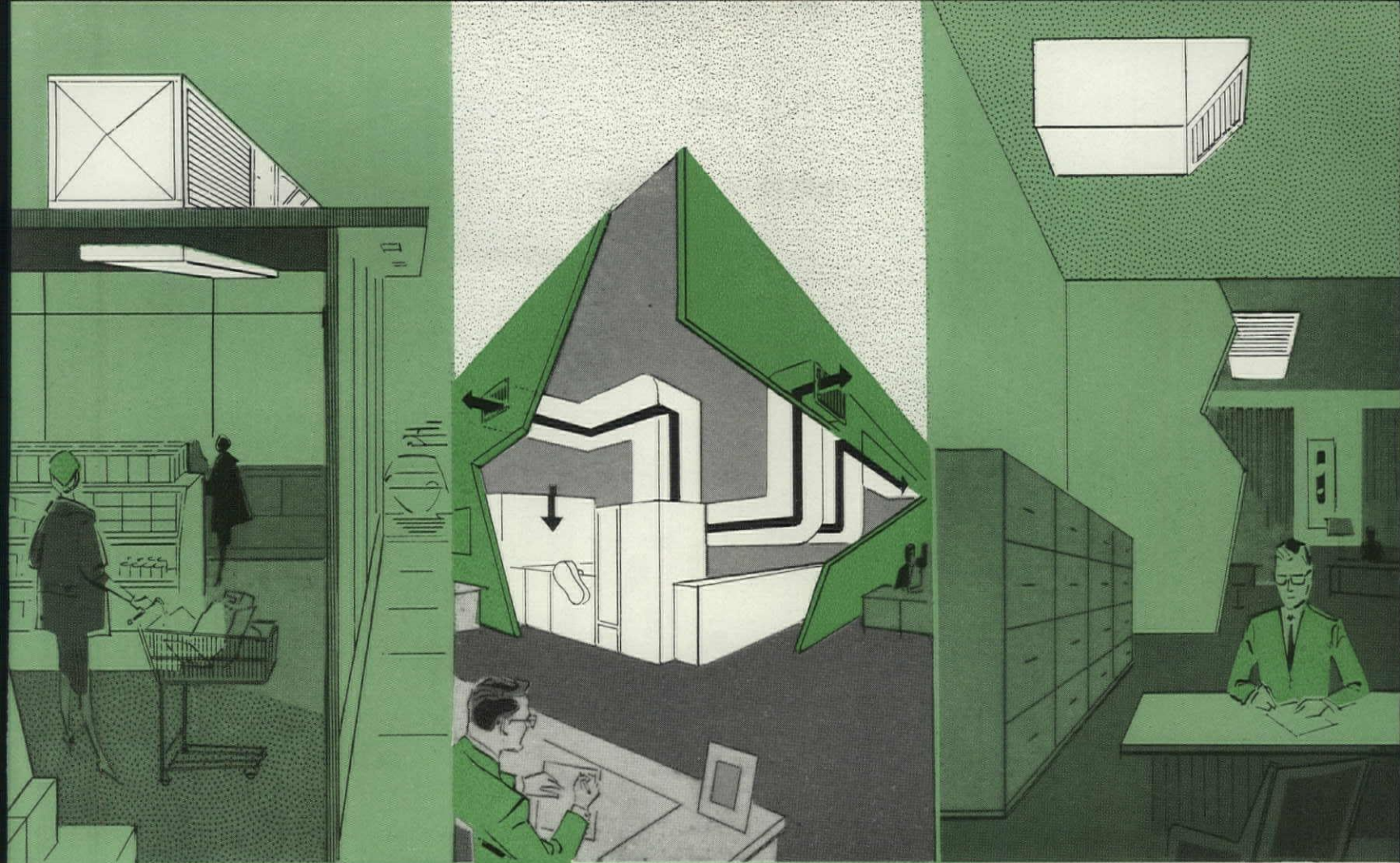


Water and air-cooled packaged units from 3 to 60 tons are compact, stylish and functional for in-space or remote application.

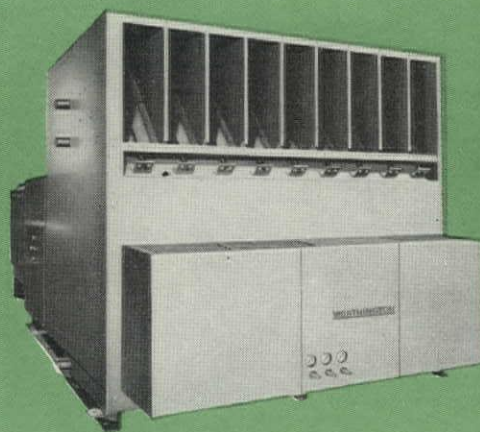


Completely wired remote air-cooled condensing unit with blower-coil units through 20 tons are ceiling-suspended or ducted to conditioned space.

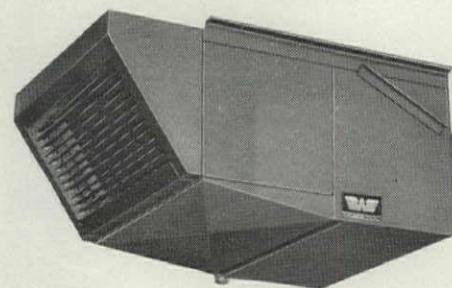
your full choice
of packaged air conditioning
MOST COMPACT
EASIEST TO DESIGN



Up to 35 tons in a single package for year 'round cooling and heating—using gas, oil or steam for heating.



Compact, low-cost answer for true multi-zone system. Offers individual zone control from zero to one hundred per cent of system capacity.



Flexi-Cool units, water- or air-cooled, for ceiling suspension are completely self-contained and can circulate directly or through ducts.

From preliminary plans to final installation, architects are finding there's no better line to use than Worthington "Full Choice" packaged air conditioning units. Here's why!

First, this "Full Choice" line delivers more usable space. You'll find that for size, based on nominal tonnages, it is the most compact line available today.

Second, for virtually every job, Worthington supplies more than one packaged system to make your work flexible, fast and profitable. Over forty models can be designed to virtually any space for air conditioning, dehumidification and heating, too, if desired.

Units may be floor-mounted or ceiling hung, either in conditioned space or remotely. An out-

door system can be roof-mounted or located at ground level on a suitable base. Use with or without ducts—get a variety of air discharge patterns with interchangeable grills and louvers. Special units with inherent capacity control handle multi-zone or special design situations.

Your estimates may be less because these units install for less, too. Every possible step has been done at the factory. Water-cooled units are shipped factory assembled, internal piping and wiring is complete and refrigerants charged. Air-cooled units are split systems, shipped in just two pieces. Only utilities and duct work, if required, must be supplied.

To make design and selection easy, Worthington has complete information on this "Full

Choice" packaged line in the booklet shown here. Ask your Worthington representative or write Worthington Corporation, Air Conditioning Division, Dept. 12-47, East Orange, N. J. In Canada, Worthington (Canada) Ltd., Brantford, Ontario.



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Venus, obviously, had more than love in mind when she importuned Vulcan to accompany her back to Mt. Olympus and set himself up as the architect of that heavenly realm.

Vulcan, the first metallurgist, knew the rarified air and the cosmic disturbances of the upper regions made a shambles of ordinary building metals. Upon arriving with his corps of Cyclopes, one of his first official acts was to put in a supply of Washington Steel's ColorRold stainless and proceed to erect a permanent haven for his mythological playmates.



There is no substitute for stainless steel whether you are building a skyscraper, a space vehicle or a kitchen sink. Washington Steel's ColorRold stainless enables you to enhance the beauty of your quality product. *It's a better product if it's made of stainless steel.*

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ARCHITECTURAL FORUM

Published by TIME INC.

Editorial

Architectural missionaries abroad

Can friends of architecture help the cause in other countries? Specifically, can architects do so through their official bodies? American architects listened eagerly when Bruno Zevi, the ever youthful, zestful critic and historian and columnist and editor of the magazine *l'Architettura* in Rome proposed it to the annual AIA convention in Philadelphia. His listeners forthwith pictured themselves as influencing all world culture. It was a pleasing prospect.

Such proposals must be acted on, but subject to one qualification and one warning. The qualification is that such action is initiated always by individuals. The warning is that such action needs prudence.

Zevi's further theme was that hitherto architects have helped one another internationally only in crises, e.g. in preventing demolition of Le Corbusier's early masterpiece, the Savoye House near Paris. Why wait for such catastrophes to threaten? Why not communicate all the time?

Experience answers that those who saved not only the Savoye House in France but the Robie House in Chicago were really individuals, and that such individuals already possess a flexible medium for regular international communication: a group of magazines that are internationally influential, including *l'Architettura* itself.

It is no slur upon the AIA to say that such institutions come in later, backing the ideas of individuals with needed sanction and machinery for official action. Time is needed to swing institutions.

International communication and action regarding architecture, through publications, gets more attention in Europe than in the U.S. The reasons are economic as well as cultural. Europe exports building materials as well as architectural literature, and although it is regarded as vulgar to mention a link between the two, they support one another. Publishing economics too are favorable in Europe. For example a strong Continental or British architectural magazine may have a circulation in the U.S. equal to only one-thirtieth of FORUM's but this may represent an expansion equal to one-fifth of its domestic total! Such a publication will find it profitable to carry quite a bit of discussion of American architecture for both of its audiences. American publications, by comparison, send a much smaller proportion of their bigger output abroad, but it bulks big enough in Europe to get a fair amount of attention from a selective audience.

The experience in international communication that is growing up among publications carries some lessons for all internationalists in action. It has its excitements and also its irritations. Italy and the U.S. are the two countries that currently get treated the most critically by others: it is a compliment to both of them. British architectural journalists divide into two groups, one of which is the world's most reasonable and informed and constructive, and the other rather waspish.

In general, whether they act through publications or institutions, Americans do well to exercise more prudence in criticizing European architecture than Europe considers necessary in criticizing American. America is fair game to European critics. For a long time the tough new phenomena of mass power and mass culture—or primitiveness—that have entered the

continued on page 79



A
design
idea

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world with industrialism and democracy have been tagged by European scholars and publicists as "Americanization." These frictions often hit America first and seem therefore to come from here. So Americans bat internationally with two strikes against them. But perhaps some of the toughest lessons in the new internationalism must be learned by the U.S. on the receiving end. To be attentive to criticism from abroad, and amenable to suggestions, without being overimpressed and diverted unconsciously from good objectives about which others differ, requires an act of will. Perhaps the best help that friends of architecture in one country can give to the cause in another is a gain for each in heightened self-awareness.

In the Forum

"The art of architecture" is a regular FORUM heading that always leads off the Table of Contents (which is always on page 1). The heading covers significant finished buildings, significant previews, significant discussion.

This month the discussion piece is on "Architecture, fit and befitting." It is a condensation of a symposium held during the winter of 1960-61 under auspices of The Architectural League of New York, with cosponsorship of Architectural FORUM, entitled "The new forces in architecture." (Audiences were overflowing.) As it turned out, the question of fitness dominated the thoughts of the eminent performers, as it does those of architects and their clients. How does today's architecture best fit in nature, in the city, in time, in style, in character?

The answers will be found quite diverse, and debate was hot at times, but opinions were definite. FORUM deplores the current nonsense about there being a formless "chaoticism" (what a horrible word formation!) in architecture, just because barriers have broken

down and ideas are blossoming in profusion. Such freedom upsets the one-liners, the single-thoughters, panacea-mongers, and art puritans; but it exhilarates those who believe that the world is rich and art should make it richer. Of course the great expectation that each major artist or architect will create a new world, or a new view of the world, thus expanding the sensibility of mankind, is balanced by the demand that his world really be one and not be a mix-max. And that is where criticism and debate comes in. His rivals and opponents test him with those questions of fitness.

It was long ago when FORUM developed the belief that modern architecture was not a single dogma but was what modern architects made it. The word "formgivers," now a cliché, first turned up ten years ago in a FORUM piece by Eero Saarinen (TIME, you're welcome) on "six main currents in modern architecture"—not just one. In 1958 FORUM ran another series, by Peter Blake, again cutting paths through the forest.

Next month

It's always a pleasure when subjects a magazine talked about ten years ago or more (such as the multiplicity of architecture) become everybody's subject now. It means that things said now, and noted fully by only the sharper readers, may become everybody's subject tomorrow. Two specific themes are in mind. One is the contribution of new talent, of the younger generation, on which a whole issue was published in 1951 and on which a quiet scouting piece was "The action architecture of a younger generation" (Oct. '59).

FORUM's August issue will be devoted to new talent.

Another theme is the rediscovery by

architects of the common people. On this a forerunning piece was "Jazz in architecture" (Sept. '60).

FORUM's September issue this year will pay special attention to the way ordinary people want to live in cities. It will carry excerpts from the forthcoming book by Jane Jacobs on *The City*—we confidently expect that what she says will have explosive effects on urban design.

And FORUM for July will give half its editorial space to an unusually thorough exploration of one important building: the Chase Manhattan Bank in New York, by Architects Skidmore, Owings & Merrill.



On a hill 40 miles from Manhattan, IBM's new Research Center is a sweeping departure in laboratory planning.

Research in the round

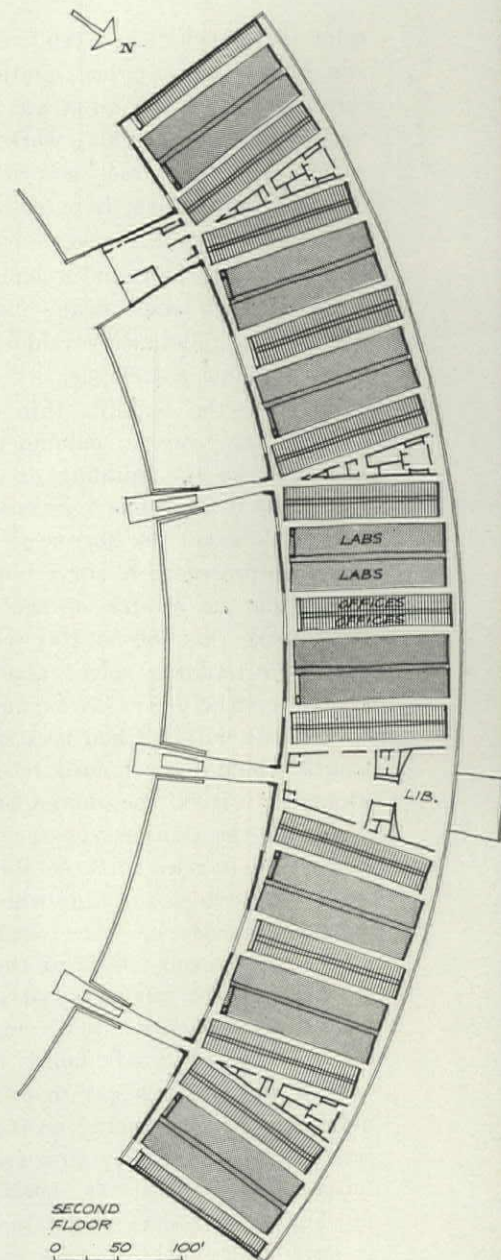
In the midst of 240 rural acres in Westchester County, N.Y., Architect Eero Saarinen has just completed a building based upon several propositions not heretofore very widely accepted: his new IBM Research Center suggests, first, that the best laboratory or office space may, conceivably, be a windowless room; it suggests, secondly, that the shortest line between two points may be a curve; and it suggests, finally, that the handsomest façade in a rolling landscape may be a 1,000-foot-long ribbon of near-black metal and glass.

These unconventional notions are incorporated in one of the architect's most successful structures since the General Motors Technical Center. The notions are anything but arbitrary, for Saarinen did much original thinking before he concluded that an entirely new approach to laboratory planning was in order.

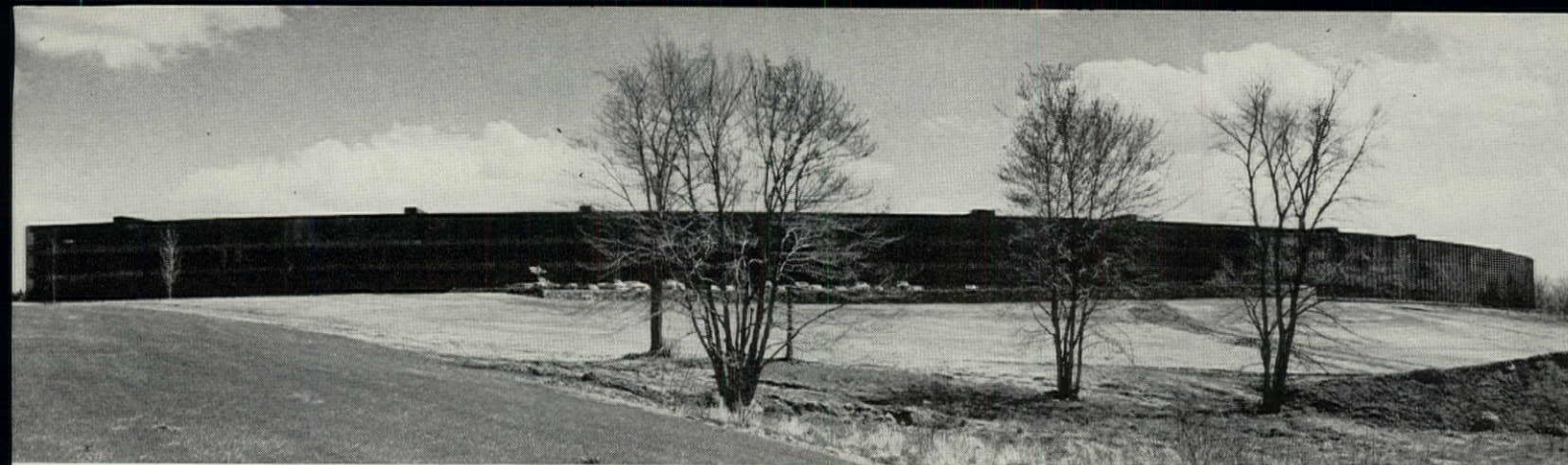
The new Thomas J. Watson Research Center is a three-story-high building about 1,000 feet long and 146 feet wide. Its long façades are almost all glass; yet, behind these glass walls are not offices and laboratories, but wide corridors that run the full length of the building. Between these long corridors (which are used for long-distance traffic) there are shorter ones that cut across the depth of the building—and each of these shorter corridors serves offices on one side, laboratories on the other. Both offices and labs are artificially lighted and ventilated. The short corridors between them are designed for local traffic only. A typical floor plan at right shows how this works.

Saarinen's rationalization of this unusual plan is impressive: "Labs and offices today depend on air conditioning and fluorescent lighting for their air and light—not on windows," he says. "Windows are like fireplaces, nowadays: they are nice to have, but rarely used for their original purpose." Saarinen looked at many conventional labs, found that most of them had window shades drawn. Moreover, any lab building that had a central, double-loaded corridor (and outside windows for labs and offices) suffered from two major drawbacks: the corridors were long, dreary, and noisy; and there was no economical way of bringing in the expensive utilities (including the several, separate air-conditioning systems) required by today's labs.

The IBM plan, on the other hand, does three things: first, it puts labs back to back, with a 4-foot-wide utility



Curved north corridor (left) is heated in part by an enclosed convector tube doubling as window rail. Glass is tinted dark gray.

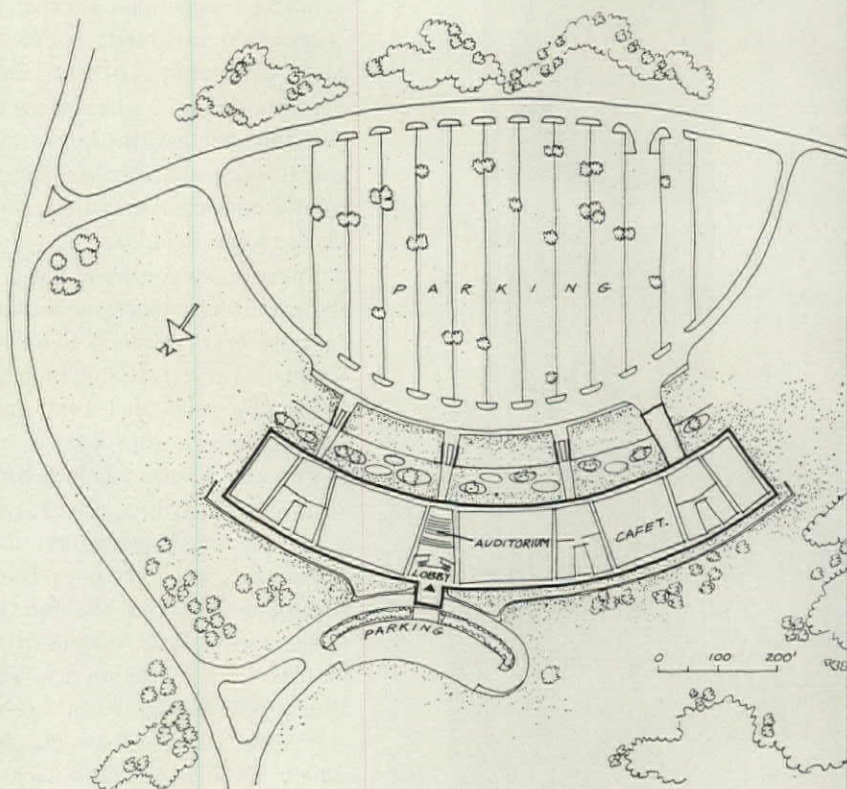


North-to-west facade, a curved, 1,000-foot-long ribbon of dark metal and glass, fits neatly into the crest of the hill. This is the main approach side of the building. Visitors' parking for 60 cars is in front of entrance.

spine (or corridor) between the labs; second, it puts labs and offices opposite one another on short, local-traffic corridors which are quiet and encourage frequent contacts between researchers working on related problems—a very important asset, according to those who work in the labs; and, third, it puts the huge, gray-tinted windows where they will never have to be shaded, so that all local-traffic corridors enjoy handsome views of the landscape at each end. Meanwhile, a walk down the peripheral, long-distance corridors is about as spectacular as a Cinerama travelogue.

To make the building thin enough so no one would be very far from an outside glass wall, Saarinen also had to make the building exceedingly long. (He could not make it any taller because of local zoning limitations.) To avoid the horror of 1,000-foot-long corridors, Saarinen proceeded to curve the entire building, with the result that no stretch of the peripheral corridor ever looks more than 80 to 100 feet long. The decision to curve the building solved another problem as well: it made the structure easily expandable on the given hilltop site. If the building had been straight, any additions in length would have tended to stick out of the sloping ground. As it is, the curved building is beautifully adjusted to the contours of the site (see above): on its north side it rises to three stories, but on the south it seems only two stories high when seen from the charming Japanese garden of gravel and planting islands (opposite). The present length of the great arc is only about one-fifth of the perimeter of a circle; if the building were to be expanded into a complete circle, the periphery would be close to a mile long!

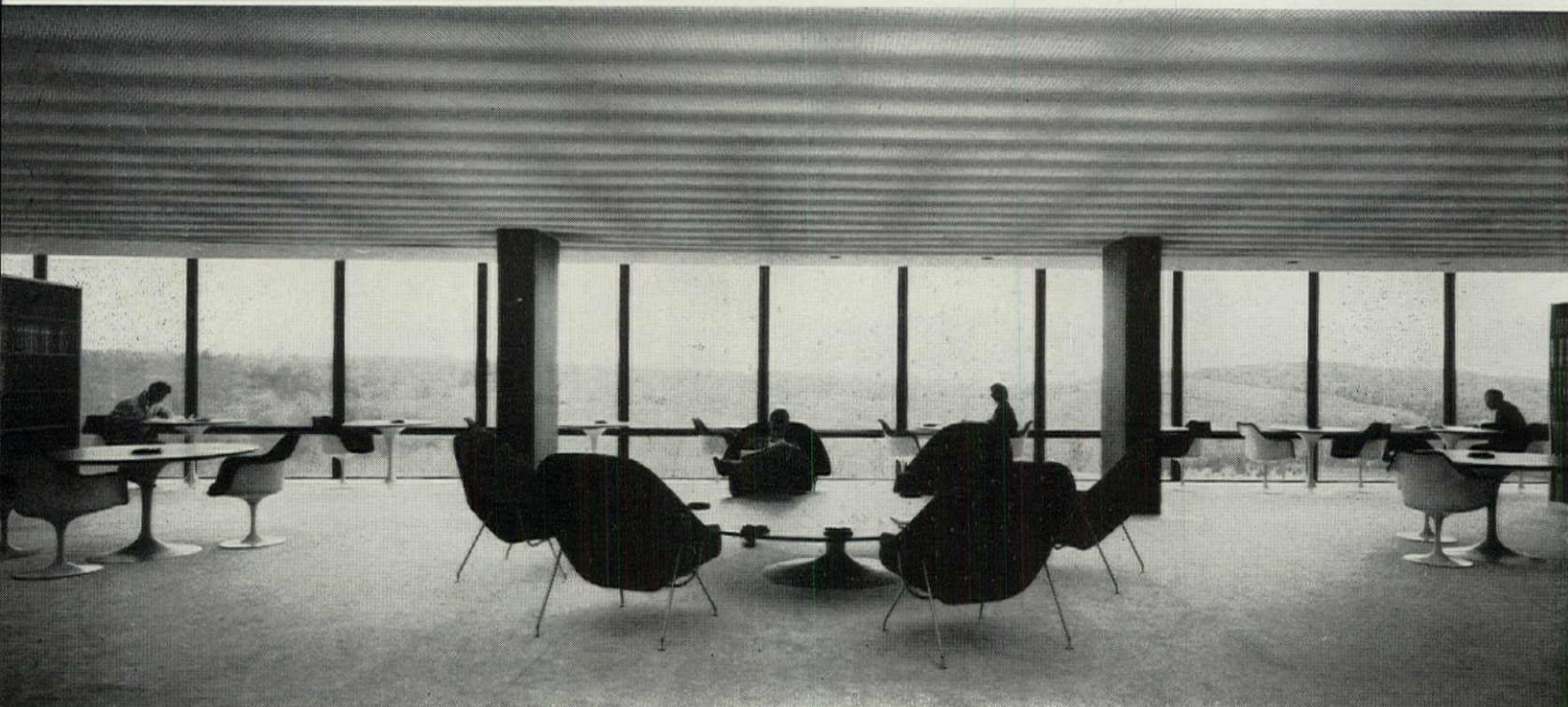
IBM was anxious not to offend its new Westchester neighbors by introducing an industrial-looking structure into a rural area. For this reason, Saarinen made his façades as neutral as possible—aluminum mullions finished in near-black porcelain enamel, holding seemingly near-black sheets of glass. Behind these neutral glass façades are large surfaces of local stone, taken from the walls that crisscrossed the pastures existing on the property. The effect is modest, highly appropriate, and extremely elegant. And at only \$23 per square foot (including all special lab piping, but excluding lab equipment), such elegance is quite an achievement.



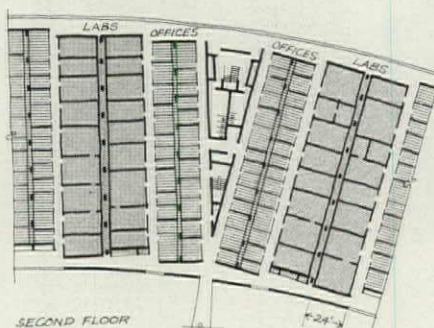
Site plan shows employee parking lot for 1,000 cars, to the south of the building. Bridges lead from parking lot to work areas (photo right), across sunken Japanese garden. Truck loading is at southeast end of arc.

Stonework is appropriate to the building's rural site. Concrete entrance canopy (right, above) is supported on stone walls curved to counter the line of the building. Sculptures by Seymour Lipton, entitled "Argonaut I & II," symbolize man's search into the unknown. South walls of the building (right) are predominantly stone to reduce the air-conditioning load. Japanese garden is a sunny, wind-protected area for the use of IBM personnel.

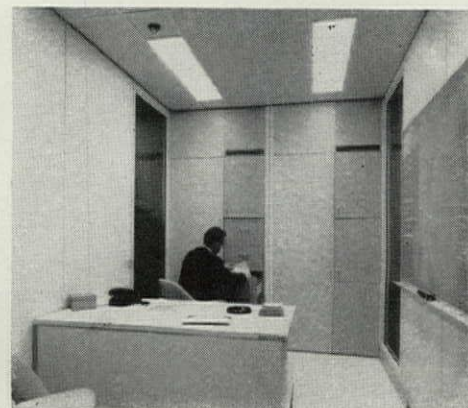
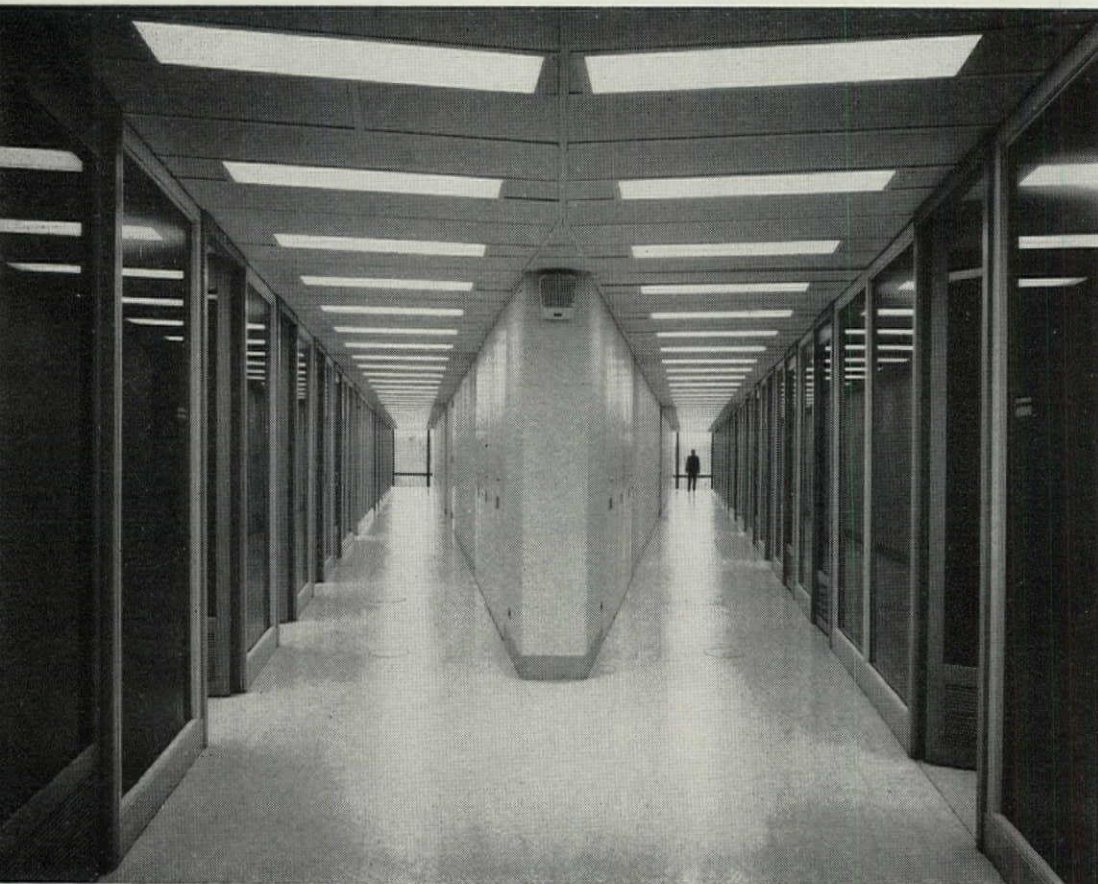




Library on top floor is one of the few work areas with glass walls facing the landscape. In addition to the main reading room, there are desk-equipped cubicles for researchers.



Modular offices and labs are 12 and 24 feet deep, respectively; their widths along corridor are in multiples of 4 feet. Offices are back to back and separated by a wall of storage units finished in different shades of the same, basic color (below). Labs are separated by a 4-foot-wide utility spine containing all pipes and ducts. Wedge-shaped utility cores occur at intervals of about 200 feet (below, left). Control center governs air conditioning, piping, fire protection, etc., throughout the building.





Main lobby has a curved mezzanine used as exhibition space. Stair landing at half level, with bust of Thomas J. Watson by Jacques Lipchitz, leads into 266-seat auditorium.

Auditorium can be divided into two sections of 186 and 80 seats. Double folding doors are sufficiently soundproof to permit simultaneous use of both sections. Acoustics are excellent.

THOMAS J. WATSON RESEARCH CENTER, Yorktown Heights, N.Y.
 ARCHITECTS: Eero Saarinen & Associates.
 ENGINEERS: Severud-Elstad-Kruger-Associates (structural);
 Jaros, Baum & Bolles (mechanical and electrical).
 LANDSCAPE ARCHITECTS: Sasaki, Walker & Associates.
 GENERAL CONTRACTOR: William L. Crow Construction Co.



Architecture— fitting and befitting

The pundits are pondering both the physical problems and the appropriateness of current design trends.

Over the course of the last few months the Architectural League and FORUM have sponsored five evening programs of stimulating architectural talk, "The New Forces in Architecture," in New York City. Subjects ranged from the opening evening's talk "Critique: environment and act" in October to "Individual expression versus order" in April, but all the speakers, as speakers will, steered their own directions under the general sailing instructions, saying what they thought important to say at this moment in architectural history. The locales of the evenings varied architecturally from the steep capaciousness of Harrison & Abramovitz' Caspary Auditorium at the Rockefeller Institute to the Italianate uncalm of Gio Ponti's auditorium in the Time and Life Building (with two of the evenings at the Metropolitan Museum's larger, more neutral auditorium). One thing was constant: crowds of eager listeners, sometimes overflowing the appointed spaces. Chairman of the program committee was Architect Ulrich Franzen; moderator was August Heckscher, president of the Twentieth Century Fund. On the following pages are extracts from the contributions of some of the panelists, on or off their charted courses, but all significant to architecture today.

A critique—environment and act

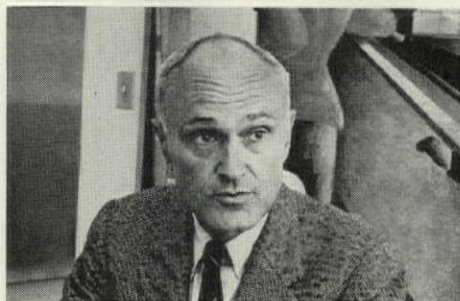


Vincent Scully Jr., professor*

"It is clear that the serious contemporary architect—like any serious contemporary artist or, indeed, any statesman—has to face certain general trends of the moment which are inimical to solid accomplishment in his field. . . . One trend, as it can be perceived in American mass culture as a whole, is a growing lack of respect for action or accomplishment; and, quite naturally, it has produced many unpleasant and dangerous effects in all fields where action is required.

Foremost among those effects has been a tendency to prefer the semblance of action—the illusion of action which is really the avoidance of action—to meaningful action itself. Thus, along with it have come an instinct for mindless, ignoble comfort and a preference for material and conceptual gadgetry over thought and useful things alike. Most of all, since action must have an object, the present trend is marked by a growing refusal to admit of the existence of realities external to the self and, therefore, by a frightening inability to make contact with anything—which means, in the end, by the inability to revere anything or to love. Architecturally speaking, this attitude has created a general incapacity to focus upon things of real use, whether material or conceptual. . . . The sense of use of a building, for example, as a special tool for human thought and action, and thus potentially as an embodiment of both, is probably weaker now in a general sense than it has ever been in the history of the world. What is arising is a lack of trust in the validity of anything. Since nothing has any real use or any objective existence, then it follows that nothing can really be very important. Consequently, nothing can be worth taking serious pains over at the basic level of what

*Scully drew material for his talk from his two forthcoming books, *Modern Architecture*, to be published this fall by Braziller, and *The Earth, the Temple, and the Gods—Greek Sacred Architecture*, to be published by Yale University Press, also this fall.



Philip Johnson, architect



Reyner Banham, British critic

it is intended to be used for, how it is formed, and what it means.

"But the rising contempt for action and object alike is deadly serious. . . . It is serious because most contemporary metaphysical thought seems to make it clear that modern man is now alone and unprotected in the world. He is at home no longer under the Roman "Dome of Heaven," or the Medieval "Celestial City," or the perfect neo-Platonic universe of the Renaissance. He is alone, Stevens' "empty spirit in vacant space," and he has only the reality of his own acts to believe in, and comes to maturity only in so far as he is prepared to assume full and lonely responsibility for those acts. . . .

"With the question of environment and act, and of the man-made and natural worlds, we come to the heart of the architectural problem of our time, and of any time. Because, what is architecture? Or rather, what do men do with architecture? The first phase of the answer seems clear. With architecture human beings create a man-made universe within the natural universe, a new universe conceived at human measure and creating the image of the world as they wish to believe it to be. With architecture they create an environment for themselves. Thus the first definition of architecture is a spatial one.

"But this definition is not enough, in so far as architecture, like sculpture—the other three-dimensional art—also embodies human acts and populates the natural world with images of human thought seen in relation to nature, which is the test of that thought. Architecture seems to demonstrate once again, and intensely for this generation, the basic fact of human fate: act and love. Act, love, or, as a species, perish."

"...I recognize three quite interesting ways of doing architectural design right now, intertwined, none of them a style, but all exhilarating, all forward looking, all fecund, I would say, for future form. The one-line direction still the strongest is the International Style.... Let us not write off this grand, modern, 40-year tradition.... The second great stream that I recognize is what the British sometimes call... brutalism, not a good name, but a name....

"It's an attitude, not a style, not even a way of forming... it stems from the attempt to fulfill as clearly and simply as possible the environmental purposes of the building. For form the brutalists are apt to bring us great concrete beams—muscle-flexing, one English critic calls it—and tiny windows, funny shaped, scattered in great brick walls. Much inside and outside movement, and a great many pieces of concrete exposed....

"The brutalist attitude melts, however, strangely into the other popular direction, which, to use the British word, is neohistoricism. To many this idea of a return to an interest in history is a slap at the whole Modern Movement, capital M capital M.... I claim that it is not... in the time of the Bauhaus and the time of the early days at Harvard, history was not considered a proper study. And today how different! We find ourselves wrapped up in reminiscence. We cannot today *not* know history.... It's a stimulating and new feeling of freedom....

We no longer have to judge buildings by how little or how much history they have in them.... It is not neo-Baroque, it is not anti-international, it's not anti-modern, it's only faintly anti-functional. It is also slightly anti-rational... but in being anti-rational, aren't we following merely in the philosophical trend of our day?... We have no wish to revolt against the past; we can acknowledge the leadership of our great elders. But we can be freer...."

"Behind the diversification of architecture, which we see at the moment, there is, pretty clearly, a diversification of sociological and other human impulses.... The architect is no longer being joined with a particular kind of sociologist in laying down a narrow line.... I think everywhere the question becomes much more: how do people live? How are these ways of living viable? How can we create buildings which will enable them to develop the potentialities of that manner of living? And this clearly is against the evolution of a single style or even a graded series of styles. Probably quite unrelated styles will erupt to deal with particular problems in particular places. This is for instance the tendency which we've seen in the recent evolution of *Le Congrès International D'Architecture Moderne*.

"In the good old days C.I.A.M. could lay down specific rules on how town planning should be done and what people should expect: you know, sun, space, trees, reinforced concrete, things like that. These were the basics of the good life.... But at the last C.I.A.M. conference two years ago, people brought actual projects they were working on. This is what people in Italy were doing for the peasants in the south; this is what people in England were proposing for the traffic planning of London, and so on; they brought actual schemes and they argued about actual schemes....

"The growth of this attitude seems to be becoming increasingly current throughout the world under the impact not only of sociologists but of biological studies and things like that. The foundations of a scientifically humane attitude are constantly broadening, and that, it seems to me, will spread the foundations of architecture at the same time. After all, architecture is built for men and by men."



Catherine Bauer Wurster, critic

"... We used to worry about chaos, about the horrible result of untrammelled whim and small-scale initiative. Now there is a complete reaction the other way. We worry about overstandardization and monotony. We worry about order brutally imposed. Take a suburban tract, for example. The individual house nowadays is probably better designed than it used to be; sometimes it's quite well designed. But technology, finance, and bureaucracy all favor, naturally, large-scale operations, and therefore we build several thousand at once which are practically identical in design. If there are slight deviations they are even more irritating than if they were identical. They are entirely identical in price and they are completely identical socially. Not actually because it is necessarily cheaper to do it that way, but because it is easier. It's just easier in the Federal Housing Administration, and it's easier in a big contracting job. Easier all the way through just to make them all the same... whether in Portland, Maine, or San Diego or New Orleans or anywhere. Now the result is that we have a wave of romantic nostalgia which may even stop redevelopment sooner or later. When they tore down the last of the Victorian—the very slummy Victorian—mansions in a redevelopment project in San Francisco a few weeks ago, everybody had parties and went and tore out everything they could save because they were losing something absolutely terrific. And, indeed, they were losing a part of the history of the city. We are even getting a really very unhealthy kind of nostalgic romance; it's very fashionable today to say that, after all, the slums were wonderful. People had a lovely neighborhood and family life when it was urbane and was a great mixture and exciting and so on.

"But this is just simply giving up."



Jose Luis Sert, architect-planner

"My answer is: We are not... very definitely and without hesitation. My next comment is, are other people equipped to handle the problems of our time? And I will be equally inclined to answer, No....

"I think that other trades are more confused than the architects.... The architects have done extraordinary things in the last years. The leading figures have helped to make things better for men to live. I think there has been an extraordinary revolution in architecture. We can't expect that in a few decades this revolution is fully accomplished....

"I also believe in times near we will have people who will specialize in different fields of architecture. Today architects are designing everything from chairs and ash trays to cities and civic centers. It's rather a broad field of design, the one we're involved in. And maybe if we take it less ambitiously and if we concentrate our efforts in one or another area, the results will perhaps be better and go deeper into the matter we want to study...."



Louis I. Kahn, architect

"I believe we design too quickly without realizing what characterizes one thing from another in form. The realm of spaces which characterizes a school-house is not the realm of spaces which is a city hall....

"I believe that modern cities need a distinction between the aqueduct architecture and the architecture of the activities of man, because the buildings we build are really indicative of what the activities of man need in the way of space.... I believe both architectures must be separated from each other, because they are not the same architecture. One is a tough, kickable architecture, and the other is delicate—could be gossamer, in our present technology, could be completely remarkable. And if we knew the distinction, I think it would become even more remarkable, because we would not place that building out of context, but would place it in relation to the tough architecture....

"Growth is only possible if you can refer to something around which you can grow. The oyster needs that in order to produce a pearl. You've got to have something there from which you can understand which way you're going....

"But right now each architecture has blindness around it on all sides, hoping the other architecture does not exist.... They're all sitting there really just hoping for things to gather around them which would be equally as respectable. It won't be—unless you set something of an anchoring course of logic in this movement and give it a great architecture—not just a commonplace, 'good-enough' architecture."



Ernest Van den Haag, psychiatrist

"Architecture and urban design can no more escape the spirit of the age than any other phase of life. Most ages have been characterized by distinct styles of living, of building, of feeling, and of thinking. . . .

"If we ask inhabitants of the slums of Naples whether they would prefer to live in a New York housing development they would undoubtedly answer yes. They would escape enthusiastically the discomforts of their present quarters and achieve comfort. 'But what is a man profited if he shall gain the whole world and lose his own soul?' Comfort has always been more appealing to human beings than the soul. Gains are visible, concrete, specific. Losses are intangible. Yet I think they are quite concrete. Without esthetic gratification . . . man's soul atrophies. The loss becomes apparent through a multitude of ambiguous symptoms. . . . People may never be aware of the qualities of esthetic gratification—their presence or their lack. If a person works in a beautiful landscape he seldom is aware of its beauty; yet I think this beauty affects him, even in unconscious terms. The fact that people are not aware of either the absence or presence of esthetic gratifications does not mean that they have no effects. To be sure, American slums never had any esthetic gratification, but housing developments do not either. So the most we can say is that they have not improved the problem where it needs improvement most."



Marcel Breuer, architect

"I am sure that some architects, among them very capable ones, feel that today's architecture needs a shot in the arm and that the glass wall is much overrated as a universal enclosure of space. I do not want to abandon some of my own children: the transparency of architecture; the interior space connected with the exterior one, at least visually speaking; the flow of space through a structure and between its walls; the language of structural forces; the physical and esthetic sensations of a material which promotes these various phenomena, glass. But there are many more potentialities in architecture if it is not strait-jacketed into narrow rules. There are also many human needs which our glass wall does not fulfill. . . .

"That a greater number of tendencies are emphasized today—inventiveness, structure, plastic modulation, preoccupation with scale, and the all-is-permissible-to-the-genius tendency—is partly due to the original emphasis of modern architecture on freedom, mainly on freedom from traditional precedence. The initial liberation process still has an active momentum which is actually increasing now as a reaction to that large section of 'successful' modern architecture . . . demonstrating a rather tyrannic discipline, losing relation to true progress, to visual and human needs.

"... Only a synthesis of the opposites, individuality and discipline, lends our thoughts a direction which moves forward in balance: otherwise one totters and reels from one side to the other, replacing one mask of architectural style with the mask of another. It seems that architecture should have a rather universal foundation. Man comes and goes; the building, the street, the town remains. To build is, in final appraisal, not a role to play, not a vote to take, not an opinion; it is a passion, basic . . . the bread we eat."



Paul Rudolph, architect

"Today we build on the International Style's basic precepts, but search for an approach and answers which will allow us to help bring cohesion to our environment. There seem to be three approaches today. The first is "mood" architecture. The second is "universal space" architecture, and the third grows more directly from the thinking of the twenties, and I shall call it "civic" architecture.

"... Civic architecture is the glaring lack of the twentieth century. I believe that architects have abdicated from the traditional role they have played in large-scale, three-dimensional design. We mistakenly thought the planners were civic designers. They are not now and never will be, for their heart is elsewhere. Coherence and order can only be achieved by recognizing the profound forces of society, and resolving to find significant solutions

"The sheer bulk of our buildings and cities, access to and through them, plus recognition of the presence of automobiles when they are not moving, are overwhelming environmental problems. Scale is the only potent architectural tool

"In short, our cities need to be broken down into comprehensible parts, each with its own specific character. The wonderful honky-tonk quality of Times Square should not penetrate beyond; the civic quality of the New York Public Library and its park should be emphasized by rebuilding the three sides of the square of one material, and no advertising allowed above the first floor. . . .

"It has been said that the golden age of modern architecture is over and now we merely elaborate and embellish. How could it be so when there are so many untouched, even undefined forces of society crying for order?"



The suffering shore line

Waterside blight is blocking visual escape from the city.

BY WALTER McQUADE

Where the land meets the water, man's imagination has always stirred. Even today, when the prime ambition seems to be to voyage in outer space, the world's waters remain a mystery, an enigmatic lure, a visual escape. Many U.S. cities stand beside rivers, others on bays, harbors, and lakes, and some even beside the oceans which not so long ago were themselves considered outer space—when Magellan and Columbus were the space men. Almost any city by the water is privileged by its nearness to the deeply reassuring weight of nature; its people can look up now and then from the almost inevitable pettiness of their environment and find release.

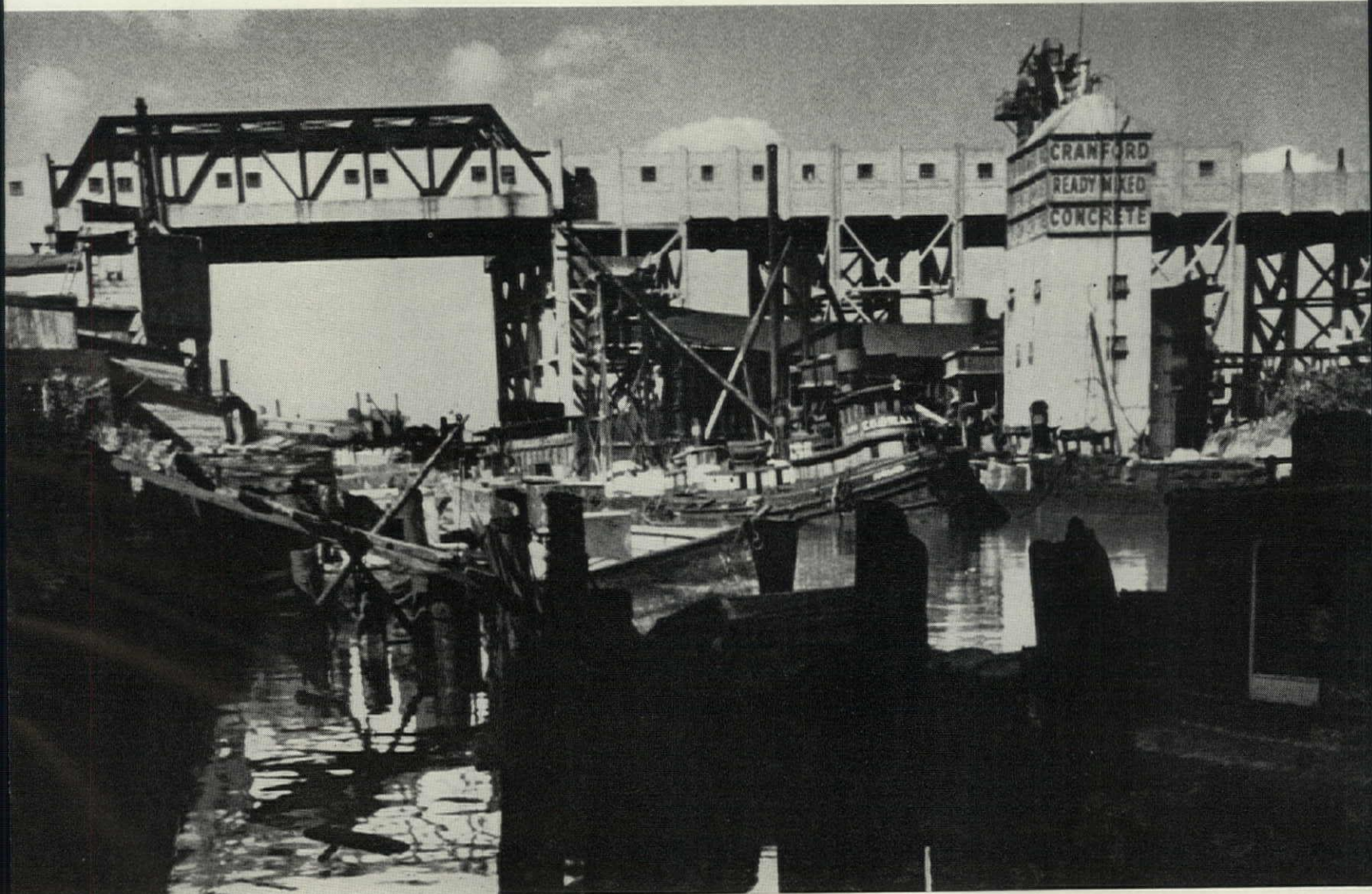
They can do this if they have not made their shore lines a visual barrier. Cleveland (1) has both river and lake—or perhaps the verb, properly, is had.

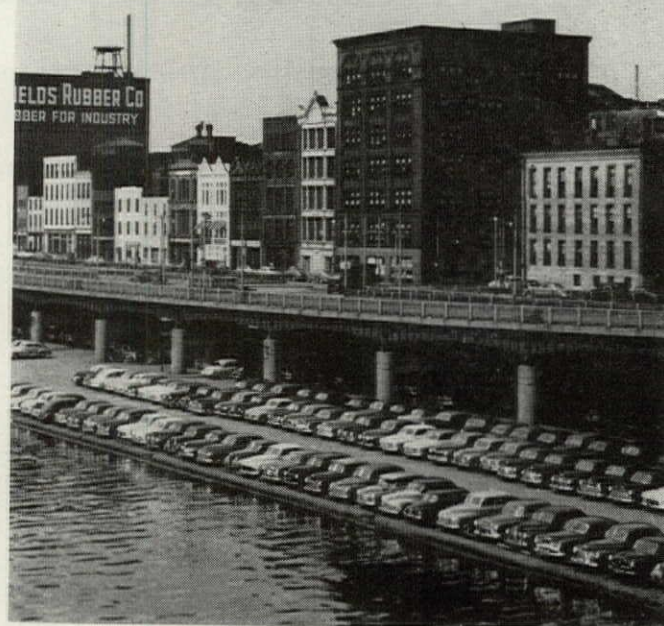
Likewise, Staten Island, New York (2). Neither is untypical in its visual squalor.

For it is an unavoidable fact that urban water fronts, by and large, have been handled viciously: filled by ugliness, exploited carelessly, made part of man's seemingly ceaseless efforts to reshape nature into a shoddy image of his shallower impulses. As a result the dividing line between land and water too often is a creeping smudge.

The specific errors which so often spoil shore fronts are so familiar they are easy to list. As usual, the automobile is the first villain; it is almost conventional for cities to be fenced off from their waters by highways, and parking fields, or both, as in Pittsburgh (3). For a more extreme example note the mutilated view of San Francisco Harbor from

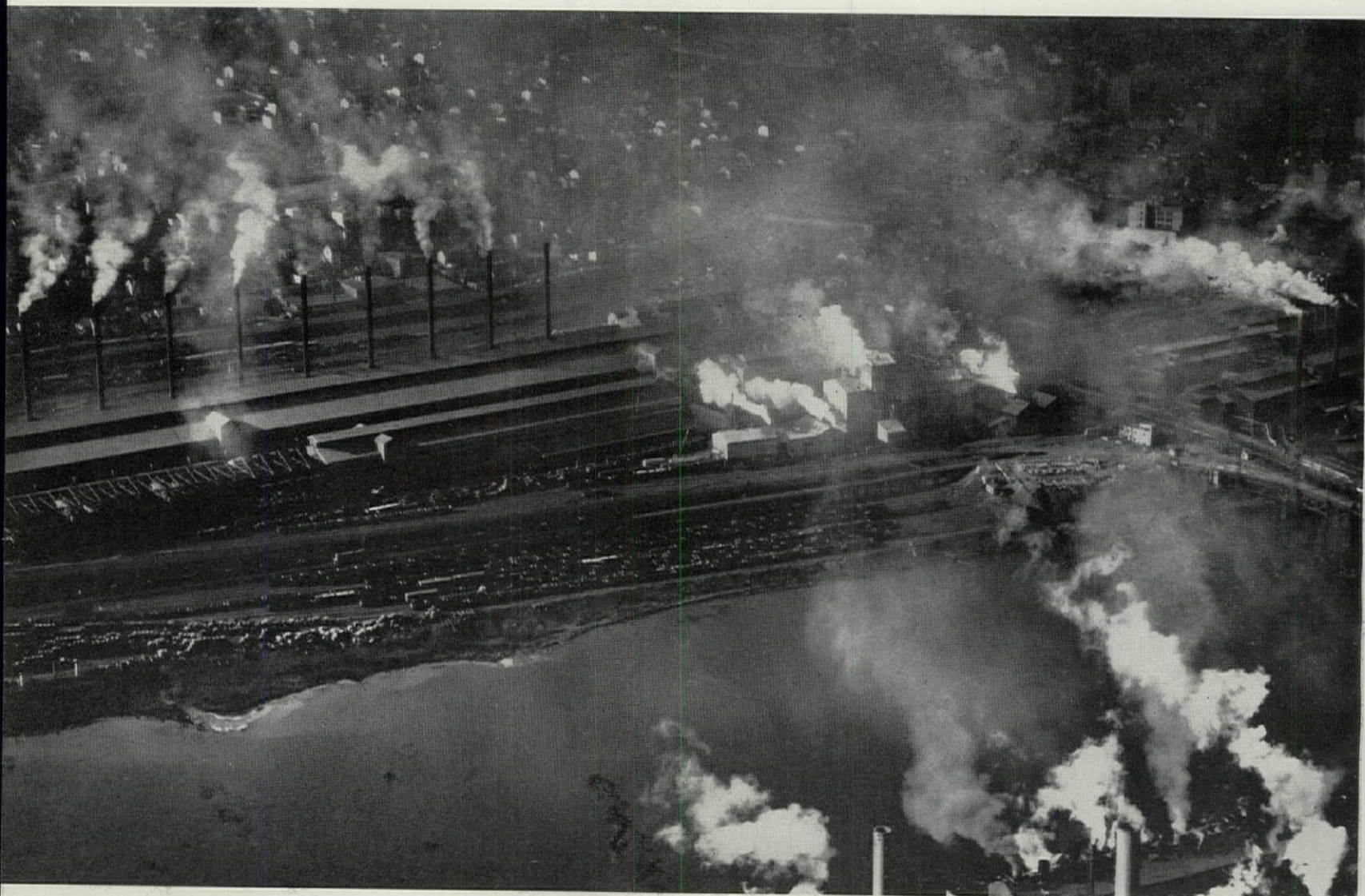
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one of the city's new elevated superhighways near the shore line (6).

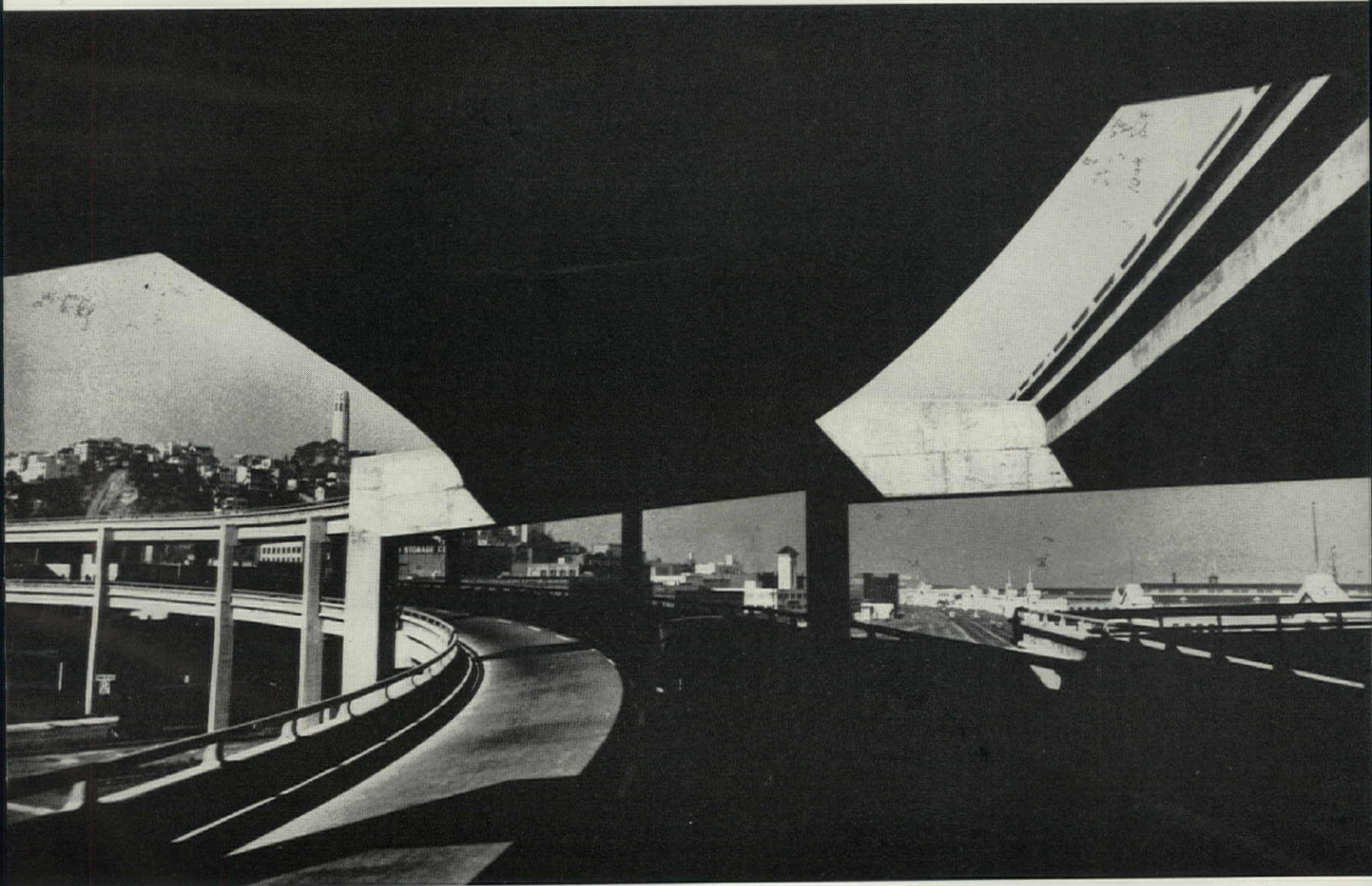
Another easy villain is industry, which has followed the water fronts both to drink the water and to use it as a shipping avenue. The characterization of industry as villain, however, is more intricate, because some industries, such as commercial fishing, actually improve water fronts, as in Boston (5), dramatizing them, adding the fascination of an old, adventurous trade. At any rate it is impractical to deny industry's need for water frontage. Nor is it possible to deny that even some of the more maniacal stretches of inland rivers, such as the industrial landscape near Pittsburgh (4), are impressive sights, almost Biblical with their water turned into lava, their shores into controlled volcanoes.

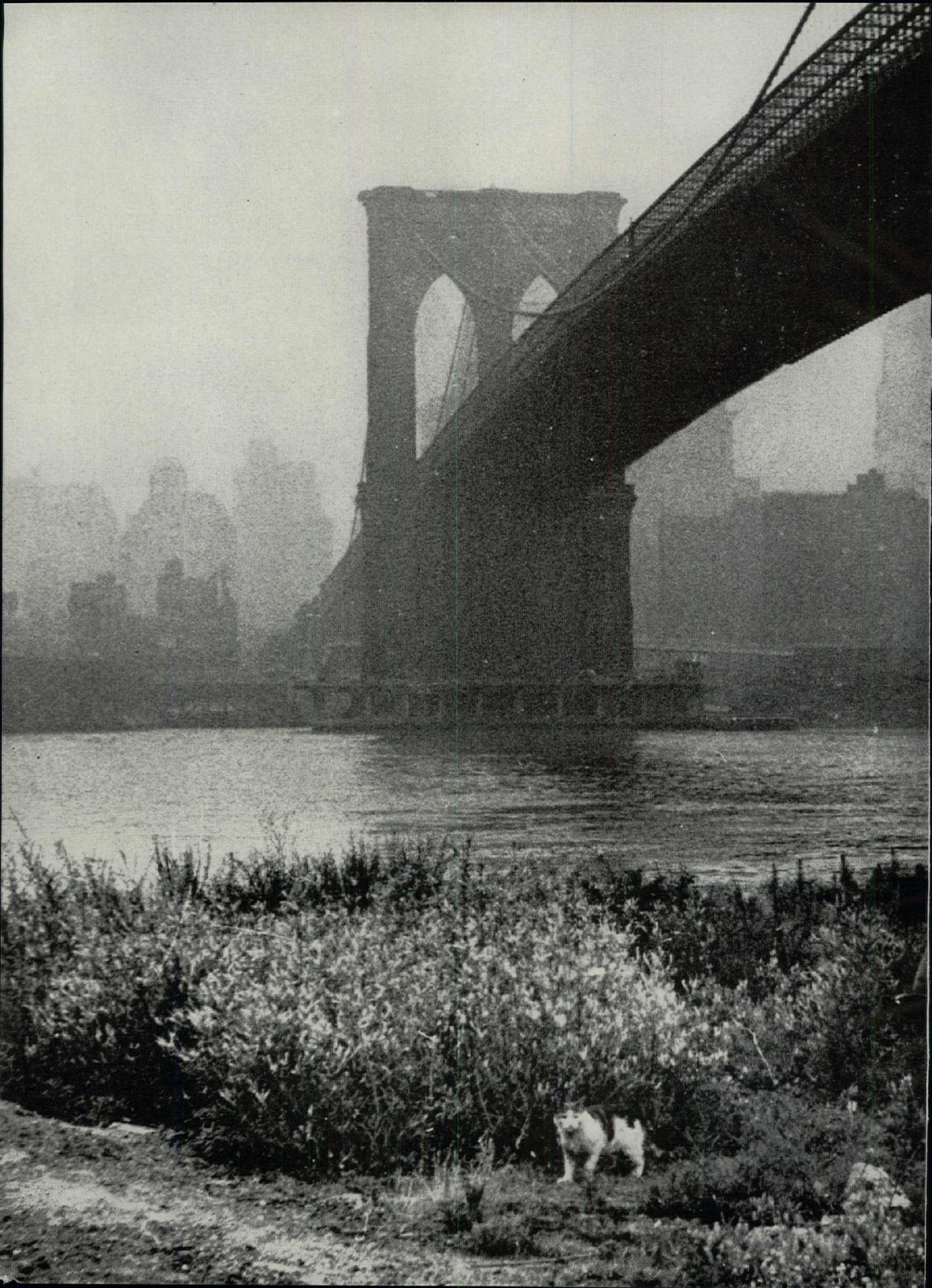
It is not the ferociously used water fronts which are the most depressing ones, but the half-used or



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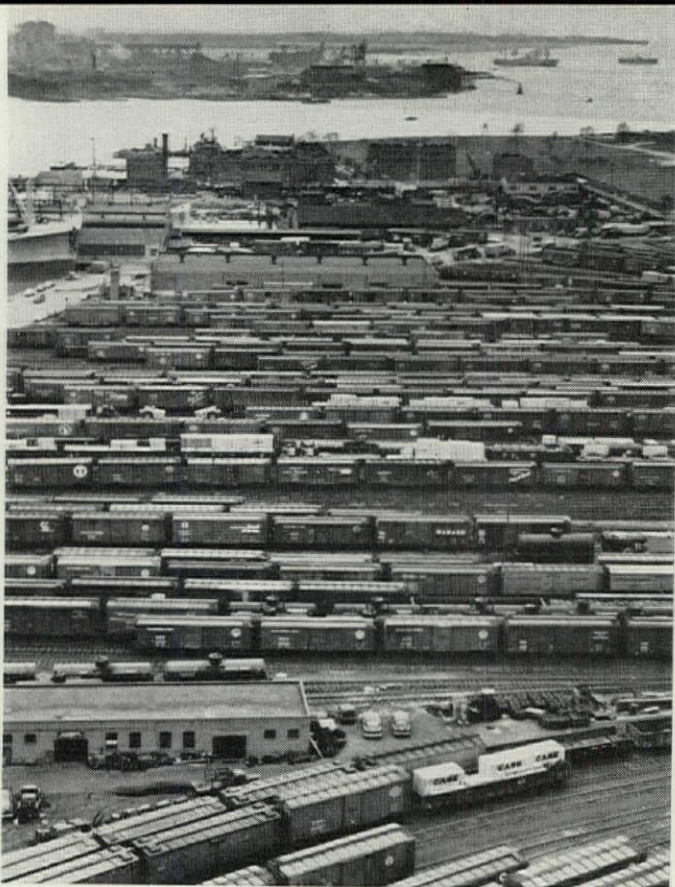
misused water fronts, those that are spoiled without purpose. Many old dock areas in cities qualify as industrial slums; there are factories still crouched by rivers that would be happier economically somewhere else; in numerous downtown districts there are blocks and blocks of warehouses blocking off the water. These are areas which present great opportunity for city redevelopment. One of them is at the Brooklyn end of the beautiful old Brooklyn Bridge (7), a minor urban jungle. In contrast is a view of where the ocean meets California (8). There is something wrong with this too; it is a kind of sanitary Casbah, a mild contradiction to the boldness of the sea, confronting it smugly, safely, from behind a divided highway.

There are many individuals aware of the opportunities of our cities' water fronts; even some cities are aware of them, and taking action. Wide con-

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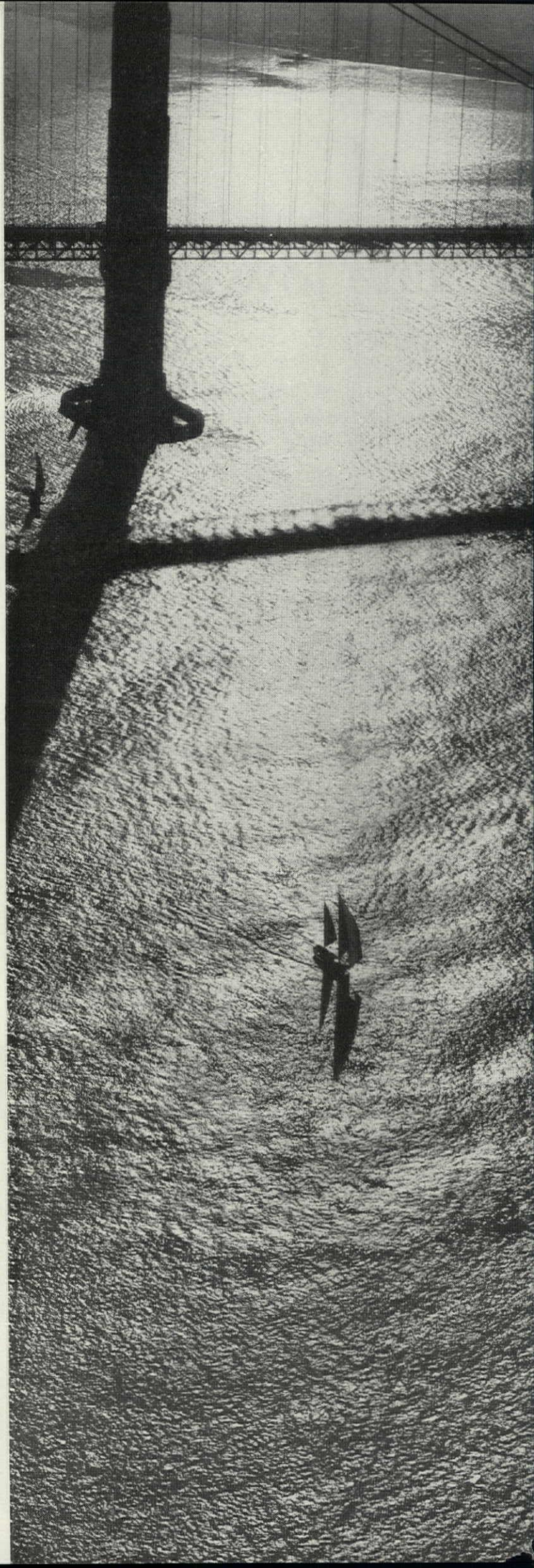


trasts of water-front conditions are visible side by side; compare the two views of Baltimore Harbor: across the yards (9) and across the waters (10), toward the national memorial, Fort McHenry. It is a fight never over, and not even begun in most places—witness the Missouri River at Omaha (11). Even some of the best-kept water fronts continue to face new threats.

In future issues FORUM will examine both the problems and some of the solutions to the preservation or rescue of the urban—and suburban—shore line. This is not a cry simply for conservation of untouched nature. Just as cultivation into farmland has often improved a raw countryside, so also—as indicated in the photograph of San Francisco Bay (12)—can man's works improve the water front itself. The problem which requires exploration is a professional one: how.

PHOTOS:

- (1) U.S. AIR FORCE
- (2) ALFRED EISENSTADT—LIFE
- (3) BILL AND DILLON FERRIS
- (4, 8, 12) MARGARET BOURKE-WHITE—LIFE
- (5) ELIOT ELISOFON—LIFE
- (6) MICHAEL E. BRY—AERO PHOTOGRAPHERS
- (7) ERICH HARTMANN—MAGNUM
- (9) GEORGE SKADDING—LIFE
- (10) HANS MANN
- (11) HANS WILD



The low cost of fine buildings

Developers and corporate clients are demonstrating the economic reasons for building high quality office space.

BY DAVID B. CARLSON

The impending completion of the nation's mightiest skyscraper since the Empire State Building, the \$100-million (not including land and furnishings) Chase Manhattan Bank tower in New York City's financial district, will pose, in the most megalomaniacal terms ever, the enduring question of the cost of high-quality building. The Chase is the latest in a procession of landmark skyscrapers that have been built in the past decade. Like its generic predecessors—Lever House, Seagram's, Corning Glass, Union Carbide—it is expensive in terms of the cost of producing a given amount of office space. But, like these and other new and distinguished buildings not only in New York but in Chicago, Cleveland, Pittsburgh, Seattle, San Francisco, and other cities, it is not considered too costly by the parties most concerned with the economics—the owners. In fact, they have found that such fine buildings can make money as well as earn the good will of the cities in which they are built.

The willingness of the owners of the Chase and the other fine office towers to spend vast sums for top quality reflects both a desire to be housed in the best space available—esthetically and efficiently—and also a sharp understanding of the economics of building and owning such space. For while it is true that such buildings are indeed costly, sometimes costing twice the "going cost" of new office space of more modest qualities, large corporations have found it well worth their while to add them to their assets.

The reasons for a corporation to em-

bark on a costly building program, particularly for headquarters space in a high-cost central city area, are both tangible and not so tangible. Among the former is the elemental need for more space and more efficient space in a convenient location. But this still does not necessarily mean that the building must be a high-cost project—new and efficient office space is being built right now in New York City at prices well under those for Chase (roughly \$30 per square foot versus \$45 per square foot) and other buildings like it. The corporate willingness to push ahead with such a building reflects 1) a knowledge of tax laws which can convert a new building into a machine for conserving capital as well as a machine for working, 2) a consideration of the returns that can be earned from the development of highly valuable urban real estate, and 3) a realization that an investment in an office structure of outstanding quality is an asset of the highest caliber. Then, too, there is the great but not-so-tangible

value of the high-quality office headquarters as a promotional artifact (FORUM, July '60).

The corporate client

Most of the fine office towers which have been built in the postwar years have been designed for corporate clients whose main sources of income lay outside real estate development as such. So-called operative builders, men whose business is developing real estate for a profit, are sometimes quick to point out that this type of client is the only kind that can afford the sort of luxury that goes into a Lever House. Take the case of Union Carbide, for instance. The huge chemical corporation paid \$70 million for its gleaming shaft of steel (FORUM, Nov. '60), plus another \$10 million for the ground lease. It rents out a little more than 10 per cent of its space (175,000 square feet, out of the 1.3 million total) at an average rental of \$7.50 per square foot, thus gaining tenant income of about \$1.8 million annually. Subtracting this income from the total annual cost (including taxes and interest) of about \$7.7 million, Carbide's own space costs it only \$6.55 per square foot, about what it would pay in a building of much lower quality. But what makes the Carbide building, and many like it, such a sound investment goes even beyond the economies of attaining high-quality space at going rates. For instance, Carbide can claim amortization of the \$10 million cost of its ground lease as well as depreciation on the total \$70 million building cost for its new headquarters. Presuming that all such charges could be taken in one year, the total cost of \$80 million would, in effect, shrink to only \$38.4 million, after taxes. Thus the building would actually cost Carbide only 48 per cent of its out-of-pocket cost, and, after depreciation and amortization is considered, Carbide's own space-rent would

No. 4 Gateway Center, Pittsburgh

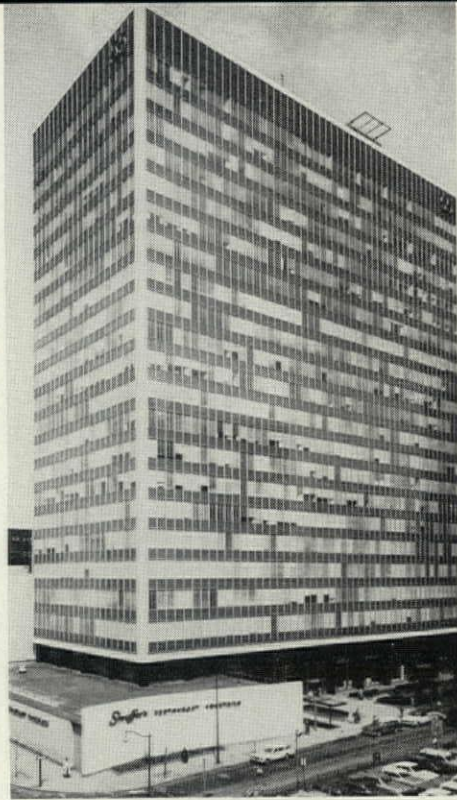


shrink to a mere \$2.52 per square foot. Putting it another way, Carbide's depreciation charges are, in effect, saving the corporation, on a 50-year straight-line basis, nearly \$1.5 million of profits from other sources each year.

Like the Carbide building, Mies van der Rohe's bronze-clad tower for Seagram's is an ideal investment for the nation's second largest distiller, and it represents some other refinements in the economics of quality office space. Seagram's did not look for a mortgage loan on its Park Avenue headquarters, but rather sold \$40 million of corporate debentures for working capital purposes. The rate was $4\frac{1}{4}$ per cent for 25 years, considerably lower than the rate at which most operative builders can borrow.

Seagram's was a very expensive building—at an estimated \$45 per square foot, it is one of the most costly structures in Manhattan. Still, the company figured to make nearly \$400,000 on the building in the first year of its operation, or about 13 per cent on its initial \$3 million cash investment, before federal taxes or amortization. As the interest payments decline, its annual net income from the building will rise to \$750,000 by the eighth year. And on a 50-year, straight-line depreciation basis, the \$38 million building will each year save the corporation \$395,000 of profits from other operations. And Seagram's, besides this saving, is able to rent premium space for \$6.36 per square foot.

Seagram's and Carbide could have crammed more office space onto their respective sites, and thereby earned more on their real estate ventures. But real estate is not either company's prime interest, and both wanted significant buildings, slated to endure as architectural landmarks for many years. Thus Seagram's provided a broad plaza, at an estimated cost of



Cleveland Illuminating Building

\$2,250,000, and Carbide included an arcade and plaza at its site. Carbide, in fact studied carefully the possibility of building another 200,000 square feet of space on its site, in a typical operative builder's ziggurat design, but concluded that the extra space gained was actually too costly for its purposes. It would have been expensive in terms of uneconomic design and it would have meant that too many offices would have been in the interior of the building. Carbide favored the two-building design (with both connected by corridors) because it provided much more prestigious window office space.

The economic value of quality

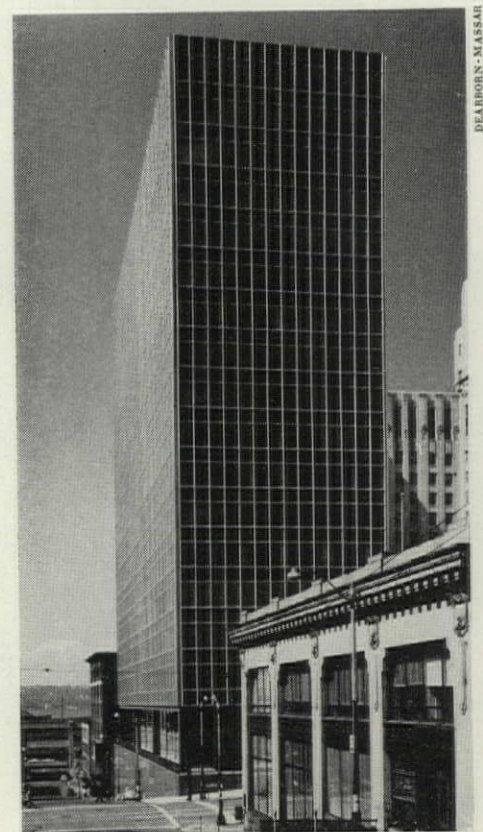
While the tax laws apply equally to all builders, whether building for speculation or for long-term ownership, different points of view concerning the value of esthetics are instrumental in producing different levels of architecture. Basically, the corporate client wants a building that will be strikingly identified with the corporation itself. The success of Lever House has, perhaps more than any other single structure, set off the boom in the building of high-quality office space. In terms of promotional value alone, Lever House has been a resounding success—it is estimated that the building generates at least \$1 million worth of publicity each year. The corporation figures that this more than compensates for the estimated \$200,000 in potential rental income it lost by giving up some of the ground space to a plaza. Indeed, the

company estimates that since the building was finished in 1952, free publicity has been of sufficient value, in hard economic terms, to pay for the \$6 million building. Without its many architectural amenities, this would have hardly been the case.

More tangible, although still not wholly realized by many corporate clients, is the value of a fine building in terms of employee relations. Since its building went up, Lever has had a steady stream of applicants for jobs, and has consequently been able to upgrade considerably the level of its clerical and other help. And, in 1958 when it analyzed employee turnover, it found that its turnover was only 37 per cent of the New York City average.

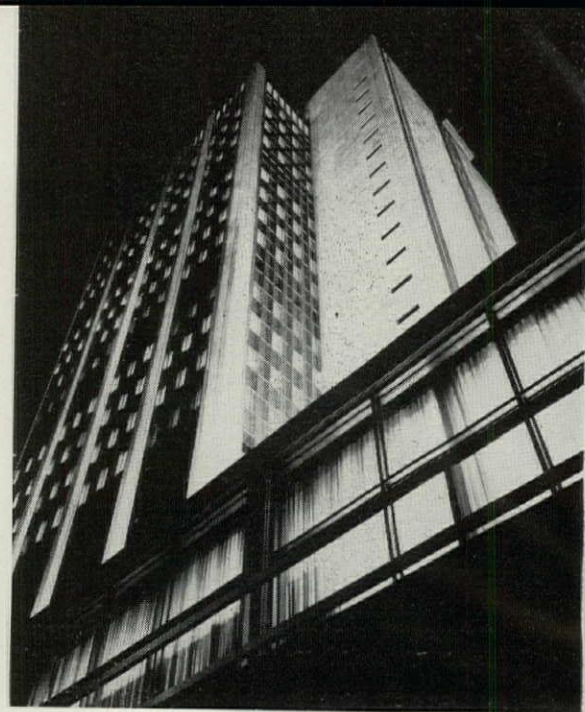
Reynolds Metals several years ago
continued on page 195

Norton Building, Seattle



Electrified tower

Atlanta headquarters of Georgia Power Co. heats itself and identifies itself with light.



Making a brilliant advertisement out of its own product, the Georgia Power Co. uses light in half a dozen ways to dramatize its new skyscraper headquarters—thereby eschewing the obvious and usual device of a lighted sign.

At night, powerful exterior lights bathe the white marble covering the columns and service core, so that these surfaces appear, themselves, to be giving off a luminescent glow. At the entrance, a fountain is lighted with changing patterns of light, and as the fountain periodically subsides, the lighting in the lobby picks up the act and goes through a sequence of varying colors and intensities. A huge circular chandelier in the lobby demonstrates another kind of contrast in light: a sharp sparkle within the generalized glow. A view window in the elevator lobby shows off the building's mechanical equipment, vividly spotlighted in color, and another window for the public affords a view downward into the basement space where power output from company plants is regulated.

The office floors are equipped with fixtures, especially developed by the architect and electrical engineer in collaboration with the manufacturer, which combine low brightness level with high foot-candle measurements. Ordinary desktops get an average of 100 foot-candles, drafting boards as high as 200. Walls, floors, and desktops indoors were planned for maximum light reflectivity and are all light neutral colors, but the interior columns are painted dark to indicate that all this light has bones under it.



Executive suite contains a stair of precast terrazzo hung on bronze rods.

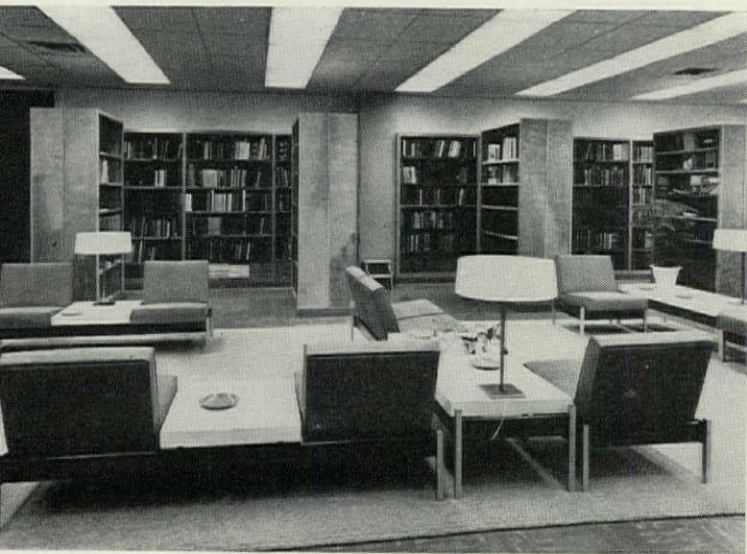


Plastic panel ceilings illuminate executive offices.

Huge lobby, with white floor, gray marble walls, blue ceiling, is designed for displays in addition to exhibiting patterns of light itself.



GABRIEL BENZUR



Employees' floor includes recreational and research library.



Cafeteria, served by snack vending machines, is on midfloor of building.

Ordinary offices have newly developed fluorescent fixtures, recessed in fiberboard ceiling.



Except in the hot Atlanta summers, when the building is air-cooled, the skyscraper's lighting fixtures heat offices as well as illuminate them. Room air is drawn into a void above the ceiling, where it is warmed by the recessed lighting fixtures on its way to the fan room. During spring and fall this suffices. As winter sets in, electric resistance heaters located in the mixing boxes of the high-pressure air-conditioning system go into operation. During unusual cold snaps, resistance heaters set in the exterior wall below each window come on automatically. To help reduce the summer air-cooling load—at least from the sun—only alternate vertical and horizontal panels of the curtain wall are windows. The gray glass and porcelain-enameled panels are divided by deep aluminum mullions.

Although the building was constructed for Georgia Power, the company rents it from the builders and owners, Henry C. Beck Jr. and Joseph B. Hutchinson, on a 30-year lease with three ten-year renewal options. The architects, Finch, Alexander, Barnes, Rothschild & Paschal, were employed by Beck and Hutchinson but worked directly with the Georgia Power Co.'s building committee, headed by A. H. Wade Jr., who made all final client decisions. This unusual arrangement worked out very satisfactorily indeed, say the architects. For interior design, the same architectural firm was retained directly by Georgia Power Co.

Cost, including land, was \$10 million: \$18.50 per square foot of rentable area.



At the end of each elevator lobby is a window affording a view over the city.

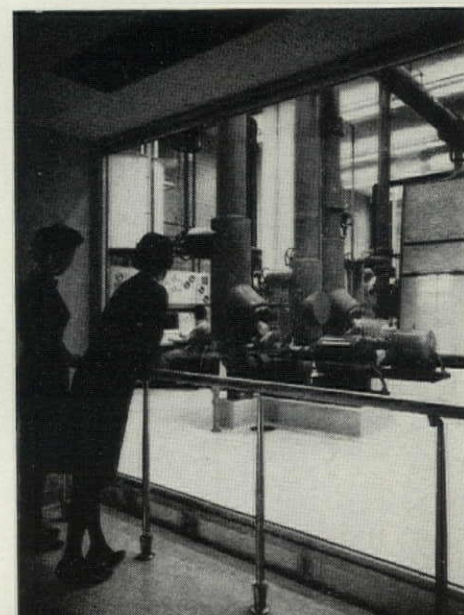
Main-floor auditorium has ceiling sound baffles and elaborate spotlighting.



Machine heat is drawn off through false floor.

GEORGIA POWER CO., Atlanta, Ga. ARCHITECTS: Finch, Alexander, Barnes, Rothschild & Paschal. SPECIAL LIGHTING DESIGN: Abe Feder. ELECTRICAL ENGINEER: Thomas E. Blakely Associates. MECHANICAL ENGINEER: Lazenby & Borum. STRUCTURAL ENGINEER: Chastain & Tindel, Inc. CONTRACTOR: Henry C. Beck Co.

Mechanical equipment is on public display.



Apartments around a well

A contemporary version of the old-fashioned light well yields extra rental space and extra delight.

Two-level lobby is skylighted with plastic domes by day and hanging lantern fixtures by night.



Few features can endow a building with a more luxurious indoor effect than can a generous central light well. Big, galleried central wells have come to seem almost anachronistic, merely because the luxury of grand "waste space"—at least in profit-making buildings—has, sadly, become economically anachronistic.

However, in this case, in Cambridge, Mass., generosity and economics are not at odds. Thanks to the well, Architect Hugh Stubbins was able to add 14 more apartments than would have been possible in a more conventional service-core building for the same site. The extras, to be sure, are small efficiency apartments, but every little bit counts.

The well required special fire and sound protection for apartment doors and for air-intake louvers in the toilet and kitchen ventilation systems but, even so, the net cost advantage of the well scheme—based on the increased perimeter wall rental space—is estimated at \$18,000. Construction cost was \$1,127,400, or \$13.23 per square foot.

Here are Stubbins' comparison figures for the well design and for a service-core design, both for eight floors:

	Well	Core
Apartments	103	89
Allowable coverage	45%	45%
Site covered	45%	35%
Bldg. area (sq. ft.)	81,690	69,360
Average apt. cost	\$11,620	\$11,450

A modified-U design, which Stubbins also considered, would have yielded the same rental space as the central well scheme, but would have been wasteful of exterior wall. By closing the U, savings were permitted both on first cost and on heating costs.

The well, surrounded by its open corridors, is reported to be a social success as well as an economic and visual



Construction is flat two-way slab with balconies on seven floors.



First-floor apartments, below street level, have small gardens.

Central well is galleried on three sides with corridors and is faced with patterned ceramic tile on the fourth side.



PHOTOS: DAVID HIRSCH

Amenities such as balconies and cork tile for apartments were paid for out of such construction savings as slab-to-slab door frames, prefabrication of storage units, and the low form cost accompanying the flat-slab reinforced concrete construction.

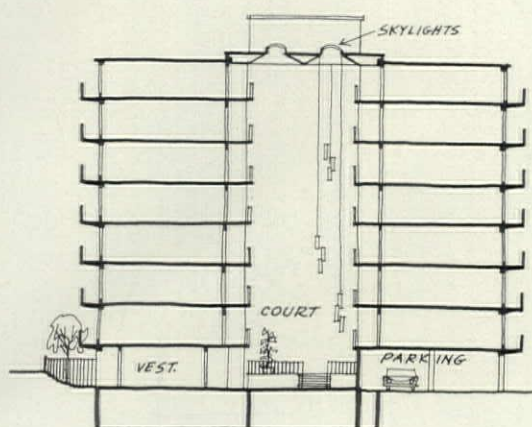


asset. Whether it would be tolerable if populated by hordes of children is academic because the building contains only 4 two-bedroom apartments, and none larger.

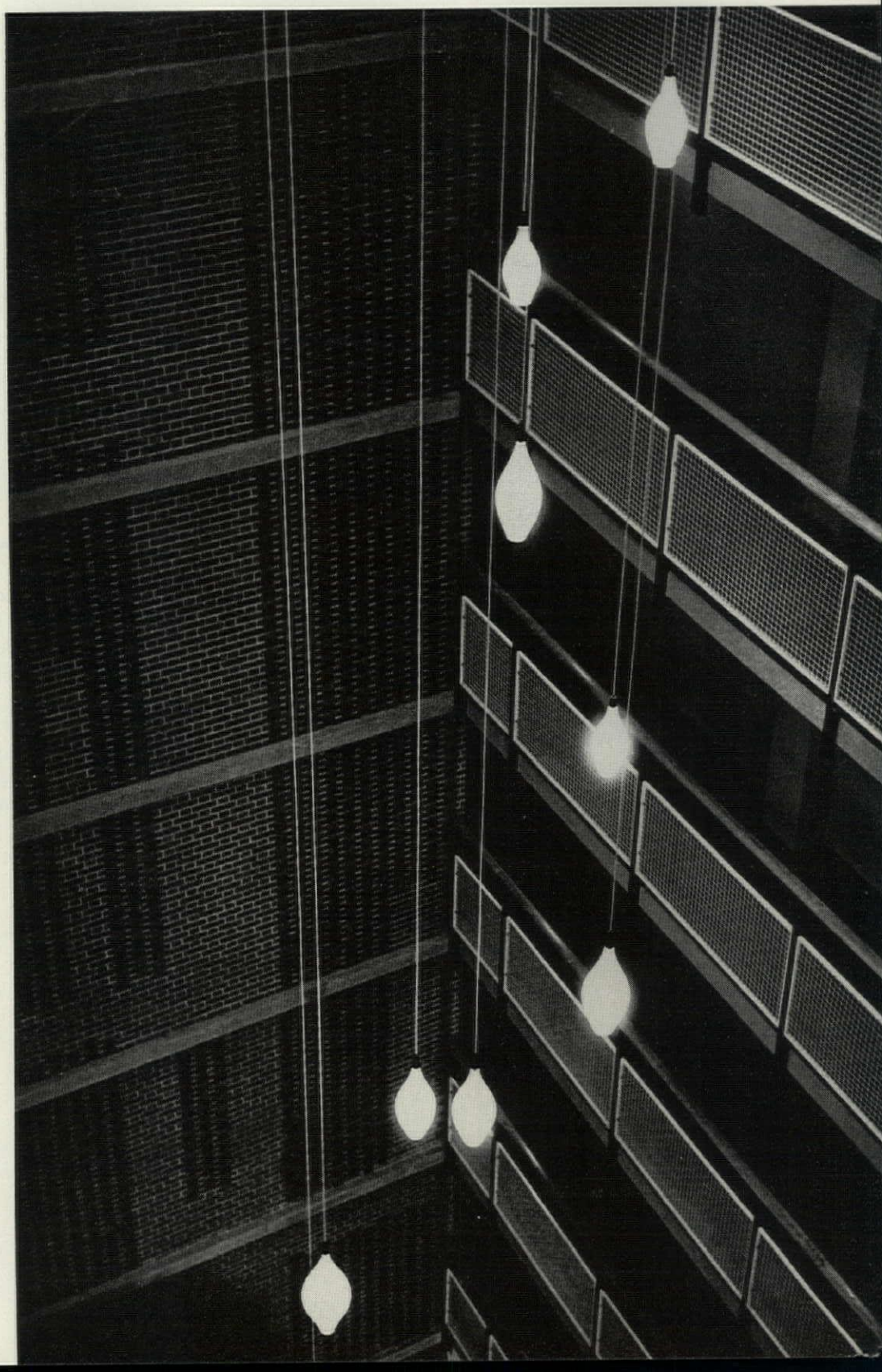
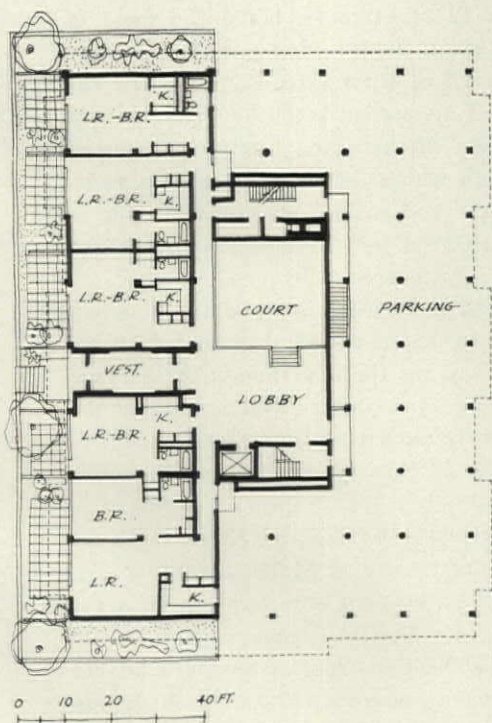
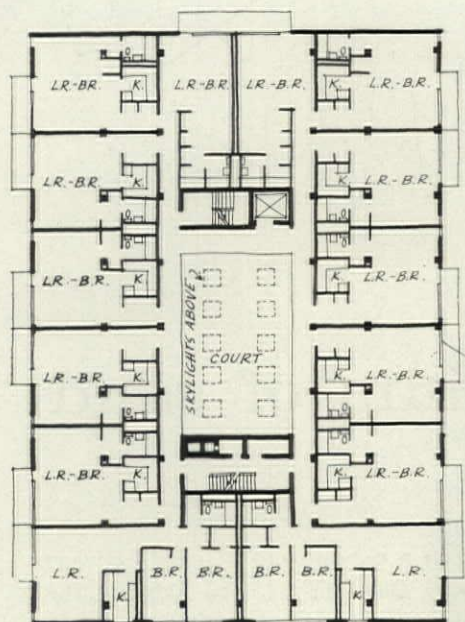
The fact that the building has eight floors instead of seven, and thereby has the 14 apartments of the eighth floor, grows out of another ingenuity, more common in apartment building than is the light well, but seldom handled as nicely as it is here: a dropped ground floor. The six steps down at the vestibule permitted the additional floor within the 65 foot height restriction (above curb) on this plot. The five "basement" apartments are particularly attractive, owing to their small gardens (see photo, page 105). The dropped ground level remains open on the other side of the building for parking.

Of the 103 apartments, 74 are known as "jumbo efficiencies," which means they include small, but enclosed, kitchens. Simple "efficiencies," of which there are 14, have unenclosed wall kitchens. Two-bedroom apartments number 14 also, two on each typical floor. In addition, there is one single-bedroom unit, at the corner of the dropped ground floor (see plans, right). Each apartment above the ground level has an allocation of half a balcony.

ARCHITECT: Hugh Stubbins & Associates, Inc.
LANDSCAPE ARCHITECT: John L. Wacker.
STRUCTURAL ENGINEER: Goldberg & LeMessurier. MECHANICAL ENGINEER: Delbrook Engineering, Inc. ELECTRICAL ENGINEER: Fred S. Dubin Associates. ACOUSTICAL CONSULTANT: Bolt, Beranek & Newman. CONTRACTOR: John F. Griffin Co. OWNER: Continental Terrace Inc.

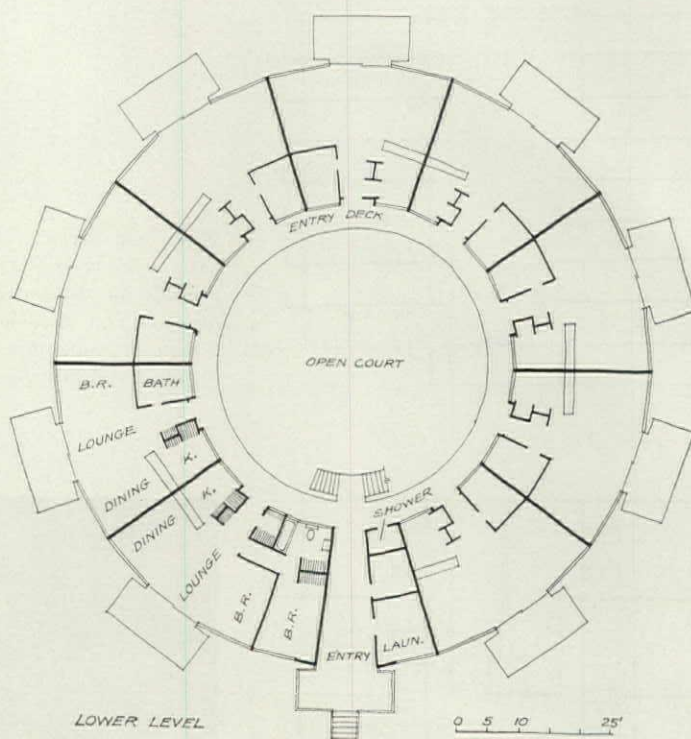


Plans and section show the building's two basic efficiencies: the large perimeter made possible by the central well scheme, and the dropped first floor which made possible the addition of an eighth story within the 65-foot height restriction for this site.





Inner court serves as entry.



Viewful apartments on a podium of sand



Circular plan allows maximum density with maximum openness.

Surrounded by water on a narrow spit of sand between Long Island's Shinnecock Bay and the open Atlantic, the four cooperative apartment buildings called Round Dune are a handsome and viewful new contribution to the summer vacation scene. The wheel-shaped, two-story buildings, each with 19 apartments, make the most of their superb natural setting, capturing panoramic views of the water as a result of their circular plan. And the plan really works. Each apartment is a 12-degree segment of a wheel, with foyer, kitchen, and bathroom grouped next to the hollow hub which serves as an alfresco circulation core and landscaped patio. Thus, the viewside of each apartment is preserved for "living" quarters which open onto generous, cantilevered balconies.

Under the buildings, a 20-foot-high podium of sand, bulldozed out of the sea, is contained at crucial spots by concrete block walls, raising the apartments to increase the view. The structure is a bolted wood frame set directly on wood pile foundations. Exterior siding is cypress; interiors are finished in redwood with cedar floors.

The units sell for between \$3,875 and \$8,500 with an average annual carrying charge of \$1,500 including $5\frac{1}{4}$ per cent interest and $1\frac{1}{4}$ per cent amortization on a 15-year mortgage of \$1,171,520. Total cost, including the 4.7-acre site, was \$800,000. Construction cost, for 56,000 square feet, was \$700,000. Architects: James A. Evans and Olivier de Messieres. Engineers: Werner-Jensen and Korst. Landscape architect: W. James Briggeman. General contractor: Lap Construction Corp.



Broad boardwalks link buildings with each other and with swimming pool. Raised platform of sand heightens view of water.

Low, two-story buildings have jutting, cantilevered balconies capturing panoramic views of bay and ocean.



Capitol for the 50th state

Hawaii's state government will be housed in a symbolic grove of concrete trees.

The proposed capitol for Hawaii is the first major governmental building in the U.S. to be entrusted to a leading modern architect. The reason why state and federal governments have been so slow in commissioning anyone but a classicist is simple: while a classicist could always be relied upon to design a symbol (however hollow), none was sure that a modernist could produce anything but a functional administrative plant. When Hawaii's new capital is built, such doubts should be put to rest forever.

The architects of the new capitol, led by John Carl Warnecke, had to solve a series of complex functional problems; but, in addition, they created a symbol

which reflects the tropical splendor of the islands and should be quite a tourist attraction in itself.

The site selected by the legislature is a 24-acre area surrounding the 80-year-old Iolani Palace in downtown Honolulu, the traditional seat of government for the Hawaiian Islands. This area is, largely, a handsome park, with a great banyan tree at its center. By removing a number of minor existing buildings, and by depressing or removing one street that bisects the park, the architects plan to create a noble setting for the new capitol.

Given this site, with its past associations of government, the architects planned a building to serve both legislative and executive functions. The center of this building is a great entrance well, open on all sides at ground level, and roofed over by a domed skylight. From this level, visitors can walk di-

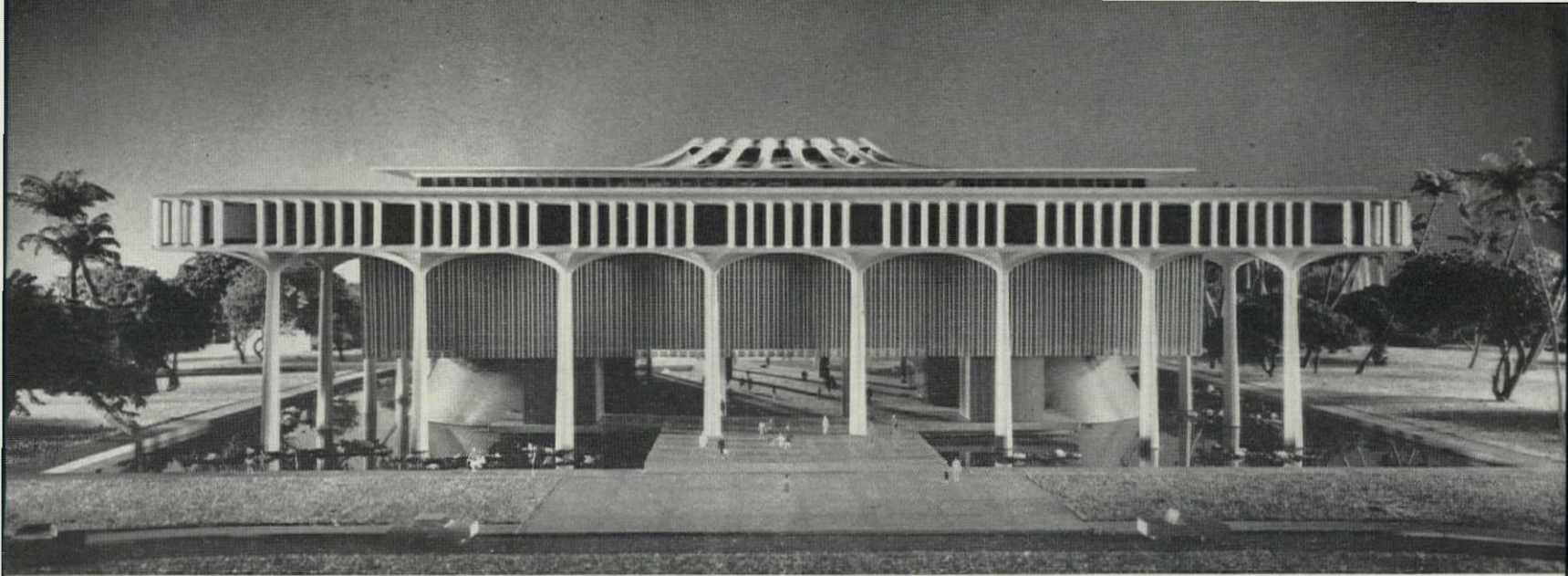
rectly into spectators' galleries that overlook the house and senate chambers; and they can reach the legislators' and the governor's offices by elevators to the four balcony-floors that surround the central well.

The structure of the capitol is a ring of 24 concrete columns that rise to a height of almost 60 feet and recall the many trunks of the banyan tree in front. Most of these columns stand in a large reflecting pool that surrounds the open-air ground floor and cools the walls of the house and senate chambers. The symbolism is obvious, effective, and very handsome: a new and lovely state, in miniature, composed of many islands, surrounded by the Pacific, and fanned by ocean breezes.

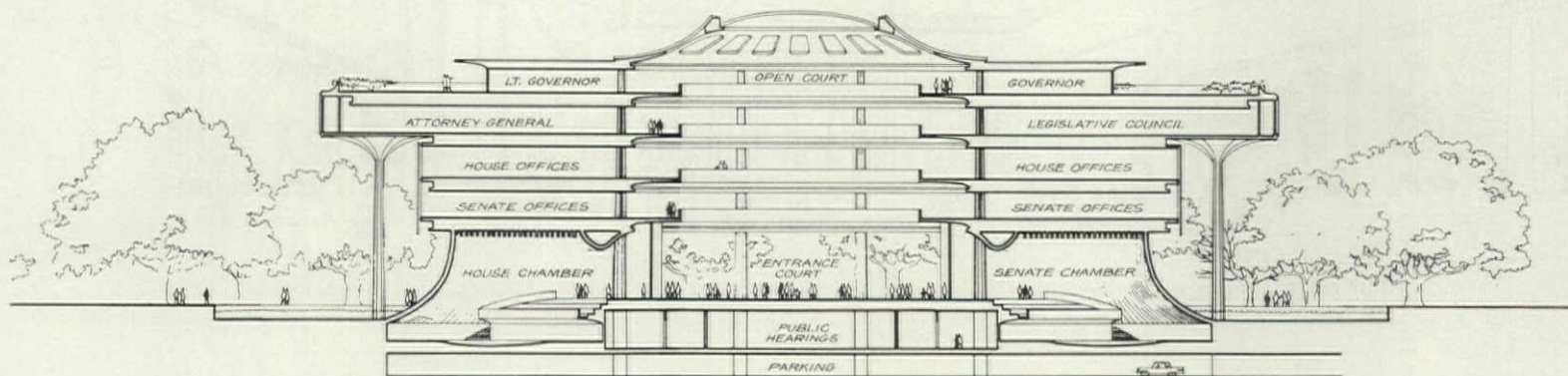
Architects: Belt, Lemmon & Lo (architects-engineers), and John Carl Warnecke & Associates (architects and planning consultants).

Bird's-eye view of the new capitol model shows a huge banyan tree in the center, Iolani Palace at left, existing Library of Hawaii at right.

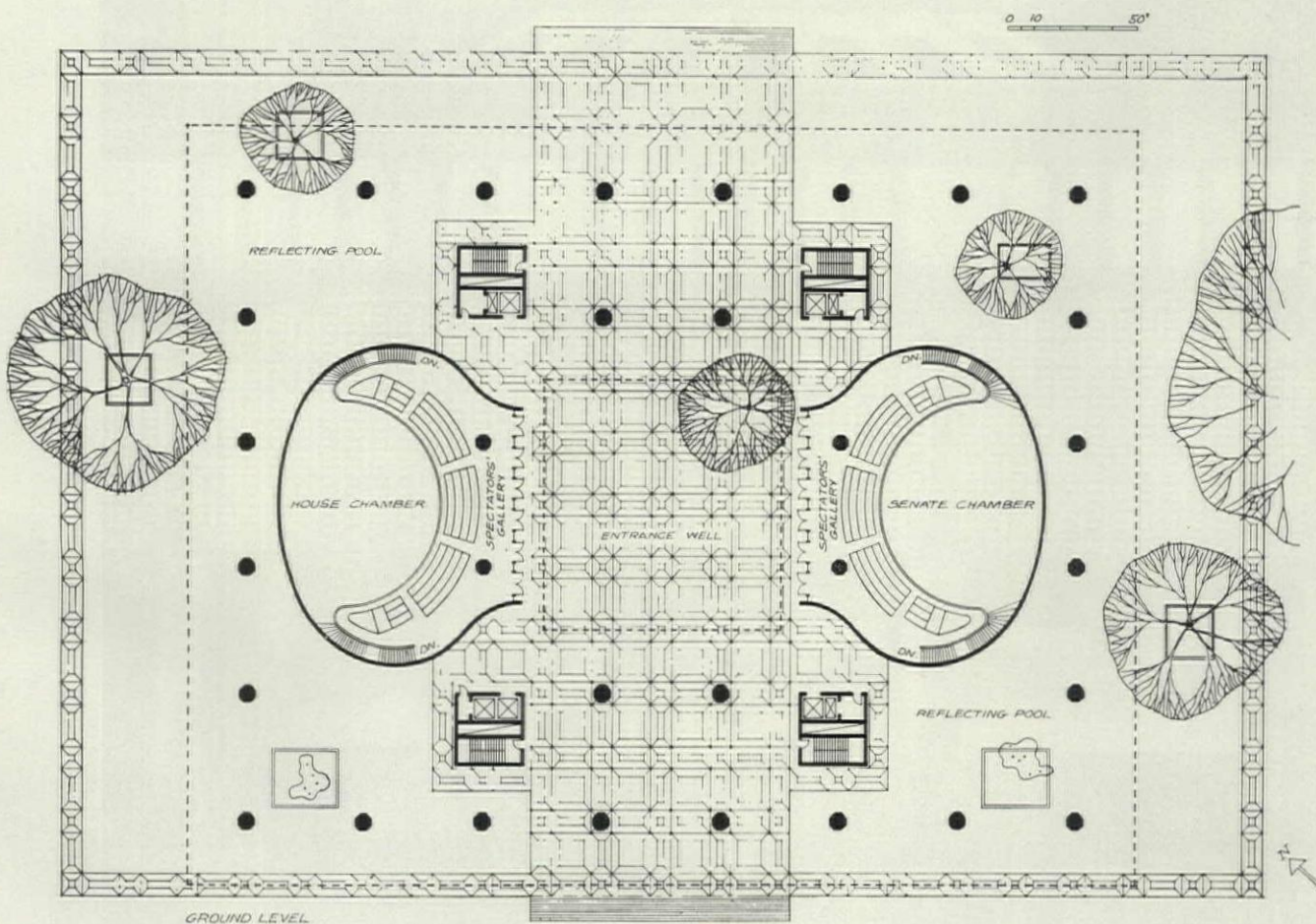


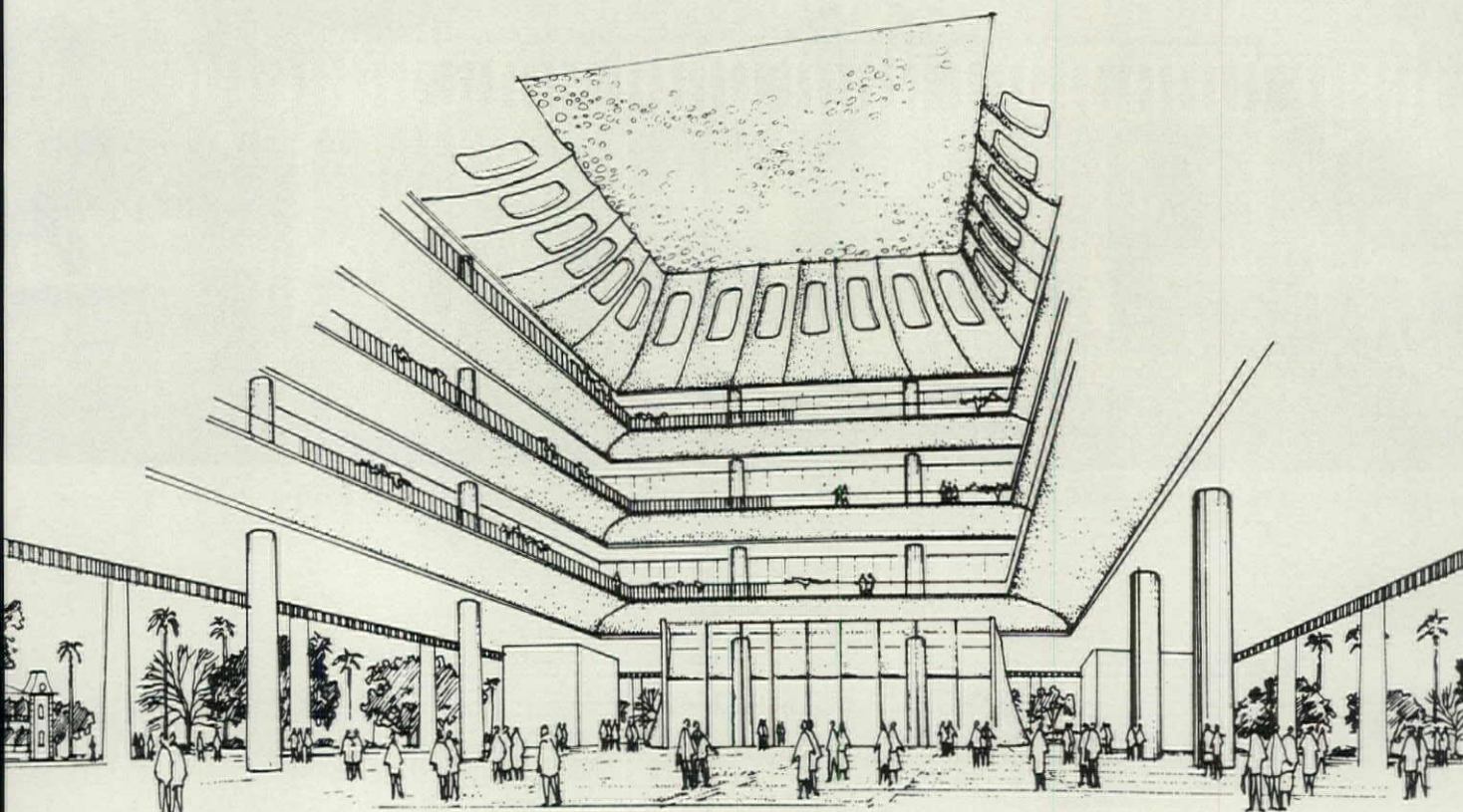


Main approach to the capitol will be between pools that symbolize the seas around the Hawaiian Islands. Paved plaza extends through building.



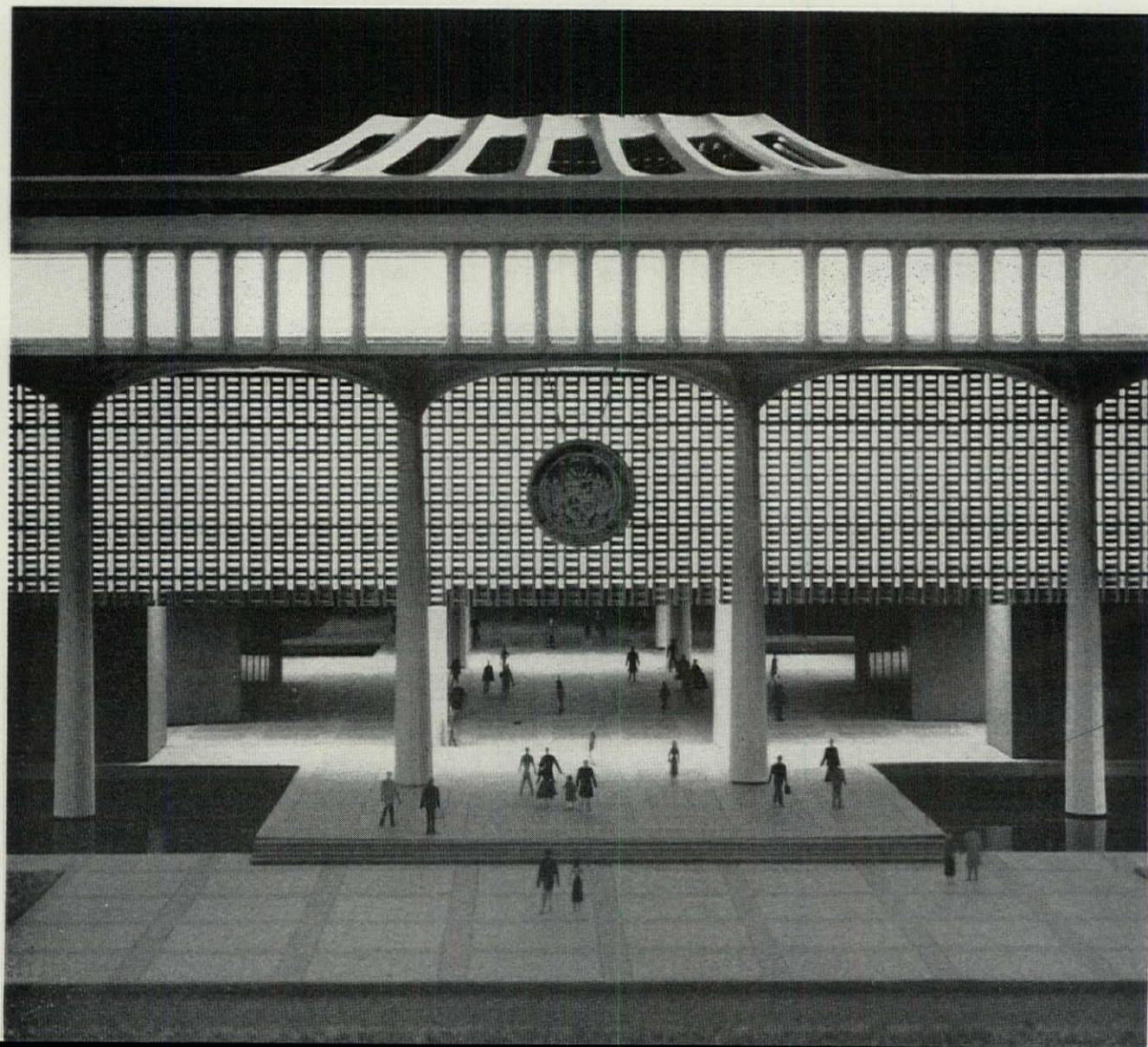
Section (above) shows underground approaches to House and Senate chambers for legislators, on-grade access to galleries for spectators.





Central well of capitol will be a huge breezeway under a domed skylight. Legislative and executive offices are on balconies.

Night lighting will make the capitol look like an oriental lantern. Entire structure, including grilles, will be of concrete.





Oklahoma's second land rush

Business leaders stake out some public claims to guide their city's growth.

"We know we belong to the land, and the land we belong to is grand!" To many of the businessmen gathered for the Chamber of Commerce's big Friday lunch, the voices of the high school chorus echoed something more than the bright, corn-ripe strains of a well-known Broadway song. They reflected a concern, rooted in land and water, in history and hard work, to nourish and protect a town, and to pass on to their children a city worthy of the name.

During the 72 years of Oklahoma City's relatively short life, its business leaders have built their Chamber of Commerce into a uniquely powerful engine and governor of civic growth. Other cities might envy the results:

► Oklahoma City is one of the few places in the U. S. where the city limits have been pushed miles out beyond actual development, so that future land use can be carefully controlled against suburban conflict and sprawl.

► It is one of those rare towns where local businessmen not only bring in new industry, but responsibly administer it in their own efficient and well-zoned industrial parks.

► It is a city which not only woos air traffic and air-based industry, but protects both by controlling the land around its bustling airfields.

► It is probably the only city in the country where groups of businessmen, working through their Chamber, regularly step into the breach to buy up land for needed public improvements,

and hold the land until the city itself can raise the money and take over.

Perhaps the most significant civic move that has taken place in Oklahoma City since 1889, when some 10,000 land-hungry settlers rushed into former Indian territory to found the town (photo above), might be described as the Great Annexation Drive of 1959. In a little more than two years since then the city has managed to quintuple the area within its legal boundaries, from 80 to 433 square miles (see map overleaf). This remarkable feat, carried out in a number of open, and not-so-open, ways, is Oklahoma City's plain-spoken answer to the parasitic growth that to greater or lesser degree threatens to choke almost every municipality in the U.S.

Attack and counterattack

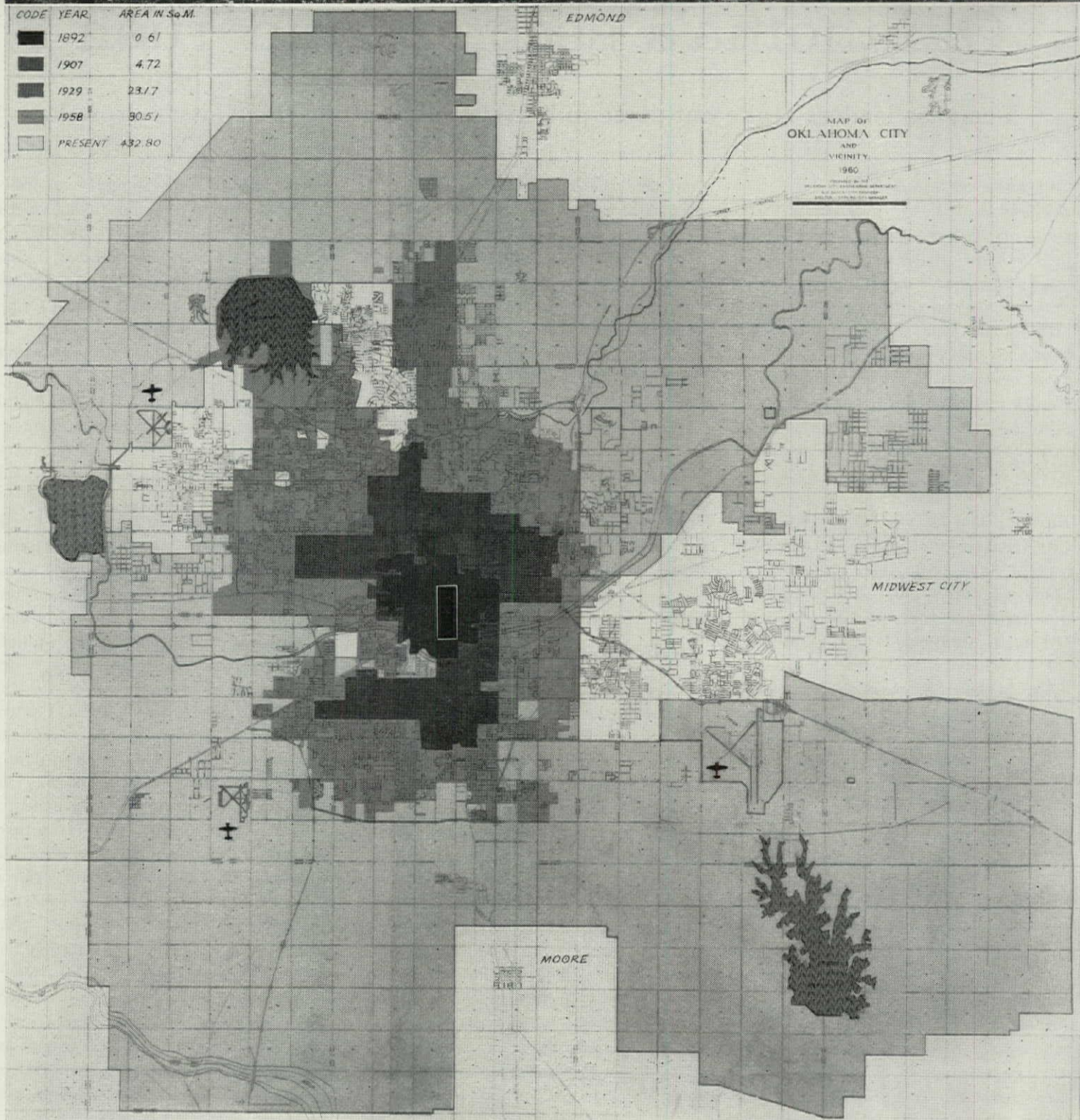
Not too many years ago Chamber of Commerce leaders came to the realization that random development not only carried the seeds of blight in itself, but that it also was becoming a distinct menace to some of the city's major organs, which unhappily lay just outside its jurisdiction. Developers and suburban townships were moving in dangerously close to city reservoirs and threatening to annex major new industrial plants. They were also crowding in on vital airfields, including the big Federal Aviation Agency center at Will Rogers Field, which the city had worked hard to bring in, and the huge Tinker Air Force Base, which it had been going out of its way to hold onto as an employer of over 20,000 Oklaho-

mans with the state's biggest payroll.

The counterattack has taken several forms. In one of several strikingly direct solutions, the Chamber raised the money to purchase outright 4,300 acres adjoining Tinker Field. This breathing space protects flight patterns, allows room for base expansion, and for the Chamber's own largest industrial park to grow. Of this total, 638 acres were subsequently made a gift to the Air Force for needed housing, a base hospital, and recreational facilities.

In another move, agents of the Chamber quietly went about buying options on some 8,000 additional acres south of the base for further protection, but primarily as a site for a new terminal reservoir for the \$65 million, 99-mile Atoka pipe-line project which will bring in precious water for the city from southeast Oklahoma. Control of the land, purchased at a fraction of what the city would have had to pay in open negotiations, also makes way for future municipal recreation grounds.

To raise the money for this venture, and for a dozen others of its kind, the Chamber manages a nonprofit corporation called Greater Oklahoma City Inc. (another Chamber corporation, the Water Development Foundation of Oklahoma, had already financed water resources surveys). Through Greater Oklahoma City Inc. anywhere from a handful to a thousand local businessmen are asked to underwrite portions of an over-all bank loan. Though two or three civic-minded millionaires have



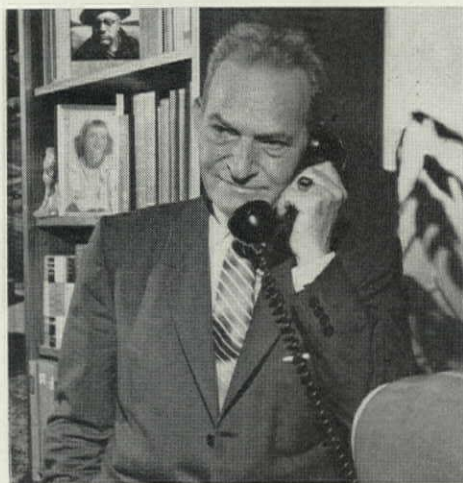
Growth in Oklahoma City has replaced tents with skyscrapers in the short span of 70 years. The original townsite (black rectangle in map below) went through more or less normal expansions, sprouting satellite towns. In 1959 leaders, worried about snowballing postwar growth, launched a remarkable annexation drive, reaching out around a few holdout towns to embrace the city's airfields, reservoirs, and key industries, and to control land for future development. Result: a five-fold increase in the city's jurisdictional area, and an opportunity for good planning.

more than once been willing and able to countersign a loan on a given project, the Chamber has preferred to spread the participation, holding what amounts to an auction of shares. Then, when the city can raise enough bond-issue money of its own, the land is turned over to public ownership at or close to cost. This unique method of financing public improvements has involved some \$100 million over the past 40 years, and the volunteer businessmen underwriters have yet to lose (or make) a dime. The Chamber currently has \$4.5 million borrowed for various local landholding projects, owns some 12,000 acres all over town, including eight industrial parks and 14 of the plants on them, which it manages and leases through yet another (profit-making) corporation, Oklahoma Industries.

The Chamber has also acquired, or urged city acquisition of, the land for most of the city's expressway system now building. In some cases where the city or state lacked immediate funds, the Chamber has even commissioned necessary engineering studies and presented the city with the results. In this odd but highly effective system for getting action, some 500 Chamber members, for example, in effect own the land under Oklahoma City's portion of the new State Highway 66.

Going along hand in glove with individual Chamber projects has been the city's formal annexation program, which has reached out around the city's few holdout villages to embrace its vital airfields and reservoirs, plus a good deal of future expansion land for the city's rapidly growing population (now at 325,000 within the city limits, well over 500,000 in the official metropolitan area). Three methods permissible under state law have been used to bring in 1) areas abutting the city

in which more than half of the property owners have petitioned to be annexed, 2) abutting areas platted in less than 5-acre tracts, and 3) areas already surrounded by the city on three sides. The Chamber's pervasive influence, backed up by its ownership of key land, has played a part in a good many of the 200-odd separate annexation ordinances which have been needed to bring the city up to its present size. There



Dynamo: the Chamber's Stanley C. Draper.

have been the inevitable court fights, counter-annexation wars, and attempts to change the state's city-favoring annexation laws, but so far the bold campaign has worked. Farm areas have been brought in under agricultural zoning, and these could guarantee the city its own food-producing "greenbelts" unless or until rezoned. The city's planning commission can now insist on new subdivisions with adequate streets, sewers, schools, and parks. It is already launched on a 20-year, \$400 million program of public improvements as a framework for its new fringe.

A civic warrior

Behind Oklahoma City's civic battles are many men, but none have waged

them so long or so effectively as Stanley Draper, an energetic North Carolinian who joined the Chamber's staff just after World War I and has been working a 12-hour day, seven-day week ever since. As the Chamber's managing director for the past 30 years, Draper has charmed, needled, threatened, and inspired his townsmen through the many processes of growth, with an eye fixed always on the stars. "People just don't realize how important it is to plan ahead and keep moving," says Draper. "They just put out a sign saying 'Do not disturb,' and let things take their course. It's up to citizens to do what their government cannot do. Room is what people came out here for in the first place, and we've got to keep some open for future generations to decide what they want to do with. Look at what happened to Long Island when it swallowed up Mitchell Field. Look at St. Louis almost strangled by all its suburban towns. You have to have room to grow."

Draper and other Oklahoma City elders have seen the lessons of cities so hemmed in that their only alternative is the long, hard road of voluntary metropolitan federation, and they have managed to gain a measure of one-city control before it is too late. What happens now is up to younger men, who will probably have to work along less colorful, more normal—and perhaps more sophisticated—lines. Nonbusiness elements of the community who resent not having been consulted may have to be enlisted on broader jobs ahead. So will top-rank professional city planning consultants, and the city's own architects, to tackle the next, all-too-obvious needs: downtown urban renewal, and an over-all master plan. The worthy city is not yet built, but the foundations have been laid.

Revolution in concrete



ROBERT DUNN



The shape of tomorrow's buildings is beginning to evolve as the concept of prestressing gains wider popularity.

BY T. Y. LIN

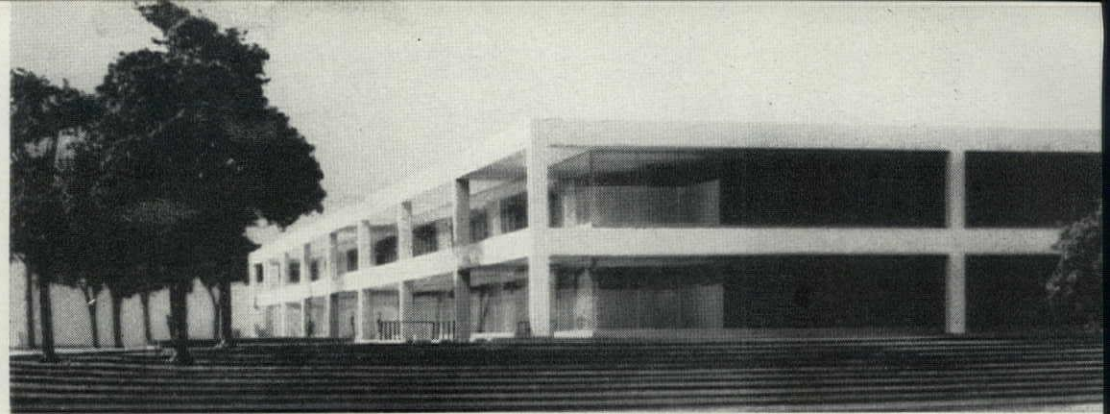
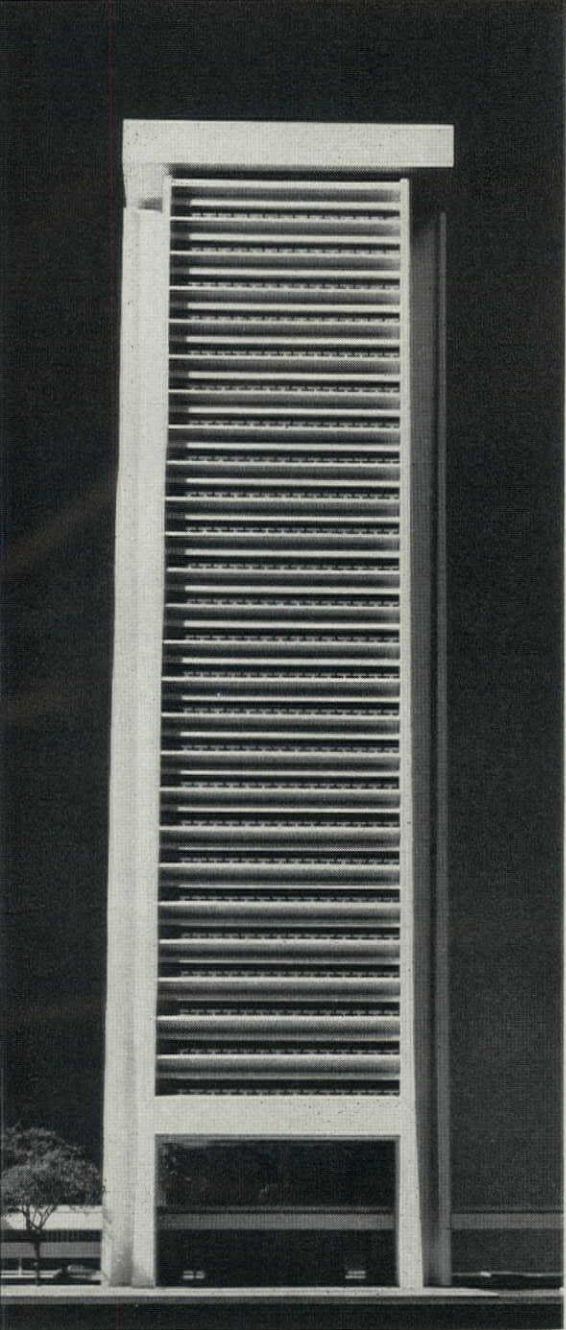
This is the second of two articles on prestressed concrete by Professor T.Y. Lin, of the University of California, one of the leading authorities on prestressing in the world. Last month, Mr. Lin set down some of the fundamentals of prestressing, pointing out the ability of prestressing to redirect the force of gravity and thus permit a new wide-span architecture to be born.

Although much has been achieved by the coordination of architecture and engineering in such fields as acoustics, lighting, heating, and ventilating, little has been done in the integration of design and new structural concepts. Prestressing is changing this, forcing architects and engineers to work together. Out of this collaboration will come a new era of achievement in which the architect and structural engineer will complement rather than rival one another.

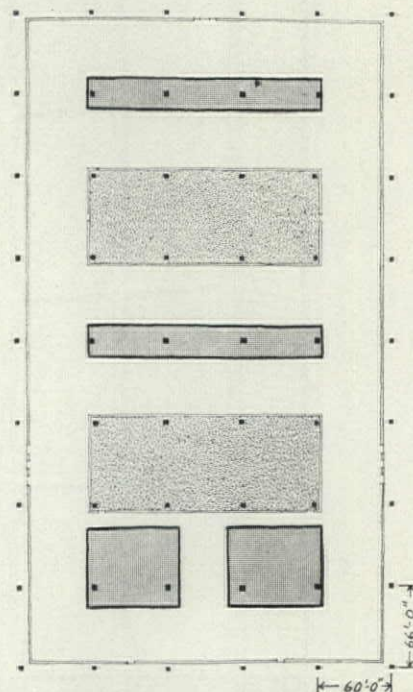
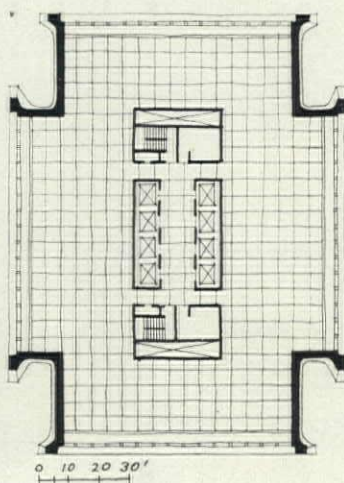
Since 1951, when the first prestressed concrete buildings were built in the U.S., the prestressing concept has indeed opened a new frontier to architects and engineers. At first they cautiously substituted prestressed elements for more traditional materials in their buildings of conventional design

(above). Now, after a decade of learning about prestressing, they are using the concept of prestressing, to produce the more "futuristic" designs shown on the following pages.

This revolution in design was a long time coming, for prestressing, up to now, has been essentially an engineering development. In fact, the more orthodox engineers, preferring to design by so-called rules of thumb, have been reluctant to use prestressing at all. This reluctance is largely the result of traditional engineering education, with its emphasis on "know-how," and the tendency to confine much building engineering to mere code interpretation. Gradually, however, the exciting possibilities of prestressing have spurred engineers to return to the basic principles of engineering. Its utility



Office tower in Honolulu, designed by I.M. Pei & Associates, will likely use prestressing in two areas: the exterior beams and the floor slabs. Prestressed elements will enable reductions in weight and construction time.



Large bays in United Airlines Executive Office Building were possible with prestressing: 60 by 66 foot bays would have been too costly in conventional construction. By prestressing, the structural cost was held to \$4 per square foot.

and its economics, notwithstanding, prestressing has become a symbol: a symbol of freedom from rules and formulae, of design freedom, and of freedom of thinking itself.

This new-found freedom is not limited to concrete design alone, for the concept of prestressing can also be applied to masonry, timber, metals, and plastics. (Prestressed steel was used in the Brussels air terminal.) But because concrete possesses a unique array of properties not inherent in other materials—protection against fire and weathering, easy moldability, and compressive strength—it lends itself to prestressing. Concrete is likely, therefore, to be the dominant material in this field, at least for some years in the future.

In all phases of prestressing con-

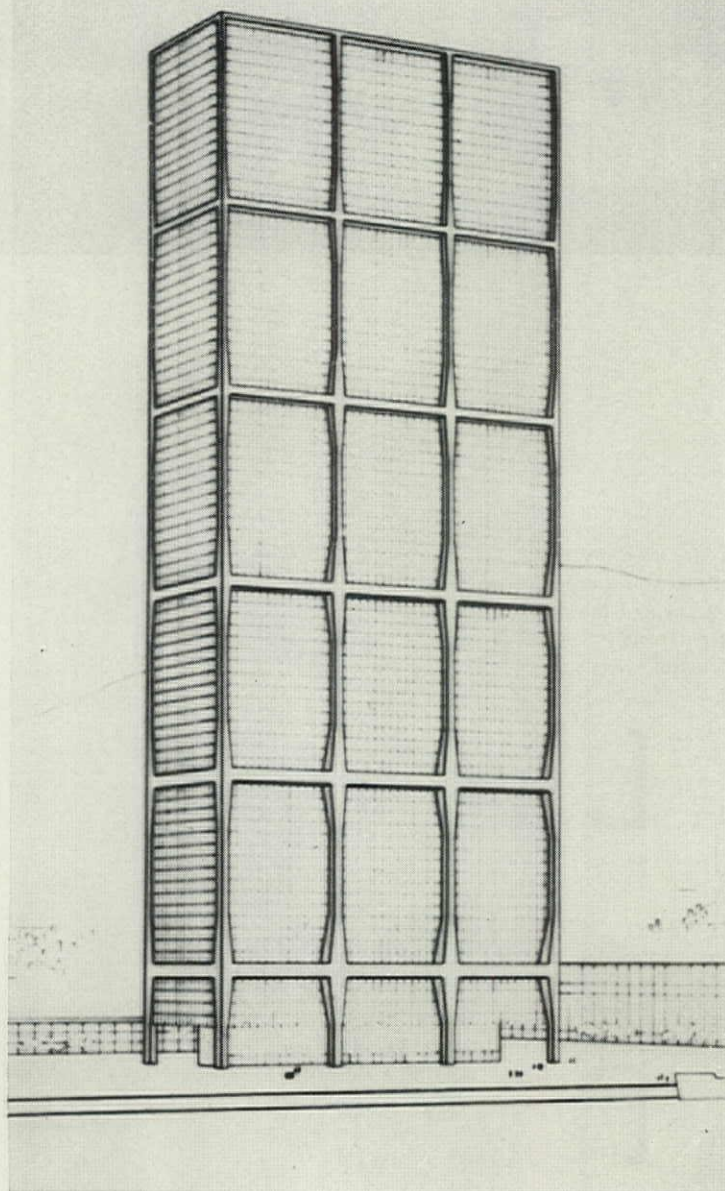
crete—research, development, production, and construction—the groundwork has been laid for great progress. However, it is hazardous to predict its future course, beyond suggesting three avenues of development which prestressing is likely to follow. These are 1) increased use in multistory buildings, 2) three-dimensional prestressing, and 3) the precasting of prestressed building elements.

Multistory prestressing

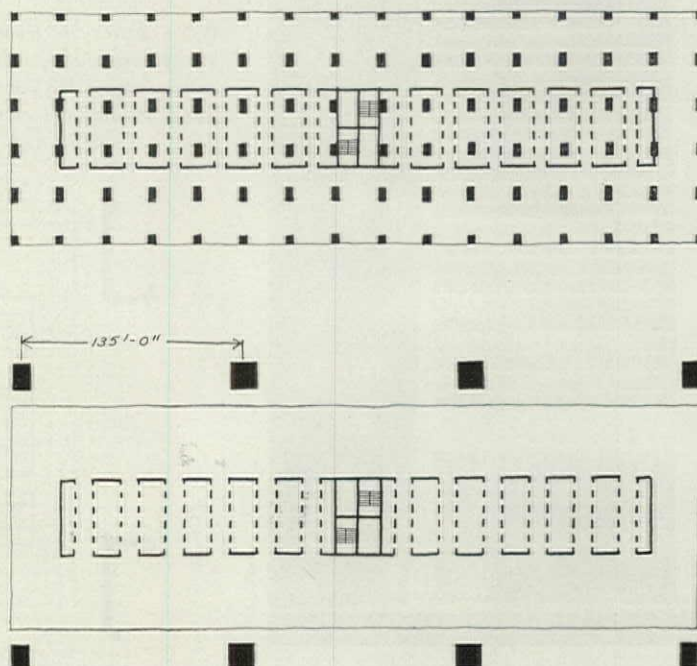
The possibilities of prestressing in multistory buildings have scarcely been explored. To be sure, a number of such buildings have been built, but few have taken full advantage of the theory. For example, the Norton building in Seattle (left), a 20-story structure by Skidmore, Owings & Merrill, uses precast

prestressed concrete girders to span 70 feet, allowing great flexibility in floor layout. But this cannot be classed as a prestressed structure, for its use of prestressing is limited. Another example is I. M. Pei's proposed office building for Honolulu (above) whose precast prestressed floor panels and beams will save weight, construction time, and construction costs.

But these buildings are only prologue. Like most prestressed structures now standing, they were originally designed for conventional construction and were switched to prestressing primarily for reasons of economy. It is only when the architect appreciates the meaning and potential of prestressing that he can develop an integrated design. Such an approach is illustrated above in the United Air Lines Executive



Tower 86 stories high, envisioned by Architect Myron Goldsmith, will use prestressing in floors and exterior columns. The sketches (below) illustrate column spacing in conventional design versus prestress design (bottom sketch), which enables fewer columns and broader spans between columns.



Office Building by Skidmore, Owings & Merrill, now nearing completion outside Chicago. This huge three-story structure has 500,000 square feet of floor area. To eliminate interior columns and provide great flexibility in planning, a bay size of 60 by 66 feet was chosen. This bay size in conventional construction would have been prohibitive in cost, but thanks to prestressing, the total cost was held to \$15 per square foot, and the structural cost to \$4 per square foot. Such low costs were achieved by prestressing the grids to transmit gravity loads horizontally to the columns. Prestressing beams indirectly prestressed the panel slabs (12 feet by 12 feet by 4 inches). The building's horizontality of force will be fully expressed in its façade.

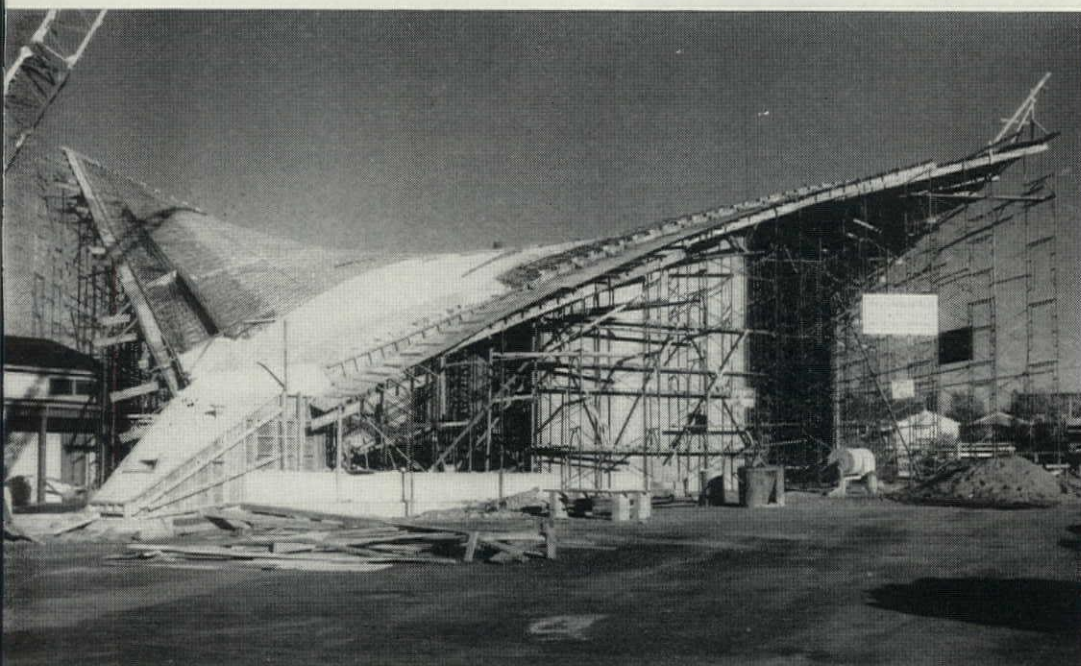
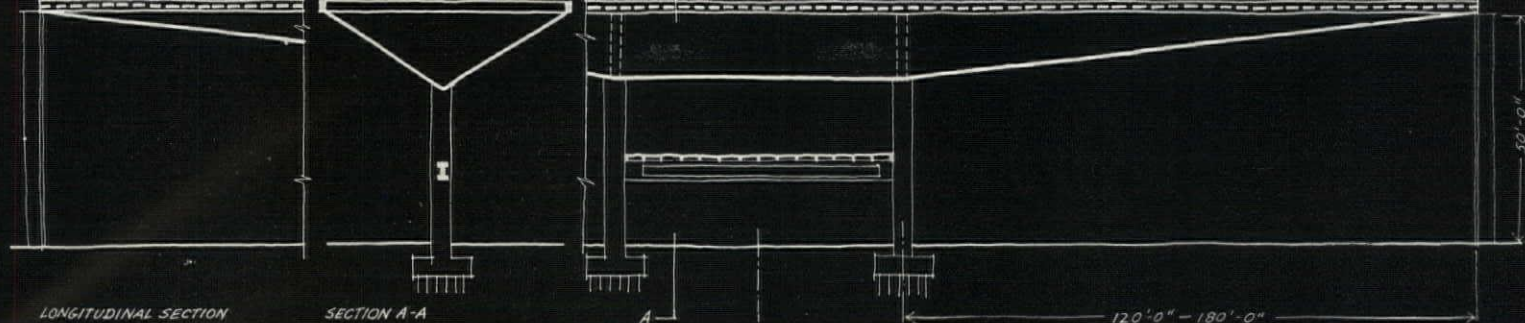
A further advance in the use of the

prestressing concept is seen in the study for a high-rise building sketched above. When this 86-story project was conceived in 1949, Architect Myron Goldsmith planned 15 stories between each of the six horizontal platforms; seven of these stories would be suspended from the platform above, and seven would be supported on the platform below. The middle story in each series of 15 would be columnless, for its floor would be supported and its ceiling suspended. Both the columns and 25 by 40 feet floors were to be prestressed. Using today's prestressing techniques it would be feasible to increase the typical bay of this building to 100 by 100 feet and to carry all the floors on the building's eight exterior columns and its center core, thus eliminating all interior columns. The pre-

stressed floor slabs would be 3 feet deep and would carry all loads to the exterior columns and center core. Its rigid frame design would use the elasticity and plasticity of concrete to resist all lateral forces, including earthquake shock and wind loads.

Three-dimensional prestressing

Since space and form are the basic ingredients of architecture, there is probably no area of prestressing more stimulating than the thin shell. Without prestressing, construction of this kind is limited, owing to the excessive deformations and secondary stresses which develop in these structures. With prestressing it is possible to balance gravity loads and minimize distortion, thus reducing the critical secondary stresses. Thus, greater, more efficient



Thin shells: hyperbolic-paraboloid concrete shell (above) foretells the aircraft hangar of the future: roof cantilevers 150 feet on either side of the hangar, with prestressed tension ribs carrying loads back to the center of the structure. At left is a thin shell roof for St. Charles Church, in Spokane. Its 102-foot cantilever is probably the longest span of its type ever constructed.

shell forms are possible. To visualize the possibilities of three-dimensional prestressing, one must remember this basic difference between it and the more conventional two-dimensional prestressing techniques: two-dimensional prestressing is limited to slabs and walls, with the surface lying in a single plane. Three-dimensional prestressing permits the use of unusual forms, such as various types of folded plates and thin shells.

The cylindrical shell (page 121) demonstrates some of the possibilities of the three-dimensional prestressing of curved thin shells. Its vertical component of prestress balances the weight of the shell so that no transverse load is transmitted by the shell. As a result, there is no bending of the shell under its own weight, and deforma-

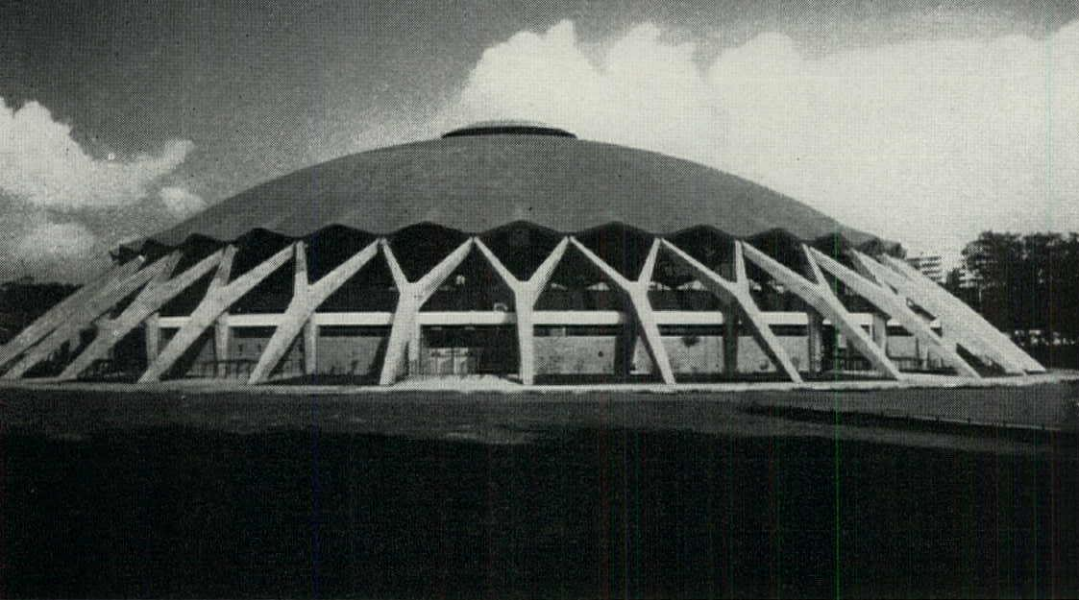
tions and secondary stresses are minimized, if not eliminated.

Shells of reversed curvature present a more intricate prestressing problem. For a hyperbolic paraboloid of the inverted umbrella type, it is desirable to prestress the edge beams to balance the tension and reduce secondary distortions and stresses. This was done in the 15 by 15 foot model (p. 121), tested at the University of California, where this 1-inch shell carried 247 pounds per square foot before failure. Each edge beam was prestressed with only two wires of $\frac{1}{4}$ -inch diameter.

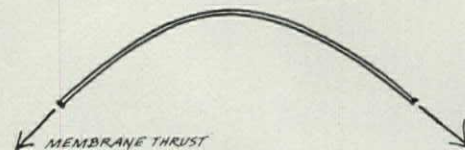
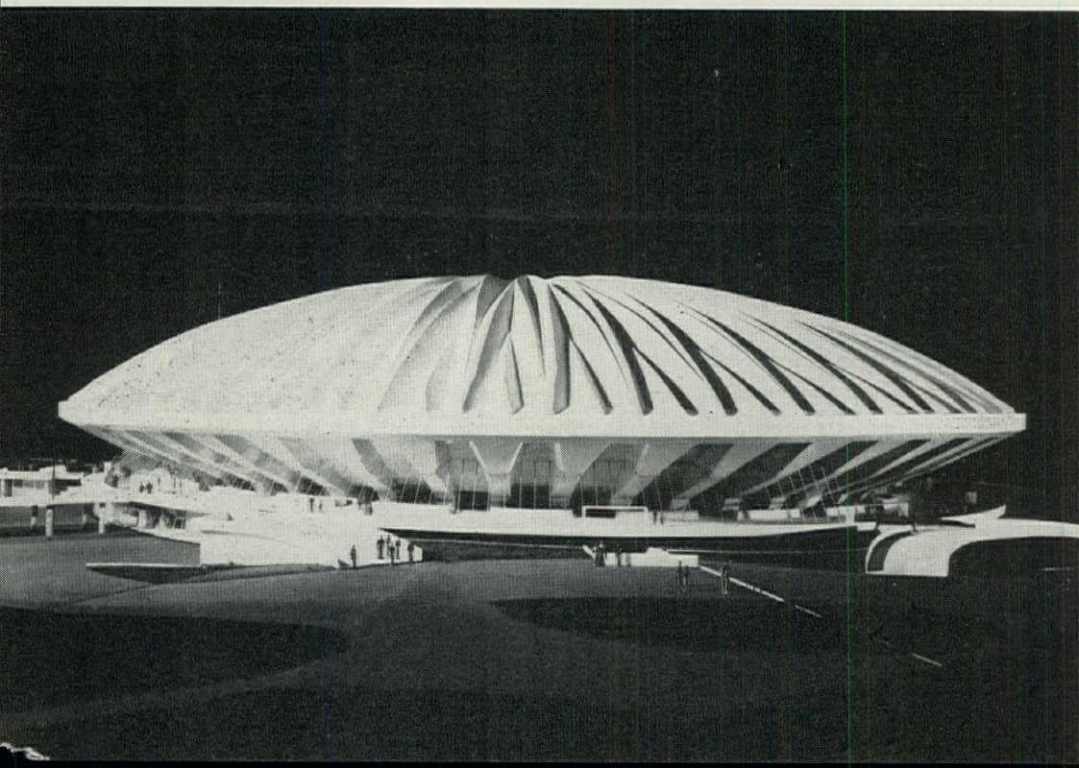
Although the usual theory of stresses in hyperbolic paraboloids indicates simple stress patterns with a limited amount of tension, the actual stresses will often depend more upon the type and location of the shell's supports.

For example, a shell roof like that on Spokane's St. Charles Church, by Architects Funk, Murray & Johnson (above), will be subjected to stresses quite different from a shell which is continuously supported along its edges. This shell has only two supports 140 feet apart, and its cantilevers 102 feet, probably the longest span of its type.

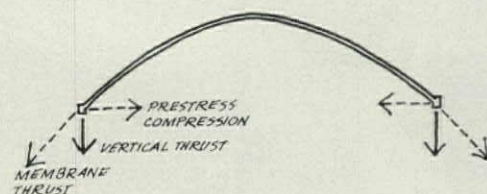
Although some shells are of such form that their gravity loads cannot be easily balanced, their lines of principal stress can be determined from computer or model analysis. Then the lines of principal compression can be stiffened by ribs, and the lines of principal tension can be prestressed into compression. When properly analyzed and prestressed, such a shell can be built without cracks, making unnecessary the addition of a roof finish.



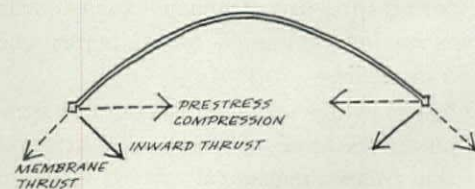
DAVID LEES—TIME



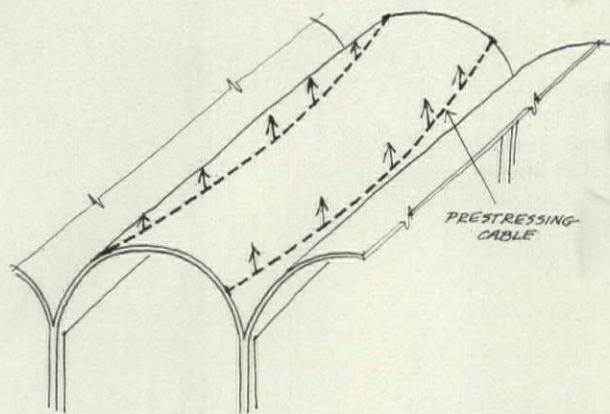
Olympic Sports Palace, in Rome, designed by Pier Luigi Nervi, with dome diameter of 194 feet and weight of some 1,250 tons, transmits its load along inclined buttresses to the foundation. No prestressing is used in this design.



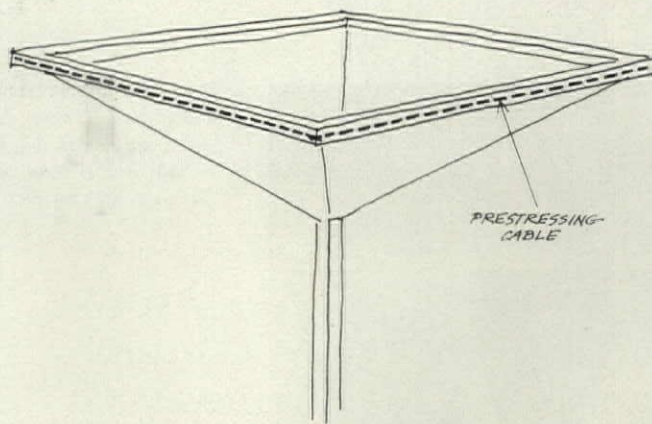
Sports Palace in Havana, designed by Arroyo & Menendez, uses prestressing around the dome's periphery—some 58,000 pounds of wire—to exert an inward thrust and thus create a hooplike compression, resulting in a vertical thrust, as shown in the sketch.



Stadium for the University of Illinois, designed by Harrison & Abramovitz, has an excessive prestress applied to dome's periphery so as to deflect the vertical thrust inward and create a bowl-shaped structure, 400 feet in diameter.



Cylindrical thin shells with continuous spans can be prestressed with curved cables (sketch). The California Museum of Science and Industry has such a roof: two spans, at 75 feet each, are made continuous and prestressed with cables along the shell, which has structural depth of only 3 feet.



Hyperbolic paraboloid is a more difficult shape to prestress. Normally, the edge beams in an inverted umbrella structure would be under tension. By prestressing the edge beams, tension is eliminated. The experimental shell shown here carried 247 pounds per square foot before failure.



Shells of double curvature, such as domes, call for different types of prestressing. A conventional dome without prestressing, like Pier Luigi Nervi's Olympic Sports Palace in Rome (left, above), carries its thrust to the ground along an inclined path. If prestress is applied around the ring of the dome, an inward thrust is produced as a result of hoop compression, and the resultant force is made vertical. It can then be supported on walls or columns as is the Sports Palace in Havana (left, center). When a bowl shape is desired, an excessive prestress can be applied around the rim of the dome so as to deflect the thrust inward, as in the case of the University of Illinois assembly hall (left, below) by Architects Harrison & Abramovitz, which is now under construction.

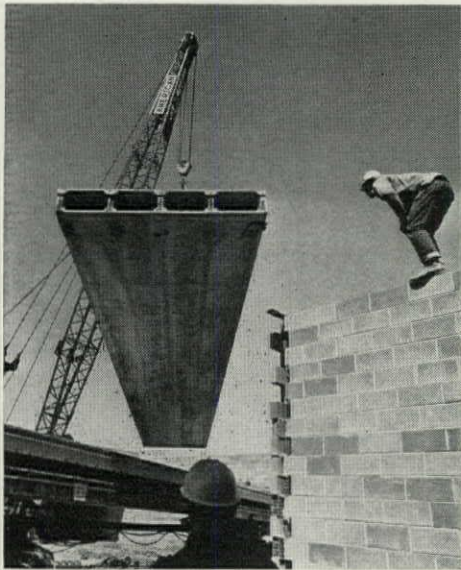
The cost of concrete and steel in a thin shell is usually negligible: 50 cents to a dollar per square foot. The most costly item is forming and falsework, which could exceed \$3 per square foot. Form costs can be reduced, of course, when forms are reused; another method of cost reduction is to precast the shell in sections, then join the precast sections together by post tensioning at the building site.

Precast elements

The growing revolution in concrete is being supported by enlightened manufacturers who are contributing a steady stream of prestressed precast elements, such as the long, cored slabs (p. 122), recently developed by General Dynamics' Material Service Division. Prestressed both longitudinally and

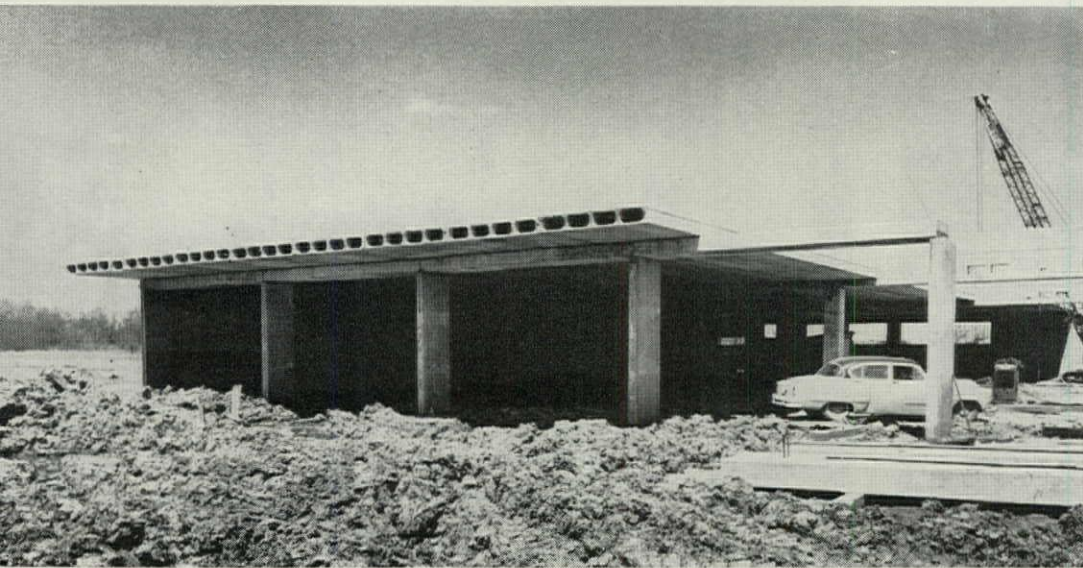
transversely, these sections weigh less than 44 pounds per square foot and will span 100 feet. Their large cores may be used as housing for electrical conduit or as air ducts.

Another example of materials development in this expanding field is a self-stressing cement, recently developed at the Structural Engineering Laboratory of the University of California. This cement "grows" during the curing process, thus stressing the steel in tension, which in turn stresses the concrete in compression. Precast pipes, slabs, and shells made of this new material exhibit remarkable characteristics. For example, the 2-inch-thick slab shown above spanned 6 feet, supported only at its four corners, and carried an ultimate load of 435 pounds per square foot. After the slab had been crushed



Standard prestressed elements are gaining wider use. These 100-foot-long prestressed cored slabs can be used as conduit housing or air ducts. The longitudinal steel lies in the web of the section, protected from fire.

Television tower in Stuttgart, Germany, perhaps the tallest prestressed structure ever built, is 693 feet high, has restaurant and observation tower. Designer was Fritz Leonhardt.



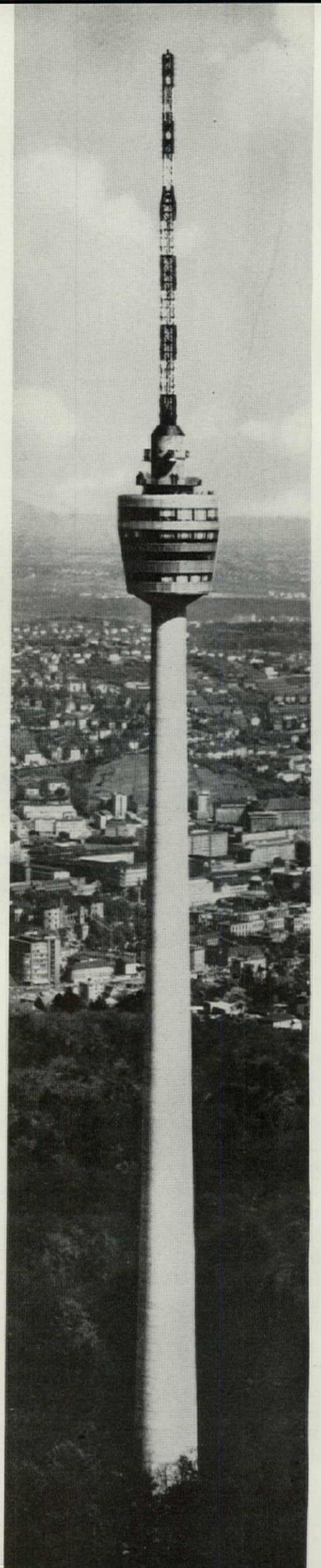
PHOTOS: (ABOVE) TONY ROMANO; (RIGHT) ALBRECHT BRUGGER

and the load removed, practically all the cracks closed up as a result of the forces of prestressing.

The future of prestress concrete—precast and otherwise—is not limited to buildings, though it is here that the next great strides are likely to come. High towers like the 693-foot tower in Stuttgart, Germany (right) can be anchored to their foundations by prestressing to resist the horizontal forces of wind and earthquake. And prestressed bridges can span great gaps with the minimum of material, as has already been demonstrated by Louisiana's Lake Pontchartrain bridge and the one proposed for the Bering Strait (FORUM, May '60).

Nor is the future of prestressed concrete building likely to resemble its past. Since prehistoric days, builders

have worked hard to resist the force of gravity in a passive manner, piling up enough material to transmit loads to a structure's foundation. Even in modern conventional construction, loads are carried downward as directly as possible through forests of columns. With the aid of prestressing, however, engineers are now beginning to master the dispersion of forces and guide them in the most efficient paths, by active and conscientious efforts. And architects, going beyond the mere expression of harnessed energy, are now beginning to play their part by producing works of art based on the sturdy foundation of prestressing science and technology. These bright beginnings promise that the fomenting revolution in concrete will be beautiful as well as broad.

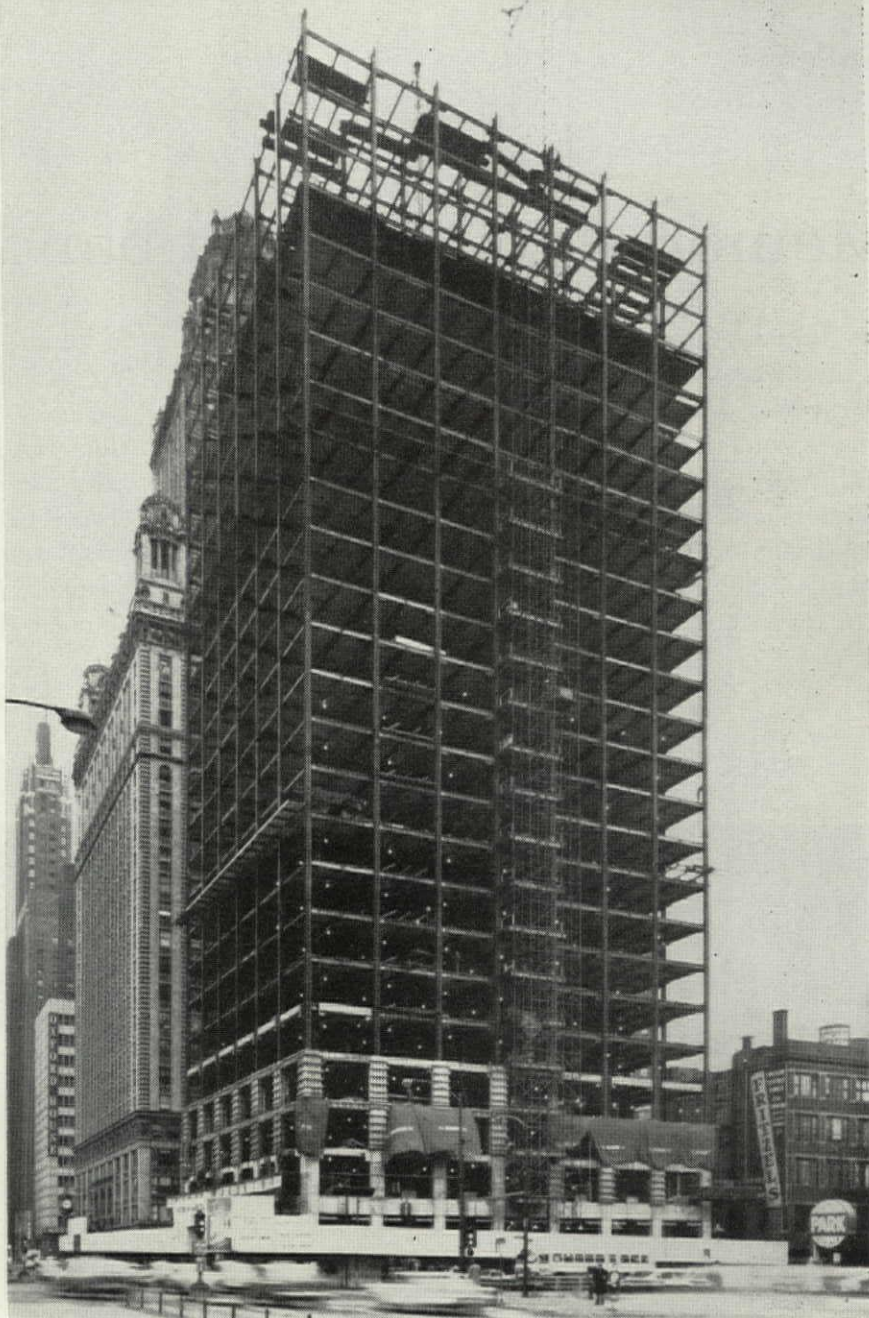


Skinny skeleton of steel

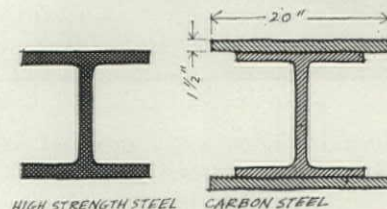
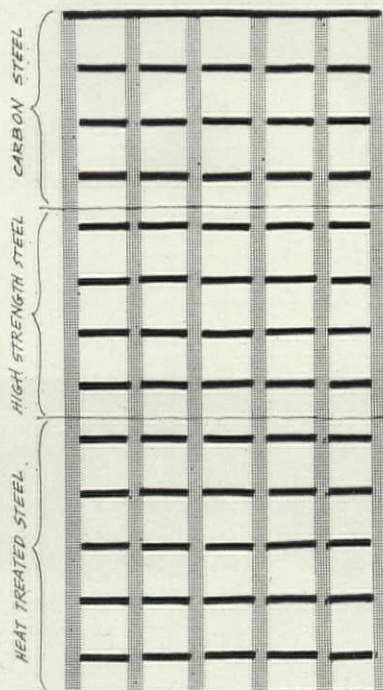
The United of America building in Chicago is one of the first structures in the U.S. to use high-strength steel in its structural frame and thus reduce column sizes and weight. The columns in the basements, as well as those supporting the lower 23 floors of the 40-story structure, are made of ASTM A440 high-strength steel. By making the switch away from more conventional carbon steel, the designers were able to reduce the weight of the frame by 800 tons and save about \$45,000 in the cost of the erected frame. The building was designed by Shaw, Metz & Associates; the frame was erected by the American Bridge Division of U.S. Steel.

The cross-section sketches at right compare an interior basement column of high-strength steel with one of conventional steel. In addition to being 98 pounds per foot lighter in weight, the high-strength column has 11 per cent less periphery than that of the carbon steel column. The over-all weight saving: about 26 per cent.

Several other structures, now in design, are using steels of different strength in their columns. The advantages of this design approach, in addition to weight and cost savings, include increased usable floor space, reduced cost of fabrication and fireproofing, and simplification of architectural details.



Column sections (below) represent the difference between a conventionally designed column, using structural A7 steel, and a column of high-strength A440 steel having the same capacity. The slimmer high-strength steel column, when finally enclosed, has 21 per cent less area than the carbon steel column.



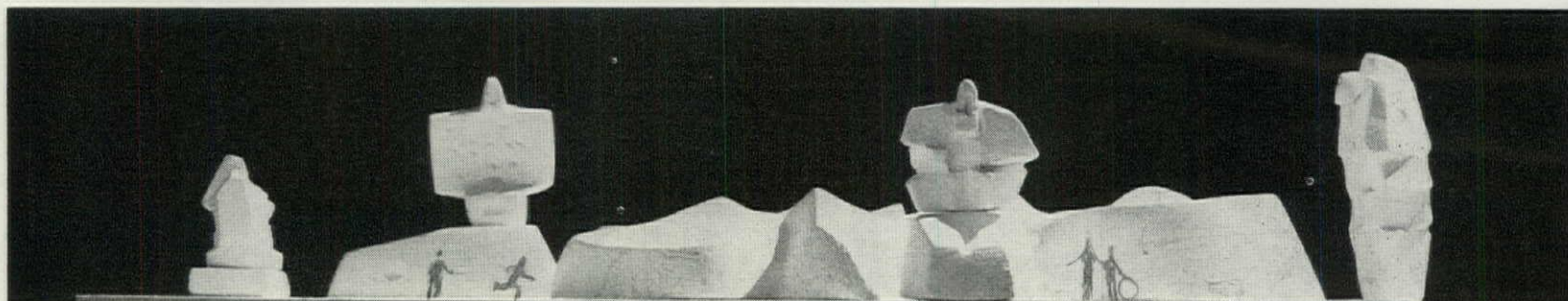
Hypothetical building (sketched at left) could gain significant weight reduction by using three types of steel in its frame: a heat-treated constructional alloy steel for columns supporting the lower floors; high-strength steel, such as A440, for the midfloors, and carbon steel for the upper floors.

Memorial to a gallant band

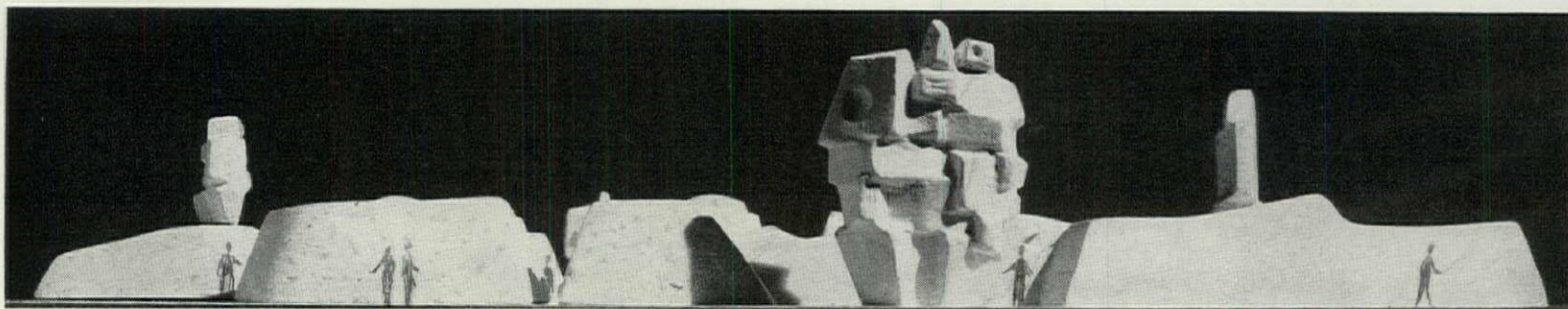
The Italians, an eminently peace-loving race, lose all their wars and win all their war memorials. After World War II, Architects Belgiojoso, Peressutti & Rogers built their delicate little memorial in Milan. And, near Rome, a group of seven architects and sculptors created that great, somber slab over the Ardeatine Caves. No better war memorials have been built anywhere in this century.

In 1959, the town of Sassari, in Sardinia, decided

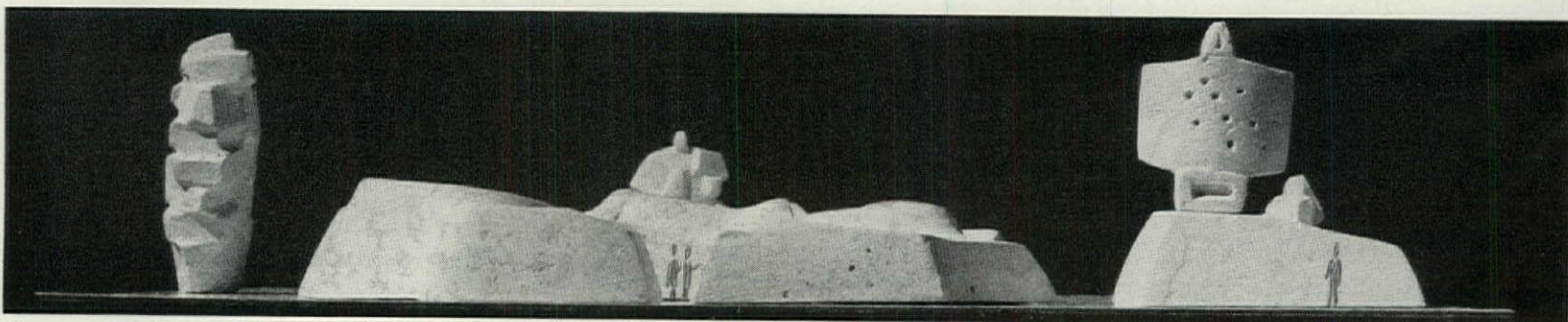
to build a memorial to the famed *Brigata Sassari*, a World War I brigade recruited entirely from among Sardinia's proud descendants of bandits. A competition was held and Constantino Nivola, a native of Sardinia and now a New York sculptor, won the second prize with the project shown here. (The first prize went to a more conventional solution.) The people of Nivola's birthplace, Orani, liked his design so much that they may build it in their own village.



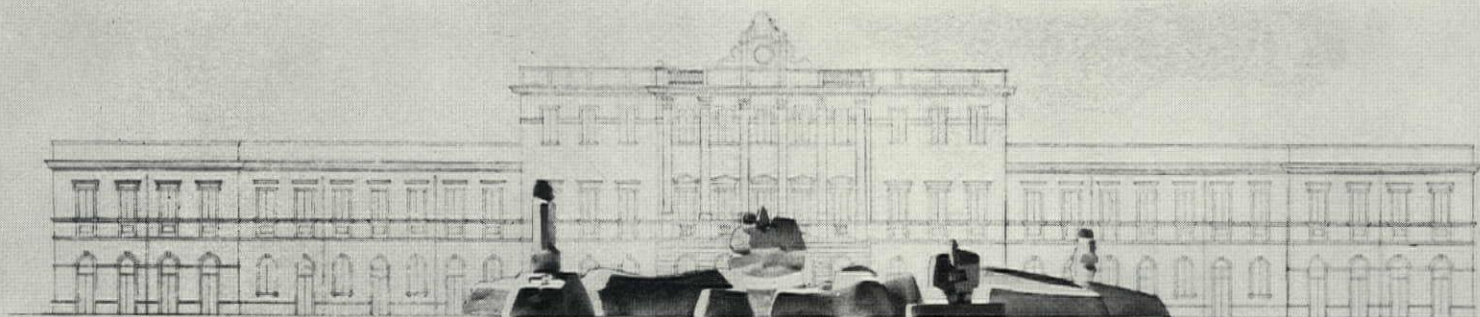
Nivola's memorial is a maze of trenches, cut through artificial "mounds" of concrete or stone that rise from 5 to 10 feet above an existing paved plaza.



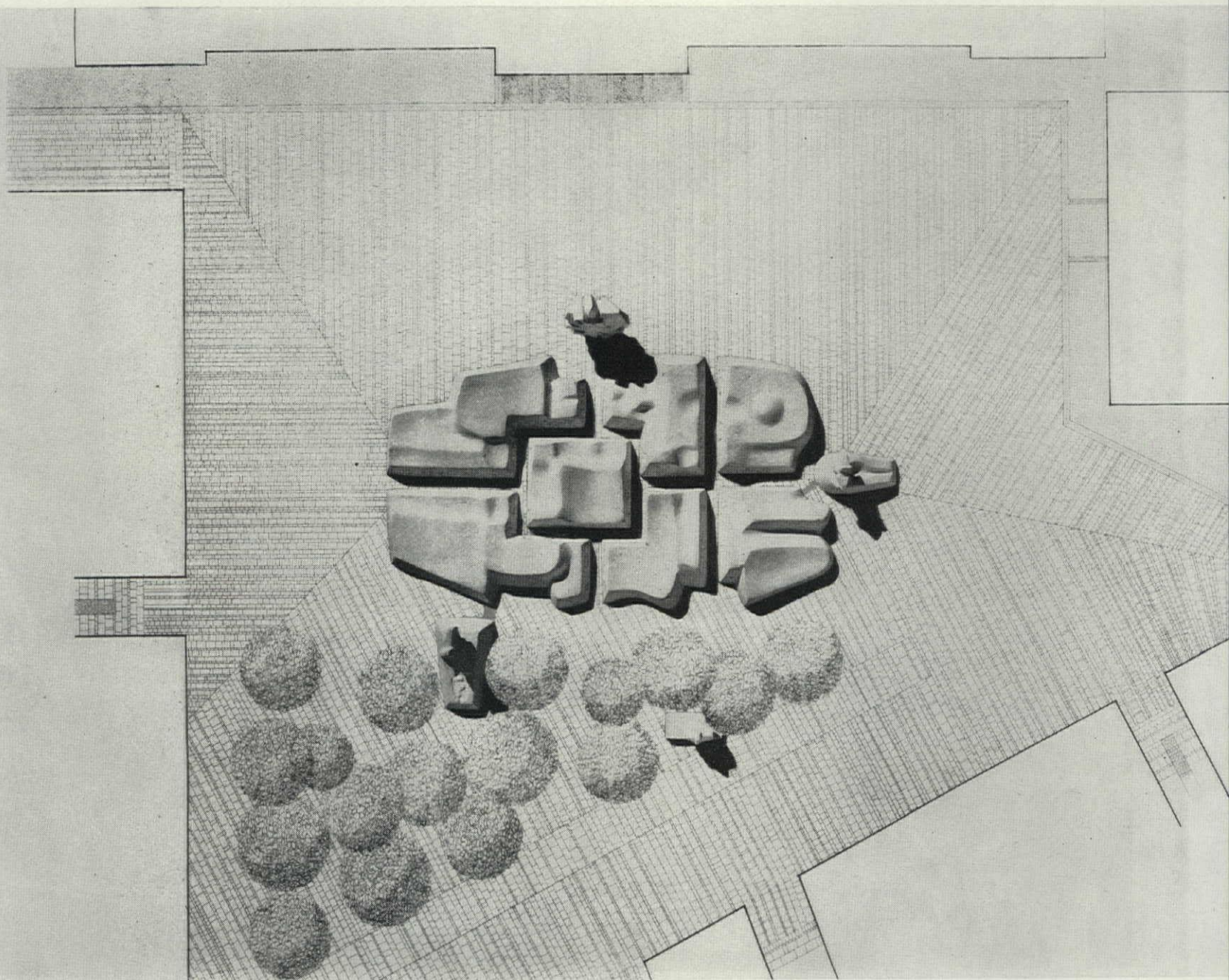
These three views show the memorial from different sides. Four freestanding, abstract figures, up to 25 feet high, stand guard all around the concrete mounds.

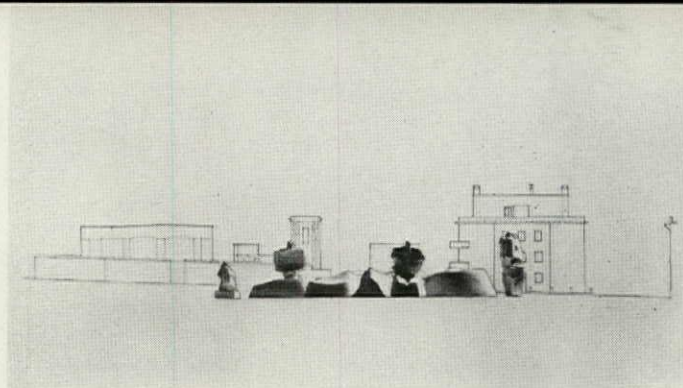


PHOTOS: HANS NAMUTH

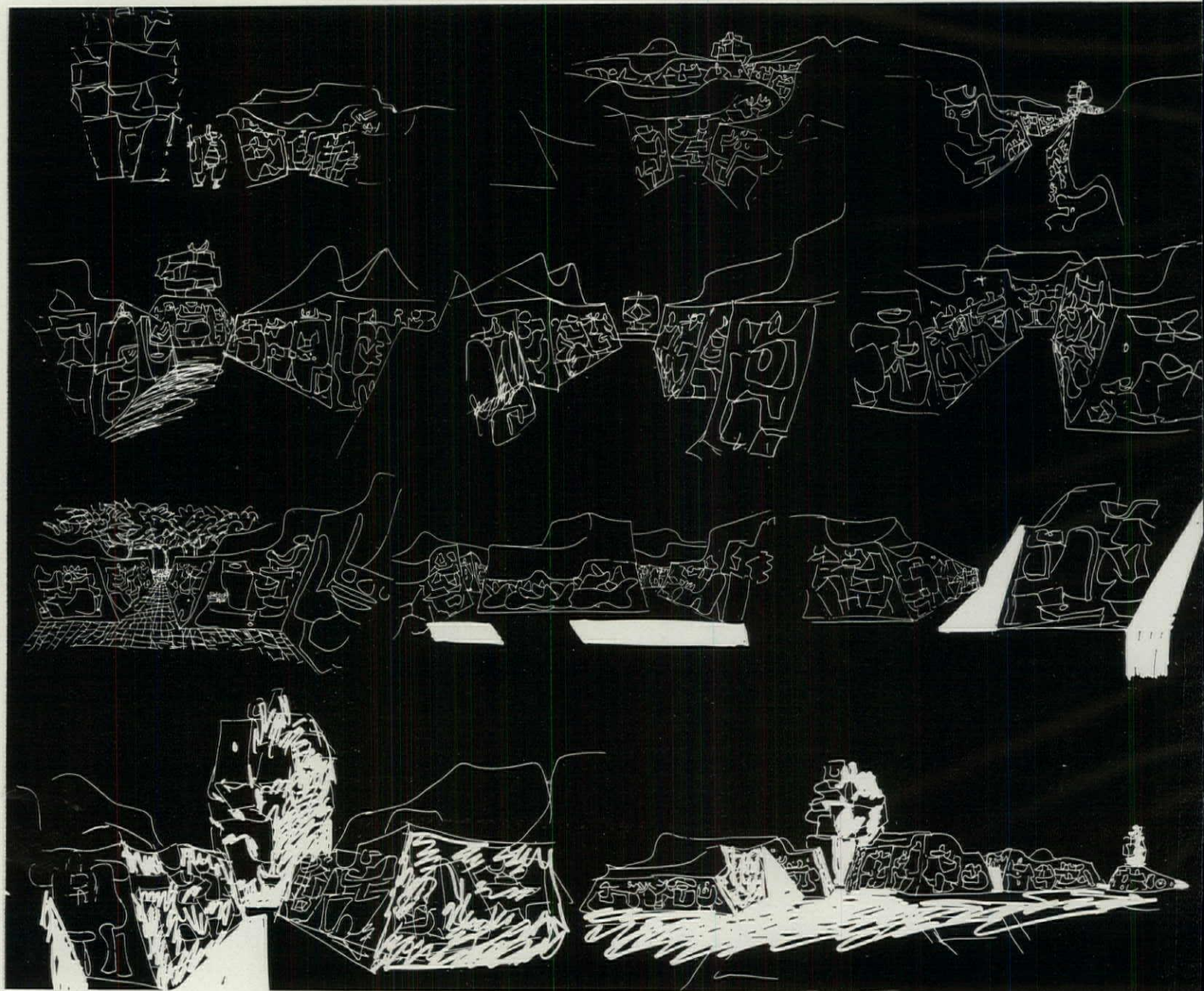


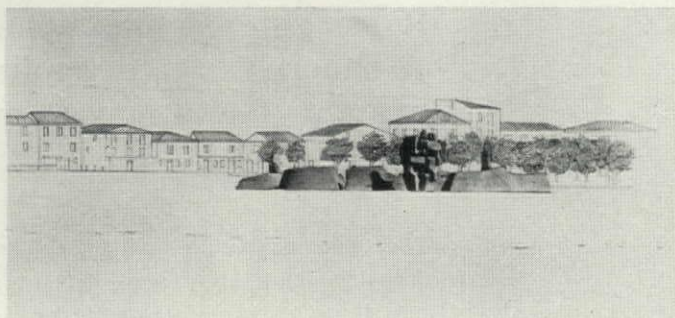
The proposed site was the plaza in front of Sassari's railroad station (above). In plan, the memorial resembles a prostrate human figure, dissected by narrow trenches.



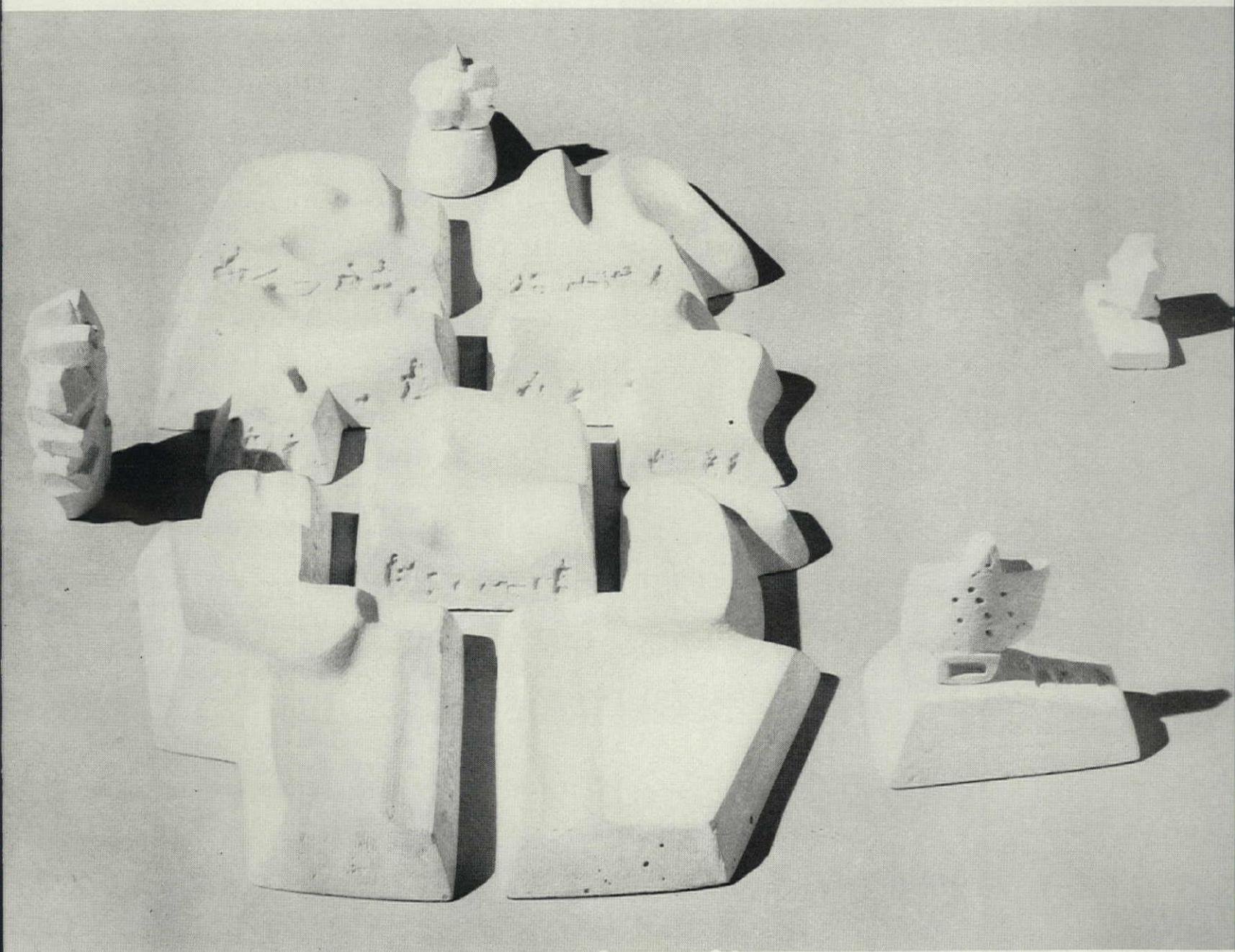


The memorial was designed for walking through. The sides of the narrow trenches bear imprints of human figures, hands, and weapons. Nivola's drawings (below) suggest different views of and through the maze. The plaza for which the memorial was designed is about 400 feet square, and the memorial itself was intended to be about 120 feet square. Richard Stein was the associate architect for the project.





The four tall, abstract figures that face the approaches to the mounds (below) are meant to symbolize, from left to right, a Sardinian shepherd, a soldier on guard, a mother awaiting her son's return from the wars, and, finally, the returning soldier himself. The model shows imprints of figures and objects on the walls of the trenches. Nivola intended the memorial to be bleached stone or concrete.



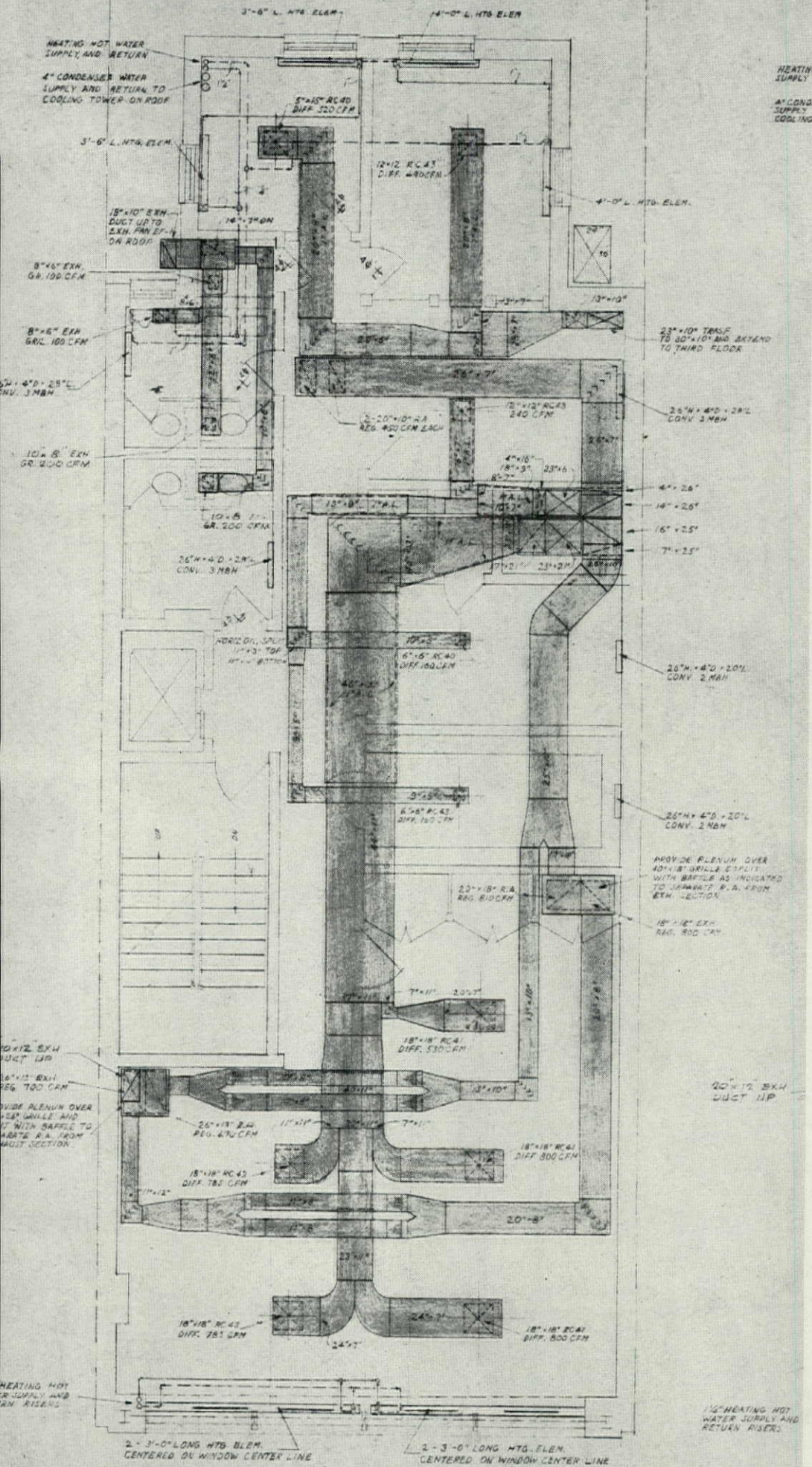
HANS NAMUTH

Air condi

Some guide lines on how to choose the right cooling system — and how to get the most out of it.

The demand for air-conditioned space probably motivates more rebuilding jobs than any other single factor—and usually involves the largest single item of expense (as high as 50 per cent of some general rebuilding contracts). By now, the arguments for air conditioning are well known: to meet competition from newer buildings; to attract tenants and employees who increasingly demand clean, comfortable quarters; to cut interior maintenance costs; and to promote greater personnel efficiency. A recent study by the federal government's General Services Administration indicates that, in air-conditioned space, productivity rises 9.5 per cent while absenteeism falls 2.5 per cent—and that an increase of only 1.5 per cent in productivity will pay air-conditioning costs in salary savings.

Almost any existing building can be air conditioned, of course, but there is surprisingly little agreement on how to go about it. Each building is unique. Compounding the problem, air-conditioning equipment comes in a bewildering variety of sizes, shapes, and costs, ranging from window units of $\frac{3}{4}$ -ton capacity, to self-contained, mass-produced packaged units of 2 to 50 tons, to highly sophisticated, custom-designed central systems of virtually unlimited capacity. Small wonder that to many building owners and architects air conditioning remains a mysterious tangle of wires, ducts, compressors, and fans, hard enough to plan for a new building let alone integrate with an old one. Useful guide lines, however, can be



SECOND FLOOR PLAN

SCALE $\frac{1}{4}'' = 1'-0''$

Duct patterns weave through the second-floor plan of a loft structure rebuilt as newly air-conditioned offices (see page 132).

tioning the older building

established*. Those that follow relate to the air conditioning of the typical small- to medium-sized office building (special building types will be discussed in later issues). But first, an important prologue: a major investment in air conditioning should not be made on a "do-it-yourself" basis; the help of an experienced mechanical engineer should be obtained.

Choosing the system

A small total amount of space is usually best air conditioned with individual, self-contained units, either window coolers or larger floor-mounted consoles. Initial cost for packaged units is lower, about \$700 per ton of cooling for the larger models compared with \$1,000 to \$1,500 per ton for central air conditioning, but maintenance requirements are apt to be higher. In other terms, package systems will range from roughly \$2.25 to \$5 per square foot of conditioned space, where central systems can run from \$3 to as high as \$8 per square foot for the fanciest installations. (One of the newest wrinkles in packaged equipment, especially appropriate for stores, shopping centers, and industrial plants, is the rooftop unit, designed primarily for installation in one-story buildings without the need for adding ductwork.) In larger buildings, however, the cost of maintaining a great number of separate units can become significant, and a central system can substantially lessen the problems—and the costs—of maintenance. Moreover, the total tonnage required in a central system is often less than the sum of the many packages needed to cool the same building, because the central system can shift to handle shifting loads; each package unit, on the other hand, must be sized to handle the peak load in its own area.

In larger buildings, it is often desirable to zone the space and install a "split" central system. For example,

the rebuilt Vulcan Building (see page 131) has two related but independent air-conditioning systems. Because of an unusually heavy illuminating load—there are about 3 acres of luminous ceiling—the interior zone is cooled, year-around, by a low-velocity central system with supply ducts running along the center core walls. The exterior zone is cooled with individually controlled induction units, installed under each window and supplied by vertical air and water risers.

Use of existing systems. If a building already has a good heating system, the air-conditioning system should supplement it rather than replace it, providing adequate, year-around control. In many old buildings, radiators along the outside walls can be boxed in neatly and equipped with modern temperature controls. In other cases, it may be desirable to remove the radiators but use the same piping system for more modern convectors to give a uniform, inconspicuous source of heat along the outside wall. Then, for summer cooling and year-around mechanical ventilation, new air-conditioning ducts can be worked along interior corridor ceilings, feeding into the exterior rooms. But, as a rule, if the existing heating system is more than 25 years old, the cost of maintaining it will probably necessitate its replacement before half the life of the new cooling system has expired. In this case, it is cheaper and less troublesome in the long run to install a complete new integrated system at the outset. Of course, if the building already has ductwork for mechanical ventilation or an earlier air-conditioning system, this can often be integrated into the new system. A good illustration is the recently remodeled, 22-story Tennessee Building in Houston, which, over the years, had acquired an exotic array of air-conditioning equipment—some floors with just window units, others with central systems—all added with almost no over-all coordination. By dividing the building into five zones (for the four exposures and the inte-

rior), by modifying existing equipment to provide automatic control of room temperature and humidity, and by increasing total refrigeration capacity by 400 tons (with an accompanying 400-ton cooling tower added on the roof), the architects produced a highly coordinated system to cool the building.

Which kind of power? Since air-conditioning equipment is powered by either gas, electricity, or steam, and since the cost of these varies from area to area (and even between sections of the same city), it is only prudent at the outset to determine which power source is the least expensive.

Not many existing buildings are wired to handle a new, electrically powered air-conditioning system. A system of 500 tons (500 hp) with all its auxiliary motors will need roughly 500 kw. Unless extensive new wiring is required anyway for new lighting and other power demands, it may pay to cool the building with a steam absorption system using steam from the building's existing boiler plant (or from a central utility supply). This can do a 500-ton job on only 60 kw. demand and, lacking compressors, eliminates much of the noise problem.

Structural changes. When packaged equipment is installed, structural changes are usually unnecessary and this is a major source of their popularity. Window units will, of course, cut down outside light and view, or, if set above or below the windows, require puncturing the outside wall, but even here, the basic structure is usually untouched. The central system, however, sometimes necessitates structural changes to support the heavier equipment. A basement often seems the logical place to put air-conditioning equipment, and such placement generally skirts the support problem. Good air conditioning starts with good ventilation, however, and the air at and below street level in most cities is foul. Thus, if the equipment is located in the basement, this may mean having to route

*The ones in this article were drawn up with the help of Consulting Engineer Fred S. Dubin, and manufacturers of air-conditioning equipment.

bulky air-intake ducts back up toward the roof where the air supply is cleaner. This suggests putting the equipment on the roof in the first place, where the cooling tower and exhaust fans usually have to be anyway. Supporting this equipment on the roof may require structural changes, but the ease of maintaining accessible, centrally located equipment, and the operating economies derived from such a system usually make the expense worth-while in the long run.

Noise suppression. Unlike new buildings, in which the structure can be de-



GEORGE CSERNA

signed for anticipated mechanical loads and vibration, old buildings often present a noise problem. In locating compressors particularly, a sound-deadening concrete mat should be put under them and ideally should be placed over existing columns to minimize vibration.

Getting the most from the system

Thoughtful planning can greatly reduce the initial size and increase the efficiency and economy of any air-conditioning system. Here are two ways:

► *Reduce solar loads.* The sun often imposes a heavier burden on cooling systems than any other factor—greater than the heat from the system's intake of outside air, from people inside, from all the new lighting which modern standards demand. Therefore, when the architect takes sun control into his initial remodeling plans, he simplifies the whole job immediately. Installation and operating costs can be materially reduced by "equalizing" east and west facades in particular, eliminating the need for expensive zone controls. Sometimes the deeply recessed windows of

older masonry structures are enough to keep out high, hot summer sun, but more often additional sun shades, canopies, fins, grilles, louvers, or other devices must be considered (and *carefully* considered lest they clash with or obscure a fine old façade). If the building front is right up to the building line and no further projections are allowed, heat-absorbing glass, flat exterior "Venetian" blinds, or tiny-louvered metal screening especially designed for sun control are worthy of consideration.

Unlike an apartment building, where west sun creates particular problems in heating up interiors when they are about to come into heaviest early-evening use, an office building should be protected most importantly on the east, so that morning sun does not penetrate during the heaviest morning working hours. However, east and west should both be planned for sun control, and south as well.

► *Design for short distribution.* Both space and cost can be saved by locating the main cold-generating equipment centrally and closest to the heaviest anticipated cooling loads. Then, more localized air-handling equipment can feed out in short runs. (It is sometimes better to give up rentable space to make way for centralized equipment and thus save on cooling costs.) Rather than trying to get ducts all the way from the center of the building to the outside, it is well to consider running them above dropped corridor ceilings, with outlets feeding directly into rooms through diffusers high in the corridor wall. A new dropped ceiling extending into an outside room is not always necessary unless new lighting and acoustical treatment are to be integrated with it. Generally an air-distribution system that attempts to serve more than five floors in one zone results in vertical ductwork so large that it is difficult to find vertical chases to accommodate it; a chilled-water distribution system is often better for remodeling, for its smaller pipes are easier to snake through existing structure.

A guide to equipment

Type: air-conditioning equipment comes in two basic types: packaged units assembled at the factory, and custom-designed central systems created to suit a specific set of conditions.

Installed cost: the initial cost of packaged equipment is invariably less than custom equipment of the same capacity because it is mass-produced and is easier and less expensive to install, requiring a minimum of ductwork and structural change.

Operating cost: because a central system is tailor-made for its job, it generally requires 10 to 15 per cent less power than packaged equipment. However, some larger central systems require an experienced operator. A packaged unit, on the other hand, can be turned on and off as needed.

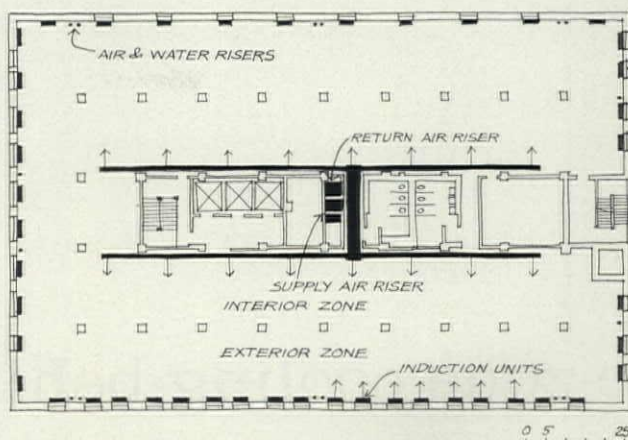
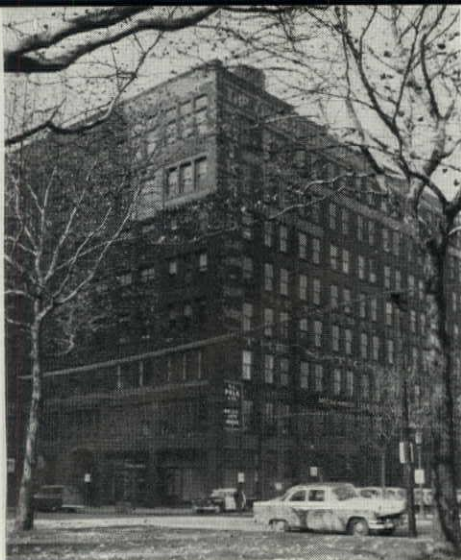
Maintenance: it is more difficult and expensive to maintain packaged equipment when the units—each with fan, compressor, and motor—are spread throughout the building. A central system, on the other hand, generally has most of its equipment in one spot. However, when the central system fails, unless the loads are divided among two or more compressors, the whole building suffers, and when one packaged unit fails, only the area which it serves is without air conditioning.

Comfort control: packaged equipment is designed for an average balance between temperature and humidity conditions and is not so flexible in this respect as a central system designed to meet varying conditions in specific areas (packaged units, for example, must be considerably oversized to overcome humidity in warm, wet climates or where there are heavy concentrations of people in one space).

Noise: packaged equipment is invariably noisier because compressors and fans are contained within the units directly next to the spaces being cooled. Central systems, with fans, compressors, and motors located in one or two more remote spots, are quieter.

Life expectancy: packaged units usually come with a five-year guarantee. With proper care they usually last from seven to ten years, often more. Given the same care, central systems can be expected to last for 20 years and longer.

Following are two case studies of rebuilding in which air conditioning played a major role: one is a larger office building (opposite), the other a typical smaller one (page 132).



Cool new skin for an old shell

A prime downtown location—right on Cleveland's lake-front mall and one block from its public square (photo, right)—prompted the thorough rebuilding of the hulking, 65-year-old loft structure above.

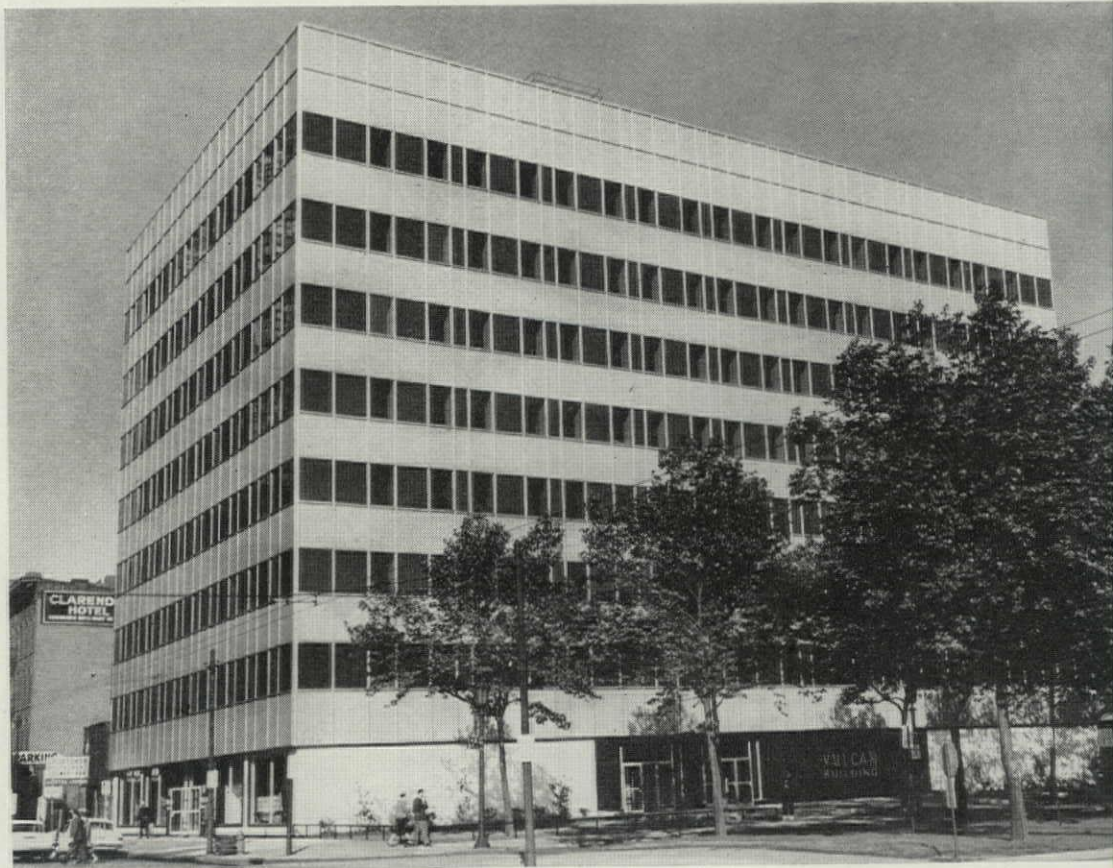
In addition to a new "split" air-conditioning system (plan above, text page 129), the Vulcan building received a new public front: on the south and east façades (below, right), a new curtain wall was hung 1 foot out from the old masonry shell, creating a vent "stack" in which air can circulate to dissipate built-up heat and, thus, reduce the air-conditioning load (the north and west façades are exposed painted brick). The old open stair well and elevator shafts were converted into a modern, central service core, including three new automatic elevators. Reinforced concrete floors were introduced and surfaced with rubber tile. New luminous ceilings provide a lighting level of 115 foot-candles (below).

Rebuilding cost of the 110,000-square-foot building exceeded \$1 million. Architects and electrical-mechanical engineers were Hubbell & Benes and Hoff. The structural engineering and contracting were done by McDowell Co., the owners and principal tenants of the building.

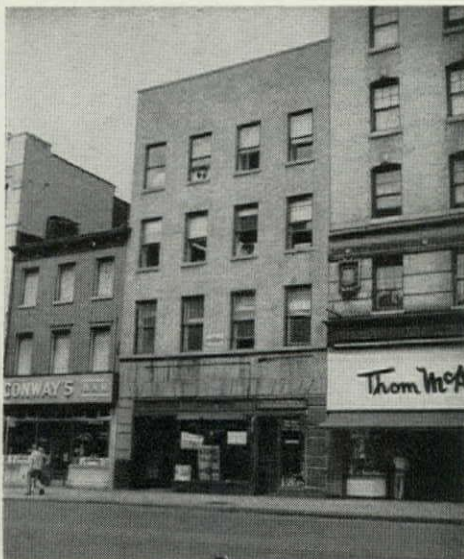
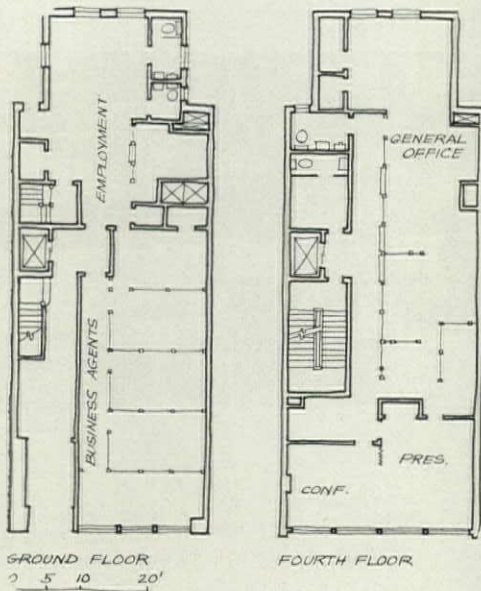


Vulcan building (arrow) is on lake-front mall, one block from Public Square (upper left).

Curtain wall of glass and stainless steel is hung 1 foot out from old masonry shell.



Three-zone cooling behind a sleek façade



Dreary old facade (above) had heavy masonry at the top. New facade (right) opens up windows in a bright new pattern.



PHOTOS (RIGHT & OPF. PAGE): MARIS © EZRA STOLLER ASSOC'S.

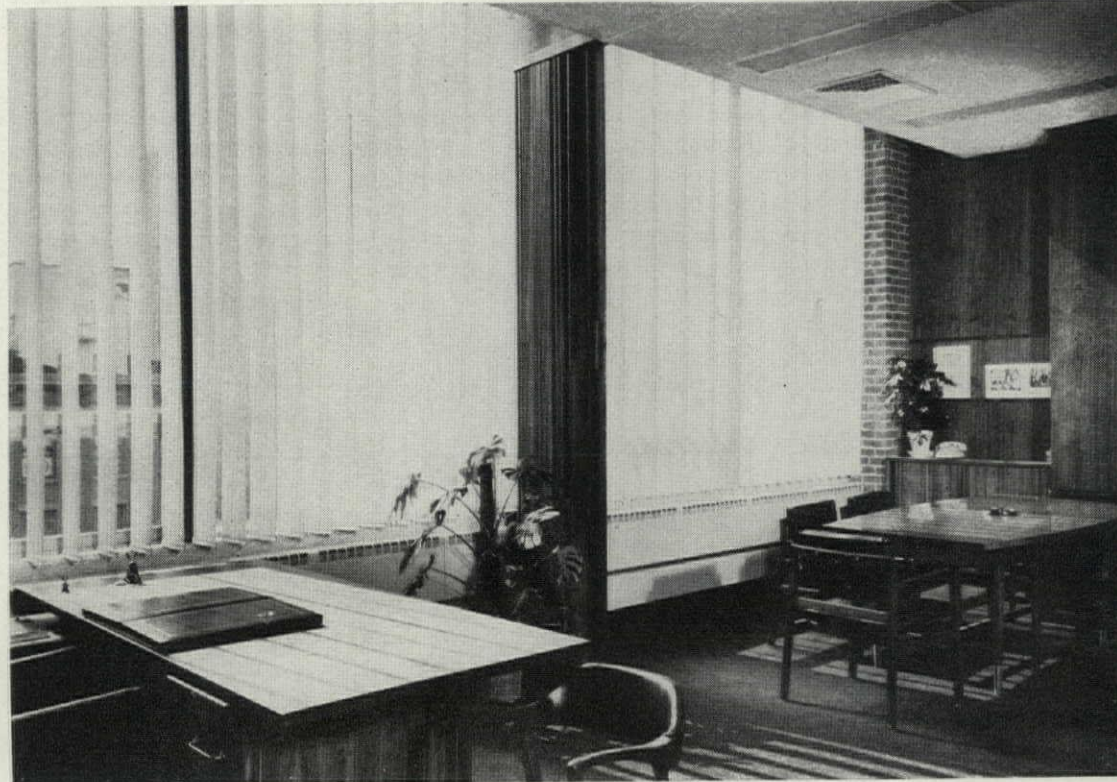
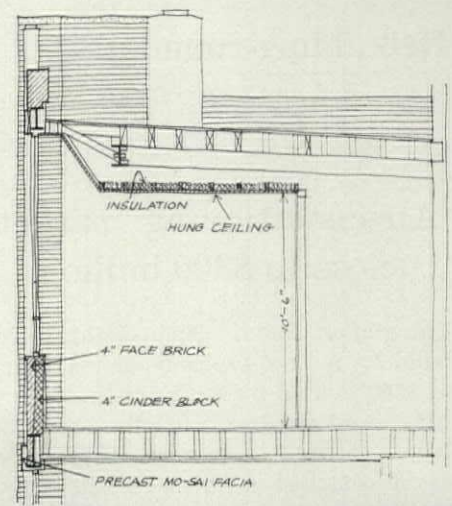
Central air conditioning played a major role in the latest modernization of the old, seven-times-altered Manhattan loft structure which now houses Local 144 of the Hotel and Allied Service Employees Union.

The narrow building's windows face east and west; to avoid freezing the occupants of the shady side while cooling the sunny side, the air conditioning was divided into three vertical zones—east and west, each designed to handle a variable load, and, between them, an internal zone designed to handle a constant load. A compressor in the basement feeds to three central-station fan-coil units, one for each zone, and each with separate thermostatic control; in addition, the second-floor assembly room has its own independent controls. The first floor has a separate compressor and air-handling unit so that, if the floor is ever rented, the tenant can pay for his own power. A cooling tower on the roof serves the entire 67-ton system. Much of the ductwork is acoustically lined because, to save headroom, the depth of the ducts was reduced, increasing the air velocity and, consequently, the noise. (A high velocity system with still smaller ducts was deemed too expensive for such a small building.) A steam coil in each air-handling unit provides winter heating.

In the rebuilding, the existing floor structure, elevator system, and steel stairs were preserved. The building's new façade is a study in contrasts. Rough plate and polished plate glass alternate, and regular bond courses of brick on the side piers play against the stacked brick spandrel panels. Inside, brightly painted, movable partitions divide the space, running full height only in the executive offices and the washrooms. All floors have strip-lighted acoustical ceilings.

Total remodeling cost for 10,065 square feet of space was \$268,000. Heating, air-conditioning, and ventilating accounted for \$79,000—roughly 30 per cent of the total contract cost. The total investment was met by the members of the local who voted to assess themselves \$1 each per month for 30 months.

Architect: Giorgio Cavaglieri. Mechanical and electrical engineer: Nicola Ginzburg. General contractor: Charnin Builders, Inc.



Dropped ceiling in president's office angles back from extended windows, bringing added light.

Vertical Venetian blinds throughout screen the sun and reduce air-conditioning loads.



Air-conditioning market close to \$300 million

The market for air conditioning in rebuilding is now probably in the range of \$300 million a year. Equipment manufacturers are unable to offer any definitive estimates because they have never compiled detailed records showing how much of their output ultimately is installed in new construction and how much in rebuilding projects. A representative of one of the largest producers, however, calculates that this year's volume of cooling going into older buildings will be about \$270 million. He arrives at this figure by totaling figures he considers likely in each of the following categories (in millions): office buildings, \$100; hospitals, \$30; retail stores, \$45; factories, \$60; public buildings, \$15; hotels, \$10; apartments, \$5; and schools, \$5.

These estimates take into consideration the extent to which each of these submarkets has already been "saturated" or satisfied. About 50 to 55 per cent of the floor area of office buildings, including government structures, has now been air conditioned, and perhaps 15 per cent of the total floor area of hospitals. About 25 per cent of the nation's apartments now have some kind of air conditioning, including room units purchased by tenants (the \$5 million estimate covers only systems that would be installed by apartment owners).

While virtually all major downtown stores and shopping centers are air conditioned, there are so many small neighborhood stores scattered in every city and town that no firm estimate can be made of the proportion of retail stores that are now conditioned; the best guess is about one-third. It is estimated that about 40 per cent of all

hotel guest rooms are now cooled, but only about 5 per cent of all classrooms, and less than 1 per cent of elementary and secondary classrooms. Somewhere around 6 per cent of factory floor area is now air conditioned.

Brief

Store modernization check list, an eight-page pamphlet to help owners or tenants determine to what extent exterior and interior rebuilding will increase their customer-appeal and sales potential, is now available without charge from the Small Business Administration, Washington 25, D. C. Also available from SBA, if local credit is not obtainable on reasonable terms, are five-year, 5 per cent interest loans for store rebuilding. SBA will also participate with banks in making such loans.

Rebuilding on the rise, quarterly statistics reveal

During the first three months of 1961 more than three quarters of all rebuilding was nonresidential. This is a continuation of the pattern found during 1960 in FORUM's latest report of building permit data from 16 selected cities throughout the country. In only two of the cities, during the first quarter of the year, was the nonresidential share of rebuilding less than 70 per cent of the total rebuilding volume.

Total building figures show an overall increase of 4 per cent, which compares favorably with Miles Colean's estimate for the year (FORUM, April).

REBUILDING PERMITS, 1ST QUARTER 1961

Additions and alterations, in thousands of dollars:

City	Residential	Nonresidential	Total	Change '60-'61
ATLANTA	\$ 1,262	\$ 7,637	\$ 8,899	+120%
BOSTON	925	5,007	5,932	+ 60%
BUFFALO	253	1,386	1,639	+ 58%
CHICAGO	1,863	7,817	9,680	- 26%
CLEVELAND	1,314	3,731	5,045	+ 21%
DENVER	767	2,885	3,653	+248%
DETROIT	1,028	6,253	7,281	+ 5%
LOS ANGELES	9,405	11,627	21,032	- 17%
MINNEAPOLIS	649	2,558	3,207	+ 41%
NEW YORK	6,539	13,773	20,312	- 29%
PITTSBURGH	451	2,944	3,395	+ 54%
PHILADELPHIA	1,144	2,749	3,893	- 15%
ST. LOUIS	462	1,907	2,369	+ 52%
SAN FRANCISCO	2,621	7,422	10,043	+ 54%
SEATTLE	1,153	8,082	9,235	+ 81%
WASHINGTON*	525	2,944	3,469	+ 55%
TOTAL	\$30,361	\$88,722	\$119,083	+ 5%

* Does not include government building.

Both new building and rebuilding (additions and alterations) shared in this increase. Rebuilding accounted for a slightly larger share proportionately than did new building, having increased 5 per cent to new building's 4 per cent.

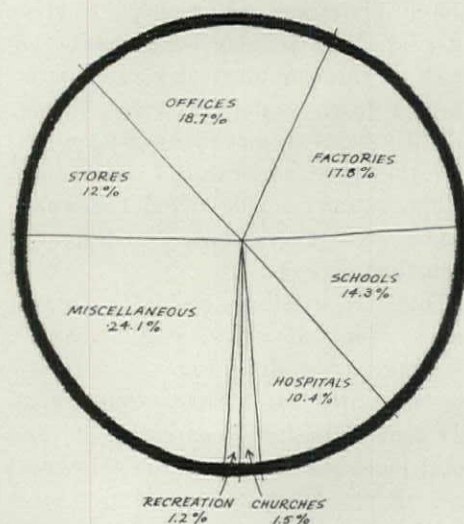
Among individual cities, only six showed a decline in total building—Atlanta, Boston, Chicago, Los Angeles, New York, and San Francisco. Interestingly enough, however, the last three of these showed an increase in rebuilding.

New York City accounts for approximately one-third of the total building market in these cities and, as such, rather overbalances the picture. If New York were omitted from the analysis, new building in the remaining 15 cities would be up 5 per cent and rebuilding would be up 18 per cent, for an over-all increase of 7.5 per cent in total building.

Since building in New York City did not decline as much as in the other cities during the latest business recession, this vigor in building in the other 15 cities may be a sign that they are attempting to catch up with the delayed demand and, of course, in so doing are activating the whole economy.

In the six cities that classify nonresidential rebuilding permit figures by types of buildings—Boston, Chicago, Cleveland, Detroit, New York, and St. Louis—an analysis of the different

categories for the first quarter of 1961 shows a marked increase in the rebuilding of hospitals: from 4.4 per cent of all rebuilding in 1960 to 10.4 per cent this year. The increase in miscellaneous rebuilding was noticeable too; this category includes, among many other items, warehouses, storehouses, commercial garages, and public or governmental buildings. Schools and churches showed slight fall-offs in dollar volume and in their share of rebuilding.

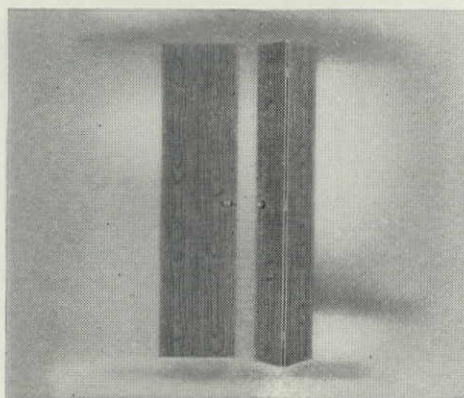


Share of nonresidential rebuilding ascribed to eight different building categories for the first quarter of 1961 is shown in the pie chart above. Boston, Cleveland, Chicago, Detroit, New York, and St. Louis are the cities whose permit data supplied the analysis.

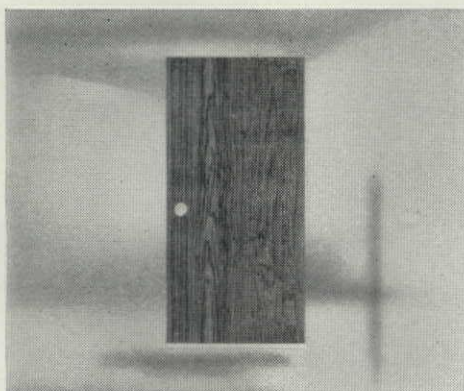


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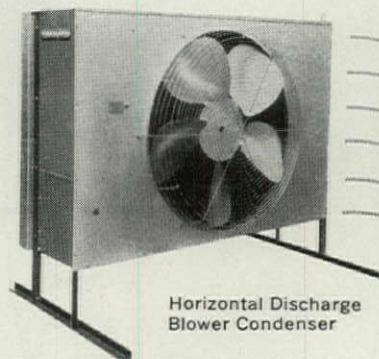
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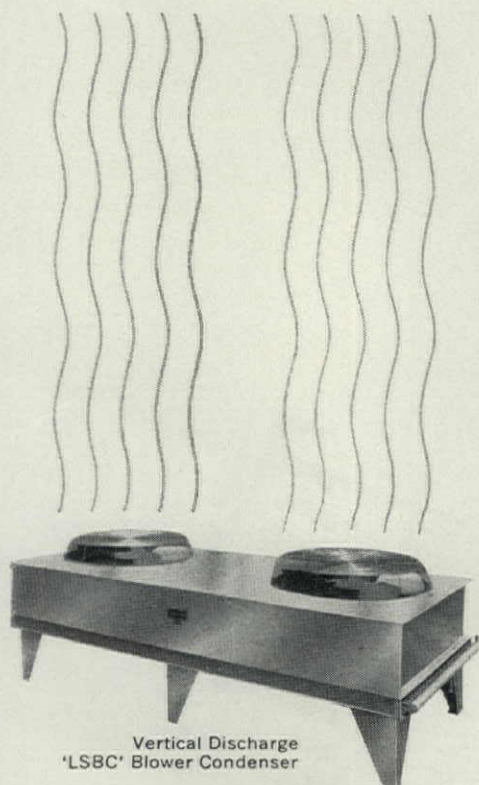
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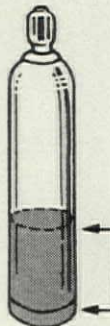
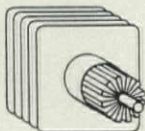
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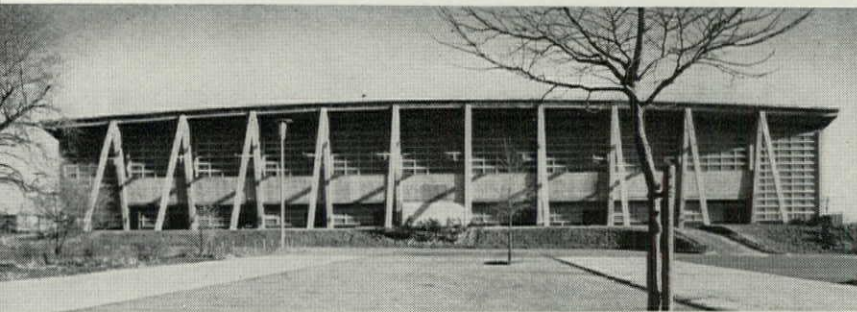


REFRIGERANT
REQUIRED FOR
INNER-FIN
INSTALLATION

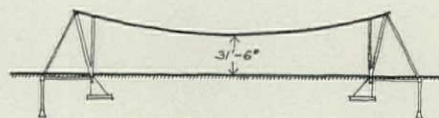
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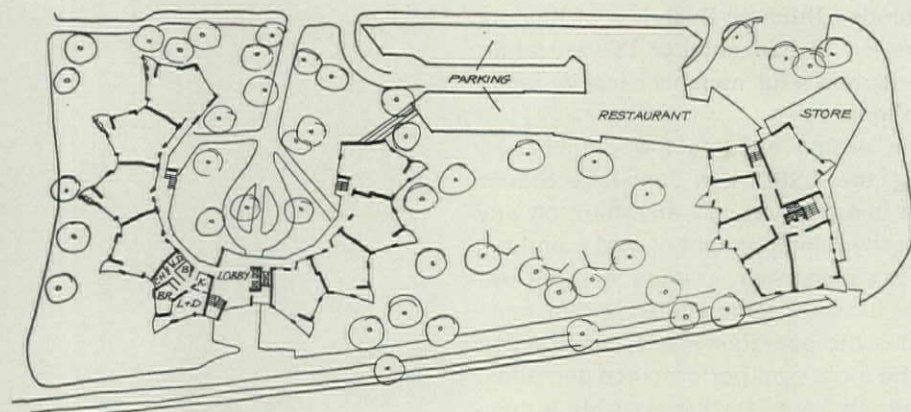
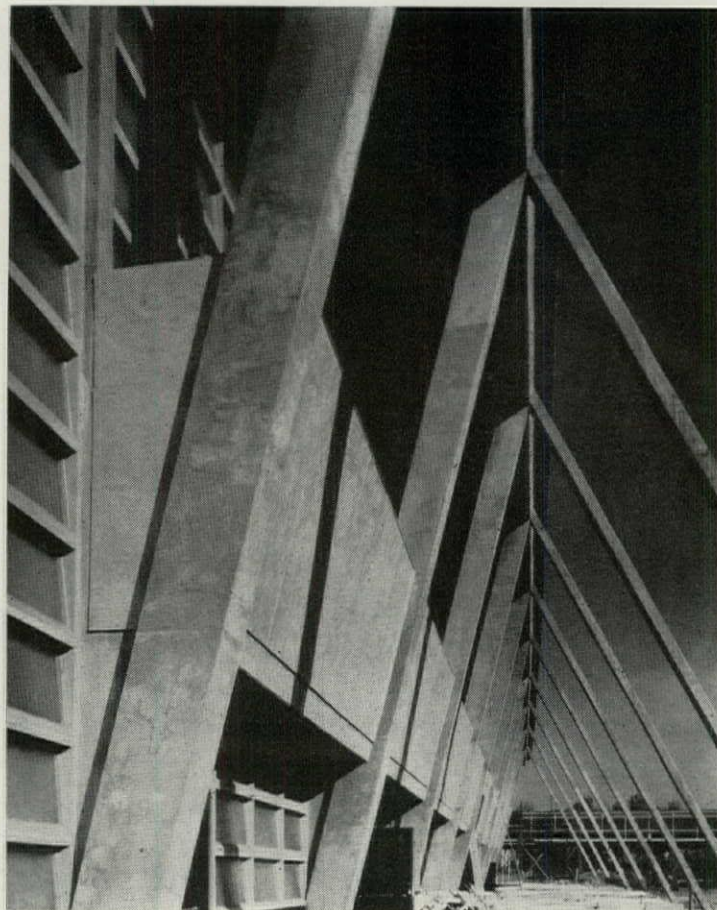


CABLES AND CONCRETE



In his new Westphalia Hall in Dortmund, Architect Walter Holtje has strung concrete on cables for a sports and exhibition structure clear-spanning some 250 feet. The post-tensioned cables, encased in precast blocks strung like beads, support lightweight precast roof decking; they are held aloft by out-tilting compression struts and tied down by guy-wire cables in concrete (photo, right). In winter the hall contains tennis courts and practice areas; in summer it is an air-conditioned center for trade shows and theatrical productions on a movable stage.

PHOTOS: (RIGHT) CHEOR STUHLER; (LEFT) FRIEDHELM THOMAS



ROMEO AND JULIET

In this truly cooperative, and highly romantic, apartment project in Stuttgart, Architect Hans Scharoun first built a tall tower called "Romeo," then gave it a mate, "Julia," curving around in a lower, more embracing feminine form. To link the couple Scharoun provided a low structure of shops, restaurant, laundry, garage, and gardens. Upstairs, other Romeos and Juliets may play their balcony scenes on tooth-shaped terraces cantilevered out to the sun and view. Inside, few walls are parallel, and the spaces that result invite different kinds of occupants to improvise on their surroundings.

PHOTOARCHIV, ZEISS IKON AG





PHOTOS: JOHN G. ROSS

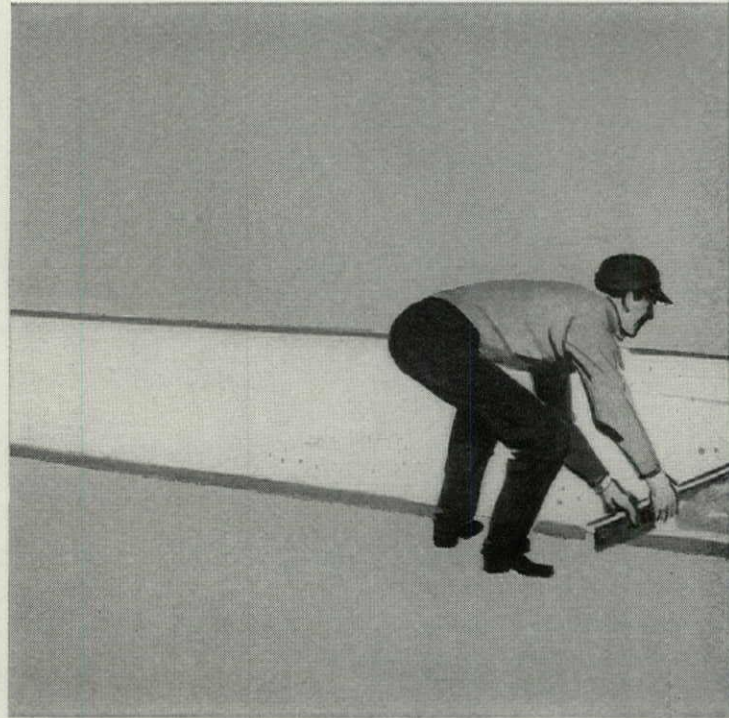


THE BIGGEST DOME OF ALL

Long watched while its scalloped arches took shape above a forest of scaffolding (FORUM, Mar. '58), the vast National Center of Industries and Techniques in suburban Paris is now finished, and functioning as a shell for equally vast trade shows and exhibitions. Designed by Architect-Engineer Bernard Zehruss and Architects R. Camelot and J. de Mailly, the dome springs from three corners, spanning 656 feet along each glass-sheathed side. Jutting in under the arches are what appear to be separate buildings, which, while they spoil the clear sweep of the over-all form, con-

tain 400,000 square feet of useful perimeter offices and shops, and continue through the main building as lower exhibit and storage floors. Each floor is built of many triangular concrete units, precast in a plant built especially for the job and fitted together by mammoth cranes; the structure can handle heavy trucks and machinery displays with ease. Above the main floor, the multiple arches of the dome flare out to stiffen the larger curved surfaces of which they are part. Spectators mount various temporary structures within the hall to go through the exhibits, or look up at the roof.





These five plants got built-in extras



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Architect: J. Fruchtbaum, Buffalo, N. Y.



F. N. Burt Co., Inc., Buffalo, N. Y.
Architect: H. E. Plumer and Associates, Buffalo, N. Y.



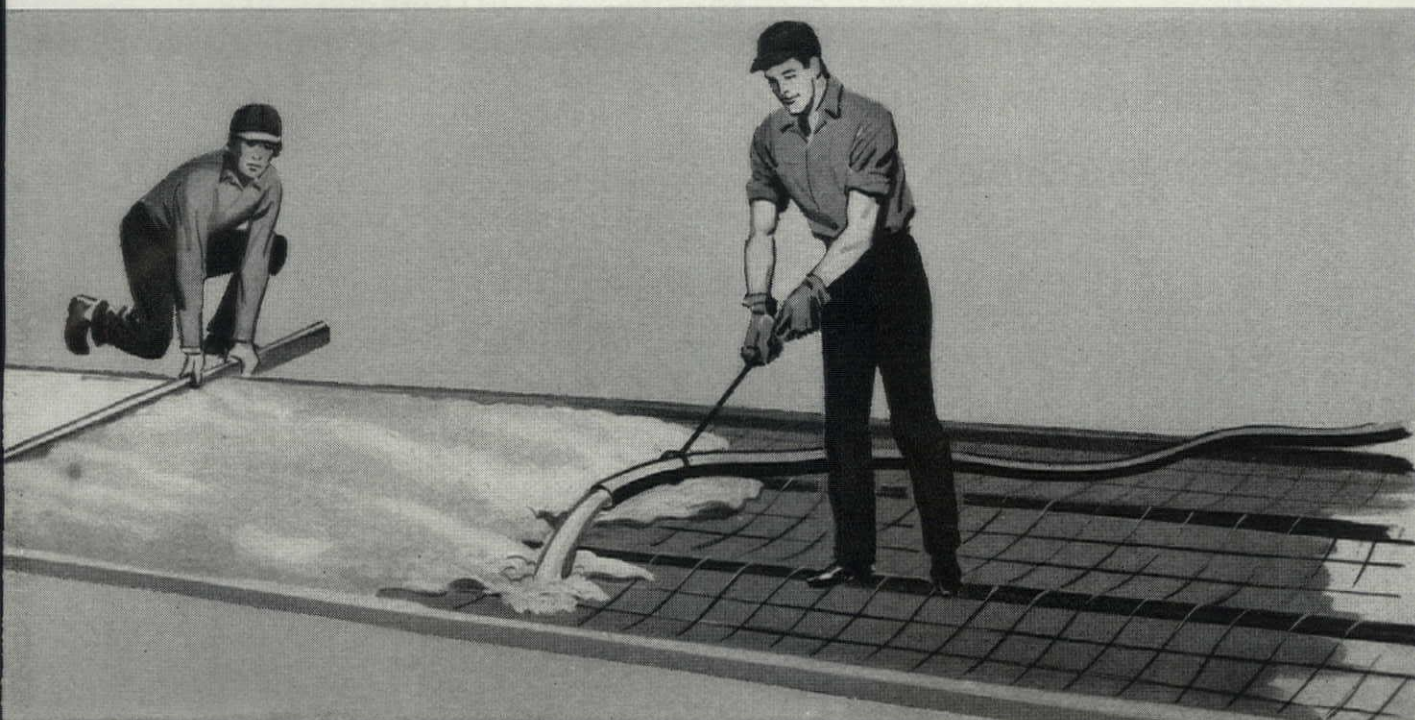
Bradley-Sun Div. of American Can Co.
Washington, N. J.
Architect: American Can Company Engineering Dept.



Behr-Manning Co., Troy, N. Y.
Architect: The Tuttle Co., Boston, Mass.



Martin Co., Orlando, Florida.
Architects: Connell, Pierce, Garland and Friedman, Miami, Florida.



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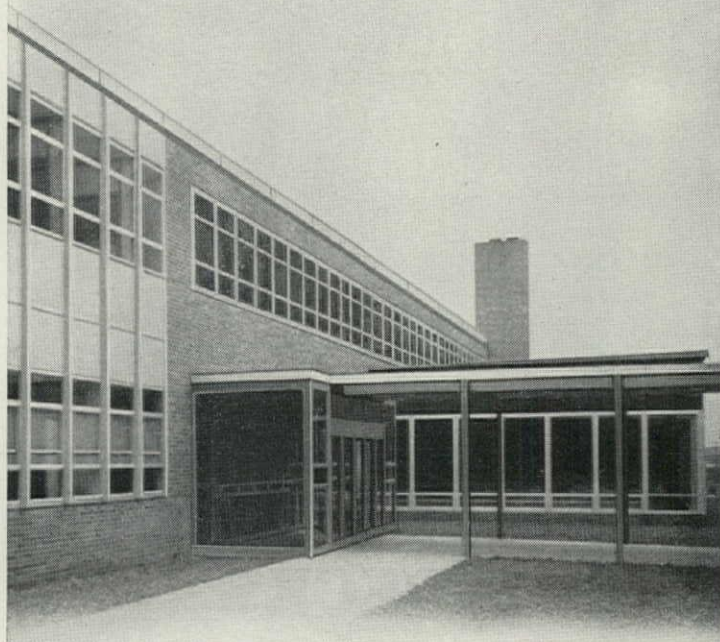
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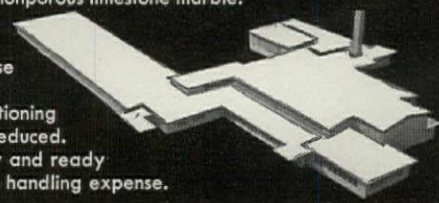
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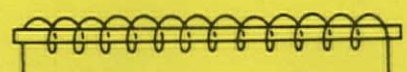
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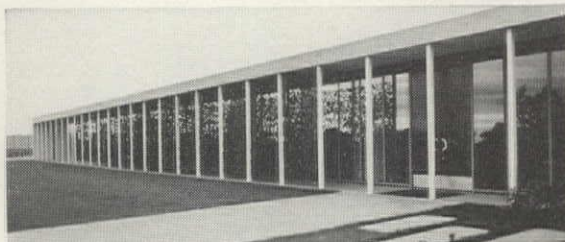


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General Contractor: Diesel Construction Co.
Owner: Hals Corporation

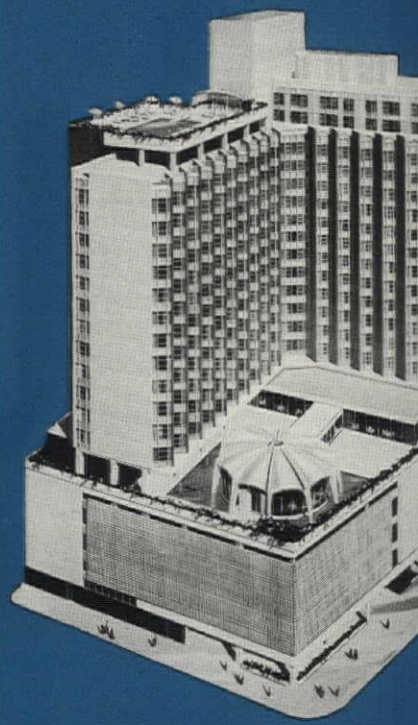
BOTTOM LEFT

Mount Prospect Towers
Newark, New Jersey
Architect: George J. Sole
General Contractor: Radice Construction Co.
Owner: Mount Prospect Towers, Inc.

UPPER RIGHT


River View Motor Hotel
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Architect: Morris Lapidus, Harle & Liebman
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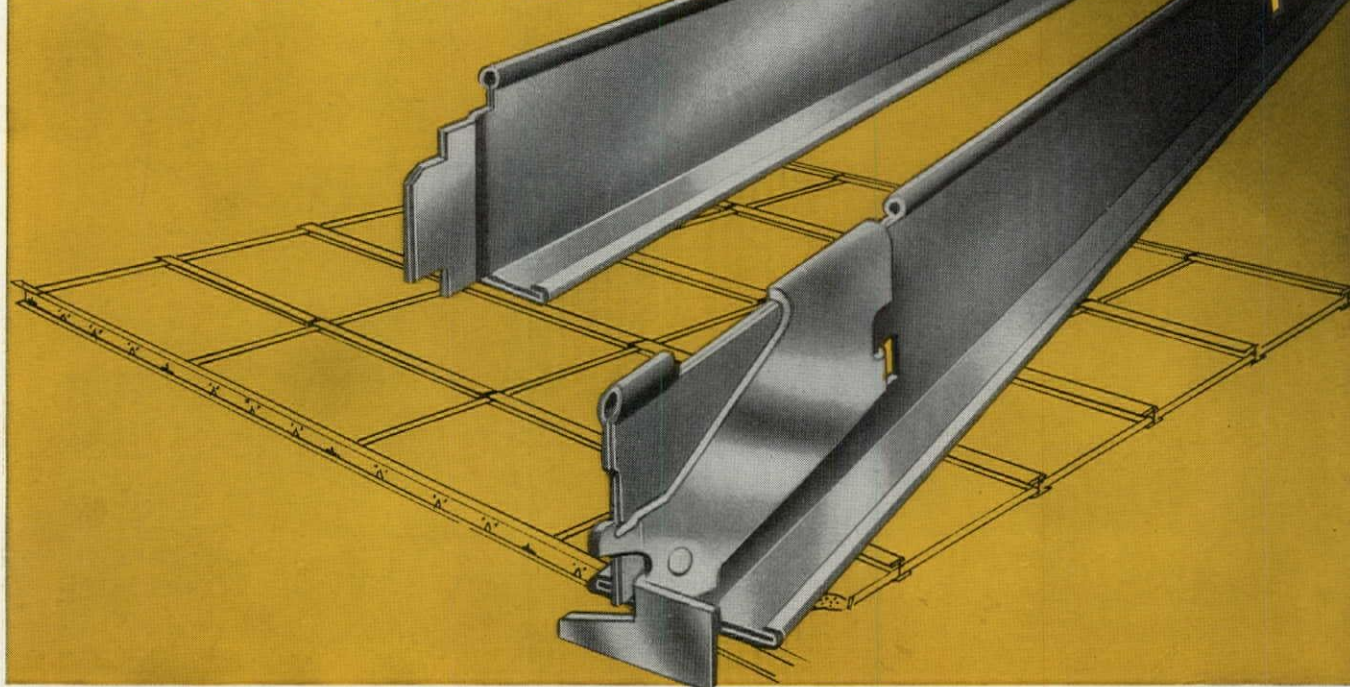
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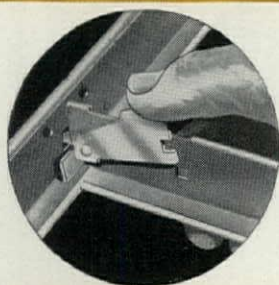
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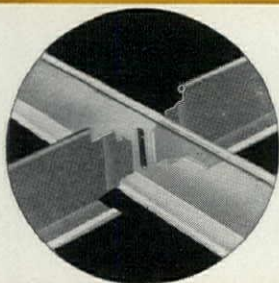


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ARCHITECTURE IN AMERICA: A BATTLE OF STYLES. Edited by William A. Coles and Henry Hope Reed Jr. Published by Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York, N.Y. 412 pp. 5 3/8" x 8 1/4". Illus. Paper-bound. \$2.40.

This is simply a propaganda book masquerading as education. It is false to begin with in pretending that architecture in America is first of all a battle of styles, and it can do immeasurable harm in so teaching the young. Architecture is first of all a never ending creation. It comes to enrich experience, not to divide it. Nor are there just two styles hard at war in the U.S.—false again. Author Reed simply wishes that there were. He is one of a small group of epigones left over from the dying enthusiasms of the first decade or two of this century. Subsequent history has passed them by. Accordingly it is false again for the authors to identify, as "the classical style," just that version of it which prevailed in that one past moment of Beaux-Arts teaching: a fantastically narrow view to imprint on young minds which, according to the preface, are not expected to have had any other previous education in the history of architecture and are left to judge for themselves a series of conflicting readings about conflicting recent jobs.

The beginnings of fairness would have demanded explanation of the manifold meaning of the words "classic" or "classical" as applied to architecture: 1) architecture of the Greco-Roman tradition, of which the Beaux-Arts were just one development, and 2) by an extension, all architecture with the classic attributes of rationality, a close "order" of discipline and expression, balance, studied proportions, and a search for what is valid universally. So the classical spirit has carried on and developed in one whole great class of modern architecture which the book leaves out altogether, for it would demonstrate wherein the authors' "battle" is a phony.

Author Coles is unknown to FORUM but Author Reed is so well-known as a passionate foe of modern architecture that, whether Coles just went along or was dragged, the supposedly objective and impartial collection of source material is a great deal less than good in conveying the "modern" side of the picture. As well expect a clear picture of capitalism from Mr. Khrushchev as a clear picture of modern architecture from Mr. Reed. Just how FORUM was induced to let some of its material be used is something the editors are trying ruefully to recall.



"Sublimation and regression."

THE CITY IN HISTORY: Its Origins, Its Transformations, and Its Prospects. By Lewis Mumford. Published by Harcourt, Brace and World, Inc., 750 Fifth Ave., New York 17, N.Y. 657 pp. 6" x 9 1/4". Illus. \$11.50.

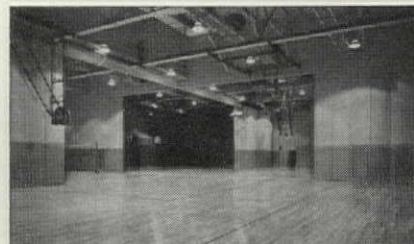
This epic work transcends cities. It is a history and a philosophy of Western man and his civilization. Cities are the stage but the drama is man. At this level, as we have come to expect, Mumford is a hope and an inspiration. His dedication to a humanity which is dignified, sensual, complex, moral, gentle, and free is expressed nowhere with more power. The meaningful survival of the race is the driving essence.

Yet on another level there is only despair. Mumford revels in humanity, but he resents man's engulfment by civilization. The neolithic village, dominated by women whose strength lay in "the mysteries of menstruation and copulation and childbirth, the arts of life," has given way to cities ruled by men whose strength is in the arts of aggression, force, and destruction. "Neolithic woman has as much reason to be proud of her contribution as Nuclear Age woman has reason to be apprehensive over the fate of her children and her world."

Mumford gives brief acknowledgment to the positive side of cities, but the book is heavy with "the darker contributions of urban civilization: war, slavery, voca-

Continued on page 173

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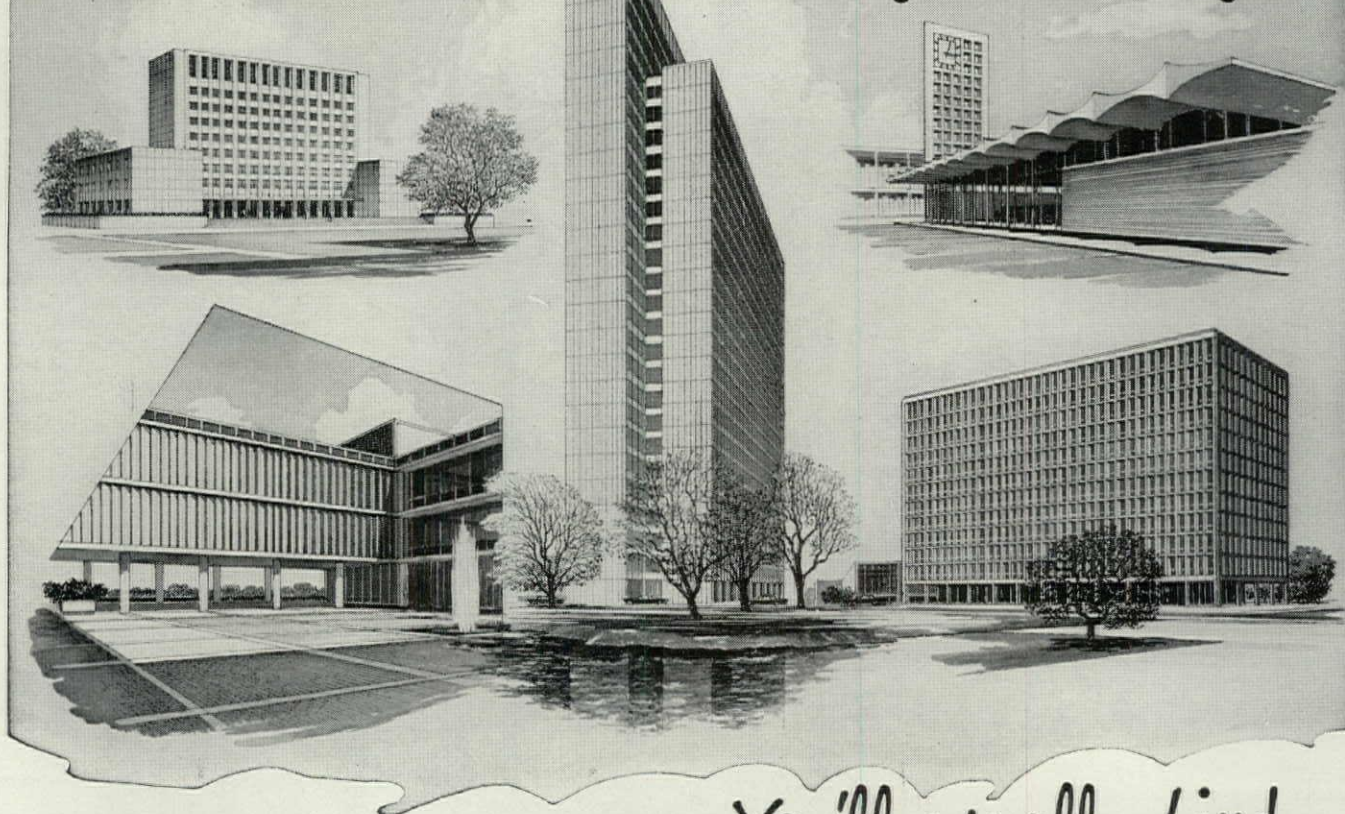
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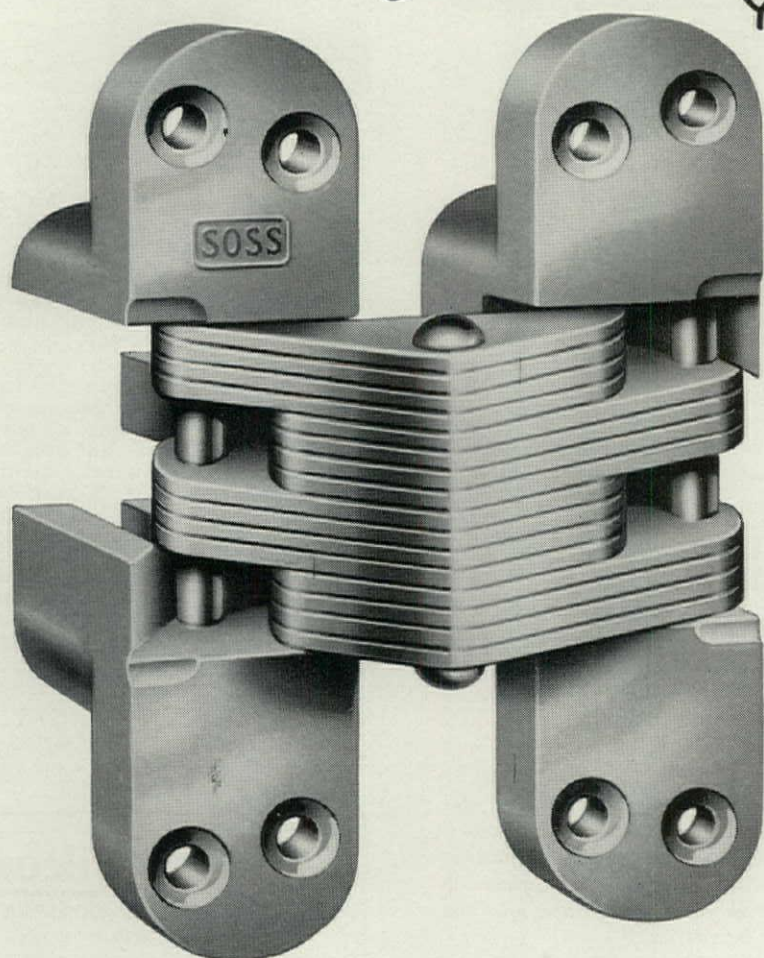


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tional overspecialization, and, in many places, a persistent orientation toward death. These institutions and activities, forming a 'negative symbiosis,' have accompanied the city through most of its history, and remain today in markedly brutal form, without their original religious sanction, as the greatest threat to human development."

With this underlying spirit the history of the city is unfolded. It weaves from fascinating speculations about "civic" life in paleolithic times through a brilliant account of the cities of Egypt, Mesopotamia, Greece, Rome, the Middle Ages, the Baroque, and the Industrial Revolution and finally to that symbol of present-day urbanization, the sprawling suburb.

In the concluding chapters Mumford presents values and prescriptions for cities which are eminently sound and disturbingly ahead of their time. Cities should "unite the urban and rural components into a porous regional complex, multicentered but capable of functioning as a whole;" and planning for cities is described as "a rational and orderly method for dealing with complexity, through an organization capable of establishing balance and autonomy, and of maintaining order despite differentiation, and coherence and unity despite the need for growth."

The prevalent monolithic, oversimplified approach to city building and city rebuilding is decried: "To keep the advantages first incorporated in the romantic suburb, we must acclimate them to the building of cities. To keep the advantages discovered in the enclosed city we must create a more porous pattern, richer in both social and esthetic variety. Residential densities of about 100 persons per net acre, exclusive of streets and sidewalks, will provide usable private gardens and encourage small inner parks for meeting and relaxing. This can be achieved without erecting the sterile, space-mangling, high-rise slabs that now grimly parade, in both Europe and America, as the ultimate contribution of 'modern' architecture. If we are concerned with human values, we can no longer afford either sprawling Suburbia or congested Metropolis. . . ." The goal is to decongest the central cities and to decentralize their organization on the order of the *arrondissements* of Paris or the boroughs of London and to build self-contained new towns on the urban fringe.

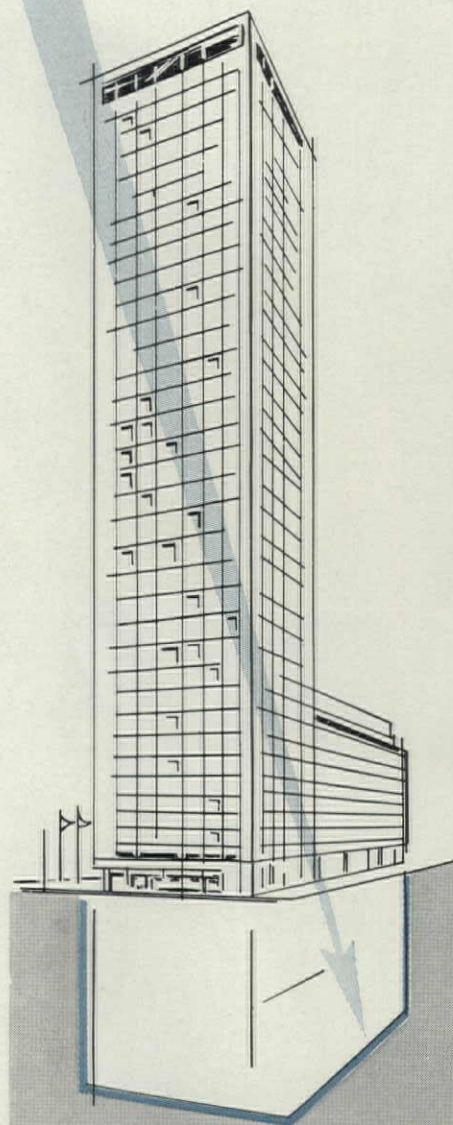
This is a clear direction; yet Mumford is not so consistently clear. Positive statements very much to the point are often contradicted by a gnawing undercurrent of resentment toward cities. This culminates in the invoking of elements of Ebenezer Howard and the Garden City movement which are out of scale with contemporary needs and even with the spirit of urbanization in Mumford's own terms.

If *The City in History* is in some ways discouraging, it nevertheless emerges as the most incisive analysis of urban man.

Continued on page 176

Carlisle

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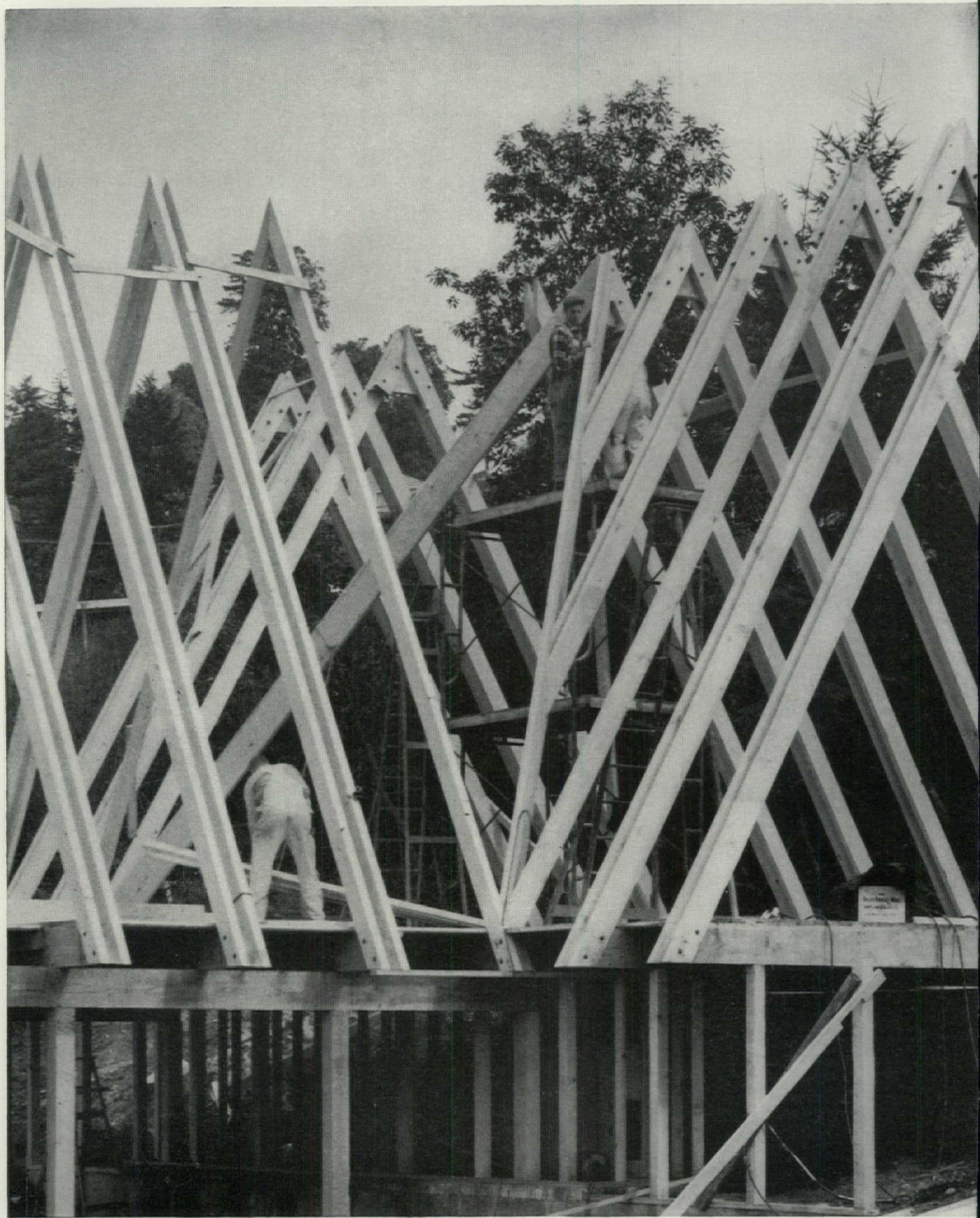
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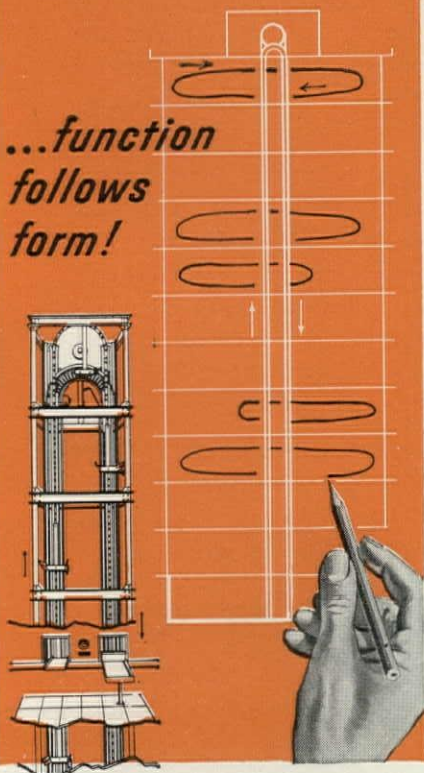


Economy in small church design uses the wood A-frame for maximum space inside. Outside, the naturally weathered shingled roof, heavy A-frame supporting members, and board siding create a welcome site for worship. Gerald Matson, architect.

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Its breadth and scholarship are brilliant. The book supplants *The Culture of Cities*, written some 25 years ago by the same author, as the classic in the social philosophy of cities.—Stanley B. Tankel.

MODERN ARCHITECTURE IN MEXICO. By Max L. Cetto. Published by Frederick A. Praeger, 64 University Pl., New York 3, N.Y. 224 pp. 11¼" x 9". Illus. \$12.50.

Those who lament the "chaoticism" of contemporary U. S. architecture may find solace in the thought that this phenomenon is by no means confined within the borders of the U. S. As Max Cetto's handsome book demonstrates, the new buildings in Mexico "... share both the virtues and the vices of international architecture of other continents," and the architectural landscape of present-day Mexico seems fully as "chaotic" as our own.

In a brisk and spirited introduction, the author briefly traces Mayan and Aztec origins and then takes a hard look at the present scene where the sternly rationalistic Miesian order has created a somewhat anarchistic, heavily mannerist reaction. Much attention is devoted to ornament—and to the widespread Mexican belief that lack of ornament is a symptom of mental poverty. Discussing the many attempts at integration of the arts (most notably at University City), the author develops an interesting theory to explain why they have largely proved disappointing: the discrepancy is too great, he maintains, between Mexican styles of painting (realistic) and architecture (abstract) and, consequently, the two tend to fight rather than complement each other.

Following the introduction is an extensive photographic catalogue of Mexico's significant modern buildings, each accompanied by brief but penetrating text and rendered, like the introduction, in both Spanish and English.

CREATED PAWNS OR CREATIVE PARTNERS. By Emiel J. Christensen. Published by Emiel J. Christensen, Columbus, Neb. 143 pp. 5½" x 8". \$3.25.

Lectures on community planning and the creative process by an interesting and qualified expert, an architect-planner-professor.

MONT-SAINT-MICHEL AND CHARTRES. By Henry Adams. Published by the New American Library, 501 Madison Ave., New York 22, N.Y. 384 pp. Paper-bound. 75 cents.

Adams for the masses: the classic study of medievalism and its greatest architecture by a biased scholar; for the first time, less than a dollar.

ELEMENTARY STATICS OF SHELLS. By Alf Pfluger. Published by F. W. Dodge Corp., 119 W. 40 St., New York 18, N.Y. 122 pp. 6½" x 9". Illus. \$8.75.

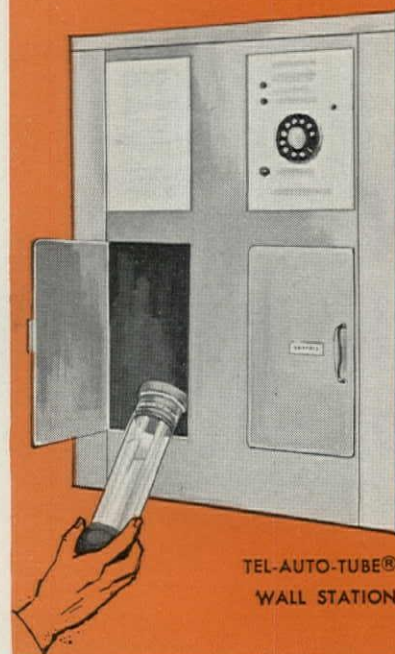
A visual presentation of the spatial interplay of forces in shells by a German engineer-professor.

Continued on page 178

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University Apartments, Chicago, Ill. Owner: Webb & Knapp, Inc. Architect: I.M. Pei and Associates. General Contractor: Taylor Construction Co.



Big. New. Crane-equipped. Chicago's spectacular University Apartments feature Crane fixtures in every kitchen and bath

Fabulous setting for gracious living in the heart of bustling Chicago... the glamorous new University Apartments. So modern, a closed circuit TV intercom system is included in each of the 540 apartments. And Crane provides the ultimate touch of luxury and convenience in every kitchen and bath.

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closets, lavatories with the clean modern styling that blends so beautifully with today's most advanced architectural designs. A total of more than 2,800 fixtures—all made with Crane's flair for precision that goes far beyond ordinary standards.

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tutional building—Crane equipment is always available in the color, style, size and price you want. In heating and air conditioning equipment, too, Crane gives you the same wide choice, the same high quality, the same precision manufacture. For complete details, consult your regular contractor or your Crane representative. Or write direct to Crane Co., Plumbing-Heating-Air Conditioning Group, Box 780, Johnstown, Pennsylvania.

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HEART
OF HOME AND
INDUSTRY

CRANE

VALVES AND PIPING
ELECTRONIC CONTROLS
PLUMBING
HEATING • AIR CONDITIONING

SCHOOLS FOR TEAM TEACHING. By Evans Clinchy. Published by Educational Facilities Laboratories, Inc., 477 Madison Ave., New York 22, N.Y. 64 pp. 8½" x 11". Illus. Available on request.

A nicely prepared presentation commenting on the plans of a number of completed and projected school buildings, which are intended to facilitate the practice of term teaching (i.e., classes keyed more to students' skills than to their ages).

THE ARCHITECTURAL INDEX FOR 1960. Compiled and edited by Ervin J. Bell. Published by The Architectural Index, 517 Broadway, Sausalito, Calif. 61 pp. 5½" x 8½". \$5.

For the 11th successive year, a handy, almost-pocket-sized index to all the 1960 issues of seven magazines related to architecture: ARCHITECTURAL FORUM, HOUSE AND HOME, Progressive Architecture, Architectural Record, Arts and Architecture, Interiors, and Journal of American Institute of Architects.

SURVEY OF THE LAW OF BUILDING CODES. By Charles S. Rhyne. Published cooperatively by the American Institute of Architects, 1735 New York Ave., N.W., Washington 6, D. C. 62 pp. 7" x 10". \$2.

A concise reference work by the general counsel of the National Institute of Municipal Law Officers (and former president of the American Bar Assn.) summarizing the legal basis for building codes and related laws in different states, and pointing the way for officials who may wish to draft new codes or update existing ones.

BUILDING MAXIMUM PROFITS INTO INCOME PROPERTY. Compiled by the Greater Los Angeles Chapter of the Institute of Real Estate Management. Published by the Institute of Real Estate Management of the National Association of Real Estate Boards, 36 S. Wabash Ave., Chicago 3, Ill. 170 pp. 8¾" x 11¼". Illus. \$5.

A text based upon the experiences of certified property managers to serve as a guide for investment property development, with suggestions in the modernization of older properties.

REAL ESTATE ENCYCLOPEDIA. Edited by Edith J. Friedman. Published by Prentice-Hall, Inc., Englewood Cliffs, N. J. 1458 pp. 7" x 9¾". Illus. \$29.50.

A solid, hefty, and authoritative reference book, not a volume for light reading, by 54 different realtors, builders, mortgage bankers, and other experts each of whom has authored a chapter on his specialty.

TAXES FOR THE SCHOOLS. Volume II. By Roger A. Freeman. Published by the Institute for Social Science Research, Washington 5, D.C. 441 pp. 6" x 8¾". \$5.

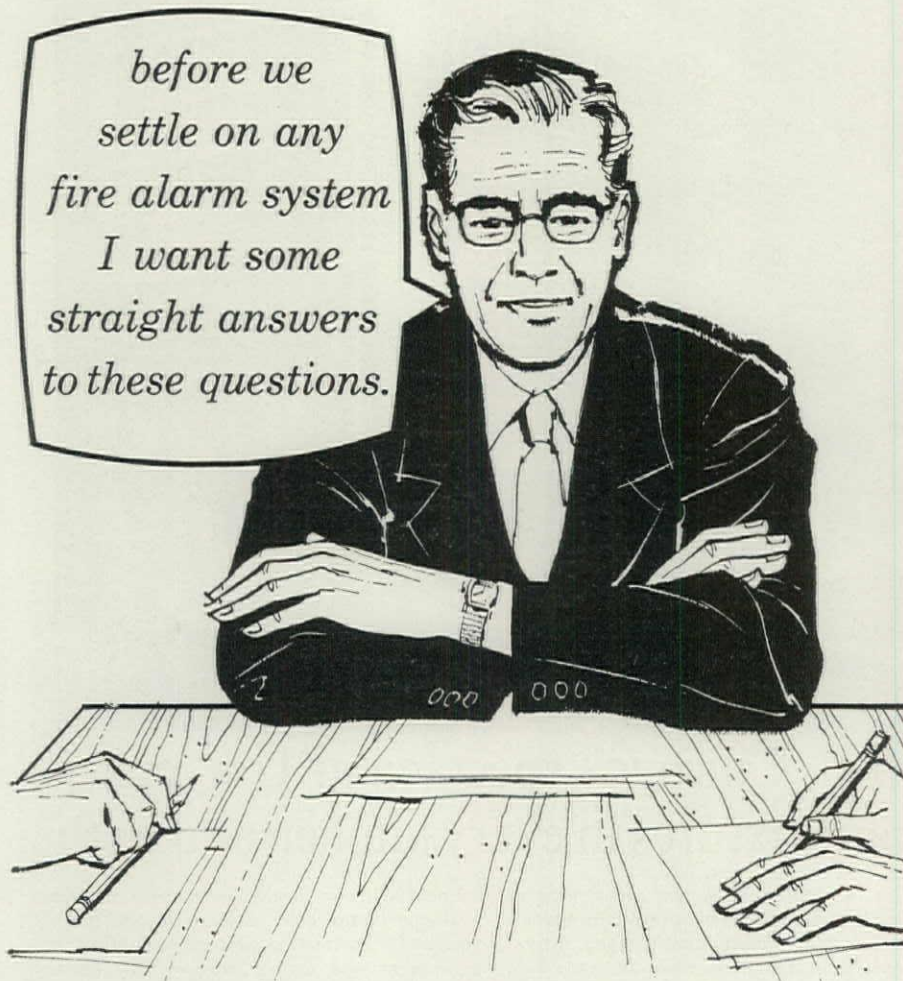
In this book, Mr. Freeman addresses himself to the problem of financing the presumable school needs that he scrutinized so closely in his companion volume, *School Needs in the Decade Ahead*.

DESIGN OF WELDED STRUCTURAL CONNECTIONS. By Omer W. Blodgett and John B. Scalzi. Published by the James F. Lincoln Arc Welding Foundation, Cleveland 17, Ohio. 92 pp. 8½" x 11¼". Illus. \$1. in U.S.; \$1.50 elsewhere.

A detailed, well-illustrated manual for students, practicing engineers, and architects.

BUILDERS' HARDWARE BOOK. By Adon H. Brownell. Published by Chilton Co., 56th and Chestnut Sts., Philadelphia 39, Pa. 262 pp. 8½" x 11". Illus. \$8.

A one-volume encyclopedia on such items as base metals, finishes, hinge requirements, lock functions, exit devices, door-closing devices, hardware installation, lock security and keying, and many more. **END**

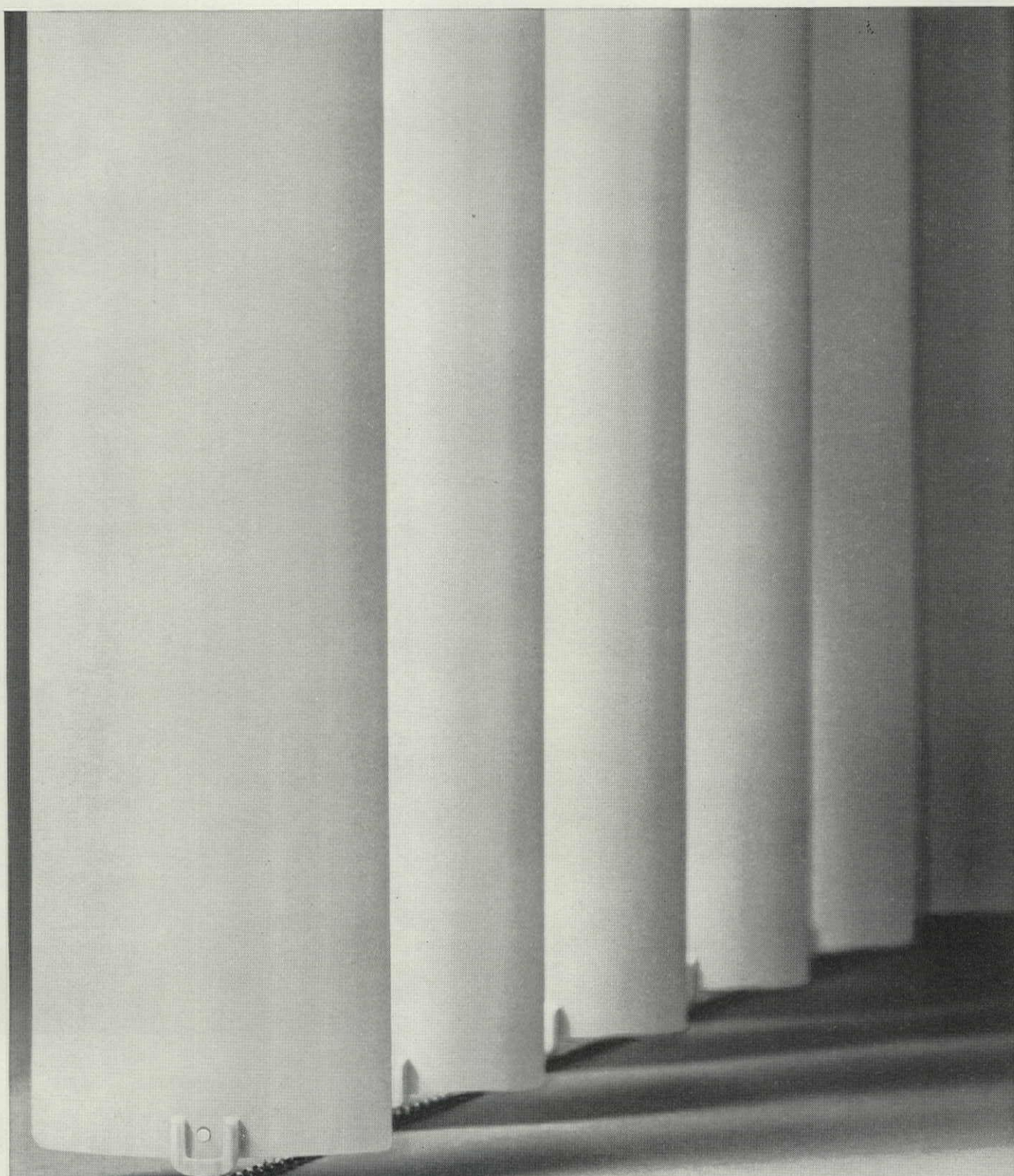


- Will it automatically detect fires or does someone have to first see the fire or smell the smoke?
- Will it automatically sound the alarm or does someone have to pull a rope or lever to signal the danger?
- Will everyone be able to hear the signals in all parts of the building?
- Will the system automatically call the fire department, or must someone try to reach the fire station by phone?
- Will the fire alarm system automatically tell us (and the fire department) if and when it isn't working...or do we just assume we're still protected?

Questions like these deserve **straight answers**. Precious lives are at stake.

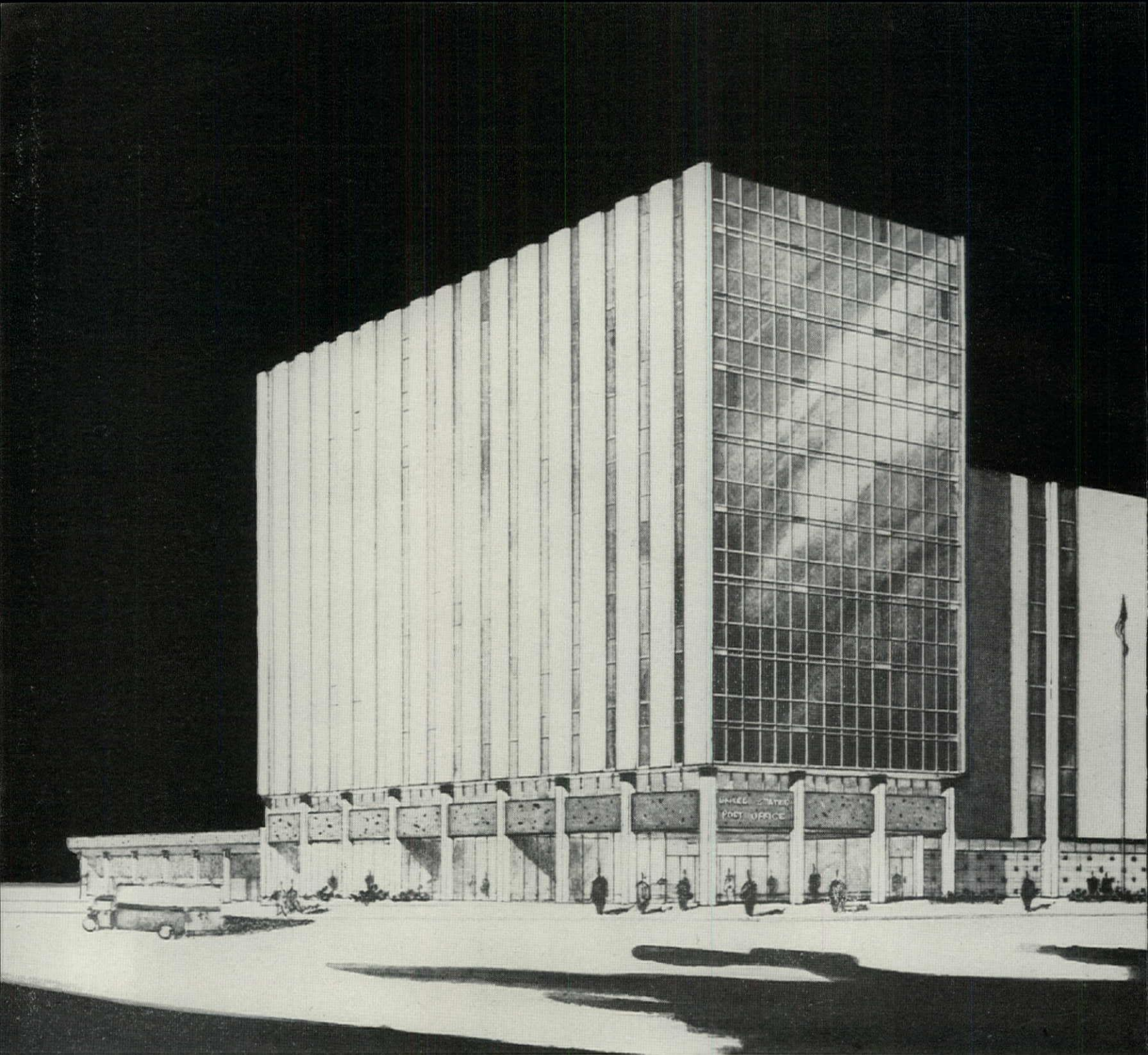
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Write to Bridgeport Brass Company, Hunter Douglas Division, 30 Grand Street, Bridgeport 2, Conn. for descriptive literature and specifications, engineering assistance or cost estimates. See our insert in Sweet's Architectural File.



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reinforcement
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SAYS MASONRY CONTRACTOR

Sixty percent of Michigan's mail flows through the new Detroit Post Office—a marvel of automation. One example: the "Mail-Flo" system can move trays of mail between sorting points at a rate of 8 million pieces an hour.

Everything is on a grand scale in this building. More than 10 miles of Keywall were used to reinforce the masonry partitions.

Because Keywall is of uniform width and easy to place accurately, it won't protrude past the surface of the wall; permits clean, smooth striking of joints.

And the fact that Keywall doesn't thicken the joint when it's lapped is a point in its favor.

Perhaps even more important is that the distribution

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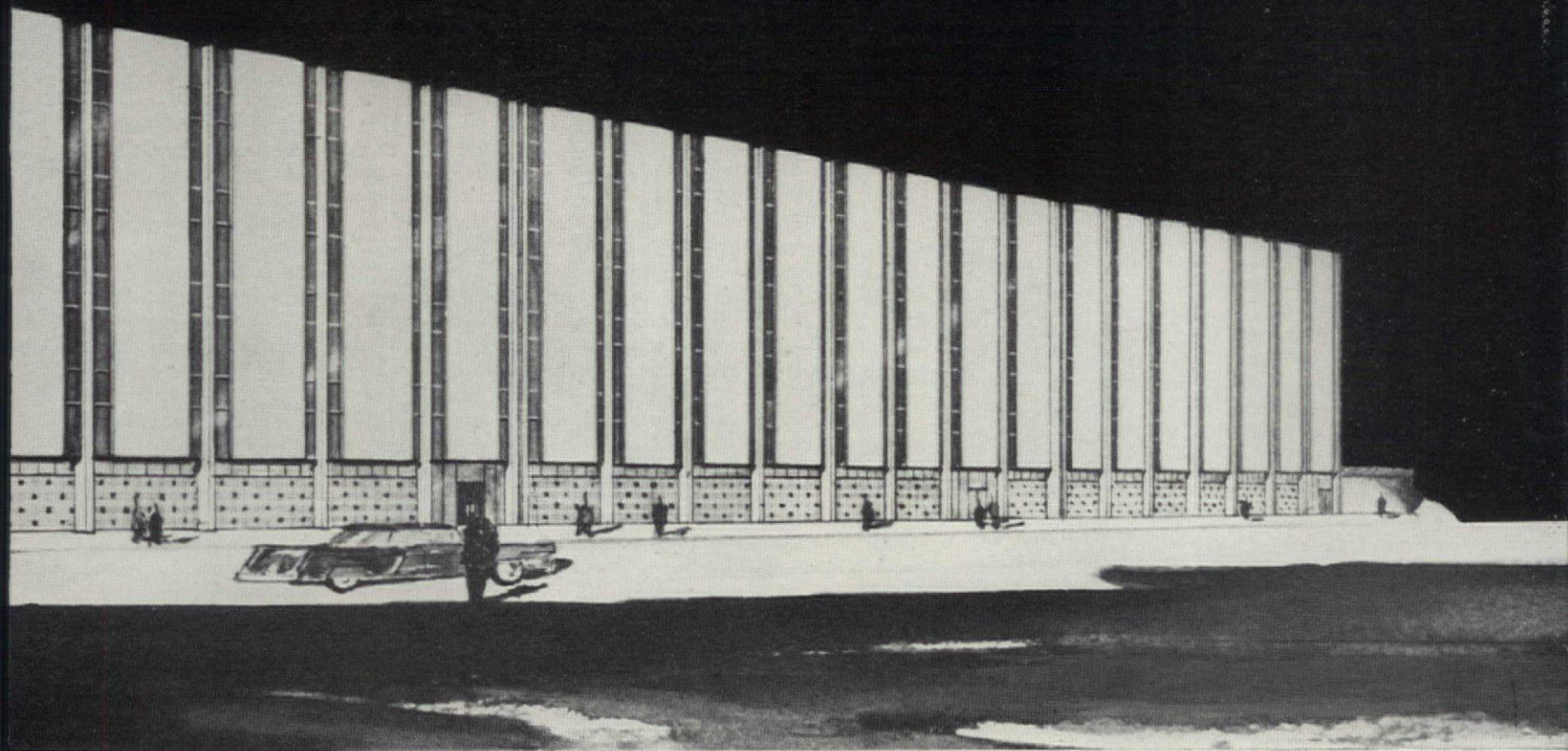
has just been completed in Detroit, Michigan.

The cost: \$23,000,000.

Architects & Engineers: Giffels & Rosetti, Inc.

General Contractor: Barton-Malow Company, Detroit

Masonry Contractor: Smith Fireproofing Company, Detroit



used in Detroit post office

of the metal in Keywall reinforcement maximizes shrinkage resistance.

You would think that a reinforcement with such obvious advantages would necessarily cost more. Not so.

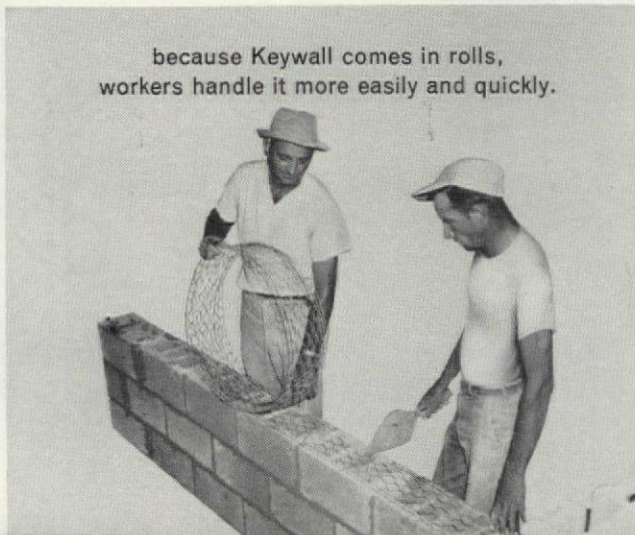
Mr. C. T. Hessee, president of Smith Fireproofing, the masonry contracting firm, says, "I find that Keywall is the most economical masonry wall reinforcement we have used."

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Report by Engineering Firm on Economics
of a Glass-Walled Skyscraper

Study predicts

Thermopane® insulating glass in L·O·F Building will pay for itself in 3½ years

The new Libbey-Owens-Ford Building in Toledo, Ohio, is not just a "glass showcase for a glassmaker". It is a practical, economical building.

This 120-foot-square, 15-story, air-conditioned office structure was completed in early 1960. It provides 12 office floors, a ground lobby floor, an underground floor for service operations, and two upper floors for air-conditioning machinery.

Because it is a very new and outstanding example of office building architecture . . . because its designers were given broad scope in its creation . . . considerable interest has been focused on its operating results.

Guy B. Panero Engineers, the air-conditioning and heating engineers on the structure, have completed an analysis that shows how the air-conditioning and heating costs are affected by the glass used.

Vision glass 77% of wall area

Vision glass in the L·O·F Building comprises 77% of the gross wall area. Walls are oriented approximately 30° counterclockwise from the cardinal directions. *Thermopane*, with vertical Venetian blinds, is used in all vision areas above the ground floor.

\$55,200 saved on air-conditioning equipment

For this building, the outer pane of

Thermopane is *Parallel-O-Grey*® and the inner pane is *Parallel-O-Plate*® glass. Calculations by Guy B. Panero Engineers show that the use of *Thermopane*, as compared with a single pane of *Parallel-O-Grey* plate, reduced the air-conditioning requirement by 92 tons. This lowered the initial cost of air-conditioning equipment by an estimated \$55,200.

Saves \$7,220 annually on operating costs

They next found that operating costs on the same comparison should bring an annual reduction of \$2,190 for air-conditioning and \$5,030 in heating costs. This combined saving of \$7,220 plus the \$55,200 would pay for the premium cost of *Thermopane* in 3½ years.

These studies also compared the additional capital cost of insulating glass at an investment of 3 per cent, and that of single glazing of *Parallel-O-Grey* plus the extra cost of the air-conditioning equipment it would require. The comparison has shown that it would be more economical to glaze the building with *Parallel-O-Grey Thermopane*.

The same comparison could have been applied equally if the building had been glazed with *Heat Absorbing Thermopane* instead of *Parallel-O-Grey Thermopane*. They are about equal in solar radiation reduction.

Additional advantages

Guy B. Panero Engineers also found many other advantages not calculated in dollars during their detailed study. During cold weather, for instance, personnel may work comfortably closer to *Thermopane* than single glass. In effect, this provides more usable floor area.

Appreciable outdoor sound reduction may add to efficiency. And through the use of *Thermopane*, possible complications of temperature control, architectural layouts, space conditions and louder air-circulating equipment noise levels are avoided.

Without the use of *Parallel-O-Grey Thermopane*, they concluded it would have been practically impossible to have these advantages which exist in the L·O·F Building—small, compact air-conditioning units in each room, reduced ductwork space in the ceilings, and minimum space for the air-conditioning equipment.

Tenants Samborn, Steketee, Otis and Evans report more efficient use of drafting-room space due to comfort provided by *Thermopane* insulating glass.





L-O-F Building, Toledo, Ohio. Architects: Skidmore, Owings & Merrill. Structural Engineers: Severud-Elstad-Krueger Associates. Mechanical Engineers: Guy B. Panero Engineers. General Contractors: George A. Fuller Company.

One of the air-conditioning and heating specialists in the office of Guy B. Panero Engineers states that "in reality it would not have been economically practical to air condition this particular building properly by means of conventional units, had single glazing been used".

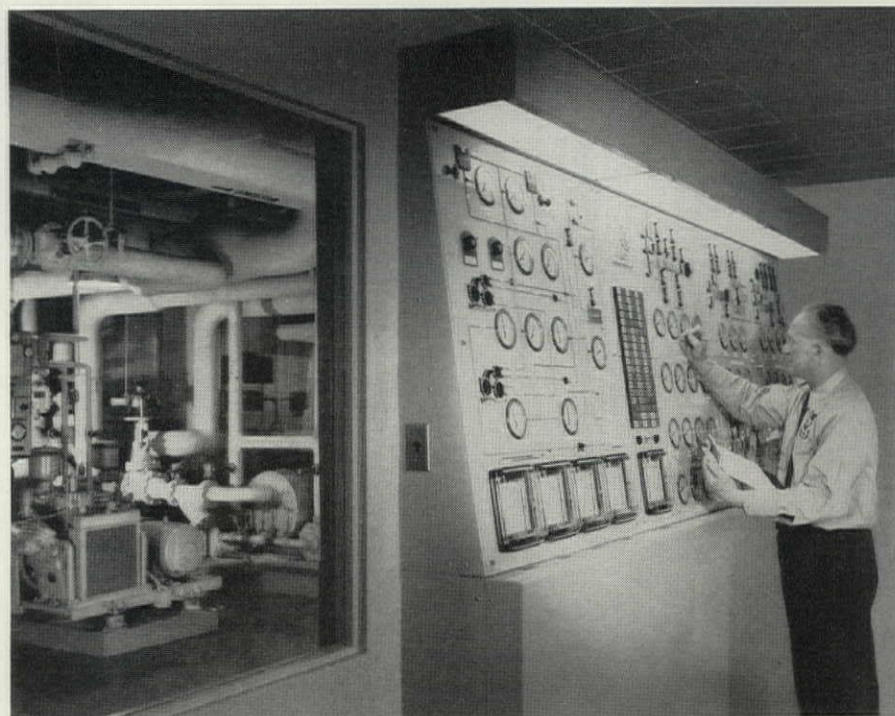
Complete analysis available

In arriving at these conclusions, the engineers made a detailed study of the factors that determine glass performance and its effect on air conditioning and heating. The complete study is available to architects and engineers who wish to make a study of their own designs. Use coupon.

As predicted by the designers, overall performance of the air-conditioning and heating systems in the L-O-F Building has been extremely successful. The *Thermopane* glazing has resulted in savings for the building management. It also has afforded many comforts, controls and environmental benefits for those who use the building daily. This attractive new building, which has won praise from its tenants and the occupants, has functioned superbly to fulfill all the requirements of its builders.



Air-conditioning and ventilating equipment inhales and exhales as much as 200,000 cu. ft. of air per minute.



Master control board tells at a glance how equipment is functioning anywhere in the building.

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Please send me complete report on L-O-F Building,
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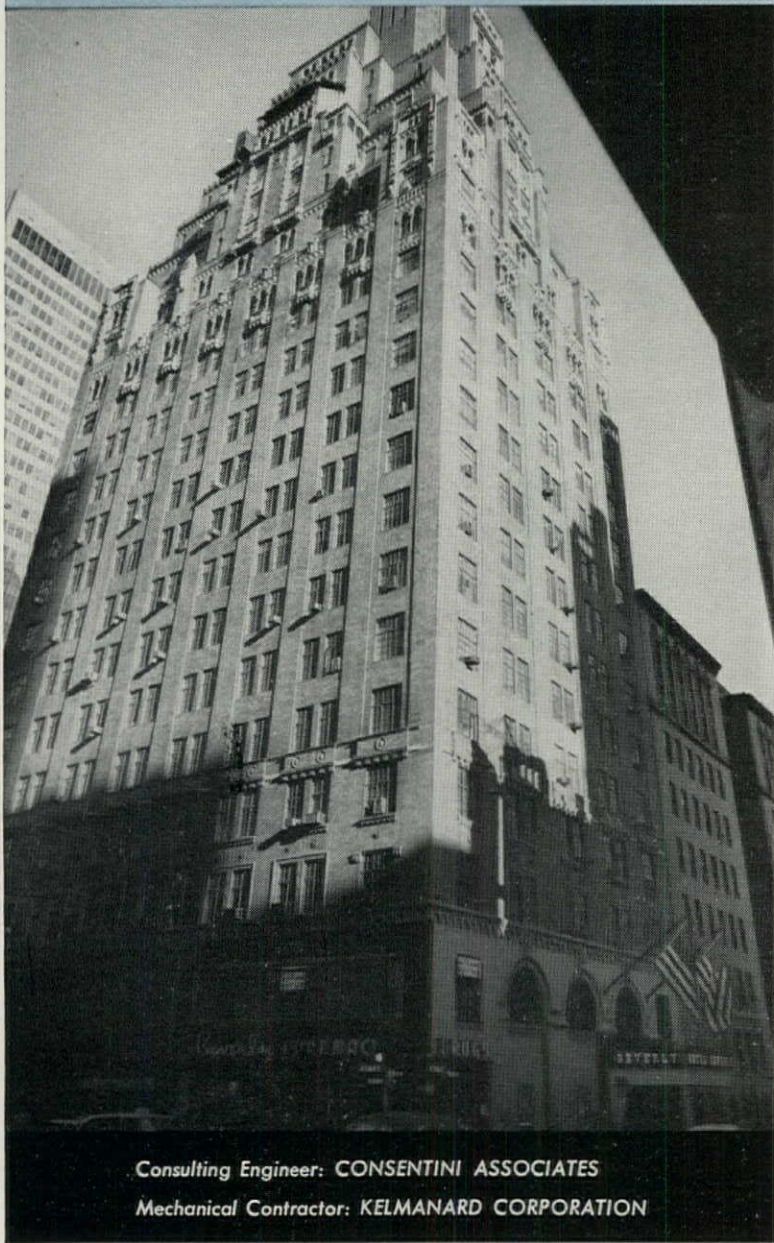
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Modernizing Problem Solved with *Acme*

Modernization plans for New York's Hotel Beverly . . . in addition to redecorating from top to bottom . . . called for replacing window coolers with a more efficient, year around central-type comfort conditioning system. In the absence of space for equipment in the basement or on the roof, a "decentralized" system, using individual packaged chillers for each two floors was decided upon. Fine . . . except that spaces allotted for these chillers were confined (roughly 6' x 6') and adjacent to bedroom areas.

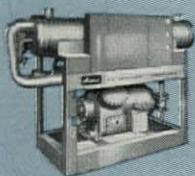
Problem: Finding chillers of required capacity small enough to fit the spaces, quiet enough to eliminate guest-disturbing noise.

Solution: Acme Packaged Chillers . . . chillers that are more compact, lighter-in-weight (up to 40%) per ton of capacity than any other units on the market today. And quiet? According to the mechanical contractors, "The 'whisper quiet' operation of Acme chillers has lived up to reputation."

Acme's space-saving design and light weight also resulted in the selection of Acme cooling towers for this job. Two of them, 100 tons each, were hoisted outside the building and installed in a confined space on the 19th floor of the Beverly.

At the halfway point in the program (when the picture at left was taken) the many benefits of modern air conditioning . . . greater comfort for guests, increased operating efficiency, simplified maintenance, etc., . . . were already paying off. And a gratifying "fringe benefit" had become apparent, too . . . i.e., note, from the 12th floor up, the vastly improved appearance of the building.

Thinking of modernizing? Think of Acme!



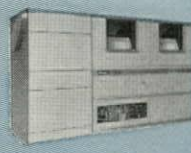
Packaged Chillers
1½-250 tons



Remote Room Conditioners
200-600 cfm



Cooling Towers
3-120 tons



Packaged Air Conditioners
3-60 tons



Evaporative Condensers
10-110 tons



Air Handlers
665-47,000 cfm

Beauty . . . solvency . . . study

THE ECONOMICS OF BEAUTY

In a recent issue of the Baltimore AIA's Architect's Report, Architect Van Fossen Schwab contends that beauty is a sound investment.

The price of ugliness is high. Speculate a moment upon the depreciation of property values, the decline in tax bases, the flight to the suburbs, the flight from the suburbs, the rise in juvenile delinquency, the spreading of slums and the despair of slum-dwellers, the increase in the unemployment rolls and the additional burdens on welfare agencies. Speculate upon the ruination of natural beauty, the tragic loss of life and limb resulting from the roadside confusion of rampant strip development. It cannot be said that ugliness is solely responsible for these ills. But it cannot be denied that ugliness unchecked has played a major role.

Now consider the case for beauty. The initial cost is higher, but it is undeniable that the added expense is a sound investment. These points merit review:

1. The relatively small cost for the most capable architects, landscape architects, urban planners, artists and engineers;
2. The relatively small cost for the integration of works of art in structures;
3. The relatively small cost of trees, shrubs, and open spaces in the city;
4. The relatively small cost of a community-wide design plan and a three-dimensional model to assure the best possible relationship to the city elements;
5. The relatively small cost of establishing an effective civic design commission to coordinate and properly relate the smaller elements of the overall plan.

So crucial is the need to halt the spread of ugliness that the architect is compelled to dedicate himself to the principle that nothing short of his best effort shall be expended on everything he undertakes. Such effort will produce better individual designs which will, in turn, result in a broader desire for and appreciation of good design. The subsequent desire for and demands for the artistically successful architect will lead to the eventual creation of an army of talented and revered citizens acutely aware of the needs of the community.

There is strength in numbers, and professional groups can be extremely effective in making constructive suggestions and statements on those matters of public interest upon which they are qualified to comment. The architect must encourage his organizations to ally themselves with other groups in support of, or in opposition to, issues of mutual interest. He must see that his professional groups take an active interest in improving our school

system relative to the preparation of our young people for an active appreciation of artistic values.

The conscientious architect must support cultural institutions. He must help establish scholarship funds, urge members to give talks at church, school or civic groups, encourage art shows, recognize outstanding works of art by the establishment of annual awards.

We architects are qualified by training and experience to propose, create and preserve beauty. It is our responsibility, our trust, our contribution to tomorrow and to our fellow man.

THE WAY TO CITY SOLVENCY

In one of his recent speeches, Fred Smith, vice president of Prudential Insurance Co., made a strong case for restoring the city rather than bulldozing it.

If people want cities, and they are now uneconomical, do we make them solvent by replacing, with whiter cement, and curtain walls, and efficient design, the very structures that have grown old and costly? Are we ahead of the game when we bring together all of the available federal and state and local pressures to eliminate present slums, only to replace them with massive housing projects which in another generation will become even more densely populated slums that will again need to be destroyed and replaced?

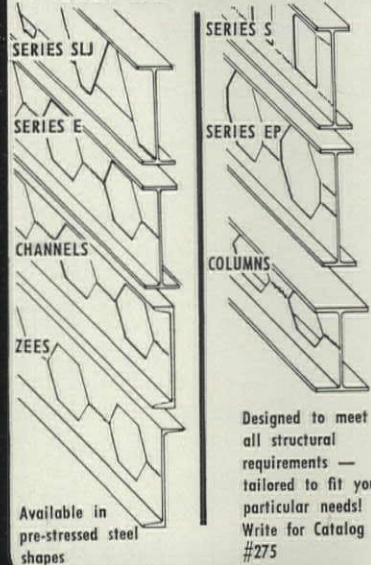
Do we look at the financial records of the city and decide that the chief, if not the whole objective, is solvency of the core area; and then set about plowing under all the older commercial buildings, and replacing them with new, multistory projects that can collect higher rents, and provide more taxes per square foot of real estate? Do the city fathers simply set a course that will lead to standardized development complexes that may prove profitable—but will make Detroit and Philadelphia and Pittsburgh and Boston virtually indistinguishable?

And do we decide, as so many before us have decided, that, as part of our rehabilitation, we need new access highways—which of course we do—and then head directly for the open lands, the parklands, the recreation areas, and the historic sites, which, since they are already in state or local ownership, provide highway space without costly court suits or loss of ratables? If solvency alone is our objective, then the answer may be yes, and perhaps in that case we should do away not only with parks, but with the statues in the parks—the historical figures of those who carved out our civilization for us; instead, perhaps we should

continued on page 186

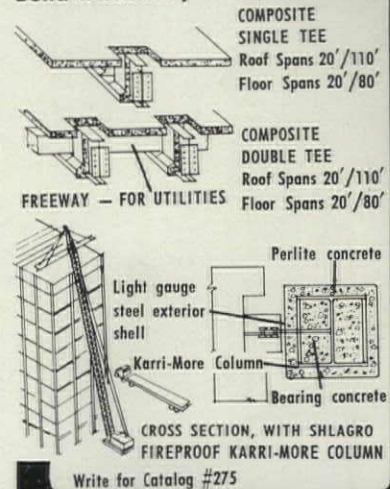
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reserve a space 10 feet square in every major development and there mount on a marble pedestal the bulldozer that has come to symbolize this great new era; the bulldozer that buries our traditions and, if we do not discriminate better, may reduce our future and past to rubble.

Slowly it is dawning on people, I think, that when something must go, it might be better to lose a colorless ratable than a colorful tradition; that it may be more profitable in the long run to salvage a

piece of our lives, a ballast for our civilization, than to reduce to the absolute minimum the size of a bond issue.

The very solvency they seek may escape the city fathers if redevelopment is designed for solvency alone. People get bored with too many modern buildings, stripped and stark and functional. They stay home when they might be window shopping, and tourists go elsewhere, and the city could be worse off than before. Experience has shown in city after city that the big

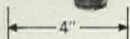
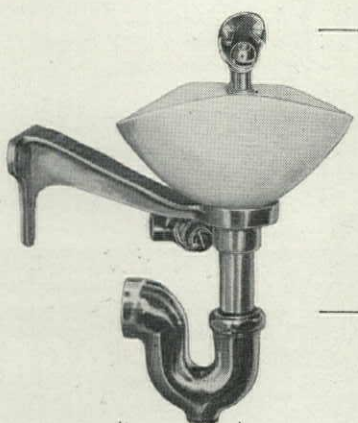
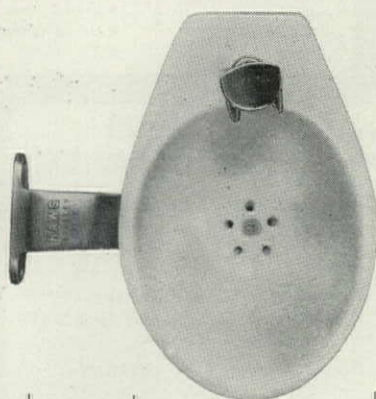
standardized complexes that developers dream up because they represent advanced design, and demonstrate functionalism, and have a cost-to-cubic-content ratio to delight an investment banker, fail to have any particular magnetism for people. The workers in the glamorous buildings on Park Avenue in New York, a pleasant, roomy street with plenty of elbow space, an almost classical example of what the modern redevelopment program aims for—these working people, when they come out of their buildings, head for Madison or Third Avenue.

Park Avenue is clean and slick and uninteresting. It is wide and open and has trees down the middle and is a great relief, only nobody seems really to think so. Third and Madison Avenues are cluttered with stores of all sorts, some in disrepair and some with the world's finest selection of display windows. They are crowded. They have all the evils that the modern redevelopment experts try to avoid. But that's where the people go, and that's where you will find the successful retail stores. This is where the wealth is generated to pay taxes.

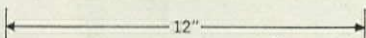
The fact is that people appreciate the occasional open spaces in the downtown area, but they are drawn by the sights and the sounds and discomforts of the city. They are not fascinated by the prospect of municipal solvency. Solvency is something we must achieve by catering to people, not by ignoring their interests.

ANOTHER HAWS PROJECTION OF STYLE

HAWS MODEL 1505



This aristocratic Haws fountain is the practical choice of professionals who specify for economy as well as beauty. Channing Wallace Gilson designed it. Haws Craftsmen shaped it in gleaming vitreous china. The *Triennale Internazionale* of Milano, Italy, selected it for exhibition as superior international design. That was in 1957. Today, you can get this Haws exclusive in polished aluminum, or with your choice of colors in vitreous china and enameled iron. Wall or pedestal mounted. Specify superior design at a popular price! Write for detailed specifications—today!



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ENVIRONMENT FOR STUDY

The preferences of 100 college students were summarized in a recent "Bulletin" of Mount Holyoke College.

Where do college students prefer to study? Do educational institutions provide them with the right kind of study space that encourages independence and the pursuit of excellence? To secure definitive answers to these questions, a faculty committee representing Amherst, Mount Holyoke, Smith, and the University of Massachusetts undertook a "consumer preference" survey of the study spaces in the four institutions.

Nearly 100 students in the three upper classes at each of the institutions kept study diaries noting when they studied, what, where, and for how long. A total of 8,375 study hours was thus recorded (5.78 hours per day per student). The participants were also asked to comment on conditions in the places where they studied and to give suggestions for improving study spaces.

The conclusions were consistent among students at all four schools: 1) Students prefer to study in small spaces. Fifty-six per cent reported studying in library carrels and dormitory rooms. 2) Large library reading rooms are disliked by most students because of distractions produced by others. 3) Students would like dormitories to provide special rooms, other than bedrooms, reserved for study. END

*Curves of canopy
and wall panels
show design versatility of*

Mo-Sai®

The unique design for the First Federal Savings and Loan Association in Sarasota, Florida, is beautifully executed in genuine Mo-Sai. The repetitive curves of the canopy over the front entrance project through the facade to repeat in the lobby. Individual canopy units were approximately 14' long, with a spread of about 3'6". Mo-Sai wall panels, too, picked up the gentle curve motif. Aggregates used on the Mo-Sai panels were a white crushed quartz for the canopy, and a brown, coarse-textured red, black and white combination for the concave wall panels.

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GOODSTONE MFG. CO., Rochester 21, New York
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OLYMPIAN STONE CO., INC., Seattle 7, Washington
OTTO BUEHNER & CO., Salt Lake City 6, Utah
P. GRASSI-AMERICAN TERRAZZO CO., South San Francisco, California
SOUTHERN CAST STONE, INC., Knoxville, Tennessee
TEXCRETE MOSAIC CORP., Dallas 22, Texas
THE DEXTONE CO., New Haven 3, Connecticut
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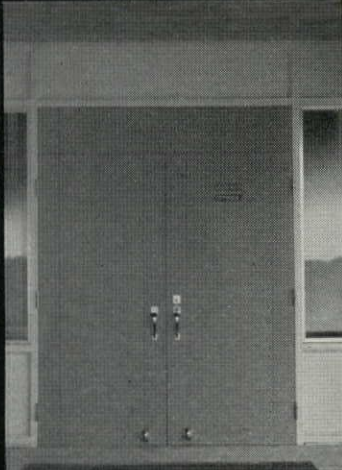
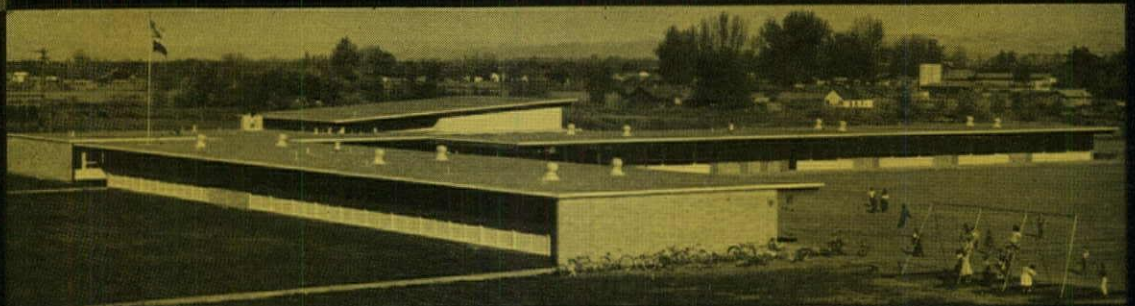
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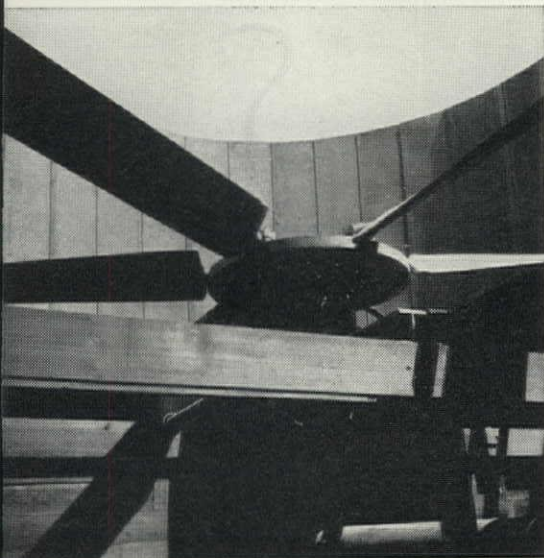
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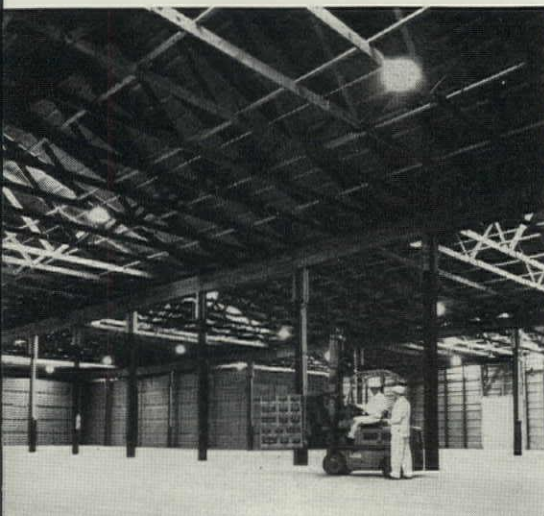
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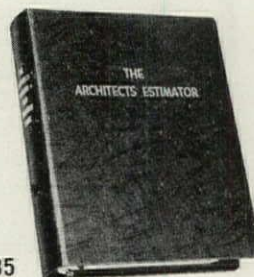
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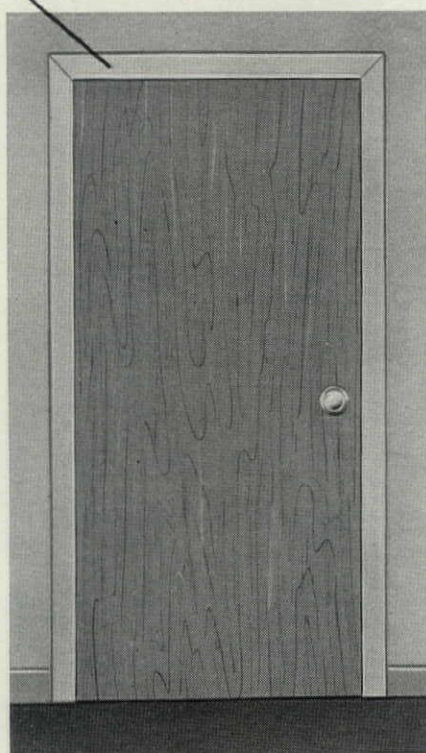
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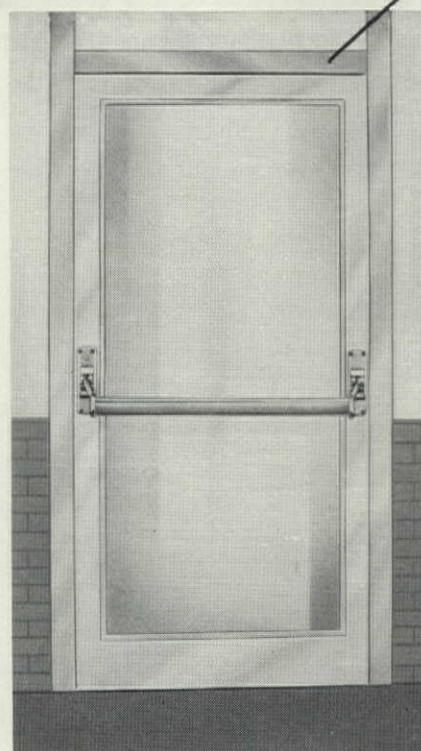
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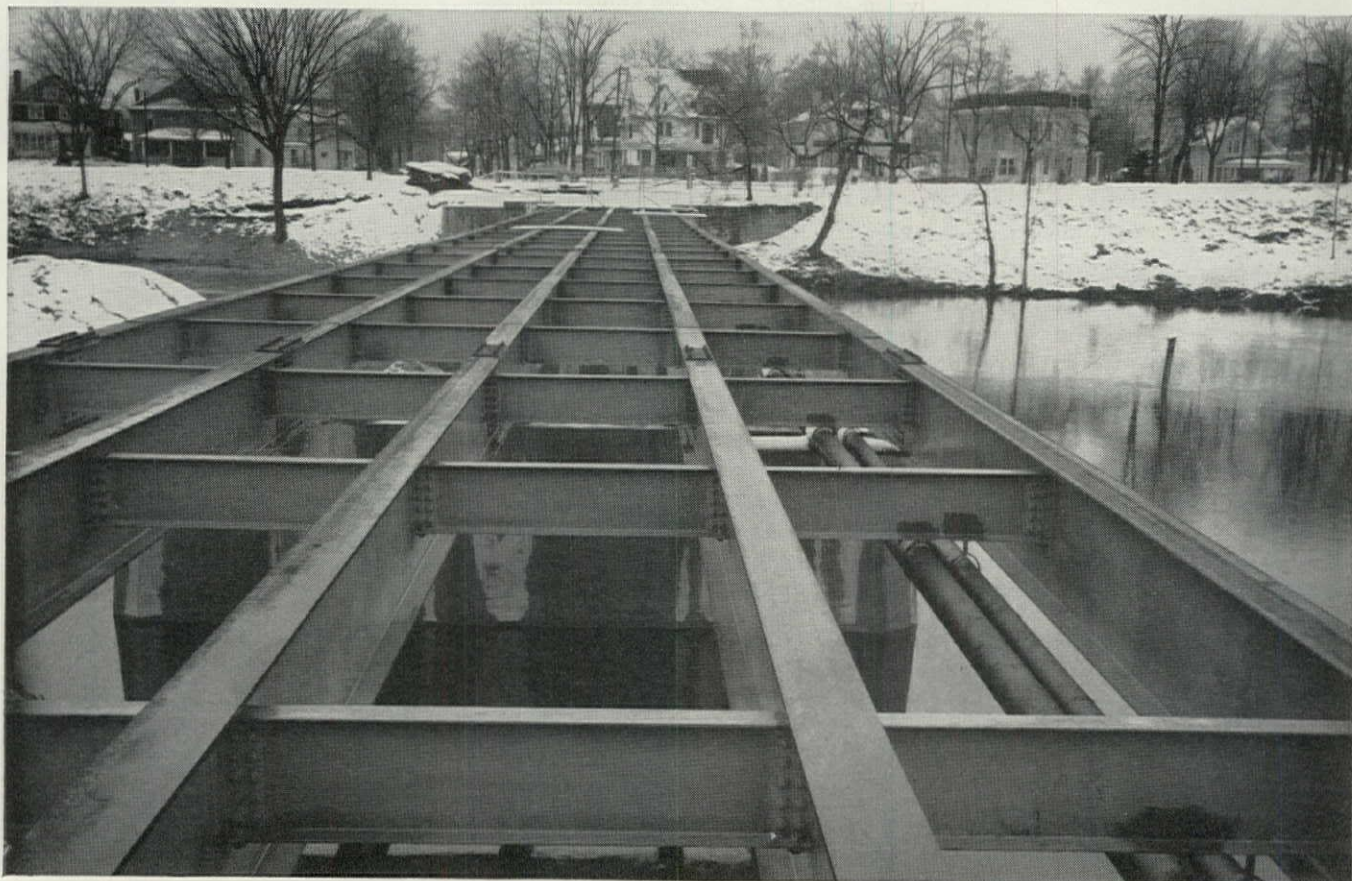
no wonder the contract went to steel—steel cut costs by \$23,000!

They were almost ready to go ahead on the new bridge in Elkhart County, Indiana, when they decided to take a second look at costs. Original plans called for material other than steel, but maybe steel construction could save money.

And save, it did! Steel bids were actually \$23,000 lower and that wasn't all. Maintenance had not been one of the considerations till the steel bid suggested its importance—as one consulting engineer put it, “I've never seen or heard of any type bridge which is maintenance-free.” Thus, even with maintenance included, steel construction was shown to be less costly than any other material. In fact, accompanying studies clearly showed the only maintenance required would be painting and that only \$4,488.84 invested at 3% would take care of that for 50 years. Thoroughly convinced, the County Commissioners changed the plans and awarded the contract to steel.

Use  for Modern Construction

This is another example of the efficiency, lower initial cost and minimal maintenance required when construction plans call for STEEL!



THE LOW COST OF FINE BUILDINGS

continued from page 99

asked Architect Minoru Yamasaki to design a "showcase for aluminum" chiefly to impress the automobile industry in Detroit. This relatively small building was costly (\$2 million, or about \$44 per square foot of usable space), but the corporation insists it was well worth the cost in terms of its market impact alone. Reynolds has since sold the building to the Morgan Guaranty Trust and leased it back, thus indicating another way in which a corporate client can recover its whole capital investment in a fine structure.

High quality for speculation

Although the corporate client has pioneered in the development of high-quality office space and has demonstrated most fully that there is sound economic rationale behind it, there have been several real estate developers who have also proved that such buildings pay their way. The Equitable Life Assurance Society, for instance, has sponsored several better-than-average office buildings throughout the nation, including the new Four Gateway Center in Pittsburgh, designed by Harrison & Abramovitz. Equitable, which owns all the office buildings and the hotel in Gateway Center, invested \$15 million in land and construction for the tower and built 400,000 square feet of new space, all available to tenants. Rental income each year is about \$2.2 million (an average of \$5.50 per square foot) and, after \$350,000 in taxes and \$650,000 in operating expenses, the company nets \$1.2 million annually before depreciation. This represents a net-before-depreciation return of 8.8 per cent, which is modest by the standards of many speculative office builders, but satisfactory for Equitable. And it is twice as high as the initial returns on the first three office towers, which were of lesser architectural quality. Thus Gateway Center (particularly its latest addition), which was a pioneering effort to get open space into Pittsburgh's congested downtown while at the same time providing needed new office space, is proving a very successful investment.

Some real estate developers build high-quality office buildings because they are firmly convinced that only with high-quality tenants can speculative ventures really pay out. Brooks, Harvey & Co. is among these. Its huge (425,-

000 square feet) \$20-million Cleveland Illuminating Building nets \$1.6 million annually before interest payments and amortization. Designed by Carson & Lundin, the building is Cleveland's first new office tower since the twenties. Brooks, Harvey was attracted to the Cleveland site because of the dearth of new office space there and because of the low cost of the land itself. "We bought that land for \$18 per square foot," says Senior Partner Frank Brooks, "and it would have cost us at least \$200 per square foot in New York City. Yet we were able to rent space in the Cleveland building for about \$5.65 per square foot, which was about the going market for space in New York." Brooks, Harvey nets over \$500,000 a year after all charges.

Given the low cost of its Cleveland site, Brooks, Harvey could easily have built a lower-cost building, but, because it wanted to attract high-quality tenants to provide a maximum of fiscal strength for the building over a long term, it refused to compromise with quality. "If we had not built such a good building," Brooks says today, "we would have had both higher operating costs—particularly maintenance—and lower quality tenants."

Another significant office development sponsored by real estate interests is the handsome Norton Building in Seattle. Designed by Skidmore, Owings & Merrill's San Francisco office for the Northwest Building Corp., the relatively small (195,000 square feet) building cost \$11,250,000 and is rented at \$5.50 to \$6.50 per square foot. Annual rental income (at a 95 per cent occupancy rate) totals \$1,158,000, leaving a net before depreciation charges (about \$225,000 annually on a 50-year, straight-line basis) but after operating costs of \$758,000 a year. (Having the best new office space in Seattle, the owner-builder does not plan to sell or lease back the building when amortization begins to run ahead of depreciation charges.)

The basic argument

Of course, nowhere has the argument over high-quality, high-cost office structures versus "economy space" raged more fiercely than in New York, where Carbide, Seagram's, and Lever House live next door to speculative builders' towers

continued on page 199

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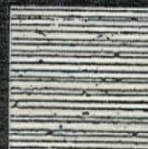
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THE LOW COST OF FINE BUILDINGS

continued from page 195

which cost far less to build and which rent at correspondingly lower rates. The operative builders, such as Uris Brothers, who are still the No. 1 builders of office space in the city, claim that the great headquarters towers are appropriate for firms which have large reserves and high credit ratings and have large incomes from sources other than real estate so that depreciation becomes in effect a two-edged fiscal tool. But, they argue, it is unfair to claim that the small amounts of space available for other tenants in those buildings is truly competitive with the space they offer in their own buildings, which frequently cost half as much. Carbide, for instance, cost about twice as much to build as did Uris Brothers' Number Two Broadway (FORUM, Feb. '59) although both are of about the same size. And yet Carbide rents available space for \$7.50 per square foot, compared to about \$5.50 per square foot at the Uris building. The reason that Carbide's rental figure is not higher is that the landlord simply absorbs some of the costs of the building operation which Uris makes its tenants pay. "Actually, Carbide should be charging nearer \$10 per square foot, if it rented on a comparable basis with our buildings," says a Uris spokesman. Carbide provides maintenance and electricity and other services at its own expense, whereas Uris does not. But the speculative builder starts with a different goal—maximum profit from real estate. The corporate client, on the other hand, simply wants the finest building he can get within the limits of his ability to pay for it.

The question posed by the speculative builder who provides minimum quality space at economy rentals as to the feasibility of high-cost luxury corporate headquarters buildings remains moot, in terms of economics. Most of the corporate clients show good returns on their buildings, with the aid of tax write-offs and other factors, and have proved that they are better off fiscally building and owning their own offices than renting them (FORUM, Mar. '60). But the investor-builders like Brooks, Harvey and Equitable have shown that good design can be incorporated as an integral part of a sound real estate development plan, and pay handsome returns, also. Actually, the tide is running in favor of better design. New York City's new zoning plan, which will be in effect in less than two years, will probably make the wedding cake-ziggurat speculative office building as extinct as the pterodactyl. It gives a premium for open space at the base of office buildings, and provides incentives for opening up ground floors while steering builders toward towers that soar, uninterrupted, toward Manhattan's sooty sky. And when the new zoning law is indeed effective, New York's speculative office developers, with their keen eye for imitation, will undoubtedly find their inspiration, for profit as well as esthetics, in the low-cost, high-quality landmark towers of the corporate client.

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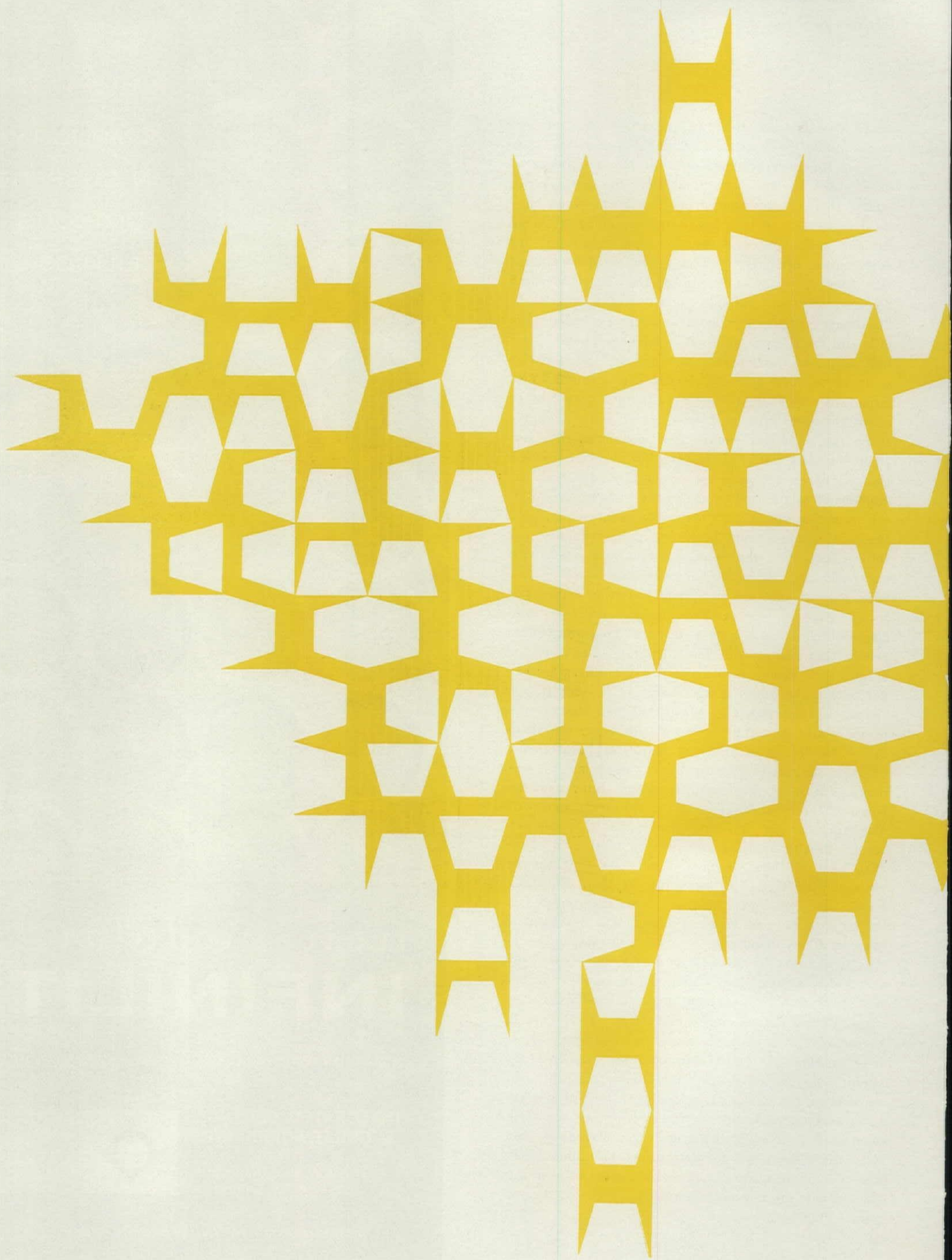
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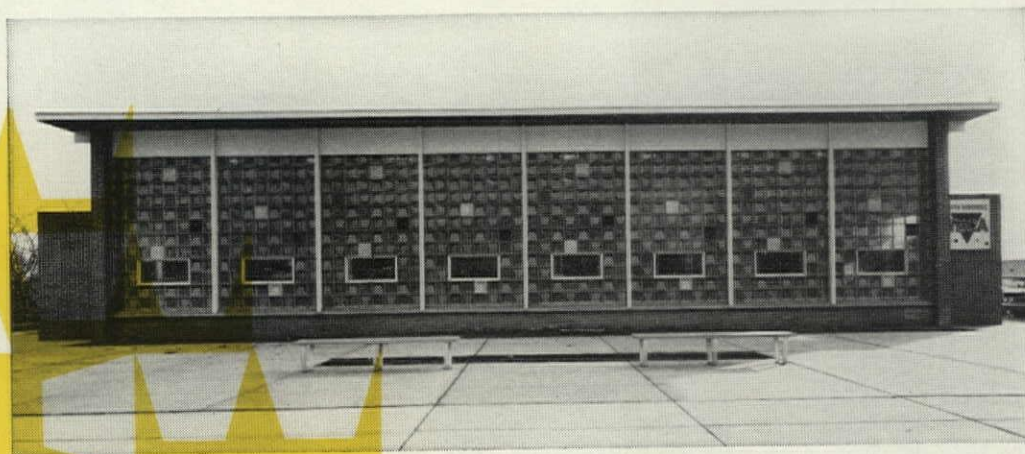


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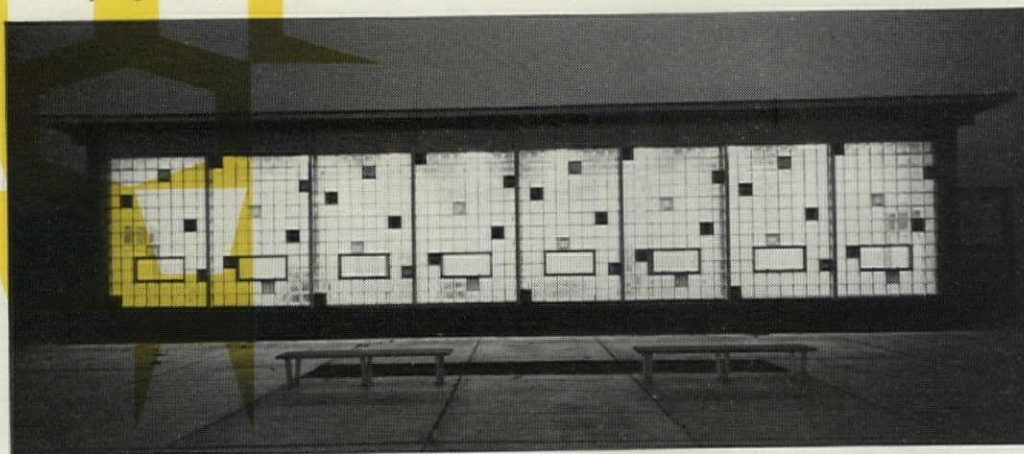


PC Sculptured Glass Modules... to state a building's purpose

Playful, free, busy and dynamic. Architects Lawrence and Anthony Wolfe sought this as the building statement for the new North Boroughs YMCA in Bellevue, Pa. They found the answer in imaginative use of PC's new Sculptured Glass Modules — both plain and colored. Each 12" square module — in the Wedge pattern — was turned at a 90° angle to adjacent modules to effect the interplay of surface texture essential to the building's theme. These panels form the entire North elevation of the structure. Spotted through the panels for accent are modules with a variety of fused ceramic face colors.



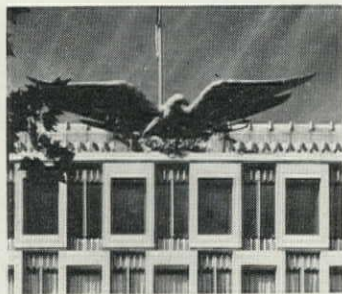
By day, the Sculptured Module panels reflect the playful freedom of activity within the "Y." By night they become a bright, dynamic beacon to the surrounding community.



Once more, thoughtful architects have found new excitement in wall design through the use of Pittsburgh Corning's stimulating architectural forms in glass. You may find that same excitement in a study of the bright new PC Glass Block and Sculptured Module catalog. For a copy, write Pittsburgh Corning Corporation, Department E-61, One Gateway Center, Pittsburgh 22, Pennsylvania.

PC Color Glass Blocks and Sculptured Modules available only on architects' specifications.

PITTSBURGH
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HENK SNOEK

COWARDLY EAGLE

Forum:

The controversial eagle on the U.S. Embassy in London (FORUM, Mar. '61) is looking toward its left. In heraldry this is a sign of cowardice. For this reason shortly after Pearl Harbor all military officer's hats which then had the eagles looking toward the left were abandoned. All U.S. military eagles have been looking right since.

The present eagle should be removed, and a new one looking to its right put in its place. This would also provide an excellent opportunity to give further study to the size of the bird.

AUSTIN C. DALEY
Architect
Providence, R. I.

KUDOS ON CORBU

Forum:

Congratulations on the April issue of FORUM! Its review of Corbu's work, its variety of well-presented projects, and its editorial content were all exceptionally interesting.

MORRIS KETCHUM JR.
Architect
New York City

Forum:

I thank you most sincerely for this act of homage. I congratulate you for the choice of the illustrations and the objectivity of the text.

LE CORBUSIER
Architect
Paris

KING SIZE VS. MONUMENTAL

Forum:

We noted in your April issue a public discussion of the FDR Memorial Competition.

If the following appears to be an indictment of contemporary architecture, it most certainly is. Our present-day building designers are tragically sterile, barren, futile, and irrational. But as is often the case, we have compensation in that modern engineer-

ing is positively brilliant, enough to cover up any and all designing errors.

Certainly there is no dignity in cement towers of Babel. King size does not make it monumental, it only makes it gross.

What are the essences that are completely lacking? The eternity of God's natural stone, and the validity that only a classic, traditional, and cultured intelligence can convey.

S. BELKIN
Calcagni & Belkin, Inc.
Worcester, Mass.

PREJUDICED PRAISE

Forum:

The editorial in the May issue of FORUM is an excellent interpretation and (although I may be prejudiced) evaluation of the Administration's housing bill.

ROBERT C. WEAVER
Administrator
Housing and Home Finance Agency
Washington

PARKINSON'S LORE

Forum:

I find Parkinson's impressions of the status of the creative professions (FORUM, Mar. '61) too pessimistic to accept. While his statements are thoughtful and thought-provoking, what he says is that in this modern world esthetics really do not matter at all.

Why should art be identified with craftsmanship in a narrow traditional sense? Why should architecture be dependent on the traditional craftsman at all? Should not art and architecture depend instead on such timeless considerations as form, color, and texture, elements that persist irrespective of crafts? We will always have form, color, and texture available for the use of architects, even though the materials and techniques change from time to time. New materials require new kinds of craftsmanship, and this gives our buildings a vitality they would otherwise lack.

WALTER K. JOHNSON
Director, State Division of Planning
Madison, Wis.

DREAM ARCHITECTURE

Forum:

Your recent tribute to the visions of Architect Paolo Soleri's "City on a Mesa" (FORUM, Mar.

and Apr. '61) was stimulating. While I am always interested to know what other architects are building, I am also delighted to encounter what they are dreaming they could build.

RICHARD E. PALMER
Architect
Pittsburgh

Forum:

You are to be congratulated for your presentation of the visionary city by Paolo Soleri. It is this kind of coverage that is an inspiration to the profession.

Soleri's visionary city is a work of greatness.

RODNEY H. WRIGHT
Architect
Libertyville, Ill.

LAND PLANNING

Forum:

We especially enjoyed your January articles concerning Don Mills, River Oaks, and Irving, Tex., and Westport, Conn.

We welcome the increasing number of articles devoted to land planning. Noting that the architect is very properly given recognition in every instance, may we in the planning field bespeak recognition? The story about River Oaks with a reproduction of the plan provokes this inquiry. We in the profession recognize it as the work of Hare & Hare of Kansas City, one of the highly respected and older firms in the Middle West.

GABRIEL C. HARMAN
Land planner
Denver

CRITICISM CRITICIZED

Forum:

Having literally lived in the Portland Coliseum for several days, I enjoyed reading your critique of the building (FORUM, Apr. '61). I agree with you wholeheartedly on almost all of your comments, although I do

not agree with your statements regarding how the building appears in the daytime. In all of my photographs, the free-flowing band of the interior stadium does read through the dark glass, regardless of the angle at which one stands. Therefore, I do not agree with your comment regarding the loss of the "building's crystalline transparency." The "splendid form of the oval" is not difficult to discern.

I wish more of the FORUM's presentations were as astute and critical as this one. Such criticism can only educate architects, and certainly (and this is extremely important) this type of critique should be placed in the hands of every architectural student in the country, for there is too great a tendency on the part of students and their instructors to accept a building as being an excellent one simply because it was designed by a name firm.

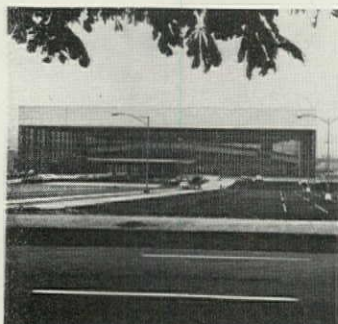
JULIUS SHULMAN
Photographer
Los Angeles

ACOUSTICAL GOOF

Forum:

I read, to my horror, that the interior of the new Air Force Academy Chapel (FORUM, May '61) will be covered "with lath and acoustical plaster." Having served as consultant on this project, I know that ordinary hard plaster is going to be used. One never uses acoustical plaster to cover the inside of a church.

ROBERT B. NEWMAN
Bolt, Beranek & Newman, Inc.
Cambridge, Mass.



JULIUS SHULMAN