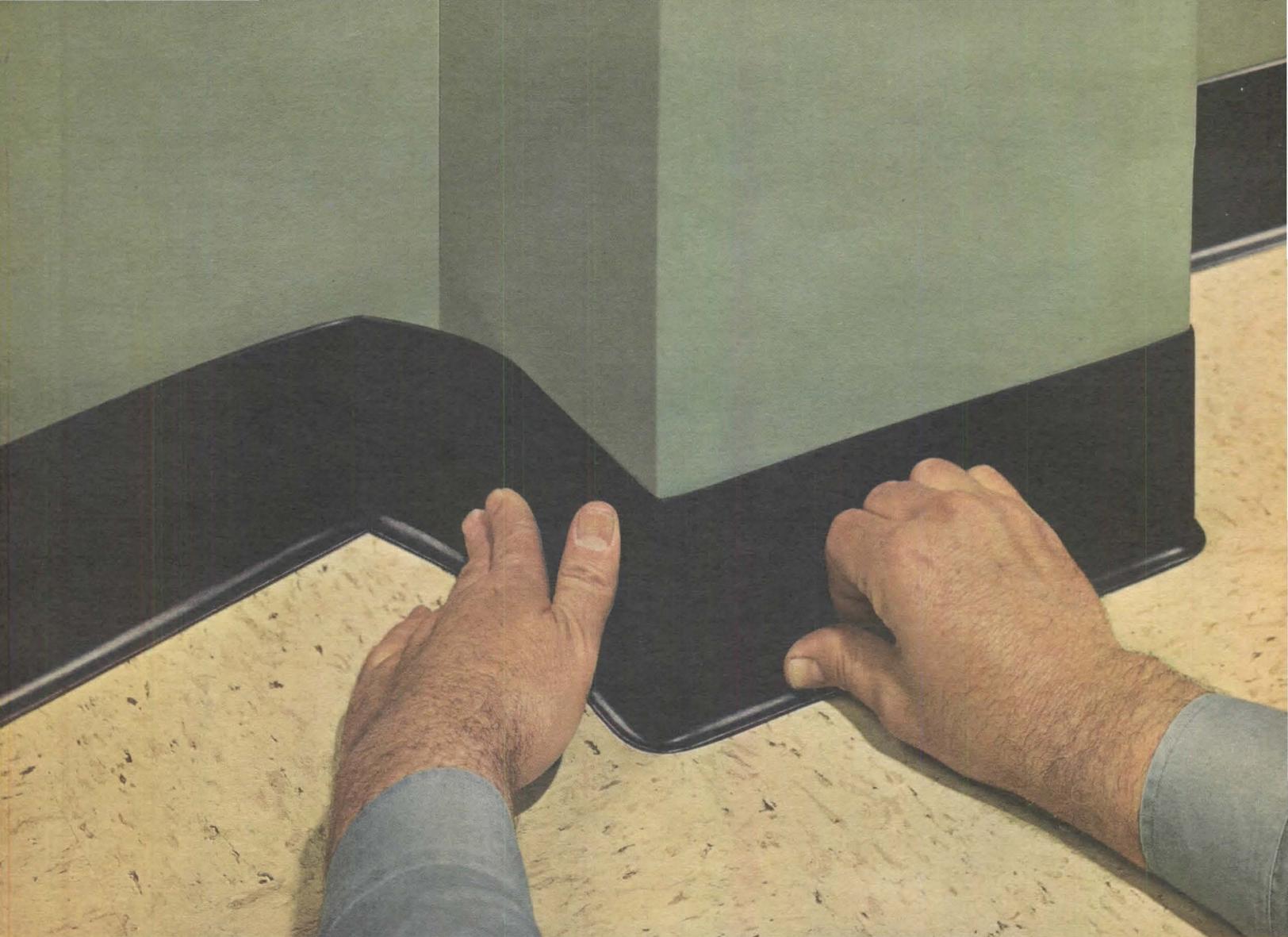


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FORUM—APRIL—1968

LETTERS 10

FORUM 33
A monthly review of events and ideas.

DOWN-TO-EARTH TOWER 37
SOM's latest New York office building is all logic and restraint, except for the big red sculpture out front.

RFK's FAVORITE GHETTO 46
NYC's Bedford-Stuyvesant, where the action is mostly promises—and hopes.

FOCUS 54
A monthly review of notable buildings.

METABOLIST'S TINKER TOY 58
Astonishing steel columns earmark a Japanese plant for expansion.

WIND AND ARCHITECTURE 60
Man-made gales around buildings can be prevented. By Michael O'Hare.

DRAMATIC RESCUE 64
New York's first public library has become its new Public Theater.

BOOKS 68
Furieux Jordan's *Victoriana*.

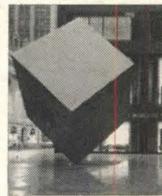
HOMAGE TO HARVEST 71
A gallery of Iberian granaries. By Myron Henry Goldfinger.

A BILL-DING-BOARD ETC. 75
A competition-losing entry for football's Hall of Fame By Robert Venturi.

MOST DAMMED NATION 80
The case against continued reckless dam-building. By Michael Frome.

MORE BUILDING WITH BOXES 84
Schemes for stacking large, prefabricated units continue to multiply.

PREVIEWS 99
Double-deck lifts; high-voltage towers.



Cover: Sculpture by Isamu Noguchi (page 37). © Ezra Stoller (ESTO).

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PUBLISHER'S NOTE

One of our subscribers is Mr. Whitney North Seymour Jr., a New York State Senator and chairman of the Senate Committee on Housing. Not only is Senator Seymour a FORUM subscriber but he is an attentive reader, too. In sponsoring an amendment to the public housing law which would broaden the definition of "project cost" to include an allowance "sufficient to encourage excellence of architectural design . . . compatible with prudent budgeting," the Senator turned to THE FORUM for supporting material. His letter to us said:

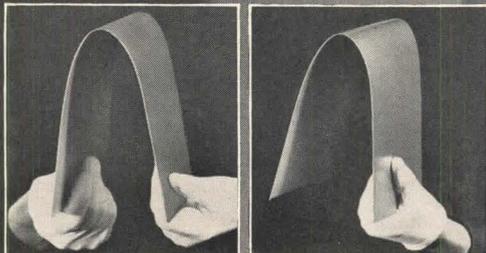
"For the first time in the history of the Senate, I used colored slides to support the debate in favor of the bill. The slides showed five of the British public housing projects, including Canada Estates about which I first learned from your excellent article in Architectural Forum (July/Aug. '65). I recited a number of your observations and conclusions in that article during the debate itself. So you can see your efforts have not been in vain."

The measure was approved 29-27. This small but significant amendment is not going to be an Open Sesame to a treasure of architectural gems in New York's public housing program. But it probably is going to reverse the direction of the debate on future public housing legislation. The question now will be, "How much better can we do it?," not, "What's the least we can get away with?"—a point of view losing popularity even in prison construction.

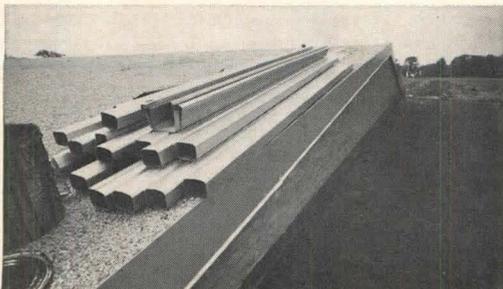
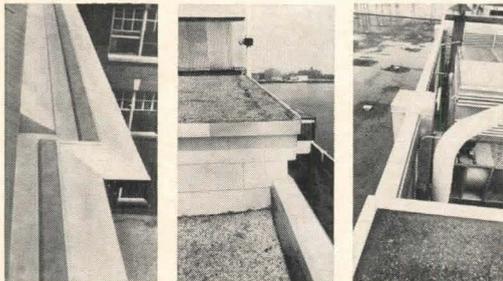
Congratulations, Senator, and many thanks for the credit line!

—L.W.M.

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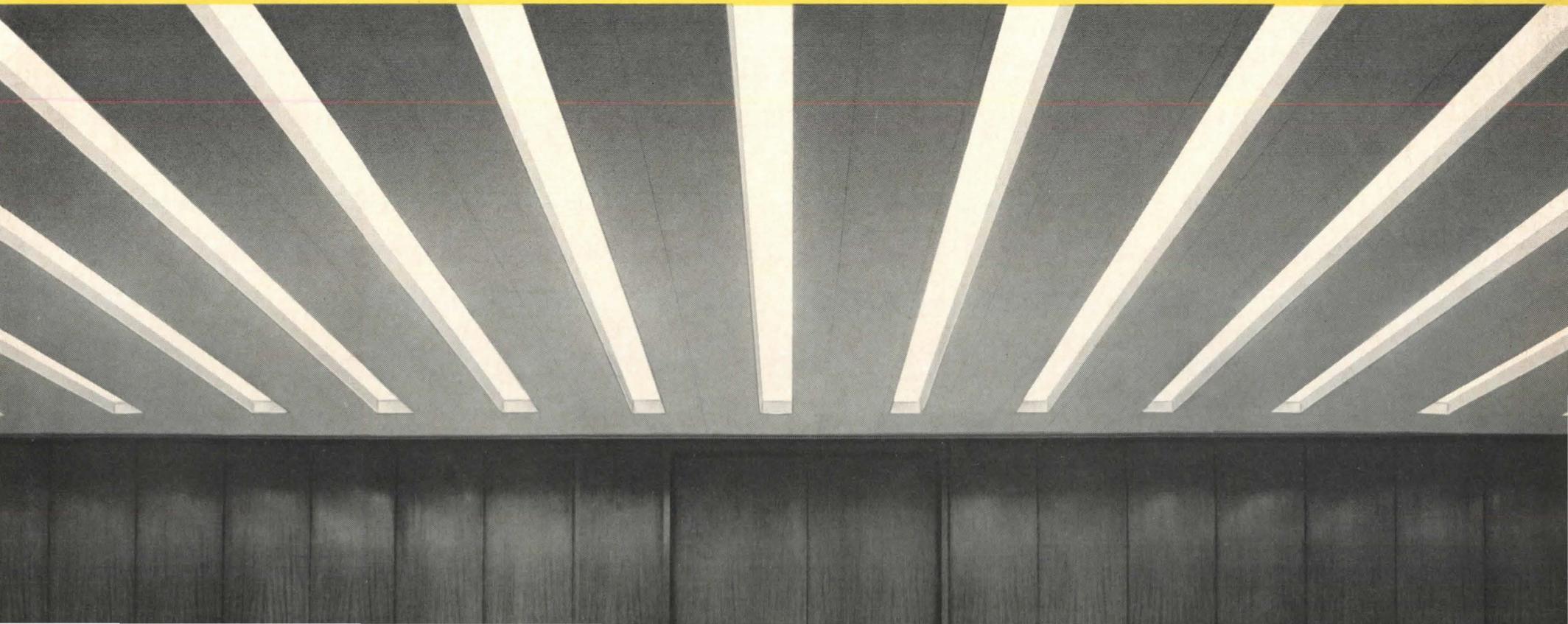
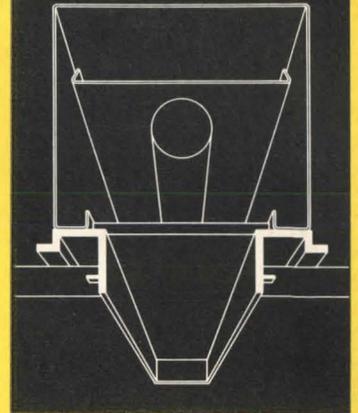
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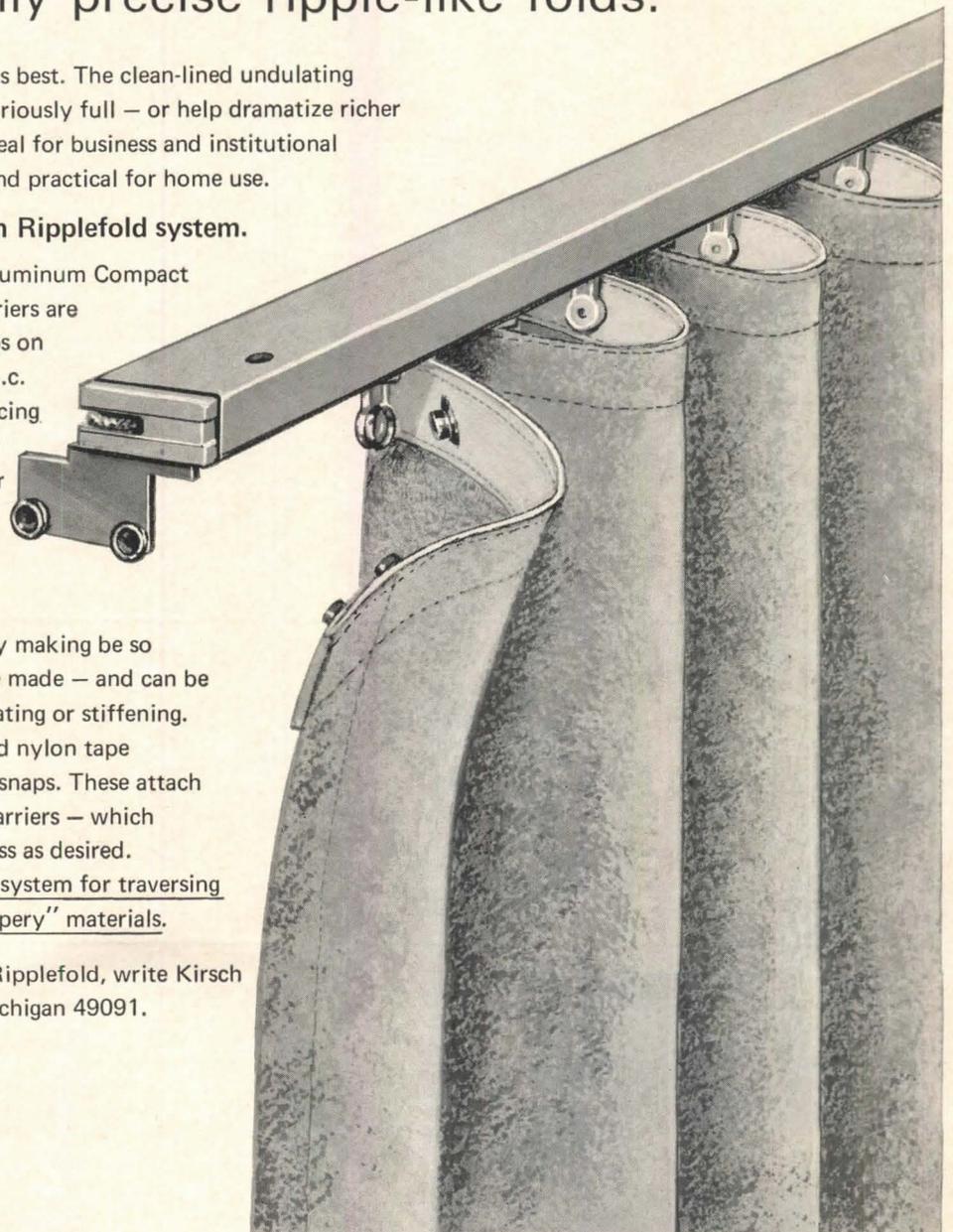
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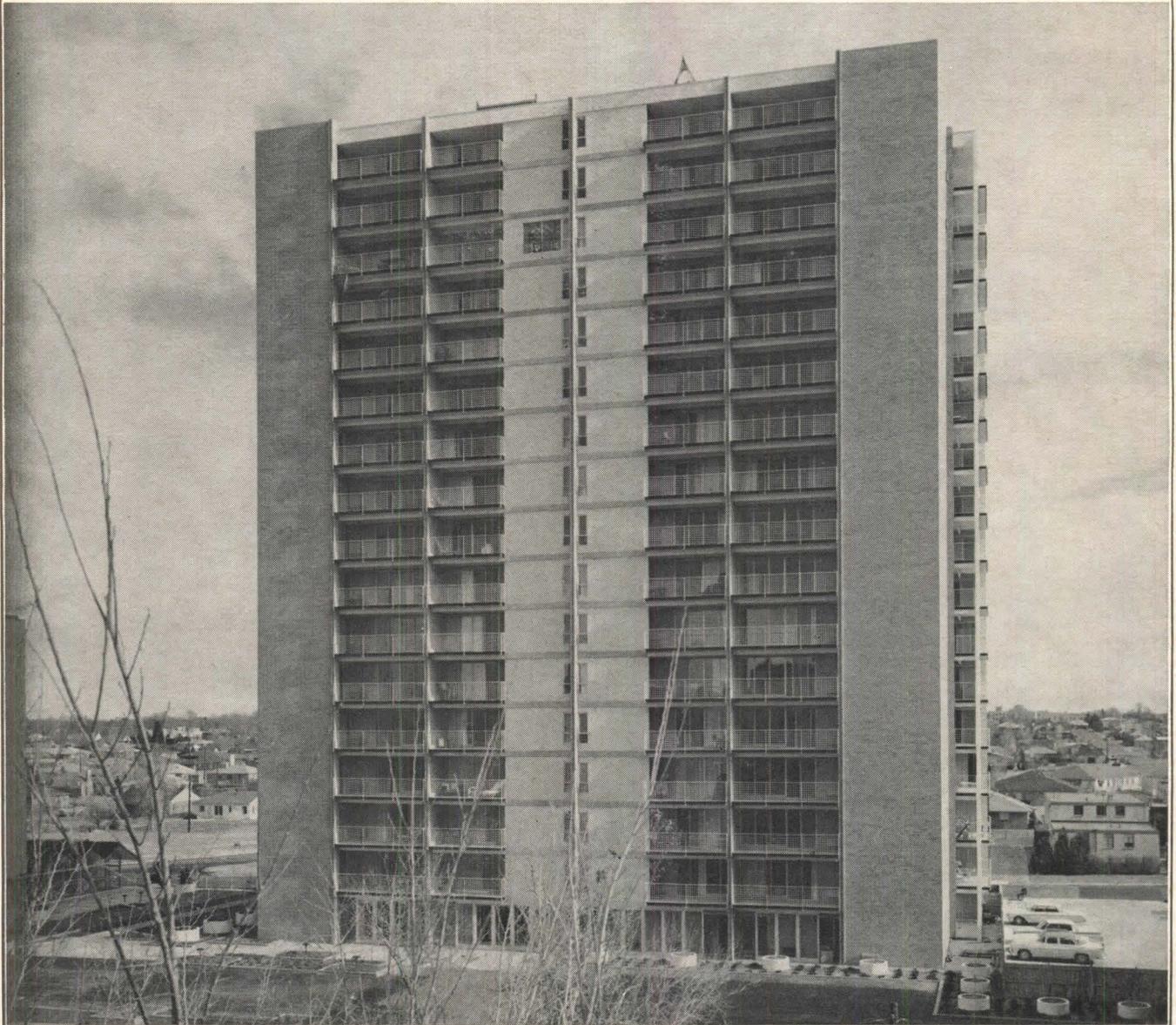
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LETTERS

TRANSLATION

Forum: I have just read your article on the National Science Foundation study ["Computers for Design," March] and find it excellent. I am impressed with how clearly you got what we were trying to say and made it clear. It is not a simple task!

Many thanks for your understanding, support, and interest.

JOHN R. MYER
Architect

Cambridge, Mass.

PARALLELS

Forum: I would not presume to comment on Robert Venturi's exhaustive story of Las Vegas [March] except that there is a reference to the Las Vegas Airport (McCarran Field) being "a replica of Eero Saarinen's TWA Terminal."

Careful research would point out the fact that this terminal was designed considerably prior to the great Saarinen terminal in New York.

We would not presume to say that his is a replica—indeed further research would tell you that the two are entirely different in both construction and function—but they do reflect designers' thinking along similar lines.

RALPH JACKSON
Director of Public Relations
Welton Becket & Associates

Los Angeles

INSERTS

In the article by Robert Venturi and Denise Scott Brown that appeared last month, several sub-heads were omitted for reasons of space. In addition, on page 89, the last-but-one paragraph should have ended with the words "and the pretty shopping malls of the American strip"; and, on page 91, the sentence beginning "But the order of the Strip includes:" should have continued: "it includes at all levels, from the mixture of seemingly incongruous land-uses, to the mixture of seemingly incongruous advertising media . . ." We regret these omissions.—ED.

SYNTHESIS

Forum: Two events regarding the state of the art: Charles Luckman found a new way to make more money, and the Venturis discovered the significance of A&P parking lots [March].

Luckman has been busy stamping out the new spatial order for many years, but it will probably be some time before anyone can buy stock in the Venturi Corp.

And I am trying to find out what urban design is—at Penn, where David Crane says we don't know much, but more than most. . . .

Meanwhile, a architect on every exchange and a plastic flower in every pot.

ALAN JOHNSON
University of Pennsylvania



BLUNDERS

Forum: How is it possible for a responsible and respected publication to misreport on the name and the location and the author of a project? The Montreal Metro station [above] shown on page 70 of your January/February issue:

1. is called Station Bonaventure and not Place Bonaventure;
2. is located west of and not under the commercial complex known as Place Bonaventure;
3. was designed by me and not by Affleck, Desbarats, Dimakopoulos, Lebensold & Sise—dear friends though they be to me.

VICTOR PRUS
Architect
Montreal

The errors are unexplainable and inexcusable. Our deepest apologies to all concerned.—ED.

Forum: Having received the March issue, I read your article covering the Harlem Project on page 27. . . .

The rental of \$40 per room as a basis for computation is in error. It should be \$21 per room. . . .

ROBERT BRUCE COUSINS
Architect
New York City

The article should have pointed out that \$40 per room was reported as the maximum rental.—ED.

(continued on page 17)



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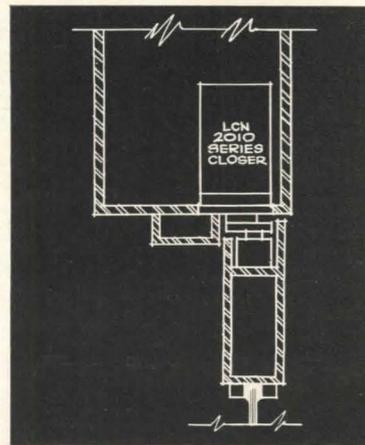


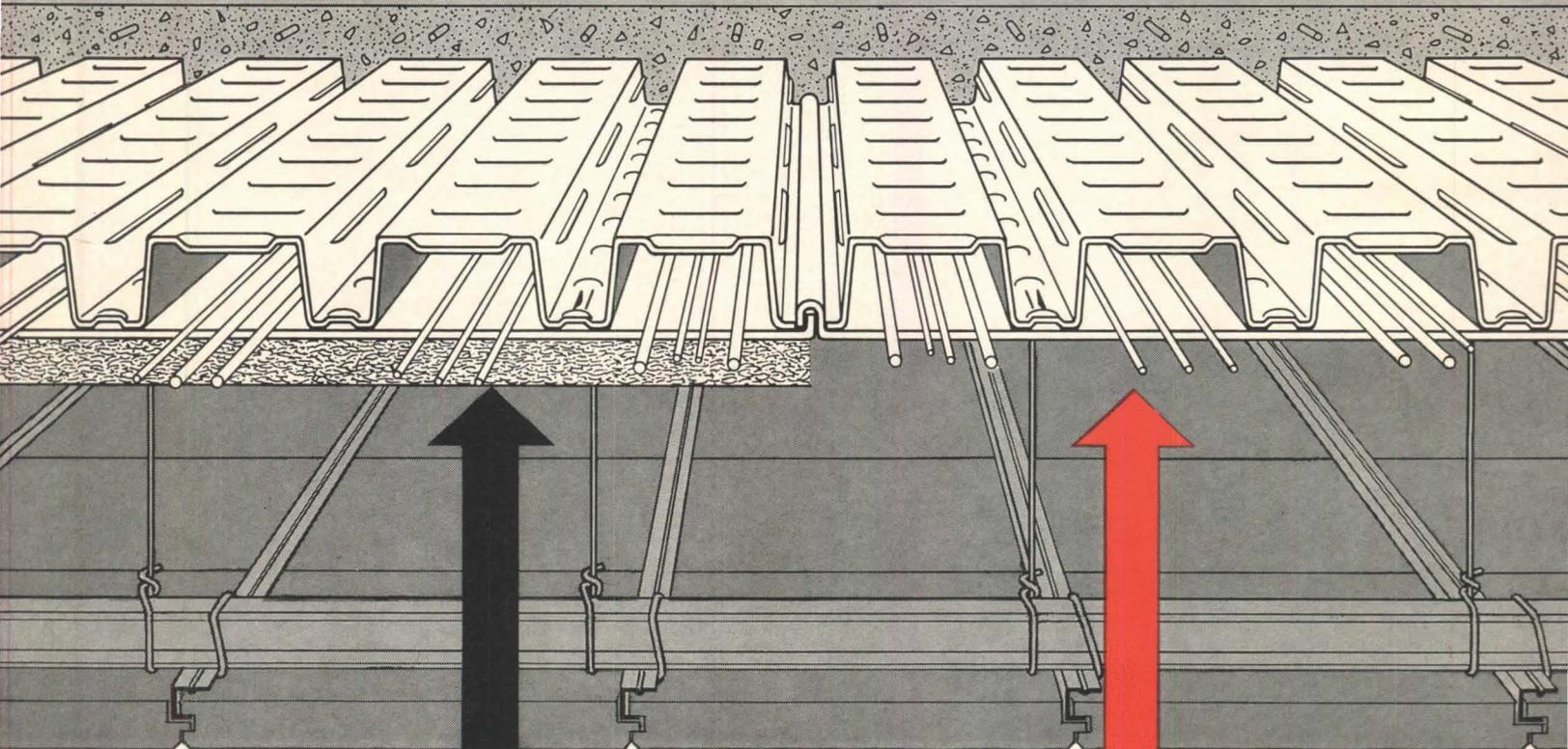
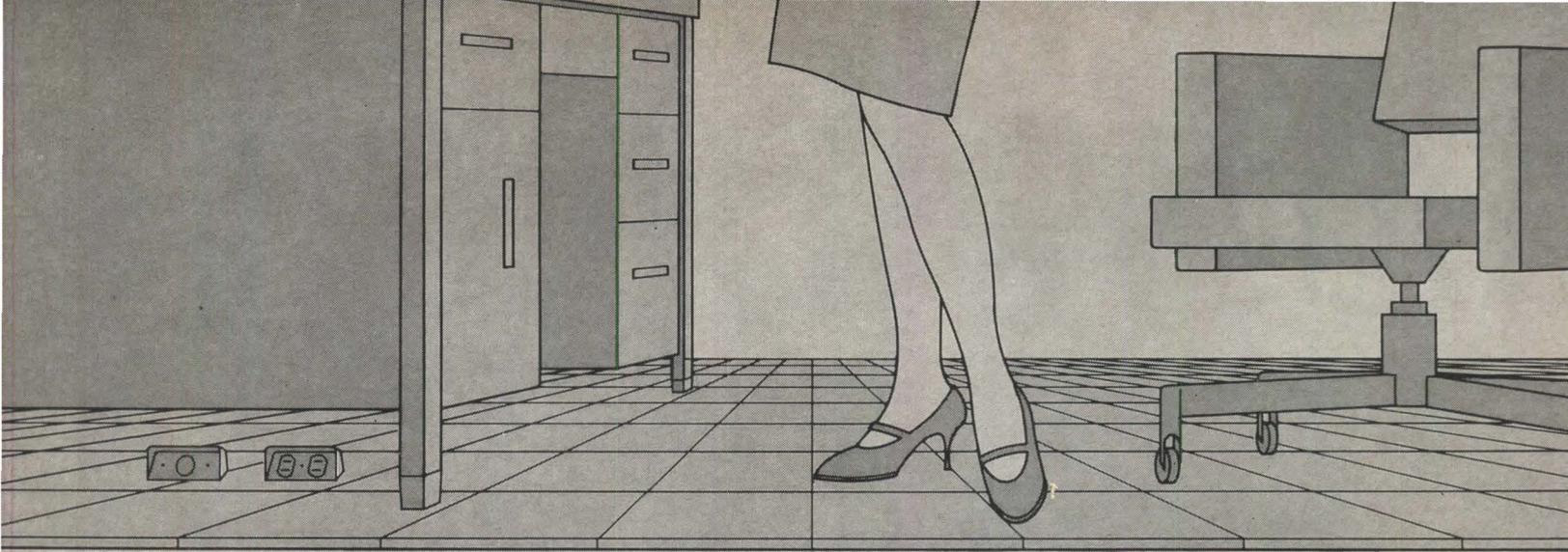
now you see it, now you don't

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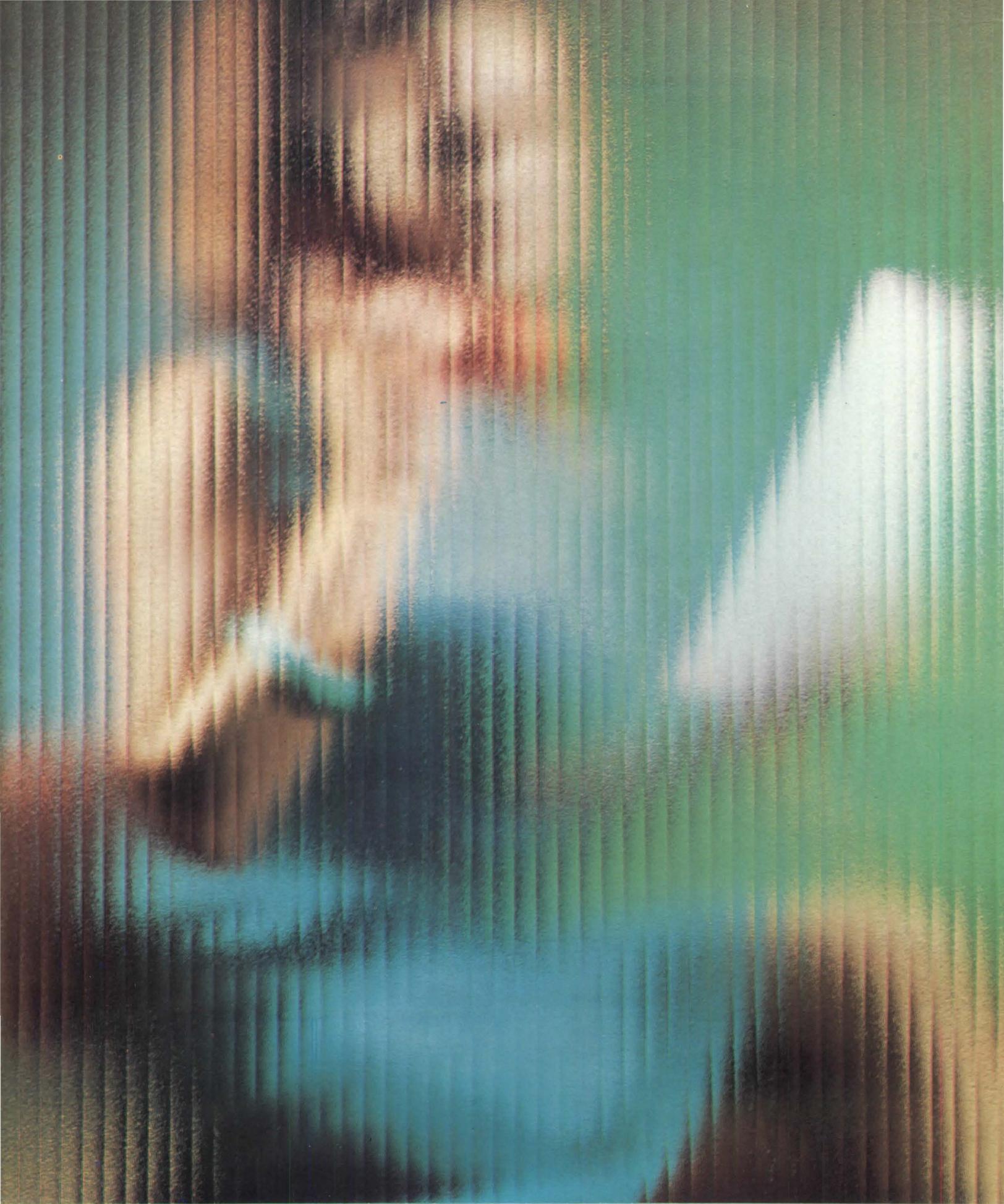
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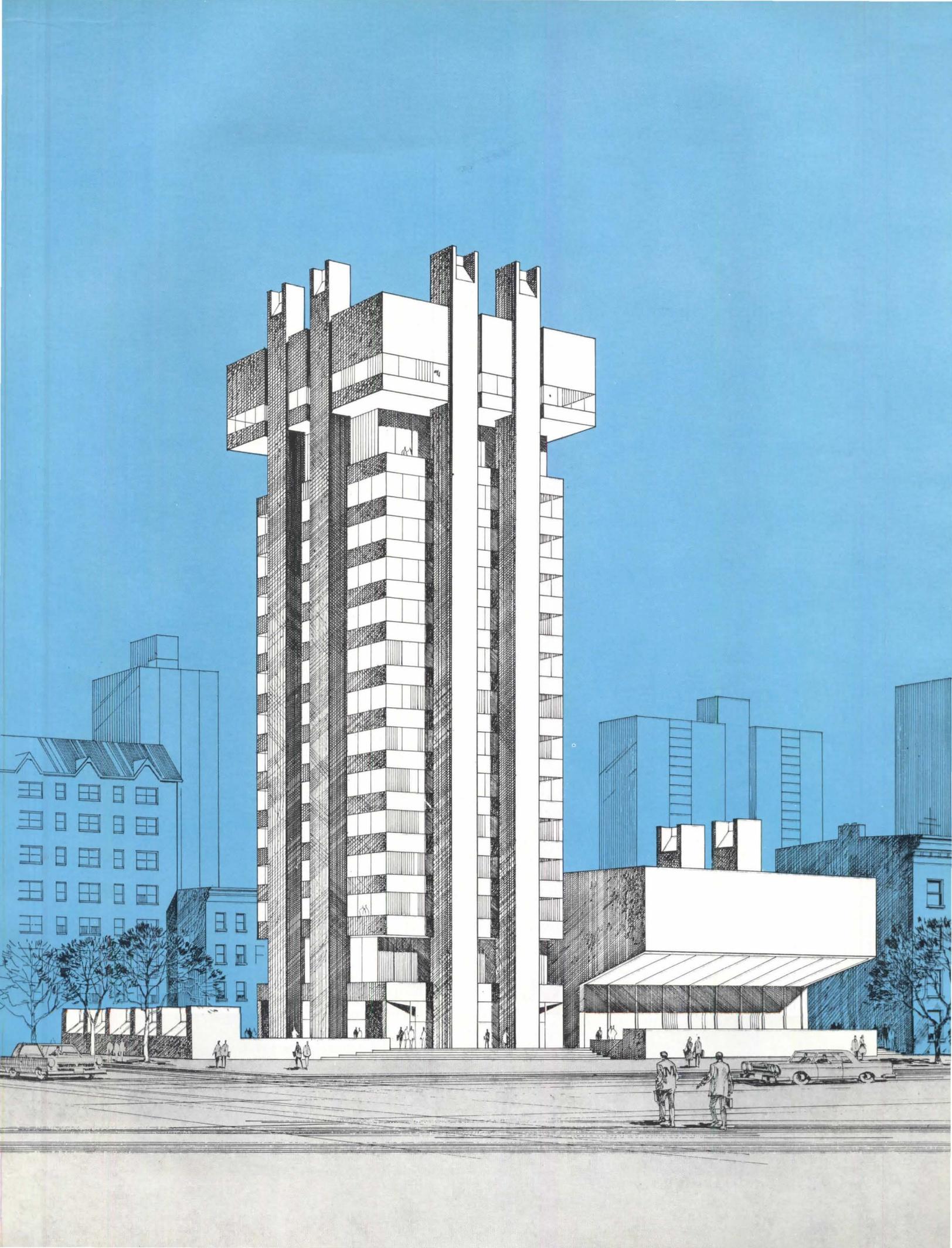
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In the natatorium, walls of blue and green glazed tile form a cool backdrop for poolside activity. And ceramic mosaics in soft whites and grays make up the easy-to-care-for deck and lining of the pool.

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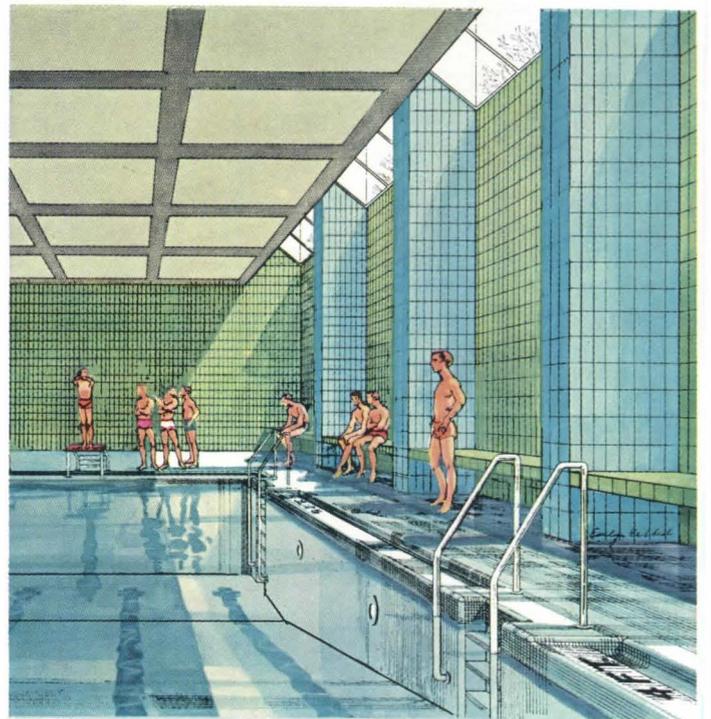
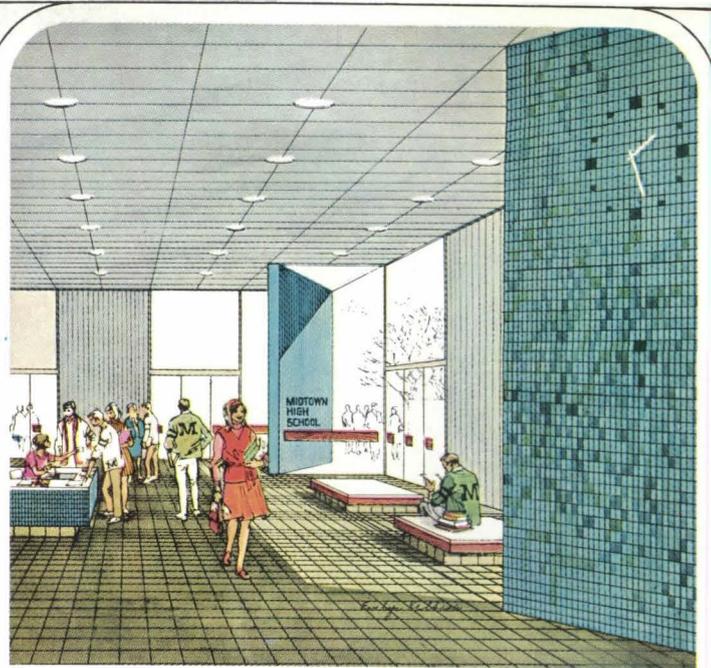
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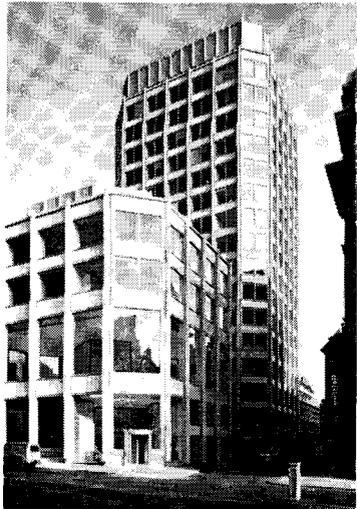
St. Louis, Missouri 63101

LETTERS

(continued from page 10)

PROGENY

Forum: Your article, "Turning a Neat Corner," in the March issue seemed to be a most logical answer to the particular problem at hand, but I just couldn't seem to get the idea out of my mind that I had seen the very illustration of the building long before it was erected.



Looking back through *The New Brutalism* by Reyner Banham, I found what I was looking for on page 189.

ROBERT DES MARAIS
State College, Pa. Architect

Mr. Des Marais also could have found what he was looking for in the May '65 issue of the Forum: the *Economist Building* in London, designed by Alison and Peter Smithson (above).—ED.

TRANSPORTATION

Forum: Your January/February issue is one of the most powerful and effective compilations of valuable material on the central core problems of cities that I have ever seen.

My own present job as chairman of the Baltimore Urban Concept Team Board of Control gives me some insight as to the value of such material in helping solve the complexities with which we are confronted.

NATHANIEL A. OWINGS
San Francisco Architect

Forum: The January/February issue is a thoroughly masterful analysis of the urban transportation problem.

PETER M. KEATING
Graduate Student in City and Regional Planning
University of North Carolina

Forum: Congratulations on the January/February issue. It surely sets a sort of high-water mark for architectural periodicals.

I may be biased because I am so pleased with the handling of our Urban Strollway System. But I cannot recall when I have seen a more stimulating assembly of news, views, and criticism of buildings, of cities, and of our hope for the future.

SIMON BREINES
New York City Architect

DESIGNER'S ROLL

Forum: Congratulations on a superb January/February issue. I am very pleased to see the growing recognition that architecture in city design should grow out of a functional network of movement systems.

I would like to point out what, in my opinion, are two basic shortcomings of the presentation:

1. Although the total regional transit system as an abstraction is presented in the section on Seattle, and the detailed termini of it, in a very limited area, are presented in the "access tree" drawing, there is no adequate graphic nor descriptive indication that there is a continuum of design flow from one scale to the other and that it involves the interweaving of all the basic transportation methods. To be sure, there is a drawing of the New York subway system, but that is treated without respect to the interaction of highways, expressways, bus routes, parking, and other types of transportation networks.

There is a tremendous need for a clear graphic representation of the unbroken flow from the widest extension of the regional transportation network through a total, three-dimensional, functional plan for center city, to the most detailed "access tree" forms.

2. Inadequate recognition is given to the fact that none of the proposals can become operative until designers themselves assume key roles in the decision-making process of government. This simple idea, without which most of the rest of the discussion becomes mere talk, is almost altogether unrecognized in architectural thought and is even considered a slightly improper subject to be raised.

Perhaps The Architectural Forum could hit both of these points square on the head in some future issue.

EDMUND N. BACON
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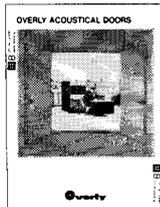
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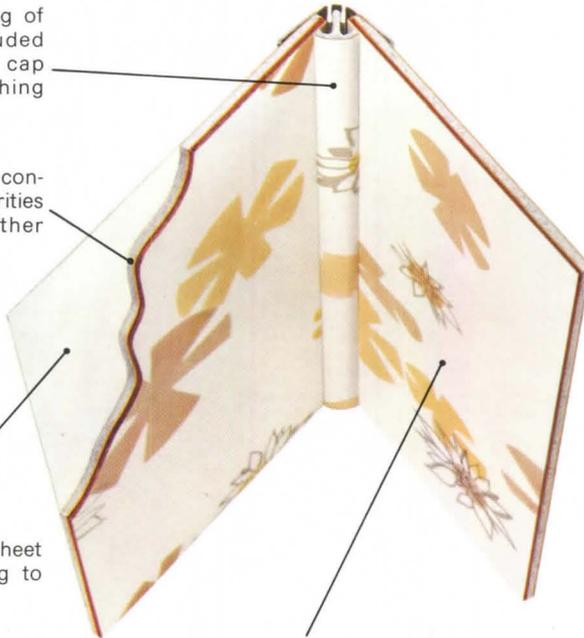
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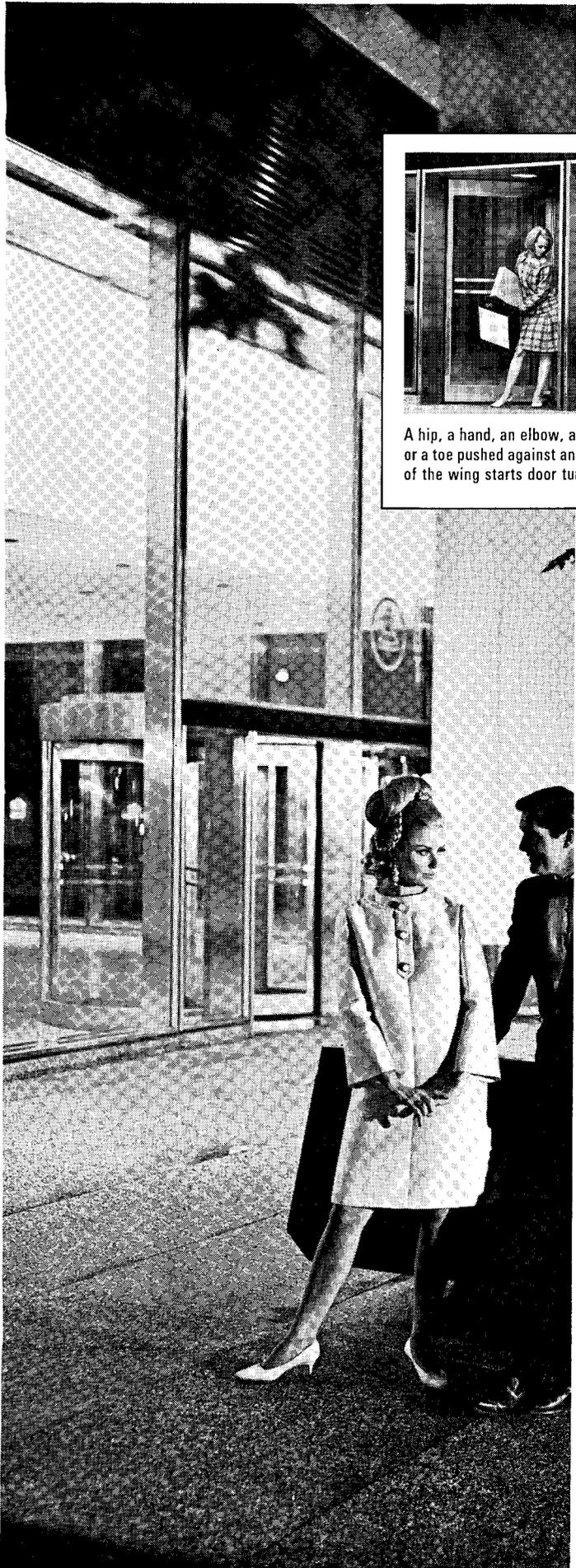


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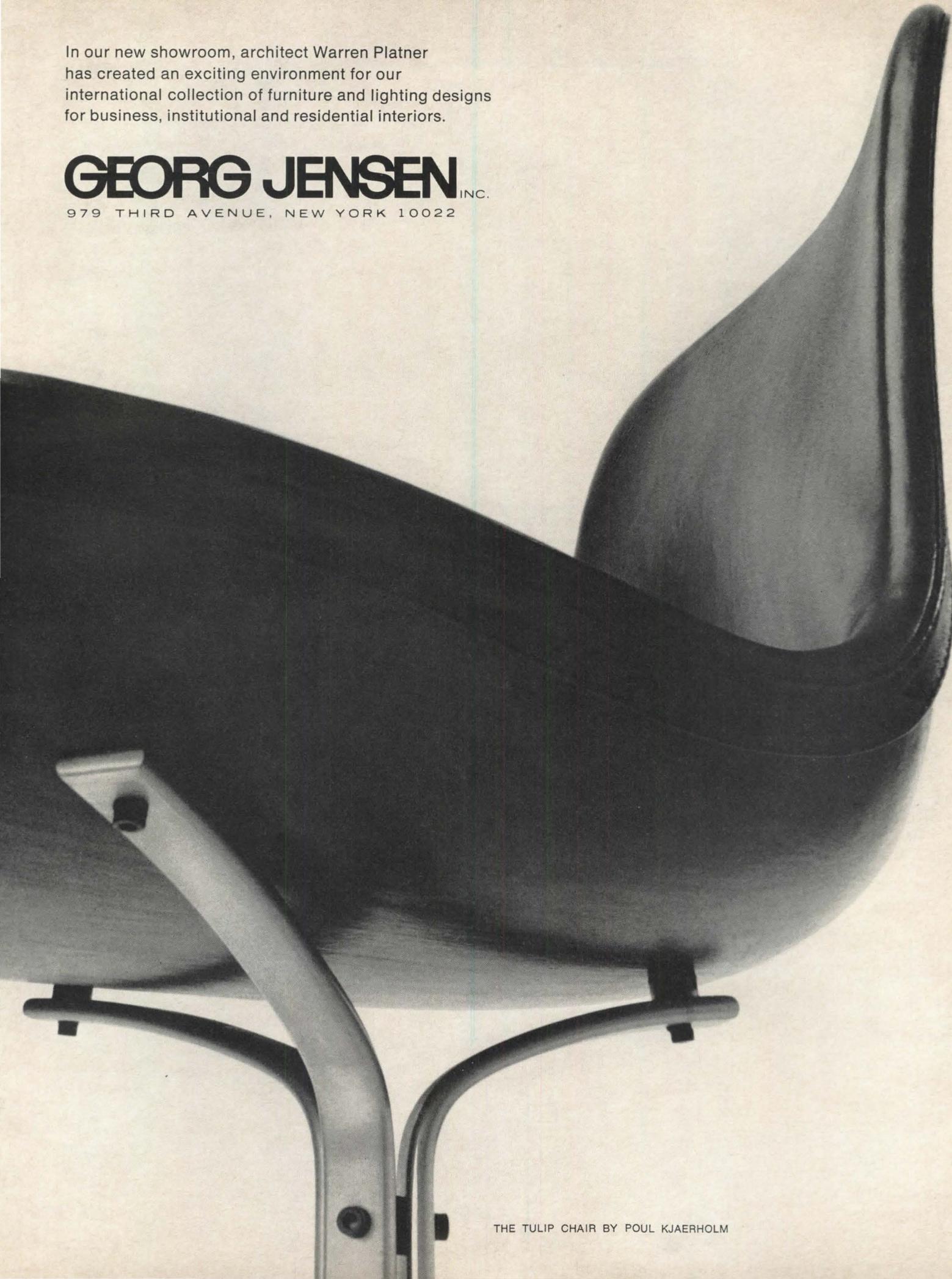
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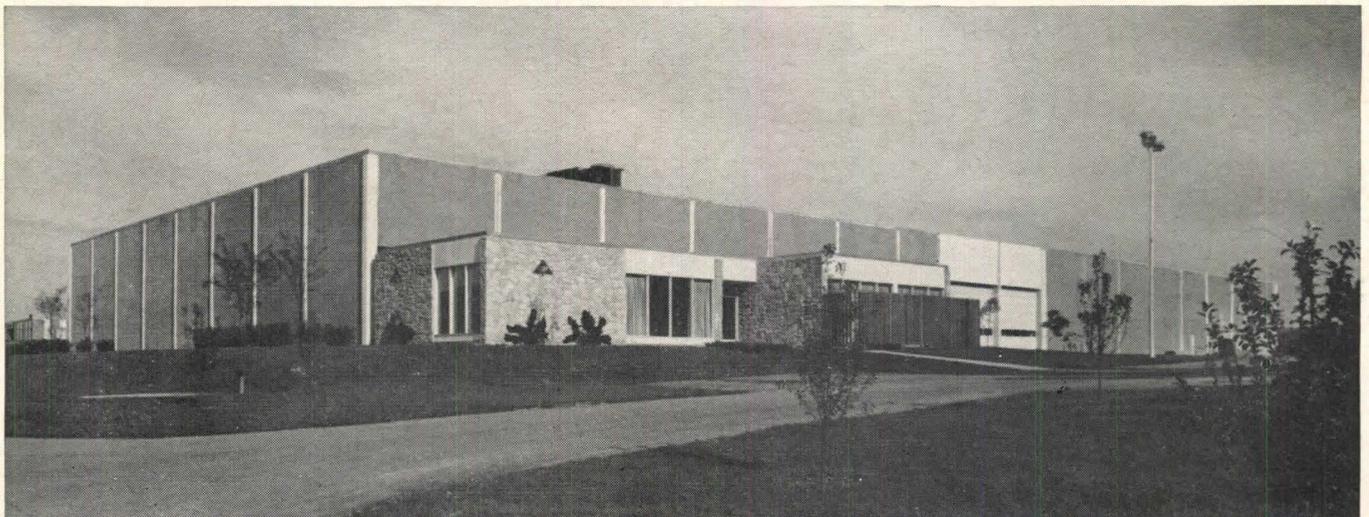
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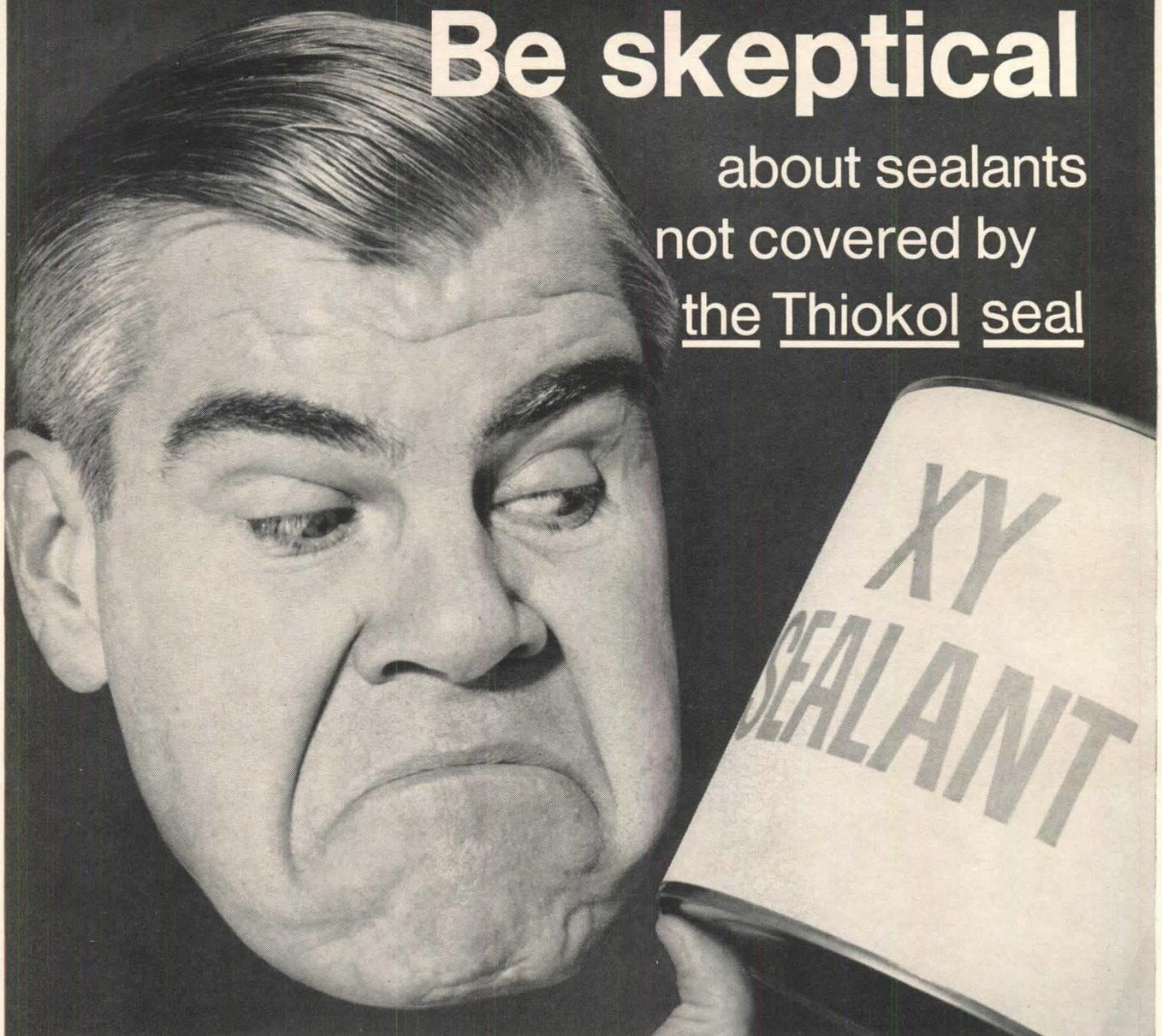
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FORUM

Well, it is nice to know that Bucky Fuller is going to get the Gold Medal of the Royal Institute of British Architects this year. It would have been even nicer if the *American Institute of Architects* had been the first such outfit to honor our native prodigy.

Alas, no such luck! A quick check discloses that the RIBA has, fairly consistently, beaten the AIA to the draw—or, at least, to the Gold Medal: Auguste Perret got his RIBA medal in 1948, his AIA medal in 1952; Le Corbusier got his RIBA medal in 1953, his AIA medal in 1961; Gropius got his RIBA medal in 1956, his AIA medal in 1959; Aalto got his RIBA medal in 1963, his AIA medal in 1960; Mies got his RIBA medal in 1959, his AIA medal in 1960; Nervi got his RIBA medal in 1960, his AIA medal in 1964; and Tange got his RIBA medal in 1965, his AIA medal in 1966. As for Frank Lloyd Wright—the British gave him *their* Gold Medal in 1941, but the AIA forgot to honor him until 1949! (The AIA did, however, scoop the RIBA by awarding its Gold Medal in 1957 to Ralph Walker, and proclaiming him the “Architect of the Century.” So far no medal for Mr. Walker from the RIBA.)

None of this matters very much, of course; but one wonders if the AIA may not be similarly out of touch on more important issues.

RIGHTS

SENATE AND OPEN HOUSING

The Senate has passed a civil rights bill with an open housing provision—a surprise to the nation, and to a number of senators, too.

Debate was already into its fifth week, on February 21, when Senator Mike Mansfield (Dem., Mont.), “with great reluctance,” and Senator Everett Dirksen (Rep., Ill.), with less, moved to kill the open housing proposal to avoid jeopardizing the rest of the civil rights bill. Mansfield’s move was a surprise, and the vote that rejected it, more so. At that point the open housing measure—by Senators Walter Mondale (Dem., Minn.) and Edward Brooke (Rep., Mass.)—covered 97 per cent of the country’s 65 million housing units.

Then, only seven days later,

Dirksen did a complete turnabout, introducing a compromise stronger than what his own filibuster had defeated in 1966. Some two-thirds of the nation’s housing would be covered, and Dirksen waxed mellifluous, claiming that time was making everyone (including him) older and wiser. The next day, however, Dirksen caught the liberals napping, and got unanimous approval to make some “technical changes” in his compromise bill—namely, exempting from the ban all single-family homes financed by FHA or VA mortgages. At the same time his son-in-law, Senator Howard Baker (Rep., Tenn.), introduced an amendment—later rejected—giving the homeowner the right to refuse to sell to a Negro sent by a broker. “The right to discriminate,” said Baker, “should not depend on whether the owner employs a broker.”

On March 5, the Senate attached an anti-riot amendment watered down from one sponsored by Senators Frank Lausche (Dem., Ohio) and Strom Thurmond (Rep., S.C.). The vote was 82-13.

Later on March 5, the fourth attempt to halt debate on the bill succeeded by one more vote than the required two-thirds—65-32.



*“There go my people—
I must hurry up to lead them.”*

Word came out that the cloture vote was less the result of the riot commission report the week before than of bartering among the senators, exchanging a weakened bill for votes to close debate.

The final vote came on March 11—71-20, for gradually lowering racial barriers in 80% of the nation’s dwelling units—first in federally owned or assisted housing; then in multiunit housing; finally (by January 1, 1970) in single-family housing. A single-family owner selling or renting without a broker is exempt, but

even so is not permitted to announce discrimination in ads. Also in the bill: antiriot and antiweapons measures; stiff penalties for intimidating or injuring civil rights workers and Negroes in housing, education, jury duty, voting; and a bill of rights for the American Indian.

Now it is up to the House, where the bill can be accepted as is, or sent to conference to iron out differences with a House bill (whose only provision at present deals with intimidation to civil rights workers) or amend it and send it back to the Senate. The strong pro-civil rights showing by Republicans in the Senate could spur the House Republicans to do likewise.

It is possible, however, that the strong Republican showing, and Dirksen's miraculous conversion, were made in the expectation that the House would never pass an open housing bill, being far more conservative than two years ago when its more moderate open housing provision only narrowly got through. Then, too, Dirksen's "getting religion" may have had something to do with the recent choice, by President Johnson's political associates, of an obscure Democrat to seek Dirksen's seat this November in Illinois.

PROGNOSTICS

RUMBLES ON THE PACIFIC

There is a 50-50 chance that a major earthquake, causing damage on the scale of Hiroshima, will hit California within the next ten or 20 years. This is the prediction of Professor Peter A. Franken, one of the nation's top physicists and former acting director of the Defense Depart-

ment's Advanced Research Projects Agency.

Experts agree that California is due for another major earthquake before the end of the century. The state has had a major earthquake roughly every 35 years (1800, 1838, 1865, 1906). Chances are that, next time, both Los Angeles and San Francisco will be hit, since both cities are located on the San Andreas fault, which has been restless.

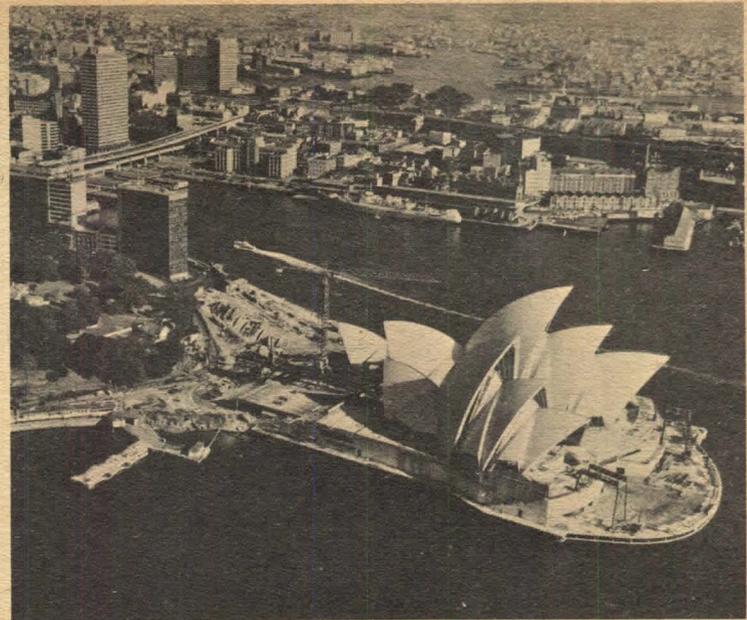
The predicted earthquake might become the biggest natural disaster since Noah: for the first time, a major earthquake would hit large and complex population centers with all the furbishings of 20th-century civilization—skyscrapers, freeways, suspension bridges, etc. Moreover, Californians may not be as "lucky" next time as San Franciscans were in 1906 (below), when "only" 600 people were killed because the disaster occurred on a Sunday, at 5 a.m., and everyone was in bed. If a future quake hits the city during rush hour, Franken foresees a holocaust of crashing bridges, cars colliding in chain reaction, citizens crushed under toppling buildings, and hospitals aflame from bottled flammables.

Franken believes that research and wide publicity could reduce potential damage in a quake, but he is pessimistic about California officials acting on this issue: they don't want to discourage people from living in the state.

SCYLLA AND CHARYBDIS

Even more imminent is the possibility of a manmade earthquake in Denver. Unless remedial action is taken, and possibly because of such action, the city may be hit by a major quake this year.

The root of the problem is a well, 12,045 ft. deep, at the Army's



Rocky Mountain Arsenal on the outskirts of Denver. From 1962 to 1966, 160 million gallons of poisonous waste water were pumped into it. (The water is a by-product of the production of chemical warfare agents, among them nerve gases.)

The dumping of these wastes was stopped when a series of minor quakes hit this normally stable area, and the locus of the quakes was pinpointed in a narrow zone encompassing the well.

Until last year the quakes behaved in a uniform pattern, giving no cause for alarm. An analysis of the 1967 quakes, however, showed a change: quakes of greater severity had become more frequent.

If this new magnitude-frequency relationship persists, it is estimated that there is a ten to 20 per cent chance of an earthquake of 6.2 magnitude occurring in 1968. (The San Francisco 1906 earthquake was of an 8+ magnitude.) A 6.2-magnitude quake could have a disastrous effect on Denver, which was not constructed with earthquakes in mind. Many buildings have brick-veneer facades, which generally are dependable only in quake-free regions.

Experts at the U.S. Geological Survey recommend pumping waste water out of the well. It is conceivable, but unlikely, that such action may actually cause an earthquake. It is also conceivable that it may fail to prevent one. Cracks made in the deep rock by the original pressure of the water might close up as a result, making it impossible to pump out the remaining fluid. Meanwhile, the federal government is weighing the alternatives, with a decision due in a few weeks.

PROGRESS

PROLONGED FINALE

The Sydney Opera House continues to make news. The free-form shells (above), cleared now of all rigging, give Sydney's beautiful harbor the excitement of a perpetual yachting regatta. But its history, of course, has been anything but smooth sailing.

Technical difficulties in the roof structure that arose out of a precipitous rush into construction by the New South Wales government (computer hours: 2,000); the dramatic withdrawal of Finnish Architect Joern Utzon under government pressure (April '66 issue); the appointment of successors (Hall, Todd & Littleton) to complete his masterwork—recognized widely as one of the most complicated of the century; skyrocketing cost estimates (from \$8 million to \$56 million)—all have conspired to knock some of the wind out of Utzon's soaring sails.

To be completed in 1972 ("If all goes well," says the government, perhaps chastened by events), the opera house will have been in construction for 13 years—three years longer than all of Manhattan's Lincoln Center.

EXPLORING NEW TECHNOLOGY

Paul Rudolph, Moshe Safdie, and a combine of Harry Weese and Brown, Wright & Mano have been awarded grants by the District of Columbia Redevelopment Land Agency for demonstration projects that explore new technology. They will each develop their own housing scheme, the three to be grouped on a 20-



acre portion of the former National Training School site. The hope is that a "technological breakthrough" can be achieved, and applied to the rest of the 335-acre site that will be the new town of Fort Lincoln (Jan./Feb. issue).

Rudolph's multistory housing will use completely prefabricated units similar to mobile homes. The Weese team will use precast concrete panels. Safdie will stack up a new version of his Habitat 67, redesigned to reduce costs. Working with Edward K. Rice (who devised last year's "Instant Rehab" in Manhattan), Safdie has cut wall thickness from 5 in. to 2 in. by a chemical post-tensioning system that uses expansive concrete. With this and other improvements, a four-bedroom house would cost about \$16,000.

TRANSIT

FROM HUD TO DOT

President Johnson has confirmed the rumors (Jan./Feb. issue) that he intends to transfer federal mass transportation programs from HUD to DOT. On February 26, he notified Congress that the change would be made in 60 days unless the legislators reject his reorganization plan.

Under the plan, DOT will take most of HUD's urban mass transit money, as well as about 50 of its employees, and will set up a new Urban Mass Transportation Administration to carry the programs forward. In return, HUD will be given "an important role in connection with transportation research and planning insofar as they have significant impact on urban development."

The President was vague about just what that role will be, but he promised that the transfer "will not diminish the overall responsibilities" of HUD, which will "provide leadership in comprehensive planning at the local level that includes transportation planning and relates it to broader urban development objectives."

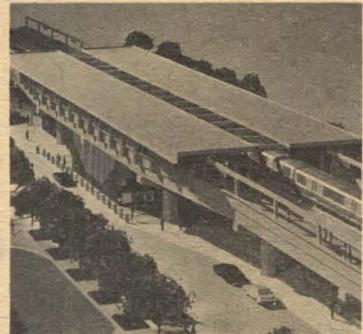
HUD's specific authority will be worked out in "memoranda of understanding" exchanged between the two departments, with the Budget Bureau acting as an arbitrator whenever HUD and DOT can't reach agreement on specific items.

So far, the only significant opposition to the plan has come

from highway lobbyists, who are afraid that HUD might be given a greater voice in urban highway planning and design. That prospect alone makes the reorganization seem eminently worthwhile.

SWAN SONG

As one of its last official acts in the field of mass transit, HUD last month dispensed 12 awards to "outstanding examples of excellence in the design of transportation systems and systems components." A five-member jury singled out three of the 12 for top honors:

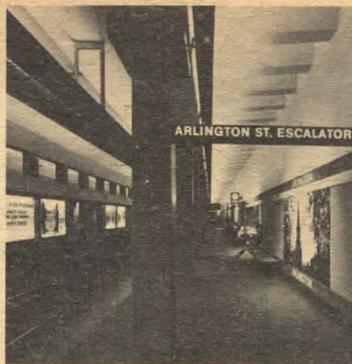


- The Bay Area Rapid Transit (BART) District, "for excellence in the comprehensive design of a total system." Among the specific elements cited by the jury were the BART transit vehicle and elevated structure (June '66 issue), and the El Cerrito Del Norte station (above) designed by Architects DeMars & Wells.



- The Philadelphia City Planning Commission, "for excellence in the comprehensive design of the Market East Transportation Center" (above and Nov. '66 issue), designed by Architects Skidmore, Owings & Merrill, with Romaldo Giurgola as architectural consultant. The jury failed to note, however, that construction of Market East has been held up for months because HUD hasn't gotten around to giving the project urban renewal approval.

- The Massachusetts Bay Transportation Authority of Boston, "for excellence in the comprehensive design of a redeveloped system"



(May '67 issue). The jury was particularly impressed with "the consistent system of identification and directional signing" developed for the 40 remodeled stations (sample above). The principal architects were Cambridge Seven Associates.

Jury members were Architect Kevin Roche, Industrial Designer Henry Dreyfuss, Planner Robert M. O'Donnell, Sociologist Robert Gutman, Engineer Lee Ham, and Mrs. Albert D. Lasker, president of the Society for a More Beautiful Capital.

BIG PLANS

GRAND CENTRAL CITY

It was finally made official late in February: Marcel Breuer, this year's AIA Gold Medalist, and one of the pioneer architects and designers of the century, will design the office tower that is going to be built over New York's Grand Central Station—just south of the Pan Am Building (one of whose architects was, of course, Breuer's former associate, Walter Gropius).

As soon as Morris Saady, president of the British U.G.P. Properties Inc., made the announcement of Breuer's selection at a New York press conference, the predictable brickbats began to fly—and the predictable question ("How could Breuer take on such a commission?")—was being asked by all and sundry.

It is a good question, but not the crucial one: the fundamental question is "how could our society permit the kind of land speculation that leads to such buildings?" For the single, most important fact about the forthcoming Breuer tower is that its site—146,000 sq. ft. of air rights—is currently valued at an outrageous \$60 million or so, and that is without any sort of building on it!

What this means, of course, is that the Penn Central Railroad (which, like most other railroads,

claims to be in dire financial straits) is going to put up a building on those 146,000 sq. ft. no matter what—and a great big building at that, if only to amortize the outrageously inflated price of the land alone. It would be silly to blame Breuer (or any other architect) for the kind of unrestricted land speculation that makes such buildings inevitable.

Given this fact, the next question is: would it be better to have the proposed 2 million sq. ft. (rentable) tower designed by a good architect rather than a bad one. The answer is obvious.

Needless to say, Breuer had considerable qualms about accepting this commission. What finally persuaded him to do so were four considerations: first, he was assured by the clients that they would want him to preserve the great hall of Grand Central. (Only the waiting rooms, now rather dingy, will be altered to accommodate lobbies, elevators, etc.) Second, he felt that since the Pan Am Building had, in any case, stopped the flow of Park Avenue by running its axis east-west (rather than north-south), the new tower would not do further damage to the space of the Avenue—and might, in fact, provide a better marriage between the old Grand Central facade and its backdrop.

Third, Breuer believes that his client is likely to make a significant contribution to the improvement of mass-transit facilities now serving Grand Central City. The existing ones are inefficient now, and will be even more inefficient in the future. Moreover, a tower on this site, with its potentials for direct access by public transport, is less likely to cause congestion at street level than one not tied to subways or suburban lines.

Finally, Breuer's contract with his client specifies that the building will be "of exceptional quality." This sort of clause is, of course, highly unusual. "I have never yet been able to specify anything like that in other owner-architect agreements," he says.

So Manhattan is likely to get one of the best possible buildings over Grand Central—under the circumstances. Those circumstances include such deplorable facts of life as outrageous land prices; rather inadequate landmarks protection (only the exterior of a designated landmark is protected—and not very effectively at that); and rather inadequate planning

powers on the part of the city. Architects, like other concerned citizens, should certainly fight to alter those circumstances. As professionals, it seems that architects should try to make the best of the world *as it is*—before somebody else fouls it up even further. That, in any case, was Breuer's decision, and it seems not unreasonable.

CITIES

A CURE FOR HOUSING . . .

Every year, President Johnson issues a portentously phrased message on the plight of our cities, then follows it with legislative requests that come nowhere near meeting the problems he has described so adequately. This year is no exception, though the President has narrowed the gap considerably in one important field: housing for the poor.

The President has asked Congress to approve a program calling for the construction of 6 million housing units for low- and moderate-income families in the next ten years. That would be more than a tenfold increase over the 536,000 such units produced during the last decade. It would replace completely the nation's current stock of substandard housing, in which 20 million people now live.

The President's housing proposal depends heavily on the involvement of the private sector and contains a number of new federal devices to lure businessmen:

- A National Housing Partnership which would collect investments from businesses and distribute them to local developers, nonprofit organizations, and public agencies. The partnership would provide at least 25 per cent of the equity for any given project, and investors would get special tax credits.

- Two new programs of interest-rate subsidy for the purchase and rental of housing by low- and moderate-income families. Under the sales program, the buyer would pay 20 per cent of his income to housing costs, and the government would pay the difference in the form of a subsidy on the privately held mortgage loan. The government's share could amount to all but 1 per cent of the interest, depending on the buyer's income. The rental program would operate the same way, with the government supplying the difference between the market rate and what could be supported by tenants, based on their incomes.

- Two changes designed to improve the supply of mortgage credit. One would abolish the 6 per cent interest ceiling on FHA-insured mortgages and give HUD authority to adjust the rate "to reflect economic realities of the financial markets." The other would transfer the secondary mortgage functions of the Federal National Mortgage Association (Fanny May) to private ownership, creating a new Government National Mortgage Association (already dubbed Ginny May).

. . . A TOKEN FOR CITIES

If decent housing for the poor were our only urban need, the President's proposals would be impressive indeed. But, once again, he has given short shrift to other urban problems, asking for token increases in the volume of existing programs and offering almost nothing in fresh new programs.

For model cities, the President has requested \$1 billion (half of it for urban renewal in model neighborhoods) for fiscal year 1969, plus \$1 billion each for the following two years. Last year he requested \$662 million, and Congress gave him \$330 million. For urban renewal elsewhere, he wants \$1.2 billion in fiscal 1969, and \$1.4 billion in 1970. The program has been running at an average rate of about \$750 million.

The President's major innovations are the formation of a national insurance pool to improve insurance protection in inner cities; guaranteed loans for developers of new towns; and a change in the urban renewal process permitting planning and execution to proceed segment by segment.

The President, in his message, called his program "a charter of renewed hope for the American city." Others, however, were not so generous. The *New York Times*, for one, called it an "unambitious status quo statement."

"It is not a program really put together to confront a crisis," the *Times* continued. "The recommendations in this message point helpfully in the right direction, but until the nation's leadership faces up to the dimensions of the urban crisis, the complex of housing-land-city problems will remain intractable."

A STINGING REBUTTAL

Just ten days after the President delivered his urban package, the Presidentially appointed Commission on Civil Disorders issued its

(continued on page 93)

DOWN- TO- EARTH TOWER

Rising straight up from a plaza punctuated by a bright Noguchi sculpture, the neat, dark shaft of SOM's Marine Midland Building has the well-groomed look of a New York banker—and the same financial logic.





The Marine Midland Building—unlike other New York office buildings designed by Skidmore, Owings & Merrill—was not conceived as a corporate showplace, but simply as a rental office building. Gordon Bunshaft, the partner in charge of its design, is gratified that a client in the hard-boiled New York rental market came to SOM.

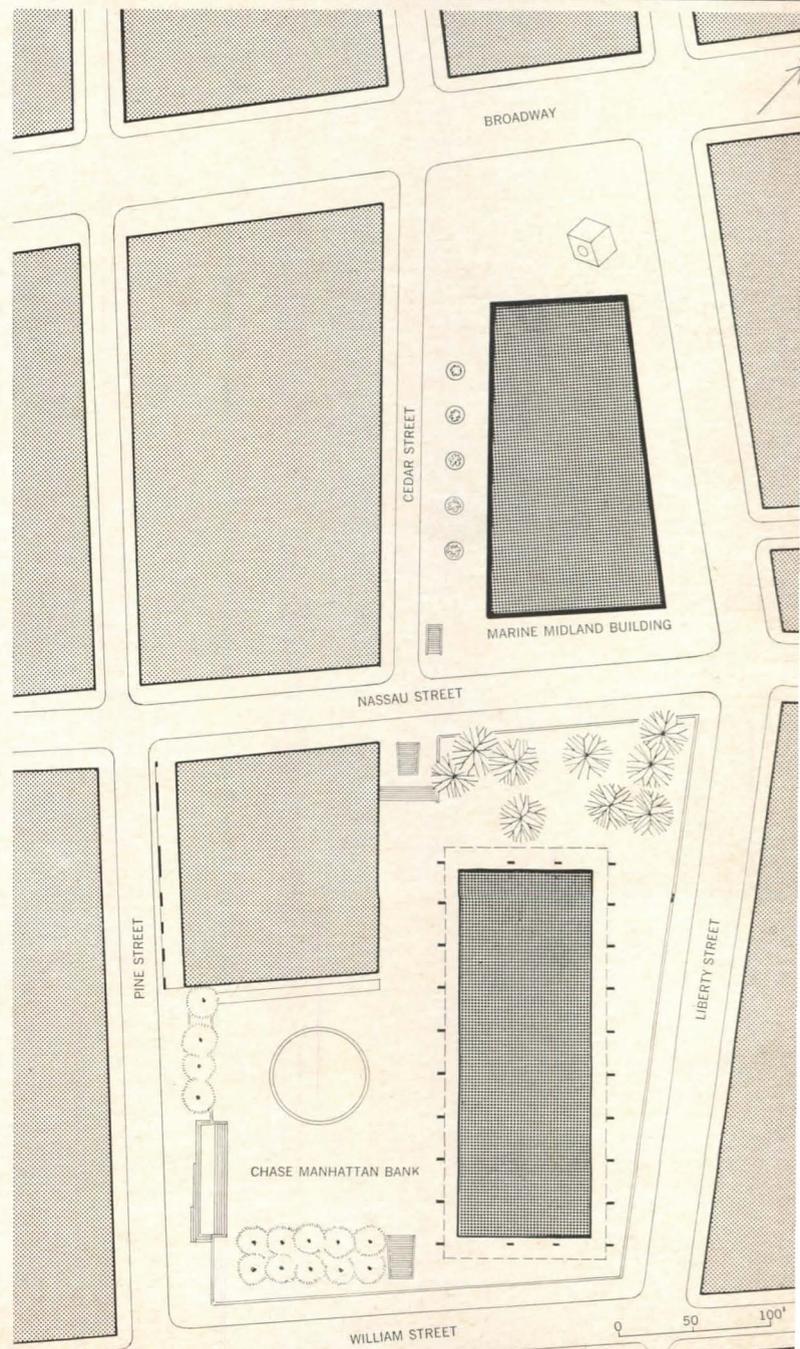
He speaks of Harry Helmsley, head of the company formed to construct this building, as “one of a growing group of commercial developers who want something more than the cheapest space—who realize that they can make money with good architecture.” Although there are no statistics to prove the point, prospective tenants—at least for prime locations—seem willing to pay an additional 25 to 50 cents per sq. ft. for space designed by a firm of SOM’s caliber.

When it came to the *amount* of rentable square footage, the client had to be hard-headed. He had to obtain the maximum rentable floor area, since even the maximum area allowed on this small, odd-shaped site was not very great—considering its very high cost.

By leaving roughly 60 per cent of the ground-level area open, the architects were able to obtain a 20 per cent increase in the allowable floor area ratio, raising it from 15 to 18. But New York’s current (1961) zoning ordinance also includes setback requirements which, in the words of Associate Partner Roger Radford, “tend to force the mass of the building toward the center of the site.”

As a result, the Marine Midland tower stands roughly in the middle of the site, but not exactly. The setback was kept to a *minimum* on the east, where the site faces the Chase Manhattan plaza, and on the north. To the south, where the flank of 120 Broadway rises straight up 33 stories, the setback was fixed to leave 70 ft. clear between the opposing facades. As large a plaza as possible was opened up at the west end of the site, where light and space were badly needed.

Rectangular building plans were considered early in the de-



New open spaces have been carved out of the dense core of Manhattan’s Financial District for the plazas surrounding Marine Midland. The south plaza (left), from which the building is entered, will hopefully be expanded (by closing Cedar Street) to form a 70-ft.-wide promenade leading east toward the Chase Manhattan plaza (background, left, and top right). The entire city block across Broadway from Marine Midland will be cleared as a “plaza.” The City Planning Commission recently agreed to allow this open space to be considered as part of the site in computing allowable floor area for the U.S. Steel building (also to be by SOM), which will be north of the cleared block, across Liberty Street.



sign phase, but it soon became clear that only a trapezoidal shape would accommodate the maximum interior floor area and leave acceptable open spaces around the building. Aligning the long facades with streets to the north and south yielded open spaces that were unified visually and workable for circulation.

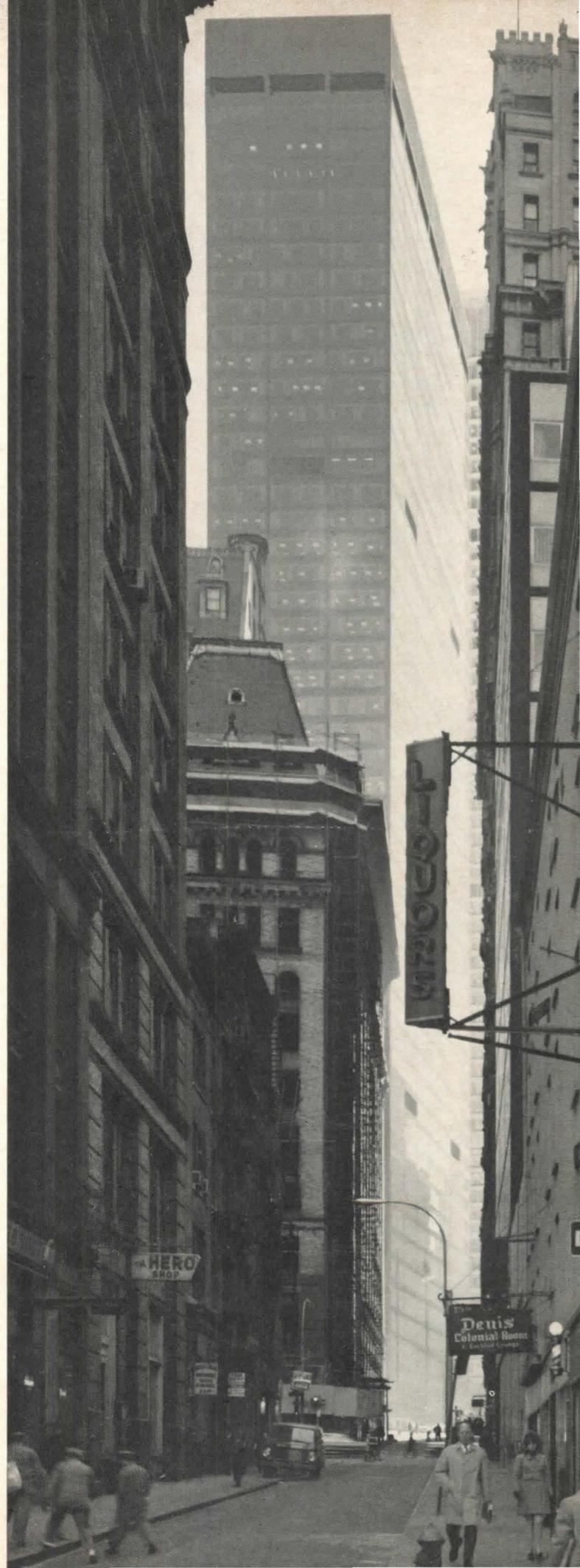
Big bright sculpture

Isamu Noguchi's red-painted rhombohedron (cover and page 37) stands at a spot on the Broadway plaza where a sculpture was indicated in early drawings. Its evolution from a smaller, figure-like form into a 28-ft.-high steel construction was a process of true collaboration between artist and architects, says Gordon Bunshaft, who has worked closely with Noguchi on many sculptures and gardens. The sculptor developed the vertically elongated "cube" shape, which subtly echoes the slenderness of the building's facade and the unexpected angles of its plan; the architects then persuaded him to enlarge it to the volume of a small house. The steel frame of the sculpture had to be calculated by a structural engineer; details of its welded skin and the polished aluminum tunnel through it were worked out on SOM's drafting boards.

Standing just to the west of the firm's famous Chase Manhattan Bank building (July '61 issue), Marine Midland appears at first to be similar in form, but directly opposite in surface treatment. The sheen of Chase's curtain wall and the articulation of its projecting columns is countered by Marine Midland's flat skin of somber bronze-tinted glass and black, matte-finished aluminum (which actually looks dark gray).

Why such a difference in wall treatment between adjacent office buildings by the same architects? When such a tall, narrow tower is constructed on an investor-builder's budget, there is no money available for the intricate details required for exposed structural columns. Since the columns had to be inside the wall, SOM decided to make a point of flat surfaces. As for

Among its older neighbors, the dark Marine Midland tower (center, left) looks unobtrusive, although it rises 52 stories to an emphatically flat top. The bright metal slab of SOM's 1961 Chase Manhattan Bank (far left), on the other hand, still looks brashly new. Ernest Flagg's elegant Singer Tower (near left), the world's tallest building when it was completed in 1906, is now coming down to make way for the U.S. Steel building (July/Aug. '67 issue). Several of Lower Manhattan's narrow, crooked streets point directly toward Marine Midland (right).





the dark matte finish, the contrast was probably deliberate: a little brother to Chase in the same shiny finish surely would have looked like a poor relation.

Internally, the trapezoidal plan was found to be as "rentable as a rectangle, since the odd angles could be absorbed in the central core, which is full of miscellaneous small elements in any case. Most of the office space could be in two strips to the north and south—with uniform depths and rectangular grids for lighting, etc.—which pose no serious interior layout problems.

The tenant as client

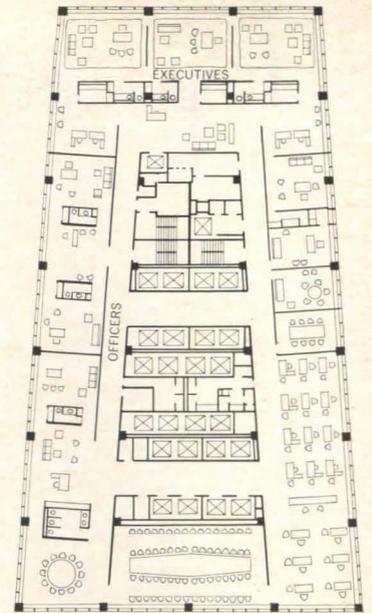
The building was in the design stage when it was decided that Marine Midland Grace Trust Company (one of New York's many banks with strange merger-born names) would be the major tenant. The bank occupies two levels below grade—extending under the entire site—as well as ten floors above grade. The bank wisely commissioned SOM to design its own interiors.

The main banking hall is located—like so many others designed by SOM—in a high-ceilinging second floor. In this case, since the ground floor is largely taken up with the office tower lobby and the truck dock (on opposite sides of the core) the only street-level spaces available for the bank were small areas at the two ends of the building, from which escalators lead up to the banking hall.

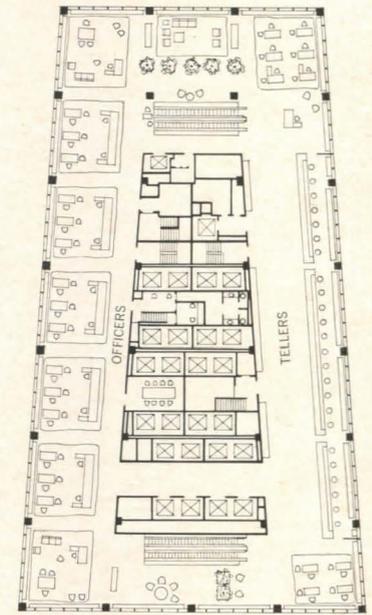
This hall, with its easily comprehensible layout and broad circulation spaces, is a fine illustration of the disciplined elegance of SOM interiors. A careful inspection of details reveals the care that went into reconciling the geometry of the building as a whole with rectangular space divisions and furnishings that had to go into it. Wherever two patterns of paving or lighting meet at an angle, the boundary is neither suppressed nor exaggerated; it is neatly but unmistakably exposed.

Although they have recently been exploring the potentials of concrete systems, SOM-New York turned again to steel construction for this slender tower. The

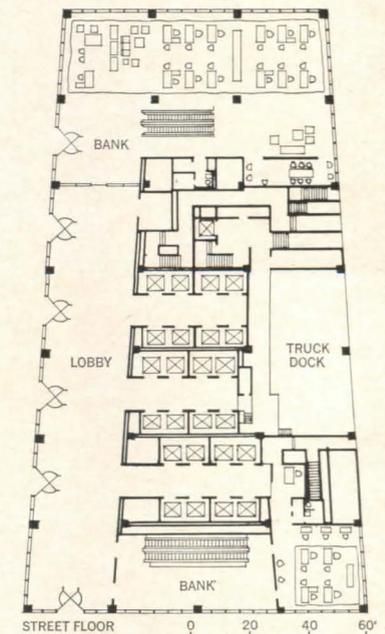
Inside the dark walls on the second floor, the 18-ft.-high banking hall of Marine Midland Grace Trust Co. (left) surrounds the marble-clad service core. On the south side (shown here), 18-ft.-long burl-veneered desks, each seating two secretaries, stand in a row on diamond-shaped islands of bright red carpet that define the officers' areas. Immediately above this hall is the bank's executive floor (plan, top right), which has smaller-scaled but equally elegant SOM interiors.



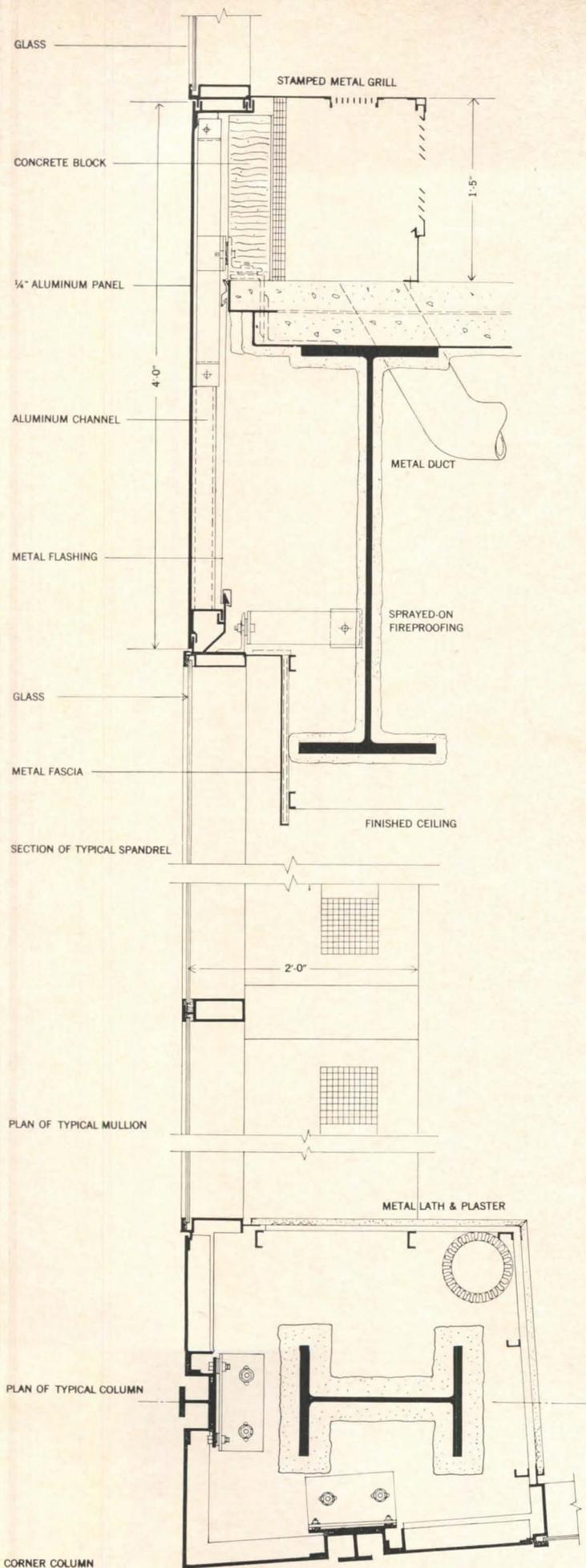
THIRD FLOOR



SECOND FLOOR



STREET FLOOR 0 20 40 60



frame, laid out in 30 ft. by 30 ft. bays (with angular variations), is probably the tallest all-welded steel skeleton erected to date. It is interesting to note that the structural bays here—not remarkably large by today's standards—are greater in area than those at Chase Manhattan, which were considered large in 1961.

Unruffled facade

Once the structural frame had been laid out, SOM determined to express it on the outside in the most direct way possible. The sheer facades were clad from bottom to top with a uniform skin of matte-finished black anodized aluminum. It was made as smooth as possible, both to emphasize the unity of the building form and to avoid any conflict between rectangular surface projections and the underlying angles of the building.

The one component that made the smooth walls possible is the rolled aluminum spandrel panel, which could be obtained in lengths of 30 ft. (and in a maximum width of only 4 ft., which became a limiting dimension). Using this rolled spandrel, it was possible to eliminate the continuous vertical mullions of most metal curtain walls (Chase Manhattan's, for instance), a major purpose of which is to cover joints in the spandrels.

The Marine Midland walls have, in fact, only two minor deviations from the absolute plane: the 3/8-inch projection of the aluminum window trim (unavoidable if the glass was to be in the main wall plane) and 2-in.-deep grooves at each column for the window washing rig.

To a greater extent than any of SOM's earlier New York office buildings, Marine Midland was predetermined by zoning constraints and market-place arithmetic. By expressing these factors in the plainest possible building form, detailed with the precision for which it is famous, SOM has produced a work that ranks with the firm's earlier corporate showplaces—Lever House, Union Carbide, Chase Manhattan, and Pepsi-Cola—as one of the handsomest office buildings in the U.S.A. —JOHN MORRIS DIXON

FACTS & FIGURES

Marine Midland Building, 140 Broadway, New York, N.Y. Owner: 140 Broadway Co. Architects: Skidmore, Owings & Merrill. Partner in charge of design: Gordon Bunshaft. Partner in charge of administration: Edward J. Mathews (retired). Associate partners: Roger Radford (design); Allan Labie (coordination); Davis B. Allen (interiors). Engineers: Office of James Ruderman (structural); Jaros, Baum & Bolles (mechanical). Consultants: Chermayeff & Geismar (graphics); Isamu Noguchi (sculpture). General contractor: Diesel Construction (division of Carl A. Morse, Inc.). Building area: 1,000,000 sq.ft. (gross). Cost: not available. PHOTOGRAPHS: Cervin Robinson.





RFK'S FAVORITE GHETTO

The aerial view at left (indicated in black on the sketch map below) encompasses only a tiny fraction of Bedford-Stuyvesant, which sprawls across 500 blocks of central Brooklyn. The ghetto houses some 450,000 residents, 92 per cent of whom are Negro or Puerto Rican.



On December 10, 1966, the residents of Bedford-Stuyvesant learned that their slum ghetto was to be singularly blessed. On that day, Senator Robert F. Kennedy (Dem., N.Y.), flanked by a host of approving notables, announced that the 500-block, predominantly Negro section of Brooklyn was to become the testing ground of a bold new kind of experiment in slum rejuvenation, in which the people of the community, in concert with political and business leaders, would guide and control a massive attack on their own economic, social, and environmental ills.

Today, nearly a year and a half later, Bedford-Stuyvesant's afflictions loom larger than ever; and many of its 450,000 residents are wondering, resentfully, whether the Kennedy experiment is merely the latest in a long line of hollow promises that repeatedly have been held out to this and other ghettos across the country. A review of the program to date—its people, processes, and results—does not resolve that question, but it does yield significant clues about the nature and magnitude of what it would take to produce meaningful advances in this or any other urban slum ghetto.

Bedford-Stuyvesant is the country's largest ghetto. If it were a city unto itself, rather than a section of a borough of a metropolis, it would be among the 30 most populous in the nation—larger than Fort Worth and Louisville, nearly as large as Minneapolis and Cincinnati. Eighty per cent of its residents are Negro, 12 per cent are Puerto Rican, and only 8 per cent are "others."

Bedford-Stuyvesant's afflictions have received far less public notice than have those of its more famous sister, Harlem, though it matches or outstrips that ghetto-symbol in nearly every negative factor. "Bedford-Stuyvesant is more depressed and impaired than Harlem—i.e., fewer unified families, more unemployment, lower incomes, less job history," notes a report by New York University's Graduate School of Social Work. "Furthermore, the Bedford-Stuyve-

sant youth has a vastly lower degree of self-esteem than does Harlem youth, with much less hope for his future." As a result, 80 per cent are high-school dropouts.

The ghetto's other statistics are equally grim. It has the nation's highest infant mortality rate (39 per 1,000); 27 per cent of its families have annual incomes of \$3,000 or less; nearly a third of its work force is either unemployed or "sub-employed" (working for a less than adequate wage); and 36 per cent of its families are without male heads.

Physically, much of Bedford-Stuyvesant appears better off than Harlem, where grim tenements and highrise public housing projects dominate the scene. It has many graceful, tree-lined streets of handsome three- and four-story brownstones, once-elegant mansions, and townhouses. The facades in these sections, notes the *AIA Guide to New York City*, "create a magnificent townscape." But they are oases in a vast desert. Most of Bedford-Stuyvesant is overwhelmingly bleak, monotonous, and desperately decayed.

Second time around

The launching of Kennedy's program for curing these ills was auspicious indeed. Alongside Kennedy on the stage of the P.S. 305 auditorium were U.S. Senator Jacob K. Javits (Rep., N.Y.), New York City's Mayor John V. Lindsay, assorted U.S. congressmen and state legislators, an impressive cross section of community leaders and, for good measure, Edward J. Logue, then Boston's development administrator, and Architect I. M. Pei.

The aura of good fellowship surrounding Kennedy that day was a dramatic change from the mood that accompanied his previous Bedford-Stuyvesant appearance. Kennedy had toured the area on February 4, and leaders of the community had flatly refused to go along with him. They did, however, confront him at the local Y.M.C.A., where the tour ended. There, with an audience of several hundred residents looking on, they told

the Senator in no uncertain terms that they were fed up with politicians coming through, tut-tutting over the appalling conditions, and then forgetting about them.

"I think it's quite clear after this trip," said a startled Kennedy, "that an overall program is needed, and anything that is done piecemeal will be unsatisfactory." Ten months later he returned to Bedford-Stuyvesant bearing a carefully worked out plan of action.

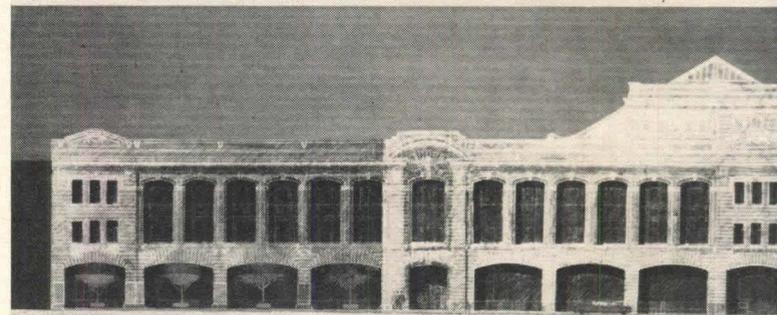
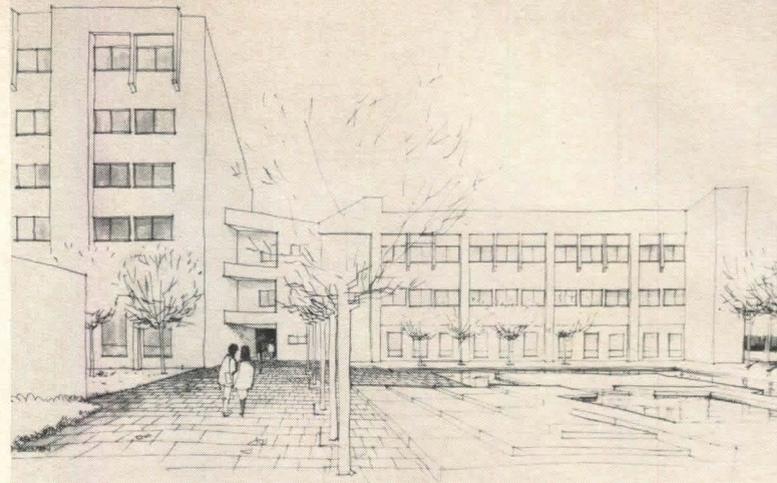
Two-pronged attack

The Kennedy package contained two key elements that combined, in his words, "the best of community action with the best of the private enterprise system." One was the Bedford-Stuyvesant Renewal and Rehabilitation Corp., a nonprofit citizens' group which would prepare and execute a broad, sweeping community-improvement program. The other was the Bedford-Stuyvesant Development and Services (D&S) Corp., a top-level businessmen's group which would provide expert managerial advice to the community and would persuade private capital to invest there.

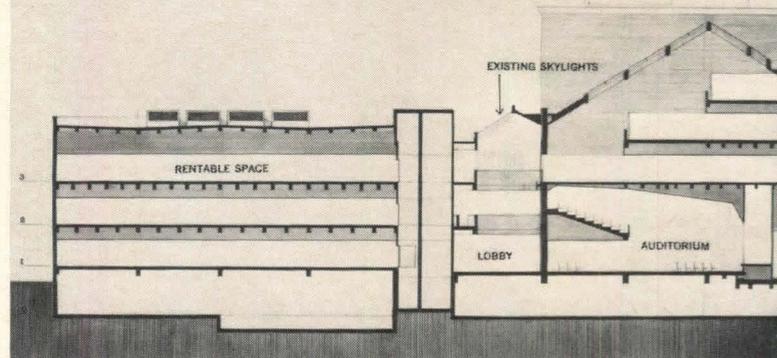
Kennedy and his staff had consulted Bedford-Stuyvesant's established leaders in preparing the program, and the makeup of the community corporation's all-Negro board reflected it. Civil Court Judge Thomas R. Jones, who had represented the area in the state assembly before his election to the bench in 1964, was named chairman. Included on the board were three women—Mrs. Elsie Richardson, Mrs. Lucille Rose, and Mrs. Louise Bolling—all of whom had been in the forefront of numerous community activities.

As for the businessmen's corporation, Kennedy announced that an all-star cast of notables had agreed to serve on its board. Included were Chairman André Mayer of Lazard Frères & Co., investment bankers; Douglas Dillon, former Secretary of the Treasury; William Paley, board chairman of CBS; Thomas Watson Jr., board chairman of IBM; and Philanthropist J.M.

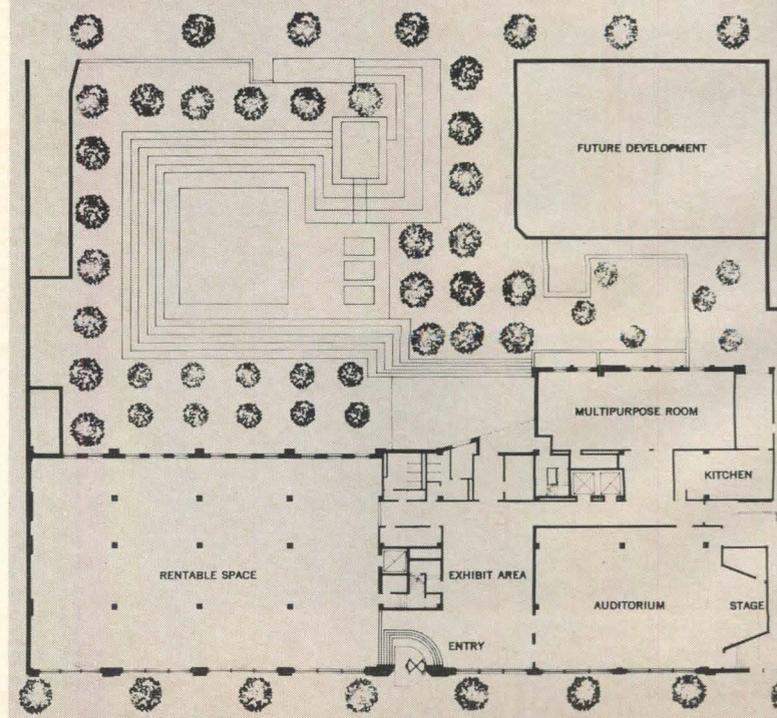
Sheffield Farms, once a milk-bottling plant, is being converted by Architects Fisher/Jackson Associates into a combination community center and headquarters for the two corporations that are carrying out the Kennedy program in Bedford-Stuyvesant. The former warehouse wing of the building (left on section and plan) will become the office area. The high portion, formerly a single space filled with pipes and milk pumping equipment, will contain an auditorium topped by three tiers of community facilities stepped back under the original skylight. The rear of the lot will become a landscaped community plaza with an amphitheater as its focal point (see plan and rendering at top), designed by Landscape Architects M. Paul Friedberg & Associates. The building's original facade of white ceramic tile will be preserved.



ELEVATION



SECTION



GROUND FLOOR

FULTON ST.

Kaplan. Kennedy's name also was on the roster, along with that of his Republican senatorial colleague, Jacob Javits.

Kennedy was deliberately vague about what, specifically, the two corporations would do. That, he said, would be up to them. But he revealed that impressive beginnings had already been made. Edward Logue, he announced, would put his well-known talents to work, on a part-time basis, as head of a task force charged with drawing up a master redevelopment plan for the area. And I.M. Pei, who had earlier been selected to design the John F. Kennedy Memorial Library at Harvard, would develop a number of early-priority design proposals for improving the physical environment of Bedford-Stuyvesant.

Borrowing a phrase from Winston Churchill, Kennedy warned his audience at P.S. 305 that the battle plan unveiled that day was "not the end—nor even the beginning of the end" of Bedford-Stuyvesant's problems. "Indeed," he said, "it is perhaps not even the end of the beginning. But it is a beginning. Bedford-Stuyvesant is on its way. That way . . . is not easy. It is complex and complicated and fraught with difficulty. Ahead of us are not weeks or months of work, no quick or easy triumphs—but long years of painful effort; with many setbacks; with constant temptations . . . to give up, to stop trying."

Leadership split

The first of the "many setbacks" predicted by Kennedy was already in the making. It involved the board of directors of the community corporation, which had split into rival factions almost from the moment of its formation. By April of 1967, four months later, the feud had reached such proportions that Judge Jones resigned as chairman and, with the blessings of Kennedy, Javits, and Lindsay, formed a totally new group, which he named the Bedford-Stuyvesant Restoration Corp.

Jones accused his fellow board members, especially the female contingent, of thwarting his ef-

forts to expand the board. "I sought to broaden the board from 17 to at least 50 people," he said, "representing broader elements of the community who sought participation—representatives of CORE, the Puerto Rican people, some of the larger churches, representatives of some unions, fraternal organizations, and youth groups."

Power play

Jones's adversaries, most of whom were prominent figures in the Central Brooklyn Coordinating Council, a federation of more than a hundred local organizations, claimed that they also had wanted to expand the board, but that Jones had refused to give them a voice in the selection of new members. They accused Jones of being Kennedy's front man in a power grab to take established community leadership away from the council—the same group that Kennedy had consulted in drawing up the plans for his experiment.

On the night of April 15, the council staged a protest meeting at P.S. 305 under the joint sponsorship of Youth In Action, the local antipoverty agency, which also felt left out in the cold by Jones's maneuver. The meeting attracted a raucous, overflow crowd bearing dozens of makeshift signs reading "Go Home, Mr. K, Because We Don't Need Your Kind of Help," "Black Power Is Black Togetherness and You're Not With Us, Uncle Tom Jones," and "Stop Making Deals With Outsiders Against Your Brothers." Neither Jones nor Kennedy showed up.

"It was the women on this side and Jones on that side," says Pat Carter in describing the feud. Carter, an insurance broker, had managed Jones's past two election campaigns and had been offered a seat on the new board, which he turned down. "Jones's tactic," Carter says, "was to accuse the ladies of being a matriarchy that was deballing the Negro men—making them subservient. He did it skillfully. He aroused feelings against people who had worked many years in the community."

Jones's action, whatever its mo-

tives, created a split in Bedford-Stuyvesant's leadership structure that has yet to be fully healed. The "old corporation," which continues to function, maintains a loose liaison with the Restoration Corp. on some projects, but generally the two factions go their own separate ways. Both sides agree that their relationship probably would be far more strained than it is if it were not for the presence of Franklin A. Thomas, executive director of the Restoration Corp.

Thomas, who was hired shortly after the new corporation's formation, has displayed a genuine talent for cooling passions and inspiring respect from every quarter. In order to take the job, he had to give up his post as a deputy police commissioner, one of the highest city offices held by a Negro. "I had a good job and an assured future," Thomas says. "It was not easy to decide to leave it. But there was a need to take the local situation and give it some leadership. The coalition that had been formed seemed to be breaking up locally. A great deal of publicity had been given to the undertaking and, at the time, it seemed that the product might not survive."

Rescue grant

Thomas' effective leadership is one reason the program has survived, but another, more important one is the injection of cold, hard cash. It came last July in the form of a \$7-million Special Impact grant from the Department of Labor (plus \$700,000 for administration put up by the Ford Foundation). The two-year grant was awarded in response to an impressive 173-page application (submitted jointly by the Restoration Corp., the businessmen's D&S Corp., and the City of New York) which proposed a host of coordinated projects for developing jobs for Bedford-Stuyvesant's unemployed, attracting new business into the area, and making a start on physical rehabilitation. Most of the money has yet to be spent, but the grant already has financed the lion's share of the Kennedy program's visible accomplishments to date.

The most impressive of these is a \$526,000 "exterior renovation" project carried out last summer. It involved a total of 272 neighborhood youths who were recruited, without regard to their skills or police records, to spruce up the fronts of some 400 four-story houses in an 11-block area. The youths were paid \$1.70 an hour for their work, and were trained in the required skills by 34 journeymen, most of whom were also residents of the area. All that was required of the homeowners was a \$25 "good faith" payment and an agreement to keep their sidewalks swept and to maintain at least two garbage cans. In return, each received an average of \$325 worth of repairs.

Bridging the gap

The project's impact on Bedford-Stuyvesant's mammoth housing and unemployment problems has been insignificant, but its sponsors feel that its symbolic effect has made it more than worthwhile. "What we wanted to do was to bridge the credibility gap," says Lewis Douglas, deputy director of the Restoration Corp. "In any program of this sort, the people are usually presented with long-range plans but with nothing that will immediately effect their lives."

Another project, just now getting under way, will give new life to the old, abandoned Sheffield Farms milk-bottling plant in Bedford-Stuyvesant's shabby commercial area. The renovation (see opposite page), designed by Architects Fisher/Jackson Associates, will provide an auditorium, meeting rooms, outdoor amphitheater in a landscaped plaza, and other much-needed community facilities. It will also provide new staff headquarters for the Restoration and D&S corporations, both of which are currently operating from outside Bedford-Stuyvesant: Restoration from the 16th floor of the Granada Hotel in Downtown Brooklyn, D&S from a Madison Avenue suite in Midtown Manhattan where it is surrounded by the nation's largest concentration of corporate power.

The major purpose of D&S,

THE LOGUE APPROACH

Edward Logue, Boston's former development director, headed a team of planners and architects which drew up the proposed master plan for Bedford-Stuyvesant shown at right. In scale and scope, it typifies the kind of renewal approach for which Logue has become famous. The plan calls for a massive physical restructuring of the entire 500-block section of Brooklyn (outlined area), including a huge new development corridor slicing lengthwise across its center and a revamped system of streets and walkways.

The two-block-wide corridor (diagonally hatched area) is conceived as a giant "community heartland" for Bedford-Stuyvesant. It would be a kind of linear garden city with clusters of multiuse development strung like beads along a continuous strand of landscaped open spaces. The biggest of these clusters, called "satellite cores," would terminate the corridor at each end (1 on plan). They would be high-density, multiuse platform developments built on air rights over existing railroad tracks. A third major core, at the bend of the corridor (2), would be a civic and business center for the community, containing government and commercial offices, housing, and some retail facilities. Distributed along the length of the corridor are five separate subcores (3), each for a specific field of interest (arts, education, health, sports, social services).

Two other community centers are included in the plan. One would be housed in a reconverted milk-bottling plant (4 and page 48); the other would be a new multiuse facility (5) serving the blocks farthest away from the corridor development.

The extensive network of landscaped pedestrianways (crosshatched on plan) is based on the assumptions that Bedford-Stuyvesant has more through streets than it needs, and that the area's excessively long blocks are a deterrent to free pedestrian movement. Thus the pedestrian network is a combination of two interconnected systems: (a) a series of "superblocks," which are formed by creating traffic-free "parklets" in the two interior streets of each three-block section; and (b) a series of north-south walkways cutting through the centers of the long blocks. The superblock concept will soon be applied in two small demonstration projects (6 on plan and page 53).

The Logue team had intended to use this plan as the basis for community discussion leading to a detailed working plan, but the project was terminated after the first phase. At present, the only planning project being carried out in Bedford-Stuyvesant is for the Fulton Park Urban Renewal Area (dotted outline).





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Map labels include: COOPER PARK, LINDEN HILL CEMETERY, ANAWITH CEMETERY, BUSHNICK PARK, QUEENSBROOKLYN, TRINITY CEMETERY, LINCOLN TERRACE PARK, and various street names like METROPOLITAN, LONG, and EASTERN PARKWAY.

of course, is to prevail on these corporate giants to invest some of their considerable assets in Bedford-Stuyvesant, but so far it has had rather small success. After nearly a year and a half, it can point to only one significant result: the establishment by several New York banks of a \$100-million mortgage pool for the exclusive use of Bedford-Stuyvesant's residents. D&S can also take credit for persuading Mobil Oil Co. to award three franchises to local black residents, and for Elzee Metal Products Company's decision to reopen the plant it abandoned in the area some years ago—and that's about all.

It is not that D&S has not been trying. Its board members and staff have buttonholed and cajoled businessmen all over the country, but so far they have been met by a solid wall of disinterest and inertia.

A large part of the D&S strategy has involved the making of big plans for dramatic projects in Bedford-Stuyvesant, then presenting them to businessmen as outstanding investment opportunities. Among these are at least three projects that are still waiting for backers to come along: a shopping center designed by Philip Johnson, a community center by James Stewart Polshek, and a combination civic and business center by I. M. Pei. All three are the outgrowth of D&S's first major effort: a planning project which it now wishes it had never undertaken.

Enter Logue

D&S had asked Edward Logue to do for Bedford-Stuyvesant what he already had done spectacularly for Boston and New Haven: draw up an areawide development plan that would form the basis for going after large chunks of federal renewal monies and private investment. To produce the plan, Logue quickly recruited a team composed of Architect David Crane, who had recently worked with Logue on the now-famous report for Mayor Lindsay on New York City's housing and development policies; the planning firm of Raymond & May,

one of whose principals, George Raymond, had been involved in a number of projects in Bedford-Stuyvesant as director of Pratt Institute's Center for Community Improvement; I. M. Pei & Partners; and William R. McGrath, transportation and public works consultant.

Big think

The Logue team, financed by part of a \$1-million grant from the Vincent Astor Foundation, began work on a "crash" basis in February of 1967, and by the following June completed a preliminary plan for Bedford-Stuyvesant. It was no small plan. The Logue team proposed a massive restructuring of the entire area and the construction of a host of new facilities—schools, recreation centers, hospitals and medical centers, community service centers, housing, industrial buildings, and commercial complexes (see pages 50-51).

"Our plan for Bedford-Stuyvesant was not intended to be final," says Logue, "but a framework for thinking and discussion." That part of it never came. Less than a month after it was presented to the boards of the two corporations, the plan was shelved, and the services of the Logue team were terminated.

There are many versions of why the plan was abandoned in midstream. Some say it was so pie-in-the-sky that nobody could take it seriously. Others claim that its large-scale development features aroused suspicions that it was just another "Negro removal" plan. But perhaps the most convincing version, expressed by several sources, is that the Restoration Corp., which by that time had begun to get its bearings under Thomas' leadership, wanted to produce its own plan for Bedford-Stuyvesant, and had different ideas about how such a plan should be carried out.

Restoration has not yet produced its own plan, but it has begun laying the groundwork for one. As a first step, it recently completed a canvass of the area, carried out by residents specially trained in survey techniques, to

find out precisely what the people of Bedford-Stuyvesant need and want most. The results of the survey, which are now being prepared for publication but have not been released, will provide the basis for Restoration's physical plans.

The Vincent Astor Foundation, which saw \$300,000 of its grant go down the drain with the Logue plan, has higher hopes for the projects which the balance of its \$1 million will finance: two "superblocks" designed by the Pei firm with Landscape Architects M. Paul Friedberg & Associates. Each of the two projects will involve three square blocks in which the two interior streets will be closed to through traffic and developed as landscaped "parklets" with new surfacing, sidewalks, lighting, trees, fountains, and playgrounds.

Construction of the first superblock project (see opposite page) is scheduled to begin this spring. Its design has involved nearly ten months of effort, during which the architects and the residents of the three affected blocks jointly worked out every minor detail. "The project could have been built, finished, and dedicated six months ago," says William Chafee, the project architect for Pei's office. "It takes time to organize and communicate with people. But that's the only way to do it right."

"We are not at all confused that beautification projects like this one answer hard-core problems," says Chafee. "But in a very subtle way, they can be effective in providing a focus for the real problems of employment, better housing, etc." The remark could serve as a capsule summary of the Kennedy experiment to date.

Hoping for hope

After a year and a half, the Kennedy program has secured only about \$9 million in operating funds—an average of \$20 for each resident of Bedford-Stuyvesant. Given this grim reality, its planners have had to concentrate on "credibility gap" projects designed to instill a grain of hope in a community

that had despaired of ever seeing any improvement at all.

With another long hot summer looming ahead, it would be premature to credit the Kennedy experiment with the achievement of even that modest goal. There are those, in fact, who fear that it may have the opposite effect. "Piddling around with the painting up of a few housefronts isn't going to give anybody hope," says Pat Carter. "It may actually cause the community to lose hope, to think that the job can't be done, to feel that the only way to get help is to burn the place down."

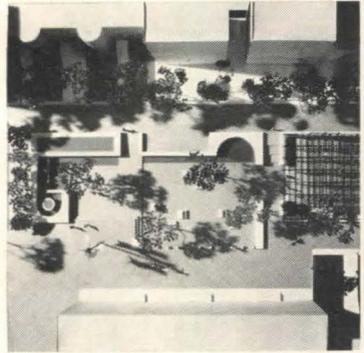
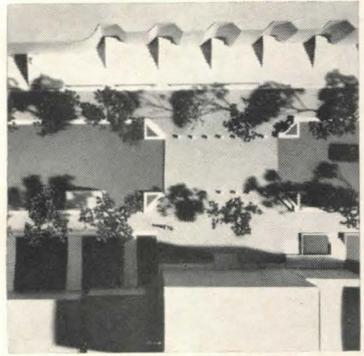
"People who accept gratuities like the Department of Labor grant merely deceive the community," says Carter. "You can't take \$7 million and really make a difference. Not even \$700 million would make a difference."

Not-so-great expectations

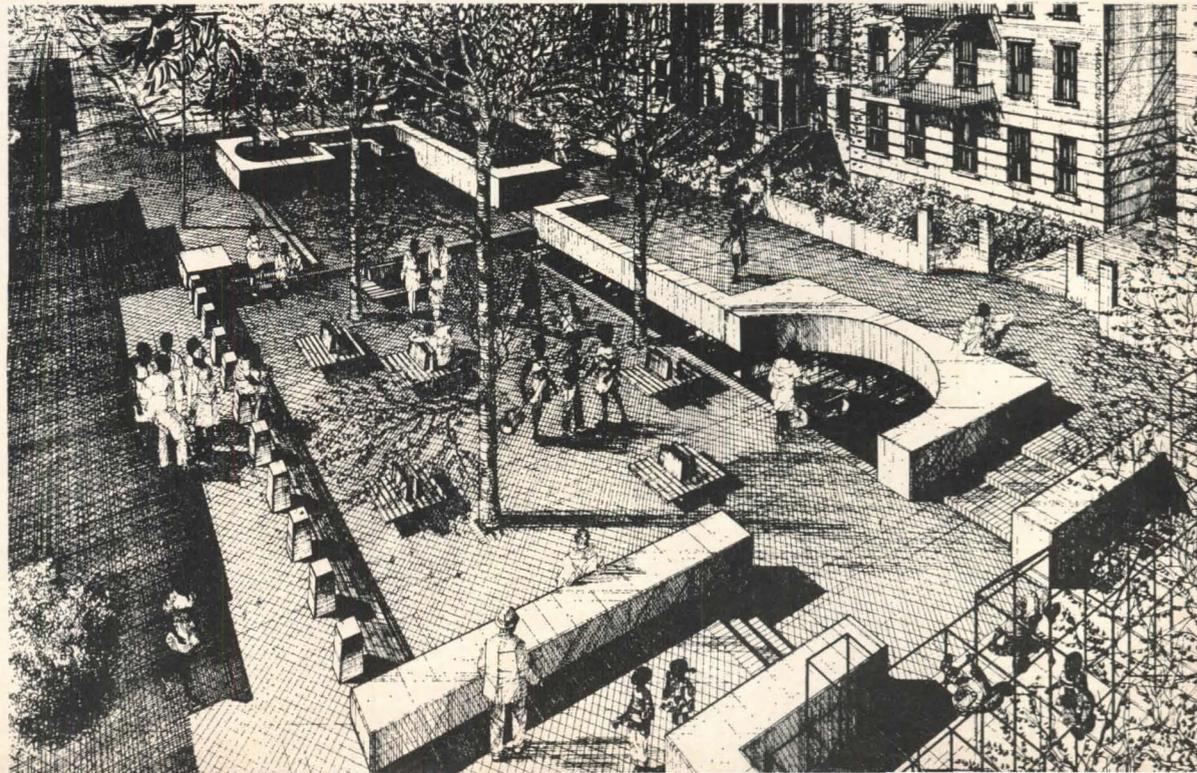
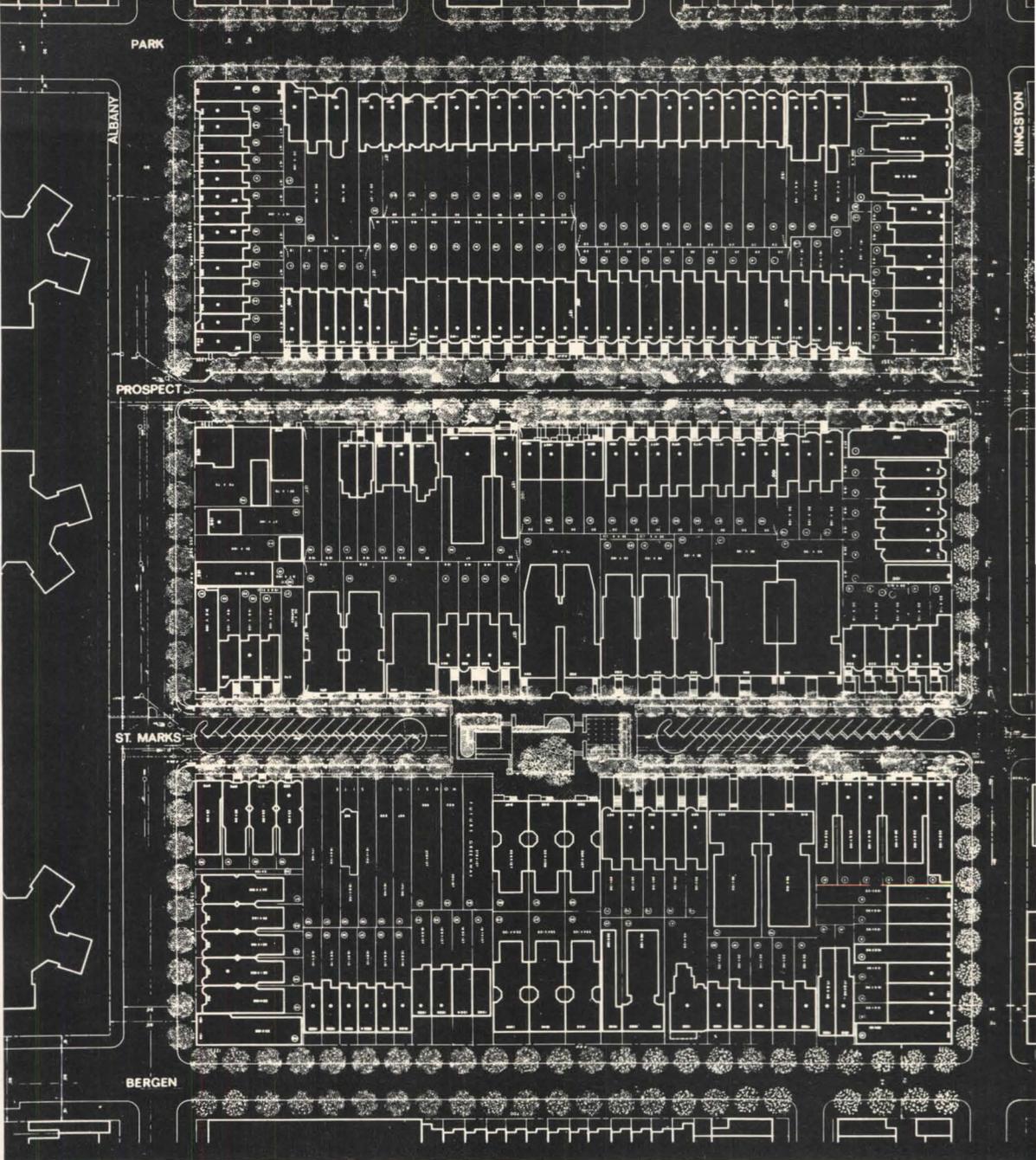
There is little reason for Bedford-Stuyvesant to expect anything like \$700 million worth of aid in the foreseeable future. The community's best expectation right now lies in the fact that most of its worst sections are contained within the boundaries of the Central Brooklyn Model Cities Area, one of three New York City slum ghettos to receive federal approval last November (the others are in Harlem and South Bronx).

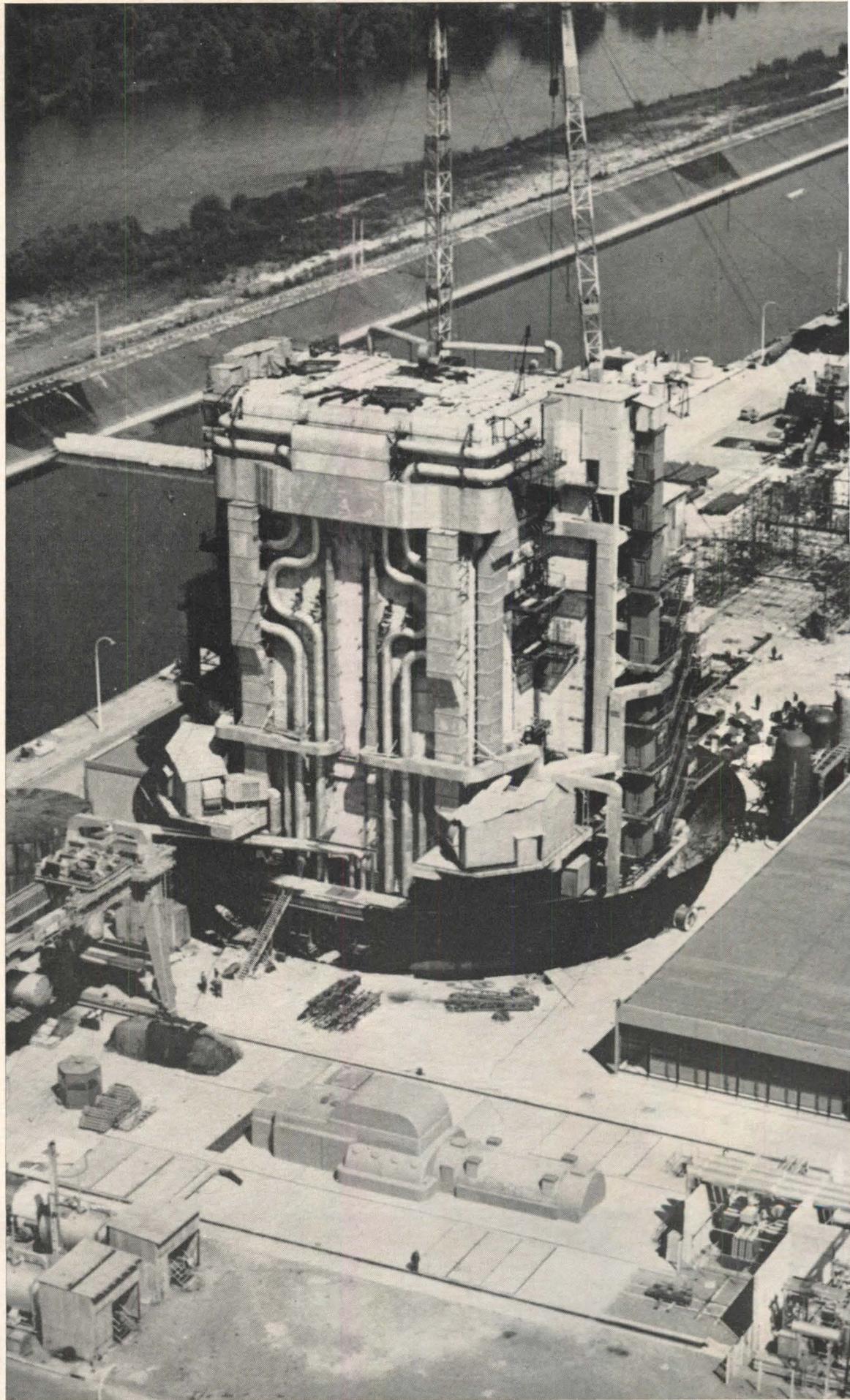
Bedford-Stuyvesant's earliest benefits under this program will be 1,600 new units of scattered-site "vest pocket" public housing and 800 units of middle-income (221d3) housing. Whatever else the Model Cities program may produce for Bedford-Stuyvesant, it probably won't be enough to attack its problems on the scale at which they exist—not unless Congress and the Administration dramatically reverse their current tight-fisted response to the ghetto crisis.

On December 10, 1966, Senator Kennedy said: "Ahead of us are not weeks or months of work, no quick or easy triumphs—but long years of painful effort . . ." Can Bedford-Stuyvesant, and the nation's other ghettos, justly be asked to accept that prospect?—JAMES BAILEY



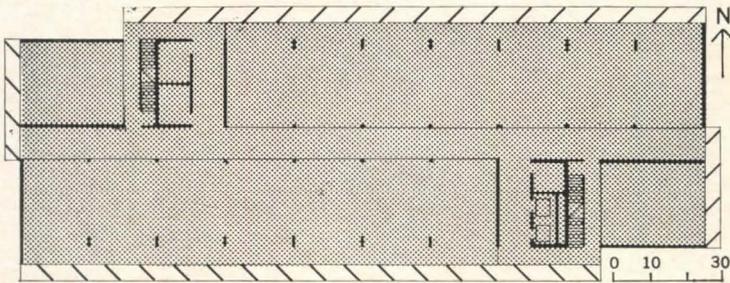
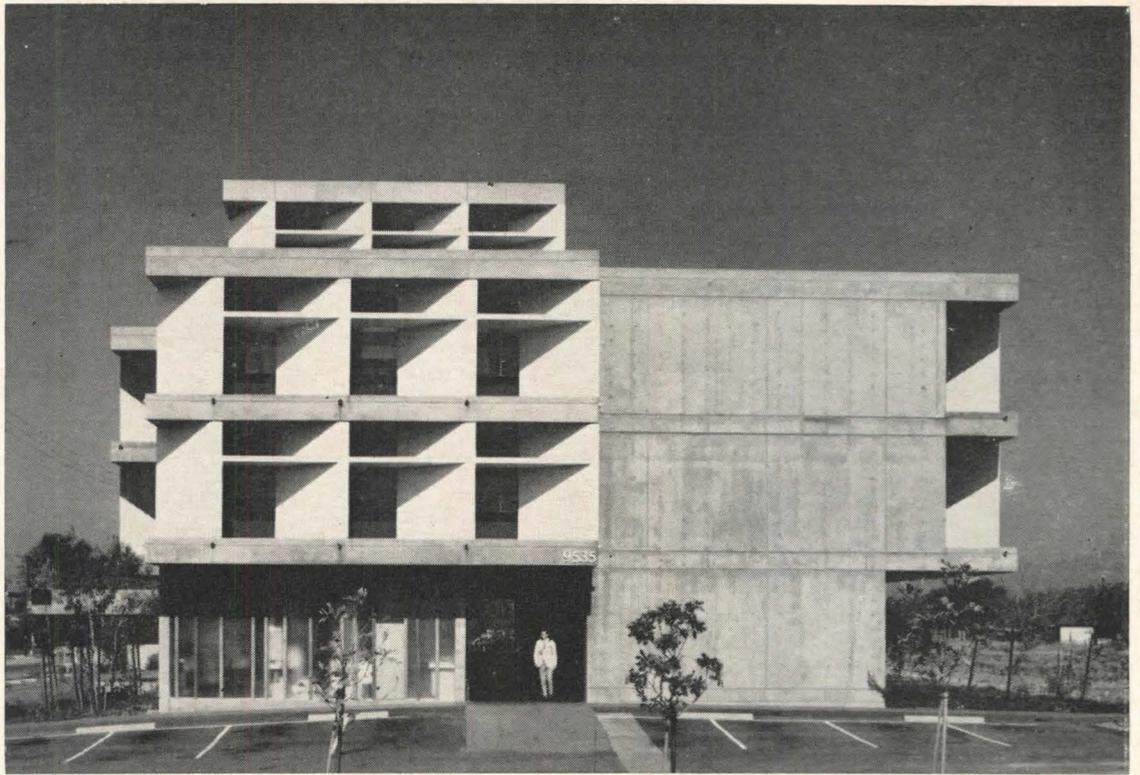
Bedford-Stuyvesant's first "super-block" project will convert two interior streets of a three-block area into landscaped pedestrian retreats. Prospect Place will become a continuous promenade (see plan), with brick paving, new trees, concrete planters and benches, improved lighting, and sculpture. Cars will be permitted to come through, but speed will be discouraged by raised "plazas" (top photo) crossing the street at two points. On St. Marks Avenue, traffic will be eliminated entirely, the two ends of the street will be reserved for parking, and the center will be given over to a small park and playground (see plan and photo above). A major feature of the park will be a recirculating, multilevel "urban stream" (rendering, right). Designed by Architects I.M. Pei & Partners and Landscape Architects M. Paul Friedberg & Associates, the project is the first of two to be financed by a grant from the Vincent Astor Foundation.





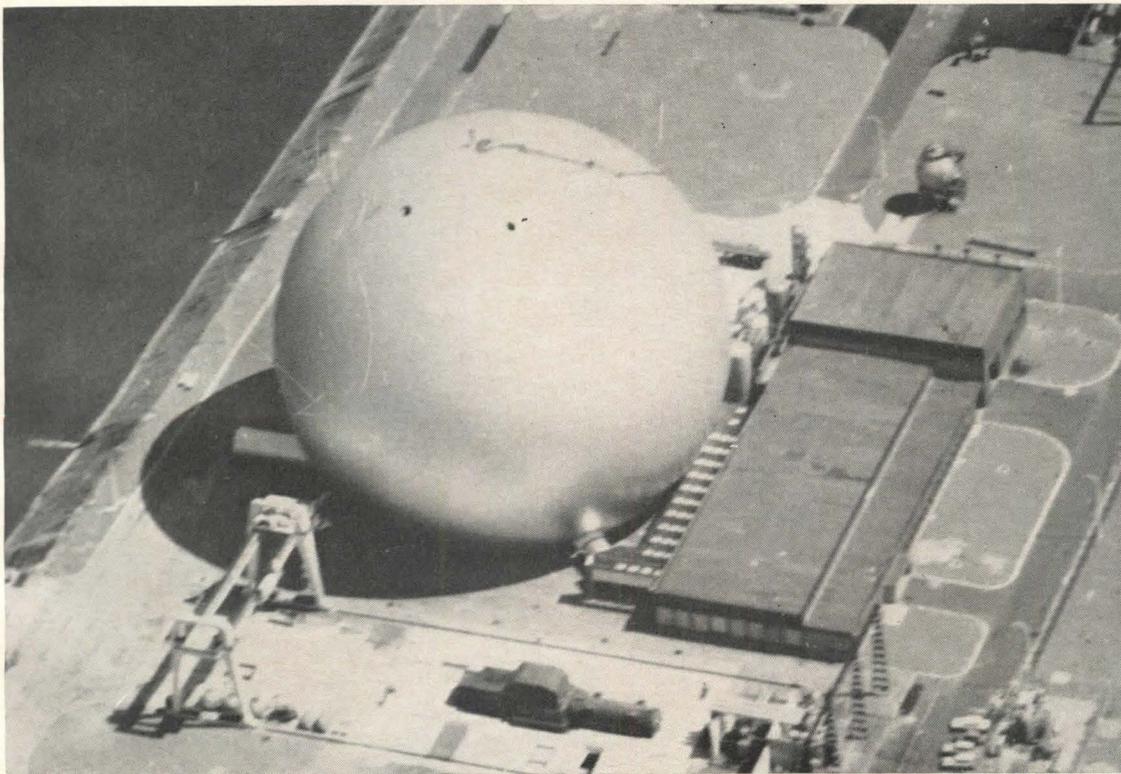
VANISHING ATOM SMASHER

E. D. F. 1, as it is called (Electricité De France), is a muscular atomic pile on the left bank of the Loire. But its visceral vitality, in the view opposite, will be no embarrassment to its elegant dowager neighbors, the châteaux. Architects J. Demaret and P. Dufau have clothed it in a pristine steel bubble (below). The 770-ton bubble was welded and assembled in place to protect its contents: reactor, heat exchangers, fans, filtration, etc. E. D. F. 1 is one of three reactors in a row, each with a different design, producing, in concert, a total electric power of 760 megawatts.



KEEPING ITS COOL

The Northridge Medical Arts Building, by Architects Paffard Keatinge Clay and Dion Neutra, gives elaborate protection from the Southern California sun to offices, labs, and a pharmacy owned privately by a group of doctors. The diagonal louvers of the concrete *brises soleil* frame windows recessed 6 ft. from the facade, and are painted white to contrast with the gray, board-formed concrete structure of the building and to aid natural illumination. The 10½-ft. overhang of the top two stories (above) provides sun protection for the ground floor. Glazed and solid walls alternate around the building (top photo and plan), giving every office one wall of windows.





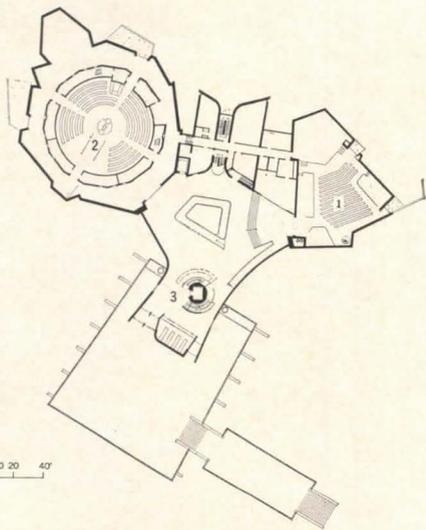
FLATLANDS CAMPUS

The sloping walls of Butler County Community Junior College (left), which make the buildings appear to be all roof, are shingled with clay tiles. The wall-roof effect, the low, horizontal orientation of the campus (near El Dorado, on the Great Plains of Kansas), and even the coloring of the tiles makes a close-to-the-earth statement characteristic of the community it serves. The library (at right in the photo) was sited by the architects, Schaefer, Schirmer & Effin, at the core of the campus, and was raised on columns to emphasize its central importance. Grouped around it are vocational training buildings, a student center, science building and lecture hall, theater, administration building, gymnasium, and dormitory.

TENTING ON THE ADRIATIC

In Italy's devastating floods of November, 1966, many of the beach spas along Venice's famous Lido on the Adriatic Sea were damaged. The beach at the Excelsior Hotel was strewn with the wreckage of wooden cabanas. Architects Ignazio Gardella and Roberto Menghi have created a whole new beachscape for the hotel's bathers. Three hundred cabanas, white canvas tents with pyramidal roofs (right), line the sand in crescent formations. Crescents are named for heavenly bodies; cabanas are numbered. Each tent has a dressing room with wooden floor, a veranda formed by a canvas awning on the ocean side, a table, and deck chairs. The beach was "landscaped" with adobe-tile footpaths and planted with low shrubs. In keeping with the neo-Moorish architecture of the hotel, the tents have the flavor of a Moroccan bazaar.



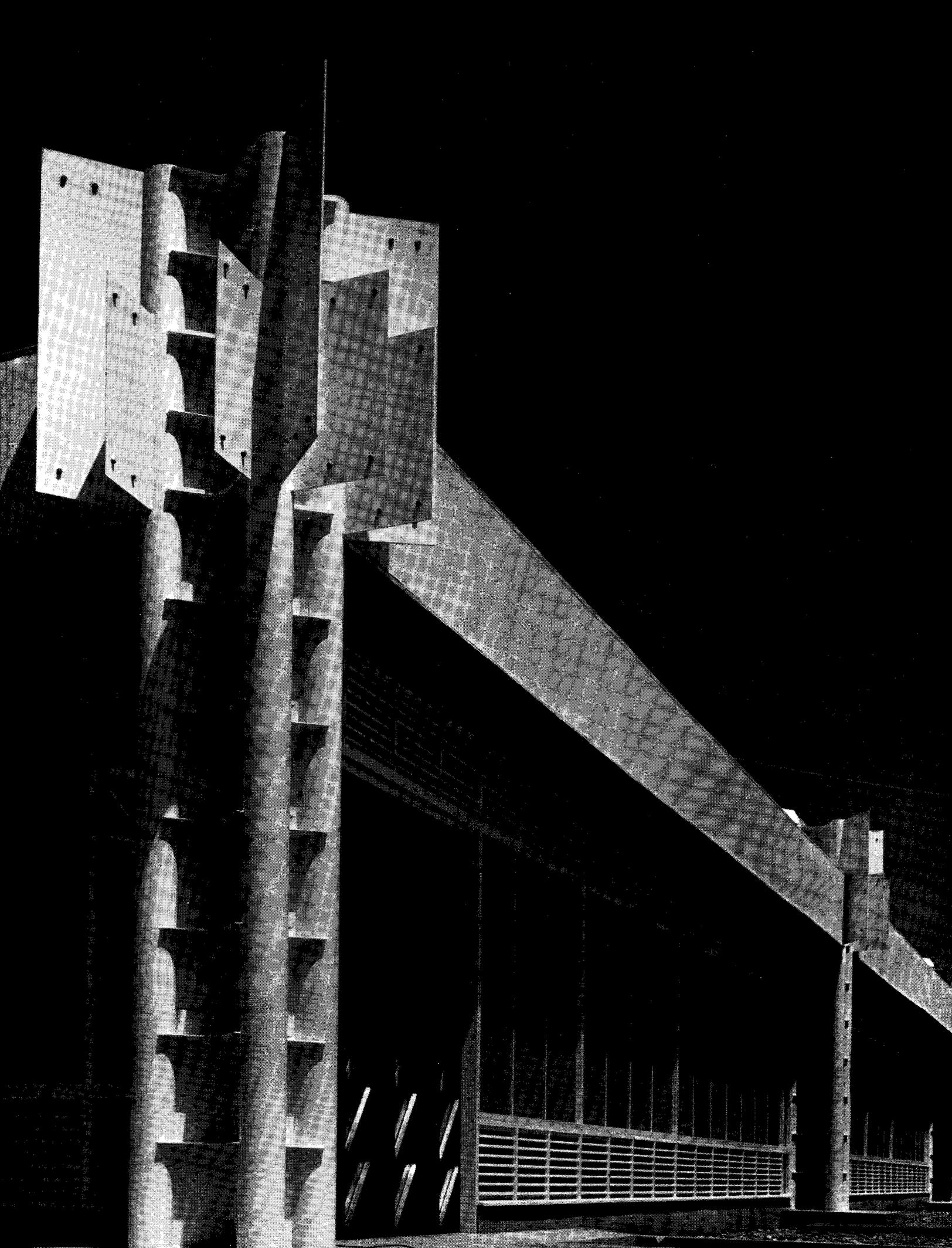


CELESTIAL CENTENNIAL

When the city of Calgary, Alberta, decided to celebrate Canada's Centennial by building a planetarium to symbolize the space age, it held a design competition. The winning architects, McMillan Long & Associates, have described their solution as "truly a bastion of culture." And, indeed, it sits rooted to a rise over the Bow River as if poised for a Philistine attack. The jagged concrete escarpments (top) enclose nothing more beligerent than a lecture hall—also

to be used for dance, musicales, etc.—one of three major areas in the planetarium (1 in plan). This theme, with variations, is repeated in the walls of the stellar attraction, the domed planetarium chamber itself (2). Last, and more restrained, is the observatory deck over the main entrance (above, and 3 in plan). The roof of the observatory retracts electronically at night so that guests may view the real thing through several high-powered telescopes.

PHOTOGRAPHS: Page 54, J. Decker. Page 55 (top), page 56 (top), Julius Shulman. Page 57, Judith Photo Studio.



BIG STEEL TINKER TOY

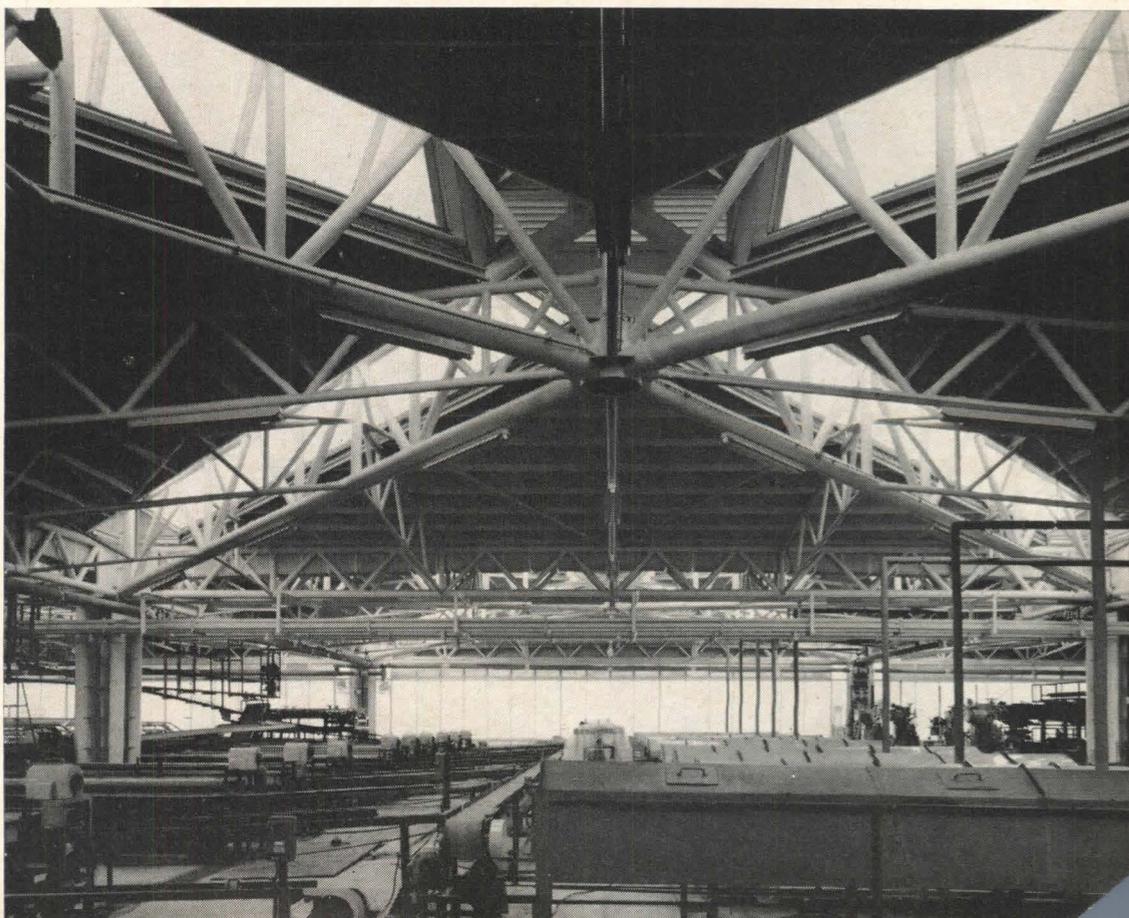
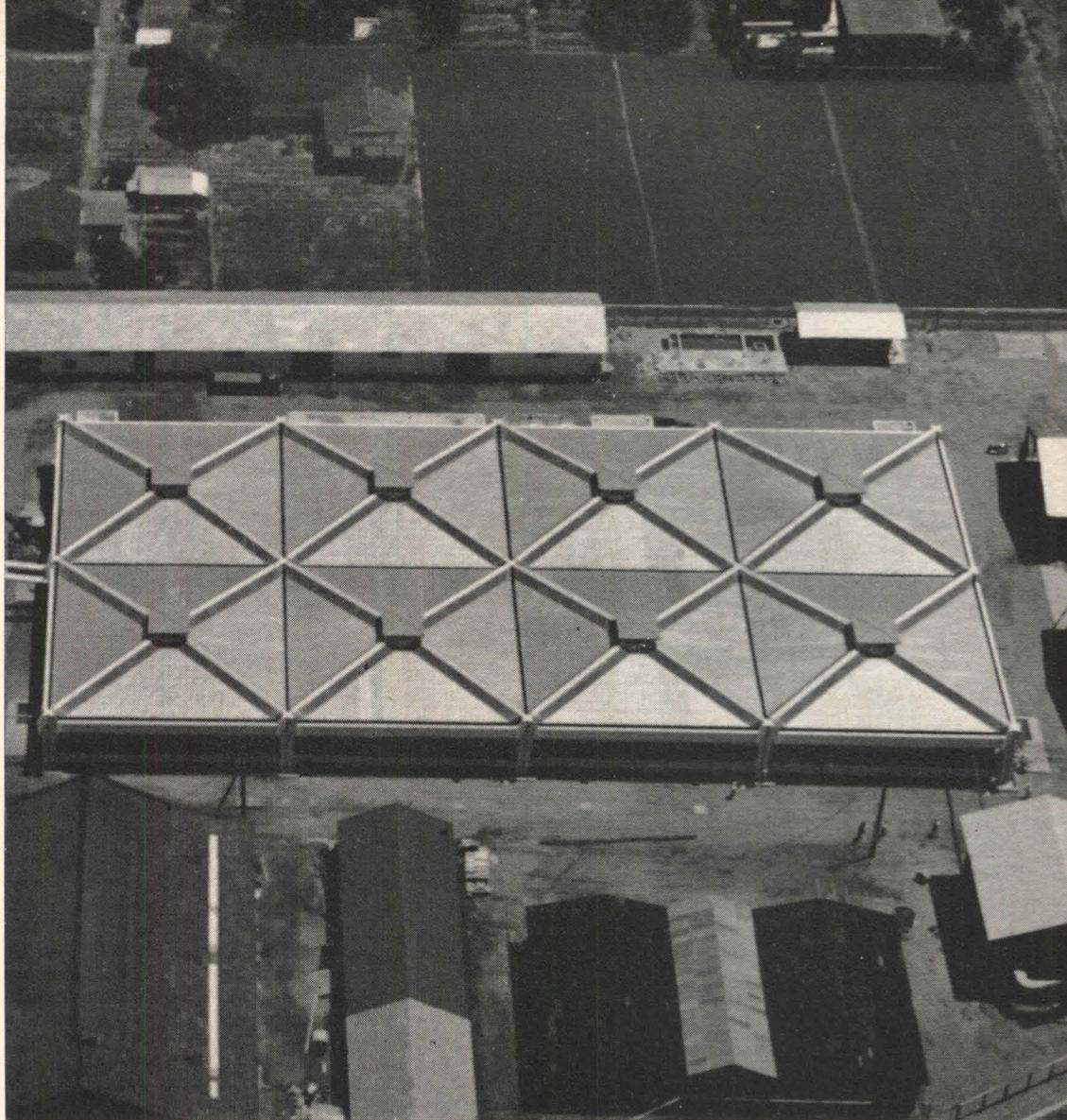
The fruit canning plant shown on these pages was designed as an expandable system, rather than a building in the ordinary sense. Its architect, Noriaki Kurokawa, is one of the leading young "Metabolists" in Japan, and his approach in much of his work to date has been to emphasize systems that permit future growth and change.

In this plant, the notion of future expansion is most dramatically symbolized in the detailing of the exterior columns (left): throughout the building, columns have been built up in clusters of four steel pipes, tied together with horizontal and vertical plates that form the web. Welded to the tops of these column-clusters are gusset plates which, in turn, carry 56-ft.-square space frame units (see photos at right). Along the perimeter of the plant, the exposed columns have been fully equipped with additional gusset plates designed to accept additional space frame roof units if and when the plant is expanded.

In its initial phase, the plant consists of eight 56-ft.-square bays. The column spacing was determined by the size of the equipment now in use in such operations, and all service areas—toilets, entrances, syrup room, etc.—are contained in boxes attached to the perimeter of the building where required.

Although Kurokawa and his fellow Metabolists like to explain their growth systems in elaborately scientific terms, one suspects that, in designing his astonishing column capitals, Kurokawa was not entirely unaware of their esthetic impact.

FACTS AND FIGURES
Nitto Foods Co. Plant, Sagae, Japan.
Architect: Noriaki Kurokawa.
PHOTOS: Osamu Murai.



DESIGNING WITH WIND TUNNELS

BY MICHAEL O'HARE

Much of architecture might be considered in terms of the conflict between man's need for warmth, light, and air, and nature's tendency to provide instead heat or cold, rain or snow, darkness or glare, stillness or wind.

Of all the elements of comfort, the wind has received the shortest shrift. The sun has forced architects to respect it, perhaps because vision depends on it, and architects are visually oriented; in fact, *brises-soleil* and other sun-control devices often are given expressive roles out of proportion to their functional value. Heat, cold, and precipitation all require conscious consideration, but their demands are met almost reluctantly; the expression of mechanical equipment in some recent architecture seems only remotely related to fundamental processes of heat transfer, combustion, air and water movement.

But buildings which strongly express the implications of wind loading, such as the new John Hancock tower in Chicago (Nov. '67 issue) are rare. Even engineers are still learning to cope with the forces that wind exerts on structures; current practice is based on crude conceptions of the wind's behavior. The result, most often, is safe but uneconomical overdesign; occasionally, however, bridges still collapse and windows pop out of tall buildings.

The structural aspects of designing for wind, then, are generally handled adequately, if not with sophistication. But another wind problem—not so easily handled—has recently forced itself to the attention of architects: the unexpectedly high winds generated around the bases of tall buildings. Well-founded complaints are numerous about plazas and street corners that are too windy for comfort—or downright dangerous.

The Prudential Tower in Boston, 1, for example, stands hundreds of feet above the four- and

five-story buildings of Back Bay, in a plaza that has been raised 20 ft. above street level and is partially surrounded by low buildings housing retail shops. Immediately after the development was occupied, stories began to circulate in Boston: everything blew off the counters of a drugstore if its two entrances were open at the same time; a woman was blown off her feet into one of the reflecting pools; innumerable hats were lost and hairdoes ruined; the plaza was abandoned to the trees, which creaked and strained in the gales.

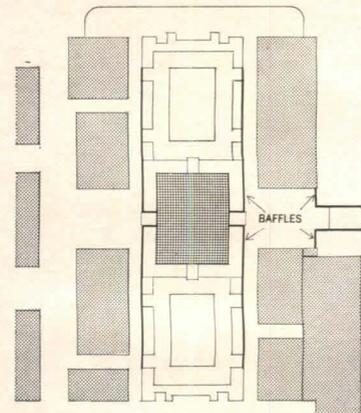
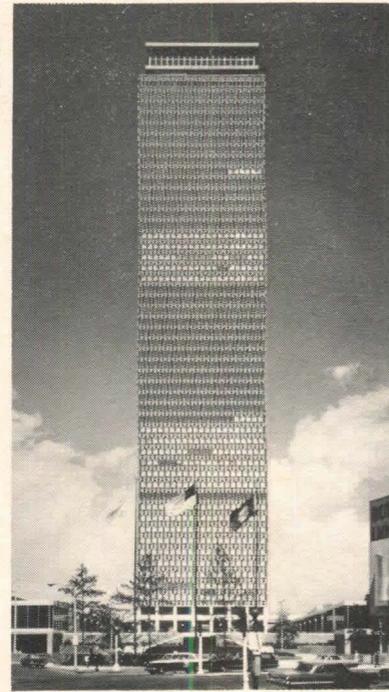
The passageways between towers and low buildings in Harvard University's Peabody Terrace complex are locally famous as "wind tunnels"; Boston University has a corner at the base of the Law and Education tower which everyone avoids because of the localized high wind. Chicago has been famous for years as the "windy city," not just because of its unprotected position on the lakefront, but also because of the surprising wind velocities around the bases of its skyscrapers.

Still another Boston area example, this one quite well known, is the hazardous situation found in the Earth Sciences Building at MIT, where an open entrance passage through the only high-rise building on the campus, 2, induces such strong local winds that, in the words of a member of MIT's physical plant office, the University was "spending the whole maintenance budget for two or three buildings just keeping the hardware on the doors."

Predicting trouble

In England, where a good deal of new construction includes tall buildings among much lower ones, the resultant local wind amplifications have caused the Building Research Station, a government-operated research facility at Garston, to regard such amplifications at ground level equally with structural effects as a problem to be studied in its new wind tunnel. The tunnel was designed especially for studying buildings, and engineers there have been carrying on what is probably the most sophisticated research of this sort.

Mr. O'Hare, who is scheduled to complete his B. Arch. and S. B. degrees at Harvard this June, is a consultant with Arthur D. Little Inc., in Cambridge, working on basic architectural research in wind and other areas.



1

2



Not only can wind impair the use of the spaces around a building, but makeshift remedies have been almost worse than the problems they cure. MIT was forced to close the passage through the Earth Sciences Building during one winter with an unsightly plywood wall, but at least the wind stopped—though at the expense of the building's design concept. The plywood remained for one winter; since then four curved entrance vestibules have been added, which enable visitors to enter without actually going through the open passage. Now the building can be used safely, but the passage (most of the ground floor area) is as windy as ever.

The approach taken to solve the problem at the Prudential Center, after the owner rejected a \$30,000 proposal for a wind-tunnel study as too expensive, has been to install thousands of square feet of plate glass around the plaza, 1, thus enclosing the pedestrian arcades. The glass is being placed in what a member of the architect's office called a "staged program." This apparently means that the glass is put up a little at a time, and if a given increment doesn't do the job, another few hundred square feet are added.

Lacking professional consultation, the architects have assumed that the central tower is "radiating" heat to the surrounding air, which then rises along the building and draws air violently into the plaza. But since the wind in the plaza is higher on windy days, and strong at all seasons—no matter what the relative temperatures of the building and the air—the "heated air" hypothesis is a dubious one. One wonders whether any construction done on that assumption will succeed in "solving" the problem until all the outdoor public spaces have been either completely enclosed, as the galleries nearly are now, or abandoned as unfit for human use, as the central plaza areas already have been.

I began looking into problems of local wind amplification around tall buildings two years ago, with a study of the MIT tower and recently—with Pro-

fessor Richard E. Kronauer of Harvard University's Division of Engineering and Applied Physics—studied the projected design for Mather House at Harvard. I have also been working on the problem at Arthur D. Little Inc. The results of this work seem to indicate that there are some general principles to be discovered (though exact theoretical prediction of wind flow around complicated building shapes remains extremely difficult). They also demonstrate that wind tunnel tests of building models can furnish much useful information about a particular design before it is too late to change it, and can show what corrections will or will not help an existing wind problem.

Ominous situation

When Shepley, Bulfinch, Richardson & Abbott, architects of Mather House (the tenth of Harvard's undergraduate residential complexes), presented their design, 3, to the Harvard planning office in 1967, it was observed that the tower had two openings through its base in the short dimension. It was similar in this respect to the MIT tower, which was then the object of some publicity as a result of its wind problem—and that publicity suggested the possibility of similar difficulties at Mather House.

Several months passed before Prof. Kronauer and I were able to begin a wind tunnel study for the architects to determine whether the tower openings would, in fact, be uncomfortable, and what could be done if they were. Since the architects were producing working drawings by then, the range of possible modifications was drastically limited.

The previous study of the MIT building had been directed to discovering the mechanism causing the high local velocities. Briefly, it was found that the conditions in the prototype building were reproducible in the wind tunnel, thus tending to justify its use as a method of prediction; the wind speed found in the entry passage at MIT was 60 to 70 per cent higher than the overall velocity above the "ground clutter" of trees and low buildings (wind

directions up to 10 degrees off the opening's axis were tested).

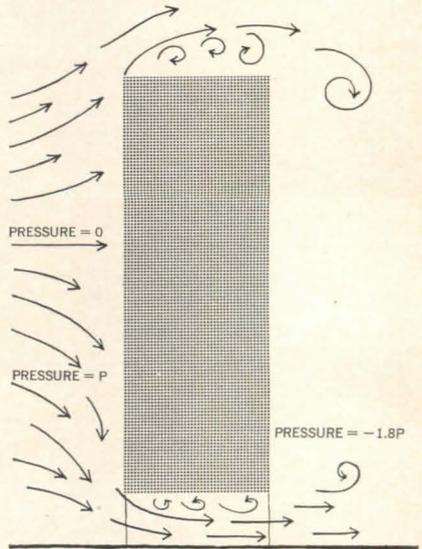
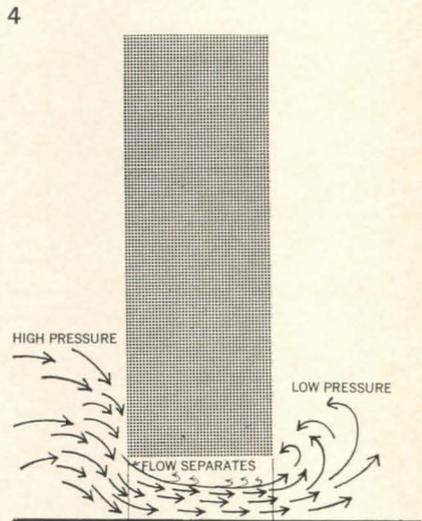
The sources of the problem seemed to be threefold: first and most important was the existence of an opening connecting the point of highest pressure (the base of the upstream side of the building) with the point of lowest pressure (the downstream face). Related to this was the strong downward flow on the upstream facade generated by vorticity in the "boundary layer" of the wind flow—the same phenomenon that scours snow away from the windward side of a fencepost or a tree. Finally, some amplification was probably caused by the separation of the flow from the front edge of the passageway ceiling, which constricted the passage, 4.

In effect, the tower was reaching up into the undisturbed air flow above the surrounding buildings and converting its kinetic energy into a large pressure differential between the front and back of the building, which then drove the jet flowing at high speed through the passage. The air in the jet was literally "dragged" down by the tall building from altitudes above the surrounding structures. Had the opening formed a sufficiently tortuous path, much of this energy might have been converted to heat by turbulence, and the velocity thus reduced—despite the unavoidable pressure differential between front and rear.

The MIT tower had been studied by observing the pressure distribution on the faces of the building and deducing the local wind flows from the pressures, though the velocity in the opening was read directly. In the case of Mather House, our primary interest was in the actual velocities at various places in the building complex; since we felt we understood the mechanism fairly well, we simply used a "hot-wire" anemometer to observe directly the velocities in a model of the complex placed in the wind tunnel. Accordingly, the architects made a model at 1/16 in. to 1 ft., accurately reproducing the overall geometry of the buildings, but including details such as columns only where



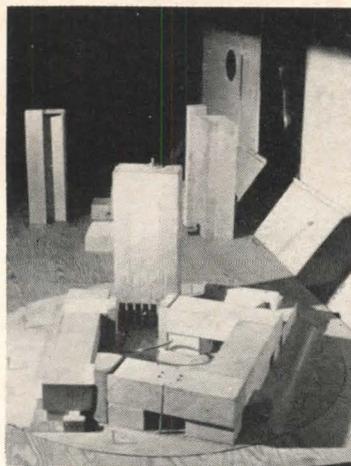
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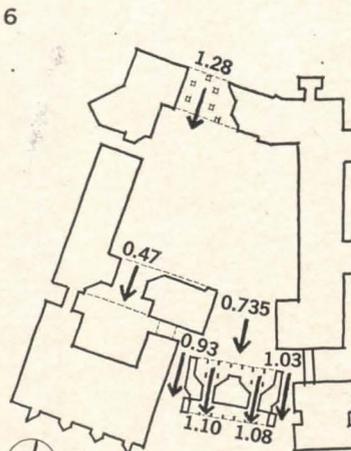
unusual conditions were expected, as in the openings in the tower. This model was placed in the wind tunnel on a round, flush base, allowing the model to be rotated to simulate different directions of wind, 5. A special probe for the anemometer supported the 1/8-in.-long test wire 3/8 in. above the "ground," and thus showed wind velocities at the scale height of a man's head. (The hot-wire anemometer is a device that indicates the speed of fluid flow by measuring the fluid's cooling effect on a fine platinum wire. The probe is connected to an amplifier which converts the change of resistance of the wire as its temperature changes into direct velocity readings. The instrument combines convenience of use and immediate data interpretation with an ability to fit into small spaces.)

The first runs, in which the Mather House complex was placed in the tunnel with no surrounding buildings, indicated amplification of the wind velocity in several places. The worst of these were, as predicted, the openings through and beside the tower and, to our surprise, the opening in the low buildings to the west of the court, 6. The results in the tower openings were more or less in line with our expectations—significant amplification of the overall velocity but less than that found in the MIT tower, presumably because the Mather House openings offer more resistance to flow. The passages flanking the tower, which—though narrow—are unroofed and so have less "funneling" effect than the openings through the tower, showed less amplification. These observations apply to winds aligned with the openings; winds which blew across the openings generated no severe wind amplification.

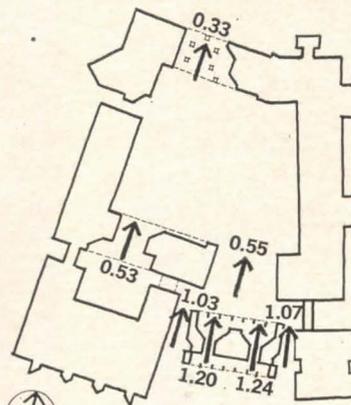
The velocities in the illustrations are given as "amplification factors." These are the ratios of the velocities found at the points in question to the velocity of the undisturbed airstream in the middle of the wind tunnel. Where the amplification factor is 0.5, for example, the component of wind velocity in the direction of the small arrow on the



5



6



7

plan would be 20 mph if the overall wind that day were 40 mph, or 10 mph if the "free-stream" velocity were 20 mph. This method of recording data frees the result from the particular velocities used in the wind tunnel test, and is justified by experiments that show—within a wide range of free-stream velocities—that the local velocities at different points in a given flow pattern remain in the same proportion to each other.

Force vs. speed

It is interesting to note here that the "effect" of a wind is not proportional to the velocity, but to its square. This means that if a certain location has an amplification factor of 1.4, a person standing there would feel about twice as much force as he would feel where the wind blows at its free-stream velocity. Furthermore, the wind at ground level among buildings usually blows at less than half the free-stream velocity, so that a location where the amplification factor is 1.2, would present a force nearly six times that of a typical location.

Had the observed amplification factors been small—less than 0.80, say—we would have terminated the project and concluded that the design as proposed did not threaten uncomfortable local winds. Since the velocities in some places were 20 per cent higher than in the free-stream, we then tried to correct the condition in the tower entry by some aerodynamic devices, then to see whether the surrounding buildings would aggravate the situation or relieve it.

First, baffles were placed between columns to simulate floor-to-ceiling glass opposite the openings on each side of the tower, in hopes that increased resistance to air flow might reduce the velocities, 7. The velocity in the narrow part of the opening was reduced by about 20 per cent, but a new area of high velocity developed next to the baffles. Trying next to interfere with the downward flow on the upstream face of the tower, we placed an "awning" (simulating perhaps a concrete slab) across the opening, level

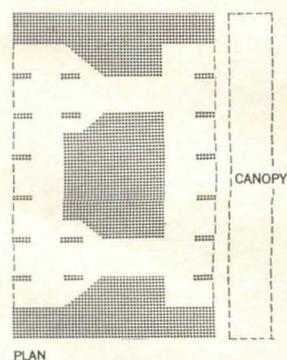
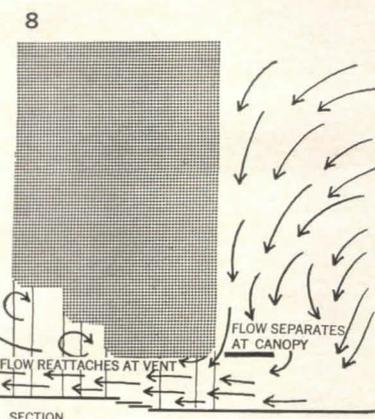
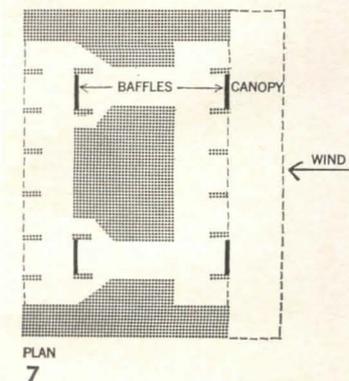
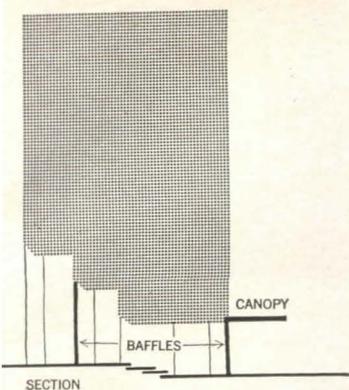
with the top of the passage. In combination with the baffles, this reduced the wind velocities in the tower openings to acceptable levels, although it was no help at all without the baffles. The combination of baffles and awning, then, was taken as one possibility of controlling the wind without actually closing the opening.

To observe the effect of the surrounding buildings upon Mather House, we made simple models of two towers and a low building of the nearby Peabody Terrace (shaded in 3) and of a proposed building across the street to the west. With these buildings in place and the wind from that direction, the velocity in the opening on that side was reduced by about 75 per cent, indicating that wind there would not be critical.

We then placed the models of the Peabody Terrace buildings upstream from the Mather House complex, and rotated the model to simulate wind directions perpendicular to the tower and a few degrees to either side. We were especially concerned that the Mather House tower might be located in the high-velocity area at the edge of the wake from one of the Peabody Terrace towers; the amplification at the edge of the wake for rectangular objects may reach 160 per cent of the free-stream velocity.

The effect of Peabody Terrace buildings, however, was to shield Mather House from the full free-stream velocity and thus reduce the local velocities. (In fact, they appeared to reduce the winds in the tower openings for easterly winds even more than the closer but lower Mather House courtyard buildings did for winds from the west.) As a general rule, a wake is about twice as wide as the building that induces it; the Peabody Terrace towers are apparently close enough together to provide a wide, combined band of reduced air velocity downstream.

We concluded at this point that velocities in the tower openings—a maximum amplification factor of 1.10 (occurring with westerly winds)—would probably be acceptable. This prediction is actually rather risky,



since there are no standards for "acceptable" wind velocities. But it was clear that, after construction of the building, control devices could be installed if needed—whether revolving doors, which would obviously stop all through wind, or the awning-baffle combination. Hence it was decided to proceed with construction in the expectation that the local winds would be acceptable; a more detailed study could be made later to design optimal corrections, if any were found necessary.

Although the study for the architects was then considered complete, we pursued the problem a little further in search of more general conclusions. The first experiment made was to remove the low building from the Peabody Terrace complex. When the wind was blowing from directly between the two Peabody Terrace towers, this modification increased the velocity in the Mather House tower passages about 30 per cent, suggesting that even at this relatively large distance from the tower under study, low (seven-story) buildings can be effective (in combinations with tall ones) in shielding other buildings.

Aerodynamic refinements

Another study measured the effect of various awning forms on the tower, without benefit of the baffles included earlier. The most striking result here was that, while the awning tight against the building slightly aggravated the situation in the passages, moving the awning a few feet from the building reduced the velocity in the openings by 25 per cent, **8**. Perhaps the high-pressure air vented into the passage jet acted, like the vented flaps of an airplane wing, to reattach the flow to the ceiling and reduce the constricting effect of turbulence. The importance of downward flow on the windward face of the building was confirmed by the fact that a solid door-high fence in front of the opening had no measurable effect on the flow in the passage unless it was within 6 (scale) ft. of the building.

The conclusions we were able to arrive at from these tests,

then, are of two kinds. The first was the discovery, in the case of this particular building complex, that the surrounding buildings would protect it sufficiently to reduce the wind velocities in the worst cases to what we expect will be acceptable levels. At present we know only that the amplification factor of 1.67 found in the MIT tower is unacceptable; upon completion of this building we will discover whether the factor of at most 1.10 predicted for these tower openings will be tolerable compared with the wind velocities at ground level in the vicinity.

The second set of results is more general. In the first place, it is further confirmed that a design approach that places passages through the base of an unprotected tower is probably going to generate uncomfortable winds in the passages. We also learned, from the west opening, that roofed passages through the short dimension of long, low buildings in exposed locations can generate the same order of wind amplification.

We discovered as well that modifications applied to these windy openings, without closing them completely, can reduce the local amplification factors significantly. (If closure is required, revolving doors are necessary, because vestibule arrangements are quite often open at both ends. In a building alteration case, I was a consultant to an architect who had to install a revolving door to replace two expensive new sets of treadle-operated doors, separated by a vestibule; during rush hours, these doors had often stood open simultaneously, and an already serious pressure differential—aggravated by the building's mechanical system—caused intolerable drafts.)

The reductions in local amplification factors obtained with the vented awning would probably not be enough to solve a problem as serious as that in the MIT tower, and the awning-baffle combination is not applicable in that case. It may be that more ingenuity and a better understanding of the mechanism involved would suggest something

short of complete closure that could cope with an amplification factor of 1.67; but at present it seems that a tower so completely unprotected by surrounding buildings, and with so large an opening in its base, will be irretrievably windy. In general, any device that will significantly affect wind flow in such a situation must have a characteristic dimension (width of an awning or height of a fence) comparable to that of the passage.

Much to be learned

Obviously, more "handbook knowledge" should be accumulated about both the wind implications of various building geometries as well as more specific information about effective *brises-vent* and where they might be used. More should be learned about ducting unwanted winds through nearby openings, like the passages next to the tower in Mather House, where high velocities were considered acceptable because they were not primary pedestrian routes.

The largest area of our ignorance is our understanding of the human implications of wind. The discomfort produced by wind is a complicated phenomenon—involving the air temperature, clothing worn, local wind velocity, gustiness, and wind velocities at nearby locations (i.e., the "general windiness" expected by inhabitants). Just what combinations of these variables produce discomfort is unknown. If wind tunnel tests indicate local amplifications greater than 1.1 (though the figure may be lower), user satisfaction cannot be assured, and further study of human reactions might be advisable.

Considering the small amount of general knowledge available, one encouraging aspect of this research is the large amount of information that was obtained from this relatively inexpensive study. Even after much more predictive information is collected, it will probably be worthwhile to run wind tunnel studies such as this one (preferably earlier in the design phase) for any complex with isolated towers or constricted passages.



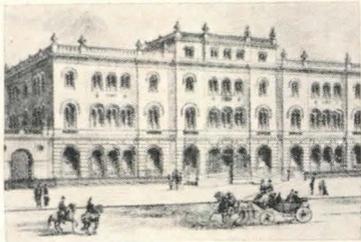
DRAMATIC RESCUE

Not *all* buildings over the age of 100 are demolished in New York City. The Astor Library, which opened in 1854 as the city's first free library, has been dramatically retrieved from the rubble-makers. The 11th-hour rescue marks the first successful attempt by the Landmarks Preservation Commission to use the city's new (1964) law, and marks the continuing attempt to do the impossible by Joseph Papp, whose Public Theater will fill out the ample spaces of the former library. (Papp is the inventive producer of Shakespeare-in-the-Park and of mobile theater throughout the city.)

The first of four major performance areas is already completed (opposite, and top right) in what was once the main reading room. Giorgio Cavaglieri, the architect, has left the richness of neo-15th-century Italian Renaissance wherever possible, adding the 20th century with restraint.

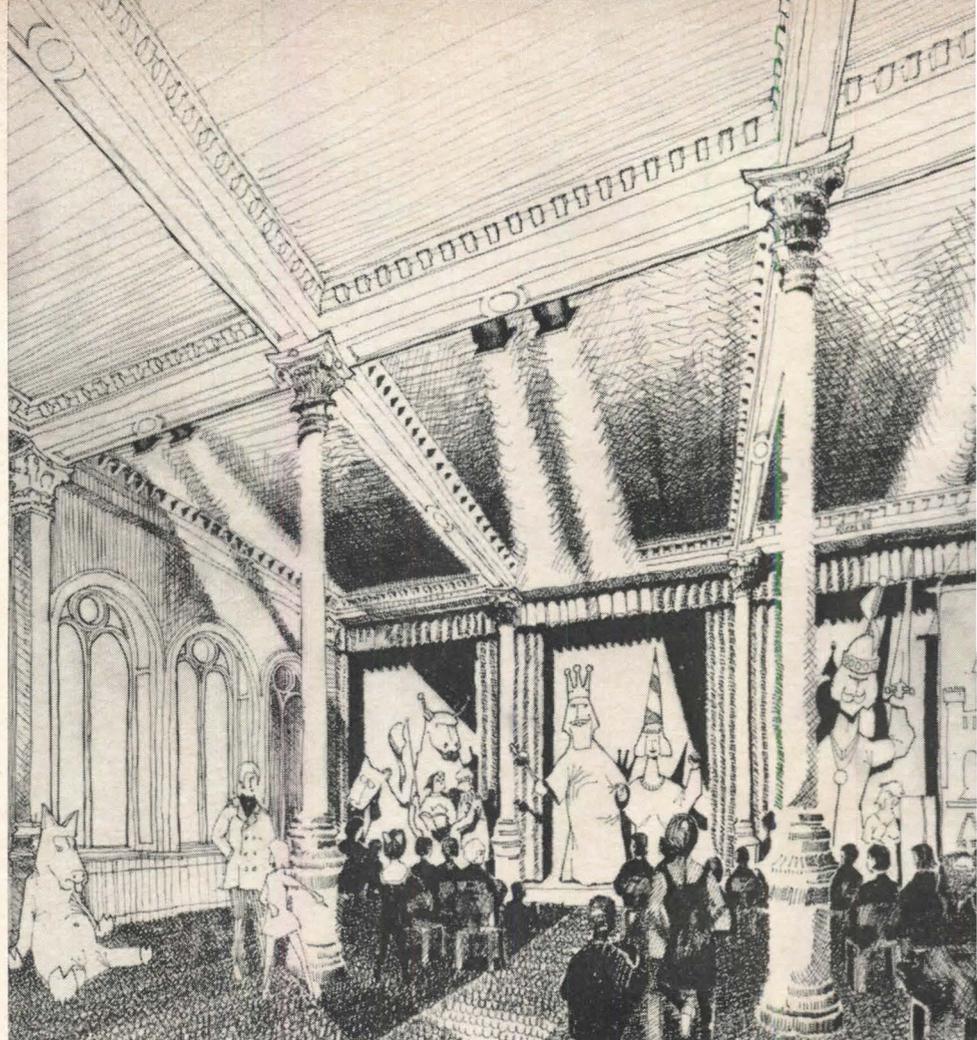
Architecturally, this contrast has a drama of its own. But nothing matches the drama of the rescue itself. The old Astor Library has not actually been a library for years. In 1920, it became the home of the Hebrew Immigrant Aid Society, which used it as a processing center—complete with dormitory, dining hall, and synagogue—for 250,000 immigrants. By 1965, HIAS no longer needed the space and couldn't find another owner who did, so they sold the building to a developer who planned to tear it down and build an apartment house. The contract was already signed, and a deposit put down, when the Landmarks Preservation Commission requested "landmark" designation, giving a reprieve of almost a year in which to find a new occupant.

Enter Papp, "looking for a landmark." Although the Astor wasn't immediately likely-looking to Papp, the commission said "Astor is what you want," and he soon agreed. The developer, who originally claimed that the commission wasn't even constitutional, arranged to turn over his contract to Papp, and even donated to Papp's privately sponsored Public Theater.

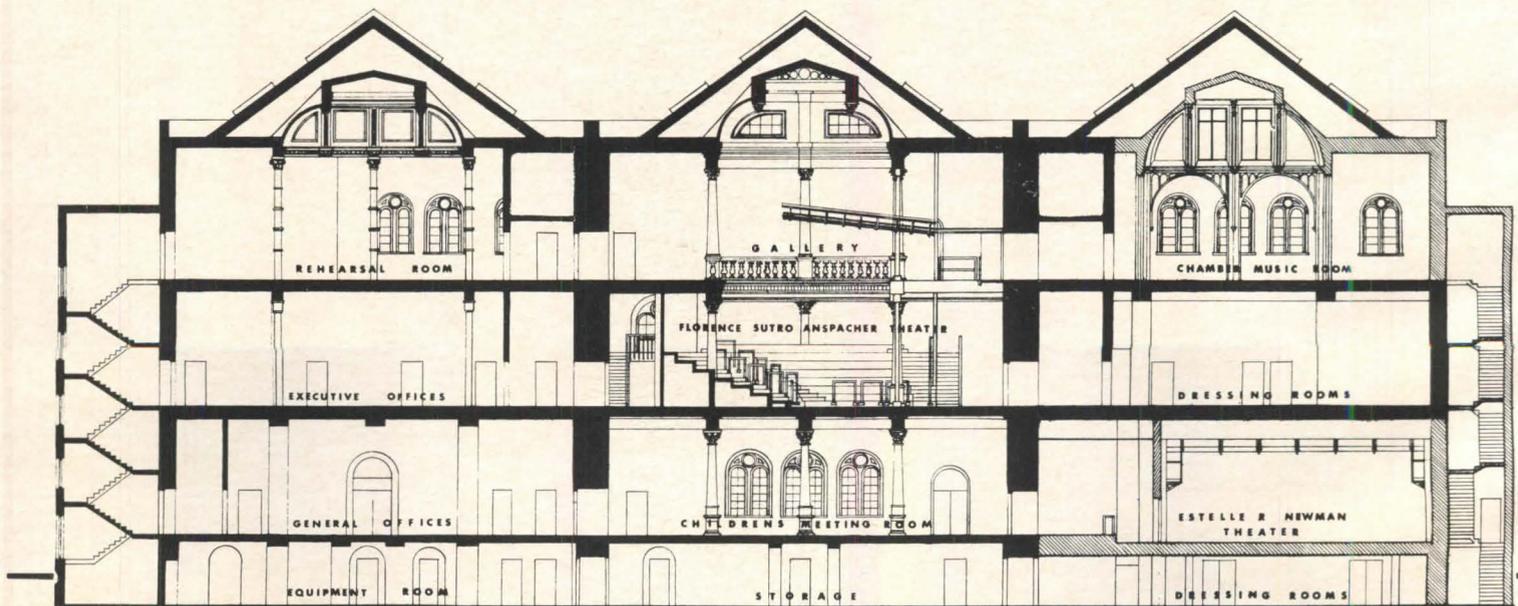


The old Astor Library (1881, above) is being restored to new life, its main reading room (opposite) now a 299-seat theater. The vertical stage (top right) is as unusual as Papp's controversial productions—it is a volume, not an area; a sculptural space, not two-dimensional. The architect carved the stage out of three bays, returning the flanking balusters to the wall, stripping down the center column to its original cast iron, re-sheathing it, and painting out the whole stage in black. The rest of the theater is white, gold leaf, red velvet. Hall leading to the theater (bottom right) is cork-surfaced.





Only \$1 million of a programmed \$3 million has been spent. Future spaces will include a children's workshop (above right), a music recital hall (opposite, top), and a rehearsal room (opposite, bottom). Existing ceiling below the Anspacher theater was brick. Cavaglieri removed the heavy cinder mix above the vaulting, then put down plywood for the stage floor, and concrete planking over a light steel frame for the seating.



0 5 10 20

The need for funds is emphasized by leaving rough the triple opening in the lobby (opposite, far left). Lack of funds has already halted work on the 299-seat Newman theater (see section), and its dusty space is silent, filled with shoring.

Future plans, as money permits, include a children's workshop (opposite, near left), a hall for chamber music (top right), and a rehearsal space (bottom right).

"We have inherited the luxury of a bygone age," says Bernard Gersten, associate producer; "our Green Room is larger than the Met's." The interior has plentiful space for exhibitions, promenades, props and dressing rooms. The exterior will see only slight changes—new sash, illumination, and advertising display.

The preservation has required the special quality of "insistence" in Papp, shown doubly in his will to make an old building live again, and in his Public Theater's new programs.

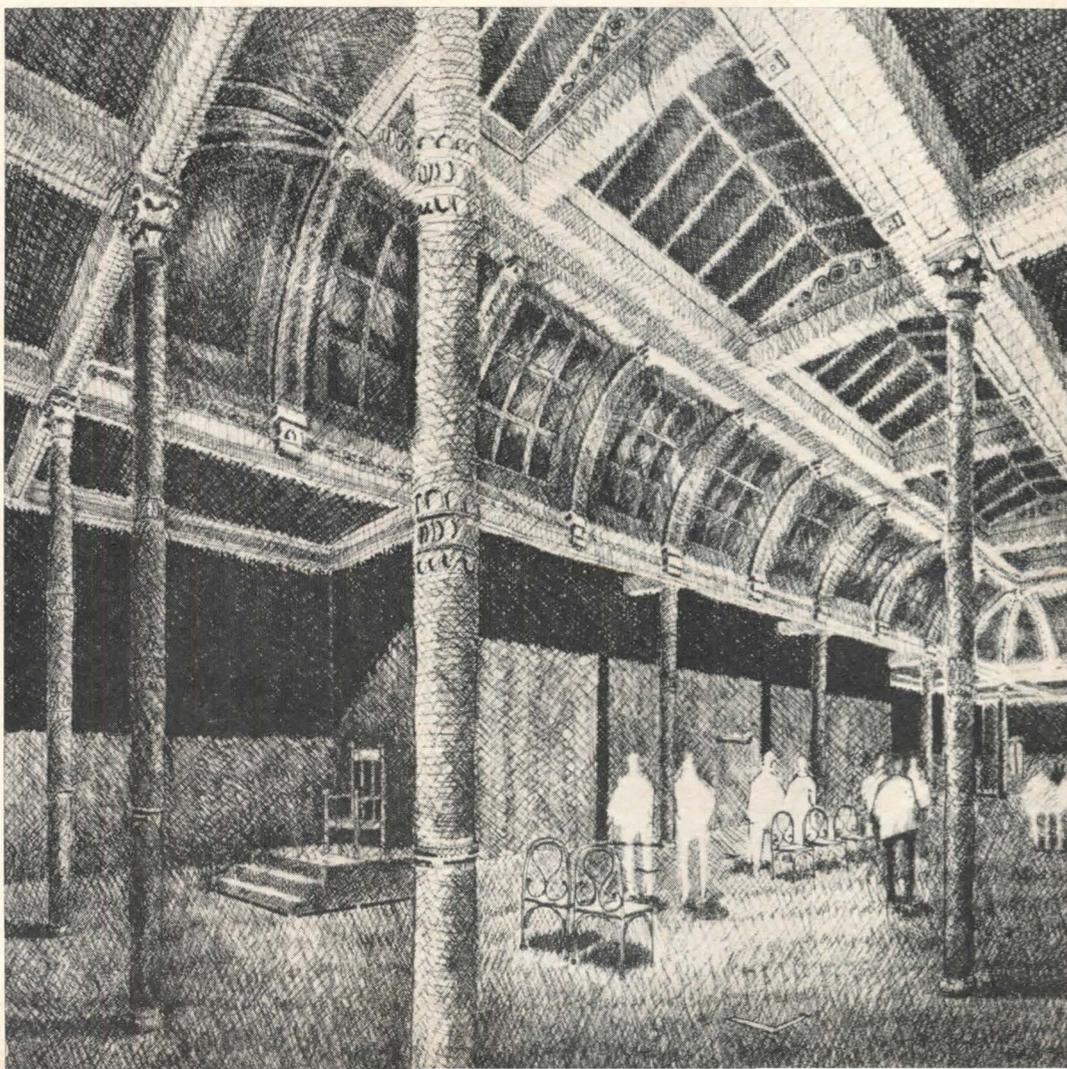
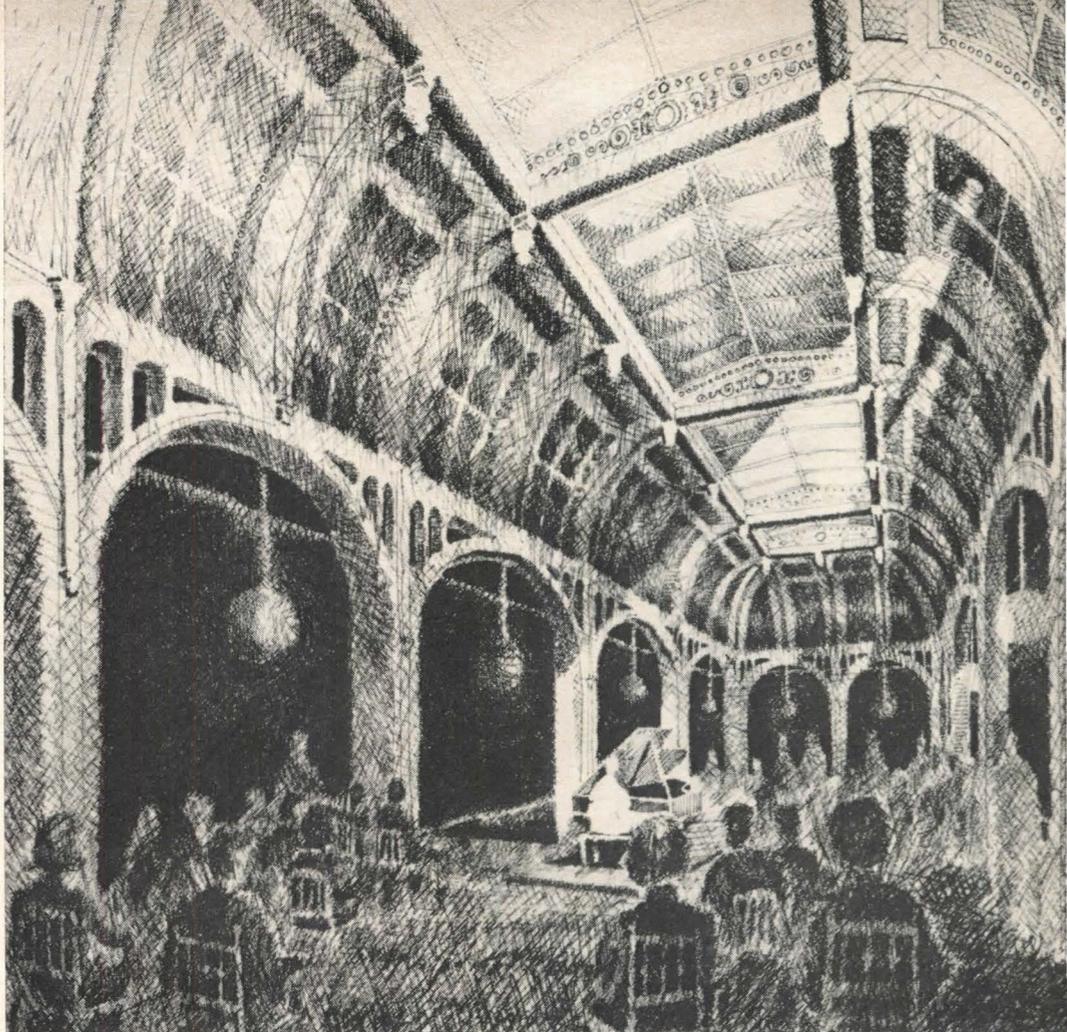
It has also required painstaking care from the architect, who made measured drawings; made day-to-day arrangements with the building department; and made the constant decisions required in a renovation where the three wings of the building, outwardly similar, concealed differences in construction.

Much credit is due the Landmarks Preservation Commission, which is constantly seeking new tenants. Unlike the Jefferson Market Courthouse, which was recently converted into a library by the city, the Astor Library was saved by private interests, using a city agency as clearinghouse. The common thread is the one architect who did both jobs. "I was born in this business," says Cavaglieri. "I began life in a 14th-century house."

FACTS AND FIGURES

Shakespeare Festival Public Theater, 425 Lafayette St., New York, N. Y. Architect: Giorgio Cavaglieri. Engineers: James Hufnagel (structural); Nicola Ginzburg (mechanical). Theatrical consultant: Ming Cho Lee. Stage lighting consultant: Martin Aronstein. General contractor: Yorke Construction Co. Building area: 60,000 sq. ft. (20,000 sq. ft. in the converted portion). Cost: (building) \$575,000; (conversion) \$400,000.

PHOTOGRAPHS: George Cserna.



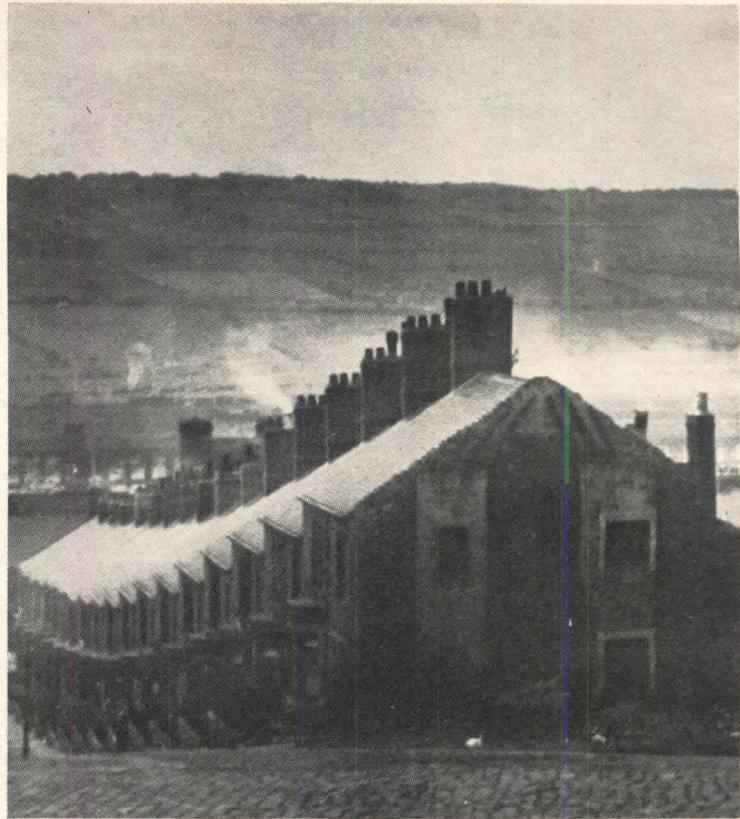
VICTORIAN ARCHITECTURE. By Robert Furneaux Jordan. Published by Pelican Books, Harmondsworth, England, and Baltimore, Md. 278 pp. Illustrated. 5 by 7 1/4 in. \$2.95 (paper).

REVIEWED BY WINSLOW AMES

On the same day, there came before your reviewer's eye the photograph [top right] used by Jordan of workers' cottages at Newcastle-on-Tyne, and a similar view used by Barbara Hepworth in her *Drawings from a Sculptor's Landscape* [below]. Both photographs show north-country industrial villages whose rowhouses step down the steep streets or occasionally confirm the contours of a map; the endless rooflines are punched with chimneys; the rounded beaten ways, themselves confirmed by rows of stone setts, echo the lines of motion or cross them at right angles, but are yet continuous and transitional and land-hugging. It is as if Barbara Hepworth's photograph had been chosen in sympathy for both land and people, out of desire perhaps to see their best foot put forward, so clear was the day when the camera shutter opened upon Harworth; and it is as if Furneaux Jordan's photograph had been chosen to emphasize the smog and dreariness. Obviously there is truth in both pictures, which report facts in different lights; but there is no doubt that Jordan takes the pessimistic attitude of his photograph.

Halfway through the book your reviewer asked himself, "Is it possible that the author does not really approve or like Victorian architecture?" And soon after he found the author saying, "The very phrase 'High Victorian' would seem to imply a 'Victorian Style.' It would also seem to exclude such special things as: (a) buildings of iron and glass to which *we* attach importance as being part of the pre-history of our own architecture, but to which the Victorians themselves denied the very word 'architee-

Mr. Ames, who lectures on the fine arts at the University of Rhode Island, is the author of the book, *Prince Albert and Victorian Taste*.



© DRAWINGS FROM A SCULPTOR'S LANDSCAPE, FREDERICK A. PRAEGER INC.

ture.' (b) The intensely religious efforts to achieve an authentic Gothic—the fanaticism of a Catholic Pugin or an Anglican Butterfield was too rarified, too personal a thing to be regarded as the 'style' of an age. (c) The Neo-Gree and all similar attempts—right on into this century—to revive historical styles in a literal way; clearly these cannot be a 'Victorian Style.' (d) The Morris-inspired attempt to recover a vernacular craftsmanship in building; however poetic the results, this could never be more than a protest

against the age, never the style of the age itself. The exclusion from our argument of all these things leaves us with the startling question—was there a Victorian style at all? The final answer will almost certainly be 'No.'

So far, so good: obviously there is not a Victorian style. But the exclusion and the argument seem to your reviewer to neglect two crucial facts: first, eclecticism must be seen as the comprehensive norm of Victorian architecture if not of *all* the Western visual arts from Na-

oleon's Empire to Cubism; second, revivals in the long run are seen to have as much the character of their own time as syntheses have, so that the Victorian is with rare exceptions unmistakably Victorian.

Jordan seems to have fallen into the old and sentimental belief that Gothic never died in Britain. Perhaps he is being a little ironical in saying of the choice of Gothic or Elizabethan for the competition for the Houses of Parliament: "The decision of the Commission was not, after all, so very astonishing. Indeed, it was inevitable. Gothic, in 1835, became the official style of England." But he does not stress *official*, he speaks of "the fine gold thread of romanticism and medievalism," and for him Blenheim and Seaton Delaval, because romantic, are really Gothic. He winds up in an otherwise just and sensitive chapter on Sullivan, Wright, and Gropius, saying that ". . . Sullivan and Wright gave back to Europe a great theory of architecture. The techniques were new techniques; the theory was the theory of Gothic." Again there is much truth in the statement, and I quote it simply to suggest a certain insistence on Furneaux Jordan's part.

Easier to get along with is his insistence on Victorian architecture as the visible matrix of 20th-century existence in Great Britain. Although he says frankly, "We see the terraces of Georgian Bath as they are today, while the Georgian slums and hovels have all gone," he seems not quite willing to anticipate the purging away of Victorian dross that must also happen in time. For him the best seems to be tainted by the worst, and tainted moreover by social history, by our knowledge of child labor and sweatshops and cesspools and the rich who grew richer while the poor grew poorer. We are all quite as aware of the misery of the industrially exploited as we are of the slavery that underlay Egypt, Greece, and gracious old plantations. Could we not take it as read; or could we not ask the author to keep it in his two



Top to bottom: Art Nouveau billiard room by George Walton; tea room, Glasgow, by C. R. Mackintosh, who nearly effected a merger between Art Nouveau and the Morris tradition; Art School, Glasgow (library and entrance) by Mackintosh.

opening chapters where it probably belongs? and not to keep lugging it in.

When he is tying the Industrial Revolution ("a gold rush") to Welsh coal and railways, cities and the Black Country in his first chapter, he produces a sort of determinist marvel; the second, called *The Nature of a Romantic Movement*, is equally skillful ("Its first manifestation was the French Revolution, its last the Russian one"); he might well have used in it these sentences from his introduction: "By and large Victorian England was a tremendously virile and very terrible affair. If we strip away the gadgets and fashions, Victorian England was not unlike the United States today . . ."

He gives the Gothic Revival two chapters, wisely reduces the space he might have spent on the Crystal Palace to a general discussion of engineers' architecture, handles dwellings separately from ampler buildings, and gives Arts and Crafts Nouveau a chapter to themselves [illustrated here]. In other words, although there is a chronological order, the approach changes almost as much as if the book were a collection of essays. "High Victorianism," for instance, a chapter of 30-odd pages, treats many neo-classicists (Smirke, Cockerell, "Greek" Thomson) as prototypes of the high Victorians. When Jordan does get to Butterfield and Cuthbert Broderick and Waterhouse, he rather enjoys them as commercial professionals, and uses such words as "fabulous" and "Indian summer" for the great cluster of South Kensington buildings surrounding Collett's Imperial Institute.

Mr. Jordan's illustrations are 95 per cent familiar ones, and this is as it should be; you can't do without the key monuments; his comments on some of the buildings reproduced are pithy and often amusing (for instance, his lambasting of Waterhouse's Eaton Hall, a grand and vulgar remodeling for a duke who did not *need* to act like a parvenu but did).

His best work in *Victorian Architecture* is probably his handling of William Morris and

Philip Webb as temporary collaborators; this in a longer account of Ruskin, Morris, and their tendency to turn all judgments into moral judgments. Three quotations must suffice: "In the Red House . . . the stylistic trappings are absent. . . . Morris and Webb were on the verge of a discovery—that orthodox Gothic forms are almost the least part of the Gothic style. . . . Morris played the Gothic game to the end, but in that short partnership with Philip Webb, he produced something that was independent, not of course of all medieval feeling—that would be asking too much—but certainly of all specifically Gothic ornament." And "Perhaps, after all, the most significant thing of all about the Red House was that it was carefully designed upon the drawing-board . . . to look as if it had not been designed upon the drawing-board at all." Jordan is also excellent on the changing status of the architect from gentleman's technician to expert and even dictator as the profession passed from Soane through Barry to Gilbert Scott. Perhaps the author's dislike of Lutyens' clients prevents him from really looking at Lutyens' form.

To Frank Lloyd Wright he is eminently fair, and about him he is admirably frank. The final chapter, "Modernity Is Born," argues very well the case for Sullivan, Wright, and Gropius as consummators of what Pugin, Morris, Ruskin, Walt Whitman, and Mackintosh had wanted. There are a few errors of American geography and of British dates which one hopes may be tidied up in a second printing.

Though the reader will have gathered that the reviewer finds the book in several ways annoying, it is fair to say that both text and comments to illustrations open a way to further inquiry. I am still not sure that Furneaux Jordan likes any Victorian architecture, but he finds it provocative; and under the circumstances it is perhaps well to write a provocative book. It is neither Arnold Hauser nor Russell Hitchcock, and why should it be either?





HOMAGE TO HARVEST

TEXT AND PHOTOGRAPHS BY MYRON HENRY GOLDFINGER

From the Minho Province of Portugal, to the Galicia Province of Spain, there exists a very special type of religious building—sheds intended not only to store grain, but also symbolically to pay homage to nature at the time of the harvest.

Mr. Goldfinger is an architect and teaches at Pratt Institute. His remarkable photographs of ancient settlements around the Mediterranean have frequently appeared in *The Forum*.

These granaries—known as *espigueiros* in Portugal, and as *horreos* in Spain—are simple stone structures: local granite, eternally durable, has been cut into squared-off columns with stubby feet. The column capitals, generally shaped like flat drums, prevent rodents from reaching the stored grain. The columns are roughly 3 ft. tall, just high enough to keep the grain away from the moisture of the ground.



The columns support a wooden floor and an enclosure, also of granite, that has been cut into large slabs and fitted skillfully together to form the walls. Ventilation is provided by means of slots cut into the granite slabs, and there is a single, wooden access door. The structure is capped by a pitched, projecting roof of terracotta tile on a wood frame.

These granite granaries were

built by descendants of the Celts who invaded the Iberian Peninsula about 1,500 years ago. In recent times, some of the granite slabs were removed from these structures to be used in other buildings; and they were then replaced with less permanent infills of wooden slats.

Many of these structures are found singly in isolated locations throughout the Minho and Galicia Provinces of Iberia. Occa-

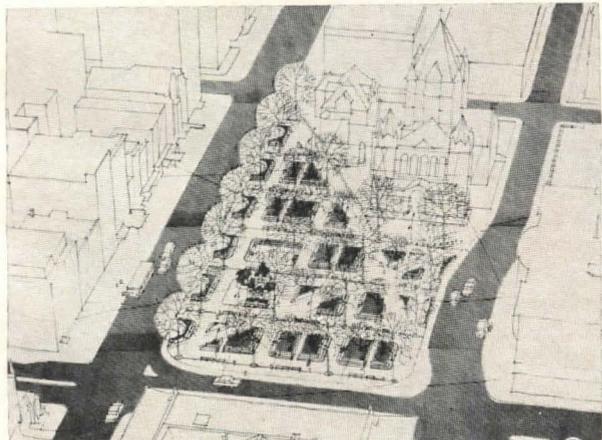
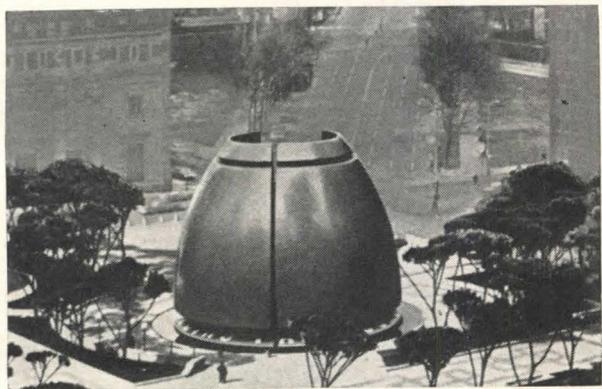
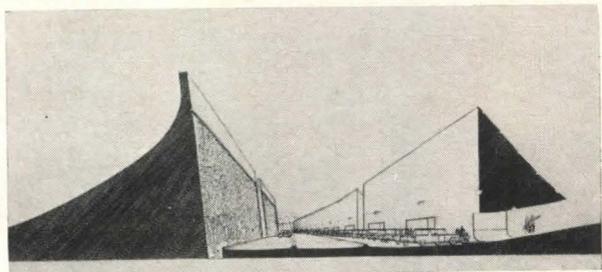
sionally, however, these granaries have been grouped together for protected communal grain storage—and these groups look like miniature villages made up of temples. The two groupings shown on these pages are those at Combarro, in Spain, and at Lindosa, in Portugal. At Lindosa, the granaries have been arranged in long rows to take maximum advantage of the prevailing winds.

In their structural clarity—in the differentiation of support, body, and roof—these granaries are reminiscent of Le Corbusier's great blocks on *pilotis*. The impression is increased by the "super-scale" of their forms: although hardly 10 ft. tall, they are strikingly monumental in their impact. Collectively, they represent a fine example of every man's search for sacred architectural symbols.



A BILL-DING-BOARD INVOLVING MOVIES RELICS AND SPACE

BY ROBERT VENTURI



Most of the competitions our office has entered have had something in common: they were hybrids. Our scheme for the F.D.R. Memorial, **1**, was architecture *and* landscape; our fountain for the Philadelphia Fairmount Park Commission, **2**, was architecture *and* sculpture; our design for Copley Plaza, **3**, architecture *and* urban design. Our latest submission, the National Football Hall of Fame (opposite), is a building *and* a billboard.

The program for this competition was restrictive in the maximum cubage permitted, in the precise and elaborate relationships stipulated for administrative, research, library, and dining facilities, and in the requirement for banqueting 1,000 people within the exhibition spaces. But it was unrestrictive concerning the main function of the building as a museum for the masses, and concerning methods of exhibition.

The unique characteristics of the program, the displays and their content, were based on the policies of the sponsor, the National Football Foundation. The Hall of Fame was described by its president in the program literature as "an Ideological Center, serving our social and education structure and our competitive economy—to the end the power of decision is kept with the people. Honoring [football heroes] . . . brings into focus, at a time of the long hair, beard, beatnik revolt on the campus, the conviction of the Foundation that the disciplines of football make it the biggest and best classroom in the nation for teaching leadership."

The structure of the organization to be reflected in the displays was particularly interesting to us. The program stated:

"The Hall of Fame is devoted to the *players* who have been elected to its ranks (some 150 are presently included; five or six elected every year); the *coaches* who have been elected (some 50 with one or none added annually to the ranks); *The Men Who Made The Game* (Walter Camp, Alonzo Stagg, William Heffelfinger and others); *the Gold Medal Winners*, men who

symbolize in the nation the qualities that are inherent in football (one is elected yearly; Eisenhower, MacArthur, Hoover, Kennedy, Whizzer White, Stagg, Lourie, Trippe, and Roger Blough have thus far received the Gold Medal); *The Scholar Athletes*, college seniors (of whom 75 have been elected so far, and another nine to 11 are picked yearly); and the *MacArthur Bowl*, an annual award of major significance to a great team. The Gold Medal Winners and the players elected to the National Football Hall of Fame are the most important groups to dramatize . . ."

After this description of a hierarchical order—recalling to us the subtle rankings of the beatified and canonized in the medieval Kingdom of Heaven—suggestions were elaborated for displays, which included relics (*sic*) of football history reminiscent again of medieval theology. The program further provided a rich catalogue of suggestions for the content of the exhibits, covering historical, topical, theoretical, and technical aspects of the game and biographical material on the players. It encouraged as well imaginative and advanced techniques of display sympathetic to some of our ideas on an architecture of communication for moving masses. Their peculiar message suggested particular media: movies, relics, and space.

The basis for our design is the accommodation of the relic on one hand and the wide-screen on the other: of Knute Rockne's sweater displayed in a little case *and* his forward pass projected on a big surface. In the Czech Pavilion at Expo 67, real lace work and sophisticated cinematography complemented each other. Here Knute Rockne's sweater—or trophies like the MacArthur Bowl—satisfy the individual's thirst for the immediacy of the real thing, and big movies absorb the masses' attention through changing illusion: the one involves extensive detail, the other simple impact. These contradictions of scale and space (big and little, individual and mass), of movement (stopping

and going), and of light (bright and dark) satisfy the need for contrast in an architecture of communication.

Our original idea was to make the building the shape of a football on the outside. For impact in the vast spaces and before the vast crowds at the Rutgers Stadium, this building should be both symbolic sculpture and architecture. But the limitations on cubage in the program precluded a sculptural outer shape which did not conform closely to the inside architectural space, so we devised a sign instead of a sculpture: an essentially two-dimensional billboard, 4, big in size but economical in cubage, which is also a building. Our "bill-ding-board" conveys impact beyond that too subtle kind of expression which is derived from pure architectural elements. Space, form, and structure, *the traditional architectural elements* mean little in the vast parking spaces that are the context of this building and most other buildings that architects can't force into their mega-structural fantasies. You just can't see space, form, and structure across a teeming parking lot without a mixture of other media. Our mixed media include symbolic and representational elements, that is, billboards and words, along with the abstract elements of space, form, and structure. Symbols with architecture enrich meaning. They can evoke the instant associations crucial for today's vast spaces, fast speeds, complex programs and, perhaps, jaded senses which respond only to bold stimuli.

The front of our building which is billboard, inflects toward the big parking spaces and the stadium. The back, 5, which is building, relates to the exhibition field in the rear and, in fact, turns, like Aalto's Otaniemi Institute, into a quasi-grandstand, 6. The enormous billboard, 100 ft. high and 210 ft. long, needs buttressing in the back. These buttresses integrate the building with the sign. Parts of the interior display are niches—static spaces along a long gallery: these fall within the buttresses as do the chapels along

the nave in a Gothic cathedral, 7. Outside, the billboard, which is several feet thick, is backed by maintenance catwalks which interlace with the buttresses. The giant screen has the approximate proportions of a football field. On it, 200,000 electronically programmed lights produce moving sequences of naturalistic images, words and phrases, and diagrammatic choreographies of famous football plays, 8. These displays can be viewed from the parking lots, the picnic green in front, and the Rutgers Stadium beyond.

From nearby, the billboard corresponds to the largely false west facade of a Gothic cathedral, especially an Italian one like Orvieto, teeming with glittering mosaics and niched statues, whose main function is to communicate information toward the piazza. From a distance the analogy with the billboard on the highway is obvious. Immediately in front of the screen, where the seats are bad at a movie, is a moat. Below the screen are various ways to enter the building.

Since the public access to the museum is from the parking which is at the sides, the main entrances to the building are from the sides. Two symmetrical ramps lead to a single, hidden entrance at the center of the facade. They ape the monumentality of the double, symmetrical stairways which approach the door of a terraced, Baroque villa. The big, low spans of the ramp openings in front increase the monumentality. But narrow stairways at the center eat out of the ramps and superimpose sharper diagonals upon them. Below, at ground level, an opening goes through the building to the field beyond and contains doors to nonpublic staff, research, and service areas on the ground floor. The shape of this opening is a partial football.

There are contradictions in the facade of the bill-ding-board. The top, which is mostly billboard and is mostly seen from afar, is scaleless, perhaps more so than a real billboard because it is bigger than usual and of slightly different proportions: you might not be sure how big

it is or how far away it is. A little ominous, perhaps.

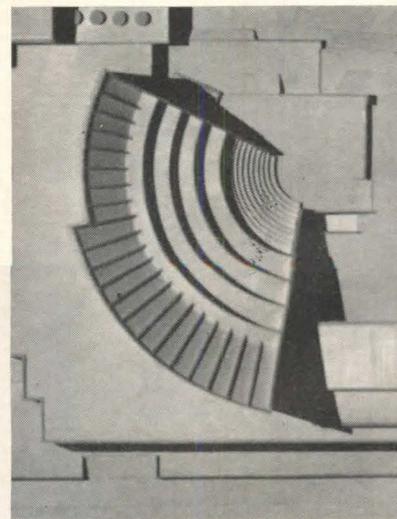
But the bottom which is mostly building and is seen closer-up is less ambiguous in scale. Its combination of contrasting ramps and stairs suggests a human scale. The top is not monumental, except perhaps through its size, but certainly not through its associations, which are commercial; the bottom, through its symmetrical form as well as its associations (with the central building of the Campidoglio, for instance) is almost pompously monumental.

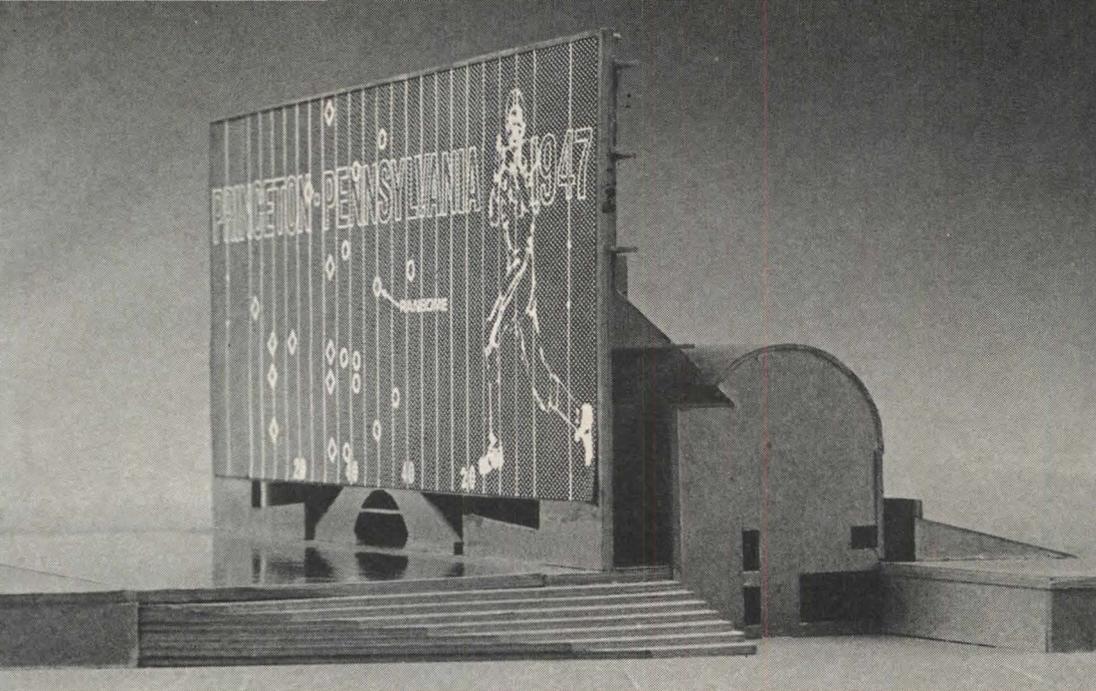
I have mentioned that the sets of ramps and stairs lead to no door, or at least to a partially hidden door behind the lower part of the billboard. The focus on no-door in turn reinforces the ambiguous scale. The top, the billboard, is a consistently flat surface, but the bottom, although it maintains the billboard's surface and silhouette for the sake of the scale of the whole, is violently punctured with big openings containing deep shadows. The lower entrance is a positive and symbolic shape, while the others are negative, residual shapes resulting from the diagonal ramps and stairs at the bottom, and the boundary of the sign on top.

The flat, high easel of the front elevation contrasts with the busy profiles of the side elevations. This disunity as the building turns the corner reflects the contradiction between the front and the back, between the behind-the-scenes mess, including the semi-exposed buttresses, which support the facadism of the front, and the front itself.

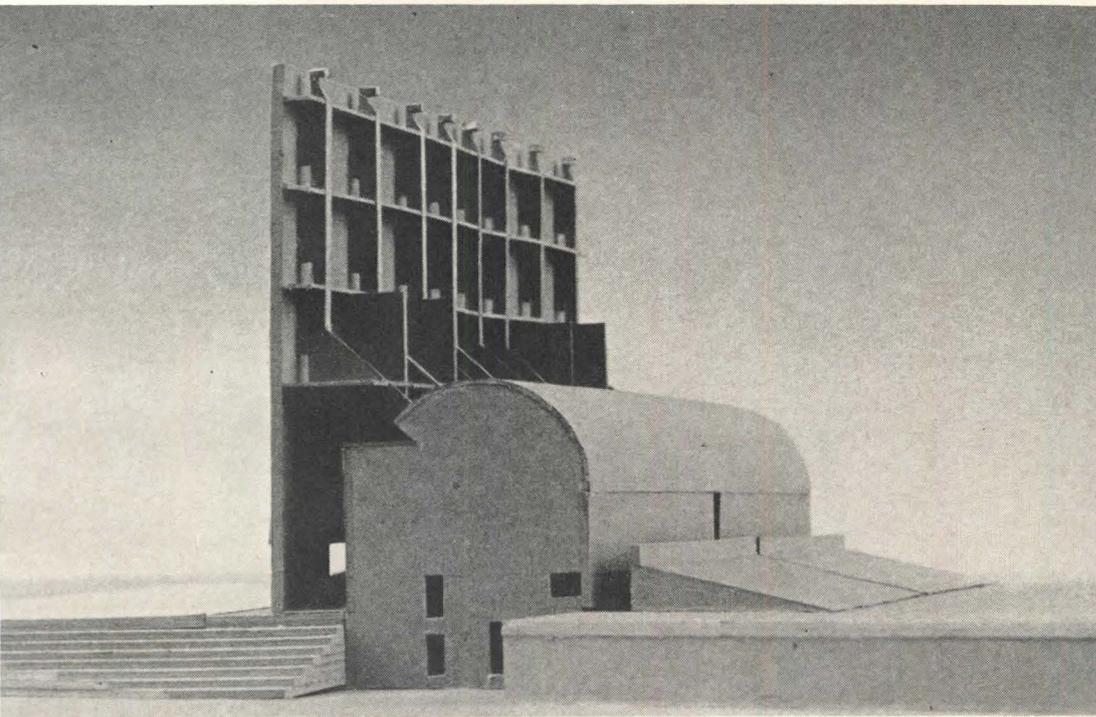
A similar tension occurs in a Gothic cathedral between the inside and the outside: from the inside you are "fooled" because the unseen buttresses outside make the spindling, vaulted nave seem magically light. Our side elevations are essentially cross-sections of the interior, and therefore correspond to orthodox Modern practice, where design proceeds "from within outward." They imply, since the building is merely cut off at each end, an open-ended system along the long axis. If the architecture in-be-

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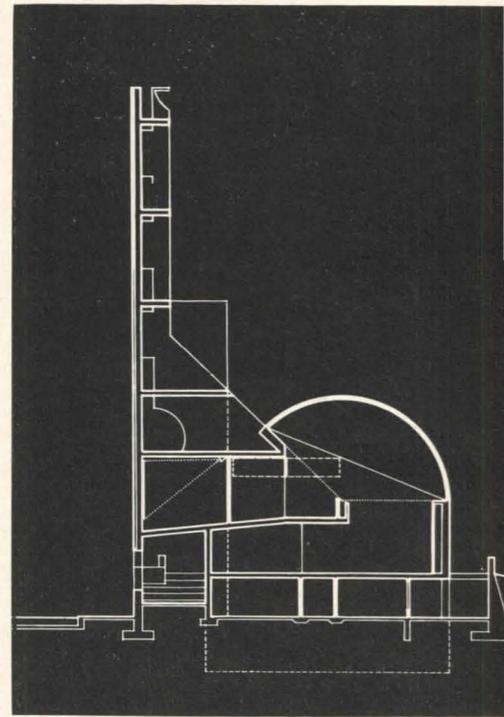




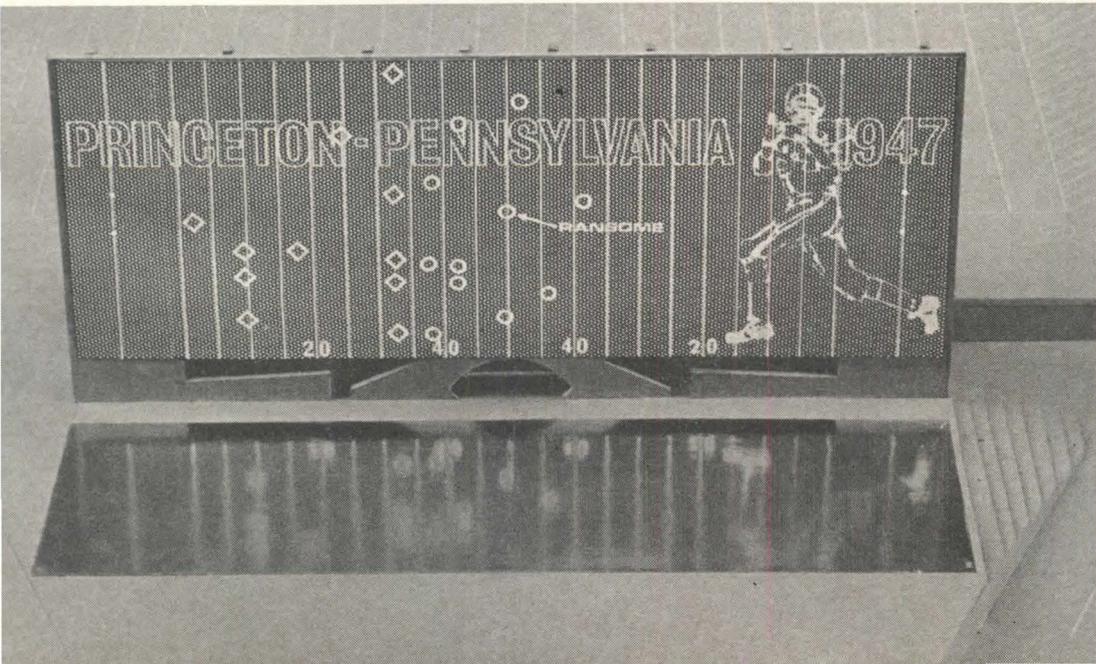
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tween becomes a pictorial easel toward the front, it becomes earth-sculpture at the back to accommodate the abortive grandstands which face the field, 9.

The main floor of our Football Hall of Fame contains three zones parallel with the front. In the first zone are the outside ramps and auxiliary stairs which approach the entrance. Because they are contained within the perimeter of the building they appear uneasily big in juxtaposition with the other, interior elements. Like the ramps in the Villa Savoye they are outside scale inside. Flying buttresses span this zone and sometimes rooms within buttresses bridge it at the balcony level, modifying the degree of top light.

The second and third zones interact closely in plan. The second zone, the niches between the buttresses along the gallery, resembles the chapels between the buttresses along the nave. This contains the services and all the vertical circulation except the elevator. The spacing and therefore the rhythm of the buttresses varies slightly to accommodate specific functions. But the niches' main function is to contrast with the gallery. It is the small space off the big space, the low space off the high space, the static space off the directional space, the protected space off the expansive space, the focussed space off the continuous space, the bright or dark space off the medium-lit space. It is the place, open but secluded, for the little relic or the specialized movie; for concentrated detail rather than general impact. It parallels the niches in the facade at Amiens, each with its own story to communicate, alone and in series.

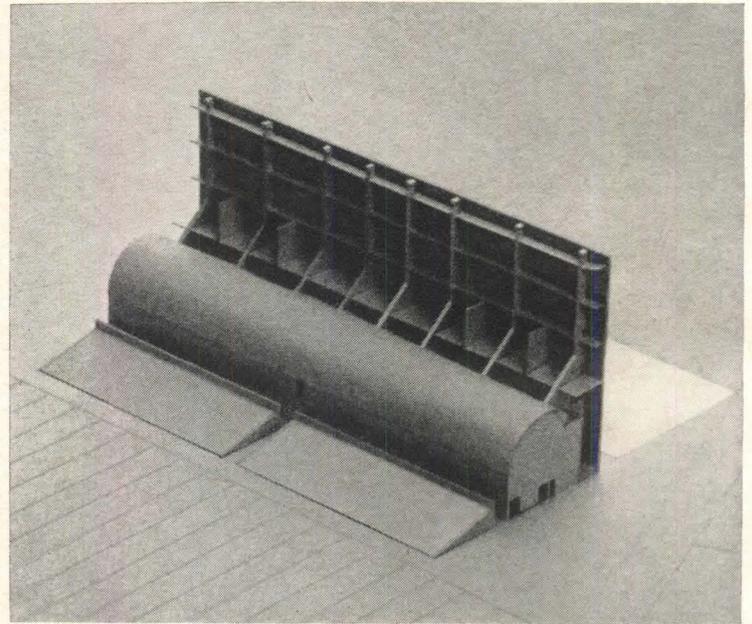
The constant, vaulted space of the gallery is like the gallery space in Tintoretto's *Finding of the Body of St. Mark*, where the quality of light is all that varies along the exaggerated length. But the directional pull of our long gallery is contradicted by the cross axes of its niches, 10. Its balcony almost fills it up, and its even lighting is bisected by a solitary shaft of light from a narrow window directly opposite

the entrance, which permits the sole glimpse of the practice field beyond. The ceiling is vaulted to act as a screen for continuous and huge movie projections from the parapet of the balcony, as shown in the section. The figure of Adam from the Sistine ceiling is inserted amongst the flying football players in our collage to suggest the qualities, both spatial and iconographic, of a ceiling fresco, but the simulated movement of the dynamic angels of a Baroque ceiling might better parallel the real movement of our reflected images of charging players.

A mosaic of rear-projecting screens complements the niches on the opposite wall of the gallery. This continuous bank of images is programmed by computer like the diapolyeran of the Czech Pavilion. Used as individual screens or in larger ensembles, it could be an extensive source of detailed material on members of the Hall of Fame and Gold Medal winners. It represents a smaller-scaled, two-dimensional version of the spatial niches opposite: a triptych screen, perhaps, in comparison with the aedicular portal in medieval architecture.

Revolving panels flip mechanically from the niches in the balcony like those in Grand Central Terminal and generate further movement to complement the cinematic reflections on most other surfaces. I forgot to mention the movies on the sides of the balcony parapet. Movies, in fact, are almost all over. They spill over the surfaces, essentially independent of the architectural forms they smother; like Giotto's frescoes in the Arena Chapel, or the rocaille ornament which indiscriminately suffuses walls, fixtures, and furnishings in a Rococo interior; or the ubiquitous and independent patterns on the tattooed man in the circus, or the camouflage patterns on a military tank, whose purpose, significantly, is to render its surfaces ambiguous. The message dominates the space.

PHOTOGRAPHS: 2, Rollin R. La France; 4, 5, 7, 9, George Pohl.



9

Mr. Venturi is a partner in the Philadelphia firm of Venturi and Rauch, architects. The prize-losing entry to the National Football Hall of Fame competition, which is the subject of this article, was submitted by Mr. Venturi's firm, with Gerod Clark as associate. This is the second of two articles by Mr. Venturi; the first appeared last month. Both will be included in a forthcoming book to be published by Alfieri, Venice.

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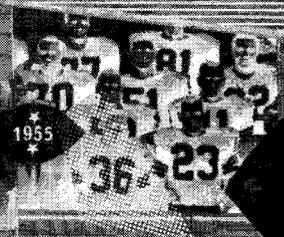


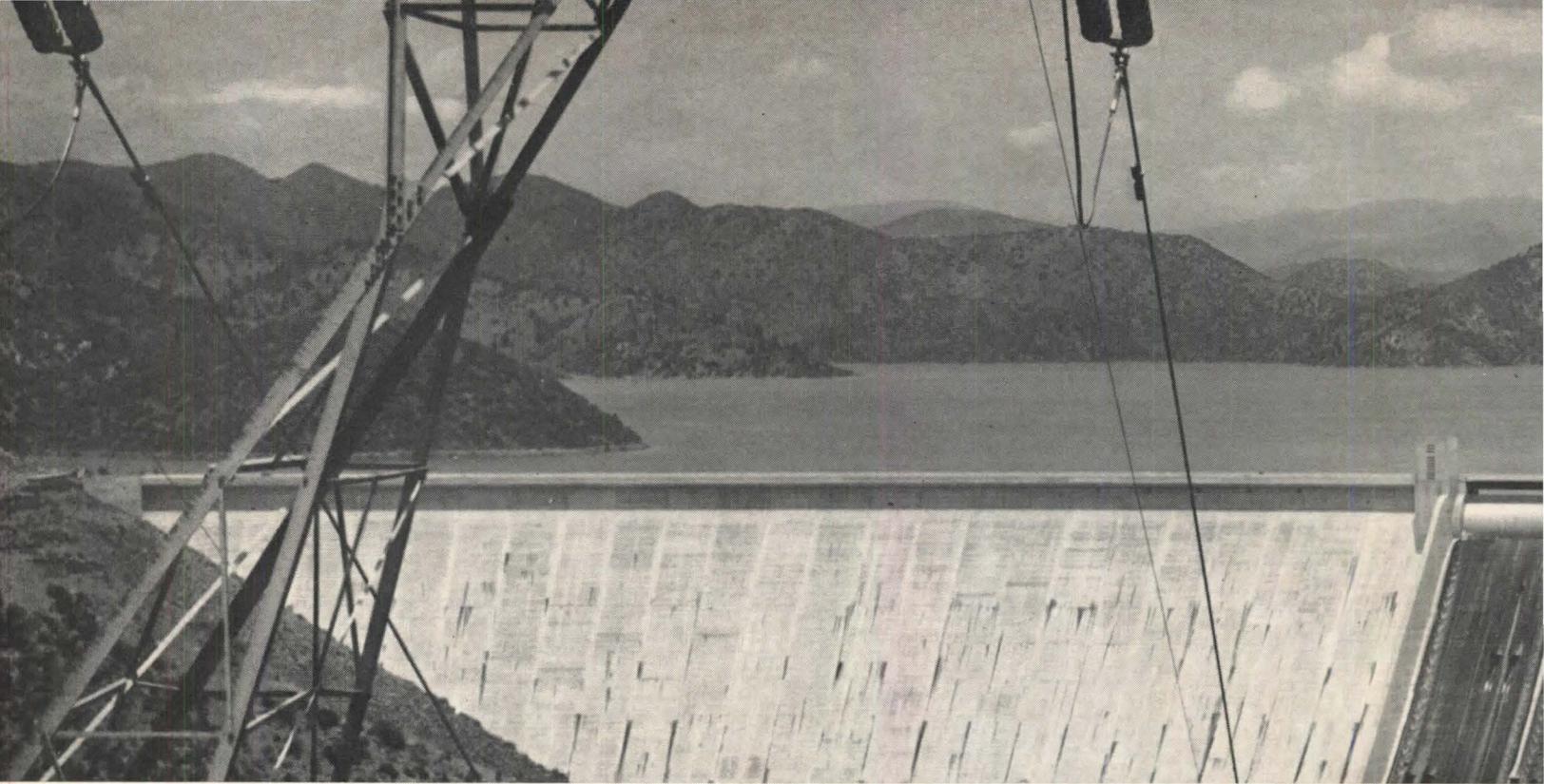
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THE MOST THOROUGHLY DAMMED NATION ON EARTH

BY MICHAEL FROME

This Nation is now passing through a strange and lurid era of building dams, dams, and more dams with reckless abandon. The entire country appears to be in the grip of an almost psychotic fixation on dams as the magic key to profits, politics, and progress. We may survive, but one must wonder.

"These Temple Destroyers, devotees of ravaging commercialism, seem to have a perfect contempt for Nature, and, instead of lifting their eyes to the God of the Mountains, lift them to the Almighty Dollar," wrote John Muir in 1913. He may have been right, but he was fighting only one dam, Hetch Hetchy, in Yosemite National Park. Since then over 160 more major dams, each measuring over 220 ft. in height, and several hundred others of lesser dimensions, have made the United States the most thoroughly dammed nation on earth. The major and minor reservoirs of the Army Corps of

Engineers alone have created a shoreline longer than that of the country's mainland.

"It seems that we can afford from \$1 to \$2 billion worth of water development projects almost every year, with only perfunctory public hearings and almost no prescribed limits as to financing," observed Thomas L. Kimball, executive director of the National Wildlife Federation, in a recent commentary, "yet we must be bound by less than \$120 million per year to finance the bulk of the park and recreation program of the U.S."

In many cases the damming of a river is a worthwhile effort in the public interest. Dams have helped to prevent floods, produce power, store water, and open rivers to navigation. Man-made lakes have created a new world of fishing, boating, water skiing, swimming, and camping. These large bodies of water have not only proven a recreational boon, but an economic asset too for land speculators on the ground floor.

The prevalent theory of the hour is that because a dam is valid in one circumstance it must

be valid in all circumstances. Self-propelled federal agencies are energetically scouting virtually every river and creek bottom from Alaska to the Gulf of Mexico for appropriate sites, without real regard for basin-wide regional planning or natural values placed in jeopardy. For example, in northwestern Montana the Bureau of Reclamation is promoting a dam across the Lower Sun Butte River, although it would wipe out trout streams and eliminate migration routes of elk herds that are part of the native fabric of the state. The Soil Conservation Service quite generously has offered to construct reservoirs in Shenandoah National Park, Virginia, for the benefit of the power structure in a nearby rural community, despite efforts by a "sister agency," the National Park Service, to protect the area as wilderness.

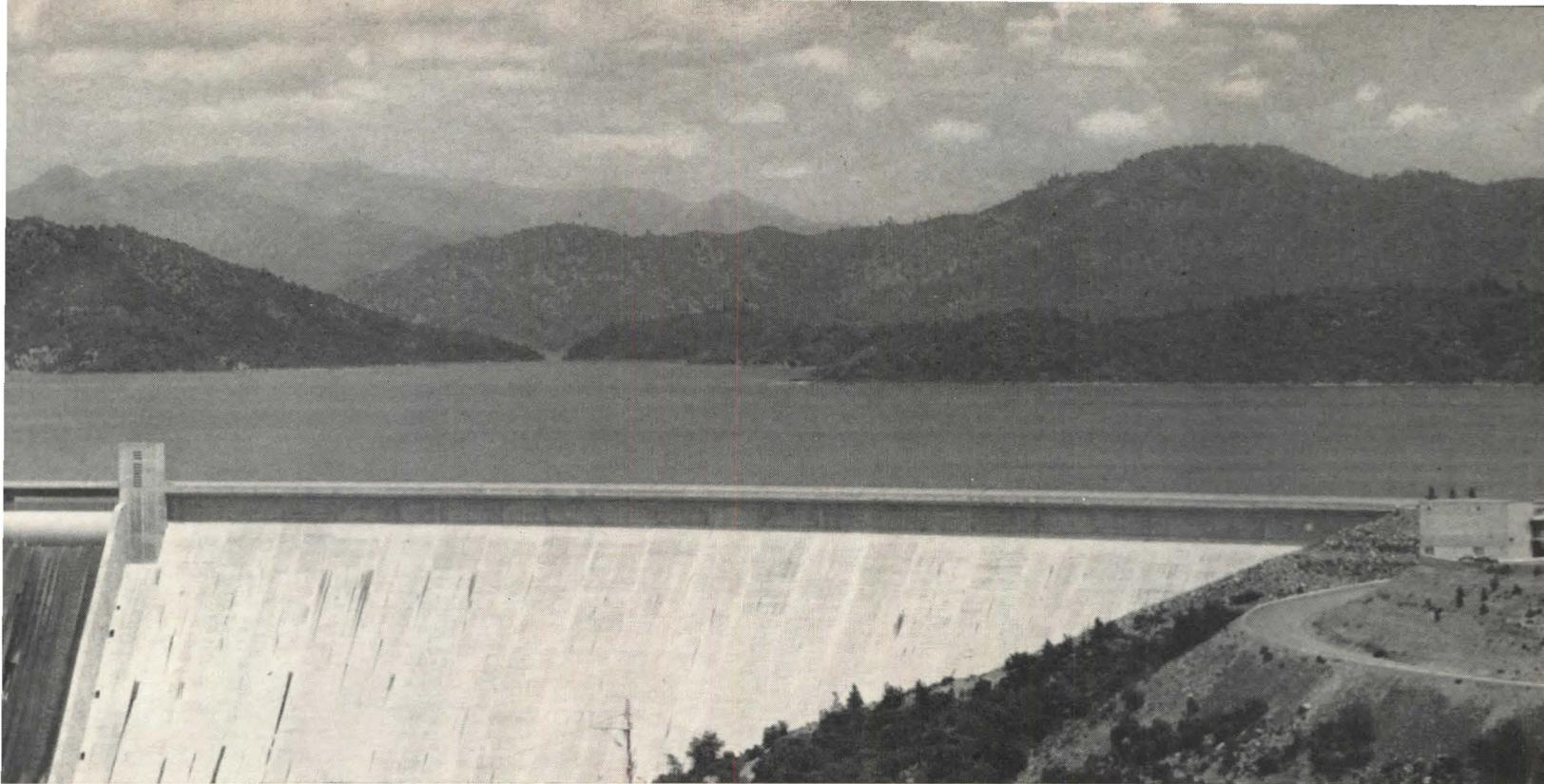
Even where the dam builders see poor prospects and prefer to back away, undeveloped states and localities beat the drums for water-storage projects on the wholly correct theory that they can receive something for nothing from federal taxpayers in more

prosperous sections. This explains why dams are a special hallmark of the South, a region noted for its Congressional bloc with long seniority and power enough to bring home the bacon—or, in this case, the pork.

Dams don't come cheaply, but they do come easily. Congress may talk loudly about the lack of funds for poverty programs, parks, and saving the cities, but the truth is there is something at the pork barrel for everybody who plays the game. As the *Washington Post* reported last October of a Senate Appropriations Committee report: "The fiscal 1968 funds bill proposes 50 new construction starts on Army Engineers water projects, although the President requested that only nine new projects be started."

One of the worst examples of wastefulness, of a dam that should never be built, is the Tellico project on the Little Tennessee River in East Tennessee, for which Congress appropriated an initial \$10 million in

Mr. Frome is one of the most active conservationists in the U.S. and has written extensively on the subject. He is vice-president of Defenders of Wildlife and lives in Alexandria, Va.



the last two years and is now preparing to throw more good money after bad in a great display of political hypocrisy. Representative Richard Ottinger, a courageous young New Yorker, dared to expose Tellico on the floor of the House in 1966 (while violating the unwritten law that no member must poke his nose into the sanctity of another's district) as "purely and simply a pork barrel project that will have the taxpayers... footing a \$42 million bill for a risky 5,000-acre real-estate speculation."

Tellico is represented by TVA (which already has 32 major dams in its system) as a "multi-purpose river development." However, it is not justified by navigation or flood control needs. Within a 50-mile radius, 22 impoundments surround the Little Tennessee. The "Little T" itself is regulated by seven major dams. The only significant argument for the dam is that it would open new industrial sites and allegedly create new jobs—33,000 in number, according to TVA's estimate. The truth is that many industrial sites on nearby lakes are not now used.

Nevertheless, TVA, which continues to masquerade as a happy experiment in regional planning, is using the power of condemnation to acquire all shoreline lands of the Tellico site and presumably will resell 5,000 acres at a profit. But, as the National Wildlife Federation declared, "Unless TVA can produce a whopping big profit on the land sale—at the expense of individual landowners—the margin of profit over cost is too small to risk destroying a beautiful valley as a monument to this 'Big Brother' brand of bureaucracy."

In this valley, 14,400 acres of fertile bottomland will be flooded forever. The reservoir will destroy farms producing over \$1 million yearly in dairy products; woodlands; hunting areas; and a major tree nursery producing 30 million seedlings a year, a major contributor to pulp, paper, and wood industries nationwide.

Also ruined by this dam will be the remains of the ancestral capital of the Cherokee Indians, called Echota, or "Chote the metropolis," and nearby Tuskegee, birthplace of Sequoyah, the honored Indian scholar,

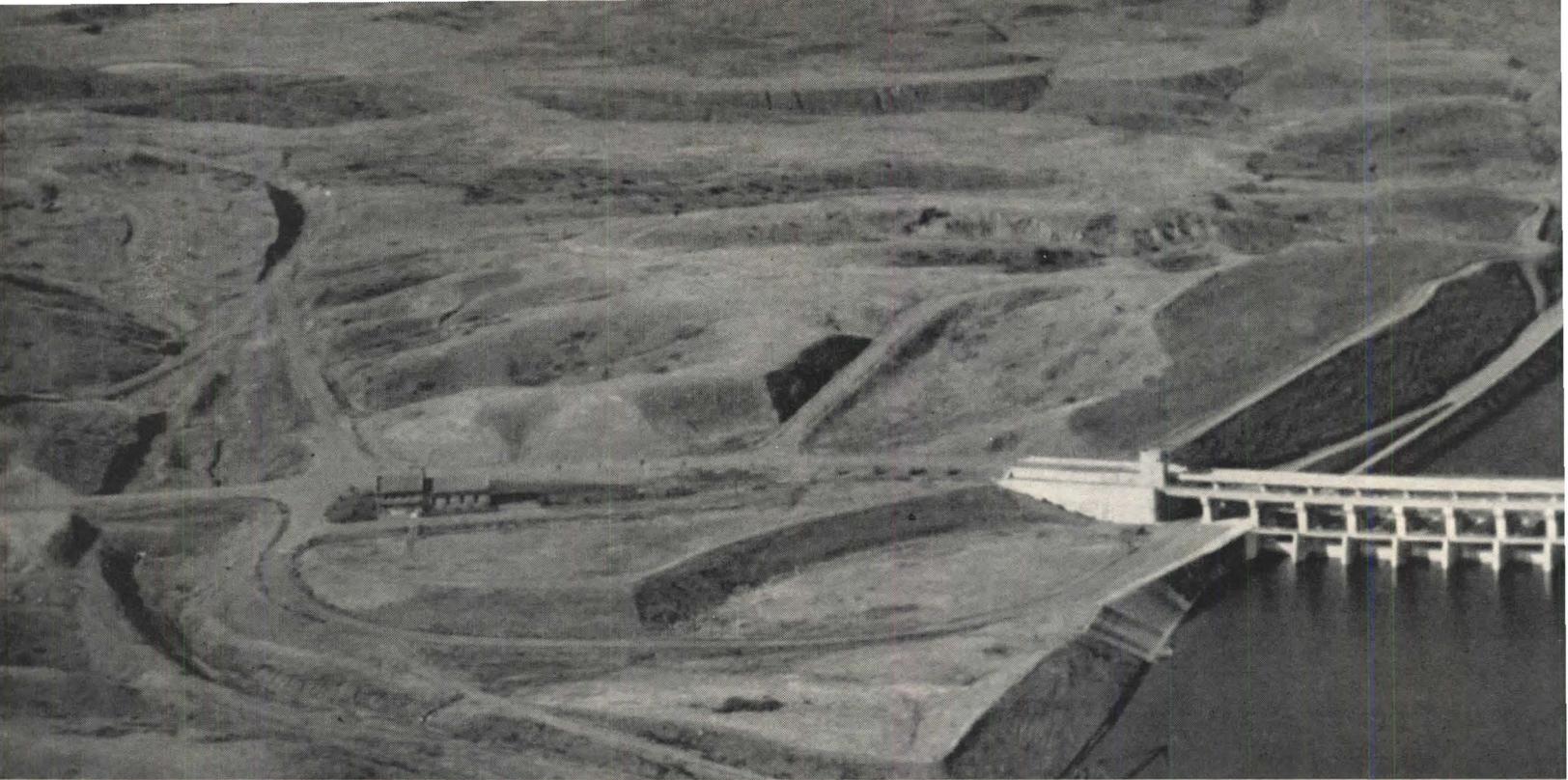
which may comprise the most important archeological sites in the Eastern United States, and which certainly are key links in tracing the culture of man to its American beginnings. Another historic site, Fort Loudoun, the first English fort west of the Appalachians, was restored with loving care over a period of many years by patriotic Tennesseans. It would not be destroyed, but would be accessible only by boat, making a mockery of its historical context.

The Tennessee Valley Authority exemplifies bureaucracy unleashed, unresponsive to the people, embarked on a ruthless, ruinous adventure with the blessings of Congress and the President's own agency, the Bureau of the Budget. TVA has tried to dismiss its opponents as "a handful of selfish trout fishermen trying to deprive the region of progress." But, in fact, the opposition came from every major national conservation organization from the American Pulpwood Association to the

Wilderness Society; from Tennessee chapters of organizations ranging from the Daughters of the American Revolution and the Federation of Garden Clubs to the Farm Bureau Federation and Livestock Association, and from a majority of business and professional leaders of the area, county governments, and property owners.

The Association to Save the Little Tennessee pointed out that it was fighting to save the last stretch of the river that remained undammed, in free-flowing condition—a clear, cold stream that provides superb canoeing and miles of the finest trout fishing in America. With its unique qualities, it could be an economic resource in its own right, and the core of a real regional plan encompassing the adjacent Great Smoky Mountains National Park, national forests, and TVA lakes. The cost of development would be fractional compared to Tellico Dam, but this was never considered by TVA, the Bureau of the Budget, or Congress.

One of the hardest battles of rational land planning is to defend the few surviving moving



ivers, which constitute a living, vibrant part of the national heritage, from the pressure for dam building. Where the national issues are big enough, as in the case of the Colorado River flowing through the Grand Canyon, and the leadership of conservation organizations is tough enough, the pressures are not beyond successful resistance. But when nobody is looking, or when a dam seems to be of restricted local interest, the surviving rivers become truly endangered species.

As one example, the proposed Salem Church Dam, outside of Fredericksburg, Va., may finish off long stretches of the Rappahannock River and its major tributary, the Rapidan, and turn them into a large flat lake. Here the Corps of Engineers would like to erect a high dam for a modest \$79.5 million. The figure is conservative (as all such figures prove to be); with rising values of land to be acquired, the ultimate cost could run over \$100 million. But the Corps has been promoting this project

since 1942 and since then has spent great sums of money.

The initial justification was flood control. On that basis, a much smaller dam was projected at the Salem Church site, but was never built because the benefit-cost ratio was clearly marginal. In time, other potential benefits presented themselves and the project ballooned. For one thing, critical low summer flows of water showed that Fredericksburg and adjacent communities must take positive action to assure their future water supplies. According to the estimates, the project will produce annual benefits of \$340,000 for water supply and \$157,000 for flood control. These total less than 7 per cent of the annual benefits claimed for the project. So other benefits were added, including hydroelectric power, location for oyster beds, and the standard clincher of these times, recreation, which is claimed to represent 41 per cent of the total benefits.

What kind of recreation are the Rappahannock and Rapidan best suited for? These rivers are crossed by few highways. They

are relatively unpolluted and thus immensely popular with canoeists and bass fishermen. Their bottomlands are forested and rich in wildlife, with deer, ruffed grouse, and wild turkey. If the proposal to establish a National Scenic Rivers System now before Congress is adopted, the Rappahannock, midway between Washington and Richmond, would be unique as the only stream so designated and located in a megalopolis.

The Corps of Engineers turned for a definition of recreation values to the Bureau of Outdoor Recreation, an agency of the Department of the Interior. But BOR is a young agency struggling for existence in a harsh political world. Thus, it considered the possibility of suggesting that the river be left in its natural state, but not for very long. It obligingly recommended the development of large scale "flat water" recreational opportunities, despite the availability of near flat surfaces on the Potomac River and Chesapeake Bay. Although BOR supposedly is leading the defense of the scenic rivers, without its testimony of

recreation benefits the Corps of Engineers could never have recommended the high dam.

The Salem Church circumstance to this hour has lacked a straightforward discussion of alternatives. The Corps of Engineers has avoided discussion of basin-wide regional planning, but has concentrated on the blessings of big engineering. The dam proponents have avoided discussion of means of bringing water to Fredericksburg at one-tenth the cost of the \$79.5 million boondoggle, although such means are known to exist through erection of smaller structures. There has been a singular lack of discussion, in Secretary Udall's Department, of alternatives to protect and enhance the scenic, historic, and recreational values of the Rappahannock-Rapidan country—surely if the Virginian Outdoor Recreation Resources Commission had access to the \$23,370,000 allocated to recreation it could safeguard the scenic river and *still* bring the development benefits to the area.

The champions of dams, both inside and outside government, assail their opponents as sheer



sentimentalists. The argument in nature's behalf, however, is only part of the case.

At Salem Church, the \$4.2 million assigned to flood control could buy up unused property, industrial plants, and substandard housing and provide a better buffer against floods than the dam. With few exceptions, every stream gets out of its banks from time to time and uses its flood plain to carry the flows it cannot accommodate in its normal channel. Despite the investment of billions in dams, levees, and other works, flood losses have continued to mount because there is no flood-plain zoning, no comprehensive planning. The odds are that the Rappahannock will be subject to flooding in the future, as in the past. Once this is recognized, the flood hazard can become the basis for preserving open space and recreation in the lowlands and for providing sound flood control. And this is not a simple case of esthetics.

The best way to lessen the threat of floods and assure a steady flow of water is by starting at the headwaters of every river and every watershed and

protecting a ground cover of soil-binding plants. Many costly downstream dams prove to be poor substitutes for the real thing, and the silt they collect is the proof of the pudding.

Dams ought to come into being as essential links of comprehensive river basin planning, or not at all. Their ancient justification for hydroelectric power is no longer valid, considering that steam power is replacing hydro and that nuclear-producing electric power plants are now competing with steam. Moreover, river resources have never been properly inventoried, classified, or defined for their best uses.

Actually, little is known about storage, evaporation, transfer, or the influence of artificial impoundments on earth stresses. Instead of demanding fundamental research and rational deliberation keyed to long-range needs, regions are too often willing to settle for political hysterics, accepting dams as a panacea for whatever ails them. And when land boomers profit they create

a rosy glow in the community that all is well.

The President, who talks a good game of conservation, natural beauty ("When land is used in harmony with our needs and the requirements of nature, it rewards us with beauty and riches"), and economy in these dire times, needs to take a searching look at his own people in the Bureau of the Budget who must give the Administration seal of approval before a water project goes to Congress. Their analyses are superficial. They have little understanding or feeling for conservation or natural beauty, and not much for economy, either.

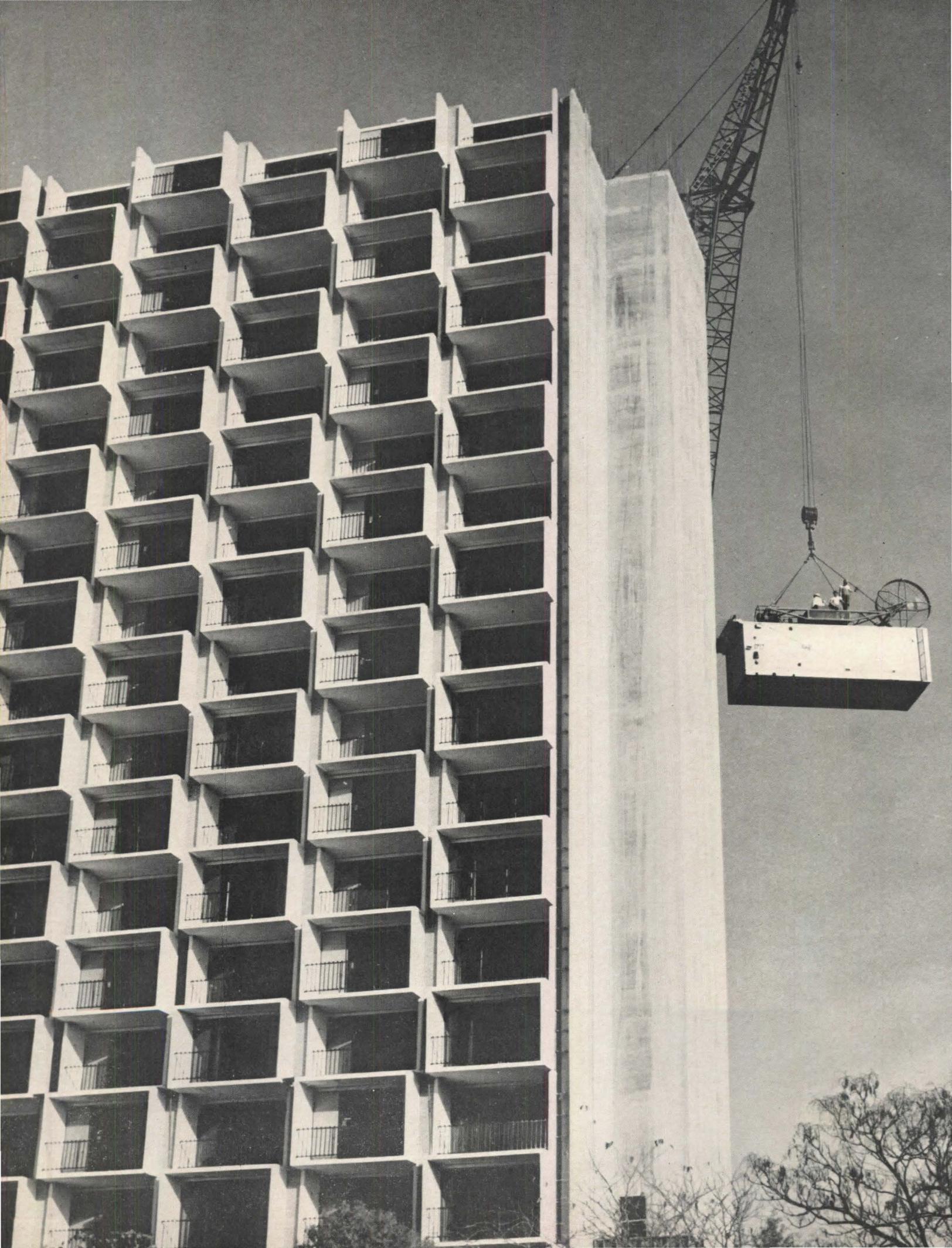
Recently the Corps of Engineers acknowledged the wisdom of antidam sentiment by adopting a new regulation. It declares that if a project's "potential net economic benefits do not clearly outweigh the intangible esthetic values that would be lost, serious consideration should be given to deferring development until doubts are resolved."

As everyone knows, words in a government agency are the easiest item to come by. In actuality, the Corps has proposed

building the highest dam east of the Mississippi on the Big South Fork of the Cumberland River in East Tennessee, just below the Kentucky border. Nearby, TVA has singled out the Obed River, a tributary of the Emory, as its special target for a new dam. Both agencies have chosen to invade remote green valleys and densely wooded slopes with some of the most beautiful river scenery in the United States.

The going will be tougher for them on these fronts. Out of the struggle to save the Little Tennessee, the Tennessee Scenic Rivers Association was born. It has vowed to take its stand on the Obed and Big South Fork. Outfits like TVA and the Army Engineers, with all their resources and political muscle, have run roughshod over their opposition. Now it is the public's turn to stand on principle and protect a slender few American streams from the hands of unwanted benefaction.

PHOTOGRAPHS: Pages 80-81, Shasta Dam in Calif., by H. Armstrong Roberts; Pages 82-83, Fort Peck Dam in Montana, by Post-Dispatch Pictures, Black Star.



BUILDING WITH BOXES

a progress report

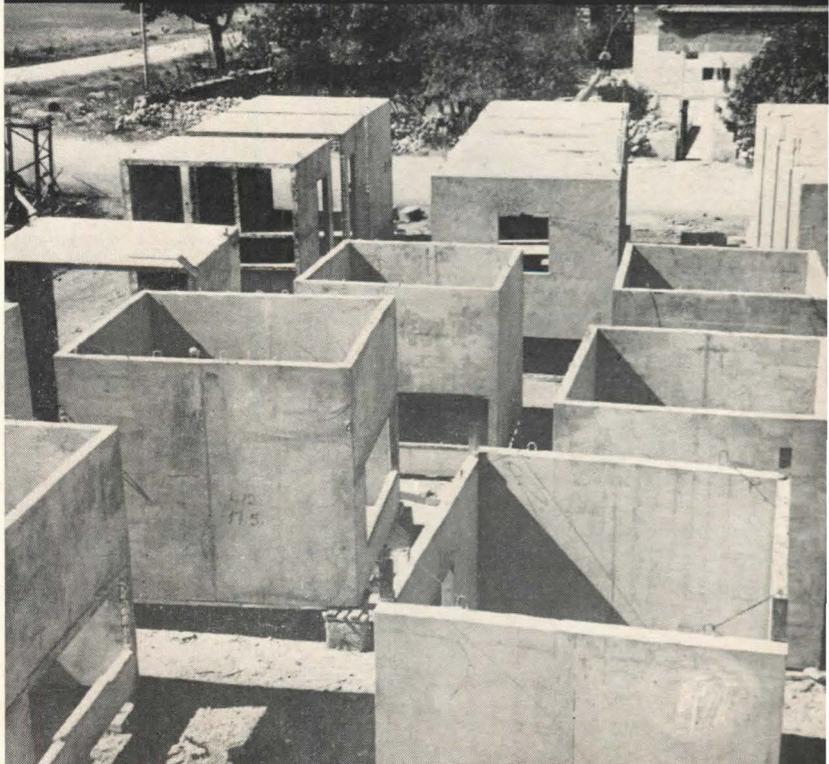
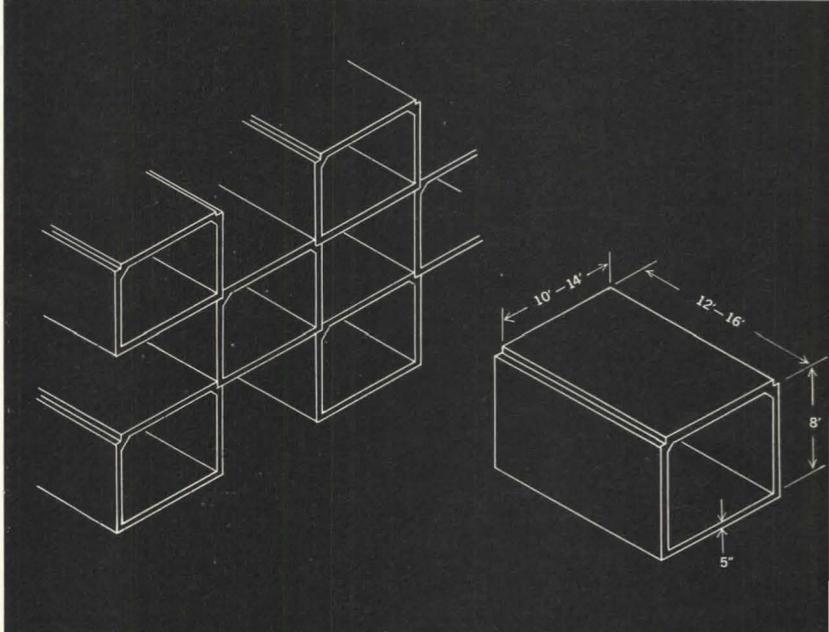
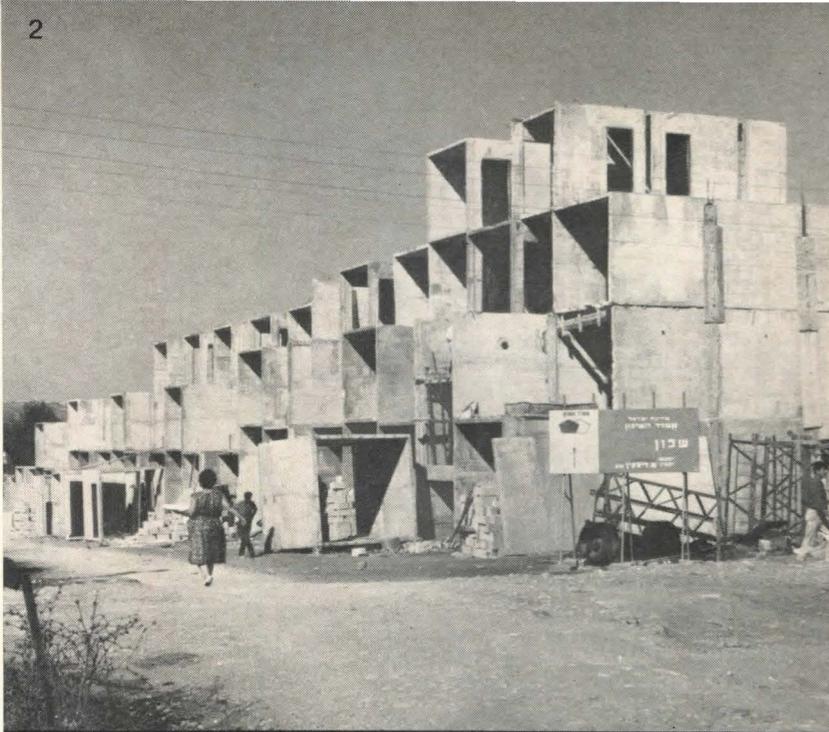
Not quite one year ago, in an article entitled "Habitat and After," THE FORUM called the concept of building with boxes "an idea whose time has come" (May '67 issue). In the 11 months since, that idea has in fact received so much attention that it now seems time for a progress report—by no means a conclusive report, since few of the scores of systems so far proposed have yet been built.

Habitat 67, which touched off the North American boom in box schemes, can now be seen in sharper perspective as an architecturally brilliant but technically cumbersome version of a long-established concept. Criticism of Habitat's uneconomical construction system has had an instructive effect on other proponents of the box idea.

The most dramatic project that has actually been built using a box system, since Habitat, is the 21-story Hilton Palacio del Rio Hotel in San Antonio, Tex., 1 (left). Like Habitat, the hotel was built for an exposition, but the concrete box structural system was not used here to demonstrate a concept. Instead, it was simply the most efficient way to build a permanent 500-room hotel in a mere eight months. The hotel's units were completed—down to the carpet and wallpaper—on the ground. They came in two sizes—32 ft. 8 in. long or 29 ft. 8 in. long (by 13 ft. wide and 9 ft. high)—which were stacked alternately to produce the in-and-out facade. At the peak of the round-the-clock building process, 36 units were hoisted into place in one day.

One of Habitat's predecessors, a concrete system that has been used in Israel for more than a decade, is soon to be introduced to the U.S. This system, 2, invented by Shimon Diskin, a developer, consists of 12-ft.-square concrete tubes, cast ingeniously with a steel inner form that folds up like an umbrella for removal. The tubes are cast standing on end, then tipped up and stacked in a vertical checkerboard pattern. The voids between them, identical in size to the cast units, become in effect *bonus* units. In Israel, the cost of closing the

1 (left) Hilton Palacio del Rio Hotel, San Antonio, Tex. (builder, H. B. Zachry Co.; architects, Cerna, Garza & Assocs.): one of the last units being hoisted, with the aid of a helicopter rotor to compensate for wind. 2 Housing in Israel (inventor and sponsor, Shimon Diskin): top, under construction; middle, method of stacking; bottom, units curing.



ends of the units and installing utilities is modest.

Construction is just starting at Oakland, Calif., on a project, **3**, using a box system based on Diskin's Henry Hanson, head of the sponsoring firm, hopes to mass produce forms for this system and distribute them worldwide to manufacturers.

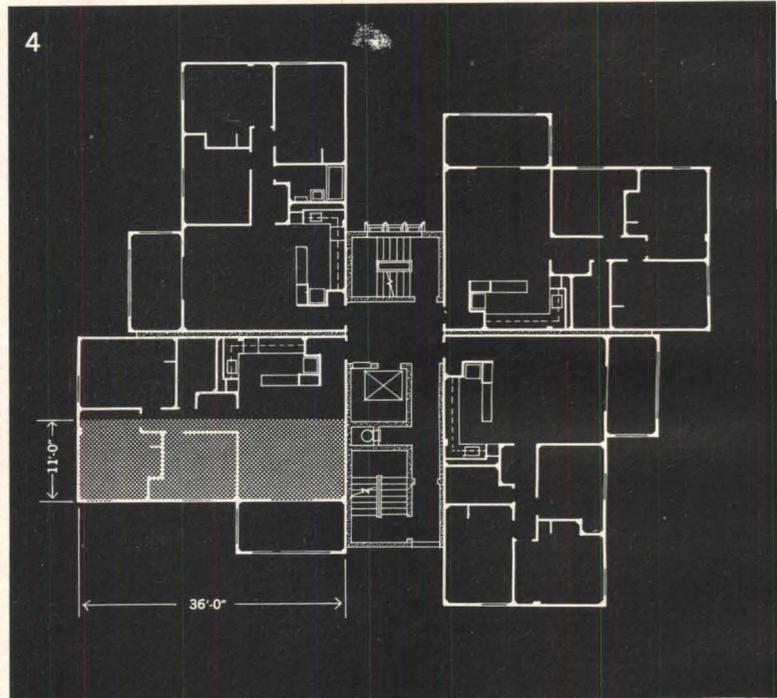
Lightweight concrete

Nearby in Richmond, Calif., construction is also starting on the first "Uniment" project, **4**, using a lightweight concrete box system developed by Conrad Engineers. The key to this system is an expanding cement, also developed by Conrad, which makes possible "chemical prestressing" of three-dimensional units without the equipment usually required for stretching the steel reinforcement. These boxes have walls only 2 in. thick (as compared to Diskin's 5-in. walls).

Each of Uniment's 11 ft. by 36 ft. units will consist of three exterior walls and all interior partitions, plus a "roof," which will serve as the floor of the unit above. The lightness of the units (15 tons, compared to 90 at Habitat) will make it possible to ship them up to 500 miles and hoist them with conventional equipment. All fixtures and cabinetwork will be installed in the factory. Edward Rice, president of Conrad, emphasizes that fitting out units at the factory is essential if a box system is to be economical. Rice is collaborating with Moshe Safdie, the architect of Habitat, on one of the three demonstration projects in Washington's Fort Lincoln Area (see Page 34).

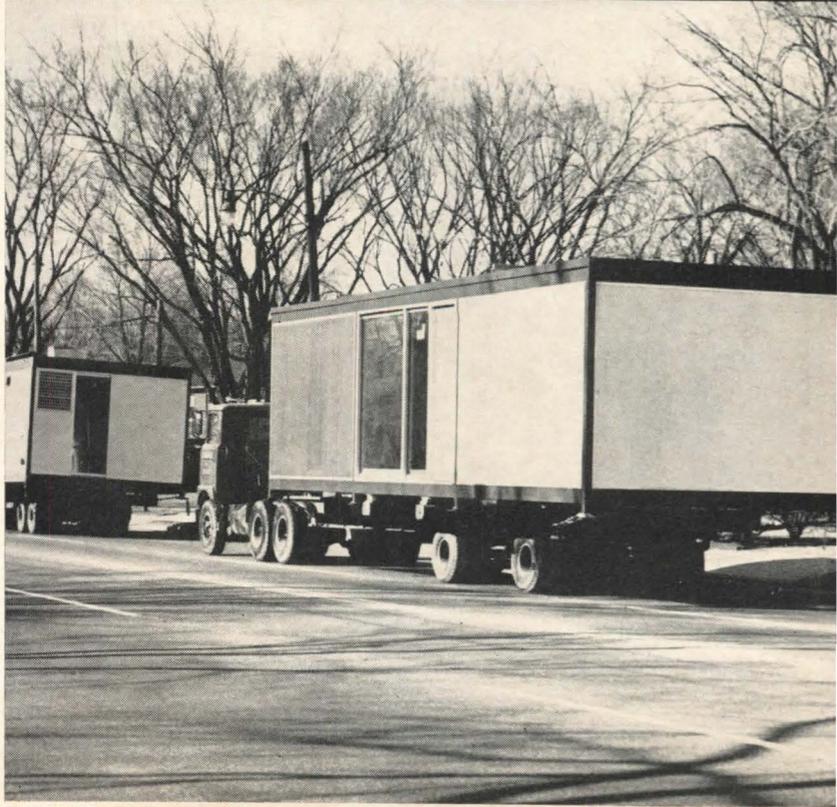
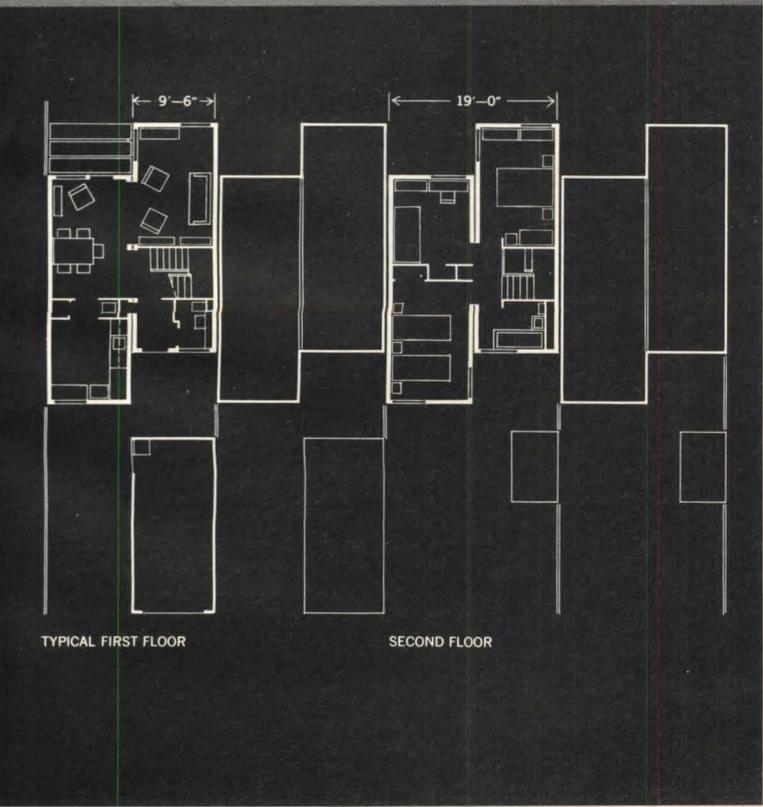
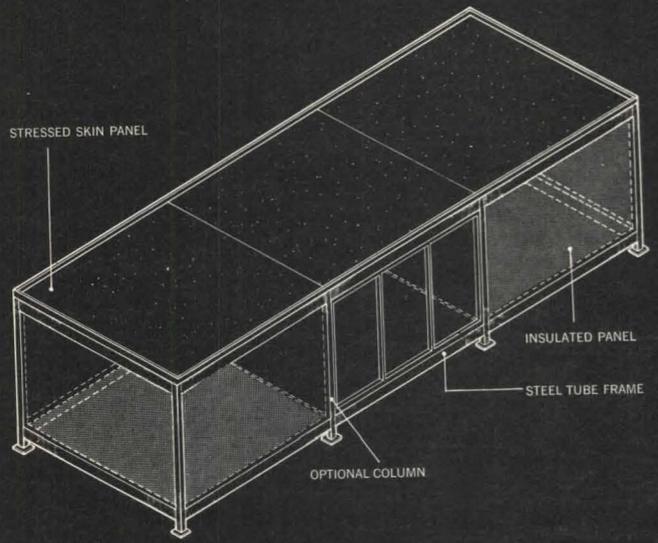
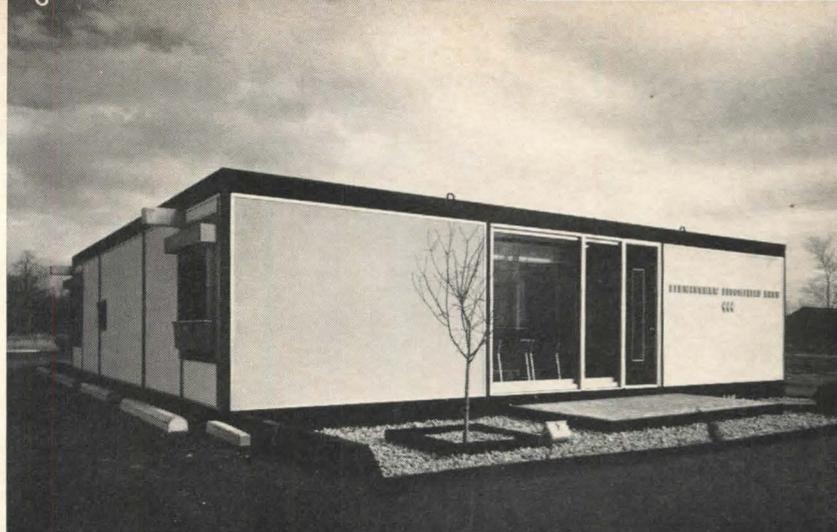
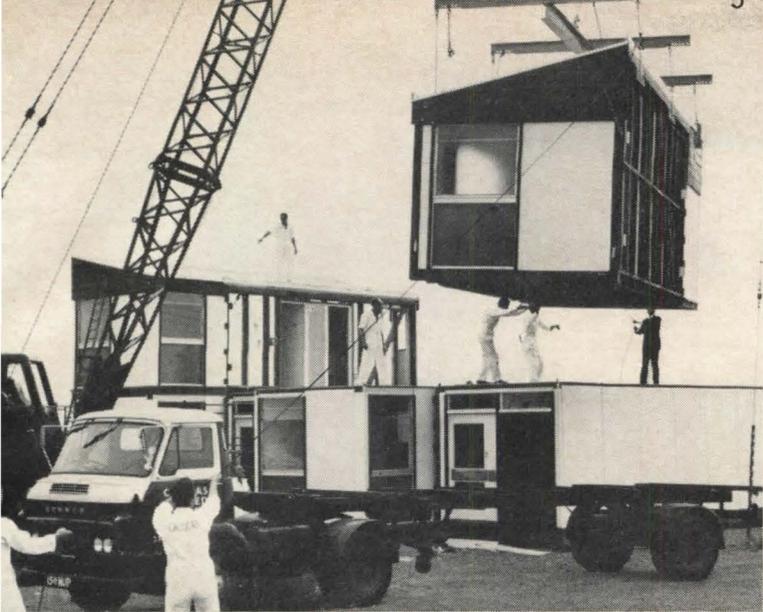
A factory-assembled, wood-framed unit produced by Calders, Ltd. has been used for low-rise housing, **5**, at about a dozen locations in England. The basic units are stacked in staggered rows. Each four-unit dwelling has sheltered patios front and rear, with windows facing them, and an interior that overcomes the feeling of living in boxes.

A box originally designed to provide temporary branch offices for a rapidly expanding Detroit bank, **6**, has since been used for school and college classrooms and



3 Low-cost housing, Oakland, Calif. (sponsor, Building Block Modules Inc.; architects, Fisher/Jackson Assocs.): a proposal based on the Diskin concrete box system. **4** "Uniment" apartment building, Richmond, Calif. (sponsor, Stressed Structures Inc.; architect, engineer, and contractor, Conrad Engineers; associated architect, Paul R. Williams): technical advances in a concrete box project now being built with an FHA "experimental housing" loan. **5** Row housing, Lydiat, England (manufacturer, Calders Ltd.; architects, Harding & Horsman): a few of about 600 units built so far with one wood-framed system. **6** Steel-framed box system (owners, Bank of the Commonwealth and correspondent banks; architects, Ziegelman & Ziegelman): top, three-unit branch bank; middle, basic structural scheme; bottom, units in transit.





could be stacked for lowrise housing. Since the units meet most codes for permanent buildings, and seem to be accepted as such by the bank's customers, few of the 22 branches erected so far have been replaced by conventional structures.

A 12-unit apartment group now under construction in Michigan City, Ind., **7**, will test a steel-framed system designed for a local nonprofit corporation. Two distinct types of boxes are used, both of which can be produced on mobile-home assembly lines. Each apartment consists of two 12 ft. by 30 ft. boxes and half of a 12-ft.-square bathroom-kitchen-utility box, which it shares with the next apartment.

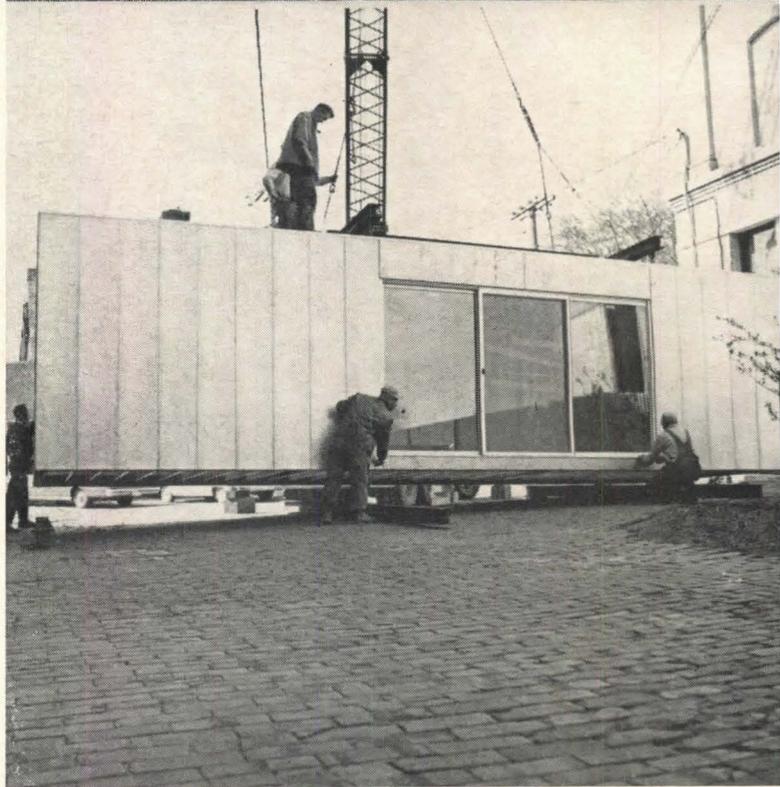
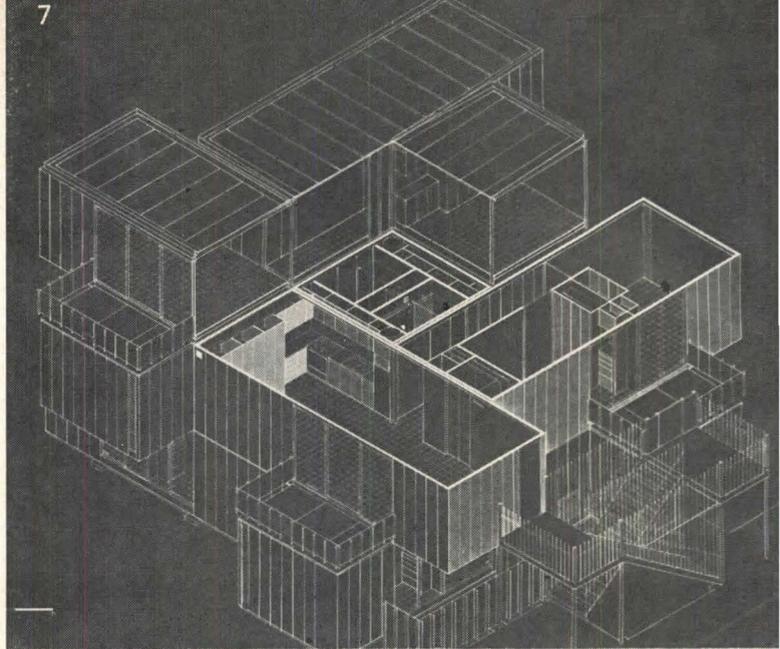
In a study for the American Iron and Steel Institute, Engineers Trygve Hoff & Associates have proposed a system for highrise construction (up to 20 stories) using steel-framed boxes stacked in a vertical checkerboard pattern, **8**, (much like Diskin's concrete boxes).

Suspension and superframes

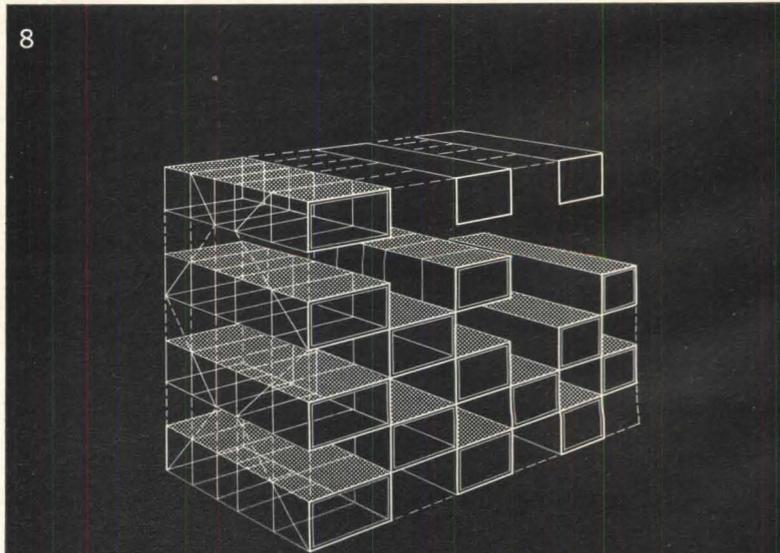
Aside from stacking, two other systems have been proposed for assembling highrise structures out of prefabricated boxes. One is the long-familiar Suspended Structures system, **9**. Its cable supports demand no more structural strength in the boxes than they would need in any case to be hoisted. The inherent rigidity of the boxes is used, in turn, to stiffen the cables. In urban reconstruction, a building of this type could go up at the center of a block while street-front buildings remained in use.

The other alternative is to support box units with a superframe, as in a proposal sponsored by the Jones & Laughlin Steel Co., **10**. In this scheme, "mobile home" type boxes could be inserted, using the frame itself as a hoisting platform, and later replaced.

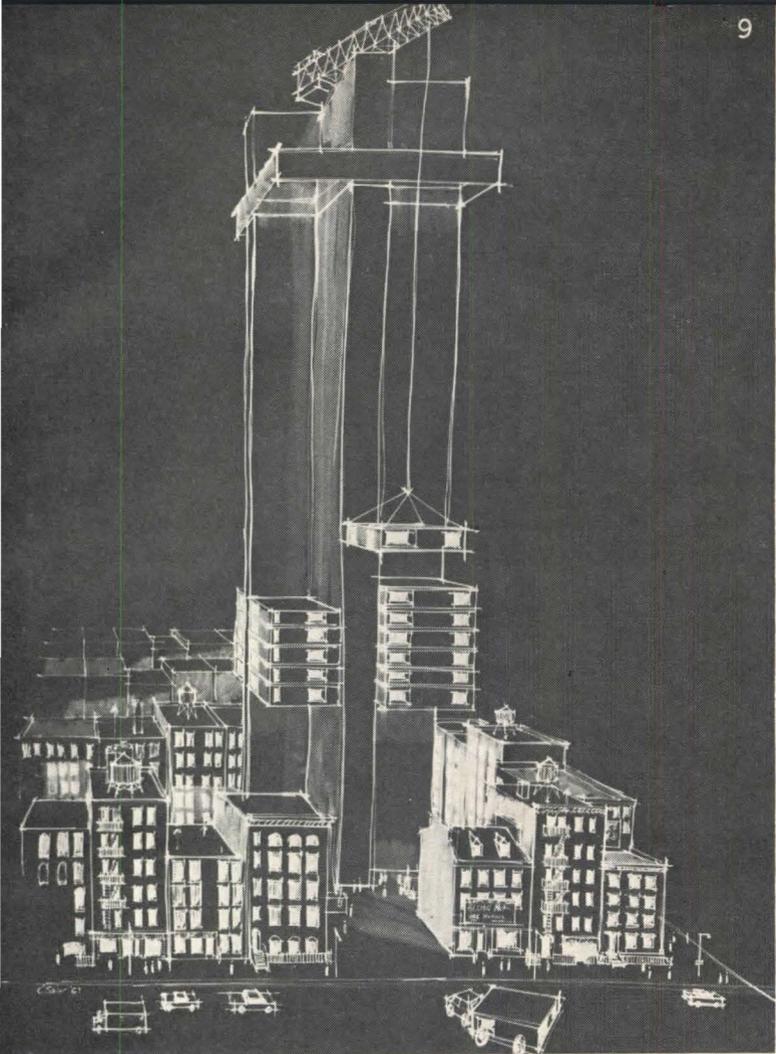
Of course, prefabricated boxes need not always be rectangular. A Swiss architect, Justus Dahinden, has proposed a triangular box, **11**, framed in steel. Bathrooms, kitchens, and stairs would occupy the corners of the triangles, convenient to utility lines in the corner columns.



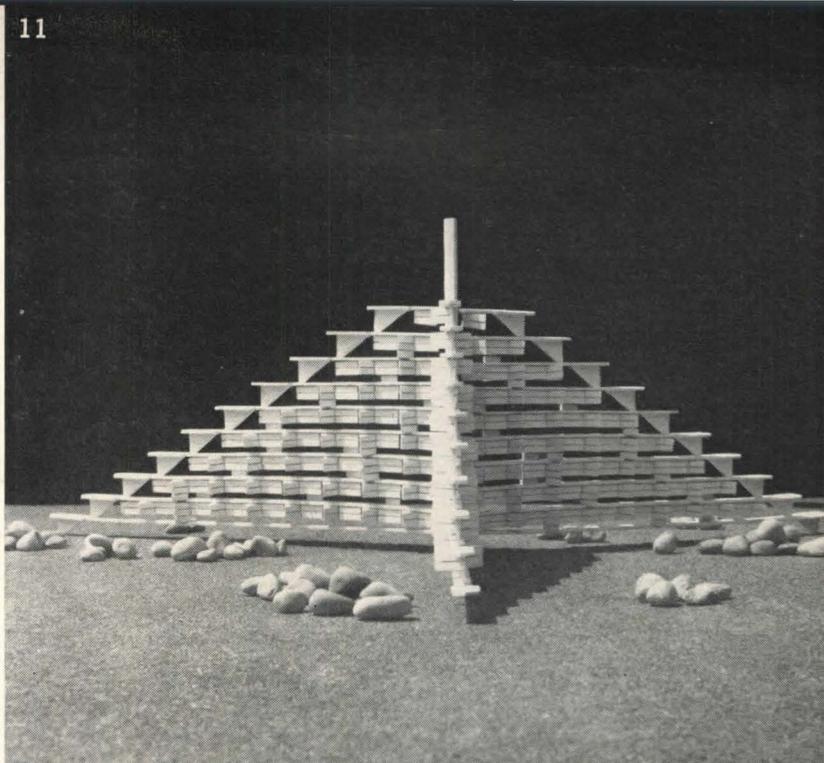
7 Prototype low-cost housing project, Michigan City, Ind. (sponsor, Housing Research Inc.; architects, Ken Fryar Assocs. and Ronald Goodfellow): steel units weighing at most five tons, which could be stacked six stories high. **8** Prototype stacking scheme (sponsor, American Iron and Steel Institute; engineers, Trygve Hoff & Associates): steel framed units 56 ft. long and 15 ft. wide, erected in a "checkerboard" to eliminate duplication of structural elements. **9** Highrise apartment building (system developed by Suspended Structures Inc.; architects, Frederick G. Frost Jr. & Assocs.): suspended-box structure proposed for New York redevelopment. **10** Highrise apartment building (sponsor, Jones & Laughlin Steel Corp.; architects, Dalton-Dalton Assocs.): proposal for light steel units in fireproofed steel frame. **11** Swiss box system (architect, Justus Dahinden): triangular box proposed for lowrise stacking or highrise superframe structures.



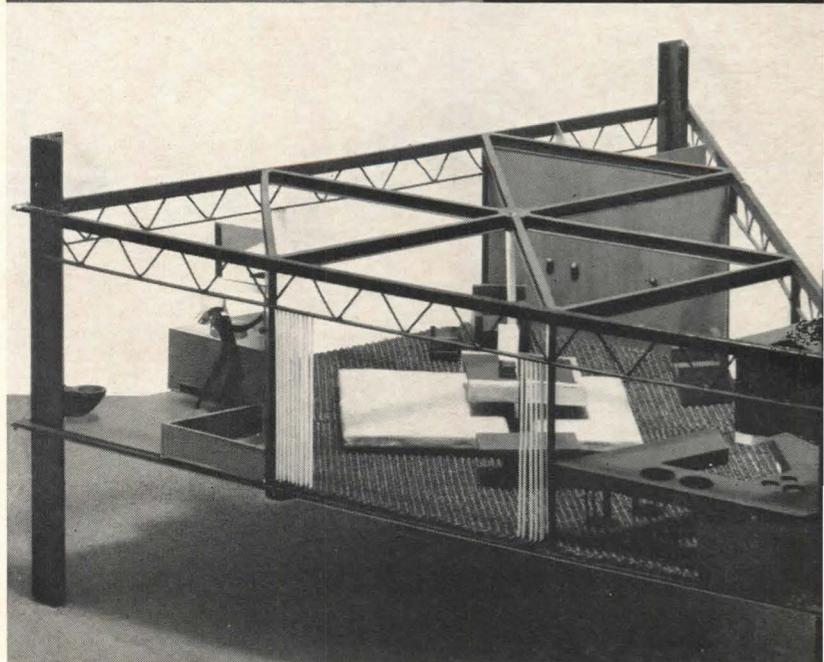
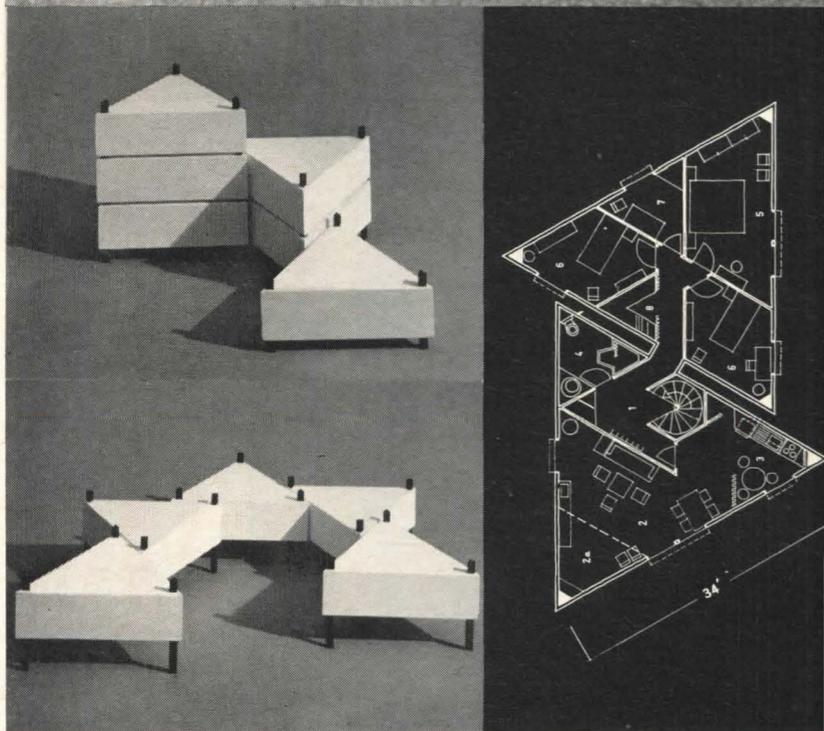
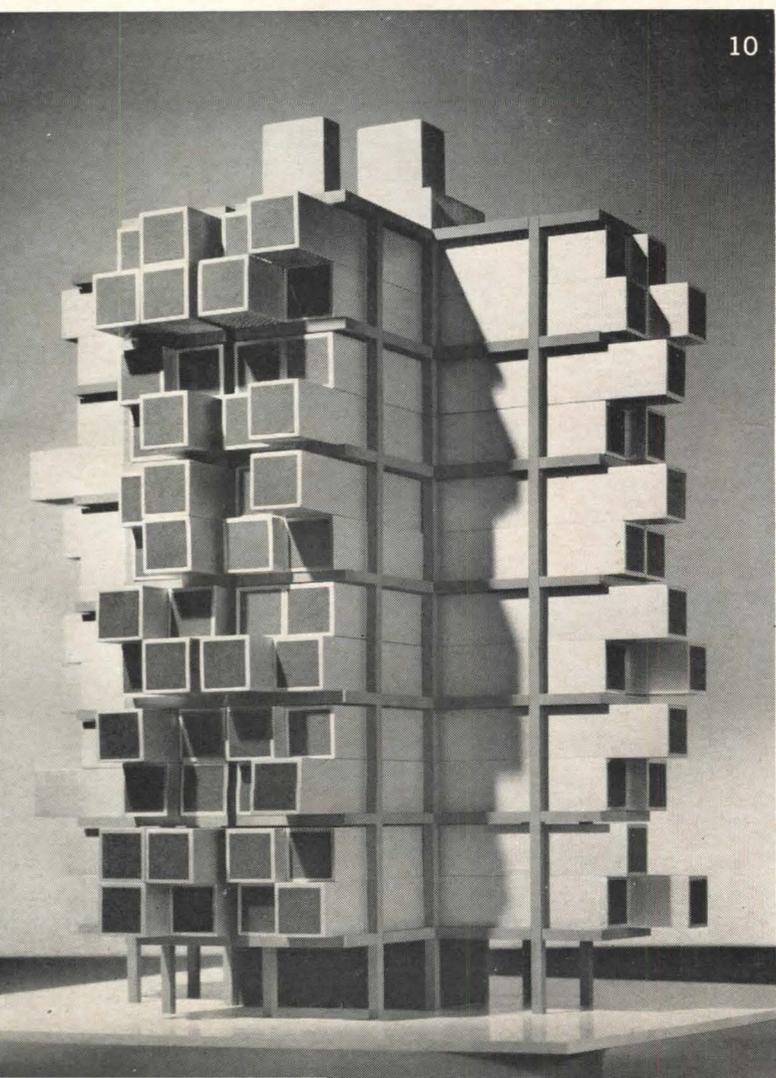
9



11



10



Kenji Ekuan, one of Japan's Metabolist architects, has suggested two systems based on 14-sided polyhedrons. One scheme, **12**, employs a large three-story unit. The other, **13**, is made up of smaller, flattened polyhedrons; projections at their corners would join them to other units or support sunshades.

The ideal material for prefabricated boxes would be a light, strong, fireproof plastic that could be vacuum-formed quickly and cheaply. When and if such a material is developed, there is a scheme ready for it, **14**, (far right) designed by Architects Craig Hodgetts, Doug Michels, and Arthur Golding, when they were students at Yale.

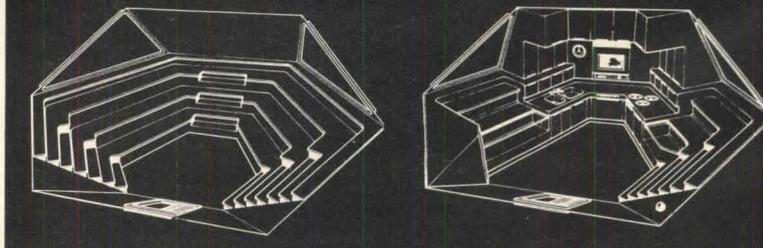
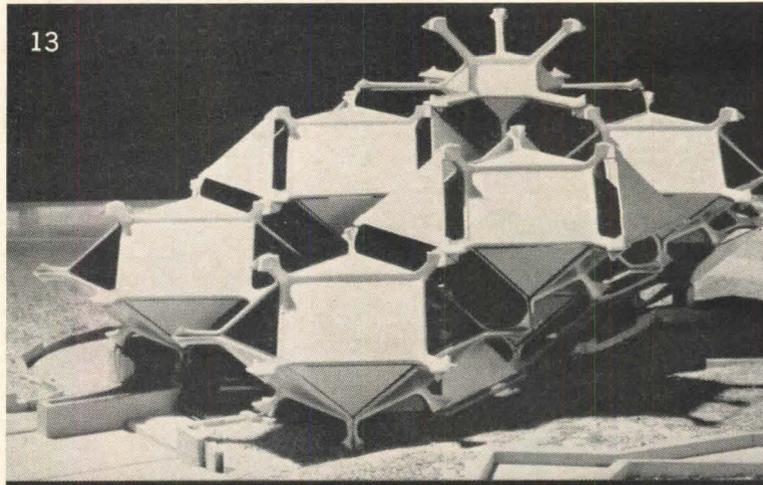
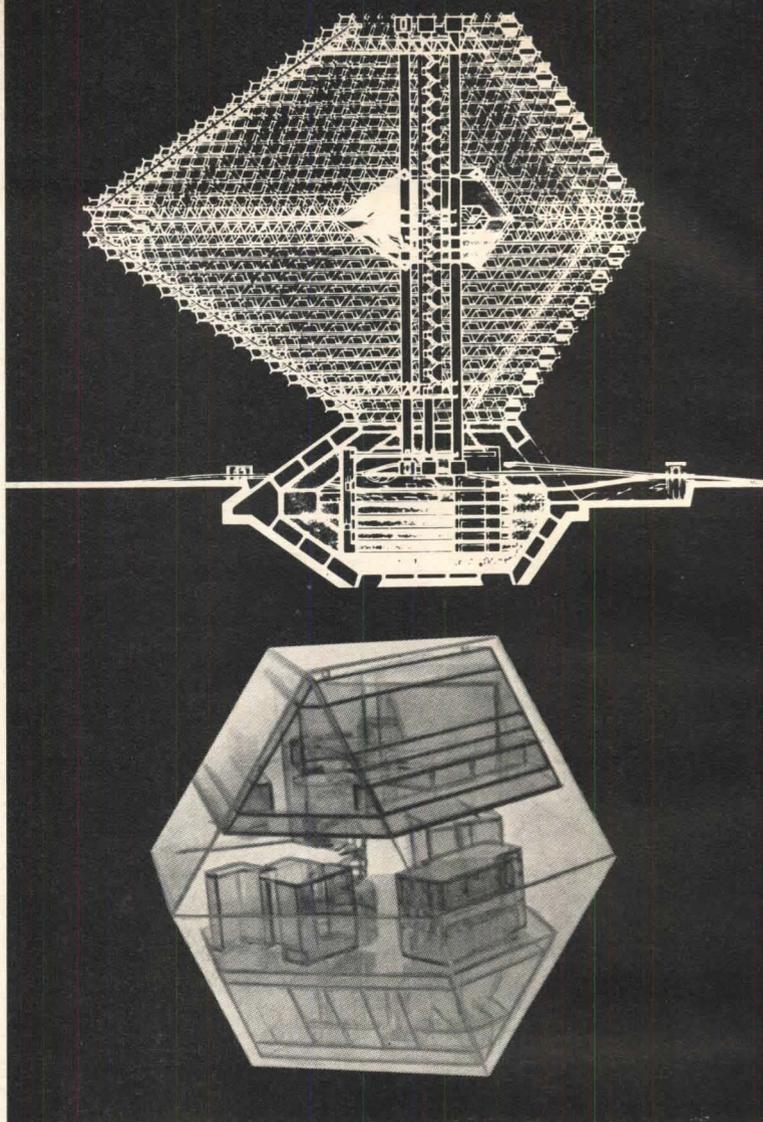
Although their system could be executed using metal sections with polyurethane foam insulation, the sought-for plastic would allow piping to be molded into the walls, as in present-day refrigerators, and wiring to be printed, as in a television chassis. Using standardized containers of three sizes, a variety of apartments could be created and remodeled by fitting specialized elements into openings.

The future of the box

Ultimately, the success of building with boxes will depend on two things: the ability to finish the units completely in the factory, and the development of an economical, lightweight, fireproof structural material.

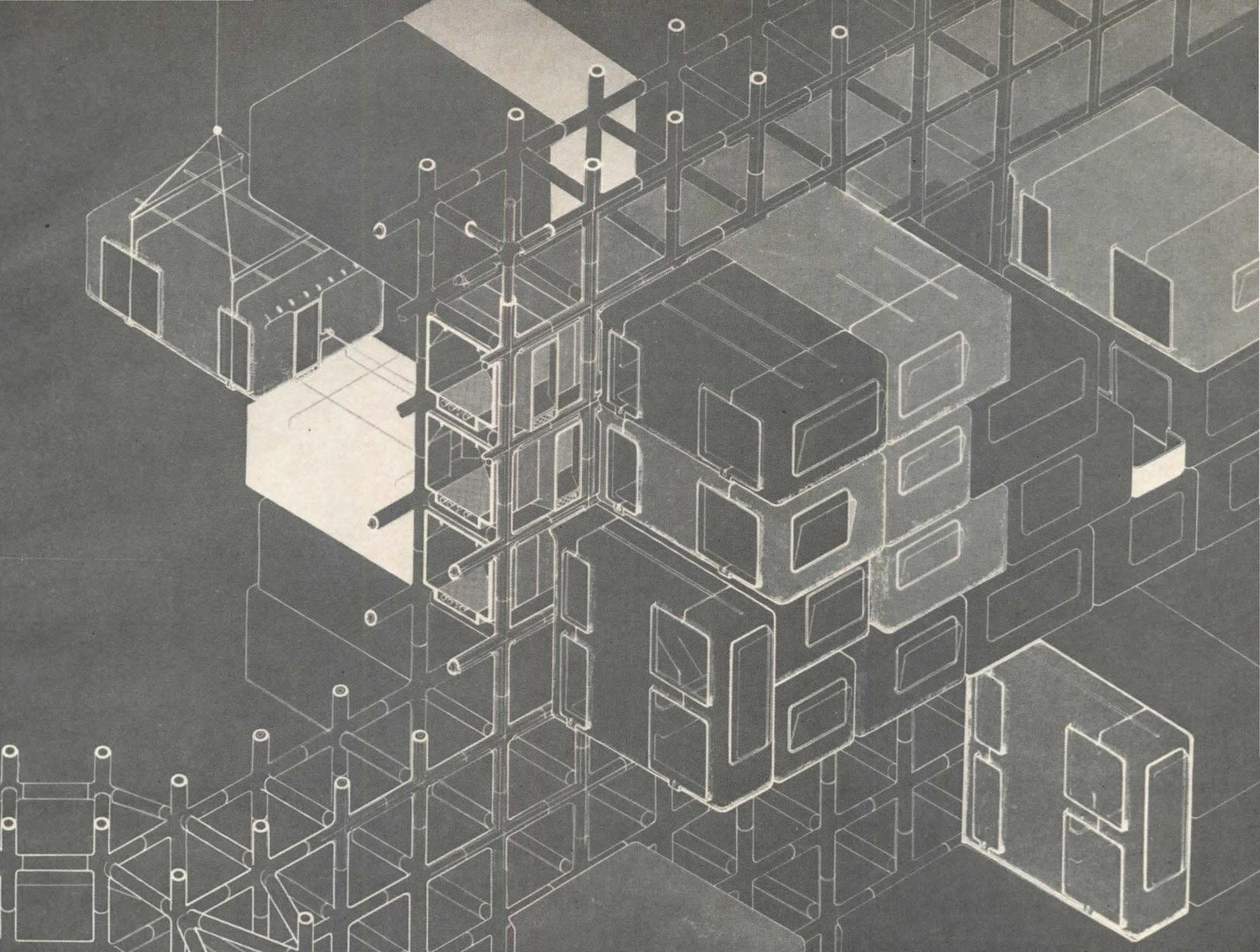
At this point, with advances in these areas still uncertain, enthusiasm for building with boxes is by no means universal. One architect who has been studying building systems calls the box approach "the least promising" of all methods proposed for industrialized building. He and others object to the apparent inefficiency of shipping large objects, full of air.

But prefabricated boxes can carry innumerable components that would otherwise have to be shipped separately, and they can eliminate many hours of inefficient on-site labor. Boxes finished and fitted out under predictable factory conditions may well be more economical than any other system of construction.

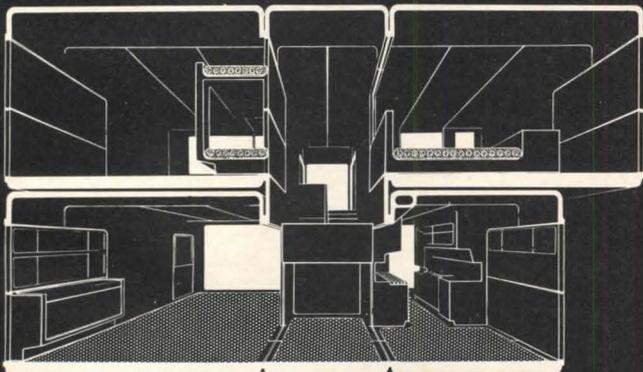


12 Highrise housing proposal (architect, Kenji Ekuan): a family-sized apartment in each polyhedral box. **13** Lowrise housing (architect, Kenji Ekuan): studio-apartment-sized polyhedron, shown in sketches at bottom as empty shell and as unit equipped in one of several proposed ways. **14** (far right) highrise housing (designers, Craig Hodgetts, Doug Michels, and Arthur Golding): one- and two-story boxes, designed for fabrication in plastic, attached to fireproof steel structural spine; variations and alterations in apartments attainable by moving whole boxes or by changing snap-in wall panels, windows, doors, cabinets, bunks, etc.

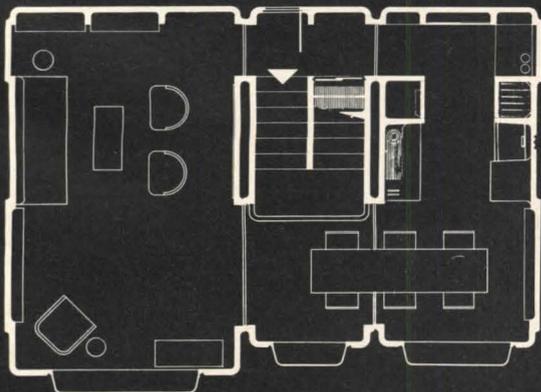
PHOTOGRAPHS: 1, Tell-Pics. 2 (top), Dr. K. Meyerowitz; (bottom), Eli Kohen. 11, Michael Wolgensinger.



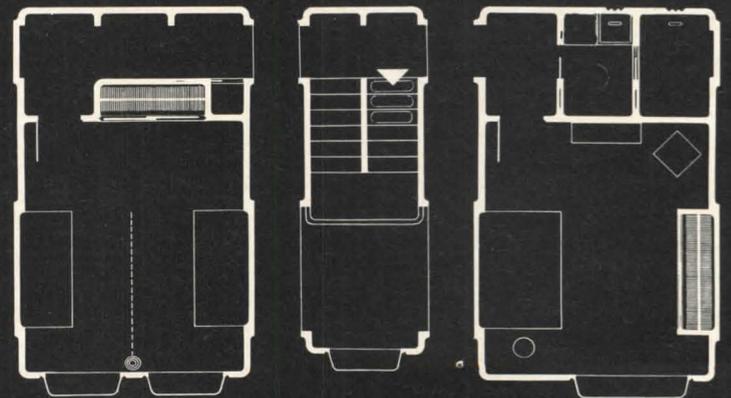
DUPLEX APARTMENT



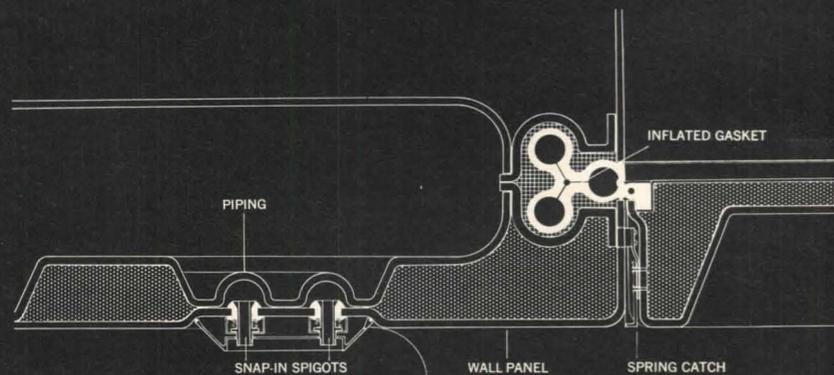
SECTION



FIRST FLOOR PLAN



ADDITIONAL UNITS



JOINT DETAIL



report on last summer's riots. In effect, if not in intent, the 240,000-word document constituted a stinging rebuttal of the President's inadequate program for cities.

In a chapter entitled "The Future of the Cities," the report bluntly spelled out what is in store for urban America if it continues on its present course: "A kind of urban apartheid with semi-martial law in many cities, enforced residence of Negroes in segregated areas, and a drastic reduction in personal freedom for all Americans, particularly Negroes." To continue present policies, said the commission, is to risk "large-scale and continuing violence . . . followed by white retaliation, and, ultimately, the separation of the two communities in a garrison state."

The commission recommended a massive program for reversing the course. Like the President, it called for the construction of 6 million low- and moderate-income housing units, but in half the time—five years instead of ten. It also proposed a guaranteed income for families living in poverty; the creation of 2 million jobs for the hard-core unemployed in the next three years; reorientation of federal housing programs to place more low-income units outside the ghettos; a revamping of the welfare system, with the federal government assuming up to 90 percent of the cost; the decentralization of city governments to make them more responsive to the needs of the poor; and federal programs for desegregating school systems and intensifying the education of ghetto children.

The report was apparently more than the President had bargained for when he appointed the commission eight months ago. He said not a word about it until four days after it was issued, and then he gave it only perfunctory praise, noting that the report and his own message on cities were both worth reading. Vice President Humphrey, who less than a year ago had called for the creation of a massive Marshall Plan for cities, seems to have had a change of heart. "Our progress has been dramatic," he told the National Housing Conference last month.

One person who might disagree



with that analysis is Newark's Mayor Hugh J. Addonizio, whose riot-torn city (above) was among those studied by the commission. "Everyone is sympathetic," he said last month, "but no one does anything and they haven't done anything since the riots."

URBAN DEFENSE

The Army and the nation's police forces are stockpiling anti-riot equipment, which includes heavy weapons once solely designated for wartime use: commando cars, M-1 carbines, shotguns equipped with targeting spotlight, armed helicopters, M-79 grenade launchers, and high-powered rifles.

At least four companies (AAI, Cadillac-Gage, Bauer Ordnance Co., and B&H Enterprises) are moving toward mass production of a tank-like armored personnel carrier designed to put police into



riot areas under fire (example above by Cadillac-Gage) and capable of being outfitted for wartime firepower. One such carrier, manufactured by B&H Enterprises, moves on rubber tank-like treads. It can surmount any barricade—crushing automobiles under it.

The companies are aiming high-pressure sales campaigns at, as yet, reluctant city halls. In a series of articles entitled "The

Garrison City," William Chapman of the *Washington Post* has painted the disquieting picture.

Other equipment—not always lethal—is being introduced on the market: armored cars that can fire tear gas, caliber .50 machine gun bullets, and chemical foams; electronic "curdlers," which emit mind-shattering shrieks; "dusters" which spread tear gas over whole neighborhoods; slippery fluids on which no one can stand upright; darts which paralyze a human being for hours (and possibly cause permanent internal injury), and the Chemical Mace, which shoots droplets of highly effective tear gas.

Simultaneously, the federal government is making extensive and diverse plans, partially secret, for the control of future riots. About 15,000 soldiers in seven task forces will be ready for duty this summer. The mechanics for the deployment of men and equipment are being refined: maps of subways, sewers, water and electrical systems in potential trouble spots are being studied, and assembly points and buildings where troops can be housed have been selected.

Perhaps the most frightening aspect of this urban defense is the arming of private citizens—mainly white, and proposals for "vigilante" groups (in Chicago, for example, which was stopped in the courts). In the Detroit suburbs, and in Newark, there has been a tremendous increase in gun sales. Choking off permits is of limited effect. In Detroit, rifles and shotguns can be bought without permits, and guns can be purchased without permits in nearby Toledo, or through the mail. Newark citizens go to Pennsylvania or Maryland to buy guns.

And, following the advice of Mayor Orville Hubbard, 180

FOOTNOTE

Walking Igloo—The eight-legged tortoise shown opposite is, in reality, a glass-fiber igloo designed by Architects Cohos, DeLesalle & Evamy, of Calgary, Alberta, and manufactured there. It weighs all of 480 lbs., which comes to 2/3 lb. per cu. ft. of space enclosed. This particular model is made of 12 orange-peel-shaped sections that can be bolted together in 90 minutes to form a shelter 14 ft. in diameter and 7½ ft. tall at the center. Other models are lengthened by the use of straight, intermediate sections; and there is a super-igloo currently going up at the North Pole that will house helicopters. It measures 76 ft. long and 17½ ft. high, and weighs 6,000 lbs. The igloos come in bright colors, and the shells are translucent. P.I.P. Photo by Michael Burn.



white ladies of Dearborn, Michigan, are taking shooting lessons—at the City Recreation Department's Gun Clinic (above).

ARTS

CUTTING THE CAKE

For the National Foundation for the Arts and Humanities, Roger L. Stevens (Arts) said he should have \$130 million from Congress in 1969; Barnaby Keeney (Humanities) said he should have \$150 million. President Johnson asked Congress for \$22 million. The arts and humanities subcommittee of the House Education and Labor Committee more than doubled Johnson's figure to \$55 million. The House then responded by halving Johnson's request, voting the two endowments \$11.2 million (the same as this year).

From the House Gallery, Stevens watched some members halving his cake and eating it too: "I support this program," said Appropriations Committee Chairman George H. Mahon (Dem., Tex.). It was he who then led opposition to the bill with this warning: "This is the first vote of the session to show which way the House is going to go on spending . . . I hope we measure up to our responsibility."

"Our responsibility," it soon became clear, was Vietnam. Rep. H. R. Gross (Rep., Iowa), dismissing all art as "twaddle," said: "I'm sure the Marines in Khesanh are waiting with bated breath for the passage of this bill."

The most cogent observations in support of increased appropriations came from Rep. Ogden Reid (Rep., N.Y.) who noted that the federal government spent \$16 billion on science last year and only \$5 million on the humanities.

"A nation that supports its scientists at the expense of its humanists," said Reid, "may in the long run have little need of either."

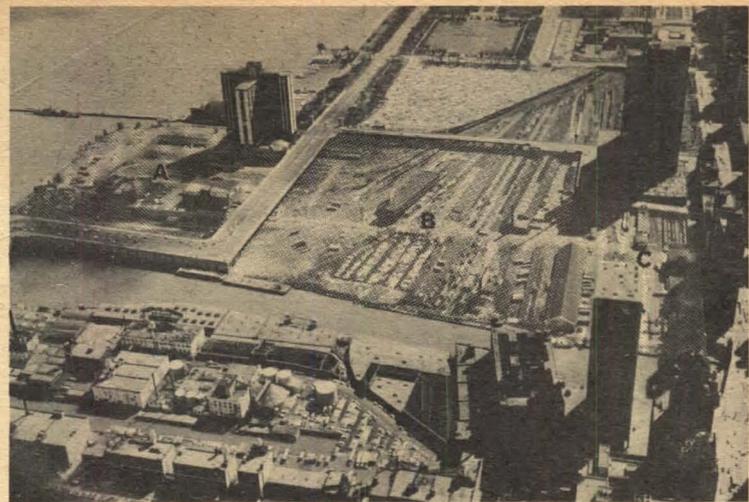
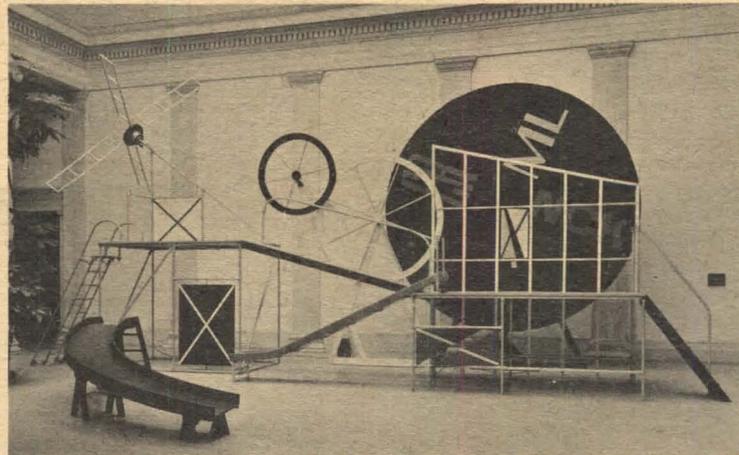
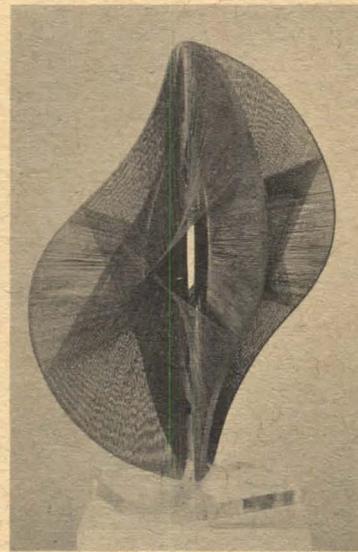
The bill is now before the Senate where, it is hoped, some of the cuts will be restored.

SOME OLD SOLDIERS LIVE . . .

Constructivism, the art movement born in 1920, never died, and it isn't fading away just yet either. Two exhibits shown last month at the Albright-Knox Gallery as part of the Second Buffalo Festival of the Arts Today made this clear.

The first illustrates the tradition of geometric and nonmimetic art with works spanning 50 years—from Vantongerloo to Mark di Suvero. The star of the show may well have been a reconstruction of Liubov Popova's 1922 stage set for Meyerhold's *The Magnificent Cuckold* (bottom photo), a 33-ft.-long motorized gadget which, for effortless humor, beats many a contemporary endeavor.

The second exhibit honors Naum Gabo, founder and guiding spirit of constructive art, with a retrospective of 105 constructions, paintings, and drawings. *Variations Linear No. 2* (below) in stainless steel coil on plastic is one of the beautiful examples.



UPS & DOWNS

CHICAGO, SUPER CITY

About two years ago, the Illinois Supreme Court awarded ownership of the air rights over the Illinois Central's Chicago lakefront yards—contested by the city and three private developers—to the railroad. And SOM and C. F. Murphy Associates were engaged by the railroad, the city, and the developers to prepare a master plan for the site between the Loop and Lake Michigan (Nov. '66 issue).

Subsequently, the developers, who had held air-rights options prior to the courts decision, denied any knowledge of the scheme. They claimed the right to cover the entire area without any reference to that plan, which would have required limitations on building form and coverage, and reallocation of their holdings.

The SOM-Murphy master plan was scrapped, but the city, in an attempt to turn the 48-acre area (above) into an exemplary urban development project, respecting the lakefront site, has set forth guidelines for private builders.

The three developers have sub-



mitted plans for separate parts of the site (indicated on the photo above): Jupiter Corp. (A); Illinois Center Corp. (B); and Metropolitan Structures (C). These would include about twenty huge buildings, at least four of them 90 stories high: offices, hotels, and apartments for 35,000 people. The projects, estimated at a total cost of \$575 million are now awaiting city approval.

In the meantime, however, Metropolitan Structures, whose site does not technically involve air rights and whose project, though not yet officially approved, seems to have met the city's objectives, has announced its plan to begin construction of a handsome, 30-story glass-and-aluminum office building (above) designed by Mies van der Rohe.

The \$40-million 111 East Wacker Drive building, located on two acres bounded by Wacker Drive and Michigan Avenue, will contain about a million sq. ft., consisting of office space, a three-story lobby, parking for 300 cars, a concourse with restaurant and shops, and a two-acre plaza at street level.

A LEAK ON LEFRAK

An article written under the pseudonym P. G. B., in the new weekly, the *New York Free Press*, reveals in bald terms a few more details on the McCrary-Lefrak plans for Harlem (March issue).

The project as announced—97th to 101st Streets, over and alongside Park Avenue—may be only the beginning. "McCrary insists that this is the only project they currently have in the works, although he says that Lefrak is scouting central Harlem for at least two more housing sites. But the drawings with which the project is presented show proposals for the redevelopment of almost all of upper Park Avenue and contiguous areas . . . more office buildings, relocation of the wholesale flower market, some (but relatively little) housing, a federal building, and a vast institutional development around the intersection with 125th Street in which Fordham University is purportedly interested."

The article also reveals McCrary's macabre choice of the name "Manhattan Project II" for his proposal. He has referred to the Hiroshima bombing as "the most successful slum-clearance project in history," and his visitors are "graciously shown glossy photos of McCrary inspecting the wasteland on the Seventh Day."

The full redevelopment story has yet to be announced, being held by national news media for the go-ahead sign. Senator Jacob Javits (Rep., N. Y.) is in on things, since a corporation called Economic Opportunities Corp. (with TV- and PR-man McCrary as a director, and Edgar M. Bronfman of Seagram as president) has been formed under his aegis.

Harlem, says P.G.B., "is not the only ghetto sitting on land destined for a 'higher and better use.' The occupancy of that land (though not, unfortunately, its ownership) is about the only capital the ghetto has right now." If private capital "must be mobilized" for redevelopment, in the face of government's failure to do so, the improvement in slum conditions must be in the direction of "community self-determination and self-control" not just in material improvements. The corporation reportedly will guarantee Harlem residents up to 51 per cent control if they can find the means to take advantage of such an invitation. In any case, "tokenism on corporate boards" seems

unlikely to satisfy the demand for a broad local participation and "selfhood," says P. G. B.

Many of those in Harlem who know about the plan are hostile to it, and any political capital that might be gained from one-upping Bobby Kennedy's endeavors in Bedford-Stuyvesant (see page 46) may be lost in the black backlash. But P.G.B. concludes that since government must "bribe industry to go into the slums" there may be "some hope of getting at least partial selfhood for the ghettos . . . if only the [political] pressure can be brought and the mechanisms [for local participation] made to work."

AWARDS

CINDERELLA STORY

The San Mateo-Hayward Bridge, spanning the southern reach of San Francisco Bay, has been selected as the Outstanding Civil Engineering Achievement of 1968 by the American Society of Civil Engineers.

This is the happy ending of a tale which began almost eight years ago in a heated public controversy. The original design, which called for a high-level, double-decked steel-truss construction, was forcefully panned by former FORUM correspondent and critic Allan Temko as a "fiasco perpetrated by the Department of Public Works," and "a Rip van Winkle of a bridge." The California Council of the AIA and public opinion echoed his views, and the State Toll Bridge Authority, at the bequest of then-Governor Edmund G. Brown, stopped construction, which was already under way.

A new plan was then substituted in accordance with the AIA's resolution for a design possessing "outstanding esthetic and architectural qualities." The elegant realization, for which Architect W.

Stephen Allen, engaged as design consultant is partially responsible, has vindicated the critics.

The new \$70-million bridge which opened last October is 6.7 miles long and includes a 4.9-mile low-level concrete trestle and 1.8 miles of high-level steel bridge, which rises to 135 ft. over the channel. The steel bridge portion incorporates 5,542 ft. of orthotropic span construction, of which the center span is 750 ft.

The bridge will replace a two-lane low-level concrete trestle and vertical lift bridge built in 1929 (visible in illustration below).

TWO FOR BUCKY

R. Buckminster Fuller's Gold Medal from the RIBA (see page 33) is one of two that he has picked up already this year. The other comes from the National Institute of Arts and Letters, which has awarded Bucky its Gold Medal for Architecture.

The institute's last gold medal in that category went to Mies in 1963, the same year that Bucky was elected to the institute.

PROSPECTS

ON THE MARKET

The Hotel Jerome in Aspen (above), built in 1889 during the silver boom, then at its height, was an opulent hostelry. Its heyday ended with the silver panic, four years later. Known as "The Victorian Queen of Hospitality," the Jerome prided itself on a hydraulic elevator—a guided cage with settees and a maw for steamship trunks under the floor. Now it stands in disuse, awaiting either the wrecker's ball or the hands of a benefactor to salvage it. The Aspen Institute holds the lease, which it is trying to sell.

The hotel is on valuable property in the heart of town. Interested parties still hope to find a new use for it—a civic and con-



vention center, for example. Its 50 rooms could accommodate at least some of the annual influx of IDCA members and guests.

'RADICAL' SOLUTION

Last December, in the interest of promoting high quality design in New York City, an anonymous group of institutions and builders underwrote an architectural competition for a middle-income residential development in Brighton Beach, Brooklyn. The winners, selected by a split jury, were announced last month by Housing and Development Administrator Jason R. Nathan. They were:

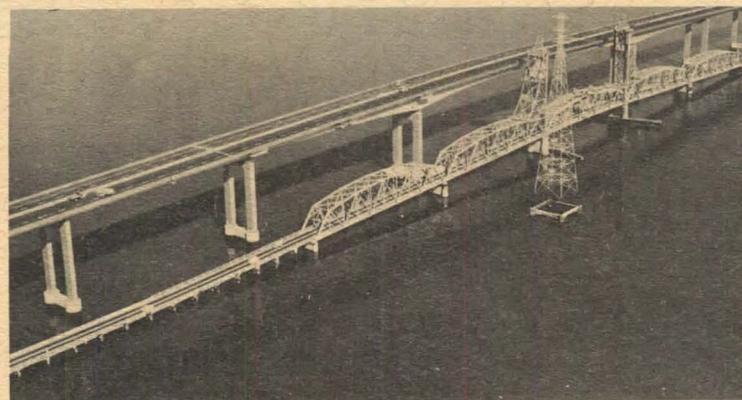
First prize of \$5,000: Jerry A. Wells and Alfred H. Koetter of Ithaca, N.Y. Second prize of \$3,000: Berman, Roberts and Scofidio & Stromsten of New York City. Third and fourth prizes of \$1,000 each: Venturi & Rauch of Philadelphia, with Frank Kawasaki, associate; and Donald and Marja Watson of Guilford, Conn. Honorable mention: Bentel & Bentel.

The seven jurors were Architects Philip Johnson (chairman), José Luis Sert, Romaldo Giurgola, and Donlyn Lyndon; Charles Abrams, chairman of Columbia University's Division of Urban Planning; Samuel Ratusky, assistant administrator of HDA; and Richard Ravitch, executive vice president of HRH Construction Corp. B. Sumner Gruzen was professional adviser.

The jury split seems to have reflected two distinct approaches to urban development, involving the question of whether a new project should conform as much as possible to its surroundings.

The winning scheme, favored by four of the jurors, contained a highrise tower and a group of six-story slabs around a public space. The minority group (Giurgola, Lyndon, and Ravitch) favored the Venturi & Rauch design, which it felt was less dramatic but more in keeping with the surroundings and with the needs of the people who will live there.

The project of 400 units, 60 per cent of which would be set aside for the elderly, will be built under the New York State Mitchell-Lama program.



Walter McQuade

THE ASSISTANT D.A.s

Lawyers have always known that to change the course of democratic government you have to get inside government. For example, it is an old tradition that some of the best young lawyers take jobs as assistant district attorneys before they establish their own practices.

This has not been true among architects but it may yet happen. One indication is the band of young architects, strong on design, who have been willing to go to work as enforcers for the City Planning Commission in New York City.

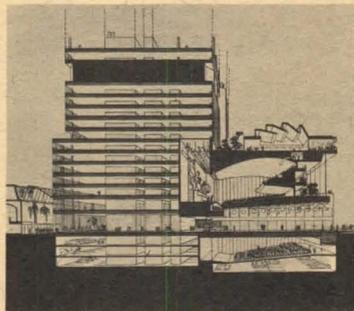
Last month I described the ten: Jonathan Barnett, Alex Cooper, Mike Dobbins, Lauren Otis, Jack Robertson, Myles Weintraub, and Dick Weinstein, with their female colleagues, Heide Konwalinka and Raquel Ramati. In the month since then there have been two additions: Gregory Matviak out of Gettysburg College, Penn, and Yale; and W. Joseph Black of Columbia.

As of now, the Urban Design Group is deep in some 30 separate shaping studies of areas ranging from slums to the Manhattan CBD, using the considerable powers of the City Planning Commission in zoning to help other architects—or, in some cases to induce other architects—to produce better buildings and interspaces than the general banality. As much as anything else, they are bargaining with developers on the basis of environmental quality.

One example is the Manhattan theater district, where the tide of new office construction has been threatening in recent months to level all theaters. The Planning Commission, led by the Lindsay-appointed Don Elliott (at 35 only

a couple of years older than the young architects), secured the power to dicker with developers by declaring the theater district a special design area. When a developer in those blocks will agree to include a legit house in his new office building (or other amenities such as pedestrian arcades, entrances to subways, or passages like Shubert Alley) the commission can help compensate for the extra cost by stretching the zoning to allow an extra layer or two of profitable office space upstairs.

The first developers approached to make such deals snorted that



they could not and would not include a legit theater, ever, and their architects were equally negative. But the Urban Design Group helped show how it could be done, and Manhattan will soon see the first new legit theaters to be built in the district since the 1920s. One example is Kahn & Jacobs' skyscraper on the site of the old Astor Theater at Times Square, an early section study of which is shown above. The legit theater is on the third level, with a restaurant on top of it, a movie theater under the ground level.

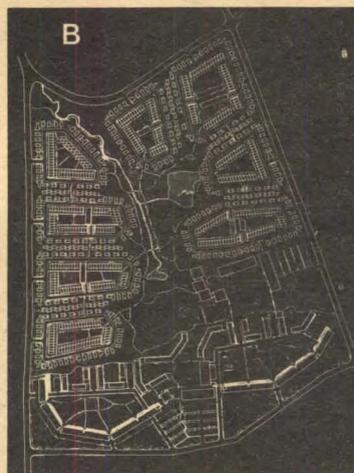
There are less glittering city problems on the drafting boards too. The Urban Design Group is at work trying to change the conventional housebuilder's site plan in Staten Island, N.Y., from something like A to something like B, (right), and with some success. In higher density areas, such as the Bronx, their function is to cut vest pocket housing patterns to take the place of those grotesquely unwieldy, scaleless standard N. Y. housing projects. Still another kind of work the Urban Design Group is involved in is the redesign of city signage and street lighting. They plan to redo 53rd Street all the way from the East River to the Hudson as a demonstration.

But beyond the detail of what the design group is doing is the symbolism of having this kind of architectural talent pitch in to attack the many ungainly design

problems of cities. They are not doing it for fun and games but out of workaday, serious, urgent necessity—and it might also be that they sense the opportunity to become a new kind of American architect. The fact that Lindsay is their mayor has a lot to do with it too; they know he is with them.

The problem of public service on the local level has always been a difficult one for architects, unlike planners. AIA chapters have sometimes donated downtown renewal designs; architectural firms who can afford it sometimes accept the grim kind of municipal jobs which they know will not earn them money, to take the work out of the brutal hands of the hacks who can make money on any job. There are also various admirable architectural pressure groups which operate for decent design from outside the local governments.

But there is a limit to the efficacy of working outside government. Sooner or later you have to get into that hot kitchen. The fact that some talented young architects are finding a way may broaden their profession a bit.



PHOTOGRAPHS: Page 33, Engelhardt, The St. Louis Post-Dispatch; Page 34, The Bettmann Archive (bottom); Australian Information Service (above); Page 93, UPI Photo (above); Page 94, UPI Photo (top left); Albright-Knox Art Gallery (center and bottom); Page 95, Aspen Historical Society (top right).

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PREVIEW

The Chicago office building (below), by Harry Weese & Associates, which will house Time Inc.'s subscription services, was designed around the need for efficient vertical circulation—of both people and materials.

The building will employ double-deck elevators during peak rush periods only. Elevators will discharge passengers from the upper cab to even-numbered floors, and from the lower cab to odd-num-

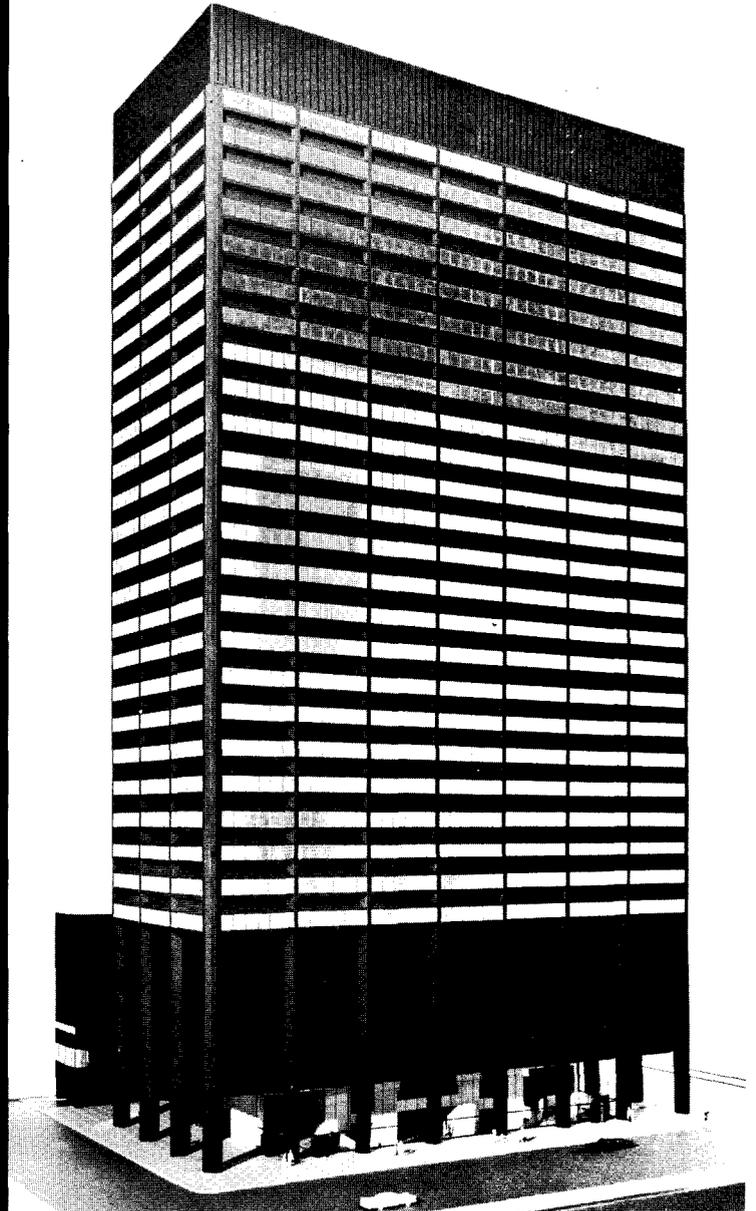
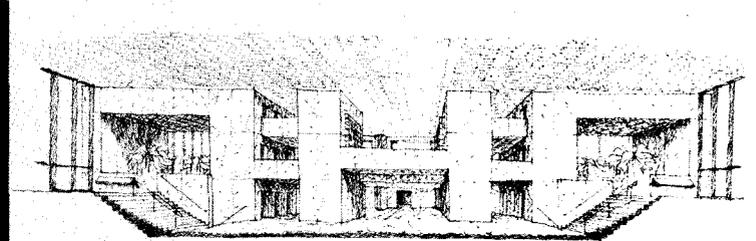
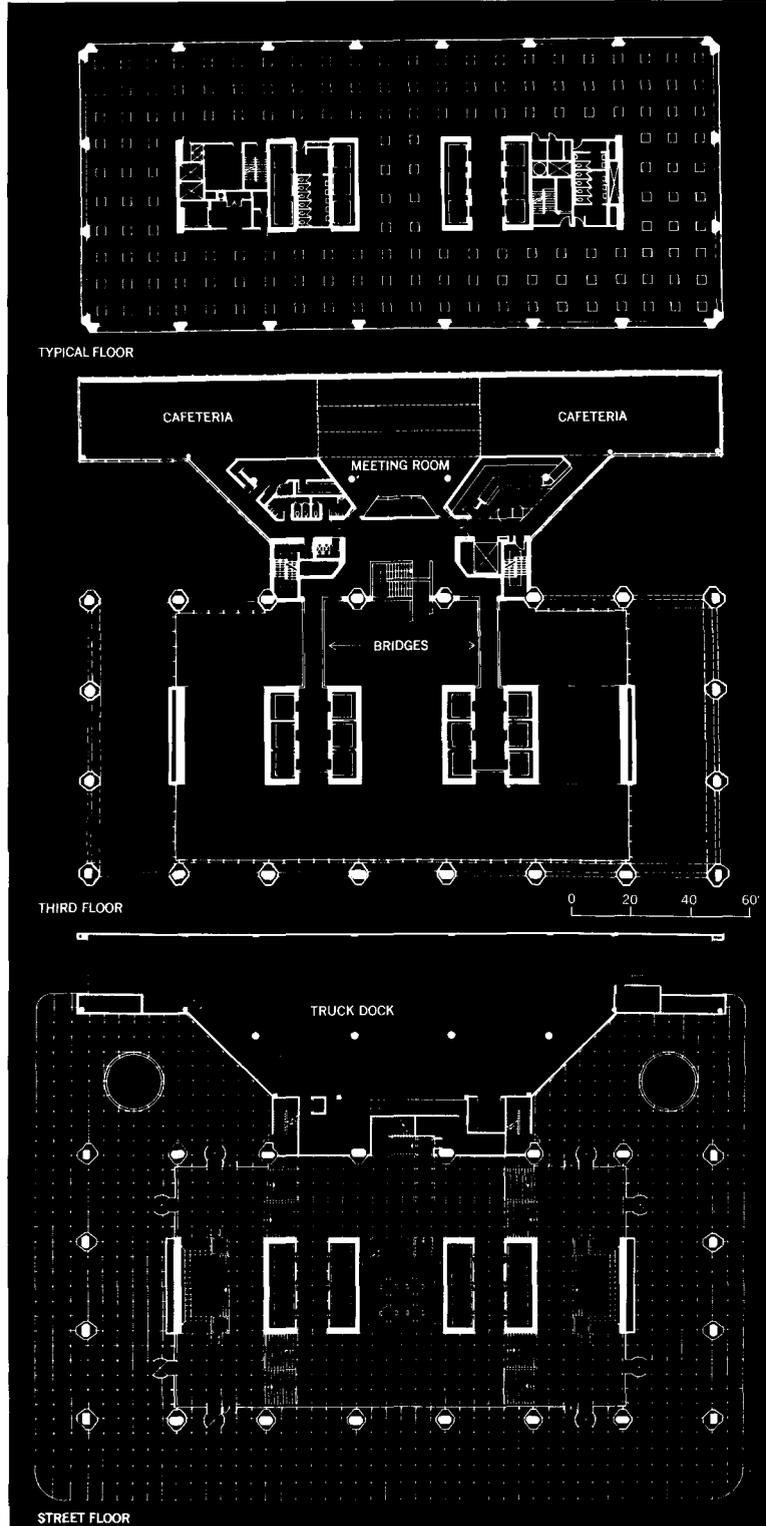
bered floors. At all other times, conventional service will resume, using the top cab only.

The system was attempted in the 1930s in New York's Cities Service building. It was abandoned, largely because a passage which was to connect the lower banks to a subway entrance was never built. Time Inc. believes the system is practical for its 2,500 employees, all arriving and departing at the same time. Thus the

split-level lobby: stepped-down for lower elevator banks and exhibition space; stepped-up for upper banks and library (sketch and ground plan, lower left).

Materials handling begins in the annex at ground level (top of plan, bottom) with trucking facilities and warehouse. The cafeteria and meeting room above are joined to the tower at the lobby's top level (center plan). Office floors (top plan) begin 87 ft. above the street.

ACCENT VERTICAL



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News from *the Potlatch Timberline*



Architects: Dickson and Dickson, A.I.A.

Lock-Deck® decking was specified as a primary building material for this dramatic lodge—part of a year-round toboggan run—because of its structural strength, insulation properties, aesthetic appeal and design flexibility. The curved walls, flooring, decking, sloped and pitched roofs are all made of Potlatch Inland Red Cedar and Idaho White Pine Lock-Deck decking. For more information about this unusual structure, write for a special Architectural Report on Toboggan Lodge.



Lock-Deck is available in 4 thicknesses and 2 face widths, Electro-Lam® beams in all sections up to 162 sq. in., lengths to 60'.

For details see SWEET'S Architectural File 1c/Po



PREVIEW

The electric utility industry, while easing into costly research in electric transmission by underground cable, has recently completed an 18-month design study to make "esthetically pleasing" the present proliferation of overhead wires. This pacification program has resulted in nearly 100 designs for towers to transmit high-voltage currents of up to 500,000 volts. The study was undertaken by the Electric Research Council and sponsored

principally by the Edison Electric Institute. The towers (examples below) were devised by the industrial design firm of Henry Dreyfuss & Associates.

"We considered the environments into which these towers were to fit," said Mr. Dreyfuss, "and assumed the responsibility of relating to them."

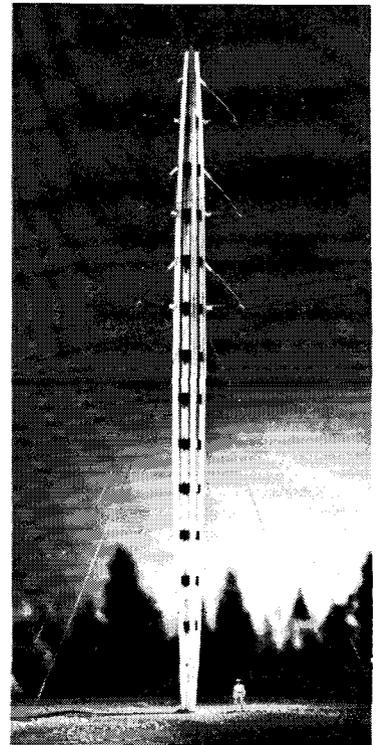
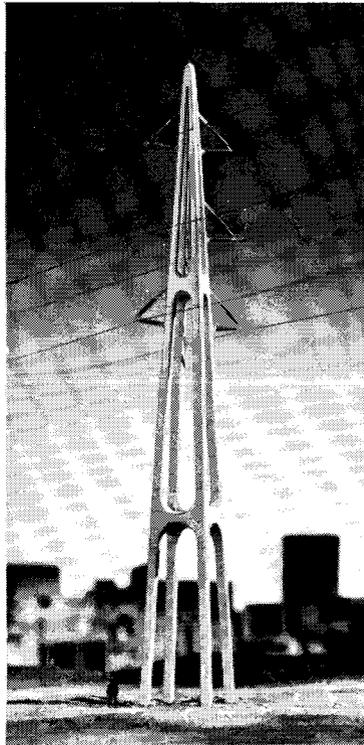
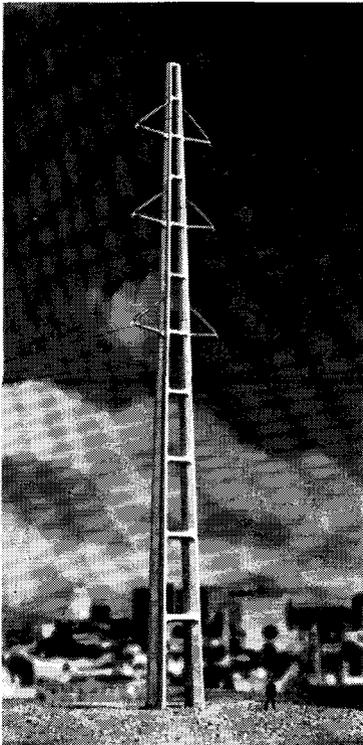
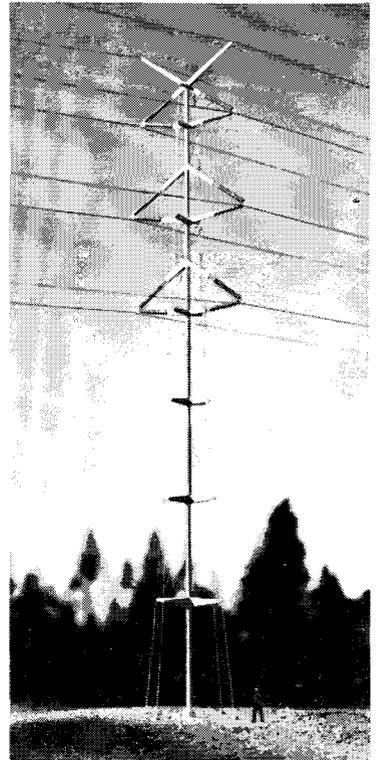
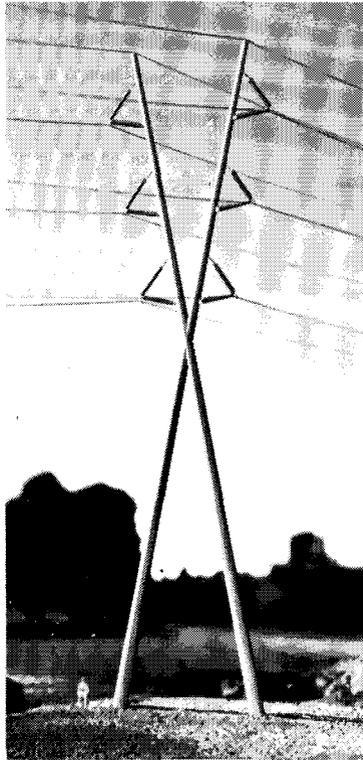
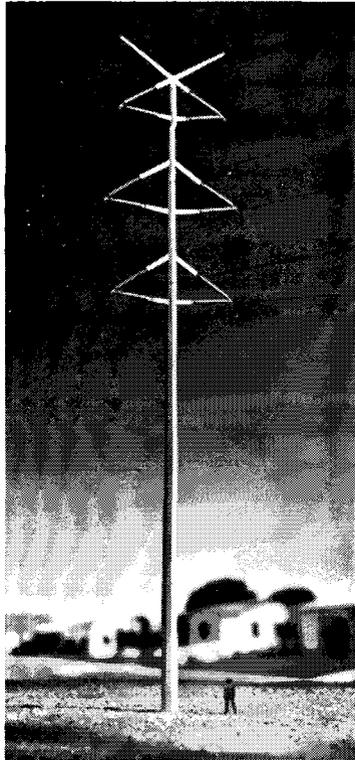
Materials include steel (top row), wood, concrete, plastic, and aluminum (left to right, bottom

row); steels are galvanized, stainless, weathering, color-coated; steps spring out or fold out from columns; insulator rods, now often haphazard, are design integrated.

The aluminum tower may be lifted intact to difficult terrain by helicopter. Others are designed of components easily assembled on the site.

Dreyfuss suggests that "selected similar designs be intermixed . . . to avoid undue repetition."

FROM POLE TO POLE



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One design — a town house complex

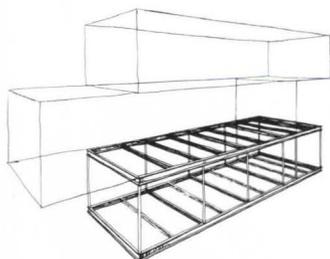
composed of modular units, with frames of structural steel, all factory built and furnished, stacked in three tiers. Another — a high-rise with modular units “plugged in” to a structural steel skeleton, which contains the entire utility, service facilities, and elevator complex at its core. Costs of such housing are estimated to be far less than the cost of mass housing produced by conventional methods.

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TOWN HOUSE. This concept for high density housing is realized by stacking units side by side between preassembled steel stair units. Simple bolted connections are used between units, adding others as required. Units are staggered to provide balconies, improve visual effect.

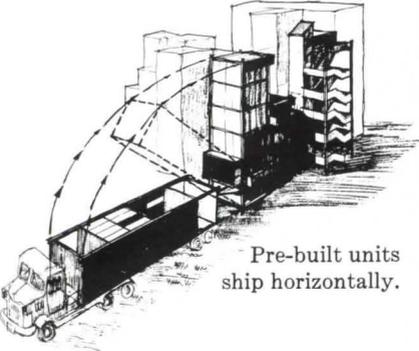


Steel frame used for bottom and middle units permits stacking three or four high.





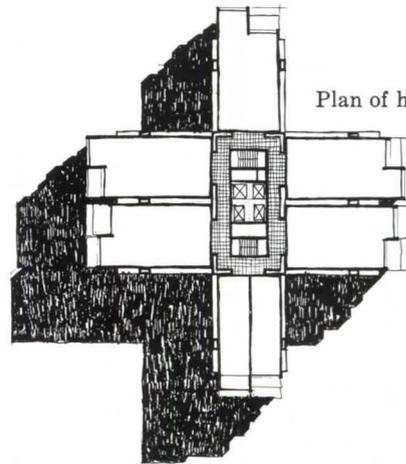
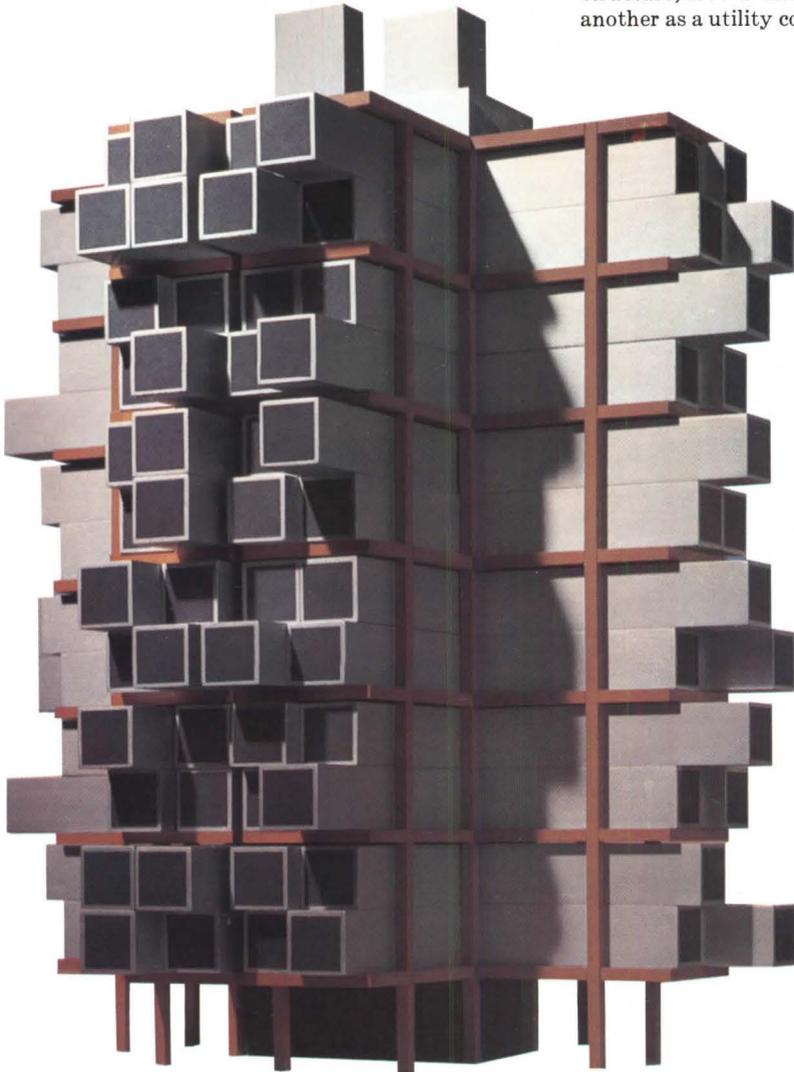
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HIGH RISE. Individual residence units, completely finished and furnished, can be slid in or out of the structural steel skeleton frame. Units of different lengths are used to avoid a slab-sided look. These units can be adapted from the town house concept.



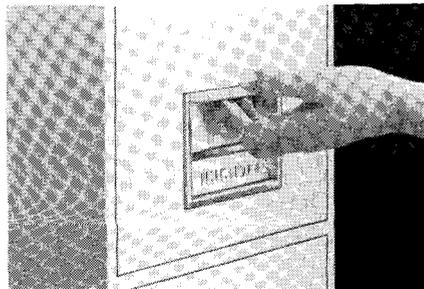
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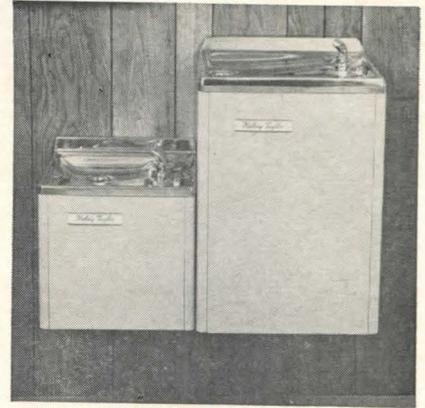
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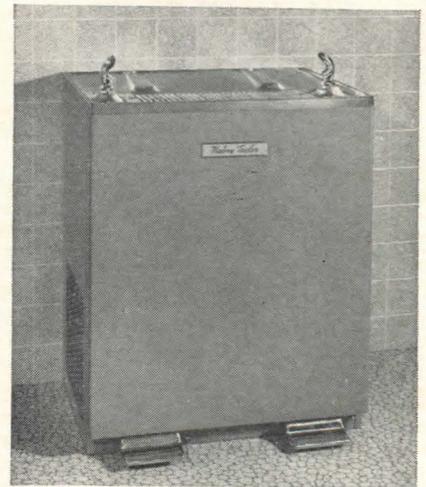


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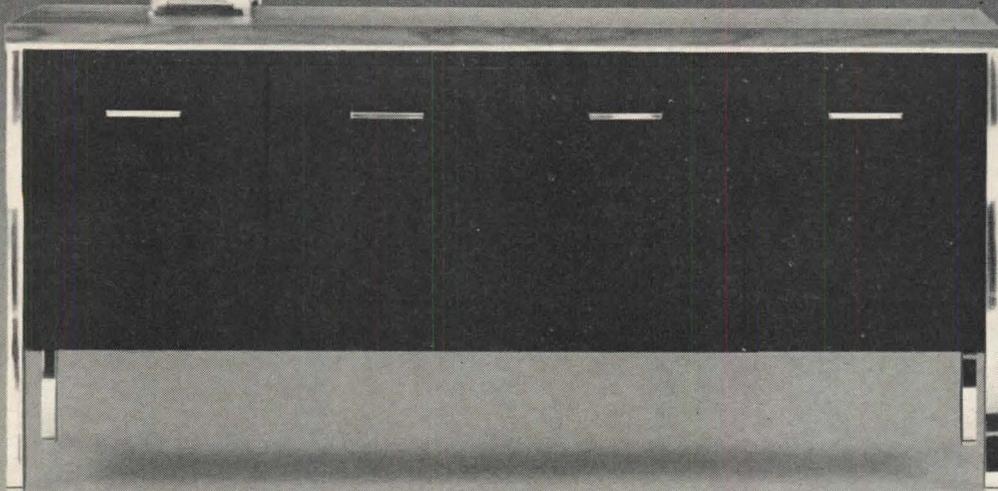
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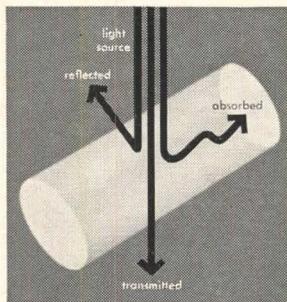
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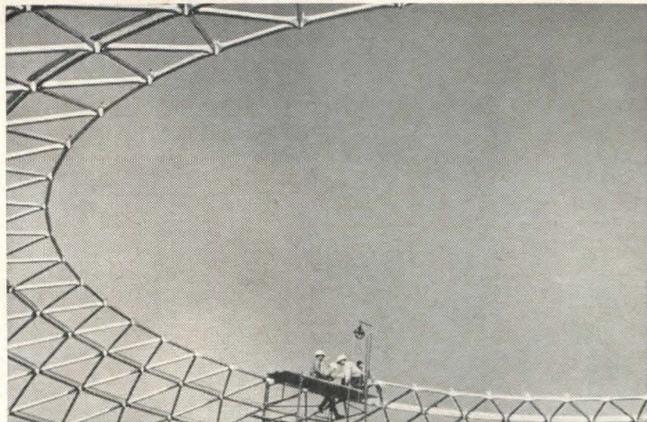
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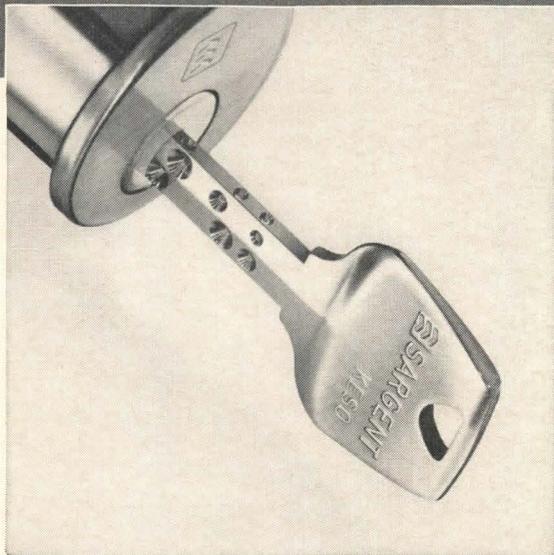
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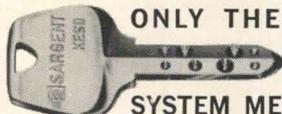


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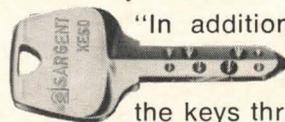
The management of The Forum was presented with a mammoth problem in lockset security. As in all sports arenas, large amounts of cash would be on hand, negotiable pre-printed tickets would be on the premises, and vandalism would be a constant problem.

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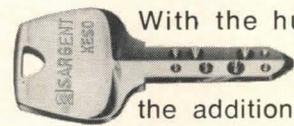
"The pick-resistance of these new lock cylinders helped make up our minds," commented Robert Church, Forum Director of Operations. "When you play host to 19,000 people in the building

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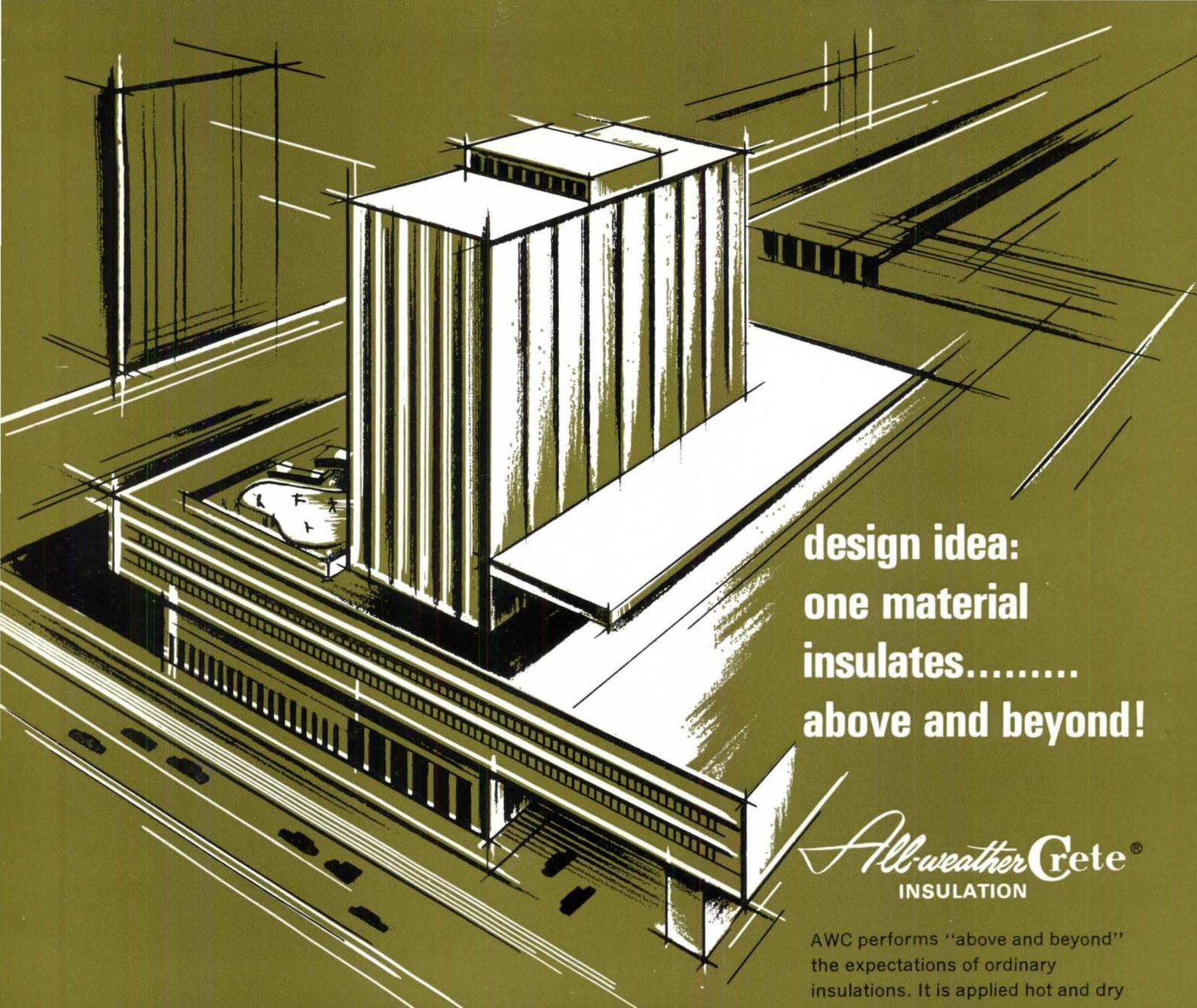
Consult Sweet's Catalog, A.I.A., File No. 23-A, 11d/Mos.

Mosaic Tiles shown in photo are: *Walls* — 622 Light Golden Olive, Velvetex, 1" x 2". *Enclosure* — Outside, No. 9 Peacock Blue, Staccato. Inside, No. 11 Opal. Both 1" x 1". *Floor* — 250 Bluegrass Green, Quarry Tile, 8" x 3 3/8".

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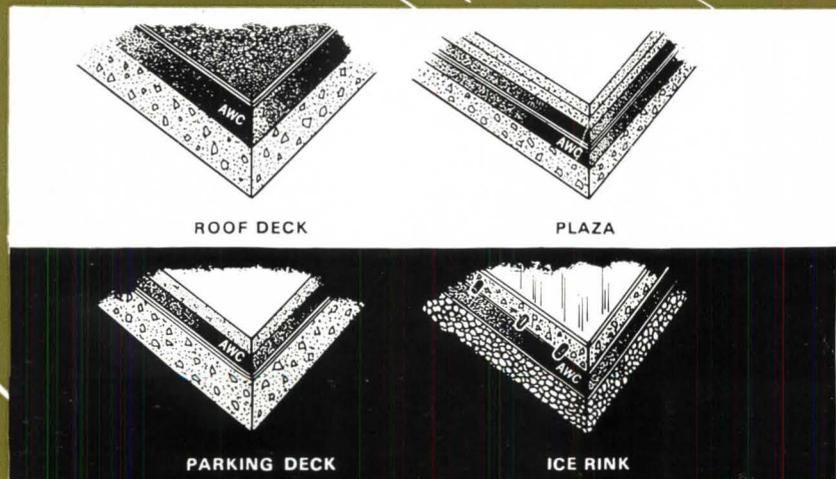




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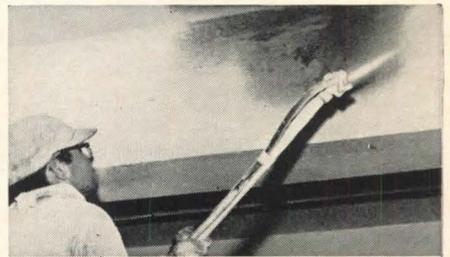
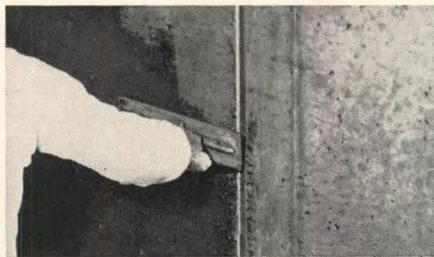
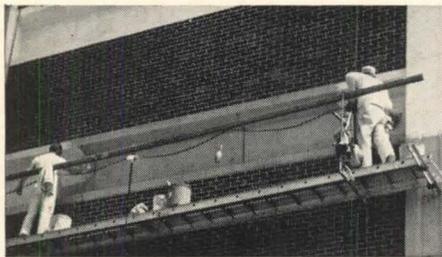
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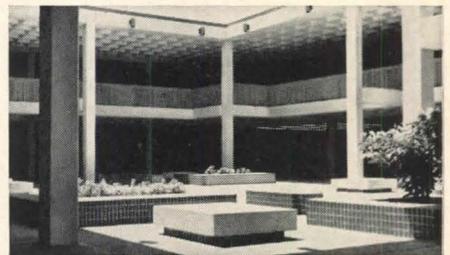
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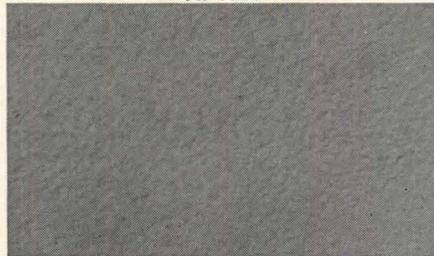
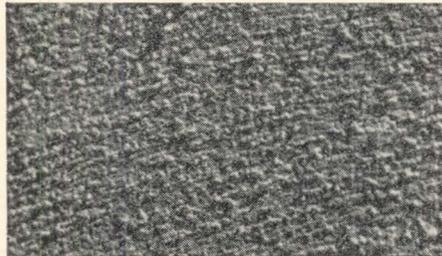
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ADVERTISING INDEX

By Advertiser

Aberthaw Construction Co. 26	Merchandise Mart, The 9
All-Steel Equipment, Inc. 108	Mosaic Tile Company 115
Amerada Glass Company 29	National Concrete Masonry Association 105 & 106
American Olean Tile Company 14 & 15	National Electrical Contractors Association 4
American Seating Company .. 22 & 23	Norton Door Closers Div., (Eaton Yale & Towne, Inc.) Cover 4
Bayley, The William Company .. 31	Olympic Stain Company 97
Butler Manufacturing Co. (Bldg. Div.) 111	Overly Mfg. Co. 17
Cast Iron Soil Pipe Institute 123	Peerless Steel Equipment Co. .. 104
Delta Faucet Company 123	Pomona Tile (Div. of American Olean) 14W-15W
Eaton Yale & Towne Mfg. Co. .. 9	Potlatch Forests, Inc. 100
E. I. duPont de Nemours & Co., Inc. 109	Republic Steel Corporation, (Manufacturing Division) 24
Faber-Castell Pencil Company, A. W. 7	Richards-Wilcox Mfg. Company . 5
Formica Corp. 18 & 19	Rigidized Metals Corporation .. 124
Georg Jensen 25	Robertson Company, H. H. 12
Georgia Granite Co., The 21	San Valle 104 W1
Gotham Lighting Corporation ... 3	Sargent & Company 112
Haws Drinking Faucet Company 27	Silbrico Corporation 116
Inland Steel Products Co. (Engineered Prod. Div.) 113	Standard Dry Wall Products, Inc. 118
International Steel Company, (Revolving Door Div.) 20	Steelcase, Inc. Cover 3
Jones and Laughlin Steel Corporation 102 & 103	Stow/Davis 114
Kentile Floors, Inc. Cover 2	Structural Clay Products Institute 8
Kinney Vacuum Division 98	Taylor, The Halsey W. Co. 107
Kirsch Company 6	Thiokol Chemical Corp. 32
Laclede Steel Company 16	United States Steel Corporation. 21
LCN Closers 10 & 11	Vermont Marble Company 107
Libbey-Owens-Ford Glass Company 13	Washington Steel Corporation .. 2
Lone Star Cement Corp. 30	York Division of Borg-Warner Corp. 110

By Product

DOORS AND WINDOWS	National Concrete Masonry Assn. 105, 106
Bayley, The William Co. 31	Structural Clay Products Inst. 8
International Steel Co., Revolving Door & Entrance Div. 20	Vermont Marble Co. 107
Overly Manufacturing Co. 17	
ELECTRICAL	
National Electrical Contractors Association 4	
FLOORING	
American Olean Tile Co. 14, 15	
Kentile, Inc. Cover 2	
Mosaic Tile Co. 115	
Pomona Tile Co., a Div. of American Olean 14W-15W	
FLOOR COVERINGS	
E. I. du Pont de Nemours & Co., Inc. 109	
FURNISHINGS	
All-Steel Equipment Co. 108	
American Seating Co. 22, 23	
Georg Jensen, Inc. 25	
Merchandise Mart, The 9	
Peerless Steel Equipment Co. 104	
Republic Steel Mfg. Div. 24	
Steelcase, Inc. Cover 3	
Stow/Davis 114	
HARDWARE	
Eaton Yale & Towne Mfg. Co. 9	
Kirsch Co. 6	
LCN Closers 10, 11	
Norton Door Closer Div. (Eaton Yale & Towne, Inc.) Cover 4	
Sargent & Co. 112	
HEAT., VENT., & AIR CON.	
York Div. of Borg-Warner Corp. 110	
INSULATION—ACOUSTICAL	
Amerada Glass Co. 29	
LIGHTING FIXTURES	
Gotham Lighting Corp. 3	
MASONRY AND BUILDING STONE	
The Georgia Granite Co. 21	
Lone Star Cement Co. 30	
METALS IN BUILDING	
Rigidized Metals Corp. 124	
MOBILE HOMES	
Jones & Laughlin Steel Corp. 102, 103	
OPERABLE WALLS	
Richards-Wilcox Mfg. Co. ... 5	
PAINTS, COATINGS & SEALANTS	
Kinney Vacuum Div., The New York Brake Co. 98	
Olympic Stain Co. 97	
Silbrico Corp. 116	
Standard Dry Wall Products . 118	
Thiokol Chemical Corp., Inc. . 32	
PLUMBING EQUIPMENT	
Cast Iron Soil Pipe Institute . 123	
Delta Faucet Co. 123	
Haws Drinking Faucet Co. .. 27	
Taylor, The Halsey W. Co. .. 107	
ROOFING, SIDING AND FLASHING	
San Valle Tile Kilns 104 W1	
Washington Steel Corp. 2	
STRUCTURAL	
Aberthaw Construction Co. .. 26	
Butler Manufacturing Co. 111	
Inland Steel Products Co. 113	
Laclede Steel Co. 16	
Libbey-Owens-Ford Glass Co. ... 13	
Potlatch Forests, Inc. (Wood Products Div.) 100	
Robertson Co., H. H. 12	
United States Steel Corp. 21	
WALLS, PARTITIONS, MATERIALS	
American Olean Tile Co. 14, 15	
Formica Corp. 18, 19	
Mosaic Tile Co. 115	
Pomona Tile Co., a Div. of American Olean 14W-15W	
PROF. MATERIALS & SERVICES	
Faber-Castell Pencil Co., A.W. 7	

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3. All-products catalog including technical information on LOF glass. New Products—Vari-Tran (TM) and Vigilpane (TM) included. SA-68. Libbey-Owens Ford Co. Please request **A-3**.

C. FLOORING

1. 1968 Designers 32-pg guide to glazed tile, ceramic mosaics and quarry tile. Includes colors, shapes and textures. American Olean Tile Co. Please request **C-1**.

D. FLOOR COVERINGS

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4. Sargent Maximum Security System. Literature includes basic data sheet, magazine articles and other information. Sargent & Co. Please request **F-3**.

J. INSULATION - THERMAL

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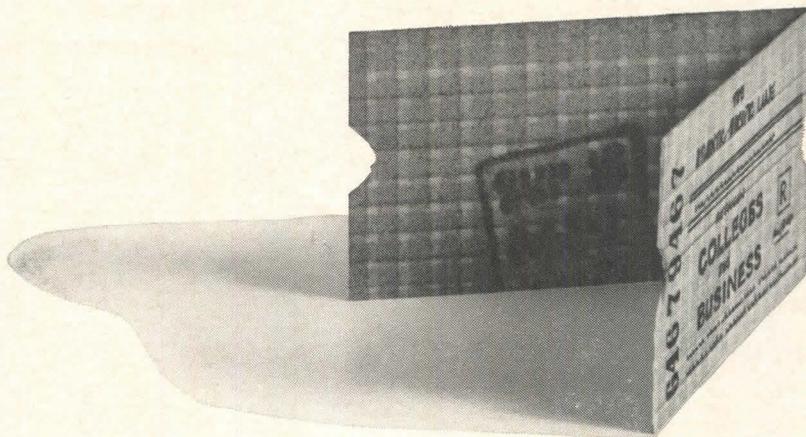
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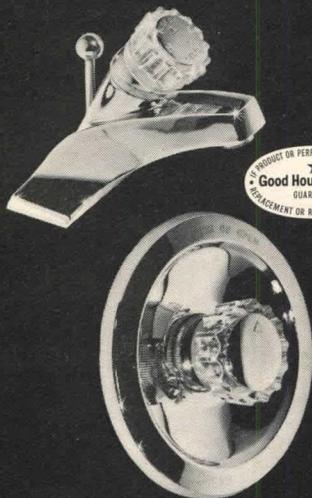
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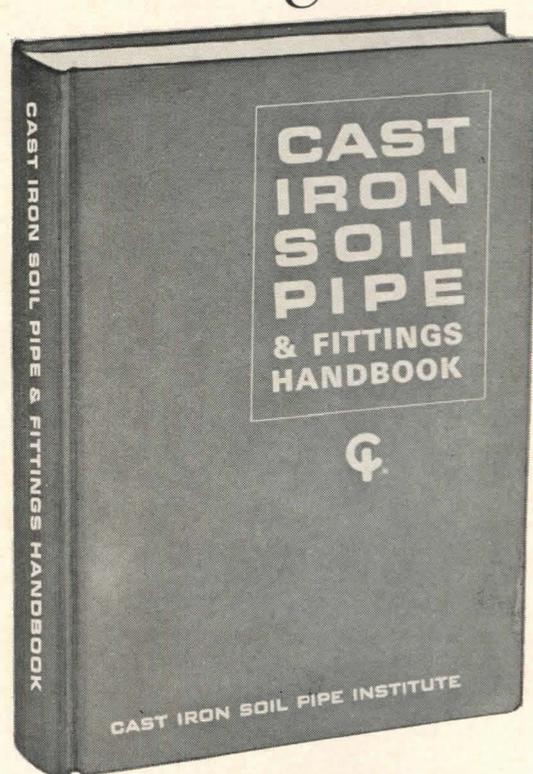


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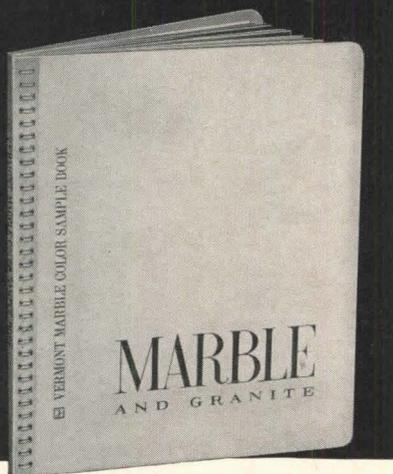


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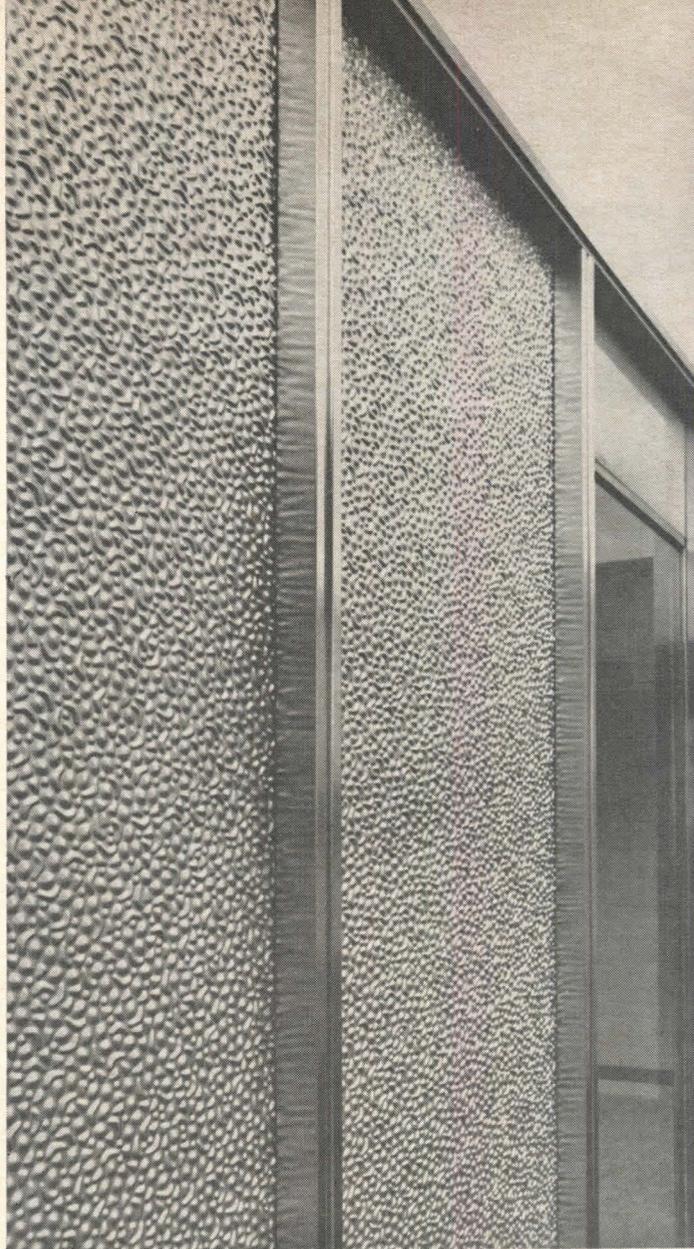


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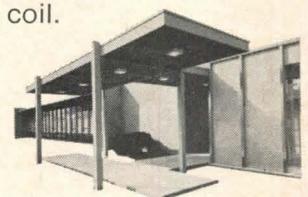


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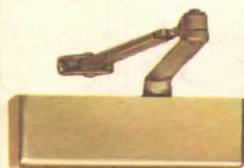
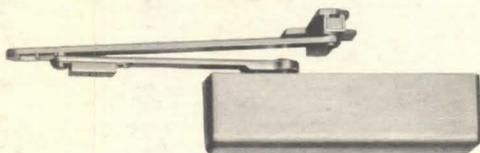
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