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4 LETTERS

6 BOOKS

10 FOCUS

16 FACETS

A monthly review of events and ideas.

21 FORUM

22 CHEAP SEATS

The Emelin and Fisher theaters illustrate how costs can be pared in the aftermath of the cultural explosion.

30 PHYSICIAN HEAL THYSELF

As a mirror to North American medical practice the new McMaster Center raises serious questions about its image and values. By Robert Jensen.

38 STREET SCHOOL SCENE

Family and community needs form the fabric of this new educational facility.

46 PAUL RUDOLPH

A gallery of drawings evokes one of architecture's most compelling minds.

54 TALE OF TWIN PARKS

Political and economic forces were carefully integrated with social and design concerns in an exemplary housing experiment in the Bronx. By Myles Weintraub and Reverend Mario Zicarelli.

56 TWIN PARKS AS TYPOLOGY

Several Twin Parks architects have brought distinctly different formal and relational attitudes to the generic form of housing. By Kenneth Frampton.

62 LEARNING FROM TWIN PARKS

Now that Twin Parks is a physical reality, questions arise: Is the project a success? On what terms? Does it provide a model for future applications?

76 PRODUCT LITERATURE

79 PRODUCTS

Cover: Detail from drawing of proposed Graphic Art Center, New York City (1967), by Paul Rudolph.

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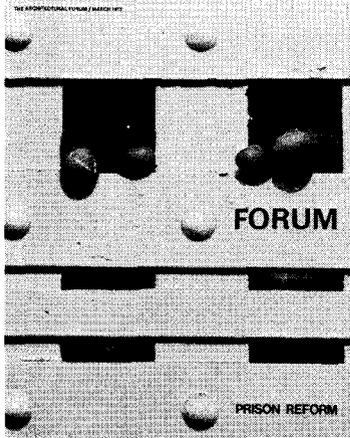
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LETTERS



PUSHING PRISONS ASIDE

FORUM: I cannot praise it too highly, the excellent article by Suzanne Stephens entitled "Pushing Prisons Aside." Ms. Stephens has told the story well, has presented the divergent views of those of us who are trying to bring about some rational change, and, I should think, has given the practicing architect with an interest in this field a good deal of food for thought. Please give her my enthusiastic endorsement.

I am engaged in a project in which this Academy is working with a group of progressive prison administrators in developing innovative changes. I will bring this article to the attention of all the members of the group, and I am anxious that they have the benefit of the views and ideas expressed in it.

JOHN P. CONRAD
Senior Fellow, The Academy For
Contemporary Problems
Columbus, Ohio

FORUM: I think the article, "Pushing Prisons Aside," which appeared in your March issue was the best written article on correctional environments to be published by an architectural magazine. It was particularly impressive because of the diversity of the viewpoints from which you commented on projects in the field of correctional facilities.

Several key members of Gruzen & Partners who worked on the Metropolitan Correctional Center in New York City deserve recognition. Most im-

portant is Peter Samton, Design Director, who worked closely as a member of the team on the site solution and building design. Gordan Vance was the Project Manager and Robert A. Genchek was a key designer.

Thank you again for including our project in your excellent coverage of a fascinating field.

JORDAN L. GRUZEN
Chief Executive, Gruzen & Partners
New York, N.Y.

FORUM: The article on prison requirements was excellent, well informed and well constructed. I have had copies provided to our architectural and planning staff.

MARTIN GALLEN
Vice Chairman,
City Planning Commission
New York, N.Y.

FORUM: I have received and read the March issue. You did a fine job. I wish that so much of each page were not devoted to buildings, but then that is the business of architecture. It is so hard, isn't it, to show a picture of a non-prison.

WILLIAM G. NAGEL
Director, The American Foundation Inc.
Institute of Corrections
Philadelphia, Pa.

FORUM: My attention has been directed to your March issue; specifically, to an article contained therein entitled, "Pushing Prisons Aside." It is apparent that this article presents, in a forthright and comprehensive manner, the varied opinions and positions prevalent in the field of corrections today, particularly as they apply to correctional facilities. This information is surely of interest to those such as myself who are occupied in the struggle to improve the environmental and programmatic qualities of prison life.

NORMAN E. GERVAIS
Director of Facilities Planning
Department of Correctional Services
Albany, N.Y.

FORUM: Your prisons article did cover avant-garde proposals on corrections quite well, and I'm sure you must have had a very difficult time selecting the final subject matter. Most of us in the article are acquainted to some degree, so I suppose we'll have the further opportunity to discuss the "moral dilemmas."

I'll have to admit that there is a good deal of confusion in the architect's mind concerning new approaches in corrections, though we all agree that it must happen. The confusion starts when we try to define the role

of the architect, as our profession is certainly not of one mind. Some architects are strongly oriented to social concept, and there are other architects whose efforts are directed more toward implementation. Obviously, a mix of both the social aspects and implementation is required. In the end, direction must be positively given by the total criminal justice system, as I doubt that any one group will be altruistic enough to crusade the issues.

My great concern is the financing of new treatment approaches. Your article implied that some of the more progressive diversionary programs on the local level would be cheaper to operate than the big institutions we have now. On a one-to-one comparison, this is probably true, but in the overall, I doubt it. Emphasis in alternative programs must be placed on properly trained guidance and treatment personnel and in sufficient quantity. We have found consistently in the design of almost any correctional project that the cost of staff to governmental units is a real consideration. Most counties and municipalities are simply not budgeted to pick up the tab and they continually look to the State. In many legislative bodies there is great dissension as to whether corrections will be administered at the local level or administered by the State, or a combination of both. These decisions must be resolved by the State legislatures before real progress can be made. The States will also look to the Federal Government for help. In the enthusiasm for change we could well give way to a bureaucracy in corrections on the Federal level.

I can't help but think of the relatively new Pruitt-Igoe project in St. Louis going down with a blast of dynamite. And I don't doubt that the Architect far exceeded the Federal criteria of the time. Our current avant-garde thinking is establishing direction, but it cannot be adopted as national policy regardless of who says it, without more in-depth research and performance evaluation. Dr. Sommer's remarks as quoted in your article, which were basically given at the National Symposium, are really straight to the point.

Let's hope that the current

"moral dilemmas" will at least spur research and provide additional performance evaluation.

JOHN W. MCGOUGH, A.I.A.
Spokane, Wash.

PHILIP JOHNSON

FORUM: Congratulations on your spectacular Jan./Feb. issue on Philip Johnson.

The Minneapolis buildings were beautiful, and Philip's statement concerning architecture in general and housing in particular brought hope and comfort to at least two of his followers who have been deeply engaged in the recent struggle to produce better housing.

The whole issue is a pleasure to read.

HERBERT OPPENHEIMER, A.I.A.
New York, N.Y.

FORUM: For those of us who were in architecture school in the late 1960's, there were many architects to whom we gave near deity status, whether it was deserved or not. And for those of us who looked to Philip Johnson, we have not been disappointed since. Your January/February issue documents the fact that he alone stands today as the most significant architect of this decade. It is to his credit—and is perhaps his most enviable quality—that neither he nor his architecture can be snugly fit into any definable mold.

Since many of the architectural publications today do not, for whatever reason, provide an in-depth focus on personalities when they present their work, the FORUM, which has consistently done an outstanding job of filling that gap, again deserves credit for this remarkable piece of architectural journalism. This particular issue not only serves as an excellent and up-dated companion to Philip Johnson 1949-1965, but it is through the publication of the words, and not so much the work, which we can see elsewhere with some degree of frequency, that we are able to better understand the man and his work.

The architectural profession needs articulate spokesmen like Philip Johnson who are not afraid to point fingers and to say what needs to be said.

You have once more done a great service to the profession and to those who care about architecture and the environment.

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BOOKS

ADHOCISM: THE CASE FOR IMPROVISATION. By Charles Jencks and Nathan Silver. Published by Doubleday & Company, Inc., Garden City, New Jersey. 216 pp. \$10.00.

REVIEWED BY STUART E. COHEN

If there is such a thing as a *zeitgeist* which emerges from time to time in architecture, the almost simultaneous appearance of Charles Jencks and Nathan Silver's *Adhocism*, a book by the Venturis, and the current urban theories of Colin Rowe, may cause critics to sniff the air with the conviction that at least the immediate future of architecture may be discerned. The architecture of this future may be *ad hoc* in its decisions, processes, and materials, providing new opportunities for pluralism and participatory democracy (Jencks and Silver). It may be *inclusive*, utilizing familiar anti-elitist images and symbols appealing to a larger number of its users (Venturi). And it may be *contextual*, always looking to the local solution as appropriate, filling gaps, and providing a new architectural humanism in which physical continuity will substitute for a lacking cultural continuity (Rowe). If the positions described above are generally considered divergent, it is because of the architectural images currently associated with them (Archigram, Las Vegas, and International Style architecture, among others). What they share, the *zeitgeist*, is a belief in empirical judgment and action as a working strategy, collage as a working process, and the rejection of the heroic stance of modern architecture as one of their ends. To suggest the comparison will, I hope, provide a perspective for the appreciation of *Adhocism*.

The description of a new

Mr. Cohen has taught architectural design, and currently has his own architectural practice in Chicago.

architecture usually comes couched in morally loaded terms. We are indebted to Charles Jencks for his critique "History as Myth" (in *Meaning in Architecture*, ed. Jencks and Baird) in which he argues, ". . . that architecture is always experienced morally and that its very meaning is dependent on this." In *Adhocism* Jencks deftly switches hats and does what he has chastised Giedion, Pevsner, Banham and Scully for doing. He takes sides. Jencks writes:

- "Ad hoc means "for this" specific need or purpose.
- A need is common to all living things; only men have higher purposes. But these needs and purposes are normally frustrated by the great time and energy expended in their realization.
- A purpose immediately fulfilled is the ideal of adhocism; it cuts through the usual delays caused by specialization, bureaucracy and hierarchical organization.
- Today we are immersed in forces and ideas that hinder the fulfillment of human purposes; large corporations standardize and limit our choice; philosophies of behaviorism condition people to deny their potential freedom; "modern architecture" becomes the convention for "good taste" and an excuse to deny the plurality of actual needs.
- But a new mode of direct action is emerging, the rebirth of a democratic mode and style, where everyone can create his personal environment out of impersonal subsystems, whether they are new or old, modern or antique. By realizing his immediate needs by combining *ad hoc* parts, the individual creates, sustains and transcends himself. Shaping the local environment towards desired ends is a key to mental health; the present environment, blank and unresponsive, is a key to idiocy and brainwashing."

Here we have: standardization limiting choice, great bureaucracies and forces hindering human fulfillment, and conventions of design threatening the plurality of needs and mental health. *Adhocism* makes no claims to be an objective study. Its format, in part, seems to present the history of an idea and suggests the possibility of utilizing Jencks' "History as Myth" as a critical model. *Ad-*

hocism's myth would be a response to "the spirit of the age" and its mythemes (Jencks' word) would be *adhocism* (good) and purism (bad).

These generate the following approximate oppositions: choice, repression; multiplicity, specialization; pluralism, elitism; participatory democracy, hierarchical organization; inclusive, exclusive; open, closed; spontaneous, planned; expedient, ideal; and of course, personal, impersonal. Corollary to a myth which attributes a course of action to "the spirit of the age" is the embodiment of the new sensibilities in the person of the *noble savage*, whose unselfconscious works are to be emulated. Modern architecture's *noble savage* was the engineer. For Jencks and Silver he is Heloise and her *Housekeeping Hints*.

In *Adhocism* the authors have provided a commentary on the processes of invention, creativity, change, and just plain coping, and have described extensions of these processes in a product, producer, and waste oriented society. Their criticisms of the inadequacies of our present modes of consuming, and their discussion of the potential of consuming by "performance specification" and consumer controlled marketplaces, are a useful contribution. In the introduction to *Adhocism* we are told that the book is really two books; Jencks having written the first six chapters and Silver the last four. If Jencks' arguments, persuasive though they may be, are criticizable for their mythic and moral tone, than Silver's are to be commended for both their presentation of a case and their incisive criticism of it. Silver makes the distinction between *practical adhocism*, or *ad hoc* means, and what he calls *intentional adhocism*, or *ad hoc* ends, suggesting that adhocism as a working process may be selected with a particular form of architectural expression in mind. He cautions that, "As the procedure succeeds it may become institutional, bureaucratic, orthodox, perfectionist, hidebound-thus, really no longer *ad hoc*." In a sense, this is a problem of all revolutions, and if Jencks is implicitly calling for architectural change, Silver is cautioning against the inherent contradictions of seeing adhoc-

ism, a profoundly unrevolutionary idea, as revolutionary. Silver writes, "For architects, equivocal adhocism may be the best stance. The trouble with adhocism, more than other principles, is that the moment it is identified and adhered to it may become a pose, and as a pose it stands to lose its vital relationship with purpose."

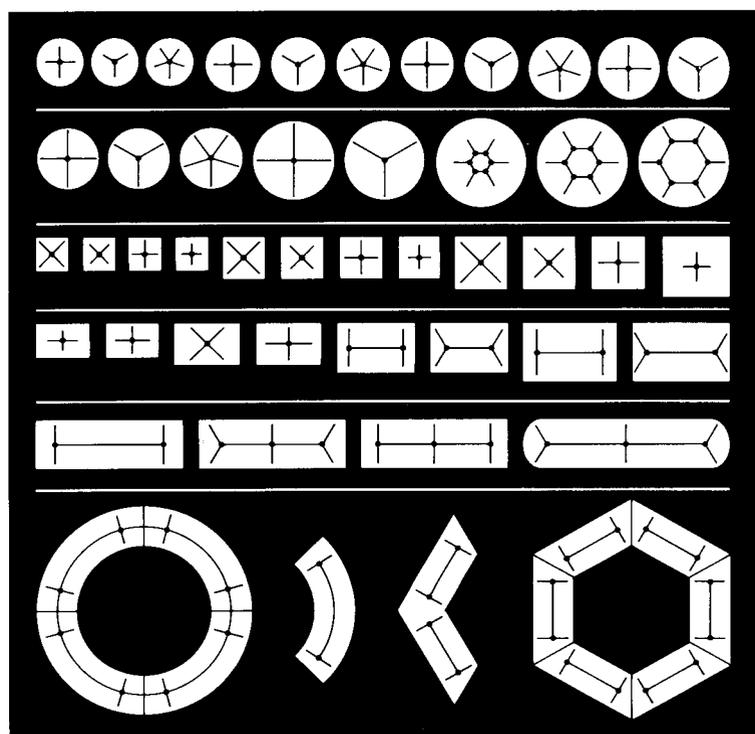
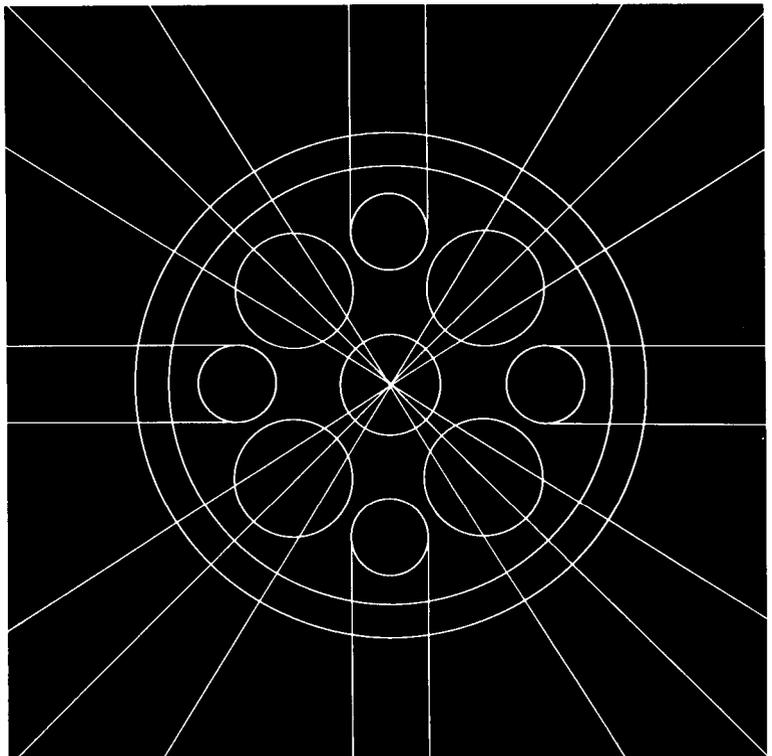
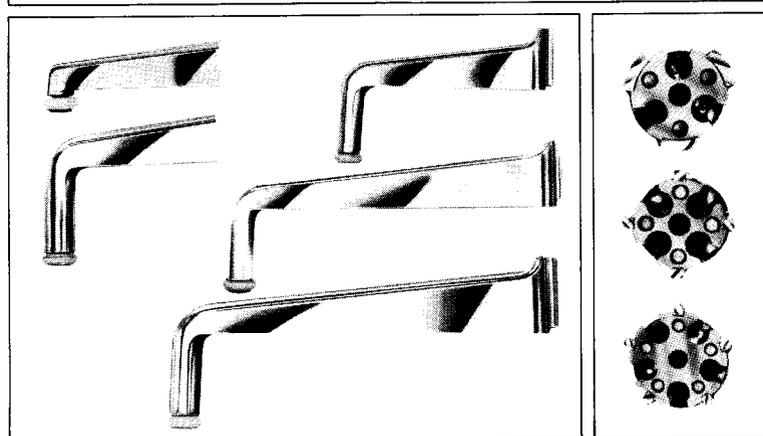
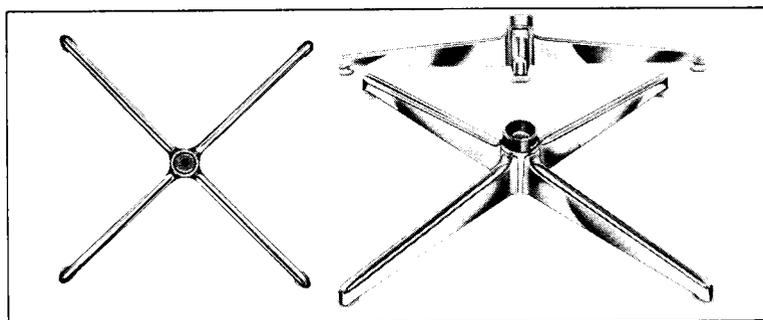
It is in the area of urbanism that *Adhocism's* pictures rather than its verbal arguments seem to go astray. We are told that the virtue of urban adhocism is that, "The complex order that would emerge would be adjusted piecemeal to every imbalance in the environment or to the individual's significant need. It would thus undergo continual and small readjustments *ad hoc* until it was finely tuned to the exigencies of life. The advantage of this piecemeal method of ordering over totalistic planning is that it allows one to disentangle causes and effects and learn from mistakes; totalistic planning, in seeking to change everything at once, has no relative order against which to measure progressive change." While the question of a "relative order against which to measure progressive change" is a problem when one considers an architecture or urbanism which is process or environments which are continually self altering, it is the image of "totalistic planning" implied by some of the book's illustrations that throws its pictures and its words into opposition.

Jencks and Silver have written a good book which, if nothing else, should serve to canonize the visual sources of the British Archigram movement. It is well illustrated and often well argued. It should be looked at, read and taken seriously. To deny the present validity of empirical solutions, the strategy of Adhocism, Inclusivism, and Contextualism, would be to ignore the failure of heroic modern architecture's stated social and architectural purposes as well as its failure to produce a viable urbanism. However, heroic architecture is still with us and as Silver writes, "Adhocism is not to everyone's liking; many prefer a heroic role in a fresh battle to the slow amelioration of a situation which is easier to accept as unfairly 'lost'."

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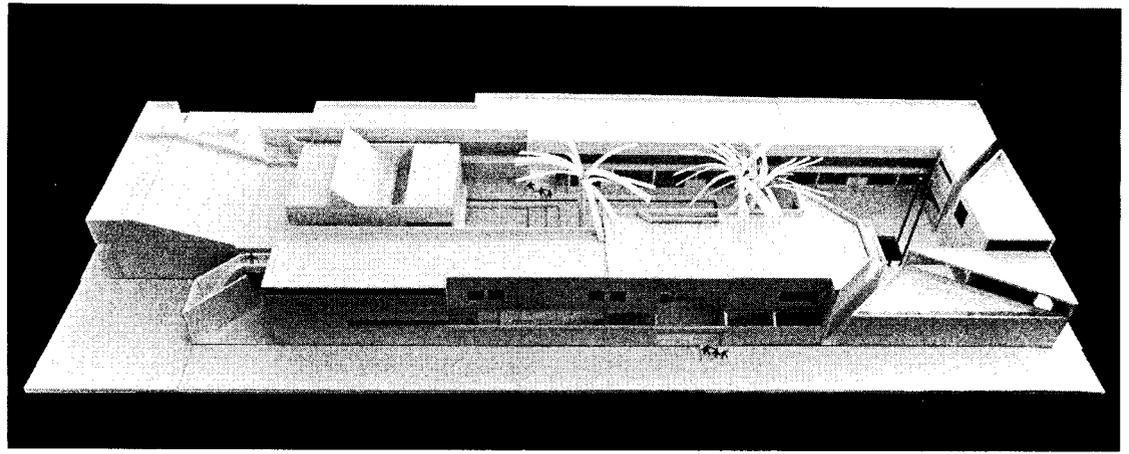
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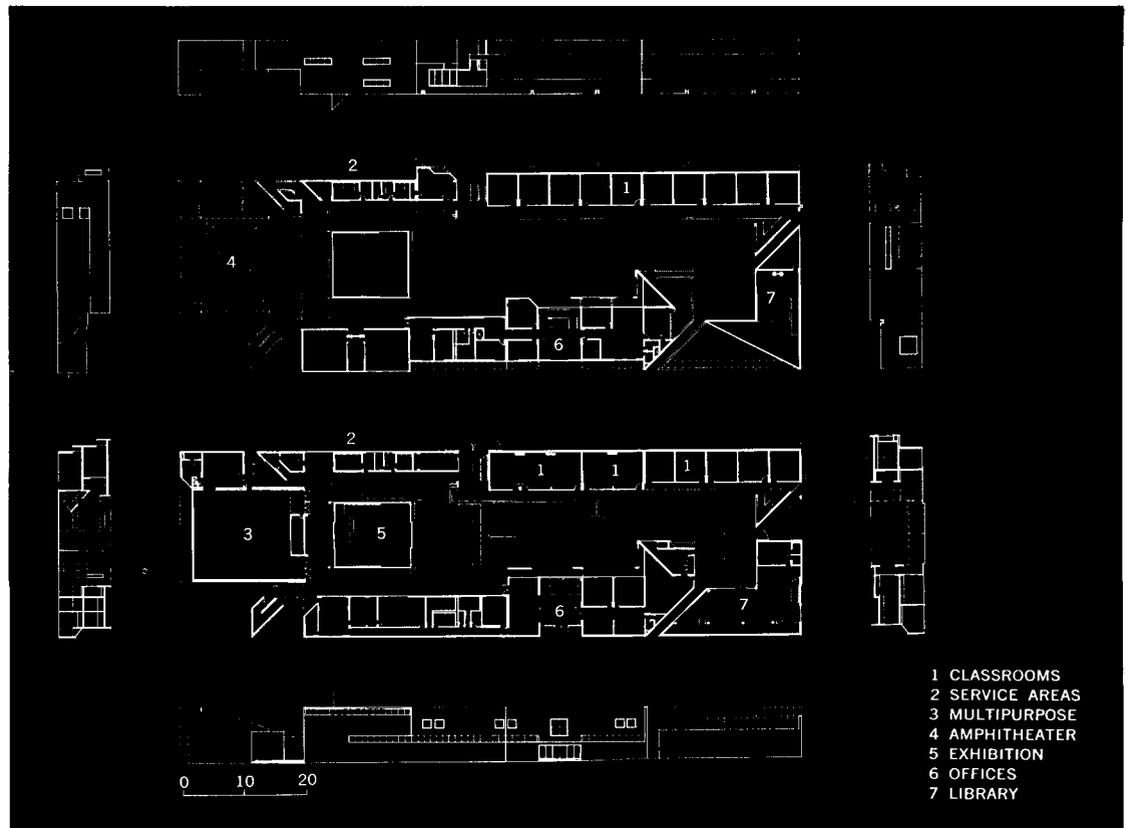
Casa Thomas Jefferson in Brasilia by Mitchell/Giurgola Associates, with Associate Architects Alcides Rocha Miranda and Elvin McKay Dubugras, shows that the U.S. Government occasionally makes a good architectural move. At the instigation of Neil Thompson of the United States Information Agency (who worked with Louis Kahn for eight years) an arrangement was made for the American and local architects to collaborate on the design of a Bi-National Cultural Center. This is the first time a government agency has fostered such a relationship.

The project, jointly sponsored

with a Brazilian non-profit community agency, is small scale—in keeping with neighboring low density housing and the agreed on need for modesty. It contains 20 classrooms and two language laboratories for teaching English, a 25,000-volume library exhibition hall, 250-seat multi-purpose auditorium, an amphitheater, and offices for the USIS, Fulbright Commission and the school. It has nightly movies and talks.

Like other Mitchell/Giurgola buildings, and unlike most at Brasilia, Casa Jefferson focuses inward. The spare and unpredictable rhythms of the exteriors may pique curiosity until the entrances become an enticing

invitation to find one's way around the inner complexities. The middle entrances are direct but those at the ends are oblique; narrow passageways for individuals approaching the library or classes; wider ones at the other end for those going to large group facilities. The architects liken the intriguing garden to the scale, informality and tightly knit quality of Rio's squatters' settlement; and will reinforce these qualities through the painterly use of colors on the stucco exteriors—pinks, violets and greens relating to the pungent red earth color—in an additional effort to break away from the sterility of Brasilia.



(continued on page 12)

She's not crying *because* her hand's not hurt!



New Amarlite SAFETYLINE entrance
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A child's hand is priceless. That and safety for all people is the inspiration for this unique, beautiful entrance.

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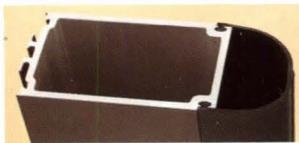
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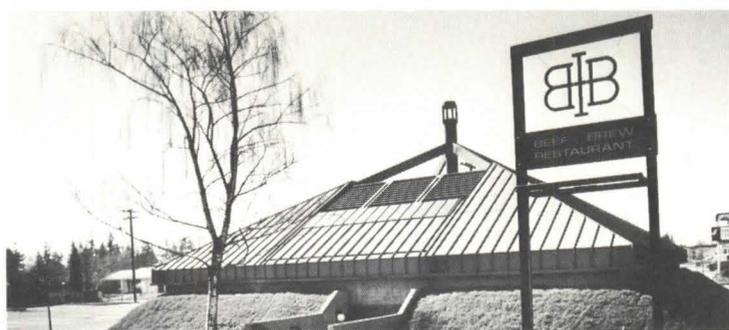
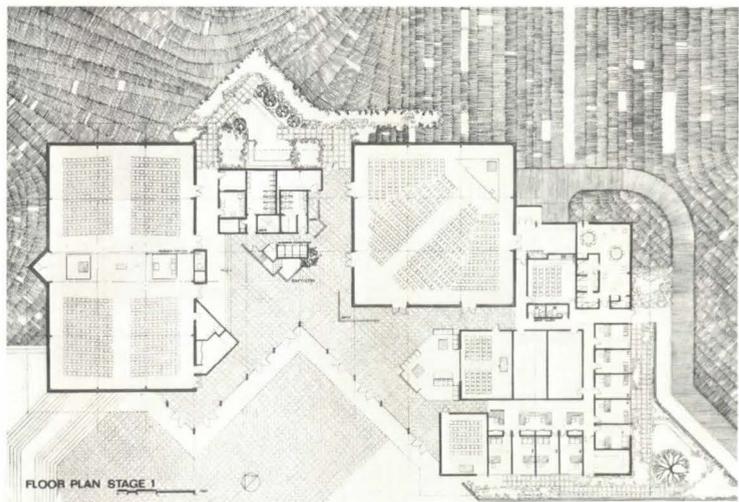
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KEEPING THE FAITHS

The Religious Facilities Center completes the village center quadrangle of Wilde Lake, the first of eight to ten neighborhoods being built in the new city of Columbia, Maryland. Each neighborhood of 8,000 to 11,000 will be focused on a center with community, social, school and church facilities. Whereas the program for Wilde Lake first called for the clustering of all churches on one site, a single structure was settled on to express interfaith cooperation. The common entrance court (above), provides an approach to the village center and access to its parking areas. All

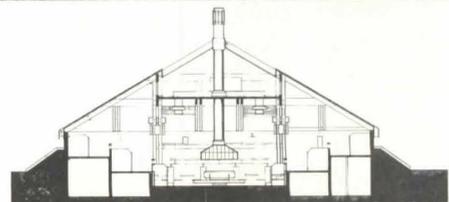
rooms except offices open onto a common foyer with a central baptistry; office spaces are also shared. The complex by Architects Huygens and Tappe of Boston provides for 13 denominations. The major worship rooms are planned for the predominant use of one denomination—a 600-seat room for Catholics, a 350-seat room for Protestants—but may be used by other denominations and for civic and educational assemblies, theater and church suppers as well. The ceilings in the worship spaces have a flexible lighting layout adaptable to various moveable seating arrangements.

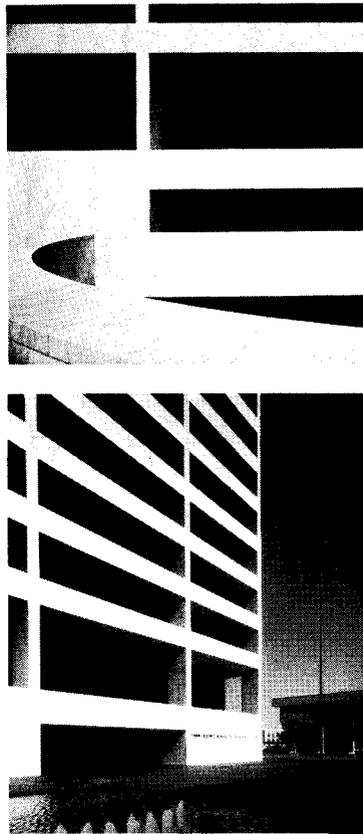


CHEERS

Beef and Brew in Portland, Oregon is a welcome prototype for a new franchise which aims to give its customers maximum food and drink for a *prix fixe*. The exterior, what you see of it over the berm, is sand blasted concrete; the roof is standing-seam weathering steel. There's an aura of congenial darkness and coziness in the interior with natural oil finish on oak booths and hemlock paneling. The

ceiling is made of resawn glulams and resawn two-inch white fir decking. The terracing of the booths allows all diners privacy, plus a view of the central fireplace, and leaves room for compact support facilities below. The building area is 5,800 sq. ft. with a seating capacity of 240, and cost \$289,000. The design and interiors are by Campbell-Yost-Grube & Partners. It's good to see how nice a roadside stand can be.





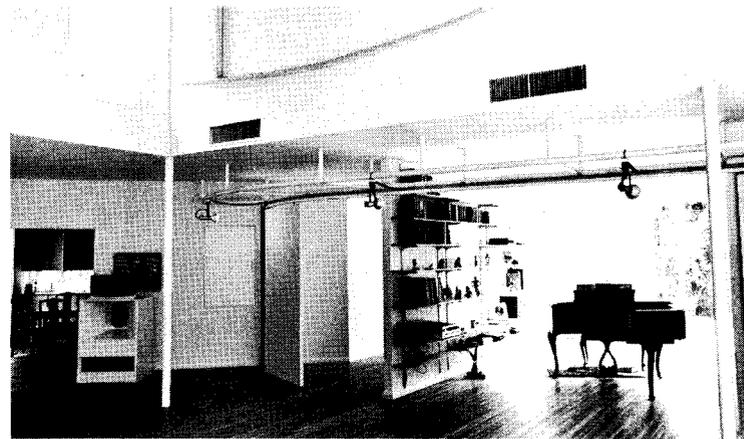
STRIKING IT RICH

The ten-story Farm Credit Bank Building in downtown Wichita, Kansas houses the regional headquarters of three banks on seven of its floors. Remaining space is available to tenants. The building stands on a 50,000-sq. ft. plaza of black rustic terrazzo with two 40 by 40-ft. fountains. Beneath this is parking for 90 cars, and there is surface parking for 30 more on the opposite side of the building. Sheathed in white domestic marble with window walls of black aluminum and gray plate glass, the exterior has a crisp, substantial simplicity. The interiors, designed and selected by the architects, Schaefer, Schirmer & Associates, share this quality, but colorfully contrast with the conservatism of the exterior. Deep blue-purple check carpeting sets off bright furnishings including secretarial desks in a rich grape color. Major walls are white; accent walls and upholstery are magenta, yellow, blue, ochre and purple.

FUN AFIELD

Preliminary plans by Liu Urban Design Associates, based in New York City, call for a 67-acre park and recreation complex at the former Mitchell Field on Long Island. The scheme includes three pools, ice skating facilities, tennis courts, rose gardens, a band shell, a large plaza and mall, restaurants, playgrounds and an indoor rifle range—altogether, some congenial cacaphony on the Sound. The recreational facilities surround a man-made lake, with waterways interconnecting

smaller lakes, fountains, and reflecting pools. Sufficient parking for staff and normal weekday use will be at the south boundary of the park. Peak use parking for weekends and evenings will be in the facilities of adjacent commercial and office buildings, thus conserving land for park activities. A consortium of engineers and architects, hopefully including the Liu firm, will be appointed by the county to develop the plans. The park should be open in 1976.



FREE STYLE

The \$120,000 Block residence in Houston, designed by Charles Tapley and Associate, enhances a heavily wooded site, and was placed in existing clearings. The architects make the apt remark that it was part of the program to "recognize the site as a resource equal to the building," and the program has obviously paid off. Areas of maximum family activity—living and dining rooms, plus a study—open to each other, although the study may be closed off by a curved sliding wall. Formality is minimized. Simplicity — creosoted cedar siding, interior walls of gypsum board—is maintained.



PHOTOGRAPHS: Rollin R. La France, page 10; Julius Shulman, page 12 (top); C. Bruce Forster, page 12 (bottom); Joel Strasser, page 13 (top).





Cor-Ten Steel: The next best thing to nature.

Standing on 20 rolling acres on the outskirts of Madison, Wisconsin, is a new building that could have been designed by Nature herself. It fits perfectly into the environment—yet establishes its own character and dignity on the rural scene.

The Farm Bureau Building, which houses the Rural Insurance Companies, the Wisconsin Farm Bureau and several smaller offices, is a beautiful example of how USS COR-TEN Steel blends with other materials and helps the total structure harmonize with its natural surroundings.

The \$4½ million, 143,580 square-foot building has a USS ULTIMET Steel Curtainwall System and utilizes materials that are easy to maintain:

USS COR-TEN steel, brick and solar glass.

For practical and aesthetic reasons, COR-TEN was a natural choice. It doesn't have to be painted—so it saves maintenance costs. If it ever gets scratched, the surface oxide heals itself! And that rich, russet color actually deepens and becomes more strikingly beautiful as it gets older.

Inside this unique building . . . even more surprises. A fully enclosed atrium, complete with shrubs and trees that reach upwards for four stories, take up about 10% of the interior space. Steel on the interior of the atrium is pre-weathered COR-TEN steel.

The Farm Bureau Build-

ing is another example of the intelligent use of a remarkable steel: USS COR-TEN. It represents the most imaginative expression of contemporary architecture—with due respect for what Nature built first!

For more information, contact a USS Construction Marketing Representative through the nearest USS sales office or write: United States Steel, 600 Grant Street, Pittsburgh, Pa. 15230.

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FACETS

CITIES

SEATTLE ON THE RISE

Seattle is in the midst of a mild building boom. The severe recession that hit this beautiful city by Puget Sound when Congress canceled the SST project is fading, and at least five major skyscrapers are under way or in the planning stage, including the 42-story Bank of California Center designed by John Graham & Co. and the 20-story Peoples National Bank of Washington designed by the Richardson Assoc. In addition, the \$40-million King County Stadium (a joint design venture by three firms under the name Naramore, Skilling & Praeger), slated for completion in 1976, is now rising south of the business district. And two major parks should be under construction by summer. One is the \$5-million Waterfront Park, designed by the Bumgardner Partnership, and the other is the park designed by Lawrence Halprin & Associates, complete with waterfall and canyon, that will top a bridge over the downtown section of Interstate 5.

Perhaps most indicative of Seattle's resurgence is the restoration, planned and completed, of some of the city's more striking older buildings. The

Grand Central on the Park building, a former hotel converted to boutiques and offices, is now fully rented.

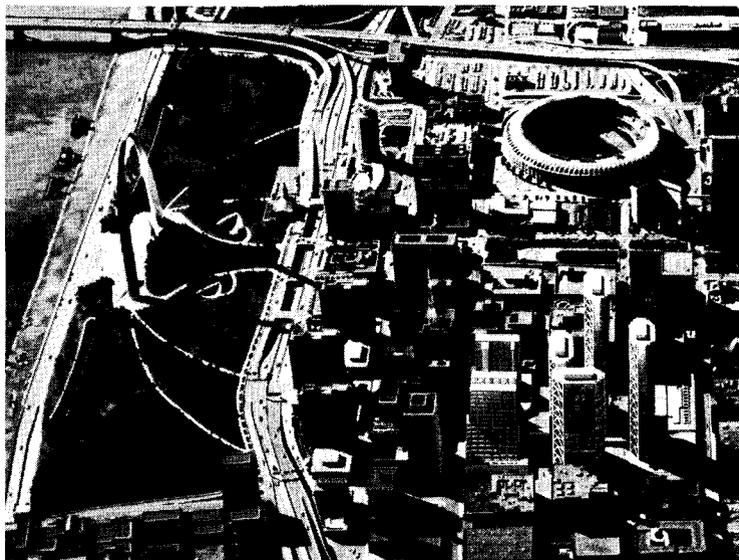
ST. LOUIS WALKWAY

What will amount to a major investment in both the present and future of downtown St. Louis is underway. During the next ten years these plans will see an estimated \$260,000,000 spent on structures on 24 central business district blocks, to the south of Busch Memorial Stadium and to the East of Gateway Arch. And it is hoped that these projects, a Convention Center and a five building Mercantile Center, can be linked both to each other and to much of the rest of downtown St. Louis by a system of overhead pedestrian walkways. Already there are five overhead walkways connecting St. Louis buildings, and if planning becomes reality these bridges would become part of a skyway system separating pedestrians from wheeled traffic.

Scheduled for construction this summer is the first building in Mercantile Center, a 35 story tower. The Center is designed by Thompson, Ventulett and Steinback of Atlanta, with Sverdrup and Parcel, St. Louis, as supervising architects and engineers.

Eventually Mercantile Center will include three other office towers of 27, 24 and 51 stories (the city's tallest building) and a 25-story hotel with 800 rooms and plans for an addition of 200 rooms.

Developers of Mercantile Center along with the Mercantile



Mercantile Center (model foreground).

Trust Co. are Crow, Pope and Land Enterprises of Atlanta, the developers of Atlanta's Peachtree Center, San Francisco's Embarcadero and Houston's Allen Center.

The St. Louis Convention Center will include two hotels, two retail centers, two office buildings and several garages beside the convention hall itself. Sverdrup and Parcel are architects and engineers for Convention Plaza and for the Center's building Hellmuth, Obata and Kassabaum, in association with Charles Fleming and Carey K. Jenkins, are architects. Within the land set aside for Convention Plaza a block square area has been reserved for a hotel to be designed by Robert McMahon and Associates.

UPDATING KANSAS CITY

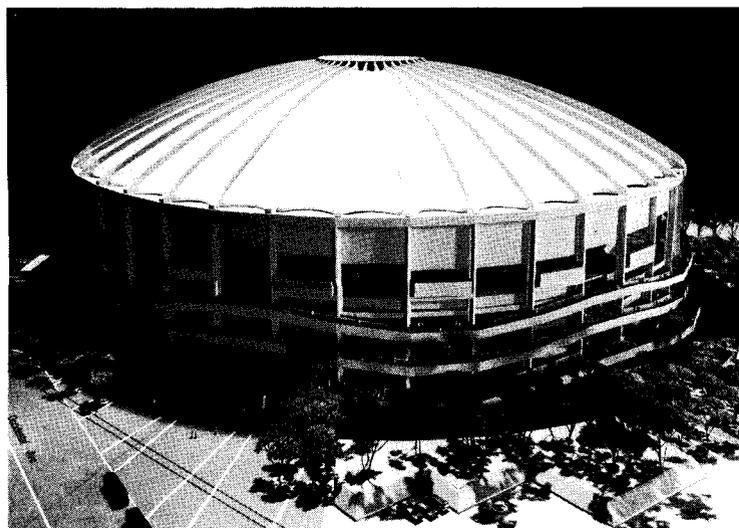
Perhaps not everything is up to date in Kansas City anymore, but it seems in a fair way to become so again. This spring a new \$250 million jetport opened. Plans are under way for a new convention center and a new hockey arena. And perhaps most significantly Hallmark Cards Inc. is investing a reported \$200 million in an 85 acre complex directly across from the old Union Station in the downtown area.

Open already in what Hallmark calls Crown Center are offices in a complex designed by Edward Larabee Barnes of New York. By July 1st this complex will encompass 640,000 sq. ft. and be 85 percent occupied. Also open is a 750 room hotel and motor lodge, designed

by Harry Weese and Associates of Chicago. And planned for September is 100,000 sq. ft. of retail space with three restaurants also designed by Barnes.

Housing will be added sometime next year—a first phase providing 427 luxury apartments, designed by The Architects Collaborative of Boston. Mr. Joyce Hall, the founder of Hallmark, thinks of the project as "the most ambitious of its kind in the world." And he confidently predicts that the project will bring "interesting people back downtown." By the time it is completed in 1983, Crown Center will have one million sq. ft. of office space, 250,000 sq. ft. of shopping and cultural space, 2200 apartments and parking space for 7000 cars.

"We're a town whose time has come," points out Richard Degenhardt, Director of the Chamber of Commerce. He



King County Stadium.



Crown Center Hotel.



Crown Center office complex and central square.

thinks of Kansas City as beginning to move the way Atlanta and Houston did a few years back.

Hallmark selected the three architectural firms involved in Crown Center because of the compatibility of their work, and the overall planning done by the Barnes office includes a ten acre park and central plaza and several landscaped terraces over underground parking. Buildings in the initial complex are a precast concrete aggregate with marble chips giving it a warm gray color. Windows and their anodized aluminum frames are also gray.

ENVIRONMENT

HOPE FOR VENICE

When U. S. Grant first saw Venice he is supposed to have said it would be a fine place if it were only drained. A lot of people have, in a way, come around to that position, not wanting to drain it entirely, only to a point where the piazzas aren't flooded, the monuments not eroded, and the buildings no longer sinking.

Built on the mud flats in a lagoon, Venice has always been unstable, but the drilling of some 19,000 wells beneath the city over the years has lowered the water table and caused the city to sink. At present Venice is sinking at a rate of three millimeters a year. In addition some of the polar ice is melting, raising ocean levels, and occasional winds in the Adriatic

force water towards the city. At least 70 times a year, there are a few centimeters of water in the Piazza San Marco.

But something is finally about to be done. On April 13th the Italian Parliament agreed to appropriate \$500 million to the Save Venice Plan. Under the plan the wells beneath the city will be capped, water pipelines will be built to supply nearby industry, relieving it of reliance on city water, and huge locks will be built across the three entrances to the lagoon to control periodic flooding. Although the total cost may be far in excess of the \$500 million appropriated, especially if disagreement continues on exactly how it should be spent, some think many of Venice's water problems can be controlled within three years. In an interview earlier this year, Italian oceanographer Dr. Roberto Frassetto, who headed the research into

Venice's subsidence, said: "Venice will have a short life, if we don't prevent floods . . . We're not ready to say how long Venice will live, but everything we know today allows us to act immediately . . . We're going to solve Venice's basic problems and then take very good care of her. So, you won't have to worry."

A TREE GROWS IN MIAMI

Many trees will be growing in Miami because of the efforts of Architect Thurston Hatcher and members of the Florida South Chapter of the A.I.A.

This group of arboreal enthusiasts has created the Greater Miami Tree Conservation Bank. When someone finds it necessary to remove a tree in Miami, s/he notifies the Tree Bank. The Bank then removes the tree and replants it in a public area, giving the owner a receipt for the value (based on an appraisal of its cost if purchased in a commercial nursery).

The owner could then use this receipt as a tax deduction for a charitable contribution to a non-profit organization.

These architects are also trying to encourage more planting in parking lots. Therefore, if the lot owner agrees to planting, the Tree Bank architects will design his parking lot free of charge.

Another aspect of the Tree Bank's program concerns planting of small seedlings. South Florida residents are encouraged to gather small seedlings and turn them over to the County nursery, which then cares for them until they can be publicly planted. This process, Hatcher points out, is cheaper than mov-

ing already grown trees, and because of the warm climate provides substantial results in ten years.

While the Tree Bank has been working on a program to educate the public about its services, it has also been busy legislatively. In the past few months, the Bank has been able to push through ordinances in Dade County, Miami and other municipalities forbidding the bulldozing of any tree over a certain height and width.

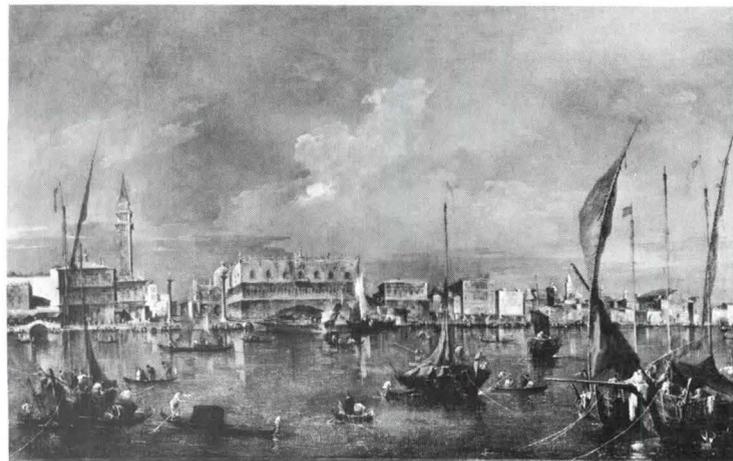
WORDS, WORDS, WORDS . . .

While the United States wrestled with the specific timing of auto exhaust controls, Europe was debating the broad issue of protecting the environment. At the European Ministerial Environmental Conference held this spring in Vienna, the 17 nation Council of Europe found itself divided. While the nine Common Market nations gave lip service to the need to protect nature, the other, less-industrialized nations wanted to talk about immediate controls for curbing the spread of pollution. A proposal by Austria to put teeth into anti-pollution proposals and calling for international collaboration was slapped down by the Council. What emerged was no more, if no less, than what emerges from most such conferences. In this case it took the form of a 4,000 word document saying that the council members wanted to come to grips with pollution in its many forms. Next year another conference will meet to evaluate further steps.

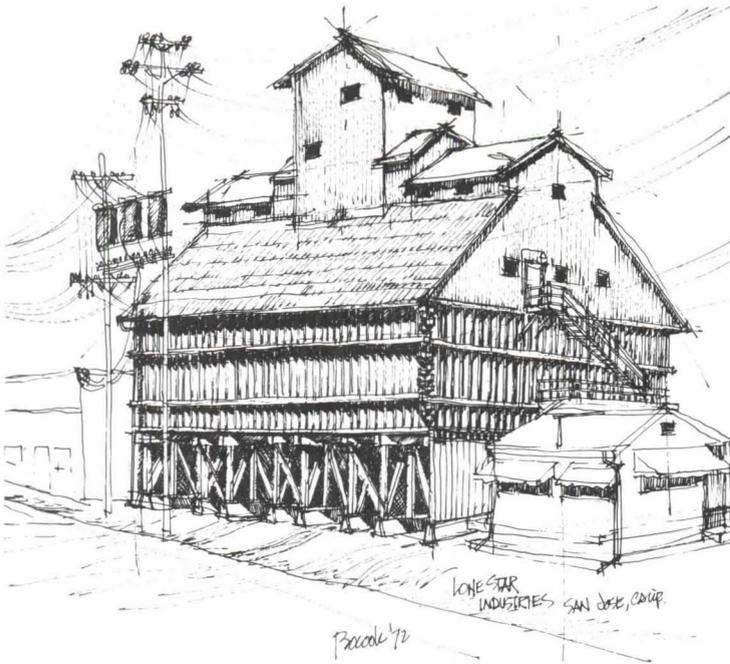
PRESERVATION

SKETCHING

Architect Bill H. Bocook of Palo Alto, California likes found objects. "I've always enjoyed drawing functional things," he says. "They're the way they are because of what they do. Everything has a meaning. It's done with a purpose. There's no embellishment. And, I guess the older and shaggier they are, the more I enjoy drawing them." This is why Mr. Bocook often sketches industrial buildings like Lone Star Industries (Page 18) or a salt works or sand plant or cannery. He likes recording craftsmanship and use of ma-



Riva Degli Schiavoni, Venice (Francesco Guardi, 1712-1793).



Lone Star Industries, San Jose, California.

terials—things we will never see again, as he did in sketches of Redwood City's tannery where everything, including the pipes, was of redwood. Mr. Bocook is discouraged by the many failures of preservation efforts in the East but is optimistic about what's happening to save significant mementoes of the West Coast heritage, especially in the San Francisco region.

FOOTING THE BILL

Our Washington, D. C., correspondent, Carleton Knight, has overheard some telling comments around Congress lately: "Would you buy a pig in a poke?" asked Rep. H. R. Gross (R-Iowa). Rep. Samuel S. Stratton (D-N.Y.) said that it was like taking an old car that needed some repairs and trading it in on a Cadillac. Rep. Bob Casey (D-Tex.) noted, "No one makes a pilgrimage to this wall, as people do to the Blarney Stone, to kiss it. If they do, all they are going to get to kiss is some General Services Administration paint." It ought to be called, "the architects' wailing wall," said Rep. Clarence D. Long (D-Md.). "If Frederick Law Olmsted were alive today," said Rep. John F. Seiberling (D-Ohio), "he would say the proposed West Front extension is an improvement."

What all those gentlemen were talking about was the controversial proposal to extend the West Front of the U.S. Capitol by 80 feet and thus

provide more office space. A bill to allow such an extension was part of the 1974 legislative branch appropriations and it passed the U.S. House of Representatives in April.

On April 17, the House rejected a move to cut the project off without any funds by a vote of 189-196. The following day, by a vote of 215-185, the House voted to appropriate \$58 million for the \$60 million plan (\$2 million has already been spent on planning and study).

At that cost, it is probably the most expensive building (per square foot) in history—far outrunning the legendary Rayburn House Office Building with its more than 100 percent cost overrun and the new FBI Building now under construction. The extension to the West Front is now estimated to cost \$222 per sq. ft. based on actual space and \$368 (that's right—three hundred and sixty-eight) per sq. ft. on the usable space. The FBI Building will come in at about \$68 per sq. ft and the Rayburn Building was about \$50.

The 270,000 sq. ft. extension will contain about 160,000 sq. ft. of usable space for 285 offices as well as meeting rooms and auditoriums. But nothing is definite and the final plans have yet to be drawn.

That's what upsets Rep. Gross. No one really knows what will be included. "They might stick in a bowling alley," he says. He objects to voting money to build a project before the final

plans have been drawn and many of his colleagues felt the same way. Furthermore, says Rep. Stratton, who leads the opposition, "we have been talking about holding the line [on spending] and yet here we are being asked to spend \$58 million that we do not need to spend."

The bill now goes to the Senate where Sen. Ernest F. Hollings (D-S.C.) will again lead the opposition to the plan. Hearings on the proposal will begin before his Appropriations Subcommittee in mid-May. Under his active efforts and with the assistance of Sen. William Proxmire (D-Wis.) last year the spending proposal was narrowly defeated.

• The AIA launched its latest attack on the West Front extension on March 29 with a full-dress press conference. President Scott Ferebee led off and was followed by Archibald C. Rogers, First Vice President; George M. Hartman, a member of the AIA Task Force on the

at least as much space as the proposed extension and be closer to the House chamber (it is mainly the members of the House who are clamoring for additional space).

Ferebee hit on two of the points that the AIA believes to be crucial. "We are concerned that extension of the West Front will obstruct the present sight lines to the Capitol dome and lessen the striking visual effect of the dome when viewed from the mall." In addition, he said that a comprehensive master plan is needed so that, "a full range of design alternatives could be considered to safeguard the continuity and integrity of Capitol Hill."

Rogers outlined the history of the first proposal, first submitted by the late J. George Stewart, the non-Architect of the Capitol, in 1967. The AIA has opposed the plan since and has called for restoration of the facade—a plan that was declared feasible by an engineering firm in 1970 and a plan that



Uproar on the Western Front.

West Front; Milton Grigg, The Chairman of that Task Force; William L. Slayton, the AIA Executive Vice President; and Maurice Payne, the AIA Director of Design.

In brief, the AIA proposes an underground facility on the south side of the Capitol that will cost 25 percent less, offer

is estimated to cost \$20 million, only one-third of the extension price.

Hartman said that an underground facility would in no way detract from the Capitol's proportions and that furthermore, "Congress should solve today's problems with today's technology. Fifty years ago an under-

ground building was inconceivable, and if conceivable, would probably have been intolerable."

In response to questions, Hartman estimated a savings of "at least 25 percent" in construction costs of an underground building as compared to the West Front extension. He said that a savings of 15-20 percent could be predicted for a standard commercial structure built underground; the additional savings would come from not having to use marble for the facade. In fact the facade would be concrete covered with earth.

Those at the press conference stressed that they did not question the competence of George White, the Architect of the Capitol and a former officer of the AIA. "It is a difference of professional opinion," said one.

And so now it is up to the Senate, and early reports indicate another close vote. If the measure fails, the bill would go to a conference committee for resolution and another vote. If it passes, the bill goes to the White House for the President's signature. Maybe he could be convinced to take the unprecedented step of impounding the funds as being too inflationary.

BOOSTS

FLICKS BENEATH THE ARCHES

The bridge that spans New York's East River from Manhattan's 59th Street to Queen's Northern Boulevard is called, appropriately enough, the Queensboro Bridge.

The bridge's approaches run over land and, on the Manhattan side, the space beneath these approaches, which are supported by massive stone pillars with graceful arches between them, has been used as a warehouse for the kinds of barricades police put up to hold back crowds at parades and other

demonstrations.

The interior of these spaces have wonderful vaulted ceilings and earlier in the century when the bridge was new, the open, vaulted isle beneath the bridge approach was used as a market. In 1919 the area was glassed in.

Now, in what is truly an enlightened move towards better use of urban space, the city has agreed to lease the "cathedral area" beneath the bridge approach to the City Center Cinematheque for \$1 a year.

Plans are under way to convert the space to a film museum-exhibition area. As designed by I.M. Pei and Partners, the space will have two interior theaters and a 50-seat private screening room, plus 25,000 sq. ft. of exhibition space. There will also be a restaurant, a bookstore, a flower market, and conference space. The theaters will have to be taken 10 to 12 feet below grade because of the space taken by the massive columns, and a third and largest theater (500 seats) will be partly below grade and partly beyond the bridge structure. What is now a parking lot next to the area will become a landscaped park. The I.M. Pei renderings show contemporary design with stainless steel and supergraphics contrasting consciously with the massive, almost medieval, character of the existing structure.

The City Center Cinematheque is raising \$10 million to pay for the project.

TRANSPORT

MAG LEV NOT WAR

Magnetic levitation may, before long, be the way to get to work—at least in West Germany and Canada. While American engineers have been fooling around with rubber wheels (for greater quiet) and air-cushion systems (for greater whoosh), the other two countries are working to

apply electro-magnetic power in rapid transit systems.

Krauss-Maffei AG of West Germany seems to be carrying (or floating) the ball on this one. The firm is now conducting a seven-month study for the government to see whether a mag-lev underground system could, by mid-decade, replace the streetcar line now running down the mainstreet of Heidelberg. The plans, at this stage, call for 12-ft.-long cars, each carrying eight passengers. These would "float" between six or so stations at 27 miles an hour, and cost only half as much as a traditional "tube."

A much faster mag-lev is in the offing for the 500-mile hike between Munich in the south and Hamburg in the north. The government wants this link operational by the 1980's, and plans call for a stunningly short (not to mention smooth) two-hour trip. Several firms, in addition to Krauss-Maffei, are vying for contracts to develop what would have to be a 250-mile-an-hour system.

Meanwhile, Ontario, Canada, is about to select a mag-lev prototype for an estimated \$1.3-billion network in three of that province's major cities. The Krauss-Maffei system is in the running; so is a combined mag-lev and rubber wheel system from Hawker Siddeley Group, Ltd., of London. Plans call for an operational prototype by 1974—most likely in Toronto which is to build a new 56-mile transit system—with a complete working system by 1977.

The reasons mag-lev is being taken seriously: Because the trains would float, and don't depend on wheels, friction is reduced and speed increased. Secondly, mag-lev would be mercifully quiet—none of those roaring air blowers, and no ground vibrations. Thirdly, mag-lev wouldn't pollute. When you talk about an ancient city like Heidelberg (or several dozen others threatened by progress),

you're talking about a reprieve for historic buildings which are regularly battered by the side-effects of traditional movement systems.

With well-funded test tracks being laid out all over West Germany, that country will be commanding even more attention (and contracts) in the transportation field. Just a few years ago, mag-lev was considered too futuristic to be feasible, but now the technology and the financing have moved into place. When you stop and think about it, mag-lev taps just about the most basic, certainly timeless, principles of energy, something which makes the wheel (rubber or not) look interim by comparison.

AUTOPIA

DRIVE LESS, BREATHE MORE

The April decision of the Environmental Protection Agency to give auto makers until 1976 (instead of til 1975) to meet federal requirements on exhaust emissions gives the U. S. another year of dirtier air. Or does it? Perhaps the whole ruckus merely throws the problem back in the lap of the individual, which may be what part of the objection to the Agency's ruling is all about anyway. What can we at home do about dirty automobile exhausts? Well, we might consider using our cars less, cutting down on non-essential trips and joining car pools for essential ones. We might consider buying the foreign models of Honda, Mazda and Mercedes-Benz that already meet the standards specified for 1975.

According to a recent series of public hearings in California, where 10 percent of the nation's cars are found, residents of Los Angeles are ready to cut out leisure driving on smoggy days, even—in a seemingly radical step for a Los Angeles resident—to use available public transportation. City and state anti-pollution authorities think such voluntary controls might cut auto use nearly 25 percent.

According to Graham Smith, executive director of the Clean Air Constituency, one of the hearing's sponsors, "People indicate they want action. Most

(continued on page 68)



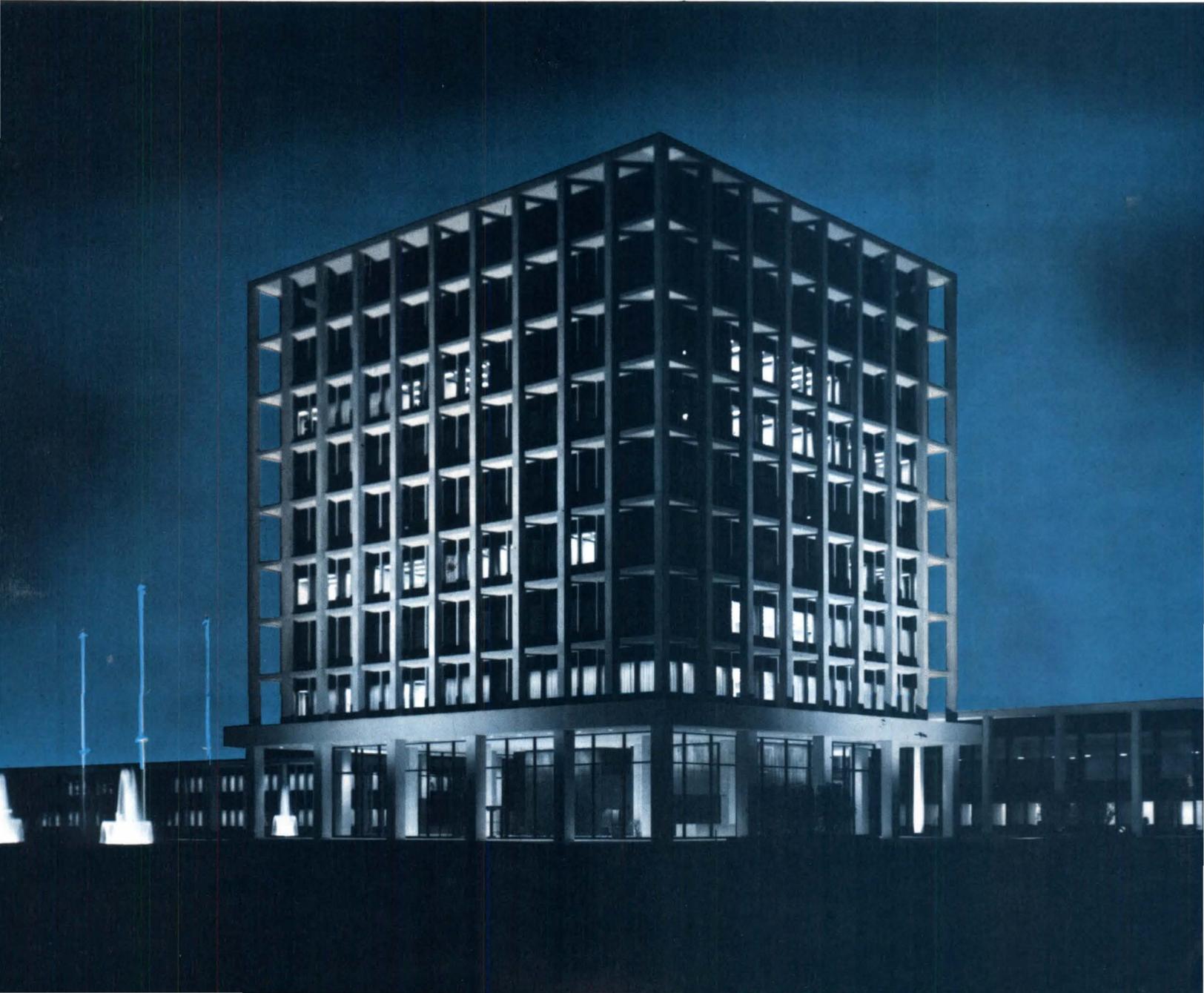
Cinematheque beneath New York's Queensboro bridge.

**There's hidden
"insurance" in
the Allstate building.
It's All-weather Crete
roof deck insulation.**

When Schmidt, Garden & Erikson Architects designed the Allstate Insurance Headquarters in Northbrook, Illinois, they realized that a company known for insurance protection should itself be well protected thermally. All-weather Crete was selected for insulating the roof deck. This monolithic insulating fill provides excellent thermal properties that cut heating and cooling costs for years. In addition, the unique ability of All-weather Crete to be formed makes possible slope to drains which assures positive water drainage. Vapor transmission properties, experienced dry application by licensed applicators and many other features make All-weather Crete the outstanding roof deck and plaza protector for truly fine buildings. Compare — get the facts — contact Silbrico Corporation, 6300 River Road, Hodgkins, Illinois 60525, (312) 735-3322, or see Sweets for the address of your local applicator.



Allstate Insurance Company, Northbrook, Illinois • Schmidt, Garden & Erikson, Architects and Engineers



W. R. (Bill) Hasbrouck has been preaching Chicago School architecture for years. So it is only natural that his wife Marilyn showed up at the American Institute of Architects convention last month wearing the only necklace in the world designed by Louis Sullivan.

There is a lot hanging on this.

If the last 15 years are any indication, it may end up being the only evidence that a Chicago School ever existed. Too many of those pioneering, metal-framed skyscrapers have been sacked by speculators—the old Stock Exchange, the Garrick Theater. Small deeds (30 stories and more) have replaced the big (if shorter) deeds of Sullivan, his partner Dankmar Adler, and their contemporaries. I suppose that's what you get from people who talk civic pride, then behave (and build) as though civic morals are spawned beneath boxcars.

A moment of silence.

And, during it, a word of reprieve.

The U. S. Department of the Interior has put forward a proposal which might be called the Second Chicago Plan, coming 64 years after Daniel Burnham's first one. In contrast to Burnham's, however, Interior's plan looks at Chicago *as it is*—boxcars and all. If accepted by city officials, and approved by Congress, two dozen or so Chicago School landmarks would become units in a National Cultural Park—America's first, and a vitally significant concept for cities and towns across the country where soiled, but salvageable landmarks remain.

Economic incentives raised Chicago's benchmark buildings—Leiter II, the Fisher, the Auditorium, the Manhattan and Marquette, the Monadnock, the Reliance and Rookery, others. But in the same way that innovations in construction became innovations in expression, so did economics create a *cultural* presence which continues to inform (even inspire) the world. Dankmar Adler's caisson foundations (the first ever) sank deep, like tendrils, into the social and technological changes which came out of the Industrial Revolution. Moreover, those tendrils have kept a hold on every architectural and urban development since. They have made Chicago, to borrow from Henry Russell-Hitchcock, "the Ile de France of modern architecture."

The tendrils must not be severed and, with Interior's proposal, there is no reason they should be. Under its provisions, economic incentives would intercede. And the possibility that they might make preservation possible has thrown a lot of Chicago developers for a Loop. Could it be possible, they are wondering, to cash in on a cultural heritage? They'd better believe it.

The prod (or the poker, depending on your viewpoint) is *zoning*. Incentive zoning. According to a stunningly sensible plan worked out by John J. Costonis, Professor of Law at the University of Illinois, development rights in excess of what zoning would normally permit on a landmark site could be transferred to adjacent or nearby parcels. This would be done within an agreed-on preservation district, with height, bulk and density guidelines specified and supervised by the city's planning agency. In the bargain, economic pressures (usually based on potential rather than present land value) would be diverted from the landmark at stake; the sale of development rights would enable the

FORUM

JUNE-1973 VOL. 138 NO. 5

landmark owner to clean up the building, rather than close it out. New projects benefiting from zoning bonuses would, of course, contribute proportionally more to the city's coffers, and the owner's pocketbook, while the redeemed landmark would pay proportionally less in taxes. Complementing the transfer provision would be a "development rights bank" where unused zoning bonuses would be deposited and later sold. This would involve a kind of revolving fund, supervised by the city, whose seed money would come from Congress.

All this depends on how resolutely Chicago moves to accept the National Cultural Park concept. For it would be up to the city to get on with the business of granting official landmark designation—something the Chicago City Council refused to do in the case of the old Adler & Sullivan Stock Exchange; it would be up to the city to implement the provisions for development rights transfer, and the "bank"; and it would be up to the city to make sure that the maintenance and use of landmarks is in keeping with its own ordinance covering them, and with the standards set down by the Department of the Interior. In turn, Interior (through the National Park Service) would establish suitable displays, tours and visitors facilities—thus making the Chicago School an educational as well as (once again) an economic resource.

Still operating at or near full capacity, these buildings would be landmarks in the truest sense; not museum pieces, but approachable, accessible, *useable* elements of the city's on-going life; places to work in, and learn from. The ultimate tie-in, one suspects.

The author Nelson Algren (*Man with the Golden Arm*) may have been right, once. "Somehow," he wrote, "the caissons below the towers never secure a strong, natural grip." He wrote that in *Chicago: City on the Make*, and I can only hope Chicago is still enough on the make to give these buildings the strong, natural grip they deserve.

—WILLIAM MARLIN

CHEAP SEATS

Two economical designs illustrate how theater costs can be pared in the aftermath of the cultural explosion

When the history of architecture for the last half of this century has been written, it may not include a Butler pre-engineered building. Yet one firm of talented architects, Hardy Holzman Pfeiffer Associates of New York, has been working in this genre for several years (FORUM, April 1971) and has just applied it to one of the most technical of building types—the theater.

As HHPA points out, pre-engineered buildings have been relegated to warehouses and auto showrooms along the commercial strip. The reason the architects are investigating their applicability to different design solutions has not so much to do with the current fascination over the Strip's pop imagery, however. Instead they argue, catalogue components available here and now not only provide economical construction but with some amount of modification, adapt well to a wide range of uses. Financial restraints of the sort that generated this building type are welcomed by HHPA with a joyfulness that borders on the perverse. And if you don't buy their pre-engineered ideas, they can figure out other inventive ways to cut corners.

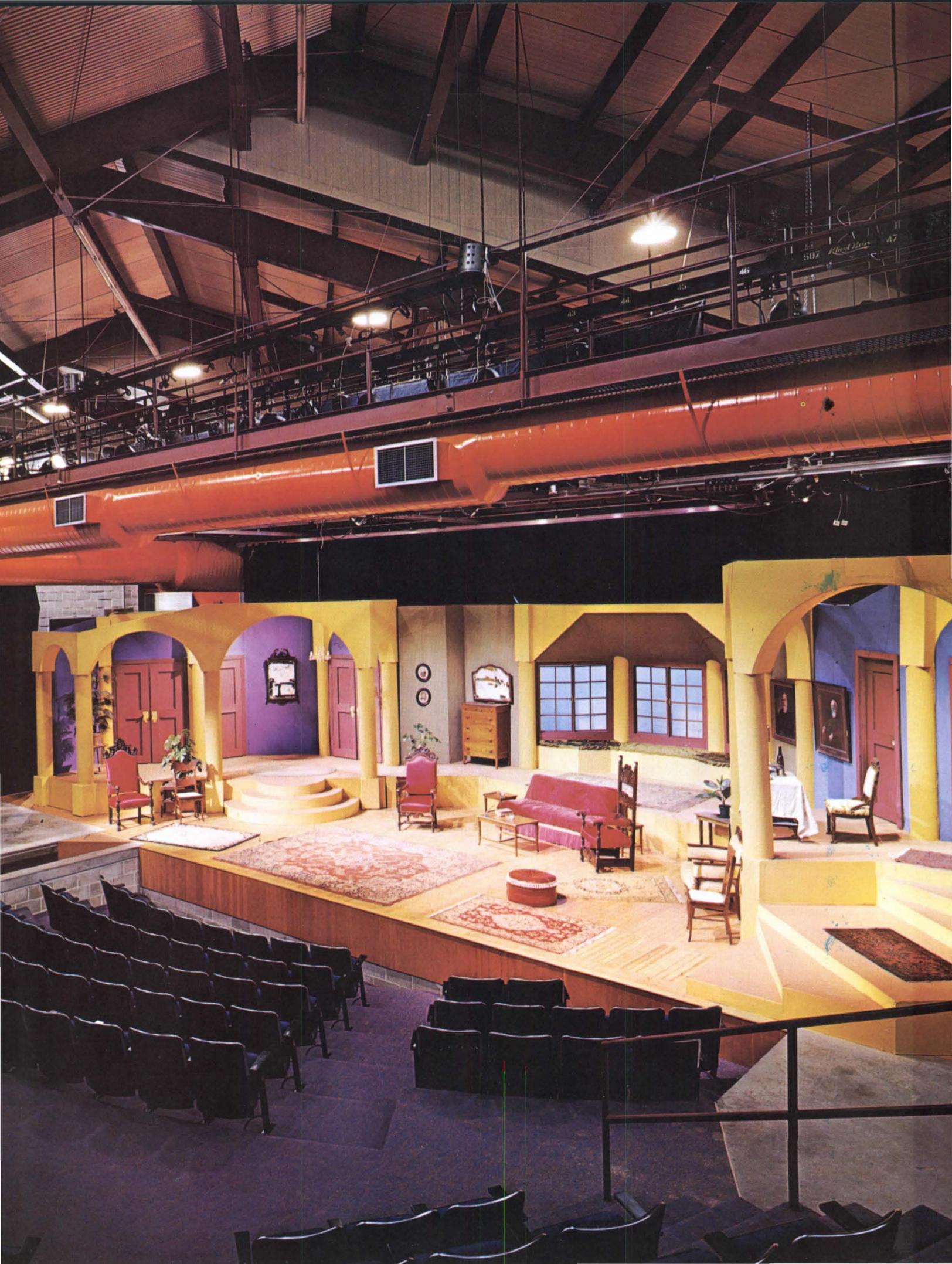
Both of the theaters shown in the following pages really only share one thing: they didn't cost much. One, the theater for Exeter, exemplifies the firm's current efforts with pre-engineered building. The other, a conventionally constructed theater (the clients just couldn't be sold on Butler) illustrates other devices used to achieve low-budget theater construction.

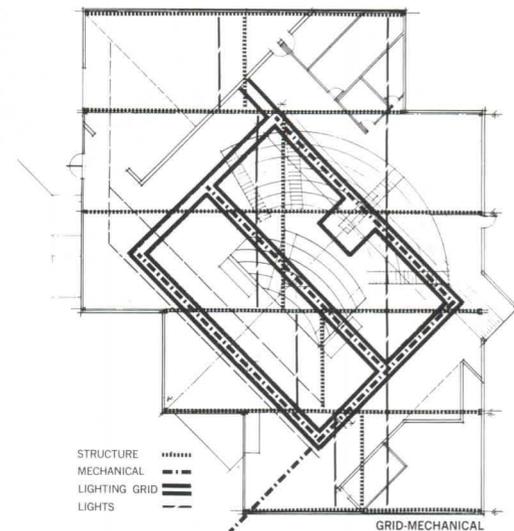
Not only is there a concern



The exposed structure, ductwork, and catwalks of Emelin Theater in Mamaroneck and Fisher Theater at Exeter have been painted bright colors to good visual effect. The lobby for

Emelin Theater (above) is actually part of backstage (or vice versa). The auditorium for Fisher Theater (opposite) sits in a pre-engineered building, with acoustically treated roof surfaces.



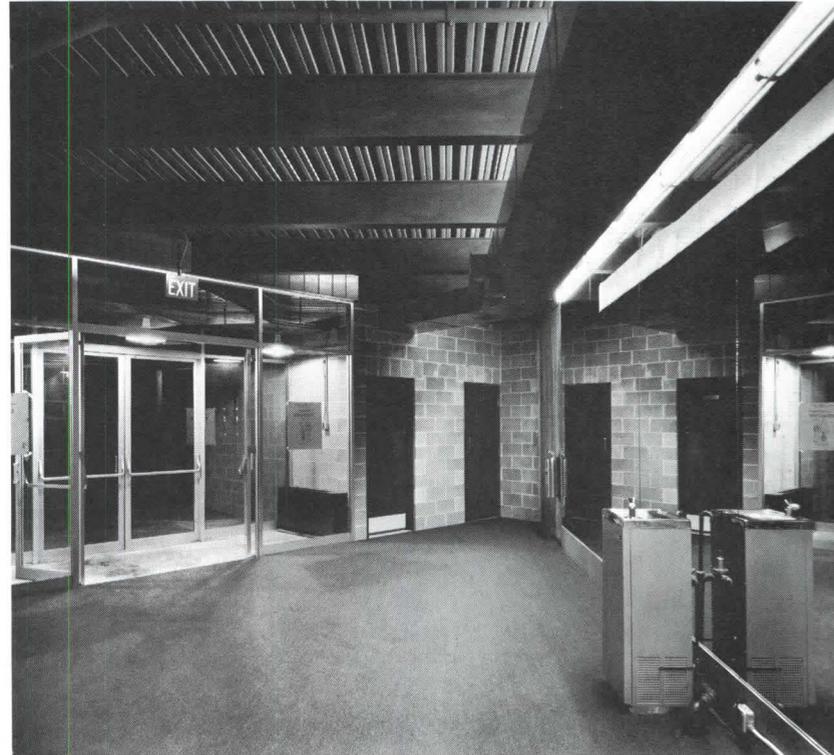
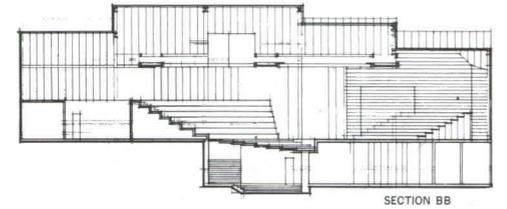
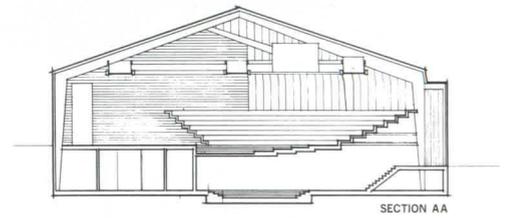
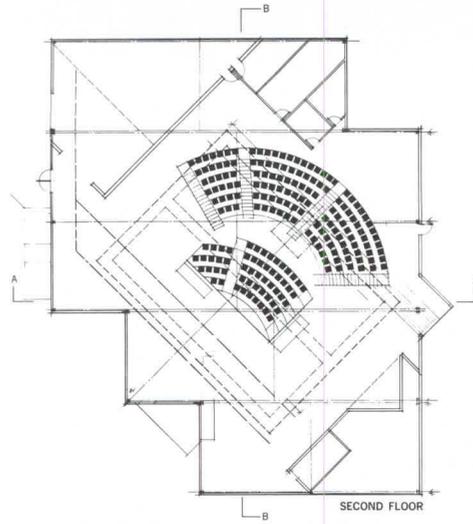
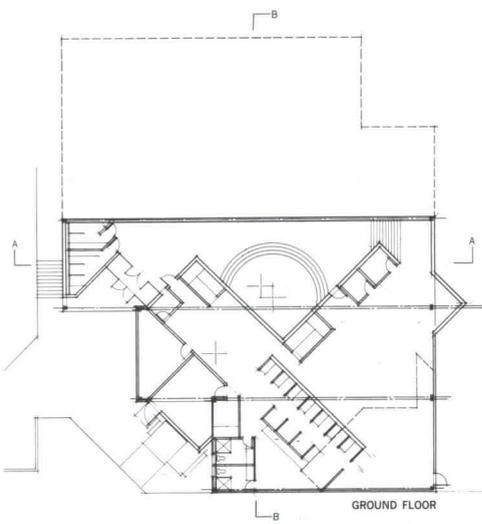


in each of the buildings with economical construction, but also with a theater design that reflects current permissive attitudes toward the audience and performers. Instead of struggling to maintain illusions of the traditional stage performance, these theaters expose the proverbial "behind-the-scenes", and make this reality part of the audience's experience. In keeping with the no-secrets-kept vitality of the theatrical environment is the asymmetrical plan and

destruction of the center line in the two theaters, along with the exposure of the structure, ducts and catwalks. By virtue of the plan, multitudinous sight lines are established allowing greater flexibility and more mobile staging. The design solution forces the directors to expand their orientations, and the audience too, will have to welcome this visual participation. The suspension of their disbeliefs is not required for a moment.

Yet in the case of pre-engineered buildings such as the Exeter theater, there is the requirement to suspend esthetic prejudice. By taking catalogue components that previously have had quite different levels of signification with regard to their use, user and client, HHPA is pushing the public and the professionals to re-examine their predilections. As they explain, architects have a "conditioned esthetic" that prevents them from looking on this kind of

building as "architecture." Yet its variety and flexibility of spaces, the ingeniousness of adapting the program to this kind of building system (and adapting this building system to a new kind of program) would confirm its right to be considered as much of an architectural solution as Louis Kahn's Library also on the Exeter campus (FORUM, July/August 1972). As Norman Pfeiffer succinctly puts it: "Standard parts have formed a nonstandard solution."



Doors, windows and details are standard Butler (opposite, top); panels are an olive color, while the shed for the mechanical system is a bright red to match the ductwork. Inside, carpeting and upholstered seating

aids the acoustics (opposite, bottom). Stairs from lower level lobby (left) lead around exposed structure of auditorium seating. Lobby's concrete retaining wall (above) has mirror-finish at entry, slate or natural finish beyond.

Fisher Theater

Applying a pre-engineered building system to the design of a theater turned out to be fun but not all that easy. In this case, Exeter Academy in Exeter, New Hampshire needed a theater that could accommodate 260 seats for various types of student productions. The total budget was \$800,000. Since Exeter seemed perfectly willing to have a pre-engineered building on their campus (as long as the building would be placed on a fairly concealed site), HHPA

decided on the Butler Widespan rigid frame system with aluminum and styrofoam sandwich panels. But therein lay the rub. The architects wanted to have a two-level (16,000 sq. ft.) theater, and pre-engineered building components are designed to be single story only.

The tampering that ensued involved inserting steel beams into the Butler system to create the second (auditorium) floor. Furthermore, since catwalks had to be suspended from the roof,

more loads than usual were applied to the bents. Thus calculations had to be undertaken for point loads on the bents, so that they could be strengthened where the purlins holding up the catwalk would be attached. In addition to the beefing up of the basic structure, the theater required a lot of concrete foundation work. A pre-engineered building is best suited naturally for a flat site: since the site sloped, a retaining wall had to be installed half-way down the

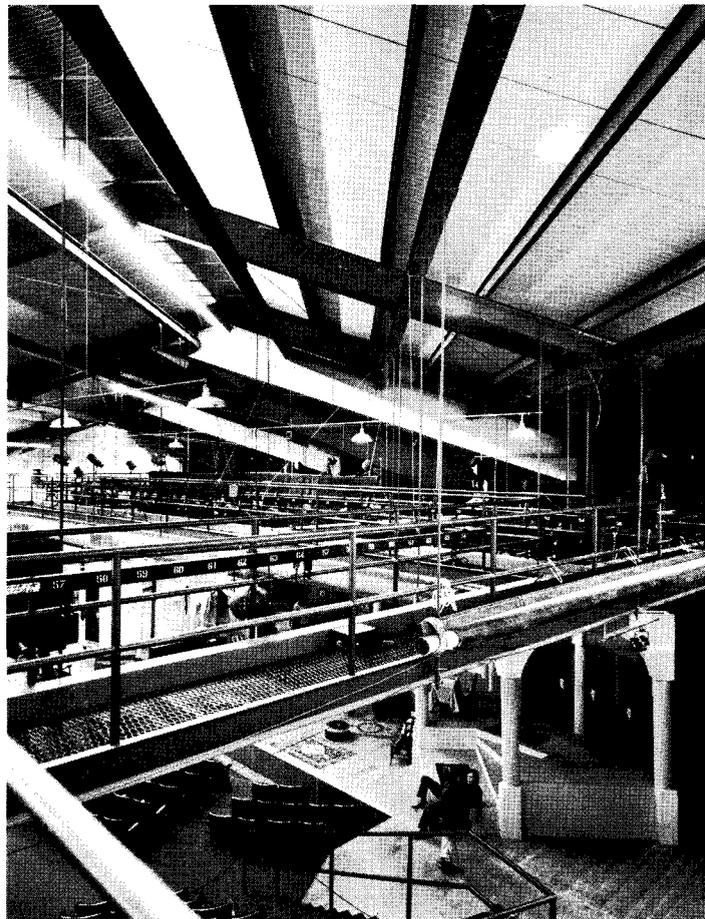


The cold rolled steel sections used to form curves for the risers of the lower seating dish are visible in the ceiling of meeting space adjoining the lobby (above). Besides spots hanging from the grid (right below), movable pipe scaffolding towers carry lighting and define stage spaces. A track system also allows equipment and flats to be easily shifted.

FACTS AND FIGURES

Fisher Theater, The Phillips Exeter Academy, Exeter, New Hampshire. Architects: Hardy Holzman Pfeiffer Associates; Project Architect, W. Scott Perry. Engineers: Goldreich Page & Thropp (structural); Dubin Mindell Bloome Associates (mechanical). Consultants: Robert A. Hansen (acoustical); Wood and Tower (cost analysts). Contractor: Davison Construction Company, Inc. Building area: 16,000 sq ft. Cost: \$800,000 (including fees); \$92,000 for the shell.

(For a listing of key products used in this building, see p. 80.)



grade. These factors added to the initial expense, although in the end, the theater cost less per cubic foot (\$2.15) than the conventionally built Emelin theater (\$2.50).

Modifying the building involved more than purely structural choices: HHPA took five Butler bays, connected two into one shed of uniform height, then staggered and stepped two bays down at one end and one at the other. Within this total volume they turned the interior spaces—a wide stage, with semicircular seating wrapping around it—on a 45 degree angle to the rectangular series of bays.

Whereas center stage would usually line up with the ridge of the roof, the highest portion of the roof now extends from stage right over the two seating dishes to the far left corner of the auditorium. Nevertheless, the suspended grid of catwalks, lighting, and utility ducts counterbalances any sense of conflicting directions, since it is hung on the same diagonal axis established by the stage and seating placement.

By lengthening the stage and allowing the seating to embrace the end portions, HHPA provided the potential for a flexibility in staging productions that could in a sense bring people backstage. The sense of frontality is destroyed along with the center line, and the stage almost becomes the entire room. Chairman of the Arts Center Committee at Exeter, Donald Schultz, praises the flexibility allowed by the plan. Commenting that almost any production can be easily staged there, Mr. Schultz reports the only criticism so far is that the height over the stage should be a couple feet higher, to keep the rigging from interfering with the mechanical system's ducts. (While the theater has baseboard heating, large ducts convey additional heat, plus air conditioning and ventilation at low volume for acoustical purposes.)

In comparing the design process needed for pre-engineered buildings with conventional construction, HHPA points out that much more time is spent with shop drawings than working drawings. Since they had signed an enclosure contract with Butler, HHPA received half of the working drawings from Butler's computerized access service. (Of

course additional modifications required HHPA's own working drawings.) But the firm warns more coordination is required during the design phase between manufacturer and the architect tampering with the pre-engineered system, and the architect should be aware of this requirement.

The actual construction process diverges from the norm also: Fisher Theater arrived on the site packed in cartons. After the parts were unwrapped, the foundation was poured, then vertical members of the bents were installed and anchor bolted to the foundation. Roof members were fastened together on the ground and then flown by crane into position. Next the aluminum panels for roof and walls were snapped in place. *Voilà.* All in all, Fisher Theater, while presenting a few more headaches due to the innovative quality of the pre-engineered experiment, pleased HHPA. "We would definitely do it again," they assert, "Although we will probably attempt to put in a free-standing substructure next time."



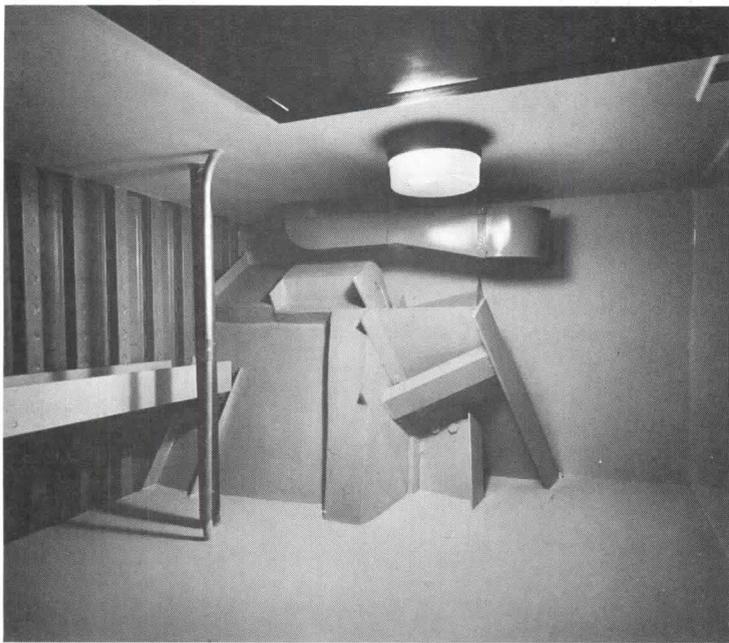
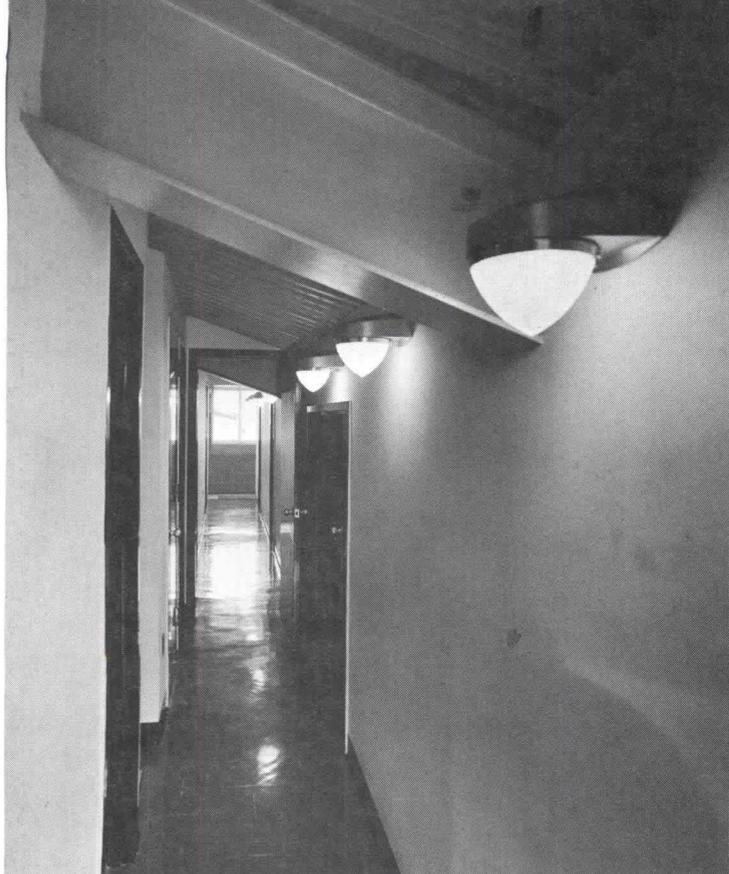
The small theater (6200 sq. ft.) actually occupies air rights over a city-owned parking lot. Architects gave the corner entrance canopy a marquee effect by using industrial spot lights

(above). The ribbed concrete block has been chosen to blend with fieldstone of the adjoining library (below), while the flat concrete block mimics limestone coping, sills, and cornices.

Emelin Theater

Emelin Theater in Mamaroneck, New York, posed several challenges that some architects with a lot of work (\$20 million in construction) probably wouldn't bother with: A \$262,000 budget for one; and a tight site on air rights over a 72 x 58 ft. parking lot adjoining the town library for another. The program called for a space that could be flexible enough to accommodate puppet shows, lectures, recitals, films, as well as amateur and theatrical productions. In other words, the design solution had to fall somewhere between an actual theater and a civic auditorium. HHPA's suggestion for a pre-engineered building was tossed out because the clients, the Mamaroneck Free Library, desired a building that would blend with the fieldstone library built in 1927 and its addition designed by Clarence Litchfield in 1966. Thus the basic structure of Emelin is a steel frame box carried on fireproof columns ten feet above the parking lot. Two kinds of concrete





block form the exterior walls: One, a ribbed block, roughly echoes the fieldstone walls of the library; the other, a flat faced block, mimics in texture and scale the smooth bands of limestone used in the library's cornice, coping and sills.

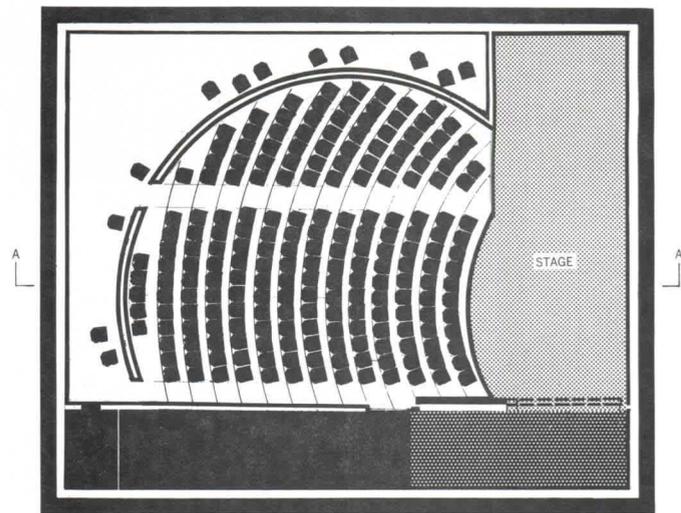
Since a heavy slice of the budget, \$80,000, had to be used in cranking the building up one story over the parking lot, and because of the small lot size they were given, HHPA decided to eliminate the backstage in

the 6,200 square foot theater. In a sense, however, there is still a backstage, but the audience is part of it: for the ticket lobby lies in its center—between the dressing rooms on one side and the side stage where the orchestra plays or scenery may be kept, on the other. Actors enter the stage either from stage right, behind the curved stud wall that wraps around the seating, or stage left through the ticket lobby and the side stage. The inflection of the curved wall

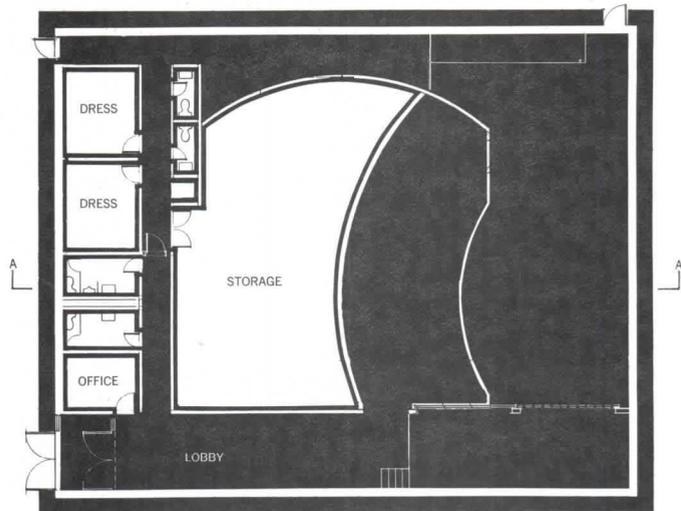
and balcony seating towards stage left, again serves to destroy the center line and the sense of frontality.

The improvisatory quality established by opening up the backstage, and the sense of movement created by the asymmetrical plan, is underscored by interior treatments. All structure and working parts of the theater—utility ducts, catwalks, lighting—are exposed and painted bright colors. The catwalks, formed from long-span

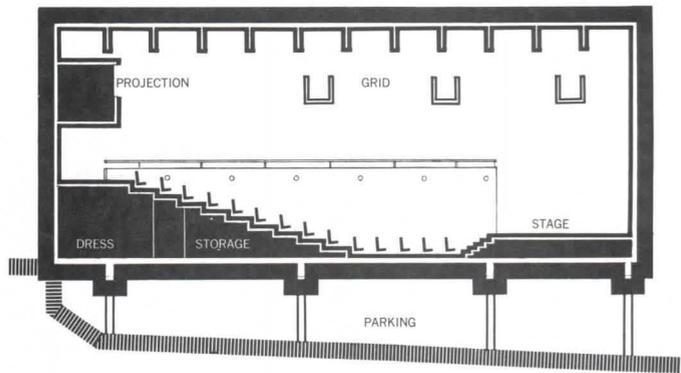
bar joists have been placed a little lower than the bar joists actually supporting the metal deck roof. These joists penetrate the concrete block walls to obviate the need for columnar support. Despite lack of interior finishes for ceiling components, the theater has much acclaimed acoustical properties due to the use of wood-faced steel stud walls that separate the auditorium from the backstage-lobby area, a fabric covering on the curved wall, and car-



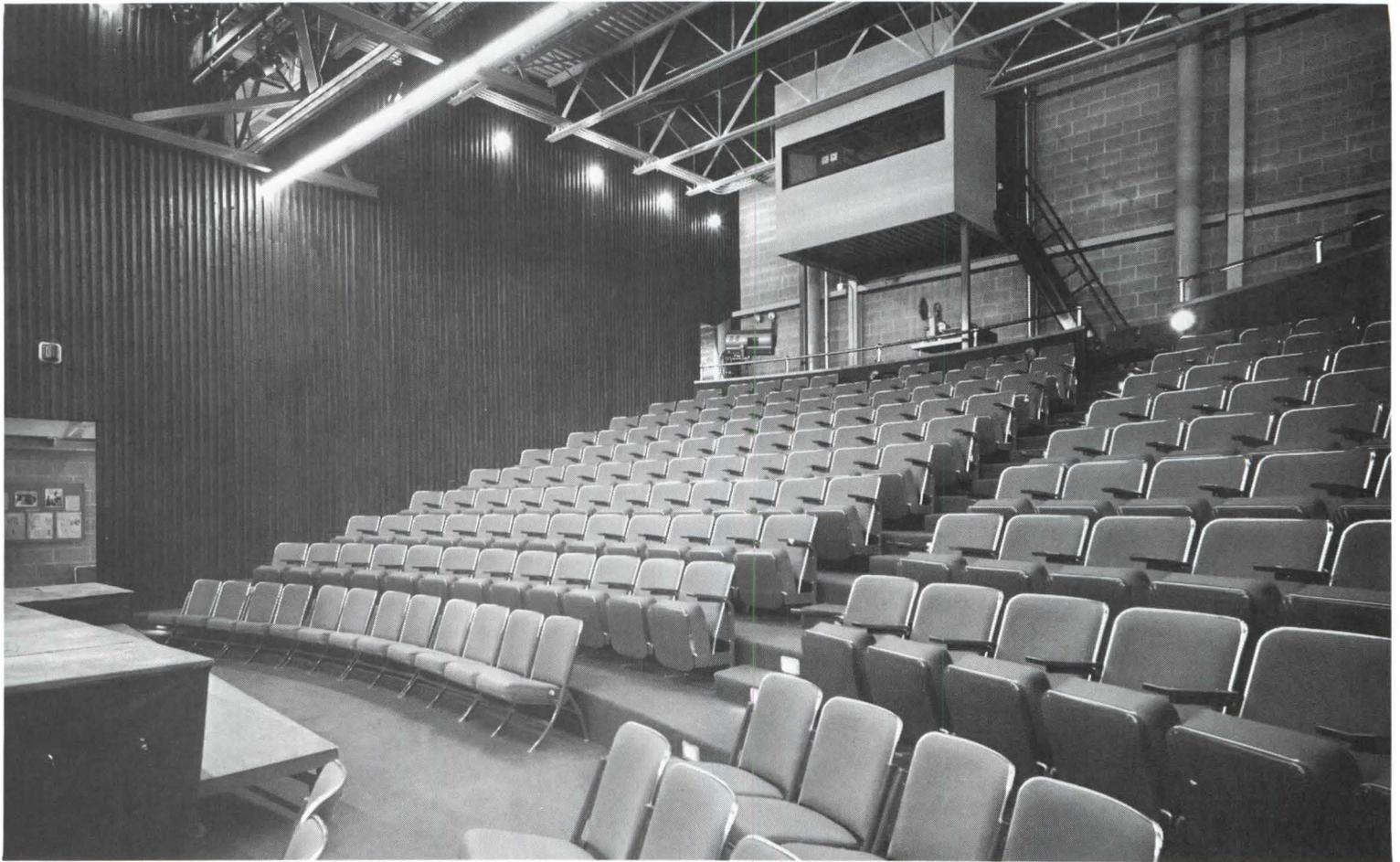
UPPER LEVEL



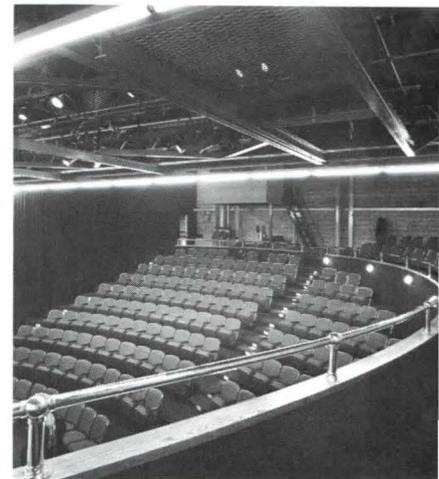
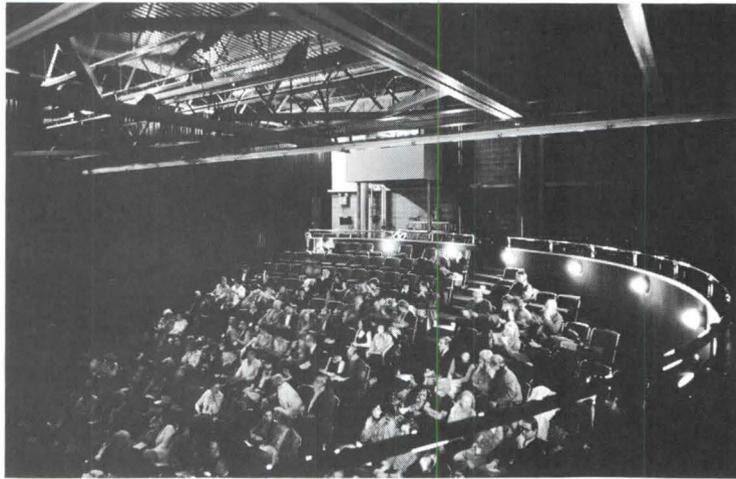
LOWER LEVEL



SECTION AA



The theater has been so tightly organized that the corridor leading to dressing rooms and toilets (opposite left, top) is tucked as closely as possible under the steel frame of the seating dish. Exposure of structural elements in these areas (such as the bathroom, left, bottom) remind users, in a bizarre way, just where they are in relation to seating. Structure here too is painted bright colors. The theater itself has 151 permanent seats but can accommodate 114 more on the concrete and steel frame seating dish (above) or on the balcony arcing over stage right (right).



peted flooring throughout.

The director of theater operations, Norman Klein, feels that the theater has worked out well from the point of view of events that can take place there, but at times longs for a backstage—a real place to store scenery. Klein also points out that since there is no backdrop, the lighting picks up the exposed structure (painted yellow) of the rear wall, sometimes considered a distraction in stage performances. Others have noted the

difficulty of entering stage left if the audience is still mingling in the lobby, and even Malcolm Holzman points out the tendency for the catwalks to swing, because they are made from bar joists. But as Holzman adds, normal catwalks would be prohibitively expensive.

Budget limitations meant trimming other amenities too, such as the set-building shop or costume work area. But the architects judiciously dropped the columns in the parking lot, so

that if money ever becomes available and the city relinquishes the 16-car lot, a trap room and other theatrical spaces can be easily built at ground level.

True enough, the theater has none of the technical perfection of a multi-million dollar cultural center extravaganza, but nevertheless, the clients have gotten an intricate piece of equipment that can accommodate a range of activities, for the price of a large home in Mamaroneck.

FACTS AND FIGURES

Emelin Theater, Mamaroneck, New York. Architects: Hardy Holzman Pfeiffer Associates; Project Architects, Michael Kaplan, Michael Ross. Engineers: Goldreich Page & Thropp (structural); Benjamin & Zicherman (mechanical and electrical). Consultants: Robert A. Hansen (acoustical). Contractor: Romani & Picco. Building area: 6200 sq ft. Cost: \$262,000 (including elevating the building). (For a listing of key products used in this building, see p. 80.)

PHOTOGRAPHS: Norman McGrath.



PHYSICIAN HEAL THYSELF

As a mirror to North American medical practice this new center raises serious questions about its image and values

BY ROBERT JENSEN

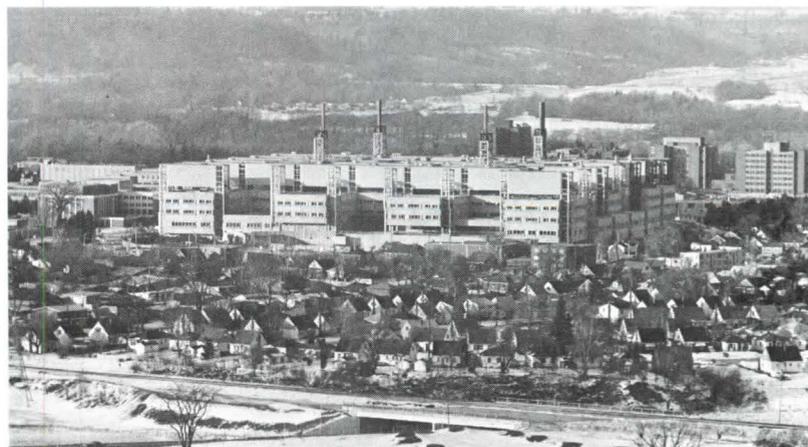
The McMaster Health Sciences Center, located in Hamilton, Ontario, is being studied by architects and health officials in the British Commonwealth as one model for the reorganization of medical delivery systems. Its architectural images are clear, aggressive, unfamiliar, particularly for doctors and the public. As an advance agent for current medical techniques and their possibilities, the building deserves attention.

If the man on the street is surprised by the center, architect Eberhard Zeidler of Craig, Zeidler, Strong, has an answer for him: "If I build something and everybody immediately accepts it, I feel I've failed . . . any new form is automatically rejected if it breaks new ground." Dr. J. F. Mustard, Vice President of Health Sciences at McMaster University and Dean of the School of Medicine, remarked: "Environment is very important to human behaviour and this

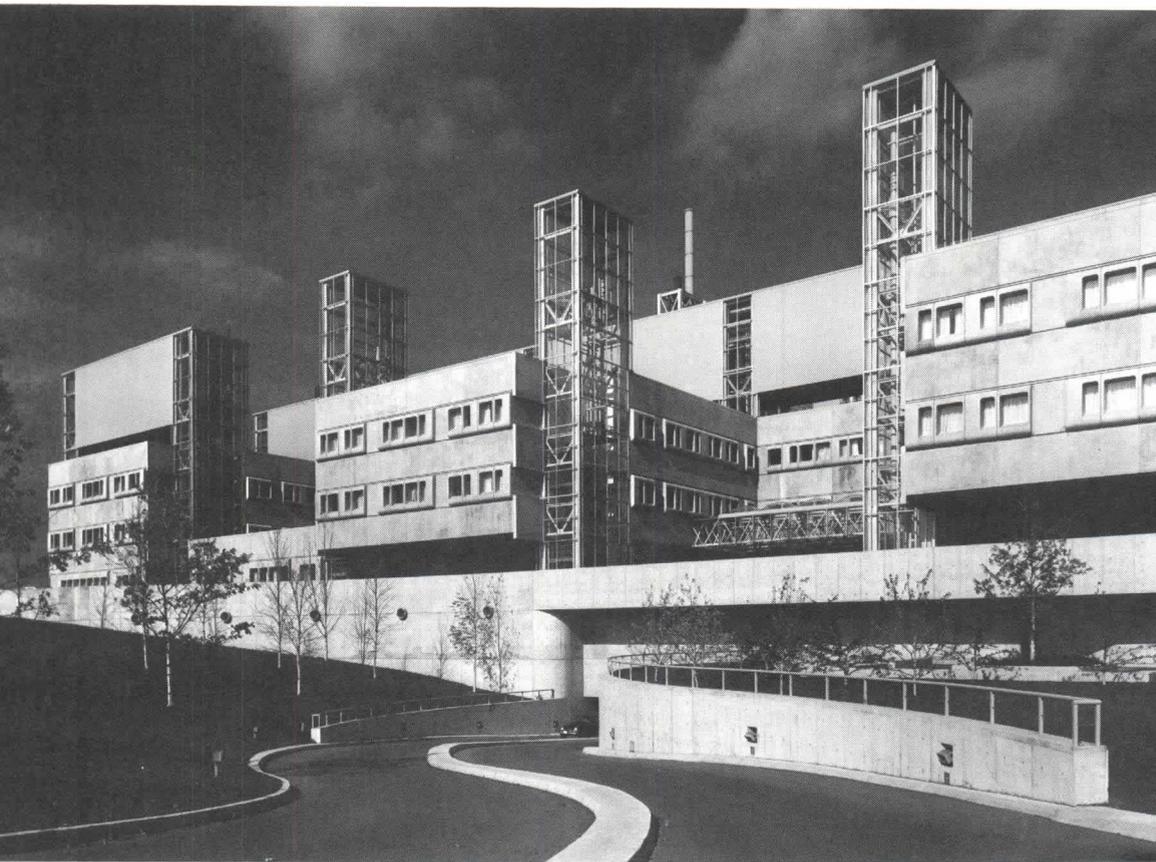
building has a positive effect, in my opinion, on behaviour." And a staff writer for the local newspaper says, "Helping to counteract the unpopularity of its looks is the reassuring fact of its physical presence—a convenient hospital right in the West Hamilton community."

What all these assessments have in common is their projection of personal values and associations into the architecture: the designer believing social traditions will change to meet his vision; a ranking administrator seeing the forms as reinforcing and beneficial to his own work; a local writer knowing one day he and others may need medical care and reassured by the presence of the building. This is a common way of interpreting architecture, and since McMaster has been thoroughly analysed for its innovative structural and physical systems (FORUM, June 1971, and *Canadian Architect*, September 1972) we too can look at it as an image of values; an image of the medical practice, organization, and priorities that produced it.

Mr. Jensen, an architect and architectural historian, teaches at Queens College, New York City.



The glass enclosed vertical risers for stairs and mechanical equipment create a regular, dominant rhythm on the exterior of McMaster Health Sciences Center, rising above present floors to accommodate future additions. Above, a view from the Niagara escarpment shows the impact of the building within the community of Hamilton.



The canopy over the main entrance at McMaster (below) is an extension of the main trusses, 8 ft. 6 inches deep, that create the interstitial mechanical spaces of the building. Here they are light, airy, an appropriate introduction to the spaces inside.



We don't necessarily have to like it to see its importance, and this article takes the position that in its blending of diverse medical and cultural forces, all implied by the architecture, there are serious contradictions at McMaster.

There is first the matter of its sheer bulk on the landscape, indicated by the photograph on page 31. The building is large by any standard of architectural scale in Hamilton (pop. 302,000), in the medical region which it serves (a largely rural area of 1.3 million people from Lakes Ontario and Erie on the south to Lake Huron on the north), or even in the Canadian nation. Each floor of the building covers an area of ten acres; it is approximately 610 feet long on each exterior facade; its eight story height carries four occupiable floors with four floors of interstitial space and mechanical equipment between and over, supporting the electrical lines and technological services so prevalent in modern medicine. Its size is a problem because the building is not as big as it *could* have been, say its administrators and the architects, and they cite many ways in which they have made it "little." Dominance over the community is not at all what they wanted and not at all what they believe they have achieved.

The "image" problem of any large medical facility is in fact clearly understood at McMaster: "The greatest deterrent to the development of new health care delivery systems is the presence of a hospital within the community, since the hospital is not considered an integral part of the community by those who designed it, who administer it or use it. As a result, the hospital, like the mountaintop monastery, stands distinct from the community, when in reality it should be as accessible as the village church," this from James R. Mackenzie, a surgeon at McMaster University itself. But the village church McMaster is not. Dr. Mackenzie's reference to mountaintops is apt, for the nearest physical image, man-made or natural, to McMaster is the Niagara escarpment in Hamilton, a gigantic cliff over which Niagara Falls tumbles further to the East.

The building's functions should be differentiated im-

mediately, for McMaster is a research facility, hospital, medical school and doctor's office, all in one. As a major research center, about 30 percent of McMaster's 1.34 million square feet of occupiable floor space is given over to investigative, non-patient and non-student activities. There is research in vascular disease, blood proteins, heart disease, drug analysis (including "street" drugs), growth and development of the nervous system and nuclear medicine, among others. McMaster has a nuclear reactor and two nuclear accelerators on its campus.

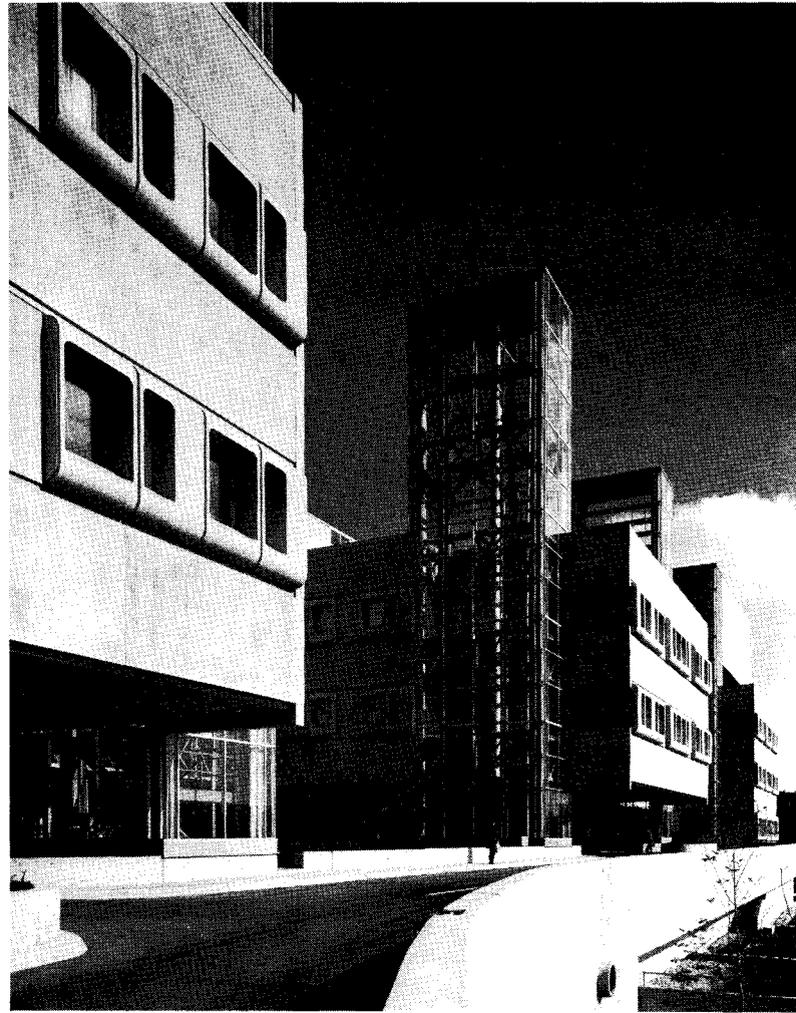
McMaster, the school, is now admitting 80 new medical students every year, from an applicant group of 2,000, and it hopes soon to raise admissions to 100 students per year. Besides a three-year program graduating licensed MD's, there is an undergraduate school of nursing (a fully degreed four-year curriculum), an undergraduate and graduate school of biochemistry (Bachelor of Science, Masters of Science, PhD.) and schools of continuing education for both nurses and doctors returning for specialized (usually one-year) study. Teaching spaces are mixed with research and patient care facilities throughout McMaster because education is conceived as "learning by doing" here. An accurate figure is difficult, but Eberhard Zeidler says about 19 percent of the building's floor space may be designated "teaching."

Patient care functions occupy the remaining 51 percent of the building. These are emergency care (located off the main entrance), in-patient care (a 418 bed hospital), a rehabilitation ward, obstetrics/delivery, surgery, and a primary practice center where doctors see their out-patients like any group practice doctors' office. Patient care here and throughout Ontario is conceived in three categories: tertiary, secondary and primary. Tertiary care is that medical treatment requiring major unusual operations or complicated testing/diagnostic procedures using expensive or rare scientific equipment. McMaster is an important tertiary care facility in its region, and an expression of Ontario's attempt to centralize this tertiary care, which is far removed from a person's typical daily health

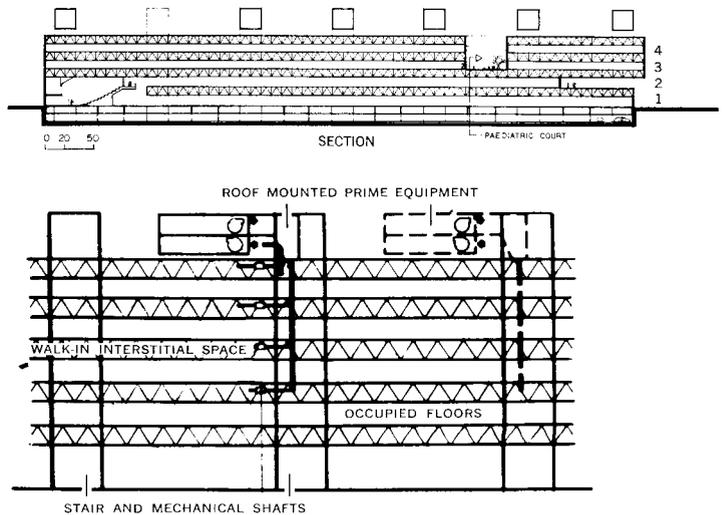
needs. Secondary care ("normal" hospitalization of a patient, for whatever reason) is less centralized by intent in the region, and McMaster's 418 beds are less than one sixth of the 3,000 hospital beds available in Hamilton alone.

Finally, primary care is decentralized in Ontario as much as possible: emergency treatment for accidents, and visiting a doctor when you don't feel well or want to discuss a problem. These primary care facilities at McMaster (emergency, the out-patient and family practice suites) represent about 30 percent of the total floor space in the Center, about half of that being facilities shared with the hospital. It is important to make this clear, particularly when discussing the building as image, for the public idea of medical care is primary care—that is what we need from medicine most of our lives—and this is precisely what McMaster is not; or put another way, this is but 15 percent of what it is.

In identifying these diverse functions, then, McMaster becomes more representational of its staff and planner's vision of it: Centralization is appropriate for a research center, or a major teaching hospital, which it is, less appropriate for a community hospital, less still for a clinic, which it also is. But length and bulk are not the only carriers of its image: Regularly spaced vertical towers of glass expose the bones and sinews of the building. Its mechanical ducts, electric raceways, motors and pumps are permanent and unchangeable, just as the architects wanted. This permanent 'servo-system' represents the 60 percent of the building (by cost) that is fixed; around which quick, unknown but necessary accommodations to new functions or wall arrangements within the other 40 percent might be made at will. Mechanical or electrical services sit over the building, permeate its interior, controlling the visual and symbolic reading of the building at all times. They are appropriate to the basic research and elaborate tertiary equipment that are such a large part of medicine inside, for which future applications cannot be predicted. Thus the towers reach beyond the building, encompassing spaces as yet unplanned, future possi-

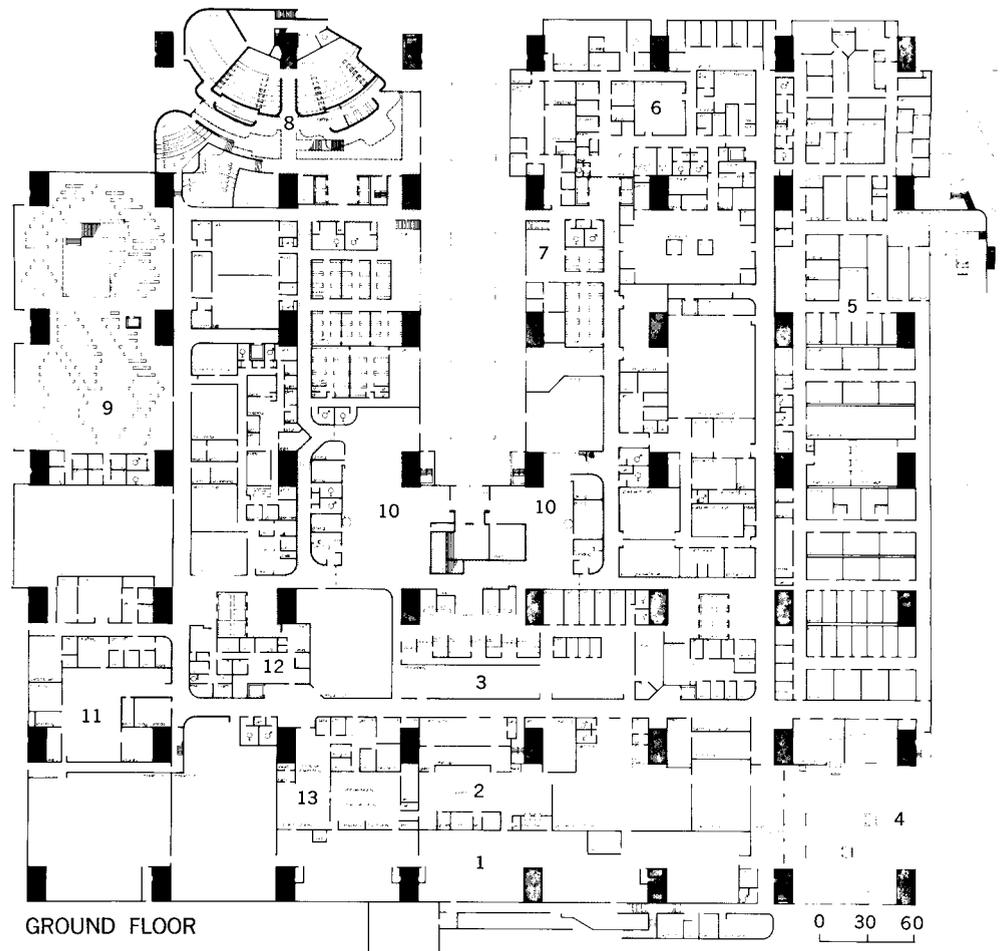


The section below shows the proportion of floors, walk-in horizontal mechanical spaces, and vertical risers in McMaster, and the diagrammatic section shows their relationship. Roof mounted prime equipment eliminates a separate equipment floor, and extensive new equipment can be added later. The main point of this permanent "servo-system" is that human functions, walls, partitions can change dramatically with little disruption to the larger building.



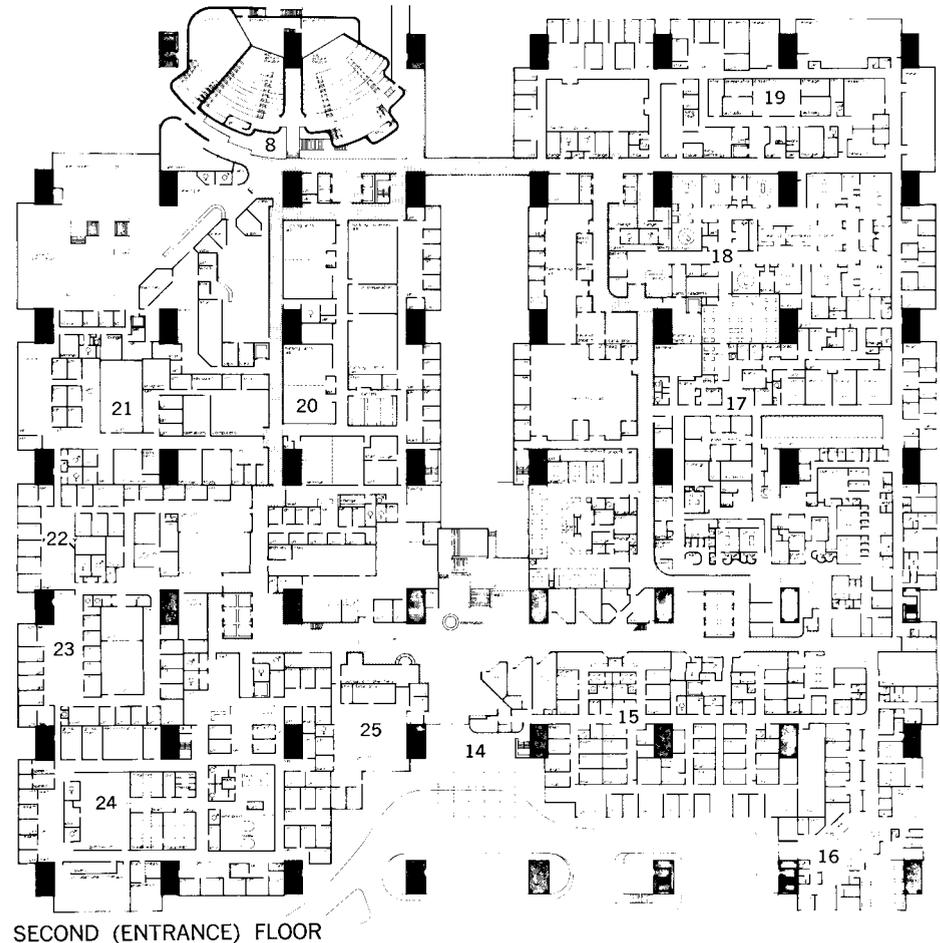
bilities, unknown changes which treatment necessities may dictate, and for which the building expresses its willingness to accommodate.

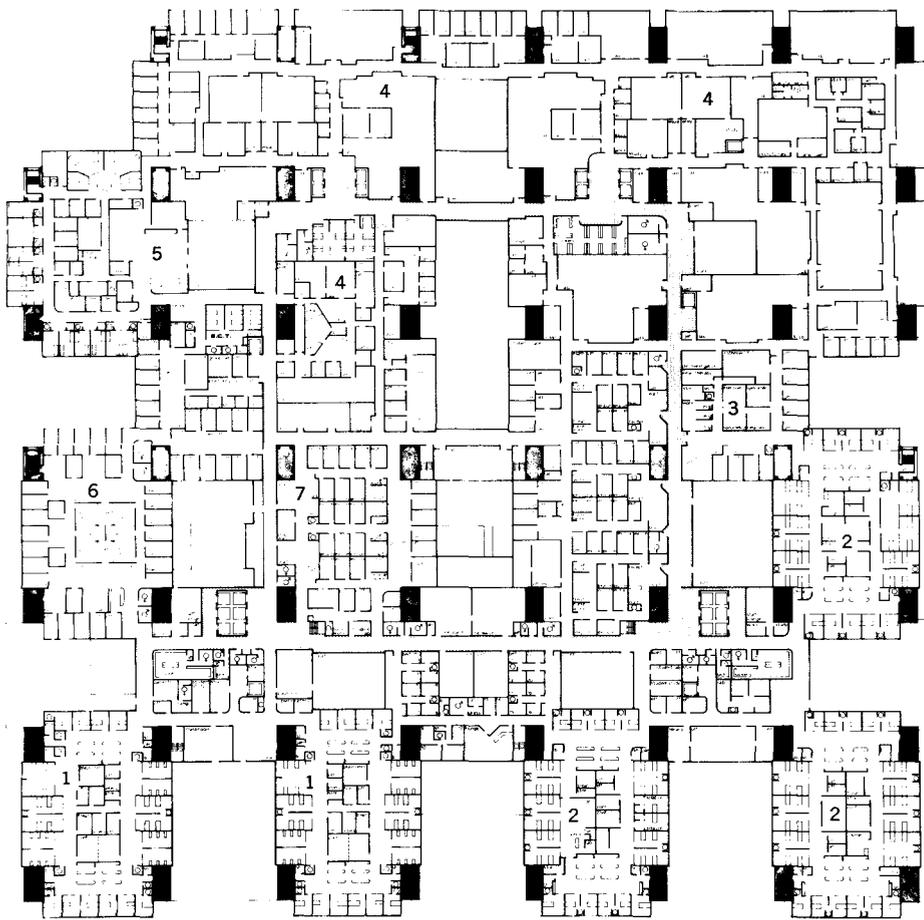
But other characteristics of medicine are fixed, known and have been known for thousands of years, as one individual feels basic responsibilities for another who is sick: What has *always* been known in medicine is the heightened emotional needs of the ill for dignity, closeness to friends and known associations, the knowledge that someone trusted is helping. The immutable human content of life—self-esteem, compassion, understanding—must be protected and projected by the setting; recognizably established, familiar, unchangeable. Perhaps this is the vague, but real and necessary image that the building does not quite get across, for it is doctrine at McMaster that staff, patients, people will change, *must* change, while the mechanical-technological servo-system will never alter. Life, work,



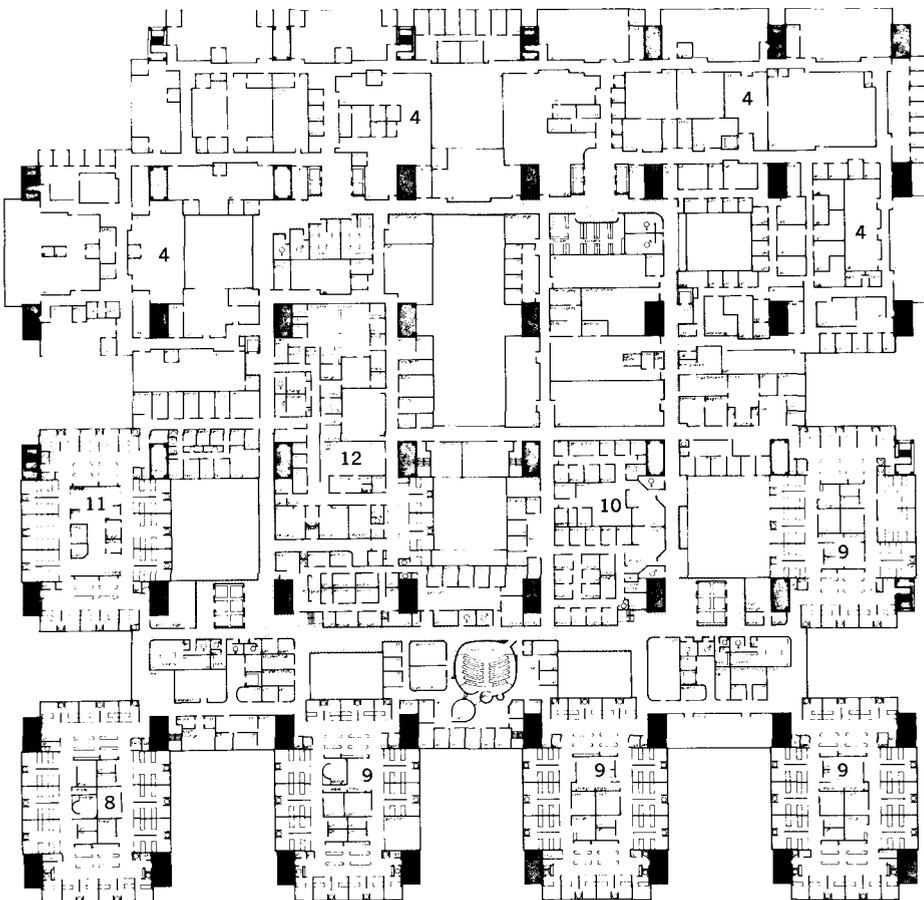
Legend: Floors 1 & 2

- 1 GENERAL STORAGE
- 2 CENTRAL SUPPLY
- 3 FOOD ASSEMBLY
- 4 SHIPPING-RECEIVING
- 5 ANIMAL QUARTERS
- 6 NUCLEAR MEDICINE
- 7 STUDENTS
- 8 LECTURE THEATRES
- 9 MAIN LIBRARY
- 10 CAFETERIA
- 11 MAINTENANCE
- 12 PERSONNEL
- 13 PHARMACY
- 14 MAIN ENTRANCE
- 15 FAMILY PRACTICE
- 16 EMERGENCY
- 17 RADIOLOGY
- 18 OPERATING SUITE
- 19 PATHOLOGY—POST MORTEM
- 20 SCHOOL OF NURSING
- 21 COMPUTERS
- 22 FACULTY OFFICES
- 23 ADMINISTRATION
- 24 REHABILITATION WARD
- 25 ACCOUNTS





THIRD FLOOR



FOURTH FLOOR

values characterized as constantly shifting, contrasted to the unchangeable framework of technology in which life appears grounded: This is the building's principal implication. It is a 20th century vision, cultural and architectural, that was unknown to any prior era; but however immutable it seems now, it has not always been a "fact." Therefore it is conceivable (just) that it may not always be a fact in the future. But it is certainly fact in today's medical research and tertiary medicine's marvelous instruments, as portrayed by the building.

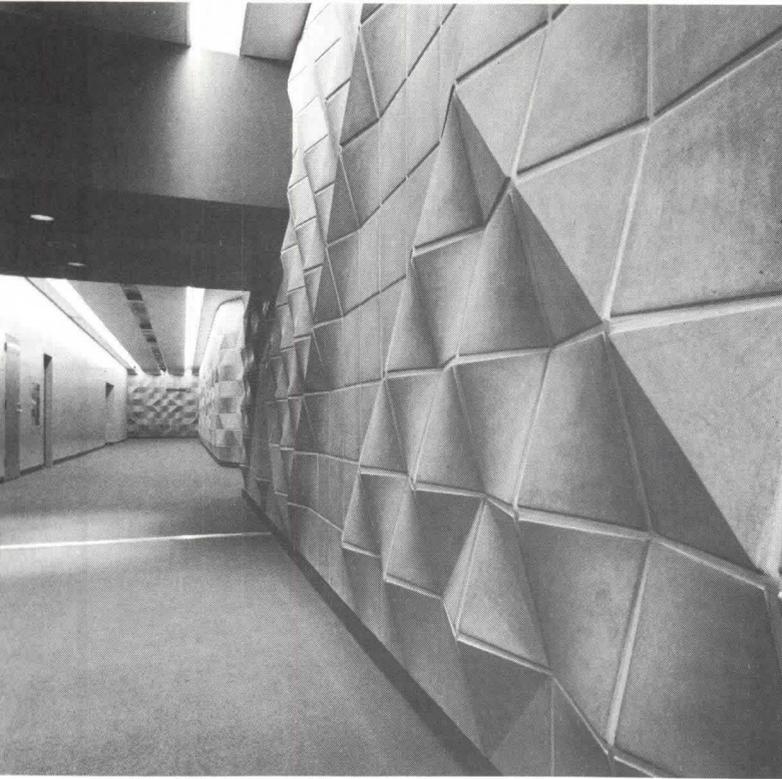
More than research or tertiary medicine, however, McMaster's staff sees their building as a community hospital and clinic. They see it as an integral part of the community, diversifying standard medical practice in every way, and in the McMaster programs real steps have indeed been taken to fulfill this view. "The patient always comes first at McMaster," as its staff says with sincerity. The Department

Legend: Floors 3 & 4

- 1 PEDIATRICS WARD
- 2 GENERAL WARD
- 3 CARDIOVASCULAR
- 4 RESEARCH
- 5 PSYCHIATRIC WARD
- 6 PSYCHIATRIC THERAPY
- 7 PEDIATRICS O.P.U.
- 8 GYNECOLOGY
- 9 SURGICAL WARD
- 10 SURGICAL O.P.U.
- 11 OBSTETRICS
- 12 DELIVERY—NATAL

FACTS AND FIGURES

McMaster University Health Sciences Centre, Hamilton, Ontario, Canada. Owner: McMaster University. Architect: Craig Zeidler Strong. Partner-in-Charge: Eberhard H. Zeidler. Project architects: A Banelis, R.H. Jacobs, F. Kulcsar, A. Roberts. Engineers: John Maryon & Partners Ltd. (structural); G. Graneck & Associates (mechanical); Jack Chisvin & Associates Ltd. (electrical). Landscape Architect: Strong Moorhead, Sigsby Ltd. Interior Designer: Craig Zeidler Strong; E. Jenkins, R. Redman (furniture). Project Manager: Doyle-Hinton Contract Ltd. Mechanical Project Management: Sayers & Associates Ltd. Construction Cost: \$56,700,000 (less garage and fees). Building Area: 1,340,000 sq. ft. (less garage). (For a listing of key products used in this building, see p. 80.) PHOTOGRAPHS: page 30 and 31, Panda Associates (left) and The Hamilton Spectator. Page 32 (bottom); Canadian Architect: pages 32-33; Panda Assoc. Pages 36-37, Ian Samson (top) Canadian Architect (bottom).



Above, part of the elaborate block-work mosaic that runs along the inside face of the main loop corridor throughout the building. Its richly textured, distinctive variations make orientation for the viewer easier than it might have been inside. The section of the entrance lobby (shown below) expresses sensitive choices in furniture and appointments.



of Family Medicine has been created with the same rank academically as have the programs in Psychiatry, Surgery, or Pediatrics, emphasizing general-practice doctors and nurses, rather than specialists.

If traditional medical education is geared to the bed patient, McMaster is trying to change that with small out-patient clinics, located not just in the main building but in outlying communities like Smithville, Ontario (pop. 1,200). The small primary facilities at McMaster were arranged as an experiment in giving students first hand exposure to primary care, and raising the status (in a student's mind) of a doctor seeing his patient about common ailments. It is also an experiment, and an important one at McMaster, in giving more direct care to patients by reducing distances and concentrating activities.

In the hospital wards at McMaster, patients may have visitors at any time of the day or night, and there are facilities for close friends or parents to sleep over on the ward, near the patient. There are no fixed meal hours; patients may specify when they prefer taking breakfast, lunch or dinner. The school has inaugurated a "nurse practitioner" program, training nurses in the management of simple health and illness problems on their own and thus expanding, hopefully, the availability of treatment. Third year medical students work part of that year with family practitioners in outlying clinics, again de-emphasizing "hospital" practice and central facilities. McMaster has a two-track system for admitting students; over half their students last year were taken from fields outside the sciences, and not necessarily students with the highest previous academic achievement (at least a B average in the last semester before admission is required; in practice, quite high grades are needed because of the competition for entrance). All of these actions are unusual, an attempt to make medical practice relevant today. To the extent these programs work—training nurses capable of direct treatment, enlarging the image of the general practitioner, establishing outlying clinics for primary care—they answer criticisms of North American medical delivery that

are familiar to everyone. And they modify that image of centralization, abstract power and technology in medicine which the building seems to carry.

But other problems, perhaps more fundamental in North American medical tradition, are not attacked at McMaster. Paraphrased and simplified, other critics of medical practice say things like this: The reason primary care is so difficult to find is the status of the doctor himself. A diagnostician or surgeon with 12 years training is not needed to treat a broken toe, a cut on the hand; what is needed perhaps are para-medics below MD rank to take over most primary care in medicine, not under doctors but referring illnesses in the paramedic's neighborhood, community, or building to doctors in cases beyond the medic's competency. The vast majority of any individual's health problems require quick treatment, friendliness, warmth, a good listener about general aches and pains. And the present medical system with the doctor at the center and controlling all—over-trained, over-paid, coming predominantly from middle and upper-middle income society and naturally returning to that society after medical school—will never solve the shortage of medical personnel nor their *mal-distribution*.

However accurate or ill-founded such criticism of North American health care is, its content sometimes shows through in the criticism of medicine by doctors themselves. The Canadian physician William Osler is paraphrased by Norman Cousins in his 1970 *Saturday Review* issue on health care: according to Cousins, "Sir William Osler declared that nothing a doctor can do is more essential to an accurate diagnosis and the welfare of his patient than providing ample time to hear him out. The modern practitioner, however, surrounded by electronic devices and laboratory tests, tends to become impatient with a patient's recital of his multiple symptoms and can hardly wait to get on with a blood count, sedimentation rate, electrocardiogram or sundry other tests." In a larger context then, and at McMaster, we can see the contradictions: While its teaching commitment toward general practitioners and com-

munity doctors points in one direction, its research function, tertiary apparatus and architectural presence points in another. And that architectural image it does carry is analogous to the more basic assumptions of medical practice in Ontario: The specialness, power and unique control of the doctor in medical delivery, as it has always existed in North America; the unchallenged road to achievement in medicine leading through middle and upper-middle income neighborhoods, the best schools, the highest academic achievements in college grounded most often in the sciences but shifting slightly to the humanities at McMaster, ending in the career-oriented professional who subscribes to the values through which he has passed, and tends to return to those values in practice. James Kramer, educational co-ordinator for McMaster, says its medical students still come almost exclusively from upper-middle income social backgrounds, although the school "looks hard" for students applying from less affluent areas of the region it serves. The nurse practitioner's program specifically trains its graduates to work under a doctor's supervision, paid by the doctor on a salary basis, not by the patient or the state as a fee for services. And of course McMaster in no way tries to take first-line medicine out of the hands of licensed MD's, a truly revolutionary idea in medical practice that the profession is not ready to accept. The recent public interest and acclaim given in the West to the medical delivery systems in China, with their "bare-foot doctors," para-medics and diversification, only heightens by contrast the underlying basis of medicine here.

So we should not be surprised that the building represents the research commitments and power structure of North American medicine, or the underlying cultural assumptions of society generally: Grounded as they are in affluence, a right to private gain, the status of upper-middle income life and ethics, the aspirations of academic achievement, the hopefulness and awe with which we view science and technology itself. But that is an awkward reality to accommodate in medicine, for sickness and accidents are messy, personal, all

too human, not an image but a frightening disorienting fact. The individual who is sick, whether poor or well-off, in a tundra village or West Hamilton, wants immediate personal attention.

But adequate treatment is only sporadically, at great cost, being delivered by the institutions whose images the new patient himself perhaps valued the day before. For the first time it might occur to him that the culture of which he is a part appears to isolate illness from its consciousness, or place it at a safe distance among machines.

Architecture cannot change the social content and values for which it was built, it can only reflect them, and at McMaster the best reflections are applied ones.

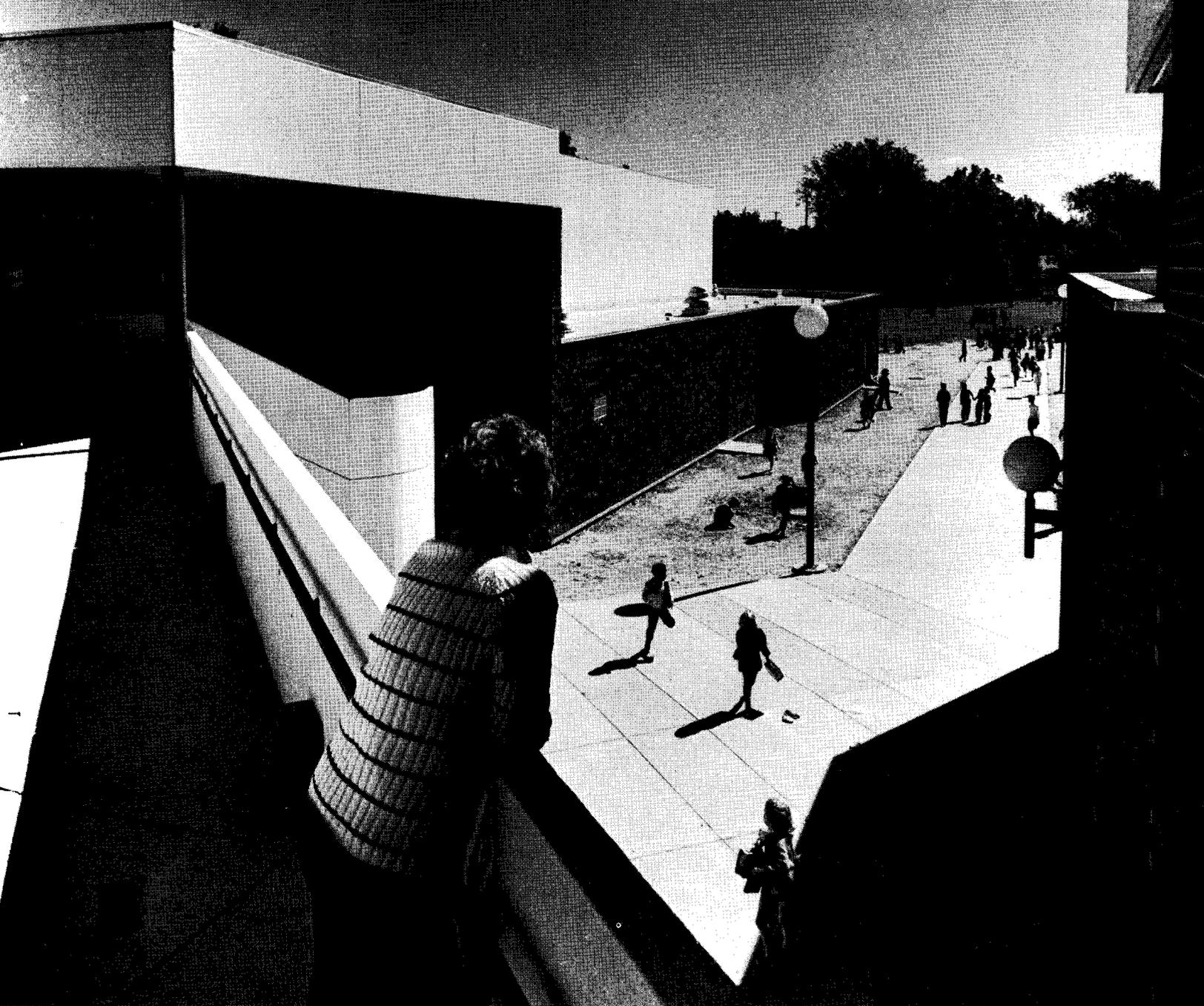
Craig, Zeidler, Strong handled the interiors rather than subcontract them: "After years of planning, meetings, working drawings and mechanics, we had to have some fun," says Eberhard Zeidler. Brilliant patches of color, inexpensive commissioned art work from the region, a marvelous blockwork mosaic all around the inside wall of the central loop corridor system so that orientation is easier, bright carpets, drapes and chairs; these are the devices used to reduce the scale inside. They make the vast interior system into smaller events, diversify the building for public understandability and excitement. Here is the architectural equivalent of McMaster's medical efforts at delivering the building to the community, at making treatment personal and warm. The interior designs have been applied to the basic structure of the building, of course, as they had to be, just as McMaster's specific, progressive changes in medical education and delivery are applied over the unchanged foundations of medical practice itself. The fact that the budget for "interior design" at McMaster was less than one percent of the total building cost is significant, and analogous too.

McMaster is an accurate, even brilliant interpretation of the medical assumptions that sponsored it; the building's failures are medical failures, contradictions in fact within the society in which we live—and subconscious to the degree that many people might argue whether they are failures at all.



The cafeteria area above is alive with bright graphics. A typical two-bed room on the wards has a window looking out to the corridor to lessen any patient feeling of isolation, and the space around the bed has been enlarged to better accommodate student observation and learning. There are patient bathrooms for every two bedrooms, placed at the exterior window wall, not on the corridor.





The neighborhood side of the Human Resources Center, seen from the bridge end of the community level street (above) and looking towards that bridge (below), presents inviting, welcoming courtyards rather than formidable walls. Underneath the bridge is the entrance to the school level street. The gym is at the outer end of the bridge and opposite the gym is a teaching wing.



STREET SCENE SCHOOL

Family and community needs form the fabric of this new educational facility

The Human Resources Center is not just another school building. Even its architects, Urban Design Associates, play down the building, and play it up as a planning process. For the Center did more than replace one old school. It is helping revive the inner city of Pontiac, Michigan, 45 minutes from Detroit. And the planning process, with community cooperation, has not died with the Center's completion. When the building was almost finished, a group consisting of parents, teachers and citizens came alive again to program space use and select staff. Today, this group is effectively guiding the Center's operations—although technically, the Board of Education has the say-so. In actuality—this is what is important and perhaps unique about the HRC—the group's recommendations are being followed.

The HRC is a community service school, what the English call a polyvalent complex. As Superintendent Dana Whitmer and Architect David Lewis describe it, "The Center's programs and services are a blend of education and social services designed to respond comprehensively to the needs of people of all ages, enabling them to have the opportunity for lifelong self-development."

Specifically, the Center provides wide-ranging education programs: A pre-school and nursery with child development training for mothers; individualized instruction by differentiated teams, on a continuous progress (rather than graded) basis, for 2,000 children from kindergarten through fifth grade levels; special bi-lingual instruction for children and adults from all over the city; special education programs (also city-wide) emphasizing the integration of the handicapped into the regular program; teacher and para-professional training in conjunction with three universities; after-school and summer classes and

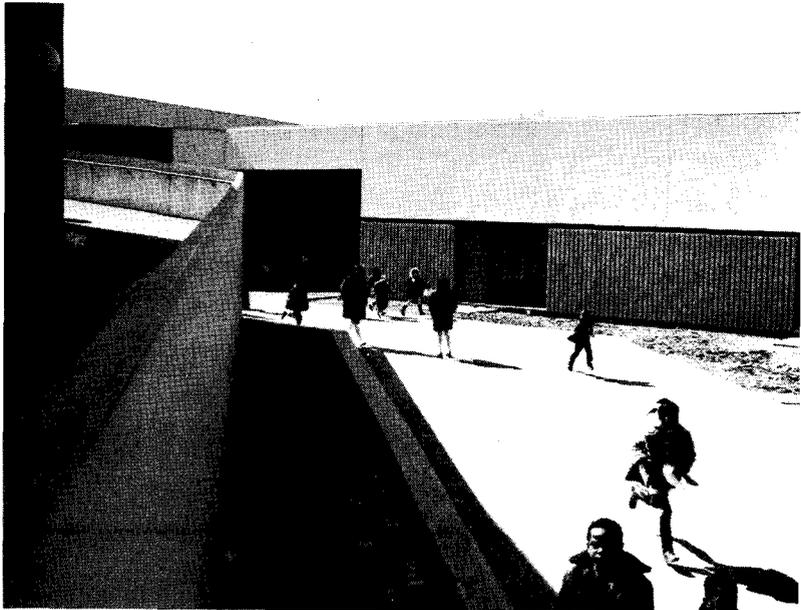
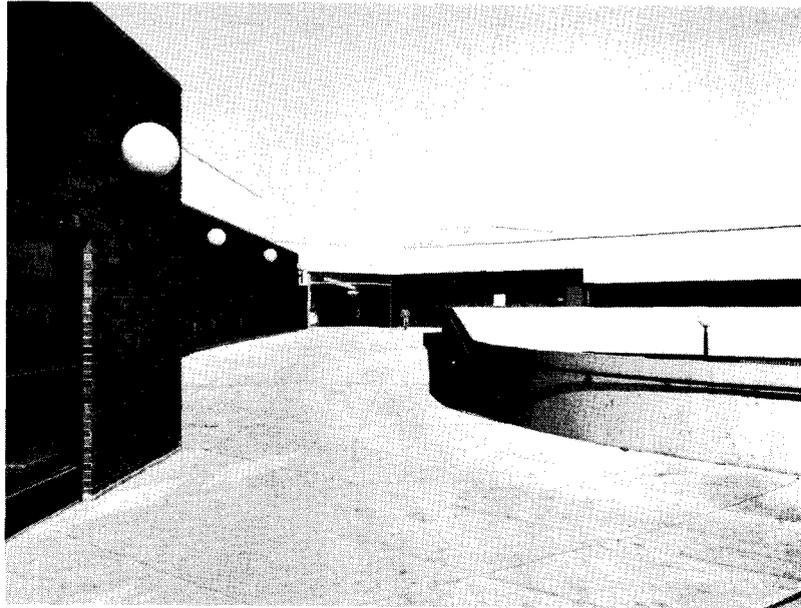
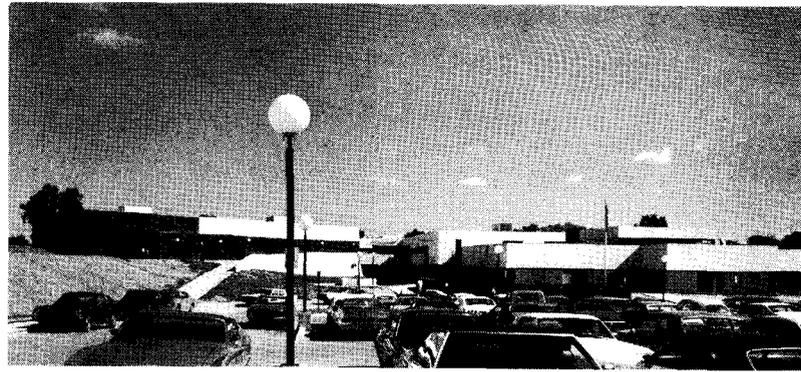
recreation; classes for adults and out-of-school youth including high school and college credit classes and a wide range of non-credit classes (many in home management); parent involvement activities to give them the confidence and sophistication they need to support their children's education.

Adult education has been astonishingly successful, forcing the Board of Education to use rather than demolish one of the old elementary schools which HRC replaced.

The other shortcoming of the Center is also due to success. There is not enough office space for community service agencies interested in being at HRC and several have had to be wait listed. The agencies now installed and operating full or part time are: the Michigan Employment Securities Commission dealing with the disadvantaged; Pontiac Youth Assistance Agency of the county juvenile court offering family counseling and a delinquency prevention program; Center for the Education of Returning Veterans; cooperative extension Service of Michigan State University which primarily aids parents in budgeting, meal planning, etc.; the Boy Scouts; the Oakland County immunization clinics, well-child conferences and dental clinic; Detroit hearing clinics for deaf adults and their friends or relatives; and a cooperative grocery which enables families to save one third on what they would pay in local stores. There is also a free nursery for children of adults who take classes or act as volunteers in the various programs.

The HRC is open from 7 am to 10 pm (some days later) six days a week. Its total operating budget for 1972-73 is approximately \$4 million. Its programs, need it be said, are more comprehensive than most community service schools.

In 1967 when UDA was called



The low profile of the HRC from the south (top) with the theater far left and teaching wings at right. The ramp leading towards the community level entrance (middle) from the civic center side of the building passes the theater and cafeterium. A recessed entrance to one of the teaching wings, at the rear (bottom); and the ramp from the community level street which winds down around the gym, left foreground.

in they said the proposed site would produce the largest segregated elementary school in the country; and any site selection by the school board alone would be authoritarian; the site should be chosen through a community process. With the understanding and energy of Superintendent Whitmer the Pontiac Area Planning Council was formed. Architect David Lewis says it is crucial that neither UDA nor the board but the community planning process selected the site. The community—not one agency—became the client. The PAPC was chaired by the Mayor and composed of 34 of his appointees, ranging from officials of General Motors to representatives of the Pontiac Organization of Black Youth. The Executive Committee consisted of the Directors of each major city agency. All meetings were held publicly with press coverage. Another group, appointed by the Board of Education in 1966, consisting of 30 parents from the four schools HRC would replace, was working on specifications for the Center, and making regular reports to PAPC. They made 33 recommendations and all but one, the swimming pool, became part of the plan. For the first time, the city and school district cooperated in comprehensive planning.

In close collaboration with the PAPC, the architects mapped the area's population, economics, land use, physical obsolescence, health, employment and transportation. Their analyses showed that Pontiac residential areas are islands separated from each other—and consequently economically and racially segregated—by radial highways and railroads along which there are commercial strips and industrial development. It became apparent that lack of housing and employment options, health, recreation and social services and adequate public transportation, along with the location of schools, reinforced the divisions. UDA found the districts of the four oldest schools formed a slightly S-shaped area three miles long that would be naturally integrated. They proposed the HRC be right in the middle.

This site was also chosen to alleviate the abandonment, especially by whites, of downtown

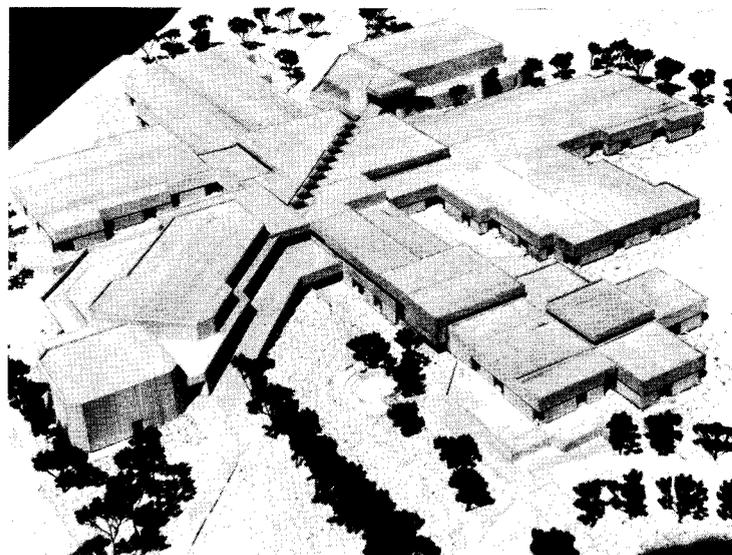
Pontiac as a place to live or do business. The HRC is next to the city center which was deficient in facilities the HRC could provide. Subsequently given a contract to master plan the area immediately adjacent to the site, UDA sought to relieve the residential areas from non-local traffic, recommending one-way and pedestrian streets (for safe walking to school) with new landscaping to encourage rehabilitation.

UDA used the 15 ft. slope of the site to emphasize the dual aspect of the building. The community use entrance is on the upper grade oriented towards the civic center, and the school entrance is at the lower level on the neighborhood side. In the design of the entrances particularly, but also in the general massing, UDA took care to provide inviting spaces rather than institutional barriers, thus overcoming the estrangement people felt from schools and places offering community services. The entrances are recessed behind the roof line, so one is never confronted with a wall. And of the two "streets" which form the core of the Center, the top one is wide open at either end while the lower one has glass doors.

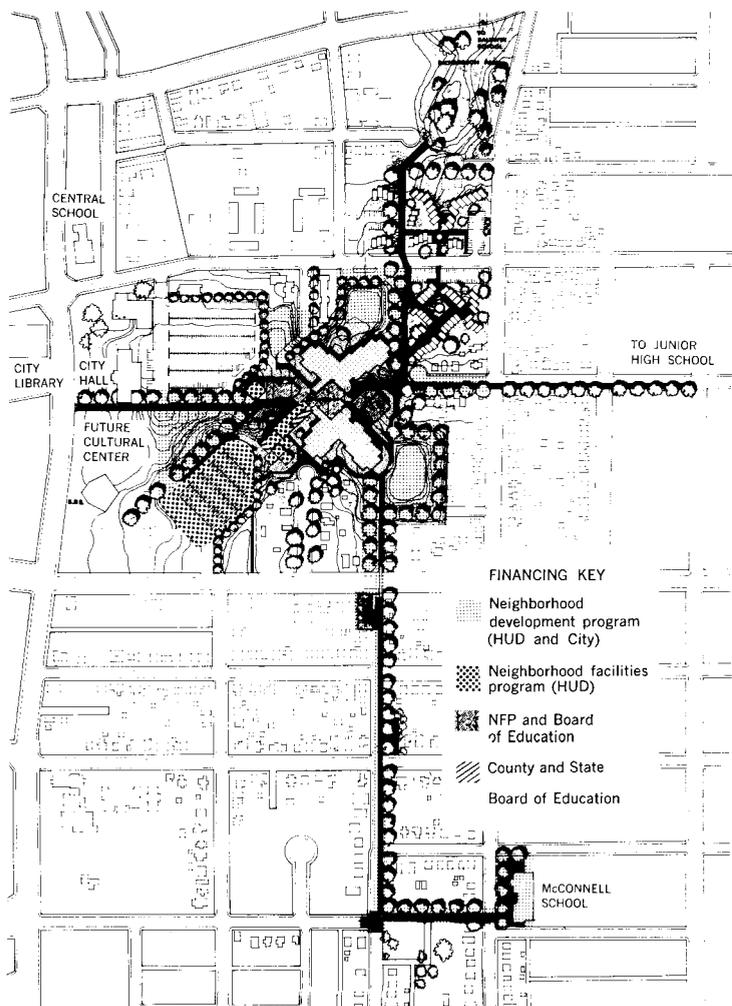
The HRC celebrates street life because the architects sought to make a place where both adults and children would not feel they were trespassing. The skylit community level street is lined with what the architects call shop windows. These give people a sense of easy access to community services and the Director's offices. Even the teachers' lounges are open to the street. The extensive use of glass gives people either a sense of being in the mainstream of community activity or an inclination to join in. No one is walled off. The clerestory lights over the main corridors to the teaching wings are also intended to produce an outdoor, street-like effect.

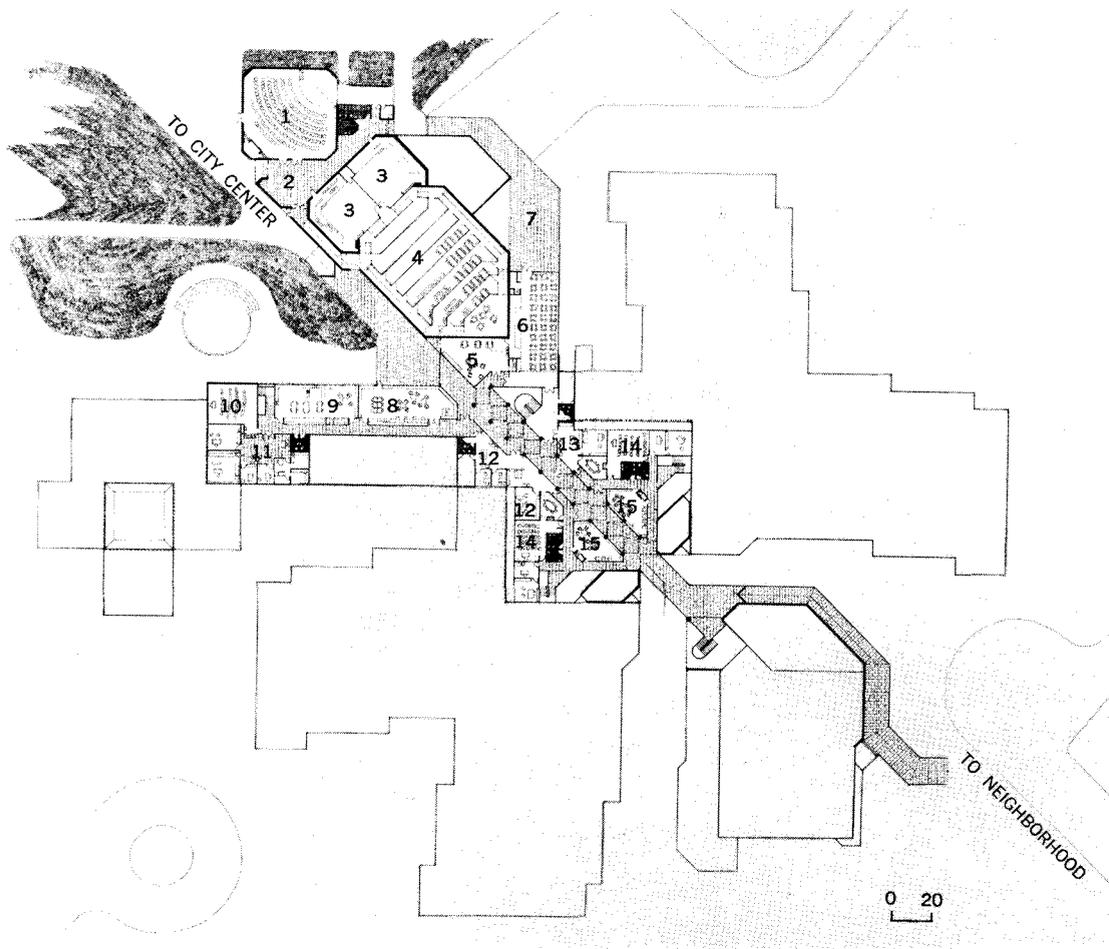
The architectural interest is concentrated at entrances and circulation nodes, but the street theme pervades the building. A sidewalk cafe assumption about the pleasures of people-watching has produced innumerable overlooks and outlooks.

The teaching wings reach out into the neighborhood. Paradoxically the underplaying of the



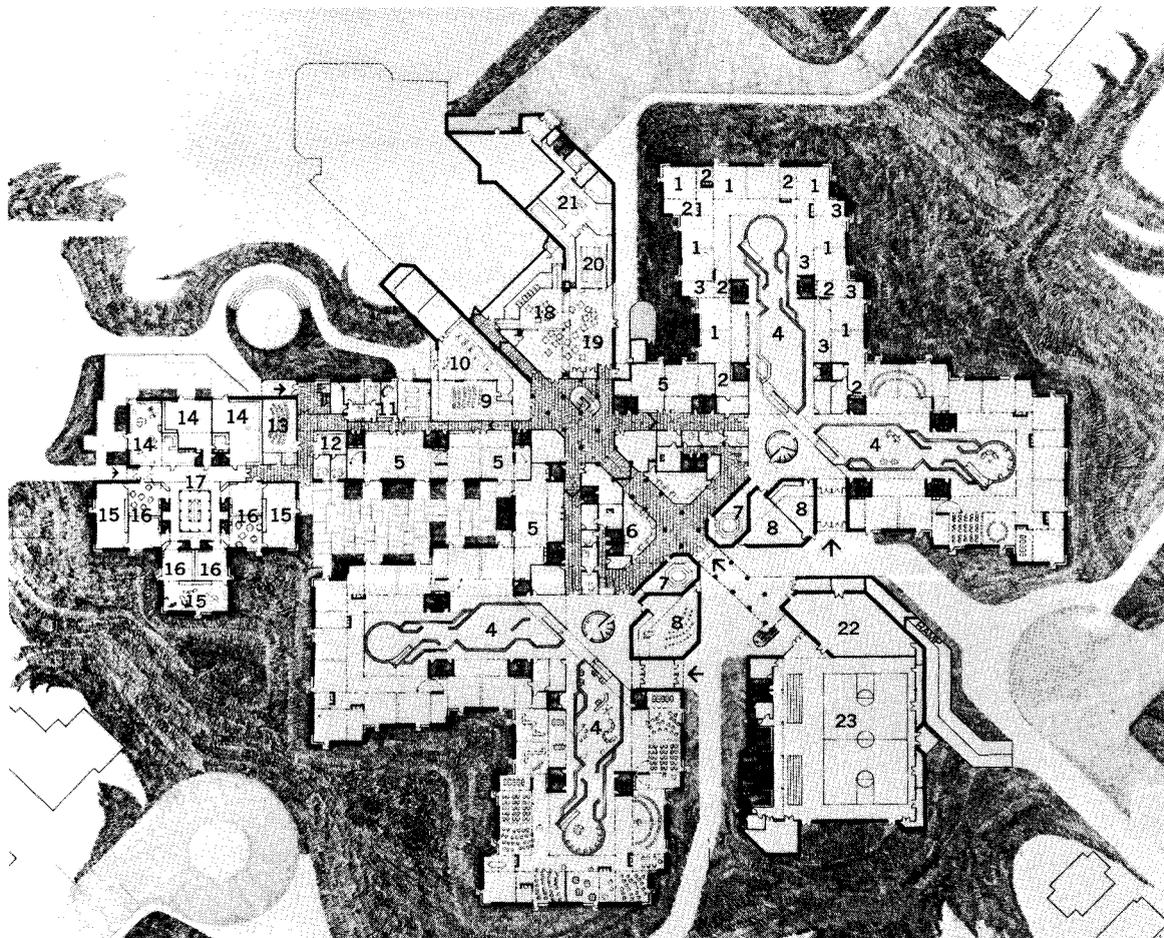
Aerial view of the model showing the approach from the civic center with the theater in the foreground.





COMMUNITY LEVEL

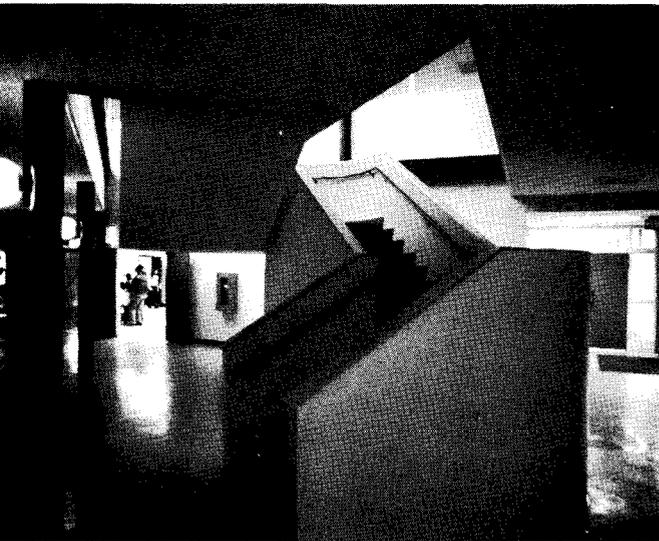
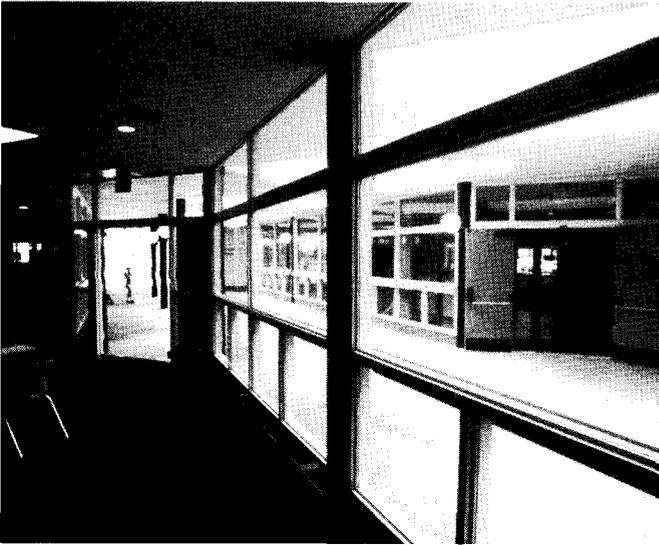
- 1 THEATER
- 2 LOBBY, EXHIBITION AREA
- 3 CHORAL ROOM/DANCE HALL
- 4 CAFETERIUM
- 5 COMMUNITY LOUNGE
- 6 PUBLIC RESTAURANT
- 7 OUTDOOR DINING TERRACE
- 8 LIBRARY/ADULT STUDY CENTER
- 9 ADULT HOME ECONOMICS
- 10 COMMUNITY COLLEGE CLASSROOM
- 11 COMMUNITY HEALTH CENTER
- 12 COMMUNITY OFFICES
- 13 DIRECTORS' OFFICES
- 14 DEMONSTRATION CLASSROOMS
- 15 TEACHERS' LOUNGE



STUDENT LEVEL

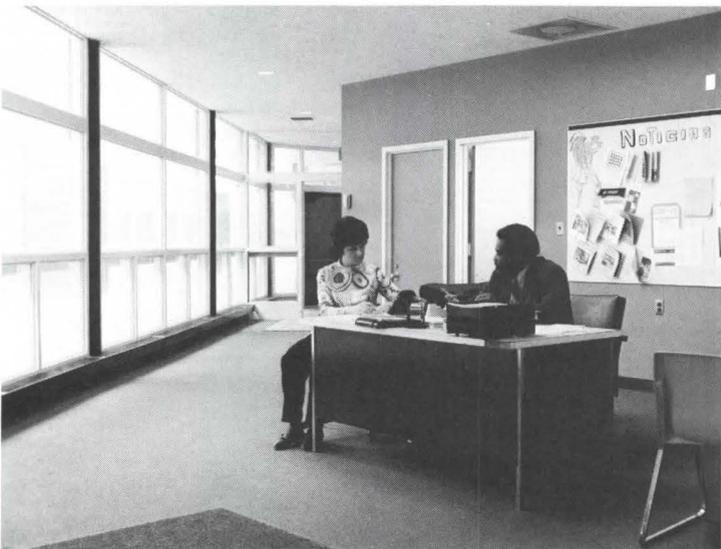
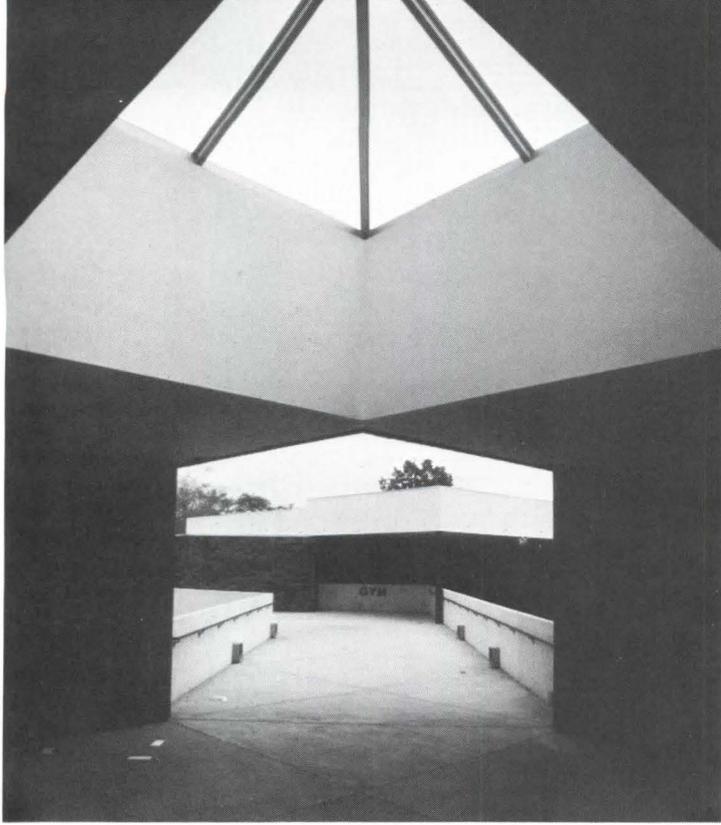
- 1 20-40 STUDENT TEACHING AREA
- 2 WET AREAS
- 3 INDIVIDUAL WORK AREAS
- 4 MATERIALS RESOURCE CENTER
- 5 SPECIAL EDUCATION
- 6 ETHNIC MUSEUM
- 7 MINI THEATER
- 8 MUSIC ROOM
- 9 ARTS
- 10 CRAFTS
- 11 MEDICAL SUITE
- 12 COMMUNITY COLLEGE EXTENSION OFFICES
- 13 PARENT EDUCATION
- 14 PRE-SCHOOL
- 15 LARGE GROUP KINDERGARTEN (ACTIVE)
- 16 SMALL GROUP KINDERGARTEN (QUIET)
- 17 HIDEAWAY
- 18 LOWER CAFETERIUM/STAGE
- 19 BACKSTAGE
- 20 FOOD SERVICE
- 21 KITCHEN
- 22 MOTOR LEARNING LABORATORY
- 23 SPECTATOR GYM

The skylit pedestrian street at community level (right) looking towards the theater at the end of the ramp. The other end of this street (opposite top) towards the gym. One of the community offices (opposite middle) on the street with the open feeling created by the shop windows which line it. A social service counseling space (below) has a view towards the main stair across the street.



The main stair off the community level street (right) seen from the public restaurant. The interior windows let people see what's happening and contribute a sense of liveliness to the building. At the base of the oval stair (above), which is in a triangular light well, is the main intersection of the school level, with the shop window of the arts and crafts center at left, the lower cafetorium straight ahead, and the glass wall of the public restaurant above the stair. A brightly painted stair (opposite, bottom) in a two-story high interior street at the entrance to the teaching wing.





entrances makes the building into a complex of entrances, a multiple funnel, further emphasizing circulation and breaking down scale. Irregular massing provides each peripheral teaching area with a private play area, and prevents you from seeing the building all at once. Although it appears small, it is 176,000 sq. ft., for 2,200 students, and one of America's largest elementary schools. Relating to the white clapboard, black-trimmed houses nearby, the teaching wings are mostly one story high, of white and textured grey precast panels with black trim.

The educational spaces range from those for one child and one teacher to those for groups of 60 to 100. These spaces had to accommodate traditional classroom teachers and the re-training of Pontiac's teachers in open classroom techniques. There are high-ceilinged spaces for large groups and low ceilinged ones for small groups which can be divided by chalkboards raised and lowered on counterweights, by storage units that swing 180 degrees, and by folding partitions.

The spirit of the place is best conveyed by the kids' reactions. Architect Raymond Gindroz said, "When the kids first got in they couldn't believe it was school—it was fun!" One said, "It has almost every color I can think of—even the people are different colors." (Several have remarked that the HRC is the most truly integrated school they've ever seen; there are none of the usual cliques.) Christine Quintanilla, age 10, said, "The thing I like the very, very, very best is that you can go where you want to go—and it's pretty easy. In my old school you opened and closed doors, and knocked on them, and opened and closed doors all the time. Now in the HRC it's easier, *you just go.*" Another likes that her mother goes here too, taking classes upstairs and coming down to help the reading teacher sometimes. One of the inevitable responses was, "When are they going to put in the walls and doors?"

HRC is the first multi-use complex in the U.S. to be financed by federal, state, county, city and Board of Education funds on a ratio of usage basis. The total construction

cost of the building and site was approximately \$6.2 million. As the largest user, the Board of Education contributed \$4.4 million from bond issues. When a program and building developed that cost more than the bond issues, EFL suggested going to HUD which had funded wings or separate sections of school buildings before. For the HRC they made a major policy change and awarded \$1.6 million on a ratio-of-usage basis for neighborhood facilities. The theater with lobby exhibition area, community lounge, adult library, adult home economics area, community college classrooms, community health center and pre-school were funded entirely by HUD. The restaurant and dining terrace were jointly funded. The school paid for 60 percent of the gym while HUD paid 40 percent, and they shared the cost of the arts and crafts area on a 50-50 basis. At least three other schools have benefited from the funding package worked out for HRC. The county gave \$155,000 towards special education and the City gave \$250,000 towards site work. Mott Institute and Ford Foundation grants totaled \$15,000. No community agencies provided building funds, nor do they pay rent.

In 1970, a year before HRC opened, Thor Petersen was appointed Director and began to work with parents to form a governing body. They voted to elect 14 members to an Executive Board of 11 parents and 3 teachers. The Board then appoints 10 subcommittees which elect chairmen who also serve on the Executive Board which totals 24 members—parents, teachers, and interested citizens. HRC personnel and agencies are screened by subcommittees and serve at the Executive Board's pleasure.

A striking indication of HRC's success is that after the bussing strife, a 1972 Board of Education bond issue failed to pass citywide by a vote of three to one but was favored three to one in the HRC district. A more modest statistic is that HRC's attendance rate—with three to four percent absenteeism—is twice as good as other Pontiac schools.

At this point, for HRC and other community service schools, it's like watching early returns

on election night. The architects and school officials of HRC have a strong feeling of success about the people's continuing involvement in planning and administration. HRC's Director, Thor Petersen, points out however that the Center is reaching only one third of the people in its service area; which is to say, only 4,000 are directly involved in programs.

There are flashier figures (discredited in part by local officials) circulated about the decrease in juvenile delinquency, dropouts, recidivism and the increase in voting and passage of school bond issues attributed to the community education program which has been developing in Flint, Michigan, since the 1930's. They at least indicate some of the hopes for community service schools.

Superintendent Dana Whitmer and Architect David Lewis say, "The Human Resources Center is a demonstration of how the leadership of the Board of Education can act as a catalyst in reversing the obsolescence, the despair and the segregation of a typical inner city."

There is, alas, a sad sequel to HRC's seeming success. According to David Lewis, the Board of Education was keen on the Pontiac Area Planning Council, Superintendent Whitmer being one of its main architects and movers. When UDA was through planning HRC, and going into detailed design, they were asked to do a comparable planning study for a high school in a mirror location on the other side of the central business district. This plan, like that for HRC, included the selection of a site which would maximize desegregation and the suggestion of an urban rather than a campus form for the school. Not only was this plan rejected by a tremendous white backlash, but in an acrimonious election the Board of Education veered to the right and seceded from the PAPC. It did however honor its arrangement to have citizens participate in the governance of the HRC. Although the PAPC reconstituted itself as the Pontiac Urban Coalition, exciting opportunities, such as those which presented themselves in the planning of the HRC, are obviously lost without the cooperation of the Board of Education.

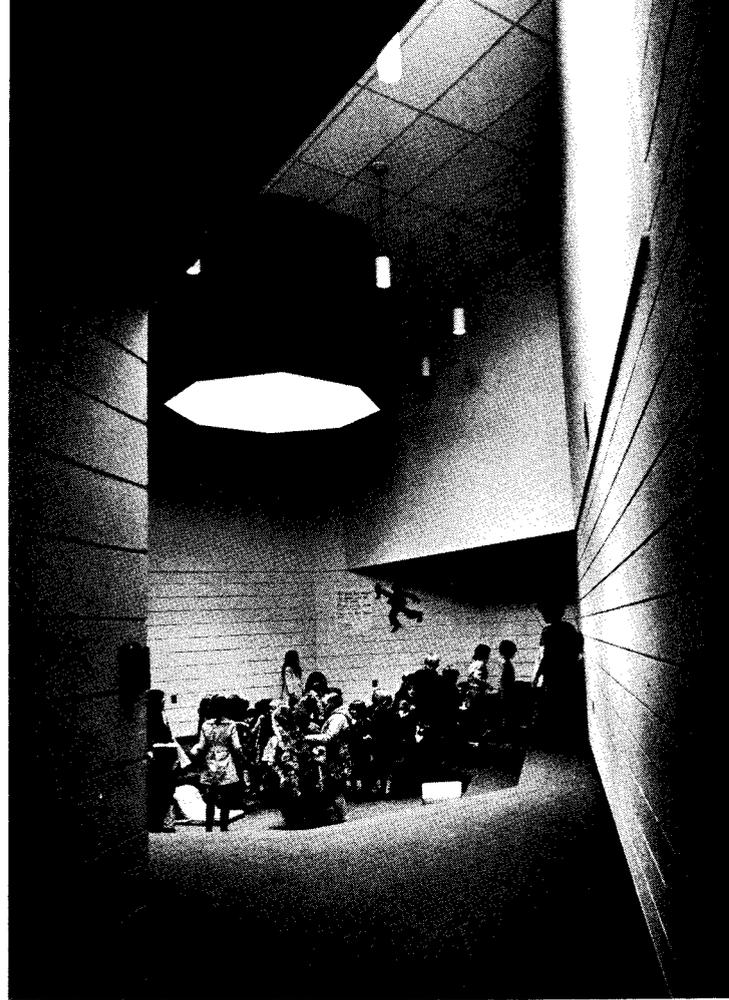
Urban Design Associates began to do school work of this sort in 1964. The essence of their work, in the words of Ray Gindroz, is "to build not schools but focal points of community identity and activity of which education is a major component." They are known for their initiatives along these lines; and they credit their clients at HRC, Superintendent Whitmer, Director Petersen, and the Board of Education, with great courage in taking the risks necessary to making a new and sincere try at democracy.

Educational Facilities Laboratories counts at the very least sixteen community service schools underway, and is just about to publish a book about them. What they and UDA are looking forward to as the next move is the involvement of private enterprise in these complexes—hobby shops, stationers, drug stores, company recruiters and the like. A cautionary and perhaps antediluvian voice pipes up to say to them there were for centuries, and still are, many good reasons for treating education as special; for cloistering it; for providing an atmosphere of concentration rather than distraction in a school; for not putting a school on a par with a 10¢ store or a mixed media environment. The celebration of urbanism with street and shop themes is inevitable, even necessary. But hopefully, no one will become so carried away with it as to bulldoze the landmark values of education.

—JANET BLOOM

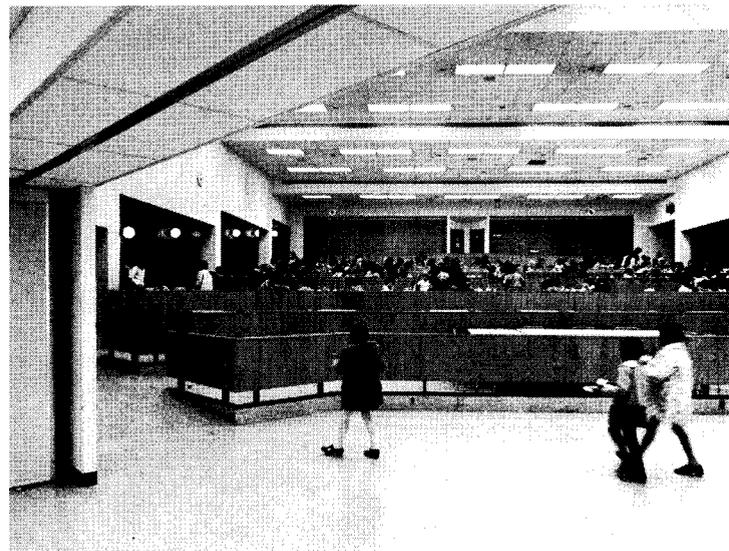
FACTS AND FIGURES

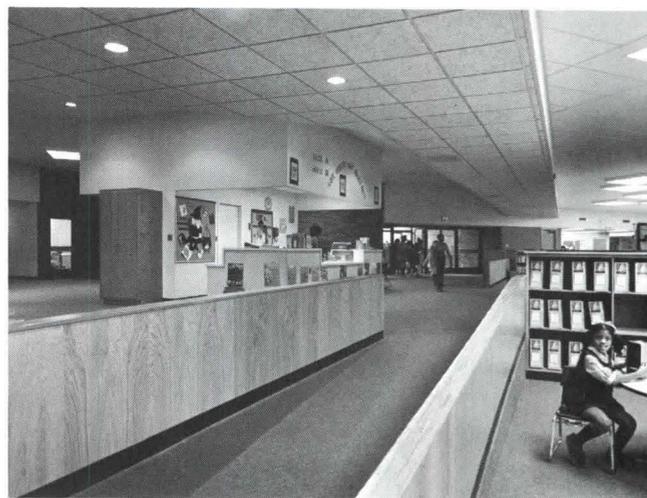
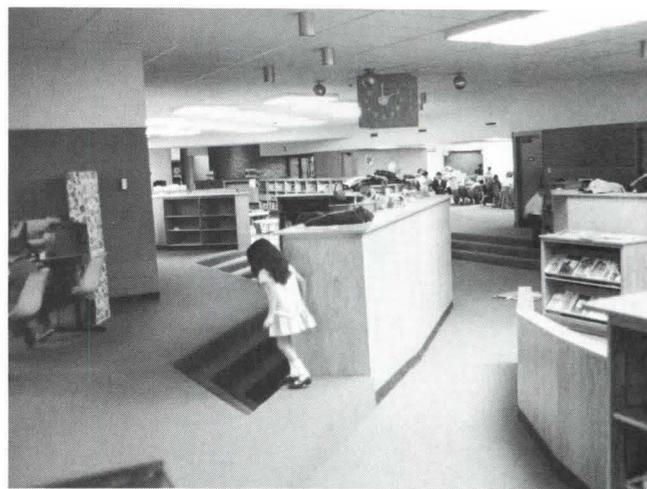
Human Resources Center, 350 Wide Track Drive, East. Pontiac, Michigan. Architect: Urban Design Associates (Raymond Gindroz, David Lewis, James Porter, James Goldman). Job Captain: Dirk Krot, Ann Ketterer, Guy Dellicour. Associate Architect: O'Dell, Hewlett & Luckenbach, Inc. Engineers: Joseph E. Spagnuolo (Structural); Migdal, Layne & Sachs (Consulting). Landscape Architect: Griswold, Winters & Swain. Special Consultants: Simon Nicholson. Contractors: J. A. Ferguson Construction Co. (General); Eames & Brown, Inc. (Mechanical); T. L. Jacobson Electrical, Inc. (Electrical); Precast-Shokbeton (Other). Guilding Area: 175,000 sq. ft. Land and Site Development Cost: \$681,254. Construction Cost: \$5,900,000. Furnishing and Equipment Cost: \$350,000. (For a listing of key products used in this building, see p. 80.)



One of two mini theaters (above) used for informal teaching, story telling, and romping. The cafetorium (below) is used for school lunches. When the tables are removed it can be used as a town hall. The wall at left is bright orange and the tiers are faced with red oak panels.

PHOTOGRAPHS: Balthazar Korab pages 38, 39 (top), 42 (right top and bottom), 43, (bottom), 44, 45 (bottom right); Larry Molloy, Educational Facilities Laboratories pages 39 (middle and bottom), 45 (top right); Cinema '76 page 45 (top left); Rolf Winter, Oakland Press, page 45 (bottom left).





The Materials Resources Centers (this page) are open to the peripheral large group instruction areas but have a strong sense of enclosure. They are for individual studies and have listening posts, cassettes, films, books and other things kids can get plugged into. Looking from the ramp into a Resource Center (above), past the librarian's counter towards the main entrance of a teaching wing. Coat-racks on the outside of the Resource Centers are faced by steps where kids can take off their boots (left). They like to hang things from the low ceilings which create a transitional space between the high ceilinged, large group teaching areas and the Resource Centers.

PAUL RUDOLPH: DRAWINGS

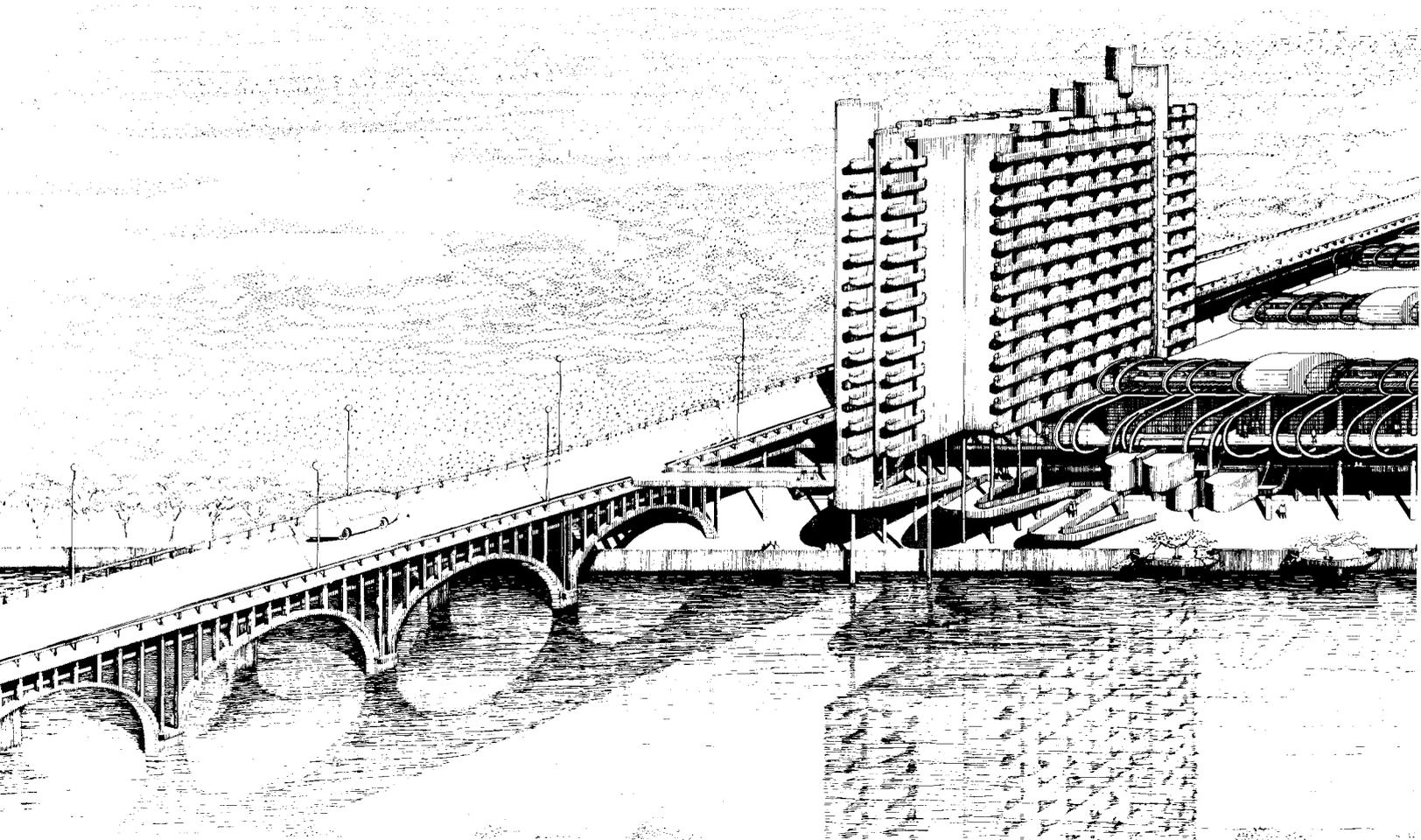
A recent monograph from Yukio Futagawa's A.D.A. Edita Tokio Company reveals one of architecture's most compelling minds

A lot of architects have forgotten how. Or why. Drawing, depending on the way you go about it, can be evidence of scornful detachment or of soulful concern. Either way, it is a very personal process, almost too personal to let out. Souls are not easily bared. Neither are soulful concerns—the ones which come to you in the middle of the night and must be gotten down, right then. Conditions impinge. There are the next day's commitments: a rote "We Must." Or restrictions, from somewhere: a rote "You Mustn't." Or someone's deathless cause—the client's office calling, messianic murmurs at the next drafting board: a rote "Thou Shalt." So the soulful concerns get locked in, fortunately; some get built that way. But you sort of wonder, now and again, where spontaneity comes from—the artesian surge of that first, tentative sketch. Or wonder, down the road to realization, where spontaneity went.

Paul Rudolph probably wouldn't believe a word of this, or say so anyway, even though his personality and accomplishments have evoked it. We tend to trouble people like him by thinking of them in ways that they never thought of themselves, or were too busy to. Still, it is in the nature of architecture that we must plumb the creative impulse—however impulsive or impeccable its results, because it is architecture's place to evoke those impulses in those who experience it.

Paul Rudolph was about six. Like Frank Lloyd Wright's, his father was a preacher—Southern Methodist, and

Rockford Center, proposed for Rockford, Illinois (1970), would orchestrate a mix of commercial, cultural and civic activity and retrieve a riverfront.



ever on the move from one parish to another. A new church building was in the offing at the time, and he grew up with memories of the architectural drawings which had been scattered about: "I never really gave up the idea of becoming an architect after that," he recalls. "There are two things I remember being fantastically impressed with. First of all, the weekly revivals. And then the first modern structure I saw—Wright's Rosenbaum House in Florence, Alabama. I can remember taking my parents and making them drive me to see that house—the carport, those low ceilings, the clerestory light coming in overhead, the sequence of space. In fact, to this day, I remember that house as the most vivid structure I have ever seen."

This impulse carried him to Auburn (where he got his first honorary doctorate last year—"it's very sentimental"), and on from there to Walter Gropius' Harvard.

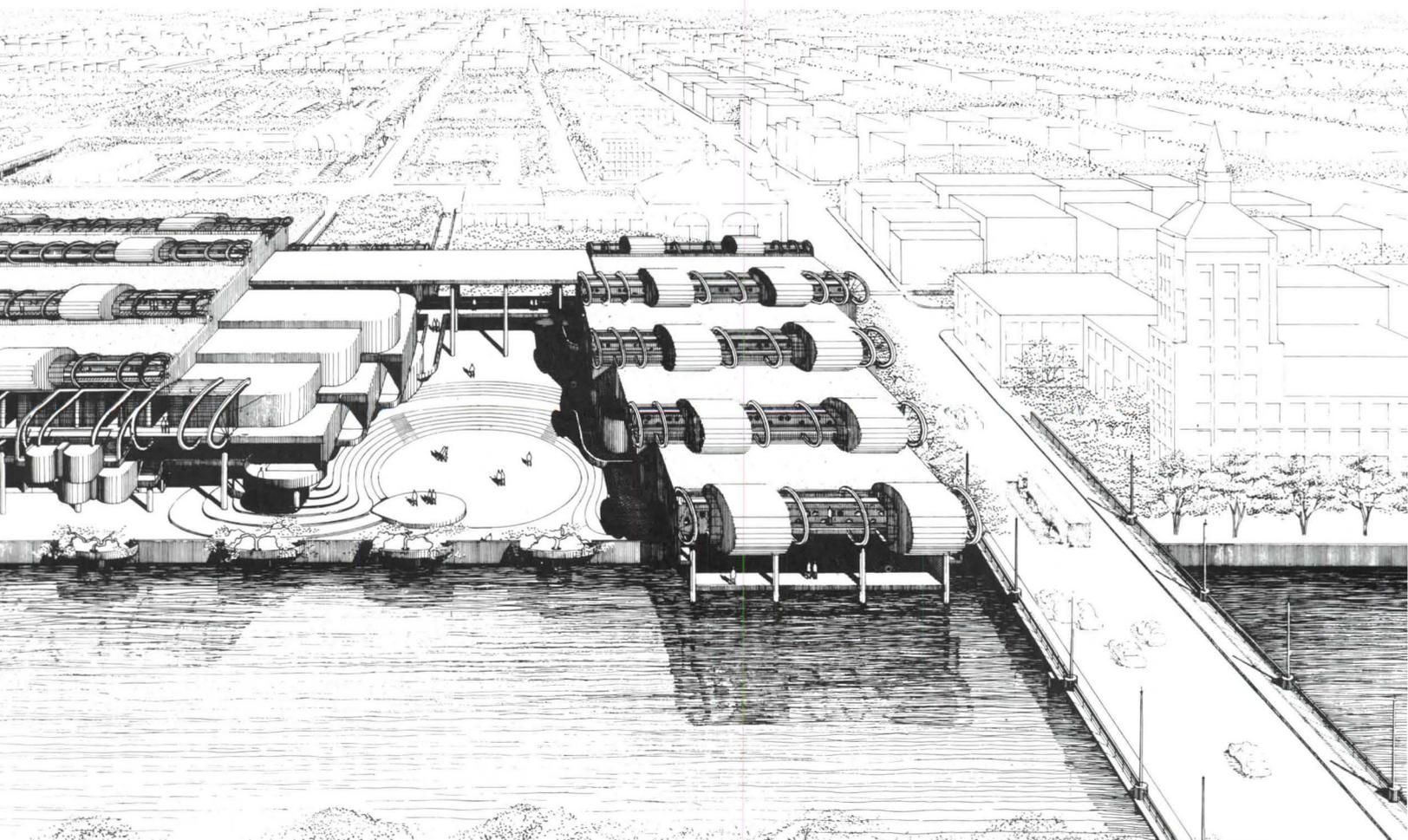
"This was 1940, and there were very few places specializing in architecture—not much meaning anywhere. Consequently, not only did people from all over the United States go to Gropius' school, but also people from Europe. There was a marvelous group, both students and faculty. Of course, it was clear to me that Gropius was an international star—something I subsequently revolted against. In any event, I knew what I was revolting against because, being a marvelous teacher, he made it very, very clear."

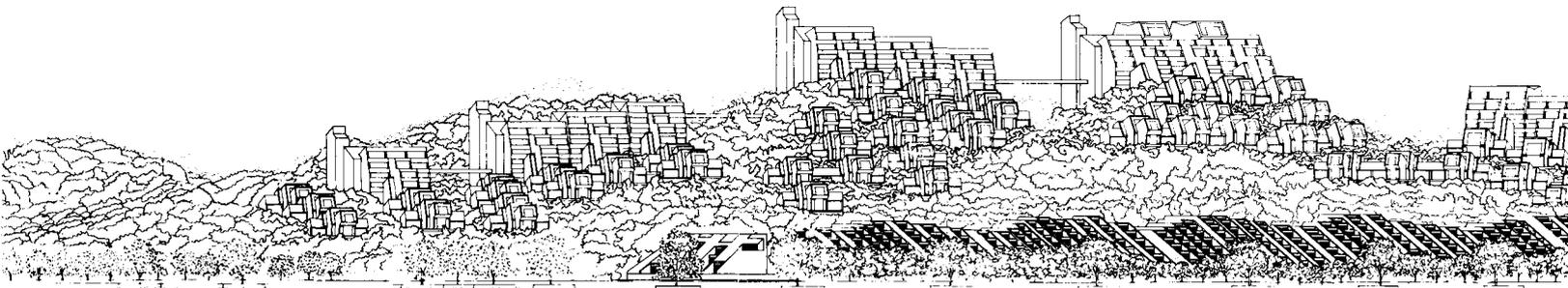
After Harvard came a summer job in Sarasota,

Florida. Birmingham, Alabama then beckoned him back for a year where he first found his footing in design ("I couldn't design"), and in detailing. Then it was back to Sarasota, where he paired up with Ralph Twitchell. From 1946, and for ten years after, there were houses to do, a lot of guest houses especially, "People wouldn't trust me with the main house usually, only the guest house. For eight years or so, I did really very small things—but always on my own terms. Until . . ."

Until, as most of you know, the Mary Cooper Jewett Arts Center at Wellesley College, outside Boston—commissioned 1955, completed three years later; the Greeley Memorial Laboratory for the Forestry Institute at Yale—commissioned 1957, completed two years later; the spectacularly published Sarasota High School—commissioned 1958, completed the next year, and carried out at the insistence of Philip H. Hiss. "Until . . . the Yale thing," the Art and Architecture Building—commissioned 1958, completed 1964.

"I'm probably the last person to ask about it," Mr. Rudolph comments, still curious about (and a little hurt by) the criticism that the Art and Architecture Building was a compulsive, undisciplined act, as though he had been unable to control the release of all his pent-up energy. "I worked very hard on that building, and it's about the most disciplined thing I've ever done. I went through many phases, some of which have been doubtful, some of which haven't. But if I had





it to do over, I would do it much the same way. In spite of the criticism, I don't think the final story is in. It's easy to see that the building makes its presence felt, and that interferes with the young man or woman who is trying to make his or her own work felt. Maybe the most anonymous kind of thing would have been better. Maybe I was the wrong person to do this, but that is for others to judge in time. You see, I really feel that people should react to their environment—feel it, sense it, have something to say, positive or negative. People should have a clear idea of what they are reacting to, which is why this building's presence is most important, from my point of view."

Talk about presence. Paul Rudolph has it, as he says this. A presence born of having been through a lot, and having taken in the reactions. It's not every dean of a school of architecture who is willing to let his students give him a grade, which is exactly what happened, and what he wanted to happen.

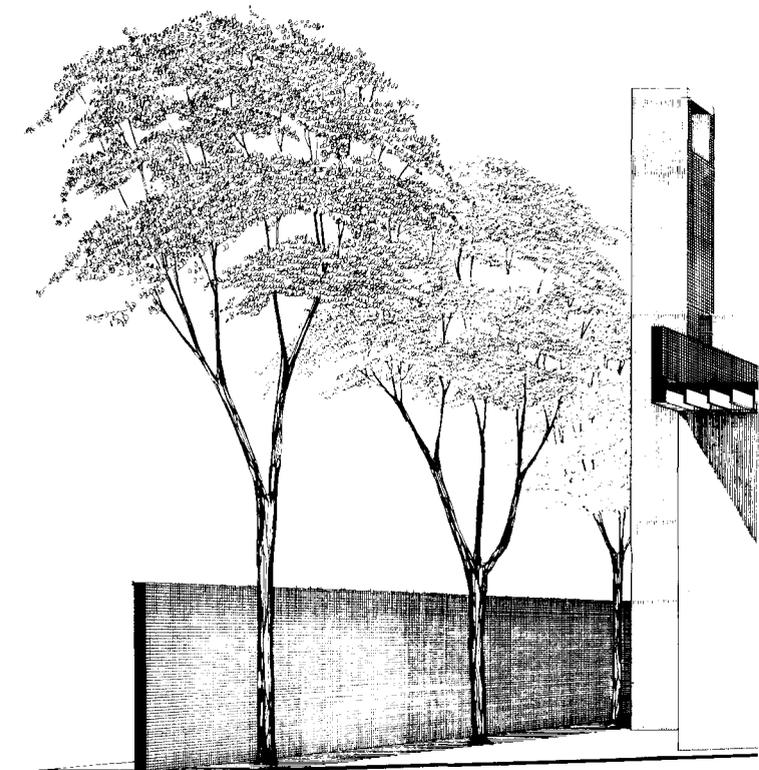
"I never intended to become the head of a school. Any school. I had lectured there, and a dozen other places. Contrary to what has been reported, President Griswold did not say, 'Come to Yale, and we will give you buildings to build.' This demeans him, and me. He wanted me to come, and I did. I learned much more than my students. You know, one has to be two different people in such a situation. As an architect, I'm probably one of the most opinionated cusses around. But in helping students find their way, you must have many viewpoints represented, try to see all sides, try to see what the student is doing, determine whether it is valid and, if not, say why. I don't know how successful I was. I do know that I tried to create an atmosphere in which people could find out things for themselves, and an atmosphere in which to test what they had found."

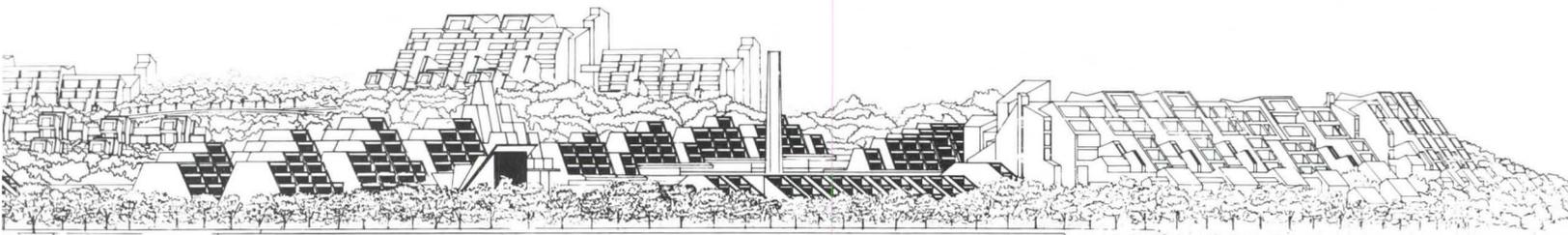
Since 1964, and completion of the Art and Architecture Building, Mr. Rudolph has carried this atmosphere into everything he touches. This is no evangelical crusade, but a steady carving out of architecture from reality as he interprets it.

Industrialized building:

"People have been talking about architecture for over 100 years now as a solution to social ills. I don't think that's a solution at all, although it can help. Until recently, prefabrication referred to structure, which is only about 20 percent of construction cost. What about *financing*, *land values*, *site preparation*, the

mechanical and electrical systems? I think that something which considers only 20 percent of the whole is slightly ridiculous. We have to move into a prefabrication of three dimensions, maybe more. Having come of age, I see the mobile home industry as a stepping stone to something truly momentous—the integration of structural and mechanical systems and finishes, and it's only a matter of time before the six-story modular becomes a reality; then higher. The mobile home and its size were not determined by engineers only, but by state-enforced limits on how much width can be safely driven along a highway. Similar limits will apply to modular design, and those units will also be trucked into place. This country has a tremendous investment in highways, and it would be too bad not to recognize it, and use it. I am fascinated with the fact that a modular unit, seven and a half feet wide, will fit nicely on a road-bed. And if you put two of them together, you get a clear 13 feet. It is the American equivalent to the Japanese mats,





three by six feet, which they have been folding up, moving around and rearranging for five centuries.”

Urban design:

“The most emphatic thing which has happened since World War II is the extensive thruways which have been built between cities and, in the process, torn them apart. It’s going to be a long while before we surpass the idea of the private conveyance, so what we need to do is organize the ways in which people get around, the geometry of transportation—the thruway, subway, pedestrianway, people movers, airport access. In other words, a movement system so coordinated that it would be clearly understood, easily used, and human—the characteristics of beauty. The thruway doesn’t have to be divisive; it brings up the whole notion of the linear city which is much more than building a platform over a road and putting buildings on top of it. We can think, instead, of configurations of building elements spanning the road. I happen to think the A-frame configuration, accommodating modular

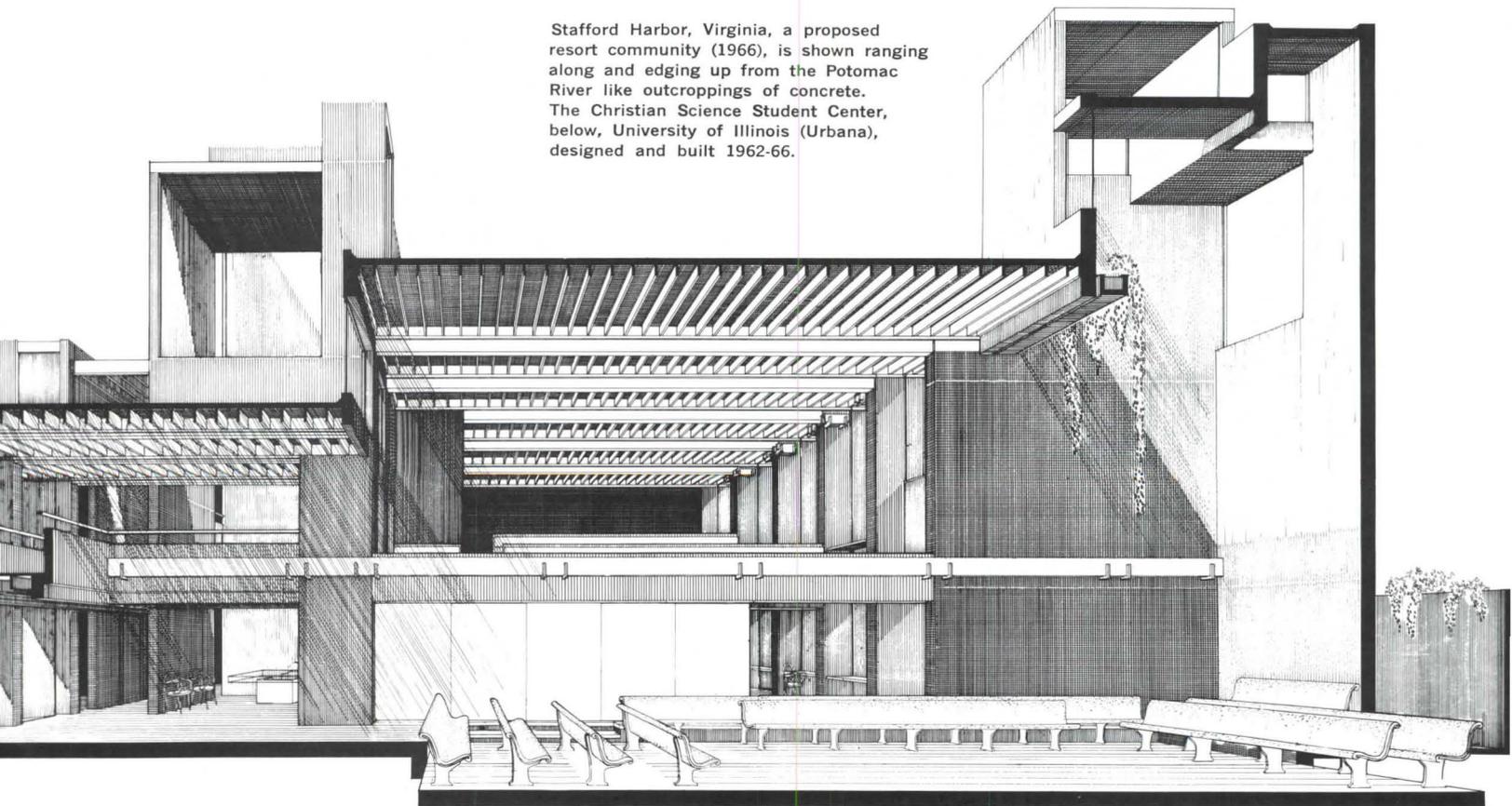
units, is the most natural way of doing this.”

The individual house:

“It seems to me that architects should investigate as many ways as possible to deal with space, structure, light and human psychology. There is no one set of problems. I would feel condemned if there were. To me, the expensive single house is a consummate opportunity to investigate, to test certain notions which can be applied in other areas of building. I am very happy that after ten years of building no houses, I now have eight. Four are in construction. Three of them are huge, over a million dollars. But the thing I am most happy about is this opportunity to learn things which can contribute to all the other things I am doing—lessons about the sequence and psychology of space, the uses of natural and artificial light, the relationship of furnishings, of the building to the land, of color.”

By now, Paul Rudolph is pacing around, talking about the drawings in a forthcoming monograph, the one from which the drawings on these pages are taken.

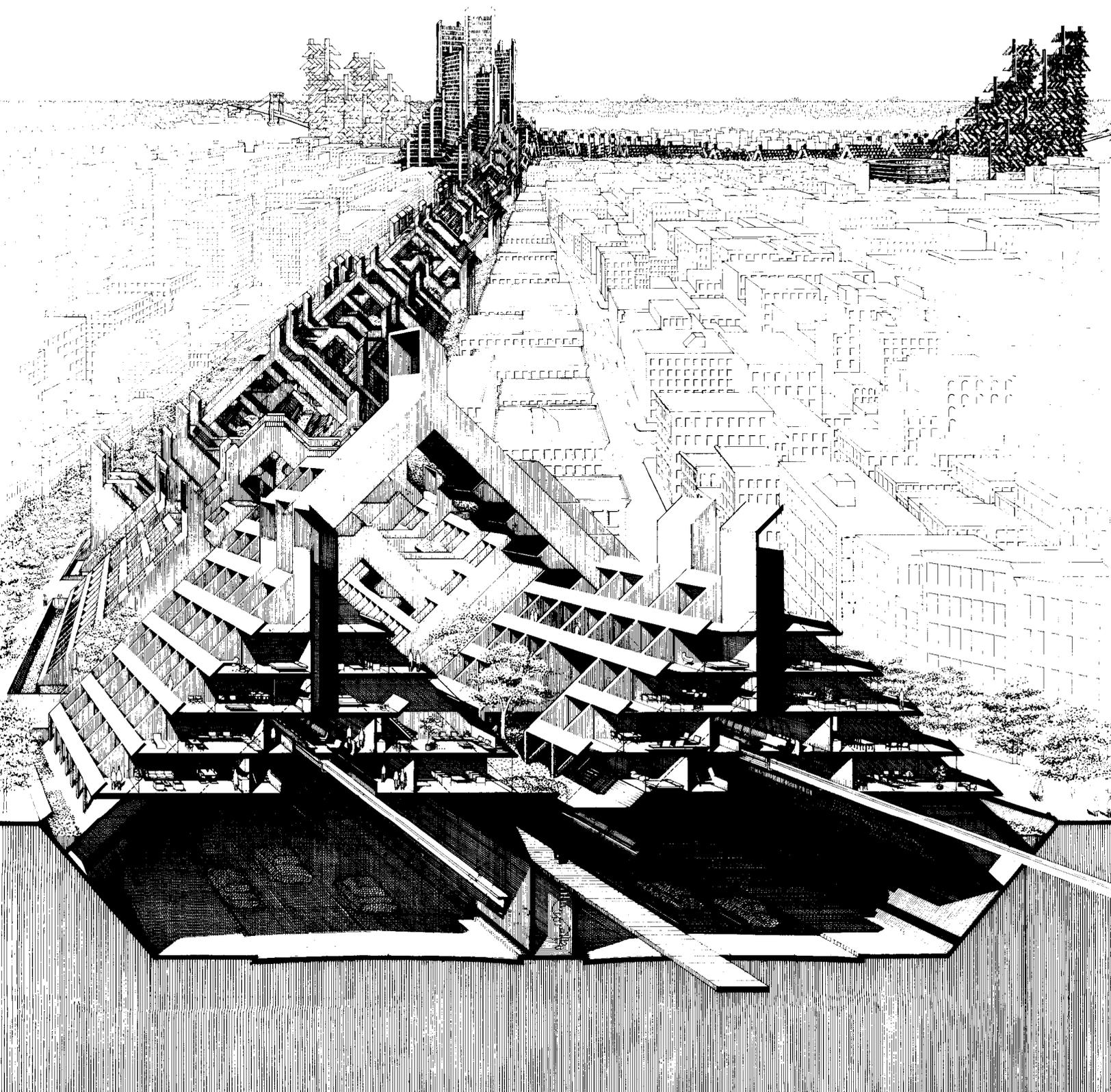
Stafford Harbor, Virginia, a proposed resort community (1966), is shown ranging along and edging up from the Potomac River like outcroppings of concrete. The Christian Science Student Center, below, University of Illinois (Urbana), designed and built 1962-66.



There is a film being made of his study for the proposed Lower Manhattan expressway—Ford Foundation funded. So much for us to look into. And out on. A barge is plying past on the East River below his Beekman Place apartment. The street author John Marquand lived on so many years, someone recalls. I.M. Pei just down the block. Beekman seems so far from Birmingham, yet incontrovertibly close—that Auburn doctorate was just a few weeks away.

"I suppose the single most influential book in my

professional life was Giedion's **Space, Time and Architecture,**" getting back to sources. "The concept that cubist painting might have an instructive relationship to architecture was a great revelation. Was and is. Of course, Giedion was very selective in his reading of history, but his prejudices make it all the more meaningful. Then there is Le Corbusier, especially **When the Cathedrals were White**—most moving. And **The Architecture of Humanism**, by Scott. Of course, the most convincing books were not the ones you



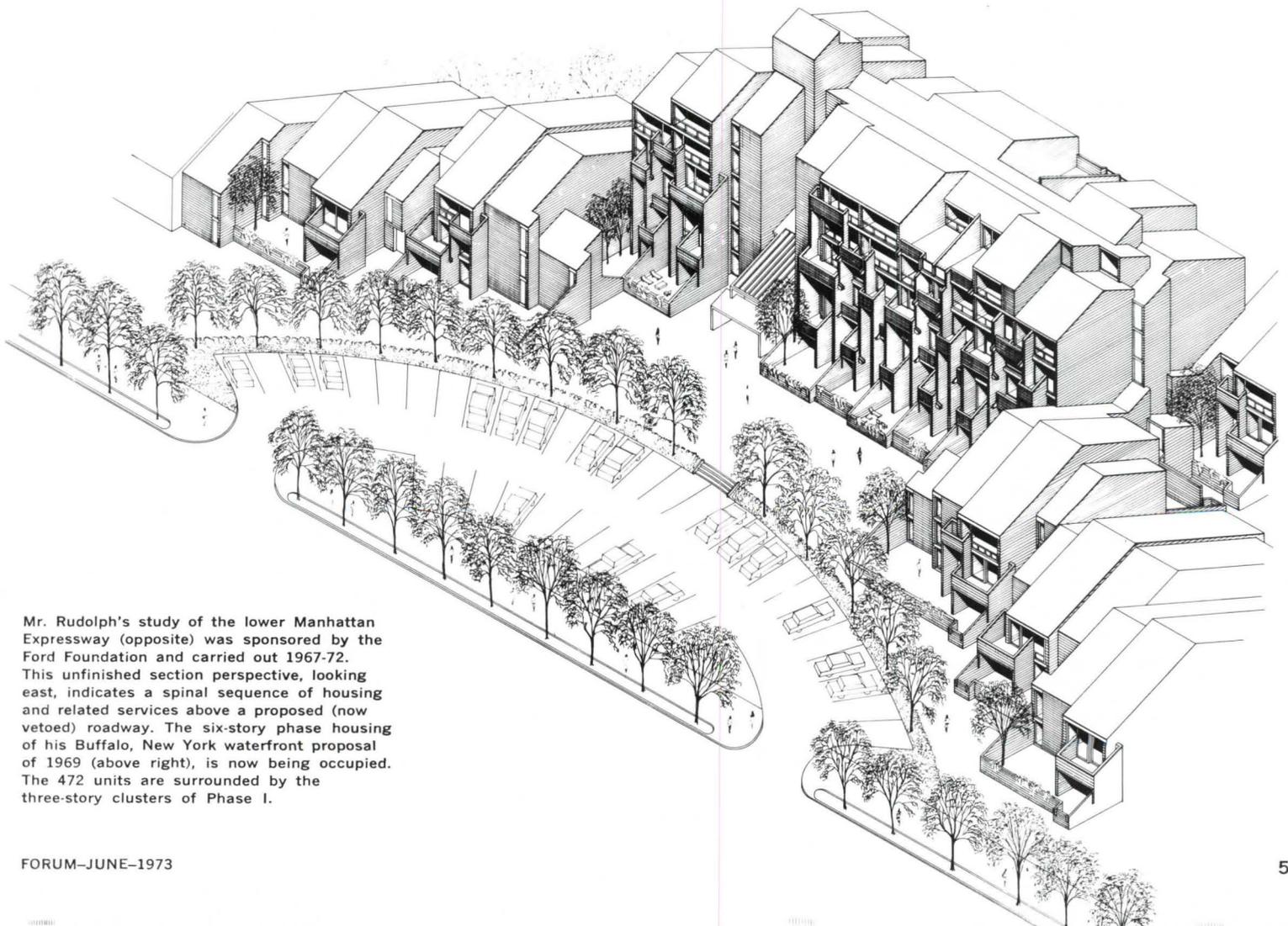
could pick up and put down. I mean the most convincing were things like the Wright house, which said it all."

Soon Mr. Rudolph is off traveling again. There is an office building in Japan, and one in Spain. Cliff-hanger commissions in the Middle East. But travel is also a functional need, "It's the only way I can get anything done. The sketching, I love it. But it has to be done right then and there, when it hits you, as I did on the train the other day coming back from New Haven. That way, the people in my office can see what is happening. You know, this moving around is really a 20th century phenomenon, nobody stays put, but something very tangible can come out of this mobility, something very permanent."

Mobility and permanence. In passing, or staying put. Heavy opposites, so it seems at first. It is a reconciliation which circumstance has routed in our time, as Paul Rudolph implies, "The art of disposing one building in relationship to another so the total adds up to more than the parts—this is an art that we know very little about, something we have almost lost, like the secret of making stained glass. I suppose that Siena comes to mind as the city I feel strongest about. Its humanness comes from its close wedding with the site. You go up, through, out, around, down

—only to go up again. Then there are those winding streets, leading to the plaza—so natural, it seems, not contrived. I can't imagine it being any other way. Yet, it is interesting that it wasn't treated as being something dominant. Its irregular but definite form is not immediately apparent; it unfolds as you enter it from various points. And as it unfolds into view, the plaza's relationship to the pattern of the city beyond becomes so clear that you know damn well that it took centuries to build."

There is something of the "tabula rasa" in Paul Rudolph. And there are those who take issue with him for this reason, pointing out that no one's mind can be swept clean as a prior condition for receiving new impressions, that no one's building can be conceived as though nothing had gone before, or as though nothing around it deserves respect. Such assumptions have created havoc in the modern city, applied in lesser hands. But the "tabula rasa" on which Paul Rudolph draws, the one from which he derives his strength, is fundamentally different. The cleanness of his slate comes from his having pondered and thoughtfully traced what has gone before, blowing away the dust which obscures useful precedents. That is why he has and will continue to set them.—William Marlin



Mr. Rudolph's study of the lower Manhattan Expressway (opposite) was sponsored by the Ford Foundation and carried out 1967-72. This unfinished section perspective, looking east, indicates a spinal sequence of housing and related services above a proposed (now vetoed) roadway. The six-story phase housing of his Buffalo, New York waterfront proposal of 1969 (above right), is now being occupied. The 472 units are surrounded by the three-story clusters of Phase I.



TALE OF TWIN PARKS

Political and economic forces were carefully integrated with social and design concerns in an exemplary housing experiment in the Bronx

BY MYLES WEINTRAUB AND REVEREND MARIO ZICARELLI

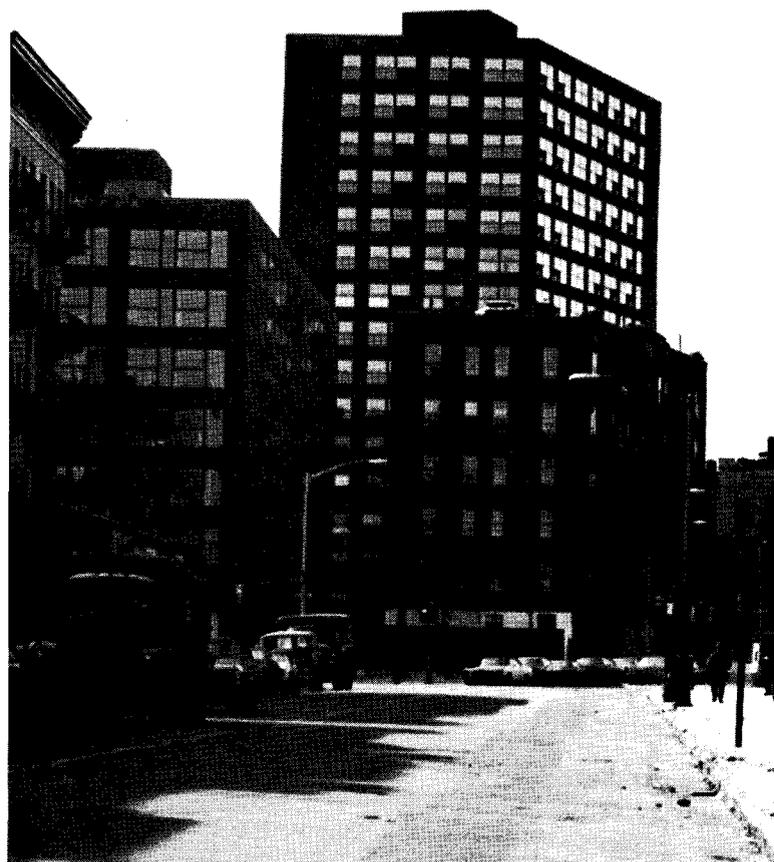
In the spring of 1966 when the City of New York decided to build 800 units of public housing in the Twin Parks area of the Bronx, it was not considered a core ghetto. Neither was it a stable middle-class community. Composed of several neighborhoods varying in social and economic composition, Twin Parks had elements of both extremes; yet numbers of the poor were increasing and the middle class was moving away. Pockets of severe physical deterioration were already present, even though much of the built fabric was still substantial and well-maintained. In other words, Twin Parks displayed the classic symptoms of the common mid-twentieth century epidemic—urban decay.

More than a year ago 270 families began moving into the first of the new buildings. Hundreds more have done so since and other buildings are under construction. When this opening round of renewal has been completed, Twin Parks will boast a total of 4,000 new units of housing (1,200 for low-income and 2,800 for moderate-income families), 1,000 rehabilitated apartments, three day-care centers, plus two new primary schools with a combined capacity of 2,000 children (the air rights of one school are being developed for middle-income housing by the New York City Educational Construction Fund), a new intermediate school for 1,800 students, a youth center, an early childhood learning center for 200, and various community facilities for the elderly. Some of the low-income families will live in public housing built by the Housing Authority; others are lodged in moderate-income buildings under an Authority leasing program.

Mr. Weintraub now has his own architectural practice, and Father Zicarelli is parish priest at Our Lady of Mount Carmel in Poughkeepsie, New York.

While the Authority was the original agency to be involved in Twin Parks, the difference in scope between its original proposal and what has been accomplished is both significant and instructive. That early proposal for 800 low-income units was promptly rejected by a group of community leaders in June 1966, despite city officials' claims that it would be "vest-pocket" housing. Yet about this time, Bronx Borough President, Herman Badillo decided to ask Archbishop John Maguire, who had just set up a diocesan office of Housing and Urban Renewal, if he would encourage some of the Catholic pastors from the Tremont neighborhood to form a non-profit housing corporation to develop middle-income housing in conjunction with the Housing Authority's low-income housing. They hoped by using the vehicle of non-profit sponsorship they would attract Federal 221d-3 subsidies. The six Tremont pastors quickly agreed to form such a corporation; since middle-income housing at that time meant rents of about \$30 a rental room per month.

Meanwhile, from another direction entirely, a group of architects, Jonathan Barnett, Giovanni Pasanella, Jaquelin Robertson, Richard Weinstein, and Myles Weintraub, entered the scene. As the nucleus for what was soon to be the Urban Design Group in the City Planning Commission, they had just secured a grant from the J.M. Kaplan Fund for an advocacy planning study. When the architects found out about the several plans for Tremont, they decided to meet with the community under the auspices of the Housing and Development Administration. (HDA, a super-agency formed by Mayor Lindsay in 1967, was given the responsibility to coordinate urban renewal projects and administer moderate and middle income



Twin Parks projects were designed to fit in with existing scale and

housing programs.)

At a community meeting the architects proposed identifying a number of vest-pocket sites (less than a full square block) preferably on vacant land, in the East and West Tremont sections of the Bronx. On these scattered sites, the group recommended building 800 units of public housing and 1,200 units of middle-income nonprofit sponsored housing. Furthermore, as they explained, the concept was to be developed in dialogue with both the people of the area and the City's housing agencies. While the Tremont pastors, including Reverend Mario Zicarelli, supported the plan, most of the large audience from the area of West Tremont—white, a cut higher economically than the racially mixed East Tremont, and more conservative about public housing—heckled and booted the city officials off the stage.

There the matter would have died if the Catholic and Protestant pastors of East Tremont had not felt that their neighborhood was hardly in a posi-

tion to let the matter drop. And so they decided to act without West Tremont. At the end of 1966 they formed the Twin Parks Association (TPA), a non-profit housing company with Catholic, Jewish, and Protestant participation; whites, blacks, and Puerto Ricans. They asked the housing agencies to restrict the focus of the study to the eastern half of the previously designated area, i.e., to East Tremont (or from the Bronx River to the Webster Avenue escape-ment).

The young men of the Urban Design Group then began to consult with the community of East Tremont and with the Twin Parks Association about sites and priorities. Each meeting meant altered plans and new proposals, but by Spring 1967 the group had put a package together. Determined to achieve the widest coverage for the proposals, the urban designers produced an exhibit that traveled throughout the community.

Finally, the plan was ready. At this point it called for something less than 2,500 units in-



character of the neighborhood, as shown by Twin Parks Northeast.

stead of the ultimate 4,000, and included numerous proposals for public services ranging from classroom space within residential buildings, to an organized tree planting program, to the demolition of the Third Avenue elevated subway (with an express bus route as a replacement), to a detailed phased program to minimize the relocation problems. It is to the plan's credit that it has not been substantially changed since, except that the number of apartments increased as certain sites were expanded and building costs mounted.

With local approvals secured, the Twin Parks Plan was presented to the City Planning Commission in September 1967 and received unanimous approval. The Board of Estimate appropriated \$12,000,000 in land acquisition, approving the plan 22 to 0.

As crucial as the planning and politicking had been to this point, a new set of obstacles had to be overcome as the plan moved to the implementation stage—internal conflicts over

sponsorship, bureaucratic nit-picking, lack of equity funding.

Once HDA had a local office, a project director, and a staff, it went about the business of urban renewal implementation (i.e., code enforcement, maintenance, relocation writs, demolition, etc.), and finally sponsor selection.

The Twin Parks Association could not claim to represent the entire community and asked for sponsorship of one-fourth of the available sites (some had already been designated for the Housing Authority's public housing share). But HDA wanted TPA to take over sponsorship of the whole program, with the proviso that the Association become more broadly-based by absorbing some of the other applicants, such as a group of Puerto Rican churches and new West Tremont organizations sympathetic to the cause. The Association reconsidered, and so started to grow. At last count it embodied 49 churches and organizations. And by the end of the summer of 1968, it seemed to have met all of HDA's re-

quirements for members.

But as 221d-3 subsidies allocated to New York were drained by other projects, non-profit sponsorship seemed more and more unrealistic and wasteful. During this time Congress was re-evaluating the idea of offering low interest government mortgages to non-profit sponsors, under 221d-3, and gradually began to endorse a program of low-interest subsidies on privately-financed mortgages under 235-236 programs. Because it was a presidential election year, the 221d-3 monies that were running out were not being replaced. Thus sponsor designation was repeatedly postponed.

In the meantime, Father Zicarelli had become the chairman of the TPA. Already President of Local School Board 10 in the Bronx, he was in the unique pivotal position of coordinating plans for the housing and the schools. In December 1968 TPA was designated sponsor of all HDA's moderate-income housing and of the air-rights school and housing complex (ECF). But the TPA designation hinged on its discussing the plan with the newly created Urban Development Corporation—a state agency empowered to float \$1 million worth of bonds, and to override local zoning ordinances and building codes, in order to initiate development in urban areas.

As was established, the UDC would build the housing and then sell it to a private owner. Since the TPA had no money, it could not hope to buy the housing from the UDC, and thus the Association had to make a critical decision.

Going with the Urban Development Corporation would mean allowing most of the housing to be sold to limited profit developers whom UDC would designate. It meant TPA would have only an advisory role in management and renting, giving up the "sponsorship" that in a low-income, heavily minority-populated community meant "control." On the other hand, waiting for 221d-3 funds might take forever and the housing might never be built, since a new President of the United States had been sworn into office.

The TPA decided to risk it. The decision was made an easier one with the knowledge that

the TPA's last and most important demand had been met: the architects to be selected would be of outstanding ability. The Urban Design Group and HDA's Office of Design had prepared a list of architects whom they believed could translate the spirit of the plan into built spaces. All three "developer" agencies, the Housing Authority, Education Construction Fund, and UDC had agreed to make their separate choices of architects from that list. The UDC chose the offices of Richard Meier, Giovanni Pasanella, James Stewart Polshek, and Prentice & Chan, Olhausen; the Housing Authority selected Mitchell-Giurgola, John Johansen, and Pasanella; and ECF eventually selected Pasanella for the combined school and air-rights housing. The theme of anti-project architecture permeated the entire planning process, shared both by the community and the architect-planners. All schemes emphasized the need for new buildings to fit into the existing physical fabric, remedied past deficiencies such as the appalling lack of convenient and usable open space, and called for economical construction.

In September 1970 the first groundbreaking for Twin Parks took place.

The Twin Parks development is now about 50 percent complete. Three complexes are occupied—Site 5-11 and Site 4 by Prentice & Chan, Olhausen and Twin Parks Northeast by Richard Meier, all for the UDC. Two UDC projects are being occupied now—Southeast by James Polshek and Site 8 by Giovanni Pasanella. And others by Pasanella—Sites 5-7, 10-12 and 6, for the UDC, and Twin Parks West, Site 1 and 2 for the Housing Authority—will begin to receive occupants during the next five months. Two ECF housing projects, Kelly Towers and Keith Plaza, also by Pasanella plus a UDC youth center by Smotrich and Platt are in early construction. A housing scheme using modular pre-cast concrete panel systems is now being designed by SOM for the UDC. In addition, an intermediate school designed by The Architects Collaborative for UDC is slated for construction in the near future. Meanwhile, other projects wait in the wings.

TWIN PARKS AS TYPOLOGY

Several of the UDC architects have brought distinctly different formal and relational attitudes to the generic form of housing

BY KENNETH FRAMPTON

A comparative critique of four specific UDC schemes—Twin Parks Northeast, Twin Parks Southwest, and Twin Parks Northwest, Sites 5-11 and 4—may best be made along four main lines. Firstly, radically different approaches have been taken to the development of the respective sites given a more or less comparable density and mix. Secondly, relatively different strategies towards the implicit social differentiation of public and private space are displayed in the layout of these sites. Thirdly, different attitudes have been adopted with regard to either integration with, or differentiation from, the pre-existing urban context. And finally, different compositional devices are employed for the expression of an aggregation of individual dwelling cells as a larger collective whole; i.e. the capacity of massing and formal configuration to express the generic idea of housing.

With regard to the differentiation of public space and the integration of the built form into the existing urban pattern, fundamentally different approaches seem to have been adopted in two particular schemes—Twin Parks Northeast by Richard Meier and Twin Parks Southwest by Giovanni Pasanella. In each instance the underlying conception seems to have been based on 'models' drawn from the received culture of 19th and 20th century architecture.

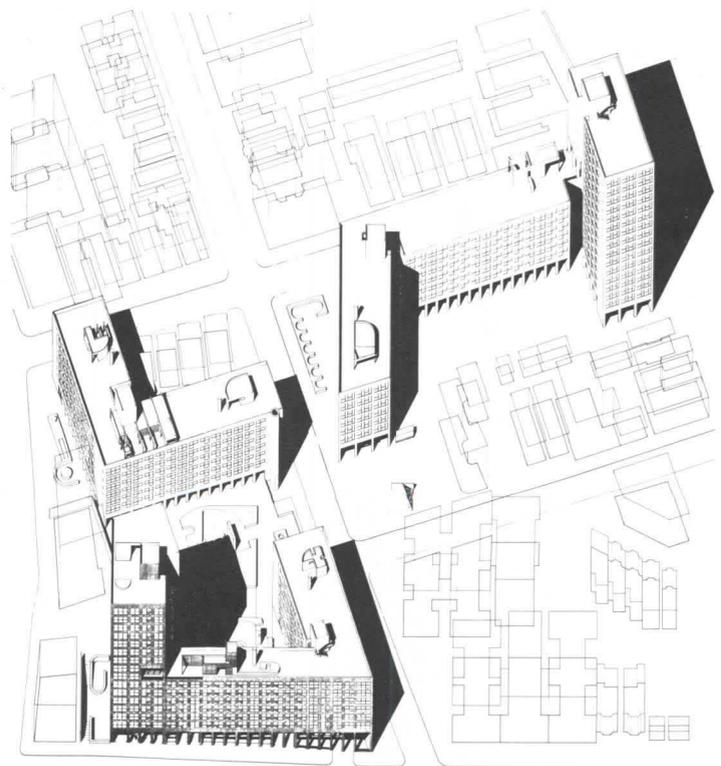
In the Pasanella scheme the point of departure seems to lie in the work of Le Corbusier as epitomized in the latter's Unite

d' Habitation at Marseilles. In the Meier case the referential base is more complex. Once again, of course, there is the example of Le Corbusier, only this time the typological reference is to the *redent* blocks of the Radiant City. From 1922 on, such set-back blocks constituted an essential component in the Corbusian residential pattern. As such they were largely an extension of a late 19th century anti-street polemic.

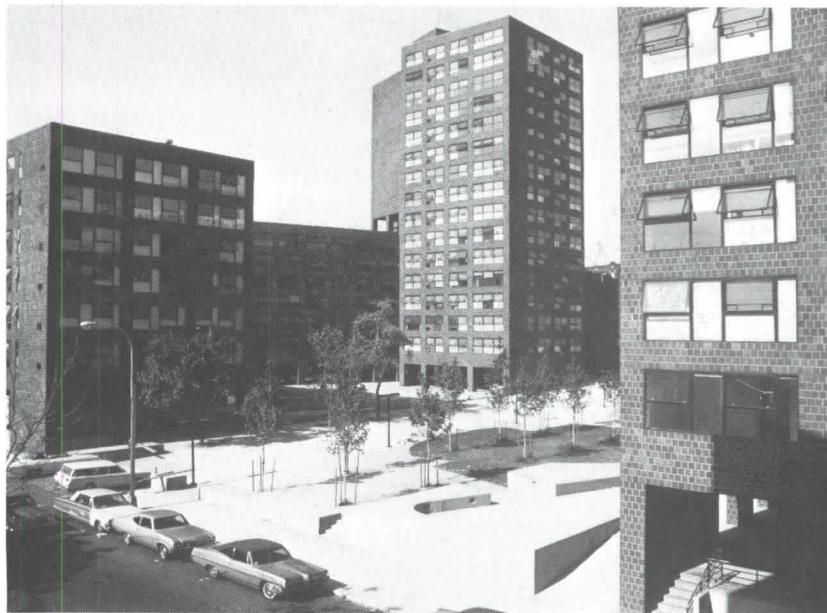
Meier's use of this model appears at this juncture to be somewhat paradoxical since his set-back blocks at Twin Parks align themselves with what remains of the existing street frontages. At the same time, of course, as is inevitable with such a model, they open up the interior of the site to the street. Meier attempts to balance this openness by subtle changes in level between the site and the surrounding streets, and by using his set-back blocks to precisely define the public open space. This appropriation of space is accentuated through the careful disposition of housing towers that rise higher than the general cornice line of the development.

From this one may argue that the overall *parti* of the Meier scheme stems from a curious compound of Le Corbusier (after Henard), on the one hand, and Sittesque notions of urban space, on the other. The unusual formal and social interaction that the Meier scheme invokes in conjunction with the existing urban context no doubt derives from this conscious attempt to conflate two ultimately antithetical models drawn from 19th century urban theory.

Although Twin Parks Northeast had the misfortune to become the disputed turf of



Mr. Frampton is a fellow at the Institute for Architecture and Urban Studies in New York, and teaches architecture at Columbia University.

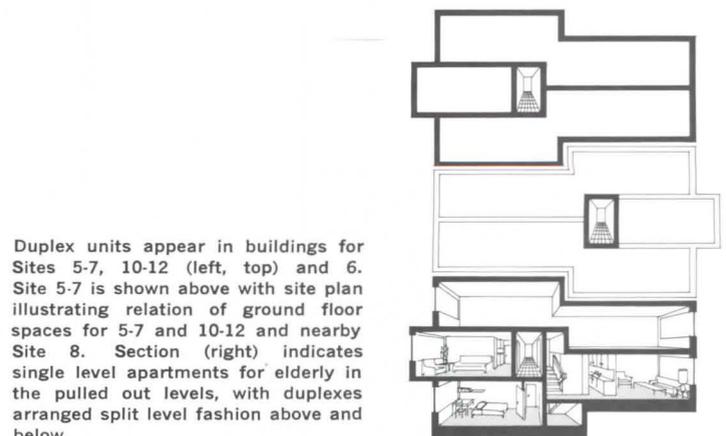
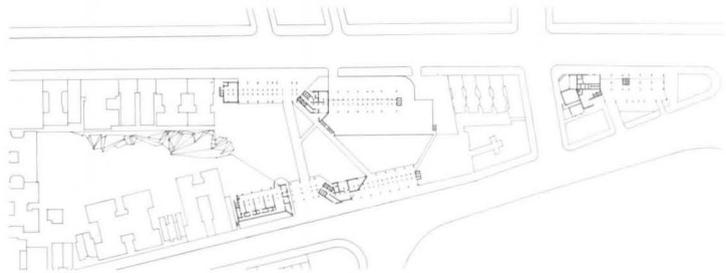


Twin Parks Northeast occupies portions of three blocks (isometric opposite) comprising 3.34 acres. The seven-story and 16-story buildings accommodate 523 dwelling units with 86 percent of the units one, two and three-bedrooms (plan, left). The building's 385,625 sq. ft. includes ground floor areas for a 4400 sq. ft. day care center, 3000 sq. ft. of commercial space, 1500 sq. ft. for community meeting rooms, plus the project's management office and enclosed parking for cars. Structure is poured-in-place concrete frame with brick exterior walls.

FACTS AND FIGURES

Twin Parks Northeast, Sites 6-8 and 2, Bronx, New York. Owner: Twin Parks Northeast Associates and Grote Street Associates (limited partnerships). Architect: Richard Meier & Associates. Design Team: Richard Meier, Murray Emslie, Donald Evans, Paul Jenkins, Douglas Kahn, Carl Meinhardt, Steven Potters, Henry Smith-Miller. Engineers: Robert Rosenwasser (structural). Landscape Architect: Joseph R. Gangemi. Contractor: Leon D. DeMatteis & Sons, Inc. (general); Lipsky & Rosenthal Inc. (mechanical); Simpson Electric Corp. (electrical). Building Area: 385,625 sq. ft. gross. Construction Cost: \$17,649,844 including site improvements.





Duplex units appear in buildings for Sites 5-7, 10-12 (left, top) and 6. Site 5-7 is shown above with site plan illustrating relation of ground floor spaces for 5-7 and 10-12 and nearby Site 8. Section (right) indicates single level apartments for elderly in the pulled out levels, with duplexes arranged split level fashion above and below.

rival gangs during the last hot summer, this should not blind one to the outstanding sensitivity of Meier's layout both in relating to its existing urban context and in providing a viable public space for congress and play; a space that seems to have been more than adequately supported by spontaneous use, even if, on occasions, this use has degenerated into violence.

The site planning of Pasanella's, as yet unoccupied, Twin Parks Southwest would seem to indicate that its public open space will be even less defensible in the Oscar Newman sense of the term. For one thing there is a pedestrian route running diagonally across the site. Without becoming involved in a potentially regressive discourse about the relative security of the public space offered by these respective schemes (particularly as each scheme had radically different site conditions to contend with), I would like simply to point out the contrasting approach to the provision of public space in each case. Where Meier creates defined areas of public space within the arms of his set-back blocks, Pasanella appears to afford little space which could be appropriated with any kind of comparable conviction for either play or confrontation. Instead, one is presented with one of the more embarrassing features to be found in the Le Corbusier model of the Unite; namely, to what purpose do you assign the space under the pilotis? Of course, an extensive use of pilotis is common to both the Meier and the Pasanella schemes, but in the Meier case, they mostly predicate promenade arcades flanking usable public space, while in the Pasanella scheme, they are shelter-

ing 'gateways' giving directly onto the route through the site. The pilotis in the Pasanella scheme predicate no public use save for functioning as open foyers to the right of way linking Webster and Valentine Avenues. The architect, true to his original model, has provided for undifferentiated areas of green space on either side of this route; a provision which will fail if left open and which will not provide the necessary public space if closed in.

The problem posed by pilotis and adjacent public open space at Twin Parks Southwest is one that is integral to the original model. Even in Le Corbusier's idealized version of a city on piles floating above a continuous park space the problem remains. What would the inhabitants of the *Ville Radieuse* have done with these continuous arcades? This is the typological burden, so to speak, carried to an equal degree by both the Meier and Pasanella schemes. Its corollary as far as pragmatic planning is concerned is that the designer can never find enough public space in the program to occupy the volume created below the building mass. Thus the undercroft of the Meier scheme sometimes takes on the aura of a wasteland. Even here where the overall provision of public space has been intelligently arranged, excessively large and ill-maintained foyers seem to abound at every corner.

To work pragmatically, without concern for canonical models, seems to have been the dominant approach behind the Twin Parks work of Prentice & Chan, Olhausen. In this respect their two schemes are possibly among the most successful in the area. Their site planning from the point of view of both

Twin Parks Southwest (Sites 5-7, 10-12, 8 and 6) comes to a total of 610,000 sq. ft. on three separate sites that total 4.2 acres (aerial photo, left opposite). The building on Site 8 (Page 66) accommodates 167 dwelling units with zero to two bedrooms for the elderly in a stepped five to 19 story building. The three buildings to the north accommodate a total of 369 dwelling units with one to five bedrooms (most are two's and three's) in a 17 story building, an 11 story building and a ten story building. Split-level duplex apartments (photo, right) are provided by a section element of five levels grouped around a corridor (section, bottom opposite). Elevator stops are every two and a half floors. At ground levels in the 10-12 and 6 buildings are located a 4500 sq. ft. day care center, and a 1500 sq. ft. community center. Construction is reinforced concrete flat slabs with eight inch square face brick and concrete block walls.

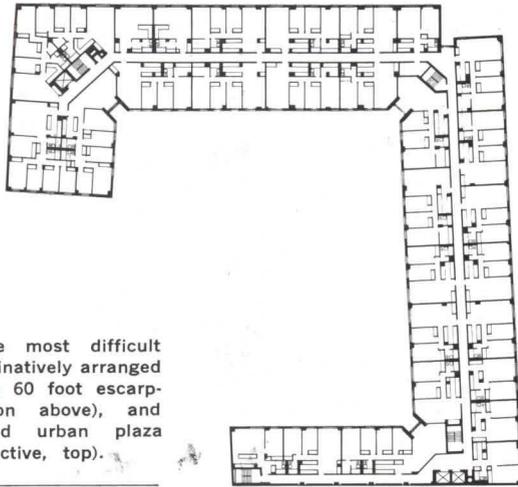
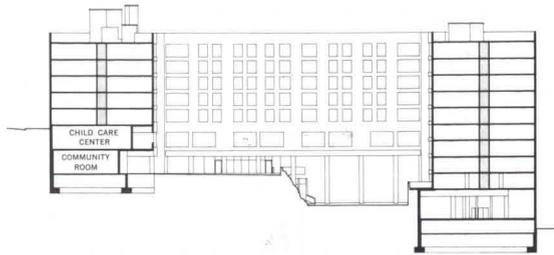
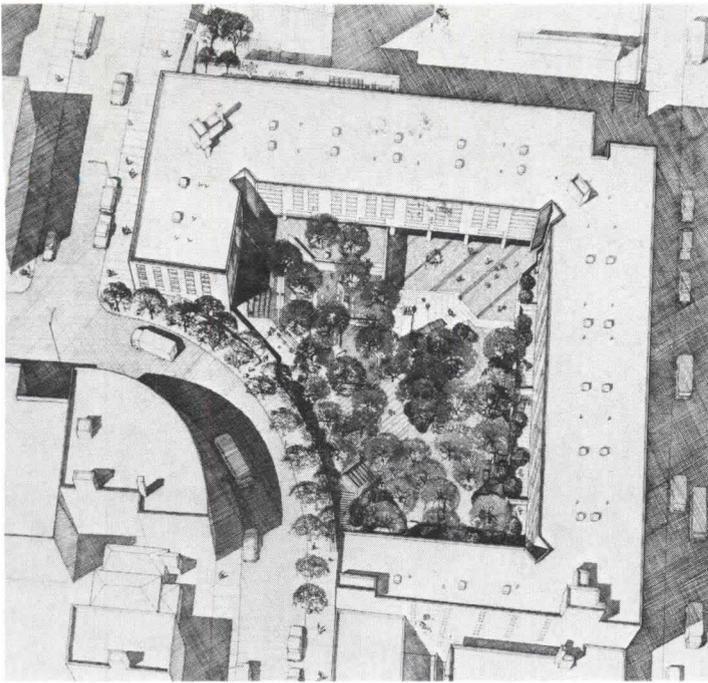
FACTS AND FIGURES

Twin Parks Southwest, Sites 10-12, 5-7, 8, and 6, Bronx, New York. Owner: Sovereign Realty Association. Architect: Giovanni Pasanella & Associates. Job Captains: Crane DeCamp, P.C. Wong, Etel T. Kramer (Site 8). Engineers: Gleit Olenek & Associates (structural); Daltan & Dunne (mechanical and electrical). Landscape Architect: Peter Rolland and Associates. Contractor: Sovereign Construction Company (general). Building Area: 610,000 sq. ft. Construction Cost: \$17,611,471.00.



Twin Parks Northwest, Site 5-11 contains 211 dwelling units with apartment sizes ranging from zero to five bedrooms on a 1.25 acre site. The 29,476 sq. ft. building is five to eleven stories high and encloses a terraced sixty foot escarpment (photo, left). Community facilities include a 12,000 sq. ft. early childhood center. Structure is reinforced concrete with brick cavity walls.

Photographs: Dorothy Alexander, page 55, and page 57, center, right top and right bottom; Richard Meier, page 57, right middle; Norman McGrath, page 58, right top; page 59, left bottom, David Hirsch, page 61, left and right top. Nathaniel Lieberman, page 58, top left, and page 59, top.



Site 5-11 was the most difficult site. Architects imaginatively arranged building around the 60 foot escarpment (plan, section above), and created a terraced urban plaza (three point perspective, top).

FACTS AND FIGURES

Twin Parks Northwest, Site 5-11, Bronx, New York. Owner: Dic-Underhill First Realty Co. Architect: Prentice & Chan, Ohlhausen. Associate-in-Charge: Francis C. Wickham. Engineers: Robert Rosenwasser, PE (structural); Jack W. Barrett, PE (mechanical & electrical). Landscape Architect: R.T. Schnadelbach. Contractors: Kreisler, Borg, Florman Construction Co. (general); J.H. Kaim; Dierks Htg. Co.; Lipsky & Rosenthal (mechanical); Simpson Electric; A.I. Smith (electrical). Dic Concrete; Civetta Excavating; Lewis & Valentine, (other). Building Area: Site 4: 126,060 sq. ft.; Site 5-11: 246,388 sq. ft. Construction Cost: \$11,183,369.00.

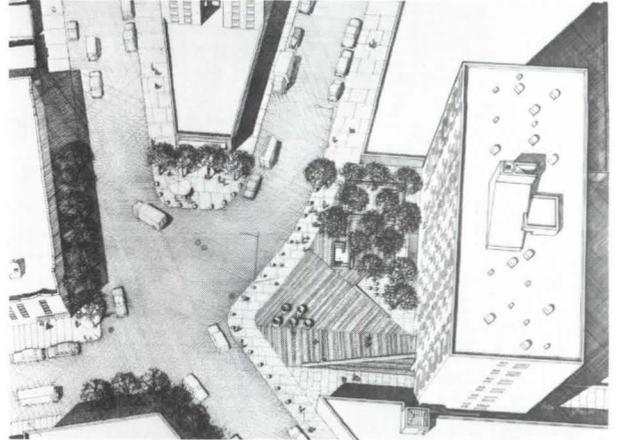
security and differentiated use is by far the best to be found in the whole UDC development. Given their bluff-like rocky sites, Prentice & Chan, Olhausen appear to have taken a fortress approach to the problem: the paradigm of the building as bastion. A defensible proposition if ever there was from the point of view of security. This approach is clearly more successful at Twin Parks Northwest, Site 5-11 than it is at Twin Parks Northwest, Site 4. The former provides for a bastion that on three sides encloses a differentiated public open space. Even more successful, at Site 5-11, is the relation between the interior and exterior public spaces and between these spaces and contingent semi-public areas, such as the elevated access deck to one side of the garden court. Here there is little chance for one to become embarrassed, so to speak, by the use of pilotis. The few that exist constitute a clear gateway leading into the central court from the lower level (as in the Rio de Janeiro Education Ministry of 1936-45).

What in the last analysis are the respective attitudes adopted in these three designs to the aggregation of living cells? How do they each in turn choose to express this phenomena? Let me in this instance proceed in reverse. The Prentice & Chan, Olhausen schemes predicate themselves on the building as an hermetic bastion or block. Its homogeneous brick surface is merely enlivened by the iteration of a syncopated fenestration. There is patently no hierarchy save for the palpable brute presence of a brick-clad megalith and the ornamental flicker of rectilinear window openings. This is mass housing expressed as an art of abstraction, as a mere vehicle for an altogether superficial effect of scalelessness. There is no comprehensible architectural relation made between the point of entry and the individual cell.

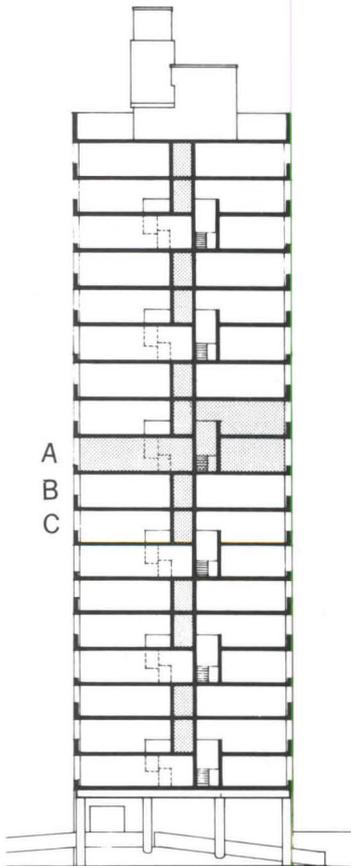
The absolute converse is true in the Meier scheme which refers constantly in both its elevation and in its massing to the human drive towards hierarchy—that is to say, to the need to distinguish public from private, and to establish the center as distinct from the periphery. These distinctions are possible

in the Meier scheme, which transcends the mass aspect of housing, much in the same way as the English Georgian terrace did, through modulating an assembly of related parts that refer to a larger entity. In the Georgian terrace it was the pediment applied to accentuate the ends and the center of an otherwise undifferentiated repetition of identical units, that served most effectively to establish the sense of the whole. In Meier's Twin Parks scheme, it is the 16-story tower at the eastern end of the site, which centralizes the composition causing the massing and the fenestration of the entire scheme to appear to gravitate towards a piled-up center. Despite Pasetella's articulation of the facade by projecting continuous floors to reflect the public access routes within, little of this larger aggregate value manifests itself in his scheme. This projection neither convincingly reveals the nature of the public presence nor does it finally serve to forge the composition into a larger whole. This is particularly so where the composition (still basically looking to the Unite) is split abruptly asunder by articulated vertical access; a schism which Le Corbusier was able to suppress in his final formulation of the Unite at Marseilles.

It is exactly at this point where aestheticization of statistics rather than organization of space becomes the prime *raison d'être* of a design that the architect loses sight of the fact that building, as opposed to art, must be contingent upon finding semantically relevant physical forms for appropriate social relations. Failure to observe this necessary law accounts for a body of modern architecture that is by now littered with implied social hypotheses which could never be brought into being (even when built), simply because they were too complex or too ambiguous to be understood and used. In short, we are confronted once again with the unconscious utopianism of a modern architecture that has failed to acknowledge the society as a living body, and has built for a society that does not exist; the fault lying in the last analysis, not with architecture, but with the structure of the society.



Twin Parks Northwest, Site 4, occupies a narrow 54,342 sq. ft. site. The 19-story building contains 120 dwelling units with zero- to five-bedrooms in duplexes and simplexes, using twenty different apartment layouts (plan, right). Fenestration expresses varied plan. Since the tower sits on an escarpment, the architects designed a pedestrian pass-through leading from the entrance of the building (photo, top right) through the ground floor and down the hill.



A TYPICAL FLOOR PLAN
FLOORS 2, 5, 8, 11, 14, 17



B TYPICAL FLOOR PLAN
FLOORS 3, 6, 9, 12, 15, 18



C TYPICAL FLOOR PLAN
FLOORS 4, 7, 10, 13, 16, 19

FACTS AND FIGURES

Twin Parks Northwest, Site 4, Bronx, New York. Owner: Dic-Underhill First Realty Co. Architect: Prentice & Chan, Ohlhausen. Associate-in-Charge: Francis C. Wickham. Engineers: Robert Rosenwasser, PE (structural); Jack W. Barrett, PE (mechanical & electrical). Landscape Architect: R.T. Schnadelbach. Contractors: Kreisler, Borg, Florman Construction Co. (general); J.H. Kaim; Dierks Htg. Co.; Lipsky & Rosenthal (mechanical); Simpson Electric; A.I. Smith (electrical). Dic Concrete; Civetta Excavating; Lewis & Valentine, (other). Building Area: Site 4: 126,060 sq. ft.; Site 5-11: 246,388 sq. ft. Construction Cost: \$11,183,369.00.

(For a listing of key products used in these buildings, see p. 80.)

LEARNING FROM TWIN PARKS

Now that Twin Parks is a physical reality, questions arise: Is the project a success? On what terms? Does it provide a model for future applications?

In a sense, the New York State Urban Development Corporation made its name with Twin Parks—at least in New York City. The feat of building 1,858 moderate and low-income units so far (in the usual 70-20 proportions with an additional ten percent for elderly) on difficult sites within three years cannot be ignored, no matter how they did it.

Rumor has it, the UDC got roped into Twin Parks: New York City agreed to lease Welfare Island for 99 years to the UDC if it would agree to take over Twin Parks impossible sites. Welfare Island is said to have been UDC's baby, but Twin Parks got built. (Construction has barely begun on the Welfare Island housing.)

A closer look at the specifics of Twin Parks' group dynamics—between UDC, architect and occupant—might be instructive (*pax* to the other agencies). For this kind of effort will influence (and has already) how the UDC will act in the future, what architects can expect and what the public may get.

UDC and the Architect

Since both the UDC and the particular architects selected for the job were inexperienced, the enterprise at the outset had a trial-and-error quality about it. Anxious to have Twin Parks proceed at record speed, the UDC sliced design development time for architects to seven-to-nine-months. To further trim time expenditure, the UDC did not permit the architects to meet informally with the Twin Parks Association during design development except at public presentations. As President of the UDC, Ed Logue explained at a Columbia University symposium held in March on Twin Parks, he believes in working as a *partner* with the community, not

as their *advocate*. The theory was that the Urban Design Group architects had already met with the community to determine its needs: now it was time to get on with it.

Another aspect of the architects' relations with the UDC involved the contractor. At the beginning the UDC had some difficulty getting contractors to take them seriously. Thus the contractors were not actually lined up for each project until working drawings had been completed. Since the projects were not competitively bid, architects then found design modifications required at this late date—because the contractor said so. Richard Meier was the first architect to be subjected to this rather unique process, and it hurt: He had designed windows for the small apartments (FHA minimum-as-maximum room standards the UDC first adhered to religiously) to encompass a large proportion of each brick bay of Northeast. The contractor then argued it would be too expensive to keep apartments heated because of the electric heating system (the original design called for steam). Needless to say, Meier lost and the windows are significantly smaller.

Today contractors are selected at the outset, and work with the architect through design development. But as one other firm has pointed out, this too has disadvantages: When the contractor has been accepted on a basis other than lowest bid, he has no commitment to a design he would normally have promised to build at the lowest cost. Therefore, when the chips are down, the architect is the one who constantly returns to the drafting board to bring the building in at budget.

Many of the Twin Parks architects also mention unsatisfactory workmanship was com-



mon to the project—either because of the union stranglehold or indifferent job supervision.

Aside from these headaches however, architects still love the UDC. As Jim Polshek puts it, "The UDC is the closest counterpart we have to the London County Council—and is light-years ahead of other bureaucracies." Polshek and others add that since its incipient years the UDC has gotten more organized—as well as more bureaucratized. Nevertheless, all expressed a desire to work again with the UDC (but only two firms—Prentice & Chan, Olhausen and Giovanni Pasanella have been so favored).

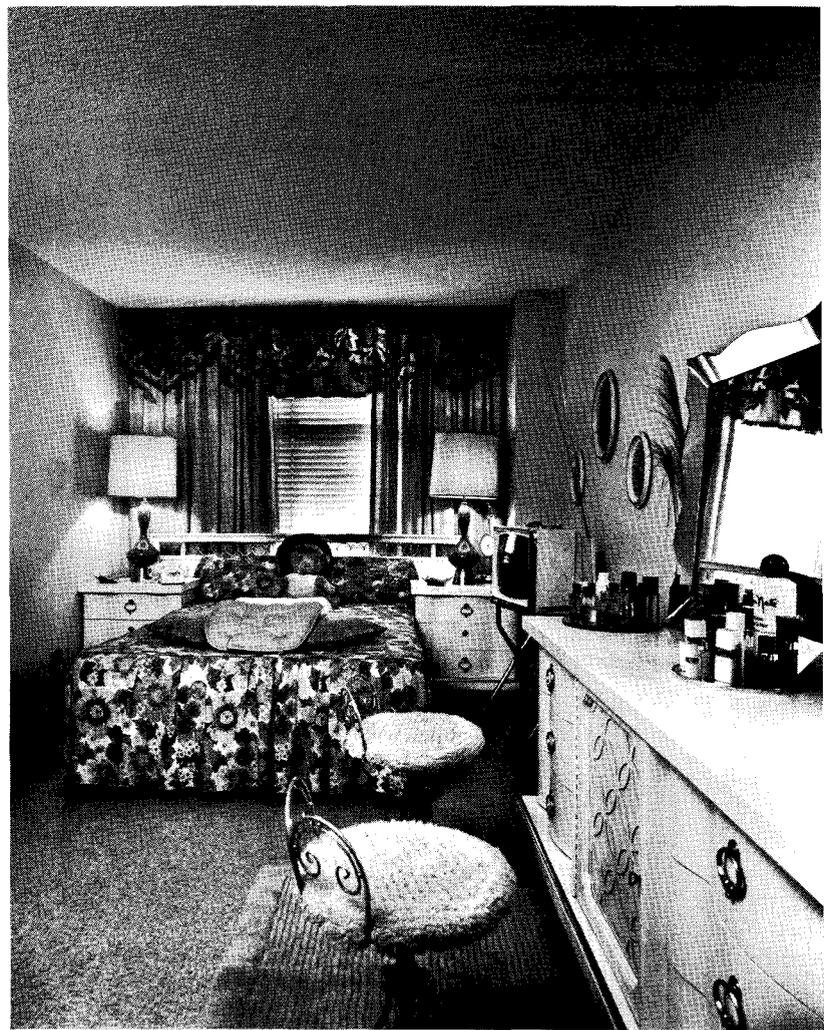
UDC and the Social Scientist

Twin Parks housing was built without benefit of social scientists by architects whose reputation rests primarily on formal considerations. Here again the UDC was paring costs and time spent in the design stage, with some obvious mistakes. For example, the earliest projects, such

as Richard Meier's, were designed with FHA minimum room standards held as the maximum. After the initial round, the UDC realized 80 sq. ft. was awfully small for a two-person bedroom and began loosening up. They took it upon themselves to prove to the FHA 236 people that they could increase room sizes 15 percent with costs only going up four percent.

Although the social scientist remained an invisible element throughout design and construction, the UDC now seeks to be responsive to user-need input. Under the direction of Chief of Architecture for the UDC Ted Liebman, and Associate Architect Tony Pangaro, the UDC is developing "interim" standards and criteria. These criteria would provide architects with standards regarding not only room sizes, but general performance requirements; for example, furnishability of a space.

As part of this program the UDC already has student interns compiling sociological data on the way occupants live, rea-



sons for the success of various housing developments, how they should relate to community services, plus questions of security, etc. Such research is seen as an ongoing process to develop criteria that can serve as an information bank for UDC architects. The criteria will never be regarded as a final document, but a continual program "to investigate the issues in housing" as Liebman puts it.

This summer Twin Parks will become a laboratory for detailed testing designed to help formulate interim criteria. Led by environmental psychologist and sociologist Frank Becker of Cornell University's Department of Environmental Design, this post-construction evaluation will concentrate on two of the Twin Parks sites—Northeast (Meier) and Site 4 (Prentice & Chan, Olhausen). About 25 percent of the occupants will be subjected to formal interviews, on such topics as "development" aspects—site design, building amenities and unit design—as well as feelings about security,

factors influencing their interrelationships with other tenants, image of home, perception of administration and management, and hindrances to self-expression. Becker feels that some of Twin Parks mistakes would not have occurred had the architects and the UDC been more sensitive to information already known. But he also warns that the questions occupants are asked have to be carefully constructed and phrased.

The impetus for this post-evaluation traces to Summer 1972 when the UDC instituted a two-week live-in in Northeast for the architect Richard Meier, Ed Logue, Ted Liebman and other UDC personnel and their families. While their reactions were generally favorable, they realized only a true testing of occupants, most of whom have radically different life styles, would provide hard data.

UDC and the Occupant

Despite the fact that a real evaluation has not occurred,

one could infer that the buildings are reasonably successful from the stand-point of current user-need literature, preliminary observation, informal interviews and discussion. Often the response of the occupants is much more enthusiastic, and indicates a great improvement has been made over prior dwelling units (thank God for that). There are complaints though, referring to poor maintenance (a problem with 236 housing, since private management corporations can only use the low rent money for maintenance), shoddy construction (The Twin Parks Association however, reports no more kinks than say, Coop City), small apartments (referring to those built to FHA standards) and other people (the TPA responds that 95 percent of the occupants now are from the overall Twin Parks area defined by postal zones; others are people relocated from other parts of the city, and TPA keeps close supervision on tenant selection). Nevertheless these complaints are common

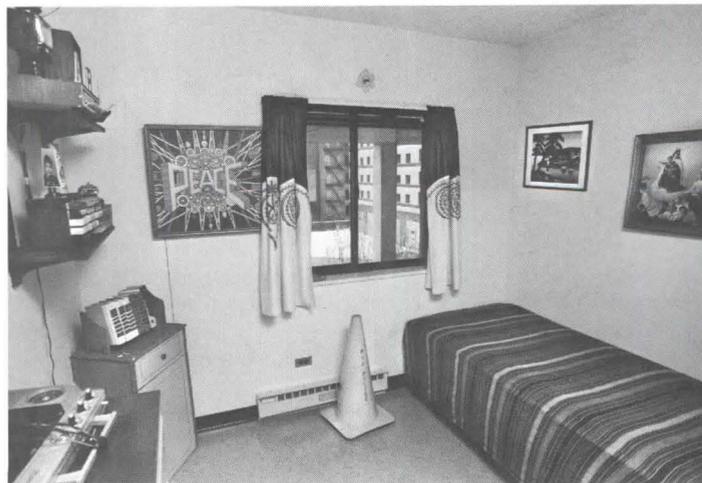
One of Site 4's occupants, sits in the living room of her parents' duplex (left, top) in front of the mirrored tile wall separating living from dining room. Downstairs, the master bedroom (above), is spacious enough to accommodate complete furniture suite.

Photographs: Norman McGrath except for Nathaniel Lieberman, page 65, top; Van Brody, page 65, bottom left.

to publicly assisted housing—and in New York even to luxury housing. So unfortunately Twin Parks is no exception to the rule. But it should also be kept in mind that such comments represent the most direct tangible apperception of reality to the occupants. Other qualities that exist might be too difficult to verbalize on a conscious level. And certain factors that affect tenant attitudes often do not show up right away.

At the risk of simplification, the most apparent characteristic of each of these buildings is that the architects have emphasized one of two principal design considerations at the expense of the other. If the architect has designed a building with highly popular public spaces, the apartment units tend to be ordinary; if he has devised an ingenious apartment layout, the site plan is nondescript. For example, Prentice & Chan, Olhausen's scheme at Site 5-11, a five to eleven story building embracing a 60 foot escarpment, had the most difficult site. Yet their building is clearly the most successful from an urban design point of view. Any mild sunny day, the terraced plaza is swarming with children (the first floor has a early childhood center) and residents. The low scale of the building and its configuration allow mothers to easily call to their children from their apartments—a common design recommendation of social scientists. Yet the rooms are small (FHA minimum-as-maximum), layouts standard, and half of the dwellings face away from the plaza because of the double-loaded corridors. On the other hand, the same architects designed an intriguing system of spacious duplexes and simplexes (you walk up a flight to a one-level unit) in an ordinary high-rise tower on Site 4.

Richard Meier too, concentrated on the urban design aspects of Twin Parks Northeast, creating a very pleasant open space. Yet the apartment units are tiny, like 5-11, and the layouts are more typical of middle-class childless life styles; mothers do not have easy surveillance over children; kitchen-dining facilities are minimal. Air conditioning is much desired with double-loaded corridors, but since it doesn't "come-with", UDC will stress single-loaded

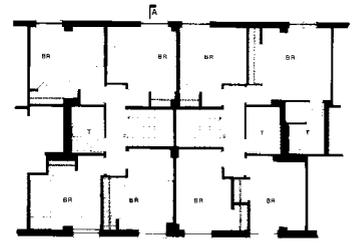


Superintendent for the building, Mr. Bilbao, shows friends his living room (above). Kitchen-dining-room is combined (left); and bedroom (left, bottom) overlooks galleria (opposite right, bottom). Twin Parks Southeast has a total of 468 dwelling units in 635,700 sq. ft. Sites total 3.47 acres. Of the units, 308 are contained in a 31-story tower for the elderly and small families, with apartment sizes ranging from zero to two-bedrooms. The medium-rise nine-story complex contains 168 dwelling units with a range of two to four-bedroom apartments (plan right), 24 of which are duplexes. Structure is concrete frame with two tone (brown and beige) brick.

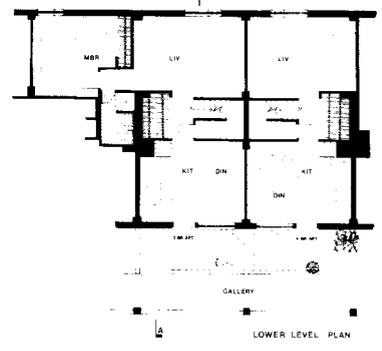
FACTS AND FIGURES

Twin Parks Southeast, Bronx, New York. Owner: Twin Parks Southeast Houses. Architect: James Stewart Polshek and Associates. Associate in Charge: Dimitri Linard. Project Manager: Michael Herlands. Engineers: Pfisterer, Tor and Assoc. (structural); Dalton and Dunne (mechanical & electrical). Landscape Architect: Johnson and Dee. Consultants: William G. Baum, Inc. Contractors: Kreisler, Borg, Florman Construction Co. (general); Royal Sheetmetal (mechanical); Simpson Electric (electrical); Paramount Plumbing (other). Building area: 635,700 sq. ft. Landscaping & sitework cost: \$468,862. Construction cost: \$13,682,962.

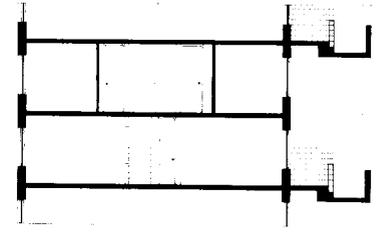
(For a listing of key products used in this building, see p. 80.)



UPPER LEVEL PLAN



LOWER LEVEL PLAN



SECTION AA



corridors in the future, for natural ventilation.

Pasanella's buildings on Sites 5-7, 10-12, and 6 boast an ingenious system of providing duplexes with floor-through two-level apartments, and elevator stops every two and a half floors. Even single level apartments for the elderly are strung out along one wall so that each room has light and view, including the bathroom and kitchen. While the overall scheme suggests a system that is open-ended and additive, this characteristic itself prevents the kind of enclosed quality that makes the site design at 5-11 so successful. (But since landscaping has not been completed at 5-7, 10-12 and 6 it is difficult to assess its potential success at this point.) The nearby Site 8 with single-level zero-to-two bedroom apartments for the elderly, on the other hand, responds in a very particularized way to the narrow triangular site: A blank wall faces onto busy Webster Avenue; while the elevation facing Echo Park carries a series of balconies angled to permit sunlight easily into the apartments.

Again in Polshek's buildings at Southeast, mixed benefits exist. Well-designed duplex units occupy the middle section of the medium-rise buildings enclosing a plaza; but Polshek has separated the elderly from this complex in a 31-story tower across the street. While sociologists such as William Michelson (*Man and the Urban Environment*) might agree with concentrating the elderly in one building—citing studies that show the elderly find greatest satisfaction in living with other elderly—sociological evidence also makes clear that they must be close to activity. Others argue that the elderly provide natural surveillance for housing, and therefore should be integrated with families for reasons of security.

Probably more than the others, this middle section corresponds to certain axioms current in user-need literature. For example, the duplexes strongly reflect ethnic life styles of the Puerto Rican neighborhood surrounding the Southeast. Sociologist John Zeisel has pointed out (*Fundamental Values in Planning with a Non-Paying Client*) that Latin Americans

tend to gravitate toward the kitchen as their communal space, reserving the living room for special occasions. In Southeast, the duplex apartments are entered via an outside gallery, then an outdoor patio and directly into a large common kitchen-dining room. The more formal living room lies beyond. The mother has easy visibility from the kitchen of the children playing in the outdoor patio or down in the main court. Polshek's design also most clearly indicates the separation of public space (courtyard), semi-public (corridor/galleria), semi-private (elevated walled-in patio), and private (the apartment), that Oscar Newman (*Defensible Space*) applauds in Riverbend Houses by Davis, Brody.

Security as a Consideration

In terms of scale, many designs acknowledge the six-story scale prevalent in the surrounding neighborhoods, although medium and highrises have gotten a foothold in Twin Parks. Scale has strong implications not only from the point of view of con-

text and life style (families with children need to be close to the out-of-doors), but particularly with regards to security. Security is the thorny issue of the year, both for Twin Parks occupants and the UDC. While several of the architects have mentioned that security was not a central issue at the program's inception, it is now.

Not as much has to do with the users' own expressed need for security (a top priority desire in the lower classes that sociologist Lee Rainwater pointed to in 1966) as with the recent publication of Oscar Newman's *Defensible Space*. So with heightened awareness of how design can foster natural surveillance and sense of territoriality, many consider 5-11 the best example of a secure design scheme. Access is from the top level, the public street, into semi-public open galleries to the actual entrances of the building in two corners overlooking the plaza.

Nevertheless secure design still being as elusive as it is, it is not surprising that a few occupants of 5-11 complain of

some muggings and fights—more so than say, in Site 4, a theoretically "less secure" high-rise.

Richard Meier's building has had its share of security problems too: Because Northeast was to be situated on two sides of a street that formed a boundary between the Italo-Americans and the blacks in the community, Meier closed off the street, and designed the housing to carefully enclose a plaza and pedestrian pass-through. The first summer the housing was occupied, the implicit intention of bringing the community together didn't often work, especially on those nights when the plaza became a battleground for the warring white and black teenagers. Nevertheless if Meier had designed a fenced-in fortress to begin with, he would have been castigated for not trying to inspire community togetherness.

Obviously any of these projects would be safer if it were designed as a fortress, or enclosed by gates. But overkill is easy and leaves unresolved the question of how the hous-



Site 8 housing for the elderly occupies a triangular site (page 58).



One of 5-11's occupants, Mrs. Fay Winslow, is shown in the living room of her one-bedroom apartment.

ing is to be an integral part of the community, not isolated from it. Why 5-11 works so well as both a bastion and a strong urban place lies a great deal in the topography: The slope provides natural enclosure so that the point about security is not so obvious.

Implications for Housing

There is no building in Twin Parks that totally responds to social and urban requirements with one design solution. Aside from the question of whether this goal is truly attainable, the architects didn't have the time or money. If social scientists had been involved in the design process, more of the apartments might have fully responded to the users' needs. This intervention too would have cost more time and money. Yet as the interiors indicate, one still senses that the occupants of the housing are reacting in a very positive way to the apartments. Furnishings give evidence of a response to the architecture, of a strong rooting in the home as an image of self and life

style, characteristic of upwardly striving economic groups.

But despite Twin Parks' clear successes, it still could be considered as a case where the patient lived while the operation was a failure. In social, urban, and formal terms, none of the architects could produce a complete physical entity applicable as a model for future housing. The lesson for such a utopian goal is still the need for more time, money and research. But the operation (or experiment) has a built-in failure to begin with. The UDC still depends on Federal subsidies for its low-rent housing. Since the 236 monies that made Twin Parks (and much of the rest of UDC housing) possible, are being phased out without clear-cut replacements, this constraint is already proving the UDC's vulnerability.

Alternative solutions raise the issue of whether this kind of system of Federal aid, with a state administrating body—and the architectural profession—is the way to provide low-cost housing that responds to its users. At the most specific

level, critics of 236 program point out that "indirect subsidies" really mean that direct subsidies are given to private builders who receive low mortgage interest rates (with the government picking up the tab at the bank for the difference) instead of to the user.

The Regional Plan Association has been discussing the advantage of housing certificates—allowances like food stamps that are paid directly to the occupants so they may rent on the private market. However this plan would only be successful if a large amount of housing was built in the private sector so that the lower income groups could move into good used housing.

Other critics of the American housing situation carry the certificate idea further to its physical implications. Architect John Turner (*Freedom to Build*) suggests that the government should not only make economic resources available but building materials as well, so that users could build their own housing to match the stage in family life cycle. In this network (as

opposed to hierarchical) system architects could provide assistance and advice to the users. Others side with N.J. Habraken's ideas (*Supports*) that have a more physical basis, but ones which make sense in cities. Support structures—vertical frameworks—could be erected: Users then rent or buy part of the floor they desire to live in and build their own living spaces. The only problem is that the latter two proposals assume users want to build their housing themselves; or that the construction industry will be that permissive in this capitalistic society.

Nevertheless, the search for alternatives is an extremely valuable one, one that influential and imaginative organizations such as the UDC should be searching for. If there were any government body that could successfully advance progressive public housing practices in the United States it would seem to be one like UDC, simply on the strengths of its accomplishments under the tough demands of existing constraints. —SUZANNE STEPHENS

FACETS

(continued from page 19)

of them agree on strict enforcement of the federal program for new cars, but they don't want to be harassed."

There lies the dilemma. For controls carry with them the bureaucracy of enforcement, which spells harassment. Voluntary curbs are even tougher on the individual, because they burden us with responsibility. But if we are going to have cleaner air before 1976, it is up to those of us who complain about it.

DON'T SAVE IT, PAVE IT

Just before Easter, the members of the House of Representatives, their attention on the impending vacation, voted down a proposal to divert money from the Highway Trust Fund available for mass transit. At the same time they passed a \$20 million highway construction bill. What opposition there was to the plan, which would have made money from the Highway Trust Fund available for mass transit, came from rural districts. Urban areas supported it. The Highway Trust Fund, a part of the Federal Budget, is financed entirely by taxes on gasoline, tires and trucking. Under current legislation, the Fund can be used only for new highways and a few related purposes. According to provisions of the now defunct bill, a mere \$700 million of the Fund's yearly \$6 billion income would have been diverted to mass transit. Rural areas would have had none of their road money taken, and urban areas had the option of using that \$700 million for either mass transit or roads. . . . nothing was mandatory. Meanwhile, in the face of such obstinacy, Michigan has voted an increase of two cents (from seven to nine) in its state gasoline tax with one half cent of that raise (or an estimated \$22 million) earmarked for mass transit. If the Motor State can do that, perhaps others can serve local needs without Federal help.

BUILDING

LUMBER PRICES LUMBER UP

Everyone is caught in the jam caused by the soaring prices of lumber. Depending on which figures you use, lumber and plywood have gone up an average of 56 percent in the last year (some say as much as 66 percent for some types).

Caught by the repercussions are not only architects and builders, but producers, shippers, home buyers, and anyone who might enjoy an outing in a National Forest. This year the federal government has authorized an increased cutting of 1.8 million board feet of logs from National Forests, up 18 percent from last year.

Blame for the outrageous prices is spread widely. Some put it on the Japanese who, caught in a home building boom of their own, have increased their lumber buying in the United States. Some say it is the Russians who have tied up boxcar shipping space by buying all that wheat. And of course some blame it all, like almost everything else, on politicians.

How to deal with the problem is being hotly discussed and perhaps a combination of measures including more boxcars, smaller exports and more cutting will solve the problem. Meanwhile, prices alone are cutting into demand. And the crisis, if not at a peak, seems to be getting worse.

TECHNOLOGY

BINARY SYSTEM

Building systems consultant Steven Winters recently clued us in to Jorge Pardo's "Binary System," one of the latest proposals for construction based on the 60 degree alignment of structural components: It consists of two (hence binary) components—a circular column laid out on a grid pattern, and a rhomboidal structural floor panel which spans between columns. The rhombi are double equilateral triangles and can thus inter-connect in continuous configurations.

Buckminster Fuller's tetrahedra and Don Gellert's Fan-Shell system were three dimensional in their use of angular alignments. The Binary System

uses the angular alignment in horizontal planes only, thus avoiding some geometric problems but at the same time lacking somewhat in continuity.

The interconnection of the floor sections results in interesting patterns which have been carefully adapted to layouts for apartments and schools, and Pardo suggests that the system can encompass construction at scales varying from toys to hospitals.

Real evaluation of the binary system is still premature as few building systems have their merits realized in the development stages. In fact, a system's success rarely rests with its technical details or component designs. The primary test of the efficacy of the binary system will be in the management and financing methods employed during planning, production, and construction phases of its operation.

UPS & DOWNS

BRINGING DOWN THE HOUSE

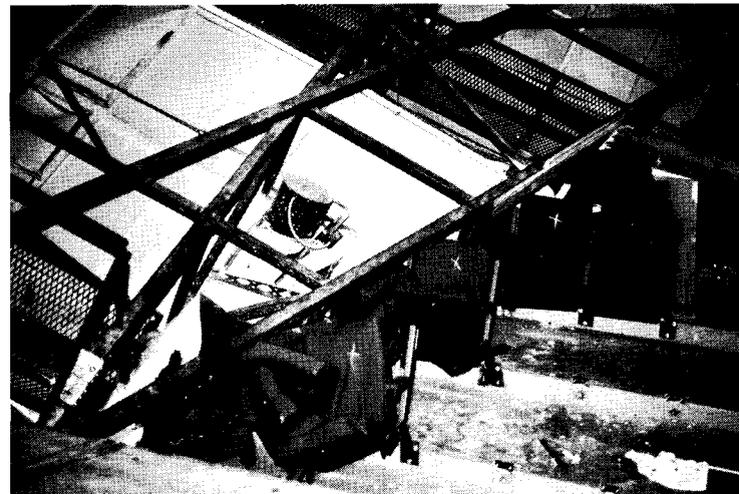
Dr. Glen Loney, Professor of Theaters, City University of New York, reports a comedy of errors for the FORUM: In theater parlance, to "bring down the house" is something to be proud of. Applause. Cheers. A tumultuous roar.

to the auditorium floor, crushing scores of seats. Fortunately, since the accident occurred shortly after 1 p.m., no spectators were in the house, and no one was hurt.

The disaster demanded an immediate curtailment of cultural and conference events scheduled for the theater. But aside from the inconvenience of canceling events, there was the need to keep the house in operation to pay off construction costs. The handsome multi-purpose structure, designed by William Wesley Peters of Talliesen Associated Architects, had opened only 11 weeks before with a monumental production of *Aida* meant to show off the capabilities of its large stage and generous backstage areas.

The 15-ton ceiling was devised in such a way that it could close off some 300 balcony seats, turning a 3,000 seat auditorium into a more intimate 2700 seat theater. Curtains downstairs could make the seating area even smaller. By virtue of the ceiling's movability, the acoustical properties of the auditorium could be modified for concerts, operas, plays and speeches.

While the fall was almost a year ago, placement of the blame has yet to be made. In December, the San Jose Civic Improvement Authority and the City of San Jose filed a com-

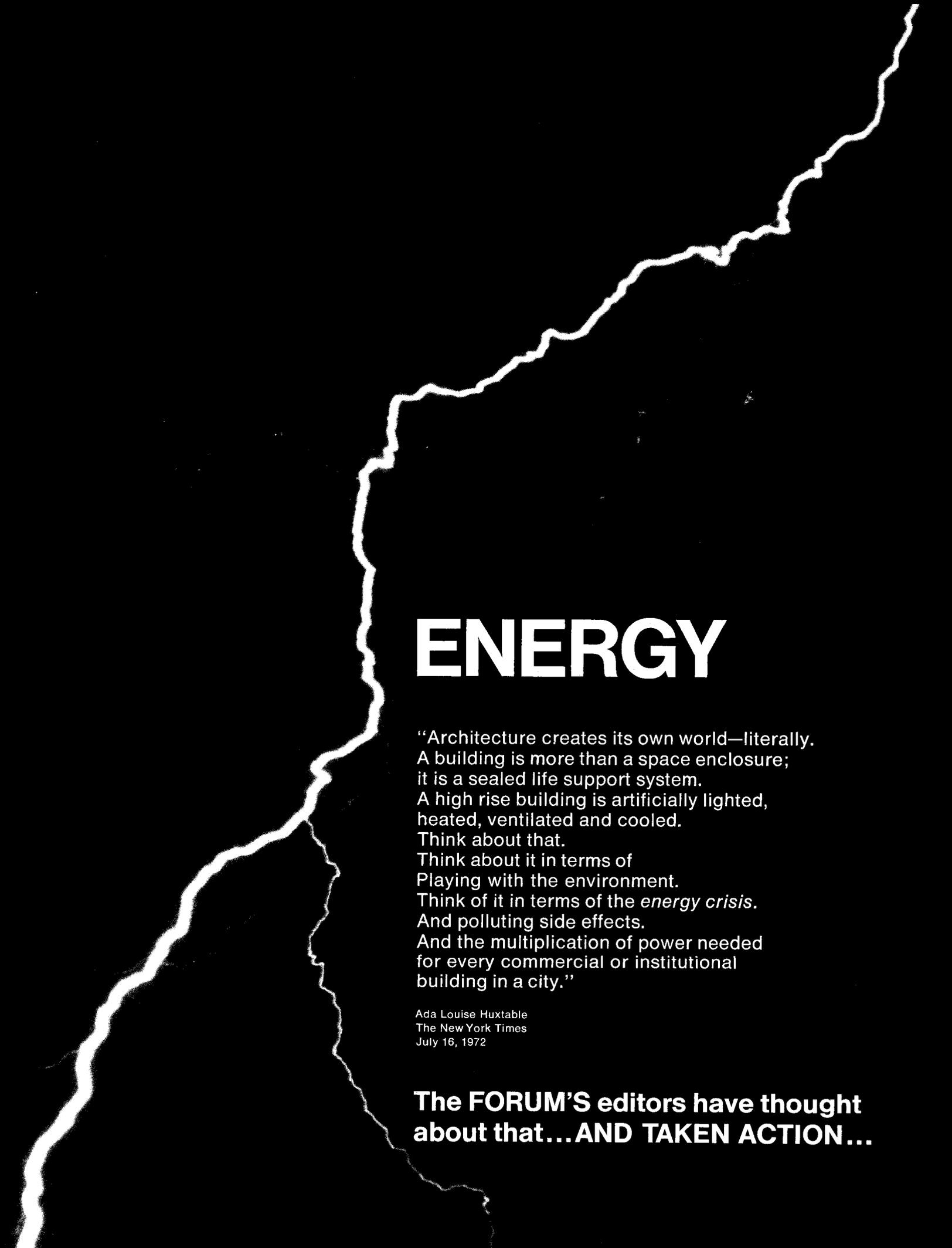


Part of the steel frame of aluminum clad ceiling now rests on the seats.

Well, a tumult, a roar, and a crash greeted riggers last May in the new Community Theater in San Jose, California. While they were trying to adjust the cables supporting the theater's movable ceiling, the stage-right side tore free and plummeted

bined suit against 18 defendants. The Improvement Authority—which holds the building's title—is seeking \$2,150,000 in damages, while the City of San Jose is asking for an additional million.

In response to a request asking
(continued on page 72)



ENERGY

“Architecture creates its own world—literally. A building is more than a space enclosure; it is a sealed life support system. A high rise building is artificially lighted, heated, ventilated and cooled. Think about that. Think about it in terms of Playing with the environment. Think of it in terms of the *energy crisis*. And polluting side effects. And the multiplication of power needed for every commercial or institutional building in a city.”

Ada Louise Huxtable
The New York Times
July 16, 1972

**The FORUM'S editors have thought
about that...AND TAKEN ACTION...**

**The
environmental
issue
of the
decade...
in The
Architectural
Forum
issue
of the
year.**

The July/August double issue of The Architectural Forum will devote itself exclusively to the crisis in Energy—a crisis which may revolutionize architecture as we know it.

The Problem

While the efforts of industry to cope with the problem are well publicized, the efforts of the design professions are not. Many of today's solutions to yesterday's problems are coming into question . . . What is the future of glass facades and open planning in light of energy waste? . . . What will cluster utility cores mean to entire blocks of buildings? . . . How will future heat, lighting and power sources affect the shape and planning of individual rooms as well as entire structures? . . . How far along towards implementation are the new developments in energy sources? . . .

These are a few of the many questions being raised by architects and designers as they assess energy problems in terms of a design standard.

A High Interest—High Readership Editorial Package

In keeping with its traditional, award-winning approach, this editorial review will examine the complete spectrum of problems that bear on energy usage. Nor will a mere statement of the problems suffice. New developments in energy sources will be examined; the latest nuclear energy plants will be appraised. Capping this will be an analysis of the fundamental changes that must take place—changes in legislative guidelines and codes, changes in technology, changes in social attitudes, changes in the character, scale and configuration of new buildings.

Analysis by the Profession's Keenest Minds

Under the thoughtful editorship of William Marlin—recipient of the American Business Press Neal Award for the best special issue of 1972 (devoted to Buckminster Fuller), the Forum will contain a full-spectrum "biography" of energy concepts throughout history, and draw on the insights of some of the keenest minds in the increasingly related fields of design and science.

Architect **Richard Stein**, F. A. I. A., has tirelessly worked and researched energy and its impact upon architecture. His extensive studies in this area have gained international recognition. His contribution on how an architect views the energy crisis will keynote the issue.

R. Buckminster Fuller, scientist, structural engineer, inventor and himself the subject of a special FORUM issue, will contribute more provocative thoughts.

Architect **Louis Kahn**, F. A. I. A., (who was the subject of a profile in last year's July/August issue) will contribute his insights to the problem. His use of light and its modulation as a key design element makes his involvement in this particular issue particularly apt.

The overriding concern over the imminent energy crisis, the outstanding thinkers analyzing the problems, and an augmented circulation approaching 50,000 copies make the July/August number of The Architectural Forum an outstanding advertising vehicle.

Advance reaction to this publishing event is such that Richard Stein, who is providing the anchor piece for this issue, has been invited to preview the July/August issue of The FORUM at the National Exposition of Contract Interiors Furnishings (NEOCON) being held at Chicago's Merchandise Mart in June. The directors of this, the largest single most important meeting of architects, interior designers and space planners, recognize the seriousness of the situation and accordingly are featuring a panel on the Energy Crisis during the exposition. Everyone there, because of their great involvement in the design profession, will be interested in the presentation. Literally thousands of these professionals—architects—interior designers, and industrial designers, will be presold on this issue.

No matter what products you market, this issue is an advertising **must** for you. Every firm that sells to architects and is involved in energy conservation should be represented.

Bonus Distribution

Because of the importance of this issue, a minimum of 2,500 additional copies of the July/August FORUM will be sent to those influentials capable of resolving the energy crisis. Copies will be sent to:

- All members of Congress
- The governors of the 50 states
- All members of the Cabinet
- Mayors of the Cities over 1,000,000 population
- Chief executives of Fortune's 1,000 leading corporations
- Chief executives of the Utility members of Edison Electric Institute and the American Gas Association
- Financial and features editors of leading magazines and newspapers.

Additionally, this double number of The FORUM is the fourth in a cycle, beginning with the Jan/Feb. 1972 issue on "The World of Buckminster Fuller" which has historically sold several thousand extra single copies. The fact is that each issue, the one on Dr. Fuller as well as those on Louis Kahn and Philip Johnson have become collectors' items, each having completely sold out its press run.

In Summary

The opportunity to tell your sales story to an audience of vitally interested prospects is here for the seizing.

31,000 registered, practicing architects—your key customers who in 4 out of 5 instances select and approve products for use in the buildings they design . . . 13,000 other architects, builders, engineers and others deeply involved in construction and planning of new edifices . . . leaders of federal, state and civic government . . . top executives in industry and public utilities . . . leading financial and business publication editors . . . all will see your story in the July/August FORUM.

Closing date: July 2.

The advertising opportunity of the year.

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FACETS

(continued from page 68)

ing for a statement regarding the charges, Wesley Peters explored the accident, stating: "The ceiling was designed to meet all existing code requirements, and was in conformity with the most advanced ideas of structural and seismic engineering. Investigation has clearly confirmed that the ceiling was dropped by employees of the rigging contractor who were correcting a misalignment of the rigging system in the original installation of the movable ceiling. These employees have admitted they disengaged the permanent supporting cables just prior to the fall. Clamping of the temporary restraining cables failed to support the ceiling, and it fell."

Speculation regarding other possible causes of the accident has been rife, including rumors that recurrent earthquake shocks might have weakened the installation. Mr. Peters replies, "Seismic analysis of the entire structure was performed by a California structural engineering firm and approved by the appropriate reviewing authorities." Floyd Gier, the City's supervising civil engineer, has rejected the earthquake rumors, insisting that only the outcome of the lawsuit can establish the cause with finality. He also contends that bringing suit against 18 individuals and firms involved in the design, fabrication, and installation of the movable ceiling by no means implies that all are culpable. The intention is merely to force an agreement as to whom should assume blame.

Among the defendants, in addition to Mr. Peters, are theater engineer George Izenour, and Barnhart Construction Company. The complaint alleges that the nature and timing of the accident indicate negligence of some of the defendants. In addition to negligence, the complaint charges that there was a demonstrated lack of art and skill in the design of the ceiling, besides defects in the workmanship and materials.

Whatever the outcome, San Jose has not been intimidated by

the accident. When the ceiling is replaced, San Jose still wants a movable ceiling and an adjustable auditorium.

COMPETITIONS

CONSERVATION CONCERNS

Owens-Corning Fiberglas Corporation has announced its second annual awards program to recognize architects, engineers and clients involved in the design of buildings that conserve energy.

Open to registered architects and licensed engineers practicing in the U.S., the project must be commissioned, not a speculative design. Among the jury members are: Walter A. Meisen, Assist. Commissioner for Construction Management, GSA, Washington, D. C.; Ronald E. Aspgren, Chief Corporate Architect, Montgomery Ward, Chicago; and Professor Gifford Albright, Department of Architectural Engineering, Penn. State University. Entries must be submitted by August 31.

For more information, write: Energy Conservation Award Program, Architectural Products Division, Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659.

CONCRETE KUDOS

Designs using concrete made with white cement are eligible for entry into Portland Cement Association's fifth annual White Cement Awards Competition. Submissions for the 1973 competition should be sent before July 31 to PCA, Old Orchard Road, Skokie, Illinois 60076, attention of James A. Frohlich. The structures must be located in the U.S., designed by architects with offices here, and completed sometime between Jan. 1 and Dec. 31, 1972.

BIG THINK

TOWN MEETING FOR 20,000,000

The New York metropolitan region has, of course, the same problems as the rest of the country, it just has them in stiffer doses. The 20 million persons living within an 80 mile radius of New York City have more (or at least just as many) transportation, housing and pollution problems than

people elsewhere—in large part because of the region's density: all those people in that relatively small space. One of the difficulties, unfaced until this spring, was how to hear what these people had to say about solving their problems. Although the region still contains some small towns that cling to the tradition of the town meeting, more and more local problems are regional ones, demanding regional solutions.

With such a massive regional population how can individual voices be heard? Because of the difficulty of answering such a question, let alone doing anything about it, regional problems are traditionally left to politicians to decide, politicians who may not be in touch with the will of the people.

This spring, in a striking move, the Regional Plan Association, a private non-profit agency which for 50 years has been concerned with the social, political, and economic development of the New York metropolitan region, came up with an audacious scheme for taking the problems to the people.

Launched was a program called "Choices for '76" in which the 20 million persons of the Region would be able, at least in theory, to act as a town meeting, having problems presented through television and the printed word, then voting on their solution.

First step was the publication of a book: *How to Save Urban America*. Second was the production of five films, each based roughly on a chapter from the book, one each on Housing, Transportation, the Environment, Poverty, and the Cities and Suburbs. Starting in mid-March, TV stations showed the films, one per weekend at two week intervals. Each film posed ten major choices, and residents of the region were urged to register their opinions on ballots, provided in newspapers, libraries, and banks.

Preliminary results of the balloting on the first two films, Housing and Transportation, are available, tabulated by the Gallup Poll. And they show that the 30,000 or so respondents to each of the first sets of problems are at the upper ends of the income and educational scales. (Each film was seen by an estimated 3,000,000 persons.)

Such a response, says Dr. George H. Gallup, "must be seen as the views of civic activists, not a scientific sample of the Region's whole population." But at the same time he points out, "This is an amazing outpouring of ballots for a project like this. There has never been such a widespread response to a set of hard planning issues that most people just leave to officials."

Some of the findings were decisive. For example, 77 percent favored the continued building of low income public housing and 82 percent favored that government encourage tenants and community groups to take over management of deteriorating apartments. Other decisions were less clear cut. Fifty percent favored the construction of "less expensive housing" (attached or on small lots) on vacant land, even if some zoning responsibility were shifted to county or state governments.

Not surprisingly, over 90 percent of the respondents to the choices on transportation favored more regional reliance on public transportation, and nearly as many were willing to pay part of government subsidies.

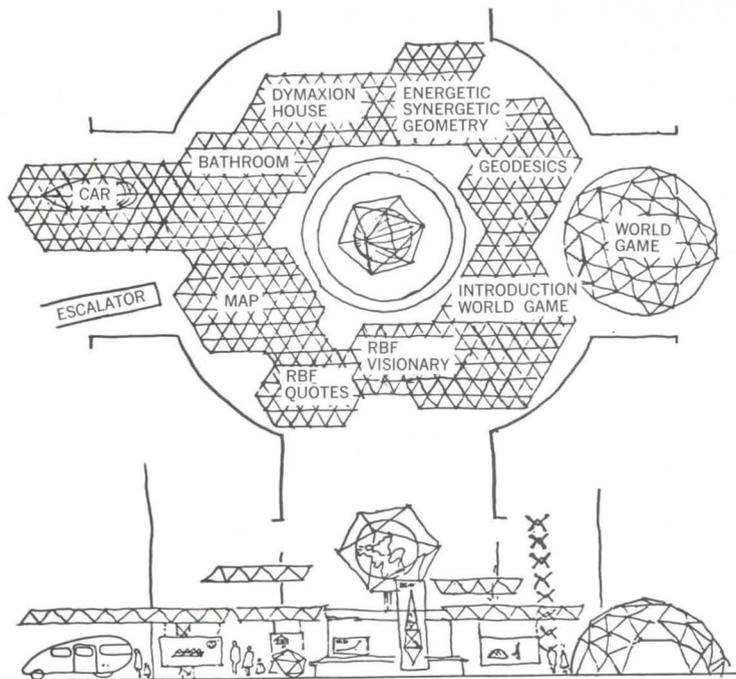
At the same time it came as a jolt to the Regional Plan Association that only 45 percent wanted to slow or stop expressway construction in the Region.

Following final tabulations of all ballots on all choices, The Regional Plan Association hopes to make its films available through a commercial film distributor. And a final film, containing the Gallup Poll findings may be shown this fall.

EXHIBITS

BENEATH THE DOME

The rotunda of Chicago's Museum of Science and Industry is a suitably grand setting for the exhibit of Buckminster Fuller's work, on display there through the end of August. Although "innovative" is a word that falls short of encompassing the scope of Fuller's vision, his quest has continually moved beyond conventional bounds. And it is this quest which the exhibit illustrates. Roughly, it covers three periods of Fuller's career: the Dymaxion period 1927-1944; the energetic-synergetic-geometric period from 1944-1964,



Plan and cross section of Exhibition.

which includes the development of the geodesic dome; and the world resources management period, which includes the World Resources Inventory.

Beneath an octet truss canopy, which covers 4,000 sq. ft., is one of the three Dymaxion cars, the three-wheeled car Fuller developed and built in 1933; there are also a 30-ft. tensegrity tower, two 24-ft. geodesic domes, three dimensional models of Fuller's ultra modern house, his floating city and his world map. A special section is devoted to a multi media World Game presentation; and two sections present photos, slides and quotes of Fuller, along with statements about him and his work.

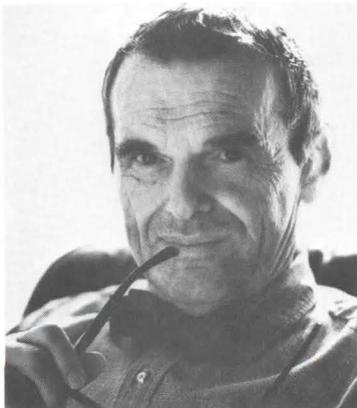
Dr. Victor J. Danilov, Director of the Museum of Science and Industry, commented recently, "The exhibit has two basic purposes: It shows Fuller's work in historical context and thoroughly demonstrates his originality and foresight. It also illustrates his continual efforts at innovation by giving insight to the way he thinks, how he defines problems and what approach he brings to their solution."

EAMES FURNITURE SHOW

In April, you may remember we said some nice things about those 50 objects designed by Charles Eames, now on view through July 1 at New York's Museum of Modern Art and

covering the past 33 years. Included are 39 chairs and examples of his multiple seating, tables and storage units.

Well, now we must say some equally nice things about Mr. Eames himself, and about that wonderfully affable wife of his, Ray—they were absolutely great at the show's opening, with everyone else jostling for autographs and as is so often the case at MOMA openings, jockeying for position. The Eameses were very kind and above it all, looking as though



Charles Eames.

they were still breathing that uptight Santa Monica air.

Through the years, Mr. and Mrs. Eames have turned out, among a dazzling array of other things, a series of brilliantly conceived chairs, ottomans, and benches. But Eames, who originally trained as an architect and as early as 1930 had

his own architectural practice, thinks of himself as an architect. "I can't help but look at the problems around us as problems of structure," he says, "and structure is architecture."

In his introduction to the exhibit, Arthur Drexler, director of MOMA's Department of Architecture and Design, calls Eames "the most original American furniture designer since Duncan Phyfe," which is one of the best compliments to Phyfe we can think of. How does Eames himself feel about this retrospective? "It's a little like scratching a place that doesn't itch," he said.

DOMUS ON DISPLAY

"45 Years of Domus," an exhibit celebrating Domus Magazine's 45th anniversary, is scheduled May 31st through September 23, 1973 at The Louvre, in Paris. Domus, founded in 1928 by Gio Ponti, is still being published under his direction. The show will tell the story of the magazine's development via a continued history represented in five "time periods": 1928-1940—Pre-war; 1940-1945—The War; 1945-1955—Post-war; 1955-1965—The 20th Century in its Maturity; 1965-1973—Our Times and its Development.

CONFABS

NEOCON 5

NEOCON 5, planned for June 20-22 at the Merchandise Mart in Chicago, promises to be timely with such topics as the energy crisis, the designer-builder, an assessment of office-landscape, and others. For information contact NEOCON at the Merchandise Mart, Chicago 60654.

EDRA 4

Now that the fourth meeting of the Environmental Design and Research Association (Blacksburg, Va. April 15-18) has come and gone, it seems worthwhile to look back and see how far the field of environmental research has come and where it might be going. Since he was down there anyway, we asked Don Conway, AIA Director of Research, to do just that:

EDRA, was formed about five years ago by a group of architects, planners, behavioral scientists, and corporate research

people, all of whom had the relationship between man and the man-made physical environment as the principal focus of their research. Recognizing the complex nature of this field and to facilitate the multi-disciplinary effort needed, a forum for discussion was needed and so EDRA was conceived. Since that first meeting at the School of Design at North Carolina State in 1969, EDRA 2 (Pittsburgh), EDRA 3 (UCLA in collaboration with AIA) have been held. Thus with this latest meeting—EDRA 4—we have enough background to see where the field of environmental design is today.

Some indication of this is given by the program of EDRA. A sample of session titles begins to tell us something about the breadth of the field—theoretical issues, research and design for different age groups, environmental cognition, decision making tools, quantitative techniques in environmental analysis and future oriented technologies are a few of the topics the field attempts to cover. Breadth of fields, of course, is not enough information to explain what is really happening in research. When we begin to look at depth of knowledge, increased understanding and generalizability of findings—as represented by the papers and workshops at EDRA 4—the picture comes out to be gray and somewhat muggy at best, certainly not rosy. To begin with, and despite the best efforts of conference organizer, Wolfgang Preiser, EDRA 4 was plagued by a raft of outdated, highly personalized and methodologically shaky papers. This is not to say that there were no good papers at EDRA 4—there were. But the point is that the time has come where the "anything goes" approach of the early EDRA conferences is not acceptable anymore.

It seems clear that more critical appraisal and public discussion of the work being presented must become the order of the day. It is interesting to note, for example, how few of the papers raised any controversy whatever, and how little criticism there was from either other speakers or audience at any of the sessions. The healthiest thing that could happen to this field of research is for everyone to take the gloves off, and start slugging it out in true

scientific style.

One very valid reason for EDRA to begin insisting on higher quality papers at its meetings is the growing importance of the EDRA conferences on both the national and international scene. At Blacksburg, for example, there were 30 representatives from Canada, 15-20 from England, 15 from Germany, six from Switzerland (including a representative from the Swiss Psychological Association) and eight from Sweden. All in all, there were about 680 people in attendance. While these figures are down slightly from the previous meeting they do indicate a larger number of people with an interest in man-environment research than say five or ten years ago. Certainly the EDRA meetings are the largest research meetings for this field, and as these meetings grow so does EDRA's responsibility for assuring a higher standard for the work presented.

The high points at EDRA, when there were any, were high indeed and give clear statements of the underlying vigor of this fast emerging field of research. Notable in this respect was the marathon series of workshops called Childhood City under Robin Moore's (University of California—Berkeley) direction. Once started, and thanks to a lot of pre-conference exchange of ideas and concepts, the workshops talked, showed films, slides, talked some more and generally explored almost every possible aspect of child-environment interaction one can imagine. This went on for three solid days and part of the nights. While the usual number of curiosity seekers came and went during the sessions, this particular field (Child/Environment Research) seems remarkable for the apparent dedication of its adherents. In addition to the relatively young average age of these researchers, two characteristics about them stand out. The first is that they all really get into their research with the kids. They run, jump, climb, play and learn just as hard as the subjects of their experiments do. Out of this comes both an understanding and a knowledge of how children cope with, are frustrated by, manipulate and learn from the environments that designers create.

Another hopeful sign at the EDRA meeting was the attendance at John Zeisel's (Graduate School of Design—Harvard) seminar on teaching research methods to architects. About 150 educators attended to hear and talk about the efforts of a growing number of schools to include the teaching of research skills as part of normal professional education in schools of design. Clearly this is a big step in a direction which will create a research tradition in the design professions—something they do not have now.

Perhaps the most exciting part of the EDRA conference was Irwin Altman's (University of Utah) surprise presentation on privacy. Dr. Altman began by pointing out the dearth of research on the issue of privacy. He then cited a few of the examples from cultural anthropology literature which have led him to the tentative conclusion that privacy may be equally as critical an issue in human interaction as are territoriality, crowding and aggression. The subject really gets interesting when you begin to investigate the ways in which people manipulate their physical environment (or become frustrated and stifled by not being able to manipulate the environment) in order to control the inward and outward flow of various degrees of privacy. Dr. Altman's introduction of privacy as a major issue in a human interaction and man-environment relations was the first new idea I have heard in this field in a long time.

A recurrent theme at EDRA 4 was the need to "bridge the gap" between research and design practice. This of course, is not a new concern but it has come up so often it deserves a closer look here. On one side of the gap stands the practitioner community. It is torn a hundred ways by depressed construction markets, the construction management phenomenon, to go building systems or not, dealing with the encroachment by the engineers and on and on. Compounding the problem, from the research point of view, is an anti-rational design bias that runs a mile wide through the design professions. Small wonder then that such a pitifully small percentage of people at EDRA 4 were practitioners. Perhaps practitioners do have to be

shown "there's-gold-in-them-thar (research) hills!" One cannot help but wonder however about the state of health of any group of professions that hold their knowledge acquiring apparatus (i.e. the research community) in such low esteem as the design professions do—at least as evidenced by the practitioner turnout at EDRA 4.

All is not well on the other side of the gap either. The EDRA 4 Planning Committee acknowledged this to some extent when they scheduled two program sessions on theory building. Clearly this implies the need for serious theoretical work in environmental research. First to stem the tide of ego-centric, one shot, low quality papers that presently confuses serious research. Secondly, and more importantly, the application (and the credibility that goes with it) of individual environment research findings will continue to be limited unless and until some sort of theoretical framework for it evolves.

Finally some mention should be made of the changes that were made in the EDRA organization itself at Blacksburg. EDRA is now an officially incorporated organization rather than the non-entity it was up to about a year ago. A result, it is beginning to take on real form and to think about expanding its activities beyond an annual conference. At the first election ever held three new members were elected to the EDRA board of Directors—Florence Ladd (a psychologist at the Graduate School of Design—Harvard) Wolfgang Preiser (an architect on the VPI faculty) and yours truly, Don Conway. Chairmanship also changed hands from Henry Sanoff (Architect—North Carolina State University) to Daniel Carson (Psychologist—University of Wisconsin). There is reason to hope that all this organizing, shifting about and changing will make EDRA a more effective and active organization than it has been . . . perhaps we'll see evidence of that at EDRA 5 in Milwaukee.

ACADEME

SUMMER SESSIONS

The Engineering Foundation of the United Engineering Trustees,

Inc. has chosen two locations as the setting for some interesting conferences this summer:

Berwick Academy, South Berwick, Maine, will host various speakers and topics during the summer: June 24-29 "Need for National Policy for the Use of Underground Space" (E. F. Casey of the New York City Transit Authority). July 8-13 "Issues in Behavioral Travel Demand Modeling and the Valuation of Travel Time" (P. R. Stopher and A. H. Meyburg both of Cornell University). August 19-24 "Evaluation in Health Services Delivery" (Richard Yaffe of the U.S. Public Health Service Hospital in Baltimore, Maryland, and Dr. David Zalkind of the University of North Carolina School of Public Health).

Energy will be the featured topic at New England College, Henniker, New Hampshire, on two dates: July 15-20 "Energy Research — Alternatives for Policy and Management to Meet Regional and National Needs" (Gerald Berg of the Environmental Protection Agency), and August 19-24 "Energy Conservation at Point of Use" (Jesse Denton of the University of Pennsylvania).

Attendance, limited to 100 persons, is by application or invitation. \$160 covers registration, occupancy and meals. Information and application forms may be obtained from the Engineering Foundation, 345 E. 47th Street, New York, N. Y.

ADDENDA

Photography credits for "Five on Five" (FORUM, May 1973) were omitted. They are as follows: Figure 5 from *Le Corbusier* by Robert Furneaux Jordan, (Hill & Co.) who published it courtesy of G. Pivarski, Paris; Figure 6, Peter Carl; Figures 7 and 19, Laurin McCracken; 8, Leni Iselin; 9, 11, 15, 18, 30, Ezra Stoller; 17, Richard di Liberto; 25, Courtesy Museum of Modern Art; 27, Norman McGrath; Also, Figure 1 was printed upside down, and 5 and 6 should be reversed in order of mention in the text.

PHOTOGRAPHS: Isabella Stewart Gardner Museum, page 17 (bottom); H. Armstrong Roberts, page 18 (bottom); Nathaniel Lieberman © 1973, page 19.

The energy crisis and tomorrow's design

The July/August issue of THE ARCHITECTURAL FORUM devotes itself exclusively to the Energy Crisis—a crisis which could revolutionize architecture as we know it.

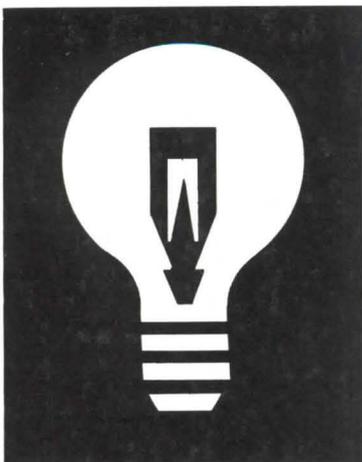
How will this crisis change the fact of architecture? The FORUM's editors have gathered some fascinating answers. They will offer readers an absorbing insight into new energy economies for design and building which influences our energy use more than any other industry except transportation and the military.

The FORUM draws upon the insights of some of the profession's keenest thinkers — Richard G. Stein, Louis Kahn, and R. Buckminster Fuller — to bridge the practical and the poetic, the scientific and the esthetic, showing how the energy crisis will influence architecture and environmental design.

The FORUM will also cover the full spectrum of expertise in energy research — what's being done to develop synthetic fuels from coal and shale oil . . . to reduce pollutants in petroleum fields . . . to tap the earth for developing geothermal energy — everything.

This publishing event will itself be a source of energy — *creative energy* for the architectural profession at a time when energy was never needed more.

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PRODUCT LITERATURE

To order any of the literature described, circle the indicated number on the self-addressed Reader Service Card on page 77.

LIGHTING FIXTURES

From the Sechrist Lighting Division of the Keene Corporation 7 examples of Sechrist line of contemporary light fixtures are covered in an 8-page brochure including Regressed Air-Lite Troffers, 6-inch wide Troffers, surface luminaires, Gym-lite, ceiling or wall-mounted fixtures, and completely sealed exit fixtures. On Reader Service Card, circle 200.

BUILDING SEALANTS

Dow Corning offers 8-page brochure outlining application information on four types of silicone building sealants, along with a 20-year material guarantee against color change, hardening, or cracking from weathering. On Reader Service Card, circle 201.

FRAMING SOFTWOOD

Expanded to include additional design values and complete data on lumber sizes and grades, 1973 edition of the Western Wood Technical Library "Product Use Manual" now available from Western Wood Products Assoc. A basic technical guide for selecting light framing lumber and estimating needed quantities of siding and paneling, manual includes tables on design values for light framing and on properties of sections for joists, beams, planks, decking. Other catalogs available. On Reader Service Card, circle 202.

TEXTURED LIMESTONE PANELS

January, 1973 "Textured Panels of Indiana Limestone," published by Harding & Cogswell, Inc., introduces several newly created texture finishes and includes photos of actual jobsite erection of the large textured panels; also includes square foot price information for the floor-to-floor panels, typical anchoring details, and short form specifications. On Reader Service Card, circle 203.

POWDER COATINGS

A technical/descriptive bulletin about Vitralon powder coatings has been issued by Pratt & Lambert. 22 advantages of powder coatings are presented and performance characteristics listed. Also provided are technical data on surface preparation, application, curing methods, storage, service, and specifics on chemical resistance, hardness, and adhesion. On Reader Service Card, circle 204.

WOOD ADHESIVES

Four-page illustrated catalog describing Scotch-Grip Adhesive 5230, Scotch-Grip Construction Mastic 4314, and Scotch-Weld Polymer Bond Structural Wood Adhesive system for wood bonding applications for either in-plant modular house assembly or job site construction available from 3M Com-

pany, Adhesives, Coatings, and Sealers Division. Describes and illustrates how high strength, weather resistant adhesives can reduce construction costs and improve building quality. On Reader Service Card, circle 205.

SILICONE SEALANTS

New literature from General Electric describes service of silicone sealants possessing an inherent resistance to heat, cold, ozone, sunlight, radiation, and moisture. Specifics on GE silicone sealants 1200, 1300, and 1600 charted. On Reader Service Card, circle 206.

SPRINKLERS

Handbook on sprinkler systems covering what they do and how they work published by Honeywell's Commercial Division. Called "the most comprehensive guide to sprinklers ever written." Discusses wet and dry pipes, pre-action sprinklers with and without supervised piping, deluge types, and other common systems. Also, drawings of basic system types. On Reader Service Card, circle 207.

CARPET INSTALLATION

Architectural guide specification for glue-down installation of double jute-backed carpets, already in 15th printing, available from Jute Carpet Backing Council. Gives detailed installation instructions; explains why jute's porosity and affinity to standard adhesives allow no-pad glue-down installation. On Reader Service Card, circle 208.

JOINT COMPOUNDS

"Architects' Guide to Joint Treatment," an 8-page brochure from United States Gypsum Co., provides data for use in selecting and specifying gypsum drywall joint finishing systems, describing features of various kinds of joint treatment compounds, their compatibility, and the merits of hand and machine application. Joint system selector and job inspection procedures included. On Reader Service Card, circle 209.

TENNIS ELASTATURF

Brochure from Borden Chemical describes the "superior playing qualities" of their Elastaturf synthetic tennis court surfacing material, emphasizing wearability, resiliency, and controlled surface texture. Traction of the poured-in-place material outlined; absence of seams and curled-up corners aids safety. Material customized to courts in three basic colors—grass green, clay red, earth tan. On Reader Service Card, circle 210.

DAY-GLO COLORS

Intermix color guide for Day-Glo coatings, paints, inks, and plastics published by Day-Glo Color Corp. Shows six full-strength fluorescent colors,

and mixtures of these with conventional colors. Fluorescent tints, blends, semi-fluorescent colors charted, along with samples of hundreds of clean color combinations. On Reader Service Card, circle 211.

FIRE SECURITY

12-page technical report on smoke detector location for automatic closing fire/smoke doors available from Rixson-Firemark, Inc. Report describes tests conducted at the "Project Corridor" facility, with the consent of the California Fire Marshall. Includes complete details on test procedures, facilities, results. On Reader Service Card, circle 212.

GLASS

1973 Globe-Amerada's Catalog "Environmental Control Through Glass" available through Amarko, Ltd. New specifications on "Acousta-Pane" and Insulated Acousta-Pane, noise controlling glass are featured. Architectural applications presented to aid in determining acceptable noise levels and temperature controls. On Reader Service Card, circle 213.

HEATING/COOLING

48-page application guide and condensed catalog bulletin covers full line of Chromalox electric comfort heating/cooling products for residential and commercial use. Entitled "The Eight Seasons of Chromalox," compilation includes over 400 photographs and illustrations of product applications. On Reader Service Card, circle 214.

WATERPROOFING

Illustrated brochure on TREMproof Waterproofing Systems for a variety of below, on, and above-grade construction applications available from Tremco Mfg. Co. Describes waterproofing security at low cost for occupied areas and gives application data for complete line of liquid polymers, masonry preservatives, transparent preservatives, all-level drains, and adjustable KingPin Pedestals. On Reader Service Card, circle 215.

CONCRETE/STEEL REINFORCEMENTS

Revised 1973, 21st Edition of the Manual of Standard Practice available from Concrete Reinforcing Steel Institute. Contains revisions based on 1971 ACI Code requirements and 1972 ASTM specifications for rebar. Also included are explanations of industry standards for estimating, detailing, fabricating, shipping, and placing rebar. On Reader Service Card, circle 216.

CERAMICS

Brochure from American Olean describes Redi-Set Systems 200, pre-grouted ceramic mosaic sheets. 2' x 2' sheets of 1" x 1" unglazed ceramic mosaics are factory grouted with color-coordinated polyurethane. Sheets install with a matching polyurethane adhesive; 10 patterns and 4 grout shades available. Installation guidelines given. On Reader Service Card, circle 217.

DEMAND LIMIT SYSTEM

New solid-state control system which eliminates high demand peaks enabling large electricity users to buy their energy at a lower demand rate.

Brochure describes Demand Limit Control system consisting of 3 current transformers that measure total power being used; an AC-to-DC converter which totalizes voltage during each demand billing interval; and the DLC controller which eliminates high demand peaks by turning "deferable loads" on and off automatically in a predetermined priority sequence. On Reader Service Card, circle 218.

DIFFUSED LIGHT PANELS

"Therma-lucent Panels," described in 6-page brochure published by the New England Pacific Corp. Offers specifics on custom designed and fabricated panels of modular construction that provide glare-free diffused light and offer high insulating qualities to reduce heat loss. Panels are sandwich of translucent fiberglass-plastic sheets bonded to a grid core of mechanically welded I-beams. On Reader Service Card, circle 219.

ENTRANCE SYSTEMS

Brochure from Kawneer/AMAX describes the Entara-XD Educational Entrance system designed for strength and security in schools and colleges. Shows heavy duty aluminum structural frame components; features include door corners joined with machine bolts with welded shear blocks, attachment of high-stress hardware directly to 1/4-inch thick aluminum extrusion walls, interlocking frames, double weatherstripping, and a pressure equalized threshold. On Reader Service Card, circle 220.

WASHROOM FIXTURES

1973 Washroom Fixtures catalog from Bradley Corp., featuring cost comparisons of lavatories versus wash-fountains, plus blocked group areas of products within the line—showers, valves, Bradpack wash centers, accessories, pressurized soap spray systems, in assorted materials and sizes. Color selections, specifications, layout drawings added. On Reader Service Card, circle 221.

SLIDING DOORS

From Clark Door Co., a brochure describing their line of Designer Series sliding doors for interior openings where maximum attractiveness and fast, frequent operations are required for control of environment. With fast open/close speed and perimeter seals, power operated doors said to be ideal for computer rooms, industrial and food plants, pharmaceuticals, laboratories, hospitals. On Reader Service Card, circle 222.

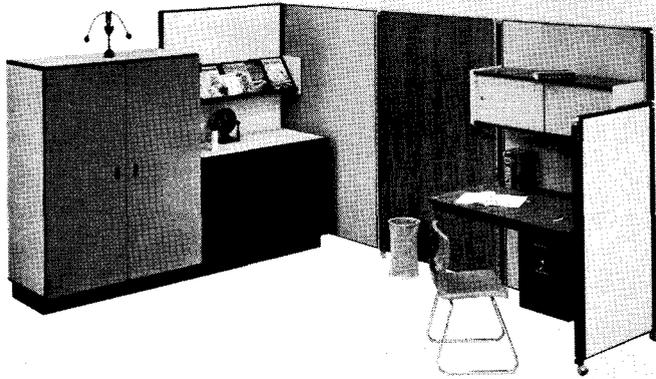
STANDBY GENERATORS

Kohler Co. presents its line of 500-500,000 watt, gas, gasoline, and diesel fueled generator sets, making available a copy of their 12-page insert submitted as part of the Architectural File of the 1973 Sweet's Catalog. On Reader Service Card, circle 223.

CLEAN ROOM EQUIPMENT

Industrial, commercial, institutional uses for modular laminar flow clean room equipment described in new brochure entitled "Weber Clean Room Technology," published by Weber Technical Products. Emphasized is the flexibility of basic Weber components, and how they can provide horizontal or vertical laminar flow suitable for clean rooms. On Reader Service Card, circle 224.

PRODUCTS

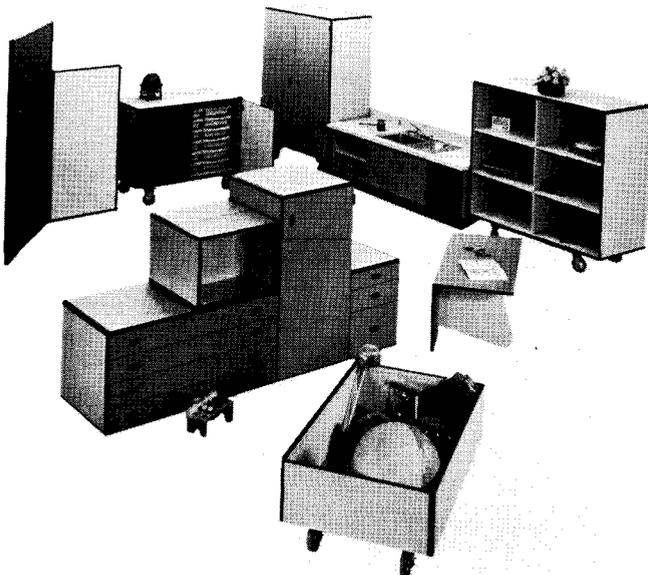


SPECTRA-CULAR

Peabody/Mutschler introduces its Spectra Series, an integrated and coordinated interior for open-plan schools. The equipment is movable, integrated in function and color, multipurpose, and styled in rounded, unbroken lines. The series includes space dividers, furniture and interchangeable component cabinetry (Spectra Series I, II, and III, respectively). The cabinetry is of lightweight modules which can be stacked, fixed to walls, put on casters or bases,

or used singly, and range in sizes from 12" x 24" to 60" x 78", with depths either 11½" or 23". Spectra-Mold corners, using no nails, screws or glues, make the modules molded integral units which slide easily. The basic element of the furniture is a strong and durable plastic shell, moulded to support the body. Space dividers are sight and sound barriers which can be used singly or grouped as study carrels.

On Reader Service Card, circle 100.



DRY FEET

Imagine walking in winter and having dry feet! That's what is happening in Norway, where they electrified the sidewalks of a shopping street (at minimal cost: they have hydro-electric power). Plastic insulated copper cable is laid and then graded sidewalks of concrete are poured over it, so that the cable becomes part of the slab. The power is turned on when snow begins to fall so that it immediately turns to water and drains into the streets. This means that the temperature is at or above 32 degrees F. Heating cables are from Standard Telefon-og Kabel-fabrik, a subsidiary of International Telephone and Telegraph Corporation.

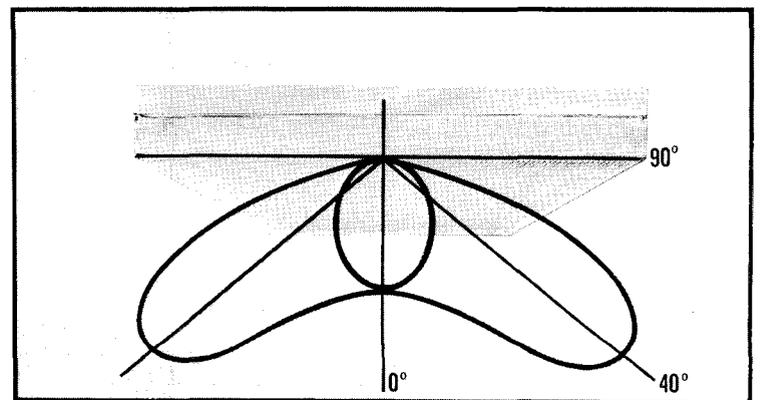
On Reader Service Card, circle 101.



Mmmmm

In the true spirit of revivalism, Scope Furniture Inc. gives us their version of a Bauhaus classic. Called the "M" chair, it is sleek in its simplicity and balanced proportion. The chair is framed in continuous (seamless) stainless steel, 7/8" in diameter, with a mirror polished finish. Hardwood frame, rubber webbing, and latex foam rubber are found at the seat and back. The chair is 22" wide, 24" deep and 32" high, and may be covered with fabric or leather upholstery.

On Reader Service Card, circle 102.



TWIN-BEAMED

Recently introduced by Guth Lighting, a Division of Sola Basic Industries, is "Twin-Beam Aristolite". This fluorescent fixture has an acrylic enclosure which directs illumination to the sides, reflecting away from the normal viewing angle and improving contrast rendition and visual performance. The fixture

combination is available in 1' x 4' two-light and 1' x 8' tandem four-light units. Both sizes offer an apparent installation depth of 1¾" due to the shallow chassis design. This surface mounted fixture is ideal for interior lighting of commercial and institutional buildings.

On Reader Service Card, circle 103.

ECO

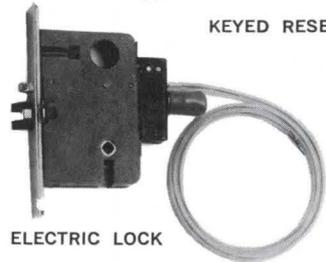
Hager Hinge Company has developed a security system called "ECO" (Electronic Control of Openings). It offers total building monitoring and control by sensitizing openings. The system combines a master control panel with a series of patented electric switch and contact hinges and individual electric locks; all designed for standard A.N.S.I. door and frame preparation. There is a keyed reset switch, external and internal alarm systems, an auxiliary power unit and a time delay alarm mechanism. The system works with a minimum control panel indicating 5 doors, al-

though it may be augmented to accommodate more than 100 doors. ECO works in conjunction with standard 110-volt house power; however, each control panel converts this power to 24-volts needed to operate the system. The manufacturer suggests that the system be specified prior to construction, to save cost in installation.

On Reader Service Card, circle 104.



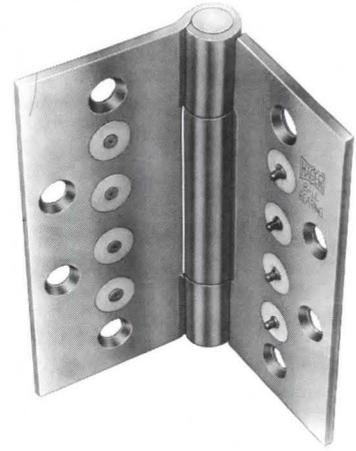
CENTRAL CONTROL



ELECTRIC LOCK



KEYED RESET



ELECTRIC SWITCH HINGE

The following is a listing of the key products incorporated in some of the buildings featured in this issue:

HUMAN RESOURCES CENTER. ARCHITECT: Urban Design Associates. (Materials & Manufacturers as submitted by the architect.) WATERPROOFING: W. H. Kelly Co. CONCRETE AND CEMENT: J. A. Ferguson Construction Co. BRICK, BLOCK AND STONE: J. A. FERGUSON Construction Co. STRUCTURAL STEEL: Chapper Iron Works, Inc. FLOOR AND DECK SYSTEMS: J. A. Ferguson Construction Co. ROOF MATERIALS: Carey Materials. ACOUSTICAL MATERIALS: Celotex Corp. FENESTRATION: Nulite Co. GLASS: Fourco Glass Co., ASG, Mississippi Glass Co., PPG Co. INTERIOR PARTITIONS: U.S. Gypsum. DUMBWAITERS: Detroit Elevator. DOORS: Pioneer Detroit, Inc. HARDWARE: McKinney, Sargent, LCN, Baldwin. INTERIOR MATERIALS: Keystone Ridgeway Co. PAINT: Standard Detroit. ELECTRICAL DUCTS AND WIRING: Square D. ELECTRICAL EQUIPMENT (SWITCHES & BREAKERS): Square D. LIGHTING FIXTURES, LAMPS: Wakefield Lighting. PLUMBING FIXTURES: American Standard. HEATING BOILERS: Kewanee A. UNIT HEATERS: Trane. UNIT VENTILATORS, RADIATORS, CONVECTORS: Trane. HEATING VALVES, PIPING, CONTROLS: Jenkins, B & G Circuit Sensor. AIR CONDITIONING COMPRESSOR, FAN UNIT: Trane. UNIT AIR CONDITIONERS: Mammoth. DIFFUSERS, DUCTS, PUMPS, ETC.: Titus, Bell & Gossett. SPECIAL FANS AND VENTILATORS: American Standard. ALARM EQUIPMENT: National Time & Signal. CEILING MATERIAL: Celotex. WATER COOLERS: Halsey-Taylor. MOVABLE SHADES: Steelco. KITCHEN: F. D. Stella. FINISH FLOORING: Kentile.

EMELIN THEATRE. ARCHITECT: Hardy, Holzman, Pfeiffer. (Materials & Manufacturers as submitted by the architects.) CONCRETE & CEMENT: Colonial. BRICK, BLOCK, AND STONE: Plasticrete. STRUCTURAL STEEL: Bethlehem. FLOOR AND DECK SYS-

TEMS: Vulcraft Joists, Wheeling deck. ROOF MATERIALS: Carey. THERMAL INSULATION: Barrett Celotherm. ACOUSTICAL MATERIALS: Owens Corning. GLASS: Pittsburgh. INTERIOR PARTITIONS: U. S. Gypsum. DOORS: Hollow Metal, Acme & Dort, Clark Door. HARDWARE: Sargent & Co. INTERIOR MATERIALS (TILE, PLASTIC): American Clean. PANELING: Weyerhaeuser. PAINT: Sherwin Williams, Rust-O-Leum. ELECTRIC DUCTS AND WIRING: Wheatland. ELECTRIC EQUIP. (SWITCHES, BREAKERS): General Electric. LIGHTING FIXTURES, LAMPS: Kliegel, Stage, Crescent, General Lighting. PLUMBING FIXTURES, TOILET SEATS: American Standard. PIPING: Anaconda. HEATING VALVES, PIPING, CONTROLS: Mammoth. AIR CONDITIONING COMPRESSOR, FAN UNIT: Mammoth. DIFFUSERS, DUCTS, PUMPS, ETC.: Carnes. SPECIAL FANS & VENTILATORS: Carnes. CEILING MATERIALS: U.S. Gypsum. WATER COOLERS: Halsey Taylor. FINISH FLOORING AND CARPETING: Bruce Wood, Mohawk Carpet. SOUND EQUIPMENT: Altec Lansing.

TWIN PARKS, NORTHEAST. ARCHITECT: Richard Meier. (Materials & Manufacturers as submitted by the architect.) FOUNDATION WATERPROOFING: Durox. WATERPROOFING: GAF Felts. CONCRETE & CEMENT: Hudson Cement, Colonial Sand & Gravel. FACE BRICK: Webster Brick Co. STRUCTURAL STEEL: Concrete Frame. WINDOW WALL: Craft Metal Corp. FLOOR AND DECK SYSTEMS: Poured Concrete. ROOF MATERIALS: IRMA Roofing System. THERMAL INSULATION: Styroform R. M. FENESTRATION: Alwinseal. GLASS: ASE, C.E. Porta-Pane. INTERIOR PARTITIONS: U.S. Gypsum. ELEVATORS AND ELECTRIC STAIRWAYS: Serge Elevator, Parkline. DOORS (EXTERIOR AND INTERIOR): Kaween, American Steel Products. HARDWARE (LOCKS, SETS, HINGES, CLOSERS): Russwin, SDSS. INTERIOR MATERIAL (TILE): Atco Ceramic, Pan American. ELECTRICAL DUCTS AND WIRING: Jones & Laughlin. ELECTRICAL EQUIP. (SWITCHES & BREAKERS): Royal Switchboard Co. LIGHTING FIXTURES: Venson, Livitor, Silvray, Puritan. PLUMBING FIXTURES: Eljer. PIPING: U. S. Steel, Anaconda. ELECTRIC HEAT: Indecco, Trane. GAS

WATER HEATER: Hydrotherm. RADIATORS, CONVECTORS: Federal Pacific. HEATING VALVES, PIPING, CONTROLS: Honeywell. DIFFUSERS, DUCTS, PUMPS, ETC.: Federal, Ketchum. SPECIAL FANS & VENTILATORS: Trane. INTERCOM SYSTEMS: Loeffler. RADIO & TV SYSTEMS: TenaVision Inc. SPRINKLER SYSTEM AND FIRE PROTECTION EQUIP.: W.P. Allen. MAIL BOXES: Loeffler. VENETIAN BLINDS: Adco Aluminum. FINISH FLOORING: Armstrong. COMPACTORS: International Pollution Control Corp. RANGES: J.B. Slattery & Bros. Co. REFRIGERATORS: General Electric.

TWIN PARKS, SOUTHWEST. ARCHITECT: Giovanni Pisanella. (Materials & Manufacturers as submitted by the architect.) FOUNDATION WATERPROOFING: Bitumunous. CONCRETE & CEMENT: Portland Cement. BRICK, BLOCK AND STONE: P. C. Glass Block, Glen Gary. ROOF MATERIALS: Philip Carey. THERMAL INSULATION: Tempchek Urethane Insulation. ACOUSTICAL MATERIALS: Styltone Acoustical Tile, U. S. Gypsum. FENESTRATION: Alumiline. GLASS: W. T. Industry. INTERIOR PARTITIONS: Evon Metal Components, USG, Flintkote, National Gypsum Wallboard. ELEVATORS AND ELECTRICAL STAIRWAYS: Armor Elevator. DOORS (EXTERIOR AND INTERIOR): Williamsburg Steel Product. HARDWARE (LOCKS, SETS, HINGES, CLOSERS): Atlantic Hardware, Corbin. INTERIOR MATERIALS (TILE, PLASTIC): GAF—V.A.T., Columbia Ceramic Wall Tile. PAINT: Thompson Porcelite, Purity Paint Product. ELECTRICAL DUCTS AND WIRING: Wire—Circle, Triangle-Conduit, Arrow. ELECTRICAL EQUIP. (SWITCHES, BREAKERS): Federal Pacific, Slater, Mulberry. LIGHTING FIXTURES: Kurt Versen, Puritan, Marco, Devine, Atlite, Work-O-Lite, Contemporary Ceiling. PLUMBING FIXTURES: American Standard, Elkay, Dayton. PIPING: Triangle Pre-Insulated Copper Pipe, U.S. Steel, Central Foundry. UNIT HEATERS: Nelco. UNIT VENTILATORS, RADIATORS, CONVECTORS: Berko. DIFFUSERS, DUCTS, PUMPS, ETC.: Federal Pump Corp. INTERCOM SYSTEMS: Auth. RADIO AND TV SYSTEMS: Blonder Tongue, Antenna & Communication Corp. SPRINKLER SYSTEM AND FIRE PROTECTION EQUIP.: Alenco, Stargard. CEILING MATERIALS:

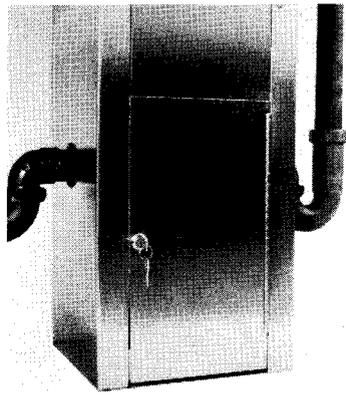
Styltone Acoustic Tile by Keene Corp. MOVABLE PARTITIONS: Fold Door Partitions Inc. MAIL BOXES AND CHUTES: Auth. SHADES: Breneman Inc. KITCHEN, LAUNDRY, LABORATORY EQUIPMENT: Magic Chef, Crown Kitchen Cabinets, G.E. Refrigerator. FINISH FLOORING AND CARPETING: GAF, American Clean Quarry Tile. COMPACTOR: Waterbury Hydrolic & Pollution Science.

FISHER THEATRE. ARCHITECT: Hardy Holzman Pfeiffer Associates. (Material and Manufacturers as submitted by the architects.) WATERPROOFING: Weston Waterproofing Company. STRUCTURAL STEEL: Butler Manufacturing Company (for the primary structure); New England Steel Fabricators (for the secondary structure). CURTAIN WALL: Butler Manufacturing Company sandwich F103 aluminum and styrofoam panel. FLOOR AND DECK SYSTEM: Cyclops Corporation (for the steel decking). ROOF MATERIALS: Latoil Roofing Company. ACOUSTICAL MATERIALS: Reynolds Metals Company. FENESTRATION: Butler Manufacturing Company. GLASS: Pittsburgh Plate Glass. DOORS (Exterior and Interior): Pittsburgh Plate Glass assembly for glazed doors, Butler Manufacturing Company for others. HARDWARE: Schlage Lock Co. INTERIOR MATERIALS (Sealant): Pit Glaze Company. PAINT: Devoe and Reynolds Co. ELECTRICAL EQUIPMENT: Square D Company Distribution Equipment Division. LIGHTING: Kliegl (stage lighting). HOT WATER HEATER: The Patterson-Kelley Company, Inc. AIR CONDITIONING COMPRESSOR, FAN UNIT: Trane Company. DIFFUSERS, DUCTS: Skyline Roofing. LOUDSPEAKERS: Altec Corporation. FURNITURE AND SEATING: Heywood-Wakefield Company.

TWIN PARKS, SOUTHEAST. ARCHITECT: James Stewart Polshek. (Materials & Manufacturers as submitted by the architect.) FOUNDATION WATERPROOFING: Brisk. PILING: Raymond WATERPROOFING: Dex-o-tex. CONCRETE AND CEMENT: Dic Concrete. BRICK, BLOCK AND STONE: Merritt. STRUCTURAL STEEL: Julius Ohrlein Inc. CURTAIN-WALL: Metralite. FLOOR AND DECK SYSTEMS: Dic Concrete. ROOF MATERIALS: Colonial Roofing. THERMAL INSULATION: Star Circle.

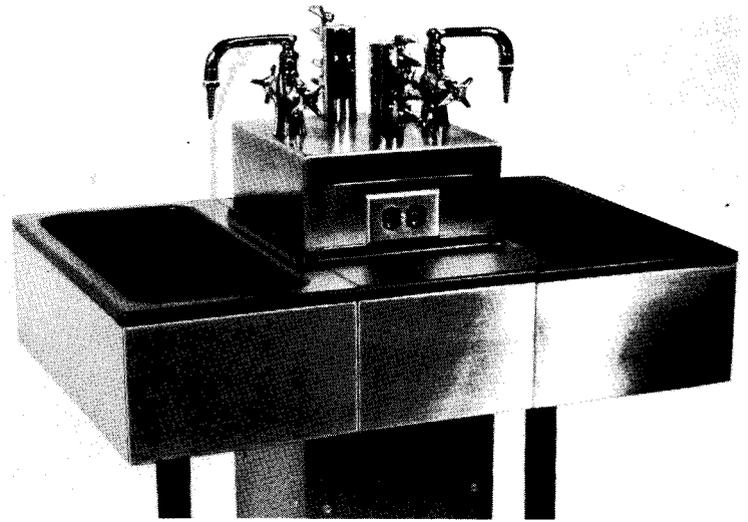
SINK TURRET

The St. Charles Manufacturing Co. has introduced a utility turret for sinks. Because various kinds of sinks can be plugged into this core, and thereby change its function, the turret becomes more a piece of furniture than a piece of fixed equipment. It can be relocated with minimum time and labor (contingent on local plumbing codes). The turrets are interchangeable both as to single bowl with ledge and double bowl sinks with ledge and also interchange for height to accommodate standing or sitting application. The turret is modular and all service fixtures could



be adapted to any single turret. The unit is being used in schools in science, home-economics, and arts and crafts departments.

On Reader Service Card, circle 105.



ACOUSTICAL MATERIALS: U.S. Gypsum. FENESTRATION: Merrit. GLASS: Sontag. INTERIOR PARTITIONS: U.S. Gypsum. ELEVATORS AND ELECTRIC STAIRWAYS: Serg. DOORS: Williamsburg. HARDWARE: Seeco Supply. INTERIOR MATERIALS: Del Turco Bros. PANELING: Mirwal, Kyser Aluminum. PAINT: Glidden. ELECTRIC EQUIPMENT (SWITCHES, BREAKERS), DUCTS, WIRING, STANDBY EMERGENCY POWER: Simpson Electric. LIGHTING FIXTURES, LAMPS: Lightolier, Harry Gitlin, Prescolite. PLUMBING FIXTURES: American Standard. PIPING: Paramount, HEATING BOILERS: Bryan Steam Corp. UNIT HEATERS: Federal Pacific Electric Co. HEATING VALVES: McDonnell and Miller Inc. AIR CONDITIONING COMPRESSOR, FAN UNIT: Carrier. DIFFUSERS, DUCTS, PUMPS, ETC.: Krueger Mfg. Co. SPECIAL FANS AND VENTILATORS: Carrier, INTERCOM SYSTEMS: Loeffler. RADIO AND TV SYSTEMS: TenaVision Inc. SPRINKLER SYSTEM AND FIRE PROTECTION EQUIP.: Paramount Plumbing. CEILING MATERIALS: U.S. Gypsum. MAIL BOXES AND CHUTES: Loeffler. KITCHEN, LAUNDRY, LABORATORY EQUIP.: Sefi Kitchen Equipment. FINISH FLOORING AND CARPETING: Armstrong, Del Turco Bros. GLASS BLOCK: Pittsburgh.

TWIN PARKS, NORTHWEST, SITES 4 AND 5-11. ARCHITECTS: Prentice & Chan, Ohlhausen. (Materials and Manufacturers as submitted by the architects.) FOUNDATION WATERPROOFING: Sonnenborne. WATERPROOFING: Nervastral. CEMENT: Hudson Cement Inc. BRICK: Belden Brick Co. ROOF MATERIALS (ROOFING, GUTTER): Barrett. THERMAL INSULATION: Dow Chemical. FENESTRATION: Alwinseal Inc. GLASS: Libbey, Owens, Ford. INTERIOR PARTITIONS: U. S. Gypsum. ELEVATORS: Armor Elevator Co. DOORS (EXTERIOR AND INTERIOR): County Fire Door Co. Inc. HARDWARE (LOCKSETS, HINGES, CLOSERS): Sergaent, Glyn-Johnson. INTERIOR MATERIALS (TILE, PLASTIC): Ceramic Tile, American Olean. PAINT: Amsterdam Color Works Inc. ELECTRICAL EQUIP. (SWITCHES, BREAKERS): Leviton, Square D. LIGHTING FIXTURES, LAMPS: Gotham, Liteolier, Lyric. PLUMBING FIXTURES: Elger. PIPING: Bisch,

K S B Inc. HEATING BOILERS: Kewanee Boiler Corp. UNIT HEATERS: Trane Co. UNIT VENTILATORS, RADIATORS, CONVERTORS: Slant Fin. Ltd. HEATING VALVES, PIPING, CONTROLS: Altherm Inc., Honeywell, W. D. Allen Mfg. Co. AIR CONDITIONING COMPRESSOR, FAN UNIT: York Corp. UNIT AIR CONDITIONERS: General Electric. DIFFUSERS, DUCTS, PUMPS, ETC.: Federal Pump Corp., Krueger Mfg. Co. Inc. SPECIAL FANS AND VENTILATORS: Acme Engineering and Manufacturing Corp. INTERCOM SYSTEMS: Auth Electric. RADIO AND TV SYSTEMS: TenaVision Inc. SPRINKLER SYSTEM AND FIRE PROTECTION EQUIPMENT: W. D. Allen Mfg. Co. CEILING MATERIALS: U. S. Gypsum. MOVABLE PARTITIONS: E. F. Hauserman. MAIL BOXES AND CHUTES: Auth Electric Co. Inc. KITCHEN, LAUNDRY LABORATORY EQUIPMENT: Hotpoint, Magic Chef. FINISH FLOORING AND CARPETING: Armstrong, Gaf.

MCMASTER UNIVERSITY HEALTH SCIENCES CENTER. ARCHITECTS: Craig Zeidler Strong. (Materials & Manufacturers as submitted by the architects.) WATERPROOFING: Vandex (Vaxon). PRECAST CONCRETE CLADDING: Beer. CONCRETE BLOCK: General Concrete; Beer Precast. READY MIX CONCRETE: Red-D-Mix; Howard Concrete and Materials Ltd. STRUCTURAL STEEL: Cannon. REINFORCING STEEL: Gilbert Steel. STEEL STAIRS: MRM. CURING/HARDENING AGENTS: Sternson; Tremco. EXTERIOR WALL INSULATION: Canadian Hanson Van Winkle. ROOFING INSULATION: Fibreglass Canada; Canadian Hanson Van Winkle. EXTERIOR WINDOWS: Sentinel. TOWER CLADDING: Zimmercor. MACHINE ROOM CLADDING: Robertson Irwin. ELEVATORS: Otis. FIREPROOFING (Soft): Pyrotech Products; Donelco. TELELIFT: Mosler Teletift Systems. HARDWARE: Corbin (Locks); Modric (Trim); Lon (Closers); Aikenheads (Consultants) D. M. Hardware (Suppliers). CEILING: Canadian Johns Manville (Acoustic Tile); CEB (Skeletal Framework); Lorealea (Walk on Deck). PLASTIC LAMINATE DOORS: Gardiner. HOLLOW METAL DOORS AND FRAMES: Bumeda. LABORATORY FURNITURE: Valley City Manufacturing. DRYWALL AND HARD VENEER PLASTER: Canadian Gypsum Compa-

ny. VINYL ASBESTOS TILE: Flintkote. SHEET VINYL FLOORING: Armstrong. SEAMLESS FLOORING: Duron. GLASS: Pilkington. TOILET PARTITIONS: General Steel Wares. WASHROOM ACCESSORIES: Porteous. FOLDING PARTITIONS: Modernfold of Canada Ltd. PAINT: Glidden. PLASTICIZED WALL COATINGS: Duron; Canadian Evergard Coatings. WOOD WALL COVERING: Canabor. OVERHEAD DOORS, SHUTTERS, GRILLES: Ambassador. AUTOMATIC SLIDING DOORS: Overhead Door Co. (Horton). THEATRE SEATING: Canadian Seating Ltd. KITCHEN EQUIPMENT: Hospital and Kitchen Equipment. CASEWORK: T & T Store Fixtures. PATIENT SERVICE UNITS: Modular Architectural Components Ltd. LOCKERS: Sunar Ltd. METAL CASEWORK: Hospital and Kitchen Equipment. ROOF FLASHING: Tern. ENTRANCES: Zimmcor. METAL DECK: Robertson Irwin. ELECTRICAL: Pirelli (Primary Cables); Canadian Westinghouse Co. (Switchgear, Transformers, Switchboards, Bus Ducts). LIGHTING AND DISTRIBUTION PANELS: Canadian Westinghouse Co.; Federal Pacific Electric. M. G. SETS WITH DORMAN ENGINES: Metron Engineering. LIGHTING: CEB, Revel International, Howard Lighting Design, Prescolite, J. A. Wilson, Garcy, Electrolier, Lightolier, Powerlite, C & M, Krouse Hind Ltd. FIRE ALARM SYSTEM: Edwards. NURSE CALL SYSTEM: Dukane. RADIO POCKET PAGE: Multi-Tone. PUBLIC ADDRESS AND BACKGROUND MUSIC SYSTEM, DISCRETE INTERCOM SYSTEMS, M.A.T.V. DISTRIBUTION: Noram Communications Ltd. AUDITORIUM SOUND SYSTEM: Engineered Sound Systems Ltd. DIMMING: Superior Electric. WIRING DEVICES: Smith and Stone. BLENDED DECK SYSTEM: Robertson Irwin. ISOLATED POWER SUPPLY PACKAGES: Federal Pacific Electric. CABLE TRAYS: Electrovert. AUTOMATIC CONTROLS: Honeywell. MAIN AIR HANDLING UNITS: Industrial Process Equipment Co. ACOUSTICAL VIBRATION CONTROL: Korfund Sampson. AIR FILTERS: Continental. ENVIRONMENTAL ROOMS: Bel Par (Vancouver). EXHAUST FANS: Sheldon. FAN-COILS: Trane. FUME STACKS: Nichols. HIGH VELOCITY AIR BOXES, INTEGRATED CEILING DIFFUSERS: Barber-Colman. SPRINKLER SYSTEM: Grinnel. UNIT HEAT-

ERS: Trane. FIREHOSE CABINETS: Wilson & Cousins. PUMPS: Canada Pumps. STEAM PRESSURE REDUCING VALVES: Fisher. VACUUM SYSTEMS: Leitch. STEAM TRAPS: Velan. PIPEWORK EXPANSION JOINTS: United Flexible Company. CABINET HEATERS: Modine. PLUMBING FIXTURES: American Standard, Emco. OXYGEN SYSTEM AND NITROUS OXIDE: Union Carbide. STERILIZERS: Castle Corp., AMSCO. O. R. LIGHTS: Castle Corp., X-RAY VIEW BOXES: Canada X-Ray. CENTRIFUGES: International, Sorval, Beckman. PHOTO SINKS: Treck. GLASS WASHERS, BOTTLE WASHERS, GLASS DRYERS: Better Built. AERATOR: AMSCO. CART WASHER: Girton. SONIC CLEANER: American Hospital Supply. X-RAY EQUIPMENT: Siemens, Phillips, Picker, Canadian Kodak. COMMODOES: Modular. SOLUTION WARMERS: AMSCO. ANIMAL CAGE WASHER, ANIMAL BOTTLE FILLER: Girton. BLOOD BANK REFRIGERATORS: Foster. ELECTRON MICROSCOPES: Phillips. FURNITURE SUPPLIERS: Ambient Ltd., Associated Innkeepers—Bentwood, Arthur R. Ball, Business Accessories, Canadian Lundia Ltd., Canadian Seating Co., Danesco of Canada, Delta Furniture, Eatons (Interiors International, Craftwood Products, Burke/Acton), Ebena Lasalle, Fine Art Upholstering, Fritz Hansen, General Fireproofing, Habitat, Henderson Furniture Co., InterRoyal, James Products, Karelia International, King Plastics Ltd., L'Enfant/Industrial Interiors, Metalsmiths Co., Nortex Products, Office Specialty Ltd., Reff Products Ltd., Regent Square, Simmond Ltd, Simpsons (Knoll International, Paul Arno Ltd, DuBarry, Chris Sorensen), Stefan Siwinski, Standard Desk, Standard Tube, Sunar Industries Ltd., Synthesis Ltd. LIBRARY EQUIPMENT: B. K. Johl Ltd. CAFETERIA BOOTHS: Picard Construction. PLANTS: McMaster Greenhouse. DRAPERY AND FABRIC: Jeff Brown Fine Fabrics, A. B. Caya Fabrics, Gabriel of Canada, Karelia International, Loomloft Design Ltd., Samo Textiles Ltd., Unifab Ltd. WALLPAPER SUPPLIERS: Walter L. Brown Ltd. Crown Wallpaper, Empire Wallpaper & Paint. CARPETS: Simpsons (Armstrong, Brinton, Celanese Canada Ltd., Harding, National Rubberpad).

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KRUEGER Kerker & Associates, Inc.	7
LIBBEY-OWENS-FORD COMPANY Campbell-Ewald Co.	8-9
PPG INDUSTRIES Ketchum, MacLeod & Grove, Inc.	2-3
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SILBRICO CORP. Elving Johnson Advertising, Inc.	20
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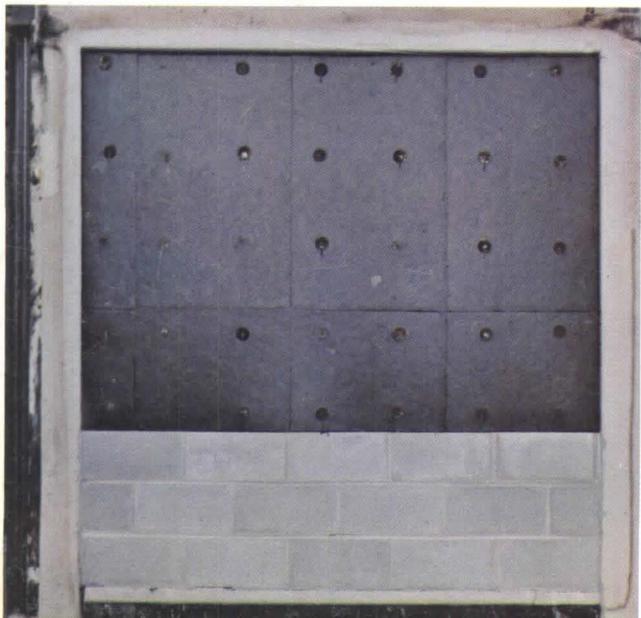


▲ Furnace fire comparison test at the U.S.G. Research Center resulted in complete disintegration of polyurethane foam insulation within five minutes.



▲ Identical fire testing of glass fiber curtain wall insulation resulted in melting and general deterioration within twenty-six minutes.

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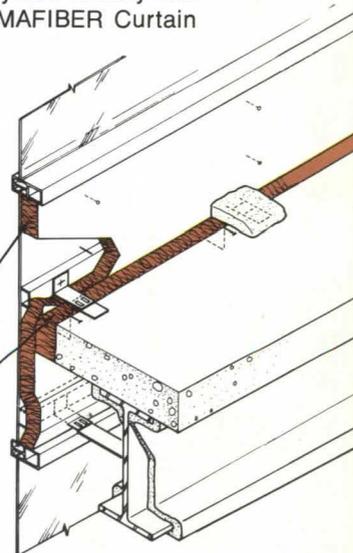
THERMAFIBER Safing Insulation also proved its superior fire-resistance in a separate 3-hour fire test. Furnace temperatures conformed to the ASTM E119 time-temperature curve. Results showed a melt point of over 2000°F. The Fire Hazard Classification for unfaced curtain wall and safing, tested in accordance with ASTM E84, is Flame Spread 15, Fuel Contributed 0, Smoke Developed 0 (foil-faced: 25-0-0).

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