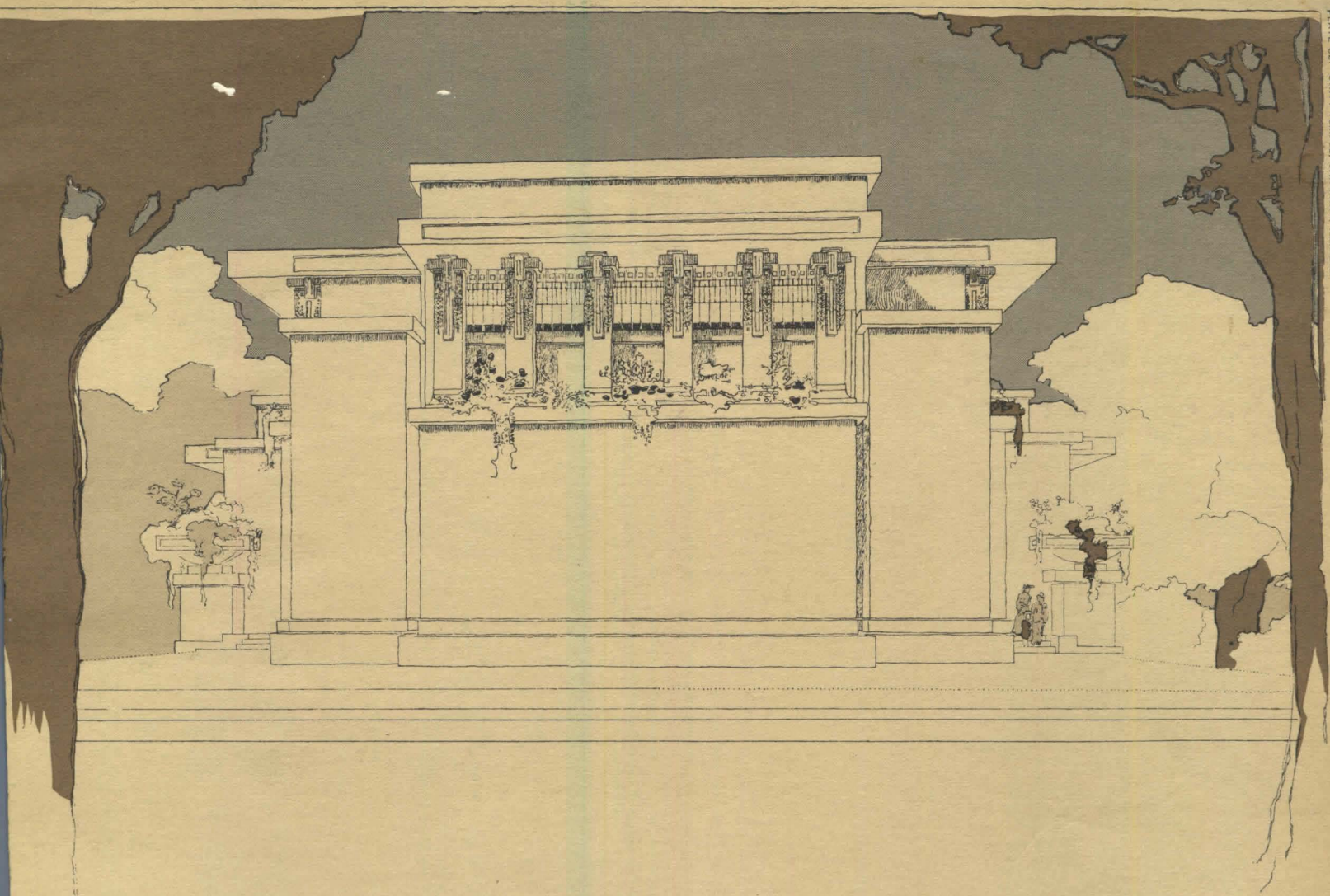
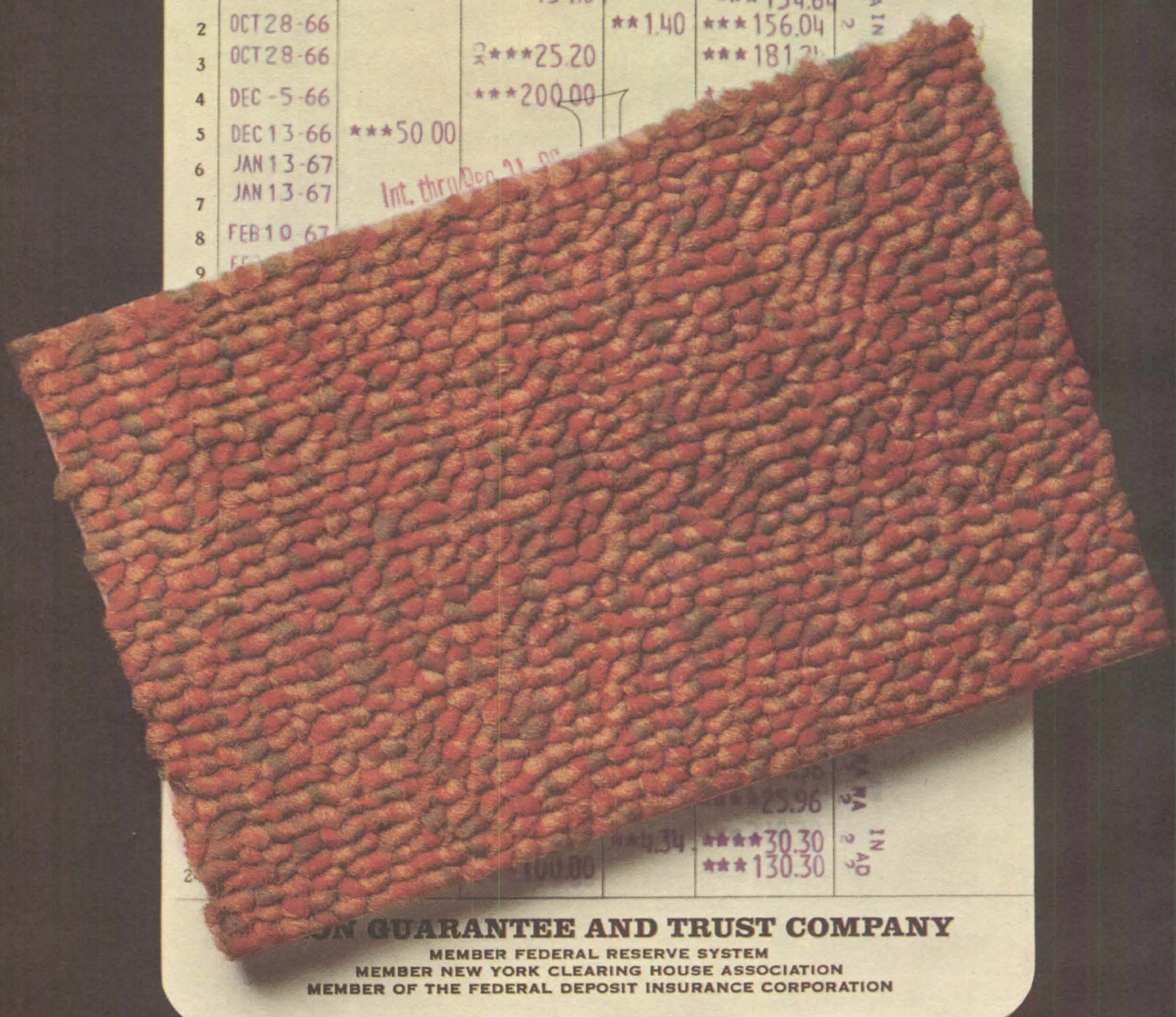


PLATE 62. UNITY TEMPLE, OAK PARK, ILLINOIS.

FORUM

THE FLOOR SAVER



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Cover: From a facsimile of Unity Temple from the Wasmuth portfolio, Buildings Plans and Designs published by Horizon Press (p. 29).

THE ARCHITECTURAL FORUM Vol. 130 No. 5. June issue.
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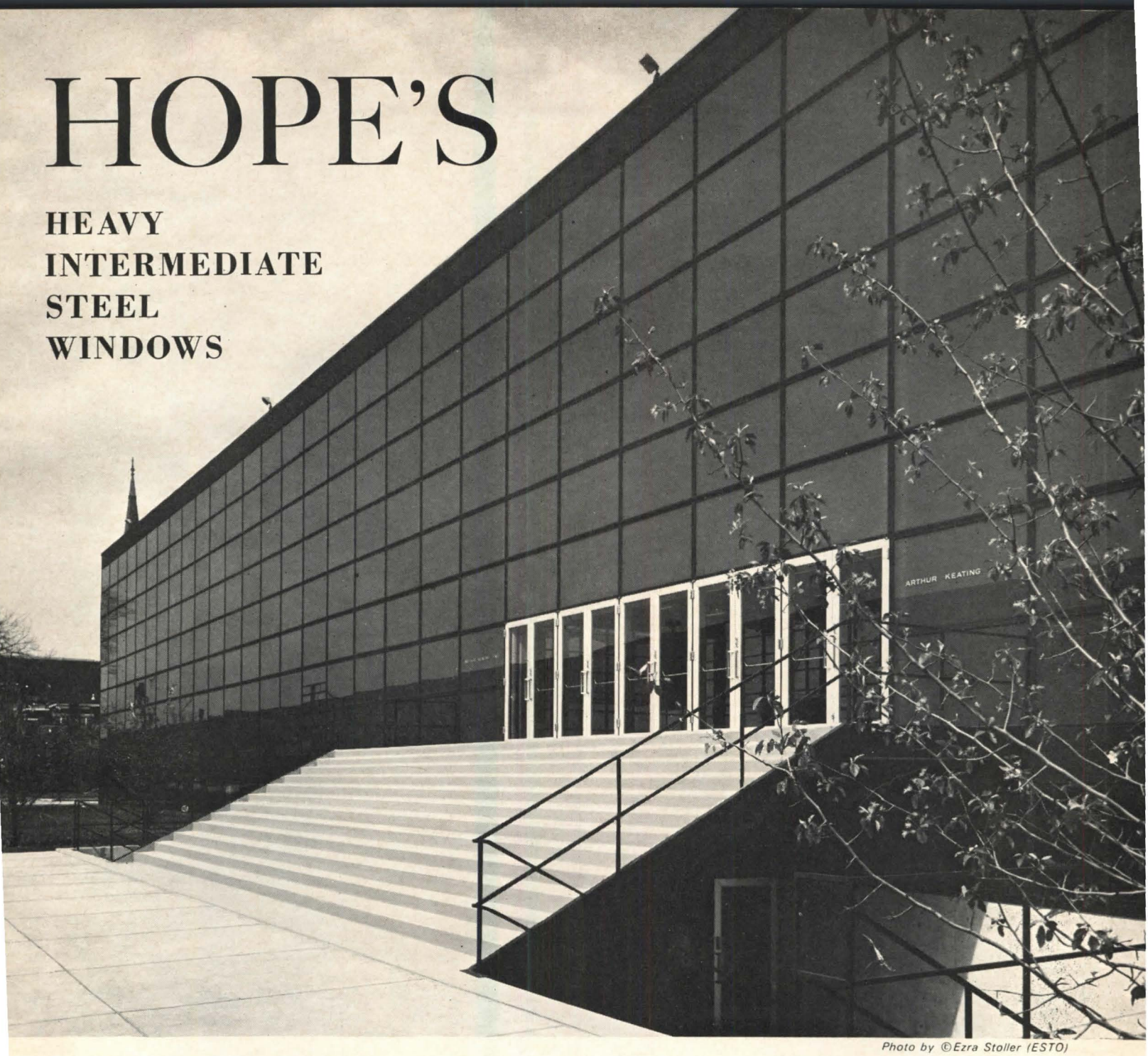

Photo by ©Ezra Stoller (ESTO)

GYMNASIUM (Arthur Keating Hall), ILLINOIS INSTITUTE OF TECHNOLOGY—CHICAGO, ILLINOIS

Architects: Skidmore Owings & Merrill *General Contractor: A. J. Maggio Co.*

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LETTERS

THE FUNNYE MEN

Forum: I wish I'd said that.

Mr. Funnye's points of view [April issue] are the first fresh breaths away from the summer fire pollution which has beclouded contemporary thought.

ROGER W. MARGERUM
Architect
Detroit

Forum: Re: "Deghettoization" by Clarence Funnye: Very funny.

SAM CARSON
Architect
Los Angeles

STATING THE FACTS

Forum: Mr. Bailey's report in the March issue of Forum on the Baltimore Concept Team, entitled "How SOM Took On the Roadgang In Baltimore" [sic] was an unfortunate combination of rumor, gossip, and gratuitous speculation presented as fact. It was used, it would appear, to project a pall of uncertainty and failure on the principles of interdisciplinary design we have been developing.

The Director of the project, John Weese, and Nathaniel A. Owings, Chairman, were never interviewed, nor were they apprised that such an article was in the process of preparation.

They were, therefore, given no opportunity to state the facts as only they could know them. Responsible reporters traditionally verify attributions and quotes at the source. This team was constituted through the joint efforts of the architecture and engineering professions, the City of Baltimore, the State Roads Commission of Maryland and the Federal Highway Administration. It represents the first time that the Federal Government has provided substantial funds for corridor and joint-use planning in connection with an urban interstate freeway. If properly pursued, the joint development or joint-use concept will generate construction of sorely needed facilities for housing, education, recreation, commerce and industry which could represent a capital investment equal to or greater than that for the freeway system and a replacement of tax base which could equal or even outweigh the loss.

A unanimous Concept Team Board of Control reaffirms that the philosophy of the team effort is valid and cannot be destroyed by irresponsible reporting. But the job in Baltimore is only half done. Negotiations are underway to extend the Team's contract to complete the detailed design of the long-range plan that has evolved out of our work to date. A balanced factual report of this plan and our proceedings during the past two years will be published at an early date.

NATHANIEL A. OWINGS
Chairman
EDWARD J. DONNELLY
Co-Chairman
WALTER S. DOUGLAS
WILBUR S. SMITH
Members, Board of Control
JOHN R. WEESE
Director
Urban Design Concept Associates
Baltimore

The above letter was written in response to the Forum's offer to provide as much space as needed for correcting any errors that might have appeared in our article. The offer still stands.—ED.

MORE ON REGISTRATION

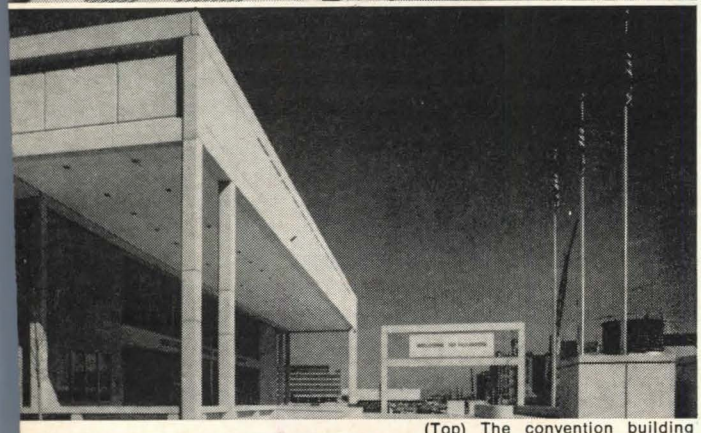
Forum: In reading your article on "The Case for Specialized Registration" [March], it is evident that there is a lack of clarity in thinking as to what Architecture is as a profession, and what might comprise sub-disciplines that are part of the profession. The article presents a relatively narrow technical type of specialized registration as being the most valid in today's society. It exhibits a desire to have registration put at a sub-discipline level; rather than on the "total-discipline" level.

Even the legal definition of Architect and Architecture is used in a narrow sense. It is necessary to find a definition adequate to protect the public; and, equally important, to differentiate between the two professions of Architect and Engineer.

Broadly speaking, if the profession of Architecture is understood to reconcile conflicts between the social matrix of our environment with the technical issues of building, construction, and environmental design, then we understand that the Architect is a very broad-based individual who has the ability to render a particular form of value judgment. We also

(continued on page 13)

ALBERT THOMAS NATIONAL SPACE HALL OF FAME CONVENTION AND EXHIBIT CENTER, Houston; Owner: CITY OF HOUSTON; Architects: CAUDILL-ROWLETT & SCOTT, Houston; General Contractor: SPAW-GLASS, INC., Houston; Ready-Mixed Concrete: W. D. HADEN CO., Houston.



(Top) The convention building and connecting underground garage form the largest structure in Houston's Civic Center.

(Bottom) "Sectioned" concrete columns and a massive overhanging roof suggest a modern version of the temples of Ancient Greece.

High Mark for Civics

Houston's Civic Center gains a dramatic new concrete convention complex

A vast concrete complex today forms the heart of Houston's fast-growing Civic Center. □ The new $12-million Convention and Exhibit Center offers 279,500 square feet of floor space to accommodate major conventions; the building also has a connecting 1,800-car self-park garage —largest in the city. □ Besides making over a million square feet of exhibit hall and garage space available to visitors, the complex encloses this space handsomely. The building itself is set back on all sides. The lower floors are set back still further. And by constructing the connecting garage underground, the city has been able to use the block in front of the building for a landscaped plaza. □ Virtually all of the 70,000 cubic yards of concrete for Houston's new complex were made with dependable Lone Star Portland Cement. Lone Star Cement Corporation, 100 Park Avenue, New York, N.Y. 10017.

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49,000-ton refrigeration system, for the world's tallest building, being built at York's plant.

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To assure uninterrupted air conditioning even in the event of a water shortage, the system will use water pumped from the nearby Hudson River for heat dissipation. And, the system has been designed to withstand the unusually high pressure imposed by the 1,350-foot height of the twin towers.

An equipment maintenance agreement, for a twenty-year period, was awarded to York—to assure trouble-free operation.

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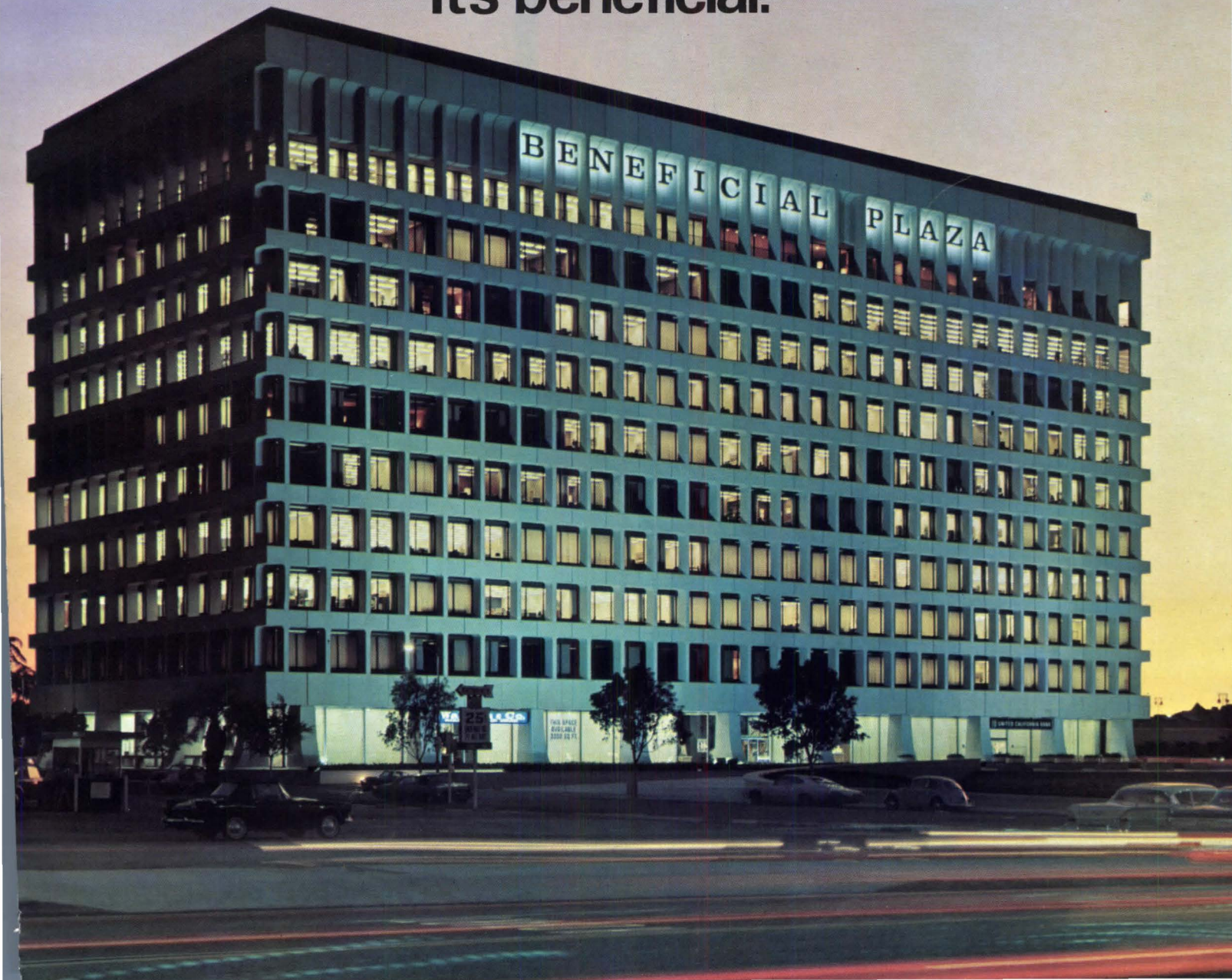

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LETTERS

(continued from page 6)

understand that the profession of Architecture includes the various sub-disciplines referred to in the article. These (construction management, legal matters, computerized techniques, etc.) are drawn upon by the Architect in order to render his value decisions.

Registration has to cover the *total* value system that the profession holds; it must also recognize that one narrowly specialized sub-discipline does not comprise a total profession. In the article, although the hypothetical candidates all have architectural degrees, there is no indication that, through training and experience, they have ever attempted to develop as a professional, but merely have continued specialization within a technical field. It seems they truly do not desire registration as an Architect, but only as a technician in a sub-discipline.

The question is also raised as to the form of the NCARB examination. Due to the total scope of the exam, it, of necessity, does *not* go into the depth required of a specialist in any sub-discipline. The treatment of a sub-discipline within an exam of this kind is somewhat general; however, this does not, in any way, invalidate the exam for the profession in its totality. Our disagreement lies in the fact that, in the article, registration is not desired with the term Architect attached, but as a technical specialist, since most Architectural Registration Boards attempt to examine a candidate as a broadly-gauged individual who has the ability to make the value judgments necessary within the entire profession.

THOMAS J. SEDGEWICK
Flint, Mich. *Architect*

FILMSTRIP FAN

Forum: As an architect-user of the filmstrip series, "The Man-Made World", I have read with interest your review in your March issue.

Your review points out, quite rightly, that this series is 'decidedly British in point of view and in presentation'. Your readers, however, may be interested to know that the series had an American godfather. Its editor, Architect John Donat, conceived the idea of the series after giving a lecture in June 1966 to a conference on "Visual Education and Economic Growth" at the University of Oregon. In his lecture, he used much of the material which now appears in the filmstrips, and was sufficiently encouraged by the response at the conference to produce the series for RIBA.

I have found, myself, that they are effective when cut into slides, used selectively, and supplemented by local material.

The general themes of the series *are* relevant to other countries; the strips are a flexible tool. I would think that Americans would find them useful as a working aid.

RONALD GUY
Brighton, England *Architect*

SUMMER BOMB-OUT

Forum: With reference to your note "Summer Bomb-In," on page 86 of your April issue.

The faculty of the Department of Architecture voted to cancel the OCD Summer Institute at Yale. The plans for the Institute came to the attention of the faculty at large only after the announcement had been printed and mailed.

DONALD WATSON
Visiting Critic in
Yale University *Architecture*

HOT DOG

Forum: It is only now that your Oct. '68 issue came to my attention, in which you illustrate a "thing" known as the "Wienermobile," which, as your remark indicates, opens up some spectacular possibilities both for urban transport and for decentralized shopping. In the last sentence you add: "Where are you, Victor Gruen, now that we really need you?"

Well, this is just to inform you where I am. I am in WIEN, where the WIENERS come from and which in English is known as VIENNA. I am trying to influence the Austrian government to put an embargo on all WIENERS in order to prevent the spreading of that "thing."

So you see, I am doing my best when duty calls, and have rushed to the place where the whole trouble with WIENERS started.

VICTOR GRUEN
Vienna, Austria *Architect*

From coast to coast Perfection Gas infra-red warms up the auto business.

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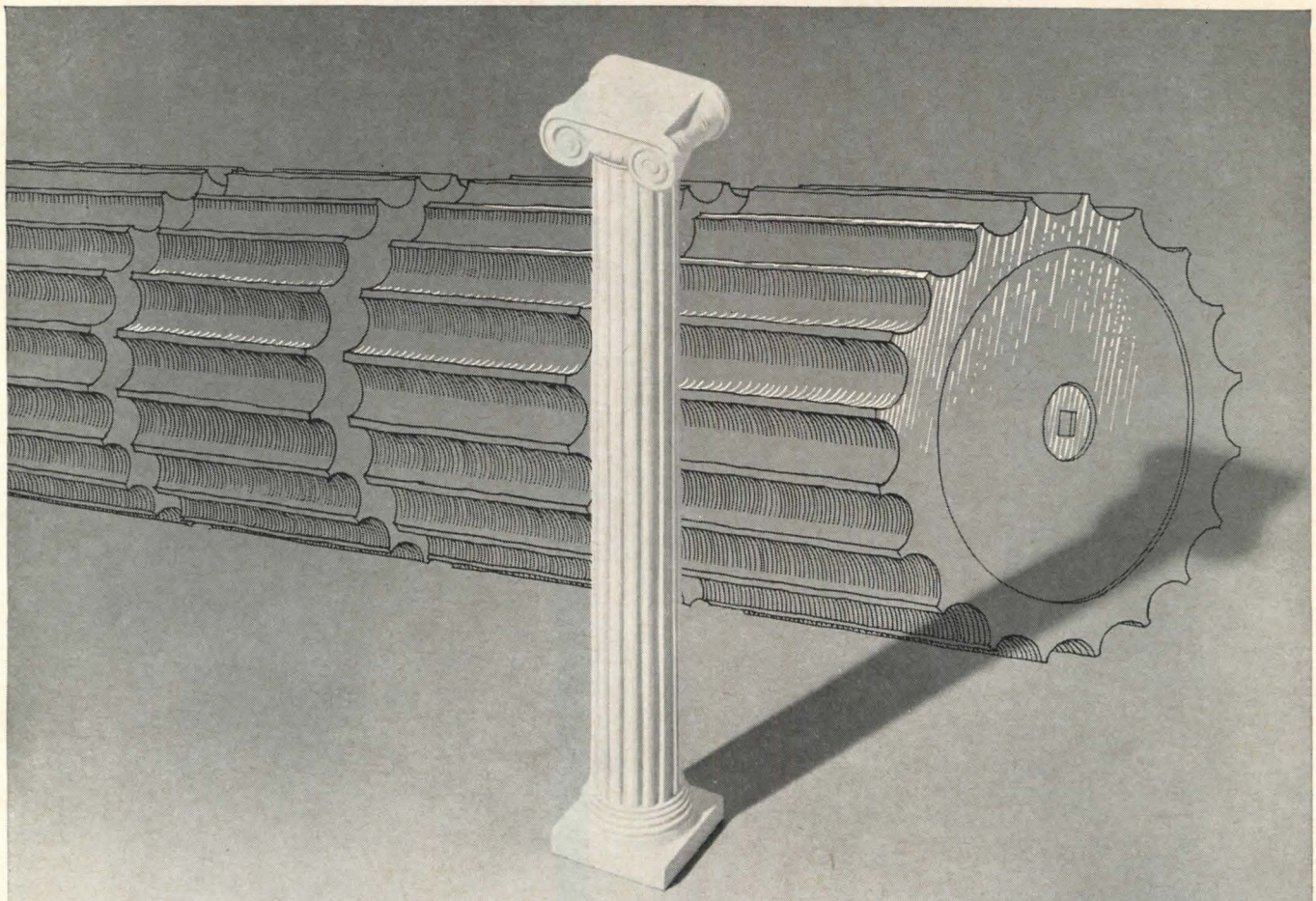

Guide to the best joints in Athens

Existing technology severely limited the Greek architects of the fifth century B.C., yet they designed and built columns of more than sixty feet with a beautiful monolithic appearance. White marble drums were stacked with bronze pins at their centers. The drums were ground against each other like mill stones until the marble was worn to a perfect seat and the joints were invisible.

On many of these graceful columns, standing now for close to 2,500 years, the joints are still invisible. The venerable marble remains unworn and unstained.

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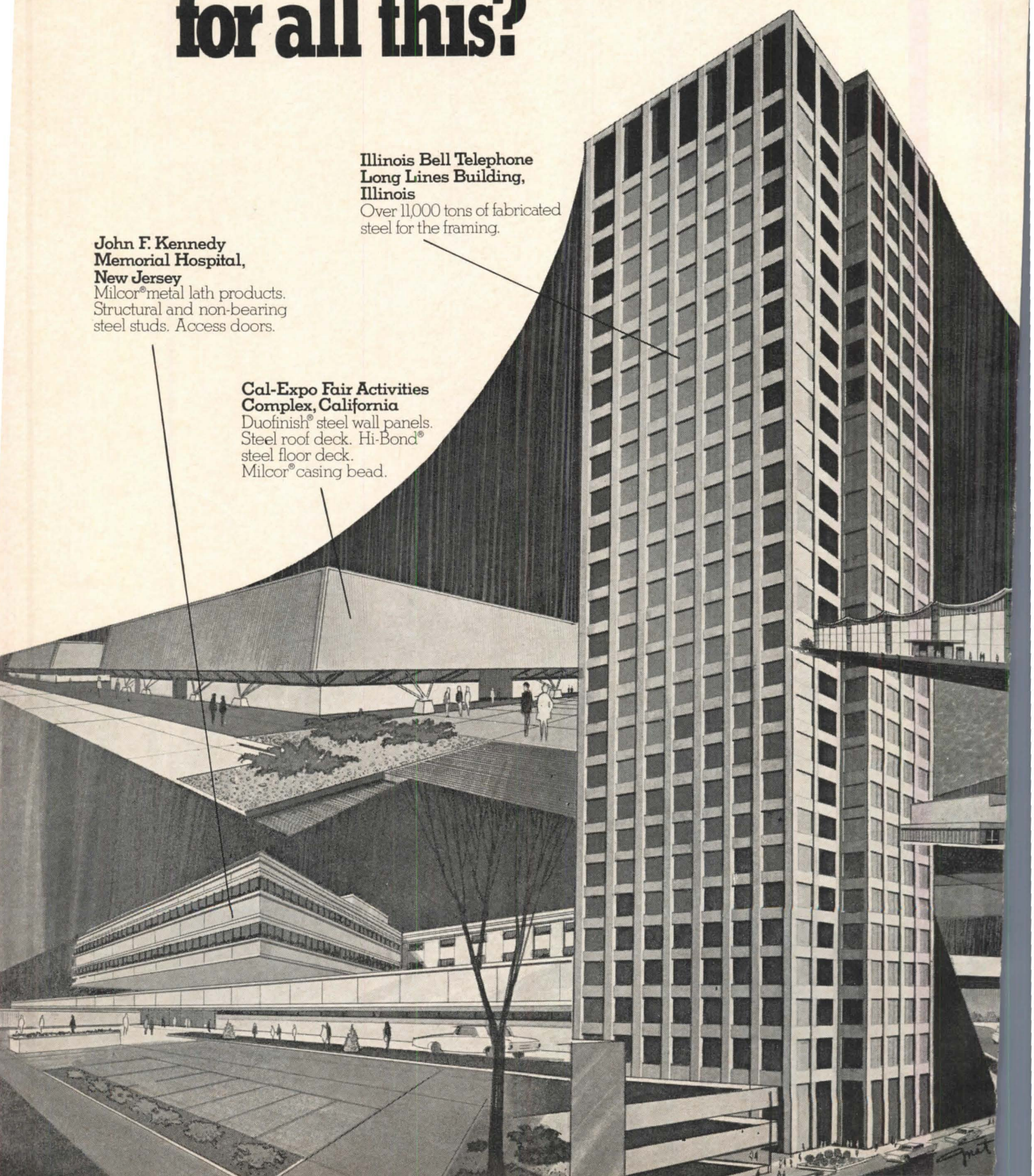

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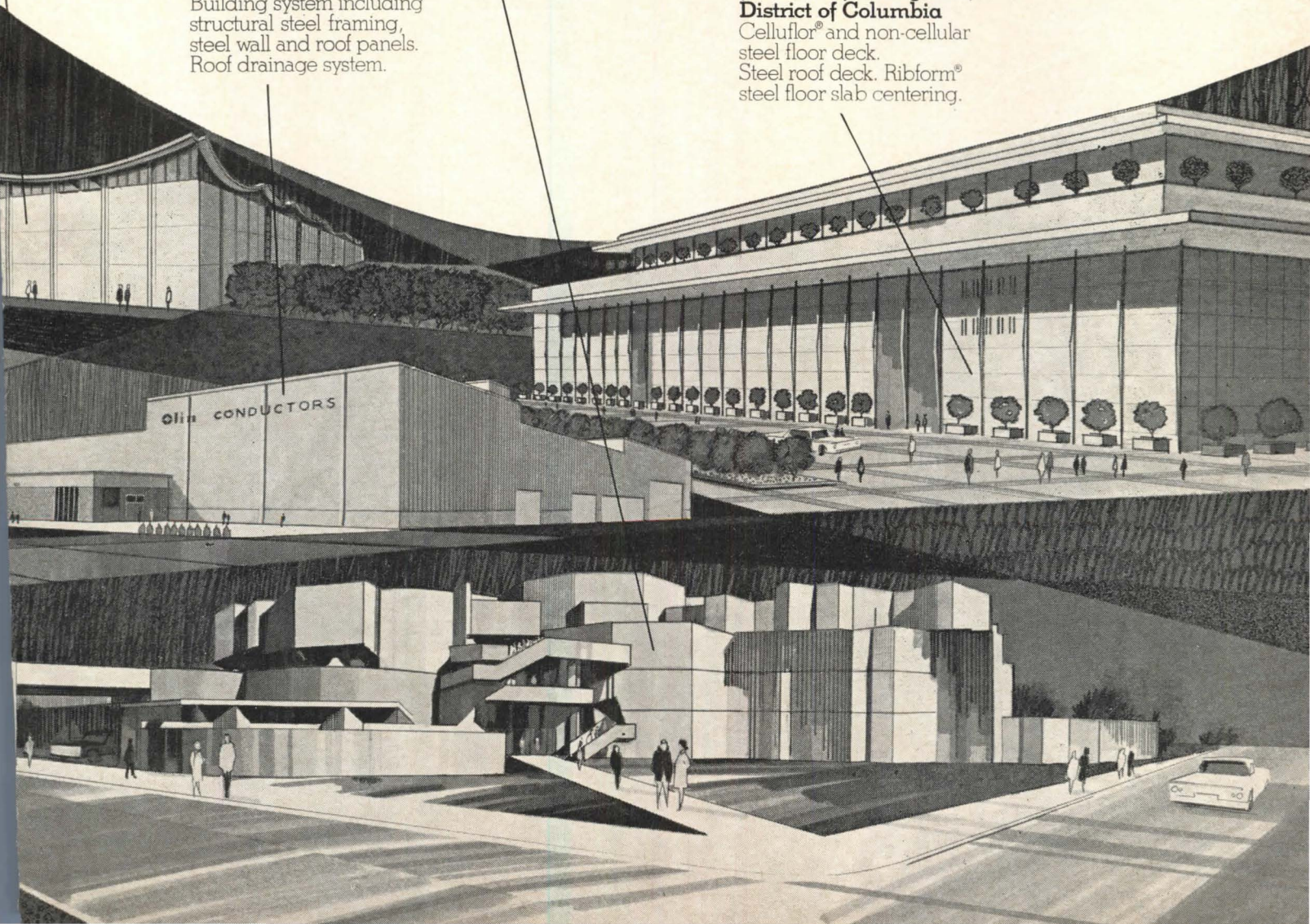

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FORUM

It is becoming clearer with every passing day that the most affluent nation on earth can no longer afford to build buildings. If present trends in construction costs are not reversed, we will all be living in caves before the century is out.

Consider the following random collection of reports from various sources:

- The Associated General Contractors say that lumber prices have increased from 40 to 135 per cent during the past year alone.
- Philadelphia's Plumbers' Union Local 690 negotiated a new contract with the Mechanical Contractors Association a couple of months ago, under which the plumbers' wages (including fringe benefits) will rise by 50 per cent over the next *two* years, to a possible annual income, by 1971, of $19,520. (Eight days later, Philadelphia's steamfitters rejected a contract offer that would have brought their 1971 take to a paltry $18,000.)
- Taking carpenters for another example, their wages, on a national average, rose 45.4 per cent in the years from 1957 to 1967. In one year, from '67 to '68, they rose another 9 per cent. And just last month the government reported that construction workers' wages. in the first quarter of 1969, were going up more than twice as fast as last year.
- In New York City alone, 21 labor contracts must be negotiated in the construction industry before August 8, when the last craft contract expires. (Building in the area is expected to grind to a halt before that date.) It does not seem penurious to suggest that these wage packages be *somewhat* consistent with other industries. But are they?
- The Bureau of National Affairs reports that the median wage increase for all nonbuilding industries rose from 6½¢ per hour in 1962, to 15½¢ per hour by the end of 1968; but in the construction industry the increase, over the same period, rose from 11½¢ to 49½¢—i. e., from about double the nonbuilding wage increase in 1962 to more than triple in 1968!
- Land prices, meanwhile, are doing nicely also: the "Douglas Commission" reports that the average cost of land for single-family houses has gone up 259 per cent since 1948 — and it has gone up much more in suburban areas close to major urban centers.

One result of this madness in the building industry is that it is rapidly becoming impossible to arrive at reliable cost estimates for construction projects: one large, institutional project in the Midwest, which had been carefully checked out against its budget by a top cost estimating firm, came in 47 per cent over the budget when the bids were opened last month. And in many parts of the country contractors will not guarantee some materials' prices for longer than 10 days!

Most of the reasons for all of this are pretty well known, but others less so. In some parts of the country, for example, politicians up for re-election at local or state levels engage in wild, last-minute flurries of building activity so as to be able to point with pride just before November. Result: prices soar. In other parts of the country, Mafia control of building is so tight that collusion in bidding on all major projects is quite open, even where public works are involved. And all across this land, certain building trades continue to exclude minorities from their lily-white ranks, thus creating artificial shortages of skilled labor.

Perhaps the only way to stop this madness is to stop all construction, everywhere, for a year or two. That would, of course, put all architects (and their magazines as well) out of business, so we are looking for an alternative. Any suggestions?

SNAGS

BLOCKING THE VISION

"Our ultimate goal must be the Pennsylvania Avenue of L'Enfant's Plan, a grand route connecting the Congress and the President's house. . . . It is a vision which links Presidents, as it links the citizens of the District, in the love of the city." This endorsement by President Nixon was given to Congress on April 28.

One week later, the District's Acting Corporation Council Hubert B. Pair, ruling on a building-permit application for a proposed office building at 1401 Pennsylvania Ave., clearly demonstrated the need for action to protect the President's "vision."

The building application was first filed with the Department of

some of which, they point out, are mutually exclusive:

(1) A "compatible system of STOL ports" and strips for STOL taxis at the major airports.

(2) Completion of negotiations for high-speed ground transportation to Kennedy; consideration of such modes as gravity-vacuum trains to distant sites as an alternative to air travel.

(3) Acceleration of FAA research and development on improved traffic control technology; investigation of "key unknowns" by a neutral agency.

(4) Expansion or replacement of Kennedy by building landing strips or a jetport in the ocean.

And, said RPA, "the value of a bird sanctuary, the cost of noise pollution, the value of passenger man-hours saved, air pollution prevented—while difficult to assess must be included in an evaluation of social and economic factors."

The study, of course, was immediately attacked by the Port of New York Authority as "turning the clock back ten years" and as "fascination with far out ideas," which, to them, did not seem mutually exclusive.

. . . AND ON THE GROUND

Elsewhere, the RPA, under a $150,000 grant from the Henry Luce Foundation, will conduct a one-year study of how to improve pedestrian circulation in central business districts, such as Manhattan (see "Forgotten Man in the City," Jan./Feb. '68 issue).

"In New York, the pattern of sidewalk widths was established a century and a half ago, scaled for medium-density residential areas," said C. McKim Norton, vice chairman of the association. "Most of the subway entrances and platforms were built over 50 years ago. No one anticipated today's high office buildings with their heavy pedestrian traffic loads. The study will recommend designs for improving sidewalk circulation and the environment of the underground world . . . including ways of opening some to light, air, and a glimpse of the sky."

ENVIRONMENT

POISON AND NOISE . . .

• Rachel Carson's *Silent Spring* is at last reaping a noisy harvest. Ecologist Ian McHarg (see last month, page 33) has predicted that environment will be the rallying issue for the young radicals of tomorrow (see also page 46). In the vanguard is a University of Wisconsin group calling itself the Conservation Research and Action Project (CRAP).

Their doughty band of "DDT Commandos" (motto: "Get the crap out of the environment") recently stormed the Wisconsin State Capitol building in Madison where hearings are being held into the effects of DDT. They were armed with water pistols filled, said CRAP, with the embattled pesticide, and were chanting "Liberate the Ecosystem!" The ecocentrics were stopped and disarmed at the hearing room door.

Inside, the legislature was hearing a number of horror stories getting more and more currency across the country. Wisconsin's hearings, and those in other state capitals, follow Michigan's lead. There, the sale of DDT has been banned following seizure by the federal government of 22,500 pounds of coho salmon from Lake Michigan containing excessive pesticide residues.

• Deafening decibels may be injuring the eardrums of our youth but, says Dr. P.D. McLean of the London University Institute of Psychiatry, noise pollution may be condusive to the retention of learned information.

Dr. McLean's experiments gave student subjects (who were not informed of the nature of the study) a series of nonsense syllables, each matched with a digit. Learning the correct relationships was harder, of course, for the group subjected to noise than for those studying quietly. However, on the following day, when asked to recall the proper pairings, the "noise group's" performance was superior. And now every teenybopper can say "I told you so."

. . . BACTERIA AND BOOMS

• The world of tomorrow, says Stephen Rimsa, 16-year-old scientist-student at Boston's Chelmsford High School, could get turned-on by germs. Rimsa demonstrated his theory that bacteria and protozoa could generate electricity at a recent science fair, sponsored by the *Boston Globe* and held at MIT.

His "Biozoa Reactor" consisted of two glass containers of living "biocells" in a white gummy substance connected by electrodes and wires to a demonstration panel of light bulbs, a neon sign, and a transistor radio. These devices did

(continued on page 93)

UNITY TEMPLE REVISITED

BY HENRY WRIGHT

According to an in-group saying, the theoretical physicist who has not made a fundamental contribution to his chosen field by the time he is 30 is unlikely to do so. Architecture, too, has few late bloomers. Louis Sullivan was 25 when he became the better half of Adler and Sullivan, and just over 30 when design work on his famous Auditorium Building began, in 1887. Frank Lloyd Wright, who joined the firm that same year, was either 18 or 20, depending on which of his birth dates you accept. And by the time he was 22 (or 24), Wright had designed the Charnley house, which he later—with matter-of-fact immodesty but a good deal of justification—called "the first modern building."

Having made a number of fundamental contributions to architecture before age 30, Wright went on, in the first decade of the new century, to design at least three buildings which became world famous: the Larkin Building in Buffalo, N.Y., Unity Temple in Oak Park, Ill., and the Robie house, now the Adlai Stevenson Memorial Foundation offices near the University of Chicago.

Of these three best known buildings of Wright's "first golden age" the Larkin Building has been demolished, the Robie house was abandoned, then restored. Only Unity Temple has continued to serve the purpose for which it was built. Indeed, many of those attending its Sunday services are descendants of the families who built it, when Oak Park was on the edge of the prairie, and Frank Wright's "house with the tree through the roof," three blocks to the north, a sight to show Sunday visitors.

The religiously inclined might well conclude that God has had an approving eye on Unity Temple and its Unitarian-Universalist congregation these 60-odd years. Had their number increased, they would soon have outgrown the social and Sunday school space provided. Had the congregation shrunk more than it did, it could not have continued to bear the financial burdens attendant upon living with an architectural landmark—burdens which in recent years have become more and more onerous. That things have bumped along as they have—divine intervention aside—reflects the fact that Oak Park and nearby River Forest have remained so much as they were when the church was built: a collection of substantial middle-class houses (many Wright-designed) set on large lots amid what are now really venerable shade trees. With a decisive change in neighborhood character, the Temple, like many lesser religious structures marooned in former residential areas, would have become a white elephant. Given its location a block and a half from the Oak Park station of the "El," any unoccupied church building would soon fall victim to the wrecker's ball.

There are some 75 Frank Lloyd Wright buildings in the Chicago area, more than a third within a half-mile or so of Unity Temple. It would be sad to see any of them demolished, but the Temple is a special case. It is one of a handful of public, monumental buildings designed during what is to some Wright's most important "period." And among the survivors it is the most successful as well as the most innovative. Its significance is essentially architectural: it speaks to the building designer, it speaks *of* building design, and it illustrates the multifaceted design *process* at its best.

Thirty—or 40, or 50—years later it would have been hard for even a fairly well established architect to persuade a church group to go along with the lucid approach that made the Temple possible. How did Wright manage to do so in 1905?

Here is the bare outline: Wright's mother, who had followed her son from Madison, Wis. to a South Side Chicago boarding house, soon renewed an old friendship with the Reverend Miss Augusta Chapin, at that time pastor to Oak Park's Universalist congregation. Miss Chapin invited mother and son to live with her in Oak Park. When Wright married, he located his first house and studio there and became a member of the church. Fourteen years later the congregation's frame church burned to the ground. Dr. R. F. Johonnot, who had replaced Miss Chapin as pastor, asked Wright to design a replacement. According to Wright, Dr. Johonnot had in mind a white New England meetinghouse with a steeple. Wright's approach, on the other hand, anticipated by 65 years attitudes fashionable in religious circles today. Here are his recollections, written 25 years later:[1]

Why not build a temple to man, appropriate as a meeting place, in which to study man for his God's sake? A modern meeting house and good time place.

"Build a beautiful ROOM proportioned to this purpose. Make it beautiful in this *simple* sense. A *natural* building for natural man."

Sounding a bit like one of today's college students, he adds:

"The pastor was a 'liberal.' His liberality was challenged, his reason piqued, and the curiosity [of the church trustees] aroused.

"What would such a building be like? They could imagine no such thing.

"'That's what you came to m for,' I ventured. 'I can imagin it and will help you create it.'

"Promising the building com mittee something to look at soor I sent them away—they nc knowing, quite, whether the were foolish, fooled, or foolin with a fool."

The *Autobiography* then goe on to describe the birth of th design in a step-by-step accoun which might well be used as text for design classes today. I is as though Leonardo had lef notes on his composition of th Last Supper:

"That ROOM; it began to b that same night.

"The first idea—to keep noble ROOM in mind, and let th room shape the whole edifice, le the room inside be the architec ture outside.

"What shape? Well, the answe lay, in what material? There wa only one material to choose a the church funds were $45,000 t 'church' 400 people in 190 Concrete was cheap.

"But concrete at that tim meant wood 'forms.' The form were always the chief item o expense, so to repeat the use o a single [form] as often as pos sible was desirable, even neces sary. Therefore a buildin [with] all four sides alike looke like the thing.

"What had concrete to offe as a cover shelter? The slab, o course. The reinforced slab. Noth ing else if the building was t be a thoroughbred, meanin built in [a single] character, ou of one material. That would mak their temple a cube, a nob form.

"The site was noisy, by th Lake Street car tracks. Ther fore it seemed best to keep th building closed on the thr front sides and enter it from court at the center of the lot.

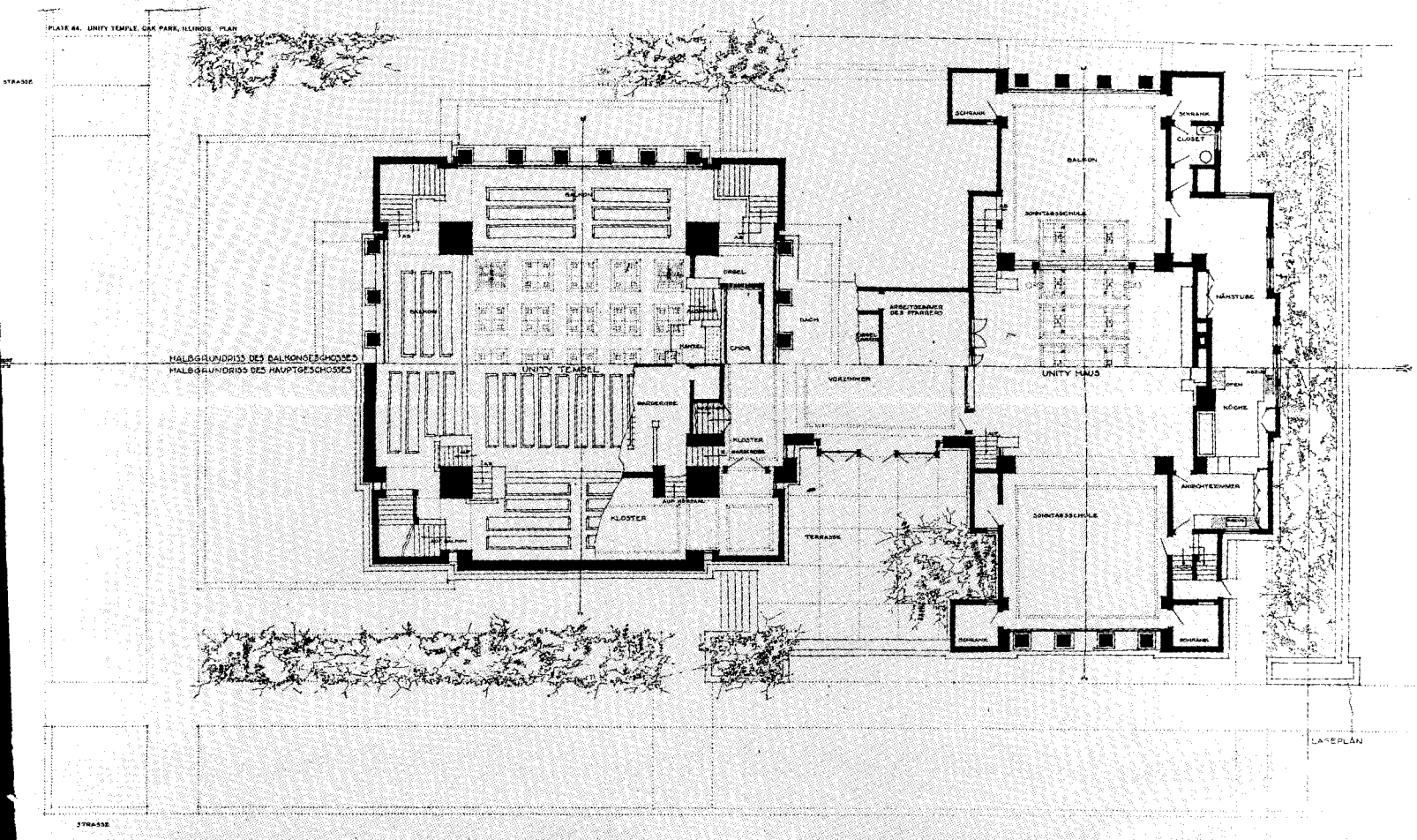
"Unity Temple, with th thoughts I have just express arrived easily enough, but the was [also] the secular side Universalist church activities entertainment—Sunday Scho feasts, etc. . . .

"To embody these latter w the temple would spoil simplicity of the room—the nc ROOM . . .

Mr. Wright (not a relative of the architect of Unity Temple) is a former Managing Editor of the Forum, and is a frequent contributor to this magazine. *He is now Regents' Distinguished Professor, College of Architecture and Design, Kansas State University.*

1. *Frank Lloyd Wright, An Autobiography* (New York, 1932), pp. 154-163 (condensed and slightly rearranged).

PLATE 64. UNITY TEMPLE, OAK PARK, ILLINOIS. PLAN



"So I finally put Unity House[2] at the rear of the lot. It thus became a separate building but harmonious with the Temple—the entrance to both to be the connecting link between them. That was that."

That was that only in the broad sense, however. There remained questions of arrangement, circulation, lighting, seating, etc. As Wright goes on to point out, all of these factors had to be brought together into a single "harmony of the whole." And, he adds, "As always, some minor concordance takes more time, taxes concentration more than all besides." All architects feel the need for such concordance—to borrow his inspired term. But Wright felt it more deeply than most: Unity Temple as we see it is the result. Only after a series of studies did organic unity emerge.

Having satisfied himself with the design, Wright had the task of convincing the church officials that they should cast aside preconceptions of what a church "should be" and build it. In his *Autobiography* he remembers a building committee of four; actually, there were four separate committees: one on site, one on plans, one on ways and means, and one on building. But his memory is probably correct in identifying T. J. Skillin, chairman of the Board of Trustees, as the major opponent of the design. Mr. Skillin was greatly concerned that the church's money be properly spent and inclined to doubt that a concrete cube, virtually unadorned, met that specification.

Mr. Skillin's granddaughter, Mrs. Marion Herzog, an assistant in the spanking-new Oak Park Library, confirms this—also that her grandfather, as further recounted in the *Autobiography*, was completely "sold" once the Temple was built.

On the other hand, Wright sensed that Charles E. Roberts, a mechanical engineer and member of the committee on building, was a sympathic soul. He showed the design to Mr. Roberts privately and asked his advice on presenting it to the others involved. Roberts suggested a model; one was built and submitted; the design eventually was approved, a contractor found, and construction begun in June, 1906.

Approval by the various church committees evidently left some doubt as to the attitude of other members of the congregation. The result was still another committee: one to prepare an illustrated brochure—surely an unusual step in the case of a $45,000 suburban church. The brochure appeared coincidentally with commencement of construction, under a title hand-lettered by Mr. Wright or one of his assistants:

THE NEW EDIFICE OF UNITY CHURCH, OAK PARK, ILL. FRANK LLOYD WRIGHT, ARCHITECT. DESCRIPTIVE AND HISTORICAL MATTER BY DR. RODNEY F. JOHONNOT, PASTOR. PUBLISHED BY THE NEW UNITY CHURCH CLUB, JUNE-NINETEEN HUNDRED AND SIX

Insofar as the brochure reads like a Unitarian-Universalist sermon, it is presumably the work of Pastor Johonnot. Occasionally the words—or at any rate the ideas of the architect break through. And at times one can practically hear minister and architect speaking in close harmony. But the brochure is no apologia. Wright and his newfound disciple are giving their friends and neighbors a short course in architectural appreciation. It begins:[3]

"Every radical departure from the customary must make its appeal to reason to determine its worth and truth. Without good reason we should not depart from the customary. Especially is this true with regard to things sacred. But if the change is governed by sound reason, it compels an adjustment of thought. . .

"The fundamental principle of all architecture is that the form must fit the function; that is, a building must be adapted to the uses to which it is to be put and should express those uses in its form. . . ."

After a detailed description of the building, the argumentative vein resumes:

"The plan and style of architecture have been determined by no desire to create something unique [!], but are founded upon substantial reasons; they are the natural and even necessary outcome of existing conditions; the rational solution of a given problem. . . ."

Thus, while there may be some doubt as to whether Wright's approach was ever all that "functional," it is interesting that he felt it would be persuasive to assert that it was. And that, in 1906!

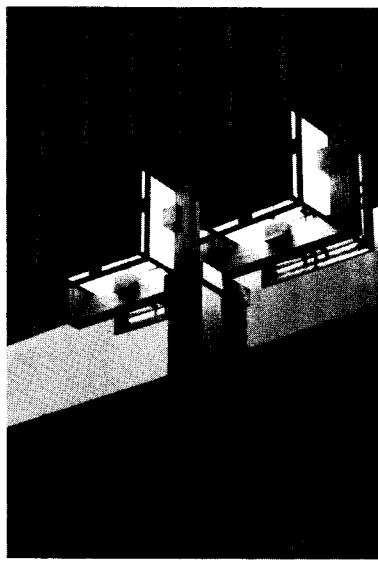
In his use of concrete "poured and tamped in forms"—as the brochure put it—Wright was not many years behind the French pioneers De Baudot, Perret, Garnier. In other respects his design was years ahead:

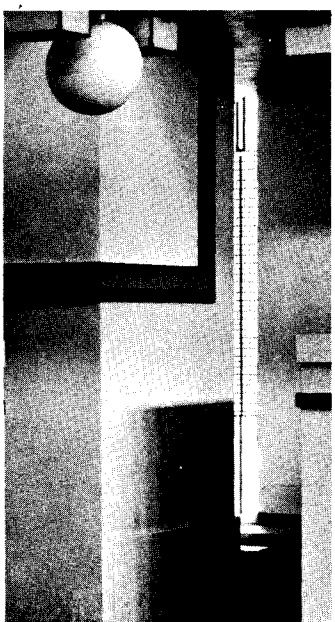
- The narrow slit windows which separate the corner stairways from the cruciform mass on the outside run past the stair landings in the way later used by Gropius and Meyer in the Fagus factory, and still later by Gropius in the Bauhaus. Besides their highly significant esthetic role, these windows had an equally important practical function, at a time when it was considered almost sinful to use electric light in the daytime. Without them, the corners of the room behind the bulky square columns supporting the upper roof would have been quite dark.
- In the same way, the high windows on the four sides of the cruciform space form a *continuous glass plane* behind the six columns supporting the roof, the manner of Mies' separati of glass and structural colum in the Seagram lobby and el where. Wright's use of this d vice made it feasible to keep t sills of the windows very hig thus avoiding glare in the ey of those on the opposite bal nies, while making the *appare* sill on the outside much low By echoing it in the chur house he was able to conceal t fact that there were two lev to be lighted, the main floor a the Sunday school balconies, a maintain a monumental scale the church house correspondi to that of the Temple.
- The skylights constituting t ceiling of the square central po tion of the ROOM are fitted w electric lights above the low glazing so that this important d sign element can appear night much as it does in the da time. Almost half a century la Alvar Aalto used this idea in t dining room of his MIT dorm
- On three sides of the squa the balcony balustrades—co crete, like everything else—co stitute structural beams suppo ing the balcony floors. The floors, much shallower than th are wide, span between the b cony rails and the closing wa and join the corner piers to c ate a tightly knit structu While on a much smaller scale, rivals the Roman Pantheon as expression of monolithic concre
- Integration of the organ in the design of the room, compl with a handsome screen consi ing of the very long, verti wood strips which were a Wrig trademark as early as the Cha ley house, shows how easily digested traditional elements a adapted them to his "moder purposes. As late as the 19 contemporary architects w still struggling with such pr lems in their church designs coming up with nothing n inspired than the A-frame. this sense Unity Temple may called the progenitor of Sa nen's MIT Chapel.
- The "bi-nuclear" organiza of the Temple and church h anticipates Breuer's use of term—and idea—in his h designs. More important,

2. "The name 'Unity House' is given to the building used for social service, the name 'Unity Temple' to the building used for public worship. While it is common among us to speak of our houses of worship as 'churches,' the use of the word 'temple' is better for many reasons. It allows us to keep the word 'church' to its distinctive meaning, namely, that of the body of Christian worshippers, and thus prevents much confusion resulting from the different meanings of the word. This usage also keeps us in line with the Biblical use of the terms; for the word 'temple' is always used to designate a house of worship, while the word 'church' always refers to the body of worshippers . . ." —*The New Edifice of Unity Church.*

3. *The New Edifice of Unity Church*, reprinted, 1961 by the present congregation and available for $1 at Unity Church, Lake Street and Kenilworth Avenue, Oak Park, Illinois 60302.

Many of the Unity Temple's design innovations influenced subsequent architecture. Narrow slit windows (exterior and interior views, below left) separate the central cruciform space from the corner masses. High windows (left) form a continuous curtain, isolated from structural columns. Skylights (top left) are fitted with electric fixtures above the lower layer of glazing, so that they remain the principal light source even at night. The wood organ screen (above) is integrated with the design of the room, and the balcony balustrades are actually beams. Rectangular light fixtures in front of the organ screen (right) make use of reflections between planes. The entrance link (below right) between the two major masses anticipates the "binuclear" layouts, so popular a few decades later.





articulation of these elements into a total design presages the sculptural clarity achieved by Dudok in his best buildings at Hilversum.

The design also illustrates one of Wright's most inspired planning devices in a fully developed form. Follow, on the ground plan, the path into the Temple. Location of the entrance lobby behind the main room meant that the entrances were on the side streets, rather than on Lake Street, which the church symbolically "faces." But although these entrances are *on* the side streets, they are definitely not *from* them. Parapet walls, high on the sidewalk side, screen the entrance terraces and "turn" them towards the more important street. The visitor is taken firmly by the shoulders, as it were, and made to enter the building as the architect intended he should.

Once on the terrace, he is turned toward the lobby; once in the lobby, towards the Temple. Even then, in true Wrightian fashion, he does not see the main room; he must "discover" it by making his way around two more corners, past the narrow slit windows recalling the exterior of the building, and into one or the other of the characteristically low-ceilinged "cloisters."

Several problems are thus solved simultaneously: the 180-degree about-face required by the entrance location, the problem posed by the central position of the podium, which blocks the entrance side of the main space, and the compelling necessity to treat both sides of the seating area equally, since there is no convenient way to get from one side to the other once you have entered the right or left cloister.

It is the seating geometry of the Temple, however, that is its most unusual and successful feature. Consider: there are *six* balconies—balconies on three sides of the room and two levels. Each is only four rows deep and seats about 50 people—taking care of some 310 all told. The central square contains ten rows of pews and accommodates another 100. The room thus holds a congregation of over 400 with the furthest seats the equivalent of 15 rows from the podium. Intimacy is the word for it. *No one* is further than 45 ft. from the minister, most are a great deal closer. Nor does anyone have the feeling of being very far above or below him. As Grant Carpenter Manson has pointed out: "This close relationship, plus the great simplicity of decoration of the room and its astonishing brightness, conspire to give a grand sense of the meaning of Unitarianism and its total lack of pomp and circumstance." It is in effect still to be matched, much less improved upon, and seemingly as adaptable to today's jazz and folk masses as to the Unitarians' traditional reading of late 19th Century poetry.

The word "acoustics" does not occur in the Johonnot-Wright brochure, despite two references to the noise of street cars, one to explain the entrance scheme, the other the absence of windows in the lower part of the building. Wright, however, was aware of Dankmar Adler's success with the Auditorium Theater, and approved of the way the sound reached every seat, unmodified by the room.

From the same point of view, the acoustics of the Temple may be considered a triumph. As all acoustical triumphs must be, this one is circumscribed by the desired result. Unity Temple does not *sound* like a traditional church, any more than it *looks* like one. It is not sonorous and is only slightly reverberant, but it has no vaulted ceilings, either. On the other hand, the nuances of the spoken word are the essence of the Unitarian-Universalist service. And these nuances are eminently audible, as they could never be in, for example, King's College Chapel in Cambridge or even Boston's Symphony Hall.

Years after Unity Temple was designed, the British acoustician Hope Bagenal pointed out that galleries were added to German churches at the time of the Reformation in order to put more of the congregation within hearing distance during the sermon and that these galleries tended to improve the sermon's intelligibility by reducing the free-air volume. In his design Wright carried this principle several steps forward. In fact, it is doubtful if there is anywhere another space, seating so many, so well suited to its main purpose: listening to the unreinforced voice of an individual.

Recently R. Lawrence Kirkegaard of the Chicago office of Bolt, Beranek and Newman attended a service at the Temple and—somewhat startlingly—burst a balloon in order to record its reverberation time. With a congregation of 100 this turned out to have a mid-range average of 1.55 seconds. This, he points out, would still be considered "an appropriate design goal for a church of this size and intimacy." His report continues: "The 'bass ratio' (the average of the 125 and 250 Hz values divided by the average of the 400 and 1000 Hz values) is about 1.23, which is also quite appropriate. The high-frequency reverberation times were very short due to the high sound absorption of dry air found in unhumidified, heated spaces during the winter. Some persons remarked that hearing conditions during the summer deteriorate. This may possibly be because of longer high-frequency reverberation, but more probably it is because of increased traffic noise with the windows opened for ventilation."

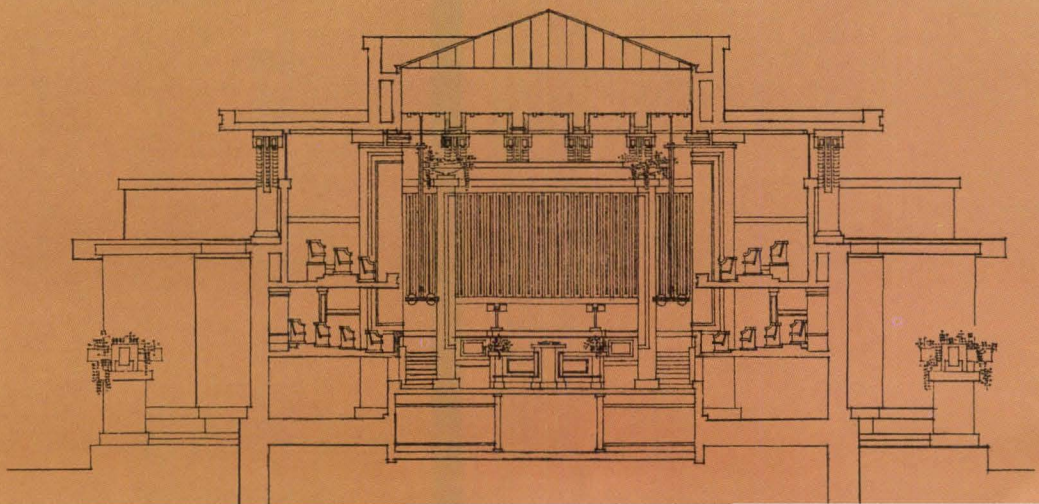
More poetically, Kirkegaard describes the closed-window condition thus: "There is complete intelligibility of the spoken word combined with some reverberant support for the musical part of the service. The sound is *neither* asceptically dry nor spine-tinglingly alive; it has warmth and immediacy; it is very human in scale. The minister or a soloist is comfortably able to fill the room with sound whether speaking or singing.

"There is neither mystery nor miracle behind the acoustics of the room. They result naturally from the concept of the space; a concept which placed everyone in the congregation within sneezing distance of the minister, which put hard-surfaced, somewhat reverberant circulation spaces [the 'cloisters'] alongside the nave, and which put every member of the congregation within 10 or 15 ft. of an effective sound-reflective surface."

On the negative side, Kirkegaard noted three sources of background noise: "[1] Outside traffic noise penetrating through the windows at the upper walls; [2] noise from the organ blower transmitted through the structure because of inadequate vibration isolation; and [3] hissing, sputtering and clanking associated with steam heating—heating that was added shortly after the Temple was built, when it was found that the hot air system failed to do a satisfactory job, probably because of the lag effects of the massive, uninsulated concrete structure."

As already mentioned, Wright designed a handsome enclosure for the organ, but the organ itself was replaced in the 1920s. Kirkegaard suggests that the console might be relocated, together with the choir, in the rear balcony, retaining the present pipes. The blower, he notes, should be remounted in any event. He adds: "Ideally the space should be air conditioned, perhaps using the original ventilating shafts. This would eliminate the noise of the steam heating system in winter and traffic noise in summer."

One reason that Unity Temple is still with us is the resilience of its minister, the Reverend Robert M. Rice. In addition to the usual problems attendant upon holding his flock together through a turbulent 17 years, Mr. Rice has had to weather a series of crises when a considerable portion of the congregation—once almost a majority—have wanted to "walk away" from the "edifice" and build anew somewhere else. Rice, however, feels strongly the responsibility of the congregation



towards its building as an architectural landmark. He is fond of recounting how a tour guide at the Doge's Palace, a quarter of the way around the globe, was aware of Unity Temple and its significance. He is anxious that his parishioners be at least equally aware of it.

The building has caused Rice minor problems as well as major ones. Another of his stories concerns a female church member (and former Episcopalian) who left the congregation because she "couldn't feel she was in a church." (This problem just *might* have been solved by installation of an electronic organ with a "reverb" attachment.) Another member of the congregation objected to the lighting fixtures flanking the podium because, he said, they "look like traffic lights." (He might have objected to traffic lights looking like the lighting fixtures, which were there first by a good many years.)

Rice takes such problems in his stride, along with the steady stream of American and foreign architects who call him at all hours asking to be let into the Temple to look around and then take up half a day with their questions and pronouncements. He shows no sign of cracking under the strain but certainly deserves more support than has been supplied by the profession to date. This has been limited to a 6 by 6 in. plaque designating the Temple "one of 17 American buildings designed by Frank Lloyd Wright" which in the opinion of the AIA should be "retained as an example of his architectural contribution to American culture."

More effective support has come from within the congregation under the leadership of one John Michiels. Michiels is a modest young man who is a member of the church Board of Trustees. He is also a project architect with The Perkins and Will Partnership who has made an avocation of preservation of the Temple and of what might be called the "rights of visitation" of the international architectural community.

Three years ago, when sentiment to abandon the building because of its various shortcomings was beginning to revive among the congregation, Michiels worked out plans for improved washroom facilities and three additional classrooms beneath the Temple in the space originally used for oversized cloakrooms. The new rooms were built at a cost of $21,500 and have done much to improve the workability of the plant, while in no way compromising the Wrightian heritage. A year or so later he developed a church tour program designed to open the building to the public at suitable times and with suitable safeguards, while relieving the pastor of the responsibility for such tours, on weekends at least. It was also intended to create a source of income for badly needed maintenance and restoration work.

Merely to keep the church open for visitors on weekend afternoons requires a formidable number of volunteers and an impressive organization. The proceeds are less than munificent, but they have supplied funds for some restoration work. However, the fact that all such work must be done at a cost several times as great as an ordinary structure would require—involving, for example, reuse of original glass, special zinc cames matched to the original design, etc.—is one more reason that the small Unity congregation cannot be expected to go on indefinitely supporting a program whose significance is essentially architectural. In any case, despite the best efforts of the volunteers, the building, while fundamentally sound, is deteriorating. They are like a crew rowing hard upstream at a rate of three miles an hour against a downstream current of four.

It seems clear that the architectural profession cannot rely indefinitely on the efforts of dedicated individuals to keep the Temple in being. Nor is there much point in waiting for an emergency. The emergency, actually, is here. It will take at least $375,000 to restore the woodwork, patch and resurface the concrete walls, install a new organ, replace broken glass, and make other necessary repairs. The main skylight has been covered with fiberglass to prevent leaks. This is darkening and should be removed, but in order to do so the skylight itself must be reconstructed. Some of the original electric system, especially the parts consisting of obsolete "knob and tube" wiring, needs replacing. And, as Lawrence Kirkegaard has suggested, a modern air conditioning system should be installed and the steam heating system removed.

All of these things should be done first of all because it is *in the interests of the architectural profession that Unity Temple be preserved*. But, unless the Temple is to be embalmed, so to speak, it is essential that a means be found to preserve it and at the same time preserve its use for religious purposes. Since Oak Park is outside the city limits of Chicago, the Chicago ordinance for the preservation of architectural and historic landmarks does not apply. Possibly a board of trustees, sponsored by the AIA, locally or nationally, could assume responsibility for collecting and disbursing funds for refurbishing and maintaining the building, while assuring the congregation or their assigns of continued occupancy. It would be nice if some way could be found to more nearly fill the Temple's 400-odd seats on a regular basis, but this delicate matter is best left to the church authorities.

Had Louis Sullivan's *Kindergarten Chats* been written ten years later, he might well have included an accolade to Wright's Unity Temple like the one he gave to Richardson's Marshall Field warehouse. It could have gone like this:

"Let us pause, my son, at this oasis in our desert. For, when we fret amid the barren wastes and littleness of soul, a rich, sombre chord of manliness, as this is, comes more a welcome.

"You mean, I suppose, that here is a good piece of architecture for me to look at?

"No; I mean here is a *man* for you to look at. A man that has red blood. A man who knows well how to choose his words, who has something to say and says it."

But perhaps what Wright actually wrote expresses it better:

"After this building of Unity Temple, I thought I had a great thing well in hand. I was feeling somewhat as I imagine a great prophet might. I often thought, well, at least here is an essentially new birth of thought, feeling and opportunity in this machine age. This is the modern means. *I* had made it come true. Naturally, I well remember, I became less tolerant, and I suppose, intolerable. Arrogant, I suppose was the proper word. I have heard it enough."[4]

4. Finis Farr, *Frank Lloyd Wright* (New York, 1961), p. 99.

ESTIMATED REHABILITATION COSTS FOR UNITY TEMPLE

Prepared by John Michiels, April 1969. Items are listed in approximate order of necessity.

1. Replace entrance doors; transfer existing leaded glass to new doors. $5,000
2. Rework electrical system throughout building; place lights over Church House skylights. $15,000
3. Replace exterior stairs, and sidewalks around building. $6,000
4. Replace original 36-ft.-square exterior weather skylight over main auditorium. $25,000
5. Restore leaded glass skylight over main auditorium; repair leaded glass throughout building. $5,000
6. Treat exterior of building to restore original color and texture. $70,00
7. Provide new precast concrete planters on retaining walls at exterior entrance plazas. $6,00
8. Provide new skylights over minister's study and robe room. $4,00
9. Landscape as shown on original plans. $8,00
10. Repaint interior of church original color. $9,00
11. Restore original heating system with modern equipment; add air conditioning. $160,00
12. Restore foyer; add furnishings as per FLLW designs. $7,00
13. Rebuild exterior stainless steel program sign to include precast concrete stanchions and cap. $3,00
14. Install exterior lighting building. $7,00
15. New organ. $45,00

Photographs by Richard Nickel.

FRANK LLOYD WRIGHT: THE ELEVENTH DECADE

BY EDGAR KAUFMANN, JR.

This year marks a decade since Wright died, in his nineties. What is left of his work? What do we think of his architecture and its guiding principles? Do we think of these things at all?

Wright's very personal forms have not proved viable in other hands. Whenever they are echoed they have a strange ring. Wright's words survive, but most often as aphorisms applicable to every kind of architecture. We are stopped, challenged, chiefly by his designs and actual buildings. Subject to time's tooth or man's indifference, these still speak to us powerfully, in ways that are unexpectedly direct.

This is because Wright's work embodies three ideas ardently alive today, ideas that are bound to continue to influence architecture. Wright's intent was to make principles manifest; there surely will be more to discover in his designs as time goes on. But now, these three ideas appear clearly related to the current scene: *Territoriality, Clustering, Indeterminacy.*

Mr. Kaufmann, a member of the Forum's Board of Contributors, is adjunct professor of architecture at Columbia, and a lecturer and author.

TERRITORIALITY

Territory and environment are twin concepts that dominate our hopes today. In the exploration of these themes we trust that a working relationship between man and society can be reestablished, between society and the natural order. Here is the very source of Wright's architecture. From the start, as he has told it, even before he became aware of his own direction, Wright struggled to formulate a particular kind of territoriality, one more responsive to the environment than was usual, or ever had been usual, in the art of building. He called it "the destruction of the box." In his works, beginning with his own home of 1889 (Fig. 1), he established territories, centered in kernels of matter or space, and extending responsively and, as shown in the Walter Gerts house (Fig. 2), ever more freely into the environment. It will be possible to show, I think, that in Wright's usage, clusters and indeterminacy are natural developments from this nuclear form. Thus it seems worthwhile to dwell a moment on the expression of territoriality Wright chose, and on its place among other patterns of territoriality recognized by scientists now at work.

Late last year, when the American Association for the Advancement of Science held its annual meetings, one paper was particularly apt to this need. It was contributed by Glen McBride professor of psychology at the University of Queensland, and it outlined four basic patterns of territorial activity found in animal life. These were not typical of species or genera, but rather of moments and situations in the lives of the animals; some patterns appeared during mating and rearing of the young, some during migration, etc. Based in animal instinct, certain of these patterns are very close to the human expressions we find incorporated in architecture. The patterns can be identified (in my words, not Professor McBride's) as the Defended Perimeter (stockade, moat, castle), the Domain Center or Hub (Wright's nucleus); the Center in Motion, affecting surrounding areas as it moves; and the Cen

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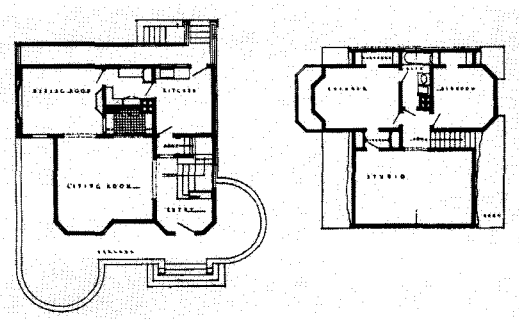

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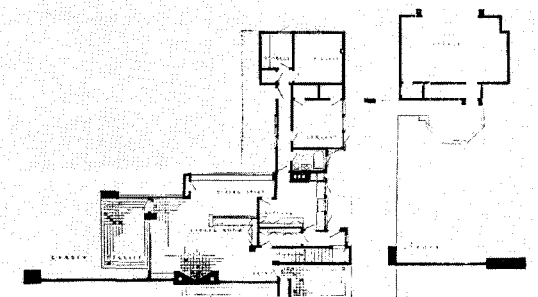

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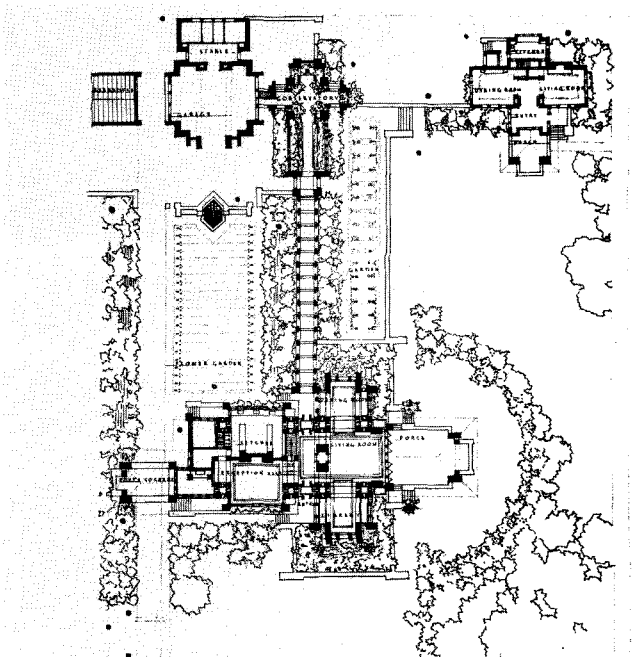

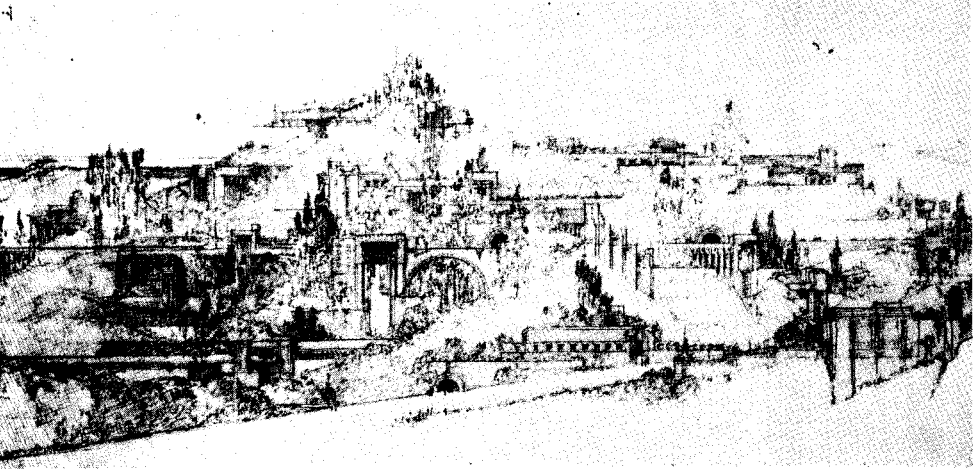

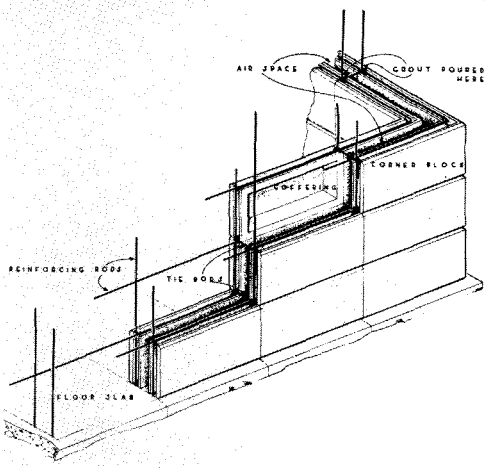

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r in Motion Forward, with re-
ced influence to the sides and
ck. When architecture and de-
gn for nomadic living become
ore amalgamated—a moment
erhaps not too far off—the two
ter patterns may come into
ay for architects.

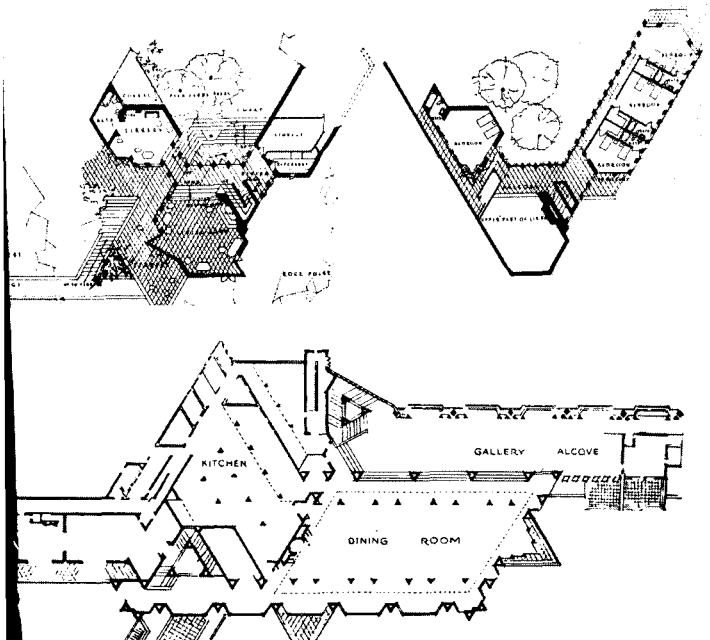
So far, only the first two are
ertinent. And it is clear that
Vright opted for, and developed
pressions for, the one pattern
territoriality that represents
e individual and the group in
ceptive contact with the en-
ronment. Becoming more aware
the trend in his own work, the
ttern came into his view. The
rtified clearing, held despite
imical forces and creatures, was
pified by its wall. The nucleus,
ceptive to the world around
it able to be protected as
eded, was typified by the cen-
al hearth and sheltering roof,
ith screens to direct movement
and give privacy. Wright's "de-
struction of the box" was not an
esthetic campaign waged to estab-
lish new shapes and details, but
a struggle to sense an appro-
priate way for man to behave in
the world around him, with the
world around him.

CLUSTERING

As Wright developed this sense of territoriality through the 1890s and early 1900s, he began to consider the possibilities of grouping architectural nuclei. At first he played cautiously with groups not dissimilar to good residential development schemes of the day. But, even in designing for single commissions, he found opportunities to cluster functions expressively along axes of motion and at their intersections. This trend appeared well developed in the Martin house of 1904 (Fig. 3) in Buffalo (now remodeled to serve a university as the president's house). The grid was rectangular, a field of modules within which major and minor nuclei and screens were spotted freely, rhythmically. None of Wright's early demonstrations of this mastery have survived in reasonable condition; but from fragments, drawings, and photographs it is possible to establish how he combined the ancient device of modules with his nuclear theme to enhance the vocabulary of an architecture of clusters dominating territories.

Modular design carried into the third dimension was another device taken by Wright from older practice, and again he began his experiments in projects for estate development. The grandest of these was a scheme of 1921 for the Doheny ranch in California (Fig. 4). Here Wright combined a system of concrete blocks (Fig. 5), tied by networks of vertical and horizontal reinforcing rods, with a plan based on a spiral roadway circling over mountain gorges and, every so often, expanding into supremely romantic, nuclear habitations. His imagination, loosened from the thrall of rectangularity, began to play with arcs, and with angles of other than 90 degrees.

Wright developed modular grids based on 60 and 120 degrees—hexagons and equiangular triangles. A fluidity of plan emerged that required unusual care and judgment as the forms were projected spatially; an example is the Cudney house (Fig. 6). By 1927, schemes for the San Marcos hotel in the desert (Fig. 7), and its related residences, showed nuclei woven in a new mesh of angular shapes and



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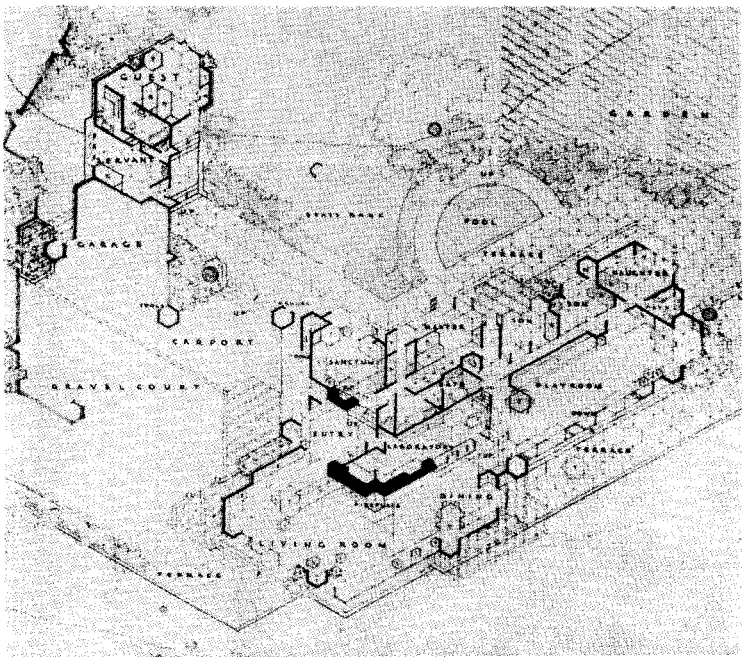

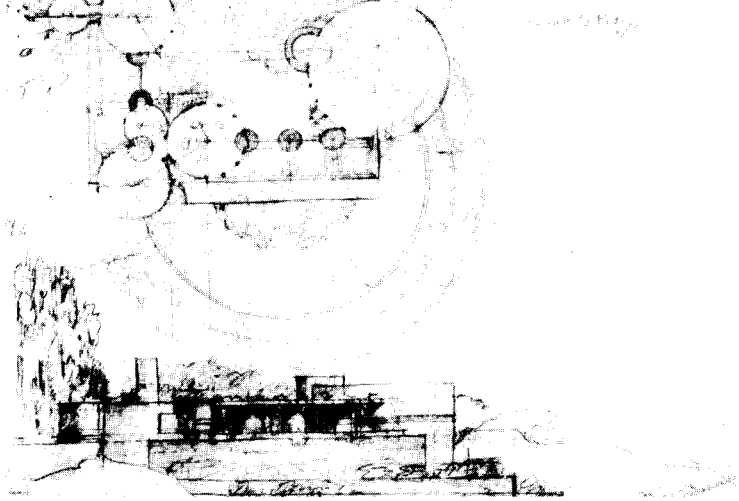

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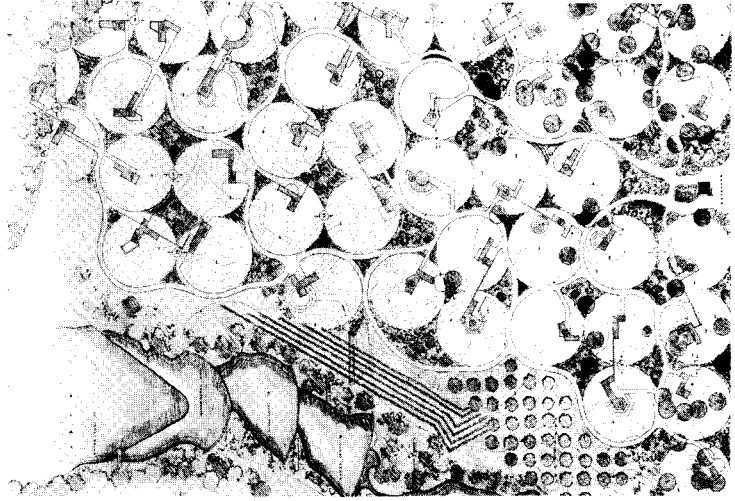

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gliding pathways that had been evolved in the context of Arizona terrain and climate. Balked by the economic debacle from realization, this system waited until, ten years later, it could be adapted and launched at the Hanna residence of Palo Alto (Fig. 8). With diagonal modules Wright's architecture accepted the motility of dance; it provided a structure for movement, endowing everyday existence with some of the expressive scope of ritual and ceremony. Wright's work, in a sense, became an architecture of happenings.

At this same time points and pools of repose appeared in other of Wright's projects. Clustered circles were loosely arranged, as in the scheme for Ralph Jester's house (Fig. 9), or regularly ranged, as are the point supports of the newspaper plant projected for Oregon as early as 1931. In the 1940s, tangential circles formed the pattern of a cooperative development scheme (Fig. 10), each house the nucleus of its circular plot, all embedded in jointly held forest land.

The interplay between nucleus and clustering showed Wright the rich rewards of a casual use of strict elements; he had found a way to that blending of simplicity and complexity which artists have always envied in nature.

INDETERMINACY

In the later years of his life, Wright could not resist the challenge of transposing this experience to the realm of single geometric forms. Over a long period, primary solids had appeared in his designs: the cube of Unity Temple; the cone of the huge Inter-Faith Cathedral (Fig. 11) projected in steel; the curious sphere suggested as a vacation house for Huntington Hartford (Fig. 12). Wright now pursued ways and means of enlivening these ideal forms, tempering their purity while maintaining wholeness in each case. A new level of indeterminacy made its appearance in his work. The mature early houses and buildings had, as it were, led space around cores and between screen walls so ingeniously that an element of uncertainty, of adventure within the context of the composition, had been a distinguishing mark of this architecture. In clustering, this had been united with the reassurance of modular rhythms. Now safeguards were abandoned, platonic solids were lifted free of the ground, or nearly so, and inflected enough that space itself, and not just the inhabitants, seemed involved in the dance. Wright called this continuity, and of course its major expression is found in the Guggenheim museum, or would be were that museum ever to be completed with the varied illumination and screening that was meant to articulate the now barren, repetitive ramp. Within that spiral nebula of space as Wright planned it no star of art would seem blanched or blurred.

Continuity incorporated in a simple geometric solid (the cube, the cone, or the sphere) was also essayed by Wright in lesser but more fortunate works. The square block of space, which is so forthright at Unity Temple, was often varied—though never more subtly than at the Douglas Grant house (Fig. 13), gleaming amid the hills near Cedar Rapids. A high sliver of space, defined by a square screen of glass and a flat roof, is entered down a swift, narrow

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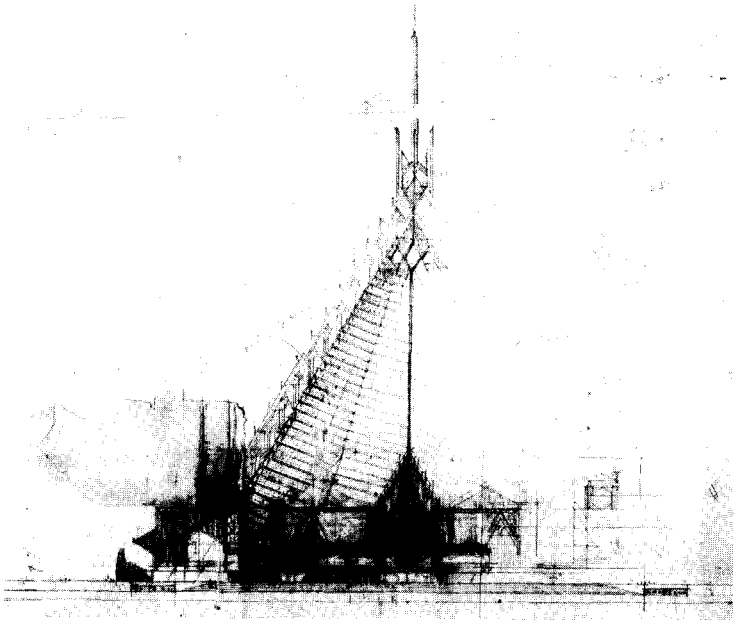

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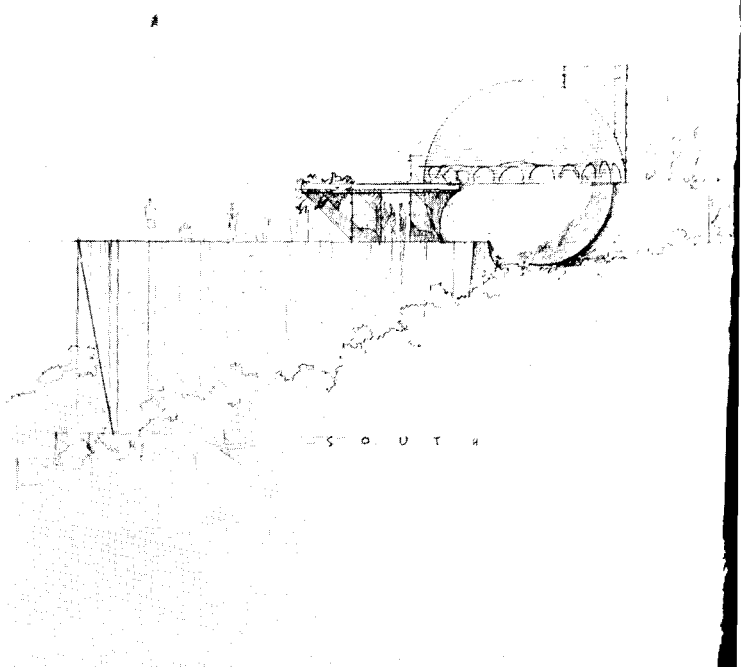

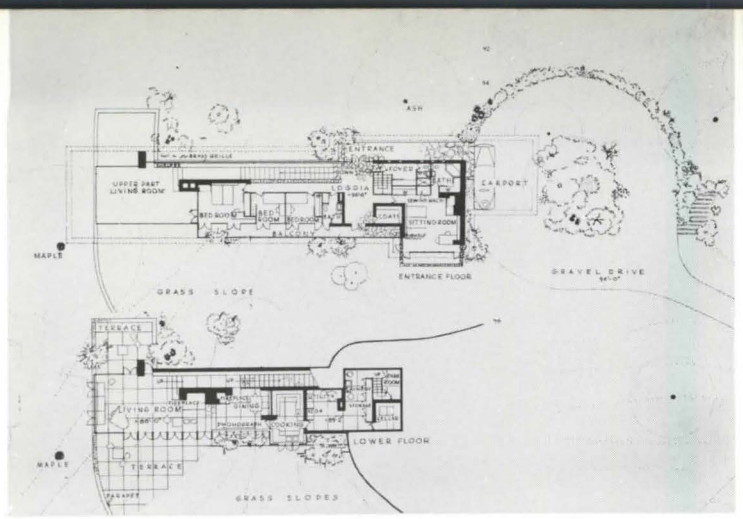

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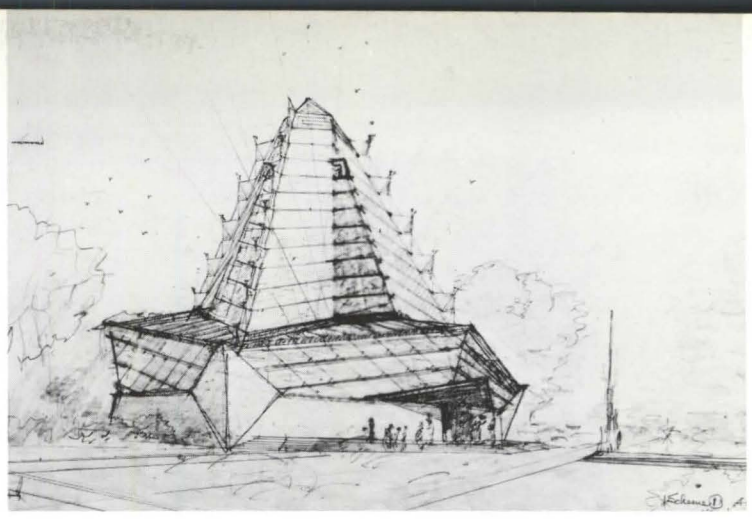

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gorge of stairs from the hilltop. Before the living space itself is reached, a platform breaks the rhythm, leading off to a raised dining area. Above, the main bedroom has panels opening onto the principal space. At ground level the sheer glass walls separate terraces from living room, though all share a level floor. Thus uncertainty and clarity are continually juxtaposed and ideality is refreshed, not denied, by incident.

Wright's great conic cathedral project was, much later, transposed into a smaller synagogue outside Philadelphia (Fig. 14). Here the form is lifted up, allowing a sloping auditorium floor that is faceted to correspond to the faceting of the translucent roof. Below, subsidiary spaces are accommodated. Within the main room, approached by ramps, a space crystal seems suspended in eternity, ready to cradle the congregation in the unending motion of creativity.

So too, Wright modified the rigid enclosure of a sphere until it became paired upper and lower shells, a saucer dome over a stepped, concave floor form, as in the Bailleres project for Acapulco (Fig. 15). Gently recurving and softly hovering around an ideal center, these cupped surfaces are linked by a film of glass, they let light in from a central skylight, and masses of stone anchor the movement in an inglenook of intimacy and warmth. The same shapes are used to different advantage in the scheme for a Greek Orthodox church (Fig. 16) near Milwaukee (executed with some loss of refinement). In these designs the crushing self-centeredness of sphere and hemisphere has been overcome, tamed to the uses of human living.

These late, mature statements of Wright's architecture transmute his exploration of territoriality and flowing space into concentrated paeans of purity in flux. Our modern sense of indeterminacy, of the constant interchange between energy and matter, between man and milieu, between aim and act, is given form. No other age has asked this of its architects, no other civilization has openly pursued these insights into the realm of living matter. So far, Wright has blazed a trail for our times.

How close he came to our thoughts today is exemplified by a quotation from a younger architect who has no evident relationship to Wright at all: Aldo Van Eyck. In the foreword to a recent exhibition ("Our Environment" held by the Associated Artists of Pittsburgh) where Van Eyck acted as a sole juror, he wrote:

A man at home wherever he happens to be, carries his roots with him, with himself, is himself, his own house. He then inhabits his own inner space and his own time. He will also be able to inhabit as it were, simultaneously, all the places to which he is emotionally linked. But, of course, this requires a frame of mind quite different from the one we have burdened ourselves with. . . . It also requires another kind of environment altogether. The one will have to sustain the other, assuming, of course, that a habitable world is what we have in mind.

It is such a habitable world that Wright's creativity sought to bring about; such a world would see Wright's works as arrows pointing ahead.

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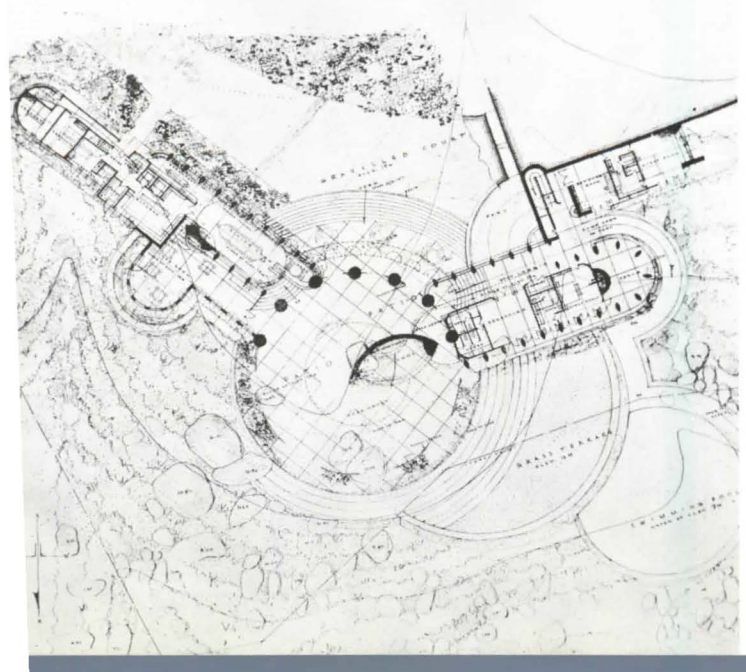

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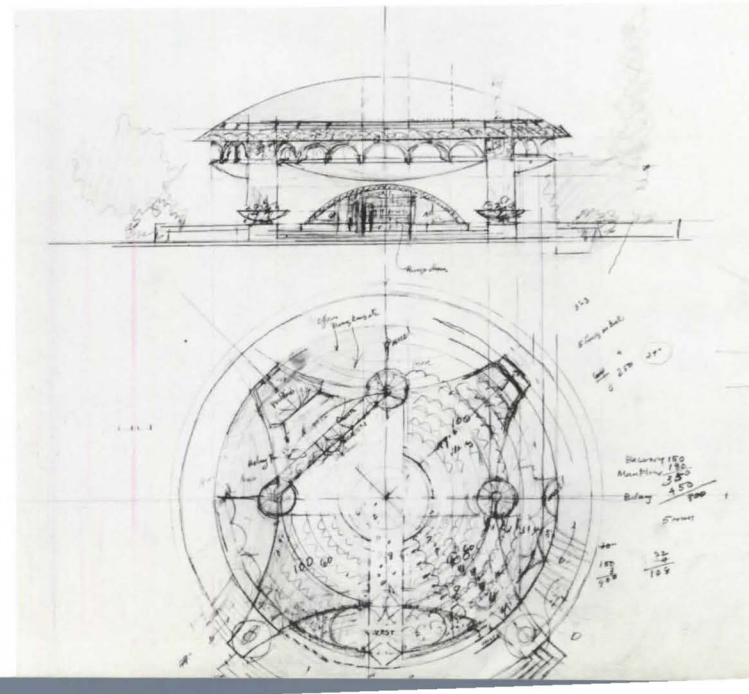
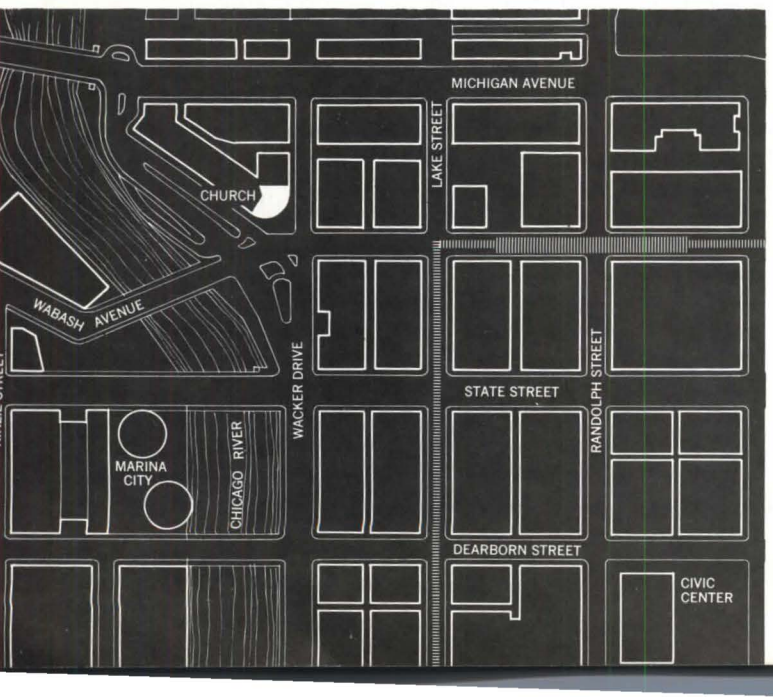


CHURCH IN A GROVE OF SKYSCRAPERS

The towers that line the Chicago River north of the Loop form a cityscape unsurpassed for overpowering scale, except perhaps by New York's Financial District. In the very heart of this cluster of skyscrapers is a small, triangular plot for which Harry Weese & Associates have designed—of all things—a church.

Built for a well-to-do congregation that meets downtown, the Seventeenth Church of Christ, Scientist, has to serve as a sym-



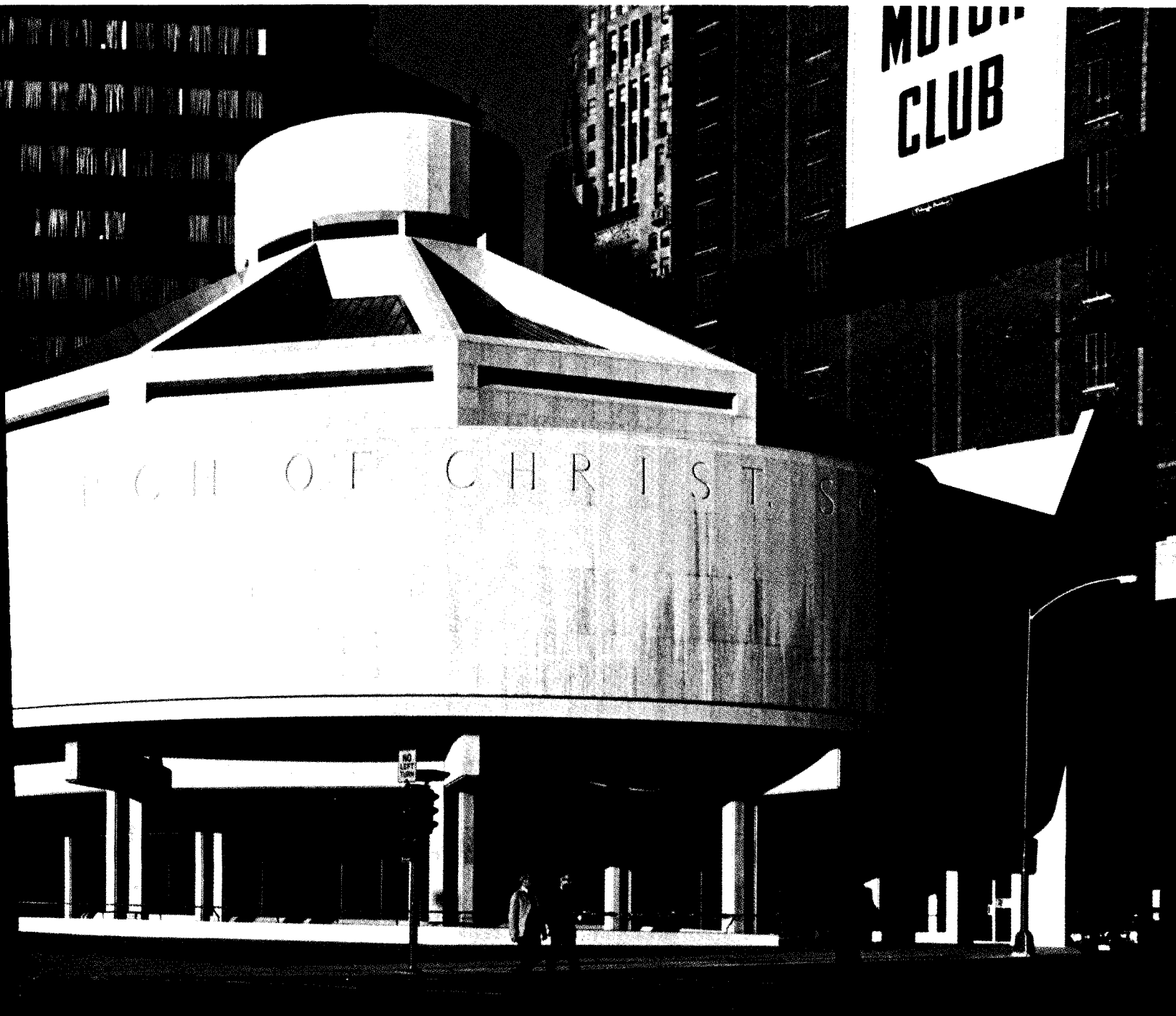
bol of the sect in the city core and as a place to welcome traveling members who stay at downtown hotels. The location chosen is, to say the least, prominent; it is visible for almost a mile along the river and is the focal point for traffic moving east on Wacker Drive.

Clearly, a church on such a site could not be designed as a delicate counterpoint to the massive buildings around it; it had to present a strong image from a distance. Besides, the Christian Science faith is not a ceremonial one calling for expressive forms. Its teachings are transmitted by the spoken word, and its churches are efficient auditoriums, as large as site and budget allow.

In this case, the auditorium is almost as large as the entire site, and Weese has made its semicircular form powerful enough to count in this setting. Elevated above a street-level lobby and topped by a conical roof, the auditorium compensates for the greater size of surrounding structures by exceeding them in *scale*. The 200-ft. unbroken curve of the auditorium wall and the massive projecting ribs of its roof might be overbearing in some situations, but as part of this urban scene they strike a subtle balance.

The building's scale is far out of proportion to its actual size; the observer instinctively measures it in terms of an imagined full circle—156 ft. in diameter—although 60 per cent of the circle is not actually there. It is difficult to see from the ground just what portion of the full circle *is* there, since the two ends of the curved facade cannot be seen at once except from a small area about a block to the west.

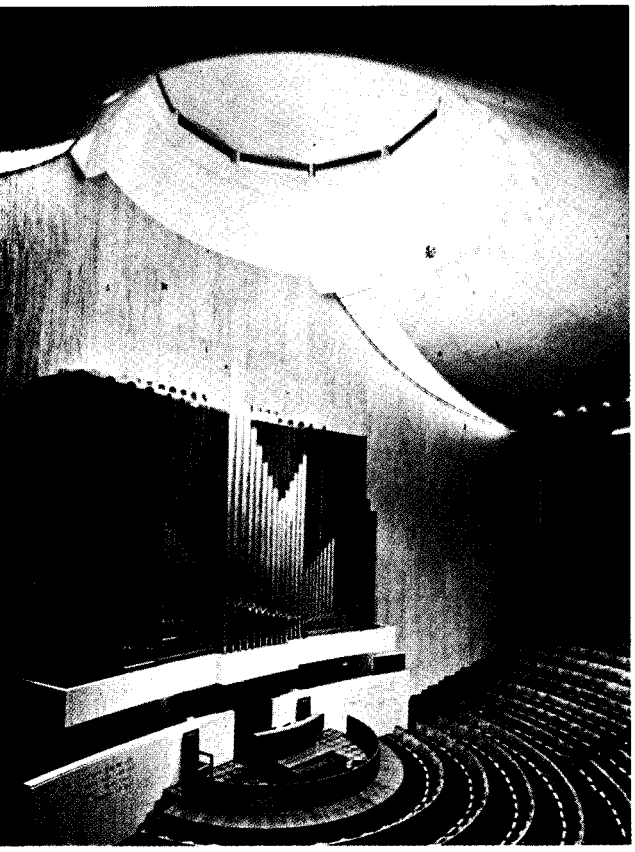
Except for concrete framing members exposed at the street level and panels of lead-coated copper on the roof, the entire exterior of the church is clad in travertine. At present, this soft-

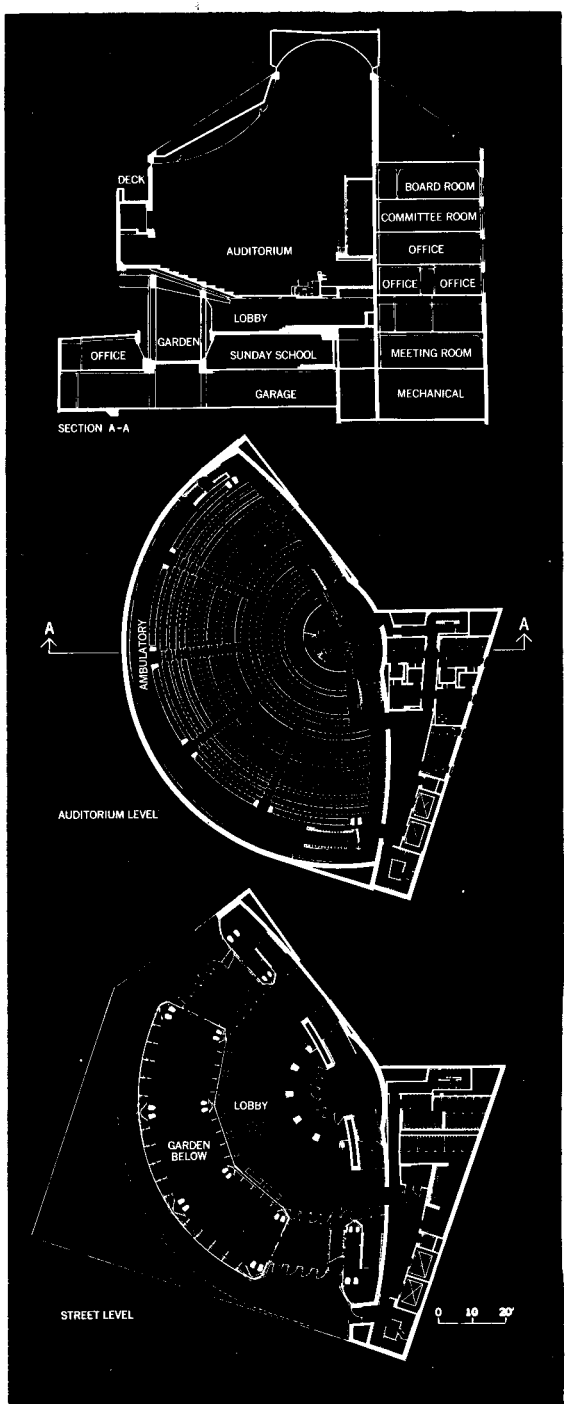


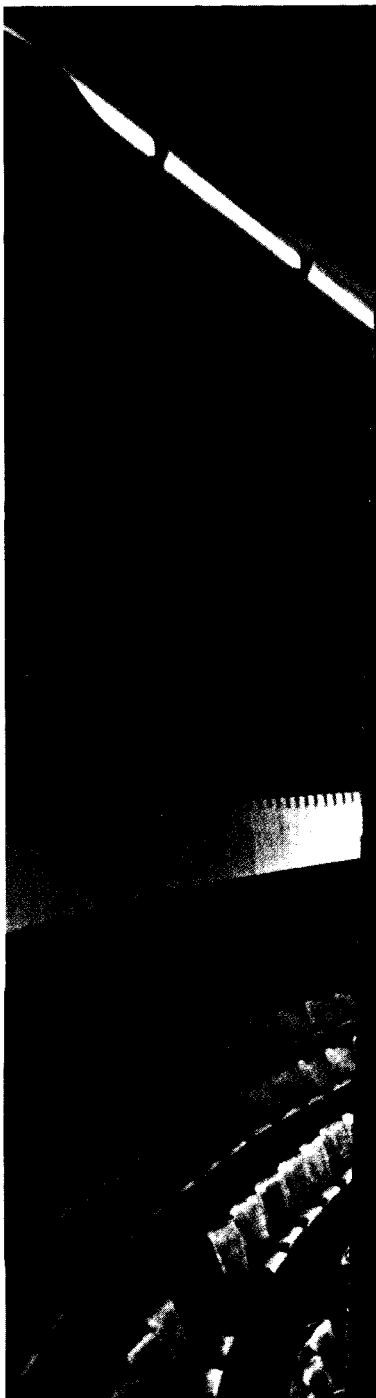
looking, monochrome coating tends to negate the toughness of the building's forms, but weather and grime should soon produce a chiaroscuro effect, accentuating its curves and projections.

Although the auditorium is virtually the whole church in this instance, a few auxiliary spaces were needed. The only way to fit them in was, in effect, to use the site several times over (compare Civic Center Synagogue in New York, Oct. '67 issue). Sunday

An array of organ pipes directly below the drum-shaped cupola (below) is the focal point of the church's auditorium (facing page). The main stairs up to the auditorium from the low, glass-walled lobby (bottom photo) are approached from directly below the speaker's platform.







school and offices were placed under the lobby and stacked in a sliver of space along one property line (see drawings below). The auditorium was raised as little as possible above the street to minimize the climb up to it. Beneath its sloping under surface, a sunken garden was carved out to keep the lobby from being claustrophobic and to admit light to lower-level rooms.

Inside, the auditorium has been treated very simply, in a way that makes its relationship to the exterior form quite clear. Light entering through slots at the base of the roof and around the cupola illuminates all of its surfaces evenly. (Direct sunlight is almost always blocked out by surrounding towers.)

A tent-like suspended plaster ceiling disperses sound in a desired pattern. Acoustically, the room is designed for organ music; speech is channeled through microphones, which are distributed throughout the room to pick up the testimonials included in the Christian Science service.

The auditorium seats 764 people in 13 rows of seats — the farthest only 54 ft. from the reader's desk. An additional 160 can be seated on a bench along the wall of the "ambulatory" at the rear of the hall and in the two tiered gallery above that. Above this gallery is an open deck (accessible from top floor offices) from which the congregation can look back out at the cityscape along the Chicago River.

—JOHN MORRIS DIXON

FACTS AND FIGURES

Seventeenth Church of Christ, Scientist, Chicago, Ill. Architects: Harry Weese & Associates. Engineers: The Engineers Collaborative (structural); S.R. Lewis Associates (mechanical and electrical). Acoustical consultants: Bolt, Beranek & Newman. Interior consultants: Dolores Miller Associates. General contractor: Sumner Sollitt Construction Co. Building area: 45,425 sq. ft. Cost: $2,434,153.

PHOTOGRAPHS: Orlando Cabanban (except page 42, John Morris Dixon).

ENVIRONMENTAL EDUCATION FROM KINDERGARTEN ON UP

It is doubtful that architecture will followReading, 'Riting, and 'Rithmetic as the fourth R, but environmental studies are increasingly making their way into the formal education of children. Maps, models, constructions, games, trips, films, photographs, and TV are the media, for a message pointing to the importance of environment both in its visual sense and in its social and political implications.

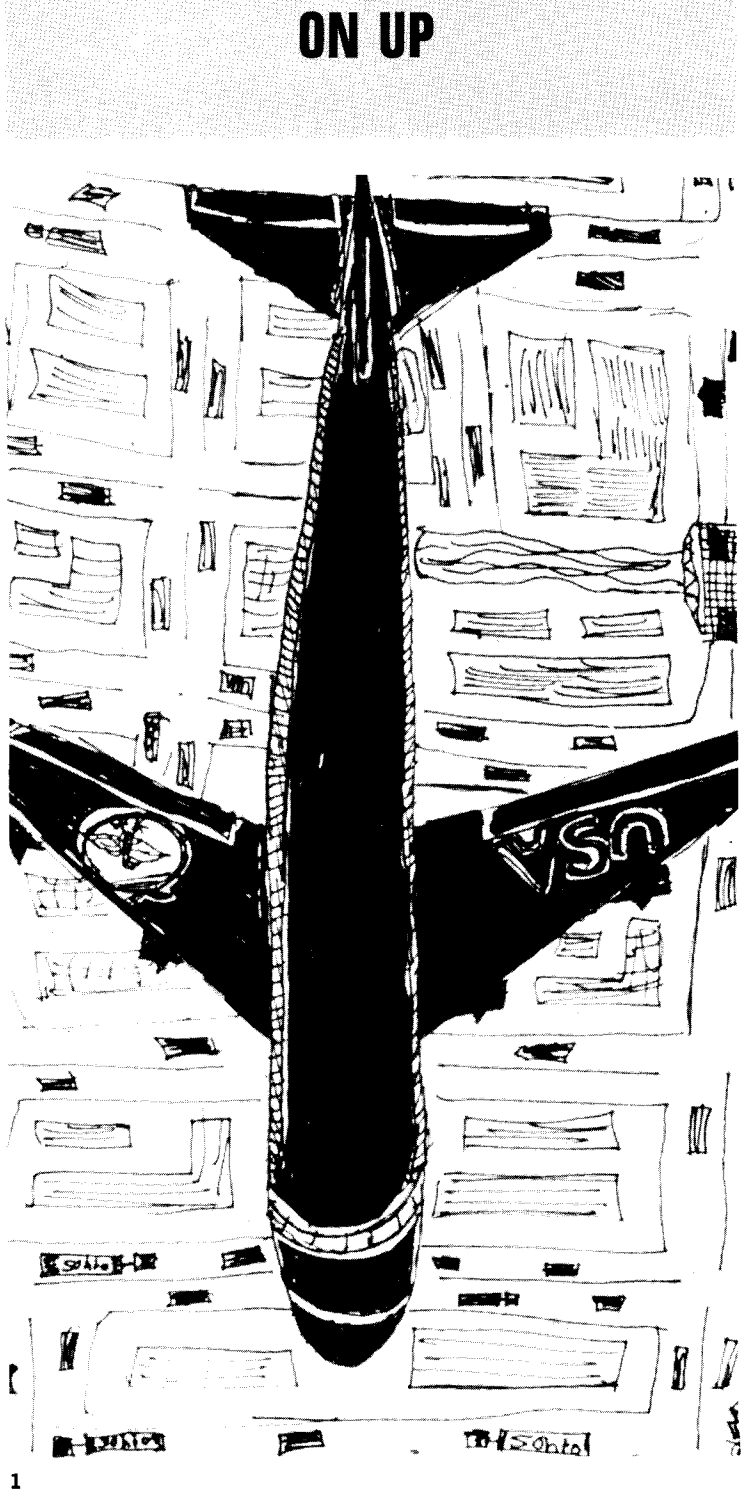
Age levels vary. Some programs start at a single grade, with plans for expanding upward or downward (or outward to a wider geographical area); others seek to permeate a whole school system at once. And not all programs are in schools. Materials vary, too; some fit into the classroom, and some are as large as the real world outside.

Most programs are still experimental, but many have already received the enthusiastic response that assures their continuation and expansion. People whose concern has been either for education *or* the environment are now devoting their energies to a merger of the two. Their goal is not a better professional, but a better citizen, an adult with a developed sensitivity toward his surroundings and a sense of the interactions possible between himself and his environment. And some programs have broader educational goals in mind, and simply use the environment as a means.

The four examples that follow will introduce the variety of programs underway.

Starting with the future

"Design of Alternative Futures" began last summer in Berkeley, Calif., under a state program for high IQ children. The leaders were Jon Dieges and Edwin Schlossberg, continuing a course they had given at Southern Illinois University at the invitation of Bucky Fuller. Some 25 children, mostly 13 and 14, built a model of a functioning community, and then, through role-playing, saw where it would *not* function. They designed a future community, space frames, space capsules, and more—in a course that took shape as they proceeded. (Not all of the children had high IQs, and, in fact, says Dieges, those with the highest IQs often produced "the most regressive structures.")



1

Dieges is continuing this year with three coordinated courses—for elementary school children, eighth graders, and architecture students. Within the framework, roughly, of "design and the future," students pursue in-depth research on whatever interests them. They renew old cities, and build new ones. Over-specialization is no danger, Dieges believes. "Young people are naturally comprehensive, and the deeper one goes, the more one sees how one's work is related to other areas. Because all parts of a city are interrelated, the small groups consult frequently." He finds that even fifth and sixth graders are fully able and eager to move beyond the restrictions of traditional coursework, and into this kind of individual work within a group project (**2, 3**).

The project expands. At the invitation of the Berkeley school district, the university course this spring has been designing a future-oriented class in Environmental Design, which it will teach next year to seventh, eighth and ninth grade classes.

Experiences and travel

MATCH boxes are traveling packages of *M*aterials and *A*ctivities for *T*eachers and *CH*ildren, developed by the Children's Museum of Boston (aided by the U.S. Office of Education).

A "City" kit was created in part by Architect Tunney Lee; another, on "Houses," has a mud-and-thatch hut to build and an igloo to assemble. The kits are designed for two or three weeks in the first, second, or third grade; they can be rented from the Museum, or, since 1968, purchased commercially.

In the city kit, as in all the MATCH boxes, children learn by doing. Trying to find hidden things in a large aerial photo they learn about simultaneity and diversity; dramatizing an imaginary accident, they learn about interdependence; playing a kind of "pictorial scrabble" with the photos, they see relationships among

rban places or happenings; uilding a model of a neighbor-ood, they learn that cities are an-made. When they try to find route for a highway through n imaginary neighborhood, the eacher's guide suggests that vari-us solutions are possible—mov-ng the houses, or building tun-els, bridges, and divided high-ways. "It is also permissible *not* o arrive at a solution," it says.

,000 young planners

"Planning for Change" is a ibrant fourth and fifth grade urriculum developed by C. Rich-rd Hatch Associates. It grew ut of a collection of data on Harlem, gathered by ARCH in 965, when Hatch, founder of RCH, was its first executive irector. It was taught in two lassrooms in Harlem in 1966, hen was expanded (with help rom the Center for Urban Edu-ation) into a full curriculum hat has already reached some ,000 children in New York City. Hatch's firm is now under con-ract to Ginn & Co., educational ublishers, to prepare an eighth rade course for national distri-ution by 1970.

Hatch's intention is to show hat, since the environment is a roduct of multiple human ac-ions, it can indeed be changed y human action. Before the hildren finish the year, they are lready participants in change. n the process, they acquire basic kills—verbal and mathematical -where these are needed in heir work (their first activity to graph the origins of New ork's people in general, and e members of their classroom particular). They find school levant for perhaps the first ne, because it deals with the alities of their lives. They find achers more sensitive to them, ace the children, in effect, are owing teachers their own way life in the systematic gather-g of information about their ighborhood.

During the year, children see w New York City grew, what problems are, who is respon-le, and what is being done change things. They analyze ir own neighborhood in terms its people and jobs, then map its buildings and discuss possible improvements. They look at the city through the eyes of its utopian planners, and its poets and folksingers. For reference material, they have the entire city open to them, supplemented by such class material as four-page cards placed around the room, and freehand filmstrips made by the Hatch office (**4**).

2

3

4

The teacher's volume of resource material is an excellent reference, valuable to any citizen for its concise rundown on city history, government, planning, and politics. Any new curriculum must be made easy for teachers, or they will resist it, and this one makes a vast amount of information easy to grasp and use.

Tangible results have been striking — parents were organized into block associations, two students (from the earlier, eighth-grade course) were appointed full members of the official local planning board, others joined volunteer design professionals to work on local plans. The students learn by doing (their workbooks even have telephone numbers of the borough presidents!). And they learn by role-playing: one example suggested in the teacher's manual is a familiar local problem—a large university in the neighborhood decides to buy up houses and turn them into dorms. "We didn't hire any educational experts," says Hatch, "we mostly did what we thought would be fun." Robert Dentler, director of CUE, considers it the best social studies program in America.

The program for nationwide distribution will obviously not focus on New York. Other changes: the year-long curriculum (for eighth grade) will go further into cities in history, and further into the meaning of planning, as children focus on making "a plan to improve your neighborhood." A game of "Stranded Planners" is new, too —the shipwrecked class finds safety on a desert island, where teams must decide how and where to build shelter and make many other decisions.

"Planning," says the teacher's manual of the New York City

program, "is not an end in itself; it is a process designed to help people think about the future and to work together to achieve the good life." The Hatch courses go a long way toward making students feel less like Stranded Citizens when they grow up.

Environment as an art

"Our Man-Made Environment: Book Seven" is volume one of a series that will eventually put environmental studies into grades seven through twelve in the Philadelphia public schools (**5, 6**).

The inexpensive workbook is fresh off the presses, created by Alan G. Levy of the architectural firm Murphy Levy Wurman, although credit also goes to the school system's division of art education (which made the initial offer), and to the local AIA chapter, the School District, the Howard Heinz Foundation, and the Arnold W. Brunner Fund, which supported it. The publisher is GEE! (their logo has the exclamation point), which stands for Group for Environmental Education, and is composed of Levy, Wurman, and William B. Chapman, executive director of the Philadelphia AIA.

The workbook runs broadly through the environment—what it is, why it is built, what forces shape it, and, as a bridge to later material, how it can be changed. The aim, as Levy defines it, is to increase awareness, to build confidence in judgment ("There are no right or wrong answers," says the workbook, "only choices for you to make, depending on the way you see your world and want it to be"), and to broaden aspirations. "We are against delegating decisions to the professionals," says Levy; "the decisions should be made by those who must live with the results."

Many exercises are die-cut and have interlocking tabs, so that scissors and glue are not needed. The book is well executed. But the exclusion of any "negative" aspects makes for a certain unreality—the kind of unwittingly distorted picture often given to children by adults of goodwill. Levy believes that teachers can relate the subject to the children's reality.

5

6

A guide for teachers elaborates on each exercise, suggesting other projects, discussions, and short trips to enliven the course. "We have to aid the teachers, not burden them," says Levy, "and we want to give them confidence that they already know the environment." Three seminars for teachers have attracted many besides art teachers, and there are plans to use the material in a number of subjects besides the required art course.

Freedom to experiment

Some programs develop where the framework accepts experimentation easily.

Philadelphia's Mantua-Powelton Mini-School is a brand new school for 120 (funded by foundations and the Board of Education) operating in a warehouse. "Urban Affairs" is only one of its innovative courses for youngsters from ten to 15, devised primarily by David Fleischaker, a young Swarthmore graduate who has halted his Ph.D. in political science to teach in this exhilirating place. In nine weeks, the children experience the city as a series of similar and dissimilar places; they see what Mantua has (and lacks); they see how barriers, wards, gangs, and neighborhoods function. They make trips, take photos, ask residents of various neighborhoods such questions as "Where would you choose to live, if you could?" They make checklists on the condition of housing, the mixture of homes and businesses, the cleanliness of streets, the color of people. And during the final two weeks, they build several model neighborhoods. The aim is to see the city as "more than Mantua, but less than a monolithic unmanageable monster." In the process, it is hoped, the children will develop a pride in their own neighborhood—and in themselves.

An elective, from outer space

Phillips Academy in Andover, Mass., offers architecture as a senior elective, but Robert A. Lloyd, who studied architecture himself, didn't want the usual design problem—where, he feels, the student doesn't create real

architecture but concentrates on drafting and model-making, and doesn't see whether a finished project works in reality.

Lloyd also wanted to set up a problem in which he, as teacher, could be no more expert than the students, and he settled on housing for strange creatures from a distant constellation. The creatures turned out to be not so strange, but very much like tennis and Ping-Pong balls; they could survive, it was stated, only by constant and varied motion.

Lloyd describes the solutions—"some using rolling, others bouncing, some attempting to control with precision, others creating systems that allowed for random motion within a control envelope, some depending on rapid staccato motion, others on slow adagio rolling, some graceful, others grotesque, some dependent on continuity, others on contrast, some noisy, others silent." At the term's end, the students assembled these into one single, clattering, rumbling, fantastic *thing*. "Was it a mind? An animal? A town? A city? It suggested all of these and more."

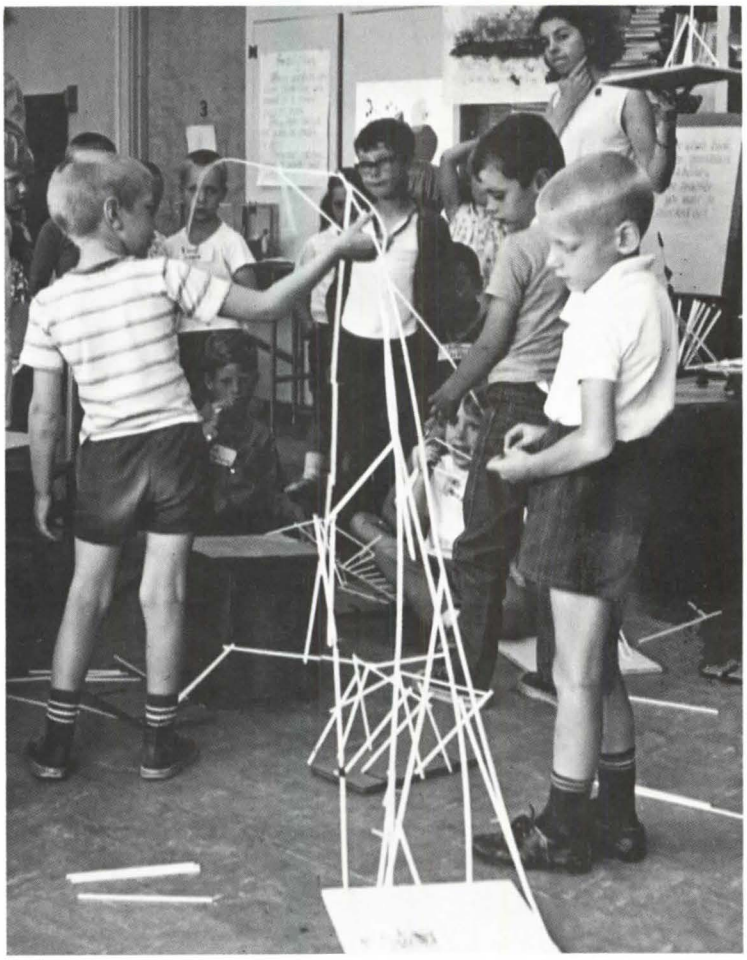
Another class of Lloyd's developed "An Eden for Hamsters," and were confounded when the first beast installed in its multilevel environment began to eat the styrofoam Eden. Students now set their own problems, which is perhaps the most challenging problem of all.

Away from the knowledge pill

Innovation is a business for Education Development Center Inc., of Newton, Mass., which creates "units" for classroom use. Their "Structures" unit—a collection of plastic straws, pins, blocks, etc.—will soon be available commercially (**7**).

The main criterion for any EDC product is whether it causes children to question. The teacher's guide suggests asking children, "How tall a tower can you build?" and "Where does it fall over?" Or, "How many straws can you cut before the tower collapses?" And, "Towers can go upward, outward, downward—does each direction present the same problems?"

One of the advisers on this kit was Neal B. Mitchell, professor of construction at Harvard, and sometime teacher of structures to fourth graders. "When you say good morning to fourth graders, they answer back," says Mitchell; "when you say good morning to graduate students, they write it down." He is convinced of the need for free exploration: "Each time we brought things out to work with, we won, and each time we went for the knowledge pill, we lost. The sooner we get away from telling them, and they get involved in discovering, the better."



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Outer and inner landscapes

"VIZ ED" is the name of an extraordinary course that David Lowry Burgess, a teacher and painter in Cambridge, Mass., taught first in 1967 at the Murray Road School in Newton. (The school itself is experimental, run by a committee of teachers, and offers flexible schedules to students volunteering from existing Newton high schools.) The course owes its existence in part to Sir Herbert Read, who saw the material Burgess had developed several years ago, and urged him to work on it further.

The name is a misnomer. The course is not strictly visual—its 120 exercises are for experiences in all the senses. One student described it as "more than vision with our eyes; it was vision we felt with our minds but saw with our eyes."

In a series of mapping exercises, Burgess asks students to map the most important objects in their environment, the journeys they make, and the locations of their friends. Exploring the "inner landscape" of the mind, they search their innermost thoughts; one exercise is to imagine "a city at the edge of the world." They do landscapes and cityscapes from reality—but adding, subtracting, or rearranging what they see. They also gently probe dreams and memory.

In spring, students move outdoors—building, among other things (and in two hours), a huge dome (**8, 9, 10**). The dome is made of a triple-thick cardboard called "Tri-Wall" that comes in standard-size panels and is used

in industrial packaging. Burgess is doing the course at Boston University this year for art teachers, as well as in Weston, Mass., and he is seeking a publisher for the materials.

The relevance of cities

The innovative "Model City Project" looks superficially like a simple problem in visual form, (**11**), but its educational purpose is much deeper. Inaugurated by Kenneth A. Lieberman in a seventh grade class in Philadelphia's Sayre Junior High School (1967-68), it is operating this year in eight schools throughout the city. Children will learn anything, Lieberman believes, if it is personally relevant. And cities are the great universal experience of urban children. He believes, too, that learning needs a laboratory for its trial-and-error method.

LEGO blocks were chosen for building "a city in which you'd like to live," because of their unlimited possibilities of combination. They are expensive, but are already familiar to many children, and are already color-coded. Masking tape is used for streets.

In addition to countless LEGO blocks, the Model City Project uses a multi-media information bank (with filmstrips, slides, records, tapes, operating all at once). As many as 120 children have been in the first model project at one time, with numbers only enriching the experience. Outside the classroom, the children see, first-hand, some of the city's "physical and functional" aspects.

In the process of building, they learn how to learn: they learn how to gather information and apply it, and they acquire basic skills (in math and reading) when these are essential to the solution of their self-imposed problems. They see that "lack of knowledge is not the same as lack of ability." They also learn, of course, about cities—actual and ideal—and that the individual is "the unit force in society." Says Lieberman, "Nothing exists in a city without the hand of man. And that hand belongs to an individual."

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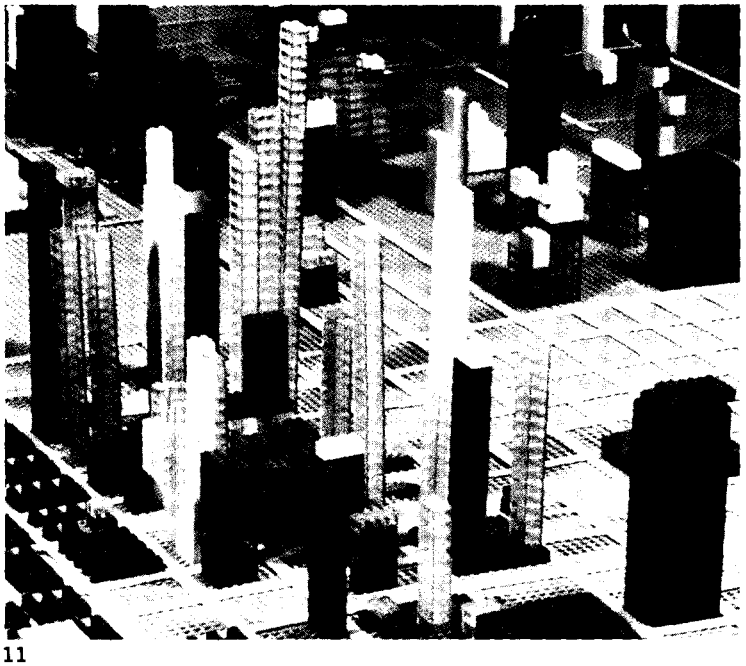

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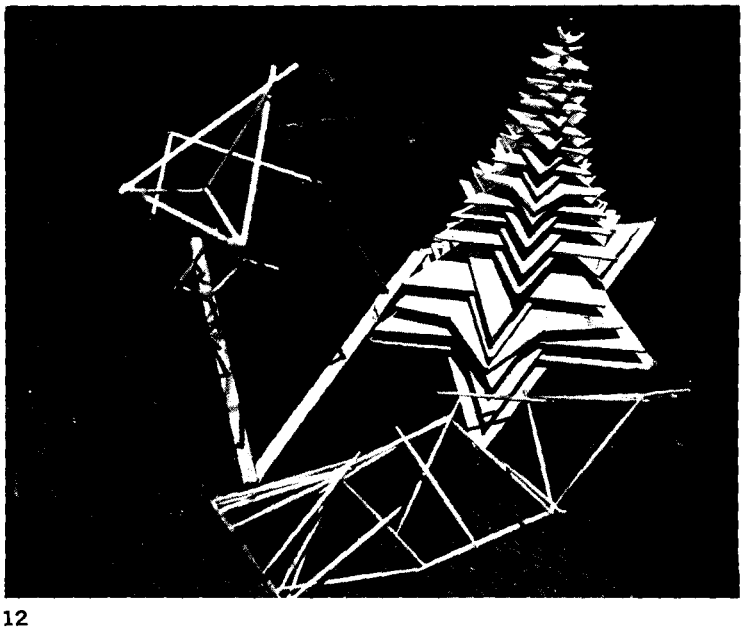

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A staggering diversity

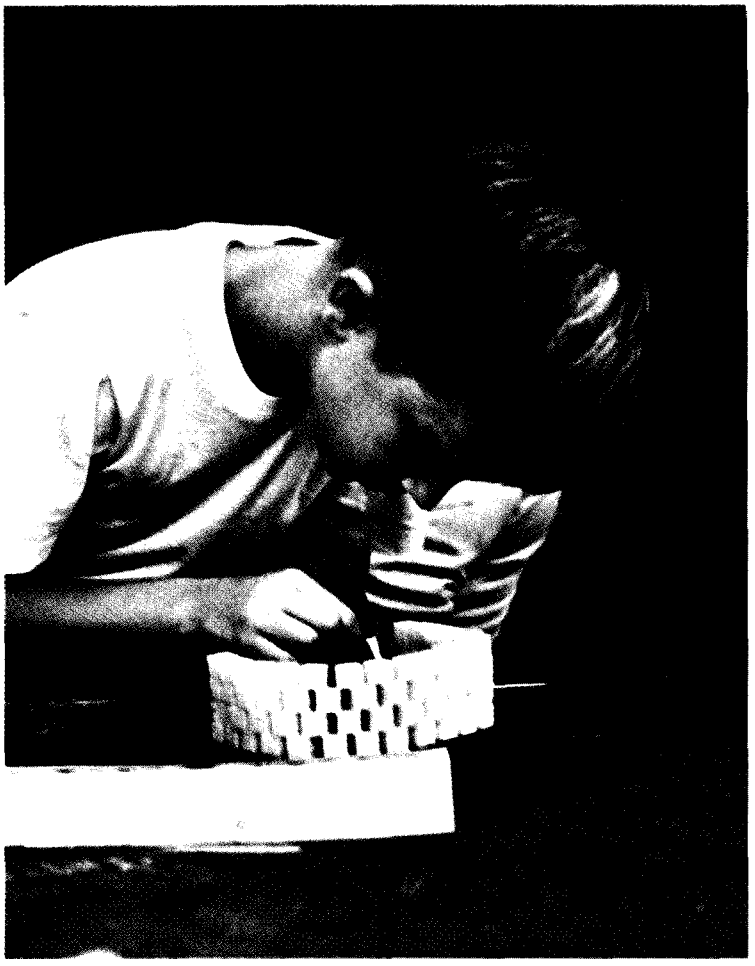
The variety of approaches is amazing. Among them:

- A pilot project sponsored by the John D. Rockefeller 3rd Fund to make the arts part of an entire curriculum—permeating it, rather than adding to it. The school system of University City, Mo., a suburb of St. Louis, is the first of three to get underway. Stanley S. Madeja, director of the project, talks of the possibility of a portable membrane structure going from one school to the next like a bookmobile, letting children create their own environment inside.
- A pilot project by the Northern California chapter of the AIA to integrate material on architecture and the physical environment into social studies throughout the elementary school. The focus of their early efforts is a school in San Rafael, Calif.
- A summer program started by David Hirsch, an architectural photographer, at the Fiedel School day camp on Long Island, N.Y. With toothpicks, clay, and sugar lumps, children explored possibilities of space, form, movement, symbol (**12, 13**). Believing most teachers to be inhibiting, Hirsch limited his own intervention to setting the problem (a home to fit a rock, the longest bridge you can build) and to gentle conversation like "How big are you inside this space? What is it like?"
- A daily two-hour seminar combining English and government, for seniors at Jefferson High School in Alexandria, Va. Students planned the Pohick Valley for 1980, renewed eight blocks of Alexandria, presented their proposals to the local planning board, attended committee sessions of Congress, and wrote legislation themselves—and defeated it, "because it was superficial in its assumptions." They designed a river city, a port city, a desert city, dividing themselves into teams of ten specialists in housing, architecture, transportation, etc.
- A new nationwide course in geography that deals in part with the urban environment. Learning by discovery, ten graders explore the reasons

ind urban location and growth
onstructing a city model on
large map board); they study
ie relationship, in Chicago, be-
veen population distribution
id income; they study their own
ocality in terms of waste dis-
osal, land use, zoning, etc. The
igh School Geography Proj-
t, as it is called, is sponsored
v the Association of American
eographers, and funded by the
ational Science Foundation.
nits were prepared by profes-
onal geographers, in consulta-
on with educational specialists.
ommercial distribution is ex-
ected later this year.

A five-year investigation of
ie impact of a new "motorway"
Wiltshire, England. Students
f all ages, in 36 schools, are
ooking at present conditions,
id will later evaluate the high-
ay's effect on industry, com-
erce, traffic, flora and fauna,
rices of land and houses,
anges in land use, etc. (One
ociologist suggests that chil-
ren may be better at collecting
ata than adults—more honest
id less prejudiced.) The county
brary has spoken up for the
esults, but the educator in
arge of the project says
at "anything of objective
alue will be regarded as a
onus." The real value is in
udying something first-hand,
hich he finds "rarely possible
the traditional school ap-
roach, where the problems have
l been well ventilated and the
achers at any rate know the
swers. The motorway prob-
ns will be open-ended. They
ay not even have answers."

A free-wheeling project just
ginning in ten small towns in
w York, to give teenagers a
w sense of themselves and
ir environment. Phyllis Yam-
lsky, originator of the "Feed-
ck Station," describes it as
mething between a visual
vn forum, social meeting
ound, social event, vehicle of
mmunication, total environ-
ntal piece of art, creative
rkshop, place and platform
community action." Actually,
ould be part of any existing
gout. Anything could emerge
n multimedia answers to
stions like "What is your fa-



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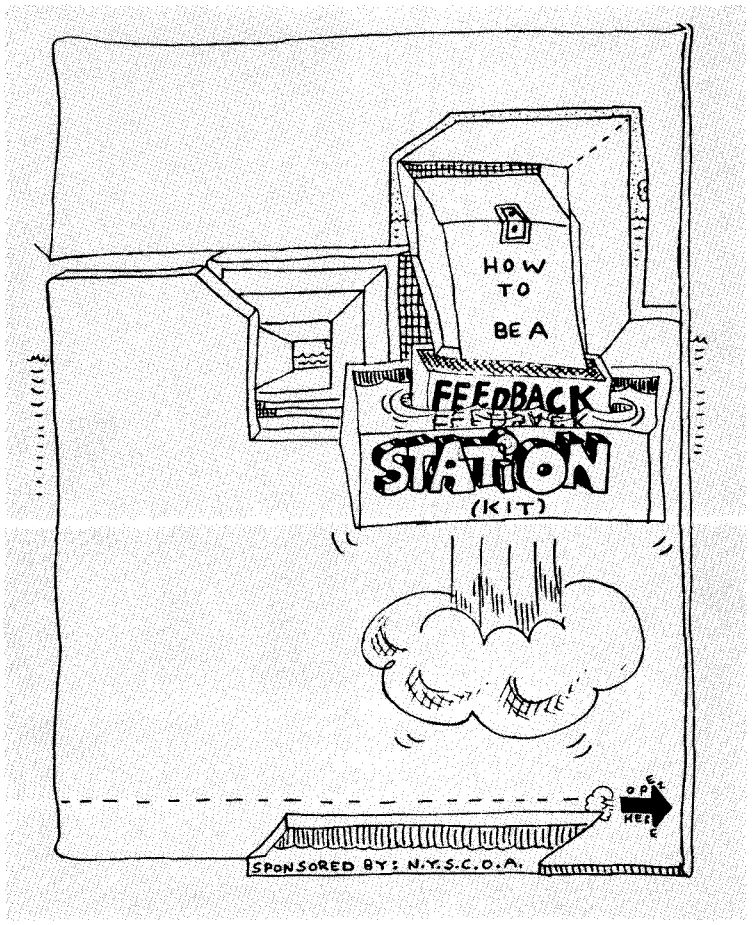

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vorite (or unfavorite) spot in town?" The hope is that the teenagers will find anonymous America a valid alternative to the glamorous cities. New York State Council on the Arts is providing funds (**14**).

• And many more—in Cambridge, Mass., Kevin Lynch, author of *The Image of the City,* takes groups on urban walks; in Madison, Wis., a unit on urban renewal is being devised; in suburban Washington, D.C., the Potomac School runs a summer program using the entire city as a laboratory.

Images, on TV and film

Television should be one of the best ways of presenting architecture and environment to any age group, apart from the fact that children brought up on TV are often geared to absorbing information primarily in this way, and have an extremely short attention span for the printed page. But TV fare on the environment has been thin. NET's series called "What's New," for instance, for eight-to-twelve year olds, doesn't recognize the environment unless it's distant in time (like colonial Jamestown) or in culture (like the igloo).

WGBH in Boston is just beginning to make a series of six half-hour films, which will show how different people view the city—architects, planners, ecologists, sociologists; and also parents, teachers and students. Richard H. Lee, executive producer of the station's education division, says: "Students already know they can change their surroundings—they set up a clubhouse, or they drop a gum wrapper. These films, and the curricular material that goes along with them, will give kids a sense of competence in molding their environment, and a sense that since the city is made by man it can be changed by man." The $365,000 project is funded by HUD and various foundations (principally Ford), with $40,000 still to be raised.

Scheduled for completion this summer is a ten-program series on architecture and urban design prepared by Philadelphia's Chan-

nel 12 (WHYY) for the state's Department of Public Instruction. It promises to explore, among other things, "the community and the architect—how they get together," housing for the poor, and "the state of architecture" as seen by five concerned architects. The work of over a year, the $81,000 series will be finished this summer.

The AIA's series of 12 films for young people is running more slowly. The allocation of $80,000 was spent on the first film of the series, and James Lawrence, an architect in Boston who started the program, is seeking foundation money to continue. He would like to get Mumford or Udall to do future texts. When the first film, "Man Builds: Ancient Egypt," was finished in 1967, an officer of the AIA considered it "one of the greatest turkeys of all time." It has since been revised, but is not yet in wide circulation; only three copies are in existence.

A Canadian film, "A Is for Architecture," has won eight awards since it appeared in 1959; it seeks to show various buildings and cities as reflections of their times. It is available free in Canada to any teacher or library, the only stipulation being that the National Film Board, according to its mandate from Parliament, must keep records on how many people have seen it—2,436,936 so far. (Outside Canada, it rents for $11.)

View-It-Yourself

Films and photos *by* children are becoming as important as those done for them, especially if their education has left them frustrated in written skills.

A camera selling for less than $1 (made in Hong Kong) is being promoted by Education Development Center. "By no means the least of its virtues is the fact that it bears a strong resemblance to expensive professional cameras." A sixth grade group wrote the instruction book, explaining the inexpensive developing process that can be handled in any classroom. Says George Cope of EDC, "We didn't invent anything, we just took the processes that have been around for a hundred years or so." The cameras are being used in about a hundred classrooms **(15)**.

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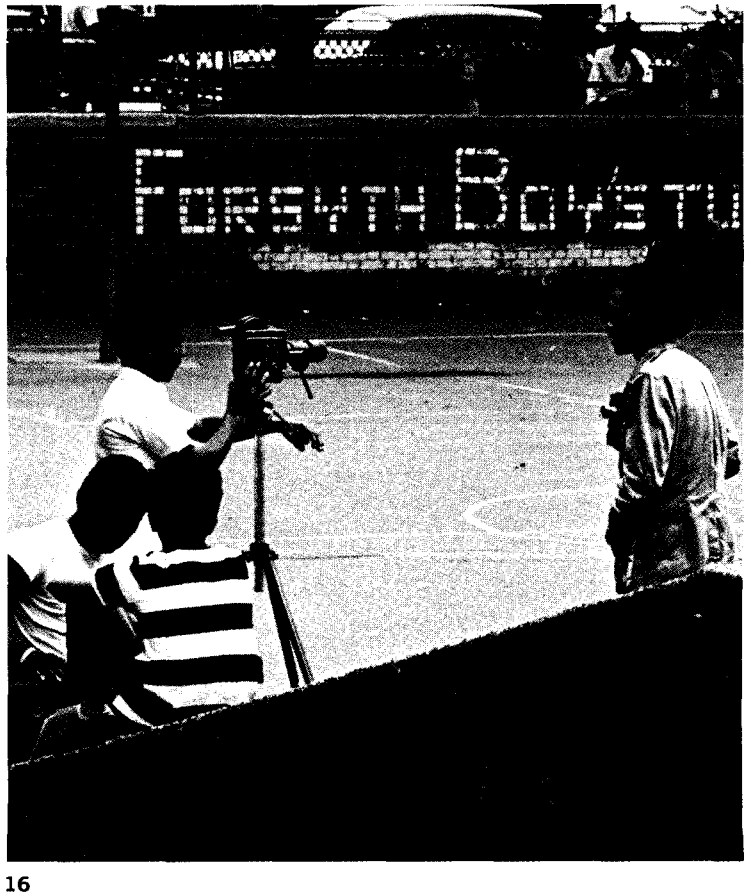

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Eastman Kodak has been extremely active in helping young people interpret their environment on film. They have lent equipment and advice on many projects, one of them a contemporary history of Anacostia several years ago, and they recently sponsored the first national conference on "Visual Literacy."

Film-making is also expanding rapidly. WCBS-TV recently showed some films by young people, one by a group called the Film Club (**16**), whose work was also seen at the Connecticut Society of Architects' seminar on "perception and design." Rodger Larson, executive director of the Young Film-makers Foundation (which sponsors the Film Club, and distributes many films by young people), says that films made by city youth often deal with their own environment (except for obvious fantasies like science fiction), whereas films by suburban children tend to deal with more exotic places.

Even TV is being handled by young people, and, in fact, a video camera can be mastered in several hours. A combination video-encounter group of about 12 teenagers has been organized by Elaine Waldman of the education faculty of Long Island University (**17**). With this dual technique, they are "dissolving the walls of the school," getting the children to think of the whole neighborhood as a place for learning, and legitimizing the streetcorners and stores as places where things happen. "In film, you impose your perception on reality, but in TV, with instant feedback, you and the environment are engaged in an immediate interaction."

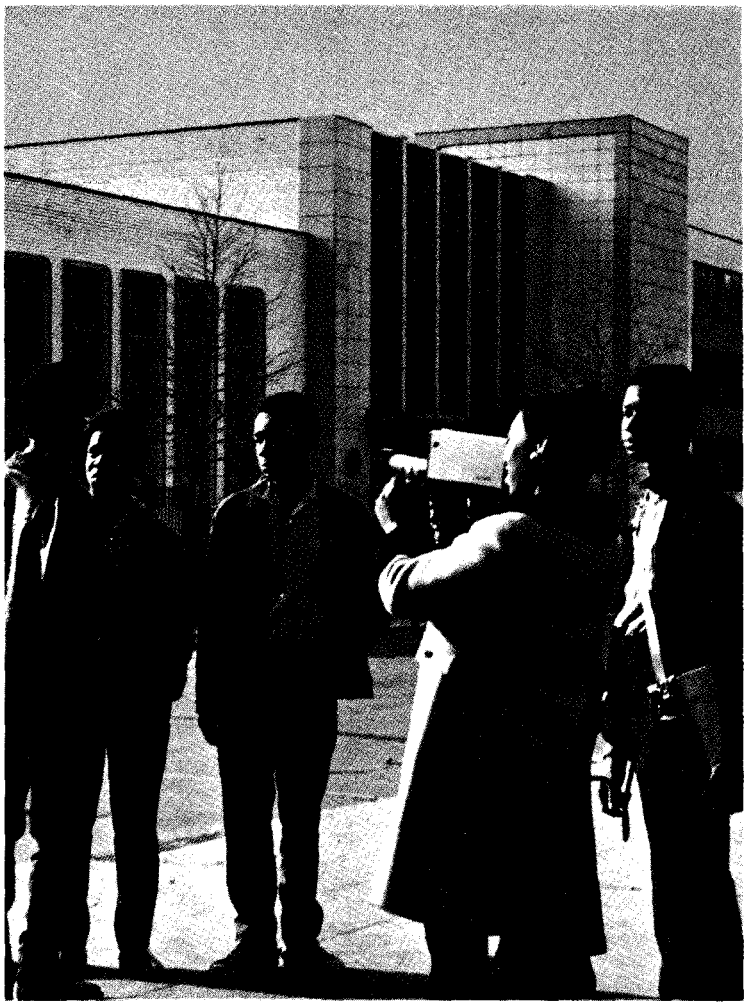
A few words on the subject

Children's reading matter on the environment is proliferating and the AIA Committee on elementary and secondary education (which began as a one-man Task Force in 1966) issued a rudimentary bibliography in its recent report "Environmental Awareness."

The AIA committee (currently aired by Arthur Rigolo) hopes have the bibliography exnded. It is adding to the list another way, though, with the rthcoming publication of its urth-grade reader, *A Book bout Cities*, by June King Mcee, director of the Institute for ommunity Art Studies at the niversity of Oregon School of rchitecture & Allied Arts. One nnot know what influences aped the book, within the AIA, om the time it was commisoned in 1965, but hearing Dr. cFee address a group of art ducators on environmental edu tion, one senses that the perptions and vitality of this art ducator are absent from the ook. The drawings, too, in the ial edition just printed, are a ile imitation of what this prossional body might have put rth under its name.

A new journal, "Urban orld," appeared in 1968, and s circulation may well reach 00,000 by next September. It ppears twice a month in all 50 ates, primarily in grades seven rough nine, and sees itself as xploring "the trials, the dangers and the challenges in the merican City and its suburbs." lthough it deals with vital enronmental subjects, it tends to resent them with a glibness that akes historic preservation or anned cities seem like this ear's hula hoop.

Perhaps, as some teachers are scovering, students get as much om reading and writing their n works as they do from an ult's. Dr. Robert Coles, a ychiatrist, has long felt that w-income children are highly sitive to their environment—re so than children from mid--income backgrounds. With encouragement, the Innovan Team of the District of Cobia schools urged local chiln to express their feelings, show the destruction in their roundings, on the days folling Dr. Martin Luther King's rder. The small paperbound *ldren of Cardozo Tell It Like Is*, published by EDC, is a der for other children. It has mpted one (primarily white) s in Newton, Mass., to com-



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pile a remarkable history—of themselves and their town—in exchange.

And Herbert Kohl, author of *36 Children*, found a double value in asking the children to write about the block they lived on—he learned about parts of their lives that had been closed to him, and they learned about an expressive power, in writing, that they hadn't imagined was possible. Children can often see quite well, is Kohl's message; it is adults who need some education in environmental awareness.

More fun and games

Children are getting an environmental education in other ways. A game called "Pollution," developed for the Wellesley, Mass., public schools by Abt Associates Inc., ends with a simulated Smokey Hollow Town Meeting, where players negotiate out of self-interest to control a problem that threatens them all. Another game by Abt called "Neighborhood"—based on Boston's North End—is not yet in playable form.

Exhibits can be involving. The Museum of Modern Art had a circulating one as early as 1944 —"You and Your Neighborhood" —with the linoleum top of its packing case serving as a board on which to arrange the buildings of a model neighborhood (**18**).

But here, too, there are opportunities for more direct involvement. When the Cleveland chapter of the AIA produced its exhibit last year on "Design and the City," with Robert A. Little in charge, several hundred schoolchildren were asked to provide the introductory section with interpretations (**1**) of "My City."

Exhibits of the future? John Kinnard, director of the Smithsonian's Anacostia Neighborhood Museum talks of a project in oral history, in which youngsters would interview older people about Anacostia in the past and its problems today. This would lend itself readily to an exhibit, with visual material added, he says, or to a course on Anacostia in the schools. But taking part in the preparation of the exhibit

(Continued on page 110)

CONCRETE FRAMES FOR WORKS OF ART

Last fall, the almost simultaneous debut of two museums in widely separated parts of the country created a stir in the art world. The two structures—one in Syracuse, N.Y. (pp. 56-61), the other in Des Moines, Iowa (pp. 62-67)—were acclaimed by the public, the press, artists, and architects alike. (This month, in Chicago, both buildings will receive AIA Honor Awards.)

Both museums were executed in bush-hammered concrete and both provide elegantly appropriate settings for displaying works of art. But they differ considerably in most other respects, each reflecting its own functional needs and the character of its environment. Together, they represent Pei's first venture into the field of museum design. He is currently designing two more: one for the Cornell campus at Ithaca, N.Y., the other an annex to the National Gallery in Washington, D.C.

In terms of design-philosophy, both of Pei's new museums owe something to Le Corbusier's famous 1959 museum in Tokyo: their most dramatic spaces are central, multilevel, indoor sculpture courts, variously lit from above. But, apart from this debt, these museums are original in concept and detail, and particularly imaginative in their uses of contrasting volumes and forms.

SYRACUSE
spatial diversity within a giant sculpture

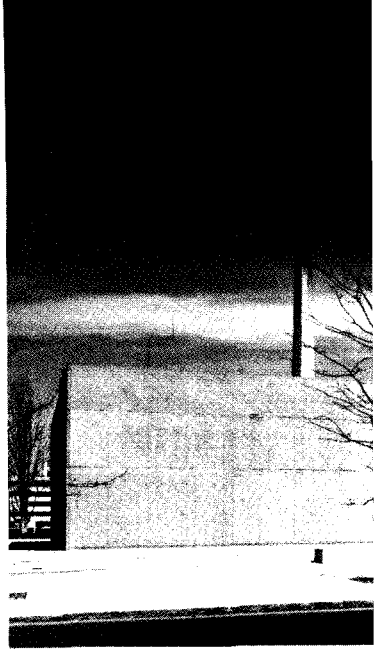
As you approach the Everson Museum of Art from off the freeway, it appears not to be a building at all, but a giant piece of monolithic sculpture that has survived some holocaust. It stands in the middle of nowhere, relating to nothing except two neighboring "survivors": a sports-convention center and a municipal steam plant.

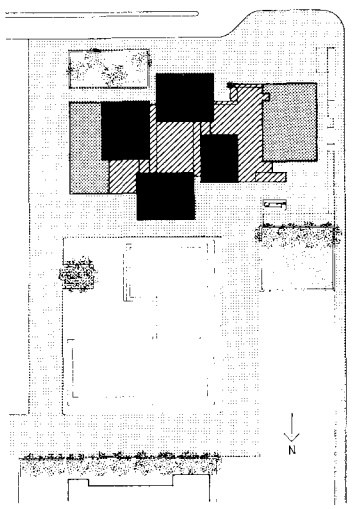
The "nowhere" is the Community Plaza urban renewal area in Syracuse, a city of 300,000 in Upstate New York. Eventually, Community Plaza will blossom forth into a new civic and cultural complex near the center of downtown. As the first new unit of the complex, the museum had to be designed in a semi-vacuum. It is still uncertain just what the museum's future neighbors will be, or how they will look, but it seems safe to predict that Pei's bold form will hold its own no matter what develops around it.

As a piece of urban design, the museum is necessarily speculative; but as a container for displaying works of art and related activities, it is superbly rational and responsive to the museum's special, and somewhat unusual, requirements. It is a small building (only 130 ft. by 140 ft. above ground), yet it provides a lavish variety of exhibition spaces, ranging from tiny, intimate galleries to a grandly scaled central sculpture court.

Unlike most modern museums, the Everson contains no vast exhibition spaces capable of being subdivided into smaller units. Max W. Sullivan, the museum's director and the man who spearheaded the community drive to get it built, felt that such anonymous spaces would be unsuitable to the Everson's needs. The museum has only a small permanent collection (currently valued at about $1.25 million), and thus depends largely on continuously changing traveling shows to attract most of its visitors.

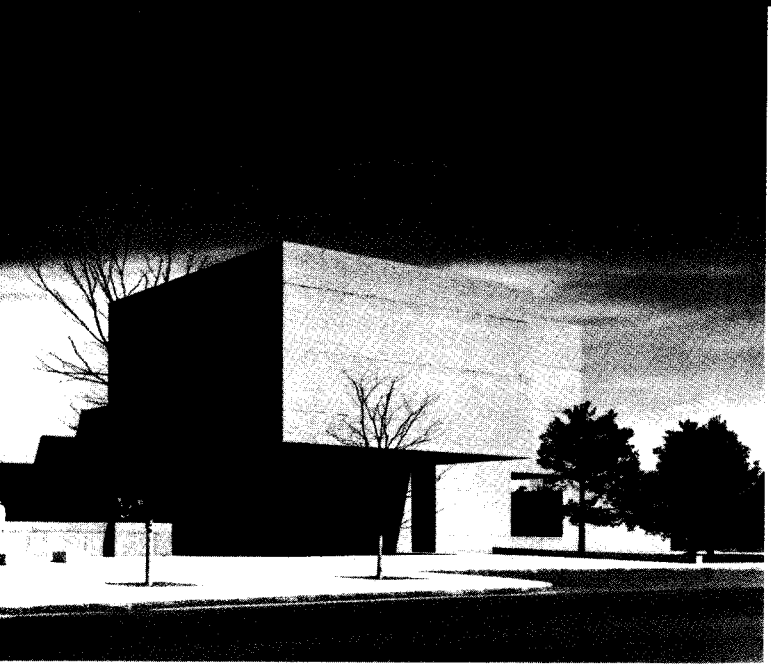
Sullivan therefore requested a more appropriate kind of flexibility: a series of individual spaces in a variety of shapes and sizes. He got nine galleries altogether, each one different from the others both in size and in character. (As another possible

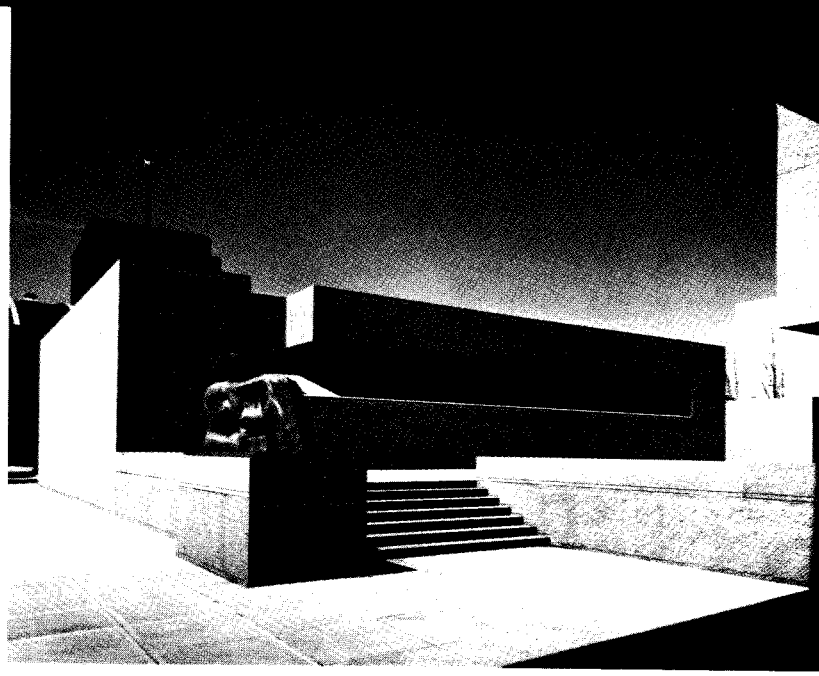


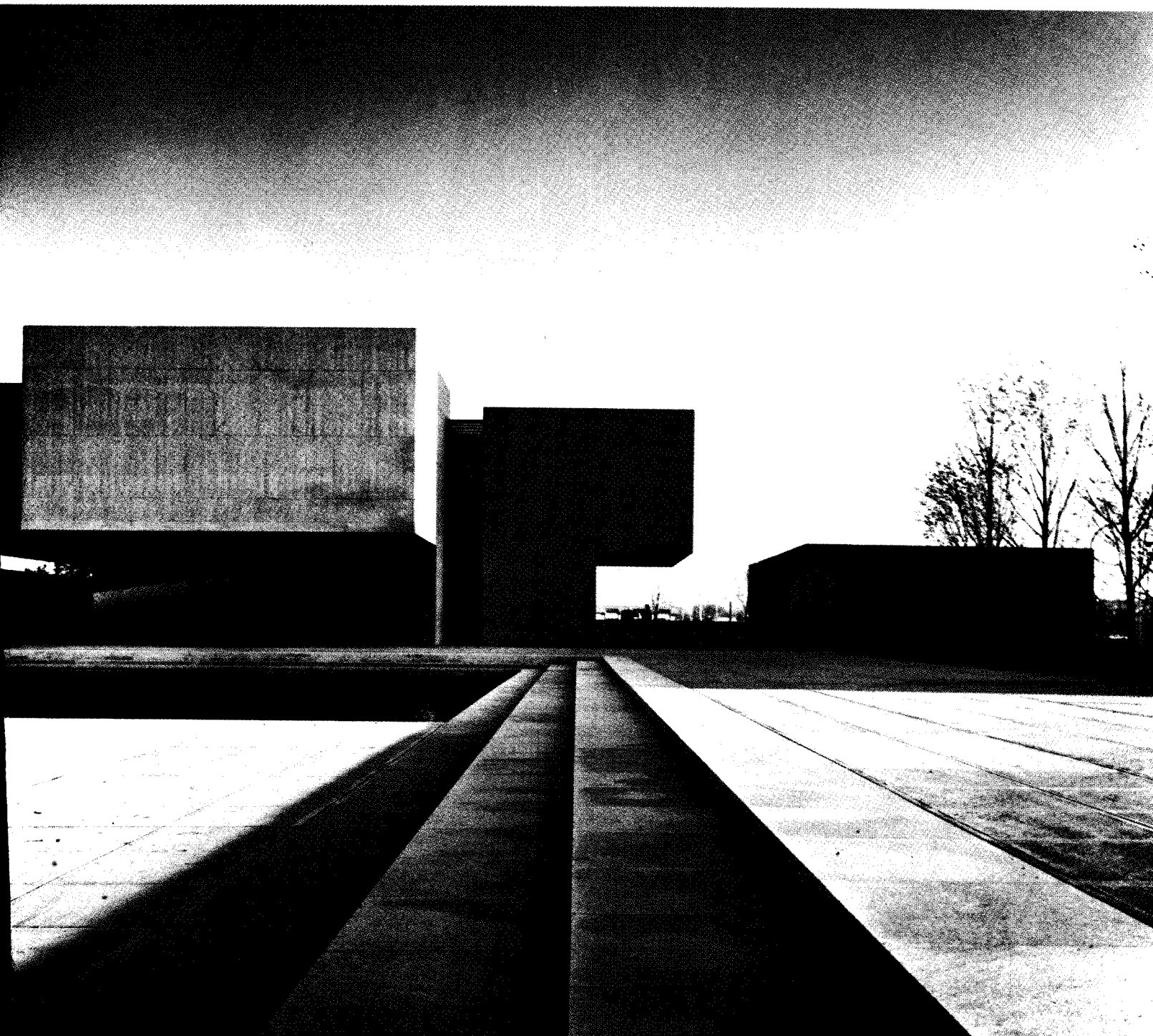


SITE PLAN

Cantilevered boxes over the plaza of Syracuse's new Everson Museum house four galleries which open onto a two-level interior sculpture court (site plan, above). The low structures flanking the central building (right) rise from a basement-level administrative wing at the near end and an auditorium at the far end. Henry Moore's bronze "Two-Piece Reclining Figure No. 3" (above, far right) rests at the entrance podium. The building is adjacent to a pool and plaza built atop an underground garage.







bonus, any one of the spaces would be a fine inducement to a major art patron looking for a permanent, public home for his collection.)

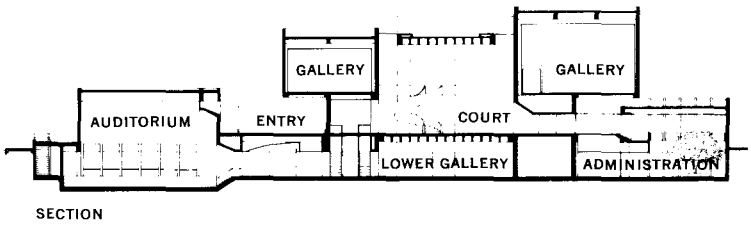
The largest of the Everson's exhibition spaces, a sculpture court 50 ft. square and two stories high (photos at right), forms the dominant central element of the museum. Its walls, like those on the exterior, are bush-hammered in a diagonal pattern to reveal a warm, red-granite aggregate. Overhead, a waffle grid ceiling is flanked by narrow strips of clear glass through which natural light pours down onto the walls. At two corners, floor-to-ceiling window strips offer glimpses of the outside. The natural light is supplemented by incandescent spotlights tucked into the voids of the waffle ceiling.

Were it not for one rather insistent element—a spiral staircase—the central court would be a flawless setting for sculpture and large-scale paintings. But the staircase, which rises from a point near the center of the court, upstages the objects on display. Sullivan refers to it as "our most extravagant piece of sculpture." (He likes it.)

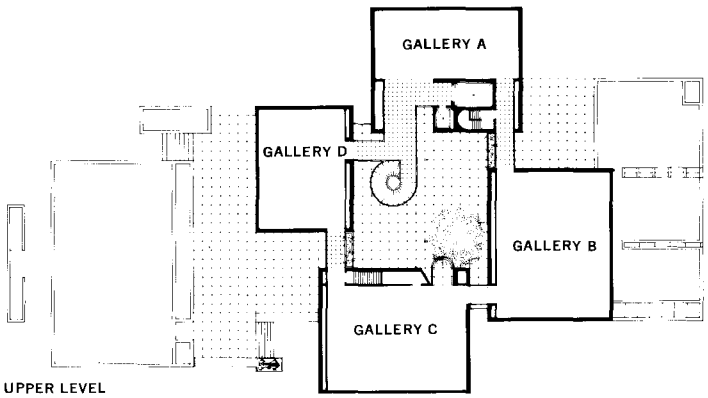
The staircase does, however, provide an exhilirating, continuously changing view of the sculpture court as it spirals up to connect with four elevated galleries which surround the central space, pinwheel fashion. The galleries are expressed on the exterior as four cantilevered, windowless boxes projecting over the plaza. Since all four are intended primarily for the display of paintings, they are artificially lighted. Their walls are covered with an off-white, acrylic-coated linen and cotton fabric, and their floors are polished oak.

As the visitor wanders through the galleries, he can look down upon the sculpture court from a number of vantage points: openings in the wall; a short bridge which spans two galleries at one corner; and a semicircular balcony which projects over the court from one of the galleries.

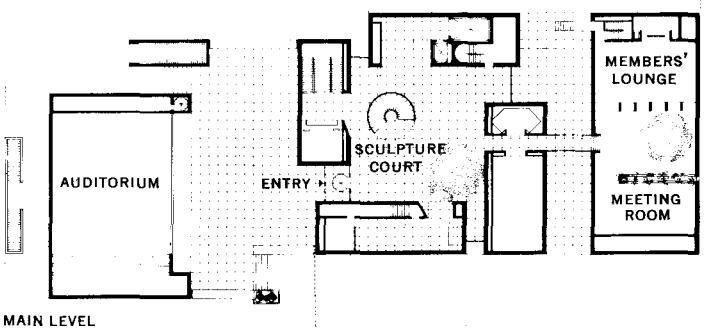
Below ground, under the slightly raised platform on which the museum rests, the enclosed space



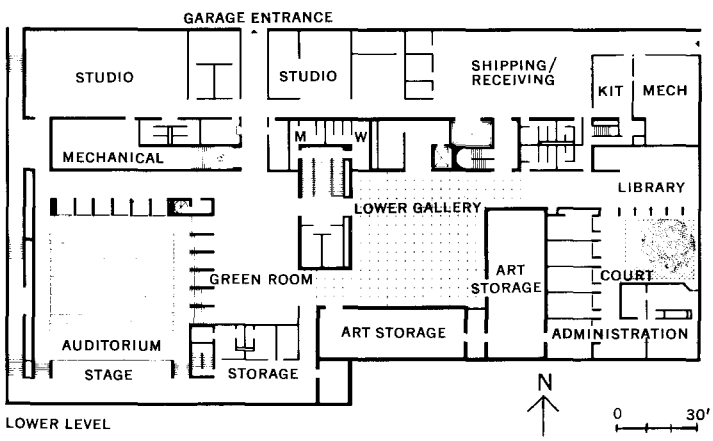
SECTION



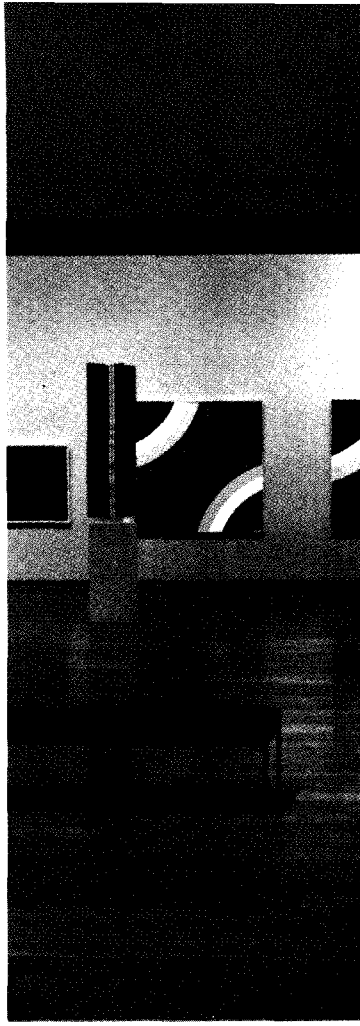
UPPER LEVEL

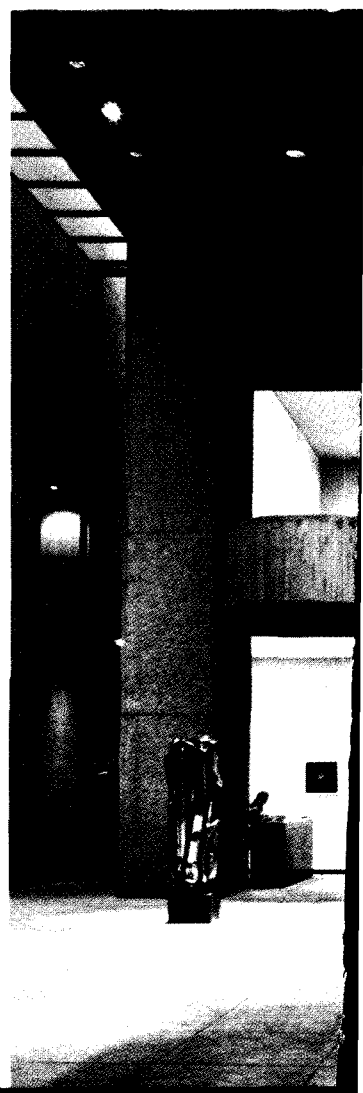


MAIN LEVEL

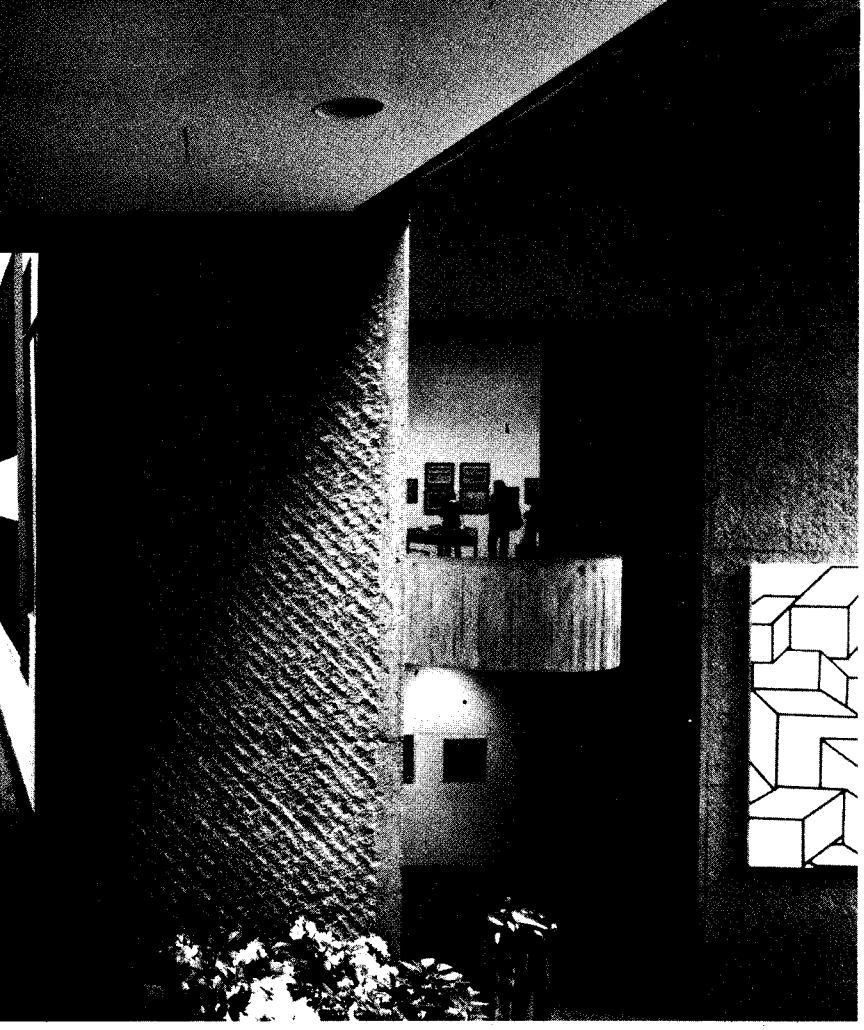


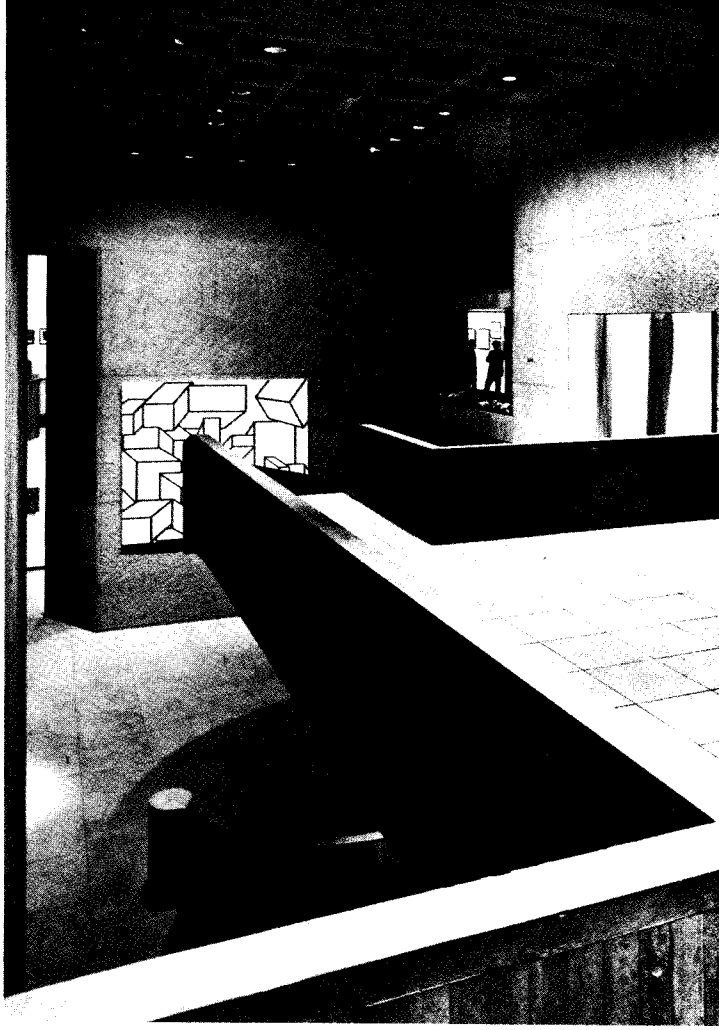
LOWER LEVEL

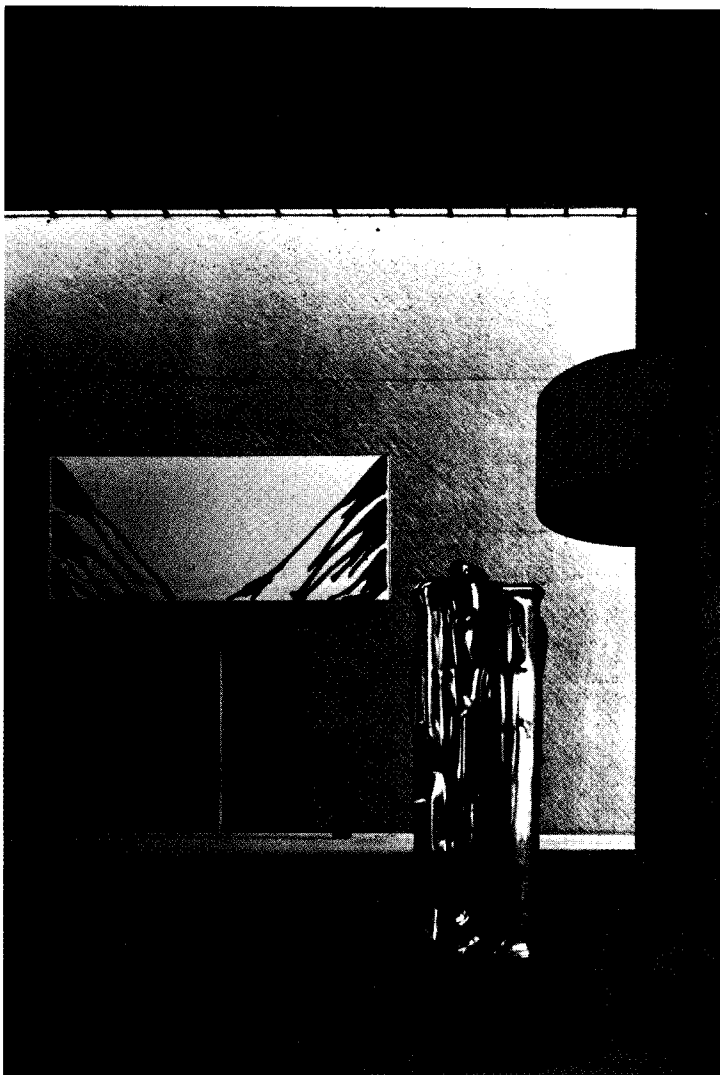


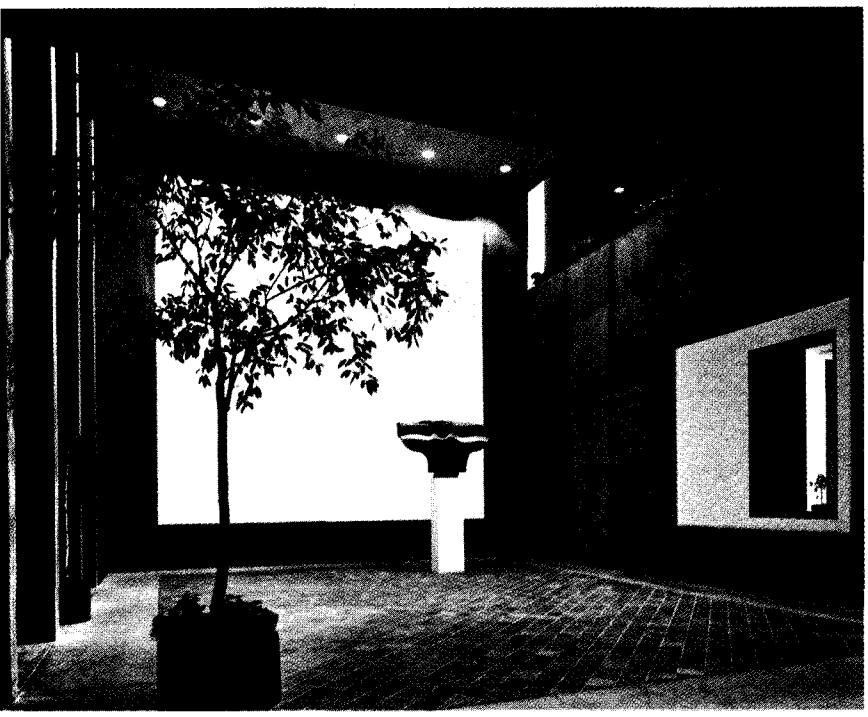


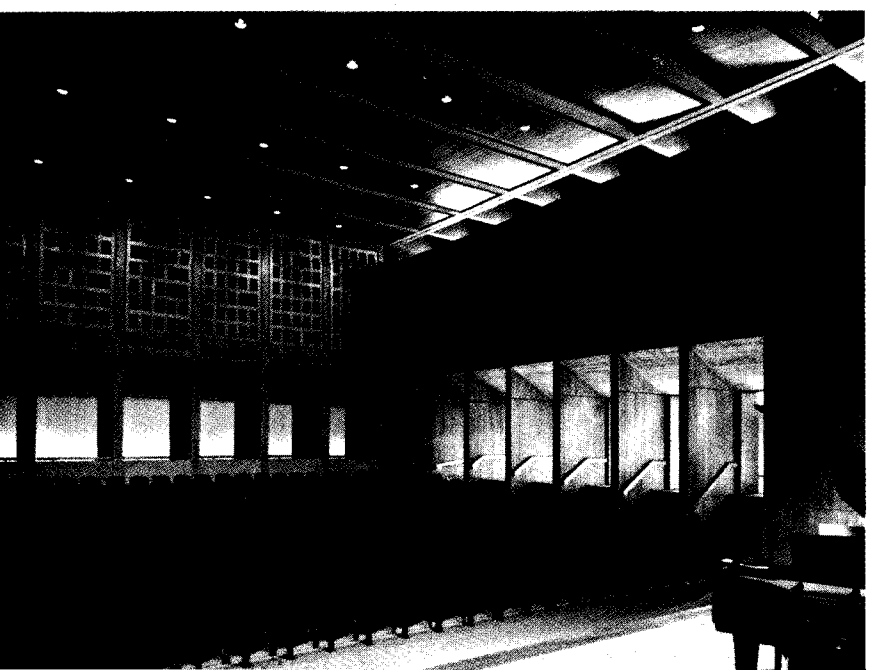
A two-level central sculpture court (photos at right) is skylit through narrow strips which flank its waffle grid ceiling. Its walls, like those on the exterior, are bush-hammered in diagonal striations exposing a red-granite aggregate. A concrete spiral staircase leads up to the four galleries that surround the sculpture court (top photos). Floors of the upper galleries are polished oak; others are partially ground terrazzo containing the red-granite aggregate.











spreads out to a length of 260 ft. to accommodate still another gallery (located directly under the sculpture court), storage and work spaces, classrooms, a kitchen, administrative offices, and an auditorium. The latter two sections, located at opposite ends of the lower level, rise above the plaza as low outcroppings which flank the central structure. The museum can be entered at the lower level from an adjacent underground parking lot, which was built by the city to serve the museum, as well as future buildings to be erected in the area.

The major spaces of the lower level, like those above, flow effortlessly into each other: a green room off the auditorium opens into the lower gallery, which in turn opens into the administrative section. Here, offices and a library flank a skylit lower sculpture court which rises through the main level above. A main-level meeting room and members' lounge, reached by a corridor from the big sculpture court, overlook the lower court.

The Everson Museum is the result of eight years of planning, design, and fund raising, during which thousands of Syracusans gave money to build the structure and to acquire new works of art. Pei and his associates, in collaboration with the Syracuse firm of Pederson, Hueber, Hares & Glavin, worked closely with Director Sullivan throughout the design process. The museum's board of trustees allowed the team virtually complete freedom of design. The trustees, and the people of Syracuse, have been well rewarded for their faith.

FACTS AND FIGURES

Everson Museum of Art, 401 Harrison St., Syracuse, N.Y. Architects: I. M. Pei & Partners (with Kellogg Wong, project associate; William Henderson and Reginald House). Associate architects: Pederson, Hueber, Hares & Glavin (with J. Murray Hueber and Robert Majewski). Engineers: R. R. Nicolet & Associates (structural); Robson & Woese Inc. (mechanical). Consultants: Edison Price Inc. (lighting); Bolt, Beranek & Newman Inc. (acoustical); Mueser, Rutledge, Wentworth & Johnston (foundations). General contractor: William C. Pahl Construction Co. Inc. Building area: 60,000 sq. ft. (including plazas). Construction cost: $2.6 million.

PHOTOGRAPHS: © Ezra Stoller (ESTO), except this page (center and bottom), Robert Damora.

A lower sculpture court for muse
members and employees (top
center, left) is skylit from above
opens onto a balcony-level memb
lounge and meeting room. Bott
left: the auditorium, which has
clerestory window under its
paneled ceiling. Right: the cer
sculpture court, with natural
bathing its walls through a skyli
The opening in the wall, above
entrance, offers a view of the c
from a continuous corridor w
connects the upper galleries.

DES MOINES
an enclosure for sculpture completes an open court

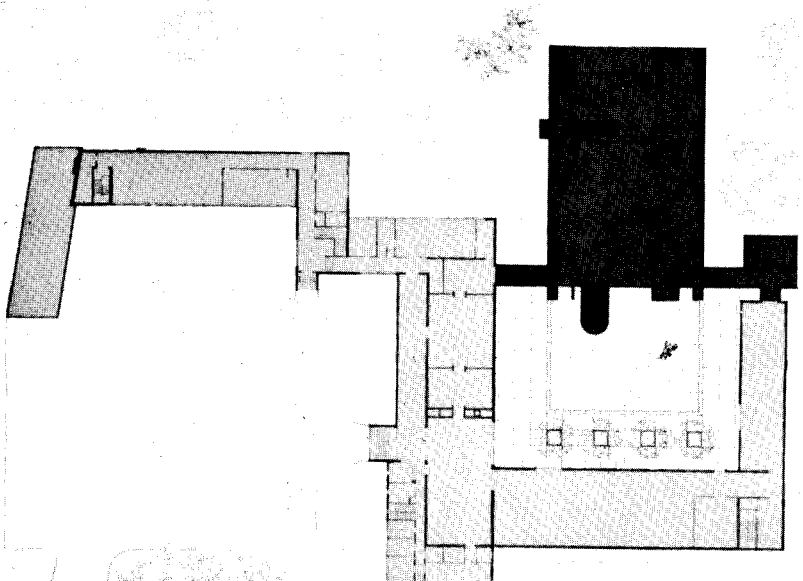
When the trustees of the Des Moines Art Center commissioned I. M. Pei to design a new sculpture wing, they insisted on only one major restriction: that it be sympathetic to the existing building designed by Eliel Saarinen and completed in 1948.

The building, with its fine collection of paintings and sculpture and its extensive program of art education, is a great source of pride in Des Moines—so much so that some of the trustees thought the new wing should be a rather slavish imitation of Saarinen's design. But Pei convinced them that such an approach would be an injustice to both the old and the new.

In both a visual and functional sense, Pei's addition actually completes Saarinen's original scheme. Visually, it encloses the fourth side of a central courtyard which formerly was defined on only three sides by the U-shaped gallery wing of the old building (photo and site plan, bottom right). Functionally, it overcomes a previously disturbing circulation problem caused by the dead-ending of the old gallery wing. Pei has connected the new addition to the Saarinen structure at two points, so that visitors no longer have to retrace their steps to get back out.

The new sculpture wing enhances the spatial quality of the central court just by being there, but Pei has upgraded the court in other ways as well: by introducing trees along one side, by resurfacing the plaza in sandblasted concrete, and by revamping the pool, which had been potentially dangerous (3 ft. deep) and stagnant. Now the pool has a drainage and circulation sys-

The new sculpture wing of the Des Moines Art Center (top photo) encloses the fourth side of an outdoor courtyard that was part of the original museum complex designed by Eliel Saarinen (bottom photo and site plan). The new structure is of poured-in-place reinforced concrete that was bush-hammered in a vertical pattern. Its exposed limestone aggregate matches the color of the Iannon stone used in the old building. The rounded section projecting into the pool from the front of the new wing contains a staircase leading to a lower-level auditorium.



SITE PLAN

N

0 25 50'

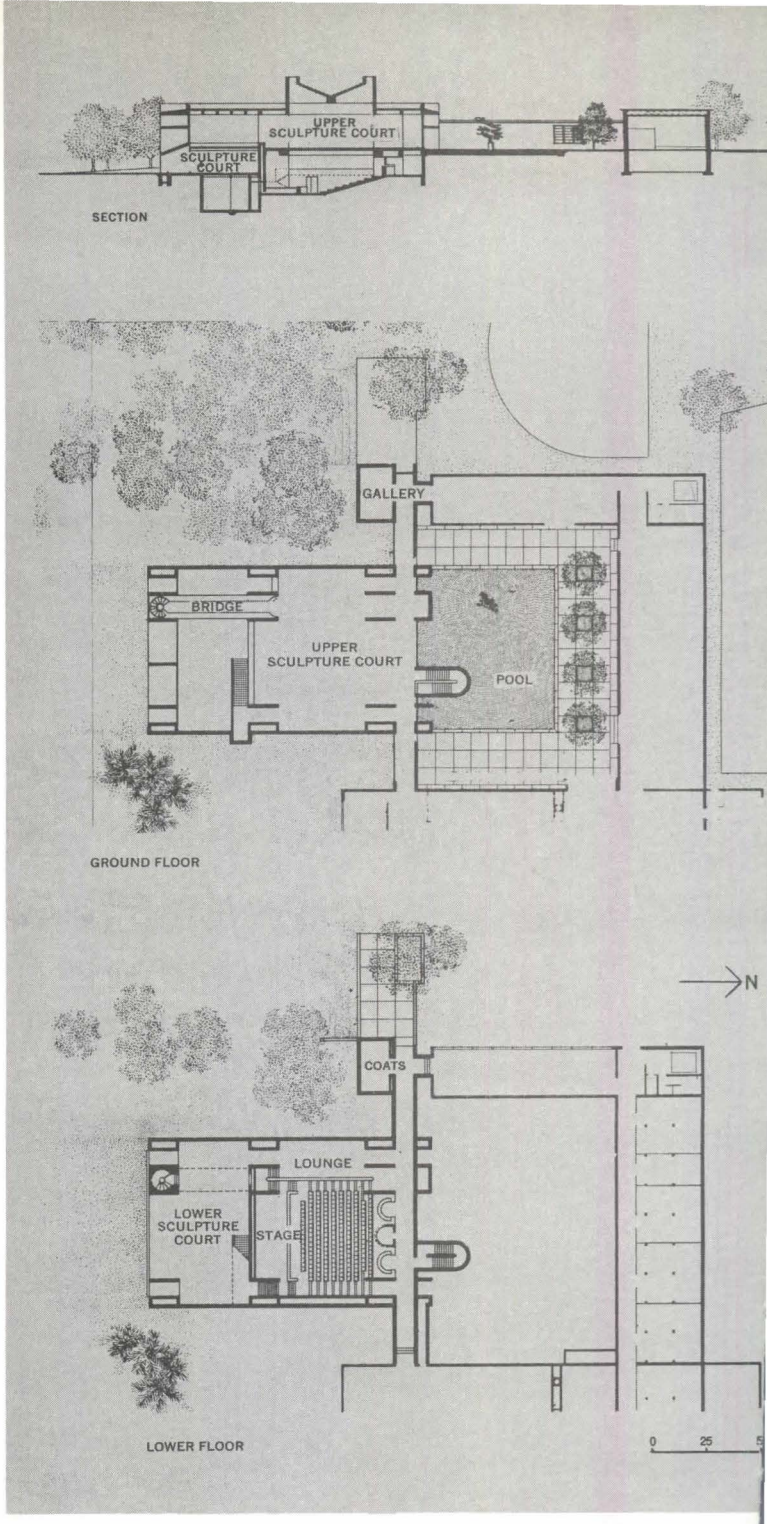
tem, its depth is only 6 in., and its bottom is lined with granite cobblestones laid in a radial pattern that centers on Carl Milles' bronze sculpture, "Pegasus and Bellerophon."

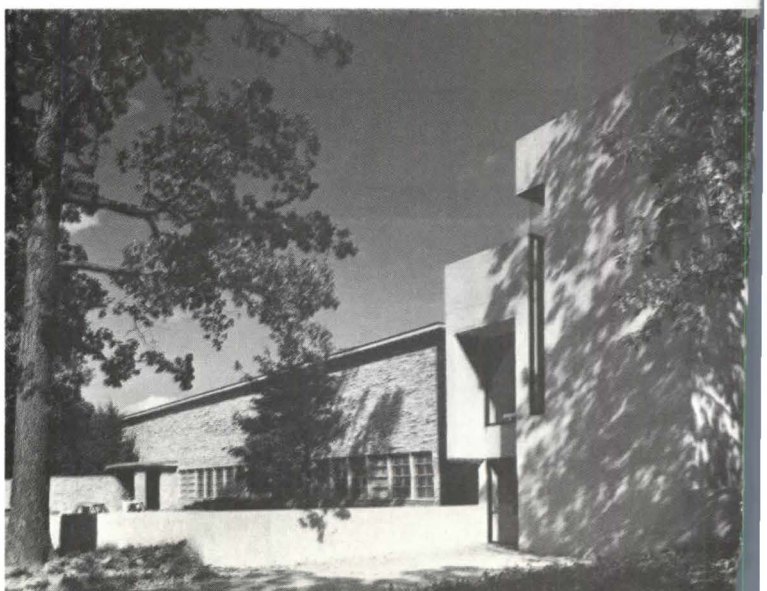
Pei and his associates went to considerable pains to harmonize the concrete of the sculpture wing with the reddish-brown lannon stone of Saarinen's building. Originally, they planned to use the lannon stone as an aggregate of the concrete, but, when tests showed it to be structurally unsuitable, they used a more durable limestone of virtually the same color. Then the poured-in-place concrete surfaces of the new structure, both inside and out, were either bush-hammered in a vertical striation or sandblasted to reveal the limestone aggregate.

In form, the sculpture wing is essentially a rectangular box which presents its narrow dimension to the pool at one end and to a beautifully wooded park at the other. Its side walls are blank, but its end walls are punctured with large expanses of glass that admits natural light from the north and south. The glass is set into deep recesses which serve to screen out glare. From the central court, the visitor has a view through the building to the park beyond.

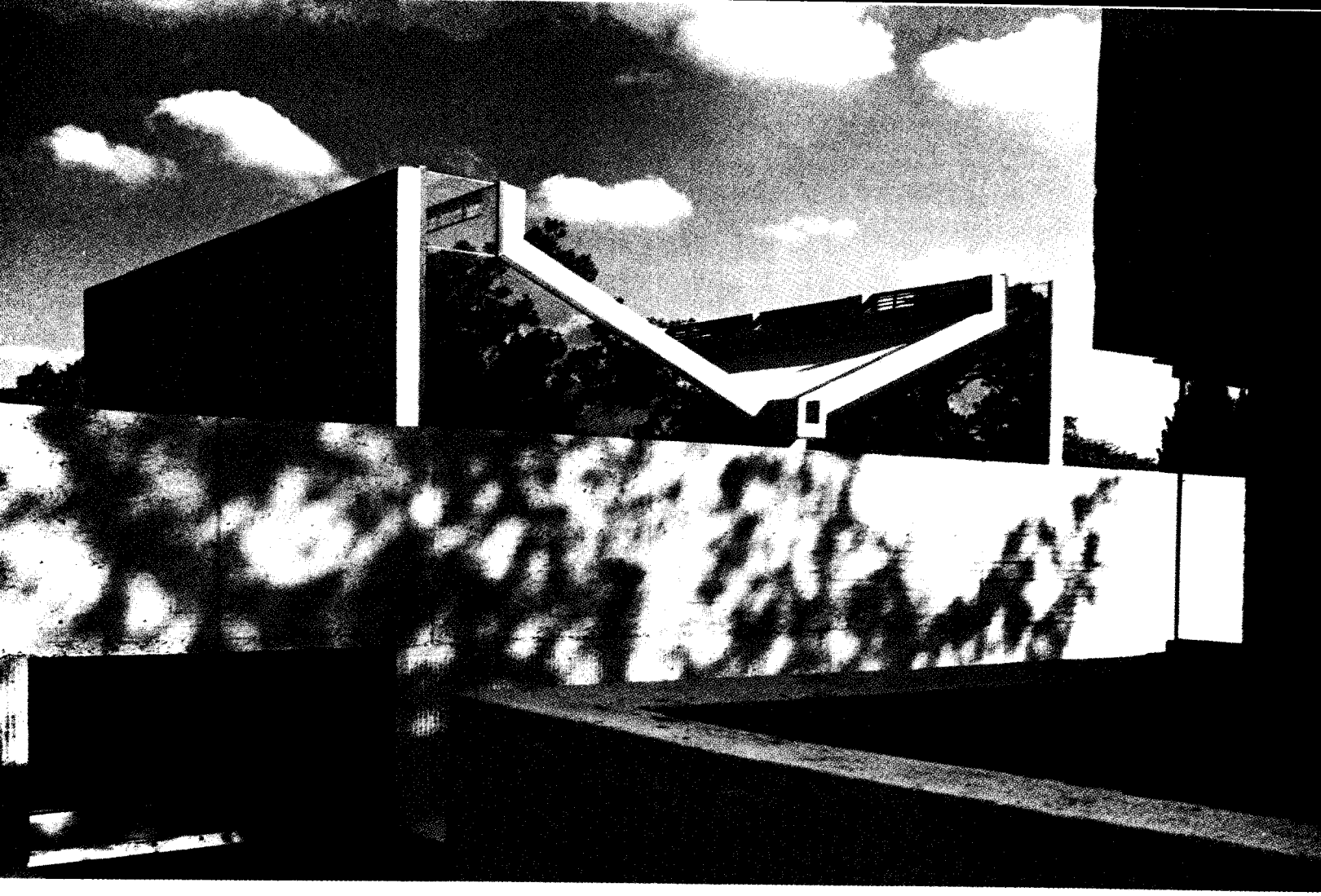
Additional sunlight enters the interior through a V-shaped monitor atop the building (photos opposite). Its form accommodates two narrow, horizontal bands of skylight and two pairs of vertical window openings along its east and west elevations. (The monitor, by rising slightly higher than the original Saarinen structure, also serves to announce the existence of the new sculpture wing to visitors approaching from the entrance drive.)

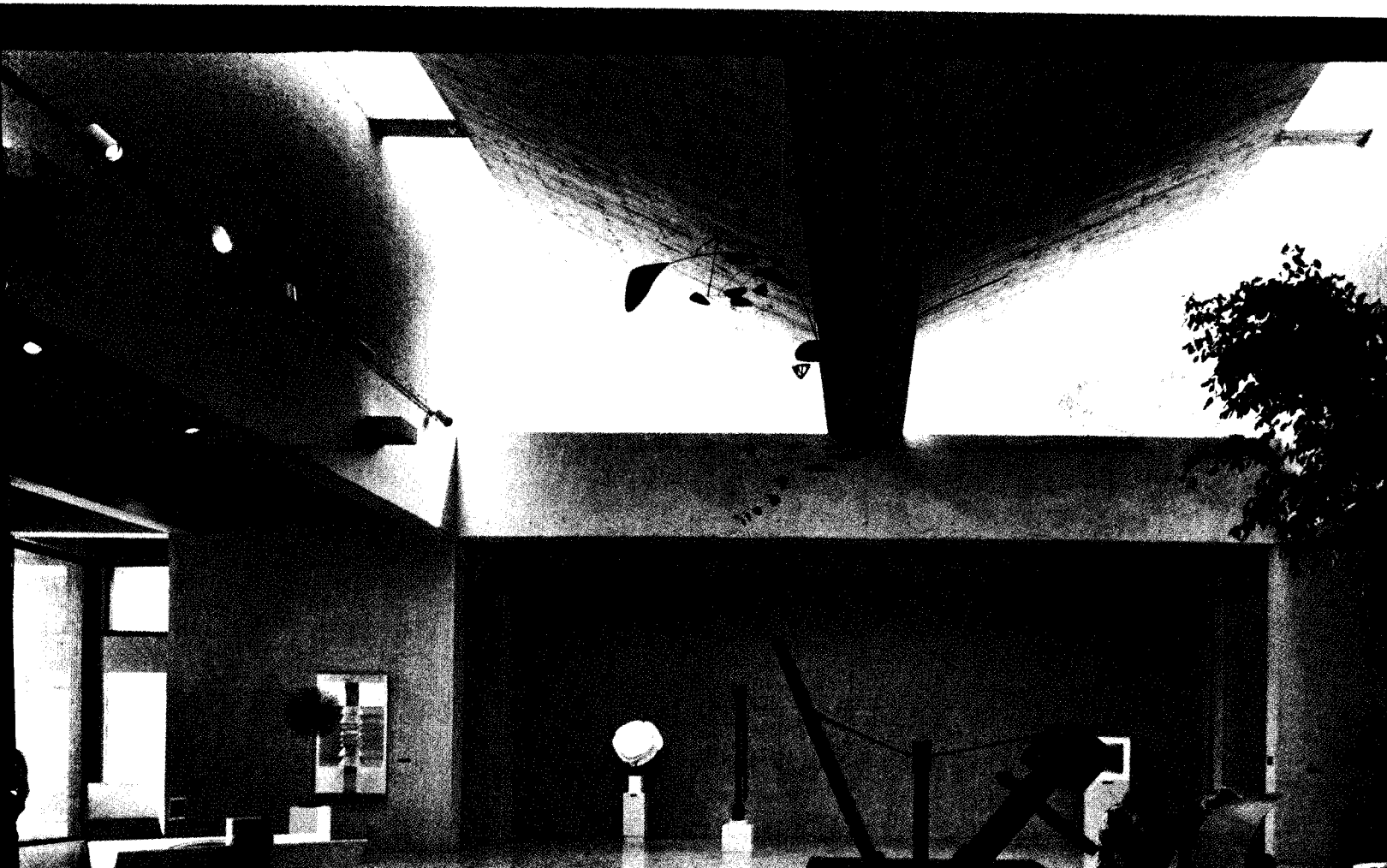
Quite obviously Pei has given a *great deal of* attention to the effects of natural light on works of sculpture, and the results show it. Inside, the interplay of light and shadow presents a fascinating, constantly evolving drama. As the quality of the light changes, the sculpture seems to take on a life of its own, revealing previously concealed forms and shapes. It is an effect that could never have





The two-story-high rear facade of the sculpture wing (top photo) contains deeply recessed openings which permit natural light, without glare, into the building's two sculpture courts. Wherever more than one glass panel was used in an opening, the joints were sealed with nylon tubing and clear silicone, eliminating the need for mullions. The lower sculpture court (near right and center) is connected to the upper court by a straight-run staircase and a bridge leading to a spiral stair (far right).





been achieved through the use of artificial light alone. (Pei also has provided a flexible lighting system for nighttime use, and as a daytime supplement.)

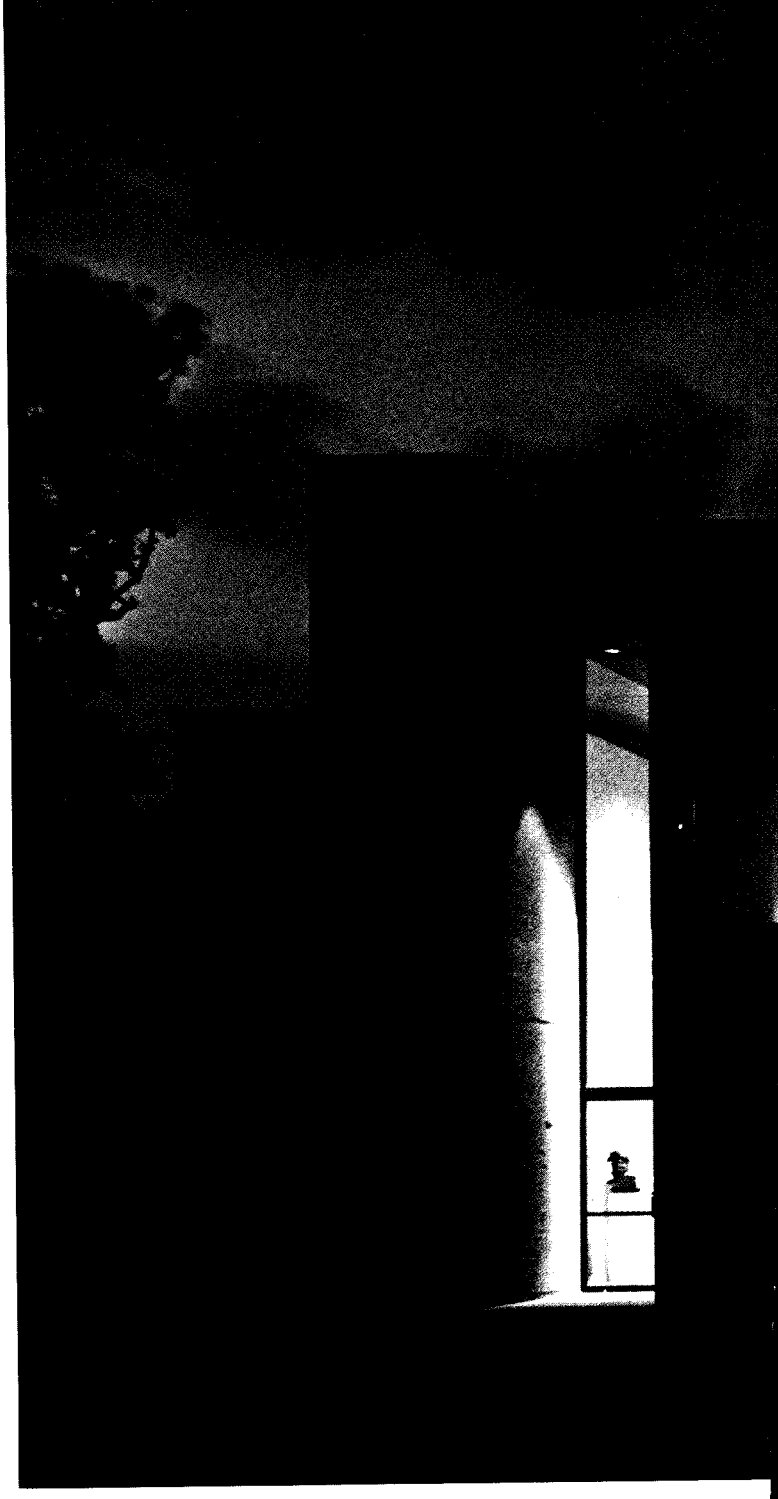
The major exhibition spaces of the building are two travertine-floored sculpture courts situated on separate levels that follow the contour of the sloping site. The upper sculpture court, positioned under the rooftop monitor, faces onto the pool at one side and forms a balcony overlooking the lower sculpture court (and out through the windows of the two-story-high rear facade) on the other. From here, the visitor can get to the lower sculpture court by one of two routes: down a straight-run staircase, or across an elevated bridge and down a spiral staircase located behind a strip of glass on the back facade. Either way offers a pleasant visual experience.

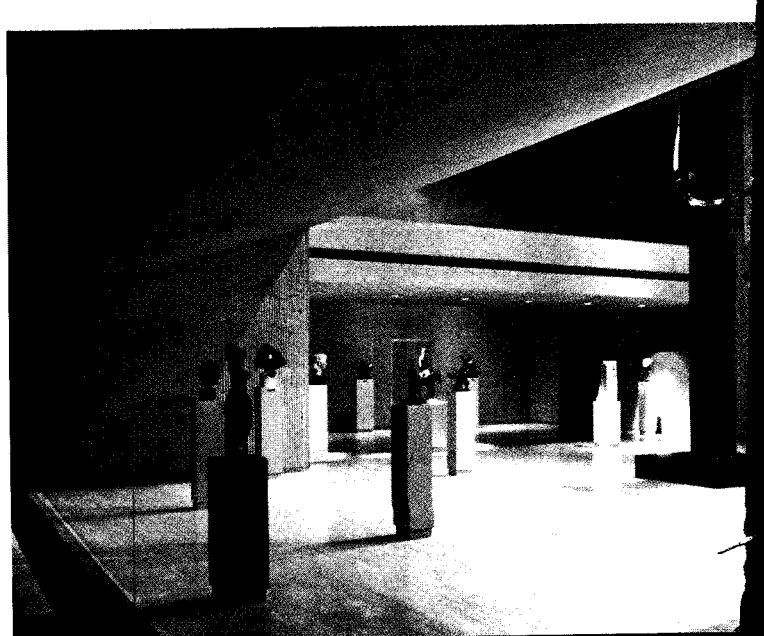
Each of the two courts has a grandly scaled central space for displaying large-sized sculpture, plus a variety of peripheral spaces more suitable for showing small pieces. At the top of the straight-run stairway, a skylit niche pops out from the building to provide one such intimate display area; another is provided under the diagonal recesses in the rear facade at the lower level.

Adjacent to the lower sculpture court, and tucked under the floor of the upper court, is a small, 240-seat auditorium. It can be reached from the upper level via a stairway encased in the rounded section that projects into the pool.

Pei says of his design: "The problem was to reconcile two generations of architecture without compromising either, so that one plus one would equal more than two." He has succeeded handsomely.—JAMES BAILEY

FACTS AND FIGURES
Addition to Des Moines Art Center, Greenwood Park, Des Moines, Iowa. Owner: Edmundson Art Foundation. Architects: I. M. Pei & Partners (Richards M. Mixon and Graeme A. Whitelaw, architects in charge). Engineers: Weiskopf & Pickworth (structural); Robson & Woese Inc. (mechanical and electrical). General contractor: The Weitz Co. Building area: 23,800 sq. ft. (including terraces and courts). Construction cost: $1.1 million (including furnishings).
PHOTOGRAPHS: © Ezra Stoller (ESTO).





A V-shaped monitor projecting above the building serves as a skylight for the upper sculpture court (opposite page). A small, two-story section joins the new wing with the original building (right) and provides a separate entrance to the lower-level auditorium. It contains a coatroom at the ground level and a small gallery above (see floor plans).

TECHNOLOGY AND THE NATURAL ENVIRONMENT

BY BARRY COMMONER

The architect is the designer of places for human habitation. But the habitat of man is not merely buildings, roads, and cities. It is, rather, the earth's total skin of air, water, and soil, for it is that planetary system—the biosphere—which establishes the basic conditions that support the life of man. Like all living things, human beings can survive on the earth only so long as this environment is fit to support them. What the architect designs for the use of man must therefore fit into the design of the environment.

Until recently the environment has been largely taken for granted—that it will continue, as it always has, to support our life and our livelihood, providing the air that we breathe, the water that we drink, the food that we eat, and much of our industrial raw material. In the last few years, with a sudden shock, it has become apparent that modern technology is changing the environment — for the worse. The air that we now breathe in our cities can lead to respiratory disease, and lung cancer; surface waters are losing their natural capability for accommodating human wastes; environmentally-induced changes in food crops are causing disease in animals, and in some instances people; human activities may threaten—depending on the outcome of two contradictory effects—either to flood the cities of the world under water from the earth's molten ice-caps, or to induce a new ice age.

Mr. Commoner is the Chairman of the Department of Botany, and the Director of the Center for the Biology of Natural Systems at Washington University, St. Louis. The above was his contribution to a recent symposium at New York's Museum of Modern Art.

Photograph by the New York Times

I should like to review briefly what has been learned from the mounting roster of environmental problems. The lesson, I believe, is simple and grim: The environment is being stressed to the point of collapse. I believe that we are approaching, in our time on this planet, a crisis which may destroy its suitability as a place for human habitation. But I believe that we have also learned that the environmental crisis *can* be resolved if we accept a fundamental fact — that man is not designed to conquer nature, but to live in it.

The proliferation of human beings on the surface of this planet is proof of the remarkable suitability of the terrestrial environment as a place for human life. But, the fitness of the environment is not an immutable feature of the earth, having been developed by gradual changes in the nature of the planet's skin. Living things have themselves been crucial agents of these transformations, converting the earth's early rocks into soil, releasing oxygen from its water, transforming carbon dioxide into accumulated fossil fuels, modulating temperature, and tempering the rush of waters on the land. And, in the course of these transformations, the living things that populated the surface of the earth have, with the beautiful precision that is a mark of life, themselves become closely adapted to the environment they have helped to create. As a result, the environment in which we live is itself part of a vast web of life, and like everything associated with life, is internally complex, and stable, not in a static sense, but by virtue of the intricate play of internal interactions.

"In the past, the environmental effects which accompanied technological progress were restricted to a small place and a relatively short time. The new hazards are neither local nor brief."

On a small scale, the dependence of environmental stability on the nice balance of multiple biological processes is self-evident. A hillside denuded of vegetation by fire, and thus lacking protection against the erosion of heavy rains previously afforded by the canopy of leaves and the mat of roots, can quickly shed its soil and lose its capability to support plants and harbor animals. And, on this scale, the threat of thoughtless human interventions is equally self-evident; we have long since learned that brutal lumbering or greedy exploitation of the soil can permanently alter the life-supporting properties of a forest or a once-fertile plain.

But, now, the size and persistence of environmental effects has grown with the power of modern science and the expansion of new technology. In the past, the environmental effects which accompanied technological progress were restricted to a small place and a relatively short time. The new hazards are neither local nor brief. Modern air pollution covers vast areas of the continents. Radioactive fallout from nuclear explosions is world wide. Synthetic chemicals have spread from the United States to Antarctica; some of them may remain in the soil for years. Radioactive pollutants now on the earth's surface will be found there for generations, and in the case of carbon-14, for thousands of years.

At the same time, the permissible margin for error has become very much reduced. In the development of steam engines a certain number of boiler explosions were tolerated as the art was improved. If a single comparable disaster were to occur in a nuclear power plant or in a reactor-driven ship near a large city, thousands of people might die, and a whole region rendered uninhabitable. Modern science and technology are simply too powerful to permit a trial-and-error approach.

This means that we cannot escape the responsibility of evaluating the competence of modern science and technology as a guide to human intervention in the environment. My own considered opinion is that modern science is a dangerously faulty foundation for technological interventions into nature. This becomes evident if we apply the so-called "engineering test" to it—that is, how well does it work in practice? Science represents our understanding of the natural world in which man must live.

Since, man consciously acts on the environment through technology, the compatability of such action with human survival will, in turn, depend on the degree to which our technological practice accurately reflects the nature of the environment. We may ask, then, how successful is the understanding of nature which science now gives us as an effective guide to technological action in the natural world?

It is my contention that environmental pollution reflects the failure of modern science to achieve an adequate understanding of the natural world, which is, after all, the arena in which every technological event takes place.

The roster of the recent technological mistakes in the environment which have been perpetrated by the most scientifically

advanced society in the history of man—the United States of 1969—is appalling:

- We used to be told that radiation from the fallout produced in nuclear tests was harmless. Only now, long after the damage has been done, we know differently. The bombs were exploded long before we had even a partial scientific understanding that they could increase the incidence of harmful mutations, thyroid cancer, leukemia, and congenital birth defects.
- We built the maze of highways that strangles almost every large city, and filled them with hordes of automobiles and trucks long before it was learned—from analysis of the chemistry of the air over Los Angeles—that sunlight induces a complex chain of chemical events in the vehicles' exhaust fumes, leading eventually to the noxious accumulation of smog.
- For more than 40 years massive amounts of lead have been disseminated into the environment from automotive fuel additives; only now has concern developed about the resultant accumulation of lead in human beings at levels that may be approaching the toxic.
- The insecticide story is well known: They were synthesized and massively disseminated before it was learned that they kill not only insects, but birds, and fish as well, and accumulate —with effects that are still largely unknown—in the human body.
- Billions of pounds of synthetic detergents were annually drained into U.S. surface waters before it was learned—more than ten years too late—that such detergents are not degraded by bacterial action, and therefore accumulate in water supplies. Nor were we aware, until a few years ago, that the phosphates added to improve the cleansing properties of synthetic detergents would cause overgrowths of algae, which on their death pollute surface waters.
- In the last 25 years the amount of inorganic nitrogen fertilizer used on U.S. farms annually has increased about fourteen-fold. Only in the last few years has it become apparent that this vast elevation in the natural levels of soil nutrients has so stressed the biology of the soil as to introduce harmful amounts of nitrate into foods and surface waters.
- The rapid combustion of fossil fuels for power, and more recently, the invasion of the stratosphere by aircraft, are rapidly changing the earth's heat balance in still poorly understood ways. The outcome may be vast floods —or a new ice age.
- And, for the future, if we make the monumental blunder, the major military powers have prepared to conduct large-scale nuclear, chemical and biological warfare—which can only result, for belligerents and neutrals, in a vast biological catastrophe.

"We used to be told that radiation from the fallout produced in nuclear tests was harmless. Only now, long after the damage has been done, we know differently."

Each of these is a technological mistake, in which an unforeseen consequence has seriously marred the value of the undertaking. In order to illustrate the origin of such failures, I should like to discuss, briefly, the homely example of sewage disposal.

In natural lakes and rivers, animal organic wastes are degraded by the action of bacteria of decay which convert them into inorganic substances: carbon dioxide, nitrates, and phosphates. In turn these substances nourish plants, which provide food for the animals. In sunlight, plants also add to the oxygen content of the water and so support animals and the bacteria of decay. All this makes up a tightly woven cycle of mutually dependent events, which in nature maintains the clarity and purity of the water, and sustains its population of animals, plants, and microorganisms.

If all goes well, this biological cycle can assimilate added organic waste materials, and, maintaining its balance, keeps the water pure. But such a complex cyclical system, with its important feedback loops, cannot indefinitely remain balanced in the face of a steadily increasing organic load. Sufficiently stressed it becomes vulnerable at certain critical points. For example, the bacteria that act on organic wastes must have oxygen, which is consumed as the waste is destroyed. If the waste load becomes too high, the oxygen content of the water falls to zero, the bacteria die, the biological cycle breaks down, the purification process collapses, and the water becomes foul.

A sewage treatment plant domesticates the microbial activities that degrade wastes in natural streams and lakes. Sewage treatment involves a primary step in which indigestible solids are removed, and secondary treatment in a tank or pond rich in microbial decay organisms. During secondary treatment, the organic materials, artificially supplied with oxygen, are converted by microbial oxidation into inorganic substances. If the system works well, the resulting water is a clear, dilute solution of the inorganic products, of which nitrate and phosphate are most important. These inorganic products of sewage treatment, now free of oxygen demand, presumably can

be released to rivers and lakes without causing any immediate drain on the oxygen in them.

But it has recently become apparent that this form of waste disposal technology is, to put it simply, a failure. For, in many places—for example, Lake Erie—the products of the treatment systems themselves, nitrate and phosphate, ultimately increase the organic load on the water, deplete the oxygen, and so negate the entire purpose of the system. Nitrate and phosphate are always present in natural waters—but in amounts far less than those generated by the huge waste load imposed on them by man. And at such abnormally high levels, nitrate and phosphate become a new hazard to the biological balance. These concentrated nutrients may induce a huge growth of algae—an algal "bloom." Such an abnormally dense population tends to die off with equal suddenness, again overloading the water with organic debris, and disrupting the natural cycle. To make matters worse, we are adding to the nitrate burden of surface waters by the massive use of nitrogeneous chemical fertilizers, and to their phosphate burden through the use of phosphate-rich detergents.

"The 'success' of modern technology is... determined by its ability to meet the economic requirements of the manufacturer... rather than of those who bear its costs in environmental deterioration."

What all this means for the U.S. as a whole is evident from the report of the Spilhaus Committee report to the President's Office of Science and Technology. According to that report:

"The oxygen-demanding fraction of domestic and industrial waste is growing much more rapidly than the efficiency of waste treatment, so that, by 1980, it is estimated the oxygen demand of treated effluents will be great enough to consume the entire oxygen content of a volume of water equal to the dry-weather flow of all the United States' 22 river basins."

Ignorance of the biology of the environment is leading to the absolute deterioration of the quality of the nation's water systems. For example, despite a steady improvement in New York City's sewage treatment facilities, since 1948, in most of the coastal waters which receive the effluent of New York City treatment plants, the numbers of human intestinal bacteria has *increased* sharply. Water at many of the city beaches contains bacterial counts which are well above the allowable public health limits. Behind this astonishing fact may be a new and hitherto anticipated phenomenon—that intestinal bacteria, rather than dying off, as expected, when they are discharged from treatment plants into surrounding waters, actually multiply in them, because of the high concentration of bacterial nutrients, such as phosphate.

The warning is clear. We have begun to stress the self-purifying power of the Nation's surface waters to the point of biological collapse. A major cause of this impending catastrophe is our ignorance of the technological requirements of the environment and our persistent tendency to design technological instruments which do violence to these requirements.

The failure of technology is also evident in the air pollution problem. How else can we judge the matter of the recent proposal to construct a sunken expressway, capped with schools and houses, across lower Manhattan, without previous consideration of the resultant effects of carbon monoxide generated by the traffic on the school children and residents? Only *after* the plan was announced, did it become apparent that the resultant carbon monoxide levels would be sufficient to cause headaches, mental dullness, and even collapse. Or consider the potential impact of microscopic flakes of asbestos, spread from building materials and the lining of air conditioning ducts into the city air. Careful studies by Dr. I J. Selikoff of the Mount Sinai School of Medicine of New York City residents show ". . . these particles are now very common among city dwellers at this time." And it has been established that the presence of asbestos particles in the human lung is the prelude, if sufficiently concentrated, to a particular form of lung cancer.

We tolerate the operational failure of the automobile and other technological hazards to the environment only because of a peculiar social and economic arrangement—that the high costs of such failures (for example, the lives lost to lung cancer or the medical cost of smog-induced emphysema) are not charged to any given enterprise, but are widely distributed in society. As a result, these costs become so intermingled with the costs due to other agents (for example, air pollution from power plants) as to become effectively hidden and unidentifiable. This suggests that the "success" of modern technology is largely determined by its ability to meet the economic requirements of the manufacturer. Measured against the economic interests of those who bear its costs in environmental deteriora

tion—society as a whole—technology is by no means as successful.

In the same way, nuclear bombs epitomize the exquisitely refined control that has been achieved over nuclear reactions. There is no evidence that any U. S. nuclear bomb has failed to go off or to produce the expected blast. What has been unanticipated, and the source for loud complaint, is the effect of nuclear explosions on the biology of the environment. And again, the chemists and engineers who have given us the new synthetic detergents and insecticides are clearly competent to produce the desired materials; the trouble comes when we begin to use them, as they must be, in the environment.

No one can deny, of course, that, in certain respects, modern technology is brilliantly successful. Certainly, the modern mass-produced automobile is a technological triumph—up to a point. The dividing line between success and failure is the factory door. So long as the automobile is being constructed, it is a technological success. The numerous parts are designed, shaped, fitted together—and the whole assemblage works. However, once the automobile is allowed out of the factory into the environment, it is a shocking failure. It then reveals itself as an agent which has rendered urban air carcinogenic, burdened human bodies with nearly toxic levels of carbon monoxide and lead, embedded pathogenic particles of asbestos in human lungs, and has contributed significantly to the nitrate pollution of surface waters.

"Let us hope that we can all learn what the architect has long known—that the proper use of technology is not to conquer the world, but to live in it."

I believe that we must reverse the order of relationships which now connect economic need, technology, and the biology of the natural world. In the present scheme of things, narrow economic or political needs dictate the choice of a given technological capability—construction of nuclear weapons or an expressway, synthesis of insect-killing chemicals or the manufacture of asbestos building materials. This capability is translated into a specific engineering operation and when the operation is intruded upon the natural world, a myriad of biological problems arise—and it is left to the biologists, physicians, and others concerned with the survival of living things, to cope with these hazards as best they can.

I believe that if we are to assimilate modern science into a technology which is compatible with the environment that must support us, we shall need to reverse the present relationships among biology, engineering, technology, and economics. We need to begin with an evaluation of human needs and desires, determine the potential of a given environment to meet them, and *then* determine what engineering operations, technological processes, and economic resources are needed to accomplish these desires, in harmony with demands of the whole natural system.

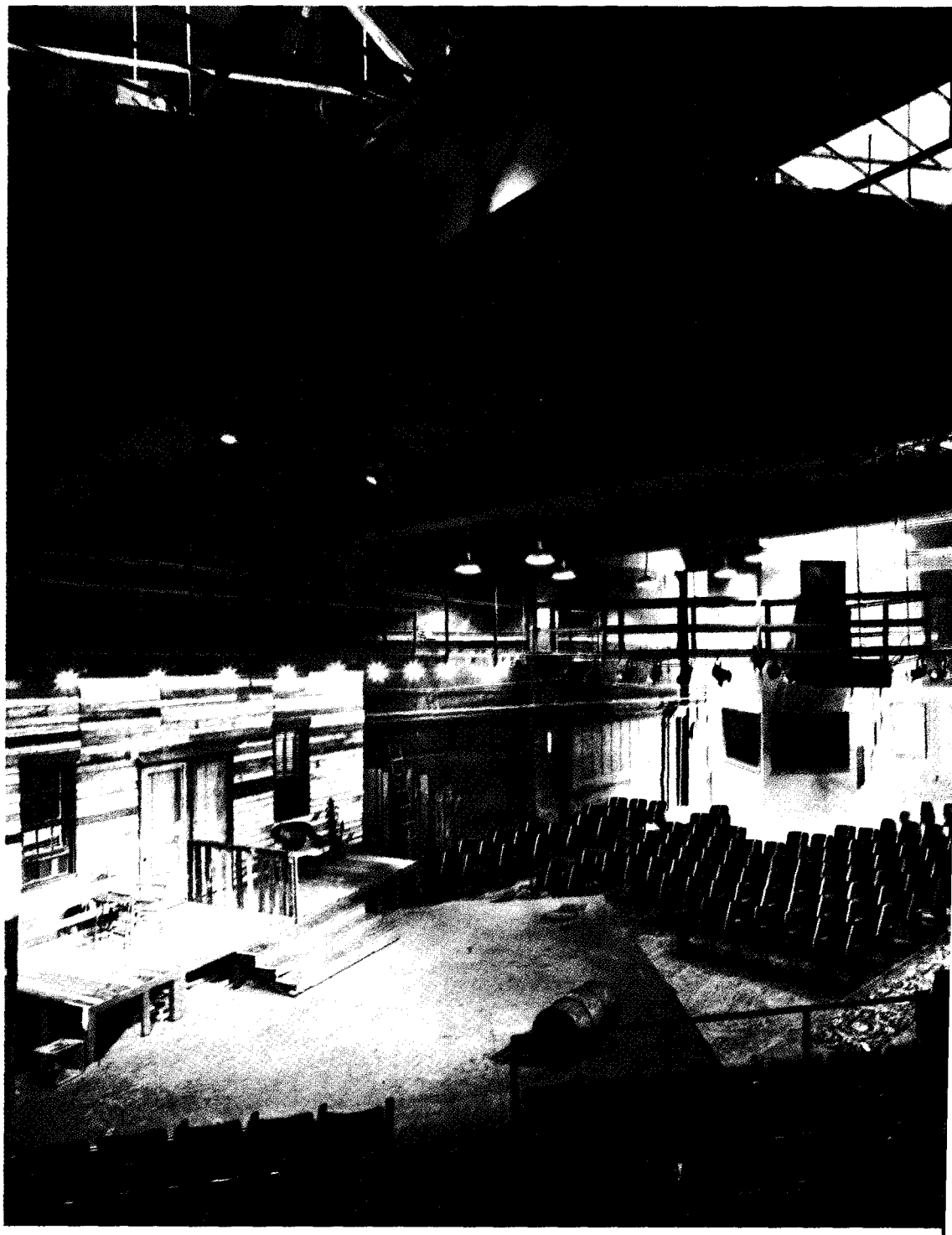
We need to reassess our attitudes toward the natural world on which our technology intrudes. Among primitive people, man is seen as a dependent part of nature, as a frail reed in a harsh world, governed by immutable processes which must be obeyed if he is to survive. The knowledge of nature which can be achieved among primitive peoples is remarkable. The African bushman lives in one of the most stringent habitats on earth; food is scarce, water even more so, and extremes of weather come rapidly. The bushman survives because he has an intimate understanding of his environment.

We who call ourselves advanced claim to have escaped from this kind of dependence on the environment. Where the bushman must squeeze water from a searched-out tuber, we get ours by the turn of the tap. Instead of trackless wastes, we have the grid of city streets; instead of seeking the sun's heat when we need it, or shunning it when it is too strong, we warm ourselves and cool ourselves with man-made machines. All this tends to foster the idea that we have made our own environment and no longer depend on the one provided by nature. In the eager search for the benefits of modern science and technology, we have become enticed into a nearly fatal illusion: that we have at last escaped from our dependence on the balance of nature.

The truth is tragically different. We have become, not less dependent on the balance of nature, but more dependent on it. If we fail to understand this inescapable fact of modern life, we shall forfeit our survival.

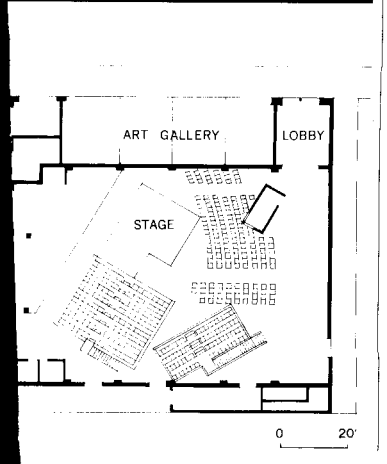
We are still in a period of grace. In that time, let us hope, we can all learn what the architect has long known—that the proper use of technology is not to conquer the world, but, instead, to live in it.

FOCUS



THEATRE FOR HARLEM

In January 1968, the New Lafayette Theater in Harlem (N.Y.) was destroyed by fire, after a mere four months of existence. Less than a year after that, a new theater was created, in the former "Renaissance" movie house on 137th Street and Seventh Avenue. Architects Hardy Holzman Pfeiffer Associates kept to the original concept of the theater's director, Robert Macbeth: "a theater in the black community where the work of the artist can reorient itself to the life of the black community." The theater, being the only facility of its kind in a 20-block area, must serve as cultural center, meeting place, point of reference. The premise of the new theater, in its dramatic context, is direct confrontation between players and audience. There are no curtains or partitions to separate the two areas, and staging is extremely fluid. Action, in fact, often makes use of all available space: aisles, catwalks, platforms, as well as the three-sided stage. Seating, in three banks, angles sharply to the stage area. One bank hides the entrance to the dressing rooms, another is raised on a steeply sloping steel scaffold, the third incorporates original seats from the movie auditorium. Mechanical equipment, such as the lighting grid, projection box, and rigging, is in full view. The very low cost ($100,000) of the adaptation of the 6,000-sq.-ft. space was paid through foundation grants.

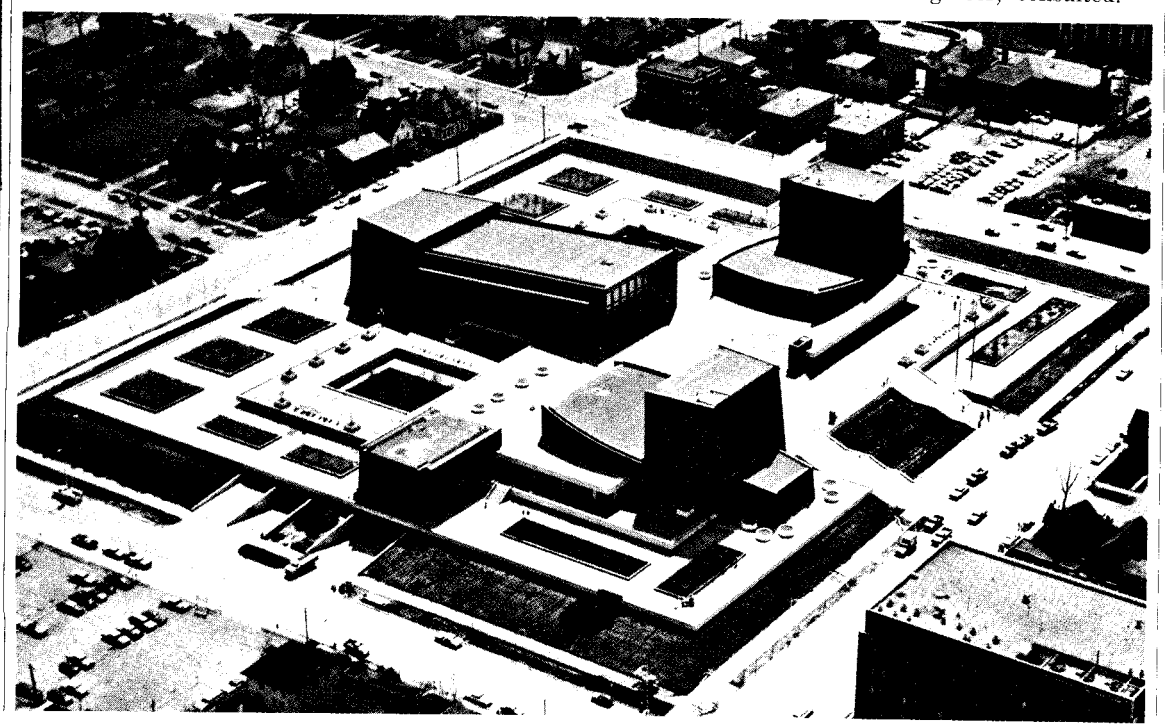


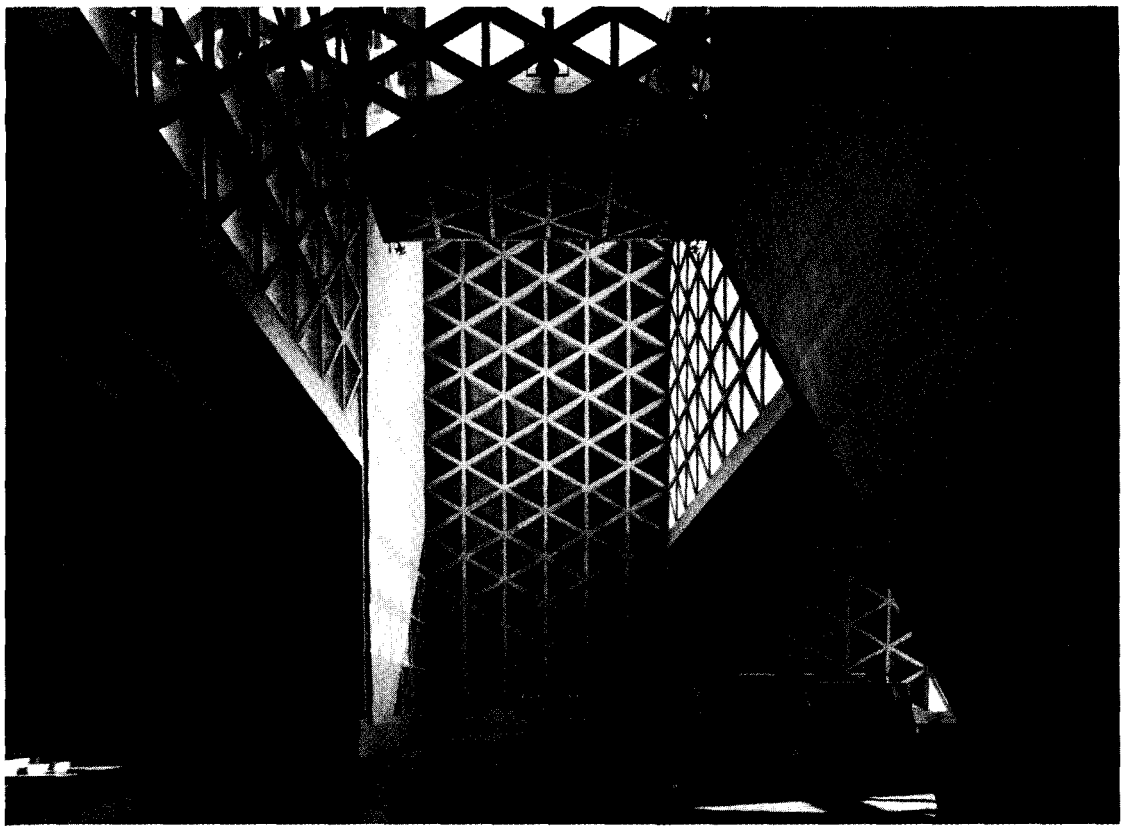
COMPATIBLE CHURCH

In keeping with the overall design concept and plan of new-town Reston, Va., is the Washington Plaza Baptist Church, which was formally dedicated last summer. Architects Ward & Hall designed the church in close collaboration with Conklin & Rossant who were Reston's master planners. The 8,610-sq.-ft. structure blends harmoniously with the surrounding townhouses on the plaza. It is built on three levels adapted to a sloping site: worshippers enter on the middle level. The top level contains a rear balcony for the choir, offices, and the baptistry preparation room; the lower level contains five classrooms. The baptistry, naturally, is the most important feature; the architects designed it in reinforced concrete and it protrudes through the front wall.

ACROPOLIS FOR THE ARTS

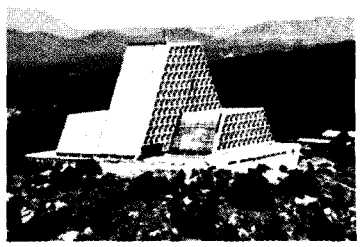
On April 19, the University of Illinois at Urbana-Champaign opened its huge (two-block-square) new complex for the performing arts. The Krannert Center, named for Herman Krannert who donated most of the necessary $21 million, incorporates—in one single entity—five theaters: the Great Hall, a 2,100-seat multipurpose auditorium; the Festival Theatre, and the Playhouse; the Studio Theater for experimental productions; and an outdoor Amphitheater. All are serviced by a common lobby, which also contains facilities for parking, utilities, classrooms, and rehearsal rooms. The Center was designed by Max Abramovitz, architect of Philharmonic Hall in New York's Lincoln Center. Jo Mielziner and George Izenour, theatrical designers, and Dr. Cyril M. Harris, acoustical engineer, consulted.





HONEYCOMB FOR PRAYER

The Temple to Maria Madre e Regina stands stark and isolated on Monte Grisa, a hill overlooking the city and gulf of Trieste. Designed by Antonio Guacci, the entire church is constructed on the "principle of the triangle," which, according to the resident priest, is a symbol of the Trinity, as well as of eternity and stability. Triangular penetrations in, and overlays on, the interior and exterior walls echo the angle of the walls themselves. Windows are broken by triangular bars, too, lending a further counterpoint in light and dark.

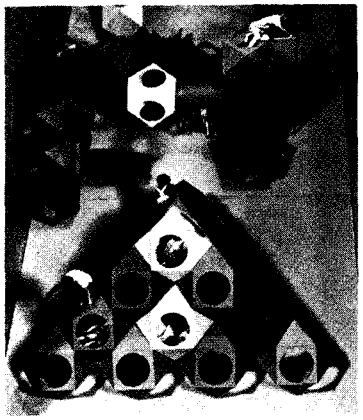


THE TRUNK LINE

The major attraction at Tokyo's Ueno Zoo is the new elephant house, which was just opened to the public in July of last year. Designed by the architectural department of the Tokyo University of Fine Arts, the house is divided into three sections: housing for the elephants, spectator areas, and care facilities. There are four elephant rooms, and a spare room for sick animals, all lit from skylights of galvanized steel (see photo below). Each elephant compartment is cut off from the outdoors by a folded concrete screen which can be raised to let the animals out into paddocks and pools. Outside, too, is a mud-bathing area. The spectators may view the elephants from across a moat, or may go inside the house onto a special spectator "island" which looks directly into the four elephant rooms thereby affording a greater feeling of involvement and intimacy with the animals. Above this island, and above the rooms, crosses a "feeding bridge" which opens into a silo block where food is stored. The feeding bridge also joins four cores: these together are the supporting framework of the house. In the basement of the elephant house are the service areas, machine room, ventilation trenches, and storage areas.

PLAY'S THE THING

A new adventure in play has been developed by Playstreet Inc. for parks, vacant lots, playgrounds, or, in fact, for any available space. Richard Dattner, the designer who created the very successful Adventure Playground in New York City's Central Park, designed a modular system of "playcubes" which interlock in clusters to form a variety of shapes. Each individual "cube", or "cuboctahedron," is light and resilient, made of glass fiber and thermoplastic which has been shot through with one of four colors: blue, red, yellow or green. The clusters can be assembled very quickly, to fit any allotted area. Once put together they become pyramids, space ships, boats, houses—anything the child can imagine. The cubes are penetrated by holes which interconnect to form tunnels and "creep places." The clusters, which can be purchased in eight different groupings, are inexpensive: four cubes cost $600, nine, with a slide and tube cost $1,350; 100 cubes with 20 accessories cost $15,000.



PHOTOGRAPHS: Page 74, Norman McGrath; page 75, Robert H. Canizaro; page 76 (top), Foto Pozzar; (bottom), courtesy of the "Japan Architect."


HIRTS
35

WILL SUCCESS SPOIL THE VIEUX CARRE?

It is threatening to, but a four-year study has shown how new development in the Quarter can become a tool for enhancing its historic tout ensemble

Everybody loves New Orleans' historic, romantic, and unashamedly sentimental Vieux Carre. Everybody loves it so much, in fact, that the unique character of this 250-year-old French Quarter is threatened with destruction.

Millions of tourists pour into the Vieux Carre each year to experience the delights of its quaint and nostalgic charm. To accommodate them, Vieux Carre merchants build grossly overscaled hotels and other tourist meccas—usually in a style of "fake authenticity" that owes more to Walt Disney than to history. The result has been a steady erosion of the very features that the tourists come to see. If the trend continues, it eventually could kill the goose that lays the golden egg.

If that should happen, the nation will have lost an incomparable and irreplaceable part of its heritage. But it need not happen. A team of urban planners, after an exhaustive four-year study, has come up with the conclusion that new development and historic preservation need not be natural enemies in the Vieux Carre; that they can, in fact, work to each other's mutual advantage, provided both are carried out according to a comprehensive, carefully conceived set of guidelines and controls.

The Vieux Carre study was conducted for the City of New Orleans by the Bureau of Governmental Research and financed largely by a HUD demonstration grant. The study team was led by Marcou, O'Leary & Associates, a Washington-based planning firm, and included architects, historians, economists, attorneys, governmental officials, and experts in other fields. It resulted in a massive, eight-volume report that has significance far beyond the confines of the Vieux Carre itself.

Preservation in conflict

What sets the Vieux Carre study apart is the comprehensive, real-life nature of its approach. It is not, like others of its kind, a mere survey of architectural and historic landmarks carried out in grand isolation from the social, economic, legal, and political facts of life. Instead, through extensive analysis, it identifies these forces and establishes methods of dealing with them in ways that will not destroy, but enhance the flavor and quality of the Vieux Carre.

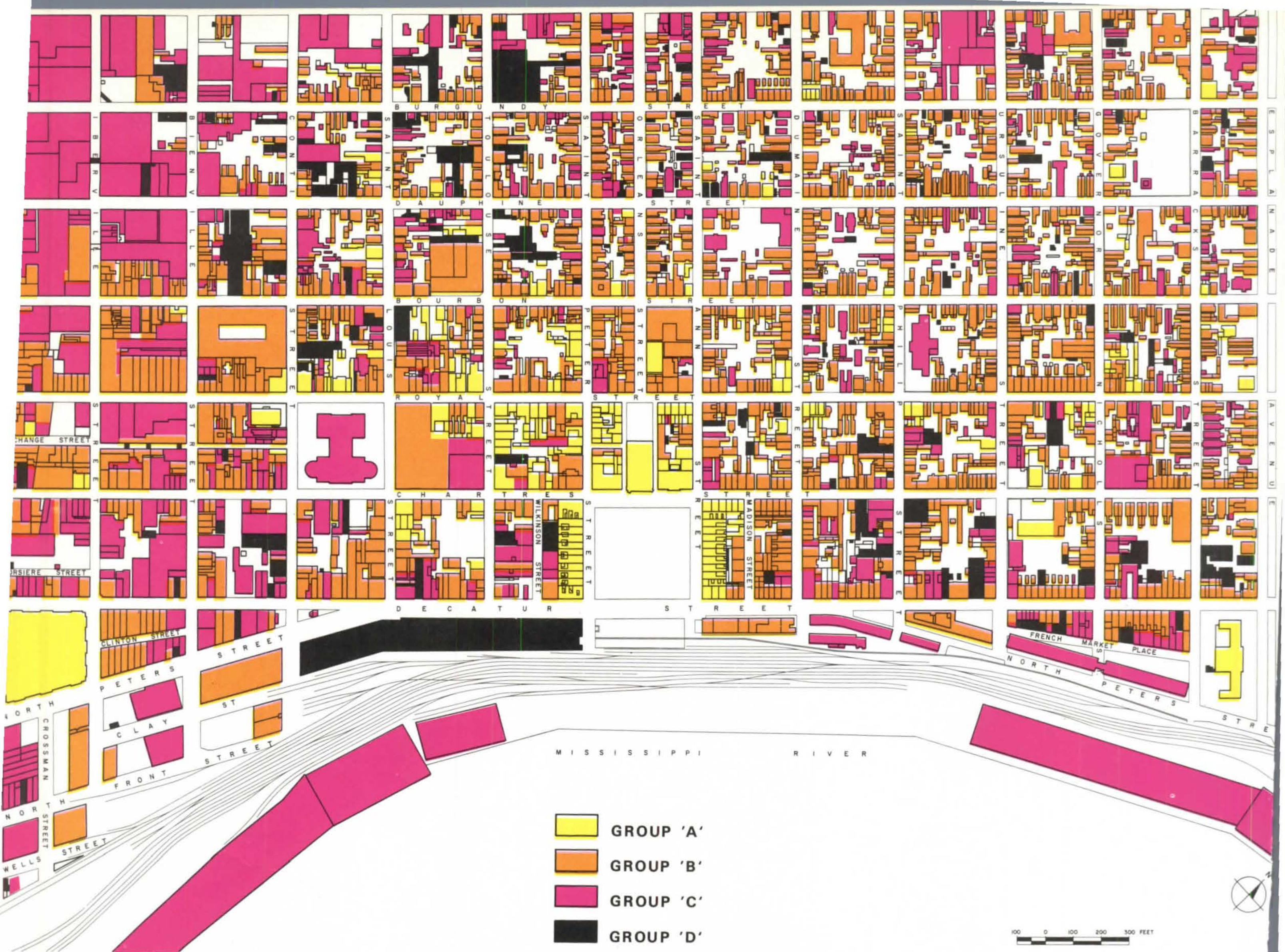
The unique character of the French Quarter lies not so much in its individual buildings, most of which are neither architecturally distinguished nor historically important, but in its *tout ensemble,* the sum total effect of its buildings plus its environment. "We realized," says Planner George T. Marcou, "that we first had to identify the specific physical and functional elements that compose the *tout ensemble* before we could devise an effective plan for preserving it. Only then could we establish what structures and activities in the area should be fixed—not subject to change—and what could be changed without endangering the Quarter's essential character."

Defining the alltogether

To define the *tout ensemble,* the study team developed an analytical method which incorporated both the general and the specific. The general included the Quarter's major physical features: focal points, corridors of movement, landmarks, character areas (commercial, residential, tourist, etc.), viewpoints and vistas, open spaces, building groups, and facade combinations.

The specific involved every one of the Vieux Carre's 3,070 buildings, each of which was surveyed and evaluated in three broad categories; architectural-historic significance, land use compatibility, and existing building condition.

In the "architectural-historic" category, the team (aided by Tulane University's School of Architecture) gave each building one of five ratings: of national significance, of major significance, of local importance, of value as part of the scene, and of no importance or objectionable. Not surprisingly, only 14 structures scored the highest rating—five of them buildings clustered around the Vieux Carre's major focus, Jackson Square (see page 80). But 2,411 structures,


BURGUNDY STREET
DAUPHINE STREET
BOURBON STREET
ROYAL STREET
CHARTRES STREET
DECATUR STREET
IBERVILLE
BIENVILLE
CONTI
ST. LOUIS STREET
TOULOUSE
ST. PETER STREET
ORLEANS
ST. ANN STREET
DUMAINE
ST. PHILIP STREET
URSULINE
GOVERNOR NICHOLLS STREET
BARRACKS STREET
ESPLANADE AVENUE
EXCHANGE STREET
CLINTON STREET
WILKINSON STREET
MADISON STREET
NORTH PETERS STREET
CLAY ST
FRONT STREET
CROSSMAN
NORTH STREET
WELLS STREET
FRENCH MARKET PLACE
MISSISSIPPI RIVER
GROUP 'A'
GROUP 'B'
GROUP 'C'
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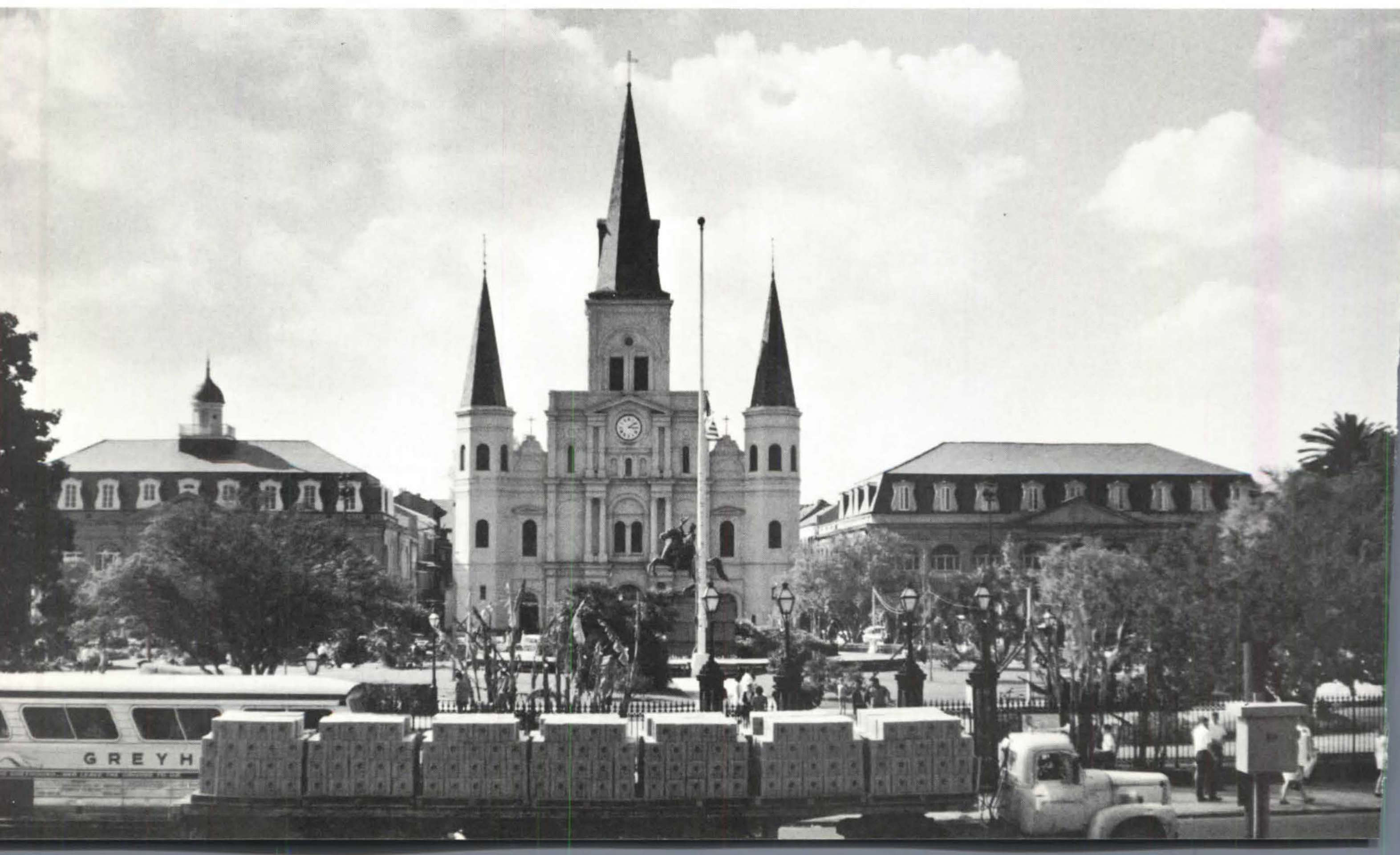
100 0 100 200 300 FEET


GREYH

representing 78.5 per cent of the total, received at least a rating "of value as part of the scene." Only 659 buildings (21.5 per cent) were rated "of no importance or objectionable."

In the "land use compatibility" category, the team placed each building in one of three rankings: compatible, acceptable, and not compatible. The degree of each building's compatibility was evaluated in relation to the character area in which it was located. Thus, mixed residential-commercial uses, for example, were rated "compatible" or "acceptable" in all but the Quarter's low-density residential area (see map, below left), while heavy industries were rated "not compatible" in every area. (All parks and open spaces were automatically rated "compatible.")

In the category of "existing building conditions," each structure was rated as either sound, in need of minor repairs, in need of major repairs, or dilapidated. Surprisingly, in view of the advanced age of many Vieux Carre buildings, a total of 2,410 structures (78.6 per cent) were rated either sound or in need of only minor repairs.

Having thus evaluated every single building in each of three categories, the team combined the ratings into a single scoring system. Because of the overriding importance of a building's architectural-historic significance, double weighting was given to this category. Eight points were allotted to buildings of "national or major significance," four points to those "of local importance," two to those "of value as part of the scene," and none to those "of no importance or objectionable."

In the land-use category, "compatible" buildings received two points; "acceptable" buildings got one point, and those "not compatible" scored zero. For physical condition, sound buildings and those requiring only minor repairs scored two points, those in need of major repairs received one point, and dilapidated structures got none.

The result is the "Treatment Index" map shown on the opposite page—a kind of composite portrait of the entire Vieux Carre which ranks each of its buildings in one of four groups:

- Group A (over eight points): buildings of "irreplaceable architectural and historic value" which should not be replaced or changed under any circumstances.
- Group B (six to eight points): buildings that should remain "unless unusual and compelling requirements dictate replacement."
- Group C (four and five points): buildings not essential to the preservation of the *tout ensemble*.
- Group D (less than four points): buildings eligible for clearance and redevelopment.

By pinpointing and defining both the good and the bad physical features of the Vieux Carre, the Treatment Index served as an invaluable guide for determining where future change could be accommodated in the Vieux Carre without destroying existing elements that contribute to its *tout ensemble*. The Treatment Index showed that, of the 258.5 acres within the boundaries of the Quarter, 47.1 acres (18 per cent) contained structures that should be replaced with developments more in keeping with the *tout ensemble*, thus enhancing the area as a whole.

So far so good. But economic surveys carried out by Hammer, Greene, Siler Associates had indicated a demand for approximately 68 acres of Vieux Carre land by 1985, plus an additional 70 acres between 1985 and 2000. Clearly, the Vieux Carre could not accommodate all this growth without seriously impairing its *tout ensemble*. To overcome this dilemma, the study team proposes the use of a built-in "escape valve": the riverfront area, which is currently a blighted strip of warehouses, docks, and railroad tracks, but could be redeveloped to absorb a large part of the Vieux Carre's growth demands, especially after 1985.

Return to the river

Development of the riverfront is thus an essential element of the Vieux Carre plan prepared by Marcou-O'Leary (see page 83). It calls for carefully staged riverfront program that eventually would produce the following elements in a coordinated complex:

- An in-town residential community on the river's edge, containing apartments, restaurants, and related facilities lining a new riverfront promenade extending along the entire stretch of riverfront.
- A complex of office and apartment towers, stores, tourist accommodations, and parking structures adjoining the new International Trade Mart, which is now nearing completion on a site just outside the Vieux Carre boundaries.
- A physical extension of Jackson Square to the river.
- A riverfront center to include a visitors' center, a hotel, an arts and crafts center, antique mart, shops, entertainment activities, and a series of parking garages serving the entire Vieux Carre.

Development guidelines

The planners recommend seven "planning and design principles" on which the staged redevelopment of the riverfront area should be based:

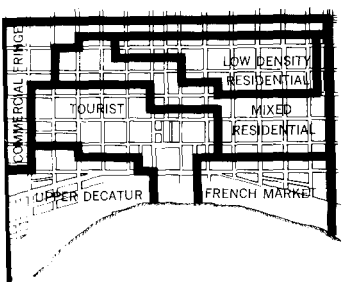
1. Total replanning as a unified development district. "Because the area is primarily in public ownership already," states the report, "redevelopment can be staged over a sufficient period of time to amortize existing investments in port and other riverfront facilities.

2. Replacement of incompatible industrial, wholesaling, and heavy goods handling activities with "a rich diversity of compatible activities," including in-town housing, shops, offices, parks and open spaces, and a variety tourist service uses.

3. Control of future traffic in the historic district and achievement of a higher standard of environmental planning through the construction of a "unified multi-level development."

4. Restoration of the physical and visual link between the historic core and the river, reclamation of the river's edge for scenic and recreation use, and, by opening the Vieux Carre to the water, reestablishment of the Mississippi as the natural physical boundary of the historic district.

5. Provision of new opportu-



technicolor map is a "Treatment ex" developed by the Vieux Carre dy team as a composite evaluation each building's architectural-oric significance, current physical dition, and land-use compatibility ermined in relation to its loca- in one of the Quarter's six aracter areas"—map above). The buildings fronting on Jackson are (left) were among only 14 to ive the highest rating as struc- s of national significance.

nities for private development which should "support rather than detract from the preservation of the historic environment and . . . help divert economic pressures away from the original settlement."

6. Improvement of the functional connection between the Vieux Carre and the Central Business District, which lies adjacent to it.

7. New development consistent with the character of the historic core; preservation of the intimate domestic scale of street life in the old district; extension of the regularity and clarity of the Quarter's street grid into the riverfront area; maintenance of the pattern of interior courtyards linked together to form a pedestrian network throughout the redeveloped area; and recreation of historic features such as the riverfront promenade—a green spine along the river's edge.

The riverfront area is, of course, the proposed site of the highly controversial Riverfront-Elysian Fields Expressway (March '67 issue). Studies carried out by Marcou-O'Leary clearly show that an expressway would be an undesirable addition to the Vieux Carre, but the planners have tried to make the best of it in their scheme. Says Jeremiah D. O'Leary Jr.: "We found that redevelopment of the riverfront area would be feasible and desirable no matter how the proposed expressway was designed —elevated, at grade, or depressed —provided the entire riverfront was designated for joint development on the basis of an overall design concept." With the expressway built at grade, as shown in the plan, air-rights developments could be built in a series of platforms adjacent to and above the roadway.

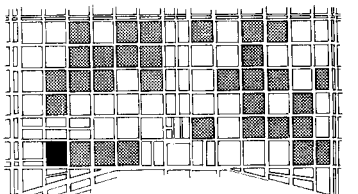
Other improvements

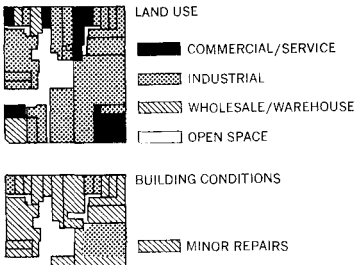
The plan also proposes extensive public and private improvements throughout the rest of the Vieux Carre, most of them intended for completion by 1985. The principal public projects would include:

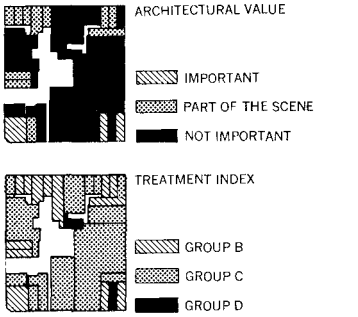
- Demolition of the grossly overscaled Louisiana Wild Life and Fisheries Commission Building and redevelopment of its one-block site into a new "Place Royale." The square would have two terraces—one a half level above grade, the other a half level below. The decked-over space would contain shops and restaurants, and parking would be provided underneath for about 250 cars.
- Pedestrian malls, new community facilities, and new parks, plus the beautification of neglected streets within the Quarter and those that form its boundaries.
- A new school and playground to serve the Quarter's residential neighborhoods.
- A rubber-tired "minitrain" serving as a combination shuttle bus and tourist service linking peripheral parking garages, motels, tourist attractions, shops, and other destinations within the Vieux Carre. With regular transit removed to peripheral streets, the minitrain would also serve as local transit for residents, connecting with citywide transit routes at several points.
- A series of major parking garages, most of them located on the periphery of the historic district. Under the plan, the number of off-street spaces would be nearly doubled by 1985.

Finally, the planners propose a program of specific actions designed to coordinate public and private efforts toward preserving and enhancing the Vieux Carre's *tout ensemble*. Among them:

- Vigorous code enforcement programs covering the entire Quarter.
- Establishment of a revolving fund of at least $2 million to provide loans to private citizens and groups for renovating and restoring structures of architectural and historic significance.
- Comprehensive zoning changes based on a selective zoning concept "to insure its consistency with historic preservation objectives."
- Creation of a private improvement corporation to supplement public and private preservation efforts. The corporation would (1) purchase deteriorating properties and resell them at a loss to investors willing to restore them; (2) buy, restore, and lease properties for profit; (3) coordinate government and private efforts to carry out specific non-self-liquidating projects; and (4) provide technical assistance and advice to individuals who undertake preservation activities.
- Creation of a Vieux Carre Historic Preservation District under the management of a seven-man board of commissioners. The District would replace the present largely ineffectual Vieux Carre Commission and would be given broad powers and authority to regulate and administer future development in the Quarter.
- A capital improvement program covering specific projects to be built by 1980.







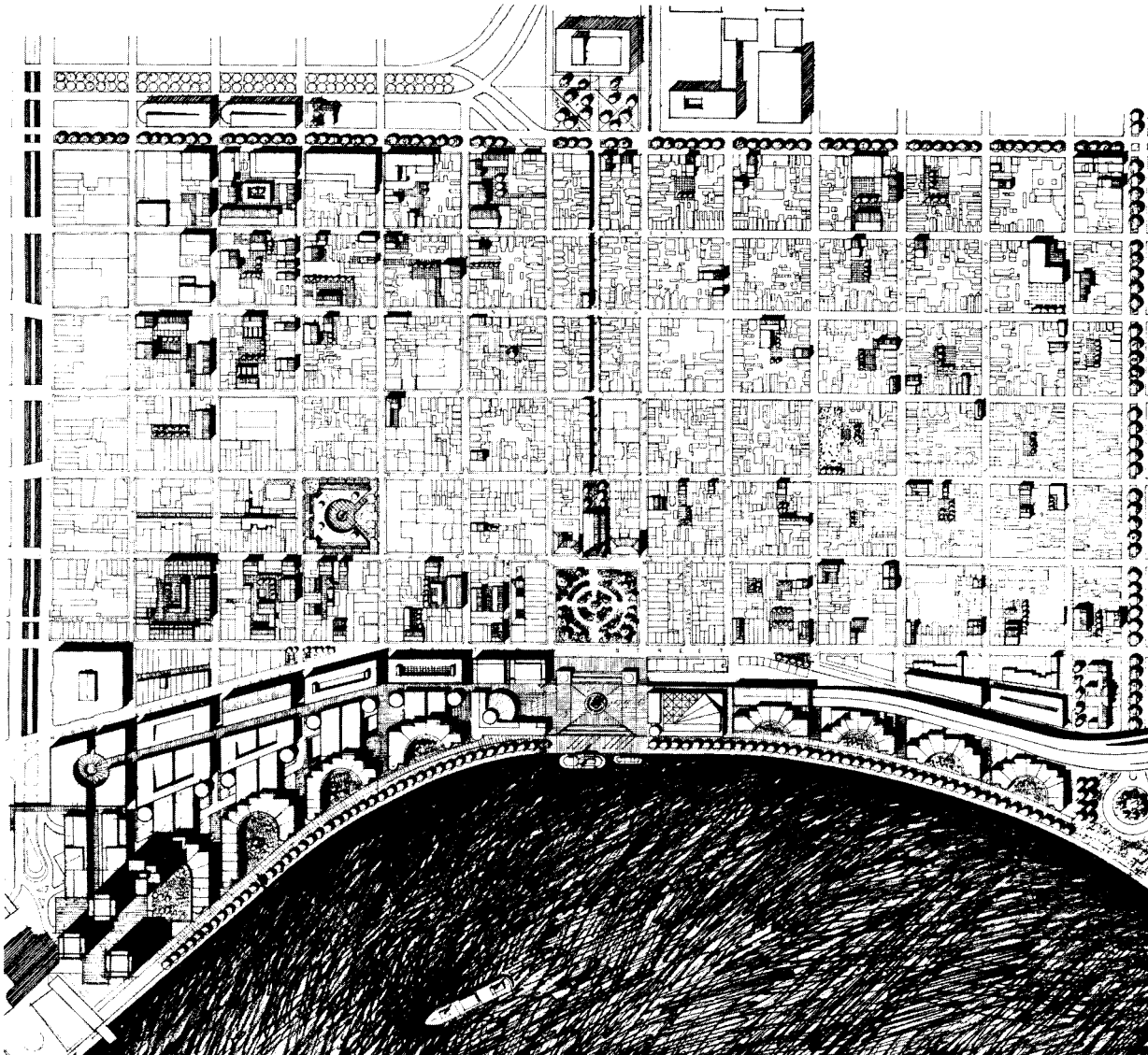
The Marcou-O'Leary plan calls for selective redevelopment of the 32 blocks in the Vieux Carre which contain unimproved interior open space (map at top). The approach, using the four-stage evaluation method developed by the study team, is demonstrated in the "pilot improvement block" shown in the site plan above. Twenty of the original buildings, ranked "C" or "D" on the composite treatment index, would be cleared and replaced with 60 new dwelling units in upper floors and new commercial and office space at ground level. The remaining buildings and open spaces would be rehabilitated and integrated with the new to form a coordinated unit.

Historic continuity

"The main objective of exercising controls in the Vieux Carre," states the report, "is to continue it as a living, functioning community." There would be no attempt to turn back the clock, to recreate the life and environment of a past era, *a la* Williamsburg. Neither would the clock be stopped, walling out all change as a threat to the area's historic identity, *a la* Annapolis. Historic "styles" would not be imposed on new development, but it would have to be compatible with the *tout ensemble* in scale, design, and land use.

The total cost of carrying out the Vieux Carre plan would be about $128 million, of which $88 million would be private investment and $40 million public works. About two-thirds of the development cost would go into the riverfront area.

The public cost is admitted high, but the planners estimate that increased property tax and rental income gained from the new development would provide the city and state with almost $1.2 million in revenues annually. "In the long run," states the report, "the noneconomic benefits of preserving the Vieux Carre will far outweigh the quantifiable financial return. New Orleans' pride in the Vieux Carre and the community's stake in the French Quarter's historic heritage is not essentially a dollars and cents matter."



The proposed Vieux Carre plan (right) calls for total redevelopment of the blighted riverfront area (photo at top) into a multilevel complex of apartments, shops, tourist facilities, and landscaped open spaces. The area is officially part of the historic district, but it is currently given over to industrial and railroad facilities which act as a barrier between the old Quarter and the river. The plan incorporates a proposed, hotly debated expressway which would be elevated at the downriver end of the Quarter (far right on plan), on grade in front of historic Jackson Square, and tunneled at the upriver end.

PHOTOGRAPHS: Page 78, Jack Zehrt; Page 80, John Messina; Page 83, Industrial Photography Inc.

BOOKS

FRANK LLOYD WRIGHT—THE EARLY WORK. By C. R. Ashbee. Introduction by Edgar Kaufmann Jr. Published by Horizon Press, New York, N.Y. 140 pp. 10¼ by 13¼ in. Illustrated. $15.00.

REVIEWED BY WILBERT R. HASBROUCK

It has been written that Frank Lloyd Wright publicly stated early in his career that he intended to be "the greatest architect of all time." This is probably just one of the many bits of folklore surrounding Wright, but, whether he said it or not, he succeeded in attaining this seemingly unobtainable goal. Furthermore, when the first edition of this book appeared in 1911, his place in the annals of architectural history was already absolutely secure. For, at that time, he had, in the remarkably short span of less than two decades of private practice, invented a new architecture.

The seeds of Wright's new architecture had been planted in the late 1880s and early 1890s by Louis Sullivan while Wright sat at Sullivan's right hand in the Auditorium tower. Wright went to Sullivan to school for nearly six years. He could not have remained longer. Even his *Lieber Meister* must have been a confinement unbearable to the most creative architectural mind civilization has yet produced. Still, in the first few commissions Wright executed after leaving Sullivan, he leaned heavily on Sullivanesque forms and details. The Winslow House, designed in 1893, owes much to Sullivan, not only in its ornament but in the massing, materials, and architectectural character. The same might be said of the 1895 Williams House and the Joseph Husser House of 1899, both of which are included in the present volume. Several other buildings not illustrated might have shown this dependence more clearly and one suspects they were not included for that reason. But, by the time Wright designed the B. Harvey Bradley House of 1900, his own idiom had become clear. Then, after eight years in practice he did the Ward W. Willits House. Here no trace of Sullivan remains—the Prairie House is born. Not just born but full grown. From 1901 forward, with the grammar established, Wright's residential work becomes a process of refinement of the vocabulary of the Prairie House. Near perfection was found in the Frederick C. Robie House, designed in 1907 and completed early in 1909.

Wright did not work alone during this period of practice. He surrounded himself with capable assistants — an absolute necessity when one realizes that from 1900 through 1909 the record shows he designed an average of about 16 buildings each year (he probably designed more than this), over half of which were built! Such productivity demanded not only intense effort on the part of the architect but by his entire staff. Nevertheless, Wright found time to speak widely, not only to architectural organizations, but to women's groups, at civic affairs, and so forth. Furthermore, his work was being widely published and he was writing then as he continued to do throughout his life. Such prodigious activity established Wright as the leader of an entire movement or "school" of architecture in the American Midwest. Thomas Tallmadge called it the "Chicago School." Today we usually think of the architecture of Wright and his contemporaries as the "Prairie School," to differentiate their work from the commercial skyscraper construction popularly called the "Chicago School." Wright's prairie houses were so admired and accepted by the architectural community that they inspired a host of followers and imitators. Many of those men who worked in this style had received their apprenticeship in Wright's Oak Park Studio; others had been trained in various Chicago architectural offices and were introduced to Wrigh through participation in the ac tivities of the Chicago Architec tural Club where Wright ofte spoke and exhibited although h was never listed as a member.

Today, in the western suburb of Chicago, particularly Oa Park and River Forest, one ca trace the development of th Prairie School of Architectur through dozens of examples. Ex amples not only by Wright bu by those who surrounded hi and learned from him. One ma does not make a "school" in m sense. But, with Wright as lead er, the Prairie School movemen in Midwestern American archi tecture came to have enormou influence on all architecture t follow. It was, I believe, fa more influential than any o Wright's later work. Even i Wright's remaining 40 years o life, his best things were ofte influenced by his own work o this earlier period.

Writers are constantly search ing for influences which ma have affected Frank Lloy Wright's work. Occasionally, valid point can be made—fo example, Peter Behren's design shown at the Turin Exhibition o 1902 surely had some effect o Wright, probably through Sculp tor Richard Bock who execute so much of the terra cotta an stone ornament on Wright's earl work. But one must conclude tha the greatest single influence o Wright's architecture was his ow earlier work—that is, throughou his career he was continually re fining, improving, and searchi for perfection. He did not hes tate to repeat details over a over if he found them appropr ate. In a very real sense he a cepted Mies van der Rohe's dictu that "one does not need to inve a new architecture every Mond morning." Mies, of course, knowledged a debt to Wrig when he wrote that the Ber exhibition of Wright's work 1910 had saved him and his leagues 20 years.

There are 40 executed proj included in the present volu Four of these are essentially teriors or exhibits. Three—U Temple, the Larkin Building, the River Forest Tennis Cl

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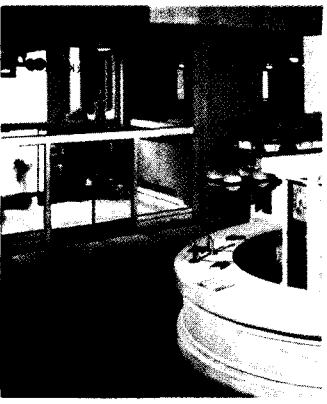
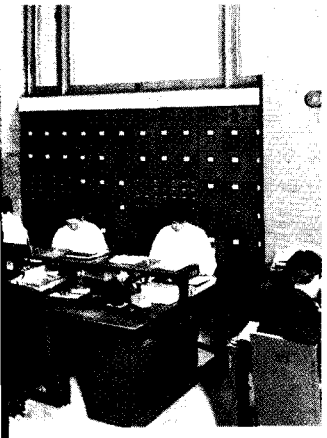
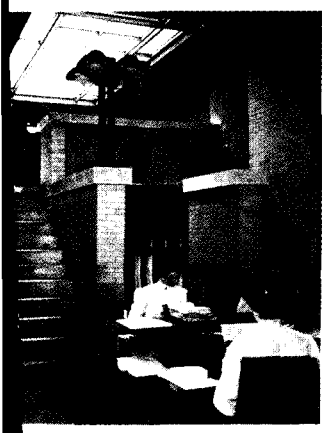
Mr. Hasbrouck is executive director of the Chicago chapter and the Illinois Council of the AIA. He is also editor and publisher of **The Prairie School Review.**



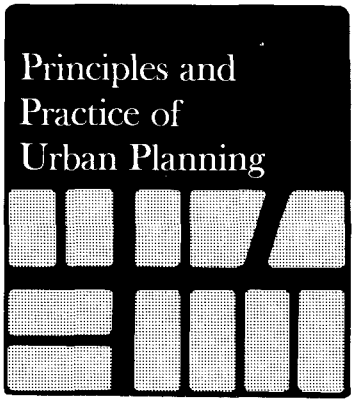




eriors of Wright's Larkin Build- (top to bottom): entrance hall, h glass-walled vestibule and ved information desk; desks for tors in gallery; office space with tal files built into walls, and ght-designed desks, from which vel chairs were cantilevered; ir to employees' recreation room.

are public buildings. The 33 others are houses. As great and influential as Larkin and Unity were, Wright was still basically an architect of private homes. The houses in this book are very representative of Wright's work for the first 17 years of his practice, with an example from almost every year. The original edition of *Ausgefuhrte Bauten* (or in English, *Executed Buildings*) was published by Ernst Wasmuth in Berlin in 1911. It was published concurrently with the public exhibition of 100 drawings of Wright's work which had been published the year before in portfolio as *Ausgefuhrte Bauten and Entwurfe*. Another somewhat abbreviated edition of *Ausgefuhrte Bauten* was published in the same year as part of an inexpensive series of books on the arts. Both editions received wide distribution in Germany, Austria, and Holland. However, *Ausgefurte Bauten* was not widely seen in the United States, probably due to its having been printed only in German. Most of the copies which Wright had brought from Germany were destroyed in the disastrous first fire at Taliesin, and the book has been virtually unobtainable for some 50 years. Now Horizon Press has published the first American edition aptly renamed *Frank Lloyd Wright—The Early Work*. It takes its rightful place as one of our most important basic books on Wright.

The Horizon edition is not a facsimile of the original. The publishers have chosen to redesign it in a larger format so that all drawings and photographs can be read without turning the book on its side. The captions are now in English. Most of the photographs are new prints from the original negatives, although not all were available. An introduction has been contributed by Edgar Kaufmann Jr., and C. R. Ashbee's original German text is presented in English. Both essays present Wright as master of his art, which, of course, he was. The real value of the book, however, is to be found in the presentations in plans and photographs of the work of Frank Lloyd Wright done during the most creative and productive period of his life.



PRINCIPLES AND PRACTICE OF URBAN PLANNING. William I. Goodman, editor; Eric C. Freund, associate editor. Published by the International City Managers' Association, Washington, D.C. Illustrated. 621 pp. 7¾ by 10½ in. $12.50.

REVIEWED BY ROGER MONTGOMERY

Professionals concerned with city planning have waited a long time for this one. Though the name is new, it actually represents the fourth edition of the well-worn *Local Planning Administration* published since 1941 by the International City Managers' Association. Second and third editions appeared in 1948 and 1955, each rewritten under new editorship in response to substantial changes in planning's state of the art. In the years since 1955, even more substantial changes have made the edition of that year obsolete and have created the need for this new volume.

Before considering specific aspects of the Goodman-Freund accomplishment, it should be made clear beyond doubt that this is the most useful of the currently available state-of-the-art texts on U.S.-style city planning. Sophisticated planning professionals, practitioners in the allied professions of architecture, engineering, landscape architecture, law, and community development — and interested laymen — will find it a mine of information. Most of the book covers how-to-do-it material on American planning (more about these chapters in the paragraphs below). It also gives a splendid capsule account of how planning and planning institutions evolved in the U.S. And it includes several chapters the editors characterize as "position papers or think pieces."

Understandably these more speculative chapters contain some of the weakest, though in the case of Kevin Lynch's brilliant piece on urban design, some of the most intriguing material in the book. With respect to social planning, currently the most glamorous branch of the profession, the editors, with Paul Davidoff's help, serve up a collage of old articles from the American Institute of Planners' *Journal*. This chapter does little more than reveal its authors' bias for planning technology and their unfamiliarity with the social science of social change.

A chapter on automatic data processing (ADP) turns out to be even more puzzling. It reads like an academic plea for greater use of ADP-based urban data systems, written unaware that such setups have become commonplace in planning offices, especially in the transportation field. At this point in time such a handbook should (a) take a how-to-do-it approach to computer use, and (b) devote some time to the ends which might justify even the current levels of ADP utilization.

Lynch's chapter, called "City Design and City Appearance," is worth the price of the whole book. First off, his distinction between *design* and *appearance* (a long overdue notion) should do more to clarify discourse among designers, planning administrators, and the general public than anything anyone has written on the subject of urban design—if the professionals can bring themselves to use the word *appearance* when that is what they or their employers actually mean. While Lynch does not solve the conundrum of the place of design-and-appearance considerations in the American city planning process, he continues his seminal contributions which have

(continued on page 106)

Mr. Montgomery is professor of urban design in the Department of Architecture and the Department of City and Regional Planning at the University of California, Berkeley. He is the West Coast correspondent for Forum.

MULTIMEDIA ZOO: 1

Night becomes day for nocturnal animals

BY JOHN S. MARGOLIES

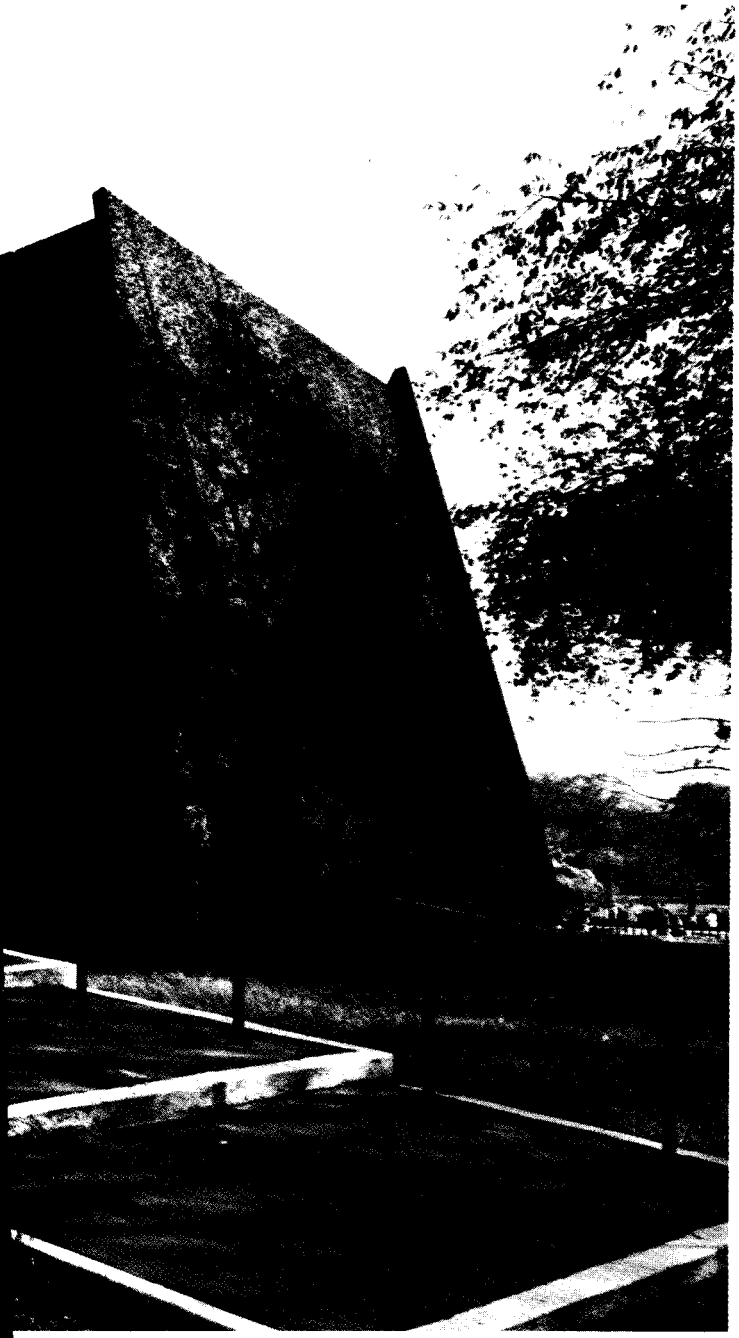
"The World of Darkness," a unique exhibition building for nocturnal animals is a horseshoe-shaped structure sited on a glacial knoll at the Bronx Zoo in New York City. It came into being after the discovery of a new display technique.

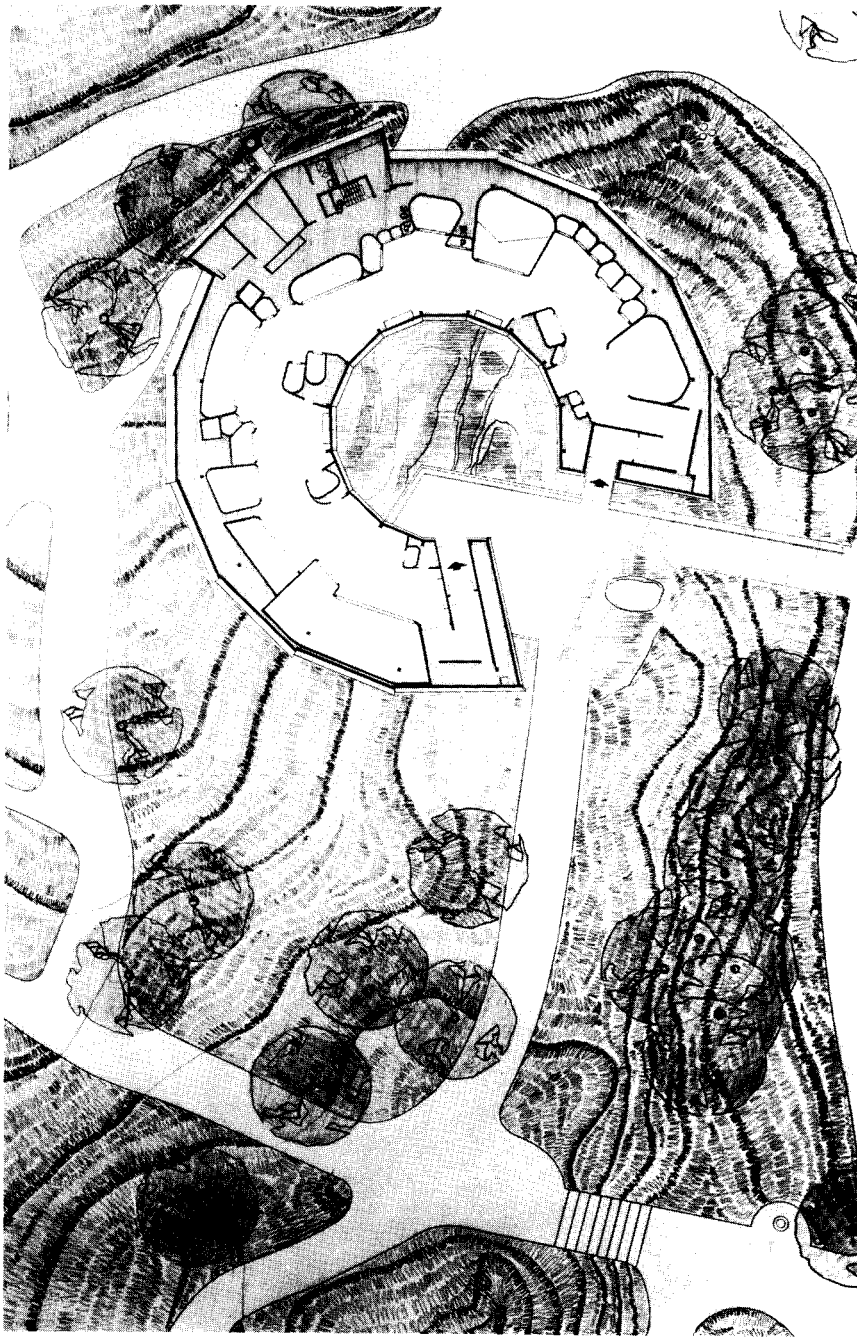
Mr. Margolies is a contributor to several magazines, on topics which include *architecture, the arts, and the* mass media.

In previous displays nocturnal animals were sound asleep during zoo visiting hours because no provision had been made to affect their day-night cycles. Research at the New York Zoological Society demonstrated that the animal's life cycles could be reversed—by use of bright white light during the evening and bright red light (invisible to nocturnal animals) during visiting hours—enabling the visitor to see night creatures as they go about their "nightly" rounds.

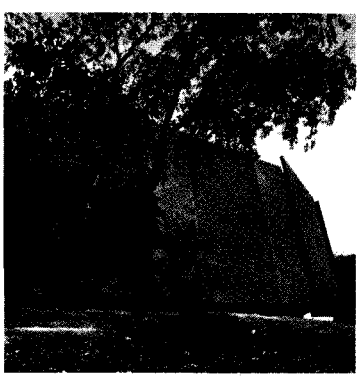
Expressing an enlightened design philosophy for future development at the Bronx Zoo, N.Y.Z.S. Director William G. Conway feels that "there ought not to be any visible buildings in the zoo. The zoo should present a strong, pervasive environment, a world of wild creatures. The man-made should be muted with architectural statements [that are] widely dispersed."

Architect Morris Ketchum and Associates were retained design the World of Darkn and later the "World of Bir (see page 90), and they are p sently developing a master p for the future Bronx Z "Wherever feasible," says K chum, "this is going to be 'cageless' zoo with few barrie with animals contained in vironmental enclosures ra



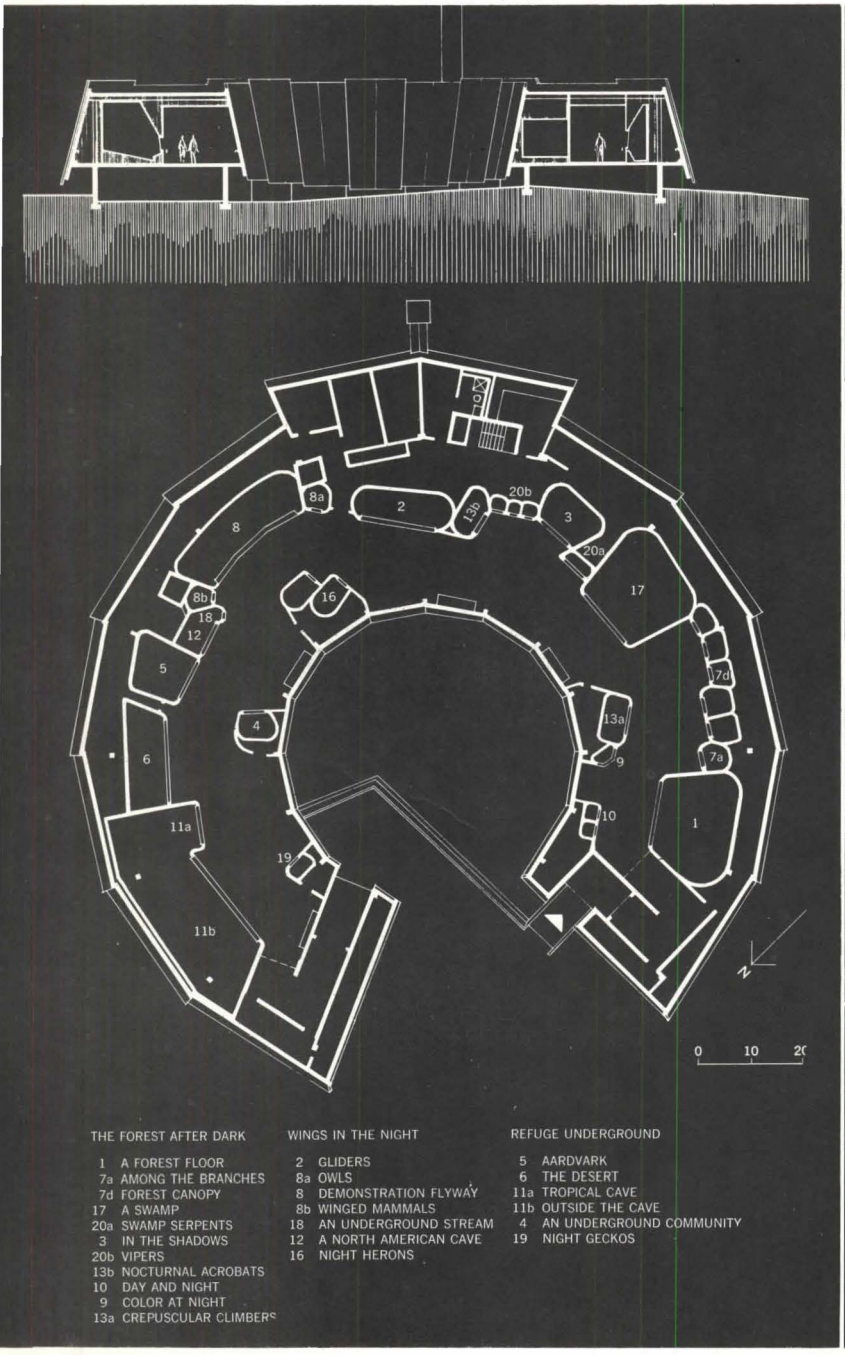


an in solitary confinement. We e going to get away from zoos signed for the convenience of e maintenance staff, rather an for the 'creature comforts' the exhibited animals." For imals which would be lost from w or perish from the climate such outdoor "natural" set-gs, theatrical, environmental play buildings such as the "Worlds" are being created. The World of Darkness build-



ing is less monumental than these photographs indicate, and blends into its natural surroundings. Ramped entrance pathways, plaza and interior corridors are finished in asphalt. A huge boulder, the Rocking Stone, was retained near the entrance. No other excavation was necessary—the building conforming to the natural slope of the knoll, with a mechanical plant tucked underneath at a lower level.

The exterior has a sophisticated theatricality and is dominated by battered precast concrete wall panels with surfaces of black granite chips set in black cement. The panels are cantilevered from a steel structure and appear to hover above a foundation of exposed, board-formed concrete. The flat roof has a finish of white marble chips to reflect heat. The black exterior was chosen for a number of

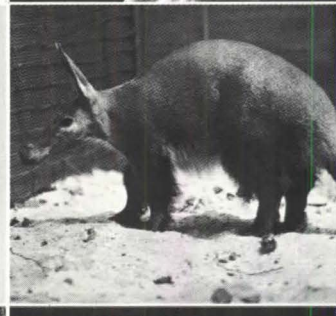


THE FOREST AFTER DARK
1 A FOREST FLOOR
7a AMONG THE BRANCHES
7d FOREST CANOPY
17 A SWAMP
20a SWAMP SERPENTS
3 IN THE SHADOWS
20b VIPERS
13b NOCTURNAL ACROBATS
10 DAY AND NIGHT
9 COLOR AT NIGHT
13a CREPUSCULAR CLIMBERS

WINGS IN THE NIGHT
2 GLIDERS
8a OWLS
8 DEMONSTRATION FLYWAY
8b WINGED MAMMALS
18 AN UNDERGROUND STREAM
12 A NORTH AMERICAN CAVE
16 NIGHT HERONS

REFUGE UNDERGROUND
5 AARDVARK
6 THE DESERT
11a TROPICAL CAVE
11b OUTSIDE THE CAVE
4 AN UNDERGROUND COMMUNITY
19 NIGHT GECKOS



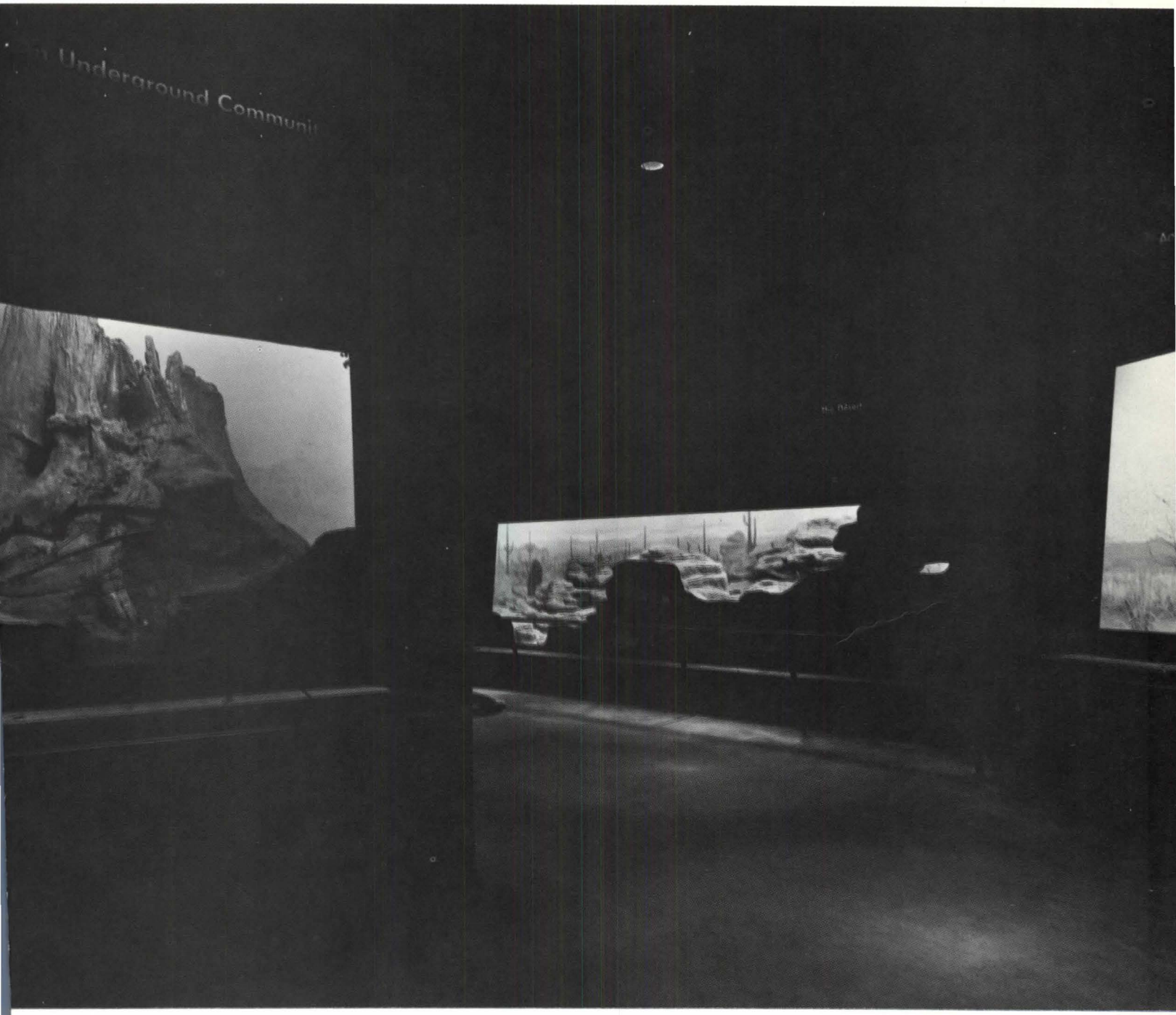


reasons: to express the character and mystery of the structure; to minimize its size and bulk; and to withstand deposits of New York soot (but the ministrations of New York gulls and pigeons are another matter.)

Ketchum chose a curved shape "to create an optical illusion of greater space, because space can't be measured in the round, and to provide for ideal one-way traffic movement." The entrance and exit are adjacent, with the exit hidden from view at the entrance to keep the circulation "one way." Light baffles at entrance and exit acclimate the visitor from light to dark to light.

The interior, which seems much larger than the exterior envelope, is a carefully structured, theatrical experience. "This building is intended as a teaching display rather than as a major breeding facility," says Conway, "and we are trying blatantly to excite the interest and attention of city dwellers in wildlife, conservation and ecology." Upon entering the light baffle, the visitor is confronted by a rear-lit stained glass mural intended to create "a cathedral-like atmosphere—and to quiet children down." Most of the 30 major exhibits are placed on the outer side of the corridor to inhibit reflections, and to keep the one-way circulation moving. Low intensity lighting from the exhibits and from above illuminates the 13-ft.-high public areas.

The public corridor contracts and expands to create a varied spatial experience, and it defines three thematic areas—The Forest At Night, Wings In The Dark, and Refuge Underground. The interior is a programmed, multi-media experience, and the dis-



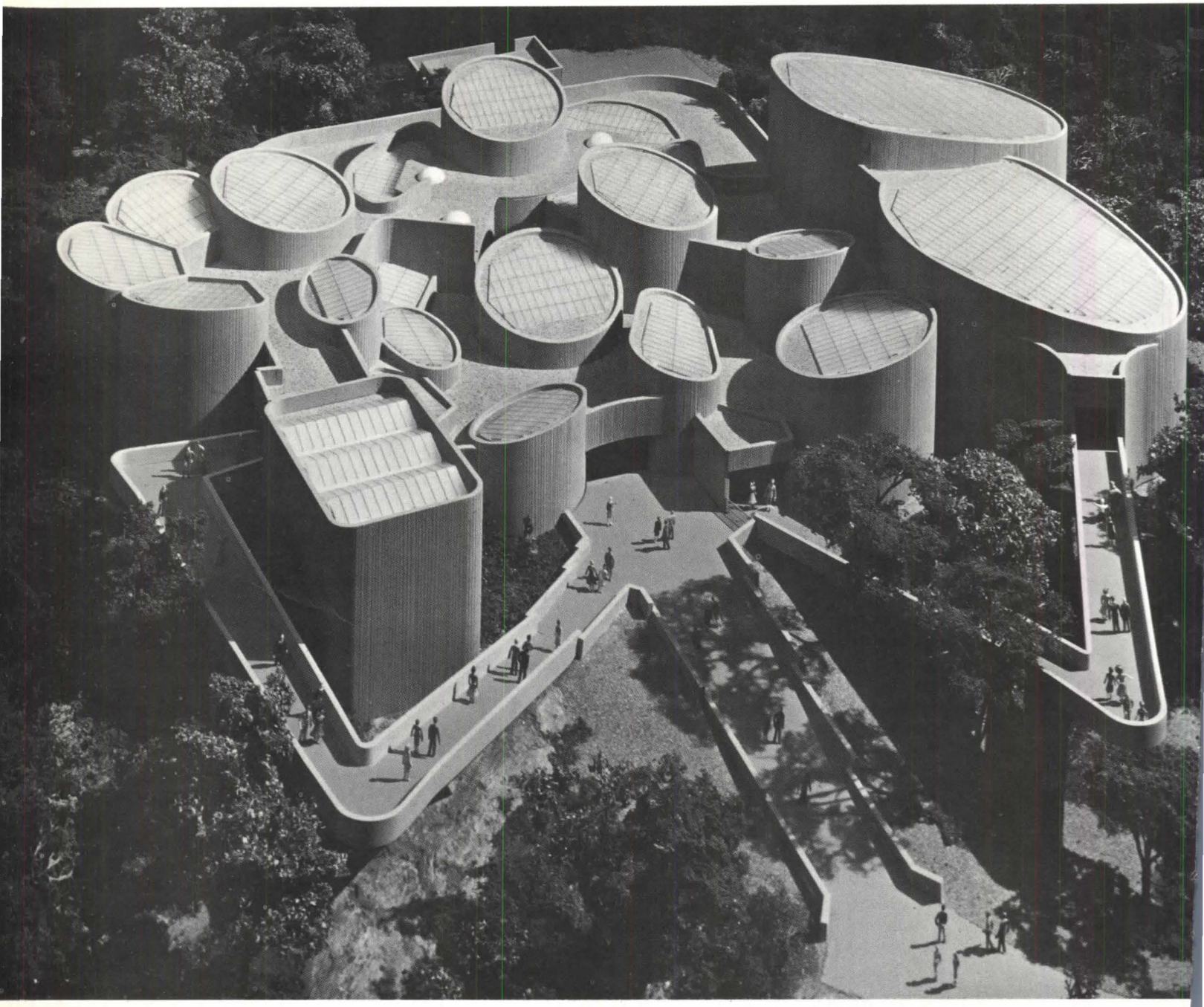
ys themselves, by Jerry M. nson, Curator of Exhibits Graphic Arts for N.Y.Z.S., interpretive and environ- ntal. The displays have curved rama backdrops and extend ve glass openings to create nse of spaciousness. The "na- l" animal settings are com- able to those in a natural his- museum, and are composed lightweight concrete, fiber- s rocks and trees, plastic plants, real logs, real water. Major displays include re-creations of a swamp, a desert, and a two-part "interior-exterior" of a tropical cave.

The exhibits are accompanied by recorded sounds and other special effects—soft music at the entrance, crickets chirping, frogs croaking, alligators bellowing, cayotes howling, bats screeching, and "electric" fireflies. The dominant exhibit will probably be the 30-ft.-long "demonstration flyway" in which a group of fishing bats, operating by sonar orientation (picked up by an oscilloscope), will swoop down into a "pond" and sieze fish. Accompanying this action will be a short programmed show of four sets of images (movies and slides) projected on the rear wall of the flyway, along with a short plea for conservation.

While the World of Darkness might seem "hokey" to esthetic purists, it promises to be a joy and a long-remembered event for most visitors. It will also communicate an understanding of the behavior of these mysterious denizens of the dark and a comprehension of principles of ecology and conservation. As a work of purposefully theatrical exhibit architecture, the World of Darkness is an effective and functional building.

MULTIMEDIA ZOO: 2

An artificial thunderstorm for the birds

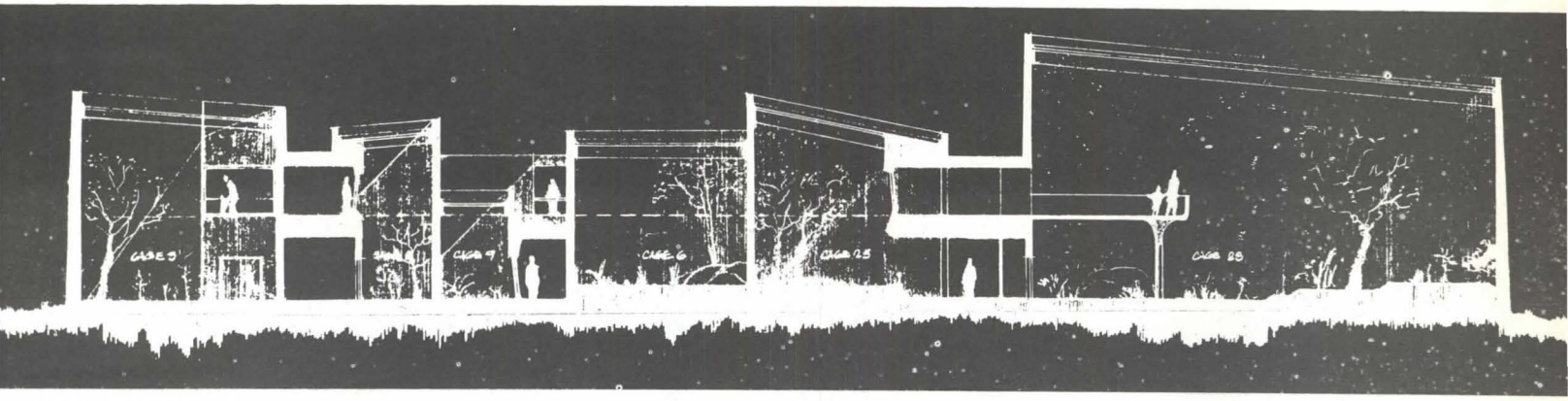


The "World of Birds" is another carefully programmed environment by Morris Ketchum Jr. and Associates now under construction at the Bronx Zoo.

The $1.8-million building is a clever solution to a complex design problem—exhibiting more than 200 species of small birds with a variety of display techniques. The exterior of clustered curvilinear and cylindrical forms expresses the variety of enclosures within. Exterior cladding is rough-textured, vertically striated concrete block, with enclosures topped by skylights sloped at various angles.

In this 30,000-sq.-ft. building of structured, sequential experience, the shaping of public circulation spaces on two levels is achieved with great virtuosity—encompassing two exhibits which can be viewed from both levels, two bridge exhibits on the second level where the visitor passes through the enclosures, and five "treetop" exhibits, viewable from the second level only.

Upon entering the air-conditioned and lushly planted building at ground level, the visitor travels in a one-way scheme where most exhibits are kept on one side of the corridor and recesses are placed in front of major viewing areas so as not to impair circulation. The public corridor continues to the sec level as an outdoor ramp leads to indoor bridges thro the two large forest exhi then outside for upper l views of two ground floor plays, then indoors for view five "treetop" exhibits. Fin it passes a special, tempo exhibit hall, which can be cl off without imparing the ci lation, and then outdoors o exit ramp to the entrance co



LEGEND OF EXHIBITS

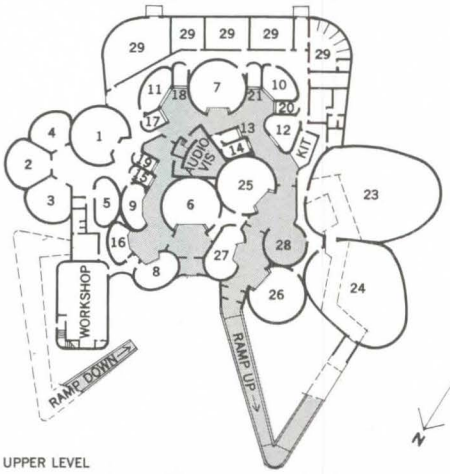
1–5 TREETOPS

6–22 SECRETS OF THE WORLD OF BIRDS

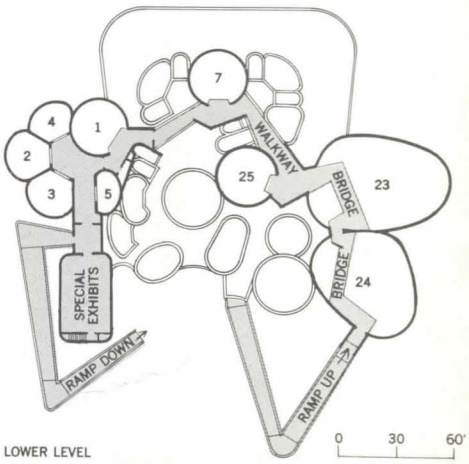
23–27 WINGS AROUND THE WORLD

28 ART GALLERY

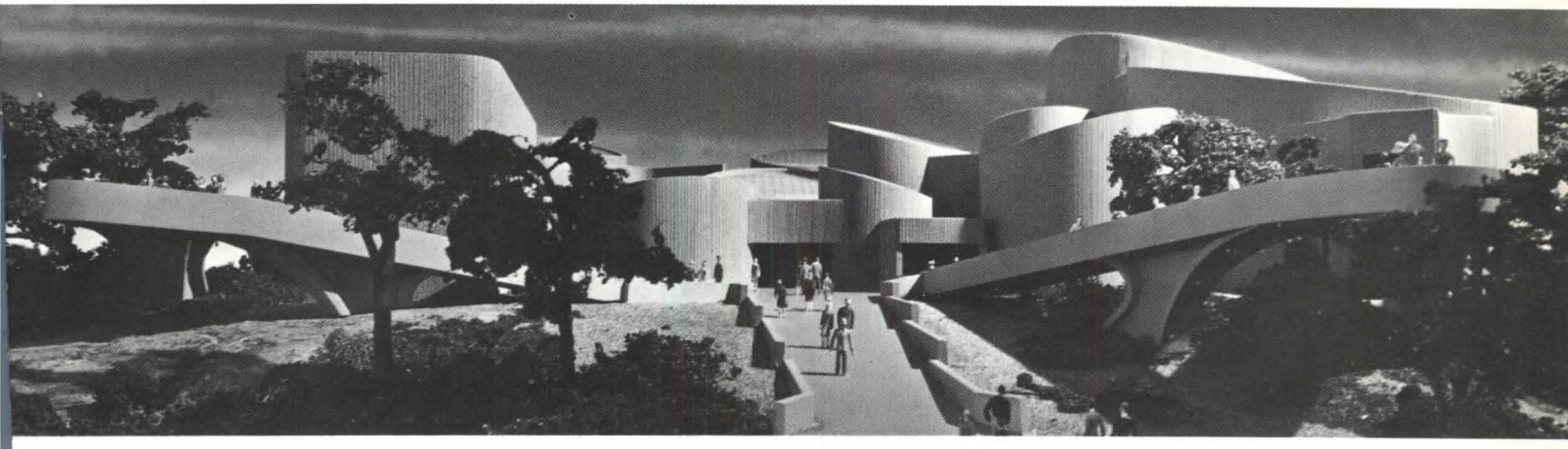
29 PERSONNEL AND MAINTENANCE FACILITIES



UPPER LEVEL



LOWER LEVEL



Personnel and maintenance fa-ilities are kept at the perimeter the ground floor to minimize oss traffic. The building is rviced by a small, separate e-story buliding located at the r service entrance, and con-ns the cooling tower, trans-rmer vault and refuse room.

The bird displays are curved ramas with floors of natural th, lit from above by the sky-hts which will be supplement-ed by artficial illumination when necessary from sources set above the skylights. Openings to view the exhibits are glass-enclosed except at five large enclosures which are left open.

The exhibits are grouped sequentially in five thematic areas: Secrets Of The World Of Birds; The Mating Instinct; The Bird and Its Nest; Wings Around The World; and Birds In The Treetops. In addition to the natural planting and settings, a few sound and light effects will be employed, such as a "rainstorm" in the "tropical forest" by means of plumbing, strobe lights and sound. Walls between displays will have illustrative materials including built-in rear projection equipment. On the ground level will be a small stand-up theater, an art gallery, and a large window into the kitchen where bird food is prepared.

FACTS AND FIGURES

World of Darkness, Exhibition Building for Nocturnal Animals, New York Zoological Park (Bronx Zoo). Owner: New York Zoological Society and Department of Parks. Architects: Morris Ketchum Jr. and Associates. Engineers: Ames and Selnick (structural), Harry H. Bond (mechanical). Interior exhibit design consultant: Jerry Johnson, curator of exhibitions and graphic arts. General contractor: Trans Urban Construction Corp. Building area: 13,000 sq. ft. Cost: $630,000, exclusive of exhibit equipment.

PHOTOGRAPHS: Page 86, Alexandre Georges; page 89, Louis Reens.

FORUM CONT'D

their thing, proving Rimsa's thesis that underdeveloped countries could transform marshlands, bogs, and sewage dumps into power plants at very little cost: "I only put $3 into this experiment."

With $3 *billion* being spent annually in the U.S. for solid waste disposal, there has, of course, been thinking along related lines. Three days after Rimsa's demonstration, the Urban Systems Laboratory at MIT issued a report recommending the incineration of garbage as fuel to power electricity, and we don't want to imply that it was any less sophisticated a scheme.

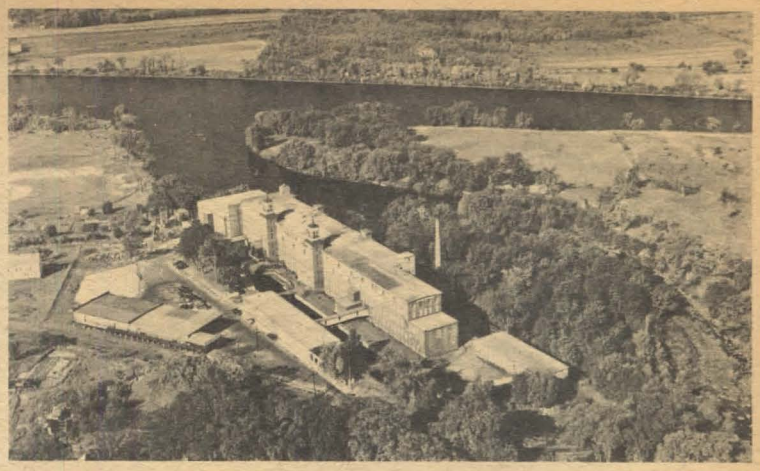
• J. H. Wiggins Jr. is a boom debunker. Wiggins, who directed those government boom tests at White Sands, N.M., in 1964 and 1965 and has spent five years studying the results, claims that sonic booms "slow down deterioration and aging of houses." Repeated sonic booms, Wiggins told the Institute of Environmental Sciences, have lowered the rate at which defects show up in buildings. Why, he said, is not known, but one theory is that an occasional nudge relieves accumulated pressures. Conceding that the government has paid off on about 35 per cent of 40,000 claims resulting from cracked glass and plaster, Wiggins insisted that sonic booms will not "crack concrete driveways, tear shingles off roofs, crack toilet bowls, or snap brassieres, all of which have been claimed."

AIA

TAC MEETS FAC

The Architects Collaborative of Cambridge, Mass., is the choice of the committee set up by the AIA to select a new architect for its headquarters building in Washington (Jan./Feb. issue, page 35). TAC will, of course, start from scratch. Not so the AIA. A first scheme for the project, by Mitchell/Giurgola Associates, sustained several revisions over five years, each, in turn, accepted by the AIA and struck down by the Fine Arts Commission. Finally, M/G withdrew from further compromise.

Max O. Urbahn headed the selection committee of architects that included Romaldo Giurgola.



Chosen, said the committee, for its outstanding buildings and its "sensitivity to this project," TAC, too, must face the FAC, whose rulings in this matter have been—to put it kindly—*hyper*sensitive.

PRESERVATION

MERRIMACK MONUMENTS

Roughly 15 miles north of Manchester, N.H., where the Amoskeag Millyard's great urban planning scheme is being destroyed through the demolition of 90 of its buildings (Jan./Feb. issue), another mid-19th-century textile mill is fighting to survive.

Much less grand in scope than Amoskeag, China Mill—so named for the "China trade" days when most of its products went to the Orient—does have a considerable site advantage in its 40-acre semi-rural setting at the confluence of the Suncook and Merrimack Rivers at Allenstown (aerial view, above).

The Merrimack is dammed one mile below China Mill, and the 5,000 ft. of water frontage is essentially that of a linear lake. Pollution control programs are proceeding at a pace that promises swimming classification by 1972. In addition, the adjacent lands to the north and south are slated to be used for parks and recreation by Allenstown and the neighboring village of Pembroke.

It is this river valley setting, once described by Thoreau as "a scene of rare beauty and completeness," that owner Moody C. Dole II hopes to transform into a retirement community with a wide array of recreational and service facilities. (New Hampshire is exceeded only by Florida in percentage of population over the age of 65.)

Dole, and his architects and land planners, J. Timothy Anderson & Associates of Boston, would convert the structurally sound main building into 240 apartments, restoring the original large windows (the frames of which still remain), and retaining such features as the solid maple floors and the 1,800-ft.-long, 25-ft.-wide canal along the building's facade.

Dole's "non-standard" project has been filed with the Federal Housing Administration for "limited dividend sponsorship" under section 236 of the Housing and Urban Development Act of 1968. Actively seeking support at "effective policy levels" to forestall another Amoskeag, Dole may yet prove Manchester's urban renewal director wrong. It was his theory that "monuments don't pay."

AWARDS

PACKAGED ARCHITECTURE

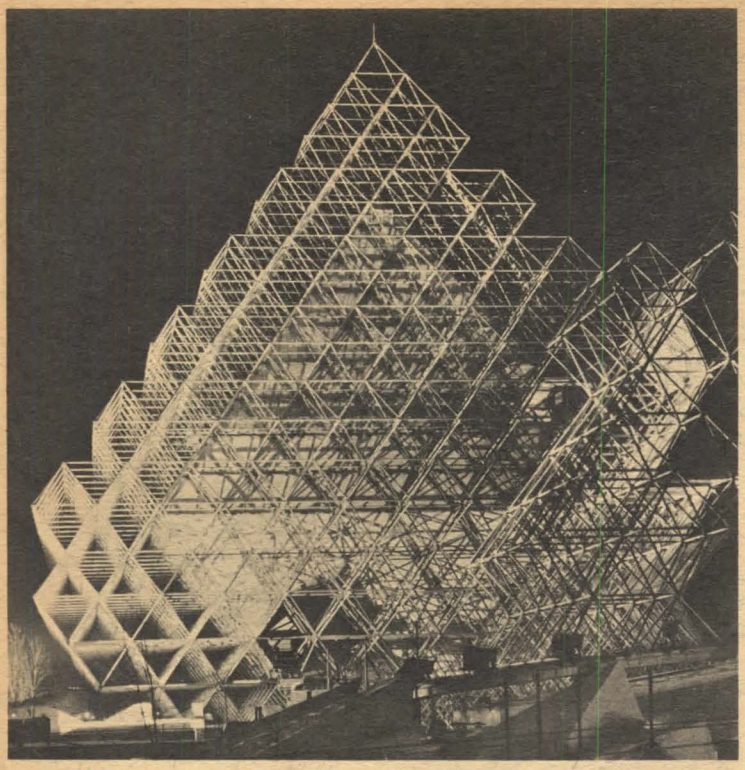
A ready-for-occupancy inflated structure that floats down out of the sky is a winning concept in the Alcoa Student Packaging Design Awards program.

Alan Backus, a junior at the Rhode Island School of Design, created his "pre-packaged emergency exposure control shelter" (model below) from a two-sided

quilt of aluminum foil-film laminate with an inner layer of vinyl. Compressed in its carrying bag, the package measures 15 by 12 ins., and when fully inflated is 8 ft. long, 7 ft. wide, 5 ft. high, and can

FOOTNOTE

Throw-away Architecture—The men seen here frolicking down Manhattan's Fifth Avenue are members of an electricians' union who participated in last year's Labor Day Parade. They are standing on one of the floats and hugging scale models of typical NYC public housing high-risers. This picture doesn't prove anything except that New York public housing looks as if it had been designed by electricians. Photograph: Ann Douglass.



house two adults and three children.

Air-dropped without the aid of a parachute, the tent will inflate in one minute as it falls. On the ground, it affords complete protection from the elements or may be opened on any two sides by means of a two-way zipper. Designed for weekend camping as well, the tent can be reinflated by air pump or aerosol container.

OFF TO A LIVELY START

The $25,000 R. S. Reynolds Memorial Award for "a significant work of architecture in the creation of which aluminum has been an important contributing factor" will be presented this month to London Architect Boyd Auger for his first major building project: the Gyrotron structures at the Montreal exposition, Man and His World—formerly Expo 67 (May '67 issue).

The AIA-administered award was selected by a jury composed of Architects Max Abramovitz, Walther Eijkelenboom, Ralph P. Youngren, and David N. Yerkes. Their verdict: "Esthetically and functionally successful. . . . lighthearted and lively."

The structures (above) are basically pyramidal space frames, computer-analyzed and constructed of aluminum tubes 16 ft. long and 6 in. in diameter. These enclose two exhibition auditoriums, which are clad in stressed-skin panels consisting of 4-in. honeycomb paper sandwiched between thin sheet aluminum.

Visitors ride a continuously moving train that spirals upward through the million-plus cu. ft. of the principal structure on a programmed outer-space voyage created by Sean Kenny. At the top, 100 ft. above ground, the train crosses a bridge to the smaller structure, where it descends to the ground through a simulated volcano.

Another of Auger's projects, a scheme for resort housing, in which prefabricated apartments are supported by a multilevel space frame, will be reported in the July/Aug. issue of FORUM.

UTILITIES AND ESTHETICS

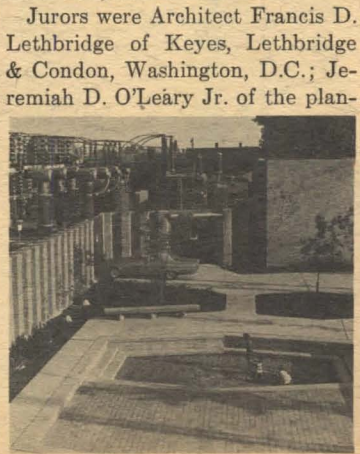
The first and only design awards in this country for local, publicly owned electric utilities were presented in Washington, D.C., on May 8 to the winning utilities and their respective architects, landscape architects, planners, and/or engineers. The program, which recognizes esthetic excellence in the design of electric utilities in the U.S. and Canada, will continue to be administered by the American Public Power Association on a biennial basis.

The City of Seattle's Department of Lighting, in an amazing sweep, took four of the five top Honor Awards, including the First Honor Award for its East Pine Substation by Architects Fred Bassetti & Co. and Landscape Architects Richard Haag Associates (directly right). It was cited by the jury for dramatizing its electric equipment by means of a viewing platform for visitors, and a recreation area. Seattle's other awards included its Seward Substation by Landscape Architects Glen Hunt & Associates and Electrical Engineer John Wilson (below); and the underground

distribution of power lines in the Hillcrest Division of West Seattle (see before and after photos), also by John Wilson.

The fifth Honor Award went to the Sacramento Municipal Utility District office building by Architects Dreyfuss & Blackford.

Jurors were Architect Francis D. Lethbridge of Keyes, Lethbridge & Condon, Washington, D.C.; Jeremiah D. O'Leary Jr. of the planning firm of Marcou & O'Leary (see page 78); Civil Engineer Eugene Weber; and Philip H. Lewis Jr., chairman of the department of landscape architecture at the University of Wisconsin.



BEST IN THE U.S.

The AIA Honor Awards, the nation's highest professional recognition of architectural excellence, were announced last month. Some comments by the jury follow:

"The quality of the submissions is higher than it has been for many years.

"Of the 465 submissions there were 27 preservation or restoration entries (against only one last year) and approximately 20 that might be called 'urban design.'

"For the first time . . . every building not already personally known to at least one member of the jury was actually visited by a member of the jury. A report was then made as to whether the project had been pictured accurately.

"It was the consensus that it is the design considered in conjunction with the planning or social characteristics of an entry that is the . . . heart of the issue."

The winners are:

1. Boston City Hall, Boston, Mass.; Kallmann, McKinnell & Knowles, architects (see Jan./Feb. issue).
2. Monsanto Co. Cafeteria, St. Louis, Mo.; Vincent G. Kling & Associates, architects.
3. DeAnza College, Cupertino, Calif.; Ernest J. Kump Associates and The Office of Maston & Hurd, architects.
4. Mill Valley Library, Mill Valley, Calif.; Wurster, Bernardi & Emmons Inc., architects.
5. Everson Museum of Art, Syracuse, N.Y.; I.M. Pei & Partners and Pederson, Hueber, Hares & Glavin, architects (see page 54).
6. Des Moines Art Center Addition, Des Moines, Iowa; I.M. Pei & Partners, architects (see page 62).
7. Convent of the Holy Names, Spokane, Wash.; Walker/McGough/Foltz; Lyerla & Peden, architects.
8. Exodus House, New York, N.Y.; Smotrich & Platt, architects (Oct. '68).
9. Tenneco Building, Houston, Tex.; Skidmore, Owings & Merrill, architects (Sept. '63 issue).
10. San Diego Stadium, San Diego, Calif.; Frank L. Hope and Associates, architects.
11. Bolton Square, Baltimore, Md.; Hugh Newell Jacobsen, architect (May '66 issue).
12. D.C. Reeves Elementary School, Ponchatoula, La.; Desmond/Miremont/Burks, architects.
13. Auditorium Theater Restoration, Chicago, Ill.; Harry Weese & Associates, architects (Dec. '67 issue).
14. Collegetown Phase I, Sacramento, Calif.; Neill Smith & Associates, architects.
15. Smith House, Darien, Conn.; Richard Meier, architect (Dec. '67 issue).
16. Girls Dormitory, Putney School, Putney, Vt.; John B. Rogers, architect.

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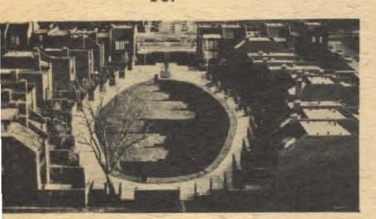

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HELLO NEW DAY

The winners of New York City's Bard Awards—for excellence in civic architecture and urban design—so pleased the jury that it issued a critique by juror Sibyl Moholy-Nagy in which this statement appeared: "Goodbye glass curtain wall, universal envelope, modular repetition! We are at the beginning of a new day."

The First Honor Award was shared by Architects Davis & Brody for their Riverbend Houses in Harlem, and Adelman & Salzman for their nine rehabilitated brownstones in the West Side urban renewal area. (Both these projects will be covered in the next—July/Aug.—issue of FORUM.)

Awards for Merit went to Exodus House by Architects Smotrich & Platt (Oct. '68 issue) and the "World of Darkness," a house for nocturnal animals at the Bronx Zoo, by Architects Morris Ketchum Jr. & Associates (page 86).

The other jurors were Architects Pietro Belluschi and Archibald C. Rogers; Paul Grotz of ARCHITECTURAL FORUM; and Philip Kazon, trustee of the City Club, which sponsors the annual presentations.

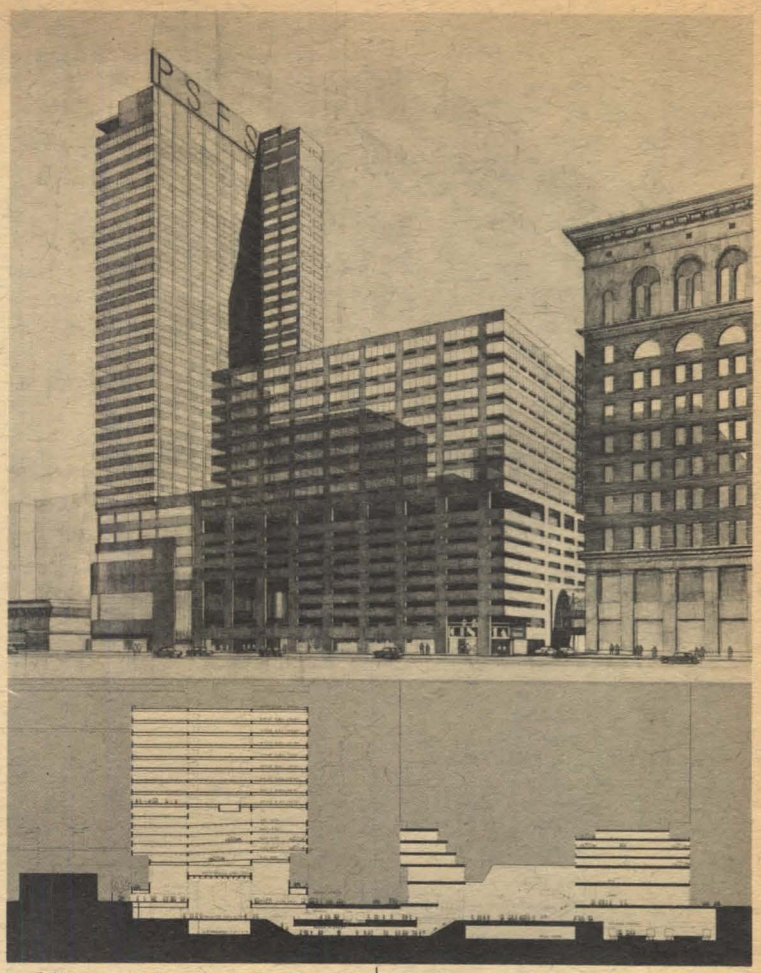
BOOSTS

ONE-TWO-THREE-FOUR-GO!

Philadelphia's long-awaited Market Street East Transportation-Commerce Center urban renewal project has been given a substantial nudge from the "private sector." The Philadelphia Saving Fund Society and John Wanamaker's department store have joined to bridge their two properties on the south side of Market Street with the office-parking building shown above.

The building—which will be known as 1234 Market Street East—was designed by Associated Architects George M. Ewing Co. and Bower & Fradley to anticipate the five-block-long transportation and shopping spine by Skidmore, Owings & Merrill, proposed for the north side of Market (Nov. '66 issue). It is also sensitively integrated with the 37-year-old, landmark PSFS building by the late William Lescaze and George Howe (see May '64 issue).

The base section, consisting of eight parking levels plus street-floor retail shops, will abut the PSFS building and connect to Wanamaker's by a covered passageway over 13th Street. Automobiles, entering from both side streets, will park after circling an indoor public plaza to be called the "Great Hall." This space, flooded with natural light from the open parking levels, will serve as a pedestrian circulation core, linking the three buildings with the SOM-planned development via escalators and moving sidewalks under Market Street (see section).



Above the parking structure will rise eight office floors, which "break free" of the PSFS building mass to provide maximum exposure to light. The office floors—up to 45,300 sq. ft.—will be the largest in the city.

Meanwhile, on the other side of Market Street, the city has alloted roughly $10 million in urban renewal grants toward implementation of the $200 million SOM scheme.

PEOPLE

DEAN STEPS DOWN

● José Luis Sert, dean of the Harvard Graduate School of Design, will retire this month after 15 years in the post. The GSD was in a state of disarray in 1953 when Sert assumed those duties, following the departures of Joseph Hudnut, Walter Gropius, and other key faculty members. Sert put the GSD back on its feet. Now, coincidentally, he leaves at a time of major student upheaval on the Harvard campus and at the GSD.

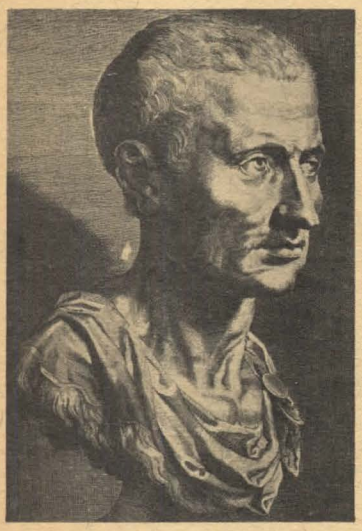
Last month, GSD alumni met to discuss the complete restructuring of the school as proposed by students and faculty. Among those proposals was a new constitution. In one plan, power would reside in a council composed of a faculty member and a student from each department. In this proposal, a dean, who would be elected by a general assembly of the GSD from a list submitted by the council or by petition, would be empowered to reside over the council and execute only those responsibilities given him by the council.

Sert, of course, has made a considerable contribution to the "restructuring" of the physical campus itself. He will now devote full time to his practice, Sert, Jackson & Associates, which in the past has designed for Harvard its Center for the Study of World Religions, the highrise Married Student Dormitories on the Charles River, and Holyoke Center on Harvard Square (Jan./Feb. '67 issue). A fourth major project, an Undergraduate Science Center, is in the design stages.

WALTER McQUADE

A TIP FROM M.T. CICERO

Editor's note: The peripatetic McQuade continues to neglect us in favor of the New York City Planning Commission—and reading Cicero. But the foreword he produced for an exhibition now to be seen at the Architectural League, "URBAN DESIGN IN NEW YORK—To Help Shape The City," will represent him well on this page this month.



"The City, the City, my dear Brutus—stick to that and live in its full light! Residence elsewhere—as I made up my mind in early life—is mere eclipse and obscurity to those whose energy is capable of shining in Rome."

—Marcus Tullius Cicero

Two years ago a report was delivered by a task force of citizens to Mayor John Lindsay concerning design in New York. It recommended that a more assertive approach be made by the City Planning Commission toward solving the physical problems which assail this, and all big cities. The Commission was urged not only to take defensive action through zoning and other conventional controls, but also to take the lead in defining just what the growth of various areas should be. New staff was recommended: "An urban design force of trained professionals to be charged with the developing—or commissioning—of concept designs for rebuilding special-use sections of New York; the conceiving of neighborhoods of residential buildings in close working collaboration with the planning section of the Housing and Development Administration; the locating of promising areas of office and commercial building in all the boroughs and the preparing of plans for area development; the preparation of renewal plans for the great avenues of our city, and other assignments, both short-term and long."

The mayor responded. A start had already been made with the plan for lower Manhattan. In the past 18 months, work has gone forward, and the panels of the exhibition can be considered interim report cards on what has been done not only within the Planning Department of the city, but by other agencies and private individuals commissioned on projects.

Two points should be made. First, none of the projects shown are merely dreams and drawings. Their imagination is not fantasy, but performs within the strenuous political discipline of fulfillment. Each of these projects is being launched successfully into law and development. Other projects on the drawing boards and on the agenda for community discussion will soon follow.

The work shown is necessarily expressed in the vocabulary of architecture, but the issue is not at all the architecture of specific buildings, and certainly not their esthetics. What is concerned more is the space between buildings, their functional relationships, and the general level of thought about what the city should be, in terms of multiples of buildings over several sites, sometimes over many city blocks.

Apparent are four different categories of approach and strategy:

The first involves *a newly focused kind of zoning* for New York, in which the well-established legal powers of the city are being defined more closely in particular areas, such as Manhattan's theater district. Here a number of different buildings by various entrepreneurs are being coordinated in a pattern that will be pleasanter for the pedestrian, more logical than what we have been used to. The sum of these real-estate investors' separate ambitions will be larger than their separate aims. Also, in this case, Broadway will not be forced entirely off-Broadway, as seemed certain two years ago, when office building development began inexorably to move west from midtown. Today construction work has already begun on three new legitimate theaters—the first new theaters built here since the 1920s.

Community survival is another issue. Professionals are assisting local residents in the various boroughs to plan and negotiate growth without the need for neighborhood death before rebirth. The effort is to add residential elements without obliterating the physical scale by which their residents long have recognized them.

The third category of effort is *the civic continuum* of streets, sidewalks, and public buildings. And finally, comes *new large scale development*, which will, in the next several years, begin to create entirely new sections of the city on land fill or in urban renewal areas.

* * *

In Cicero's time, a city was a safe refuge from the wilderness all around. In our day, the tendency of big American cities is to turn that situation inside out—the city itself becoming the menacing wilderness, with many a safe refuge just outside the city limits. This cannot continue; when the heart dies, so do the extremities.

Nor, having plunged into development work, do we think it need continue. The physical future of New York is frequently and gloomily predicted as unimaginable. But, instead, it is essentially imaginable, in the imperative sense. The way for New York to step forward again is by such large planning strides as those taken near the turn of the century in the Grand Central development, in the 1930s in the original Rockefeller Center, and, at various times, in such residential communities as Kew Gardens and Sunnyside—where thought preceded action. This scale of effort New York knows. What is less familiar is the more intricate reweaving that must be done in scores of neighborhoods, but that, too, can and has to be done here. It is, of course, famously difficult to "do anything" in New York.

This violent vortex of finance, brains, social and intellectual conflict, and audacious ambition sucks ordinary effort under. It is only practical, then, to try for the extraordinary. New York is a city which might startle Cicero; but he would comprehend its dynamic.

PHOTOGRAPHS: Page 26, Moulin Studios (bottom); San Francisco Examiner *(right center). Page 27, © Walt Disney Productions (top). Page 95, first column: 1, 9, 15. © Ezra Stoller (ESTO); 2. Lawrence S. Williams; 3, 7, 14. Morley Baer; 4. Robert Brandeis; 8. Norman McGrath; 10. Julius Shulman; 11 Robert C. Lautman; 12. Dave Gleason 13. Richard Nickel; 16. J. B. Rogers Page 96, Bettmann Archives.*

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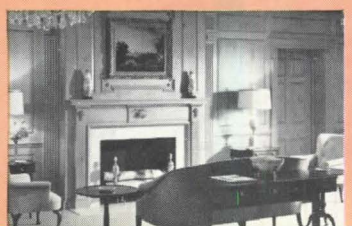

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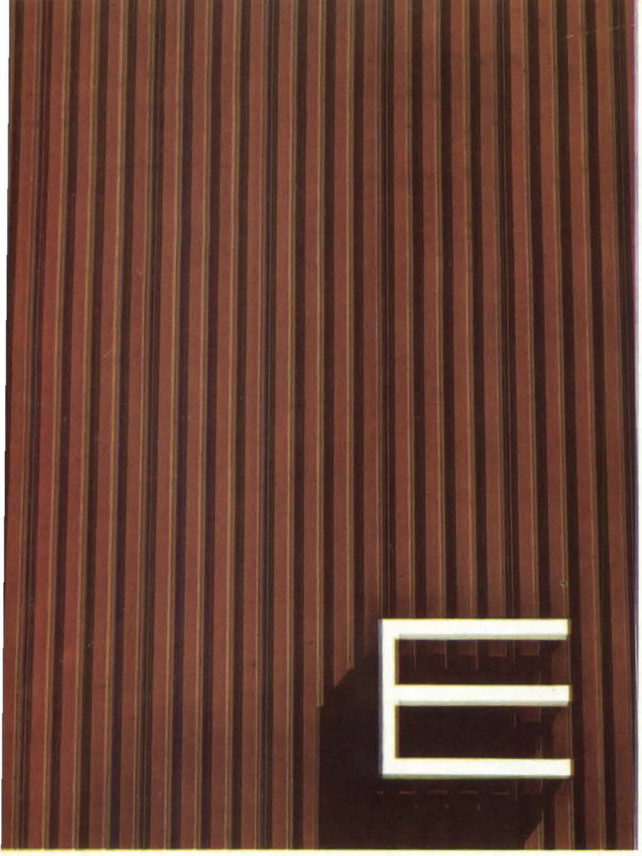

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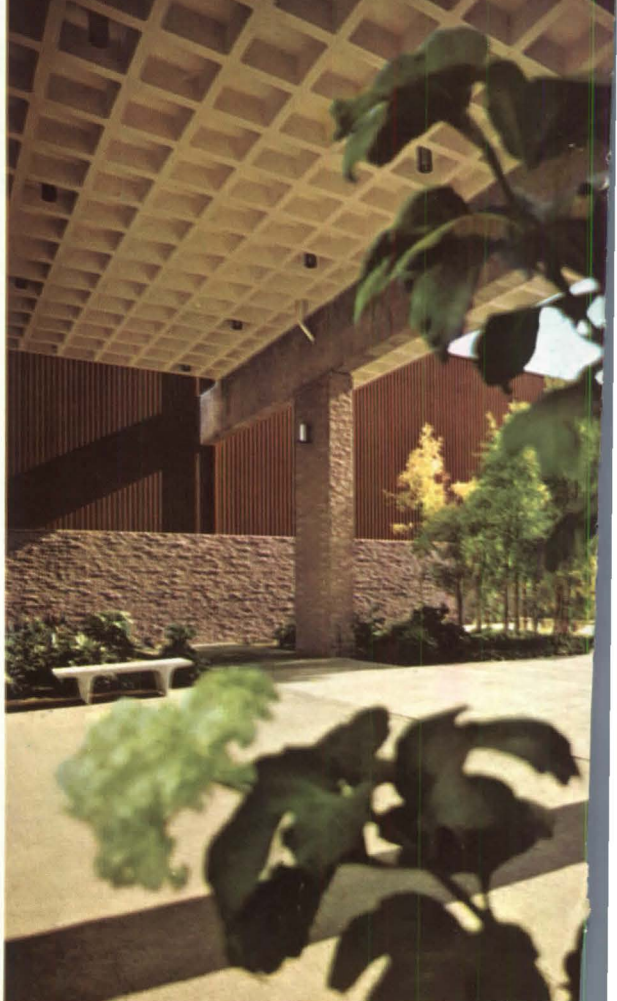

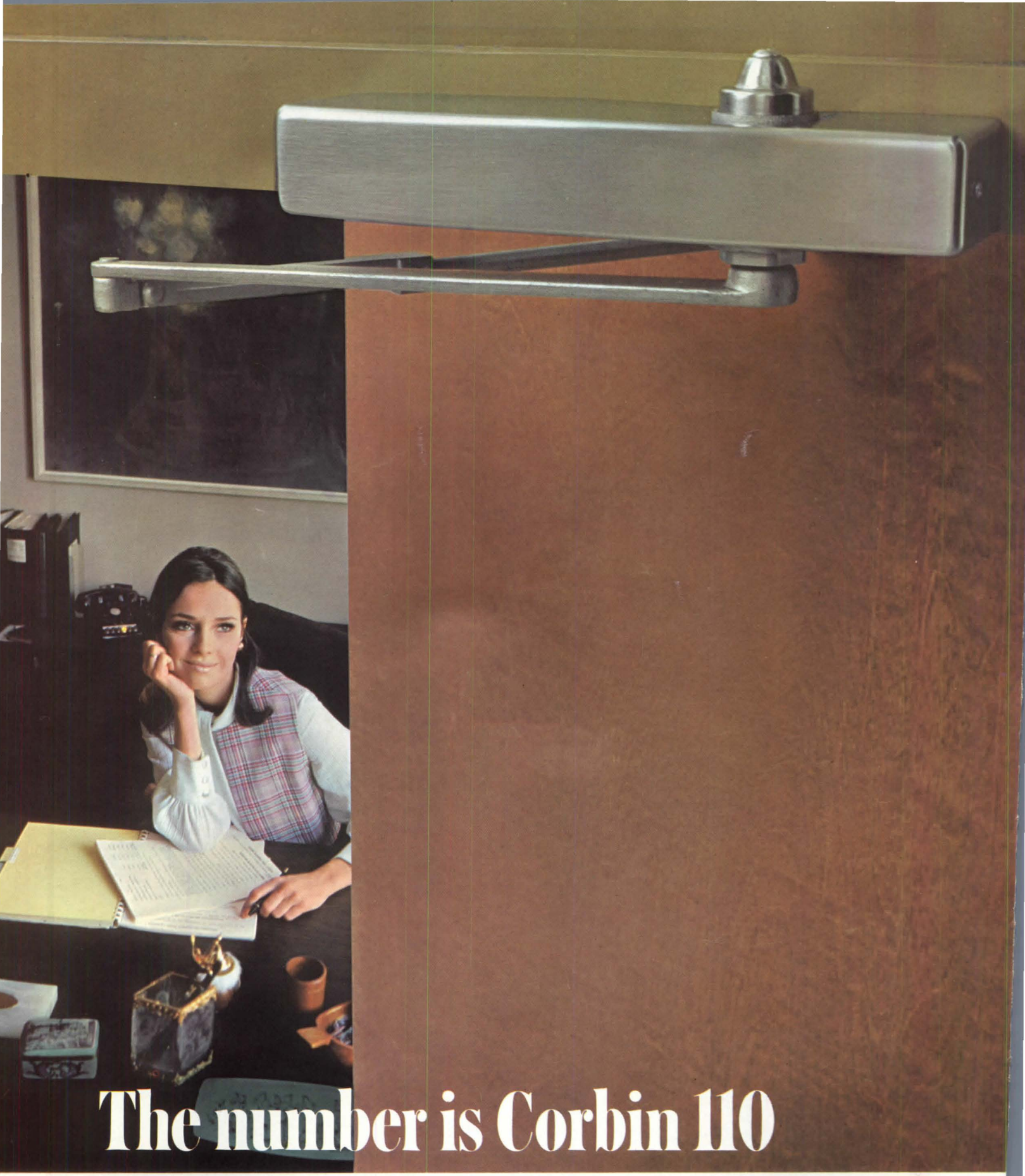

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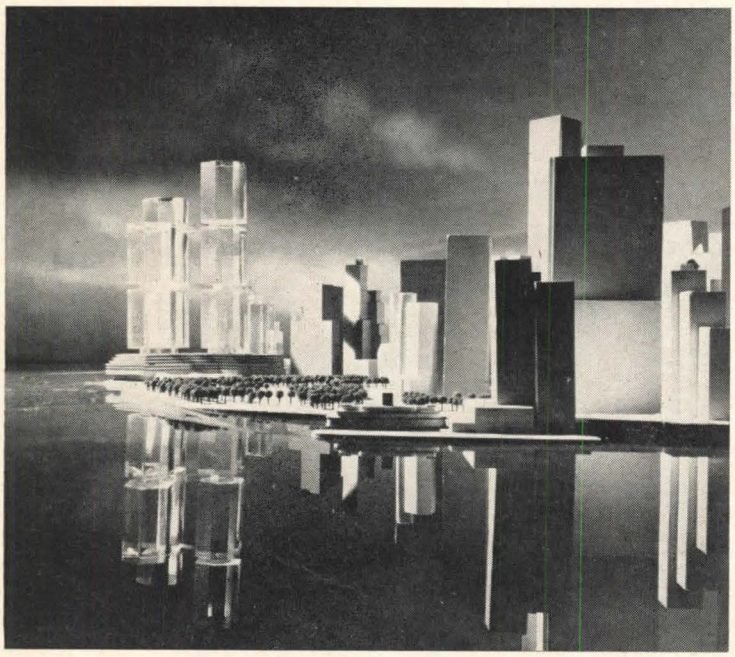
PREVIEW

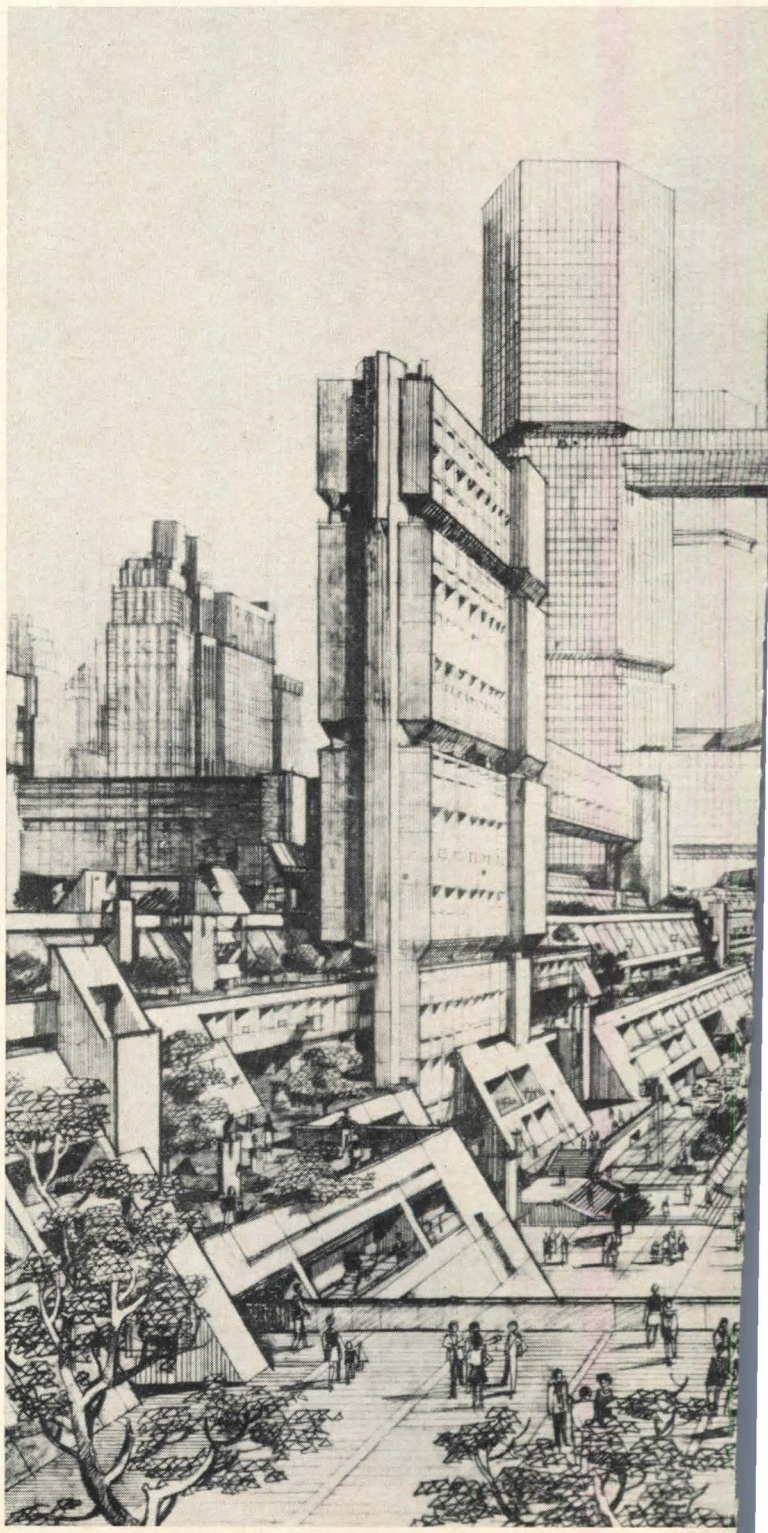
MAKING MANHATTAN BIGGER

Everyone seems to agree that Lower Manhattan should be enlarged by filling in riverfront areas now occupied by abandoned piers. But the question of how to plan and administer this man-made land is another matter.

Nearly three years ago, the New York City Planning Commission proposed a plan of development in its Lower Manhattan Plan (July/Aug. '66), which was drawn up by three architect-planning firms: Wallace, McHarg, Roberts & Todd; Whittlesey, Conklin & Rossant; and Alan M. Voorhees & Associates. Almost simultaneously, Governor Nelson Rockefeller unveiled a plan, by architects Harrison & Abramovitz, for Battery Park City (Oct. '66 issue, page 31), occupying a half-mile strip of Hudson River waterfront (outlined in aerial photo).

Fortunately, the city and the state realized that they could not build rival developments on the same tract of water, so they set up a jointly-sponsored design team: Conklin & Rossant (the city's firm), Harrison & Abramovitz (the state's), with Philip Johnson and John Burgee (the referees). While these architects were hammering out a plan acceptable to both city and state governments, a 24-acre patch of the Hudson was being filled with material excavated from the ad-





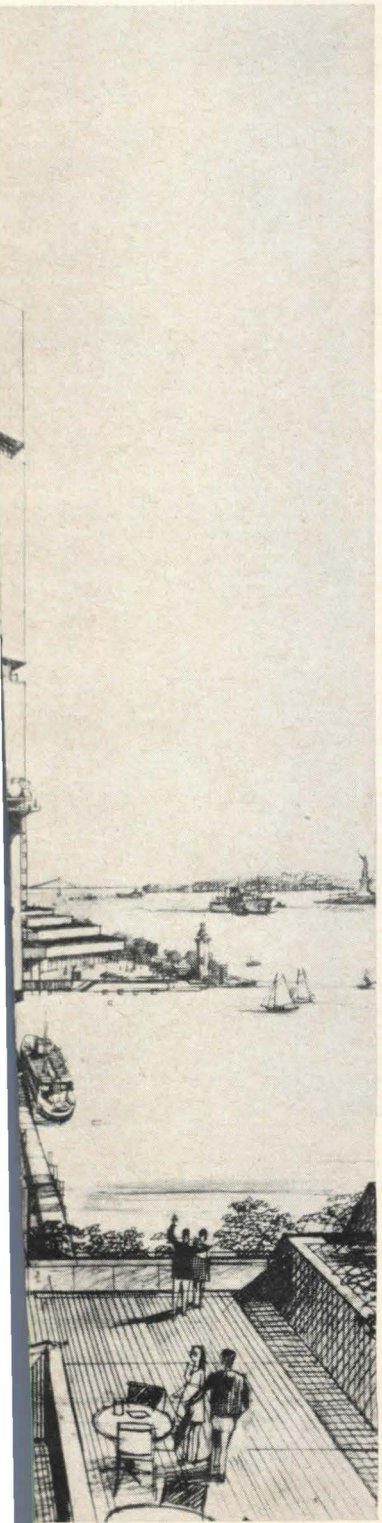
jacent World Trade Center site.

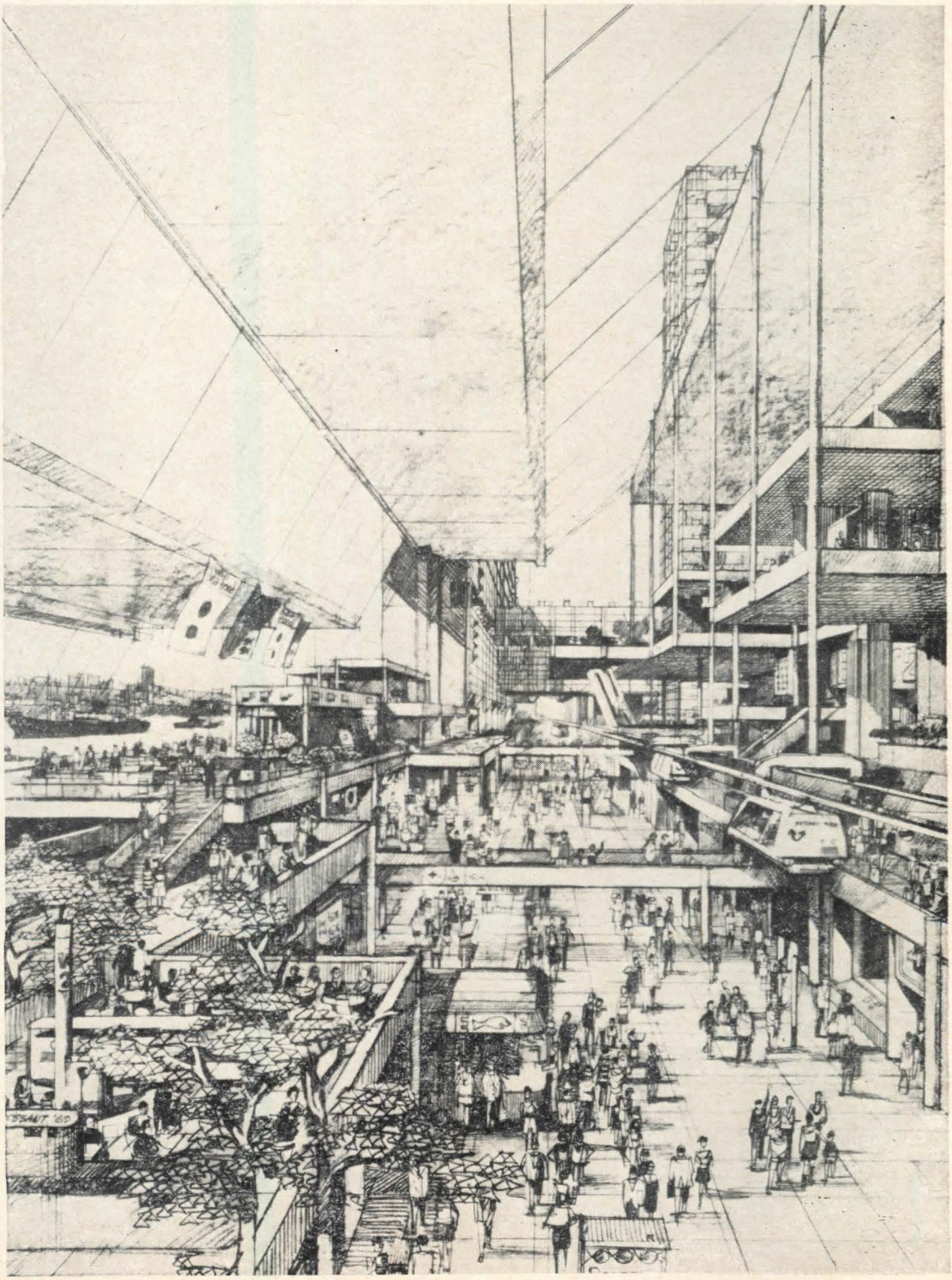
The current proposal calls for intensive development of 91 acres of landfill—plus 27 acres of air rights over a rebuilt West Side Highway—to house about 55,000 people in 19,000 apartments and provide jobs for 35,000 workers in offices, shops, and public facilities. The whole undertaking will cost about $1 billion—$150 million in public improvements and $850 million in private construction—and will be administered by the Battery Park City Authority.

The new design does not look at all like a compromise solution. Some of the best features of the city's original plan have been preserved—notably the complex building groups, which step back in tiers to exploit river views, and the small, plaza-lined coves along the shoreline. A multi level circulation-shopping spine (below right)—which may include an internal minirail system—will run the entire length of the project.

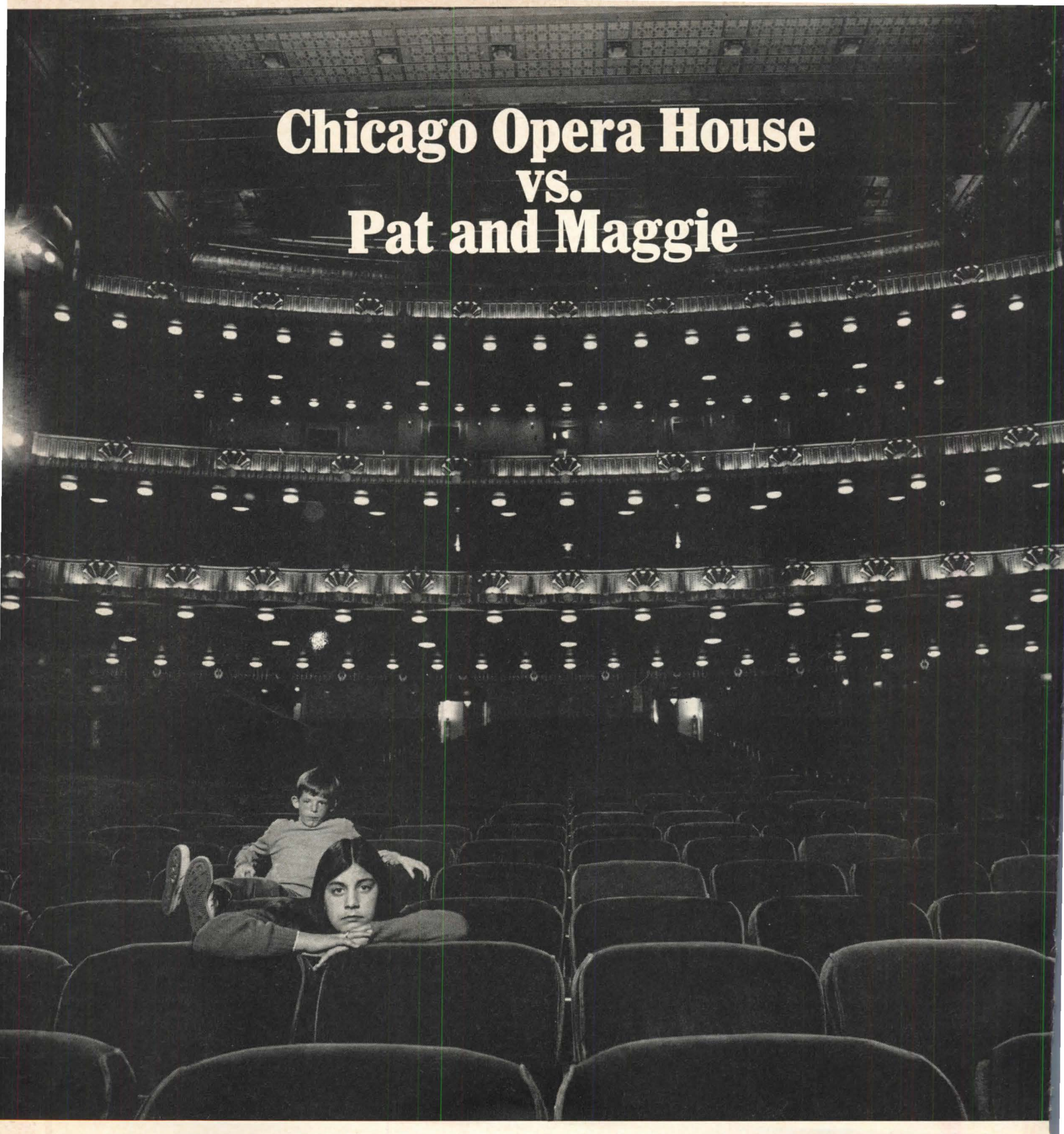
The distribution of apartments by income group was one of the hardest issues to resolve. The solution agreed upon was to reserve one-third of the housing area for low- and middle-income residents. Economically, the lower land rent obtained for these portions of the tract will be balanced by the higher income received from the office building sites.

This two-to-one ratio of upper-income to lower-income housing has already drawn objections from representatives of minority groups. If the project as a whole is to be self-sustaining, however, the proportion of lower-income housing can be expanded only by increasing the amount of office space beyond the proposed 5 million sq. ft., and that may be as much as the real estate market can bear—even in Lower Manhattan.





Chicago Opera House vs. Pat and Maggie



When the Chicago Opera House first opened its classic bronze and marble doors, the audience was astounded by its beauty. The stately marble columns rising to the vaulted ceiling of gold. The recessed lighting. The mammoth stage with its unique steel curtain.

Today's audiences still marvel at its well-preserved original beauty.

Yet, for many years, the great House was plagued by the spectre of disaster. It was forced to close, once during the Depression, again during World War II, and once more as late as 1946. Each time, new backers came forward with financial aid, new supporters with fund-raising plans, to reopen it.

It's interesting how people with taste and talent and ability always seem to spring into action when a treasure of the past is threatened. But what about the treasures of the future? The future of kids like Pat and Maggie. Kids who are threatened by Chicago's encroaching slum conditions, substandard housing, population increase, decreasing opportunity.

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BOOKS

(continued from page 85)

given urban design its current vocabulary.

With respect to the aims of the book to provide useful background, Goodman and Freund have generated effective short essays on the planning movement in America. James C. Coke has written an unmatched, 21-page history of the movement, and Graham S. Finney has turned out a remarkably useful piece with the self-explanatory title, "The Intergovernmental Context of Local Planning."

Understandably, the how-to-do-it chapters form the bulk of *Principles and Practice*. Some, such as Shirley Weiss's chapter on land-use studies, provide enough material to get anyone well on the road to turning out a finished piece of professional work. Others, such as Richard B. Andrews' chapter on economic studies, take a properly less direct how-to-do-it approach. Andrews gives a catalog of methods and applications sufficient to make the planning administrator an intelligent buyer of economic studies.

Some chapters, such as Jerome L. Kaufman's piece on urban renewal, reveal sharply the lacunae in standard-brand U.S. planning. Kaufman dwells at some length on the largely ineffectual federal grant-in-aid program for community-wide renewal studies, yet he gives precious little attention to low-cost housing, which lies at the center of our urban renewal problems, and he says nothing about physical design.

The final three chapters deal with organizational aspects of the local planning agency. They *aim* at a very narrow audience, evidently made up largely of freshman city managers trying to get their first 701 federal planning grant. Either they are not meant to be read by others, or they are just plain dull old stuff. If the latter is the case, perhaps the problem lies once again in the bias that leads Goodman and Freund and their colleagues to believe only planners can speak to planners. These chapters cry for the introduction of material from management science, accounting, and the sociology of organizations.

Principles and Practice speaks about planning administration and land-use studies, but it says nothing about how to build cities, or even how to build decent neighborhoods and houses for people to live in. It gingerly mentions social planning and speaks of policies which deal with poverty, but it hardly comes to grips with the problems of social justice in America. Yet architects and others who must concern themselves with American urban planning must get and use Goodman and Freund: nothing so useful to them has ever been published and nothing is likely to match it in the very near future.

Its faults are the faults of planning in the United States. So are its strengths planning's strengths. It tells how to do our brand of planning, and, by implication, it tells how little this brand of planning can do.

THE ARCHITECTURAL INDEX F 1968. Edited and published by Er J. Bell, P.O. Box 9277, Berkeley, Cal 94709. 74 pp. 5½ by 8½ in. $6 (paper).

The 19th annual edition The Architectural Index is n available. This compact and valuable reference booklet cro indexes articles from ei periodicals (Architectural & *gineering News*, Architectu Forum, AIA Journal, Archi tural Record, House & Ho Interiors, Landscape, and P gressive Architecture). Arti are identified by location, t of building, product or ser and architect or designer. I issues, from 1950, are availa as is a six-issue hardboard b er ($4.50).

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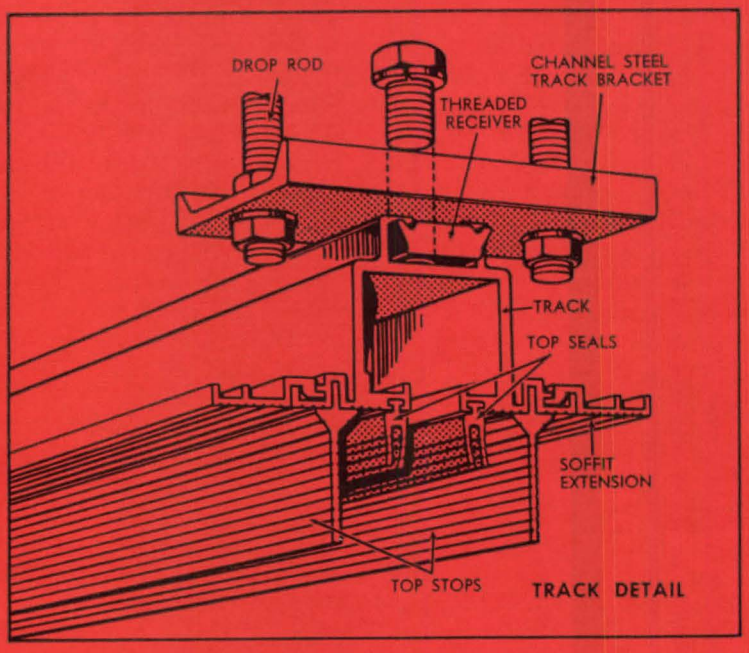

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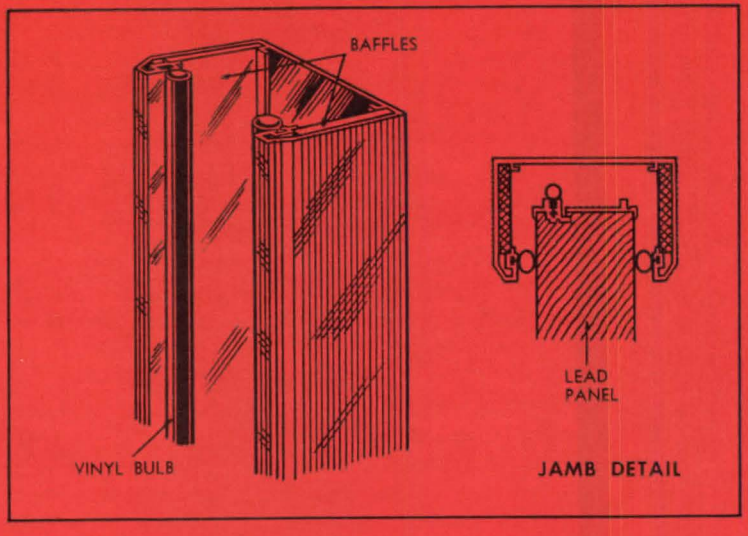

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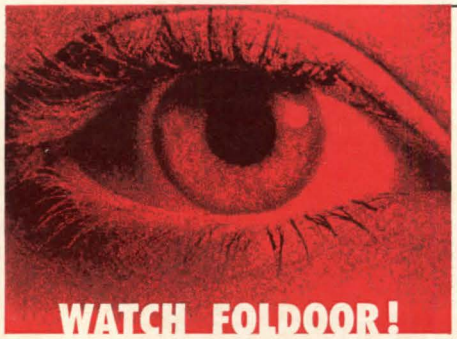

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(Continued from page 53)

would be *the* educational experience for many.

Ultimately, it is *doing* that is exciting for children. It will be a rare building that is built by children themselves, although the Putney School in Vermont and Architect John Rogers designed and built a dorm this way several years ago. As a more everyday experience, though, it should be possible to have an effect on one's own environment. The "Tri-Wall" cardboard that is moving from the warehouse to the schoolhouse (thanks to EDC) is one possibility. It lends itself to impromptu furniture, enclosures, and barriers, and involves a student directly in the making of his environment. The craftsmanship for the material is not as demanding as for wood, and an amateur can easily turn out something to be proud of.

The remarkable Adventure Playgrounds, originating in Denmark and flourishing in England, provide this kind of activity. Scouting could provide it here, but the Boy Scouts have been moving in a different direction. (Until 1966, as far as architecture goes, however, they were still helping old ladies across the street. Their merit badge actually called for drawing the historic orders.) The guide for the new merit badge makes contact with the present with a glowing description of the Yale Art and Architecture Building, and some vague admonitions about "the environment."

A new program for seventh graders, due to be nationwide within the year, seemed hopeful when it was first announced. But "The World of Construction," one-half of the HEW-funded Industrial Arts Curriculum Project, appears to be primarily vocational, with little imagination required or encouraged.

Looking toward the future

What will come of the profusion of programs? Some will undoubtedly expand and encourage others; some will disappear (there was a short-lived interest in environmental education in the early '40s).

Professionals will wonder about their role. Neal Mitchell describes an argument between a chicken and a pig over their contribution to the breakfast staple, bacon and eggs. The pig has the final word: "For you, it's a donation; but for me, it's a commitment." Professionals certainly have a role in environmental education for young people, but it is a larger job than can be handled by an architect coming into the schoolroom for "career day," or taking students out for an occasional tour of a prominent building. (Several AIA chapters are already involved in these efforts.) Presentations an adult knows how to make, rather than those a child can receive, can easily occupy the time and money of the concerned professional, salving the consciences of a few adults, while failing to reach the minds of many children.

The AIA Committee on Elementary and Secondary Education, if properly funded, could make an important contribution —retaining consultants active in educational innovation, and supporting promising enterprises in curriculum development, filmmaking, etc. Without proper funds, it can do little more than spread the word to chapters that there is a job to be done, and suggest ways of beginning it, such as approaching the state departments of education. The diversity resulting from a decentralized program is obviously desirable, but many will find the task too big. Some ready-made materials—if well prepared—could be extremely helpful.

A crucial problem is whether the child is to be given principles, fully formed by someone else, or is to be allowed to develop his senses to a point where his own curiosity, skepticism, imagination, and judgment take over. The latter may be a difficult educational task for a professional association that often defines itself as the arbiter of esthetic principles.

Training teachers, and the teachers of teachers, holds promise. Several AIA chapters (Baltimore, New Jersey, Dallas) already have programs. The Dallas chapter has taken teachers of one private school on several excellent tours of its area, then later worked with them to incorporate materials into the curriculum. James Pratt, chapter president and initiator of the project, hopes soon to expand this effort into the public schools.

Several curriculum development programs are beginning—one, by Stanley Madeja, to fit into the JDR 3rd Fund project in the University City, Mo., schools; another, under a Ford grant, by the Wave Hill Center for Environmental Studies in Riverdale, N. Y. The Boston Architectural Center wanted to set up a teaching laboratory in which to explore ways of reaching young people, but funds were not available.

At the University of Colorado, Richard Whitaker, director of design for the School of Architecture, reports that a thesis student is working on an organizational framework for bringing environmental material to an existing curriculum. (As AIA staff member for education, Whitaker was instrumental in creating the AIA's Committee on elementary and secondary education.)

Visual dynamics

Research is proceeding in other ways. In a doctorate at the NYU school of education, Amalia Pearlman is developing a strategy for making art and environmental education encompass the same concepts that a child meets in other subjects—change and simultaneity are basic to the new history, for instance. In part of her work, she uses tachistoscopic projections (slides flashed on the screen for a fraction of a second) and asks children afterward to draw what they remember, in an attempt to discover how they see, and what is prominent in their environment.

Another researcher is Charles W. Rusch, a Fellow at the Center for Advanced Study at the University of Illinois in Urbana. He is giving third graders (at the experimental school of the university's Curriculum Lab) a number of exercises in a controlled situation, to see whether there is improvement in their ability to *think visually*—a neglected skill in an education that emphasizes verbal and mathematical modes of thinking. He sees visual thinking as an important ingredient of better education in many subjects (math, science, even English) not just in the obviously visual subjects. His exercises are designed for enjoyment, as well as learning: in "What's In the Basket?" children guess unseen objects, one by one, such as an orange or a ball which is then produced from the basket; they eventually discover the objects' common attribute without ever describing it verbally. Another game is "Bite Me a Tree"—children nibble a shape out of a piece of cheese or baloney, and then tell what it is. Rusch also uses tachistoscopic projections, asking children to draw what they have seen, in the hope of increasing their visual memory. He says it is much too early to tell whether the exercises will be successful, but "given the educational orientation of the country, it is no small triumph that the work is going on at all."

The impetus for a new look at education in the sciences came from the sudden appearance of Sputnik more than a decade ago. Today's environmental crisis has been brewing for longer than that, and one wonders what it will take to make environmental education as basic as science, as pervasive as social studies, as creative as art. Our cities and buildings—one of the measures of a society—are increasingly abrasive, uncomfortable, joyless, mean, and inhumane. One hope for the future is a public that knows enough to see other possibilities and cares enough to demand them.

—Ellen Perry Berkeley

PHOTOGRAPHS
1, painting by Billy Hunt, Georg Washington Elementary School, Cleve land, Ohio. 2,3, Jon Dieges. 4, drawin by Emmanuel Stallman. 7, Educatio Development Center. 8,9,10, Davi Lowry Burgess. 11, Kenneth Liebe man. 12,13, Maude Dorr. 14, drawir by Phyllis Yampolsky. 15, EDC. 1 Hella Hammid. 17, James Knowlto 18, Ted Castle.


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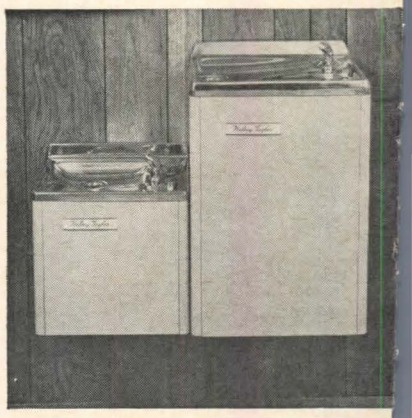

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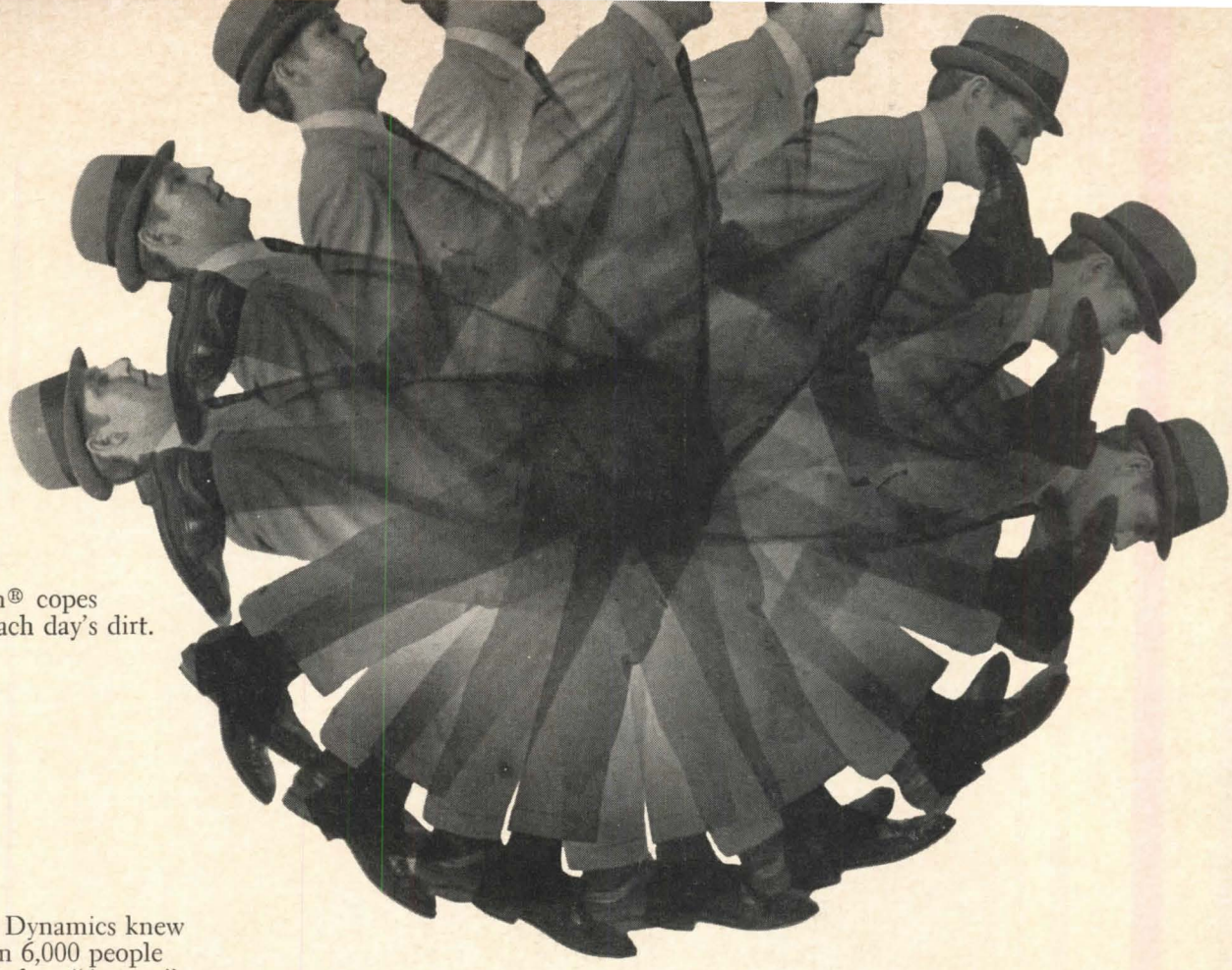

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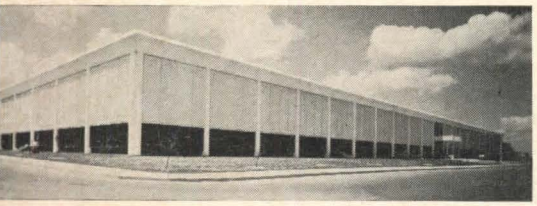

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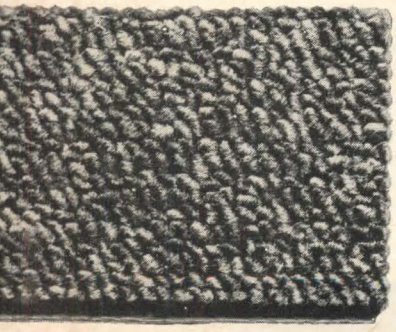

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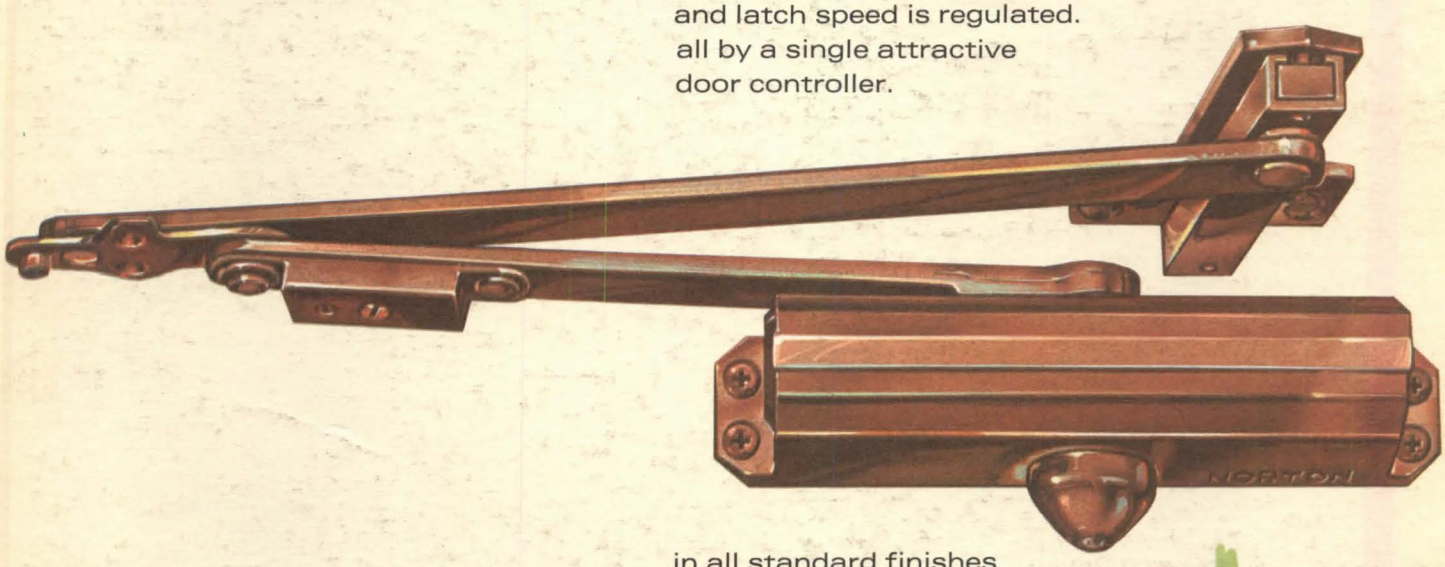

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