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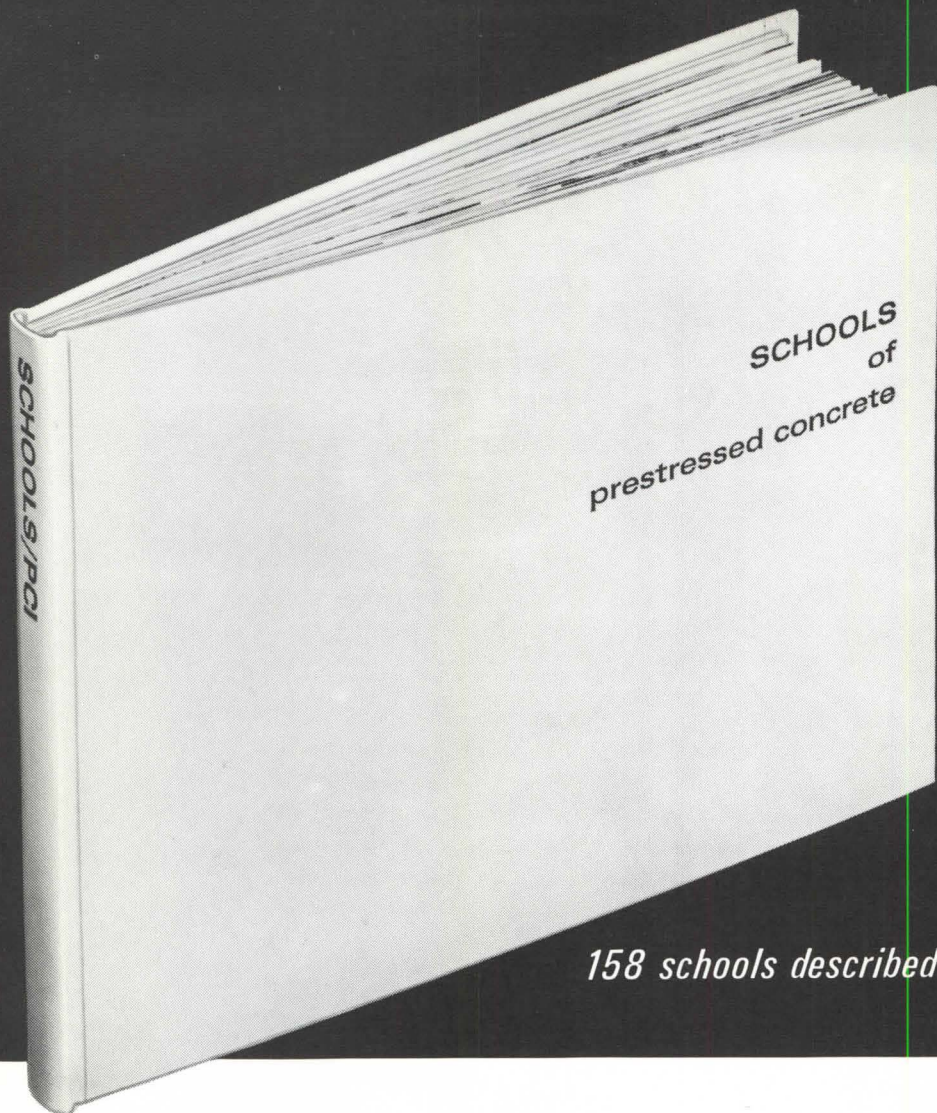
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VOL. XLIX, NO. 5

## Comment & Opinion

**Return to Montreal:** It is good to know that Expo is reopening this month under the title "Man and His World," thanks largely to Mayor Jean Drapeau and his associates. And it will become, following the May 17-October 14 run, a permanent cultural and popular center.

It is good news because Expo 67 was a "good show" in every sense of the word, and I would assume that its successor—dubbed the "Son of Expo" by some wag—will likewise be rewarding, even though on a reduced scale. Thus a brief recap at this time.

Not every one who visited the Montreal exposition will agree as to its merits, architectural or otherwise (see Letters). In my conversations with those who attended the majority of recent World's Fairs, however, the consensus is that Expo topped them all.

There are those who maintain that the architecture was too flamboyant, and others that there were really no breakthroughs. Yet it appears that the significance of some of the structures was never fully recognized.

Take the US Pavilion, for example. My reaction upon learning that it would be designed by R. Buckminster Fuller was probably typical: "Oh no, not another geodesic dome!" But viewed from afar or within, the big bubble, enclosing 7 million cubic feet of un-pillared

space, was not only impressive but totally appropriate as a piece of exposition architecture.

The United States will not have an exhibit at "Man and His World," but Bucky's dome will be very much in evidence, for it was presented to the City of Montreal which is putting it to fitting use as an international botanical garden and aviary.

Mayor Drapeau, by the way, persuaded all but three countries to donate their pavilions to the city: Czechoslovakia and Yugoslavia, whose buildings will be re-erected in Newfoundland in new capacities, and the Soviet Union.

If I had to choose a favorite, I would pick the German Pavilion, a tentlike structure that expressed

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### Cover

Paul Rudolph's Yale Art and Architecture Building with Robert Engman's tower. Photo: Robert Damora.

an exterior-interior relationship lacking in a good many of the exhibit buildings and that handled the flow of visitors beautifully, without regimentation.

Enough about the architecture, for a fair can be evaluated on several different levels. Expositions are, after all, designed for people — and Expo certainly was planned with that foremost in mind. There were long queues, to be sure, but there also were benches and quiet corners and pools of water and trees and flowers to enjoy; and they should be all the more luxurious and enjoyable in the coming months. I attended Expo on Labor Day weekend, which drew one of the largest crowds ever, and yet I found numerous oases where one could get away from the milling mobs.

There were other amenities such as well-designed street furniture and lighting, the handling of signs, noise control and provisions for the handicapped, who were accommodated by special gates and by ramps in almost every major building. Noteworthy, too, was the transportation system — within and without the fair site — which attempted to alleviate congestion by dispersing people on different levels via elevated platforms and easily accessible walkways.

But back to 1968 and a few of the highlights of "Man and His World":

- National exhibits by at least 40 countries, in addition to provincial and business displays
- Three theme pavilions: "Man the Provider," "Man the Explorer," "Man in the Community"
- An international humor exhibit in the former Swiss Pavilion
- Labyrinth, operated by the Canadian National Film Board with apparently the same presentation as in 1967
- La Ronde, the delightful amusement area.

Habitat, the influence of which on industrialization and housing remains to be seen, is being rented (about \$180 to \$350 a month) and therefore will not be open to the public.

While I cannot vouch for the quality of "Man and His World" at this writing, the exposition merits a trip if it lives up to its predecessor—not only for those who missed Expo 67 but for the repeaters who will want to spend more time in Montreal itself, a metropolis that has many lessons to offer in terms of city spaces and plazas and an effective rapid transit system to boot.

ROBERT E. KOEHLER

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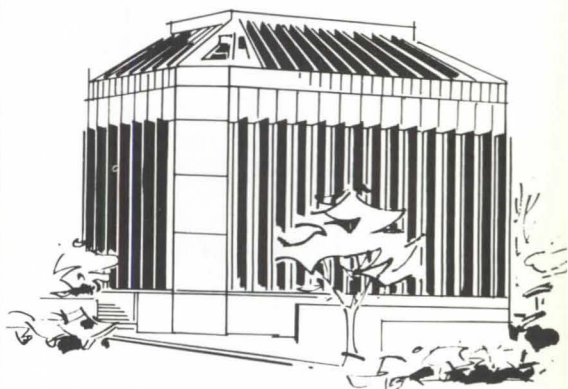
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# Newslines

## First Lady, Whitney Young And Gene Brewer Speakers For Institute Convention

Mrs. Lyndon B. Johnson, Whitney M. Young Jr. and Gene C. Brewer will address the 1968 convention of The American Institute of Architects.

The theme of the convention is "Man/Architecture/Nature" and Mrs. Johnson's appearance will be in connection with the "Nature" segment.

Mrs. Johnson has been active in beautification and environmental causes and in 1966 was awarded a special citation by the AIA for her "determination to restore beauty where it has been forgotten, to preserve beauty where it exists and to protect our natural resources."

Young, executive director of the National Urban League, is a stal-

of the Institute. Portland, Ore., is the location for the June 23-27 period, and Honolulu for June 28-29.

Previously announced as the Purves Memorial Lecturer was Barbara Jackson, internationally known author, editor and economic interpreter.

Speaking with Mrs. Johnson will be a panel headed by Orville L. Freeman, Secretary of Agriculture; Dr. M. Gordon Wolman, a member of the AIA-appointed Potomac Planning Task Force of the Department of Interior and chairman of the department of geography at Johns Hopkins University; and Marvin B. Durning, a Seattle attorney who in 1965 was named by President Johnson as "National Conservationist of the Year."

Donald Canty, editor of Urban America's *City* magazine, will be the discussion leader for the "Man" theme session.

Workshop sessions on various aspects of practice and architecture number nine and will be split seven Portland, two Honolulu. They cover the "Architecture" segment.



Mrs. Johnson



Young



Brewer

wart in the civil rights movement. Under his direction the Urban League has broadened and intensified its activities.

Young will be the keynote speaker for the "Man" segment along with Brewer, chairman of the board of the National Forest Products Association and president of U. S. Plywood-Champion Papers Inc., and civic affairs activist.

The "Architecture" portion of the theme will be covered in a series of workshops in this first two-city convention in the history

## King Death Marks Parley On Religious Architecture

The murder of Dr. Martin Luther King and the widespread disorders that followed in its wake were certain to have strong influence on a meeting that began April 30 and ended May 3.

This was the 29th National Conference on Religious Architecture, held in Miami Beach and attended by theologians, artists, craftsmen, architects and contractors.

About the time of the assassination, the Rev. S. T. Ritenour, Presbyterian clergyman who has directed the National Council of Churches' programs on religious architecture since 1957, said:

"There is a genuine desire on the part of some congregations to witness to Christ not only within the worship center but also by acts of reconciliation in the community, in the nation and the world."

Recent church/architecture conferences have questioned the propriety, indeed the morality, of erecting edifices when social structures are breaking down — as they did in cities across the land last month.

There was certain to be an even stronger underlying social awareness among conferees at the Miami Beach gathering due to the death of Dr. King.

The religious building industry in 1966, according to latest US Commerce Department statistics cited by Mr. Ritenour, accounted for a \$1.17 billion turnover.

Social awareness does not necessarily relegate brick-and-mortar programs but indeed can expand them, it appeared. As Mr. Ritenour pointed out, more and more emphasis is being given in church planning to services to local communities in education, recreation, etc. These extensions beyond the worship purpose are visible in recent designs, he said.

In a related development, however—and this was sure to be a topic of discussion in Miami Beach —Patrick Cardinal O'Boyle called for the suspension of all new church and church school construction in the Archdiocese of Washington, a move aimed at freeing funds for the battle against urban poverty.

The annual conference — this was the 29th — was sponsored by the Guild for Religious Architecture, The American Institute of Architects and the National Council of Churches, supported by several national Christian and Jewish organizations.

## National Urban Policy, City Strife, Weighed At 'Cities' Conference

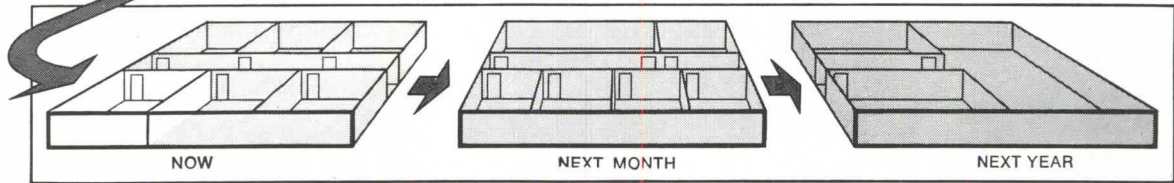
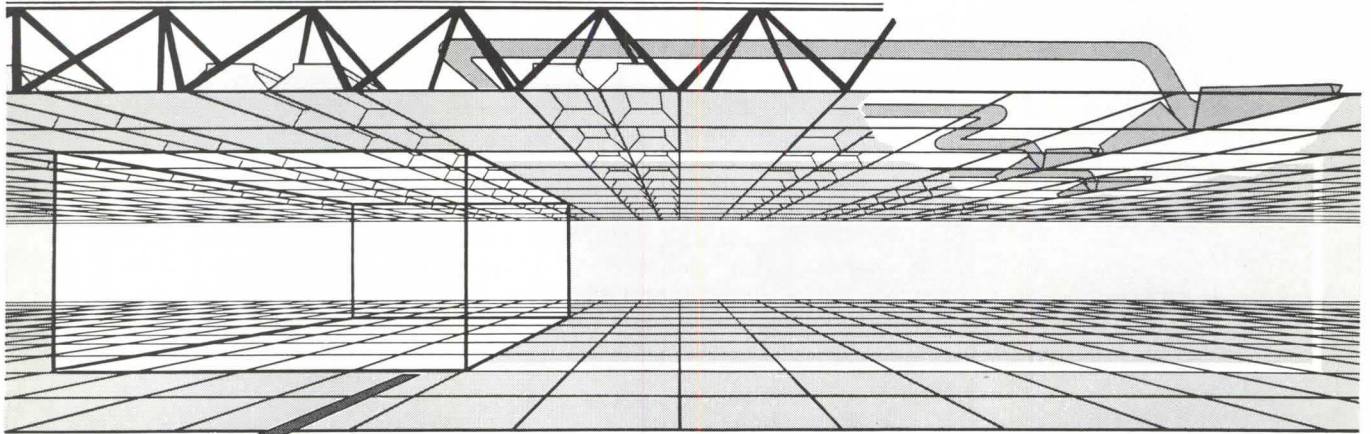
A national urbanization policy for human settlement got support from two speakers at the Cities in Context Conference at the University of Notre Dame last month.

Recommending the concept in an address devoted to the "rural renaissance," John A. Baker, Assistant Secretary, Department of Agriculture, continued in the footsteps of his boss, Orville L. Freeman. Earlier this year, Secretary Freeman organized a symposium, along with five Cabinet colleagues, to consider the idea of an urban-rural balance.

At the Notre Dame sessions, William L. Slayton, executive vice president of Urban America, Inc., in endorsing "a policy that ad-

*Continued on page 10*

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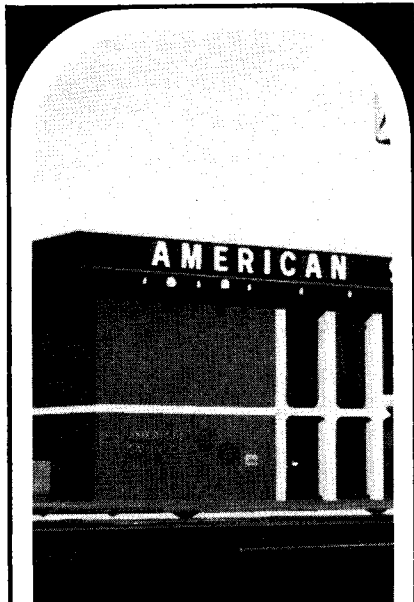
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dresses itself to where the increasing population should be located," went one step further when he said: "Perhaps we should take a look at the more basic question of how large, in terms of numbers, should the United States be?"

However, Slayton hastened to admit: "It is going to be difficult enough to devise a program to try to establish a national pattern of human settlement; it is going to be much more difficult to face the issue of limiting the size of the population to a specific number."

Slayton cited Houston as a settlement opportunity — missed. The NASA installation there, he explained, could have been located so as to create a new community.

"Federal installations," he added, "should be used in a positive way to encourage population settlement where it is logical for it to go rather than inundating existing population centers."

While advocating freedom of choice in housing for all people, he acknowledged the need to discourage the immigration of rural or small town Americans to city areas in search of a better life.

**Down on the Farm:** Baker, on the other hand, told the city planners, civic leaders, educators, students and a sprinkling of architects that the Agriculture Department, working singly and with groups, already has helped to "reverse the tide of rural decline" by:

- developing and implementing comprehensive community development plans
- expanding job opportunities and increasing income
- improving community facilities and services ranging from water and sewer systems to schools — and cultural and recreational activities
- carrying forward systematic programs to eliminate poverty and underdevelopment
- building new homes, and
- making wise use of natural resources, including expansion of income-producing outdoor recreation where feasible.

It was evident in the discussion period that more than one listener thought Baker's "rural renaissance" something of a myth, or, at best, an implausible approach to the problems at hand.

**Strife and Discontent:** Few, however, could argue with the conference organizer, Patrick Horsburgh, who set the theme by saying: "The city, that climax of civic

aspiration, has now become the abscess of social discontent." The visiting professor of architecture at Notre Dame, whose new graduate program leading to a Master of Science in Environic Design was formally announced at the March 31-April 3 sessions, continued:

"The fierce contest in social strife has served to conceal the fact that it is upon the condition of the environment that all else depends. The context in which we find our cities consists of three primary facets—cultural, ethical and natural—and these factors receive insufficient attention in urban administration, professional practices and academic scrutiny."

On hand to make the issues of social discontent more meaningful to conference participants were several members of the Real Great Society, Inc. (RGS), a self-help organization started by former street gang leaders on New York's Lower East Side.

Formed in 1964 by young Puerto Ricans, RGS recently received a grant of \$258,000 from the Office of Economic Opportunity for its University of the Streets, an experiment designed "to link education with community aspirations."

In a discussion at the conference opening, an RGS spokesman supported advocacy planning which suggests that community groups develop their own plans, enlisting what expert advice they need, and then seek to push these plans through city government.

Lewis W. Hill, chairman of the department of urban renewal for the City of Chicago, said that advocacy planning to a great extent is misdirected, since it rests on the principle that the community must be protected from municipal government.

"I support it if both can work toward a common goal, but we should not replace advocacy planning with that already established by the government."

Calvin S. Hamilton, director of planning for the City of Los Angeles, on the other hand, said he favors the advocacy planning approach as perhaps the only way to end the neglect of the slums in favor of suburban development in many communities.

He called the participation of poor and minority group members particularly an "imperative" in the planning process and emphasized:

"It seems to me absolutely essential that the public be completely aware of the planning process"

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Paul Robinson Hunter, FAIA

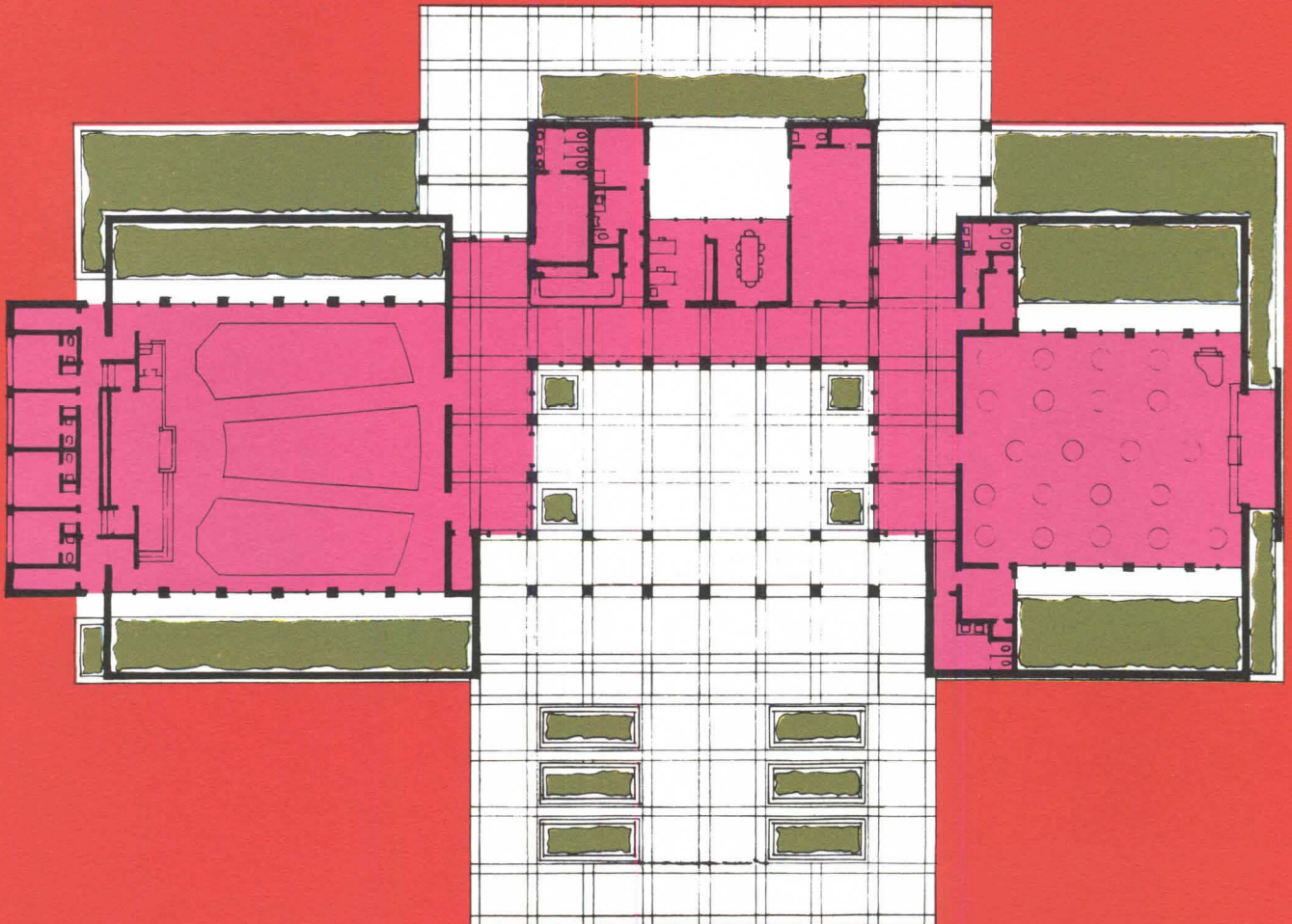
## designs with daylight

This non-ritualistic church auditorium, Sunday school and administrative offices are grouped about a forecourt. Here, people may gather before and after services. The three buildings are connected by a glazed arcade that looks out upon the front courtyard.

Access to the buildings also is provided from the parking lot through skylighted porches.

Both auditorium and Sunday school have glare-softening Parallel-O-Bronze® plate glass walls from floor to canopy facing enclosed garden courts. Generous overhangs shade the glass from glare and solar heat gain much of the year.

Walls of the upper portion of the auditorium, between the bents, are concrete panels inset with windows of tinted glass. With a north-south



axis, daylight will illuminate the interior during the principal morning service.

A skylight the length of the auditorium, gives filtered light throughout the interior, permitting easy reading of hymnals, etc.

Seating capacity of the auditorium may be increased some fifteen percent by moving the glass walls into the garden courts and placing the aisles on the opposite side of the columns.

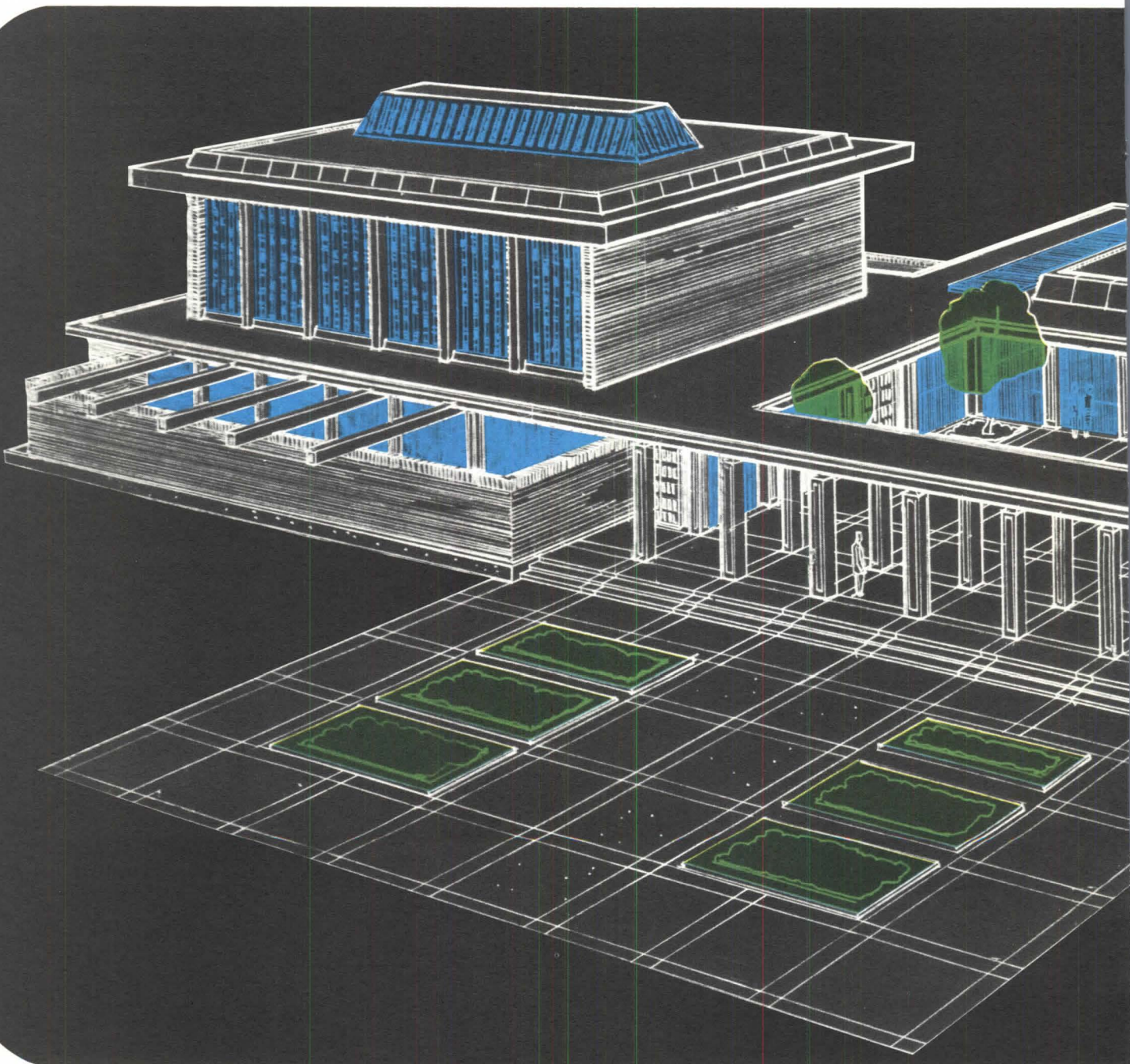
The nursery, board room and clerk's office are

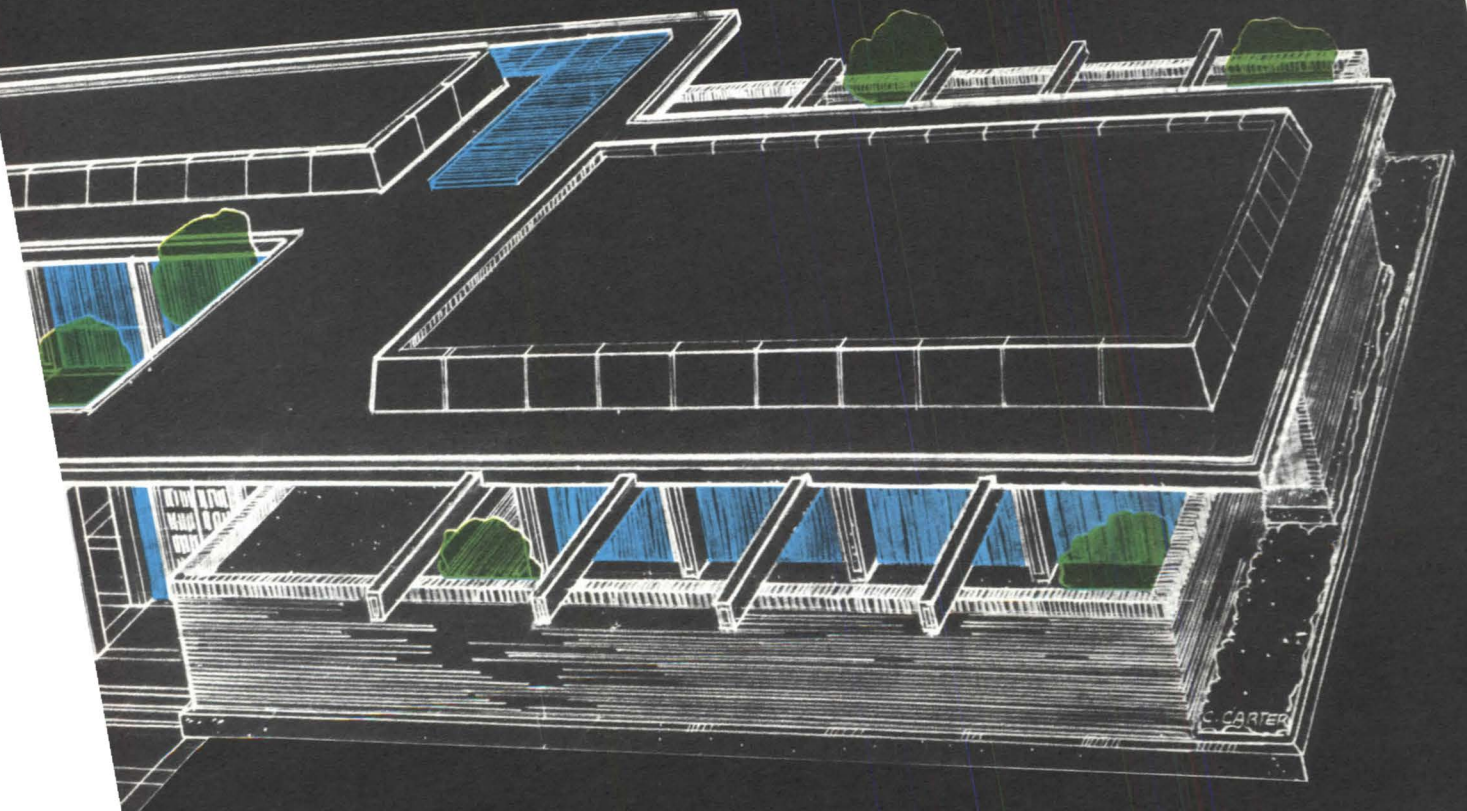
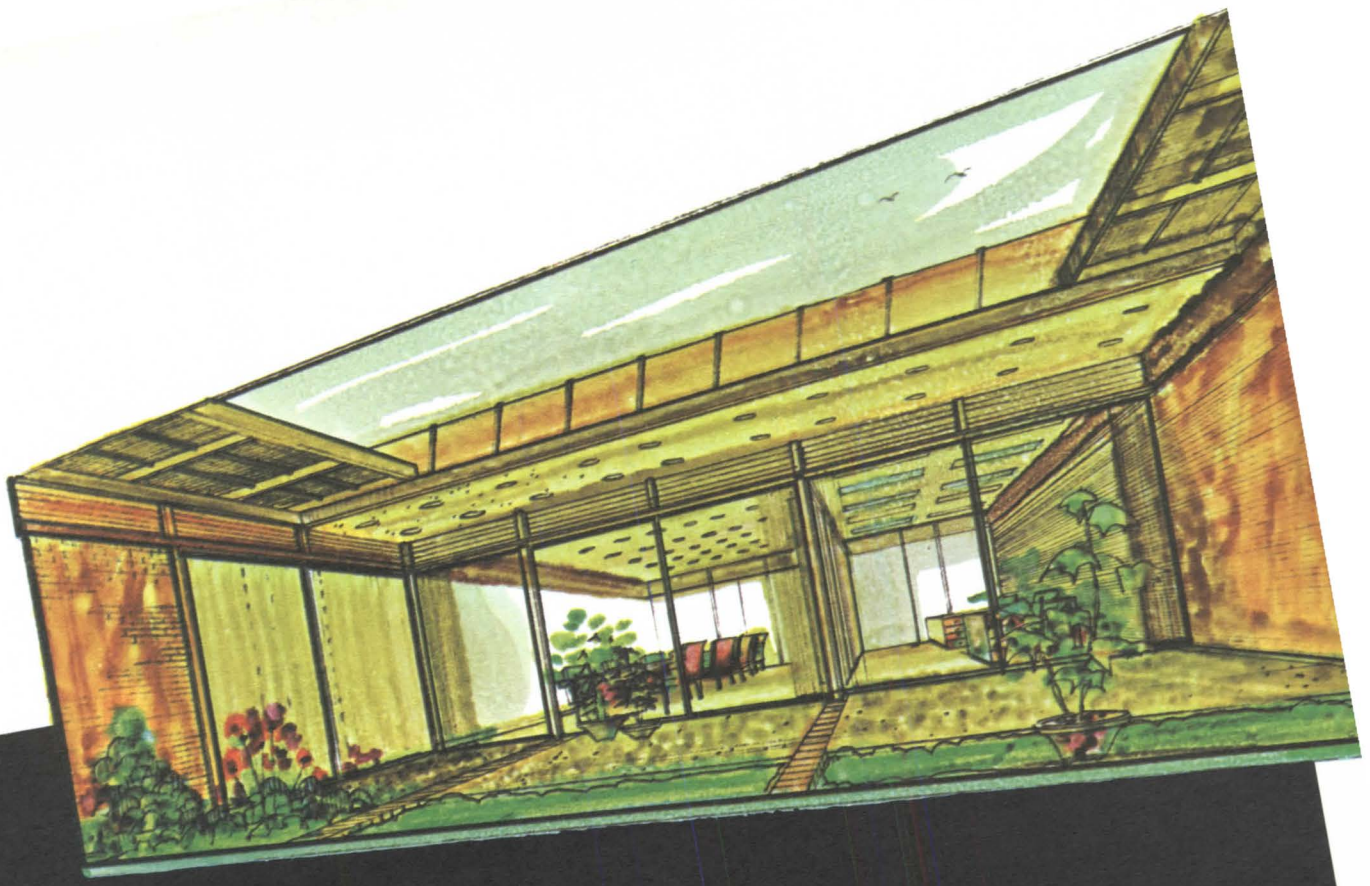
daylighted by sliding glass doors which open upon an enclosed court.

The court is roofed in part with a retractable wired glass skylight. Here, children may play without disturbing adult services. Glass walls in the arcade permit friends to see the children in the nursery.

Thus architect Paul Robinson Hunter of Los Angeles would use God-given light to create a fine feeling of

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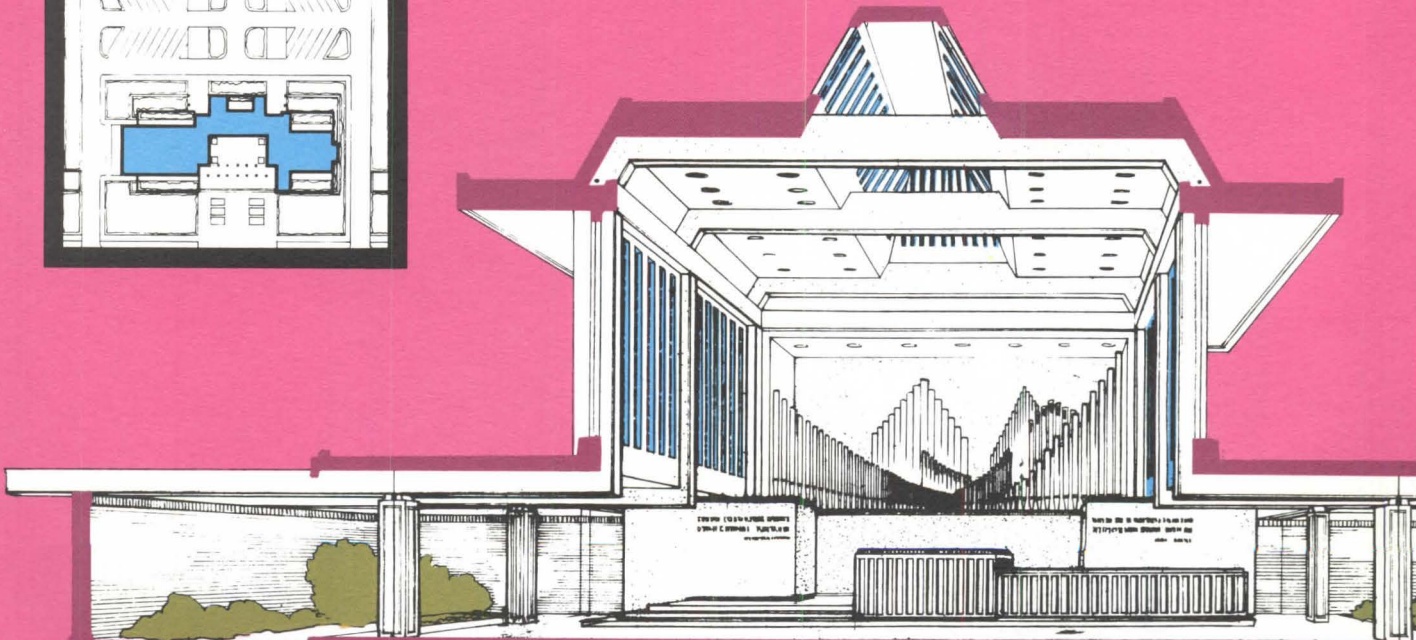
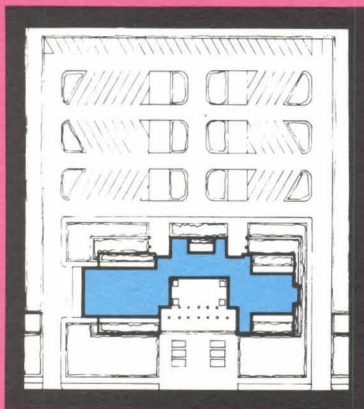
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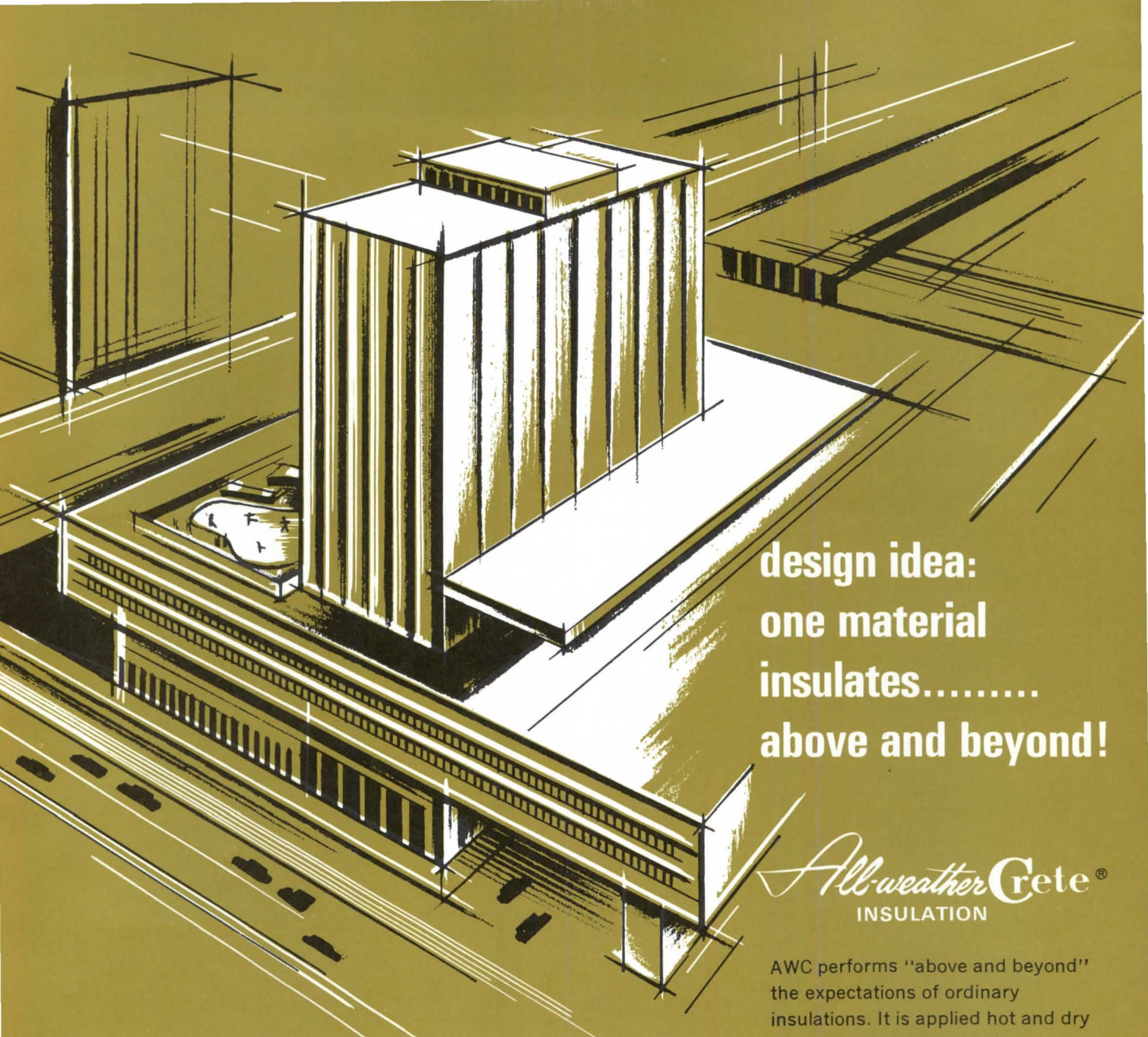


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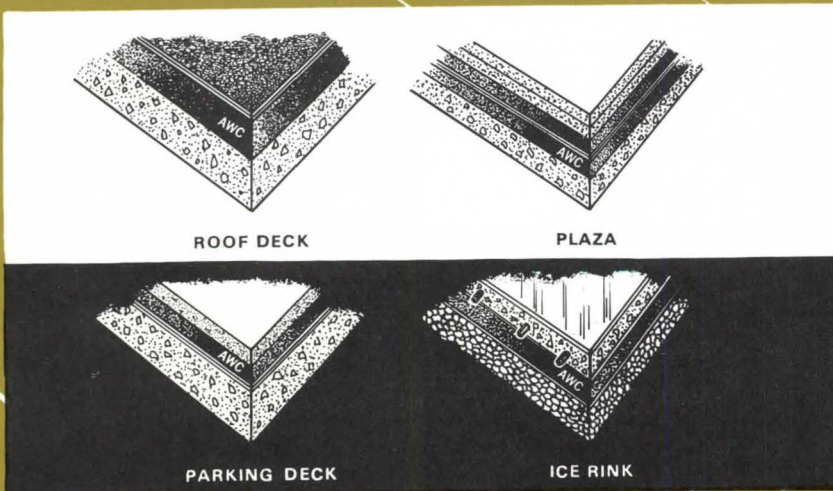




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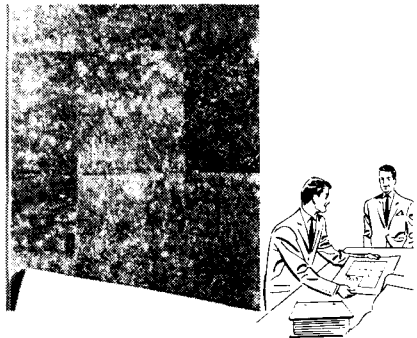
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# The "or" in "or equal" usually ends up in... "inferior"

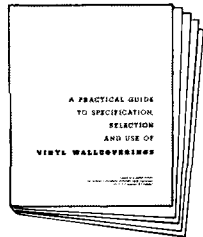
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"The public must be in a position to evaluate the necessary trade-offs in the allocation of scarce resources to solve our massive urban problems. In a democracy, do we have any other choice?"

Desmond Heap, comptroller and city solicitor for London, said the average citizen does not have the vision and technical knowledge necessary to participate in the planning process, but explained: "I think the citizen should be carried along . . . educated, so that he will like the plan when he gets it."

**By Any Other Name:** New towns came in for their share of attention, although the speakers could not agree on a definition. While the disparities between the English and American experiences were underscored, British Lord Llewelyn-Davies said that "the difference between the United States and Britain lies more in the general attitude of the community toward planning than in the strength of legislative powers."

The structure of England's local government is somewhat "less obstructive" than in the USA, explained the head of the Bartlett School of Architecture, University of London. City boundaries in England, for example, are regularly extended to take in the suburbs at the growing edge of the city.

Citing the fact that all the new towns in south England, with few exceptions, have been successful in economic terms, he admitted that they have been "vigorously attacked by some architects. They have been criticized as lacking 'urban quality.'"

Charles Haar, Assistant Secretary for Metropolitan Development, Department of Housing and Urban Development, pointed out that the New Communities Act is directed toward solving problems of suburban sprawl and not the central city. "This legislation is only one branch of the entire tree," he added. "There is no ideal city form."

**A Lot of If's:** While the conference raised many more questions than it answered—some 20 speakers covered such specific topics as water and air pollution, urban ecology, use of land resources, systems analysis, man's relationship to space and the urban atmospheric environment—it nonethe-

less ended on a certain note of hope with Slayton's final comment:

"But if we were to address ourselves to the elimination of poverty by seeing that, by various means, all families had an income sufficient to enable them to lead decent lives; and if we really were to tackle the problem of discrimination on a broad basis and commit ourselves to its elimination; and if we were to plan now for the substantial rebuilding of our central city areas at some future time when the population pressures of present residents have been removed; and if we were to develop new national and local policies on the channeling of population growth and the development of a mechanism to control the development of metropolitan areas; and if we were to couple with these programs a positive program aimed at providing real freedom of choice to Negroes and other minorities to live and work where they wished and were to create a really friendly and welcoming climate — if we could couple these programs with these objectives and really commit ourselves to do them, then, perhaps, before too long, we could achieve the American dream."

## Ben Evans Becomes BRI's Executive Vice President

Ben H. Evans, AIA, has been named executive vice president of the Building Research Institute.

Evans, 41, leaves the position of director of Education and Research Programs for the AIA. He joined the AIA staff in 1963 as director of research.

His new post, which Evans expects to assume by June 1, has been filled on an acting basis by Robert P. Darlington, AIA, who has joined the staff of the Copper Development Association in New York City.

Terming the AIA "a tremendous, dynamic organization," Evans said he is leaving its staff with regret but that he looks forward to his role with BRI and what he termed its "whole new program of vigorous activities." He cited a statement by BRI President Gershon Meckler which emphasized the organization's "unique ability to develop a broad interdisciplinary approach to research and innovation."

A vice president of BRI's Board of Directors, Evans has been an active member of the organization for

Continued on page 20

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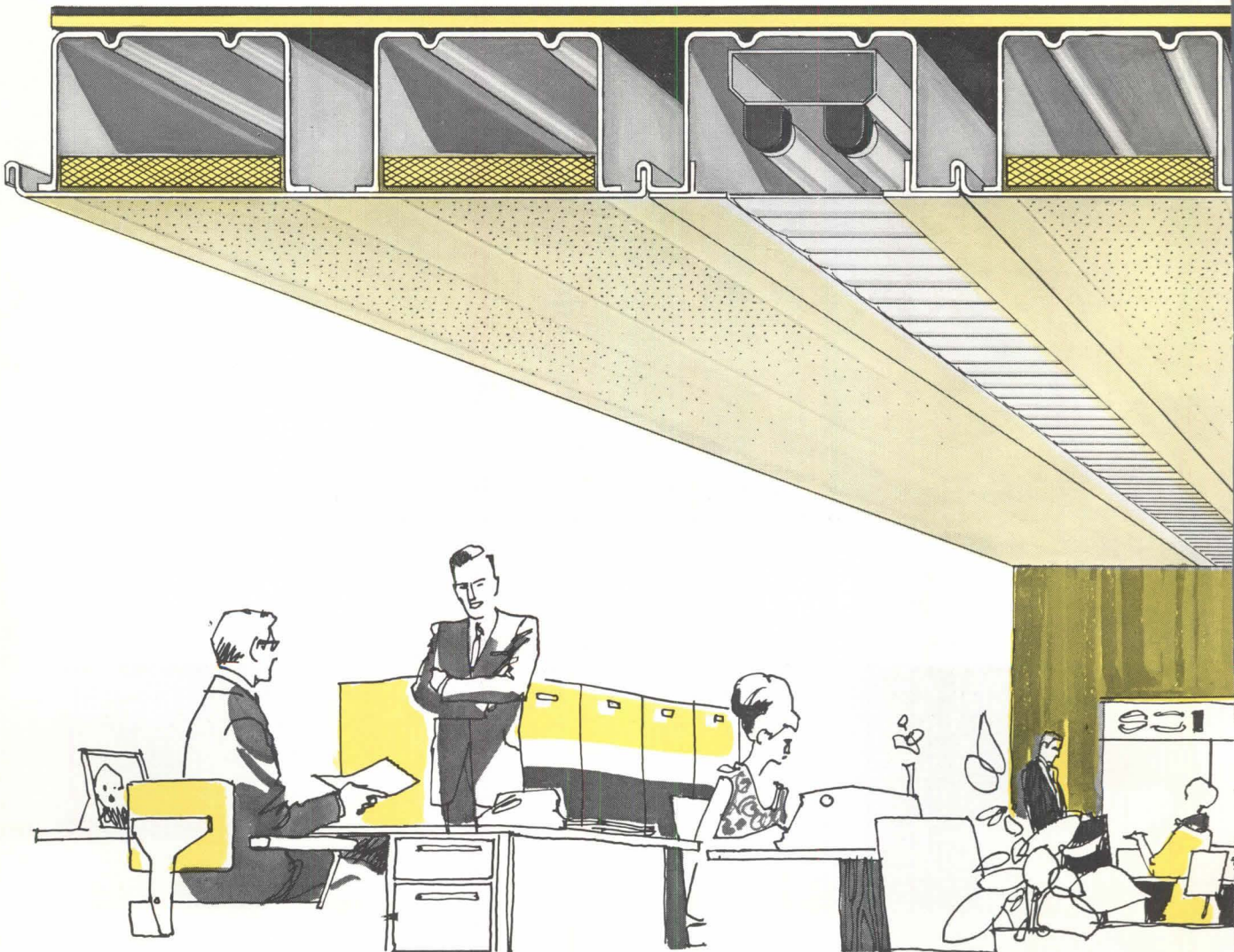
**CHICAGO**

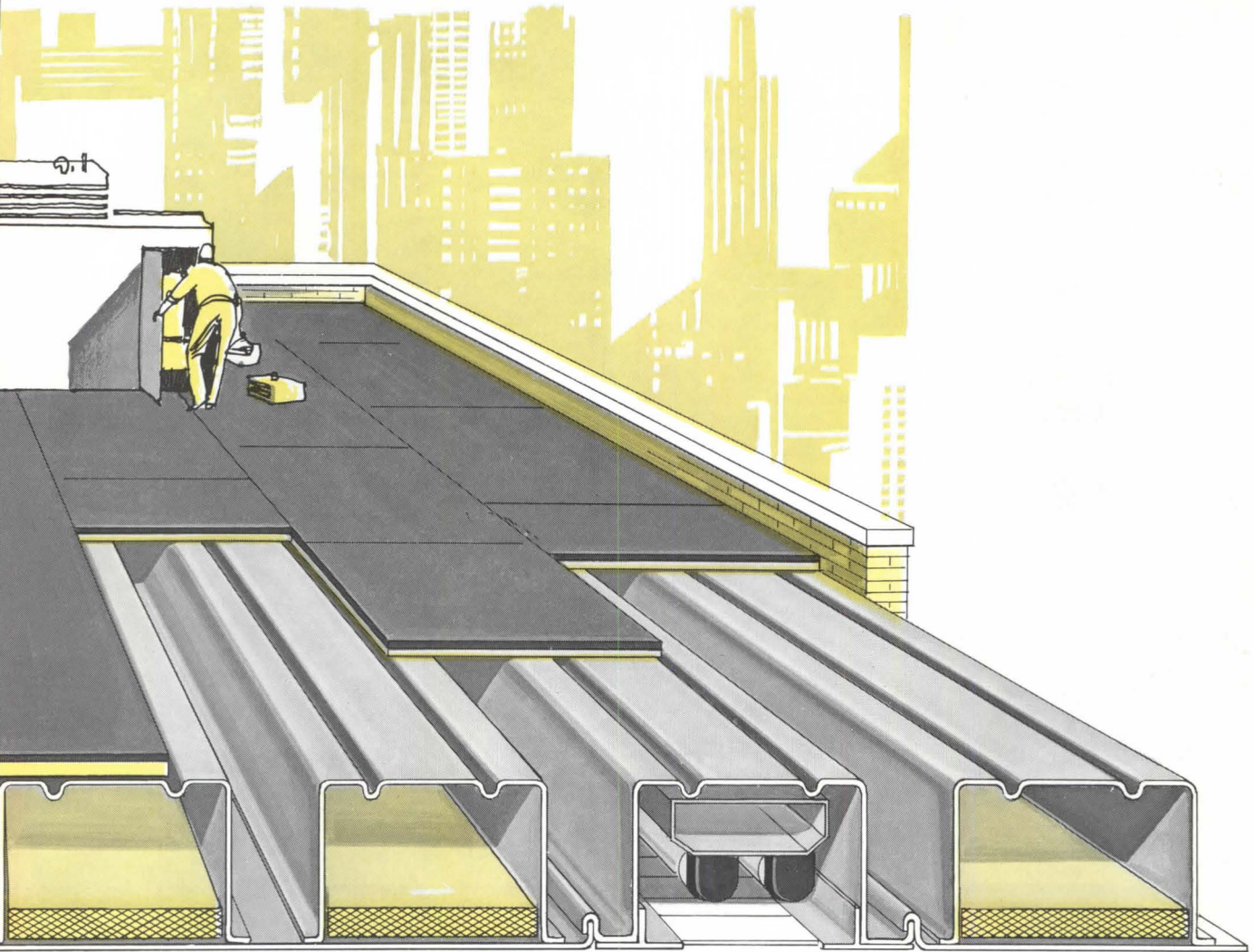
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Newslines from page 16

some 10 years. He is also a member of the Building Research Advisory Board of the National Academy of Sciences and the Association of Collegiate Schools of Architecture and its committee on graduate studies and research. He is a past president of the Brazos, Tex., Chapter, AIA.

He holds a Master of Architecture degree from Texas A&M where he served from 1958 to 1963 as head of architectural research.

He was an invited participant in the 1965 Nobel Memorial Tour of Sweden which included travel and study of Swedish educational and scientific institutions.

Among AIA projects with which Evans has been closely associated are Cost of Architectural Services, Princeton Report and Implementation, Architectural Researchers Conference, and Emerging Techniques of Practice.

## ACSA Gathers Before, NCARB After, AIA

The AIA convention will be straddled by two others—those of the Association of Collegiate Schools of Architecture (June 21-23) and the National Council of Architectural Registration Boards (June 29-July 2).

The annual meeting of ACSA, at the Benson Hotel in Portland, Ore., will include a presentation and discussion of the Princeton Report.

The NCARB convention, in Honolulu's Princess Kaiulani Hotel, will have Gerald M. McCue, AIA, keynote the theme, "NCARB's Response to the Changing Profession."

Another speaker will be political figure William F. Buckley Jr.

## Recent Awards Sculptures Mix Straights, Curves

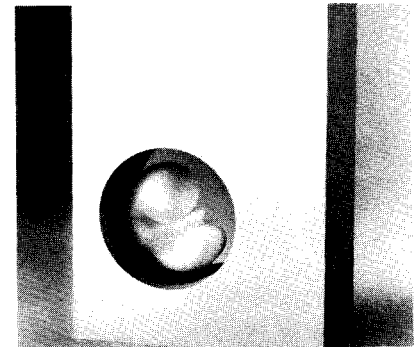
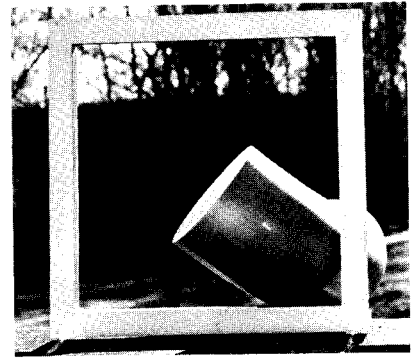
Two recent works of sculpture, both commissioned in connection with awards programs, bear a curious commonality in having curvilinear elements within rectilinear frames. One is by Alexander Liberman, the other by J. Daatselaar.

Liberman calls his work, "Torque," "an expression of the conflict of opposites; the circular and the square; the curved and the straight; thinness and thickness. The total effect gives a three-dimensional expression of these

tensions." It is made from sand-cast aluminum, cut and polished.

Daatselaar, who created his piece from burnished aluminum, says the simplicity of his geometric shape symbolizes "modern day industrial technology" while the ceramic representation of the human embryo within it suggests "purity and life support."

Liberman's work, along with \$25,000, will go to the winner of



"Torque," the Reynolds sculpture, above, and technology-enveloped life.

the 1968 R. S. Reynolds Memorial Award for Architecture with Aluminum, presented by the Reynolds Metals Co. and administered by the AIA.

The Daatselaar work was created for the newly established Lewis L. Dollinger Pure Environment Award—the first of its kind to commemorate notable achievement in environmental pollution control. Named in honor of the founder of the sponsoring company, the Dollinger Corp., the award carries a cash honorarium of \$2,500. The Franklin Institute of Philadelphia will designate the 1968 winner for the sponsor.

## Threes Have It in Battle Over D.C. Freeways— National Meaning Cited

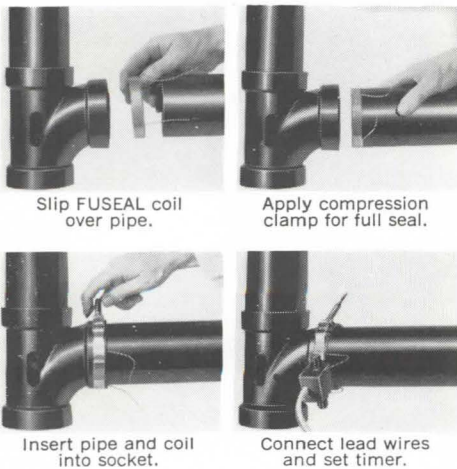
Speaking to the subject at hand, "The Complete Transportation System," Rep. John C. Kluczynski was telling the Associated General

Continued on page 22

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Contractors of America convention that he sees "no reason to believe that our reliance on automotive transport is going to change to any substantial extent."

He wished it would be different, he said, but he had to feel this way—"in spite of all the fancy language and long-range predictions about technical miracles to provide other methods."

The Democrat of Illinois and chairman of the House Subcommittee on Roads last month heard AIA testimony on a freeway measure he has introduced for the District of Columbia. Kluczynski's legislation, the AIA said, would "force an ill-conceived and misrepresented highway plan upon the District."

But the Kluczynski legislation's impact would flow beyond the District's boundaries, in the view of Rep. Richard D. McCarthy (D-N. Y.) and thus might impose an unwise approach upon the entire nation.

What the bill did, in McCarthy's opinion—and the Congressman felt it had "a very good chance of passage"—was ignite "an issue that has been smoldering a long time . . . what to do about urban transportation."

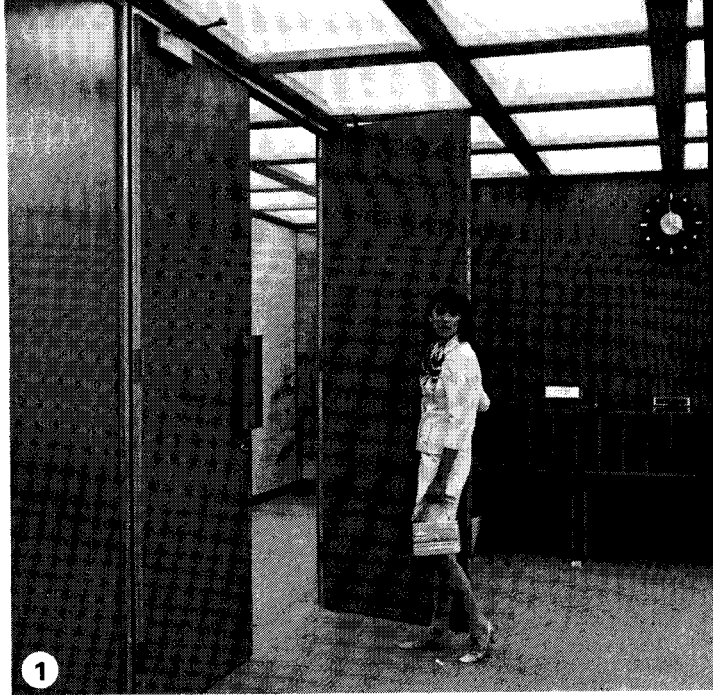
Kluczynski insisted he was not irrevocably tied to his bill, saying he introduced it merely as a starting point for hearings. "We want to hear everybody," he said.

**Steamrollers and Bulldozers:** "I never steamrolled a bill," declared the Congressman who at the AGC convention a week earlier alluded to another construction technique, bulldozing, as he told of how some people who "ought to know better" are accusing highways of "bulldozing communities or destroying beauty. Few people raise their voices to point out that without highway transport the communities would soon die, or that until the highway took them to it, not very many people got a chance to see the beauty."

One of the items on which the Institute raised its voice was that the Kluczynski bill "seeks to ignore a basic democratic principle, namely, that the people have a right through public hearings and discussion to play a part in the highway planning process."

AIA testimony urged adoption of a three-part planning team consisting of a decision team (city

*Continued on page 26*



**Where should the**

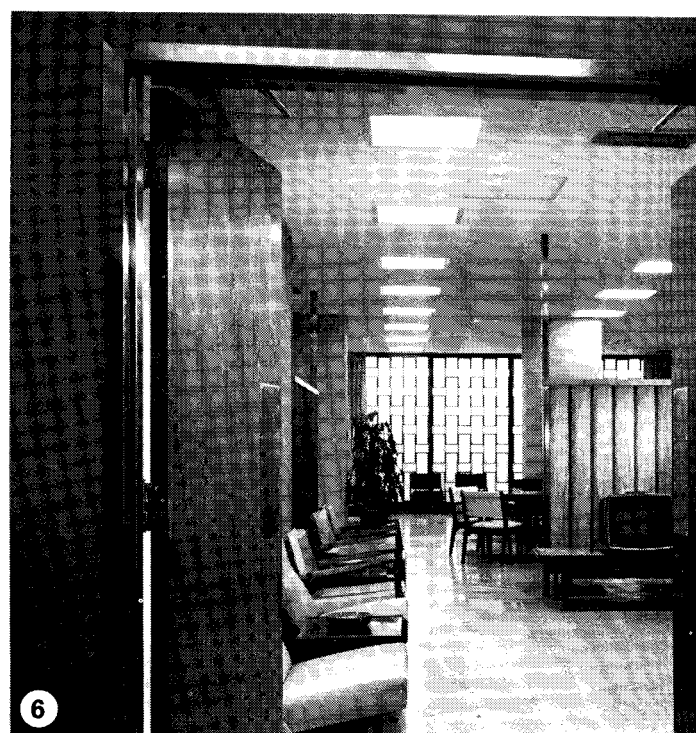
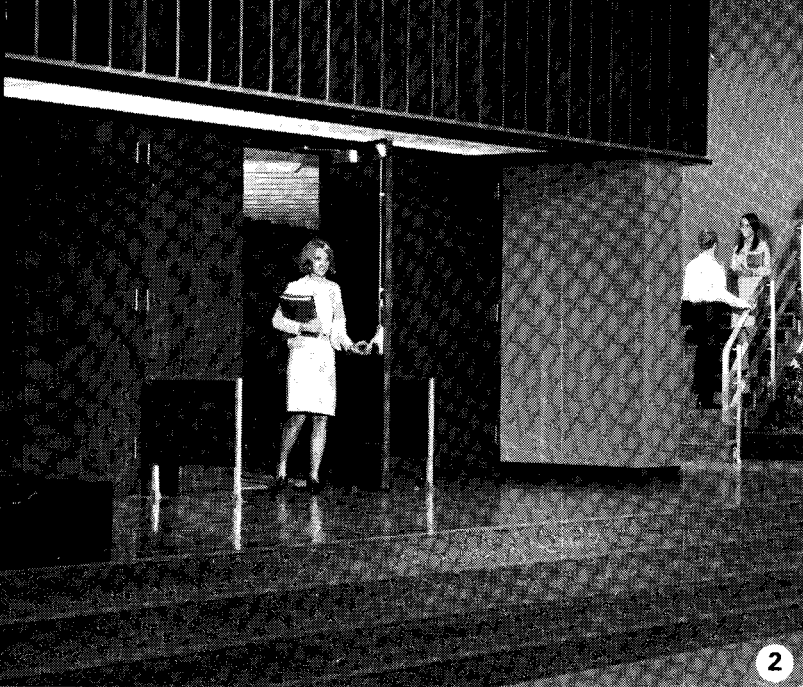


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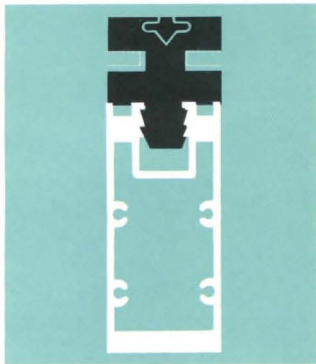
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and federal agency representatives), a citizens' or community team (business and neighborhood representatives) and a design team (architects, engineers, economists, sociologists, etc.).

**Of National Significance:** The festering highway controversy in the District of Columbia has been assessed by one writer, the *New York Times'* Ben A. Franklin, as a battle that "may change part of the country's automotive way of life."

The battle, too, is three-way, as Franklin views it—and the parts are the Administration, the Congress and the highway industry.

Transportation Secretary Alan S. Boyd's resistance to the highway program for the District also falls into three parts, according to the Franklin article, stemming from views that hold:

- The freeway planning is disruptive to the quality of life in the city and inadequate for the traffic it would serve.
- Open to question is the assumption that the 9-to-1 federal-to-local financing ratio in the interstate

highway program impells continuation of highway construction in the face of less and less downtown mobility and parking. There may be alternatives, and one of them is rail mass transit.

• In any event, if freeways are to be built something should be done to preserve the well-being of affected neighborhoods.

**An Overlooked Argument:** "We are repeatedly told," Kluczynski told the contractors, "that urban highways eat up valuable land in the inner city that could otherwise be used for housing or business property and for maintaining the tax rolls. This argument, of course, overlooks the fact that if people don't have convenient access to the central city, they're not going to bother coming, and the business is going to move out and take its taxes with it to some other area."

Implicit in that statement is the opposition of downtown vested interests to balanced or complete transportation systems. So the resistance also divides into three—the highwaymen, the automotive and related industries, and the downtown interests anxious for those lanes to suburban affluence.

## Construction Begins Soon On Expo '70 Pavilions

The sites for individual pavilions for Japan's Expo '70 are scheduled to be ready next month for the start of construction. One firm of planners, architects, engineers and builders will begin the erection of four pavilions.

This is the Takenaka Komuten Co., Ltd., sometimes package dealer, depending on the set of circumstances. Two of the pavilions have been designed by Takenaka Komuten, while the others were designed by independent architectural offices.

The 1970 world exhibition will be situated in the Senri Hills near Osaka. Site preparation has been in progress for a year according to a master plan developed by Kenzo Tange.

Takenaka Komuten will erect pavilions for the Japan Iron and Steel Federation, the Federation of Electric Power Companies, the Takara Chair group and the Wacoal Lingerie and Riccar Sewing Machine companies.

Kunio Maekawa & Associates  
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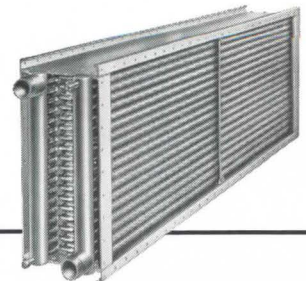


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Cell of new Lo-Brite 55° Shielding Louver (l.) is smaller than conventional louver cell (r.) with 45° shielding. Greater number of smaller cells means better light diffusion; higher ratio of cell depth to width gives better control of brightness.

Want to see a sample? Simple. Write American Louver Company, 7700 Austin St., Skokie, Ill. 60076.

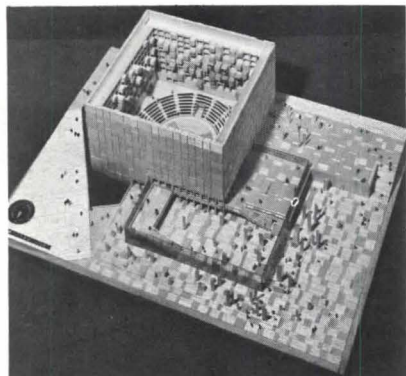
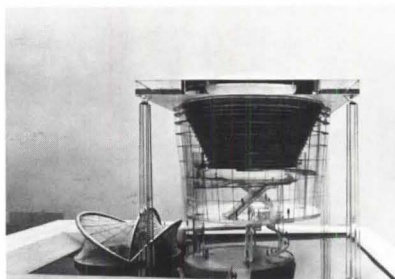
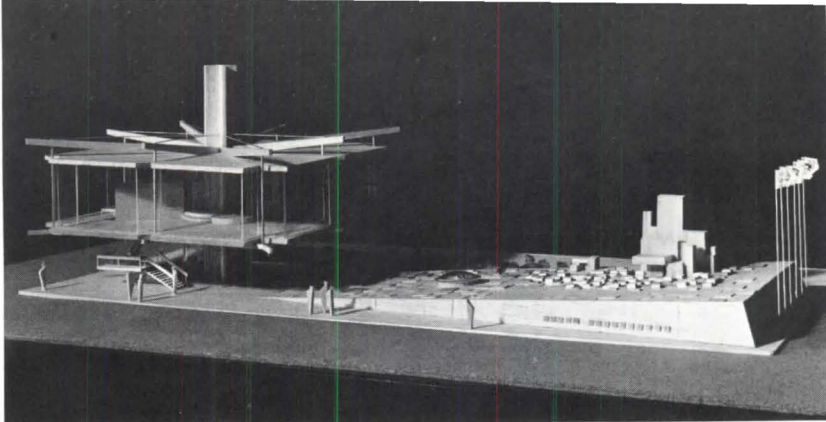
The LO-BRITE 55° LOUVER by  
**American Louver Company**

Newslines from page 26

and Junzo Sakaçura & Associates and Yutaka Murata designed the Iron and Steel and Electric Power pavilions, respectively.

More than 23 foreign governments have already agreed to participate in the fair, and several of the foreign participants are said to be negotiating with Takenaka Komuten for pavilion construction.

Right, from top, the pavilions of the Federation of Electric Power Companies, Wacoal Riccar and the Takara group's "Beautflion." Below, the Iron and Steel Federation of Japan entry.



## Practice Census Report To Be Made Late in Year

The results of a US census involving architectural firms will be published in a series of reports to begin appearing late this year, according to the Bureau of Census.

Architectural and engineering firms are new to the census—the bureau's regular business canvass involving retail, wholesale and service trades along with manufacturing and mining industries.

Architectural firms included in the survey had until April 30 to return completed questionnaires dealing with their 1967 practice. Completion of the forms is required by an Act of Congress.

The bureau said the forms were  
*Continued on page 36*

## HAVE YOU SEEN NEW VPI SOLID VINYL WALL BASE?

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51-186



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### 3 Everybody knows laminated wood beams go great in churches, fine homes, schools and lodges. But who would select them for an industrial plant?

Over the years we've kept close tabs on the types of structures using Koppers laminated wood beams. Their application in industrial buildings started out as a trickle, but now it's a steady flow. Among the earliest uses were large

A-frame warehouses for bulk fertilizer storage, where severe corrosion all but ruled out other structural materials. Lately, designers have solved some tricky problems by using laminated wood in processing plants where humid and corrosive atmospheres make it an economical choice.

The United States Forest Products Laboratory in Madison, Wisconsin, was on to this trend early. Their four-story, 460-foot by 60-foot pilot plant building houses various chemical testing and experimental facilities for wood research, along with an 80-foot-long paper-making line. It's about as humid

and corrosive an atmosphere as can be imagined for an industrial plant. The structural members: 24 laminated wood arches, eleven of them two stories high and the remainder one story high. The larger arches each contain 10,600 board feet of lumber and weigh about 20,000 pounds. All told, 186,000 board feet went into the 24 arches . . . all made by Koppers.

The secondary framework of roof purlins and wall girts is also made from laminated wood. For a thorough run-down on the potential of laminated wood for industrial construction, please check the coupon.



### 4 Coal tar enamels will protect the country's largest crude oil pipeline.

It's called Capline, a 40-inch diameter line scheduled for completion by the Shell Pipe Line Corporation in mid-1968. It will run more than 635 miles from the Gulf Coast in Louisiana to a distribution terminal in Southern Illinois. The system will initially carry 400,000 barrels of crude oil per day, with an ultimate capacity of 1,000,000 barrels per day.

Engineers: Hill Engineering, Inc.  
Houston, Texas

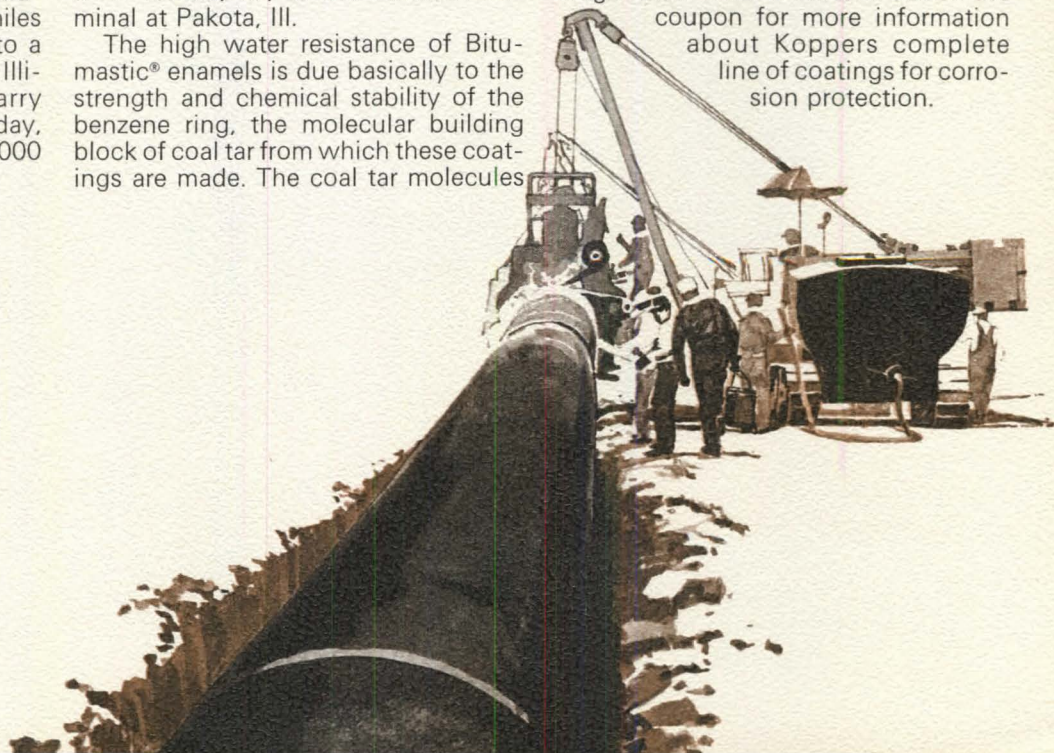
More than 250,000 tons of steel will go into the line, in 40-foot pipe lengths with wall thicknesses of 0.312, 0.344, and 0.375 inch.

Koppers hot-applied coal tar enamels protect initial phases of the project . . . a 55-mile stretch from Donaldson, La., to Liberty, Miss., and a 90-mile section from Vienna, Ill., to the northern terminal at Pakota, Ill.

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CORROSION PROTECTION FOR STEEL	X	X														
CORROSION PROTECTION—CONCRETE & MASONRY	X	X		X												
PROTECTION OF ASPHALT PAVEMENT						X										
INSULATION													X			
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FIRE PROTECTION FOR WOOD								X		X						
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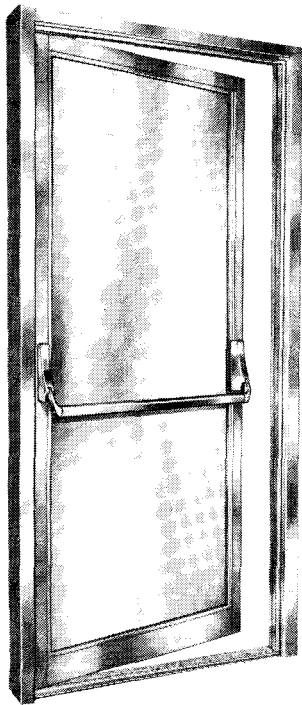
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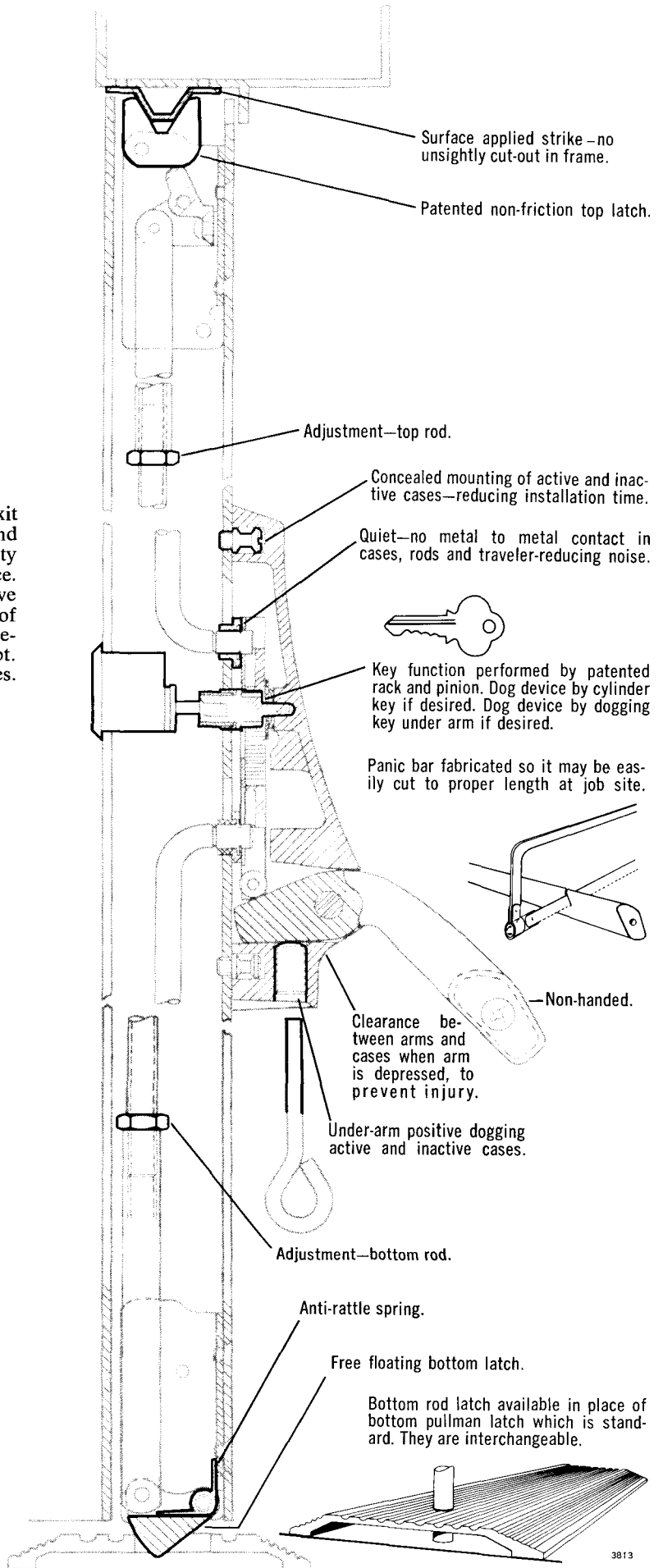


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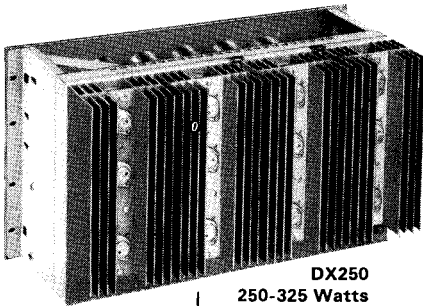


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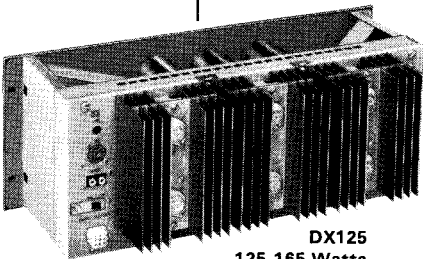
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Newslines from page 28

sent to the larger offices and a "scientifically selected" sample of smaller firms (having employees).

Data for architectural and engineering firms will be published in a separate report containing summary information for the US as a whole, for the states and for standard metropolitan statistical areas, the bureau said.

The census will provide firms with a composite picture of the profession, reported the bureau, adding that "statistical totals derived from the census will be used extensively by decision makers in the architectural and engineering fields, and by researchers and officials at all levels of government and business."

### Steve Oles' Drawing Wins Prize for Best Rendering

The Architectural League of New York has awarded its annual Birch Burdette Long Memorial Prize for Architectural Rendering to Paul Stevenson (Steve) Oles Jr.

Oles' pencil drawing of a theater in the round of his own design, won him the jury-awarded prize.

The prize is given for "excellence in composition, facility in technique, and expression of the character of the design illustrated."

Oles received a Bachelor of Architecture degree from Texas Technological College in 1960 and a Master of Architecture degree from Yale University in 1963.

A Watertown, Mass., resident, he is with Edward Diehl Associates.

### New Venture Will Focus On Low-Cost Housing; Klutznick Is Chairman

With its chairman, Philip M. Klutznick, declaring that private enterprise must "do things that are not profitable if we expect to save the core of society," a new Chicago-based firm has been organized through the consolidation of four major realty and investment companies to emphasize housing for low-income families.

Urban Investment and Development Co., which Klutznick called "one of the nation's largest firms of its kind," was formed through the purchase of Old Orchard Business District; Oakbrook Terrace, Inc.; Inland Construction Co.; KLC Venture, Ltd.; and its homebuilding division, United Development Co.

Klutznick, a contributor to the January 1967 AIA JOURNAL devoted to housing, headed the company that produced Park Forest, winner of an AIA postwar award for best community development in Illinois and surrounding area.

A former commissioner of the Federal Public Housing Authority in the Roosevelt Administration, the UIDC chairman also served by appointment of President Kennedy as US representative to the Economic and Social Council of the United Nations, holding the rank of ambassador.

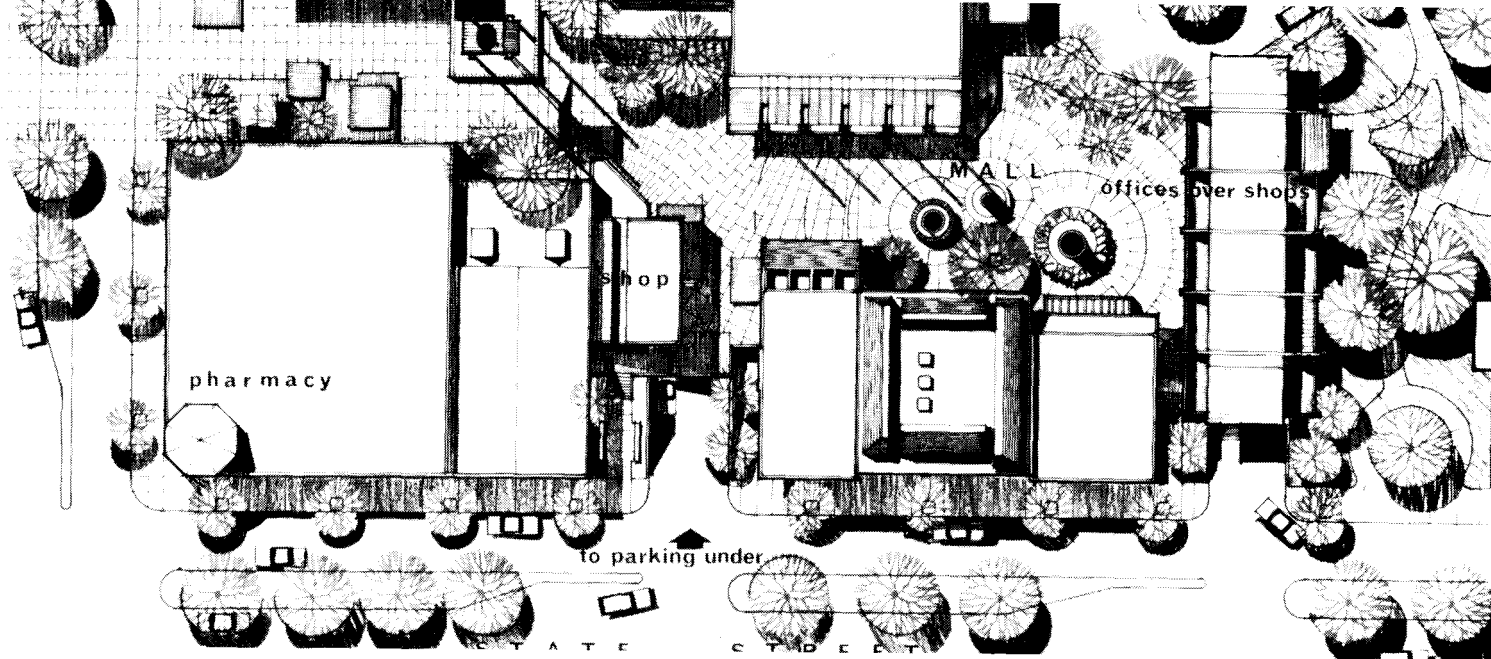
Among UIDC's seven directors is Jerrold Loeb, partner in the Chicago architectural firm of Loeb Schlossman Bennett & Dart. Klutznick made it clear that Loeb is serving on the board as would any

*Continued on page 38*

Pencil drawing of a theater in the round designed by the award winner.



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*profit incentive* and a coordinated plan of action involving local architects, businessmen, civic groups and public officials. In this manner—by showing the entire community how they will *all* benefit from a properly co-ordinated Urban Projection Program—the profit incentive actually helps communities develop sensibly and reduces the probabilities of slum, tenements and ghetto areas.

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One of a series presented by members of the Forest Products Promotion Council.

other individual and that his firm has no organizational tie with U IDC.

Klutznick told a Chicago press conference that "I believe our country has entered a new era which maintains that, as part of our national purpose, the uneconomic market must not go untreated."

**Offers Management Services:** U IDC is prepared to engage in national-private partnerships, he explained, adding that the firm

will handle entire programs including community facilities. "It is not enough to build low-cost housing; we must also offer management services."

At the same time, U IDC will continue a program of diversified realty ventures, Klutznick explained. The new firm owns three large shopping centers, all in the Chicago area — Old Orchard, Oakbrook Center and River Oaks.

While U IDC will pay special attention to Chicago potentials, it is at present examining expansion of its activities in other cities and

currently has two projects under development in the West.

Montbello, a 3,000-acre city-within-a-city in Denver, is expected to have a population of 50,000 within the next 10 years. Also underway is University Village in Santa Barbara, Calif.

Construction will begin soon on Lakeview Towers, a 500-unit, twin-tower apartment complex in Chicago's uptown renewal area.

**A Fruitless Exercise:** As for rehabilitation, Klutznick admitted that U IDC directors are not convinced they know how to do the kind of job they believe is necessary. "Isolated rehab," he declared, "is a fruitless exercise that converts itself into a painted-up slum months later."

Asked for his views on prefabrication, Klutznick called the process "an art to attack the wall, which is only a small part of the total cost." He added that product-oriented research will be more effective in terms of amenities rather than costs.

Klutznick will have occasion to draw on U IDC's early experiences when he addresses the Fourth Triennial Congress on the International Council for Building Research and Documentation in Washington, D.C., in October. His subject: "Housing for a Market."

### 'Hidden' Lines Are Erased From Computer Graphics

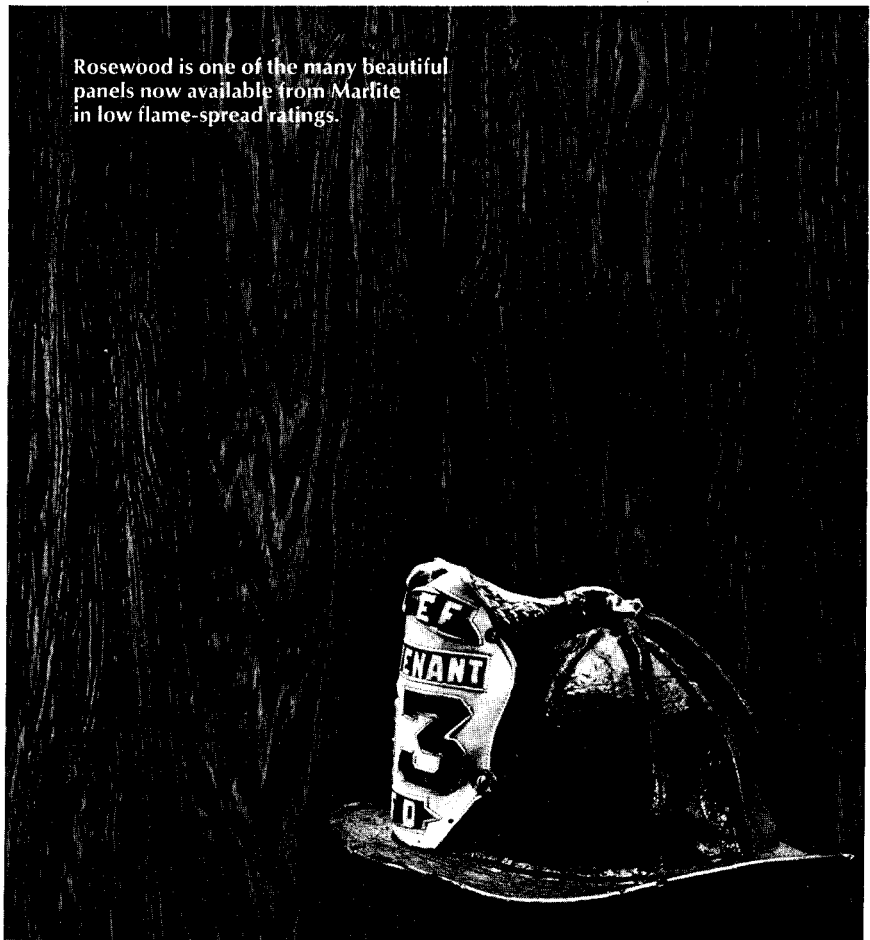
The "hidden line" problem in computer graphics reportedly has been solved.

The problem was to eliminate lines not visible from a specified vantage point in programming a computer to generate perspective drawings of three-dimensional objects.

Worked out by a graduate student in electrical engineering at New York University's School of Engineering and Science, the solution is said to be an efficient procedure that enables a computer in just seconds to generate line drawings of any polyhedron with the "hidden lines" either deleted or shown by dashes.

The author of the mathematical solution is Phillipe Loutrel of Paris. His work, said his adviser, Prof. Herbert Freeman, constitutes a "major" and "elegant" improvement over earlier procedures that rely more on "brute force."

"I don't expect much improvement on Mr. Loutrel's technique for some time to come," Freeman said. *Continued on page 40*



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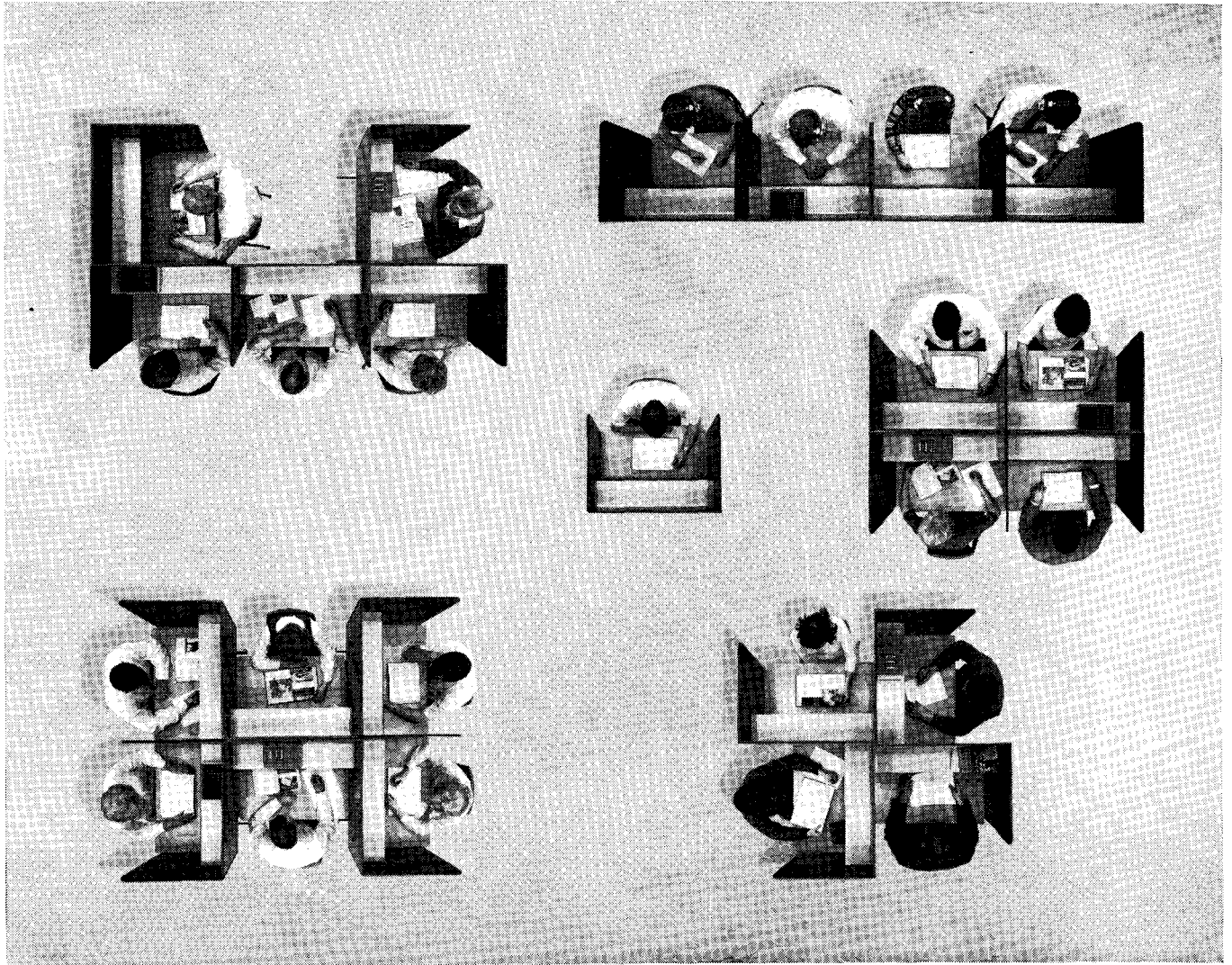
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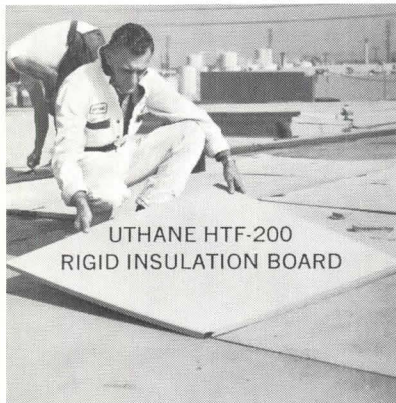
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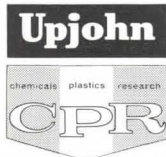
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Newslines from page 38

Until Loutrel's development, the drawings of architects, engineers and designers using computer graphics to visualize, alter and manipulate perspectives have been cluttered and confused by lines representing "hidden" back edges that should not be seen.

### Litter Scheme Would Inter Auto Bodies in Concrete

A concrete building block with a core of compressed metal? Better? Cheaper?

Not the point. The blocks were developed as a solution to the junked auto problem.

Under the Solid Disposal Act of 1965, the US Bureau of Mines awarded a contract to Korbblock Corp., Hornell, N. Y., engineering firm, to build prototype blocks and test them on Lehigh University's seven-story tension-compression machine.

Announcements of the results were made by both the bureau and the university. Neither made any price comparison with ordinary blocks. Both said the metal-core blocks are "about as strong" as solid masonry, and both laid the emphasis on riddance of junked car bodies although they did take note of weight and insulation advantages.

The project represents one of several approaches taken by the bureau toward solving the scrap car litter.

To produce the blocks, car bodies are burned to rid them of flammable material such as upholstery. The remaining scrap metal is cut into sections, compressed, and encased on all sides with 2 inches of concrete which is steam-cured, using the heat from the burning process. The scrap metal accounts for more than half the volume of the block.

Korbblock said that several builders have indicated an interest in the scrap-cored units and that plans are underway for a pilot plant to produce the blocks.

### Only Workable Laboratory Held to Be the City Itself

Today's urban problems urgently need innovative solutions—and the only workable laboratory for testing new solutions is the city itself.

So said a trio of specialists in

urban affairs at the annual meeting of the American Association for the Advancement of Science, held last December in New York.

Drs. W. L. Garrison, E. N. Thomas and Joseph Schofer—all on the staff of the Center for Urban Studies of the University of Illinois (Chicago Circle)—prepared the arguments; Schofer presented them to the AAAS.

Referring to the process of creating a city as "settlement systems development," Schofer said that improved transportation and communications systems have speeded up the adoption of problem solving techniques, but that the traditional techniques are not necessarily the best ones. As a result, all planned communities are getting to be pretty much alike, and they don't always turn out as well as they should.

Rejecting the modeling and simulation techniques used by planners to predict the effects of alternative solutions, Schofer said that such models generally fail to take into account public reaction to urban changes.

"Using models to predict the impact of radically-different projects is risky," he explained. "It requires extrapolation beyond our current knowledge of behavior patterns."

Schofer admitted that the recommended approach—experimenting with solutions in an actual urban environment—has its own risks. "At first it may seem to be a gambler's approach," he said, "because in any experimental endeavor you must accept the risk of failure. We must remember that the risks are considerable in not developing innovative systems which might result in significant improvements in the quality of urban life in the future. The potential payoffs may far outweigh the risks of an experimental program."

### Pittsburgh Architects Give Free Restoration Counsel

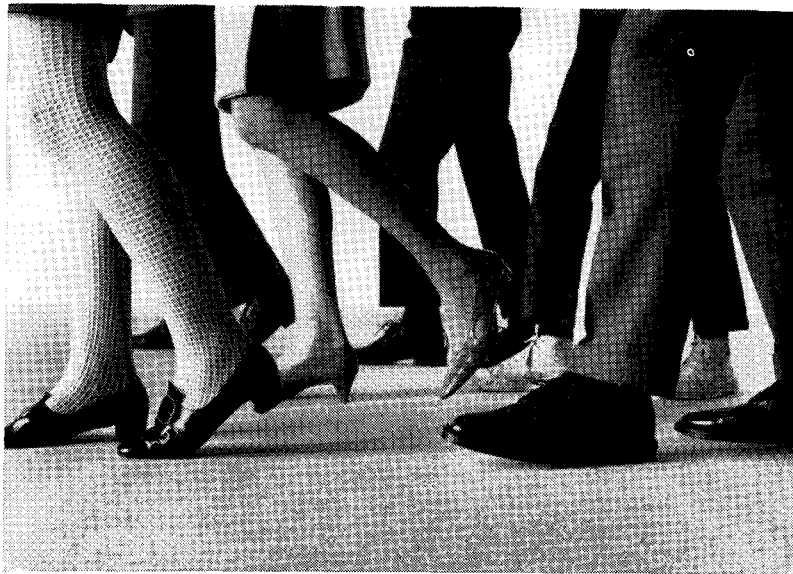
The Pittsburgh Chapter AIA is giving free counseling service to shopkeepers and residents of two Pittsburgh areas at the request of the city's History and Landmarks Foundation.

The foundation is developing renewal-through-restoration programs in the two areas, the Central North Side and the South Side.

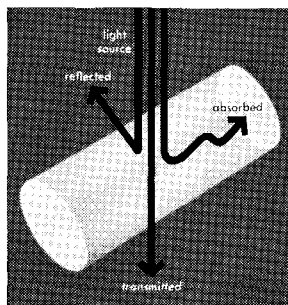
On the North Side, it has charted out a historic restoration district and is, under a Sarah Mellon Scaife

Continued on page 42

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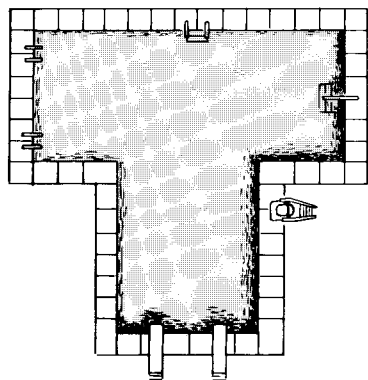
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**Newslines from page 40**

Foundation grant, which established a revolving fund for restoration, buying and restoring housing of architectural value.

On the South Side, the Landmarks group has developed a comprehensive renewal program for the area between 10th and 28th Streets. It is working closely with the South Side Chamber of Commerce and the city's department of planning.

The North Side restoration activity is being extended through the newly formed North Side Housing Improvement Group and the local AIA Chapter. Anyone living in the area who wants to refurbish his house can obtain free architectural counseling.

The South Side area consists of hundreds of small houses of high architectural quality — dating from 1860 to 1900 — along with an 18-block business district. The business area is said to have a restoration potential as a late 19th century shopping setting.

The chapter said it joined in both programs in order to give architectural knowledge and authority to the undertakings.

Architects from the chapter volunteer to meet with property owners and offer verbal advice about the architectural character of their buildings and how this can be restored and enhanced. If working drawings are required, the chapter gives the owner a list of architects from which to make a selection for professional service on a fee basis.

"Architects must get into this kind of work," said the chapter's president, Louis F. Valentour Jr. Valentour himself has taken on a full block of commercial frontage.

The chapter's Public Service Committee chairman, G. Thomas Williams, said the Pittsburgh architects are finding the work "different, stimulating and rewarding."

**Builder Gerholz Selected For Fitzpatrick Award**

Robert P. Gerholz, president of Gerholz Community Homes, Inc., of Flint, Mich., has been named the 1968 F. Stuart Fitzpatrick Memorial Award recipient.

The award is given for individual national achievement in the unification of the construction industry. Leon Chatelain Jr., FAIA, a past president of the AIA, was last year's recipient.

The award was established in

1960 in memory of F. Stuart Fitzpatrick who, as manager of the Construction and Civic Development Department of the US Chamber of Commerce, worked toward giving the construction industry a unified and strong voice.

Gerholz is a past president of the national Chamber of Commerce, the National Association of Home Builders and the National Association of Real Estate Boards.

The award is sponsored by five organizations: The American Institute of Architects; Associated General Contractors of America; National Association of Home Builders; Producers' Council, Inc.; and Building Research Institute.

**Index to Design Articles Of 1967 Now Available**

The *Architectural Index*, a guide to articles carried by the AIA JOURNAL and eight other publications during 1967, is now available.

The publications cover architecture, engineering, homebuilding, interiors and landscape topics. Entries are cross-indexed under location, general building type and architect or designer.

Copies of the 1967 *Index* are available from its editor-publisher, Ervin J. Bell, AIA, P. O. Box 2399, Norman, Okla. 73069, at \$6 a copy. Back issues for 1965 and 1966 are also available at \$6 each.

**Defunct Service Stations To Be Razed by Oil Firm**

The American Oil Co. says that when it gives up on a service station that station will come down.

Unless, said William H. Miller of Chicago, a company vice president, another use for the building is found that is "acceptable and pleasing to the neighborhood."

Where facilities are leased from other landlords, negotiations will be undertaken as soon as possible to provide for company disposal of buildings and other improvements when the lease is terminated.

"We recognize that a program of tearing down buildings, removing pumps and pump islands, and in some cases ripping out driveways, is going to cost a good deal of money," Miller said. "But we believe that in the long run—and not too long a run, at that—the benefits of improved image and greater respect will mean greater opportunities for us."

Continued on page 48



# Congregation Replaces Original Chapel With All-Electric Church



Seventy-foot steeple tower, spotlighted at night, landmarks Methodist Church at Abingdon, Virginia.

**THE CASE**—When the congregation of Baker's Methodist Chapel at Abingdon, Virginia, outgrew the building that had served it for over 100 years, Beeson & Beeson, architectural and engineering firm of Abingdon, Virginia, and Johnson City, Tennessee, was asked to select a site and design a new church plant for 200 adults and 100 Sunday school pupils. The congregation also requested a modern heating system that would be economical to own and operate and simple to maintain.

**THE HISTORY**—Architect Charles R. Day's choice of site on RFD 2 proved so appealing the congregation adopted a new name—Pleasant View Methodist Church—for the distinctive building opened in January, 1963. Constructed of off-white brick trimmed with dark wood, the new chapel has a steeply pitched white asphalt shingle roof and slender belfry. Colored glass graces the nave and chancel. The narthex extends 55 feet from the

main entrance to the chapel.

The slope of the building site places about three-quarters of the 41 ft by 50 ft fellowship hall and adjoining kitchen and storage rooms underground. The classrooms, pastor's study and fellowship hall all have separate entrances.

A feasibility study by Beeson & Beeson favored electric heat over a central flame-fuel system because of lower construction costs (no boiler room, less space for equipment); esthetic design advantages (no protruding chimneys or flues); and reduced maintenance (the all-electric system requires no operating attendant, even though the building is used intermittently).

In the nave and chancel only, both heating and cooling are provided by self-contained, through-the-wall units. The classroom wing, fellowship hall and pastor's study are heated by electric cabinet convectors. Recessed fan-type heating units are wall-mounted near entrances and in the hallway.

**1 CATEGORY OF STRUCTURE:**  
Religious—Church and Sunday School

**2 GENERAL DESCRIPTION:**  
Area: 11,500 sq ft  
Volume: 130,000 cu ft  
Number of floors: one and a partial basement  
Number of occupants: 300  
Number of rooms: 14  
Types of rooms: nave, fellowship hall, pastor's study, choir room, narthex, nine classrooms

**3 CONSTRUCTION DETAILS:**  
Glass: single  
Exterior walls: 4" face brick, 1" cavity, 8" concrete block with masonry fill. U-factor: 0.15  
Roof or ceilings: asphalt shingles on 3" wood deck; built-up roof on concrete deck. U-factor: 0.18 (avg.)  
Floors: concrete, perimeter insulation  
Gross exposed wall area: 4,485 sq ft  
Glass area: 1,260 sq ft

**4 ENVIRONMENTAL DESIGN CONDITIONS:**  
**Heating:**  
Heat loss Btuh: 422,000  
Normal degree days: 4,700  
Ventilation requirements: 2,000 cfm  
Design conditions: 0°F outdoors; 75F indoors  
**Cooling:** (nave and chancel only)  
Heat gain Btuh: 162,000  
Ventilation requirements: 2,000 cfm  
Design conditions: 95F dbt, 78F wbt outdoors; 80F, 50% rh indoors

**5 LIGHTING:**  
Levels in footcandles: 30-70  
Levels in watts/sq ft: 1-3  
Type: fluorescent and incandescent

**6 HEATING AND COOLING SYSTEM:**  
The nave and chancel are conditioned throughout the year by through-the-wall electric heating-cooling units. Cabinet convectors are used in the classrooms, study and fellowship hall and recessed fan-type heating units are wall mounted near the entrances and in the hall.

**7 ELECTRICAL SERVICE:**  
Type: overhead  
Voltage: 120/240v, 3 phase, 4 wire  
Metering: secondary

**8 CONNECTED LOADS:**

Heating & Cooling (12 tons)	166 kw
Lighting (Incl. Floodlights)	40 kw
Water Heating	9 kw
Cooking	18 kw
Other	10 kw
TOTAL	243 kw

**9 INSTALLED COST:\***

General Work	\$ 83,896	\$7.29/sq ft
Plumbing	5,728	.49/sq ft
Electrical	11,657	1.01/sq ft
Heating & Cooling	6,700	.58/sq ft
TOTALS	\$107,981	\$9.37/sq ft

\*Building was completed 1/63

**10 HOURS AND METHODS OF OPERATION:**  
The building is occupied approximately 5 hours on Sundays, daily by the pastor, and about three hours per week for choir practice and evening meetings.

**11 OPERATING COST:**  
Period: 1/6/67 to 1/8/68  
Actual degree days: 4814  
Actual kwh: 56,844\*  
Actual amount: \$850.86\*  
Avg. cost per kwh: 1.5 cents\*  
\*For total electrical usage

Billing Date	Degree Days	Demand	kwh	Amount
2/6/67	1133	160	11,280	\$159.36
3/7/67	603	70	5,880	91.20
4/5/67	404	40	3,600	57.00
5/8/67	155	40	2,760	44.40
6/6/67	163	15	720	13.80
7/7/67	34	15	720	13.80
8/8/67	13	15	720	13.80
9/7/67	18	15	684	15.42
10/9/67	75	40	2,040	33.60
11/7/67	232	70	5,400	84.00
12/7/67	690	120	7,600	139.20
1/8/68	1294	160	13,440	185.28
TOTALS	4814		56,844	\$850.86

**12 FEATURES:**  
Church heating and cooling is controlled by a seven-day program clock which operates in conjunction with built-in thermostats and relays in each heating unit. Wintertime set-back temperature during unoccupied periods is 55F. Bypass relays permit the heating of any selected area at any time.

**13 REASONS FOR INSTALLING ELECTRIC HEAT:**  
The first cost of the electric system was lower than that of a central flame-fuel system with the same degree of control flexibility. Additional features of the electric system that favored its selection were: safety, cleanliness, simplicity of operation, and its characteristic low maintenance.

**14 PERSONNEL:**  
Owner: Pleasant View Methodist Church  
Architects and Engineers: Beeson & Beeson  
General Contractor: Johnson Brothers  
Electrical Contractor: O. M. Kelly  
Utility: Appalachian Power Company

**15 PREPARED BY:**  
James M. Cole, Power Sales Engineer, Appalachian Power Company.

**16 VERIFIED BY:**

*Charles R. Day*

Charles R. Day, Architect

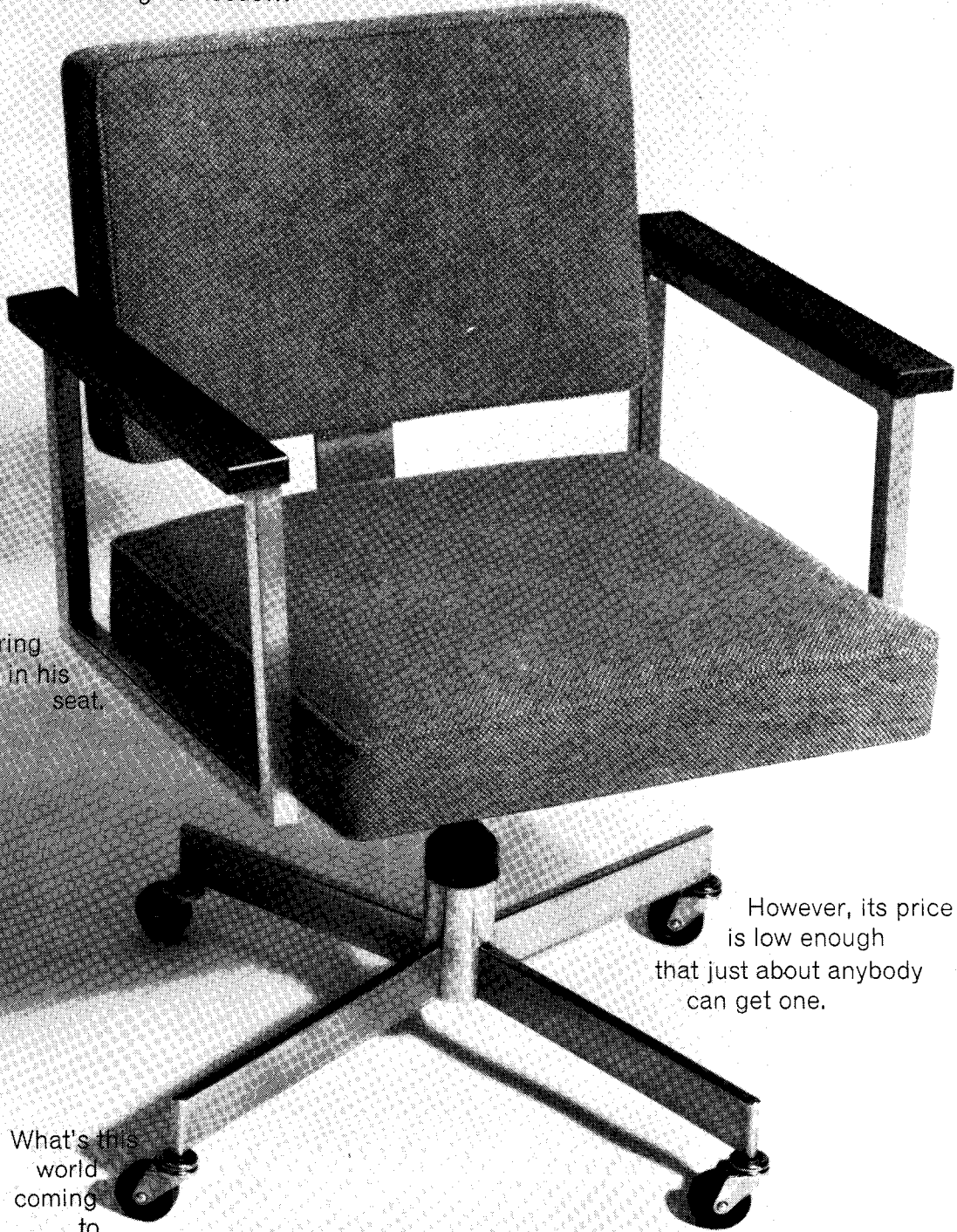


**NOTICE:** This is one of a series of case histories of buildings in all structural categories. If you are an architect or consulting engineer; an architectural or engineering student; an educator; a government employee in the structural field; a builder or owner, you may receive the complete series free by filling out the strip coupon at the left and mailing it to EHA. If you are not in one of the above categories, you may receive the series at nominal cost.

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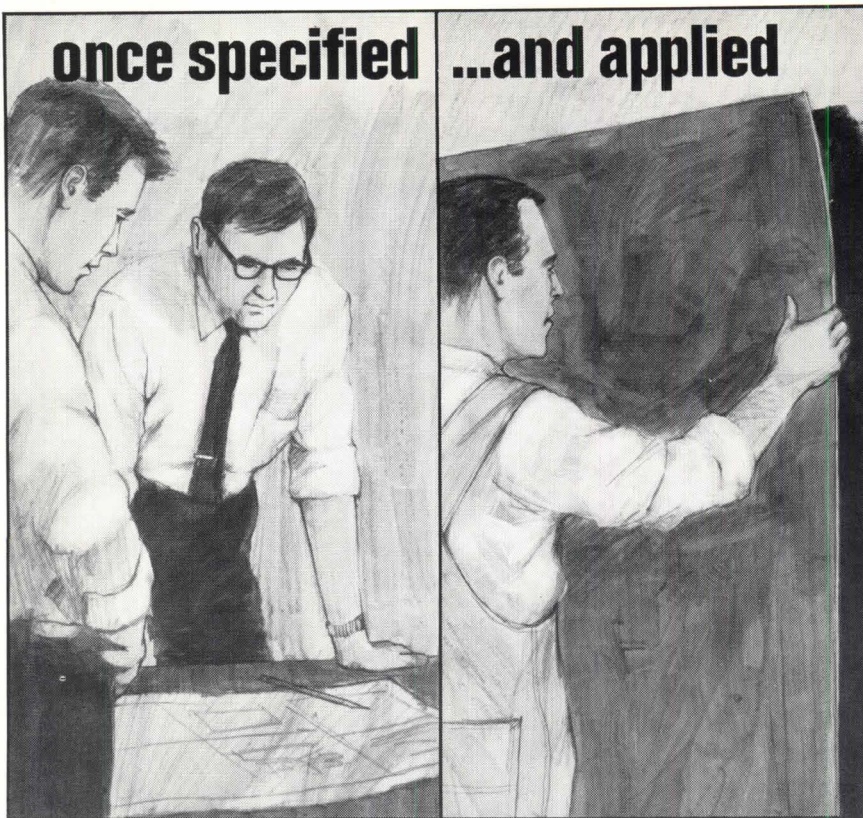
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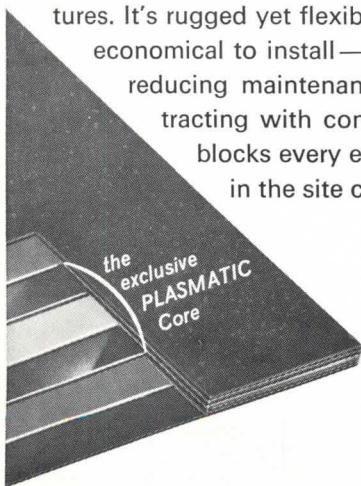




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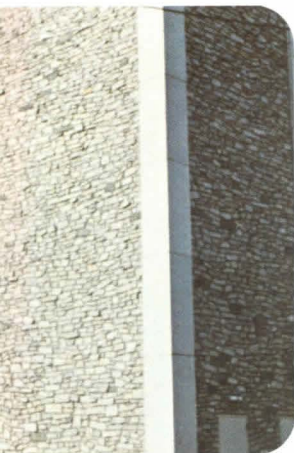
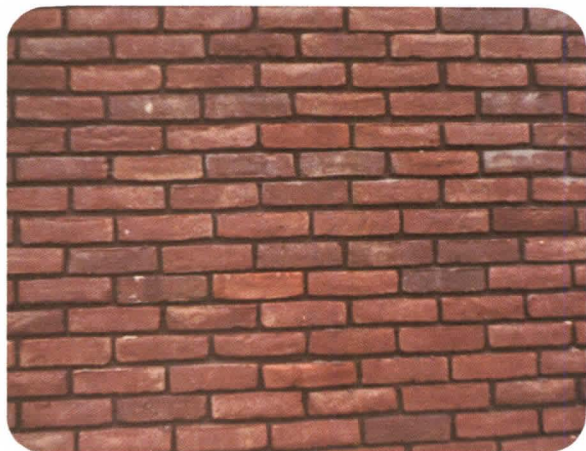
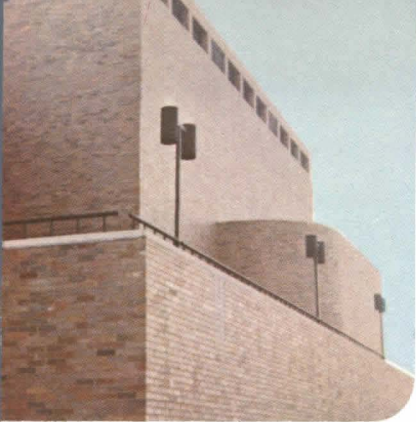
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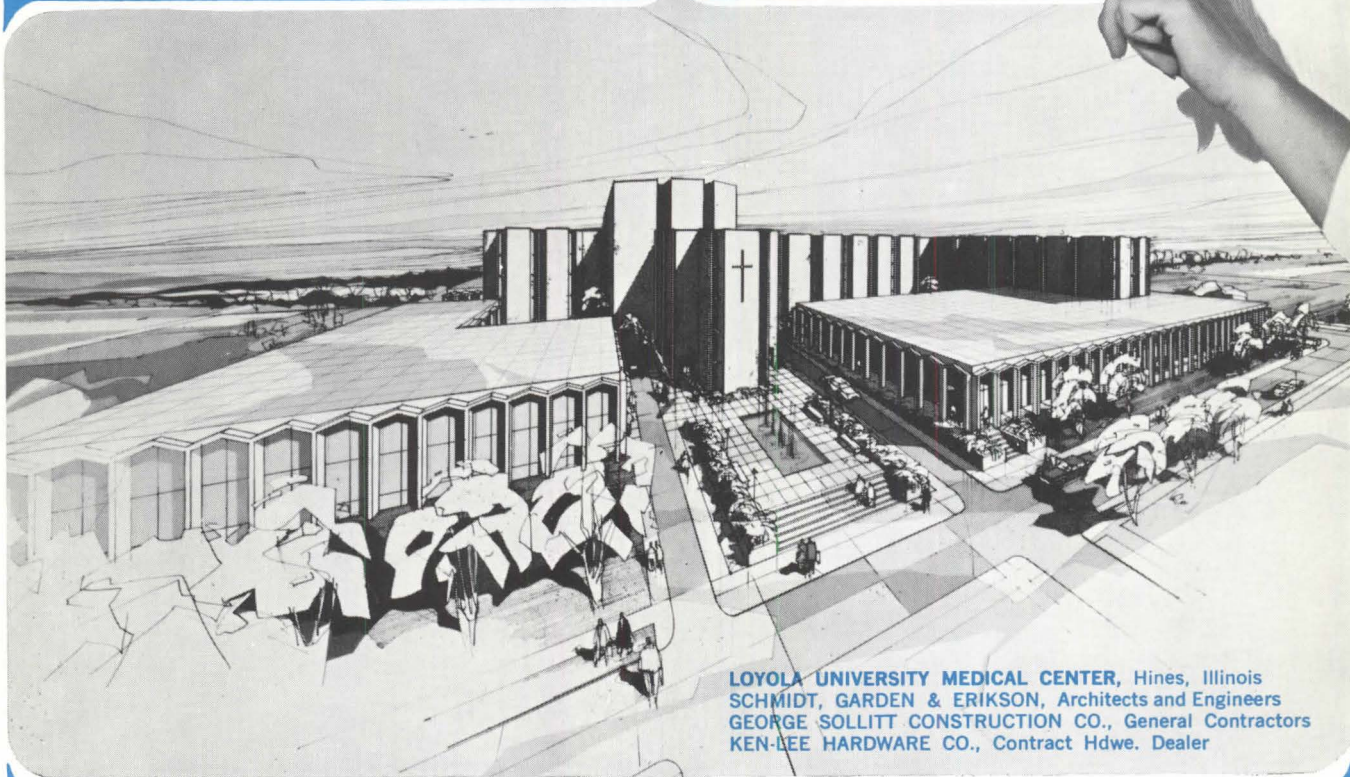
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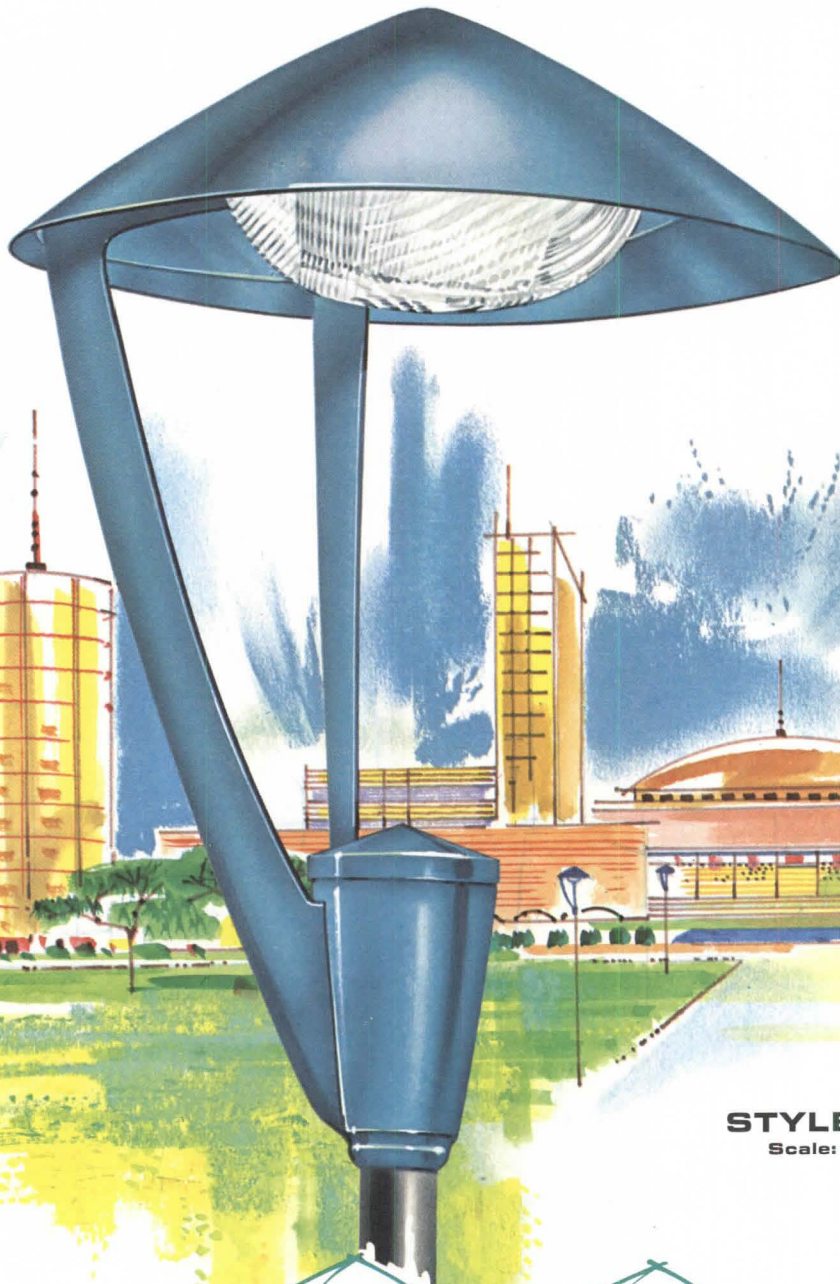
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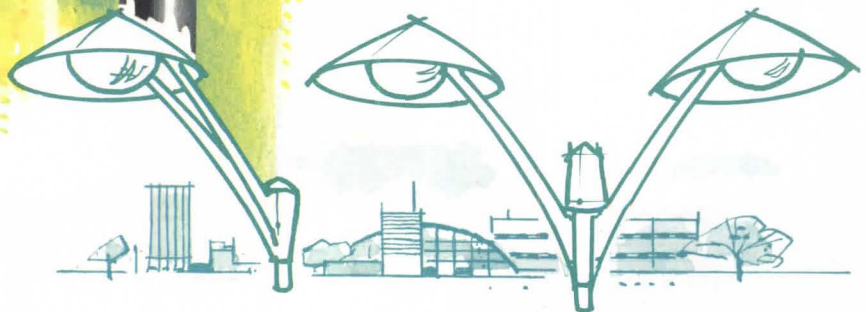
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IDEAS IN OUTDOOR LIGHTING

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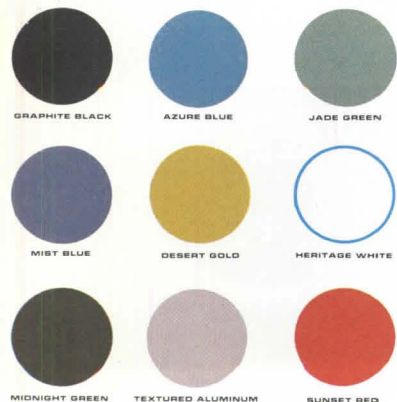


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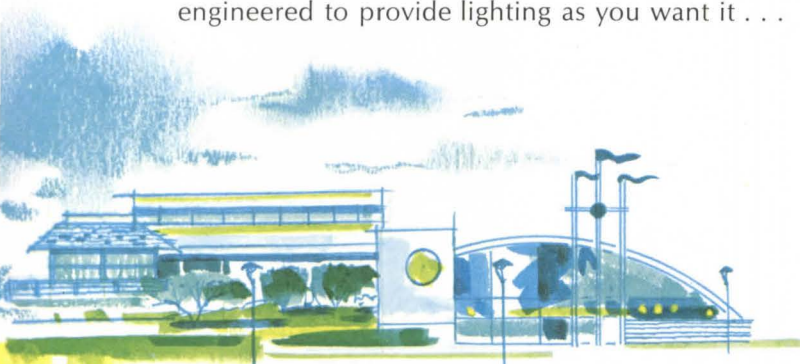
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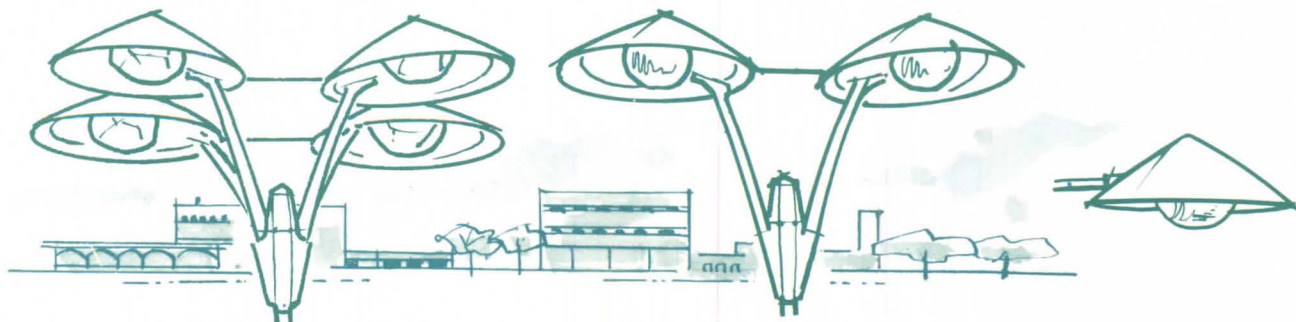
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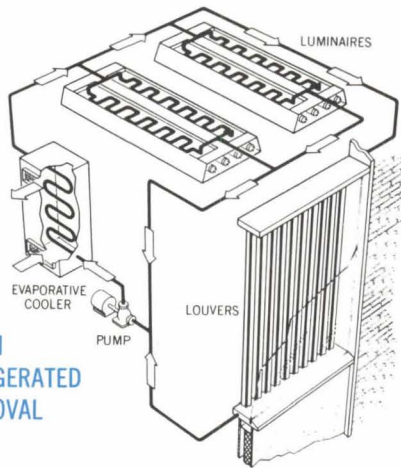
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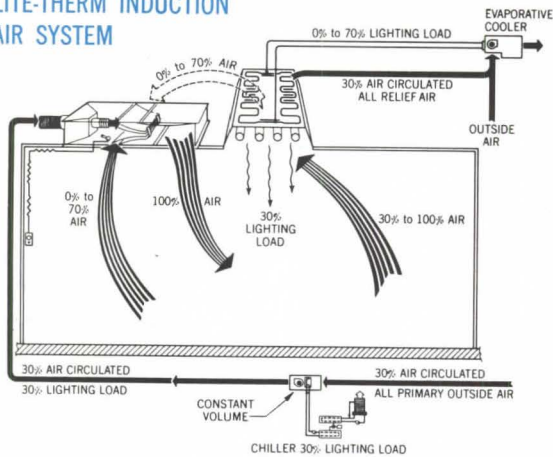
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Executive Director

# Milestone for Professional Vitality

As far as I know, the first published praise of AIA's educational research report ("Princeton Report") was in the March 14 *Engineering News-Record*. Editor-engineer Arthur Fox said, "[the Princeton Report] is of potentially far more importance for the construction industry than 'Goals for Engineering Education.'"

The engineering education study, funded by a \$300,000 grant from the National Science Foundation, covered all fields of engineering, many of which are not concerned with construction.

The Princeton Report is now having wide circulation in educational and professional circles, in its original form and in edited versions that translate research phraseology into layman's language. The Institute's leaders devoutly hope that both attain "best seller" status of readership throughout the design professions.

Already, as this is written, a kind of debate has developed around the report which I would like summarily to extinguish as a side issue. It goes like this: How come the Princeton Report is all about environmental design and the education of professionals in environmental design? How come the words "architect" and "architecture" are used so sparingly in the report? Why would the AIA sponsor such a study?

One implication is that the AIA might have wasted its money on so broad a study.

Far from it! Who is most vigorously espousing the idea of design concept teams? The AIA. Who is most energetically analyzing the creative process for environment? The AIA. Who is in the forefront in studying the future of building and its multiplying complexities? The AIA! This, my fellow architects, is leadership with a capital L. Leadership by action and example, rather than by assertion. Leadership that will keep architecture spelled with a capital A.

Our concern for the future of the profession has expanded into our concern for the future of the cre-

ative process for environment. Our concern for the future, now permeating everything AIA does, began with our concern for the future of architectural education which took tangible form in the Princeton Educational Research Project.

We can look with pride upon the result because we permitted it to be true research. We selected the researchers for their competence, gave them a broad directive and stood aside to ensure objectivity.

The result is "a working process for change" for professional education that can produce not only a more capable breed of architects but also their teammates in the design disciplines who are indispensable in the realization of 21st century physical environment.

Note the words "professional education." Right now—not waiting for the next generation—we have before us a dramatic set of developments that are testing our concepts of professionalism. With the engineers we are fighting a government agency's idea to require architects and engineers to bid for professional contracts. We debate the multifaceted potentials in another agency's idea for turnkey housing projects. An architectural firm merges with a diversified corporation to create a capability for total management of large-scale projects.

In England questions are being raised about professionalism in general and including architectural "professionalism" in particular. In that nation, outsiders are accusing the professional societies of adhering to outmoded concepts of ethics which they first conceived in the Victorian era to protect the members of "gentlemen's clubs" from each other and their practice from the intrusion of outsiders.

The AIA Board of Directors is keenly aware of all of these things. Its members realize that forces for change in the socio-economic climate of these times cannot be ignored, wished away nor legislated against for the purpose of preserving practice as it is today. They have boiled down the analysis of

the creative building process to "the 3 D's"—decisions, design, delivery. The last D—delivery—raises most of the questions regarding the architect's participation because it encompasses construction, which involves contracting.

Under assignment by the board, several of its members are examining new concepts of practice against classic concepts of ethics. The goal is neither compromise nor accommodation.

There is no intent to sacrifice or water down professionalism. Rather the objective is to separate the basic fundamentals of professionalism from any ivy that has sprouted and climbed over its foundations from Victorian roots.

Years ago the "professions" included law, medicine and the clergy. The practitioners, after special education, performed highly personalized services, in a spirit of putting first the interests of the persons served, and the public. Their ideas forbade conflict of interest.

Is there anything now that changes this old concept? Can the professional relationship of personal and mutual confidence and trust exist between architect and client regardless of the magnitude of the project or the complications of related business matters?

I think it can if:

- The architect will put his client's interests ahead of everything except the interests of the public.
- The architect will not involve himself with matters that would create any conflict of interest for him with the interests of his client or the public.
- The architect truly represents his capabilities to perform the services for which he is employed.

All else is window dressing.

We are going to need all the help we can get from our brothers in the other design professions to keep professionalism immune from attack and at the same time do the biggest job ever in environmental design.

Implementation of the Princeton Project will be a mighty boost for professional teamwork. □



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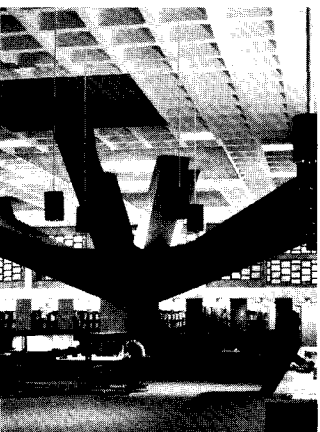
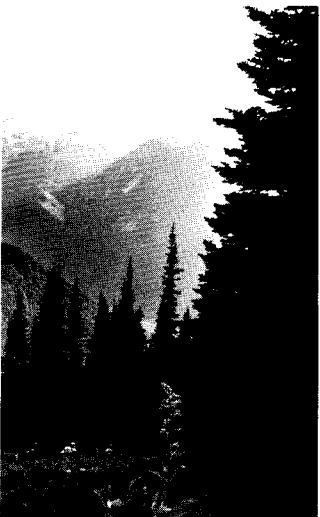
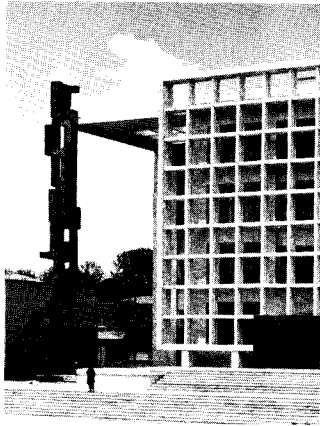
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# ART IN

**Westland Center**  
Westland, Michigan

**Architects**  
Victor Gruen Associates and  
Louis G. Redstone Associates, Inc.

**Artist**  
Samuel Cashwan, "The Goose That  
Laid the Golden Egg,"  
cast terrazzo, 1965

**School**  
Aarau, Switzerland

**Architect**  
Emil Aeschbach

**Artist**  
Erwin Rehmann, bronze wall  
sculpture, 1967

**Palais du Senat**  
Teheran, Iran

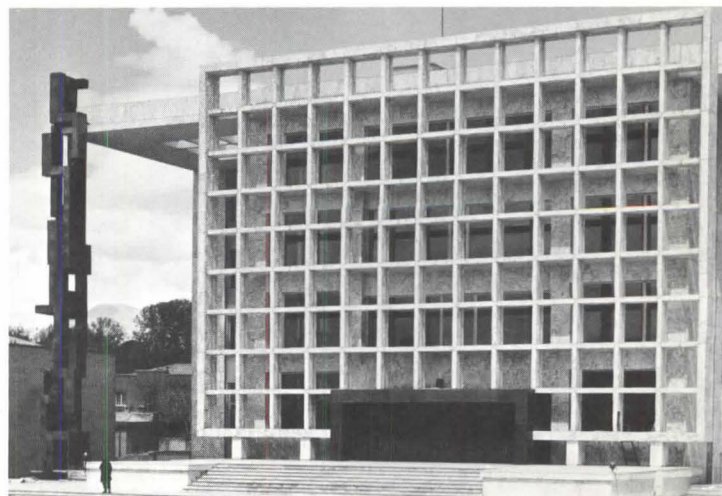
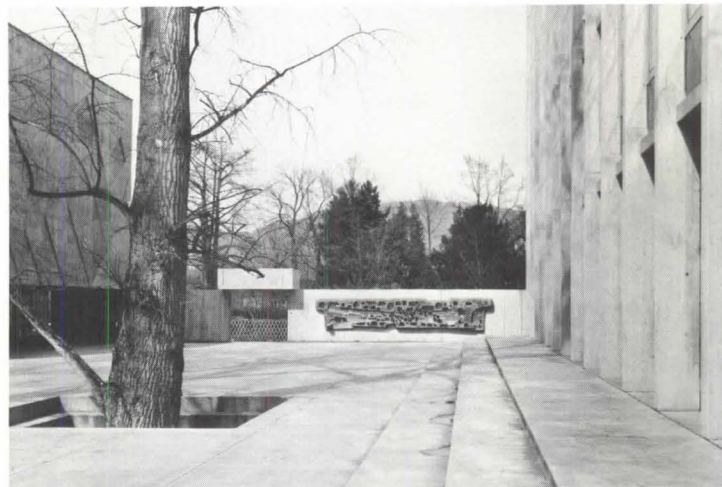
**Architects**  
Foroughi & Ghiai

**Artist**  
Andre Bloc, metal column, 1961

**Our Lady of Angels Seminary  
of the Fathers of the Mission of  
St. Vincent de Paul**  
Albany, New York

**Architects**  
Office of Max O. Urbahn

**Artist**  
Jean Barillet, east window,  
"Our Lady of the Angels," 1963

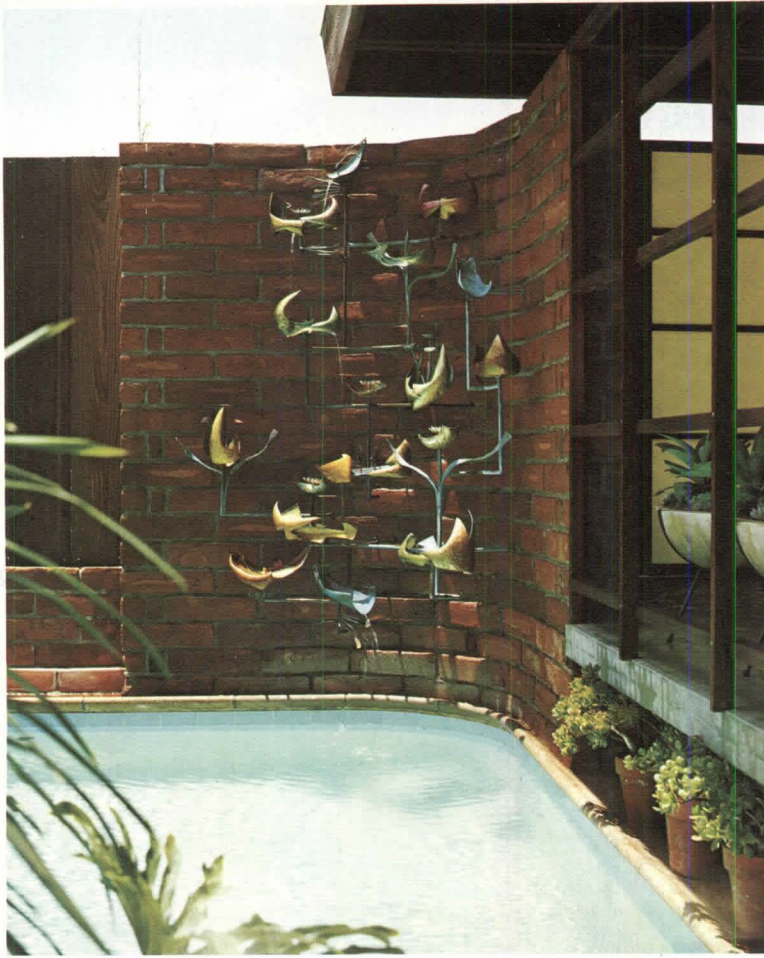


*Architects all over the world  
are again advancing the use of art in their buildings,  
as indicated by samplings  
from a forthcoming McGraw-Hill book.*

BY LOUIS G. REDSTONE, FAIA

# ARCHITECTURE





The reaction of the older generation of modern architects against the overornamentation of earlier periods resulted in omission of all forms of art from their buildings. Furthermore, the architects who were interested in collaboration had great difficulty in finding ca-

**The author:** Mr. Redstone, a principal in the firm bearing his name and an artist in his own right, is chairman of the Allied Arts Committee of the Detroit Chapter AIA. This article is based on material developed for his book *Art in Architecture*, to be published at mid-year by McGraw-Hill Book Company.

pable talent. The artists themselves, isolated, for the most part, in their studios, did not familiarize themselves with the new materials and technological advances in architecture.

The past decade has seen a radical change in their attitude. Today's artists can be found in foundries, welding shops, experimental laboratories for plastic and other workshops. This is resulting in a rapprochement between the architect and the artist and may well serve to create a common language.

An examination of projects where integration has occurred serves to reinforce this relationship and demonstrates that it need not be limited to any one category. Commercial projects such as large shopping centers offer possibilities for artistic representation in the form of murals, sculpture, fountains, planting and graphics.

Educational facilities, too, provide an ideal place for our future leaders to be exposed to art in all its forms, from the sophisticated mosaic murals of universities to



**Herbert Brownell Residence**  
Newport Beach, California

**Architect**  
Herbert Brownell

**Artists**  
Dextra Frankel and Charles Frankel,  
enamel-on-copper fountain, 1961

**San Ignacio School**  
Santiago, Chile

**Architect**  
Alberto Piwonka

**Artist**  
Mario Carreño,  
glass mosaic mural, 1960

**Midland First Methodist Church**  
Midland, Michigan

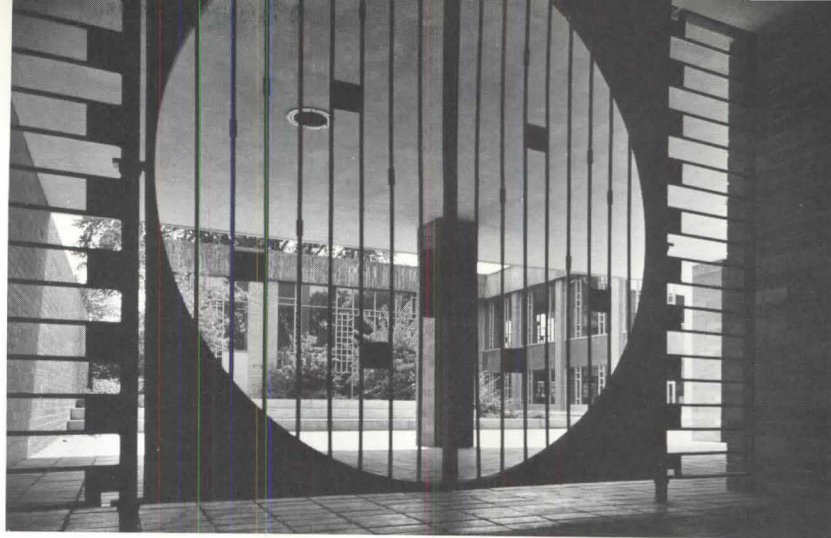
**Architects**  
Alden B. Dow Associates, Inc.

**Artist**  
Alden B. Dow, gate, 1954

**American Republic  
Insurance Company**  
Des Moines, Iowa

**Architects**  
Skidmore, Owings & Merrill

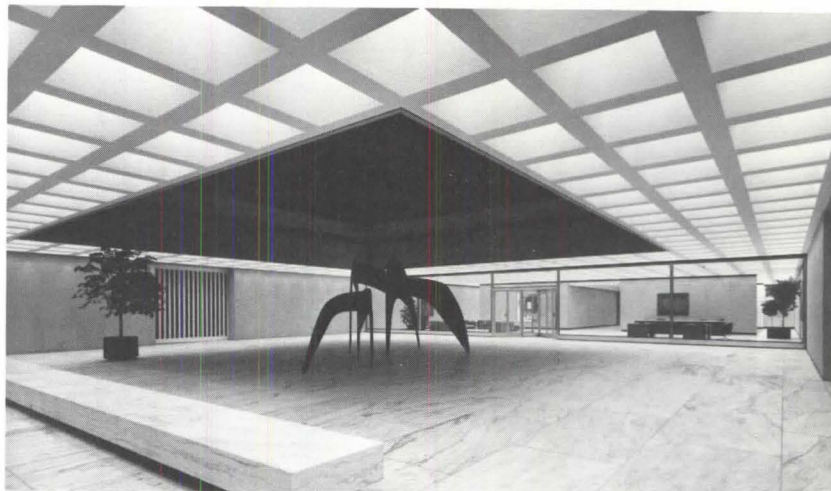
**Artist**  
Alexander Calder, sculpture, "Spunk  
of the Monk," 1965



**International Monetary Fund**  
Washington, D. C.

**Architect**  
Vincent Kling

**Artist**  
Glen Michaels, mosaic mural, 1966





**Lytton Savings & Loan Association  
of Northern California**  
Oakland, California

**Architects**  
Kurt Meyer & Associates

**Artist**  
George Rickey, stainless steel, 1965

**Federal Building**  
Los Angeles, California

**Architects**  
Welton Becket & Associates

**Coordinating Architects**  
Albert C. Martin & Associates and  
Paul R. Williams & Associates

**Artist**  
Richard Haines, murals, "Of the  
People, by the People and  
for the People," 1964

**Julian H. Krolik Elementary School**  
Detroit, Michigan

**Architects**  
Louis G. Redstone Associates, Inc.

**Artist**  
Arthur Schneider, concrete play  
sculptures, 1962

outdoor concrete play sculpture for elementary schools.

Business is now beginning to include art in its building program as a realization that economics should not be the sole concern. As John Kenneth Galbraith says, "We must explicitly assert the claims of beauty against those of economics. That something is cheaper, more convenient or more efficient is no longer decisively in its favor."

In the sphere of religious buildings where art has always been a tradition, we are witnessing revolutionary changes in the acceptance of new forms. Artists' approaches to religious themes vary from conservative representational forms to pure abstractions using every type of medium, as seen at the National Religious Art Exhibition at the Cranbrook Academy of Art in 1966.

Another important client is emerging: the federal government. This promises great opportunities for artists on national and local levels, in accordance with the President's directive of 1962, Guiding Principles for Federal Architecture. The order urged that up to 1 percent of the construction cost of a new government building be reserved for the fine arts.

This policy has been reflected on other levels, and as a result, significant commissions are being awarded to artists all over the country for civic and public buildings and plazas. Lincoln Center for the Performing Arts in New York City, the Fresno Mall in California, the Civic Center in Chicago and Constitution Plaza in Hartford, Connecticut, are a few examples.

Artists are working intently to expand the possibilities of their discipline. One important event, for example, occurred in 1965, when California's Long Beach State College sponsored an international sculpture symposium. Its purpose was to bring together eight artists, including two Americans, to give them absolute freedom to create works on assigned campus locations which would, with the cooperation of more than 70 industries, express modern technological influence in the United States. Besides revealing the yet unexplored possibilities of the marriage of technology and art, the event sparked the promotion of the art/architecture integration and set a precedent for similar symposia.

The collaboration has indeed begun. However, the architectural profession must now assume the leadership in giving art its appropriate place in our environs. □

**Architectural Criticism.** "The critic, like the client, can only judge by the final result," declares a British editor in dispelling what he considers myths held by architects. He adds, "It must be emphasized that criticism is not simply fault-finding. It is a poor critic who is concerned only with looking over a building for points of disagreement. Criticism is a matter of discriminating between what is important and what is trivial."

## The Professional Magazine as Critic

BY J. M. RICHARDS

The editor of an architectural magazine, writing about the effect of magazine criticism, must exercise considerable caution lest he claim greater influence than he really exerts. Real progress in architecture can be achieved only by architects—by building, not by writing.

Basically, architectural magazines have two roles: in relation to the architect and in relation

**The author:** Mr. Richards, who has edited *The Architectural Review* for just over 30 years, is the author of a number of books, the most recent of which is *A Guide to Finnish Architecture*. His article is an abbreviated version of an address presented before the Texas Society of Architects.

to his client. They must help architects to maintain and raise architectural standards, and they must help bridge the gap between the architect's and the client's viewpoint and thereby create the better-informed public opinion which, in turn, encourages good architecture.

They must also to some extent serve as the architect's newspaper, keeping him up to date with technical and professional developments.

Although in my view an influential architectural magazine should appeal to clients as well as architects, most get virtually all of their support and readership from within the profession.

Architecture is unique among the professions in having its ideas and developments normally discussed in such a restricted way. Literary magazines are addressed not only to writers but also to readers; magazines about music are addressed to the people who enjoy listening to music, not only to those who perform or compose it. The same applies to other arts, except architecture.

### The User's Interest

Architecture as an art, as an activity that can contribute to more civilized living, suffers badly from being too much of a mystery to the people who use buildings, which means nearly everybody. It would be in a much healthier state if it were the subject of continuous discussion, even critical discussion, among ordinary people. If people were to discuss the buildings they inhabit with even a fraction of the *interest and* enthusiasm which they put into discussing and comparing different makes of automobiles, for example, the architect would find it easier to achieve the

status in the community that his important activities require. The architectural magazines can give the public some sense of participation in architecture.

I don't think this can be done simply by imparting to the nonarchitect-reader more factual information about architecture. It is neither practical nor desirable to have every client an architectural expert in anything like a professional sense. More important are judgment and an open mind, and some understanding of the art of the possible in architecture and building. Without such an understanding the client cannot look beyond what he already knows and cannot support the architect's efforts to develop new ideas.

For a variety of reasons, architectural magazines will and must remain, primarily, magazines for architects. One reason is financial. For revenue, most magazines depend more heavily on advertising than on sales. But the advertisements an architectural magazine carries—for windows, say, or bricks or wash basins—are addressed to architects, and relatively high advertising rates can be charged because the architect-reader controls the spending of larger sums of money than the reader of other magazines, who normally controls only his own money. Other publications increase their advertising revenue by increasing their circulation, but in the case of architectural magazines this can only be done by increased circulation among architects.

Therefore, bridging the gap between the architect's and the client's viewpoint does not necessarily mean trying to appeal to nonarchitect-readers, though this helps. But the professional magazines should keep before their architect-readers the point of view of the user of the building and should avoid taking too narrow a professional view. In particular, they should regard it as their task to place buildings in their social and historical perspective, so that the architect sees his work in relation to its changing needs and programs, in relation to its setting and in relation to the evolving cultural pattern of the time.

In today's circumstances, it is the architect's responsibility to create as well as fulfill a demand. As a technical expert, he must always be ready to lead public opinion and find ways of influencing the nature of the demands which society makes on him. Here the architectural magazines could perhaps be of greater service than they are at present, together, of course, with other media of communication: the daily press, radio and television.

### **Architects and Environment**

The physical setting is of particular importance. *When we look around a city, we are likely*

to be impressed by the number of good, if not superlative, buildings and by the utter chaos of the spaces between them. Architects naturally concentrate on the building itself, over which they do have some control, and are *too often* tempted to regard the setting of the building and its relation to the townscape as something they cannot control and, therefore, with which they need not be concerned. They seem to accept the confusion of the urban setting as a kind of natural scenery.

It is understandable that architects should not worry too much about what they can't control; and yet the role of the architect is to provide society with its environment; his contribution is part of the whole and cannot be separated from it.

Most architects understand this and do their best to collaborate with town planners and civic authorities to this end; but they find it a struggle to achieve anything positive, since so much of our environment—visually, anyway—is still left to chance. The architectural magazines can support them in this struggle by criticizing the chaos which modern society makes of its cities, a chaos which denies architects the chance to apply their expertise more widely.

Magazines can also keep architects aware of their wider responsibilities by always showing and discussing buildings as part of a larger picture.

### **The Client's Viewpoint**

This is one of the social services they can perform. Another is to use their influence to curb the tendency, observable among architects, to confuse what they themselves would like to build with what their client needs them to build. Some degree of arrogance on the part of architects can be excused. If they don't show the world what it is possible to achieve—what good planning and the right use of new technologies can do to provide a better environment—no one will. But they should guard against trying to persuade people to have what they (the architects) want to give them because it suits their (the architects') tastes, or for the reason that it is supposed to be good for them.

The architect's greater sense of social responsibility is a welcome development of our time. But his role in forming *opinion should not* be to tell people how to live, but to show them how they *could* live, acknowledging that they may not all want to live like architects.

In other respects, too, architects mistakenly tend to imagine that other people's criteria are their own. The things architects get excited about are not always the things the client and the user of the building really mind about; they can't be expected to look at buildings through architects'



eyes. For example, to the client, the completed building matters much more than the process of designing it, but to the architect this process is all important: It gives him his professional satisfaction, and it is often during the process of design that the decisions are made which give a building lasting quality as good architecture.

The architect naturally judges buildings in terms of the architectural ideas he sees evolving through them. Each building, to him, is a step on the way to another. To most clients it is a finality, and they won't welcome having their building regarded as an experience that may help the architect design a better building next time, very likely for somebody else.

### The Architect's Reaction

The multitudinous problems involved in the process of getting buildings designed and built are inevitably in the forefront of the architect's mind, which brings us immediately to one of the difficulties concerning criticism. Architects always claim to be in favor of published criticism of new buildings, as long as, they usually add, it is *informed* criticism. Fair enough, if by informed they mean that the critic must know something about how buildings are planned and constructed as well as what they look like, and something about the purposes they have to serve. But often, when architects talk about informed criticism, they really mean that the critic must know about, and make allowances for, all the difficulties that occurred while the building was being designed and constructed.

This is nonsense. The critic, like the client, can only judge by the final result. If the client kept changing his mind, if local planning regulations prevented the acceptance of the better layout, if the contractor went bankrupt when the job was halfway up—all these are matters of passionate significance to the architect. But the critic must ignore them and look at the building as it is, just as the drama critic, in writing a notice of a play, must appraise simply what he saw at the opening night's performance. Even if he happens to know that the stage manager resigned halfway through the rehearsals, that the electricians went on strike and the leading lady insisted on the other actresses' most effective lines being cut out—all that must not affect or influence his view of what he saw.

The historian is different. He comes along afterward, and it is his job to discover and explain everything. The fact that Sir Christopher Wren was made to plan St. Paul's Cathedral as a Latin cross, not the Greek cross he started with, because of the conservatism of some clergymen who were accustomed to the layout of medieval cathedrals, is of vital interest to the historian.

But the critic must ignore such facts and appraise even a cathedral as he finds it. Architects seem too often to want critics to transform themselves forthwith into historians.

Among some architects, there is a degree of resentment at the idea of being criticized at all. This is less prevalent than it once was. Most architects today accept honest criticism as a healthy thing, and as more magazines become bold enough to print regular criticism, it becomes more widely accepted. Resentment dates from the time when the absence of routine press criticism meant that the few exceptional attempts seemed an invidious attack and created a climate in which reasonable discussion was difficult. Such a climate does not exist in the theatrical, art or literary worlds, in which a critical approach to new work is taken for granted.

### Where Are Critics Found?

Then there is the problem that, because of the complexity of modern building and planning techniques, it is often thought that the only man with the knowledge to criticize architecture is the trained architect. This again turns architecture in on itself and inhibits the formation of a body of informed public opinion. In addition, to limit the critics to those engaged in the practice of architecture virtually stifles criticism, by posing problems of professional ethics.

In the other arts—painting, say, or literature—there is no disadvantage, and several obvious advantages, in the critic's being also a performer. Many good art critics are themselves painters, and literary critics (since the medium of criticism is the written word) are by definition writers. But they are not, like architects, rivals for each other's jobs. When one architect allows himself to sit in judgment on another architect's work, there is always the possible inference that next time a similar commission comes along it ought to be given to him.

If the critic need not, or should not, be a practicing architect, where is he to come from? At present there is not enough demand for architectural criticism to offer a living to the full-time critic; he tends to be someone like myself who writes criticism as part of the job of being an editor and architectural writer generally; or else he doubles up the job of criticism with teaching, with which it goes very well, or that of historian, with which it doesn't go so well. I've already indicated the reasons why, in my opinion, the art-historical, fact-arranging attitude is not compatible with good criticism.

If architectural criticism were more widespread, as I hope it may one day become—if all newspapers and magazines had as a matter of course their architectural critics just as they have

art and drama critics—this problem would not arise; there would be enough outlets to keep the qualified architectural critic fully occupied. Strangely enough, the one country I have visited where the full-time professional architectural critic exists and is accepted without question is Japan. However, I have not managed to discover whether this is because there were more outlets, and if not, how the young men who decided to make architectural criticism their career made a living out of it.

We should mention one more problem that besets architectural criticism: the problem of libel. The law of libel differs in different countries; in general, however, it applies more stringently to architecture than to the other arts because of the large amount of someone else's money involved. Whoever puts up a building is not only commissioning a work of architecture, he is investing money in property, and in criticizing an architect's work it is often difficult to draw the line between an opinion of his merits as a designer and his competence to handle a client's or a company's funds.

I think all these problems can be overcome; I certainly don't want to give the impression of pessimism about the prospects of more widespread responsible criticism.

### **The Role of the Critic**

It must be emphasized that criticism is not simply fault-finding. It is a poor critic who is concerned only with looking over a building for points of disagreement. Criticism is a matter of evaluation; of discriminating between what is important and what is trivial. I am always surprised to find how much contemporary architectural writing treats everything at the same level and gives solemn accounts of important developments and fashionable conformity as though there were no difference between them.

Above all, architectural criticism must refer constantly to basic principles so as to help build up the frame of reference—the sound, acceptable canon of good design—without which every architect is on his own and no one can benefit by anyone else's experience. We can assume that in any art the genius is a law to himself. The man who needs rules to guide him, and criticism to help him make something creative out of those rules, is the ordinary, conscientious practitioner: 60 percent, perhaps, of the total number of architects. Another 39 percent may be those who are not conscientious and who are not interested in learning the lessons the critic can teach, and the remaining one percent represents the geniuses who know the same lessons by instinct.

In demanding more (and more outspoken) criticism of current architecture, I am not threatening

architects with still another burden and complication. Architects have a hard enough time already, dealing with building regulations, zoning laws, intractable materials, careless contractors, earthquakes, tidal waves and unreasonable clients. I would hate to threaten them with attack by critics, after all those other menaces have been dealt with. If the critic can't always be on the side of the individual architect, he is on the side of good architecture—which is more than can be said for the list of perils I have just recited!

And there is surely a way for intelligent criticism to support good architecture and at the same time castigate the bad—the bad program or bad client as often as the bad designer. For in architecture the second best is the enemy of the best; the very presence of second-rate buildings makes it that much more difficult for the public—the potential client and patron—to learn to discriminate about buildings at all.

Perhaps the strongest influence of magazine criticism is in the environmental field. Among the general public and among government and municipal officials at all levels, as well as in the architectural profession, there is now much greater awareness of the extent to which the environment can be designed and controlled; of the extent to which civilized living standards depend on good planning, land use control, etc., and of the architect's part in raising these standards.

Evidence of this awareness takes different forms: the formation of local groups by citizens who care enough to want to watch and influence what is planned and built in their own neighborhood; a more intelligent attitude to historic buildings, many of which in the past have been thoughtlessly and unnecessarily swept away to make room for new developments. (It is now better realized that a judicious mixture of new and old produces a more human environment, and that to incorporate worthwhile old buildings into a new project should be looked on as a stimulating challenge, not as a nuisance.) Then there is more awareness of architectural values among those—businessmen, government officials, school board members and university administrators—who initiate building projects, resulting in more discrimination in the choice of architects.

Importance should therefore be attached to free and frank criticism especially on the part of architectural magazines—criticism uninhibited by fear of giving offense to architects, the construction industry or anyone else. This is second only to the importance of a magazine keeping itself independent of all commercial and other pressures—all hidden motives. Only architects can create architecture. Intelligent criticism can help to create a climate in which good—even great—architecture is possible. □

*One of the most controversial practitioners of our day, a generalist in the true sense of the word, Doxiadis exerts his influence worldwide.*

## Emanations from Athens

BY JOSEPH WATTERSON, FAIA

Constantinos A. Doxiadis, architect-planner-teacher, is widely known in the United States but primarily as a planner. Many colleagues have asked me, ". . . but is he an architect?" My reply has always been, "Certainly he is."

Publication in the architectural "slicks" and awarding of medals for outstanding design seem, in these days, to be granted to those who turn architecture into exhibitionism or who design

**The author:** Mr. Watterson, former editor of the AIA JOURNAL, is chief of the National Park Service's new Division of Historic Architecture.

for the acclaim of their fellows. Thus Doxiadis' work may win few of the usual awards, for he does not strive for them. Yet his design is clear-cut, simple and truly functional.

If there is a sameness to Doxiadis' architecture, it is because he asks himself, "I frequently tend to adopt similar solutions—should I consciously try to be different?" He always comes to the conclusion that he has no right to be different where the conditions compel him to remain the same. Yet there is a variety to his work, but it is a variety dictated by function, climate, topography, local materials and social customs. It is invariably honest architecture; it is always good architecture; as a consistent body of work, it is quietly distinguished architecture.

Doxiadis has a definite philosophy of architecture, set forth in his book *Architecture in Transition*, which rationalizes his approach to design. He believes that "visiting time" is over for architecture. "We must look on architectural cre-

ations as objects not merely to be visited, but to be lived in. . . . Architecture must not be looked upon as one of the sights of the city, as a monument of the past or even of the present. In the golden days of well-balanced architectural styles, a whole city, such as Athens, had a single overall character, and its monumental places were simply the highest expression of a common architecture."

Doxiadis was graduated in architecture in 1935 from the National Metsovion Technical University in Athens and took his doctorate in engineering and city planning at the Berlin-Charlottenburg Technical University. His thesis was a demonstration that the ancient Greek communities were planned with a conscious order of design, not merely the result of happenstance and tradition.

He entered the service of the Greek Government as a town planner, and when Italy attacked Greece in 1940, he was chief of the Regional and Town Planning Department in the Ministry of Public Works. He fought the war on the Albanian front and, after the Greek surrender, he returned to the Ministry of Public Works, covertly working with the underground.

During the postwar years Doxiadis was a prime mover in the Greek Government's recovery and reconstruction programs, holding various jobs of cabinet rank or just below. He represented Greece as leader of the underground forces at the founding of the United Nations in San Francisco. In 1950 he collapsed from ulcers and fatigue, and while he was in the hospital, his cabinet post was abolished due to political instabilities.

He took his family to Australia for two years, returning in 1953 to open an office in Athens for



*"We can no longer limit ourselves to single buildings, and our idea and ambition should no longer be to create monuments through which we shall influence their surroundings. We should work rather to create a total architecture inside which we shall recreate our whole living space architecturally."*

the practice of architecture and planning. Times were propitious and within 10 years his firm became the nearly worldwide organization it is today. The main office of Doxiadis Associates, or DA, is now an eight-story building in Athens, with a five-story wing housing the Athens Technological Institute, which Doxiadis founded. His large, permanent staff is composed principally of architects, planners and engineers, but includes others skilled in economics, sociology, geography, and allied disciplines—even a musicologist.

With its center in Athens, it was inevitable that the work of DA would be in the fast-expanding areas of the Middle East, India and North Africa, where it has been mostly involved with providing housing and concomitant services. However, it has also included highly sophisticated industrial and commercial development projects, plans for new cities and the redevelopment of old ones, and buildings for them all.

Among some of DA's recent and current assignments are:

- *Ghana:* The DA-planned town of Tema, to provide for a population of almost 300,000 people of all income ranges. A hotel and 9,000 dwelling units are completed.

Also in Ghana, several factories for which DA

made economic surveys to determine markets and distribution of the products.

- *East Pakistan:* Buildings for the College of Home Economics at Dacca; dormitories, auditorium, administration building, cafeteria, teacher-student center and education extension center for Dacca University; and the Village Development Institute.

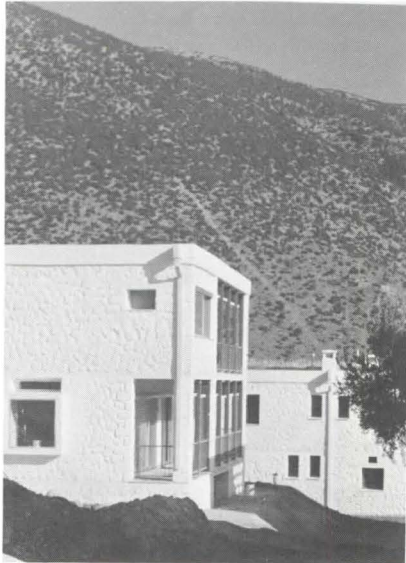
- *West Pakistan:* The total campus for the University of Panjab (20,000 students); the same for Lyallapur University, this in collaboration with Associated Consulting Engineers.

- *Greece:* Laboratories, classroom buildings, offices and two auditoriums for the Athens Agricultural University, a new building for the Royal Research Institute.

- *United States:* Public housing in Hampton, Virginia, in collaboration with Rancorn, Wildman & Krause; facilities in connection with the design for the development of the waterfront in Louisville, Kentucky, in collaboration with Lawrence P. Melillo, AIA, and Jasper D. Ward, AIA.

The following projects are, strictly speaking, nonarchitectural, but certainly lie within the scope of the comprehensive services which any progressive architect should be able to furnish:

- *Spain:* A \$200 million tourist center for Tene-



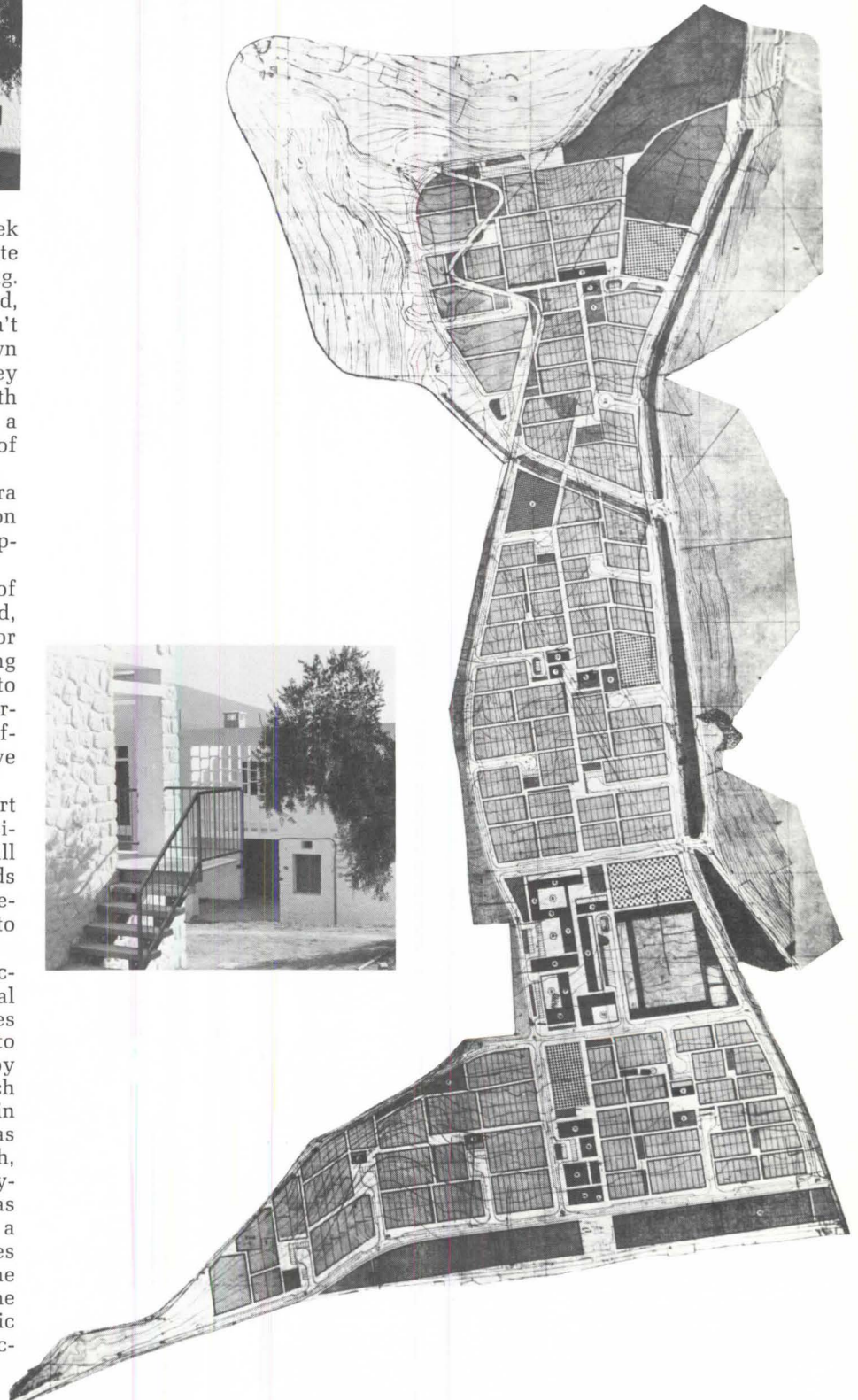
**Aspra Spitia:** The traditional Greek town is a cluster of low, white buildings, picturesque and inviting. The planning appears haphazard, but the visual pleasures couldn't just have happened—the unknown builders clearly knew what they were doing. Narrow streets with teasing vistas of a church or a small square lead to the center of the village.

In the plan and design for Aspra Spitia, an 1,100-unit community on the Gulf of Corinth, DA has captured this old-city atmosphere.

The 12 basic house types are of local stone, most are white washed, but a few painted in pale colors or left unpainted for accent. Existing trees are carefully integrated into the design. Stone walls, steps, pergolas, terraces and pavings of different materials and textures give a great variety to the scene.

The L-shaped town, with short leg facing the gulf, has four residential areas and a town center, all with their own peripheral roads and, from these, occasional cul-de-sacs. Wheeled traffic is limited to these roads.

Models and sketches of each sector were studied with special thought to the sequence of spaces experienced by the pedestrian, to the sense of enclosure created by the buildings surrounding each square and to visual richness in every vista. Each neighborhood has a small center with shops, a church, an elementary school and a playground. The main town center has major stores, offices, workshops, a movie theater and, on two sides adjacent, the high school and the municipal center. Most of the shoreline has been left as public open space with a section for recreational and tourist facilities.





**Islamabad:** The site selected for West Pakistan's new capital, Islamabad, is on a plateau adjacent to the city of Rawalpindi at the intersection of two major highways. Two additional highways will bypass Rawalpindi. The combination of these four roads will define the natural areas of Islamabad, Rawalpindi and the National Park.

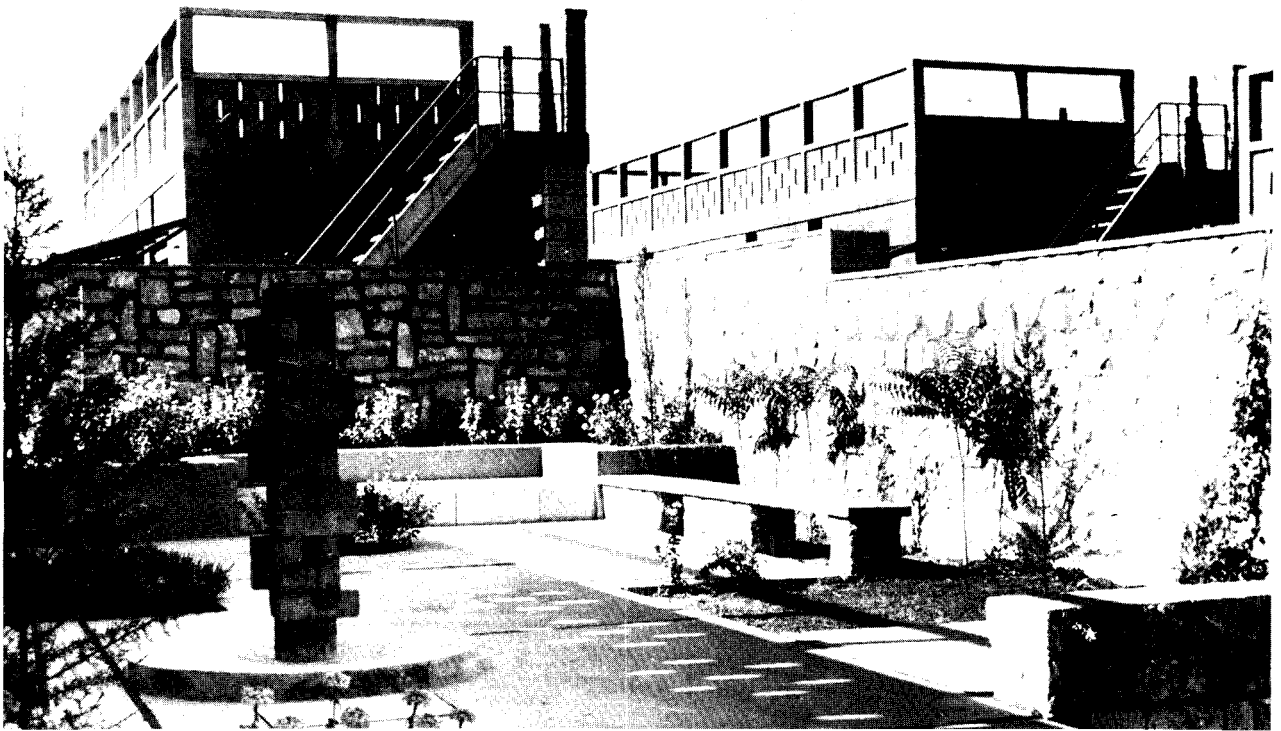
The old city will nourish the young one and furnish it with long-range services. Rawalpindi will be the industrial and commercial center, Islamabad will be the administrative and cultural one. Plans encompass both cities and permit future growth to the southwest.

Islamabad is built in sectors with 20,000 to 40,000 people in each, divided by roads with 600-foot right-of-ways, spaced on a 1 $\frac{1}{4}$ -mile grid. Here, again, DA encloses the sectors with secondary roads with cul-de-sacs leading from these in between the structures. Throughout the complex is a system of walkways, completely separated from roads carrying vehicular traffic.

The major sections of Islamabad are self-contained with high schools, shops and civic centers. Each is subdivided into three or four communities with a primary school, basic stores and a mosque and is loosely segregated on the basis of income.

Plots vary from 1,000 square feet to about one-half acre according to income. No house has less than two rooms, kitchen, toilet and shower; each has roof space and an enclosed yard or garden to provide privacy, so important to the people of Pakistan.





*In Middle East tradition, DA's low-rent dwellings in Iraq have emphasis on privacy with enclosed space on roofs and in yards. In Philadelphia, below, DA followed row house style. Units are compact and inexpensive. With Reynolds Metals Development Corporation and Samuel & Henry Berger, Philadelphia builders, DA won 1959 urban renewal competition for a 2,500-acre area with an ultimate population of 40,000.*

rife, Canary Islands, with luxury hotels and bungalows to accommodate 30,000 people, in expectation of the tremendous expansion of tourism to come with low-cost supersonic flight.

- *Libya:* Studies for the master plan, residential communities and the city center of Beida; master plans for Susah and 60 other small cities.
- *Greece:* Urban development plans for Arta, Gamina and Preveza in Epirus—for which DA has already prepared a comprehensive development plan—providing for doubled population by the year 2000.

- *United States:* Association with the System Development Corporation, a 3,200-man research firm with offices in Santa Monica, California, Colorado Springs and Lexington, Massachusetts, to form the Doxiadis-System Development Center. With staff from both firms, including planning, transportation, engineering, computer sciences, economics, geography, sociology and psychiatry specialists, the center will pursue long-range, continuing study of the operational problems of the American city and the direction of its future. It will work with government agencies



and educational institutions as well as public utilities, business and industry. Special emphasis will be placed on conservation of human and natural resources. The result of these studies will be available to local and regional governments in addition to private business firms.

However, I believe personally that it is as a teacher Doxiadis will make his most lasting contribution. I have heard and seen him in action many times. He has a great facility for synthesizing ideas, his own and those of other men, and expressing them clearly and simply. He has built up a complex teaching organization over which he presides in sport shirt and slacks, constantly lecturing, discussing and clarifying. Coming from many countries, his students, now in the thousands, carry his comprehensive and logical approach to planning problems around the world. Here, as well as in Athens, he has a tremendous impact upon them which will show widely in the coming generation of professionals.

His Athens Technological Institute consists of a system of junior colleges with courses in architecture, planning and engineering. Its parent organization, the Athens Center of Ekistics, is a graduate school for advanced study in ekistics—a word derived from the Greek and encompassing all the disciplines necessary to study the problems of human settlements.

Through the facilities of ACE, which recently received a \$1 million research grant from the Ford Foundation, Doxiadis conducts widespread studies of housing and development needs in many countries, such as the Capital of Greece

Research Project. In 1965, ACE inaugurated the week-long annual International Seminar on Ekistics, which I attended along with about 75 graduate students and practitioners from many countries. In 1967, there were 300 participants from 25 countries and 25 disciplines, and it continued for three weeks. The panelists are drawn from the ranks of the participants in the Delos Symposium.

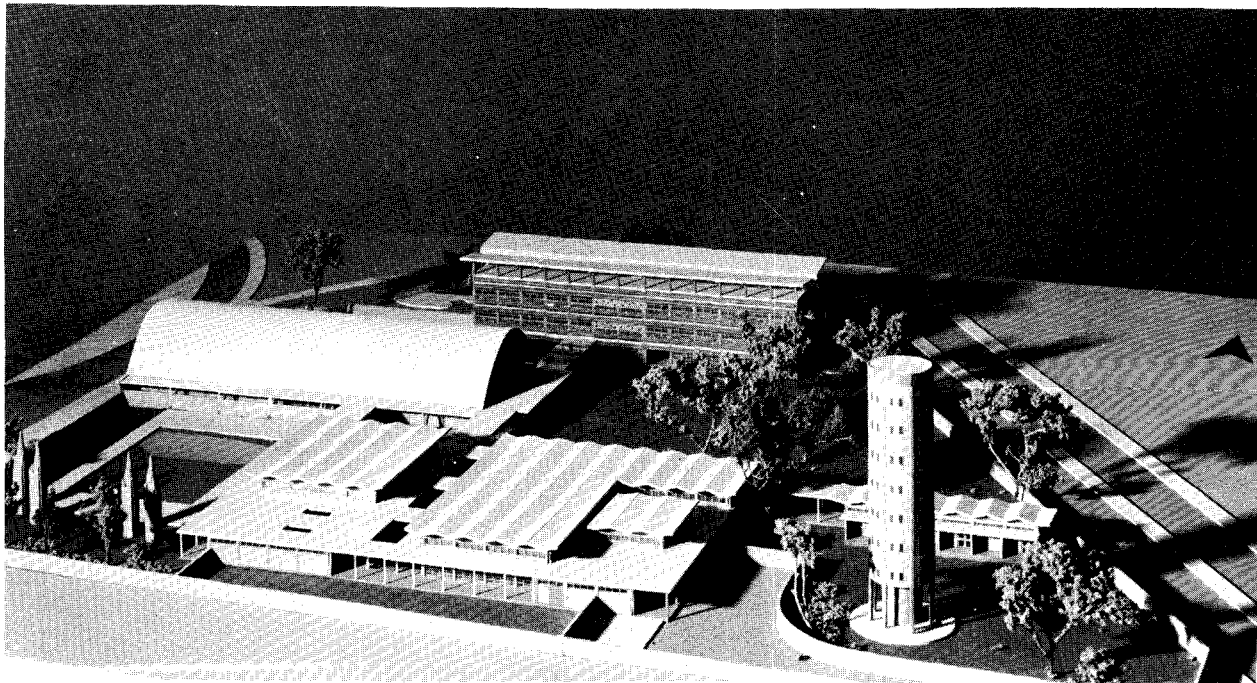
The first Delos Symposium, in 1963, was undoubtedly inspired by the floating congress held on a converted barge by LeCorbusier and other leaders of the architectural revolt, the CIAM group which produced the "Charter of Athens" in 1933. However, Doxiadis invited to his cruise ship not the leaders of the "out" group but the best minds of the "in" group to discuss, in complete informality, the problems of mankind, with particular reference to the city.

Doxiadis prefers the Greek word "symposion" to the Latin "symposium," for the Greek symposion was much more informal than the Roman. Many of his guests were not particularly responsive to his ideas, some were even hostile, so there were long discussions, even heated arguments. Out of it came the beginnings of a new understanding of the human and urban problems facing us today, as expressed in the "Declaration of Delos" in the AIA JOURNAL (Dec. '63).

The Delos Symposium has been repeated each year, and I was fortunate enough to be invited in 1965 and 1966. Many have asked me, "What's it for? Whatever comes out of it?"

My answer is to ask, "What do you expect—

*Teacher-Student Center at Dacca, East Pakistan, with buildings placed east-west to get full benefit of the prevailing northerly winds. A covered walkway runs between structures of reinforced concrete frame, exposed around panels of multicolored glazed tiles in the local tradition or around exposed brickwork. Hindu tombs stand by the pool, a water tower by the guest house which is linked to the cafeteria, center.*



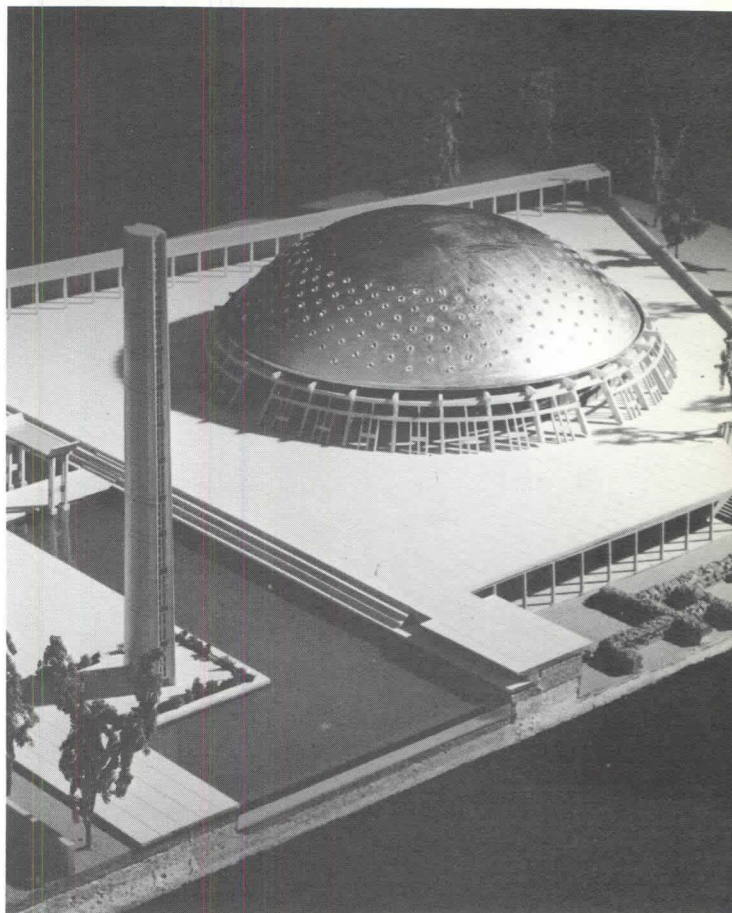


a school, a new 'movement'?" No, that's not the idea. Over a hundred people have participated by now, not counting a hundred or more observers, all of them men and women directly or indirectly associated with planning, urban and human problems. Their group discussions and private conversations have broadened the understanding of every one of them, and better equipped them to cope with problems of their professions. That's what the Delos Symposium is for.

There are a few "regulars" at the symposia; others are invited once or twice and then replaced by new faces and new ideas. The regulars include Buckminster Fuller, Margaret Mead, Sir Robert Matthew, Lord Llewellyn Davis, Barbara Ward and Arnold Toynbee. Observers are younger members from a range of professions, and there are a number of students from ACE. Put men and women like these together on a cruise ship for a week under the Aegean sun, with plenty of time for discussion, loafing and swimming, and they just can't help but come away broadened, stimulated and even inspired. That's another reason I call Doxiadis a great educator.

As a person, Doxiadis is relaxed but alert, genial but controlled, personally modest but professionally aggressive. He reads widely and quotes the Greek poets and philosophers as readily as Toynbee and Mumford or the vital statistics of a city, ancient or modern. He is a thorough scholar of classic Greek architecture and a profound student of the history of the city. To my knowledge, he speaks English, French and German as fluently as his native Greek, but with a

*"... the more we purge our forms of every inherited element, the more we shall be returning to certain basic traditional forms. It is here that we find the link between tradition and evolution."*



*DA's design of the Axum Cathedral in Ethiopia, now under construction, is in deference to the Ethiopian round-church tradition, deeply rooted in the people's religion. The cathedral stands on a high platform over a crypt; the artificial lake is a revival of the holy lake of Axum. The reinforced concrete belltower is reminiscent of the city's pre-Christianity stelae relics.*

pronounced accent. Although just past 50, he is trim and athletic and can dance those lovely Greek dances almost as well as his young son Apostolos.

The secrets of Doxiadis' success are, I would say, his analytical mind, his great ability as an organizer and promoter and his gift of being able to reduce a complex problem to simple terms for solution. He is constantly seeking new ideas; he can absorb criticism with complete good grace.

Some Americans are critical of his promotional techniques but, then, other countries have different standards of ethics from ours. Nervi, for example, not only designs his structures but builds them. DA is, I imagine, alert enough to recognize where there is a prospect, steps in and presents its credentials.

In 1966, Doxiadis was honored with the Aspen Award; in 1967 he was asked to deliver the keynote address at the international "Water for Peace" conference held by the federal government in Washington, D.C. Thus was recognized the breadth of his interdisciplinary humanitarianism and his preeminence in the field of physical, economic and social planning. □

BY BERNARD L. ORELL

America's profligate period, when manifest destiny was the proclaimed justification for relentless exploitation of natural resources to conquer and civilize a raw continent, yielded slowly to the new philosophy of conservation in the first third of the 20th century.

At its inception "conservation" meant, to a majority of people, wise economic use. Better utilization and some preservation of natural resources were early goals. Regeneration of renewable resources sprouted as a concept during this early period, rooted during the Great Depression and flowered in the post World War II era.

In the final third of this century the challenge will not be a lack of capability for increased production and better utilization of renewable natural resource raw materials vital to constantly rising living standards, but rather a famine of land on which to produce them.

Our nation is literally proliferating itself out of living room. Population density, affluence, mobility, urbanization, mass communications, rising educational levels and the rapid ascendance of environmental quality as a broad social goal all have contributed to an astonishing increase in valid but conflicting pressures on a finite land base, which only a few years ago could supply all land use needs in abundance.

Where does the country's forest products industry fit into this picture? As the steward of working forest lands committed to supplying, at a legitimate profit, the increasing wood fiber needs of a growing nation, it obviously is caught squarely in the middle of a maelstrom of competing land use pressures.

Happily, it is not caught with its trees down, however. The nation now grows more wood fiber than it consumes each year. Intensified forest management holds the promise of increasing annual fiber production per acre by at least one-third on much of the nation's tree-growing land, both private and public.

Assuming that existing commercial forest land could be kept in optimum production, it is likely that foreseeable wood raw material needs of the United States could be met with domestic supplies through the year 2000.

That is no small feat, considering that the average American now consumes 530 pounds of paper

products and 200 board feet of lumber each year, and instead of 200 million, there probably will be 325 million of us by the end of the century.

Realistically there can be no assumption of the status quo on working forest acreage continuing to 2000. A suburb here, superhighway there, dam and power transmission line somewhere else—these dynamic artifacts of our expanding civilization continue to erode the productive land base.

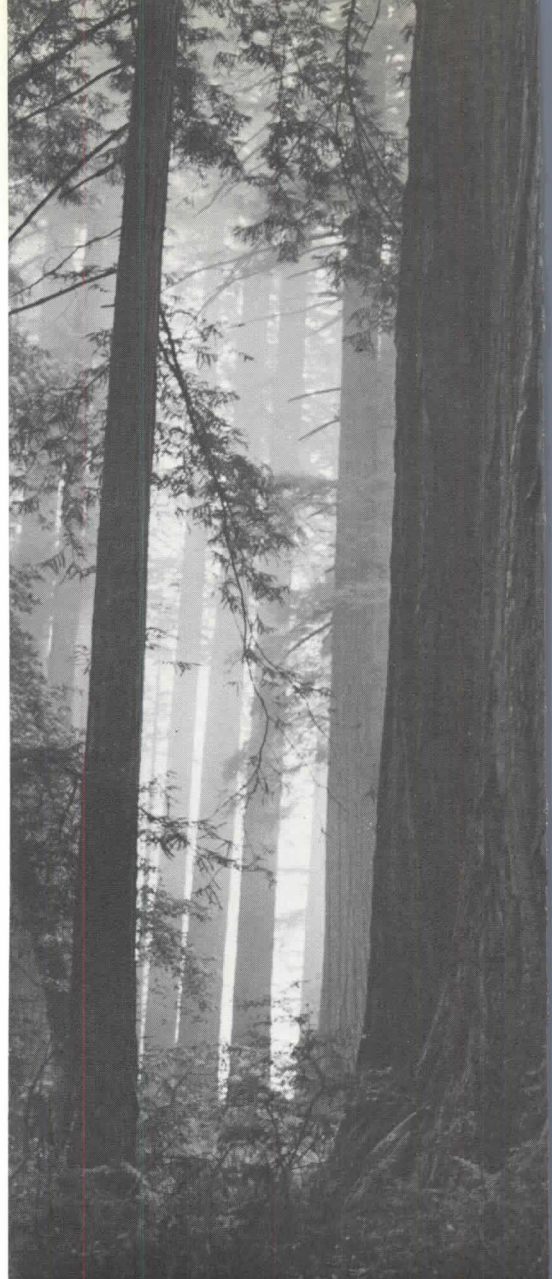
Greenbelts, wild rivers, parks, wilderness areas, summer homesites, skiing developments and wildlife refuges are manifestations of the national drive to return to the out-of-doors and to protect and enhance environmental quality. They all require land, usually forest land.

While economic aspects have remained and will continue to be vitally significant, the modern definition of conservation as simply "wise use" of natural resources, coupled with myriad pressures for competing uses, has made the word almost meaningless. Its interpretation and application depend entirely on the perspective of the user.

Granting that wise use can encompass virtually every activity that enriches mankind materially, spiritually, culturally, esthetically, or scientifically, the great conservation questions of the 1960s boil down to these: How much of nature's bounty should be set aside for each single "wise use," and, more important, how can the maximum amount of compatible utilizations be achieved on our crowded continent?

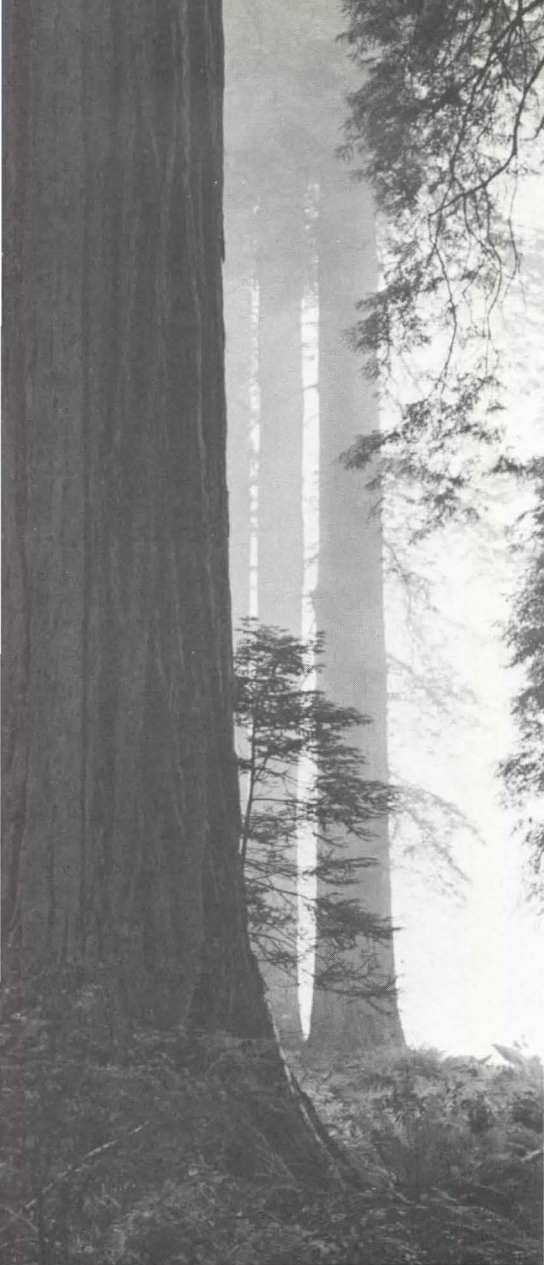
If the forest products industry is to maintain economic viability it must retain ownership and substantial management prerogatives on the land base which supplies raw material. Today's conservation climate dictates that the industry must adapt its management techniques to accommodate more and more secondary uses of forest land and pioneer new vistas of compatible multiple use. These are paramount considerations in the management of federal and state commercial forest lands as well.

It also is mandatory under our private enterprise system that managers of industrial forest land be permitted to discharge their basic responsibility to keep the land working toward the best possible economic return which is consistent with the public good. Their job is complicated by rising pressures from compet- (continued on page 79)



# A Thing Like Conser-

A lumbering industry spokesman, Mr. Orell, writes of crying wolf; a conservationist, Mr. McCloskey, tells us of wolf cries. Their colliding views of the same, silent forest land offer hewn insight into the thicket of conservation issues facing the nation today. Next month's convention of The American Institute of Archi-



BY J. MICHAEL MC CLOSKEY

In conservation it has long been fashionable to take an apocalyptic view of what the future holds. The first half-century of forestry drew its moral impetus from a forecast of an impending timber famine. A prolonged stagnation in total wood consumption and quick recovery of eastern and southern forests at last made it clear that the famine would never arrive, but it is a continuing article of faith among forestry groups that intensive silviculture is a national imperative.

Under cover of this conservation heritage, large timber concerns today justify intensive forestry on the basis of projecting skyrocketing future demand for wood products. In place of a timber famine, their new apocalyptic fear is of a "land famine," a fatal shrinkage in the land available so that forestry can meet imagined needs.

Alarming statistics are charted about the steady erosion of the forest land base, with land being diverted to freeways, reservoirs and—most "damaging" of all—to parks and wilderness. An industrial nation, hard pressed by competitors on every side, can hardly afford the luxury of large and lightly used parks, they suggest. Every proposal to preserve a distinctive landscape in a park is greeted with a chorus of "ruin," with the *reductio ad absurdum* argument that park preservationists are trying to "lock up" a whole state or region.

The wolf cry of ruin needs to be measured against these hard facts: **1.** For half a century the demand for wood products in this country has been soft; it continues to be, and there is every reason to believe that this picture will persist. Despite population growth, the total consumption of industrial roundwood today is hardly different from what it was in 1910.

As architects well know, substitution of other products for wood in the construction industry is so rapid as to be nearly revolutionary. The effect of this substitution is to cancel out the impact of growing population on demand for wood products. The clear fact of the matter is that there is no rapidly growing demand for wood products. **2.** There is no shortage of timberland. More timber today is being grown than is being cut, principally in the East and the South. Seventy-two percent of the commercial timberland in this country is in private ownership. The fact that 300,349,000 acres of this land are not under

commercial management is due to the fact that the markets are not strong enough to make it economically advantageous to put it under such management or to sell it to large concerns who will. If markets do become stronger, there is an ample reservoir of good commercial timberland.

**3.** The real competitive problems of the timber industry, particularly in the Northwest, stem from pressure on log prices caused by an excessive number of small mills bidding the price up in the face of static lumber prices, not from a squeeze on forest land in relation to consumer demand. The brutal fact is that the public log market there cannot support all of the small mills which are trying to hang on. Since World War II, mill capacity has exceeded the permanent log supply in that region. As private lands are being cut out and ownership is being consolidated into a few large holdings, the day of reckoning is approaching when the number of firms must be drastically pruned.

It is this prospect which is causing panic in portions of the timber industry. Between 1947 and 1962, 29,000 sawmills, nearly half of those in the country, closed down. In line with this trend a 25 percent reduction in employment is forecast in the industry in the next decade in the Northwest. With declining employment, the industry's economic and social importance in this and other regions is waning.

**4.** With so many small mills hungry for logs and pushing prices upward, pressure has built up to increase the amount of stumpage offered for sale from the national forests. The Forest Service is being pressed to sell timber in remote and marginal sites which are exceptionally scenic. The soil on these sites is so poor, with growing seasons so short, that it is impossible to produce successive crops of trees within economically desirable periods. These sites, essentially, are being mined on a one-time basis for the old growth it took centuries to grow, with the public's interest in the scenery irreparably impaired.

Such areas can be found in the North Cascades, where Congress is in the process of passing administration to the National Park Service so that better protection can be provided. The Forest Service is also being pressed to raise the allowable cut through subterfuges disguised as technical revisions.

**5.** Our society is now an affluent

# vation Is as It Is Seen

pects in Portland, Oregon, will have conservation in the forefront. For the benefit of both those who will attend the event in the great Pacific Northwest and those staying home, the AIA JOURNAL asked Mr. Orell and Mr. McCloskey to articulate the views of their respective camps on the conservation issue.

**Michael McCloskey**, a native Oregonian, is conservation director of the august conservationist group, the Sierra Club.

one which chronically produces more than it can consume. It is burdened with surpluses of products and materials, while environmental amenities increasingly are in short supply. In such an affluent society, parks, wilderness and protected landscapes are items of social priority because of the refreshing quality and meaning that they give to life.

Despite this priority, the land allocated to these purposes is minimal. Less than 2 percent of the surface of the United States is set aside in national parks, wilderness areas and wildlife refuges.

In western states, the percentage is generally higher but still minor. On the Pacific Coast, the following amounts of land are found in these reservations: California, 4.4 percent; Oregon, 1.5 percent; and Washington, 5.9 percent. In California and the Pacific Northwest, only 5 percent of the national forests are protected in landscape management units, where the amount and intensity of logging is restricted. All current proposals for new parks, refuges and wilderness areas would hardly change the general percentages.

A study of three typical national forests in California, for instance, showed that the maximum reservations for recreation that could be made under official inventories would remove only 13 percent of commercial timberland from production. And a similar study in the Pacific Northwest of maximum possible wilderness reservations foresaw only a 2 percent reduction in the allowable cut in the Douglas fir subregion.

The true perspective, therefore, for viewing disputes over parks is one involving minute shifts in the allocation of land. The disputes involve marginal shifts, not massive lockups. Massive lockups exist only as scare cries of an industry willing to concoct straw man arguments to discredit legitimate and responsible park proposals.

The epic battle being waged over a Redwood National Park in northern California illustrates the kind of contest now taking place between conservationists and the lumber industry, with more such contests coming soon in the case of the proposed Voyageurs National Park in Minnesota and the

Big Thicket National Monument in Texas.

Again the industry cries "havoc," charging that the redwood industry is being mortally wounded and that the local economy is being gutted by the park. As usual, the facts fail to sustain these alarms.

The redwood industry has nearly cut itself out of old growth now, with only 10 percent of the original timber available yet to be cut and 2½ percent protected in state parks.

Most of the remaining 10 percent will probably be cut in the next 15 years. When this is cut, most of the redwood sawtimber industry will be finished. A marginal industry in second growth will exist, but not much second growth will be available for another 20 to 30 years, and second growth by its nature is far inferior to old growth.

Most of the redwood land now being bought up by large companies is being planted to Douglas fir, which will be cut at short intervals for pulp. Because of automation, the pulp industry provides scant employment. Of the land capable of growing redwoods, 95 percent remains in private hands.

The bill (S. 2515) passed by the Senate to establish a Redwood National Park (by a vote of 77-6 on November 1, 1967, and then sent to the House) would take only 36,000 acres out of private hands, thus still leaving 93 percent of redwood land in private ownership.

The national park would bring the percentage of original forest protected to barely more than 3 percent. In the process, though, it will rescue such stands as the 300-footers lining Redwood Creek.

The industry argues that this slight shift will somehow undermine the stability of an entire industry. If this argument has any plausibility at all, it is rooted in the fact that the four main companies affected have a strictly limited supply of old growth left. Two, Simpson and Georgia-Pacific, have less than a dozen years left in this locality. As both are in the pulp business, they are anxious to phase out their sawtimber holdings to convert their lands to Douglas fir.

In view of these phase-outs, the question is not *whether* a drop in mill employment will occur, but rather *precisely when* it will occur.

It has already come for many. Between 1953 and 1962, 110 mills went out of business in Humboldt County, destroying 2,400 jobs. Lumber employment in the three North Coast counties dropped by



6,200 jobs between 1959 and 1967. 1,500 of those jobs were lost in the last year alone. Peak unemployment hits the 16 percent level. A crisis born of over-cutting and mining a one-time resource is now upon these counties.

A national park can be a counterbalancing force in local economies. Economic surveys by Arthur D. Little, Inc. have predicted that park-based employment should be able to replace the jobs displaced in the lumber industry within 10 years after the park is established.

While a park is not an economic panacea, and does not find its justification in economics, in the long run it cannot be anything but of help to local economies. And the troubles the lumber industry faces locally are not attributable to the park, nor is the park an aggravating factor of any overall significance.

Clearly one or two firms will be affected in a significant way by the park, and their opposition is somewhat understandable, though they will be paid full fair market value. But the vehemence of an entire industry's opposition to this park can only mean that the battle is regarded as a symbolic test of strength.

At stake is the industry's traditional dominance in being able to dictate national land use policy for wildlands. The industry may soon have to decide whether the cost in public goodwill is worth the uncertain value of being a competitive political force where its fundamental interests are not really at stake. □

**Bernard Orell** is vice president for public affairs of Weyerhaeuser Company.

ing land uses, with outdoor recreation in the forefront.

Just as recreation can be the major secondary use of lands managed primarily for tree growing, so can tree growing be an important secondary use of much (but not all) land managed for recreation.

The landowner who compromises forestry operations in response to recreation needs, expects and deserves public acceptance that this is a two-way street: in other words, abandonment of the philosophy current among some conservationists that *all* public recreation demands are sacrosanct mandates. Industry reacts negatively, as would any homeowner or other possessor of private property, to neighbors who continually shout, "What's ours is inviolately ours; what's yours is completely negotiable!"

Government has reacted to sociological and political conservation demands by moving aggressively into the field of public recreation

*From top, Glacier Peak, within the proposed North Cascade National Park in Washington; a scene four years after logging south of Prairie Creek, Redwoods State Park in California; tree farm/public park of the Weyerhaeuser Company; and fertilization by helicopter for fast growth.*



via land-use planning, regulation, acquisition and development. The result is tax-supported facilities requiring only token payment from the users.

The panoply of forces at work requires the industrial forest operator to increase income from the land or lose it to competing economic functions and, at the same time, increase public recreational opportunities in the forest or face condemnation of his land for recreation purposes.

Growing more and better trees faster will increase income, and the industry is just beginning an exciting new era of intensified forestry to accomplish this. But accommodation of expanding recreation needs inevitably will conflict, to a degree, with optimum forestry.

Fortunately, this paradox is not insurmountable if the forester and the public recognize that much of the recreation demands on private land can be satisfied in ways compatible with timber production, which will also provide a return on investment to the landowner. In plainer words—fee recreation.

While little effort has been made in the past to see that users of public outdoor recreation facilities bear most of their cost, this picture is changing rapidly. Fees for public parks, campgrounds and resorts are being increased. People are demonstrating willingness to pay a fair price for outdoor pleasures. The skier, boater or trailer camper does not expect a free ride at the expense of his stamp-collecting neighbor.

It is imperative that owners of industrial forest land respond to this opportunity with enthusiasm and business acumen. The social and economic incentives are strong, and the alternatives are ominous.

One key to full development of private outdoor recreation of all kinds will be the tax structure imposed upon these operations. Adding too heavy an additional tax increment based on the recreation value of working forests will tend to discourage capital expenditure for recreational development and may even force the land out of timber production. Using taxation as a zoning tool also must be avoided.

In situations where recreational needs are great and business opportunities negligible, working partnerships between private landowners and public recreation agencies may be attractive. The objective would be to optimize rec-

reation and minimize disruption of timber production at the least cost to all concerned.

These approaches will require a metamorphosis in thinking—by the recreating public, the industrial forest operator, legislative and executive branches of government and the ardent advocates of greatly expanded single use of land for noneconomic purposes.

At the same time the forest products industry must continue to raise the voice of reason on conservation issues. Only an alert and fully informed citizenry can direct the increasingly complicated decisions which will determine what sort of ecological and economic environment we will pass along to our grandchildren.

A delicate and finely tuned balance of natural resource uses, responsive to present needs and planned for those of the future, must be the goal.

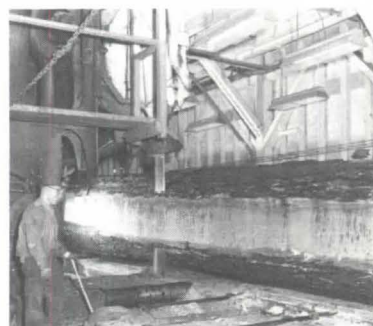
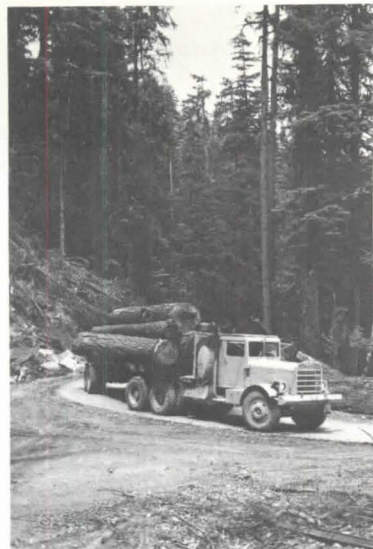
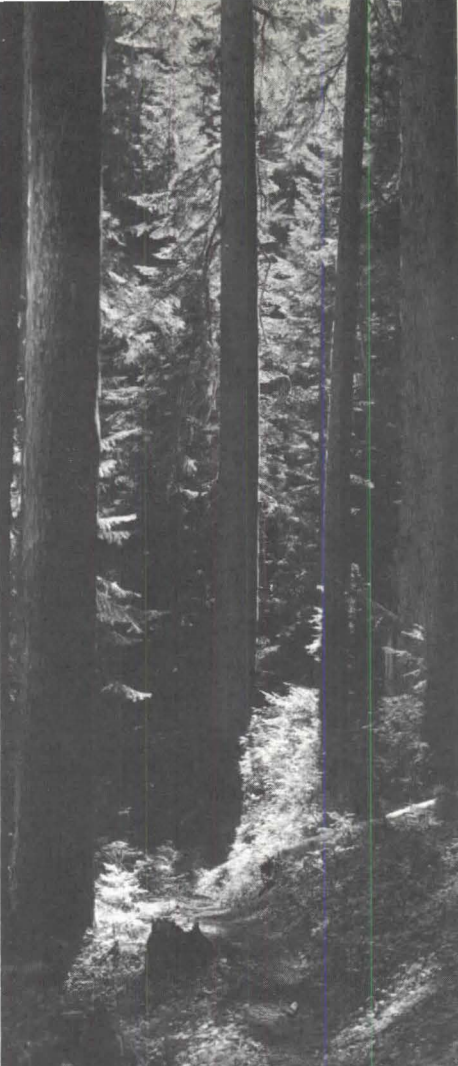
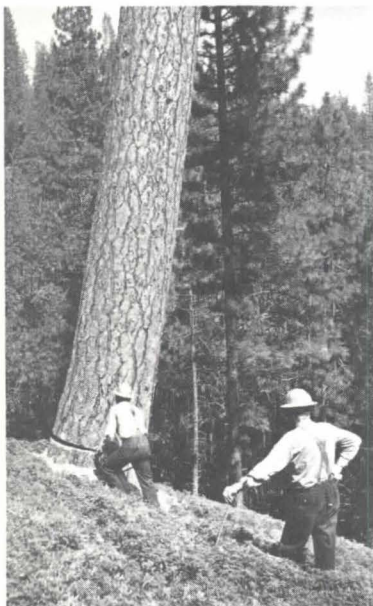
Continued pursuit by innumerable factions of their present adversary roles can only prolong the present conservation melee. Everyone wants national parks; the arguments concern how many and how large.

Greenbelts refresh the soul, but forests entirely closed to the logger may leave the children of this generation hungry and, as they become adults, jobless. The hunter exults in the chase while the bird watcher photographs the same quarry and demeans the nimrod.

It is time for all conservationists, whatever their persuasion, to begin communicating more effectively with one another. Determination of points of agreement is the proven avenue to reasoned compromise of differences.

Objectivity and candor must prevail, both in straightforward debate of honestly held convictions and in education of the public on the broad issues involved. Those who cry "wolf!" in advocating extremes must be prepared not only to produce an authentic *canis lupus* but to document its existence, hair by hair. Close scrutiny is the surest antidote for the selfish, the self-seeker and the misinformed.

Americans have an opportunity and an obligation right now to restore "conservation" to its proud place in our self-governing philosophy. If we approach the challenges with energy, honesty and goodwill, we can shape our forest environment to meet all the needs of the affluent 20th century and prepare to meet the demands of the intensely populated 21st. □



## A Day in Tall Timber

The forests of the Pacific Northwest will become a workshop of sorts for convention-goers who stay on to don their walking shoes for an all-day outing on Friday, June 28. Co-sponsored by the Host Chapter and the Western Wood Products Association, the tour will take visitors through timber stretches not ordinarily open to the public. The trip, which will get underway at 7:30 a.m. and continue through late afternoon, will include a visit to the Weyerhaeuser Company mill at Longview, Washington, lunch in the tall-tree country on the Kalama River and a view of logging operations on the slopes of Mount St. Helens. Inquiries regarding the tour, the cost of which is \$5 per person, should be directed to the Portland Chapter AIA, 605 Park Building, Portland, Ore. 97205.

# Contractual General Conditions

BY GEORGE M. WHITE, AIA

A steady stream of written and spoken words has been flowing from the headwaters of architectural practice for the past three years in connection with the updating of the AIA Standard Forms. Most of the volume has been concerned with the General Conditions of the Contract, known affectionately, if not passionately, by the cryptic sign, A201.

The place of this document in the hierarchy of Institute forms is a prominent one because it forms the keel upon which the legal relationships of the construction ship are laid. The architect, as the captain, must thus necessarily be vitally interested in its composition. A brief review of

**The author:** Mr. White, architect and consulting engineer in Cleveland as well as a lawyer, is chairman of the AIA Committee on Documents Review and a member of the Committee on Insurance.

the basic documents and of the relationship of the parties in the construction process will serve to delineate the basis for the reasoning behind the detail, and the general characteristics of A201.

The diagram on the next page indicates the direct legal ties by solid lines. The dashed lines indicate indirect ties. It is important to note that the architect has no direct legal tie with the contractor. This apparently obvious fact is often overlooked or forgotten when disputes arise into which the architect is drawn. Similarly, the subcontractor and the sub-subcontractor have no direct legal tie with the owner; neither do the architect and the surety (where one is involved) have any direct legal tie. The simplicity of these relationships is very deceptive, as an analysis of the documents will show.

What causes the complexity? Why cannot the simplicity be retained? The answer, of course, has many facets. A primary one is the effect of the legal grid which is superimposed upon the activities of our society generally, and upon the construction industry in particular. The Anglo-American common law heritage, intermingled now with derivatives of the Napoleonic codes, has certain characteristics that do not lend themselves readily to the special needs of this industry. Automation, technological development, rapidly expanding frontiers of knowledge, geometrically increasing needs, all are confronted in the American construction industry with the restrictions and complexities of our legal system which warp the construction process.

The dire need to retain the order necessary for stability, and still accept the change necessary

for progress, has brought about a series of revisions in the documents. These changes are now occurring with increasing frequency. The development of a more national rather than regional approach to problems has made the acceptance and use of standard documents more prevalent than ever before. Local usage must still, of course, force certain changes in any document prepared for use by some 50-odd jurisdictions.

Another result of the technological progress in construction is the increased complexity of the design and construction process. We are experiencing a growing team effort in the design offices and, indeed, in the entire building program. The need to better define the limits of responsibility of the parties on the construction team has thus arisen. The goal, of course, is to avoid litigation through a better understanding of the roles of the parties. The litigation increase has become evident as a result of several factors:

1. The growth of a social philosophy which favors society's responsibilities to individuals. This concept is manifested in such things as Social Security, Workmen's Compensation and Medicare, and results in the law's increasing tendency toward the finding of liability without fault. Thus an injury to someone is more and more resulting in redress irrespective of who or what is the cause.
2. The abandonment generally of the legal principle of privity. So it is that one does not have to be a party to a contract in order to claim damages which arise out of the contract. As a corollary, one who is a party to a contract may find himself liable to third parties outside the contract for negligent acts resulting from performance under the contract.
3. A highly technical society has come to expect a higher degree of skill from its specially trained members. The level of knowledge required to land a rocket on the moon is imputed to architects, who are expected to be increasingly knowledgeable about complex building forms containing sophisticated mechanical, electrical and structural systems. The computer has necessitated an upgrading of professional skills, and the law is holding architects and engineers to comparably higher standards.
4. A legalistic society has developed which looks increasingly to the courtroom for the solutions to its conflicts. This trend will hopefully encompass international conflicts as well, and in that development, more, rather than less, individual lawsuits are to be expected.

As a profession which is part of a major industry in our economy, architecture must necessarily

concern itself with problems far broader than those of A201 as such. The creation of man's environment with all of the attendant social, economic and esthetic ramifications is an exciting and powerful challenge. But just as the architect must concern himself with a myriad of details, any one of which may destroy his design, so must he concern himself with all of the components of the industry's interactions. His is the only discipline that encompasses *all* of the facets of the diamond we call environment. A well-founded knowledge of the General Conditions is a fundamental volume in the architect's encyclopedia of information regarding those interactions.

A line-by-line and word-by-word study of A201 will unfold the rules by which the architect can govern his practice during the construction phase of the project. A quarterly review will serve to revitalize that knowledge.

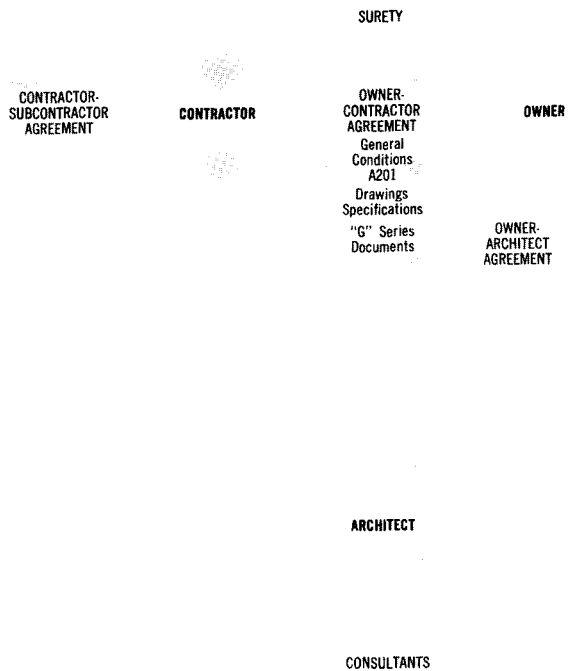
The latest revision has probably been more widely publicized and reviewed at chapter and state seminars than any other document in the past. Some of the changes and additions have elicited extensive reactions from contractors, lawyers, insurance companies and sureties as well as architects. [Hopefully, further commentaries will be published on all of the sections of A201.] For the present purpose, an examination of the major substantive changes will serve to enable practitioners to understand this vital document better.

### 1. Definitions

A number of new definitions are found spread through the document.\* These are, of course, primarily intended to designate specifically the meanings of contract words which have given rise to misunderstandings in the past, to give new meanings to previously used terms and to define new terms. In their order of appearance, the following Subparagraphs have no antecedents in prior documents, and thus are new language: 1.1.2 The Contract; 1.1.4 The Project; 4.13.1 Shop Drawings; 4.13.2 Samples; 5.1.2 Sub-subcontractor; 6.1.2 Contractor in separate contracts; 8.1.1 Contract Time; 8.1.2 Date of Commencement; 9.1.1 Contract Sum; 12.1.2 Change Order; and 12.4.1 Field Orders.

Some terms have been defined for the first time or more clearly defined than previously. These are 1.1.1 Modification and Addenda; 1.1.3 The Work; 2.1.1 The Architect; 3.1.1 The Owner; 4.1.1 The Contractor; and 5.1.1 Subcontractor.

\*When the AIA Document revisions were being developed, it was decided to capitalize certain words, i.e., Owner, Contractor, Architect, Project, etc., to clarify and emphasize 1) the parties to the contract, 2) definitions, 3) other contract documents or 4) AIA-related practice documents such as G703, Application for Payment. Thus the Architect is the Architect who has an Agreement with the Owner to perform professional services related to the Project. All recent editions are coordinated regarding the use of identical language when referring to the same requirements.



### 2. General Statements

New language which applies to the contract generally is found in 1.2.2, a representation by the Contractor that he has visited the site and has familiarized himself with local conditions. The statement made in 1.2.4 is also new, and qualifies the Specifications organization as not governing the division of the Work among Subcontractors. It will be noted that the term "Work" is capitalized when used in accordance with its definition in 1.1.3, as indicated previously.

The word "interpretations" appears in 1.2.5 as a substitute for "instructions" which was used in the 1963 edition. This and numerous other word changes result from the newly established policy of clarifying the extent to which the Architect's control over the Contractor's actions is limited.

### 3. Architect's Responsibilities

Subparagraphs 2.1.2 and 2.2.1 are new, and state that no contractual relationship is created between the Architect and Contractor, and that the Architect will perform general Administration of the Construction Contract. The latter does not define a new role, but better describes the acts performed by the Architect. Subparagraph 2.2.2 contains a new sentence which states that all of the Owner's instructions to the Contractor shall be issued through the Architect; this requirement should avert misunderstandings that might otherwise arise.

The language generally in Article 2 is repeated verbatim from the Architect's duties as spelled out in Document B131, the Owner-Architect Agreement. The purpose here is to place the Contractor



on notice of what the Architect has agreed to do and what he has not. Thus Article 2 contains much that is new: 2.2.5, 2.2.13, 2.2.14, 2.2.15, 2.2.16, 2.2.17 and portions of 2.2.4, 2.2.8, 2.2.12 and 2.2.18. The last sentence of 2.2.4 states that "The Architect will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions. . . ." This statement is the heart of the concept that the Architect shall design the Project and the Contractor shall build it. Here, for the first time, also, we find a fixing of responsibility for safety measures on the site. These and other similar statements were inserted, not to relieve the Architect of his proper responsibilities but rather to insulate him from liability for acts which he does not intend should be within his zone of professional risk. Subparagraphs 2.2.10 and 2.2.11 modify the previous arbitration provisions by providing that a demand for arbitration must be made within 30 days of the date of issuance of the Architect's final decision; otherwise, this becomes final and binding.

The Architect's authority to stop the Work is provided for in 2.2.12. The wording is an attempt to limit the liability attendant upon such stoppage. There is some doubt concerning the continued validity of this traditional concept. Although the purpose of the authority is to enable the Architect to prevent the continuation of unsatisfactory construction which does not conform to the Contract, the authority has been misinterpreted by some courts to mean that unsafe or otherwise unsatisfactory construction which results in injury to an individual, should have been stopped by the architect. The Institute is remaining alert to these developments and will give serious consideration to the further clarification or possible abandonment of this doctrine.

Subparagraph 2.2.17 clearly limits the duties, responsibilities and authority of the Architect to those set forth in A201, and requires written consent of the Owner and the Architect for any extension. This provision is carefully worded to clarify the limits of liability of the parties and their agents.

#### **4. Owner's Responsibilities**

New language appears in 3.2.3, 3.2.4 and 3.2.5. Basically, these provisions are an attempt to relieve the Contractor of the necessity for making requests which are acceptable in the construction industry but usually appear unreasonable to the Owner. Thus the Owner is clearly on notice that delays in the Work may result from his failure to furnish required information on a timely basis. Further, in 3.2.4, the Owner is apprised of the necessity to furnish instructions to the Contractor through the Architect. This statement was also included in 2.2.2 for clarity.

#### **5. Contractor's Responsibilities**

The Contractor's responsibilities for the constructing of the Work are stated in 4.3.1 in language similar to that used in 2.2.4: "He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract."

Much of the wording of the 1963 edition was changed in an attempt to clarify and modernize the language, while retaining the basic concepts expressed in that edition. A good example is the first sentence of Article 14 (1963): "The Contractor shall keep on his Work, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Architect." In the 1967 edition, this sentence is found in 4.9.1 and reads: "The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during the progress of the Work. The superintendent shall be satisfactory to the Architect. . . ."

A representation by the Contractor is made in 4.13.4 regarding his having verified field measurements, materials, catalog numbers and similar items. This is new language, and was added to fix responsibility for verification of Shop Drawings and Samples.

Subparagraph 4.17.1 is new, and is the final knot tying down the requirement that all communications from the Owner to the Contractor, or from the Contractor to the Owner, be forwarded through the Architect.

The inclusion of Paragraph 4.18, the new provision regarding indemnification, produced considerable national discussion among contractors, architects, insurers, sureties and others. Much of the difficulty apparently grew out of an understandable but unfortunate misunderstanding regarding the intent of this provision, coupled with the semantic problem of accurately describing the intent in words. The level of abstraction at which the material in these documents is presented causes no fewer semantic difficulties than are found in most similar endeavors. The thoughts conveyed by the written words are easily distorted by the reader's prior associations. In this instance, the word "indemnification" itself seems to have caused some adrenaline to flow and emotions to intensify.

Once the actual intent was clear to those charged with responsibility for the content of the documents, proper words were agreed upon which, at least for those involved, seemed to do the best job of description.

The intent is relatively simple. It is to let the burden of responsibility for damage to third persons or third-party property, arising out of joint

negligence of the Contractor and the Architect during the construction phase, fall upon the one whose negligence is the primary cause of the injury or damage.

The reason for the inclusion of 4.18 is also relatively simple. A number of claims have been made against architects by injured workmen who had received remuneration under Workmen's Compensation laws, and who were therefore precluded from claiming against their employer, the Contractor. Probably because of the inadequacy of the awards under Workmen's Compensation, the injured party cast about to find a likely prospect for a negligence claim. The prospect had to be one who was outside the legal immunity granted the employer. This same situation occurred with employees of subcontractors, who claimed against general contractors, since the latter are, in that instance, also vulnerable.

Because of the Architect's activities on the construction site, some of which may be the cause of injury to a workman, he is a proper party to a lawsuit. The Contractor is similarly entwined. Where the primary cause of the injury is an active wrongdoing by the Contractor, it seemed eminently unfair to require the Architect to respond for the passive role of not having detected the Contractor in the act of doing wrong. Similarly, the Contractor should not be asked to respond for any active negligence of the Architect.

The foregoing oversimplified explanation is an attempt to indicate, also, the reasons for the following basic features of 4.18:

- It does not apply to the Work itself.
- It does not apply to the Architect's negligence in the preparation of Drawings, Specifications or other enumerated documents.
- It does not apply where the Contractor is not negligent in the legal sense.
- It does not require indemnification where the Contractor's possible wrongdoing is not the primary cause of the injury or damage.

The limited but important instances which 4.18 was designed to cover are understood by the underwriters in the insurance industry, who were party to its composition, and therefore the insurability of the contract is now universally assured.

## 6. Subcontractors

Subparagraph 5.1.2 is new and defines a Sub-subcontractor. Although to some that word appears to be a contrivance, it is nevertheless used throughout the industry and, with a proper definition, should eliminate many contractual misunderstandings.

A basic change, intended to deal better with the problems of bid shopping and unqualified

Subcontractors, either by the Owner or the Contractor, is found in Paragraph 5.2. Editions of A201 prior to 1963 allowed an increase in the contract price for the change of a subcontractor, only where such change was required by the Owner after approval of the Subcontractor had been given by the Architect. The 1963 edition changed that and required that upon the disapproval of a Subcontractor, regardless of cause, the Contractor would be entitled to an increase in the Contract Sum for any additional amount resulting from the obtaining of an approved Subcontractor. The inequities that resulted from that provision arose from the use of unqualified subcontractors' bids as the primary basis for a Contractor's low proposal. The Owner would then be required to increase the Contract Sum in order to obtain qualified subcontractors who could perform the Work required by the Contract Documents.

The rationale behind the 1967 edition is that if a Contractor proposes a subcontractor who is unqualified in accordance with the Architect's determination, then the Contractor's proposal is not responsive to the bidding invitation, in that it is not actually competitive with the proposals of other contractors who would be able to comply fully with the contract requirements by using qualified subcontractors.

Paragraph 5.2 provides that under such circumstances, the successful bidder may, prior to the award, withdraw his bid without forfeiture of the bid security, or he may submit a substitute for the disapproved subcontractor. If the submission

G-Series Document No.	Document Name	A201 (General Conditions) Reference
701	Change Order	Article 12; Subparagraph 1.1.1; 2.2.14; 4.8.1
702	Application for Payment	Subparagraph 2.2.5; 9.2.1; 9.3.1; 9.3.3; 9.4.1; 9.4.2; 9.5.1; 9.6.1;
702A	Continuation of Application for Payment	9.7.2
703	Certificate for Payment	Subparagraph 2.2.5; 2.2.15; 5.4.2; 9.5.1; 9.6.1; 9.7.2; Paragraph 9.4
704	Certificate of Substantial Completion	Subparagraph 2.2.15; 8.1.3; Paragraph 9.7
705	Certificate of Insurance	Subparagraph 11.1.3
706	Contractor's Affidavit of Payment of Debts and Claims	Subparagraph 9.7.3; 9.7.6
706A	Contractor's Affidavit of Release of Liens	
707	Consent of Surety to Final Payment	Subparagraph 9.7.3; 9.7.4
708	Architect's Field Order	Subparagraph 1.2.5; Paragraph 12.3; 12.4
805	List of Subcontractors	Subparagraph 5.2.1; 5.2.2
808	Guarantee Information	Subparagraph 13.2.7

Other Published AIA Office and Project Documents That Can Be Used to Fulfill A201 Requirements

includes an increase to the proposed contract sum, the Owner has the option of accepting it, or disqualifying the bid. If, however, the Owner or the Architect refuses to accept a Subcontractor *after* the award, then the Contract Sum may change because of the required substitution, and an appropriate Change Order must be issued.

Paragraph 5.3 states the provisions that must exist in the Contractor-Subcontractor agreement, rather than, as was done in the 1963 edition, stating that the Subcontractor "agrees" to be bound by the terms of this document. The Subcontractor is not a party to A201 and therefore cannot "agree" within it. This is an example of some of the "cleaning up" that was necessary in the 1963 edition. In that connection, some of the language of that edition was transferred to the new edition of A401, Standard Form of Subcontract, where it more properly belongs.

### 7. Miscellaneous Provisions

Paragraph 7.6 changes the time of notice by the Owner for Contractor defaults from three days to seven days. This seemed a more reasonable time in light of the complexities of present-day construction.

The fixing of responsibility for the costs of tests is clearly stated for the first time in 7.8.1. The Contractor is to bear these costs except under the special circumstances provided in 7.8.2.

A very important statement is made in 7.8.5, which reads: "Neither the observations of the Architect in his administration of the Contract, nor inspections, tests or approvals by persons other than the Contractor shall relieve the Contractor from his obligations to perform the Work in accordance with the Contract Documents."

The purpose of 7.8.5 is, of course, to prevent the Contractor from excusing lack of proper performance by claiming an approval by the Architect or others. This can be a deceptive shield, however, where the Architect does, in fact, approve a variance from the Contract requirements. Subparagraph 7.8.5 is primarily meant to apply to those instances where improper materials, poor workmanship and other such failures to perform are either undetected or are latent in character. This Subparagraph does not relieve the Architect of his duty to do an appropriate job of administering the Contract in accordance with professional standards.

The subject of arbitration is dealt with in Paragraph 7.10. A basic change occurs here, in the provision that disputes shall be arbitrated in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association unless the parties mutually agree otherwise. The content of these Rules should be known to the Architect, and certainly to the parties to the

Contract, so that they are aware of their obligations. Compulsory arbitration, at the option of either party, has long been an established provision of this document. Its importance in determining the final disposition of a dispute is all too often overlooked.

### 8. Time, Payment, Completion, Protection

Claims for extension of the Contract Time and for delay resulting from failure to furnish timely interpretations have time limitations of 15 days as provided in 8.3.2 and 8.3.3. These are changes from the respective seven-day and two-week prior provisions.

The subject of payment is one that can easily cause misunderstanding, and therefore considerable effort was expended in trying better to recognize and provide for generally accepted practices and safeguards in the construction industry. Subparagraph 5.4.2 provides, for example, that if the Architect fails to issue a Certificate for Payment for a cause which is the fault of the Contractor, and not the fault of a particular Subcontractor, then the Subcontractor shall nevertheless be paid by the Contractor. This was included to avoid penalizing a Subcontractor for a problem which is not his.

Subparagraph 9.3.3 is a new one, and provides a warranty of title from the Contractor to the Owner. It is important to note that the Contractor warrants that title ". . . will pass to the Owner upon the receipt of such payment by the Contractor, free and clear. . . ." The point here is that title need not have passed prior to that time, and therefore the Contractor need not have actually paid for the Work prior to the receipt of moneys from the Owner. Thus the Contractor is no longer required to invest working capital to the full extent of the amount indicated in the Application for Payment. This practice has long existed in the industry and is now out in the open rather than being a known subterfuge.

Subparagraph 9.4.2 is a verbatim repetition from B131, the new Owner-Architect Agreement, and places the parties to A201 on notice concerning the extent of the Architect's responsibilities for the Contractor's use of funds paid to him. The following words in the last sentence contain an important new safeguard: ". . . the architect shall not thereby be deemed to represent that . . . he has made any examination to ascertain how or for what purpose the Contractor has used the moneys previously paid on account of the Contract Sum."

Clauses 9.5.1.6 and 9.5.1.7 provide two new and additional reasons for justifying the withholding of payment to the Contractor.

The usual list of items to be completed on a Project before final payment is discussed and

clarified in 9.7.1, and the procedures for qualifying the Contract for final payment are enumerated in 9.7.2 and 9.7.4. These latter Subparagraphs were previously found in A101, the Owner-Contractor Agreement, but it was felt more appropriate that they appear in A201, leaving the latter a simple agreement used primarily as a document of execution.

Subparagraph 9.7.3 is substantially revised in principle from former Article 32. It is now clear that before payment becomes due, the Contractor must submit an affidavit stating that all indebtedness has been satisfied, together with the consent of any surety if payment is final. Additional evidence need only be submitted if required by the Owner. This clarifies the ambiguity that existed in the 1963 Edition regarding the Architect's role in the requirement and the question of what, if anything, would be required. The specific items in the submission are regarded as equitable to the Owner without being a hardship to the Contractor.

Paragraph 10.2 clarifies the provisions for safety precautions. A long standing state of confusion regarding responsibility for project safety is hopefully laid to rest with this and the comparable provisions in B131. The Contractor is responsible for the safety of persons and property in connection with the Project. The Architect and Owner are not responsible unless they voluntarily inject themselves into the situation. Under those circumstances, liability may arise for the failure to act prudently.

Subparagraph 10.2.3 provides new language intended to make abundantly clear the Contractor's responsibility for the proper storage and use of explosives.

## 9. Insurance

The insurance provisions of A201 are found grouped together in Article 11. A detailed discussion of this article is found in Chapter 7 of the Architect's Handbook of Professional Practice. A new requirement is that the Contractor's liability insurance coverages provide at least 15 days' prior written notice in the event that the insurance is cancelled or materially changed.

Subparagraph 11.3.2 is new and calls attention to the fact that steam boiler and machinery insurance is not included in the ordinary fire and extended coverage policy.

The importance of the Owner's responsibilities for property insurance is emphasized in 11.3.4. In accordance with that Subparagraph, the Contractor is entitled to reimbursement if he is damaged by the failure of the Owner to properly protect the property by insurance. As in all areas of a standard document which do not conform to local practice, this provision may need to be al-

tered for projects where the Contractor is made responsible for all property insurance.

## 10. Changes in and Correction of the Work

Subparagraph 12.1.6 contains new provisions for resolving any disputes over additional costs that arise from unknown and concealed conditions below the surface of the ground. The intent here is to reimburse the Contractor more equitably for conditions differing materially from those ordinarily encountered. Subparagraphs 13.2.3 and 13.2.4 are new and clarify the correction and removal of defective Work.

Although the foregoing comments are reasonably explicit of the important substantive changes in A201, they are not intended to be exhaustive nor definitive. Practitioners should study the document in some detail in order to determine for themselves the portions which may have more significance for their particular practice. A careful review of the wording will yield many answers to questions concerning the developing industry practices.

Great effort was exerted to coordinate A201 with the other document revisions. Because the wordings are carefully interlocked, users of the documents are cautioned to carry any changes necessitated by local circumstances, through all of the various Articles.

The concepts, intents and basic provisions of the 1963 edition of A201 were carried forward to the current edition in order that users would not be inadvertently deceived. It is intended that this policy will continue in future revisions, which are not only inevitable but a necessity in the rapidly changing construction relationships. Generally, document revisions are an attempt to keep up with the practice as it is being carried on. Hopefully, future revisions can do more to set practice standards as well.

As are all of the AIA Standard Forms, A201 is written with a basic commitment to the single contract method of building structures. It is, however, readily adaptable to the method of separate contracts, if that appears appropriate in particular instances.

Future changes in the structuring of the legal relationships in the industry will hopefully make possible a simplification of A201. The recent trends toward performance rather than method type specifications may well have its counterpart in the contractual relationship itself, as it develops out of the general conditions.

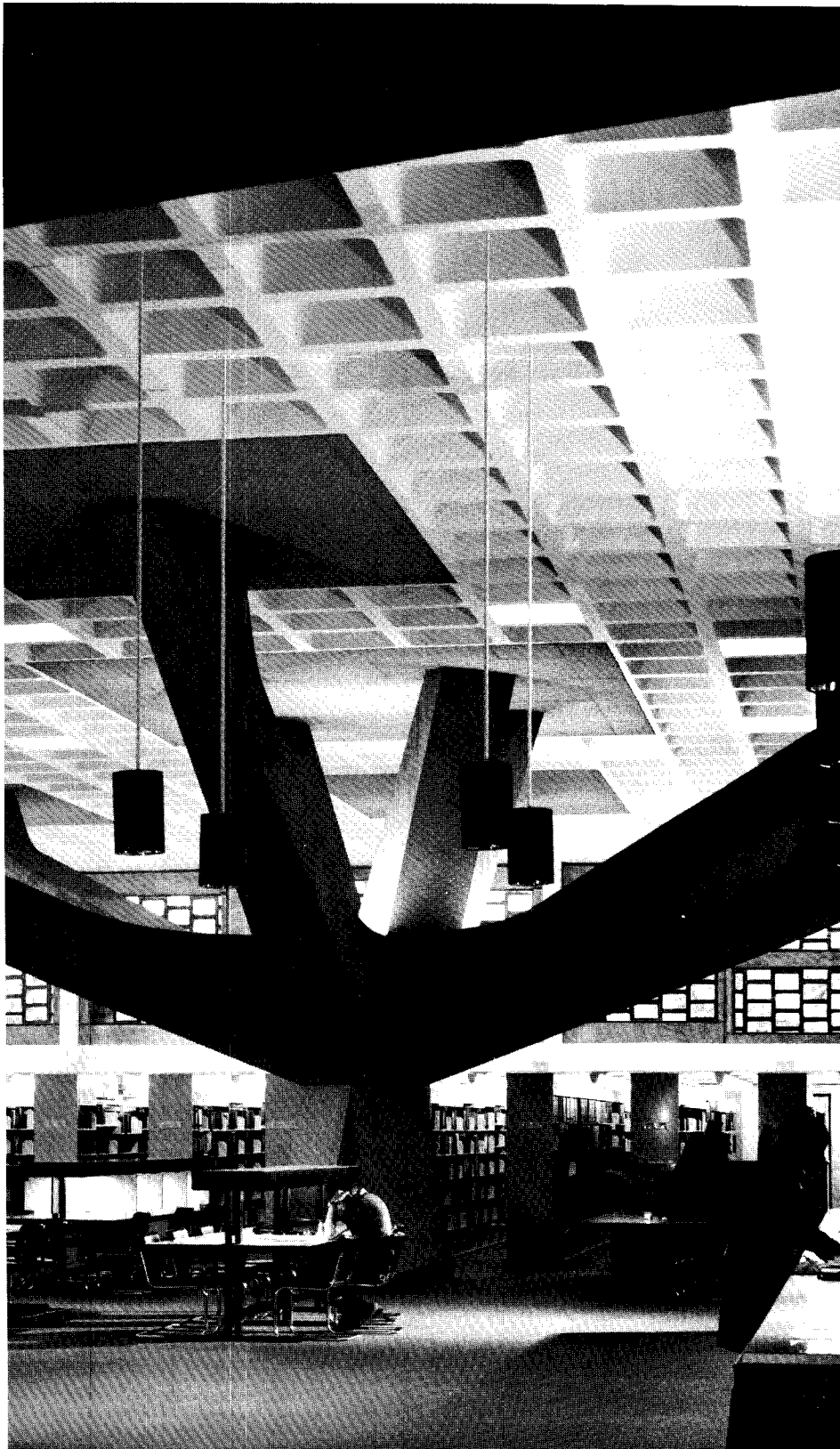
For the present, however, we must work with what we have, recognizing its limitations as well as its strengths and realizing that the detail of the document must be viewed in the larger light of the basic legal relationships of the parties themselves. □

# LIBRARY BUILDINGS 1968 AWARD PROGRAM

Seven projects in three categories—School, Academic and Public—have been cited for Awards of Merit in the fourth Library Buildings Award Program. Of the more than 200 entries, none was singled out for a First Honor Award. The biennial event is sponsored jointly by The American Institute of Architects, the American Library Association and the National Book Committee. Architect members, all AIA, of this year's jury were Francis P. Gassner, chairman, George E. McDowell and Giovanni Pasanella. Librarians who served as jurors were Frazer G. Poole, Library of Congress; Cora Paul Bomar, State Department of Public Instruction, Raleigh, North Carolina, and James E. Bryan, director, Public Library of Newark. The winning entries, shown here with excerpts from jury comments, will be exhibited at both the AIA and the ALA annual conventions in June.

**St. John's University Library,** Collegetown, Minnesota, Architects: Marcel Breuer, FAIA, and Hamilton P. Smith AIA.

"Use of structural 'trees' appropriate to the large size of the main reading room"





**Mount Anthony Union High School Library**, Bennington, Vermont. Architects: Benjamin Thompson & Associates, Inc.

"Design of tasteful directness with excellent use of contemporary materials"



**Mill Valley Public Library**, Mill Valley, California. Architects: Wurster, Bernardi & Emmons.

"An informal blend with the existing surroundings"

**Library, Institute for Advanced Education, Princeton, New Jersey.** Architects: Harrison & Abramovitz.

“Pierced roof allowing natural light to enter”



**Wichita Public Library, Wichita, Kansas.** Architects: Schaefer, Schirmer & Eflin.

“A functional plan with good distribution of services”





**La Crosse Public Library, La Crosse, Wisconsin.** Architects: Hackner, Schroeder & Associates.

"An efficient plan, providing ample space for circulation"



**Hofstra University Library, Hempstead, Long Island, New York.** Architects: Warner Burns Toan Lunde.

"An efficient solution in a two-story pavilion surmounted by a central tower"



# Our Recent Ruins

*"You can't tell our masterpieces without a program."*

BY EDMOND A. PACHNER, AIA

To anyone who travels the world and sees the works of the great and famous architects, it must come as a surprise to find that many of the recent ones are falling to pieces. They appear beautiful in photographs and sketches, they sound noble in descriptive essays in books and magazines. They are, in many cases, incipient heaps of rubble.

My own traveling has stretched over the past 10 years, so some of the buildings which I describe may have since been renovated. Or on the other hand they may have fallen down.

Take some of the works of Le Corbusier. The government buildings at Chandigarh, about 10 years old, are striking at a distance. Up close, and inside in particular, they are dreary, lifeless and disheartening. Rainwater pipes and electric wiring straggle across their surfaces. Holes from form ties pit their faces; dirt, pencil marks and perspiration stains discolor the walls. To the viewer not brainwashed by published presentations, they might well seem like abandoned factories.

The Ville Radieuse in Marseille, about five years old when I saw it, was in a similar condition of deterioration. But it had the added misfortune of being strewn and littered with the refuse of its scarcely esthetic-minded tenants. It was a vertical slum.

The Swiss Pavilion at the University of Paris, about 25 years old at the time, had already lost its entire facade which was in the process of being replaced. I trust that the second facade will last longer than the first.

Moving to the new world we find the devastation of modern life just as awe-inspiring. The city hall of São Paulo, Brazil, by Niemeyer, about 10 years old, was literally breaking up. Its cracked walls and its broken and poorly patched windows made it look like an abandoned warehouse. The free-form roof of the terrace was in a state of disrepair.

The restaurant at the Floating Gardens of Xochimilco in Mexico, by Felix Candela, about 10 years old, was also in a sad state, but

through no fault of the architect. It was completely smeared with painted signs and printed posters, making its very form invisible, if not pointless. I am told that it is now badly cracked, but it was a bold experiment with ultrathin concrete, and allowances must be made for this.

The chapel and library at Florida Southern College by Frank Lloyd Wright, about 10 years old when I visited the campus, fits into this group admirably. There was still a row of truncated columns meant to carry a canopy which had been carried away by a hurricane some time previously, making it appear like an archaeological relic. Also, one could not help being depressed by the dreary, dusty, cracked glass jigsaw puzzle above and the feeling of utter desolation.

Admittedly these are only a few examples of the modern masterpieces, but they comprise a good percentage of those that I have seen. Some may since have been put into better repair. But what is striking is the almost immediate obsolescence and deterioration of buildings held as works of art.

There are many recent architectural works which have held up far better and are more successful as a living and usable environment: Lever House by Skidmore, Owings & Merrill; the Illinois Institute of Technology by Mies van der Rohe, the US Embassy in New Delhi by Edward Durell Stone, the government buildings in Brasilia by Niemeyer to name a few. Clearly, there is no reason to conclude that all modern buildings are subject to immediate deterioration.

All of the aforementioned have been built within the past 40 years. None is especially daring or experimental in structural concept except the restaurant by Candela. None has been subject to violent meteorological or seismic disturbances except the chapel and library by Wright.

A building which becomes a shambles in a decade or two has something lacking in its original concept. This may be due to a budget that was inadequate to furnish both architecture and permanence. It may be that the archi-

tect was not allowed to, or was not paid enough to, or was not interested enough to inspect and approve construction. But it seems to be most often a lack of interest in the function of a building as a reasonably permanent human environment, but only as a tour de force, a piece of sculpture that will stand up long enough for photographs to be published in the magazines.

Aside from budgetary limitations and lack of proper inspection, there are certain facets of design which lend themselves to obsolescence and deterioration. These are basically the result of the lingering subservience of function to form.

The use of continuous glass surfaces where not called for by the floor plan is a strong offender. Everywhere these are seen curtailed off or blocked out, sometimes with raw plywood, to cover up ends of partitions, bookcases, panels for grilles or airconditioners. Often they are just kicked out because they run unnecessarily to the floor.

The use of glass in places uneasily accessible is another offender. It is intended to give lightness and airiness to an otherwise solid mass. But this is illusory as is visible even before the building is completed. The accumulation of dust and cobwebs, as well as cracking, will soon make a fuzzy mess that will be reminiscent of an unused amusement park.

The use of reflecting pools and planting bins where there is no assurance that they will be maintained is an absolute guarantee of a permanent supply of rubbish in the most visible locations.

The use of rough-formed concrete as a flight from smooth surfaces is perhaps the most misleading of all. This neither remains as crisp and clean as when stripped nor ages beautifully as brick or stone. The clipped tie wires rust through and pop out the pointing material, the grooves collect soot, the surfaces within reach of hands and heads turn black and shiny with dirt and grease. Within two years, you can't tell the masterpieces without a program.

Whatever the cause of this impermanence, the fact remains that architecture is not only an art but a science. This science should include safeguards against obsolescence and deterioration. □

# Are We Ready for Metropolitan Planning?

*Ready or not,  
the urban architect is being faced  
with a new kind of client.*

BY MATTHEW L. ROCKWELL, AIA

Architects have learned to be inured to public indifference to environmental improvement whether it be close to home or along the roadside. Trained primarily to better the design of structures, they are moving increasingly to improve the design of communities.

In fact, urban design has for some years now been a field of training for many architects. Its

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original context has been broadened from the plaza-civic center concept to include the whole city. This broader approach can be justified through the recognition that the latter is an entire structure, no less so than a building complex. Parallel though the design concept may be, there has been a sometimes unrecognized change of client. The prestigious corporate client has now become the political cluster which with mercury-like speed and nodulization raises new concerns.

Despite these elusive tendencies, the cluster still is representative of one political unit.

Hardly has the urban architect made this adjustment before he realizes the shortcomings of the political boundaries of his municipal client. The city structure more often than not fails to stop within its traditional limits. The architect barely adjusted to one municipal client is thus jarred by the new complexity caused by the metropolitan or regional client. Many faces indeed, for the strong centralized power is diffused into hundreds of fragmented communities: school, park, sanitary and drainage districts—some 1,200 for example, in the Chicago area.

Moreover, each unit has been trained to believe in the prestige of its singleness and the specific need of its local constituency. Each has learned to recognize the blueprint of its high school, filtration plant or village plan. Few units are prepared to recognize their interrelatedness until a wall of floodwater bears down upon them from their upstream neighbor or until the smog of a burning dump wafts across the intangible wall which separates each community.

The architect senses the need for his involvement. If he knows little about the polluting effect of carbon dioxide or the interrelation of the acqui-

WISCONSIN

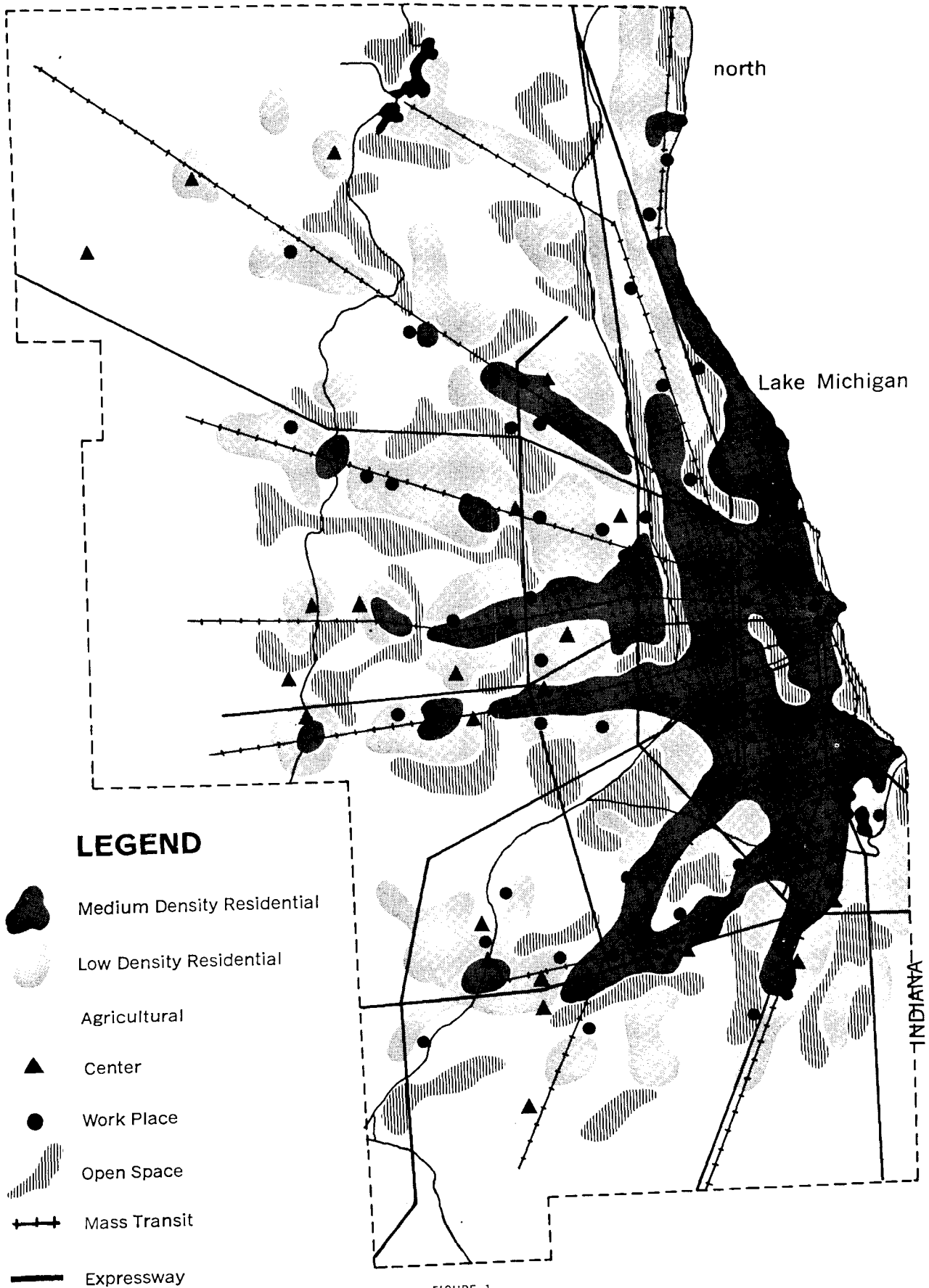


FIGURE 1



FIGURE 2

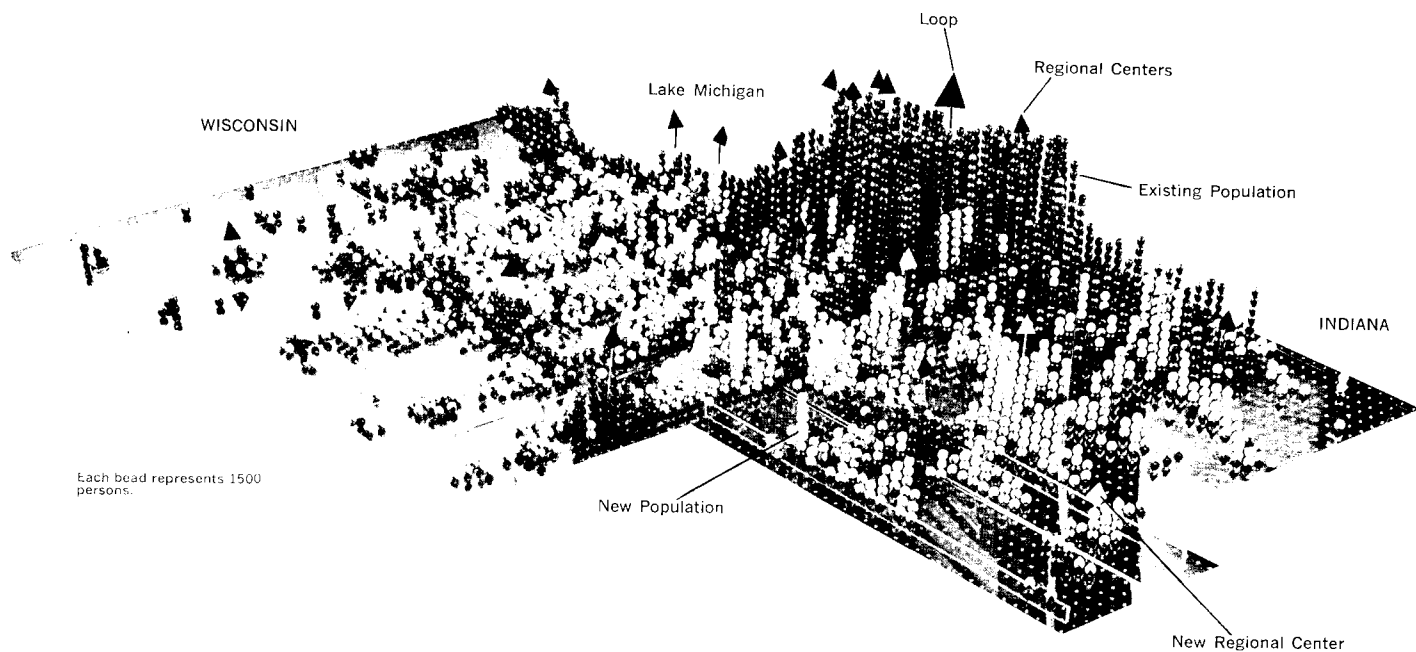


FIGURE 3

fers to water retention ponds, he is at least prepared to help identify those open spaces of a region which could help to give it not only form but outlook, recreation and uplift of spirit. Similarly, every new highway alignment cries for his involvement; so also do the outmoded village business centers so desperate for reorganization. This is an expanded urban design the architect can now provide.

The possibilities continue limitlessly. Developers to the contrary, we have far too few "new cities." There is too little understanding of the term itself, not to mention the social function and the physical contribution which a new city must make to its region. Architects should soon realize the many inadequate substitutes for the term and accept their responsibility to design communities attuned to the technology and society of the 21st century.

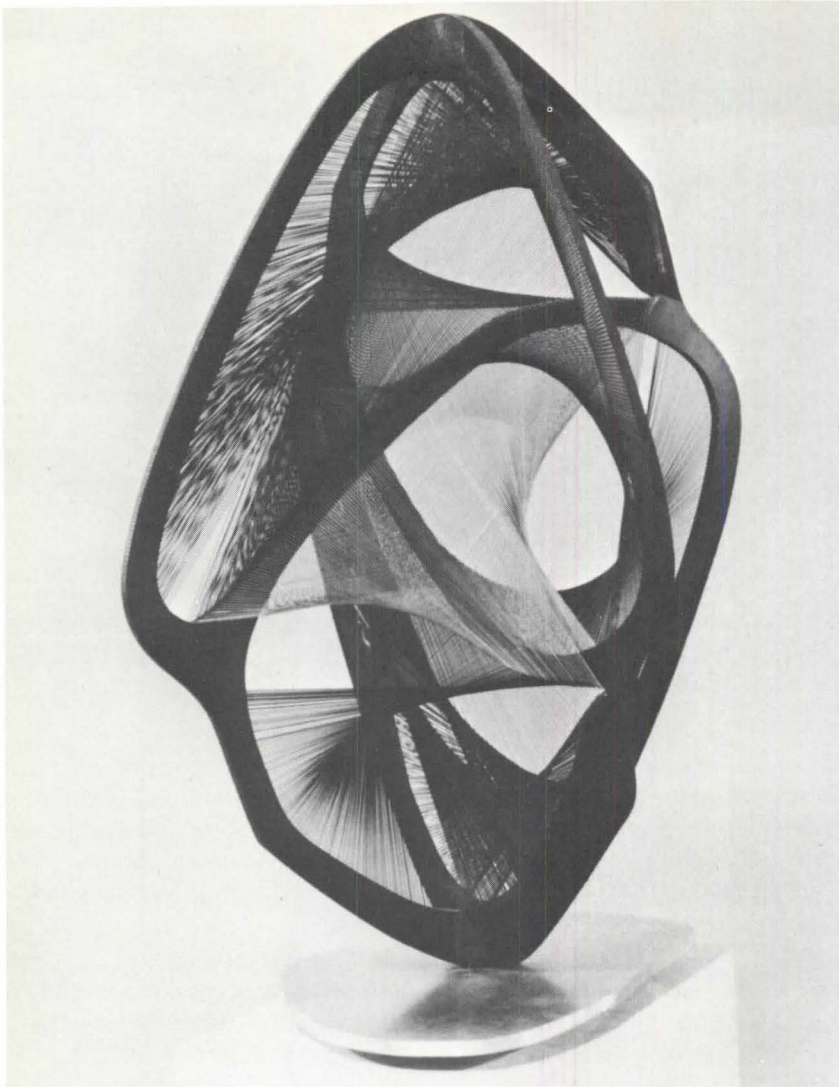
What else is characteristic of this new client? Every American and democratic sense strains for the iteration and reiteration of social interaction. Our friends, our associations, have all been centrifugal in involvement. Suddenly we find in regionalism a centripetal influence which turns each community in upon itself; the rugged individualism that attitude fostered was appropriate in the days of the pioneer but is hardly so in an era of ever-increasing mobility.

To those who fear coordination between communities—of which a regional planning process is the sceptre—the urban architect acquires a sinister and subversive mantle, according to the critics from the radical right. These critics forget the two interstate toll roads which failed by 3<sup>1</sup>/<sub>2</sub>

miles to meet on the Indiana-Illinois boundary. The metropolitan planning opposition says the planning process is a foot in the door for complete federal take-over of local affairs—and only a few steps from control by a UN task force (the Illinois Legislature was told!). The former position derives from the provision of the Model Cities program for metropolitan planning agencies to comment on the compatibility of all federally aided projects with a metropolitan plan.

What is a metropolitan plan? The urban architect today prepares such a plan initially with broad brush strokes. The work is at once physical, economic and sociological with a strong base of political awareness. Generalized and conceptual, it has significant graphic meaning. Thus we have the corridor, the lineal, the satellite city plans, etc. The true understanding of the current thinking does not come across until it is realized that the plan at this stage is an expression of the political policies related to its shape. Thus a finger—or radical corridor—type plan, now proposed for the Chicago area (Fig. 1), would locate all but the sparsest residential areas close to expressways and commuter rail lines.

Conversely, a satellite city plan would cluster development around existing or potential nodes of community activity. Dozens of plans or combinations are available to the designer, but each must face the test of implementation. And implementation results primarily from the acceptance by political leaders of the policies which effect the chosen plan. Policies, of course, exist at all levels. At the county level for example, a finger plan may be implemented by a county zoning or-



The armature: "Here is a strong frame interrelating beautiful order and hundreds of connective cords which can stand for the Chicago metropolitan plan."

dinance which coagulates industrial zones within a corridor rather than permitting "a little bit of industry in each township"—a practice in one of our Northeastern Illinois counties.

It is apparent that there is an infinite amount of design possibility to the regional or metropolitan plan. A typical detail of one segment of the new proposed finger plan clearly illustrates this (Fig. 2), but the basic plan should more realistically be a recitation of policies for development. In the text, the plan policies may be shown by illustrations. For example, a map can show the distribution of people as of some future date which would result if the proposed policies were adopted. One such map is the regional model of the finger map (Fig. 3). But the map is not the plan!

Obviously, a policies plan provides a framework onto and into which many proposals of detail may be added. A term which suggests itself is the armature plan. Borrowed from the sculptor, whose clay creations can or could collapse for lack of a *strong armature*, this framework can

symbolize the essence of the metropolitan plan. This is particularly true in modern sculpture where contemporary simplicity tells a complete story: thus the handsome piece by Naum Gabo. Here is a strong frame interrelating beautiful order and hundreds of connecting cords which can stand for the Chicago metropolitan area, almost without competition in the number of its governmental units (over 1,200 at the last count) to be tied together by an orderly frame. The provision of an orderly frame of reference, the armature, will provide the multitude of governmental leaders with a place to find *collective* agreement on general concepts of interrelation which might not otherwise be possible.

Furthermore, the generalization—the conceptualization of a form so great as to omit local indications of property use—could be such that most conservatives may be persuaded that individuality is still the prerogative of the local unit of government; thus planning for the future does not violate in any way our democratic traditions. □



**Editor:** Donlyn Lyndon, AIA, School of Architecture and Planning, Massachusetts Institute of Technology, Cambridge. **Contents:** An Applied Mathematics Course for Architects and Urban Designers by Roger Montgomery and Stuart Boxerman; Our New Environment and Our Old Universities by Philip Thiel.

## An Applied Mathematics Course for Architects and Urban Designers

BY ROGER MONTGOMERY AND  
STUART BOXERMAN

*This article reports the experience at Washington University in the hope that it will encourage others to make the necessary move toward more relevant quantitative analysis in architectural and urban design curricula.* —THE EDITOR

Developing quantitative analytical skills has proved among the more troublesome problems in education for urban design and the architecture of large-scale projects.

The vast majority of the urban design candidates in the several schools giving degrees in the field have graduated from the normal five- or six-year professional curriculum in architecture. Today, in most of these architectural programs, students have been exposed to a good deal of large-scale design and planning work in their studio or lab courses. In addition, they have frequently received introductory or survey courses in city planning.

At the same time, their technical course work concerned with quantitative analysis has focused almost exclusively on building assemblies and equipment. They may have learned how to compute beam deflections using elementary calculus; they have not learned to use statistics, computer methods and engineering economy, to analyze traffic flows, population changes, project feasibility or the demands for the various kinds of services provided by hospitals or new towns. The result is a large immobilization of their newly developed large-scale design capacities in much the same way the conventional architect would be immobilized if he had no understanding of structure behavior.

Architectural schools generally require only calculus and analytical geometry, and they apply this mathematics only to statics and strength of materials. The typical curricula miss entirely such powerful mathematical tools as probability, statistics, modern algebra, simulation and numerical analysis. They fail, too, in not providing an introduction to using and programming computers—though because of its glamour more do this than do the basic math work. At a number of schools some students take computer work on their own. Perhaps even more startling (when viewed in the light of the architectural profession's increased attention to problems of cost control, scheduling and management) the architectural schools have largely failed to include work in engineering economy, network theory (CPM/PERT) and linear programming.

For years now, the city planning schools have recognized the need for relevant quantitative analytical skills in their profession. Architectural school graduates undertaking programs which lead to the Master in City Planning degree or its equivalent usually receive work in applied mathematics: mainly statistics, data processing and computer programming. Where these courses have been worked out over several years of earnest effort, they provide a set of powerful tools for analysis at metropolitan and regional scale. Typically, however, they, too, miss topics of central importance in the world of urban design and large-scale project architecture. Engineering economy gets little attention. Emphasis tends to focus on the information-processing and analysis side rather than on the mathematical simulations by which designs may be tested.

The urban design program at Washington University gives a second professional degree aimed

at equipping architects to deal with large-scale design. One of the first tasks in developing the curriculum was a new course in quantitative analysis. With the help of the special research fund of the School of Architecture, one of the authors, Stuart Boxerman, was employed to develop such a course with Roger Montgomery. At first this was done within the framework of existing courses.

As given in the 1966-67 academic year, the course took the form of a conventional class of three credit hours (three one-hour sessions per week), two semesters. It offered a survey of some of the analytical tools useful in design work. The word survey should be emphasized since time limitations prevented treating any of the topics in real depth. This resulted from the authors' belief that in courses of this type the emphasis needs to be on the variety of quantitative methods available and how they may be applied, rather than on an in-depth discussion of the underlying theory. An attempt to deal with these

subjects completely would restrict the field that might be covered.

For the first year, topics represented a largely arbitrary choice of techniques which, without a *priori* experience, seemed to be of benefit to urban design students. The course began with a study of engineering economy. Here the main stress was on the importance of quantitative and economic methods for considering alternatives in design and in decision making. The majority of the students lacked such tools for a rigorous comparison of alternatives.

The next topic was program evaluation and review techniques (PERT) and critical path method (CPM). As many architects know, these techniques provide planning tools which enable designers to do more than just guess at project scheduling and planning.

The semester concluded with some basic material from probability and statistics. This included a brief introduction to the notion of probability as well as discussion of the concepts of

## COURSE OUTLINE

### FALL TERM

**Computer Programming (six weeks):** This is a survey of Fortran II language covering arithmetic statements, input-output statements, looping, control statements etc. Assignments consist of basic practice programs, often illustrated with practical examples from architecture.

**Engineering Economy (four weeks):** This is a discussion of the time value of money, concepts of present worth, equivalence of series of payments and annual costs with emphasis on comparison of alternatives in a proposed design. Assignments include small economic studies in planning or construction.

**PERT/CPM (three weeks):** The essentials necessary to calculate a critical path and its associated slack are covered. Mention is also made of how one sets up a PERT network. Assignments consist of solution of typical PERT networks.

**Linear Programming (two weeks):** A very brief presentation is made of what linear programming can do and how it might be used in architecture. An assignment consists of graphical solution to a small two-dimensional problem.

### SPRING TERM

**Probability (four weeks):** The notion of probability and uncertainty is surveyed. The basic theorems of probability are covered as well as an introduction to some of the more common probability distributions. The physical situation where various laws are appropriate is discussed. Assignments include the solution of some simple probability problems.

**Statistics (five weeks):** The coverage begins with a discussion of descriptive statistics such as the calculation of means, standard deviations, etc. Next, statistical inference is studied which includes hypothesis testing, regression, correlation and their application to trend analysis, population projection and market survey. Assignments include simple textbook problems as well as larger-scaled problems correlated with the students' work in their urban design studio courses.

**Simulation (four weeks):** This is an introduction to the notion of simulation and its use as a design tool. The basics of performing a simulation are discussed and illustrated with several architectural examples. Students are assigned a simulation study of their choosing.

This individual project is drawn from, and correlates with, work in the urban design studio.

**Game Theory (two weeks):** This is a brief introduction to the theory of games and how it is being applied by urban planners in various land-use games.

**Text:** McCracken, Daniel D., *A Guide to Fortran Programming*, John Wiley & Sons, Inc., 1961.

**References:** Evarts, Harry F., *Introduction to PERT*, Allyn & Bacon, 1964.

Grant, E. L., and W. G. Ireson, *Principles of Engineering Economy*, Ronald Press, 1960.

Hadley, G., *Linear Programming*, Addison-Wesley Pub. Co., Inc., 1962.

Hoel, Paul G., *Introduction to Mathematical Statistics*, John Wiley & Sons, Inc., 1964.

Moder, Joseph J., and Cecil R. Phillips, *Project Management with CPM and PERT*, Reinhold Publishing Co., 1964.

Parzen, E., *Modern Probability Theory and Its Applications*, John Wiley & Sons, Inc., 1960.

Williams, J. D., *The Compleat Strategyst*, McGraw-Hill Book Co., 1966.



averages, standard deviation, frequency distribution and probability laws.

The second term began with a rather detailed study of Fortran programming. This was followed by a discussion of digital simulation and its application to urban design and planning.

Next the students were called upon to present orally to the class an article of their choosing which dealt with the application of a mathemati-

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cal technique to architecture or urban design. These articles, the majority of which appeared in professional architecture journals, emphasized to the students the applicability of quantitative techniques to practical architectural problems.

Finally each student was assigned an individual project in which he was required to apply mathematical notions to an architectural or urban design problem of his choosing. It was most encouraging to review the many examples of rational quantitative thinking performed by students who, at the beginning of the semester, looked upon this type of an approach with doubt and mistrust.

The range of problems included:

- a comparison of alternative parking structures for a downtown setting
- a PERT analysis for a large-scale urban housing project
- a simulation of an automatic car wash to determine its effect on traffic flow
- use of simulation methods to arrange a shopping center in such a way as to provide specified traffic flows
- examination of the impact on traffic flow caused by the closing of a downtown street to make a pedestrian mall.

The success of the course can be measured several ways. One student enrolled in it, and following the first term, undertook a thesis applying linear programming to urban renewal/rehabilitation project planning. He now works in a large architectural firm where he has a series of programming responsibilities such as the application of PERT methods to large projects and simulation modeling to test design alternatives in complex facility design.

Other people matriculating from this course

have gone on to take more advanced work in fields such as operations analysis. Before they finished the course, students were demonstrating a marked increase in their ability to handle quantitative analytical work in paralleling their design assignments. For example, the population projection and housing market analysis made by these students for a studio course were used in St. Louis Model Cities planning work. They derived concrete practical benefits from these new skills almost immediately.

Despite its success many bugs clearly existed. In the current year, 1967-68, Boxerman has revised the course. The major change has moved the Fortran programming to the beginning of the course. Its purpose is two-fold: It enables students to utilize the computer in all their subsequent work; and it possesses sufficient glamour to provide immediate interest for the students as they begin a study of quantitative techniques.

Secondly, linear programming has been added to the first semester. This sparks a discussion of the subject of optimization in general and how one chooses from among several alternatives under consideration.

Probability and statistics have been moved to the second semester. More emphasis has been placed on regression and prediction techniques which will aid the student in such tasks as small area population trend analysis and delineating markets or service areas for facilities.

Finally, a brief introduction to game theory will be presented. More use is being made of land-use games and conflict simulations by city planners. It becomes important for urban designers to be acquainted with the notions underlying these techniques.

The course outline, texts and references used in the revised version of the course appear in the accompanying box.

The point though, and it is a point of real importance, is that *even after the first halting trial run, a course geared to giving architects access to modern quantitative analytical tools demonstrated great promise.*

In just a year the course has become so entrenched—Washington University calls it Architecture 719-720, Computation and Analysis—that the urban design program could not exist at its present level of seriousness without it. But this is no reason to rest. In fact, the work given in this course, such tools as engineering economy and Fortran programming ought to be part of the basic professional architecture curriculum. A move in this direction has been made by Washington University: Fourth-, fifth- and sixth-year students in the basic professional architecture program may now elect Architecture 719-720. More and more are doing so. □

# Our New Environment and Our Old Universities

BY PHILIP THIEL

The image that most readily comes to mind in connection with the university and its attempts, in professional design schools, to comprehend and cope with the problems of the bio-social and physical environment, is that of the five blind men who discovered an elephant and respectively conceived it as very much like a tree, a rope, a wall, a fan and a spear.

The situation is rather like having a group of separate medical schools: one for training leg doctors, another for elbows, a third for the back of the torso, and a fourth for the front of the head. In the same way, we have those who improve the flow of auto traffic into traffic-jammed cities and "unspoiled recreation areas"; others who specialize in teapots and armchairs or recommend which teapot and which armchair will best establish what image. Some concern themselves with outdoor adult play spaces and the direction of attention to their professional existence; and another group dedicates itself to the design of large objects for the indication of status, the assertion of authority, the gratification of egos, or as a way to "express themselves" for public amazement and entertainment.

All this flourishes while society's major requirements for basic shelter are handled by sub-professionals and speculators, existing resources are misused, and the overall environmental quality falls between the several professional stools.

There are reasonable explanations why this came about, but today there are no logical arguments as to why it should continue. We are beginning to realize that the massive changes that man on earth is inadvertently causing in the limited quarters of his small, green and watery spaceship, and the rising levels of worldwide expectation for the potentials of human development and the quality of proximate experience, cannot much longer continue to be studied and planned in other than a comprehensive context, nor can studies be directed toward anything less than the development of latent human potentials, the enhancement of the quality of human experience and the encouragement of specific patterns of behavior.

These goals, it may be argued, are those of any enlightened professional endeavor today. The problem, however, is how to move beyond these good intentions to significant accomplishment. Thus we are concerned with more suitable or

more effective means, higher standards and more certain performance in broader areas of involvement. This is quite apart from the elusive issue of "creativity in design synthesis," so often used as a red herring to decoy attention from a comfortable status quo. *The real challenge lies in making it possible for more creativity to be more effectively exercised by more people in more relevant areas.* In short, we must discover, inform, implement and apply creativity to these goals with more ubiquity and effectiveness.

It may be realized that this undoubtedly represents the greatest challenge that any university has ever faced, transcending any previous crisis

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of the matter of its existence or freedom of its operation. For this present issue concerns its handling of the question dealing not only with the existence of man on earth but with the quality of that existence; and on this issue will its ultimate value to society be judged.

The university must recognize that it now has an urgent and equal responsibility (equal in devotion of time, talent and resources) to three groups of people:

1. The participants in the environment, the general public as well as those receiving a university education.
2. The much smaller group of managers of existing environmental facilities—the professional or nonprofessional administrators ranging from the politician to the housewife.
3. The smallest group, that of the professional designers of new facilities.

At any moment in time the existing inventory of environmental facilities—landscapes, highways, parks, cities, buildings, kitchens, teapots—is much larger than the current increment. *It should be apparent that any social and human benefits that may accrue from them depend not only on the adequacy of their design (location, size, structuring, accessibility, etc.) but also on the skill with which they are used and the awareness with which they are experienced.*

As civilization grows more complex and the world closer knit, its implements of culture demand an increasing level of operational competence and critical sophistication. With rapid and

comprehensive change, we are all, to one degree or another, in need of acculturation, retraining and continuing education. The consequences of this lie within the university's purview and are now the major part of its contemporary and future responsibility. The assertion is thus made here that the university has a new, unprecedented challenge for research, development and communication in the area of the art of living.

It is interesting to note how the field of magazine journalism has assumed some of this responsibility in recent years. It is particularly prevalent in Japan, probably because of a long tradition of the assimilation of new and foreign ideas, coupled with a passion for the formal patterning and standardizing of procedures. Thus, Japan has been practicing for centuries what the enleisured West is now attempting.

Several writers have recently commented on these matters: Reyner Banham, on the implications of the acquisition of the specialized techniques necessary for contemporary urban living<sup>1</sup>; A. E. Parr, on the deficiencies of today's urban environment as an educational medium<sup>2</sup>; John Burchard, on our general ignorance of what constitutes urban delight<sup>3</sup>; Edward Hall, on the means by which varieties of people might enhance their living experience<sup>4</sup>; Abraham Maslow, on self-realized, optimized, human potential<sup>5</sup>; and Clarence Schoenfeld, on education for environmental quality.<sup>6</sup>

It seems that the university might handle this responsibility at several levels. Most obvious would be the provision for a series of courses on environmental awareness to encompass both appreciation and problems. These could be taken as a general university requirement by all entering students. An interdisciplinary offering based on bio-social ecology<sup>7</sup>, it would of necessity require innovation in the development and presentation of techniques of environmental connoisseurship while avoiding class, ethnic and professional stereotypes and prejudices.

Without an informed, sensitive, alert and critical audience able to communicate responses<sup>8</sup>, the performance of the environmental managers and the change-agents is largely unchallenged. Discipline and art languish in a preoccupation with peripheral and irrelevant activities, and "remedies" take the form of cosmetic palliatives (e.g., "highway beautification").

The faculty and teaching resources organized to implement this program would have the further potential of developing new lines of historical investigation, theory formation and prognosis.<sup>9</sup> The continuing development in this new area of consciousness could be made continuously available to teachers, journalists and the general public by means of evening classes, com-

mercial and educational television programs, special courses and popular publications.

If we are indeed fated to grow into a leisure-economy and are in fact on the threshold of a cultural revolution, there is no doubt that the university would be gravely remiss in not actively broadening the public base in environmental living-skill and connoisseurship. It should extend the range over which these may be exercised and thus reduce the number of environmental eunuchs. The proper issue of the marriage of democracy and leisure depends on the services of the university, for who else is better qualified? This program would serve three purposes:

1. It would provide a basic environmental service for the general and college-educated public.
2. It would provide a necessary foundation course for the education of professional environmental managers and new-facility designers.
3. As a result of the first activity, it is possible that more students may be attracted to these professions who are better qualified in terms of public and service orientation.

Serge Boutourline has developed the concept of "environmental management" beyond the conventional categories of conservation, redevelopment and maintenance.<sup>10</sup> In this broader formulation, one who (for example) consciously or unconsciously shifts his position to improve his view qualifies as a "manipulator of existing sensory input available in the environment." In this sense we can identify a new group of people as environmental managers. It includes park directors, caterers, cruise directors, department store managers, public safety directors, morticians, hotel managers—and the housewife who sets a table for her family or a dinner party.

In one way or another, as professionals or amateurs, these people and others are involved with environmental manipulation and human values, and their skills are an essential part of the operation of the massive inventory of existing equipment and facilities. The mere existence of a facility by itself is of no practical significance; its utility depends on its effective use, just as no well-designed and well-found yacht can win a race without a skillful crew and helmsman.

1. "The Embalmed City," *The New Statesman*, April 12, 1963.

2. "Urbanity and the Urban Scene," *Landscape*, Spring, 1967.

3. *The Metropolitan Enigma*, US Chamber of Commerce.

4. *The Silent Language*, New York: Doubleday & Co., 1959.

5. *Motivation and Personality*, Princeton, 1962; *Toward a Psychology of Being*, New York, 1954; "Psychological Data and Value Theory," *New Knowledge in Human Values*, New York, 1959.

6. "Memorandum on Environmental Quality Education," prepared at the request of Sen. Gaylord Nelson, University of Wisconsin.

7. Rainer Hassenstab, development of course for environmental awareness, College of Architecture and Urban Planning, University of Washington, Seattle.

8. O. Earle Miller, *The New Einsteinian Culture and Communication*, Portland, Ore.: Miller Publishing Co., 1967.

9. Philip Thiel, "Environmental Awareness: Appreciation, Problems and Prognosis," working paper, College of Architecture and Urban Planning, University of Washington, Seattle, 1967.

10. "The Concept of Environmental Management," *Dot Zero*, Vol. 1, No. 1, 1967.

Courses in home economics, physical education and hotel management, currently of low academic status, are also parts of the environmental picture when it is framed in this context. So, too, are the often unnoticed skills and insights of the carnival operator, the tea-ceremony master, the maître d'hôtel, the disc jockey, the stage-lighting expert, the *ikebana* master and the other manipulators of environments who evoke specific moods, establish congruencies of time, place and occasion, or who in general optimize and enrich human experience using existing resources.

This may suggest some of the rethinking that might be devoted to existing university programs in these areas and might indicate some of the administrative relocations, course-material emphases, new courses and research directions that the university could encourage. Television programs, special short courses, and popular publication are some means available to the university in discharging its obligations to extend the insights and capabilities of increasing numbers of people, in more effective operation of the man-made environment.

Consideration of the ends and means of environmental management discussed above also underlies the issue of environmental design or the provision of new facilities in the man-made environment. We have with us today those historical fossils curiously called "professional design schools" in which continuous human experience and connected human use are divided up, like a sliced salami, into a series of separate, discrete, self-sufficient entities on the basis of areal extent, or whether roofed or open. Thus we have regional planners, landscape designers, urban designers, building and equipment designers.

But we have no "envirotects" or "envirotecure," concerned with the experience of the total environment on a 24-hour basis, as in "real life." In this manner, means have become ends, and the ends have become lost. Like insects these professional divisions have become embedded in the amber of the universities, where they are often separately housed, with independent faculties and administrations and jealously guarded spheres of "action." Sometimes the departments are brought into physical proximity, and the ensemble papered over with an inclusive name.

But the academic activities pursued under this transparent blanket still resemble a brain-washing process of indoctrination into the esoteric taste-rituals of a special priestly sect. As Robert Sommer puts it, "The entire art of design rests on empirical underpinnings so weak that no consensus exists about what arrangements are efficient, beautiful or even relevant to a given activity."<sup>11</sup>

Raymond Studer and David Stea have defined

the ends as "the accommodation of the biological and nonbiological requirements of the human organism through the appropriate organization of relevant variables in the designed environment."<sup>12</sup> It is perhaps unnecessary to point out that today, "wilderness" areas excepted, *all* our environment is "designed." But it *does* seem necessary to point out, as Gyorgy Kepes<sup>13</sup> has suggested (in an essay that amounts to a Magna Carta for envirotecure), that the basis of our environmental experience today is a "transportation-defined pattern of a sequence of vistas." Today, students are still trained to think, see and "design" objects, out of any context, which are statically "perceived."

On the whole, the academic programs in environmental design currently involve a minimum of the humanities, the behavioral and life sciences. ("It takes away from 'design' time.") Thus means become glorified as ends: Art becomes remote from life, and the members of these professions spend their lives bemoaning their lack of significant influence. One basic indication of the destitute and irrelevant quality of the programs of these schools is the fact that while other professional schools administer active research programs and present courses in continuing education for their practicing professional, there is no reason or advantage, or even any possibility for any contemporary practitioner in "environmental design" to return to any design school to extend or upgrade his ability or insight. In other words, these are vocational schools, providing training in a pseudo-craft.

As a corollary, there is to date no professional, scientific, interdisciplinary journal providing a forum for those researchers who have a common reference to man's physical environment in relation to man's behavioral systems.

It is suggested here that envirotecure is a process of decision making concerned with the provision of facilities for the control of sensory inputs to the human organism; for the measurable development of latent potentials, the enhancement of the quality of experience and the elicitation of specific patterns of behavior. This implies a shift in the present concept of environmental design, in which the designer's personal evaluation of the adequacy of his proposal (a hypothetical "solution" to the problem) is replaced by a more objective procedure. Instead of "I like it" ("I" being a superior), he would say with a demonstrably high degree of validity, "It will produce the desired effect."

11. "Man's Proximate Environment," *Journal of Social Issues*, Vol. XXII, No. 4, Oct. 1966.

12. "Architectural Programming, Environmental Design and Human Behavior," *Journal of Social Issues*, Vol. XXII, No. 4, Oct. 1966.

13. "Notes on Expression and Communication in the Cityscape," *The Future Metropolis*, New York: Braziller, 1961.

If, in fact, the word "design" can mean nothing less than this, the university "environmental design schools" are obviously far off the mark. In all fairness, however, it must be noted that today some of them are beginning to realize this, and the faint, preliminary twitches of a hopefully fundamental revolution are beginning to appear under some of the blankets. But the problem still waiting creative solution in the university is the method by which the slow, generation-paced rate of change inherent with a tenured faculty and appropriate to periods of evolutionary growth, can be geared to cope with today's revolutionary rate of change. One answer might be to establish a graduate research institute parallel to the existing school and recruit to it students from various disciplines.

Environmental design or envirotecture as formulated here obviously constitutes a new field of study and would appear to be based on the development and exercise of three fundamental and interrelated techniques. The first of these involves methods of conceptualizing, describing and communicating problems and goals. Some new work in this area is being done today under the name of programming in the development of systems of experience notation, in decision theory and in computer-aided systems of heuristics. But note that any design proposal, regardless of how well conceived, worthwhile in purpose, comprehensive in scope and clear in formulation, can only be regarded as *hypothesis*, not a solution. It still remains to test and invariably refine this hypothesis.

Since full-scale testing is usually impractical for large elements of the man-made environment, some type of simulation to permit this must be performed. Simulation may be defined here as the process of attaining an essence without the reality. Drawings and models are one type of simulation, and both enjoy wide use. However, to evaluate the adequacy of most design hypotheses relative to more sophisticated goals (as suggested above), newer types of dynamic simulation are necessary. Investigation and developmental work in this area, based in part on highway and aircraft simulation techniques, are being carried forward in a few places<sup>14</sup>; but on the whole this field is in a most embryonic state in the environmental design schools.

The purpose of any simulation procedure is to obtain a pattern of responses, from users typical of those for whom the design is proposed. *Drawings and models as currently employed are used for self simulation: i.e., the designer, aware of his parti and conscious of his design intentions, presumes to play the role of a naive user.* By this practice self-delusion is ensured and the public denied. With appropriate information, a compari-

son may be made with the original intentions; and the design hypothesis then may be experimentally modified, resimulated and the new response measured, leading eventually to the desired degree of congruence. As Studer points out, in this process of continuing change the "experiment" becomes the "solution," and continual adaptation to change the key to survival.<sup>15</sup>

The third key technique is now seen to be the measurement of human responses. Here again we encounter a lacuna, with only a few pilot studies currently suggesting the potentials, and the nature of the difficulties in store.<sup>16</sup> Telemetric instrumentation and developments in computer-aided multifactorial analysis, however, appear to offer promising techniques for this work.

This concept thus defines envirotecture as an experimental, social operation in behavioral and experiential pragmatism, rather than a private exercise in novel or hopefully normative iconographics. Architect Eero Saarinen's dictum that "Architecture is not just to fulfill man's need for shelter but also to fulfill man's belief in the nobility of his existence on earth" needs only an operational procedure.

An approach to envirotecture in the universities would require that each student have an undergraduate background in the humanities, and in the social and behavioral sciences. As an implementor of society's goals he should have a broad knowledge and appreciation of their development in an historical context. His subsequent (graduate) professional education would at first concentrate on design decision theory, on techniques of simulation and the measurement of human response. It would include studies in design heuristics, multivariate analysis and courses directed toward the development of his perceptual sensitivities. Ultimately his developing personal interests will incline him to some aspect of special study or application, and to implement this he will have recourse to the university's programs in the physical, social and behavioral sciences; engineering; administration; health sciences and art. The method of education should as much as possible be based on participation in

14. Gary Winkel and Robert Sasanoff, "An Approach to an Objective Analysis of Behavior in Architectural Space";

David Bonsteel and Robert Sasanoff, "An Investigation of a Televised Image in Simulation of Architectural Space," Nos. 5 and 6, respectively, in the Architecture Development Series of the College of Architecture and Urban Planning, University of Washington, Seattle, 1966-67; and

David Bonsteel and James Donnette, "The Suzzallo Quad: A Computer Graphics Simulation of Sequential Experience," research project, University of Washington, department of architecture, Seattle, 1967-68.

15. "Behavior-Contingent Architecture: Some Implications for Experimental Communities," paper presented at the 1966 Conference on the Experimental Community, Racine, Wisconsin.

16. Gary Winkel, Roger Malek and Philip Thiel, principal investigators, study on the measurement of human response to the roadside environment, Cambridge, Mass.: Arthur D. Little, Inc., 1967; and

Arthur L. Grey, principal investigator, "Human Response in the Core Area of Seattle, Washington," study in process, department of urban planning, University of Washington, Seattle.

the on-going research projects of the school and university.

*This is obviously an open-ended process, without a formal termination.* It should be possible for a professional to live easily a life of constant alternation between study and application. Development of theory and technique should be mixed with applications thereof, both in and out of the university's research and application centers. "Application center" may be a good name for the pilot project operations the university should undertake, in advance of public or private enterprise when it recognizes an unmet social challenge. Claude Stoller's pioneer activity for the University of California in the San Francisco Bay area is a good example.

The physical facilities required to implement such a program would consist chiefly of a range

of well-equipped and well-staffed shop and experimental spaces, in association with a computer center, various "libraries" and the faculty of a large university. Since some of the simulation studies will require actual urban situations, these facilities should be in or near an urban center. But if the environment with which such schools are concerned is, in effect, that of our small green and watery spaceship, it would seem provincial to think of an education as localized in a city, or in a state, or even in a nation; perhaps successive stages of study should be spent at different global locations in accordance with specific facilities, faculties or experiments-in-progress. In this concept, envirotexture is a world-public service, not a private privilege or indulgence; and as such education for it can only profit from a global exposure. □

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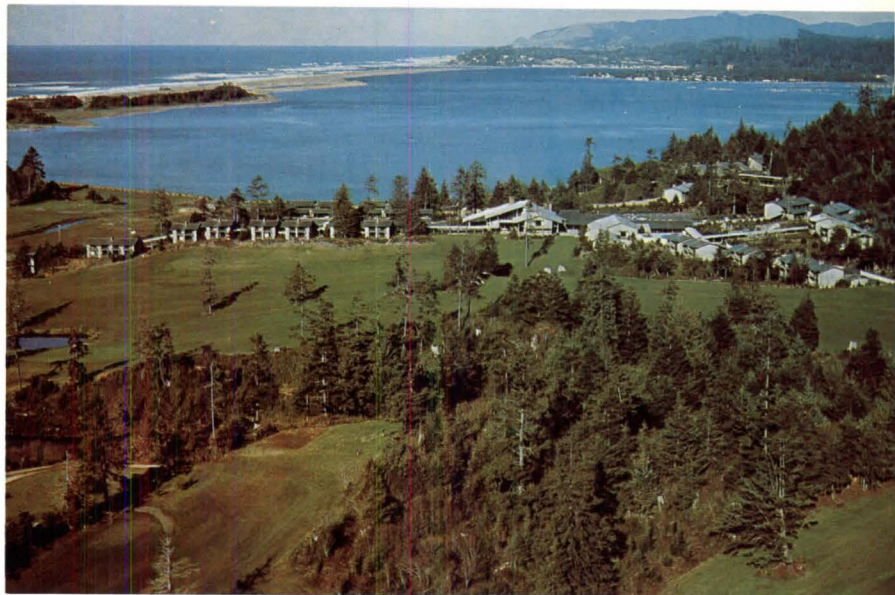
"We were fortunate to have been able to observe the wearing qualities of the Cabin Crafts carpet in our first one hundred units for over two years before we specified Cabin Crafts again." These are the words of Mr. Alex Murphy, General Manager of the magnificent Salishan Lodge at Gleneden Beach, Oregon.

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# Survey Shows Salary Spread

A nationwide survey of architectural firms has disclosed wide-ranging salaries paid employees in comparable job title categories.

Even after averaging out salaries on a regional basis (using The American Institute of Architects' 18 regions) the salary spread, though diminished, remains considerable.

Regional, rather than state averages, are perhaps the more reliable since some states had no firms responding to the canvass and others had only one or two offices returning questionnaires.

The survey, however, did receive returns from 338 firms in 43 states. The data was collected last year.

Besides the state averages, the chart presents the range of pay within each state.

On the regional level, survey figures disclose that in seven of the

18 AIA regions job captains average a higher weekly pay than designers. In two of the regions, averages for the two job categories are the same.

The per-hour charges of principals, again by regional average comparison, run from \$10 to \$27.

Similarly based comparisons show ranges for designers of from \$100 to \$252, for job captains of from \$143 to \$250, for chief draftsmen of from \$158 to \$241, for field representatives of from \$147 to \$212, and for specification writers of from \$128 to \$214.

The spreads tighten up somewhat in the architectural draftsmen categories.

For draftsmen who had professional training and more than three years' experience they run from \$136 to \$171. For recent architectural graduates the spread is \$106 to \$141.

For draftsmen with no professional training and with more than three years' experience, the range is from \$88 to \$141, and for those with one-two years' experience it runs from \$79 to \$100.

Fringe benefits in relation to payroll range from 6 to 13 percent for senior employees and from 5 to 13 percent for draftsmen.

The survey was compiled by Leonard Mayer, AIA, the Institute's director of Professional Practice Programs. Copies, in chart form, of "Survey of Salaries in an Architectural Office" or AIA Document M501, can be obtained at \$1 per copy.

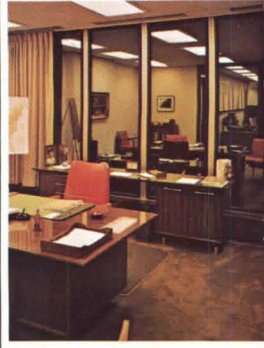
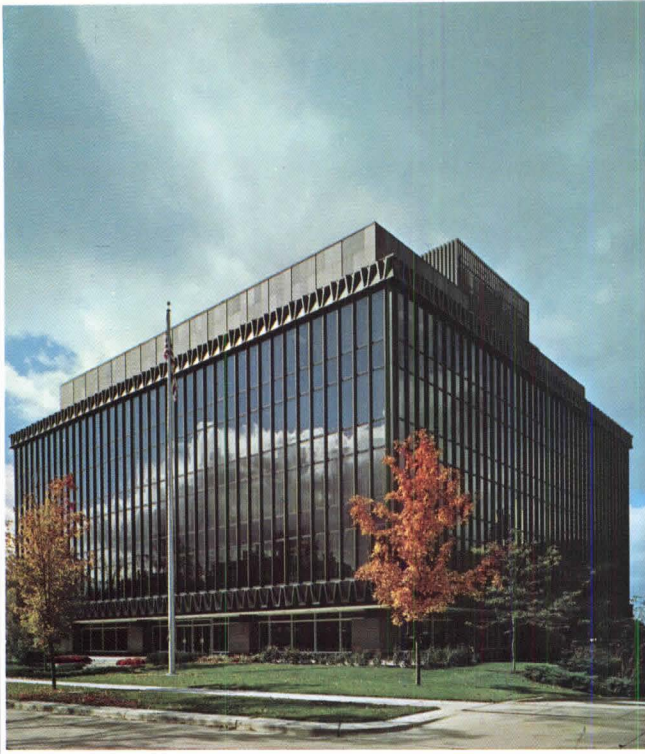
The accompanying chart shows the regional weekly pay averages in the various job categories, the fringe benefits and principals' per-hour charges. The figure following the name of the region represents the number of firms reporting. □

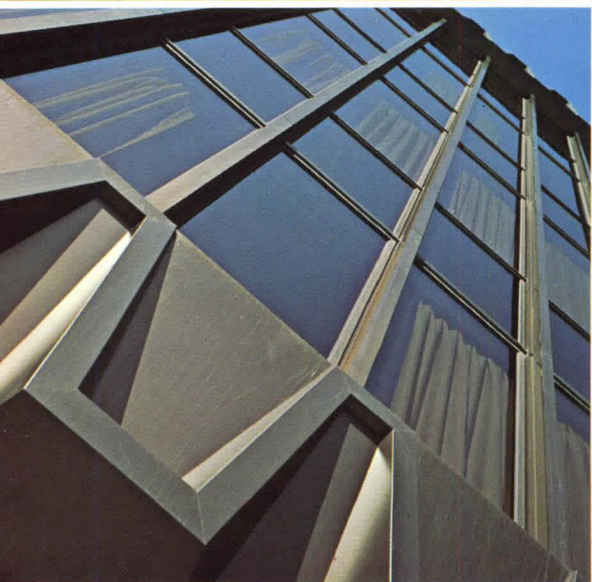
	Arch. Draftsmen No Professional Training		Arch. Draftsmen Professional Training		Senior Employees					Fringe Benefits		Principals
	1-2 years' experience	over 3 years' experience	recent arch. graduate	over 3 years' experience	specification writers	field representatives	chief draftsmen	designers	job captains	arch. draftsmen	senior employees	per hour charges
<b>California (50)</b>	80	135	125	171	200	210	234	252	250	8%	12%	17
<b>Central (55)</b>	82	112	116	151	169	158	186	175	192	5%	9%	11
<b>East Central (8)</b>	95	124	125	166	167	164	186	189	176	8%	11%	11
<b>Florida (25)</b>	83	114	108	145	148	152	158	175	177	13%	12%	22
<b>Gulf (28)</b>	79	115	106	140	152	147	181	156	166	7%	8%	11
<b>Illinois (12)</b>	91	129	118	136	128	185	193	183	143	8%	10%	19
<b>Michigan (17)</b>	93	135	118	167	198	191	162	200	205	10%	13%	14
<b>Middle Atlantic (10)</b>	80	127	122	155	168	187	205	201	210	13%	11%	27
<b>New England (18)</b>	92	121	119	151	166	183	188	179	149	8%	8%	14
<b>New Jersey (4)</b>	97	143	124	168	193	188	231	200	205	10%	13%	15
<b>New York (15)</b>	88	120	116	154	214	212	241	224	213	11%	12%	26
<b>North Central (16)</b>	87	112	124	152	159	161	173	174	170	7%	8%	13
<b>Northwest (38)</b>	100	143	126	164	192	186	210	190	199	8%	9%	12
<b>Ohio (18)</b>	85	148	119	152	175	173	187	180	180	8%	9%	13
<b>Pennsylvania (11)</b>	95	120	141	167	199	191	216	209	175	5%	6%	14
<b>South Atlantic (11)</b>	88	113	119	145	163	169	189	188	182	11%	14%	13
<b>Texas (22)</b>	90	122	118	154	170	158	194	180	180	9%	11%	11
<b>Western Mountain (16)</b>	90	124	108	142	156	151	169	168	161	7%	8%	10

**Central:** Iowa, Kansas, Missouri, Nebraska, Oklahoma **East Central:** Indiana, Kentucky **Gulf:** Alabama, Louisiana, Mississippi, Tennessee, Arkansas **Middle Atlantic:** Delaware, District of Columbia, Maryland, Virginia, West Virginia **New England:** Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont **North Central:** Minnesota, North Dakota, South Dakota, Wisconsin **Northwest:** Alaska, Hawaii, Idaho, Montana, Washington, Oregon **South Atlantic:** Georgia, North Carolina, South Carolina **Western Mountain:** Arizona, Colorado, Nevada, New Mexico, Utah, Wyoming

The image features a grid of glass windows, likely from a modern building. The windows are arranged in a regular pattern of vertical and horizontal panes. The glass reflects the sky, which is a clear, pale blue. In the lower right portion of the grid, the dark green foliage of trees is visible, partially obscuring the sky. The overall composition is geometric and emphasizes the transparency and reflection of the glass material.

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# Museum Above the Mounds

What better place to build an archeological museum complex than on a prehistoric Indian burial ground, is the shared sentiment of client and architects for the Museum of the Illinois Indian at Dickson Mounds.

The client is the State of Illinois (with Lorentz A. Johanson, AIA, as supervising architect), and the architects are Golabowski, Spinney & Coady of Springfield.

The structure will house all the facilities providing for a complete operation at the burial mounds. Designed with four wings supporting a central area, the four-story building will include exhibit areas, an

anthropological laboratory, an auditorium, a meeting room and banquet hall and storage for mechanical equipment.

The building is designed in truncated pyramids built on top of each other and burrowed gently into the terrain's natural grades in harmony with the shape of the surrounding ceremonial mounds. Though the building materials are far more durable than mud and thatch, the earth color of the exposed aggregate, precast concrete skin will blend with the Indian idiom.

Says architect James Coady, AIA: "I do not know of another museum that provides for display

and anthropological research which is located on the site being explored. This resulted in design problems not only in function but also an especially heavy responsibility to produce design that is integral to the site."

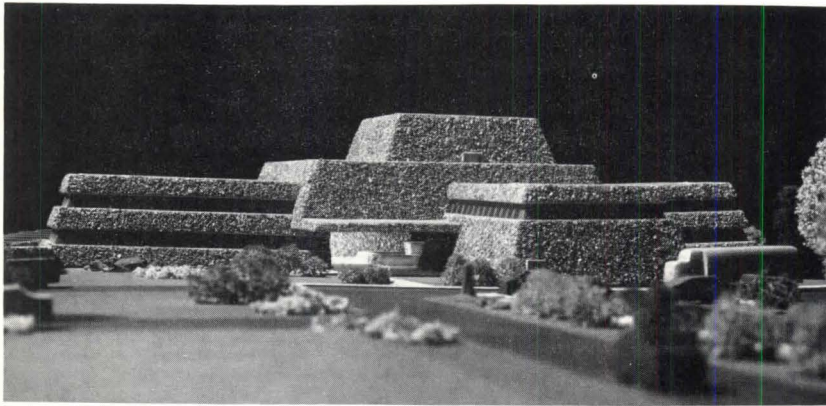
In preparation for construction, more than 20 archeologists worked at the site this past summer to open up areas that would be covered by the new building. Excavations have been carried down to sterile soil below any evidence of human activity to insure that no remnants would be overlooked. In the excavation process, over 200 graves were opened, uncovering relics of a people who probably lived about 900 A.D., but about whom we know practically nothing.

Archeologists, pathologists and other researchers have been able to determine that the Indians were skilled farmers and possessed a high artistic ability, evidenced by their tools and pottery. They were afflicted with ailments which are still common today, such as crippling caused by arthritis. In addition, some of the excavated skulls reveal evidence of surgery. Researchers hope that further on-site studies can shed light on modern medical, as well as anthropological, knowledge.

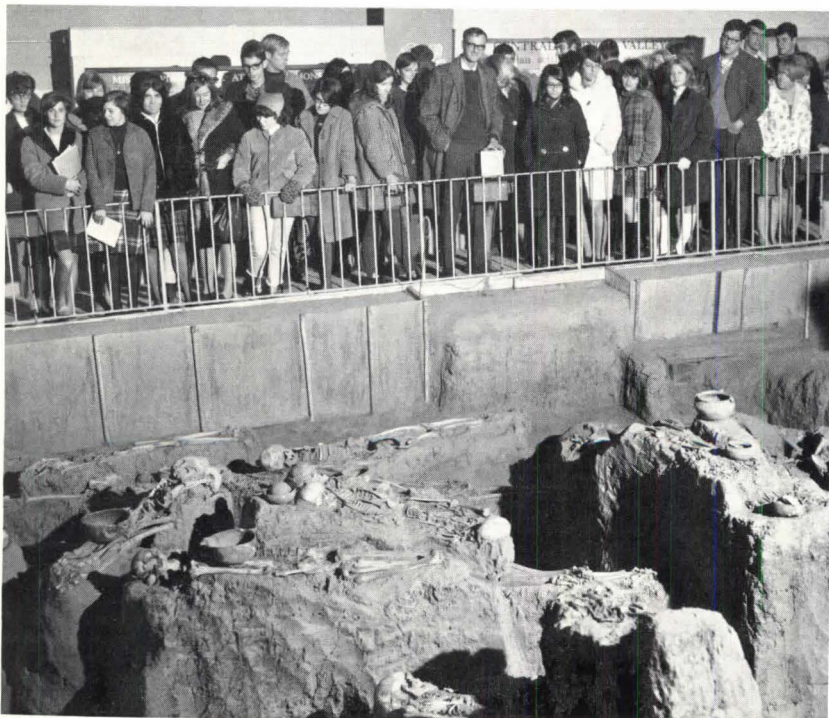
Over two years of study for the museum will have been completed by the time construction starts. Most crucial, the architects point out, is the preservation of the existing uncovered burials, the cedar grove, the remaining mound and other grades. The result will be the elimination of only the deteriorated buildings now on the site.

It is expected that the museum complex will attract thousands of international visitors to the historic site and double the mounds' current annual attendance of 150,000 to 175,000. The scale of this year's archeological exploration alone has become so large that its proportions are second only to the tremendous highway salvage project at Cahokia a few years ago.

For the first time, the architects maintain, there will be a facility which can "fully educate the public about the significance of Dickson Mounds, provide efficient workshops for future archeological research and preserve and protect the finds." □



Above, a model shows the museum's truncated pyramid design, in harmony with the surrounding burial mounds. Below, an anthropology class from nearby Knox College hears a lecture on the excavation at Dickson Mounds.



# Dry-film finishes, the microthin miracles

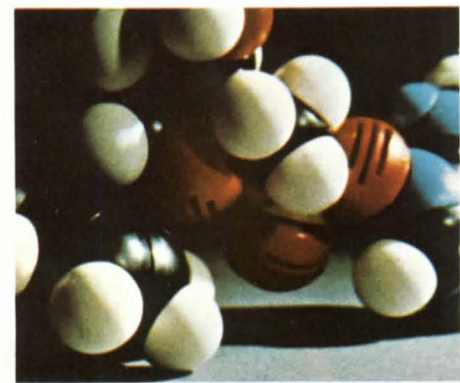
It's not hard to believe that modern chemistry can produce microthin plastic films tougher than any paint. But it is rather hard to believe that a polyester film can be produced that is more than twice as resistant to rubbing wear as high-pressure laminate—and that a polyvinyl fluoride can be unsurpassed in stain resistance. Yet these are facts.

## Molecules used as building units.

In both polyester and polyvinyl fluoride films, the process of extruding the film arranges the molecules in a definite structural order. And that is the secret of the microthin miracles.

If you applied the same material in liquid form, the molecules would be randomly placed and you would get no better wear-resistance than with paint. Essentially, this is the difference between a pile of bricks and a brick wall.

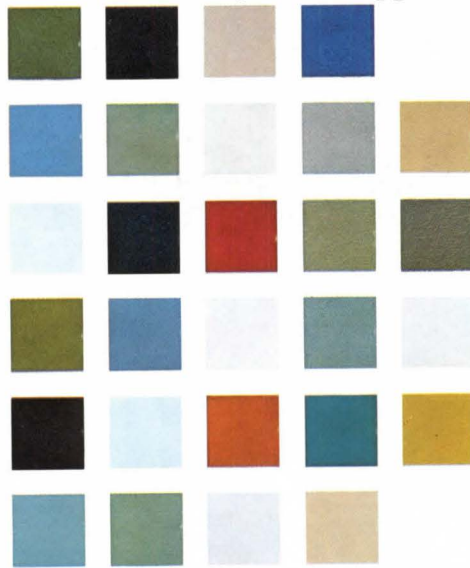
This physical structure has another important advantage. Preformed films have fewer surface flaws to collect dirt and stains or



increase the action of solvents and acids. So these films are exceptionally easy to clean—soap and water is usually enough. They are also highly resistant to most common staining agents, alcohol and germicidal detergents. As a result, maintenance costs are significantly reduced.

## Protection for hardwoods.

Clear films allow wood grain to show perfectly—revealing the natural beauty of fine hardwood. They also protect hardwoods in high-wear locations. For interior applications U. S. Plywood supplies



hardwood paneling, doors and partition panels with Permagard<sup>®</sup>, which is our trademarked name for plywood surfaced with clear films. These products are recommended for use in high traffic areas of dormitories, hospitals, schools, motels and the like.

U. S. Plywood also makes solid-colored paneling and doors surfaced with Permacolor<sup>®</sup>. The outer layer of Permacolor is a clear 1/2-mil film of polyvinyl fluoride laminated to an 8-mil film of colored polyvinyl chloride. This overlay gives a lightly embossed colorfast finish which is highly wear-resistant and easy to clean. Permacolor is available in 28 colors.

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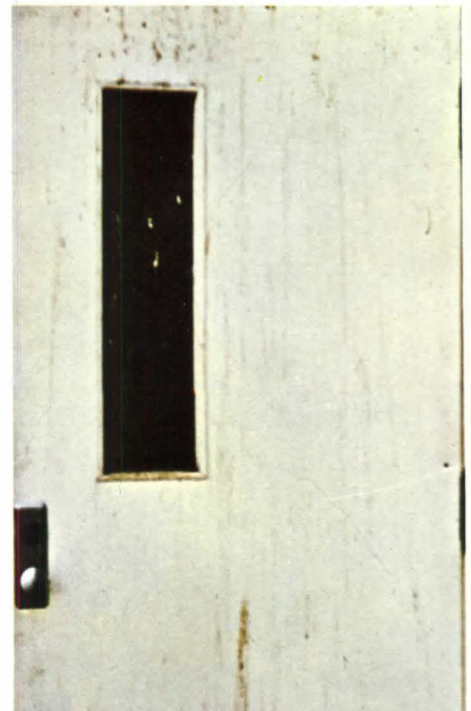
PF-L.<sup>®</sup> It is available in 11 colors. Vigilant is also recommended for interior use in swimming pool areas, showers, toilets and other areas requiring constant cleaning with harsh cleaning agents.

## No aging.

All these films are laminated to wood substrates with adhesives under heat and pressure. This is necessarily a factory process, which cannot be duplicated in the field. The preformed films undergo no further change during application, so there is minimum shrinkage after application.

These films are highly resistant to cracking, checking and crazing, resulting in a new class of materials of a higher order of durability.

Equally important is the fact that sunlight resistance is considerably enhanced.



Typical example of the effects of aging on painted doors.



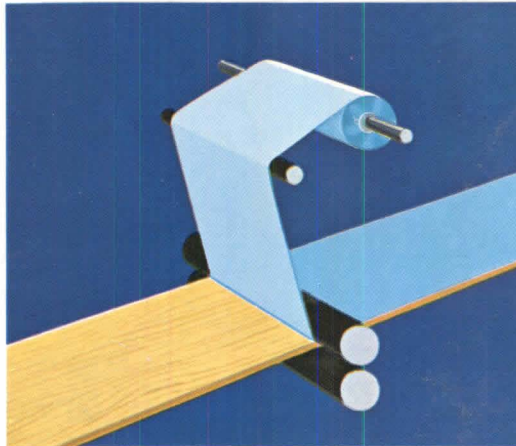
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**Permacolor**—A ½-mil film of clear polyvinyl fluoride laminated to an 8-mil film of colored polyvinyl chloride, Permacolor is a cleanable finish which is wear- and stain-resistant—and colorfast. It is lightly embossed. It will not flake, peel or chip. It is available in 28 standard colors on interior doors, paneling, partition panels, casework parts and fire-retardant products.



**Permagard**—A clear 3-mil polyester film which is an ideal cleanable finish for Weldwood custom-designed hardwood paneling and doors. Also available toned to change the natural color of the wood while retaining and enhancing the grain pattern.

**Custom prefitting and machining.** Paneling, doors, case goods, shelving and fire-retardant products can all be supplied precut to blueprint specification. A wide variety of custom machining is available: edge banding, edge rabbeting, tongue and grooving, dado, square edge, bevel, miter, and miter and shoulder.

For full details, drawings and assistance with specifications, call the Architects' Service Representative at your nearest U.S. Plywood Branch Office.



## Performance Chart of U.S. Plywood Dry-Film Finishes and Comparable Service Materials

Test	Weldwood Permagard (Interior)	Weldwood Permacolor (Interior)	High Press. Laminate (Interior)	Weldwood Vigilar (Exterior)	Enamel (Exterior Type)
Accel. Aging by Humid-Dry Cycling ASTM D2571-67T	Outstanding No Checking or Crazing	Outstanding No Checking or Crazing	Excellent Crazes at 12-15 cycles	Outstanding No Checking or Crazing	Satisfactory Checks at 3-4 cycles
Tape Adhesion ASTM D2571-67T	Excellent No Damage	Excellent No Damage	Excellent No Damage	Excellent No Damage	Excellent No Damage
Hoffman Scratch Test	Excellent 500 Grams	Excellent 600 Grams	Outstanding Over 1000 Grams	Excellent 600 Grams	Satisfactory— Excellent 300-900 Grams
Taber Wear CS-17 Wheel 1000 Gram Loan Fed. St'd FS141-A (6192)	Outstanding 3000 Cycles/Mil	Satisfactory 500 Cycles/Mil	Excellent 800 Cycles/Mil	Excellent 450 Cycles/Mil	Satisfactory 210-280 Cycles/Mil
Resistance to Color Fading NEMA LD1-2-06	*Outstanding Exceeds NEMA requirements by over 500 hours	Outstanding Exceeds NEMA requirements by over 1000 hours	Excellent Exceeds NEMA requirements by over 200 hours	Outstanding Virtually fade-free	Satisfactory Exceeds NEMA requirements by over 100 hours
Resistance to Staining NEMA LD1-2-05	Satisfactory Stains 7 out of 29 agents	Outstanding No staining	Excellent Stains 2-4 out of 29 agents	Outstanding No staining	Satisfactory Stains 7-16 out of 29 agents

\*Rating refers to clear finish only—substrate will have normal wood color change.

Note: Performance ratings should be compared only to the finish(es) shown in the adjacent column(s) in same category.

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The United Air Lines Training Center in Elk Grove, Illinois  
Architect: Skidmore, Owings & Merrill—Chicago. Contractor: Power Construction Company—Oak Park, Illinois

# It's a Bird! Man? Superfab?

The sight of buildings being toted through the sky could become a common one if two trends extend and entwine.

One is a growing interest in industrialized construction, most particularly in three-dimensional modules. The other is the rising capacity of the helicopter.

A prefabricated ski lodge, large enough to serve 250 to 300 skiers, was airlifted to a mountain ridge in New Jersey a few months ago to lengthen the line of examples of helicopter application to the construction industry.

"If standard construction and delivery procedures were followed, this lodge might never have come about because of the nature of the surrounding high country," said George H. Matthews, president of Continental Units Corp. of Fairfield, N. J.

The \$28,000 lodge was built as five separate units, airlifted and completely finished with carpeting, electrical wiring and plumbing, and was joined together on a concrete block foundation.

The degree of interior finishing in that job conjures up the Palacio del Rio project in San Antonio in which hotel room units were hoisted by crane but guided into place with the use of a helicopter rear rotor blade. The 35-ton units were too heavy for any of today's vertical craft.

The Russians, however, are half way there. They have a helicopter with a capacity of some 17 tons. (Petroleum Helicopters, Inc., Lafayette, La., to add to its helicopter flock, has ordered one of the twin-engine Soviet craft.)

Ten-ton loads can be carried by American helicopters and it is anticipated this payload will double over the next decade, a Sikorsky Aircraft representative told the "Instant Space" conference held in Chicago last month by the Building Research Institute.

It is not expected that helicopters will replace ground cranes all together, Sikorsky's R. B. Lightfoot allowed, but "there are many occasions when the helicopter is the only practical means of accomplishing the task."

Lightfoot forecast that building

designs will change "because the helicopter alleviates many construction constraints."

Military procurement has spurred the development of heftier helicopters. But the makers of the craft—principally the Bell Helicopter Co., a division of Textron, Inc., and the Vertol division of the Boeing Co., along with Sikorsky, a division of

United Aircraft Corp.—are said to be eyeing the commercial market potential for point-to-point transport of people and cargo.

As for cargo, Lightfoot, engineering manager of production for Sikorsky, told of the current interest in helicopter application in the transfer of cargo containers from ship to inland destinations.

Indeed, a Sikorsky S-64 Sky-crane brought 31 such containers ashore under adverse weather conditions in less than six hours. The total weight transferred was 454,260 pounds.

The cargo transfer was one of a number of Lightfoot citations to substantiate the lifting and placement prowess of the helicopter. Potential applications within the building industry were conspicuous, but Lightfoot added fuel to the imagination. It is "probable," he said, that helicopters "will permit construction techniques, architectural designs, or utilization of remote sites not feasible under current practice."

Some months ago, in fact, a cargo-handling helicopter lifted ventilator units to a vast rooftop in Jamestown, N. Y. (an Art Metal, Inc., facility of 1 million square feet).

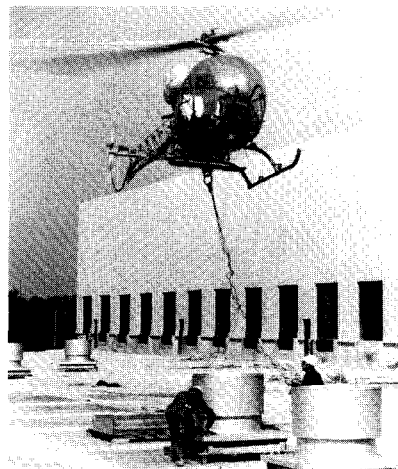
It took less than seven hours to position 130 ventilators.

Apart from consideration of the helicopter as a piece of construction equipment is its use impact on building design since, in Lightfoot's words, "the helicopter is here." He declared that hospital designs must accommodate helicopters for emergency service.

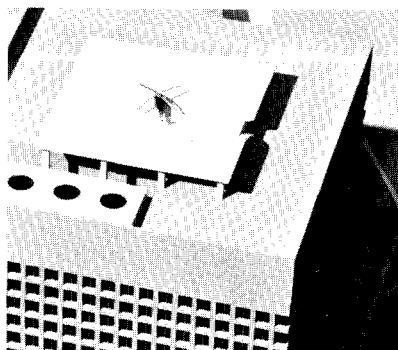
But what is most intriguing about the flying cranes is their increasing capacity and capacity potentials and their precise placement capabilities at a time when so much thought is being given to space modules—and to lightweight modules—as brought out by the BRI conference.

Transport constraints, chiefly dimensional, have historically posed impediments to industrialized modular approaches.

These would no longer be pertinent were air transport to replace road hauling. It's just a matter of lighter boxes, bigger craft. □



**Lifting lodge section in New Jersey, ventilator in New York; below, provision atop Gruzen & Partners model for Manhattan police headquarters.**





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# Just an Intriguing Idea

Since we're having an ear-shattering population explosion on this earth of ours, which happens to be three-quarters water, and since one-tenth of that water is shallow, and since we're talking these days about desalination and the harvesting of fish and other commodities from both the sea and its floor, why not industrial, shoal-water cities?

London's Pilkington Glass Age Development Committee has turned out what it terms the first practical step in this direction. Its Sea City, an offshore island in glass and concrete, would be permanent home to some 30,000 persons.

The committee says such a project may not be realized for 50 years. But the structural and engineering techniques required do in fact exist today, the committee says.

The committee cited a number of promising shoal areas (including this country's Martha's Vineyard) but chose for the location of Sea

City a site 15 miles off England's east coast.

The committee's architect, Hal Moggridge, and its engineers produced plans for the design and construction of a sea city which, the committee said, would be "economically viable and provide all the facilities of a mainland town in a warmer, healthier environment than would be possible on land."

Sea City's main structure is a 16-story amphitheater supported by piles and protected on the seaward side by an encircling breakwater.

This main structure encloses a lagoon with clusters of floating, man-made islands; it is broken only at one point, in the southeast corner, to provide a narrow harbor entrance. The city extends 4,700 feet north to south and is 3,300 feet across at its widest point.

**Concrete on Piles:** The scheme has piles brought by barge from the mainland driven into the seabed in rows 20-30 feet apart to form the

base for the superstructure. Reinforced concrete deck sections, pre-cast ashore and towed to the site, are jacked up on guide rails between the rows of piles. The sections are then locked in position at the top of the piles.

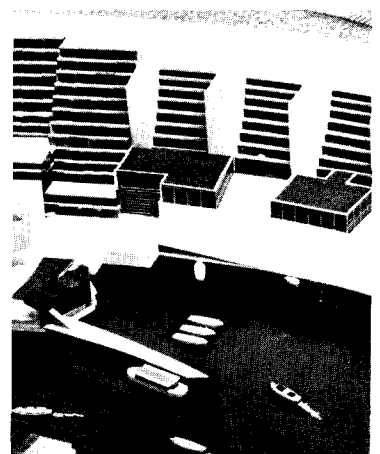
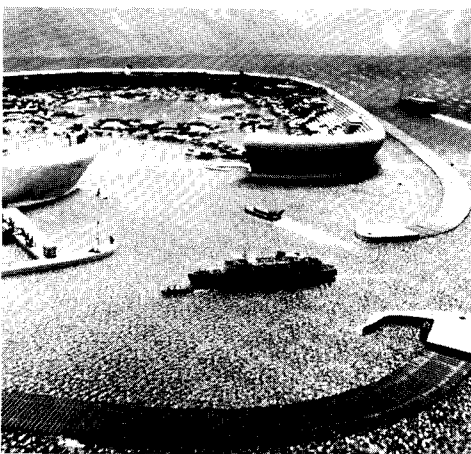
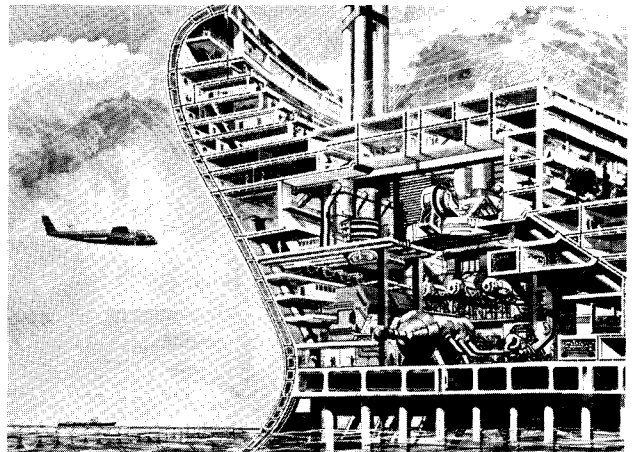
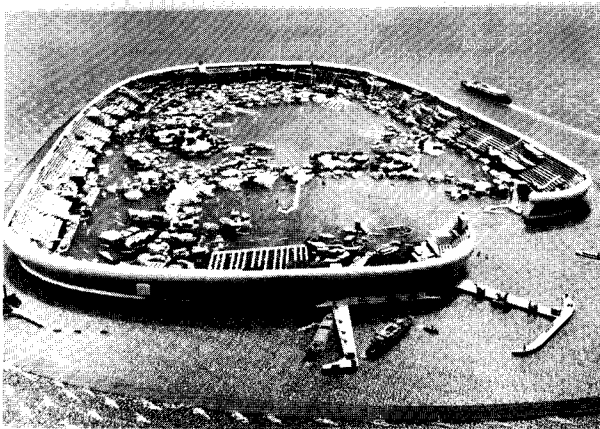
The superstructure, beginning 30 feet above sea level, is composed of concrete cells joined together at the corners. Each cell is prefabricated on the mainland and transported to the site in bottomless barges, then is winched into position over temporary ramps and mounted on spacer units.

The spacers form gaps above, below and on both sides of each cell, which are used as ducts for gas, water, electricity and sewage.

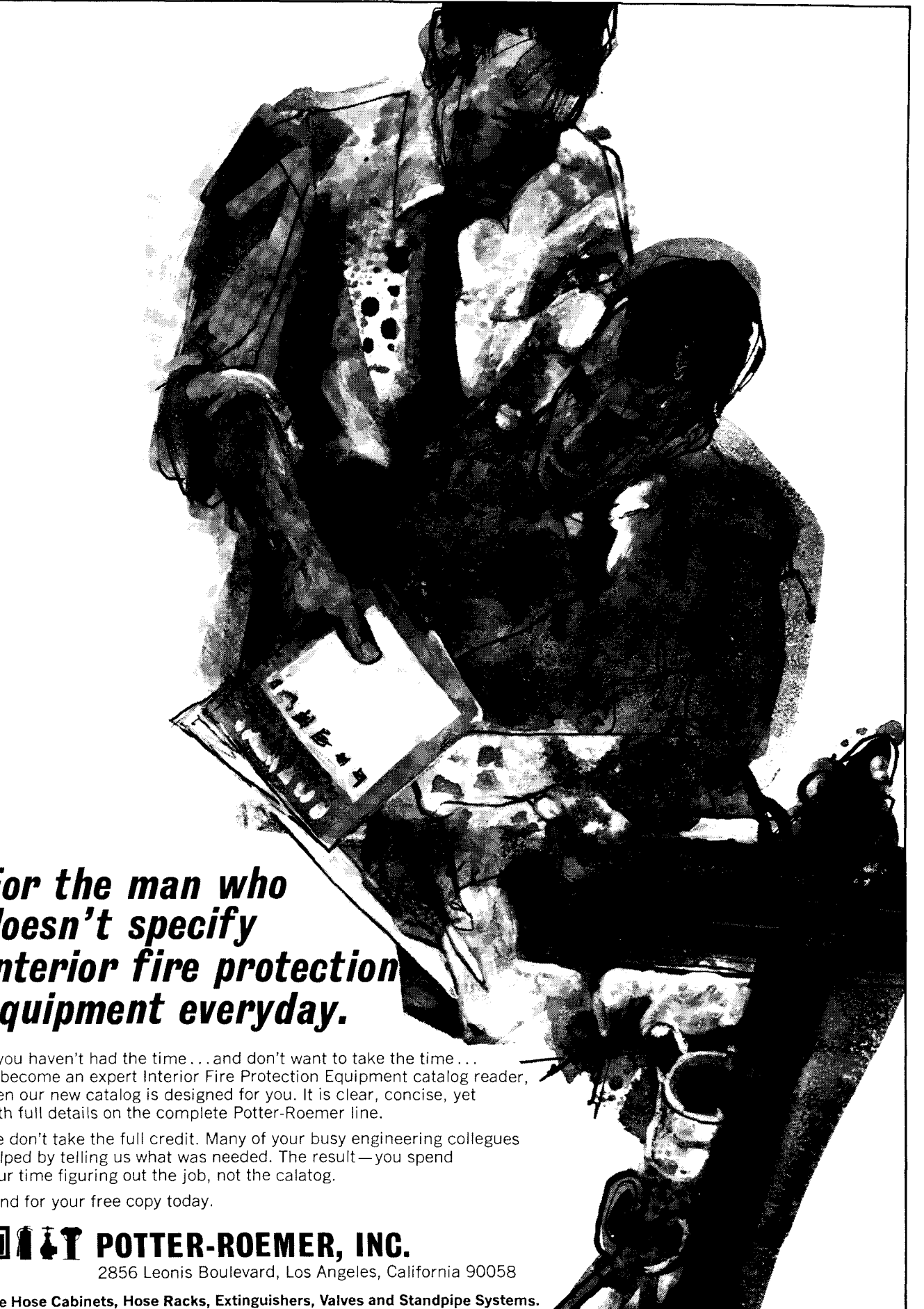
Clusters of floating islands in the inner lagoon are made from triangular concrete pontoons 60 feet wide and held in position by anchor chains. Linked by flexible couplings to allow for water move-

*Continued on page 124*

**Clockwise, from upper left: model of Sea City; wall section showing power complex; a 200-bed hospital; view from upper terrace of playgrounds and island chain leading to shipbuilding complex; breakwater cleop.**







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ment, these rigid sections can be easily separated and recoupled. They carry lightweight, glass fibre reinforced buildings up to three stories high.

**Foiling Wave and Wind:** Designing Sea City involved the need for controlling winds and rough seas while creating at the same time an artificially warm and equable climate. To meet these needs, a breakwater was devised consisting of a row of cylindrical coated-fabric bags 90 percent full of fresh water and lying side by side.

The wall dampens waves by generation of second waves inside the bags. Moreover, in bad weather a curtain of compressed air bubbles from an undersea pipeline rises to the surface across the lagoon entrance to break up the waves further.

Protection from winds is afforded by the 180-foot-high curved wall of the amphitheater which deflects air currents over the city.

**Power from Natural Gas:** Sea City's power source is supplied by natural gas from a nearby field. A complex situated inside the city processes the gas and passes it to

turbines coupled to generators. Waste heat from turbine exhaust gases is used to power a desalination plant as well as to supply power for domestic and industrial heating and refrigeration. The hot water used for cooling is then emptied into the lagoon to raise the water temperature and warm the city's microclimate.

The terraced city wall holds 16 stories of centrally climate-controlled sun- and view-oriented apartments with various floor plans to accommodate 21,000 inhabitants, along with shops, gardens, etc., while other residents would have individually designed houses on the islands. Glass used for residences has special heat and light transmission and insulation properties to reduce glare and solar overheating.

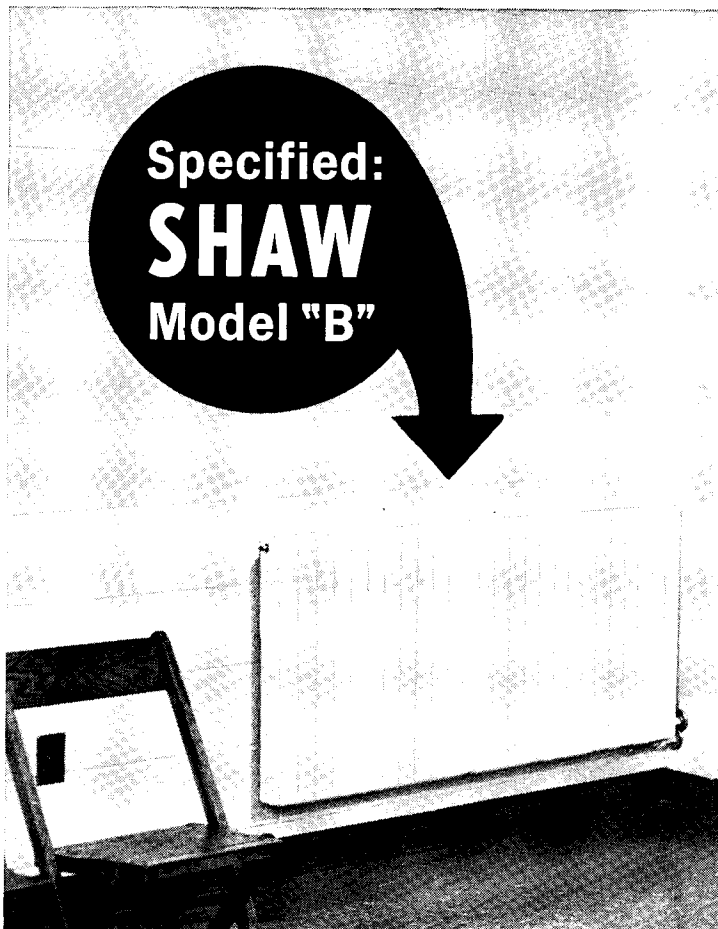
All internal transportation is provided by electrically powered boats and water buses unrestricted in movement except for one heavy traffic area. Visiting craft, including vehicles bearing supplies, are not allowed inside the lagoon but moor at berths outside the city wall. Commuters to the mainland travel via hovercraft or helibus, a vehicle still under development.

Most of the public buildings are located on the floating islands, accessible by footpaths and bridges. Plans for social and health facilities include clinics, dental services, a 200-bed hospital, municipal services, nursery through high schools, community centers, theaters, libraries, an art gallery and museum, churches, plus sports facilities of all sorts.

**The Green in the Sea:** Marine industries are the natural center of the economy. A highly efficient fish farming industry yields at least 5 tons of fish per year. Fish canning and the manufacture of fertilizers from seaweed and sewage are major industries, and the desalination plant produces enough fresh water to export by pipeline to arid or heavily populated areas of the mainland.

A further possibility for export is sand and ballast dredged from the sea bed (in high demand by the mainland's building trade) and seawater extractions such as magnesium, bromine, strontium, rubidium, copper and other metals.

In short, employment is provided not only for the residents of Sea City but also for commuters from the mainland. □



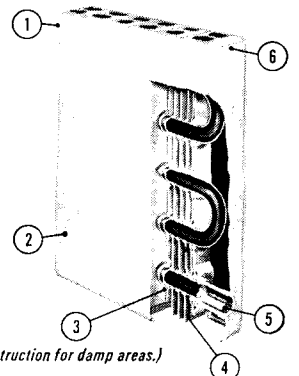
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**DESCRIPTION** — Composition and Materials: A modified chlorinated rubber in a volatile aromatic solvent.

**Basic Use:** Concrete curing agent. It forms a clear membrane surface barrier that holds the moisture in the mix for a prolonged curing period to aid in complete hydration. Produces water-tight, dense, hard concrete. At the same time, it protects against the penetration of moisture, stains or other soil as other trades complete construction.

**Limitations:** Do not use on concrete slab that is to receive Bonded or Monolithic Terrazzo.

**Advantages:** Eliminates expensive operation of wet sawdust, wet sand, earth — the costs of placing these materials on a new installation, keeping them damp, and then removal. Eliminates ponding and spraying. Eliminates covering with building paper, etc. to keep the moisture in the concrete.

**Color:** Not pigmented. Gardner, maximum 6.

**Standards:** Complies with ASTM C156, water retention efficiency of liquid membrane forming compounds for curing concrete. Also conforms to ASTM

C309 Type I as required by the National Terrazzo and Mosaic Association. U/L listed as "slip resistant."

**TECHNICAL DATA** — Pittsburgh Testing Laboratory: Water Retention at 3 days — Average of 3 controlled tests — 98.38%.

NVM: Minimum 20%.

Viscosity: Gardner A2-A5.

**Drying Properties:** Sets to touch in 30 minutes. Dries hard in 2 hours. Dries traffic-ready in 4 hours.

Clarity: Clear

Sediment: None

Suspended Matter: None

No loss in drying or skinning in container.

**INSTALLATION** — One man, who need not have special training, can apply Cem-Seal with a sheepskin applicator or sprayer. Should be applied as soon as the slab can bear weight. Can be used on vertical installations. Only one coat needed.

**GUARANTEE** — When applied in accordance with manufacturer's directions, it is guaranteed to meet all claims made for it in the proper curing of concrete and terrazzo floors.



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# Books

**New Trends in Church Architecture.** Justus Dahinden. New York: Universe Books, 1967. 144 pp. \$10.

The author of this provocative book is a Swiss architect who is responsible for some outstanding ecclesiastical structures. There is a preface by G. P. Cardinal Agagianian who writes that the title of the book "expresses the spirit of the Second Vatican Council, which Pope John XXIII convoked for the purpose of placing the Church in the framework of our time."

The Roman Catholic Church cannot adhere to one cultural expression, writes the Cardinal, but it must recognize the character and culture of different peoples. This book stresses that the native environment must be reflected through contemporary church buildings.

Dahinden sees no logic in duplicating time-honored styles of church architecture. Rather, builders of churches today must be sensitive to the climate, customs, topography and liturgical require-



ments of whatever region in which the church may be situated. He contends that in Africa and Asia the liturgy should be enhanced by native forms in architecture, art, music and dance. Dahinden uses examples of new church architecture in Switzerland, France, Germany, Italy, Africa, South America, Japan and the United States to illustrate his points.

**New Japanese Architecture.** Udo Kultermann. Revised ed. New York: Praeger, 1967. 180 pp. \$13.50.

The first edition of this work was published in 1960, but, as Kultermann emphasizes, Japanese architecture has developed tremendously since then. A new generation of architects educated since World War II is now in command, and the

Japanese scene is dominated by their buildings.

"More and more young Japanese architects talk, not only of links with the West but also of the bonds uniting them to Asia," says Kultermann, and this is of great significance. It accounts for a new recognition of "Japaneseness," and the effort being made to reconcile the Japanese architectural tradition with modern technology. This is largely a book of photographs, most of them new. The same general arrangement is followed as in the earlier edition with a presentation of various building types ranging from municipal buildings to housing schemes and town plans. There are 30 pages of text, and included are biographies of some 20 of Japan's foremost contemporary architects.

**Eric Mendelsohn: Letters of an Architect.** Edited by Oskar Beyer. New York: Abelard-Schuman, 1967. 192 pp. \$7.50.

These are remarkable letters written by a man with keen intelligence and imagination and a delight in life around him. Most of the letters were addressed to Mendelsohn's wife Louise. He met her first in 1910 when she was a young girl of 16, and shortly after that the correspondence began.

In the preface Beyer, editor and a staunch supporter of Mendelsohn until his death in 1964, states that it was of fundamental importance to the architect's work and development that "there should be someone there with whom he could have a constant exchange of thoughts and feelings . . . and throughout his life he really only wrote—and only wanted to write—to this one partner." The hundreds of letters his wife received came from all over the world: Florence, Berlin, Jerusalem, Leningrad, Washington and finally San Francisco, where Mendelsohn died suddenly in 1953.

In order to present a chronological development of Mendelsohn's life and thought Beyer divided the book into four parts—student years and World War I (1910-1918); years in Berlin where he became one of Germany's most successful architects (1919-1933); in England and Palestine because he was forced out of Germany, becoming a British citizen in 1938 (1933-1941); and in America where he came to earn money to help support his and his wife's family (1941-1953).

The letters to his wife are interspersed with letters to other people

and with excerpts from his articles and lectures. The book is of importance in gaining an understanding of this architectural pioneer, and the reader will vastly enjoy his comments about architecture, cities and personalities.

**College Unions at Work: An Annotated Bibliography.** Ernest Martin Christensen. Ithaca, N. Y.: Association of College Unions-International, 1967. 268 pp. No price given.

It is amazing how much has been written about the planning, operating and programming of college unions. This lengthy bibliography is evidence that there has been a flood of materials. Four years were spent in the preparation of the bibliography, and Christensen says he has included most of the major works written or published during the period of 1950-1966. He seems to have been successful in working out a logical and meaningful classification.

Of particular interest to the architect is the section on "Planning the College Union." He cites references on such related topics as architect, architecture, consultants, interior design and parking. The brief annotations appear to be to the point, and full information is given. Christensen even includes the price when he cites a book.

**Sixty Sketches of Iowa's Past and Present: An Illustrated Guide and Narrative to Some of Iowa's Past and Present.** William J. Wagner, FAIA. West Des Moines: Brown & Wagner, 1967. 179 pp. \$8.75.

This is a delightful volume of sketches in line and word about a section of the country that it is quite evident Wagner knows and loves very well. Wyatt Earp, Mamie Doud Eisenhower, Buffalo Bill Cody and Louis Henri Sullivan are among the personalities about whom the architect writes. Wagner also relates tales about a sorghum mill, a Quaker meeting house, riverboats, covered bridges and county jails.

The book resulted from an effort to give his drawings (see AIAJ, Feb. '68, for a sampling), which are its very essence, a more permanent form. The combination of drawings and stories must please any Iowan, and they are fascinating to anyone who cares about American history and customs. The books will surely help preserve not only Iowa's colorful history, but also some of its historic structures.

*Continued on page 130*



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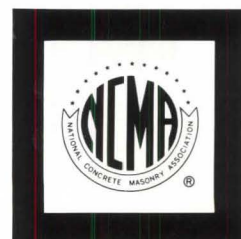
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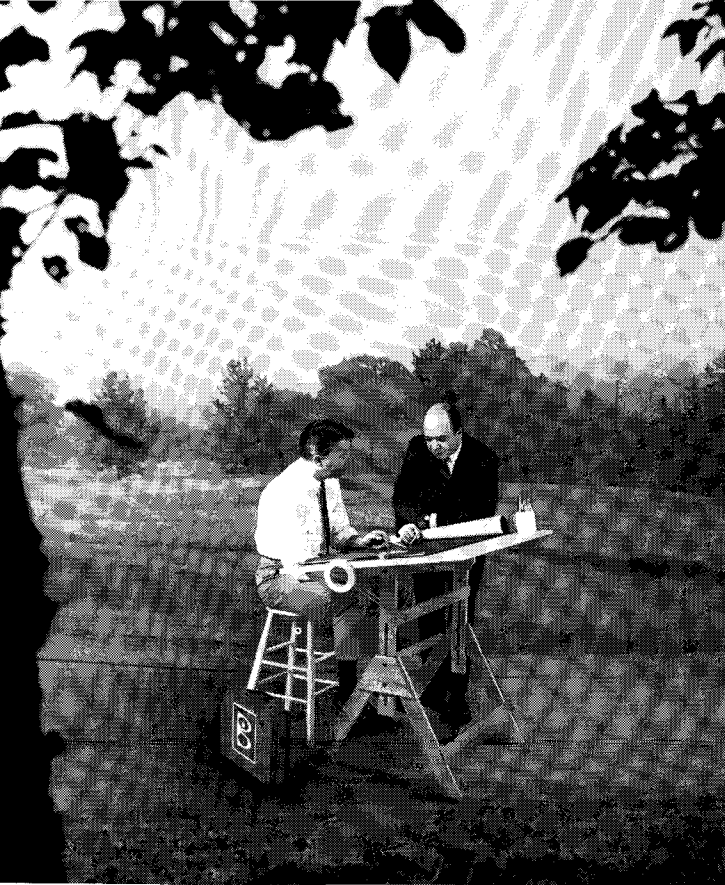


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Books from page 126

**Founders and Frontiersmen: Historic Places Commemorating Early Nationhood and the Westward Movement, 1783-1828.** Robert G. Ferris, Series Editor. Washington, D. C.: National Park Service, 1967. 410 pp. \$3.

This is another volume in the National Survey of Historic Sites and Buildings Series, a cooperative writing and editorial project of the National Park Service personnel. The work describes historic sites and buildings associated with America's formative years.

The first part of the book sets the historical background and describes such political and military events as the War of 1812, emergent nationalism and the Westward movement. Sites and buildings are described in Part 2.

The arrangement is alphabetical by state within five categories: sites in the National Park System; historic sites owned by others than the United States Government; sites eligible for the registry of National Historic Landmarks; historic districts eligible for the registry of National Historic Landmarks; historic districts eligible (two are included—Vieux Carré, Louisiana, and Colonial Annapolis); and, finally, sites not considered nationally significant enough to be a Landmark but of sufficient importance to merit attention.

The Octagon, owned by The American Institute of Architects, is described and pictured, with information given about its location, ownership, significance and present appearance. The book contains 118 photographs, eight maps and an index.

**Early Houses of New England.** Norman B. Baker. Rutland, Vermont: Charles E. Tuttle, 1967. 144 pp. \$7.50.

Baker is an architect, and the book jacket blurb says he is also a sentimentalist. He is sentimental about old New England houses. He wants to revive an interest in the domestic architecture of the early settlers of this country and adapt it to the life of today.

Baker here presents some 53 examples all based on houses of colonial America still extant. He has depicted the way in which modernized versions of such houses can result. He adds on wings and puts in space for bathrooms, two-car garages and porches. These modern adaptations of structures are based on a variety of styles—from a small gable lean-to to a Cape Cod cottage to a Greek Revival mansion.

**Techniques of Landscape Architecture.** Edited by A. E. Weddle. New York: American Elsevier Publishing Co., 1968. 226 pp. \$16.75.

This book was commissioned by the Institute of Landscape Architects in England in order to provide a general textbook that would cover a wide range of problems in landscape architecture. The whole of the outdoor environment, in both city and country, is encompassed. Therefore, the tasks of the landscape architect are broad, and a wide range of specialists with a spread of skills was called upon in the compilation of this book. The experts are highly competent, and the topics covered are dealt with comprehensively and authoritatively. Because the book was intended as a technical handbook the purpose is to inform, and the writers are concerned with practical matters.

There are twelve sections, beginning with "Site Planning," written by Sylvia Crowe. Other sections cover aspects of landscape architecture, including a section on "Enclosure" by Frederick Gibberd, one on

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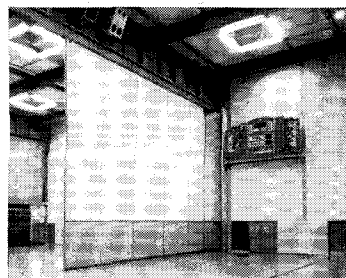
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"Hard Surfaces" by Timothy Cochrane, and G. A. Jellicoe's contribution on "Water." The appendix includes various technical information regarding such matters as the comparative rate of growth of trees; the cost of maintenance; and places to obtain additional literature about landscape architecture. There are numerous photographs and line drawings throughout the book which amplify the text.

Much of the information in this comprehensive book is applicable only to England, such as paving costs, scale of fees, etc. There is enough, however, that is generally practical to commend it to the American architect.

**Building Contractor's and Home Builder's Handbook of Bidding, Surveying and Estimating.** Ben Benson. Englewood Cliffs, N. J.: Prentice-Hall, 1968. 190 pp. \$14.

This is a handbook for the construction job estimator and is intended to insure a profitable operation by means of knowledgeable calculation. Useful in residential as well as in general construction projects, the book develops a system that "will guarantee that a completed estimate will not omit any factor in preparing a bid."

Benson outlines in detail the items that must be considered in a bid: labor, equipment, materials, subcontract and overhead. He provides samples, tables, formulas and mathematical shortcuts. The author, chairman of the department of homebuilding, Trinity University, San Antonio, has been a professional estimator for 17 years.

**Plastics in Architecture.** Edited by Albert G. H. Dietz and Marvin E. Goody. Cambridge: Department of Architecture, Massachusetts Institute of Technology, 1967. 279 pp. No price given.

"The evolution of plastics in building will bring new kinds of architectural expression. What these will be is a matter of conjecture. Where plastics have been introduced in many industries and where traditional materials have been replaced by plastics and where the material has been honestly used, a new esthetic has been born."

This statement was made by A. W. Levenhagen in a speech he made on reinforced plastics in architecture at a seminar conducted by MIT's Department of Architecture in June 1967. Papers were presented by experts from the fields of architecture, engineering and the plastics industry in an inquiry into the technical, code and construction problems inherent in the use of plastics in contemporary architecture.

The book, reproduced from typewritten copy, contains the papers given during the June week at MIT. The spectrum is broad, ranging from a paper on the classes of plastics by Albert G. H. Deitz to one on pneumatic structures by Walter W. Bird.

**Concrete Technology and Practice.** W. H. Taylor. 2nd ed. Sydney: Angus & Robertson, 1967. 650 pp. \$15.

First published in 1965 (AIAJ, June '66, p. 160), this work is updated by including changes to standards and tables and by additions to the text. There is a lengthy bibliography on the design, management and execution of projects in building construction, as well as references throughout the text to various books and standards. Taylor has included new references in this edition and added a list of publications on the use of the computer in building technology. □

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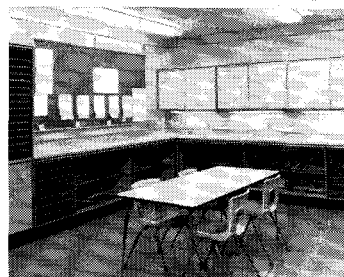
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# Calendar

## National

**May 13-17:** American Society of Civil Engineers Environmental Engineering Conference, Hotel Patten and the Read House, Chattanooga, Tenn.

**May 20-21:** Washington Paint Technical Group Symposium, Marriot Twin Bridges Motel, Washington, D.C.

**May 26-28:** Illuminating Engineering Society Theater, Television and Film Lighting Symposium, Barbizon-Plaza Hotel, New York City

**May 27-28:** Ohio State University College of Veterinary Medicine/College of Medicine Seminar on the Planning and Design of Animal Laboratory Facilities, Upham Hall, OSU Hospitals, Columbus

**June 21-23:** Association of Collegiate Schools of Architecture, Benson Hotel, Portland, Ore.

**June 23-26:** American Society of Landscape Architects Annual Meeting, Sheraton-Brock Hotel, Niagara Falls, Canada

**June 23-29:** AIA Annual Convention, Portland Memorial Coliseum, Portland, Ore., and Ilikai Hotel, Honolulu (June 28-29)

**June 29-July 2:** National Council of Architectural Registration Boards Annual Convention, Princess Kaiulani Hotel, Honolulu

**July 3-6:** National Society of Professional Engineers Annual Meeting, Schroeder Hotel, Milwaukee

## AIA Regional and State Conventions

**Sept. 26-28:** New Jersey Society, Chalfonte-Haddon Hall, Atlantic City

## International

**May 19-26:** Union of International Architects Industrial Architecture Seminar, Ponchartrain Hotel, Detroit

**June 2-4:** International Design Methods Group First Annual Conference, Massachusetts Institute of Technology, Cambridge

**June 15-20:** International Federation of Landscape Architects Congress, Montreal

**June 16-22:** International Design Conference, Aspen

## Continuing Education

**June 17-28:** "Computer Graphics for Designers" course. Contact: Bertram Herzog, Associate Professor, Department of Industrial Engineering, University of Michigan, Ann Arbor 48104.

## Awards Programs

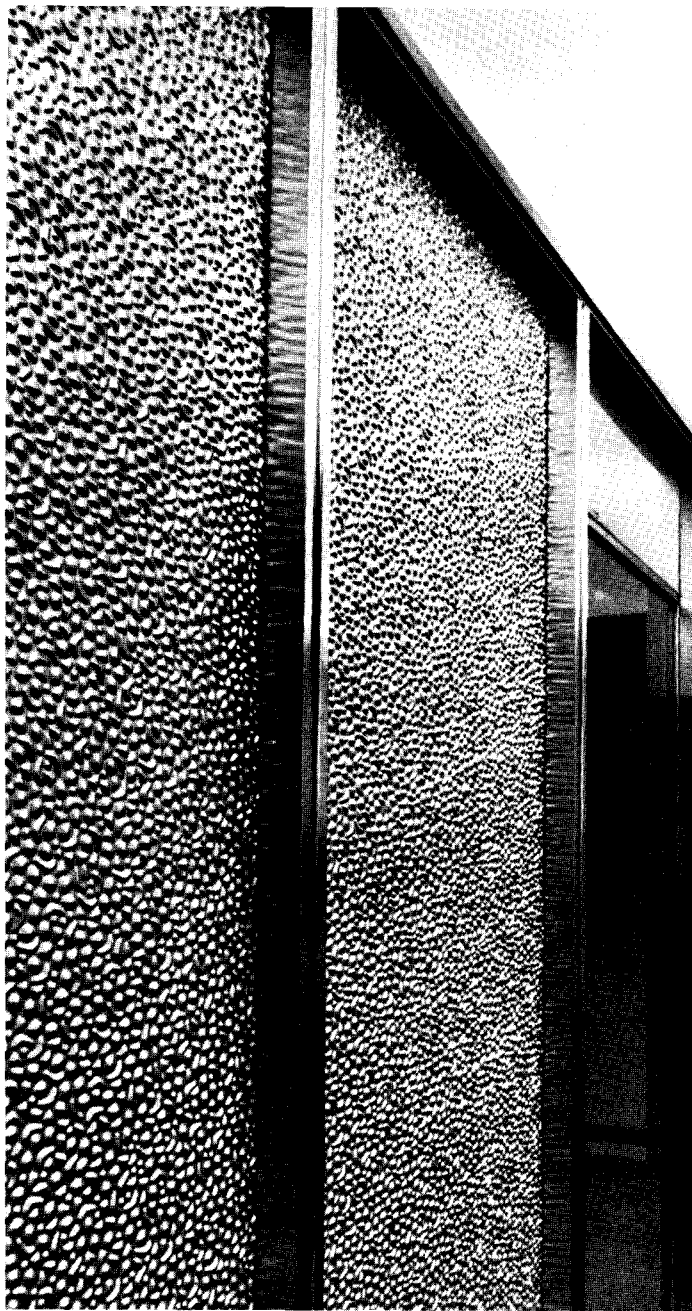
• American Institute of Steel Construction. Contact: AISC, 101 Park Ave., New York, N.Y. 10017. Submissions due June 1.

• The James F. Lincoln Arc Welding Foundation. Contact: Secretary of the Foundation, P. O. Box 3035, Cleveland, Ohio 44117. Submissions due July 15.

## Tours

• Architectural Tour of Scandinavia, Aug. 8-Sept. 6. Contact: Dr. Harold Fredsell, Director of Church Development and Architecture, United Presbyterian Church, USA, 475 Riverside Drive, Room 1511, New York, N. Y. 10027.

• Architecture and Garden Tour of Japan, Oct. 7-31. Contact: Kenneth M. Nishimoto, AIA, 263 S. Los Robles Ave., Pasadena, Calif. 91106. □

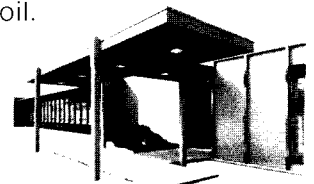


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# Letters

## Back in the Drafting Room

EDITOR:

I don't know what kind of response you get from your readers on the philosophical and design articles that occupy much of the space in the JOURNAL. I do know that the response we have received to the article by Chester E. Roemer of our office on freehand drafting in January has been phenomenal.

We have been glad to take the time to give additional details to those who come to the office—and this is not limited to just the "production" offices. We have heard from educators; we have been visited by representatives from two major corporations; and we have answered more than 60 letters.

GEORGE E. KASSABAUM, FAIA  
St. Louis, Mo.

## Going, Going, Gone!

EDITOR:

I find surprising the March issue with cover and lead article both asking "Where Is Architecture Going?" Didn't you know? It's gone.

EDWARD HUNTSMAN-TROUT  
Landscape Architect  
Beverly Hills, Calif.

## The Future Decision Makers

EDITOR:

I wish to commend Neil E. Gallagher on his fine article "Decision Maker 1985" appearing in the February issue. I have been studying city planning at Pratt Institute and am keenly aware of the tremendous task which lies ahead of educating future decision makers in esthetics and urban design.

I feel that we cannot move fast enough in incorporating such courses in our elementary and secondary school curriculums. If we don't act now, America will pay even more dearly in the years to come than she has in the past.

HUNTER G. LOUIS  
Louisville, Ky.

EDITOR:

While browsing in the public library, I had the pleasant experience of spotting my picture on the cover of the February issue of the JOURNAL.

At the time the photograph was taken, I was principal of Page Elementary School in Silver Spring, Maryland, and was helping some

kindergarten children to differentiate among attribute blocks of different shapes, sizes and colors.

Currently, I am on a Mott Fellowship and am working on my doctorate at Michigan State University, but expect to return to Montgomery County next year.

JOSEPH T. HOWARD  
Flint, Mich.

## Expo or Expose 67?

EDITOR:

The news that Expo 67 will reopen its doors May 17 under a new name has prompted this belated letter. So much saccharine commentary about the fair inundated the public that it has been considered almost unpatriotic to register a large and resounding dissent.

Criticisms which did appear picked at the edges but failed to pinpoint the intrinsic psychological weakness of such endeavors. The fair was at best a compromise of quantity and scale over quality. It merely tended to emphasize our society's fetish at honoring the mediocre — palatable to middle-class tastes. The only unifying feature about this metropolis and its surrounding environment was the people, all harried and fatigued.

Take "geodesic heaven," for example. I understand Buckminster Fuller had volunteered to cover the entire exposition with such a spherical contraption. Having welded the joints instead of utilizing the old-fashioned nut and bolt, I am told that the United States graciously sold it to Canada for the going rate of a dollar.

When viewed from afar, the silhouetted simplicity of the dome is a delight. As the viewer approaches the ribbed spheroid, he becomes increasingly aware of the mechanics of the scheme. Beyond this crude distraction and accepting this type of skeletal structure as a clever means for sheltering great masses of people, I could not but sense a great disappointment of the uninspired entry treatment which was more like a happening.

I would have anticipated a baroque swirl serving as an umbilical transition between the anticipatory and the experience itself. I have forgotten what the exact treatment was: I seem to recall a pseudocanopy of orange tubular bars. At any rate, the transition was abrupt, arbitrary, incomplete.

The geometry of the escalators and platforms had no relationship to the epidermis. It was as though the building itself was a dynamic

shield against the elements: separate but equal. The "show" was the dome and yet it was unattainable, divorced like a glass curtain from its surroundings. I liken it to the frustration felt at not being able to fondle a sculpture within the confines of a museum.

As I look back upon the scene, I realize I was tired, bored, frustrated. Nonetheless, the night views of the fair taken by helicopter are unquestionably more flattering than a worm's-eye view through the sweating dandruff of the throngs.

But the exhibit itself shall long remain etched in my soul—100 guitars standing proudly at attention, scotch-taped to the wall. "Look, there's Elvis Presley's and Theo Bikel's!"

The space part of the exhibit was excellent. Three orange-and-white-striped parachutes held a space capsule within the huge dome. A moon machine stood on a simulated moon surface. But a photograph of the earth taken from the moon made it all seem so comical—and sad.

I looked at Habitat as though I were a robot come to roost for the night. Like bingo in 3D. I live in G58—that's five to the right, one down—bingo!

For anyone who senses a void in his life, a visit to Expo would have made him realize that his very existence is smothered in cosmetics.

TERRY F. HOROWITZ, AIA  
Silver Spring, Md.

ED. NOTE: For the other side of the Expo coin, see Comment & Opinion in this issue.

## City '70: Pro and Con

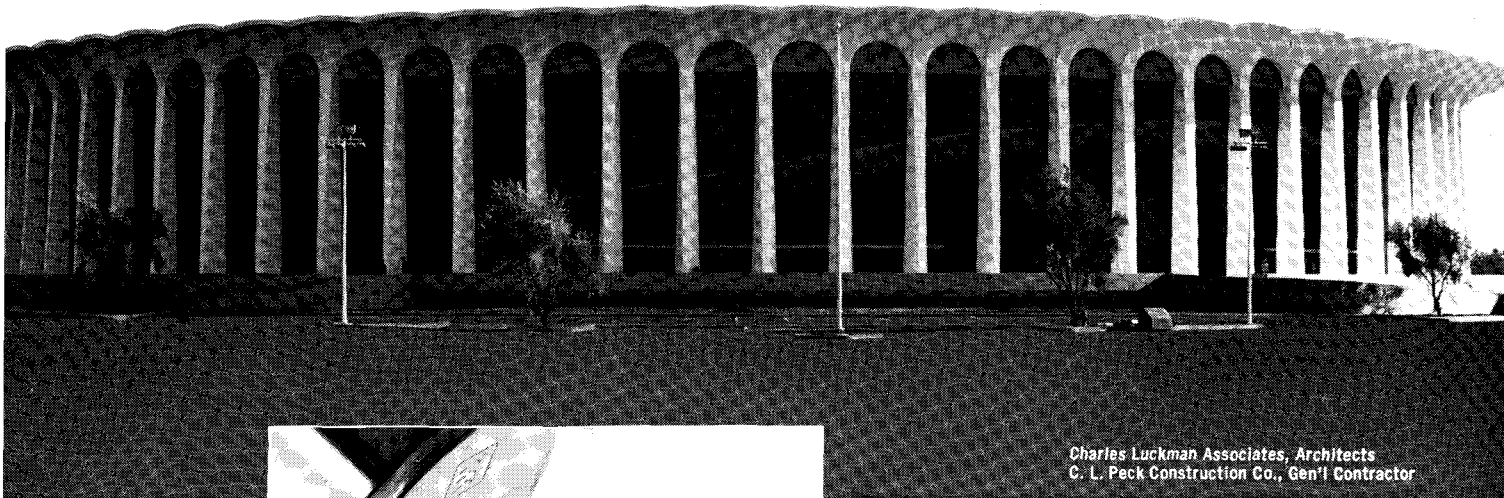
EDITOR:

Permit me to congratulate you for the December issue and particularly for Antonio Luccarelli's City '70 proposal which seems to offer far more possibilities to overcome the legal and political barriers to basic urban rehabilitation.

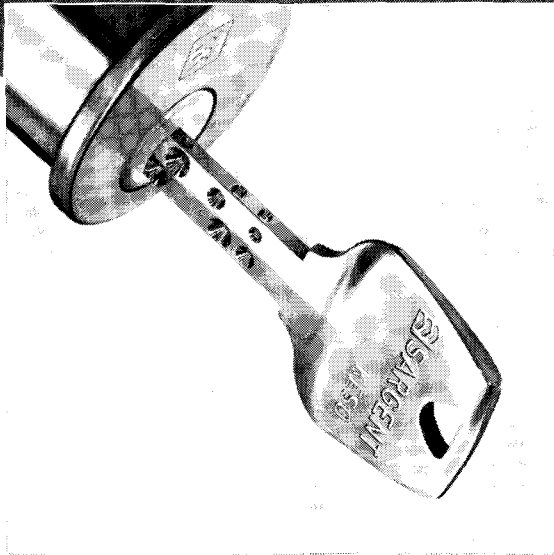
It is potentially excellent by its nature which, in calling for new structural and prefabrication concepts, automatically clears the ground level and thus assures the ideal site for all the services whether social, cultural, administrative or commercial, as well as the gardens and opportunities for leisure.

The magnificent consequence of this clearing of the site so hopelessly hoped for to date appears to be almost miraculously attained by Luccarelli's sleight hand. But I also

Continued on page 139



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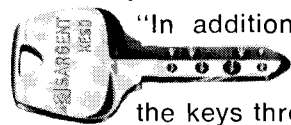
The management of The Forum was presented with a mammoth problem in lockset security. As in all sports arenas, large amounts of cash would be on hand, negotiable pre-printed tickets would be on the premises, and vandalism would be a constant problem.

Moreover, a great degree of flexibility would be required to accommodate the fluctuating storage and space needs of converting The Forum from an exhibition hall to sports arena and entertainment center.

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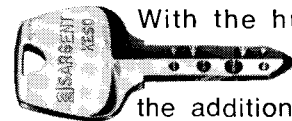
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*The Chicago History of American Civilization a series edited by Daniel J. Boorstin.*  
1968 LC:67-30127 329p, illus. \$10.00

### The Mosque in Early Ottoman Architecture

Aptullah Kuran

The Ottoman Turks delighted in building, and developed a rich and impressive architecture wherever they went. All the hundreds of mosques of the period that can still be studied in modern Turkey are analyzed in this book. Floor plans, uniform section views, and at least one photograph of the exterior of nearly every mosque are included, making this clearly the most comprehensive work on the subject in any language. "A Publication of the Center for Middle Eastern Studies."

1968 Details to be announced

### Illinois Architecture

*A Selection of 150 Buildings and Structures from Territorial Times to the Present*

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This overview of the development of architecture in Illinois presents 150 photographs of landmark buildings. The accompanying text by Koeper points out their historical and architectural significance. The book shows buildings from the time of early French influence until the twentieth century when the Chicago School set the pace in architecture for the world. This volume was prepared as part of the Illinois Sesquicentennial program in collaboration with the Illinois Sesquicentennial Commission.

1968 LC:68-16700 Cloth \$10.00 Paper \$1.95

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- 42 Special book offers to AIA members, information and prices; just published *Creative Control of Building Costs; Specification Work Sheets; Architect's Handbook of Professional Practice; 1967 Membership Directory; Comprehensive Architectural Services; Urban Design; Uniform System for Construction Specifications, Data Filing & Cost Accounting; Opportunities in an Architecture Career*
- 43 1966 Design Award Program (HEW-AIA-EFL), brochure of higher education facilities
- 44 Your Building and Your Architect, 18-page booklet for clients
- 45 Checklist for Cities, a working guide for urban analysis
- 46 NACA Ceiling Systems Handbook, order form

had a similar experience while teaching at Pratt Institute and having to direct my students in the reclaiming and development of the Jersey Meadows. Here the consequence due to soil and foundation difficulties led inevitably to a completely elevated city including streets and dwellings, leaving the ground level totally free for leisure opportunities, public services, etc. Thus the Luccarelli proposal and the Jersey Meadows project become parallel stepping stones to the ultimate ideal Linear City concepts.

Again, as regards the challenge for new concepts of prefabrication, I find this proposal in harmony with my own former research. For in 1936-1938, I developed the Suspended House wherein the use of interior rooms of small size and of independent form could permit the separate prefabrication and their transport to the site by trailers so as to be finally suspended within an exterior shell. As this exterior shell insures the climatic control of the interior space, the interior rooms could be universal in form and equipment whether used on the North Pole or on the Equator. Such a solution thus permits continental production as is practiced by the automotive industry, which returns to Luccarelli's proposal.

When I exhibited the model of the Suspended House in New York in 1938 at the Museum of Modern Art—a reproduction is in its permanent collection—Aalto remarked in a seminar that this research established a point of departure in time and in space from which would radiate new developments someday. What I want to emphasize is that the City '70 concept does this very thing.

PAUL NELSON, AIA  
Professor and Director  
of the Franco-International  
Atelier of Architecture  
Ecole des Beaux-Arts of Marseille  
Marseille, France

EDITOR:

At a point when growth, change and flexibility are being accepted more and more as premises for the organization of our environment, it seems inappropriate for the JOURNAL to headline a proposal such as City '70.

Lines of communication, such as highways, have special purposes to serve and have certain design requirements, all of which define alignments, patterns and scale.

Residential building, or even commercial building, and especially the spaces between them, have completely different requirements. The most dramatic difference is between the pedestrian and vehicular scale.

If not completely plausible, it would be wholly coincidental if these two types of structure could be combined successfully into a single form. The right place for a roadway is likely to be the wrong place for living space. And this does not begin to consider the effects of a landscape which is surrounded by Chinese walls.

This is not to say that in a few critical areas—the proposed Brooklyn Expressway or the Boston Inner Belt in Cambridge, for example—such an integrated design of highways and buildings should not be considered. I do suggest, however, that the superficial attractions of such a scheme can lead to bad planning and bad urban design.

ROBERT S. STURGIS, AIA  
Boston, Mass.

EDITOR:

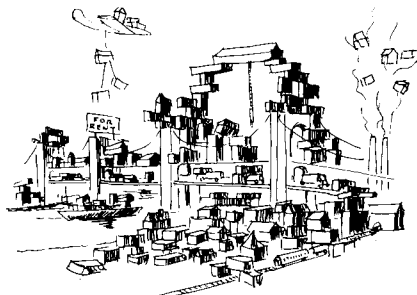
I thought the article was excellent. The concept behind Mr. Luccarelli's plan has a great deal of merit.

A. W. MUELLER  
Mortgage Officer  
Acacia Mutual Life Insurance Co.  
Washington, D.C.

EDITOR:

Looking at your December cover and remembering the design philosophy of Habitat '67, I could not help but react with a vision of the future city as depicted on the accompanying sketch.

I am sure, if we try hard enough, we can learn to design cities which



will have the efficiency of a beehive or an ant hill. By then, we too will probably have the personality of an insect.

I am always curious to know what kind of an environment the proponents of these ideas live in.

LEON ROSENTHAL, AIA  
Babyon, N.Y.

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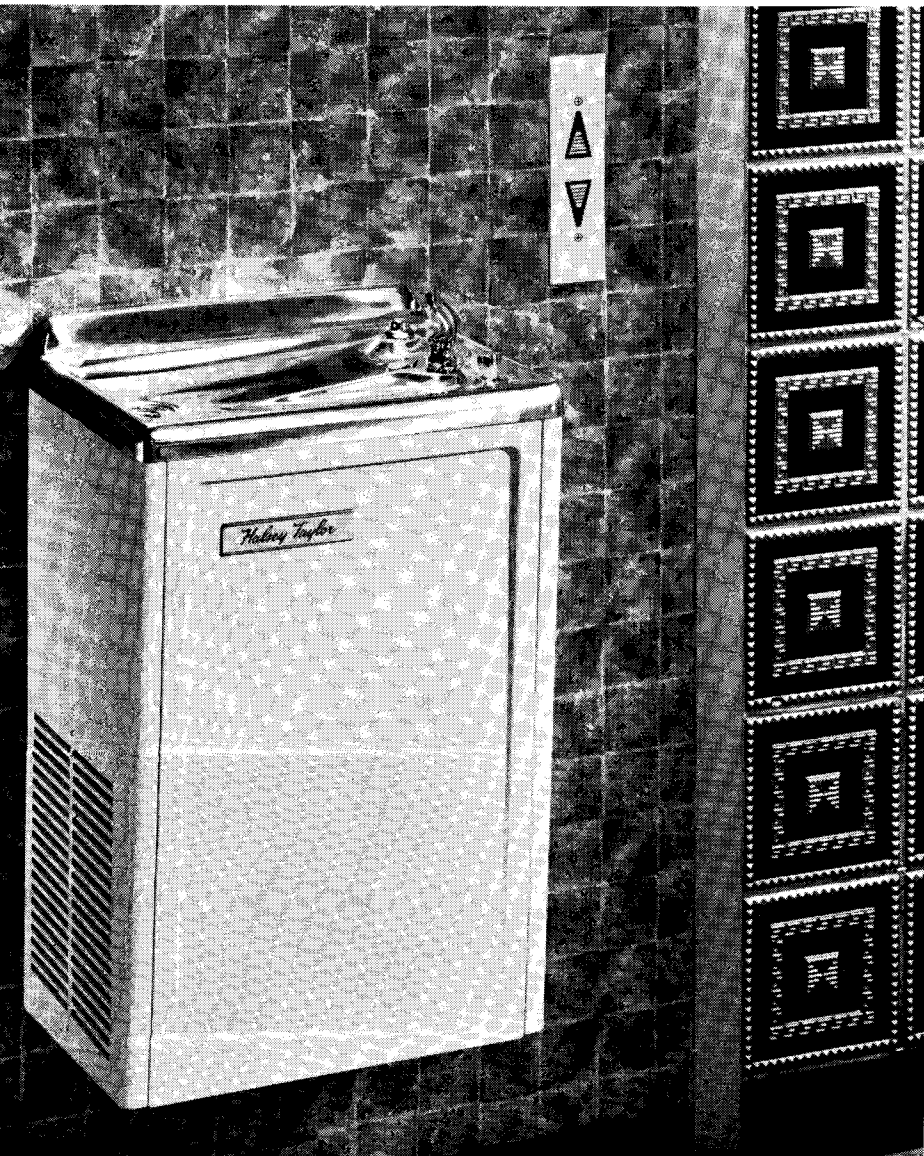
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# THIRST QUENCHER



## Asides

**Next Month:** The Institute's first two-city convention will give us an opportunity to take a special look at the architecture of the Pacific Northwest and Hawaii. The Official Convention Guide, however, will lead off with a portfolio of the 1968 AIA Honor Awards, the presentation of which is always a convention highlight.

In addition to pictorial essays on Portland and Honolulu, the June issue will have a roundup on the western house, prepared in cooperation with *Sunset Magazine*; an in-depth study of Portland's architectural history by a University of Oregon professor; and a review of the wood tradition as employed by practitioners in both Oregon and Washington by a freelancer who has done considerable architectural writing.

**On the Move:** Make no mistake about it: Doxiadis is a hard man to follow, literally and physically. While an article on the Greek architect-planner was being prepared for this issue, he was addressing the fourth annual Jordan Editorial Conference which I attended at Arden House on Columbia University's Harriman campus. CBS News was on hand with its television cameras and will incorporate the filmed material during a three-part program scheduled for June 18, 24 and 25.

Just before presstime, he delivered a major talk at the annual Architects and Engineers Forum in Los Angeles; in February, he addressed the annual Engineers' Day at Drexel Institute of Technology in Philadelphia, where he received the Engineering and Science Award, and participated in a Post Office Department planning seminar in the nation's capital — and these are only four of his recent engagements which have come to our attention. R.E.K.

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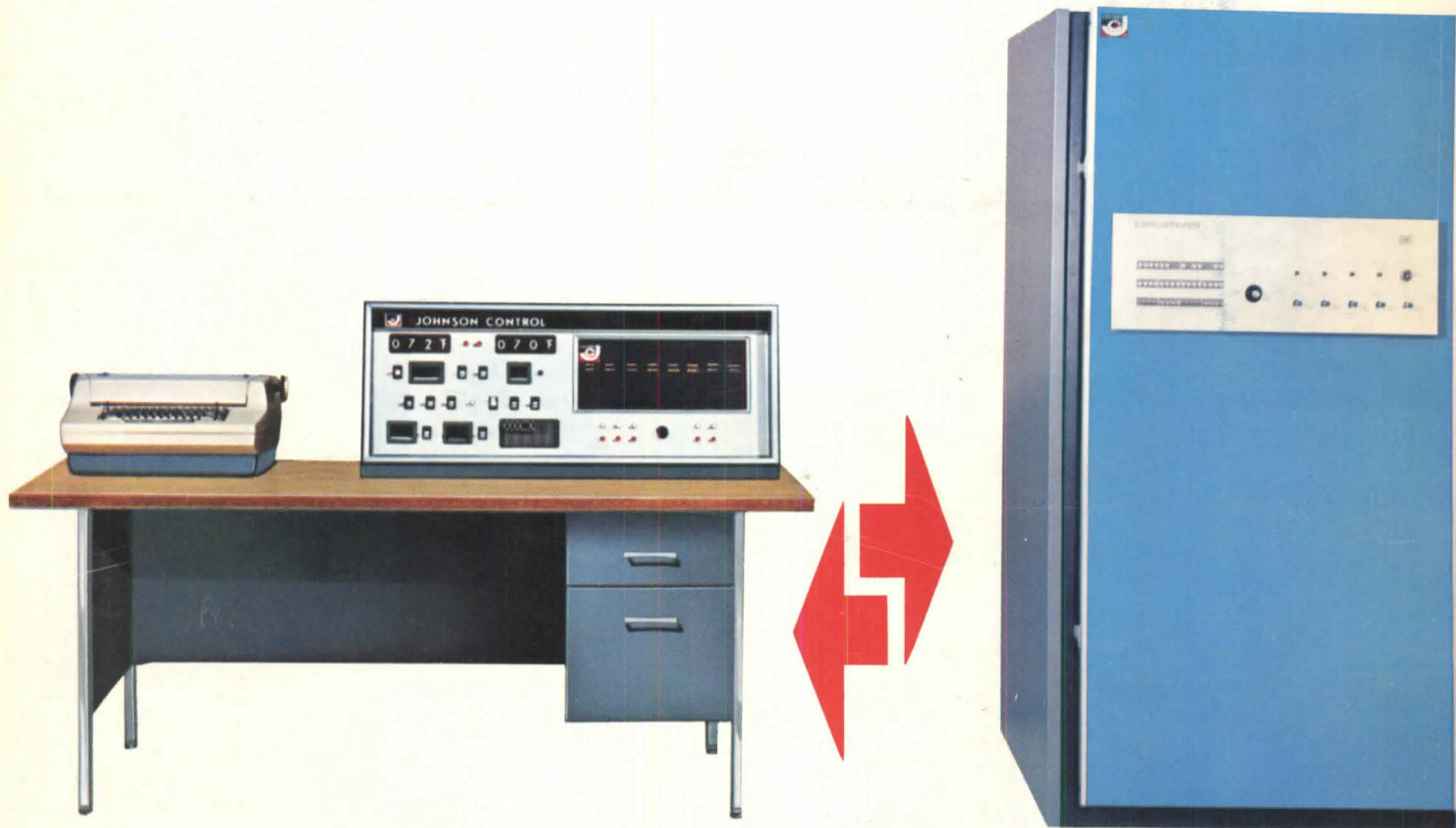
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