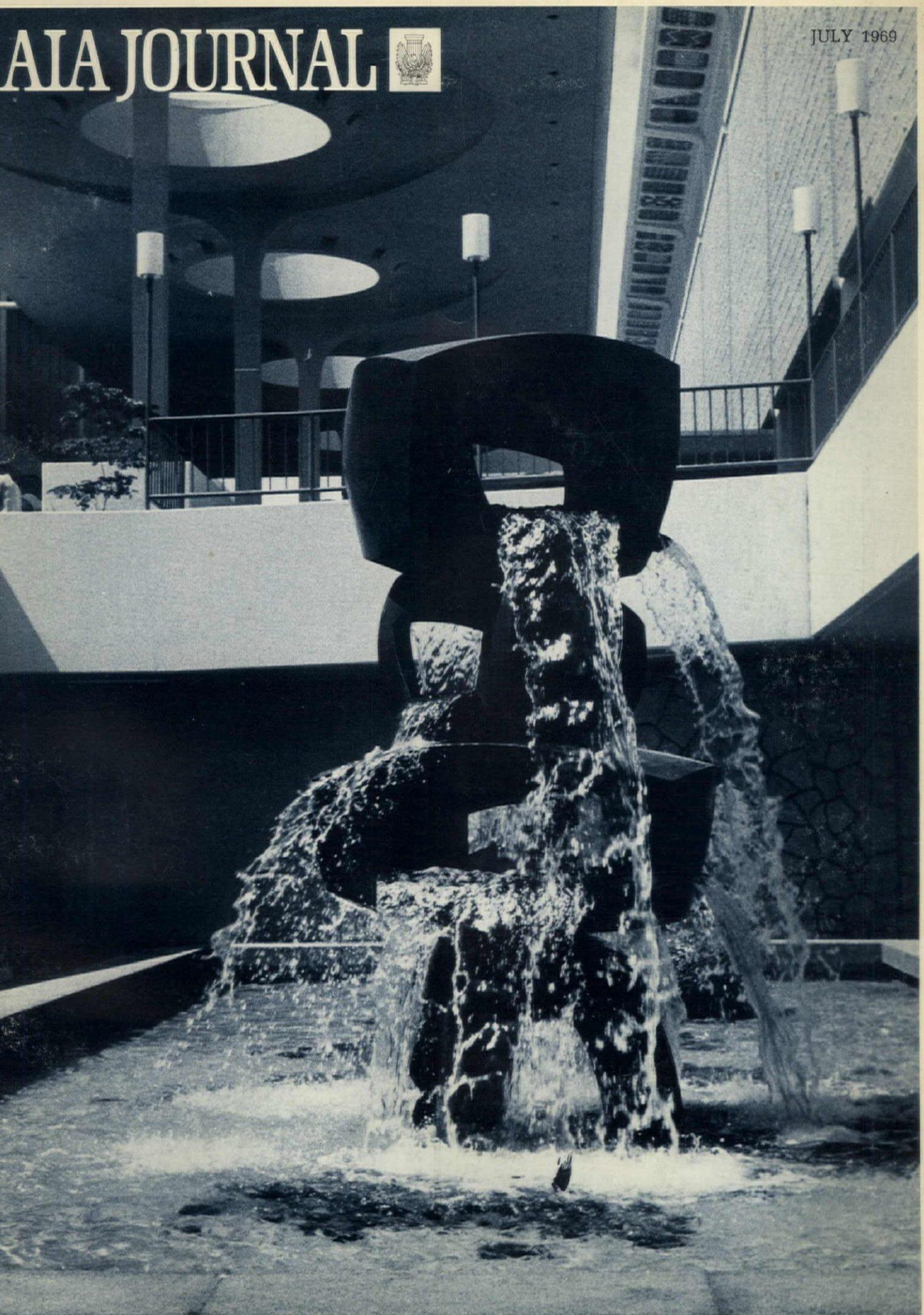
AIA JOURNAL

JULY 1969



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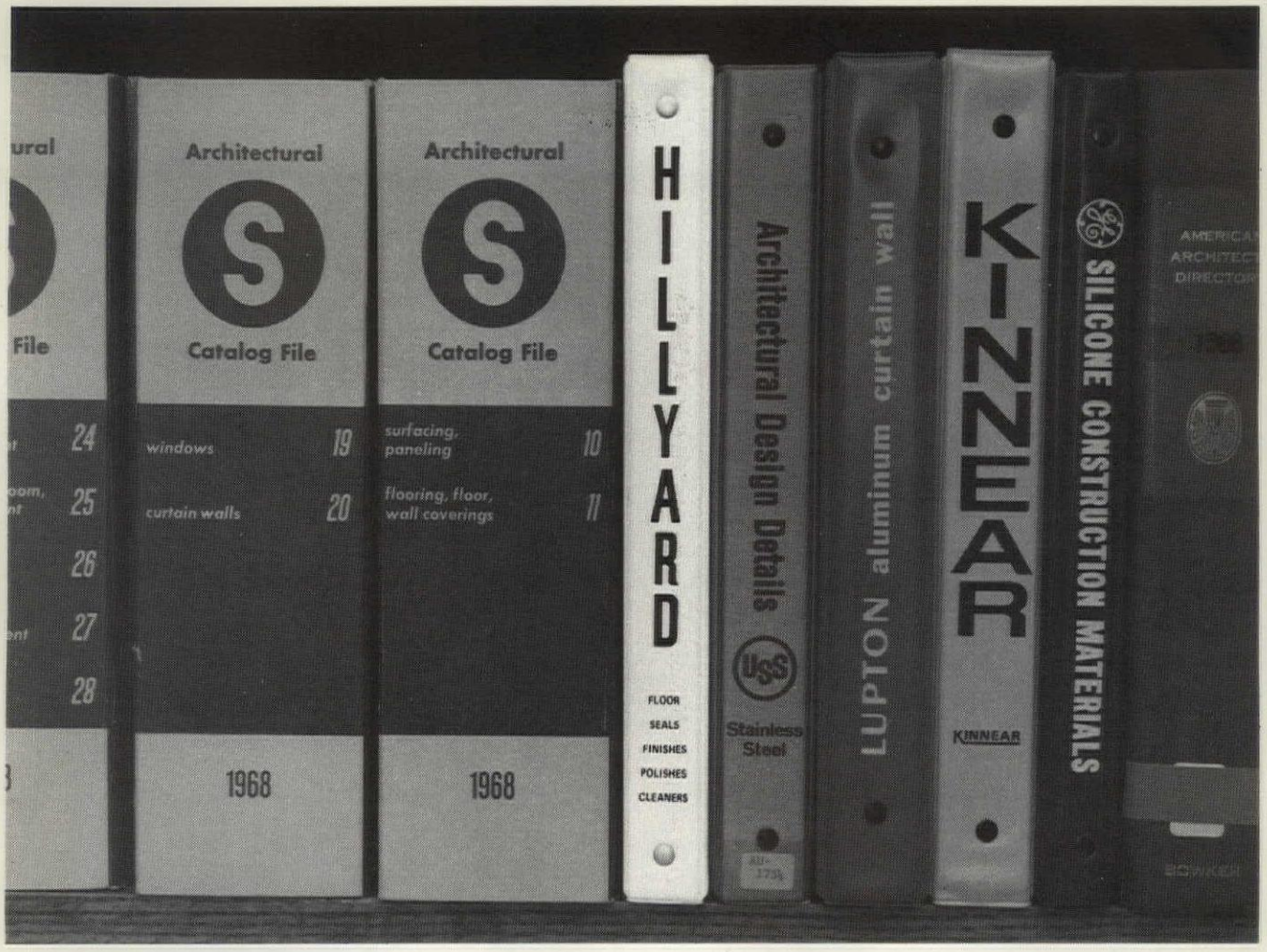

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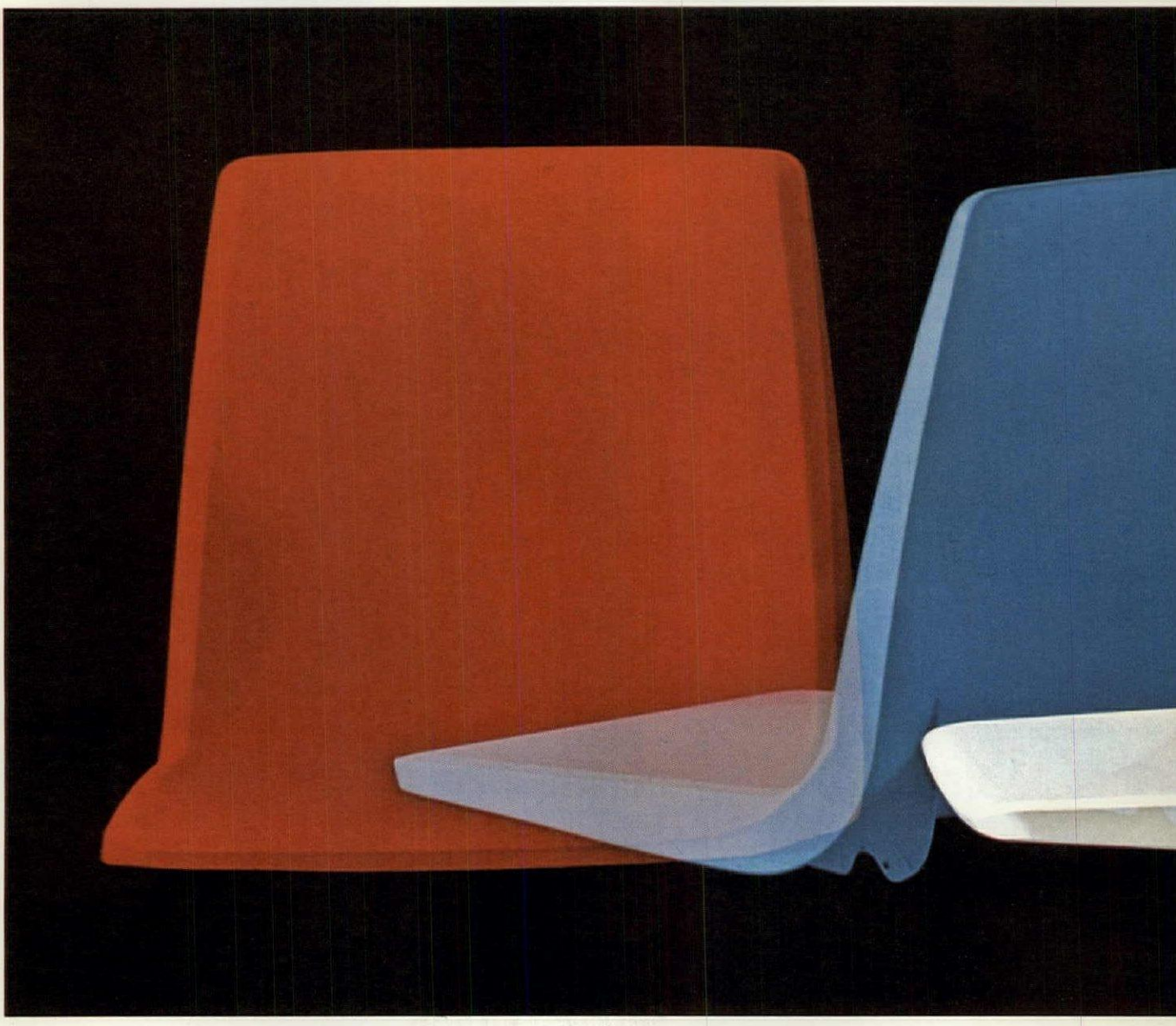

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Cover: Waiola, George Tsutakawa fountain at Ala Moana Shopping Center, Honolulu, by John Graham & Co.

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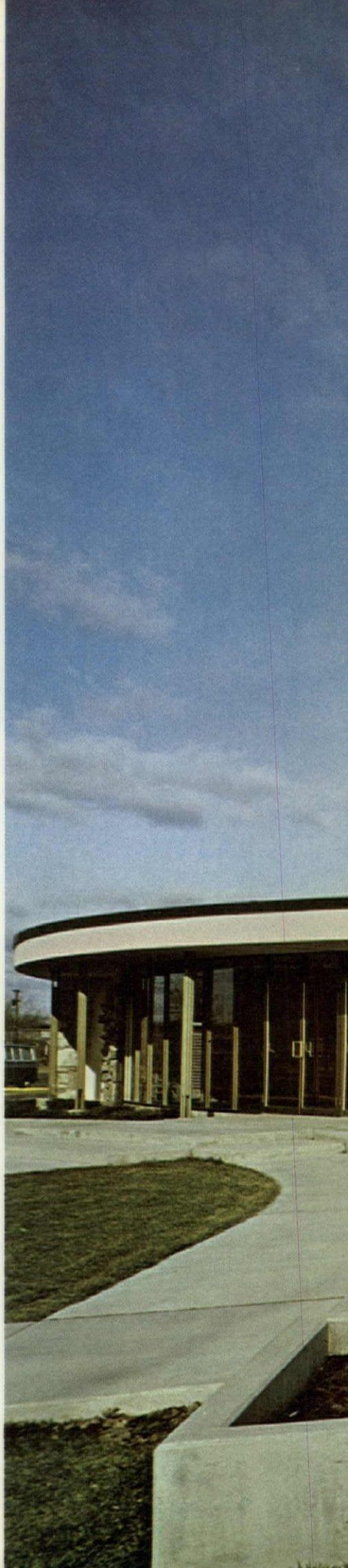


THE KAWNEER CONCEPT:
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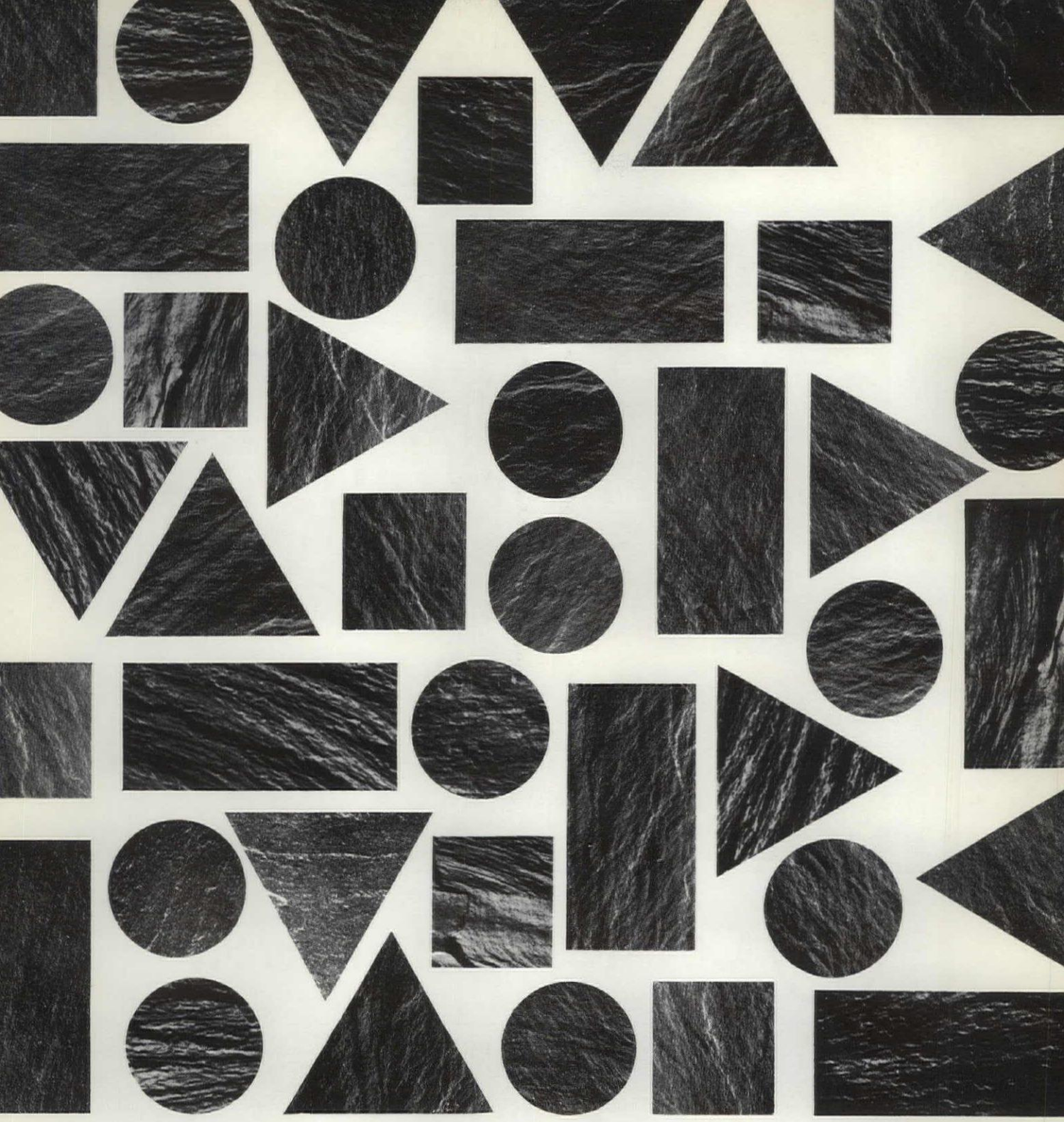
Asides

Next Month: On occasion we like to look beyond the US borders for architectural lessons to be learned. Such is the case in August as the AIA JOURNAL examines how two cities in South America were planned and on what principles: Brasilia, a gigantic spearhead for development of Brazil's hinterland; and Guatavita, a village built to replace an old quiet town inundated by a new dam to provide Colombia's capital with more power.

Other features include a Practice Profile of a computer-oriented Texas firm and a sympathetic look at the institutionalized environment as it affects the elderly patient.

And This Month: We put architects on the moon (p. 52) but, as all loyal Peanuts' fans know, Snoopy got there first.

PHOTO & ART CREDITS: 43 right — Phokion Karas; 47 — Research & Design Institute; 49 — Herbert Bruce Cross; 52, 53 — National Aeronautics & Space Administration; 67 — Simon Breines, FAIA; 72 — Paul D. Spreiregen, AIA; 77 above — Hawaiian Mission Children's Society; Snoopy, 8 & 52 — United Feature Syndicate.



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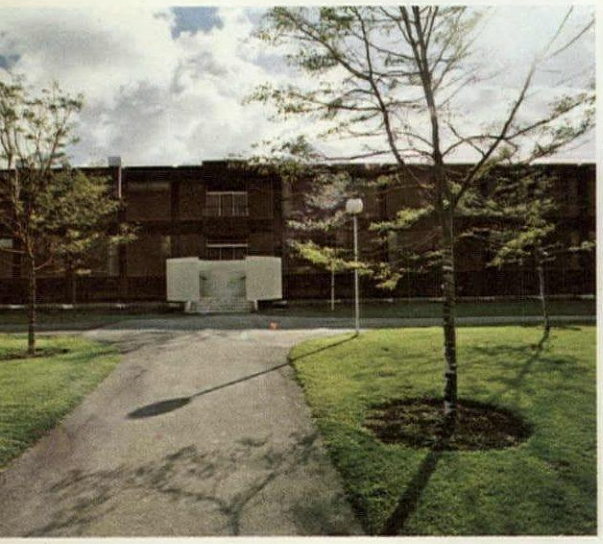

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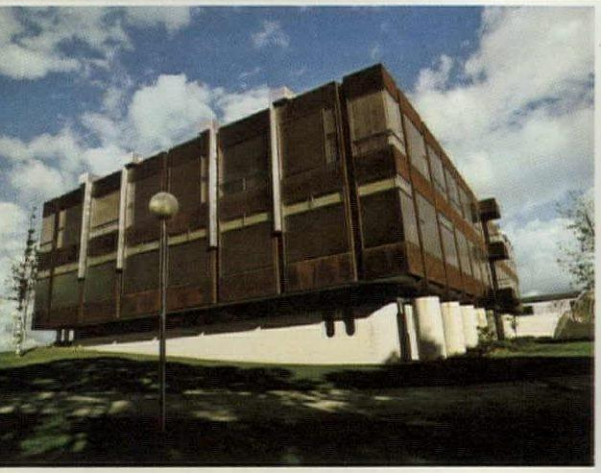


Newslines

Construction Foundation Is Established to Rectify 'Victorian' Relationships

Born from a paradox, the Construction Industry Foundation is alive and doing well and within mere months is expected to become a precocious fledgling.

Its proper care and feeding involves, among other things, a half-million dollars.

Robert G. Cerny, FAIA, of Minneapolis, who spearheaded the movement behind CIF — it is, in fact, his brainchild — said he expects the foundation's "major financing" to be committed by September. He appeared to see no problem in getting financial support, alluding to CIF's purpose of relieving industry losses running into the millions of dollars yearly.

At CIF's organizational meeting, held at the headquarters of The American Institute of Architects, Cerny injected the paradox of an industry undergoing far-reaching change while statically holding to practices he labeled as "Victorian."

The bylaws of the industrywide foundation say CIF is to be "a forum for the mutual review and understanding of the problems within the construction industry" and that it is to "clarify and improve relationships among all elements of the industry."

Identify First Targets: Four problem areas CIF singled out for immediate attention are: 1) Financial order and reform, particularly the system of payments to contractors, subcontractors, material suppliers and manufacturers. 2) Bidding reforms and qualification of bidders, including bonding problems and bid-shopping. 3) Establishing standards for plans and specifications. 4) Product performance and guarantees.

The organizational session, which elected Cerny foundation president, was attended by representatives of various performers in the industry including bank loan officers and building owners.

Notably absent, however, were envoys of the general contractors.

But Cerny expressed confidence the generals will be part of CIF. "They are essential to our performance," he said, adding that if their participation does not come through organizations such as the Associated General Contractors of America, which had been invited to the session, "we will have no problem finding 100 top contractors in the country" to take part.

To Assemble Staff: The foundation, a nonprofit organization, will have its offices in either Washington or New York. Meanwhile, it is headquartered in the offices of Cushman & Obert, 2426 Fidelity Building, 123 S. Broad St., Philadelphia. The firm's Robert F. Cushman is serving as legal counsel and interim executive director. Recruitment of permanent staff is in progress.

Membership in the foundation is open to any person or group interested in the welfare of the construction industry. Dues are $1,000 a year.

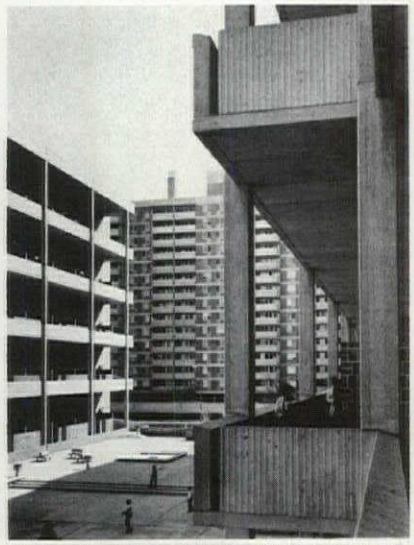
CIF's method of operation will be to retain experts to analyze problems and recommend solutions. Promising solutions will be reviewed by CIF committees and discussed with professional and trade associations.

Hoped for, Cerny said, is "that this business of pushing off responsibility stops."

Bard Jury Sees 'New Day' In Making Four Awards

"Goodbye glass curtain wall, universal envelope, modular repetition. We are at the beginning of a new day."

That opinion was voiced by Sibyl Moholy-Nagy, jury chairman of the 1969 Bard Awards for Excellence in Civic Architecture and Urban Design.



A Bard winner for excellence in both architecture and urban design, the Riverbend House in upper Manhattan.

First Honor Awards went to Riverbend Houses, a middle income housing project located in upper Manhattan along the Harlem River, designed by Davis, Brody & Associates, and to the 9-G Cooperative, the reconstruction of nine condemned brownstone houses in the West Side Urban Renewal Area, by Edelman & Salzman.

Awards for Merit were presented to Exodus House, a rehabilitation center for ex-addicts, which also won a 1969 national AIA Honor Award (see AIAJ, June) for architects Smotrich & Platt, and to the Exhibition Building for Nocturnal Animals at the Bronx Zoo, by Morris Ketchum Jr. & Associates.

Population Growth Policy And New Cities Advocated Amid Warnings of Disaster

Two formidable appeals have issued forth recently for more rational patterns of human settlement in the US.

Former Agriculture Secretary Orville Freeman has called on President Nixon to summon the nation to "total action" on the problem.

Freeman's appeal followed by days a call to undertake an ambitious new cities program, a recommendation resulting from an eight-month study by the National Committee on Urban Growth Policy. The committee includes top personages in federal, state, county and city government. The study was sponsored by the National Association of Counties, the National League of Cities, the United States Conference of Mayors and Urban America.

Warning by Agnew: The study report, to be published this month by Praeger under the title, *The New City*, includes an introduction by Vice President Spiro T. Agnew:

"Everyone concerned knows that something must be done. Without cities of a new kind, cities which exist to serve human life and not detract from it, our complex civilization cannot survive."

Under the committee's plan, 100 cities with populations of 100,000 would be built over the next 30 years along with an additional 10 cities of even greater population.

Continued on page 18

A bank in North Carolina's legendary hill country.

Architects: Freeman-White Associates.

Their material: Red cedar handsplit shakes.

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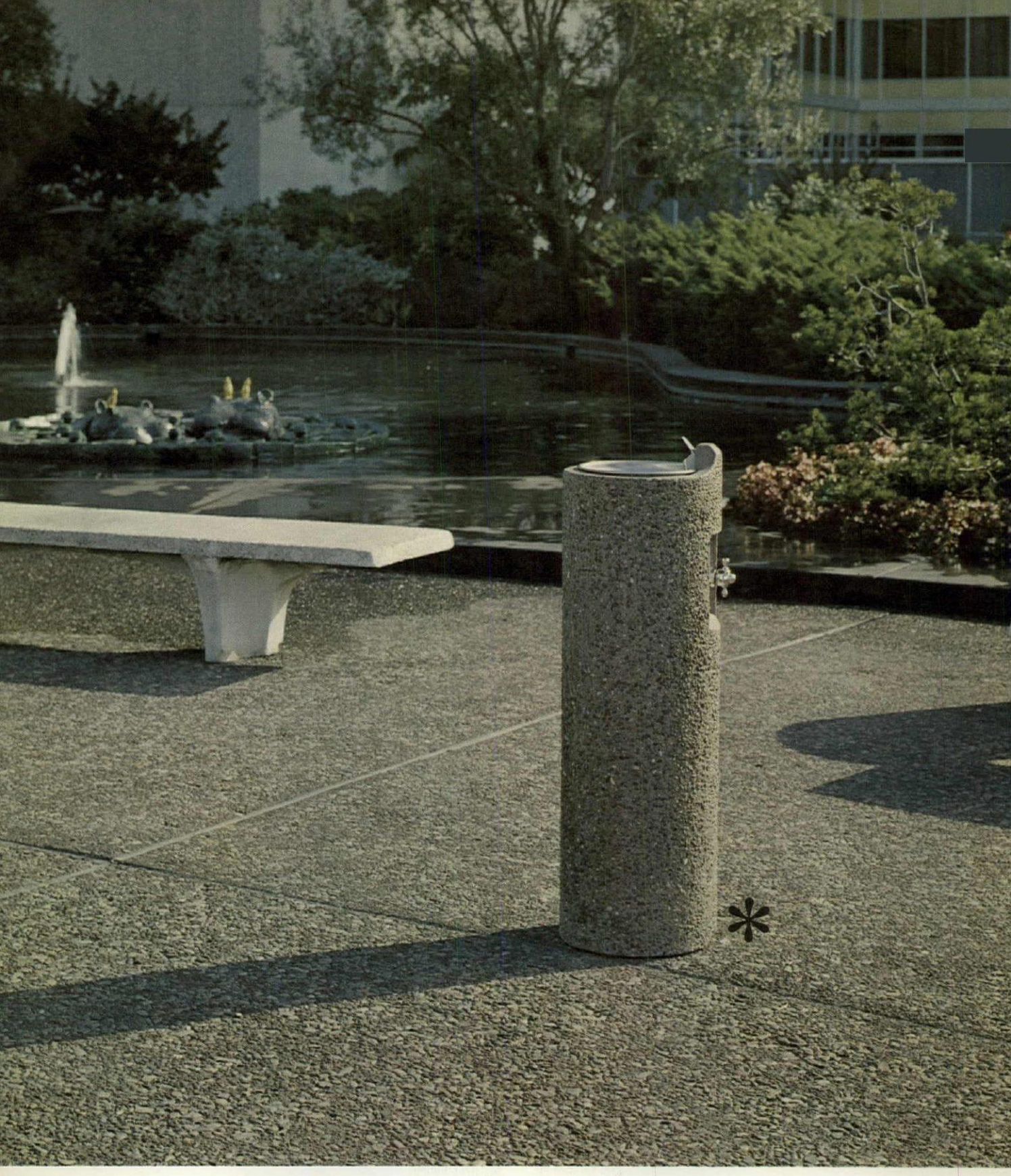

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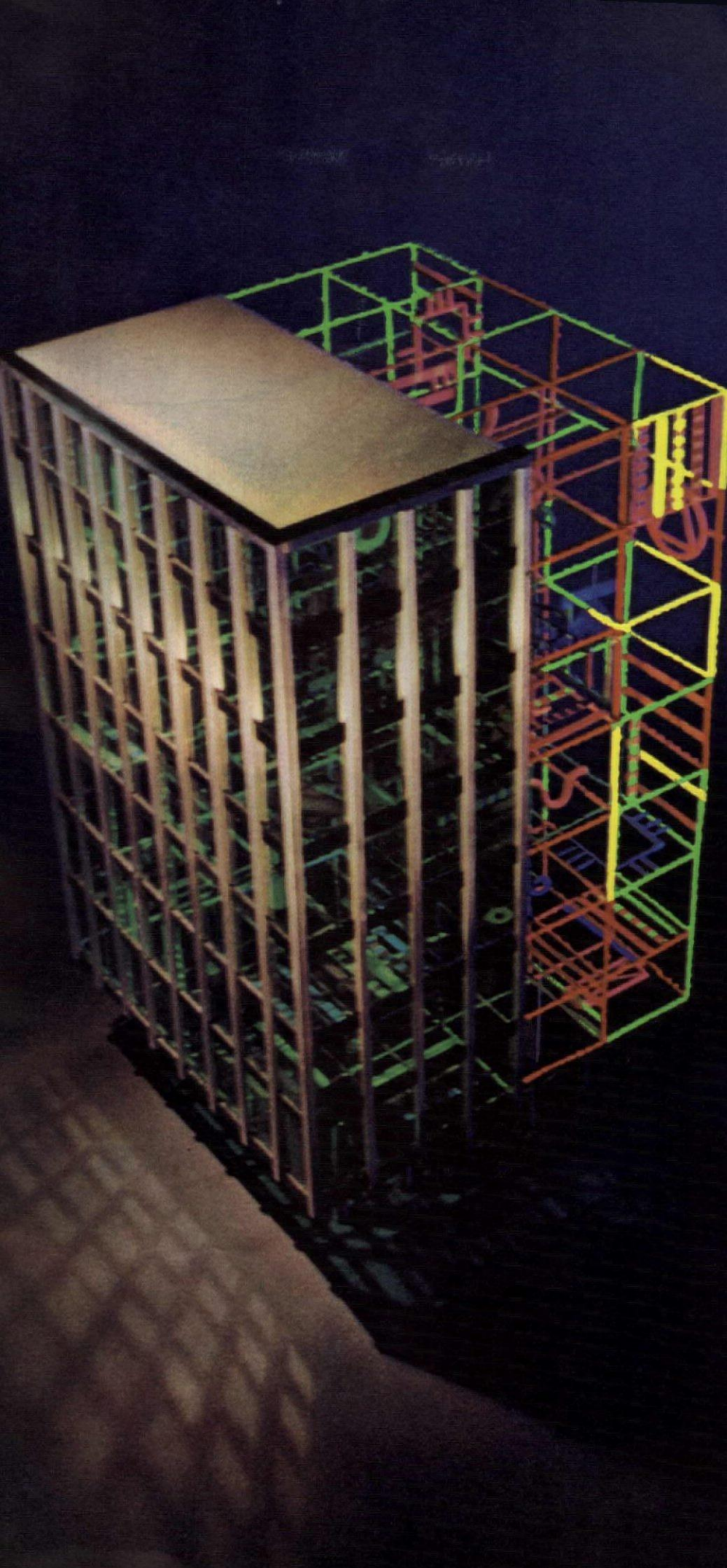


Newslines *from page 12*

The committee urges a three-way program — new cities within existing cities, accelerated growth centers (rapid but planned build-up of existing smaller communities), and the creation of entirely new communities.

National Policy Urged: It also recommends the creation of a policy planning group at the federal level to "mold a national policy which coordinates a range of programs designed to assure a more rational pattern of urban growth and development. . . ."

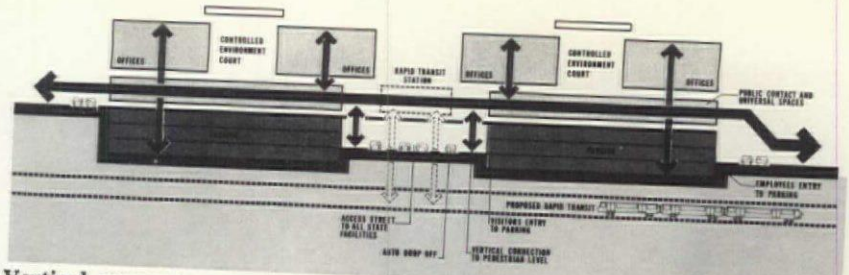
Freeman, in an article in the *Minnesota Law Review*, advocates:

1. New initiatives in planning at county and multicounty levels.

2. Leadership by the federal government through procurement policies and location of its own facilities.

3. Creation of regional institutes bringing together professional planners and community leaders.

4. Establishment of a Town and Country Development Bank for rural America, similar to the National Urban Development Bank proposed by many for the cities.



Vertical connectors permit stratification of transportation means/auto storage and offices, the major principle of Gruen plan for Baltimore's complex.

Official Housing Needs Eyed by Three States

As lawmakers and the populace alike in Hawaii were growing accustomed to their spanking new State Capitol Building (*see* AIAJ, April, p.10), Maryland, Wisconsin and Michigan were examining ways to house ever-expanding governmental functions.

In Maryland, a conceptual scheme has been unveiled for the development of a State Governmental Center in Baltimore within the framework of long-range plans for the capital city of Annapolis. As proposed by Victor Gruen Associates, Inc., the plan would expand the Mount Royal urban renewal project consisting of three buildings, opened in 1956, that serve state activities required within the city of Baltimore.

The first stage of expansion calls for 350,000 square feet and 800 parking spaces to be built on the large landscaped area east of the State Office Building, an existent structure of 15 stories.

In Wisconsin, the Joint City-State Planning Commission has endorsed a master plan for the relocation of state offices in central Madison. The scheme, prepared by Charles Luckman Associates, provides for construction in three stages.

Continued on page 20

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Newslines *from page 18*

Facilities would house state administrative offices, legislative and judicial quarters and executive offices, with completion by the year 2000. In addition, the planners propose construction by private developers of hotel and other facilities.

In a neighboring state, the Michigan Society of Architects have gone on record opposing "the erection of a temporary, or economy-type, addition to the State Capitol Building" in Ann Arbor. The resolution went on to say: "Such a structure, and the necessary additional parking facilities, would desecrate the site and tend to become an eyesore and destroy the setting of the historic building.

"Since the Capitol Building is the focal point of government in the state of Michigan, it is entirely inconsistent with our image and pride . . . to even think of allowing such an ill-conceived building.

"These funds should be used for other permanent, and more desirable, solutions, for which there have been many suggestions."

Romney: Mass Production, Aerospace Methods Way To Solve Housing Problem

Three fundamental convictions on housing have been revealed by George Romney in his first months as Secretary of the Department of Housing and Urban Development.

One holds that housing should adopt the methods of the auto industry. Another holds that it should adopt the methods of the aerospace industry. And the third — assuming these adoptions — is that housing can become the economy's spearheader industry.

"For the balance of this century the greatest instrument of growth in the national economy will be a breakthrough in the housing field," Romney was soon to declare.

An Operation Is Born: "Breakthrough" was to become formalized at HUD with "Operation Breakthrough," which the agency says is to begin "the process of providing housing for all income levels through a partnership of labor, consumers, private enterprise and local, state and federal government — with the use of modern techniques of production, marketing and management."

Representatives of the AIA received a briefing on the program following which George E. Kassabaum, FAIA, then Institute president, said the AIA was "gratified" over the effort Breakthrough represents. Jack C. Cohen, chairman of the AIA Committee on Housing, added, however, that "we remain concerned about the quality of high volume production of housing. It is up to each architect to see that he is used in an effective way in the production and evaluation processes."

A Finger Tip: HUD's first Assistant Secretary for Urban Research and Technology, Harold B. Finger, expects increased use of modern technology in the housing field. Said Finger, formerly responsible for administration, organization and management activities for the National Aeronautics and Space Administration:

"There are many new, time-saving techniques and materials that are now being stockpiled because their use is precluded by local constraints such as codes, ordinances, land use and financing regulations. Breakthrough will encourage a review of these constraints so that new ideas and methods can be tried."

Continued on page 24

Hamilton Grange vs. the 142nd St. gang

Hamilton Grange, Alexander Hamilton's country home, stands in the heart of Harlem. A dump to most observers. But it has been declared a national landmark by an act of Congress. Soon it will be moved and be restored to its original Federal glory.

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Wouldn't it be wonderful if the same type of thinking people would become so involved in the potential greats of the future? Like Helene and Felida and Shelley and Henry and Joe and Eddie. Kids growing up in what was once open countryside but is now crowded with people, vermin and crime.

We'd like to stimulate some more thinking about that future among people like you. That's why we've established the Eaton Yale & Towne Urban Design Fellowship. The award, administered by the A.I.A., provides for one year of graduate study in urban design at an American University and a follow-up tour of urban developments abroad.

Alexander Hamilton is a name to remember. But as long as we're saving the past, shouldn't we save the future? The Helenes, the Felidas, the Shelleys, the Henrys, the Joes and the rest of the gang.

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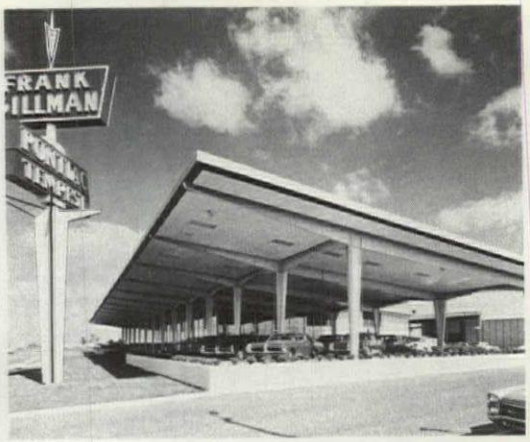
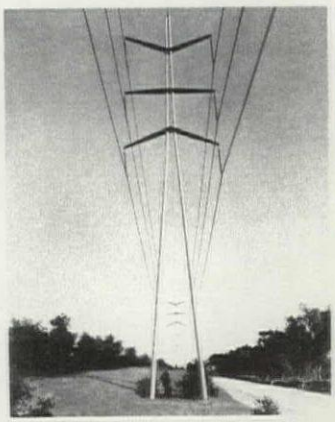




Steel winners, clockwise from upper left: Alcoa Building in San Francisco; auto showroom complex in Houston; high voltage transmission tower in southern California; interim bank of portable modules in Birmingham, Mich.

Newslines *from page 20*

Design in Steel Program Selects 10 for Honors

A total of 10 construction projects were picked for design awards and citations in the 1968-69 Design in Steel program sponsored annually by the American Iron and Steel Institute.

In the residential category, Louis Skoler, Syracuse, N. Y., architect, won the top design award for a private vacation house in New York's Finger Lakes region. Henry T. Elden, AIA, of Charleston, W. Va., received a citation for excellence in this category.

Winning the top award for the best design in low-rise commercial, industrial or institutional construction was Eugene Werlin & Associates, Houston, for the Miller Outdoor Theatre in Houston. Citations for excellence went to Skidmore, Owings & Merrill, San Francisco; Charles S. Chan, AIA, Houston; and Ziegelman & Ziegelman, Birmingham, Mich.

The high-rise winner for the same building types was Skidmore, Owings & Merrill for the Alcoa Building in San Francisco.

The design winner in public works construction was the Southern California Edison Co. in conjunction with Henry Dreyfuss & Associates, Los Angeles, for a high voltage transmission tower. Receiving citations for excellence were Schafer, Flynn, van Dijk, Architects; R. M. Gensert & Associates, Structural Engineers, Cleveland; and Edward Durell Stone & Associates, New York.

A jury of 12 was drawn from architecture, industrial design, engineering and the fine arts.

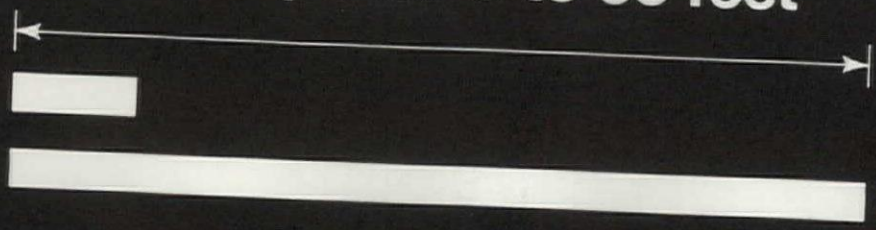
Architects' Home/Office Cited for Wood Design

A Chevy Chase, Md., husband-and-wife architect team have won the 1969 Forest Products Industry Award for Wood Structure Design with the renovation of a 40-year-old bungalow into a contemporary home/office.

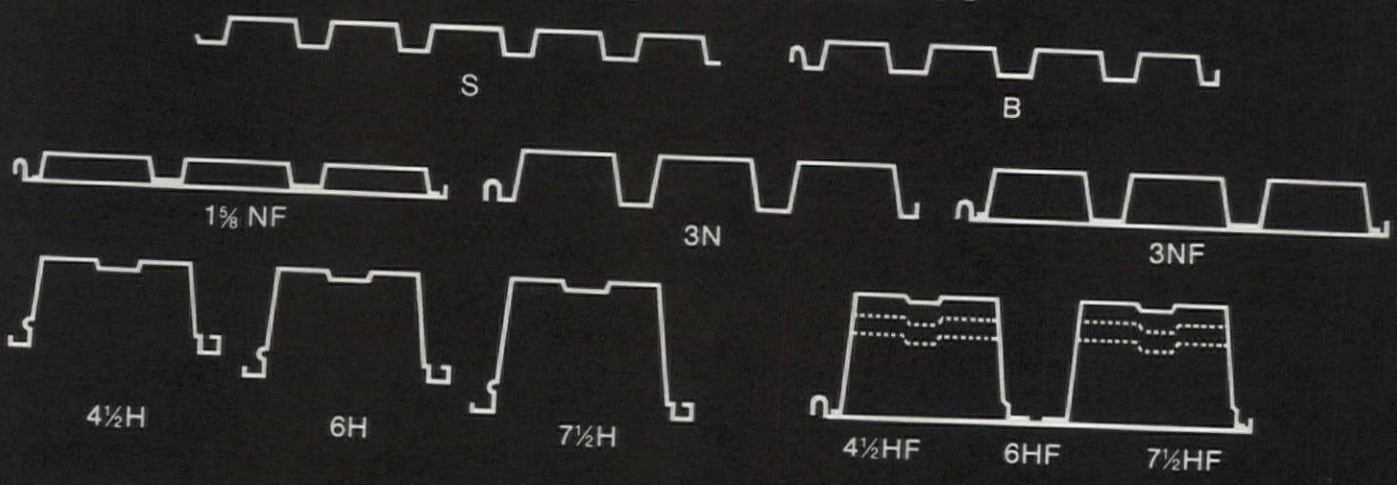
The two-story structure was built around and atop of the original bungalow, whose skeleton was altered only slighty—the attic was reinforced with 2x10 joists to carry the new loads.

Continued on page 28

More spans: 5 to 35 feet



More profiles: 11



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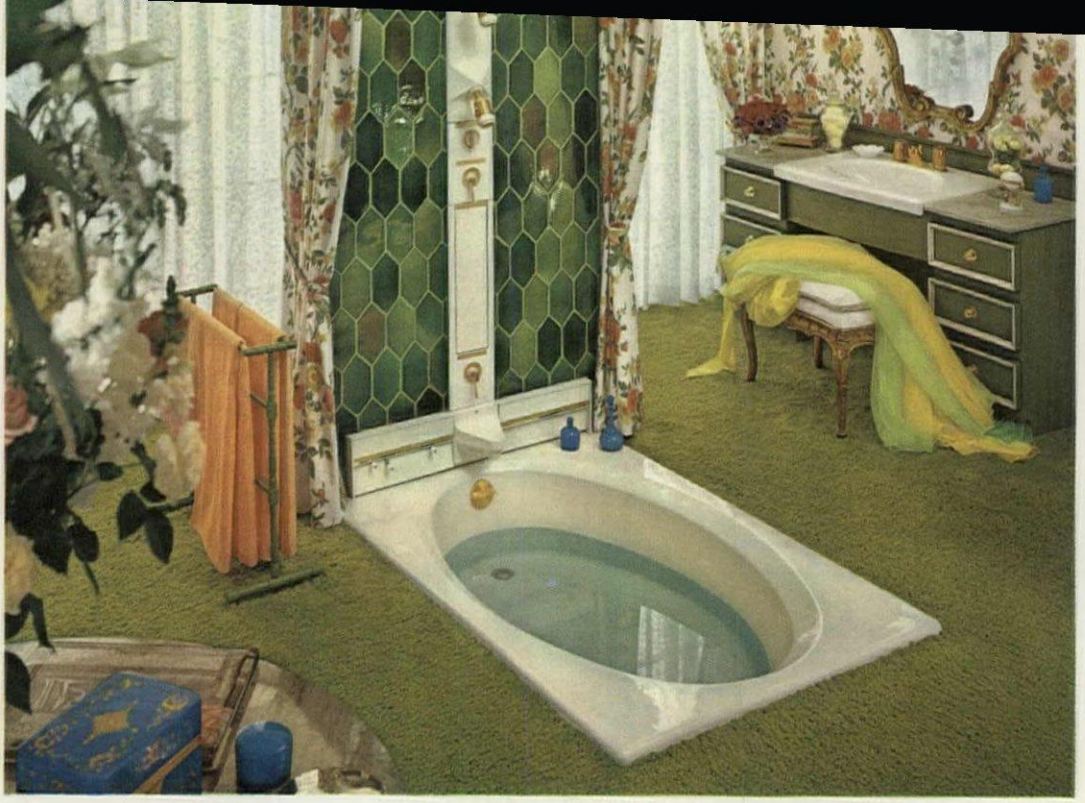

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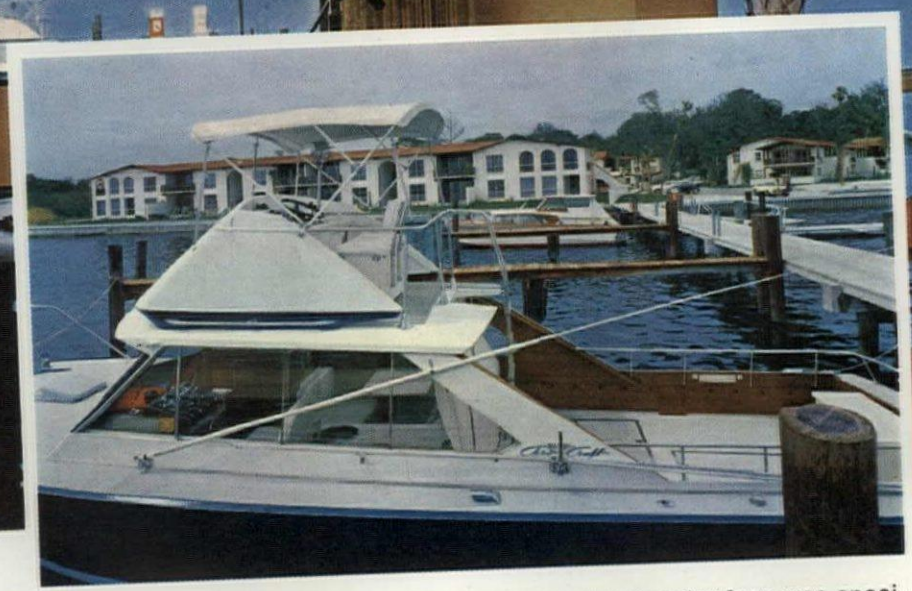

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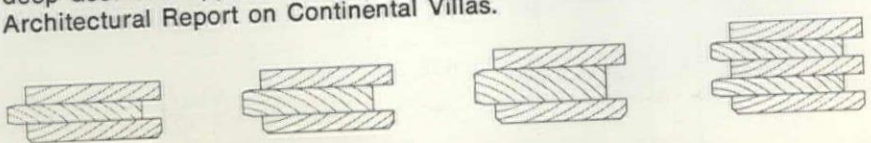

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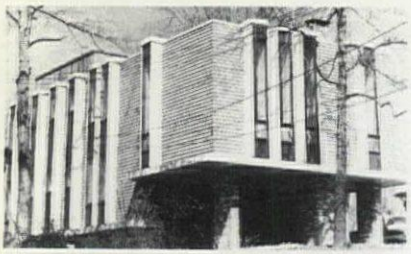
Newslines *from page 24*



Wood winner: bungalow conversion.

A continuous wood gutter system at the bottom of the new exterior walls, projecting 18 inches beyond the outer face, overcomes the constant maintenance problem in the wooded area.

Three Well-Known Fellows Among Recent AIA Deaths

The architectural community has lost three notables, including the first member of a religious order ever elevated to AIA fellowship status.

Brother Cajetan J. B. Baumann, OFM, established the Office of Franciscan Art and Architecture in 1946 and remained its director until his May 9 death. The native of Germany held two architectural degrees and designed and supervised the construction of every type of ecclesiastical building. He was 69.

Charles Herrick Hammond, FAIA, who died at age 87, served in 1928-30 as the Institute's national president. Mr. Hammond was a partner in several Illinois firms before becoming supervising architect for the State of Illinois in 1928, a post he held until 1952 when he moved to Delray Beach, Fla.

Michael B. O'Shea, FAIA, retired partner in the Toledo firm of Richards, Bauer & Moorehead, which includes John Noble Richards, FAIA, another former Institute president, died May 17 at the age of 71. The native of Ireland was a former president of the Toledo Chapter AIA.

Necrology

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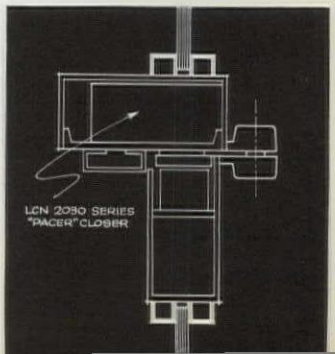

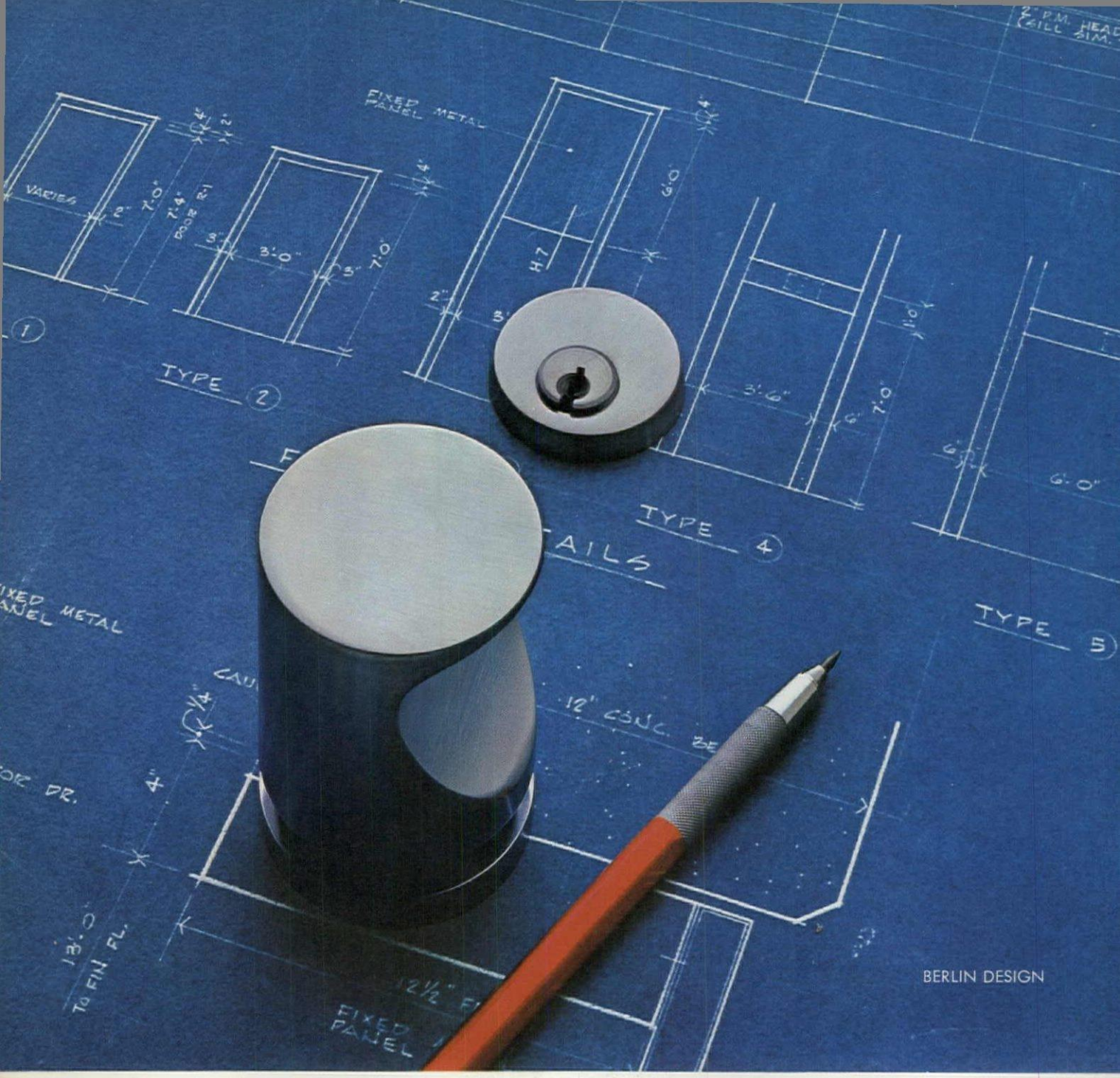

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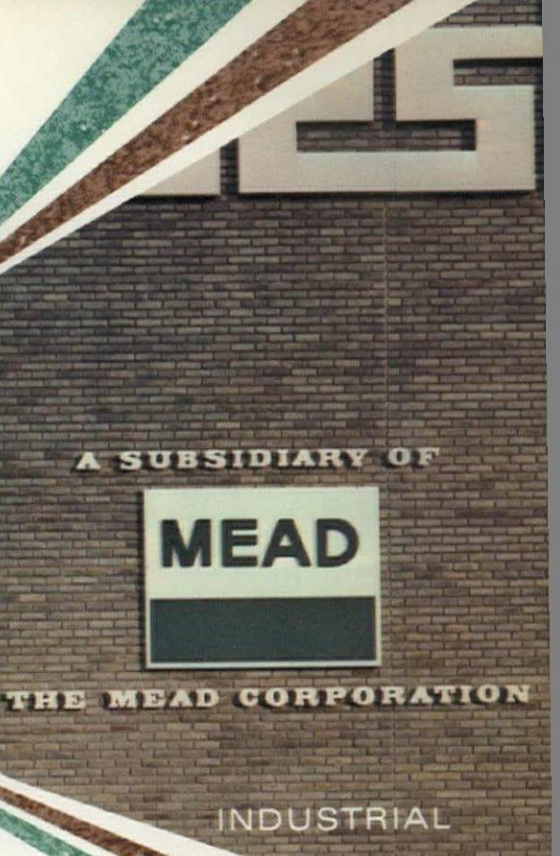

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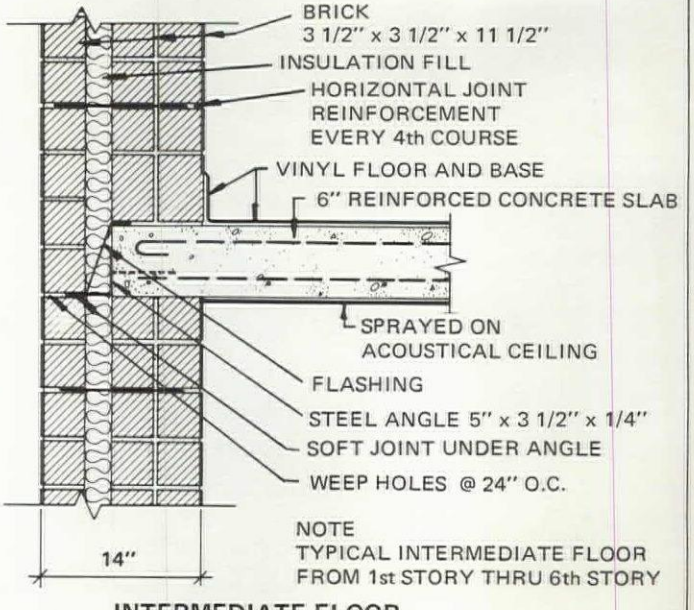

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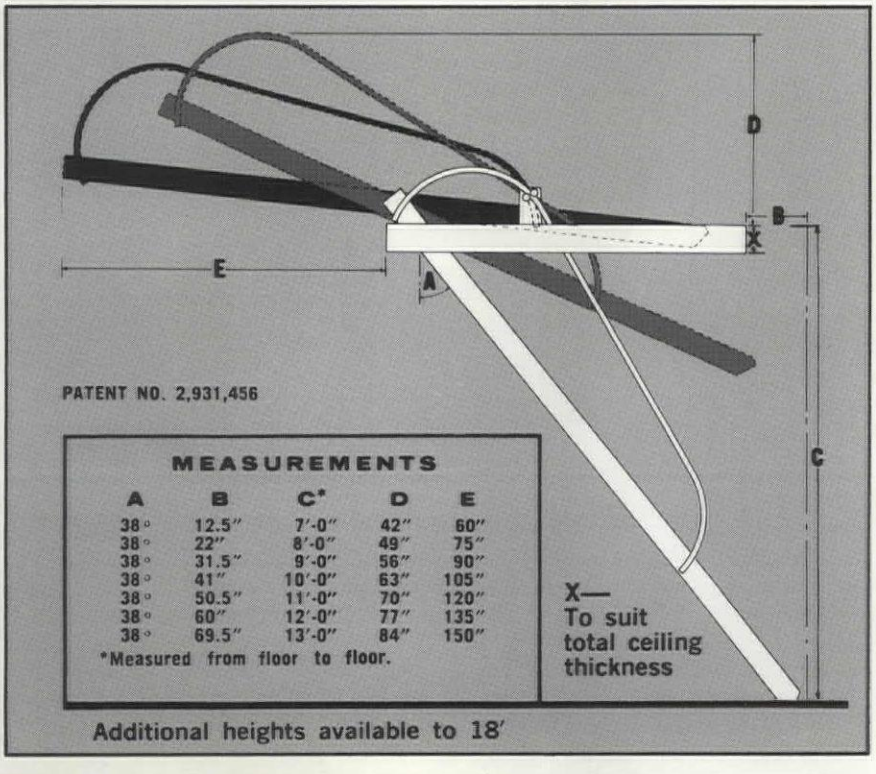

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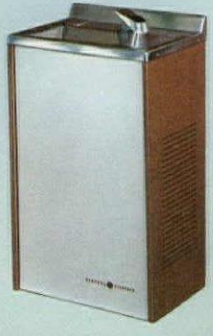

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UNFINISHED BUSINESS

By WILLIAM H. SCHEICK, FAIA
Executive Director

R_x for Growing Pains

In reading the professional press, you will sometimes see criticism of the AIA. Baiting the establishment is a popular sport in these times.

Thanks to vigorous growth, progressive policies and productive action, we are too busy to be bothered. Our best critics are within the family, always figuring how to do better while enduring our growing pains.

For more than a decade the AIA has been running a race with change. From an early concern with "the package dealer" (about 1958) our vision expanded to encompass the entire creative process for building mankind's physical environment.

For eight years or so we were concerned mainly with the profession's ability to cope with changes taking place in the building process itself — from the earliest decisions through design and delivery of the end product.

Then with the explosive manifestation of the urban crisis, we found ourselves, like astronauts speeding to the moon, looking at the whole sphere of the creative process. We found ourselves comprehending and becoming involved with the social, economic and political problems which shape the needs for physical environment and the destinies of those who would shape it.

We had moved ahead vigorously for a decade to restructure education and practice; to reach the public with the message of order and beauty in its cities; to make our influence effective in burgeoning legislation related to our mission in the creative process.

Through the work of many, many AIA members, through dozens of projects and programs, through literature, seminars and movies, we have moved architecture ahead and into the awareness of the public and its public servants.

Culminating this decade of study and action, there is yet to come the results of the most probing project of all. The study of the future of the profession was begun by a committee led by the vision of the late Llewllyn (Skeet) Pitts, FAIA, and completed under the forceful leadership of Gerald McCue Jr., FAIA.

When published, this study will swing wide the doors upon a broad, sharp-focus view of what lies ahead. It looks at society, at people, at the social "shock front" of change. It looks at the building process and all the actors in it from the "macro-operator" to the small architect's office. It looks at the impending breakthrough of computer technology in the creative process.

The report will give AIA big jobs to do for years to come. But it also shows that some of our present programs are already driving right down the middle of the fairway.

By temperament, talent and practice, the architect readily comprehends the many responsibilities in the creative process. He sees beyond the sphere of his training in design and business and quickly senses the responsibilities to do something for the community, for society, for people generally and for disadvantaged people in particular.

His ambitions are expressed in the ambitions of the AIA (architects collective). A sense of duty and a sense of opportunity lead to driving desires to do something about everything that relates to physical environment.

We must realize, however, that ours is a small profession, limited in numbers, in man-hours and funds; unlimited in imagination and initiative. There is no danger of our failing to react to the challenges or responsibilities. There is danger only in spreading ourselves too thin. My prescription for success has three parts:

Policies and planning — First of all the leaders of the AIA must use their most plentiful resource — the ability to plan — to chart a flexible course of action. They must become students of national issues which relate to the overriding problems of a better urban environment. They must formulate policies which relate the architectural profession to these issues. Policies must be translated into courses of action for the Institute.

In the public sector, such policies will be the basis for exerting AIA's influence through public and governmental relations.

In the professional sector, such policies will shape the AIA's professional development programs which advance the performance demanded of architects in this changing world. The demands are many. Both wisdom and discipline will be needed to select those areas to be given emphasis and priority within our resources. Tokenism and boondoggles must be banned.

Management of resources — Funds are the only limited resource. One reason for the Institute's strength is prudent fiscal management. There is always a "saturation point" for the dues payer. Numerical growth will not increase unexpectedly.

So the leadership must use ingenuity to develop other sources of funds. We are beginning to learn how to obtain grants from government and foundations. The by-products of projects (publications) are salable. New services, potentially possible through computerization, should develop income to be plowed back into still newer services. We must exploit and manage every fund resource available.

Alliances — We are not alone in our desire to work for a better environment. The other professions and many powerful segments of the building industry share this desire. This is no time to fret about competition, even from that ogre, the macro-building operator. The job to be done is simply too big.

Rather, the competition lies in those areas which interfere with the fulfillment of optimum environment. If waste in the military-industrial complex or in space conquest deters this fulfillment, there is the competition to be fought.

Whoever is concerned with solving the socio-economic-political-physical problems of environment is our ally. What is good for humanity is good for our allies and good for us. If we talk leadership, let's talk about alliances of leaders who could help people live better. □

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Because of their low absorption, Gail tiles have dovetail ribs on the back which make a mechanical key with the setting mortar, hence, they are suitable for pre-cast and tilt-up construction as recently employed in the Serramonte Shopping Center, Daly City, California; Welton Becket & Associates, Architects.

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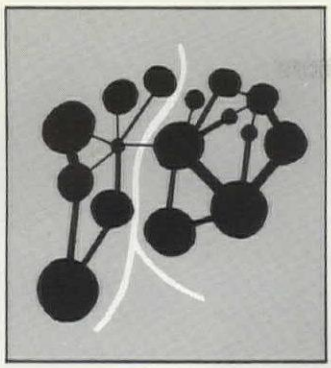
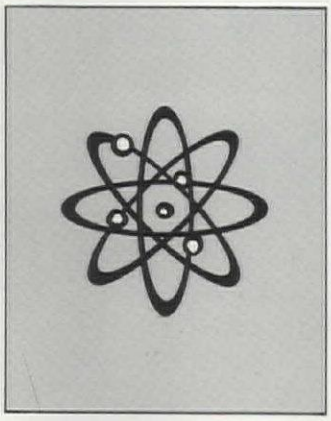
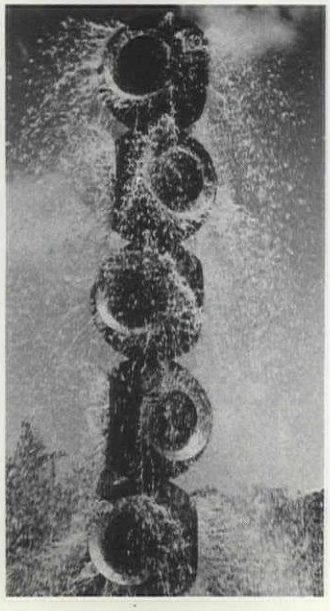






Comment & Opinion: If the architectural profession is going to provide the kind of meaningful environment about which its members talk and write so much, then the need for involvement of the interior designer (who may or may not be an architect) at the project's earliest stages becomes increasingly important. And that is why articles such as the leadoff presentation on office landscaping in this issue are appearing more frequently in the architectural press.

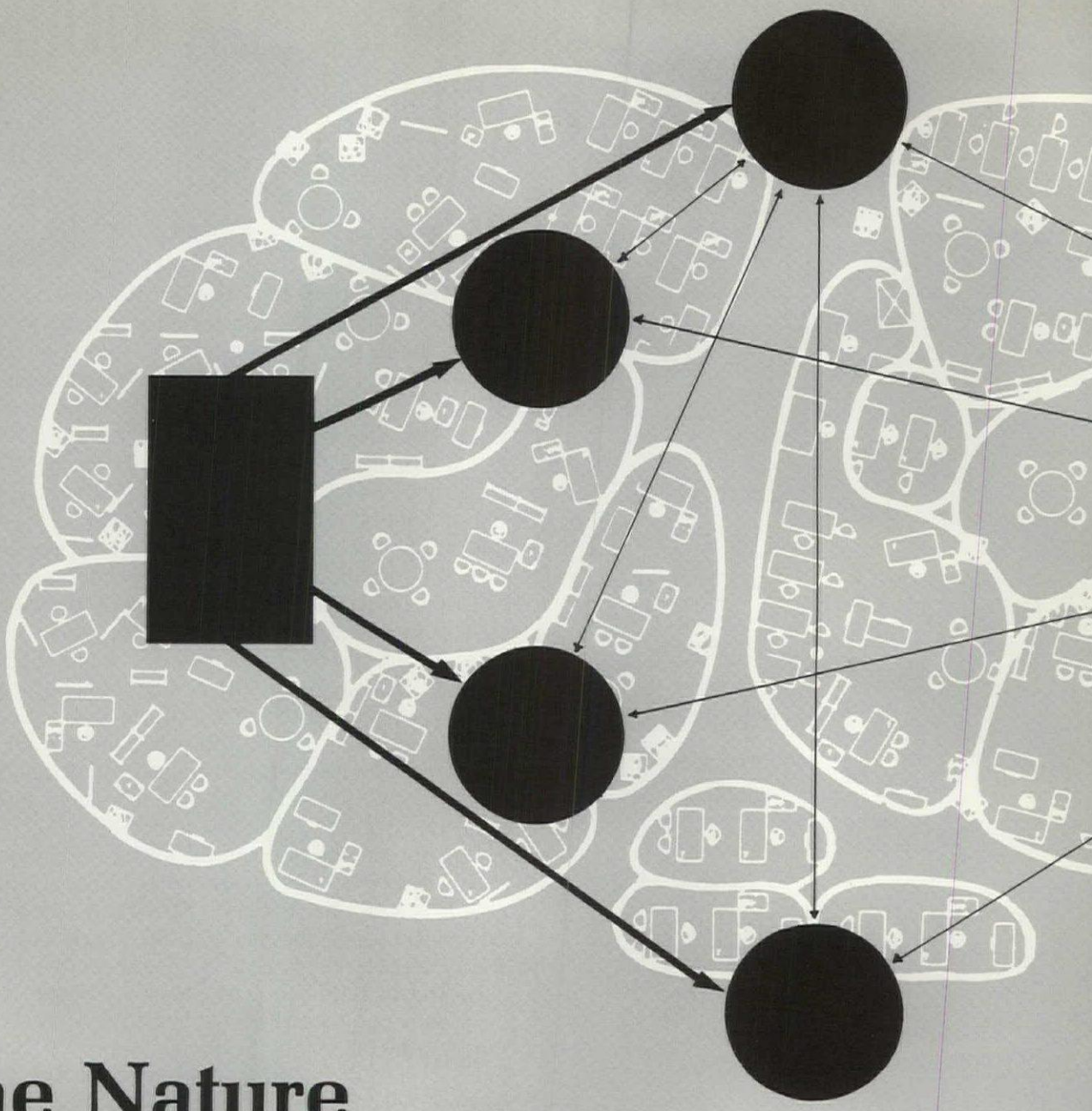
Perhaps most architects are unaware that the interior design profession is witnessing a rapidly maturing process, in many ways paralleling the current experiences of the architectural profession. The American Institute of Interior Designers (AID) and the National Society of Interior Designers (NSID) are undergoing changes in philosophy and structure. For example, the Interior Design Educators Council, following the completion of a study into the needs for an improved curriculum on the college level, has made its initial recommendations in that direction.

Despite the housecleaning and refurbishing that is taking place in both professions, their relationship is clouded with distrust and disrespect. Speaking as a member of The American Institute of Architects and the AID, I do not believe that this has to be so.

Efforts to establish a productive dialogue have been made at chapter and regional levels. The Western Mountain Region AIA and the Rocky Mountain Region AID held a provocative joint conference a few years ago. Several AID chapters, including Illinois and New York, have sponsored one- and two-day seminars to which local AIA members were invited. Furthermore, top AIA national officers participated in the past two national AID conferences.

On the whole, however, it must be admitted that a significant channel for the constant interchange of ideas and programs has not come to pass. Each professional organization continues its own unilateral approach to design and to the education of the public.

As a step toward a coordinated attack on today's contemporary challenges, I see the desirability for a Congress of Design Professionals which would embody representatives from all the disciplines involved. In addition, such a congress would have strong allegiance with the various sciences which are discovering the very roots of human behavior, action and needs. This congress could pool into a coordinated and better-financed voice the now scattered programs designed to improve the home of man—this earth. JOHN CONRON, AIA, AID



The Nature of OFFICE LANDSCAPING

Process, say the office landscapers, is the thing and by "process" they mean two processes — the process of plannnig an office (data-gathering, data-analyzing) and the ideal work process of the office itself. The curvilinear and chaotic-appearing environments which result do so by the dictates of these processes, they say. Landscaping is presented as a system; thus none of its components is expendable. Controversial though it may be, landscaping nonetheless presents an alternative to the geometric monotony of closed planning's rigidly ordered cubicles and open planning's usual regimentation of office furniture. But that isn't what it's about; it's about process, and architects, the author submits, need to have an understanding of this process.

BY JOHN F. PILE

Catchy though the term may be, "office landscaping" conjures up a mere superficiality, a visual result — an image of a curvilinear and plant-infested office. It fails to convey any notion of a complex process that involves a forthright and intelligent marshaling of spaces and facilities according to the work relationships of people.

The office planned by the landscape process, according to the claims of its originators and adherents, is a cost-saver, a time-saver, a space-saver and a morale-builder.

Its primary objective is improved work performance through enhanced communication, and since the lines of frequent communication within an organization seldom flow along those of its organizational chart, or for that matter, the lines that come from T-squares and triangles, office landscaping's physical result appears to be chaotic. In fact it is logical.

The rectilinear regimentation of conventional office space planning, while organizationally logical and while *looking* smart and efficient, is in reality far from being truly accommodating of the organization's functions.

The author: Mr. Pile is a design consultant and an adjunct professor at Pratt Institute Art School. A book he has written on office design — Whitney Library has it scheduled for fall publication — includes a chapter on office landscaping.

For architects, the programmatic implications of landscaping are so substantial as to suggest major new directions in office building fenestration, modularity and configuration. Every architect, office planner and interior designer coming into contact with an office project should be knowledgeable about the landscaping approach and should form opinions on its applicability to various situations.

Efforts toward familiarization should be discerning, however. The publications, conferences and seminars concerned with space planning, after years of having nothing to discuss, seized on landscaping as the most interesting and most controversial development in sight and have produced a flood of written and spoken commentary in which opinions — pro, con and noncommittal, but nearly always based on shaky knowledge — are usually voiced in support of a position in which the commentator has a vested interest.

Landscaping got its start when a German firm — not space planners

or interior designers but management consultants — with the odd name of Quickborner Team (after the Hamburg suburb, Quickborn, where its office is located) began to look into the problems of office planning for several European corporations. A group of ideas evolved through successive projects which gave rise to highly unusual spaces.

The geometry-disdaining appearance of such offices, together with the use of many green plants, led to the name "Bürolandschaft" which translates literally to "office landscape."

Beneath the surface appearance, however, are some ideas which are far from frivolous. Closely interrelated, these ideas, their originators say, must always be used together and in full and should never be applied to offices having fewer than 80-100 employees in one location. They compose a system and they are as follows:

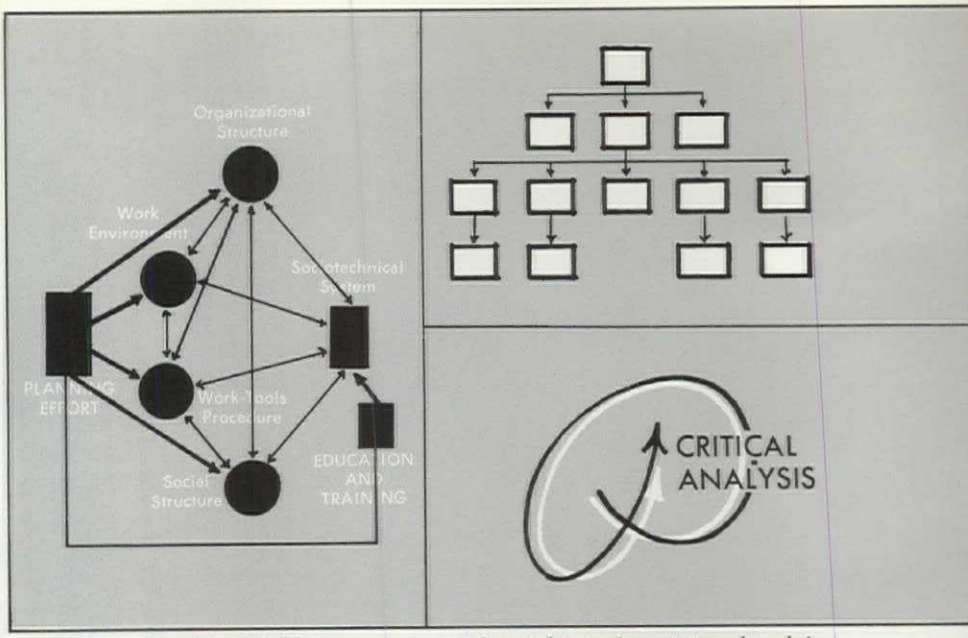
1. Planning must begin with a detailed analysis of the actual patterns of communication whether written, telephoned or spoken. This communications analysis replaces organizational charts, departmental structures or other conventional criteria and becomes the basis of the critical analysis that is the heart of the landscape process.

2. Planning is largely a matter of making as short and as effective as possible those lines of communication which are the most used, so that people who work together closely end up in close proximity regardless of their rank or departmental status. Computer-aided techniques can be used to aid the planning process for larger organizations and they are easy to use because of the simplicity of the criteria involved.

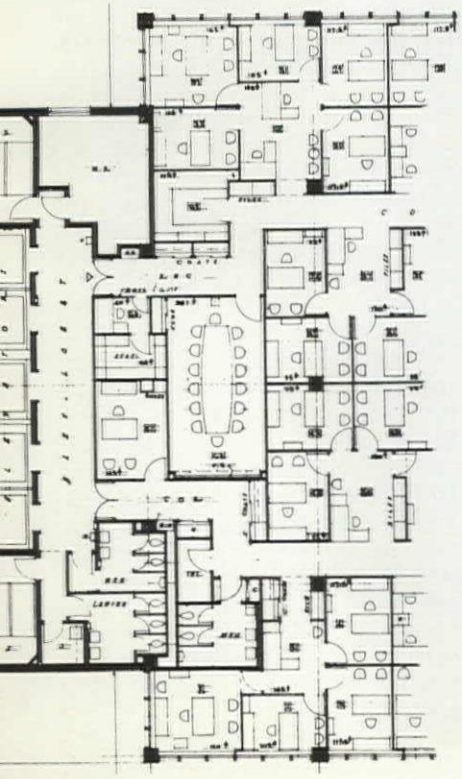
3. There are no partitioned private offices. Even for top executives, light, moveable screens control lines of vision and establish personal and group work areas.

4. Geometric layout is avoided to make adaptation to the operations-based ideal plan easier, to promote flexibility and to avoid the grimly regimented appearance that might result in the large open spaces involved.

5. To cope with the acoustical problems, carpeting is used throughout, ceilings are equipped with an acoustical baffle system, reflecting surfaces are avoided (glass perimeter walls are limited or curtained) and furniture with large vertical

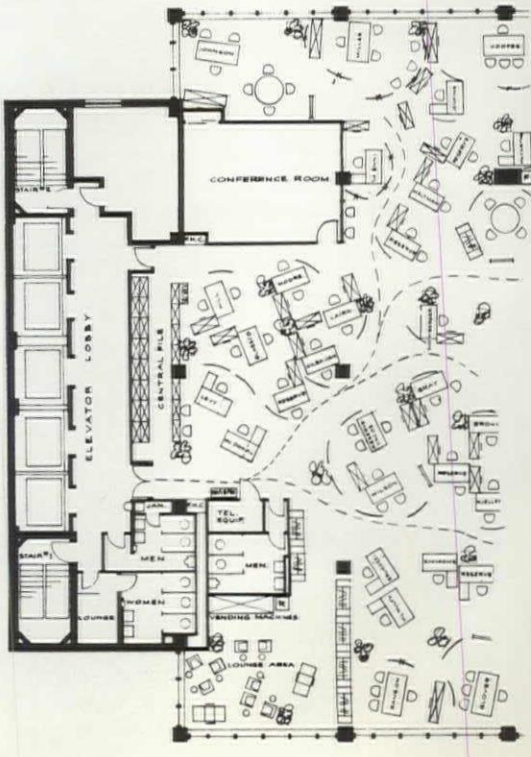


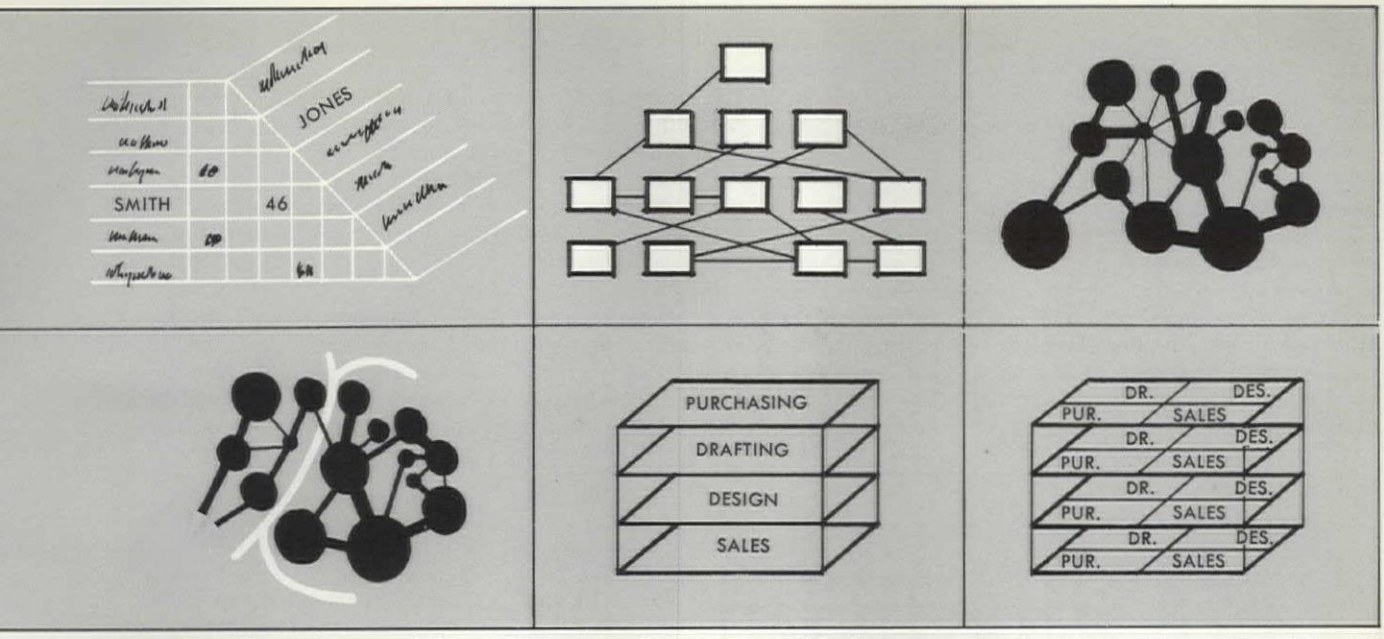
QUICKBORNER QUICK VIEW: *Quickborner puts equal weight on four interrelated factors and emphasizes education of members of the "socio-technical system" to ensure faithful application of its*



DU PONT CONTINUES LANDSCAPING TEST

In Wilmington, Delaware, the Du Pont Company continues to experiment with a single installation for a marketing management operation formerly quartered according to the plan at left. Audio and visual privacy deficiencies remain an unsolved problem in the test setting which has most of the office landscape characteristics. But P. G. Twitchell, manager of the industrial section of the company's general service department, is convinced office landscaping has a useful role to play, especially in "high teamwork" activities. Du Pont, reportedly the first United States company to try landscaping, is considering the approach in its planning for a new office building.





concepts. Report-command lines flow up and down. Communications data from "mileage chart" is plotted, revealing multidirectional information flow. Varied line widths between units show interaction pattern. If analysis finds pattern appropriate, proximities are set accordingly, fragmentation notwithstanding.

reflecting surfaces is shunned. Movable screens — and sometimes even furniture — also perform in the area of noise absorption.

6. Work spaces contain only that material which is in active use; files are removed to centralized locations. Generous lounges are provided for staff.

7. Architecturally, the ideal environment for landscape interiors is one which evolves from the planning process. There are times, however, when it is a simple matter of the largest possible open spaces with minimum obstruction from columns, circulation cores or other fixed elements. (Developments in spanning technology form a pertinent and interesting coincidence.) Windows are needed only to avoid total isolation from the outside world; windows in corner locations, generally desirable for prestige offices in conventional planning, are, if anything, a detriment in office landscaping. General lighting and heating/cooling of the entire space must be uniformly excellent.

The announced benefits of landscaping are improved work performance resulting from improved communications and work relationships; improved morale; greatly improved flexibility for organizational changes rendering replanning easy and thus encouraging the actual making of such changes; and — quite incidentally but of great interest — markedly reduced costs in initial construction and,

A TEST AT HOME, A REST ABROAD

At right, a test landscape installation for the John Hancock Mutual Life Insurance Company in Boston; below, a Pausenraum or rest area, a feature of landscaping, at Volvo offices in Sweden.

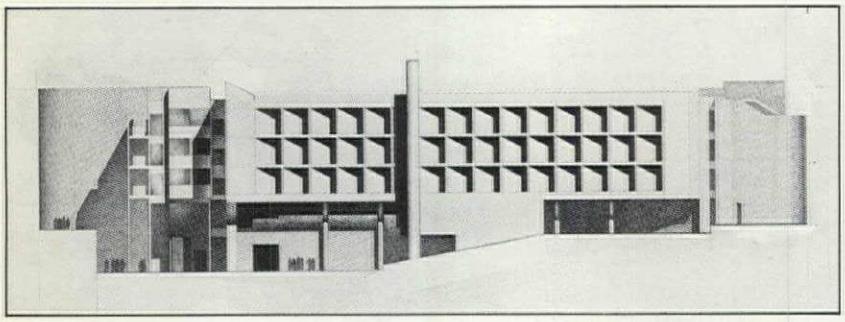
over extended time, even greater cost reductions because of the ease of making changes.

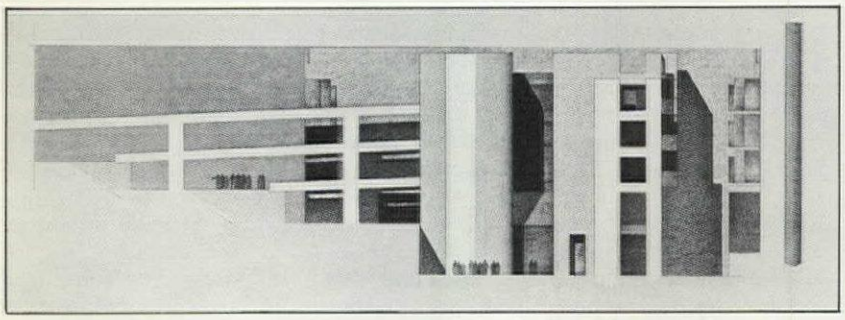
The sources of initial cost reductions are largely in the elimination of partitioning but to some degree are also in floor area savings. The latter usually results from the compacting of work stations in nongeometric open planning.

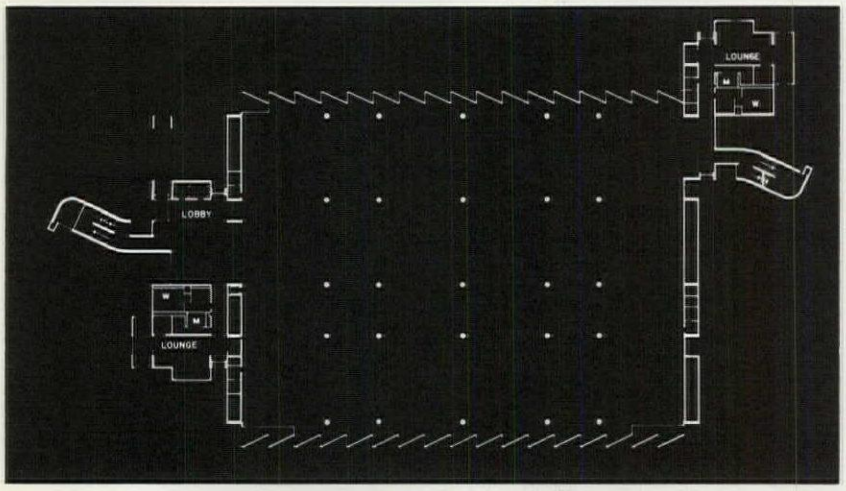
It can be argued that landscaping pre-empts the architect, designer and planner, replacing such professionals with computer-armed business consultants. There have been similiar "usurptions" in hospital planning and other areas where specialized functional planning has become something of the province of experts outside the design professions.

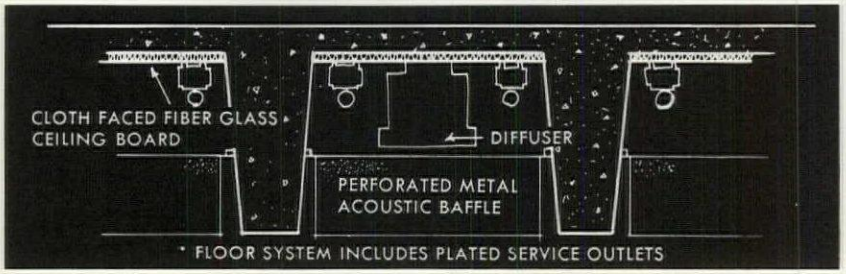
The office landscapers seem to take the position that designers have the design responsibility for the office but their design programs should be the basic programs resulting from the operations analyses. Indeed, when the nature of landscaping is clearly understood, architects may find it no more constraining than any other set of client requirements. Moreover, the lucidity with which landscape requirements are presented can make it easier for the architect to perform his role.

Landscapers discover the significant patterns of communication through direct, empirical research. Done over a period of several weeks, this research elicits the actual communication pattern within a given organization. This generates basic data about *real* work patterns — "real" as opposed to









TWO REFLECTIONS OF LANDSCAPING

Architectural programs rooted in landscape requirements must meet numerous design standards to accommodate the system. For the Ginn & Company Office Building in Lexington, Massachusetts, left, the work of Boston architects Anderson Beckwith & Haible, these standards numbered 49. This building and Purdue University's Administrative Services Building, right, in Lafayette, Indiana, show the special spaces of office landscaping pulled out from the main body along with those for services and vertical circulation. The building at Purdue, by the architectural firm of Walter Scholer & Associates, accomplishes this within what reads essentially as a common enclosure. In the Ginn building, the loft space is accentuated by the sculpted expression of the special/service spaces at its extremities. Some of the design standards shared by the two projects are: 1) The office areas should be divided by as few permanent walls as possible. Large flexible areas allow free-form furniture arrangement which correspond to organizational and communication patterns. 2) The arrangement of columns should not divide the office area nor hinder the free arrangement of working places. There should be no less than 25 feet between columns. 3) The office area should be planned independently of facade and natural light. To achieve this, the depth of office areas should be 100 feet or more between fixed walls. 4) A service module providing electricity and telephone service should be provided throughout the office area on approximately a 6-foot grid. 5) All stairways, elevators, installations, toilets, washrooms and vestibules to them are to be brought together at inflexible fixed points. 6) One core should serve from 100 to 125 employees.

those which are *thought* to exist — necessary for the development of patterns which *should* exist.

This kind of data can be gathered and reported only with suitable forms. Often used in organizing such information are "mileage" charts in which a numerical value expressive of the density of communication between any two persons is entered at the point in the chart where their respective columns intersect. In the case of a complex organization, such charts express relationships between individuals in small groups as well as the work relationships between the groups themselves.

The numerical data in the mileage charts of a large organization, though it might well overwhelm the planner, becomes more manageable when placed in the lap of electronic data processing.

Faced with the problem of minimizing the length of dense communication lines, a planner can devise a graphic portrayal of density and then through trial and error seek to find the best plan. For jobs so complex as to defy any planner's skill and patience, the computer — the undisputed champion of trial and error exercise — can try every possible permutation of physical arrangement while computing a total of density x distance factors for every combination in order to locate the optimum plan which then becomes subject to qualitative adjustments.

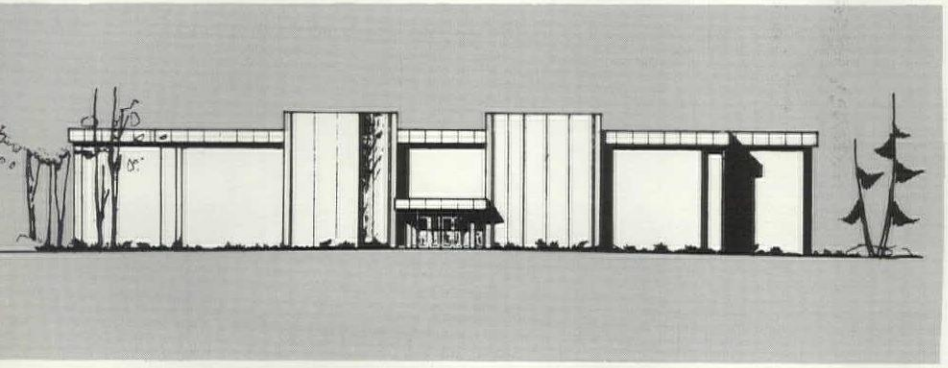
Such sophisticated planning should not, obviously, be negated in any way by the building that encloses the office operation. Floor spaces should be planned according to the disclosures of the critical analysis. As a general principle, they should be as large as possible and unbroken by walls, circulation cores, service installations, etc., with services in external towers or in corners.

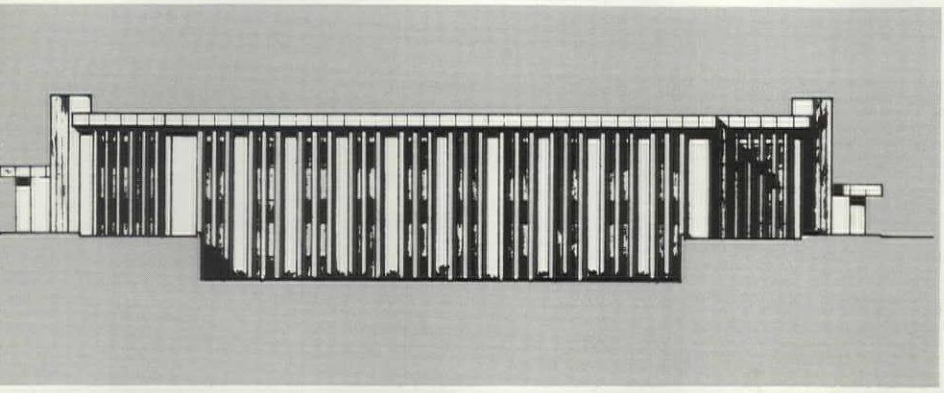
Partitions should be avoided. Visual barriers, acoustical controls, privacy to the degree necessary and definition of particular work group areas can be obtained through the use of lightweight, movable screens and living plants. Screens can be arranged so as to blot out extraneous distractions while providing visual communication with other members of the activity with which the staff member is associated. "Visual fields" can be created for managers.

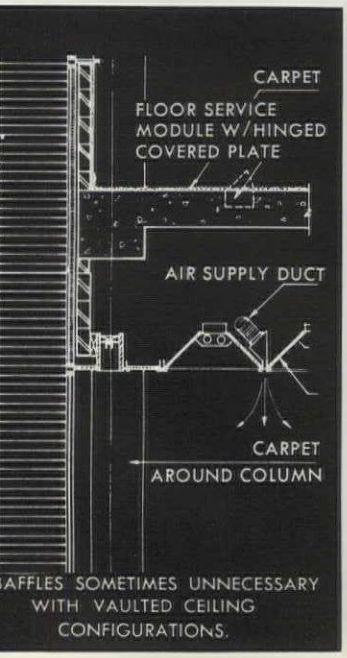
Lounge areas available at any time to all staff members are created for their relaxation. Available to personnel at any time, they must be large, comfortably furnished and equipped with refreshment facilities. Here again the reality of office life is recognized; workers will take breaks anyway and the provision of a "break space" makes the rest period more beneficial. It also discourages the weary workers from disturbing colleagues who may be very much in harness.

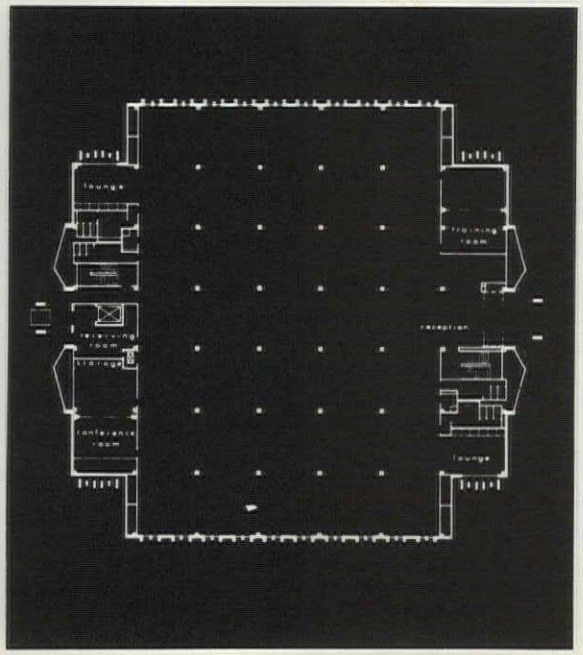
Geometric arrangements of furniture and aisles encroach upon functional need. Free patterns better fit the real lines of work relationships. They also pose an alternative to cubicle cloisters and open planning's frequent vistas of grim regimentation. This approach happens to outrage many of the planners who for so many years have dedicated themselves to getting things into visual order.

Adapting landscaping to the rectangularity of most buildings is not a significant problem. Moreover, landscape plans often use straight rows and rectilinear relationships when these work well, as in drafting or engineering departments.









Architecture, meanwhile, is testing departures from the dominating rectangle, and any breakaway paths discovered might well parallel what is happening in offices today.

Routine work is becoming truly mechanized, and the staff member, no longer a mere cog in a machine, is becoming a thinker, a creator and a decision maker. His individuality grows more important and his need for human, face-to-face communications more necessary. Everyone is an executive — and in landscaped offices everyone shares space of considerable luxury with a minimum of rank distinctions. Thus landscaping expresses an emerging reality.

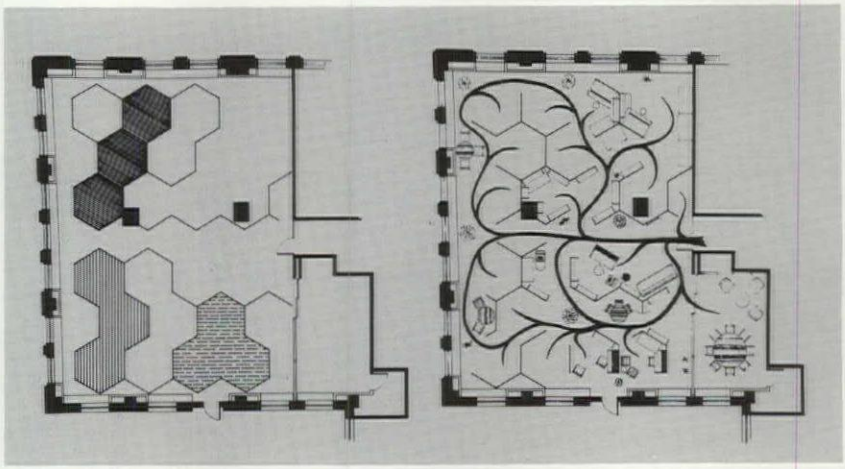
There are objections to landscaping, and perhaps the most often voiced comes from top executives who tend to see it as a subversive effort to torpedo their prestigious private offices. On the other hand, it can be noted that the better restaurants are often the scene of the most confidential and far-reaching business discussions. No sound-proof cubicle there! Moreover, and more seriously, a degree of sound control can be achieved through landscaping's techniques.

Are landscaping's claims being tested? Yes, and probably the most careful of the studies of this planning approach is underway. Its first-phase findings on those aspects which are subject to tangible evaluation are contained in "Office Landscape/A Feasibility Study," conducted and published by Brooks, Farr, Graeber & White, and Pitts, Mebane, Phelps & White, Associated Architects and Engineers, under sponsorship of the Public Buildings Services Administration and the US Department of Labor. This 44-page, illustrated booklet reports on a study conducted to evaluate the appropriateness of using office landscape concepts for a Department of Labor office building under construction in Washington, D. C.

The Quickborner Team was retained as consultants for this study, but the facts were marshaled by the architects and engineers who appear to take responsibility for the report's impartiality. The study is of great significance because of its pertinence to almost any large American office building (the Labor building will house 6,000 personnel) in which landscape planning might be under consideration.

A detailed comparison is made between conventional and landscape requirements for lighting, airconditioning, furniture selection and filing practices. Also included is a complete comparison study of the standards for work space allocations of the General Services Administration, Labor Department and the Quickborner Team. A small, typical area of floor space including a range of situations was chosen and planned out in detail in both conventional and landscape approaches. The results of this small unit comparison are then used by extension to give comparative data for the huge, five-level building.

The conclusions appear to be heavily favorable to the landscape method — more favorable, in fact, than the report chooses to emphasize. Each conclusion as to a particular aspect of comparison is stated separately; their cumulative force is never added up in one place. These are the conclusions: **1.** The nonpartitioned landscape plans would permit a reduction in



the building's mechanical systems. GSA and Labor, however, stipulated the installation of a mechanical system adequate to a conventional plan in order to keep options open. So the saving, since it is not to be realized, is left unpriced — but it would have been "large," the report says simply.

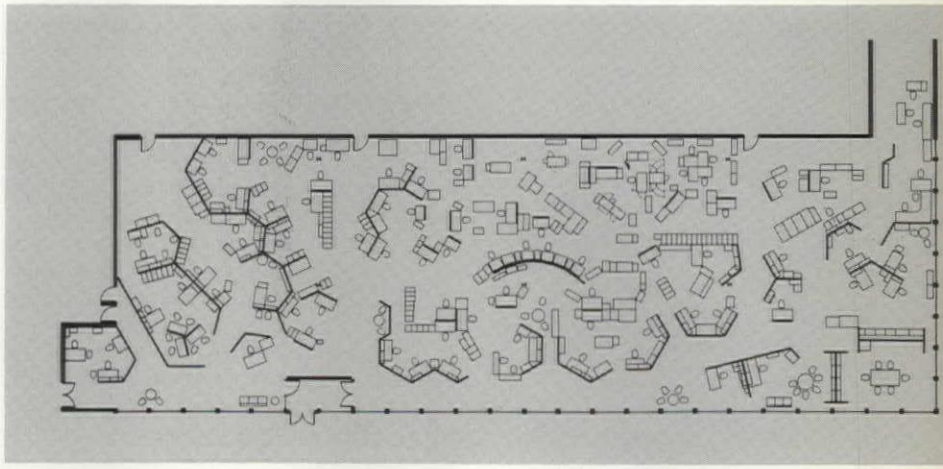
2. There is a gain in floor area occupancy of about 10 percent throughout the entire building even after certain areas not subject to landscaping are deducted. Besides lobbies, data processing centers, etc., these areas include top executive locations. This is contrary to one of the principal tenets of the landscape approach. Exempting a certain executive class from open space occupancy seems to establish a status line more marked and odious than under conventional practice.

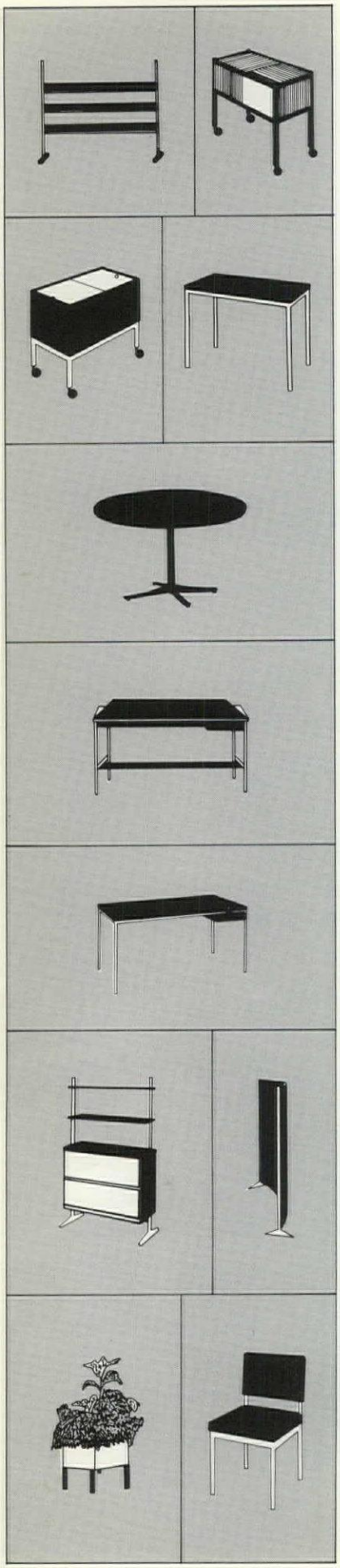
Also, it means that the gain in space utilization throughout the building would have been greater if it were not for this exclusion. The gain can, of course, be taken either through reduction of the size of the building planned or, as in this instance, as a dollar figure representing the cost of rental or newly constructed space of the area saved. No matter how it is seen, it represents an approximate 10 percent saving in first cost and in all continuing expenses for the life of the building.

3. The square foot cost of the conventional installation works out to $4.18, and for the landscape plan,

AMONG VARIATIONS AND DEPARTURES

The office at left was planned by JFN Associates, Inc., a space planning firm, for its own branch in Chicago. It is said to be the first use of Herman Miller's Action Office II system other than in Herman Miller's own offices in Zeeland and Grand Rapids, Michigan. A 5-foot hexagonal grid was used for the 3,000-square-foot office that is devoid of straight-line corridors. A JFN statement explains that executives of both the firm and Herman Miller "prefer the phrase 'open plan' rather than 'office landscape,'" and adds that the use of a hexagonal grid "makes it an altogether different thing from the seemingly random arrangements of work stations in Bürolandschaft offices seen here and abroad." Panels do more than define space; they hold furniture which can be changed or adjusted according to individual or program needs. The stations themselves can be changed — made larger or smaller or new spaces created — within the grid system. For Rhode Island's B. A. Ballou Company, right, the Research and Design Institute of Providence, which did both the building and the interior planning, produced a solution that, while clearly recognizing work flow patterns, tries first to enhance the involvement and interpersonal relationships of staff. If in the design of an office or anything else, says Ronald Beckman, REDE's director, you begin with the concept of human behavior, "you end with what is truthful and varied and what may even become recognized as beautiful." It can be demonstrated, he adds, that "efficiency is a function of motivation and that motivation is a function of identity on the part of the performer." So REDE, views of whose own factory loft offices appear at lower right, addresses a problem in primarily human, motivational terms.





$3.47. This is a saving of 17 percent and although this report does not mention it we can note that this saving pyramids on to the area saving cited previously. Taken together, a saving of 25 percent can be projected (the percentages are not to be simply added; they are to be deducted in sequence).

4. The comparison of the costs of annual maintenance works out to the advantage of the landscaped installation by 3.9 cents per square foot. This cannot be converted to a percentage since no total maintenance figure has been estimated.

5. Replacement costs comparisons generate a result favorable to the landscape plan by 2.7 cents per square foot if carpeting is replaced in a 10-year cycle. If a five-year cycle is assumed this figure becomes favorable to conventional planning by 5.9 cents per square foot. Combining this estimate with the maintenance figure previously given, we find either an advantage of 6.6 cents per square foot to landscape planning, or a disadvantage of 2.0 cents, depending solely on the frequency of carpet replacement.

There is no attempt to estimate savings which might result from the lower cost of making layout changes in spite of the weight of this cost factor. Intangible benefits of the landscape plan are discussed guardedly and without offering any firm conclusions.

A byproduct of the ferment about office landscaping has been a sudden burst of new thinking about office furniture, a field in which uniformity among various manufacturers had become almost total. Landscape planning theory demands office furniture that is "transparent" to vision and to sound. This means tables with few drawers and open file baskets in place of conventional desks, and open-topped file bins or carts in place of conventional cabinets.

Furniture manufacturers are responding to this new set of requirements in either of two ways (and sometimes in both). There are several new product groups that attempt to supply the requirements of landscape planning quite exactly according to the specifications of its developers. At least one other group (and more are in the development stage) respond to the pressure of the landscape idea with an alternative which recognizes some landscape ideas without following the details of its proposals.

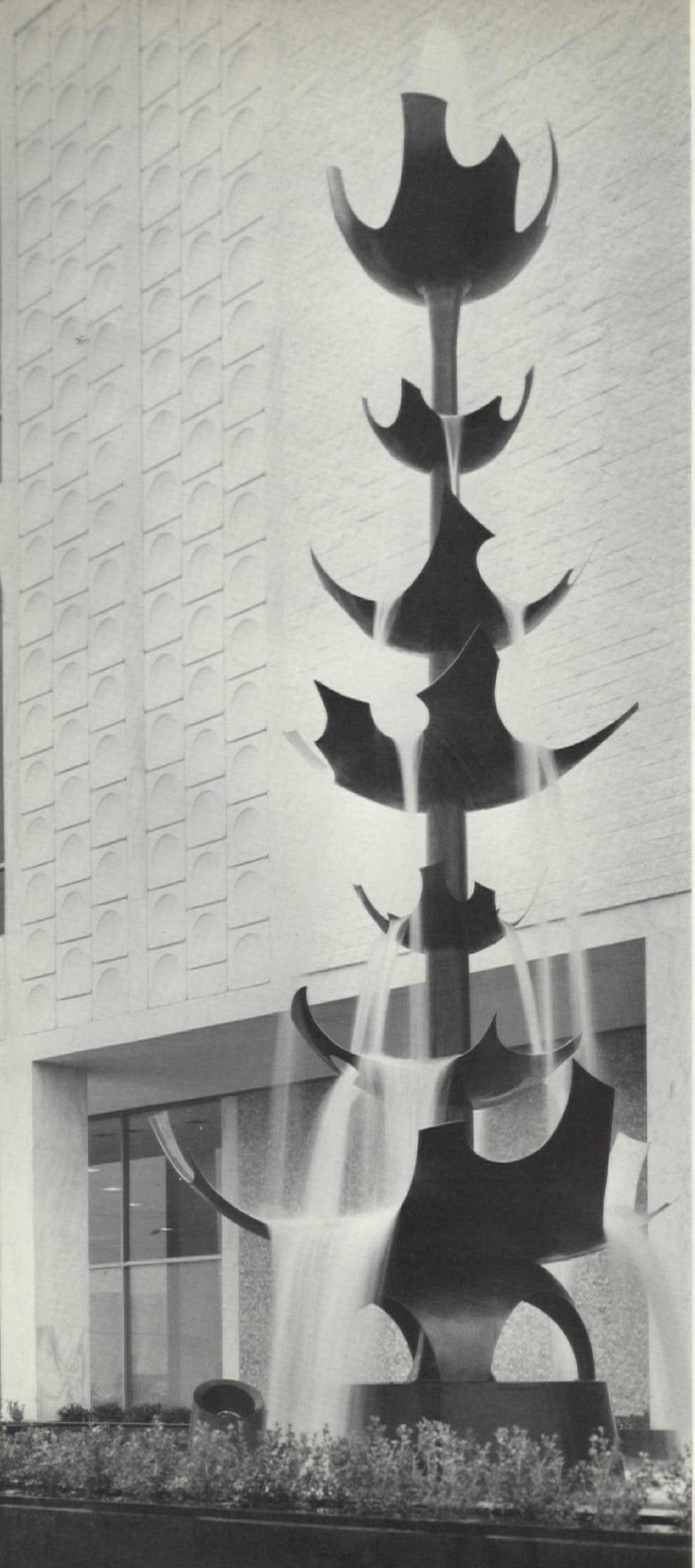
One of the alternative lines of thought is illustrated by the "Action Office II" group produced by Herman Miller in the designs of that firm's research director, Robert Propst. It is provided with a full apologia in the form of a book (*The Office — A Facility Based on Change*, by Propst, Business Press, 1968). The book undertakes a broad re-evaluation of office work functions with the individual worker (seen primarily as a middle-management executive) as the basic focus, and proceeds to the development of highly flexible equipment (an extension of the original Herman Miller Action Office) to serve widely varied requirements. It suggests that this equipment can be arranged in free groupings, such as those of office landscaping's, although landscaping as such is never mentioned. Such mention, in fact — and rather amusingly in view of the author's wide scope of interests — is scrupulously avoided.

Quite aside from the value of the products which it introduces, this is a book of considerable interest, but it is marred by a tendency to use the artificial language and style of a think-tank in its leaning toward portentous-sounding words and phrases of unclear and possibly nonexistent meaning.

Whatever quibbles one may have with the verbal justifications offered for this furniture, it must be admitted that the group is another lively and interesting departure from the dullness which was the norm of all office equipment until a few years ago. Office planning has come alive and we can expect a period of change, confusion and development. Every project involving office space must take account of the new ideas afoot and must entail decisions as to what directions will prove to be sound and meaningful over the anticipated life of an installation.

Meanwhile, remaining as the most comprehensive reference on what office landscaping is all about is *Flexible Verwaltungsbauten* (second, revised and extended edition, by Ottomar Gottschalk, Verlag Schnelle, Quickborn). This 287-page, fully illustrated book replaces a smaller and somewhat tentative work by the same author, one of the originators of landscaping, published in 1963. It is a handsomely designed, thoroughly detailed manual which, unfortunately, is in German. A high school-level understanding of German, however, suffices to extract the data of interest.

There is no manual of conventional office planning that begins to approach the orderly thoroughness of this one. □



The Fountains of George Tsutakawa

BY GERVAIS REED

They are made of bronze and water, graceful arrays of flower-shaped bronze basins that catch and hold and then release the rushing water.

The bronze is silicon bronze, heavy sheets of it, cut to shape by bandsaws, wrought to form by presses and hammers, assembled by electric welding into final order, a strong and stable matrix for the rapid water.

The water is integral, not incidental to the design. Falling in a series of controlled cascades, it moves in swift and transient counterflow to the ascending structure of the bronze, its fall describing shapes that complete and complement the metal form, extending it beyond itself in space.

There are more than 20 of these Tsutakawa fountains now in 12 American cities, from Anaheim, California, to Seattle, from Honolulu to Washington, D. C.

The first was begun in 1958 for Seattle's new Public Library, the first fountain to be commissioned for the city in more than 25 years, and the first fountain in the career of the artist.

It took almost two years to complete. Each step in its realization

was exploratory. The first move was to examine, to question and then to reject the hackneyed traditions of fountain design in the art of the West, from the villas of Rome to the malls of Flushing Meadows: "firehoses, swimming pools, showerbaths, and a variety of bodily excretions."

The next step was to apply intelligence and sensibility to the fundamental design problem: How can moving water be made an integral part of a monumental sculptural form?

The sculptural form had been determined already. It was to be an *obos*.

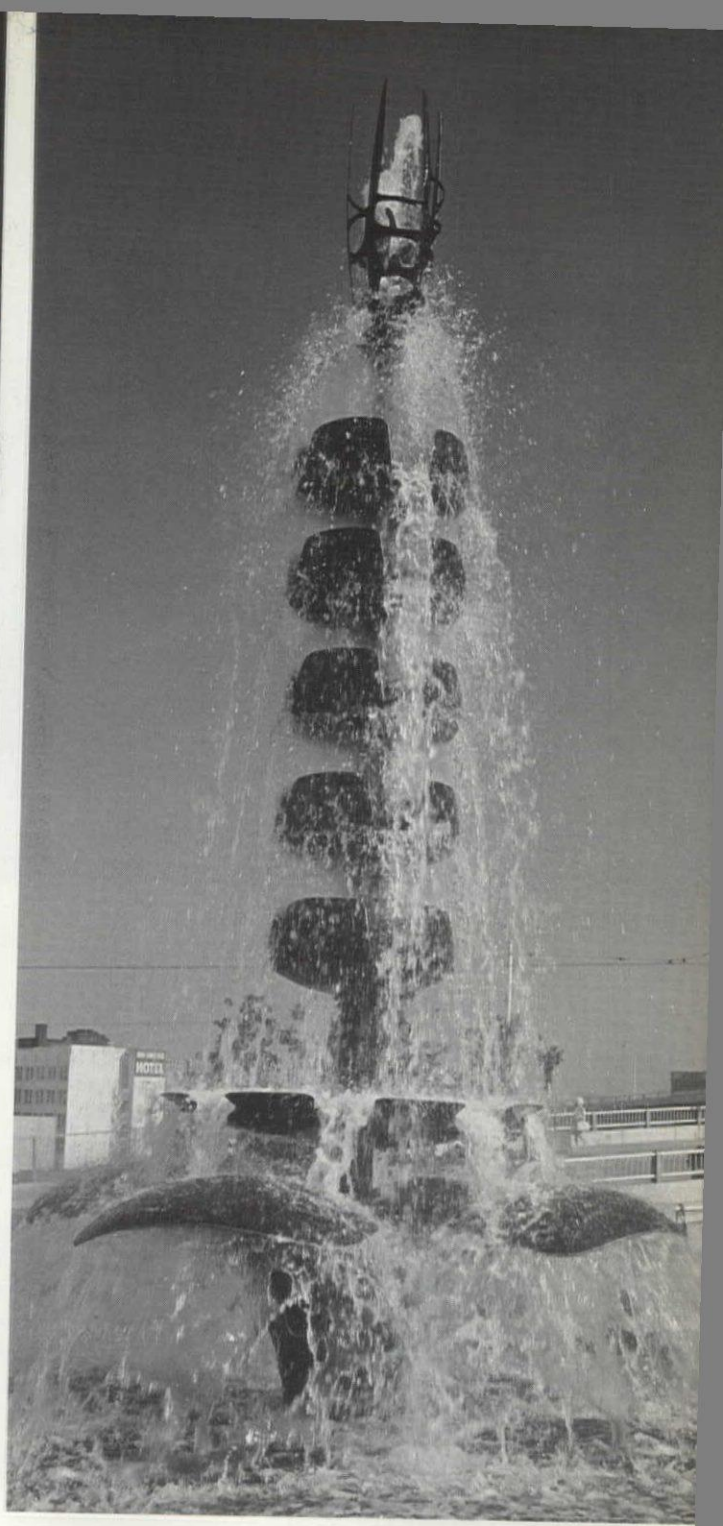
Obos is a Tibetan word for the timeless, cross-cultural Oriental folk custom of building small cairns in places of exceptional natural beauty as offertory gestures, small monuments of thanksgiving.

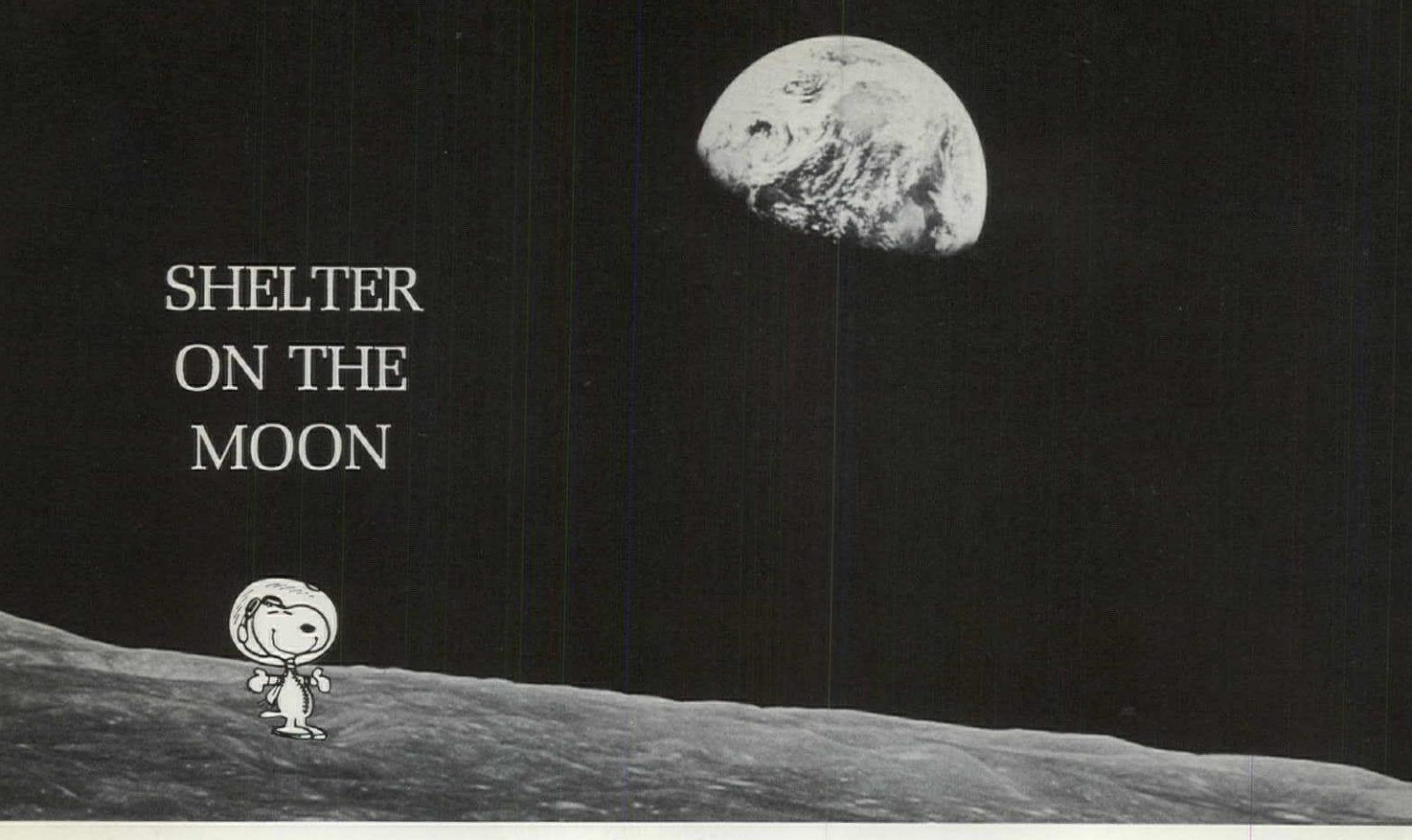
Tsutakawa had discovered the *obos* in Japan in 1956, his first visit there in nearly 30 years. (A nisei, he was born in Seattle, raised and educated in Japan; then, back in Seattle, he was re-educated in American language, culture and, eventually, art.) Since 1956 the *obos* has been almost obsessively present in his work, giving new form and meaning to his drawings, paintings and wood sculptures. Now it was to be the basis for the fountain.

In 1960 the fountain was finished. From the day of its unveiling it has enjoyed the continuing love and friendship of the city, causing no outcry about "modern art," raising no questions about taxpayers' money — a major step in Seattle's growth to maturity, a landmark in the changing geography of the city, a benchmark and a milestone in the life of the artist. □

The author: Mr. Reed is a lecturer in the School of Art, University of Washington, Seattle.

ARCHITECTURAL CREDITS: Preceding page —Robinson Fountain, 25x12 feet. Robinson Department Store, Anaheim, Calif. Kent J. Attridge, AIA. This page, top—Fountain of Good Life, 11x7 feet. Commerce Tower, Kansas City, Mo. Keene & Simpson & Murphy. Below—Fountain of Wisdom, 12x7 feet. Seattle Public Library, Seattle. Bindon & Wright. Across page, clockwise starting upper left—Garth Fountain, 9x4 feet. National Cathedral, Washington, D.C. Philip H. Frohman, FAIA, (Mead Palmer, landscape architect). Naramore Fountain, 20x8 feet. Seattle. Jones, Lovegren, Helms & Jones. Unity of Man Fountain, 20x8 feet. Hobart Technical Center, Troy, Ohio. David Niland, designer.





SHELTER ON THE MOON

"If we architects don't become involved in the space program, become leaders, make our opinions heard, engineers and scientists may find that they can get along without us." So maintains Professor Bowes, who also holds that the design for moon shelters may well influence construction on earth, especially in so-called uninhabitable areas — areas we may have to develop in response to the anticipated world population squeeze. Architects, Bowes says, must learn from the aerospace industry, a fresh and more efficient approach to design. There are other architects, apparently, who think along the same lines: Sheldon A. Anonsen, AIA, president of Myers, Anonsen & Bennett, Inc., recently received a master's degree in physics with one of his three papers dealing with moon architecture. And in Oakland, California, the East Bay Chapter AIA has a committee on aerospace architecture.

BY C. HERBERT BOWES, AIA

The need is here now for a versatile lunar base system capable of supporting a variety of scientific missions. This study concentrates on an expanding modular base adaptable both to two-man outposts and permanent installations, housing up to 18 men, consisting of prefabricated shelter modules that fit onto their Saturn rockets.

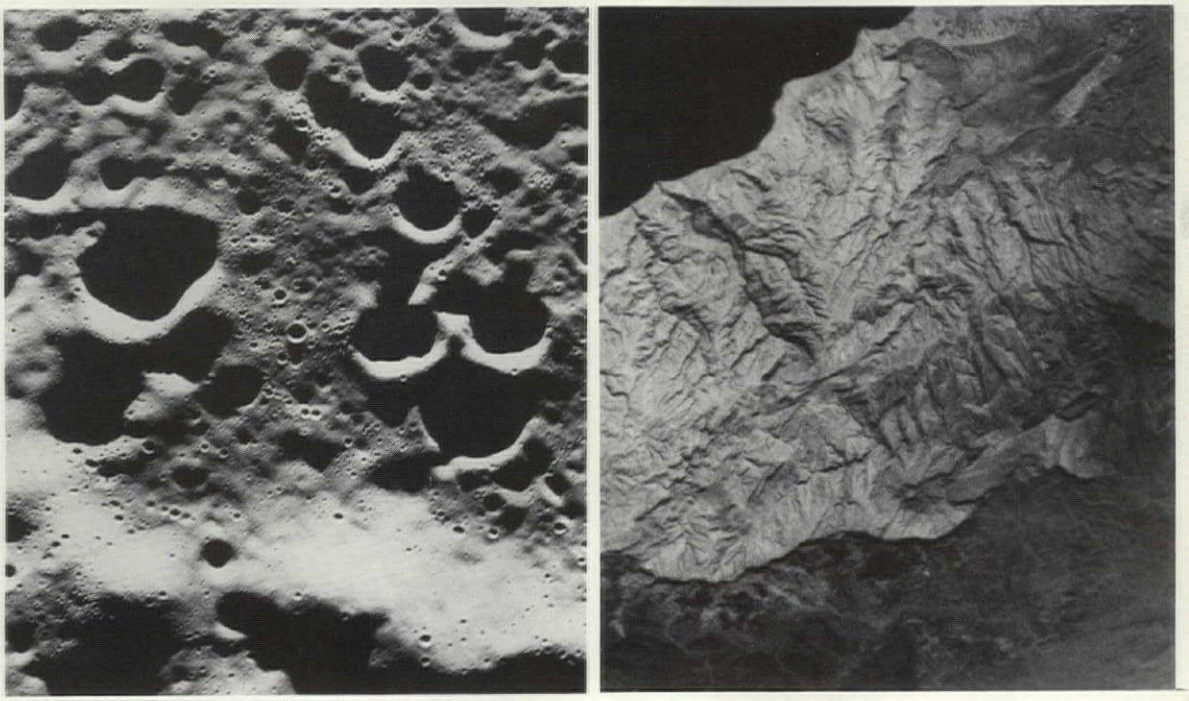
Three major elements of the base — the life support system, the nuclear power plant and the regenerative fuel system for surface vehicles — will be designed by others. However, their enclosing shelters, if any, are considered here.

The two-man shelter must have an entrance/exit chamber, a communications console, laboratory, microfilm library, laundry, first aid station, space for sleeping, for exercise and recreation, food storage, food preparation and eating area, and body hygiene space.

On earth, man is part of an ecological cycle, both simple and familiar. It is very likely that this cycle will be required for long-term space voyages and advanced future bases located on the moon and other celestial bodies. At present and in the very near future, however, a somewhat less complete version will have to suffice.

Each shelter is equipped with mechanical, chemical and electrical devices to provide and regenerate a life-sustaining atmosphere — 8 psi, oxygen and nitrogen, humidity, odor and temperature control.

The carbon dioxide exhaled by the shelter occupants will be passed through a system containing hydrogen and then heated in the presence of a catalyst. This produces water vapor and solid carbon. The vapor is condensed and broken down into hydrogen and oxygen



THE MOON AND THE EARTH

ATMOSPHERE

Moon has none — vacuum exists. There is no weather, no wind.
Earth has atmosphere. It is 14.7 psi at sea level.

TEMPERATURES

Moon's lows are believed to plunge to −240 degrees F. At the subsolar point on a full moon, +270 degrees F may be reached. Due to moon's slow rotation the temperature change is slow. The lunar surface consists of highly insulating materials that prevent absorption and storage of heat.
Earth's lows reach −125 degrees F, highs +140 F. Earth's water and land absorb and store heat for future use.

RADIATION

Moon, due to lack of a shielding atmosphere, in all probability has hazardous radiation in the form of major solar flares (every three to four years), solar X-rays, cosmic rays, infrared and ultraviolet rays.
Earth is shielded by atmosphere from extreme intensities of ionizing radiation, one of the greatest hazards above it.

METEORITES

Moon in all probability has meteoritic activities.
Earth's atmosphere incinerates most meteorites and meteoritic material before striking the surface of the earth.

GRAVITY

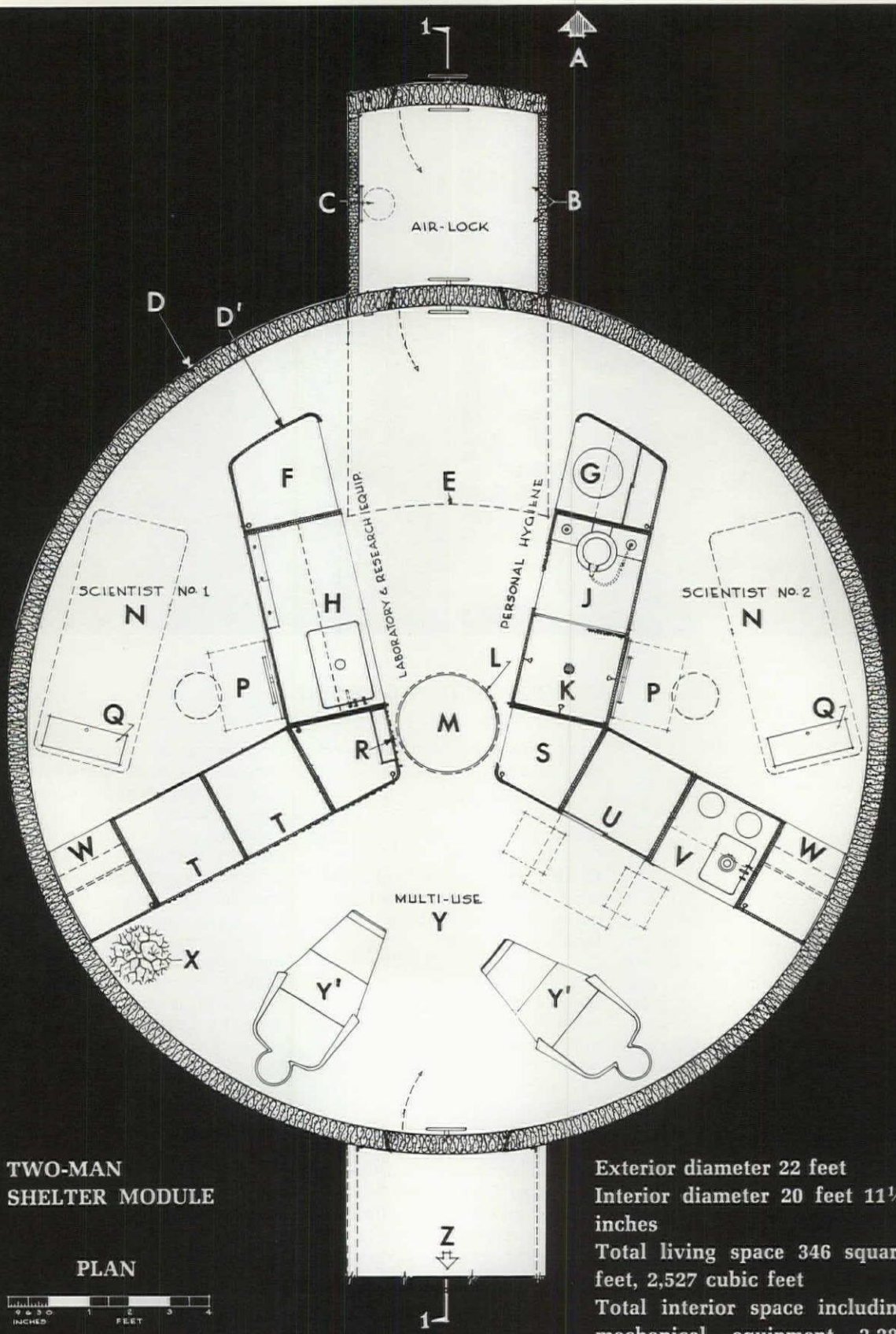
Moon's gravity is only ⅙ of earth's gravity, therefore it cannot capture and hold an atmosphere at and above its surface. The escape velocity from moon is 1.48 miles per second, which will enable space ships to lift off from lunar surface with much less rocket energy than that required for lift-off from earth.
Earth's gravitational attraction holds down the atmosphere, preventing it from escaping into space. Gravity gives weight to all matter on earth. The escape velocity from earth is 6.96 miles per second.

TERRAIN

Moon has no water, no vegetation. Some mountains are over 20,000 feet. Some areas are covered with craters, several as deep as the highest mountains. Slopes of crater walls and mountains incline up to 35 degrees. Most of moon's surface is covered by a thick layer of loose material like small rocks, gravel and fine particles, with high insulating qualities. Frequency and severity of moonquakes, if they occur, are not yet known.
Earth is ¾ water, ¼ land. Surface features are continually undergoing change due to weathering. Earthquakes are major hazards in certain regions.

SUNLIGHT

Moon and earth are about the same distance from the sun, but moon has no atmosphere to attenuate harmful rays or to filter harsh light. Sunburn will occur about 50 times faster than on earth. Moon rotates about its axis only once in 28 days, resulting in two-week days, two-week nights, a factor contributing to the extreme temperatures.
Earth's atmosphere shields it from sun's harmful rays and harsh light. Earth rotates once every 24 hours, which allows for surface cooling.



TWO-MAN SHELTER MODULE

PLAN

INCHES 0 6 3 0 1 2 3 4 FEET

Exterior diameter 22 feet
Interior diameter 20 feet 11½ inches
Total living space 346 square feet, 2,527 cubic feet
Total interior space including mechanical equipment 3,288 cubic feet
Gross weight on earth about 20,000 pounds
Gross weight on moon about 3,333 pounds

TWO-MAN SHELTER MODULE

Key to Plan:

A — North or south orientation only, to shield doors of air-lock against sun's radiation when on horizon.
B — Hangers for radiation and thermal capes.
C — Hinged seat with boot covers under.
D — Aluminum alloy skin exterior and interior with rigidized foam insulation between, to withstand an artificial atmosphere of 8 psi when outside environment is a hard vacuum.
D' — All interior cabinet or partition units: sandwich panels, 1/16-inch fiber glass reinforced plastic skin each side with 5/8-inch thick flame-proof paper honeycomb structural core. Height from floor to top of units, 6 feet 3 inches.
E — Air-lock telescopes inside shelter for rocket trip.
F — Spare helmets and suit oxygen. Tools for excavation. Cleaning equipment. Retractable vacuum cleaning tube.
G — Lavatory. Washer-dryer below; first aid, medical supplies and linen above.
H — Laboratory and related supplies.
J — Body wastes.
K — Body cleanser.
L — Observation and light aperture above.
M — Floor hatch to mechanical equipment and 2/3 of the food storage.
N — Scientists' private areas.
P — Hinged desk and seat.
Q — Air mattress, stores deflated in floor panel.
R — Electrical and mechanical control panel and defect warning system.
S — Exercise equipment; microfilm library; games; cameras; shelter-leak patch kits; fire extinguishers; folding stool storage.
T — TV and radio transmitters and receivers.
U — 1/3 of food storage and utensils. Dining table slides out of cabinet. Folding stools from S.
V — Food preparation. Refrigerator below.
W — Closet.
X — Hydroponic orange tree. Ultraviolet light above.
Y — Communications; meals; lounge; recreation.
Y' — Contour couches (for trip to moon and later lounging).
Z — Pedestrian tube to other shelter units (space suit not required).

by electrolysis. The hydrogen is returned to the system for further use, the oxygen is reused in the breathing cycle of man. The powdered carbon is used to replenish distillation filters. Tied into this artificial atmosphere system is the processing of body wastes, which will produce nitrogen. This, in turn, will be used to dilute the O_2 atmosphere created for use in the shelter.

A great deal of research is still needed to determine the long-term biological effects of the use of oxygen in a greater proportion than man is acclimated to on earth. Also, the use of nitrogen in an artificial atmosphere of reduced pressure creates the possibility of the bends (nitrogen bubbles forming in body tissues) or of radioactive isotopes produced by cosmic radiation. Other gases are available, the so-called noble or inert gases such as helium and neon, but in varying degrees these noble gases, especially xenon, produce mild narcosis or anesthesia when mixed with oxygen. In addition, the long-term effect of breathing gases such as these is unknown.

Protection Against the Elements

Each shelter has sufficient insulation between inner and outer skins and its exterior surfaces are finished so as to provide a controlled amount of radiant heat reflectivity while in transit and while waiting to be covered with insulating substances on the moon's surface. With a yard or so of coverage the thermal conductivity may be sufficiently low for the temperature to be virtually constant at about −22 degree F. The additional amount of heating or cooling needed depends on the quantity of heat generated by mechanical equipment, electronic devices and human occupants. It will easily be taken care of.

Shelters that are underground or covered give considerable protection from ionizing radiation and chance meteorites.

The Burden of Lighter Weight

Walter Kuehnegger, formerly director of life support systems research at Denver Martin-Marietta, says that six months in the weak gravity of the moon could cause the visitors' skeletons to weaken so that the 8 G-force re-entry into earth's atmosphere would be too much to take.

The engineer-physiologist recommends that astronauts and scientists undergo a vigorous exercise program on the lunar surface to help prevent their bones from decalcifying. The daily energy used on earth by the astronauts should be determined, then their proposed energy-output on the moon should be calculated. Once on the moon, they should make up for the difference with exercise.

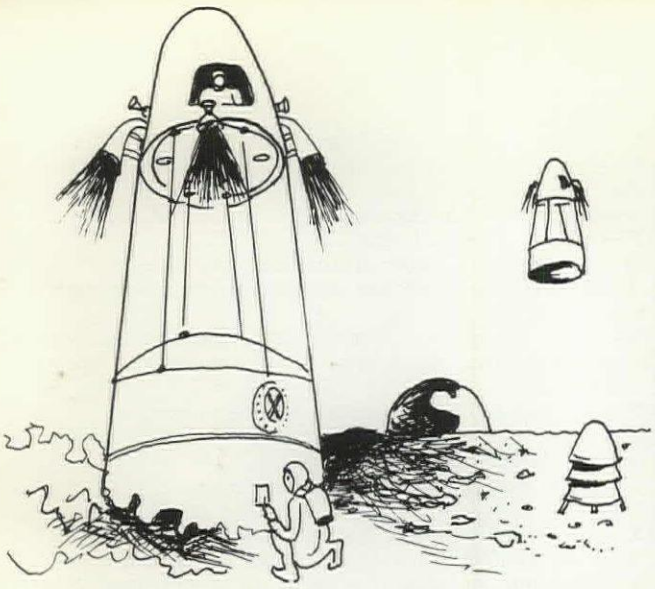
A man weighing 180 pounds will weigh only 30 pounds on the moon; a tall adult will probably be able to take 20-foot steps. Much less work will be required to lift weights. However, a man's own weight will work for him less effectively when he wishes to compress anything or to drive a shovel into the ground.

The proposed shelter has ample space for exercise and also for storage of exercise devices.

The Barren Landscape

Few researchers agree completely on the nature of lunar subsurface water deposits. Certain evidence, although speculative, suggests concentrations of water in some form beneath the lunar surface. The importance of such sources for the future of space exploration cannot be exaggerated.

There is a good possibility that water does exist on the moon in large quantities but not in liquid form. The molecules of H_2O may be in the crystal lattice of many minerals which we expect to find. Volcanic glasses contain about 5 percent water by weight, serpentine as much as 10 per-



Proposed rocket-powered taxi to lift shelters upon arrival on moon, delivering each to its predetermined site. It will also be used for exploration.

cent. One group of meteorites, the carbonaceous chondrites, are known to contain from 10 to 20 percent water.

The dehydration of these minerals will be possible by heating them in a furnace at about 932 to 1832 degrees F, depending on the mineral, then condensing the escaping vapor into liquid water.

The author: Professor Bowes, who is with the School of Architecture at the University of Colorado, has for the past eight years studied extraterrestrial design.

During the early period of moon occupation, it will be impossible for the explorers to take the time to remove water from lunar minerals or deposits. Therefore, each shelter will contain a reasonable amount of clean water. Two 100-gallon tanks per two-man shelter will be used rather than one large tank in the event of damage or leakage. A small amount of the fresh water (about 25 gallons) will be used in the initial operational period, the remainder for emergencies.

The early lunar base shelters will be stocked with foods that require no refrigeration, take up little space, have little waste and are highly nutritious. Since there will be sufficient water, dehydrated and freeze-dried foods are a definite possibility. Each shelter will have food for two men for a little more than six months, or about 500 pounds plus an additional 400 pounds of morale-building tidbits and sweets.

To supplement the diet of these foods, the larger base has a shelter for an experimental hydroponic farm. This will use the aggregate culture technique with plants placed in beds of sand, gravel or stones and subirrigation channels passing through the base of the hydroponic tanks. The aggregates are charged with chemical nutritients that feed the roots. Volcanic gravel from the lunar surface can be used for this.

Edible plants can be grown under a series of reduced pressure conditions. Up to a point plants grow as well, occasionally better, under pressures less than sea level conditions.

The lunar hydroponicum will have a reduced pressure of 8 psi but an earthlike atmosphere, temperature control, artificial light during the two-week lunar night and, during the two-week lunar day, indirect sunlight will be admitted into the underground structure through a glazed opening in the roof, supplemented by artificial light.

Oxygen produced by the plant life on the farm will be collected and stored for future use.

Irradiated foods may hold promises for future space travelers; cultivated algae has been proposed, but in spite of their high food value no human culture is known to subsist on them. Suggestions have been made such as a menagerie feeding on algae. Maybe a small crustacean could be introduced, such as the water flea, which has a voracious appetite for algae and is said to taste like an avocado with a touch of shrimp.

The Long Days and Nights

Man is used to a life consisting of 24-hour periods. On the moon, the explorers will have two-week days and two-week nights. Since most of the time will be spent inside the shelter, it may not be too difficult to establish a cycle based on earth's pattern.

The importance of recreation has not been overlooked, both as a pastime and as mental therapy.

Radio and television equipment is available and special earth programs, including news and movies, will be beamed to the moon on a limited basis. The astronaut/scientists will occasionally transmit, both by radio and television, short programs describing their life and scientific findings.

Each shelter has storage space for microfilmed literature, with two lightweight automatic viewers, and several games — with boards made of foam glass or rigid plastic foam.

A Conference and Fellowship Center on the 18-man base will be used for certain recreational activities besides conferences.

The Household Chores

A relatively generous area below the suspended shelter floor holds tanks, mechanical devices, tubing, etc. Access to all equipment is through a main floor hatch and removable floor panels at strategic locations.

Body wastes, water vapors, waste water and special wastes from the laboratory will all go through special processes to obtain nitrogen, for the artificial atmosphere in the shelter, and hydrogen and methane, for attitude control nozzles in the space vehicles, as well as water for reuse.

Unusable residue will be incinerated. Toxic acids that cannot be neutralized will be stored for later disposal underground.

A lightweight vacuum tube which can reach every point within the shelter and air lock will be used for cleaning. This is needed to remove the fine moon-surface sand from outer garments. Abrasive and disinfecting cleaning aids will come in containers readily disposable in the garbage grinder.

The Man-Made Radiation

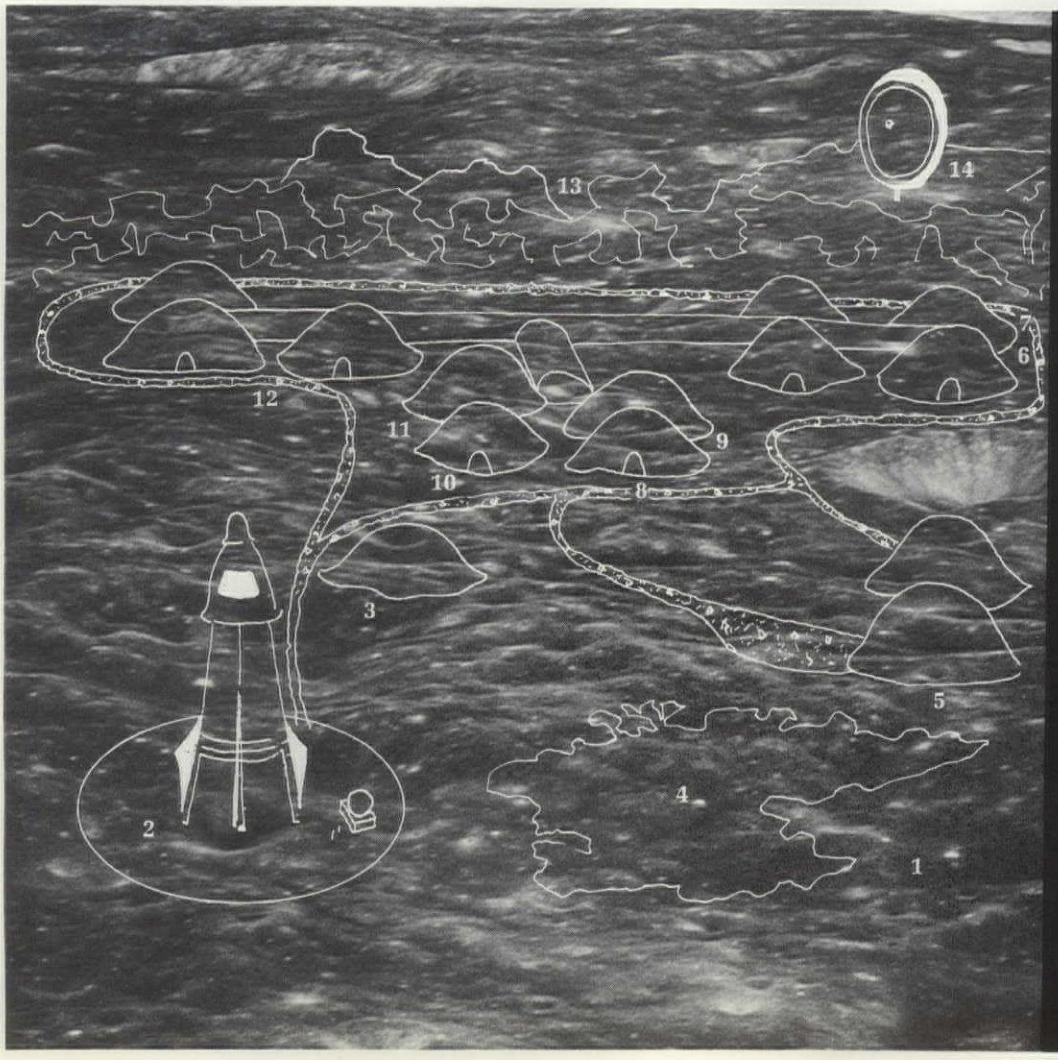
The 18-man base will be electrically powered by one large nuclear reactor. There will also be three smaller nuclear units available in the event of a failure or destruction of the large unit. These smaller units will be used initially as the base increases in size.

Every precaution will be taken to protect the personnel from the lethal ionizing radiation emitted by the reactors. Since it will not be feasible to transport from earth enough lead to shield the reactors completely, they will be segregated from the base behind natural rock formations.

The Need for Sterilization

Unless precautions are taken, it is quite possible for spacecraft to contaminate the moon biologically. The craft must therefore be sterilized before launch and it must be made certain that it will not be reinfected while still within earth's atmosphere during flight. Biologists emphasize that many microorganisms can survive long periods of interplanetary space travel, particularly in the payload section of the craft. Fortunately, even the first lunar impact vehicle, the Soviet Lunnya Raketa, was sterilized to prevent earth bacteria from contaminating the nature of the moon and thereby mislead future explorers of this heavenly body in case it stayed alive. The reverse situation is also conceivable: A spacecraft returning from another planet might carry microorganisms that could infect our biology.

Even if there is no life on the moon, terrestrial life may take hold and multiply. Scientists would then lose forever the chance to study new, uninfected biological phenomena and trace novel evolutionary sequences. They would also be unable to determine if the planet on which micro-



LUNAR BASE FOR 18 MEN

1 — Site: Sea of Tranquility, a likely location for a first lunar base.
2 — Rocket port.
3 — Flight control.
4 — Borrow pit (where lunar aggregate is borrowed to cover shelters and connecting pedestrian tubes) and fuel storage for rocket engines.
5 — Regenerative fuel system for surface vehicles.
6 — Surface vehicle maintenance.
7 — Mechanical equipment maintenance.
8 — Supplies
9 — Chief scientist and assistant.
10 — Hydroponic farm.
11 — Conference and fellowship center.
12 — Research scientists.
13 — Nuclear/electric power plant in rock formations.
14 — Radio and TV antenna.

organisms or other life are subsequently found was an abode of life before the arrival of early nonsterilized spacecraft from earth.

In order to reduce the danger of contamination, the spacecraft and all its components, its payload, the working fluids (i.e., hydraulic oils) will be sterilized.

Ordinarily overlooked as breeding grounds for bacteria are electronic tubes, capacitors and some resistors, also, the plastics in which electronic components are potted. Special attention should be paid to such spaces.

There are several ways to sterilize spacecraft and their equipment. Chemicals, notably ethylene oxide gas, are used with good effect for both exteriors and much of the interiors of American space vehicles. This takes from six to 24 hours.

Engineers and architects of spacecraft and shelters must test all materials, such as paint and adhesives, to assure that the use of ethylene oxide causes no subsequent harm. Spacecraft and shelters should not incorporate areas that cannot be reached by the gas — unless the interior of such areas has been sterilized before sealing or can be sterilized by other methods after sealing.

Complete decontamination of the human body is obviously impossible. Accordingly, it may be necessary to seal man off completely from an alien environment not only for his own protection but to protect the local ecology from contamination by him.

Man and His Shelter

There has been a conscious attempt, from early concepts to the finished development of the two-man shelter, to create an architectural environment that will satisfy not only human needs for survival but one that will satisfy some psychological needs as well.

The shelter is only 21 feet in diameter inside, or 346.2 square feet. This is a small space for two persons to share underground for as long as six months.

One element of the design, and perhaps the most important, is a separate space for each person, a space to retire for meditation, for study, to record data of findings and experiments and to rest or sleep.

In addition to these private spaces there is a compact, but sufficient space for recreation or joint study. The laboratory and the communications console have enough room and equipment for both men to work at the same time.

A 30-inch diameter skylight permits — with the help of motor-operated mirrors — the viewing of the heavens and of the moon's terrain in a 360-degree arc. The aperture is equipped with special glazing and a 1½-inch thick lead shield, which can be closed to protect against ionizing radiation when the sun is overhead. Supplementing the skylight are special luminaires inside the cabinet or partition units, providing direct lighting for unit spaces and also general shelter illumination by reflected light passing through the acrylic plastic tops of the units to the curved ceiling above.

Another physiological and psychological feature of the shelter is the generous ceiling height. This is possible because of the shelter's shape, evolved from the structural dictates of the pressure vessel. Also, no partition units nor pieces of equipment obstruct or interfere with the immediate access to walls and roof for patching in the event of damage by meteoric particles during transit and while the shelter awaits covering with lunar soil.

General acoustics and sound control of mechanical equipment are factors which have been solved within the severe limitations and dictates of the program.

Individual hues and the overall color scheme and material textures are extremely important in any environment, but especially so in a relatively unique one, such as shelter units comprising a lunar base. Further studies, with one or more psychologists involved, are needed in this respect, using a full-scale shelter mock-up with live-in occupants for an extended period of time.

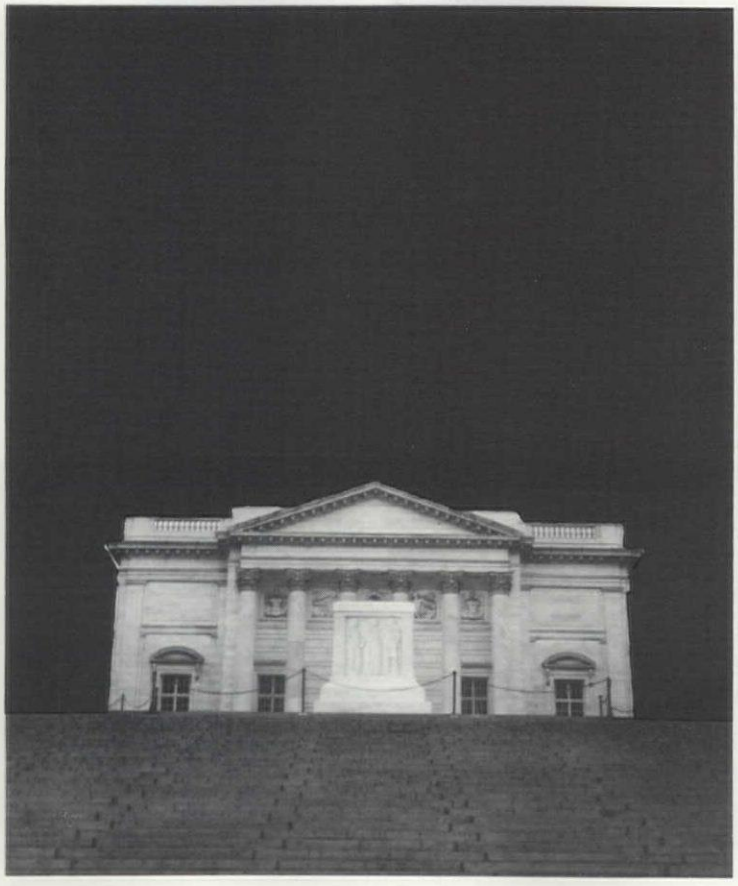
With an Eye Toward Space

The much-needed changes in the state of the art on earth must and will evolve directly from the man-in-space programs. Through them, more will be known about the nature of man, biologically, medically, psychologically and sociologically. New, stronger but lighter materials will be developed, present ones will be improved. We will have greater and more sophisticated use of computer-operated machines and devices, both in the factory and in the field, for manufacturing and fabricating processes. Engineering systems will be changed to a degree difficult to visualize today. Much more efficient transportation systems could be one of the earlier manifestations of byproducts of outer space technology.

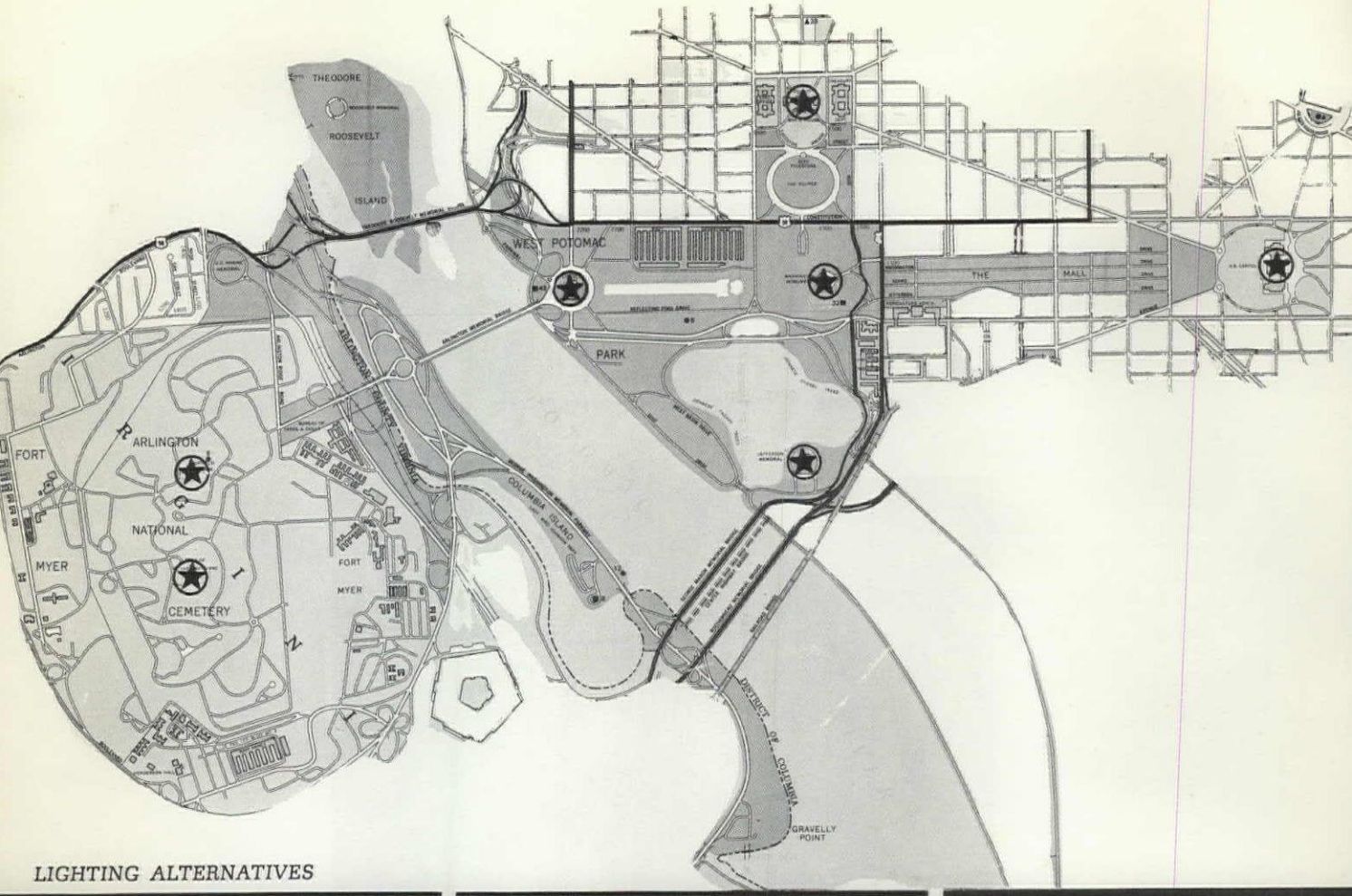
In response to the anticipated world population explosion, outer space technology will enable and may encourage man to develop regions of the earth heretofore considered uninhabitable for larger communities as a normal way of life, such as the polar regions and our many deserts.

And if we are to create in the near future housing worthy of and within reach of most people, we must learn from the aerospace industry a fresh and more efficient approach to design — the philosophy of performance as related to weight, size and shape. Or, as Buckminster Fuller has said, "doing more with less." □

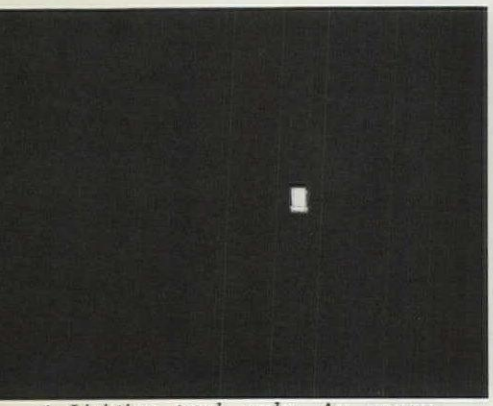
A Study in Lighting



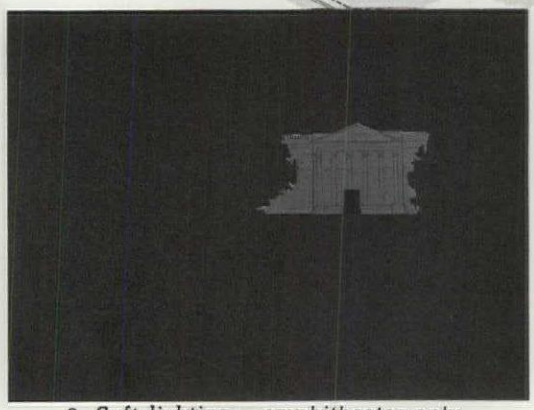
For almost half a century, the Tomb of the Unknowns has disappeared anonymously with dusk's arrival while floodlighted landmarks and memorials on both sides of the Potomac comes to life powerfully. Now, at last, the tomb is also illuminated. Behind the result, which has secured for the tomb its own place as a primary element on Washington's night scene, lies extensive experimentation.



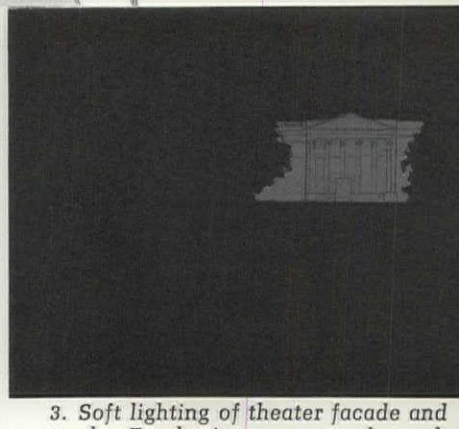
LIGHTING ALTERNATIVES



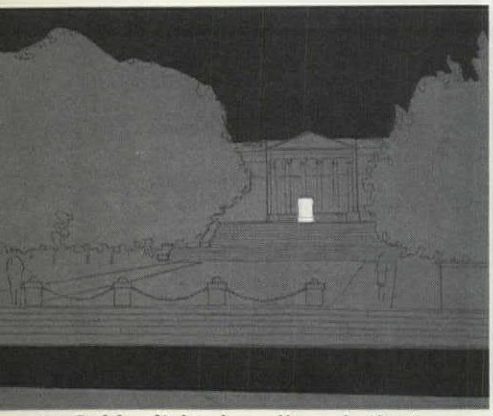
1. Lighting tomb only. An anonymous spot of brightness isolated in a black surround.



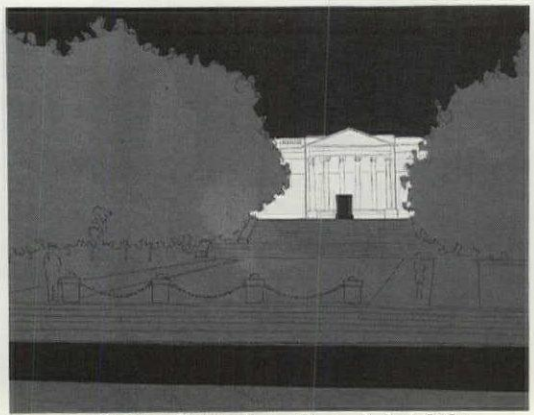
2. Soft lighting — amphitheater only. More emphasis on tomb area, but tomb lost against background.



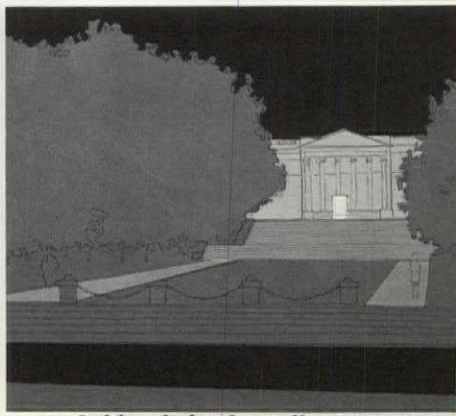
3. Soft lighting of theater facade and tomb. Emphasis on general tomb area, but tomb anonymous.



7. Softly lighted mall and theater facade; brightly lighted tomb. Emphasis on setting for tomb. Tomb important but detached.



8. Softly lighted mall and brightly lighted theater facade; tomb unlighted. Theater facade dominates. Tomb de-emphasized.



9. Softly lighted mall, increasing brightness toward tomb. Larger total composition with greater identity. Tomb is focal point.

BY SYLVAN R. SHEMITZ

The lighting techniques used for the Tomb of the Unknowns at Arlington National Cemetery is a first for a major Washington monument: It is done in color.

The mention of colored illumination immediately brings to most people's mind the glaring hues of downtown. Next, the question arises: Why use color for such a serene memorial?

Color adds richness and depth to the tomb and its environment, much as varying shades add depth to an artist's canvas. The warm and cool shades of blue used to illuminate the tomb and its immediate environ are applied so subtly, however, that they are barely discernible. But they do fulfill their purpose: to give dimension to shadows, warmth to accents and to recede the background elements.

The author: Mr. Shemitz is head of the lighting consultation and design firm of Sylvan R. Shemitz & Associates with offices in West Haven, Connecticut.

The tomb itself is small, but its setting—on the central promontory of the cemetery—has great importance in that it can be seen from a large portion of Washington, including the Capitol and the Jefferson Memorial. It is visible also from cars crossing the Twin Bridges or driving along the George Washington Memorial Parkway.

We found, therefore, that it was essential to light the tomb's backdrop—the Memorial Amphitheater —as well as the wide steps in the foreground leading to the podia. Thus a larger total composition was established, giving the site greater identity and easier recognition from afar and from the air.

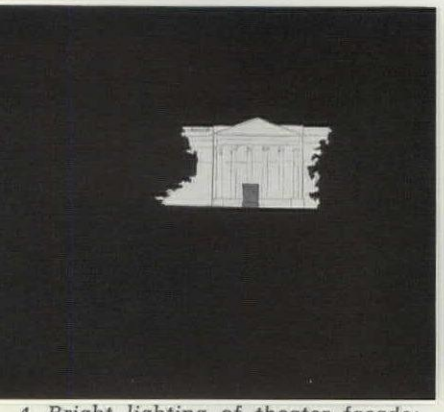
The tomb, of course, is the focal point of the composition and is accented in white. The stairs below it are washed in diffused light; the amphitheater facade is brighter than the stairs, but not so much as to detract from the tomb.

Snow will change the reflectance of the composition and the effect of the lights, but an automatic control will balance the entire system to maintain the desired effect.

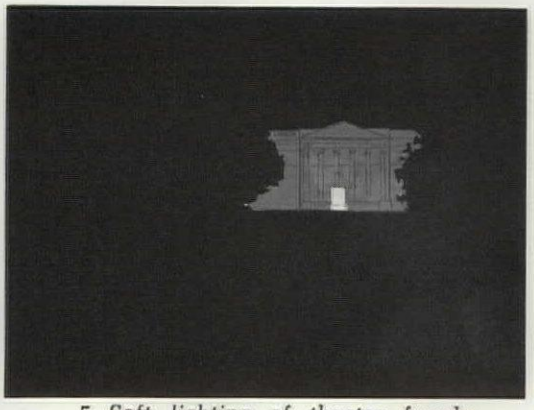
All the lighting equipment is concealed in trees—barely noticeable in the wintertime, completely hidden when the trees are in leaf. The fixtures are especially designed to resist wear and tear of the weather and are mounted on special devices invented for this project to allow unimpaired tree growth. All lamps are incandescent and controlled by dimmers; many have pale color filters.

The lighting system is a gift to the nation from the American Legion in commemoration of its golden anniversary last March. It was accepted by President Nixon, who turned on the system's switch by remote control. The tomb is now lighted every night. With the $100,000-gift, the Legion provided an additional $25,000 for maintenance, which is taken care of by the US Army.

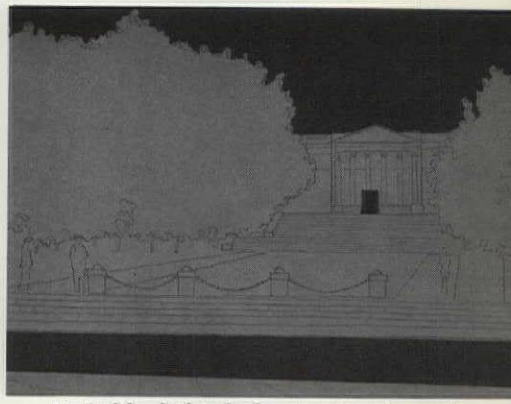
Plans for the expansion of Arlington National Cemetery, prepared by Keyes, Lethbridge & Condon in collaboration with landscape architects Sasaki, Dawson & DeMay, include underground parking and a visitors' center below the Memorial Gateway Plaza; an administrative building and a new chapel. The latter will be a reflecting pool and on an axis with the Tomb of the Unknowns. □



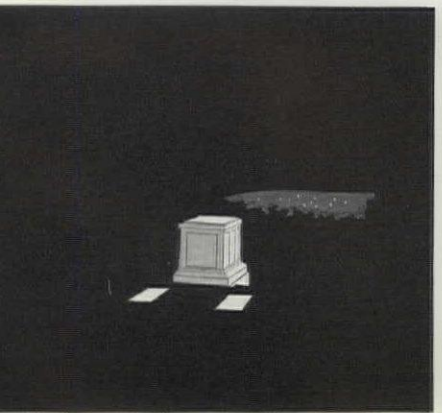
4. Bright lighting of theater facade; soft lighting of tomb. Emphasis on theater, which floats in space. Tomb anonymous.



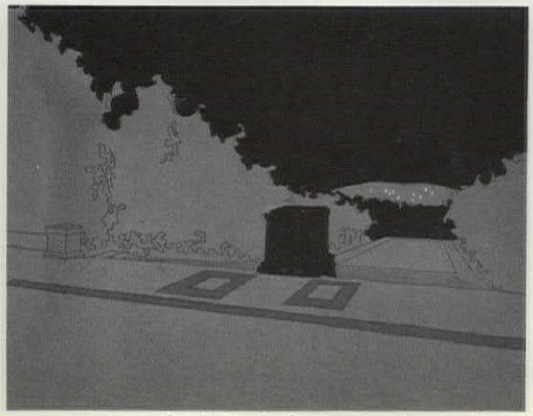
5. Soft lighting of theater facade; brightly lighted tomb. Emphasis on tomb; theater floats in space.



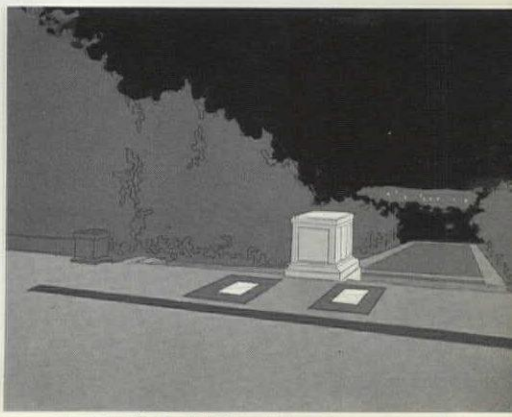
6. Softly lighted theater facade and tree-lined mall; tomb unlighted. Emphasis on setting for tomb. Tomb anonymous.



10. Viewed from the theater. Tomb brightly lighted; surround in darkness. Tomb isolated element — dramatic, mystical and detached.

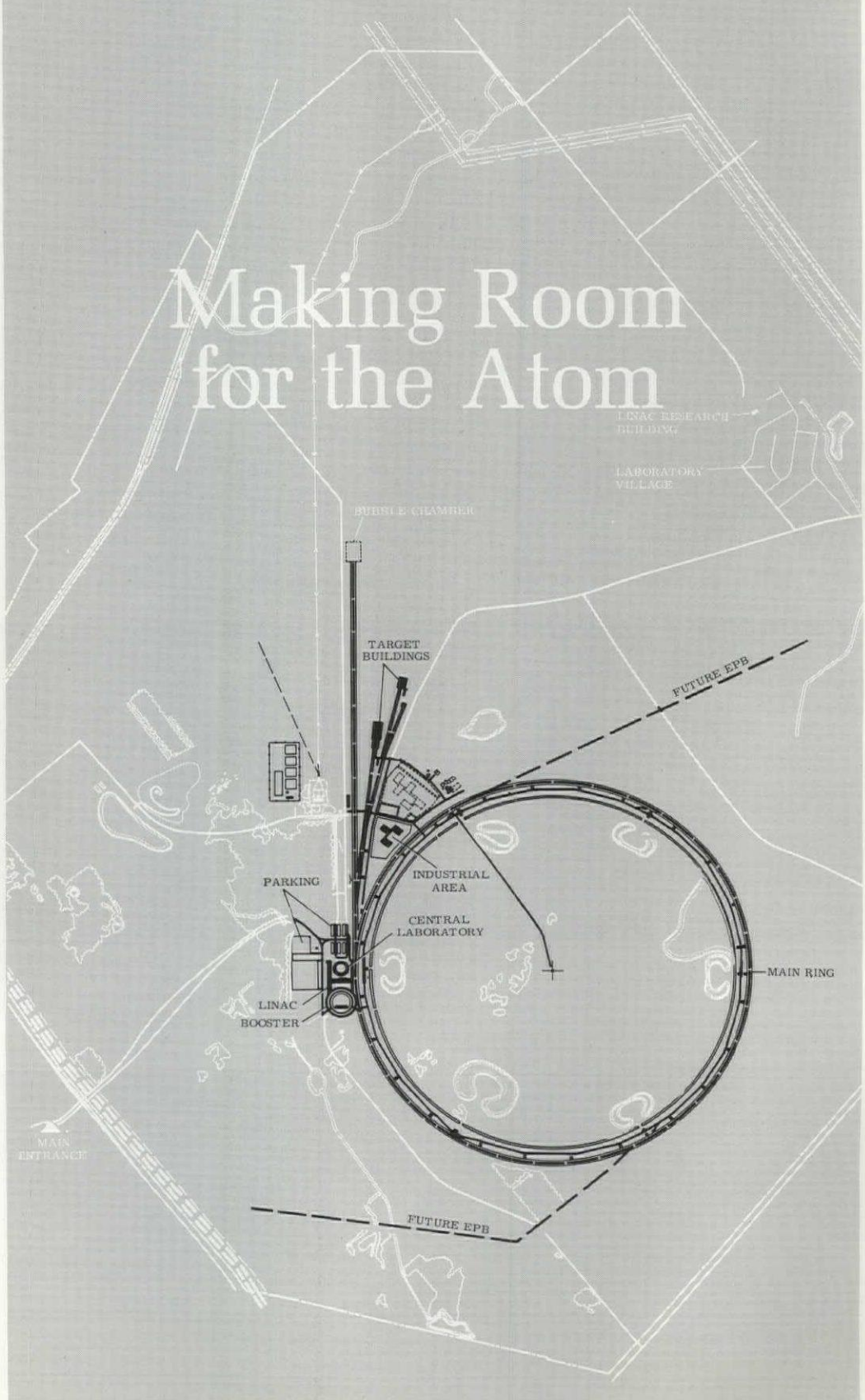


11. Tomb left dark and surround softly lighted. Tomb lost in a park-like setting. Washington on horizon dominates view.



12. Tomb brightly lighted; surround softly lighted. Nine and 12 are the same and most desirable, hence used for the project.

Making Room for the Atom



Young people call the design for the National Accelerator Laboratory relevant architecture. Here's a project with meaning: a synchrotron for research in subnuclear particles, a product of the best of the 20th century, conceived to discover new knowledge about the most basic constituents of matter known. A joint venture of a 20th century magnitude has been chosen to design and construct the future-oriented facility.

The atom stands for peace and cooperation at the National Accelerator Laboratory (NAL) now under construction in Batavia, Illinois. The plant's 200-billion electron volt (BEV) atom smasher — more formally called synchrotron — will be the largest research plant ever built for peaceful purposes, splitting atoms into subnuclear particles at a never before used energy range.

The vast undertaking is based on cooperation:

- Between scientists from 47 United States and 1 Canadian universities, incorporated into the Universities Research Association (URA) under contract with the US Atomic Energy Commission (AEC) to help with the design of the 200 BEV and connected facilities.
- Between scientists — notably Drs. Robert R. Wilson, NAL director; Edwin L. Goldwasser, NAL deputy director; Norman F. Ramsey, URA president — and designers.
- Between architects, engineers and construction managers, namely, the joint venture of DUSAF, composed of Daniel, Mann, Johnson & Mendenhall, architects and engineers, Los Angeles; the Office of Max O. Urbahn, architects, New York; Seelye Stevenson Value & Knecht, Inc., consultants and engineers, New York; and the George A. Fuller Company, building constructors, Dallas.
- Between NAL staff, local unions, industry and the poverty-stricken in the Chicago area.
- Between scientists and between students from all parts of the globe who will converge on NAL to probe further into the world of the atom.

DUSAF was established by the four companies when they were selected by NAL from among seven other joint ventures to undertake preliminary budgetary studies for the 200-BEV facility. Twos and threes of their group had worked together previously and thus knew each others' aspects; all four joined for the first time for the specific purpose of designing and constructing the NAL laboratory.

The DUSAF members came into the undertaking with strong credentials: Among buildings to their credit were the Atlas Missile Complexes (DMJ&M); the Vehicle Assembly Building, Cape Kennedy (Urbahn and SSV&K in a joint venture); and the South Mall, Albany, New York (construction management, Fuller).

In other words, they were all experienced in negotiating with the federal government and used to the stop and go funding to which government construction so often is subject.

When the formal contract to manage the design and construction of the laboratory's conventional buildings was signed in November 1967, DUSAF formed a steering committee consisting of Irvan F. Mendenhall, president of DMJ&M; Max O. Urbahn, FAIA, head of his own firm; A. Wilson Knecht, president of SSV&K; and Cloyce K. Box, chairman of the board of Fuller.

Now with a staff of 170 and headquartered in Hinsdale, Illinois, DUSAF has as project director William D. Alexander, executive vice president of SSV&K, who sees to it that the various members supply the specialized skills offered at the time the venture was formed.

Resident-project manager E. Parke Rohrer integrates the personnel from the four firms and the local employees (of which there are 130) into a coordinated organization, as were it one single company. Persons assigned to DUSAF from member firms lose home office identification.

The joint venture is in full and total charge; no single firm has any portion of the responsibility assigned to it. Herein lies the key to steering clear of conflict between or overlapping of the four firms, providing, as it does, one single point of contact for the client.

DUSAF, on its part, also has one single point of contact with the client: Dr. Wilson. A scientist with practical sense, he is prime mover of the undertaking for the NAL. During what he termed Architecture Month — a planning session that actually extended into six weeks — Dr. Wilson and his staff worked hand in glove with a team of six isolated DUSAF designers, headed by chief architect Thomas E. Downs, to hammer out the plan for the functional core of the project.

With New Knowledge in Sight

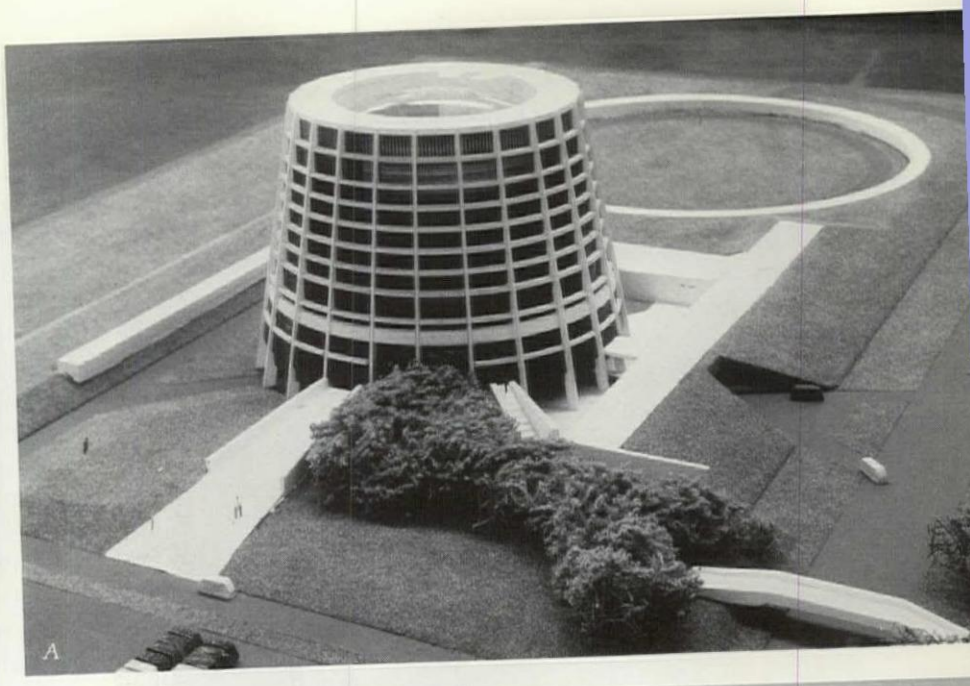
What will take place in the 200-BEV synchrotron, in the simplest possible terms, is this: Protons are generated in an ion source and accelerated to an energy of 750 kilo electron volts in a Cockroft-Walton preinjector. From there, they pass into a linear accelerator (Linac) and pick up 200 million electron volts, then shoot into a booster ring to attain 8 billion electron volts. This booster ring, incidentally, will be almost as large as any accelerator now in operation. From it, successive beam pulses are flashed into the main synchrotron and stored in orbits around it. When the ring is completely filled, the protons are accelerated full force, which is one cycle every two seconds around the 4-mile ring.

About 1,000 magnets placed around the ring guide the beam and confine the protons within

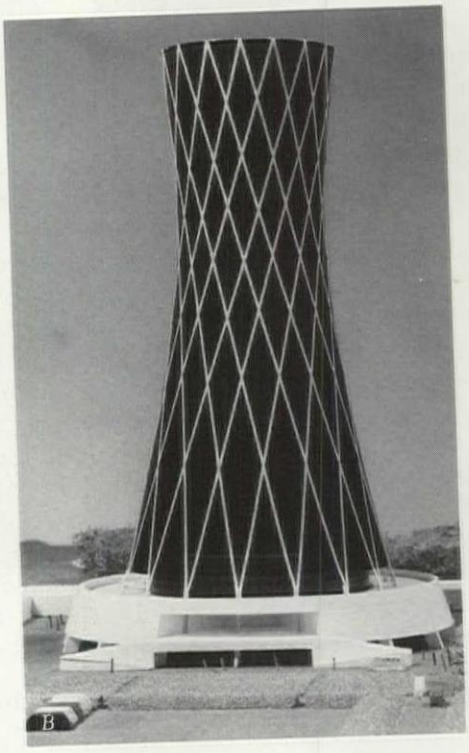
VARIATIONS ON A THEME

The basic philosophy behind all four schemes for the NAL Central Laboratory building is the same: to invite intercommunication between a 2,000-man staff and to keep the human scale in a project of this size. The solutions vary widely.

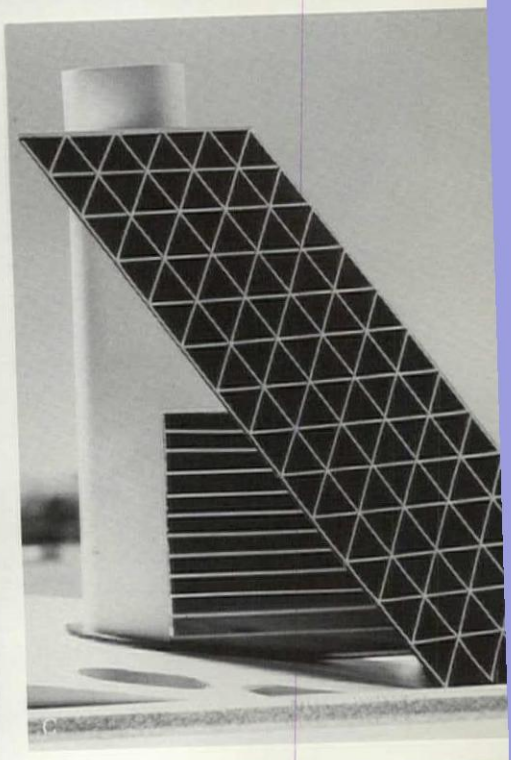
Scheme A, a "donut" structure with a covered center space, was NAL's choice and is shown as presented initially. The large trees on the site are extended directly to the building, landscaping is continued into the central court, allowing pedestrian flow from entrance to natural landscape without traversing large areas of paving or cars. The scheme is estimated at $27.76 per square foot—lowest of the four.


A

Scheme B, a hyperbolic paraboloid tower of precast concrete 400 feet high, rests on a base containing service rooms on the ground floor, public lobby, auditorium, cafeteria, etc., on the second. The tower has 24 column-free levels for offices, library and light duty laboratories. Estimated cost per square foot is $30.57.

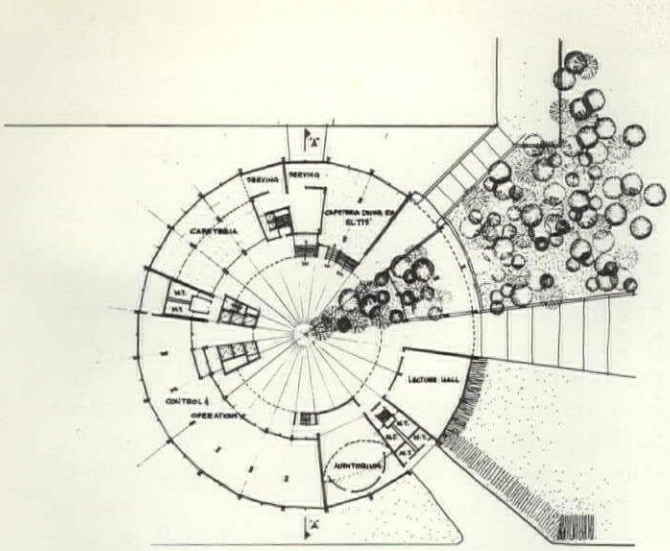

B

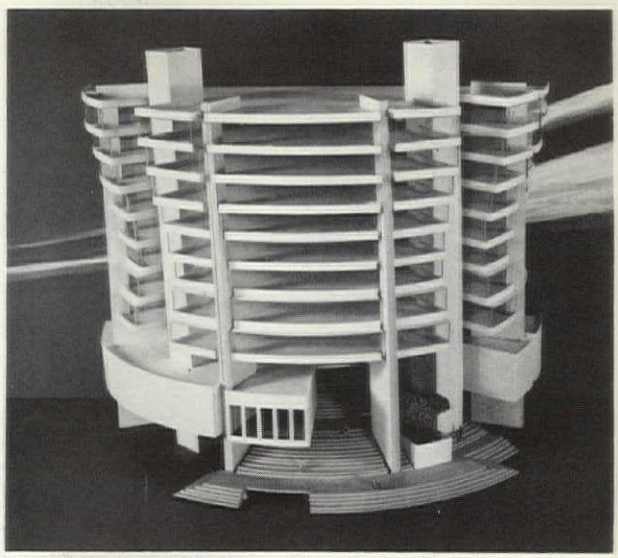
Scheme C, the first one developed, is a sloping prism generating from an equilateral tetrahedron. The tower is intersected by vertical circulation and service shaft with bridge floors interconnecting the triangular, column-free floors of the various levels. A secondary core supplies public floors and lower tower floors with service elevators and mechanical shafts. Estimated cost is $32.73 per square foot.


C

Scheme D is consciously developed to separate the man-made and natural environments. The main entrance road is a bridge crossing over two main parking areas and the Linac building, leading directly to the entrance level. The inverted pyramid tower is supported on four legs containing exit stairs. The floors are hollow squares. At the center of the ground level is the control room, symbolizing the "center" of the machine. Estimated cost is $30.25 per square foot.


D





Entrance level plan of the winning scheme and a study model of modified version of the initial concept.

their vacuum chamber, which is no more than a few inches wide. The exit zone has a stretch of 170 magnet-free feet. On the final orbit, magnets are turned on in this zone to flick the beam out to an experimental area in the target buildings. There, it impinges on a concrete wall backed up by soil. And that's it. There will be nothing to show that can be taken away in wheelbarrows. But this is where the scientists enter (and where, it seems, ordinary people get lost). Twelve or more experiments can go on simultaneously while others are being set up.

The extracted proton beam, the physicists say, is one of the synchrotron's most important features. While external beams have been developed at other accelerators after operation has begun, this is the first time they are planned from the beginning. With them, particles will be produced at very small angles to a target, and it is at this very small angle the useful secondary particles can be found.

With Stress on Easy Communication

The site selected by AEC for the laboratory from among the 200 suggested is no more than 30 miles from Chicago O'Hare International Airport, an important consideration in the choice. It is readily accessible not only to scientists from this country but from all parts of the world, and to a number of midwestern colleges and universities with strong graduate and undergraduate programs in the physical sciences. Twenty miles away is Argonne National Laboratory.

Other advantages of the site is that it is nearly level, with bedrock from 50 to 125 feet below the surface; there are no cuts that require fill. Power (energy enough for a city of 60,000 will be required) is readily available; so is water. Lack of seismic problems eliminates the need for special construction features.

And the Chicago area has, of course, the commercial machine tool, electronic and other types of supporting facilities needed for accelerator construction and operation.

Another important consideration in selection of the Batavia site was the general climate of nondiscrimination in labor unions, business and industry in the area. Underway even before construction started were pre-apprentice and apprentice training programs conducted by DUSAF under the Equal Employment Opportunity program. Men from hard-up minority groups were bussed to experimental construction sites at Argonne and Illinois Institute of Technology and taught how to operate bulldozers and other sophisticated equipment.

The program has got off to such a good start that when Dr. Wilson was about to underwrite the loan for a group who needed a car for a car pool, the local union gallantly suggested that it do it, instead.

For the Chicago area, NAL will be a definite asset not only during construction but also when completed, bringing in as it will more than 2,000 scientists, engineers, technicians and other personnel. Yearly operating cost is set at $60 million.

A gift from the State of Illinois, the 6,800-acre property held 40 odd farms — now evacuated — and the City of Weston, a 100-house settlement now taken over by Dr. Wilson and the presently 400-man NAL contingent. Soon, the DUSAF office will move into a converted barn nearby. This proximity will save hours of travel time and make communication easier.

Prior to Architecture Month, the DUSAF architectural section had made an overall master plan of the facility as well as the preliminary programming for the Central Laboratory. The NAL/DUSAF session resulted in an initial design concept for this main laboratory, which in essence

represented the conclusions of the study and helped to crystallize the philosophy of the entire project. To maintain human scale between the unusually large man-made elements was the foremost concern of the designers; therefore, a careful blending of existing woods and plants with the new buildings, roads, canals and berms was of utmost importance.

From this initial concept emerged four schemes, all widely different in architectural expression but all with the same basic principle of circulation. A central arrival point, Dr. Wilson had requested, should be developed to encourage chance meetings of staff members who otherwise might easily become isolated and lose touch with their colleagues.

The very size of the Central Laboratory building (420,000 square feet) spoke against its future expansion; design with such a possibility was therefore ruled out. The site, however, will lend itself to inclusion of an even larger main ring with additional facilities when the time comes.

The construction of the project, expected to be finished by 1974, is estimated at $250 million; fully furnished the cost of the plant will total $350 million. There will be the 12-story Central Laboratory, a Linac building, one booster and one main synchrotron, a central utility plant, an experimental area, a Linac research building, heavy shops/laboratories, warehouses, etc., in all, nearly 2 million square feet of floor space. DUSAF has charge of all building construction, including the main ring enclosure. New water surface — 150 acres of it — will be brought in for use as a coolant.

With People in Mind

The four schemes were presented to NAL by DUSAF in May 1968. Dr. Wilson and his staff were unanimous in their selection of a truncated, radially framed "donut" structure with a central space extending from the main floor level to the roof: a geodesic-dome skylight. Balconies around the central space add to the intercommunication possibilities so important to the 2,000 persons who will work at the laboratory. Another 300 will visit it daily.

Other factors important in the scientists' choice of design was the flexibility of the layout; climatic and geographic adaptation and continuity of nature inside and outside, brought about by extending the trees on the site directly to the building and into the central court. Also, the price was right; at $27.76 per square foot it was the lowest of the four schemes.

The Central Laboratory will stand out on the rolling fields, a strong, rugged element between its low neighbors. Its ground and service levels hold kitchen, light duty shops, control room, etc. The entrance floor contains auditorium, lecture hall and cafeterias, and a mezzanine with business offices, medical departments and lounges — again emphasizing intercommunication. The nine tower-floors are for light duty laboratories, library and offices.

The form of the main ring will be outlined in the landscape by an acceleration system of radio frequency stations, which will provide the required 7 million volts per revolution of the beam. In these relatively bleak surroundings, the designers and Dr. Wilson are wary of the all too common drabness of government installations and so will give life to the stations with varying gay colors. The DUSAF people like to think of them as beads on a necklace.

Moreover, the stations' numbers will be displayed on handsome signs; glass walls will reveal a full view of their complex, wondrous equipment. The fascination of *all* equipment, in fact, will be shown wherever possible, letting the passerby feast his eyes on intricate machinery. Only the more than 10-foot high Cockroft-Walton preinjector in the Linac building will have to be covered because of radiation.

Radiation presents problems on three scores: shielding, residual radioactivity and radiation damage. Dr. Wilson, who thinks that ignorance is behind the fear of radiation, emphasizes that any high-power utility pole — exposed for anyone to climb — is far more dangerous than any radiation the public could get near — which is none. After all, nuclear power is the only form of power under federal pollution regulations and other control.

Fear of radiation made some of the future laboratory's neighbors protest against having the Fox River water returned after use as a coolant, as initially planned. Actually, the water would have been 100 percent decontaminated during a 24-hour period and restored to normal temperature before being returned. Instead, DUSAF's plan is to draw a reservoir from the river during flood periods, then to reuse this water. Refill needed as time goes by, project manager Rohrer points out, is less than what a community on 6,800 acres would ordinarily use.

The main ring is the major radiation source and therefore will be embedded 25 feet below ground and be shielded with concrete and barite aggregate in addition to the regular cladding around the beam enclosure. The Linac building and the booster ring will be partly covered by soil from excavation.

The rest of this soil Dr. Wilson hopes to use for a 200 or so feet high hill for the staff's ski-bugs. A lover of nature, he eventually plans to turn the entire NAL site into a peaceful spot for the public — an arboretum. BESS BALCHEN

For the Pleasure of Promenaders

The more you have to do the more you get done, or so the saying goes. It could be added that the less you have of something, the more you make of it. Big cities as a rule have precious few areas that the promenader can call his own. New York is one such city, but there, as in many others, it is possible to make more, much more, of the limited spaces at hand.

BY SIMON BREINES, FAIA

With few exceptions most sidewalks in midtown New York — and in most of our other large cities, for that matter — are too narrow for the pedestrian's safety and comfort.

When similar conditions confront the motorized vehicle, the auto clubs and traffic commissions do something about it. And one of the things they do is to pare a few more feet off the sidewalks. Take Park Avenue: It measures 120 feet from building line to building line and is one of our widest streets. Yet its sidewalks are now only about 15 feet, which comes to two average basketball players laid end to end.

The author: Mr. Breines is partner in the firm of Pomerance & Breines with offices in New York City.

While we wait for better conditions for the pedestrian which tomorrow may bring, can we do anything to help him today?

To begin with, we can make our present sidewalks more pleasant by planting more trees. In New York, thanks to generous citizens and a sympathetic Parks Department, thousands of sidewalk trees have been set out recently. Unfortunately, the mortality is high. Sidewalks are too narrow and are being further reduced in favor of the motorists so that trees are usually planted 3 feet and less from the curb. This worked in horse-and-buggy days, but today delivery trucks and parking cars are death on the trees. Moreover, young trees are frequently dam-

aged by snow-melting salts and by man and dog because of inadequate protection around their trunks and on the ground.

Wherever possible, trees should be installed at least 5 feet from the curb, with sturdy metal guards and with provision for permanent maintenance.

Small open areas in the cores of our cities should be encouraged; there never are enough little parks, plazas and squares. When Paley Park, a diminutive oasis of about 5,000 square feet, was opened on East 53rd Street between Fifth and Madison Avenues, it was enthusiastically hailed and just as enthusiastically taken over by the public. Every new postage-stamp-size plaza which results from the city's new zoning amendment immediately becomes a magnet for old and young. Small as these open spaces may be, they provide the opportunity to plant trees. When they are adjacent, sidewalk and plaza trees can be planted in groups, "bosquets," with benches and sunbreaks.

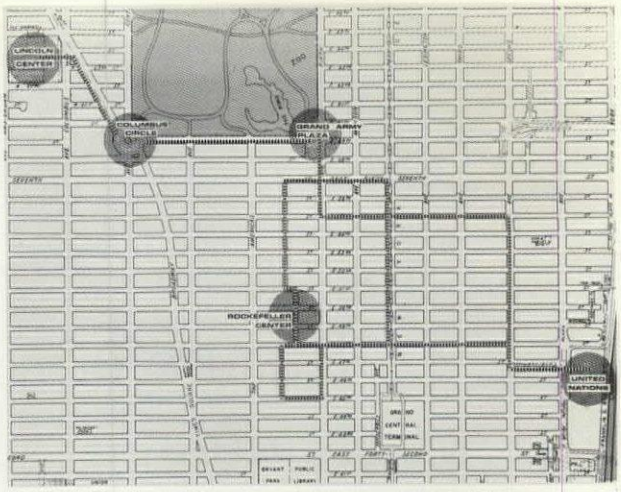
The incidence of public plazas should not depend on the whim of private builders. The city should create such open places wherever buses stop and where there is a subway kiosk. And every opportunity should be seized to create open and sunken plazas which would connect and brighten arcades below ground.

Lighting fixtures designed to human scale would also improve the pedestrian's life in the city. The high posts which illuminate broad areas may be satisfactory for highways, but they impart no serenity or feeling of security to the man on foot. In addition, well designed street furniture and graphics such as mail boxes, fire alarms, planters, benches, traffic signals and signs can revolutionize the character of a sidewalk.

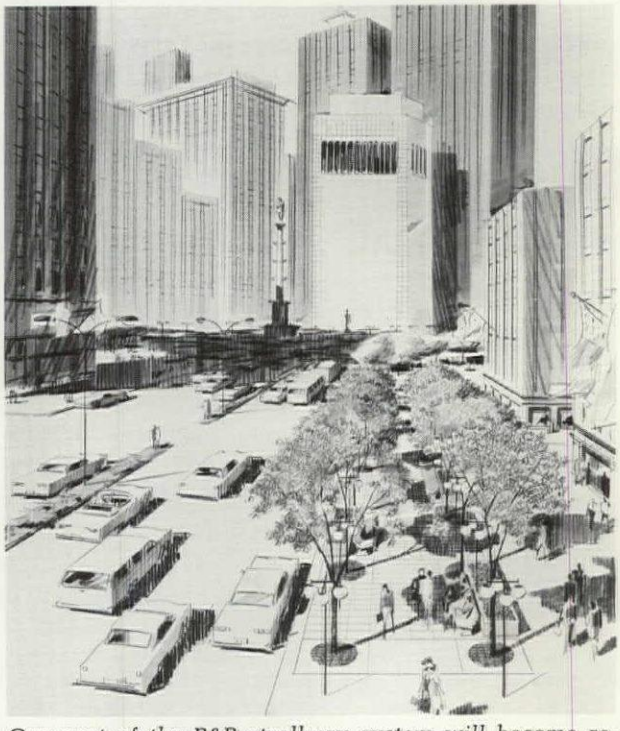
Wider sidewalks can, however, more than anything else improve the lot of the pedestrian. Fortunately, several important streets in New York, for instance Park and Lenox Avenues and Broadway above Columbus Circle, lend themselves to an immediate, simple and dramatic demonstration of how this can be done. Streets in other large cities, surely, offer similar opportunities.

Putting the Park back on Park Avenue

The 20-foot planting bed which now divides the traffic on Park Avenue can hardly be termed a park. True, it is nice to look at from above, but only fleeting glimpses of green can be had from speeding autos. It is also a traffic hazard. The first left-turner can get out of the way but the rest build up and block traffic. Traffic departments prefer the parallel left-turn lanes where cars can wait in safety. Pedestrians must either



A New York strollway system proposed by Pomerance & Breines could be made easy to identify, for instance with something similar to Boston's Freedom Trail which has a strip of red brick inlay running down the middle.



One part of the P&B strollway system will become reality this summer when Broadway's center strip between Columbus Circle and Lincoln Center is moved to the west sidewalk. Cost is $500,000, a private donation.

hurry across to make the traffic light or content themselves with a distant view from the sidewalk.

Suppose that the center mall between 47th and 57th Streets were lifted up and joined to one of the present 15-foot sidewalks. This would then become an ample promenade 35 feet wide and take on a new quality without reducing the traffic capacity of the street.

Instead of just dividing the flow of traffic, the transplanted strip would become a green buffer between the cars and the pedestrians, and it would also be directly accessible and usable. Gay brick and flagstone paving could

be interspersed with the planting beds so that people could get close to the shrubs and flowers and sit down in safety to rest, meet their friends or eat their lunch.

With the "park" on one side of Park Avenue, instead of out in the river of cars, all sorts of new possibilities suggest themselves. Sidewalk exhibitions is one of them. Recently a great pre-Columbian stone head from Mexico was displayed on Seagram Plaza. Perhaps other countries could be encouraged to send appropriate exhibits which would be changed from time to time. This would help attract visitors, especially on week ends or during evenings when Park Avenue is normally unfrequented. Supplementary lighting — on a human scale — would add life to the famous avenue at night.

The widened sidewalk could go on either side but were it on the west side of the avenue, the promenade would naturally relate to Fifth Avenue and could hook up with other strolling ways around Rockefeller Center. It might be asked whether this would have any effects on the unwidened east side. The widened sidewalk would draw more pedestrians into the avenue, to everybody's advantage. The traffic pattern would continue as is.

The basic idea behind the proposal is to increase the pleasures of walking in New York City. By making sidewalks wider and more attractive, pedestrians will be encouraged to do more strolling and shopping. If several such walks are linked together, a pattern of walkways will be established. This will add life to the city and make it more appealing to tourists. Park Avenue is suggested as a pilot demonstration of this walkway system, but it can be applied in any part of the city, Harlem as well as downtown, and certainly in other cities also.

Park Streets

In our automobile-oriented cities sidewalks, no matter how improved, can provide only a few of the connecting links to make a strollway system. Park streets could serve as safe and pleasant connecting walks between places of civic interest.

The park street prohibits through-traffic as well as parking at all times. Emergency and service vehicles would have limited access, off-street facilities would be made available for residents' cars.

The park street would look unlike other streets. Sidewalks and gutters would be removed and replaced by a single level between building lines. The entire area would be replanned for play, strolling and resting. Trees and shrubs would be planted out in the middle where they can thrive. There would be a variety of paving materials and lights and street furniture of appropriate design. Such streets would look like parks. Indeed, they would be parks!

Part-Time Pedestrian Streets

Streets can be closed permanently to traffic only under special circumstances and only after careful weighing of the balance of forces representing foot and wheel. But many streets are not needed for vehicular use 24 hours a day and every day of the week.

The "play street," for example, is one from which through-traffic is temporarily banned

Suggested Park Avenue link in the P&B strollway system shows 20-foot center strip moved to the west sidewalk.

after school hours. Police, fire, sanitation and delivery vehicles are permitted. With the exception of the children's game lines painted on the pavement, play streets look like other streets.

After 6 p.m. and on weekends and holidays many streets downtown and in residential districts could very well be closed to traffic with little or no inconvenience. Besides the wisdom and will, all it takes is a pair of wooden horses at the two ends of the block.

The ease and economy with which a street can be temporarily closed to traffic makes one wonder why the method isn't tried more often to see the effects. If the results were favorable, the complete implementation of the project could proceed. If they were negative, the closing could be rescheduled if desired and little would be lost.

New Yorkers will recall the famous battle to block a roadway through Washington Square Park. The new road was suggested by a developer, supported by Robert Moses and approved by the Planning Commission because, as the commission stated in its report, traffic would otherwise "saturate" the neighboring residential area. Several citizens proposed an experimental closing of the road through the park. Wooden barriers were installed and we watched with bated breath. Nothing happened. The predicted overflow of traffic, simply and sensibly, took alternate routes. The temporary conservation of the park became permanent.

A part-time or full-time pedestrian street should be given some tangible character to identify its new use and mark it as part of a strollway system. This would be in the special color and texture of the paving, as in the well known green line which guides subway riders to the 42nd Street shuttle. It would be in the scale and design of the lights, the graphics and the street furniture, to make the walker immediately aware that he is on the strollway system.

Cross Walks

Improved sidewalks, park streets and part-time pedestrian streets are all proposals for connecting walks based on the existing street system. But walkways can also be created through blocks, between streets and avenues. An example of this is the suggested mall running along and between Fifth Avenue and the Avenue of the Americas (formerly Sixth Avenue) from 42nd Street to Rockefeller Plaza and on to Central Park at 59th Street. This project, conceived some years ago, generated much enthusiasm and was promptly dubbed 5½ Way.

Through its 17-block, one-mile length, 5½ Way traced a sinuous pedestrian path weaving between and through buildings, even under them via arcades. From 43rd to 45th Streets, it was to go through existing buildings at lobby or mezzanine levels. From 45th Street through Rockefeller Center to 48th Street, it was proposed that the interiors of the three blocks be developed with plazas, shops and restaurants which would constitute new links in this chain of walkways. But the gain of open space would come at no cost to the public since, under New York's new zoning, the private builder is given a bonus in the form of extra floor space in return for the plazas.

One small link of 5½ Way — which is still a feasible project — is actually being realized. A branch of City University purchased the building just east of Stern Brothers department store on 42nd Street. The university's architects, knowing of 5½ Way, have opened an arcade through from 42nd to 43rd Street to provide a campus connection to Bryant Park and the New York Public Library. Perhaps this is a first step into the future.

Urban Strollway System

The emphasis on walking and pedestrians might create the impression that an urban strollway system is only for the young and vigorous. Actually, the old and infirm would benefit along with everybody else. The strollways could have ramped curbs for wheelchairs, baby carriages, bicycles and roller skates. Special safety paving, now used on playgrounds, could be tried.

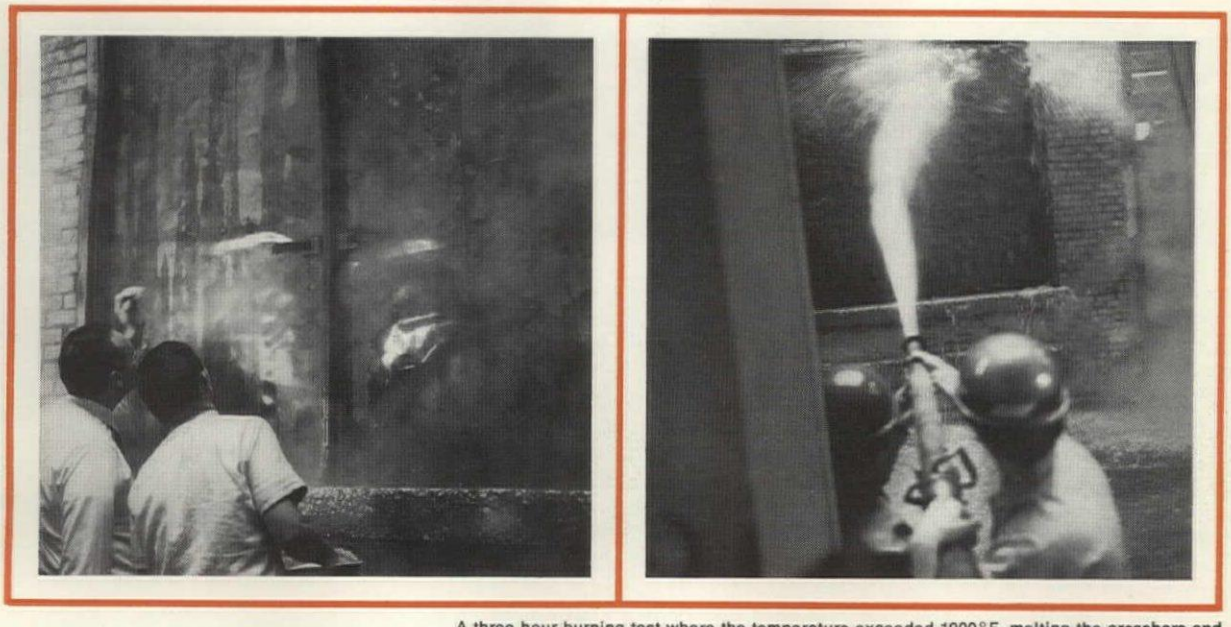
Once a strollway system is established, new buildings and existing ones will surely orient themselves to it in terms of entrance lobbies, plazas, shops and outdoor restaurants. Articulation with subway and underground arcades are logical developments of the concept. Some day it should be possible to add mezzanine connections which would relate the buildings at this higher level, thereby opening the way for a strollway over, and completely separated from, vehicular street traffic. Covered walks, arcades and through-building passages could make parts of the system an all-year facility. The concentrated flow of pedestrians should stimulate shops and other enterprises; the time should come when it will be good business for a hotel, a cinema or a specialty shop to advertise that it is located on the strollway.

Moreover, a strollway which attracts numerous pedestrians at all hours will afford people more security than obtained on many urban streets these days.

By themselves, better walking conditions and more public open spaces will not solve any of the major problems of city living. But once a reasonable balance between footpower and horsepower is restored, a process will have started which can help shape the urban future. □

beauty

is now listed for "A" labeled doors



A three hour burning test where the temperature exceeded 1900°F. melting the crossbars and hinge stile brackets; the latches, strikers, and mullions held the door closed. As a high pressure hose developing 45 psi pounded the door, this hardware remained latched.

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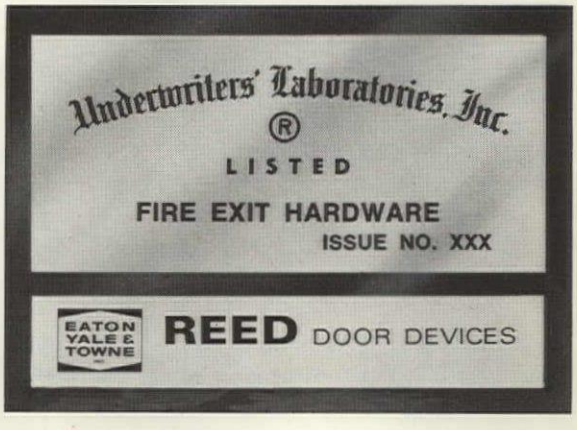

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Tin Elephant Turns White

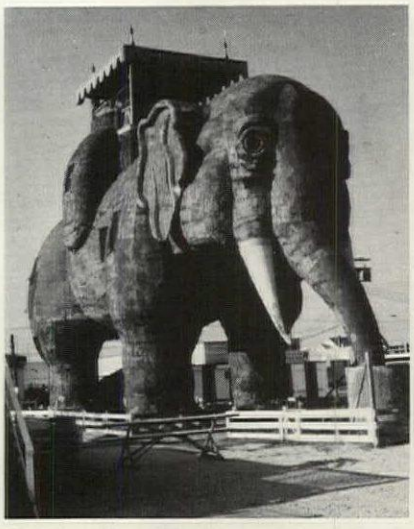
You've heard about an elephant in a parlor, but how about a parlor in an elephant? Paul D. Spreiregen, AIA, has. He even goes one better, telling here about an elephant, although ailing, with 10 rooms in it. He also suggests how it might get back on the trail to prosperity.

Five miles south of Atlantic City, right along the beach, stands one of America's most brilliant architectural follies — a 65-foot-high elephant made of timber and tin.

It is a work of genius and utter whimsy, built almost a century ago. To see it is to fall in love with it on sight, and forever. Alas, its days may be drawing to a close. For decay and beachfront economies are marching around the corner.

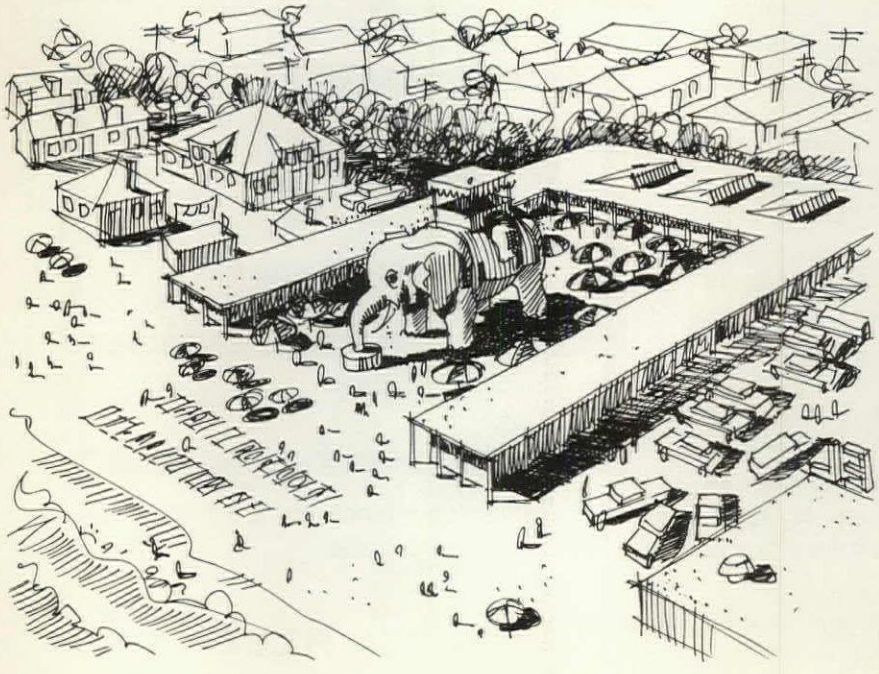
The elephant really has to be seen, but it can be described, at least a little. It was constructed in 1882 by James V. Lafferty as — get this — a hotel of 10 rooms, four of them bedrooms. Entrance is via a stairway through the animal's rear leg. Exit likewise, down the other leg.

The Howdah (that thing on top where you sit) is 16 feet square and 20 feet high. Its floor is 65 feet above the ground. It is still privately owned by John Gertzen, son of the man who bought it in 1895 from Lafferty.



The setting really has to be savored. It is part of that long New Jersey beach that gave summer respite to generations of sweaty New Yorkers and Philadelphians, and still does.

Remember the comic strip "Harold Teen"? This could be the place where he spent his summers, conveying dripping ice cream cones over Saharas of sand. Here's where the squeaky screen door may have been invented or, if not invented, at least brought to its ultimate refinement. Here's where the 2x4-front porch found its finest hour. Here's America. And here, of all places, is a 65-foot elephant.



Mr. Elephant's present difficulties go back just a few years when the town powers-that-be, in the form of Mayor Martin Bloom, decided to tear it down. After a strenuous protest by the elephant's admirers — including lots of kids, incidentally — a reprieve was granted. Gertzen wants to sell, but his price is too high, and the town (Margate City it's called) cannot afford it. Meanwhile, it is rotting away. Here, again, is America.

The elephant's potential future reads loud and clear. Obviously, it should be restored to become a shrine for beachside America. It could be surrounded by a structure, made of 2x4's, of course, housing hot dog stands, ice cream stands, cotton candy stands — and all the rest and lots more.

It could have an Eye-talian restaurant at one end, a kiddy-car center with a wading pool for infants, a beer garden and a place to dance, enhanced with Japanese lanterns. It could have a place to buy balloons and kites, rent beach-chairs and umbrellas, and buy a pail and shovel.

Obviously, it could be used on occasion by local Republicans. Or, if you insist on keeping politics out of it, how about a center for advanced studies for Bob Venturi's students?

Clearly, there ought to be a fund of public money to buy things like this, not only buy them but even make a payment to the city in lieu of tax revenue, if that is warranted. It would not take a lot, but it would do wonders.

After all, architectural follies are a marvelous investment. Americans trot all over the globe to click cameras at them. Is it a dream to hope such harmless hopes? I don't know. I do know that we are about to lose a masterpiece. □

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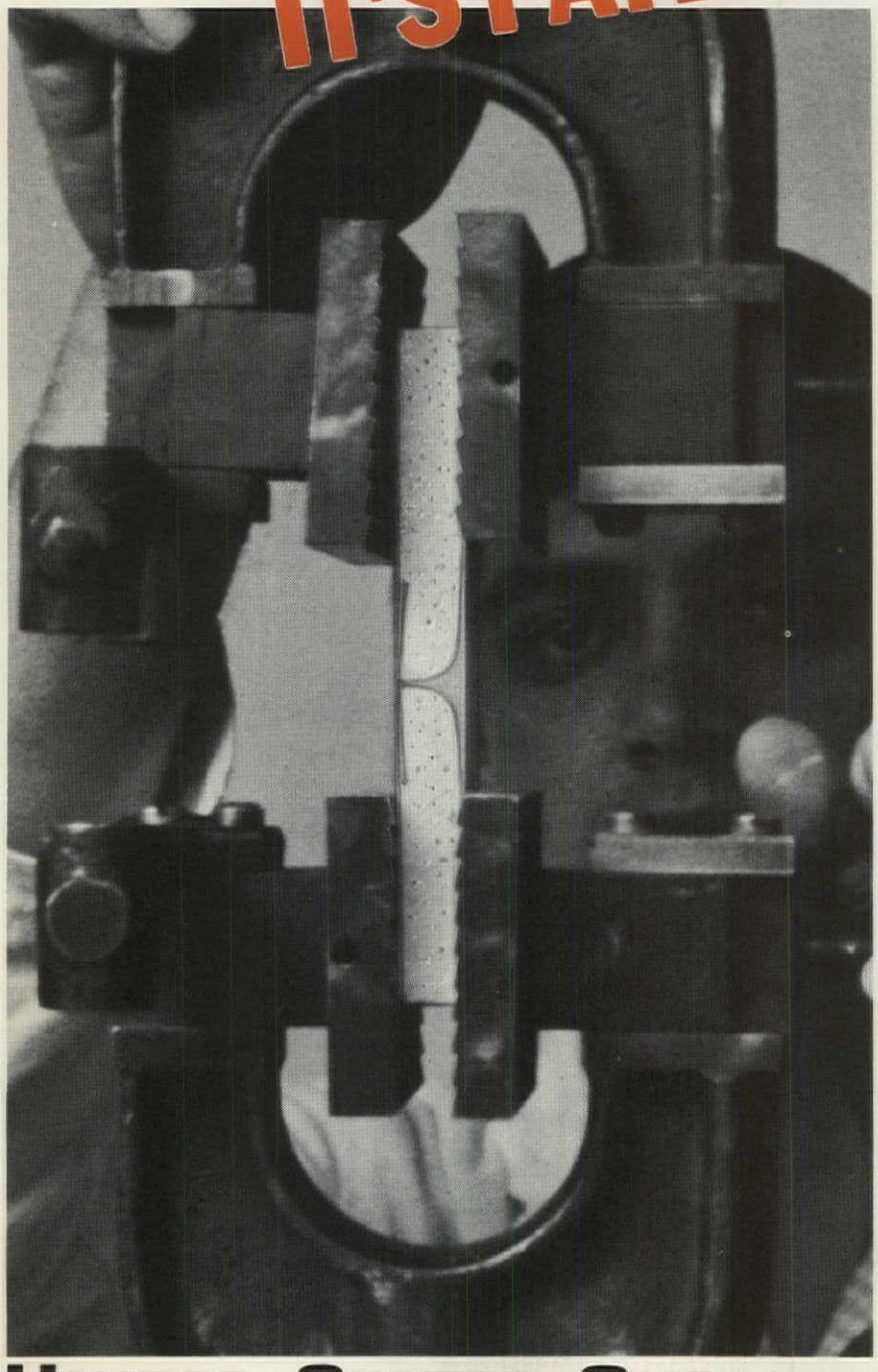

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UNITED STATES GYPSUM

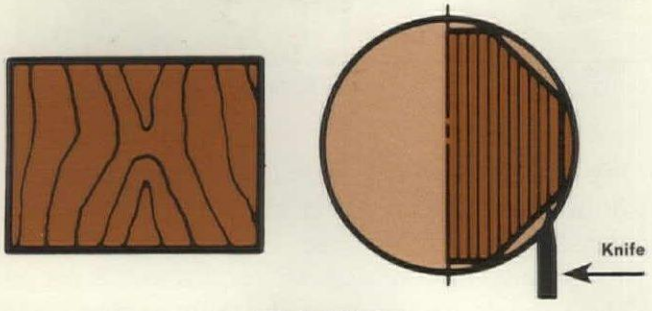
The art and science of cutting and matching veneers.

By John Lentz

Simply defined, veneers are thin sheets of fine woods glued to core stock, such as Novoply® or lumber cores. This definition, however, leaves a lot unsaid. For cutting and matching veneers for architectural paneling and doors—as done by the skilled woodworkers of U.S. Plywood—involves many careful and complicated procedures.

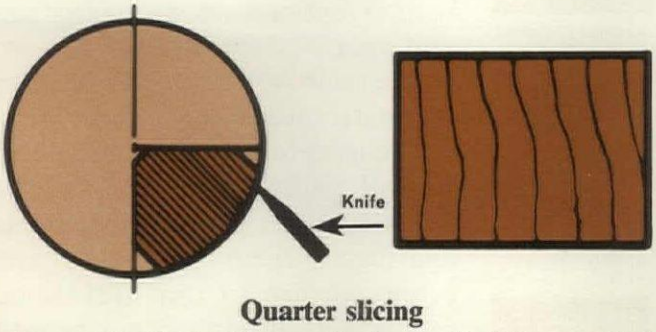
Veneer cutting

Our veneers are cut from sections of choice logs—called flitches—by one of several methods, depending on the wood species as well as the veneer figure or growth pattern produced by a particular log. Most architectural veneers, however, are either plain, quarter or rotary sliced, as shown here.



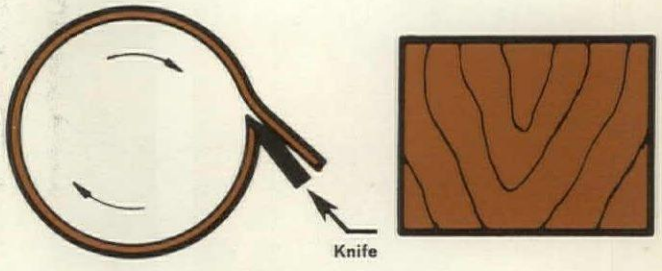
Plain slicing

In plain or flat slicing, the half log or flitch is mounted with the heart side flat against the guide plate of the slicer. Slicing done parallel to a line through the center of the log produces a cathedral figure.



Quarter slicing

In quarter slicing, the quarter log or flitch is mounted on the guide plate so that the log's growth rings strike the knife at approximately right angles. Result: a series of stripes which are straight in some woods and varied in others.



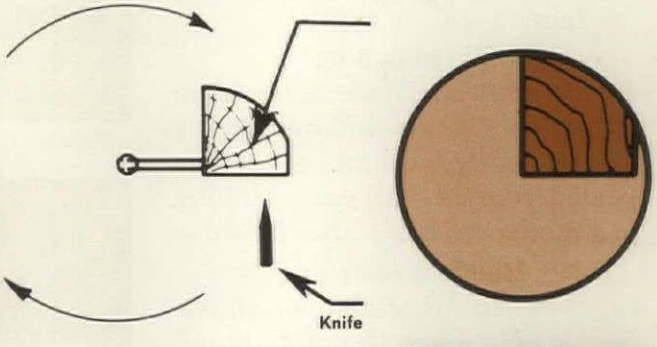
Rotary slicing

In rotary slicing, the log is mounted centrally in the lathe and turned against a razor sharp blade, like unwinding a roll of paper. Since this cut follows the log's annular growth rings, a bold variegated grain marking results.

As the plain and quarter sliced veneers fall from the knife, they are attached in the *exact* sequence in which they were cut. (Rotary cuts, of course, cannot be sequence matched.) All logs or flitches are identified by number. After laminating, each panel is identified by both its sequence and flitch number.

Other cutting methods

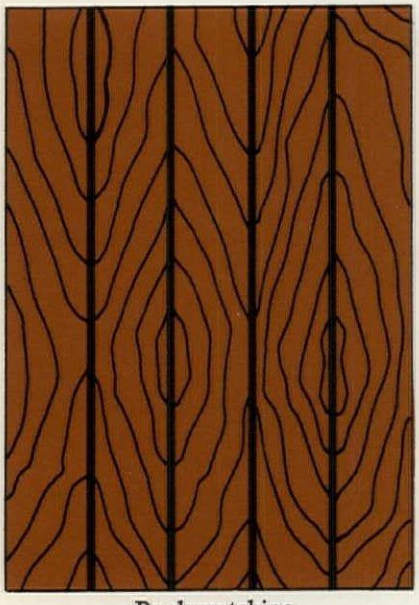
In addition to these methods of slicing, U.S. Plywood produces veneers by other types of cutting to yield a wide range of veneer configurations. Rift cutting, for example, produces a distinctive pattern.



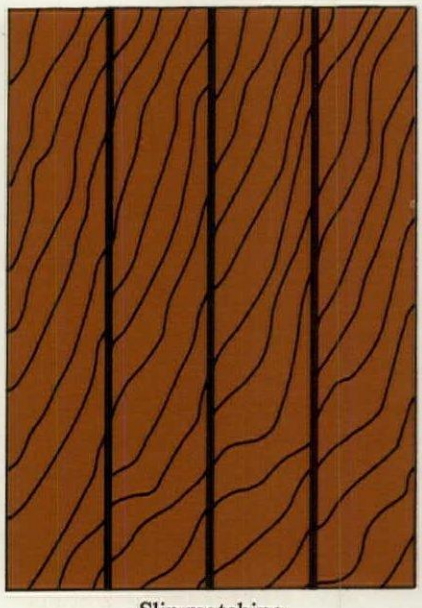
Rift cutting

This method of cutting produces Comb Grain Oak veneers. The medullary rays of oak radiate from the center of the log like the spokes of a wheel. By cutting perpendicularly to these rays, a comb effect results.

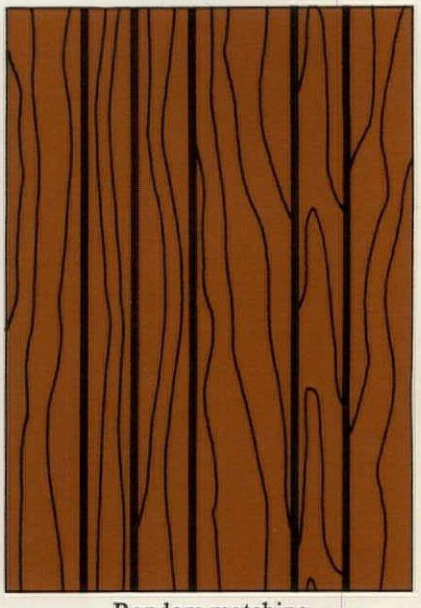
Veneer matching by U.S. Plywood



Book matching



Slip matching



Random matching

Three matching patterns are most often used: Book, Slip and Random matching.

Book matching

In Book matching, every other sheet of veneer is turned over, like the leaves of a book. Thus, balance at the veneer joint is produced as shown above.

Slip matching

In Slip matching, veneer sheets are joined side by side, without turning. Consequently, the flitch pattern is repeated from sheet to sheet, resulting in a more even color after finishing.

Random matching

In so-called "Random mismatching," veneer sheets are carefully and deliberately mismatched for the most effective appearance. Veneers from several different logs are often used for one set of panels.

U.S. Plywood has one of the world's largest and most varied inventories of veneers for use in creating our Weldwood® architectural paneling and doors. Samples of veneer matching are shown in the sketches on this page.

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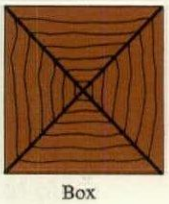
Diamond

Reverse Diamond

"V"

Herringbone



Box

Reverse box

We also offer a wide variety of panel and door finishes. For example, our dry film finishes—applied by roll lamination—will not check or craze. These films are also noted for their exceptional resistance to stains and wear.

Let our Architects Service Representative work with you in selecting veneers for paneling and doors. He will gladly show you sample veneers, analyze your requirements and suggest the most practical and economic use of our Weldwood products. Call him at your nearest U.S. Plywood Branch Office.

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Heritage That Speaks of Harmony

In the islands, too, there are efforts afoot to save old landmarks. Rossie M. Frost, AIA, and her husband H. Lockwood Frost, AIA, Honolulu, both devote a great deal of time to preservation work, some of which Mrs. Frost tells about here.

Yankee spunk and perseverance happily mixed with Hawaiian skill and influence is what early missionary buildings in the islands speak of. They tell an almost incredible story of what the dedicated young settlers, arriving from New England in the beginning of the 1800s and, for the most part, inexperienced with construction methods, were able to accomplish.

Ship captains would give them a hand now and then while anchored for supplies and so, for a price, would carpenters and other craftsmen turned settlers from salts. Some good advice may have been obtained from construction handbooks brought from home.

But mainly the missionaries had to rely on their own ingenuity and on help from the natives, who had developed a considerable building skill of their own before the event of the white man.

The huge grass houses of Hawaiian chiefs and royalty were a far cry from the grass shacks most people connect with the islands. Indeed, the natives used fitted joints and knew the stress and strains to which lumber can be subjected. The stonework in their elaborate heiaus and fortifications reveal an inherent engineering know-how—a know-how they seemed to have shared willingly with the missionaries.

A few building materials, such as stone and coral, were readily available. Lumber was scarce, though hardwood such as ohia and koa was dragged by many hands from the forests miles away high up in the mountains.

Today, some of these combined-effort buildings still remaining need funds for maintenance and repair. The sites of some of them are viewed hungrily by developers who would like them for skyscrapers. Luckily, there are groups in Hawaii which fight for the protection of this modest but historic heritage.

One such group is the Hawaiian Mission Children's Society whose members are descendants of the early missionaries. They have a very real interest in preserving some of the buildings erected by their forebears.

In the case of one of these structures, the Old Stone Printing House in the Mission Buildings Museum which the society owns and operates, we were called on for help in planning its restoration.

This old printing house dates from 1823 and was the first to be built west of the Rockies. It roofed a used Ramage printing press brought to the Sandwich Islands aboard the Thaddeus which also carried the pioneer group of missionaries. On it were printed the first textbooks, hymnals and Bibles in the Hawaiian language.

The original stone building, which replaced a thatched cottage where the initial printing was done in 1822, was 28x17 feet, costing the mission around $300 and erected with extensive native help.

The walls are of coral dug from almost 8 feet below the ground, found when they were digging one of the wells. It was cut in rough blocks and laid up with a mud-and-grass mortar. Not a very good mortar, to be sure, but it filled the holes and kept the wind out; and in spite of rain and storms through nearly a century and a half, some of it is still there.

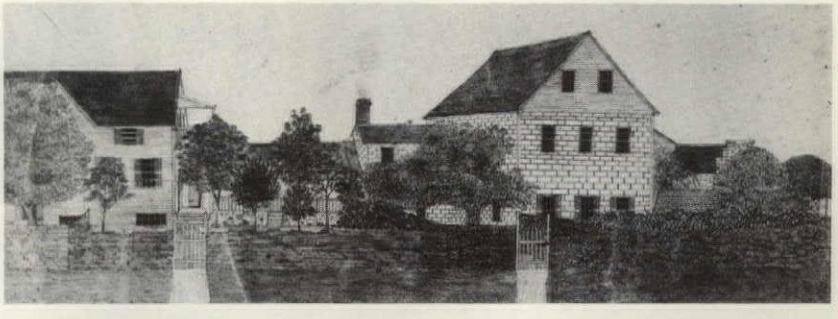
The good ship Ruby was at the time aground on a reef and abandoned. The missionaries bought her hulk to use for a roof on their printing house and for structural members. First they built a small boat to aid in the ship's salvage. Then, after much labor, she was dismantled and the material hauled up to the mission.

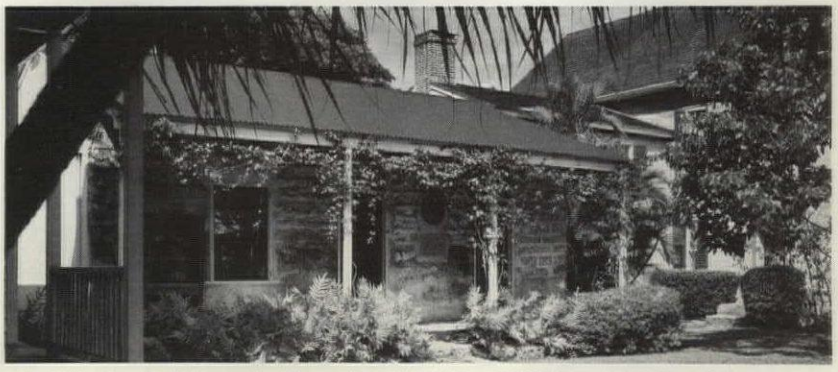
Interior walls of the printing house were plastered with mud, then covered with tapa made by the Hawaiians and pasted on with poi.

Late in 1828, a larger printing house was completed. The little one then became a bedroom addition to its neighbor, which is Hawaii's first frame house, shipped in pieces around the Horn and put up in 1821.

In 1908, the old printing house served as an office for the HMCS. At present, as part of the museum, it houses a working reproduction

Continued on page 80





The Mission Buildings in the mid-1800s. The Old Stone Printing House, concealed behind trees, is in center. Close-up shows it as it appeared in 1966.

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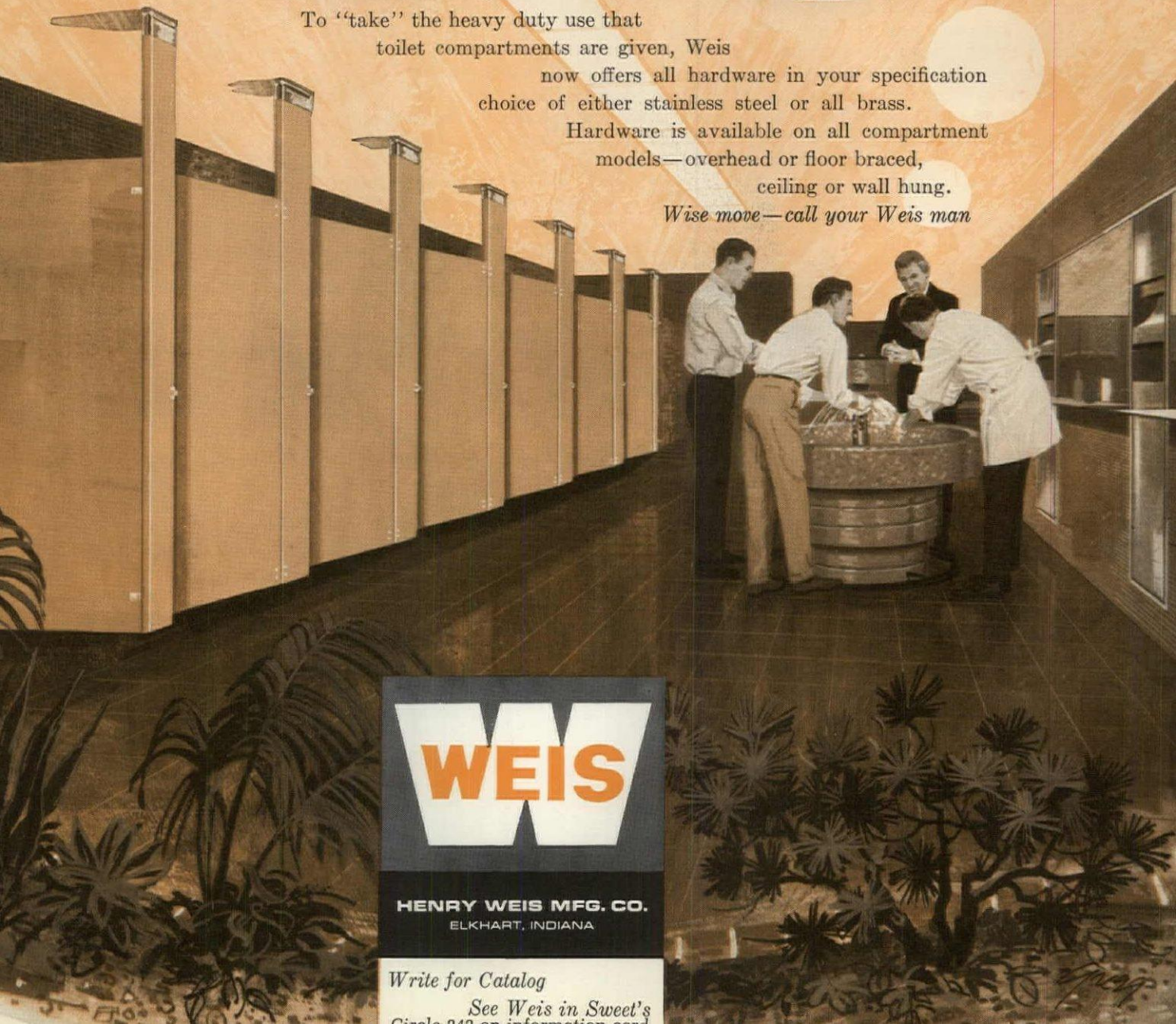

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Books

Los Angeles. Portrait of an Extraordinary City. Editors of Sunset Books and Sunset Magazine. Menlo Park, Calif. Lane Magazine & Book Co., 1968. 304 pp. $11.75.

A rich visual feast of the plus side of the phenomenon rapidly expanding in the coastal plains from the Tehachapis, San Gabriels and San Bernardino Mountains to the sea. The Sunset team led by Supervising Editor Paul C. Johnson has produced, in a tight series of broad brush pictorial essays, a feeling for the breadth of the natural assets and the diversity of man's use thus far, set against a historical outline that goes just far enough to encourage further exploration. To seek out the scenes of these attainments and to experience in person the settings so beautifully set out in photographs, to delve further into the source material of treatise and novel referenced in the reading list, and to find ways to turn the enormously diverse potential catalogued in these pages into a rich, full and meaningful life is a compelling result.

True, there are many vital elements of the area which are not brought to light. It may be significant that Watts is identified only as the location of Simon Rodias towers symbolizing creative artistic energy, that the only obvious smog producing element is the test firing of a 3 million pound thrust rocket engine, and that the only crowds are audiences at sports events, the theater, concerts and festivals.

It may even be enough to pass over the problems of transportation, urban density and the deterioration of the core city with a few words on how Angelenos attack their problems in advance of the rest of the country. Constant exposure to the front line of the planning battles may lead one to wonder if being in advance of the rest of the country is an adequate substitute for having solutions to match the problems in time to be effective.

One of the strengths of the book, however, is its clear presentation of the diversity of interest and accomplishment which borders on matching the scope of the natural endowment of this fantastic region. Another diverse picture which emerges is the architectural fabric which is visible even where not identified. Some of it is subtle, beautiful and lasting, some serves only as background or setting for the activity accommodated, some lives down to concepts of garish promotionalism and some highlights the tradition of creative regionalism.

It is a beautiful book and can serve an excellent purpose as a standard against which to measure the development of true choice and diversity and mobility for all of our citizens. When all of these delightfully presented features are available with equal ease to all the citizens of this wonderful land, then we will know that our hierarchy of systems relating the individual to his community, his city, his region, is in balance.

Two particularly useful functions which I would strongly recommend are to use the work as a reference for anyone who is coming to southern California to visit or live and as a satisfying and challenging review for those of us who have spent our lives in the area as "Today's Angelenos vigorously pursuing the good life in an evolving city, keeping much of the past while advancing the frontiers of technology, widening cultural horizons . . . people on the move like their restless predecessors."

ROBERT D. BOLLING, AIA

Drawing as a Means to Architecture. William Kirby Lockard. New York: Reinhold, 1968. 96 pp. $10.95.

Lockard, a practicing architect in Tucson and associate professor of architecture at the University of Arizona, looks upon drawing as an inseparable part of the design process. He insists that what the architect designs and builds is *absolutely* (italics his) limited to what he can draw.

"One of the real reasons why we no longer ornament like Sullivan," he writes, "is that we can't draw like Sullivan." And he adds in still more emphatic tones, "Perhaps the greatest appeal the curtain wall has for the modern architect is that it can be drawn by an idiot or a machine and should be, being beneath the dignity of the attention of man's hand."

The architect must learn to draw, affirms Lockard, "to possess a tool with which he can test his first conceptual ideas, discard, refine them and finally, but only secondarily, present them to others." For equipment Lockard suggests one's mind, a pen and a piece of paper, contending that a room full of equipment is not necessary and that with a little training one can learn to do the drawings necessary for the conception and study of a design without going near a drafting room.

An Introduction to English Mediaeval Architecture. Hugh Braun. New York: Praeger, 1968. 297 pp. $17.70.

Braun is a practicing architect in England who follows architectural archeology as a hobby. This book reveals that it is more than a hobby, however, for Braun is a dedicated scholar. He has produced a number of other books on English architecture in addition to this one, the first edition of which appeared in 1951. The second edition has been considerably revised, aided by Braun's own further researches and by many published sources that have appeared meanwhile.

The book is about buildings, and Braun's approach is practical. There are chapters on churches, halls, houses, monasteries, castles and towers. Braun also discusses architectural details, ornament, planning techniques, construction and materials. He does not neglect these marvelous craftsmen and builders, however, whose magnificent structures proclaim even to today their genius and sensitivity.

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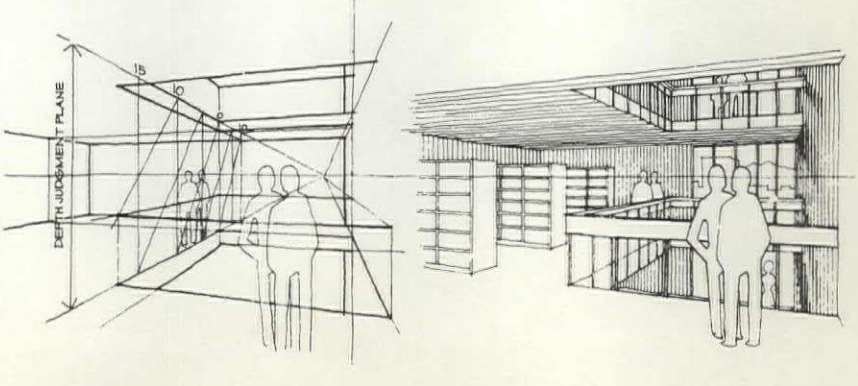

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14"		4.7	5.9
15"		5.0	6.3
16"		5.4	6.7
18"		6.0	7.6
20"		6.7	8.4

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7"	.294
8"	.336
10"	.420
12"	.504

Widths	Estimated Lbs. Per Foot
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18"	.756
20"	.840
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Note: Rolls are 50 to 55 feet in length.

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AIA Regional Conventions

Sept. 18-20: Central States, Cornhusker Hotel, Lincoln, Neb.
Oct. 1-3: East Central States, Ramada Inn, Evansville, Ind.
Oct. 11-14: Northwest Region, Salishan Lodge, Gleneden Beach, Ore.
Oct. 23-24: Middle Atlantic States, Statler Hilton, Baltimore
Nov. 9-13: Western Mountain Region, Dunes Hotel, Las Vegas

National

August 11-15: Engineering Foundation Research Conference, Proctor Academy, Andover, N. H.
Aug. 17-20: Society for College and University Planning Annual Conference, Rice Hotel, Houston
Aug. 25-26: Planning, Programming and Designing the Community College Annual Conference, University of Washington, Seattle

International

Aug. 9-24: Symposium at Stockholm (to be repeated in Sept. and Oct.) Contact: Symposium at Stockholm, Box 9137, 10272 Stockholm 9, Sweden.

Oct. 19-25: 10th UIA World Congress, Buenos Aires

Continuing Education

July 28-Aug. 1: Coatings Course for Painting Contractors, Maintenance Engineers, Architects. Contact: Dean Wouter Bosch, Graduate School, University of Missouri-Rolla, Rolla, Mo. 65401.
Aug. 18: Two-week summer session on Industrialized Building. Contact Prof. Albert Dietz, MIT, Cambridge, Mass.
Aug. 25-Sept. 5: Information Seminar on Finnish Architecture and Urban Planning for foreign architects (in English). Contact: Association of Finnish Architects, Mrs. Riitta Skogström, Unioninkatu 30, Helsinki 10, Finland.
Nov. 1: Applications due, Fulbright-Hays scholarships. Contact: Information and Reference Services Division, Institute of International Education, 809 United Nations Plaza, New York, N. Y. 10017, or Fulbright Program Adviser.

Tours

June-Aug.: Special Travel programs departing from New York, for AIA members. Contact: Travel Wholesalers International, 1707 L Street, N.W., Washington, D. C. 20036.
Sept. 14-27: Mexican Architecture and Interior Design Seminar-Tour, meeting in Mexico City. Contact: T. H. Hewitt, P. O. Box 2292, San Franciso, Calif. 94126.
Oct. 7: Architecture and Garden Tour of Japan, departing from Los Angeles for 24 days with optional extension to Hong Kong and Bangkok. Contact: Kenneth M. Nishimoto, AIA, 263 South Los Robles Avenue, Pasadena, Calif. 91106.
Oct. 7: Architects' Trek to South America, departing from Miami for 21 days with optional excursions. Contact: United States Travel Agency, Inc. 807 15th Street, N.W., Washington, D. C. 20005. □

Books *from page 83*

Structural Engineering Handbook. Edited by Edwin H. Gaylord Jr. and Charles N. Gaylord. New York: McGraw-Hill, 1968. 1 vol. (various pagings) $28.50.

Here, in one rather massive tome, is a concise handbook on the planning, design and construction of many engineered structures. There are 26 sections written by 39 experts who have made an effort to select informative material considered to be the most useful to the greatest number of readers.

The sections include such diverse topics as digital computers in structural engineering; soil mechanics; fabrication and erection of structural steel; and suspension roofs. There is one entire section of buildings, and the three parts encompass general design considerations; industrial buildings; and multistory buildings. Other sections that will assist the architect particularly are those on earthquake-resistant building design; aluminum structures; timber structures; and thin-shell concrete structures.

The editors are both engineers. Edwin H. Gaylord is professor of civil engineering at the University of Illinois; Charles N. Gaylord is chairman of the department of civil engineering at the University of Virginia. They are co-authors of the well-received *Design of Steel Structures.*

The Design of Foundations for Buildings. Sidney M. Johnson and Thomas C. Kavanagh. New York: McGraw-Hill, 1968. 393 pp. $16.

Johnson and Kavanagh are civil engineers with wide experience and background in their specialized fields of work. For nearly four years they were engaged in preparing the structural, construction and foundation provisions of a new building code for New York City. This gave them an unprecedented opportunity to study in depth the related problems for the design and construction of foundations and to review these problems with many recognized experts. They have used their knowledge in this book.

There is no nationally accepted design standard for foundations, and the authors' purpose here is to give architects and engineers an overview of the current standards of practice as they exist today. They also attempt to fill in the large gaps in those practiced standards by making some suggestions of their own.

Project Romulus: An Adaptable High-Density Urban Prototype. Anthony Kettaneh, Editor. Cambridge: MIT Press, 1968. 233 pp. $7.50.

Some 20 students from various departments and disciplines at MIT participated in the Inter-Departmental Student Project in Systems Engineering during the spring term of 1967. The class was to assume that it was an organization commissioned by a major industrial corporation to explore the contributions advanced technology might make in the amelioration of urban problems.

Specifically, the faculty leader, Dean William W. Seifert of the School of Engineering, charged the students with the problem of designing a high-density urban prototype which would be able to adapt with minimum stress to an unpredictable future. The class was responsible not only for the design of the physical structures and systems but also for the development of means whereby the sub-city might be initiated, financed and managed. Some of the ideas developed by the class are extremely interesting and provocative. We fervently hope that everyone in the class received the grade of A. □

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Letters

It All Comes Back to Fees

EDITOR:

Let me say at the start that because I have an architect partner and our services are jointly used in this field, I read the AIA JOURNAL regularly and believe it to be of excellent quality. However, as regards the article "Planning of Capital Investments" in the April issue, I do feel compelled to relate two specific thoughts.

By way of introduction, many times we all tend to learn terms and definitions without getting to the core of why terms and definitions were developed in the first place. It seemed to me that in reading this article it represents a classical case of just that thing.

All of the terminology and definitions that were recited in the article are definitely part of contemporary management science jargon. However, for any of this jargon to make any real sense, it must be understood that there are two underlying concepts that represent the cause for the development of all the jargon.

These concepts are 1) goal orientation based on definitive statements of need and 2) value engineering based on the concept that things should be designed and built at the lowest possible cost in order to do the job or meet the need. If one does not keep these two central concepts in mind while applying all the technical jargon, one will probably never advance the quality of whatever one is trying to do.

However, it seems to me that these two central concepts, which were never reached in the article, are particularly applicable in the architectural profession. First, we are surrounded by examples of buildings that do not meet the needs of the people who use them.

Second, it is further quite possible that the cause or reason for the fact that generally buildings are constructed to last two or three times longer than their useful life is the fact that no value engineering was applied in terms of the essence of this concept.

I further desire to observe that the primary motivator in the architectural profession — the fee — is surrounded by a mechanism to arrive at it which causes the architect to perform in direct opposition to these two basic concepts. That is to say the architect can only make more money if he makes the building more expensive.

I suggest for the contemplation of members of your profession that they restructure the manner in which fees are arrived at to reward creativity and the meeting of human needs at the lowest possible cost.

JACK H. COLEMAN
Jack H. Coleman & Associates
Consultants
Oklahoma City, Okla.

ED. NOTE: Author Paul B. Farrell Jr. replies: "Basically, Mr. Coleman is right: The best way to fight jargon is with more jargon."

More on Barrier-Free Standards

EDITOR:

The City of Philadelphia is in the process of preparing a manual for the use of architects designing library buildings for the Free Library system. As you know, because we receive federal funds for the erection of these structures, we must comply with Public Law 90-480 which requires that library buildings, among others, be made accessible to the physically handicapped.

We have noted with interest the article in the March issue in reference to these standards. It would facilitate the work of the architects involved if they could have access to the drawings in this article.

THOMAS W. McCONKEY
Chief, Administrative Services
Free Library of Philadelphia
Philadelphia, Pa.

Required Reading

EDITOR:

Clovis Heimsath's article on vacation home developments in April was especially appropriate in capturing the flavor and attention needed to properly design the environment for the burgeoning second home market. The impact of this piece should be highly significant for improving the quality of so many new developments which have spawned recently from hectic and chaotic attempts to satisfy the demand of the "back-to-nature wave."

His insights into the planning process for recreation-oriented communities have assisted us in presenting the environmental context to numerous clients with whom we are presently working, helping them to focus on the market and economic issues related to existing and proposed projects.

The values created through the decision-making process that Heimsath describes must be an essential blend of proper architecture and planning attuned to the responsiveness of the marketplace, and we are pleased to see that the AIA JOURNAL has devoted attention to this increasingly significant field.

With man's increasing desire to return to nature forced upon him by the intensifying pressures of urban life, architects and planners considering opportunities in this area would be well advised to place this commentary on their required reading list.

W. THOMAS WALL
Robert Gladstone & Associates
Economic Consultants
Washington, D. C.

EDITOR:

I was interested in the article on the second home. On the affirmative side, I am glad to note that the individual house is again being recognized as "architecture," something most of the professional press and certain award juries have been tacitly and/or affirmatively derogating for several years. I found your examples varied and exciting — and, of course, in many instances perfectly suitable for a first home as well.

I raise two questions: Why did you not include plans? In several cases you discussed interior layouts, but without plans your comments were relatively meaningless. And why no photo credits? When excellent pictures are used, the photographer is entitled to a break.

GERSON T. HIRSCH, AIA
Briarcliff Manor, N. Y.

ED. NOTE: The purpose of the portfolio was to illustrate the range of second home categories, from the single custom-designed house to condominiums; therefore, the layout of any particular project was not deemed essential.

As for photo credits, they are grouped together, as is the custom with most periodicals, at the bottom of the Asides column following the contents page. On occasion, when the photographer's work is used exclusively with an article, he is acknowledged in the presentation itself.

Corrections

Because of inadequate information supplied by the news sources (not the architects in each case), the architectural credits for two recently published projects in the AIA JOURNAL were incomplete.

A house shown in Oregon's Salishan second home development (March, p. 51) was designed by Richard M. Beckman and Robert M. York, AIA.

Powell Symphony Hall in St. Louis (March, p. 17) was the work of Wedemeyer-Cernik-Corrubia, Inc., with Ben Schlanger, AIA, as associate architect. □

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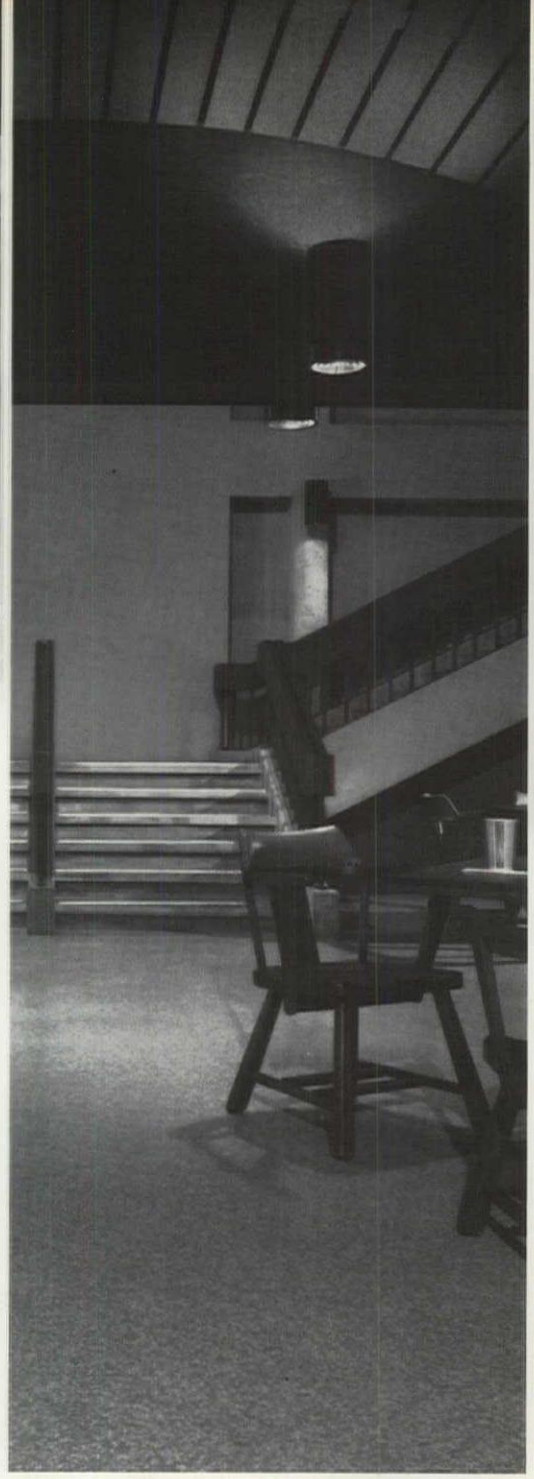

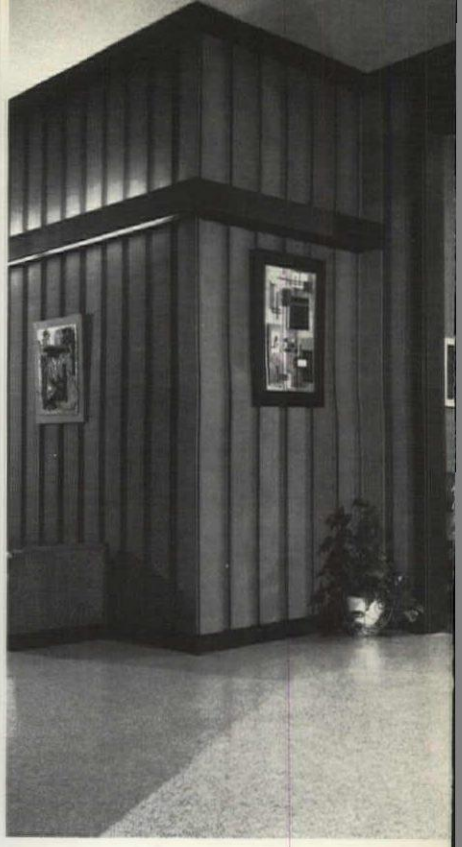

De Anza College is an all-new, fully accredited, two-year college in Cupertino, California. On the beautifully landscaped, 112-acre campus are over 50 buildings designed in the Early California Mission motif. **Architect:** Kump Masten and Hurd Architects Associated, Palo Alto, California. **General Contractor:** Barnhart-Dillingham General Contractors, Santa Clara, California. **Flooring Contractor:** Harry L. Murphy, Inc., Floor Covering, San Jose, California.

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The floor plan of a college

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