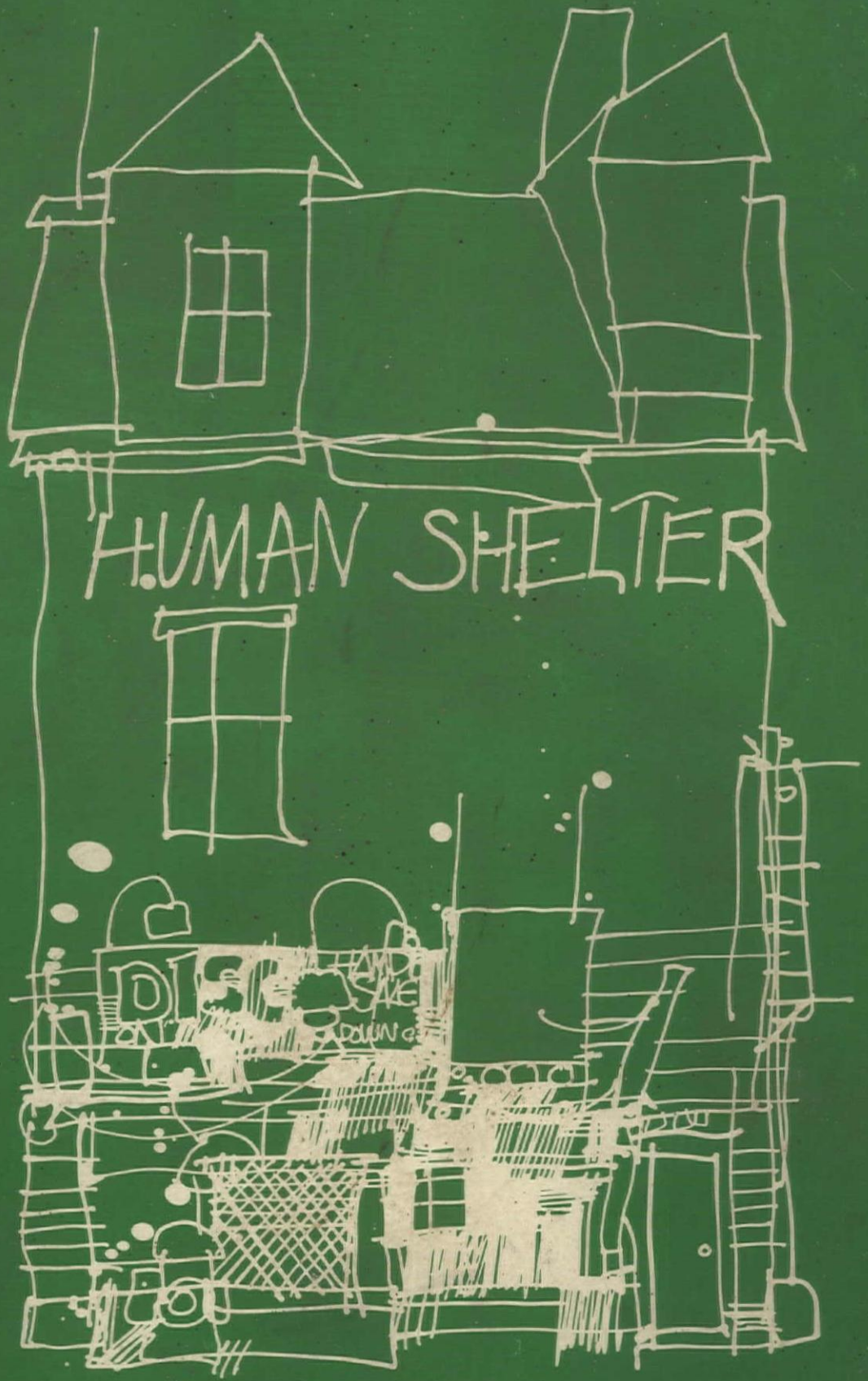


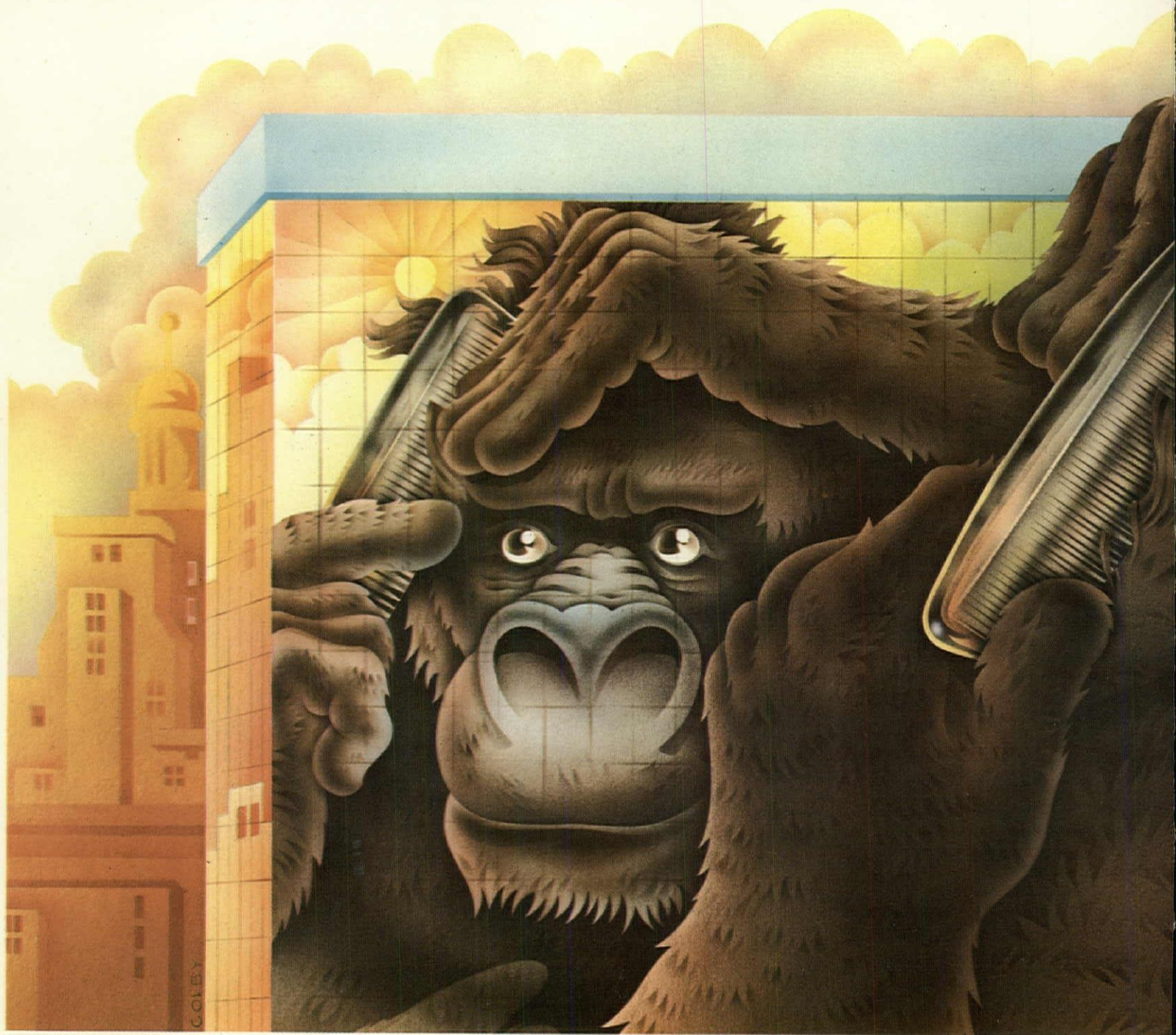
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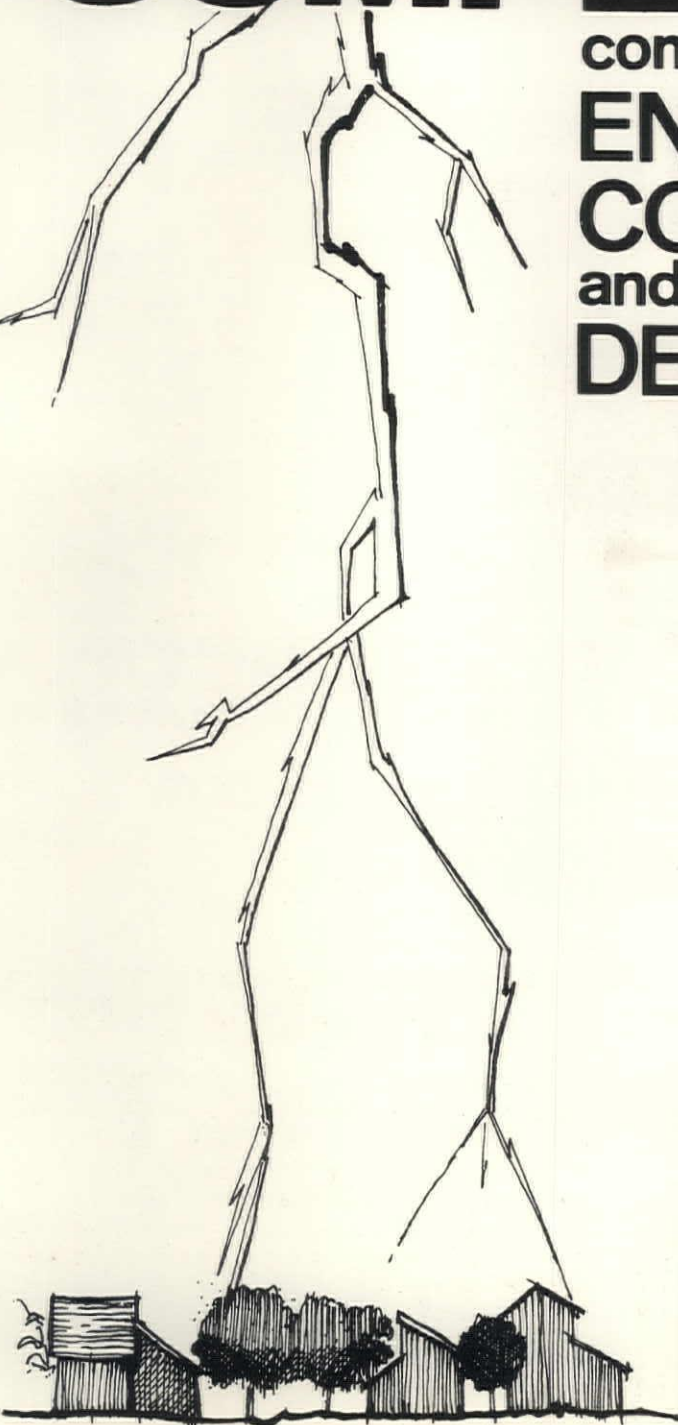
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## Planning for Health Care Facilities

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**Cover:** That's not to suggest a hospital. What Peter Bradford indicates is a health facility, and for the full meaning of that, turn to page 13.

**Acknowledgements:** 40 above, courtesy South Carolina Department of Mental Health; 40, 41 below, courtesy Clemson University's Health Care Facilities Planning and Design Studio; 42, 43, B.T. Rook.



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**A Receptacle for Architectural Research:** The American Institute of Architects has entered into a publishing venture with the Royal Institute of British Architects, as was reported in the July issue of the *AIA JOURNAL*. It is a move that is applauded and about which I would like to make a few more comments here.

*Architectural Research and Teaching (ART)*, a journal formerly issued by RIBA alone, now will be produced by two subsidiary organizations: RIBA Publishing Ltd. and the AIA Research Corporation. Two editorial boards, one in Britain and one in the United States, will solicit and screen research papers for the publication, which will appear three times a year. The first number under the joint agreement will be off the press this fall.

The merger is an attempt to increase the dissemination of architectural research from the research community to practicing architects. The hope is that this effort will make the best of British and other European as well as American research more readily available to architects on both continents, according to Don Conway, AIA's director of Research Programs. He further points out that since the two institutes probably represent about 25 percent of the practicing architects in the world, this move should go a long way toward a useful exchange of ideas.

We on the *JOURNAL* are pleased because our readers, in *ART*, have another, perhaps more suitable, outlet for their research-oriented manuscripts, many of which have been sent to us for consideration over the years. Not that we have turned our back on the matter of research. For example, it shows up strongly in the content of the current issue, devoted exclusively to health care facilities. And we will continue on this course as we look behind the facades of the buildings we explore. But the point remains that some of the articles that are proposed speak to too small a group of architects to merit publication in the *JOURNAL*'s pages. What we look for, rather, are the final results of this research work, not how it was conducted. Those interested in further details can get the necessary references from our staff.

Inquiries about *ART* and about procedures for submitting research papers should be directed to Conway at AIA Headquarters. The board of review will consist of the Institute's Research Advisory Panel, made up of three architects, a sociologist, a psychologist and a lawyer.

Perhaps a word is in order about the submission of material to the *JOURNAL* itself. We receive a considerable number of unsolicited manuscripts, which, generally speaking, are read by not only the editors but also by an appropriate member of the Institute staff and at least one outside person who is particularly knowledgeable about the subject at hand. We also are the recipients of ideas for articles, sometimes simply spelled out in a letter, sometimes in a more formal outline or summary statement. When a manuscript is not already prepared, an inquiry first is the better approach. In any event, we want our readers to know that we welcome ideas, suggestions and even rough drafts or the finished product. *Robert E. Koehler*

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## Responsibility and Potential Liability Assessed at Conference on OSHA

The designer's responsibility to become fully familiar with the provisions of the Occupational Safety and Health Act of 1970 was stressed throughout a recent conference held in Washington, D.C., on "The Architect, the Engineer and OSHA." More than 300 architects and engineers participated in the conference which was sponsored jointly by the AIA, the American Society of Civil Engineers, the Consulting Engineers Council of the



OSHA official Chain Robbins reports on Japan's occupational and safety act.

US (now called the American Consulting Engineers Council) and the National Society of Professional Engineers.

Congressman William A. Steiger (R-Wis.) pointed out "the special responsibility of the design professional to know what it means to have a safe workplace" that is free from structural hazards, toxic substances, damaging noise, etc. He said that "OSHA is here to stay."

Gerald W. Farquhar, consulting attorney to the Office of Professional Liability Research for Victor O. Schinnerer & Co., Inc., the national underwriting managers for the AIA- and NSPE-sponsored professional liability insurance program, advised the A/Es to "document everything." He said that the designer should communicate fully with the client to determine the final use of a building in order to make it as free as possible of OSHA violations. Should violations later be alleged or cited, the designer will be able to demonstrate his efforts to design a complying building. Early in the project the designer should tell his client of his own responsibilities under OSHA, advising him of possible costs involved in such compliance.

The designer should inform his own employees regarding OSHA provisions and should insist that any observed violation of the act by the contractor be reported and corrected, said Farquhar.

David Golemon, a professional engineer, declared that the design professional has three areas of responsibility: as an employer whose workplace must conform to OSHA standards; as an employer who sends employees to building sites; and as a designer for a client whose building must comply with the act.

Chairman of the AIA Codes and Standards Committee Jasper S. Hawkins, AIA, of Los Angeles pointed out that designers encounter problems with OSHA's retroactive provisions, its language and interpretation, its conflicts with existing building codes, its appeals



and consultation procedures and its provisions for establishing state occupational and occupant safety. These factors, he said, make it difficult for the design professional to exercise his judgment.

The need for the AIA, engineering groups and others in the construction industry to work with legislators and OSHA officials to alleviate problems was stressed by Alan Burch, director of the Department of Safety, International Union of Operating Engineers, and by most of the speakers from the Occupational Safety and Health Administration. Thomas C. Brown, director of Federal and State Operations for the administration, told the audience that the A/E can expect "more inspectors and inspections, greater probability of random inspection and more state inspectors with stronger enforcement authority." Other speakers from the administration described the law and its application in detail.

**It's to the designer's advantage to be fully familiar with the provisions of OSHA, as a recent conference emphasized. These initials and what they represent are here to stay. Other initials in the news are HUD. David O. Meeker Jr., FAIA, has been nominated by President Nixon as an official in this federal government department.**

Chain Robbins, Deputy Assistant Secretary of Labor and administrator of OSHA, reported on a recent trip to Japan at which time Labor Department representatives studied the new Japanese occupational and safety act.

## Indianapolis Architect Nominated For Community Planning Post

A Fellow of the Institute and deputy mayor of Indianapolis since 1972, David O. Meeker Jr., has been nominated by President Nixon to be Assistant Secretary for Community Planning and Development in the Department of Housing and Urban Development.

After 13 years with the architectural/engineering firm of James Associates, Inc., in Indianapolis, Meeker assumed an active role in city affairs, becoming director of the Indianapolis Model Cities program in 1968. The following year he was named acting director of the Indianapolis Department of Metropolitan Development and in 1970 was appointed director.

The HUD nominee, who has held office in both the Indianapolis Chapter AIA and the Indiana Society of Architects, has won numerous awards for design and planning, and was selected the "Man of the Year in Construction" by the Indiana Subcontractors Association in 1969.

Meeker earned his architectural degree from Yale University in 1950. He received a Fulbright Fellowship for advanced study and a Royal Danish Government Fellowship for advanced research in architecture in 1961, resulting in a certificate in architecture from the Graduate School for Foreign Studies of the University of Copenhagen and Royal Academy of Art.

## Design for Detroit Civic Center Plaza Focuses on Fountain of Jetting Water

Detroit's City Council has approved a detailed plan for the Detroit Civic Center Plaza and a revised design for the Horace E. Dodge & Son Memorial Fountain. Designed by sculptor Isamu Noguchi, the fountain is a refinement of the original concept of an "engine for water." The new design is a 30-foot high ring floating above a walled circular pool. Its relocation closer to Woodward Avenue





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**Detroit Civic Center Plaza will be a place of beauty, featuring a fountain of jetting water. Designer Isamu Noguchi says that the total effect "will be American." Also American are the unbeautiful facilities that have grown up along our highways. An AIA committee wants innovative planning for them, considering their attractive development a major priority along the interstate highway system.**



*The 8-acre plaza has a series of pyramidal shapes, providing multiuse facilities.*

satisfies an agreement with the heirs of Anna Thomson Dodge, whose will provided a \$2 million bequest.

A cross section of citizens and organizations made suggestions concerning the 8-acre plaza's activities, many of which Noguchi and his staff incorporated into the overall design. There will be a circular festival amphitheater for outdoor music, dance, theater or ice skating; a tourist center; a smaller gathering place for entertainment and educational uses; shopping facilities; a riverfront restaurant and promenade; and underground restrooms, dressing rooms, service areas, etc.

Noguchi says, "The plaza, viewed as a whole, will present a series of pyramidal shapes: that of the fountain, that of the stepped pyramid of the theater, the blue exhaust stack of the road and the greater pyramid of the festival amphitheater as it rises to the plaza plane. The whole will be seen as a low mound with the bend in the river and the river beyond. I like to think that the effect will be American, unlike anything elsewhere."

Noguchi's firm of Noguchi Fountain & Plaza, Inc., has selected the Detroit firm of Smith, Hinchman & Grylls Associates Inc., to act as local architectural/engineering/planning consultants and to prepare working drawings for the project. It is expected that the plaza and fountain will be completed in time for the nation's bicentennial celebration in 1976.

#### **Old and New Architecture in Russia Studied by 300 American Architects**

Approximately 300 US architects and members of their immediate families recently returned from an eight-day architectural workshop and sightseeing tour of Moscow and Leningrad.

One of the team, Marvin J. Cantor, AIA, of Rockville, Md., reports that although the Soviet buildings of the '50s and '60s are "similar and barren," the newer structures reveal a change to more innovative use of materials and a "freshness of design." He found the Palace of the Congresses in the Kremlin to be "as stylish and functional as any large assembly hall in the world."

Some of Cantor's capsule comments:

- Storm drainage is very poor; nearly all downspouts are on building exteriors and dump right on the sidewalks.
- Sidewalks and streets are impeccably clean.
- Children keep asking for chewing gum.
- Hotel accommodations are comfortable, but rooms are miniscule in size.
- Mass transit is superb; trains run every two minutes, except during rush hours when they run every 30 seconds.
- Elevators that stop within 3 inches of the floor line are considerable acceptable.
- Fluorescent lights flicker and buzz as a rule and not as an exception.
- Historic and architectural landmark buildings are being restored.

- Prefabrication plays an important role in Soviet building, and concrete is the most prevalent building material.
- Urban renewal problems are surprisingly like our own.

#### **AIA Committee Seeks Innovative Planning on Transient Facilities**

"Sensible and attractive development of rest stops and service facilities" is the number one priority along the interstate highway system, said Jack Williamson, AIA, of Cherry Hill, N.J., vice chairman of the AIA Committee on Architecture for the Arts and Recreation, at a recent seminar on transient facilities. The meeting, sponsored by the committee, concerned a new planning approach for the development of facilities along the highway system which will accommodate, it is predicted, 90 percent of all interstate travel.

Williamson commented that since the introduction of the system, the commercial developments that line old travel routes have taken on local and regional significance. Many interstate interchanges, he said, "are characterized by an amassing of motels, restaurants and service stations piled on top of one another." Furthermore, the complexity of interchange areas confuses the motorist who is often required to double back on secondary roads to find a desired entrance. He cited a problem to be "the lack of freedom to locate in a linear pattern along the interstate system."

Ned McNair of Point South, Inc., a subsidiary of the Sea Pines Company, developers of Hilton Head Island in South Carolina, was one of the guest speakers. At some interchanges, said McNair, it looks as though developers have tried to copy the worst American architectural and planning examples. He criticized the "repetitive and unimaginative design, lack of landscaping and disregard for traffic patterns."

Traffic surveys, which helped create the interstate system, he said, have seldom been used for interchange development. Calling for sound planning efforts, he cited Point South, located in South Carolina at the confluence of interstate

*continued on page 60*

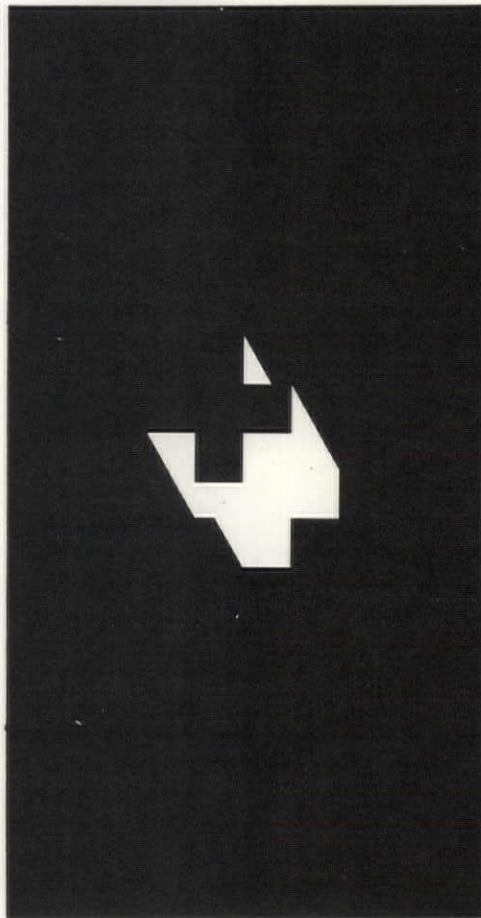
## Maurice Payne, AIA

**Architecture for Health:** In this country today there is a growing and unprecedented demand for better health care. It is estimated that during the next 10 years Americans will spend \$30-40 billion on health facilities construction. There is also a mushrooming belief that every citizen is entitled to better services, more skillful manpower and vastly improved health care facilities. Some form of national health legislation plan will surely become a reality within the next two or three years.

"In short," says the introduction to a film proposal that the AIA Committee on Architecture for Health (CAH) has had prepared, "a medical revolution is upon us. It is actually a double revolution, compounded by the fact that the needs and the nature of health care itself are being completely transformed by rapidly changing techniques of medical practice and a whole spectrum of new discoveries, and more importantly by dramatic and unexpected shifts in the nation's health-need profile. Implicit in such a revolution are completely new concepts of organization and administration, skills and training, information management and the requirement for a great variety of new and innovative facilities to assure the efficient delivery of a high standard of health care.

"For a revolution of such vast potential human benefit to develop haphazardly, as a kind of growing social 'happening,' would be disastrous and would obviously vitiate much of the good that might otherwise be delivered. Rather, it would be best if all concerned—city, state and federal groups and officials, medical and paramedical administrators and staff, architects and planners and builders, unions and insurance groups, and the general public as well—knew much more than is generally known today about the problems and future possibilities for delivering a significantly higher level of health care than is currently available. And given the indicated timetable, such efforts should be initiated sooner rather than later."

**Mr. Payne** is director of the AIA Design and International Relations Programs and staff executive for the AIA Committee on Architecture for Health.



The film proposal has been prepared as part of the committee's charge to investigate, in cooperation with other health organizations, the feasibility of preparing a film whose message would express the importance of this medical revolution to both the public and to architects.

The committee has 53 members from 26 states and the District of Columbia. At its last meeting in June, it unanimously endorsed a proposal for this film on the future of health care. Now it has the herculean job of finding joint sponsors and funders to match the AIA's commitment. Is anyone interested?

The film proposal was but one of 37 items that appeared on the committee's June agenda. Through personal contact and official liaison agreements, the Institute through CAH maintains close communication and develops cooperative programs with the US Public Health Service, Facility Engineering Construction Agency and the Veterans Administration. In the

**"A medical revolution is upon us," declares a proposal for a film prepared by the AIA Committee on Architecture for Health. The film's message will stress the importance of this revolution to architects and public alike. In its work the committee is endeavoring to foresee architectural implications regarding future possibilities for the delivery of a higher level of health care.**

nongovernmental area liaison is maintained with the American Hospital Association, American Public Health Association, American Nursing Home Association and the related design disciplines of hospital planners and consultants.

CAH members represent the AIA on the National Fire Protection Association's Safety to Life Code for health-related facilities. CAH also reviews and advises on accreditation standards for hospitals and mental health facilities for the Joint Commission for the Accreditation of Hospitals.

In light of the Institute policy, recommended by CAH and adopted by the AIA Board of Directors last year, another responsibility of CAH is a continuing review of the numerous bills before Congress which propose various national health programs. The AIA policy urges that any national health program recognize and provide for adequate planning and the resultant facilities to administer any new national program.

The committee is attempting to anticipate what the architectural implications will be under any new national programs. They say that in China the doctor only gets paid when the patient is well since that is his job; if the patient gets sick, the doctor does not get paid. There is a strong interest here in providing health maintenance rather than just curing the sick, in having neighborhood preventive health care, in making health care a team activity which provides psychological as well as physiological care. Some of these concepts will require smaller, less sophisticated facilities which will allow architectural practitioners who are not "experts" in hospital technology to participate in the design and construction of architecture for health.

CAH is but one of the many Institute committees which cover the full spectrum of the interests of the profession. Committee work is a voluntary activity of hundreds of AIA members. While there is a degree of personal benefit and prestige in committee membership, the ever-expanding interests, programs and policies of the Institute are the direct results of the untold manhours contributed by AIA committee members. □

# Project Checklist

PROJECT:

NUMBER:

Remarks

	Dates	Initials	Item	Remarks
140.			Obtain qualification statements from interested bidders and review. If separate prime contracts are to be awarded, obtain assistance from consultants. (AIA Doc. A501, A305)	
141.			Place Architect's and Engineer's seals on the documents and obtain any necessary signatures required by reviewing authorities.	
142.			Assist Owner in filing required documents for approvals and permits.	
			Obtain Owner's written authorization to proceed to the Bidding phase. (HBC 9)	

## DESIGN DEVELOPMENT

Refer to AIA Handbook Chapter 11 and B-Series Documents

Part A—On-going or periodic tasks accomplished throughout this phase.

	Dates	Initials	Item	Remarks
64.			Have Owner review the documents and render prompt decisions as the need arises. (HBC 9)	
65.			Periodically review internal office budgets and production schedule and check against actual progress.	
66.			Review and update schedule of completion dates for this and all subsequent phases.	
67.			Review and update man-hour and production cost projections.	
68.			Adjust number and type of personnel as required.	
69.			Update project record book.	
70.			Update project directory. (AIA Doc. G807)	
71.			Update project data form. (AIA Doc. G809)	
72.			Review and update project flow chart.	
73.			As documents develop, obtain tentative approval from regulatory agencies, such as:	
74.			<input type="checkbox"/> Building Department	
75.			<input type="checkbox"/> Fire Marshal (state and local)	
76.			<input type="checkbox"/> Dept. of Health	
77.			<input type="checkbox"/> Department of Education	
78.			<input type="checkbox"/> Planning Commission	
79.			<input type="checkbox"/> Design Review	
80.			Maintain expense accounting records.	
81.			Submit monthly statements to Owner for payment. (AIA Doc. G802)	

	Dates	Initials	Item	Remarks
72.			Submit monthly reimbursable expense statements to Owner for payment. (AIA Doc. G802)	
73.			Part B—Tasks prior to starting design development.	
74.			Review the schematic design checklist and insure that it has been completed and that all required data has been obtained.	
75.			Have Owner delineate any additional or special requirements.	
76.			If models, perspectives or renderings will be required, obtain Owner's approval of expenditure for them. Take appropriate steps to insure completion at the proper time.	
77.			Review the program and verify compliance.	
78.			Re-check schematic documents against all codes and regulations.	
79.			Select additional consultants, if required, and establish contractual relationships. Obtain Owner's approval when required. (HBC 10)	
80.			Receive requested results of all investigations and tests, including soil borings and analysis. Request additional information if necessary.	
81.			Forward final information if necessary to the Owner, consultants, etc.	

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# AIA JOURNAL

## Planning for Health Care Facilities

**A hospital? No more. Think of it from now on as a health care facility, a place that should not only meet need but also attract and encourage use. "Where does the process of design start? With a determination of need, not just for a building but for health care in the community. No rule of thumb is a substitute for an analysis of the community. A comprehensive plan for care, including prevention of illness as well as cure, can then be developed." These remarks by keynote speaker Rex Whitaker Allen, FAIA, at the recent International Hospital Federation Congress in Montreal, attended by architects from every corner of the world, clearly show that the profession must look much deeper for its design solutions than just to the arrangement of functions within four walls. Sharing experiences, exchanging information, is a help to practitioners in finding such solutions, and with this in mind the AIA JOURNAL brings readers beyond the designed facades and speaks of changes and trends in health care facilities.** Bess Balchen

# The Impact of Change on Health Care Facilities

George J. Mann, AIA

Nowhere in the construction field is change more dynamic and accelerating than in the health field. In fact, it is so dynamic that an increasing number of architectural firms find themselves unable to respond to the rate and directions of this change and consequently are suffering from "future shock" (Alvin Toffler's term to describe the shattering stress and disorientation that we induce in individuals or organizations by subjecting them to too much change in too short a time).

In *The Age of Discontinuity*, one of Peter Drucker's main points is that organizations which keep properly informed and are able to understand and react to change are most likely to compete effectively. No building type design is more dependent on accurate information than that of a health facility. Therefore, in establishing a strong health facilities capability, an architectural firm must recognize 1) dynamic change and 2) flow of and reaction to information.

It is more and more widely recognized that the basic problems of health facilities relate to health needs rather than the technical problems of building. This is a simple and basic idea but is often overlooked. Health facilities are frequently built that do not respond to the actual health problems of areas to be served.

Several recent significant developments have affected or will soon affect health facilities. These include:

**Reorganization of the Department of Health, Education and Welfare.** The department's new Assistant Secretary for Health, Dr. Charles C. Edwards, is proposing to reorganize the Health Services and Mental Health Administration into more manageable units such as a Health Services Administration and a Health Resources Administration, while giving more independence to the existing Center for Disease Control.

**Mr. Mann** is director of the Health Facilities Research Program at Texas A&M University's College of Architecture and Environmental Design, College Station, as well as a consultant in health care delivery and the planning and design of health facilities. He is a member of the AIA Committee on Architecture for Health.

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**The Hill-Burton Program.** This was scheduled to be phased out since the Administration contends that it is wasteful and no longer needed. However, Congress has extended the program for one year to allow time to reevaluate it. Forty-seven other programs have, by Public Law 93-45, also been extended for a year. (In many ways the program has served its purpose; however, the problem of replacing obsolete facilities needs more attention from the Administration.)

**Certificate of Need.** The growing concern over the rising costs of health care, the uneven distribution of and thereby uneven ease of access to health services and facilities have resulted in more attention being paid to relating the needs more precisely to planned expansions of health facilities. More and more states are enacting laws requiring a Certificate of Need to be issued before any significant construction can begin. (The constitutionality of such laws are now being tested in the courts.)

"Basically, a Certificate of Need is written evidence of a determination made by an appropriate agency that a proposed health facility is needed, or that an existing facility is continuing to fulfill a necessary service," writes John F. O'Leary in his article "Certificate of Need—the Bridge Between Health Care Planning and Implementation" in *Viewpoint*, published by the Health Insurance Council.

A Certificate of Need is responsive to the following public interest concerns:

- control of facilities expansion
- control of facilities duplication
- conversion of surplus facilities to fill unmet needs.
- recognition of local responsibility.

"It is not difficult to see that the process of controlling construction, elimination of underutilized facilities, and then balancing what the public wants with what it will pay for, infringes upon deep rooted vested interests," O'Leary continues. Certificate of Need legislation, therefore, is a mechanism for attempting to achieve a balanced health system.

William J. Curran in his report "National Survey and Analysis of Certification-of-Need Laws" considers Oregon as having the best review criteria of any state. The Oregon law, writes Curran,

Our changed attitudes toward our physical and mental well-being as a nation are showing up in federal legislation, among other areas. Important to architects in this respect is the stress on health facilities that will respond to the actual health problems in regions to be served.

## CERTIFICATE OF NEED LEGISLATIVE

State	Enacted Law
Alabama	
Alaska	
Arizona	1971, 1972
Arkansas	
California	1969, 1971
Colorado	1973
Connecticut	1969
Delaware	
Florida	1972
Georgia	
Hawaii	
Idaho	
Illinois	
Indiana	
Iowa	
Kansas	1972
Kentucky	1972
Louisiana	
Maine	
Maryland	1968, 1972
Massachusetts	1971, 1972
Michigan	1972
Minnesota	1971
Mississippi	
Missouri	
Montana	
Nebraska	
Nevada	1971
New Hampshire	
New Jersey	1971
New Mexico	
New York	1964, 1969
North Carolina	1971
North Dakota	1971
Ohio	
Oklahoma	1971
Oregon	1971
Pennsylvania	
Rhode Island	1968
South Carolina	1971
South Dakota	
Tennessee	
Texas	
Utah	
Vermont	
Virginia	
Washington	1971
West Virginia	
Wisconsin	
Wyoming	

From *Special Legislative Report—National Survey and Analysis of Certification-of-Need Laws: Health Planning and Regulation in State Legislatures* by William J. Curran.

**The uneven distribution of and thereby access to medical services has resulted in a requirement for certificates of need in some states. This is a forceful factor indeed in shaping a new climate—man-made or otherwise—for health care.**

**AND REGULATORY ACTION**

Regulations	Defeated Bill	No Action
		x
1972	1972	
1971		x
1973		
		x
	1971	
	1971	
	1971	
	1972	
	1971	
	1972	
		x
1970		x
1972		
1971	1971, 1972	
		x
	1971	
		x
1972	1972	
	1971	
1965		
1971		
1971		
		x
1972	1971, 1972	
1972		
	1971	
	1972	
	1971	
		x
	1972	
	1972	
1971		
		x
		x
		x

“ranks the consideration of the recommendations of the areawide agency and conformity to the areawide health plan even before an independent consideration of the ‘need’ for the services in the area.”

Curran lists the following considerations that are taken into account by the Oregon state-level health authorities when reviewing certificate of need applications:

1. Recommendations of the areawide health planning authorities.
2. The relationship of the proposal to the areawide health plan.
3. The need for health care services in the area or the requirements of the defined population.
4. The availability and adequacy of health care services in facilities which are currently serving the defined population and which conform to state standards.
5. The need for special equipment and services in the area which are not reasonably and economically accessible to the defined population.
6. The need for research and educational facilities.
7. The probable economies and improvement in service that may be derived from the operation of joint central services or from joint, cooperative or shared health resources which are accessible to the defined population.
8. The availability of sufficient manpower in the professional disciplines required to maintain the facility.
9. The plans for and development of comprehensive health services and facilities for the defined population to be served. Such services may be either direct or indirect through formal affiliation with other health programs in the area and shall include preventive diagnostic treatment and rehabilitation services.
10. Whether or not the applicant has obtained all relevant approvals, licenses or consents required by law for its incorporation or establishment.
11. The needs of members, subscribers and enrollees of institutions and health care plans which operate or support particular hospitals for the purpose of rendering health care to such members, subscribers and enrollees.

12. The adequate funding of the proposed facility.

In the case of an application by a hospital established or operated by a religious body or denomination, the needs of members for care and treatment in accordance with their religious or ethical convictions may be considered against public need.

Certificate of Need will have, and already has had, unprecedented impact on architectural practice. A firm may invest considerable time and expense developing plans for a health facility, only to find that it wasn't needed in the first place.

**Federal Legislation P.L. 92-603** (Sec. 221, Limitation on Federal Payments for Disapproved Capital Expenditures): This is another form of screening for need before capital expenditures can be made. It “excludes Medicare and Medicaid payments for certain disapproved capital expenditures (except for construction toward which preliminary expenditures of \$100,000 or more had been made in the 3-year period ending December 17, 1970), which are specifically determined to be *inconsistent with state or local health facility plans*.”

“Capital expenditures, for purposes of this section, include expenditures: 1) for plan, equipment and related expenditures in excess of \$100,000; 2) which change the bed capacity for the institution; or 3) which substantially change the services provided by the institution. All work, whether contracted out or done in-house, is considered but excludes items judged to be operations or maintenance. The Secretary (of HEW) will make the determination of the acceptability of the designated state agency (generally the 314 [a] agency) with which he has made an agreement, and other state or local planning agencies. Provision has been made for a fair hearing to appeal the recommendation of the designated planning agency and for appealing the Secretary's determination; however, this determination will ‘not be subject to administrative or judicial review.’ Effective after December 31, 1972, or earlier, if requested by a state.” (From summary of selected provisions of P.L. 92-603.)

**Health Maintenance Organizations (HMOs):** There is widespread agreement

Reprinted with the permission of the American Hospital Association. (Colorado added to table.)

**Efforts to cut cost of health care are also taking new directions. For instance, the government has recently concluded that to use the least expensive materials and equipment to cut construction cost may not necessarily be the most economical. Consequently, calculations of cost for the full life span of a structure will be required.**

in the United States that a change for the better is needed in the financing, organization and delivery of comprehensive health care. To this end, the concept of the HMO is gaining considerable support.

The HMO differs basically from conventional health care methods in that it is based on a combination of prepayment for services and a responsibility for providing a total health care delivery system, including prevention. These elements result in a system in which costs are more easily controlled and quality care can be built in.

Conventional health insurance programs have been traditionally oriented toward inpatient hospitalization benefits rather than ambulatory care. Inpatient care is generally the most expensive kind of care available, thus the conventional insurance programs have resulted in continuously rising costs of health care. HMOs generally provide benefits for the less expensive yet equally important aspects of a comprehensive health care delivery system such as: preventive care; primary care; emergency care; acute inpatient hospital care; inpatient and outpatient care; and rehabilitation for chronic and disabling conditions.

These other basic characteristics of an HMO are worth noting:

- An HMO is not a universal delivery system for health care but rather an alternative that can be joined on a voluntary basis.
- An HMO responds to community needs by encouraging members to play advisory and policy making roles within the group.
- Income from the prepaid fees, which are for total health care, is used for operation and to determine per capita rates. Regularly, fees for hospitalization insurance go into a pool for application against insured risks.
- The basic objective of an HMO is to provide comprehensive health care. In order to achieve this, a balanced group of physicians, including specialists, must be organized. A group of medical peers makes it possible to establish and enforce quality standards.
- Provisions of both medical care and hospitalization requirements of HMO members is a basic tenet. A typical HMO will provide for all of a member's normal

office visits with his physician, diagnostics on an outpatient basis, laboratory services, X-rays, etc. By contrast, many health insurance plans place emphasis on hospitalization and offer only limited coverage for routine medical service. This characteristic has led to the practice of extensive—possibly excessive—use of hospital facilities for nonacute illnesses. Conversely, the ability to provide a broad range of services needed by members is one of the features which keeps hospital use rates down for an HMO.

Even more important, comprehensive coverage is basic conceptually to an HMO. The ability to provide examination and diagnostic services routinely on an outpatient basis is health maintenance. Proponents feel that this provides an opportunity to discover and deal with illnesses before they become critical enough to require hospitalization.

The HMO facility or network of facilities must reflect the concepts just outlined. It becomes evident that we are by no means describing a classic hospital: The expected widespread growth of HMOs throughout the country will have profound effect on the design of health facilities.

A number of successful HMOs were formed across the country during the era preceding and following World War II. These have proved that the concept can work, that it can be a viable health care delivery system. Frequently cited examples of successful HMO operations include the Group Health Association, Washington, D.C., a prepaid group plan contracting with doctors and hospitals and with some 80,000 members; the Health Insurance Plan, formed in New York in 1947 and with an enrollment of about 750,000 persons; the Group Health Care Cooperative in Puget Sound, Seattle, also formed shortly after World War II and presently with an enrollment in the neighborhood of 120,000. (Sections of the above were extracted from the pamphlet "Health Care Delivery: The HMO Alternative" by Thomas B. Johnson.)

**Professional Standards Review Organizations (PSROs):** The establishment of PSROs is a requirement of last year's Social Security legislation (P.L. 92-603, Section 249 P). The objective is to im-

prove the review of the quality of health care through formal peer review mechanisms. The following is a synopsis of the legislation:

"... the Secretary will designate PSRO areas throughout the country by January 1, 1974, to be specifically defined as geographic medical service areas which generally shall include a minimum of 300 practicing physicians."

The PSROs would have the responsibility of determining—for purposes of Medicare and Medicaid reimbursement—whether care and services are medically necessary and provided in accordance with established professional standards. Additionally, where medically appropriate, PSROs would encourage the attending physician to use, when feasible, less costly sites and modes of treatment.

Statewide Professional Standards Review Councils would coordinate the activities of PSROs within the state, disseminate information and other data to PSROs and review the overall effectiveness of each PSRO operation. At the federal level, a National Professional Standards Review Council would disseminate information on PSRO operations in the several states and report regularly to the Secretary and to Congress on the overall and area-by-area effectiveness of the review program. The council could offer such recommendations as it might have for improvement of the program.

Although PSROs may not have any direct influence on the design of health facilities, they are mentioned here to make practitioners aware of their significance and importance in maintaining the future quality of health care delivery.

**GAO Study:** Recently the General Accounting Office released an exhaustive "Study of Health Facility Construction Costs." This blames "slipshod planning, decreased labor productivity, wasteful delays and overlapping facilities" as the main reasons why hospital construction costs shot up from a 3 percent annual rise in 1960 to '67 to over 10 percent annually in recent years. It notes, for example, that of 23 hospitals singled out for intensive study, preconstruction planning consumed an average of 6½ years during which aggregate costs jumped 33 percent due to in-



Only by keeping up to date on legislation, trends in insurance policies and on the development in the fields of technology and materials can an architectural firm hope to offer the best when it comes to meeting the changing requirements in the health field. In other words, it will take an interdisciplinary team.

HEALTH MAINTENANCE ORGANIZATIONS					
	Members	Total Gross Square Feet	Number of Facilities	Total Project Cost	Annual Operating Cost
Group Health Care Cooperative of Puget Sound	176,220	450,385	9	\$ 29,480,000	\$ 31,656,000
Harvard Community Health Plan	32,000	40,000	1		
Kaiser Foundation Medical Care Program	1,050,000	3,000,000	24	\$160,000,000	\$200,000,000
Michael Reese Health Plan	4,500	10,000	1		\$ 1,500,000
Rhode Island Group Health Association	11,500	13,000	1	\$ 300,000	\$ 1,820,887
Yale University Health Services	20,000	90,000	1	\$ 6,500,000	\$ 4,500,000

accuracies, inflation and deviation from original plans.

To try to curb this trend, GAO suggests more uniformity in federal construction regulations, and more emphasis on alternate construction systems (such as the fast-track method) instead of the conventional sequential system. It should also "explore the feasibility of reusing hospital designs." \*

Perhaps the most original recommendation, and the one stressed most often, concerns the use of life-cycle cost analysis (see AIA JOURNAL, July). The study criticized hospital planners for failing to pay enough attention to a facility's operating costs, even though these usually exceed initial construction costs in two or three years. Rather than automatically buying the least expensive materials or equipment to hold down initial costs, it suggests that planners should gauge all costs according to their total over the hospital's life cycle (a span which the report pegs at an average of 20 years).

\* The response from The American Institute of Architects to this suggestion is that "there are no stock or standard plans for health care facilities, each facility will be unique to the extent that site constraints, local zoning, vehicular access and neighborhood requirements are taken into consideration in the initial project."

The best way to cut overall hospital construction costs, the study holds, is to reduce the demand for acute care facilities by more reliance on such well-known measures as preventive medicine, prepaid health plans, use review, insurance coverage for ambulatory care, shared services, regional delivery systems and health planning agencies.

In addition the report states that the planning of health care is disorganized: "Less than 50 percent of the 163 health planning agencies responding to our inquiries about health facility needs provided data showing that they had knowledge of 1972 needs for various types of inpatient, extended and ambulatory care facilities and beds."

Other recommendations to cut cost were:

- Regional groups of hospitals should share services to reduce the 90,000 obstetrical beds in American hospitals by 38,000.
- Home health care programs should be expanded. This, in turn, would reduce the need for 20,000 hospital beds nationally.
- Patients needing long-term care should be placed in special facilities that would not only be less expensive but also would reduce the need for 126,000 beds in general hospitals.
- A central data system should be created within HEW, upon which hospital

planners would draw for up-to-date information about construction techniques, operating systems and materials.

- Hill-Burton's new "Minimum Requirements of Construction and Equipment for Hospitals and Medical Facilities" have changed standards and will be compatible with the standards of Medicare/Medicaid.

- A systems analysis approach to the design and construction of hospitals should be adopted.

The "Study of Health Facility Construction Costs" is sharply critical of the share of costs attributed to wages and fringe benefits of building trade workers, commenting that many persons interviewed had felt that such costs were driven up by low productivity, restrictive work practices and jurisdictional disputes. Such views were, in turn, criticized as being unfounded by officials of the Building and Construction Trades Department of the American Federation of Labor-Congress of Industrial Organizations.

The study also contends that increased use of prefabricated materials would help reduce labor costs.

The report is bound to have a significant impact on any future federal financial assistance program to health facility construction.

All the foregoing point in the direction of regional health planning, locally controlled through volunteer citizen participation. Health facility development plans must be conceived within the context of a regional effort and based closely on health needs—indeed a difficult process.

Too many architectural firms have organized their staffs in a hospital division made up of hospital architects. This is too narrow a concept to respond effectively to health needs. Yet many offices cannot sustain all the necessary disciplines required on its payroll. An interdisciplinary task force should be developed with physicians, health care administrators, nurses, engineers, urban and regional planners, financiers, statisticians and economists.

This kind of task force can be geared toward health problem solving and determination of health needs. This might yield quite different results than plans for a new building. □

# Services Geared to the Complex Demands

Jason W. Frye, AIA

All conscientious efforts notwithstanding, contracting for architectural services for a health care facility can be followed by severe headaches brought about by one or more of the following situations:

- Misunderstanding of the scope of services necessary to complete the design, especially in the areas of dietary services consulting, radiation protection analysis, and radiographic and laboratory equipment layouts.
- Poorly defined programs or, worse yet, a well-defined program but slightly over the equally well-established budget. (This is often the consequence of the architect or the hospital consultant not being involved early enough in the project.)
- Schedules lacking recognition of the demands placed on the time of key hospital personnel. Problems will be encountered in getting meetings scheduled with the key client decision makers. Meetings often are interrupted by emergencies. (Sensible scheduling considerations when the architect is preparing his fee proposal will compensate for this difficulty. Proposals should include schedules of client and A/E decision meetings.)
- An unforeseen long list of agencies to see, approvals to obtain and possible substantial delays before approvals. (Once again, the answer is to recognize the effect on the project schedule. It is helpful to check with local and state agencies and, preferably, with experienced consultants.)
- Changing or conflicting state regulations, local building codes and standards, and nationally recognized codes such as the National Life Safety Code. The technology of fire prevention is improving rapidly, resulting in many changes to existing codes. A new edition of or amendment to one of these midway in design can affect budget, program and design.
- Changing design criteria. This is perhaps the most widely publicized problem inherent in health facilities. The sophisticated technology involved tends to become obsolete at a rate which is faster than the design process. Therefore, redesign of portions of a health facility is a constant problem. (One recent answer to

this has been to design functionally flexible space, using concepts such as interstitial space, supermodules and a modular approach to systems. These may or may not save the hospital money but they certainly do save the architect and engineer a lot of headaches adapting to changes during the planning and design stages. The significant benefit to the health facility client in this flexibility is that it allows decisions on equipment to occur later. If an improved model of equipment becomes available late in design or during construction, or a new procedure emerges, the design criteria can change without undermining the design concept for the project as a whole).

There are a multitude of problems such as mentioned, all well known to hospital planners and architects, varying with projects and time. They have obvious relationships to the definition of scope of a project and are integral to the process of developing a reasonable fee proposal for the work involved.

Another area of concern relates to the ability of the architectural firm's staff to understand the language of health facility planning. "Integrated systems analysis" is one of the more mysterious terms used by architects but it hardly holds a candle to neonatal intensive care, electro-encephalography or angiography. Many such terms fill the everyday life of the health facility planner. Understanding the medical terminology is basic to successful planning. If communication is difficult, then planning is nearly impossible.

If all these problems and others exist to bedevil the architect, then why are so many firms successful, and why are so many attracted to health planning? The answer is economics.

- Construction of health facilities is less affected by variations in our economy. They tend to relate to population growth and new patterns of population distribution. They have, until recently, been substantially federally subsidized.
- During the last few years of declining federal subsidies there has been increasing support from private financial circles which traditionally considered hospitals to be single-purpose buildings and poor financial risks. Proprietary hospital cor-

**At the root of good health care facility designs are an architectural firm's services, its organization, its planning methods. Only part of the problem today is to design for adaptability and expansion. These qualities are shown in the Neurosensory Center of the Methodist Hospital and Baylor College of Medicine (Golemon & Rolfe). However, the architect encounters other, even more complex demands on his abilities.**

porations have changed that image. Hospitals generally are now looked upon with favor by most large lending institutions.

- Hospital projects are generally costly. The budget and fee for many of them will equal or exceed some of the largest high-rise office buildings in this country. Consequently, the competition is strong among architectural firms for the commission for even a medium-sized hospital.

The quality of engineering work will have a major effect on the success of a project. The question of engineering capabilities continually comes up during interviews with prospective clients. A good record will materially affect the selection of an A/E team. Engineering fees may easily be over 50 percent of the total.

Robert Douglas, in an article for *Progressive Architecture* (July 1972) entitled "Health Care: The Fastest Growing Industry," states the magnitude of health facility needs very well: "It has been projected that by 1975, health care expenditures (now around \$70 billion annually) will top the \$100 billion mark and hospitals alone will employ over 5 million people—making health the largest industry in the United States. It is estimated that it will soon reach 10 percent of the gross national product. The need for appropriate facilities to support this growing industry becomes evermore acute."

He goes on to quote a US public health study which marks 35 percent of all hospital facilities in the country as seriously obsolescent and a publication from the Department of Health, Education and Welfare, which states that 43 percent of the nation's health care facilities need modernization.

Writes Douglas: "More than 75,000 additional beds are needed to overcome current deficiencies, eliminate maldistribution and respond to population growth. Simple projections reflect a requirement for net addition of some \$23 billion capital funds in this decade. This means nearly doubling investments in hospitals and related facilities in a single ten-year period. . . . Translated into dollars, a reasonable estimate of the value of the needed replacements and current construction costs is \$16 billion. In addition, \$500 million

Mr. Frye is partner in the architectural firm of Golemon & Rolfe, Houston.



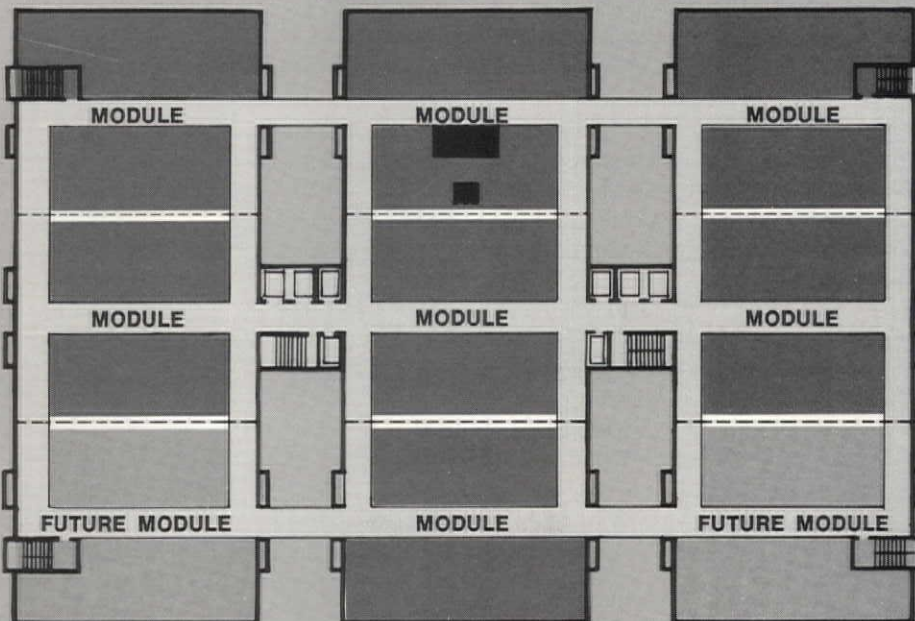
## ADAPTABILITY

### MODULAR CONCEPT

Uniformity of structural module for adaptability to current and future planning needs

Vertical routing of current and future utilities and systems in uniformly and conveniently placed vertical chases in each module

Horizontal routing of current and future utilities and systems in uniform and adequate space between levels



## EXPANSION

**HORIZONTAL:** Additional modules can be added with bridge connections allowing expansion of all three institutes.

**VERTICAL:** Additional levels can be added to all three buildings.

in new construction will be required each year just to keep pace with the population growth.”

Because we have a slowing population growth, we will be faced with a more rapidly aging population, and possibly greater health problems. Our population is also on the move constantly. Regardless of the exactness of the figures quoted, the need continues to exist for new health facilities, modernization and relocation of existing facilities and services.

Many hospitals are rich in beds but poor in ancillary services. These services must be expanded to accommodate the recent emphasis on outpatient health care. The existing hospitals in this country are no more adequate for increased outpatient care than for inpatient care.

With the growing consumer awareness, there has been an increasing demand from the public for better health care. As more federal programs provide more people the means to pay for this, our standards of care will further change.

What kind of services, then, should the architect provide in order to help meet this demand? Are new types of services

needed? Are basic services needed, different in scope and nature from architectural services that evolved only in the past few years? Certainly there are.

Our firm prefers to separate these services into two major divisions or packages. The first is preliminary project analysis, which includes determination of needs, preliminary architectural programming, functional relationship diagrams, code analysis, cost projection, applications for approvals and first stage financing application. This package is normally proposed under a separate fee, quoted either as a lump sum or a fee plus expense.

Following the approval of the first package we proceed with development of the second, which consists of schematic design and master planning, documents for fund raising and financing, design development, construction documents, and construction.

This gives our team of architects and consultants and our client an opportunity to define the scope and nature of a project before negotiating the fee. This assures that the contracted services will fit the needs of the project and the client. The

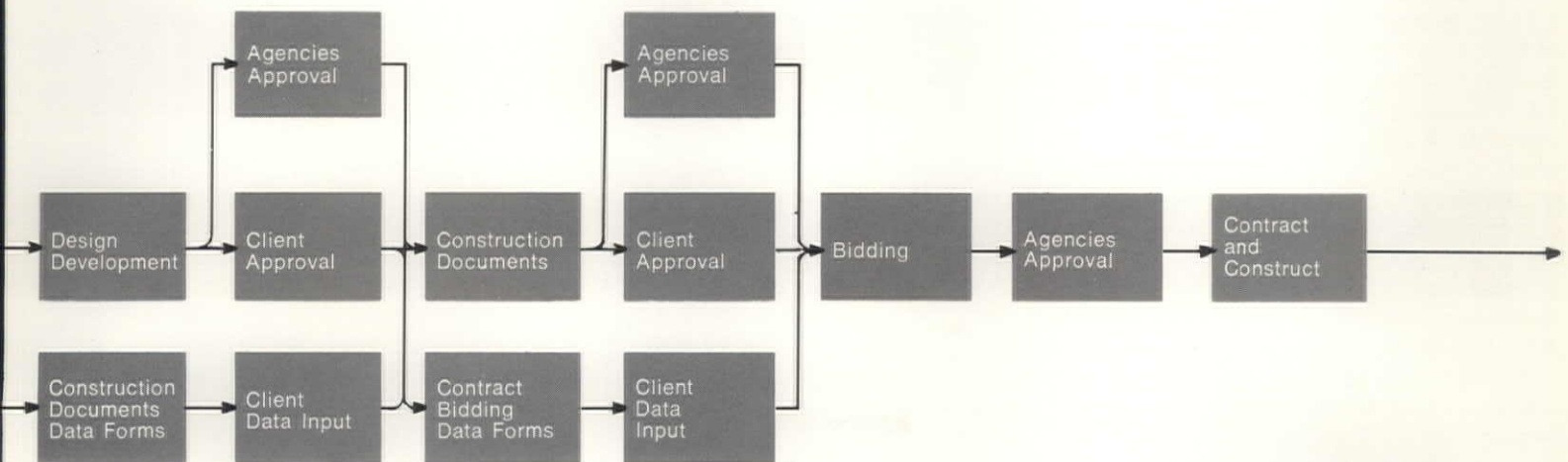
architect has a solid basis on which to propose the fee. Our firm is using basically the same approach to other building types.

**Preliminary Project Analysis:** The new approaches to hospital planning, the growing body of research information in specific areas of health care facilities design, the increasing number of codes and standards and new regulations have as much effect on the design and construction process as the design procedures themselves. The research and analysis stage must obviously include careful study and documentation.

Comprehensive health planning provisions of social security legislation, commonly referred to as HR1 (Public Law 92-603) finally put some teeth into regional planning this year. While the final results of this legislation are not yet clear, probabilities are that the number of health facilities built in this country each year will continue to increase, though many projects will be delayed six months to a year. For certain, the preplanning process will be lengthened due to the front end work required to prepare a proposed project for review by the area planning agen-



The method used by the author's firm is to separate the services into two major packages: preliminary project analysis and project design and construction. Following approval of the first package, usually proposed under a separate fee, comes development of the second. This gives the architectural team and the client as well an opportunity to define the scope and nature of a project before negotiating a fee.



**PROJECT DESIGN AND CONSTRUCTION**  
**PACKAGE II**

federal programs is now more toward guarantees of loans similar to Federal Housing Authority programs that have existed for years, with the possible addition of interest subsidies).

When borrowed capital is the principal means of financing a project, the cost must be recovered out of revenue and therefore it goes more directly back to the patient. Since this form of financing is so closely tied to the patient's bill, it is essential that accurate revenue/expense projections be made. These include all direct and indirect expenses which must be covered by expected revenue as well as operation cost. Many architects do not know how to do these necessary projections. However, assistance is available through management consulting firms. Our firm prefers to maintain the capability to do these economic studies as part of our services, believing it gives a better basis for making planning and design decisions and under-

standing their impact on functional and operational needs. This type of early study is absolutely essential, especially on proprietary hospitals.

With privately borrowed capital as a major source of financing a facility, the facility will inevitably change in character. More of the low cost types will be built. Cost comparisons of maintenance and operation of a facility versus initial capital cost has become a matter of considerable concern. The revenue/expense type of cost study is followed naturally by life-cycle cost analysis. The pressure is on to reduce the cost of delivering health care as well as the cost of a facility's maintenance.

The greatest strides in reduction of health care cost may well be in coupling original capital cost for facilities to the cost of the operation over the life of the facility itself. A generalized procedure for systems cost/benefit may be to:

1. Develop a team of health professionals—hospital consultant, architect and engineer.
2. Design the method or find one that is appropriate to accomplish the work.
3. Check the design against alternatives, using real numbers.
4. Determine economics of design and operation.

The most effective studies in this area are being done by federal agencies. Limited studies by the A/E on the subject are often done as part of the early design development of a project. However, these studies are often beyond the economic limits of the firm and/or the client.

There have been many attempts to categorize and organize the multitude of cost and quality of systems and components of medical facilities. These have been only marginally successful because:

- New systems and components are continually being added. The quantity of data

**The architect shares in the responsibility of bringing down the cost of health care delivery. To this end, the very latest technological know-how must be available from someone on his team and provided as part of his services.**

on different systems and materials nearly prevents a comprehensive analysis of all alternatives.

- The basis for expected life and cost data varies among manufacturers. There are no industry standards.
- There are many differences of opinion on basic systems criteria. It is not unusual to find two authorities in the same field in basic disagreement—each with logical, factual data to back up their points of view.
- There is no communication, no sharing of data between planners in different firms.

These four facts alone make early cost and systems decisions during preliminary project analysis difficult at best.

The current approach to designing health care facilities is to determine the program, project the cost and add financing, fees, other indirect costs and the cost of operation and then work forward to the eventual cost charged to the patient. Perhaps now, with health care costs at an all-time high, we should start with the cost to the patient and work backward, seeking innovative solutions as we go. Research will continue to seek new cures, new technology and new services. Maybe a significant thrust in research should be made to deliver existing health care to as many people as possible within specific cost limits, through the use of equally sophisticated technology.

**Fee Proposals:** Before a firm presents its qualifications to a potential health facility client, the client's special needs as well as applicable standards and regulations must be clearly understood for the preparation of a fee proposal.

The number of consultants available in a variety of fields which have bearing on health facility planning represent a valuable resource to both the hospital and the architect. These include management consultants, industrial engineers, hospital consultants and hospital planners. In addition, there are a number of architectural firms that will work on a consulting basis, as an associate or in a joint venture. The extent to which the consulting firm performs services should be the basis for determining whether an association or a minor consulting role is appropriate.

The preliminary preparations to design, which have always been long in the past, are now even longer. The programming period can easily be longer than that of completing the design and the construction documents. It is in this area that consultants can best serve the architect and his client. It is imperative that the scope of services to be performed by the consultants and the interface between the consultant and the architect, who often must use programs developed by the consultant, are clearly stated to all concerned. A consultant should be willing to continue sufficiently far into the design process to assure the adequacy of the data developed.

Our firm finds network analysis and scheduling a favorable tool in developing the interfaces between the hospital consultant, architect, engineer and hospital client. Generally, our fee proposals and our definitions of scope of work are based on network analysis.

Some architectural firms, our own among them, have developed an internal capability to perform services normally accomplished by special consultants and thus can be counted upon to provide continuity of responsibility and management of the total project. The less experienced architect would be wise to work with a consultant in the development of a fee proposal on any project as complex as a health facility. More and more of our firm's fee proposals are not on a percentage basis but rather on a stipulated fee plus expenses arrangement or on a lump sum. This works well for the client and for us. However, it does require an in-depth analysis of scope and nature of the work to be performed before the fee proposal can be quoted.

Since a great deal of work is done on health facilities prior to the initiation of the traditional design process, the consultant should be a valuable resource in assisting the architect with reviews and approvals on a project during preliminary analysis. There are at least three different agencies at the state, local and federal levels involved actively in design review—important factors to consider in developing a fee proposal. Normally, there will be a project application filed with the local planning agency. This is usually done by

the hospital client with the assistance of the architect or hospital consultant. Following the preliminary project analysis, application is made once again for a review of program, eventually followed by a review of schematic design at the local and state levels and, possibly, by investors. This is again followed by agency reviews during design development and construction documents.

**Schematic Design Development:** A design seminar was held not long ago that was specifically oriented toward a comparison of design methods. It was attended by representatives from a number of firms located in different parts of the country. It became obvious that design methods don't vary radically from firm to firm. While some of the terms used and some of the detail of design development vary slightly, the basic activities are the same:

1. The program is developed jointly by the consultant, the architect and hospital staff.

Many resources of data for programming are available, such as the American Hospital Association and the US Public Health Service's publications. These are available at moderate cost and lists of available publications can be obtained. Programming criteria have become fairly standardized. It is not unusual at all to see great similarity of programmed area, though several programs may have been prepared by different consultants independently. The danger is that programming might be treated as an exercise of accumulating data rather than a conscientious activity of research and analysis.

2. Functional relationships are developed early to verify and validate the program assumptions. This is accomplished through the use of some sort of gaming or modeling situation, either using squares of colored paper to represent spaces or tracing paper overlays.

Another issue is the effect of codes and standards, economics and other factors on the architectural practice specializing in health facility designs. Some of these effects are:

- More in-house specialists are required and are often absolutely essential, particularly for equipment data, finish re-

**But only when the architect, through these services, can manage to get the systems and functional requirements under control and provide better and more humane health care facilities will he have some claim to success. Clearly, his services must be provided through a multidisciplinary team.**

quirements, biomedical engineering studies, etc.

- Outside consultants are frequently required and ideally should be firms with which a good line of communication has been established.
- Network scheduling (including client input, decision points and development process) has become a necessary tool in directing the efforts of a multidisciplinary approach.
- The firm must keep abreast of technical changes and code revisions, especially as they affect space criteria, system cost or function.
- More systems-oriented research is being done, including trade-offs of systems versus manual procedures.

**Design Development:** *Modern Hospital* for March, 1973 has an article entitled "Study Tells Which Areas Change Most Often and Why" by Herbert McLaughlin, AIA, John Kilbre and Mort Raphael. The authors criticize the building of maximum flexibility into all areas of a hospital and present an analysis of the kind of remodeling and/or expansion most characteristic of specific areas. They conclude that nursing units should be designed for replacement; that treatment, diagnostic and service departments should be capable of small but frequent changes or additions; and that transportation systems must be capable of extensive but concentrated growth.

The importance of this article is not necessarily in the conclusions but rather lie in the postevaluation work. Analysis and reanalysis of design criteria are essential for the architect who wishes to continue to design health facilities or any other specialized building type. Much of the data used by health planners is developed in this manner and is often shared through articles. In "It Seemed Like a Good Idea: But How Well Did It Stand Up?" (*Modern Hospital*, March 1969) E. Todd Wheeler, FAIA, evaluated buildings designed by his firm, offering a critical analysis of good and bad design solutions. Hopefully, design evaluations before, during and after construction will increase and help us find design solutions for the hospitals of the future.

Better-looking, more human-scale hos-

pitals will result if we, as architects, can manage to get the systems and functional requirements under control. We are now so heavily involved in designing the technical side of health facilities that little attention has been given to the humanistic side. For this reason our firm has attempted to develop prototype hospitals, an activity we share with a number of firms. As far as we are concerned we have found that mutations from any basic concept cover a wide range. Hospitals are still individual designs. One obvious key to standardization seems to be to develop a design concept which is general enough to permit a wide range of changes and plugging in of departments of varying sizes and service capabilities. McLaughlin and others have explored in detail the variety of configurations present in existing hospitals.

Every portion of a hospital will have operational patterns and efficiency affected by the design approach that "function follows form." Simple patterns of separating clean from soiled, activity and work centers from public traffic and interference are relatively easy to plan. Beyond this, however, a wealth of industrial engineering studies have been undertaken. The architect must avail himself of these or re-create the data himself, or be doomed to make costly errors for his client.

In the interior of a health care facility, one of the greatest considerations may be—now much more than before—to keep the users happy with their surroundings. Color plays a vital part here. Our attitudes concerning the use of color and materials are based on length of stays that existed some years ago, but the criteria are changing. Little definitive data exists on the use of color and its effect on people, but studies are available for the architect's use. (The AIA JOURNAL ran a three-part article on the subject in its August, September and October 1972 issues, authored by Faber Birren.)

In designing hospital interiors we should consider that as technology becomes more sophisticated, it also becomes more ominous. A giant cobalt unit looks like a drill press. Intensive care and coronary care units contain gadgets that scare people. The smells and noises in

the hospital are neither homelike nor familiar. Respirators and X-ray machines look more like car parts than people-care systems. A great deal of work has gone into making the systems more efficient, but only recently are the manufacturers of these hospital components making them attractive, colorful and clean of line, and thus more acceptable to the patient.

Hospital personnel, being around the systems day after day, tend to become hardened to their appearance. While much of the health care gadgetry must be prominently displayed in order to be accessible to the personnel, whenever possible it should be out of patient view. In this area architects and engineers have a great contribution to make.

In discussions of the availability of beds and the quality of health facilities, the prevailing image of hospitals in our country seems to be that of being typically urban general hospitals of between 250 to 300 beds. Most of our hospitals are not like this at all. They are more typically either very small and struggling to keep up, or very large institutions. Most typical of all is a small rural or suburban hospital, clinic or infirmary, short on money, specialists, and technical capability, with perhaps 100 beds or less. These are the facilities which are most often in need of repair or replacement and are least capable of finding the capital. These are not the widely publicized architectural projects nor health care at its best. If we are not careful in seeking solutions to their dilemmas, they will pass out of existence. This is perhaps the largest gap in our health care system, and the reason for it is that these marginal facilities are of little interest to either corporate investor owners or legislative bodies. The majority of hospitals in the US fall in this category.

At the other end of the spectrum is the patient in Room 257, Unit B, 5th Floor, West Wing, of the 1952 annex, completely lost and isolated from any form of personal touch or personal care. When we find the solutions for the patient in Room 257 and the patient in the small rural hospital as well, then we will have some claim to successful health facility planning. This success will depend to a large degree on the type of services architects provide. □

# The New Generation of Military Hospitals

Sandor B. Csobaji, AIA

The New Generation Military Hospitals Program was formally initiated in June 1969. The total effort is an on-going 10-year program in the offices of the Assistant Secretaries of Defense for Health and Environment and for Installations and Logistics.

The goals of the program are to reduce the cost and to improve the operating efficiency of military health care facilities while maintaining or improving the quality of patient care and also to create spin-offs for improvements in the civilian health care sector.

The military medical services are the largest health care providers in the United States, operating 212 hospitals with over 31,300 beds, taking care of more than 1.1 million admissions yearly as well as 400 clinics and dispensaries which handle more than 50.3 million outpatient visits annually. The total budget is \$2.4 billion. Concern over the rising cost of providing this care, as well as the rising cost in the private sector, is the focus of the program, which has three phases:

1. *Systems analysis*, completed be-

Mr. Csobaji is a principal in the firm of RTKL Associates Inc., Baltimore.

tween 1969 and 1971, developed concepts and systems, drawing on current state of the art and technology, and improved concepts developed during this phase. All will be incorporated into a single test-bed facility.

2. *Design/construction/evaluation* of a test-bed facility has been initiated and the advanced planning completed. The latter included the application of NGMH concepts to Travis Air Force Base, California, the site for the prototype facility, and development of new criteria incorporating these concepts into the program for design. Standard architectural/engineering will be underway shortly, including integration of data automation and medical information systems into the design.

3. *Long-range R&D applications*, including the development of evaluation criteria and advanced management and medical information systems / design consulting to an advanced state of the art, to be included in the prototype facility as well as in future military medical facilities.

Phase 1 request for proposals generated interest from over 300 organizations. Twenty-eight formal proposals were received from diverse industrial/management design consortiums. The Depart-

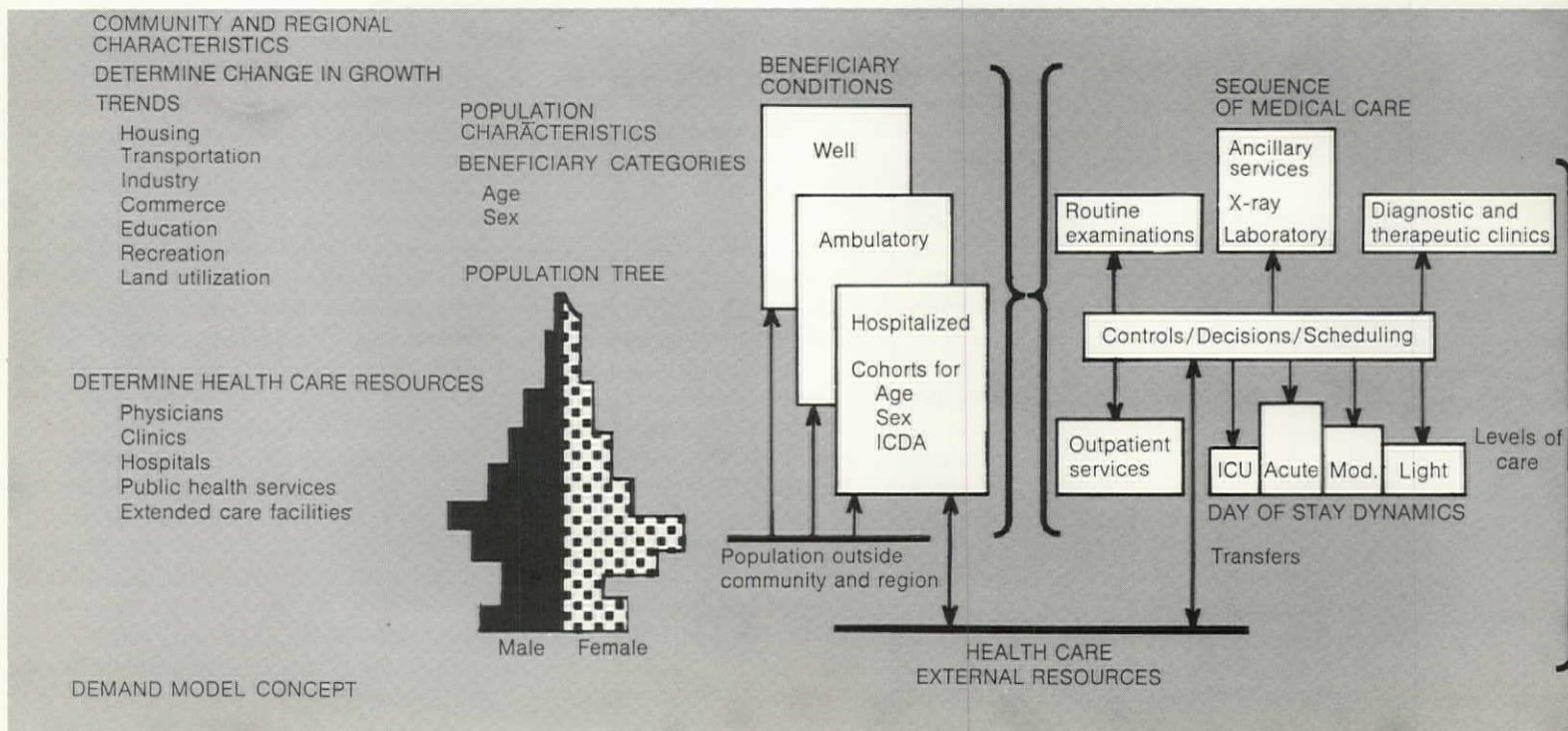
ment of Defense awarded two parallel and coordinated contracts to Arthur D. Little, Inc., and the consortium of Westinghouse/RTKL Associates, a team which included consultants from the Johns Hopkins University School of Medicine, the University of Michigan and Georgia Institute of Technology Schools of Industrial Engineering, the University of Pittsburgh School of Nursing and the Sybron Corporation.

For the advanced planning tasks the Air Force selected the Westinghouse/RTKL team to apply the Phase 1 planning and design concepts to Travis AFB. Benham-Blair Affiliates was selected to develop the new criteria and the program for design; national solicitation by the Naval Facilities Engineering Command (design/construction agents for the AF) produced inquiries from over 400 firms.

The responsibility for continuity, the integration of results and overall program monitoring rest with the DOD. The awards of additional work will go to individual teams on merit and performance.

Phase 1, or the systems analysis investigation, included:

- the planning and budgeting process from the perception of a facilities need to





**The hospital planner should not overlook the wealth of information derived from studies contracted for by the federal government. These studies represent considerable investments; the findings are public domain and are generally available.**

the allocation of resources, determination of capacity, types of facilities needed and instructions to the design/construction agencies

- the design/acquisition cycle, analyzing the types of facilities built, their capital cost, operating efficiency, maintenance flexibility and rates of obsolescence
- facility operations, including efficiency throughput, application of technology and management techniques, allocation of personnel, operating costs at various functional levels and changing requirements over time
- training and use of professional and paraprofessional personnel as related to the clinical workload and operation requirements.

About 40 percent of the Westinghouse/RTKL team's total effort went into establishing a base line as to "how things presently are." Only against this base line could potential improvement be evaluated and justified. The obvious conclusions were that no significant improvements in the overall system were feasible unless the problems were addressed in terms of their interrelationships and improvements integrated into an operating system. It was also concluded that to get more cost-

effective facilities and more efficient operations, improvements in the management and decision-making process at all levels were necessary. The critical ingredients in support of improved management/decision-making procedures are the availability of appropriate data and information systems as well as tools and techniques for manipulating the information in the evaluation of alternatives. These conclusions not only supported the approach and nature of Phase 1 results but also confirmed the need for the "real world" application in the Phase 2 test-bed facility and the need for test and evaluation under operating conditions.

It was found during Phase 1 that facilities were invariably undersized against the predicted workload, especially in the ambulatory care and diagnostic areas, and that in the lag between the time when a need is identified and a facility beneficially occupied (five to eight years), the requirements may have substantially changed. The early establishment of a fixed capital budget imposes further constraints on the process, as the time lag and escalation erode the buying power of available funds, thereby causing reduction in the scope and capability of the facilities.

The need is there for a more predictive method of defining health care requirements. Consequently, demand modeling techniques were developed. The logic behind this is a relatively simple computer tool which considers these basic factors:

- characteristics (age/sex) of population to be served
- condition of the beneficiary population in terms of visitation rates to various clinics, rates of admission by various disease categories
- sequences of medical care for each episode of care (inpatient, outpatient), including lengths of stay, levels of care, use of diagnostic/treatment facilities (surgery, radiology, laboratories)
- demand on resources based on the conversion of appropriate workload units including staff (physicians, nurses, support) and supplies (radiology film, laboratory tests, meals, etc.)
- performance requirements for facilities, translating workload through space cri-

teria to size and capacity (beds, surgical suites, radiology suites, clinical laboratory, outpatient clinics), operation variability, future flexibility needs in terms of growth and change, and life-cycle cost.

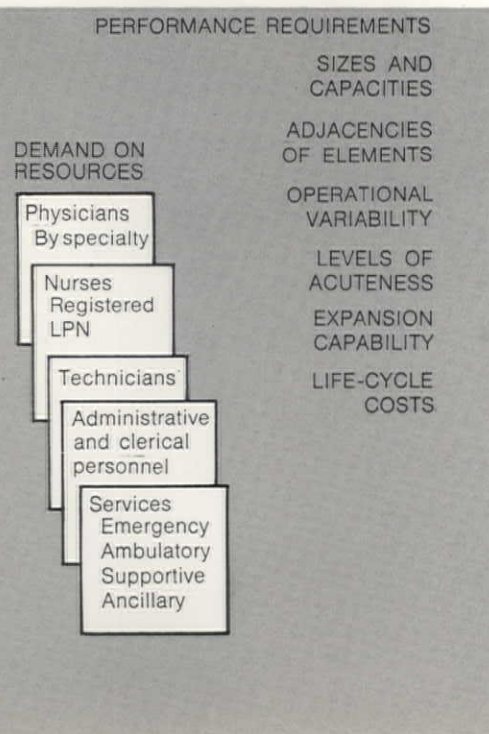
Demand modeling, in its simplest application and based on the reliability of current data and prediction of future trends, can provide a more reliable estimate of facility size and requirements for various elements. As part of a creative planning/design process, it can begin to interrelate present and future health care facilities on a regional basis, simulate and game alternative courses of action (new construction, upgrading present facilities, phasing out of facilities and services), test the impact of potential new modes of health care delivery (impact of screening, trade-offs between reduced lengths of stay and outpatient visits, new clinical procedures and new technology).

In its present form, however, demand modeling is one step beyond the rudimentary stage. The more sophisticated applications are dependent on the availability of data and criteria through the implementation of a medical information system which interfaces the clinical/patient care data with planning/demographic data and facilities design/construction data. It is anticipated that through the comprehensive automated data processing effort of the NGMH, these goals will be achieved.

The design concept must be capable of manipulating in three-dimensional and spatial sense the same data that the demand model manipulates in terms of changing trends in population and health care delivery. The issue of facility flexibility is further sharpened under the constraints of initial budget limitations and the difficult legislative and planning cycle under which facility changes are effected.

Present military hospitals, it was found, were generally adequately designed and constructed but were usually undersized, lacked the flexibility and growth capability and invariably suffered under the first cost penalties of inadequate mechanical systems, elevators, minimal structural systems (short spans, floor to floor heights) and the least expensive finishes.

Where special and separated facilities,



**The New Generation of Military Hospitals is one such study undertaken for the government. Though done for the Department of Defense, it will have applications also in the civilian health care sector.**

such as light care beds, were provided, these usually became absorbed into standard hospital functions with poor relationships to services and adjacencies. Further, it was found that over 50 percent of the facilities eventually underwent significant changes and expansion programs. Moreover, usually after the completion of these programs, critical functions were hopelessly dislocated and adjacencies violated, causing serious operational inefficiencies and reducing the useful life spans of the facilities.

The hospital as a traditional building type is obsolete; health care facilities must be conceived of as integrated patient care environments and activity zones, interrelated by flows (patients, staff, materials, information) and critical adjacencies (emergency, surgery, recovery, ICU/CCU, radiology, laboratory) but distinguished by levels of patient care (ambulatory, diagnostic/treatment, inpatient intensive to light care) and different rates of change/growth/obsolescence.

The service and factory functions (dietary, laundry) through the use of disposable and contract services are changing materials management and processing operations, although in-house capability is frequently still the most cost-effective alternative. The heavy ambulatory care workload (up to 700,000 outpatient visits per year) in military facilities pose operation requirements on the facility that are more analogous to the environment and efficiencies of a shopping center. The external access and orientation requirements are similar to the needs of an airport, with multiple points of entry related to specific facilities and clinic destinations.

Although the NGMH program is still in its early phases of development, some of the intended benefits are beginning to seep into the system within the military as well as in the civilian health care sector.

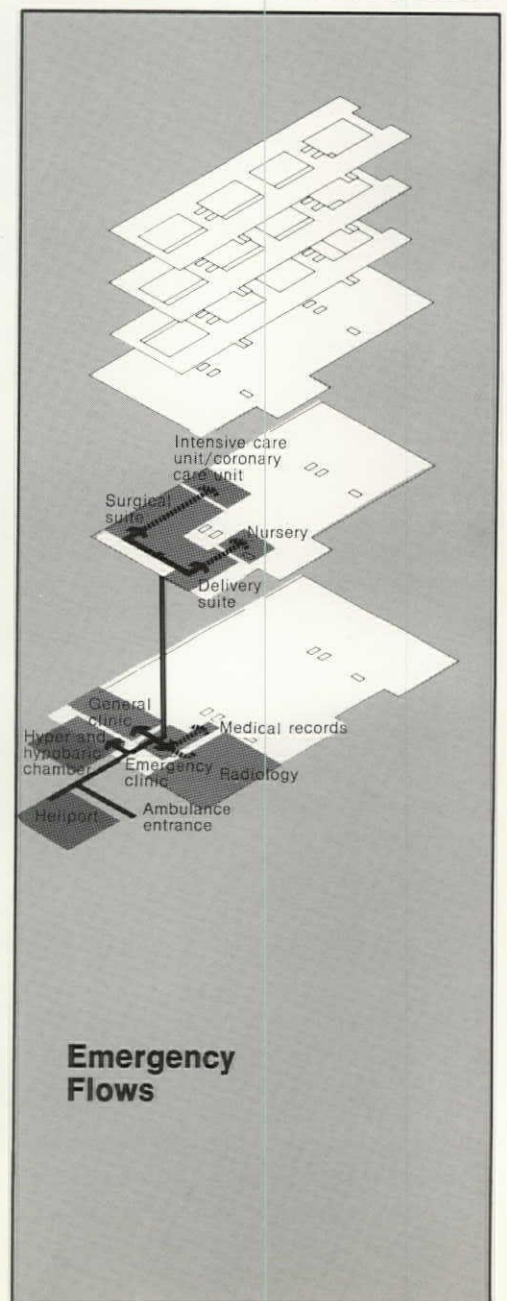
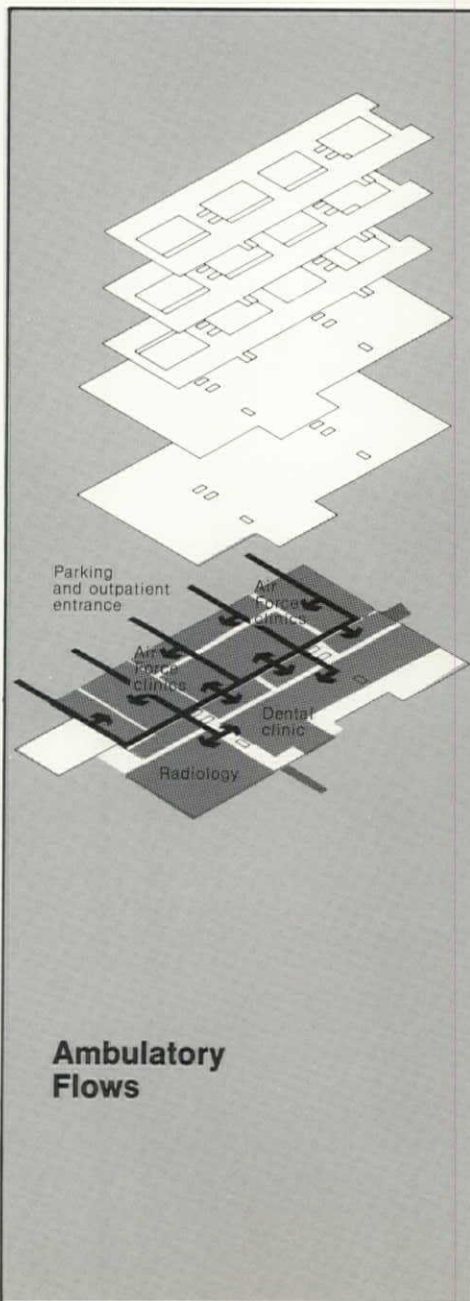
- The recently completed General Accounting Office study on "The Cost of Federally Supported Health Care Facilities" demonstrates the potential benefits of life-cycle costing. The study indicates that potential real savings are improved in a planning process where health care needs are assessed within a comprehensive regional framework. This study will

have significant impact on pending health care legislation.

- The application of a cost modeling concept, developed for Travis AFB, has been expanded in the planning of the redevelopment of the Johns Hopkins Hospital. For each functional area, not only are the capital costs identified but also the operating costs for each function and unit of service as well as the anticipated revenues. This process will insure that the most cost

effective capital investment program will be undertaken with reasonable expectations that the operating cost and revenues will be balanced. The technique will also identify the degree of subsidy required from various sources to maintain the operations which are not revenue producing but are essential to fulfill the teaching and research functions of Johns Hopkins.

- The development plan for National Naval Medical Center and the Naval Hos-



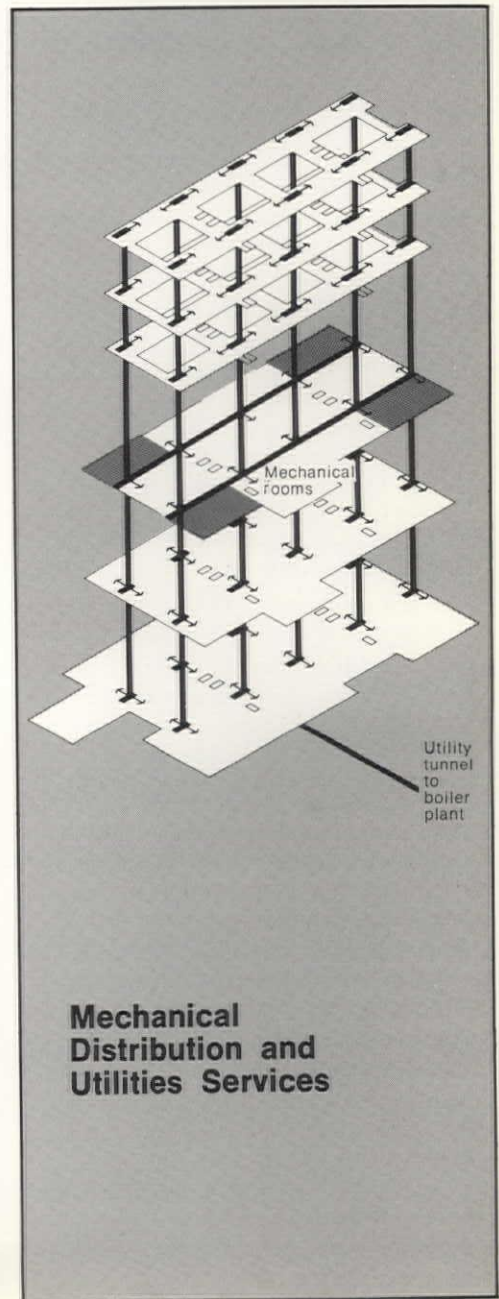
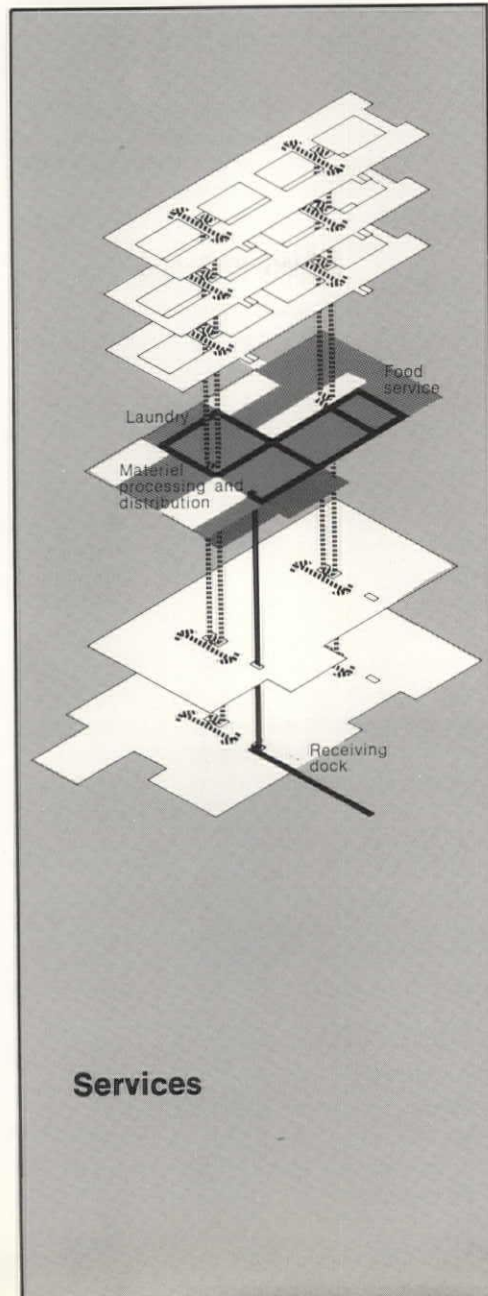
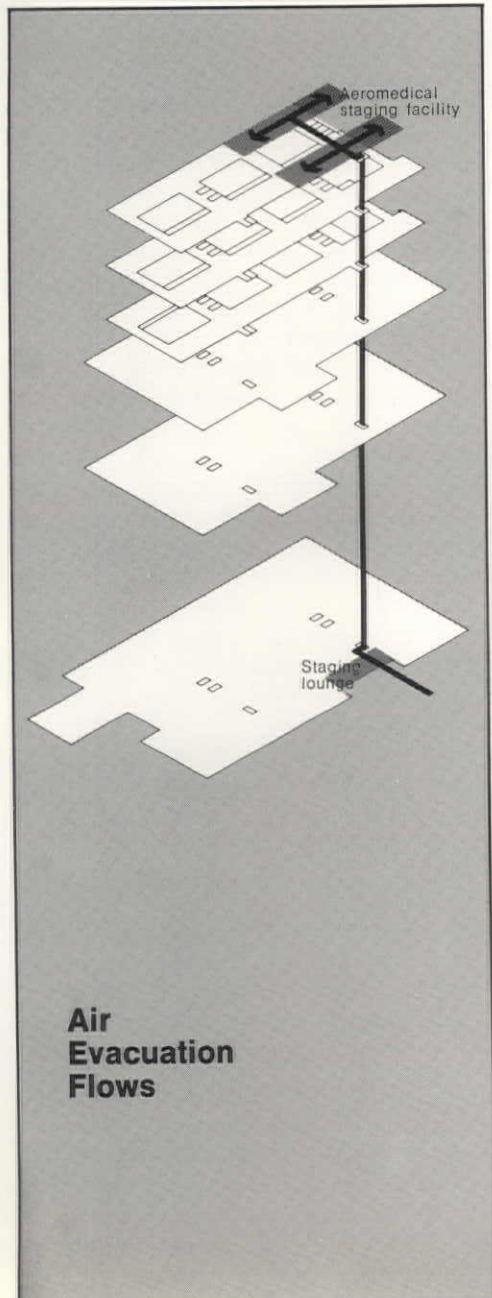
**Important aspects of the NGMH program, which was undertaken in part by a consortium of Westinghouse/RTKL Associates, are the establishment of "how things presently are" in order to provide a base line for potential improvements; development of demand modeling techniques to define health care requirements; and flows within the hospital.**

pital at Bethesda, Maryland, recently completed by RTKL for the Chesapeake Division (Naval Facilities Engineering Command) and the Bureau of Medicine and Surgery, illustrates a highly successful adaptation of the Phase 1 design concept to a retrofit situation. Some functions are dictated by the location of functions within the existing facility. Unique topographic and site conditions provide the opportunity for on-grade development

on both ambulatory care and diagnostic/treatment levels. A computerized adjacency optimization program indicated a 50 percent improvement in the overall functional efficiency of the proposed configuration over the present facilities.

These isolated examples are hopefully only some early applications of concepts and methods from a highly imaginative and creative federal program. However, the critical periods for the new generation,

effort are still ahead during the design and evaluation process. The establishment of criteria for program success and the definition of evaluation protocol and perhaps the need to admit that some goals have not been achieved may lie ahead. It is hoped that this will not happen and that the program will indeed reach its lofty goals. Then, much-needed improvements in the efficiency of the health care delivery process may be a reality. □



# The Medical Office Building

James R. Diaz, AIA

The trend toward new medical office buildings affiliated with hospitals is strong. The MOB's, as they are sometimes called, are much larger in scale than the typical building designed for a specific group of doctors. They are more complicated because the needs of many tenants must be satisfied, strict budgets met and future demands for change accommodated without inordinately affecting original construction costs.

The reason for this trend is the presently changing character of medical practice. We are beginning to see more of larger group practices and much closer relationships between physicians and hospitals. Physicians are trying to simplify their practice in the face of increasing complexity of techniques, interprofessional relationships and the required paperwork and documentation. This simplification is achieved primarily by eliminating personnel and overhead, reducing space requirements and referring patients directly to hospital diagnostic and ambulatory treatment departments. It has become increasingly apparent to physicians and hospitals that there are many inherent advantages in being closer together, preferably in connected buildings.

This national trend has also been aided by the reluctance of some physicians to invest heavily in private buildings distant from hospitals against the fear that Congress might move toward a health delivery system based in hospitals, relying upon large group practices and dominated by third party payers, including the government itself.

The major advantages of a hospital-affiliated MOB include:

- The physician will be able to see more patients in a day.
- The hospitalized patient benefits since his physician is more readily available.
- The patient visiting his doctor's office need not wait long for the doctor to return from an unexpected trip to the hospital.
- The hospital has a group of captive doctors who will admit their patients and who will refer ambulatory patients to hospital departments like radiology, laboratory,

physical therapy and special diagnostic services. The hospital may also extend administrative, purchasing, central processing and housekeeping services to building tenants.

- Physicians can reduce overhead and space requirements by avoiding duplication of personnel and services available in the hospital.

Some of the major drawbacks of hospital participation are:

- If financing is tied to that of the hospital itself, it is nearly impossible to offer prospective physicians a condominium ownership concept.
- Possible limitations may be imposed upon individual practices and services if they compete with hospital departments.
- Staff membership may be a requirement for building tenants.

Like most major building types, the MOB has attracted the package dealers who offer to plan, finance and build under one contract. The prospect is enticing because on the surface it promises to relieve the owner or sponsor of much uncertainty, responsibility and tedious work.

To offer similar services, architects must collaborate with a multiplicity of clients, medical office building consultants and contractors and, most important, must accept stringent cost and design limitations.

In too many recent cases architects have been either unable or unwilling to design within the narrow constraints of budget and program required to make a project competitive with traditional doctors' office space in older buildings or new wood frame structures of a speculative nature. Naturally, a large new type I building, at current interest rates, will require higher rent. However, additional value of proximity and other benefits to prospective tenants can generally command only about \$2 more in rent annually per square foot than primitive or less proximate space. This obviously requires extremely economical design and construction. But while the structure of the building may be simple, that of the architect's services is usually not.

Like all buildings the MOB is the focus of interplay of many forces. Administratively it may be complicated because

More and more, this building type is becoming affiliated with hospitals. It has recently been a subject at government-sponsored seminars.

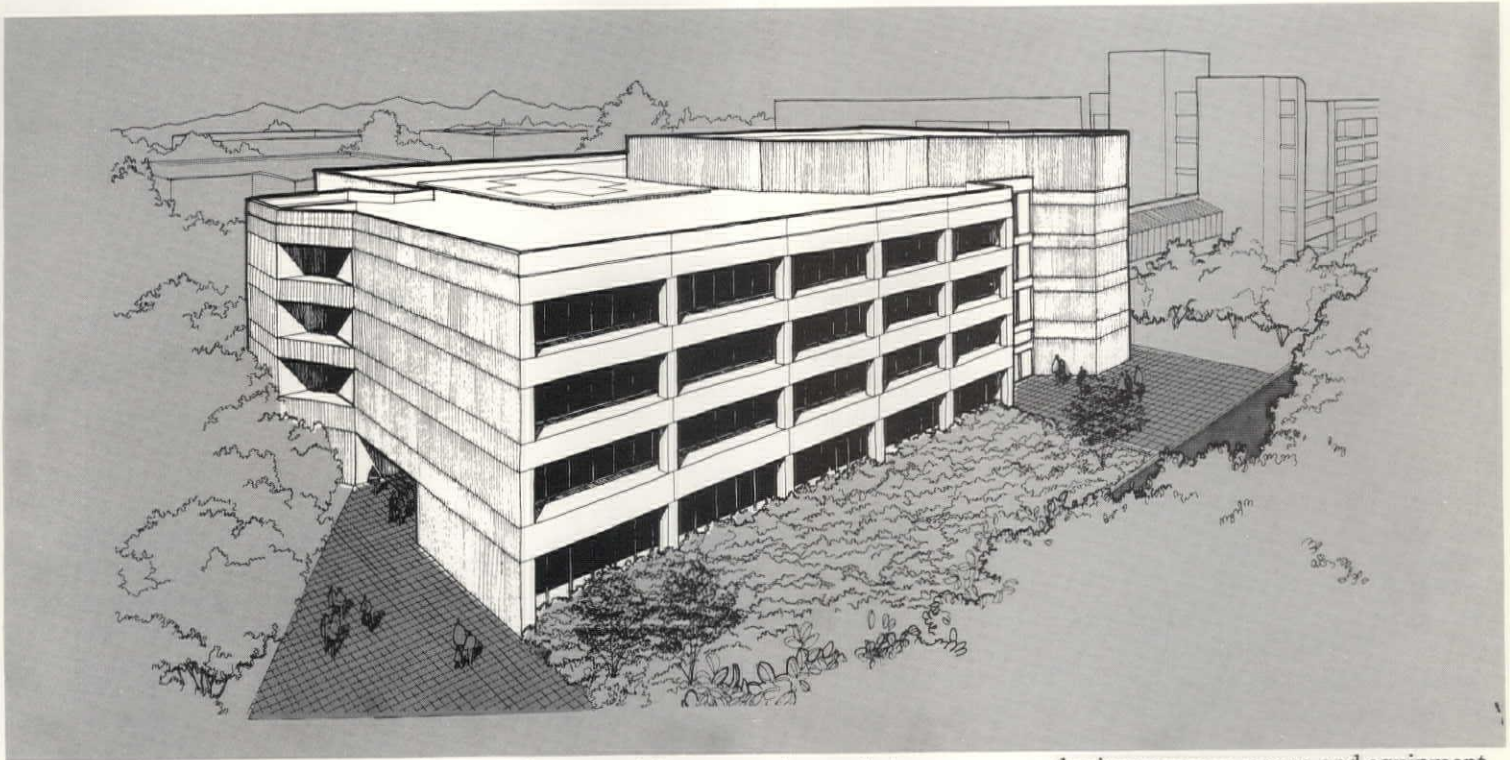
several groups with conflicting goals must resolve tenant privileges and limitations, ownership, financing and the amount of hospital subsidy, if any. The architect must structure his fees and services in response to the conditions of each project.

**Tenant Space Requirements:** A large medical office building with 30 or more physicians may have many of the following tenant space requirements:

- Small professional suites for independent practitioners as well as large suites for groups of three or more physicians. Generally each physician will rent about 800 square feet of space so that with circulation, partitions and shafts, 1,000 gross square feet per physician is a useful planning tool. Excluding psychiatrists, surgeons request the least space, as little as 600 square feet. Gynecologists and orthopedic surgeons are near the top at approximately 1,000 square feet. Physicians with practices that employ technicians—in radiology, EEG and EMG for example—tend to require the most space. The amount of space for waiting varies with family size in a region, availability of public transportation and local customs.
- Commercial space for tenants such as a pharmacy, medical equipment and uniform supplier, restaurant, barber shop and branch bank which will serve physicians, patients and hospital employees. Their space requirements can vary significantly with the size and location of the building and the hospital.
- Space to be used by the hospital itself, either on an interim basis until there is demand for office space or as an alternative to more expensive hospital construction. Some hospital uses need few partitions, and the space can be converted easily into medical suites; other facilities require a considerable capital investment and will probably remain permanently. Some examples include administrative offices, storerooms, laboratories, small outpatient departments, research projects and outpatient surgical facilities.
- Auditorium or classroom space.
- Motel-type rooms for ambulatory patients and for the families of patients in the hospital.
- Parking, in varying amounts between five and eight cars per 1,000 gross feet of

Mr. Diaz is a partner in the firm of Kaplan & McLaughlin, San Francisco.

**A much closer relationship between physicians and hospitals, among other things, has fostered the need for them to be closer together and thereby the need for these facilities. Connected buildings are preferable, such as at St. Mark's Hospital in Salt Lake City (below), whose MOB, with rooftop helistop, will be completed this year. Kaplan & McLaughlin.**



area, depending on public transportation and the specialists in the building.

- Rooftop helistop and triage area for receiving emergency patients.

**Functional and Economic Demands:**

Local customs, current market conditions and the availability of competing office space will affect planning criteria. However, the following trends are common:

- More large suites in response to group practice arrangements.
- More space within each suite allotted to technician work areas, labs, storage, business offices and other supporting facilities.
- Demand for inexpensive space but at the same time insistence on higher levels of environmental comfort and greater planning flexibility than is afforded in older buildings.
- Acceptance of low levels of future flexibility and a definite reluctance to pay for future flexibility that cannot be foreseen as necessary during the initial lease period. However, an institutional owner looking at a longer building life span will insist on as much flexibility as is economically warranted.

**Future Requirements:** Current planning is affected by projections for future

change and the expected rate of obsolescence within the building.

In the past, obsolescence in MOB's resulted from a remote or unfashionable location, an inability to expand or provide new services, insufficient or expensive parking and poor building management.

Physicians themselves rarely found physical or functional obsolescence reason enough to remodel and/or relocate. Most of them had similar practices and could adapt to space as they found it. Their primary reasons for moving were major changes in practice, new partnerships or following a hospital to a new site.

Now physicians are regrouping by specialty or associating in larger organizations to offer comprehensive health care. In the past these groups have designed and financed their own buildings; however, new buildings must be designed to accommodate their new patterns of practice. Change may occur by:

- combining several small suites into one large suite
- converting an entire floor to serve one specialty, or an entire building into a group practice
- eliminating private clerical and waiting spaces and concentrating them elsewhere

- sharing common rooms and equipment
- providing centralized services for records, supplies and billings (this may in turn require information retrieval and materials transportation systems such as the pneumatic tube, dumbwaiter, teletype)
- incorporating space for ambulatory patient treatment and recovery without admission to the hospital
- the emergence of paramedical personnel and physicians' assistants, each requiring private work areas.

**Planning for Now and for the Future:**

Depending upon the ownership, the financing and the future goals of an owner, a building can be planned with increasing capacity for future flexibility, though always at greater initial construction cost. The major planning components affected are the site, parking, building systems, typical floor plans, bay size and tenant allowances or finishes.

A large site is of the greatest importance if an MOB is hospital-owned and expected to continue to grow to serve and attract the medical staff. Horizontal expansion by adding new wings is significantly less expensive and does not disturb tenants within the building. The original building phase, while paying a premium

**The project architect for the St. Mark's complex here goes beyond generalizations in discussing the programming and planning for the MOB; yet it is not possible to cover every aspect in one article.**

for a large site, need not pay a premium in terms of stronger foundations, structural rigidity, empty elevator shafts and other provisions for vertical expansion. Later the cost of addition will be reduced by beginning at ground level. Also, significant savings are to be gained with hydraulic elevators in a lowrise building.

The ability of the building systems and layout to respond to future needs will lengthen its economic life span. In a quasi-commercial venture like an MOB, initial capital expenditure has a great effect on the feasibility of the project. Therefore, life-cycle analysis of building components will be biased toward lower first cost.

The capacity to meet each type of change listed below implies additional construction cost. Continuing needs that must be accommodated:

- minor partition changes within suites
- minor electrical and lighting changes
- additional power for new equipment
- changes in the telephone system.

Changes primarily required by new tenants and improvements within a suite:

- minor mechanical zone changes
- additional plumbing fixtures
- amenity improvements like carpets, wall finishes, ceiling finishes, ceiling systems and lighting
- new communications systems such as intercoms, central dictation, CCTV, monitoring, which may be more economical to own than to incorporate into the telephone system.

In a reasonably well-planned development major changes that will require remodeling of large sections of a floor should occur infrequently. They can be financed through future increases in rent or borne by the tenant, and they can probably be met more efficiently through new construction if there is continuing demand for space. Major changes include:

- large area remodeling affecting circulation, reception, waiting, clerical and treatment areas
- horizontal expansion of a floor to provide additional space to a given tenant, such as an outpatient surgical suite
- materials handling systems, adding pneumatic tube or dumbwaiter.

**Building Systems:** The environmental qualities of a building will be directly re-

lated to its ability to attract physicians at various rentals. The following finishes, mechanical systems and amenities are appropriate for a hospital-owned building (notations are made to indicate items that seem to be emphasized or used in less expensive speculative projects as well as those which are requested rarely and can usually be financed by the tenant):

*Partition systems* need not be relocatable since major floor remodelings occur rarely. Traditional drywall construction with a paint finish is acceptable throughout. Other finishes should be at the tenant's expense.

As a *basic floor finish* vinyl asbestos tile is adequate, with sheet vinyl in toilets and other wet areas. Various grades of carpet can be had, but speculative buildings tend to provide generous quantities of inexpensive and inappropriate shag carpeting.

*Lighting* throughout can be recessed fluorescent fixtures, with few exceptions where special effects are desired or where various light levels are necessary.

*Ceiling heights* can be maintained at 8 feet, with the few rare exceptions of some X-ray rooms and outpatient surgical facilities which may require 9 or 10 feet.

The *ceiling system* should provide continuous access to electrical and mechanical equipment above. A 2x4 lay-in acoustical tile system is fully adequate. The amount and complexity of this equipment is not sufficient to require an interstitial space between floors.

*Privacy and acoustical separation* are very important. Conventional 5/8-inch thick drywall on both sides of steel studs provides adequate separation if the ceiling system is well finished to close air gaps at partitions. Special care needs to be taken with mechanical systems using a common air return plenum space so that return grilles are protected from each other. Solid core doors are preferable throughout. Provision for additional soundproofing at extra cost should be incorporated, allowing one layer of drywall to extend to the slab above and providing a sheet of sound-attenuating fiber-board on one side. Toilets can have drywall ceilings and insulated partitions for additional acoustical separation.

*Casework* can become a most trouble-

some and expensive item. Unless the building rental is sufficiently high to absorb the cost of a nominal amount of casework, it is preferable to make it a tenant-provided and -owned item. It should also be kept out of the general contract so that each tenant may have a choice among wood, metal and new wall-hung component systems.

An adequate *heating, ventilating and airconditioning system* provides two independent zones per 1,000 square foot of office, an exterior zone of offices and examination rooms and an interior zone of waiting, reception and clerical areas, as well as examination rooms. Each treatment area should be provided with a radiant heating unit for the comfort of undressed patients. If necessary, a perimeter hot water radiation system should counter heat loss at large windows.

At rock bottom cost some speculative buildings install a recirculating residential HVAC unit per suite, using a duct system for supply and the corridor for return. Such a system has no future flexibility, violates acoustical privacy, lacks individual room control and relies largely on infiltration through windows for clean air supply without filtration.

By their nature MOB's require a high density of *plumbing fixtures*, and provision must be made to provide them anywhere, except possibly placing toilets along the periphery. Sinks should be independent wall-hung fixtures in examination rooms (to insure air circulation around all pipe joints and avoid wet bacteria incubators within sink cabinets).

In laboratories and technician work areas, however, there is a need for countertop sinks. These areas and a few treatment rooms will also require piped utilities like vacuum, compressed air and natural gas. These should be available at an extra cost to the tenant. Depending on the clearances between the ceiling and the structural system it is usually prudent to provide a wet column within every 1,000 square feet of peripheral space.

Necessary evils like *electrical closets, vertical shafts, shear walls and stairways* affect planning flexibility. If economically feasible they should be placed at the ends of the building or away from rental space.

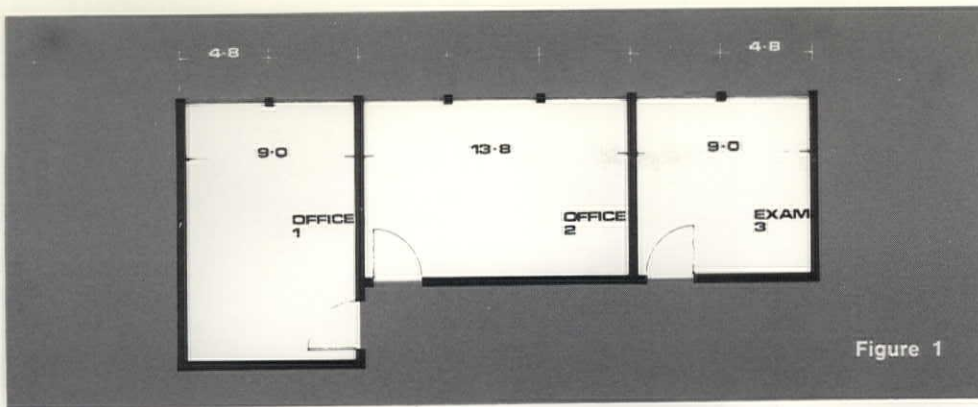


Figure 1



Figure 2



Figure 3

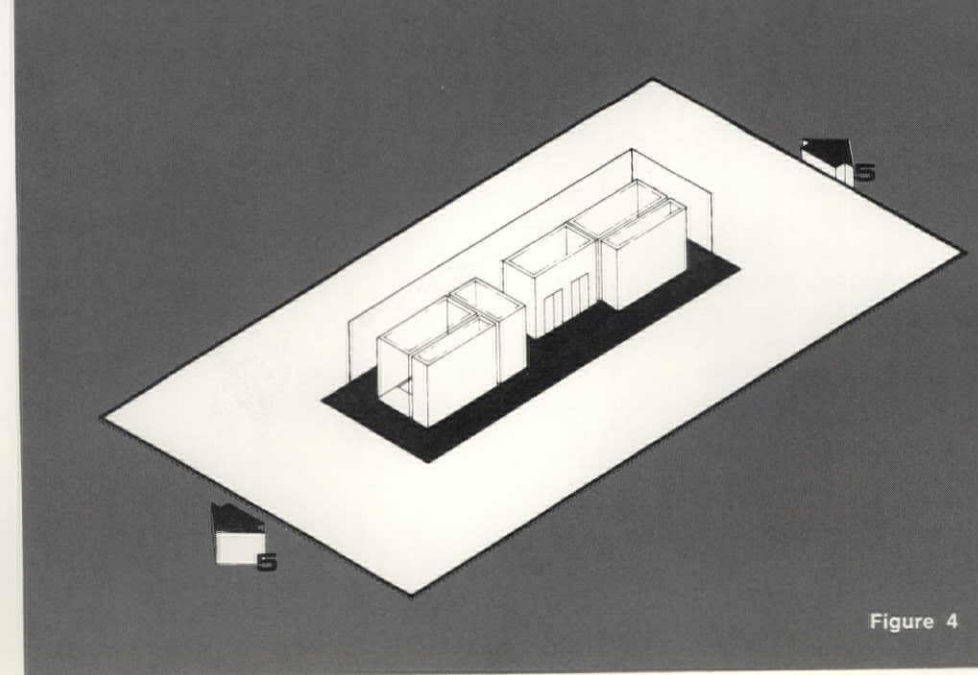


Figure 4

Electrical and telephone closets should be accessible from public corridors, and major distribution lines should follow corridors until entering a suite.

**Tenant Allowances:** The following quantities per 1,000 square feet of rentable space are useful for estimating and design purposes. The density of partitions is greater in smaller suites than in larger ones where waiting, reception and clerical areas tend to be combined into open spaces.

Interior partitions	—	130	linear feet
Demising partitions	—	30	" "
Doors	—	6	
Plumbing fixtures	—	6	
Lighting fixtures	—	24	

For estimating purposes they can be used to determine the cost of a basic building without special features such as lead lining, plaster traps, X-ray processors, lightproof doors, additional acoustic separation and special lighting controls.

For apportioning costs to the building owner and the tenants a more careful delineation of systems and costs must be established. The breakdown of costs depends on the type of ownership and the willingness of tenants to make capital investments for subsequent depreciation.

As a rule, physicians taking space prefer to have as many items as possible incorporated into the basic building allowances and rental. However, care must be taken to exclude items which are not required by the majority. Special sinks and lead lining are obvious examples; however, the rule may also be extended to include such planning services of the architect.

When the building is planned and owned by an institution, there should be a committee of doctors who openly discuss all aspects of allowances and costs. There is considerably more latitude in a privately financed project, where each tenant will overtly want his own best deal and where the owner can negotiate confidentially with each tenant.

**Window Modules and Room Sizes:** Perhaps the most frustrating design dilemma is to attempt to design within a strict planning module. The density of partitioning is so high that modular ceiling systems do not lend themselves well to interruptions,

Architects and hospital planners alike need more information, and various sources are now available.

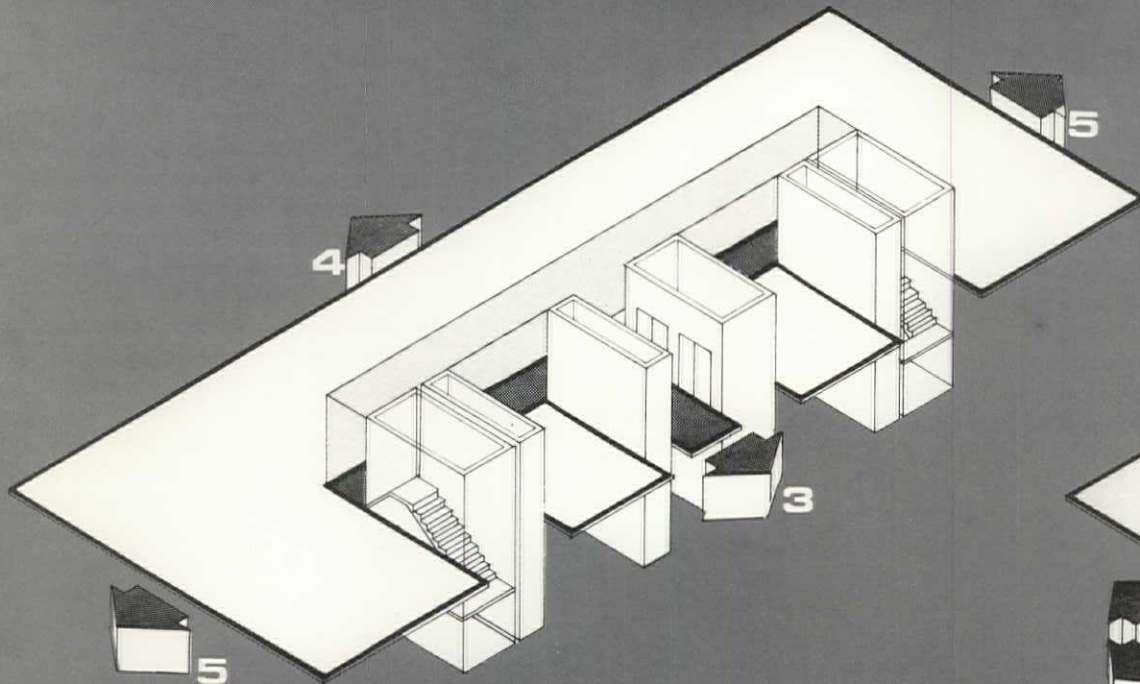


Figure 5

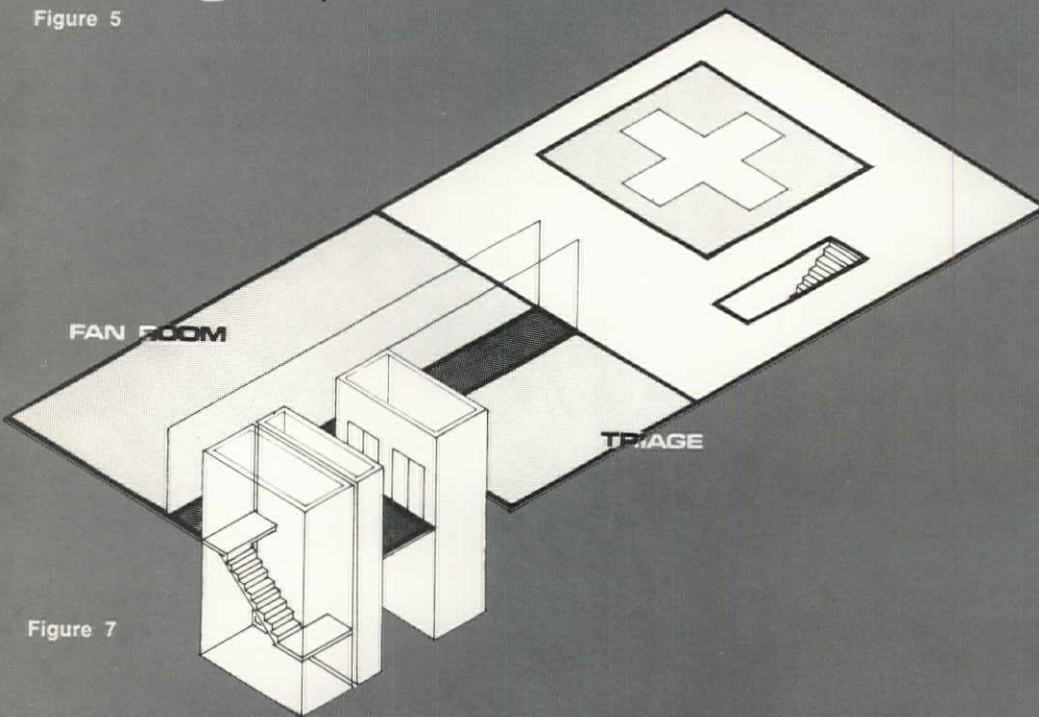
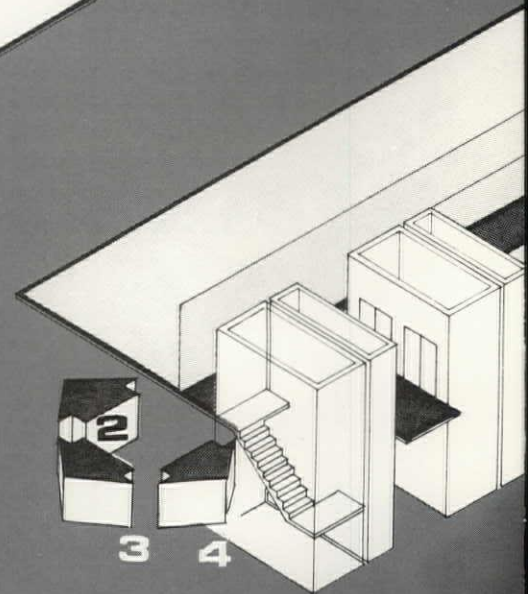
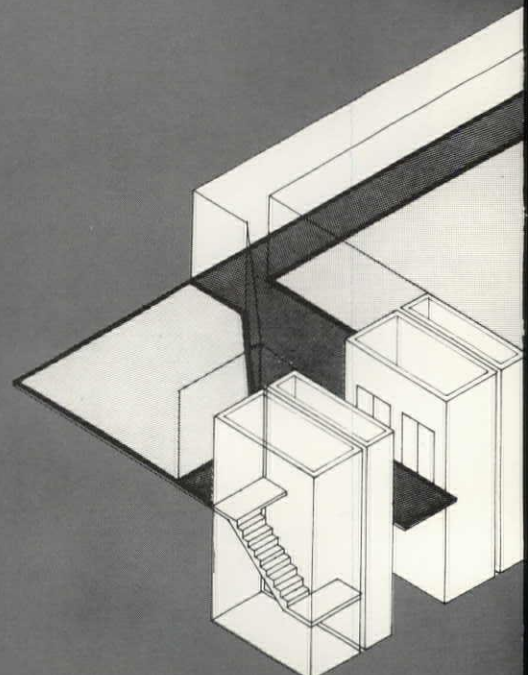


Figure 7





The book "Minimum Requirements of Construction and Equipment for Hospital and Medical Facilities," published by the Government Printing Office, includes sections on outpatient facilities within hospitals and in free-standing buildings.

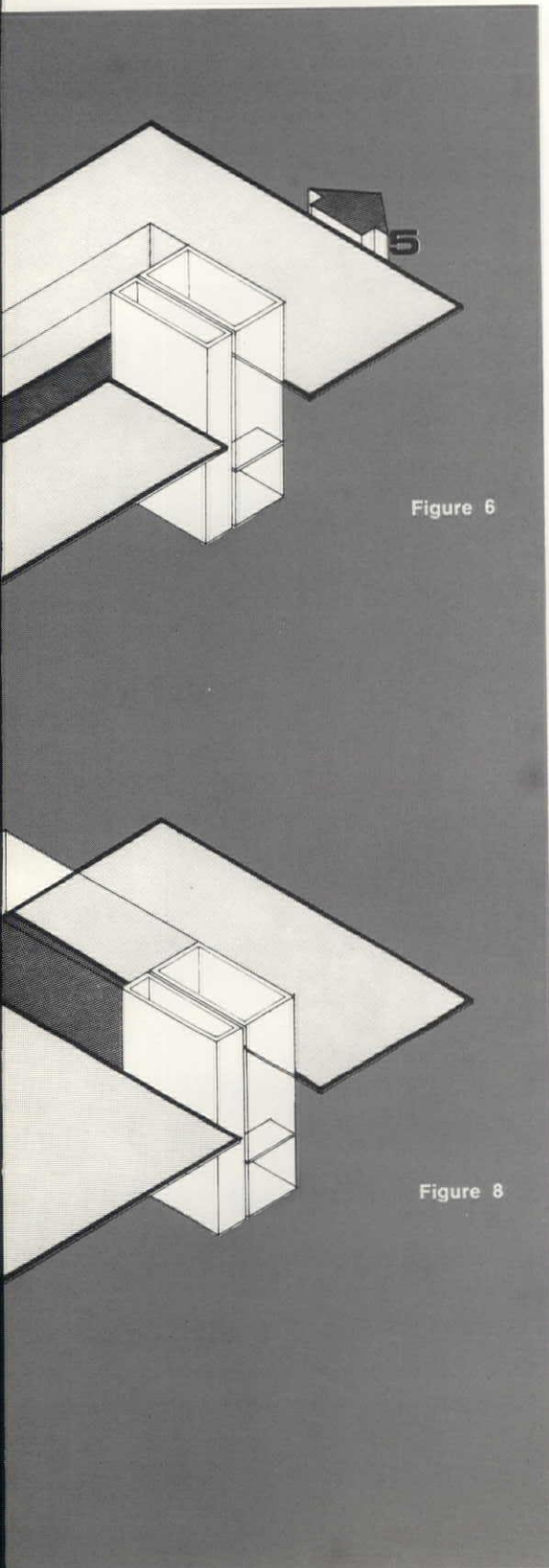


Figure 6

Figure 8

especially in cases where partitions to the slab above are requested for additional privacy.

It is impossible to achieve efficient layouts on an office building grid because there are too many spaces like toilets and treatment rooms that vary from one medical specialty to another. Physicians are adamant about setting precisely the size room or office in which they will work; they do not like to hear that the building module will prevent this.

Large windows are not particularly desirable in MOB. However, when views from a building are dramatic and several of the tenants request large windows, such as those in commercial office buildings, then a module of 4 feet 8-inches coincides with most requirements. Room widths along the periphery will be either 9 feet or 13 feet 8 inches, adequate for physician offices in either direction (Figure 1) and examination rooms at a width of 9 feet. A smaller module creates narrow offices, yet a larger one makes some offices and exam rooms too wide.

Without large windows there is much more planning flexibility along the periphery (Figure 2). Ideally a modular system of smaller window units and solid panels could be placed randomly in response to demand. Such a system would have to be accepted esthetically by the designer, would be difficult to change later in response to the needs of the new tenants, and would present problems in a building not fully rented when built.

The height of window sills above the floor is a matter for compromise. In an office or waiting room, windows can extend to the floor, whereas an examination room presents problems of privacy. Also, in labs and special treatment rooms they interfere with the placement of casework along the exterior wall. However, draperies will provide necessary privacy, and casework can usually be located away from the windows.

**Column Intervals:** Long spans are not necessary since the density of partitions is high and nearly all rooms are small. Except in very tall buildings with large columns, the columns themselves do not limit flexibility any more than do vertical drain stacks. The savings possible through

shorter spans and lighter beams may be critical to the feasibility of a project. With certain soil conditions lighter column loads may result in a simpler foundation and additional savings; the difference between driven piles and spread footings, for instance.

With a 4-foot 8-inch window module it is convenient and economically justifiable to space columns at 28-foot intervals. Transversely, three spans of 30 feet may be optimal in a 90-foot wide building. However, the loss in flexibility of accepting four spans of 20 or 25 feet is small in comparison to the savings that can be achieved (Figure 3).

**Floor-to-Floor Heights:** Given the relative simplicity of duct systems in an MOB and the short spans, a floor-to-floor height of approximately 12 feet is easily attainable with 8-foot ceiling heights. This height can be further reduced by shorter bays in flat-slab concrete structures or wood frame buildings, but planning flexibility thereby is limited.

**Floor Size:** At least 10,000 square feet of rentable space per floor are necessary to achieve sufficient flexibility for a variety of floor configurations and to increase the efficiency of stairs, elevators and lobbies. In a cruciform building a typical floor could exceed 40,000 square feet of rentable space served by one building lobby.

**MOB Prototypes:** For the most part, MOB have not followed any distinct planning pattern. The very specific requirements of group practices, designers' responses to unique architectural opportunities and the sizes and shapes of limited sites have created a wide disparity in size and layout. However, there are a few typical floor layouts that are repeated often and are worthy of analysis.

The most prevalent of these duplicates most commercial office buildings which place elevators and stairs in the center and wrap rentable office space around this core. However, unlike commercial buildings—where typical depths (from the core to the windows) vary from 35 to 40 feet—the depth of medical offices has traditionally varied from 22 to 26 feet.

The efficiency of a typical floor of 11,000 square feet of rentable space is

**Both architects and hospital administrators should be aware that if the outpatient facility is an integral part of the hospital and intended to accommodate inpatients as well, the applicable standards relating to general hospital facilities will apply. Thus it could become necessary to separate the MOB so that it will not be classified as a hospital, thereby increasing considerably in cost.**

about 81 percent. The floor becomes more efficient as it approximates a typical commercial floor with wider rental space on each side and at the ends.

This prototype precludes future horizontal expansion and limits efficient planning to small offices along each side and larger ones which may successfully use space at the ends of each floor. The size of this space, however, is limited by the distance of travel permitted by code. With the elevator core in the center and windows on all four sides, it is necessary to build an arcade, bridge or tunnel between the MOB and the hospital (Figure 4).

Another common prototype is the single-corridor plan with shallow space along each side and a deeper space at each end. The size of this end space is also limited by the maximum distance to an exit from within a suite. There is difficulty in leasing half a floor because one stairway will fall within a nonpublic corridor (Figure 5).

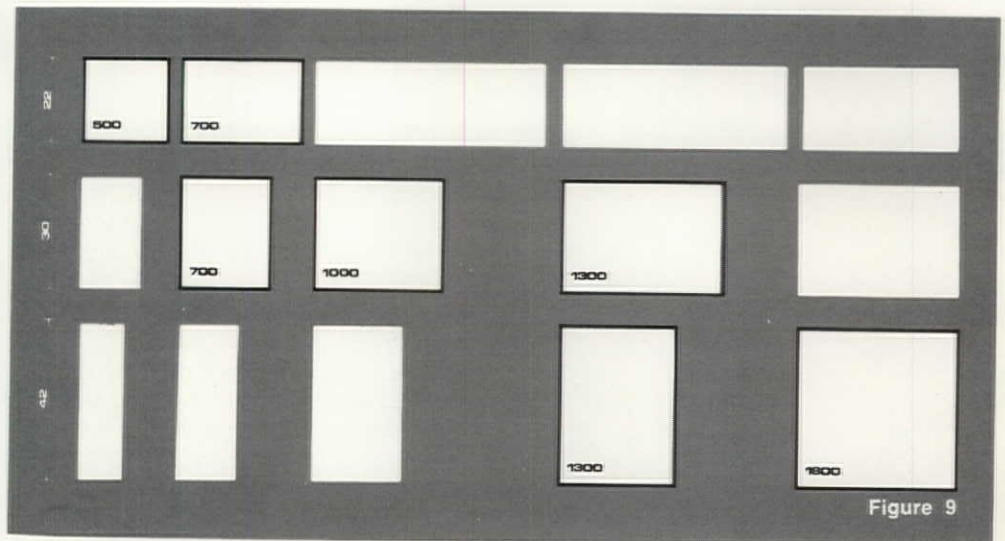
For a typical floor of 11,000 square feet of rentable area an efficiency of 84 percent can be achieved. Again, there is greater efficiency with fatter space along each side of the corridor and also with a longer floor.

This plan is advantageous in that it offers two directions for horizontal expansion (3 and 4), but it too needs a bridge or tunnel to connect with the hospital proper (5).

A third prototype is a variation of the second; it comprises only one wing of the latter plan and therefore has available three directions for future growth (Figure 6; 2, 3 and 4). It can also be attached to the hospital in lieu of one-direction expansion (2) or by a bridge at the opposite end (5).

For 11,000 square feet of rentable area it is slightly less efficient (83 percent) than the second plan. The difference can be noted in that slightly more corridor is necessary at one end of the building.

The plan can easily accommodate a rooftop helistop at one end, away from the mechanical and elevator penthouses at the other end. The roof can also be used for an enclosed triage, or first aid, area between the pad and the elevators (Figure 7).



The major advantage of this plan is that all hard elements such as stairs, elevators, shafts and equipment closets can be removed from the rentable portion of each floor. With only columns and plumbing stacks to contend with, the corridor can be moved to meet tenant requirements (Figure 8).

**Connections to the Hospital:** If an MOB is attached directly to the hospital, the following criteria are important:

- It should be near the point of entry and admitting desk for outpatients. Major ambulatory diagnostic and clinical services, such as radiology, laboratory, physical therapy and special diagnostic services should be close at hand.
- The emergency department need not be closely related unless it might use MOB space for imminent expansion. If the emergency department is small it is sometimes prudent to provide an outpatient drop-in clinic within the MOB but contiguous to the emergency department.
- Physicians should be provided a secondary means of entering the hospital through nonpublic areas. Access to surgery, recovery, delivery, nursery and intensive care should be facilitated.
- Ideally a third connection is available to service the building directly from the services floor of the hospital.
- With a helistop atop the MOB, elevator service from the rooftop to emergency and surgery is desirable.
- For the convenience of patients, visitors and employees, MOB shopping facilities

should be accessible from the most public floor of the hospital.

**Efficient Office Shapes:** Typically a depth between 22 and 26 feet has been used for rental space in MOB's. We have found that such a depth is efficient only for offices below 700 square feet. A bigger office, at a 26-foot depth, requires too much corridor and periphery for building economy. A 30-foot depth is better suited for offices between 700 and 1,300 square feet. Offices between 1,800 and 2,500 square feet are planned most efficiently at a 40-foot depth. When a suite reaches 3,000 square feet, a 50-foot depth offers greatest flexibility; however, some groups may prefer the additional windows offered by a longer shape (Figures 9, 10 and 11).

When it is above 3,000 square feet, a group practice suite approaches the size of a hospital department. With a 50-foot depth it is possible to locate hospital services (particularly an outpatient surgical suite) within the MOB. Finally, it becomes feasible to give some specialties, such as ophthalmology, an interior space without windows (Figure 12, A).

In actual practice the number of floors of each type will be determined by the tenants themselves, and the building must be planned to accommodate the corridor in a separate location on each floor. One particularly interesting floor plan which epitomizes the inherent flexibility and combines all four office depths on one floor occurred at St. Mark's Medical Office Building, Salt Lake City (Figure 13).

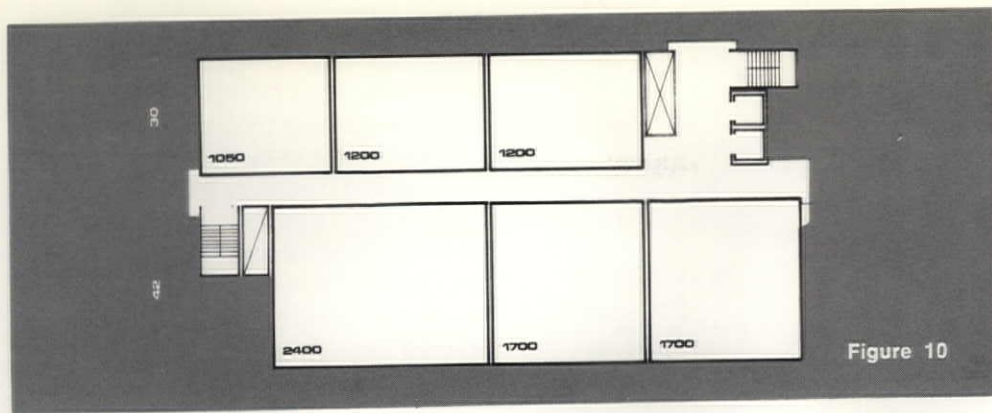


Figure 10

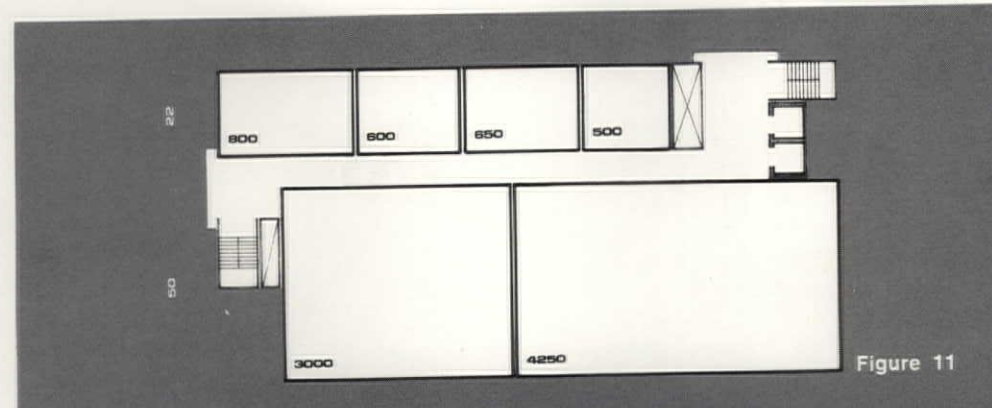


Figure 11

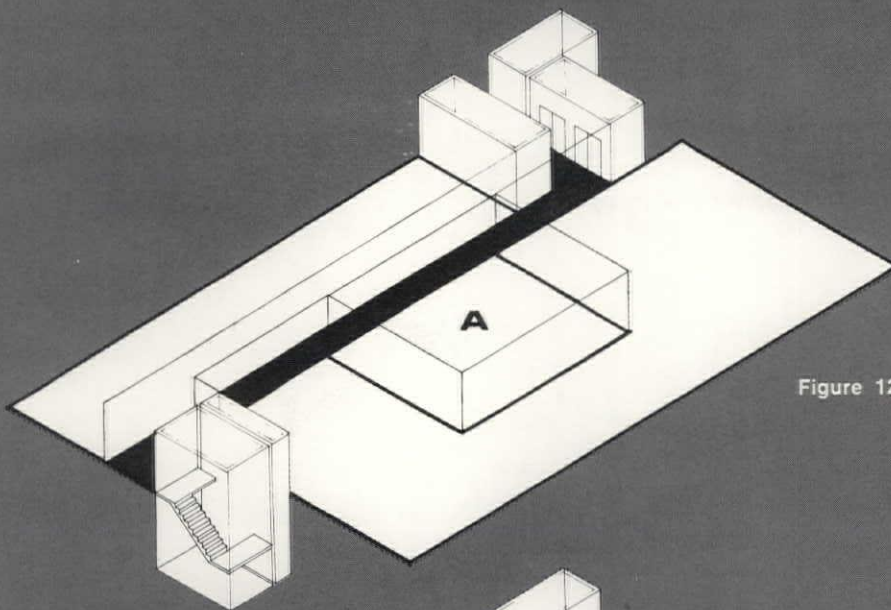


Figure 12

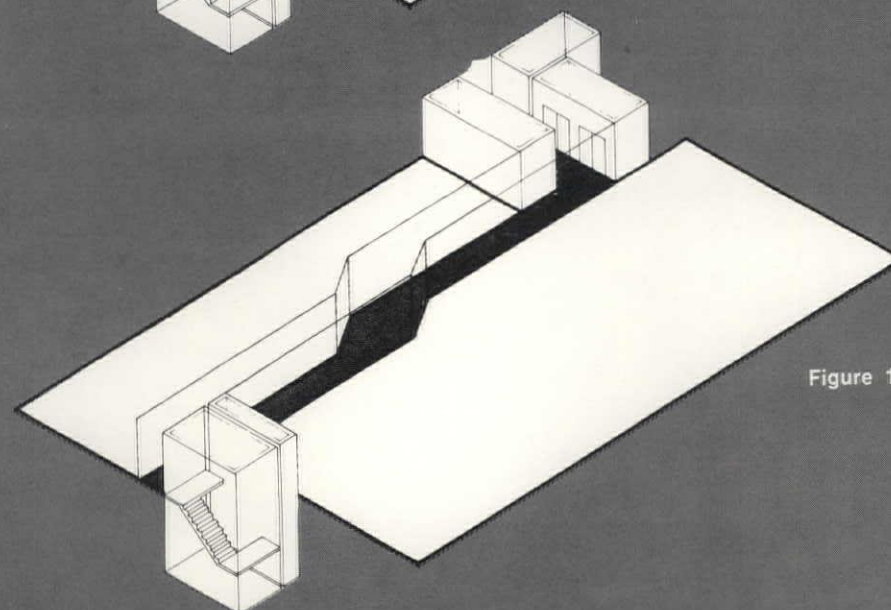


Figure 13

**Architectural Services:** Preferably an architect will contract his for work directly with the building owner. Nominal fee curves for professional and medical office buildings, as recommended by local and state AIA chapters, are adequate with several exceptions:

- The nominal architect's fee does not cover the lengthy negotiations and consultation necessary to "sell" the building and space to prospective physicians.
- An architect can work most efficiently if the physicians prepare themselves in the area of medical practice management, examining the reorganization of their practice in anticipation of entering a building where rents are high and certain central services are offered to the physicians. This can be done by a special consultant or by the doctors themselves.
- A desirable approach starts with the building owner's retention of a medical office building consultant who can work with the owner, physicians, lenders and architects. For about 75 cents per square foot of rentable area such consultants will develop the architectural program, the office layout and pertinent design data needed by the architect for the construction documents phase.
- Services for individual suites should be separated from the traditional percentage of construction fee basis. They should be charged on an hourly basis directly to the tenant to discourage continual changes and indecision. The total cost of these services may be budgeted at \$1.50 per net square foot, including consultant's fee, if any. This is analogous to fees charged for more complex programming and space planning in commercial office buildings.
- The design of custom cabinetry and accommodations of major medical equipment should also be structured on an hourly fee basis.

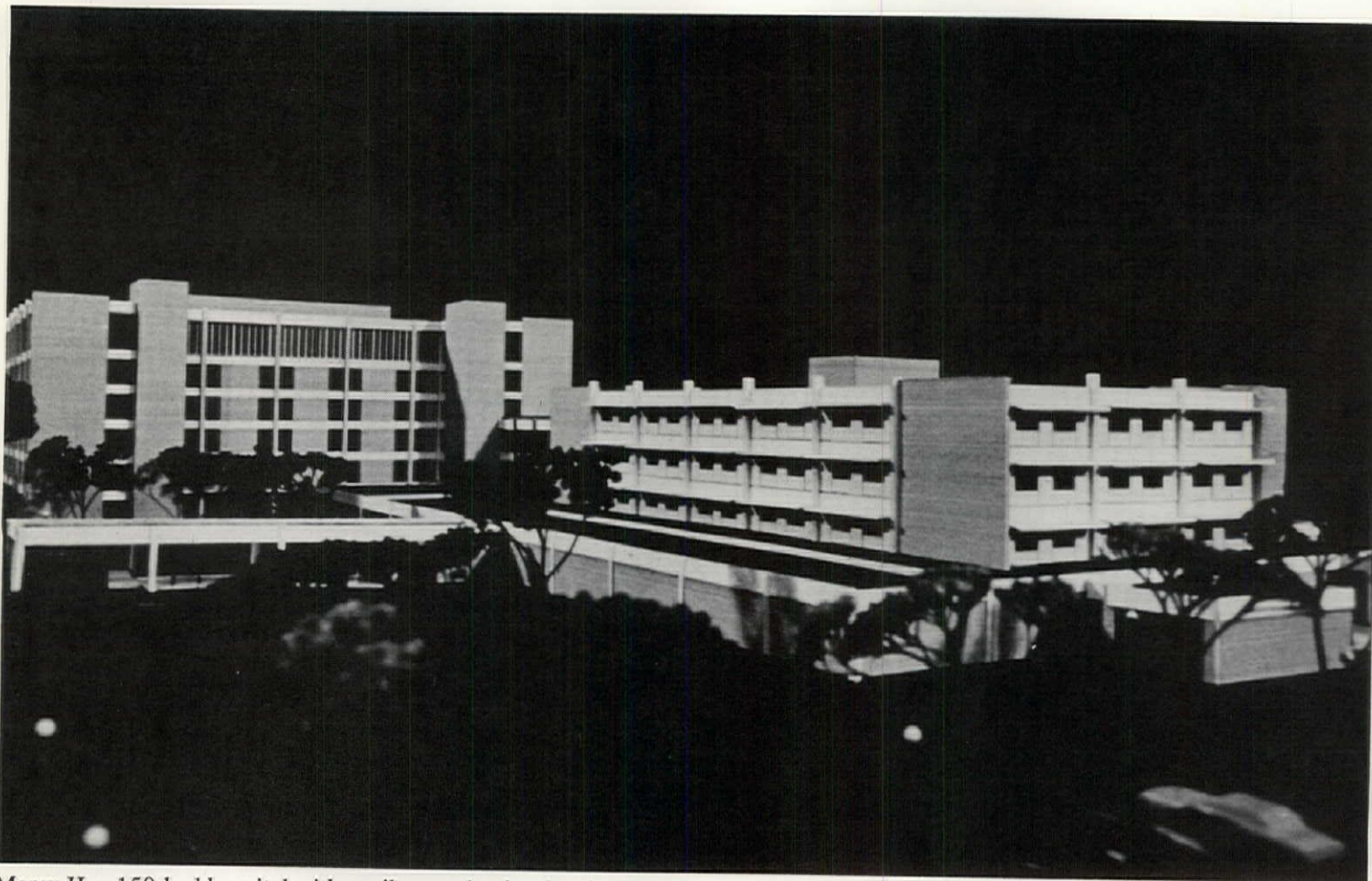
The prospective tenant must be given supplementary information describing the capability of space in the building so that lengthy disputes can be avoided later.

Finally, the architect should protect himself with specific agreements to cover delays in leasing space, especially after the building is essentially complete, and design time for prospective tenants who may drop out of the project. □

# A Plan for Energy Saving

Robert W. Gish

**Mercy II, the expansion of an existing hospital currently under construction, has a building and mechanical system that will conserve energy, lower operational costs and reduce maintenance requirements time. This was achieved, at no increase in original building expense, by the reduced size of equipment made possible by using the "Energy Saving Plan" design scheme.**



Mercy II, a 150-bed hospital with ancillary support areas, is an expansion of the 150-bed Mercy Hospital in Coon Rapids, Minnesota. Owner is Health Central Inc.

The Liebenberg Smiley Glotter design team's energy planning efforts for the hospital were spearheaded by the forward thinking of this owner group. Added impetus came from our team's attending an energy crisis conservation seminar in 1970 at the Southwestern Research Institute at San Antonio, Texas.

An "Energy Saving Plan" thus became the rule to our approach, and it resulted in decisions for Mercy II that will represent a total of 9.34 billion Btu's saved yearly, which represents approximately a 20 to 30 percent overall total energy re-

duction for the life span of the hospital. This was accomplished at a low initial expenditure. The project was winner in the First Institutional Category of the 1972 Conservation of Energy Awards Program sponsored by the Owens/Corning Fiberglas Corporation.

The building expansion space, site placement and compass orientation were carefully studied to produce minimum summer solar loads and minimum outside perimeter wall areas as related to maximum usable floor space.

Our team examined and investigated all existing and suggested new methods of energy reduction and recovery concepts.

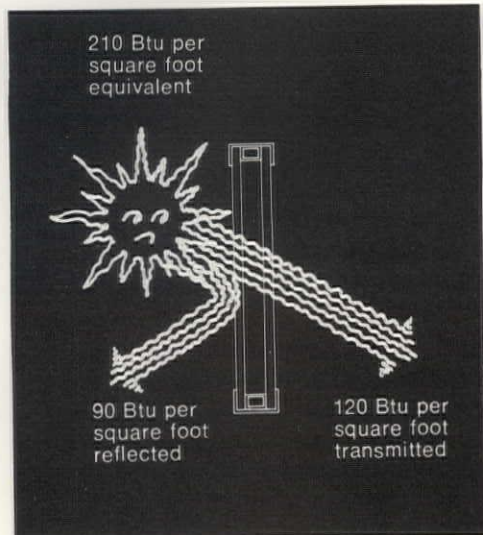
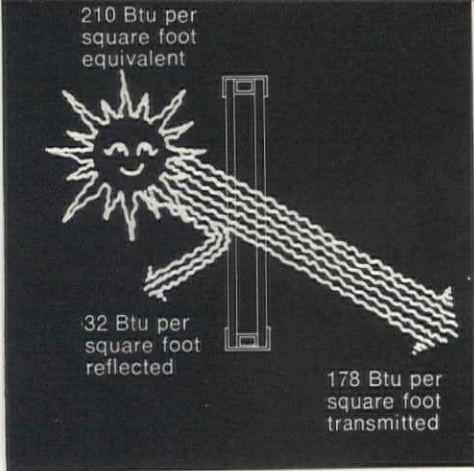
The effect that various types of fenestration would have on energy consumption was analyzed, with the result that solar bronze heat reflecting glass was chosen. The cost calculations proved that the added expense for this was more than offset by the added cost of the larger re-

frigeration system which would have been required without it. Winter results were, of course, also analyzed. Due to the solar angle this time of year, the heat gain relationship changes to a standoff, the air quantities are less and the daylight hours are 30 to 40 percent reduced, so the gain was clearly in keeping the facility cool in summer.

The reuse of waste energy is of paramount importance in most new projects today. Our list of ESP possibilities for Mercy II included all of the hospital's exhaust air, the total building's relief air, which is normally wasted to atmosphere, unnecessary energy used to keep the large storage volumes of domestic hot water up to specific temperature levels, and higher than required temperature levels in the various rooms, zones and mechanical systems.

A new process using a liquid energy transfer from exhaust air to supply air was thoroughly investigated. Our research

**Mr. Gish** is director of engineering at the Minneapolis architectural firm of Liebenberg, Smiley, Glotter Associates Inc. (formerly S. C. Smiley Associates).



engineer was sent to the manufacturer, the Midland-Ross Corporation in New Jersey, who prepared a mockup unit for evaluation. This system, the Twin-Cell Heat Exchanger, proved to be the best choice.

Besides producing an energy transfer rate of 66 percent efficiency for the saving of waste energy from the exhaust air, the system eliminates the need for a preheating coil system as it will not freeze even below design conditions of  $-20$  degrees F. It further carries a filter rating efficiency of 35 to 50 percent under the National Bureau of Standards dust stop rating, thus eliminating the need for prefiltering.

The system also supplies or removes humidity in the incoming air stream. This eliminates the need for extra humidification equipment up to specific humidity levels and assists the cooling cycle by removal of a large percentage of the contained humidity.

An additional plus for this system is that the liquid—lithium chloride—is aseptic and will not support the growth of pathogenic organisms. This purifies the incoming supply air and eliminates atmospheric pollution from the exhaust air.

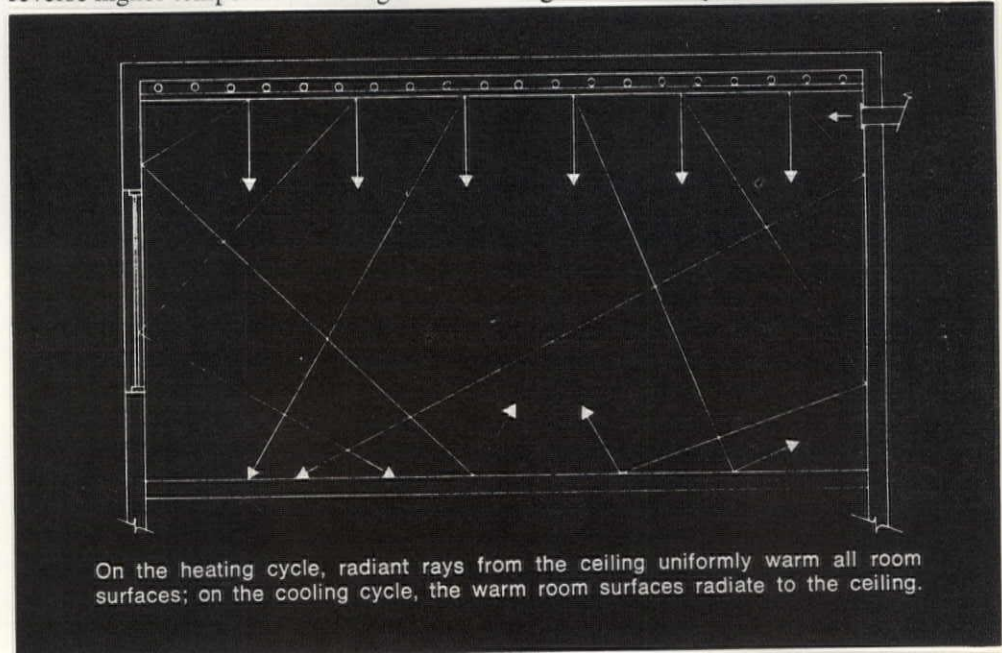
Another ESP design feature was the elimination of the top floor heat gain/heat loss by using this floor as the building mechanical space with building relief air fed to it as makeup combustion air for the boilers and as ventilation for the mechanical floor.

Radiant metal modular ceiling panels

of the high output capacity, manufactured by the Airtex Corporation, were used in lieu of perimeter fin tube radiation, convectors or fancoil units. The basis of this ESP feature is that by warming and cooling the room surfaces through the radiant heat-cool transfer surfaces, it will be possible to maintain a 2 to 3 degree F lower heating-season room temperature and a reverse higher temperature setting in the

type steam-to-water heat exchanger with no appreciable storage was selected. This makes maximum use of the available steam supply and gives a continuous flow of constant temperature water, relying only on the efficient operation of the new steam boilers, which are the most economical energy sources.

The overall efficiency of any new building mechanical system is closely con-



cooling season yet still keep these areas within the design comfort level.

The heavy use of hot water in any modern hospital amounts to a significant portion of the total building energy load requirements. This fact makes the water heating system one of the many important areas which the engineer and owner must study to get maximum performance for minimum energy input. Conservation of energy, compatibility with the building mechanical system and maintenance-free operation were all considered in the selection of the Mercy II domestic water heating systems. We made provisions to replace the existing hospital's installation with one efficient enough to supply both the old and the new structures.

The existing direct-fired firm gas storage type heaters were removed, thus eliminating over 600 square feet of wasteful radiation surface and four inefficient firm gas fired heaters. A semi-instantaneous

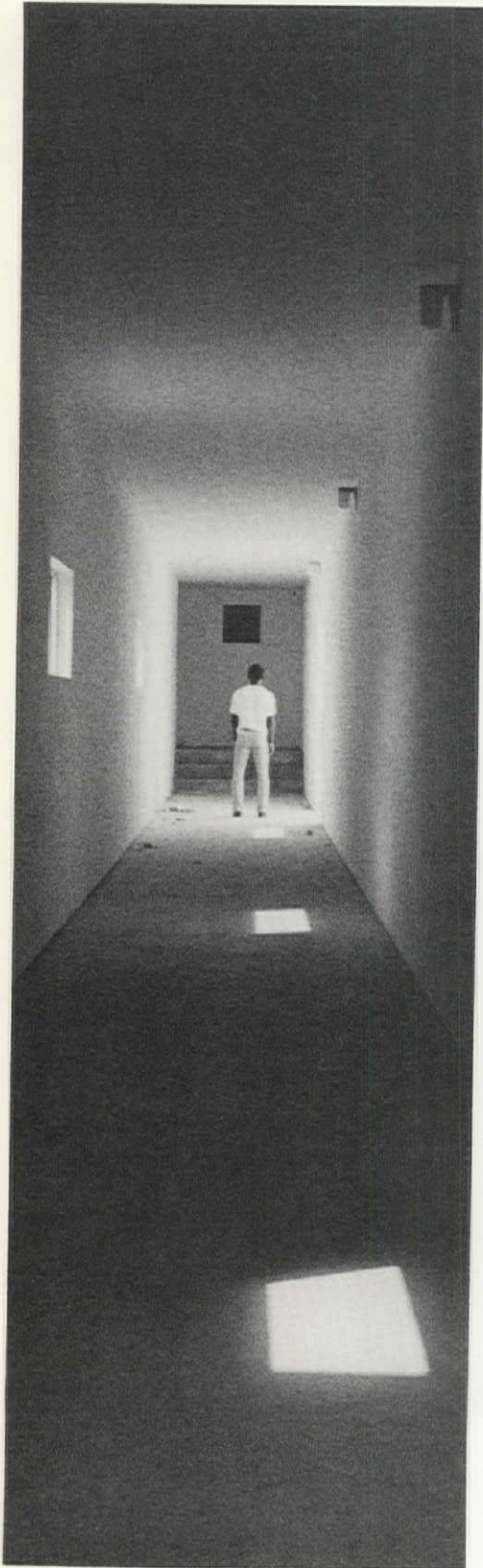
trolled by the degree of upkeep it is given. A thorough maintenance program is of utmost necessity in order to keep the efficiency of the equipment at the level designed into it. If it is difficult to maintain, it will not receive enough attention to keep it at peak performance.

With this in mind the domestic water heaters selected were copper lined and can be descaled with an interruption of the steam supply of only a few minutes. This simple operation permits the heat transfer to be uniform and easily maintained over the long life of the system.

It should be the responsibility of all architects, engineers and professional groups to study and employ energy conservation methods and technology in all possible areas of design. We quote John A. Carver Jr. of the Federal Power Commission, who said, "For the next three decades we will be in a race for our lives to meet our energy demands." □

# Design as a Nonverbal Language

Dolores Norley



Communication is not all verbal or written. Body language is not just movement or stance. It is dress and distance. Territoriality demands or sanctions of an environment are components of another language, and the decoding of the message is not dependent on the intelligence of the receiver.

There is different residential behavior understood when walking down the halls of Leavenworth or the Ritz. Living design literally shouts messages of expectation to the resident.

Clerestory windows say we expect you to break glass and besides, your seeing outside is unimportant. They also say that society does not want to look at you.

Six, 10, 20 or 60 beds in one room say you are not an individual. You exist only as part of a group.

Benches or rows of chairs in front of a television set say you are boobish and do not need and will not get a cultural/social life.

Toilets without doors say you are incapable of learning self-care.

Tiled walls say there is more interest in sanitation than in your sanity.

Baths and showers with no privacy say you have no right to dignity.

Carpetless floors say we expect you to soil them and you are not worthy of training.

Eating facilities separate from staff and visitors say you are infra-human and not worthy of cross-sectional companionship.

Limited use or locked doors say society must be protected from you and you from yourself.

Employees are hung with keys to maintain this protective design. They say you have no right to make errors, though error upon error is the normal way we all learn.

Every developed country is in the swing of phasing out traditional institutions in favor of small community residences in normal neighborhoods. Almost all states

**Mrs. Norley**, who recently received an award from the Florida Rehabilitation Association for "her effective and outstanding services for the mentally retarded during the past 20 years," is a special adviser to the President's Commission on Mental Retardation.

**Clearly, things are wrong with the way we house our mentally ill. And, hopefully, a cry for help such as this will be heard not only by architects but also by regulatory agencies, which actually have the greatest influence on the design of facilities for the retarded.**

are far along in plans and at the beginning of implementation.

Yet the March '72 issue of *Architectural Forum* features a new Bronx State School for the Retarded, with an "introverted focus." The drawings show a multi-winged, four-story squarish white structure with blank faces "isolated from the wasteland of blight around it." The density is not mentioned, but an educated guess is that it's more on warehouse than domestic proportions.

And Illinois announces with pride the building of a series of centers, each with 400 beds. Incredible!

The tunnel vision areas still pop up.

No wonder Bengt Nirje, then Secretary General of the Swedish Association for Retarded Children, said that he "found it difficult to understand how a society which is built on such noble principles, and which has the resources to make these principles a reality, can and will tolerate the dehumanization of a large number of its citizens in a fashion somewhat reminiscent of Nazi concentration camps."

He took exception to the word "purgatory" as used in the book by Burtan Blatt and Fred Kaplan, *Christmas in Purgatory* (Rockleigh, N.J.: Allyn & Bacon, 1967). He said that what he saw was Gehenna, or Hell.

Building codes and regulatory agencies are the whipping boys, or excuses for un-human planning. But such blame is a cop-out. The codes are man-made, and man can change them by a feisty combination of you and us. We are skilled in changing laws and regulations. We who are political change-agent advocates, who have no personal-gain axes to grind, who must speak twice as loudly because we speak for those who cannot speak for themselves, who have experience and know-how in haunching a phalanx of coalesced power to gain or defeat what we will, we need your specialized knowledge in a combined thrust to obtain reasonable codes. We can threaten, cajole, scream and cry, while you preserve your decorum and provide scientific documentation. That's a combination which strikes terror in the heart of any bureaucrat.

We have built our personal and cor-



porate lobbying powers to the point of practical influence on all programs and especially on their funding. Appropriations in all but a few states are no longer practicably available for traditional institutions.

And your influence is greater than you think. You make policy, even governmental policy, by your very approach to the problem.

Architects have said over and over that they are the prisoners of their clients, private and governmental. Maybe so. But they needn't be. One suspects that when they are, it is because they are ineffectual, lazy or uninformed.

Architects and funeral directors have the same impact on most of us. They are necessary, expensive and they intimidate us with their esoteric knowhow. We deal with each of them at highly traumatic moments in our lives, when we are least able to think for ourselves. We are not always honest and fair with them in our awe and timidity, for we don't insist on our special needs. We hand over the whole job and then complain later—to everyone else.

There is another similarity: Given a certain assignment and cost allowed, morticians and architects (at least when planning for the retarded resident) give us minor variations of the same old box!

Let's say you're asked to design a residential facility for the retarded. Do you think of a house on an ordinary street? Do you envision bedrooms for one or two people? Do you see a family? Do you see a need for privacy and the storage of personal possessions within reach? Do you see bathrooms of the same type and number you'd plan for a large family?

If your clients don't see these needs, do you make an effort to educate them?

The day of the concern or protective model is gone. If it weren't, I should have a stove which cuts off above "low" because I tend to cook quickly while doing other things and I burn food often and sometimes set the kitchen afire. But that's my right, to learn by error, and I am doing better. No one agonizes over my disability—and I'd resent it if they did.

Some men and women should sit on Formica, sleep on metal and walk on con-



crete, for their smoking habits are dangerous to chairs, beds, carpeting and other people. Who would try to "protect" them by designing a "safe" environment for them?

Yet we accept extraordinarily sterile environments for retarded people, environments which tell them clearly what horrors we expect of them, denying them the dignity of risk and learning how to handle it.

If you build zoos, or warehouses, the message of the design will be self-fulfilling; the residents will behave as animals or zombies. What's more, the staff, by the same insidious osmosis, will gear their own behaviour and expectations to the language of the environment.

Kenneth Bayes of England spoke of people architecture and its admission that each human has a need for self-esteem and self-fulfillment. Planning must be for the maximum potential of the resident, not for the convenience of the staff.

The famous anthropologist Edward Hall, in discussing man's need for space, said: "Caged animals become stupid, which is a very heavy price to pay for a super filing system! How far can we afford to travel down the road of sensory deprivation in order to file people away?"

One of the classic problems in communication is frozen evaluation, i.e., it is assumed that a person is nonchanging.



The retarded do change; therefore, living quarters must not petrify potential. Upward mobility must be built into that self-fulfilling prophecy. Let the design speak.

Normal expectations beget normal behavior. Hear us clearly, give the retarded people a home, the same kind of home you want for yourself. If you'd like to live there, so would they. □

# An Architecture for Human Dignity

**"Healing with concern" is the motto of the South Carolina Department of Mental Health. For more than 150 years the state has had a deep concern for the mentally ill, having been the second in the nation to finance a hospital for these persons. The architect of its first building, still in use today, was the distinguished Robert Mills who was tutored by Thomas Jefferson.**

Can the language of architecture really speak for those persons in mental institutions who are often forgotten by so many? Can architecture be blended with the treatment process? Can it provide an envelope which unifies a network of services? Can it at the same time open up avenues of communication and interaction between patients and medical staff? Can it help in the restoration of the patient to a normal life in his own community?

The South Carolina Department of Mental Health and the Health Care Facilities Planning and Design Studio of Clemson University's College of Architecture hope that the answer to these questions will be a resounding yes. Four years of health care planning produced a marriage of architectural concept and treatment philosophy before the first construction drawings were begun. It is anticipated that the application of this research into actual "bricks and mortar" will serve as a prototype for other institutions.

The research and planning have resulted in a "village system" of care which blends physical design with patient needs and treatment. The village system is a coordinated network of home community resources, community mental health programs and controlled therapeutic communities. In brief, the plan is to construct four small regional villages or miniature communities throughout the state where the patient, in a homelike setting, will learn to adjust to and to tolerate an environment not unlike the one to which he will return when he is well.

To paraphrase the words of the innovative and able state commissioner of mental health, Dr. William S. Hall, the architectural concept which is designed to aid the therapeutic treatment will give the mentally ill certain specific rights: the right to dignity, to comfort, to humane care, to privacy, to respect, to treatment, to hope and to recovery.

Group process will be the basic treatment philosophy. Four unique factors

have been combined into one planned treatment program by the role diffusion of group leaders; the milieu therapy in the village communities; the physical design which enhances the treatment programs; and the linking of the home with the varied controlled therapeutic communities.

South Carolina has long had a concern for its citizens who are mentally ill. It was the second state in the union to finance a state hospital for such persons, the legislators in 1821 appropriating funds to purchase property and build a hospital. The early structure, constructed at a cost of about \$100,000, was the design of Robert Mills, who was tutored by Thomas Jefferson and who was the architect of such landmarks in the national capital as the Washington Monument, the Treasury building, the General Post Office and the Patent Office building.

Mills himself said of his hospital when it was finished in 1827: "The design is both novel and convenient. It combines elegance with permanence, economy, and







security from fire." The Mills Building, as it is now known, serves as resident quarters for women employees and affiliate student nurses, and is the oldest structure in the nation built to house mental patients which is still in use today.

South Carolina was the first state in the southeast to have all of its mental institutions fully accredited by the Joint Commission on Accreditation of Hospitals. The Department of Mental Health administers five major hospitals and facilities and works with local communities in the regional network of 14 community mental health centers and clinics. It operates an annual summer camp for emotionally disturbed children, said to be the only state-operated camp of its kind in the nation. Construction is now underway for a new 186-bed alcohol and drug addictions center (architects: Geiger, McElveen & Kennedy), about which more will be said later.

It is not surprising, then, that the officials of the Department of Mental

Health decided in 1968 to map out a master plan and to take a long-range look at the effectiveness of its facilities. Dr. Raymond E. Ackerman, deputy commissioner of the state's mental health services, says that there was a massive need for change if the population of the state's mental health facilities were to be reduced and optimum treatment provided.

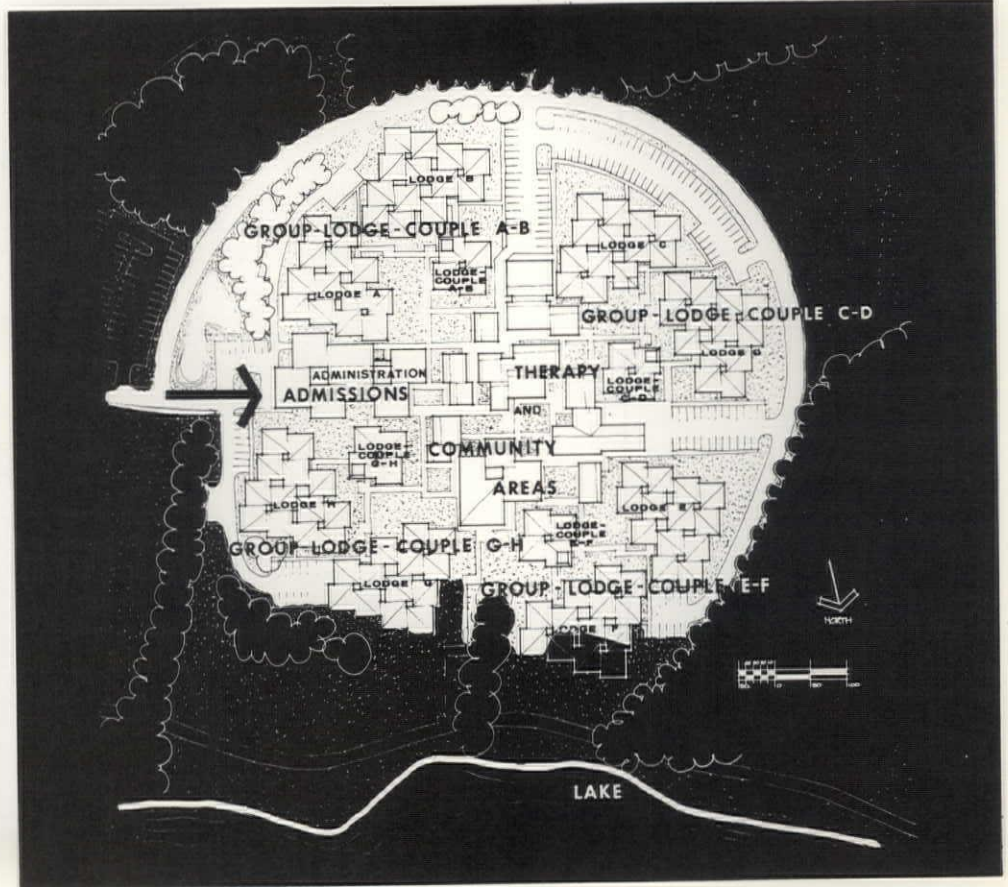
Determined not to segregate its charges forever in a hospital environment but to "marry patient care with appropriate architectural systems," as Dr. Hall expresses it, the Department of Mental Health asked Harlan E. McClure, FAIA, dean of Clemson University's College of Architecture, to make personnel available to assist it in formulating long-range plans for treatment philosophy and the physical design of facilities. In early 1969 the department made a continuing grant to the college's Health Care Facilities Planning and Design Studio to be funded by the Clemson Architectural Foundation.

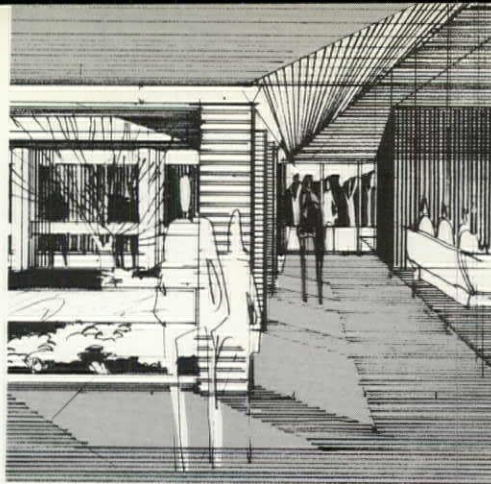
Dr. Hall has commented that Clem-

**The state has now initiated a prototypical system of health care for the mentally ill comprised of a coordinated network of community resources and mental health programs integrated with regional therapeutic villages. Four years of research and planning have culminated in a marriage of architectural concept and treatment philosophy.**

son's Professor George C. Means Jr., AIA, was requested to head the research project and to advise the department because of "his knowledge and because he is a compassionate man." Assisting in the coordination of the research grant was C. Milford Hunter, then chief of engineering of the Department of Mental Health's planning section. The research team was aided by a multidisciplinary advisory planning group of key professionals. The personnel of this group from the department included psychiatrists, psychologists, nurses, social workers, therapists and experts in such areas as management, information, food and environmental systems and technologies.

No plan for a state system of health care delivery can work unless it has the cooperation of legislators and their understanding and support. Dr. Ackerman says that every effort was made in all the planning to involve the commissioner and governing board, the State Budget and Control Board chaired by the Governor and





The concept draws a line of distinction between the physical space mission of a psychiatric treatment center and that of a general hospital, allowing the patient to relate to a more normal community environment. These character studies by the architects show the overhangs which will help control the warm climate and also serve to unite the individual lodges with the village.

the state's legislative committee on mental health.

Professor Means and Professor Robert L. Chartier have skillfully used this tremendous opportunity to help their students bridge the gap between learning and practice. In the beginning of the research project, the students became personally committed to finding ways whereby architecture can serve the mentally ill. There was little information, recalls Professor Means, and his students had "to plow ground for fertile soil."

Three former graduate research assistants who worked long and hard on the project are now working in the health field: John L. Wells Jr., AIA, John L. Thompson and Paul B. McClanahan. They and other students became actively engaged in study and research into nearly every aspect of architecture and patient treatment and have been instrumental in the practical application of the research.

The professors recall that their students and they themselves read, studied, observed and listened, and visits were made to many places in this country to try to find the best architectural solutions for the treatment of the mentally ill. "We humbly became, and still are, aware of the complexity and magnitude of caring for the mentally ill," Professor Means has commented.

After the years of research into the ways in which architecture can affect and influence the treatment of the mentally ill and the emotionally disturbed, it was decided by all involved to make a drastic departure from the usual structural layout of a general hospital and to initiate the village system "where a pleasant community environment will reflect those societal influences to which the patient must learn to adjust in his own home community."

Instead of a series of multistoried buildings with vast and inhumane wards where the mentally ill person is treated as someone diseased, each village embraces a grouping of attractive small lodges designed specifically to aid the treatment process and to return the patient to his own home as quickly as possible.

The plan is to have eventually four regional villages in different parts of the

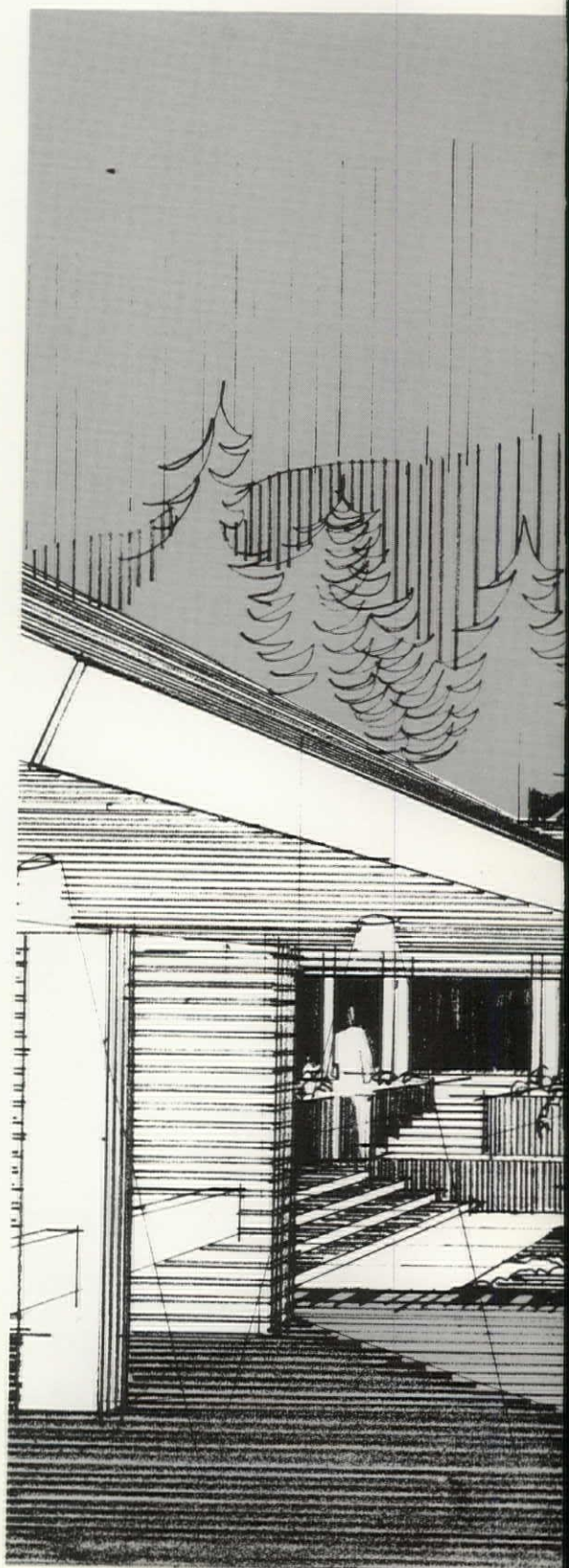
state. The regional villages will be able to provide a coordinated range of treatment programs and settings "so that a person may receive treatment appropriate to his difficulty at or in a location commensurate with his abilities," says Professor Means. In addition to the regional villages there will be the special ones for the treatment of such problems as alcohol and drug addiction.

"Village A," as yet without its official name, will be the first regional village. It will be constructed on a 50-acre lakefront site six miles north of Columbia. The working drawings are presently being prepared by the Tarleton-Tankersley Architectural Group in Greenville. The firm's principals, H. Harold Tarleton Jr., AIA; Ladson D. Tankersley, AIA; and John A. Pinckney Jr., AIA, are as committed to and as enthusiastic about the architectural concept as the research and advisory planning teams. Through it all, Professor Means has been what the architects call a catalyst, synthesizer and prodder.

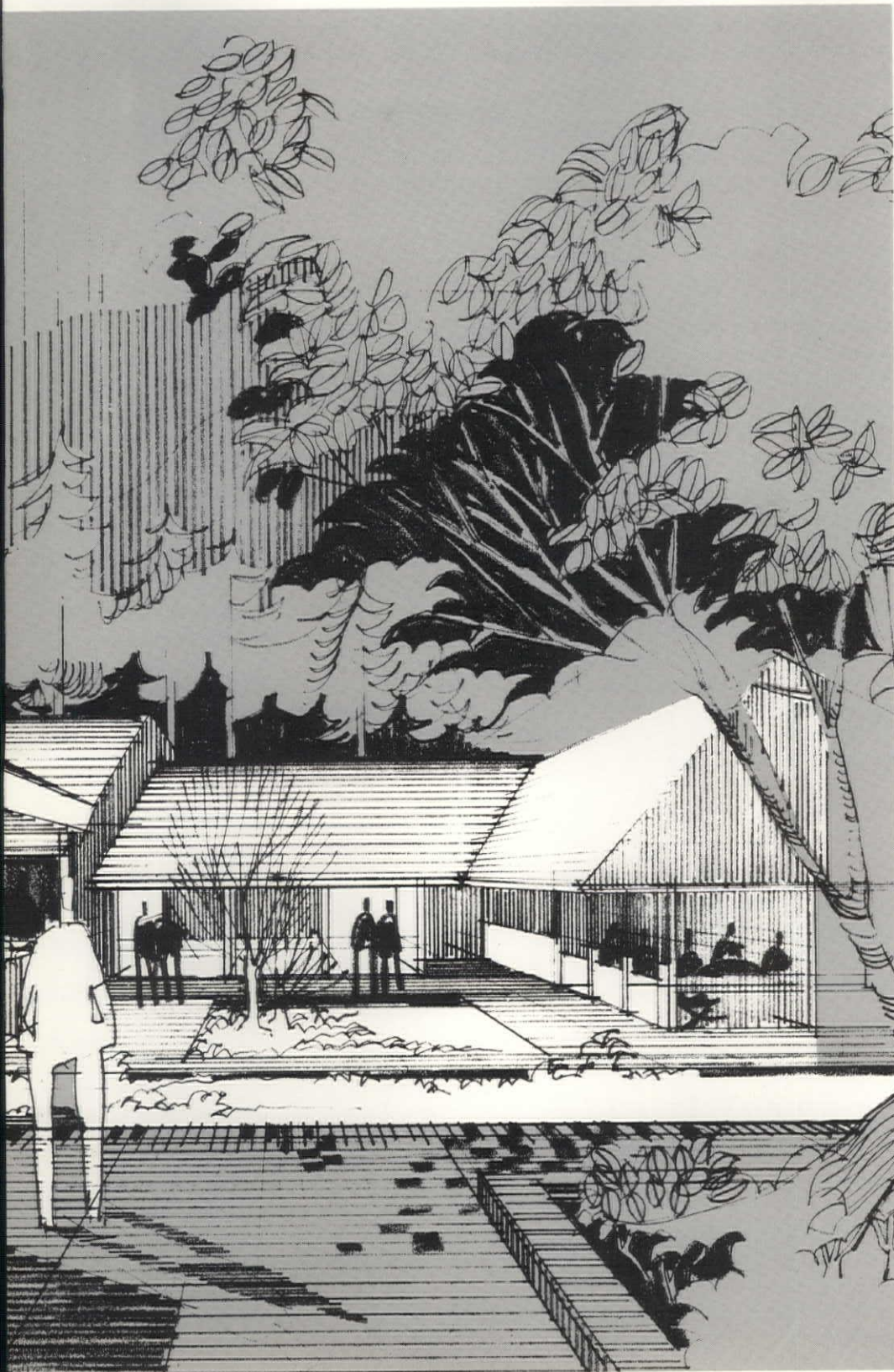
Although the environment of Village A is as nearly as possible like the community to which the patient will be restored, it is, after all, a controlled setting designed to provide the patient with the necessary care and treatment to restore him to health. Within the village, patients will be housed in lodges, each of which will accommodate three groups of 12 patients. Two individual lodges are joined together by a lodge "couple" which will serve as the administrative unit of the group.

Each lodge will contain individual bedrooms and also, like home, a living room, dining room, kitchen and laundry. Village A will have eight of these lodges as well as the admissions center where the patient first enters the village for diagnosis. He will be returned to this center in case he has minor illnesses that do not require hospitalization. If he does need more intensive care, use will be made of one of the department's hospitals.

Within the center of the therapeutic "new town" is what Professor Means calls the "agora," containing such normal community amenities as a restaurant, bank, post office, theater and areas for recreation, education and training. Dr. D. Devon Pollard, who directs the village sys-



**The essence of each patient's recovery process is interaction among patients and staff. The village system allows this group therapy to occur. The physical facilities meet three criteria: continuity of care, flexibility and opportunity for therapy. Almost as important as the system itself, says a psychiatrist, is the planning process and its long-range implications.**



tem pilot project, was brought on the scene early to participate in the planning and says that "the buildings themselves will facilitate rather than hinder therapeutic efforts."

Dr. Pollard explains that the village will allow the staff to test the amount of responsibility that the patient can take at every point in his treatment. As the patient goes from the security of the admissions center, he enters the lodge "with its open door policy." Even here responsibility will be tested, and it is expected that gradually the patient will go out of his lodge and enter the village center to work and play. "Once the patient has shown that he can take the responsibility of working and playing in the village," says Dr. Pollard, "he will be sent home on pass to test out whether he is ready for discharge to the community."

The architectural setting allows for optimum interaction between patient and patient and patient and staff. "As the patient is able to recover and relate to others," comments Dr. Pollard, "the village will allow us to offer him more and more contact with others until the point that he is ready to tolerate the number of contacts he must have in order to live in his own community after discharge." As Professor Means explains, the least common denominator is "the group," in which "group process as a treatment program promotes the ultimate goal of the patient's rapid return to his life's responsibilities."

Dr. Ackerman believes that the village system may reduce the hospitalized mentally ill population for which the state is responsible by as much as one-half. The regional villages, he comments, are more expensive in initial funding, but eventually it is hoped that there will be dividends in earlier return of the patient to his own home and fewer sent back for treatment.

Dr. Pollard has remarked that patients who are not responsive to the village milieu therapy will be transferred to special hospitals for long-term supportive care.

As a controlled treatment environment, the village system is flexible in program and evaluation, in environmental and spatial elements and in supply and maintenance. It provides, explains Professor

**The belief is that architecture can affect and influence the treatment of the mentally ill, affording the appropriate environment to envelop the therapy. An evaluation after several years will help supply answers about the effectiveness of the village system in restoring patients to health.**

Means, "a continuity of care for the patient and many omnifarious situations which afford an opportunity for therapy." The continuity of care is all-important, and it is here that the village system is closely related to the 14 regional mental health centers and clinics.

After the patient is discharged, he will not be forgotten. While he is undergoing treatment, community workers will continue to investigate his home environment and to eliminate wherever possible the elements that have disturbed the person's well-being. When he returns home, he will continue as long as necessary under the care of the regional center or clinic.

Before a patient enters the village, the staff will have studied his home environment. As social worker Linda Martin explains, "There must be a flow of communication and interest from the village community through the local community mental health center and through influences in the home community. Responsibility, interest, influence and benefits must be shared. . . . The staff should take into consideration the community from which the individual comes and to which he will return, this being a vital part of planning and treatment."

In September 1972 a pilot project was initiated to try to anticipate the conditions that will occur in Village A. Under this study program, all 24 patients are from Sumter County and are referred to the project by the county's mental health center. A cottage at the psychiatric institute was used to simulate a projected group-lodge-couple in Village A. Data gathered during this project has been fed back into the planning process.

There has been a carefully devised training program for the staff who are working first in the pilot project and will be transferred to Village A when it is completed. There were no guidelines for the implementation of the philosophy of the village system, reports Mrs. Lilyan R. Klein, chief of nursing education, who has coordinated staff training. Prior to the opening of the pilot project, personnel for all three shifts were relieved of regular duties to participate in a six-weeks' intensive training program. The major focus was on the group process and feedback

and the principles of group treatment. A major goal, says Mrs. Klein, "was to learn how to diagnose group problems and how to use this knowledge in working with patients and helping them to deal with day-to-day living problems. The group leader will be required to recognize, understand and in some way influence these proceedings and processes without unnecessarily distorting their natural development." Group leaders like to call the patients "group members."

Dr. Hall says that South Carolina envisions three levels of public mental health care: the community mental health center or clinics; the villages; and the central hospitals which are expected to be improved and upgraded. In addition to the regional villages, there will be a special village for the treatment of alcohol and drug addictions. As with Village A, a pilot project was initiated in 1971 to test program procedures before completion of the 186-bed center now under construction. A building on the grounds of one of the hospitals has been used for the pilot project, which has operated under the direction of Dr. Thomas G. Faison.

The new village for addicts will be completed before Village A, probably opening early in 1974. The same philosophy which related architecture to treatment for Village A will exist in the Addiction Center. Occupational, recreational and vocational rehabilitation programs will augment therapy sessions. Group therapy and personal interactions will be emphasized. The Addiction Center will contain 14 cottages. The construction contract was awarded at a cost of \$2,665,507.

Village A will initiate the service system for the entire state. Located in the Columbia area, it will serve the Midlands. Future villages are also planned for the Piedmont, the Pee Dee and the Coastal regions. Final location for "Village B," for which funding has been made, has not yet been determined. The four regional villages when finished will serve all of the state's 14 mental clinics and centers.

"With the village system," Dr. Pollard has said, "there will be no longer the feeling that a mental facility is a snakepit. The villages will give the atmosphere of the patient's hometown. He may go to the

bank and deposit or withdraw money, or to the restaurant for a night out, or to the post office to mail a letter—all things he would normally do at home. When these patients return home, they will be adjusted to community life. They will be able to overcome the No. 1 problem: acceptance by their neighbors." Of the village system, he says, "It is the answer."

At the same time, all who have been involved in planning the village system realize that only an evaluation after several years will really supply the answer about its effectiveness in restoring patients to health. But perhaps someday, as Dr. Hall has remarked, "There will be no longer the need for those tall, cold-looking mental hospital institutions where patients lie side by side, and hope is no more than a flickering shadow on the gray walls."

Bengt Nirje, a Swedish authority on mentally retarded children, reported in *Changing Patterns in Residential Services for the Mentally Retarded* (Washington, D.C.: President's Commission for the Mentally Retarded, 1969) that he had visited many of this country's public institutions for the mentally ill and had found them to be "shocking denials of human dignity." Perhaps South Carolina's village system of care will help to refute such an opinion. At any rate, as Thomas Jefferson, who guided Robert Mills, once said, "I like the dreams of the future better than the history of the past." And it is hoped that the dreams and plans of George Means and many others in South Carolina will be realized to help point the way to better care for those human beings who for so long have been denied their human dignity. *Mary E. Osman*

*ED. NOTE: The Health Care Facilities Studio, College of Architecture, Clemson University, will present an illustrated dialogue to interested professional groups and universities with curriculums in architecture and related health professions. Discussions center on South Carolina's village system for mental health care delivery and relate the philosophy of programming, planning and design to education and practice. For information write to: Professor George C. Means Jr., AIA, P.O. Box 1, Clemson, S.C. 29631.*

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# A Multipurpose, Multidisciplinary Teaching Lab

Here's how one planning team solved the problem of getting the utmost out of the square footage and the budget provided for teaching spaces in a medical school. Theodor Ruys, AIA, director of Laboratory Facilities Planning, Naramore Bain Brady & Johanson, Seattle, explains how it was done.

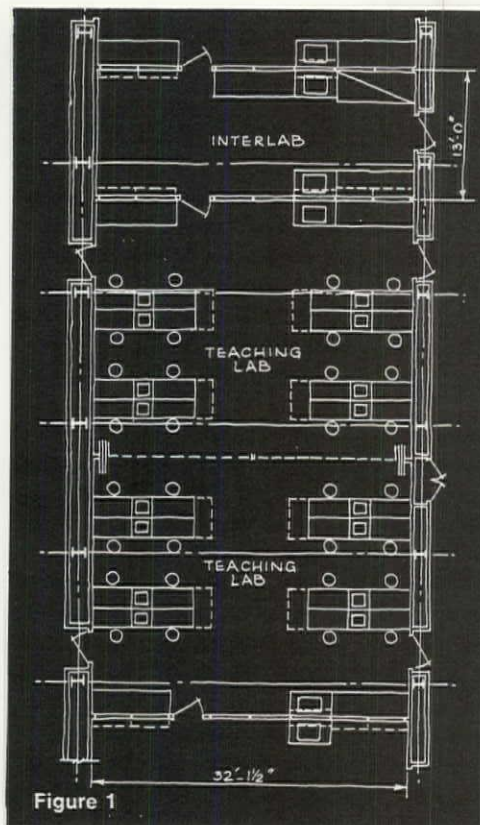
When the Health Sciences Center at the University of Washington was faced with the problem of providing new teaching space on a limited budget for the schools of Medicine, Dentistry and Nursing, the concept of Multi-Discipline Teaching Laboratories (MDTL) was adopted as an approach. This was by no means a novel one; it had successfully been used by Northwestern, Loyola and Case Western Reserve Universities, the Universities of New Mexico and Southern California Medical Schools as well as several others.

A study committee from the University of Washington consisting of faculty members and architects visited the medical teaching facilities mentioned and noted that there were two approaches to the multidisciplinary teaching technique. The first provides each student a station consisting of a laboratory bench and a study carrel within the MDTL (Northwestern, USC). In this case, the space is used by one group of students only. The second approach provides for laboratory benches only, and the study carrels are found elsewhere (New Mexico, Case Western). The obvious advantage of the second approach is that the laboratories can be used for many disciplines and for several groups of students during the year.

The study committee came to the conclusion that the second approach still was not good enough and recommended that a MDTL be designed which could be used for many disciplines, for several groups of students and in addition could be converted easily to other functions. The architects took up the challenge and designed a MDTL which will meet these requirements.

The idea behind this third approach is that there will be no proprietary space. Laboratories and seminar rooms will be assigned on the basis of need. The spaces can be assigned as laboratories for 16 students or, by removing a soundproof folding wall, for 32 students. Each 16-student lab has an adjacent support laboratory where the fume hoods, equipment and supplies are located. Figure 1 shows this arrangement.

In order to assure a 100 percent use of all spaces it was deemed necessary to pro-



vide the flexibility to convert these laboratories to seminar rooms or small classrooms. The architects suggested the use of a system which will support all items along the laboratory walls, such as bench tops, wall cabinets, shelving and utility services. This concept had been developed as a system with the support of an Educa-

tional Facilities Laboratories grant at Southern Illinois University at Edwardsville. At the University of Washington, however, all utilities on wall benches are supported off the wall, independently of bench tops and cabinets, in order to make all benches easily removable.

In addition, benches along the walls are supported on leg frames so that the storage cabinets below may be rearranged at will and removed for use elsewhere, thus providing a versatile storage system which eliminates duplication. The peninsula benches are provided with utilities from a panel in the wall, as shown in Figure 2. These utilities may be disconnected easily in order to remove the bench. The utility panel can be closed if the room is converted into a classroom. Each peninsula bench consists of three movable tables, a double sink unit and two fixed tables next to the wall. All tables are identical and interchangeable, however, and may be used for chemistry bench, physiology table, equipment table or conference table.

During the conceptual phase of planning, the decision was also made to make all benches and tables a uniform height at 36 inches and to provide comfortable stools for sit-down work at these stand-up benches. This eliminates another wasteful feature of many laboratories, i.e., the need to provide both sit-down and stand-up benches—each of which is only used part time—and the need for both chairs and stools. □

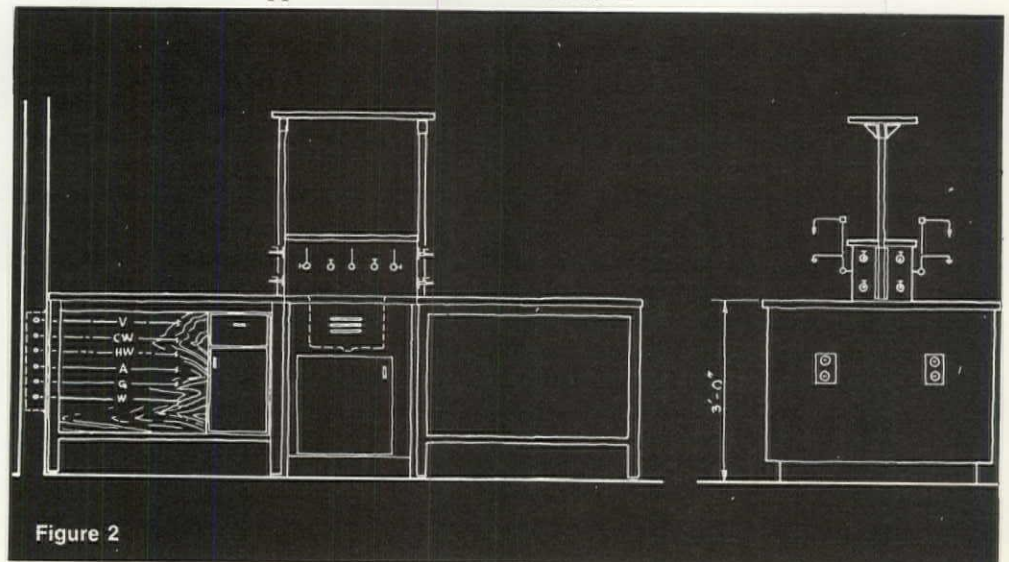


Figure 2

# What in the world are you doing when you buy UNICEF cards?



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# Fire Resistance Rating: What's That?

Through its many services and publications, the Underwriters' Laboratories, Inc., helps those who are involved in the planning and construction of buildings. R. W. Malcomson, PE, a senior field engineer in UL's Follow-Up Service, tells the architect where he can find the answers to many questions about a fire resistance rating of materials.

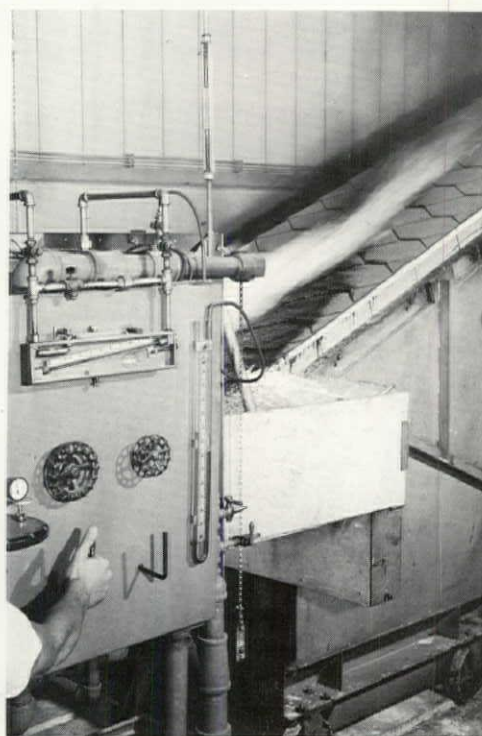
The question as to what a fire resistance rating is frequently arises when some perplexed designer learns that the plan-checker in the city building department has just turned down the latest set of detailed drawings for a new building complex. Many firms have been caught at least once by the lack of a fire resistance-rated floor, walls and partition, beam, column or roof designs.

The answer to many fire resistance problems may be found in the *Fire Resistance Index* published each year by the Underwriters' Laboratories, Inc. Copies of the index may be obtained for \$2.50 each from Public Information and Education Services, Underwriters' Laboratories, Inc., 207 East Ohio Street, Chicago, Illinois 60611.

This relatively new publication contains the information that was heretofore found in the more familiar *Building Materials List*, which has now been retitled *Classified Building Materials Directory*. The directory still contains information relative to the fire hazard classifications that are applicable to interior finish materials as well as the rating of fire doors and roofing materials.

The fire resistance ratings were removed from the *Building Materials List* and placed in the new index in January 1972 to coincide with revisions made in the American Society for Testing and Materials' Standard E-119 entitled "Fire Tests of Building Construction and Materials." The changes in the ASTM standard and corresponding revisions in the UL Standard 263, on which these fire resistance ratings or classifications are based, necessitated reevaluations of the hourly ratings applicable to most of the designs.

The rerating process also gave UL an opportunity to revise its system of numbering the designs which had been classified with respect to fire resistance. Heretofore a combination of sequential numbers and hourly values such as "237-2 HR" were used to describe a classified floor and ceiling assembly. With the advent of electronic data processing, a simpler alpha-numeric system was needed. Consequently, the designation "G504" was assigned to replace "237-2 HR."



To initiate the new numbering system, a conversion chart or cross reference of the old to the new design number has been placed in the front of the new index. In addition, the general information section preceding the illustrations of the classified designs has been expanded to more clearly explain the terms of reference used in the designs. It also includes the "Guide for Determining the Conditions of Restraint for Floor and Roof Assemblies and for Individual Beams."

Specification writers as well as designers will benefit from the new *Fire Resistance Index* because the formats of the designs have been revised to include the names of the manufacturers who are qualified to supply component materials for the designs which can bear the appropriate UL classification marking. The presence of these on materials that arrive at the job site are of vital importance to both architects and building code inspectors: They are the only means provided by UL to identify materials that have been produced under its Follow-Up Service and are acceptable for use in the rated designs.

In its Follow-Up Service, UL determines that the component materials that leave the manufacturers' plants bearing

the classification markings comply with the specifications and properties applicable to the materials originally tested to establish fire resistance rating. To accomplish this objective, UL's worldwide inspection staff visits the plants at unannounced intervals and witnesses tests on current production to verify that the composition and performance characteristics of the current material is the same as that of the original material tested. In addition, samples of the individual ingredients used to form these materials, as well as samples of the finished ones, are periodically forwarded to UL's testing facility in Northbrook, Illinois, where more detailed countercheck tests are conducted by means of infrared spectrophotometers, X-ray spectrometers and other sophisticated equipment not normally available in the manufacturer's plant.

In order for an architectural firm to avail itself of the UL Follow-Up Service, the specifications that are provided for bidding purposes should carry a notation. For example, the firm might state: "The (name of specific material such as acoustical tile, gypsum wallboard, etc.) intended for use on this job must be produced under the Follow-Up Service of Underwriters' Laboratories, Inc., and bear the appropriate classification marking indicating acceptability for use in fire resistance design . . . ." Notations of this type alert subcontractors to the fact that UL labeled materials are required. This knowledge enables them to submit correct bids and to check the materials at the jobsite to see that they are UL labeled. This reduces the likelihood of costly delays in construction, stop-work orders and the withholding of funds from the project.

To insure the degree of fire resistance contemplated by the building code, it is necessary for the designer, the plan-checker, the specification writer and, hopefully, the contractor to know what is required to provide a fire resistance-rated assembly and to see that UL labeled products are delivered to the jobsite. The most authoritative source for the design information is in UL's *Fire Resistance Index* and its companion publication the *Classified Building Materials Directory*. □



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**Health Design Administration.** David Porter, AIA. Washington, D.C.: George Washington University, School of Health Care Administration, 1973. 262 pp. No price given.

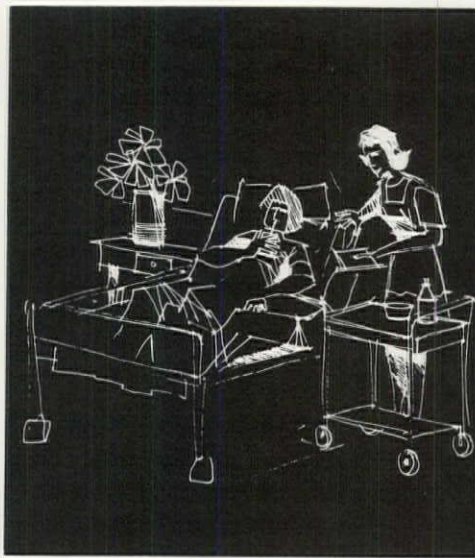
As health facilities planning has grown more specialized over the years, it becomes increasingly difficult to find literature which can provide a comprehensive overview of the entire field. This particular book attempts to survey all aspects of health planning from the viewpoint of an administrator who must oversee a building project.

The author is an architect and a lecturer at the George Washington University in Washington, D.C. The book was prepared as a text for students in health care administration. As such, it provides a simple and straightforward, if somewhat traditional, description of both participants and process in health facilities development.

Although its intended audience is students, the book will be useful to the practicing architect in communicating with clients. Most architects recognize the value of an understanding and knowledgeable client, and many work closely with administrators, board members and others to inform them as to expected levels of performance, alternate procedures and the cost and time framework for project development. This book should provide a useful starting point for this sort of client/architect discussion. Architects may also find the book a worthwhile addition to their own office libraries for younger staff members who want an introduction to health facilities planning.

The first portion of the book describes the planning team, from hospital consultant to construction manager. It includes their training and qualifications, relative roles, fees, methods of selection and desirable contractual conditions for professional services. Examples are given to illustrate the normal range of services provided by the architect, extra services necessary for a project and typical project development costs. Both fast-track scheduling and the techniques of construction management are also covered.

The book goes on to describe the technical components of a hospital build-



ing; structural systems; heating, ventilating and cooling systems; communications; materials handling, etc.; basic planning factors such as departmental sizes, recommended relationships and parking requirements; and the traditional phases of architectural document development. Considerable emphasis is placed upon specifications and construction documents including lists of standard abbreviations and symbols and illustrations of architectural and engineering production drawings.

Bidding and the construction process are covered in a rather minimal way. This is unfortunate because this period is often a time of frustration and disillusionment for a client. Issues such as delays in agreed-to schedules, quality of workmanship, change orders and the general framework of responsibility during and after construction are all important for an understanding of the total development process. The necessity of obtaining permits, the desirability of prequalifying bidders and the use of a clerk-of-the-works are briefly discussed. Activities related to the construction phase such as interior design, facility opening procedures and public relations are more thoroughly covered.

Because of the wide spectrum of material included in this book, it is apt to leave the experienced professional with some sense of frustration at the simplification and rigidity with which procedures

A number of books on the various aspects of health facilities design and planning are reviewed by authorities in the field. Together these publications emphasize that the architect must constantly read to keep himself informed about the dynamic and ongoing changes in the area of architecture for health.

and roles are described. However, remembering my own early efforts to understand hospital planning, I have no doubt that many young administrators, and architects as well, can benefit from this comprehensive review of the subject.  
*W. H. Tusler, AIA*

**The Practice of Planning in Health Care Facilities.** Chicago: American Hospital Association, 1973. 100 pp. \$4.50.

Attempts to organize the chaotic planning process attendant to most medical institutions is a worthwhile and useful effort. The American Hospital Association should be commended for producing a manual which endeavors to provide some guidelines, definition and direction in the activity of planning in the most complex of client environments. At the same time, when a broadly based institution such as the AHA with its large constituency of institutions and individuals produces a quasi-official document for wide dissemination, the application causes concern.

For one who has spent the better part of the last four years in developing tools and procedures for the planning of health facilities, I am acutely aware of the hazards of indiscriminate application of such sophisticated planning procedures by less than sensitive practitioners.

The AHA manual attempts to avoid this dilemma by threading a fine line between the philosophic and technical aspects of the planning process. The philosophic treatise is simply that institutional planning is just a part of and an extension of good management, and there is no quarrel about that from this corner. However, I have a lingering feeling, after reading the manual several times, that there is an overwhelming preoccupation with the process itself as an end, without clear indications what results of the process might be related to real problems.

The technical framework of the manual deals with essential ingredients of the planning process including organization (who?), information (what?), role and goals (why?) and programs (how?). The style is heavily flavored by the management sciences theory and jargon of what the planning process should be and why it is essential on a continuing basis.

This is contrasted by the real world where the reason for most planning activities is precipitated by crisis and overwhelming problems. In the case of health care facilities, the problem is often characterized by deteriorating facilities and environment, declining clientele and competition from other health care facilities, and changing demographic and social patterns. Further, the problems which beset the institutions are generally beyond their immediate control, and any process or consultant with ready solutions should be scrutinized carefully.

Therefore, the process itself is not the actuality, as stated in the manual, but must produce results against specific goals with self critical evaluation protocols. From the architect's point of view, unfortunately—or fortunately, whichever the case may be—the design and building process lends itself to such evaluation in terms of budgets met or exceeded, schedules met or exceeded and the petty annoyances related to the shake-down of any building at beneficial occupancy.

Obscured in this evaluation are the considerations that the most critical decisions affecting scope, budgets and schedules are made early in the process on simple criteria, such as capability to support the debt service, the minimum improvement for a competitive edge or simply the availability of certain funding sources (private or public) at any given time.

Clearly, an effective planning process must find the middle ground between the expedient and the unattainable. Planning is based on the need of all business ventures (which include all health care facilities from the "for profit" proprietary hospitals to the most sophisticated teaching and research institutions), for the most effective utilization and conservation of resources, namely staff, facilities and equipment, translated into dollars (capital and operating).

The organization (who?) of the planning process must include those who are charged with the responsibility of expenditure and commitment of funds, capital and operating. The information produced by the planning process must be sufficient for decision making relative to the appropriation of the available resources such as reallocation and change, growth and expansion, investment and return. Within this framework, the planning and decision-making process must produce sufficient information for the qualitative judgments relating to the extent essential community and other services are to be provided, within an overall viable economic balance.

The roles and goals of health care institutions, beyond certain philosophic notions, are shaped by dynamic forces from within and changing patterns on the outside beyond its immediate control.

The programs to implement goals must

be viewed in the broadest context of the life cycle of an institution. Each program may be in a different dynamic state within the total process (planning, programming, design, construction, operation, evaluation), but it must be viewed within the context of the total institution, present and future.

It is perhaps in this arena that the sophistication in planning techniques, generally viewed with suspicion, can play an effective role. The notion of simulation/gaming of present and future options can vividly demonstrate the impact of alternatives. The consequences of decisions can

be evaluated in terms of critical criteria, such as revenues produced against facilities throughout, prior to building of facilities and commitment of funds. It is also the area where the notion, very appropriately considered in the manual, of the art and science of planning is of greatest significance.

The essence of a successful planning process lies in the crucible of honest interchange between the many disciplines involved in the process, the blend of quantitative analysis and qualitative judgment.

In summary, the AHA manual represents a useful and considerable analysis of

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the planning process. On the critical side, there is an excessive emphasis on management and process with an implication that understanding words and following the steps will produce desired results. On the positive side, there is an appropriate recognition of the qualitative and quantitative aspects of planning with a useful mix of specific relevant data and information as well as a glossary of definitions. It is anticipated that this information will provide a degree of understanding of the problems, issues and current techniques on planning for the AHA constituency.

Finally, it should be stated that the essentials of a successful planning process are not found in manuals but are contingent upon people. No great plan has been conceived and implemented without an enlightened and great client. The ingredients of a successful plan and process lie in the synergism of the professional and lay people who are involved in quest of a significant great purpose within the context of immediate potential results.

*Sandor B. Csobaji, AIA*

**A Therapeutic Environment: Considerations for the Space Planning of a Community Mental Health Center.** Roeland van der Hidde. New York: Institutional and Business Design Council and the Interiors Environment Research Council of the National Society of Interior Designers, 1972. 83 pp. No price given.

This is the publication of a thesis of a master's candidate at Pratt Institute, and an excellent one. The practicing architect will find its academic presentation (i.e., statement of the general area of interest, research into the documented work of others, a program of a project to serve as an example, the student's solution and summary) a bit tedious. The graphic arrangement of the copy proves cumbersome in places.

The author's essential message, however, is clearly stated. The physical setting can be conducive to milieu therapy or antagonistic to it. The author prepares categories of spatial activities and analyzes each area of his satellite treatment unit accordingly.

The total result is a job well done and the kind of analysis that any architect ought to do in planning any building. In fact, van der Hidde's only weak point is the statement: "People develop a set of patterns to acquire identification and to establish communication. These behavioral patterns are generally true for disturbed persons as well as the healthy."

This is the essence of milieu therapy in a nutshell. It is only a small part of "A Therapeutic Environment," but it is the architect's and the interior designer's part. Neuropsychopharmacology we'll leave to the doctors, and we realize that there is always a difference between reality perceived by the mentally ill and the

well. (We are in the same surroundings but not the same environment.) Yet if all buildings were planned with van der Hidde's principles, communication between people would be enhanced, and the world would be a better place. *Fleming W. Smith Jr., AIA*

**Evaluation of Hospital Design: A Holistic Approach.** Hermann H. Field, John A. Hanson, Constantine J. Karalis, Donald A. Kennedy, Stanley Lippert and Paul G. Ronco. Boston: Tufts-New England Medical Center, 1971. 542 pp. \$9.50.

Evaluation in the continuum of planning, design, construction and occupancy of buildings has been virtually ignored by the architectural profession. This large book describes the early results as well as the activities, successes and disappointments of the Planning Office of the Tufts-New England Medical Center for long-range development of the center.

The office flourished during that brief hopeful period for planning in the early '60s, which coincided with the thrust of urban renewal in Boston. However, planning and evaluation virtually ended when the medical center faced a worsening economic situation, federal cutbacks and a planning drive that had spent itself. It is hoped that it may begin again during more auspicious times.

Much of the work of the Planning Office appears to have formed a basis and has been incorporated into the excellent architectural design by The Architects Collaborative Inc. The design directives required certain "physical attributes" that would help to achieve the center's goals in health care and education. Briefly, these included: horizontality; clustering of patients' rooms; grouping of clusters with triads; continuity of spaces related horizontally; de-emphasis of the nursing station; and construction staged in small increments. These directives were far-reaching in their impact on design and will also affect function and operating cost. Hope-

fully, there will be interest and money to evaluate the building when it is completed.

The five chapters, eight appendices and selected bibliography are interrelated, but each can also be read and used independently. They develop the strategy for an interdisciplinary approach to evaluation of hospital designs and probe the process of environmental decision making. They are general in nature and applicable to any building evaluation. The book also considers empirical techniques or tools to evaluate relationships between environment and behavior.

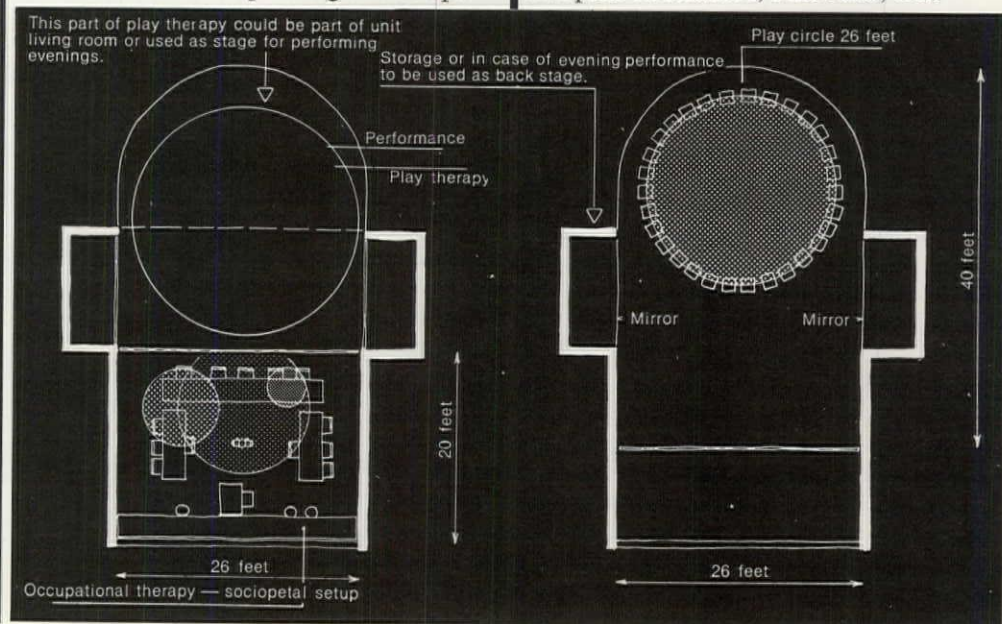
One study attempts to develop ways of assessing the probability of success of a space that fosters certain behaviors. The approach of the authors and their conclusions closely parallel work in the evaluation of environments in prisons and community mental health centers where confinement is a greater concern.

The second study on travel in nursing units is exhaustive and develops algebraic methods for quantitative comparisons. The tabulated results of various nursing unit arrangements are interesting and conceivably would have affected the planning of some hospitals. However, in actuality nurses' travel has a much lower priority than the single-care room concept, staffing and nursing concepts, the absence of nurses' stations and the number of beds per unit. In these areas, much additional evaluation needs to be performed and published.

In summary, the book is long and difficult to read. However, it is informative and helpful to anyone undertaking a building evaluation. *James R. Diaz, AIA*

**Changing Hospital Environments for Children.** Roslyn Lindheim, Helen H. Glazer and Christie Coffin. Cambridge, Mass.: Harvard University Press, 1972. 206 pp. \$10.

The authors of this book began their collaboration during the design phase of Stone, Marraccini & Patterson's Children's Hospital at Stanford, Palo Alto, Cali-



fornia. Roslyn Lindheim was the project's consulting architect for programming and research, and Helen Glaser, a pediatrician and psychiatrist, was the hospital's assistant medical director. They were joined by Christie Coffin, an architect who devotes her professional efforts to exploring the social and behavioral aspects of architecture. The many excellent photographs which accompany the text are by Lise Giodesen, an occupational therapist at the hospital.

Planning for the Children's Hospital began in 1964; the facility was completed in 1969. A totally new hospital for children is a relatively rare building type, and the authors developed guidelines for positive hospital environments for children based on their Stanford experience. This book concentrates on those environments specifically experienced by children in hospitals rather than upon the total scope of children's hospital planning.

This unusual book fills a void in professional architectural literature. There are few published studies of the physical environment of a hospital for children or of the total milieu surrounding the child, including the medical, psychological, social, recreational or educational aspects of a hospital. The book is effectively organized in a developmental sequence that recognizes the distinctive characteristics of various age groups.

The text is divided into nine chapters, the first two dealing with the hospital's relation to the community and to alternatives to hospitalization.

The next four sections are devoted to the various stages of childhood: infant, toddler, grade school child and adolescent. These chapters are further subdivided into areas concerning the child's reaction to his new environment. These are each concluded with "design guidelines," the how-to-do-it phase of the book.

The most useful, interesting and entertaining aspects of the book are these recurring design guidelines. They set forth specific directives for creating environments sympathetic to the needs of children of different ages who are required to live away from home for medical reasons. Here the principles of normal child growth and development are applied to the formulation of sound concepts of hospital design.

The guidelines are practical, logical, fun and often innovative. For infants: "Provide a 'giant playpen' or small enclosed alcove off a larger space for crawling infants, in full view of the nursing substitution." For toddlers and preschoolers: "Design the playroom or multipurpose room with a high ceiling over the central portion, and low ceiling heights in adjacent alcoves. Adults look smaller if the ceiling is higher, and lower ceiling alcoves provide cozy places for children to play." For adolescents: "Teenagers generally

have a greater number of 'necessary' objects than adults, including musical instruments, record players, radios and books, as well as hairdryers, beauty aids and personal clothing. Adequate personal and storage space must be provided in which each teenager can keep his possessions and personalize his environment."

A chapter on the pediatric nursing units, which concludes the text, surveys and carefully evaluates trends in the design of this type of unit.

There are two appendices. The first is a useful design checklist for evaluating pediatric nursing unit planning, and the second is a series of subjective observations of children in hospitals which is interesting from a behavioral point of view.

The authors conclude their book with "Misery is": a tabulation of comments from patients in the adolescent unit of Children's Hospital at Stanford. These comments say something pertinent about hospital organization and routine. The environment developed for the patients can be excellent, but the overall effect can be dampened by everyday routine.

Misery is: "When you're being bathed and you're all uncovered and the doctors open the curtain for a consultation and ask, 'Why are you lying there like that for?' " "Getting up at six o'clock on 'weigh day' just to find out that you've put on more weight." "When your friends are visiting you and the nurse comes in and asks if you don't notice that something smells bad."

The book is a moderately technical how-to-do-it guide for use primarily by architects, but it is also for administrators and pediatricians. You will find it delightful reading. *Lawrence Partridge, AIA*



**Architecture in New England: A Photographic History.** Wayne Andrews. Brattleboro, Vt.: Stephen Greene Press, 1973. 202 pp. \$16.95.

Wayne Andrews can always recharge my enjoyment of all kinds of buildings. His enthusiasm, expressed by camera craft and prose, is contagious. He is obviously a man who loves buildings, and he freely admits that photographs cannot substitute for the real experience of a visit. With this in mind, he tells us which of the historic buildings in the book are open to the public. He also informs us about who main-

tains such buildings and, as he always does, who has ripped down one of them.

The photographs and text describe eight periods, including our own, beginning with "The Dust of Dead Saints, or the Seventeenth Century." It is a beautiful document. The photographs are particularly sensitive to texture. It looks as though the author waited all day for the sun to best bring out the texture of clapboards or rough concrete. He thereby creates effective photographs, even when other factors may not be ideal as in the case of bleak surroundings.

This book is one of a regional series following Andrews' *Architecture in America*, which is similar in format. The too brief text is similar in spirit to his major historical work *Architecture, Ambition and Americans* which is now in paperback. His writings make history contemporary and actually interesting. He delights in telling why a building was built a certain way and records bits of gossip about the people concerned. This serves to give a feeling for the period as he touches on the taboo subjects of religion, money, various prejudices and occasionally sex. He humanizes history and allows us to identify similarities in our own clients as well as in ourselves. This can only lead to refreshing reflections and insights into our own tasks.

I am a fan of this man's works. Although I have not read all of his books, I intend to. *John Blanton, AIA*

**Housing the Elderly.** Ottawa, Canada: Central Mortgage and Housing Corporation, 1972. 38 pp. \$3.

The comprehensive and informative Canadian architectural document, *Housing the Elderly*, has recently been made available to architects in this country.

This publication is constructed as a working guide for the design and planning of housing for the older adult based on recent research and practice. Published in both English and French, it features background information, an outline of principles for design criteria and sketches of important housing unit dimensions and building details which highlight specific environmental considerations for the elderly population.

The book covers a wide range of material from site planning information to dwelling unit design to description of various hardware systems, in a most readable and concise manner. Included are major sections on multiple unit housing for the elderly and the design of the dwelling. There is an introductory chapter, an appendix and a bibliography as well.

The conscientious application of this information to the design process should significantly raise the level of the environmental condition of our growing elderly population. It should be noted that the development of appropriate and suppor-

tive alternate physical settings for the older population has many implications for sound environmental planning principles of benefit to all age groups.

The volume is produced under the supervision of the chief architect and planner of the Central Mortgage and Housing Corporation—the Canadian equivalent of the Department of Housing and Urban Development in this country—with Nils Larsson performing capably as coordinator. A second volume, *Housing the Handicapped*, is currently being produced and will be available soon. We owe a great debt of gratitude to CMHC for developing these valuable design guides.

A copy of *Housing the Elderly* may be obtained from the Director of Information, CMHC, Montreal Road, Ottawa, Canada KIA OP7. Include \$3 to cover the cost of the publication and handling. Thomas O. Byerts, director of *Architecture and Environment*, Gerontological Society, Washington, D.C.

### Modern Architectural Detailing, Vol. 5

Edited by Konrad Gatz. New York: Van Nostrand Reinhold, 1972, 268 pp. \$19.95.

The general theory behind this volume and its four predecessors is that there must be consistency and no contradictions between the concept of a building and the detailing of its component parts. The materials in the book, which is a pictorial "catalog" of international architectural examples, were first published in the German periodical *Detail: Zeitschrift für Architektur + Baudetail*.

The first major section of the book on "details of structures" includes brick buildings and concrete, steel and timber construction. The examples, illustrated with drawings, plans and photographs, range from a house on the Rhine near Düsseldorf to a bus stop shelter in Lamersdorf. One American example is the Volkswagen depot in Orangeburg, New York (architects: Katz, Waismann, Weber & Strauss).

There is a section devoted to "consistency in detailing" which is illustrated by a diversity of structures: a bank, a school of architecture, a church, a museum, etc. The two concluding sections are concerned with exterior and interior details. In the former, attention is given to aluminum curtain walls, details of surface structures and of outdoor installations such as screen walls. Interior details include concrete stairs, suspended ceilings, fireplaces in brick and decorative details.

**Mr. Jefferson, Architect.** Desmond Guinness and Julius Trousdale Sadler Jr. New York: Viking, 1973. 177 pp. \$14.95.

Thomas Jefferson would be remembered today as "the first truly American architect" even if he had not played such a significant role in the development of this country and served as its President,

say the authors of this book on his architectural achievements. Some of his inspiration came from the architectural patternbooks of his day and from the structures he admired so much in Europe, but he was no "slavish copyist" and his architecture "seems peculiarly at home in the brilliant Virginia sun."

Through a most readable text and many plans, drawings, engravings and photographs, Jefferson's development as an architect is presented. His own beloved Monticello, the University of Virginia,



Belle Grove in Middletown, Montpelier in Orange County and many other buildings—some in ruins and others still in use—are discussed in detail.

The book gives an abundance of information about Jefferson the man as well as the statesman and architect, his friends, the life of that era and the fate of the buildings since the time of their first "Jeffersonian glory."

Perhaps one of the secrets of how one man could be so remarkable in so many different pursuits is summed up in his own words: "There is not a sprig of grass that shoots uninteresting to me." He was referring specifically to the development of Monticello, but the remark seems applicable to his philosophy of life in general.

**The Functions of Cities.** Fran P. Hosken. Cambridge, Mass.: Schenkman Publishing Co., 1973. 276 pp. \$6.95 hardbound, \$4.95 paperbound.

Fran Hosken presently teaches in the University Without Walls in Roxbury, Mass. She is a graduate in architecture, a critic, urban journalist and author of the previously published book *The Language of Cities*. She takes her students directly into city institutions and tries to show them the "real" world of the city. She believes that only by going into the city and examining an actual situation can the student really learn the problems and the realities.

This book is based upon taped interviews between Ms. Hosken and such experts in urban affairs as Alan Altschuler, secretary of transportation and construction for the Commonwealth of Massachusetts; Denis Blackett, president of

Housing Innovations, Inc.; and Edward Logue, president of the New York State Urban Development Corporation. Tapes of the initial interviews are available from the McGraw-Hill Book Company.

Each of the discussions concerns a specific problem such as housing, crime, education, race relations, etc. Urban design and architecture are discussed with I. M. Pei, FAIA. The author herself provides a chapter on new cities and towns. A bibliography is given at the end of each chapter.

**Architectural Alphabet, 1773: Thirty-three Plates Reproduced in Facsimile.** Johann David Steingruber. London: Merriam Press, 1972. 111 pp. \$55.

Two hundred years ago Steingruber's *Architectural Alphabet* was first presented to "those learned in architecture and to curious readers." People today who fit either of those categories will be fascinated by this republication of a rare and beautiful book. So rare is the first edition, say the publishers, that hardly anyone has seen a copy. Copies in the British Museum and the Berlin State Library were destroyed in World War II, and the only copy known to exist in a library in England is one in the Victoria and Albert Museum.

This reproduction is from a copy belonging to Berthold Wolpe, Royal Designer for Industry, who came to England in the '30s from Germany. He spent years studying Steingruber's life and work and has supplied the present edition with an introduction about the Bavarian architect and master builder.

Steingruber wrote an introduction to his book in which he stated: "However numerous the discoveries and invention of architectural schemes and layouts, no one has yet worked on the idea of basing contours and ground plans on the letters of the Latin alphabet. So I have devoted my leisure hours, and with no detriment to the many official commissions graciously entrusted to me, to the attempt at compiling a volume of such alphabet-based designs."

He thought that his innovations would serve a purpose and that the plans would be useful to architects "when sites are



most irregular in shape." He also contended that "the very quirks and curves of the letters may compel the architect to divide up his interiors more imaginatively."

Each letter of the alphabet forms the basis of a ground plan for a baroque structure. Thirty designs cover 25 letters, with I serving for both I and J. There are alternative schemes for the letters A, M, Q, R and X. Steingruber wrote notes to accompany each design. Of the letter K, for example, he remarked: "Here again is a letter of such form that the amateur prepared to base a palace upon it would be hard to find. Yet, as the arrangement shows, a great household could be accommodated in reasonable style." But the letter U "is of a shape entirely appropriate for a palace design, permitting of a handsome courtyard and two long wings with ample apartments, and a lower transverse block comprising two salons. . . ."

The book is, as the publishers state in a special brochure announcing its republication, "a storehouse of baroque fantasy and romantic yet practical invention." A present-day architect might like to while away some hours by trying to fashion more contemporary buildings than baroque palaces along the same scheme to which Steingruber evidently devoted so much loving attention and from which he derived great pleasure.

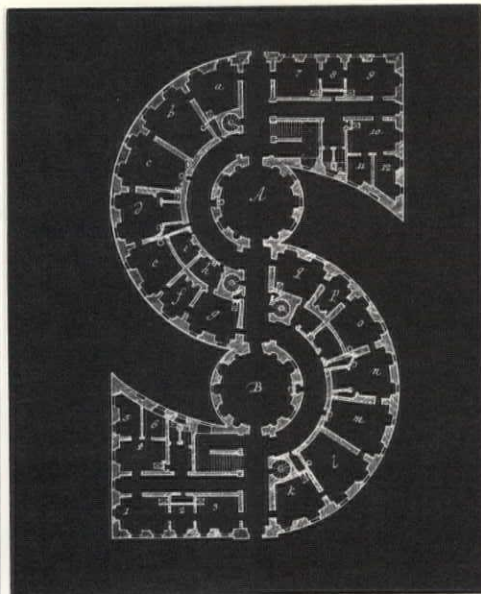
The new edition is a typographical delight. The original copper engraved plates are printed in true facsimile and mould-made paper is used. Only 425 copies are for sale. The book is the first publication of a new press located at 16 Groveway, London SW9, England.

This is a luxury item for the average American architect, of course. But if some library nearby is fortunate enough to have a copy, the contemporary designer will want to look at it. Perhaps he will then agree with Sir Francis Meynell who says, "I can think of no other recent book which so happily combines gay learning, serious study and surprising beauty."

**The Letters and Diaries of Oskar Schlemmer.** Selected and edited by Tut Schlemmer. Middletown, Conn.: Wesleyan University Press, 1972. 425 pp. \$19.95.

Schlemmer — artist, choerographer, dancer and teacher — spent nine years as a master at the Bauhaus. For more than 30 years, he was intensely preoccupied with art and artists and was a leader in bringing new concepts of artistic expression into being. He knew Gropius, Moholy-Nagy and many other figures in the world of art and architecture in those days prior to World War I and to the middle of World War II.

His letters and diaries presented here provide an insight into his own thinking as well as statements about his associates.



**Style 1930: Elegance and Sophistication in Architecture, Design, Fashion, Graphics and Photography.** Klaus-Jürgen Sembach. New York: Universe Books, 1971. 175 pp. \$10.

Primarily a visual presentation, this book contains many international examples of architecture, design, fashion and photography to show the culture of the '30s. An introductory essay provides a background to this interesting decade when there was concentration upon technical achievements and design.

**The Conservation of Georgian Edinburgh.** Edited by Sir Robert Matthew, John Reid and Maurice Lindsay. Edinburgh, Scotland: University of Edinburgh Press, 1972. 130 pp. 3 pounds.

Edinburgh is one of the most distinguished examples of urban design in Europe. This book contains the proceedings and an account of the outcome of a conference organized by the Scottish Civic Trust in association with the Edinburgh Architectural Association and the Civic Trust, London. It is the story of crucial action taken to conserve the "new town" of Edinburgh. The book affords a noteworthy example for American conservationists. As one contributor says, the new town of Edinburgh has no equivalent in the world. "The problem is not therefore to determine if it will be preserved: it *has* to be preserved. It is how it is to be saved from the pressures of modern life and from decay that concerns us." We Americans can make the same statement about our own architectural heritage.

**Transportation and Town Planning.** Kurt Leibbrand. Cambridge: MIT Press, 1970. 381 pp. \$17.50.

This book is an interesting addition to the growing literature on the relationship between transportation and land use planning. Leibbrand is at his strongest when he is discussing transportation systems and urban and regional growth in their historical contexts.

American transportation engineers will find the technical aspects routine if not rather outdated. This is not to say that they should not read this book for its contribution in linking technology to urban growth problems. It will serve as a useful primer for environmentalists because it is written on a layman's level.

At one point Leibbrand states that "purely technical solutions are usually no longer adequate. Economic, social and political questions are of increasing importance." The strongest criticism of the book can be made on this point. The economic, social and political implications of transportation are discussed at best in a suggestive manner and at worst are overlooked altogether. Perhaps the point of view is a bit too European for those concerned with the urban transportation issues in this country. Leibbrand is associated with Traffic and Industrial Planning, Inc., of Frankfurt/Main, Germany. *Michael Barker, Administrator, AIA Department of Environment and Design*

**New Towns In-Town: Why a Federal Program Failed.** Martha Derthick. Washington, D.C.: Urban Institute, 1972. 102 pp. \$2.95.

In 1967 the Johnson Administration announced a program to build new towns in-town to provide housing for the urban poor and to help revitalize American cities. This book analyzes seven projects to ascertain why the program, once so promising, was "unequivocally a failure," falling far short of its goals and producing few visible results with three deaths.

"In general," the author of this provocative book states, "the program failed because of the disabilities of the federal government associated with, and to a degree inherent in, its central character. Very simply, the program was an unsuccessful attempt at centralized action in a governmental system that remained extremely decentralized more than a generation after the New Deal and two decades after World War II."

**Seacoast Maine: People and Places.** Martin Dibner; photographs by George A. Tice. Garden City, N.Y.: Doubleday, 1973. 209 pp. \$12.50.

"Let it be clear from the start," writes Dibner, "this is no guidebook for tourists, no campground directory-cum-clam chowder recipes." It's a portrait of the people and places of a highly individualistic region. The photographs by Tice are an integral part of the book, making it a handsome one.

**The Recreation Center Operation Manual.** Alan R. Caskey. Cranbury, N.J.: A. S. Barnes & Co., 1972. 295 pp. \$9.95.

Planned for the staff of a recreation center, this book contains information on the operation and maintenance of such a

facility. Its help to the architect is in giving him leads on the direction and use of a recreation center. There is also a brief introductory chapter on the planning of a center.

**Introduction to Construction Drafting.** Lee Hooper. Englewood Cliffs, N.J.: Prentice-Hall, 1971. 247 pp. \$13.75.

This manual, prepared by an AIA member, will be useful to students of drafting. Hooper begins where a novice might, building in graded steps to skills required of a competent draftsman. He provides the beginner with a practical knowledge of plans so that he may be more economically useful to an employer and better able to find his way in construction processes. The three parts of the book cover techniques, practices and design and designers. Well illustrated, it is instructive and easily comprehended.

**Reinforced Masonry Engineering Handbook.** J. E. Amrhein. Los Angeles: Mason Institute of America, 1972. 320 pp. \$14.

It takes sheer grit for an architect to shear his way through this tome on designing masonry shear walls for seismic and wind loads. A structural engineer would eat it up, as it is replete with endless formulas, charts and tables to assist him in designing building walls to resist both lateral and vertical forces.

The handbook is heavily oriented to the requirements of the Uniform Building Code, a model code published by the California-based International Conference of Building Officials. The author carefully points out that local building code requirements must be considered in interpreting the information presented.

This authoritative handbook joins the ranks of other nationally recognized technical engineering design manuals for concrete, steel and timber. Although principally concerned with clay masonry, its principles are equally valid for other types of masonry used in the reinforced mode. Covered are the theory of masonry design and explanation of design procedures; design examples for a one-story industrial building, a seven-story apartment building and a retaining wall; and typical reinforced wall details, connections with floor and roof diaphragms and other building details.

The primary value of the handbook to the architect who uses consultants for structural design is the creation of an awareness of the effects of earthquake and wind forces on architectural design. But it takes considerable wading through a formula-ridden text to discover this. Perhaps the author's next work will be the brochure he started to write, set out in terms most helpful to the architect who relies on his engineer to do the mathematics.

*Robert Allan Class, AIA, Director, AIA Technical Services*

## LETTERS

**Saving Energy:** I appreciated the article by Fred S. Dubin titled "If You Want to Save Energy" in the December '72 issue. I have used it for reference on several occasions. I find it valuable in convincing clients that the time to pay attention to energy consumption is in the planning stage. We are currently developing a major project for a telephone company in Colorado, and I have used the article advantageously with the personnel.

*John B. Rogers, AIA  
Denver*

**Rapid Conversion:** Imitation is supposed to be a form of flattery. I thought that AIA members might enjoy this American Republic Insurance Company advertisement. The Institute's new administration building, it seems, has already been converted into a hospital.

*Theodor M. Hoener, AIA  
Cape Girardeau, Mo.*

**Our 'New Image':** If you want to raise my AIA dues in order to pay for Peter Bradford's bold new image for the AIA JOURNAL, it's okay with me.

*Robert L. Hanna, AIA  
Lincoln, Neb.*

Congratulations on the new format. Besides looking great, it makes for easier readability; and when one is in a hurry, greater skimability. The editorial material continues to be excellent.

*David R. Dibner, AIA  
Newark, N. J.*

We are grateful for the new standard which the AIA JOURNAL has achieved. Thanks for the much improved design format of the magazine. *C. Crawford Murphy  
Architect  
Shelby, N.C.*

I want to congratulate the staff on the pleasant revised graphics. I think that the format is very "gutsy" and consistent, which helps to a large extent in segregating editorial content from advertising. It



is essential that a meaningful part of the magazine does not become secondary. Anyway, for the first time I am looking at an architect's magazine that has graphics worthy of the profession.

*William H. Kessler, FAIA  
Grosse Pointe, Mich.*

Certainly the new graphics have improved the image of the magazine and simultaneously the image of the profession. As designers of the environment, we should present to others and to ourselves the best graphics image possible. I hope that the quality of the new design will continue and even improve.

Overall, the change is excellent and most commendable. I look forward to seeing more of the same applied to both cover and content. *Craig Walling, AIA  
Tempe, Ariz.*

In my opinion, the new and improved format is as forward a step as when the magazine was changed from the *Reader's Digest* yellow-orange cover format to the present size. The staff is doing a magnificent job, and I hope many people are saying so. *R. Lloyd Snedaker, FAIA  
Salt Lake City*

The new format and design is a tremendous step toward easier and quicker reading. In recent years, the AIA JOURNAL has become one of the best sources of information on the profession. The new design format makes the publication even better.

The cover on the April issue is a masterpiece. A friend of ours in Palo Alto has framed it as a work of art worthy of display. Peter Bradford should be heartily congratulated on a job well done.

*James E. Westphall, AIA  
Pasadena, Calif.*

*ED. NOTE: We are grateful to those who have responded, either in writing or orally, and continue to welcome comments.*

**The Education of an Architect:** As a product, in part, of the educational process to which Philmore J. Hart, AIA, refers in his article "Humanizing Architects" in the January issue, I'd like to add a personal note to what he said and didn't say.

Undoubtedly, the classical view of the architect is that of a modern day Renaissance man: part engineer, part artist, part scholar, part sociologist. It is not surprising that someone receiving this type of education would develop into the kind of all-knowing, arrogant, thing-related individual described by Hart.

During my freshman year at Western Reserve University way back in 1965, a mysterious hand wrote on a studio blackboard that a particularly vigorous assignment we had been given had been expanded to include the redesign of Western Europe. While we went headlong into ar-

chitecture with a capital A, we saw real architects creating real abominations—witness the research center that Hart mentions in his article.

During the activist '60s, it was easy to move from a feeling of knowing the symptoms of what was wrong with this country to a ready course of action. In our case, the action meant making our education relevant to the world around us and designing good buildings within the context of a lot of political change. Wrong was all around us in the misled and misleading, misguided and misleading leadership that was evident at all levels within the

architectural and academic communities and in city, state and federal governments.

As students and faculty began rejecting the kind of architecture and societal priorities which were everywhere evident, the powers that be began rejecting the university's department of architecture.

Hart's credits state that he was formerly chairman of the department. What happened? During the late '60s, it was decided to change from a five-year bachelor of architecture degree to a six-year B.A. and M.A. program with multidisciplinary concentrations in architecture, planning and urban design. Such a transition

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seemed opportune and important. Some five years after the initial announcement, however, the department was phased out of existence due to "financial and staffing problems." The story of change that went on in the department and in the curriculum does not have a happy ending. The department is no more.

As we went from a program based upon developing draftsmen/designers who could and often did work for local architectural firms to one of nondraftsman programmers, designers and ideologue/politicos becoming more involved with nontraditional forms of architecture, working with antipoverty agencies, giving away architectural services and becoming more and more involved in radical causes (Vietnam among others), we succeeded in isolating ourselves from the two major sources which would have husbanded the department's transition from an undergraduate architect-producing one to a multidisciplinary and multifaceted undergraduate and graduate department of architecture and planning. These two sources were the university community and the local architectural one.

There were five years of ups and downs that Hart experienced as chairman of the department which were shared by me among other students, faculty, staff and friends. We became more and more estranged from the architectural community at large. We cut ourselves off from it and the local AIA and embarrassed and irritated most local architects enough to put them in the opposite camp.

When the department died, not a word of regret reached us—with a few personal exceptions. We were equally as monstrous to them as some of their buildings were to us. The process of politicizing our education and lifestyle (the department as a body went on strike in the aftermath of Kent State and Cambodia) drove all non-believers into the opposite camp. We were few, and they were many. Unable to draw support, financial or otherwise, from any quarter and with a new regime in power, the department was eliminated.

The department wasn't a great school of architecture, but we did what we thought was right. It can be proud of the inputs it made into the life and vitality of Cleveland.

Any look at the portfolios of students of the latter part of the '60s would have to reflect the changes that went on in architectural education at Case Western Reserve University and elsewhere. Mine is no different. I was graduated from that defunct but accredited department at which Hart was chairman and friend, and I wonder, so what if you humanize architects? Two equally powerful visions are before me: One is a bit of graffiti on the wall of the new school of law building at Case Western Reserve (no staffing or financing problems there) which reads "Ar-

chitecture died for your sins," and the other is a question: How did Howard Roark pay his bills during all those lean years?

Ken Orenstein  
Providence, R.I.

**Historic Preservation Down Under:** Since I am involved in matters of architectural preservation, historic buildings, their registration, etc., I read with interest the article "Architectural Continuity" by Nicholas H. Holmes Jr., AIA, in the February issue.

I was particularly interested in the reference to a chapter on "The Architect as Preservationist" in the *Architect's Handbook of Architectural Practice* prepared by the AIA Committee on Historic Resources, as well as its forthcoming "Preservation Code Appendix."

I am a member of a committee from the National Trust of South Australia, and we have just started gathering information in order to prepare a draft guide for preservation purposes in our state. Any material that might help us in this task will be very much appreciated.

Albert Gillissen  
Architect  
Department of Architecture  
and Town Planning  
University of Adelaide  
Adelaide, South Australia

**Deterrents to Crime and Vandalism:** As designers of our physical environment, architects today must face up to many problems which plague the contemporary social scene. Two of increasing concern are crime and vandalism. There must be more built-in security measures in order to resist these threats.

The threat to security exists in structures of all sizes. Many small store owners are locking their front doors and allowing in potential customers only after they are carefully scrutinized. Anyone who fits the shop owners' profile of a potential menace is not permitted to enter.

In larger stores, supermarkets and banks, closed circuit TV cameras are mounted on interior walls and columns to permit surveillance and to guard against shoplifting and holdups. At airports, federal law now calls for all travelers to be searched electronically before boarding planes. The airlines are particularly wary of those who fit the profile of a potential hijacker.

There are crime and vandalism in both cities and suburbs. The person who owns a house in the suburbs, or even the exurbs, faces a risk of having his home entered, robbed and vandalized while he is away. Worse yet is to have his home entered by armed robbers while he is there. Because of his isolation, the suburbanite is more vulnerable to such crimes than the city dweller.

During the Middle Ages, cities were encircled by high walls that could only be

entered through guarded entrance gates. Buildings were made of heavy masonry walls with narrow windows. They were accessible only through heavily barricaded wooden doors. The prevalent architectural form, which reflected the violent times, was that of the fortress.

It is not pleasant to think of returning to that kind of architecture today. Nevertheless, we will have to abandon many of the tenets of modern architecture because of their invitation to crime and vandalism: wide glass areas that are easy targets for thrown rocks; easily accessible entrances; open planning in banks and other places that are prone to holdups; light-colored walls that invite marking; and easily mutilated and combustible building materials.

Many of the security measures that have been utilized up to now were not designed into the buildings. They have been haphazardly added by owners and inhabitants. Consequently, we have a mishmash of security measures that are often ineffectual and sometimes more of an annoyance than a deterrent.

Adequate security must be designed into a project. Entrances and exits must be controlled, but at the same time must be readily accessible for evacuation of occupants in case of fire. Windows should not permit either entrance or exit. Dark-colored, rough textured walls should be used on ground or street levels because they are less inviting to graffiti scrawlers than light-colored smooth walls. Hard surfaces should be used in public areas of buildings because they are less likely to be mutilated than expensive decorative woods and fabrics.

The problems of crime and vandalism are social and police problems. They are also architectural problems, and the architect must make certain that any project that he designs is as secure as physically possible against these enemies of society: the armed robber, the burglar, the arsonist and the vandal.

Leonard E. Trentin, AIA  
New York City

*ED. NOTE: Architect Oscar Newman and a group of researchers worked for three years on a study of the incidence of crime as related to the physical environment. Their report Defensive Space was published in 1972 by Macmillan. Meanwhile, the Justice Department has announced a \$2 million demonstration program to help make safer urban environments through the application of concepts developed by Newman and his associates.*

## EVENTS

**Aug. 20-24:** Value Engineering for the Building Design Team Workshop, University of Wisconsin, Madison, Wis.

**Aug. 21-23:** Value Construction Conference, Building Industry Consulting Center, Columbia, Md.

**Sept. 6-7:** Seminar on the Use of Concrete in Housing, Statler Hilton Hotel, Dallas.

**Sept. 6-8:** Indiana Society/Kentucky Society of Architects Regional Convention, French Lick Sheraton Hotel, French Lick, Ind.

**Sept. 9-13:** National Association of Home Builders Apartment Conference, Regency-Hyatt House, Atlanta.

**Sept. 9-14:** International Federation for Housing and Planning Conference, The Hague, the Netherlands.

**Sept. 13-15:** New Jersey Society of Architects Convention, Playboy Club, Great Gorge, N.J.

**Sept. 14:** Entry slips postmarked, AIA Honor Awards Program. Contact: Maria Murray, AIA Headquarters, 1735 New York Ave. N.W., Washington, D.C. 20006.

**Sept. 18-20:** Value Construction Conference (repeat), Building Industry Consulting Center, Columbia, Md.

**Sept. 23-25:** Northwest Regional AIA Conference, Victoria, B.C., Canada.

**Sept. 23-27:** Prestressed Concrete Institute Convention, Palmer House, Chicago.

**Sept. 27-28:** Virginia Chapter AIA Fall Meeting, The Homestead, Hot Springs, Va.

**Oct. 1-3:** Architects in Industry Conference, AIA Headquarters Building, Washington, D.C.

**Oct. 5:** Entries due, Swimming Pool Design Awards Program. Contact: National Swimming Pool Institute, 2000 K St. N.W., Washington, D.C.

**Oct. 10-12:** Central States Regional AIA Conference, Wichita, Kan.

**Oct. 10-12:** Short Course on the Design of Cold-Formed Steel Structures, University of Waterloo, Waterloo, Canada.

**Oct. 10-13:** Pennsylvania Society of Architects Annual Forum, Pittsburgh Hilton Hotel, Pittsburgh.

**Oct. 11-14:** National Trust for Historic Preservation Annual Meeting and Preservation Conference, Cleveland.

**Oct. 12-13:** International Council of Societies of Industrial Design Congress, Kyoto, Japan.

**Oct. 13-21:** San Francisco International Design Show, The Showplace, San Francisco.

**Oct. 14-17:** New York State Association of Architects Annual Convention, Kutscher's, Monticello, N.Y.

**Oct. 15-17:** National Noise Control Engineering Conference, Shoreham Hotel, Washington, D.C.

**Oct. 21-25:** International Federation of Municipal Engineers Conference, Tel-Aviv, Israel.

**Oct. 26-28:** Louisiana Architects Association Convention, Lake Charles, La.

**Oct. 30-Nov. 1:** Texas Society of Architects Annual Meeting, Convention Center, San Antonio, Tex. □

## GOING ON

going on from page 8

96 and US 17, as a facility "which will incorporate all the services and recreational facilities demanded by the interstate traveler and set them in a context of indigenous regional development."

Point South will have a shopping village, sports facilities, a playground for children, a nature and history trail for hiking into the surrounding areas, a farmhouse in a 19th century setting, motels, restaurants and campgrounds. "All efforts will be coordinated through grand scale management to oversee such innovations as the controls of exterior materials and colors, uniformity in lighting, underground utilities and better quality landscape design," said McNair.

Another speaker, James Hines of the Marriot Corporation, said that a "new look is demanded by the traveler." He called for multipurpose rest and service areas for the traveler, the businessman and the family in search of a short respite. He said that "there is a need for upgraded coordination of development with respect to site design, traffic safety and recreation/service facility combinations." He commented that the Point South development "represents a valid first attempt toward rational environmental development along the interstate system" and that it sets standards for planning to replace the chaos that lines so many of our highways.

### Senate Opposes West Front Extension, Supports Underground Development

"Historic preservation, fiscal prudence and common sense all seem to have prevailed on the preposterous proposal to alter the cherished face of the US Capitol," commented the *Washington Post* editorially on July 22. The newspaper praised the action of the Senate whereby a request for \$58 million to construct an 88-foot addition to the Capitol's West

Front was defeated by a vote of 92-0. Instead the Senate voted to authorize expenditures in the amounts of \$18 million to restore the existing front; \$300,000 for the preparation of a master plan; and \$15 million to construct underground offices on the House side of the building.

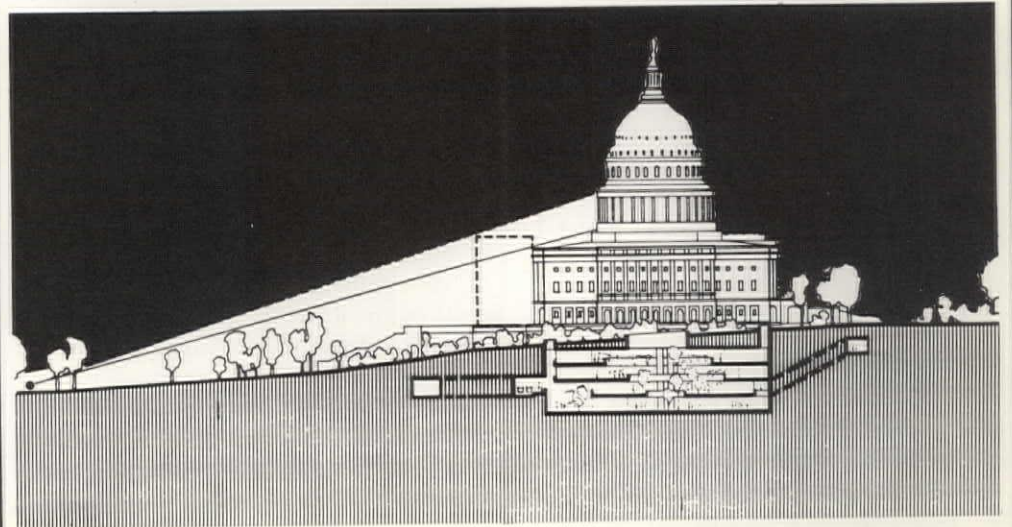
The AIA has consistently opposed the extension of the West Front since it would destroy the last remaining facade of the 144-year old original Capitol. The Institute has said that space requirements could be met successfully without this sacrifice.

The Senate's recent action follows recommendations made by the Institute in testimony before a House Appropriations Subcommittee in March and a Senate Appropriations Subcommittee in June. S. Scott Ferebee Jr., FAIA, president of the AIA, and Archibald C. Rogers, FAIA, first vice president, testified that the Architect of the Capitol should have the guidance of a planning program as he endeavors to meet the needs created by a growing nation and expanded activity on Capitol Hill.

In March George Hartman, AIA, Washington, D.C., architect, appeared with Ferebee and Rogers before the House subcommittee. He suggested that space needs could be met in other ways than an extension of the historic structure. He stated that the most immediately apparent alternative would be the development of an underground complex beneath Capitol Hill. "Because it will not be seen," declared Hartman, "it offers the unprecedented advantage of allowing a symmetrical building to respond to an unsymmetrical need for space." He also said that the underground facilities would be less expensive to build and to operate.

AIA testimony declared the proposal to extend the West Front to be "historically, esthetically and monetarily wasteful." It was recommended that the West Front be restored and that any new construction be deferred until it can be integrated into a long-range plan for all of Capitol Hill.

By a margin of only six votes, the



The AIA study proposes underground office space, leaving the West Front intact.

House authorized \$58 million to be spent on an extension of the Capitol. Earlier the seven-member Commission on the Extension of the Capitol had directed George M. White, FAIA, Architect of the Capitol, to seek the necessary funds, saying that the extension was essential to insure structural stability and to provide office space. In its report in April the House Appropriations Committee made no mention of the alternative plan proposed by the AIA.

Extensive lobbying efforts were then made by the Institute's Legislative Minutemen, State Preservation Coordinators and AIA Congressional liaison and design program staff. In the Senate debate in July, Senator Ernest F. Hollings (D-S.C.), floor manager of the bill, called plans to erect an extension "an architectural crime and common-sensical offense." Evidently his Senate colleagues agreed.

The Senate bill now goes to conference. Senator Hollings is quoted as saying that he "will not be budged." The *Washington Post* surmises that the House "will now take its new underground office space and leave the West Front alone."

#### **Federal Commission Urged to Encourage, Conduct Research in Fire Safety Measures**

"It is not yet possible to establish a fully rational design philosophy for achieving fire safety in buildings," states an ad hoc panel of the Building Research Advisory Board in a message to the National Commission on Fire Prevention and Control. The contention is made by BRAB that there have been "years of research neglect" and that measures of fire prevention and control in use today have often been established on the basis of trial and error and in isolation without sufficient consideration of the building and its operation and management as an entity.

BRAB calls for an approach "that would give life safety maximum priority at reasonable cost, provide reliable information on hazards and experience and encourage the research necessary for rational building design/management philosophies." Present measures of fire safety, says BRAB, include limitations on building materials, equipment and construction techniques as well as requirements for protecting occupants of a building such as means of access and egress and special devices for fire detection, control and fighting. But they should all be "reexamined and their actual value determined" on the basis of scientific research. "It is simply not yet possible for a building designer to quantitatively balance means of achieving fire safety with other safety goals and the basic design goals of function and economy." BRAB asks for an approach that relates fire safety requirements directly to their overall impact on building design. It believes

that the federal government "ought to have an interest in establishing and maintaining sound and defensible fire safety requirements in areas appropriate for federal action" and that it is a leader in supporting research and technology development as well as one of the country's largest users of buildings.

BRAB, a unit of the Division of Engineering, National Research Council, National Academy of Sciences/National Academy of Engineering, is comprised of 36 appointed representatives of government, industry, the professions, the academic community and labor. For a number of years it has worked actively in the exploration of various aspects of fire safety in buildings.

#### **Value Analysis in the Design Process Is Recommended to Congress**

The AIA recommended to Congress recently that value analysis of construction operate in such a way as to become an integral part of the design process. Speaking for the Institute, William Carlisle, FAIA, of Columbia, S.C., said that the basic goal of value analysis "is to pinpoint the most effective, efficient design approach that will satisfy the facility's functional requirements based on established quality criteria and life span considerations."

This can best be done, said Carlisle, who is a member of the AIA Board of Directors and of the AIA Government Affairs Commission, by a team within the architect's office or by consultants selected by and responsible to him. The performance of value analysis by a part of the overall design team, Carlisle commented, will require compensation for both consultants and architects who are involved in providing this service, which is an additional step in the design process.

Carlisle explained that historically architects and engineers have been excluded from participation in value analysis under terms of their contracts. He commended the Public Buildings Service of the General Services Administration as the "single federal agency which utilizes value analysis services by architects and engineers on a professional basis."

Carlisle took issue with a report released early this year by the Government Procurement Commission which recommends that A/E contracts be awarded in part on the basis of life-cycle cost estimates. The AIA, however, agrees with the commission's minority report which holds that a requirement for predesign life-cycle costs estimates is "meaningless." The minority report states, "In developing his design, the A/E can take into consideration the comparative life-cycle costs of elements of the various possibilities open to him. Only when the design is thus firmed up and the choices made can a realistic estimate of total life-cycle costs for the project be made."

#### **Recreational Project Opened in Guam Viewed as Step Toward Island Tourism**

Guam is taking steps to become a tourist center. One step in this direction is the recently opened Country Club of the Pacific, an \$8 million development which is said to be the island's first major recreational project.

The 25,000 square foot structure is elevated above an 18-hole golf course



*The clubhouse is a 30-minute drive from Agana, the island's business center.*

which stretches along the Pacific Ocean and through jungled hills. It is the design of Tokyo architect Kisho Kurokawa. Pacific Architects & Engineers, Inc., headquartered in Los Angeles, served as engineering consultants. The firm is presently designing a 50-foot pool for the area.

The club is located near Talofono, on the south end of the island. Its facilities are open to Guam residents and visitors. The clubhouse is a 30-minute drive from Agana, the island's business center.

#### **Dramatization of Single Urban Theme Is Object of 'City Edges' Grants**

The "City Edges" project was created under the Architecture + Environmental Arts Program of the National Endowment for the Arts to highlight problems of urban design and planning and their solutions. Recently the project made 37 grants totaling over \$1.1 million to 37 municipalities and planning and environmental groups in 34 states, Puerto Rico and the District of Columbia.

Among those receiving grants were the University of Texas, School of Architecture, for the investigation of a series of natural waterways. Another grant was made to Cooper Union in New York City for its School of Art and Architecture to study the use of rooftops.

There were more than 350 grant applications submitted. The Endowment states that "the range of identifiable edges for which research and development study funds were requested includes waterfronts, highways and railroads, inner city borderline areas, palisades and historic landmark districts."

#### **Architects Cite Open Space Advantage In Discussions on Tall Buildings**

Although Mexico City is said to have "the worst foundation in the world," its archi-

itects and engineers have succeeded in designing 44-story structures which have withstood the severe tests of earthquakes. "Imagine working with soil that settles at the rate of 2 inches per year," said structural designer Emilio Rosenbleuth at a recent conference on the planning and design of tall buildings held in the Mexican capital city.

The conference is the ninth in a series of such meetings in various parts of the world. The 50-nation cooperative project is headquartered at Lehigh University in Bethlehem, Pa., under the direction of Dr. Lynn S. Beedle, director of Lehigh's Fritz Engineering Laboratory and chairman of the Joint Committee on Planning and Design of Tall Buildings.

Conference organizer Oscar de Buen said that most of Mexico City's new high-rises are office buildings, although the tallest, now under construction, is a 45-story hotel. He commented that the new subway is changing people's habits which will probably lead to tall buildings in special areas. "We can meet the structural design problems," he commented. "What is needed is attention to housing problems. Will we be able to house people suitably in apartments?"

One of the speakers, Minoru Yamasaki, FAIA, architect for the New York City World Trade Center, said that "the high-rise is the result of the natural tendency

of people to group themselves. The case for the highrise is that it allows one to leave a bit of green space." Bruce Graham, FAIA, who is associated with Skidmore, Owings & Merrill and is architect for Chicago's Sears Tower, said that its height was justified because it provided for adequate space for a street-level plaza. "Otherwise, the office requirements would have filled the block sidewalk to sidewalk creating the gloomy canyons that have resulted from some of the designs of earlier generations."

Among the other speakers on the program was architect Paolo Soleri who described a proposed prototypical self-contained city. "The tall building should become the city," he declared. Another speaker was Alan Jacobs, head of the San Francisco Planning Commission, who spoke about his city's Urban Design Plan, relating aspects of the crucial role of tall buildings. Other speakers considered legal, sociological and structural problems of tall structures.

The Joint Committee on Planning and Design of Tall Buildings will sponsor a series of conferences this summer in New Zealand, Australia, Hong Kong and Japan.

#### **Outstanding Engineering Achievements In 1972 Are Honored by the NSPE**

The Kansas City International Airport, opened last November, is designed to

serve supersonic transport, jumbo and wide-body jets. Located on a 5,000-acre site some 15 miles from the central business district, the airport has three terminal structures and plans another one. It is expected that by 1980 it will accommodate 10 million passengers and 800 million tons of cargo a year. Its architects are Kivett & Myers; its engineers are Burns & McDonnell.

The airport has been named as one of the 10 outstanding engineering achievements of 1972 in the US by the National Society of Professional Engineers.

The other nine winners are:

- Geysers Power Plant in Sonoma County, Calif., potentially the world's largest source of electrical energy generated by geothermal steam
- North Cascades Highway in the state of Washington
- Prairie Plan Project of the Metropolitan Sanitary District of Greater Chicago whereby nutrients contained in waste water are returned to the land
- Personal Rapid Transit System in Morgantown, West Va., the first effort of the US Department of Transportation to apply technology and management techniques from the aerospace industry to a major rapid transit program
- Houston Ship Channel Bridge, the nation's longest strutted-girder bridge
- Baggage Handling System and Central

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### National Program of Coordination Urged In AIA Testimony on the Metric System

The AIA has advocated conversion to a metric system of weights and measurements since 1944. In recent testimony before the subcommittee on science, research and development of the House Committee on Science and Astronautics, S. Scott Ferebee Jr., FAIA, president of the Institute, reaffirmed this position.

He urged a program of coordination saying that the architect's job of specifying materials for construction would be "virtually impossible" if parts of the building industry were to begin to convert only as their particular needs required. Ferebee recommended that this country follow the example of the United Kingdom which incorporated modular coordination, dimensional coordination and standardized component sizes into its conversion program.

Suggesting that the conversion could take place in a planned 10-year period, Ferebee said that architects would be able to convert in less time. But, he declared, "We could not even begin until the conversion of product sizes and the revision of design tables and their acceptance by the various code groups was well underway." Ferebee stated that the AIA is opposed to "evolutionary metrication," or a concept of letting things happen naturally. Without a program of coordination, there would be difficulties of "disastrous proportions."

### Design Methods to 'Humanize' Lighting Will Be Studied by IES Task Force

Der Scut, AIA, associated with the architectural firm of Kahn & Jacobs in New York City, has been appointed by Robert T. Dorsey, president of the Illuminating Engineering Society to a Special Task Force to Integrate Esthetics and Engineering in Lighting.

"In too many cases, lighting going into today's new buildings is designed by formula, focusing simply on numbers and hardware and resulting in a dull, monotonous environment," comments Dorsey. The aim

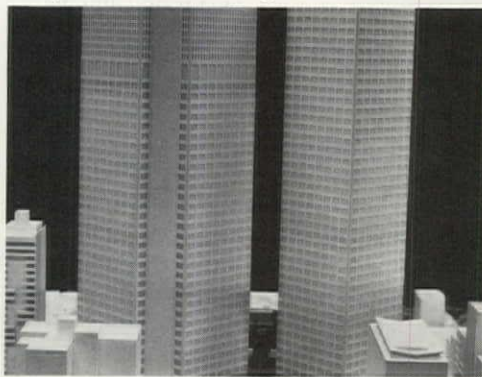
of the task force is to minimize "this insensitive approach to lighting design." It is expected that the task force will improve relations among architects, interior designers and the ultimate lighting user.

The task force is headed by James Kaloudis of the consulting engineering firm of Meyer, Strong & Jones in New York City. Its instructions are to prepare a report that will suggest "not solutions but approaches to solutions reinforcing rather than preempting the position of the lighting designer."

Other members of the task force are Noel S. Florence, chief designer, Lightolier; Bob McLeod, TLA Lighting Consultants; Carroll B. Lusk, the Smithsonian Institution; and Henry J. Wald, director of engineering and planning, College of Physicians and Surgeons, Columbia University.

### Melbourne Large-Scale Building Complex Joins American, Australian Architects

Melbourne, Australia's second largest city, has been having a sustained building boom for a decade. The latest and biggest project involves a city block in the central city where a \$12 million twin tower complex will rise. Design architects are



*Diagonal alignment of the twin towers will admit sunshine to the ground-level areas.*

the US firm of I. M. Pei & Partners, who are associated in the project with Melbourne architects Bates, Smart & McCutcheon.

The two buildings, Collins Tower and ANZ Bank Tower, will be 600 feet high. The former will contain an international hotel, office suites and a "sky lounge" with bars and restaurants around the periphery where spectators will enjoy panoramic views of city, sea and mountains. The ANZ Bank Tower will house the headquarters of the Australia and New Zealand Banking Group.

A feature of the project is a public concourse which will rise four levels above the ground. Roofed with glass, it will be serviced by glass capsule elevators running from the below-street-level car park. The two lower levels will contain shops, restaurants, theaters and professional offices.

The complex, situated on 3.7 acres, is expected to be finished in 1976.



*The sculpture will be viewed in its entirety from afar and on an intimate basis below.*

### Chicago's Dearborn Street Is Site For 53-Foot Sculpture by Calder

Following completion of the Chicago Federal Center next spring, a monumental steel sculpture 53 feet high will adorn the plaza to the north of the 42-story office building. The 29-story Dirksen Federal Building and a post office complete the three-structure center designed by Ludwig Mies van der Rohe.

The sculpture, designed by well-known American artist Alexander Calder, will be paid for by the General Services Administration. Price of the sculpture is \$250,000; another \$75,000 will be spent for installation. The stabile, as yet untitled, is a free-flowing assemblage of forms painted bright red to contrast with the building's dark facade. Pedestrians will be able to walk underneath the 53-foot arches.

Arthur F. Sampson, head of GSA, says that President Nixon has expressed strong support for the arts. "In keeping with the President's wishes, GSA renewed a program in 1972 that permits expenditures of up to one-half of 1 percent of building construction costs for fine arts."

### Fellowships Given in Health Facilities

There are two recipients of the American Hospital Association/AIA Fellowship in Health Facility Design for 1973/74: Edward Gregory Stanislawski, College Station, Texas, who will pursue graduate



work in health facility design at Texas A&M University, and Jacek J. Cianciara, Milwaukee, who will be undertaking an independent research project on application of a systems model to optimize hospital movement systems. The awards are for \$3,000 each.

Edward Earl Huckaby, Bryan, Texas, was named as an alternate, should any of the winners be unable to accept the award.

#### **Past AIA College of Fellows Leader, Winner of Many Awards and Honors**

Long active in the planning of the historic area of Philadelphia, Roy F. Larson, FAIA, designed that city's Independence Mall which is visited by thousands of tourists yearly. He was responsible for many structures, some of his principal works being the University of Pennsylvania Social Science Center; the Jefferson University Medical College and Hospital for Pennsylvania State University; the Bethlehem, Pa., Civic Center; the Haverford College Library; the Philadelphia Electric Building; and the Moore College of Art.

Larson, who retired as senior partner of the Philadelphia architectural firm of Harbeson, Hough, Livingston & Larson in 1970, died at the age of 80 on June 30.

He was a leader in both civic and professional affairs, serving as both secretary and president of the Philadelphia Chapter AIA. In 1959-62 he was chancellor of the AIA College of Fellows. He was a past president of the Philadelphia Art Commission and of the American Swedish Historical Foundation and Museum. He was a founding member and vice president of both the Independence Mall Association and of the Citizens Council on City Planning. Larson was a member of many organizations such as the National Academy of Design, the Royal Society of Arts in Great Britain and the National Sculpture Society. He served on many architectural panels of US government departments. The recipient of many awards for his designs, Larson was a knight of the Royal Order of Vasa of Sweden.

He was a graduate of the University of Pennsylvania and a former architect in residence at the American Academy in Rome.

#### **Deaths**

WILLIAM M. BLOCKER JR., Silver Spring, Md.  
LAWRENCE H. DUNBAR, Wilmington, Del.  
BRYANT E. HADLEY, Springfield, Ill.  
WALTER G. JAMESON, Portland, Ore.  
RICHARD A. LITTLE, Ann Arbor, Mich.  
MAXWELL A. NORCROSS, Beachwood, Ohio  
HUGH PERRIN, Vero Beach, Fla.  
EDWARD P. POTTER, Marble Falls, Tex.  
GEORGE J. B. RIEHL, New Orleans  
PAUL K. THAMES, Raleigh, N.C.  
TALBOT WEGG, Seattle

#### **Newslines**

**A new medical library** for the University of Illinois is under construction at the institution's Medical Center in Chicago. When finished, it will be the largest library in that city devoted exclusively to the health professions. The \$6 million project is the design of Holabird & Root. It is the university's first building to use phased construction techniques and will serve as a pilot project for this method.

**The Yugoslav section** of the International Union of Architects is now called the Union of Associations of Yugoslav Architects. Its president is Neven Kovacevic.

**The proceedings** of the 1972 International Conference on Planning and Design of Tall Buildings are now available. The set of five volumes may be purchased for \$50 from the American Society of Civil Engineers, 345 E. 47th St., New York, N.Y. 10017. The volumes are the most complete documentation available to date on the planning and design of high rise structures.

**The American Consulting Engineers Council** has been formed as a result of the consolidation of the Consulting Engineers Council of the US with the American Institute of Consulting Engineers.

**Louis A. Rossetti, FAIA**, vice president of the Detroit Chapter AIA, has been appointed by William P. Rogers, Secretary of State, to the US National Commission for Unesco.

**Films on architecture** are discussed by Sally A. Chappell in the spring issue of *Art Journal*. She makes introductory remarks on the cinematic treatment of architecture in general and gives capsule reviews of what she considers to be "some of the better films on architecture."

**How to save energy and money** is outlined in the booklet "Cost and Energy Savings Opportunities with Heating, Air Conditioning and Lighting Systems in Schools." Operating and maintenance tips for two major electric services—space conditioning and lighting—are given, and there is a review of electric space conditioning and lighting concepts for both new construction and modernization. Single copies are free from the Commercial Program Manager, Electric Energy Association, 90 Park Ave., New York, N.Y. 10016.

**Richard W. E. Perrin, FAIA**, of Milwaukee is the new president of the Wisconsin Academy of Sciences, Arts and Letters. He has served on the City of Milwaukee Housing Authority, the City Plan Commission, the Landmarks Commission and the Department of City Development. He was cited recently by Governor Patrick J.

Lucey for "scholarship and service to historical preservation in Wisconsin."

**Changing information requirements** in education are reflected in four new leaflets prepared by Alan M. Baas as part of the Educational Facilities Review Series. Titles are: "Libraries and Instructional Materials Centers," "Physical Education Facilities," "Luminous Environments" and "Acoustical Environments." Requests for free copies may be addressed to ERIC Clearinghouse on Educational Management, University of Oregon, Eugene, Ore. 97403.

**Joshua D. Lowenfish, AIA**, has been appointed to the Beautification Committee of Cocoa Beach, Fla., and will chair a subcommittee which will develop an overall plan to accomplish the committee's objective.

**A major step toward uniformity** has been taken by three model code groups (Basic Building Code, Uniform Building Code and Southern Standard Building Code) in the 1973-74 edition of the Gypsum Association's manual "Fire Resistance." The manual can be used across the country, providing fire test data for 240 wall, ceiling, column, beam and roof deck assemblies using gypsum boards and plasters. Single copies are free from the Association, 201 N. Wells St., Chicago, Ill. 60606.

**Mobile home owners** will be required to buy and hold title to the land on which their units are located in what will be the nation's largest mobile home park 16 miles from Phoenix. The \$75 million planned community is called Sun Lakes. Amenities will include three golf courses, clubhouse, swimming pools, fishing lakes and tennis courts.

**Three awards** were won by the architectural/engineering firm of Ellis/Naeyaert Associates, Inc., in the 1973 AT&T architectural design awards program for the best-designed facilities of Michigan Bell. There were 96 entries from the central regional telephone companies in the US and Canada. The program, held every two years, is to encourage excellence in architectural design for low-cost efficiency. The firm's award-winning Michigan Bell facilities include the Troy-Somerset project designed to serve the Kresge world headquarters area, a telephone equipment facility in Sebawaing and an equipment facility in Oshtemo. The first two won honor awards and the last one an award of merit.

**Frank M. Coda**, former managing director of the Perlite Institute, Inc., in New York City, has been named executive vice president of the Illuminating Engineering Society based in Manhattan. □

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