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# AIA JOURNAL

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**Cover:** The Monte Vista Greenhouse is part of the S. W. Cooperative Education Lab in Albuquerque. The beadwall and thermal design is by David Harrison and Steve B. Baer of Zomeworks; architectural design is by George Vlastos of the Education Laboratory. (see p. 38)

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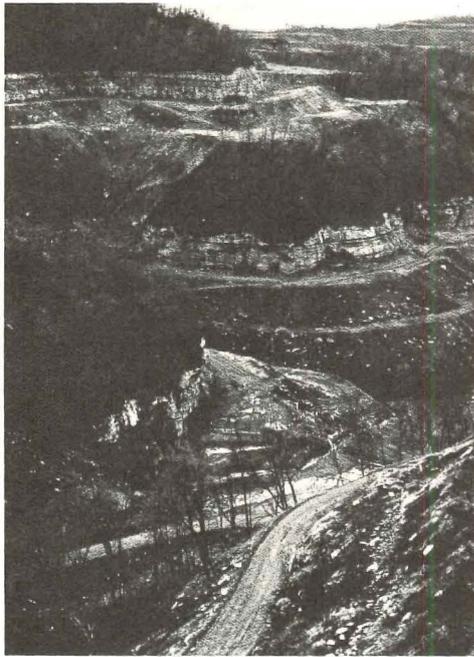
## House Passes Surface Mining Restrictions Supported by AIA

Archibald C. Rogers, FAIA, president of the Institute, has written to members of the House of Representatives urging support of the Surface Mining Control and Reclamation Act of 1974 (H.R. 11500). The bill, he comments, "carefully balances environmental concerns and national energy requirements and realistically addresses the overriding economic and ecological problems inherent in surface mining operations."

Late last year, the AIA board of directors approved and adopted a surface mining policy statement that calls for "full reclamation of all mined lands and protection of the nation's water resources" as a matter of national policy. The statement asks for adequate funds to be appropriated by the federal government "to aid the states in the rehabilitation of 'orphan' lands that have been strip mined and abandoned and now lack owners who will take reclamation responsibility." Rogers says that Title III of H.R. 11500 "is consistent with this policy." He also urges the recognition that "certain areas have irreplaceable historic, environmental or scenic value" and should not be strip mined. The AIA supports section 205 of the bill which defines the process of designating areas as unsuitable for surface coal mining.

The statement issued by the AIA is addressed to the strip mining of coal because of the vast areas involved. It declares that the strip mining and dredging of other materials also have serious environmental consequences, but such problems are regional in character and more information is needed regarding local conditions "before policies can be adopted."

The AIA urges the consideration of water resources and the effect of all surface mining on regional requirements for water supply. To protect the water rights of landowners and the quality and quantity of water during and after mining operations, the following specific procedures are urged: avoid acid mine drainage by



preventing or retaining such drainage to acceptable standards of acidity; conduct mining operations to minimize water run off; seal shafts, drill holes and wells to prevent acid drainage; avoid the removal, interruption or destruction of the flow of surface waters except as part of an approved plan; restore recharge capacity of the aquifer at the mine site.

The AIA recommends that its members "become involved in the planning and analysis of surface mining as it relates to land use and the environment, and that architects serve on national, state and regional surface mining advisory committees." It also asks that architects, landscape architects and planners be included in proposed federal offices of surface mining reclamation and enforcement.

In July, the House of Representatives by a vote of 106 to 267 refused to send the bill back to committee. Recommittal motion supporters, who wanted to clear the way for a weaker substitute bill that was favored by the coal industry, argued that the House bill would cause a serious reduction in coal production and an increase in the price of coal. Opponents of the motion said that the stronger bill was required to prevent strip mining abuses. The House then passed the bill by a vote of 291 to 81.

## Registration Boards Urged to Strengthen Their Policing Role

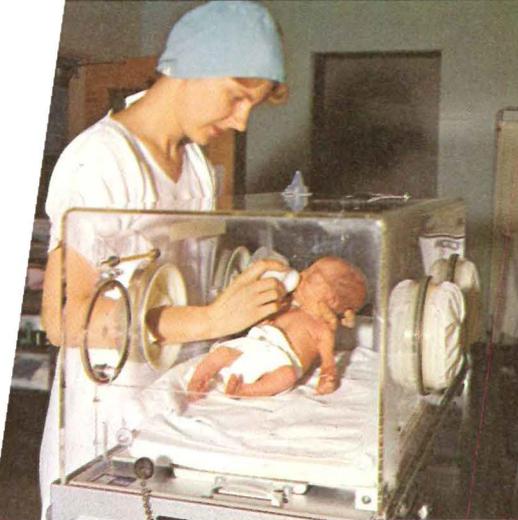
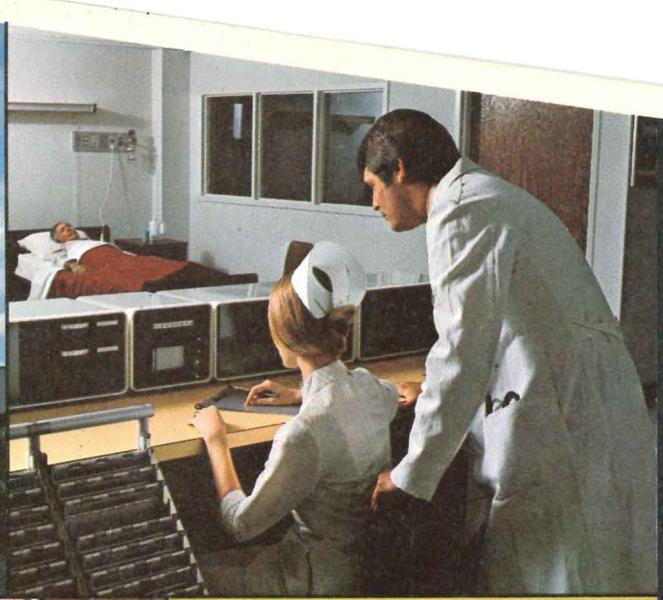
"Halting and insignificant" are the efforts by state registration boards to insure that the registered architect is practicing the "high standards expected of him," said attorney Carl M. Sapers in an address titled "Policing the Profession" at the recent annual meeting of the National Council of Architectural Registration Boards in Dallas.

Sapers said that four things have happened within recent years to make the question of policing of the profession by state boards more timely than ever before: the Justice Department consent decree, the pressure of consumerism, changes in the construction process and the recent revelations of corrupt practices by professionals.

Regarding the first, Sapers said: "In May 1972, the AIA entered a consent decree restraining the AIA from maintaining an ethical standard prohibiting price competition among architects. That famous or infamous event, depending upon your view, was followed not many months later by Justice Department antitrust division investigations of professional minimum fee standards, and these were soon after declared to be violative of antitrust laws. The pressure from the antitrust division of the Justice Department had two profound effects."

The first was a limiting of AIA's activities in "disciplining members for unethical practice," in part because "many of the ethical standards of the AIA enforced a decade ago could be considered by some overzealous lawyer in the antitrust division to have as their purpose discouraging economic competition. A decade ago, for example, the AIA standards of professional practice forbade the architect from guaranteeing the final construction cost to the owner, entering into competitive bidding on the basis of price, engaging a commission agent to solicit work in his behalf, and soliciting advertisements or other support

*continued on page*



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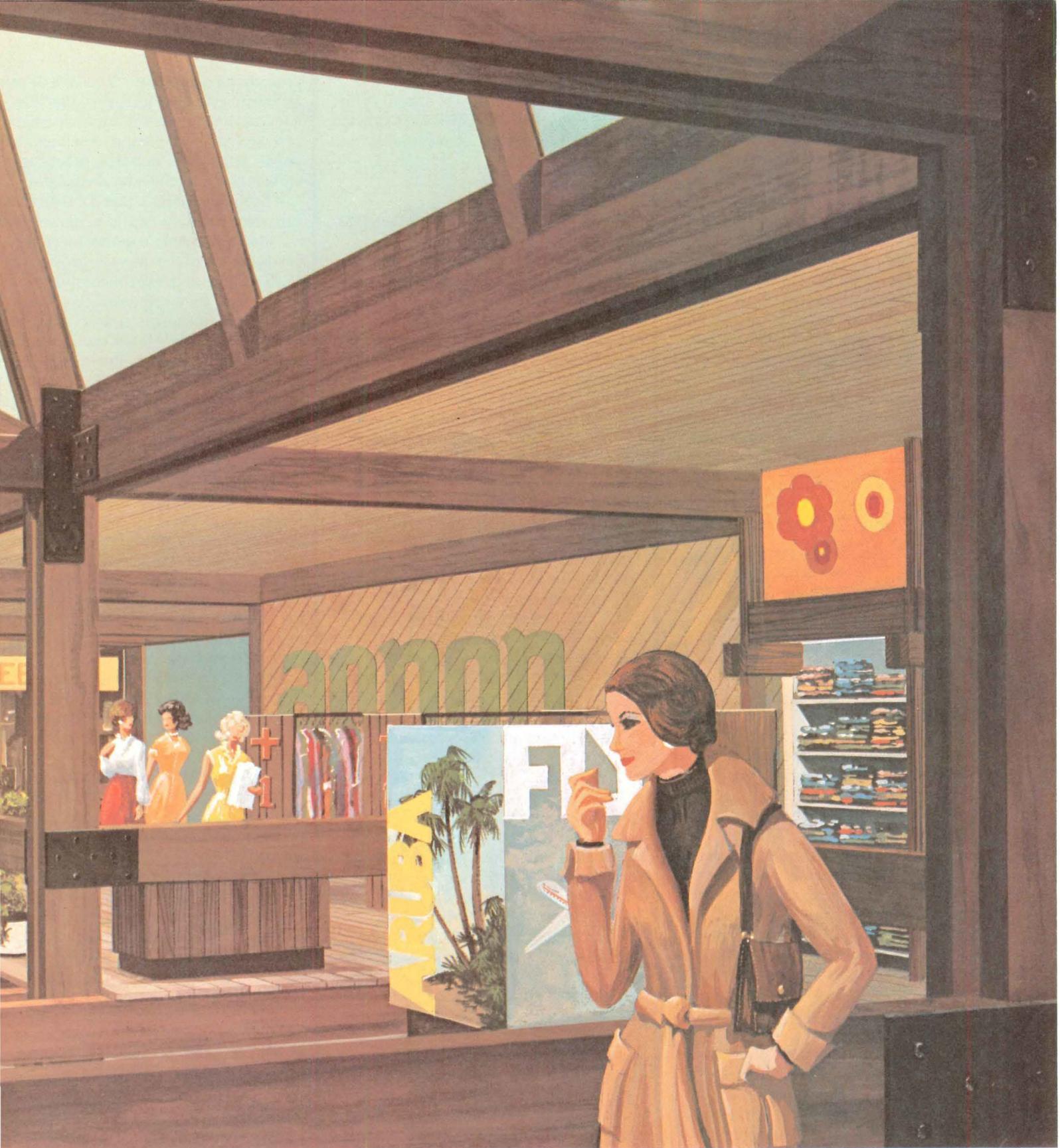
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Going On from page 4

toward the cost of any publication representing the architect's work. None of those prohibitions exists today. Today, the AIA publishes 12 standards of ethical practice—the number itself is not important, for the Lord gave Moses only 10—but it is interesting to note that a decade ago, there were 28 standards.

"A second result of the consent decree was the decision by various national architectural and engineering organizations to insert prohibitions against competitive bidding in the rules and regulations promulgated by professional registration boards. . . . While the initial impetus was without doubt to restore the prohibition against competitive bidding, the process required that state boards be authorized to address themselves to questions of professional conduct generally." In 1972, Sapers noted, 22 jurisdictions had such authority and today the number has grown to 32.

Recalling that the apostle of consumerism, Ralph Nader, four years ago challenged the NCARB to take a more active role in the public interest, Sapers said that there have been suggestions in many states that the "regulated should not be represented on the regulatory board. . . . If the purpose of the boards is to protect the public, why shouldn't the boards comprise the public members?"

Sapers reminded the audience that a number of lawyers recently have been disbarred from practice because of corrupt practices. "How many architects and engineers involved in the Baltimore County scandals have lost *their* licenses?" he asked. "If regulatory agencies are to protect the public interest, they must be sensitive to the fact that persons holding licenses granted by them—particularly professional persons whose work involves a high degree of trust—must be denied their right to practice when it is clear that they have violated standards of good moral character."

Sapers said that "in an imperfect world, we cannot invoke serious disciplinary actions for the occasional negligence of an architect." But persistent negligence "should be a subject for disciplinary action as well as fraud, dishonesty, conflict of interest and conduct inconsistent with professional responsibilities."

He said that a question is often raised about the obligation to revoke a registration where the holder is convicted of a crime. The best test, he declared, should be whether the crime is "evidence of the holder's inability to live up to the high standards of his profession. Thus, an architect jailed for conscientious objection during World War II may be thought to be morally competent to conduct the practice of architecture, while an architect convicted of bribing public

officials may be thought to have trespassed in an area so closely related to his professional responsibilities as to indicate his lack of competence to continue to practice."

## NCARB Hears of Threats To Reciprocity, Receives Internship Proposals

At the NCARB meeting, John M. O'Brien, AIA, of Memphis, was elected president. Other officers are: William C. Muchow, FAIA, Denver, first vice president; Lorenzo P. Williams, AIA, Minneapolis, second vice president; secretary, Paul H. Graven, AIA, Madison, Wis.; and treasurer, Charles A. Blondheim Jr., AIA, Eufaula, Ala.

Outgoing NCARB President E. G. Hamilton, FAIA, of Dallas, said in an address that there are many pressures at work today which tend to force the architect into a "secondary, technical role." To counteract such forces, he declared that the NCARB can play a role by setting standards for registration that will reinforce professionalism, thus aiding a society which "desperately needs the architect's design, creativity and judgment."

Williams, speaking to the meeting's theme of reciprocity, reported on a new development that threatens reciprocity. Florida, North Carolina and Puerto Rico have passed laws that require a degree in architecture as a prerequisite to admission to registration, and he predicted that at least four other states will pass similar laws. Williams voiced concern about the preeminence of certification as acceptable proof of competence to practice almost everywhere.

Blondheim, chairman of a NCARB internship committee, introduced a series of proposals for making internships a "productive experience." They included: the development of a mandatory recording and monitoring system to insure that all candidates remain in a controlled procedure; the organization of a sound mandatory counseling system; the development of a uniform, mandatory experience portfolio; and the establishment of appropriate nomenclature to designate the status of the trainee.

He suggested that the system involve NCARB, its 55 member boards, the profession and educators, stressing the need for professional and architectural school cooperation. Fees would be paid for services rendered and counselors paid for full-time guidance.

These recommendations are somewhat at variance with those of a recent interim report of the Five Presidents' task force on internships. This report recommends the assignment of the intern to a *voluntary*

professional counselor. "The idea of paid or full-time counselors is considered as not good and an unnecessary bureaucratic scheme," states the report. The voluntary unpaid counselors would be practicing architects, not architectural educators.

The report suggests that the voluntary counselor program "could work well with a central (national) coordinator in the headquarters of the intern organization at AIA." The selection of counselors would be a "joint responsibility of the state board working in concert with AIA local components." It has been suggested that the intern organization be in some way related to AIA. The NCARB and state boards would maintain records and files, help select counselors and evaluate and examine eligible candidates.

The intern organization recommended by the task force, would be a self-generating and self-governing body "within the framework of the AIA, which currently has a mechanism which could be developed into the new organization—the national associate membership category." The organization would be initiated by the Five Presidents "with the direct input of a pilot group of interns and the necessary support of the AIA."

Both the recommendations of the Five Presidents' task force and those of Blondheim agree that an internship program requires the cooperation of the entire profession.

A highlight of the NCARB meeting was the presentation of the first Dean L. Gustavson award to the NCARB past president for whom the award was named. The award is given in recognition of "outstanding service by an individual architect in helping to achieve the highest standards of professional practice." Gustavson, a fellow of the AIA, was NCARB president in 1969 and chairman of the 1971 multi-national conference on registration and reciprocity.

## House Bill Exempts Small Firms from OSHA

The House of Representatives has passed a Department of Labor/Department of Health, Education and Welfare appropriations bill containing an amendment which will exempt businesses with fewer than 25 employees from coverage by the Occupational Safety and Health Act.

The Associated General Contractors of America, in opposition to the amendment estimates that about 90 percent of the businesses in this country would not be compelled to abide by OSHA provisions. There are estimated to be 4,448,000 businesses out of a total of 4,942,500 that have fewer than 25 employees. AGC says that passage of the bill "would cause a

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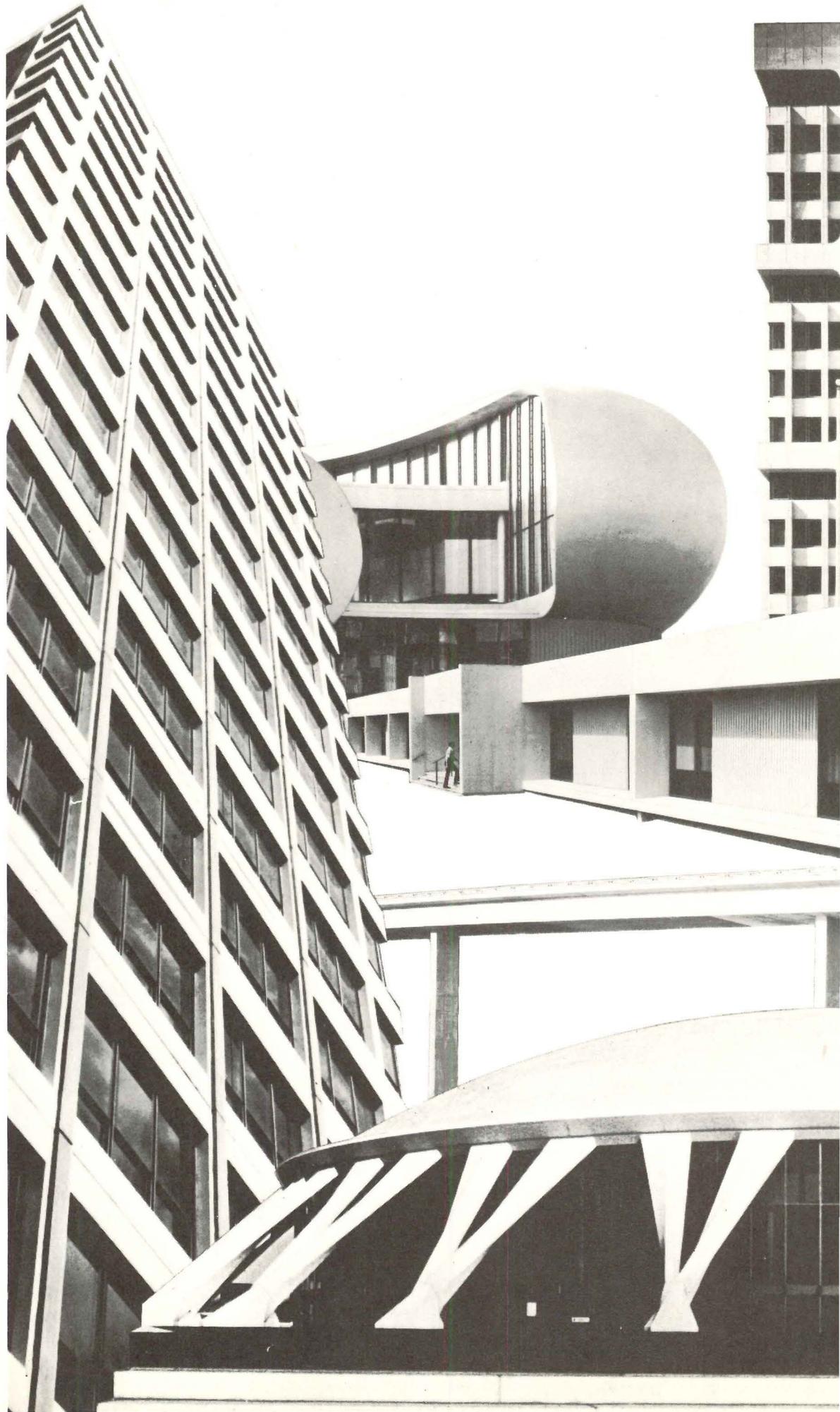
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## How to submit entries

Simply mail your entry directly to CRSI. Please follow these specifications in organizing materials for submission:

**1** To preserve anonymity during judging, submit the following data typewritten on plain white 8½" x 11" paper.

- a** Description of type of structure.
- b** Size of structure in total square footage.
- c** Description of any unique design features that deserve special consideration during judging.
- d** Date structure was completed or scheduled for completion.

**2** Include a brief statement of reasons for choosing reinforced concrete.

**3** Include at least two 8" x 10" glossy black-and-white photographs and at least two 35-mm color slides of completed structure. Do not include company or firm identification on photographic material.

**4** Give any computations or specifications if they enlarge on design problems and solutions. Include, if considered necessary, copies of plans, perspective drawings, detail drawings, etc.

**5** Prepare a separate typed sheet (you may use company letterhead) giving proper name of entry; type of structure and location; names, addresses, and phone numbers of architect, engineer, and owner; and date of completion. Seal this sheet in a plain, unmarked envelope and affix to back of entry.

**6** Assemble all of the materials in a ring binder (or equivalent) approximately 10" x 12".

**7** You may submit more than one entry, but please organize each according to above specifications and submit separately.

**Deadline for Entries**—All entries must be received no later than November 30, 1974, at CRSI headquarters (address below).

**Announcement of Winners.** To be made as soon after judging as practical.

**Ownership and Publication of Entries**—All entries shall become sole property of CRSI. No materials will be returned. CRSI reserves the right to use or publish all entries and accompanying materials in CRSI advertising, CRSI publications, or for any and all editorial purposes and by entering, entrant grants a royalty-free license to CRSI to use any copyrighted materials. Such right includes publication of photographs and names of Award winners without compensation to winners.

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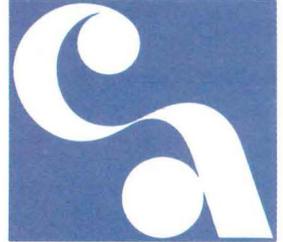


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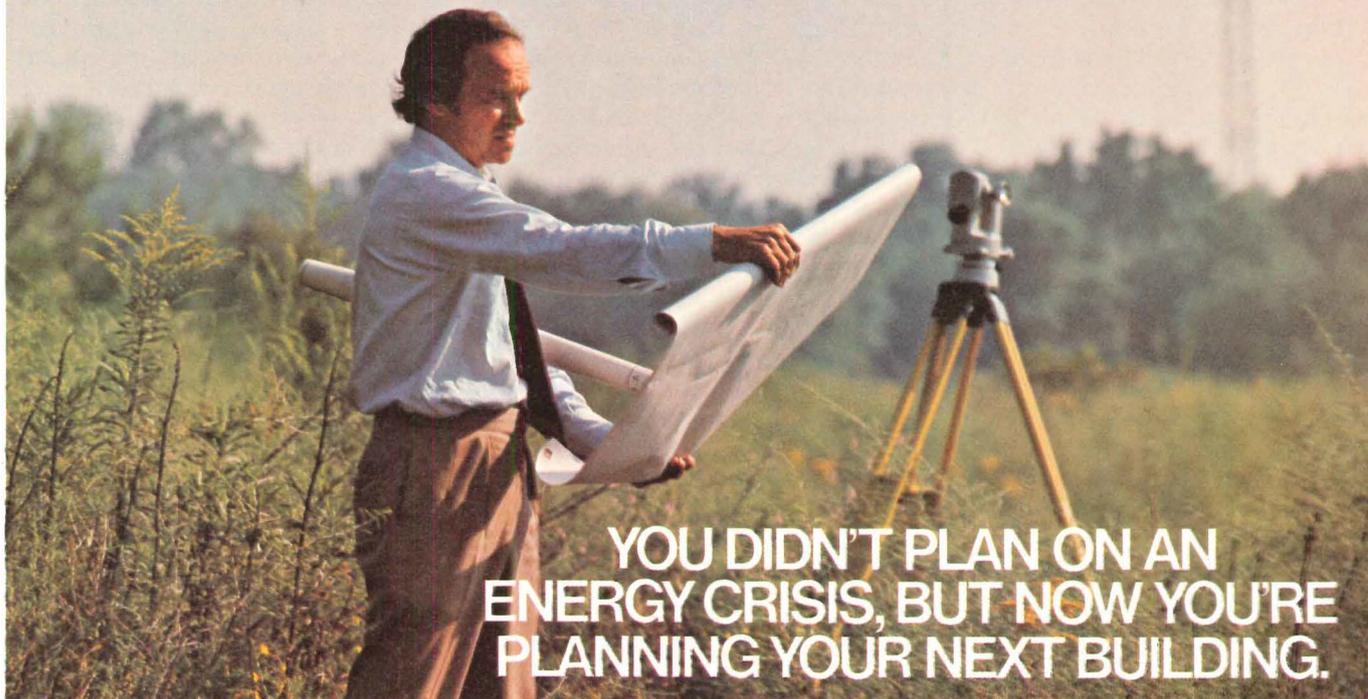
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This means that the masonry wall is about 450% more efficient, on the average, than the glass wall in reducing heat loss.

Over the useful life of the building, the heating cost per square foot of wall area for masonry will be about 30 cents. For double-plate glass, about \$1.38.

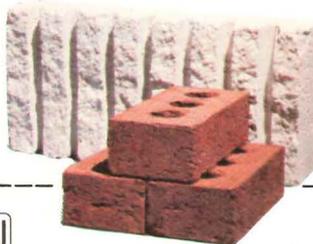
In a time of one energy crisis after another, masonry makes eminently good sense as a good citizen.

The masonry industry believes that the thermal insulating qualities of masonry are an important economic consideration to building designers, owners and investors, and all citizens.

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Nature of Business  AIA

Going On from page 8

nightmare for the general contractor who would have thrust upon him the responsibility for the safety of his employees on the site who might be exposed to the hazards created by subcontractors employing fewer than 25 workers."

Other opponents of such a change in the law say that all employees must be protected and that accidents and injuries occur just as frequently and severely in small firms as in large ones. The opponents include the National Society of Professional Engineers, the American Institute of Industrial Engineers, the American Society for Quality Control and the Society of Manufacturing Engineers. AIA so far has not taken a position on the amendment.

In testimony before the House of Representatives select labor subcommittee, Benjamin D. Rocuskie, chairman of NSPE's committee on OSHA and product safety, said that smaller firm's often "feel OSHA's impact more acutely than large organizations." The four engineering societies recommended a revision of OSHA to permit employers to request on-site consultations and that OSHA inspectors perform the consultations under limitations on matters specified in advance by the employer and be prevented from issuing citations during consultations.

The engineers also recommended the continuation of unannounced OSHA inspections; an index of standards to aid the small employer for whom it is a hardship to sift through complex regulations; and a requirement that the Labor Department submit "economic impact statements" to detail the effects of proposed OSHA regulations.

One of the AIA's long-standing concerns about OSHA pertains to OSHA regulations and building codes. In testimony in 1972 before the House of Representatives select labor committee, William Marshall Jr., FAIA, speaking for the Institute, and Charles K. Whitescarver Jr., for the Consulting Engineers Council, said that historically, state and local building codes have "effectively been adopted and implemented to protect the life safety of occupants." They pointed out that building codes "establish minimum standards for structures to insure occupational safety and are enforced by local government officials" and called for building codes to continue as the province of local governments for guaranteeing life safety of occupants, saying that for OSHA to prescribe overlapping standards which conflict with building codes has created "unnecessary and unwarranted confusion."

Recently, an "OSHA white paper" was prepared by the American Society of Civil Engineers' committee on standards. Now in draft form, the white paper has been

sent to the AIA national codes and standards committee for review.

The paper says that the protection of employee and public in the working environment as a result of the effectiveness of existing model codes has not been contested. Therefore, the use of these codes and the established code enforcement mechanism "is the logical way to achieve safety without conflict, overlap or duplication by another set of regulations superimposed on the long established code regulatory system." An amendment of the enabling legislation to recognize model codes, allowing their use by local governments in carrying out the intent of the law, is recommended.

Meanwhile, OSHA in its *Technical Notes*, dated July 5, has issued rules for determining when to withdraw federal enforcement in states which have approved plans for job safety and health. Enforcement authority will be withdrawn when a state has completed the following:

- Enacted enabling legislation that is substantially in compliance with OSHA rules for approval.
- Promulgated under state law job safety and health standards which are the same as, or "as effective as," OSHA's, or standards which the assistant regional director for OSHA judges will provide overall protection equal to comparable federal standards.
- Has available sufficient qualified state personnel to enforce the standards.
- Has in force an operating review and appeals system through which employers and employees may contest enforcement actions.

OSHA will continue to investigate any hazard, occupation or industry not covered by a state program and will retain responsibility for investigation of complaints alleging discrimination by employers against employees who "exercise their rights under federal or state job safety and health laws."

Notice of states which have operational status will be published in the *Federal Register*, as well as notices of resumption of federal enforcement authority over issues that OSHA evaluation has determined a state is inadequately enforcing.

## Research Corporation Reviews HUD Awards

The Department of Housing and Urban Development has awarded a contract to the AIA Research Corporation to study and evaluate its biennial design awards program. Initiated in 1962, the awards program was set up to recognize outstanding design quality in HUD-assisted projects. Plans are now being formulated to expand the program in scope, with entries evaluated on the basis of socioeconomic

implications, managerial strategies and overall community impact as well as physical design and performance.

The research corporation will identify alternative criteria and methods of evaluation to meet the proposed new objectives. An interdisciplinary group of consultants from the fields of architecture, planning, management and the social sciences will provide input to reflect all aspects of the design process. Some 70 professionals will meet in October to review the criteria and the evaluation methods in the study, and the information obtained will be incorporated in a report of recommendations to HUD.

## Staff Members Added

George E. Thomas, AIA, has been appointed vice president for administration of the AIA Research Corporation. His background experience is varied, ranging from private practice to corporate management. He recently served as a consultant to the General Services Administration for its special study of architectural and engineering procurement procedures.

A new appointee to the AIA staff is David G. Dildine, who has been named assistant director of public relations publications. He comes to the Institute from the Federal Energy Administration where he was a writer/editor.

An addition to the AIA JOURNAL staff is Kathy Yu, recently appointed editorial assistant. She was formerly on the staff of *US News and World Report*.

## Multimillion-Dollar Suits Over Stadium

The Los Angeles-based firm of Charles Luckman & Associates has filed suit against Dillingham Corporation for \$5 million damages, charging that Dillingham's division, the Hawaiian Dredging & Construction Co. "willfully concealed . . . (its) . . . deficient performance" of a construction contract for the Halawa Stadium now being built in Honolulu, and "deliberately, wantonly, willfully and maliciously has blamed CLA and others for the present stadium deficiencies." CLA is architect of the \$27-million stadium and Michael T. Suzuki & Associates, Inc., of Honolulu is associate architect.

The counterclaim is in answer to a suit brought by HD&C, the contractor. The suit against CLA claims that the architect failed "to exercise reasonable and ordinary care, skill, judgment and diligence" in the preparation and submission of plans and specifications, resulting in "great cost to the plaintiff . . . and delays in completion of the work required" under the contract with the state of Hawaii.

HD&C is asking that it be awarded



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"actual damages when those damages can be ascertained and \$1 million in punitive and exemplary damages." It contends that CLA did not take into account the "true subsurface conditions of the stadium site and failed to properly review, design, test, investigate, study and prepare the design concept of, and the plans and specifications for, the mechanical, electrical and structural components of the stadium."

CLA claims that because HD&C failed to "comply with the plans and specifications and well and truly perform its construction contract in a timely and workmanlike manner" that the firm has been required to expend additional sums and provide additional services.

In answering charges issued to the press by Charles W. Watson, president of HD&C, Charles Luckman, FAIA, said, "I am outraged. This is the first time in my entire professional career that I have seen a company file suit and simultaneously make a nationwide press release of unsubstantiated charges." He commented that the news release "was designed to excuse the fact that HD&C is many months behind schedule—far beyond the authorized extensions granted by the state due to weather, strikes or other legitimate causes and is trying to avoid the state's implementation of the \$500-a-day penalty clause for failure to complete on time."

Luckman, in commenting on the HD&C press release that stated the CLA

working drawings and specifications were not adequate to handle the stadium's mechanism for moving 28,000 seats to change from a football to a baseball configuration, said that both his firm and the state had taken precautions that the "unique" system will work satisfactorily.

## Raising Federal Agencies' Design Consciousness

The theme of the second Federal Design Assembly, slated for Sept. 11-12, at the Arena Stage and Kreeger Theater complex in Washington, D.C., is "The Design Reality." The aim of the conference, says Nancy Hanks, Hon. AIA, chairman of the National Endowment for the Arts and of the Federal Council on the Arts and the Humanities, is to make "federal decision makers aware of how they can use good design as a management tool for their agencies" to achieve greater economy and efficiency and to improve communications.

The assembly, being organized by a task force chaired by John Richardson Jr., assistant secretary of state for educational and cultural affairs, will include two general sessions and four program meetings on architecture, visual communication, landscape architecture and environmental planning, and interior and industrial design. Discussions and media presentations will focus on such topics as

how to make federal design more human and the impact of federal design on the environment. Among the speakers will be Sir Paul Reilly, director of England's Council on Industrial Design, and Peter Bretinga, a Dutch graphics designer.

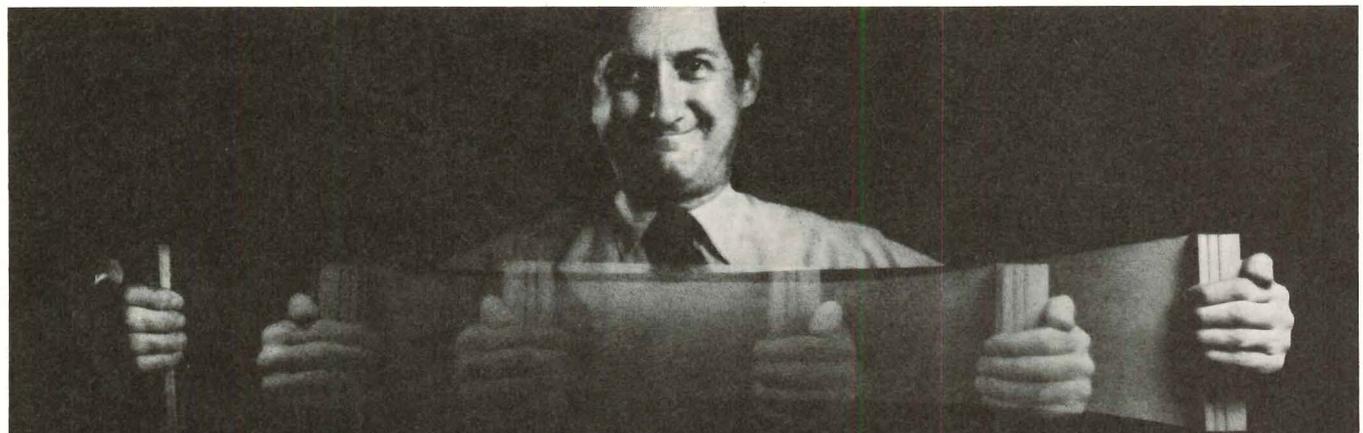
More than 500 government officials, state cultural representatives and members of professional design societies are expected to attend the second assembly. The first assembly, held in April 1973 (see May '73, p. 66), resulted in several states and cities organizing their own design conferences.

The federal design assemblies are part of the federal design improvement program initiated in 1972 by President Nixon. Other aspects include a review and expansion of the "1962 Guiding Principles of Federal Architecture," an interim report having been published (see May, p. 4); improvement of federal graphics and publications; and a study titled "Excellence Attracts Excellence" of the Civil Service Commission's procedures for recruiting and training federal design professionals (see Apr., p. 21).

## NAAB Seeks Executive

The National Architectural Accrediting Board, which is based in the AIA headquarters building in Washington, D.C., is seeking an executive director. NAAB

*continued on page 1*



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ing On from page 16

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## Interiors Groups Merge

e American Institute of Interior De-  
gners and the National Society of In-  
rior Designers have approved a plan of  
nsolidation to form a new organization  
be called the American Society of  
erior Designers (ASID). The consoli-  
ion will make the new society the  
gest organization of professional inter-  
designers in the world, with a mem-  
ship of about 9,000.

The effective date of ASID's formation  
expected to be Jan. 1, 1975. National  
icers of ASID will be elected respec-  
ely by the national governors and direc-  
s of the existing societies at special  
ard meetings to be held in Portland,  
e., in October. National committees of  
two societies will combine forces  
mediately.

## Office of the Year Awards

e magazine *Administrative Manage-  
nt* began its "Office of the Year" awards  
rogram 24 years ago to "encourage  
her standards of business effectiveness  
ough good design." Winners are se-  
ted annually by the editorial board.

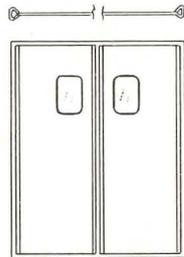
The new international headquarters of  
ndard Oil Co. of Indiana in Chicago is  
recipient of top honors in the 1973  
ards program. The structure and its  
eriors are the design of Edward Durell  
ne & Associates and Standards Oil's  
house architects. Open landscaping is  
d in 75 percent of the office areas.

The award of merit was won by the  
ces of Uniroyal Inc., Middlebury,  
nn., whose architects are the Eggers  
tnership, with interiors by Rodgers  
ociates. Honorable mentions went to  
General Telephone & Electronics  
rp., Stamford, Conn. (Victor Bisharat,  
hitect); the State Farm Mutual Auto-  
bile Insurance Co., Bloomington, Ill.  
llerbe Architects); and the First Na-  
al Bank, Phoenix (Charles Luckman  
sociates, architects).

# ELIASON

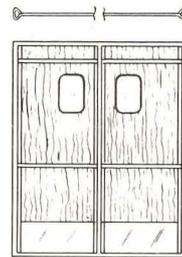
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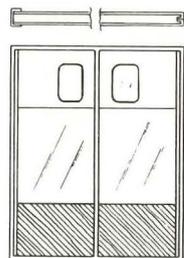


LWP 3

LWP 4: Same as "LWP 3" except with decorative high pressure laminate both sides. Decorative doors are practical with protective accessories. Door illustrated has 12" high Base Plates and two sets of Bumper Strips.

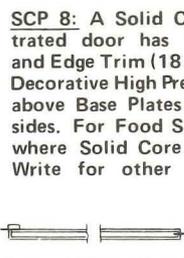


LWP 4



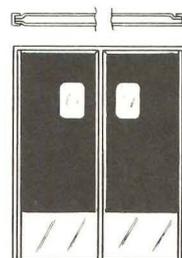
SCP 5

SCP 5: A Solid Core Door 3/4" thick. Illustrated door has Anodized Aluminum, Top Panels, 18 gauge steel center panels (SS front, Galv. rear), 14 gauge high carbon steel kick plates. Write for options and other Solid Core Door models. Applications same as "LWP 3", a heavier door but same easy action.

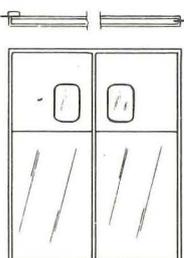


SCP 8

SCP 8: A Solid Core decor door. Illustrated door has 18" high Base Plates and Edge Trim (18 gauge Stainless Steel). Decorative High Pressure Plastic Laminate above Base Plates to top of door both sides. For Food Service and other areas where Solid Core Decor doors desired. Write for other models and options.



SCP 8



SCP 1

SCC 1: Gasketed, Solid Core Door 3/4" thick. Illustrated door has Anodized Aluminum top Panels and 48" high 18 Gauge Stainless Steel Base Plates. For Refrigerated areas, Work Rooms, Processing and Cooler to Processing. Write for options and accessories. Ask about 1 1/2" thick Foam Core Doors.

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# Estimates from Schematics

## An interview with Assoc. Estimator Jack B. Avery.

**Q. In the first place, how can you prepare a detailed estimate from schematic drawings?**

A. Well, the A&E team assists us with outline specs and a well-marked up set of drawings. From this it is quite possible to make a highly detailed estimate with a reasonable degree of accuracy. Naturally, a knowledge of the component parts that make for good construction is helpful.

**Q. But doesn't this make the estimate too "rough" to be useful?**

A. No. As long as the basic design remains the same, the estimated cost will not be materially affected. Unless, of course, the design criteria change. This is very useful because it pinpoints the cost *at this stage of drawing development*.

**Q. What does a schematic estimate tell you?**

A. First, it tells the Owner and Architect if the project can be built within the bounds of budgeted costs. Second, it shows you exactly where your money is being spent. And third, it shows you where costs can be cut if you're over budget.

**Q. What advantage does this offer over preparing estimates at**

**later stages of drawing development?**

A. It allows the Architect to control and adjust his design with minimum expense to himself and his client. If he waits until Design Development or Contract Document stages, his costs are committed. It's very expensive and time consuming to redesign at that point.

**Q. Don't most A&E's have a pretty good idea in their own minds, of the cost at the schematic stage?**

A. Yes and no. For those who *don't* know or aren't sure, estimates can show them what the probable cost is. For those who *think* they know, or *do* know, our estimates can confirm the probable cost. You must remember, we're a *disinterested* party.

**Q. Does a schematic estimate eliminate the need for future estimates?**

A. No, it does not. Because of changes in labor, material and equipment costs plus changes in drawings by Architects and/or Owners, an Architect would be well advised to be in constant touch with a cost consultant.

**Q. Well then, why have a schematic estimate?**

A. Because it establishes a realistic price and is one of the first steps towards effective cost control.

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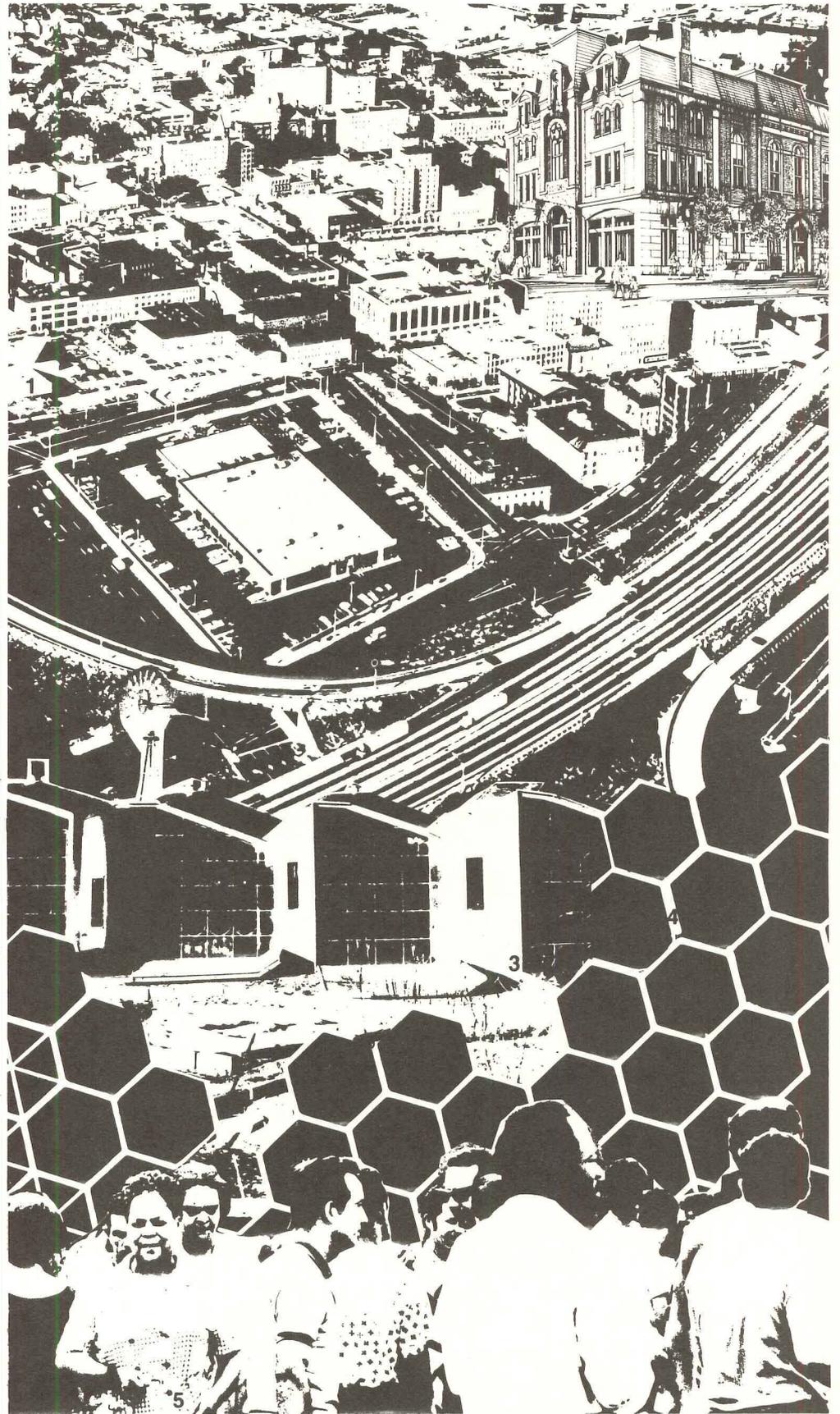
"It's very expensive and time consuming to redesign."

"You must remember, we're a disinterested party."

"It shows you where costs can be cut if you're over budget."

Circle 14 on information card

# AIA JOURNAL



*There is, surprisingly, something of a unifying theme to the melange of images above, which comprise a kind of visual summary of this issue. The theme is the enduring post-crisis (or post-fad) concern about energy. Thus, Nos. 1 and 5 have to do with the impact of this concern and others on patterns of metropolitan growth; No. 2 is a building repeatedly adapted to new uses, for reasons not unrelated to energy conservation; and Nos. 3 and 4 depict uses of solar energy, the first applied and the second conceptual.*

# Will the New Consciousness of Energy and Environment Create An Imploding Metropolis?

Herbert M. Franklin

When the noted art critic Bernard Berenson first experienced an air view of his beloved Italian cities, he exclaimed that the airplane would destroy them. The flight took place well before the aerial bombardments of World War II—but this kind of destruction was not in his mind.

His exquisite sense of form told him that the airplane would convert the scale of our vision of the city, that the focus of urban design would involve not only the courtyards, fenestration, brickwork, fountains and other more intimate details of the cityscape, but also vast miles of urban development.

His fears proved well-founded. The relatively compact urban form of even 60 years ago has yielded to an immense, oozing expanse during an age of automotive affluence. The exploitation of natural resources—land, fossil fuels, water—has permitted the scale of urbanization to explode on an unparalleled basis. The existing institutions dealing with the use and reuse of urban land make it far easier to meet needs by converting raw land to its “last crop” of houses or stores than to rehabilitate already built-up areas.

With the posted price of oil at only \$1.79 a barrel in the 1960s, the automobile was running virtually on “water.” Gasoline price wars were frequent. Commuting 75 miles to work became not uncommon and moderate-income workers, in particular, were attracted by homes on the cheapest land at furthest remove from employment centers. Subdivisions mushroomed overnight, as it were, in former cornfields. The “exploding metropolis” proclaimed by the editors of *Fortune* in 1960 proved to be the hall-

**Mr. Franklin** is a member of the Washington, D. C., law firm of Lane & Edson and director of the metropolitan housing project of the Potomac Institute, also of Washington.

mark of the decade. Commenting on the fact that a drop in consumption of oil might be a good thing, J. Paul Getty (a more than interested observer) recently noted: “People never expected to go 50 miles to have lunch with somebody, and drive 50 miles back. It’s only our own generation that’s had that.” Indeed, the rapid spread of cities into “commuter-sheds” has been a relatively recent phenomenon.

An alternative vision—that of a more compact and orderly progression of urbanization—is probably held by anyone who has thought seriously about the wasteful, chaotic pattern of American metropolitan growth. In physical terms the vision had many variants: a better demarcation between city and country so that the pleasures and character of each is heightened; preservation of rustic areas free from second homes and other urban intrusions, accompanied by more usable open space in denser, built-up areas and the infilling of left-over parcels of land; an end to both abandonment of central city land and the spread of thin-film low-density sprawl on the fringe; a better coordination between new development and mass transportation, and so on. Basically, the vision can be summed up as favoring the encouragement of centrifugal development that permits potential urbanity to leak into the countryside.

The Council on Environmental Quality has studied the link between wasteful urban development patterns and inefficient uses of resources. Its preliminary findings are that planned higher-density patterns of development, compared to typical low-density suburban sprawl, can achieve significant savings in total capital costs, land costs, energy consumption and reductions in water consumption and auto emissions.

The CEQ study is important because it may enable proponents of a more compact, centripetal urban development policy to advance their case not as latter-day Berensonian esthetes but as hard-nosed economists and environmentalists counting the dollars (and scents) costs of inefficient and ecologically damaging

patterns of growth. If an era of scarcity has replaced the era of affluence, the sheer waste of resources that has fueled centrifugal development forces may be challenged by arguments that carry new influence.

Certain official policies are being formulated now that bear scrutiny for their potential impact on urban form. It should be noted in this regard that public policies in the United States with the greatest spatial impact typically do not address spatial objectives directly. Rather they usually deal with certain functional objectives in ways that have ultimate but indirect spatial implications. For example the functional purpose of providing fast automotive transport on limited access highways had enormous consequences for the form of metropolitan areas. Central cities lost significant elements of their tax base and neighborhoods were disrupted or destroyed, while suburban land values were created almost overnight. These spatial impacts were predictable, but of no concern until relatively recently. Similarly, it was more important to the maker of housing policy to lubricate the mortgage market and stimulate housing and jobs than to be concerned with the creation of low-density suburban sprawl. These are examples of development-oriented policies that moved ahead heedless of their spatial consequences.

As we move now into an era of conservation (and in many respects anti-development) policies, past experience suggests that we scrutinize these policies for their spatial consequences. What impact will they have on urban form and questions of who can live where at what cost? Will they exacerbate the wasteful spread of urban sprawl, or will they facilitate the forging of new, centripetal guidelines for the management of growth?

This article attempts to identify some of these policies to chart their possible long-term centripetal or centrifugal implications. The policies with potential

centripetal tendencies deal with conservation of energy, efforts to implement the Clean Air Act, the redirection of national housing policy toward better use of the existing housing inventory and new attitudes toward the preservation of ecologically fragile or valuable land. Policies that, on the other hand, seem to have centrifugal tendencies include efforts to implement the 1972 Water Pollution Control Act, and local controlled-growth policies aimed at reducing urban (or more often suburban) densities.

**Energy and sprawl.** Although the severe gasoline shortage proved to be a temporary phenomenon, it dramatized the energy costs inherent in urban sprawl. Certain lessons may have been learned even as supplies have increased. In some cities, there has been an increase in demand for older homes in desirable neighborhoods. Builders of fairly distant and expensive houses experienced new sales assistance in many metropolitan areas. In New York City, midtown department stores, suffering declining sales for years, reported an increase in business during the weeks of gasoline shortage, while their suburban branches catering to shoppers by auto reported lower sales volumes.

Although the severe fuel shortage was brief, its lingering impact may filter through the economy and public policy in incremental and undramatic ways. Thoughtful people know that over the long run, a true depletion and shortage of petroleum and natural gas seems inevitable. Consequently, energy-conscious policies are bound to find more receptivity with opinion leaders, courts and policymakers even though the crisis atmosphere has passed.

The design of new housing will be affected. Cluster developments that can lower heating and cooling costs through better design will gain new favor. Site planning and landscaping with wind and sun in mind, better insulation, better zonal heating and cooling systems and other market adjustments or code requirements may be expected. The National Bureau of Standards has proposed a "draft in-

terim energy conservation standard" intended to become the basis for an eventual national consensus standard. It deals with the major energy-related aspects of a building—its envelope, heating and cooling system, illumination, water heating and electrical systems. Whatever the final model, it will undoubtedly prove influential in most states, possibly tilting the market in favor of multifamily developments because new energy conservation measures will add relatively more to the cost of detached housing.

What has been given far less attention, however, is whether an energy-conscious policy governing land development will emerge. Will states and localities continue to permit energy hookups to subdivisions located at great distances from centers of employment? Can the distance of a proposed subdivision from centers of employment and shopping justify a local government's refusal to permit it on the ground that residents will be forced to excessive use of the automobile? The law now gives great discretion to local zoning authorities to adopt new meanings for the term "general welfare," that vague standard that is supposed to guide their decision making, provided they do so without violating constitutional guarantees of due process and equal protection. A better understanding of the social and economic costs of leapfrog development could support a local or state land use policy intended to "reduce the wastes of financial and human resources which result from either excessive congestion or excessive scattering of population" to quote and emphasize Vermont's recent land use legislation.

The New York Regional Plan Association has analyzed the total consumption of all forms of energy in the New York urban region. Looking beyond the immediate energy crisis, the report noted that to reduce energy demand will require a

change in the pattern of regional development. According to the report, this means governmental action to inhibit free-standing shopping centers, strip commercial zones along highways, isolated office and educational campuses and other elements of "spread city." These recommendations are supported by findings that the density and economy of the New York urban region results in lower energy use than in other areas. With 9.7 percent of the nation's population and 12 percent of its money income, the region consumes only 6.4 percent of the nation's energy. A major reason is that the region has less manufacturing and depends on products for which energy is expended elsewhere. But a second reason is the region's density of development. There is less travel per capita in high-density areas and more of it by energy-saving public transportation. Per capita use of energy for transportation in the New York region is about two thirds of the national level.

Findings such as these can support new legislative approaches to promote a more compact pattern of urban development and to reverse prevalent notions that good planning inevitably means the maintenance of low densities.

**Clean air and metropolitan growth.** A few years ago, the notion of "alternate growth centers" held center stage in discussions of growth policy. A growth center was to be an existing small city whose growth was to be promoted in preference to the growth of metropolitan areas. This proposed policy was based essentially on the notion that urban ills derived from the congestion of urban metropolitan centers, and that people—and jobs and industry to support them—must somehow be lured or diverted away from such dens of ecological and social iniquity.

Ecology-minded interests, however, were quick to oppose any effort to reduce urban air pollution by transferring pollutants and polluters to the countryside. Their opposition took the form of attacking proposed Environmental Protection





**Centripetal forces** at work on metropolitan areas are making cities of suburbs such as White Plains, N. Y. (three surrounding photos), creating new nodes of urbanity in the midst of sprawl. These forces also are bringing higher densities, and a trend toward multifamily housing instead of detached one-family dwellings, to the suburbs as well as the cities. Examples shown here are garden apartments in Yonkers, N. Y. (left), and public housing in Hartford, Conn. (right).



Agency standards under the federal Clean Air Act, and they succeeded. Federal courts have ruled that state clean air implementation plans must be adequate to prevent "significant deterioration" of existing air quality in areas of the nation where the air is now cleaner than required by the national standards.

In response, EPA has now proposed regulations that would give states primary responsibility for preventing "significant" air quality deterioration by authorizing them to classify regions in a state according to three zones of allowable air quality deterioration. The pollution sources affected are major industrial or power plants. Class I would be areas of exceptional scenic, recreational or ecological value in which practically any change in air quality would be considered significant and where no major industrial growth is desired. (This could mean that a major job-generating industrial plant could not locate in a thinly developed rural area currently blessed with pristine air—cutting against the growth center concept.) What would be considered "significant" deterioration in other areas would differ from Class I areas because of the existing quality of the air. In Class II areas, with somewhat less pure air, moderate and well-controlled growth would be allowed if appropriately dispersed geographically. Class III areas would be those in which air quality deterioration to secondary standards (those protecting vegetation rather than human health) would be permissible, and "rapid and major" industrial expansion would be desirable. Under these proposed guidelines a state could classify a region to permit the construction of a major air pollution source, for example, if it determined that the social and economic benefits of the facility would outweigh the resultant air quality deterioration. Under this approach to the Clean Air Act the states could have a profound effect on urban form—it verges on a comprehensive system of licensing industrial sites, a device employed in other nations as a spatial growth policy tool. Could a state adopt a centripetal development policy for compelling economic and social reasons, favoring the recycling of declining industrial sites in





*Centrifugal forces remain strong, however, and are pushing development to and beyond the fringes of metropolitan areas, extending sprawl over virgin or agricultural land. Jobs as well as housing follow highways outward, but because of large-lot zoning and rising costs much of the housing is beyond the reach of the commuter. Some of those commuters, gathered in front of a factory in a remote and once-rural location in New Jersey, are bussed to work daily from Newark and other cities.*



built-up areas over locations in the metropolitan fringe?

The Clean Air Act also authorizes land use and transportation controls to achieve and maintain national air quality standards. EPA requires that, as of January 1, 1975, states review new indirect sources of air pollution, such as highways, airports, parking lots, commercial office space and large residential developments, that generate motor vehicle activity and prevent them from being developed, if necessary, to preserve or attain air quality standards.

Daniel Gaston, regional director of Virginia's air pollution control board, has observed that the Clean Air Act may indirectly clamp a lid on growth in suburban areas. Speaking to northern Virginia planning officials in July, he told them to consider the air pollution potential of any development before approving it and to advise the developer of the need to obtain a state permit. If the developer can't meet the air pollution control standards (such as a limit on the number of parking spaces), he said, "there's no sense . . . spending any more money on the project."

The powerful potential of the act will be lost, however, if the review process ends up merely reducing the size of parking lots, or changing design to reduce idling and achieve better auto traffic flow. This is likely to happen unless mass transit becomes a key requirement for major development to proceed. If this is done, sites adjacent to existing mass transit facilities could become nodes for future growth. Even better, future sites of mass transit could be coordinated with major development.

Such things will only happen if the Clean Air Act is implemented with conscious attention to its potential for encouraging centripetal patterns of growth.

**Redirection of national housing policy.** After four years of self-congratulation over the unprecedented volumes of subsidized housing it generated under the 1968 legislation expanding lower income housing subsidies, the Nixon Administration abruptly terminated these programs. It did so primarily to reduce budget commit-

ments but rationalized its decision by proclaiming housing allowances a better method of helping the poor obtain decent shelter. This was done just as the locational policies imposed by civil rights legislation and court decisions were requiring the increased suburbanization of lower income housing subsidies. The Administration's preferred leased housing program, even if it proves workable in stimulating new construction (which is widely doubted), is not intended to assist homeownership as did the Section 235 program. It will most probably function within the older housing inventory. There is also much talk of encouraging substantial rehabilitation of structures.

This deemphasis of new construction in the subsidy program is paralleled by an apparent indifference to rapidly falling unsubsidized housing starts. Homebuilders, who traditionally complain in good times that the industry is stimulated only when necessary to stimulate a lagging economy, are now looking in vain for even that stimulation. National monetary policy has proved to be a most effective slow-growth policy.

**Environmentalism and land preservation.** Federal environmental initiatives have been more than matched by local and state actions prohibiting development of ecologically valuable or fragile land.

A consensus is emerging across the country that some land should be off limits to virtually all development because of its unique ecological character. The preservation of shorelands and wetlands in a natural, unspoiled state, especially when filling and development can be shown to inflict irreversible damage to wildlife and estuarine resources, has inhibited urban expansion in a number of areas. Recent decisions in state courts have extended the ambit of permissible state or local regulation to prevent the indiscriminate destruction of such eco-

logically fragile sites. As a result, in areas with environmental citizen action groups or wetlands legislation, land that would have undergone major development is now off limits.

Other land should be off limits not because of its unique ecological value but simply because it is poorly located or otherwise unable to support ecologically responsible development. This includes flood plains and impermeable soils—something that planners and architects have long known but which now has gained greater recognition in law and practice through flood plain zoning. In this connection, the federal government has major impact on the problem through the Flood Disaster Protection Act of 1973. Under this act over 12,000 communities may be required to enact and enforce ordinances to restrict construction of new buildings in flood-prone areas. To bring an end to massive expenditure of federal funds for flood disaster relief, the act provides subsidized flood insurance for residents who build their houses and businesses in flood-prone areas without sufficient knowledge of the hazard. But this insurance is available for structures in existing communities only if future development in those communities is controlled to minimize flood losses by appropriate restrictions in the building permit and subdivision regulation system.

If a community fails to adopt flood-sensitive regulations after being informed by the Department of Housing and Urban Development that it has a special flood hazard area, no real property loans can be made in the designated area by any financial institution regulated or insured by a federal instrumentality. Potential buyers of housing in flood-prone areas will thus confront either flood insurance premiums (alerting them to the danger) or will be unable to obtain mortgage financing. The use of such land for low-density urbanization will be immediately affected unless engineering overcomes the flood danger. Such engineering, however, is more likely to be within the means of developers working at large scale. This

could favor higher densities than might otherwise occur.

In the next decade, the need for greater quantities of arable agricultural land may also become a focus of preservation policies. To maintain the balance of trade in the face of skyrocketing prices of imported oil may require stepped-up exports of food, which many experts believe will place unprecedented strains on U.S. agricultural production. Some of this strain has been reflected in quickly rising U.S. food prices, resulting from the increase in exports. The federal government has therefore discontinued its policy of paying farmers not to grow crops. The end of these price supports means putting 53.5 million acres back into production—an area the size of Minnesota.

Fertilizer has made U.S. agricultural land enormously productive. The Department of Agriculture estimates that the United States may be short one million tons of vital nitrogen-based fertilizers, the manufacture of which is based on oil. With less fertilizer, more land will be needed to produce the same volume.

Many urban areas were settled in highly fertile valleys, or are encroaching on them. The rising value of farmland adjacent to cities may greatly increase the cost of such land for urban uses, increasing market pressures for higher densities to carry land costs. The continued removal of farmland even at higher prices also could eventually prompt new regulatory approaches to prevent or deter development because farmland is a "critical resource." The possibility of using this rationale for controlling the low-density spread of metropolitan areas is worthy of further examination.

The foregoing policies seem to contain the seeds of a way to encourage some of the ingredients of the urban vision previously described. But our complicated society is split not only into a federal system but also into political crosscurrents that respect few traditional liberal-con-

## Narrowly based water quality plans and locally imposed growth limits could bring a new explosion of sprawl.

ervative ideological distinctions. For every policy impact there is also an equal and opposite policy impact, sometimes promoted by the same government if not the same agency. Let us examine some policies that seem to have centrifugal tendencies.

**Water pollution control and managed growth.** Sewage treatment facilities have become a major capital cost in many suburbs, largely because of federal water quality standards. Under the 1972 Water Pollution Control Act, the federal government can enforce these standards by seeking a court-ordered moratorium on sewer hookups where discharge permit conditions have been exceeded. But after setting high standards, the federal government has now proceeded to impound funds appropriated to enable localities to meet them. The result has been sewer moratoriums that severely affect the price and pattern of land development, particularly for housing. Many of these moratoriums furnish convenient ecological excuses for suburbs to divert residential growth for economic or social reasons.

The sewer moratorium highlights what observers of urban growth policy have long noted: Sewers can determine the pace and direction of growth. EPA has begun to recognize this by establishing "growth-related conditions" in discharge permits. These conditions require the municipal committee to make adjustments in its land use and development policies where sewer treatment facility overload is either imminent or actual because of growth.

This incipient step toward a water quality related growth management program, it should be noted, concerns itself only with reducing water impurity. Because of this it may militate against appropriate densities because localities may view such densities only quantitatively—

that is, lower densities on individual parcels mean fewer people generating less wasteload. Thus, higher-density developments, with greater open space, viewed as a desirable objective in a regional context, may be defeated or at least severely limited by narrowly based water quality planning. Although EPA has created a land use office, there is at present little indication that it will require sewer capacity planning to respond to regional growth objectives. Nothing is being done to encourage sewer agencies to adopt policies that guide growth into more rational patterns.

In the short run, the lack of sewers beyond the existing service area could have a centripetal impact on future growth in some regions where both central city and suburban areas use the same treatment facility under allocation agreements. In such regions, it is possible that localities under the greatest growth pressures in recent years have exceeded or will soon exceed their allocated wasteloads, thereby encouraging some infilling of the already built-up area. But it is far more likely that severe constraints on development at the metropolitan fringe will have a centrifugal rather than centripetal impact—that is, suburban developers deprived of opportunities on closer-in land will follow their usual course of seeking farflung cheap land (serviced by septic fields). There is some indication that this is already happening.

Admittedly, there is seldom any linkage between sewer policy and land use controls in a single region. Model state legislation could be drawn up to forge this linkage, having in view the "growth unit" as the ideal scale of development. If a priority for sewer hookups were given to developments at this scale, for example, it could be a powerful stimulus for quality development in high growth areas.

**Local controlled growth regulations.** New policies to control development *per se* are emerging in many communities, apart from water-related sewer moratoriums. These policies generally are a reaction to recent rapid growth which has changed the character of previously rural or semirural areas, distressing older (and

even recent) residents. New schools, roads, sewers and other urban services drive tax rates up in so short a time that their initially low base is forgotten.

Controlled growth policies take many forms, from simple to highly sophisticated. The simplest is the outright moratorium on the issuance of building permits or the granting of rezonings of subdivision approvals. Usually these "breathing spell" moratoriums are rationalized by the locality's confession that it has been disappointed in its past ability to manage growth and wants to rethink its policies and try again. Since metropolitan growth has pushed into many formerly semirural jurisdictions that lacked staff or regulations to plan and control development, an admission of past failure is perhaps understandable. Often, however, it is merely a political expedient to slow growth without improving its quality.

Another device is the transfer of more and more general infrastructure costs, or "impact fees," on to consumers who purchase houses in a subdivision. This technique can therefore be used by communities to reduce the volume of housing constructed within their jurisdictions, because it tends to assure that whatever housing is produced serves a limited upper-income market, or that newcomers will pay "at the front end" for urban infrastructure that older residents may have deferred through bonding.

A trend to impose large burdens on new developments—particularly those at large scale—can seriously undercut the AIA "growth unit" model. It can encourage piecemeal development to escape this burden, or it can price large development's scale beyond the reach of a wholesome economic mix of purchasers. To the extent that such requirements are imposed by localities experiencing growth pressures, they might tend to divert development to land possibly even further removed from existing urbanized areas.

Another controlled growth device is the

## It depends on the outcome of a tug-of-war between conflicting forces pulling at the patterns of growth.

"building cap." Under this approach a locality tries to ration the number of building permits it grants over a period of years or permanently. The theory on which such ordinances are based is that it is possible to establish the "optimum population" of a locality. The standards for determining what such optimums may be usually cannot withstand close examination. In a recent *Christian Science Monitor* poll, 47 percent of the respondents agreed with the statement that "each community, through democratic process, should determine its own population limit . . . even if that may limit the opportunity of others to move into the area." It does not take a computer to envision the impact on metropolitan form of permitting each locality to set its population limit, with the artificially low densities that flow inevitably from building caps. Sprawl would almost certainly be exacerbated. In the only court decision thus far on the legality of a building cap, a lower federal court has invalidated Petaluma, Calif.'s policy because it interfered with the ability of others to migrate and settle in the San Francisco housing market area, of which it is a part. The decision on the appeal of this case will have great implications for growth policy.

By far the most sophisticated controlled growth device is "development timing." This approach to growth control has been upheld by the highest court in New York in a case involving Ramapo township. Under development timing, the pace of development permission is dependent on the relationship between the land and certain public facilities. The locality attempts to determine development patterns by its capital budget and plan rather than having private development dictate its facilities program. This is potentially a powerful tool to curb leapfrog subdivisions because it defers the development of un-

serviced parcels. Owners of land located at great distance from public facilities must wait until they are installed before the locality will grant development permission.

Development timing within a single jurisdiction can eliminate leapfrog development—the skipping over by developers of serviced land in favor of cheaper outlying unserviced land. Unfortunately, if the spatial controls underlying the timing regulations do not call for higher densities at certain locations, and for construction of the facilities to serve them, this new device can reinforce low-density sprawl by making eventual rezoning to higher densities totally impossible.

Inherent in development timing is the public commitment to finance and to provide the public facilities to support growth. What remains unsolved, however, is whether a locality should be permitted to decide how much growth it will absorb and support with urban facilities and services regardless of regional needs. If it does not absorb a "fair share" of overall growth, it might divert development pressures outward, with unfortunate centrifugal effects.

**Conclusion.** In the absence of an articulated national growth policy, or even a national land use policy, a number of growth-shaping policies and forces are emerging in the United States. Some are both so subtle and massive, or so dependent on world politics, that it would be folly to pretend to predict their effects. Others, however, are coming into being with little attention to how they may, or could, reshape urban settlements to make them more efficient and humane.

Economic belt-tightening could lead to urban belt-tightening as well. Russell Train, EPA administrator, recently observed: "One thing is certain: the days of uncontained sprawl are over. We are moving, instead, toward patterns of growth that will cluster closer and closer together the broad range of services and opportunities that we must now travel so far and so often to enjoy."

As much as one would like to agree, the days of sprawl are far from numbered.

Market pressure to use raw land, rather than built-up land, for major developments in metropolitan areas will remain intense. It is far easier and cheaper to build on open land than to "infill," rehabilitate or clear for reuse more centrally located sites served by obsolete utilities and surrounded by possibly confining uses or protesting neighbors.

Also, an almost cultural distaste for urban densities in the United States makes it increasingly difficult to gain political acceptance for land-conserving developments in either outlying or central locations. And taxpayers in existing communities are reluctant to shoulder the burdens of new roads, mass transit, schools, fire stations and other facilities and services required by growth. This reinforces the spread of people thinly into many different taxing jurisdictions as each tries to keep down its own population.

But new tools and a new climate of opinion for containing sprawl are beginning to emerge. Whether they will be exploited depends a great deal on the design profession's involvement in fashioning and supporting energy-sensitive land and development policies to achieve centripetal rather than centrifugal effects. For example, important policy decisions under the requirements of federal air and water legislation should be made in the context of regional growth plans and with conscious assessment of their impact on sprawl. Growing interest in the use of regulations or land acquisition programs to preserve vital farm land can set the stage for better public understanding of the need to link this approach with more efficient and equitable use of built-up or skipped-over land in the urbanized area. And mass transit may gain new support from environmental policies if they are keyed to centripetal objectives.

These things can happen if urban designers look to the future of urban form in the largest sense, and if policy makers are made conscious of the spatial implications of their acts. □

# The Varied and Early Solar Energy Applications Of Northern New Mexico

Affrey Cook, AIA

The largest collection of amateurs and professionals actively involved in the application of solar energy probably can be found in the northern half of New Mexico. Unlike solar interest elsewhere, enthusiasts in New Mexico have built their bases—much in the 1950s and '60s before the current excitement about solar energy. Among the reasons for this interest may be the extremes of climate, the high insolation, the nonurban character of human settlements and the low-keyed economy, which tend to emphasize conservatism and self-dependence.

Typically, solar energy is associated with the broader ramifications of energy conservation and conversion. In New Mexico, especially, solar energy is part of the larger issue of energy management and conservation of resources. Thus, wind power; self-sufficiency in food, land and water conservation; and the economy materials are concepts interrelated with solar applications.

At least part of the interest in these areas has been supported by a portion of the population which is not native born but has been attracted to New Mexico as a quiet oasis within the maelstrom of postindustrial American society. As a result, solar energy is an interdisciplinary interest shared by persons with a variety of professional backgrounds.

The input of scientists from the Atomic Energy Commission at Los Alamos and the Sandia Labs in Albuquerque goes well beyond the technical. Also, several of the immunes in the area, whose concern is primarily social, have been involved. Often there are contributions by several independent inventors and innovators, such as Steve Baer of Albuquerque, Peter van Dresser of El Rito and Robert Reines Barton, who have regional if not national reputations. And last there are the several associations of design professionals, such as Bridgers & Paxton in Albuquerque and Sun Mountain Design in Santa Fe, who have executed the most actual concepts in solar buildings.

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Nonsponsored, self-structured activity is the epitome of solar success in New Mexico. It is no accident, perhaps, that such solar efflorescence of amateur and professional involvement is part of a long tradition of personal autonomy and self-sufficiency. The recent international interest in low energy solutions to human life support systems only underlines the distinct regional impulses that are operative in the Southwest and focused in a part of this quiet state.

It is difficult to trace historically these values because they are products of the matrix of time and place, culture and economy. Rather than a linear development, there is a broad front of solar activity that ranges the spectrum of intent and accomplishment. One of the fathers of New Mexico's grass roots cultural form is the planner Peter van Dresser, who describes himself as a "40-year-ago dropout from the Eastern megalopolis." He associates the reaffirmation of land attachment in New Mexico with the decentralist-distributist movement of Depression years in this country. He is an advocate of "undevelopment," whereby villages and towns would change toward a more self-provisioning system. He resents trucking bread from Albuquerque to El Rito.

In 1949, van Dresser began a "biotechnical" house in El Rito that generated

its own electricity and was intended to be solar-heated. The solar aspect was never completed, but his later "sun-tempered house" has been in continuous and satisfactory operation with a variety of tenants since its completion in 1958 on Armenta Lane, off Canyon Road in Santa Fe. Unlike the slick appearances and hardware of other contemporary domestic solar experiments, this is a small adobe structure. It integrates the thermal tempering characteristics of an indigenous style, with a minimum of high technology materials and gadgetry. The sun was intended to provide two-thirds of the annual heating, the balance coming from the auxiliary means of a fireplace or small gas heater.

The one-story house uses two tilted air collector panels on its roof. The air transfers heat to rock pile storage under the brick floor, which serves as a radiant surface for the kitchen and bathroom space. Under the living space, ordinary three-inch galvanized downspouting has been used as an air duct grid for radiant heating of the brick floor that is set in sand. Air flow down from the roof collectors is encouraged by small 80-watt squirrel cage blowers. Solar warmed air is used also to preheat the domestic hot water by circulating a copper double-helix water coil through the warm air supply. Santa Fe has a great deal of freezing weather, but the air collectors suffer no freezing

*Peter van Dresser's 1958 sun-tempered house in Santa Fe is probably the longest continuous solar-operated building in the U.S.A.*



## In Santa Fe, solar systems in sympathy with indigenous architecture; in Albuquerque a more complex, urbane approach.

problems. Typically, the collectors provide daytime air that is heated between 120 to 150 degrees.

A philosophical parallel can be found in the multidisciplinary, nonprofit corporation in Santa Fe known as Sun Mountain Design. Talents on the team include architects, engineer, physicist, developer, land use planner, furniture maker and business manager. The goal is high-performance building with low energy inputs. The team is concerned with the energy burned in making building materials, as well as the efficiency of the building throughout its life. Its passive energy approach is completely sympathetic with the traditional forms and materials of old Santa Fe architecture. In 1973, Sun Mountain designed about 20 projects, two of which have been built in Santa Fe.

Both of these projects also use tilted solar air collectors that feed through vertical ducts to under-floor rock pile storage, in a system similar to the earlier van Dresser sun-tempered house. The collector area equals approximately half the floor area. One building, at 631 Santa Fe Trail, is a modest 340-square-foot office addition to an existing adobe structure that uses precast pumice walls. The other is a guest house for a family at 1330 Cerro Gordo Road. It is a particular jewel of conservatism—an 1870 log cabin that has been moved from the country into Santa Fe's historic suburban district. It is not like any other building in the area, but its design passed the historical commission. The roughly squared logs are chinked with fiberglass, and the south slope of the roof is entirely solar collector. The history of self-sufficiency has come full circle.

In contrast to the Santa Fe activities are the urbane and more technically complex productions around Albuquerque. Early in 1954, active design work was begun with preliminary thermal calculations by Bridgers & Paxton, a mechanical engineering firm. Its "solar building," completed in 1956, was designed by the architectural firm of Stanley & Wright. How appropriate that mechanical engineers should be so well accommodated in such a mechanical marvel. The control

room of the building looks like the center of a submarine; the architectural expression otherwise is clean and strong.

Aside from the solar water collectors, the building uses items of standard manufacture. The system includes three-day heat storage, a heat pump for refrigeration and to boost heating efficiencies and an evaporative water cooler. The interior can be cooled while the sun's heat is being stored for later use. The building received over 90 percent of its heat from the sun, and the system ran successfully for a number of years. But when the collectors developed leaks and when the cost of natural gas persisted at bargain rates, the system was converted to conventional fuel. Now the solar collectors are to be repaired and the system restored to its original solar splendor. Similarly, as solar engineers, the firm's professional services are being obtained for major commissions where large areas of solar collectors provide the energy source for heating and cooling.

A different kind of professional service is offered by Zomeworks, a nonestablishment corporation headed by Steve Baer. Zomeworks as a group effort in structural and solar heating systems grew out of work done at communes: Drop City in Colorado and Lama and Manera Nueva in New Mexico.

Zome structures are a mathematical extension of Buckminster Fuller's geodesics, which result in a crystalline three-dimensional enclosure geometry. Zomeworks' involvement in solar energy is at least as comprehensive: inventing, designing, fabricating, testing and consulting in solar ideas. Zomeworks is an action effort in use of techniques and technology to move toward a life-adaptive society. Among the recent architectural configurations from Zomeworks are two houses and a greenhouse.

The Monte Vista Greenhouse is an educational extension of an experimental school sponsored by the S. W. Cooperative Education Lab. The greenhouse is the first architectural demonstration of George Vlastos' "beadwall," which is a simple transparent wall that uses movable insulation to control heat flow. The wall



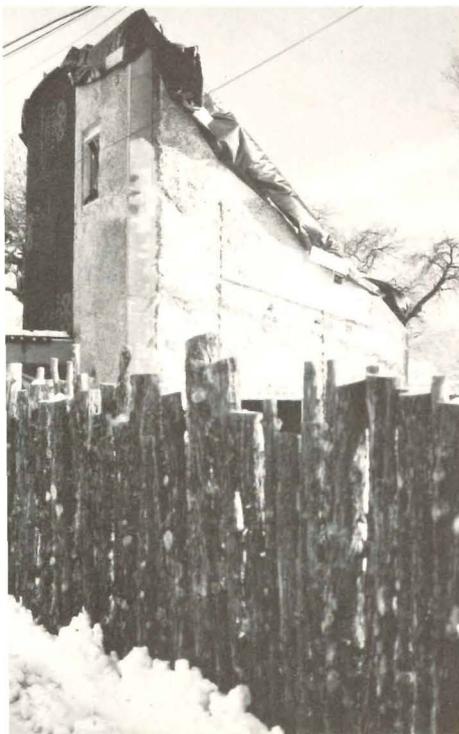
*A reconstructed 1870 log cabin became a solar-heated guest house for the Allers family of Santa Fe in 1974. The southern facing roof slope accommodates 432 sq. ft. of solar collector to condition 650 sq. ft. of floor area.*

*Old hand-shaped logs are chinked with fiberglass for the solar log house in Santa Fe's historic suburban district.*





Recast pumice concrete is an economical and highly effective local material in Santa Fe for such energy-conscious structures as this modest solar office addition.



The "beadwall" of the Monte Vista Greenhouse is a direct and passive solar collector completely integrated in this facility for an experimental school program.

The concept of mobile insulation is the principle in the patented "beadwall" system of the Monte Vista Greenhouse.

The pioneer Bridgers & Paxton office building of 1956 uses 800 sq. ft. of solar collector to heat and cool 4,300 sq. ft. of floor space.



consists of vertical and sloped south-facing sheets of clear Filon, with a three-inch cavity. The cavity is filled with Styrofoam beads at night to provide an insulated wall with a U factor of approximately 0.1. The beads are sucked or blown by vacuum cleaner motors and are stored in adjacent tanks (*see cover*).

The Monte Vista Greenhouse is a modest 10x24 feet in plan, having no auxiliary heating or cooling. Drums of water against the inside north wall serve as thermal stabilizer to flatten the diurnal temperature variations. Architecturally, the building is clear, playful and resolved. The most stimulating and memorable environmental experience is to be inside when the beadwall moves. The air-blowing motors provide an audio track to the visual show of spiraling white clouds that fill up the transparent cavities to blanket the interior.

Movable insulation is also a major element in Steve and Holly Baer's own home on the plateau behind Corrales, overlooking the whole valley of Albuquerque. The Baer house has been published extensively, typically as the prototype solar house of the future. The faceted aluminum panels of the zome geometry make a photogenic subject inside and out. However, the esthetic experience of spatial revelation and continuity in the succession of zones is even more satisfactory than the static reflections of photographs.

As a solar heated building, the Baer house uses large glass windows to allow the sun to warm racks of water drums. At night, the glass walls are covered by raising large insulating shutters, which, during the day, lie on the ground as reflectors. Such a passive system uses only a pulley to rig the movable insulation walls. It is an architecture that is run like a sailing ship.

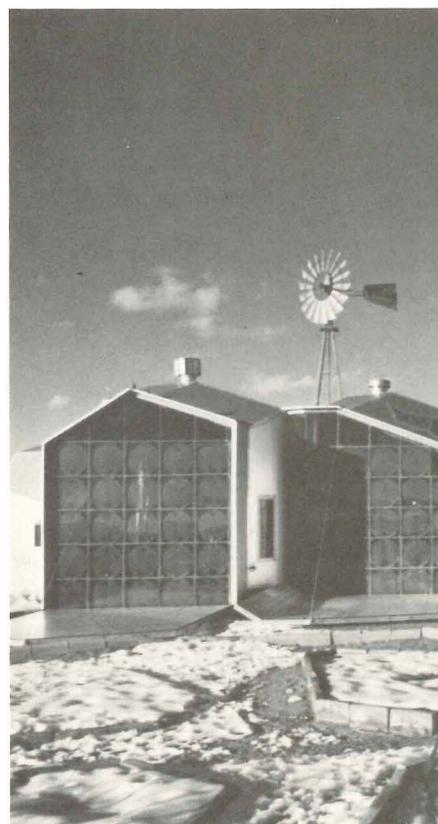
Several other devices contribute to the thermal stability: Both the exposed concrete floor and adobe walls (inside the aluminum panels) add to the thermal capacity of heat stored in the water drums. Each zome has a vent at the top that is hand-operated by a rope for ventilation, and the roof has several "skylids." Skylids are another Zomeworks product and con-

sist of insulated louvres under a skylight. When the temperature between the louvre and the skylight is higher than the interior temperature, the louvres automatically stay open to allow the heat into the interior. Otherwise, they stay closed. The Baer house also uses solar hot water heaters and a windmill for partial power generation.

The esthetic interests of the Baer house together with its technical innovations have tended to overshadow the house next door that belongs to Professor Paul and Mary Davis who used Steve Baer as a consultant for their solar heated design. The unassuming Davis house is largely owner built. It has a modest total of 1,000 square feet and two floors and has already been successfully operating for two years on its solar air collectors and rock bed storage. Because the view is to the south, the collector is below the main floor, and the rock storage forms the floor of the south-facing porch. The vernacular and woodsy style of the house is in complete contrast with the assembly of shining crystals of the neighboring Baer house. The solar air heating system of the Davis house works by means of gravity flow, without the benefit of fans. As a building, it works absolutely silently. The heat flows gently upward. The only controls are strings and dampers to open the ducts.

The warm interior has a homey ski lodge character—open kitchen, balcony bedrooms, walls of books and rugged fireplace.

And, finally, there are the most comprehensive, intense and remote building experimenters among these New Mexico solar pioneers—Integrated Life Support Systems, located on two acres in the chaparral country some 20 miles east of Albuquerque. This is a private research organization whose director of research is Robert Reines and whose one-time director of philosophy was Jay Baldwin. There is complete dedication and certain fanaticism in the quest for perfection, in the ruthless attention to documentation and the insistence upon measuring all costs, financial and social. Solar is seen as only one part of a complete alternative energy integrity at Integrated Life Support Systems. Ultimately, that integrity will be



*The geometry of the Baer house is zome, a polyhedron structure that goes beyond Fuller's geodesics in allowing efficient asymmetrical dome shapes.*

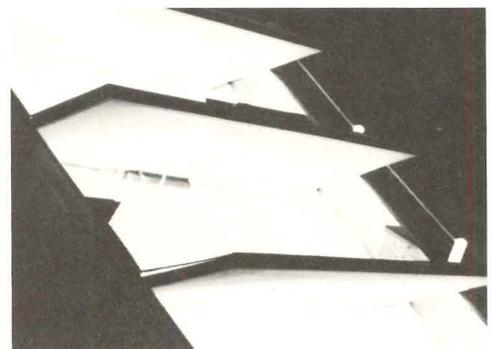
*The controls for the solar-heated Davis house consist of strings to open and close dampers; there are no fans or thermostats.*



Two adjacent solar houses of contrasting form and character, and a remote and intense experimental research group.



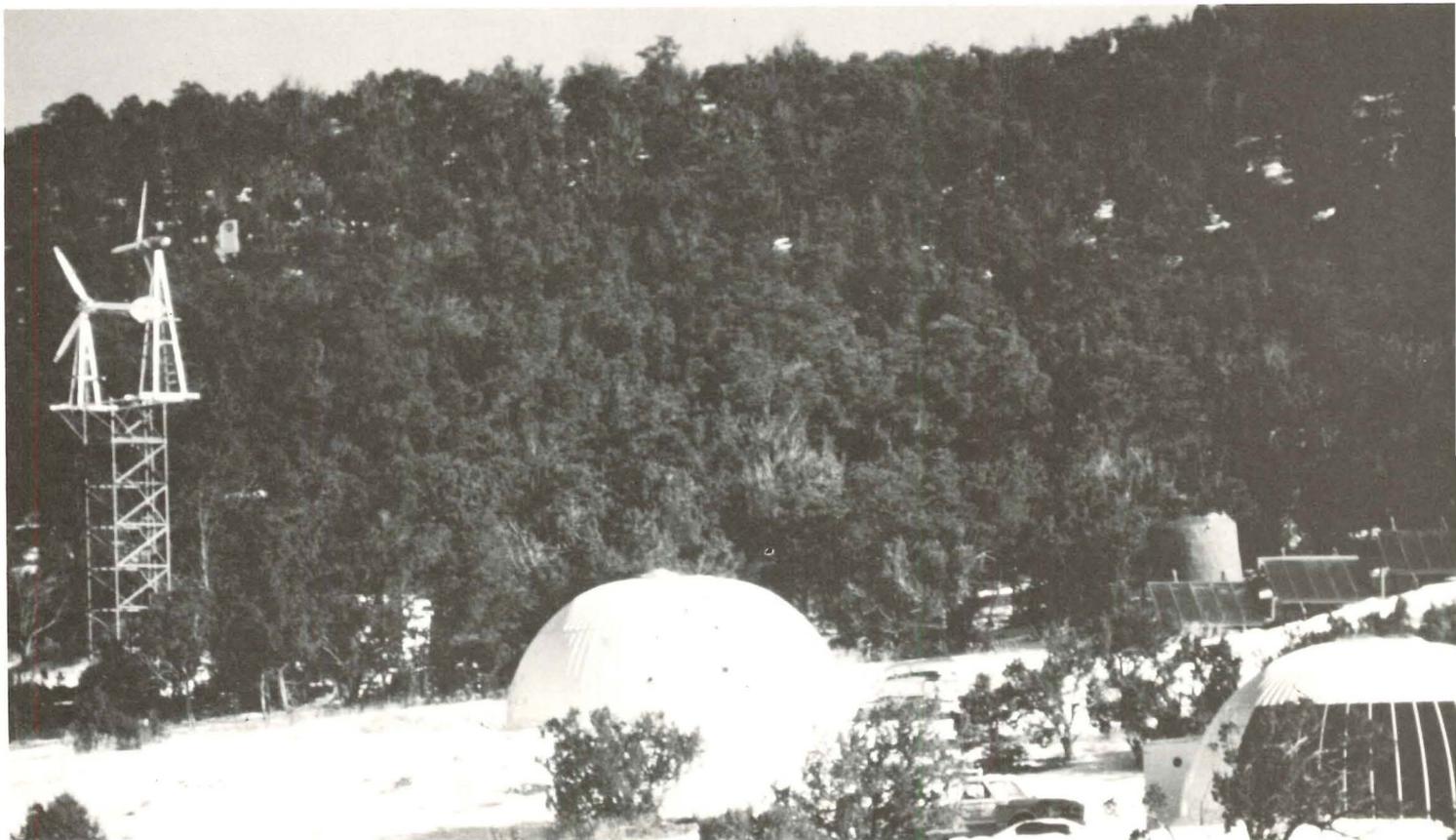
*Passive solar storage in 55-gallon drums provides an interior expression of the Baer house's heating system, visually and thermally complementing the adobe walls and aluminum sandwich ceiling planes.*



*The patented "skylid" in the Beach house is an unpowered automatic solar heat trap. Louvers are tipped by the weight of freon that condenses in one of the connected sealed cannisters.*

*In the Davis house, the passive solar air collector and its thermal storage are under the south-facing porch.*

## Solar applications as part of a quest for life-support systems 'that reconsider man's relationship to the earth.'



*The performance standards of automobiles and airplanes are applied to buildings by Integrated Life Support Systems.*

all-inclusive. As yet, there is little effort in terms of food production, but heat and electricity are totally supplied by solar and wind devices. It took two years to figure out how to start a table saw.

Integrated Life Support Systems was the recipient of a competitive grant from the profits of the *Last Whole Earth Catalogue*. There are no esthetic illusions and none about parading before the world with all the answers. They are not ready to publish. Everything is neat and tidy. The two 31-foot diameter silvery domes are actually steel prefab silo tops lined with three inches of foam insulation and porthole windows that can take 160 miles-per-hour gales. One dome is used as a house, the other as a workshop. A third dome houses the enormous investment in storage batteries and other electrical paraphernalia for wind generation.

Integrated Life Support Systems has three windmills. Solar energy is collected

by three ranges of freestanding tilted fluid collectors that step up the hill. Much more discrete is the curved collector that is an integral part of one of the domes. Winter is intense and summer is hot at this location in New Mexico, but no fuels are burned to support life or work. Admittedly, fuels had to be consumed elsewhere to provide the materials.

Throughout northern New Mexico there are many other solar experiments, communal and private, crude and sophisticated, established and unfinished. They are all part of a broad attitude in this special state that hears a different drummer. Support for solar experimentation in New Mexico has come mainly from the state legislature. Recently, however, the Four Corners Commission, established by the federal economic development commission, has agreed to fund a research program in "energy-conserving home building techniques in rural New Mexico."

The program is being conducted by the Ghost Ranch conference center in Abiquiqui through a four-man technical committee with Peter Van Dresser as coordinator. Its first step will be "development of a range of prototype designs for dwellings incorporating solar and other energy-conserving principles, which can be built largely of indigenous materials and are generally within the capabilities of local craftsmanship and are harmonious with regional tradition."

There are two important concepts illustrated by the solar architecture of New Mexico. First is the fact that applied solar energy is in practice a part of a much larger philosophic commitment about life support systems that reconsider man's relationship to this earth. And second is that such a philosophic and, therefore, technical commitment can result in architectural expressions as diverse in character as they are rich in meaning. □

# Student Energy Competition: 'New, Sometimes Risky Solutions'

To encourage awareness of energy use in the built environment, the Association of Student Chapters/AIA recently conducted a national energy conservation competition. Open to any student enrolled in a school of architecture, the competition was judged on the responsiveness of the student designer to conservation needs as expressed graphically in the design presentation and in a written explanatory statement of the measures taken.

The jury, chaired by Caren Yglesias, a student at Virginia Polytechnic Institute, included: Larry Degelman, engineer and faculty member at the school of architecture, University of Maryland; John P. Eberhard, AIA, president of the AIA Research Corporation; Frank Powell, chief of the thermal engineering section, National Bureau of Standards; Richard Stein, FAIA, New York architect and authority on energy conservation in the built environment; and Kevin Weiler, student at the University of Maryland.

The five winning entries that are presented on the following pages are a "good cross section of the kinds of ways that we are looking at the problem of energy conservation measures," said Eberhard. He pointed out that some of the students looked at applications of solar energy, some at total energy possibilities. Others applied energy conservation methods to a particular building, and some "took unique approaches."

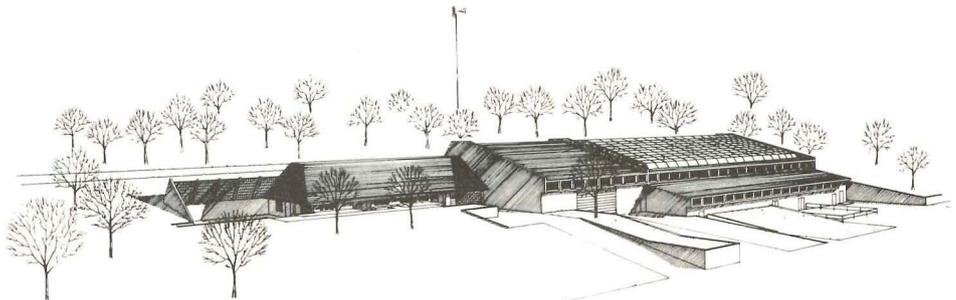
As Eberhard remarked, "Most professionals are pleasantly surprised by students involved in productive activity. Such was my impression of the jurors' reaction

to the submissions." He also offered a word of advice to students: "Clearly, students should take advantage of their comfortable tolerance and not remain satisfied with traditional attitudes of energy conservation and its application. It is one matter to thoroughly research information available on a given topic and implement it or even allow it to generate your building design. It is another matter to grab the essence, the concept of the problem, and seek an involvement that is your own game, your own vocabulary. At this stage of architectural development, expertise is limited in almost any area of student concern."

And juror Powell remarked: "In the time given for work on the competition, at most a student can learn what another has discovered. This competition was an opportunity for students to have their methods of design and techniques of presentation tested by experts of the profession. This competition was the responsibility of students to wake up those experts to new, sometimes risky, ways of looking and ways of solving. It's up to the students to challenge the established use of energy and established means of conservation.

"The jury felt the winning projects came closest to this attitude. They were the best examples of thorough investigation, innovative approaches and graphic communications. The best work of students, as students."

Inssofar as possible, the students' own words have been used to present their concepts within a limited space. *Mary E. Osman*



*Among the winners, a single-family farming complex (see next page).*

# A Prototypical Single Family Farming Complex

Rex James Hall  
Oklahoma State University

Located in the climatic and terrain conditions of northern Oklahoma and southern Kansas, the farming complex houses on a year-round basis dairy cows, beef cattle, hogs, poults, hens and horses. The below-grade structure is placed on the leeward side of the hill for wind protection, and trees are used as a windbreak. Shadow boxes and roof overhangs on the south and west exposures are shading devices. A water circulation system in the roof decking cools the roof and the greenhouse, and acts as insulation. Exterior above-grade walls contain insulation material, which continues below-grade past the depth of the frost line.

The self-sustaining energy system uses conventional electrical and gas supplies only for backup purposes. The principal inputs are solar energy, wind energy and methane gas that is produced from the fermentation of animal wastes. Supplementing one another by methods of energy conversion and storage, the sources form an interlocking energy system.

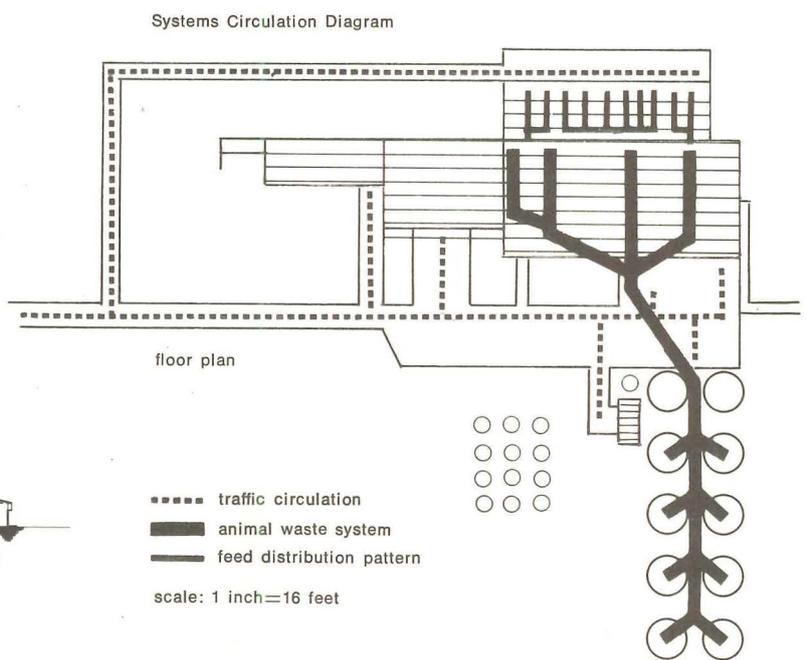
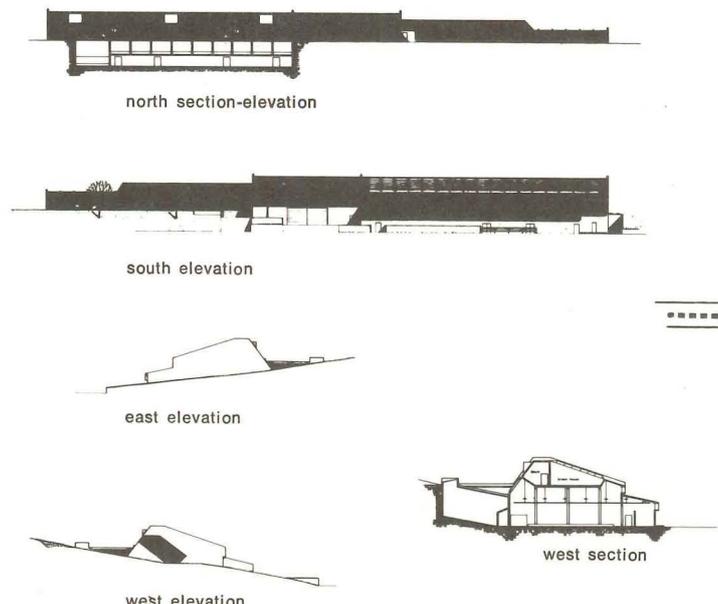
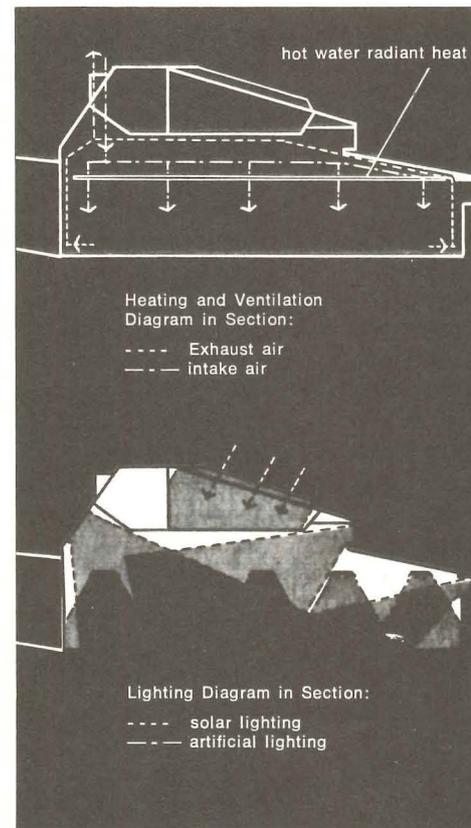
Sixteen wind chargers at the crest of a hill, two wind chargers supported by poles and 10x10-foot solar cell panels mounted

to track the sun's path are the primary sources of the electrical system. Power provided to the power station by these inputs is regulated and distributed, stored in batteries or converted into hydrogen by electrolysis. Hydrogen can be converted back into electricity by means of a fuel cell. Electricity can also be supplied by a methane-gas-driven engine running a generator.

Methane gas, produced by animal waste, is collected in eight large tanks that are supplied through a manure collection system that starts at the slotted floors of the livestock pens and is piped down to the fermentation tanks. Vehicles and equipment are run primarily by methane.

A well, operated by a windmill, supplies water, and a holding tank provides a two-day supply. To get required pressure at distribution points, air is pumped into the tank to give head pressure.

A solar heat collector is located on the south and west exposures of the roof. The dark metal deck absorbs the heat and transmits it to the water that circulates through the decking. Hot water is stored in a large heat sink in the house zone.



# A Day Care Center

William F. Rogers  
and Kim Wong  
Cornell University

The designers keep "sun and wind in mind" in both the siting and structure of the day care center, located in northern New York state. The valleylike site has existing dynamic environmental patterns that are accentuated to reduce, avoid and solve many of the environmental problems normally overloaded onto a mechanical system. The intent is for the mechanical system to be only a backup, thereby reducing energy use to a minimum.

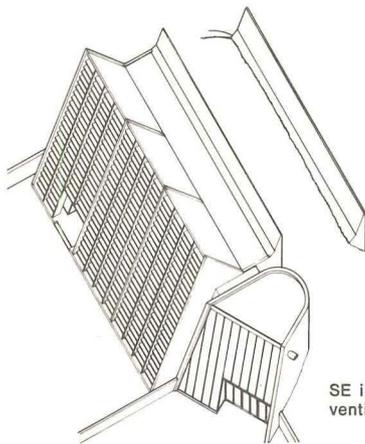
The structure, which contains a multipurpose space and classroom and administration areas, is sited on a southern slope with a 12-degree southeast orientation to allow for maximum heat gain in winter, with the southern and western sides of the building flexibly opened to the sun's rays. Heat loss is diminished by the burial underground of the building's northern side. Both structure and evergreen trees protect the entrance, parking and pedestrian areas from northwest wind and snow. And in summer, the rows of trees capture maximum wind, and evergreen trees on the west give sun protection.

In summer, the building's exterior southern louvers and protected northern skylights give maximum sun protection. The west wall and the northern windcatchers capture the wind and circulate it through the multipurpose area, pulling air from classrooms and offices.

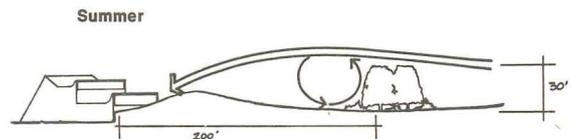
On a winter's sunny day, the exterior louvers are adjusted for maximum sun exposure, and the protected skylights and the adjustable louvers provide maximum light. The multipurpose area, acting as a greenhouse, absorbs the sun's heat, and both heat and air are circulated to interior spaces. Warmth from the mechanically heated classroom and administration areas is circulated in and out.

A misty winter day will have minimum heat loss because the exterior louvers close off outside cold while the radiation trapping recreates the greenhouse effect.

The mechanical system feeds directly to the classroom and administration areas and to the top of the multipurpose room. Guided by the floor radiant heating system, return air is pulled back to the multipurpose room. The fresh air system is integrated into the supply pattern.



SE isometric ventilation



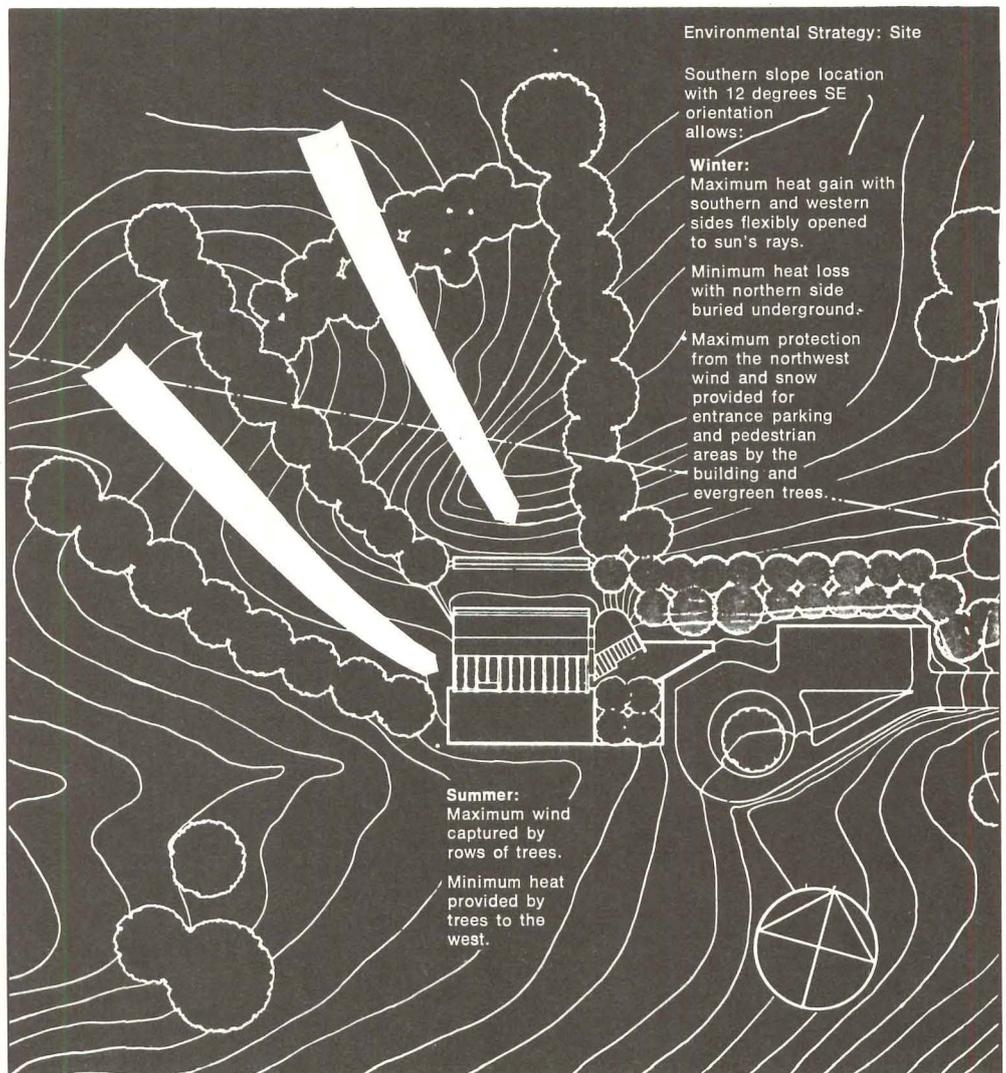
Summer

Maximum wind pulled down over deciduous trees. (Horizontal distance: tree height = 7:1)

Winter



Minimum wind enters building since hill crest lifts wind up.



# A Residential Community

**Bob Evans**  
Southern California  
Institute of Architecture

A California residential complex on a long and narrow strip of land near the ocean features a series of seven clusters around a circular, central courtyard. The prevailing northwest wind and the openness of the site combine to make it an ideal spot for maximum use of sun, wind and water.

A typical cluster contains 12 units and a community co-op in the center of the courtyard. The units are divided into four groups of three, forming a sub-courtyard for each group. On the south side of each unit is a sun collector, and shadows are minimized somewhat because the units are cone-shaped.

They took this shape for many reasons. First, the sun collector is a series of flat trapezoidal-shaped panels wrapped partly around the south face to make maximum

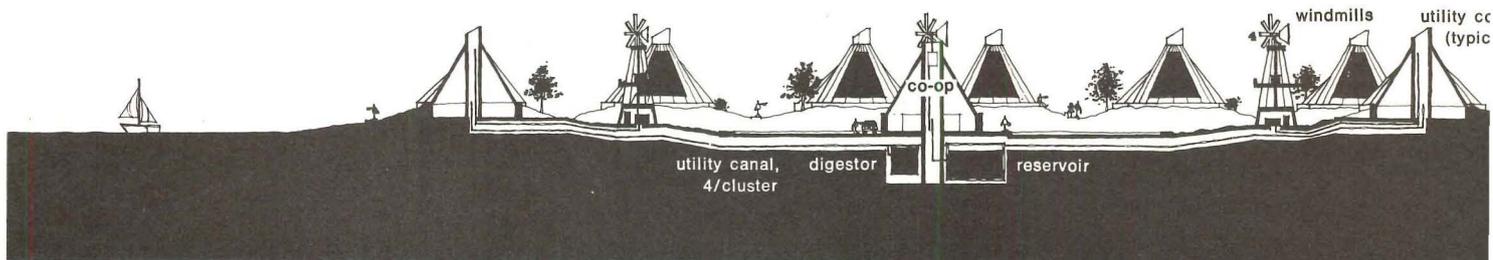
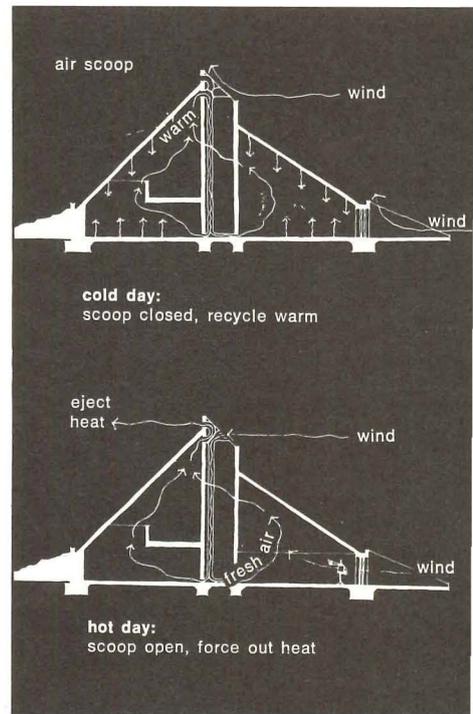
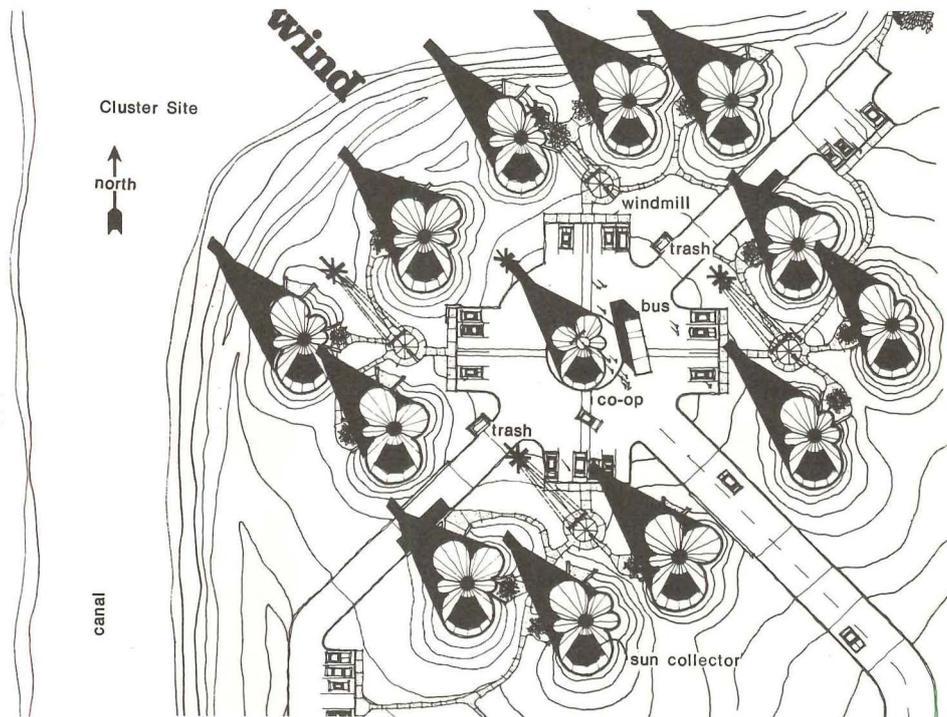
use of the sun all day. Each sun panel picks up the heat to warm water for heating a unit and supplying hot water for domestic use.

Also, when heat rises in the house, the cone acts as an inverted funnel, forcing warm air to the highest point. On a cold day, the air scoop of the utility core and the duct in the damper are closed, recycling warm air. On a hot day, they are opened to let in fresh air and to force heat out a back vent.

Each unit and the co-op have a rain gutter that runs the complete perimeter of the unit to collect rain runoff and recycled water for storage in the reservoir. A waste line takes waste from disposals and chemical toilets to a digester where it is chewed up, mixed with other organic materials and then is taken to a nearby compost.

The water supply comes into the co-op area where it branches out in four directions through a ditch just below the parking lot to a smaller area where the windmills are located. The windmills both produce and store electric power. In this area, electric lines join other utility lines, branching out again to the utility cores of the units. From these cores, the vents, convenience outlets, plumbing, etc., feed into the living areas. The waste system works just the opposite of the supply route.

The co-op is a community bus stop and so convenient that people leave their cars at home. It's also a laundromat, and once a week the busman picks up groceries ordered by the residents and stores them in the co-op in freezers to further reduce car use.



# Eco-Unity

Richard Loope and  
Peter Clegg  
Yale University

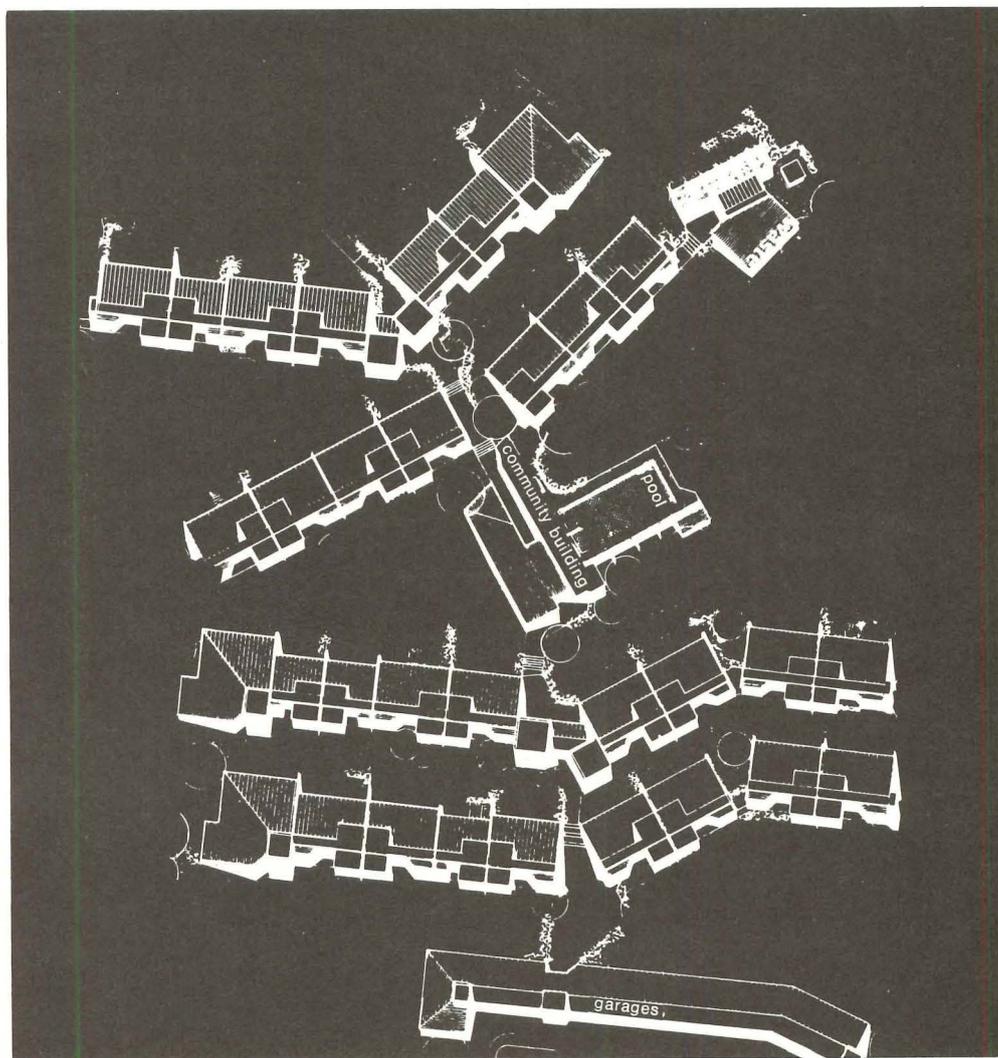
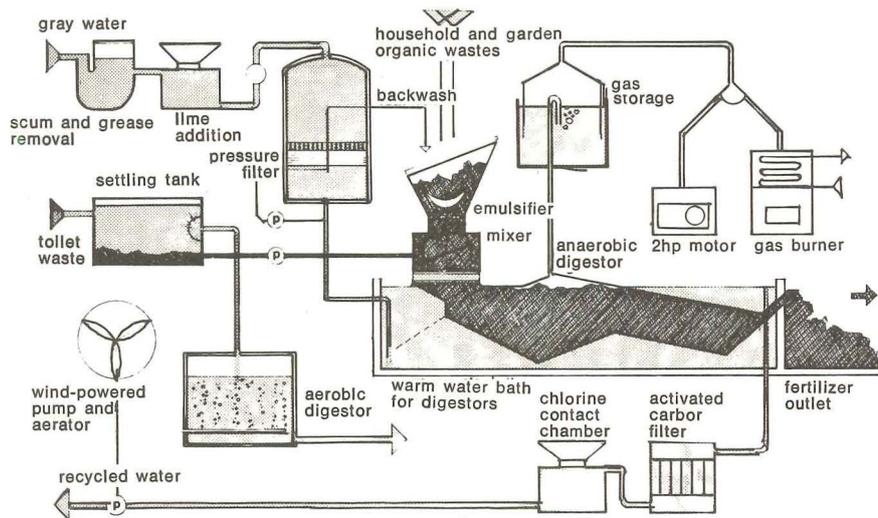
Eco-Unity is defined as the "unification of the relationships between organisms (people, plants, animals, shelter) and their environments." The intent is to demonstrate that a relatively simple, inexpensive, readily available and well-tested technology can be integrated into a workable and viable housing scheme for a suburban/rural community in Connecticut. As a result, the community will be as well serviced as if the scheme were based on conventional energy systems.

The designers of the proposed housing explain that they have approached energy conservation by redefining the primary relationships between man and climate, believing this necessary for the adoption of a "bio-climatic" solution to energy conservation. Man's shelter "can be regarded simply as an additional skin between his body and the elements." Thus, climatic factors have been utilized to provide alternate sources of energy rather than depending upon the creation of an artificial shelter that is dependent upon centralized energy systems and nonrenewable resources.

There are technical descriptions of the way in which solar energy can be captured, stored and used for heating and cooling, of how wind power can be used for ventilation, mechanical power and electricity. There are diagrams to complement the specifics of the text on such subjects as sun energy, solar collectors, solar energy storage, solar heat and the recovery of waste heat. So detailed is the proposal that the authors have considered such things as the installation of operable windows, the design of fireplaces and chimneys and plans for a solar dryer.

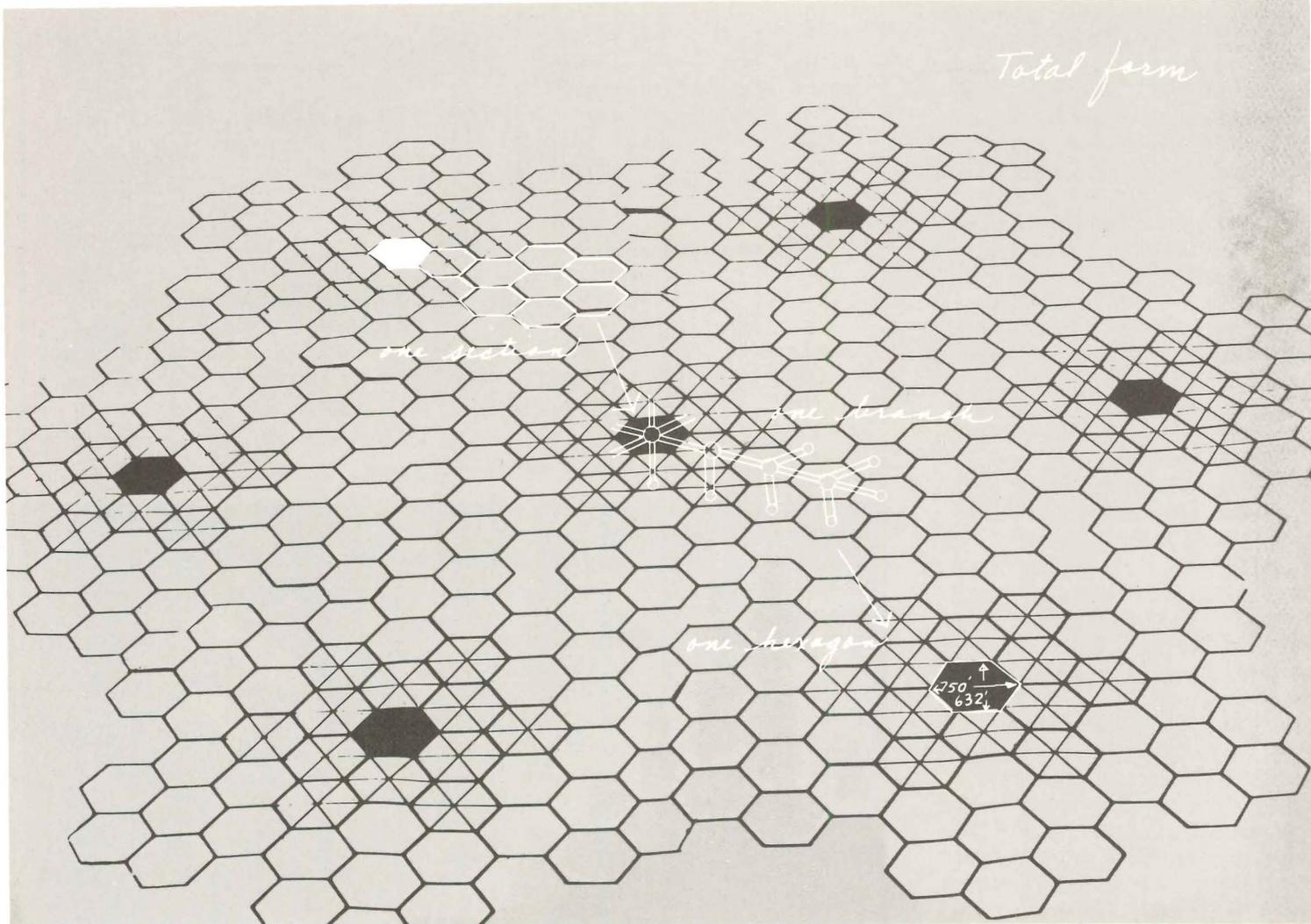
One way to reduce the consumption of energy, the authors say, is the sharing of common facilities by the community. This sharing of resources is "sociologically stimulating" as well as energy saving. But individual "personalization" of the dwelling units is encouraged.

Damage to the local ecology is kept at a minimum, and food production on the site or in the greenhouse is part of the housing process. And waste treatment takes place on site to produce fertilizer which is returned to the land.



# Solar Community

Douglas Bancel, Nicholas Carnevale, Jack Crocker, John Davis, Peter Nelson, Robert Pritchard and Forest Sheldon  
University of Colorado



The goal of the design of an energy system for a total community is maximum efficiency and minimum waste. The community, powered solely by nondepleting natural resources, is laid out with energy conservation as the prime planning factor. The three critical elements of generation, distribution and consumption are integrated into a total design synthesis as parts of a living, growing system to meet the community's energy needs.

Solar generation is center-oriented within the community, and all utility channels for distribution are integrated into one underground, specifically planned and scaled "utilidor." The utility center is the central hub of a total energy district. Consumption efficiencies are optimized by clustering users into larger

forms. By resolving the logical user-to-user and user-to-source relationships and by establishing a radial utility distribution pattern, the total energy system can be given static form.

The basic design decision is the center-oriented generation and distribution area that reaches all parts of a district most efficiently and with least waste. A hexagonal grid layout is the optimally efficient arrangement of solar generation districts adjacent to one another. By combining the three-dimensional radial distribution concept with the hexagon grid, one total community energy system is formed. Actual size and configuration are based upon realizable solar generation outputs, distribution distances, proportions of land space for high and low level user needs,

and resistances and hierarchies.

Distribution distance minimums are accomplished with 42 stations, with the six main distribution lines acting as connecting utilidor between interconnected systems. Statistics used to size the hexagons and the whole "snowflake" are minimums established from data regarding solar energy capabilities, person-to-person ratios, etc.

Snowflakes interlock for larger community layouts, and several can "melt" together to form larger living environments. During growth periods of a snowflake or a multitude of snowflakes, energy needs are precisely defined and met with development of new solar collection districts and distribution and consumption facilities to complete them. □

# Adaptive Use: Saving Energy (and Money) As Well As Historic Buildings

Andy Leon Harney

Adaptive use of existing buildings is growing beyond historic preservation into an increasingly popular alternative to new construction and a significant area of architectural endeavor.

While still a favorite tool of preservationists who want to see historic buildings serve as more than shells or museums, adaptive use also is being applied to what Robert Burley, AIA, calls "background buildings." Burley, chairman of the Institute's commission on environment and design, recently told a congressional committee that "what originally started out as an effort to preserve America's heritage is now becoming a major tool in city planning, revitalizing downtown areas and making wiser use of present resources."

Burley's statement contains some clues to the motivation for the widening acceptance of adaptive use. Clearly, one has been the energy crisis. Adapting an existing building rather than building from scratch can save both energy and materials.

Another source of support for adaptive use is the environmental movement, with its aversion to highrise buildings. Especially on valuable urban land, the economics of new construction often require

Ms. Harney is a Washington, D.C., editorial consultant and writer.

taller and larger buildings than what has gone before. The environmentalists see adaptive use as a means of retaining "human scale" in the cities, and call it the "recycling" of buildings.

Arthur Cotton Moore, AIA, of Washington, D.C., cites his adaptation of the Cairo Hotel as apartments as a case in point (for more on Moore's view and the Cairo project see May, p. 58).

The Cairo is Washington's tallest building, rising 160 feet in a neighborhood very conscious of maintaining its residential scale. Says Moore, "When I went in for a zoning variance to do the adaptation, the crowd at the hearing was almost grateful after learning of three requests for new construction of highrises in the neighborhood.

"If I had asked to build a new structure that tall in the same neighborhood, they would have been up in arms. But the Cairo was already there—it was familiar." The need for familiarity of structures and institutions is an increasingly important factor for people to preserve a neighborhood's unity and stability. The adaptive use becomes a way to extend the life not only of individual buildings but also whole neighborhoods.

The range of background buildings that have been adapted is vast. A torpedo fac-

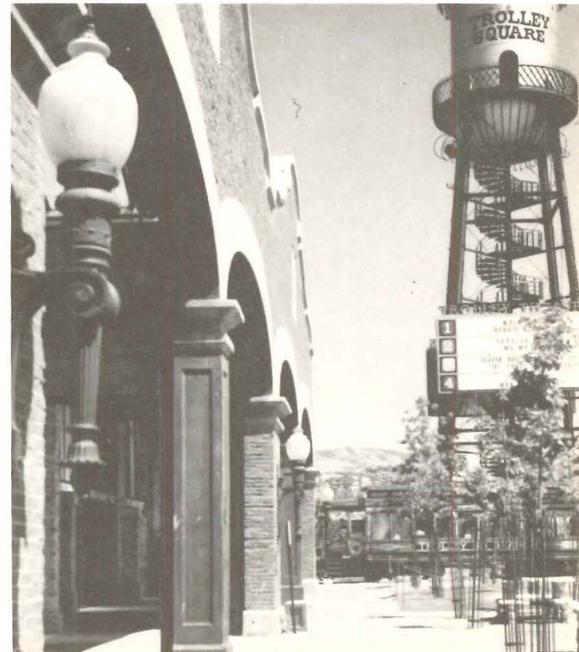
tory in Alexandria, Va., has been converted into an arts center; a movie house into a neighborhood museum in Washington, D.C.; a newspaper plant into a restaurant in San Jose, Calif.; a trolley barn into a shopping complex in Salt Lake City; a fire station into a church in New York City; a warehouse into an indoor tennis court in Chicago.

Gas stations have been converted into sausage factories, dry cleaning plants, porno movie houses, volunteer fire stations, opticians' offices, drug stores, garden centers, bakeries and teen centers.

Some well known projects have combined new construction with adaptive use of existing structures—Ghiradelli Square in San Francisco, Underground Atlanta, and Washington's Canal Square.

Recently, Boston Architecture Team, Inc., announced the conversion of a large single-family home overlooking a harbor in Rockport, Mass., into five condominiums. The conversion, perhaps the first of its kind in the country, offers condomini-

*Vacant structures such as old trolley barns can be converted into profitable shopping areas with sufficient parking space. The Salt Lake City "Trolley Square" by Architects/Planners Alliance has over 80 shops and offices, and covers 10 acres.*





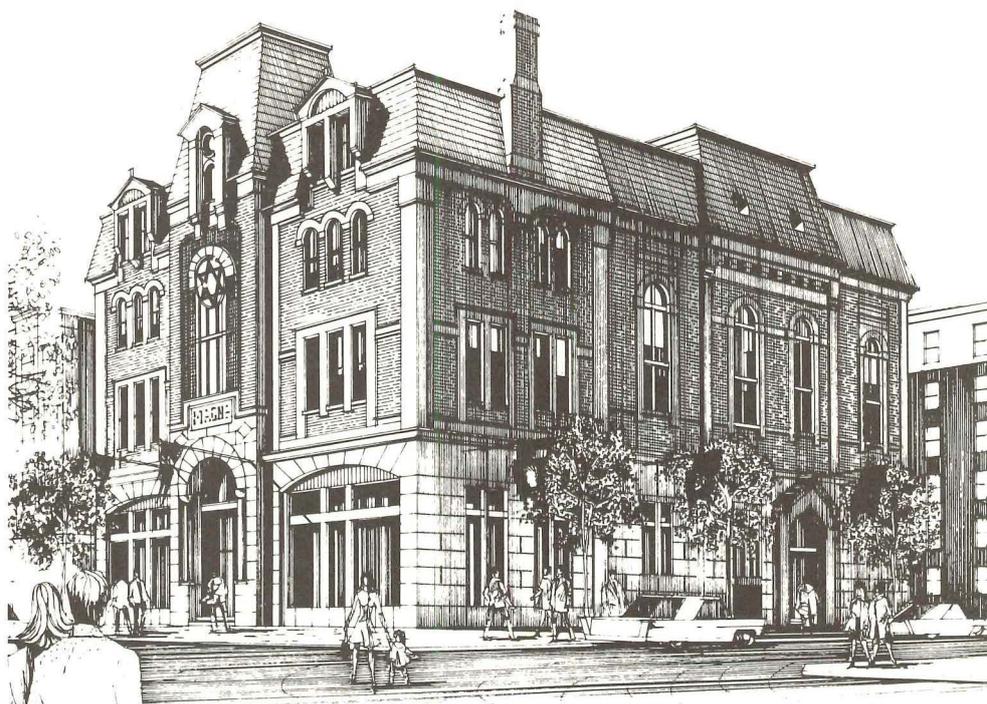
um owners fireplaces, country kitchens, a large porch and many other amenities not often found in new multifamily residential construction.

The same firm is converting a former church into a combined shopping arcade and multifamily dwelling. The 1860 building has served as a Congregational church, a synagogue, commercial shops and a bakery and most recently as a rock band nightclub.

The interior will have a new shopping arcade on the two lower floors. The former main sanctuary on the third level will be split into three floors of apartments. The top story will have additional loft bedrooms overlooking two-story living/dining rooms.

One of the most active organizations in the area of adaptive use of everyday structures has been the Educational Facilities Laboratories (EFL). The New York City-based nonprofit corporation was established in 1958 to "encourage and guide constructive changes in schools and college facilities."

EFL's initial emphasis was on new construction, but recently it has become heavily involved in helping community groups adapt existing spaces for educational uses. EFL, in several publications, promotes the use of "found spaces" for educational purposes. Examples it has reported include a girdle factory in Perhasia, Pa., turned into an early education center; a refrigerator warehouse that is now a child development center in Cambridge, Mass.; a catering house in the Bronx, N.Y., that is now an elementary school; a sardine factory in Robbinston, Me., that is now an elementary school. The list goes on and on—supermarkets, factories, bathhouses, greenstamp display rooms, warehouses, small stores, residences, offices and apartment buildings, church properties, farm buildings, all of-



*A Cambridge refrigerator factory (top) has been converted into a child development center. A Washington, D.C., day care facility (center) is a converted supermarket. The oft-converted Boston building (bottom) will become a shopping center and residential complex.*



*The Chattanooga Railroad Station has been converted into a group of restaurants and shops with Victorian gardens and a hotel with Pullman car suites, including the original Wabash Cannonball Club Car.*

ering new environments to stimulate the learning experience.

The most recent contribution made by AIA in the area of adaptive use is a report titled *Reusing Railroad Stations* prepared by the architectural firm of Hardy Holzman Pfeiffer Associates under a grant from the National Endowment for the Arts. The investigation began with the basic premise that "America's railroad stations are fine examples of architecture which might be preserved by reuse." It's estimated that there are 40,000 stations still standing across the country.

One of the strongest arguments for adaptive use is the cost factor, both in terms of construction and long-term investment potential. "If it can be demonstrated that a shell of an existing structure will reduce the cost per square foot by

3 or 4 dollars, then you have shown a savings which can make a big difference in the decision to adapt or start from scratch," says Moore.

However, Giorgio Cavaglieri, FAIA, of New York City, cautions that insertion of modern mechanical systems and observance of modern building codes may cut into savings from adaptive use.

Cavaglieri, an ardent and longtime preservationist, recently pointed out that most codes "are written for the purpose of defining the construction of new buildings. Most definitions that restrict building materials, uses and construction procedures are studied and written for the purpose of improving the user's protection and safety. When, therefore, an existing building is assigned new purposes or uses, it becomes the responsibility of the authorities to assure the public that its structural and safety characteristics are equal to those of new buildings and are adequate for the new uses."

Cavaglieri, whose Astor Library conversion to New York's Shakespeare The-

ater is an outstanding adaptive use, cautions that the key to adaptation is in retaining the spirit of the building, the volumetric relationships and choices of materials which blend harmoniously with the originals. Adaptive use thus presents a whole new set of design challenges to the architect.

Moore acknowledges that the problem of integrating new heating, cooling, electrical and fire prevention systems into an older structure often becomes a major stumbling block even after cost and code factors have been overcome. "It's like an organ transplant," he says. "The old building wants to reject it. The basic architectural conception did not incorporate these systems. The real question is how to accommodate these systems, how to graft them onto the existing structures."

"There are two extremes you can adopt as you bring in new systems to an older building," says Hugh Hardy, AIA, of HH&P. "You can make everything disappear, which is often more trouble than it's worth, or you can let it all hang out,



*Harry Weese's Actor's Theatre of Louisville.*

which is sometimes difficult because the stuff is so aggressive." Hardy's solution generally is to "put all the spaghetti in one place."

Architecturally significant structures provide clues for the architect to pick up and translate. Adaptive use of everyday structures presents the challenge of making a silk purse from a sow's ear. The choice then is to "make a dynamic of the juxtaposition of old and new and concentrate on the interior space," says Moore. Hardy agrees with the necessity to use a "different vocabulary and acknowledge that it is something different."

Hardy cautions against "thinking you've got to make it sexy—" and advises

architects to "leave things alone. Architects have to throw away certain prejudices when adapting a building to a new use," he says. "For example, you can be a lot freer with some of these old buildings if you can work with columns instead of trying to hide them."

Faced with the problem of adapting an existing everyday building, Hardy prefers the challenge of great cavernous buildings in which space can be used in a variety of ways, through double decks, mezzanines, changing levels, etc. "The hardest structures to adapt are the rabbit warrens, the tiny places with a lot of little cells, because no matter what you do, you still have a lot of little cells.

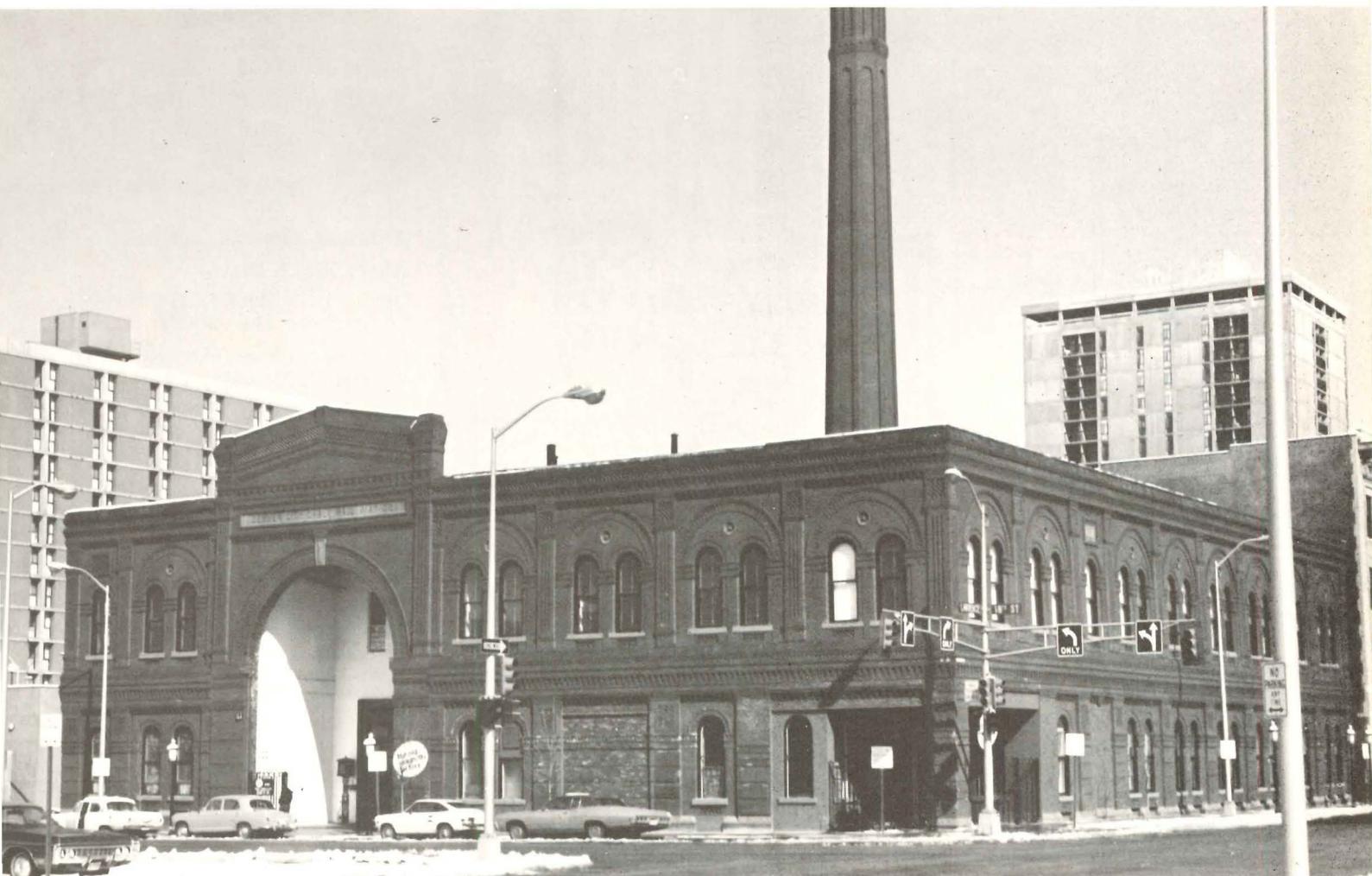
"I think we are going to see a lot more adaptive uses of everyday buildings," says Hardy, "because after all, they are what



gives a community its character. If we limited adaptive uses to great buildings, we would rapidly lose the scale and sense of community that ordinary buildings provide."

Acquiring buildings for adaptive use sometimes can be complicated, but several new devices for doing so are emerging. One is the swap. In Louisville, Ky., for example, the Actor's Theatre wanted to convert a bank building into its home stage. The bank's owner, the Louisville Credit Men's Association, had completely depreciated the building since acquiring it in 1936. To sell the bank outright would have meant incurring a large capital gains liability.

So the theater group offered to build the association a new building elsewhere roughly equivalent in value to the bank



*the Old Spaghetti Factory restaurant  
ain has adapted the old Mercury News  
ant, San Jose (top, left column); a ware-  
use, Portland, Ore. (center, left  
lumn); a cable car barn, Denver (above)  
d a Spokane warehouse (right).*

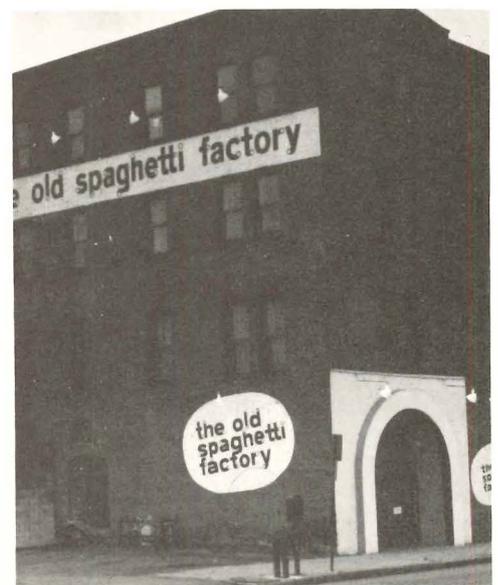
d then trade. The group's architect,  
arry Weese, FAIA, of Chicago, inte-  
ated a neighboring warehouse into his  
sign for the bank-to-theater adaptation,  
ving it too from probable destruction.  
espite the elaborate exchange, Weese  
ys, the theater group got its new home  
r substantially less than a new facility  
ould have cost.

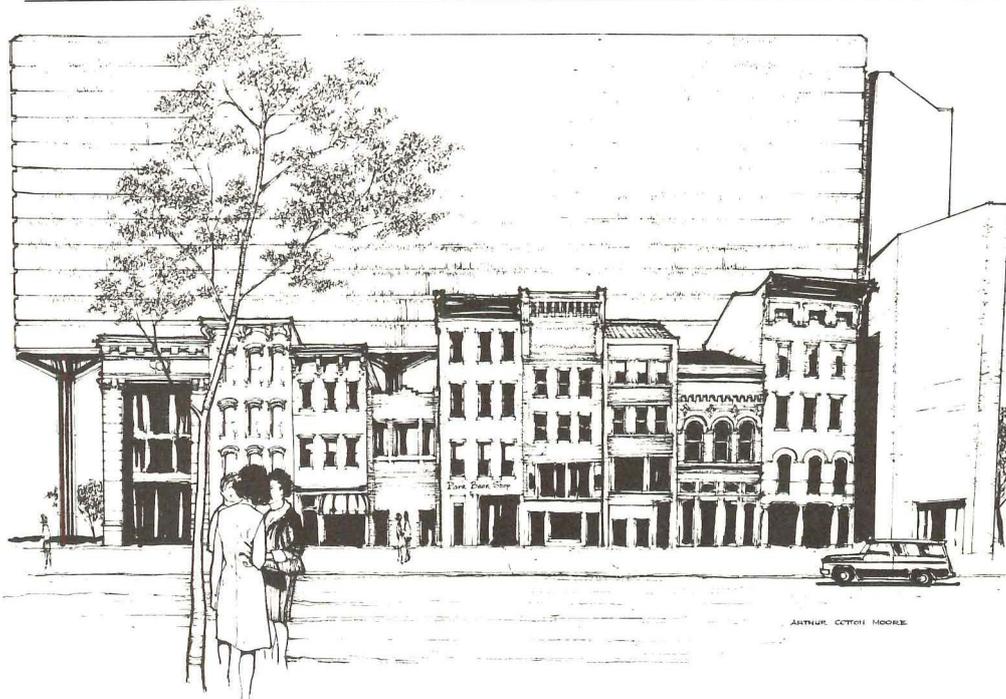
Moore has developed a plan for reuse  
entire city blocks through the sale of  
: rights. The unused spaces behind and  
etween buildings—alleys, courts, drive-

ways—would be used for a new structure  
set on pilings. Occupants of the houses  
or businesses in the block would sell the  
air rights over these spaces, using the  
money to rehabilitate their own proper-  
ties. City treasuries would get increased  
revenues from the new construction and  
an entire block would be renewed while  
preserving the scale and architectural  
character of the city.

Surplus government properties owned  
by local governing bodies or the federal  
government also can be a source of build-  
ings for adaptive use. Last year, accord-  
ing to the *New York Times*, purchasers  
of surplus New York City properties  
paid a total of \$8.8 million for everything  
from a vacant firehouse to an unused  
armory.

Surplus historic federal properties also





*The above sketch by Arthur Cotton Moore/Associates illustrates Moore's concept of adaptive use for an entire city block. The scale of the old city is retained, while the new building rises behind it, resting on pilings. Moore's plan involves the sale of air rights by owners of the older shops, providing them with funds for much needed rehabilitation.*

can be acquired virtually free for adaptive use by lower levels of government and nonprofit groups for revenue-producing purposes under 1972 legislation.

Vacant properties also can often be purchased for tax arrears or for minimal sums from private owners and realtors. At the peak of the gasoline shortage, for example, Clyde Smith, head of an industrial and commercial real estate firm in Harrisburg, Pa., offered to purchase local abandoned gas stations from major oil companies. He is currently closing sales on stations that will be converted into bicycle shops, drug stores, tire stores, retail shops and laundromats.

Despite the surge of interest in adaptive use, Harry Weese, a strong advocate of the concept, is quick to point out that it is "a threat to the system—it may keep

architects from building new structures, developers from doing the same, and governments from satisfying their edifice complexes."

Says Hardy, "It's only recently that you could reuse a building without losing your standing in the profession." But he sees changes and predicts, along with many others, increasing involvement of architects with adaptive use in the years ahead. □

The following list of organizations includes major groups actively interested in pursuing adaptive uses of historic and sometimes everyday structures. Many of these groups have publications and some will provide technical assistance.

Advisory Council on Historic Preservation  
Suite 430  
1522 K Street N.W.  
Washington, D.C. 20005

American Association of Conservators  
and Restorers  
1250 E. Ridgewood Avenue  
Ridgewood, N.J. 07481

American Institute of Architects, Committee on Historic Resources  
1735 New York Avenue N.W.  
Washington, D.C. 20006

American Canal Society  
809 Rathon Road  
York, Pa. 17403

American Society for Theater Research,  
Department of English, Queens College  
Queens, N.Y. 11365

Association for Preservation Technology  
Box 2682  
Ottawa 4, Ontario, Canada

Don't Tear It Down  
Box 14043, Ben Franklin Station  
Washington, D.C. 20004

General Services Administration  
Historic Preservation Program  
Room 6304  
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# Methods of Establishing a Firm's Value

Thomas J. Eyerman, AIA

Have you ever been asked, "What is the economic worth of your firm?" Have you ever thought of merging your firm with another firm, which leads to the problem of determining the value of each firm?

If you are a partnership or a subchapter S corporation, what value have you placed in the firm at the time of admitting a new partner or owner?

For an architectural firm with publicly traded stock, the value of the firm may well be determined by the latest stock market quotation. However, most architectural firms are privately held and the value of the firm is very subjective. Two valuation techniques, "capitalized earnings" and "excess assets," are generally used to establish a framework for determining a firm's economic worth.

The concept of "capitalized earnings" is that given past performance, the value of an architectural firm depends on the income it should produce in the future—the estimated "earnings stream." Putting a value on this earnings stream is called the capitalization of earnings.

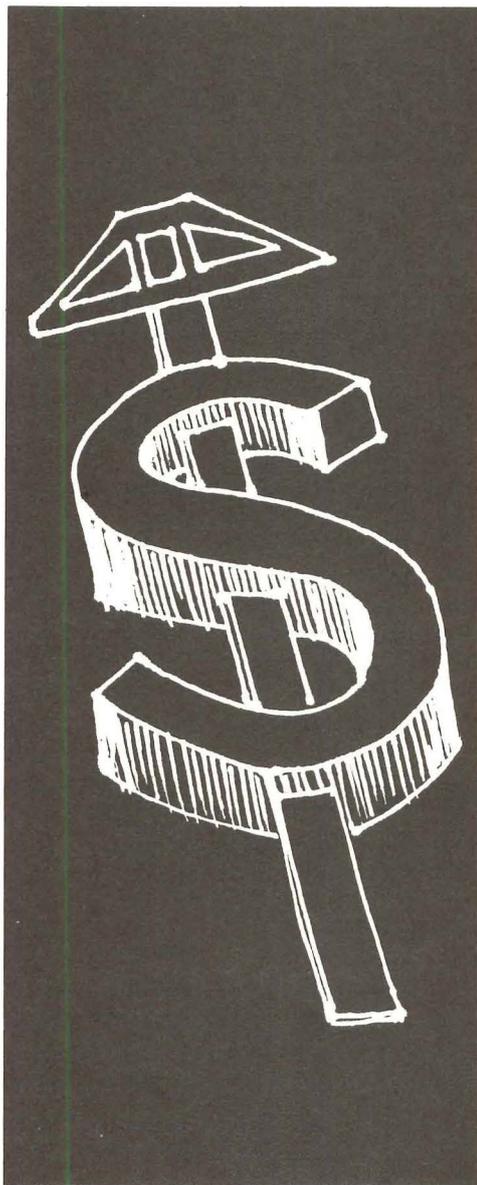
Capitalized earnings can be figured by using the following formula:

$$\text{Capitalized earnings} = \frac{\text{average earnings}}{\text{rate of capitalization}}$$

To determine the earnings stream, an estimate must be made of the future earnings of the firm. Generally, this earnings stream is computed by simply taking the average earnings of the firm over the last five years.

The rate of capitalization is determined by the relative certainty of the estimated earnings. The more certain the earnings, the lower the rate of capitalization. In a very stable firm with a prospect of steady earnings of \$50,000 per year, a capitalization rate of 10 percent may be in line. This would place the value of the firm at \$500,000 ( $\$50,000 \div 10\% = \$500,000$ ), a relationship expressed as ten times earnings. However, if there is a great deal of uncertainty over future earnings, a higher rate of capitalization would be used, such as 25 percent. This would place the value

Mr. Eyerman is a general partner with Kidmore, Owings & Merrill and is located at the firm's Chicago office.



of the firm at \$200,000 ( $\$50,000 \div 25\% = \$200,000$ ), or four times earnings.

The factors that go to determine risk in a particular situation are complex and the weighting of them is a matter of judgment. It should be obvious that the election of a capitalization rate appropriate to the risk is still a very subjective way for a privately held firm to estimate its worth. Generally speaking, for a stable architectural firm, a capitalization rate of 20 percent (five times earnings) appears to be the normal worth of an architectural firm.

"Excess assets," the less subjective technique, determines the value of the firm by subtracting liabilities from assets. All assets of the firm, i.e., cash, accounts receivable and fixed assets, are subtracted from the liabilities of the firm to arrive at the so-called book value of the firm. The firm's worth is its excess assets. Many architectural firms have an item called "goodwill" in their assets. This is always excluded from this calculation. If the reputation of the firm is such as to be of some value, this should be discussed as a separate item during the negotiation procedure.

As an exact and clear-cut method of valuation, excess assets are relatively easy and simple to determine. Nevertheless, the lack of standardization of accounting practices among architectural firms makes comparison difficult without reconstructing accounting procedures so as to get the figures on a comparable basis. For example, a firm with a rigorous depreciation policy would show lower net fixed assets and a lower book value than would a similar concern that has charged less depreciation. Fixed assets, i.e., property, furniture, are typically carried at cost less depreciation, whereas current value of the fixed assets may be more applicable.

As architectural firms have generally liquid assets, such as cash and accounts receivable, rather than a high degree of fixed assets, extreme care should be taken to review the collectibility of accounts receivable in developing the excess assets of a firm. The excess assets method of valuation results in the more conservative value of an architectural firm.

Quite clearly, there is no one simple, reliable method of determining the economic value of an architectural firm. A combination of capitalized earnings and excess assets may be the best system to use in answering the question, "what is the economic worth of your firm." With the decision to merge two firms or to admit a new partner, no one should minimize the influence of bargaining. Using the two techniques should be looked upon as establishing a framework for valuation within which bargaining will establish a real value. □

# A Management-Conscious Firm Grows from a Remote Montana Base

Kevin Dennis

Billings, Mont., population 85,000, is far more attuned to cattle, cowboys, copper and coal than to Le Corbusier. Yet, the remote, rocky country of Billings is the home of CTA, Architects/Engineers/Planners, a fast-paced practice that eight years ago reversed a threatened demise and has since broadened its service area, expanded its capability and tripled its size. The firm is projecting fee revenues of \$1.8 million for 1974; at an average construction cost per project of \$1.6 million, \$25 million in new construction will flow from the firm's boards this year. Other indicators of CTA's growth include the creation of engineering and land development subsidiaries and an office in Twin Falls, Idaho. The firm uses its own airplane to cover an expanded service area that lies within the 500-mile radius of an arc that sweeps below the Canadian border from Seattle to Denver to Minneapolis.

The center of this arc is the firm's Billings office, where CTA was originated in 1938 by the partnership of Ralph Cushing, AIA, and Everett Terrell, AIA. By 1966, the firm's practice was virtually a captive of locally available educational and health care projects, and its resources were committed to maintaining staff specialists in educational and health facilities. CTA was unprepared to cope with a suddenly diminished market for schools.

The stings of fortune were averted by the structuring of strong management roles for each of the firm's partners. The profile of the "new" CTA began to emerge when the partners called in Dick Enion, a management consultant. CTA needed organizational goals, a leadership structure and a marketing process. Ultimately, Enion offered 57 recommendations, and today the firm has implemented 51 of them.

The second generation of CTA's management examined the implications of strengthening its professional operations, concluding that to offer a competitive, up-to-date capability from a remote base in the space-age West, a high level of self-reliance would be necessary to provide appropriate technical and ancillary

services. Moreover, the size and geographic spread of the market would demand an aggressive and well-organized selling effort, and project and marketing operations would require management that could attract competent people.

The management process that the firm ultimately developed is demonstrated by the introduction of a four-day work week that raised productivity by 13.8 percent. As with all major policy issues, the short week spent a year under feasibility review by a member of the firm's board of directors—in this case, F. Edward Jones, AIA. He reported back to the board in January 1972 with a "go" recommendation that was denied because the board saw no substantive benefit to be gained.

Two weeks later, Jones submitted a revised recommendation that called for the four-day week but borrowed from the published experience of a large Midwest firm, eliminated coffee breaks (coffee is served at each individual work station) and established a no-nonsense quiet period for the first two-and-a-half hours of each working day. The major factor in the productivity increase may be the quiet period that establishes each day's focus on the work at hand, free from sales calls,

the telephone and intraoffice interruptions. Another likely reason for the increase in productivity is that the four-day week is a positive morale factor, complementing the Montana lifestyle.

The firm's fiscal, personnel and production operations are managed by W. J. Bennington, P.E., AIA, who enlists a battery of computer programs to control production effort and costs. The most important of these programs is the biweekly accounting of project completion percentages against production budgets.

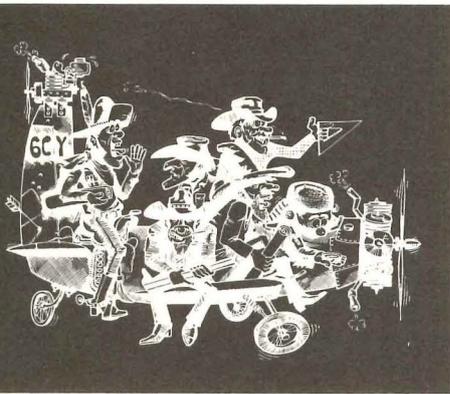
CTA developed these programs in-house so that the record-keeping for each profit center could provide the basis for cost controls on individual projects. The firm does not employ a computerized billing system, in part because of the variety of payment methods to which the firm has contracted, but more because impersonal communication by computer is inconsistent with the Western style of man-to-man directness. The straightforward, personal approach to business heavily influences the firm's project operations as well: A principal of the firm is explicit accountability to the client for each project.

The roles of the principals are defined by individual combinations of interest,

*The entrance mall of the College of Southern Idaho in Twin Falls.*



Mr. Dennis is a Montana-based freelance writer.



attitude and organizational requirements. Jones' project activity emphasizes the educational work. C. Dale Hall, P.E., A, attends to the high volume of medically related work, and R. Edmond Peterman, AIA, directs the Twin Falls office and serves as principal-in-charge for the Idaho work.

The PIC role at CTA has teeth in it. The client, as might be expected, looks for the whiskers that a principal's experience represents and the authority that comes with having the "boss" at bat. The PIC himself attends all project meetings with the project architect in order to make decisions on the spot that might otherwise require backtracking to bring authority to bear. The PIC is locus of the firm's contractual responsibility, and the tight working relationship between the principal and the project architect is a guarantor of its continuity under any circumstances. Although the project architect is accountable to the PIC for budget and time schedule, the firm's six project architects meet once monthly to discuss manpower requirements and allocations with Benington's architectural and engineering production managers. Subsequently, they hold meetings of their project teams.

Robert Fehlberg, FAIA, directs the design department. The project architects draw from it on a pool basis for input from programming through design development. Client involvement in the design of each project has been a characteristic of CTA's work since its earliest days and, consequently, the psychology of the relationship is well understood. The client's decision-making capacity is often the key to a successful project, and appropriate interaction at both personal and professional levels is important to the establishment of a decisive climate.

The firm has introduced a new approach to design review teams as one element of its process for client involvement and regard for employees' needs. The practice of in-house critiques has long been recognized as an effective method of capitalizing on a firm's collective experience but often is the ultimate deflator of an architect's ego. To stimulate constructive discussion, the review teams conduct critiques, and the client receives presentations at the programming, spatial relationship, concept and schematic stages. This analysis and the exchange of facts, convictions and opinions, particularly in the development of the project's spatial

## Practice Profile

relationships, give the design team and the client a mutual feel for the most desirable project solution before anyone is intractably locked into a building concept.

Client involvement at CTA begins in the firm's selling efforts, which Jones, who devotes 50 percent of his time to marketing, considers to be the beginning of each project's architectural development.

Regardless of the source of the lead, be it bird-dogging, past clients or friends, the firm's marketing is based on two strategy principles. The first identifies the prospect's real needs and problems; the second recognizes the competition and matches CTA's strong points to the potential client's needs. "We've beat some big firms," says Jones. "They've come from Houston, Los Angeles and Chicago with staffs of hundreds. But we've found that the client is generally looking for that key guy who can relate to and solve his problem. We really try to get our specialist and his perception of the client's situation out on the table early."

To combat the disadvantage of its remote location and to accomplish quality control and quick delivery of support capabilities, the firm is staffed and equipped for offset printing, computer program-

Below, the Bigwood Condominiums in Sun Valley, Idaho. Above, a portrait of CTA's 'flying cowboys' by Larry Andren.



## The airplane is a major practice tool and five firm members are pilots.

ming, technical writing, photography and graphic design. The in-house airplane illustrates the level of self-reliance necessary to serve widely dispersed clients and is, perhaps, CTA's most significant business development tool. It facilitates on-site visits with prospects in the process of pinpointing project requirements and displaying the firm's selling points.

CTA made the airplane a major practice tool when commissions at the College of Southern Idaho required almost weekly 1,000-mile round trips from Billings. Car or restricted commercial airline travel via Salt Lake City took 12 hours one-way. The firm calculated that the air charter costs would nearly justify the cost of a \$30,000 plane. Additional air charter costs for other work and the marketing potential of an in-house plane swung the decision to order a single-engine, four-passenger Cessna 210. Jones and Fehlberg became the first of five members of the firm to receive pilot licenses. CTA has since graduated to a twin-engine, five-passenger Cessna P-337 Skymaster and hired a director of transportation who operates and maintains the plane and schedules all ground and air transportation.

The Twin Falls office has prospered, in large measure, as a result of successes at the College of Southern Idaho. The insti-

tution, which was established in 1966, now has an enrollment of 3,100. All of its eight structures are the product of CTA. The impact of the college on the community's economy, livelihood and self-image has helped stimulate the firm's entry into a variety of commercial, residential and institutional projects. Presently, \$20 million in new construction is in various stages of progress at the Twin Falls office.

The creation of the firm's two subsidiaries—Engineering West and CTA Development—followed the same careful sequence of management evolution that precedes every corporate policy and operational decision. The goals of Engineering West were to minimize nonprofessional liability considerations and, more importantly, to increase opportunities for the transfer of ownership to deserving firm members. Under Montana law, engineers are excluded from ownership in architectural firms, but the reverse does not apply. When CTA incorporated Engineering West, two key professionals were granted equity participation in the new subsidiary. In addition to its mechanical, electrical and structural services to CTA, 26 percent of Engineering West's workload is derived from services to other architects, site engineering for developers

and major projects for municipal utility and street systems.

In establishing its most recent growth venture—CTA Development—the firm wanted to capitalize on its total service capability. One of the first projects of the subsidiary, which is directed by R. Martin Anderson, AIA, is Rocky Village, a planned unit development in Billings. The firm is contributing its professional capability in an equity participation with Rocky Mountain College, which holds title to the 67-acre project site. The \$21 million development will include 555 condominium and rental housing units and 115,000 square feet of retail and office space. Joined in the team-designed, fast-tracked effort is the Hardy Construction Co. The project will put CTA in new headquarters this fall as the first occupant of the Rocky Village Office Building.

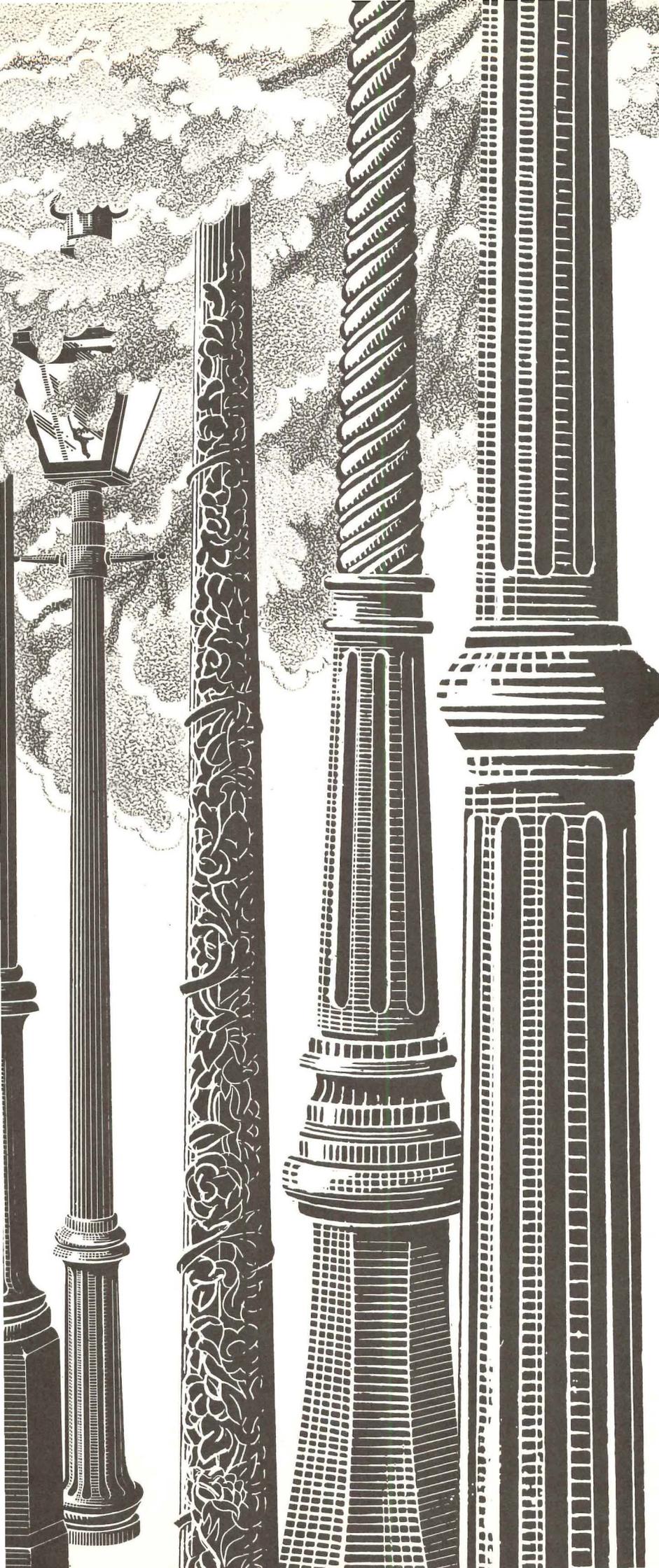
The firm is running ahead of its targeted 15 percent growth rate for 1974. While allocating 5 to 7 percent of its operating budget for marketing, the firm is continuing a high level of investment in capability analysis and development, including a trial run of Masterspec, refinement of the cost-accounting system and a feasibility study of adding a construction management capability.

In spite of its demonstrated self-determination, CTA's recent history has shown a receptivity to joint ventures, growing out of the firm's exposure to other professionals through Fehlberg's activity as a member of the national AIA board of directors. "We like a joint venture when our alliance with another firm can give the client more capability than he'd have by hiring us alone," Jones notes. "If environmental engineering or construction management services are critical to the project, we'll marry anybody with a good track record and a sense of team effort."

CTA's goal for the long-range future is continued growth. Although the growth may be measured in terms of staff size, building volume and gross fees, progress toward the goal will also be estimated in the quality of CTA's professional, technical and support capabilities. As one "cowboy" put it, CTA's future will develop "not from horsepower but from good management horse sense." □

*The Missoula, Montana, Community Hospital, designed by CTA.*





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# Drafting the Ground Rules Of Building

**Gordon M. Comb, AIA**

EDITOR'S NOTE: The following was adapted from a report prepared by Mr. Comb for the newsletter of the Minnesota Society of Architects. It provides a too-rare glimpse into the arduous and painstaking work of the AIA documents board in drafting and continually updating the contract forms and other documents that contain the basic ground rules for the intricate relationships in building construction.

In addition to Mr. Comb, current members of the documents board are Leo G. Shea, AIA, chairman, Detroit; MacDonald Becket, FAIA, Los Angeles; Arthur L. Burns, AIA, Indianapolis; David R. Dibner, FAIA, Newark; Dean F. Hilfinger, FAIA, Bloomington, Ill.; Stuart L. Knoop, AIA, Washington, D.C.; Edward D. McCrary, AIA, San Francisco; Albert H. Nees, AIA, Wichita; John Rauch, AIA, Philadelphia; Bernard B. Rothschild, FAIA, Atlanta; Kenneth M. Schaefer, AIA, St. Louis; George M. White, FAIA, Washington, D.C.

The documents board of the Institute in its third meeting of the year, July 15-17, 1974, heard a proposal by a committee of the New York State Association of Architects, supported by the president-elect of the California Council of the AIA, that a new owner/architect form of agreement be developed incorporating an itemized cost method of arriving at compensation. In the proposed document the concept of the "Architect's Basic Services" as embodied in AIA document B141 ("Standard Form of Agreement Between Owner and Architect") would not be used; instead, there would be a master list of detailed services provided by the architect from which the owner would select those for which he wished to contract. However, the architect would continue to perform those services which he has traditionally provided. The services not selected would remain available, but if subsequently ordered by the owner would become "additional services" for which additional com-

**Mr. Comb** is a principal in the St. Paul, Minn., firm of Bettenburg, Townsend, Stolte & Comb, Inc. He has been a member of the AIA documents board since 1968.

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penation would be due. The list of services would be an adaptation of the lists in the New York State Council on Architecture's *Guidelines for Cost Base Compensation for Architectural and Engineering Services* and in the California Council's *Comprehensive Architectural Services*.

The board was favorably impressed by the presentation and placed the proposal for development of such a document on its agenda. It was the board's consensus that while some modification of B141 might be necessary to implement this proposal, it is essentially a method for defining the scope of services and amount of compensation. Use of the proposed method will require negotiating skill on the part of the architect and the possession by him of detailed information on his cost of performing services. The proposed document would also enable the architect to include comprehensive services as an integral part of his agreement with the owner.

In this connection, the board noted that the man hour data bank studies now being undertaken by West Coast components of the Institute should be supportive. In drafting a possible new document, the board intends to give its usual concern to the protection of the practicing architect against his inadvertent assumption of legal liabilities beyond those which he and the owner intend him to assume and the duties which he is competent to undertake.

There is no intention, however, to withdraw B141, which now provides, by means of alternative tear-out pages, four methods of compensation: multiple of direct personnel expense; professional fee plus expenses; percentage of construction cost; and fixed fee. The number of questions coming in to AIA headquarters indicates that a number of users have not understood that only the page which covers the method being used for the particular project should be included in the executed agreement.

The board heard a report that the federal interagency committee studying a revision of federal form 251, "Architect/Engineer Questionnaire," is nearing agreement on a new form which A/Es will be asked to submit annually to those agencies in whose work they are interested. The AIA architects in industry committee has prepared, and the board has reviewed, a similar form proposed for use in the private sector. The board is hopeful that the two forms can be brought into substantial conformity before either is issued. The federal committee has welcomed and has received input from the AIA, including the draft of the proposed private sector form.

Review of AIA document A201, "General Conditions of the Contract for Construction," has begun by the board. A task force has met with representatives of

the National Society of Professional Engineers and Construction Specifications Institute to consider changes which have been proposed within or to the three organizations. Few, if any, of the proposed changes would significantly affect the responsibilities of owner, architect or contractor. Most of the suggestions for change are editorial, but even here, a major change in format is not contemplated. Some procedural matters, i.e., handling of shop drawings and samples and processing of the schedule of values, may be taken out of the general conditions for inclusion by the specifications writer in division one of the specifications, but the basic requirements that these items be furnished will be retained in the general conditions. There is no deadline for issuance of a revised A201, but a publication date of mid-1976 seems probable.

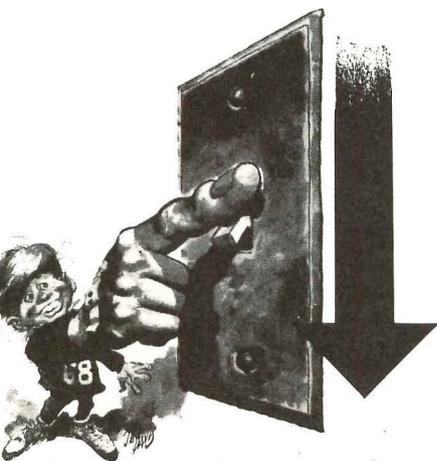
The board has completed its review of a proposed A210/CM document, an edition of the general conditions to be used with the agreement between owner and contractor where there is a construction manager on the project whose agreement with the owner is an AIA Document B801 ("Standard Form of Agreement Between Owner and Construction Manager"). A task force of the board is working on proposed B141/CM (Owner/Architect) and A101/CM (Owner/Contractor) documents for use under the same circumstances so that there will be available a complete package of documents for the construction-manager mode. The board originally produced B801 and is working on the companion documents to respond to the needs of two groups of architectural practitioners: those architects wishing to or being required to work with an outside construction manager, and those architects wishing to offer their own services as construction managers. For both groups the intent is to produce documents reflecting a completely professional approach to defining the duties and responsibilities of both architect and construction manager, yet providing to the owner the respective services and commitments he requires in professional service contracts. It should be emphasized that only those architects believing themselves fully equipped and competent to do so should offer their services as construction managers under B801. Architects should carefully consider whether their rights and responsibilities are properly and adequately defined in all of the agreements covering a project where the owner has engaged or intends to engage another entity as construction manager; B801 and its future companion documents are intended to assist in this consideration.

The board is concerned with the growing number of instances in which the architect is required to "certify" that a project has been designed in strict accordance with certain codes and that the completed

structure complies in detail with his drawings and specifications and the applicable codes. Liability resulting from such a certification is specifically not insurable in professional errors and omissions policies. The board, with the assistance of its legal and insurance counsel, is investigating a model form of certification that an architect could responsibly sign without jeopardizing his professional liability insurance coverage.

The 1974 edition of document A701, "Instructions to Bidders," is now available. This complete revision and amplification of the document was prepared with great assistance from the Minnesota Society of Architects' committee on documents. When used with a properly worded advertisement or invitation for bids, for which instructions appear on the jacket of A701, it requires no supplementation for most biddings. Over 55,000 copies have been sold by AIA so far this year.

Handbook chapters 5, "Selection of the Architect;" 9, "Owner and Architect;" and 10, "Architect and Consultant," are under revision. Proposed new chapters include chapters 22, "Urban Design" and 23, "Codes and Standards." A task force of the board is working, with cooperation from members of the professional interior design groups, on formulating a prospective package of interior design practice documents. It is expected that this will become a significant area of activity for the Institute in the future. □



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## Antonin Raymond: An Autobiography.

Rutland, Vt.: Charles E. Tuttle Co., 1973. 330 pp. \$27.50.

This beautifully illustrated book reveals a grand panorama of the work and life of an important contemporary architect. The more than 700 illustrations, many in excellent color, and the interesting narrative complicate a discussion of all the surprising details. The display of Raymond's architecture and art is more impressive than his writing, which he himself calls an unfamiliar medium. The autobiographical material is handled as a succession of episodes, vignettes of personalities, annotated enumeration of jobs and assorted opinions on architecture and art.

Raymond reminisces about his childhood in rural Bohemia and his student years in Prague. He was influenced by publication of the work of two stars on the early horizon of architectural modernism at the turn of the century: Frank Lloyd Wright and Auguste Perret.

In 1910, Raymond took a steamer to New York City, where he worked for four years, primarily in the office of Cass Gilbert. A splendid fee for a rendering enabled him to make a trip to Europe. He visited Africa and Italy before the outbreak of World War I, and was among the lucky passengers to be on the last ship back to the States. It was on this ship that he met his future wife.

An important turning point in his work came when Frank Lloyd Wright invited the Raymonds to Taliesin, where they stayed about a year. The stories about Wright's habits makes this section the most entertaining part of the book.

Soon afterwards, he was drafted for service in World War I, and his work in the newly established Intelligence Service points to another of his talents. His knowledge of languages and his background as a radical Czech nationalist emigrant enabled him to stay close to international political developments.

Raymond could have turned his abilities as a painter into a career by itself, and the book has many engaging examples of his work as an artist. Perhaps the greatest example of his mural art is the vast fresco in the Gunma Music Center in Japan, which I found to be one of the best state-



ments anywhere of the integration of the arts.

After his rich experience on the Imperial Hotel in Tokyo with Wright after World War I, Raymond set up his own practice in Japan. With the exception of an interruption caused by World War II when he practiced from his remodeled farm in Pennsylvania, his principal work has been done in Japan.

He introduced modern Western architecture to Japan, consciously trying to amalgamate his ideas with the traditional architecture of that country. He was perhaps unduly concerned about stylistic influences on his work, notably by Wright, Perret and Le Corbusier, but it is to his great credit that he never went along with fads in architectural styles or mindless mannerisms. It is refreshing after two decades of form-givers to hear this voice against design from outside in, against facade art for art's sake.

Of his earlier work, the residential architecture in wood is most charming. His larger buildings, notably the Tokyo Golf Club, speak the clear language of contemporary European modernism. Against a background of given social and human circumstances, we understand why his work had to be very often inventive and could be executed only with the help of highly skilled local craftsmen in a custom-built manner.

The straightforward building for the *Reader's Digest* was the first permanent structure to rise from the ashes of the war in Japan. A long series of commissions followed, and Raymond built for himself a pleasant office and home. In my opinion, his most important large building is the Gunma Music Center in Tasasaki. I stopped to see it and admire it when I

was on my way to a little temple where the architect Bruno Taut resided. The center is a success as a total design, beautifully executed.

In recent years, Raymond has designed many residences in which his wife has shared in the work. A fine artist with a sure hand in furniture design, her influence and cooperation are felt everywhere in his work.

The book allows the enjoyment of much hitherto unpublished work, and the rich details of the architect's personal background make a contribution. And the publication itself is a pleasure to behold. *H. H. Waechter, AIA*

**The Containment of Urban England.** Peter Hall, Ray Thomas, Harry Gracey and Roy Drewett. Beverly Hills, Calif.: Sage, 1973. 2 vols. \$35, vol. 1; \$25, vol. 2.

The verdict is in. The jury, the Political and Economic Planning group (PEP), headed by Peter Hall, has completed a comprehensive research study on the British planning system since World War II. British planning, whose achievements have been inflated by many planners in the U.S., has been effectively punctured by this thoroughly documented research.

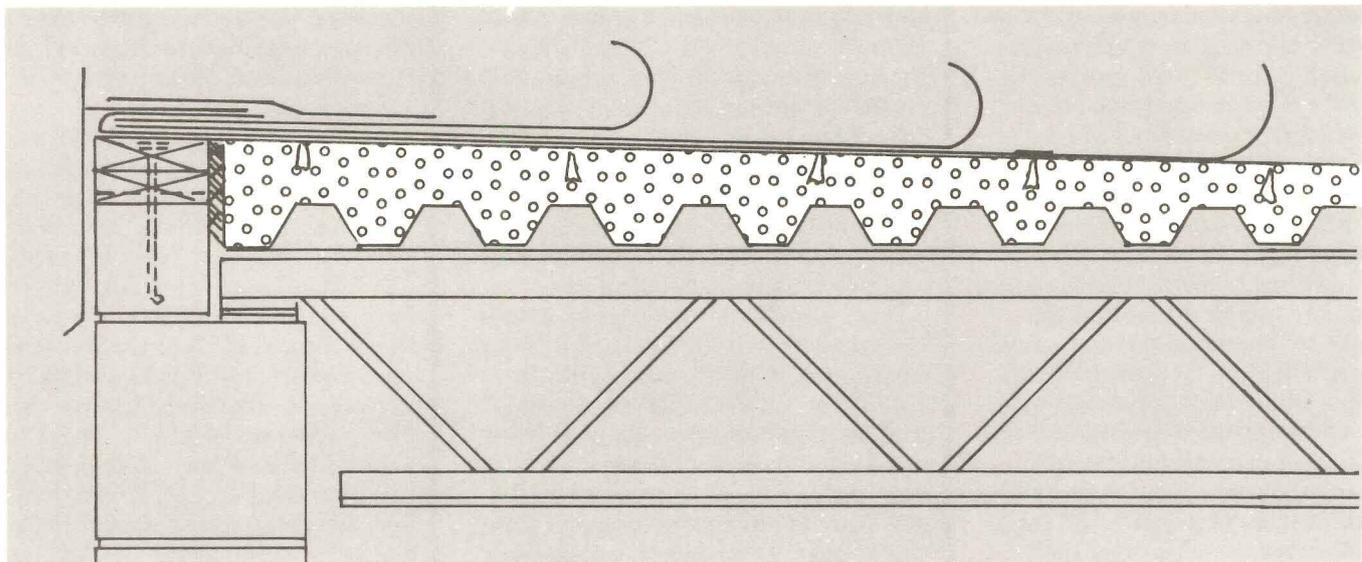
The authors contend that British planning has not been contributive to the rise in the general quality of life. Rather, its effect has been to support vested interests in the urban setting, to retard constructive social and economic change and, generally, to disrupt the housing market to the extent of increasing the difficulty of families in finding suitable housing.

The first volume, which establishes the context for analysis and evaluation, focuses on British urban and metropolitan growth processes beginning in the 19th century. Numerous case studies of contemporary metropolitan areas are included. The second volume concerns the planning system, its objectives, its operations and its impacts. The 1947 Planning Act is seen as the formal beginnings of the British planning system. A substantial amount of fascinating historical material is included, however, which leads up to the fateful 1947 act.

In my opinion, these two volumes are a must for university and other planning



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libraries. This cost (\$60 for the two volumes) may be prohibitive in respect to personal libraries; after all, the main value of the books may be to researchers. The conclusions are extremely valuable, of course, to all in the urban design and planning field.

Fortunately, the basic conclusions are available for \$12.50 in a book titled *Planning and Urban Growth: An Anglo-American Comparison*, by Marion Clawson and Peter Hall (The Johns Hopkins University Press, 1973). This book received a rather lengthy review in the February issue of the AIA JOURNAL. This book gets to the basic issues in which the U.S. planners would be most interested more quickly and economically. *Michael B. Barker, Administrator, AIA, Department of Environment and Design*

**Terrain Analysis: A Guide to Site Selection Using Aerial Photographic Interpretation.** Douglas S. Way. Stroudsburg, Pa.: Dowden, Hutchinson & Ross, 1973. 392 pp. \$29.50.

This publication contains information to help determine what uses and activities are appropriate in a geographic region. The determination is based upon an interpretation of basic data gained from aerial photography and other sources. General data are followed by interpretations of each basic landform category.

The discussion of the processes of physical geology is simply stated with a supplementary informative graphic presentation. The complex subject of the systems of soil classification is presented in considerable detail as essential background but without any conclusive substance. Another general topic of the book is an outline of important points and issues in site selection. The outline is then discussed for each of the six broad categories of landforms plus several sub-categories.

The landform category is to be established from aerial photographs for a broad, general area. The discussion of each landform in the six categories follows the outline presented earlier. It is an analysis of the development potential of broad categories of landforms, with a consideration of both wide regional concerns and limited on-site questions.

Items discussed include sewage disposal, solid waste disposal, trenching, excavation and grading, dewatering, construction materials, soil compaction, groundwater supplies, pond or lake construction, foundations and highway construction. A number of the items vary within any given landform and are important on any given site, yet the techniques presented have only the most general application. They would be useful only in large-scale regional or national planning.

The subjects covered are only part of

the facts needed to make a regional site determination. The scope is limited to a geological approach. The data pertinent to on-site evaluation seems to be too general for firm recommendations in any specific case. The book frequently reaches deeply into specific factual material, but it has a contradictory breadth of scope and application. *John C. Gailard, Director, AIA Urban and Housing Programs*

**Architecture of Skidmore, Owings & Merrill, 1963-1973.** Introduction by Arthur Drexler; commentaries by Axel Menges. New York: Architectural Book Publishing Co., 1974. 281 pp. \$27.95.

SOM has executed an amazing number of design projects over the period covered by this book: 1963-73. Its staff of about 1,000 located in seven cities in this country and abroad has worked on commissions for many building types: libraries, museums, sculpture gardens, hotels, printing plants, industrial structures, commercial highrises, university buildings, urban complexes, etc., etc. This book, with text in English and German, documents the firm's work. Copiously illustrated with handsome photographs, this is an "office brochure" *par excellence*. Each example shown has lengthy captions to give the reader information about such things as the intention of the design, site feature, mechanical systems, structural considerations. There are interior and exterior photos, plans and diagrams.

The extensive introduction by Arthur Drexler, who is head of the architecture department of the Museum of Modern Art in New York City, is an interesting analysis of SOM's work. He praises the firm for its "technical brilliance and a standard of professionalism second to none" and for its championship of "desirable change." In conclusion, he comments: "Having written some of the best passages of American architectural history, it now seems fair that SOM should be expected to perform as well in the next phase."

**Vandalism.** Edited by Collin Ward. New York: Van Nostrand Reinhold, 1974. 327 pp. \$13.95.

A weekly news magazine recently estimated that vandalism costs this country billions of dollars a year—and is growing worse. Police believe that only one in three cases is ever reported. Last year, it cost New York City more than \$1 million for park vandalism alone and another \$2 million to clean graffiti off subways. But vandalism is not confined to big cities—it occurs in affluent suburbs and in small towns as well.

This book of essays, edited by a British designer of housing and schools, is a definitive study of vandalism, outlining the problem, analyzing the social causes and

offering solutions. Designers, or "modifiers of the environment," are assigned responsibility for avoiding materials and components that are most vulnerable to attack.

To help in this task the author offers guidelines to give the architect specific information on such matters as surface textures, color, patterns, materials, maintenance and strength of components in resisting attack. Some of the things to be avoided: soft textured, easily scratched, light in color materials; glass in large panes; cast iron signs; external copper piping; plastic control buttons in elevator accessible asbestos cement roofs; access to flat roofs; open spaces under stairs; hidden corners in entrance halls; nooks and crannies; surface electrical wiring in public spaces; lever handles to doors, etc., etc.

Chapters on planners and developers and vandals apply primarily to the British scene, but we all know of instances in this country where the design, as Ward puts it, is "more stupidity than crime." But, he adds, "Stupidity does far more harm in the world than crime." Environments with the impregnability of prisons will suffer from vandalism. "A carpeted prison is still a prison."

A final section on coping with vandalism points up that some such acts may be a necessary outlet for human emotions. "Might we not conclude," asks Ward, "that the destructive fury of the vandal is a thwarted form of creativity, and that an environment with 'unmake,' loose ends, loose parts, alternative uses and variables would be one in which the vandal in all of us would be transmuted into the creator in all of us and our children?" A final quotation of Charles Peguy suggests that if the function of our society, at best, is to be but caretakers of cathedrals built by our ancestors, we shouldn't wonder that out of sheer distraction the windows of those cathedrals are smashed. This is an important book about our society, really. Its contributors are architects, planners, sociologists, psychologists and criminologists. And contemporary society needs their viewpoints of them all.

**Modern Architecture: The Architecture of Democracy.** Revised edition. Vincent Scully Jr. New York: Braziller, 1974. 158 pp. \$8.95.

There are three parts to this excellent work in which Professor Scully examines the way in which the architecture of democracy is related to contemporary thought and political action. The titles of the book's divisions are "Fragmentation and Continuity," "Order and Act" and "Twelve Years After: The Age of Irony." The "twelve years after" refers to the fact that this is a revised edition of a work first published in 1961, and this part of the book brings Scully's analysis of major de-

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velopments in modern architecture up to date. Much has happened in the intervening years, he says. He finds that the late Louis I. Kahn "occupies a very special position during the decade." Kahn became the "new hero-architect" of the early 1960s and was "perhaps the last such creator-formgiver that we shall see."

As readers of the first edition know, nearly half of the book is given over to photographs of architectural projects, and they range all the way from the Spanish Stairs of Rome (1721-25) to a 1971 design by De Bretteville, Hodgetts & Kupper for a mobile theater. As Scully remarks, the book is not a "full history of modern architecture . . . but it does attempt to define that architecture's historical dimensions, to evaluate its meaning in terms of modern life, and to trace the major developments which have taken place in it."

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**History of Urban Form: Prehistory to the Renaissance.** A. E. J. Morris. New York: Wiley, 1974. 268 pp. \$19.75.

"This book is the best single-volume general history of urban planning and development that has yet appeared, and I think it unlikely that a better one will be written." These words of high praise are by the discerning and respected scholar John W. Reps of Cornell University's department of urban planning and development, who has written an introduction to the book. Morris traces 5,000 years of city development, placing all this activity in a social, economic and political context while discussing such topics as climatic influence, defense systems, water supply, landscaping and population effects and other components of urban growth.

Morris points out that the great majority of urban places covered in the book were not "planned" and to call his book a history of urban "planning" would be inaccurate. This history of urban forms, then, begins with the earliest settlements of man and continues through the Greek city-states, Rome and the Empire, medieval towns and Renaissance cities in Europe. A final chapter discusses the early history of urban form in this country to the end of the Civil War. "Subsequently," Morris writes, "the advent of mass-produced, factory-system industry brought about the continuing modern period, a record of which must be reserved for a later volume."

Appendices cover less extensively China, Japan, Mexico and parts of the world other than Europe. There are more than 300 illustrations, more than half having been drawn by Morris, who is an English architect and town planner.

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**Architecture of Neel Reid in Georgia.** James Grady. Athens, Ga.: University of Georgia Press, 1973. 204 pp. \$29.75.

Neel Reid was the principal designer in the firms of Hentz & Reid and of Hentz, Reid & Adler. The ability of the firms, says Grady, was appreciated from the beginning of their practice, and their architecture is highly valued to this day. Reid died in 1926 at the age of 41, at the peak of his career.

The young architect made an important contribution to the architecture of Atlanta and of other Georgia towns. This catalog of his work is limited to a study of existing buildings in Georgia—with the exception of the Atlanta Athletic Club, which was destroyed after its inclusion in the book. The selection is mainly of houses—mansions, villas, cottages and small city homes. Grady, who is professor of architecture at the Georgia Institute of Technology, includes photographs of interiors and landscaped gardens as well as of exteriors. There is a brief section on other structures than residences, and here are portrayed such buildings as a children's library, a railway station and a store.

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**Gothic vs. Classic: Architectural Projects in Seventeenth Century Italy.** Rudolf Wittkower. New York: Braziller, 1974. 191 pp. \$12.50 hardbound, \$4.95 paperback.

In 17th-century Italy, an esthetic problem that created considerable controversy revolved around the question of how to finish major Gothic structures that had been started in earlier years. Some theorists and architects thought that the cathedrals should be finished according to Gothic principles; others argued for the reason of classicism. As a result of the conflict, there were either compromises or complete cessation of building.

In this book, Wittkower analyzes the documents, the exchanges, the appeals to the authorities concerning the facade of the Milan Cathedral, the vaulting and facade of San Petronio in Bologna and the facade of the Duomo in Florence. His text is complemented by 159 illustrations which show plans, models and drawings of the structures. He concludes with an essay on the theory and practice of Borromini and Guarini because, he writes, their names "cannot be left out of a consideration of the Italian attitude toward Gothic architecture in the 17th century."

This is the last work of Wittkower, who died in 1971. Its publication is brought about due to the efforts of his scholarly wife, Margot Wittkower, who had collaborated with him in the extensive search of archives in Italy.

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**What Can She Be? An Architect.** Gloria and Esther Goldreich. Photographs by Robert Ipcar. New York: Lothrop, Lee & Shepard, 1974. 48 pp. \$4.05 AIA members, \$4.50 nonmembers.

"This is Susan Brody. Susan is an architect. She designs buildings, draws up plans

for their construction and makes sure that the work is done well." Thus begins this book that will appeal to *both* young girls and boys who may be considering architecture as a career. Ms. Brody's busy life is portrayed, and described in simple language, as she draws plans, selects materials, consults with co-workers and clients, inspects projects on site and finally ends her day relaxing in her own backyard with family members. The photographs by Robert Ipcar complement the straightforward and easily comprehended text.

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**Construction Equipment Guide.** David A. Day. New York: Wiley, 1973. 563 pp. \$24.95.

The choices, cost and controls of equipment are essential factors in satisfactory construction work. This practical guide covers self-powered equipment common and widely used for construction work. A background in engineering is not necessary for the reader, but Day suggests that an "ability to visualize physical concepts" will be helpful.

The first three chapters concern the choice of equipment and its costs and control. Also, guiding principles are laid down for such things as construction operations and materials, power sources and forces governing motion of equipment.

Other chapters discuss specific equipment such as compressors and pumps, power excavators and cranes, foundation and erection equipment, concreting equipment. For each piece of equipment discussed, Day gives design features, methods of operation, capacity and costs.

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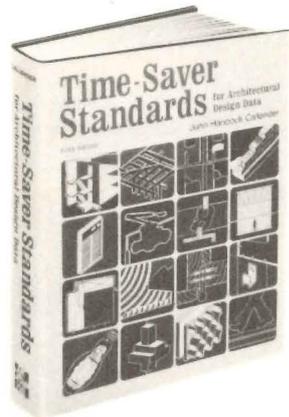
**Public Housing in Europe and America.** Edited by J. S. Fuerst. New York: Wiley, 1974. 216 pp. \$13.50.

The provision of adequate housing for low- and moderate-income families is a universal problem. Individual contributors, all of whom have experience in housing policy in their respective countries, survey here the public housing programs of Great Britain, France, Israel, West Germany, Denmark, Sweden, the Soviet Union, Hungary and the U.S. The programs are placed in a social and historical context, and housing is related to transportation, education and employment.

All the essays stress the fact that adequate housing is a primary consideration whether supplied through strong national government support, direct state assistance or cooperatives and labor organizations. In a concluding essay, the editor stresses that there must be "large-scale governmental involvement in the planning, promoting and financing of housing for a large segment of the population," whether a nation is socialist or not. Even where such programming is carried out by the private sector, city and national governments "must make meaningful plans for building for the whole population."

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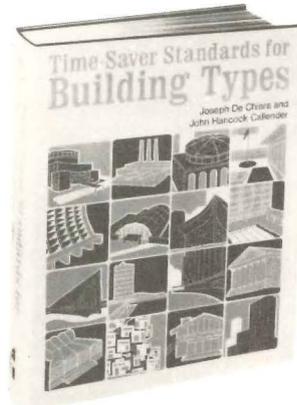
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# LETTERS

**Student Exhibition:** "Logical procedures" were followed by individuals responsible for the organization of the 1974 AIA convention. When dealing with the design of any event, logic is often not enough, as the resulting situations that occurred concerning the student exhibition proved.

Such a realization might be difficult for economists or bankers to perceive: Categorical methodologies work mathematically. But for the architect—whose goal is a product that is more than the sum total of its parts—flexibility of thought, the propagation of the exception and the advantageous use of accidents must be tolerated if a qualitative statement is to be created.

The AIA can cover its logic with sweet-scented adjectives, but that will never expand the range. The student exhibition site at the convention was an embarrassment to the educational sector of the profession. When will the AIA realize that it must guarantee quality and not subsidize shabbiness? The best organized procedures are not enough if the results amount to a meaningless visual and intellectual hodge-podge.

The title of "student work" must never self-justify mediocrity. Given time, funding and commitment, the AIA has no

excuse for the omission of quality in any statement that it makes.

*Belinda C. Reeder  
Design Faculty  
Department of Architecture and Planning  
The Catholic University of America  
Washington, D.C.*

Ms. Reeder's letter has cut me to the quick! I apologize on behalf of the several hundred students who participated in creating the "meaningless visual and intellectual hodge-podge." Let me digress for a moment, however, on the value of providing an educational experience for students and the general public as opposed to an experience for prolix visualists.

The annual AIA convention is an ideal forum for students in which to exchange ideas and experiences. This year's theme, "A Humane Architecture," provided the impetus to go one step further. That step was to inform the general public that a humane architecture could, indeed, be created and experienced—then folded up and moved away—and that architecture can be fun and can be appreciated by young and old, rich and poor and even the unenlightened. Hundreds of photographs of the site, swamped with Washington's humanity, prove this point.

The "hodge-podge" was created and executed by students—not the AIA—for the public who derived appreciation from the effort. I sincerely thank the AIA for

giving us this opportunity to share our learning experience with others.

*Patrick B. Davis Jr., President  
Association of Student Chapters/AIA  
Washington, D.C.*

\*\*\*\*\*: Dave Clarke gets six stars for his guide to Washington, D.C., restaurants in the April issue. We found the guide to be accurate, the food to be good, but the six stars are for the humor that he managed to sneak in the pages of the normally austere AIA JOURNAL.

Should Clarke visit Texas, I will be glad to give him my personal list of choice "enchilada emporiums" and to tell him a few jokes of my own.

*David R. Braden, FAIA  
Dallas*

**Bicentennial Idea:** In 1976, the U.S. will celebrate a birthday. The 200th year is an important milestone in the American industrial revolution. Has the country reached maturity? Now our society is facing serious problems growing out of our very successes, and maturity is evidenced by the wisdom to recognize and the will to face those problems: diminishing natural resources, environmental deterioration, major threats to the economy and the potential permanent disruption of the industrial state. We are now engaged in a growing effort to use our resources more wisely, to change our directions from

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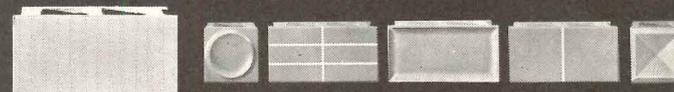
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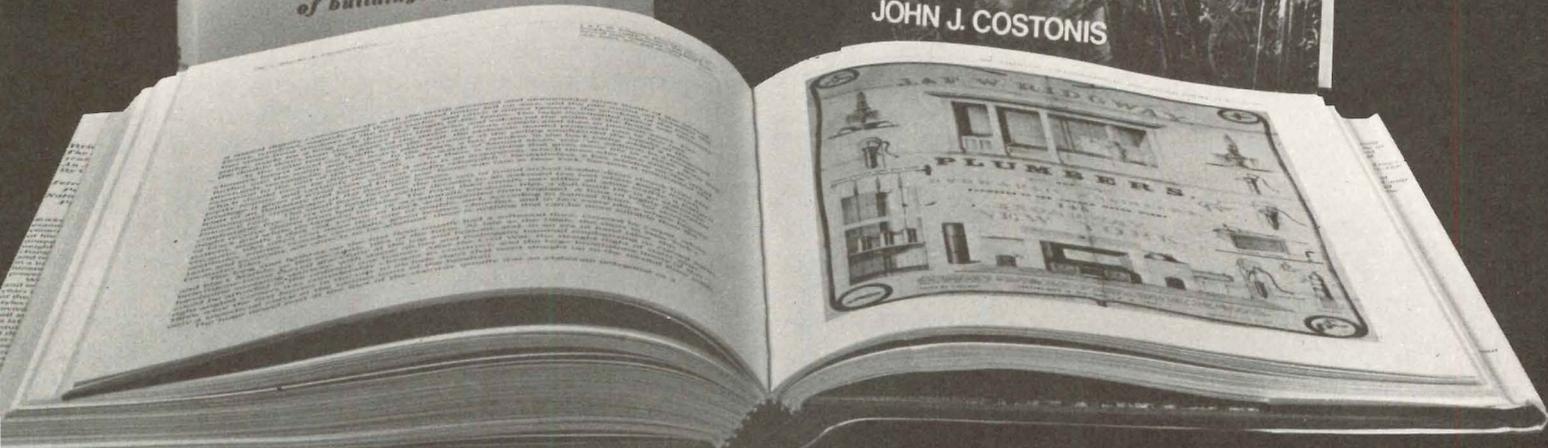
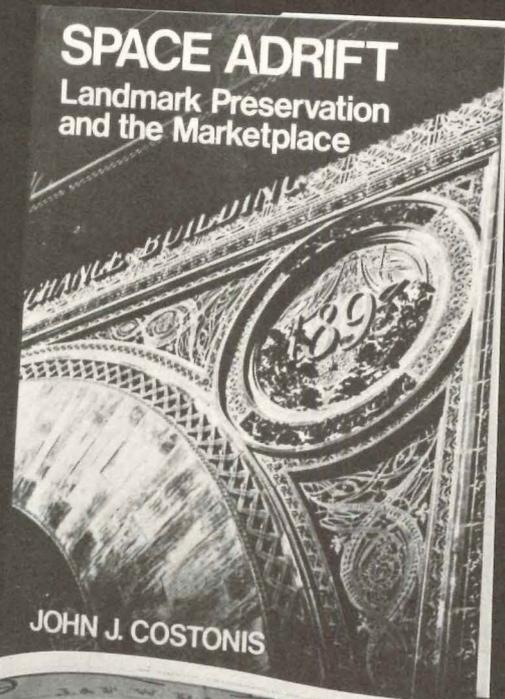
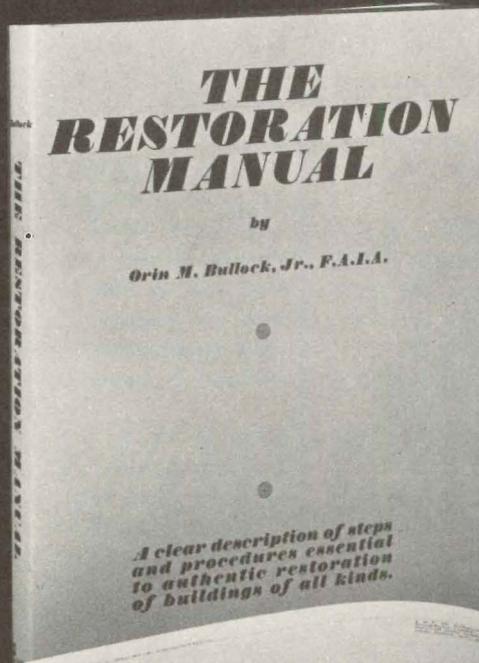
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headlong waste to conservation and to preserve our society for ourselves and for future generations.

There are many energy conservation projects in existence, and some 20 to 30 solar energy projects for major buildings are in design and will be operating in 1976. We have something positive to say to the world—to those countries just entering their own industrial revolutions. We have examples of many conservation projects for them to follow so that they can reap the good and avoid the fallout that we have experienced.

Let's invite them to our birthday party in a major international effort and demonstrate the evidences of their progress in the better utilization of resources, too. Let's bring the millions of visitors to our installations, all of them instrumented and presented to show what they really are. Let's have a major exhibition in Washington, D.C. (at the Smithsonian?) to show our new directions. Each state, too, can feature similar works.

It would be appropriate for the energy committee of the American Consulting Engineers Council to sponsor this celebration, to stimulate the appropriate government agencies to grab the ball, finance the program and promote it. I'm sure that our fellow professionals in the AIA will want to join in.

Time is short. Let's show that we can parlay our progressive energy conservation programs on top of our great heritage into real progress. Comments invited—action required.

*Fred S. Dubin, President  
Dubin-Mindell-Bloome Associates, P.C.  
42 W. 39th St.  
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## EVENTS

**Aug. 30:** Entries due, The Highway and Its Environment awards program. Contact: Federal Highway Administration, Office of Environmental Quality, Scenic Enhancement Division, Washington, D.C. 20590.

**Sept. 8-10:** International Conference on Urban Transportation, Pittsburgh. Contact: P.O. Box 2149, Pittsburgh, Pa. 15230.

**Sept. 10:** Abstracts due, Call for papers for international conference of the Design Methods Group to be held in summer of 1975 on theme of "The Application of Systematic Methods to Designing." Contact: Donald P. Grant, P.O. Box 5, San Luis Obispo, Calif. 93406.

**Sept. 10-11:** Timber Structures Institute, University of Wisconsin, Madison, Wis.

**Sept. 11-14:** National Inventions and New Products Conference and Exhibition, Cleveland Engineering and Scientific

Center, Cleveland, Ohio. Contact: Cleveland Engineering Society, 3100 Chester Ave., Cleveland, Ohio 44114.

**Sept. 12-13:** Health Care Facility Planning Seminar, University of Wisconsin, Madison, Wis.

**Sept. 13:** Information Systems for Environmental Planning Program, University of California, Davis, Calif.

**Sept. 16:** Postmark deadline, entries for AIA 1974/75 honor awards program. Contact: Maria Murray, AIA Headquarters, 1735 New York Ave. N.W., Washington, D.C. 20006.

**Sept. 17-18:** Air Pollution Control Association, Southern Section, Meeting, Parliament House, Birmingham, Ala. Contact: Don Meffert, Rust Engineering Co., P.O. Box 101, Birmingham, Ala. 35202.

**Sept. 19-20:** Institute on Designing Architectural Interiors to Support Task Performance, University of Wisconsin, Madison, Wis.

**Sept. 19-22:** New Jersey Society of Architects Convention, Playboy Club, Great Gorge, McAfee, N.J.

**Sept. 22-25:** Apartment and Condominium Conference, San Francisco. Contact: National Association of Home Builders, 15th and M Sts. N.W., Washington, D.C. 20005.

**Sept. 23-25:** Architects and Consulting Engineers Lighting Conference, Nela Park, Cleveland. Contact: Manager, Lighting Institute, General Electric Co., Nela Park, Cleveland, Ohio 44112.

**Sept. 26-27:** Virginia Chapter/AIA Fall Meeting, Mariner Motor Inn, Virginia Beach, Va.

**Sept. 27:** Construction Management Conference, School of Architecture, Washington University, St. Louis.

**Sept. 30:** Applications due, 1974-75 fellowships, Creative Artists Public Service Program. Contact: Ms. Karen Brand, CAPS Program, Room 2303, 250 W. 57th St., New York, N.Y. 10019.

**Sept. 30-Oct. 3:** Council of Educational Facility Planners International Conference, Atlanta. Contact: CEFP, 29 W. Woodruff Ave., Columbus, Ohio 43210.

**Oct. 1-3:** Industrial Designers Society of America Annual Meeting, Copley Plaza Hotel, Boston. Contact: IDSA, 1750 Old Meadow Road, McLean, Va. 22101.

**Oct. 4:** Entries due, Annual Swimming Pool Awards competition. Contact: National Swimming Pool Institute, 2000 K St. N.W., Washington, D.C. 20006.

**Oct. 7-9:** Architects in Industry Seminar, LaCoquille Executive Seminar Center, Palm Beach, Fla. Contact: Maurice Payne, AIA, AIA Headquarters, 1735 New York Ave. N.W., Washington, D.C. 20006.

**Oct. 8-10:** Michigan Society of Architects Annual Convention, Kalamazoo, Mich.

**Oct. 8-Nov. 3:** Architecture and Gardens Tour of Japan. Contact: Kenneth M. Nishimoto, AIA, 147 S. Los Robles Ave., Pasadena, Calif. 91101. □

## Deaths

**Sheldon Lee Anonsen**, Minneapolis  
**L. Robert Blakeslee**, Detroit  
**Samuel Cooper**, FAIA, Atlanta  
**Ralph D. Corwin**, North St. Paul, Minn.  
**Maarten Dirk Den Hartgog**, Hanover, N.H.  
**Willem Marinus Dudok**, Hon. FAIA, Hilversum, The Netherlands  
**Albert Howell**, Atlanta  
**Paul James Huston**, Palo Alto, Calif.  
**Alexander J. Majeski**, Manchester, N.H.  
**William H. March**, Mobile, Ala.  
**Carl H. Martin**, Dayton, Ohio  
**Ralph H. McPherson**, Greenville, S.C.  
**John F. Osborne**, Wyckoff, N.J.  
**Odis Poundstone**, Atlanta  
**Diedrich F. Rixmann**, St. Louis

**Tallie B. Maule, AIA:** Winner of award for design excellence, Maule was the chief architect of the Bay Area Rapid Transit system, who commissioned many designers, landscape architects and artists to provide BART stations with varied and distinctive art and adornment. In 1970, he resigned as chief architect for Parsons Brinkerhoff-Tudor-Bechtel, BART's engineering consultants, to join the San Francisco firm of Hertzka & Knowles in the design of the \$35 million Embarcadero station, scheduled for completion next year.

Maule, who died on June 17 at the age of 57, worked first for Skidmore, Owings & Merrill as a designer and planner at Oa Ridge, Tenn. He was the architect of projects in Chicago and Michigan, before spending more than three years in Japan for SOM. In 1955, he returned to San Francisco, where he headed his own group of architects. He designed the Palo Alto Office Center, a complex of nine buildings, as well as other office structures, schools and apartments. He was educated at Princeton University and studied in Italy.

**Alan Dunn:** Recipient of AIA's 1973 Architecture Critics' Citation, Dunn was praised by the Institute as a "most perceptive and penetrating analyst of architecture." He effectively satirized the architectural profession in his thousands of cartoons published in *The New Yorker*, *Architectural Record* and other magazines. He was a witty, and often sad, critic of city life and the way in which we continue to destroy our architectural heritage. Dunn, who died in May, was eulogized by *The New Yorker*, his obituary saying that his "talent flowered with age. . . . To die quickly in one's eighth decade at the very top of one's powers is an enviable end, and not an occasion for mourning."

Dunn once advised that we just curl up in a chair, "bemused and confused," and enjoy coping with a changing environment. "If you love it, it will love you back."

## Newslines

**Mario J. Ciampi, FAIA**, who heads his own firm in San Francisco, was invited by the San Francisco Art Commission as an award of honor to prepare a one-man show to highlight the 28th annual arts festival. The show will run at the Capri-Asunder Gallery from Sept. 17-Oct. 1 and then move on to other locations.

**The new overhaul and maintenance hangar** at the Miami International Airport has won the American Consulting Engineers Council's Grand Conceptor award. The \$26-million facility is the design of the Miami architectural/engineering firm Greenleaf/Telesca, Kellermann & Ragnett.

**The International Federation of Prestressed Concrete** has appointed Ben C. Perwick Jr., professor of civil engineering at the University of California in Berkeley, as its president to serve a four-year term. He is the first American to head the 10-year-old world group of experts in the prestressed concrete field.

**Equal consideration for the handicapped** promotion, special training or transfers demanded of any firm with a contract of more than \$2,500 with the federal government. Labor Department rules, which

went into effect June 11, state that non-compliance may result in court action, withholding of payments or termination of contracts. On January 1, 1976, past performance on hiring handicapped persons will be reviewed to determine eligibility for any future federal contracts.

**The university** will be used to help attack city problems in a one-year experiment initiated by the Department of Housing and Urban Development. HUD will grant up to \$10,000 to a university in the name of doctoral candidates to support dissertations on housing and urban problems. Closing dates for proposals are Nov. 1 and Mar. 1. Guidelines for the submission of proposals may be obtained from Dr. Earl W. Lindviet, Room 4270, HUD, Washington, D.C. 20410.

**Two architects**—Alfred Easton Poor, FAIA, of New York City and Paul Thiry, FAIA, of Seattle—were each awarded the Herbert Adams Memorial Medal by the National Sculpture Society for services to American sculpture.

**Don P. Schlegel, AIA**, chairman of the department of architecture, University of New Mexico, has been installed as the new president of the Association of Collegiate Schools of Architecture. Vice president and president-elect is Bertram Berenson, AIA, dean of the college of art

and architecture, University of Illinois, Chicago Circle.

**A 3 percent drop** in the value of 1974 construction contracts is predicted by George A. Christie, chief economist of the F. W. Dodge Division, McGraw-Hill Information Systems. The decline, says Christie, is due largely to the government's "austere monetary and fiscal policy designed to curb inflation."

**To control and redirect growth forces** in order to restore and sustain the human environment, the Center for Growth Alternatives has been established. The new center will collect and disseminate information on practices that influence population and consumption growth, convene varied expertise and viewpoints to define positive growth alternatives and encourage a national dialogue on growth. For more information write CGA, 1785 Massachusetts Ave. N.W., Washington, D.C. 20036.

**Women comprise only 2 percent of all engineers**, and one of them—Helen L. Plants, professor of mechanical engineering and mechanics at West Virginia University—has been elected as a director of the American Society of Engineering Education. This is the first time in its 82-year history that the society has elected a woman director. □

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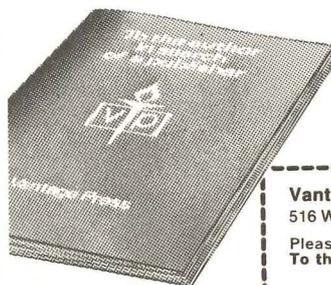
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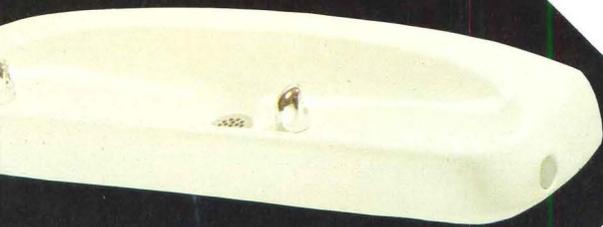
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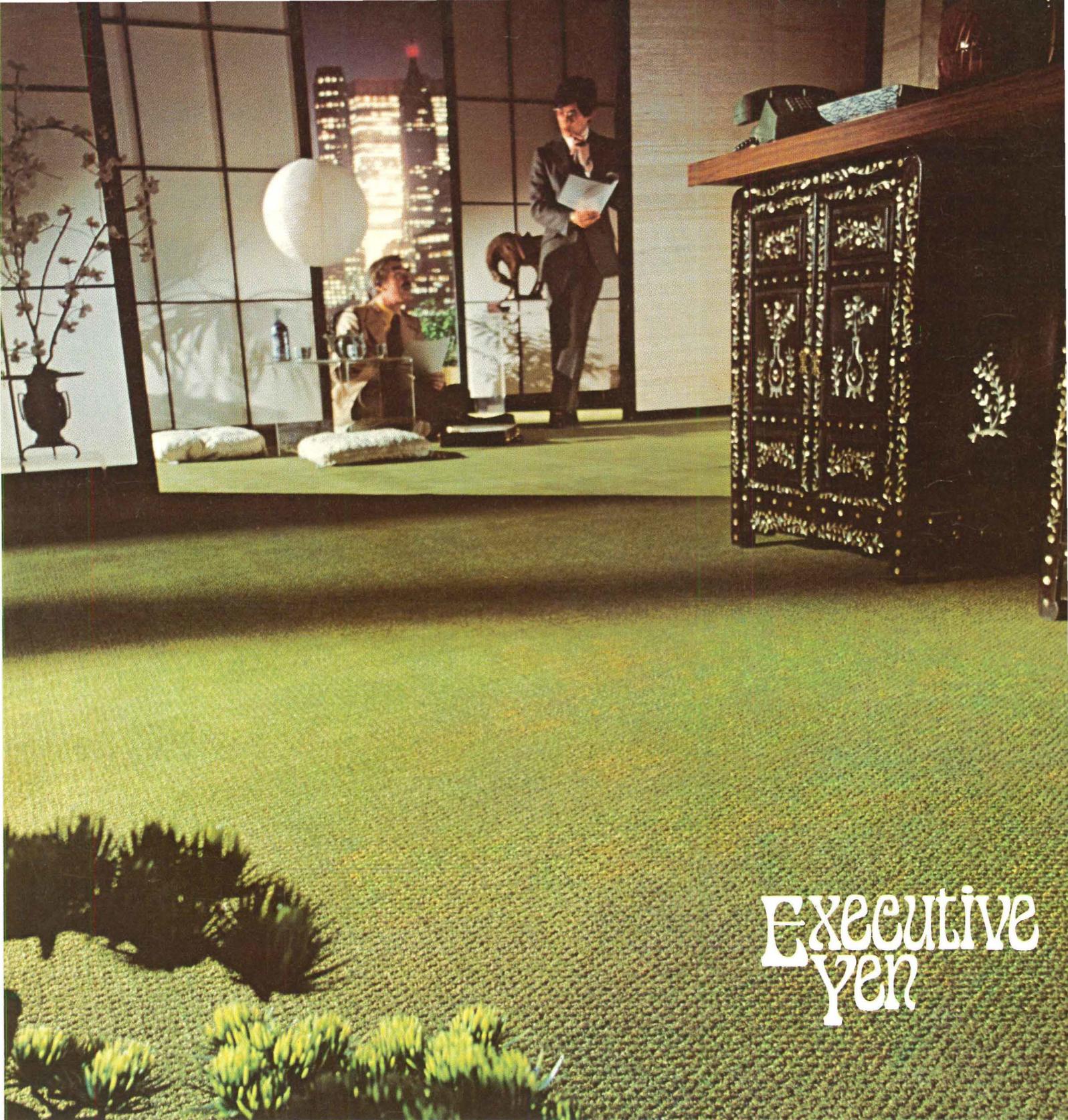
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