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Listen to Your Architecture

Texas Architect



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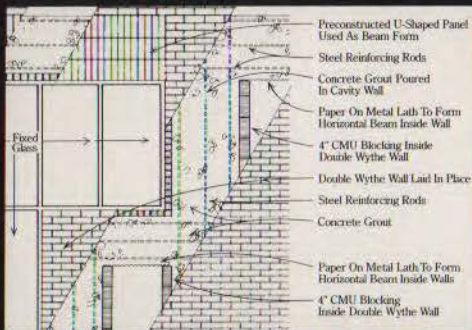
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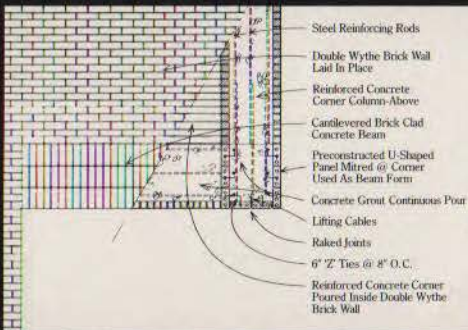
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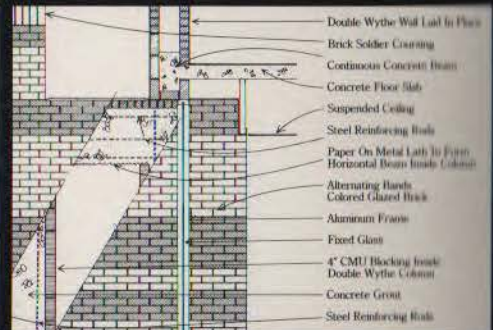
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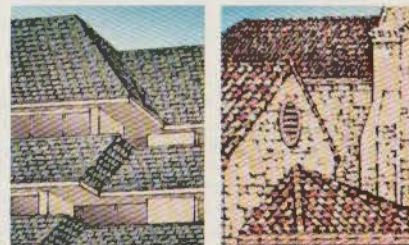
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Coming Up: *The May/June issue of Texas Architect will feature a lead article on the architecture of correctional facilities in Texas, a look at standards of design and concerns for civil rights in an increasingly complex building type. Plus, coverage of the winning projects in TSA's 1979 Interior Architecture Design Awards Program.*

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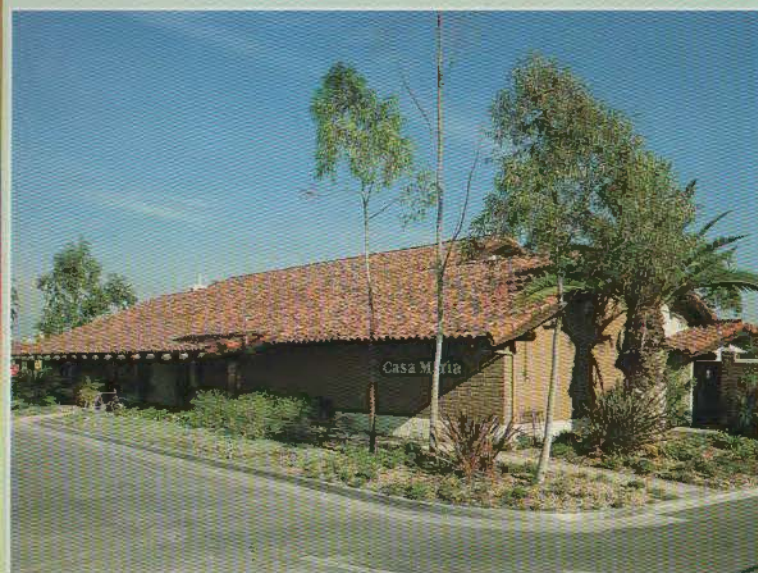
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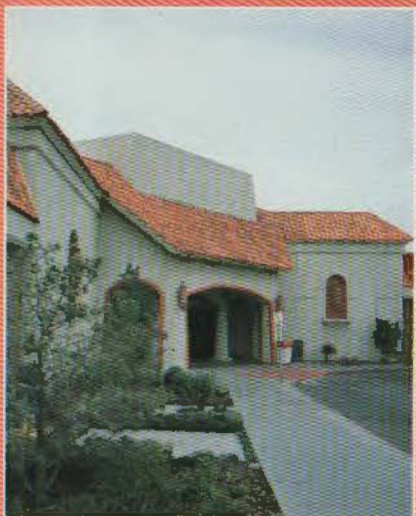
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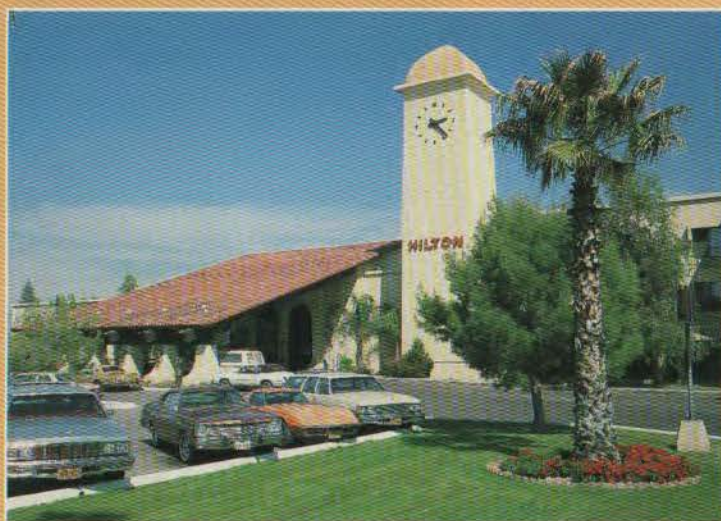
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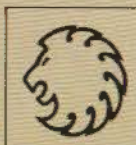
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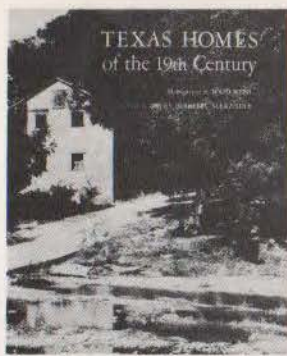
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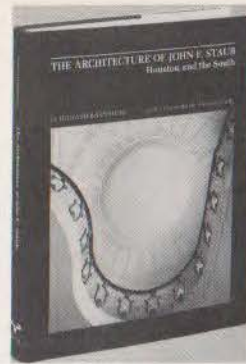
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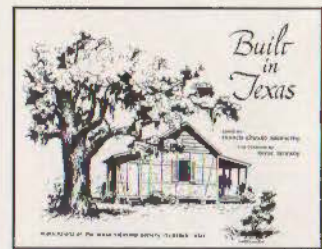
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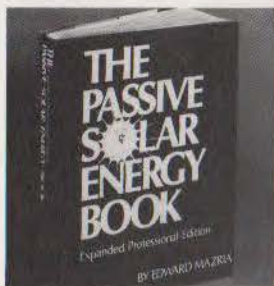
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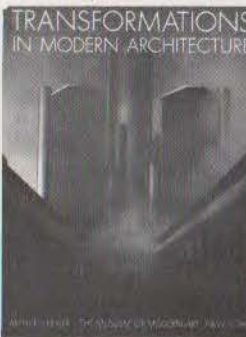
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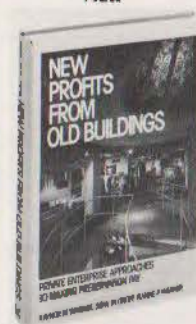
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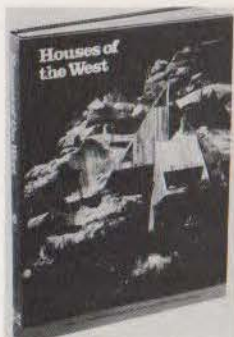
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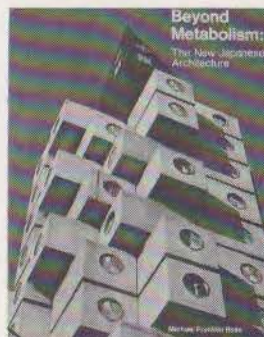
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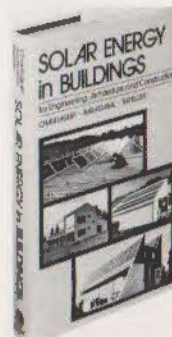
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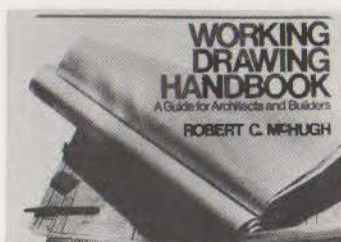
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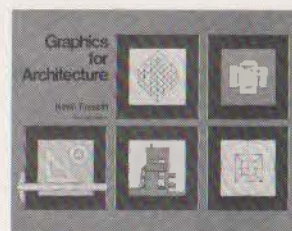
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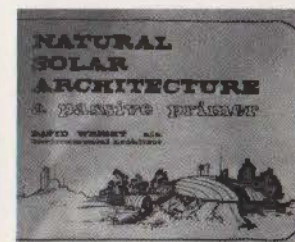
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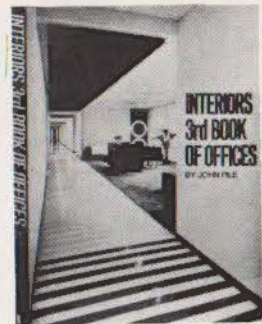
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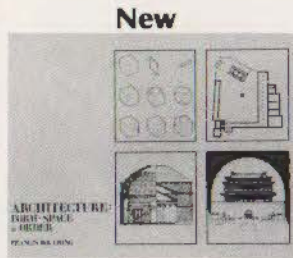
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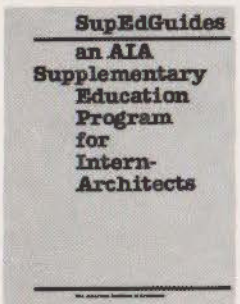


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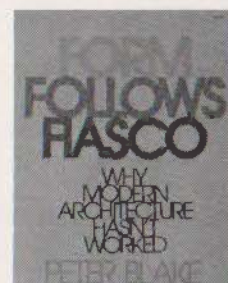
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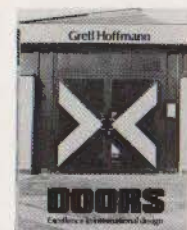
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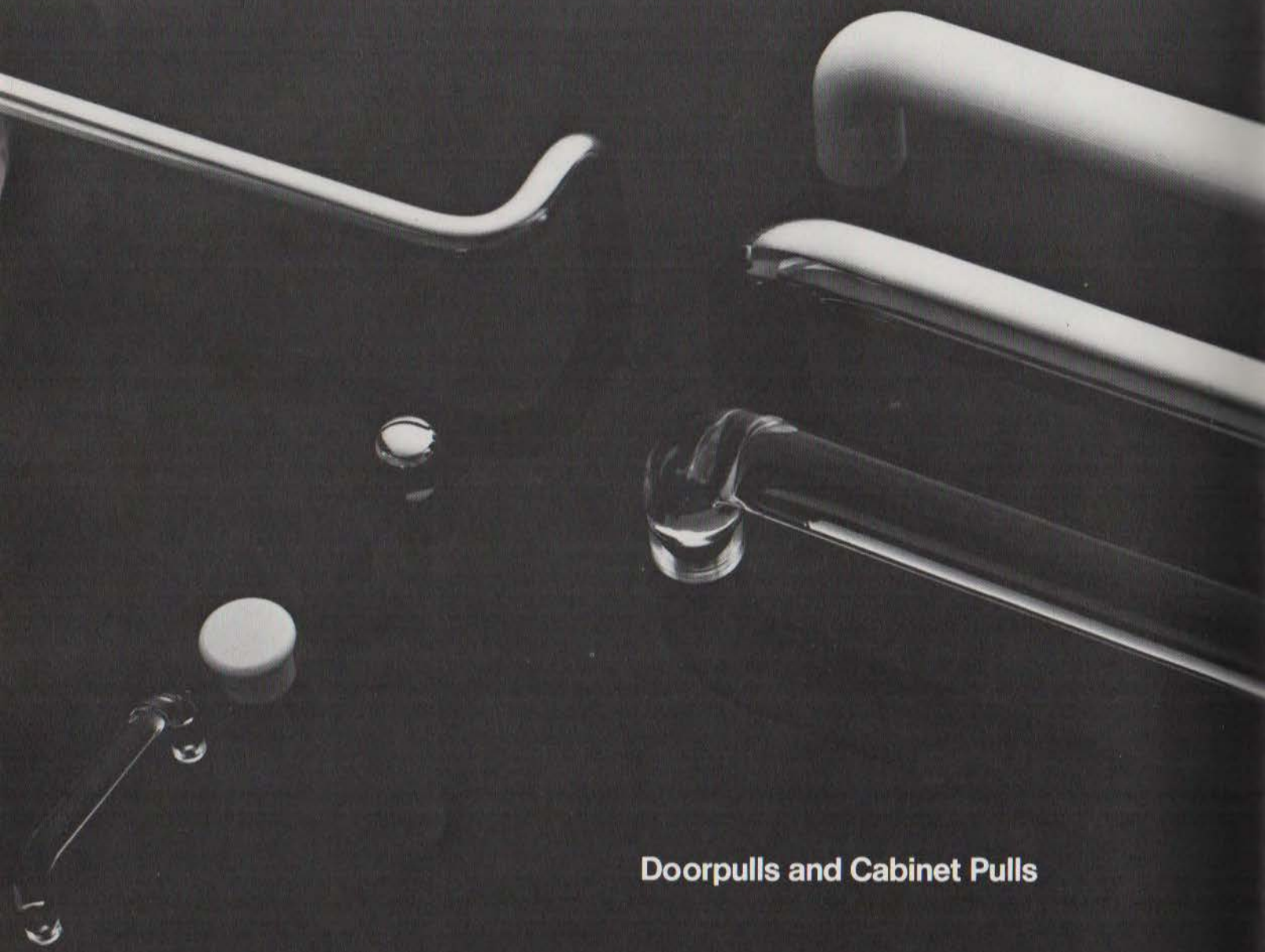


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In the News

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Lady Bird to Receive 1980 AIA Medal And Honorary Membership



AIA has selected Mrs. Lyndon B. Johnson, former First Lady of the United States and Honorary TSA member, to receive a 1980 AIA medal in recognition of an

"individual who has inspired and influenced the architectural profession," and honorary membership in the Institute for her "distinguished contributions to the architectural profession."

The awards will be presented during the AIA National Convention June 1-4 in Cincinnati.

An active supporter of efforts to preserve the natural resources and the cultural and architectural heritage of the nation, Mrs. Johnson founded the Committee for a More Beautiful Capitol in 1965, which worked to transform Washington, D.C., into a city of flowers, public parks and playgrounds. She also served as honorary chairwoman of the 1974 American Landmarks Celebration; wrote the foreword to "With Heritage So Rich," the report of the Special Committee on Historic Preservation and the United States Conference of Mayors in 1966; hosted the first meeting of the President's Advisory Council on Historic Preservation in 1967; and publicized the nation's natural and cultural heritage during a "Discover America" tour in 1968.

Her efforts in preservation and beautification of the built and natural environments were noted to have contributed to the passage of the Historic Preservation Act of 1966 and the Highway Beautification Act of 1965.

In 1966, the AIA presented the former

First Lady with a special citation in "recognition of her determination to restore beauty where it exists and to protect our natural resources." In 1968, Mrs. Johnson delivered the first B. Y. Morrison lecture at the 100th AIA National Convention in Portland, expressing concern for the natural and built environments while acknowledging the contributions of the architectural profession.

Active in preservation efforts in Texas, she generously contributed time and money to Austin's Town Lake Beautification Project, the LBJ National Historic Site and the LBJ State Park and Visitors Center. Mrs. Johnson has participated in the decision-making and planning for the LBJ Library in Austin and the LBJ Grove in Washington, D.C.'s Lady Bird Johnson Park, named for her in 1968. Each year, she presents the Lady Bird Johnson Highway Beautification Award to a supervisor of the Texas Highway Maintenance System who has enhanced roadsides and rest areas in the state.



Solar Energy Research Institute.

CRS Joint Venture Wins Owens-Corning Design Award For Solar Research Institute

A four-firm joint venture, under the design direction of the Houston firm Caudill Rowlett Scott (CRS), was named one of two winners in the governmental category in Owens-Corning Fiberglas' 1979 Energy Conservation Awards Pro-

gram for design of the Solar Energy Research Institute in Golden, Colo.

The complex, funded by the Department of Energy, will be a showplace of the state-of-the-art of both passive design and active solar-system application, employing natural lighting and ventilation, thermal-storage rock beds, nighttime cooling, thermal collectors, a biomass-fueled steam boiler, solar-powered Rankine engines, a solar pond, wind-powered generators and an array of photovoltaic solar-cell collectors.

The 518,000-square-foot facility will step down the southern slope of South Table Mountain, with portions of each stepped wing buried underground. The complex actually will be a series of parallel rows of two-, three- or four-story buildings, among which are glass-roofed "solar courts" with operable louvres to capture and store radiant heat.

According to project design director Paul Kennon, FAIA, president of CRS, the southern exposure and buried north side will provide an optimum angle for solar gain and protection from winter winds.

The facility will house research laboratories, offices, an information center, computers and dining and support areas.

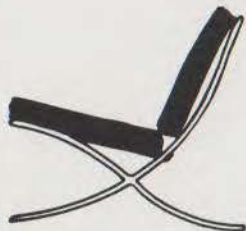
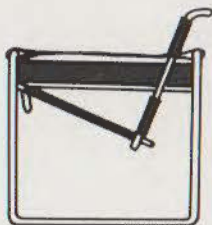
Designed to use less than a quarter of the energy consumed by a conventional building of equal size and demand, according to ASHRAE standards, the complex will depend upon renewable resources for 80 percent of its energy needs. Conceding that most of the active solar systems are not yet cost-effective, architects point out that the Institute is designed to be a research and demonstration project as well as a national example of solar energy application.

The largest source of energy for the building, which architects estimate will require 118,000 Btus per square foot

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per year, will be a biomass steam-turbine generator, supplying 35 percent. The second largest source will be four steam-driven Rankine engines, producing 100 kilowatts each from hot water provided by 40,000 square feet of roof-mounted solar collectors. Excess steam heat will be stored in two thermal storage tanks for use on cloudy days.

The first phase of the project is scheduled to be completed in 1983. The second phase will include installation of the wind generator, photovoltaic collectors and "solar pond" (for heat collection, storage and transfer to domestic hot water systems).



Rick Gardner

Glassell Art School studio.

Glassell School of Art Wins Interior Design Award

The Houston Museum of Fine Art's Alfred C. Glassell, Jr., School of Art, designed by Houston architect Eugene Aubry, FAIA, of S. I. Morris Associates, was the hands-down winner in the educational category in *Interiors* magazine's 1st Annual Interiors Awards program.

"Of all the entries in the Interiors Awards competition," said *Interiors* in a special awards issue, "the Glassell School of Art collected by far and away the most compliments. It was a clear-cut winner in the educational category."

Jurors' comments included: "It's beautiful, the best thing we've seen, exquisite."

The two story, 41,699-square-foot building is made of eight-by-eight inch glass blocks with solar gray reflective coating forming the outer walls of the classrooms and admitting natural light. The structure is divided into two sections by a central concourse covered with a 33-foot-high barrel vault ceiling made of 12-inch by 12-inch glass blocks.

Other categories in the Interiors competition included offices, restaurants, industrial, recreational, adaptive reuse, showrooms, energy-efficient and low-budget.

Atty. Gen. White Rules Against Closed Meetings For Hiring Architects

A recent ruling by Texas Attorney General Mark White holds that the Texas Open Meetings Act prohibits a governmental body from meeting in closed session to discuss the employment of an architect.

The ruling reaffirms a 1977 opinion by TSA legal counsel Lloyd Lochridge that the hiring of an architect does not fall within an exemption in the Open Meetings Act which authorizes a closed or executive session for the hiring of a "public officer or employee."

Responding to recent inquiries regarding that exemption, White pointed out that architectural, engineering or consulting firms would be classified as independent contractors and not officers or employees, "since they would undertake to do a specific piece of work for [a governmental body] using their own means and methods without submitting themselves to the control of the [governmental body] in respect to all details of the work."

White noted that his ruling is consistent with those of other states which have considered similar legislation.

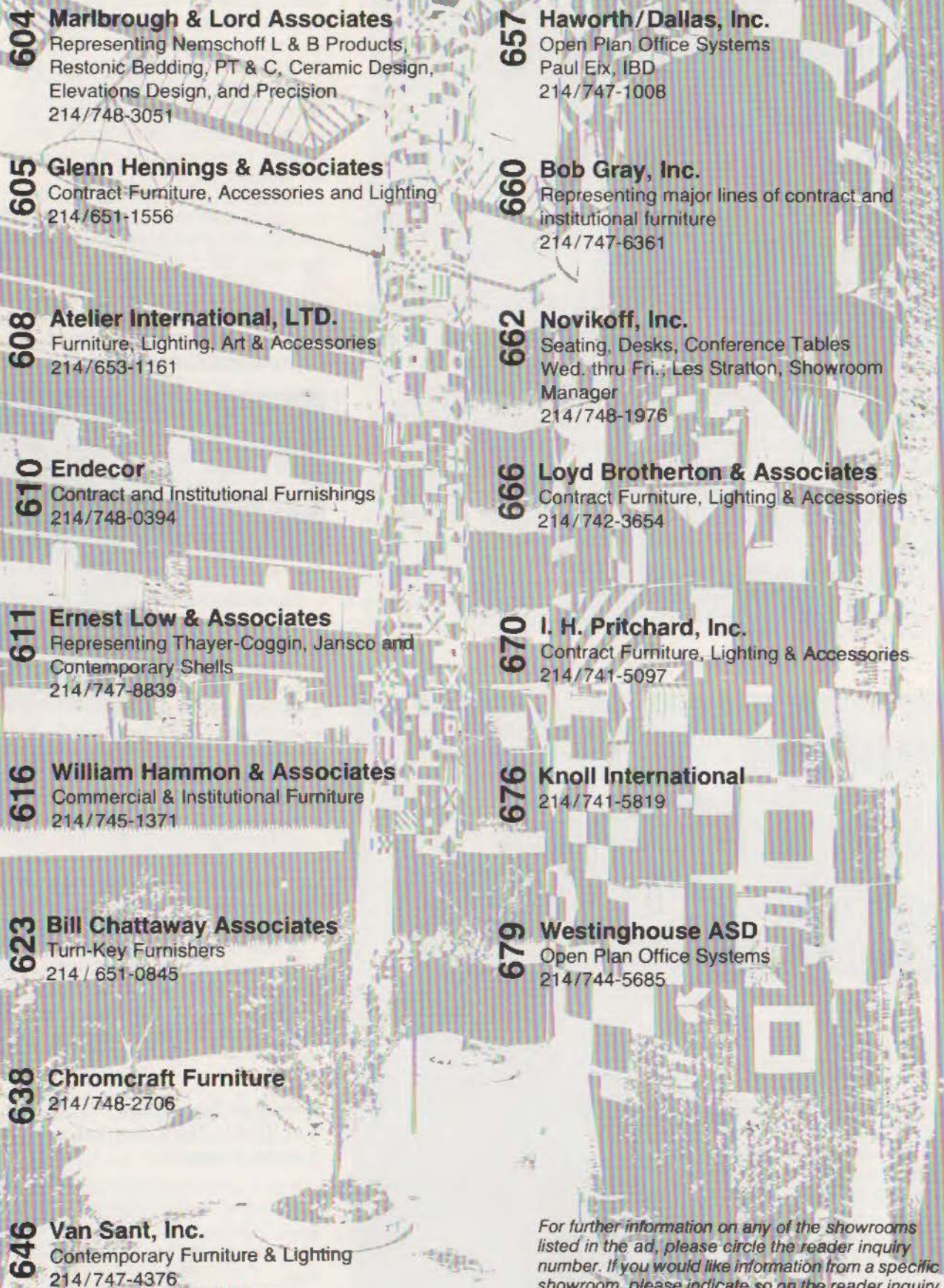
Houston Leads Nation In 1979 Housing Starts

Houston led the nation in new housing starts in 1979 with a total of 49,902, in a year that saw the first drop of residential building activity in five years nationwide, according to a report from the F.W. Dodge Division of McGraw-Hill.

The 1979 nationwide total of 1,767,905 was 11 percent less than the total of 1,975,640 in 1978, according to the report, which attributed the decline to "drastic actions of the Federal Reserve in early October," disrupting mortgage money in responding to "double-digit inflation, concern with the value of the dollar, and strong demands for credit . . . requiring a firm monetary policy through most of the year."

The other most active standard metropolitan statistical areas in 1979 were: Phoenix, with 40,929 units; Dallas, with 40,599; Los Angeles/Long Beach, with 38,490; Chicago, with 31,961; West Palm Beach/Boca Raton, with 30,565; Tampa, with 30,553; Riverside/San Bernardino, with 25,742; Seattle/Everett, with 24,945; and Denver, with 24,204.

Although the top of the list in 1979

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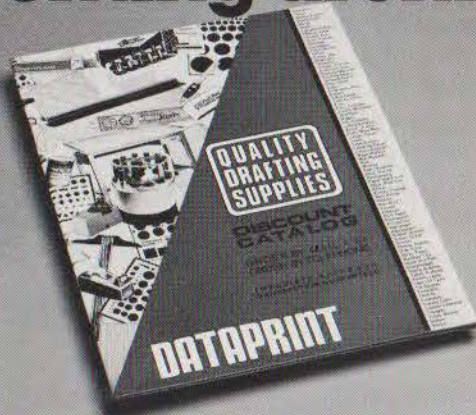
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In the News, continued.

housing starts, the Houston area saw a 27 percent decline in total residential and non-residential building activity from 1978 to 1979, according to Dodge, with most of the drop occurring in non-residential (which includes commercial, manufacturing, educational, religious, administrative, recreational and other buildings not designed for shelter).

The standard metropolitan area of Houston consists of Brazoria, Fort Bend, Harris, Liberty, Montgomery and Waller Counties.

Montgomery County Hospital Receives In-Progress Award In National Competition

Richard Payne



Montgomery County hospital.

The Montgomery County Medical Center Hospital, designed in joint venture by the Houston firms Brooks/Collier and Pierce Goodwin Alexander, was one of four projects-in-progress cited in a medical-facility design competition sponsored by the UCLA Graduate School of Architecture, Columbia University and *Architectural Record* magazine.

The \$13.4 million, 150-bed general and acute care hospital is now under construction as phase I of the new Montgomery County Medical Center complex on a wooded 91-acre site once part of the George Strake Boy Scout camp near Conroe.

A total of 102 projects were submitted in the national competition, which seeks to recognize innovative planning and a high level of design excellence in a uniquely difficult and complex building type.

Proposals Requested For TSA's Third Annual Grants Program

TSA is now requesting research project proposals for its third annual grants program, organized to investigate the history of architecture in Texas and the Southwest.

Grants in amounts ranging from \$500 to \$4,000 will be available this year for scholarly projects exploring the ideas,

aspirations, theories, idioms and technical and personal facts in the architectural history of the region.

Sponsors hope eventually to develop an authoritative and comprehensive history and analysis of this architecture and to understand its directions for the future.

For submitting proposals, TSA suggests using the format of the National Endowment for the Humanities or the National Endowment for the Arts (Architecture and Environmental Arts Program). This will provide TSA with a consistent submittal format and will facilitate submission of proposals for grants not funded by TSA.

Proposals should be mailed to be received by May 1 to: Mort Levy, Texas Society of Architects, 2121 Austin National Bank Tower, Austin 78701.

Steinman Elected Chairman of TBAE



Beaumont architect Douglas E. Steinman, FAIA, was elected chairman of the Texas Board of Architectural Examiners (TBAE) Jan. 18 during the Board's Annual Meeting in Austin.

Steinman succeeds Wichita Falls architect James R. Rucker, who remains one of the six non-ranking members of the Board.

Other 1980 officers are Abilene architect James D. Tittle, vice-chairman; and Uvalde architect John S. Graves, secretary/treasurer. (TBAE Executive Director is Austin architect Philip D. Creer, FAIA.)

The new nine-member TBAE, restructured by the Architects Registration Law passed last year by the 66th Texas Legislature, also includes public member Trammell S. Crow, 28, son of the Dallas-based international developer Trammell Crow and vice president of the Dallas Market Center. Also on the new board are Fort Worth landscape architect Robert W. Caldwell and San Antonio landscape architect James E. Keeter.

The new registration law abolished the state's landscape architect registration board and combined its licensing function with a revamped TBAE, which eventually will include three public members as terms of the architects currently on the board expire.

Taft Architects Wins P/A Design Citation For Houston YMCA Center



YMCA recreational center.

The Houston firm Taft Architects received a citation in the 27th annual P/A Awards program, sponsored by *Progressive Architecture* magazine, for the design of a proposed YMCA branch recreational center and metropolitan headquarters in downtown Houston.

The facility is situated to maximize views of nearby Spotts Park, with administration and classroom areas lined up in a 350-foot-long building paralleling the street, and a glass-enclosed lobby, swimming pool pavillion and multi-purpose area overlooking the park.

Noting the architectural detailing of the proposed project, juror Robert Stern called it, "a witty, unsentimental design that has the spacious, stripped-down qualities of a warehouse; yet the introduction of abstract versions of traditional architectural rhetoric at the entrances and elsewhere promises a specifically public character."

Presentation of awards took place during the 27th annual P/A Awards luncheon Jan. 18 at the Plaza Hotel in New York. Twenty-nine projects were chosen from a total of 928 entries.

Braden Receives Humanitarian Award From NCCJ



Dallas architect David Braden, FAIA, received the annual Brotherhood and Humanitarian Award from the National Conference of Christians and Jews in ceremonies Jan. 15 during the Construction Industry Brotherhood dinner at the Sheraton Hotel in Dallas.

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Continued on page 67.



PLASTECO skylights

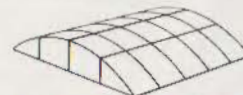
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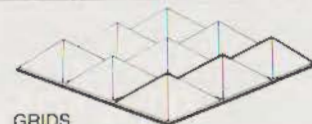
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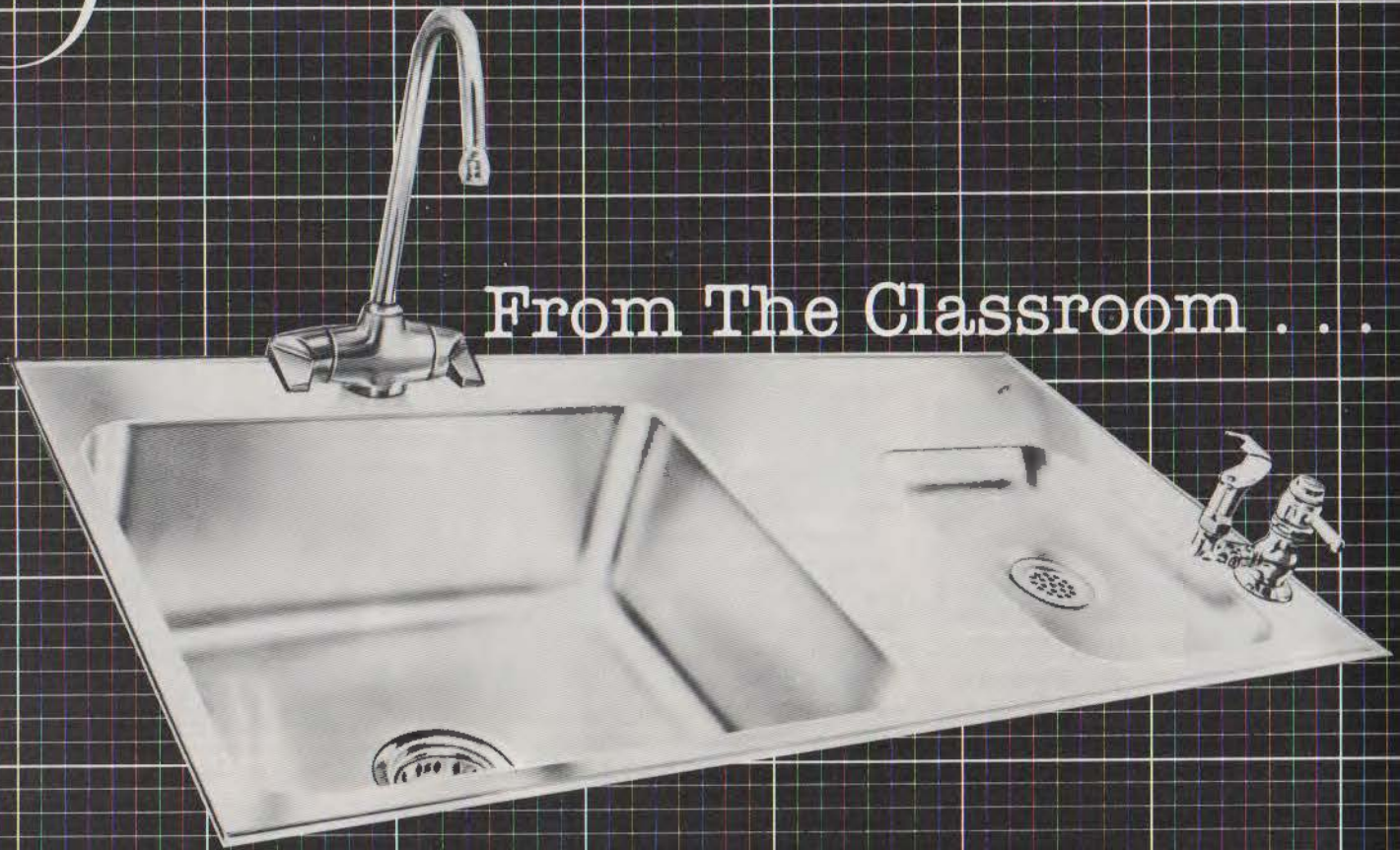
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About this Issue



After decades of mindless waste and conspicuous consumption, in a land where self-indulgence is exalted above most anything else, virtually nothing is more perplexing or difficult to accept than the notion of "running out." We have functioned—quite well, thank you—under the unshakable postwar conviction that if only we can pay for it, then surely we can have it. And in Texas—where superstate status is a by-product of petroleum, where one's automobile is a veritable extension of one's self, and where the feel of the open road is a component of our culture—reaching the bottom of the oil barrel is a thought that tends to be unthinkable.

Disbelief

This inclination toward disbelief in the severity of the fuel shortage is compounded by organized scoffing at the need for alternative energy sources, contradictory "official" predictions and assessments, and a lingering suspicion of profiteering on the part of big oil. A common assumption is that, even if shortages have not been artificially produced as a means of increasing profits, the long gasoline lines have more to do with production rates and bad timing than with an actual dwindling of finite supplies. It is supposed that, left to its own devices, the marketplace eventually will insure a production level adequate to meet demand. Such an assessment calls for increased oil exploration and categorizes energy conservation largely as a stop-gap measure to make things easier until production can be geared up to the point that our own supplies are meeting our own demand.

Petroleum will be regrettably more expensive—so the reasoning goes—but oh so very well worth the price, for those of us able to pay it.

End of an Era

As difficult as it may be to accept, however, the truth is that the oil era is coming to an end. And although precisely *when* is a matter of speculation, the undeniable reality is that we *are* running out. Whether the fossil fuel epoch (defined as the period in which human beings burned up 80 percent of the total supply of oil, gas and coal) ends in this generation, as has been predicted, or whether it lasts for several more, the following observation of oil geologist M. King Hubbert seems significant as a means of putting the matter into perspective: "It is difficult for people living now, who have become accustomed to the steady exponential growth in the consumption of energy from the fossil fuels, to realize how transitory the fossil fuel epoch will eventually prove to be when it is viewed over a longer span of human history." (See "A Reporter at Large: The World's Resources," by Richard J. Barnett, in *The New Yorker*, March 17, 1980.)

Time of Transition

So we find ourselves living during an indefinite period of transition toward a post-petroleum world. And with this realization comes conflicting feelings. On the one hand, we experience the devastating awareness of finitude and its ramifications for a culture accustomed to having anything it can afford. We feel betrayed, as if the promise of the Industrial Age has been rudely broken. And we are forced to cope with the nagging reality that a world of scarcity is a world of struggle.

On the other hand, the transition to new energy uses can be viewed as a time of opportunity (new fortunes are waiting to be made) and a period of challenge (places in history are at stake). And certainly there is something to be said for what has been called America's "new frugality"—a pursuit of the inherent value of trimming down and tightening up, of doing more with less. The need to conserve has imbued us with a common sense of purpose which promises to bring us closer together (and quite literally, as auto-dependence decreases).

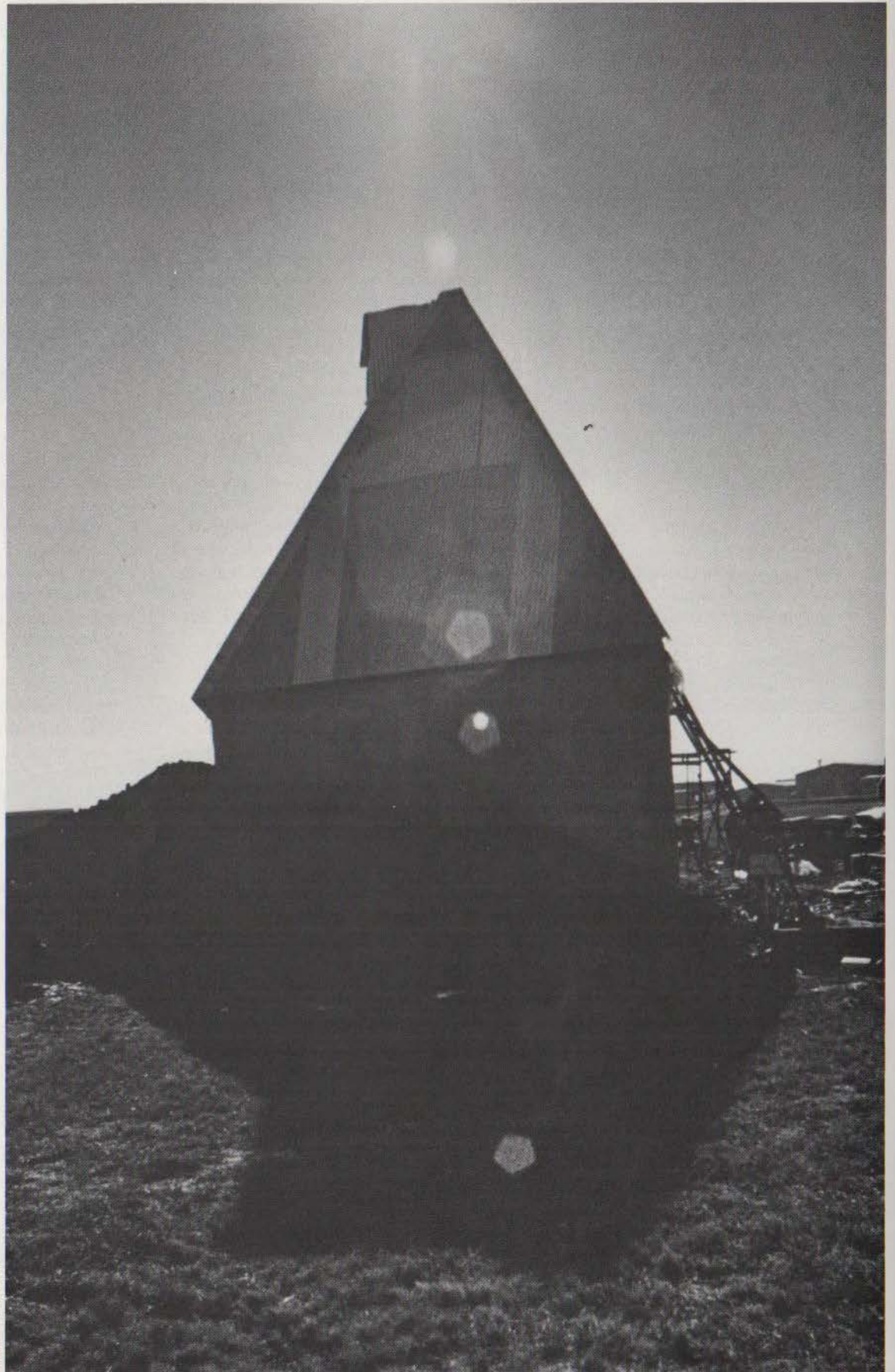
Hard Choices

The key debate in this time of transition centers on what energy options America should pursue most vigorously. The choices are presented in terms of

"hard" and "soft" energy paths—essentially a centralized, capital-intensive utilization of nuclear power versus a reliance on decentralized, labor-intensive soft technologies capitalizing on renewable resources such as sun, wind and vegetation and posing fewer environmental hazards.

Our intent in this issue is not to settle the hard-soft debate, but to look at the energy crisis in the specific context of architecture, examining the architect's role and response. Michael McCullar's lead article reaffirms a widely known fact—more than a third of all the energy consumed in America is used by buildings. This truth bears repeating because it underscores the growing significance of the architect's role and portends a new age of opportunity as well as heightened accountability for the profession. In tracing the recent response of architects to the energy shortage, the article also documents the emergence of a renewed emphasis on passive solar design, which involves the re-learning of age-old techniques for producing an energy-conscious architecture directly responsive to site and climate. Implicit in this "new" awareness are a preference for energy-conserving indigenous materials—including earth—and an acknowledgement of regional style and culture. And while active solar technology has failed as a tack-on justification for the sealed buildings and energy-intensive settlement patterns of the fuel-abundant past, it is viewed as a valuable supplementary source of energy and a promising field of research. Indeed, there is a growing commitment to the notion that—along with the world and our very selves—our most rational choices and our strongest hopes revolve around the sun.

—Larry Paul Fuller



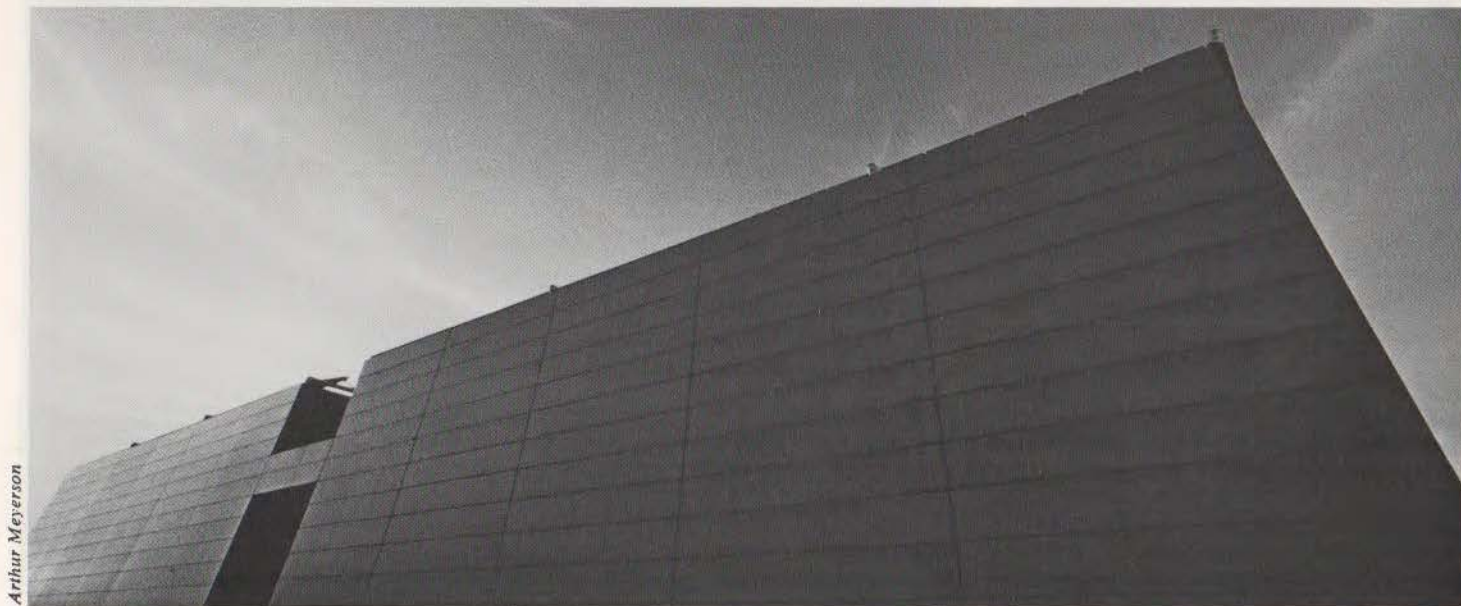
Michael Garrison

ABOVE: Passive-solar test facility at the Balcones Research Center in Austin. FACING PAGE: Developmental Arts Building at the University of Houston at Clear Lake City.

Texas Solar Design

The Sun Never Sets on Architecture

By Michael McCullar



Arthur Meyerson

"Knowledge, in truth, is the great sun in the firmament. Life and power are scattered with all its beams."—Daniel Webster (1825)

Concluding a workshop series scattering knowledge of the sun and its architectural applications statewide, some 500 architects, engineers, scientists, builders, bankers, government and public utility officials and educators, among others, gathered in Austin last December for "Texas Solar Realities '79," a statewide conference sponsored by the Texas Energy and Natural Resources Advisory Council (TENRAC). It was an historic event—"the most comprehensive renewable energy presentation in the history of the state," according to sponsors. Two days at the Austin Marriott offered a glimpse at the latest in solar, wind and biomass energy systems that really worked, along with project exhibits and case studies, as well as insight into the state of the art of solar financing, legisla-

tion and research. "Solar energy's time has come," proclaimed featured speaker Texas Lt. Gov. Bill Hobby.

A year and a half since "Sun Day," May 3, 1978, when that proclamation was first delivered in chorus nationwide, Texas Solar Realities '79 was essentially a progress report on the development and application of cost-effective solar energy systems in Texas. Among the most promising, as it turns out, is the idea that architecture can conserve a wealth of energy simply by being "climate-adaptive"—that is, designed in such intimate contact with its natural site that it can rely almost exclusively on sun, wind, earth and water to adequately provide for human comfort.

This is hardly a revolutionary idea. Inviting the sun with open arms in winter and defending against it in summer is nothing new to architecture. Millennia of human history transpired quite successfully worldwide without the aid of conditioned air (HVAC), which came on the

scene a mere 30 years ago to join with the automobile in reshaping the land- and city-scape.

What is newly unique about climate-adaptive, or "passive solar," design is that of all the alternative energy systems that have been under experimental scrutiny for the last decade—flatplate thermal collectors, photovoltaic cells, geothermal, wind and biomass systems—passive design has proven still to be one of the most cost-effective, and is almost exclusively within the professional realm of the architect.

To trace the recent re-emergence of solar design into a vocabulary of form in Texas architecture, *Texas Architect* talked to several architects specializing in the approach, as well as scientists experimenting with its regional application, state and local officials shaping it into law, and leaders in its promotion as one of the most fundamental remedies for our energy ills. Following is a glance at that evolution.

Bearers of the Light

The alternative energy movement gained its greatest impetus with the Arab oil embargo in 1973, which sent researchers and practitioners scurrying for alternatives in all directions. In Texas, as elsewhere, the effort first turned to technology, focusing primarily on replacing mechanical conventional energy systems with mechanical *solar* energy systems, on buildings designed during the energy glut. As a result, technical systems sputtered and failed, as they are wont to do in experimental phases, or they cost too much for too long to provide even a modest payback on investment. Stigma and bias cloaked the movement early on in fossil-fuel rich Texas, where resistance to the "cosmic yin" traditionally has run just below the surface like the 12-billion ton vein of low-grade lignite that stretches from Texarkana to Laredo. And overzealousness on the part of some solar energy devotees gave skeptics the impression that solar energy was supposed to be an immediate panacea for the energy crisis, clouding its very practical and current value as a supplementary cure.

Texas Solar Realities '79, however, marked an encouraging turning point in the solar movement in Texas. Wrote Daryl Janes of the Texas Solar Energy Society (TX-SES), organizers of the event, in a conference recap: "Hopefully, this all suggests that the energy security (and therefore economic security) of our lives is beginning to take precedence over narrow political bias." Ever aiming at mainstream acceptance of the sun as an infinite source of energy, TX-SES has been conducting solar energy conferences around the state for the last three years: Dallas in 1977, Houston in '78, El Paso in '79. And attendance has grown steadily. In the beginning, however, the stigma of exotica still prevailed. Not the least of their problems, according to TX-SES Executive Director Russell Smith, was the proliferation of solar equipment that didn't work and distributors who didn't care about solving society's energy problems so much as making a fast buck. "Whenever this type of individual enters into any type of industry it tends to lend it a bad name." But while there were a lot of solar systems that didn't perform as advertised, Smith says, there were a lot of systems that did, and word of those workable techniques

Jim Dougherty, Austin American-Statesman



Solar collectors atop Lake Travis home near Austin.

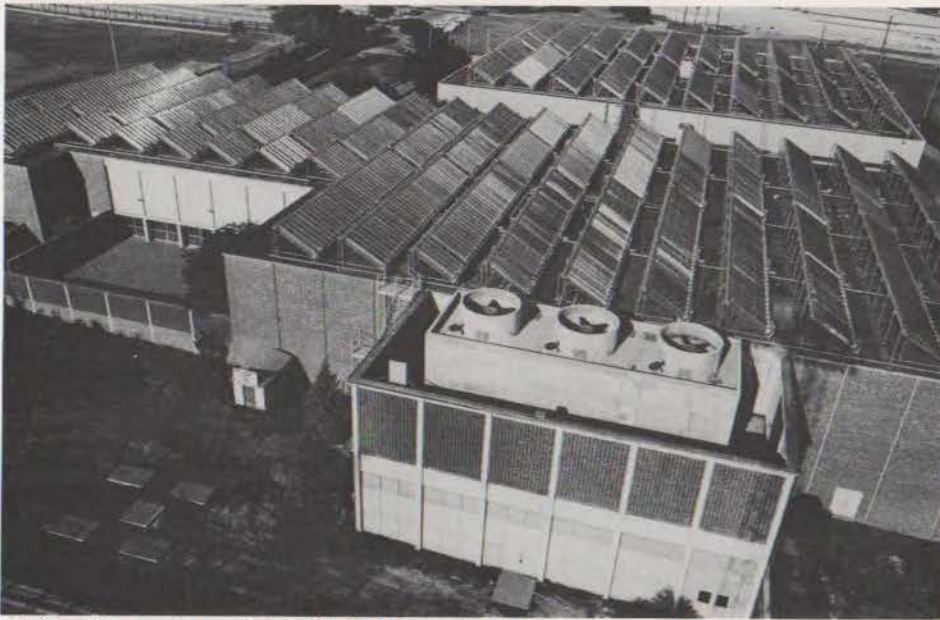
had to be spread. "The society was in no position to police the industry or to protect the consumer. So we reached the conclusion that an educated public is a protected public."

To that end, after the federal government had geared up and gained momentum in the late '70s for a nationwide solar outreach program, under the auspices of the newly formed Energy Research Development Administration (ERDA), the Oakridge National Laboratory in Oakridge, Tenn. (then the federal outreach arm for solar R&D) contracted with TX-SES to conduct three solar workshops across the state in mid-1978. Turnout for this first workshop series, however, proved disappointing. TX-SES chose small to medium-size Texas cities to carry the message to, in regions of the state hardly receptive at the time to alternatives to fossil fuel. "Going to Midland-Odessa with a solar workshop in mid-1978 was sort of like walking into the lion's den," Smith says. "The vast ma-

jority of the people thought that anything that offered an alternative to oil and gas was a threat." On to Waco, where the problem wasn't so much hostility as lack of awareness. "No one there even knew that a solar movement was afoot." Then to Beaumont, of all places, birthplace of the Texas oil industry. "Forget it," Smith says. "That was oil refinery country, one of the highest per capita income areas in the state. They weren't even feeling the pinch."

Solar energy awareness, however, was to grow as fast as gas and oil prices would rise. In the latter part of 1978, the Governor's Office of Energy Resources (later merged with the Texas Energy Advisory Council and Natural Resources Council to form TENRAC) contracted with TX-SES to conduct a workshop series in nine Texas cities throughout the summer and fall of 1979, culminating in the Dec. 6-8 Solar Realities conference in Austin. Turnout for the workshops—held in Austin, Lubbock, El Paso, Hous-

One reason it took so long for the forces to converge in support of passive design was the difficulty in quantifying the concept, which by its very nature seemed to preclude hard engineering analysis.



Active-solar retrofit project at Trinity University in San Antonio.

ton, San Antonio, Dallas, Fort Worth, Brownsville and Corpus Christi—was a far cry from the first series only a year earlier. A total of 2,000 people showed up, all wanting to know about “Solar.”

As TX-SES disseminated that information statewide, Trinity University in San Antonio led the way in solar R&D. One of the most extensive projects to demonstrate the feasibility of mechanically harnessing the sun to existing architecture was a \$1.7 million active retrofit project on the Trinity campus begun in 1977, funded for the most part by the Department of Energy (DOE, formerly ERDA). Sixteen thousand square feet of active concentrating collectors designed to track the sun by pulley, motor and cable were put on the roof of an existing gymnasium to serve the gym and six dormitories (a total of 284,928 square feet of enclosed area). The collectors were hooked up to a central power plant by underground pipes to provide 75 percent of the space and domestic hot water

heating and about 10 percent of the cooling needs of 500 students. The project would be monitored for five years to determine its efficiency and cost-effectiveness. Today, three years later, while the project has proved its technical feasibility for the most part, the general conclusion already is that its high cost is still prohibitive for common application.

As a result of the Trinity experiment, along with a host of others across the state and nation, a shift in research emphasis occurred from active systems to passive systems design on all levels of the effort, from federal sources of funding (DOE and HUD, primarily) to the research labs to trailblazing practitioners in the field. Rather than supplanting active solar systems, however, passive design would include them, putting to work those which had proved feasible and cost-effective (primarily domestic hot water heating) in a so-called “hybrid” combination.

One reason it took so long for the



Oscar Williams

forces to converge in support of passive design, according to Dr. Eugene Clark, physicist and head of Trinity’s regional Solar Data Center, was the difficulty in “quantifying” the concept, which by its very nature seemed to preclude “hard engineering analysis.” As a result, Clark says, passive methodology didn’t have a lot of credibility four or five years ago, so there wasn’t much federal funding to support it.

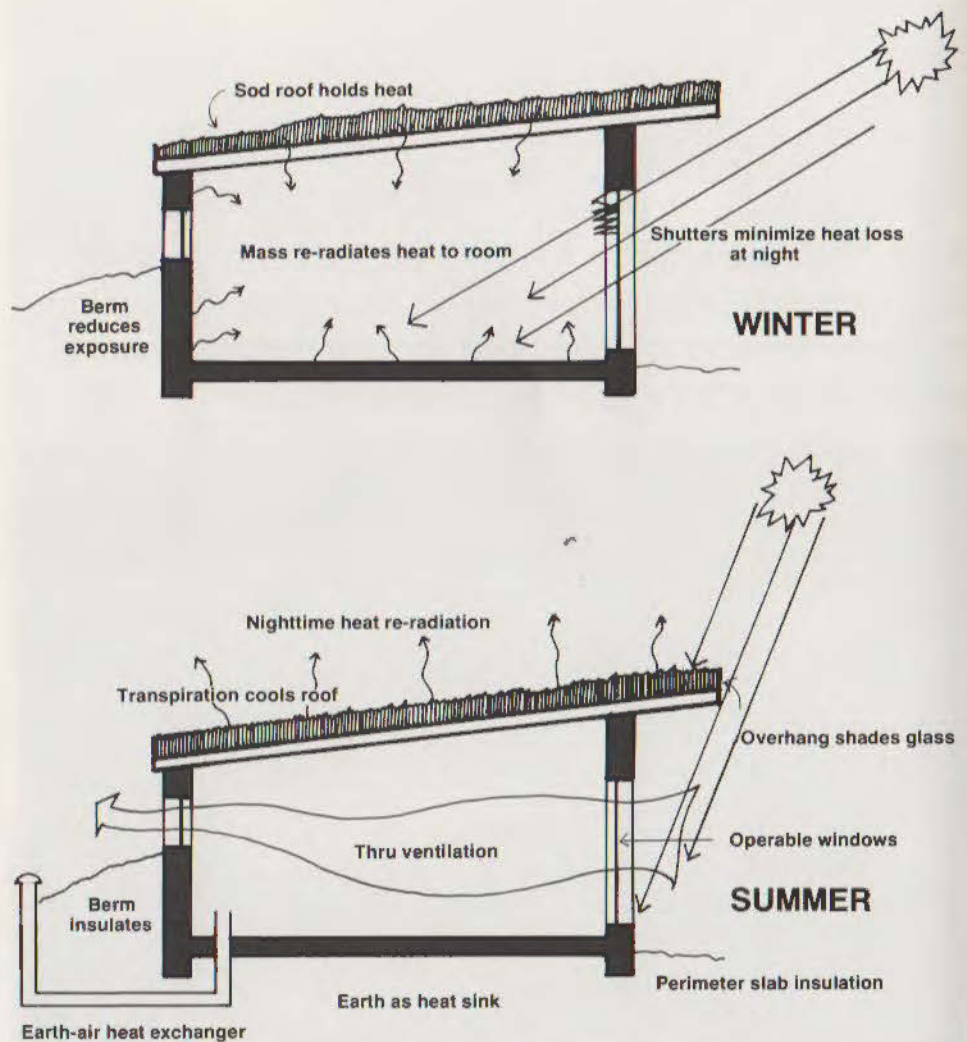
Today there is. Trinity has moved directly into a DOE-funded passive heating and cooling demonstration program to assess and validate the potential for passive cooling in the southern hot-humid belt that stretches from the South Atlantic coast to Central Texas, where 60 percent of the United States’ residential comfort cooling energy is consumed. The first phase, based on hourly meteorological data from the National Weather Service for a “typical” summer in 33 American cities, compared by computer simulation the cooling efficiency of a

conventional residence with that of a similar residence equipped with a passive "roof pond" (water contained in a polymer bag on the roof which acts as a thermal collector and distribution system in winter and a heat dissipator in summer, with movable panels to insulate the roof on winter nights and summer days.) Clark says the cooling efficiency of the passive roof pond has been quantified and the findings are thus: "acceptable human comfort" can be achieved even during the most severe part of the summer in San Antonio and Miami (the two hottest and most humid cities in the test region) by passive cooling alone. In other words, Clark says, "a properly designed residence does not require air-conditioning anywhere in the United States."

Clark concedes that "acceptable human comfort" is even harder to quantify, and that the computer simulation has its limitations. Even so, the *ASHRAE Handbook of Fundamentals* (published by the American Society of Heating, Refrigeration and Airconditioning Engineers) says that a person can be reasonably comfortable in temperatures as high as 83 degrees Fahrenheit with humidity at 80 percent. Based on that, Clark thinks it is possible "to generalize the conditions under which people find their surroundings comfortable," assuming that during the hottest and most humid summer hours they will wear lighter clothing (lighter both in weight and color), that they will be more sedentary, and that they will take advantage of air circulation and ventilation. "With those assumptions," Clark says, "our findings are very encouraging. If I can claim with any legitimacy that in any American home that is properly designed you don't need airconditioning, then it's worth looking at a little harder."

The second phase of the project does just that. To test that passive cooling simulation on actual buildings, with a variety of other passive cooling and heating systems in addition to the roof pond (which is somewhat awkward in application), Trinity is now constructing a test facility on campus which will consist of two identical 800-square-foot buildings with essentially the same exposure to wind and sun. Once the computer model is validated and the systems fine-tuned, data will be available for design application throughout the region.

The era is coming to a close, Clark says, "when an architect could design a building, usually with aesthetics being a



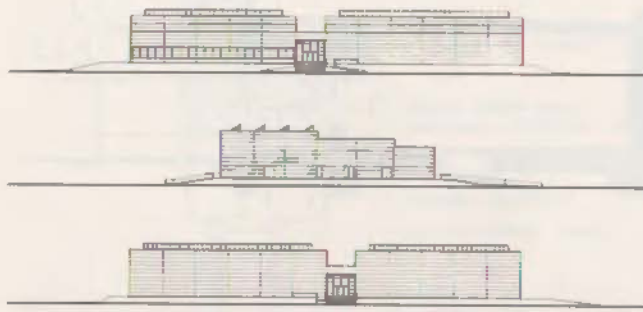
very high priority, and simply reserve a small place for an equipment room and turn it over to a mechanical engineer and say cool it or heat it."

Back to Some Basics

Passive design is simply a matter of getting back to a few essential basics—among others, an architectural appreciation of the facts that: 1) the sun comes up every day and goes down every night, and 2) that hot air rises and cold air falls. The idea is to take advantage of those principles, along with other natural means, to provide a comfortable interior environment with minimal (if any) reliance on finite energy sources. For both passive heating and cooling, according to the latest classification scheme, architectural elements of the building itself—its orientation, configuration, windows, walls, floors, roofs—are used to collect, store, distribute and/or discharge heat

by "natural" means (conduction, convection and radiation). These processes are not *forced* by mechanics, but are allowed to *flow* by design.

In favor of the passive approach, diffuse sunlight filtering through the atmosphere on a cloudy day will have some thermal effect on a properly designed structure, practitioners say, whereas active solar collectors require more intense and direct radiation to receive and transfer heat. Moreover, passive design is a kindly response to the natural elements, and nature's cooperation couldn't be more kindly in turn. In the northern hemisphere in winter, the sun rises south of east and traverses low across the southern sky, setting south of west. In summer, the sun rises north of east and rides high, almost directly overhead, until it sets north of west. Hence, one of the most basic techniques for passive solar heating—south-facing glass for direct thermal gain—is easily modified to defend against the high-flying summer



A large-scale building designed right will have a lot more long-range impact on energy conservation than 300 little houses.



North facade, University of Houston's Developmental Arts Building at Clear Lake City.

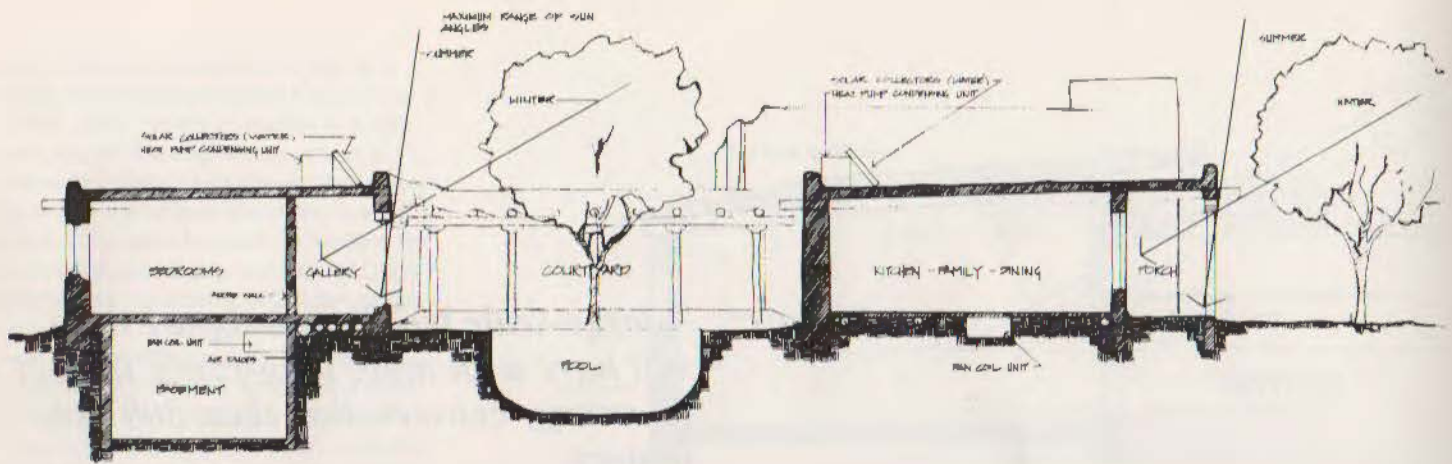
sun by simple overhangs. Nature's cooperation is perhaps most evident in the leaf-cycle of deciduous trees: when planted on the south side, the fact that they sport leaves in summer and lose them in winter couldn't be more perfectly timed with seasonal passive needs for sunlight and shade.

The logic of climate-adaptive design is not to be denied. But there are some tradeoffs and limitations in implementing the concept. As mentioned earlier, the comfort zone—whether based on ASHRAE fundamentals or individual needs—must be expanded in both directions. Also, being strictly site specific, passive design is hard to model statically. And passive design principles do have their limitations. Residential examples abound, but pure passive application in a commercial structure over two or three stories is another story. With large scale and high density, shadow patterns complicate the process. And the larger the scale of the building, according to pas-

sive-solar designer David Smith, adjunct assistant professor of architecture at the UT-Austin School of Architecture, the less influence passive systems have on its energy efficiency. Smith says passive techniques essentially involve the building skin and its relationship with the immediate microclimate, the critical factor being surface-to-volume ratio. When that ratio decreases as building size increases, the skin becomes less important than the internal load—artificial lighting, primarily. And since it is estimated that up to 60 percent of the energy consumption in a commercial building is caused by interior lighting, a large scale building that maximizes use of natural daylight by design would be "passive solar" to a significant degree. "Deciduous trees and thermal mass become less effective," Smith says, "than effective use of a low-wattage light fixture." And considering the energy-remedial trend toward high-density development, he says, "a large scale building designed

right will have a lot more long-range impact on energy use than 300 little houses."

Testing hybrid solar design on a comparatively massive scale is the new 36,000-square-foot, \$3 million Developmental Arts Building at the University of Houston at Clear Lake City, designed by the Houston firm S.I. Morris Associates and completed in June 1979. According to Partner-in-Charge Pleas Doyle, the building is designed and equipped to provide 50 percent of its energy from the sun, around which its basic design closely revolves: siting responds to solar orientation as well as circulation patterns and future expansion; exterior walls are porcelain-finished metal insulated panels for efficient seasonal heat gain and loss; interior lighting is predominantly high-efficiency fluorescent; windows, installed only in classrooms and faculty offices, are oriented to the north to minimize heat gain in a climate where cooling is the paramount concern



Michael Patrick, courtesy Texas Homes



Passive-solar adobe house in Panhandle pecan grove.

Michael Patrick, courtesy Texas Homes



Solar gain in south-facing gallery.

most of the year; and mechanical systems include roof-mounted flatplate collectors to provide space cooling and heating as well as domestic hot water (a considerable internal load in and of itself in a locker-room equipped gymnasium).

The solar system, funded by DOE and monitored by NASA, consists of 616 thermal collectors supplying hot water to an insulated, 21,000-gallon storage tank. The water is then circulated, for space heating, through heat exchangers and heating coils to the building's 10 air-handling units. For cooling, the hot water is used to heat freon, creating a gas which drives a turbo-compressor, which in turn pumps freon to chill water circulating to the air-handling units. Full back-up is provided by conventional electric duct heaters and freon chilling units.

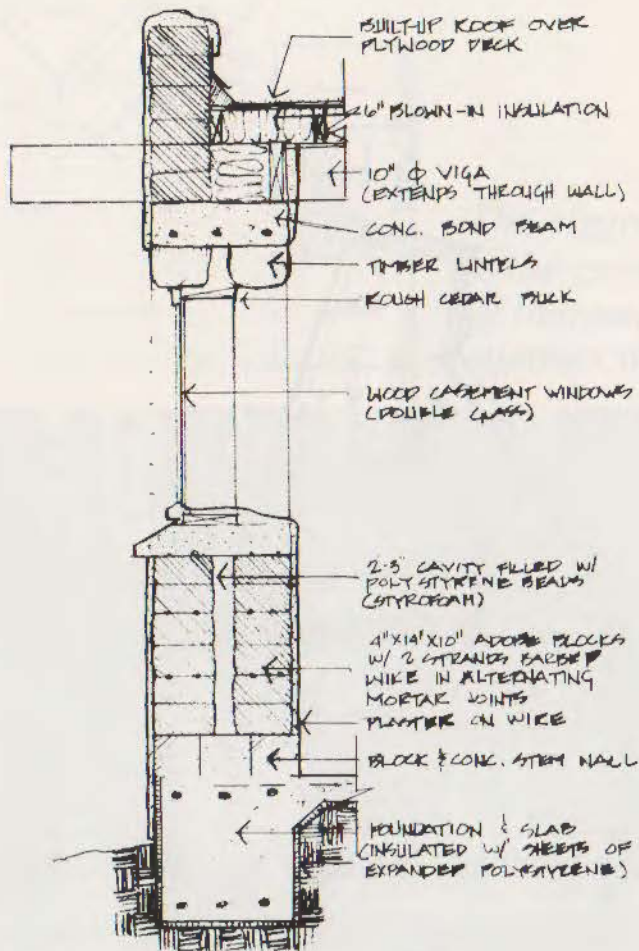
According to project engineers, the solar heating system is installed and operational, but the 75-ton turbo-compressor cooling unit won't be in operation until the summer cooling season. Mean-

while, building energy performance is being monitored, and will continue to be, by NASA at its Marshall Space Flight Center in Huntsville, Ala.

Texas architects currently practicing passive solar design, to varying degrees and scales, view the from-scratch approach as more of a design opportunity than a design constraint. Aside from the compassionate symbiosis between passive design and its environmental context, a potential exists for a happy blend between passive solar and a "post-modern" aesthetic. Foremost in that development, as David Smith sees it, is the regionalism already at work in the use of indigenous building materials—native Texas stone and adobe, for example—as energy-storing thermal mass. (Passive regionalism is not just climatic, Smith adds, but labor intensive and economical, taking advantage of and encouraging local craftsmanship and cutting down on material transportation costs, a substantial portion of the energy-consumption

pie). And, not insignificantly, the grand atrium, skylight and glass-curtainwall have inherent passive solar traits which can be exploited to the utmost for ventilation, natural light and thermal gain.

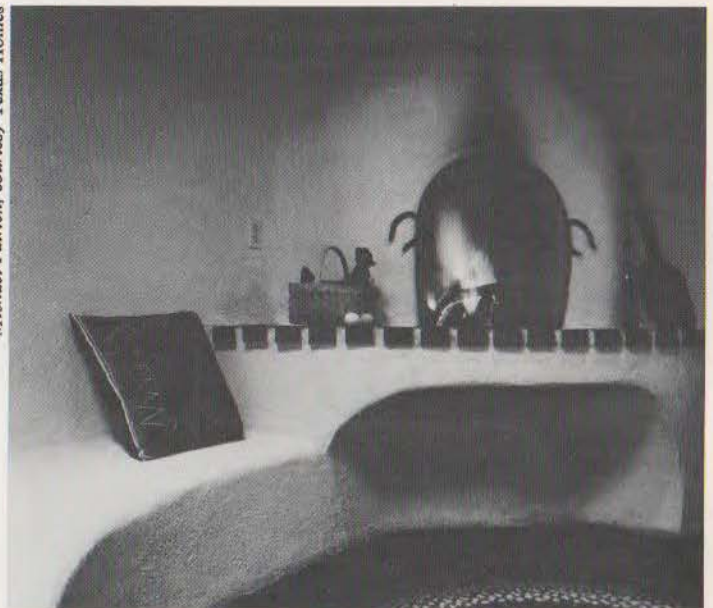
David Smith practices what he preaches. At 28, a 1973 graduate of Rice University, he is one of a new breed of architects coming of age professionally after the Arab oil embargo, when energy conservation became the byword and had to be made to fit somehow into a vocabulary of form. He achieved early success in his design of a passive adobe residence in the Panhandle, one of 145 winners out of a total of 700 entries from across the country in HUD's 1978 Passive Solar Residential Design Competition and Demonstration Program. The home features 14-inch thick adobe walls, sod roof and is partially underground for winter warmth, relying on three basic methods for passive summer cooling: cross ventilation (by design), air circulation (by ceiling fan) and an earth-air heat exchanger.



TYPICAL WALL SECTION

Foremost in the development of a passive-solar post-modern aesthetic is the regionalism already at work in the use of indigenous building materials as energy-storing thermal mass.

Michael Patrick, courtesy Texas Homes



"Indian-style" fireplace.

The latter system consists of an 18-inch diameter pipe seven feet underground along the north wall. Air is drawn into the pipe from outside and cooled by the stable temperatures of the earth (a consistent 62 degrees at seven feet), then distributed throughout the interior by fan. Hot air is vented outside.

Another of his passive residential projects, also in the Panhandle, employs many of the same passive concepts, all of which are enhanced by its setting—a 90-acre pecan grove. Also contemporary "Pueblo-Hacienda" in style, the structure consists of some 20,000 thirty-pound adobe bricks, handmade on site by the owners. Recessed south-facing windows block high summer sun and admit the low sun in winter, heat from which is stored in the thick adobe walls and brick floors, released through the night into the interior spaces. Exterior walls on the north, east and west sides are made of two layers of 10-inch adobe brick, with a cavity in between filled with styrofoam

insulation. This thick thermal mass has a stabilizing effect on interior temperature, as in a cave, Smith says, with the outer wall dealing with the extremes and the inner wall remaining more or less constant. This reduces the heating and cooling load dramatically inside, with a backup heat pump charged with heating or cooling only the air, not walls or floors.

Plans call also for supplementary solar collectors for hot water and to assist the heat pump, and a swimming pool in a central courtyard for thermal storage in winter and evaporative cooling in summer.

Smith says the house, completed in 1976, cost under \$15 a square foot, due in part to the resourcefulness of the owners in recycling salvaged building materials into the project, such as old railroad ties and telephone poles used as the distinctive vigas.

The Panhandle is a climatically black and white region. When it's cold it's cold and when it's hot it's hot, with very little

humidity to exacerbate either extreme. The region is well northwest of the climatic dividing line between hot-humid to the east and hot-arid to the west that bisects the state, roughly paralleling Interstate 35 and the Balcones Escarpment. It is easier to design an effective passive structure west of this line, easier to cool it in summer and warm it in winter, due to the region's lack of humidity and climatic predictability. Where climatic zones happen to meet, however, as in Austin as a case in point, passive solar design becomes an exercise in passive solar eclecticism.

The Austin climate is influenced both by hot-humid and hot-arid conditions, according to UT-Austin assistant professor of architecture Michael Garrison, director of the university's Integrated Solar Demonstration project at the Balcones Research Center in Austin. So the area is ideal, he says, for testing a variety of passive systems. Funded by a \$28,000 grant from TENRAC and a matching

Michael Garrison



Balcones Research Center project, Austin.

grant from the University Research Institute, the Balcones project is designed to test the "double box," high-mass walls, earth-air heat exchanger, solar chimney-induced air movement, the solar greenhouse and the solar greenhouse air-loop system, all in one structure. Researchers hope to determine the performance feasibility of these systems, "derived from architectural configurations," for use in the Central Texas region.

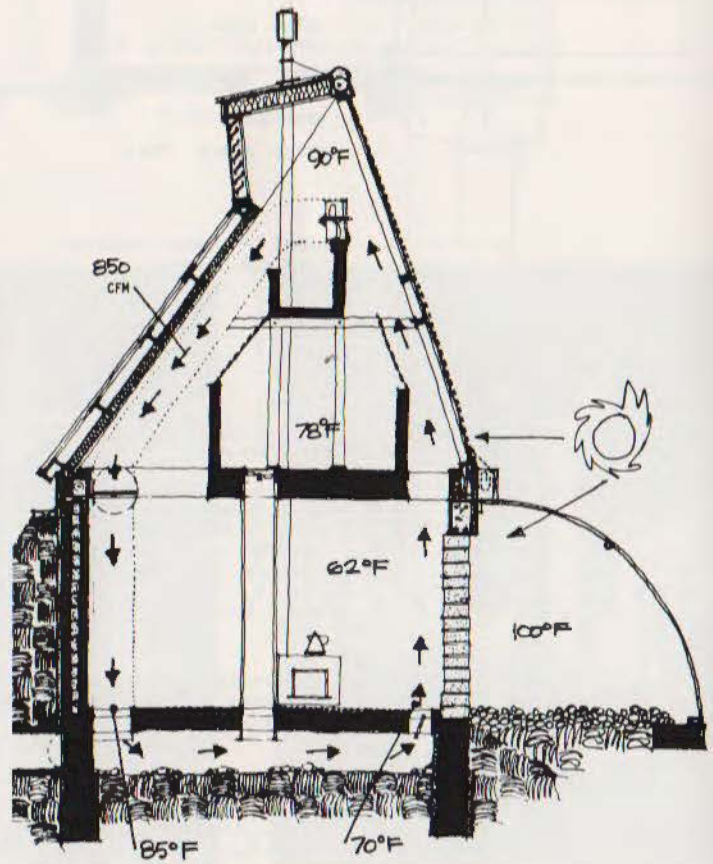
The most predominant passive system in the Balcones project is the double box, Garrison says (pioneered theoretically by D'Arcy Thompson in his book *On Growth and Form*, published in 1961). The outer box serves as a direct gain solar greenhouse, buffering against harsh ambient conditions and reducing infiltration and temperature swings; while the inner box, or interior living space, is thermally grounded to the dark mass of the earth, which has an infinite capacity for heat storage. The greenhouse buffer and thermal grounding combine to sta-

bilize interior mass temperatures, with the space formed between the two boxes wrapping the inner living space with a blanket of evenly tempered air, making for a configuration and effect similar to a thermos bottle.

The south-facing roof facade is elongated, double-tetrahedron in shape, to collect low winter sun as well as to reflect the high sun in summer, when a roof cupola is opened to create air movement by exhausting hot air as it rises and drawing cool air inside through an earth-air heat exchanger—at speeds equal to those of an attic fan.

It's an elaborate system—the complete passive house. But the concepts are simple, Garrison says, and none is new. "All are just architectural refinements of age-old principles."

East of the central climatic dividing line and deep within Trinity's hot-humid zone and the East Texas Piney Woods, regional design is more exclusive. It is an area where cooling is a need of



Double box at work on sunny winter day.

far more importance and duration than one for heating. Where West Texas weather is cut and dry by seasonal extreme, East Texas weather is thick and wet all year.

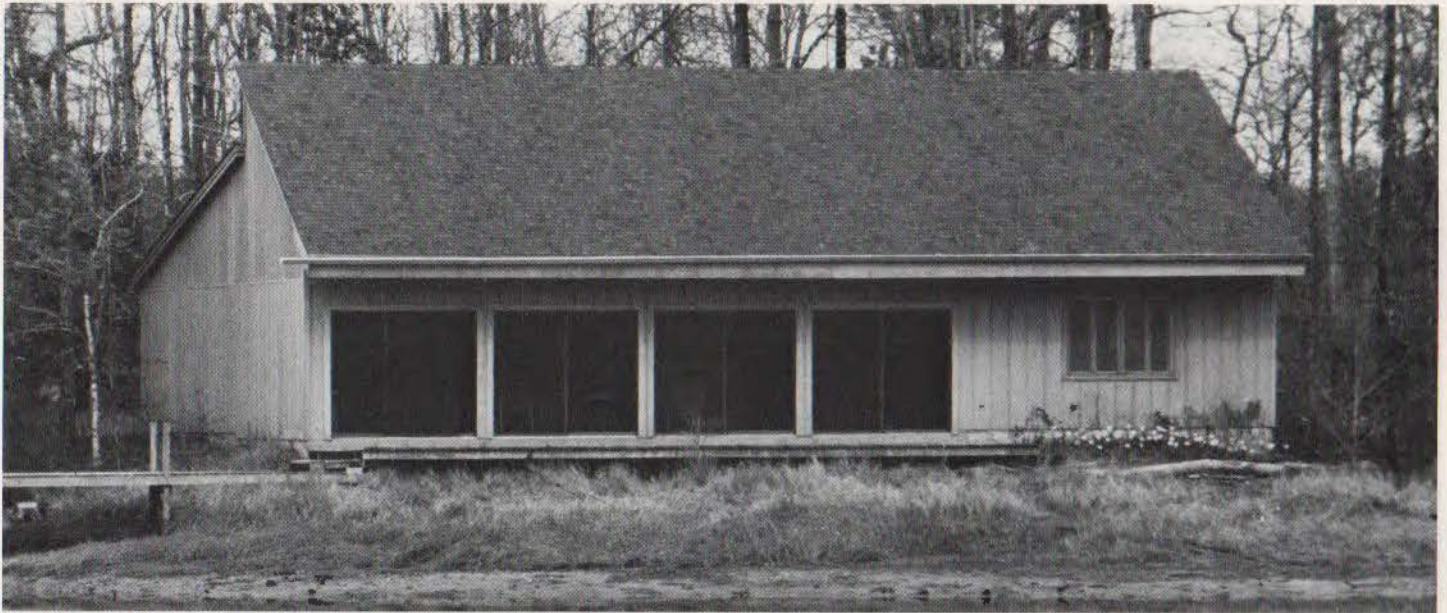
The biggest problem with passive design in East Texas, according to Houston passive-solar designer George Way, charter member and current president of the Houston Solar Energy Society, is the great care that must be taken in the placement of thermal mass. A prime need and benefit in West Texas, it is only of fleeting need in the East—and a permanent handicap if not used properly.

A representative East Texas passive solar house, designed by Way and built a little over a year ago, is a weekend retreat sitting on the north shore of a lake in the middle of the Big Thicket, near Kountze, about halfway between Livingston and Beaumont. It is a relatively modest house, Way says, two-bedroom, wood-frame, 1,600 square feet, privately financed, \$30 per square foot. The struc-



The biggest problem with passive design in East Texas is the great care that must be taken in the placement of thermal mass . . . which can do more harm in summer than good in winter.

George Way



Passive-solar house in the Big Thicket.

ture's pine and cedar envelope is insulated well, from the perimeter of the slab throughout the ceiling, and all windows are double-glazed. Tucked into the piney woods, heavy forest shields east and west exposure from summer sun and the north exposure from winter wind.

The predominant passive feature of the house, however, is a 520-square foot atrium with 168 square feet of south-facing glass patio doors opening onto the lake. For spring, summer and fall cooling, the atrium is designed to allow for cross ventilation and thermal induction, drawing cooler air from the lake and forest into the atrium and venting the hot air out a clerestory series of vents in the upper rear portion of the atrium. "Since dry air is at a premium in East Texas," Way says, thermal induction must be used to maximize the flow of air, which even when moisture-laden will enhance the body's ability to rid heat from the skin surface by evaporation, if the air flow is fast enough.

The only thermal mass for winter heating is a dark red-brick floor in the atrium area, which absorbs sunlight from the south windows in winter and stores the heat in a 6-inch-thick concrete slab underneath. Pointing out that backup airconditioning and heating here—financing prerequisites—are part of the passive approach, Way says that exposing mass directly to sunlight in East Texas does far more harm in summer than good in winter, creating too heavy a load on the passive/mechanical system during peak summer cooling periods. (Mechanical back-up is provided by a two-ton heat pump and a recirculating fireplace fed with fresh air.) "To accommodate the future," Way says, the roof of the atrium is oriented and tilted south for eventual installation of active solar collectors for domestic hot water.

So far, Way says, after a year of operation, the house has performed as predicted. Owners have found that upon arrival on Friday night for a weekend

stay, inside temperatures are in the range of 65 to 68 degrees Fahrenheit in winter and 82 to 86 degrees in summer, without backup. (Way points out that the stable internal temperatures upon arrival in summer are maintained in part by design [minimal solar gain] and in part by the fact that the house has been closed up all week, with no internal heat gain from cooking, lighting and people.)

Residential passive solar projects are numerous throughout the state, in all regions, encouraged largely by the HUD residential demonstration program (which was intended in part to seed the mass housing market with affordable designs) and the relative ease and purity of passive design on a small scale. Existing passive commercial projects, on the other hand, are few and far between. One of the few is a privately developed, two-story, 16,000 square foot passive office building in Austin, completed two years ago, designed by Austin architect L. M. "Mac" Holder.

First, you figure out where the sun and air movement is going to come from and what it's going to do in a structure. Then you look at what your client's needs are going to be in 10 years, and whether or not he will be able to afford to use that building for 30 years to pay off the mortgage.

Robert Ross



Passive-solar commercial building in Austin.

As Holder himself points out, the building doesn't broadcast the fact that it's a passive-solar structure. Viewed from the frontage road, the tan-brick building appears clean and site-sensitive as it sits horizontally on its one-acre site, parallel to the road. But it doesn't have "that solar look," which is so by design, says Holder, who doesn't believe passive design prescribes flamboyance.

He calls the building "an efficient commercial office building of hybrid design, with a heavy emphasis on passive." And he looks at passive as a *reason* for design, rather than of form of, or limit to. "If a building responds to the microclimate in the vicinity, it has character," Holder says. "That response creates the character for the structure. It is compatible with its environment, it is site specific, and it will almost design itself."

The building is located at the rear of the site, with a parking lot between it and the roadway. The long axis is oriented more or less east and west for solar gain

in winter, its windowed facade facing south. A hill behind the building protects it from the north winds in winter, while a landscaped area in front and a stand of mature liveoaks retained on the site minimize reflected heat from the parking lot in summer. (Leaving the liveoaks standing on the south side was a "trade-off," Holder says. "They do more good in summer than harm in winter.") Solar control is also provided by a cantilever balcony on the south facade. For thermal mass, high-mass walls consist of two layers of brick with urethane insulation in between.

Inside, the building is divided into 20-foot by 40-foot bays for commercial tenants, each bay with direct access to louvered breeze outlets on the north side as well as its own electrical system and individual meter. Oriented for maximum ventilation, deep vertical windows are operable and sectioned in two to regulate high- and low-speed winds. (During high winds and moderate temperatures, only

the top portions of the windows are opened to allow circulation, keeping high-speed air in the upper part of the structure near the ceiling and away from working areas, and venting the warmer air out the breeze outlets in back. During low winds, low portions of the windows can be opened and ceiling fans turned on.)

Window placement optimizes natural lighting, Holder says, and since tenants pay their own utility bills, task lighting is the rule for artificial backup. And all fixtures are movable to allow for flexibility in rearranging office furniture. Mechanical backup systems include flat-plate, non-tracking solar collectors on the roof to provide 100 percent of the domestic hot water year 'round and some space heating in winter. Heat is collected in a 2,000 gallon water storage tank. Also, a high-efficiency air conditioning system and a gas-fired boiler augment the passive design effects during periods of peak load.



Mac Holder.



Holder says his building is designed to respond to escalating energy costs by responding to its microclimate. Such twin responses are now so interwoven and mutually dependent, he says, that you can't consider having one without the other anymore. So in describing the passive-solar features of his project, his narrative leads downward to the all-important bottom line.

"A passive system building is so much more energy efficient than a standard building," Holder says, "that nobody really believes it. I told people that we could build an office building that could run on 30 percent of the energy an average building consumes. Nobody believed that. Then we built this one, and it's running on 30 percent of what an average building runs on, with parts of it running on 15. Could you really believe that you could heat a 16,000 square foot building for \$250 throughout the entire winter? Well, we did it, and have the bills to prove it."

The average monthly energy bill for an office building in Austin is about 14 cents per square foot per month, at an average of 4.5 cents per kilowatt hour. As Holder points out, a conventional building with efficient mechanical systems and incorporating energy-saving features (light-timers, reducing hot-water temperatures, air-flow dampers) can cut that square foot cost per month in half. The average monthly energy bill for Holder's hybrid office building, however, passive from the outset, is less than four cents per square foot per month.

Moreover, Holder says the building was built for \$20 per square foot (plus \$8 a square foot for tenant finishes), a cost that is no more than 10 percent of the cost of conventional office buildings in Austin. The building was conventionally financed, he adds, and produces a 17 percent return on the investment *before* taxes and depreciation.

"Everything I do is privately financed," Holder says, "so I have to be very careful

how I do it. First, you look at the most basic principles of sun and air movement on the site, you figure out where it's going to come from and how and where it's going to rise and what it's going to do to a structure. Then you look at what your client's needs are going to be in 10 years, and whether or not he can afford to use that building for 30 years to pay off the mortgage. The fact is, our clients cannot continue to absorb fantastic increases in utility costs, so passive building are going to become more and more attractive on the market. You can't just bury your head and say that energy prices are not going to increase, or that they will get to a point where they level off. They're not going to level off. They didn't, they haven't, and they're not going to."

Texas Solar Incentives

With that fundamental assumption gaining widespread acceptance, steps have been taken recently in Texas through state and local legislation to encourage solar design and renewable energy development.

In November 1978, Texas voters approved a constitutional amendment in the general elections exempting solar and wind energy devices from all state taxes, including sales, franchise and *ad valorem*. In 1979, the 66th Legislature passed the amendment into law, which went into effect Jan. 1, 1980. The new law prohibits the local tax assessor-collector "from considering in his assessment of property value the value of any solar energy device installed or constructed on the assessed property." Significantly, the definition of "solar energy device" was expanded to include attached passive solar greenhouses, high-mass walls, Trombe walls, roof ponds, rock and pebble thermal-storage beds, as well as biomass energy systems (algae ponds, water hyacinth ponds and other organic systems which produce methane and other fuels by photosynthesis. The definition does not, however, include "items used for energy conservation which do not actually provide thermal, mechanical or electrical energy," such as double-glazed windows, insulation, solar shades, absorbent or reflective roofs.)

Although John Carlson, TENRAC solar program coordinator, thinks it will be a while before solar energy systems constitute as much as five or 10 percent of the overall energy picture in Texas, "such state legislation is definitely a step in the right direction and those who ally themselves in the passive camp would have to view this as a victory."

On the city level, TENRAC has awarded a \$20,000 grant to Austin's new office of Energy Conservation and Renewable Resources to explore the use of solar, wind, biomass, hydropower and geothermal energy systems in a Model Energy Development Demonstration District in downtown Austin (the site of an ill-fated revitalization plan put together last year by an out-of-town consulting firm that never saw the light of day due to an almost unanimous professional and public outcry). The city's new renewable energy office was the outgrowth of its Renewable Energy Resources Commission, a citizens' advisory

group formed in May 1979 to involve Austin on the ground floor of renewable energy development.

Other landmark solar legislation on the local level in Texas includes Port Arthur's Planned Unit Development (PUD) ordinance, passed by the Port Arthur City Council in January 1979 to provide a site-density "bonus" for developers within a specified PUD if dwelling units are oriented for solar access.

The ordinance allows for up to 24 dwelling units per acre in an 18-acre PUD if at least 80 percent of the buildings are oriented with their long axes parallel to 10 degrees north of east (with a possible variation of 10 degrees). Otherwise, site density is limited to 15 units per acre.

A later amendment to the city's zoning ordinance requires approval by the planning and zoning commission of all site plans for proposed subdivisions, which must "clearly indicate the influence of proposed structures on the light, air, access and exposure of adjacent property and indicate shadow patterns of existing and proposed structures and major vegetation between 10 a.m. and 4 p.m., December 21 and 22 (winter solstice)."

And, on the national level, perhaps the biggest legislative incentive for passive design will come from DOE's proposed Building Energy Performance Standards (BEPS), designed to achieve maximum energy reduction in new buildings and encourage the development of renewable energy resources. The standards would set an energy consumption budget, which must be met in the design stage (with the help of a computer energy-analysis program developed by Dr. Francisco Arumi at UT-Austin's School of Architecture). TENRAC is now working with other state agencies to determine the best ways of implementing BEPS on a state and local level, but the council says that could be a long way off—August 1981 at the earliest.

Legislation, while considered essential, is not the only gear to engage in implementing sun-conscious design. Lending institutions provide the money to build, and loan officers comprise perhaps a more important target audience for solar information than the public at large. To determine the level of solar awareness among Texas bankers, TENRAC and TX-SES conducted a survey recently which revealed that while most of the respondents lacked solar-investment experience, they did seem in favor of mak-

Good Sources and Tools

The Passive Solar Energy Book: Expanded Professional Edition, by Edward Mazria (1979, Rodale Press, Emmaus, Penn.)

Design With Climate: Bioclimatic Approach to Architectural Regionalism, by Victor Olgyay (1963, Princeton University Press, Princeton, N.J.)

Architecture and Energy, by Richard Stein (1977, Anchor Press/Doubleday, Garden City, New York)

Energy Conservation Through Building Design, edited by Donald Watson (1979, McGraw-Hill, New York)

A Survey of Passive Solar Buildings, AIA Research Corporation (1978, American Institute of Architects, Washington, D.C.)

Passive Solar Conference Proceedings, American Section, International Solar Energy Society, Inc. (c/o American Technological University, Killeen, Texas)

The Davis Experiment, by Marshall Hunt and David Bainbridge (May, 1978, *Solar Age*)

The Sun Betrayed: A Report on the Corporate Seizure of U.S. Solar Energy Development, by Ray Reece, former associate editor of *Texas Architect*. (1979, South End Press, Boston, Mass.)

Sun Angles for Design, by Robert Bennet (1978, published by the author, Bala Cynwyd, Penn.)

Sun Angle Calculator, Libbey-Owens-Ford Company (1975, Toledo, Ohio)

National Solar Heating and Cooling Information Center, established in 1976 by HUD to act as a federal clearinghouse for information on solar heating and cooling (P.O. Box 1607, Rockville, Md., 20850. Telephone: [toll free] 800/523-2929).

Texas Solar Energy Society, 1007 S. Congress, Suite 348, Austin 78704. Telephone: (512) 443-2528

ing solar loans when and where the demand is. Out of 382 lending institutions responding to the survey, some 18 percent had made solar loans, accounting for 68 institutions financing more than 150 solar installations statewide, mainly for domestic hot water systems. And while most of the respondents with solar-loan experience had made loans for active systems, some interest was expressed in passive homes. (The study pointed out that El Paso National Bank likes the idea of passive systems and considers one project it is financing as a "tremendous breakthrough.")

Designing with the sun in mind promises to be an influential movement in Texas architecture, out of economic necessity and regional appropriateness. And although the energy future looms heavy on the horizon like a Texas thunderhead, passive-solar architects are excited by the challenges posed. There's an even newer breed of architect than the seminal oil embargo generation, which has had to rely almost exclusively on empirical trial and error (suffering, in the process, what Michael Garrison calls an "information overload"). Texas schools of architecture are enlisting faculty specialists in solar design and offering courses in the technique, in addition to stressing the new imperative of energy-conscious design in general. And recent graduates are scattering to the four winds to champion the passive approach. Austin passive-solar devotee Greg Watkins, 26, a 1979 graduate of the UT-Austin School of Architecture and an intern now with the Austin firm Shefelman & Nix, is enthusiastically working on getting his thesis project realized—a "solar village" in Cedar Park, near Austin. The multi-use, planned-unit development would feature a variety of passive heating and cooling and wind and biomass systems, along the lines of the famed solar village in Davis, Calif. (which instituted planned-unit development ordinances in 1973 and has reported a more than 35 percent reduction in city-wide energy consumption since doing so). And in El Paso, a multi-family passive-solar housing project, designed by El Paso architect Mack Caldwell, is scheduled to break ground soon. The El Paso city council voted last December to channel \$567,000 in federal funds into a project which will involve low-income tenants in construction of their own nine-unit adobe apartment complex. (Passive features include solar orientation and direct thermal gain as well as high-mass adobe walls.



Passive-solar housing project, El Paso.

Backup will be portable electric heaters). Caldwell estimates the average cost for each 916-square-foot unit at \$26,000.

And as ground breaks on passive solar projects testing techniques on multi-use and multi-family scale, research continues at Trinity, Texas A&M and other universities across the state, including UT-Austin, where scientists are testing the feasibility of converting sunlight to electricity, which is currently plagued by cost and electrical storage problems, according to researchers, and a good 10 to 20 years down the road.

In the meantime, passive solar design is here and working. And never before have architects had more opportunity and responsibility in affecting the commonweal. When the relationship between architecture and energy is examined, Richard Stein points out in his 1977 classic *Architecture and Energy*, a comprehensive connection is revealed: "All told, with the 20 percent in fossil fuel usage, the 6 percent in industrial usage, the 12.5 percent in source electric usage, and the 5 percent of unnecessary transportation usage resulting from planning patterns, we are addressing 43.5 percent of all energy used for all purposes. . . ." And as UT-Austin's David Smith says, "it is not a question whether buildings are going to become more energy efficient—economics dictates that. The question is whether architects are going to lead that direction and not forget about things like natural lighting." It's a fact, he adds, though not a source of great comfort, that the architect has become somewhat of an exclusive professional, dispensable in the eyes of many consumers, who would turn quicker to an engineer than to an architect to solve a building problem. "Now," he says, "is the time when the architect can become socially indispensable."

Some Passive Principles

Following is a rudimentary list of passive solar principles and systems, most of which can be employed independently or used collectively in a single structure for maximum passive-solar effect. Thanks to Michael Garrison and David Smith of the UT-Austin School of Architecture faculty for providing most of the definitions.

Solar Orientation: the most basic of the basics, this means positioning a building to take advantage of sun angles and movement in all seasons. In the northern hemisphere, ideal solar orientation is an east-west long axis, exposing windows to the south for maximum solar gain. In Texas, a deviation of up to 15 degrees will not radically affect thermal gain.

Direct Gain: the most frequently used approach for passive heating, solar radiation passes directly into and through the living space, then is stored in an interior thermal mass (wall or floor). The direct gain design, in effect, makes the building a "live-in solar collector."

Indirect Gain: a thermal storage mass stands between the sun and the living space, collecting heat directly then transferring it inside. The most common systems are the Trombe wall (pioneered by Frenchman Felix Trombe in 1967, consisting of either water or mass) and the roof pond.

Isolated Gain: the solar collector and storage unit are isolated from the liv-

Continued on next page.

Passive Principles, continued.

ing space, functioning independently and allowing the living space to draw heat inside as its temperature requirements dictate. The most common application is the solar greenhouse, a heavily glazed sunspace attached to the southside of the structure, separated from the living space usually by a thermal mass wall.

Passive Cooling: utilizing the laws of thermodynamics, which dictate unequivocally that air flows from hot to cold, from high pressure to low, passive cooling essentially involves discharging excess heat into an available, cooler "heat sink" (the earth, water, the night sky).

Thermal Induction: creating wind flow when it's not available by taking advantage of the "stack effect." The sun heats air in an area higher than the living space and causes air movement. Hot air rises, which is vented to the outside, drawing replacement air from the living spaces, which in turn draw replacement air from the coolest air source (tops of trees, water, shaded areas). The most common system to take advantage of this technique is the thermal chimney, a high outlet which maximizes the air-flow effect.

Microclimate: specific ambient conditions on a site which will affect a building and which may be considerably different from the climate monitored at the airport. Influenced by topography, vegetation, parking lots, other buildings.

Heat Pump: invented in the 1880s, used widely until the advent of central heating and cooling in the '50s. Powered by electricity, a compressor drives a refrigerant gas through a closed loop coil, which pulls heat from outside in. For summertime cooling, the process is simply reversed, with the pump extracting heat from within a structure and pumping it outside. Used as an efficient mechanical back-up for passive design and active-solar systems.



Design/Build Workshop

Friday, April 25, 1980 8 a.m.-5 p.m.

Co-sponsored by the Texas Society of Architects
The University of Texas at Austin, School of Architecture
and the Division of Continuing Education

Design/Build:

The project performed by a single legal entity with the direct responsibility and liability for project design and construction.

Objective:

The Design/Build workshop will provide legal concepts and ramifications for design/build ventures and guidelines for developing new design/build opportunities.

Topics:

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Implementing design/build under AIA ethics
General principles of liability for design/build
Bonds and insurance for design/build projects
Legal profile of a design/build project
Organizing to engage in design/build projects
Design/build contract between owner and design/build firm

Faculty Member:

Arthur T. Kornblut, B.Arch., Rensselaer Polytechnic Institute, Troy, N.Y., and J.D., University of Akron School of Law, is a principal in the Washington, D.C. law firm of Ford, Farquhar, Kornblut & O'Neill. Kornblut's architectural license is from the State of Ohio. He is a frequent speaker and author on architectural practice and professional liability, and has been the principal speaker for Design/Build Seminars throughout the country presented by McGraw-Hill's subsidiary, Architectural Record Seminars.

Fee:

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Who Should Attend:

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Certificates will be awarded by the School of Architecture and the Division of Continuing Education at UT Austin.

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Joe C. Thompson Conference Center, 26th & Red River, Austin, Texas

Time:

Friday, April 25, 1980, 8 a.m.-5 p.m.

Make check for \$225 payable to The University of Texas at Austin. Please include the registrant's name, firm name, address and phone.

Mail to: Lynn Cooksey/Conference Coordinator for Architecture/Division of Continuing Education/The University of Texas at Austin/Main Building 2500/Austin, Texas 78712/(512) 471-3123

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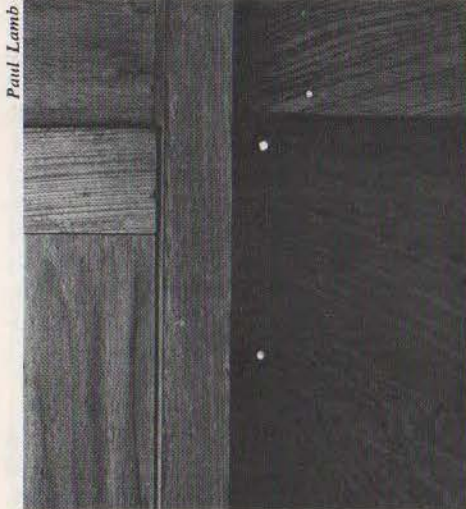
Rediscovering Harwell Hamilton Harris



Harris

Lessons from His Texas Work

By Lawrence Speck and Paul Lamb



Paul Lamb

(Editor's Note: Since his departure from Texas in 1962, Harwell Hamilton Harris has practiced and taught in Raleigh, North Carolina, where the authors recently interviewed him for this article.)

Harwell Hamilton Harris' thoroughness in conversation is striking. A consummate storyteller, he recalls, in detail, a fourth-year student field trip to the Pan American Architectural Conference in Mexico City taken shortly after he became Dean of the School of Architecture at UT-Austin in 1951. He remembers exactly how many students went (21), how they traveled (train to the border and Mexican airline beyond), the price of the hotel rooms (\$1 per night), how much each student paid (\$35), who picked up the remaining bill (TSA), a kid they called "Toline from Moline" and much more. He can describe precisely his arrangements for the "boys" to meet Frank Lloyd Wright at a reception at the U.S. Embassy and a picture which resulted from the event with Overton Shel mire poised proudly next to the great man. His recollections are rich, warm and humane—filled with layers of assiduous detail.

Harris talks like he builds. The twenty or so projects which resulted from his eleven-year practice in Texas (1951-62) testify to the extraordinary quality which meticulousness can produce. They are gentle, good-natured homes; lofty, characterful offices; and respectful, serene places of meditation. They are attentively crafted and designed "down to the door-knobs." They reflect the personal vigilance and punctiliousness of their designer.

The architect's work can only be as real and as convincing as his own life.

—Louis Sullivan

It is impressive to see buildings which so clearly draw on the personal strengths of their designer. Harris likes Sullivan's philosophy because "his picture of architecture was the picture of a man." Harris himself points out the good fortune that an architect "need not divide his time into two parts: one devoted to making a living and another to developing his person. . . . It is possible to make life and architecture one."

It is perhaps from this integration of life and architecture that Harris derives his greatest design strength—not only in the meshing of the architect's own personality and his work, but also in the joining of the client/user's life in the building. Harris talks of architecture as the "pattern of a person's interests, feelings and activities." In designing, he says, "It is as though one's interests, feelings, activities, expressed themselves on some now-forgotten occasion, leaving tracks—and a building grows up around those tracks. . . . An architectural design is the design of a pattern for sensing, for feeling, for acting."

There is a modesty implied herein which is refreshing in these days of architectural one-upmanship. Harris can

talk of his buildings as playing a "supporting role" to the lead of real life actors. Politeness, grace and good manners become admirable building traits. "A building which anticipates our wants and satisfies them with imagination is elegant. It has *great presence*."

And yet, this modesty is not unambitious. It mines a depth of concern seldom fully explored by contemporary architecture. Harris believes that building can "fire one with a passion for simple living and high thinking"—no small task. For him, the important trait of a building—surpassing its size, its style, its construction—is the way it "feels," and, in turn, the way it conveys feelings to its occupants.

More often than not, the "feeling" he deems appropriate is one of relief, ease and comfort—a freedom from distress and distraction. A Harris living room envelops its occupants in a sense of serene well-being. It is a shelter from the intensity and hubbub of life.

By contrast, in his Trade Mart Court in Dallas, Harris demonstrates an equivalent ability to play up the mood created by activity and movement. He enlivens the huge space with animated, kinetic forms intensifying a feeling of great energy.

Harris' success in constructing appropriate "feelings" is evidenced by how little has been changed in most of his buildings over the past 20 years. Colors, fabrics, details are lovingly preserved. Most of his Texas houses are still occupied by the families for whom they were built. Their praise for Harris the man, Harris the designer, and their own homes is a great testimony to the architect's talents.

Harris credits his inclination to project feelings into form, in part, to his early training as a sculptor. It was only after a memorable visit to Frank Lloyd Wright's



Pre-Portman atrium space, Trade Mart Court, Dallas, 1960.



Paul Lamb

We dwell with satisfaction upon a poet's differences from his immediate predecessors. . . . Whereas if we approach a poet without this prejudice we shall often find that not only the best, but the most individual parts of his work may be those . . . in which his predecessors assert their immortality most vigorously.

—T. S. Eliot

It is unusual to find an architect of Harris' generation who can be so explicit about the roots of his work. From Wright he learned organic principles of form-making; from Sullivan he gained philosophical justification. From the Greene brothers he understood an attitude toward landscape; from Neutra he learned integration. From all of them he gleaned a vocabulary of forms and materials.

Harris' work evolved. Diverse attitudes did not exclude, but rather refined, each other. He was assimilating, not selecting. His work can hold, at the same time, feelings of Mies, Wright, and Maybeck. The combination is enriching and fertile.

From his predecessors, Harris inherited diverse traditions. Their utilization in particular situations became the creative act. For Harris, "Newness is not planned, it is born in the course of discovering ways in which *particulars*—human, spatial, mechanical, material, structural, economic and others—can unite in a particular act." The absence of exclusive dogma allowed a greater freedom in response—a greater fidelity to circumstance. Broad application of principle became inventive in the act of appropriate implementation.

The sophisticated relationship of indoor and outdoor spaces in Harris' buildings is a good example of the working of this process, as well as of the merging of diverse traditions. In his childhood, Harris was familiar with the widespread custom in Southern California of outdoor sleeping, at least during the summer. Porches, trellises and weeping trees became extensions of the house—the fresh air of the outdoors being considered a contributor to good health. Greene and Greene often provided sleeping porches as an integral part of each bedroom. "With private rooms divided into indoor and outdoor halves," Harris observes of their work, "one could express his pleasure in the outdoors in privacy—not 'roughing it,' but elegantly." The Greene brothers' work expressed a "civilized attitude" toward nature.



St. Mary's Church, Big Spring, 1960. Shades of Charles and Henry Greene and Bernard Maybeck.

Hollyhock House in 1924 that he made a belated decision to pursue architecture. The sculptural qualities of Ms. Barnsdale's home, he recalls, made it "easy to feel myself into that form." From that moment, "Wright was the god."

But Wright was by no means a singular influence. Harris' works owes much to Louis Sullivan, Charles and Henry Greene, and Bernard Maybeck. Theirs were earthy, organic, naturalistic buildings with firm roots in the native American landscape. Harris read Sullivan attentively (along with his philosophical predecessors, Horatio Greenough and Walt Whitman). He grew up amongst the Greene-influenced California bungalows—viewing them as inevitable as much as architectural. He immersed himself in the tradition of organic architecture.

At the same time, Harris became a part of International Modernism as well. In seeking out local practitioners with whom to discuss his new-found interest in architecture, Harris discovered, very early, both Richard Neutra and Rudolf Schindler—two Europeans he later viewed as "interpreters of America to America." Their modernism was a localized expression of the *new* architecture: its industrialization, its individualization, its cultural integration. Harris worked for Neutra from 1928-32. He joined CIAM and became actively involved in the excitement of the new movement.



Paul Lamb

Austin residence, 1956. Wrightian principles of organic form-making.

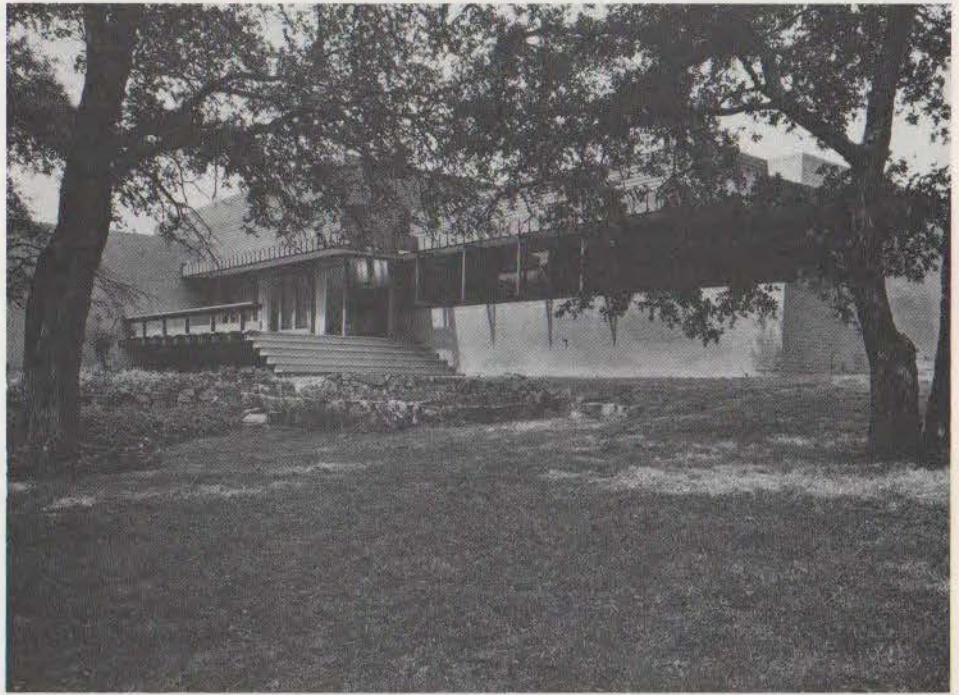
In 1921, Rudolf Schindler adopted the custom and dignified it architecturally with rooftop "sleeping baskets" for his own house. Harris himself worked on the drawings for Neutra's Lovell Health House of 1927 where, again, sleeping porches were provided for each bedroom. The sleek, pristine lines of the Lovell House detach the porches architecturally from their woodsy, naturalistic predecessors, adding a dimension of modern cleanliness and health. In Neutra's Ring Plan School each classroom opened into an individual garden. Classroom and garden were, in effect, part of the same room.

These works, along with Wright's characteristic low, continuous eaves, deep overhangs and long banks of doors, had begun a dissolution of distinctions between inside and outside space and between appropriate design methodology for indoors and outdoors. Harris adopted and expanded these emerging traditions enthusiastically.

In his early Lowe House of 1933, Harris included an enclosed private garden for each bedroom. In most of his buildings since then, a variation of this indoor/outdoor intermediary appears, not in a tired, perfunctory way, but always as a fresh response to altered situations and conditions. A general, inherited notion toward nature, landscape and space suggests the intermediary. A careful analysis of the particulars of the problem produces a unique solution.

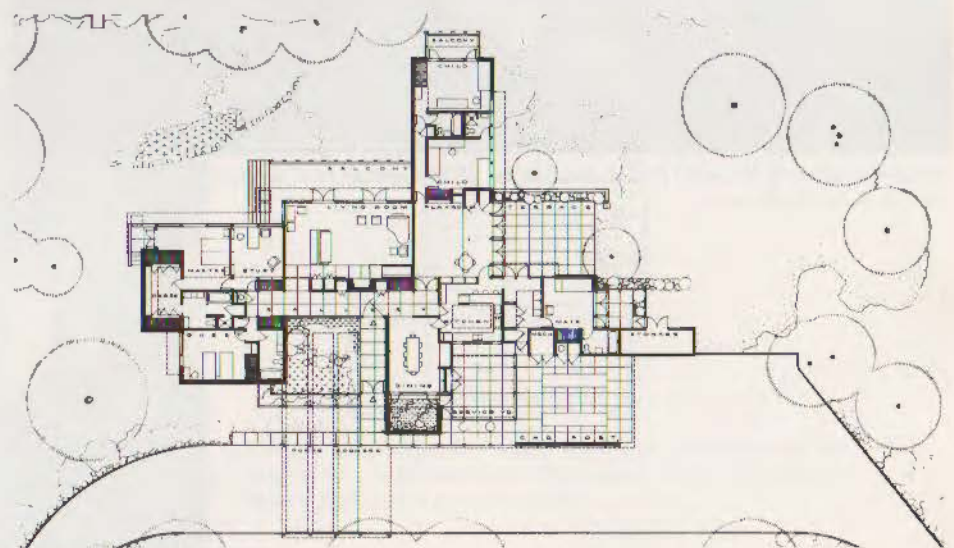
Eisenberg House

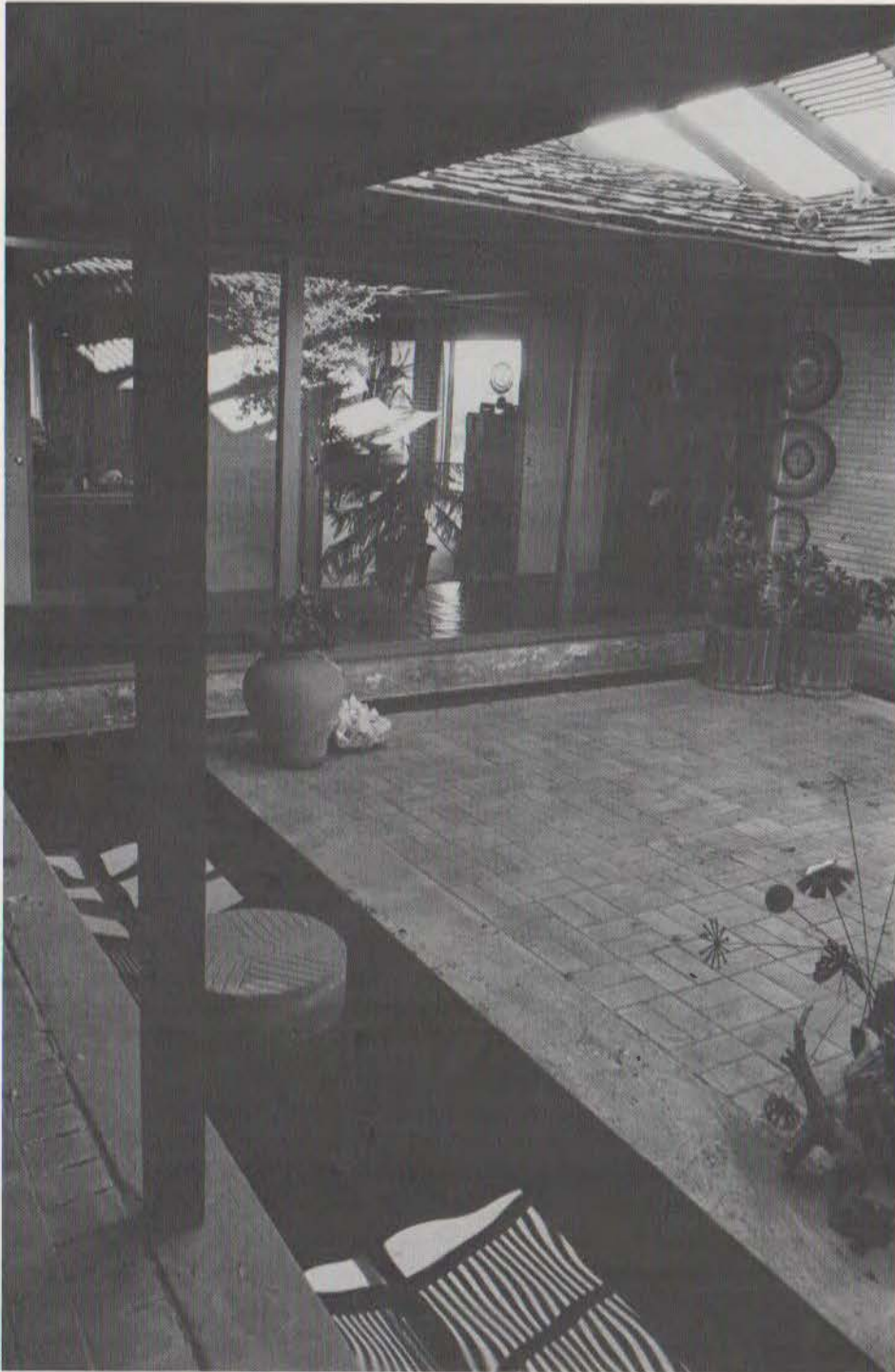
In the Eisenberg House in Dallas, for example, the site given Harris was a lush, heavily treed lot sloping down to a meandering stream to the east. Its relative seclusion as well as its visual appeal led Harris to spread the house into the landscape, producing a sort of pinwheel plan. At each of the four interior corners, an intermediary space is created between the flowing form of the house and the dense surrounding trees—a deck to the east between the living room and the creek view, a terrace to the south off the playroom, a service yard off the kitchen, and a court at the entry with a trellis that becomes the porte cochere. The four indoor/outdoor spaces vary in their degree of closure, their continuity with adjacent rooms and landscape, their manifestations of "built" or "natural" finish, as well as in their size and shape. But each plays a role in merging inside and outside, natural and man-made.



Paul Lamb

Eisenberg House, Dallas, 1958. A house with fingers into nature. Passing planes soften its edges. Wright's traditional pinwheel plan without the typical emphasis of mass at the center.





Interior courtyard, Woodall House, Big Spring, 1959. Oasis of cool serenity protected from the hot West Texas sun.

Woodall House

The site Harris was given for the Woodall House in Big Spring was not quite so genial. Nor was the climate. The plan, in response, is much less exuberant than in the Eisenberg House. Rooms are clustered around a completely enclosed courtyard in the center of the house. Walls exclude the prairie's wind, redwood beams and lattice filter the bright sun, and a still perimeter pool cools and softens the air. The ruggedness of nature is mellowed to make it hospitable enough to become a part of the house. In a similar—but less extreme—way, closed courts to the south and a deep trellised terrace to the west also modify nature as it joins the house.

Treanor House

The general direction set by the Woodall House is taken to an even greater extreme in the Treanor House in Abilene. Harris considered Abilene to be "one of the worst climates in the world"—hot in the summer, cold in the winter, with terrible dust storms in between. The Treanor House plan is closed and compact in response. The central feature of the house is the large garden room—a completely enclosed and conditioned space which is filled with plants and flooded with natural light from above. Here, the distinction between indoor and outdoor spatial characteristics is dissolved. An indoor room feels like the great outdoors.

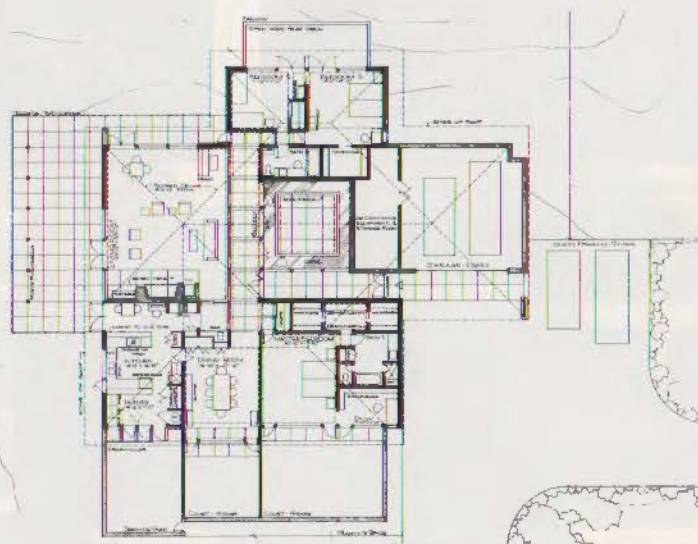
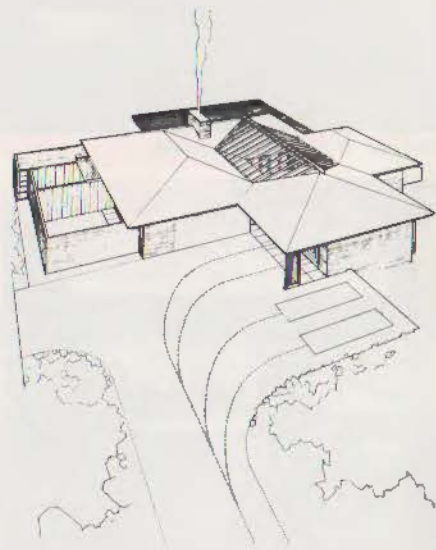
Elsewhere in the house, other, less extreme means are utilized to ease the transition between inside and out. The room-like porch on the southeast corner, complete with fireplace, seems both indoors and outdoors. Heavily trellised courts extend the dining room and kitchen while bringing a bit of natural vegetation into the rigorous rectangular frame of the house.

In all three of these houses, natural and built environments lock hands in the best organic tradition, but without a stifling or dogmatic allegiance to method. Harris is free to respond truly to the particulars of site, climate and client while maintaining a conviction to principles of form, space, nature, and landscape.

Harwell Hamilton Harris has spent his career working within traditions established in the early years of this century by such towering figures as Wright, Sullivan, and Neutra. He has expanded and modified their tenets, but he has not rejected them in favor of more current



Woodall House, Big Spring, 1959.



Constricted plan focuses rooms toward the courtyard and indoor/outdoor spaces at the perimeter. Pyramidal ceiling, left, enhances strong presence of interior spaces.



Treanor House garden room.



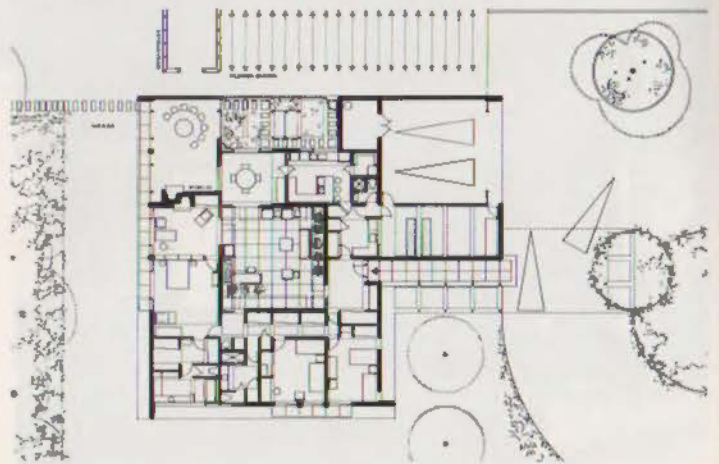
Trellis court extends interiors.



Room-like porch.



Treanor House, Abilene, 1959 (early photo). Crisp, Neutra-like forms and surfaces. Introspective planning within a tight rectangular envelope.



or prevailing doctrines. He is, for us, a link to those traditions—a badly needed connection between the not-so-distant past and the present.

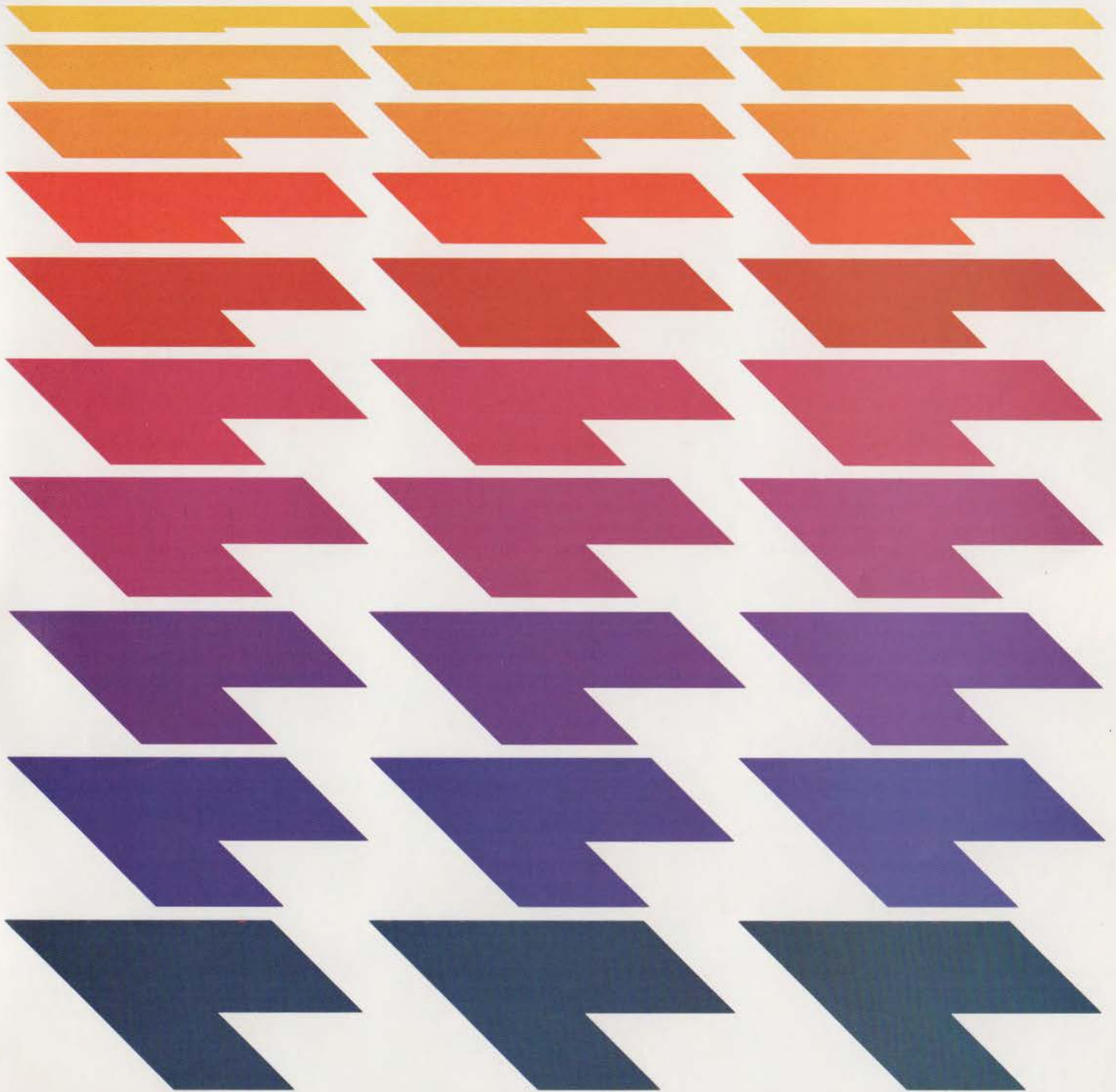
In our recent rejections of Modernism, we seem in danger of making the same blunder as the pioneers of the Modern Movement themselves made by failing to make a link to the immediate past. The ability to continue and build upon existing traditions is an important factor in producing a refined, fully developed architecture. Newness should evolve rather than raise its head in fits and spurts disconnected with context.

That is why it currently is important to keep the work of architects like Harris in our consciousness. We are in danger of losing something which was, at the same time, both within the organic tradition and an expansion of it—both at odds with modernism and a part of it. In using history as a sourcebook for new direction, we should not overlook the product of the recent parental past—that work in which, because of its nearness, both faults and virtues are clear. We also can learn, in any time, from architecture designed with sensitivity, care, and a humane spirit. Such is the work of Harwell Hamilton Harris.



Architect Lawrence Speck, left, a previous TA contributor, is an associate professor of architecture at The University of Texas at Austin. Architectural intern Paul Lamb studied under Speck and became a first-hand admirer of Harris' work by living in one of his houses.

Image





Medical Center Tower
San Antonio, Texas

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The Marmon Mok Partnership
San Antonio

General Contractor
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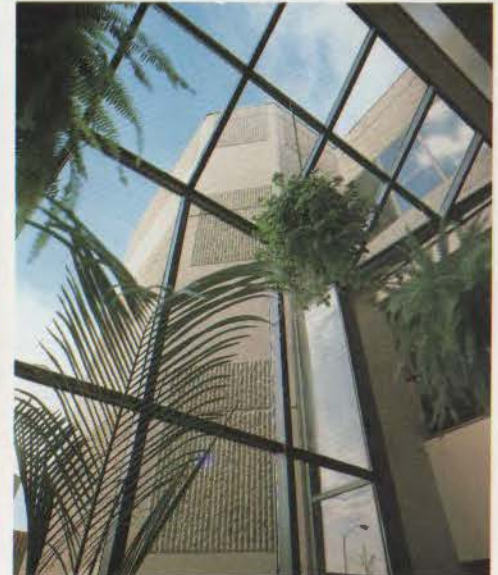
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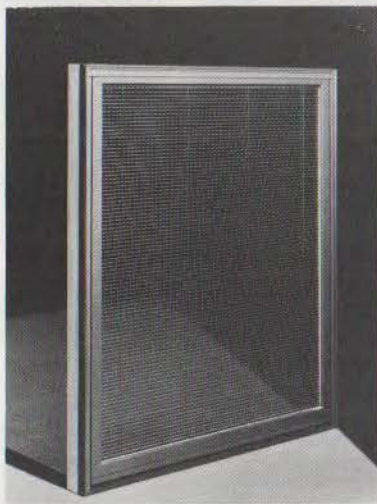
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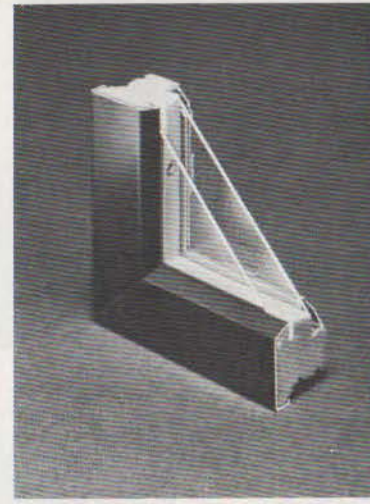


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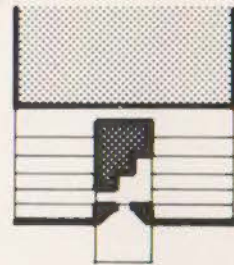
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A Special Treatment

Quail Valley Waste Plant Control Building



By Larry Paul Fuller



Mark Scheyer

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The Utility District Board at Quail Valley, a suburban development southwest of Houston near Sugar Land, found upon completion of its oxygenated waste treatment plant in 1978 that a control building was needed to provide approximately 1,000 square feet of office and lunchroom space for use on a 24-hour basis. Located in clear view of country club members striding and riding the fairways of the community golf course, the unsightly assemblage of existing concrete structures and metallic buildings needed a better image as well as a point

of emphasis to provide a sense of entry for visitors to the facility. The construction budget was \$50,000.

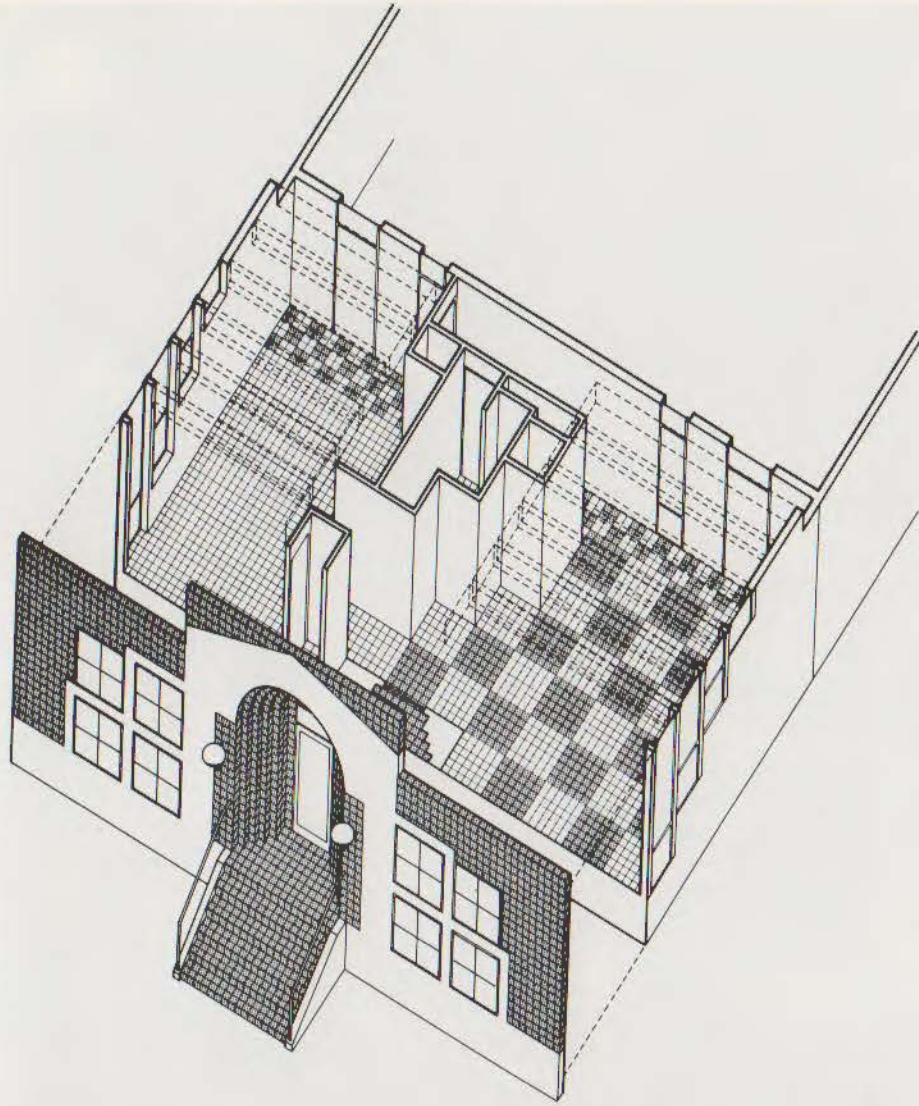
In order to increase the apparent mass of the structure, while diminishing construction cost, the new building was designed as an extension of an existing concrete structure, which was stripped of its fake Mansard roof to facilitate the merger. The new building is further "scaled up" by the front facade, which extends beyond the mass on each side and as a parapet above the roofline.

As in their Houston YWCA Downtown Branch (a 1980 *Progressive Architecture* design award winner, see page 17), the architects have deftly manipulated stucco and tile surfacing materials to create abstractions of classical architectural form. The overall configuration of the facade bears acknowledged overtones of the mathe-

matical and geometric formality of Ledoux and Boullée. And, more overtly, the facade is Palladian in character, with its ruthless symmetry, its temple-front imagery and its ceremonial entry (formed by recessed arches manifesting a corbeled effect).

The real significance of these allusions, however—and the fact that seems to distinguish this approach from one of pure whimsey—is that the historical models alluded to were also the antecedents of countless late 19th- and early 20th-century utilitarian buildings erected all across the face of America. Although not architecturally distinguished as a group, these water control buildings, gymnasiums, and other public structures—many of them WPA projects—are commonly associated with images of "Classical" style.

Quail Valley's alliance with its pre-



decessors is clenched, however, by the juxtaposition of reddish brown tiles and beige stucco, startlingly reminiscent of traditional red brick and stone combinations. The tile and stucco configuration also imparts two different readings of the building's scale, depending on lighting conditions, due to the tendency of the dark tile to recede from view. When both the tile and stucco are viewed simultaneously, this same phenomenon creates an illusion of two separate planes, one behind the other. In addition, the colors were selected to complement the brown and beige used in the existing metallic buildings.

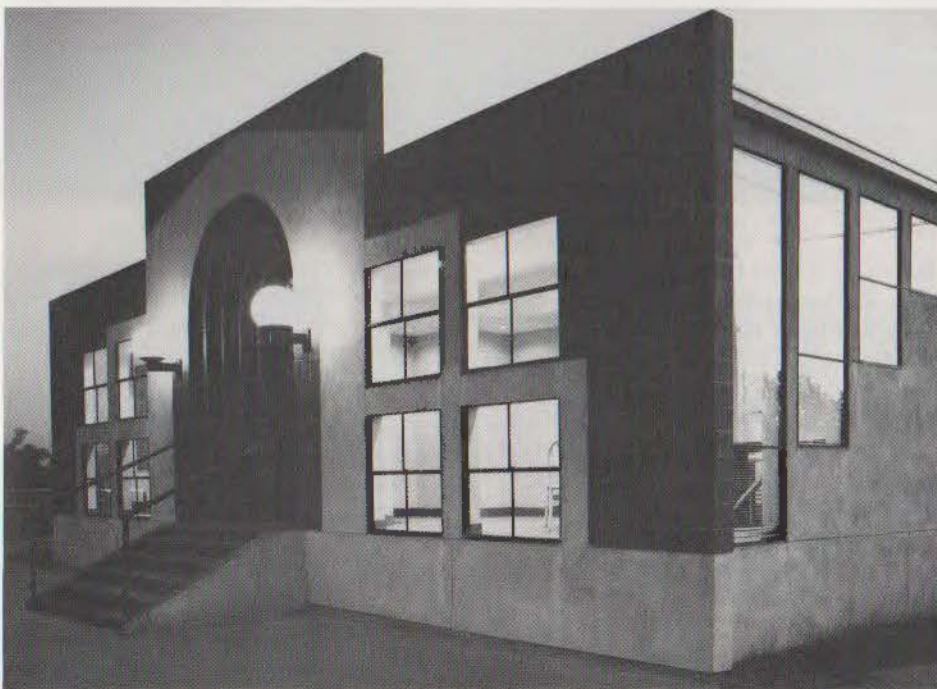
Huge globes flanking the portal, specified for their institutional character, help create a sense of entry. The semicircular insignia above the transom, which sometimes—and quite unintentionally—reads as stained glass, is actually glazed tile produced in the architects' office and was seen as a means of injecting color and of personalizing the building.

Layering

One would hope that the drama imparted by the entry facade would not disintegrate into the banality of a predictable plan inside—perhaps a dim corridor (with drinking fountain) down the middle, creating separate office and dining space, and maybe a couple of accordion-fold partitions for flexibility. And, indeed, such a disappointment does not materialize. Instead, a dialogue occurs between the facade and the interior in the form of successive spatial “layers” parallel to the frontal plane. A central service core, with 90-degree steps in its lunchroom-side partitions, organizes the space and houses bathroom and kitchen functions. The spatial layering occurs as coffers formed by ceiling trusses align with steps in the service core. The effect is reinforced by the width of windows in the side facade and by dimensions of the grid formed by alternating colors of floor tile (which approximate exterior colors).

The floor tile combination changes scale to indicate transitions from lunchroom to existing building and kitchen, and from kitchen to bathroom, while the office space is defined by reducing the tile to one color. Decorative tile patterns embellish bathroom walls. Other interior wall surfaces are painted beige in contrast to a lighter color for ceiling trusses and coffers. All surface materials are durable and washable for minimal maintenance.

For a construction cost of \$47,500,



Mark Scheyer



Mark Scheyer

the client received more than was expected. But the question should be posed, "Was it *too much* more?" After all, what do the building's users know or care about the architectural rhetoric associated with historical allusion and the layering of space? The answer seems to lie in the fact that the architects were able to inject a high level of intellectual content without compromising the harsh realities of practical building.

The Utility District management reports that community response has been overwhelmingly positive. And, more important, the people who actually *use* the

facility on a daily basis find it very livable. Earlier lunchroom facilities were seldom utilized, but this one is a place of congregation. There has even been a dramatic reduction in the employee turnover rate, which has been attributed to the improved working environment. As workers habitually enter the portal, they may not do so ceremoniously. And, once inside, they may not observe the rigorously structured layers of space. What they do perceive, however, is that every day they are privileged to inhabit a special little building.

Architect: Taft Architects, Houston; Partners—John J. Casbarian, Danny Samuels, Robert H. Timme

Project Assistant: Scott Waugh

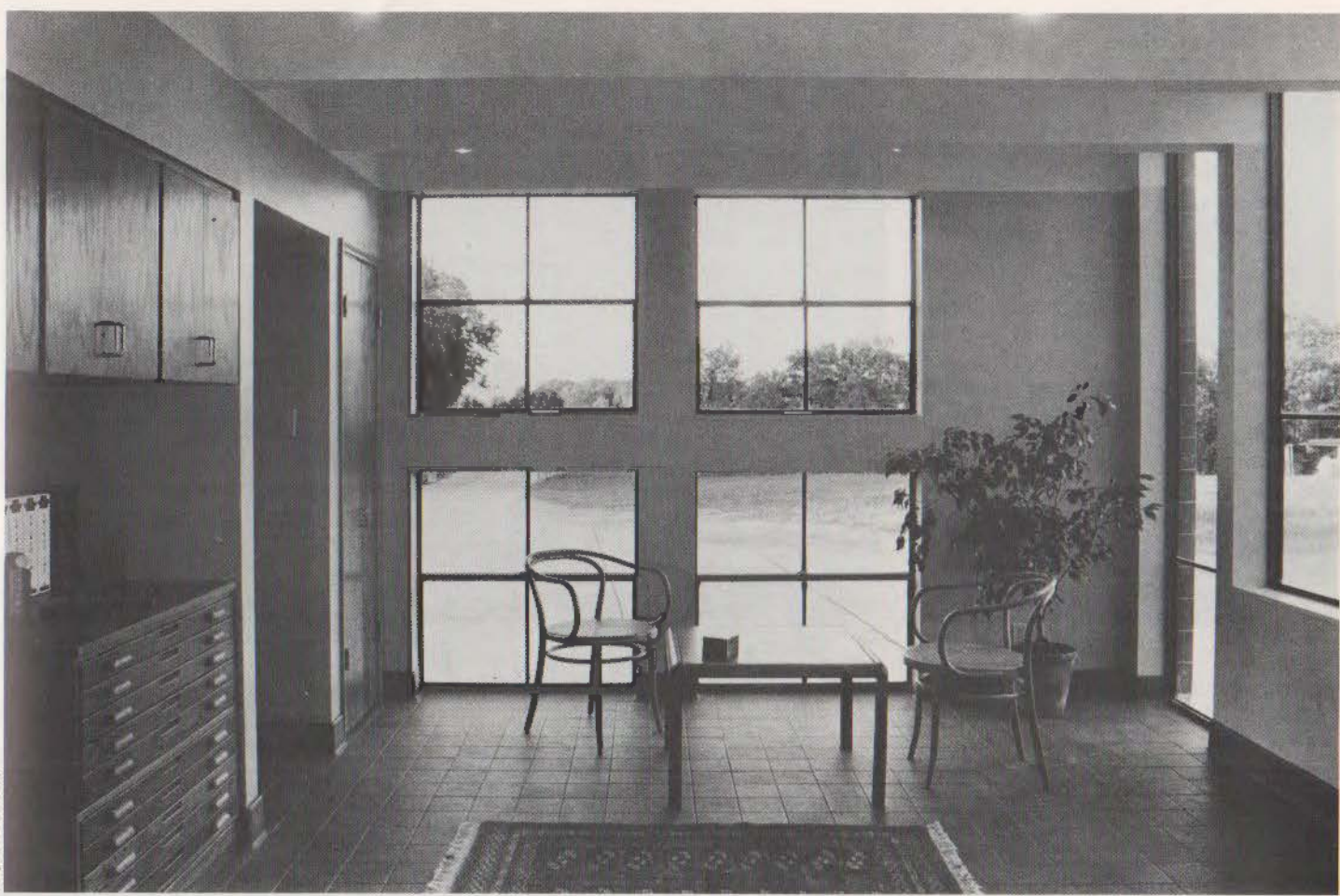
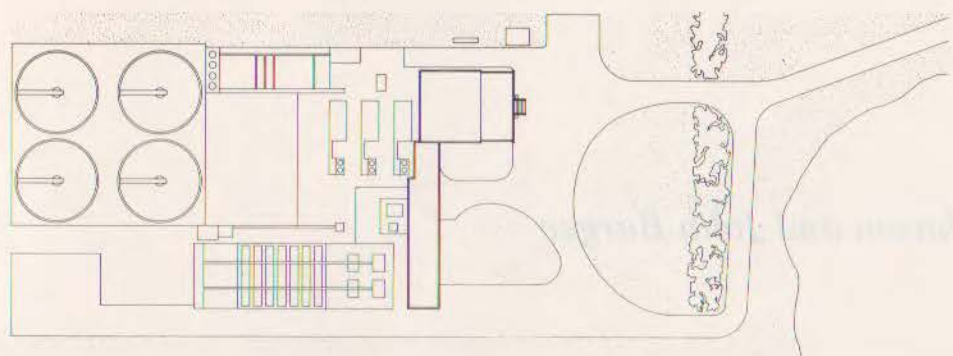
Support Team: Marc Boucher, Jeffrey Averill

Ceramic Tile Design: Joyce Rosner

Interior Furnishings: Candace Timme

Structural Engineer: R. George Cunningham Associates, Houston

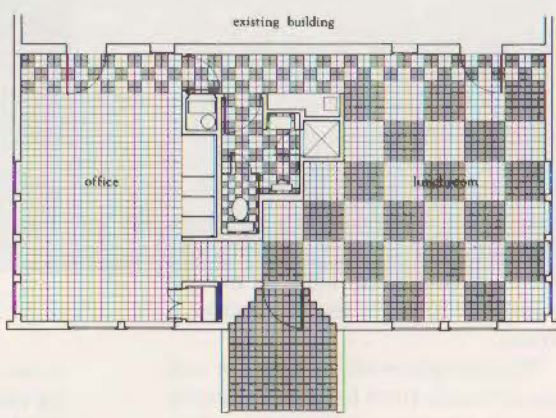
Contractor: Huisache Construction Co., Houston



Taft Architects



Mark Scheyer



FACING PAGE: View of lunchroom toward side facade. Layers formed by ceiling trusses and coffers, reinforced by window widths and floor tile grid. ABOVE: Office viewed toward front facade. Floor tile reduced to one color.

Richard Payne on Philip Johnson and John Burgee

Essay by Mimi Crossley



Johnson/Burgee: Architecture; The Buildings and Projects of Philip Johnson and John Burgee. Text by Nory Miller. Photographs by Richard Payne. Published in the United States, 1979, by Random House, Inc., New York, and simultaneously in Canada by Random House of Canada Limited, Toronto; cloth-bound, 120 pages; \$35.

In 1978, Houston architectural photographer Richard Payne was retained by Philip Johnson and John Burgee to photograph their post-1972 work for Random House's recently-released book written by Nory Miller. From this full-scale documentation emerged not only the book but an ongoing working relationship with Johnson/Burgee, as well as an exhibition of photographs—"Beyond the Box: Architecture of Philip Johnson and John Burgee"—held in December at the University of Houston's Sarah Campbell Blaffer Gallery. Guest curator for the exhibit was Houston Post Art Critic Mimi Crossley.

We are pleased to present the following portfolio of Payne's images, introduced by Crossley's brief essay on the photographer and his work.

Photographer Richard Payne trained first as an architect, then took up the camera. Out of his architectural experience came the photographic approach he has practiced on projects all over the United States since 1968: a patient, sensitive search for the moment and angle at which the design concepts of a building are seen most clearly.

His approach might be called classic. The architecture of Philip Johnson and John Burgee, Payne has said, "is serious, formal and beautiful. The buildings require a serious, formal photographic response."

Payne's typically strong, geometric images of architecture appear regularly in the professional and popular press. But his success also underscores the growing role photography plays in our perception of architecture. The often enormous scale of contemporary buildings and the crowded, turbulent city streets on which they are built make it impossible for us to see architecture whole.

Photographs made by cameras with special lenses from locations sidewalk viewers cannot reach give us a setting—



Avery Fisher Hall, 1976



Century Center, 1977

Note—Payne's photographs on the following pages are reproduced by permission of Random House, Inc.: 52, 53, 55 & 58.

Cathy Payne Harrington





Niagara Falls Convention Center, 1974

artificial, it is true—into which we fit our more fragmented, serial experience of walking, working or living in a building. Once seen, architectural photographs become the inescapable context for our urban landscape.

For each project, Payne usually finds a central photographic image. Often, it is a picture taken the same way the architect would draw it—in one-point perspective, such as the Payne photograph of the Avery Fisher Hall at Lincoln Center, New York City.

Shooting at the point of perspective activates radiating lines and forms. Other building plans require different approaches: for the Century Center in South Bend, Indiana, the idea of an assemblage of forms along skylighted arcades required diagonally-composed interior shots showing how the forms connect.

While the results might appear naturalistic, they are not. Payne boosts reality, to a hyper-real level. For instance, our eye cannot capture the full sweep of the curved roof for the Convention Center in Niagara Falls, New York, but Payne's picture does. The now-famous image of Pennzoil Place in Houston appears to have been shot while Payne hovered somewhere in space.

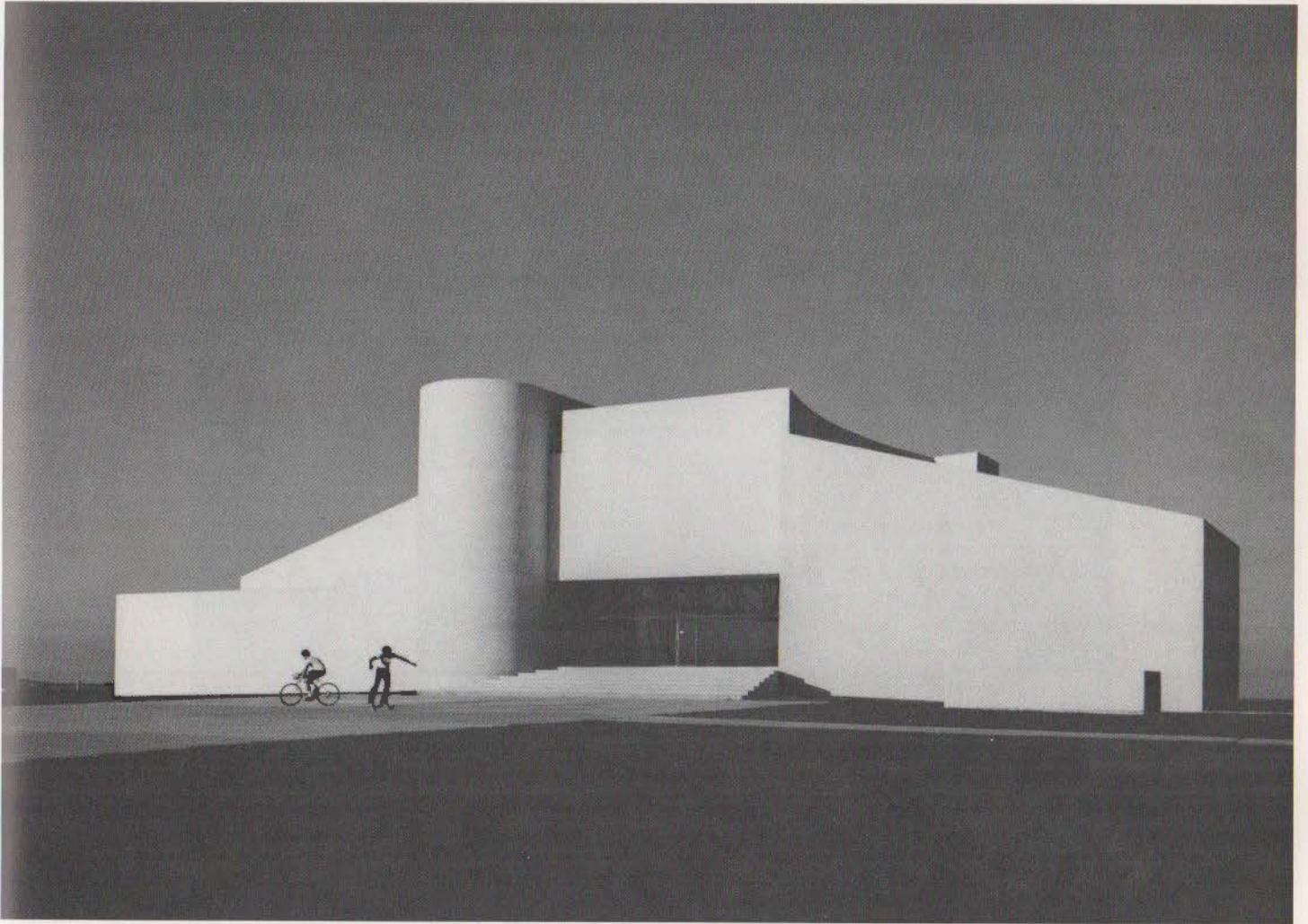
In addition to the artificialities inherent in method, Payne boosts reality into the realm of the surreal through his taste for strong light, black shadows and sculptural form. He pushes these effects to a limit he feels is correct. It is a limit expressing a building to its fullest extent through mood and light, without falling over a line into exploiting architecture as an expression of the photographer's personality and style.

The best photographs, Payne has said, "are right on the line."

*Crystal Cathedral—Garden Grove Community Church
Garden Grove, California, under construction*



*Art Museum of South Texas
Corpus Christi, 1972; Associated Architects—Barnstone & Aubry*



*Fine Arts Center—Muhlenberg College
Allentown, Pennsylvania, 1977; Coston, Wallace & Watson—Associated Architects*



Morningside House
New York, New York, 1975



*General American Life Insurance Company
St. Louis, Missouri, 1977*

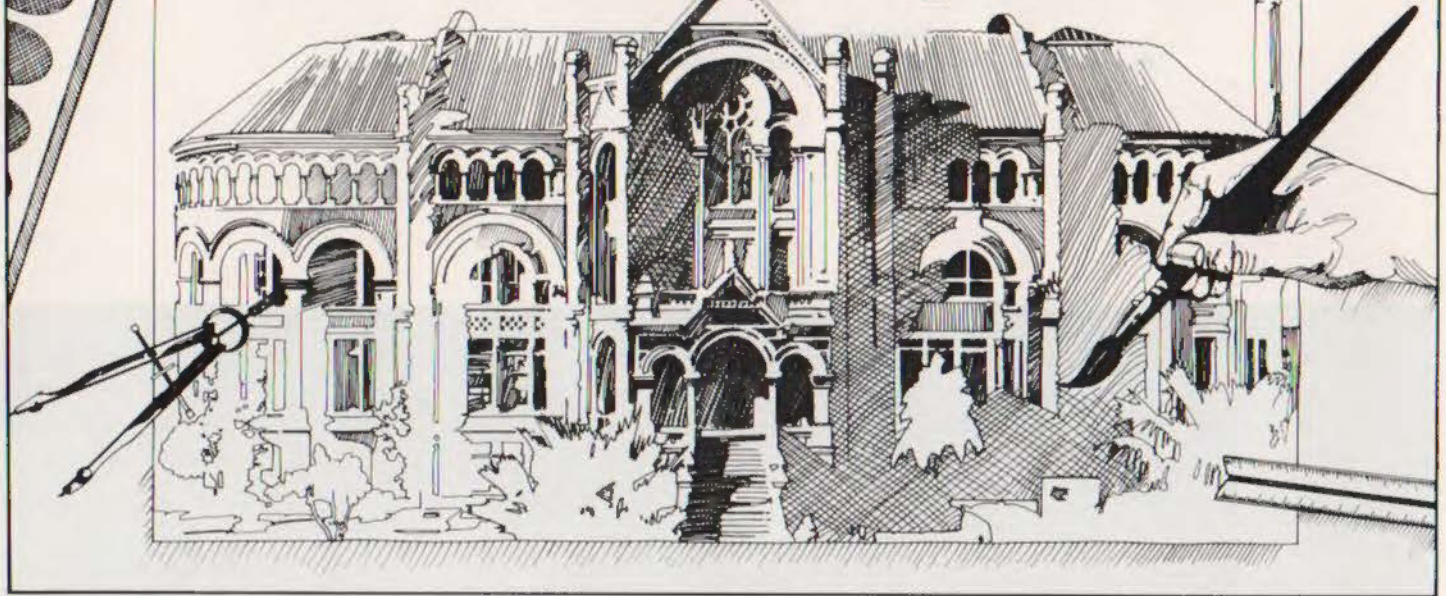


Finishing Touches for a Masterpiece

*Boston Public Library Addition
Boston, Massachusetts, 1973; Joint Venture Architects—Architects Design Group, Inc.*



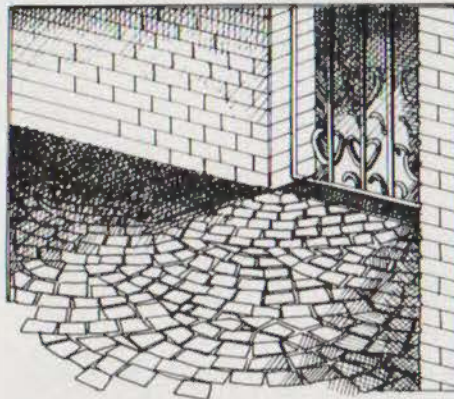
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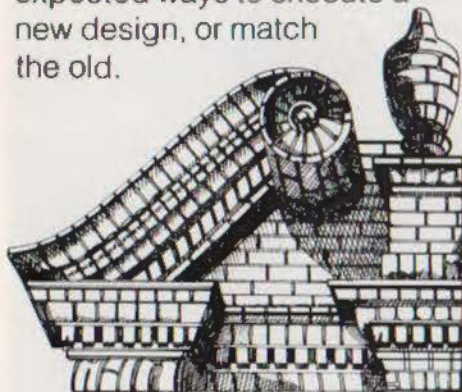


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Listen to Your Architecture

Thoughts on Committing Acoustics

By David McCandless

When you are in the creative process—designing shapes, volumes, walls, ceilings—do you hear your architecture? And when you walk through new buildings—your own, or other spaces you have never seen before—do you listen to the rooms? You should, because every time you enclose some space with walls and a ceiling, you create an acoustical environment that never existed before. Whether that environment is “good” or “bad” is the result of your design decisions. You have committed acoustics.

Not only that—but you have also created a separation of that environment from other environments around it. So, that wall and that ceiling—that division of space—is another separate act of acoustical significance. One architectural decision, to enclose some space, creates two separate acoustical phenomena: the room’s own acoustical qualities, and the reduction of noises transmitted to or from that space.

Architects are “visualizers,” continually training eye and memory in this talent. You visualize space and scale, the qualities of light and shadows, of texture and color. Yet do you “audilize” what your spaces will sound like with activities going on, or “audilize” the acoustical separation your walls will provide.

The idea of “hearing” architectural design is not new. Many of my colleagues have heard me say, “When an architect designs a building, he sees it in his mind’s eye; he should also be able to *hear it in his mind’s ear!*” This idea is presented as a challenge to most of us. If we can learn to listen to our buildings, we can also learn to audilize their sounds, as well as visualize their appearance, in the design process.

If acoustics may be called an art and a science, then the science is the whole body of facts available for use, and the

art is the experience that allows those facts to be used wisely. Audilization is part of that process. Attention to this art need not be limited to the acoustical consultant. Some architects have developed a sense for acoustics by listening and relating to the basic facts. They have learned to make subjective judgments that are very useful in defining the desired acoustical criteria and in achieving those goals through design. And they are, incidentally, the architects most apt to call in the consultant because of the importance they place on acoustical environments.

If you have never listened to your rooms, you have been missing one of the subtlest consequences of your work, and it is time you started listening and learning what to listen for. Eventually you will relate what you hear to what you see, and then you will start audilizing—imagining the sounds of your design.

Inside and Outside

In listening to architecture, the quality of a room’s own response to sound should not be confused with the other equally important aspect of architectural acoustics—the separation of acoustical environments. If in listening for the room’s response to useful sounds you hear instead the air conditioning system, the activities in the next room, the traffic outside, or other disturbing noises, you are experiencing the need for noise control between acoustical environments.

It is easy to identify noises, but it is often difficult, without practiced listening, to hear a room’s own particular acoustical qualities. If you are a beginning listener, therefore, you must find a room that has little or no background noise which might mask what the room itself is doing to the useful sounds you want to hear. You soon will notice that the acoustical personalities of rooms are more pronounced in larger spaces.



The greater distances between surfaces magnify a room’s peculiarities regardless of whether they are good or bad. So, it is wise to start by listening to large-volume spaces where the acoustics are more obvious. With practice, it will become easier to hear the sounds of smaller rooms—even in the presence of some distracting, irrelevant noises.

Comparative listening is very useful for developing an “audile memory.” Pick a large room, free of disturbances, as a basis for comparison with other rooms you visit less frequently. It would be very helpful to determine reverberation times and other standard acoustical measurements as a basis for comparison with other rooms which may be more or less “live.”

The best comparative listening will occur between two adjacent, large spaces of about the same size and shape, but with very different interior finishes and furnishings. Go alternately into each room and listen to:

- the quietness without activities,
- someone talking at the same sound level at different distances, and
- a loud, sharp, single handclap (a very portable test sound source).

Listen to how quickly or slowly these rooms allow the sounds to fade away and whether there are any pronounced characteristics in their sound decays. You soon will begin to notice whether one room allows better speech intelligibility than another, or whether it would be more likely to give support to music. You also will notice degrees of such room faults as focusing, echoes, flutter-echoes and the ringing of some materials in wall and ceiling construction.

Visit an acoustically successful open-plan office space and turn on your ears. (It may be necessary to close your eyes to the visual qualities to appreciate the

sound qualities of the space.) You will hear general activities, but they will not be too loud, and certainly not reverberant. You will hear most clearly the sounds and voices close by—the only ones you need to hear. You will be conscious of the voices of people seen at a greater distance, but for some reason (absorption and sound masking) they will not be heard distinctly, and their discussions will not be distracting. The sound level of this space will be comfortable and you will realize it is not necessary to raise your voice to be heard by associates close by.

When you open your eyes to the designed acoustics of this successful space, you will see:

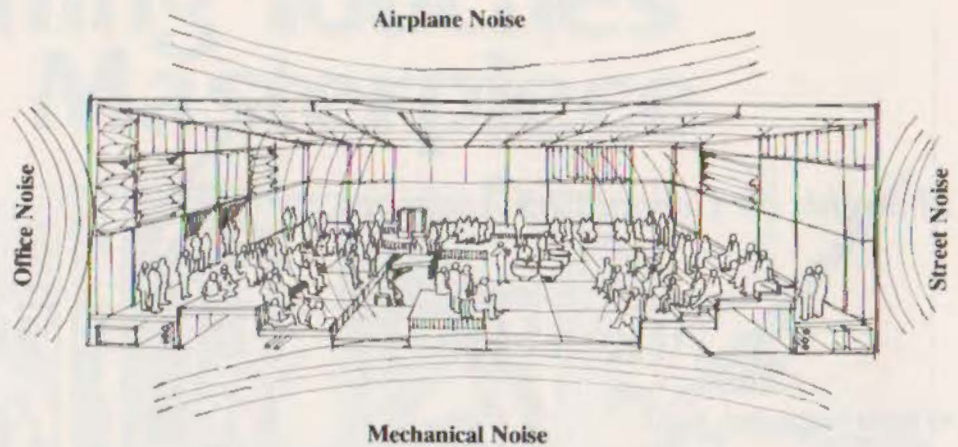
- that most vertical surfaces, as well as floor and ceiling, are treated with highly absorptive materials;
 - that special screens and furnishings are arranged appropriately as barriers to sound; and
 - that people, tasks, and furnishings are oriented according to the need to hear.
- There also will be an unobtrusive background sound that provides a masking of distant voices when they are not masked by nearby activity sounds.

If while listening for these room acoustical characteristics you hear as well the activity on the floor above, or the computer in the adjacent enclosed space, and/or the HVAC fans rumbling, you are experiencing the other problem of architectural acoustics—the separation of acoustical environments. The decisions for wall, floor and ceiling construction, for duct-borne noise and, probably, for vibration isolation were not adequately developed. It is also possible that you are hearing the results of poor workmanship and inadequate sealing of cracks during construction.

Learning Exercises

There are many other exercises which are helpful in developing a sensitivity for acoustics. For example, when walking along a hospital corridor, listen to the level of your partner's voice above the footfall noise of your four feet in that reverberant space. Hear the changes that occur as you approach two other walker/talkers and ask yourself if that is the "right" environment.

Remember the hospital hallway as you walk along a carpeted hotel corridor, listening to the level of your companion's voice. The carpeted floor reduces footfall sounds and *makes* you talk more quietly. In fact, as others ap-



proach, you may be inclined even to stop whispering.

Persuade a school board to install carpet in some general circulation area, or even in a classroom. Notice the difference which the reduction in reverberation causes in the level of the children's voices, and even in their attitudes toward each other.

Find two big offices or bank lobbies of similar size, but with varying floor finishes. Listen to the differences in the sounds of the spaces at the noon-hour rush. Try to decide whether one environment is more exciting than another, and whether that is desirable. If there is banking activity, try to decide if the quality of the rooms' sounds has a beneficial or an adverse effect on business functions.

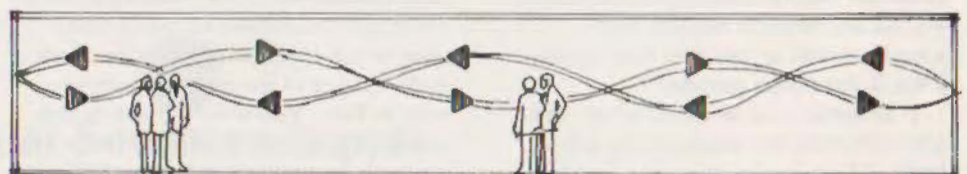
Visit several school gymnasiums and other similar large rooms which are basically rectangular. See if you can identify by ear those sound paths which occur between the parallel surfaces—floor and ceiling, the two end walls, and the two side walls. The more reverberant the space is, the harder it will be to hear these individual phenomena. If there is efficient absorption only in the limits to vertical sound paths (floor and/or ceiling absorption), there may not be any noticeable reduction in reverberation at all, because the horizontal components of sounds can still go 'round and 'round the room. In such cases, there may be a five-second decay of sound even though there is, theoretically, enough absorption in the ceiling to calculate a 1.5 second

reverberation time. Listening experiences like this, with a few facts for guidance, will illustrate the importance of some absorption in each dimension of a room.

The single handclap is a good sound source for such listening "observations." Move about the gymnasium clapping occasionally. Listen for the differences in both the reverberation and the prominent reflections. See if some of these reflections can be eliminated by standing in line with open doors or other dissipative (absorptive) areas. It is possible to find locations in rooms where flutter echoes, single echoes, and focusing from curved surfaces will be obvious. Try this same test in a long, straight corridor with flat, parallel end walls. In many cases, the longitudinal flutter-echo is quite obvious because the other parallel surfaces are too close together to produce a distinguishable flutter.

In a good room, there will not be a perceivable flutter, focus, or echo, nor will there be too much or too little reverberation. You will hear direct sound, useful reflections, and the "surround" of diffused sound, all together, within the appropriate reverberation for the room.

When listening to auditoriums and churches, try to compare the rooms' qualities at the same distance from the source (stage, pulpit, etc.). The benefit of reflective ceilings will be obvious, especially in the case of those shaped to provide early reflections. The lower ceilings, whose reflections arrive earlier than they would from very high ceilings, will thus provide a feeling of more "inti-



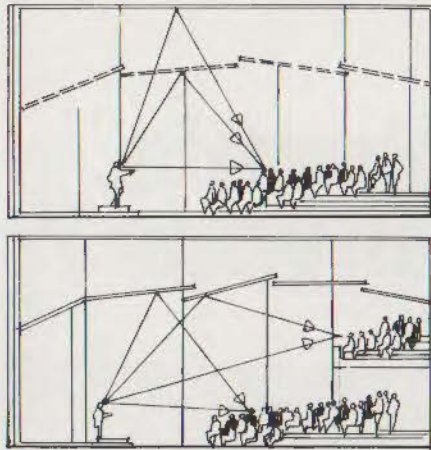
macy" with the source. This same phenomenon explains why balcony seats are usually better, acoustically, than the seats on the main floor.

Notice the difference in the evenness of the dissipation of reverberant sound in a theater or church with much surface configuration, as compared to one with plain, smooth, uninterrupted surfaces. Remember to make this comparison in rooms of about the same size (volume) and the same arrangement of absorptive finishes and furnishings. A sense of "sound surround" or envelopment will pervade rooms that have significant shaping and many diffusive surfaces in their design.

A Rule of Thumb

There is a simple rule-of-thumb architects can apply in design as well as in listening to auditoriums and churches. Since the audience (or empty upholstered seating) is usually the major sound absorber, and since reverberation depends on total absorption as well as volume, the volume-per-seat ratio is significant. There is a dramatic difference in the reverberation qualities of rooms with high and low ratios. Listening comparisons will be meaningful for two rooms of the same volume, but very different seating capacities, and vice versa. When this ratio is low, in the range of 150 cubic feet per seat, speech will be quite intelligible, and music will lack some richness. With a ratio of 200-250, speech will be less clear but music will sound more full, more supported by the room. When the ratio is 300 or more cubic feet per seat, the room may sound like a cathedral and speech may be very difficult to understand, assuming that the room is not heavily modified with absorptive materials. Rooms with high ratios can be treated with absorption to deaden them while rooms with low ratios cannot be treated to make them more live than the ratio normally allows.

Comparison of restaurants can be a two-fold auditory experience for the designer who knows what to listen for. Some restaurants suffer from the so-called "cocktail party effect" and there are others whose acoustical environments contribute significantly to the atmosphere of relaxed dining. The "cocktail party effect" is a well documented—and observable—rise in participants' voice levels as more and more people gather. Sound levels in rooms which suffer this syndrome can go from almost whispered conversations in a nearly empty room, in an increasing



climb as people gather, up to very loud voice levels even at a separation of two or three feet. This room acoustics problem is the result of too little and too inefficient absorption in the room, especially on the upper walls (from about four feet up), and also on the ceiling and in the furnishings.

By contrast, there are restaurants in which voice levels are normal across each table and not intrusive from nearby tables or across the room. Sometimes the absorbent materials which create this environment are perceivable at first glance. These include acoustical tile ceilings, heavy drapes, upholstered chairs, thick carpets, and even table cloths which reduce the background noise of china, glass and silver. In other instances it is more difficult to see what is allowing the pleasant auditory experience. It may well be an unusual wall treatment of an acoustically transparent facing over an absorptive padding. You must train yourself to listen occasionally to such rooms if you want to achieve similar environments through design.

The more you listen to architecture, the more you will become aware of the two different problems of architectural acoustics—the room's own effect on useful sounds and the barriers for controlling noise disturbances. As you realize the need for separate solutions to these basic problems, you will be dispelling the "acoustical mystique" which pervades our profession. There is no magic wand that can be waved over a set of plans to produce good acoustics, unless it is the discipline of comprehending the acoustical results of design decisions.

The most common acoustical misconception involves the use of insulation. Typical insulation materials do not really insulate sound the way they insulate heat transmission. It takes mass, limpness and

air-tightness to stop sound transmission. Air and sound pressure pulses in the air can pass through most insulation materials. To create a sound barrier, it is better in ordinary wall construction to add mass to the wall faces. However, when the wall construction allows a structural discontinuity (staggered studs, resilient furring, etc.), the insulation materials are more meaningful since they act on the air pressure pulses in the narrow "room" between the two halves of the wall. But the real advantages are in the mass of the two sides of the wall, the discontinuity between them, and the air-tightness of the construction.

Insulation materials also are used for room acoustic treatments on the surfaces of rooms. Acoustical tiles are made of fiberglass and porous mineral fibers, and special absorptive wall treatments often incorporate insulation materials. However, it should be understood that the materials are not being used as insulation in these applications.

Since "insulation" is such a misleading word, it would be wise to use two other terms in studying the sounds of architecture. Think of "surface absorption" in conjunction with the decay of reverberant sound and the control of echoes and focusing in auditoriums. And think of the need for "isolation" to control sound transmission through walls, floors, or ceiling construction. These terms will suit you better.

Remember that you can sharpen your acoustical sensitivities by listening to all the buildings you visit and all the spaces you design. Hear room acoustics and disturbing noises separately. And when you visualize your designs, audilize them as well. That will help you overcome the "acoustical mystique" and relate more appropriately to your design concepts and details. Since you are committing acoustics in the process of design, attempt to do it well.



David McCandless is a consultant in acoustics in the Austin office of Joiner Pelton Rose, Inc., of Dallas. Also an architect, McCandless holds degrees in architecture from Cornell and

M.I.T. and has taught acoustics, design and graphics at the University of Texas at Austin and at Arlington. He has been an acoustical consultant since 1962 for a full range of projects in the United States and Mexico.

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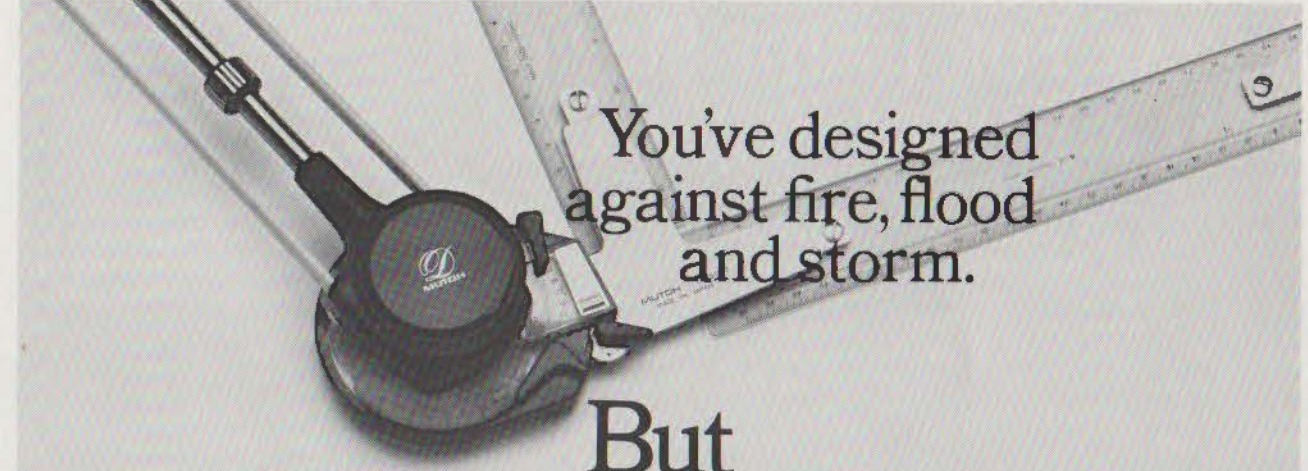
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The award recognizes Braden's "leadership in civic and business affairs" and his "personal and professional standards of ethics and conduct." Braden, chairman of the Dallas firm Dahl/Braden/Chapman, has served as president of the Oak Cliff Chamber of Commerce, the Oak Cliff Lions Club, the Citizens Charter Association and is currently a director of the Greater Dallas Planning Council and the State Fair of Texas.

Braden was president of TSA in 1975 and served as chairman of the Texas Architects Committee (TAC), TSA's political action arm, from 1976 to 1979.

The national Conference of Christians and Jews was founded in 1928 to establish an ongoing dialogue among various religious groups. Its Dallas chapter was founded in 1939 and is the third oldest in the country.

Architect Donald Greene Cited for Community Service In Corpus Christi

Corpus architect Donald Greene, president of the firm Total Design Four, was honored during a special luncheon in January by the Corpus Christi Rotary Club for his outstanding service to the community.

Greene has been active in a variety of civic programs and organizations, including the "Leadership Corpus Christi Program," which he founded in 1972. He also has served as a member of the Corpus Christi Chamber of Commerce board of directors, and chairman of the Industrial Committee, the Municipal Arts Committee and the Artifax Committee.

Greene is a member of TSA, AIA and the Urban Land Development Institute.

Galveston Homes Tour Set for May 10-11

Galveston's Seventh Annual Tours-of-Homes, sponsored by the Galveston Historical Foundation, will be held Saturday and Sunday, May 10-11, featuring seven privately-owned homes which have never before been available for public viewing (except during the restoration process).

Included in the tour will be a primitive Texas cabin, which has been relocated, raised and furnished with period furnishings; a Victorian mansion, with original art glass; and a large-scale residence currently being restored.

Each of the houses on the tour will be staffed by volunteer tour guides, who will

be available to point out distinctive features of the houses and to answer questions. Visitors will receive a tour booklet, including photographs, a history and an architectural description of each home. Touring will be by private car.

Advance tickets are \$11, and can be obtained by writing to: Events, Galveston Historical Foundation, P.O. Drawer 539, Galveston 77553. Telephone: (713) 765-7834. Tickets on the day of the event will be \$12 (\$3 for children 14 years of age and under).

Photos by Bellaire Architect Win Kodak Awards, Displayed In New York Exhibit

Jerry Houston



Special merit-award winner.

Jerry Houston



Certificate of merit winner.

Two color photographs by Bellaire architect Gerald H. Houston were on display Jan. 8-25 in The Equitable Gallery in New York City, part of a presentation of nearly 800 finalists in the Kodak International Newspaper Snapshot Awards.

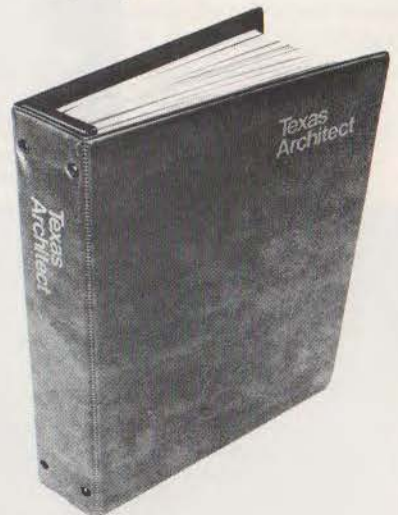
The exhibit included the winners of local contests held last summer by 138 newspapers in the United States, Canada and Mexico, all of which received a total of more than 350,000 entries.

Houston's \$100 special merit-award winner is of a dog in a life raft adrift in a sea of Texas bluebonnets. His second entry, which earned him a certificate of merit, surrealistically depicts the start of a Houston marathon race, with runners sweeping by in a blur against a focused backdrop of the Houston skyline.

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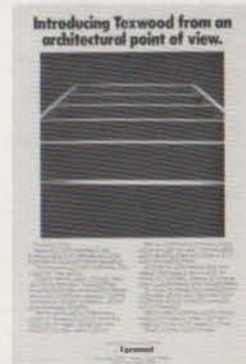
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*Accepted for Display in New
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Concept by Warren Moeckel,
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Photo: Frank White*



*Gold Award
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Agency: Poth & McGeeney
Advertising, Inc.*



Both photographs were local winners in *The Shreveport (Louisiana) Times'* summer snapshot contest and, as such, were submitted to the international competition.

Houston also received a Kodak Centennial Medallion for excellence in amateur photography.

RDA to Present Interior Architecture Lectures, Housing Symposium

The Rice Design Alliance (RDA) in Houston has announced a spring lecture series on interior architecture and a two-day symposium on housing within Loop 610 in Houston, scheduled for April and May.

The six-day lecture series, entitled "Inside/Outside: The Architecture of Interiors" and sponsored in conjunction with TSA's Houston chapter Committee for Interior Architecture, will begin Wednesday, April 2, and continue on successive Wednesdays through May 7 at the Museum of Fine Arts' Brown Auditorium.

Exploring architecture as it relates to total interior as well as exterior design—

including detail, decoration and furniture, among other things—will be featured speakers J. Stewart Johnson, Michael Graves, Massimo Vignelli, Frank O. Gehry, Charles Gwathmey and Emilio Ambasz.

And May 16-17 in Sewall Hall on the Rice University campus, RDA will conduct a symposium to assemble observations, options and opinions on how to get housing inside Houston's Loop 610 and how to keep it there.

For more information, contact the Rice Design Alliance, P.O. Box 1892, Houston 77001. Telephone: (713) 527-4876.

Architecture for Health Exhibition Scheduled For May 26-28 in Houston

The Texas Hospital Association, in cooperation with TSA and the American Hospital Association, will hold its 8th Annual Exhibition of Architecture for Health May 26-28 at the Astrohall in Houston.

Eligible projects are mounts or scale models of facilities or parts of facilities including hospitals, long-term care facili-

ties, health centers, diagnostic and treatment centers, medical office facilities, medical laboratories, staff housing and medical research facilities which were completed after July 1, 1976. Projects in the design or construction phase may also be exhibited if the architectural contract is dated no later than Oct. 1, 1979. Displayed projects may be constructed or proposed for construction in any country.

For more information, contact Richard Bettis, Exhibits Manager, Texas Hospital Association, P. O. Box 15587, Austin 78761. Telephone: (512) 453-7204.

Projects in Progress

American Airlines HQ Now Under Construction At D/FW Regional Airport

A new \$55 million corporate headquarters for American Airlines, designed by the Los Angeles firm William Pereira Associates, with the Dallas firm Corgan Associates serving as local architects, is now under construction on a densely wooded site within the boundaries of the



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The building is designed as a series of uniform four-story modules stepping down a slope toward a man-made lake, which was formed by damming a stream flowing through the site. These structures will be supported above ground by exposed steel frame, and large, shaded glass areas will be situated to maximize views of the lake and surrounding forest. The modules will be separated by courts, through which circulation corridors will pass to connect the modules to a large skylit gallery area.

The American Airlines site, a portion of 300 acres recently added to the airport boundaries, will also include American's Flight Academy, Learning Center, and a \$17 million Southern Regional Reservations Office designed by Corgan Associates and scheduled to begin construction in May.

The two-story building is designed as a double cruciform joined in the center by a full-height atrium. Some 900 agents will occupy the second floor, where specialized sales functions will be housed in individual wings of the building. The first floor will contain training rooms, administrative offices and a cafeteria, with seating in the atrium area. Construction is expected to be completed in April 1981.

Bus Maintenance Complex Underway in Houston

A \$27 million bus maintenance complex, designed by the Houston firm Bernard Johnson Incorporated "to symbolize the new direction of mass transportation in the nation's fastest growing city," is now underway on a 21-acre site in Houston, scheduled for completion in



Bus maintenance complex.

late 1981.

The 250,000-square-foot facility will be the keystone of Houston's expanding transit system, which city planners predict will need a minimum of 1,500 buses on the street by 1995. To help accommodate that fleet, the new facility will consist of two semi-circular buildings, each connected to a bus-parking canopy in between by elevated pedestrian catwalks. The 200,000-square-foot, fan-shaped, heavy maintenance shop on one end will facilitate such services as engine overhaul, component rebuilding, body work and dynamometer testing. The smaller building on the opposite end will serve as administrative headquarters for the city's Metropolitan Transit Authority bus operations.

The maintenance shop itself will consist of three concentric activity areas: bus stalls on the perimeter, repair shops at the core and parts storage in between. Fifty one 20-foot by 70-foot repair bays will be used for major bus repairs, body repair or "running repair." Facilities will include a general machine shop, welding and radiator shop, and areas for transmission, engine and differential overhaul. A strip between the shops and stalls will be reserved mainly for central parts receiving, storage and distribution.



Austin office building.

Ground to Break Soon For Austin Office Building

Construction is scheduled to begin soon on a 120,000-square-foot office building at the intersection of Interstate 35 and Ben White Boulevard in Austin, designed by the Austin firm Architectural Consortium.

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Energy conservation measures include solar orientation, shading devices, insulating glass and a variable-volume air-conditioning system.

News of Schools

ACSA Energy-Conscious Design Competition Set for this Spring

Some 10,000 upper-division students in schools of architecture nationwide will be invited this spring to participate in "Design and Energy," a design competition sponsored by the Association of Collegiate Schools of Architecture (ACSA), with support from the Brick Institute of America and the United States Department of Energy.

The competition will emphasize energy-conscious design and the application of passive solar energy systems using brick masonry materials. Jurors, scheduled to meet May 17, will include John Burgee, FAIA; George Hartman, Jr., FAIA; Richard Stein, FAIA; Paul Goldberger, *The New York Times* architecture critic; and Fred Dubin, PE.

For more information, contact the Association of Collegiate Schools of Architecture, Inc., 1735 New York Ave. NW, Washington, D.C. 20006. Telephone: (202) 785-2324.

U of H Design Team Studying Celestial Food Service Facility

The College of Architecture and Hilton College of Hotel and Restaurant Management at the University of Houston have joined forces in a NASA-funded research project to design a food service facility for a large-scale space station.

NASA has awarded \$36,800 to the two colleges to develop a menu and service system for 50 to 100 people in a zero-gravity atmosphere and to design a galley and appliances to accommodate the system.



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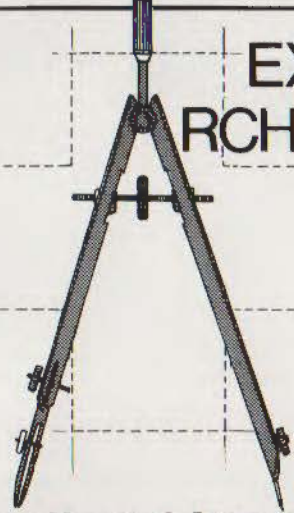
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Texas Hospital Association in cooperation with the Texas Society of Architects and the American Hospital Association.

For rules and entry forms contact: Richard Bettis, Convention Exhibits Manager, P.O. Box 15587, Austin, Texas 78761, 512/453-7204

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According to professor Larry Bell, director of the UHCC (Central Campus) Environmental Center, the College of Architecture's research arm, the energy crisis has focused some Congressional attention on building extraterrestrial solar-power complexes to supplement earth's electrical demands. So conceivably, Bell says, the first people to use the food-service facility could be the builders of such complexes.

And once researchers iron out the problems of serving food in outer space, Bell says, they hope to be involved in the design of a space hotel or dormitory.

"Depending on federal spending priorities," Bell says, "construction of the hotel could begin in 10 or 20 years. The technology for construction is close."

TWU International Program To Feature O'Neil Ford As Visiting Professor

San Antonio architect O'Neil Ford, FAIA, will teach a course on 19th-Century British Art and Architecture this summer in Texas Woman's University's (TWU) 1980 International Program in Europe.

The University of London will serve as home base July 11-14, where Ford's discussions will be augmented by local guest lecturers on the variety of architectural ideas and materials that went into 19th century British architecture. Afternoon tours will include Regency and Victorian squares and terraces, Victorian railway stations, the post-Jubilee expansion areas west of Hyde Park—including Albert Memorial and Royal Albert Hall—and the Kensington and Knightsbridge areas.

Students will tour England and Scotland July 25 through August 8 and may participate in an optional tour of Amsterdam, Brussels and Paris August 9-13 (or they may travel independently).

The basic cost of the course, which carries six semester hours of credit, is \$1,895 (plus tuition, personal expenses and local bus or "tube" are in London). Male and female TWU graduate students and female undergraduate students may enroll in the program, as well as non-TWU students who may sign up on a "transient" basis.

For more information, contact: Coordinator, International Programs Office, Box 22995, Denton 76204. Telephone: (817) 382-8923. Reservations are being accepted on a first-come, first-served basis.

**Rowlett Lecture Series
Underway April 4 at A&M**

The first lecture in the John Miles Rowlett Memorial Lecture Series, in honor of the late co-founder of the Houston firm Caudill Rowlett Scott (CRS), will be held April 4 in the Rudder Center Theater at Texas A&M University in College Station.

Featured speakers will be San Antonio educator, humanist and poet Dr. Amy Freeman Lee, who will speak on "The State of the Individual"; San Antonio architect O'Neil Ford, FAIA, who will address "The State of the Built Environment"; and *Houston Post* columnist Lynn Ashby, who will speak on "The State of Texas: Implementing Excellence."

The lecture theme, "Our State: The Present and the Prospect," is intended to explore Texas at the personal level and as a geographical entity, stimulating "concern for the quality of private and public life; personal and professional ethics; and a commitment to excellence in all areas."

The lecture series is made possible by a grant to TSA's Texas Architectural Foundation from the founders of CRS and Mrs. Virginia Rowlett. The lectures will be held annually, on an alternating basis, at Texas A&M, where Rowlett was once a member of the faculty, and at The University of Texas at Austin, where he graduated with degrees in both architecture and education. Rowlett died in November 1978.

For more information on the lecture series, contact Professor David Woodcock, Department of Architecture, Texas A&M University, College Station 77843. Telephone: (713) 845-1015.

Correction

Texas Architect regrets the omission in the Jan./Feb. '80 "In the News" of the names of architects involved in the first phase of the building expansion program at The University of Texas at Austin School of Architecture. The associated architects working on the project, which includes remodeling of Goldsmith Hall and Sutton Hall and the addition of a new lecture hall, are Austin architect Chartier Newton and the Dallas firm Thomas-Booziotis & Associates.

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Books

Active Solar Energy Systems: A Design and Installation Manual, Warren Cole, Steven E. Huck and Dr. Gary C. Vliet. Published by the Texas Solar Energy Society (TX-SES), 282 pages, \$20.

Originally developed by TX-SES for the Texas Energy and Natural Resources Advisory Council for use in their joint "Texas Solar Realities '79" workshop series around the state in 1979, the workbook is designed for interested laymen as well as knowledgeable technicians. In

addition to serving as a technical how-to workbook, according to TX-SES, the manual includes a guide to active-solar terminology, legislative incentives on the local, state and national levels, and specific applications of active-solar systems in Texas.

Built in Texas, edited and with photographs by Francis Edward Abernathy, and illustrations by Reese Kennedy. E-heart Press, Waco, 276 pages, \$24.50.

Publication number XLII by the Texas Folklore Society takes a comprehensive look at indigenous folk architecture

across the state, from buildings of pine log in East Texas to Central Texas limestone to West Texas adobe. The volume is divided up into 24 essays covering such topics as building methods and materials, style and form, building types, gates and fences and restoration and preservation. Folklorist Abernathy is the current secretary-editor of the Texas Folklore Society and a professor of English at Stephen F. Austin State University in Nacogdoches, where illustrator Kennedy is a professor of art.

1980 NCARB Design Test Handbook, National Council of Architectural Registration Boards (NCARB) and Architectural Record Books, 94 pages, \$49.50.

A study guide for Section A of the 1980 NCARB professional exam, the handbook features actual site plans and design solutions by candidates on the 1979 exam, along with critiques by NCARB's Examinations Coordinating Council. Includes a "Candidate's Information Booklet" containing the '79 design test's project statement; a "Graders' Manual" with procedures similar to those to be used in the 1980 design test; and common pitfalls to avoid and tips to follow in preparing for the test.



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News of Firms

Austin architects John Oteri, Jack Tisdale and Bronson Dorsey have announced that the Austin firm Oteri & Tisdale, Architects, is now **Oteri Tisdale Dorsey, Architecture, Planning, Interior Architecture**.

The Dallas firm **Harper, Kemp, Clutts and Parker, Architecture/Planning**, has announced the retirement of general partner Harris A. Kemp, FAIA, and the appointment of Grady Jennings as associate partner; Avery W. (Bob) Bowen and Pierrepont Harrell as senior associates; and Theodore J. Schwink as associate.

The Dallas firm Thompson/Parkey Associates has announced a change in the firm's name to **Parkey & Partners Architects**, and relocation of its offices to 300 Union Station, Dallas 75202. Telephone: (214) 742-6701.

El Paso architect Jim Langford has announced the formation of his new firm **Solar Design**, 908 Arizona St., El Paso 79902. Telephone: (915) 542-0976.

TMHI, Houston, has announced the

addition of Jim McCullough to the firm as project manager.

The Abilene firm **Boone and Pope Architects Engineers** has announced the appointment of Gary C. Pullin as vice president of design.

Houston-based **3D/International** (3D/I) has announced the opening of a New York office for interior architecture and graphics, located at 200 Park Ave., New York, N.Y. 10017. Telephone: (212) 697-3800. 3D/I also has announced the addition of Clare George Ross to the firm as vice president and director of marketing and Harry Ledbetter as budget director.

The **CRS Group, Inc.**, Houston has announced the election of Charles B. Thomsen as executive vice president of the company. In addition to his duties as chairman and chief executive officer of CM Constructors/Managers, Inc., the construction management arm of CRS Group, Thomsen will lead the Group's 1980 development program, which will include acquisition of several specialized, industry related companies to operate as divisions of The CRS Group.

In addition, **CM Constructors/Managers** has announced the appointment of Hugh Coulter, Alex Ruggeri and Tom Ventura as senior managers.

S.I. Morris Associates, Houston, has announced the appointment of H. Davis Mayfield III as director of business development. Mayfield also will be in charge of the firm's public relations activities.

The San Antonio firm **Joel Reitzer & Associates, Inc.**, Architects, has announced the relocation of its offices to: 111 W. Olmos Drive, Suite A, San Antonio 78212. Telephone: (512) 822-6000.

Abilene architect Richard Buzard has announced that the Abilene firm Buzard and Rosser is now **Richard Buzard, AIA, Architect**, 471 Cypress, Abilene 79601. Telephone: (915) 672-9012.

Planning Design Research Corp., Houston, has announced the addition of Bob Thomas as senior associate, Vicki Lovin as marketing manager, Ray L. Redburn as project architect, Patsy Jackson as project designer, and Gary M. Arbonies and Barry Williams as designers.

Pickle Architects, Inc., Dallas, has announced the addition to the firm of Stanley G. Thomas and Matt W. Oualline, Jr., as vice presidents.

Craycroft-Lacy & Partners, Dallas, has announced the appointment of Mark

Serold as senior architectural associate, Mike Hampton as architectural associate and Lois Behrhorst as administrative associate.

The Houston firm **Pierce Goodwin Alexander** has announced the appointment of John A. Oualline as senior associate, and Willard L. Tredway, Jerry C. Williams, Jr., Frank A. Lamb, L. Kendall Mower, Jr., and Michael E. Berger as associates.

The Dallas firm **Harwood K. Smith & Partners** has announced the establishment of **Harwood Taylor/HKS Architects** in Houston, 3000 South Post Oak,

Suite 1550, Houston 77056. Telephone: (713) 629-6060. The firm also has announced the addition of James A. Thompson to the firm as director of graphics.

The St. Louis firm **Helmuth, Obata & Kassabaum, Inc.**, has announced the opening of a Houston office in Greenway Plaza, 3800 Buffalo Speedway, Suite 308, Houston 77098. Telephone: (713) 960-8111.

San Francisco-based **Gensler and Associates** has announced the appointment of vice president Steve L. Wintner as director of the firm's Houston office.




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The Amarillo firm Vaughan and Associates has announced the addition of Mark Hinton to the firm as partner, and a change in the firm's name to **Vaughan-Hinton & Associates**. Offices will remain at 7811 Amarillo Blvd. West, Amarillo 79106. Telephone: (806) 353-1291.

Gordon Sibeck & Associates, Inc., Dallas, has announced the appointment of Daniel B. Burrows, Gary A. Lance and Yannis Livathinos as associates in the firm.

The Dallas firm **Hatfield Halcomb Architects** has announced the appointment of Jones C. McConnel as an asso-

ciate in the firm.

Corgan Associates, Inc., Dallas, has announced the promotion of David J. Lind to vice president of the firm.

Golemon & Rolfe Associates Inc., Houston, has announced staff promotions and the election of officers and directors for 1980: named as principal is Joseph M. Richards; new senior associate is Barry Whitehead; new associates are Oza Bouchard, Wayne Gregory, John Hardy and Barry Weiner; newly elected to the board of directors are Charles Sullivan and H. Jay Mueschke; and 1980 officers are president and chairman of

the board Harry A. Golemon, FAIA, executive vice president Charles H. Kerner, secretary L. David Godbey and treasurer Joseph M. Richards.

The Houston firm **Kirksey Associates Architects/Planners** has announced the promotion of Terry Greiner and Juan Romero to associates in the firm.

Austin Chapter AIA has announced the relocation of its offices to 709 W. 14th St., Austin 78701. Telephone: (512) 477-3318.

Dallas-based **J. L. Williams & Co., Inc.**, has announced the appointment of Gershon Cannan as senior vice president for international development and architectural design.

Houston-based **Lockwood, Andrews & Newnam, Inc.**, has announced the election of three firm members to the board of directors: B. Carroll Tharp, director of construction documents and services; William R. Blackwell, manager of the firm's Dallas division; and J. Michael Wilson, manager of the Corpus Christi division.


The Dallas firm Darrell Dean Fahler Metroplan Architects, Inc., has announced a change in the firm's name to **Darrell Dean Fahler, Architect, Inc.**

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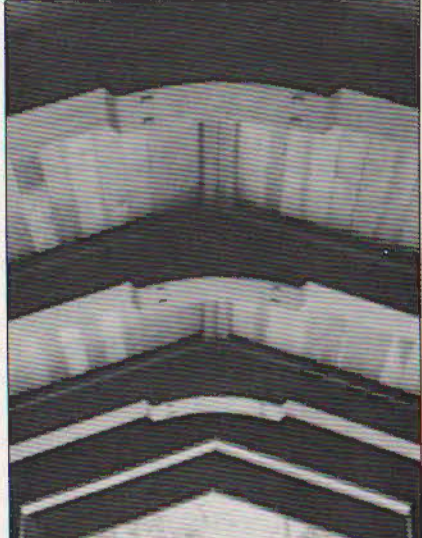
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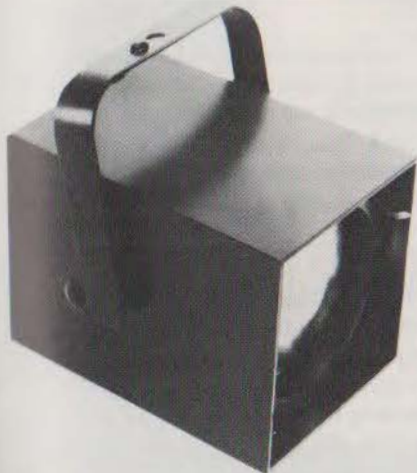
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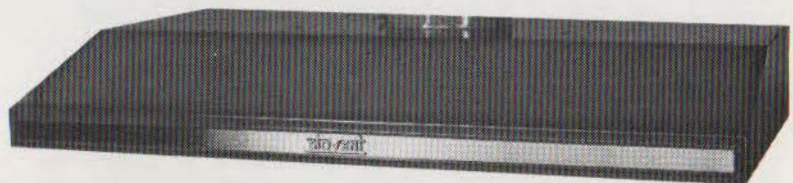
Now available from **Ernest Low & Associates, Inc.**, Dallas, is a series of low-voltage light fixtures from Lighting Services Inc. in New York, designed to consume less power and generate less heat than standard-voltage lamps. The fixtures come in a variety of styles, from the "exposed transformer and lamp look" to "recess mounted modular adjustable sys-

tems," with light beams ranging from "very narrow spot to very wide flood." Ernest Low & Associates, Inc., 611 World Trade Center, P.O. Box 58245, Dallas 75258. Telephone: (214) 747-8839.

Lutron Electronics Co., Inc., Cooperburg, Pa., has announced the introduction of a line of automatic lighting controllers which allow natural light to supplement artificial lighting. The new "Paesar" lighting control system, according to Lutron, consists of a small daylight sensor, mounted in the ceiling,

which automatically monitors the amount of daylight entering a room. As daylight increases, the sensor signals a remote power-control module to gradually decrease the artificial light level by slowly reducing the power supplied to the lamps. As daylight decreases due to clouding or nightfall, the artificial light level is increased, but only as much as necessary to constantly maintain the lighting system's design level of illumination. Available for controlling incandescent or fluorescent lighting. Texas distributors: Carl Menger Co., 403 Richey Road North, Houston 77090. Telephone:

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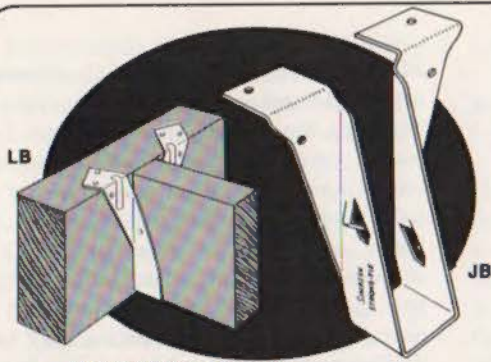



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(713) 983-4884; and Caldwell-Gray-Stewart, Inc., 105 W. Grayson St., San Antonio 78212. Telephone: (512) 224-2071.

Austin architectural photographer Robert P. Ross has announced the establishment of his Austin firm, **Robert P. Ross & Associates**, specializing in architectural and mechanical photography, at 5000 E. Ben White Blvd., Austin 78767. Telephone: (512) 327-3637.

Lifetile Corporation, San Antonio, now has a roofing selector and information kit available to aid architects, builders and other materials specifiers in selecting roofing tile shapes and colors.



Lifetile roofing selector kit.

The kit includes sample slices of tiles in three styles and a "broad spectrum of colors." Lifetile Corporation, P.O. Box 21516, San Antonio 78221. Telephone: (512) 626-2771.

Acme Brick Company, Fort Worth, has announced the selection of Robert C. Reed, manager of Acme's Bridgeport plant, as Plant Manager of the Year for 1979. Reed was presented the award during an awards dinner Feb. 5 at the Fort Worth Club, based on the performance of the Bridgeport plant in five areas: profitability, improvement of profitability, reduction of waste, in-

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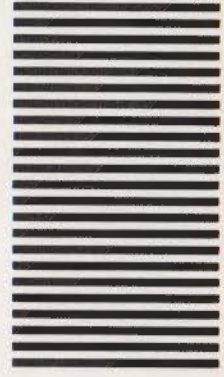


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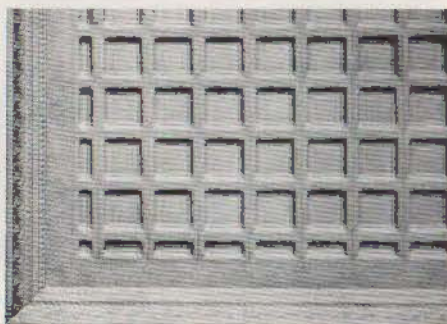
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creased volume and improvement of productivity. The plant has a staff of more than 70 people and produced in excess of 47 million bricks in 1979.

The Texas Building Branch of Associated General Contractors (AGC) will hold its annual convention June 12-15 in the Marriott Hotel in San Antonio. In addition to fiesta convention fare typical of San Antonio, the convention will include discussion of such current industry concerns as legal pitfalls for construction contracting, negotiating contracts, how to improve productivity, an architect's view of the 1980s and a legislative outlook for the '80s. For more information, contact Wayne Hall, Texas Building Branch—AGC, 704 Perry Brooks Building, Austin 78701. Telephone: (512) 478-5629.

Structural Stoneware of Minerva, Ohio, has announced its recently acquired distributorship of Agrob ceramic tiles from Munich, Germany. Agrob products to be inventoried include vitreous glazed mosaics, unglazed mosaics and large-scale floor tile, and glazed floor and wall tile. Texas distributors are Great Southern Supply Company, P.O. Box

14507, Houston 77021. Telephone: (713) 644-1751; French-Brown, 6852 Twinhills Ave., Dallas 75231. Telephone: (214) 361-9430; and Associated Tile Sales, 9203 Broadway, San Antonio 78217, Telephone: (512) 828-5761.



"Greek" pressed-tin ceiling.

Orion Antiques, Dallas, has announced its distributorship of "authentic, pressed-tin ceiling plates" manufactured by the venerable W.F. Norman Sheet Metal Manufacturing Company in Nevada, Mo., now back in business. Orion stocks a full line of tin ceiling plates, moldings, cornices, wainscotings and wall and frieze plates, made from the original lead dies of the Missouri "tin art" manufacturer which closed its doors

in 1934 (with the advent of acoustical tile and the demand for lead during the war years). Greek, Empire, Rococo, Colonial, Oriental and "modern" (circa 1930) designs are available. Orion Antiques & Decoratives, 1628 Oak Lawn, Dallas 75207. Telephone: (214) 748-1177.

Sam Flax of New York has announced the availability of the BF-5 drafting table, made in Italy, and "the first in its price range [\$289] to offer one-hand, one-lever control of both height and tilt." The table can be used at regular desk height or with a draftsman's chair and will accommodate boards up to 38-inches by 48-inches. Texas distributors are The Rush Company, 3209 N. Fitzhugh, Dallas 76180. Telephone: (214) 522-0610; and Texas Art Supply, 2001 Montrose, Houston 77006. Telephone: (713) 526-5221.

Now showing in the **Atelier International**, Ltd. (AI) showroom at the Dallas World Trade Center is the Arco Lounge Chair, AI's latest addition to its line of "European designs," designed by Paul Tuttle. Arcs of chrome steel form the chair's framework, suspended from

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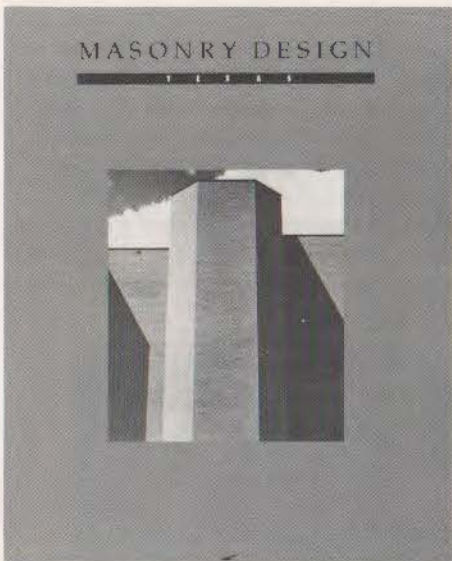
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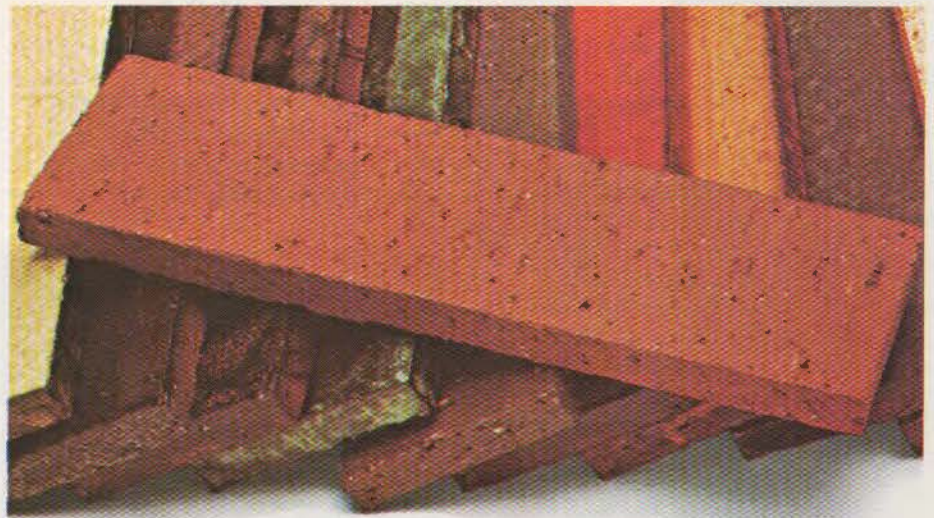
Arco Lounge Chairs.

which is a low-slung seat of steel-reinforced polyurethane, available in two kinds of leather: "Douglas," a natural-grained matte, and "Nairobi," a textured, aniline-dyed leather in dark brown or black. Atelier International, Ltd., 608 World Trade Center, Dallas 75207. Telephone: (214) 653-1161.



Texas Masonry Design.

Now off the presses is the first issue of the redesigned *Texas Masonry Quarterly*, published by the **Texas Masonry Institute** (TMI). "Bringing you the latest in masonry design applications" in Texas, the issue features the Texas Olympic Swimming Center in Austin, designed by the Dallas firm Fisher and Spillman; the Pasadena Public Library, by the Pasadena firm Reed and Clements; and the American Bank in Corpus Christi, by the Houston firm Lloyd, Jones and Brewer. Also available from TMI is the 1979-80 *AMCT Buyers Guide* published by the Associated Masonry Contractors of Texas to aid architects in the selection of masonry wall systems. Texas Masonry Institute, P.O. Box 42097, Houston 77042.



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Wake up America—Get a Horse



Humor by Braden

My experience indicates that something good always results from something bad. I do not know why it is, but one axiom you can sink your teeth into is that every silver lining has a dark cloud around it.

While the scribes on the other side of the Reader Inquiry Card scribble their dark tomes on the Energy Crunch, you have only to flip back here to find the bright spots of the future. After all, the world has overcome such crises before. During the Middle Ages we experienced a wood shortage, and later on a sperm oil crunch. This is how we got Arbor Day, and Save the Whales, and found fossil fuel to replace them in the first place.

Rather than look at the prospect of gloomy cave-dwelling as we bury our houses to conserve energy, think about the restorative aspects on the urban scene as that great living machine of the 1950s—the Dallas Rambler—sinks slowly beneath the dust, whole tracts at a time. The Dallas Rambler (for those of you who are blessedly architecturally illiterate) is that great sprawly brick veneer house covered by an immense wood shingle roof, ventilated by single-hung aluminum windows, and decorated by shutters that do not shut (and are too narrow to cover the openings if they did). The elite of the architectural world refer to this area of architectural styling as “Non-de-script.” This is translated from the Latin into our simple language to mean: “bad news.”

The Rambler was spawned in the '50s by the Plan Shoppe, midwived by the FHA, reproduced by the millions in Texas by the speculative builder, and globbed up in equal numbers by a public whose basic living experience consisted mostly of the 1930 box house, pup tents, and corrugated metal quonset huts. It has been perpetuated ever after

by cheap energy, easy financing, and ever-increasing hordes of electrical appliances which give us more leisure time. But of course we have desperately needed the leisure time to maintain our Ramblers and repair the electrical appliances.

How pleasant it is to speculate that this house form is now about to become an endangered species—along with the bald eagle, the snail darter and the Chrysler motor car. If the prophecies of the earth-covered shelter converts are correct, we are going to have to cover our Ramblers with sod in order to minimize their energy requirements. The resulting gradual change of scene in the townscape is gratifying to contemplate. As this metamorphosis rolls across Plano, Texas, the result will be a return to the cotton patch—only this time with lumps. Those who are well-traveled undoubtedly will get a fully inhabited Plano confused with the Black Hills of South Dakota. Sharpstown will once again drain to the sea, and Houston will no longer be criticized by zoning advocates since all that can be seen will be the streets and the weeds.

Another pleasant thought is that freedom of choice and temperature will be restored to the proletariat once again as workers move into new office buildings designed for energy conservation and task lighting. The mantle of tyranny which emanates from the building engineer's office will at last be lifted as we plug in our individual electric heaters and incandescent bulbs in the name of conservation. Every thinking American knows that electricity is not energy—energy is that stuff the engineer is using to run that machine down in the basement.

I was over in Myrtle Beach, South Carolina, in the late winter of 1974, when the Saudis first shoved their dip-



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stick up our national crankcase and gave us a reading. Myrtle Beach is a resort town on the Carolina Coast that is 17 miles long and two blocks wide. The entire public transit system consists of one taxi cab. There are, therefore, only two speeds in Myrtle Beach—"full steam ahead" and "dead still." On February 26, 1974, Myrtle Beach ran out of gas and achieved "dead still." Since that time a small still voice has continually risen from that Carolina community imploring—"Wake up America, get a horse!"

Normally Americans cannot react to a crisis until it is here. We have never gotten ready for a war until we have had it land smack on our doorstep. This time it is different. America is awake and alert. It has heard the voice of Myrtle Beach. As the Soviet tentacles reach slowly around the Middle East oil fields, we Americans are quietly engaged in preparations to save massive quantities of energy here at home, thus retaining our mobility and military superiority. Twenty years from now, when the Middle East sands have been sucked dry and the war machines of the world are rusting into oblivion, America will be ready, waiting, and mounted—on horses! If you do not believe me, run up to the Big Apple and count the boots and hats on Broadway.

Braden is a Dallas architect and a Texas Architect contributing editor.

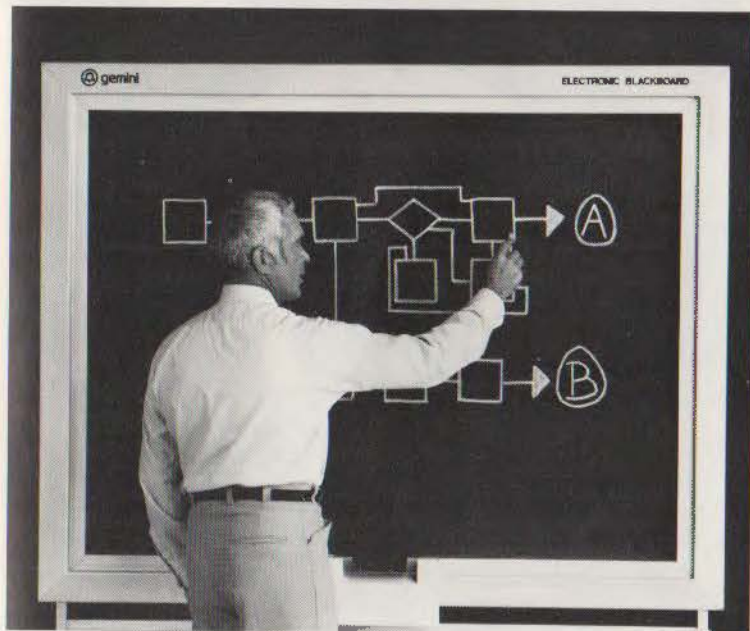
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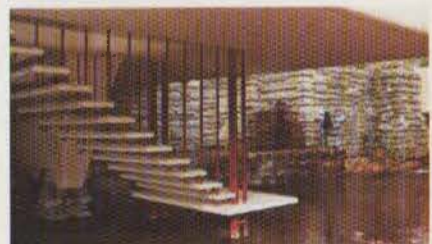
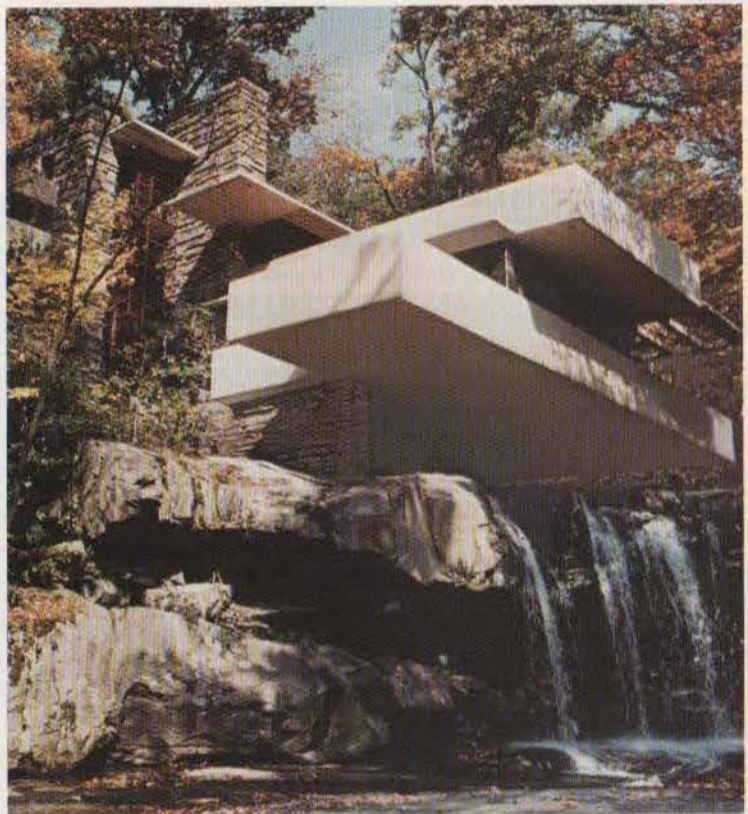
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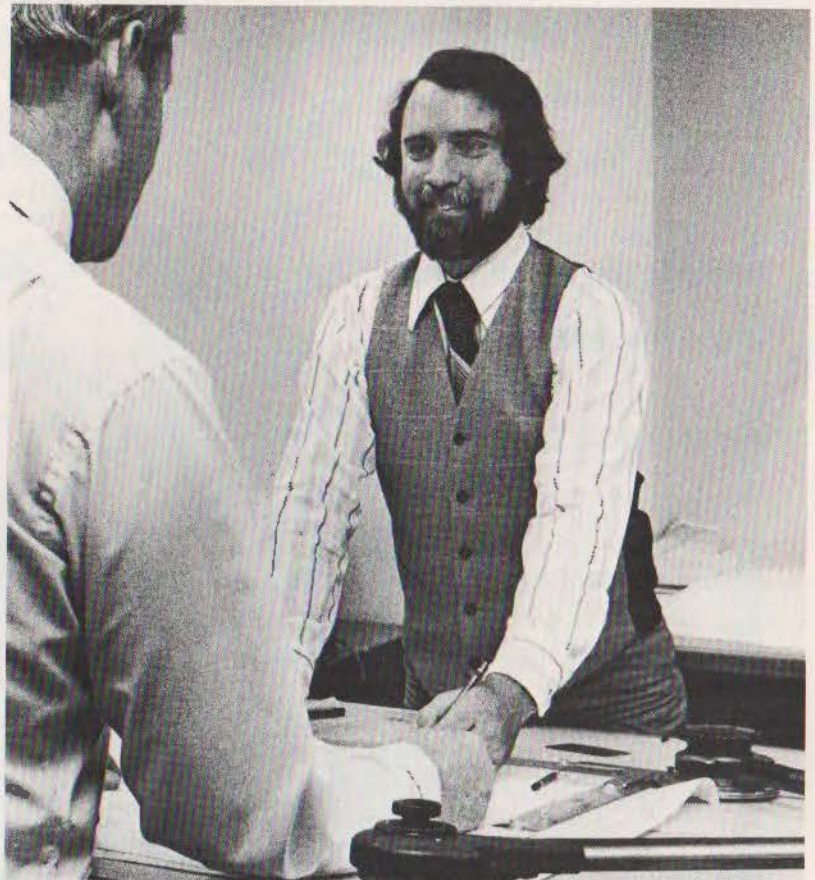
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Letters

Editor: Your article on hotels in the Jan./Feb. issue of *Texas Architect* was most appreciated. I note with a small measure of dismay, however, that no mention was made of the San Antonio Hyatt Regency Hotel which is under construction now, coming "out of the ground," and part of one of the boldest urban design schemes enacted in recent Texas memory. Curiously, a small descriptive piece on the Stouffer's Hotel appeared in the same issue. It is our understanding that this project is currently "on hold." But I digress . . .

The San Antonio Hyatt Regency is a 600-plus room hotel. The architects for the project are: Ford, Powell & Carson, Inc., of San Antonio, and Raymond F. Stainback, Jr., of Atlanta, Ga. The owner group is a consortium of interests known collectively as San Antonio 2000, Ltd.

The hotel contains the usually stunning atrium space. More than that, however, the celebrated San Antonio Riverwalk forms the base of the hotel with a panoply of water features highlighting the atrium space.

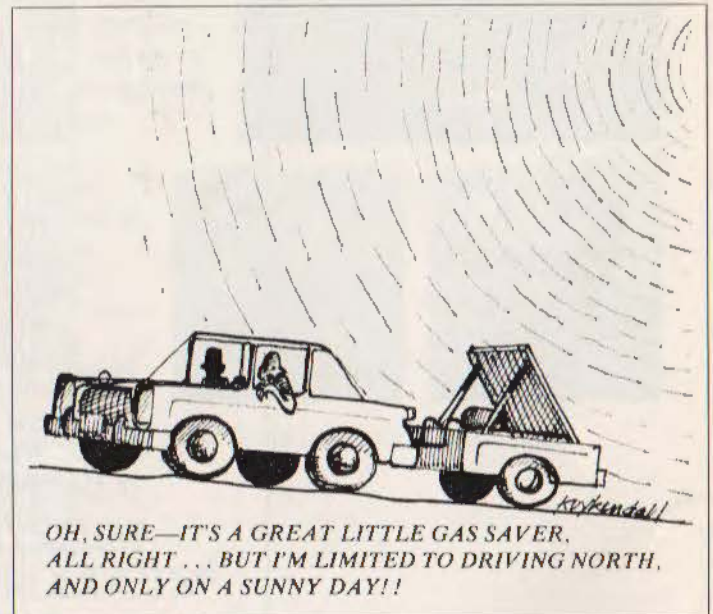
The hotel, in cooperation with both public and private interests, is an "air rights structure" that bridges a new spur of the Riverwalk that finally effects the long sought-after river level pedestrian connection between the river and Alamo Plaza. The hotel sits astride the western end of this below-grade walkway, while the recently uncovered outer walls of the Alamo form the eastern anchor of the walkway extension.

A third increment in the chain of events is the new Hyatt Parking Garage executed by the same architects. The "Riverlink" (as the extension of the Riverwalk is colloquially known) is a UDAG project carried out under the auspices of the City of San Antonio. Ford, Powell & Carson, Inc., is the prime architect for the Riverlink.

Thus, the Hyatt Regency in San Antonio is rather a bit more than a hotel, but part of an urban design scheme that seeks to unite two of San Antonio's most interesting and unique features, the Alamo and the San Antonio River.

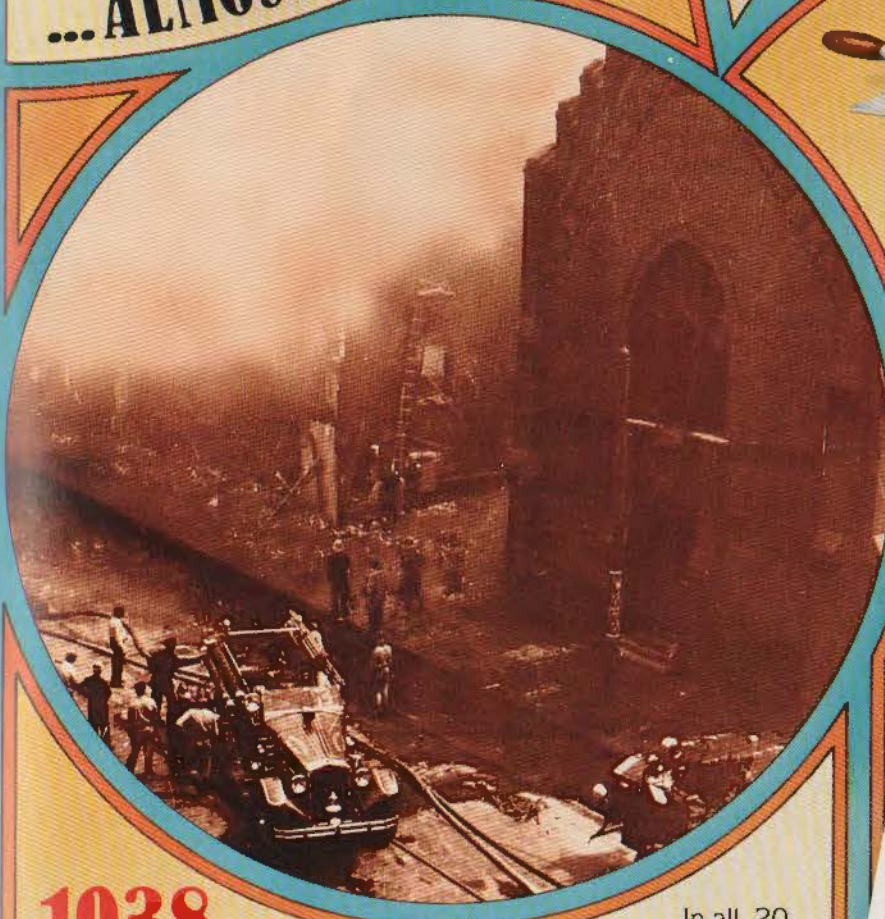
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FIRE DESTROYS CHRIST CHURCH CATHEDRAL ...ALMOST



1938

In the early morning hours of March 22, one of Houston's oldest landmarks caught fire. The fire began at a furniture store next door. According to one fireman at the scene, "We've been expecting this for 40 years. We knew if that store ever caught fire, Christ Church would go."

The fire spread quickly.



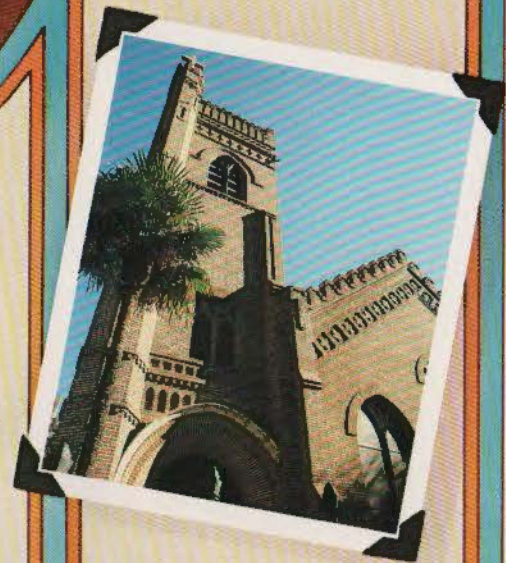
In all, 20 buildings and stores were destroyed or damaged. The furniture store was burned to the ground. But at 7 a.m., amid the smoke and rubble, amid the sounds of sirens and firemen still fighting isolated blazes inside the church, the Christ Church bell began to ring . . . its exterior masonry walls still stood. Sometimes it takes a disaster of this magnitude

for people to fully realize and appreciate the fire resistance of masonry. The members of Christ Church did. Only five days after the fire, with most of the rubble dug out, all three Sunday services were held in the church.

Today, Christ Church Cathedral stands much the same as it did before that fiery night . . . a Houston landmark built of masonry.

To find out all the facts about masonry's fire resistant capabilities, call or write the Masonry Institute of Houston-Galveston.

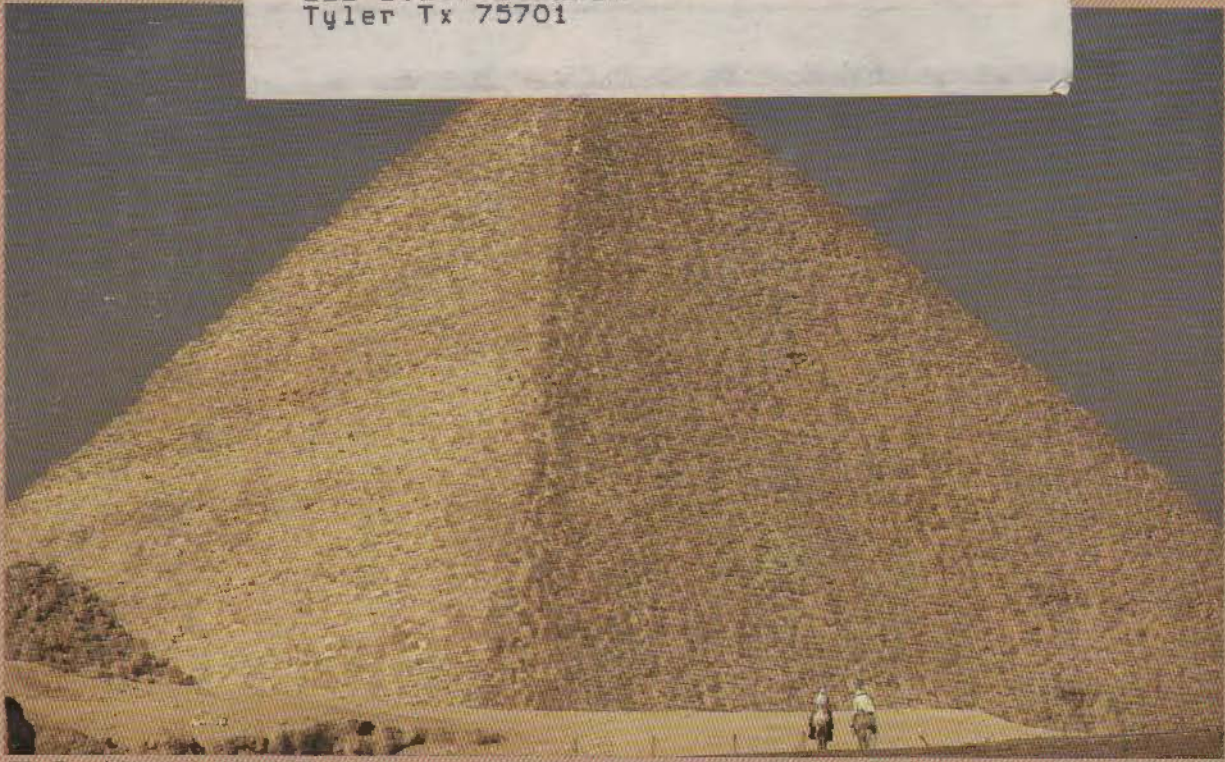
A landmark should be built to withstand more than time.



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The Royal Pyramid at Gizeh, Egypt: Commissioned by Cheops, and constructed of tura limestone; completed 3000-2130 B.C.

“It’s got great form. But it’ll take forever to build.”

Masonry design commissioned by the pharaohs did take a lifetime to build. But today, technology has reduced the time for building handsome, lasting masonry structures from a lifetime to months. The ancient Egyptians’ secret still works today — loadbearing

masonry. Simply building a series of one story buildings one on top of another.

The exoskeletal nature of loadbearing masonry virtually eliminates duplication of support and finishing components common to other building systems, which can mean less initial cost.

And, thanks to its inherent thermal lag properties, masonry costs less to heat and cool. And less to maintain and insure, meaning long-term savings for the owner.

So, before thinking masonry takes forever to build, write for the short story. Call Gregg Borchelt at the

Texas Masonry Institute, (713) 629-6949. Or write P.O. Box 42097, Houston, Texas 77042.



Contributing cities include Austin, Corpus Christi, Dallas, El Paso, Fort Worth, San Antonio, Temple/Waco and Wichita Falls.