ARCHITECTURAL
RECORD

Business Design Engineering
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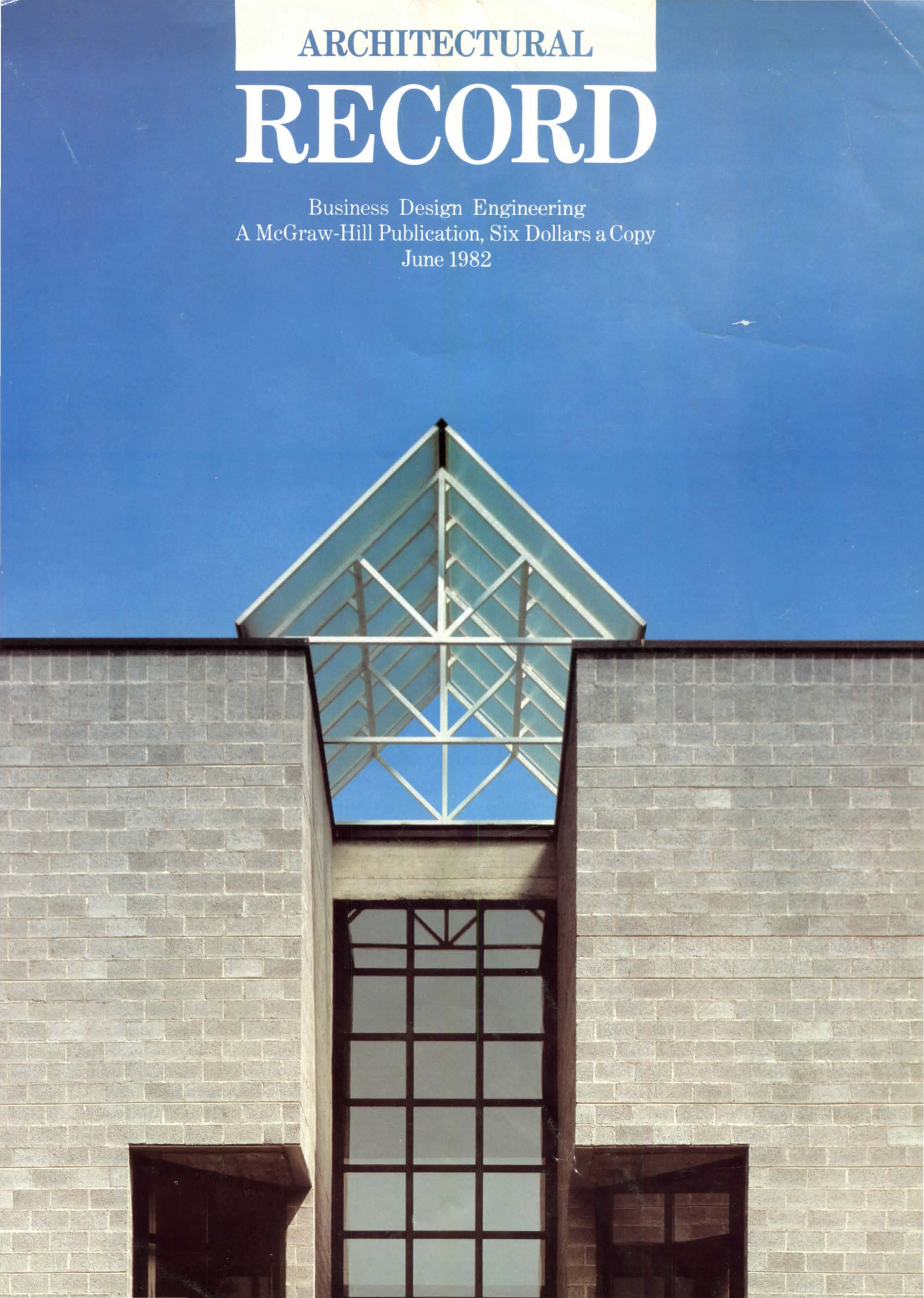
June 1982



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5050 "Double Guard."

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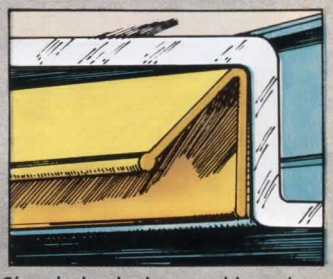

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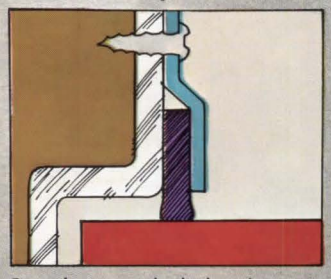

Sturdy extruded aluminum housing with durable expanded closed-cell Neoprene sealing member.

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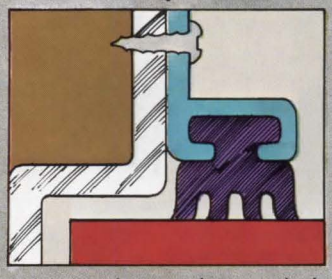

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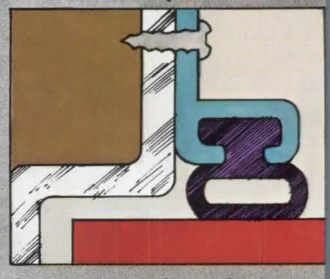

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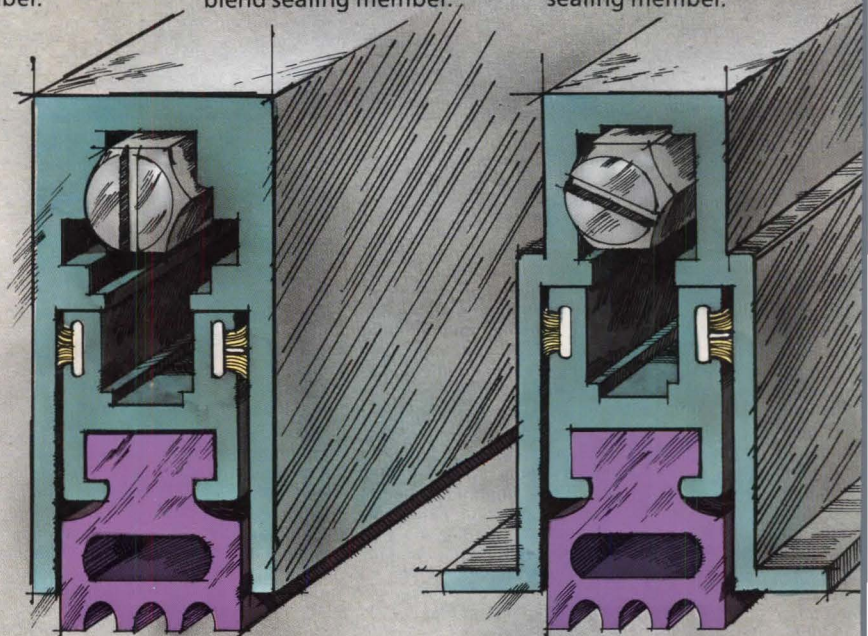
Non-handed. Designed for sound-rated doors. Two internal pile seals provide superior resistance of element passage over sealing strip bar. Available in Mill finish.



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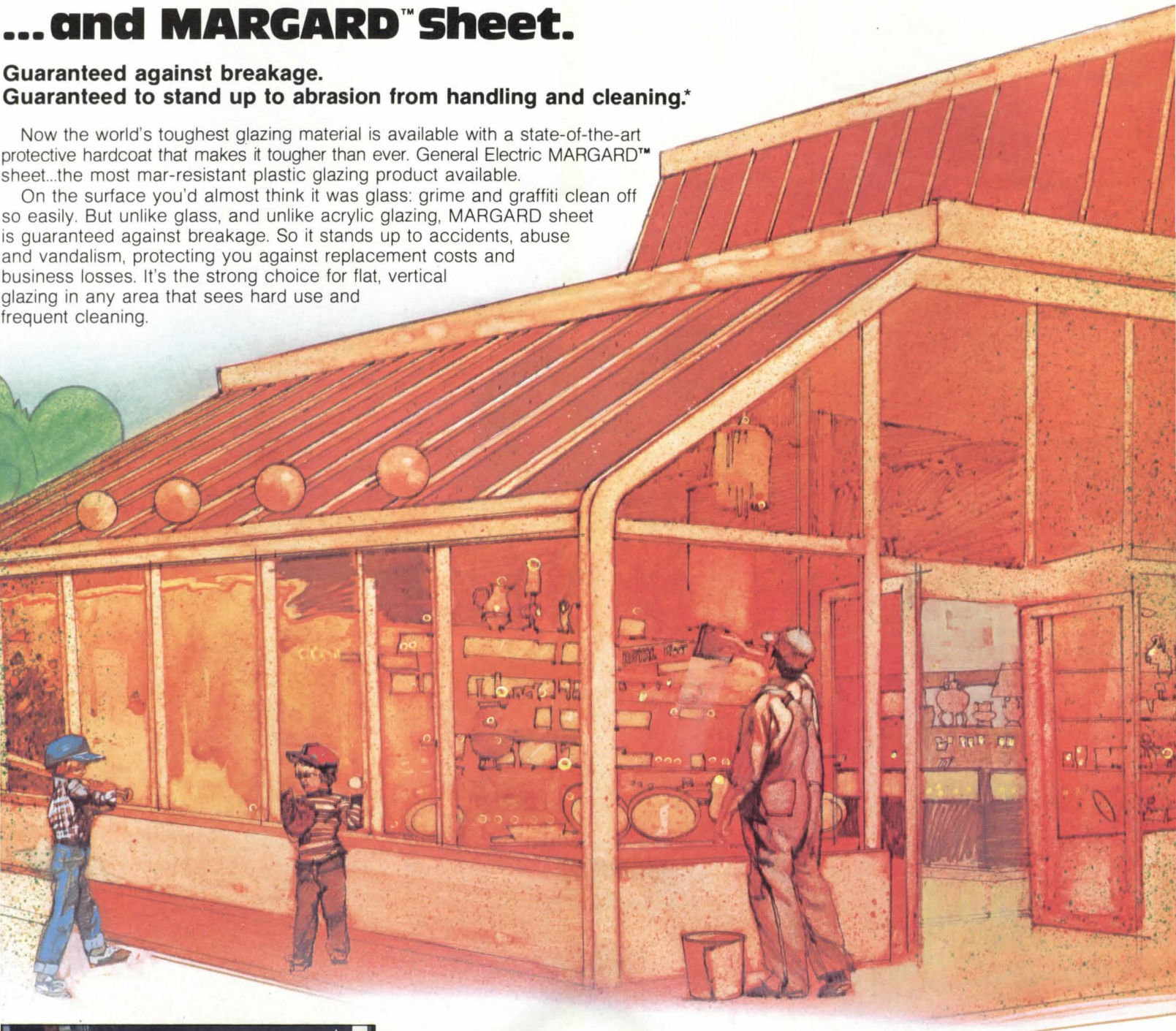

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Letters

In our current explosion of architectural journalism, it is refreshing to read something, for a change, that is clearly understandable. Jeanne Davern's interview with Paul Rudolph [RECORD, March 1982, pages 90-97] is a significant discussion about the urban crisis and architectural chaos prevailing today.

Paul Rudolph always did make sense, but his current rhetoric is especially perceptive, convincing and inspiring.

Der Scutt, Architect
New York City

I hope "A Conversation with Paul Rudolph" is the first in a continuing effort to maintain a balanced view of 20th-century architecture. This interview should, at least, provide some particularly articulate support to those who object to some of the more serious misrepresentations of modernism and its leading practitioners. For example, his description of Gropius's real role should help set that part of the record straight.

It is a pity that, in the current rush to be in style, the painful lessons and real achievements of modernism are being forgotten. Since my article on the threats to modern landmarks [RECORD, July 1981, pages 108-113], two more have come to my attention: the Mauna Kea in Hawaii, which received a nice but belated review in the *AIA Journal* after it had been seriously marred by an addition, and Lever House, which is reportedly threatened by the same economic pressures as St. Bartholomew's church across the street.

It is a serious comment on the "only old is good" aspects of the preservation movement that St. Bart's can be the focus of a major battle while a building that may or may not be better, but which certainly is historically more important, has yet to generate any support—even from the architectural community. It will take many more excellent pieces, such as the Rudolph interview, to put recent architectural history back in proper perspective.

Bradford Perkins
Attia & Perkins, Architects
New York City

I read with great interest the excellent discussion between Jeanne Davern and Paul Rudolph that appears in your March issue. There is a strong line of intellectual descent from Rudolph's ideas about city design, which he had already developed in the early 1960s, to the work of his former students, including myself, who have taken a strong professional interest in urban design, as well as to other former students who have pursued "contextualism" in architecture.

In my own work, I have stressed the mechanisms by which urban design ideas can actually be carried out, while others have derived ideas about urban form from commissions for individual buildings—but the intellectual underpinnings are similar. We all owe a great deal to Paul Rudolph, as well as to Vincent Scully and Christopher Tunnard.

Jonathan Barnett, AIA, AICP
New York City

I am writing to tell you how much I enjoyed "A Conversation with Paul Rudolph" by Jeanne M. Davern in the March RECORD. Much of the pleasure came from Mr. Rudolph's response to the questions, particularly his reminder of the importance of designing the buildings to fit into a three-dimensional urban scheme rather than as freestanding objects in space.

But I also enjoyed the interview format. Miss Davern's questions were excellent and apparently they had been given to Mr. Rudolph in advance, because the responses, such as the list of component building parts forming exterior spaces, were well prepared and thought out.

Please provide us with more "conversations" with designers and critics in the future.

Kurt Karmin, AIA
Vollmer Associates
New York City

As a native Pittsburgher, I was very pleased and proud as I read your article covering our city's "Renaissance II" [RECORD, January 1982, pages 90-107].

It is the most thoroughly interesting account I've seen, and your editorial staff is to be highly complimented.

Curtis J. Thomas
Senior Vice President/
General Manager
Marsteller Inc.
Pittsburgh

I just read Andrea Gabor's article on Canadian real estate developers [RECORD, March 1982, page 59 et seq.]. I thought she wrote a fantastic article covering a subject that has to be quite interesting to all design firms in the United States.

Being Canadians are a rather hot topic in our profession, I was surprised that the article was not

Continued on page 59

Calendar

June 6-9
Annual national convention of the American Institute of Architects, "A Quest in Time," considering the future in outer space and underwater; Honolulu. Contact: The American Institute of Architects, 1735 New York Ave., N.W., Washington, D.C. 20006.

June 17-18
"Wind Effects on Buildings and Structures," seventh Annual Short Course on Wind Load, sponsored by the University of Missouri-Columbia; at Kansas City, Mo. Contact: Wind Effects on Buildings and Structures, 1020 Engineering Building, UMC, Columbia, Mo. 65211.

Through June 20
Exhibition, "Robert A. M. Stern: Modern Architecture after Modernism," at the Neuberger Museum, State University of New York, College at Purchase, Anderson Hill Rd. and Lincoln Ave., Purchase, N.Y.

June 24 through October 10
Exhibition, "New American Art Museums," conceptual drawings, plans, renderings, photographs and models of eight new museums and museum additions. At the Whitney Museum of American Art, Madison Ave. at 75th St., New York City.

Through July 15
"The Right Light," an exhibit of architectural photographs by Roberto Schezen; The Lobby, 369 Lexington Ave., New York City.

August 8-13
Conference on "Advanced Automation," sponsored by Engineering Foundation; at New England College, Henniker, N.H. Contact: Dr. Sanford S. Cole, Director, Engineering Foundation, 345 E. 47th St., New York, N.Y. 10017 (212/644-7835).

August 26 through September 1
Clima 2000, first World Congress on heating, ventilating and air conditioning; co-sponsored by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, the European Heating, Ventilation (and Air-Conditioning) Associates, the International Institute of Refrigeration, and the International Council for Building Research, Studies and Documentation; in Copenhagen. Contact: Steve Comstock, ASHRAE, 1791 Tullie Circle, N.E., Atlanta, Ga. 30329.

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Business

Design

Engineering

Cover:
A house in Pregassona, Switzerland
by Mario Botta with Rudy Hunzinger
Photographer: Roberto Schezen

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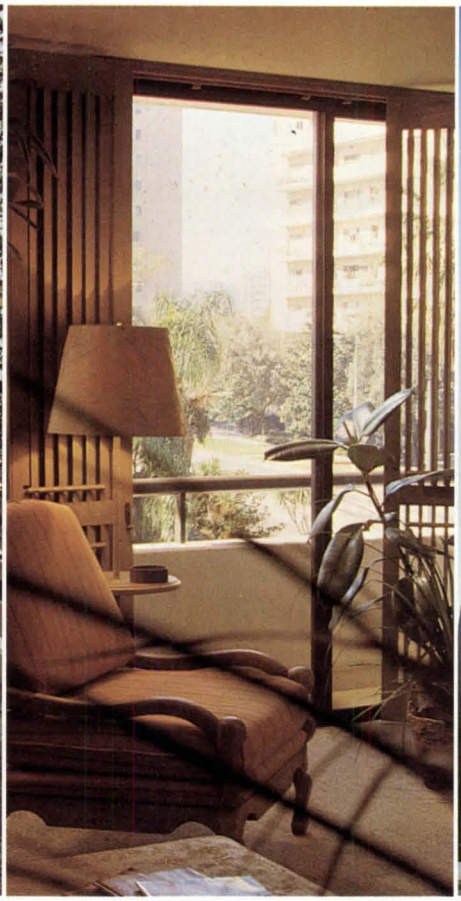

All glazing for this project handled by Fenestrol Corporation of Carson, California.

California's Title 25 sets tough standards for sound control. A code that's especially challenging for buildings like the Wilshire Manning Condominium in Westwood.

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A major redesign—and a little restructuring

As you will have noticed by now (even I don't believe that readers turn first to the editorial page), RECORD has this month a very different look, a very different design discipline. As faithful readers will know, this editorial staff (and this editor) believes in evolutionary change—in architecture, and in our architectural magazine. So why the major (well, revolutionary) redesign?

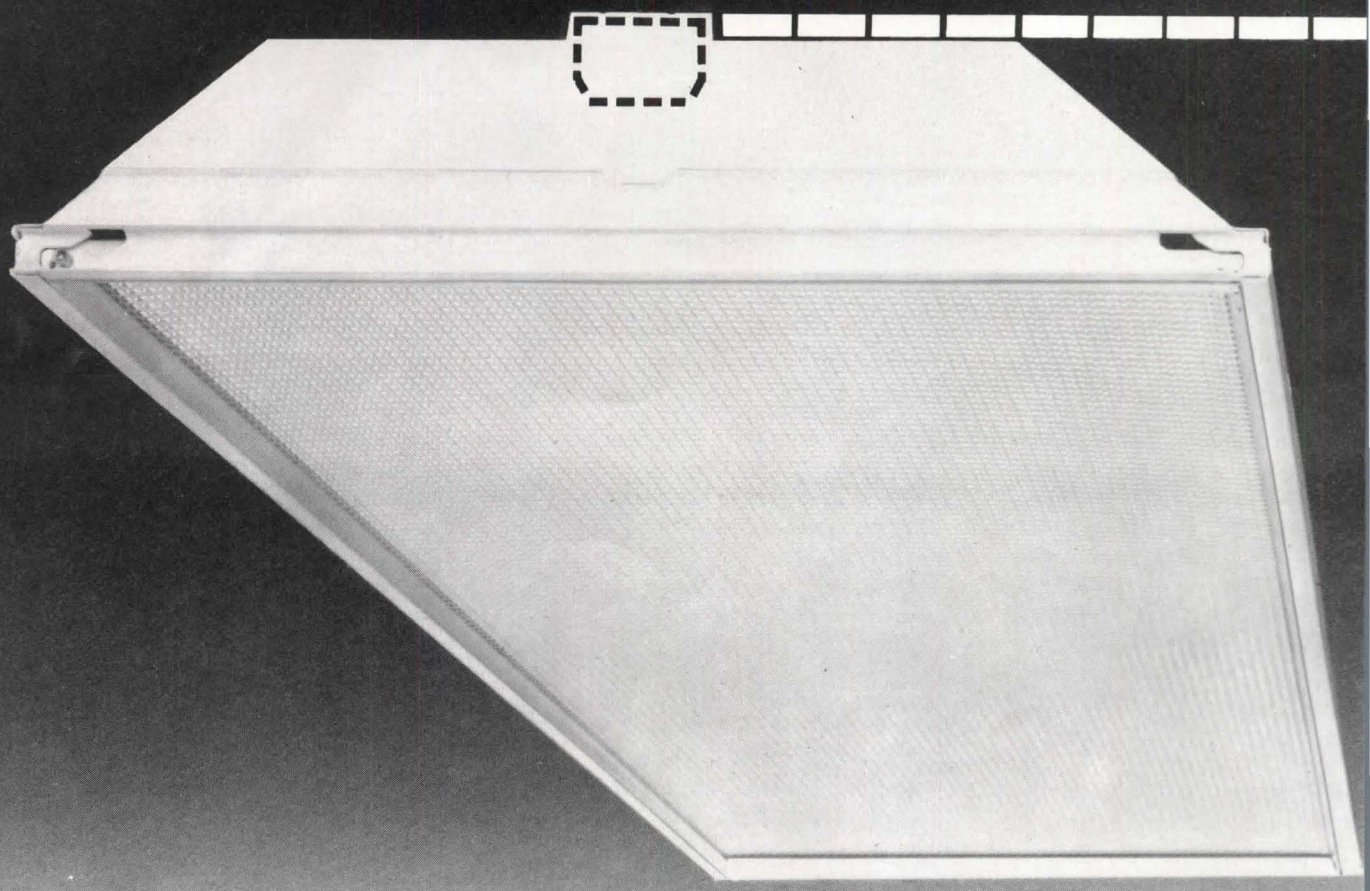
Simply because it *felt* like the right time. For one thing, over the past few years, more and more of our staff members started wondering out loud whether our magazine design was evolving and expressive of architectural design here in the 1980s—and more and more often we found ourselves wanting to do "special" layouts for certain buildings and, especially, interiors. For another thing, it is conventional publishing wisdom to make changes at times of strength; and (bless you all) our circulation and (by all conventional measures) our reader preference have never been stronger. For another thing, we found just the right consultant to help us think about the magazine. And finally, as we got caught up in the hard work (and good fun) of thinking about how we present our editorial material to you readers, why we do it that way, and how we can improve it, the redesign that you see for the first time this month began to seem inevitable.

The last time RECORD was redesigned was 16 years ago, beginning with the January 1966 issue. That redesign was by Jan White, who has worked with us in designing *Record Houses, Record Interiors,* and *Engineering for Architecture* issues, as well as individual articles, almost every month since. That redesign has served us long and well; so this change is a bit like leaving home or giving up a long-time love.

When we started thinking about redesign a year ago, our short list included, since he is one of the world's premier designers, Massimo Vignelli. Not far into our first visit, over a great plate of gnocchi, our search for a design consultant ended. It is not just that Massimo is so incredibly good at his work—be it graphic design or interior design or product design or furniture design or book design—or magazine design. We knew going in that he has a long list of prestigious awards, museum exhibitions, and top-drawer clients for his work. What we learned at that first meeting was that he is an architecture buff (dating back to his student days at the School of Architecture of the University of Venice), that he has been a long-time reader and admirer of RECORD (and has the yellowed stacks of magazines to prove it), and that he believes as we do that magazine design must be a tool for communication with the reader—never graphic art for graphic art's sake. Given all those good things, we learned another most important thing: that Massimo really wanted to do the job. Months later, after we had done our thinking about the structure of RECORD (see below), and Massimo and his associate Peter Laundy had developed this new design discipline, we learned something else: As Massimo designed this first issue—with anxious editors looking over one shoulder and our art department looking over the other—he demonstrated that he had not just a fine Italian hand but a great sensitivity in working with people.

And so, Massimo, for your good thinking and good work and good spirit, *grazie tanto.*

Months ago, before Massimo put a line on paper, we spent a great many hours thinking out not what we thought RECORD should *look* like, but what it should *be* like. We restudied the whole structure of the magazine, in the cause of thinking out how we could better serve you readers. As a result, for one thing, we have increased the number of pages devoted to the problems of practice (see *Business,* beginning on page 17). This month, for example, in addition to our standard fare of business news and reports on building activity, we begin an important new series on computer use in the architectural office, and offer a mini-survey on strategies for survival in today's economy. For another thing, we decided to increase our coverage every month of architectural engineering—giving up our mid-August *Engineering for Architecture* issue but instead spreading a greater total number of pages of engineering coverage over each regular issue through the year (see *Engineering,* beginning on page 126). Notwithstanding this added coverage of business and engineering, our coverage of building design—our first passion—remains unchanged. And so this month, along with a new design, we offer a new editorial platform—Business/Design/Engineering—expressed strongly on our new cover as a commitment to our broadened coverage—and service to you readers. *Walter Wagner*



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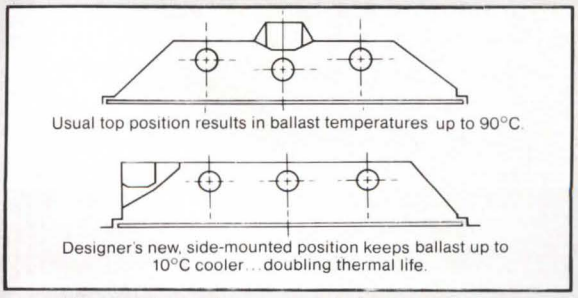

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The 1980 census reveals major new implications for housing needs

Between 1970 and 1980, the population increased by 11.4 per cent and the number of family households increased 15.7 per cent. But the numbers of non-family households—that is, persons living alone or with non-relatives—went up 71.9 per cent. As a result non-family households now comprise 26.7 per cent (21.5 million) of all households, compared with 19.7 per cent in 1970. Most of these 21.5 million households are persons living alone—the result of increased levels of separation and divorce, the postponement of marriages by many young adults, and increased numbers of older persons living alone.

Further, of the 30.3 million American families with their own children under 18 years old in 1980, 5.8 million (19.1 per cent) were single-parent families—families maintained by a male or female householder with no spouse present. This number is up from 12.3 per cent in 1970.

The census figures also reflect the growing tendency of women to work and to spend less time at home. The number of women in the civilian labor force increased by 14.1 million between the 1970 and 1980 census. Moreover, women with children under six years of age were much more likely to be in the labor force in 1980 than they were in 1970—46 per cent were in the labor force in 1980 compared with 31 per cent a decade ago.

Income (not adjusted for inflation) rose substantially in the past decade. U.S. median household income moved up to $16,830, compared with $8,486 derived from the 1970 census. But after adjustment for increases in consumer prices, there was no significant change in median household income in the past decade. However, real income did go up on a per capita basis, because of the declining average household size. It grew more than 18 per cent to $7,313.

The Census found that 22.4 million new housing units were built between 1970 and March 1980, representing 26 per cent of the total housing inventory. At the same time (no surprise) housing costs rose sharply. The 1980 median monthly housing costs for homeowners in mortgaged units increased by 112 per cent over the 1970 costs—from $172 in 1970 to $365 in 1980. Although the median monthly costs of $129 for homeowners without a mortgage was of course lower, it reflected a 115 per cent increase over the 1970 level of $60. Renters saw the greatest increase in housing costs. The 1980 median gross rent (rent and utilities) was $243, up from $108 in 1970, an increase of 125 per cent.

The number of occupied mobile homes or trailers rose by 84 per cent from 2.1 million in 1970 to 3.8 million in 1980. Other types of housing also grew. Households in single-family homes grew 23 per cent from 44.0 million to 54.1 million. And households in multi-unit structures (housing units in buildings with 2 or more units) grew 29 per cent, from 17.3 million to 22.4 million.

In 1980, 23.6 million housing units had a central air-conditioning system compared with 7.3 million in 1970, an increase of 225 per cent. And the number of housing units with one or more individual room units rose from 16.9 million in 1970 to 24.0 million in 1980, an increase of 41 per cent. *Herbert Cheshire, World News, Washington*

Fort Lauderdale opens a competition for a center-city plaza

The Downtown Development Authority of Fort Lauderdale is sponsoring a national design competition for a two-acre urban plaza in the center of the city, on the New River and opposite the site of the Museum of Art. This will be a one-stage competition open to architects registered to practice in the United States. Prizes are $10,000 first, $6,000 second, $4,000 third, with the first-prize award credited against the commission fee. The deadline for registration is July 15. A $25 registration fee is required. Entries will be due September 3. Information is available by writing Riverfront Plaza Competition, 13 West Las Olas Boulevard, Fort Lauderdale, Fla. 33301.

Commercial building perks up, but...

Contracts for new construction advanced a seasonally adjusted 8 per cent in March, according to the F.W. Dodge Division of McGraw-Hill Information Systems Company. That month's $13.0 billion of newly started construction projects brought 1982's first-quarter total to $32.1 billion, or 9 per cent less than 1981's comparable quarter.

"As welcome as the March gain in contracting was, it did not reveal any change in the underlying problems of the depressed building industry," commented George A. Christie, vice president and chief economist for F.W. Dodge. "Instead, it was a single non-building project—a $700 million electric power plant to be built in upstate New York—that was responsible for most of the latest month's increase." Contracts for nonbuilding construction totaled $3.2 billion in March.

Between January and July of last year, the Dodge Index which uses 1977 as its 100 base, fell 23 per cent from 128 to 99. During the two most recent months for which data are available, the Index still averages only 101. "This impasse can only be broken by a decline in interest rates, and the key to interest rates is a meaningful compromise on the 1982 budget," Christie stressed.

March's $5.3 billion total of contracts for nonresidential building improved 9 per cent over February, in seasonally adjusted terms. Commercial building perked up in March with gains in shopping centers and offices. It is expected that over the next year or two a revival of retail building will help to fill the void of a waning office building cycle. Meanwhile, the latest contracting data show that there's still some life left in the office building boom. Nine major projects were started around the nation in March, seven of them in the West and Southwest. Contracts for industrial building fell sharply in March, as the deepening recession left manufacturers with additional excess capacity.

The depressed housing market limped along through March, as the annualized rate of newly started dwelling units remained below one million for the eighth consecutive month. The value of March starts, at $4.6 billion, was a meager 2 per cent improvement over February. "The prospect remains for a second-half recovery of homebuilding, but every delay in the necessary decline of mortgage rates erodes more of the year's dwindling potential," said Christie. "That potential is now only about 1.2 million at best."

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Computers: The evolution is over; the revolution is on

In this first of a series of articles on computer use in architecture, Sweet's computer expert Harry Mileaf traces the surge of interest

By Harry Mileaf

It was in the early 1960s that computer and systems vendors first turned their sights on the architectural profession, and the close to two decades it has taken to reach our present state of computer involvement certainly characterizes the '60s and '70s as evolutionary times. But those times are changing . . .

There were good reasons for the slow, early movement toward computer use by designers: They were 1) the very high costs for equipment and systems—until recently; 2) the scarcity of pertinent application programs—until recently; and 3) the communications barrier that existed between the computer professionals and the design professionals.

The computer professionals had not done their homework when they launched their sales campaign of the early 1960s. It took a while before the computer professionals realized that they could not sell systems with talk of bits, bytes, chad, nibbles, virtual memory, core and endless loops. The computer would not sell itself to construction designers the way it did to the *Fortune 500* group, financial institutions, and others used to such jargon.

Although there are some well-financed design firms in the construction industry, most have little money to invest in areas where they cannot be sure of good returns, particularly in productivity. Some firms, those with more foresight than restraint, tried computer involvement anyway; and like most pioneers in a budding technology, suffered the pangs of debugging an era. There were many disappointments, creating an aura of *caveat emptor* that would last over a decade with most firms.

There were some firms, though, which recognized the great advantages of using computers in their practices, and which had the means of seeking alternative ways of developing systems customized to their needs. The very large architectural and engineering firms hired their own electronic-data-processing consultants, or established their own EDP departments to develop their own proprietary systems. This was a learning period, sometimes frustrating—but through perseverance and dedication, these firms have developed an expertise that cannot be duplicated by any systems people outside the construction industry.

The usefulness of computers in these large firms is dramatized by the degree of their computer involvement: they have more than one mainframe (the really big computers with the greatest capabilities); they have minis and micros, use two or more on-line (or remote-terminal) systems, and for some special applications, employ service bureaus that will feed the information in for them. But these large firms had something that permitted them to take the go-it-alone approach, something most firms do not have: money.

But what about the design firms who did not have that kind of money—that is, most design firms? Because much of *engineering* design is computational-oriented, engineers could see the potential productivity gains that could be had with computers better than architects.

Firms with limited funds, including some large firms with broad plans, formed APEC (Automated Procedures for Engineering Consultants) in the early '60s as a cooperative software development organization, in which expenses for software development were shared; the membership could license the software developed by APEC. Another organization, CEPA (Society for Computer Applications in Architecture, Inc.), was also founded in the early '60s to provide a software *exchange* medium for its membership. Both APEC and CEPA are still active.

CEPA and APEC helped some firms in the development of computer applications in construction design. But computer equipment and systems were still much too costly for most design firms, and were destined to remain out of reach for over a decade or more. Not that the computer industry was stagnant. On the contrary, the computer industry is probably the most dynamic industry ever to be developed, and will continue to be so. New equipment, techniques, applications, and languages were developed throughout the '60s and early '70s. But little was accomplished to make it cost effective for the under-funded designers until the latter half of the seventies.

It was then that computers in construction moved from being an evolutionary force to being a revolutionary force. Efficiency in the semiconductor industry started a downward price spiral of microprocessors and semiconductor memory devices which led to the inexpensive microcomputer. The computer hobbyist created a market that would make microcomputers available to all markets, and its low price brought pricing pressures on minicomputers and mainframes. For almost any design firm, for the first time, computers looked affordable.

Computer use has grown like wildfire—and not just among large firms
In studies made by Sweet's in the years 1979, 1980 and 1981, questions were asked of large and small design firms about present computer use, how long computers had been used, and near-future expectations. The survey results produced the profile of use shown in Figure 1 (see overleaf).

Before Figure 1 is discussed, the term *computer involvement* should be explained. The term means only that the firms are involved in *some* way; and in many cases, this might be in a minor way. The term does not mean that the firms are computerized or even mostly computerized. The large architectural and engineering firms are probably heavily involved with computers, but most smaller firms that use computers are probably only involved in a small part of their activities.

By 1976, almost 30 per cent of the 2500 most active architects and engineers were involved with computers, and this grew to 35 per cent in 1978. In 1979, the involvement leaped to 59 per cent, and reached about 65 per cent by 1981. 90 per cent of these firms feel they will be involved with computers by 1986.

The smaller design firms' computer involvement naturally lags that of the large firms, but not by much. By 1977, 20 per cent of the smaller design firms started to become involved with computers. This grew to just under 30 per cent in 1978, reached 45 per cent in 1980, and about 58 per cent in 1981. The small designers, too, project that by 1986, about 90 per cent of them will be involved with computers.

These involvement figures have been found somewhat startling by some. It should be pointed out that a study done in 1979 by the U.S. General Accounting Office showed a much higher involvement at that time (over 70 per cent). But the important thing to keep in mind is that in the data given so far, the design profession was treated as a cohesive group. To be more meaningful to the specific readers of this article, some attempts should be made to separate engineering vs. architectural use, where possible. This is not easy to do with the large multi-discipline firms since the respondent can usually only speak within his own sphere of knowledge; but with the smaller firms, where designer specialization is more the norm, architectural and engineering firms' involvement can be separated.

Figure 2 is the breakdown of the architectural firms and engineering firms from the 1981 Sweet's survey

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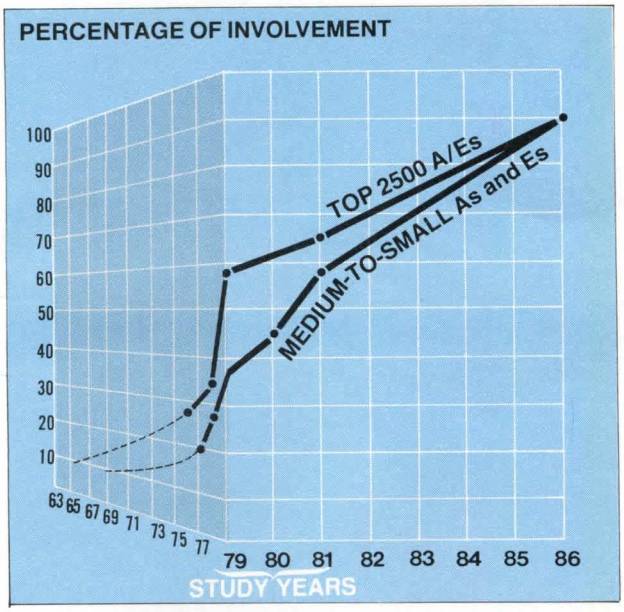
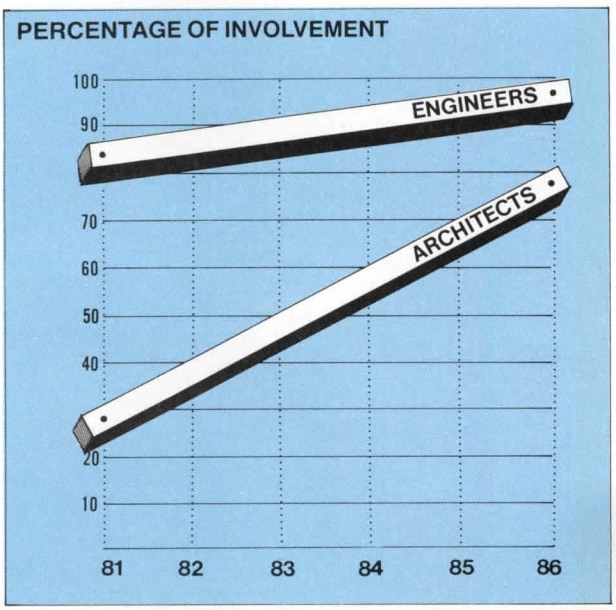
***Figure 1** (top) shows that firms doing the most design business have led in the use of computers by a wide margin, but that margin is shrinking and is projected to disappear in the next four years.*
***Figure 2** (bottom) shows that engineers have led architects in the use of computers, but again the margin is expected to shrink greatly in the four years.*





of medium-to-small designers' involvement with computers. It shows that of the medium-to-small design firms which are involved with computers, three times as many are engineering firms as architectural firms. About 28 per cent of the medium-to-small architectural firms and 83 per cent of the medium-to-small engineering firms say they are involved with computers. It is unlikely that this same ratio of architectural to engineering involvement exists in the largest architectural and engineering firms. On the contrary, since many project control and accounting systems can be applied by both the architectural and engineering disciplines, it is more likely that architectural to engineering use in the large firms is closer to a 1 to 1 ratio.

Over-all, then, when the larger and smaller design firms are combined, the results show that about 35 per cent of all architectural firms are computer-involved, and about 84 per cent of the engineering firms say they use computers. In 1981, the American Institute of Architects surveyed a 10 per cent sample of its 11,000 professional-membership firms and determined that 25 per cent of the archiectural firms were involved with computers in 1981, and this is expected to climb an additional 45 percentage points in 1982. While the 1981 AIA figure is lower than Sweet's statistic, the 1982 forecasted growth is much higher. As Figure 2 shows, the medium-to-small architects do not expect to close the gap with the engineers until 1986, and still then be trailing by about 13 percentage points.

Using extrapolation to determine the total breakdown of all architecture vs. engineering applications in 1986, the figure for architects is 79 per cent involvement, and for engineers, almost 95 per cent involvement.

While the breakdown of the over-all designer statistic has shown reasonable architect growth in computer involvement from 35 per cent in 1981 to 79 per cent in 1986, the comparable period statistics for engineers seem very high, especially the 95 per cent figure for medium-to-small engineering firms in 1986.

The reason for the high figure was uncovered in a follow-up survey conducted by Sweet's, in which a question was asked about the kinds of computers used by architects and engineers. In this survey, programmable calculators were considered by many respondents in the same class as computers—much to the delight of Hewlett Packard and Texas Instruments. While many of us would not so classify programmable calculators, the tendency on the part of engineers to do so is understandable. These calculators can be used with many plug-in modules, memory, and printers, and perform many of the functions of a microcomputer. The nature of an engineer's tasks makes the programmable calculator a common tool of the engineer. In any event, the inclusion of programmable calculators in the computer category causes a considerable overstatement of the engineering firms' present computer involvement.

What kinds of computer use will make the most sense in the coming years?

As part of the surveys of computer use, data was gathered on the major applications for which computers were used in 1981, and projections of those uses in 1986. These data are given in Table 1. The first column lists those applications for which the computers are used, and the 1981 column shows the percentage of computer users that employ these applications. The 1986 column shows the intentions of designers—both existing and future computer users—in employing those applications by 1986.

Undoubtedly because of the heavy engineering influence, design analysis is presently the major application; and accounting is presently second. The designers, perhaps surprisingly, anticipate that by 1986, accounting will be the major application. Spec writing and cost estimating follow in popularity, and show strong growth potential, according to the designers, by 1986.

Two areas of great interest to designers—computer-aided design (CAD) and automated drawing—represent a relatively small application involvement in 1981, but major growth in these areas is expected—especially considering that such systems are relatively expensive.

These 1986 projections are based on present day prices. So considering the continued developments and dropping prices occurring in the computer industry, CAD and automated-drawing applications might well exceed these projections.

How do you get started? There are three methods

A design firm can get involved with computers in the following ways: 1) the service bureaus; 2) a time-share system; and 3) buying, leasing, or renting your own in-house equipment.

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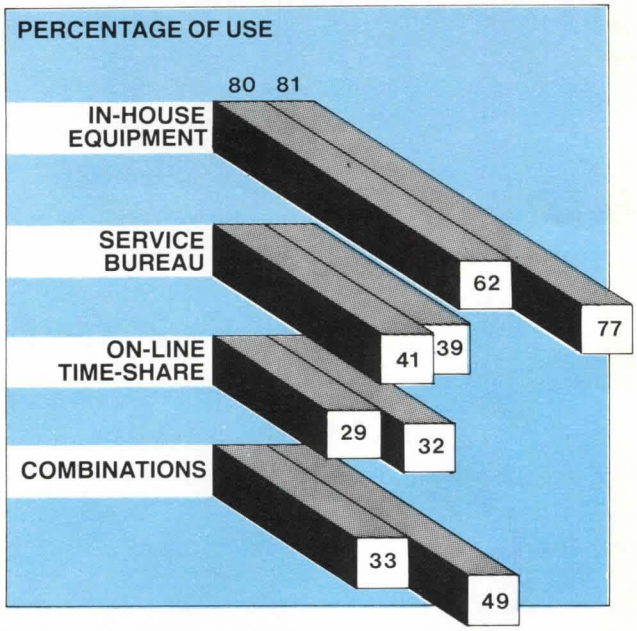
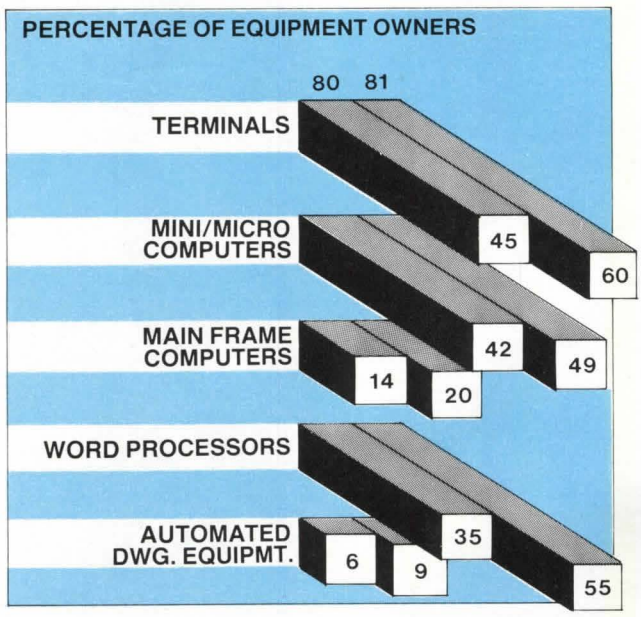
***Figure 3** (top) shows that the majority of design firms using computers already own their own equipment, but that the use of outside service bureaus and time sharing facilities continues.*
***Figure 4** (bottom) shows the kinds of equipment that design offices are using.*





for you, charging for its time on a job basis. Using a service bureau requires the least capital investment, but on-going costs might be high.

Time-sharing or on-line systems allow their customers to tap into their computers over telephone lines. All that is needed by the design firm is a terminal to communicate with the computer. This, too, requires little capital investment. There is usually a subscription or licensing charge, or a monthly base charge, and then an hourly use charge. Heavy use of the system could bring on heavy hourly charges.

Having your own system of course allows the greatest control over your computer operations at the least operating costs—*but* with the largest capital investment.

Before the advent of the inexpensive microcomputer, the designer generally became initially involved with computers via the service bureaus. This was generally followed by a hook-up to a time-share or on-line system for some specialized sophisticated applications. Ultimately, this led to the purchase, lease or rental of in-house equipment with less reliance on service bureaus.

The availability of inexpensive microcomputers has changed this scenario somewhat, but not that greatly. The acquisition of a microcomputer could precede contracting with a service bureau, or it might be the first step in drifting away from service bureau involvement.

Figure 3 shows how designers are involved with these various methods. This chart shows that in 1980, about 62 per cent of the computer users had their own in-house equipment, and this figure grew to about 77 per cent in 1981. About 41 per cent used service bureaus in 1980, and this dropped to about 39 per cent in 1981. The use of time-share systems grew from about 29 per cent to about 32 per cent. Most interesting are the bars showing combinations of methods of computer involvement. The growth from about 33 per cent in 1980 to about 49 per cent in 1981 follows the in-house-equipment growth pattern. Since service bureaus showed a loss of market share, the time-share systems benefited from the in-house equipment growth. These statistics bear out the scenario given earlier on how the novice computer user might start with a service bureau, and then grow into acquiring his own equipment—using time-sharing systems for highly specialized applications, and with many breaking away from service bureaus (although Figure 3 shows a continued reliance on the service bureau to some degree).

Why do the time-share or on-line systems benefit when a design firm acquires its own equipment? One of the reasons is shown in Figure 4, which shows the broad kinds of in-house equipment designers invest in. In 1980, 45 per cent of the computer users had terminals, and this grew to about 60 per cent in 1981. The average large design office (that had terminals) had over three terminals in 1979, and this grew to an average of almost six terminals in 1981. The average smaller office had two terminals in 1980 and this grew to almost three in 1981. Many design firms might have acquired terminals to specifically hook up to a time-share system, but most of them likely acquired computers with keyboards that can be used as terminals, giving many of these firms the ability to use a time-share system without additional equipment costs.

Figure 4 also shows how the designers who are involved with computers are investing in their own equipment. About 42 per cent of them had mini- or microcomputers in 1980, and this grew to about 49 per cent in 1981. Even mainframes showed a similar growth from about 14 per cent in 1980 to about 20 per cent in 1981. These statistics dealing with computers have to be viewed with the realization that the dynamics of the computer industry has resulted in developments that have made it difficult to maintain definitions of what differentiates a micro from a mini from a mainframe. Recent developments have given storage capacities to micros that exceed the older mainframe capacities. The microprocessors are still less sophisticated than their counterparts in the mini, but even this will change in the near future. Also, undoubtedly, design engineers included their programmable calculators in the microcomputer category.

The largest growth area is in word processing, which grew from 35 per cent in 1980 to 55 per cent in 1981. Word processors are becoming popular because of the immediate productivity gains they offer in any text-preparation applications. They can also produce more professional looking results. But, here again, the statistics should be viewed with the realization that recent developments cause crossed lines between what is a word processor and what is a computer. A pure word processor is actually a computer whose programs are dedicated to word processing. However, some so-called word processors offer computer

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***Table 1** shows the way that designers use computers and how they are expected to use them in the near future. Because of the influence of engineers in the survey, design analysis is currently the most popular application, but accounting is expected to outstrip it.*

capabilities, and computers offer word processing capabilities. The trend is that it might soon be difficult to differentiate one from the other.

The lowest set of bars in Figure 4 shows the percentage of computer users who have automated drawing equipment. This grew from 6 per cent in 1980 to about 9 per cent in 1981—both low figures compared to the other equipment statistics. The reason for this, even though automated drawing equipment gives very desirable productivity gains, is that the equipment is very expensive; and since the equipment is primarily electromechanical in nature, the drop in prices of purely electronic equipment is not reflected to a great degree in the drawing systems. Sophisticated automated drawing equipment is still, mostly, a luxury of the large office. However, service bureau activity in this area could bring it into the realm of the smaller office.

The thing that the statistics in Figure 4 make clear is that when a designer gets involved with computers, he continues to get more and more deeply involved, and continually reinvests in that involvement. Why? Because it benefits his practice.

The Sweet's surveys asked designers about their thoughts concerning their use of computers. In 1980, about 68 per cent of them thought computers gave them a competitive edge. This grew to 75 per cent in 1981. Of those designers who are involved with computers, about 95 per cent—almost all of them—are actively looking for new applications.

But involvement with computers does not always come up roses. There have been disappointments, even horror stories, but the interest on the part of designers who are presently involved with computers is such that over 60 per cent want to be part of an industry effort to improve computer use.

Table 1

Application	Percent of Use	
	1981	1982
Design analysis	46	66
Accounting	41	70
Spec writing	31	62
Cost estimating	21	51
Construction management reporting	12	23
Computer-aided design	8	32
Automated drawing	5	27
Product/equipment selection	2	15

Are computers any kind of threat? It's hard to see how . . .

The steady growth of the use of computers in the construction design process, and its upsurge in the past couple of years, makes it plain that in the next few years, computers will be as common in the design office as a typewriter. The designers themselves have projected that.

But what does that mean to the designer and how he functions? In many areas of endeavor, the computer looms as a threat. There is a widespread fear that computer use might dictate how the professional works, and might restrict creativity. While there is no doubt that work habits will change—and are changing—those design offices that are presently using computers know that its greatest usefulness is in those areas of a professional's practice that often represent "drudgery": the bidding, estimating, negotiating, contracting, document preparation, general office, production and accounting services. Computers are of course highly effective in rote applications, number crunching and manipulating, and many other services that are usually laborious and nonsatisfying. If anything, the computer promises to free the designer to have more time for the creative parts of his job.

This is all well and good, but it might be academic to those small offices who feel they will be last to get computer-involved, and must compete against those who already are. There have inevitably been predictions that the small practices will disappear under the competitive pressures. But that kind of prediction has surfaced with every new construction technique and market shift that has taken place. And there is no reason to believe it has any more foundation now than in the past, especially since the expense of computer involvement today is within everyone's reach. Micro, service bureaus, time-share systems provide efficient ways to stage into computer involvement.

But do not let this optimism make it sound too easy. *Caveat emptor* still applies, and disappointments and disillusionments still occur. Evaluate your office functions carefully, and pick the best areas of productivity to start with. Find out who is using the equipment or service you are considering. Look to your peers for information. Gain from their experiences and share yours. Participate in your chapter's meeting and seminars. Deal only with vendors who understand your business. If you are considering getting equipment, get financial advice on whether to buy, lease or rent, and the terms that go with that acquisition. And before you acquire any equipment or system, find out how much applications software is available in the marketplace which can run on that equipment.

Proceed *slowly*, but proceed.

Mr. Mileaf is Director, Technology and Product Planning for Sweet's Division, McGraw-Hill Information Systems Company. His achievements for Sweet's include Mechanical, Electrical and Civil Engineering Catalog Files, technological planning over the past 15 years and 11 research studies over the past 3 years on influences in the construction industry. Mr. Mileaf is the author of 16 books on technical subjects.

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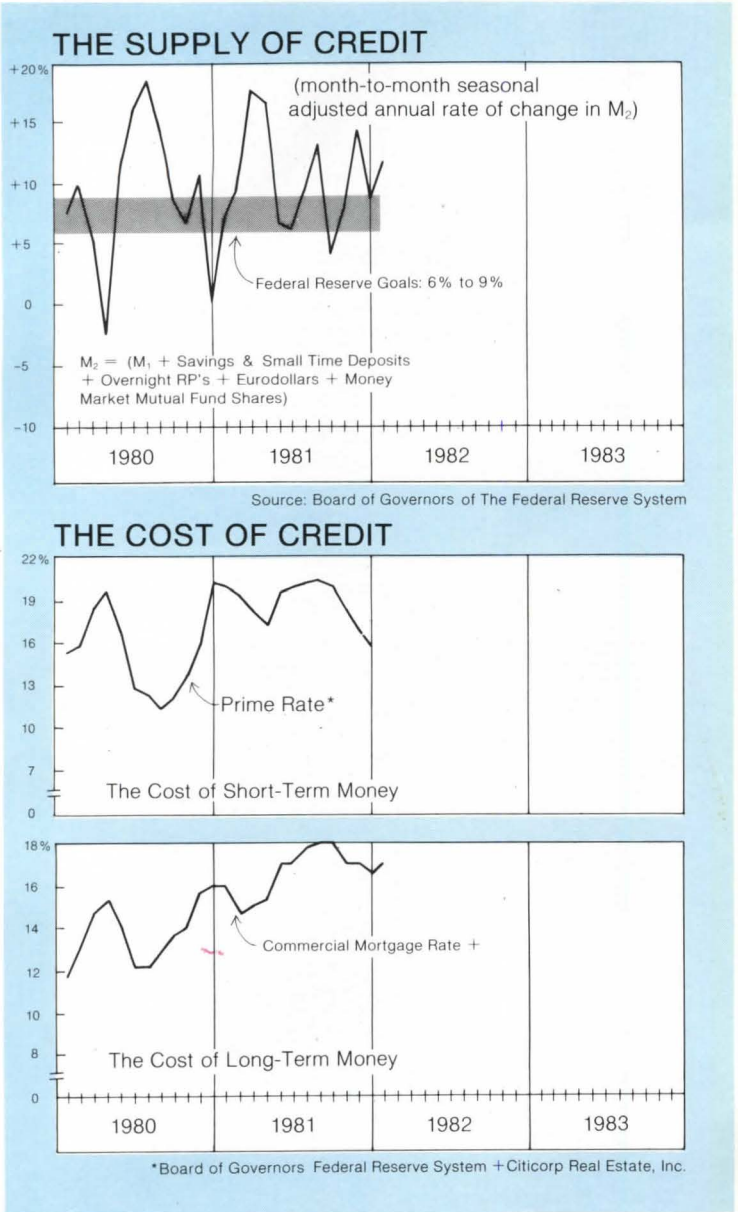
Finance: Bad news on interest rates may be good news in the long run

By Phillip E. Kidd



During the spring of 1981, the work of "expectationalist" economists was a major part of the economic philosophy of the new Administration. At that time, several of these economists, who surround director David Stockman of the Office of Management and Budget, were arguing that the Administration's policy actions—clearly showing the American public that inflation was being checked—would lead to a dramatic and rapid decline in the rate of inflation, lowering interest rates, and spurring economic growth. After 15 years of upward-ratcheting inflation, their pronouncements were greeted with a high degree of skepticism. Yet, a year later, economists in and out of government are forecasting that inflation will fall from above 9 per cent in 1981 toward 6 per cent this year and even lower next year. Since there has been a remarkable break in inflation, why has the rest of the "expectationalist" projections not come true?

Usually a recession (which cuts into credit demand), combined with falling inflation, would send investors scurrying into the financial market to lock up high long-term yields. As this flow of funds satisfied a demand for credit, long-term rates would fall. As the decline continued, potential home buyers would be enticed back into the market, boosting housing starts, and helping the economy recover. However, this time investors have avoided the long-term market, and long-term rates have stubbornly held near their record levels of 1981.

Clearly the financial community is concerned that a slumping economy has accounted for much of the year-long slippage in inflation. Investors are worried that once the July tax cut begins stimulating economic growth, inflationary pressures will reappear. Burned many times before, they are demanding long-term interest rates that provide 6 to 8 per cent real returns (huge by historical standards) over and above any returns for expected inflation. Even then, real estate lenders are only grudgingly making loans, much preferring to accept a lower interest rate in return for some form of equity interest in a project (especially in commercial real estate).

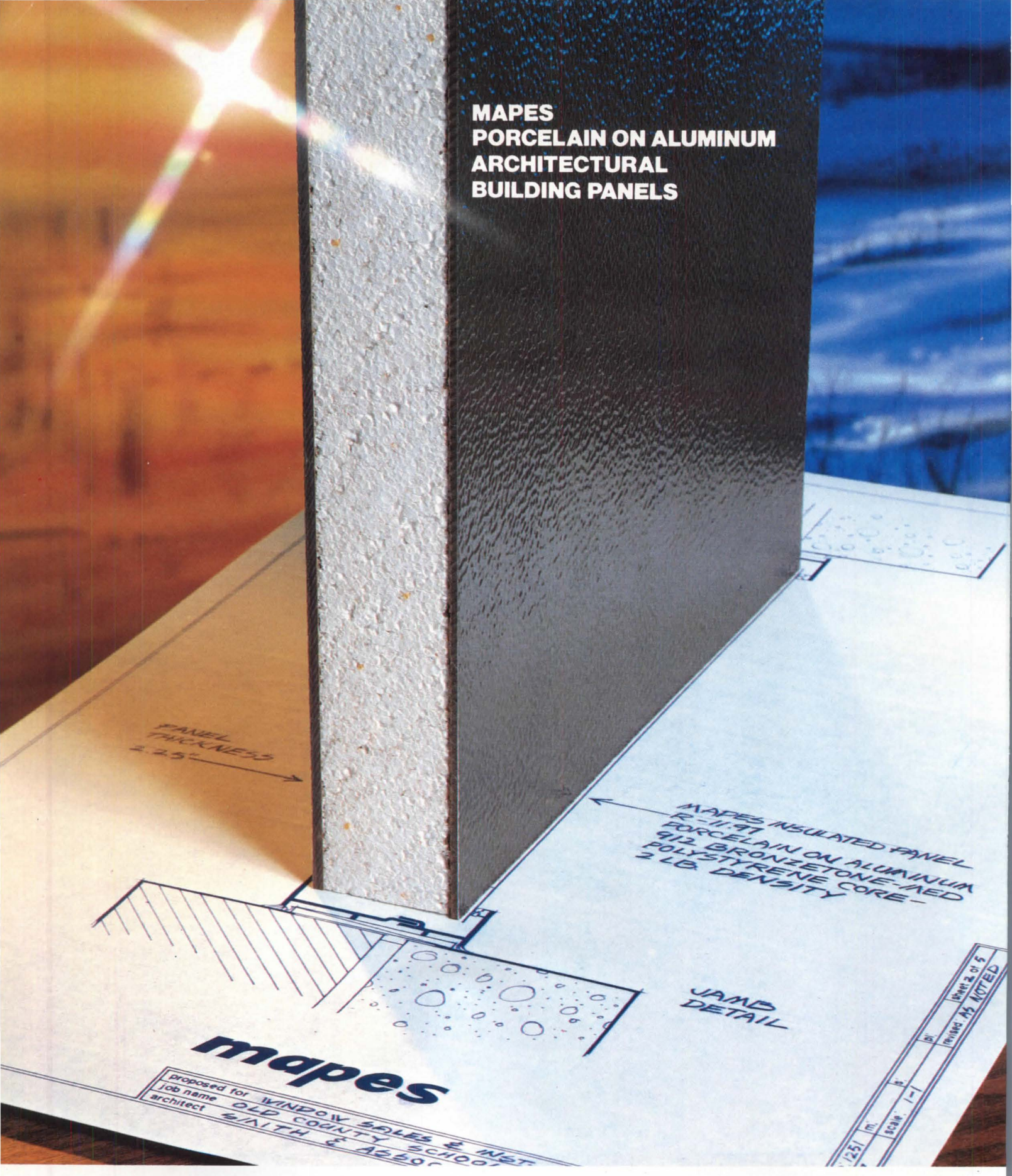
Still, it is one thing to demand substantial real returns, but quite another to receive them. That lenders can obtain such returns reflects the enormous imbalance between the demand for credit and the available supply.

This is not a one-sector mismatch as often portrayed in the popular press, which focuses almost exclusively on the growth in Federal deficits. Rather, it is widespread—encompassing individuals looking for mortgage financing, businesses trying to lengthen their debt structure, and state and local governments borrowing to cover shortfalls in revenues relative to expenditures.

Some forces are taking shape that can reduce this disparity. The July tax cut will boost consumer income, helping to improve economic activity and savings. Compromises between the Administration and Congress may trim some of the Federal deficit. And a slightly less severe monetary policy than in 1981 will also aid economic growth.

Nevertheless, these actions will not immediately alleviate the huge *pent-up* demand for long-term credit overhanging the capital markets. It will take time to unwind this situation, meaning investors will be demanding above-average real returns for some time to come. Significantly, in those above-average returns is the ultimate solution for correcting the imbalances in the financial markets. Large real returns work on both sides of the borrowing/lending equation. They discourage new borrowings, curtailing credit demands. In contrast, they encourage debt repayment and savings, expanding the savings pool. But this is a slow process, promising a gradual retreat throughout the second half from the near record interest rates of this spring. In turn, these high, but falling rates mean a grudging recovery for residential and commercial construction this year.

Mr. Kidd is a prominent economic consultant and former Director of Economics Research for the McGraw-Hill Information Systems Company.



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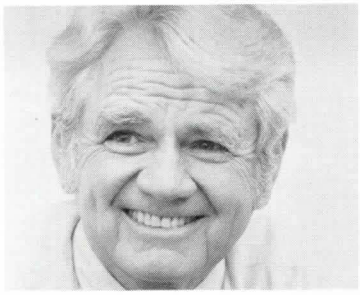
Management: Strategies for survival in today's difficult economy



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Eugene E. Cook
Managing Partner
Holabird & Root
Personnel: 165 total; 40 licensed
Volume of work in 1982: up

"Every decision during a boom should be made with a recession in mind."

The dream of every architect is an even flow of work especially in hard times like these. More than a few, of course, manage just that. How do they do it? What are the strategies for finding and keeping that work?

RECORD surveyed a group of well-known architects—some with large firms, some with small firms; from various parts of the country. We asked a lot of questions, got some thoughtful and helpful answers.

One thing is clear: there are no simple answers anymore like having one type of client (remember when FHA 236 itself could keep a good-sized firm busy). Instead, the survey suggests that the path to stability is diversity: in clients, in kinds of work and in geographic area.

A variety of building types can mean a steady flow of commissions

Eugene Cook of Holabird & Root emphasizes planning ahead: "The good years preceding a recession are the time to assess a firm's capabilities against expected demand. A decision to follow a new market means developing the necessary expertise with present staff or hiring specialists in the new market.

"The time to promote new markets heavily is when the firm has more work than it can handle, and not under panic conditions when the pinch of a downturn is felt. If the firm waits until a downturn is felt, it will find others feeling the same pinch who are carefully shepherding their already captured clients. The firm without experience attempting to reach into a new market at that time doesn't stand a chance."

Michael Maas of Haines Lundberg Waehler agrees: "We are now planning into the 1990s." It might seem that the large firms like Haines Lundberg Waehler, CRS, and HOK have already diversified into every conceivable building type, but according to Maas: "I spend much of my time analyzing the market and planning where and how we should position ourselves."

Part of the great success of CRS is its ability to foresee growth markets. Says Bill Caudill: "One of our current strategies is directed toward accumulating expertise in the design of manufacturing facilities for devices such as computers. This requires probing deep into the high-tech process, relating layout configurations to productivity, worker expectations, corporate images, and the best kind of work environment for this booming field."

George Hellmuth of HOK: "Diversification is like keeping five fingers on the ground. If one or two are kicked away, you can still finish your handstand. Today, the professional firms that are growing and succeeding—in spite of all the talk about recession, high interest rates, inflation and gloomy headlines—are those that have planned their own futures."

Strategy No. 1: Try to work with more building types

Reaching out for new types of commissions may seem all well and good for the large firms with resources for investment in research, specialized personnel, and some unsuccessful proposals to prospective clients who want "experience." Still, many smaller firms have diversified successfully without making massive investments in the effort.

Hugh Jacobsen, with an eight-person office, averages about 37 projects a year. While he is a perennial award-winner for his houses, only 20 per cent of his work is in houses. The rest includes hotels, libraries, and academic buildings—and has clearly come close to producing a very good "hot and cold valve." "House clients are the best economic barometer. They want to build the really ambitious (and expensive) houses during a recession—because their money is not effective in the marketplace, and slack construction times mean better bids from the contractors." For a small office, a few expensive custom houses can make up for a lot of dried-up speculative construction.

Says Bill Grover of Moore Grover Harper (with 21 people, 12 of them licensed) and more work this year than last: "We are as diversified as we can be. Especially now, big houses are going ahead." Warren Cox of Hartman-Cox (with 19 people, 13 of them licensed): "You can't have too broad a work base." Michael Maas of Haines Lundberg Waehler sees the push for diversification by big *and* small firms alike leading right back to where many small firms got started and are most experienced: rehabs and interiors.

What if a firm is caught in a recession without a broad base? During stop-gap situations, Robert Frasca of The Zimmer Gunsul Frasca Partnership uses a basic technique: "We call our long-time clients and see if they have work on hold—remodelings or odd buildings that both we and they have been putting off. It's surprising how helpful they can be." Grover calls this technique "agitating dormant clients."

Should diversification include more government work?

Jacobsen: "Yes. No." There are other mixed reactions. Hellmuth: "Government work is most rewarding." Cox: "With good agencies, it's fine, but there seems to be very little government work of any scope right now." Caudill: "*Some* government jobs have been rewarding." Louis Rossetti of Rossetti Associates: "Government work is usually less sensitive to short-term economic ills, but it is not very profitable." As in accepting any client, some degree of selectivity may be in order here. As Jacobsen says: "You *do* have to like your clients."

Ancillary services such as real estate analysis can help even out work

Hellmuth, Maas and Rossetti can cite secondary services as major factors both in generating income and in securing architectural commissions during good times and bad. Maas includes in this category services in energy management, the analysis of government regulations, and specialized interior design—such as hospitals and computer facilities. Rossetti includes maintenance and repair advice, operations management studies, long-range planning, and computer-based space planning and furniture-equipment inventories.

Grover says: "We do any kind of work within our limitations when we think it will help bring in real architectural work." The principals of Zimmer Gunsul Frasca collaborated on a book called *The Expandable Hospital.* Even though the book was funded by a client, Frasca notes: "Such work keeps us busy, if not always profitable." The important point is that the book generated a commission to design an expandable hospital later on, and is helping secure similar commissions now.

During an earlier recession, the three CRS partners did a research report called "Space for Teaching." Caudill says: "When the baby boom came, CRS was ready. National recognition for the report made us experts—even though we had never built a schoolhouse."

Leung Hemmler Camayd opened its now-10-person office in downtown Scranton in 1978—"we've never experienced an upturn in the economy," says David Hemmler. The partners believed in the unique character of their city, with its substantial turn-of-the-century structures, and to generate work, the partners did their own *feasibility studies on* underutilized historic buildings. Their present success comes directly from developers' interest in those studies which have resulted in commissions for both rehabilitation and new work.

Still, all secondary services are

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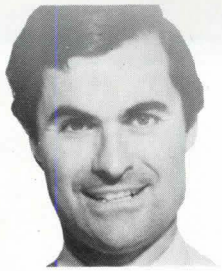
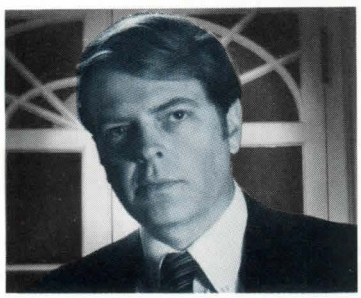


Warren J. Cox
Partner
Hartman-Cox Architects
Personnel: 19 total; 13 licensed
Volume of work in 1982: steady

"I think the important thing is not to panic and do something silly, like take a share in a questionable project in lieu of fee."

Robert J. Frasca
Senior Partner
The Zimmer Gunsul Frasca Partnership
Personnel: 90 total; 52 licensed
Volume of work in 1982: steady

"The hardest things are to be selective, and to try harder to get the work you want."



William H. Grover
Partner
Moore Grover Harper
Personnel: Total 21; 12 licensed
Volume of work in 1982: up

"I am a perennial optimist. Low billings are traditional in certain months. Now it's just certain years."

George F. Hellmuth
Chairman of the Board
HOK-International, Inc.
Personnel: 850 total; 182 licensed
Volume of work in 1982: up

"To stand still is dull; to step backward melancholy. Expand and diversify."

not for everyone. Says Eugene Cook: "Some secondary services become make-work projects, and financial analysis may show that the firm is subsidizing them. While there may be a tendency to retain losing services because they read well in a brochure, sound business judgment should eliminate them without delay."

Broad geographic coverage can help assure steady work

As AIA president Lawrence observed at a recent lunch with McGraw-Hill editors and executives hosted by the RECORD, the impact of the current recession is being felt very differently in different cities and regions of the U.S. There is little perceptible effect in some cities in the "Sun Belt," while others such as Akron and Detroit are being hard hit. The thriving cities, especially those which are growing quickly, seem to have enough work for both local and outside professionals—and the smart firms are reaching out to these cities.

The principle might be broadened to include the establishment of world-wide markets as well. Again, this might seem most appropriate for the larger offices with the resources for travel and the development of distant contacts and field offices. But it can apply to any size office.

Architects like Hugh Jacobsen—who rely heavily on their personal contacts to build business—have established truly international practices. Jacobsen is currently doing work in six countries, with four projects in Greece alone. He emphasizes the fact that clients in other countries tend to hire on a one-to-one personal basis, while "Americans will interview everyone in sight."

His U.S. work is literally coast-to-coast. Is all of the travel and other difficulties of doing work over such a broad geographic area rewarding? "Wow," he says.

Architects with small and large firms alike echo his enthusiasm for a wide-spread geographic base. Certainly, Bill Caudill does, with his firm's offices all over the U.S. and particular successes in such foreign countries as Saudi Arabia. Robert Frasca's firm based in Seattle is doing work as far afield as the Sudan. Charles Moore is, of course, a peripatetic traveler.

George Hellmuth: "Just as diversifying the kind of work you do helps, another way of avoiding the ups and downs is to avoid dependence on a limited geographic area." He cites offices in Riyadh, Taipei, and eight U.S. cities. "Work abroad has proven *very* rewarding," he says. "For one thing, the fees are higher." And presumably they can be enough higher to more than offset the extra costs involved.

Michael Maas: "Our investment in the Middle-Eastern market in 1973-74 was well timed. From our offices in the Middle East, and now in Europe as well, we are seeking additional overseas opportunities, including work in Third World nations. Our overseas projects currently account for 20 per cent of our work, and that percentage is growing."

Louis Rossetti is less optimistic about work abroad: ". . . probably only if you have dealt with different cultures; if you can wait for payment, and if you can afford considerable front-end costs." Still, having opened offices in other cities besides home-base Detroit, his attitude is: "Don't sit and wait for a weak market to hit you. Computer communication services make decentralization easier, but today's demand for more personal service will dictate new offices near your distant clients and projects."

George Hellmuth says this about branch offices: "Besides the marketing advantage, they offer opportunities for key HOK people to grow professionally and to accept more authority and responsibility. They help us maintain the interest of a staff of experienced and capable people. In effect, our people are given very nearly the same opportunities as if they had their own office; but with the comfort of having others readily available if problems beyond their experience arise."

What about design-build, or real estate investment?

All of the architects surveyed for this article take a fairly dim view of this strategy, but their attitude is by no means universal (see next month's July Business pages for another architect's highly successful experience). It is true, however, that many of the architects have invested in the buildings that they occupy. Frasca's firm owns not only the firm's current office building, but the previous one. "We will continue to do some real estate investing, but too much is not a good idea," he says. "We don't want to compete with our own clients, and there *is* the danger that you stop being an architect.

"We feel the same about construction management and design-build. If you get into those kinds of activity, I think you tend to forget who and what you are. I think we are able to maintain the quality of our practice *because* we concentrate on doing a few things well. I don't think you can play both sides and come out ahead."

Warren Cox takes an even stronger stance: "If I wanted to do that, or had any aptitude, I would not have been an architect, and I might even be rich. I agree with the traditional theory that the architect should be an independent professional who sells advice, expertise and service only. By getting involved financially in a project, one not only loses that capacity for independence but also, more often than not, gets into an area where one lacks expertise. I do not think the architectural and speculative thinking mixes very well. Clearly there is more money to be made by investing in projects than by designing them, but the risk is greater, too."

Small or large, you must concentrate on marketing

Until recently, the active promotion of professional services in the marketplace was an alien concept to many architects and engineers. But, the business world is, like it or not, becoming more competitive; and professional services are no exception. And, simply put, design professionals who market successfully will have that backlog of work to keep busy through economic dips. The architects surveyed report that much of their current strong workload (almost all are up over last year) had been on "hold" for a period extending back through the last economic upswing.

Admitting to changing attitudes on marketing, Robert Frasca says: "We have never considered advertising, and I don't think we ever will. But, then, five years ago I never thought we would have a marketing department." None of the other architects surveyed have yet considered advertising—except, perhaps surprisingly, Bill Caudill.

Marketing consists of many activities besides getting a message across about a firm's existence. Ernest Burden of New York publishes a regular newsletter, *The Presentation Advisor*, and markets taped seminars on the presentation of proposals to clients in competitive-selection processes. He points out that a large firm may spend $40,000 on courting a client, and lose the commission because of a poor presentation. He finds that a success rate of one job for every four presentations is considered acceptable by most design firms. He finds this shocking.

Michael Maas: "Even though 75 per cent of our work comes from clients of long standing, we have an [extensive] marketing and communications group. The results clearly justify the effort."

Is it too late to start marketing during a recession?

As noted earlier, Eugene Cook

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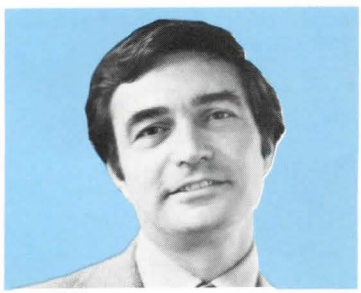
Hugh Newell Jacobsen
Principal
Hugh Newell Jacobsen Associates
Personnel: 8 total; 5 licensed
Volume of work in 1982: up

"You have to like your clients, and they will like you through good times and bad. There are more expensive houses in a recession, and work abroad is rewarding anytime."

Michael Maas
Managing Partner
Haines Lundberg Waehler
Personnel: 400 total; 77 licensed
Volume of work in 1982: up

"Determine to compete effectively for slack business; analyze the market and position yourself: be more sophisticated in management."



Louis A. Rossetti
President
Rossetti Associates
Personnel: 88 total; 38 licensed
Volume of work in 1982: steady

"Have a long-term strategy that recognizes periodic downturns. They can depend on location, so diversify there."

David M. Hemmler
Partner
Leung Hemmler Camayd
Personnel: 10 total; 7 licensed
Volume of work in 1982: up

"We did everything we were told was wrong; and it came out right.

recommends the greatest effort during good times, but most of the architects in this survey argue for a steady—if not increased—effort during a recession. George Hellmuth: "Our marketing efforts have been stepped up since day one." Bill Caudill: "We always step up marketing efforts in a competitive market." Louis Rossetti: "Adverse economic conditions will cause many firms to reduce marketing efforts, geographic expansion, and investment in high-productivity equipment. This strategy may ensure short-term survival, but will likely inhibit their longer range ability to compete."

Cox: "We try to interview well, when prospective clients contact us. But I feel we should make more effort to get on more interview lists. We do not think you can invent jobs or get work for which one is not an appropriate architect or for which someone else is better wired. The business of forcing one's way into the list at the last minute and then getting the job does happen, but not often."

Marketing technique varies by personalities—and size of firm

Every firm has a different style which works for them. Hugh Jacobsen says: "My people keep saying that 'if we could just get your mouth through the door . . .' " Most of the architects report that while securing commissions through direct personal contact between principal and client was once a matter of professional pride, it is now a necessity. Increasingly, sophisticated clients want to know who will be handling their commission, and who they will be dealing with day to day.

This is of course a great advantage for the small firm—such as Moore Grover Harper with a ratio of managers to employees of 1 to 2. Clearly, in such small firms, the person the client meets will be involved on a day-to-day basis. Further, reports William Grover, "We keep a list of prospective clients, and assign a partner's name to each one. When things get slow, every man knows his duty."

David Hemmler: "From our experience, both in a large firm and with our own small firm, the architect/partner himself represents the best marketing tool. You are rendering a personal professional service as a direct representative of your firm. Who could better represent the firm's capabilities, ideas and goals? The client, we have found, be it for a multi-million dollar commission or a private residence, appreciates our personal attention throughout the project. He does not meet with a salesman, followed by a designer, followed by a project architect, followed by an inspector."

Nonetheless, large firms do of course employ marketing specialists. These specialists are generally there to pave the way for the principals. A few bring in the commissions themselves.

Which kind of specialist is most effective? Those firms that employ in-house staff are all enthusiastic on their effectiveness. Reactions are about split on outside consultants. According to Frasca: "The independent consultant helps us to focus and refocus the direction on a year-to-year basis. He keeps us from not seeing the forest for the trees."

Is it easier for a large or a small firm to survive?

According to Caudill: "This is a tired, old, boring question. Obviously both small and large offices are needed. To survive, both better be good. I've never thought much of the *miniature* office—trying to ape big firms having broad scope practice. But I've been most impressed with small offices that specialize—becoming better, in one aspect, than any other firm large or small."

George Hellmuth argues strongly for the big office with all of its very visible resources to lure clients, and diversity to weather local squalls. Jean Bellas of Holabird cites size and endurance in themselves as being a plus factor in getting commissions: "Clients can see *your* ability to weather recessions. They know you aren't going to fold halfway through the job." And of course, it is true that large size enhances a firm's ability to go after the really big commissions that have long production periods and tend to span recessions.

On the other hand, Warren Cox argues: "If the small office doesn't have three jobs, it is out of work. But, the small office should have relatively low overhead, and with the right jobs, the theory is that a partner can make as much money (or more) than the partner in a large firm. I would certainly like to think so. However, we will never know for certain because no one will ever tell."

How serious is this recession? Bad, but not as bad as 1974

Rossetti is blunt: "It is apparent that many firms will not survive because of inability to respond to new situations." Grover: "We fluctuate between worrying about today and worrying about the future. This recession is creating pent-up demand. People who held off at 10 per cent interest are going ahead at 17."

Eugene Cook: "How has a firm such as Holabird & Root managed to survive the many cyclical dips of the economy in its 102 years of continuous practice? The current recession pales in the face of the enormity of the major depression of the 1930s." Hellmuth: "I feel like Janus with one face back, the other always ahead." Cox: "Actually, we have never had more work, or more work being put on hold or subject to delays. Everybody is worried and treading water. I think a lot of current projects got started as a last run for the ark before the deluge."

Bob Frasca: "The economy had been changing monthly and now it's weekly. However, I see a lot more underlying optimism than in 1974. Most clients have admitted they are slowing down because of the uncertainties, but are poised and ready to spring when interest rates come down and business activity picks up. There is the feeling that as a nation we can lick our problems, where in 1974 it seemed that our problems had the best of us."

At any rate, none of the firms represented in this survey has been seriously affected by this recession. By using the strategies that they have shared in this article, all have kept a steady flow of work—and some are thriving as never before. Still, each has *another* group of strategies that recognizes that work loads may go up and down. In an early issue, RECORD will explore those strategies that may in fact turn short-term dips into long-term benefits. *Charles K. Hoyt*

Kevin Roche named 1982 winner of Pritzker Architecture Prize

The Pritzker Architecture Prize, architecture's "Nobel," was awarded last month to Kevin Roche of Kevin Roche John Dinkeloo and Associates.

The Pritzker award jury said in its citation: "In this mercurial age, when our fashions swing overnight from the severe to the ornate, from contempt for the past to nostalgia for imagined times that never were, Kevin Roche's formidable body of work sometimes intersects fashion, sometimes lags fashion, and more often makes fashion."

In accepting the award, Roche announced he would use the $100,000 prize as seed money for a fund to endow a chair of architecture at Yale University in honor of Eero Saarinen, who until his death in 1961 was Roche's mentor and close associate.

Roche is the fourth recipient of the coveted prize, which was established by the Pritzker family in 1979 to honor architectural achievement with an award comparable in prestige (and tax-free dollars) to the Nobel. (Indeed the prize was suggested to the Pritzker family by Carleton Smith, now secretary to the award jury, to whom the late King Gustavus VI Adolphus of Sweden had remarked on the omission in Nobel's bequest of such significant fields as architecture and archaeology.) According to Jay A. Pritzker, director of the Hyatt Foundation through which the prize is funded and administered, the intent of the award is to honor living architects whose work "demonstrates a combination of talent, vision and commitment that has produced a consistent and significant contribution to humanity and the environment." Previous winners were Philip Johnson, Luis Barragan, and James Stirling.

The prestige of the award is guarded by a distinguished international jury whose stated purpose is to recognize architectural contributions "as represented by a substantial body of built work. [The prize] is given for built architecture, and not for drawings, proposals, theories or writings on architecture. It is given for architecture as art."

On this year's panel were J. Carter Brown, director of the National Gallery of Art; Lord Clark of Saltwood (Kenneth Clark), author and art historian; J. Irwin Miller, architectural patron; Thomas J. Watson, Jr., chairman emeritus, IBM Corporation; and architects Arata Isozaki, Philip Johnson, and Cesar Pelli. Arthur Drexler, director of the department of art and architecture of the Museum of Modern Art, serves as consultant to the jury, reviewing and screening all nominations. Some 200 architects from 50 countries are considered each year.

International Style celebrates its 50th birthday

It is now 50 years since the words "International" and "Style" were wed at New York's Museum of Modern Art. Harvard University, long the stronghold of orthodox modernism as heir to Gropius's Bauhaus, might well lay claim to having given away the bride. Both Henry-Russell Hitchcock and Philip Johnson were indeed recent Harvard graduates in 1932 when they joined forces with Alfred Barr to organize a small exhibition at the museum and prepare a thin polemical book, *The International Style: Architecture Since 1922*, which, in codifying the esthetic principles of "modern architecture," gave universal currency to a term whose buying power has yet to be spent in many quarters. It thus seemed only fitting that Harvard's Graduate School of Design take charge of celebrations for the International Style's Golden Anniversary. It was with the intent of reassessing those events of 1932, which have taken on such legendary importance, that GSD Assistant Professor David Handlin invited the show's original organizers, Hitchcock, Johnson, and Lewis Mumford (whose contribution of the section on housing is too often forgotten) to serve as panelists at a two-day symposium considering, it was hoped, "The International Style in Perspective." They were to provide controlling historical voices in the discussion generated by a series of six papers presented by historians and architects including David Handlin and Neil Levine of Harvard, Kurt Forster of Stanford, Rosemarie Bletter and Robert A.M. Stern of Columbia, and Anthony Vidler of Princeton. Each of the three pairs of papers was to be followed by a panel discussion among a group of architects and critics specifically chosen for the theme of the individual session.

Everyone agreed that a process of historical myth-making had been at work in both the 1932 exhibition and book, although the impact of that myth on American architects and attitudes remained a source of feverish disagreement. As Kurt Forster illustrated in his paper on the European scene in 1932, much of what we now consider the most innovative architecture and theoretical statements of the 1920s was ignored entirely in the New York show. As only executed buildings were shown, many projects and unsuccessful competition entries which were to have a more fertile effect on architectural imaginations played no role in Hitchcock and Johnson's definitions. Even the work of architects represented had in fact been carefully screened to illustrate only those principles Hitchcock and

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Lewis Mumford (left in photo below) and Philip Johnson take a detached view of the reappraisal of the International Style that unfolded at a Harvard symposium occasioned by the golden anniversary of its launching.

Johnson posited as the necessary characteristics of modern architecture. As Johnson himself admitted in one panel discussion, "We decided to sweep everything under the rug to make an effect," and then added devilishly, "and we certainly did; you're still talking about it today!"

The anniversary symposium was, however, an inconclusive and disappointing event; few seemed to feel that the much-anticipated gathering (people were in fact turned away at the door) had fostered a provocative or even thoughtful reevaluation. Many were not in a festive mood, least of all the original organizers. It was hardly the first time a reunion had been organized to reassess their remarks of 1932. Indeed modern architecture has periodically paused to take stock of its position in relation to the first engagement of American modernism with a vision of European ideals. Already in 1948 Hitchcock and Johnson were reunited, along with Mumford and Barr, in a MOMA debate with the British "New Empiricists" and California "Bay Region" architects to determine "What is Happening to Modern Architecture?" Three years later Hitchcock, in the pages of ARCHITECTURAL RECORD, offered a rereading of his 1932 text, arguing that its words allowed for a far wider interpretation than many had supposed for the last 20 years. But by 1958 Hitchcock was prepared to declare the style over and in 1965 even asked in a new introduction to a reprint of *The International Style*: "Who shall say, a generation after its heyday, when the International Style died?" In 1982, Hitchcock was too ill to attend the 50th anniversary at Harvard, but in conveying his regrets admitted that he was also, according to Johnson, "damned sick of the whole subject."

What Handlin had planned as an historical appraisal was, however, soon reduced to an almost parodied rehearsal of standard points of view from predictable protagonists. The insightful and often provocative papers will constitute an important voice of historical revisionism when they are collected together as a book by the MIT Press next year. But at Harvard the panelists failed in any way to enlarge the debate. Badly grouped and in part ill-chosen, they crystallized into stereotypical representations of their own customary polemics. They neither engaged the issues raised by the papers nor the comments of one another. In the final session, dedicated to that bugbear of the post-modern debate, the issue of formal abstraction, positions solidified and historical perspective was lost under a barrage of personal invective, much of it directed against Robert Stern. Perhaps goaded by Anthony Vidler's opening citation from Nietzsche that "a stone is more a stone than it used to be," several panelists, Vidler included, decided to hurl a few, an act, as one amused audience member commented, singularly counterproductive in a conference on glass houses. Philip Johnson, it must be noted, neither ducked nor retreated, but presented a series of wry and self-assured reminiscences about his early missionary role in the propagation of the International Style and his new-found faith in tolerant pluralism. As always he agilely bridged the river without being taken up by the current, being, as Eisenman insisted, at once the son of Mies and the father of Stern.

The year 1932 provided the focus of the first pair of papers in which Handlin and Forster sought to place Hitchcock and Johnson's historical myth-making in context, Handlin anchoring it firmly to a contemporary American debate about modernism and Forster contrasting its polemical simplicity to the more complex profile of European discussions of the "New Architecture." Both papers established the restrictive formalist esthetic philosophy which Hitchcock and Johnson imposed on the vital European architectural scene of the 1920s and '30s and set the stage for an analysis of how those biases—historiographical in origin—became a formative force in American architectural history and practice. Handlin described the intellectual climate at Harvard during Hitchcock and Johnson's student years, deriving his terms of analysis from Mumford, who despite his role in the exhibition held steadfastly to a point of view critical of the exclusive formalist imperative. Already in an article of 1930 Mumford discerned two contradictory philosophies in American modernism: "New Humanism" and "New Mechanism." The latter was broadly championed by engineers and scientists, as well as by architects such as Raymond Hood, who, claiming to accommodate nothing more in design than economic requirements and his clients' needs, fostered a pragmatic, native modernism. "New Humanism," a doctrine formulated by literary critics such as Milton Babbitt at Harvard, maintained that the modern must be an incremental adjustment of the Great Tradition to the particular character of contemporary life. Handlin saw Hitchcock and Johnson's involvement with the New Humanism as an essential element in their formalism, their insistence on esthetic judgments, and their refusal of "sociological concerns," as they disdainfully labeled functionalist arguments. "The source of most of the confusion and controversy that continue to surround both exhibition and book," Handlin explained, "was Hitchcock and Johnson's discussion of material generally associated with Mechanism in terms of Humanism."

Michael Lutch

If Handlin confined his remarks to an analysis of 1932, Forster concluded his paper by considering the implications of the International Style myth 50 years later. As that myth is now the basis for modern architecture—one that has ironically enough gained Europe itself since 1945—it provides the construct upon which legitimate architectural practice must rest, he argued. As a champion of Peter Eisenman's highly conceptual architecture, Forster concluded that only an architecture which engages that mythical history in a process of analysis can have contemporary meaning, while the post-modern approach continues to "approach all history as if it is all permanently on exhibition."

Post-modernism's relation to the historical myth of the International Style dominated, if only by implication, the Saturday morning session ("From Avant Garde to Official Style") in which Rosemarie Bletter and Robert Stern sought to unravel the complex and diverse architectural strands which had lost their identity in the neat International Style knot. Arguing that "perhaps we would do better to stop editing our picture of the past," Bletter accused the post-modernist rewriting of recent history of presenting a new *Nibelungenslied* version of modernism's rise to predominance, a dramatic scenario complete with villains and heros which obscures the historical complexity of events. Furthermore, she took popular critics of modernism to task for polemically focusing attention on such apocalyptic failures of particular modern buildings as the 1972 dynamiting of the Pruitt-Igoe Houses in St. Louis, a building, she noted, which has come to seem "in a permanently recurrent state of collapse." Taking Germany as an historical case in point, Bletter argued that the International Style was never so universally accepted as its critics claim, that its supposed functionalism was not a crude utilitarianism but rather contained a metaphysical notion of the artist's role as form-giver, and finally, that the assumed polarity of the European debate in the 1920s is a polemical simplification.

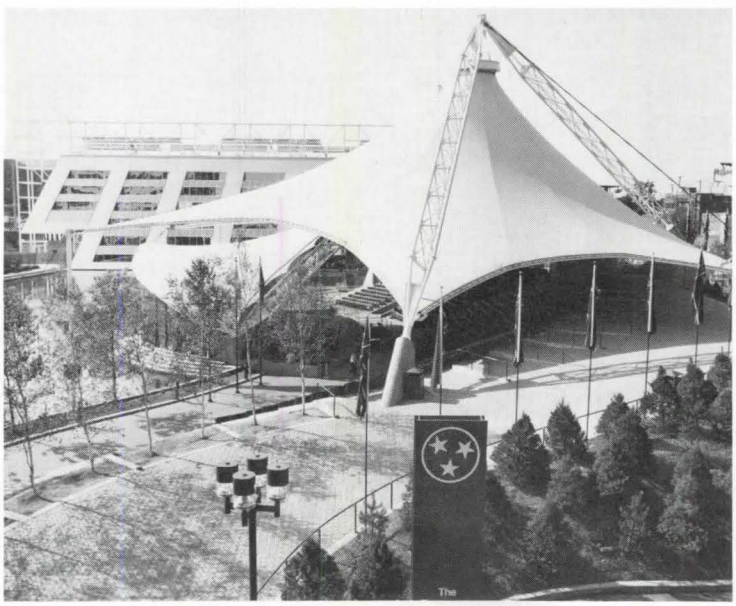
Robert Stern's rambling account of American architecture from 1932 to 1952 served adroitly as the historical support for his own post-modern position. The abundance and diversity of the buildings he illustrated argued once again for the "recognition of the transience and multiplicity of styles within the historical epoch we call modern." (*Harvard Architectural Review 1* [1980], page 86.) To Stern, the International Style is but one episode of modern architecture, one that polemically campaigned for a disjunctive abstraction which was soon softened and modified by American cultural demands and public response.

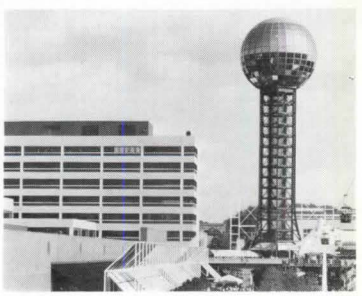
Stern's point of view was implicitly, and often explicitly, at

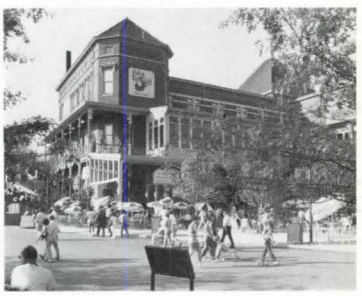
Knoxville's World's Fair: A summer festival, a lasting legacy

the center of the final discussion in which Anthony Vidler and Neil Levine jockeyed for the last word in papers delivered under the rubric "Meaning and Abstraction in the Language of Modern Architecture." Vidler's analysis of Le Corbusier's abstraction of the essence of classical architecture in its antique purity as a primary element of his vocabulary of the 1920s was an expansion of our understanding of that architectural language. It was not without its pointed attack on the position of Stern, whom Vidler labeled "the last worst nineteenth-century architect." To Vidler, abstraction is a vital part of architectural expression, be it the abstraction of nature in classicism as understood by a Laugier in the eighteenth century or of architectural essences, and thus of history itself, as in Corbusier. Corbusier's architecture is a model of the procedure in which "history is abstracted to provide the matrix in which the new can be realized." Levine dismissed early modern abstraction as a one-sided approach to a more complex problem. Focusing on Frank Lloyd Wright, whose relation to modern architecture was always as a self-aware outsider, Levine argued that Wright realized the most successful synthesis of abstraction and representation in architecture, much as Picasso did in painting in his later work. Arguing therefore, like Stern, for a broader definition of modernism, one in which Wright's entire achievement is not only integral but celebrated, Levine claimed that Wright was able to at once abstract and represent both history and nature in his highly personal architecture, showing, Levine asserted, that abstraction and representation are but two sides of one modernist coin.

Fifty years have indeed given rise to countless marital disputes, but as was abundantly clear at Harvard—however disappointing the symposium as an act of historical evaluation—history writing and architectural practice are still happily wed. An interpretation of the modern movement in architecture, exclusive or inclusive, analytical or abreactive, is still a primary act of self-definition for an American architect, whatever temporal qualifier his brand of "modernism" carries. Historical revisionism of the recent past, no matter how objective its intent, cannot escape a certain *parti prie. Barry Bergdoll*







Australia's exhibit (top), housed in a typical pavilion, includes a working windmill in keeping with the fair's energy theme. The central focus of the site is the lakeside cluster of permanent buildings: the U.S. and Tennessee pavilions (above) and the Sunsphere (left). Remodeled existing structures like the railway station turned restaurant (below left) are also permanent fixtures.

The Knoxville International Energy Exposition, which opened last month to near-unanimous applause and record-breaking throngs, is by all accounts a swell party. But its lasting gift to the city will not be opened until the last guest leaves next October.

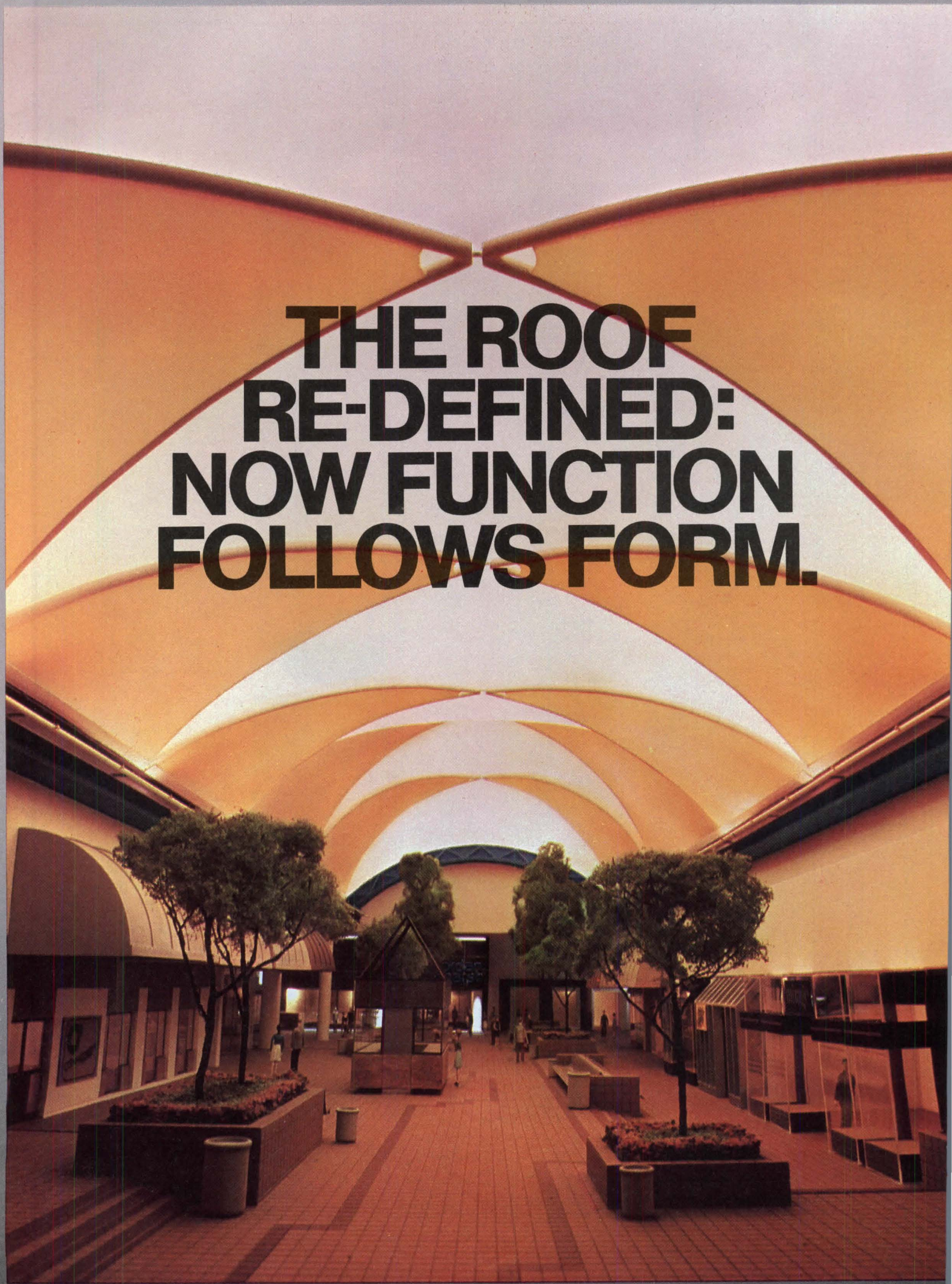
In what might be called a fair trade Knoxville will then have, in place of an abandoned railroad yard yawning between the downtown core and the University of Tennessee, four new permanent structures of varying architectural distinction, a clutch of recycled buildings of varying degrees of period charm, a nine-acre park site with lake and landscaping in place, and a cleared and serviced 70-acre development site.

From the beginning the design team headed by executive architect Bruce McCarty of McCarty Bullock Holsaple in joint venture with engineers Barge Waggoner Sumner Cannon approached the fair as an interim step toward the rebirth of the site as a vital residential and commercial community.

By focusing on residual use, the designers were able to establish a workable infrastructure for future development. But for the present their acceptance of the temporary as temporary imbues the fairground with a welcome air of unstudied gaiety.

Set in a rugged mile-long valley that narrows at midpoint to a dogleg ravine, the fair is organized around a shallow lake which will become a major feature of the future park. The lake ends at a midpoint transition bridge formed by the U.S. pavilion and the flanking fabric-roofed Tennessee amphitheater, both permanent structures although the end use of the pavilion is as yet undetermined. Across the lake is a new convention center, now pressed into service for corporate displays. Other long-term reminders of the fair will be 12 remodeled existing structures, including a one-time railway depot and hotel, and the inevitable theme structure—a "Sunsphere" clad in gold reflecting glass and perched atop a blue steel stem.

Apart from the over-all plan, the most successful elements of the fair are also the least permanent. International exhibitors occupy leased space in unassuming (and reusable) industrial loft buildings ranged along the western ridge of the valley. Their corrugated metal skins painted blue, these background structures acquire life and color from the exhibits within and introductory displays without, and from entrance trellises shaded by rainbow banners. Glass-walled kiosks throughout the site house food stalls and other vendors under buttercup-yellow tents.

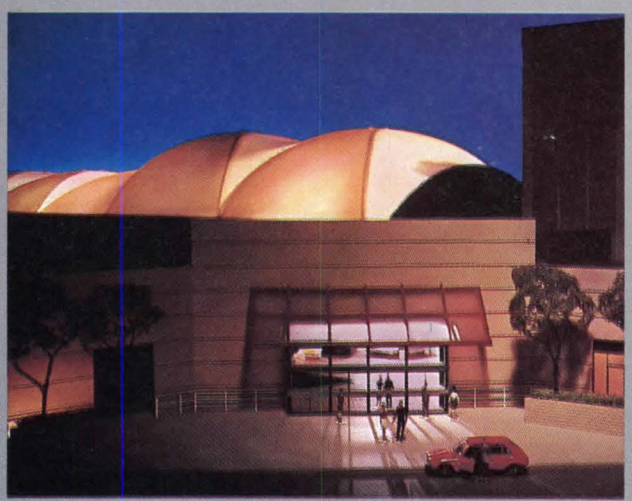


Mall at 163rd Street, North Miami—enclosed by an Owens-Corning fabric roof.
Charles Kober Assoc., architects. Geiger-Berger Assoc., engineering consultants to Owens-Corning.

The architects faced a real challenge. To take a random group of aging shops in North Miami and transform them into an exciting, unified environment. To make this renovated mall airy, inviting and energy-efficient. And to have it completed by August 1982.

FORM THAT PERFORMS—BEAUTIFULLY! AN OWENS-CORNING FABRIC ROOF

Here is the drama and wide-span freedom of form that architects dream of. And from this form flows functional performance that can save energy and lower operating costs. Here's why.



This permanent fabric roof is made of Owens-Corning Fiberglas® fabric coated with Teflon.* Its translucent surface lets in natural light, yet will screen out more than 70% of the rays from Miami's hot sunshine. This can cut down the need for artificial daytime lights, and reduce air-conditioning costs as well. And that same translucent fabric is easy to keep clean. All you need is an occasional rainy day!

EXCITING RETAIL SOLUTION

Look at the scale model in our picture. You can see that the Owens-Corning fabric roof doesn't need bulky support columns. So there's more room for customer traffic and more design flexibility. Natural, glare-free lighting shows merchandise to its best advantage. And at last shoppers can enjoy open-market shopping without worrying about rain or humidity.

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From design through construction, nobody is better equipped to help you out with your fabric-structure roof project than Owens-Corning.

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Please call us for assistance during preliminary design as well as for budget estimating. You can count on us for materials, fabrication and construction. And whether it's for new construction or retrofit, don't hesitate to call on us at the earliest stages of your project. At Owens-Corning we are glad to help in every way.

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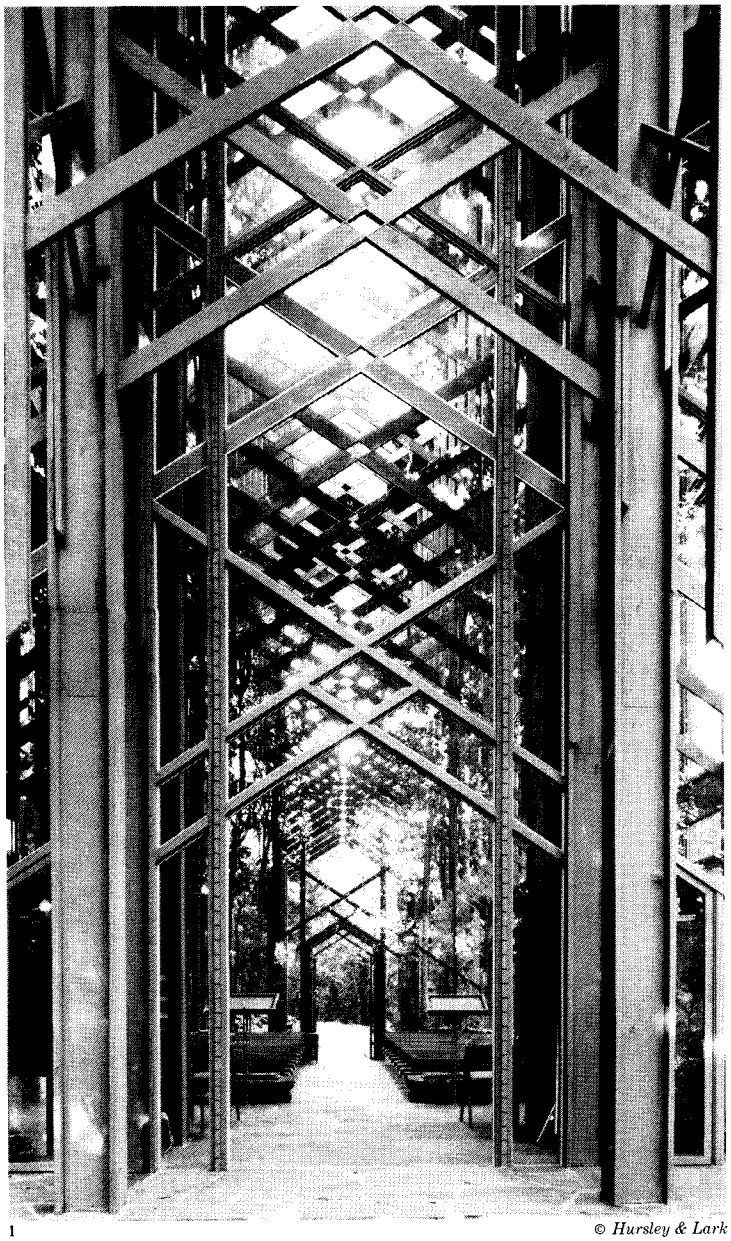
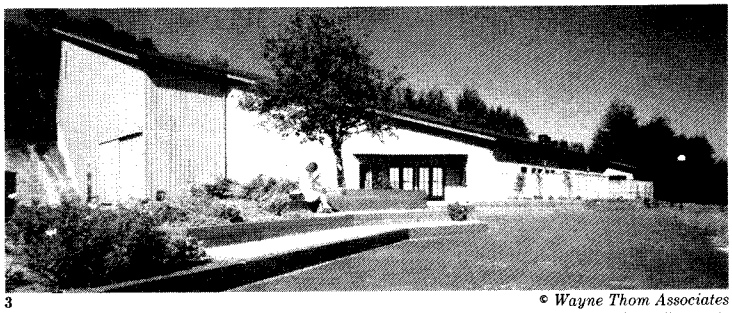
Circle 42 on inquiry card

Design awards/competitions: American Wood Council 1982 Design Awards

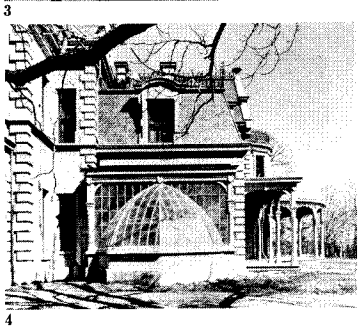


1 © *Hursley & Lark*

2 © *Don Smith*



3 © *Wayne Thom Associates*



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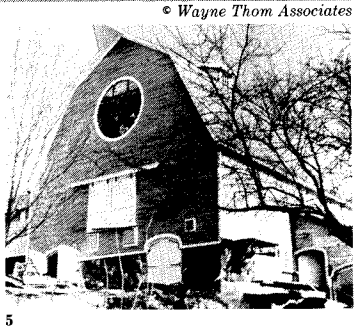

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1. Thorncrown Chapel, Eureka Springs, Arkansas; Fay Jones & Associates, Architects (First Honor Award; see RECORD, March 1981, pages 88-93). The jury lauded the 1,500-square-foot wood and glass structure as "a masterpiece. It creatively achieves an ethereal aura where the sensitive use of wood is completely harmonious with the forest setting.... One of the finest religious spaces of modern time."

2. Newhalem Campground Complex, Newhalem, Washington; Jones & Jones/Joyce Nordfors & Associates, Architects (First Honor Award). In designing the largest camping facility ever planned by the National Park Service, the architects strove to evoke the "images of permanence and aura of romance" that are National Park traditions. Treated wood poles, frame walls, and heavy timber trusses reflect local vernacular building forms.

3. Gymnasium and Athletic Center, Santa Cruz, California; Bull Field Volkmann Stockwell, Architects (First Honor Award). The 12,350-square-foot facility is deliberately barnlike, in keeping with its rural setting. Provisions for ample daylighting won special praise from the jury. Glued-laminated columns and long-span timber trusses carry lumber purlins and a plywood roof deck. Vertical boards clad both interior and exterior surfaces.

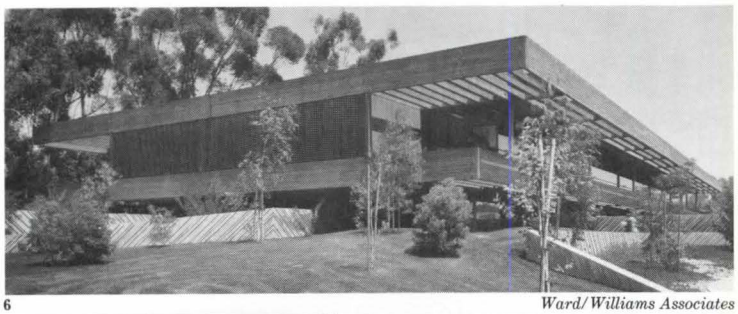
4. Museum Conservatory, Norwalk, Connecticut; Richard Bergmann, Architect (First Honor Award). After the original conservatory built in 1868 was demolished by a storm, Bergmann reproduced wood members at their original size, employing a glue-laminated beam and ribs. "An extremely elegant and carefully detailed reconstruction," concluded the jury.

5. Gerbode Farm, Enosburg Falls, Vermont; Bergmeyer Associates, Inc., Architects (First Honor Award). Native wood trusses span a 48- by 200-foot interior hayloft in a contemporary dairy barn, framed according to traditional building patterns. The jury described the barn as "extraordinarily beautiful."

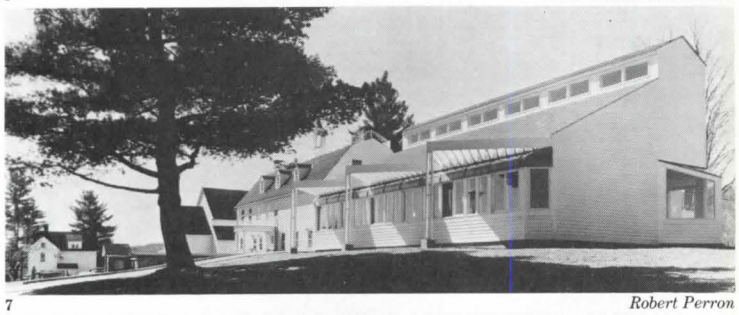
6. Motorola Communications & Electronic Facility, San Diego, California; Deems/Lewis & Partners, Architects (First Honor Award). This corporate office building is constructed of wood columns and joists with laminated beams. Utility systems are readily accessible within an acoustically efficient suspended ceiling grid. The jury found it to be "an indigenous California building of dignity and warmth compatible with local climate and terrain."

7. Dining Hall and Administration Building, Connecticut Junior Republic School, Litchfield, Connecticut; Herbert S. Newman Associates, AIA, P.C., Architects (First Honor Award; see RECORD, June 1981,

Jury review of entries in the 1982 American Wood Council Design Awards program was conducted on a regional basis (five of the winners were submitted from the East, seven from the North Central region, three from the South, and 12 from the West). The Thorncrown Chapel, designed by Fay Jones and Associates, was chosen for a National Design Award. Working under the chairmanship of Charles W. Moore, of Los Angeles, the jury consisted of architects Warren J. Cox, of Washington, D.C.; Alfred De Vido, of New York; Elizabeth Ericson, of Boston; Don M. Hisaka, of Cambridge, Massachusetts; John A. Holabird, Jr., of Chicago; Gertrude Lempp Kerbis, of Chicago; Matthew R. Mills, of San Francisco; Willis N. Mills, Jr., of New Canaan, Connecticut; Omer L. Mithun, of Bellevue, Washington; Boone Powell, of San Antonio, Texas; Philip A. Shive, of Charlotte, North Carolina; and Claude Stoller, of Berkeley, California.



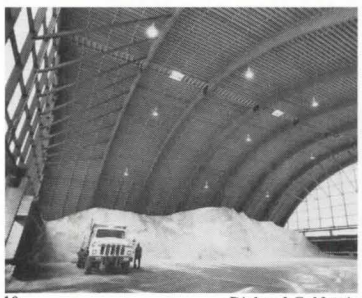
6 *Ward/Williams Associates*



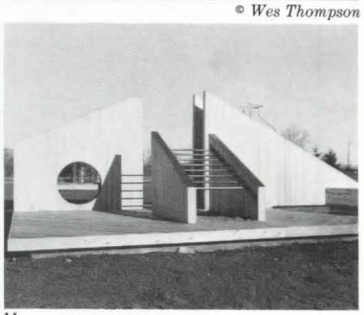
7 *Robert Perron*

8

9 *© Wes Thompson*



10 *Richard Goldstein*



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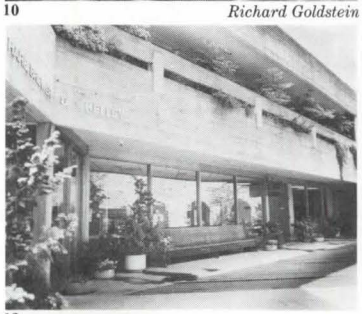

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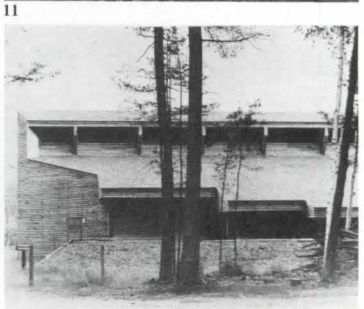


13

pages 124-127). Consistent use of white clapboard siding, porches, gables, and dormers unifies old and new buildings. The exposed timber-frame interior of the dining hall furnishes a warm rustic setting. "Humanly scaled and thoughtfully sited."

8. Lake Shore Christian Church, Euclid, Ohio; William A. Blunden—Robert A. Barclay, Architects (First Honor Award). "Inside and out, a sanctuary with clarity of forms and simplicity," the panel observed. The wood-frame structure, added onto an existing church, has a joist and plywood roof system above glued-laminated beams. A courtyard between the old and new buildings is used for outdoor services.

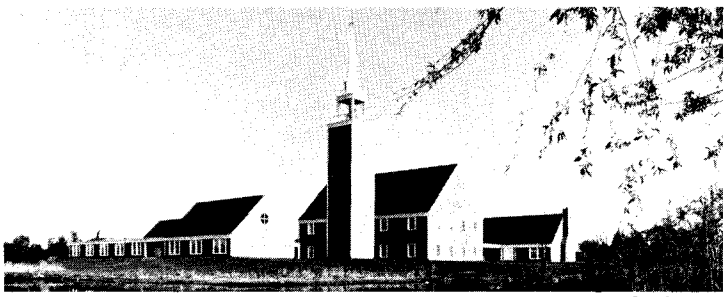
9. The Village Corner, La Jolla, California; SGPA Planning & Architecture, Architects (Award of Merit). This 3,400-square-foot office/retail complex is "a particularly successful example of the tested wood vernacular of Southern California," the jury noted. Light wood frame walls with clapboard siding are capped by a wood shingle roof.

10. Central Maintenance Facility for Salt Storage, Rochester, New York; Starks-Wurzer-Patterson-Romeo, Architects, P.C. (Award of Merit). "A bold, ingenious solution for a pedestrian problem," said the jury, "making good use of long-span wood arches." The roof system, chosen for its resistance to corrosion, covers a clear span of 160 feet. A salt pile is contained behind a heavy timber wall.

11. Alton Baker Park Play Structure, Eugene, Oregon; Victor R. Martin, ASLA, Architect (Award of Merit). The reduction of playtime hazards for children of various ages, including the handicapped, was a key element in the program for this year-round recreational facility. The jury called it "a functional play sculpture whose fresh solution exceeds the sum of its parts."

12. Lytton/Bryant Offices, Palo Alto, California; Crosby-Thornton-Marshall Associates, Architects (Award of Merit). Shingled facades with deep fascias were designed to afford a visual transition between commercial and residential neighborhoods to either side of the two office buildings. A triangular courtyard deck with extensive plantings and landscape furniture occupies the center of the complex.

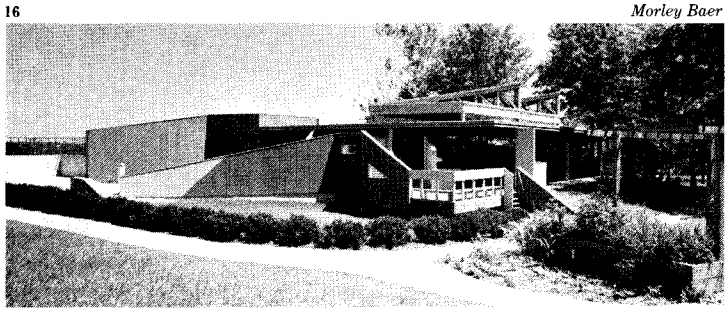
13. Conservation Center, Concord, New Hampshire; Banwell, White & Arnold, Inc., Architects (Award of Merit). The headquarters of the Society for the Protection of New Hampshire Forests comprises work spaces, offices, and public lecture rooms. Constructed entirely of timber grown in New England, the center was cited by the jury as "a building exemplifying its own principles: energy conservation, forest management and renewal, efficient construction."



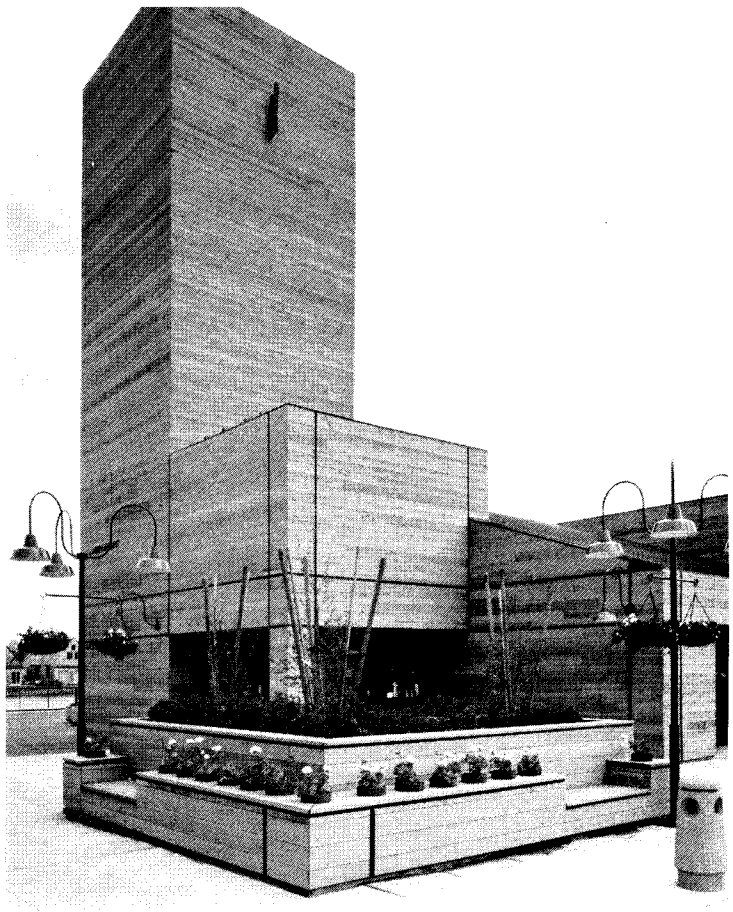
14 *Lea Babcock*

15 *© Hursley & Lark*

16 *Morley Baer*



17 *George Stille*



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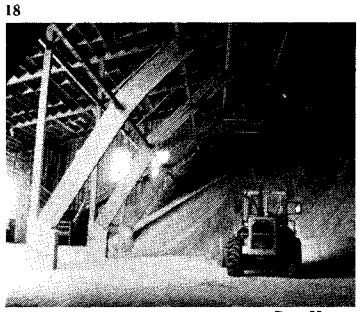
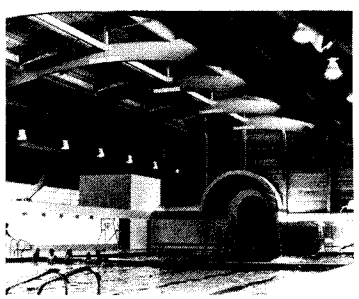


19 *Don Hance*



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14. Colonial Church of Edina, Edina, Minnesota; Hammel Green & Abrahamson, Inc., Architects (Award of Merit). Neo-Georgian in spirit, the five-building complex is clustered like a New England village. The architects specified beveled siding to suggest the scale of genuine Colonial structures. The jury noted the project's well-proportioned interiors, which are articulated with exposed columns and trusses.

15. J.R. Trueman & Associates/ Red Roof Inn Corporate Headquarters, Amlin, Ohio; Trott & Bean Architects (Award of Merit). Two corporations share offices and recreational facilities. Heavy wooden columns carry decking for floors and roof. The exterior is finished with exposed timbers and rough boards, resembling the siding of nearby barns.

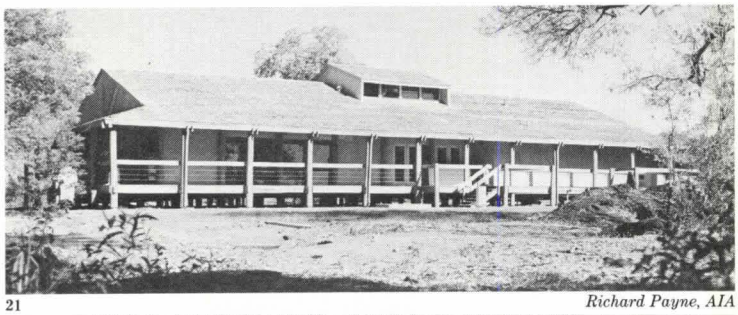
16. Office of Robert Billsbrough Price, Tacoma, Washington; Robert Billsbrough Price, Architect (Award of Merit). Mounted on pilings at the Tacoma waterfront, the shingled structure responds to the massing of neighboring warehouses and sheds. Windows and decks command views of forests and mountains. The jury commented: "a consistently simple yet dramatic building, respectful of its locational advantage."

17. Environmental Therapy Complex for Handicapped Children, Cincinnati, Ohio; A.M. Kinney Associates, William J. Rabon, Architects (Award of Merit). "A lively, vibrant play area . . . a joyous environment," the panel remarked. Varied shapes, openings, and colors stimulate the imaginations of physically and mentally handicapped youngsters. Wood decks and plywood siding were applied to an open framework of timber posts, beams, columns, and trusses.

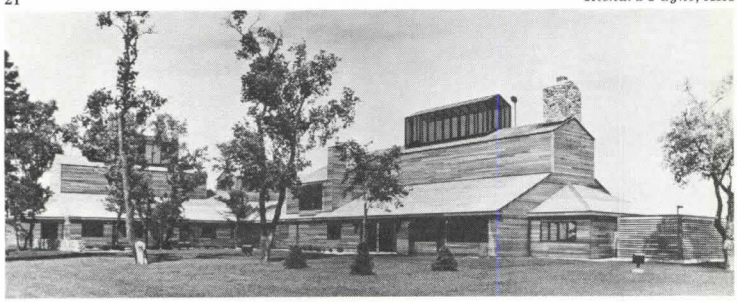
18. Edge Water Place, Foster City, California; Charles Kober Associates, Architects (Citation). A cluster of small shops opens onto boardwalks and a marina, constructed in the midst of reclaimed tidelands. Wood piles and spread footings form the foundation for timber-frame buildings. Exterior walls are faced with horizontal board siding.

19. Prairie States Warehouse, Danville, Illinois; Gatewood, Hance & Associates, Architects (Citation). Laminated arches span the 130-foot width of a potash storage area. The corrosion resistance of wood was a significant design factor. "A highly functional building of spare and uncontrived design."

20. Beachwood High School Swimming Pool, Beachwood, Ohio; Richard Fleischman Architects (Citation). The jury remarked on the innovative form and effective daylighting of the



21 *Richard Payne, AIA*



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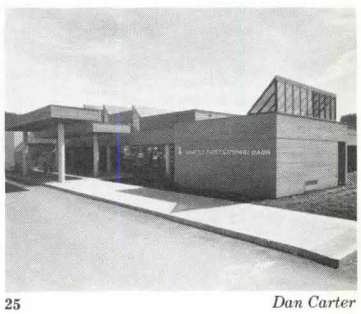
24 *Hugh Stratford*



25 *Dan Carter*

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27

wood-roofed structure, which shelters a six-lane pool and diving area, and bleacher seating for 400 spectators.

21. Armand Bayou Interpretive Building, Clear Lake City, Texas; Pierce Goodwin Alexander, Architects (Citation). The use of indigenous wood finishes is particularly appropriate for this orientation center in a nature preserve. The structure combines pressure-treated timbers and dimension lumber.

22. First Federal Savings & Loan Branch Office and Club, Grand Forks, North Dakota; Levorsen & Cohen, AIA, Architects (Citation). The multipurpose post-and-beam structure functions as a branch office and recreational club for bank customers. A focal landscaped atrium creates a pleasant work environment during harsh winters. Building masses and roof silhouettes were composed to resemble those of local granaries.

23. Pacific Gas & Electric Company Office, Davis, California; PG&E Engineering Department, Architects (Citation). This "inviting and appropriately modest public-oriented building," as the jury termed it, offers customer services to a residential neighborhood and a small town commercial center. The project incorporates a solar hot-water space heating system.

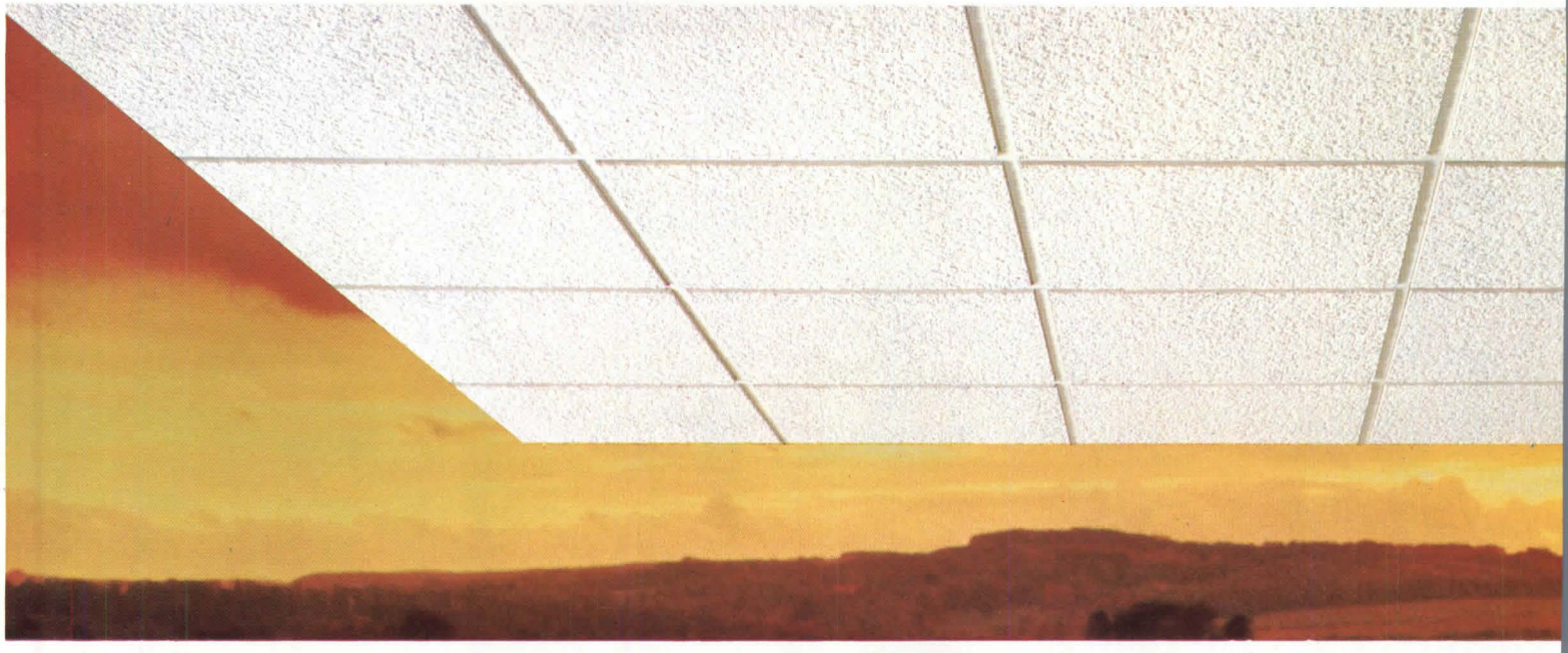
24. Camp Orkila, Orcas Island, Washington; TRA, Architects (Citation). The shingle siding and roof shakes on this 1,530-square-foot arts and crafts facility reflect the materials of existing camp buildings. The panel judged the new structure "modest and delicate in scale. It achieves a sense of warmth appropriate to use and surroundings."

25. Forks Branch, Seattle First National Bank, Forks, Washington; Kolb & Stansfield, AIA, Architects (Citation). Extensive daylighting was a top priority in this full-service bank, located in a region subject to frequent overcast days.

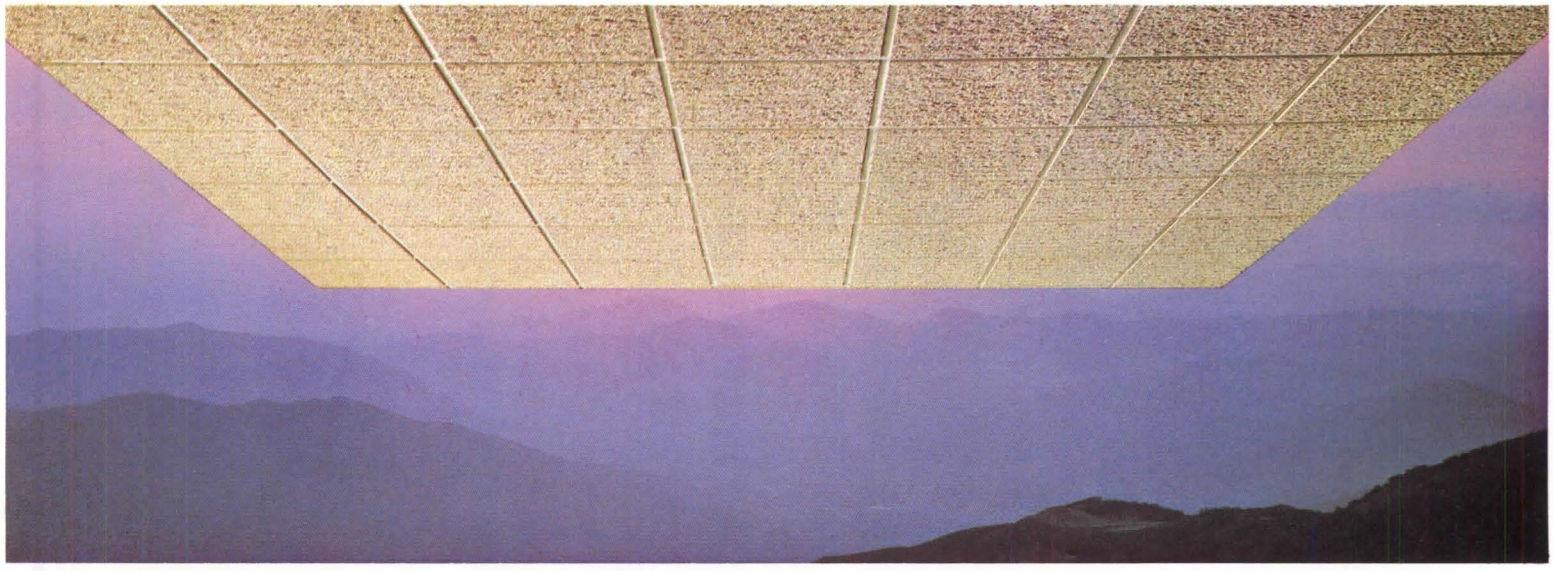
26. Mormac Oil & Gas Co. Offices, Corpus Christi, Texas; Alexander Caragonne, Architect & Planning, Architects (Citation). "Simple domestic elements and industrial character are effectively mixed, reducing the building scale and enabling it to fit into a residential neighborhood," the jury observed. Low-rise pavilions grouped around courtyards house offices and a three-level parking garage.

27. Hearing Room, Colorado State Capitol, Denver, Colorado; Pahl-Pahl-Pahl, Architects/Planners, Architects (Special Citation). Converted from the Supreme Court Chamber into a legislative hearing room, the grand classical hall boasts richly ornamental millwork and furniture. The jury commended the interior restoration project as "masterly and sensitive."

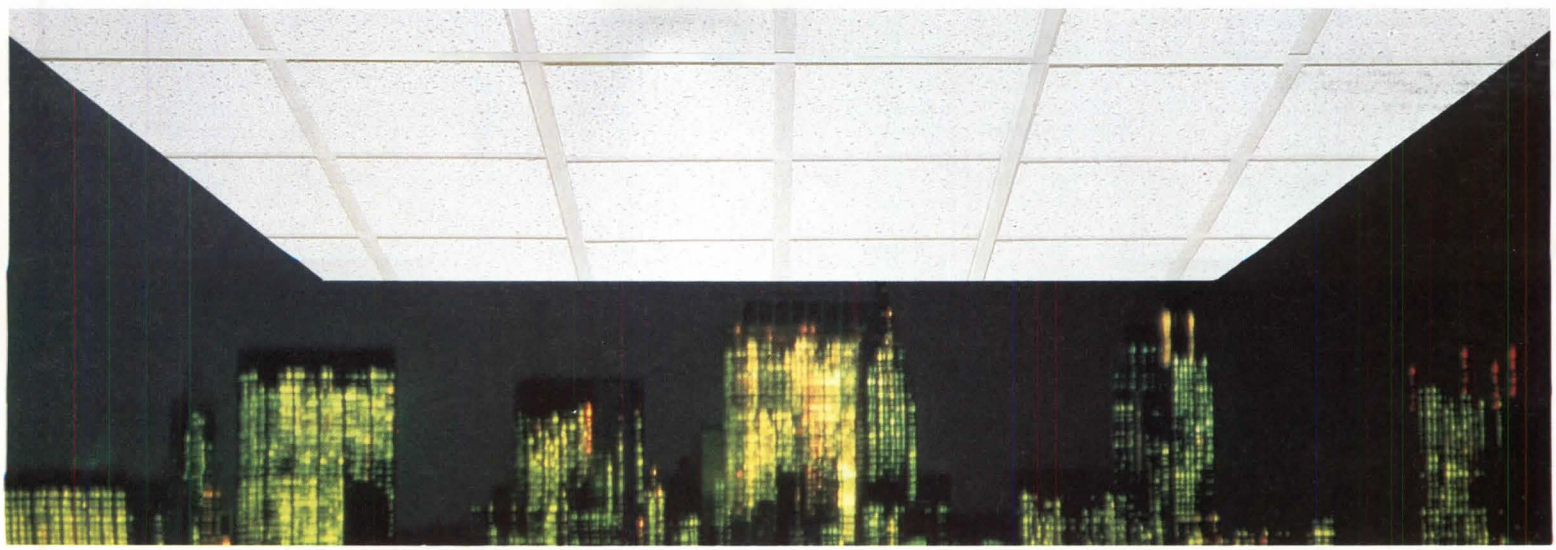
What's in the future for U.S.G. ceilings?



New concepts/Example: exclusive "New Horizons" custom-look AURATONE® panels make deep textures affordable.



Plentiful supply/Example: prestige ACOUSTONE® panels now freely available in integral colors.



Better selection/Example: AURATONE® Illusion Ceiling Series, low-cost panels that look like expensive tiles.

billed on the cover of the magazine. In any case, congratulations on a job well done.
Joseph S. Brown
Everett I. Brown Company,
Architects & Engineers
Indianapolis

I really enjoyed Bradford Perkins's Tom Wolfe review [RECORD, February 1982, pages 86-89]. For most of the past year I've found myself attempting to say many of the same things in discussions with students and friends. At first, I was rather defensive about Wolfe's criticism, I suppose in part because the few buildings I've done could be classified as "modern" (I've certainly done several white boxes) and for some other reasons, not the least of which is that, like it or not, I am part of one of the "compounds," albeit a Western compound. The article makes me feel better.

Perkins's comments about Wolfe's portrayal of Gropius and the other modern masters are right on. I think an awful lot of us were really offended by his picturing them as Machiavellian villains who were cramming their architectural ideas down the throats of a naive American public. I feel strongly that most of our corporate architecture is far more representative of the American economic system than of the European worker housing ethic as Wolfe claims.

When *From Bauhaus to Our House* came out, I was initially bothered by Wolfe's inaccuracies about the development of modernism, but, like Perkins, I found his comments on the current scene to be much more important. A few years ago, I found myself struggling to get a few small good buildings built, and along came this flood of architectural rhetoric from the East. And so, like many others, I decided to make a pilgrimage to New York—that was in 1976. I took part in seminars at the Institute for Architecture and Urban Studies, developed the linguistics jargon, and debated Modern v. Post-Modern. In the end, it left me with something of an inferiority complex about our work, listening more to the dilettantes than to those who were out there fighting the fight.

And so, for me, Wolfe's discussion of architecture as a media event came at an important time and really helped put things in perspective. As part of the academic community, I of course want to encourage debate about the direction of architecture. But as a practitioner, I don't want the rhetoric to get in the way of our getting on with the business of building good architecture.
William Paul Stamm, Architect
Tucson

Michael Graves's design of a coffee pot for the firm of Alessi [RECORD, mid-February 1982, page 35] is at least consistent with his other creations in that it is interesting, colorful, witty, playful in nature, and ornately indulgent relative to function. At first observation, the pot appears like an assemblage of found parts—for example, blue rubber balls, a tail from a yellow porcelain basenji dog, some copper-colored fluted metal siding, all capped by an inverted metal funnel. It has the nature of a cute animal-like robot and is most likely a distant relative of the Tin Man. All in all, it is a good conversation piece.

But when similar pedantic expressions of his views, such as the Portland General Services Building or the Sunar showrooms, are translated into reality, I find them weighty, uninviting, more decorative than architectural, disconnected from a relationship to nature, and almost funereal. His buildings are like mausoleums and his interiors would serve nicely as funeral parlors.

Obviously Mr. Graves is an artist of note and of skill in organizing colors, textures, historical-architectural elements, etc., into esthetic wholes. He is also an excellent renderer of his ideas. But to continue to use Mr. Graves and his work as the current exemplar of architecture in this country is doing our profession and our work a great disservice.
Carolyn McCown, Architect
Los Angeles

I read your editorial (disguised rave review) on *The Sourcebook* [RECORD, February 1982, page 13], then read it again and again. Better than anyone else, you have captured the essence of this new piece, which we believe is so important and timely. Clearly, the years of Betty Thompson's raging paid off.

If *The Sourcebook* is the most effective tool yet for encouraging public education in architecture, you have given us the most effective marketing tool yet for making it effective—for getting it into the hands of teachers and architects who can best take advantage of what it offers.
James E. Ellison, AIA
Administrator
Education and Professional Development
The American Institute of Architects
Washington, D. C.

Elisabeth K. Thompson, FAIA, was until her retirement a senior editor of ARCHITECTURAL RECORD.*—Ed.*

On page 83 of Record Interiors [RECORD, mid-February 1982], there is a person in the photograph. Is this a mistake?
Brian Shawcroft, AIA, ARIBA
Shawcroft-Taylor, AIA
Raleigh, North Carolina

Like many readers, editors, too, would like to see people and architecture in combination, but two facts conspire against it. First, few passersby will stand still for the long photographic exposures needed, especially in interiors. (Principals can sometimes prevail on young firm members to supply scale in a picture.) Second, the casual passerby does not always want his image published, a condition that requires his permission and the photographer's obtaining a signed "release."—Ed.

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Office notes

Offices opened
Robert Callaway, Christopher Hylton and Richard Garison announce the formation of Callaway Hylton Garison Architects Inc. with offices at 5360 Fredericksburg, Suite 102, San Antonio, Texas.

Joe E. Jordan and James E. Mitchell have formed a new practice, Jordan/Mitchell, Inc. Their offices are located at 1920 Chestnut Street, Suite 500, Philadelphia, Pennsylvania.

Syska & Hennessy has opened a new office, serving the New England states. The new offices are located at 840 Memorial Drive, Cambridge, Massachusetts.

ISD Incorporated announces the opening of a Denver office located at 1900 Wazee Street, Denver, Colorado.

Marshall & Brown (Colorado) Incorporated has opened offices located at Building 1, Square at Southbridge, 1101 West Mineral Avenue, Littletown, Colorado.

Marvin Fitch and James Loewenberg announce the merger of their architectural practices, which will be known as The Loewenberg/Fitch Partnership, 55 West Monroe Street, Chicago, Illinois.

Firm changes
John E. MacAllister and Kenneth S. Liu have been named principals of Bobrow/Thomas and Associates (BTA, Inc.).

CUH2A announces the promotion of Richard C. Barocca to an associate in the firm.

CityDesign Collaborative, Inc. announces the promotion of Marc W. Pelletier to associate.

Dalton, van Dijk, Johnson & Partners announces the appointment of three new partners: Richard B. Bauschard, Fred H. Holman, Jr. and Stephen Rajki, Jr. The firm also announces the addition of Ronald N. Payto as an associate partner and Robert F. Dresser, Bruce W. Kiefer, and George Regula as associates.

Fox & Fowle Architects, P.C. has named two new associates in the firm. They are John H. Miller and Donald C. Henderson.

Wayne D. Simonds has joined HTB, Inc. as director of architecture for the Oklahoma City office.

Kari T. Vilamaa has been elected vice president of Barton-Coe Associates Architects and Engineers, Inc.

Chapman & Associates has become Chapman, Coyle, Chapman & Associates. The two new principals are Hugh B. Coyle, Jr. and A. Byron Chapman, III.

Dalton Dalton Newport announces that Richard A. Van Auken, Richard C. Bridges, Edward J. Heine and Michael Senty have joined the firm.

Spero W. Valavanis has been appointed to full partnership with Design Organization, Inc.

Phyllis Hoffzimer has been named director of interior design of the Eggers Group P.C., Architects and Planners.

Environmental Planning & Research, Inc. (EPR) has named Douglas Deremer director of the Washington, D.C. office. Other promotions were: Lynn Hastings, administrative director/corporate development; Martin Yardley, senior designer; Eduardo Alfonso, director of interior design; Richard Pollack, director of project management; Phillip Olson, director of project management; Jack Moore, director of production services; Gene Rae, business development coordinator. EPR also announces the hiring of three new employees: Gina Coffey, director of human resources; Pamela Taylor, business development coordinator; Marta Maestas, business development coordinator.

Hal S. Ayotte has been named a partner of Fletcher, Finch, Farr Partners, Architects and Planners.

Ulrich Franzen and Associates announces that Keith Kroeger, AIA has joined the firm as partner. The new firm name is Ulrich Franzen/ Keith Kroeger and Associates.

Golemon & Rolfe Associates, Inc., Architecture announces the promotions of the following employees: Barry Whithead, named principal for the firm; Oza Bouchard, Wayne Gregory, Mario Bolullo and Lucho Gonzalez, senior associates; Chuck Hulstrand, Larry Osborn and Rod Lanham, associates; Gerald C. Gehm, associate and project manager of space planning.

William Cavanagh III has been appointed business manager and treasurer at GSAS, Architects and Planners. Also announced was the appointment of Al Fong to the position of controller.

Edwin A. Dirkes, Sr. has been named partner at Haines Lundberg Waehler.

Hardy Holzman Pfeiffer Associates announces that Victor H. Gong has become a partner and Harris C. Feinn and John J. Lowery have become associates.

William H. Davison has been named a principal of Hobbs Fukui Associates. The firm name has changed to Hobbs Fukui Davison.

HNTB (Howard Needles Tammen & Bergendoff) announces the selection of Stephen G. Bell as director of business development for architectural services.

Continued on page 63

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ISD Incorporated announces the election of Paul B. Berger as vice president in charge of its new Denver office.

James T. Strain and Richard C. Beach have been promoted to vice presidents and William D. Landry has been named controller of the Houston-based architectural and engineering firm of Bernard Johnson Incorporated.

MWM, Mackinlay/Winnacker/McNeil & Associates, Inc. announces the appointment of three new associates to the firm. They are: Raymond M. Craun, Jr., Francis F. Chan and John R. Regener, Jr. MWM is also expanding its services in interior design and space planning with the addition to the staff of Pat Fitzhugh as interior designer.

Stephen L. Lloyd has been named an associate in the firm of Moore Grover Harper.

Gunter P. J. Buerk has been named a vice president of Perkins & Will architects, Washington, D.C.

Paul R. Hinkel, Albert J. Krull and Margaret J. Sedlis have been promoted to vice presidents of Planned Expansion Group, Inc.

Rehler Vaughn Beaty & Koone, Inc. announces the additions of German Valdes and Theresa Washburn to the staff. RVBK, Inc. also announces the promotion of Denise Pendarvis to secretary.

Reynolds, Smith and Hills announces the appointment of L.E. Bebermeyer as vice president and manager of the planning division for the Orlando, Florida office.

Shepley Bulfinch Richardson and Abbott, Inc. announces that Elizabeth S. Ericson has joined the firm as an associate vice president. Paul E. Bell, Penelope P. Beye and Oliver W. Egleston were appointed associates of the firm.

Store Planning Associates announces the addition of complete architectural services. They are located at 135 Post Street, San Francisco, California.

Richard K. Redemske and Richard B. Cook have joined the firm of Stowell Cook Frolichstein as principal architects.

TAG Architects announces that Bruce Harold Schafer has joined the firm and will be responsible for corporate and business development and project management in the Washington, D.C. office.

3D/International has appointed four new members to the board of directors. They are: James E. Furr, Gil Thweatt, John E. Pearson and Richard E. Wainerdi. James R. Baker and Stephen D. Harding were promoted to vice presidents. James E. Pittman, Jr. has joined the firm as vice president and manager of business development for the project management division. Tom B. Ellis, J. Harold Joiner, Gary W. Murphy, Heather H. Cundiff, Michael E. James, Raymond Armor, R. Michael Walden, Jim Rexrode, A. Matt Roesler and Karl Broussard were promoted to senior associates.

Tippetts-Abbett-McCarthy-Stratton Engineers, Architects and Planners announce the appointments of Lyle H. Hixenbaugh as associate partner; Paul C. Chao, Plinio P. Patrao as consultants to the firm; G. Barrie Heinzenknecht as principal associate.

David R. McMillen has joined Yost Crube Hall, P.C. as project designer.

Johnson-Dempsey & Associates (JDA) announces that William E. vonRosenberg has joined the staff.

Jung/Brannen Associates, Inc. Architects announces that Paul A. Francisco has joined the firm as an associate.

William Kessler and Associates, Inc. announces the election to associateship of J. Michael Kirk to director of their newly formed building conservation group.

Killingsworth, Brady & Associates has changed its name to Killingsworth, Stricker, Lindgren, Wilson & Associates, Inc.

Charles G. Lobell, AIA & Associates announces that Thomas L. Penn is now an associate of the firm.

Smith, Hinchman & Grylls Associates, Inc. announces the appointment of two new vice presidents. Andrew A. Vazzano, has been named vice president and corporate director of design and planning, and Christopher P. Kittides has been promoted to vice president for marketing.

Swanke Hayden Connell Architects announces that John Peter Barie and Roland Lucien Lieber have been named associate partners. Neil P. Frankel, in Chicago, and Altan O. Gursel, in New York, are new associates.

The Gruzen Partnership announces that Wallace B. Berger and Barbara Geddis, were named associate partners. Peter M. Gumpel and Scott Keller are new senior associates and David Augustine, Philip Jones, Fredric Rosen and Martin Rotondo were named associates of the firm.

Florinda Donato Doelp, Thomas A. Bathgate and Peter J. Saraceni have been elected partners of The Kling Partnership.

Wallace, Roberts and Todd has named three new partners: David C. Hamme, Richard W. Huffman and Charles B. Tomlinson.

New addresses

CUH2A announces the relocation of its offices to 600 Alexander Road, Princeton, New Jersey.

Daniel Huntsman & Associates Architects announces that the firm has moved to 405 Sansome Street, San Francisco, California.

Ulrich Franzen/Keith Kroeger and Associates has moved to 228 East 45th Street, New York, New York.

Geddes Brecher Qualls Cunningham have a new Princeton address. It is 120 Alexander Street, Princeton, New Jersey.

Steven P. Papadatos, AIA and Associates announces the relocation of their offices to 305 East 46th Street, New York, New York.

The Landau Partnership, Inc. has moved to 1520 Second Street, Santa Monica, California.

Renovated buildings find new purpose

As the United States has grown and matured, so has its stock of buildings. And people looking at these buildings, both architects and laymen, want to save them—sometimes for esthetic reasons, sometimes for historical reasons, most often, perhaps, out of a loathing for waste.

Nonetheless, rehabilitation is easier said than done. To begin with, the building's purpose may have disappeared with the passage of time. How many families, however rich, still need or want stables and carriage houses? Fitting new uses inside old shapes often requires more inventiveness than creating new shapes. The current preoccupation with architectural form fails in the face of these demands (though it of course has validity in other contexts).

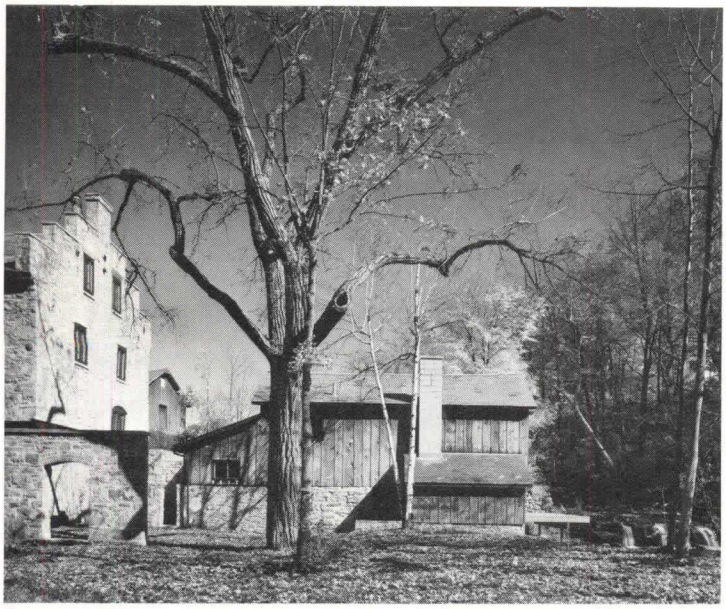
The architect of rehabilitations will also encounter plenty of challenge for his structural ingenuity. Many a surprise lurks behind those old walls, both because of the original builders' lack of sophistication and because of subsequent heedless alterations. Architects who have worked in this area concede that the transfer of knowledge from one job to the next is limited. Architect Timothy Smith, who adapted an early 19th-century papermill described in this study, says that he tries to think with the mind of the original builder, not only to understand what he did and why he did it, but thus to produce a sympathetic modern design.

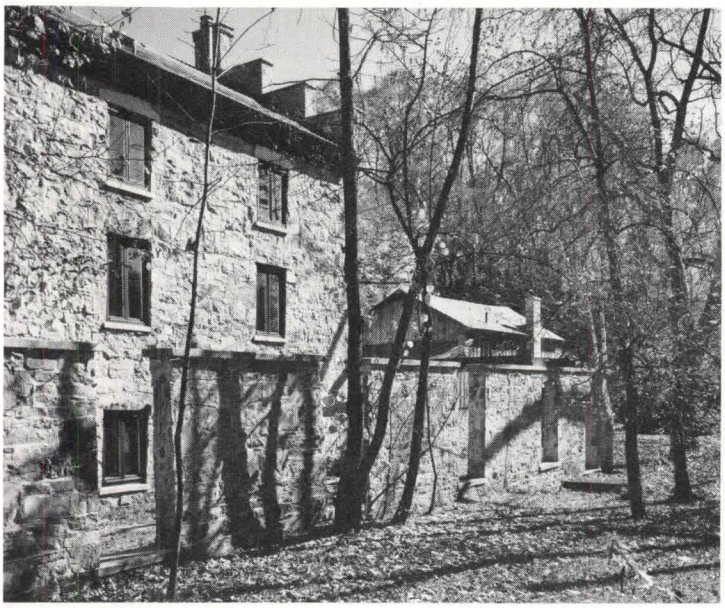
Rehabilitation is, of course, not necessarily cheap. The project may realize considerable saving if the structure is basically sound and if its users have maintained it. But if the building—or the client—calls for extensive restoration of details and finishes, costs will rise.

While the difficulties are often great, so are the rewards. What architect would—*could*—imagine a brand-new apartment building like Timothy Smith's condominiums? What architect would be so extravagant, or kitschy, as to design elaborate new horse stalls like the ones in which Graham Gund has so pleasingly placed teaching offices? And while Gordon Rogers might very well turn a deft corner with a new office building to rescue an old neighborhood, would a client care enough to pay for it? The fourth building shown here—Jeremy Lang's translation of Manhattan riding ring to Japanese tea center—is sui generis. *Grace Anderson*

Haviland's Privilege
North Bennington, Vermont
Timothy D. Smith & Associates, Architect

Six new condominiums replace a papermill





On the shore of Paran Creek in North Bennington, Vermont, six condominiums occupy the 150-year-old factory and two related buildings of a former papermill. The buildings in the complex include (left to right across page) the Stone Mill, which now contains four apartments, the new house in Fred's Old Office, and another unit now being renovated in the Stock Barn. River House (above top) has a deck overhanging the millpond. At the back of the Stone Mill (directly above) the stone walls of a demolished building surround courtyards.

The renovation of a derelict mill and outbuildings in North Bennington, Vermont, demonstrates the kind of professional orchestration required of architects engaged in such work. The nonarchitect seeing a charming old building blithely says, "Let's save it." But despite the unarguable merit in such an idea, the execution is a lot more arduous than the utterance. At Haviland's Privilege, the decision led to demolition and new construction, to painstaking structural repair and to the inventive shoehorning of new contents into old containers, not to mention some financial imagination.

Architect Timothy Smith, whose offices stand within an easy walk of Haviland's Privilege, was consulted early in the proceedings. The historical importance of the buildings to the village and their sizable and familiar presence in a small community transcended mere nostalgia for the good old days. It was determined that luxury condominiums constituted the only feasible economic use of the buildings, which are located in a town that could support neither new industry nor trendy shopping on this scale, even with a student body at Bennington College only half a mile away.

The development takes its name from a pre-Revolutionary grant from the Crown to Joseph Haviland for the establishment of a gristmill. A papermill replaced it early in the 19th century, recycling the old grindstones as semicircular lintels still visible over doors and windows. In 1927, the owners abandoned the entire complex except for a small stone building used as an office by Fred Welling, descendant of the papermill founder and for many years chairman of the village trustees.

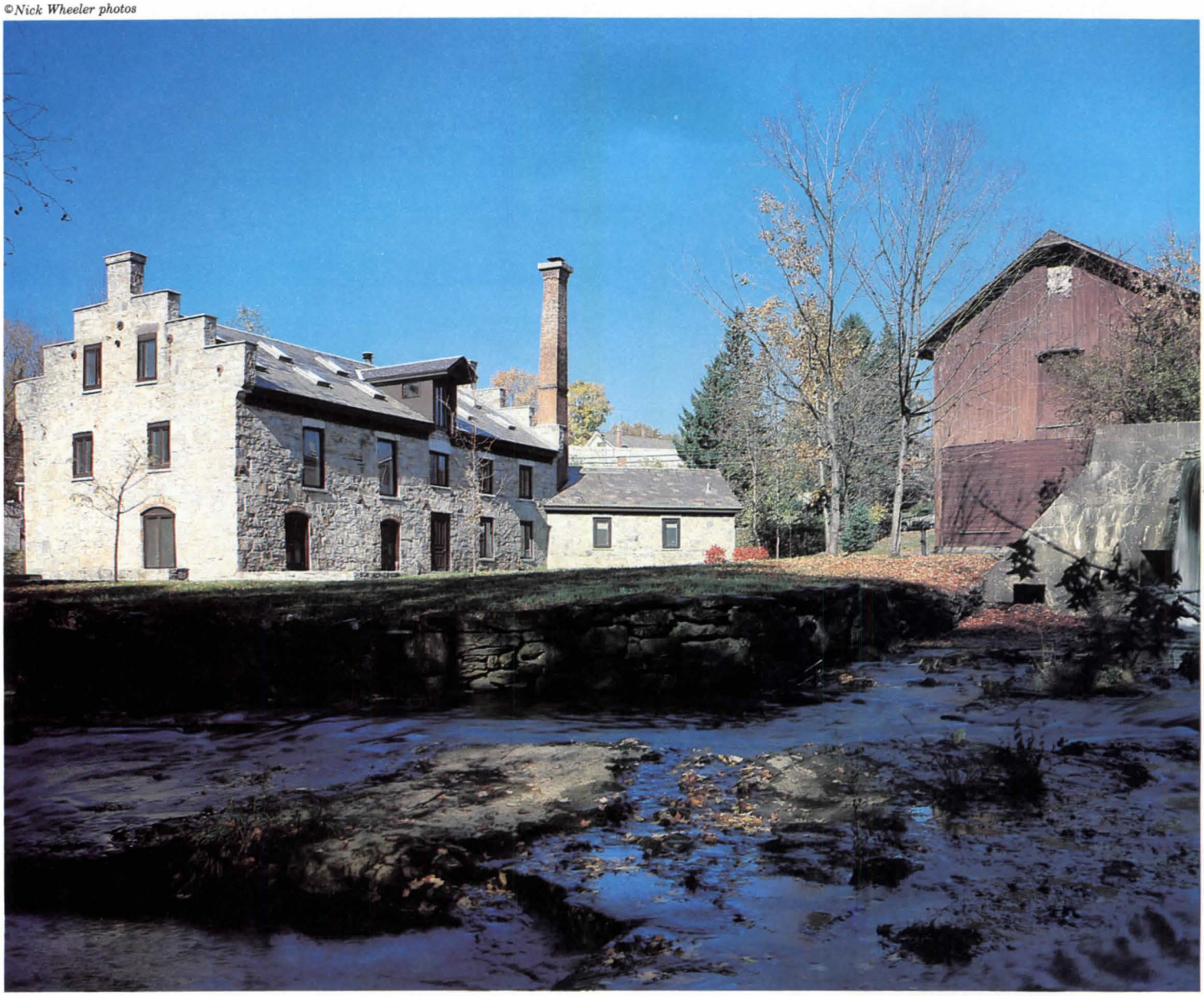
In addition to the Stone Mill, which now contains one triplex, two duplexes and a studio, and the small building, now a three-story house styled Fred's Old Office, the site held 1) a wood building rebuilt and enlarged to become River House; 2) a large wood Stock Barn, once used for paper warehousing and now under renovation as a residence; 3) another wood building, enlarged as the Car Barn for common parking; 4) another stone building, now demolished but with walls that remain as garden walls at the back of the Stone Mill (at left, bottom); and 5) a stone spillway that once powered a millwheel and that now defines a court at one end of the Stone Mill.

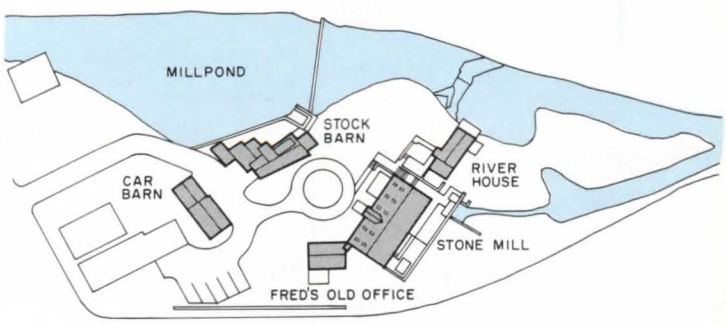
Apart from one floor of Fred's Old Office, the buildings sat abandoned for more than 50 years and suffered consequent structural decay. The mill's stonework had indeed crumpled almost to the point of collapse in some areas, necessitating its reconstruction on the left side of the main entrance (opposite). A quarry down the road that had supplied the original stone was reopened to match the material.

Moreover, the timbers that supported floors and roof endured a variety of deteriorations. Smith's structural engineer, Stanley Goldstein, devised three "bandages" that could be applied ad hoc as decision in the field warranted. Bandage #1, of wood, reinforced weakened joints. Bandage #2, a steel plate, spliced beams only slightly damaged by charring or rot. Bandage #3, a steel channel, was used for major splices in areas of severe damage.

Its geography—a peninsula separated from the village by two roads—makes Haviland's Privilege a mini-community, a fact with implications for ownership of the condominiums. Apartment owners operate as a species of selectmen, commonly responsible for the management of shared land like access roads and the woods at the end of the peninsula and on the other shore of the millpond. Residents also share responsibility for such services as heating and electricity (only River House has its own heating plant).

©Nick Wheeler photos

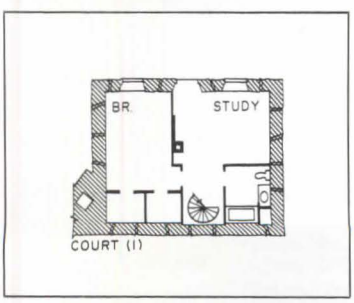


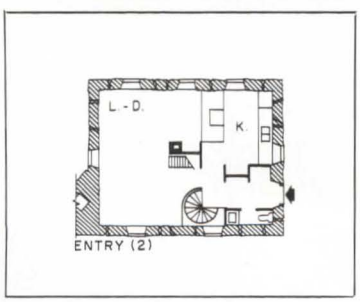


Haviland's Privilege
North Bennington, Vermont
Owners:
Mr. and Mrs. William R. Scott and Mr. and Mrs. Lucien H. Hanks
Architect:
Timothy D. Smith & Associates
Engineers:
Stanley H. Goldstein (structural); Rist-Frost (mechanical)
Contractors:
William Crosier, James Davis (carpentry); Gene V. Davis (masonry)

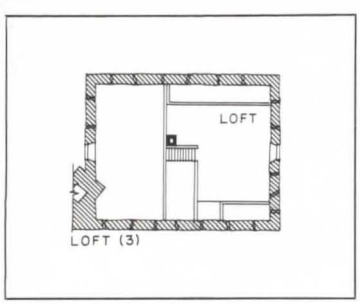
At the Haviland's Privilege condominium complex, Fred's Old Office is seen from the back below where a landscaped court at the bottom of a retaining wall gives access to the lower-floor study; the house has its main entry on grade with the Stone Mill. The main floor had for many years served as the office of village doyen Fred Welling—hence the name.

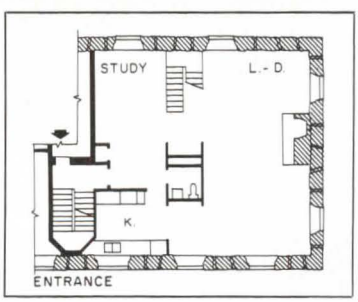
The old papermill, now called Stone Mill (below), contains four new condominium apartments: the Hideaway, a studio on the lower floor left of the common entry; Stone Mill South, a triplex over the studio; and two duplexes on the right—Stone Mill Court below and Stone Mill Loft above. The interior photographs here show Stone Mill Loft (below) and Stone Mill South (opposite).

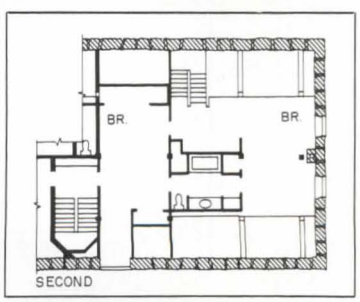




Fred's Old Office

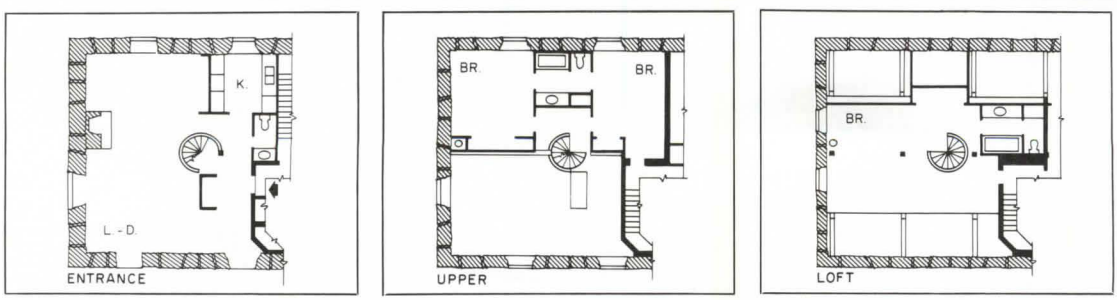






Stone Mill Loft Apartment

The intersection of tie beam and column below the ridge of Stone Mill Loft (across page bottom right) sports one of the structural bandages devised for Haviland's Privilege; here, Bandage #1, the simplest of the three cures, reinforces a joint. In Stone Mill South (below), a new sandblasted concrete beam stiffens the stone wall where a wood floor was removed.



Stone Mill South Apartment

The Carroll Center for the Blind
Newton, Massachusetts
Graham Gund Associates, Inc., Architects

©Steve Rosenthal photos

The well-finished wood and metal stalls that pampered the horses needed little serious renovation to become counseling and teaching offices (above): the removal of every other stall partition, new rugs on the old tiles to reduce noise, an invisible patch in the ceiling where there had been a light well. Elaborate nameplates that used to identify the horses remain in place. A suspended octagonal wood trellis (section below) recalls the light well that preceded the central atrium. The photographs opposite show the small windows that light the stall/offices (top) and the stable's old entrance, as well as the residence next door (bottom).

Classrooms for the blind occupy a renovated stable

Like most institutions designed to help the handicapped, Carroll Center for the Blind would prefer to invest what funds it has in staff and equipment instead of in luxurious surroundings. Its charge to architect Graham Gund Associates therefore was to hold costs for renovating a former stable to less than $40 a square foot. Happily, the horses that once occupied these stalls were, as the architects put it, "prosperous." The building thus came already accoutered with wrought-iron screens, wood-paneled walls and carved cornices beyond the reach of most modern budgets.

The center, which trains only adults who have become blind through accident or disease, usually has about 20 residents served by a staff of 50. Its rehabilitation emphasizes independence, teaching students not only essential skills in communication, mobility and household tasks but also encouraging self-confidence in people under considerable emotional stress. Among standard courses, remarkable to a sighted reporter, are fencing and the use of hand tools. (Fencing, the staff explains, teaches balance, confidence of movement and the manipulation of a long cane.)

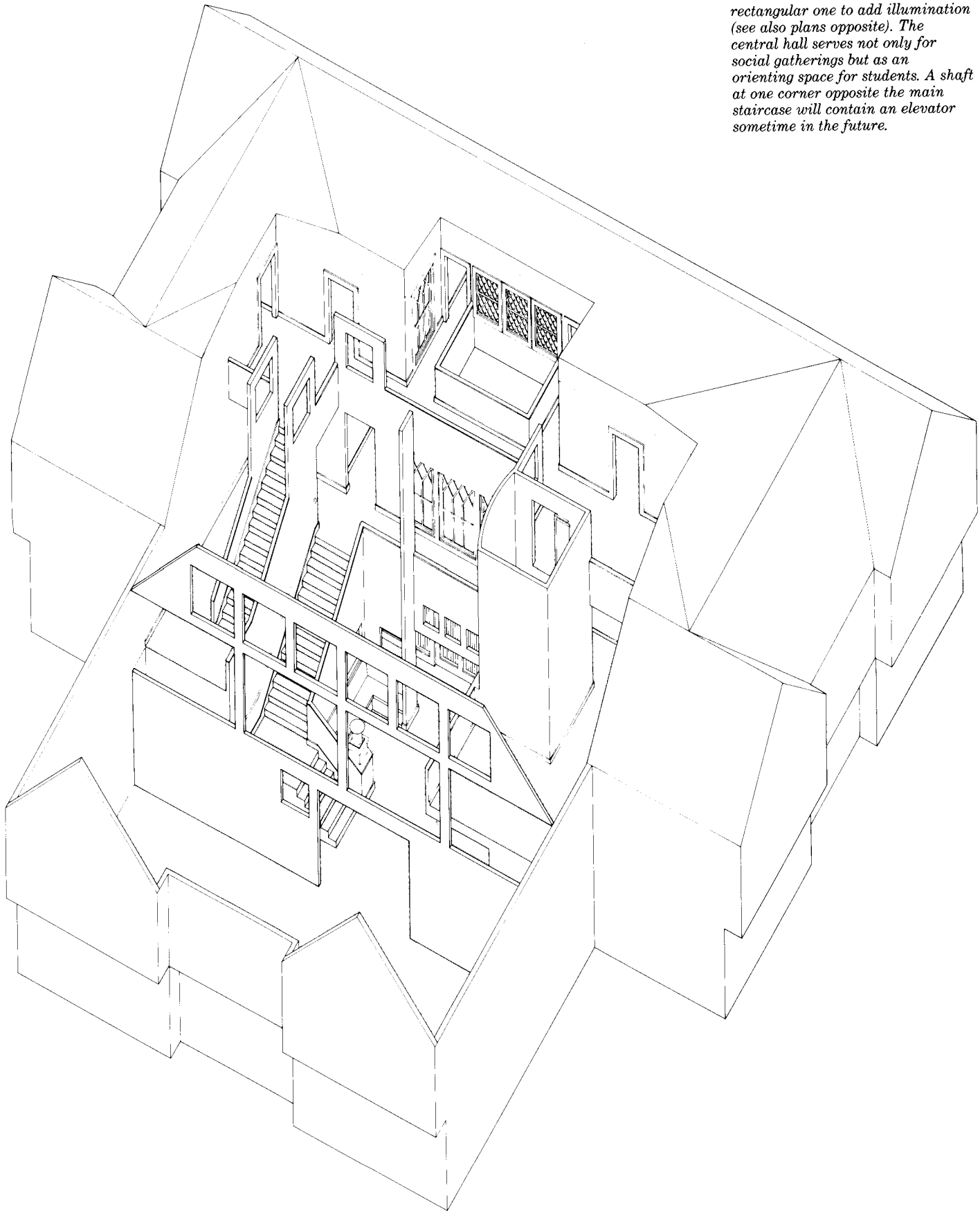
For 35 years, the center has occupied a former estate in Newton, Massachusetts, a suburb of Boston. It had used the turn-of-the-century stable shown here only for some physical training and occasional storage, while students lived in the building next door, now connected to the training center by a new bridge. Facilities in the renovated space include training areas and counseling offices, as well as a dining room and a multipurpose room for meetings and lectures as well as fencing and yoga.

Describing its approach to the design, Gund's office writes, "We looked to light as our key design element because it speaks to both blind and sighted (we knew from work with previous blind clients that about 90 per cent of the blind are at least sensitive to degrees of light and dark)." To increase the level of natural light, the designers widened two brick wells that they surmise were originally intended for ventilation: an octagon in the center of the building and a rectangle at one end (see section below and plans on next page). The removal of two floors around the octagonal well created a large, light central atrium, where students and staff congregate between work sessions.

More important functionally, the atrium acts as an organizing center, orienting residents not only with light but with auditory clues provided by the high ceilings and such varying textures as wood, gypsum board and voids. The architects point out that sensory perceptions intertwine, for the sighted as well as the blind, so that one "sees" or "hears" texture; the mind unconsciously translates visual or auditory information from a napped fabric, for instance, as tactile impression. The only sensory perception inaccessible to the blind, it has been suggested, is color. Thus the esthetic vocabulary of the blind is far greater than the sighted might at first imagine.

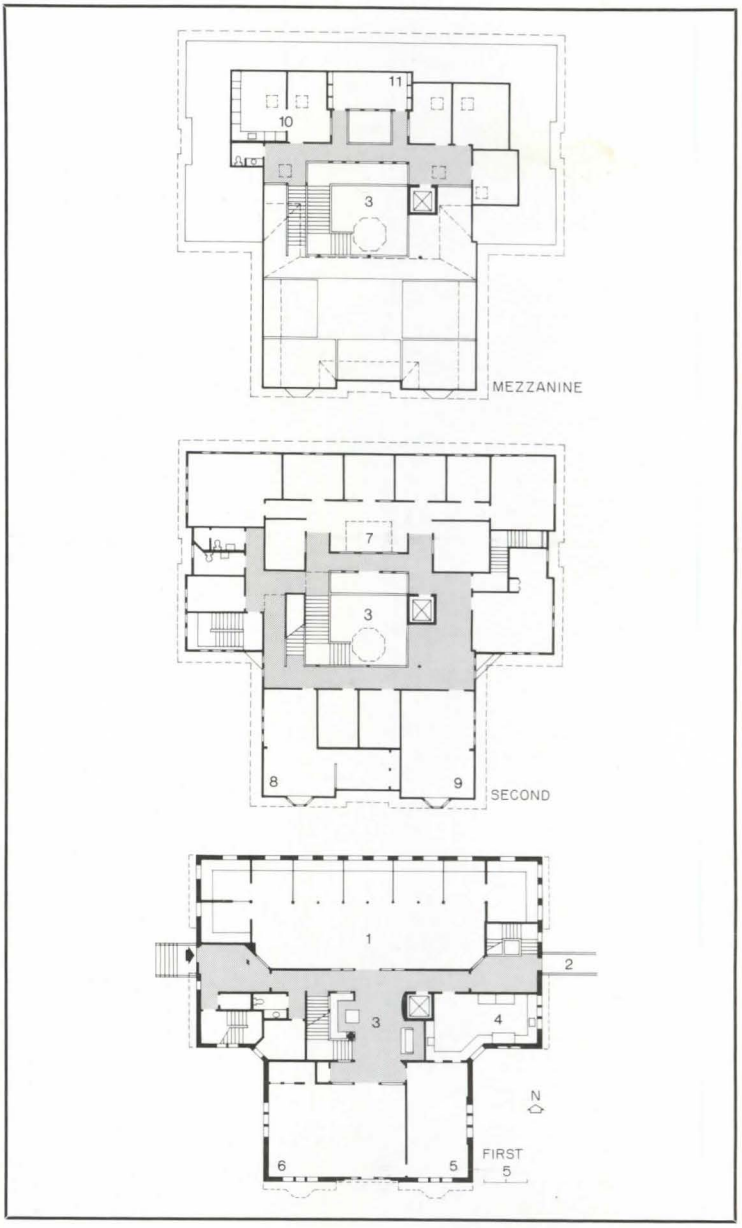
Above a second-floor waiting room outside offices, the rectangular well was widened to take light from an added mezzanine and transfer it through new interior windows on the second-floor balcony to the central atrium. Gund's renovation limits the depth of the well to the top floor, and an invisible patch repairs the hole in the planked wood ceiling above the stalls. New plastic domes were installed above third-floor halls and offices to minimize dependence on electric light. Where electric light was required, the architects took care to prevent glare, an especial complaint of many blind people; valances screen lamps on the walls, and silvered bulbs are used in hanging industrial fixtures (opposite).

At Carroll Center for the Blind, Graham Gund Associates widened one octagonal light well to create the central atrium and a rectangular one to add illumination (see also plans opposite). The central hall serves not only for social gatherings but as an orienting space for students. A shaft at one corner opposite the main staircase will contain an elevator sometime in the future.



A rectangular skylight (top) transmits light through interior windows to the central atrium. The elegant and singular window frames were salvaged from the old tack room, where they fronted cabinets lining the walls; all other windows, both square- and diamond-paned, existed. The central atrium (center) connects classrooms, dining room and the meeting room. The multipurpose room, which occupies the old carriage room, is set up here for a lecture (bottom). Its floors are carpeted for yoga classes, tiled for fencing. The oversized sculptured newel post at the bottom of the stairs was specially commissioned for the atrium.

The Carroll Center for the Blind
Newton, Massachusetts
Owner:
Carroll Center for the Blind
Architect:
Graham Gund Associates, Inc.—Graham Gund, Peter E. Madsen, David Perry, principals; Youngman Jahan, associate-in-charge; Leonard Bertaux, Eric Hollenberg, Judie Bowen, Barry Stedman, Jane Harrington, Chris Iwerks, team
Engineers:
SCI/LeMessurier Associates (structural); Environmental Design Engineers (mechanical)
Contractor:
Erland Construction Co.



1. *Communication and sensory training*
2. *Bridge to residence hall*
3. *Atrium*
4. *Kitchen*
5. *Dining*
6. *Multipurpose room*
7. *Waiting room*
8. *Low-vision training*
9. *Staff meeting room*
10. *Personal management training*
11. *Library*

The Haymarket
Kalamazoo, Michigan
Gordon Rogers Associates Inc., Architect

A store recycled as offices unites new and old downtowns

Glen Calvin Moon photos

It's not necessarily who you are but where you are that spells the possible difference between success and failure, maybe between salvation and destruction. Neither sentiment nor esthetics fostered the continued existence of this old building in Kalamazoo, Michigan: though sound and presentable, it was no beauty, and its 75-year history as a hardware and furniture discount store was not the kind of past that moves citizens to protest demolition. The building's position saved it. So did the persuasiveness of architect Gordon Rogers, not to mention his risking an equity position in the project.

The angled facade of The Haymarket makes visible its pivotal location on Michigan Avenue, the city's main street. To its west lies downtown Kalamazoo, with offices, banks, government and a major hotel/retail center, as well as the 30-year-old Kalamazoo Mall, one of the first of Victor Gruen's memorable plans to revivify failing central business districts with pedestrian retail promenades. To the northeast of the building lies a congeries of old stores that compose the new Haymarket Historical District. While these commercial structures are not designated landmarks, they have a forthright 19th-century sturdiness that lends them strong personality. Some are already renovated, but it would be hard to imagine financial success for the district were it cut off from the downtown by the parking lot proposed for the site. (One of the stores was a grocery designed by Louis Sullivan in his salad days. Young though the architect was, this early effort in some ways prefigures his later mastery of ornament. Happily, it is now under renovation as a sporting goods store, also designed by Rogers.)

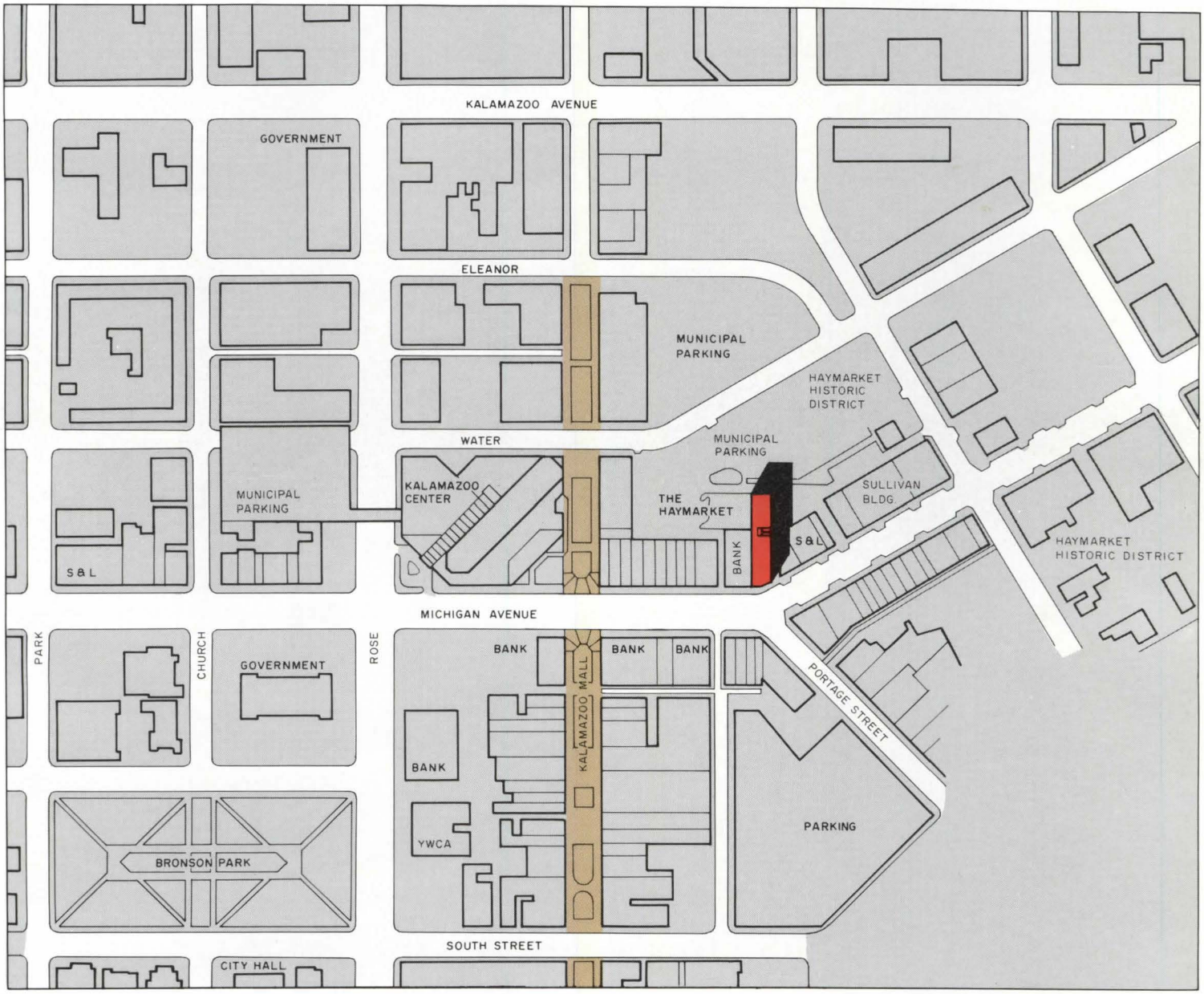
The Haymarket's position, in addition, allowed pedestrian linkage from the street via an interior bridge to a lesser commercial center at the rear. There, stores and restaurants facing Michigan Avenue and the Mall have secondary entrances.

The awkward proportions of the building—44 feet wide by 188 feet deep—combined with sparing fenestration on the lower floors to ensure a darkened interior. By opening up a seven-story skylighted atrium at the center of the building, Rogers gave daylight to surrounding office spaces.

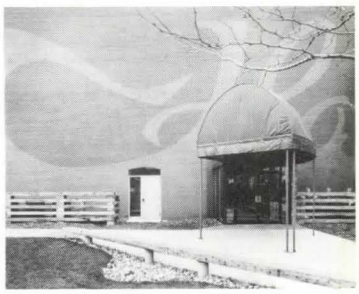
The atrium got touches of glamor from glass-backed elevator cabs and two high pedestrian bridges on the office floors, which give workers and visitors views down into the atrium. In contrast, other parts of the atrium's charm have curiously modest roots: the exposed structure of the old building, sandblasted to a fare-thee-well. Metal seats for joists still poke out from cast-iron beams, and old tacks, nails and pockmarks adorn the timbers that support the upper floors. For fire protection, the iron columns in the atrium have concrete jackets and the beams have specially aimed sprinklers.

From the front entrance, a pedestrian bridge traverses still another atrium, this one only two stories high. The serrated glass windows that overhang the lower floor are presently being redesigned as a restaurant; the bridge will overlook its landscaped cafe below.

On the exterior, Rogers had fewer choices for altering the building. The brick had been painted many times since the building opened in 1908, and the sandblasting that proved so effective indoors was forbidden outside: the city resists pollution of its sewers with either sand or strong chemicals. Fortunately, moreover, neither budget nor contemporary esthetics encouraged the popular 1950s solution of covering an old facade with a new aluminum curtain wall. The Haymarket therefore got another coat of paint. The large windows received double glazing, and new brick-arched windows were punched in the party wall that faces downtown.

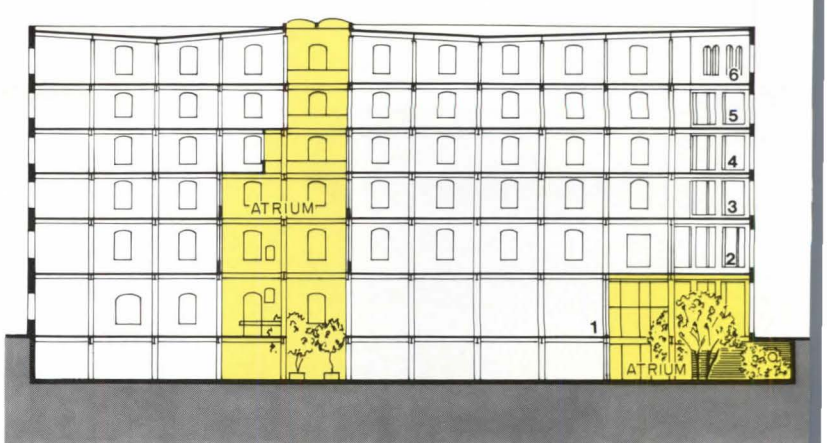


The salient on the front of The Haymarket marks the meeting of modern downtown Kalamazoo and an older retail district now in revival. The building was saved from demolition to provide space for a parking lot, an eventuality that would surely have discouraged pedestrian use of the old district despite its proximity to such cores of activity as Kalamazoo Mall and Kalamazoo Center, a hotel and retail complex. At the rear of the old building, a canopy adds new importance to a side door (below), which offers access to the area that gives the building its name: local farmers once sold their hay here. The small square, for which landscaping is planned, serves subsidiary entrances to restaurants and stores that front main thoroughfares on Michigan Avenue and Kalamazoo Mall.



At the front of the newly renovated Haymarket office building, a brick-paved bridge over the two-story atrium provides access to elevators as well as a pedestrian shortcut from Michigan Avenue to the Kalamazoo Mall (see location plan on preceding page).

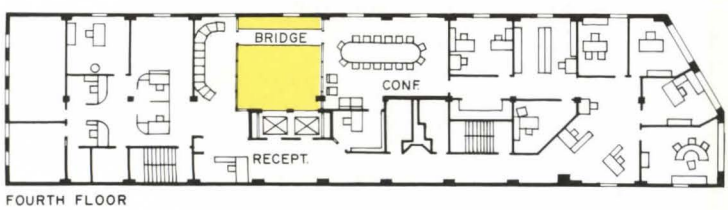
Shop windows in the front atrium are supported by original wood beams, which were sandblasted. A restaurant will replace the art gallery shown here.



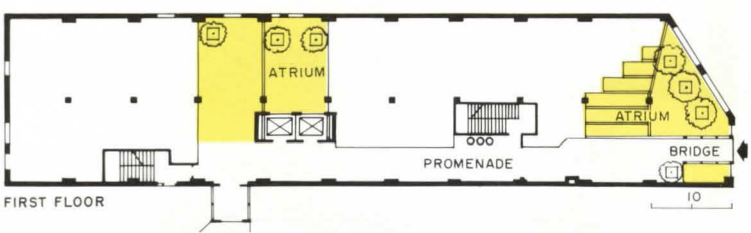
A corridor beside the central atrium connects offices at two ends of the building. Finishes are at once simple and handsome: sandblasted original brick and exposed ductwork. A pension and group insurance firm now rents all the office space.

A seven-story atrium at the center of The Haymarket gives light to offices behind glass walls. At the top, two pedestrian bridges join office floors. The sprightly kite that loops around iron beams was designed by Kalamazoo artist Patti Chipman.

The Haymarket
Kalamazoo, Michigan
Owner:
The Haymarket Company, whose general partners are Gordon P. Rogers, Frederick Harrison, Roger M. Lepley and Ann Gerould.
Architect:
Gordon Rogers Associates Inc./ Architect AIA—Gordon P. Rogers, AIA, and Roger M. Lepley, AIA, directors of design; Arnold Yurk, Jeffery Ecker, Norm Lamer, Jim Lee, Bob Gibbs, David Jarl, Eric Gerstner, project team.
Engineers:
Carl Walker & Associates, Inc. (structural).
Consultant:
Patti Chipman (kite artist).
General contractor:
B&A Inc.



FOURTH FLOOR



FIRST FLOOR

Urasenke Tea Ceremony Society
New York City
Jeremy P. Lang & Associates and
Urasenke Design Studio, Architects

Schecter Me Sun Lee photos

A Manhattan townhouse that was once a stable now contains the offices and teahouses of a Japanese tea ceremony society. Black and buff string courses unite the disparate halves of the facade. Above the roofs, a vertical slate wall gives headroom for a separate apartment above the ground floor society facilities.

A Manhattan facade veils Japanese teahouses

Contrary to Rudyard Kipling's prediction, East and West have met, combining their respective exoticisms in one institution—on the one hand, the rarefied sensibilities of Japan's tea ceremony, on the other, the utilitarian solidity of old moneyed Manhattan. The design, too, required cross-cultural teamwork, with American architect Jeremy Lang having responsibility for the street facade and Western accommodations at the front of the building, and the tea society's Japanese designers having responsibility for the teahouses.

The Urasenke Tea Ceremony Society, based in Kyoto and tracing its history through 15 generations of the family that founded it, sought quarters in New York City as part of its worldwide network of teaching facilities. It found a townhouse in a residential side street on New York's East Side with satisfactory space and with, in addition, a considerable history of its own. Built in 1883 as related stable and carriage house with a central stairway leading up to groom's quarters, the building was later altered as a residence. More to the point, the stable had incorporated an indoor riding ring at the back of the site. The painter Mark Rothko had his studio here until his death in 1969. And now the unobstructed volume—large by New York City standards at 50- by 50-feet square and 38-feet high—houses Japanese tea rooms.

Although the building is not a designated landmark, Lang felt an obligation to its "muscular" form and presence in a residential neighborhood, flanked by buildings of similar size and original purpose. Stable and carriage house were built as one, but the building's two halves have disparate, if sympathetic, details: common materials and cornice line, but different setbacks on the sidewalk, different massing, different fenestration. To unify the halves, Lang picked out a slender string course with black paint over the arched doors and established strong horizontals across both with buff paint.

The uses to which the front of the building were to be put include the mundane—reception, office work, a library—as well as an apartment for the use of the tea master. Psychologically, however, the corridor provides a transitional sequence—Lang calls it a "decompression zone"—from the noisy metropolitan street outdoors to the sanctuary of the tea house. The intent of the design is to reflect without mimicry the Oriental refinement within. The architect candidly admits his inability to duplicate the Japanese approach and has therefore relied on understated materials of natural beauty to suggest kinship: black slate floors with wood borders, or vice versa, and an arch with oak jamb and lintel trimmed with maroon laquer incisions. In symbolic expansion, the height of the corridor rises in stages to mark the visitor's progress from the entrance, a spatial stratagem often used by the Japanese at entries (see section on the next page).

At the end of the entry sequence in a tile-floored room, the visitor leaves his leather shoes and the Western world behind. At this point, he enters the ultimate architectural stage set, the complete three-dimensional illusion of a wealthy Japanese merchant's house. No memory of the city outside remains, and the size of the tiny garden and pavilions around it stands apart from remembered Western scale. And despite the smallness, its visual richness gives the space an astonishing esthetic roominess. The complex was designed and built by the Urasenke Design Studio in Kyoto and assembled in New York by Japanese craftsmen. Even stones and nails were imported. In this specialized precinct, the American architect's only duties were to catalog the space requirements of the existing structure and new mechanical equipment, and to provide a plaster-board shell on the inside of the riding ring walls.

Visitors pass along a corridor with a receptionist's desk and a wood-lined alcove (top) that suggests without copying a Japanese shigai tama *(display shelves). At the end of the entry sequence, a sliding door marks the end of the Occidental and the start of the Oriental. A curving stair rail leads to a raised platform and a pair of large tea rooms.*

Its small size and rustic construction subtly distinguish the most important of the Urasenke Society's teahouses. Intended for use by the tea master and initiates in the ceremony, it reflects the Japanese ideal of contrasting the tiniest—a mere 81 square feet here—with the richest, most varied craftsmanship.

The foundations of the teahouses (top below), of rough-textured matched stones, raises the floor to allow air to circulate. The three inset tiles are merely a receptacle for garden rakings, but according to the Urasenke staff, "in tea, even the practical must be beautiful."

Each of the teahouses has a tokonoma *(bottom below) for the display of calligraphy, flower arrangements or objets d'art chosen to honor the guest.*

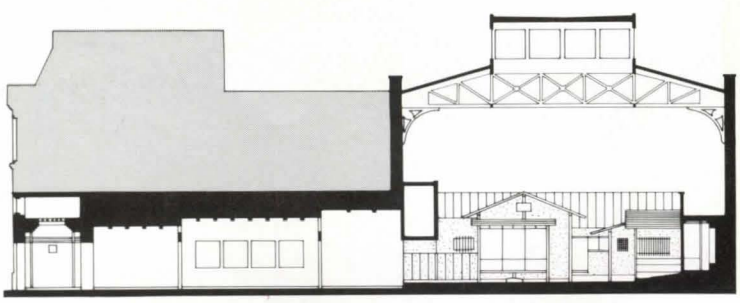
The low eaves of the teahouses, the shingled rear wall, earth and plant life focus attention on the tiny garden (below top) and create a consummate illusion of an interior courtyard in a Japanese house. Daylight filters down from a monitor, but the eaves and a wood parapet along the "ridges" limit perception of the larger volume.

Guests at the smallest, richest teahouse (below bottom) must lower their heads to enter through the sliding "humble door" (on the right wall). The skylight is an adapted "moon viewing window" that also obviates the need for artificial illumination.

A preparation kitchen provides storage and running water for all four tea rooms (below top), as well as space to teach the cooking of special dishes and sweets that accompany the tea.

At most tea ceremonies, the host enters from the corridor through a door adjacent to the tokonoma, *while guests enter from the outside. The largest of the tea rooms, on the other side of the garden (see plan on preceding page), is used for larger classes; a partition between the two rooms slides aside to create one large room.*

Urasenke Tea Ceremony Society
New York City
Owner:
Urasenke Tea Ceremony Society of Japan.
Architect:
Jeremy P. Lang & Associates—Louise Braverman and Vincent Mulcahy, assistants.
Associate architect:
T. Megishi, Urasenke Design Studio.
Engineers:
Robert Silman & Associates, P.C. (structural); The Office of Shelley Karten, P.E. (mechanical/electrical).
Contractor:
Herbert Construction Co., Inc.



Mario Botta: Trans

Alpine Rationalist

A linear (and decorated) house serves as a village boundary

Thanks to Charles Jencks's Post Modern Classicism, *and Yukio Futagawa's* Global Architecture *"a one-family house at Ligornetto" is Botta's best-known project. The*

new construction (primarily single-family houses) had pushed the village's boundary line outward, Botta elected to use the house as a wall, demarcating the expanded

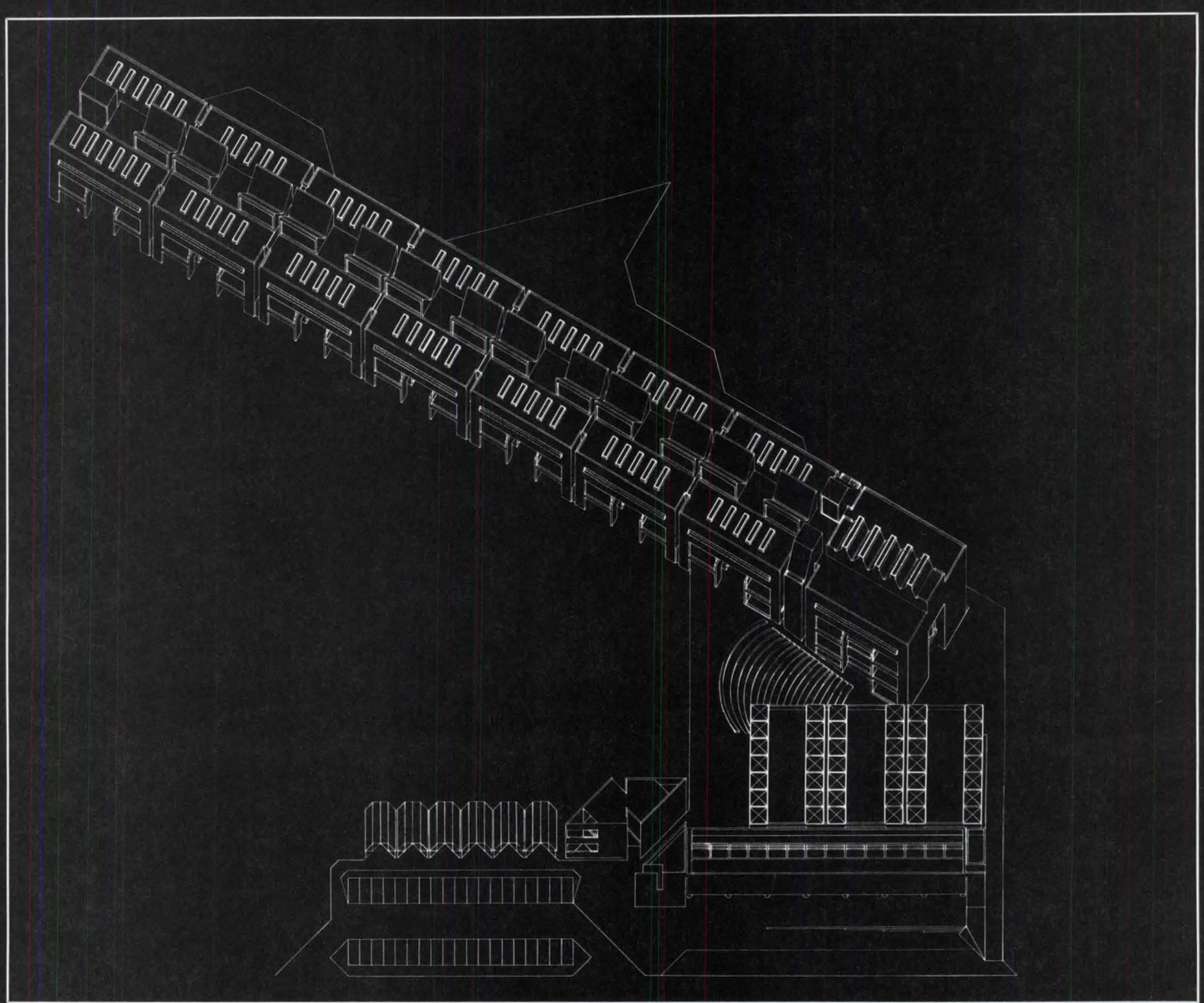
Set amid an ad hoc assemblage of

each with three levels, place work

A secondary school creates a meeting point and a landmark

As with the house at Ligornetto (page 102), Botta approached the commission for "a secondary school at Morbio Inferiore" as an opportunity to participate in, and respond to, the unique conditions of the site. The indiscriminate development spreading across the countryside from urban Chiasso to the village of Morbio Inferiore provided the context—an encroaching miasma of suburban

sprawl. Because the area lacked a focus, Botta aspired—with the school—to "achieve a center of interest through the new complex which will constitute a meeting point and a landmark . . . for the entire regional district." That aspiration is expressed in an amphitheater. Though the tiered wedge appears to have been inserted in the space left over after the classroom building and the



Secondary school
at Morbio Inferiore, Switzerland
Mario Botta with Emilio Bernegger,
Rudy Hunziker, Luca Tami

adjacent gymnasium were pulled apart, it is in fact a grand processional entry to the school and the centerpiece of the complex. The linear classroom block, composed of eight "constructional units" aggregated along a north-south axis, defines the edge of a sinuous stand of trees directly east, and the edge beyond which development is signaled not to pass. The four-story "constructional unit" contiguous with the amphitheater serves as the administration building; the other seven "units" contain entrances and arcades on the ground floor, four classrooms on the second floor, and art studios and laboratories for special studies on the third floor.

Art and Architecture Building
University of Tennessee, Knoxville, Tennessee
Architects: McCarty Bullock Holsaple Inc.

Basically two long four-story structures paired by a central court, the art and architecture building gains interest through such simple devices as the deep overhang formed by the projecting fourth level, carefully detailed fenestration, and the textural treatment of its poured concrete skin. Stairwells become architectural elements in their own right and, in the case of the curved concrete shaft on the west end of the building (above and lower right), found sculpture. The shaft is also the point of departure for future expansion.

A sophisticated campus precinct: the studio as street (and vice versa)

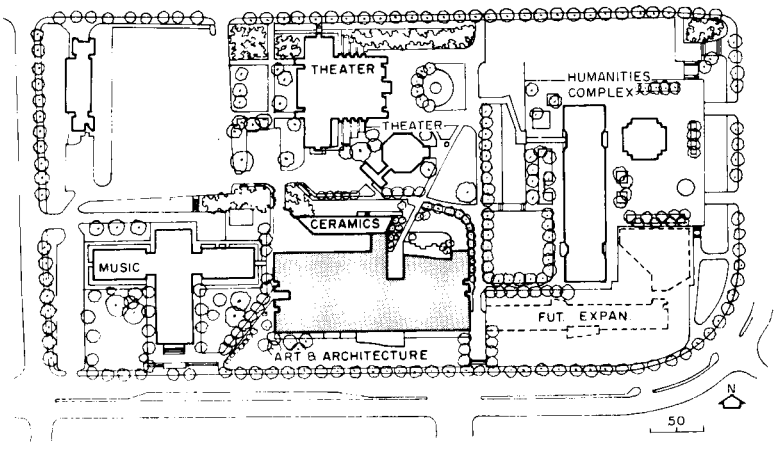
The invocation of urban references—street, square—as functional metaphors for interior spaces has become so common among architects (and architectural writers) as to constitute cliché. But clichés, be it remembered, are both trite and true. Applied to the spacious thoroughfare that is the organizational axis of the new building housing the University of Tennessee's Department of Art and School of Architecture, the designation "street" is more than usually persuasive: the space is of appropriate scale, it is a public way, and it is inclusive of the enterprises bordering it.

McCarty Bullock Holsaple's winning entry in a competition among Tennessee architects, the building owes much to the design team's familiarity with the university campus in general and the allocated site in particular. Having designed two of three adjacent buildings—the theater and humanities complexes (an older music building lies to the west)—the firm was alert to the opportunity to turn a cramped site and necessarily dense coverage to advantage.

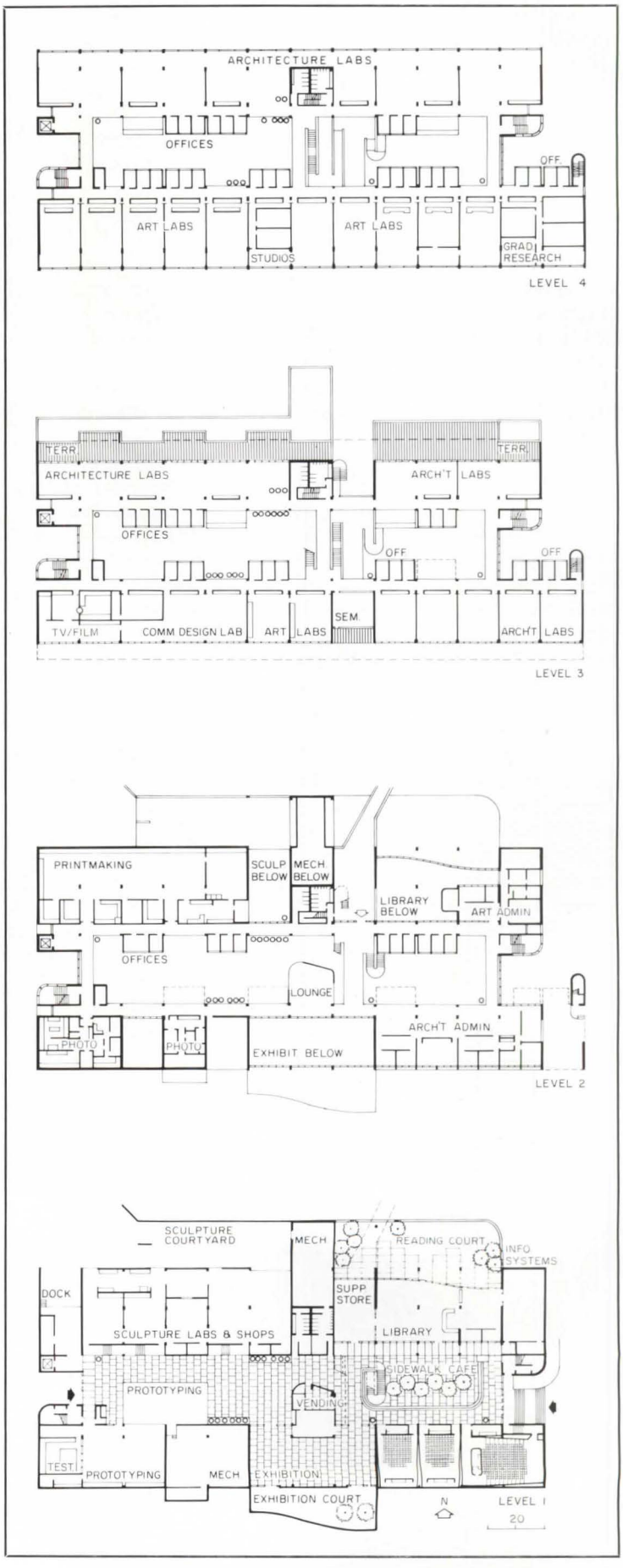
The building lies athwart an ad hoc but well-established diagonal circulation path between the old campus center—known inevitably as "The Hill"—and newer development, including student residences, to the north. Its organization into two long four-story structures fronting a central "street" was intended not only to recognize and reinforce existing pedestrian routes but to encourage the emergence of a new campus center oriented to the humanities and related arts—areas that invite the participation of the student body as a whole. In addition, the building resolves previously ambiguous spaces between surrounding structures into an ordered progression of coherent indoor and outdoor "rooms" and sets up a "wall" between these spaces and a heavily trafficked ring road. (The scheme allows for future expansion via a linear extension to the east, which will further integrate the new building with the existing humanities complex and strengthen its role as a wall.)

The heart of the newly formed student precinct, however, is the central street along which studios and adjunct spaces are ranged. Permanent facilities such as mechanical rooms, AV-equipped lecture rooms, and sculpture and prototyping labs requiring special equipment are concentrated at street level, as are common spaces meant to encourage interaction between students of art and of architecture—a library with adjacent reading court, a supply store, and a gallery and sculpture

Otto Baitz photos



The curved projections of glazed stairwells at either end of the building enhance and draw attention to the ground-level entrances to the main "street." A third major entrance forges a second-level link between the art and architecture building and the theater complex to the north.



Fenestration is carefully detailed to maximize natural light and minimize energy consumption. Window walls combine fiberglass-reinforced concrete spandrels and exterior blind boxes with fixed and operable clear insulated glass. Fixed windows are protected by outside blinds; operable windows above have deep sills to bounce light up to ceilings within.

garden. Originally envisioned as a showcase for student work, the gallery has evolved under an enterprising director into an exhibition area that also hosts traveling shows of interest to students from other disciplines and to the community at large.

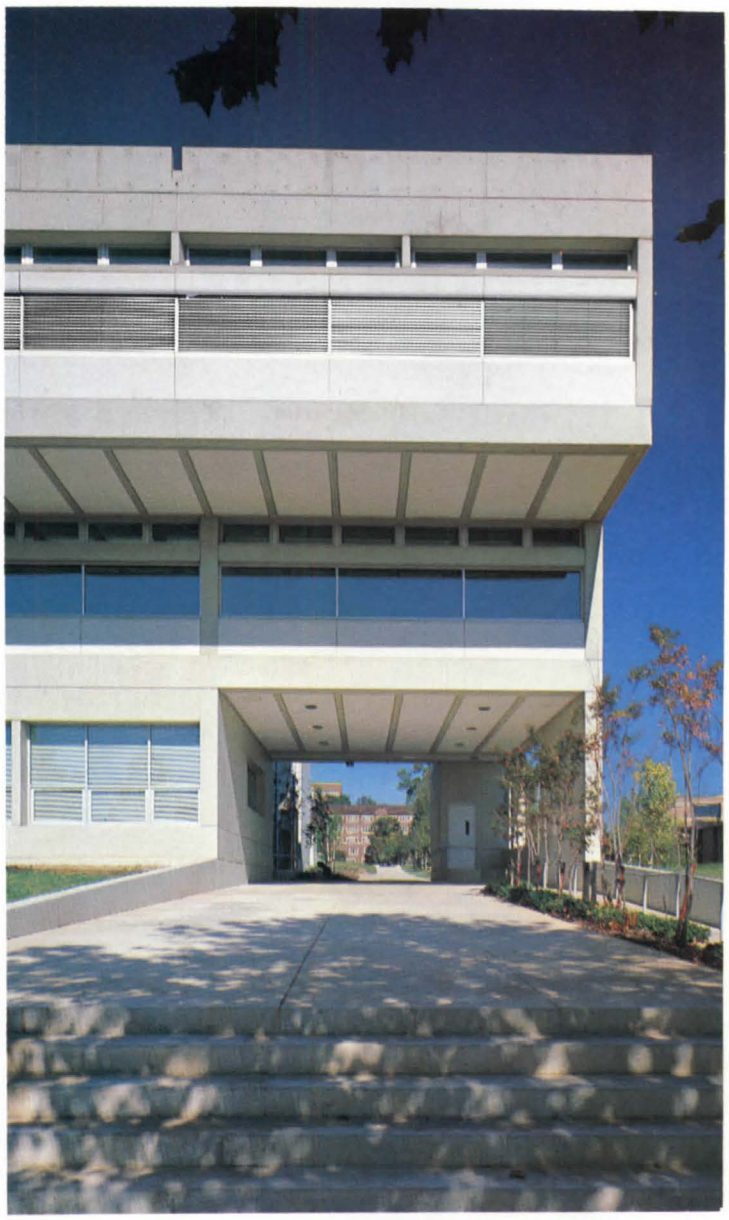
The principal draw of the street as a gathering place, though, is its sidewalk cafe, a sunken landscaped court that doubles as an assembly area. Already well used, the cafe is expected to become a yet more attractive magnet with the pending replacement of vending machines by short-order food service. A second focal point is a prototyping area at the other end of the street, where an inset deck allows for the construction and display of large-scale works of art and architecture.

The upper levels of the two main building elements flanking the central court are occupied by student and faculty work spaces reached via secondary streets or corridors defined by double rows of columns and open to the main street below. In contrast to the fixed spaces at street level, these are loft spaces designed to permit a high degree of flexibility, although in the building's present configuration only the architecture studios fully exploit the opportunity to command large open areas.

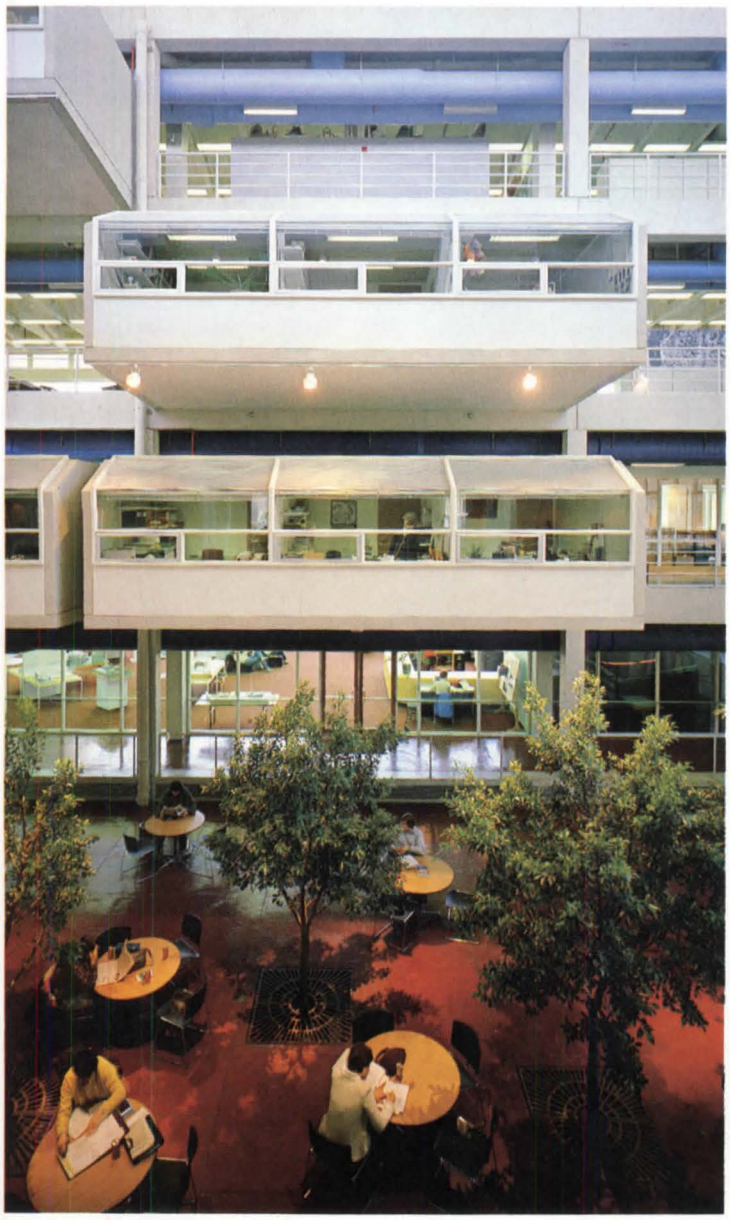
Apart from frequent glimpses from the upper level balconies to activities within and across the central court, the street's air of urbanity derives principally from elements that find no ready urban analog—the cantilevered pods that contain faculty offices. Placed seemingly at random (but actually in accord with their relationships to studio groupings and each other), the pods punctuate and lend human scale to the daunting stretch of a streetscape otherwise broken only by a dramatic staircase-cum-bridge.

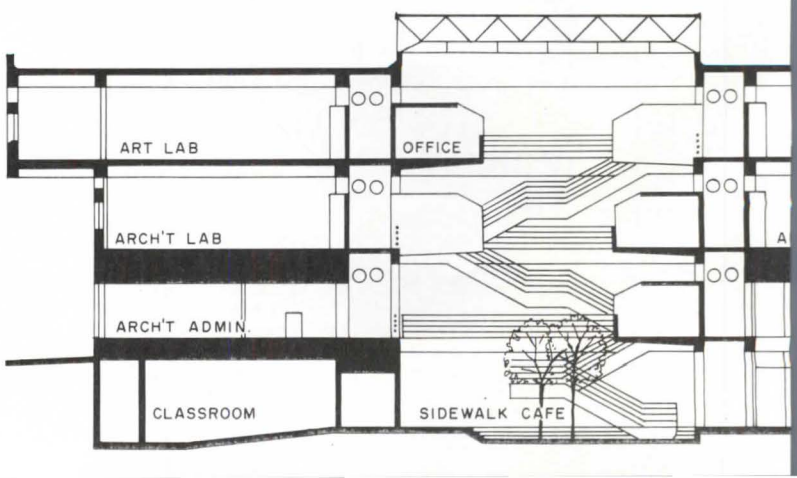
In deference to the propensity of design students for placing a personal stamp on their environment, the building was left deliberately "raw" to accommodate decorative additions by users. The emphasis on flexibility prompted the exposure of structural and mechanical elements, which also serve as permanent demonstrations of the building's anatomy.

Although an early proposal for supplementary solar heating proved impractical, energy consumption is minimized by passive means. Operable windows, combined with the open plan, provide natural ventilation during mild seasons, while overhangs and exterior blinds shield double-glazed window walls whose deep sills reflect daylight onto the loft ceilings. Clerestory windows overhead provide "street" lighting. *Margaret Gaskie*

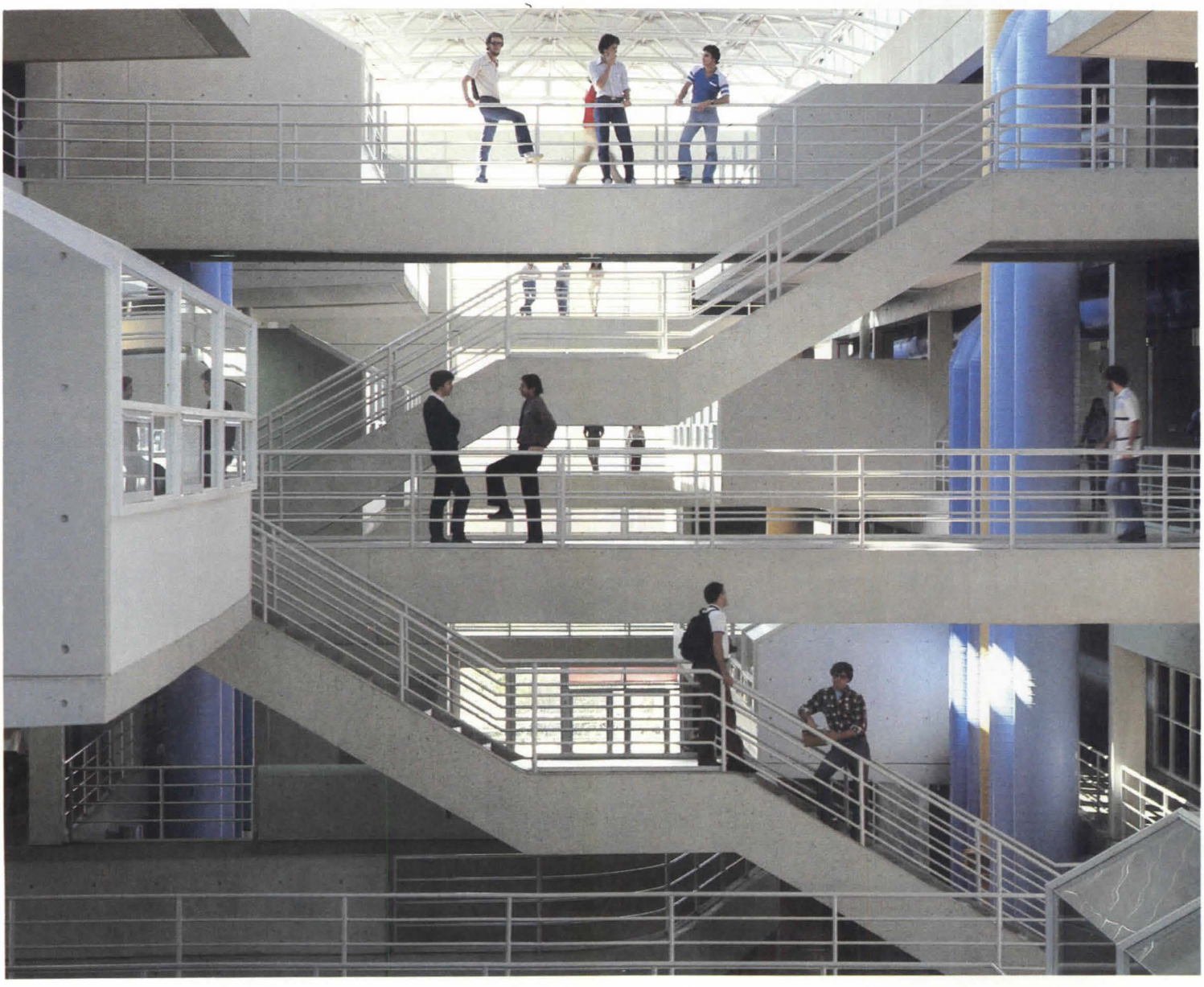


Cantilevered pods containing their offices literally thrust faculty members into the heart of the building's street life and set up a staccato rhythm that obviates the potential monotony of the long sweep of the central court. Windows fronting the pods continue in canted skylights that borrow additional natural light from the clerestory windows at the top of the space. The focal gathering space, the sidewalk cafe, communicates with the outdoors via unbroken views through the glass-walled two-story library (glimpsed in photo below left) to the reading court beyond, as well as through the glazed end wall.

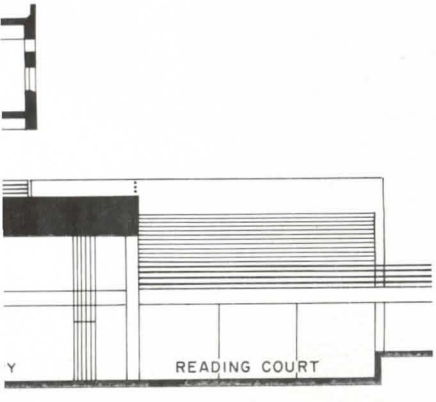




A vital circulation link, the stair bridging the building's main street is a prominent design element as well. Although brightly painted mechanical ducts lend welcome splashes of color, the street is animated principally by the activities and movements of its inhabitants.



Art and Architecture Building
University of Tennessee
Knoxville, Tennessee
Owner:
University of Tennessee
Architect:
McCarty Bullock Holsaple Inc.
Engineers:
Lev Zetlin Associates
Consultants:
O'Kon & Company (structural); I.C. Thomasson & Associates (electrical, mechanical); Kelley-Hough Inc. (concrete); Newcomb & Boyd (acoustical)
Contractor:
Rush Engineers; Construction Management Inc.



1. *Martorana Chapel, Palermo; Charles Brickbauer photo*
2. *Pazzi Chapel, Florence; Scala Istituto Fotografico Editoriale photo*
3. *Palazzo Rucellai, Florence; Anderson photo*
4. *Palazzo Vidoni Caffarelli, Rome; Anderson photo*
5. *Maria della Piazza, Ancona; Stefani photo*

Diversity, relevance and representation in historicism, or plus ça change...

By Robert Venturi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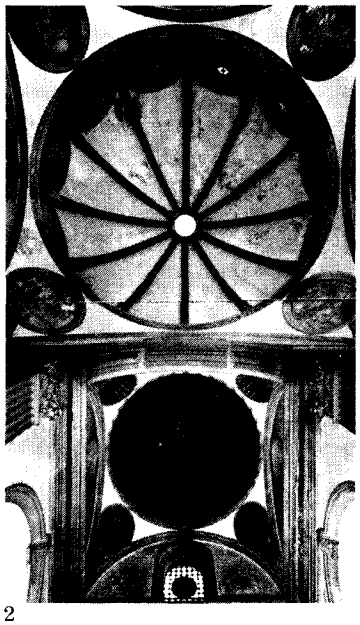
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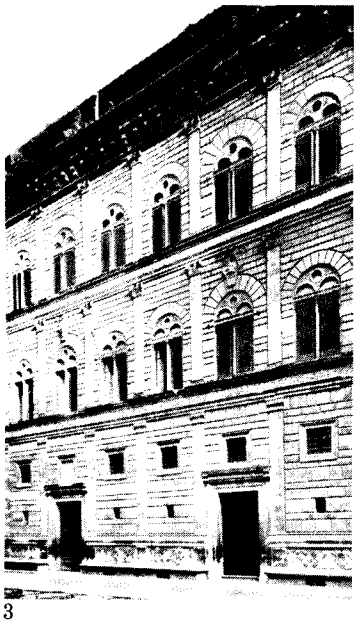
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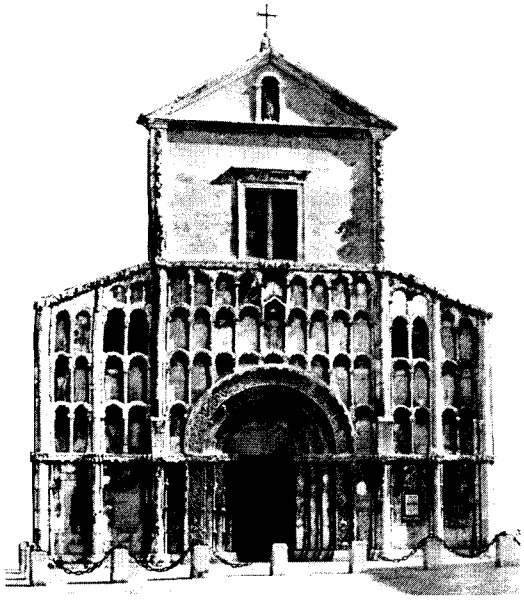
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When I was young a sure way to distinguish great architects was through the consistency and originality of their work. Mies van der Rohe was known by his unmistakable vocabulary of finely detailed, glass and steel, veneered frames universally applied to high-rise buildings, university laboratories, or rich clients' houses. Le Corbusier was distinguished by *his* particular vocabulary of hovering Cubist planes in his early years and monumental statuesque forms in his later years. In each of these periods he applied his more or less consistent vocabulary to all kinds of buildings, whether an art school in Cambridge or a house in Chandigarh. The same could be said of the work of Frank Lloyd Wright, Louis Kahn or Alvar Aalto (although Aalto diverges from his peers in this respect in his tendency to work variations on conventional industrial elements and in his avoidance therefore, of expressionistic originality). For these masters varieties of style within their own *oeuvres* would have implied indecision and lack of commitment to a unified ideal, yet the work of each as a whole tended to look different from that of the others as each strove to assert the originality that was considered the *sine qua non* of artistic expression of Romantic and also of Modern artists. This was a time in architecture when form was emphasized over symbol and when universal industrial processes were considered essential determinants of form for all kinds of building everywhere, so that priority on the individual architect's original vocabulary was combined curiously with a rigid ideal of formal unity for architecture as a whole.

This should no longer be the case. Where the Modern masters' strength lay in consistency, ours should lie in diversity. But it still is the case. It shouldn't be because the Modern masters and what they stood for have been repudiated by current architects—often with a vengeance, unfortunately—and we now look for inspiration to an architect like Sir Edwin Lutyens who especially in his domestic architecture worked in a variety of historical and decorative styles. The styles he chose were meaningful to his various clients and supported the roles they played as country squires, worldly capitalists, ambassadors to Washington, or viceroys in Delhi. I shall try to show that architects today should be distinguished by the rich variety of their work and the diversity of their architectural vocabularies rather than by the unity of their work and the consistency and originality of their vocabulary.

Some fifteen years ago in *Complexity and Contradiction in Architecture* and later in *Learning from Las Vegas* we advocated architectural principles which were then considered polemical but which are now accepted wisdom. We called for an architecture that promotes richness and ambiguity over unity and clarity, contradiction and redundancy over harmony and simplicity.

Our exemplar is the Martorana Chapel (1)—in whose Byzantine interior structural and spatial systems are obfuscated by an all-over applique of patterned and representational mosaics, frescoes, and Cosmati work, which achieve richness of effect. We choose this rather than another beloved archetype, the Pazzi Chapel (2), in whose interior simple integral ornament articulates structure and space to achieve unity of effect.

Such an architecture accommodates the intimations of local context over the dogma of universality. It provides pragmatic solutions to real problems rather than easy obedience to ideal forms—as Stanislas von Moos has put it, it solves problems, but expresses them too. It encourages ornamental surface over articulated form, pattern over texture, and sometimes pattern all over. This architecture acknowledges again the fundamental issues of shelter as well as function. And finally, it employs

plus a plea for pattern all over architecture...

The following text was delivered by Robert Venturi last April 15, at Harvard University's Graduate School of Design, as the 1982 Walter Gropius Lecture. This series was established in 1958 on the occasion of Walter Gropius's 75th birthday and in honor of his leadership as the chairman of Harvard's Department of Architecture from 1938-52.

symbol as well as space and light as the measure of its art—it derives meaning from its symbols as well as expression from its form. The symbols, depending on association by their very nature, promote elements and vocabularies that are familiar, ordinary, or conventional rather than original, outlandish, or *avant-garde.*

This approach expands the range of the vocabularies of architecture beyond the industrial vernacular and machine esthetic of the International Style and the hi-tech of later Modernism, so that it can include local and commercial vernaculars and those of diverse historical styles. The freedom from consistency and the opportunity for diversity that result are important: inherent in them is sensitivity to place, time, and culture, and recognition of the multiplicity and relativity of tastes. Diversity is, indeed, an obligation if our architecture is not to be limited again by a single, high-culture vocabulary that is expected to "filter down" and "unify" the environment because such a vocabulary tends to degenerate in that process into prettified or extravagant travesties of the original vocabulary or into dry renditions of last year's *avant-garde.*

Plus ca change . . .

Although most of the principles catalogued above are by now a part of the accepted wisdom among architects and critics, nevertheless today's architects have achieved no more diversity or cultural relevance than their Modern forbears. It is this state of *plus ca change* that I shall deal with in this paper.

In the ever oscillating balance between form and symbol in architecture we are tilting at this time toward symbol. The trend toward symbolism is not surprising as it is a reaction to the long period when symbol was banned as a manifestation of ornament or historicism, or went unacknowledged, as was the case with early Modern industrial symbolism, or was substituted for by expressionistic articulation of structure and form, as in the later years of the Modern movement. On the other hand, now that we again acknowledge symbolism in architecture, the problem becomes what to do with it. For me the answers so far have been too simple, too dogmatic—yes, they have lacked complexity and contradiction.

Architects have traditionally used symbolism in architecture to enrich its content and to include other dimensions, some almost literary, which make architecture a not purely spatial medium. Symbolism expands the scope of architecture to include meaning as well as expression, and promote explicit communication, denotative as well as connotative. (Unfortunately this has always meant that bad architecture can project pretentious symbolic ballyhoo as well as bombastic structural expressionism.)

Diversity

An essential reason for using symbolism today is that it can provide a diversity of architectural vocabularies appropriate for a plurality of tastes and sensitive to qualities of heritage and place. This use suits the need to respond in our time to both mass culture and pluralist expression. Today the world is at once smaller and more diverse, more interdependent yet more nationalistic; even small communities seriously maintain ethnic identities and carefully record local history. People are now more aware of the differences among themselves yet more tolerant of these differences.

It's a time in architecture too when the shifting balance between the universal and the unique favors the latter. The early Modern movement was named the International Style to proclaim among other things its universality. Our diversified approach to symbolism will distinguish our architecture from that of our recent predecessors whose buildings had to look like factories, or at least contain industrial references, and promote thereby a universal industrial order. But our approach to symbolism should distinguish our architecture from that of other eras too. We are not able to use historicism, as did architects of the Renaissance, to institute a rebirth of a single architectural style; they were backed by a homogeneous culture that was broadly committed to a humanist heritage. Nor can we revive 19th century Revivalism and the battles of the styles, like for example the battle between Perpendicular and Decorated Gothic advocated by the Oxford and Cambridge Movements respectively, and promoted as the exclusive expression of the ecclesiastical dogmas of each. Our historicism should involve less a rivalry and more a medley of styles; like the free eclecticism of late 18th century garden pavilions—Gothic *and/or* Greek—that evoked a variety of historical associations and Romantic moods, or like late 19th century architecture where dextrous combinations of styles reflected the functions and contexts of individual buildings.

In recent architecture historicism has been the major manifestation of the new symbolism. But it is important to acknowledge other sources of symbolism, including high-art and Pop—Scarlatti *and* the Beatles—if diversity is to be achieved. In the design of individual houses our firm has adopted numerous local and vernacular vocabularies—more or less rustic or Classical. In our exhibition for the Smithsonian Institution we acknowledged the symbolic bases for American developer housing and studied the vernacular appliques these houses accrete over time as they are renovated, expanded, and ornamented by their owners. In *Learning from Las Vegas* we analyzed commercial vernacular vocabularies of the highway environment and urban sprawl, in a search for an appropriate symbolic architecture for our time. In the same book we discussed the machine esthetic of the Modern movement as a set of symbols rather than as a set of forms deriving from industrial processes of the modern world.

Another vehicle for symbolism in architecture is ornamental pattern. Ornamental pattern is different from historical, vernacular or Pop symbolism in that it can be freer and less consistent and can depend less on association. It could be extremely significant for architecture now and has enormous potential for development. I shall return to it later in this paper.

Relevance

Architecture can be many things, but it should be appropriate. As Denise Scott Brown has pointed out[1], it should have cultural relevance. It is necessary to make this obvious point because today's architecture is frequently arbitrary in its symbolism. Architects who indulge their preferences for esoteric and exotic symbols tend to produce architecture of whimsical pavilions and picturesque follies that makes insufficient reference to the diversities and subtleties of taste cultures at hand or to the context of place which should give substance to form. But a sense of appropriateness should apply not only to a variety of cultural types, but also to a hierarchy of cultural values—not all buildings are equally important, not all buildings should be high art, most landscapes should include buildings plain and fancy.

In attempting to derive an architecture that is relevant for diversities of culture, taste and place, I put the burden on the symbolic rather than the formal or technical aspects of architecture. This is because symbolic elements are more flexible

and adaptable than formal and especially structural-technical elements. They are also less subject to limitations of use, cost, and physical stability and to the constraints of standardization. Building systems and their resultant forms should constitute the more universal qualities in our architecture and act as counterpoint to the unique qualities that will be symbolic. The construction method of our building in Iraq, for instance, is concrete frame with pre-cast panels which is standard world-over; yet some of the openings in the pre-cast panels we designed as pointed arches to conform to the desires of our clients to symbolize national character and express cultural heritage in their architecture.

I have made a case for a separation between form and symbol in the article "A Definition of Architecture as Shelter with Decoration on It." My emphasis there was on contradiction as well as separation between form and function: allowing form and function to go their separate ways permits function to be truly functional—as it couldn't be, ironically, when Form followed Function in the old Modern days, and had the obligation to look good as well as work well.

So the independence of form and function in the interest of more effective functionalism can distinguish our architecture from that of the Modern movement. But the independence of form and symbol in the service of cultural relevance can distinguish it also from traditional historicist architecture. Renaissance buildings, for instance, were constructed more or less like the Roman buildings they emulated (although the Romans were more technically advanced in the use of concrete) while Revivalist buildings of the last two centuries were also almost identical in how they were constructed to the buildings they copied—Gothic, Classical, or Renaissance—give or take a few steel or cast iron members imbedded in the masonry. And the vernacular revivals of the turn of the century represented survivals more than revivals in that "arts and crafts" as a building tradition continued to exist. Building technology hadn't changed much until recently. In most eras contemporary form and historical symbol could be integral for the whole building; it is only our age that has seen grand contradictions between structure and symbol, or form and symbol.

Modern technical forms and historical symbolic forms rarely harmonize now. Historical symbolism and ornamental pattern must almost inevitably become applique. Quoins on the corner of a facade *could* be structural in a Renaissance or Revivalist facade even if they *were* applied; but not now, because we build differently. We see differently too. We don't *want* harmony between structure and symbol if it is forced or false. If we are at last "Post-modern" enough to accept structural and formal contradiction, we are still "Modern" enough to reject structural and formal "dishonesty." If we don't have to express structure, we don't want to falsify it. *Trompe l'oeuil* in architecture is effective for us only so far as it doesn't work.

Representation

I have been discussing the what and the why of diversity and relevance in architectural symbolism—as it applies to historicist symbolism. I will now discuss the how of the subject which I will characterize as representation in architecture. Representation in architecture achieved through depiction and applique.

The separation of wall and structure through the applique of panels on or within a frame is familiar to us in Modern architecture. When the independent walls or the modular panels were colored or textured (they were seldom patterned) they provided a quasi-ornamental effect, otherwise rare in that architecture. But these non-structural walls in Modern architecture were essentially spatial in function—the marble panels interspersed in the structural grid of the Barcelona Pavilion directed flowing space and the curving walls snaking through the bays of the Parliament in Chandigarh enclosed particular space while the modular panels complemented the structural grid in the same building. Instead, I have advocated the use of applique as sign, whose function is not basically spatial or structural, but communicative, via symbolism and ornament. It is this quality which distinguishes our applique from that of our recent predecessors. The most vivid historical precedent for our approach is again the interior of a Byzantine chapel where a fresco or mosaic applique communicates explicit messages—symbolic and representational—and is independent of the architecture in content and form. The content is religious, the form is pattern, and the configurations and rhythms have nothing to do with the spatial or structural elements they are applied to. The representation of a saint's head might be tilted forward on the curved surface of the ceiling vault while his feet might be amputated by an arched opening in the wall below.

In *Complexity and Contradiction in Architecture* I analyzed spatial layering and "things within things" exemplified by the pierced multiple domes of Baroque churches and other kinds of architectural juxtaposition involving redundancy. These complex forms of applique I opposed to the complicated, Piranesian and Paxtonesque spatial configurations that late Modern architecture had substituted for symbolism and ornament. In *Learning from Las Vegas* we analyzed commercial roadside building as one model for a symbolic architecture and illustrated our Football Hall of Fame Competition entry which we called a building-board. From these sign-appliques we developed the idea of the decorated shed as a building type and as a vehicle for ornament in architecture.

In the progression of our ideas about applique, first as spatial layerings, then signboard, and then ornament, we came to applique as representation in architecture. Representation in this context involves the *depiction* as opposed to the *construction* of symbol and ornament. Manifestations of this approach to symbolism in architecture are essentially two-dimensional and pictorial. Examples of representation in historicist architecture could be Classical columns or hammerbeam trusses cut out as silhouettes which depict but don't reconstruct the originals, or Classical quoins which are incised on a facade and which brook no ambiguity as to their symbolic and decorative function (3, 4). Much of the early work of Gunnar Asplund and of some other early 20th century architects espoused a non-literal historicism which was expressed through representational ornament. In other, less historical ornament, a flower pattern, for instance, may allude to conventional wallpaper flowers rather than to real flowers; the extra layer of meaning makes the symbolism richer.

Ornament in folk architecture is often representational high-art ornament simplified and rendered in two dimensions through painted patterns on flat surfaces, or through silhouettes. The jig-saw carpentry of American front porches or the cut-out boards of Alpine ballustrades are examples. Economy and naivete were probably the immediate reasons for this representational approach, but its esthetic results were eloquent expressions of the essence of style. In our time, economy and industrial standardization on one hand and lack of craftsmanship on the other justify this simplified, repetitive, and depictive approach to ornament.

If we cannot construct historical architecture today or revive Revivalism, we can represent them through applique and sign.

These techniques may seem simple-minded, but they can help us avoid the flaws of bad ambiguity and free us to create an architecture good for our time.

Plus plus ca change

The source of the term Post-modern I believe to be Princeton where I first heard Jean Labatut use it to describe an architecture in the mid-forties. The term is widely and loosely used today to cover ever-divergent architectural trends. It includes for example the Italian Rationalist movement, although that movement is an entity in itself and has in fact influenced the American Post-modern movement especially in its adoption of a Neo-classicist vocabulary.

My evaluation of Post-modernism will cover only the movement's approach to diversity, cultural relevance, and symbolism as I have been discussing them. My view will be limited by the bounds of my knowledge of current architecture and will be based more on the projects of Post-modernist architects than on their theoretical writings. I am in general in agreement with the theoretical bases of Post-modernism; the concurrent architecture and its apparent implications are what concern me.

Post-modernism has in my opinion proclaimed in theory its independence from Modernism—from the singular vocabulary and the rigid ideology of that movement—but has substituted, in practice, a new vocabulary that is different in its symbolism from that of the old, but similar in its singularity and as limited in its range and dogmatic in its principles as the old. The new movement does not provide the diverse symbolism and cultural relevance appropriate for our era. In this respect it is not different from the previous movement. *Plus ca change . . .*

The Post-modernists have abandoned the universal industrial vocabulary of Modernism. As we said in *Learning from Las Vegas*, everyone but architects had come to know that the Industrial Revolution was dead and its continued glorification ironical. We pointed out that, although Le Corbusier's late-Modern *beton-brut* was symbolically anti-industrial, in the hands of his followers it had become expressionistically heroic and as irrelevant as the industrial vocabulary it replaced. However, the Post-modernists in supplanting the Modernists have substituted for the largely irrelevant universal vocabulary of heroic industrialism, another largely irrelevant universal vocabulary—that of parvenue Classicism, with, in its American manifestation, a dash of Deco and a whiff of Ledoux. In substituting historical symbolism for Modern symbolism, they have promoted a kind of Neo-classicism, striving for a universalism which was appropriate at the turn of the 18th century to the aristocratic and republican patrons of Neo-classicism and to the essentially homogeneous preindustrial societies in which they lived, but which is inappropriate for post-industrial societies like ours which are complex and pluralist. In this context the architectural jumps of the 1970s from Le Corbusier to Ledoux, from Whites to pastels, were not such big leaps as they sound. The transition from the pure and simple Cubist forms of the International Style to the pure and simple Classical forms of Neo-classicism manifests architects' continuing formalist predilection for simplification. However, the white forms are now tinted in Mediterranean hues which pleases clients and makes projects and drawings more saleable.

Formal simplicity and symbolic consistency make architecture easy to identify, name, copy, learn, teach, promote, publicize, publish, draw and exhibit. That this architecture is easy to name is obvious by its proliferation of names: Post-modernism, Rationalism, Radical Eclecticism, Free-style Classicism, the New Rules, etc. But doesn't the variety of its names belie the paucity of its content? Doesn't the ease and speed with which its authors name it expose its over-simplicity? The naming of movements and styles is the historian's responsibility. Did Bernini know he was Baroque? Architects should describe their work, not name it. That Post-modernism is easy to teach is obvious from its popularity among students and its acceptance in the architectural *academe* where archetypal simplification and easy universalities tend to be preferred to complexity and contradiction. That it is easy to promote is obvious because journalists love slogans. All this has obvious advantages and gives immediate satisfaction, but does it make for vigorous architecture that faces the complexities of reality?

Ledoux, in the context of the United States, is exotic as well as simplistic. I remember being startled at glimpsing out of the corner of my eye the Neo-classical city hall in the French Quarter of Montreal: it was a truly Neo-classical building. Having momentarily forgot I was in French Canada, I was subconsciously expecting a Greek Revival building typical of the United States—typical, indeed, of what I could have found immediately across the border in New York State. The differences between the pure, abstract, continental-Ledouxian version of Classicism and the more literal, sometimes naive, version of Doric that is Anglo-American, were, at this instant, subtle but telling.

If the symbolism of Post-modernism must be based on Classicism, why is it largely limited to Ledoux whose appropriateness on this continent beyond Quebec is questionable? The answer is because Ledoux is easy to take for former Modernists. He is one of the historical architects that Modern architects allowed themselves to admire and it is easy to move from liking him to doing him (douxing him and over-douxing him). He is also in vogue because of the influence within the Post-modern movement in this country of the Rationalist movement from Italy with its distinctly Latin version of Neo-Classicism. There are parallels here to the importation of the International Style to this continent in the '30s. Bauhaus architecture provided a similar strain of the exotic and irrelevant in the American context. What an irony that many of those who now discredit the rigid impositions of the International Style now follow in its footsteps. *Encore plus ca change.* In advocating versions of Classical symbolism such as Greek Revival, Palladian, and Queen Anne that are varied and natural to our place and time—connected, that is, to our heritage—and employing them in our work, I am being realistic rather than chauvinistic, and rational more than Rationalist.

But why only Classical? In this paper I have discussed the rationale for employing varieties of styles and employing applique and representation to achieve cultural relevance. In "A Definition of Architecture as Shelter with Decoration on It," I described a hypothetical building that sports a Serbo-Croatian front and a Mary Anne behind—its esthetic contradiction justified by conflicting demands of form and function and accommodated by its configuration as a decorated shed. The more traditional interdependence of form and function and the more literal and "serious" identification of form and symbol in Post-modernism, will not accommodate such functional contradictions. This tends to limit Post-modernism to a hierarchy of traditional building types and to institutional and civic buildings—the range of building types associated with Classicism—although, strangely to Americans, Neo-classical workers' housing seems to sit well with Communist mayors in

Northern Italy.

But doesn't architecture encompass ordinary buildngs too? I've seen a design for a catalog showroom in a highly literal Classical style. As a Post-modern building it was, to me, distinctly uncomfortable; as a decorated shed sporting Classical representation, it would have come off. Another recent design for a quarter in Paris is an exquisite collage of axes *a la* LeNotre (*au Notre?*). Hausmannian boulevards intersect delightful streets whose widths perfectly balance the heights of Classical facades, whose sky is punctuated by high-diving bi-wing planes seemingly piloted by World War I aces. The pedestrian density of this urban fabric would appeal to any antiquarian who strolls the streets of the 18th century quarters of Paris or parts of Munich or Leningrad, but what about the reality of cars on the ground (over drawings of Messerschmidts in the air) in the late 20th century, and the right of our cities to be civic and residential *and* commercial in their function, and of their symbolism to be nostalgic *and* real?

A plea for pattern all over

In this critique of Post-modernism I have emphasized historicism in architecture because this is the chief feature of that movement, and I have advocated an explicitly symbolic and representational historicism that is conveyed through applique. To put it another way, I have been concerned with ornament whose content is historical. But there is another type of ornament that has been acknowledged but little employed by Post-modernists perhaps because of their lingering Modernist prediliction for simplicity and the predominating influence of Italian Rationalism. This ornament consists of over-all pattern. It is an ornamental direction of enormous range and potential. Pattern-ornament can be abstract, as in the decorative tile or brick surfaces of Moslem architecture—among the supremely beautiful and complex creations in the history of art. It can be representational, as in figured Byzantine mosaics or in the pretty floral wallpapers of Victorian interiors. It can be symbolically architectural, as in the facades of those Italian Romanesque churches (5) whose rows of *bas-relief* arcades crash into portal, rose window, or moulding, seeming discordant and lyrical at once.

Our additions to the Oberlin Art Museum, I.S.I. office building, and Best Products Showroom are decorated sheds where geometric and floral patterns are appliqued using masonry and porcelainized panels. In the Best showroom loft, big flowers, bold *and pretty*, camouflage the inevitable banality of the architectural form and read as a sign across a vast parking lot and speedy highway. Ornament that is pattern-all-over is currently the subject of painters of the Pattern and Decoration Movement in New York. These painters have acknowledged an inevitable reaction against the Minimalism of late Modern esthetics. As with the American Pop Art and Photo-realist movements, the painters are ahead of the architects in their esthetic sensibility. Architects too, I think, will have to recognize the impracticality of expressionist heroics, on one hand, and of Minimalist indulgence on the other, and acknowledge the potential for richness in the decorated shed—and eventually in the decorated car, the decorated anything all over our environment.

In this argument I have cast Modern architecture in a bad role, but I want to qualify my attitude toward the Modern movement and distinguish it from that of many of the Post-modernists. I have never intended totally to reject Modern architecture in words or work, because I do, and I think our architecture should, in many important ways, evolve out of it, not revolt from it. Its masterpieces hold their own with those of any age. Forgetting the Rococco perhaps, the Modern was the first style since the Gothic to be based on an original symbolism (acknowledging its immediate derivation from the industrial vernacular of its time). Today we focus on its excesses and weaknesses at the end, to the exclusion of its successes and glory at the beginning. This makes us want to be revolutionary rather than evolutionary, anti-Modern rather than truly Post-modern.

One of the flaws of the Modern movement was its revolutionary zeal, its progressive rejection of the past. It is ironic that many critics of the rigidity and exclusiveness of Modernism who now fervently proclaim their liberation from its bondage display an equal, if opposite, revolutionary zeal; some of today's most intolerant Post-modern architects were "Whites" last year. It is too easy to hate our fathers in attempting to transcend them. In so doing we find refuge once again from a complex and contradictory world in simple formulas for our work and simple dogmas for our philosophy. Denise Scott Brown wrote in our preface to *Learning from Las Vegas:* "Since we have criticized Modern architecture, it is proper here to state our intense admiration of its early period when its founders, sensitive to their own times, proclaimed the right revolution. Our argument lies mainly with the irrelevant and distorted prolongation of that old revolution today." And now with that old revolution in a new guise.

A postscript on my mother's house

Although I am critical of much of the Classicism I see in Post-modern architecture, and because I am frequently dismissed as a Pop architect, I would like to make it plain that I consider myself an architect who adheres to the Classical tradition of Western architecture. I claim that my approach and the substance of my work are Classical, and have been from the beginning of my career. My mother's house in Chestnut Hill, Philadelphia (6,7) the second building of my design to be built, is an explicitly Classical building in the substance of its plan and form and in the ornament of its elevations. This was unusual in 1964, the year of its completion.

But the house, though Classical, is not pure. Within the Classical esthetic it conforms to a Mannerist tradition which admits contradiction within the ideal order and thereby enhances the ideal quality of that order through contrast with it. To perceive the ideal you must acknowledge the real. Contradiction in Classical architecture manifest in distortion and exception occurs in the work of Palladio and many others who are my guides.

Some Classical and contradictory aspects of my mother's house are: (8,9,13) the plan and the front and back elevations are symmetrical about a central axis, but, within the consistent perimeter of the plan the extremities vary to accommodate exceptions in plan, and within the consistent profile of the elevations, the extremities vary to conform to exceptions within; the configuration of windows is asymmetrical, if balanced, for the same reason. The central core of the house is a solid, not the void typical of a Palladian plan. The solid core consists of a fireplace, chimney, and stair, like that of a New England house of the 17th century. The central entrance reads on the front elevation as a void, rather big in scale like that of a porticoed Palladian villa, but it is contradicted by the blank set-back wall of the solid core which is itself distorted in plan to accommodate circulation around it. Symmetry in plan is therefore modified at the extremities via exceptions, and nearer the center via distortions.

6. Vanna Venturi House, Philadelphia; Rollin La France photo
7. Rear view; George Pohl photo
8. Front elevation
9. First floor plan
10. Rear view showing parapets; George Pohl photo
11. Detail of front elevation; Rollin La France photo
12. Rear pavilion, Villa Barbaro at Maser
13. Rear elevation
14. Front elevation with graffiti

The front and back elevations are Classically symmetrical with strong centralities. The front elevation is a Classical pediment (12); this facade-as-pediment I derived from the pavilion at the rear of Palladio's Villa Maser. A gable end as a front elevation was unusual in 1964. This gable is also a split pediment to reveal the central chimney block behind, to enhance the Mannerist effect of spatial layering, and to make of the facade thereby a kind of disengaged sign. The facade as disengaged pediment or abstracted sign (10) is also reinforced by the parapets of the front and back walls which make them seem independent of the roof and sides of the house. In the rear elevation the central element is the big arched window less than a semi-circle in shape. As in Neo-classical facades, it promotes big scale and grand unity in a small pavilion.

Perhaps the most unusual feature of these elevations for 1964 was their applied decoration with its Classical character (11). There is a dado on the front and back elevations. It consists of a wood moulding, placed a little high in terms of Classical precedent to enhance the scale of a small building. A shallow arch composed of the same moulding, is applied above the entrance opening. The arch is juxtaposed on the concrete lintel that sits flush with the stucco wall. Arch and lintel together further enhance the scale of the already relatively big central opening. This use of ornamental redundancy and Classical association completes the Classical composition of the whole. The abstract linear quality of the Classical ornament applied to the smooth plaster walls, together with the disengagement of the walls at the parapets, makes the facades look almost like drawings and enhances their quality as representations of Classical architecture.

There are important elements of this design which are not Classical: for example, the industrial sash and the strip window of the kitchen. But these act as counterpoint; they form part of the Classical-Mannerist element of contradiction within the whole and they establish this architecture as evolving Modern as well as reviving Classical. I did not explain this house as explicitly Classical in *Complexity and Contradiction in Architecture* because in the 1960s I was more interested in describing its Mannerist than its Classical qualities. I did, however, make analogies with historical Classical architecture in my description of the building, and this has since become a Post-modernist literary device.

The Classicism that is essential to my mother's house is typical of most of the buildings I have designed. These buildings are Castle Howard[2]-as-built, with the ultimate asymmetry of its north front rather than Castle Howard-as-designed, with its unbroken symmetry, but they are Castle Howard nonetheless.

In the end I am speaking of a historicist symbolism that seeks the essence of a style—or a place, or a tradition. I hope that my mother's house achieves an essence of Classicism in its context; for achieving essence is our ultimate aim in using symbolism in architecture—but that is the subject of another paper.

Some have said my mother's house looks like a child's drawing of a house (14)—representing the fundamental elements of shelter—gable roof, chimney, door, and windows. I like to think this is so, that it achieves another essence, that of the genre that is house and is elemental.


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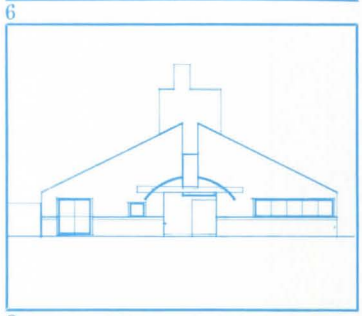
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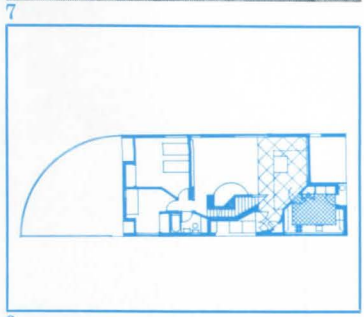
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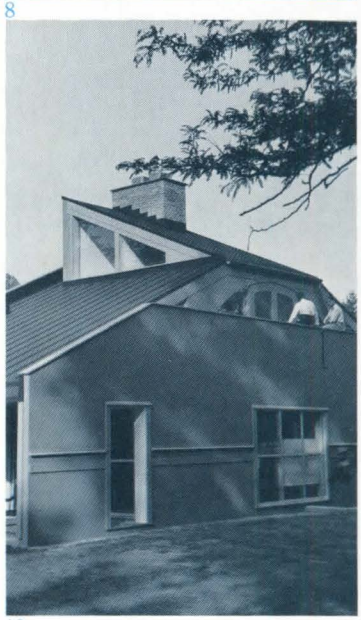
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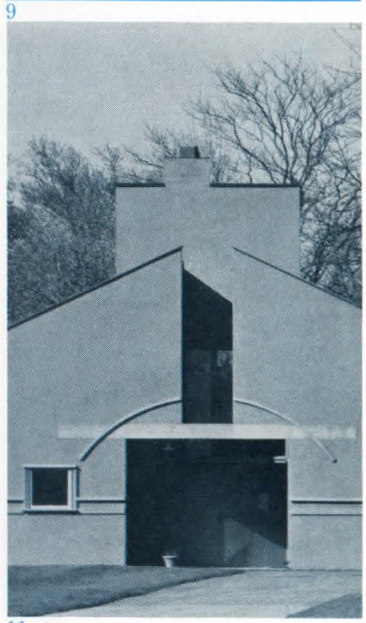
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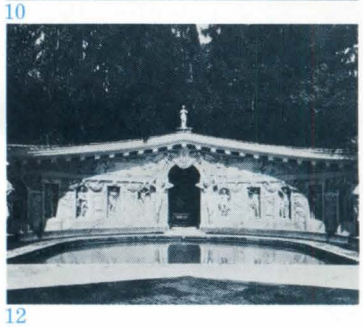
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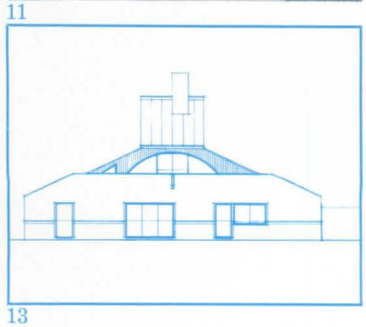
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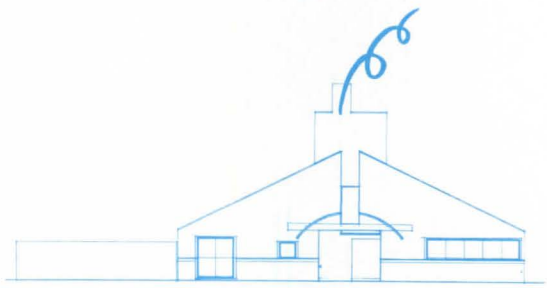
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[1]Denise Scott Brown "A Worm's Eye View of Recent Architectural History," in *Essays on the Current State of Architecture*, Peter Eisenman, ed. Institute for Architecture and Urban Studies and Rizzoli International Inc., New York: 1982.

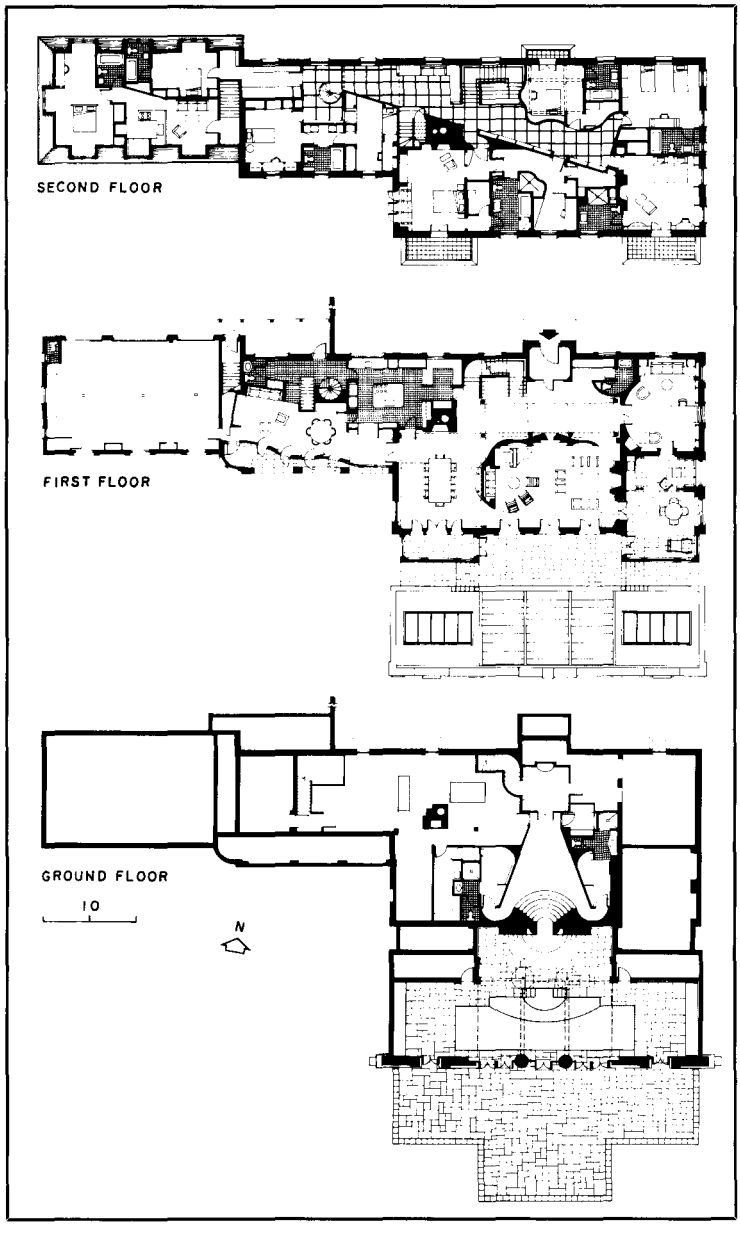
[2]Castle Howard was designed by Sir John Vanbrugh and Nicholas Hawksmoor in 1702-32 and is in Yorkshire, England.

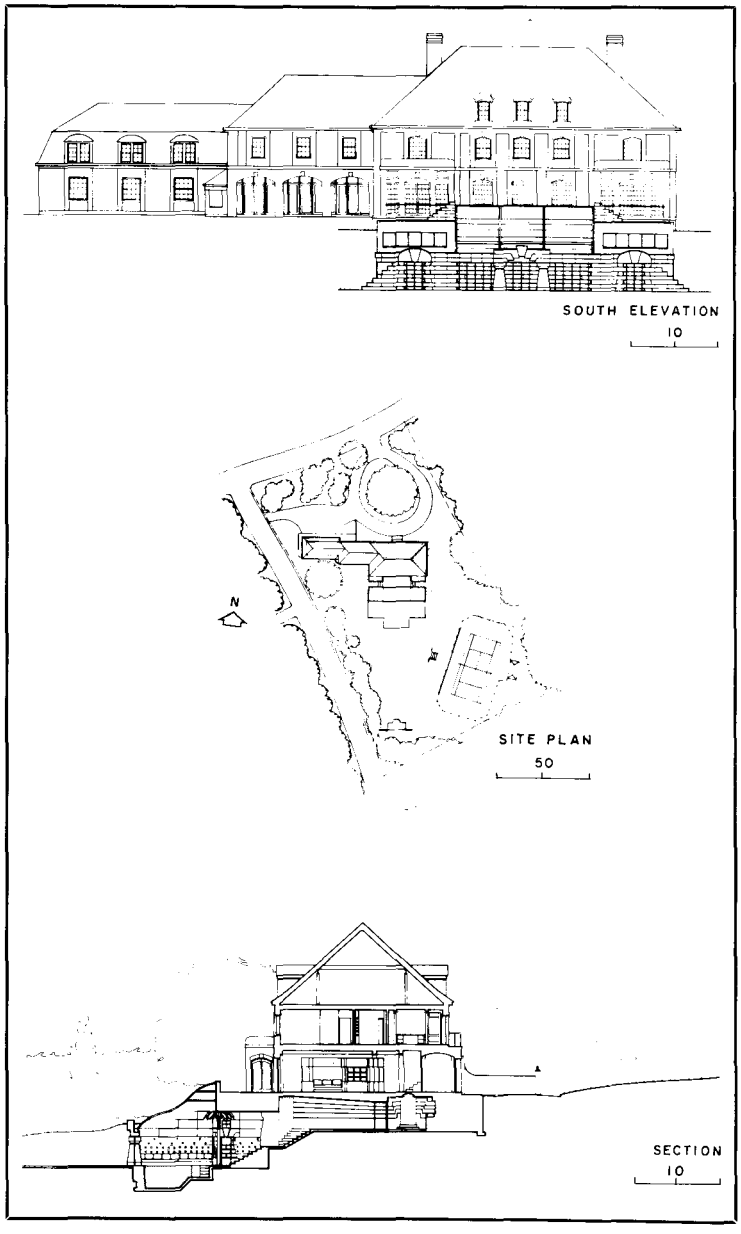
Residence and pool house
Llewellyn Park, New Jersey
Robert A. M. Stern, Architect

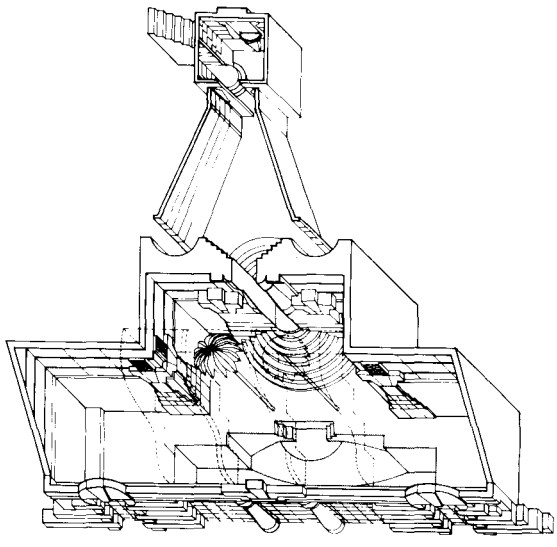
A villa in three acts

Many architects, critics, and art historians have lately sung the praises of "witty" buildings, but few have been so vocal as Robert A.M. Stern in celebrating the piquant allusion, the knowing twist of convention, or calculated whimsy. Stern has indulged his penchant for the artful play of fancy in his own work, most recently—and to spectacular effect—in the renovation of a house in Llewellyn Park, New Jersey. Outwardly, except for the addition of a glass-roofed pool house, the brick villa designed in 1929 by Edgar Williams remains virtually intact: a bland but competent essay in the so-called Wrenaissance idiom popularized by Sir Edwin Lutyens. If Stern's extensive interior alterations are hardly bland, it is because he, like Lutyens, has relied upon classical tradition not only as a source of discipline and ornament, but as a foil to his own invention. And, again like Lutyens, he has deployed historical references to confound a simplistic view of architectural progress, deliberately blurring the boundaries of old and new, primitive and sophisticated. Stern's clients, a couple with five children, valued the solid dignity of their home but found the existing interiors pompous and inconvenient for family life without live-in servants. Moreover, the 1929 plan lacked architectural character; it was merely a series of symmetrical units, without a unifying axial parti. Stern thoroughly reorganized the first floor, installing a new columnar order inside the entry and defining a network of enfilades. At the same time, however, he introduced curvilinear free-plan elements to shape informal living spaces, and ironically imply the intervention of a "later" modernist within the "original" classical framework of Stern's own devising. These serpentine elements also reflect the picturesque plan of the garden suburb, in contrast to the diagonal upstairs hallway, which is intentionally urban in character (photos overleaf). Inserted to connect the main block of the house with the former servants' wing, this corridor is flanked by cabinetwork that evokes the rusticated portals of town houses. The analogy was prompted by the clients' observation that, on busy days, family members are most likely to see each other in the hall, much as one meets friends on a city street. Stern's background for these encounters resembles a Renaissance stage set—and indeed, there is an air of theatricality to much of the rest of the interior, as well. A comedy by Noël Coward would seem at home on the first and second stories; entering the pool house, one plunges right into the world of Cecil B. De Mille. Recalling a remark by his teacher Paul Rudolph, to the effect that modern architecture had failed as yet to produce a "good-time place," Stern set out to recapture lost gaiety in this high-tech nymphaeum (solar collectors are mounted to either side of the skylight). Should one not be sufficiently dazzled by the baroque tableau of a plashing fountain, faux-marble pilasters, and palm-tree columns of brass and stainless steel, one can seek diversion by tracing architectural genealogy: the circular stairs derive from Bramante's Cortile del Belvedere; the dendriform columns from Sir John Nash's Royal Pavilion, by way of Hans Hollein's Austrian Tourist Office. On the facade, in accordance with Vitruvian decorum, limestone rustication and columns form a rugged podium for the subtler modeling of the house, as though the pool pavilion were an archaic precursor of the structure that crowns it, a transitional zone between nature and artifice. The range of thematic allusions in the pool house alone displays the agility and reach of Stern's wit. Of course, the last word must come from his clients, for it is they who will determine whether the everyday drama of suburban life can hold the stage against the backdrop their architect has fashioned. *Douglas Brenner*

Residence and pool house
Llewellyn Park, New Jersey
Architect:
Robert A.M. Stern—Anthony Cohn, assistant-in-charge; Ethelind Coblin, Alan Gerber, Gavin Macrae-Gibson, assistants
Engineers:
Robert Silman and Associates (structural) Gleit Olenek and Associates (mechanical).
Consultants:
Incorporated Consultants, Ltd. (lighting); Peter Rolland and Associates (landscape).
General contractor:
Lenvan Builders







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© Peter Aaron/ESTO photos

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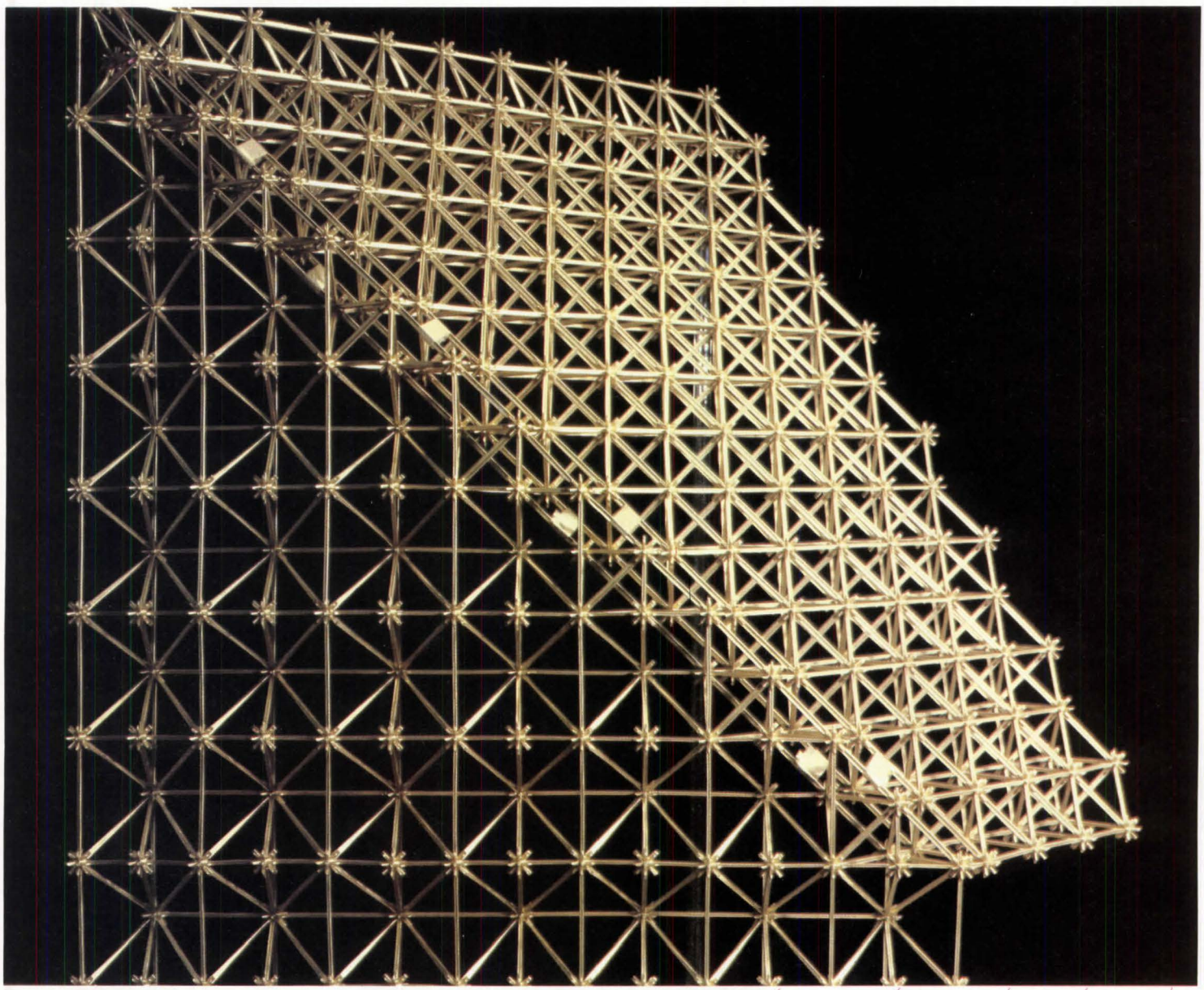
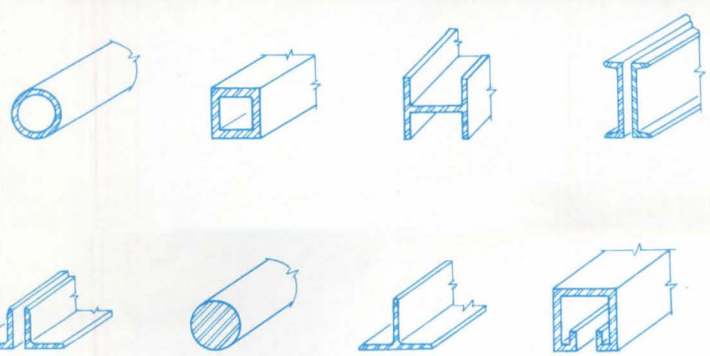
The interplay of classical and modern forms that Stern exploits as a unifying esthetic throughout the house was already implicit in the basic fabric designed by Edgar Williams in 1929. Behind its red-brick facades, the neo-Georgian villa was constructed like an office building, with a steel frame and concrete slab floors. In the entrance hall (1), Stern conceived a stripped-down version of the Tuscan order for a new colonnade. Like the figured base in musical counterpoint, this regular tectonic rhythm anchors the spatial inventiveness of curvilinear free-plan elements. (The resulting poché appears at reduced scale as the motif of the living room carpet.) The segments of the curved screen wall are treated with studied ambiguity as both architecture and furniture. On the living room side, they incorporate display vitrines and a couch (2); in the dining room, the partition becomes a bow-front sideboard (6). The opening left between the two wall segments is aligned with the main entrance and a French door on the terrace to offer a tantalizing vista of the living room and the garden beyond. (The garden has been landscaped to extend this vista, with an old fountain as its terminus.) Stern preserved existing decorative elements within the house, such as the caryatid chimneypiece in the living room (7), as termini for secondary axes. In the dining room (6) and library (8), classic modern furniture is combined with custom-made lacquered pieces designed by Stern. He has articulated the table, console, and desk as diminished architecture, using a truncated Tuscan column as his basic motif. The fusion of architecture and cabinetwork is even more pronounced in the second-story hallway (5), where "rusticated" storage cabinets and doorways suggest facades along a city street. Stern's scenographic skill is most evident in the approach to the pool house, which is contrived to intensify the effect of his coup de théâtre. *A circuitous off-axis approach brings one to a pivotal foyer (3), where a fountain marks one end of the grand enfilade that descends between proscenium-like walls (4) towards the pool.*

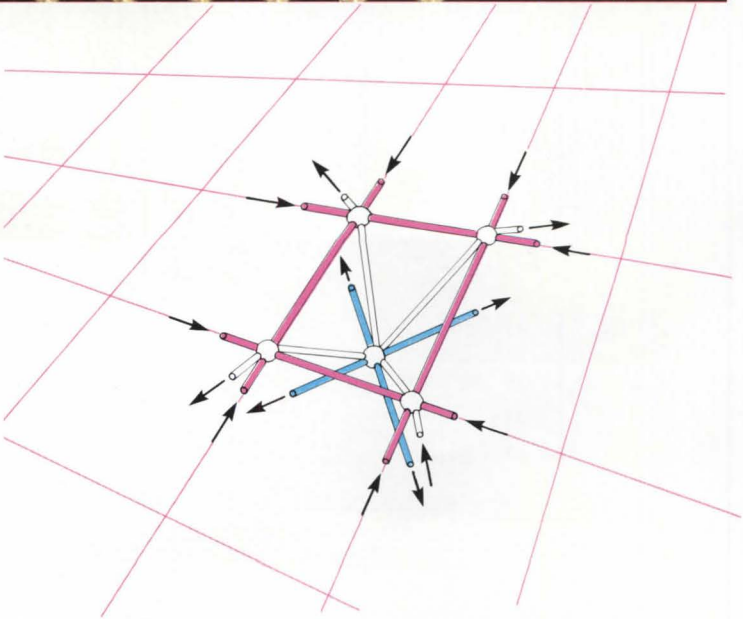
Stern envisioned the pool house (overleaf) as an exotic subaqueous grotto, a "good-time place" that mediates between the different realms of the garden and the house. Unabashedly theatrical, like the setting for a court masque, this opulent piscina displays an eclectic assemblage of motifs, ranging from marbelized baroque piers and neo-Regency columns to Sezession-inspired tiles. Modern technology also has its place, down among the sheltering palms: the pool is heated by overhead solar collectors.

Mr. Cuoco is vice president
of Lev Zetlin Associates, Consulting Engineers



Continental Center, New York. Swanke Hayden Connell, architects





Today's space frame structures: sophisticated, adaptable, reliable

By Daniel A. Cuoco

When you've seen one space frame, by no means have you seen them all. Today, 40 years after Mero manufactured the first space frame in Germany, and 70 years after Alexander Graham Bell conceived the idea, manufacturers offer a baker's dozen of systems that vary in their tubular member shapes and sizes, materials, and connection detail mechanics. Appearance ranges from high-tech hardware to jewel-like networks to nuts-and-bolts connections to which the ironworker is accustomed.

With custom-designed space frames, husky wide-flange sections are connected by different arrangements of gusset plates that vary with each building. Engineers need to use custom systems when spans are very large, and when the connection components of factory-made systems are not strong enough to resist large axial forces. But all of the manufactured systems can easily span 50 to 100 ft, and some of them more than 200 ft by increasing member diameters, beefing up wall thicknesses, or doubling or tripling space frame layers, thereby reducing buckling tendencies.

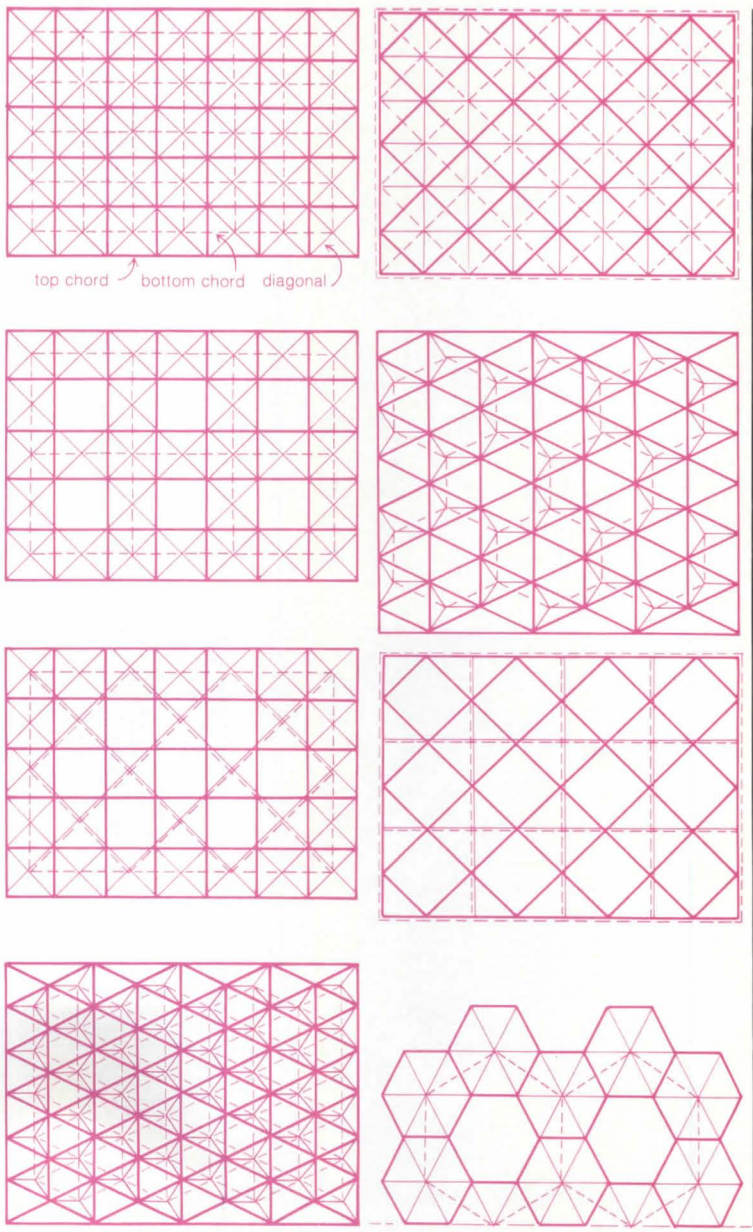
Connection methods of proprietary systems offer simple means for making positive connections. Some permit partial shop assembly. With others, a large number of members (20 or so) can be connected at a single point, allowing designers to explore geometries as a child would with a Tinkertoy. Connection methods of proprietary systems also vary with the shapes of tubes (square or round) and connectors (flat or crimped steel plates, cast steel or aluminum balls, or extruded aluminum hubs).

Different space frame geometries result, too, from the efforts to reduce the total number of members, and connections, required. With skewed geometries corners are stiffer, and less material can be used.

Costs of space frames can range from $10 to $100 per square foot. For spans under 100 ft, costs run from $10 to $25; for over 100 ft, from $25 to $40. Special finishes such as brass or chrome plating raise costs to $60 to $100. But a strict unit cost basis is not a fair comparison for space frames against alternatives. One-way trusses or deep long-span joists might cost 50 per cent less per square foot, but space frames weigh much less and are shallower (so there is less volume to heat and cool and less siding is required). Another advantage is that space frames can pick up live loads such as of cranes at any of the nodes, allowing engineers to proceed with preliminary design without having complete information.

The proliferation of space frames—in porte-cochères, atriums, pavilions, airport terminals and other widespan buildings—makes clear that the hiatus caused by the collapse of the Hartform Civic Center Coliseum is over. Designers and owners had their confidence restored after investigating engineers showed that the failure resulted from a connection detail that couldn't work as assumed by the designers in their calculations, and did not stem from an inherently risky characteristic of space frames—a misconception of many non-engineers. On the contrary, the fact that the Hartford area roof was a space frame let it stay up as long as it did before it failed. The reason is that space frames, by their nature, have redundancy—several members and nodes in a space frame could be removed and the forces would reroute themselves to remaining members.

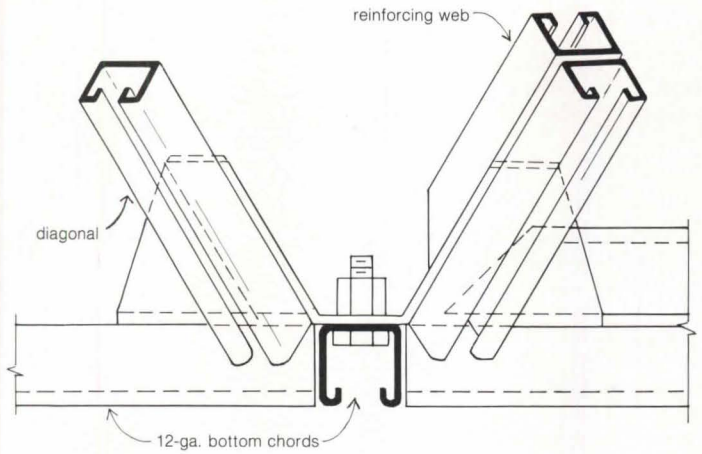
Careful study of connection details is critical with space frames—the engineer must understand the flow of forces and design the connection to accommodate them. Attempts to simplify without thorough understanding invite trouble. But, properly engineered by their designers, space frames hold promise of economy, firmness and delight.

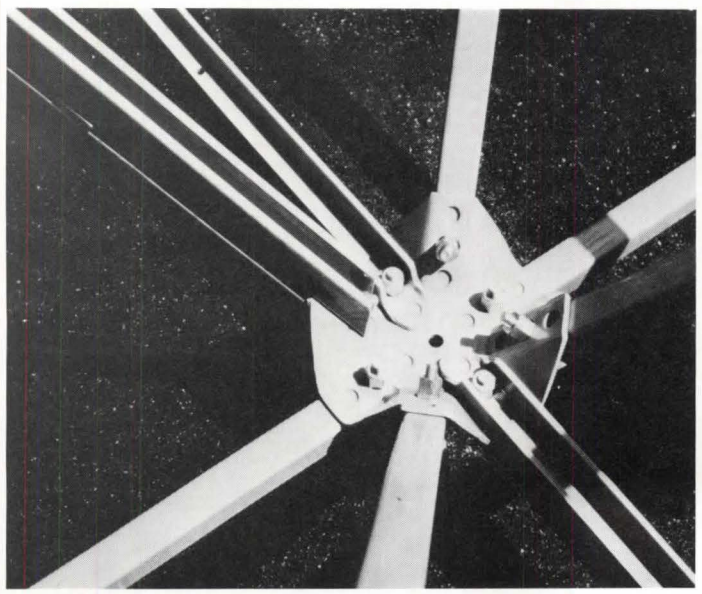


Designers choose different space frame geometries and members to optimize cost, achieve varied esthetic designs, and obtain requisite strengths. Top chords are in compression and bottom chords in tension; thus, longer and fewer chords can be used in the lower layer. Skewed chords save materials, make frame stiffer. Models (such as the one shown opposite of Continental Center's atriums) aid in visualizing involved geometries.

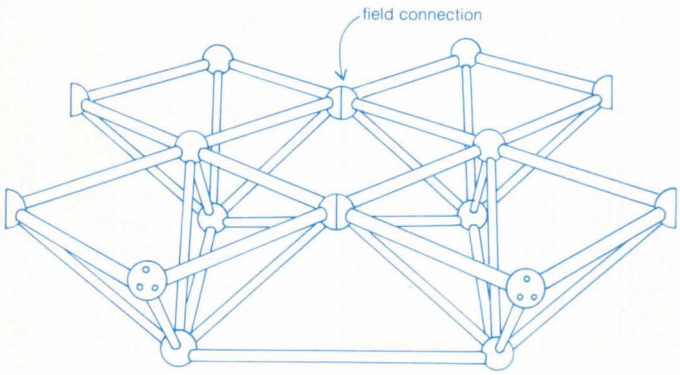
Manufacturers' space frames: varied esthetics, varied details, varied costs

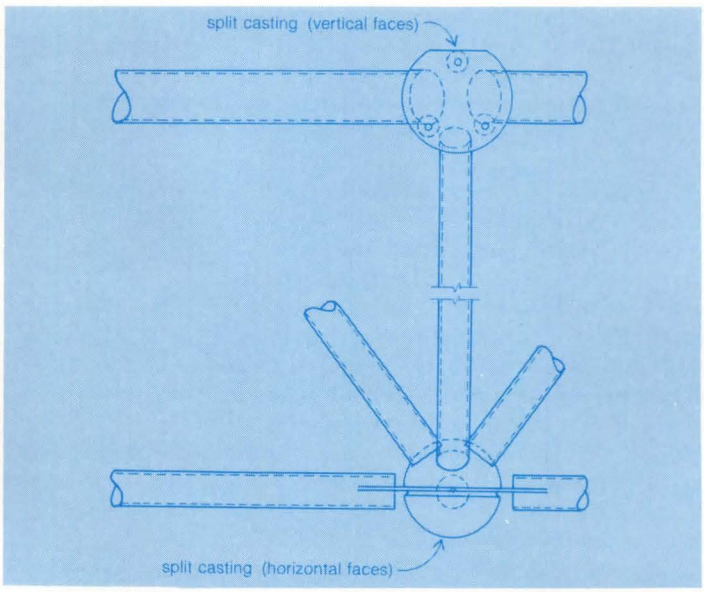
Unistrut's Moduspan system, marketed since the mid-'50s, uses 12-ga.-steel channels for both chords and diagonals. They are attached to ¼-in. steel plates crimped to form facets at 50 degrees for fastening the diagonals. Channels can be doubled to carry more load. Spans for normal roof loads are 40-60 ft, but can be more than 100 with doubled channels.





Split spherical castings with faces vertical in the top-chord layer and horizontal in the bottom-chord layer allow pyramids of the Unibat system to be shop-built and bolted corner-to-corner in the field. Separate bottom-chord members bolt to the pyramid apexes. Shorter top chords (which use less material) run diagonally with respect to bottom chords.



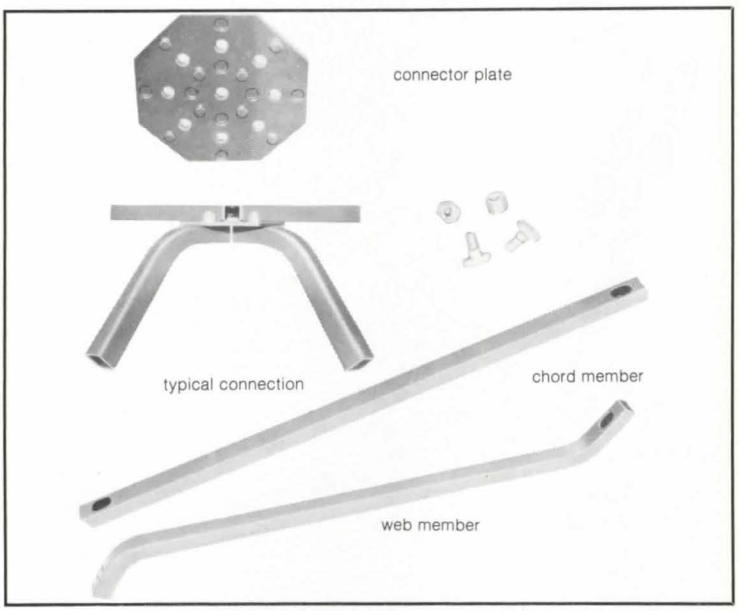


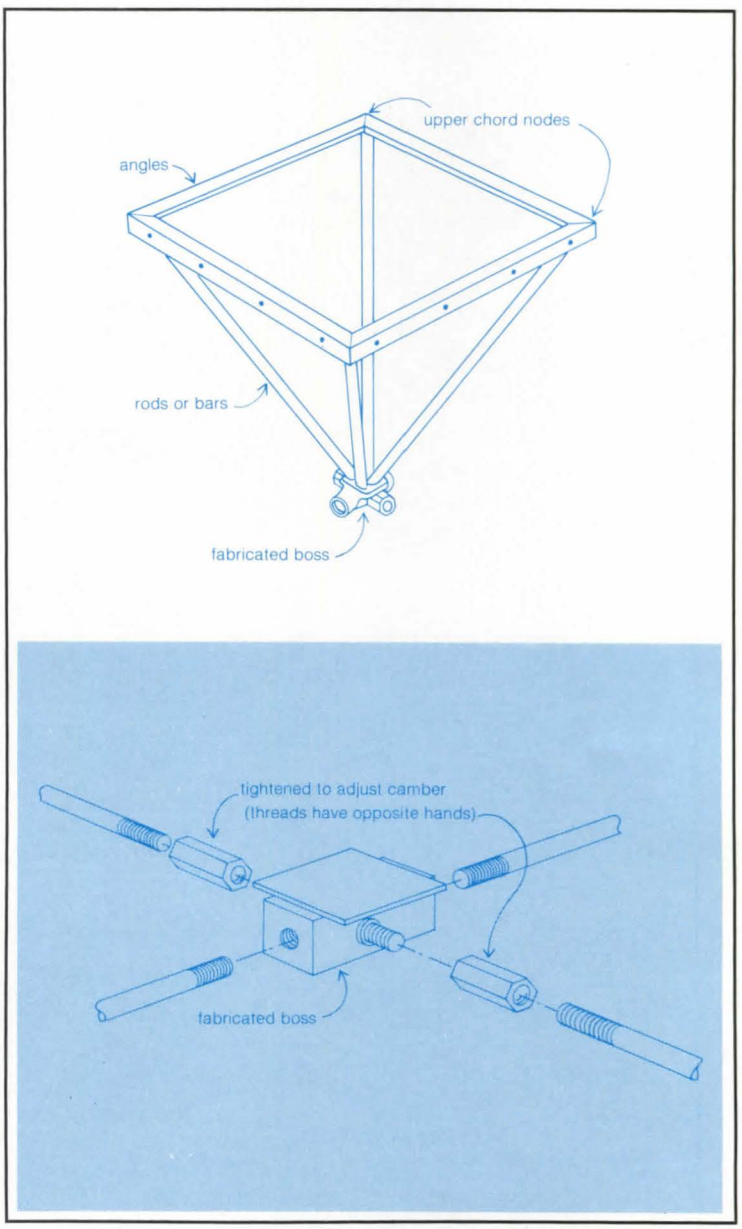
Two identical eight-flanged extruded aluminum hubs, with axes skewed 45 degrees and the two pieces bolted together through threaded solid center sections, form a single connector for either 2-in.- or 3-in.-square extrusions used as chords and diagonals of the Octa-Hub system by Space Structures. The square tubes are fastened to the hubs by plated steel bolts, and the angle of the diagonals can be varied to suit the design. Even three hubs can be combined for unusual pyramidal geometries.

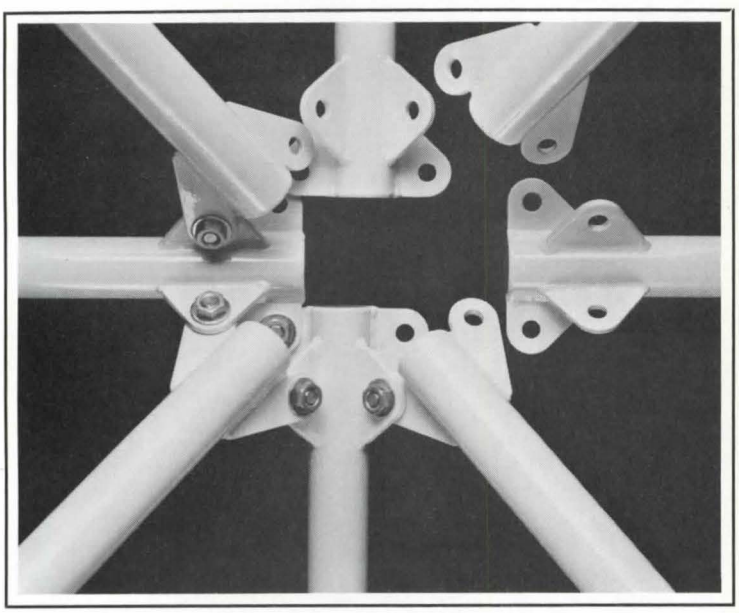
Uniqueness of the Powerstrut system is the universal flat plate connector which joins chords and diagonals, and which allows square, diagonal or triangular geometries. The simplicity is achieved by putting bends in the diagonals so they can be attached with a flat surface of the square tubing against the plate using shoulder bolts.

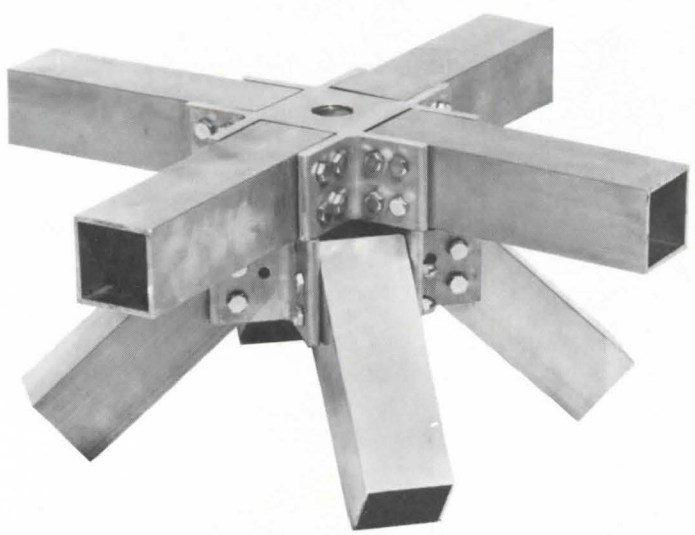
No central hub is required in the SuperStructures system, by Synestructics, Inc., which comprises round tubes with multiple tabs welded to them so that the tabs can be bolted in pairs to form a hinged connection. A typical nodal connection has 8 to 10 struts but some nodes may have as many as 26. Square, isosceles-triangle, and equilateral-triangle geometries are possible.

Space Deck is a shop-fabricated system of pyramidal units with angles for top chords and tubes (or bars) for diagonals. Pyramids are bolted together side by side. The apexes, which consist of threaded bosses, are connected by means of high-tensile rods threaded at the ends.





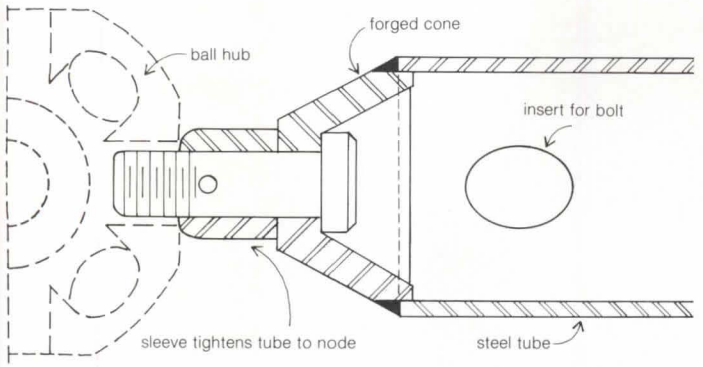


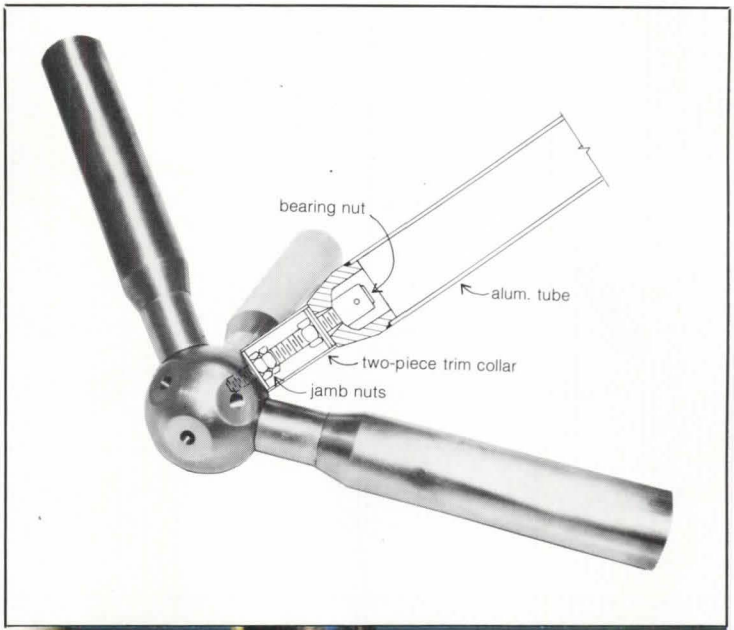


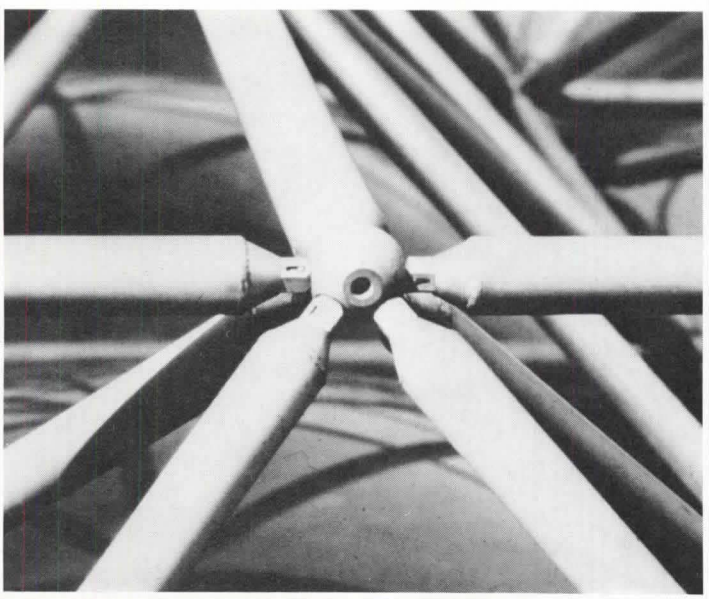
The first commercially available system, Mero, on the market since the '40s, has the distinctive cone-ended tube that some other systems have adopted in modified form. Its node is a spherical steel forging with flat facets and tapped holes. Members are round steel tubes with cone forgings welded at the ends. Bolts are inserted via an opening in the tube. Up to 18 members can be connected to a node.

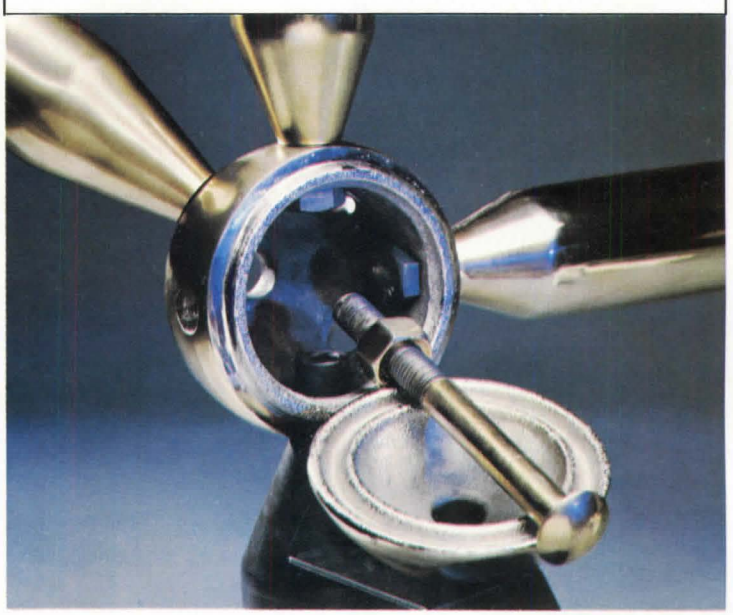
Orba-Hub uses round aluminum tubes attached to a solid aluminum spherical hub tapped to receive a plated steel threaded rod. After the rod is screwed into the hub by a wrench applied to two preset jamb nuts, a main nut is locked up against the end plug. A two-piece trim collar snaps around the threaded rod between the strut and the plug for a finished appearance. Modules generally are 8 to 14 ft.

The Spherobat system, the most recent development of Unibat (a French company with a U. S. subsidiary), has a hollow spherical cast steel node with a detachable cap. Round connecting tubes tapered to meet the design requirements of the project are drilled and threaded to allow for concealed bolted connections.

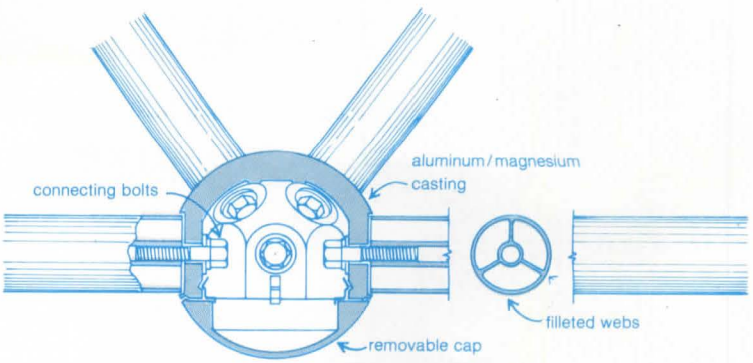




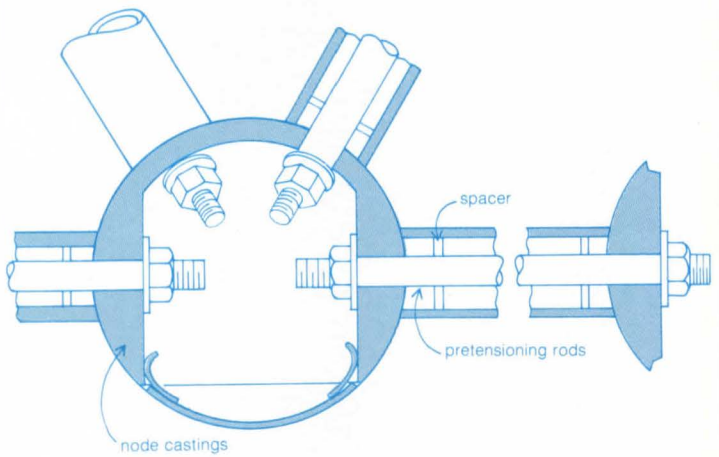


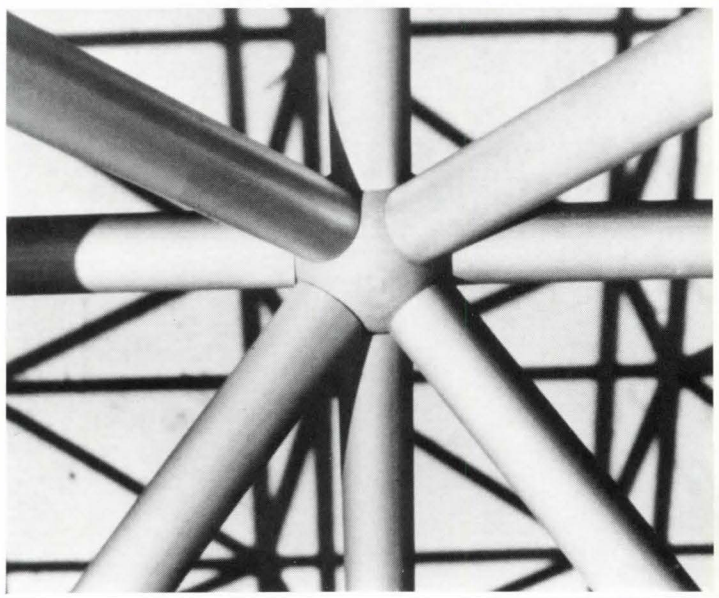


An aluminum/magnesium alloy casting seats the aluminum chords and diagonals of IBG's SpaceFrame system. At the end of each member, an internal tapped cylinder is attached to the tube wall by filleted webs. Stainless steel bolts connect members to the nodes at flat recessed areas. A removable cap snaps in place to conceal fasteners.

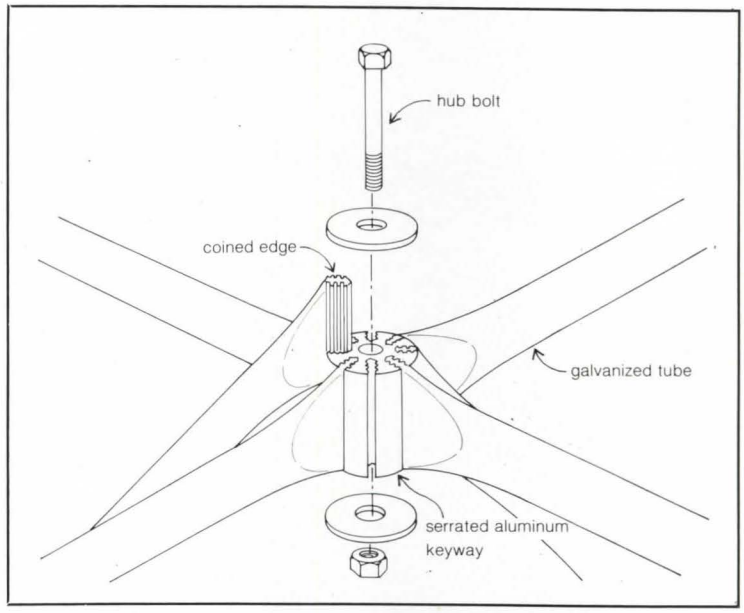


The pipe space frame system of PG Structures (which also designs custom space frames) consists of steel pipes, spherical castings with flat interior faces, and high-strength steel rods. These rods, slightly longer than the pipes, extend into the castings. When nuts on the threaded ends of the rods are tightened against the flat bearing surfaces, the pipes seat themselves on the castings and a mechanical connection between pipes and nodes results. A removable cover allows access to interior of the casting.

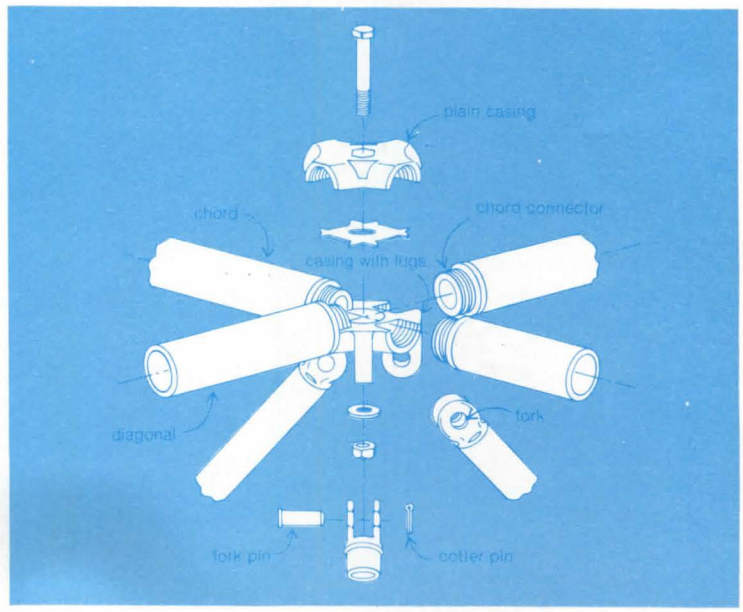




Butler's Triodetic system comprises an extruded aluminum connector hub with serrated keyways and galvanized steel tubes. Each tube end is pressed to form a coined edge that fits into a keyway. After tubes are inserted, washers are placed at each end of the hub, and a screw bolt is passed through its center and tightened. I-sections can be connected to stub plates for carrying roof structures.

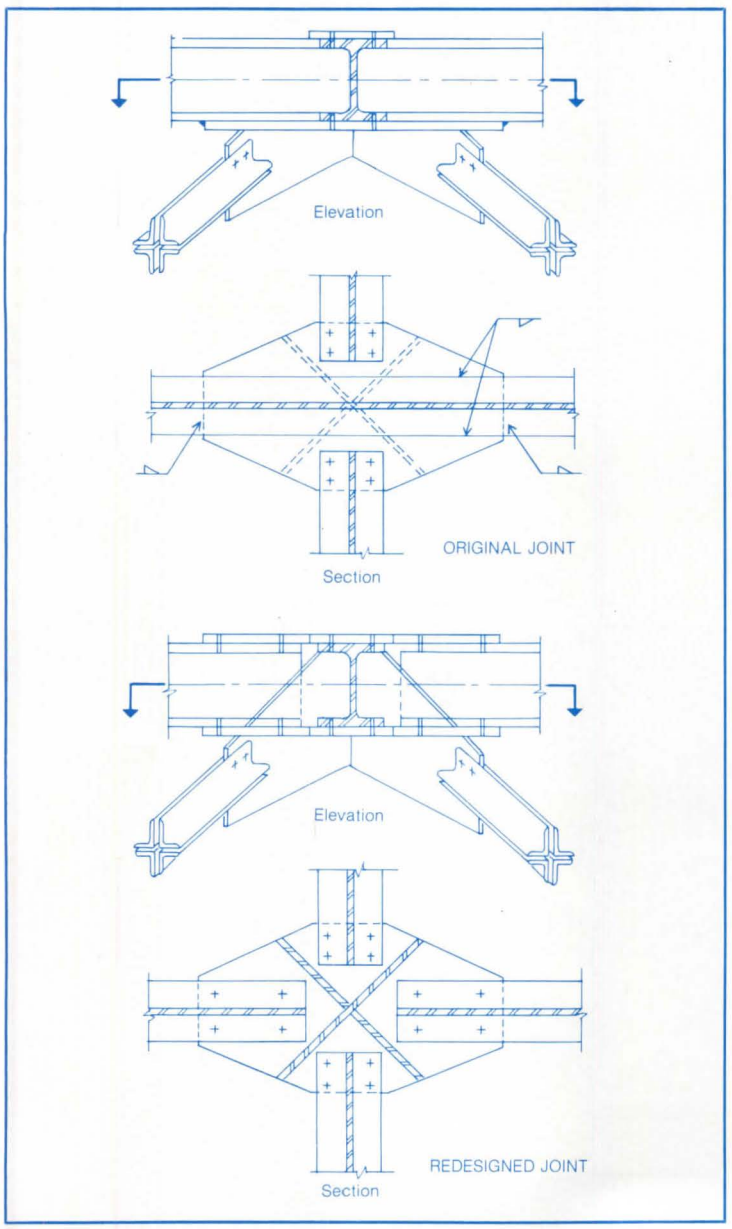


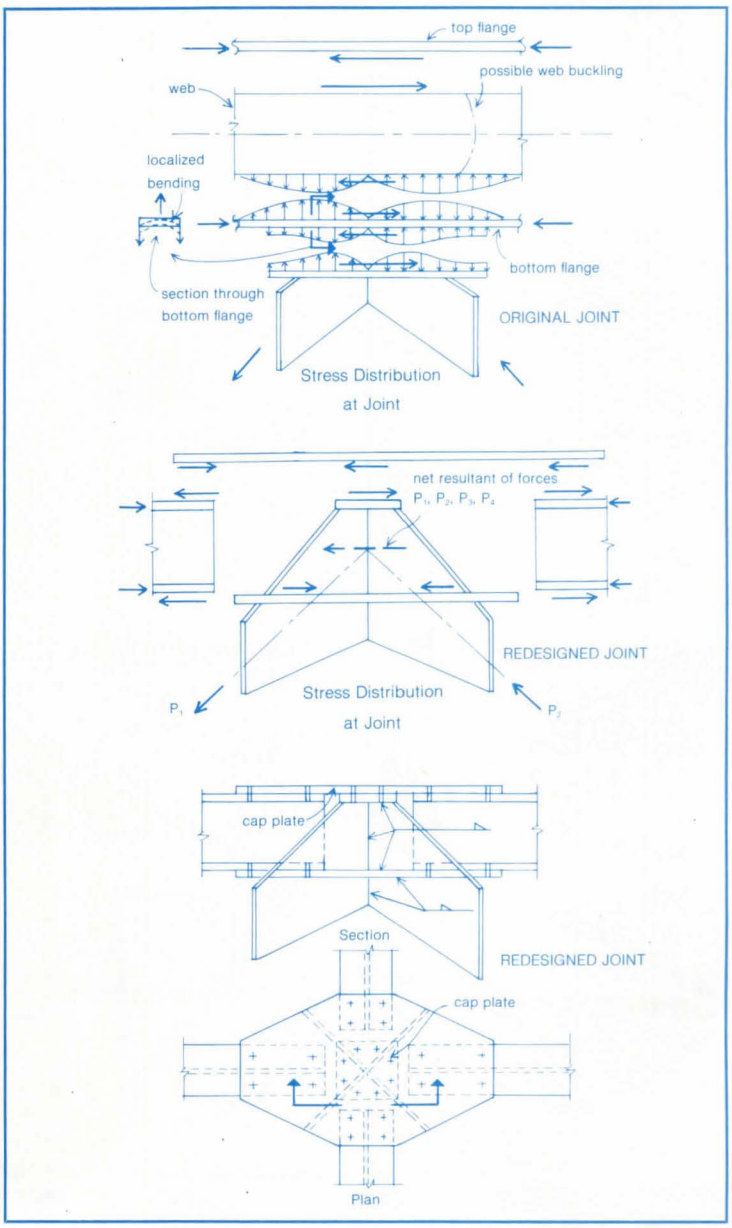
Connectors for the Nodus System are half-casings of cast steel with machined grooves on the inside. Forged steel connectors of the chords with irregularly pitched teeth engage the casings. Forks of the diagonals pin to ears of the inner casing. Since axes of the diagonals and chords do not meet at the centroid, some bending results.



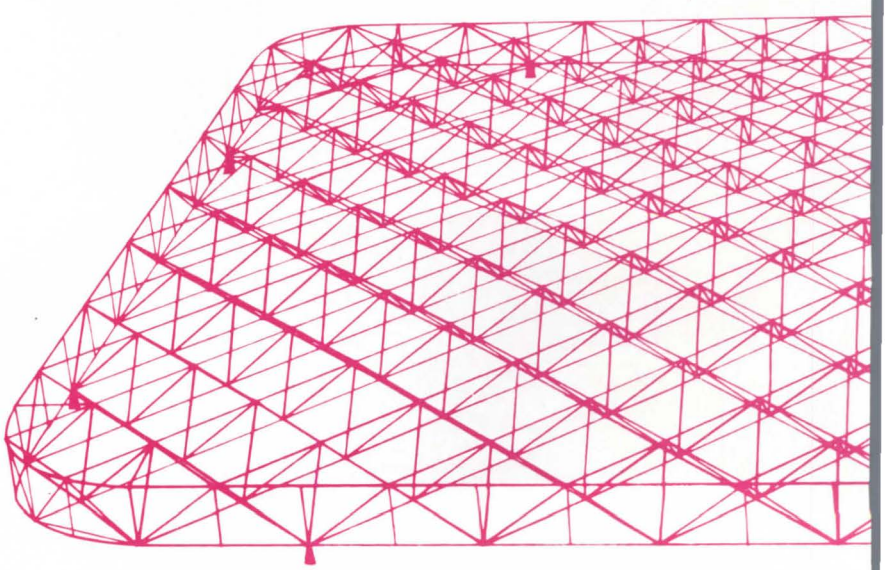
Joint design is critical to space-frame economy and safety

Cost of custom space frames is affected by the complexity of connections, so engineers try to simplify them. But to avoid problems, engineers must carefully consider the interaction of connecting pieces. For example, buckling could cause difficulty in the design labeled "original." Forces must travel from the diagonals through vertical plate connectors to a horizontal plate welded to the bottom flange of the chord; from the plate to the bottom flange, from flange to web, and from web to top flange. But the web has not been stiffened to resist buckling. The problem is avoided in a new joint, labeled "redesigned," that extends the plate connectors of the diagonals so diagonal forces and chord forces meet at the centroid of the wide-flange section.



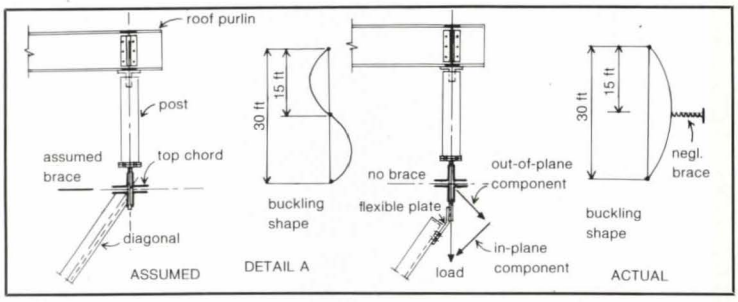


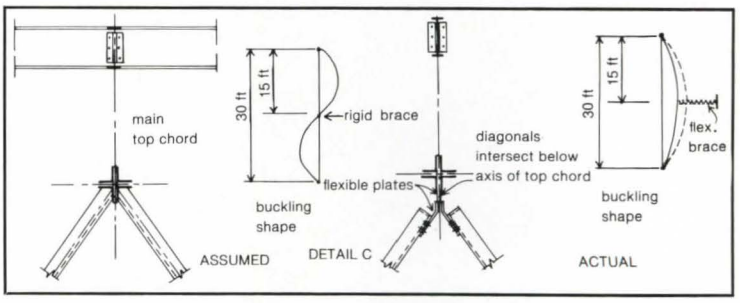
Large-scale economies were achieved in a large-scale arena by manipulating geometry

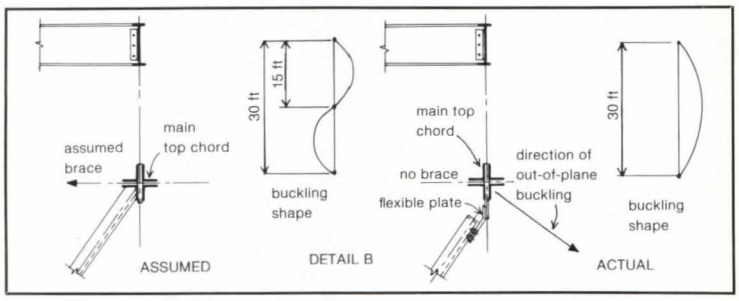


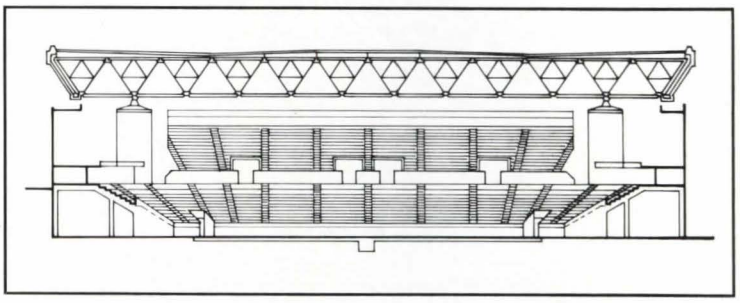
The anatomy of a space-frame failure

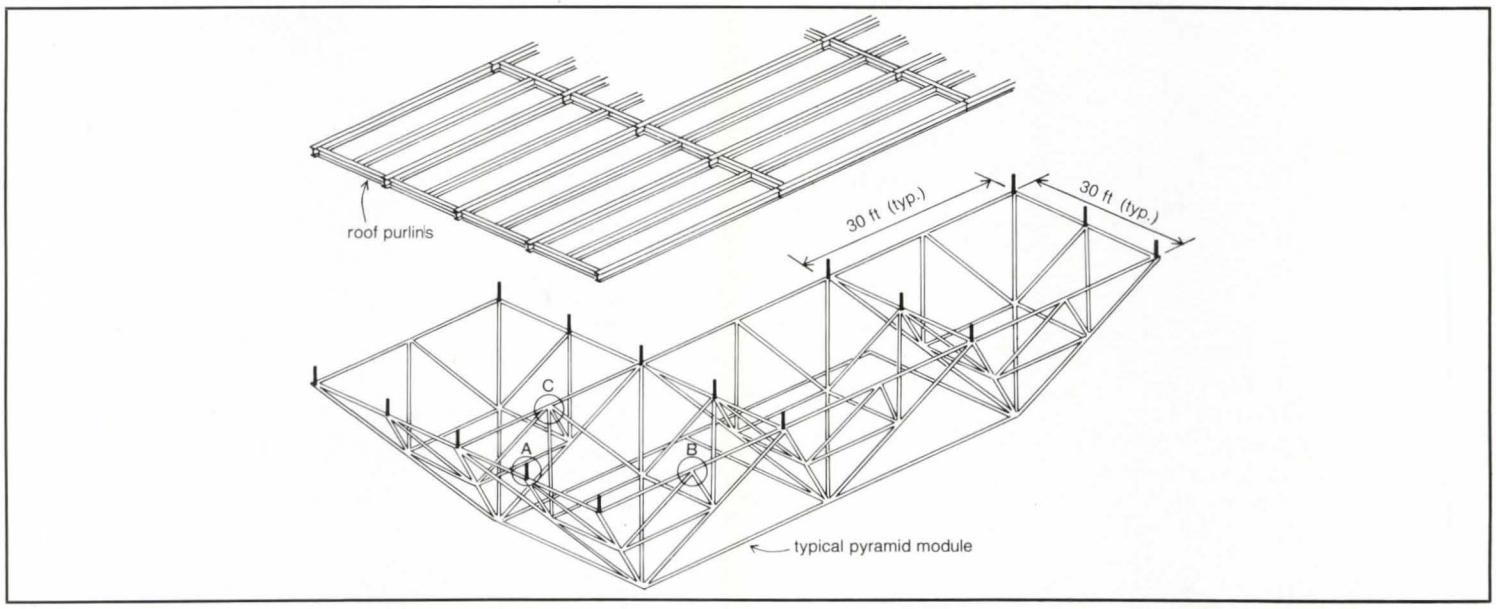
A report on the Hartford civic arena failure has helped allay concerns of architects and owners about space frame structures. This report by Lev Zetlin Associates attributed the cause to the nature of the connections between diagonals and top chords, and between top chords and roof beams. While the designers assumed that the diagonals braced the top chords in the horizontal plane, the LZA report showed that the bent-plate connection between diagonals and chords was too flexible. Furthermore, the roof beams could not brace the chords in their direction because they were raised above the chords and supported on posts. Fortunately, said LZA, the inherent redundancy of space frame structures kept the structure from failing much longer than the design justified.

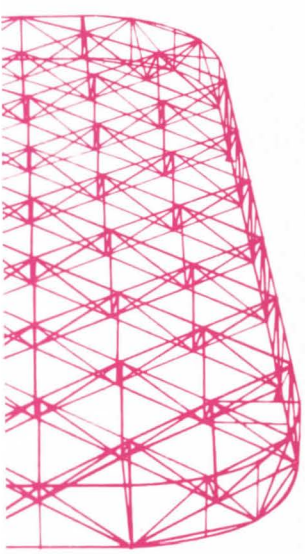


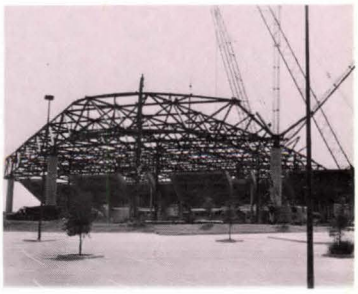










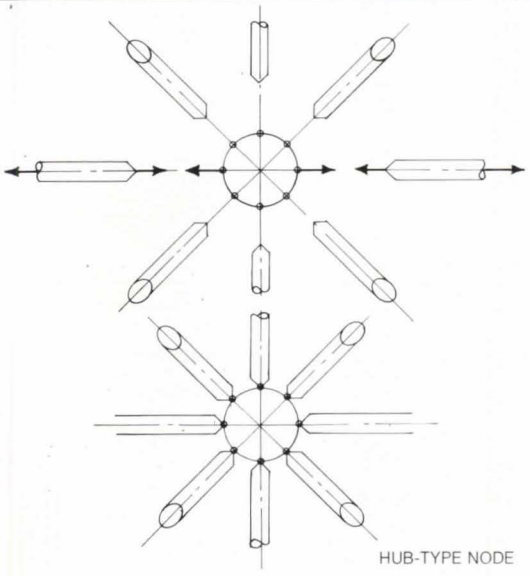


Though architects may like space frames for their visual interest, they will discover that their use can save the owner substantial costs. An outstanding example is the custom space frame for Reunion Arena in Dallas for which Harwood K. Smith & Partners were architects. The space frame was designed by Paul Gugliotta, who heads his own consulting firm as well as PG Structures. Skewed grids of the 420-ft-square roof, which has only eight columns, stiffened the space frame and cantilevers gave beneficial stress reversals. Compared with a two-way truss system, the space frame saved $900,000 in steel cost and used 30 per cent less material.

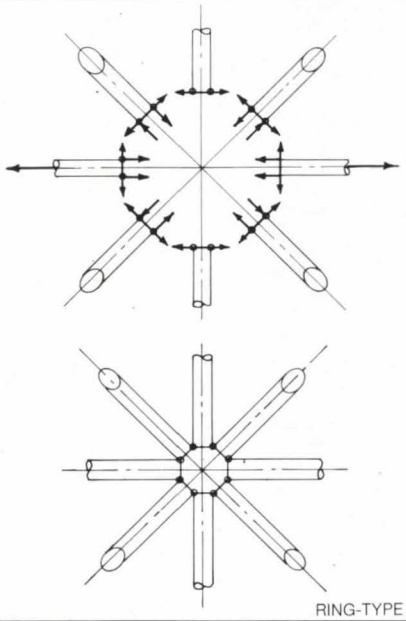
Expansion joints and node connections are critical design details

The type of node, itself, can affect the required strengths of frame members. For example: with ball and plate-type connectors, the axial forces in chords and diagonals transfer through the connector to in-line (opposite) members to effect a balance. Since the forces in space-frame members vary, member strengths also can vary. When members connect to a ring-type node, however, for a force in a member to be equilibrated, it must transfer from member to member around the ring to reach a member with a balancing force. All member ends thus must be sized for the largest forces transferred from any individual member.

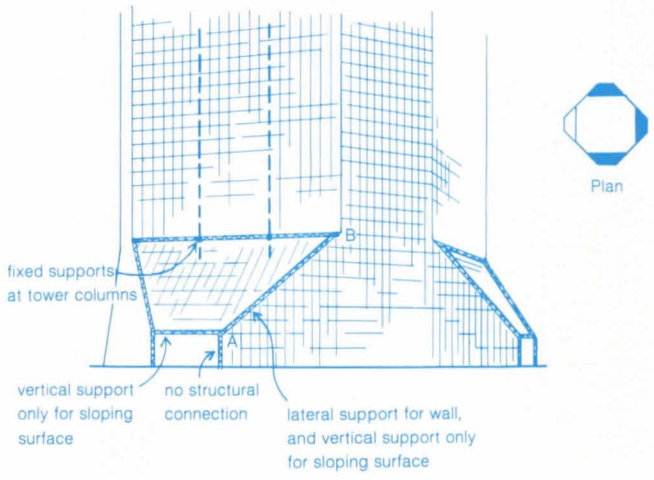
Space frames require expansion joints when movement could cause buckling problems. At Continental Center (top), architects Swanke, Hayden, Connell wanted to avoid, for appearance' sake, a vertical expansion joint where atrium side walls abut the tower. Drawings explain LZA engineers' novel solution. At bottom is an expansion joint for the Unibat split-casting system.



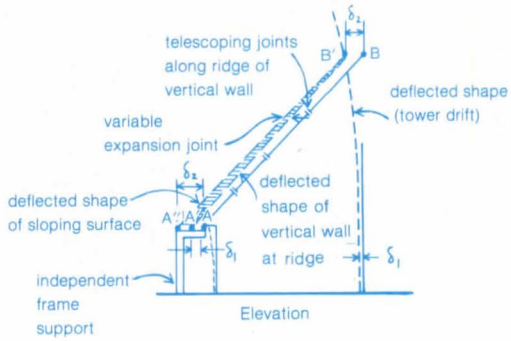
HUB-TYPE NODE



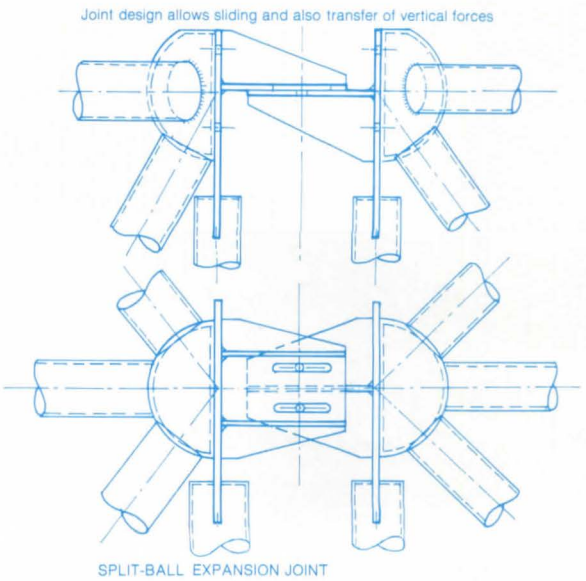
RING-TYPE NODE



CONTINENTAL CENTER



At the bottom of its slope, the atrium roof slides on a bearing plate, and the roof's translation is parallel to its original position. The walls deflect as shown, and the gap between walls and roof is closed by a variable expansion joint..

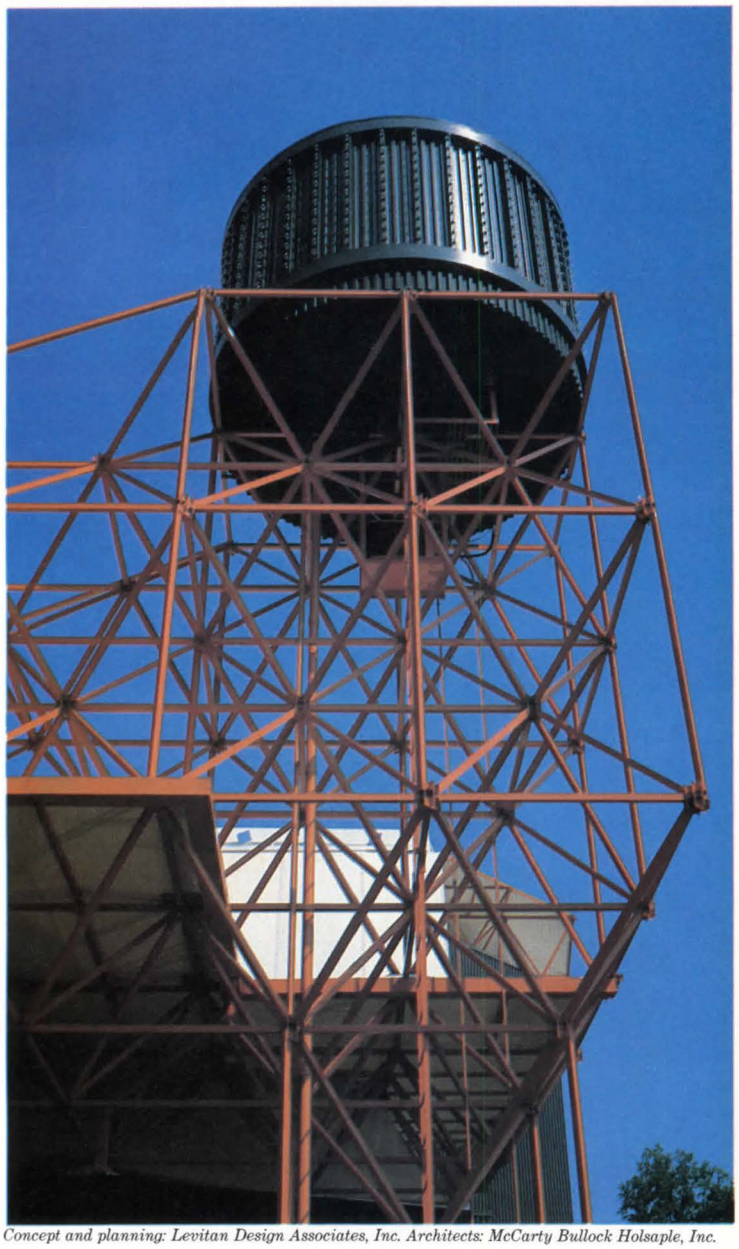


SPLIT-BALL EXPANSION JOINT

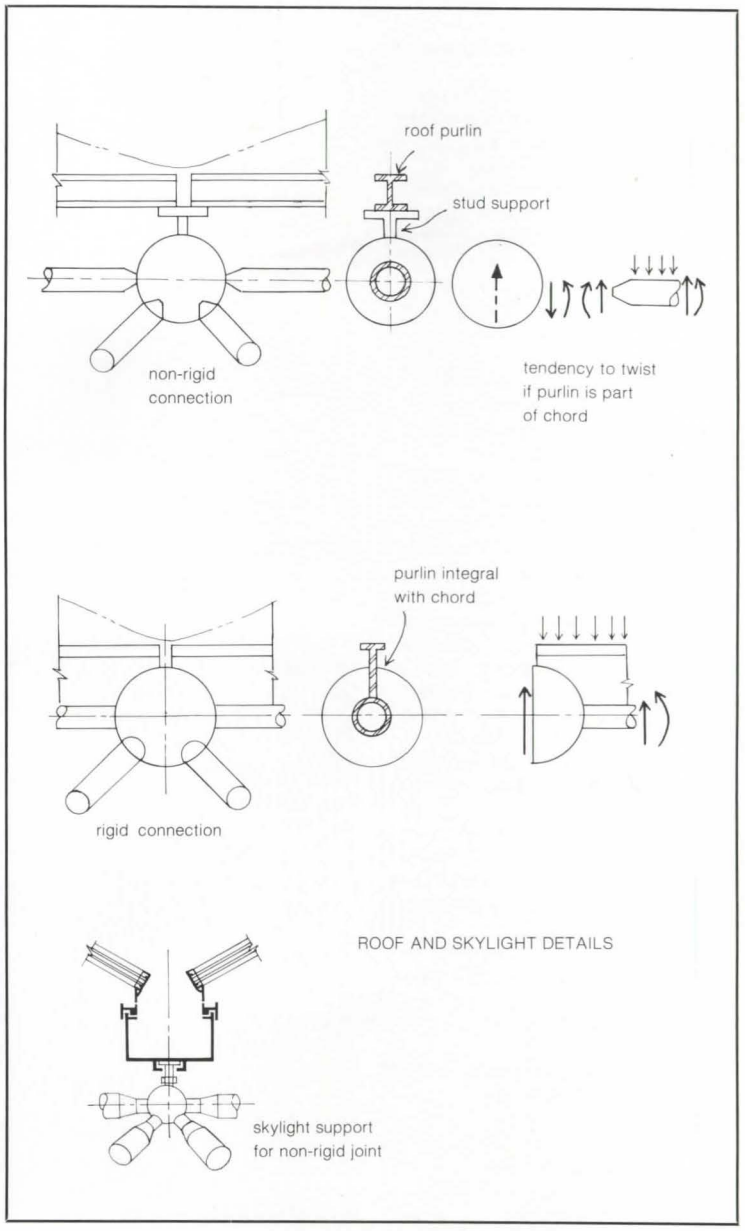
Other decisions: choice of finish and roof support

An orange-red coating enlivens the Federal Express Pavilion at Knoxville's Expo. Brass and chrome platings offer (at a fair premium) an ambience of jewelry. On aluminum, brass enamels and clear acrylics simulate these finishes. Economical baked acrylic finishes last well enough indoors. Greater durability is achieved with fluoropolymers, urethanes, epoxies and fusion-bonded powder coatings.

Designers can use T-sections combined with tubes for top chords to support roofs directly provided that the chord-node connection does not allow rotation when bending loads are applied to the chords. A solution for ball-chord connections that can rotate is a stud, with a plate on top, attached to the ball which in turn supports a roof purlin or skylight frame.



Concept and planning: Levitan Design Associates, Inc. Architects: McCarty Bullock Holsaple, Inc.



New products

For more information, circle item numbers on Reader Service Card, pages 191-192

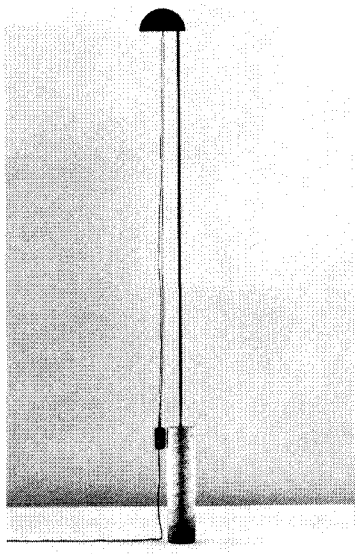
Lamps are the first collaboration of young designers with Sointu

American designers Gary Payne and Stan Magnan have worked for the past three years on a variety of interior, graphic and industrial designs, with the latest result being this sculptural new line of lighting fixtures. The seven piece collection (only six shown here) marks the first of a forthcoming series of collaborations on new-product design by Sointu and young designers.

1. Echo floor lamp: concrete base; aluminum stem and steel head, both of black enamel; 300-Watt tungsten halogen lamp; marble base optional; price $450.
2. Scoop accent lamp: cold rolled steel with black enamel finished body and acrylic handle; 75-Watt Edison-type bulb; price $100.
3. Nomad mobile up-light: 22-Watt fluorescent bulb contained in concrete base with edging of expanded neoprene, set on nylon casters; acrylic diffuser; price $265.
4. Carmelite table lamp: concrete base supports shade similar in design to Scoop; 75-Watt standard tubular bulb; marble base optional; price $225.
5. Khufu suspended lamp: monofilament line suspends black enameled steel housing, with "Cor-X" diffuser panels; 100-Watt clear globe; retail price $245.
6. Toltec desk or table lamp: concrete base; cantilevered hood of aluminum with black enamel finish; uses F13T5 fluorescent bulb; price $290.

Each lamp is individually crafted in the Magnan/Payne Manhattan studio, and is exclusively distributed by Sointu, owned by Kipp Trafton (see RECORD September 1981 pages 102-105). Sointu, New York City.

Circle 300 on reader service card
More products on page 147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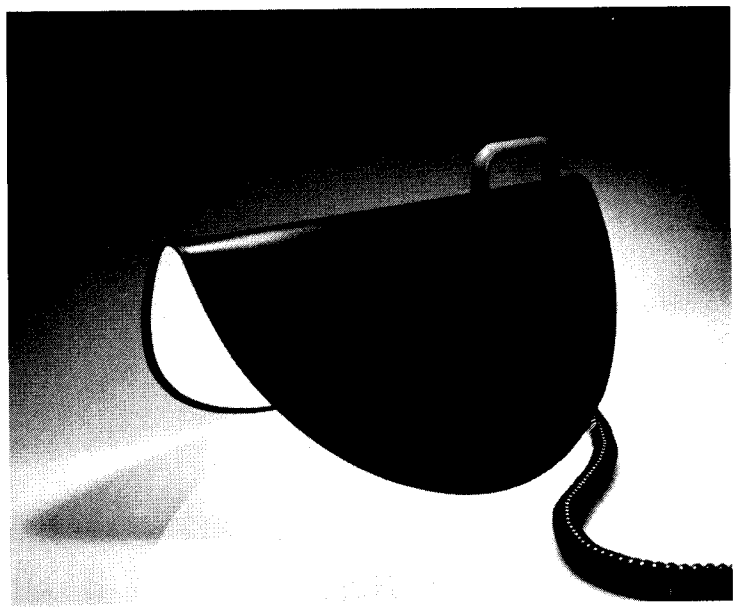
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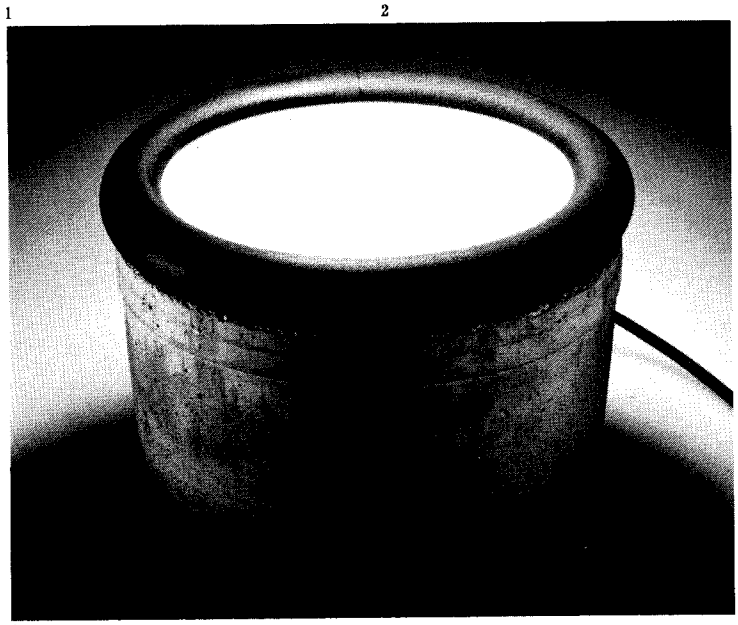
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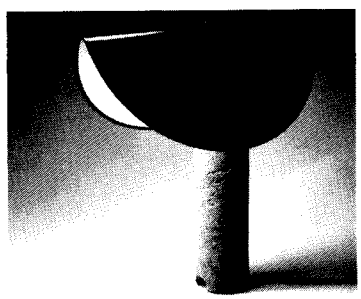
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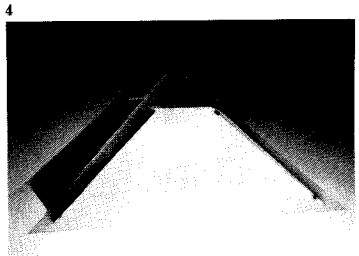
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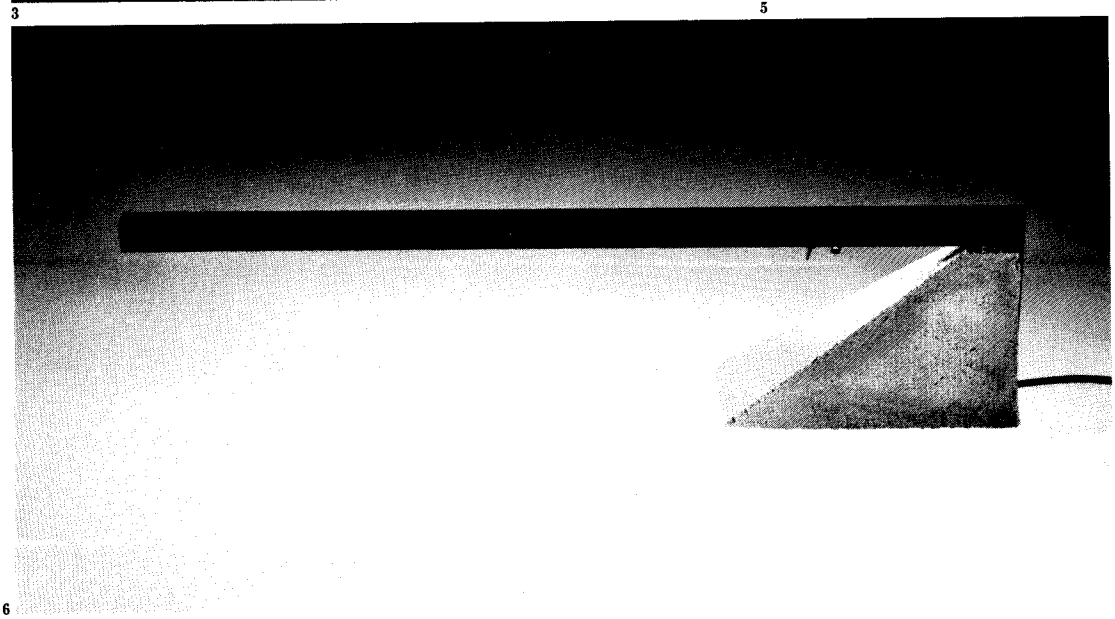
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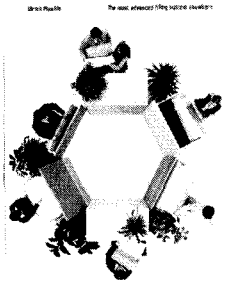
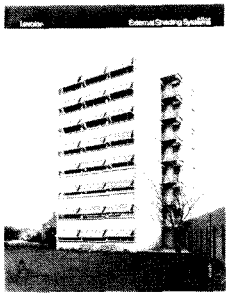
Product literature

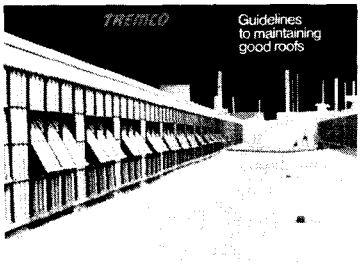
For more information, circle item numbers on Reader Service Card, pages 191-192



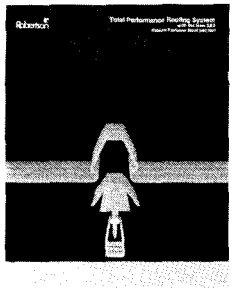
Planfiles
A 12-page four-color catalog describes this line of vertical planfile equipment. Featured are built-in fire protection, water resistance, and pin tumbler lock assembly. Ulrich Planfiling Equipment Corp., Lakewood, N.N.
Circle 400 on reader service card



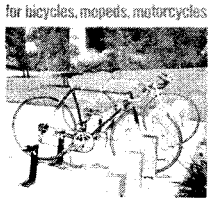
External shading
A line of external shading systems for residential and contract use is described in a 4-page color brochure. Each system uses a retractable, maintenance-free awning or sun screen and a headbox. Levolor Lorentzen, Inc., Lyndhurst, N.J.
Circle 401 on reader service card



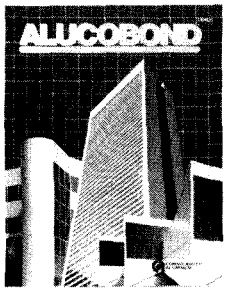
Roof maintenance
A 20-page four-color brochure explains advantages of cold-process coatings compared with hot bitumens coatings. Included is an analysis of most common roofing problems with suggested solutions. Tremco, Cleveland.
Circle 402 on reader service card



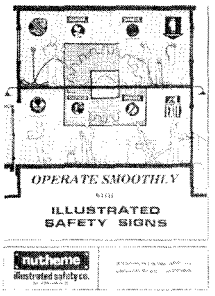
Metal roofing
A 16-page brochure describes a roofing system which has a thermally responsive hidden clip, and sub-girt assembly, to lock roof sections in place. Examples of retrofitted older building roofs are also included. H.H. Robertson Co., Pittsburgh, Penn.
Circle 403 on reader service card



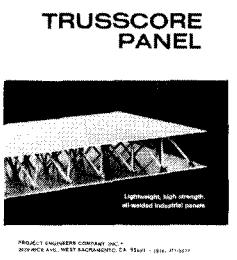
Bike racks
An 8-page color catalog describes a new design for bicycle, moped and motorcycle racks. A variety of the most commonly used locking devices is illustrated. Installation layouts and product descriptions are included. Rally Racks, Sonoma, Calif.
Circle 404 on reader service card



Aluminum panels
A 20-page color brochure illustrates the adaptability of a composite material which consists of two sheets of aluminum with a thermoplastic core. Photographs show applications for exteriors, interiors and retrofits. Consolidated Aluminum, St. Louis.
Circle 405 on reader service card



Graphics
A 23-page catalog features information on safety signs. The signs are silk-screened, stoved enamel on aluminum, measuring 10- by 12-in. and are in OSHA-approved colors. Nutheme Illustrated Safety Co., Elk Grove Village, Ill.
Circle 406 on reader service card



Panels
A 16-page brochure describes lightweight *Trusscore* panels for structural uses. Detailed are panels which may be custom made in sizes up to 10- by 40-ft with an open core for conduit or insulation. Project Engineers Co., West Sacramento, Calif.
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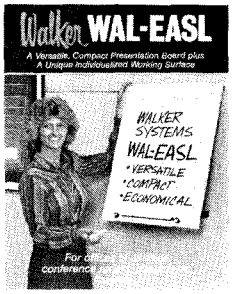
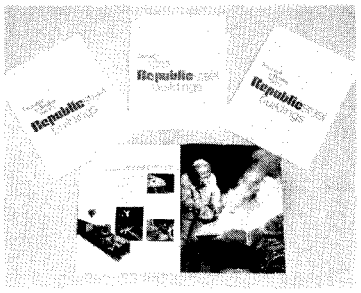
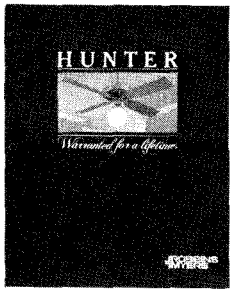


Easels
A 4-page, four-color brochure describes a versatile easel which can be mounted on a wall and used either as a presentation board or as a work surface. A variety of features and accessories is illustrated. Walker Systems, Inc., Duluth, Minn.
Circle 408 on reader service card



Building systems
A 16-page color brochure outlines the company's steel building systems. Included is information on a full selection of rigid-frame, tapered-beam, and post-and-beam structures and accessories. Republic Buildings Corp., Van Wert, Ohio.
Circle 409 on reader service card



Ceiling fans
A 20-page four-color brochure describes and illustrates ceiling fans for residential and contract use. Pictured are low profile light kits, Tiffany globes, and reverse-air blades. Robbins & Meyers, Inc., Memphis, Tenn.
Circle 410 on reader service card

Wind bells
Cosanti Originals, bronze and ceramic windbells designed by Paolo Soleri, are described in an 18-page color catalog.
The catalog may be obtained by sending $3.00 to ZONA Gallery, 484 Broome St., New York City 10013.

Introducing the innovative Sylvania Super Metalarc™ 3K Lamp.

If your place of business looks a little blue, it may not be the decor, but maybe the lighting. That's why we invented a new line of metal halide lamps. The Super Metalarc 3K family—another Sylvania breakthrough in lighting technology. The lamps use a unique rare earth phosphor specially developed to produce rich, warm, incandescent-like color. For everything from retail stores to offices. Or any place that needs good color rendition.

The lamps also offer dazzling energy savings. At up to 93 lumens per watt, they're among the most efficient warm-color H.I.D. sources around. What's more, they produce so much light, you usually need fewer fixtures to maintain high lighting levels. And with average life ratings of up to 20,000 hours, it means fewer lamp changes and lower maintenance costs as well.

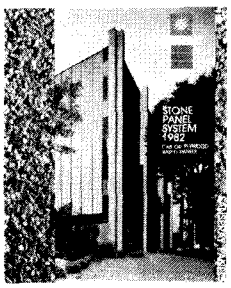
In addition, these lamps come in 175W, 250W and 400W sizes for horizontal operation in low profile H.I.D. luminaires—so there's plenty to cheer about.

For more information see your IED Independent Electrical Distributor, or write or call GTE Products Corp., Sylvania Lighting Center, Danvers, MA 01923 (617) 777-1900, Ext. 2650.

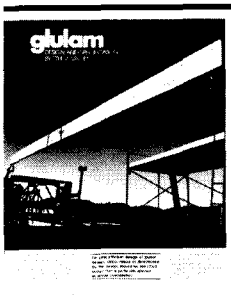
SYLVANIA Industrial/Commercial Lighting GTE

Circle 59 on inquiry card

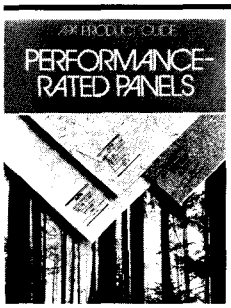
Product literature *continued*



Stone panels
A four-color 8-page brochure describes a line of natural stone panels, available in 4 textures and 9 colors on a CAB or plywood substrate. Installations are pictured with illustrations of the manufacturing process. Sanspray Corp., Santa Clara, Calif.
Circle 411 on reader service card



Glulam design
A 6-page guide explains a method for designing glue-laminated timbers by stress rather than by wood species, to determine stress values for precise engineering criteria. American Institute of Timber Construction, Englewood, Col.
Circle 412 on reader service card



Performance-rated panels
A 12-page guide describes APA's performance-rated panels, which include conventional veneered plywood, composite panels, and non-veneered panels such as waferboard and oriented-strand board. American Plywood Association, Tacoma, Washington.
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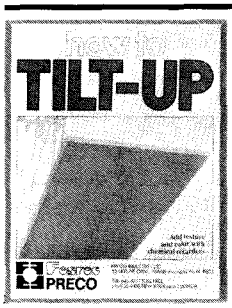

Concrete
A 4-page illustrated guide to tilt-up construction gives step-by-step instructions for casting concrete. The use of chemical retarders to expose the aggregate is shown in job-site photographs. Preco Industries, Ltd., Plainview, N.Y.
Circle 414 on reader service card

Heat exchangers
A 4-page four-color technical bulletin describes stainless-steel, spiral-wound heat exchangers which are adaptable to all liquid, gas or vapor systems for liquid heating, cooling or condensing functions. Portescap U.S., West Caldwell, N.J.
Circle 415 on reader service card

Dampers
This 20-page catalog describes the engineering, manufacturing and testing capabilities of control and isolation dampers for hvac systems in nuclear power plants. Quality Air Design, Cincinnati, Ohio.
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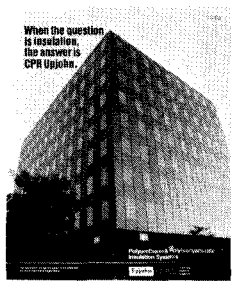

Insulation
An 8-page color brochure illustrates insulation applications and compares the insulating value of polyurethanes to other products. Various types of insulation are described with major test ratings. The Upjohn Co., Kalamazoo. Mich.
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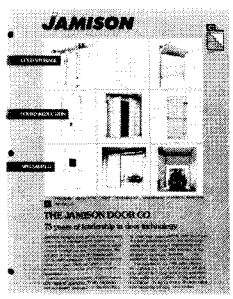

Special doors
Photographs and text in an 8-page brochure explain the features of cold-storage, sound-reduction and specialized doors. Installations are pictured and illustrate the variety of uses for each type. Jamison Door Co., Hagerstown, Md.
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Graphics
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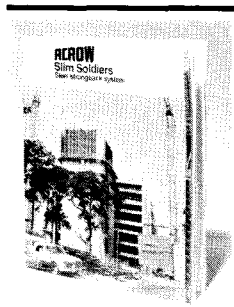
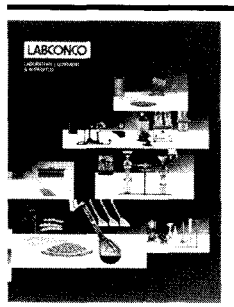


Steel concrete forms
A 20-page four-color booklet describes a steel system for job-built concrete forms. Included are photos showing the range of structures which use this system. Line drawings, graphs and charts detail typical applications. Acrow Corp. of America, Carlstadt, New Jersey.
Circle 420 on reader service card



Laboratory equipment
A four-color catalog covers over 40 products in 5 lines of equipment. Included in the product lines are fiberglass laboratory hoods, safety enclosures and freeze-dry apparatus. Labconco Corp., Kansas City, Mo.
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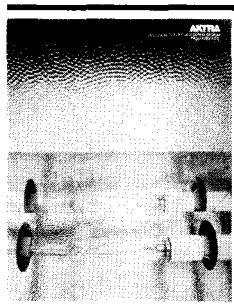

Floodlights
A 12-page four-color brochure details a cut-off reflector system for outdoor lighting applications. Three fixtures make up the system: one for industrial and general light; one for athletic fields; and one for commercial applications. Wide-Lite Corp., San Marcos, Texas.
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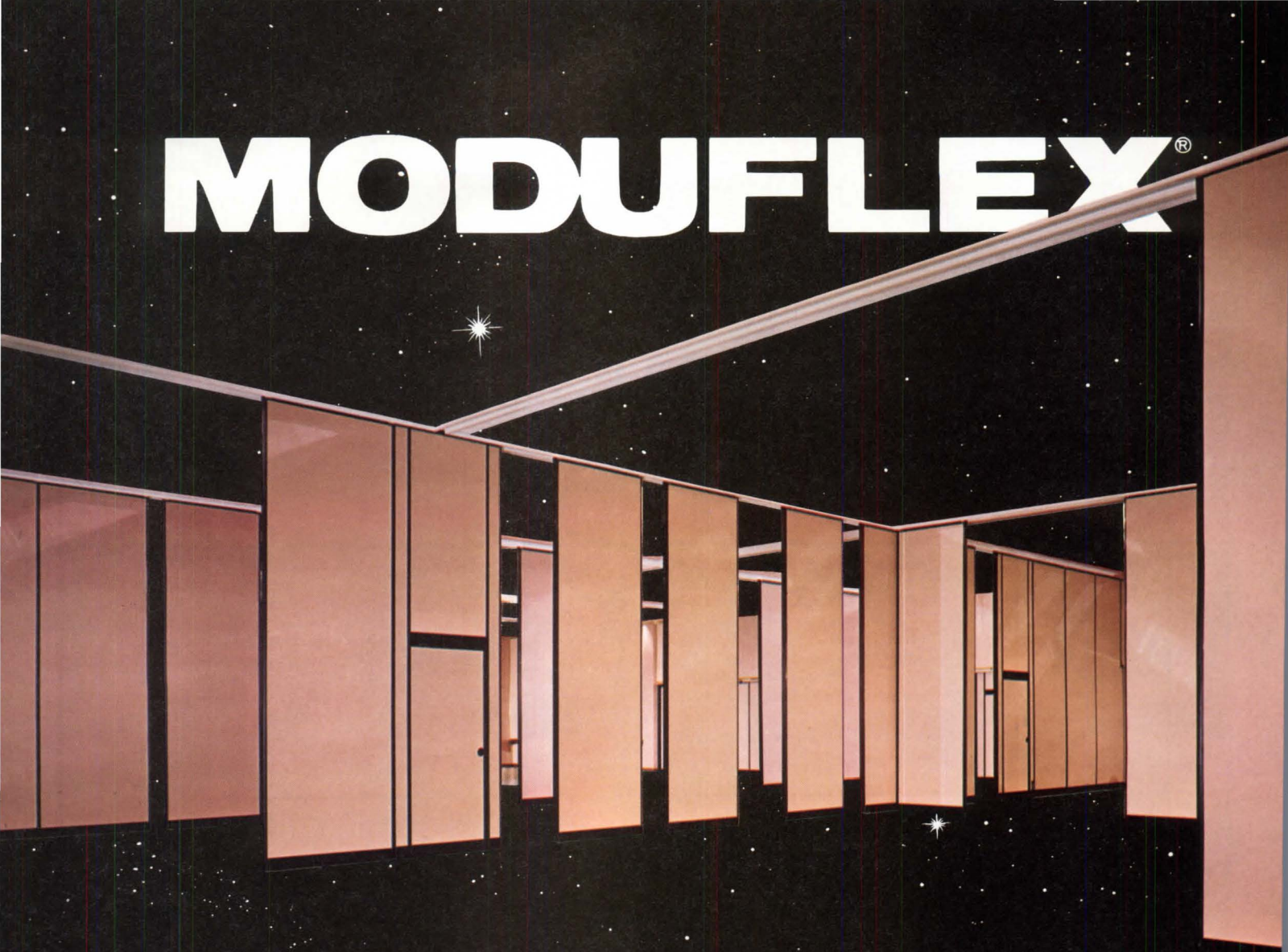

A change of space.

It's a tough job to effectively separate the enthusiastic sounds of different groups of people using adjoining spaces.

Panelfold has engineered a system of operable acoustical panels which are sealed so perfectly to each other, to the floor and to the top track, that they have been field tested to NIC45... NIC60 with two parallel walls.

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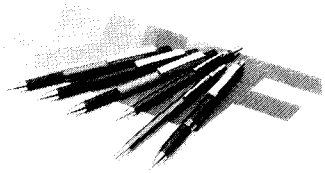
Continued from page 136



Writing pencils
Intended specifically for writing, "XF Fineline" pencils from Castell feature contemporary shapes and a pressure proof tip for writing comfort. Various models, in different lead thicknesses, come with black, red, blue, bronze, or black with silver barrels. Faber-Castell Corp., Newark, N.J.

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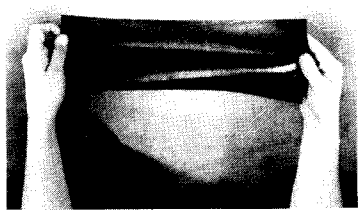

Liquid roof coating
Elastaseal elastomeric coating for flat roofs has a stretch factor of 400 per cent. A formulation of tars and urethanes, it can be sprayed, rolled or painted on, drying to a thickness of 40 mils. London Chemical Co., Columbus, Ohio.

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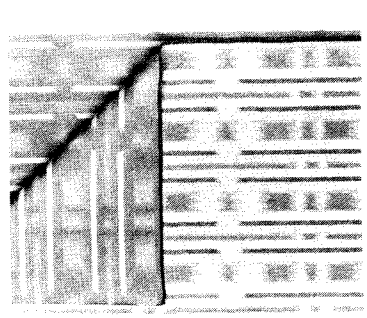

Contract fabrics
A compact box contains 225 fabric squares, samples of materials used in such contract installations as the Metropolitan Museum of Art and the Baghdad Sheraton. There is an initial $50 charge for the kit; new fabrics are added at no charge. Brunschwig & Fils, Inc., New York City.

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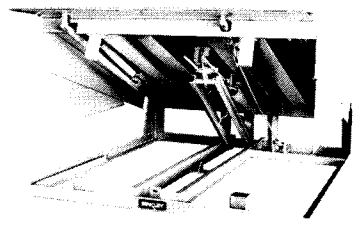
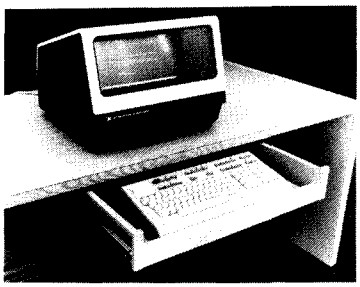


Dock leveler
Binkley offers a series of dock levelers that are convertible after installation from manual operation to several forms of power assistance without welding, cutting or removal. Units are available in widths of 6- and 7-ft, and in lengths of from 5- to 10-ft. Binkley Co., Warrenton, Mo.

Circle 306 on reader service card

Continued on page 149



Keyboard drawer
Designed to work with any 29-in.-high work surface offered in the "2000 System" from Corry Jamestown, this 4½-in.-high CRT keyboard drawer can be placed directly beneath the display unit. Mounted on ball bearing slides for easy operation, the drawer can be locked in two open positions controlled by finger-tip release levers. Corry Jamestown Corp., Corry, Pa.

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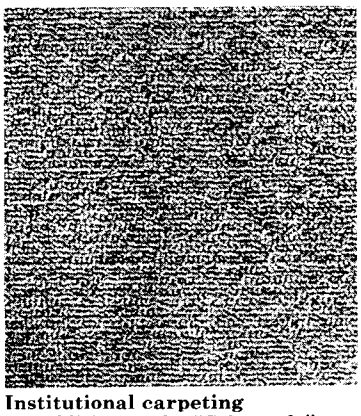

Institutional carpeting
An addition to the "Colonnade" line of commercial carpeting, "Monitor" is a textured loop, *Ultron* nylon floor covering specifically recommended for hospitals, schools, hotels, and other high-traffic applications. The carpet is rated Class A under ASTM E-84, with a Flame Spread of 25 and Smoke Density of 75. Built-in static control reduces shocks and lowers soil attraction. "Monitor" is offered in eight neutral shades, each a heathery coloration achieved through yarn dyeing and air entangling. Collins & Aikman, New York City.

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Surrounded by cropland on the outskirts of a farming community, this private residence is, as stated by the architect, "a response to the historical and physical characteristics of its site. Its sloped roof areas are covered with silver gray TCS (terne-coated stainless steel), suggesting the color and form of traditional rural architecture."

In addition, TCS satisfied the owner's stated need for, "a maintenance-free roofing material that will last several lifetimes."

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Lee Residence, Northeast Arkansas
Architect: Polk, Stanley, Gray, Architects, Ltd.
Little Rock, Arkansas
Roofer: Gerald Rooks Contractor
McCrory, Arkansas
Photographer: Hursley & Lark

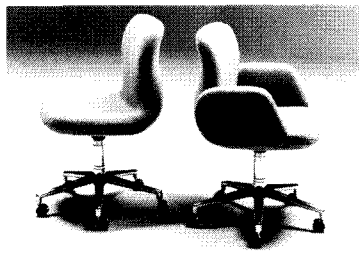
FOLLANSBEE
FOLLANSBEE STEEL CORPORATION
FOLLANSBEE, WEST VIRGINIA

Circle 62 on inquiry card

Continued from page 147

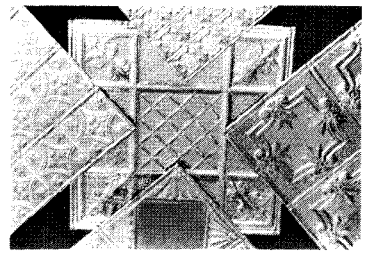
Tile grouts
Colored grouts and joint filler have been added to the "CeramicUS" title product line from United States Ceramic Tile. The seven new earthtone grouts include natural gray, black, white, char brown, straw amber, brown, and antique white. Grout and filler come in 10- and 25-lb bags. The United States Ceramic Tile Co., Canton, Ohio.

Circle 307 on reader service card



Work station chair
A mid-size seat, the "Task Chair" features a flexible back achieved with a concealed mechanism. A spring steel device self-adjusts to the sitter's posture and back pressure. The chair is available with either upholstered foam arms or without arms, for secretarial through mid-management use. Harvey Probber, Inc. Fall River, Mass.

Circle 310 on reader service card

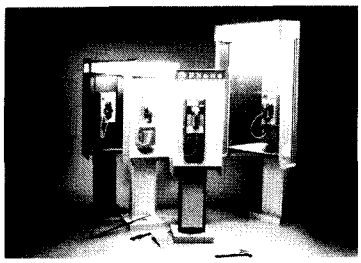


Pressed metal ceilings
Fabricated with the original turn-of-the-century dies, pressed-tin plated ceiling sheets are offered in Greek Revival, Victorian and Deco-style designs. The various 6-in., 1-ft and 2-ft designs come on 2- by 8-ft sheets. The silvery finish may be coated with a clear lacquer or an oil-base paint, or left as is. Cornice is also available in many sizes. Chelsea Decorative Metal Co., Houston, Texas.

circle 311 on inquiry card

Quarry tile rubble
A two-colored mix of abrasive quarry tile rubble is installed here on the atrium floor of the North Dekalb Mall in Decatur, Georgia. Brick-shaped 4- by 8-in. quarry tile forms the mall and planter island borders. Universal Ceramics, Inc. Adairsville, Ga.

Circle 312 on reader service card
Continued on page 151



"Theft-proof" phone
To deter vandalism and stop theft, the pay phone is recessed 3-in. into the "Pro-Tec-Tel" post, which in turn is set firmly in cement. The recessed phone is attached to a unique secure slider, ensuring that the phone cannot be pried away from the post. Four new ADCO booths are designed to fit this post; booths can be mounted back-to-back. Acoustics Development Corp., Northbrook, Ill.

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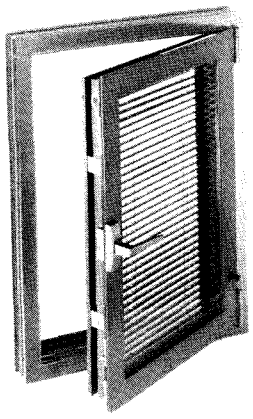

Two-mode window
European-styled "TR10" series aluminum-framed windows tilt as well as turn. A quarter turn on the operating handle turns the window in, as shown, for safe, easy cleaning. An additional quarter turn on the handle tilts the window in from the top for indirect ventilation. Glazing options include one-in.-thick insulated glass, and double- or triple glazing with or without an integral venetian blind. All architectural finishes are offered. Three Rivers Aluminum Co., Inc., Pittsburgh.

Circle 309 on reader service card

'CLOSE HARMONY

In Graceful Tension Structures By Helios.

The delicacy and beauty of these tensioned membrane structures is thoroughly practical. In this economical shelter for an outdoor music amphitheater, the natural beauty of the site is preserved, with only minimal disturbance for footings for structural elements. The smaller white tensioned structure at the Aspen Design Conference in Colorado is even simpler, facilitating its erection and demounting each year.

All these structures, including the festive rest area sunshades, are fabricated of vinyl-coated polyester material held in tension on a steel framework. The result is a lightweight, rigid structure engineered to withstand heavy wind. Though a tensioned membrane structure is in a higher price class than a tent, it offers far greater strength and durability. Compared to alternative structures of wood, steel or masonry, it typically results in important cost savings.

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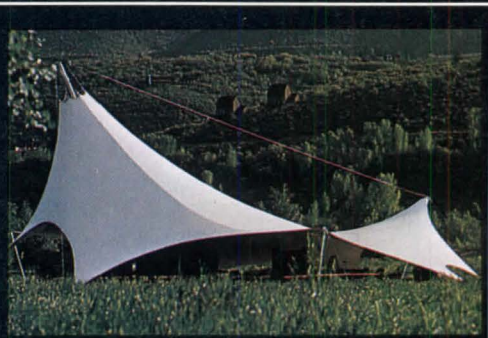

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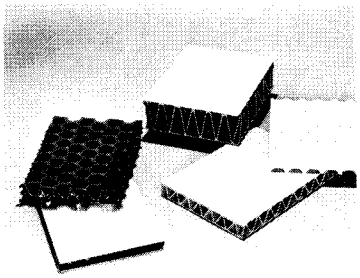
Continued from page 149



Fire-rated honeycomb
Thermoplastic honeycomb panels are now available in a fire-resistive resin formulation, with a UL flammability rating of 94-V-O. Called *NorCore 100*, panels come in standard sizes up to 5- by 10-ft, and in custom thicknesses of from ¼- to 2-in. Said to have an excellent strength-to-weight ratio, the panels can be laminated with all popular facing materials and fabricated with standard woodworking tools and methods. Norfield Div., Fallek Chemical Co., Danbury, Conn.

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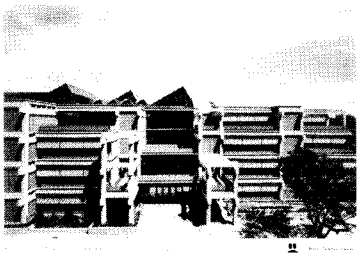

Exterior shades
Shown here on the Gregory Bateson building in Sacramento, an exterior motorized shading system keeps 85 per cent of the sun off the glass areas. Controlled by a computer, the shades are raised and lowered based on such information as the azimuth and altitude of the sun, cloud covering, and the wind velocity. The building was designed by the Office of the State Architect (Sim Van der Ryn, state architect.) Mecho Shade Corp., Long Island City, N.Y.

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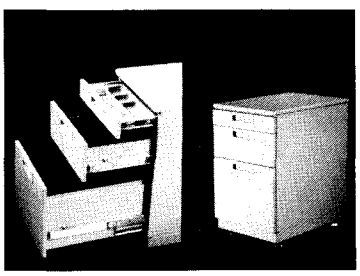

Pedestal file
For use under any panel support, work surface or data processing station, this 27¼-in.-high rolling cube file features an anti-tip fifth wheel base, which prevents tipping when a loader drawer is fully opened. The file contains one personal drawer with pencil tray, a divided box drawer, and a file drawer. Offered in two sizes, the mobile unit comes in a beige epoxy finish with a soft-edged laminate top. Structural Concepts Corp., Spring Lake, Mich.

Circle 315 on reader service card

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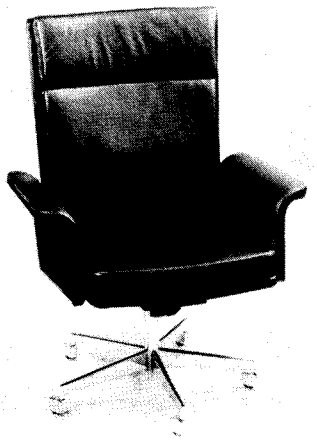

Executive seating
Constructed on molded plywood framing to fit the contours of the body, the "Labofa 7000" executive chair is padded with 3½-in. of foam rubber, and fitted with loose-back seat and back cushions. The chair double-tilts for maximum freedom of movement, and is equipped with a height-adjusting gas spring. Its five-point base is set on twin castors that revolve 360 deg from an off-center axle for full mobility. Upholstery options include leathers or fabric. Functional Office Furniture, San Rafael, Calif.

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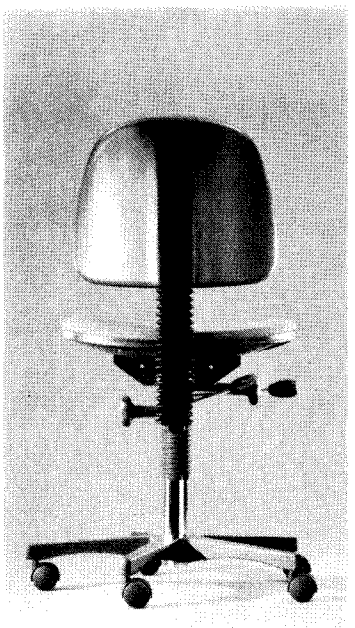

Five-function chair
New from Charvoz-Dauphin, this "G1500 CRT" chair features a larger, fully tapered back, with built-in lumbar support. Seat height and back incline is pneumatically controlled; a shell back encloses fixtures and adds a streamlined look. The chair accepts open or closed armrests, and tilts for extra comfort for the person who leans forward while seated. Available colors include beige, anthracite, mocha, wine and navy. Charvoz-Carsen, Fairchild, New Jersey.

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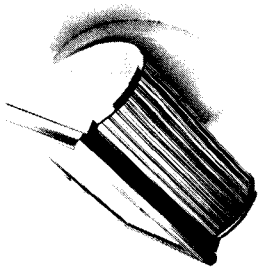

Asymmetric fixture
A fluted-surface tungsten halogen wall wash fixture, "Model 1101" received the Silver Award for 1981 from the Institute of Business Design. It projects the full color spectrum of the lamp in a visually uniform pattern, converting walls into luminous planes of light. Indoor and outdoor models are available for surface, pendant, cantilever, and track mounting. Elliptipar, Inc., West Haven, Conn.

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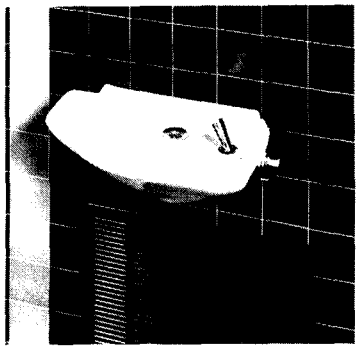

Drinking fountain
A wall-mounted commercial-type fixture, the "Serra" drinking fountain is offered in a number of vitreous china colors. An "Ice-Floe" model provides chilled water from a remotely located cooler. All fittings are vandalproof, and the fountains are designed to be functional for the handicapped. Kohler Co., Kohler, Wisc.

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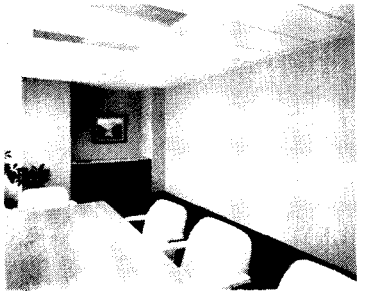

Acoustical paneling
Offered in 1 3/16- and 2 3/16-in. nominal thicknesses, "Decoustics" panels have a composite molded fiberglass core which is inert, noncombustible and dimensionally stable. Fabric or vinyl face finishes are bonded to the core to prevent sag. NRC values are 85 or 80, depending on finish selected; each component has a UL Class A flame spread rating. Panels are supplied with totally concealed, factory-installed, mounting hardware, and can be provided with prefinished cutouts. Decoustics, North Tonawanda, N.Y.

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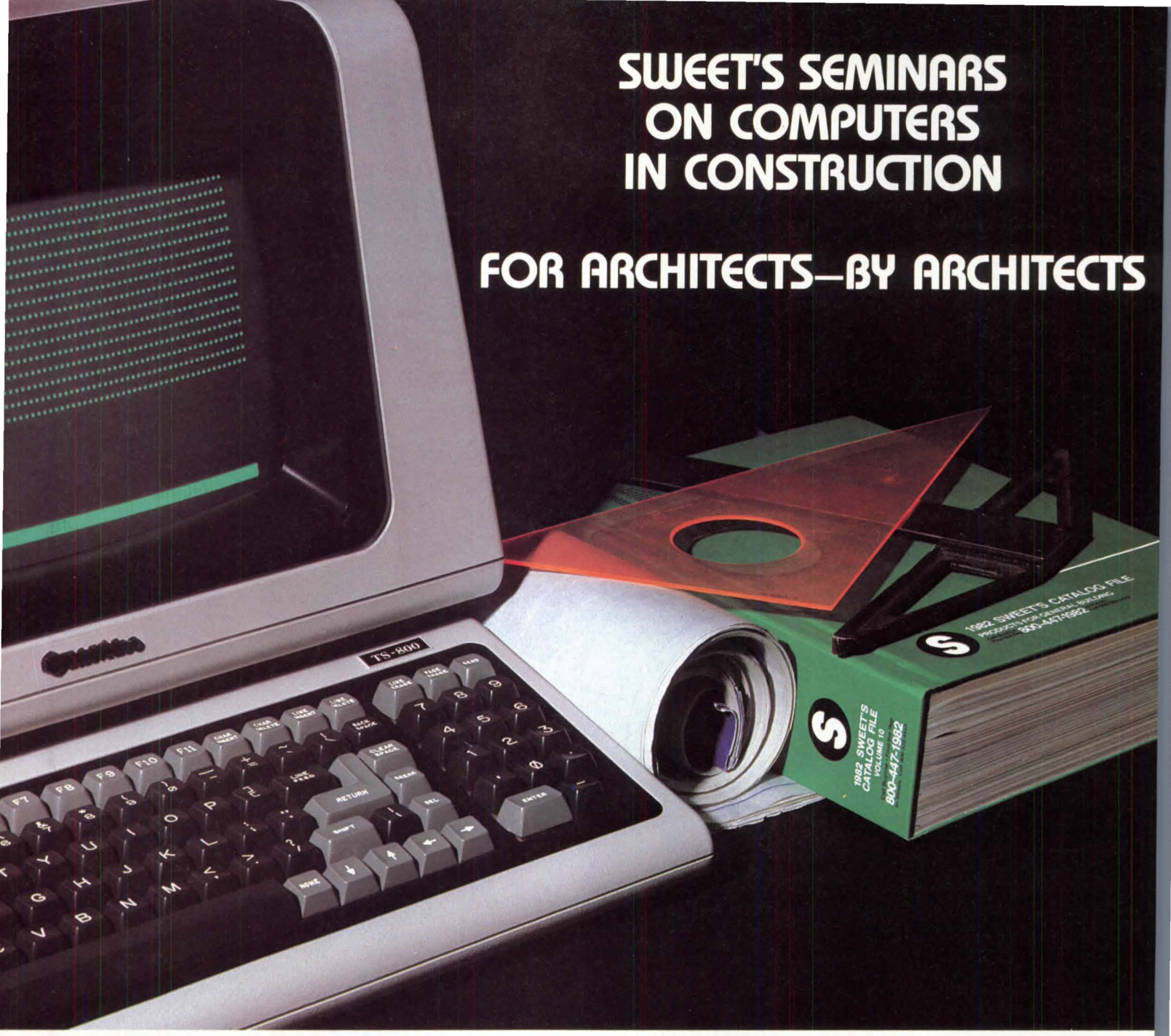

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