

THE ARCADE IN PROVIDENCE, RHODE ISLAND, BY IRVING B. HAYNES & ASSOCIATES

MASTERS OF THE MODEST PROPOSAL: LEUNG HEMMLER CAMAYD

SYNAGOGUE FOR B'NAI JESHURUN BY DON HISAKA ASSOCIATES

HANS HOLLEIN'S DESIGN FOR A "MUSEUM OF SHOWCASES"

AN INTERVIEW WITH GOLD MEDAL WINNER JOSEP LLUIS SERT

BUILDING TYPES STUDY: RETAIL STORES

FULL CONTENTS ON PAGES 10 AND 11

ARCHITECTURAL RECORD

MAY 1981

5

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Letters to the editor

In that the NCARB and the state registration boards generally require a minimum of three years of "internship" before examination for registration, it seems odd that your questionnaire regarding academic "training" is based upon the identical criteria as those used for NCARB's Intern Development Program [see RECORD, January 1981, pages 84-89]. Presumably, the intention of requiring "internship" is to complement professional education, not duplicate it.

Schools ought to instruct in areas that can be effectively accommodated in academia: for example, replicating office drafting experience is neither particularly efficient nor, perhaps, comparable with the real thing. On the other hand, few practitioners would be up to the task of instructing the apprentice on the finer points of structural analysis and theory. (While your list of topics on "how well-trained are graduating students" does not include this category, most would agree that some competency in structures is desirable for licensees.)

Your apparent underlying premise that education is equivalent to training ignores the more complex yet basic concepts of both the university and knowledge. Perhaps the emphasis on "training" is a major reason that the profession has not significantly been able to advance knowledge or avoid past mistakes.

Engineering programs, although they are not directly comparable, have a significantly higher percentage of instruction devoted to theory than do architecture programs. "Training," as an educational concept, is almost unheard of in those quarters ("... these curricula combine general foundations of scientific theory and facts with laboratory experiences which are designed to instruct in methods rather than to develop extensive skills...")

For reasons that remain unclear to me, engineering firms expect less in immediate productivity from new graduates than do architectural firms, while still paying up to 50 per cent more in beginning salaries. One revealing finding of your study suggests that practitioners expect to pay a median annual salary of \$18,000 for professional graduates after three to four years of experience (and licensed). This is less than the average starting salary of engineering graduates and most MBAs. Presuming that architects as a group are as fair to their employees as anyone, this figure is appalling.

Given the training, knowledge, time, responsibility and liability involved in practice, for society to place such a low value on the services of the architect should suggest

something very wrong. Vocational training and intern experience may be modified and may be improved, but these issues only provide a smoke screen for the more fundamental problems facing architectural practice and, perhaps, education.

More useful than NCARB's interest in a national academic core curriculum (which will always be quantitative rather than qualitative), or an Intern Development Program (based upon an attendance-log mentality) would be a study examining the worth of the professional services to society and our capability to bill adequately for these services. Something is missing somewhere.

Roger L. Schluntz, AIA
Professor and Chairman
Department of Architecture
Arizona State University
Tempe

"Profile of the 1981 Graduates" in the January 1981 issue of RECORD is interesting reading and offers a baseline for the study of graduates in other years.

As you know, ours was among the schools whose students participated in the survey. I'm not confident that our respondents (or those from other schools) represent a random sample of final-year students. We gave the questionnaire to bright, reliable students who we thought would complete and return them. These kids tend to have good grades, to have had office experience, to foresee themselves as principals in their own firms, etc.

Although their numbers are small, at this school women students are, as a group, better students than the men. Thus they tend to be over-represented in the upper percentiles of their classes. Perhaps that is at least in part why nearly a quarter of the student survey respondents were female. The notion that young women and men graduates should be given "no different advice" does not square with the realities of the male-dominated architectural profession and building industry. Our women students and graduates, several AIA task forces, and a host of other sources reiterate the continued existence of sex bias in our field. Advice given women should acknowledge this and aid them in dealing with it.

Students, faculty and practitioners, too, are, I think, less concerned with "favorite architects" today than has often been the case. Your survey question on the kind of work of most interest probably comes closer to their concerns about energy and resource conservation, the needs of special populations, preservation, computers, etc. Your headline conclusion that students are "mainline
continued on page 44

Calendar

MAY

Through June 7 "Collaboration: Artists & Architects," centennial exhibition of the Architectural League of New York at the New York Historical Society. The exhibition explores the history and future collaboration between artists and architects and includes original projects from 22 of America's leading architects and artists. New York Historical Society, Central Park West at 77th St., New York City.

7 Seminar, "Design/Build and the Law (for Architects, Engineers and Owners)," at the Halloran House, New York City. Program will be repeated July 10 in San Francisco, September 17 in Washington, D.C., October 15 in Chicago and November 11 in Dallas. Contact: ARCHITECTURAL RECORD SEMINARS, 1221 Avenue of the Americas, New York, N.Y. 10020 (212/997-3088).

17-21 The 1981 American Institute of Architects National Convention, Minneapolis.

JUNE

7-11 American Water Works Association Centennial Conference and Exposition, St. Louis. Contact: AWWA, 6666 W. Quincy Ave., Denver, Colo. 80235.

15-17 The Institute of Energy Conversion of the University of Delaware will sponsor two seminars on the Design of Residential Solar Systems. The first seminar, "Passive Design," will be held on the above dates, repeated Sept. 21. "Active Heating & Cooling Design Systems," will be held on Sept. 13. Contact: Institute of Energy Conversion, University of Delaware, One Pike Creek Center, Wilmington, Del. 19808.

16-19 NEOCON 13, at the Merchandise Mart, Chicago.

25 "Adaptive Re-Use: Opportunities for Housing," at Yale University, New Haven, Conn. The Connecticut Trust for Historic Preservation and the Tri-State Regional Planning Commission join the Connecticut Department of Housing and the Connecticut Historical Commission to co-sponsor a training session on the step-by-step process of a re-use project; for architects, planners and others. Contact: Alvin Dunaisky, Tri-State Regional Planning Commission, 1 World Trade Center, 82nd fl., New York, N.Y. 10048 (212/938-3394).

Correction

For the SmithKline Corporation headquarters (RECORD, mid-February 1981, pages 102-103), credit was mistakenly omitted for art consultants Diane Dunning Associates.

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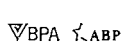
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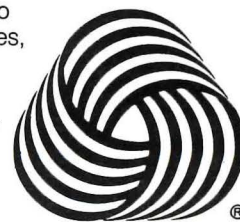
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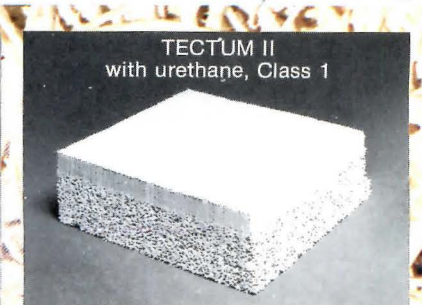
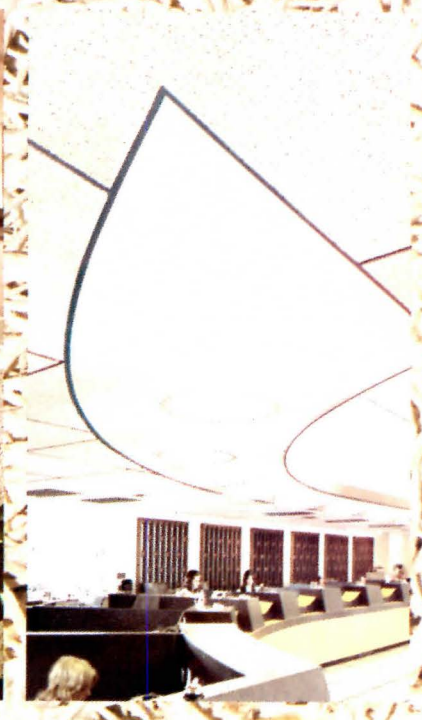
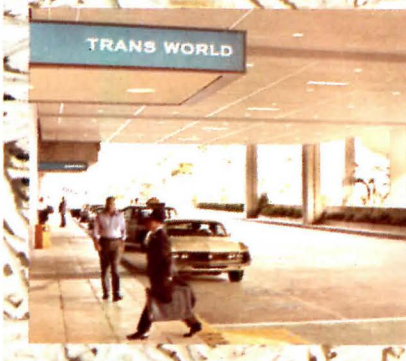
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On the importance of thinking small

Perhaps six or seven months ago, the phone rang (as it often does) and a young architect (at least he turned out to be young) asked (as many young architects do) what he needed to do to submit work for possible publication. As I always do, I told him we had no submission "requirements"—that all we needed for openers were enough photographs to get an idea of what the project is like, a floor plan and any other helpful drawings, and a brief description of the program, the design, and "why it was designed that way." And I added (as I almost always do) that if he planned to be in New York anytime soon, I'd be happy to meet with him and go over the material.

In due course, David Hemmler, the young architect who called, arrived in our office not just with photos and drawings of four buildings, but with his partners David Leung and Alex Camayd, 3/7ths of the staff of Leung, Hemmler, and Camayd, architects of Scranton, Pennsylvania. Within five minutes of holding slides up to the window, I called several of the other editors and we were in the midst of one of those sessions that give the most pleasure to architectural-magazine editors: We were looking at *fine small buildings* designed by a *small firm* which had *never been published*. What's more, the work was not in Boston or New York or Chicago or Los Angeles, it was in Scranton and Dalton and Elk Mountain and Lord's Valley, Pennsylvania.

To make an increasingly long story short, the assembled work of this small young firm in a small Pennsylvania city is our lead article this month—see "Masters of the Modest Proposal," beginning on page 75.

There's a moral: We all need to remind ourselves more often that quality architecture at a small scale can have an enormous and helpful impact on the public understanding of what good architects do, and what good architecture can do for a neighborhood or town or small city.

For the smaller places, these smaller projects are at least as "important" as any new tower or grand new museum is to the major cities—and can perhaps have an even greater impact in establishing the character of the neighborhood or town and what that neighborhood or town thinks about itself. For example, is it not reasonable to consider that Leung, Hemmler, and Camayd's fine church will serve an important public education process—perhaps start people wondering what it is that makes this new building in their small

town something special; perhaps start raising local expectations about other new buildings; perhaps teach that small segment of the public something about good architecture.


I've written before on this page about the impact on the small Connecticut town where I live of the public library designed by architect Joseph Salerno, whose office never went above three people and who won a national Honor Award for a church in Rowayton, Connecticut. Joe's design for a contemporary library sited between the 1791 Congregation Church and the 1926 neo-Georgian Town Hall stirred up a bit of controversy at Ye Towne Meetings. But in the course of the controversy, a lot of citizens (even the most hide-bound members of the Historic District Commission) learned why the new building was designed the way it was, saw that in form and materials and scale it really did "fit in," and learned first to accept it and then to love it. The library was the first contemporary building in town (except for a handful of houses hidden at the end of long driveways), and it showed the citizenry what a good, small, local office can do to set standards of contemporary design quality that clearly upgraded the expectations for design of the high school and middle school that came along later, and is clearly influencing the current town debate about how to add on to the Town Hall that sits alongside.

I'm not sure what impact Fay Jones' beautiful Thorncrown Chapel (cover, RECORD, March) will have on Eureka Springs, Arkansas—but this national Honor Award winner by a five-man office in Little Rock is bound to have an impact on the design of small churches everywhere.

In the Building Types Study for June we're publishing some small secondary school buildings in New England that offer in contemporary terms a splendid new image of what regionalism is all about—including some exceedingly handsome small buildings by a young architect named Turner Brooks who operates a two-man office in Starksboro, Vermont.

All of which serves as a reminder, I hope, that there are no unimportant jobs, whatever the scope of the project; that everything we design and build has an impact on the place where it is built and on the people who live there; and that good design is a function not of size of firm, but of design talent and skill and commitment to excellence.

—Walter F. Wagner Jr.



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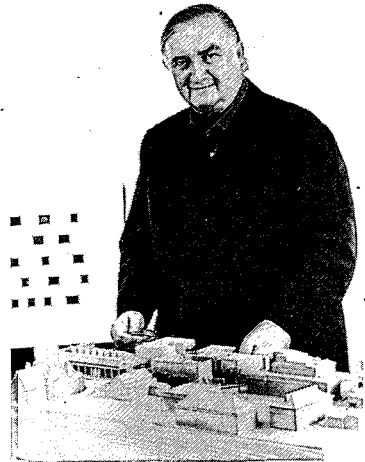
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James Stirling wins the 1981 Pritzker Architecture Prize

"This prize is a most marvelous award. And it is a great honor to keep company with the first two winners." —James Stirling



James Stirling behind a model of his proposed addition to Harvard's Fogg Museum in Cambridge, Massachusetts.

British architect James Stirling was named winner of the third annual international Pritzker Architecture Prize last month at the Museum of Modern Art in New York City. Jay A. Pritzker, president of the Hyatt Foundation (which administers and funds the prize), presented Stirling with a \$100,000 check; a cast of a Henry Moore sculpture—created especially for the Pritzker Prize—will be presented to Mr. Stirling at a banquet in Washington this month.

Mr. Stirling was the 1980 recipient of the Royal Gold Medal for Architecture, presented by the Royal Institute of British Architects. Among his current and upcoming U.S. projects are university buildings for Harvard, Columbia, and Rice. He is also working on the new Turner Museum at London's Tate Gallery.

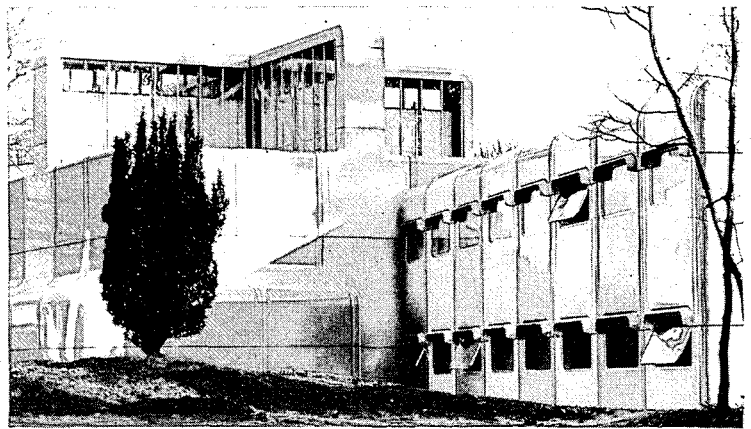
The first Pritzker Architecture Prize was presented in 1979 to Philip

Johnson, and the second, in 1980, was awarded to Luis Barragán of Mexico. The 1981 jury, responsible for electing Stirling, included: J. Carter Brown, Director, National Gallery of Art, Washington, D.C.; Lord Clark of Saltwood (Kenneth Clark), author and art historian; Arata Isozaki, architect and critic; Philip Johnson; J. Irwin Miller, chairman, executive committee, Cummins Engine Company; and Cesar Pelli, architect and Dean of the Yale University School of Architecture.

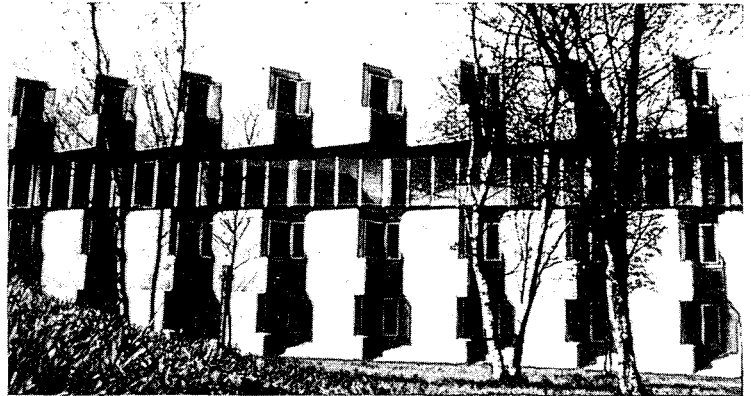
In announcing the Prize, Mr. Pritzker quoted from a statement by 1979 Laureate Philip Johnson: "James Stirling has been the *Wunderkind* of modern architecture for some 20 years. Today he is a mature leader of world architecture. He is probably best known for a series of unbuilt competition projects culminating today in two great buildings actually under construction in Germany: a Museum in Stuttgart and a Scientific Institute in Berlin. . . . His work began at a time when the Modern Movement was still in ascendance and his variations, angles, and details in the style were extraordinarily original. Today he is in the vanguard of the newer movement, which includes historical allusion and contextual consideration."

The Pritzker Architecture Prize was established in 1979 to "honor the achievements of pre-eminent architects all over the world." The award is given annually to a living architect whose work, in the words of Jay A. Pritzker, "demonstrates a combination of talent, vision and commitment that has produced a consistent and significant contribution to humanity and the environment."

Carleton Smith, to whom King Gustavus VI Adolphus of Sweden suggested the prize, serves as secretary to the jury and coordinator for the Pritzker Prize. Arthur Drexler, Director of the Department of Architecture and Design of The Museum of Modern Art, reviews and screens all submissions.

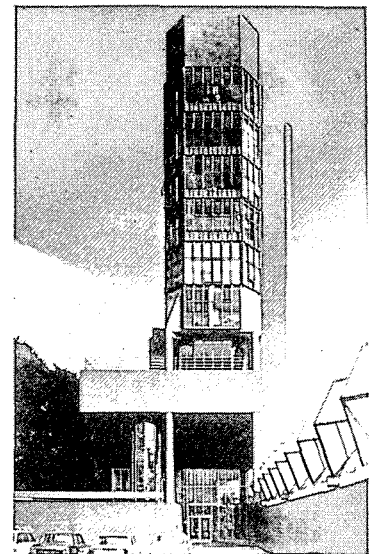
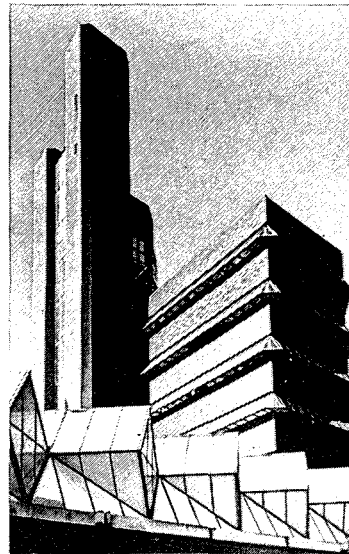


Olivetti Training School, Haslemere, England (1972).



Dormitory for Saint Andrew's University, Scotland (1968).

Leicester University Engineering Building (1963).



Congress addresses the new Administration's budget cuts

Congress is beginning to focus on President Reagan's package of tax cuts and spending reductions. Legislative disposition of the proposals—intended to perk up the economy—is expected by early summer. Congressional approval of the much publicized White House cuts should lead to investment incentives for the private clients of architectural services; at the same time, however, work for Federal and other public clients may decline.

The current mood in both the Senate and the House favors Reagan's plan, but the lawmakers are making it known that they will do more than rubber stamp the new

Administration's proposals.

The proposals set forth by the White House include: a 10 per cent cut in personal income taxes for each of the next three years; accelerated depreciation allowance for business investments; and lower spending levels for most non-military programs. The cuts are intended as a means of balancing the Federal budget (to moderate inflation and reduce the Federal Government's impact on the credit markets).

As Congress adjourned for Easter, a legislative consensus appeared to be developing along a slightly different track: as opposed to Reagan's strenuous cuts, the mood on Capitol

Hill suggested that the lawmakers were willing to provide only a one-year personal income tax break at this time, but were willing to accept most of the depreciation schedule changes. If Congress has its way, the magnitude of the spending cuts would not be greatly changed, but they would be targeted differently—preserving some of the social programs that the Reagan White House is willing to let dissolve.

But whether the White House or Congress prevails on spending cuts, the level of public design work will decline; both the executive and legislative branches intend to slash spending for Federal office buildings, veter-

ans hospitals, highways, municipal waste treatment, synthetic and solar energy, and transit systems. Off-setting these cuts will be increases for military and nuclear research programs.

The AIA disagrees with President Reagan on cuts in spending for energy conservation, housing, the arts and humanities, and historic preservation. But, the AIA adds, "[we] are fully appreciative and supportive of the vital importance for our nation's economic health, of curbing inflation and cost escalations by reducing Federal spending." —William Hickman, *World News, Washington*.

continued on page 35



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Federal spending cuts don't begin at home

Though the economic word from Washington is less than bolstering, the Architect of the Capitol—who is in charge of providing office space for senators, congressmen, and their staffs—is seeking a 50 per cent higher budget for fiscal year 1982. But it is not surprising that the cost of providing space for congressional workers is increasing. The legislative staffing level usually lags, but eventually equals comparable growth in the executive departments—and these levels have been on the rise.

Still, it is noteworthy that while most of Washington's bureaucracies have been engulfed in governmental economizing, architect/engineer/lawmaker George M. White is asking to hike his office's spending from this year's \$70.5 million to \$106.9 million for the upcoming fiscal year, beginning October 1.

Mr. White's office is responsible for designing, building, and managing the complex of buildings and grounds used by senators, congressmen, the Supreme Court, and the Library of Congress.

Three-quarters of the increased spending amounts identified by Mr. White, fall into a budget category he calls "continuing and initiating other programs." Of this amount, \$18 million is slotted for a major program to renovate and restore two buildings occupied by the Library of Congress: the money is to be used primarily for fire protection improvements in the book stacks.

Other spending will go for security equipment, alterations to a House office building, and for the installation of bronze handrails in the House Chamber Gallery. —William Hickman, *World News, Washington*.

SOM renovates University of Chicago auditorium

The University of Chicago's principal auditorium—Leon Mandel Assembly Hall—was opened in 1903 as part of a group of buildings designed by the Chicago architectural firm of Shepley, Rutan and Coolidge. Despite its ongoing popularity as the center of the University's orchestral and chamber music performances, the Hall has never been renovated. But thanks to a \$1,992,000 gift from the Joseph and Helen Regenstein Foundation, Mandel

Hall has been brought up-to-date: acoustics have been improved; new utility systems have been added; and a new stage has been installed. Architects for the renovation were Skidmore, Owings & Merrill.

The renovation included replastering side walls, re-upholstering and/or replacing seats, a new stage floor, and carpeting. Additionally, a new structure has been built to provide support areas, a loading dock, and storage.

Of the recently completed renovation, University of Chicago President Hanna Holborn Gray said: "Few developments could have such a direct impact on this campus and the larger community. For more than three-quarters of a century, thousands of people from throughout the metropolitan area, as well as from our university, have attended distinguished performances of music and theatre. . . ."

Consultants for the project included: R. Lawrence Kirkegaard & Associates (acoustical); Lustig & Associates (theatre); and John Vinci and Hanscomb Associates (cost).



Andrew S. Dolkart

1865 Staten Island church is given landmark status

St. Alban's Church, in the village of Eltingville on Staten Island (New York), has been named a New York City landmark. In making the designation, commissioner Anthony M. Tung noted: "St. Alban's is a distinguished example of the small country church popularized by architect Richard Upjohn in mid-19th-century America." Built in 1865, and enlarged in 1872,

the Gothic Revival frame structure was designed by Upjohn—one of America's most prominent Victorian architects—to take advantage of the versatility of wood. The material is used in a highly picturesque and ornamental manner; among its significant features are steep pitched roof openings and decorative bargeboards at the gable ends.

Thermography: or how to determine energy efficiency

The General Services Administration (GSA) has been in search of a better tool for measuring the energy efficiency/performance of its new buildings, and it thinks it may have found one in thermography.

Thermography may prove so effective, in fact, that the GSA could use it for holding contractors accountable for the quality of their work and for designing to specifications.

Under the direction of architect David R. Dibner, Assistant Commissioner for Public Buildings in charge of design and construction, the agency is seriously exploring the pioneering

work in the field of thermography, now being done by Canadian government building officials. "What if we develop a means for determining energy efficiency performance of buildings measured under actual operation conditions?" asks Mr. Dibner. While stressing that the science of thermography—a technique that produces a photograph-like image sensitive to heat—must still be further refined before it could be used for forcing contractors to warranty their work, Mr. Dibner is clearly hopeful that additional research will lead to that result. —William Hickman, *World News, Washington*.

A two-day workshop on construction cost estimating

McGraw-Hill's Dodge Building Cost Services unit has developed a two-day seminar/workshop designed to help architects, engineers, and design and construction professionals to "meet the challenges of escalating costs, rapid change, and new markets in the building/construction fields."

Entitled "Computer Aided Construction Cost Estimating," the seminar/workshop is being conducted in seven cities this year. The program is intended to help cut estimating time—"by as much as 50 per cent"—while increasing productivity.

Seminar participants will be exposed to the theory and principles of computer aided cost estimating, and there will be "hands-on" case studies employing the phase approach to cost estimating: this approach covers every step from conceptual design to detailed construction cost estimating.

Participants are promised a systemized procedure for producing fast, accurate, and economical estimates.

Paul Piccione, Estimating Services Manager for McGraw-Hill's Cost Information Systems Division, will be the seminar leader.

The schedule for "Computer Aided Construction Cost Estimating" is as follows: Fort Lauderdale, Florida (May 14-15); Chicago, Illinois (June 22-23); Hartford, Connecticut (July 20-21); New York, New York (August 10-11); San Francisco, California (September 14-15); Arlington, Virginia (October 12-13); Houston, Texas (November 9-10); New York, New York (December 21-22).

The cost of the program is \$495. For information contact: Pat Houghton, Dodge Building Cost Services, 331 Madison Avenue, New York, New York 10017 (212/490-3898).



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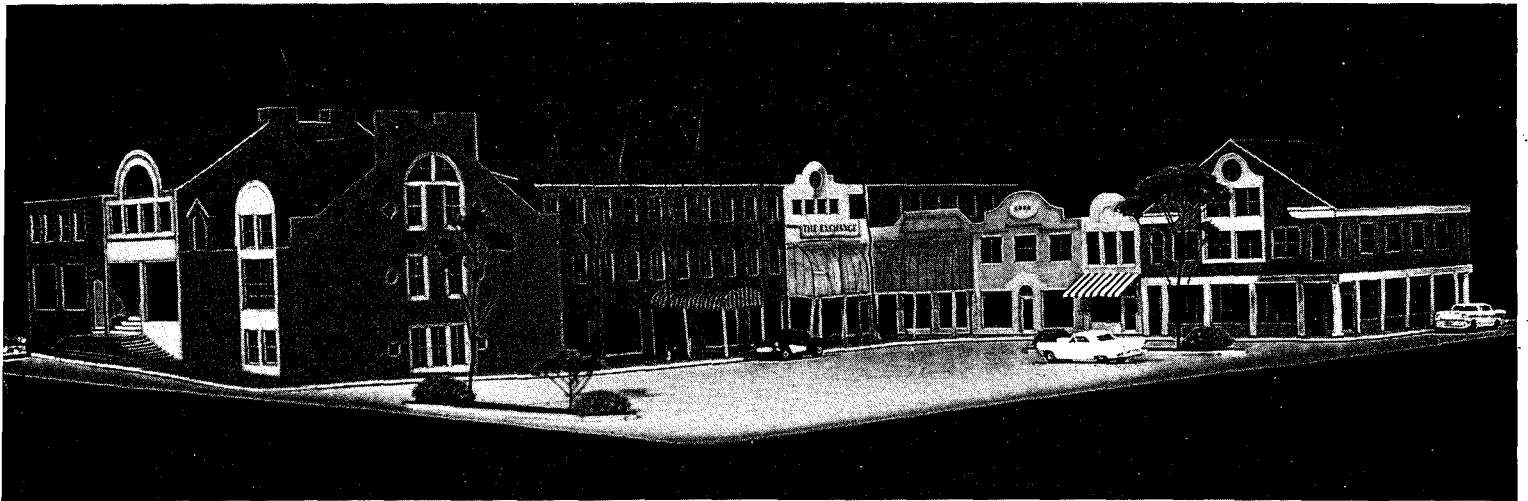
So in your next search for the best design ideas, you'll know just where to look for the right glass to help them see the light of day.

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Circle 29 on inquiry card

PPG: a Concern
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Commercial shopping complex recalls a Connecticut village streetscape

Architect Roderic M. Hartung has attempted to evoke "the local vernacular tradition" of Old Lyme, Connecticut, with his scheme for the 33,000-square-foot Old Lyme Shopping Center. The \$1½-million

L-shaped complex—to go into construction this summer—employs arches and striped canopies in an effort to echo the historic streetscape of this picturesque New England town. The townhouse-like fa-

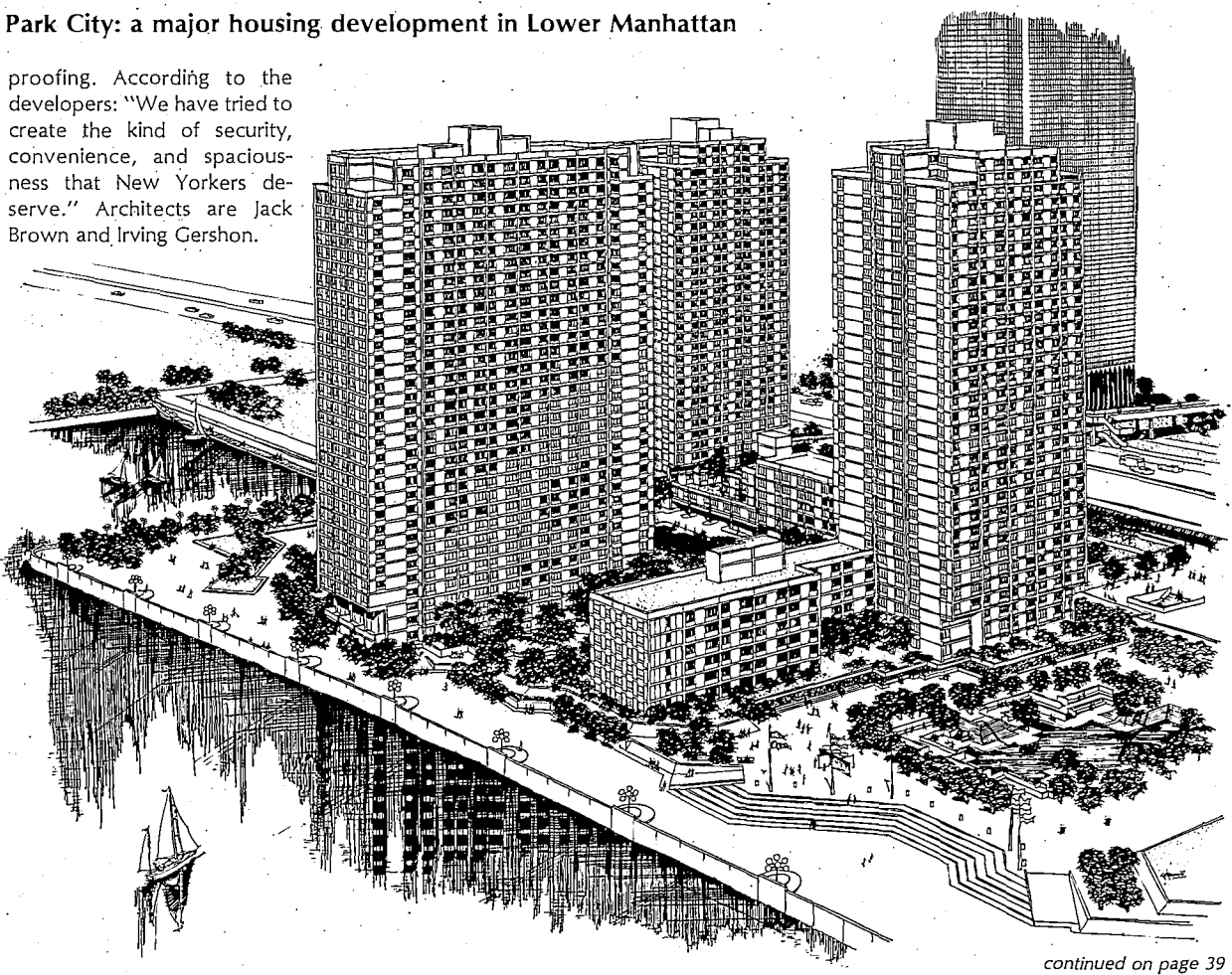
çades of the individual shops, ("the suggestion that the elements were built at different times"), will be painted a variety of colors to reduce the scale of the shopping complex. A two-story domed glass

wall will encase the main staircase and elevator, and the split-level floor plan (three levels) has been designed to fit into the natural slope of the land. Developer of the center is Robert Chapman.

Gateway Plaza at Battery Park City: a major housing development in Lower Manhattan

Plans were unveiled in March for a 1,712-unit housing compound on a landfill site jutting out into the Hudson River, adjacent to the World Trade Center in New York City. Gateway Plaza includes three 14-story buildings, two seven-story buildings, and one six-story building. The six buildings form an enclosed quadrangle with a single access, controlled by a 24-hour-a-day gatehouse security staff. According to the developers, security will be a major feature of Gateway Plaza. Protective measures include video screens in the lobbies and apartments, and TV security systems scanning the laundry rooms. A digital computer will be used to control over-all "security functions." An eight-foot wall will separate residents from a public promenade which overlooks the Hudson River. The individual apartments—ranging from studios to three-bedroom units—will be column free, due to a "flying form" construction system around a 24-foot module; the concrete walls are load-bearing and eight inches thick for sound

proofing. According to the developers: "We have tried to create the kind of security, convenience, and spaciousness that New Yorkers deserve." Architects are Jack Brown and Irving Gershon.



continued on page 39



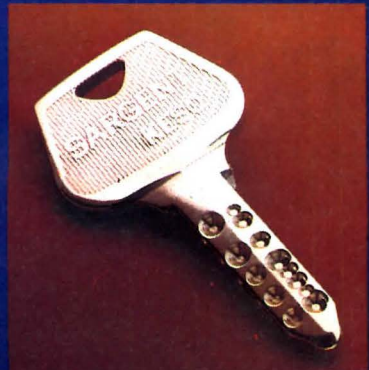
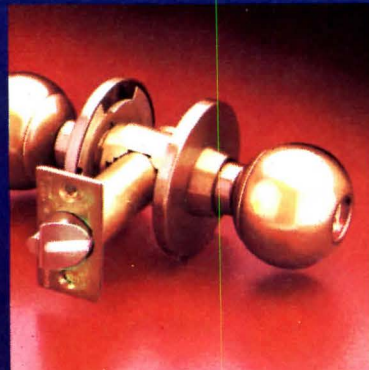
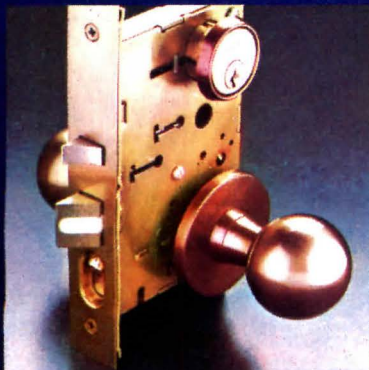
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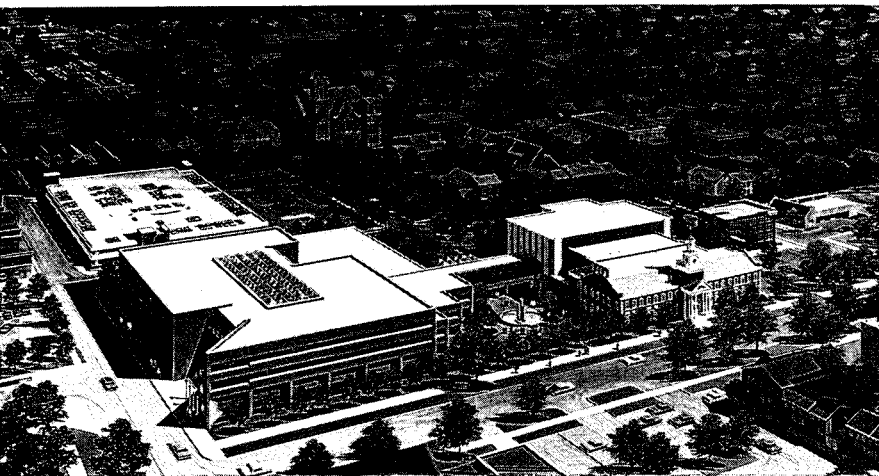
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Circle 30 on inquiry card



Construction begins this month on \$33-million expansion of Pennsylvania Insurance company's home office

Over the next five years, the Erie Insurance Group plans to complete a major expansion of their Home Office facilities in Erie, Pennsylvania. The expansion will take place in two phases: the first phase includes a four-story, 200,000-square-foot office building and a two-level parking and storage facility; the second phase will include new housing in conjunction with the restoration of historic buildings in the area. Construction is to begin this month on phase one, with completion slated for late 1982. Architects for the \$33-million project are Hugh Stubbins and Associates.

Luxury housing along Atlantic City's Boardwalk

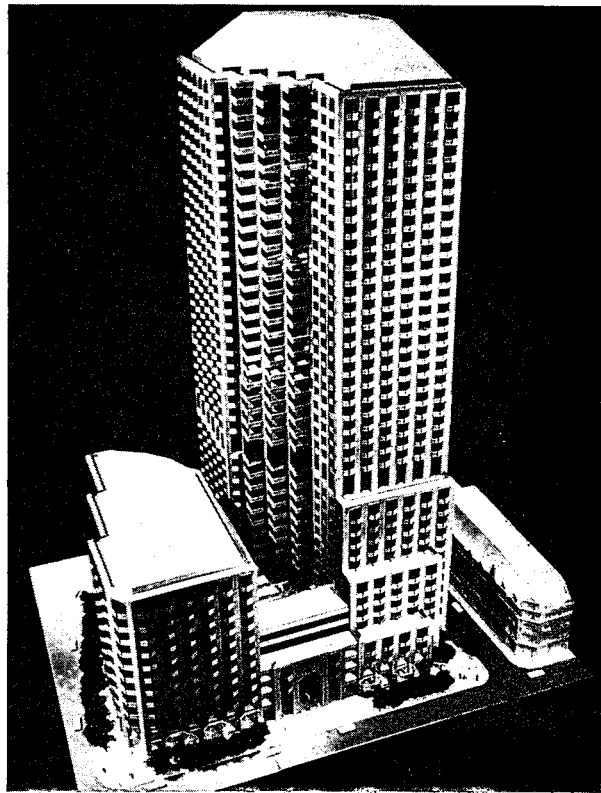
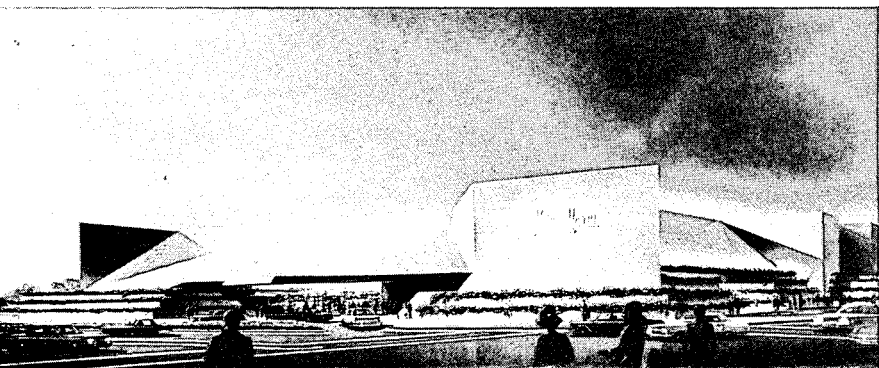
We reserve praise for few proposals and this is one that we believe fully deserves praise and support," says Atlantic City Master Plan Consultant Angelos Demetriou of the proposed Corinthian Condominiums. The 34-story, 187-unit luxury housing project will be situated between Atlantic City's high-rise casino development and a low-rise residential neighborhood; the Corinthian is intended to offer an appropriate "transition" between the commercial and residential. To avoid shading the Boardwalk, local architect Martin F. Blumberg stepped back the top 12 floors of the building.



John Carl Warnecke & Associates' third Neiman-Marcus store

The Los Angeles office of John Carl Warnecke & Associates designed the 105,000-square-foot Neiman-Marcus store in The Fashion Show

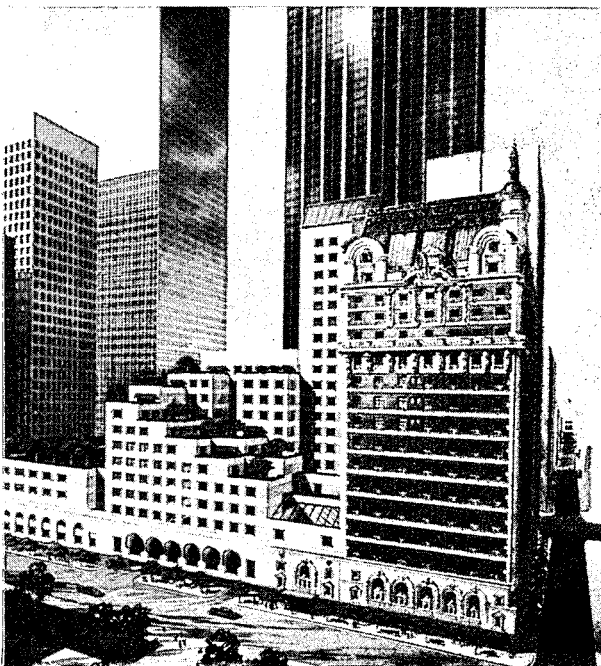
shopping mall in Las Vegas. According to the architects: "Rather than compete with the plethora of neon glitter facing on the Strip, we designed the Neiman-Marcus building in a powerful geometric shape as a bold contrast to the rest of the boulevard." The store is faced in marble.



The tallest building in Connecticut, by SOM

The Chicago office of Skidmore, Owings and Merrill has released plans for Connecticut's tallest building. CityPlace will include a 38-story tower in addition to a less formidable mid-rise building. The

1,200,000-square-foot office complex will be located in Hartford. Office space planning and interior design services will be provided by Russell Gibson von Dohlen. Occupancy is scheduled for 1983.



Reviving the grandeur of a 1912 hotel

A \$45-million reconstruction/restoration of the 1912 Adolphus Hotel in Dallas, Texas, is proceeding on schedule for a September, 1981 opening. The exterior of the 21-story building will not be altered; the interiors will either be gutted or restored, appropriate to their architectural/historical significance. Adjacent to the original hotel, two additions (1917 and 1926) will be given a new facade treatment with a terrace effect intended to draw attention to the main tower. Architects are Beran & Shelmire.

● Knoll

Diffrient Seating





Circle 75 on inquiry card

modernists" may be more a reflection of the questions asked than of students' allegiance to a particular set of formal visual devices.

Despite our rhetoric, architects and most students who are about to graduate high in their class with a professionally accredited degree are predictably conservative. We do, after all, serve the established order in our society. Our clients are individuals, corporations and government agencies who have acquired resources and power. Our meek esthetic radicalism does not fundamentally challenge the political, economic or ethical structure of the civilization our clients represent.

The schools of architecture you surveyed are accredited: they have therefore satisfied criteria established by the NAAB, a creature of the registration boards, the AIA, and the other accredited schools. Does it not follow that our graduates would appropriately be described, as your headline does, as "conservative"?

*Eugene Kremer, AIA
Head, Department of Architecture
Kansas State University
Manhattan, Kansas*

There are many areas of interest in the survey results reported in "Profile of the 1981 Graduates." I shall comment on two.

The first is the lack of skill orientation in the college training of architects. An emphasis on design concepts and design implementation ought not to be mutually exclusive. I am therefore challenged to look more closely at courses in building cost analysis and documentation areas, and to relate the acquiring of these skills to the design process.

I believe there are several such areas of interest to the architectural educator, and the survey results can emphasize the importance of forming hypotheses and testing them—monitoring the graduates of one's own school along program objectives and student expectations.

The second comment is from the general interest area, which does not suggest hypothesis formulation and testing. The high number of mentions of the first four names on the student list of "favorite architects" indicates perhaps the value of exposure to recent architectural history. I think this idea is supported by the nomination of Ronchamp. I would have hoped that "favorites" would not be based on other people's writings and illustrations. To me, the purpose of architectural publications is to expose, stimulate visits to actual buildings, and publish analyses based on first-hand knowledge of program and the human use of space.

Perhaps some respondents were unprepared to commit themselves to more recent buildings without knowing them personally or having a report that has included the test that time has given older examples.

Our students have generally read the profile, along with other material published in ARCHITECTURAL RECORD. Their comments on skill areas, especially specification and cost estimating, indicated the far greater motivation of acquiring these skills in an office "where the building was going to be built" than in a university course.

Students also questioned whether architects were as interested in summer work for students as the study suggested.

*Neville Clouten, Chairman
Department of Architecture
Andrews University
Berrien Springs, Michigan*

I read the profile of 1981 graduates with some interest, and would like to make the following comments:

A. It is consistent with my experience that architecture students are intelligent. Certainly, here at the University of Detroit, they have been the top echelon of our entering freshmen for years. Indeed, if SAT scores are meaningful, the only area of contention has been in mathematics, where

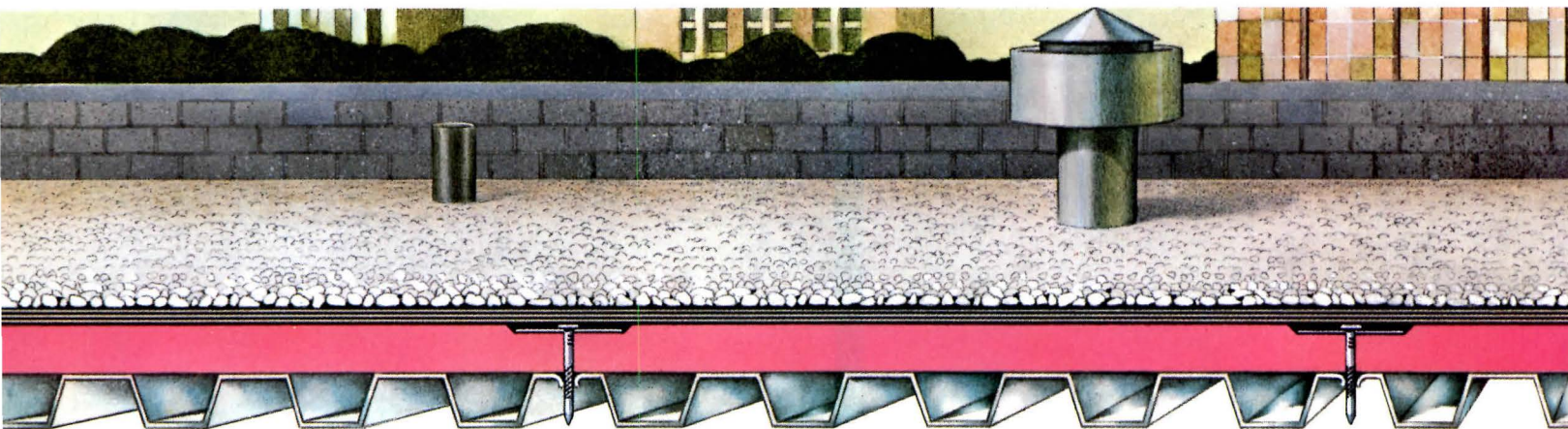
engineering students lead slightly.

I am not convinced that the student response to grades as a predictor of success is necessarily "the popular student disdain for grades." My own impression is that it derives from a trace of cynicism regarding what is desired in practice. At this stage, students perceive that offices desire drafting ability, or, at best, business ability, and they do not see this as being closely correlated with either their ambitions or what they are being taught in school.

B. As one of only two schools with a mandatory cooperative education requirement, I am not at all surprised by the answers to the question regarding the value of work while in school. It is totally consistent with our experience.

C. The practitioners' positive response to students with prior experience is readily understandable, since it provides them with what they feel is a more concrete measure of what they are looking for, rather than grades or even design portfolios. The lack of positive response to the Intern Development Program is clearly indicative of what more practitioners desire in a young graduate.

D. The "knowing early that I wanted to be an architect" phenomenon is impeccably consistent with my experience. At the University of



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Detroit, the School of Architecture overwhelmingly leads in the number of students who have a single clear career goal upon entering the university. In fact, a significant number of our rejected applicants enter other colleges on campus for the purpose of attempting to transfer into the School of Architecture after "proving" that their rejection was in error.

What is significant now is the drastic change in exploration for this single-mindedness from the days of student rebellion. At that time, most of the reasons centered on the idea of "changing society fundamentally." (I might point out that this was one of the underlying principles of the Modern Movement.) The fact that many of the present answers are either self-centered, esoteric or materialistic is reflective of a turning away from a sense of social responsibility, a sense of disdain for the "failure" of those recent revolutionaries, or a more "clearheaded" perception of what architecture can achieve. It is somewhat difficult to discern which amongst these is the clearer motivation. It is interesting, however, that those on what Walter F. Wagner, Jr., considers the "brink of ideological revolution" are also involved in an art for art's sake syndrome.

E. The attitude towards women in the profession has drastically

changed. I suspect that this is even true on the part of women. In a school, the reaction is likely to be less stringent than in practice and not so much generated by compliance with legal restrictions as with the fact that women perform equally well in approximately the same percentage of a similar sampling of men.

I have one final comment, regarding the choice of students' favorite architects. I find it fascinating that Mr. Wagner considers the choices "conservative," as he does the choices of preferred buildings. I was also surprised by the listing of three historical figures in the student list and only one among the practitioners, although the choice of Palladio in both instances is more a result, in my opinion, of a certain cultism among "post-modernists" than a meaningful understanding of his qualities and faults.

Returning to the concept of conservatism, I feel that authenticity of spirit should not be viewed in political terms. Such spirit transcends fashionable descriptions. In keeping with this prejudice, I am surprised, in a reverse fashion from that of Mr. Wagner, that several of the architects on the students' list are there at all. It has been my perception that students quickly see through dilettantism, regardless of how intellectual, because they are

in search of a deeper individual meaning for themselves. Their top choices agree with this perception.

Bruno Leon
Dean, School of Architecture
University of Detroit
Detroit

I have just received the handsome issue of *Record Interiors 1981*, which included the Alcan offices in Toronto [RECORD, mid-February 1981, pages 110-112]. The coverage and photographs are beautiful and I congratulate you on the issue as a whole.

However, I must point out that the "successful earlier design for the Toronto offices of Alcan" was carried out not by Barton Myers but by Diamond and Myers, Architects, and should be so credited. I was a principal in that partnership and was very much involved in the earlier design of the Alcan offices. Subsequently my own firm, A. J. Diamond Associates, has carried out the design for Alcan's Montreal offices and an Alcan medical clinic in northern Quebec, and we are now in the process of designing Alcan's offices in Cleveland.

While it may seem to you a fine point, I know you will understand that publication in ARCHITECTURAL RECORD carries with it considerable prestige. Consequently the implication that Barton Myers's new firm is

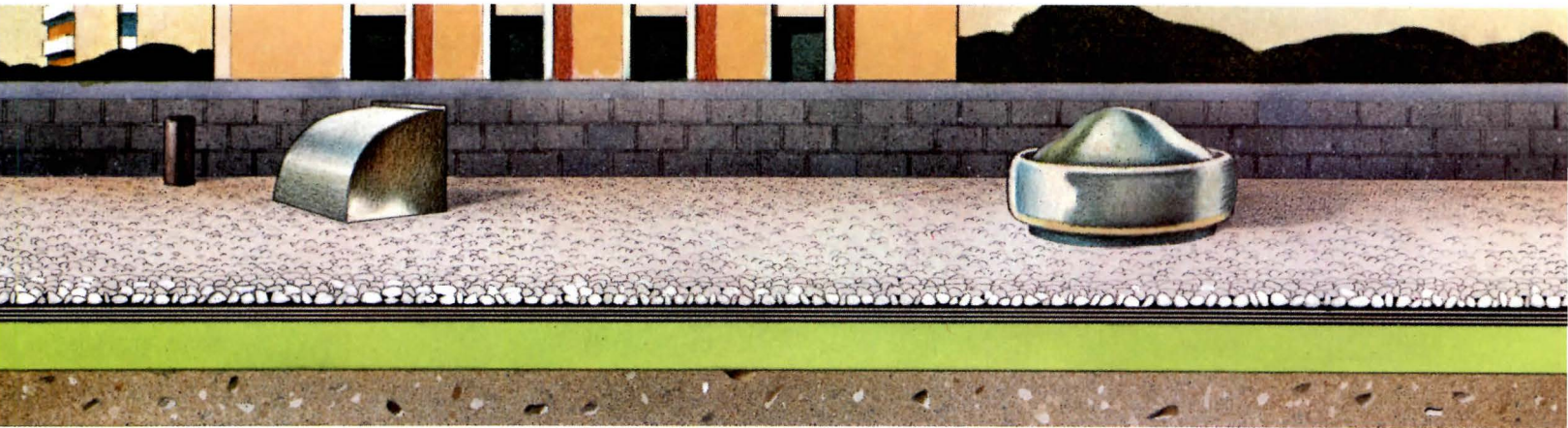
the sole successor to the former Diamond and Myers partnership causes me some concern.

A. J. Diamond
A. J. Diamond Associates
Toronto

In my news item on Hassan Fathy in New Mexico [RECORD, December 1980, page 39], you switched my word *Islam* for *Mohammedanism*. This word does not exist in Arabic and was invented by Western Orientalists who did not understand that the life system they were attempting to codify is rightly called *Islam*, which means the way of peace or surrender. Those who follow Islam are Muslims, meaning people in a state of surrender to God. "Mohammedanism" misses the point absolutely central to Islamic belief that nothing and no one comes between the human being and God. The term "Mohammedan" is no longer used in the press or in any publication, scholarly or not, as today most people seem to use the correct term.

My original sentence was "this building is the first in a larger scheme commissioned by an American group of converts to Islam. . . ." And thanks for clarifying this most important use of language.

Simone Swan
New York City



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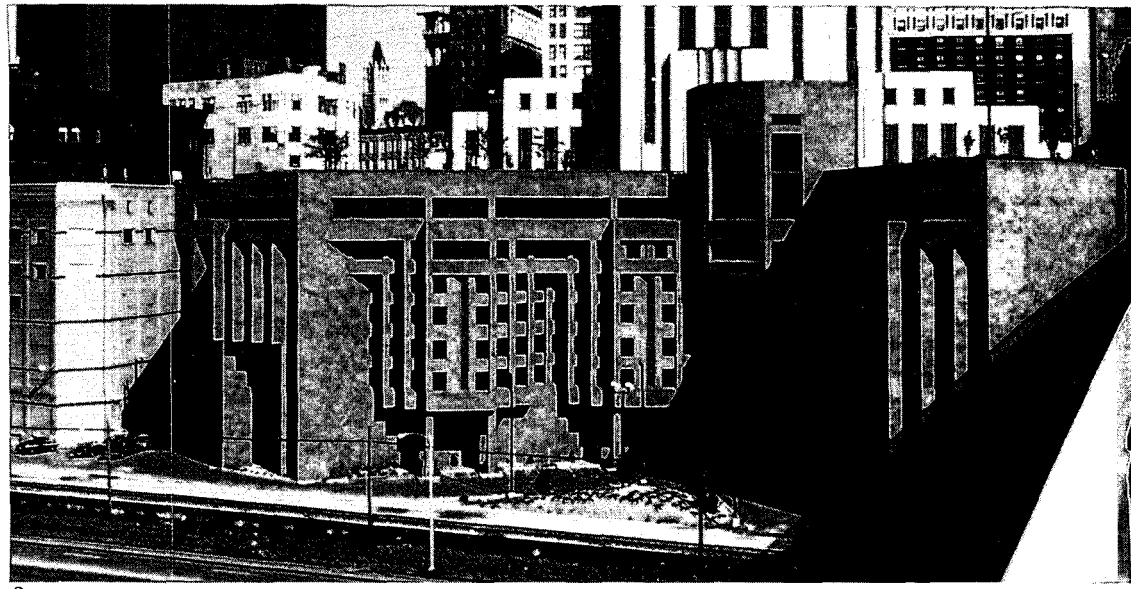
Circle 31 on inquiry card

DESIGN AWARDS/COMPETITIONS

1981 AIA Honor Awards. A broad range of design excellence distinguishes the 15 projects honored this month at the AIA National Convention. Hugh Stubbins, FAIA, chairman of the jury for current-use projects (the winners in this category appear below), noted that the diversity of entries indicates "a healthy and continuous reevaluation of form and approach in solving ever more complex and contextual problems." Extended-use projects (overleaf) were selected by a jury chaired by Arthur Cotton Moore, FAIA. Mr. Moore found widespread "confidence in juxtaposing the old and the new. . . . However, a complete absorption of the new elements, without damaging the building's original architectural quality, continues to be a major challenge."



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Stu West



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Robert Lautman

AWARDS FOR CURRENT USE

In addition to chairman Hugh Stubbins, the current-use jury consisted of William N. Morgan, FAIA, Jacksonville, Florida; John W. Moutoussamy, FAIA, Chicago; Evans Woollen, AIA, Indianapolis; Cathy J. Simon, AIA, San Francisco; Frank B. Moson, associate member AIA, Tucson; and Scott Johnston, an architecture student at the University of Wisconsin-Milwaukee. Jury comments and descriptions of award-winning buildings follow.

1. New residential community, Roosevelt Island, New York, New York; Sert, Jackson and Associates Inc., architects (see RECORD, August

1976, pages 101-107). A town-within-the-city was created on a nine-acre site. "A significant example of a prototype for high-density urban housing with concern for the amenities of each dwelling unit."

2. Ramsey County Adult Detention Center, St. Paul, Minnesota; Gruzen & Partners/The Wold Association Inc., associated architects. Built into a cliff overlooking the Mississippi River, this downtown jail houses 132 inmates. A prestressed rock anchor system ties the concrete-frame and brick-infill structure to its site. The panel commented: "The building re-

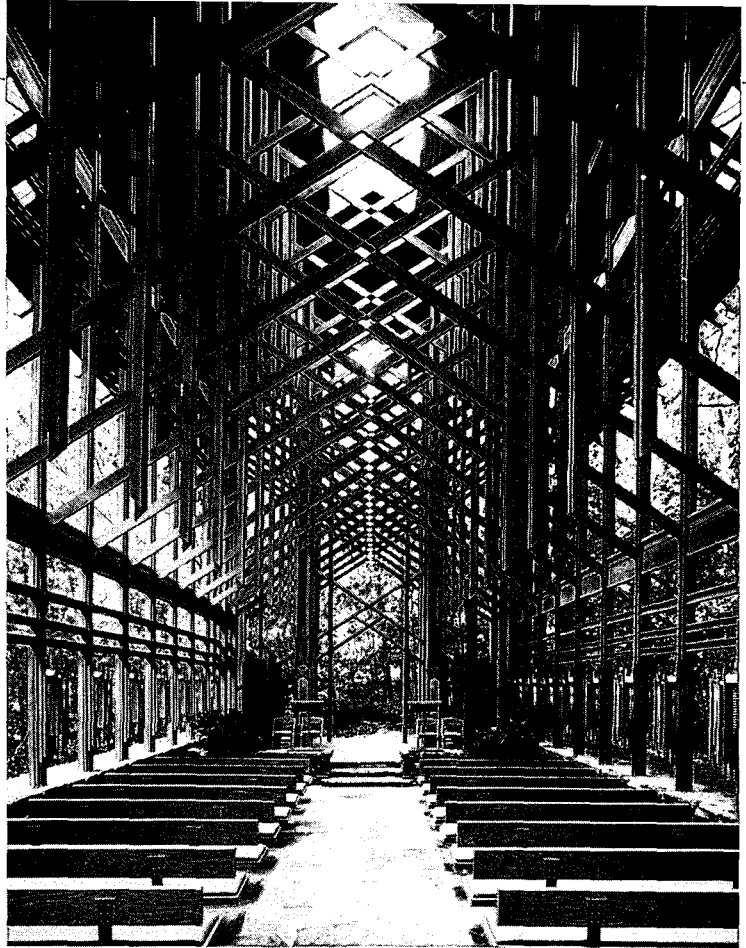
sponds to its urban context without dominating it, preserving and enhancing magnificent views of the river by the creation of a small urban park."

3. St. Mary's Gardens, Oakland, California; Peters, Clayberg & Caulfield, architects. Housing for the elderly is arranged in a barrier-free complex of five interconnected wood-frame buildings commissioned by a Catholic church. "This humanely organized project offers . . . secure outdoor spaces for viewing and use, a domestic scale, and many unit types."

4. National Permanent Building, Washington, D.C.; Hartman-Cox



Nick Wheeler



Christopher Lark/Hursley & Lark



Joseph W. Molitor



Ezra Stoller

Architects. The jury characterized this speculative office building two blocks from the White House as "a delightful, viable alternative solution to this building type." Windows are recessed or flush with the wall faces for variable sun control while, as the jury observed, "The relief of the facade reflects and respects historic buildings in the area."

5. Banco de Occidente, Guatemala City, Guatemala; Skidmore, Owings & Merrill, architects. The project comprises three buildings for Guatemala's oldest bank: a regional headquarters and two suburban branches.

Traditional materials, textures and courtyard plans are used to relate the buildings to their context. The panel praised the "unusual feeling of openness to the street and pedestrians, with a responsible degree of security. . . . In an area subject to recurrent power failures, each building can function efficiently without artificial light or power."

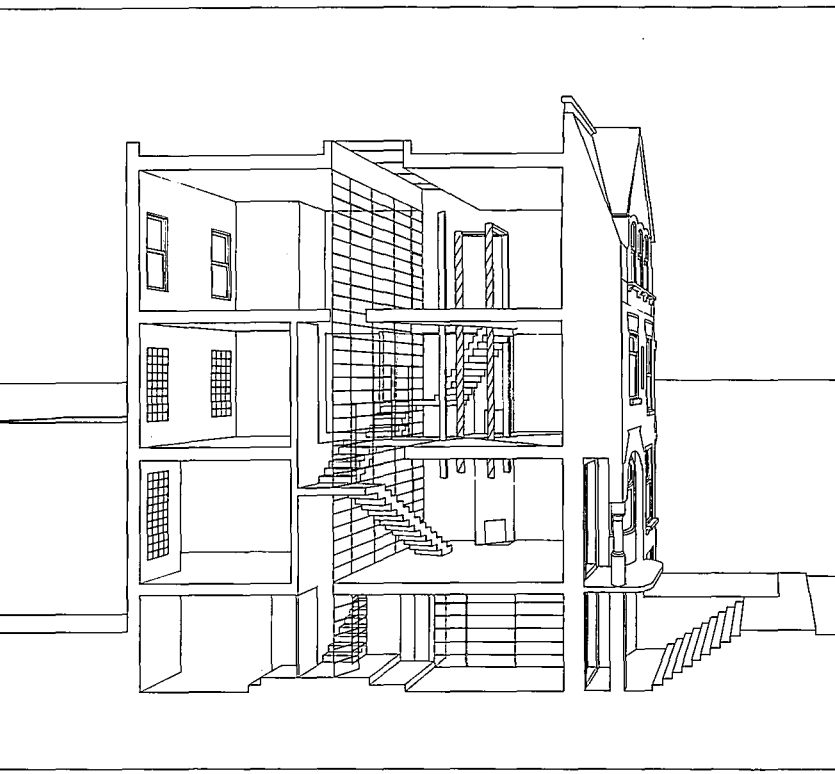
6. Thorncrown Chapel, Eureka Springs, Arkansas; Fay Jones & Associates, architects (see RECORD, March 1981, pages 88-93). "One experiences pleasure and a sense of discovery upon arriving at this 'great

lattice storm' deep in the woods of Arkansas," said the jury. "In the particularly American building tradition of wood-frame, stick structures represented by Maybeck, Wright, and Goff, and using minimal means, this chapel is a spiritual space."

7. Residence for Norman Gaffney, Coatesville, Pennsylvania; Bohlin Powell Larkin Cywinski Architects/Planners/Engineers. "Un beholden to any current fashions, but compatible with the vernacular of the region in which it is built" was the panel's assessment of this small house on a farm outside Philadelphia. The

architects sited the three-story house within the stone foundations of a burned-out barn, using extant walls as parts of the new structure and enclosures for a courtyard.

8. East Building, National Gallery of Art, Washington, D.C.; I.M. Pei & Partners, architects (see RECORD, August 1978, pages 79-92). The marble-and-glass building was cited for its sensitive relationship to the Capital's street grid, meticulous workmanship, dramatic interior vistas, and integration of permanent artwork into public spaces. "In a city of monuments, it is appropriate."



1



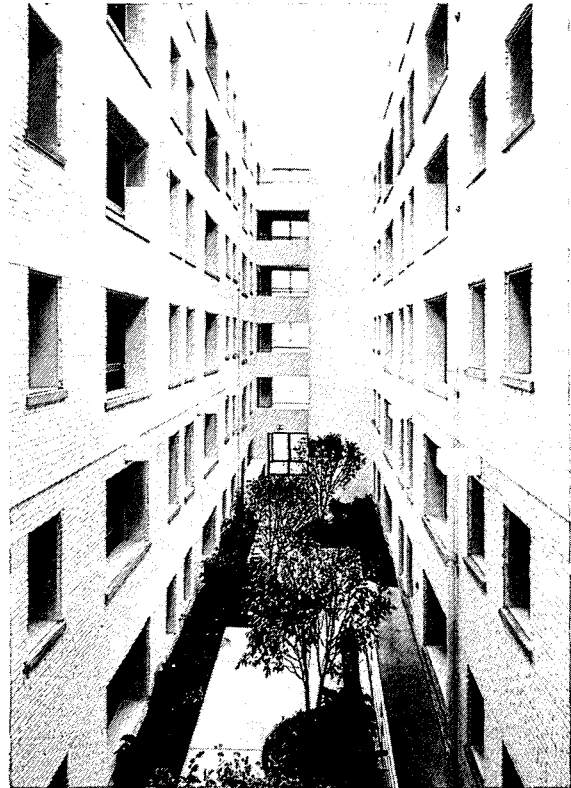
2

Cathy Kelly



3

Norman McGrath



4

Tom Van Eynde

AWARDS FOR EXTENDED USE

Arthur Cotton Moore's fellow jurors for this category were Piero Patri, AIA, San Francisco; Peter Chermayeff, AIA, Cambridge; Mildred Schmertz, FAIA, executive editor of RECORD; Stuart Cohen, AIA, Chicago; Nicholas H. Holmes III, associate member AIA, Mobile, Alabama; and Kimberly N. Stanley, an architecture student at Clemson University.

1. 38 East Schiller, Chicago, Illinois; Chrysalis Corp., architects. A Victorian town house was converted for mixed business and residential use. A screen wall of mirror glass divides the house vertically, separating family

areas to the rear from office space behind the preserved stone facade (the reflective glass also distributes solar energy collected through a skylight). "The sensuousness of the interior celebrates the juxtaposition of contrasting esthetics."

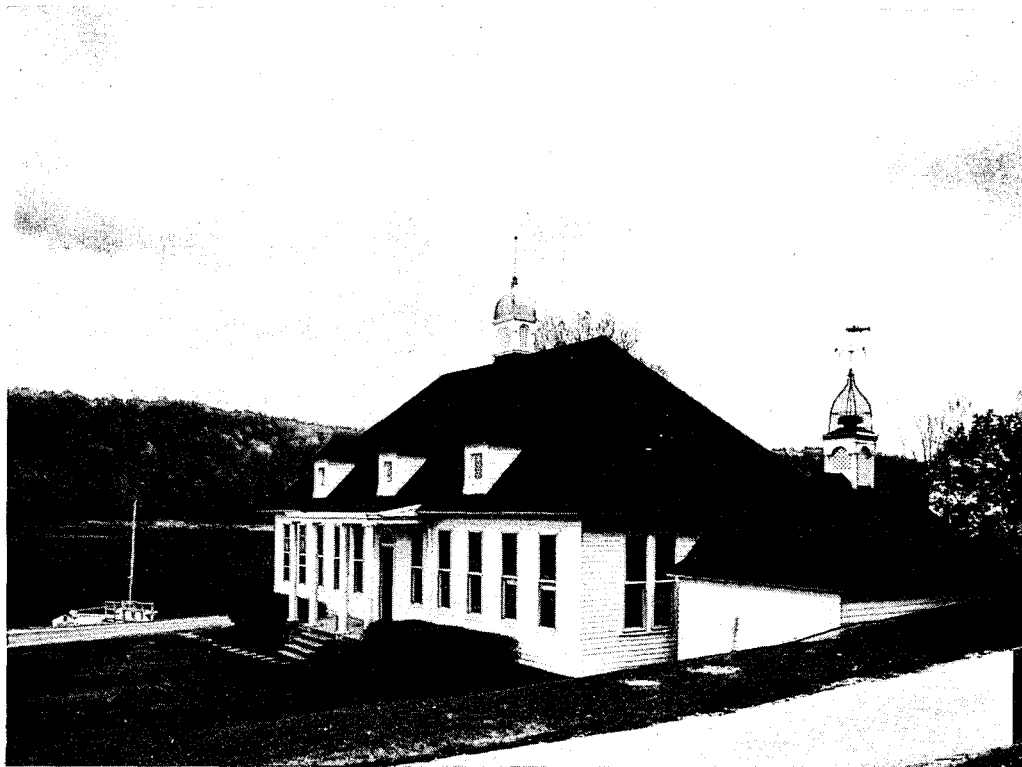
2. Crocker Art Gallery, Sacramento, California; Rosekrans and Broder Inc., architects (see RECORD, April 1981, pages 130-131). The architects rehabilitated a 108-year-old museum and inserted new services, while retaining as much as possible of the building's original opulence: "A splendid example of restoration."

3. Madison Civic Center, Madison, Wisconsin; Hardy Holzman Pfeiffer Associates, architects (see RECORD, July 1980, pages 77-84). A Moorish-style movie theater and a store have been expanded to furnish a home for the visual, performing, and media arts. "An ad hoc collection of buildings has been woven together to reinforce the street and still create a sense of a grand palace."

4. The Oaks, Oak Park, Illinois; Nagle, Hartray & Associates Ltd., architects. By transforming a 17-foot-wide court into a glass-roofed atrium, two separate hotel buildings were unified into a



5 Taft Architects



6 Norman McGrath



7 ©Steve Rosenthal

complex of 76 apartments for the aged. The jury remarked: "A common problem in older buildings where overdense building results in an inadequate light well is that this narrow slot becomes a violation of privacy. . . . [At The Oaks] this grave defect has been turned into a resource for a sense of community."

5. Hendley Building, Galveston, Texas; Taft Architects. This Victorian commercial building is now occupied by the Galveston Historical Foundation. The architects made a new grid-work of buttresses into a positive feature of their design, using it to

house mechanical services that would have altered the scale of vintage interiors. The outer wall, with its exposed stairway, was appreciated by the jury as "a playful new contribution to the surrounding environment."

6. Jones Laboratory, Cold Spring Harbor, New York; Moore Grover Harper, P.C., architects. A nineteenth-century building at a cancer research center has been remodeled into neurobiological laboratories. In order to avoid any disturbance of sensitive equipment, each laboratory stands on an independent foundation and is shielded by an aluminum skin. "The

old restored wood-shell building provides an immediate warm lodgelike social space directly adjacent to the private, specially engineered vibration-isolated lab spaces."

7. Hall of Languages, Syracuse University, Syracuse, New York; Sargent-Webster-Crenshaw & Folley and Architectural Resources Cambridge Inc., architects (see RECORD, January 1981, pages 104-107). "This project employs a very creative section and extends the campus axis and main line of circulation up diagonally through the building, creating a grand new interior space."

Calendar

Historic Savannah Foundation Design Competition. The registration deadline has been advanced to May 15. Prize monies for the design of infill housing in Savannah's Victorian District will be \$3,000 (premiated design), \$1,000 (second place), \$500 (third place). For information write to Audrey Rhangos, P.O. Box 1733, Savannah, Georgia 31402.

Rancho Bernardo Performing Arts Center Competition. An international design competition for a \$15-million performing arts facility in San Diego, California has been announced by Rancho Bernardo Symphony on the Green, Inc. in conjunction with the National Endowment for the Arts Design Arts Program. Submissions for an open pre-qualifying process, from which five finalists will be selected, must be received by May 25. There is a \$50 registration fee. Finalists will receive a fixed fee to cover costs of participating in a week-long on-site charrette. The winner will supervise implementation of the master plan. For information contact Terry Hughes, Project Director, Performing Arts Center Project, P.O. Box 28344, San Diego, California 92128.

Red Cedar Shingle & Handsplit Shake Bureau Design Competition. Entry blanks are due June 12. Contact the Red Cedar Shingle & Handsplit Shake Bureau/AIA Architectural Awards Program, 515 116th Ave. N.E., Suite 275, Bellevue, Washington 98004.

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Searching for energy: an ad hoc compendium

APPLIED SOLAR ENERGY: A GUIDE TO THE DESIGN, INSTALLATION AND MAINTENANCE OF HEATING AND HOT WATER SERVICES, by David Kut and Gerard Hare; *The Architectural Press/Halsted Press/John Wiley & Sons*, \$19.95.

The text and accompanying illustrations focus on the application of solar energy to hot water supply, space heating, and swimming pool systems, but reference is also made to other uses of solar energy which are currently undergoing development or research.

ENERGY CONSERVATION: SELF-EVALUATION MANUAL, *The Fairmont Press*, \$15.

Intended to be used as a self-evaluating checklist to: determine the major factors of energy consumption "in the Federal facility and determine factors contributing to the over-all energy usage in the specific area;" discover transferable techniques for saving energy; provide guidance to Federal facility managers to pinpoint modifications in building systems and operational practices that would result in reducing energy consumption; identify areas where additional information would be helpful and constructive suggestions welcome; and reinforce the importance of energy conservation and its place in our National Energy Policy.

HANDBOOK OF ENERGY AUDITS, by Albert Thumann; *The Fairmont Press*, \$32.

According to the author: "contains all the information necessary to establish energy audit programs for buildings and facilities."

HOME ENERGY FOR THE EIGHTIES/PLUS: COMPLETE CATALOG ON ALTERNATE ENERGY SYSTEMS, by Ralph Wolfe and Peter Clegg; *Garden Way*, \$10.95.

A comprehensive sourcebook that offers an "easy-to-understand" explanation of alternate energy systems. The catalog section describes current products and sources.

HOUSING, CLIMATE AND COMFORT, by Martin Evans; *The Architectural Press/Halsted Press/John Wiley & Sons*, \$39.95.

Deals with the environmental design problems of the whole range of climate types: "provides a much needed fundamental reference for all those involved in construction in the developing countries of the world . . ." Includes practical advice on site selection, type of construction, and window design.

HOW TO BUILD A SOLAR HEATER, by Ted Lucas; *Crown Publishers*, \$7.95.

A guide to building solar panels, water heaters, pool heaters, and more . . . with "up-to-date" supply source information.

IMPROVING ENERGY EFFICIENCY IN BUILDINGS: A MANAGEMENT GUIDE, by Dennis Landsberg and Ronald Stewart; *State University of New York Press*, \$29.

The purpose of this handbook is to present a systematic approach to reducing energy consumption in buildings. There are four parts to

the process: identifying patterns of energy usage; examining energy alternatives; rating modifications to the building structure systems or schedule; and making energy conservation a permanent part of every building.

PASSIVE SOLAR HEATING DESIGN, by Ralph M. Lebens; *Applied Science Publishers/Halsted Press/John Wiley & Sons*, \$54.95.

Includes: active versus passive—towards a design philosophy; classification and comparison of passive systems; a workbook of passive solar design tools and logic; worked example—presentation and performance analyses; and example calculations of heating load using the conventional degree day and the proposed adjusted degree day method.

PEOPLE'S SOLAR SOURCEBOOK, by *Solar Usage Now, Inc; Solar Liberation Engineering*, \$5.

"The world's largest and most comprehensive buyer's catalog of solar energy products," boasts the Ohio consortium that distributes this ambitious volume.

SOLAR ENERGY APPLICATION IN BUILDINGS, edited by A.A.M. Sayigh; *Academic Press*, \$51.50.

Consists of 19 chapters: 1-6 are devoted to climate, storage of solar energy, and material properties; 7-10 are devoted to passive heating and cooling in buildings; and 11-19 deal with various applications of solar energy in both old and new buildings.

SOLAR ENERGY APPLICATIONS IN THE DESIGN OF BUILDINGS, edited by Henry J. Cowan; *Applied Science Publishers*, \$50.

Contains the papers presented at a symposium on solar energy at Sydney University in 1979. Includes chapters on: the extent and nature of energy problems in the design of buildings; developments designed to exploit solar energy; the availability and use of climatic data; computer and other applications concerned with the physical environment; and an examination of thermal insulation in buildings, solar energy systems and "sun shading" devices.

SOLAR ENERGY UTILIZATION, by Tim Michels; *Van Nostrand Reinhold*, \$18.50.

The president of an energy consulting firm provides ready-to-use information on designing a wide range of passive and active solar energy systems. Includes information on how to weigh the costs and benefits of each system type based on the specific situation—climate, type and size of dwelling, energy conservation options, and other available energy sources.

SOLAR HEATING SYSTEMS: ANALYSIS AND DESIGN WITH THE SUN-PULSE METHOD, by Gordon F. Tully; *McGraw-Hill Book Company*, \$23.95.

Covers a variety of solar heating systems, but concentrates on those that are liquid cooled—especially emphasizing the "drain-back" design that "has proven to be among the simplest and most reliable active system designs." Covers the essential variables which would be used in a computer simulation . . . Studies the relationship between heat supply

and demand in a solar heating system, using graphs to show how system sizing affects the over-all output during a typical year . . . Introduces a new calculation concept that reduces all insulation data to simple wavelike pulses. . . .

THE ARCHITECT'S GUIDE TO ENERGY CONSERVATION: REALISTIC ENERGY PLANNING FOR BUILDINGS, by Seymour Jarmul; *McGraw-Hill Book Company*, \$18.50.

Using case studies of numerous buildings—to demonstrate the basis for the design, the cost of the work, and the resulting energy savings—this volume is intended as a practical guide designed "to help you make solid economic sense out of the deluge of energy-saving advice that's inundating today's busy architect."

THE ENERGY AND ENVIRONMENT CHECKLIST, prepared by Betty Warren; *Friends of the Earth*, \$5.95.

"An opinionated listing of over 1,600 sources of information . . . for doing everything from fighting a nuclear plant to building a roof-top solar collector."

THE HAWKWEED PASSIVE SOLAR HOUSE BOOK, by *The Hawkweed Group*, foreword by William Keck; *Rand McNally & Company*, \$7.95.

Three architects and a city planner attempt to prove: that a new solar home need cost no more than a conventional home; that the technology is available and easily understood; and that solar heating is suitable for cold climates. A step-by-step, how-to book.

SOLAR ENERGY HANDBOOK: THEORY AND APPLICATIONS, by *Power Systems Group/AMETEK Inc; Chilton Book Company*, \$18.50.

Incorporates theoretical knowledge relevant to solar energy . . . and includes contemporary information gained through research and practical experience specific to the field of solar energy and its utilization. Intended as a primer to theory and as a guide for practical applications.

SOLAR ENERGY IN BUILDINGS, by Charles Chaulia-guet, Pierre Baratsabal, and Jean-Pierre Batellier; *John Wiley & Sons*, \$24.25.

Covers the background scientific information required for the assessment of solar energy systems in the design of buildings; includes methods of assessing the viability of an individual site and the criteria involved in assessing the economics of the project.

WORLD SOLAR ARCHITECTURE, by S.V. Szokolay; *The Architectural Press/Halsted Press/John Wiley & Sons*, \$64.95.

Case studies of over a hundred solar buildings in Japan, the USA, Europe, and Australia—each illustrated with plans and photographs showing how the basic problems of solar design have been resolved. The case studies are presented against a detailed background of the physical principles and technical possibilities. Calculation methods, design data and advice on the use of programmable calculators for computation are also included.



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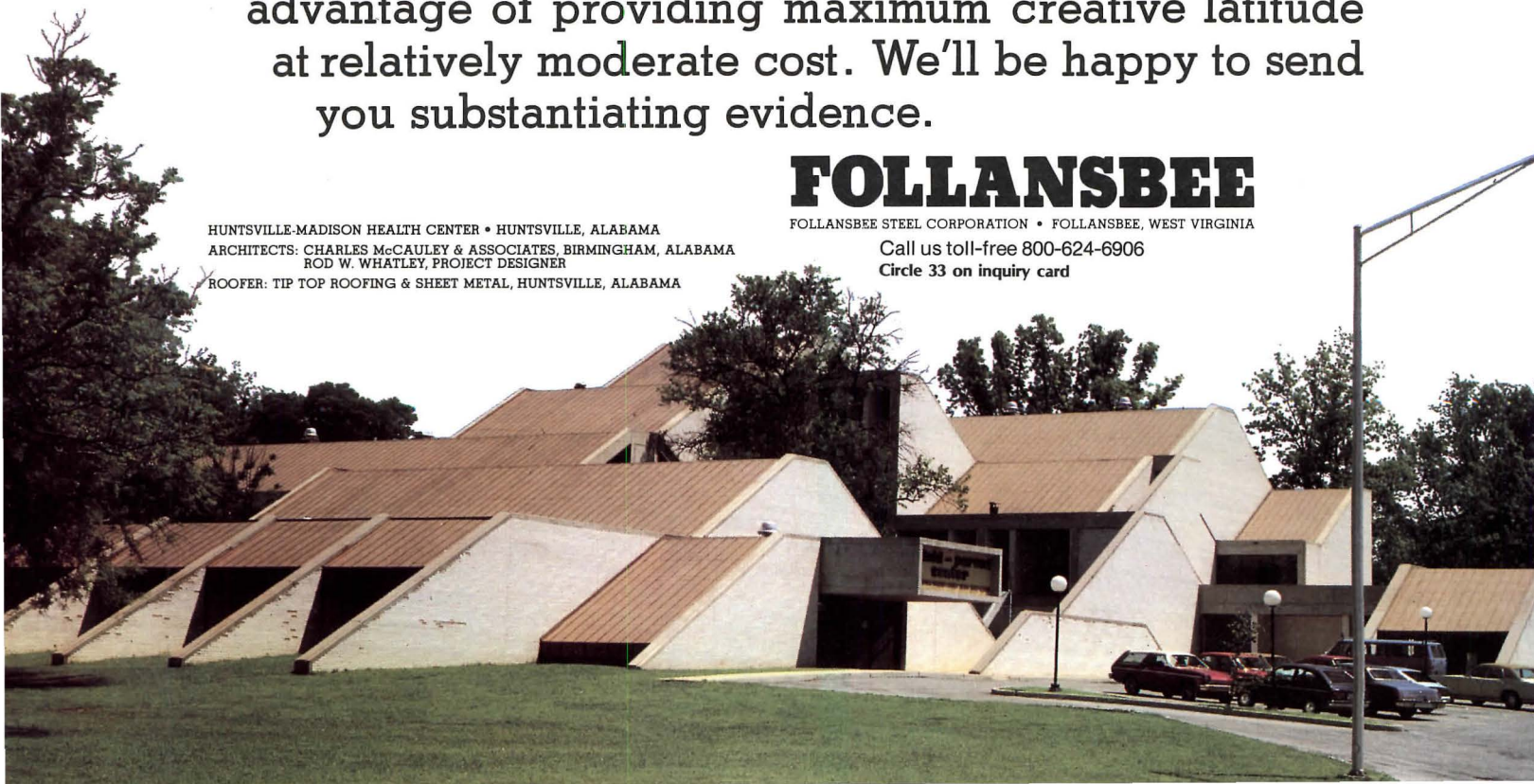
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Design cost analysis: a primer

For many architects, cost control is a very real problem with considerable impact on all phases of design. In an important new book, *Design Cost Analysis for Architects and Engineers*,* Herbert Swinburne presents a step-by-step guide to the entire cost-control process, supplemented with case histories, a systematic costing checklist, and a data base of building construction costs for every region of the country. Highlights of this rigorous study are summarized in the following article.

by Herbert Swinburne, FAIA

Design Cost Analysis for Architects and Engineers outlines fundamental questions that the architect should address to staff and engineers, and suggests how to monitor their efforts. Above all, it is a guide to making crucial decisions during the early design stages when cost-saving potential is greatest, so that the architect can forecast final construction costs even as the first sketches of a facility are getting underway.

The objectives of design cost analysis

- Seek maximum value. Maximum value is achieved when essential function is obtained at minimum cost. The essential function, which is defined in the building program, goes far beyond a mere description of spatial requirements and relationships. Value includes user needs, environmental and community impact, as well as physical form. Once levels of quality have been set for these physical and esthetic requirements, design alternatives can be explored to realize lowest costs within defined objectives.

- Maintain cost control during program and design. In order to develop cost-control capabilities, architects must identify cost distribution within their buildings *by systems* during both program and schematic design phases. At this stage, with planning still fluid, it is also imperative to explore conceptual design alternatives and system tradeoffs until cost targets can be bracketed. During design development, architects must achieve a balance between funds committed for construction and the design response to the building program. Building design and cost should be frozen, and both must be held in positive balance throughout the construction document phase to guarantee that there will be no surprises when bids open.

- Parallel architectural design with engineering design. Engineering systems such as hvac,

electrical, and plumbing must be considered simultaneously with architectural systems design and its cost during schematic design. At the same time, the value of various systems should be analyzed and other alternatives explored. The intuitive leap to a quick design solution may result in great architecture but it ignores costs absolutely. One must decide whether cost considerations ought to be pursued in depth during conceptual design. If so, rigorous cost procedures should be initiated and carried through design development and the construction document phase with constant vigilance.

Cost definitions

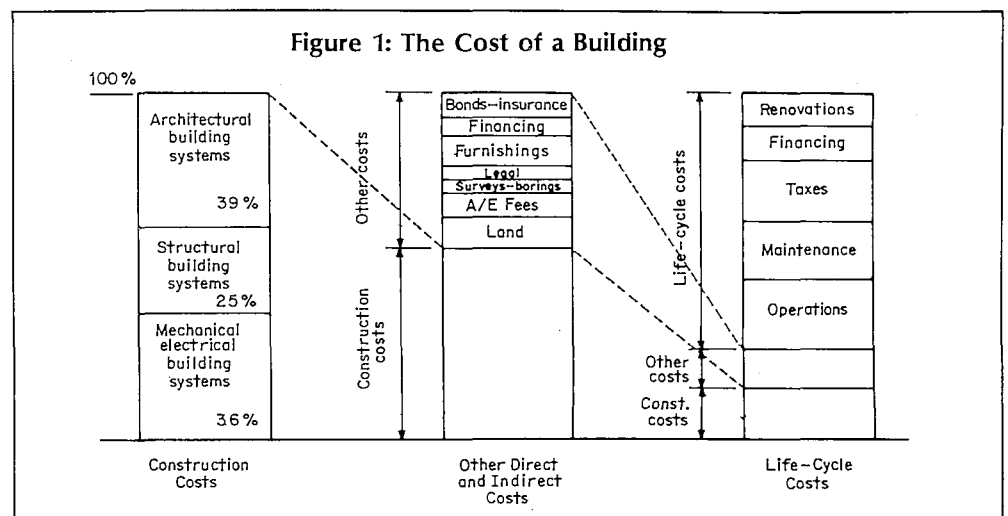
The cost of a building to the owner can be visualized in three parts. The first part is the cost of construction. The owner's needs establish what the functions and size of a building should be, and the resulting design sets construction costs. All other costs relate to construction costs. The second part of building cost is all those direct and indirect expenses, other than construction, that an owner must incur before a building can be occupied. The third part includes all life-cycle costs. Low initial building costs achieved by the sacrifice of quality can result in high life-cycle costs.

Figure 1 (below) illustrates these three components of building cost. The first column shows that, on the average, architectural building systems account for about 39 per cent of construction costs, structural engineering systems about 25 per cent, and mechanical-electrical engineering systems 36 per cent. The second column illustrates other costs before occupancy; land is a large variable and can be significantly high in downtown urban locations. At this writing, financing charges are delaying or stopping the construction of many buildings. The third column shows that total life-cycle cost dwarfs the initial cost of construction.

Prerequisites for cost control

- Data base. This book employs a construction-cost data base developed by the McGraw-Hill Information Systems Company. (1971 cost data are used in solving cost problems, although general procedures and methods are based on the updated annual edition of *Dodge Construction Systems Costs*, also published by McGraw-Hill. Consequently, unlike most books dealing with costs, this one will not become obsolete.) One chapter shows a very simple way to get computer estimates during program and early design stages, modify the design, and keep it in balance with the budget all the way through construction documents.

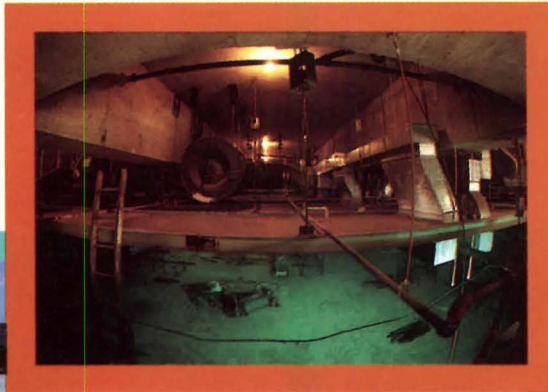
- Procedures. The book examines the cost of architectural and structural engineering systems in detail and then outlines a set of procedures for cost control during design and construction. Sufficient material from the data base is contained in an appendix to work out all cost problems in the text. Careful proce-



* DESIGN COST ANALYSIS FOR ARCHITECTS AND ENGINEERS, by Herbert Swinburne, FAIA; McGraw-Hill, \$18.95

Herbert Swinburne, a principal in the Philadelphia firm of Nolen-Swinburne and Associates for 25 years, is currently an architectural planning consultant.

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*Architect: A. Epstein and Sons, Inc.
 Construction Manager: Metropolitan Structures, Inc. Platform/Ceiling Fabricator: Anning-Johnson Co.*

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dures combined with access to an accurate data base provide "accountancy" and become an integral part of the design process.

- Knowledge of market conditions. Cost control can achieve about 80-to-90 per cent accuracy when dealing with measurable quantities described in drawings and specifications, but one can rely only on informed forecasting when uncontrollable market conditions exist. These conditions include:

- Inflation/escalation
- Time of year
- Bidding load on other local projects
- Labor supply/strikes
- Union shop/open shop
- Material shortages/outages
- Industrial capacity/backlog
- Weather conditions
- Cost of construction money
- Hunger factor/profit and overhead.

Building escalation costs can be projected to an estimated midpoint of construction, and the estimate can be adjusted to reflect these costs. All other market conditions must be studied carefully, and the cost estimate adjusted to compensate for these conditions. Such a procedure should bring the accuracy factor to within a point or two of the low bid or negotiated contract.

- The design team. Design, in the sense used here, includes elements of design other than architecture, and a design team includes members from each of the engineering disciplines as well as a cost manager who deals with building costs. Each member of this team contributes to the design solution and carries weight in advancing ideas, but the architect, as the prime contractor, is first among equals. The architect is also the generalist who creates the building concept, or series of concepts, to which the consulting engineers and cost manager must react.

Elements of cost control

- Building type. The data base for this book considers 43 building types, each of which is subdivided into three levels of quality.

- Building size. Obviously the size of a building is a major determinant of its total cost. At the same time, the larger the building, the lower its potential unit cost, owing to the quantities involved. The ratio of net square-footage to the gross square-footage needed to enclose and service it is a design decision with significant cost impact. Building size can spread horizontally or vertically, with a different set of site and foundation costs involved in each option.

- Building quality. Quality is of two kinds: physical and intangible. Physical quality entails the quality of materials and equipment and the effort applied to mitigating environmental degradation on and around the site. Intangible quality derives from building image, amenities for building users, and impact on the surrounding community. Intangibles must be set forth in the building program, and the physical qualities must be enumerated in the details of that program.

- Building complexity. According to its intended purpose, a building may be as simple as a warehouse or as complex as a medical

research facility. The shape of a building may also be simple or complex, and this can drastically affect mechanical and structural costs. In addition, any one of the building systems may be simple or complex within itself without impinging on any other system.

- Building location. The cost of the same building constructed in different regions may differ markedly because of dissimilar wage rates, materials and shipping costs, and local market conditions.

- Time. All elements of cost are influenced by the time allotted for design and construction. Construction may follow the traditional design-bid-build method or it may follow any one of the many forms of fast-tracking. Each method sets up different roles for designers, builders, managers, and owners.

Cost control using building systems

If PROGRAM + DESIGN = COST, then it follows that the building the owner desires (program + design) must be kept in balance with the funds committed for its completion (cost). The balancing mechanism is cost control. Cost control examines the cost of every component in a design, looks ahead to the time when the building will be completed, forecasts shifting cost probabilities, and advises on design decisions. Cost control begins by establishing a realistic budget for construction based on the building program, to ensure that the program itself does not call for more than the available funds can deliver. After the budget is set, cost control seeks balance in the seesaw of alternative solutions in schematic design, approaches equilibrium during

building systems selection in design development, and finally achieves full balance of all costs in the construction document phase, once subsystem and component design is complete (see Figure 2).

Cost control demands constant awareness—awareness of shifts in size, function, complexity, and quality as well as any cost oscillations caused by a change in design decisions. Thus, cost control shows how to correct imbalances between the building desired and its final cost. The estimating procedures set forth in *Design Cost Analysis* are based on 15 building systems (site work excluded) and *not* on the basis of a trade breakdown using the 16 divisions of the Uniform Construction Index (UCI). A building system is to be thought of as an independent entity made up of those subsystems and components needed to fulfill essential functions. The cost of one building system can be computed independently without affecting the cost of other systems. This permits subsystem and component design, and their costs, to be changed as required to yield maximum value. The key to cost control lies within each building system. Architects create space and architectural form by manipulating building systems—and that is their natural language for cost estimating.

The costs of many building types vary with quality. For example, Figure 3 shows the 1979 systems costs for a laboratory building. These are average national costs and must be adjusted for specific locations using the factors for individual cities contained in the book's appendix.

Figure 2: Cost Control

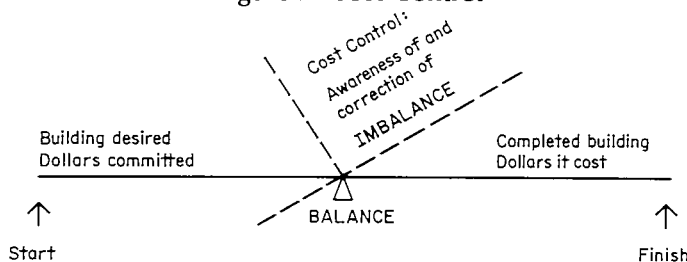


Figure 3: System Costs for a Laboratory Building

Building system	Low Average		Average		High Average	
	\$/sq ft	% tot	\$/sq ft	% tot	\$/sq ft	% tot
Foundations	\$ 2.26	5.2%	\$ 2.42	3.8%	\$ 2.50	3.7%
Floors on grade	0.84	1.9	0.90	1.4	0.92	1.4
Superstructure	6.20	14.3	10.94	17.1	11.16	16.5
Roofing	0.96	2.2	1.02	1.6	1.06	1.6
Exterior walls	4.36	10.0	6.80	10.6	7.28	10.8
Partitions	3.06	7.1	3.28	5.1	3.52	5.2
Wall finishes	1.80	4.1	1.94	3.0	2.06	3.0
Floor finishes	1.28	2.9	1.36	2.1	1.46	2.2
Ceiling finishes	1.24	2.9	1.34	2.1	1.44	2.1
Conveying systems	0.86	2.0	0.92	1.4	0.98	1.4
Specialties	1.88	4.3	2.02	3.2	2.16	3.2
Fixed equipment	3.57	8.2	5.10	8.0	5.46	8.1
HVAC	6.06	14.0	10.76	16.8	11.50	17.0
Plumbing	3.92	9.0	6.34	9.9	6.78	10.0
Electrical	5.10	11.8	8.76	13.7	9.36	13.8
Construction cost	\$43.39	100%	\$63.90	100%	\$67.64	100%

Source: Dodge Building Cost Services (McGraw-Hill Information Systems Company) with Wood & Tower Inc., 1979
Dodge Construction Systems Costs, McGraw-Hill, New York, 1978

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Engineers' share of the construction dollar
 Engineers carry a larger part of the construction dollar than most architects realize. Well over half the cost of construction derives from engineering building systems. Cost control begins with a knowledge of engineering systems during schematic design, when it is difficult to get cost estimates from the consulting engineer. Figure 4 shows the engineer's share of the average costs for a college library. The distribution of costs of engineering and architectural systems varies by building type, and yet there are some remarkable similarities. Figure 5 illustrates six other building types with unit prices increasing at approximately \$10 a square foot. When the shared systems are apportioned, the engineers' share is 61 per cent and the architects' 39. Note the similarity in all system percentages in the shopping center and the hospital. It is evident why engineers must be heavily involved during schematic design and why all their work must be closely monitored. Early decisions are basic decisions that establish cost as well as design. Alternatives must be investigated in seeking maximum value. That means engineering alternatives as well as architectural alternatives—because that's where the big dollars are.

Cost analysis during the schematic design phase—an example

Schematic design, among other things, establishes building form and materials for the exterior walls system. Figure 6 analyzes a windowless museum proposed for St. Louis. Depending on the form of the building, and whether the wall is to be faced with brick or precast concrete, design cost analysis shows how exterior wall costs alone can vary tremendously—and it doesn't require a computer run to find out, just an hour's time and the right data base. Four alternate cost decisions can be made, with a difference of \$132,375 between the highest and lowest stages.

In the course of schematic design, building form and exterior materials are finalized. So are their costs—and they cannot be changed later!

Conclusions

Effective cost control is a creative process that integrates design decisions with cost decisions. It will be attained only when the partners or principals in architectural firms are committed to design cost analysis; when design cost analysis is understood and applied in day-to-day activities by architectural and engineering designers, detailers, and specifiers; and when every design sketch is accompanied by a cost sketch. Moreover, effective cost control throughout the profession will not be attained until design cost analysis in some consistent form is placed in the curriculum of every accredited school of architecture, and incorporated into the examination for registration. Now that a current national data base is available, along with a system of estimating based on the architectural language of building systems, design cost analysis must be a fundamental part of every architect's training.

Figure 4: The Engineers' Share of Average Construction Costs for a College Library

(Site costs are excluded.)

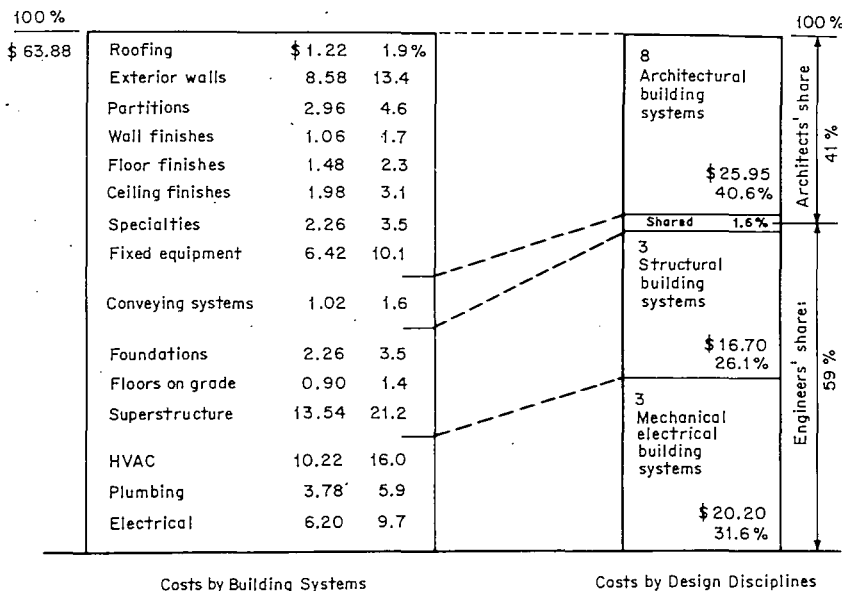


Figure 5: Distribution of Average Costs among Architectural and Engineering Systems

Average cost/sq ft*	Building type	1	2	3	4	5	6
		% Arch. systems	% Eng. systems	% Shared System	% Struct. eng.	% Mechan. eng.	% Elect. eng.
\$23.54	Shopping center	34.7	65.3	0	28.9	21.8	14.6
36.70	Community center	45.7	54.3	0	30.1	14.8	9.4
48.00	Headquarters office building	41.4	57.4	1.5	26.5	23.0	7.9
59.78	University classroom building	38.4	60.1	1.5	22.3	25.2	12.6
63.90	Laboratory building	35.9	62.7	1.4	22.3	26.7	13.7
79.82	General hospital	34.6	62.6	2.8	16.5	30.1	16.0
Average percentage all types		38.4	60.4	1.2	24.4	23.6	12.4

* Cost of site work not included.

Figure 6: Some Exterior Wall Costs in St. Louis, Missouri

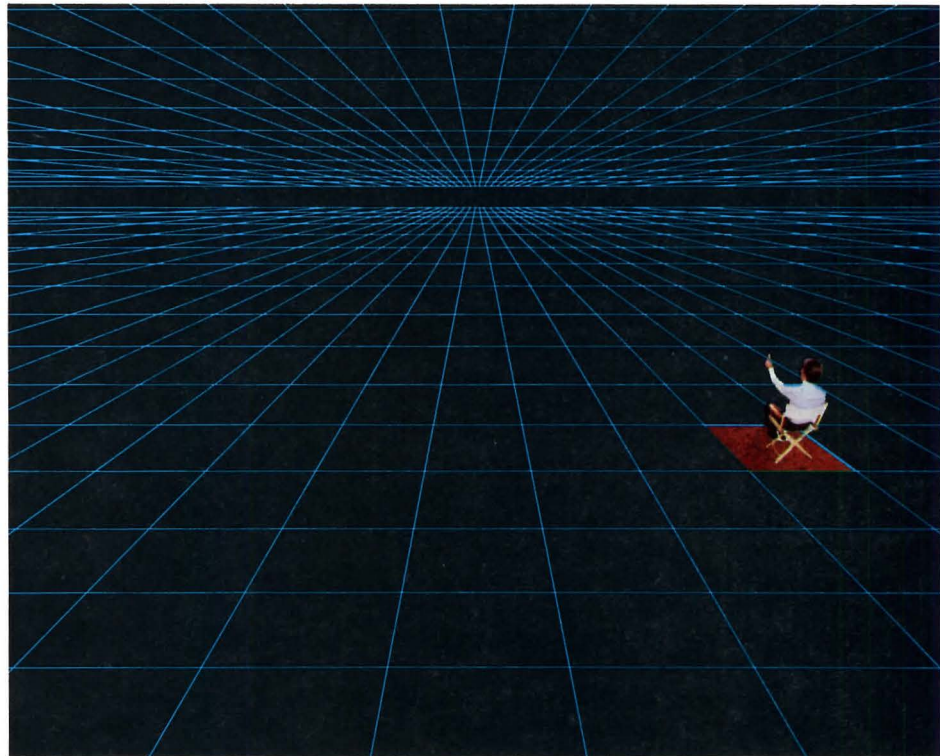
		Building Form	
		(A)	(B)
Two alternatives, each 15,625 sq ft			
Perimeter (lin ft)		500	600
Area of wall 25' high		12,500	15,000
Exterior Walls System	(1) 4" face brick + 8" block \$6.49/sq ft (national) \$6.81/sq ft (St. Louis)	\$ 85,125	\$102,150
	(2) Precast conc. + 8" block \$13.81/sq ft (national) \$4.50/sq ft (St. Louis)	\$181,250	\$217,500

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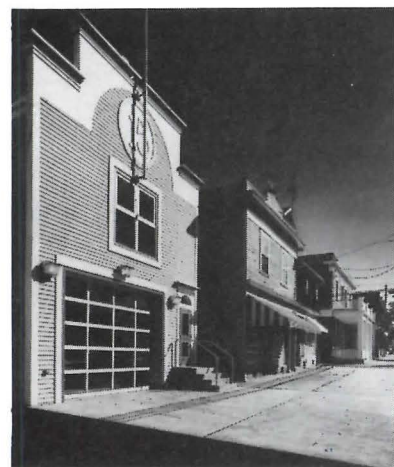
In interior design *Keraion*



Masters of the modest proposal

David Leung, David Hemmler, and Alex Camayd are quite serious when they describe their firm's recent firehouse project (shown below) as "an urban toy." An appealing blend of playfulness and modesty enlivens the designs of these young architects, now in their third year of partnership in Scranton, Pennsylvania (three more of their projects are illustrated on the following pages), but there is nothing frivolous or naive about their reshaping of humble materials, inexpensive construction methods, and well-tried symbolism into efficient buildings of considerable charm. The resourcefulness, respect for tradition, and neighborly good humor that one finds in the work of Leung Hemmler Camayd are cardinal virtues in Scranton and the surrounding region, whose economy is still recovering from the anthracite industry's postwar decline. "There just isn't enough money in the area to support lavish projects," says David Hemmler. "Even well-off clients don't want to project an image of ostentation." By making the most of a varied palette, simple allusions to historical sources, and adroit linkages of indoor and outdoor space, the architects have in each case transformed the thin-walled structure dictated by a meager budget into a positive esthetic device, with an impact on its surroundings that far outweighs any measure of actual size. —*Douglas Brenner*

O. Baitz, Inc. photos

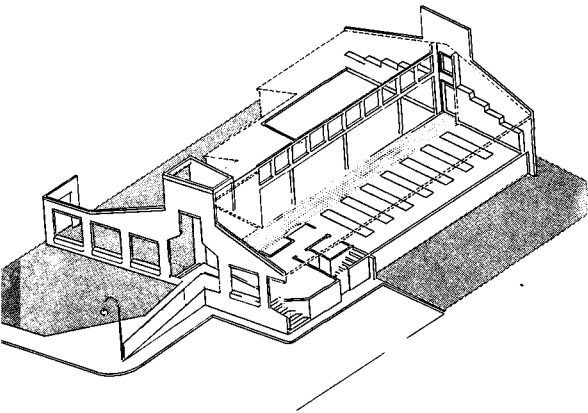


Fire Station No. 15 overlooks downtown Scranton from the once-exclusive Hill Section, whose streets are still lined with the mansions of departed coal barons. The key element in Leung Hemmler Camayd's \$162,000 renovation of this turn-of-the-century frame structure is an entirely new facade, crowned by a parapet that echoes the roof line of buildings next door. Besides adding a few inches of floor space for a longer fire engine, this handsome frontispiece, with its stylized Palladian arch and bold emblem, gives the building a fresh civic image. Inside, the second story was outfitted with a lounge, kitchen, dormitory, and locker room for firemen, who can lean out the window to raise the flag.

FIRE STATION NO. 15, Scranton, Pennsylvania. Owner: City of Scranton. Architects: Leung Hemmler Camayd. Engineers: Albert E. Peters & Associates. General contractor: Raymond & Son.



Dalton Community Library: front porch on Main Street

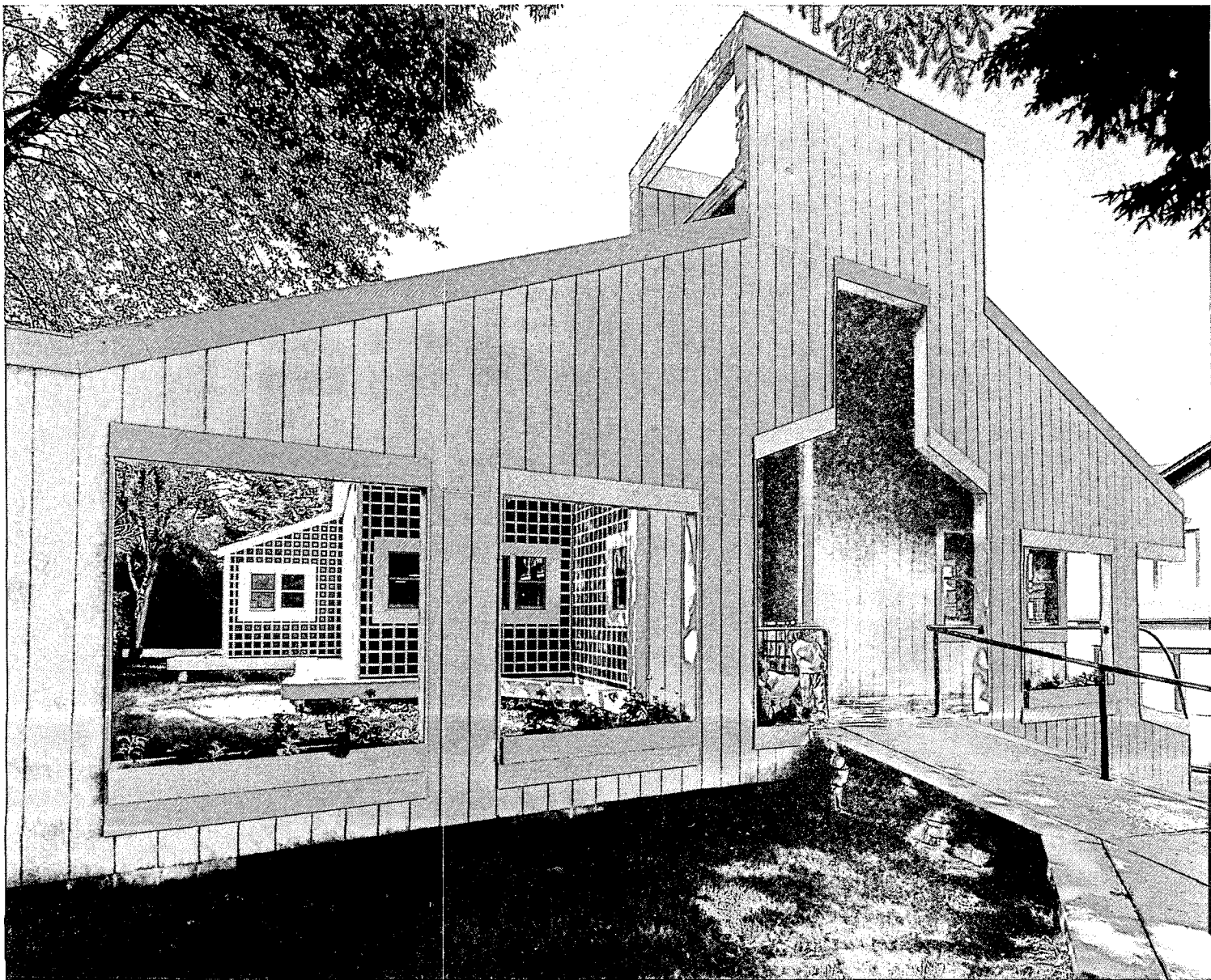


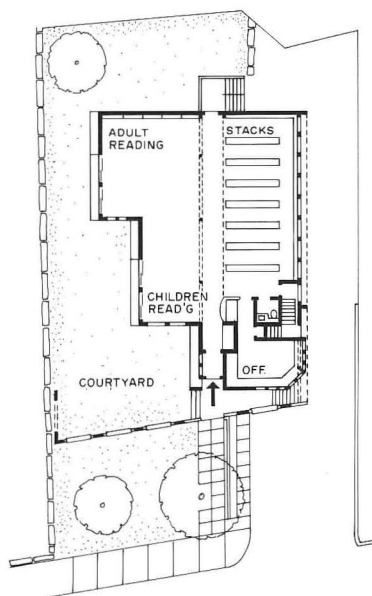
Located in the hills to the north of Scranton, Dalton still retains the flavor of a country town. When Dalton's library association was forced to vacate its storefront headquarters, the volunteer group commissioned Leung Hemmler Camayd to design its new home on a narrow site on East Main Street, near an historic inn. The \$75,000 job was Leung Hemmler Camayd's first team project, and the firm helped organize the construction fund drive (David Hemmler now drops by occasionally to mow the library lawn).

The client's program called for a light, airy reading room, an office, a place to store books, and a sheltered yard where librarians could continue a tradition of outdoor story hours. As in most of the firm's subsequent projects, the library was designed for economical construction by a local homebuilder, using a simple timber frame, plywood siding, and prefabricated roof trusses. The interior is organized along a central circulation spine, with stacks on one side and reading areas on the other, all visible from a main desk near

the entry. (Space for storage and book sales is provided in the basement.) The southern exposure of clerestory windows and sliding glass doors, which open onto a courtyard designed for storytelling, takes full advantage of natural light and solar heat. A perforated outer wall extends beyond the building to enclose one side of the courtyard and forms a porch at the library entrance, in homage to the broad verandas of nearby houses. Lattice-work and flowerboxes enhance the effect of old-fashioned domesticity. The library's symbolic public facade—the front screen wall—is slightly skewed to acknowledge the diagonal path of East Main Street, and the raised parapet atop the gable evokes the cupolas that gave prominence to schools, meeting houses, and other small-town landmarks in the past.

DALTON COMMUNITY LIBRARY, Dalton, Pennsylvania. Owner: *Dalton Community Library Association*. Architects: *Leung Hemmler Camayd*. Engineer: *E. D. Pons & Associates*. General contractor: *Donald J. Race*.





"No matter how small the library had to be, we felt that the building must project an image of importance," says Alex Camayd. "And we wanted it to be an image that real people would understand." The front portico, the emphatic entrance, and the suggestion of a central tower are all intended to give the library symbolic stature in the heart of Dalton. The architects' pragmatic attention to community involvement is apparent in details such as the benches for young readers built into the lattice-covered walls of the storytelling courtyard, near the shade of a maple tree. Openings in the front screen wall allow children to be watched from the street, while flower boxes make a decorative safety barrier.



St. John Neumann Parish Complex: sanctuary in the Poconos



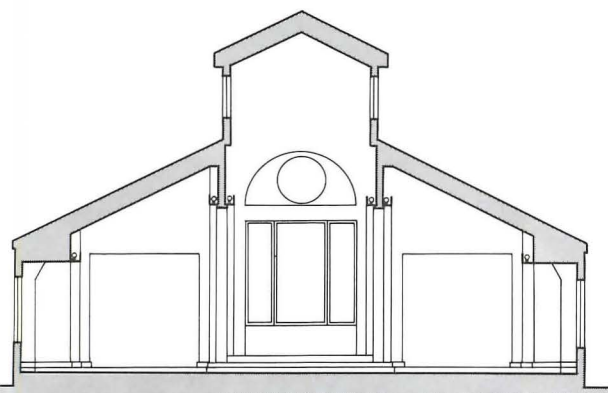
The church, parish hall, and rectory of St. John Neumann command a wooded slope in Lords Valley, a vacation area in the Pocono Mountains. The parish priest, Reverend John J. Lipinski, asked Leung Hemmler Camayd to design "traditional" buildings without sacrificing convenience. Since most of his congregation travels to Mass by car, Father John wanted a porte-cochère outside the front door, and because attendance swells when summer residents arrive, he requested that the church be planned to expand and contract with the seasons. "We decided that if we were going to be traditional," Alex Camayd recalls, "We'd go back to Italy where it all began." By creating a stripped-down version of a Renaissance church facade and advancing it 14 feet beyond the actual front of the building, the architects were able to insert a drive-in entrance that amplifies the visual effect of the whole complex. The ambiguous depth and overscaled articulation of this "ghost facade" lend it an air of monumentality, making it a dramatic terminus to a

1,000-foot-long drive through the woods.

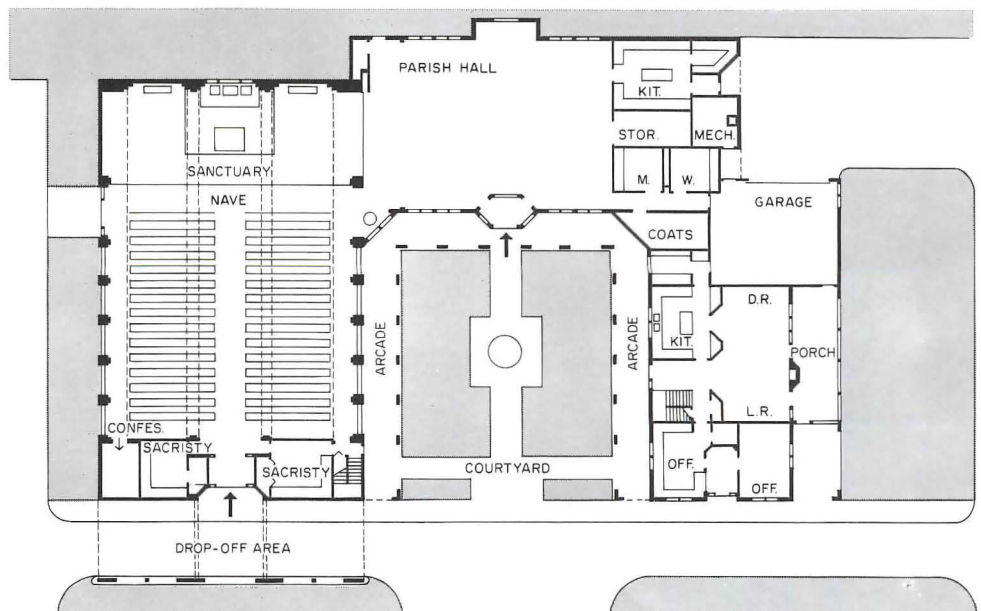
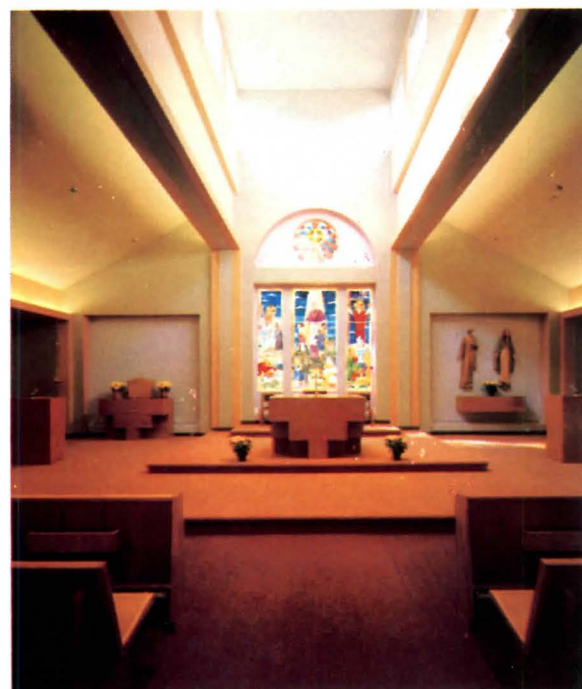
Nave, aisles, and sanctuary are conventionally arranged, although the adjacent parish hall does double duty as a social room and a transept. Folding wall panels can be opened in the summer to increase the capacity of the church from 300 to 450 worshippers. The parish hall also forms one wing of a three-sided cloister, whose porticoes serve as booths for church fairs. Opposite the church is the rectory, with living space and offices for two priests. The Diocese was delighted to obtain an entire parish center for \$550,000—approval that would no doubt have been seconded by St. John Neumann himself, a Pennsylvanian who was famed in the last century for building churches at a rate of one per month.

ST. JOHN NEUMANN PARISH COMPLEX, Lords Valley, Pennsylvania. Owner: *Diocese of Scranton and St. John Neumann Parish*. Architects: *Leung Hemmler Camayd*. Engineers: *E. D. Pons & Associates*. General contractor: *Desim Construction*.

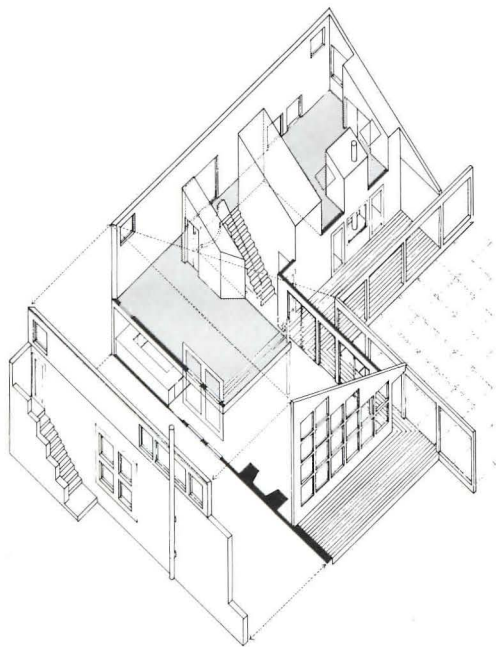




Shallow coffers in the nave ceiling and fluorescent illumination from cornice light troughs emphasize the longitudinal axis of the nave (view towards the entrance and choir loft, above), while clerestory windows cast added brilliance on the sanctuary (photo below left and section.) The architect-designed altar is bilaterally symmetrical, in order to present identical facets to worshippers in the nave and in the parish hall. Pastel wall colors are repeated in the background of stained glass windows, whose images were based on illustrations in an old prayer book owned by the parish priest.



Faber ski house: a plain and fancy villa



A lodge at the foot of Elk Mountain, 40 miles north of Scranton, is Leung Hemmler Camayd's latest project and they point to it as a milestone in their development. "Here at last, in spite of a fairly modest budget, we didn't have a long list of restrictions from our client," David Leung explains. "Although we see the Faber house as a logical extension of our other buildings in its basic imagery, the lack of institutional restraints allowed us to be more adventurous."

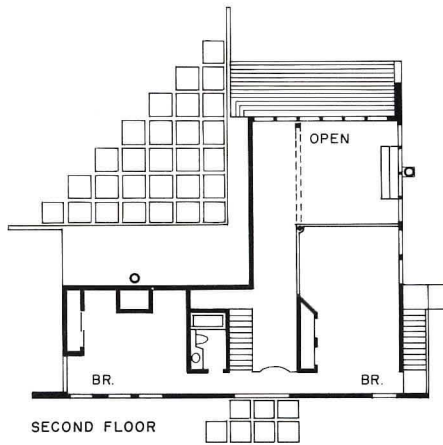
The understanding client is a Philadelphian who comes to Elk Mountain to ski and enjoy the scenery. A gregarious host who likes to entertain five or 10 guests for the weekend, he obviously had no interest in building an ascetic hermitage. Leung Hemmler Camayd gave him a civilized retreat that encourages conviviality while allowing room for privacy. Both aspects of the building are expressed through play with scale, color, and stylistic recall.

The other stuccoed entrance facade with its mock-heroic portal nods unmistakably,

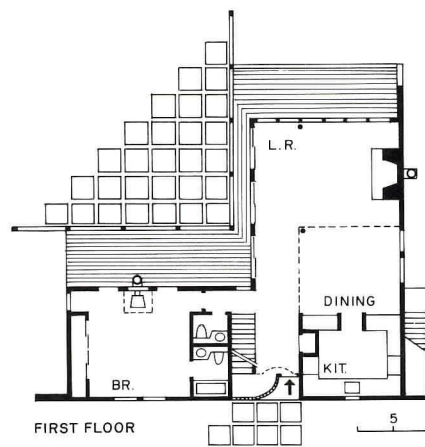
if ironically, to Italian villa design, presenting a reserved, formal mien to the road. On closer inspection, the front door turns out to be normal-sized (plate glass and glass bricks fill the rest of the void), and the imposing cross-mullioned window to the left is in fact two windows—one upstairs and one down—divided behind the transom bar by a bedroom floor. A look around the corner of this grand illusion reveals a dwelling of altogether different character: informal and open, with the wood siding, shed roofs, and porches of an American resort cottage. Elk Mountain is visible from every room, but the projecting wings of the L-shaped porch imply an even closer connection between the house and its environment, demarcating an imaginary courtyard that expands to embrace the entire panorama.

FABER SKI HOUSE, Elk Mountain, Uniondale, Pennsylvania. Owner: *Dr. Kalman Faber*. Architects: *Leung Hemmler Camayd*. General contractor: *Empire Construction*.

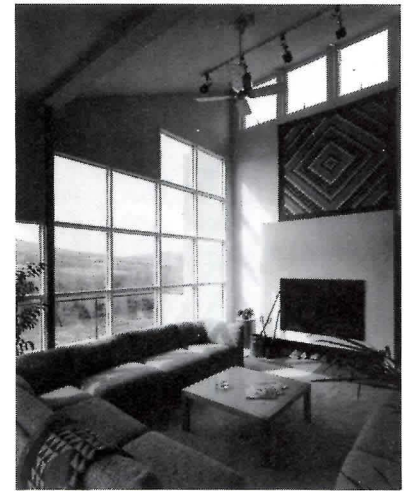




SECOND FLOOR



FIRST FLOOR



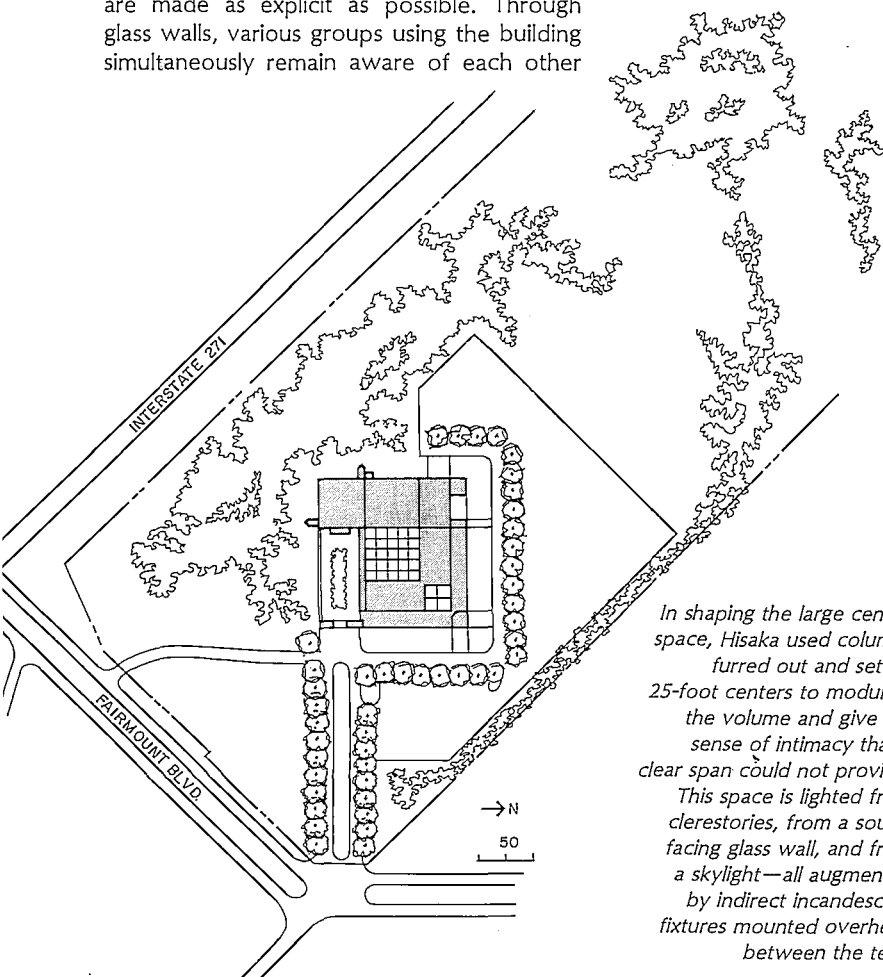
Even though the Faber house is relatively compact (1,236 square feet on the first floor, 800 on the second) the architects maximized the effect of flowing space by interlocking private and communal areas on every level, creating a series of vistas through the interior. The pipe-rail enclosure of a sleeping loft over the dining area enables guests to look out over the living room towards Elk Mountain. A landing above the front door offers another vantage point along one of the major axes of the house. By asymmetrically cropping the view of the mountain, the large window beside the fireplace asserts the role of architecture as a selective framing device. The window's stepped out-line recurs throughout the house as a decorative motif.



A new synagogue for B'nai Jeshurun

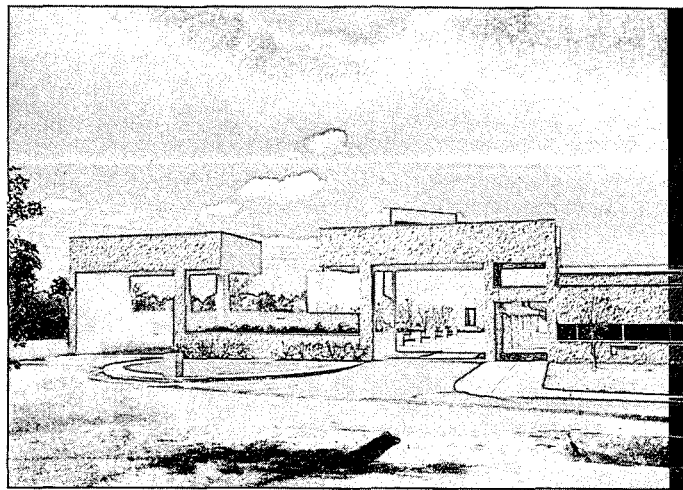
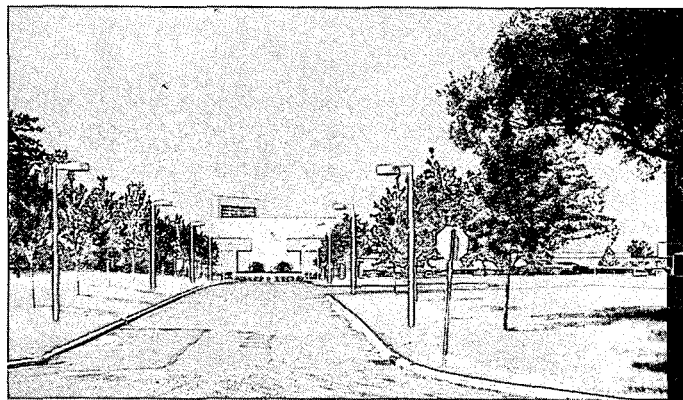
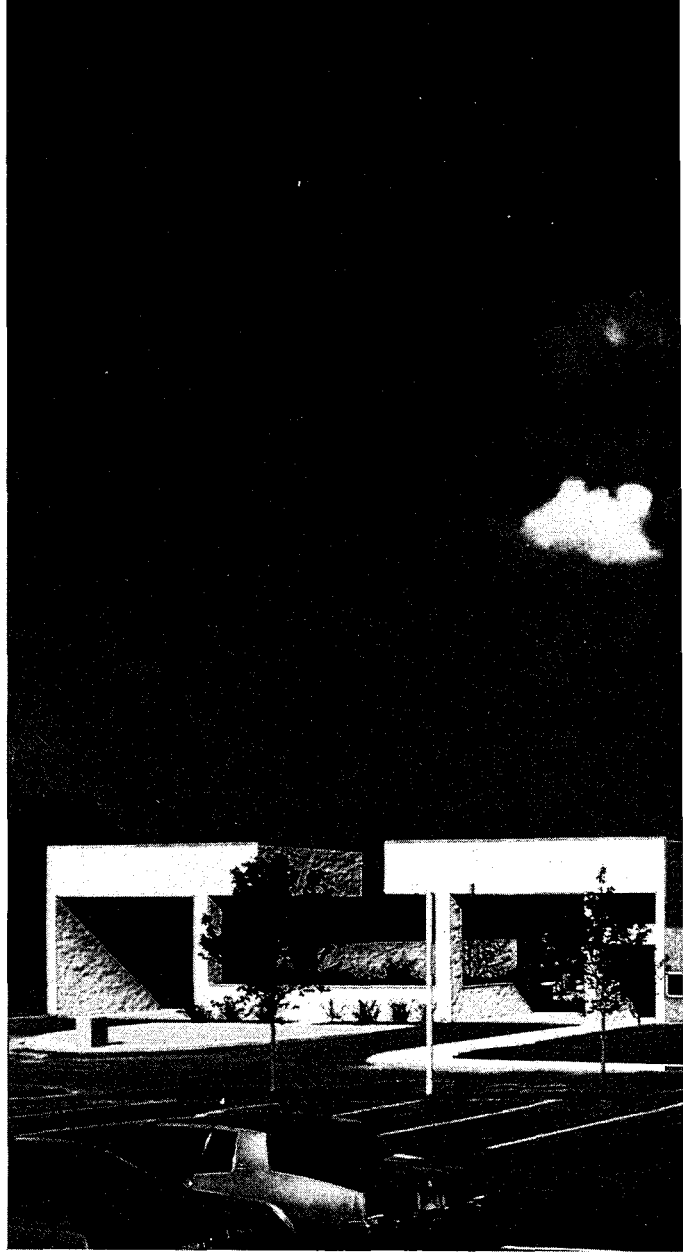
The complications of its massing suggest that several functions are combined within, but neither the building's neat, white-clad exteriors nor its pastoral surroundings give any obvious clue to what these functions might be. "The Jewish identification here is subtle, perhaps too subtle," says Rabbi Herbert Schwartz in describing his congregation's new synagogue in Pepper Pike outside Cleveland, "but the building is becoming—thoroughly and excitingly—a Jewish place." The remark conveyed something more than just this Conservative Movement congregation's struggle to adapt to, and to personalize its new center of worship, the seventh in its 115-year history. And it was more than just a reference to walls devoid of Menorahs, Stars of David, Hebrew scripture or other emblems of the tradition. "These things are important," Rabbi Schwartz continued, "but in a way they tend to trivialize a tradition that is boundlessly rich."

The search for architectural forms that exploit this tradition more fully found its most important expression in Don Hisaka's plan. Nearly all the major spaces in this synagogue are deployed around a large, covered atrium (see plan). This space fronts directly on the ceremonial courtyard, the social hall, the multipurpose room, the library, administration, and the small chapel. These relationships are made as explicit as possible. Through glass walls, various groups using the building simultaneously remain aware of each other



In shaping the large central space, Hisaka used columns furred out and set on 25-foot centers to modulate the volume and give it a sense of intimacy that a clear span could not provide. This space is lighted from clerestories, from a south-facing glass wall, and from a skylight—all augmented by indirect incandescent fixtures mounted overhead between the tees.

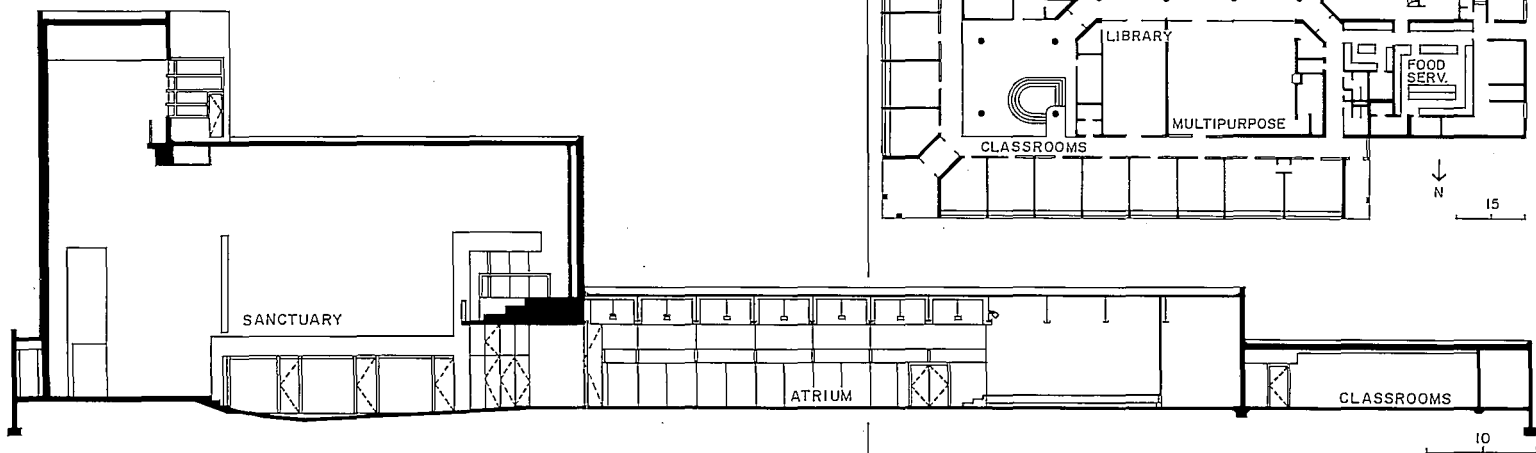
Thom Abel photos



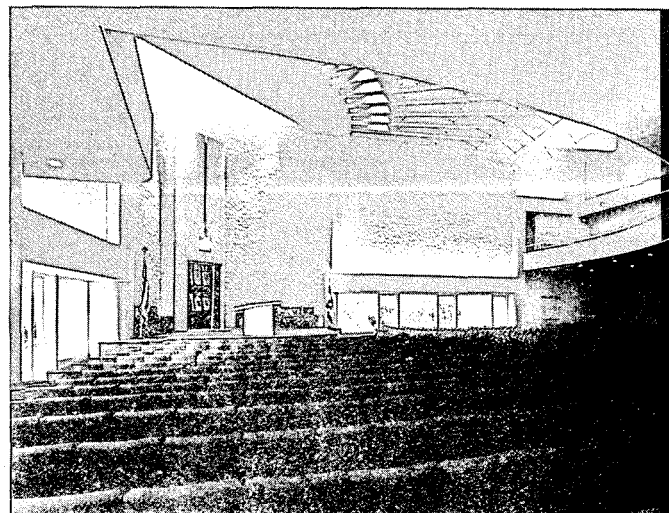


while still maintaining the acoustic privacy that their separate activities require. In this manner, architecture is used intelligently to strengthen intra-community ties. Day care, study, helping the aged, teaching the young—all are presented on a single stage as important and mutually reinforcing components of Jewish life. This openness has practical advantages as well. The celebration of Purim, for example, contains elements of worship, feast and carnival. These elements can be organized with a visual continuity that simplifies their staging and enhances their meaning.

Where visual and acoustic isolation are desirable—as in the main sanctuary, the food service areas, and the classroom wing—Hisaka has been careful to establish diagonal relationships. Each of these areas is entered from the atrium but at a corner so that the geometry itself ensures a separation. The main sanctuary, at the synagogue's southwest corner, is an extraordinarily handsome, double-height space arranged symmetrically around the diagonal entrance axis. A central aisle with continental seating on both sides provides space for 600 worshippers downstairs with no seat being more than 45 feet from the bema. Upstairs, in a shallow balcony, an additional 200 seats are provided together with a small choir loft. For High Holy Days' services, a retractable wall opens to overflow space in the social hall so that up to 2000 worshippers can be accommodated. The sanctuary's radial seating plan and the convergence of structural members over the altar both serve to focus the congregation's



Another subtle expression of Jewish tradition occurs in the selection of colors for the main sanctuary: red, blue and purple—the colors used in the Tabernacle, the first temple described in the Book of Exodus. The Eternal Light, visible in the photos at right, was designed by Brent Young.





attention as does the daylight that pours in through a clerestory over the Ark.

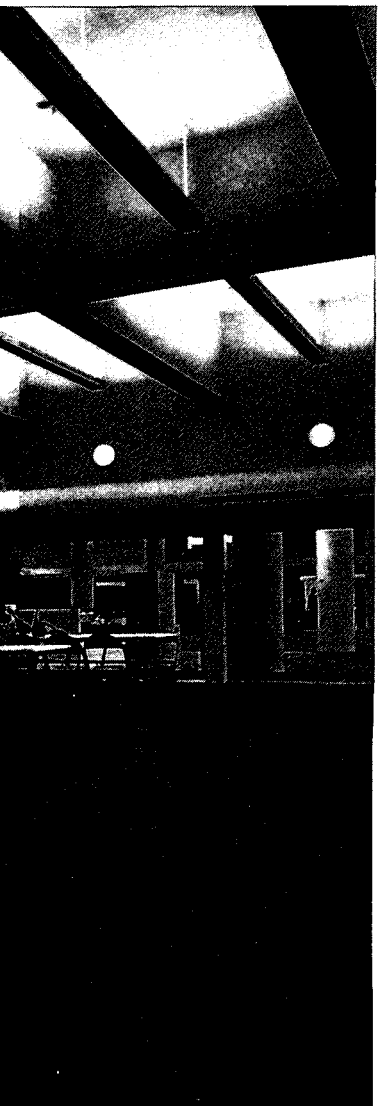
The building's exterior finish is a split-face masonry block that in sunlight produces a lightly and evenly textured surface. The roof is framed in precast double-tee sections except in the sanctuary where steel is used instead of concrete. For purposes of heating and air conditioning, the building is zoned to provide flexibility in scheduling.

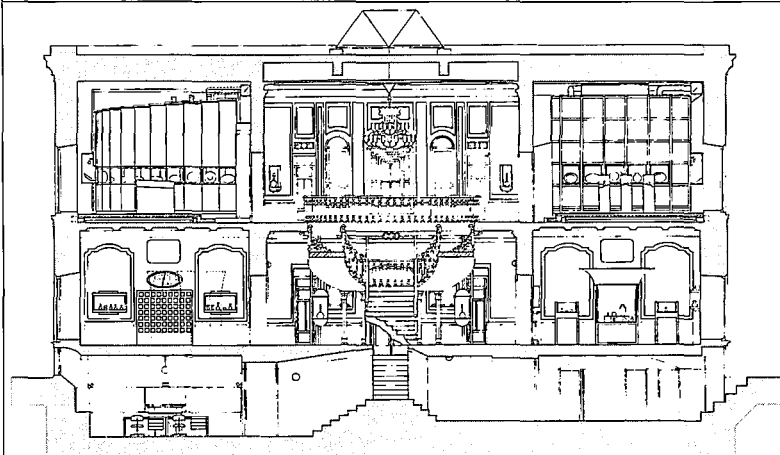
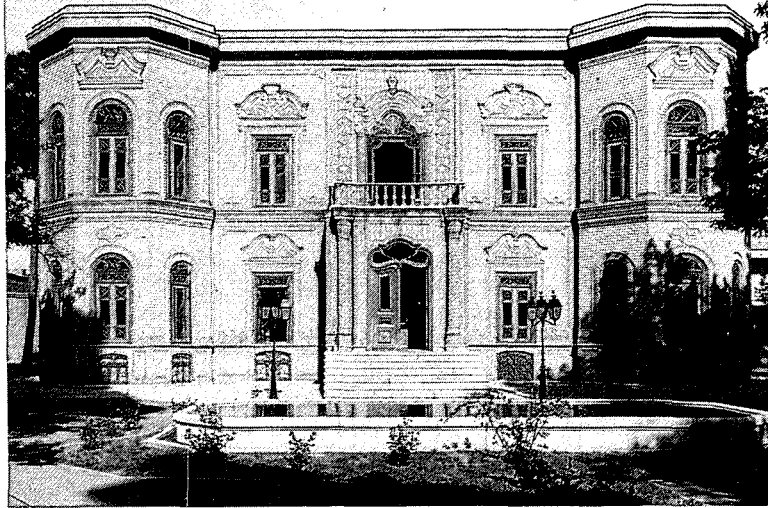
For all practical purposes the synagogue is on one level, but Hisaka has given the massing welcome liveliness by expressing the several ceiling heights, by protecting south-facing glass wall areas with deep overhangs, and by modeling the main and secondary entrances with sculptural canopies that heighten the visitors' sense of arrival. If these things give the design a taut, square-edged angularity, and if they bring the building into strong contrast with the softly contoured landscape, it is a contrast that excites the senses without disturbing the essential tranquility of the sacred spaces within.—*B.G.*

B'NAI JESHURUN (formerly TEMPLE ON THE HEIGHTS), Pepper Pike, Ohio. Architects: *Don M. Hisaka & Associates*—*George Saire*: project administrator; *James Beyer*: project architect. Engineers: *Gensert Brettnall Bobel, Inc.* (structural); *Denk-Kish Associates, Inc.* (mechanical); *V.A. Lombardi & Associates, Inc.* (electrical); *David V. Lewin* (soils). Landscape architects: *John E. Litten Associates*. Consultants: *Klepper Marshall King Associates* (acoustical). General contractor: *R.P. Carbone Construction Company*.



The ceremonial courtyard (photos right) is used for a variety of social and devotional purposes. It has already served, at different times, as a concert arena and a marketplace. When weather permits, it will also serve as a setting for weddings and other services. As photos and plan show, the courtyard terminates a long, rather formal axis and it has separate vehicular access for special occasion.





WESTERN ARTIFICE CELEBRATES EASTERN ART

Significant collections of Persian glass and ceramic artifacts, sorted but tentatively and stowed unceremoniously in shoeboxes. . . .

A nineteenth-century Qajar palace, eloquent of its period in its blending of traditional Eastern architectural elements with echoes of Western European Rococo and hints of Czarist Russia but innocent of the structural and mechanical elaboration required to meet the demands of public use or the physical standards of modern museology. . . .

From these Viennese architect Hans Hollein has educed in Teheran's Museum of Glass and Ceramics an installation that honors equally contents and setting, linking the two with a stunning assemblage of display elements whose unabashedly alien technological and cultural idiom and for-

mal assertiveness are yet curiously compatible with the archaic splendors of the building and its ancient treasures.

Balking the obvious course of gutting the existing structure to a shell for the convenient insertion of, in effect, a new museum, Hollein pursued instead the more audacious aim of meeting the programmatic requirements within the constraint of preserving the original building, leaving as nearly as possible intact the exuberant decoration that embroiders the walls and coffered ceilings of major rooms and resonates in the ornate detailing of door frames and window surrounds, the wedding-cake modeling of fireplaces and moldings.

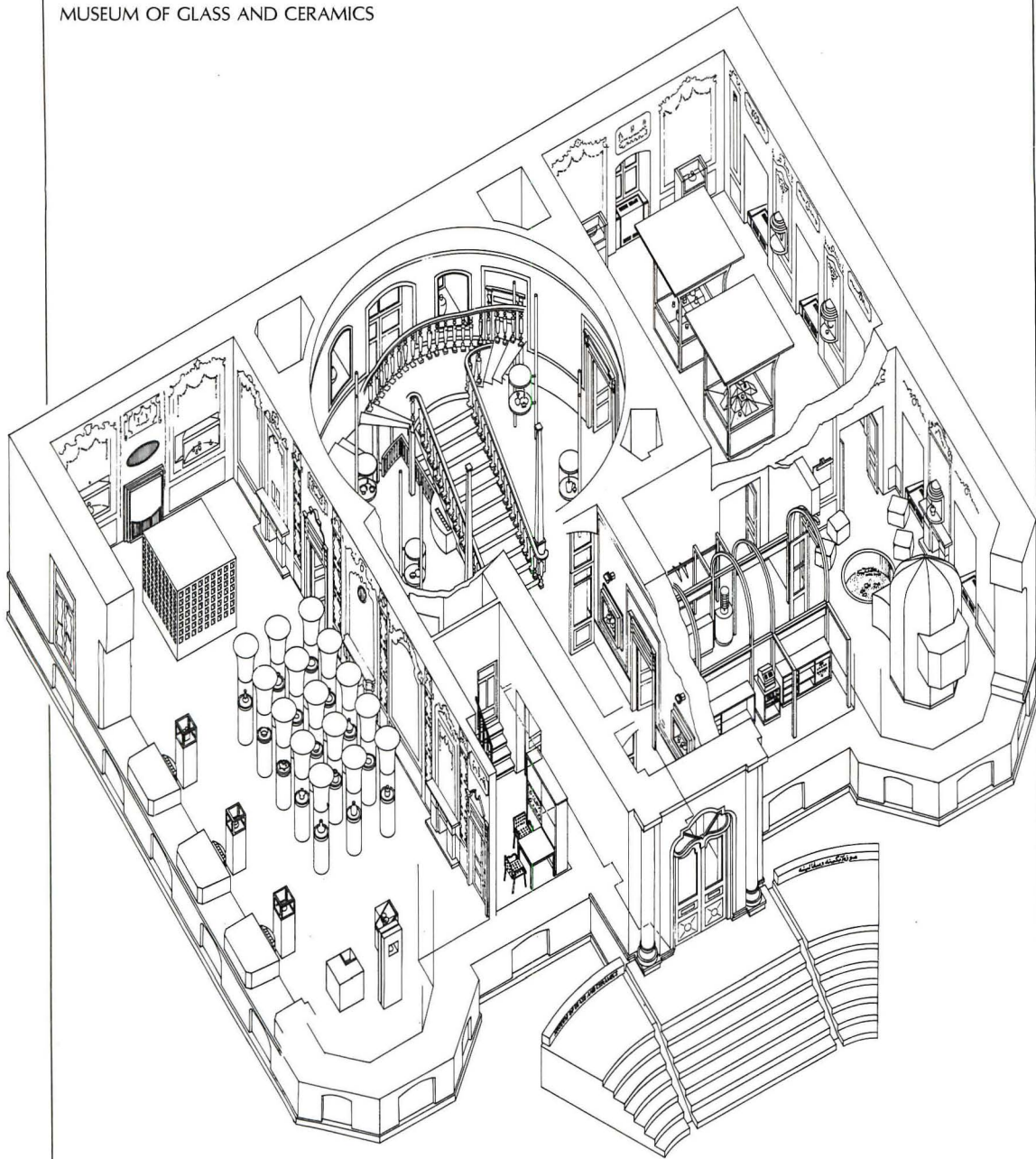
Although it was necessary to strengthen the floors, originally

supported only by thin vaults, structural changes were otherwise kept to a minimum, with the happy exception of the release from long confinement of the graceful central stairway whose sweeping double curves had previously been walled over.

In this resurrected stairhall, the literal heart of the museum and its principal circulation area, the bravura of Hollein's scheme is first revealed, as is the finesse of its execution. Here the introduction of the mirrored ornament, a traditional motif iterated throughout the building in the contemporary guise of sleek forms wrought in metal polished mirror-bright. Here the initial interplay of light with light: glitter of mirror and chandelier, luminosity of daylight filtered through windows set in deep reveals and of cases lit



Wedewardt photos



At the right of the main entrance a corridor "vaulted" by freestanding metal arches beckons the visitor past cloakroom and sales desk to the museum's collections. In this anteroom an evocative setpiece—a sunken circular showcase simulating an excavation with newly recovered object in place—is elucidated by videotaped commentary on the exhibits and their provenance.



Wedewardt photos

invisibly from within, the soft sourceless glow of light reflected from walls and ceiling. And here in the miniature "sentry boxes" suspended from the slender gleaming columns added to carry increased loads on the upper balconies, a preview of the precisely tooled, technically sophisticated display elements that seem almost to people the museum's period rooms with an urbanely modern company, at ease in but not one with their surroundings.

Because individual pieces in the collections are for the most part small and fragile, considerations of security and conservation dictated that few could be shown unprotected. This stricture, with the added demand of minimizing mechanical intrusion on the building's original spaces provided reason and rationale for Hollein's perception of the project as by definition "a museum of showcases" in which the vehicles of display assume an importance rivaling that of the spaces they inhabit, complement and counterfoil to the architecture as well as housing for the contained works of art and for the services needed to maintain them.

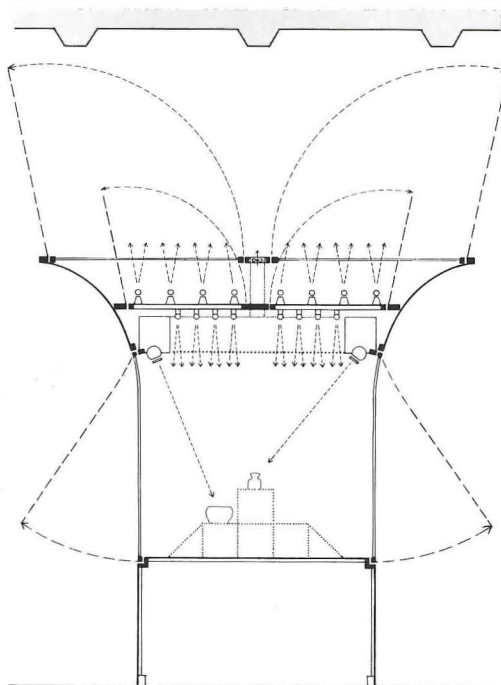
Two principal display strategies were evolved in response to the differing characteristics of the available spaces and the special qualities of the exhibits. In rooms where the lavish ornamentation was judged worthy of preservation, only independent showcases were introduced and the revitalized interiors left to stand as contrasting exhibitions in their own right. In other areas, particularly those on the upper floor which were of less intrinsic interest or had been "modernized" or otherwise damaged, the opportunity was seized to create new architectural spaces by lining the old rooms with inner shells, some providing integral display and, where appropriate, climate control.

The two strategies with their permutations produce strikingly various spatial effects. But to assert the ascendance of the showcases from neutral containers to functional artifacts that heighten the impact of the works they house without apology for their own artfulness of design, detailing, and fabrication.

Hollein's conceit of a "museum of showcases" implies an emphasis on individual pieces housed separately so as to point up their singularities, their commonalities being expressed by



In the main-floor galleries the stricture against obscuring the elaborate ornamentation of the original rooms was met by installing the exhibits in a rich variety of freestanding display cases that match flourish for flourish the exuberance of the nineteenth-century decor. Boldly individual in form and uncompromisingly high-tech in execution, the showcases are most importantly independent



in function—providing housing, protection, lighting, and in some instances other mechanical services for the works of art. The cases shown here are typical in the strategem of throwing indirect light upward to illuminate the surrounding space while sculpting the displayed objects with downlight filtered through a fine-meshed grid and highlighting them with halogen spots.



This museum of showcases compasses an inventiveness fully evidenced in its gallery for the display of pre-Islamic artifacts. Here flaring pillars spotlighting single pieces of glassware are played against a luminous cube that groups related works in checkerboard fashion and are echoed in rectangular solids cut away to reveal objects of special import.



Hans Hollein photos except as noted



juxtaposition of like containers rather than by collective display of the objects contained.

This unifying theme characterizes the exhibits as a whole, but is perhaps most tellingly demonstrated in the largest first-floor gallery with its ranks of flared black columns whose solid mass dissolves at eyelevel to disclose glassware suspended in pools of lambent light.

The conceit, however, does not descend to dogma. The same space, for example, includes one-of-a-kind cases fashioned to single out specific works of particular importance as well as an assembly of glass objects niched side by side in a luminous cube.

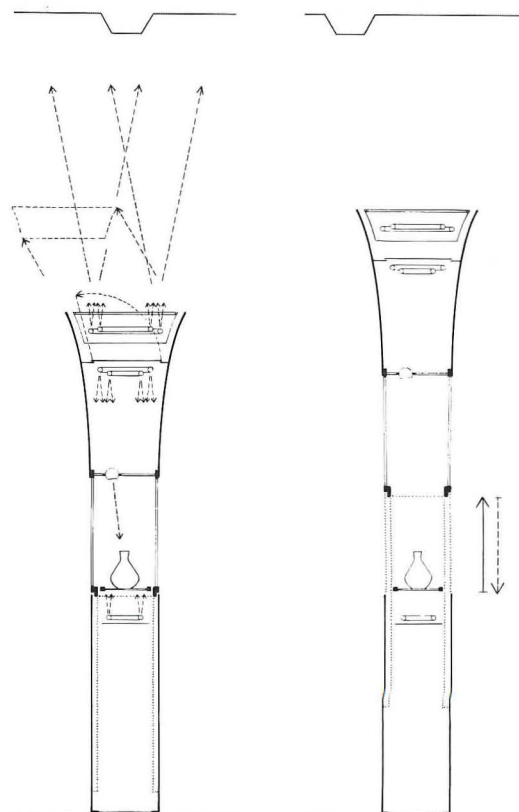
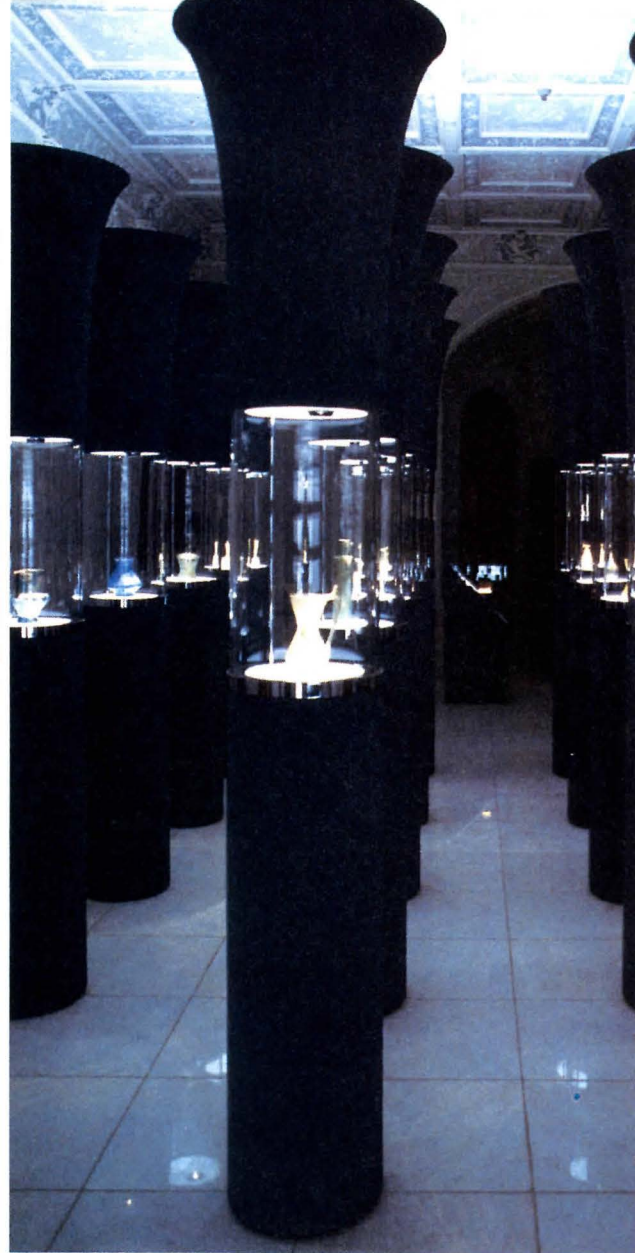
Composite displays are introduced also when works are linked by form or content in relationships that demand departure from the over-all chronological structuring of the exhibits or the over-all ordering principle of focusing on objects singly. Thus in the other major first-floor showroom the "single objects" displayed are in effect the showcases themselves—a pair of chunkily square forms overhung by outward-curving "canopies" of burnished metal—in which are grouped small related collections of prehistoric glass and ceramics.

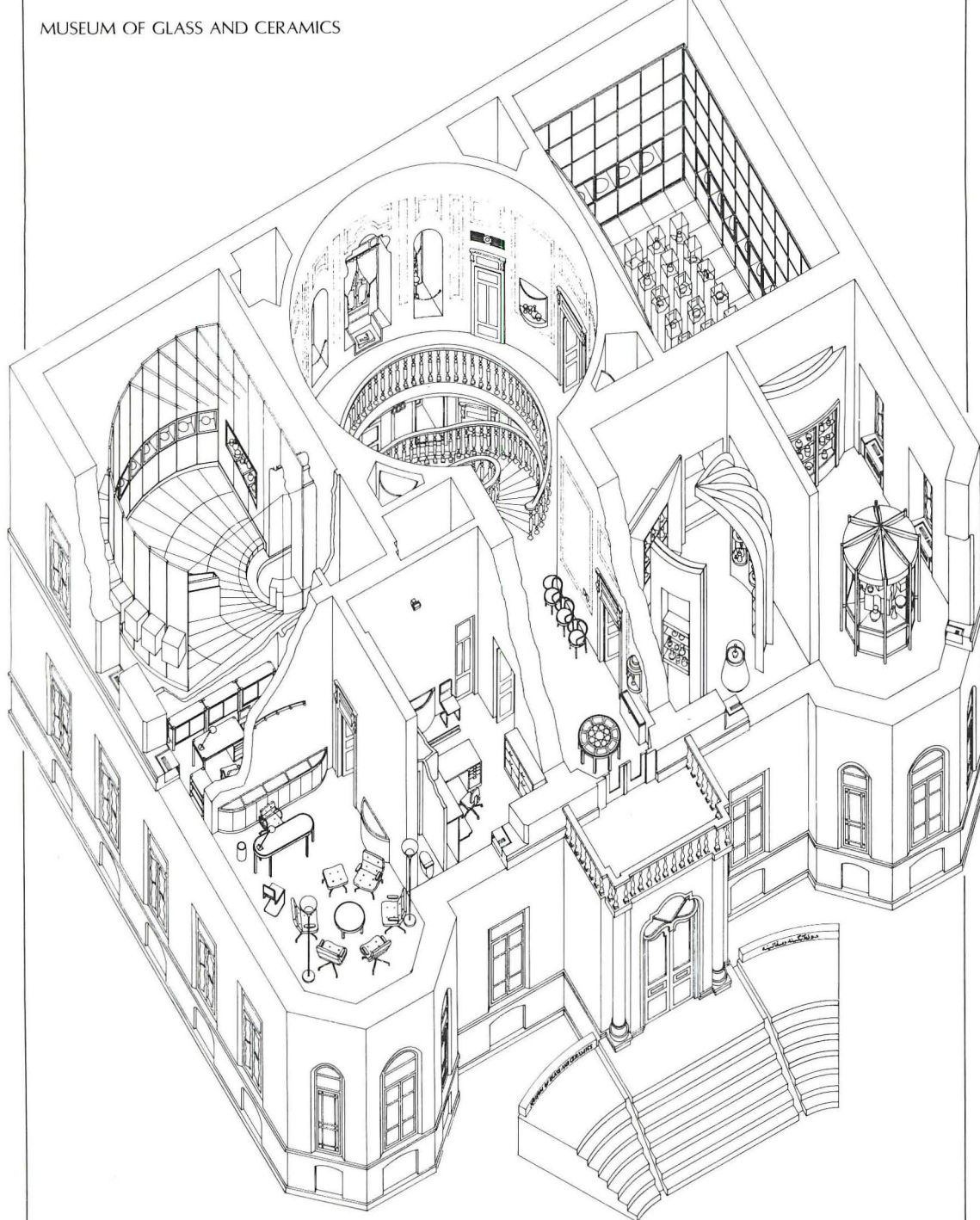
In the fashioning of its extraordinary variety of free-standing display elements, Hollein skirts narrowly the pitfall of allowing his "museum of showcases" to devolve to literally that. Individually as witty, inventive, and perfectly contrived as Fabergé eggs, the containers yet stop short of indulgence, their frequent playfulness moderated by practicality.

Similarly, while many of their forms reflect, if only by diffraction, icons of Persian culture, caricature is avoided by technical discipline and a refusal to confound reference with recall.

Hollein himself distinguishes between the handling of displays in the restored original spaces and in the upper-floor "made" spaces. In the former, the spaciousness of the rooms and their pervasive ornamentation invited the introduction of bold, even flamboyant, forms with strongly individual identity; in the latter, with background surfaces ordered and controlled, fittings were designed instead to abet the more tranquil display of works better viewed in the absence of competition from their surround.

In both, however, the design





On the upper floor new enclosures range from the mere suggestion of partial wall and ceiling sections (below left) through a fan that floats ceramics in a border of light to an encompassing grid (top opposite).

of the cases responds not only to the formal demands of museological showmanship but also to the functional demands of custodianship. Some, for example, add or augment otherwise limited mechanical services. And most important—for if this is a museum of showcases it is also one of light—the display elements are the primary source of illumination for their contents and their settings alike.

Thus the showcases incorporate an extraordinary repertoire of lighting systems tuned with the aid of full-scale mockups to develop the full values of each case, each object, each space. Fluorescent sources, accordingly, are employed less ubiquitously and more subtly than is usual in museum lighting practice and are lent depth and balance by incandescent sources whose warmth and brilliance enhance as well as illuminate the exhibited works.

Except in the cramped spaces where inserted envelopes allow for the integration of sources with surfaces and so for more conventionally adept lighting schema, the dual roles of providing ambient light and self-illumination are performed by the freestanding showcases. True to the varying character of the cases themselves, the readings differ, but all follow an assigned script of direct light to the enclosed display, indirect light to the enclosing spaces.

Describing the Museum of Glass and Ceramics, Hollein has pointed to three central design objectives: "to show the objects to their best advantage; to have light but not to dramatize light; to integrate the old with the new." It could be argued that the building rather enriches the vocabulary of museum design precisely to the extent that only the first objective is fully realized.

—Margaret F. Gaskie



Wedewardt photo

MUSEUM OF GLASS AND CERAMICS, Teheran, Iran. Architects: Hans Hollein—project architects: Franz Madl; Gerhard Knoettig; Gustava Leland; Jerzy Surwillo. Engineers: Eckart Dittbern & Partner (structural); Helmut Huber (mechanical); Werner Kasproski (electrical). Consultants: Hans T. von Malotki (lighting); Jan Frankl (graphics); Heinz Wedewardt (audio-visual); Franz Mairinger (museological conservation); Hans Materna (photogrammetric survey). Contractor: G.U. GmbH München, Karl-Gerhard Hinderink—site supervisors: Tony Wallis; Karl Dietrich Franke.



Hans Hollen photos except as noted



The glowing ribbon of case-work introduced in the fan-shaped shell reappears in the gridded lining of the rectangular shell (top), where integral wallcases are figuratively up-ended to carry their motif to freestanding displays of ceramics resting on beds of sand. Meticulous throughout, the detailing is handled with particular delicacy in the small elements that most directly impose new functions on the old fabric: mechanical units designed to mesh unobtrusively with the existing structure and equipment (above) and wallcases whose contrast of form is mediated by continuity of scale and proportion.



Wedewardt photo

AIA GOLD MEDALLIST, 1981 JOSEP LLUIS SERT



F. Catalá Roca

In the 50-plus years he has practiced architecture here and in his native Catalonia, Josep Lluís Sert has more than earned the honor that the American Institute of Architects does him, and itself, this month. Indeed, the AIA got halfway to the Gold Medal in 1977, when it gave Sert and his long-time partner Huson Jackson its Architectural Firm Award. Jeanne Davern, an architectural chronicler and RECORD's former managing editor, asks Sert to examine the state of architecture, with special reference to his great loves, housing and the city, and, as an eminent dean of architecture emeritus (he served Harvard for 15 years), to address the concerns of today's young architects.

An Interview by Jeanne M. Davern

As an architect with roots in the years when modern architecture became a crusade for transforming the human condition, how do you view the state of architecture today?

For me, architecture is mainly concerned with the shaping of spaces for the use and enjoyment of the people who live in them and use them. By "enjoyment" I mean the spiritual quality of architecture, something beyond the satisfaction of natural or material needs; in my mind, that is what is really most important in the quality of the architecture. And I am as interested in painting and sculpture as I am in architecture. Architecture is the work to which I have dedicated my life, but the visual arts for me belong to the same family. I am interested also in the relationship between the visual arts—between painting, sculpture and architecture—and that is, I think, basic in my work. I am interested in people and how people live, and very early in my life I became interested in the city itself, and in architecture not as an isolated piece of work but as part of a larger complex, as part of a city. In the years I have worked—more than fifty years, since I completed my studies in 1929—I consider that architecture has made great technological advances and done extraordinary things, things that when I started my studies I couldn't even guess I would ever see. On the other hand, at the same time that advanced-

technology architecture has progressed, I think the picture of the city, the urban picture as a whole, has gone downhill. So our dreams of the early years to a degree materialized, and provided a certain achievement and a certain excitement; but other things that we wanted to do and believed could be done are very, very far from *being* done.

Does that mean that modern architecture has failed?

That does not mean that modern architecture has failed. I think that modern architecture is today a part of history. It's such an important change and movement as example of the application of modern technology to construction and to buildings that I wouldn't say at all that it has failed. The modern movement is a tremendously vital and very revolutionary movement of change in architecture, and it's only at the start, we've only seen the first phases. I would say that we are only still in the midst of a promising period of development. What I believe is that modern architecture can be, and should be, taken further in a positive way. I realize that in our Congresses, in the first part of our lives, in the thirties, we swept away many things that we considered were not of our times. And I recognize that the vocabulary we have until now is rather poor. But these things take time to develop. If you consider any period of history, you can see how things go on changing and developing over time. Such development is not the work of one man or two men or four geniuses, it just doesn't happen that way; it's something that has to do with time. I think we are in a moment of transition now. Architecture has not yet invested in city planning at large scale: in spite of such efforts as Chandigarh and Brasilia, we have not one city which would let us say, "This is a modern city." It just does not exist.

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1960-67—Boston University; Sert, Jackson & Gourley, architects



So that if our cities remain chaotic, and our people continue to be housed in a great deal less than optimum conditions, it is not really that the principles of modern architecture have been applied and failed, but that they have not in fact been applied?

They have not been applied yet. Modern technology has been mainly applied in very sort of partial ways—for instance, it has been applied in skyscrapers, in tall buildings. A tall building is in many ways an example of a lot of the possibilities of modern technology. But then even buildings of that type are incomplete as modern buildings. When the skyscraper gets down to sidewalk level, it doesn't work; it's just the old sidewalk, the old structure of the city. The infrastructure of the city hasn't changed at all. So we are putting modern elements on old plans, and relationships grow spontaneously like mushrooms. I think there will be an increasing reaction against some of the things that are happening in cities. There are some very good young people with very good ideas, and I think that we will go forward. I believe that the moment we are living in now is a sort of wait-and-see moment, with some experiments being tried. I have nothing against experiments. Why not attempt it, if you like something? But if there's going to be a sort of open revivalism, which I do not consider to be unnatural, I would say that we have such a vast material of images and films and documents that we can make choices that are not limited to very timid and kind of recent going back, as though in reverse we had barely enough strength to go around the block.

How does this aspect relate to the question of the city?

It is precisely the question of the city, because the cities are calling for a modification of the structure of the city itself.

How is that happening?

Well, it isn't happening, but the need calls for it to happen. You can't build the new city right into the old one without destroying the old one and being unsuccessful with the new one. There's such a gap in distance, in scale, in technology, in approach to problems, in materials, in many things, that to try to tightly fit new buildings into the old pattern is bad for the old and not good for the new. A new infrastructure should be developed for the city which would make the whole something in a new scale. And that shouldn't conflict with the old; the city has the old scale and the new one. I don't think one should conflict with the other, I think they can live side by side. There shouldn't be a separation, there should be a certain *classification*, so that one doesn't destroy the other, but they're *both* important, it's not one or the other. I think that in the CIAM time, we were very radical in terms of saying, now, this is the future, and this is the time to forget all the other—although we did consider in our first charter that there were old parts of the city that should be respected: but that was a separation. Now I believe that we should not be at all ashamed either of the new or of the old, the mixture is what makes a city.

Would you say that these are lessons that had to be learned in the doing?

Yes, I think they had to be learned in that way. But I think we are in a moment of transition from all those initial attempts at applying modern technology and modern principles of planning—attempts that were sometimes rather naive, sometimes rather limited and disappointing. I must say that I am most horrified when I see the application of modern architecture in some countries, even remote countries where they didn't know what they were working *with*.

Saudi Arabia might be a case in point?

Saudi Arabia, and I've seen it happen in the Far East, I've seen these things in Baghdad, where some of the elements of modern architecture are copied and repeated, misinterpreted, badly built. To me, that is the best argument *against* modern architecture.

What is modern architecture?

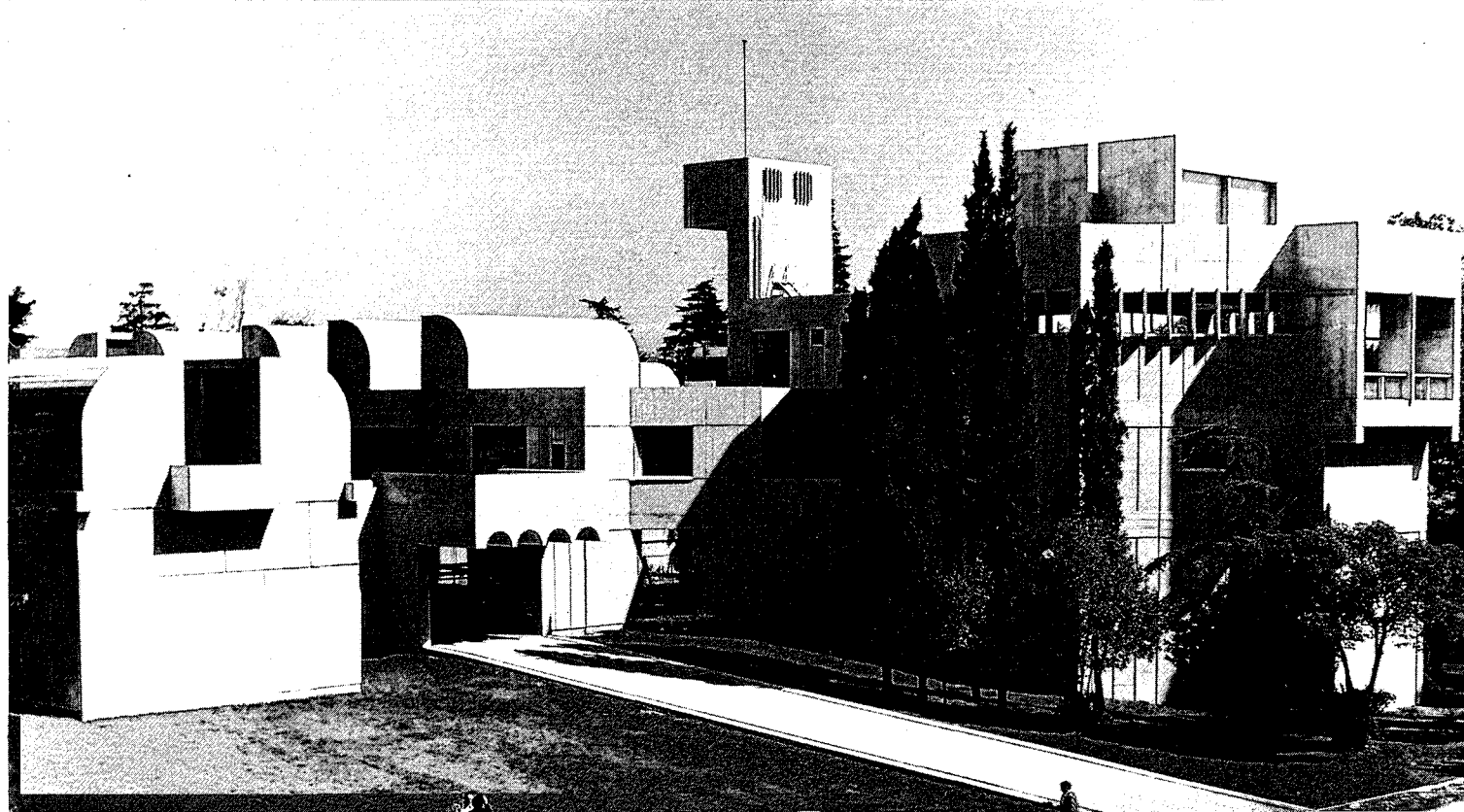
I must say that I feel that it's very difficult to define "modern," where you start and where you stop. It seems to me we use this term very often when we should be saying "contemporary" architecture, which is something that is architecture belonging to the times; that means meeting the needs of the times, the spirit of the times, the aspirations of the times. "Contemporary" is a more appropriate word, meaning *of the times*; "modern" is very vague.

What do you think of "post-modernism"?

Well, "post-modernism" is for me a transitional period, a certain state of awareness of the limitations in many ways of modern architecture. They're trying to say, these principles should not be that rigid, that simplistic, there are other things that can be done with architecture, architecture should be also for the enjoyment of people. But what I've seen as attempts can't in any way live up to anything like that. In some ways they haven't gone far enough. I think there is at this stage only a very timid attempt to revive something that was done just the day before yesterday.

All right to go back to 1910, say, or the 19th century, maybe, but—

Or even the 12th! But you know, there are so many things to learn by traveling and by seeing things that you can reinterpret if you want to and translate into modern vocabulary and recall other things—nothing wrong with



this recalling things of the past, but if you can recall good examples, so much the better. I think the choice has been very poor, they're only going around the corner or to the house next door, and doing it very timidly. I think it's a transition period; and "post-modern" is actually the wrong word—their attempts are at something *pre-modern*, and they haven't gone toward the development of those forms any further. I wish I could see something better. I'd be happy to see something and say, well, they're enlarging the architectural vocabulary, all this monotony of these kinds of projects that were promoted in the twenties is no more. But of course I said this in my lectures at Harvard—I said it all the time—because I felt at the time, having been concerned with the city, that what we had as a way of expression and as a vocabulary in terms of architecture was very far from satisfactory. It should be developed, we're only at the start of something; it should develop, it *could* develop in *many* ways. If in the development you pick some things from the past that help you, or belong there, it's all right.

It would perhaps not have to be limited to the facades of buildings?

No, of course not—architecture is not a facade problem, it is the problem of creating an organic complex that provides for better living in terms that are more practical, more comfortable, more adapted to the times, that people can take pleasure from.

So it relates to the key issue you've identified of city design?

It relates very directly, because you can see that there are certain areas of any city that have a character of their own, they have a quality, an urban quality—you take pieces of Boston and you'll find that, or you take parts of London and find that. And I'm very much

against things that are done that break this kind of unity, that break this kind of scale. In these cases I believe it is very justifiable to follow many things that were there of the past. But I am not with those who are trying to find the *novelty* in going back, because I think that first of all, they haven't picked the right things; then I don't think there's anything that ties it very much to what's happening in the world today, or to making people any happier, or to solving the real problem of architecture, to prepare for, or rather to attempt, a better world, a better life.

You have not lost your conviction that is so? No, not at all. In my mind, at least, that is why architecture is done. I'm thinking in broad terms, the future of architecture and the future of education in architecture, and for me that is the task, to courageously work toward what's coming.

The fact that it may be hard is no reason not to attempt it?

The fact that it may be hard is no justification for not attempting it.

My journalistic memory goes back to 1948, and I remember great disagreement over what modern architecture was. Mr. Wright had one idea, and Philip Johnson and Henry-Russell Hitchcock had another, and then there was Le Corbusier, and there seemed to be deep and bitter divisiveness about just what modern architecture was. It seemed to me then that the International Style adherents defined modern architecture as what they had decided the International Style was; and it seems to me now that many of the people who are talking about the failings, or the "death," of modern architecture, are talking about that thread of modern architecture.

Yes, possibly. But we are not talking so much

about the applied things as about the essence and the roots of things, the things that remain constant. All through history there has been internationalization of styles. Often these styles went to countries where they were not appropriate to climatic or other special conditions, and still they were applied, in an arbitrary application of forms that had nothing in common with the particular country or the particular place. Architecture does not move by national borders or any political borders. What should give architecture its character is the vast differences in climate, economic circumstances, customs and traditions. I feel we should keep the architectural differences. When you build in a country, you have to consider whether it is cold or hot, wet or dry, what are the prevailing winds, is it a developed or developing country, what are the available materials—these things establish the character of the architecture. That means there could be an international tropical architecture, for example—or rather, an international architecture for the humid tropics and an international architecture for the dry tropics. That's the way I see "international" applied. I think it's unavoidable, it corresponds to the developments of our time and to the way things are going in our planning.

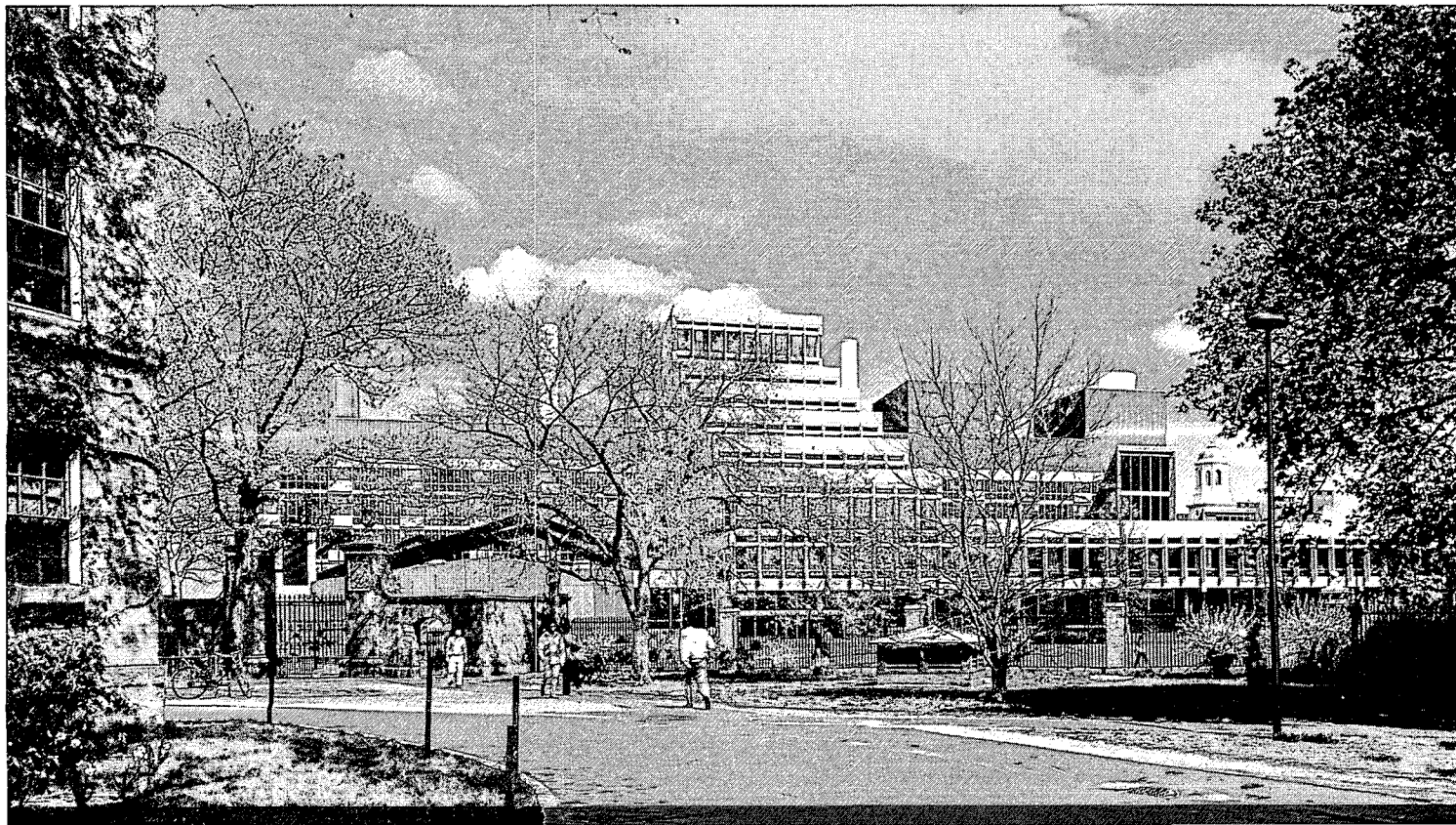
Then "International" is not monolithic, in your view of it?

Not at all. There is something in the planning conditions of any place that, no matter what we do, we can't change—certain customs of the people, certain ways of living, certain preferences, even taking certain things of the past, and the climatic conditions and the economic circumstances. For me it is something that should be brought into our actual vocabulary of today.

Do you see signs that this is happening?

1970-73—Undergraduate Science Center, Harvard University, Cambridge, Massachusetts; Sert, Jackson and Associates, architects

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There are some signs, certainly. There is no doubt that in such countries as Japan there are architects who have for some years been developing things that they learned from their architecture of the past. They are trying to put together things that are of constant value in their architecture, not the changing fashion or style values, but those that are constantly there because they belong to climate or local custom or experience.

This kind of approach has always been reflected in your own work, of course. But are you suggesting that it may be a thrust that architecture here will, or should, take?

Yes, I believe it is the thrust architecture should take. We should use the great possibilities of climate and other specific conditions to define an architecture that belongs in each place because of its own characteristics and its own ways of living and working. Now it's all based on the maximum utilization of land. I'm for the proper use of land, but I'm not for the abuse of land. Why should New York, hot in summer and cold in winter, not have arcaded and porticoed streets? Why should New York streets like Madison Avenue be a sort of awful tunnel where you don't get any sunlight in, or any benefit from living in a city where some brilliant shafts of sun sometimes make it look like an Italian city? Parts of New York have light in them like Rome, sometimes. And why should San Francisco have to look like other cities? We had the row houses, the light color, the great bridges that were very impressive. Now they're getting high buildings that block out views, concrete monoliths. We seem to scatter the same kind of mixed salad everywhere, and it's not good. Cities lose character and personality.

Does the Aga Khan Award relate to the kind of thing you're talking about?

I think they're in the right direction in taking the essence of things, toward an architecture that derives not only from their customs and their laws and their traditions, but also from the particular conditions of the country at the time. We have a lot to learn from what they did in the past because they were aware of the place, and its temperature conditions, and what were the prevailing winds; and to me, these things to a great degree define and shape architecture. They are basic. They are the elements I would call constant elements in the study of a development, because they are elements that cannot possibly change.

In our very different circumstances, how could we encourage architecture appropriately responsive to our great diversity?

I think we are today too contented with the immediate realities, and with things that seem to be the end of things and they are not. Some remarkable things have been done in this country. Sigfried Giedion and I used to go downtown in New York on Sundays to look at buildings, and there really are extraordinary things. In St. Louis last year, I saw a Sullivan building which was restored—

The Wainwright building, integrated in Mitchell/Giurgola's St. Louis complex?

Yes, Giurgola. Well, it's a building of a wonderful quality. This thing is really a work of art, you know, keeping and putting in a setting of proper value, rejuvenating.

Could you mention some other examples you find hopeful?

I find hopeful, for instance, the renovation of the Quincy Market. I think it's a wonderful thing—a good old building, very good for its time, and it's made into a lively center. But we should pursue also some much more ambitious goals.

What goals would you suggest?

I don't see why this country, with all its resources, hasn't yet realized what would be called an experimental community as has sometimes been attempted in Europe—in Stuttgart in 1929, for example, where many architects were asked to collaborate and participate in an effort to give an insight or view of what a new community could be like. It was not a complete success by any means. But in this country there could be some communities which could start as experiments but with the idea that the residents would be participants. We made a study years ago in Harvard of how such an effort might be organized. The problem is that a venture of that type is nothing that brings you quick returns; it would have to be subsidized by the Federal Government. But it could be done. There is the possibility of creating a community in which people would be invited to test new ways of living. When you think of what they do—and what they spend—when they prepare to buy a new plane, or ship, or any kind of highly complex machine: they make the most perfect models, and test them with great care before they manufacture in quantity. Why shouldn't experimental communities be developed and tested?

What attempts have been made anywhere in the world when the purpose was only to explore experimental ways of living? The New Towns in England were supposed to work and help decentralize the population of London, and the New Communities program here, while it included some experimental projects, was required to meet the test of the market.

They were mainly ordinary dormitory towns.

Can you think of an example anywhere in the world where an experimental community has

1971-75—Riverview Housing, Yonkers, New York; Sert, Jackson and Associates, architects

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been built and tested the way we'd build and test a full-scale model of, say, a \$2-billion bomber?

No.

When you think about it, that's quite remarkable, isn't it?

It's remarkable, when you think that finally, when the future looks at the past, the most obvious physically evident thing is how people lived then. What we leave behind us, our cities, are an expression of each culture, of each period, and I don't think we have anything which is an expression of what our times could have done.

Years ago, you said that change has to be measured not only in terms of technical and economical possibilities, but in terms of human adaptability to new and different ways of building. Are you talking now about testing human adaptability in experimental communities?

Yes. You can't say, people like this, people don't like that, just by the Gallup Poll system. When they apply the Gallup Poll system, they say, for instance, people like individual houses, people like one-family houses. But people don't realize what happens when they put a one-family house next to another one-family house, near another, near another. And those who build are not thinking of what people will like or dislike; buildings are built because there is a feasibility study that says they are economically possible. I think we've come to a moment in our state of development when they allow you to do things that are in total contradiction of the human scale, of the needs of the people, of the whole complex of the city around. For me there's an element of measure that should never be overlooked in the development of our environment, and that measure is related

to the people who live in it. That human factor is only too often forgotten.

How would you expand the public understanding of environmental issues?

Environmental issues are today to a certain degree universal, they apply to the planet. For me environmental issues form part of something I would call human rights: people have a right to certain things around them that make it possible for them to live in a decent and more or less agreeable way. The Habitat Bill of Rights is an effort to establish broad principles which would be a public guide to the qualities that make an environment human, livable, enjoyable. We thought that it could provide something to measure a community or a particular group of buildings against. The document is still in an open kind of state—that was the intention—waiting to be carried forward by the efforts of many different collaborators who will come forward in the future. It would be the place for a broad definition of the qualities that are essential for making an environment better for man. Of course we know that the developing countries, in their limitations and poverty, could not possibly do what other countries might do. Countries are underdeveloped, developed and overdeveloped; this results in very great difficulties in meeting very difficult problems, and all these kinds of diverse problems (and purposes) should at least be part of the document that we began and called the Habitat Bill of Rights. But all these things take a certain time. There are good trends developing, and more people today are aware of the mix-up that exists in cities and of the impact on the environment. This awareness of people has helped in this country, not just to prevent great big things, but to open the way to at least not destroying certain values which should be

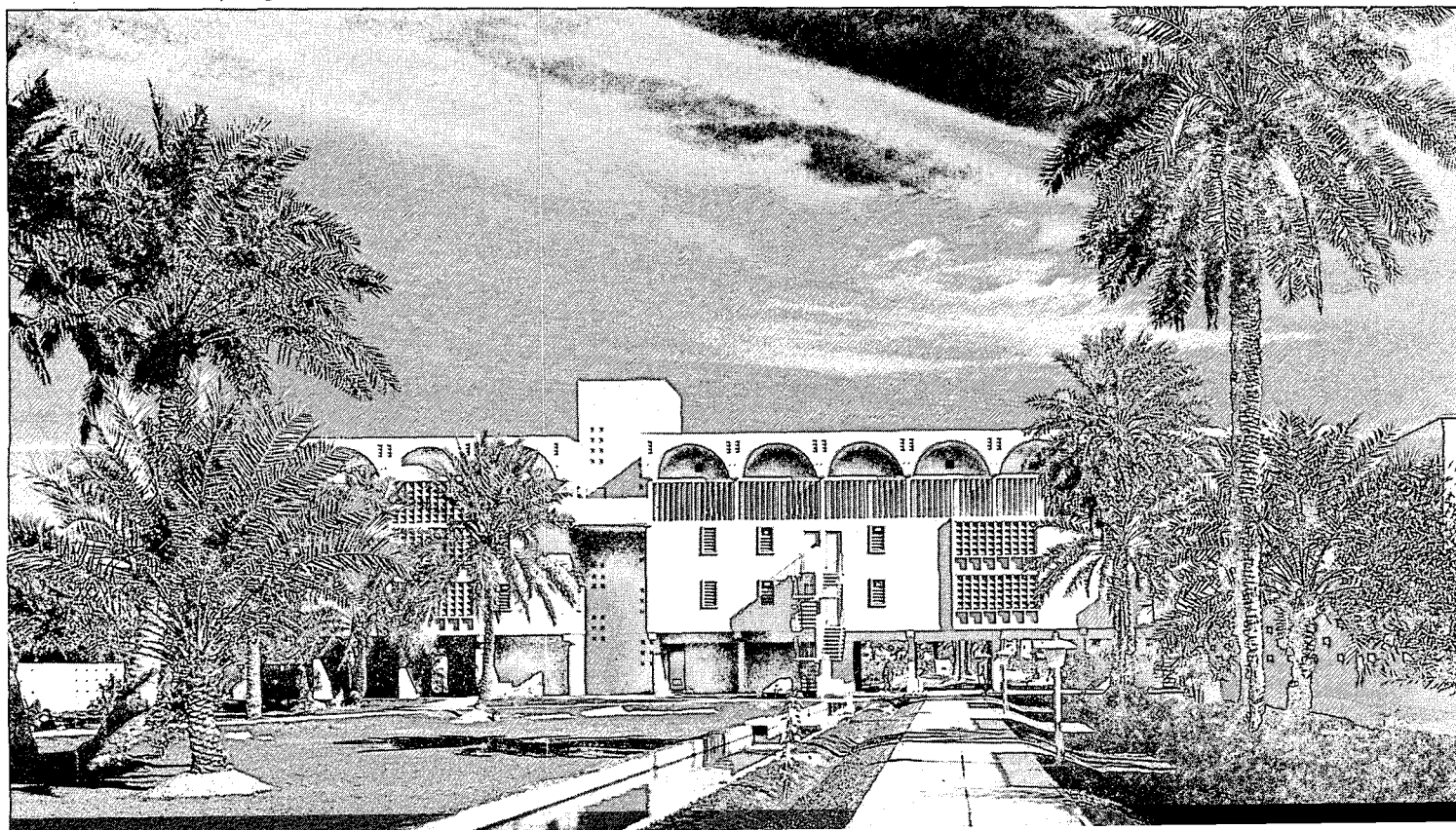
kept. Skyscrapers that violate the scale of a whole environment, they don't just pass like they did thirty or forty years ago. People are more aware all the time, and they come and say, this building will cast a shadow on a public park, and we don't want that; they are more aware of certain values. Greater public awareness is developed through the mass media, which could do more than at present. Things today work that way, you have to make things more understandable to people. But they should understand what the real menace is in these things: if you bring a great mass of building into an environment that already has difficulties in terms of transportation, parking, et cetera, then you are bringing in something that the environment just can't contain, can't hold. There's a lack of education of the general public in the problems of the environment. I never understood why people who go through high school don't get an elementary education on the environment. They have to live in these conditions, they should be aware at least of what could be done, of what would be possible.

What you get at present, in a place like New York, for example, with its community planning boards and its multiple review processes, are people—members of the general public—strongly participating really in the design process without, a great deal of the time, having very much idea of the effect of what they are asking of the process.

Where people should participate is on questions relating to impact on the environment, and not on actual details of the design of buildings, which you should participate in only if you are really prepared. But there are certain things that *a priori* have a human impact, and I believe that everybody is more or less prepared to be aware of what the human requirements are. Those requirements

1955-60—U. S. Embassy, Baghdad; Sert, Jackson & Gourley, architects

Louis Reens



shouldn't be violated in any way. I think that's something that the general public can perfectly well understand. We get it mixed up sometimes with something that should be put to a general vote, and then the results aren't good because it's a compromise. But I see as an intervention the education of the public in general in terms of how their lives are going to be affected by certain things. I think they have a right to know.

Can you say whether you think students and younger architects—those you have known over the last ten years or so—are more or less interested in urban problems than before?

I think at this moment they're possibly less—less because there's been a movement in part away from that. Such a movement can be provoked by many things coming together—the times, a moment of thinking about changing conditions in the world, discontent with the modern movement, what has been done and what has developed from it, the architecture published in the magazines, and then being seduced by certain elements which attract them but haven't until now broadened their views. There was a moment, you know, when they were in this kind of state of revolt against architecture, and at that time they didn't want to know anything about design, they only wanted to solve social problems. Then, suddenly, they go to the other extreme.

They discover they can't solve all the social problems by setting up a storefront—?

They get discouraged. I get moments in my life— Although I dedicated a lot of years in South America, planning, designing, measuring and planning cities, I realize that it's a very difficult, kind of long-winded affair, it takes many years, and you possibly won't see the

results in your life span. And as I got older, I concentrated more on things that I could build and see. That's all a natural condition. And today there's a lot of discouragement among the young people, and that influences their work. It's a discouragement about the difficulty of foretelling the future. It's very different from the moment we lived right after the First World War, in the twenties, because we at that time believed that that war had ended all wars.

The prospect of involving oneself in something that may take twenty years to bear fruit, you mean, might seem dimmer to young architects who don't think they know what's going to happen two years from now?

Exactly. Architects, I believe, suffer from that, the general condition of the world today, this great question mark about what is going to happen. And still, young men and women by the thousands go to the schools, it's wonderful, and I admire them for it. So there's an apparent contradiction: one sign confirms that they have to have faith in the future and consider that they do something about it; on the other hand, you see a lot of things done today in design that don't seem to point in any particular direction, looking to the future. There's a certain contradiction, but I think that some people are just doing the things they believe are the only things they can do right now—

Or perhaps it's the best they can do now?

Yes, the best they can do now in a moment of transition. I think I'm very aware of all these issues that concern younger architects. But I can't conceive of architecture limiting itself to purely esthetic experiments at limited scale for a limited number of clients. I believe in the involvement of young people, and I think they will become aware of the possibili-

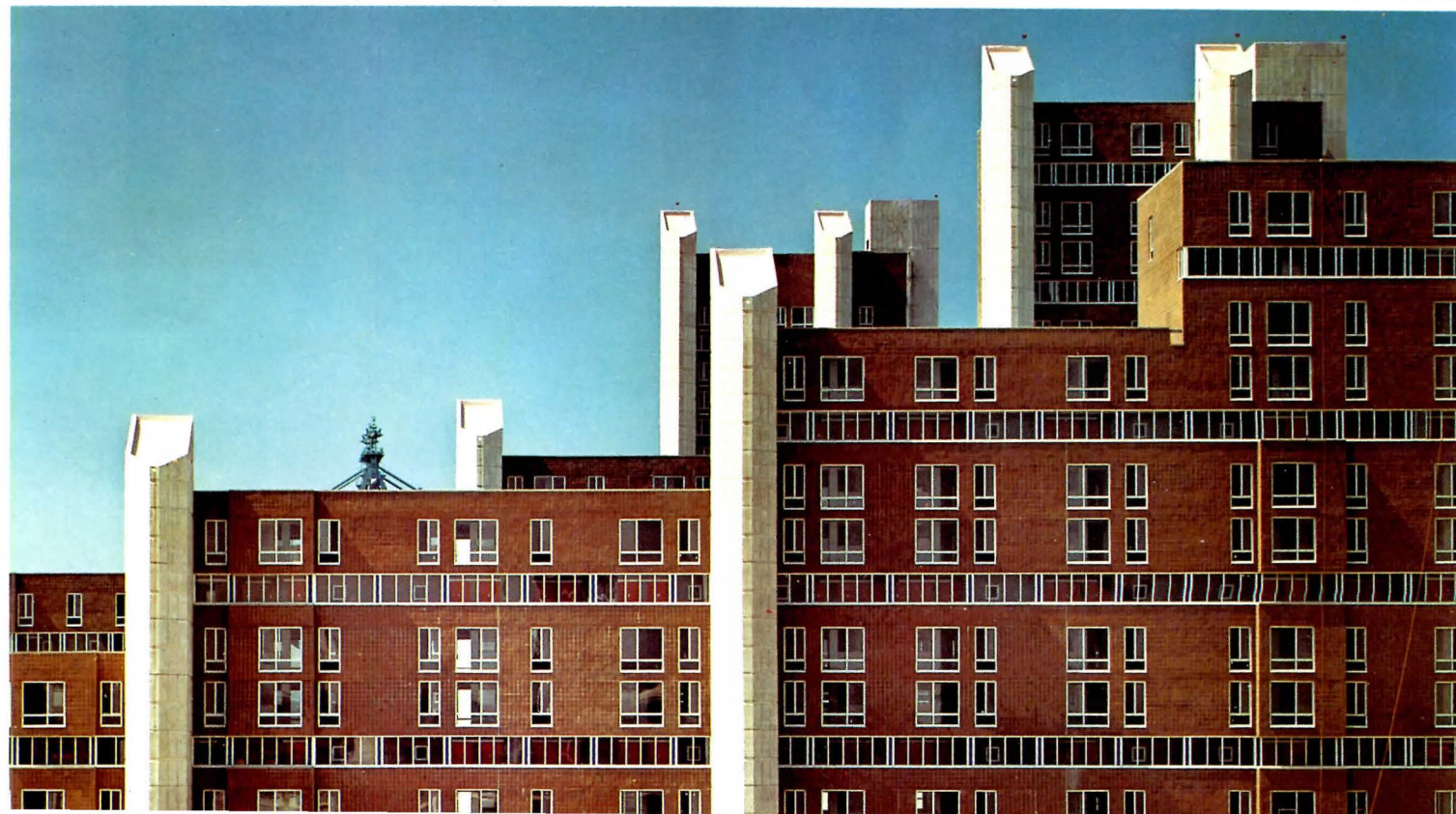
ties of what they are trying to do—what happens if this is really applied to a city?—and of the importance of the architectural profession in trying to solve—not solving but *trying* to solve—the problems which prevent or delay the improvement of the human condition.

If you were going to give some advice to young architects beginning to practice, what would you have to say to them about what issues they might usefully address, that architecture can usefully address?

Well, first I'd test their interest in architecture by testing whether they are interested in architecture just to do some kind of extraordinary building that would carry headlines and give them a name, or if they are really interested in human problems of a lasting order, aspects of our times which are a great challenge. What happens with an area like the Bronx, or like South Boston? The run-down areas are parts of the city, there is no use in ignoring them and highlighting or spotlighting the jewels, or the best things we have—if we do that, we're kidding ourselves. We need some new ways of approaching the problems of the city which would take the human factor into consideration as one of the *prime* considerations. All right, the cities have to work financially, they have to work technologically, they have to work in many ways. But they're supposed to be places for people to live in and work in. So what I'd like to see is that people take enjoyment from these places; I think the pursuit of happiness, as Jefferson put it, is part of it. You can't imagine the pursuit of happiness in a part of the city where you have nothing that has anything to do with the pursuit of happiness. And that, I think, is the basis of the creation of this country, and it should be part of the human rights as they relate to habitat.

1971-75—Eastwood, Roosevelt Island, New York City; Sert, Jackson and Associates, architects

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RETAIL STORES

If shopping has become a major American pastime, then the challenge facing retailers is to entertain as well as merchandise. As competition intensifies, merchants want environments that establish unique identities for them among consumers, mainly by conjuring worlds of glamor and excitement. The following designs show a new emphasis on architectural elements to create these environments. —R.Y.

Saks lets the ceiling shape its spaces





Marvin Rand photos

Department store and fashion specialty house merchants like Saks Fifth Avenue can still recall when shoppers trusted a store's reputation more than a manufacturer's label. Today, however, brand name promotions have made stores seem secondary to their merchandise. The new Saks in Costa Mesa, California, designed by Copeland Novak Israel, architects, is a good example of how the merchants have fought back, using interiors that conjure a fantasy world of glamor and excitement.

Saks is surprisingly exhilarating because its organization, architecture, and technology have blended together so well. The store's organization is unmistakably contemporary. Its open plan makes each selling floor one vast room with well-defined areas that shoppers can see at a glance. Its self-service displays shift inventory from stock rooms to public spaces and minimize labor.

The architects rotated the basic planning grid 45 degrees to create a diamond within a square, thereby generating a variety of spaces, vistas, and circulation patterns around a central escalator well. Lighting, electrical, mechanical, and structural elements are flawlessly integrated in the ceiling plane to articulate light coves, vaults, beam drops, and stepped planes that graphically define floor areas without restricting circulation. In accordance with California's stringent energy standards for building types, the store is lit entirely by fluorescent lamps to consume only 3.1 watts of lighting per square foot; what appears to be natural light from clerestories is really fluorescent. In this soft, indirect light, everything from wood and metal trim to natural toned walls and marble aisles looks unabashedly glamorous.

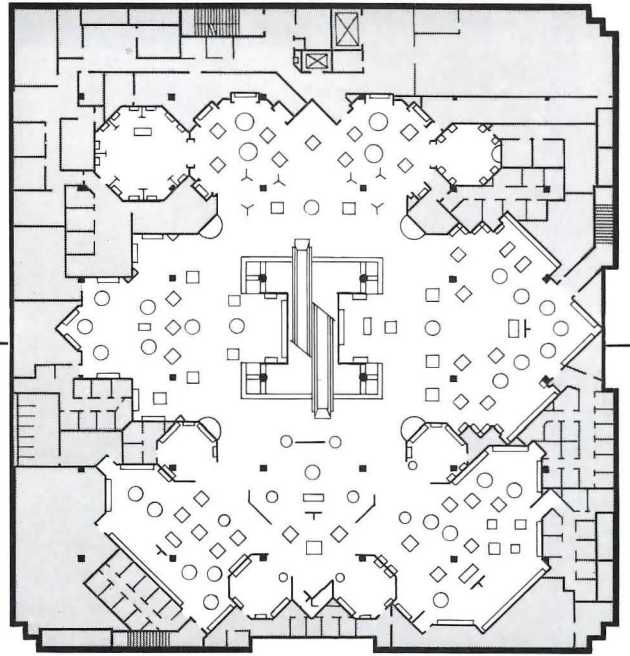
SAKS FIFTH AVENUE, Costa Mesa, California. Architects: Copeland Novak Israel International—Lawrence J. Israel, partner-in-charge.

Saks Fifth Avenue, Costa Mesa, solves the problem of open floor plans having specific but undivided areas by the active use of its ceiling as a directional guide. An integrated assemblage of structural, mechanical, electrical, and lighting elements becomes light covers, vaults, and other space defining forms that signal the boundary of one floor

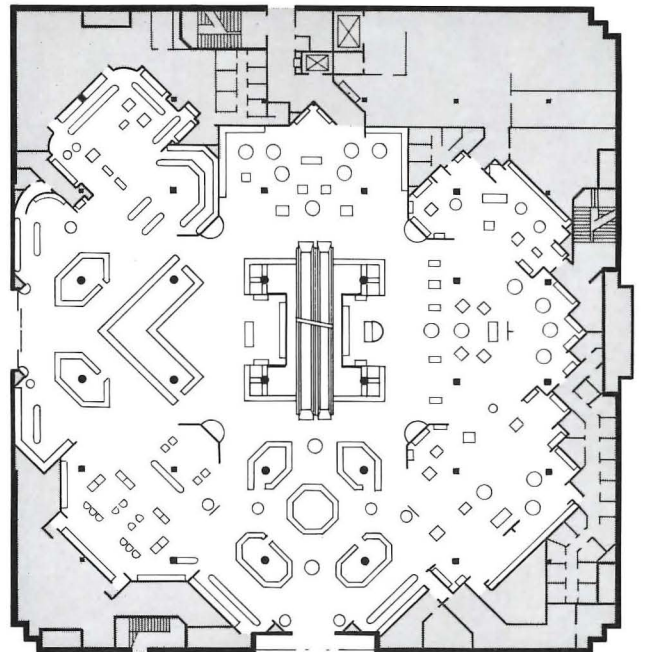
area and the beginning of another. As shown in the view below, the ceiling has been lowered to define a small, secluded area for selling jewelry. Light covers simulating clerestory windows relieve the height, while the rotated geometry of the diamond plan grid within the building grid is expressed by the display cabinetry to make the space seem

larger than it is. The three floor plans pictured to the right reveal how much of the store is open to the public, and conversely, how little is reserved for stock. While the center of the store is anchored by the escalator well and skylight, the outer edge varies with the need for floor area and specific forms to differentiate one selling location from another.

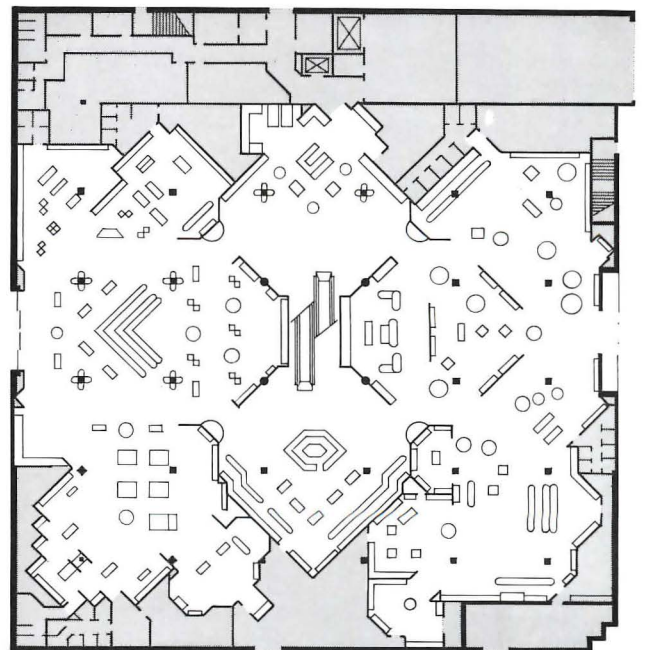




UPPER LEVEL



MIDDLE LEVEL



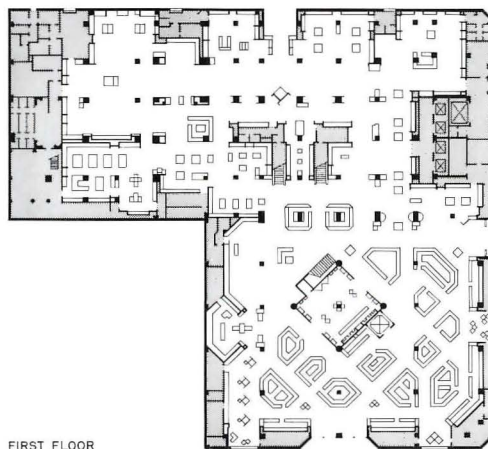
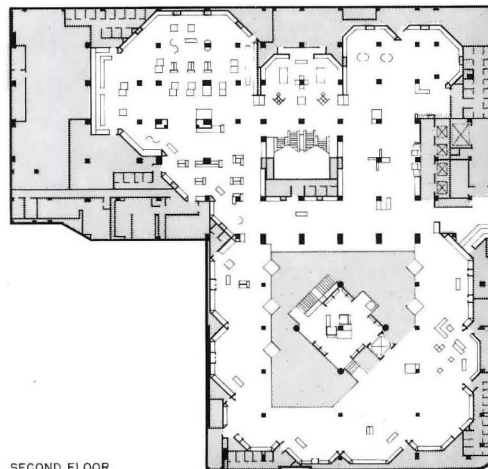
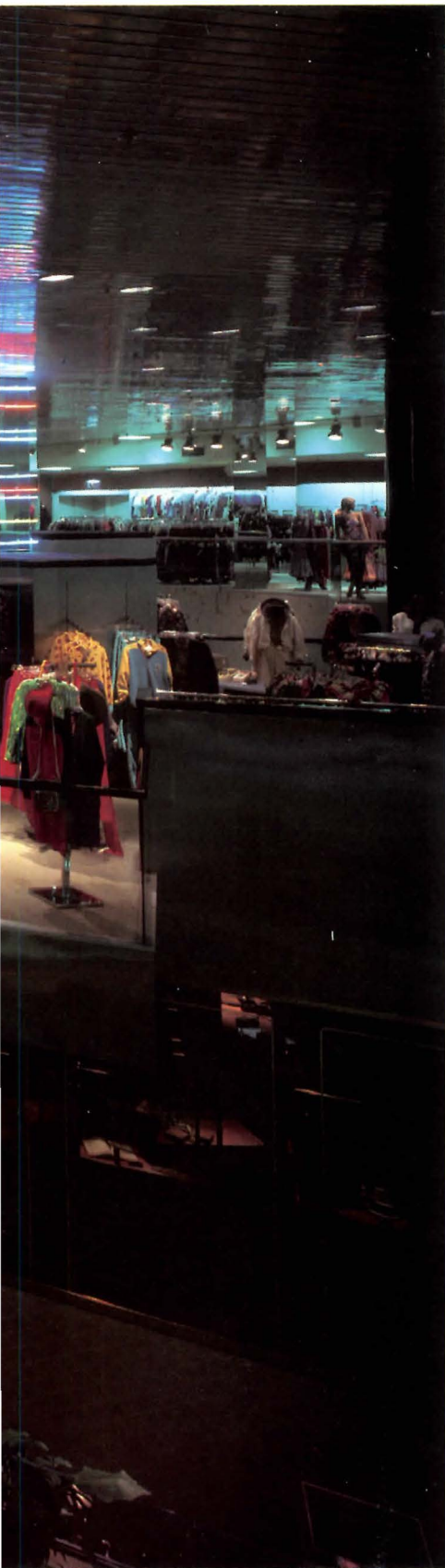
LOWER LEVEL

10

Form and light define spaces on a huge selling floor



The large ground floor of Burdines, Miami, is made to appear larger and less precisely articulated at its edges through the use of muted colors, spot lighting, and highly reflective surfaces. The grand staircase, occupying a central space, provides focus. In this setting, color is deliberately understated so that the store's merchandise stands out.



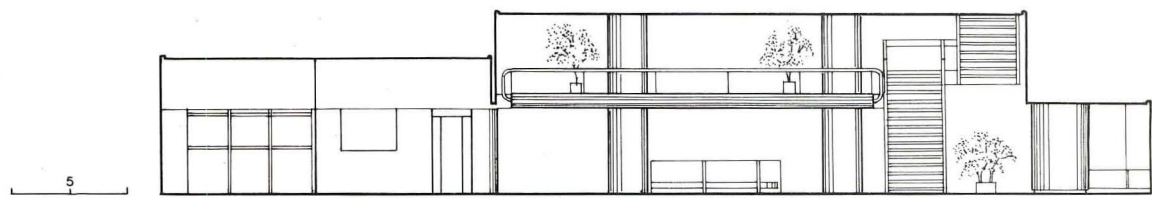
Anyone who has observed Americans vacationing in Europe knows they have an ill-disguised yearning for pomp and circumstance which are largely missing from their public and private lives. The ground floor, mezzanine, and second floor of Burdine's department store, Miami, Florida, have been re-designed by Walker/Group, architects to help restore the missing dimension.

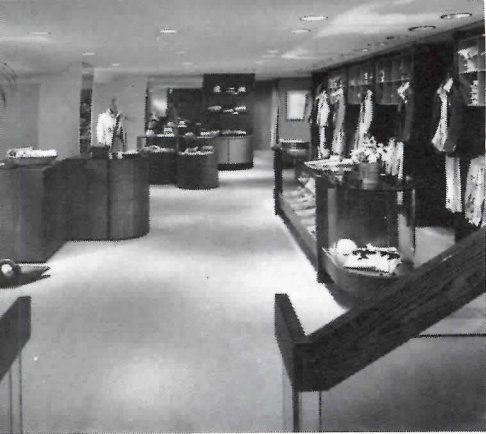
Although the new floor plans and sections superficially resemble the previous installation, the architects have made them vastly more formal and exciting. The mezzanine, which never attracted much traffic before, is tied to the ground floor by a grand staircase whose second of two landings is broad enough to be used as a selling platform; the space beneath this platform is designed as a boutique. A glass elevator attached to this assembly takes shoppers to the mezzanine and second floor.

The architects' choices of lighting, materials, and color are equally decisive. Shoppers previously saw an interior in which everything was equally visible and no individual areas stood out. Using highly directional spotlights, neon strips, and industrial finishes, such as a ceramic tile floor with a matte finish, or a metal channeled ceiling with a specular finish, Walker/Group scattered brilliant pools of light and display throughout the vast space to lure shoppers on. Amidst the pale grays and polished silver tones of the architecture, only the neon adds color of its own. The only other color comes from the merchandise.

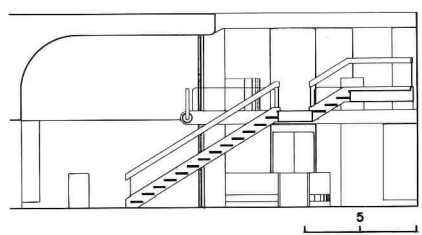
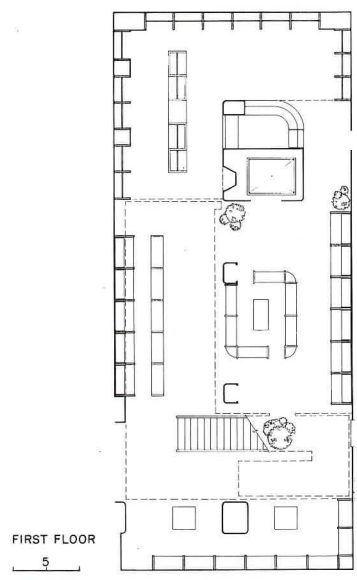
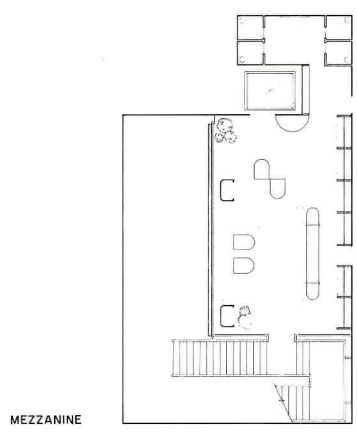
BURDINES, Miami, Florida. Architects: Walker/Group—Gary Jacquemin, project architect; Joe Schkufza, project designer; Joanne Newbold, Wyatt Neel, designers; Raul Nunez, partner-in-charge. Consultants: Herbert Johnson Associates (building architects), H.J. Ross (mechanical/electrical), David Mintz (lighting). General contractor: Henry DeGraff.

A special environment for women in a men's store





Tom Crane photos



Businesswomen moving into the executive suite soon discover that tailored business clothes for women are exasperatingly hard to find. When Paul Stuart, a New York men's clothier, established a women's shop featuring business clothes, it asked architect Jack L. Gordon to re-interpret the store's esteemed image to appeal to new customers and established ones alike.

A 2,300-square-foot space, two stories high, at the rear of the first floor was chosen as the site of the women's shop. This would have been more than adequate had the store not needed the same floor area for men's sweaters, shirts, and outer wear. The architect's response was to place the shop on a mezzanine platform above the main floor, joined to it by an existing staircase.

Seeking an ambience that is high-spirited yet mindful of traditional values, Gordon formed a new main floor perimeter wall and mezzanine back wall from convertible/interchangeable shelving bins/hanging racks of his own design. Two center islands comprising display cases and service counters direct shoppers around the circulation loop below the mezzanine. On the mezzanine, shoppers move among freestanding display cases.

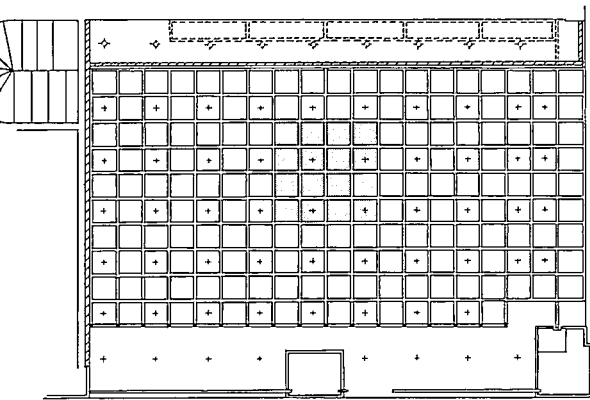
Interior appointments play standard store fittings like wood casework against lacquered surfaces, curving forms, and focused lighting. A wood "bull nose" capped by a brass rail and glass panels gives the spandrel and parapet of the mezzanine the look of fine tailoring. A graceful flow of space and refinement of form make this study in contrasts succeed for the client and customers alike.

PAUL STUART, New York, New York. Architects: Jack L. Gordon, P.C.—Jack Gordon, Rosanne Gordon, Peter Valentini, Michael Zuckerman, project team. Consultants: Nacamuli Associates (structural), Frank Rutigliano (mechanical), David A. Mintz (lighting). General contractor: Sweet Construction.

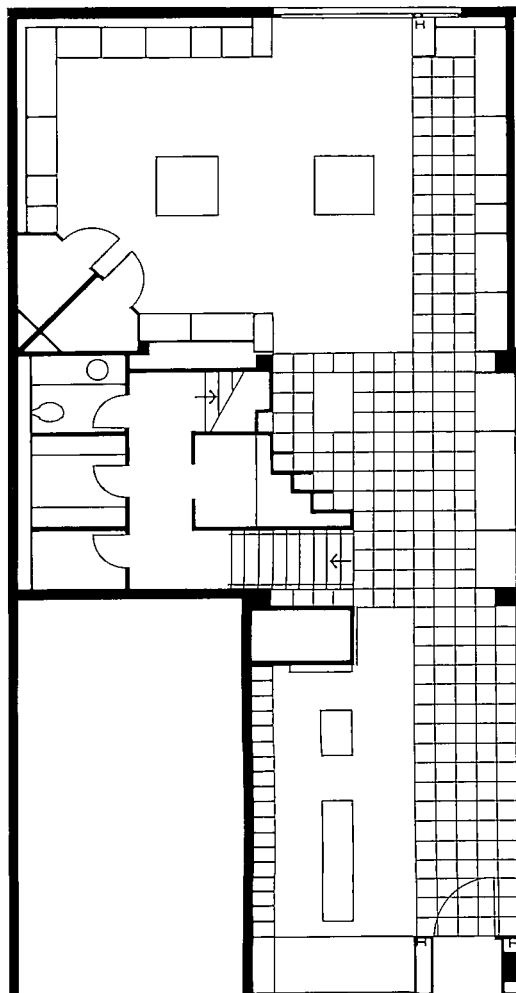
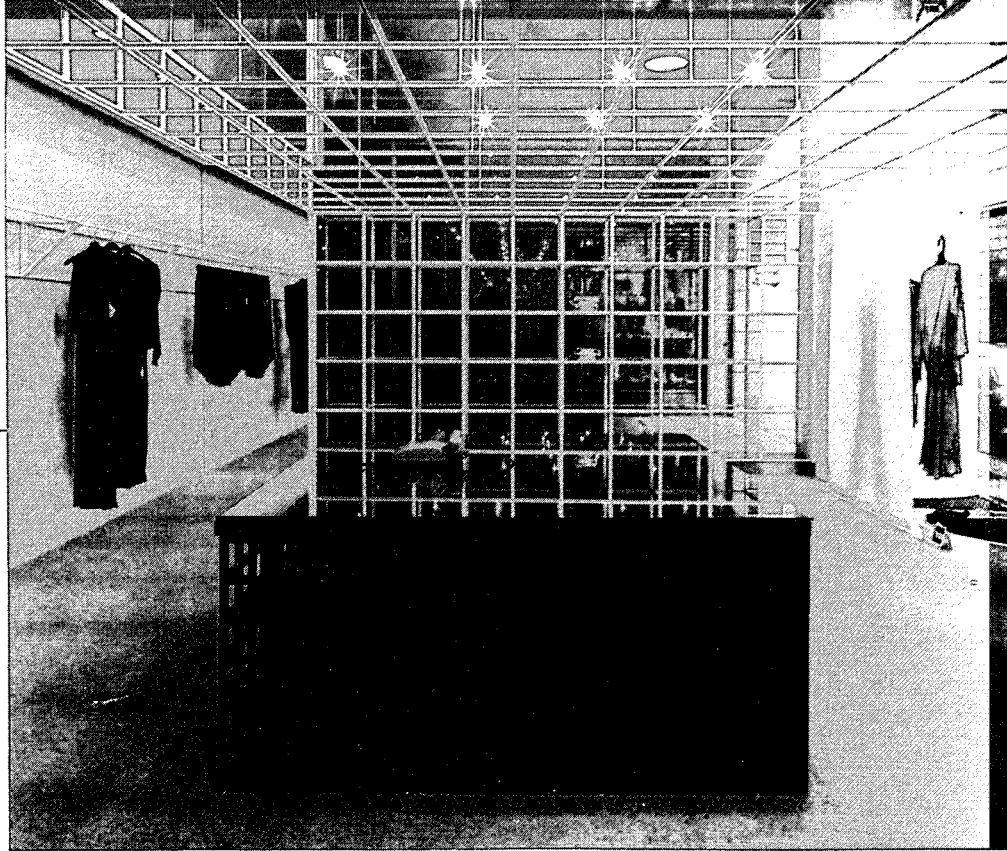
Variations on a grid shape three boutiques

The Marisa boutique, Milan (opposite page), exploits the order of the grid to make its small area in a corner of a gallery feel precisely defined and infinite in size. A small service counter in the center is aligned to the grid overhead, a metal space frame accented by mirrors and tiny quartz lamps. Grids also create depth at a wall and store frontage.





REFLECTED CEILING



Various multiples of a planning grid can be seen in the floor plan and view of the Zegna boutique, Paris (left and opposite page). Fascia and casework are clearly linked to the floor grid's slate tile joints. The small T-shaped mezzanine casts a "shadow" on the slate as it lowers the soffit.

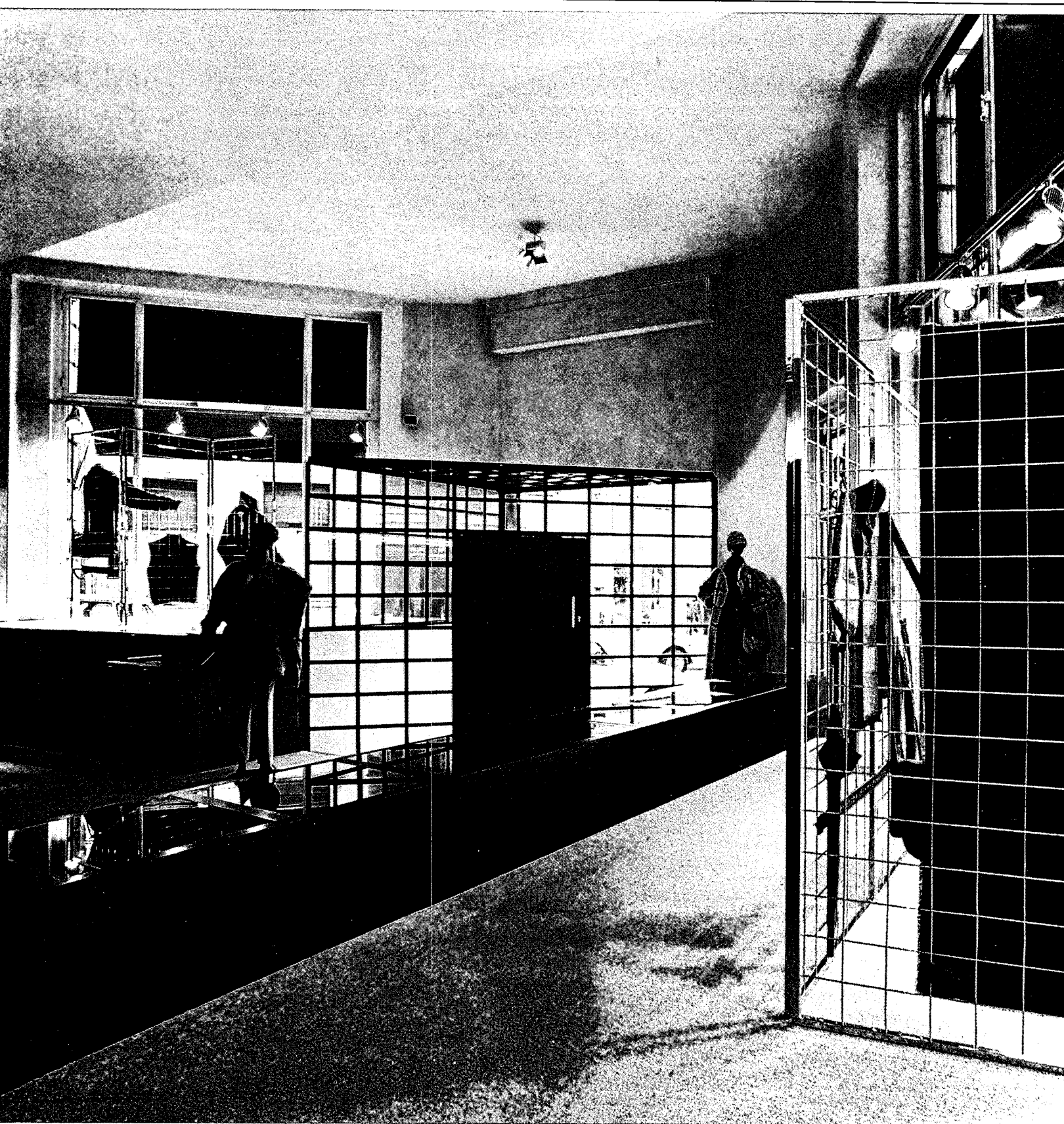
The grid is a powerful symbol in architecture. Its appearance implies structural logic, economy of means, scientific organization, and more. Three boutiques, Zegna in Paris, Marisa in Milan, and Missoni in Paris, by Gregotti Associates, Milan architects, demonstrate, with sophisticated assurance, its enduring qualities as a design motif.

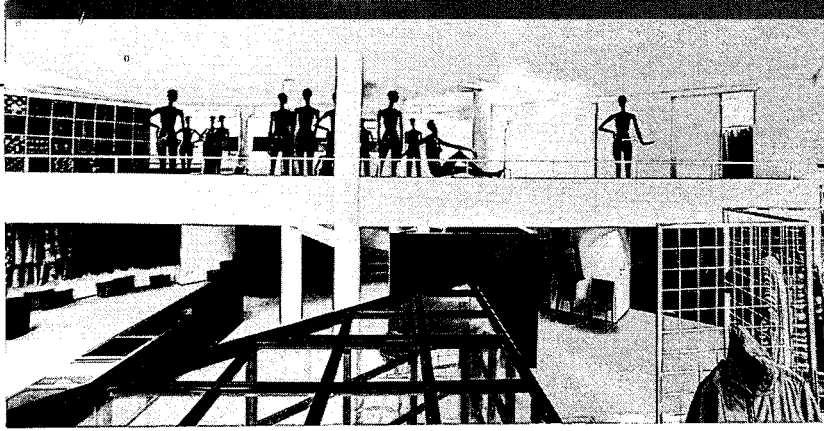
Zegna (opposite page) a men's clothier, uses traditional materials like wood, bronze, and slate, and classic colors like black (wood fascia), gray (carpet), white (walls and soffits), and rosewood (casework) in precisely executed orthogonal forms that delineate the planning grids beneath their surfaces. Holding these forms and surfaces together is the main aisle in slate. Everything seems tethered to this line as it begins at the main selling area in the front, passes the central stairwell, and ends at the other selling area at the back.

Marisa (this page) has a small selling floor whose boundaries are deliberately obscured by crisp white space frame grids illuminated by small quartz lamps and reflected by mirrored wall surfaces. The ceiling grid appears to extend to infinity, making the space above seem vast. The space below also seems less confined because of a grid display wall.

In Missoni (overleaf), fragmented elements in a triangular corner space are dominated and controlled by severe forms and colors. A starkly drawn mezzanine joins the two front walls of the triangle. Black fixtures, white soffits, and beige walls play foil to colorful couture. Most striking of all is the vestibule, a prism of steel and glass grids thrust boldly into the space, fusing the room's idiosyncracies with its coordinates.

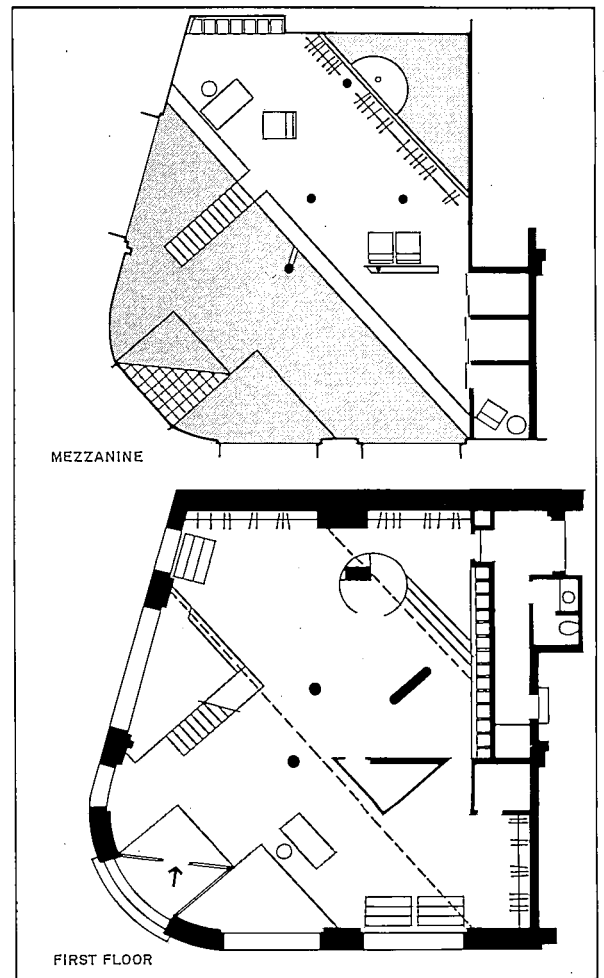
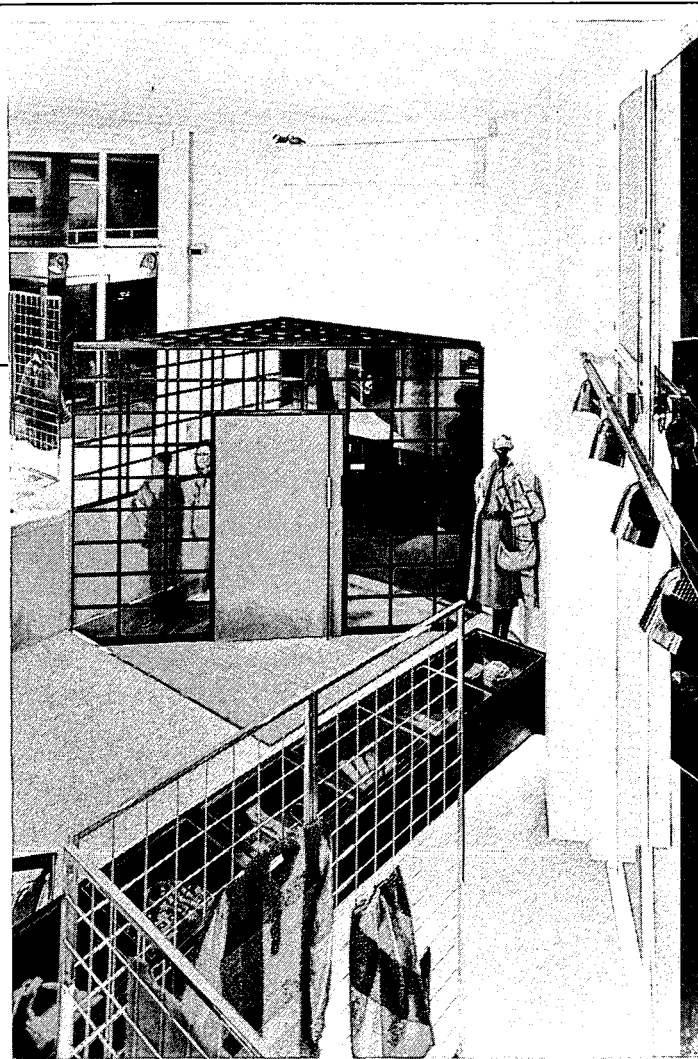
ZEGNA, Paris, France. MARISA, Milan, Italy. MISSIONI, Paris, France. Architects: Gregotti Associates—Pierluigi Cerri, Vittorio Gregotti, Hiromichi Matsui, principals; Cristina Castello (Zegna, Missoni), Theo Brenner (Zegna), associates.





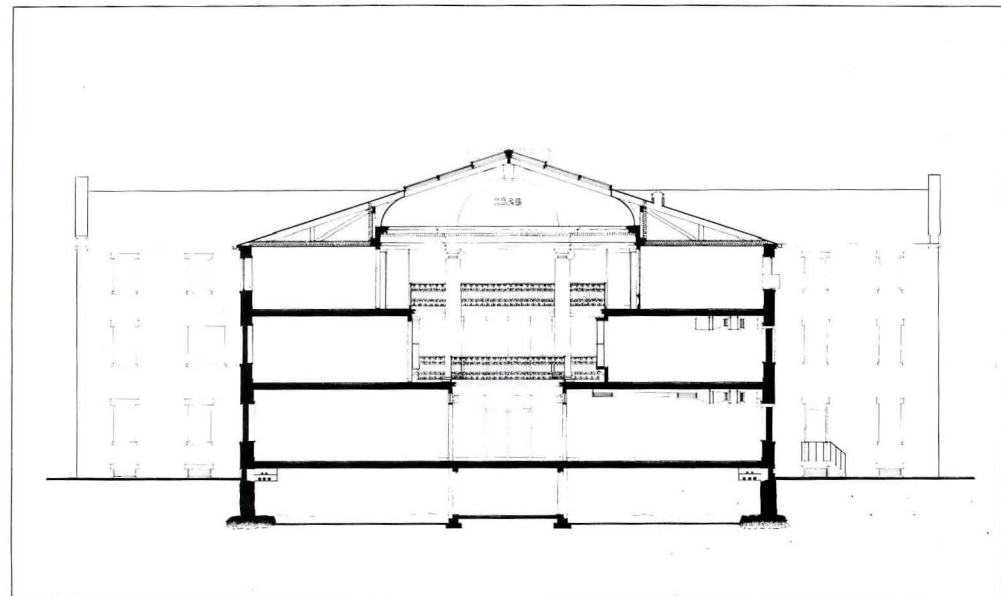
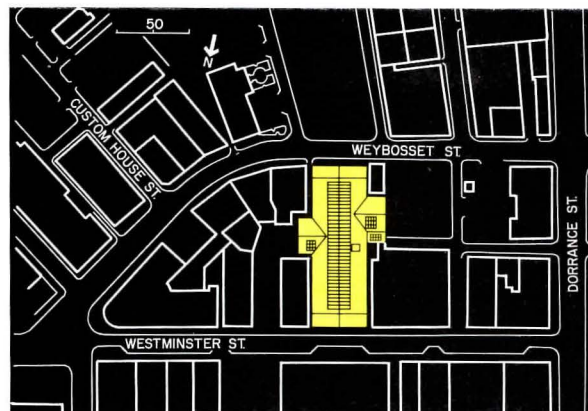
Carla De Benedetti photos

The Missoni boutique, Paris, pictured on these pages organizes a collection of dissimilar elements into a tight composition by the use of a severe geometry and a simple color scheme. A balcony (above and bottom) bridges two walls as a stark plane stretching across space. Cabinetry and the dressing room (above) are reduced to cubic shapes and a cylinder. The color palette stresses light and dark extremes so that the colorful couture stands out. But the pivotal element in this design is a vestibule of metal and glass grids (right and opposite page). It is a remarkable transition zone, simultaneously inside and outside, framing the shopper's first view of the interior and giving the numerous interior elements a powerful frame of reference.



A landmark renewed as a lively market





While the historic value of the three-story Greek Revival Arcade of 1829 in Providence, Rhode Island has often been celebrated, its financial prospects looked doubtful by the late 1970s. The National Landmark Building desperately needed a new marketing strategy and an architectural vision to achieve it. Its rescue is now complete with the renovation by Irving B. Haynes & Associates, architects, working for an enlightened developer.

The architects conscientiously preserved the old building's superb proportions and delicate features. A few changes were inevitable. Circulation was enlivened by a central court café to give shoppers an informal destination; three bays on both sides of the corridor were recessed and an open staircase installed. First floor storefronts, remodeled in 1957, were replaced by flexible folding doors. New glazing included curtain walls at the ends, for insulation and security, and new skylights with operable vents. Other improvements included new paving, signage, lighting, and store design guidelines.

The new marketing strategy features gourmet food shops as a magnet on the first floor, with a restaurant on the third floor to entice traffic upstairs. Boutiques and clothiers are located on the second floor. More shops occupy the third floor.

Careful restoration and sophisticated marketing techniques have given this landmark new life. The building which Providence once called a "Folly" is being taken very seriously again.

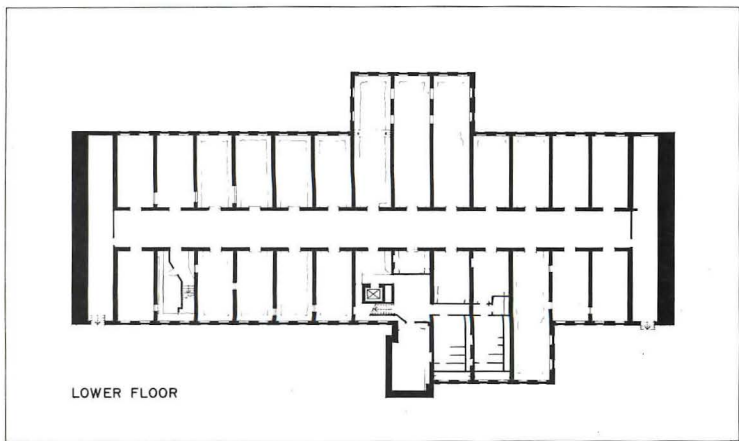
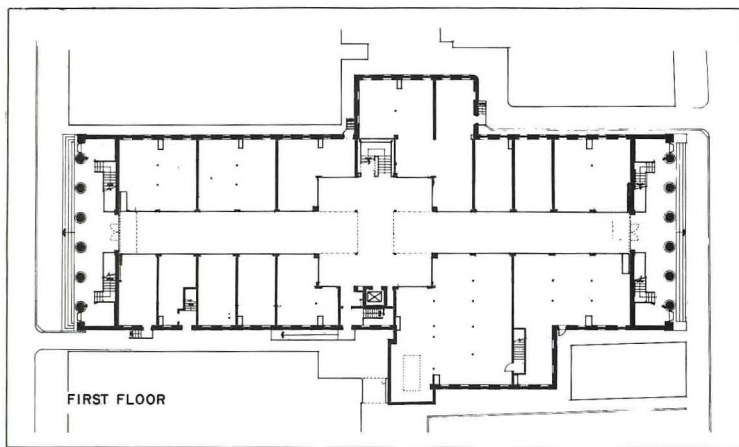
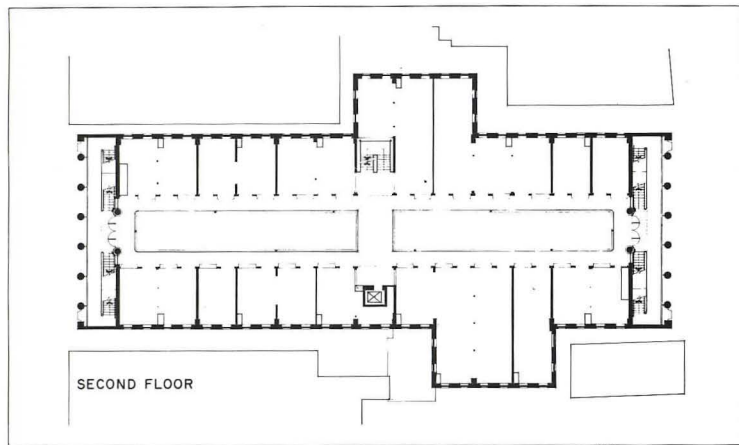
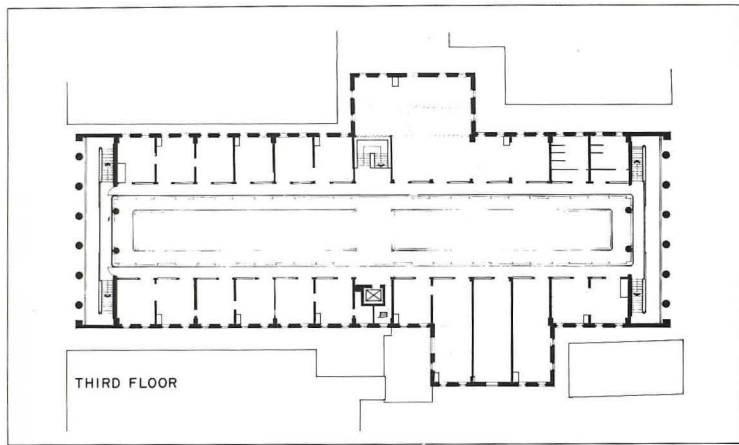
PROVIDENCE ARCADE, Providence, Rhode Island. Owner: *The Arcade Company*. Architects: *Irving B. Haynes & Associates—Irving B. Haynes, Cornelis J. deBoer, project architects*. Engineers: *Frank N. Zaino (mechanical/electrical), Wilber E. Yoder (structural), R. G. Vanderweil (consulting)*. Graphics: *Robert Flack*. General contractor: *Gilbane*.

Gifford Ewing photos



Beautiful proportions and detailing distinguish the Providence Arcade as an early example of Greek Revival architecture. It was the work of two architects: James Bucklin's facade (top) is pedimented, Russell Warren's is not. A skylight and interior three-story gallery (above and opposite) restored by Irving B. Haynes & Associates, architects, pours light in. The ornamental iron work (left) imparts a sense of delicacy.

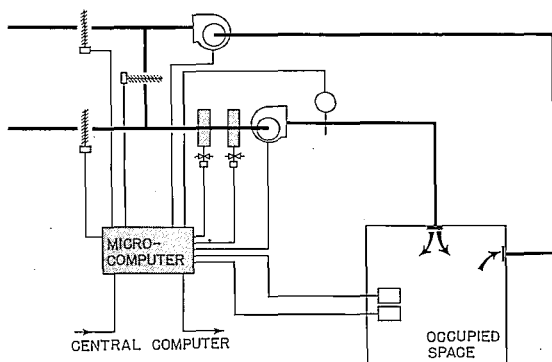




The Arcade's floor plans are straightforward (left). Each succeeding floor steps back its shops to let light in. Upper floor store fronts are the originals. Ground floor fronts, lost years ago, have been remodeled to allow merchants to open their entire frontage if needed. Lighting, banners, and paving have been added to accent the building's architectural detail and structural rhythm. The cafe seating in the center (above) is new.

A new era for building system monitoring and control

Optimization of building operation is only one of many advantages possible by incorporation of microcomputers in environmental control systems.



by Alan B. Abramson, P.E., associate partner and director, automation and security group, Syska & Hennessy, Inc., Engineers

Extraordinary advances are taking place in the monitoring and control of building mechanical, electrical and life-safety systems and equipment, and more are imminent because of the vast computer power available today at relatively low cost. The day is not too distant, for example, when companies may measure performance of departments in part by the amount of energy used in the office space they occupy. This is called energy accounting which will be possible when building operation is integrated into business systems through use of the computer.

Growth of computer power has allowed engineers to greatly improve the operation of buildings in other respects, such as life safety and the efficient utilization of energy resources. The threat of fire in high-rise buildings, for example, has resulted in a proliferation of legislation and standards that require sophisticated fire, life safety and smoke management systems. The level of sophistication required by these standards would not have been possible without modern electronic control systems.

As energy costs have escalated, and energy shortages of various kinds have occurred, engineers have begun to provide alternate energy sources in the same building: gas, oil and electricity, and also thermal stor-

age systems. Only through the application of modern computer-based technology can accurate choices be made at any given time as to which source is most economical.

In the past, engineers found it difficult to correlate predicted energy use with actual energy use. Now with vast computing power available, control systems will be able to check these values on a minute by minute basis. A correlation can be made between some hvac design model and actual performance. If a deviation of as much as 10 per cent occurs, then the hvac system is not working correctly, or something is wrong with the model.

With computing power available at so many levels of the monitoring and control system, it is possible now to create a self-learning control system known as adaptive control. An example is optimal start/stop of the hvac system. The goal might be to start up a mechanical system in an office building at a certain time so that temperature and humidity will reach desired levels, say, at 9 a.m.—not a minute before, not a minute later. The system measures relevant parameters such as outside conditions, angle of the sun, interior space conditions, etc. Based upon these values, the computer "crunches" a bunch of numbers, looks things up, and "spits out" when various pieces of equipment should start up. The system monitors how the hvac system operates from start-up until conditions are reached. If the interior space temperature reaches 75 F in summer too early or too late, the computer says it did something wrong and goes back and modifies the program for the next time.

Monitoring and control systems today are designed to take an integrated approach to environmental control, energy management, fire and life safety, and security. Integration of these functions provides many advantages in reducing cost and system complexity. For example, sophisticated smoke control for buildings in case of fire requires the following: 1) automatic and remote control of dampers that allow smoke to be removed from the source of the fire, 2) automatic damper control that will let fans produce positive and negative pressures in adjacent spaces so that smoke will not spread, and 3) fan safety controls.

Many of these same control features can be utilized to isolate portions of a building during normal operation to save energy. Duplication of these functions for the two different purposes would prohibitively increase first cost and complexity. Another

example is the integration of security functions with fire alarm functions. This permits a marriage of access control and intrusion detection (whose goal is to keep the building "locked") with egress control (whose goal is to open the building for proper exiting).

Integration of function also allows multiple monitoring consoles to be used interchangeably. For example, a large building may have operators' consoles in the lobby (fire command station), in the building engineer's office (hvac), the central plant (energy and distribution) and the security office. Through transfer of functions to any one console, off-hour operations can be monitored by one individual. Furthermore, when a number of operators are on duty, information on emergencies can be presented at many locations simultaneously.

Increased computer power enhances control systems' speed, flexibility

Until recently, monitoring and control systems had at most one computer; or, before this, a central processing unit, which controlled electronic "traffic," but made no decisions. Now modern monitoring and control systems employ multiple computers, all of which communicate with each other via the transmission of digital signals represented by varying levels of voltage, current, or frequency, called bits, which are combined to form "words," called bytes. The information transmitted or received can represent raw monitored data, control commands, or processed data, e.g., the result of a calculation, or a decision for action based upon a monitored condition.

Multiple computers share the tasks of the over-all system. The specific instructions associated with these tasks are written in the computer's internal language, assemblages of which are called programs, or, more usually, software.

A system based upon use of multiple computers is called a *distributed processing system*. It offers greater system capability, high reliability, dedication of tasks, and fewer signal transmission problems. Used for some time in industry, distributed processing only recently has become practicable in office buildings as a result of the dramatic decrease in the per unit cost computing power.

Software, paradoxically, has become both simpler and more complicated. Engineers formerly had to pack a lot of software in a single computer. This computer was limited in capability because of limited speed and limited memory. The computer could do

only so many things simultaneously. Now the tasks are segregated among a number of computers. With many tasks being done separately, software does not have to be as efficient nor as fast for satellite computers. The interrelationships of tasks do not have to be done all in one machine.

On the other hand, the software for the central computer becomes more critical. Instead of controlling traffic between many little points, it is controlling many satellite computers. Furthermore, with many more options open now, the design of the over-all system is more complex because of so many more options being available. The problem in the past was with capacity limitations—it was important to get simple things working. Now the rush is on to make good use of the extra computing power.

Software costs have become more expensive because of increased system complexities, new and complex application requirements, and the increasing demand for high-quality personnel for developing software.

Software can be divided into three areas: 1) system software, 2) application software, and 3) man-machine interface software. System software keeps the system operating. It maintains order in system communications, execution of commands, and priorities. It makes the system tick. Application software contains the data file (information and a definition of monitored and controlled points) and the algorithms (the mathematics by which the system interrelates the monitored and controlled points). Man-machine-interface software permits operator access to system operation, automatic commands, and the results of commands on operation.

Control systems grew sophisticated in a relatively short time

The first types of control systems were elementary and local. Each major mechanical subsystem operated as an independent entity, and control required a man to travel from machine room to machine room to press buttons, open valves, close dampers, etc. There was no interaction between machine rooms. The operating engineer used a clipboard to take readings. A lot of handwritten numbers were generated on which very little analysis was done.

It was obvious that manpower and operating advantages could accrue from centralization of monitoring and control capabilities. In the 1950s and early '60s, indicators, and controllers were hard-wired and hard-piped

(compressed air system) back to dedicated indicators and controllers at a central board. Pressure signals were piped back to pressure meters. Wires were run from pushbuttons to starters, and from alarm contacts to lights. The central board contained a group of unrelated instruments that "sat there and looked at you, or waited to be touched." Operating engineers could, however, begin to interrelate operation on a manual basis. They could see how the systems were utilizing hot or chilled water. And they could begin to manually match loads to generation capacity.

The early '60s brought a rudimentary approach to multiplexing: a mechanical scanning system similar in a way to an automobile distributor. Mechanical relays enabled a system of 70 or 80 wires to monitor various points in a system.

A big step forward occurred in the late '60s and early '70s when electronic-based systems were introduced for multiplexing. Solid-state equipment replaced mechanical relays. Electronic panels with integrated circuits distributed throughout buildings gave electronic codes or addresses to various pieces of information and control points. The heart of the system was a central processing unit (CPU) that acted as a traffic manager to determine whether any remote alarm points were in off-normal conditions, or whether a control action needed to be issued based upon a very rudimentary strategy—e.g., use of a time clock. These developments occurred prior to the commercial availability of computers for building environmental systems. Computers at that time took a tremendous amount of space, had stringent air-conditioning requirements, and had very low memory capacity.

The energy crisis plus the miniaturization of computers spawned largely by the space program in the early '70s encouraged the application of computers to building monitoring and control systems. The minicomputer generation was evolving. All traffic control, programming and building subsystem sequencing could be done through a single computer. Even so, by today's standards, these computers were slow and unsophisticated. They were limited in terms of their software and their application to buildings. Such computers could not support more than one set of operator's terminals, i.e., the equipment which the operator uses to get in and out of a system and to receive alarms and distribute commands.

A veritable revolution is occurring now, however, as we enter the age of the micro-

computer. For the significance to be clear, we should first understand the difference between a processor and a computer. A processor is just one component of a computer. It arranges and rearranges the data; calculates and "crunches" the information. In addition to a processor, a computer must have timing circuits and input and output modules (which let the computer talk to the outside world). Signal conditioning equipment is needed for the information to be accepted by a printer or other visual device.

Central processors, when first used for control and monitoring systems, consisted of perhaps 10 circuit boards with hundreds of little integrated-circuit chips on them. Fairly quickly those 10 boards became one board; and now that one board has become one chip. Today microprocessors are on chips; memory is on a chip; timing circuits are on chips; input-output is on a chip. Four chips replace what used to be four cabinets' worth. All this is now being replaced by one chip—the microcomputer.

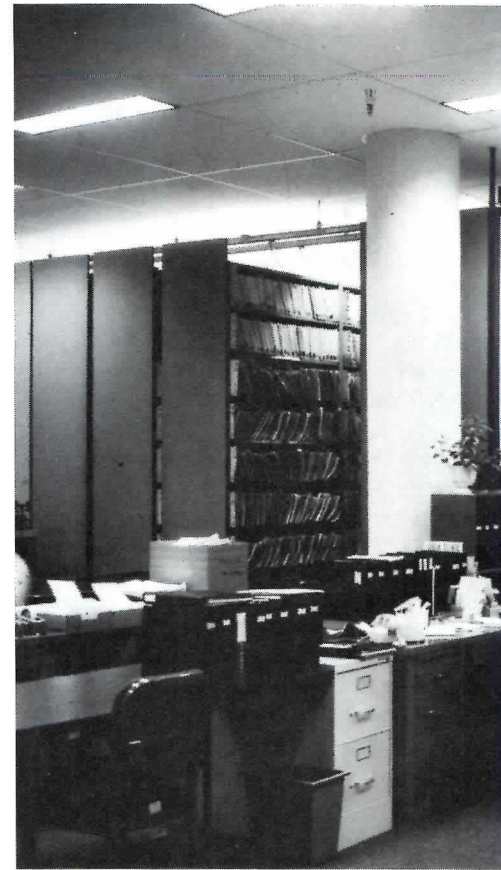
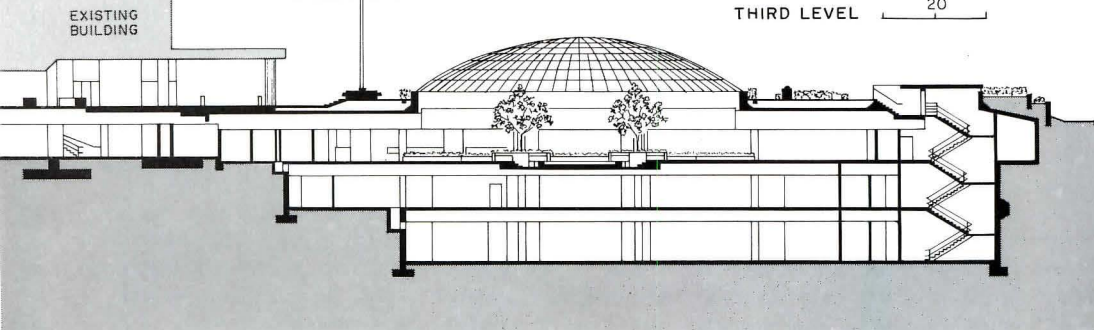
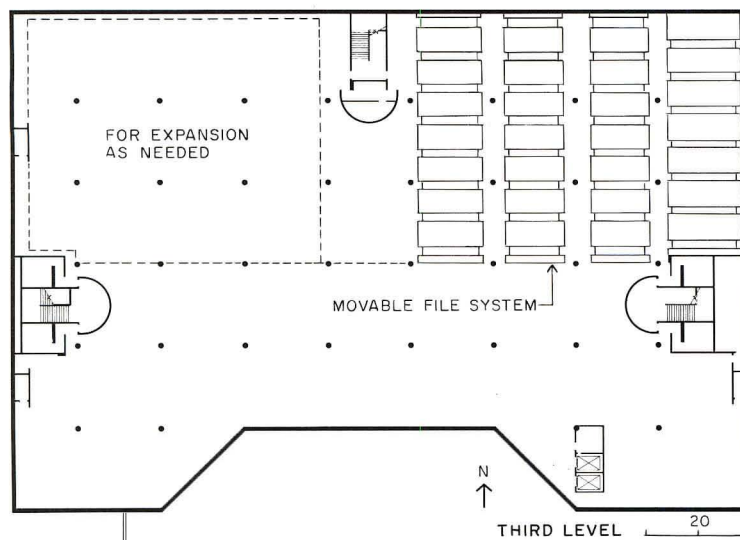
The next step, direct digital control, is one of the most important changes to take place in the control industry. Pneumatic controls are being replaced by reprogrammable general-purpose microcomputers with sets of instructions that perform far more sophisticated control routines than pneumatics ever could. (Pneumatic operators for dampers and valves are still being used because they are simple, reliable, and far less costly than electric motors that would suit the purpose.)

This, then, is the state of the art. What does the future hold? The following trends will develop and be enlarged upon:

- 1) Further integration of building functions into a common monitoring and control network;
- 2) integration of building monitoring and control functions into the facility's communication network;
- 3) more distributed processing;
- 4) more user-flexible, user-generated software;
- 5) more sophisticated control software to control more sophisticated systems;
- 6) new applications of man-machine interface hardware to include dynamic color graphics, report generation, etc.;
- 7) the development of an energy-accounting approach to facilities management in which the sources and uses of energy are constantly being analyzed;
- 8) elimination of local pneumatic control and replacement with local computers to achieve distributed direct digital control.

Mobile storage system in underground office compacts filing space to half of usual requirements

Mutual of Omaha has motorized shelves on wheels that can move on tracks so that access to files can be varied as the insurance company's claims are processed over a period of time.



Insurance companies must store and have access to enormous numbers of files that are very active in the early history of claims, but less and less so as these claims are processed. With conventional filing systems, space is wasted because of the large number of aisles required; furthermore, employees must spend time in transferring files. These problems were solved in an underground addition to the headquarters facilities of Mutual of Omaha by a unique programmable mobile storage system that takes only half the space that would have been required for the same number of fixed files. Aisles are provided only where continual access is needed to files and the remaining files are grouped back-to-back in blocks (modules). The system comprises a series of open shelves, on motor-driven carriages moving on rails, that can be grouped

and regrouped into modules according to the relative activity of the files.

The system, engineered by Spacesaver Corporation of Fort Atkinson, Wisconsin, covers 13,000 sq ft and has four bays, each with 36 carriages that can be combined into any number of modules up to seven. With this system, the owner based the initial modular arrangement of the system upon projected activity of the files, but this can be changed as time and experience require.

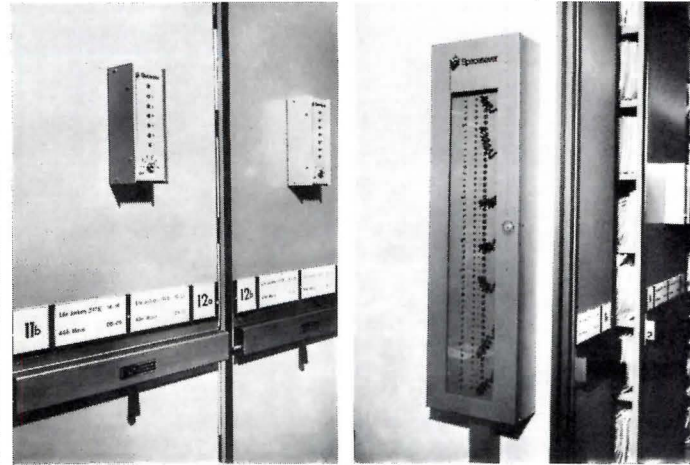
The modules can be moved as units, or individual carriages can be moved to gain access to files within a module. This is accomplished by a worker operating a lever-type switch on the end face of a carriage.

The carriages are grouped in modules by an operator, designated by the company, who turns a keyed switch on the end panel of

each carriage to any position from 1 to 7 (to identify the module number of the carriage) or to "off" (to put the carriage in a stationary mode).

This accomplishes two things: 1) it establishes programming logic so that the carriages in a module will move as a unit if desired; and 2) it identifies the module to which a carriage belongs so that floor safety panels can be programmed by the designated operator to prevent a carriage from moving into an occupied aisle, while still allowing other modules in a bay to be moved.

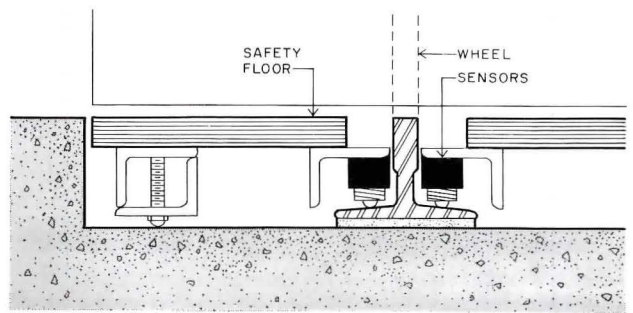
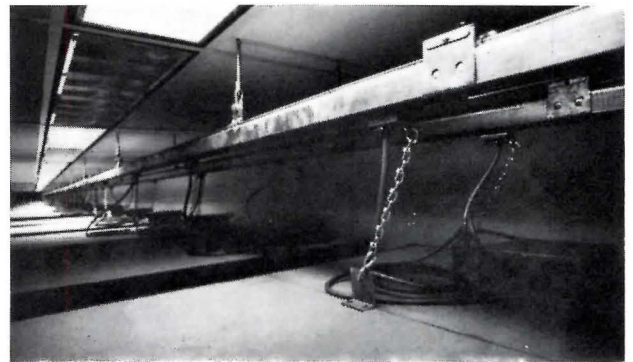
Each bay of the movable file system has 48 safety floor panels activated according to the modular arrangement selected. The system operator programs the floor safety panels by throwing a series of switches mounted on a normally-locked panelboard at the end of



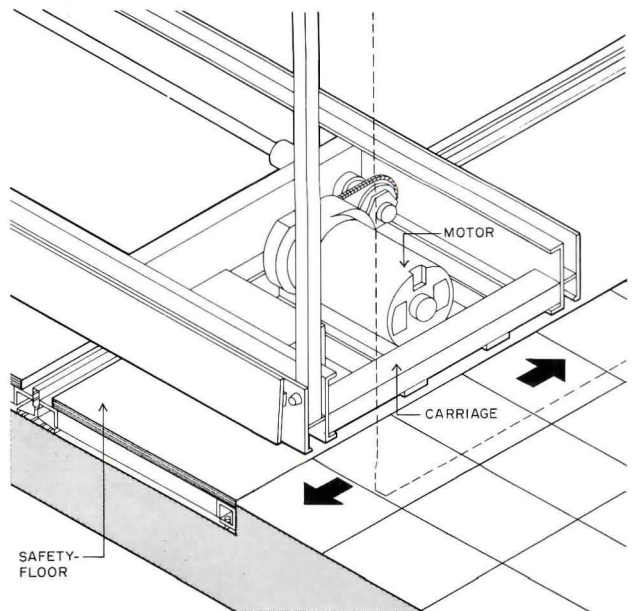
Three of the four bays of high-density mobile shelving can be seen in the photo, left, looking east. The shelves can be easily moved to provide extrawide aisles for cart access. Because the activity level of files varies over periods of time, the manufacturer, Spacesaver, designed the system with electronic programming so that the modules can be changed accordingly. The programmed system allows modules to be moved as units, and coordinates the module

arrangement with the safety floor-panel system. A person standing in the aisle on the safety floor of one module will deactivate the carriages in that module, but will not affect the operation of the balance of the system. The modules are organized by key-switch panels on end panels (center) designed to allow up to seven modules. Safety floor sections are programmed at a normally-locked switchboard panel (right) located at the end of each bay.

Overhead rails provide power and electronic control for the carriages (right). The chains pull the trolleys along as shelves are moved. This system is an advance over low-hanging "umbilical" wiring that could hinder operation.



Carriages ride on T-shaped rails that distribute the shelf load to the floor slab. Grout is placed under the rails as they are being installed to make the riding surface flush with the floor. The total mobile system has over 2,000 ft of track, with shelves accommodating more than 2.5 million pounds of records. File clerks are protected by a programmable safety floor system that is interfaced with the carriage controls. Each bay contains 48 safety floor sections which can be programmed into groups consistent with the modules. The weight of a person standing in an aisle depresses a sensor next to the track (detail, above right). This deenergizes the power to all carriages within the module.



each bay. The floor safety panels are flush with the tops of the rails and a distance of 4½ in. from the surface of the floor slab. A worker standing on a floor safety panel depresses a sensor which trips a relay shutting off power to motors in that module.

For additional safety, all drive mechanisms have torque limiters, and two bays have safety tapes attached to columns that are close to the movable shelves. Pressure on the safety tape immediately stops all the units.

The owner estimates the system will take about 4½ years to pay for itself. The 190,000-sq-ft addition, designed by Leo A. Daly Company and built by Peter Kiewit Sons Company, cost \$12.3 million, \$5 million less than a comparable above-ground facility. The Daly organization estimates a two-thirds savings in heating and cooling costs.



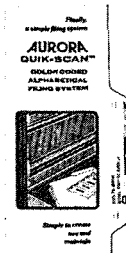
PLYWOOD FORM PANEL / A newly revised brochure on *FormGuard*, a high density overlaid plywood concrete form panel, illustrates such end-use projects as hotels, institutions and water treatment facilities all over the country. Technical information on care and handling is included, along with load factors and load determination charts. ■ Simpson Timber Co., Seattle, Wash.

circle 400 on inquiry card



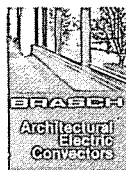
INDUSTRIAL COATING SYSTEMS / Full-color *Rust-Oleum* catalog incorporates update coating specifications, surface preparation information and coating application methods. Selection charts help determine the proper coating system for all types of interior and exterior surfaces under both normal and severe exposures. ■ Rust-Oleum Corp., Vernon Hills, Ill.

circle 401 on inquiry card



COLOR-CODED FILING / A brochure describes the *Quik-Scan* system, which offers the simplicity of a common folder file combined with one single color coded label. File creation, use and maintenance of the *Quik-Scan* system is explained, and the advantages of open shelf filing equipment are listed. ■ Aurora Steel Products, Aurora, Ill.

circle 402 on inquiry card



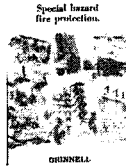
ELECTRIC CONVECTORS / A fold-out brochure describes the *Brasch* line of architectural electric perimeter convectors. Units come in three styles and many different finishes, in capacities of 100 to 500 Watts per foot. ■ Brasch Mfg. Co., Inc., Maryland Heights, Mo.

circle 403 on inquiry card



DRINKING FOUNTAINS / Twenty-page color catalog illustrates the full *Oasis* line of almost 60 models of water coolers, chillers and non-refrigerated fountains to suit a wide variety of functional and decorative applications. A selector guide section provides information on capacity, number of users served, features, colors, finishes and technical data. ■ Ebco Mfg. Co., Columbus, Ohio.

circle 404 on inquiry card



FIRE PROTECTION / A 48-page technical brochure shows examples of specialized equipment and advanced methods for Special Hazards fire protection. Systems covered include water sprays, *Selfcon* water spray, *Primac* ultra high speed fire protection, foam systems, Halon units, carbon dioxide and dry chemical suppression systems. ■ Grinnell Fire Protection Systems Co., Inc., Providence, R.I.

circle 405 on inquiry card



PERFORATED STOCK / Catalog contains 90 actual-size illustrations of round, square, slot, stabbed and decorative patterns of perforated metals available in stock. Product data lists percent of open area, number of holes per square inch, available sheet sizes, metal types and gauges offered. ■ The Harrington & King Perforating Co., Inc., Chicago.

circle 406 on inquiry card



SAFETY COLORS / The *Rust-Oleum* "Guide for Safety Color Coding of Physical Hazards and Pipe Identification" presents the most recent OSHA recommendations for marking hazards in plants, factories and other industrial environments. The brochure describes the basic principles of color coding, the significance of each color, and the necessity for safety colors to follow traditional and easily recognizable patterns. ■ Rust-Oleum Corp., Vernon Hills, Ill.

circle 407 on inquiry card



PILE RESTORATION SYSTEM / A color brochure describes a patented system of completely restoring the structural integrity of even the most seriously damaged wood, steel or concrete pilings in land or water. The FRP jackets used serve as a form, for repairs and protection of piles as long as 55 ft under water. ■ Symons Corp., Des Plaines, Ill.

circle 408 on inquiry card



COVE BASE / Flooring products available in 20 satin-finished colors, and a 12-color line of heavy- and light-duty stair treads are featured in a color brochure. New products include a latex cove base adhesive that is non-flammable and water cleanable. ■ Roppe Rubber Corp., Fostoria, Ohio.

circle 409 on inquiry card



DESIGN PRODUCTS / Professional equipment for architects, draftsmen, engineers and graphic designers is presented in the 1981 *Charrette* catalog. Products include imaging equipment, furniture, drawing and measuring instruments, tools, tapes, templates, etc. over 20,000 in-stock items fully indexed and categorized. ■ Charrette, Woburn, Mass.

circle 410 on inquiry card



HOSPITAL CASEWORK / A new 128-page catalog illustrates and describes fixed furniture and equipment for all hospital departments. Text and photos suggest assemblies of modular components which can be customized to meet exacting or special requirements. ■ American Hamilton, Two Rivers, Wisc.

circle 411 on inquiry card



FACE BRICK / Color brochure provides an overview of a full line of facebrick and pavers. Products include wire cut, machine molded and handmade bricks, as well as architectural pavers and special shapes. ■ Glen-Gery Corp., Reading, Pa.

circle 412 on inquiry card



HVAC CONTROLLERS / Product literature describes the "Satchwell Digital Optimiser," designed to replace existing fixed start/stop time controls in intermittently occupied buildings. Substantial savings can be obtained by varying switch-on and switch-off times with the building's actual heating and cooling requirements. ■ English Electric Corp., Elmsford, N.Y.

circle 413 on inquiry card



SMOKE ACTUATED DOORS / A "Fire and Life/Safety Product Guide" covers both electro-magnetic and electro-pneumatic methods to hold open and release a door upon a smoke detector signal. Line graphics explain door control problems and solutions; application charts list the correct product for particular areas. ■ Reading-Dorma Closer Corp., Reamstown, Pa.

circle 414 on inquiry card

For more information, circle item numbers on Reader Service Inquiry Card, pages 189-190

NEW PRODUCTS AT NEOCON XIII

The NATIONAL EXPOSITION OF CONTRACT INTERIOR FURNISHINGS show in Chicago at the Merchandise Mart will give architects and interior designers a longer opportunity this year to see manufacturers' newest designs as the show is being extended one day, now June 16-19 (see also RECORD April editorial page 13). A great many of these are shown on the following pages. In addition to Bucky Fuller's keynote address, there are a variety of seminar and workshop programs. Sessions include: urban reconstruction, design revolution, architectural overview of the Middle East and Africa, the XYZ's of productivity,

alternative living environments, facility management, the office revolution, the inside out of design—changing role of the architect, the international marketplace, planning today's office, legal ramifications of contract jobs, managing and marketing the small design firm, rare insights into well done restaurants, updating the regional shopping center, humanizing hospital environments, new fiber finishes, lighting alternatives in open-plan offices, and the role of developers. In conjunction with the show, NEOCON INTERNATIONAL exhibitors will hold an open-house adjacent to the Mart.



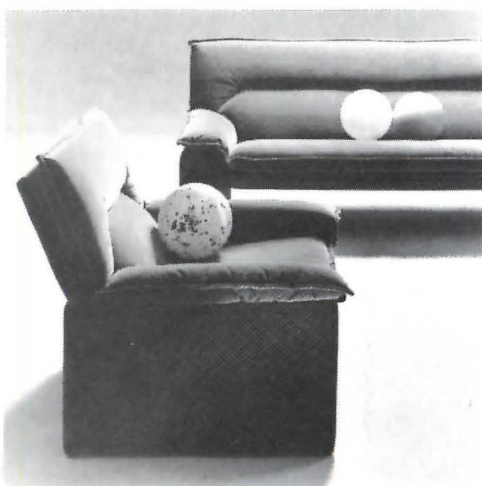
DESK AND CREDENZA / J. Wade Beam has designed the Ponte desk as a single- or double-pedestal with top finished in high gloss opaque color and metal trim of stainless steel or bronze; a matching credenza comes in various sizes. ■ Brueton Industries, Springfield Gardens, N.Y.

circle 300 on inquiry card



SEATING GROUP / The "Alanda" lounge series consists of an armchair, a two-seat sofa, and a long sofa that seats three. Each is adjustable to the comfort requirements of individual users: the back cushion can be raised to create a headrest, and the arms extend up. Designed by Paolo Piva, the "Alanda" line is constructed with a steel frame covered in molded urethane foam, upholstered in fabric or leathers. ■ B&B America, Div. of Stendig International, Inc., New York City.

circle 302 on inquiry card



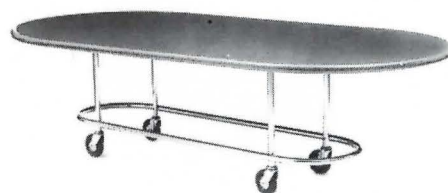
UPHOLSTERED SEATING / The "Panda Series," designed by A. Rascaroli, includes an armchair and two- and three-seat sofas. The upholstered sections—seat, back seat and arms—are made all in one piece, set into a wood and metal frame. Seating is available covered in fabric, leathers and suedes. ■ The Pace Collection Inc., Long Island City, N.Y.

circle 301 on inquiry card



SECTIONAL SEATING / Copper-plated and oxidized steel wire forms the frame for the "Pantanova Series" designed by Verner Panton of straight, concave, and convex seating sections that can be used alone or coupled in multiple assemblies. A one-piece upholstered seat and back or seat only is offered with matching glass-topped tables, stools, and storage units. ■ Cado/Royal System, Inc., South Plainfield, N.J.

circle 303 on inquiry card



CONFERENCE TABLE / Ward Bennett's new mobile conference table, designed for this manufacturer, is highlighted by stainless steel tubing legs which support an oval top available in a full range of woods and finishes, as well as a polyurethane-enamelled Imron[®] finish. The foot rail has "overtones of both 19th century functionalism and Art Deco streamlining." ■ Brickel Associates, Inc., New York City.

circle 304 on inquiry card



FLOOR LAMP / Resembling a stand-up mike, the "Aton" lamp has a quartz halogen lamp housed in an adjustable, rotating diffuser of die-cast aluminum, finished in white, red or black lacquer. The steel base and stand is coated in black rubber. The "Aton" fixture was designed by E. Gismondi, and is also available in a wall-mounted version. ■ Artemide Inc., New York City.

circle 305 on inquiry card
more products on page 131

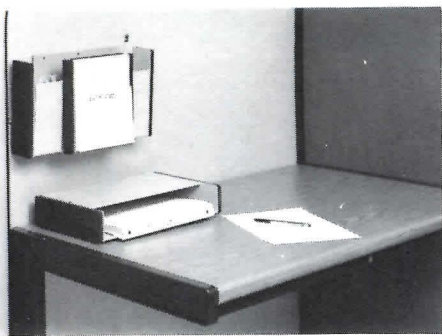


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Circle 56 on inquiry card



OFFICE ACCESSORIES / A system of two visible components and an optional hidden wall bracket, accessories in the *New Horizons 3000* group can be used on either partition walls or work surfaces. The *Correspondence Pocket* is shown here supporting a combination calendar/memo unit, which also provides for file storage of calendar pages after they are used. ■ McDonald Products, Buffalo, N.Y.

circle 306 on inquiry card



WOOL FABRICS / Woven of 100 per cent wool, "Broadcloth" designed by Joyce Vagasy has a hardy flat matte surface available in 22 colors. Elegant in appearance, the colors range from neutrals to deep Cinzano. ■ Joyce Vagasy, Division of Amicale Fabrics, New York City.

circle 309 on inquiry card



CUSTOM WOOL CARPETS / Each of the wool carpets in the "Dantsu" collection from *Bowater* may be specified in custom colors and sizes. The pattern shown here is one of 10 carpets in the line by Japanese designers. ■ The Wool Bureau, Inc., New York City.

circle 313 on inquiry card



STACKING CHAIR / Also available in office and tandem seating models, the "Pluralis" stacking and ganging chair has a seat shell molded of *Reglarflex*, a self-extinguishing fiberglass-reinforced polypropylene. Designed by Studio L/O, the "Pluralis" chair comes in a choice of bright colors. ■ Artemide Inc., New York City.

circle 307 on inquiry card



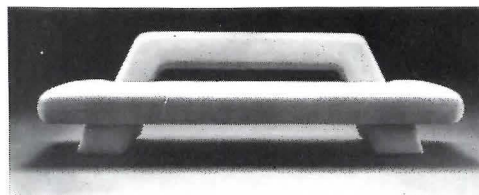
CHAISE LOUNGE / Designed by Andre Vandenberg, the "Chariot" lounge has a curved steel base finished in polished chrome. Back/seat frames are wrapped with panel sewn black or tan natural aniline dyed leather. ■ Stendig Inc., New York City.

circle 310 on inquiry card



PANEL SYSTEM ADDITIONS / A wool and nylon blended fabric for panel upholstery named *Koko*, and work surfaces and pedestals in mahogany are available as options for the Upholstered Panel System (UPS). ■ JG Furniture Systems, Quakertown, Pa.

circle 314 on inquiry card



SOFA / Harvey Propper has designed the *Mayan* sofa as much for its sculptural possibilities as for dignified, comfortable seating. It can be upholstered in fabrics and leathers. ■ Harvey Propper, Fall River, Mass.

circle 311 on inquiry card



CONTRACT VINYLs / Now available as part of Schumacher's "Architects Kit," contract vinyls are 54-in. wide. These are offered in types 1 and 2, both UL-rated. Other components of the "Kit" are wool and nylon commercially-oriented upholstery fabrics. ■ Schumacher, New York City.

circle 308 on inquiry card



FURNITURE SYSTEM / The "Marcatré" furniture system of work surfaces, tables, partitions, and storage, designed in Italy, is characterized by its bull-nose edge in oak and sleek surfaces in straight or curved veneers. ■ Atelier International, New York, N.Y.

circle 312 on inquiry card



OFFICE SEATING / Upholstery in a distinctive three-part assembly characterizes the "61 Series" of four office chairs. Three models have metal bases for casters, glides, and a cantilever; a fourth has a sculpted oak frame. The group is now available in the U.S. through a manufacturing and marketing license from Wilkhahn of West Germany. ■ Vecta Contract, Grand Prairie, Texas.

*circle 315 on inquiry card
more products on page 133*

All-Steel 8000 Series Systems Furniture not only offers you the freedom to design a totally new open plan office... it also offers panels and componentry which combine with existing office furniture. If you have an investment in conventional furniture to consider, such a combination could make real economic sense today.

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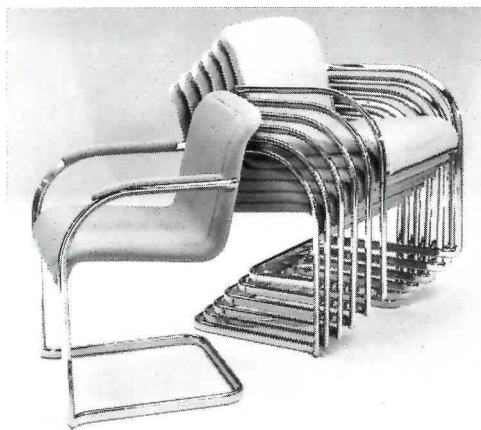
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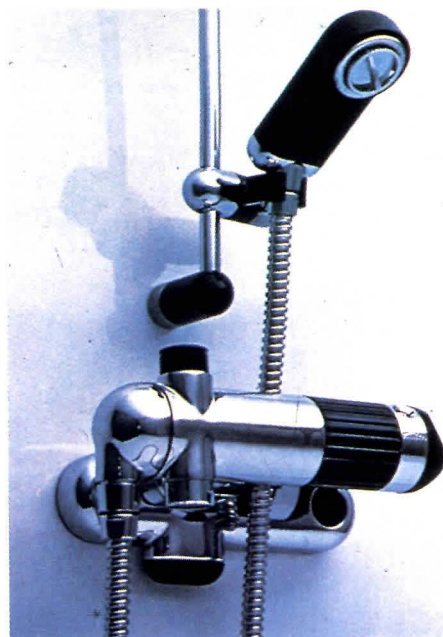
TABLE SERIES / All "Summit" tables now have a unique segmented base system, with modular common components for all base configurations. The base blade is in polished cast aluminum alloy, with chrome-plated steel columns. Connectors are black-coated steel. The 1½-in.-thick tops are available in either natural wood veneers or plastic laminate. ■ Castelli Furniture Inc., New York City.

circle 316 on inquiry card



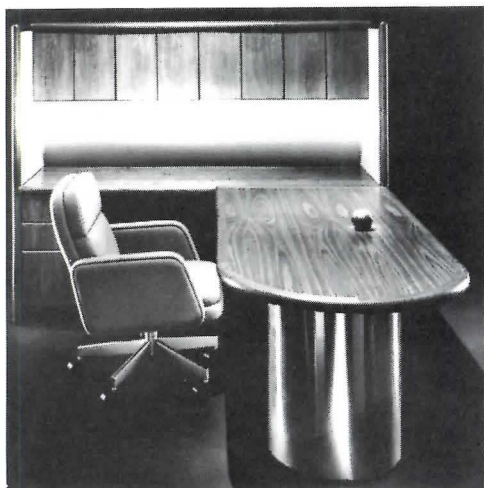
STACKING CHAIR / Warren Snodgrass exploits the properties of 14-gauge polished chrome plated oval steel to create a sled base for the Interlock stacking chair. It accepts a one-piece upholstered seat/back sling. Ten chairs can be stacked together. ■ Thonet Industries, York, Pa.

circle 319 on inquiry card



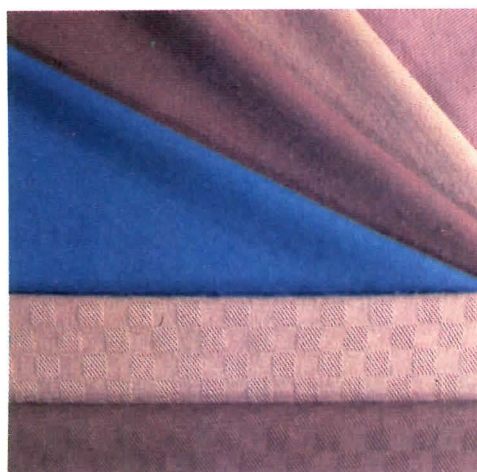
BATH FITTING / The French-made "Odyssee" faucet combines a tub spout with a hand-held bar-mounted shower, with water flow diverted by a top-mounted push-button. Flow level is regulated by a rotating cylinder; water temperature is controlled by a knob with a temperature read-out. Water forced through the shower head is adjustable. For a hands-free shower, the shower head fits onto a chrome-plated bar. ■ Watercolors, Garrison on Hudson, N.Y.

circle 322 on inquiry card



OFFICE SYSTEM / An elegant "Vertical Office System" offers self-contained, interrelated units mixing wood and metal. Wood facings are either American white oak in dark, autumn and natural finishes, or black walnut. Desk bases are also available in chrome or brass. Each unit can be used independently or as an open plan system. ■ Modern Mode Inc., Oakland, Calif.

circle 317 on inquiry card



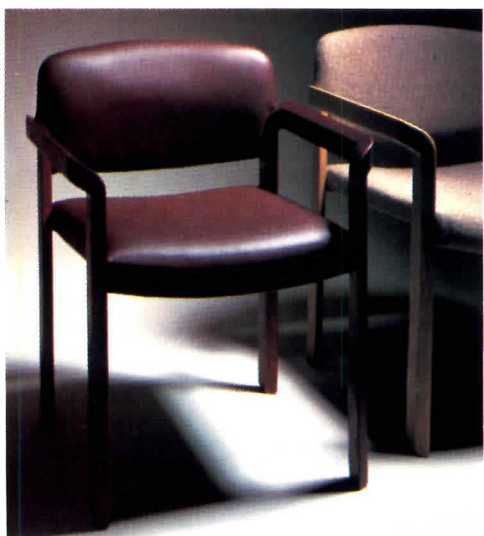
WOOL FABRICS / Styled by Hazel Siegel, the "Diplomat Wools" line of upholstery and wallcovering fabric features a subtle twill and a finely woven geometric pattern. Both all-wool fabrics are available in a range of colors, muted shades to strong clear tones. ■ DesignTex Fabrics, Inc., Woodside, N.Y.

circle 320 on inquiry card



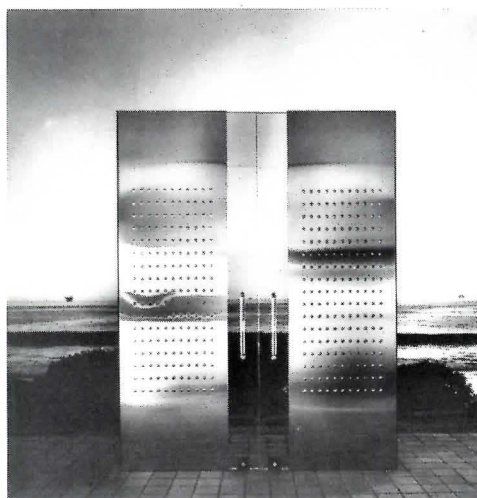
CUT VELVET / A tufted carpet of Anso IV nylon, "Estrella" cut pile commercial carpeting features built-in soil and stain repellence as well as static electricity protection. It carries a five-year commercial wear warranty. ■ Allied Chemical, Fibers & Plastics Co., New York City.

circle 323 on inquiry card



SIDE CHAIR / A scaled-down, ¾-size version of the "Continuum" chair, this versatile seating unit has a rhomboid leg cross-section and radiused arm-leg joint which allows the chair to stack six high. It is available in solid white oak or American black walnut; the polyfoam seat and back are flame-retardant. ■ Stow/Davis Furniture Co., Grand Rapids, Mich.

circle 318 on inquiry card



EMBOSSED METAL DOORS / To be featured in the new Forms + Surfaces showroom is a new series of embossed metal doors. The hydroformed doors are available in stainless steel, bronze or aluminum and tempered glass, and in a selection of other embossed designs. ■ Forms + Surfaces, Santa Barbara, Calif.

circle 321 on inquiry card



CHAIR / Solie and Sonnenleiter have designed the Parabola chair with and without arms in mahogany with a semi-attached seat and back in fabric or leather upholstery. ■ Dunbar, Berne, Ind.

circle 324 on inquiry card

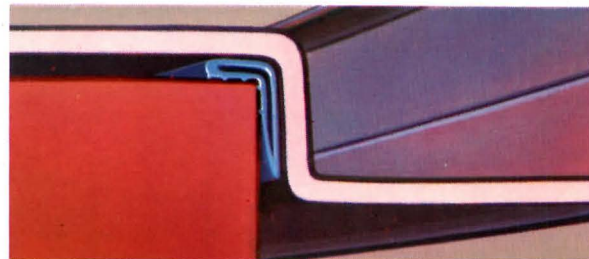
more products on page 135

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5050 "Double Guard." With exclusive AIRFOIL design (patent pending) and super long-life adhesion. It seals tight and installs quickly and easily.

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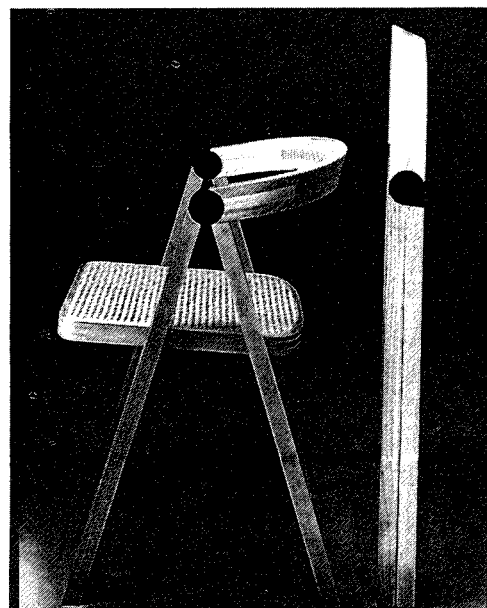
MULTIPLE SEATING / A large-volume auditorium seating program, *Rudd's* beam series are fixed onto steel supports; its stainless steel base comes in various sizes and adjustable heights. Chairs are pressed sheet metal with upholstered or wood seat and back. Units can be either fixed to the floor or movable. ■ *Rudd International Corp.*, Washington, D.C.

circle 325 on inquiry card



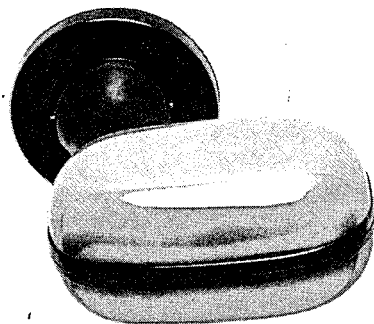
LOUNGE CHAIRS / In addition to other new products to be shown for the first time is this **FOCUS LOUNGE** Series released earlier this year. There are models for a single-seat chair, two-seat and three-seat sofa model. The exposed frame is available in light, medium, dark oak or walnut finishes. ■ *Kimball Office Furniture Co.*, Jasper, Ind.

circle 326 on inquiry card



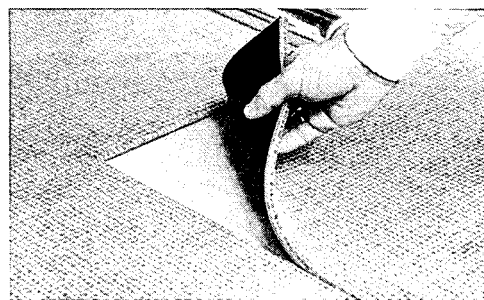
FOLDING CHAIR / From *CI Designs*, the "Kirkpatrick" chair has back and legs joined by a double-acting black aluminum hinge: as the seat is lowered, the back moves down and automatically locks in place so that the chair can be carried around by the back without folding. The frame is solid ash; the seat is offered in either natural cane or upholstered in wool fabric. ■ *CI Designs*, Medford, Mass.

circle 327 on inquiry card



LEVER HANDLES / The "Monte Carlo" lever handle designed in Italy by Caccia Dominioni is one of four new handles being exhibited at this company's showroom, separate from the Merchandise Mart at 446 North Wells Street. "Monte Carlo" is provided in a two-tone finish with the lever rose, shank and center stripe in black, and the top and bottom halves available in six colors. ■ *The Ironmonger*, Chicago.

circle 328 on inquiry card



CARPET TILE / A fine grid of over 20,000 miniature squares to each yard, this "Tattersall" pattern has been added to the *Interface* line of modular, fusion bonded carpet tiles. The *Interface* floor system is suitable under the NEC for open offices using flat AC power wiring. ■ *Interface, Carpets International-Georgia, Inc.*, LaGrange, Ga.

circle 329 on inquiry card

more products on page 137

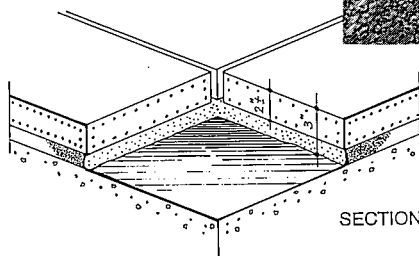
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Architect: Philip Johnson & John Burgee, New York, N.Y.



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Architect: William Kessler and Associates, Incorporated, Detroit, Michigan; Zeidler Partnership, Incorporated, Toronto, Ontario; Giffels Associates, Incorporated, Southfield, Michigan. Associated architects, engineers and planners.

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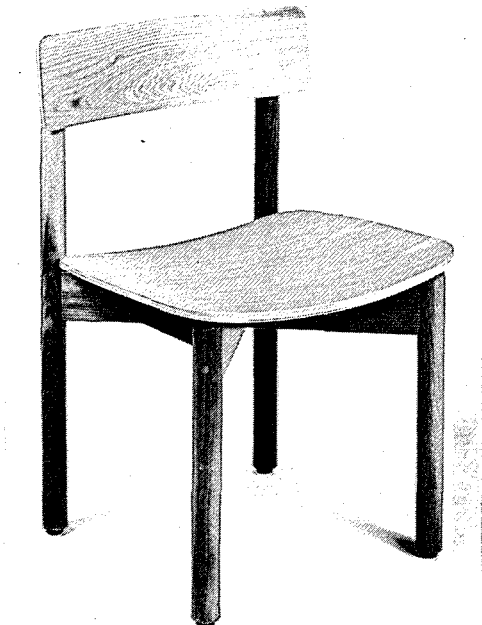
Information: Write "Planar," Alcan Building Products, P.O. Box 511, Warren, Ohio 44482.

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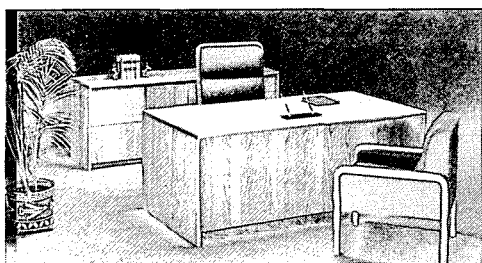




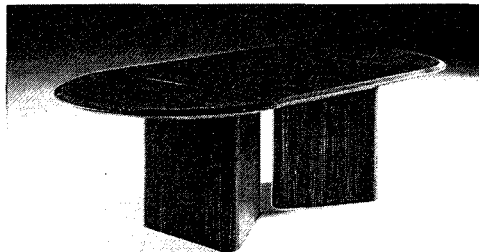
OFFICE SEATING LINES / Offered in two basic models in 13 different styles, "600 Series" seating is said to combine comfort with ergonomic design. The "Executive" series includes a posture version with syncro-tilt operation; the "Operator's" line accommodates a range of work functions. ■ All-Steel Inc., Aurora, Ill. *circle 330 on inquiry card*



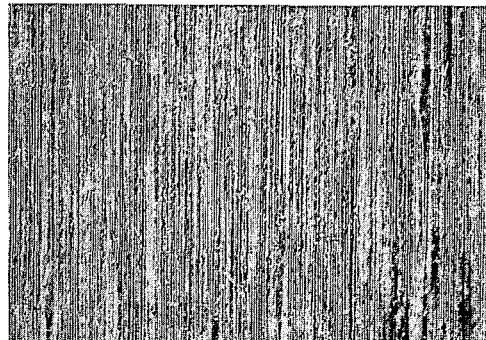
INSTITUTIONAL CHAIR / In addition to an ergonomic chair and an open plan system being introduced at NEOCON, this institutional chair #8091 will be shown. The chair features rounded edges carved of solid white oak, with contoured seat and back. Also available with arms and upholstered. ■ The Gunlock Co., Wayland, NY. *circle 331 on inquiry card*



EXECUTIVE FURNITURE / The "Corporate Collection" is this company's first introduction of office furniture. The collection includes solid oak executive and secretarial desks, credenzas and seven new chairs. ■ Adden Furniture Inc., Lowell, Mass. *circle 332 on inquiry card*



CONFERENCE TABLE / A new division of this company, called Conference Group, will manufacture an extensive line of conference, board room and executive tables. Included in the collection—designed by a collaboration between Robert Bernard Associates, Tolleson Design Group and Davis in-house team—is this red oak twin triangle-shaped base topped by "race track" oval. ■ Davis Furniture Industries Inc., High Point, N.C. *circle 333 on inquiry card*



FABRIC WALLCOVERING / Designed in Europe, "Ambrosia" intermingles natural China Grass warp with yarns of a different color. Shades include ginger, strawberry, shortcake, longboat key and honey. ■ Gilford, Inc. New York City. *circle 334 on inquiry card*

more products on page 139



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Ceco has the doors you need to make grand openings out of your light commercial entrances. Our new Versadoor™ light commercial steel doors come in attractive embossed, flush, and flush-with-raised-plant designs which can add the charm that's missing in so many multi-unit housing and business doorways.

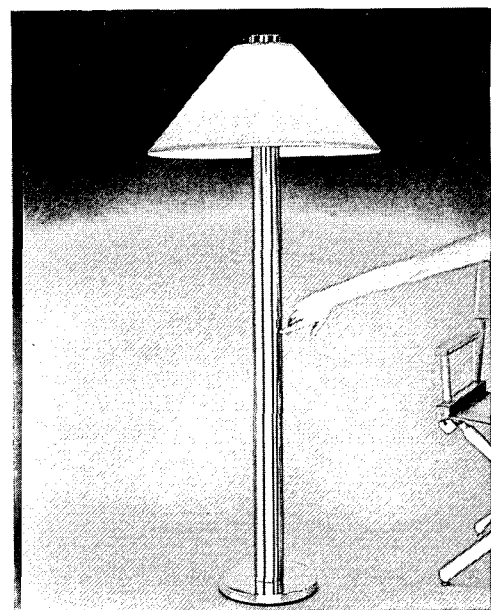
But Versadoor offers more than good looks. It's constructed with 24 gauge galvanized steel face sheets for extra durability and security. A foamed-in-place polyurethane core helps provide an energy efficient R-12.86 insulation rating. And the energy-saving design is made complete by our thermal-barrier edge seams.

The Versadoor is also nonhanded and uses standard Ceco frames—so you have no handing mix-ups at the jobsite. And we can keep more types and sizes in stock. Whether you need left or right handed doors—swing in or out—you can get fast delivery from Ceco's 18 warehouses and over 300 distributors nationwide.

Introduce yourself to Versadoor. Contact: The Ceco Corporation, 1400 Kensington Road, Oak Brook, Illinois 60521.



"The door people"



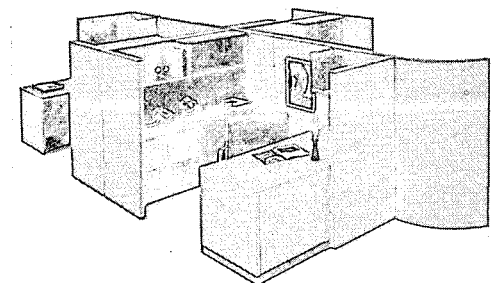
TOUCH LAMP / "The Floor Touch" is one of the newest additions to this manufacturer's "Touch Series" designed by Peter Hamburger. By touching any metal part of this 60-in.-high floor lamp three levels of brightness can be achieved. Available in two styles—solid brass or polished chrome. ■ Koch + Lowy, Inc., Long Island City, New York.

circle 335 on inquiry card



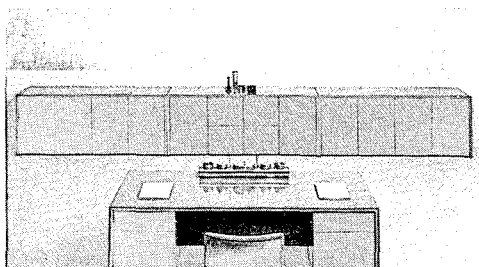
OFFICE SEATING GROUP / The "Vitra 30, 40, and 50 Series" office chairs, designed by Wolfgang Müller-Deisig, are characterized by "coactive adjustment," automatic response to the normal movements of their occupants. "Vitra's" synchronized action to accommodate changing task and comfort needs of users is the result of sophisticated mechanisms. Its numerous models stack, gang, or mount on sleds, glides, or casters. ■ Herman Miller, Zeeland, Mich.

circle 336 on inquiry card



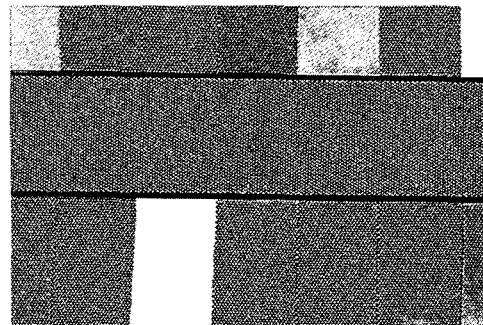
PANEL SYSTEM / The "Progressions" panel system comprises acoustical and electrical power panels and storage components designed to be compatible with conventional furniture. ■ Rose Manufacturing Co., Grand Rapids, Mich.

circle 337 on inquiry card



STORAGE CABINETS / These sleek "Katonah" cabinets have no visible hardware: drawer fronts have contour ends to serve as finger pulls, and doors have touch latches. Like other "Katonah" office units—desks, wall storage and credenzas—they are offered in 13 glossy lacquer colors, four woods and four burls. ■ Intrex Incorporated, New York City.

circle 338 on inquiry card



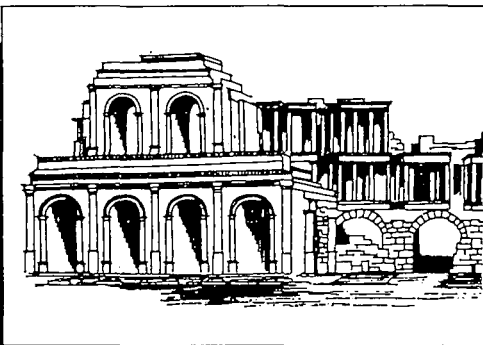
PATTERNED CARPET / "Contract V" is a pin dot patterned nylon carpet designed by Verner Pantone, one of a number of new nylon and wool berber carpets and wool casements being introduced. The pin dot pattern is offered in 15 ground colorways. ■ Mira-X, New York, N.Y.

circle 339 on inquiry card

more products on page 141

Faculty of Engineering

Department of Architecture



Al-Fateh University, Tripoli
Socialist People's Libyan Arab Jamahiriya

Applications are invited for the following staff position openings in the Faculty of Engineering, Department of Agriculture:

Building construction and Working Drawing
(3 Staff Members)

Urban Design - (1 Staff Member)

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Housing is provided by the university. Furniture allowance is 1/6 of annual basic salary given at the beginning of work for married members accompanied by their families, 1/12 of annual basic salary for single members.

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In addition, a baggage ticket of up to 25% of the price of air ticket. Leave travel tickets to the place of recruitment for the staff member and his family are given every year.

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Faculty of Engineering
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c/o Director of University Programs
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**Applicants
must have
MA or MS
degree**



The elevators were running before the building was finished.

Delivered on time. Installed on time. Operating ahead of time. That's the story of the 22-elevator installation at Clinical Science Center of the University of Wisconsin-Madison, one of the most ambitious building projects ever in the state of Wisconsin.

The huge building complex on a 45-acre site houses four major components of the University of Wisconsin Center for Health Sciences — Hospital and Clinics, Medical School's Clinical Departments, School of Nursing and Wisconsin Clinical Cancer Center. On a typical day 6000 patients, staff, students and visitors use the building, and enjoy quiet, efficient inter-floor transit on Dover Elevators.

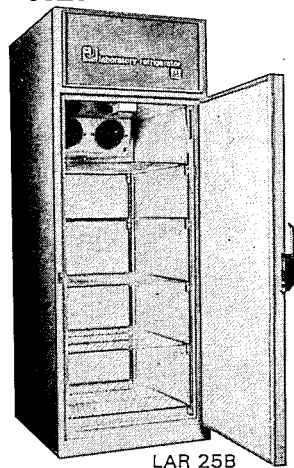
Dover wants to be on your team by providing on-time elevator installations. Dover Corporation, Elevator Division, Dept. 669, P.O. Box 2177, Memphis, Tenn. 38101.

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University of Wisconsin-Madison
Architects:
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St. Louis
Phase 2: Flad and Associates, Madison
and Milwaukee, Wis.; Gainesville, Fla.
General Contractor:
Findorff-Hutter, "Joint Venture," Madison.
Dover Elevators installed by:
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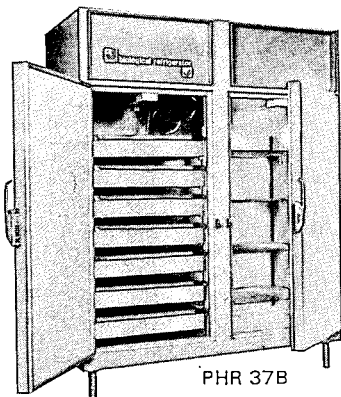
Jewett contemporary styled LABORATORY & PHARMACY REFRIGERATORS



LAR 25B

LABORATORY REFRIGERATORS feature five models to choose from with 12 to 55 cu. ft. capacity.

- blue or tangerine exterior front with beige cabinet*
- white enamel interior
- stainless steel adjustable shelves interchangeable with stainless steel drawers (optional extra)
- illuminated interior
- uniform cabinet temperature (2° to 4° C)
- quick temperature recovery
- dual or single air circulation system



PHR 37B

PHARMACY REFRIGERATORS

feature four models to choose from with 17 to 55 cu. ft. capacity.

- tangerine or blue exterior front with beige cabinet*
- white enamel interior
- adjustable and interchangeable stainless steel drawers and shelves
- illuminated interior
- uniform cabinet temperature (2° to 4° C)
- quick temperature recovery
- dual or single air circulation system

Freezers in similar sizes also available

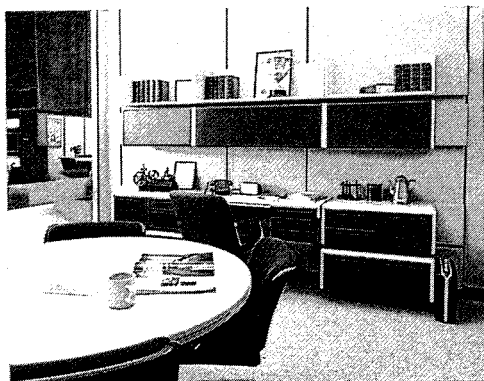
All refrigerator models available with glass doors and for pass-thru operation.

*Also available with stainless steel interior and exterior finishes.



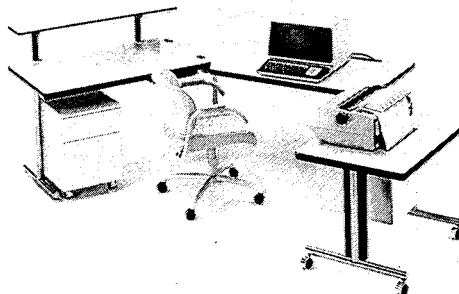
The Best of Both Worlds . . . *Individual Craftsmanship combined with Modern Technology*
Refer to Sweet's Catalog 11.20/Je for quick reference.

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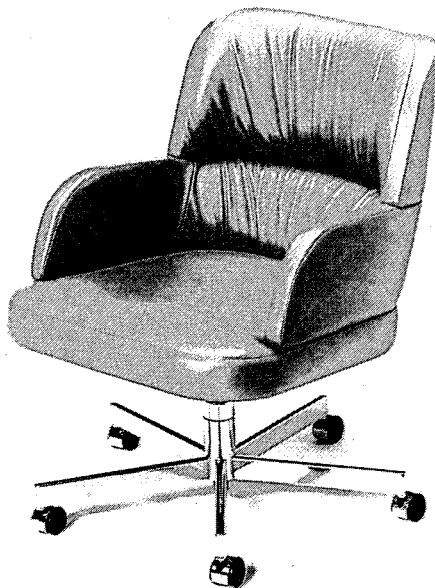
PANEL SYSTEM / A full height panel system will augment three less-than-full-height panels to produce an unprecedented open plan system with a full complement of task related components, colors, and fabrics. ■ Hauserman Company, Cleveland, Ohio.

circle 340 on inquiry card



WORK STATION / An Information Management Station designed to accept computer equipment and related accessories can assume a variety of configurations to fit user's needs. ■ Howe Furniture Corp., New York, N.Y.

circle 341 on inquiry card



SWIVEL ARMCHAIR / A new, small-scale executive swivel armchair called "Parallels" BBC 175s is one of the introductions by this company. It was designed by Bob Becker for use in systems stations or wherever space is limited, as it features a small exterior width. Fabricated of polyurethane foam over a molded shell, it is available in either fabric or leather, with stainless steel or bronze swivel base. ■ Helikon Furniture Co., Inc., Taftville, Conn.

circle 342 on inquiry card
more products on page 143

EPICORE The Weight Lifter 308 psf

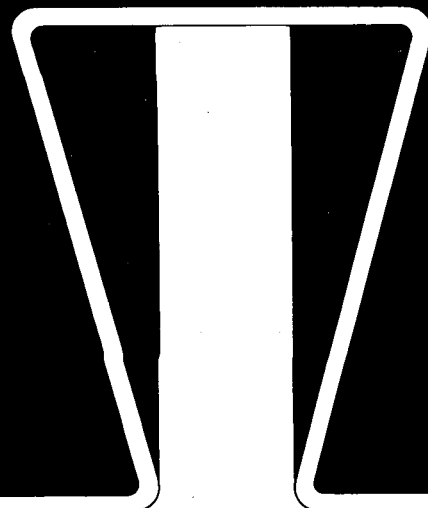
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How New York's new hotels are insulating against roof overhead.

When you're putting first-class buildings on some of the most expensive land in the world, you don't compromise on the roof systems. That's why all four of New York's newest hotels have IRMA protected membrane roofs with STYROFOAM* brand insulation.

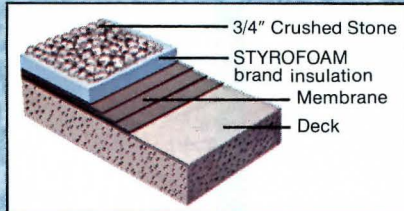
Developed by Dow, the IRMA (Insulated Roof Membrane Assembly) system is a simple, economical way to build a leak-free, moisture-resistant, abuse-tolerant, insulating roof. Once considered revolutionary, the IRMA system is fast becoming America's standard for trouble-free, high performance roofs.

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And the use of extra insulation may even allow downsizing of heating and cooling equipment.

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For further information call your local Dow representative or write: The Dow Chemical Co., Dept. E11, STYROFOAM Brand Insulation, Midland, MI 48640.



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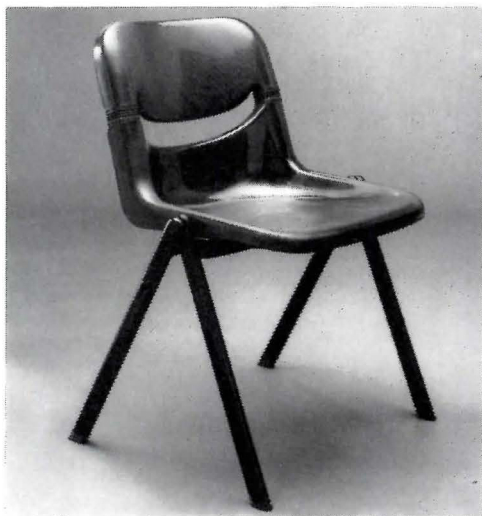


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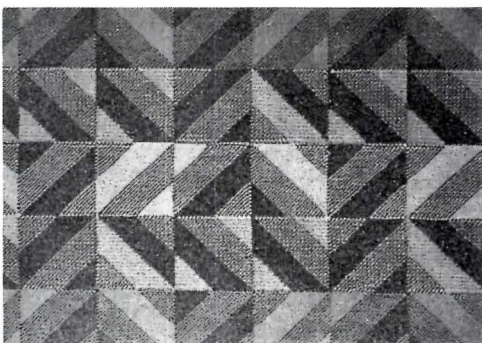
CLOTHING VALET / Set into a black or maroon wood base, Enrico Tonucci's "Lametta" valet is formed of a single piece of glass bent to form two legs. For residential as well as business interiors, the clothes stand measures 19-in. wide, 14-in. deep and 63-in. high. ■ The Pace Collection Inc., Long Island City, N.Y.

circle 343 on inquiry card



STACKING CHAIR / As part of the "Dorsal Seating" system, this stacking chair has "integrated articulating principles with economical pricing," as the manufacturer states. The chair back adjusts automatically. The system is designed by Emilio Ambasz and Giancarlo Piretti. ■ Krueger, Green Bay, Wisc.

circle 344 on inquiry card

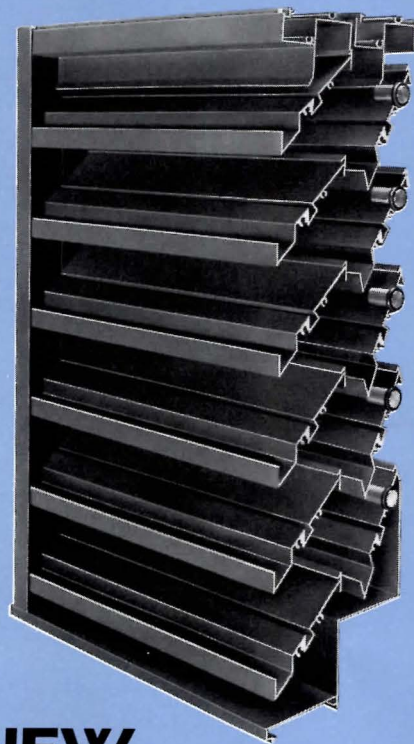


GEOMETRIC PATTERN / A cut-pile Wilton carpet, "Quotient" features shades of teal and paprika in a geometric design of diagonally-patterned squares. Made in 12-ft widths, "Quotient" contract carpeting is constructed of 70 per cent acrylic 30 per cent nylon pile. ■ Jack Lenor Larsen, New York City.

circle 345 on inquiry card

more products on page 145

HIGHER FREE AREA, LOWER WATER ENTRAINMENT, GREATER ECONOMY



NEW C/S 3" LOUVER SYSTEM

Construction Specialties Inc., the world's premier louver manufacturer, has developed a complete line of 3" deep, drainable blade louvers, in both fixed, operating and dual combination styles.

This new system offers architects and engineers a remarkable combination of features not previously available.

After studying the impressive test data below, you'll want the complete story. It's all in our new 40 page brochure which is available free to architects/engineers and all specifiers.



MODEL	AIR FLOW	WATER CARRYOVER
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The above test results were obtained using 4' x 4' louvers.



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Circle 66 on inquiry card

More finished plumbing per plumber's hour.

Prevent costly excess labor charges . . . with pre-assembled Bradpack Wash Centers.

Everything . . . including light, towel and soap dispensers, mirror, faucet and other features . . . comes in a one-piece modular unit ready for hook-up. Just set in place and connect to water and electricity. No complicated plumbing, wiring or field assembly. No wasted time.

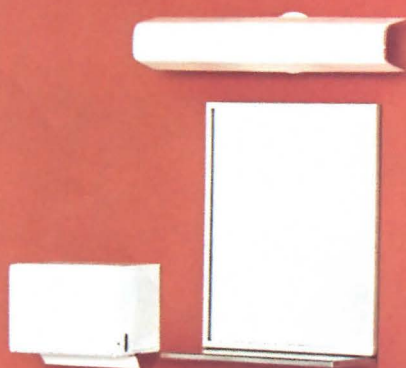
Bradpack Wash Centers also save space. Most units project only 11-3/4" into the room. And barrier-free models allow easy accessibility to everyone without requiring special washroom design.

To save on maintenance, Bradpacks are made of stainless steel. All exposed fittings are heavily-plated chrome on brass. And the Pos-I-Pak and Bradtrol valve cartridges carry the famous Bradley 83-1/3 year guarantee.

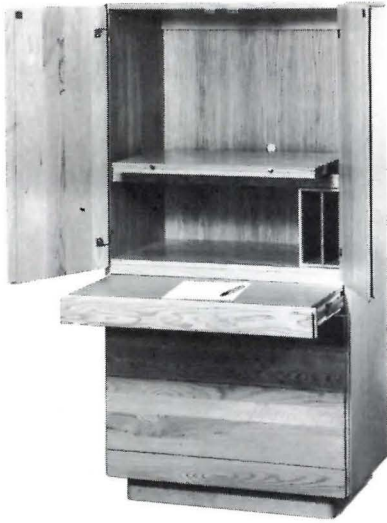
To get more finished plumbing out of your budget, find out more about Bradpack Wash Centers from Bradley. Look for our catalog in Sweet's File Sections 10.16/Br. and 15.7/Br. Or contact either your Bradley representative or Bradley Corporation, 9101 Fountain

Bld., Menomonee Falls, WI 53051,
(414) 251-6000. TELEX 26-751.

Circle 67 on inquiry card



BRADLEY SAVES SPACE, TIME AND MONEY.



OAK FURNITURE / Oakur Collection is a line of beds, desks, dressers and chests for contract use that are of solid red oak, featuring durable conversion finish and high-pressure plastic laminated tops. The desk-chest shown is designed to give a maximum amount of storage space with a large writing surface. ■ R-Way Furniture Co., Sheboygan, Wisc. circle 346 on inquiry card



OFFICE SEATING / The newest office chairs from this company are in the "4500 Series". The group comes in seven models—three swivel-tilt, two secretarial, and two side chairs. All have metal frames and bases and can be upholstered in a variety of Harter fabrics or COM. ■ Harter Corp., Sturgis, Mich. circle 347 on inquiry card



SINGLE PEDESTAL DESK / The 64- by 30-in. "Hannah" desk is pictured here with a 48- by 23-in. machine extension. In the background are two cabinets with three pedestals each. ■ Knoll International, New York City. circle 348 on inquiry card

more products on page 147

The secret may be our exclusive Agent Code of Standards. Our air-ride van fleet. International agent network. Computerized scheduling. Or our ability to move whatever or whomever you want. Reliably. Whatever the secret, it's made us America's most experienced movers. Call your local agent.

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VERSAPLEX provides full multi-location control (including mastering and grand mastering). You can take command of the system from any station. Audio-visual presentations can be interfaced with VERSAPLEX to pre-program a variety of aesthetic dimming effects. VERSAPLEX features energy saving, solid state square law dimming and cost-cutting low voltage Class II wiring. Beautiful brushed aluminum or bronze adds elegance to function, enhancing the entire interior.

Three basic configurations are available: (1) Slide (Up to

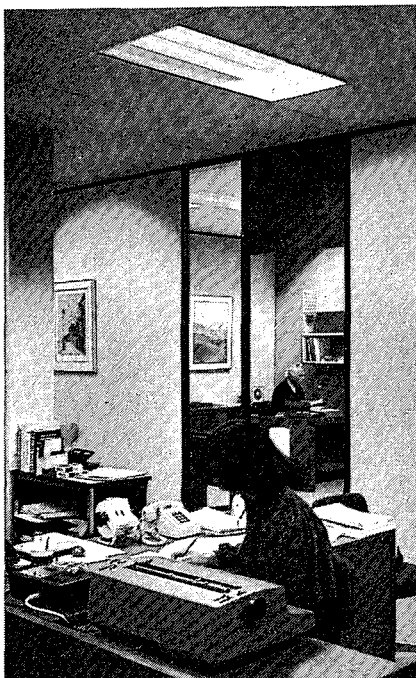
5 sliders on one faceplate), (2) Touch-button presets with fade and (3) both Slide and Touch-button combined in one control.

VERSAPLEX is the finest and most reliable system of its kind available. Installations include Citibank, FMC, Air Products, Energy Research and Development Administration (ERDA). U.L. Listed.

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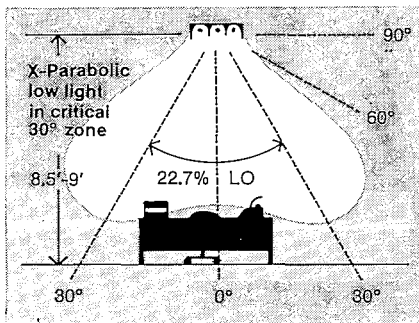
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The revolutionary
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10% more light with
25% less energy.

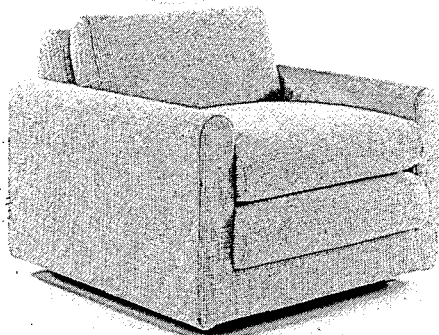
- LPI's unique open-bottom parabolic reflector design is 86.3% efficient, provides wide distribution pattern. No light wasted by light-absorbing lenses, louvers, or baffles. Fewer fixtures needed—gives 35% to 40% more light with three lamps than typical four-lamp units. Requires 2/3rds less maintenance.
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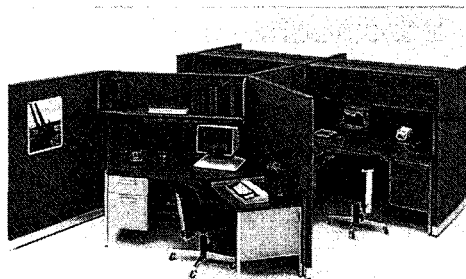
CONTRACT SEATING / Pictured here is a Club Chair from the "SA 900 Series" designed by Kibrel S. Terry. The double-doweled hardwood frame is covered by basketweave webbing topped by semi-fire retardant *Safe Crest* foam. Seat and back cushions are 80 per cent down/20 per cent feathers over a foam core. Base options include the sled-base shown, as well as a swivel base or one with ball casters. ■ Scope Furniture Ltd., New York City.

circle 349 on inquiry card



RADIUS-EDGE DESKS / Series 2100/2200 radius-edge desks will be the showcase for this manufacturer at NEOCON. In addition to round edges, features of the line include a full complement of drawer configurations, return options and recessed approach panels. They are available in natural, medium and English oak finishes, with palamino laminate or matching veneer tops. ■ Conwed Corporation, St. Paul.

circle 350 on inquiry card



PANEL SYSTEM / Existing furniture can become components of the "Progressions" panel system of acoustical and electrical power panels and storage. A variety of panel heights and widths and connector configurations are available. ■ Rose Manufacturing Company, Grand Rapids, Mich.

circle 351 on inquiry card

more products on page 149



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what you
need to know
about
metal framing.

He's sitting in your drawer, just waiting to bring you important information on Unistrut® Systems.

You'll learn how to solve complex problems such as dividing and multiplying space. We'll send you catalogues on support systems of all kinds.

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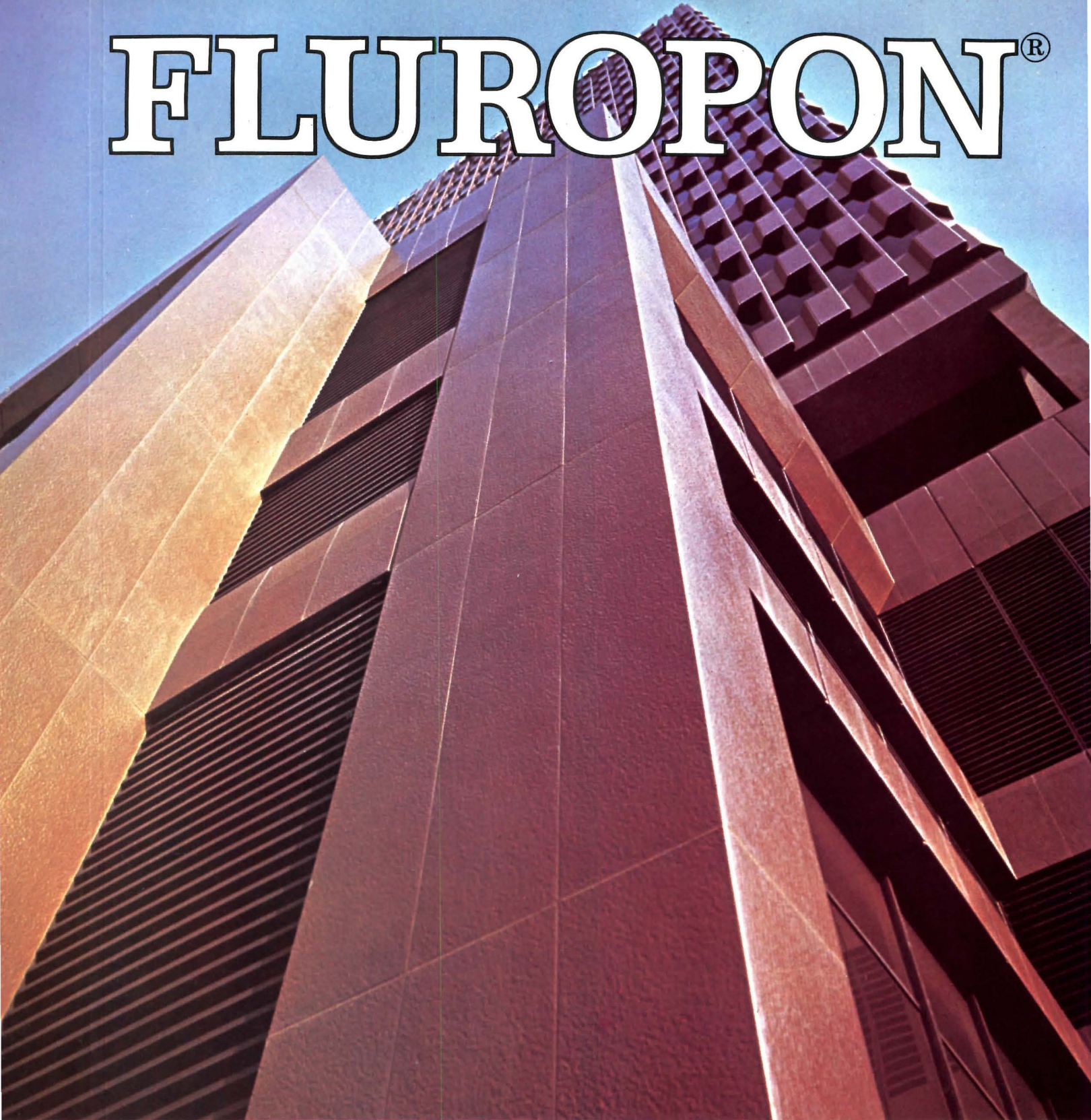
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500[®] based coating, for hundreds of different buildings all over the world, from power plants to office buildings, from schools to hospitals, from airline facilities to luxury hotels. Find out how DeSoto can help you protect your building investment. Call or write today.

The Title Insurance Building in Los Angeles, designed by Maxwell Starkman & Associates, gives the effect of textured, bronze-colored concrete.



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QUICK. NAME 38 WINDOWS.

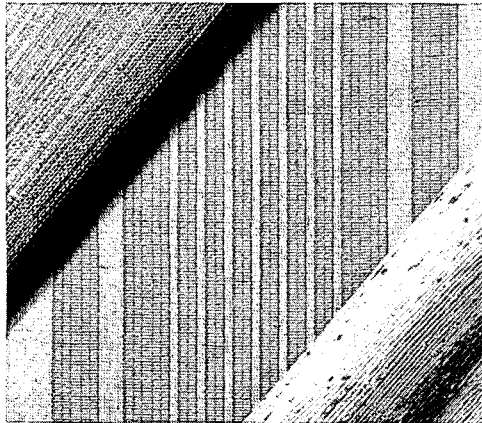
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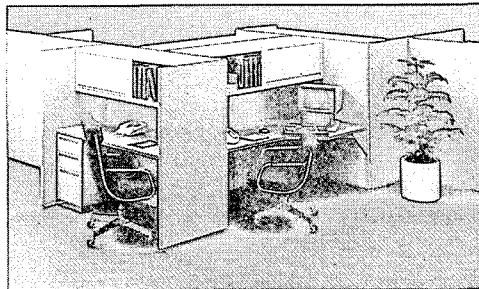


Circle 73 on inquiry card



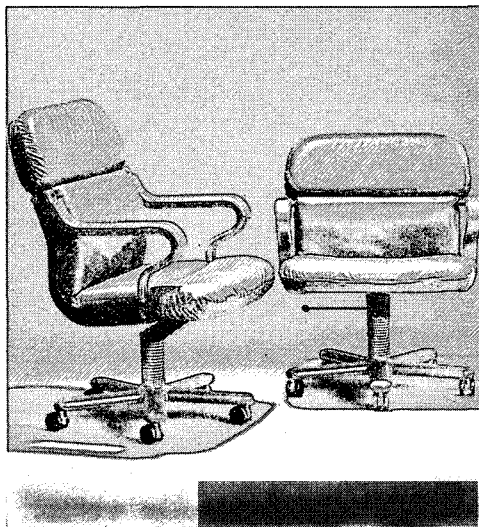
LINEN WALLCOVERINGS / The International Linen Promotion Commission will be exhibiting an array of Western European wallcoverings and fabrics at the International Exposition of Contract Interior Furnishings. Included will be an Irish linen from Durawall, Inc. (upper left), a French linen from Switzer Inc./SARI USA (middle), and a Belgian linen from Maharam Fabric Corp. (lower right). ■ International Linen Promotion Commission, New York City.

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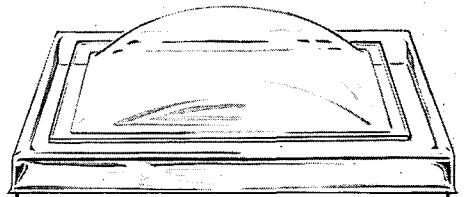
OFFICE PANELS / A complete line of softform office landscape panels are now available in this manufacturer's "2000 System." These panels, used with panel-supported work surfaces, panel-hung shelves and storage units combine with free-standing desks and components in a variety of arrangements. ■ Corry Jamestown Corp., Corry, Pa.

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EXECUTIVE SEATING / Two versions of designer Niels Diffrient's "Articulated" office chair are shown here: a high back chair in leather with urethane foam armrests on tubular steel arms, and a low back model in leather with optional fingertip comfort control. Both chairs have a painted five-star base set on Kevi twin-wheel casters. ■ Knoll International, New York City.

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How to let light in without letting heat out.

Skylights formed from **UVEX® Plastic Sheet** can reduce costs by reducing the need for artificial lighting during daylight hours.

While the optical transparency of UVEX Sheet lets light in, its low thermal conductivity keeps heating and cooling losses low.

UVEX Sheet has excellent impact strength and outstanding resistance to weathering. And in many instances, skylights formed from UVEX Sheet can be flashed directly into the roof—eliminating the need for aluminum curbing or support.

For information and the name of the skylight manufacturer nearest you, contact Bill Seaman at Eastman Chemical Products, Inc., Plastics Products Division, Kingsport, Tennessee 37662.



Eastman Chemical Products, Inc., a subsidiary of Eastman Kodak Company, Kingsport, Tennessee. UVEX is Eastman's trademark for its plastic sheet. Eastman makes only the plastic sheet used in finished products and therefore makes no warranties with respect to such products.

UVEX® Plastic Sheet

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THERE ARE THOUSANDS OF STORIES THESE ARE JUST

① Transamerica, San Francisco, built all of its 48 stories around Celotex Celotone natural fissured ceilings. It was one of those rare times when the company chose not to diversify.

② The 7 stories in Water Tower Place, a Chicago shopping center, are built around Celotone natural fissured ceilings. After all, top shops deserve the tops in tops.

③ The Kennedy Library, Boston, tells some fantastic stories about the life of JFK.

Topping them all are 9 stories by Celotex. Celotone natural fissured tiles were the architect's choice.

④ Arco, Los Angeles, built two beautiful towers of 50 stories each around Celotone Texturetone tiles. Rumor has it one of the OPEC sheiks wants to rent one of them as his West Coast palace.



The beauty of Trocal[®] is more than skin deep... it's watertight!



Trocal commercial roofing systems are as strong as they are beautiful.

Trocal is a rugged elastomeric membrane. You simply roll it on like a carpet over your present roof. Edges are solvent welded, then sealed with the same material as the roof itself. The membrane is fastened only at roof edges and penetrations.

The result is a one-piece, free-floating, molecularly sealed roof that's totally watertight. Trocal is warranted up to 10 years against leaks, even those caused by structural movement. No other roofing warranty matches it.

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DURING TROCAL INSTALLATION

Atop the Atlanta Hilton, the Trocal system was used to cover an existing roof which had been leaking. No expensive removal of the old roof was necessary.




COMPLETED TROCAL INSTALLATION

A ballast of gravel was spread over the membrane. Ballasted systems are not only visually pleasing, but also reduce heating and cooling costs.



PLAZA SYSTEM

At the Atlanta Hilton Hotel, Trocal was used as a watertight base for the pool deck and tennis courts. Installers covered the poolside Trocal membrane with marble slabs.



TROCAL[®]
COMMERCIAL ROOFING SYSTEMS
FOR ROOFS THAT STAY WATERTIGHT

How to flush out the real thing in flush valves.

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Our relief valve has a sliding gland for non-hold-open operation. The valve flushes, then shuts off automatically, even if the handle is held down. That saves water. And it's been a Sloan standard for years.

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The guide is ABS engineered plastic. In combination with either of two relief valves, it'll satisfy any fixture requirement.

The lip seal on the handle needs no adjustment. And a nylon sleeve eliminates metal-to-metal contact between handle and socket.

The real thing. A Sloan Flush Valve. For real water savings and real-life dependability.



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