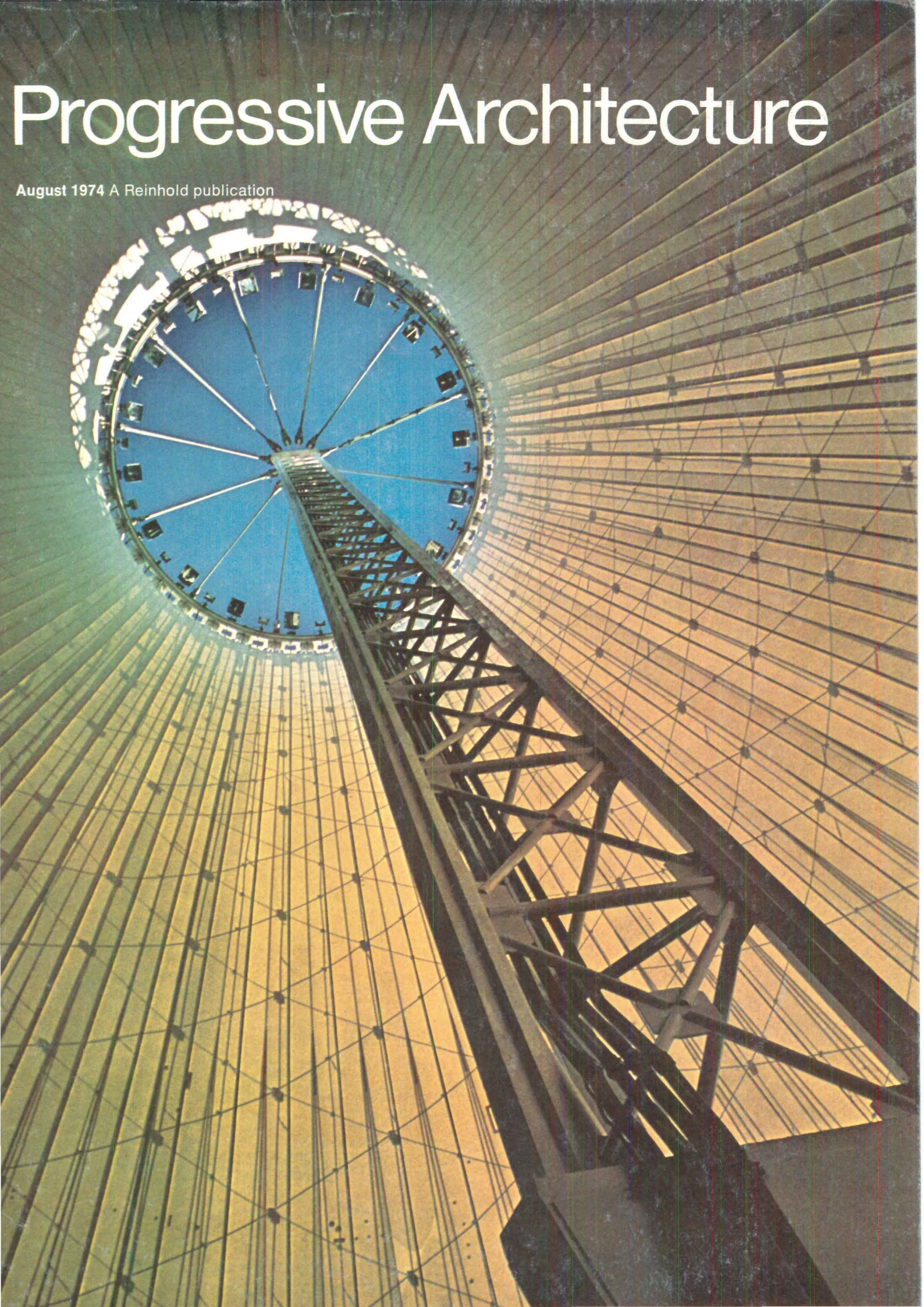
Progressive Architecture

August 1974 A Reinhold publication



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Progressive Architecture

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Cover: U.S. Pavilion (Naramore, Bain, Brady & Johanson, architects) at Expo '74, Spokane, Wash. (p. 74). Photo: Charles R. Pearson.


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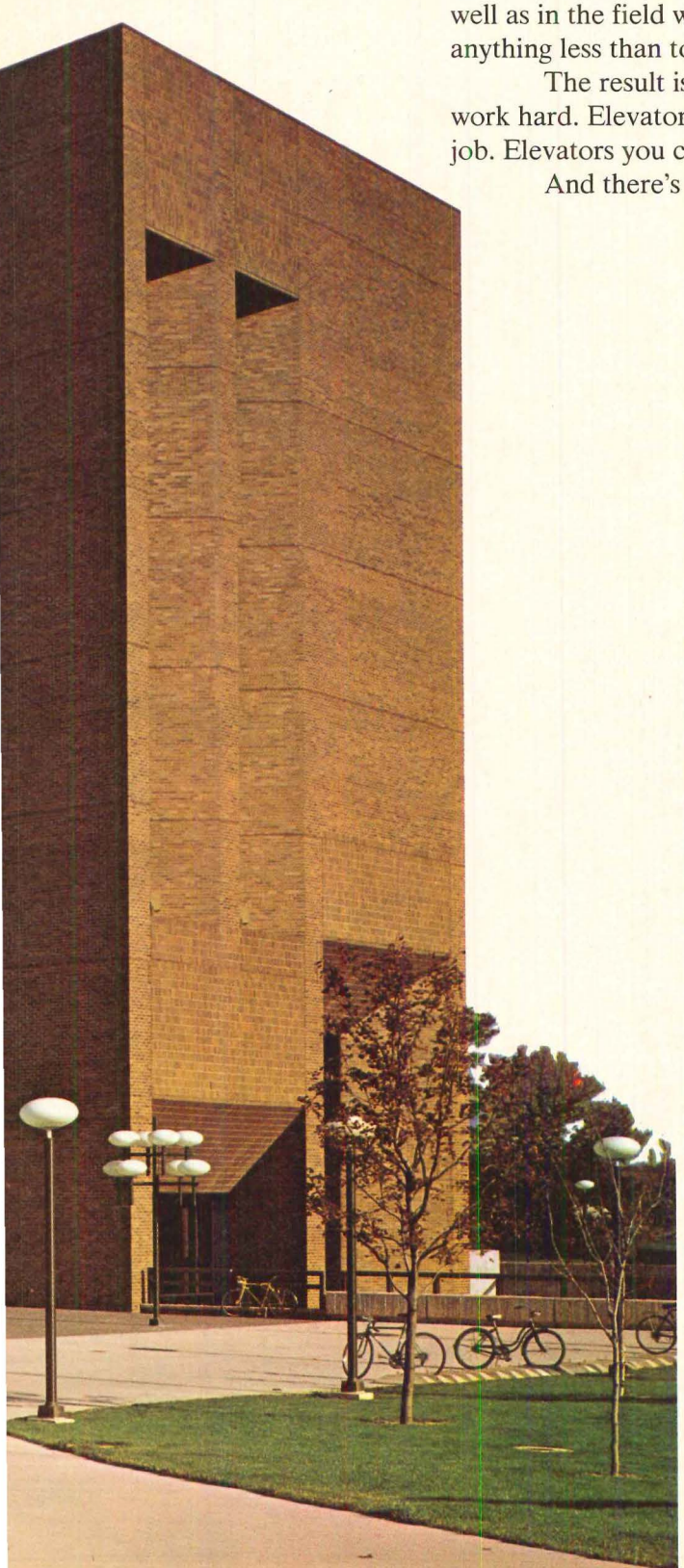

Left: LIBRARY-LEARNING CENTER, UNIVERSITY OF WISCONSIN-GREEN BAY. ARCHITECT: Daverman Associates, Inc., Grand Rapids, Michigan, and Milwaukee, Wis. GENERAL CONTRACTOR: Fluor Brothers Construction Company, Oshkosh, Wis. Four Dover Geared Passenger Elevators installed by Northwestern Elevator Co., Inc., Franchised Distributor, Milwaukee and Green Bay.

Below: FIRST NATIONAL BANK BUILDING, DAYTON, OHIO. ARCHITECT: Harry Weese & Associates, Chicago. GENERAL CONTRACTOR: Turner Construction Company. DEVELOPER AND LEASING AND MANAGEMENT AGENT: Arthur Rubloff & Co., Chicago. Six Dover Gearless Passenger Elevators installed by Dover Elevator Co., Dayton.

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ex architecture

got to say that I was struck by the fact of all the pithy remarks and provocapresentations made at the "Women in itecture" symposium held recently in ouis, the item that P/A chose to high- (News report, June 1974) was Gere Kerbis' formalist distinctions among e, female, and neuter architecture. This nusing because Kerbis' presentation ged entirely apart from her work) was aps the most unanimously rejected. In a panel discussion intended to pursue subject fell flat on its collective face. selecting out Kerbis' distinctions, P/A ilty both of giving a false impression of symposium; and of perpetrating a false on of separatism within the profession. rhaps more to the point was Whitney don's psychological profile of the arct: a personality both exceptionally able and enormously introverted. Add is the remark made by the girl from ago that if architects are here and e starving, perhaps it's their own apol attitude that they have to blame. n there was the inevitable (though not ssarily correct) conclusion about arcts' involvement with the interests of profession to be drawn from the fact the overwhelming majority of men and en at the conference were students. e symposium revealed that women arcts are frustrated by aspects of their ation. It revealed that women archi- are angry at men architects who pre- believe that women architects do not . (Let's talk about some of the product rtising in this magazine, for instance.) ealed that women architects are etimes angry at themselves for feeling ed to out-perform men in what has a male-dominated field. It revealed that women architects have marked reservations about the tendencies of the profession and about the quality of the built environment. It revealed, most pertinently, that women architects could care less about whether women shape their buildings differently from men.

Diane C. Blitzer
Boston, Massachusetts

Environmental impact!

I congratulate you for the outstanding June issue of *Progressive Architecture*. It was a smashing success. I have heard more people in our office talk about this issue than any other in the last five years. Keep up the good work.

Philip J. Meathe, FAIA
Smith, Hinchman & Grylls Associates Inc.
Detroit, Mich.

Credit due

Copies of a study on schoolhouse design by John Zeisel, sociologist at the Harvard University Department of Architecture, may be obtained without charge from Educational Facilities Laboratories, 477 Madison Ave., New York, N.Y. 10022. EFL published the report in a special issue of "Schoolhouse," in March, and P/A's article on the study of (P/A May, 1974, p. 21) failed to mention the EFL publication. [Ed.]

It has come to our attention that incomplete credits were given in the presentation of a P/A Awards Program citation. The citation, to Henry Sanoff for charrette techniques applied at the Wallace O'Neal Day School in Pinehurst, N.C. (P/A, Jan. 1974, p. 87), should carry two additional names. Correct credits should read: technique development, Henry Sanoff; architect for the school, William L. Laslett; consulting psychologist, George Barbour; director, Learning Institute of North Carolina, Dr. Richard S. Ray; educational consultant, Joan Sanoff; client, Wallace O'Neal Day School School Board, Pinehurst, N.C. [Ed.]

Hejduk's wall house: two sides

The purpose of this letter is to praise the editorial attitude responsible for the publication of "Second wall house," and to explain the reasons for my enthusiasm.

I applaud the editors' attitude because a project—not a building—gets published and because of the special characteristics of that project. Besides, from my point of view, the fact that those drawings will soon be translated into built form, into an edifice, is an unnecessary justification for their diffusion. John Hejduk's series of iconic representations constitute, among other things, an avant-garde statement on architecture as an artistic practice; as such, they have a function of their own with respect to (and within) the practice of architecture; if correctly read, the drawings take a didactic dimension, contributing to a better understanding of the present architectural ideology inasmuch as they bear some sort of an implicit critique of other currently widespread positions regarding the making of architectonic form, i.e., popularistic rhetorics, design methodologies, etc. Consciously intended by the author or not, that implicit critique *is there.*

Of course, one has to be aware of what happens, in general, once this type of statement is "on the air": it becomes, usually, a model to be parodied, a cliché to be reproduced, the milestone of a manner. In this way a degradation process (degradation of the original content) starts and it does not end until the institution of architecture has absorbed the originally disruptive product. This is an unavoidable process in the present state of society.

In a word, drawings of such a type of quality (with all the complexities and the beauty of a work of art) have an enormous value *in themselves.* (This value has traditionally been neglected by some types of architects and critics. The recognition of the function of this type of drawing, and their further publications, is an important editorial task that needs to be accomplished by a progressive magazine in a context where publications of this sort do not usually happen.

Rodolfo Machado
IKM Partnership
Pittsburgh, Pa.

Your recent article on the A.E. Bye house (June 1974, p. 98) left me confused and distraught. It is beyond my understanding why anyone would want to publish this house in its model stage, let alone build it. Beyond its formal qualities and the architect's interesting use of subtle colors and tones, the building contributes only to a mismarriage with its landscape. As an object for living with/on/or about the site, the house responds more in a prototypical fashion.

The building of a large wall as the "big idea" of the scheme would probably do little more than block out sunlight and alter wind patterns. At best, the house promotes a fine tradition in an unfortunate manner.

Todd Hamilton
Faculty, Department of Architecture
The University of Texas at Arlington

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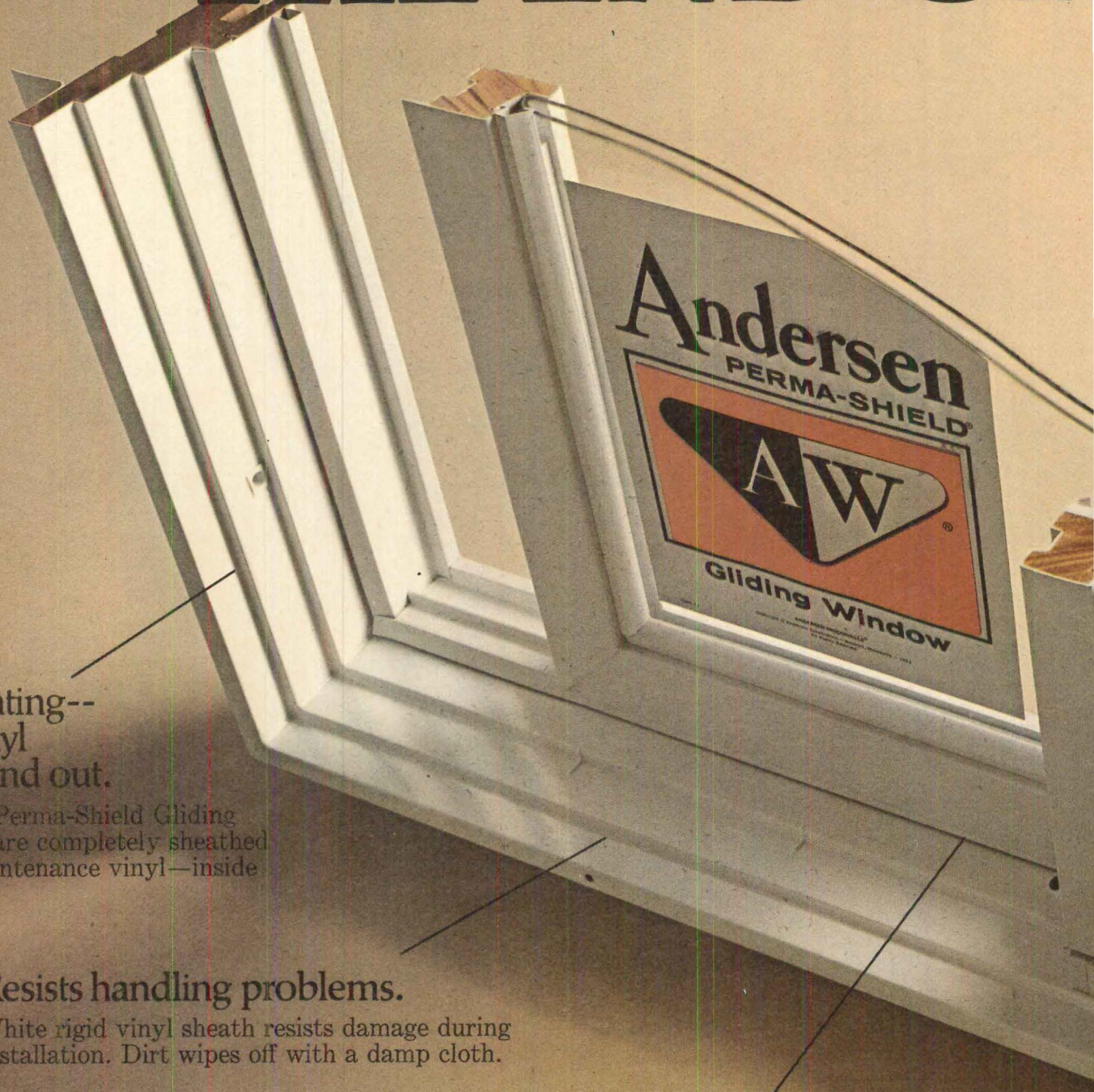

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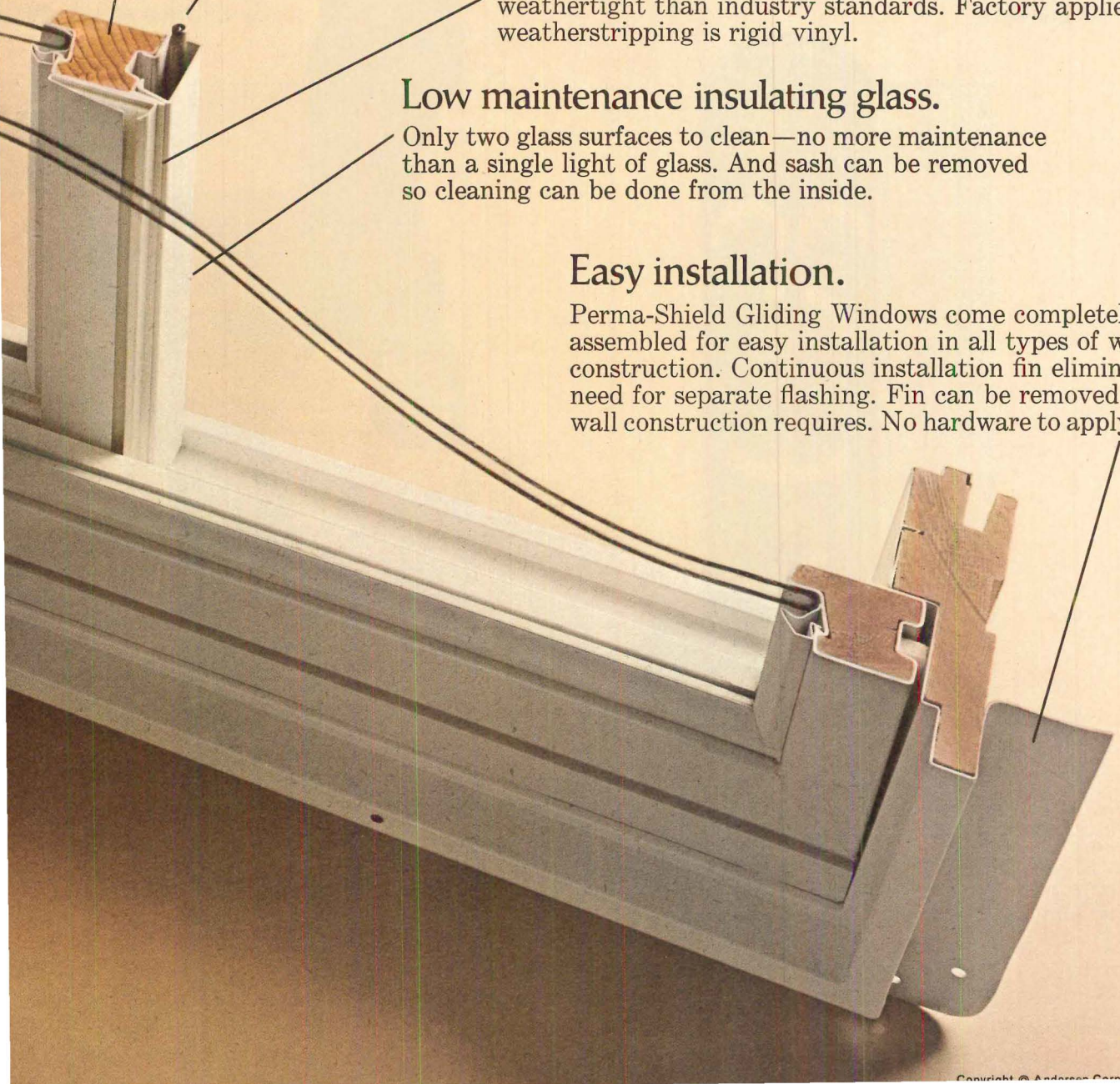

Some sash designs need to put the pressure on glazing tape.

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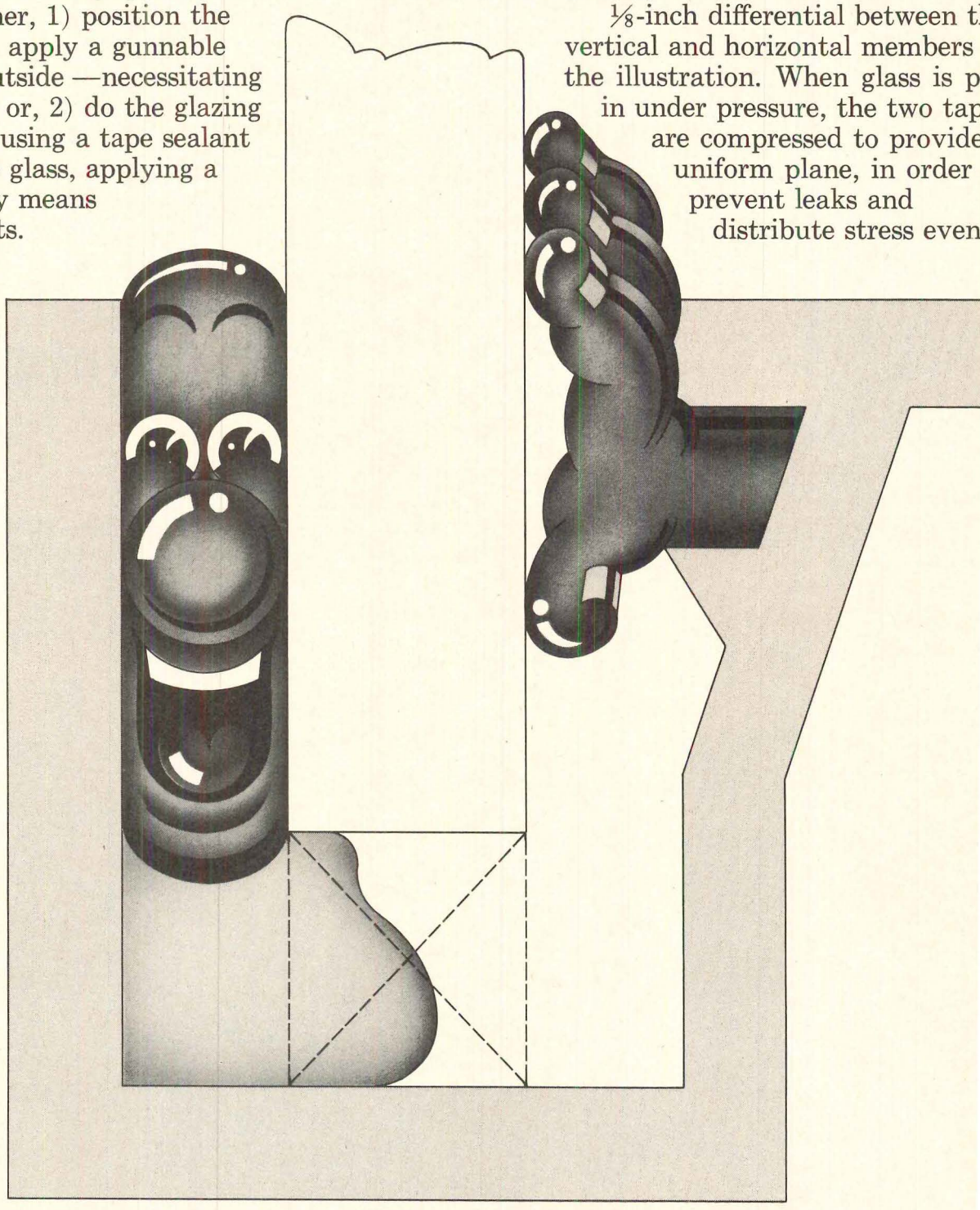
This tape sealant must be 25%-50% compre sible, yet must not squeeze out of the chann despite the pressure.

Another problem — illustrated on the opposi page — is the offset condition of channels stick system glazing. As you can see, there is ⅛-inch differential between t vertical and horizontal members the illustration. When glass is p in under pressure, the two tap are compressed to provide uniform plane, in order prevent leaks and distribute stress even



Besides the design problems
st mentioned, you and
our glazing contractor
e faced with increasingly
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uildings go higher and higher.
or example, larger lights of
ass, greater pressure differentials
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gger burden on glazing
chniques. Omitted, misplaced
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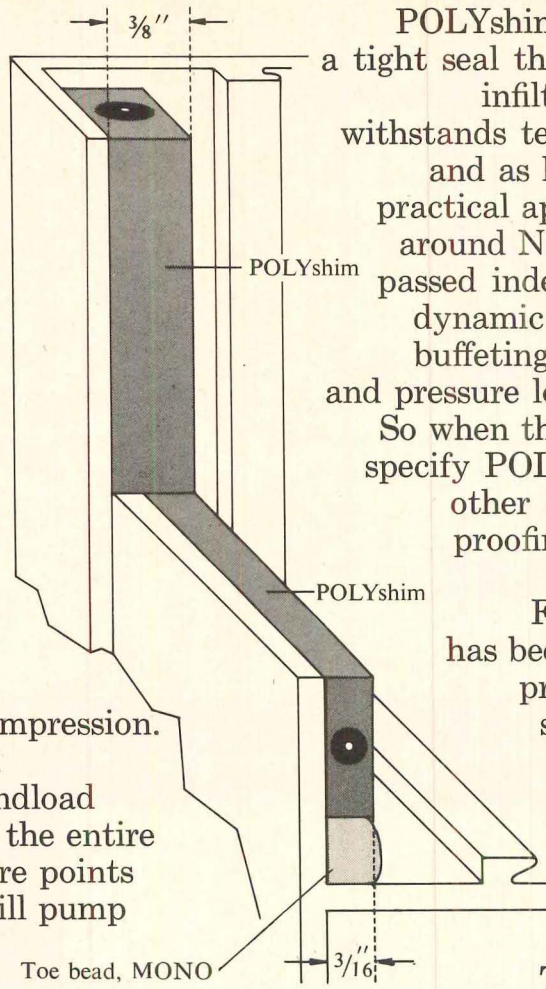

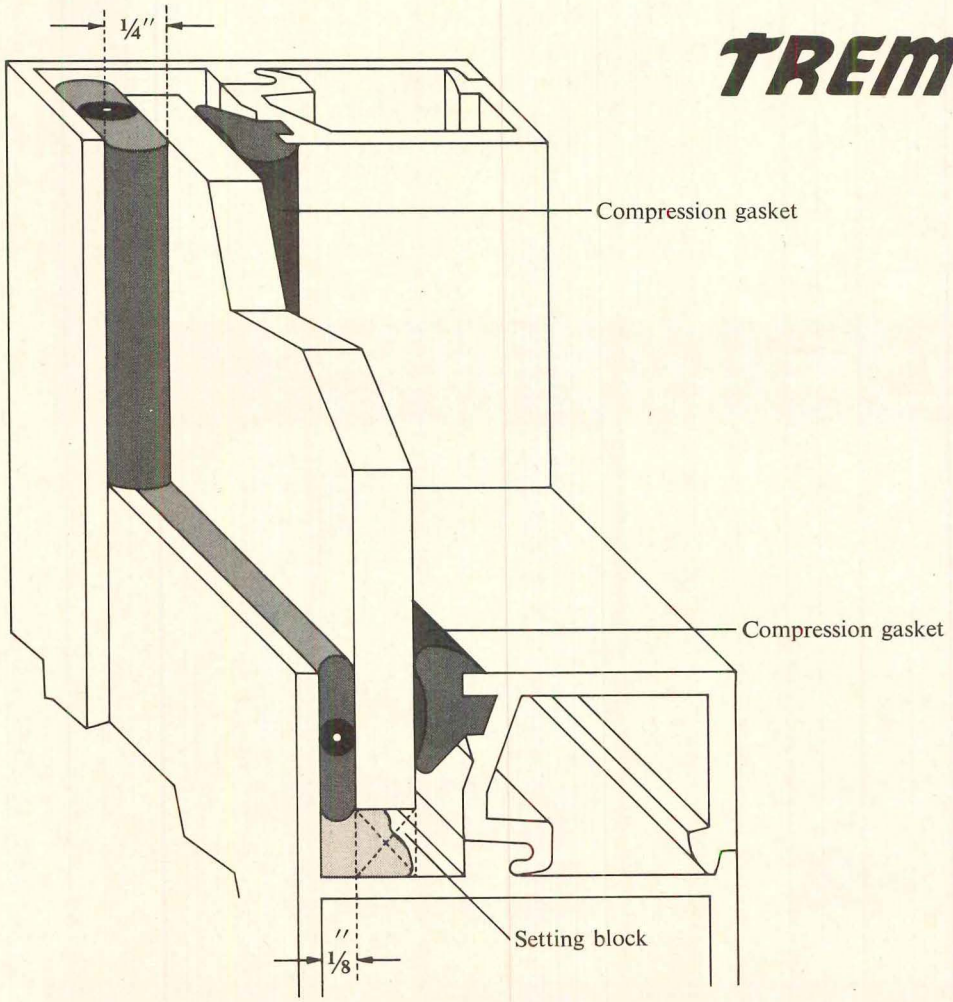

Notices

Appointments

Ellis/Naeyaert Associates, Inc., Detro has named the following associates: Ro W. Boe, Donald C. Brockman, Emanu Mansour, James W. Page, and James Jones.

George M. McSherry has been appo director of airport projects for De Leuw, Cather & Company, Chicago.

Edwin F. Heyer, PE, Arthur S. Coop Jr., PE, and N.W. Bryan have been nar vice presidents of Connell Associates In Miami, Fla.

Robert W. Wolff has been named ser consultant and executive director of Ru Johnson Associates, New York City.

Robert D. Hunter, AIA has been appointed vice president of O'Donnell Wic Pigozzi Architects Inc., Evanston, Ill. No C. Wright has joined the firm as directo business planning.

S.I. Morris Associates, Houston, Tex., named the following partners: Nolen W Jr., AIA; William D. Kendall, AIA; John Wiegman, AIA; Thomas B. Daly, AIA; a George W. Spence, AIA.

R.H. Tatlow IV was named president chief executive officer of Abbott Merkt & New York City. Robert Bridges and Ho Grill were named senior vice presidents

Kurt Franzen was made a vice presid of Gruen Associates, Los Angeles.

Robert C. Gumerman has joined Do Owen & Associates, Newport Beach, C as project manager.

Richard S. Holmgren, Jr. has been elected senior vice president of James Montgomery Consulting Engineers, Inc. Pasadena, Calif. Benjamin G. Hildyard been elected vice president.

George Birkhahn, B. Wayne Fishba Lawrence Harrison, Gerald Haselhuh

[continued on page 120]

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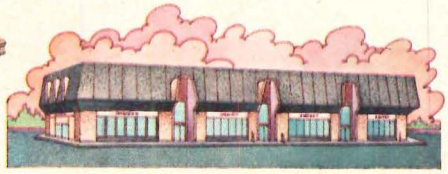

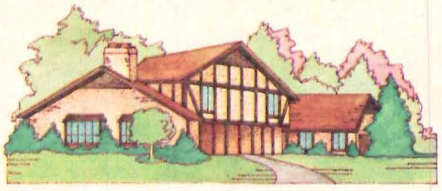

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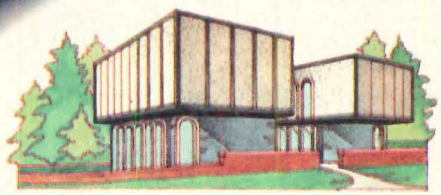

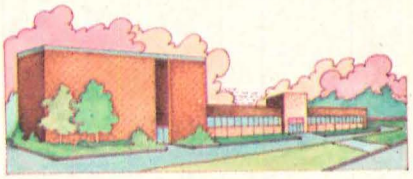

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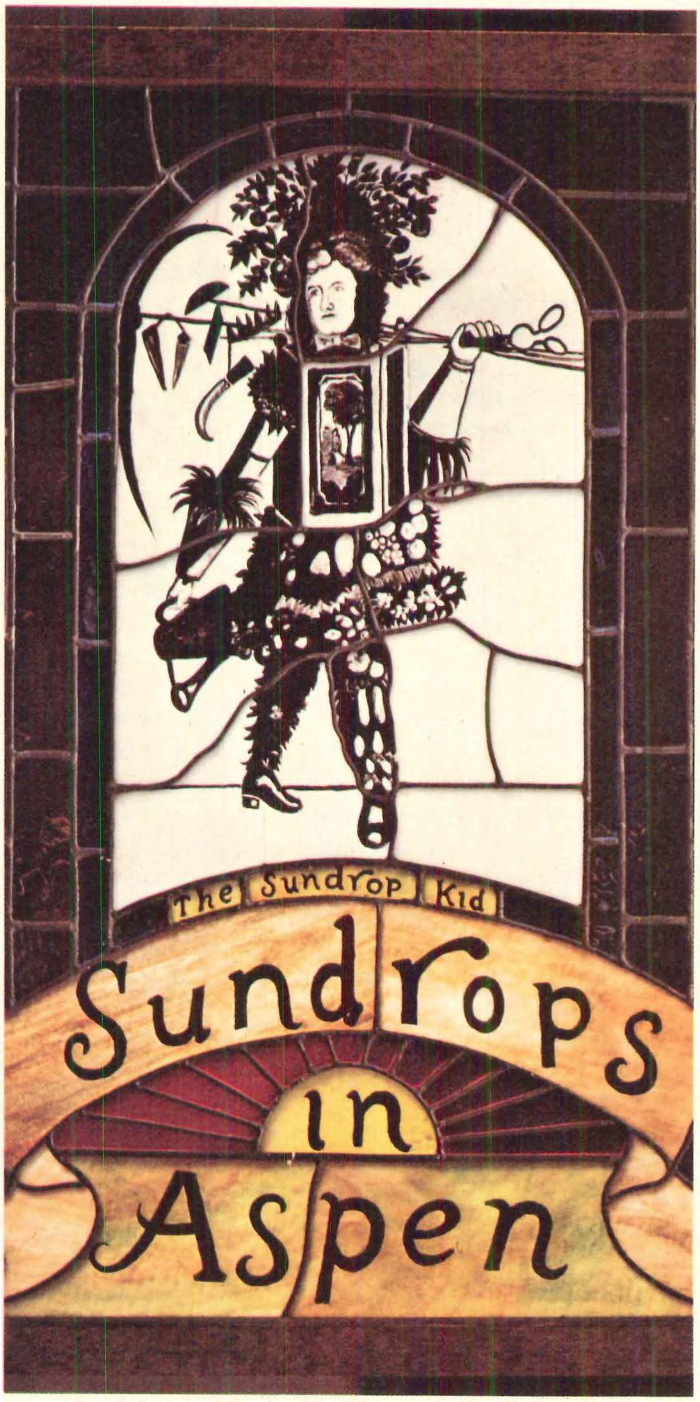
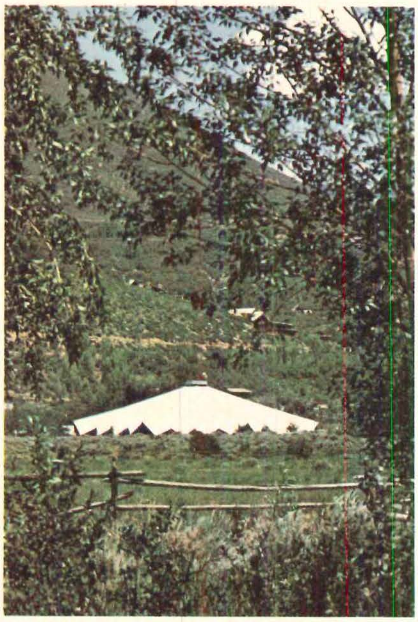


Photos: David Morton



Meeting tent

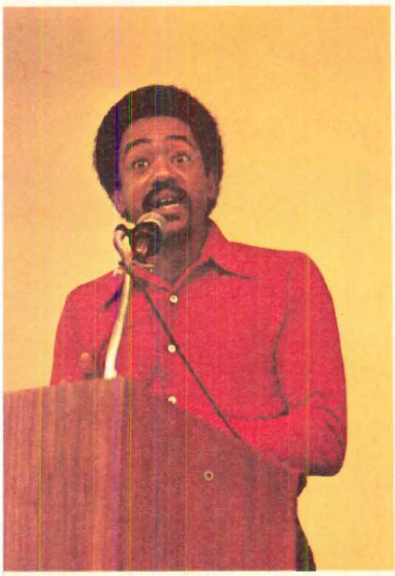
Otto Piene's balloon event

Aspen '74

More than 100 architects, 365 designers, 70 film makers, 9 psychologists, 16 planners, 427 students, 8 musicians, 1 Hertz rent-a-car assistant manager, 6 revolutionaries, 6 counter-revolutionaries, 1 dentist-designer, and 4 undecided were among the 1000 who descended on Aspen, Colo. from June 16 to June 20 for the 24th International Design Conference. In the opening ceremonies, conference president Jack Roberts prophesized that "in an otherwise dismal year, you will find these five days the most exciting, eventful, and fantastic of 1974." The problem with prophesies, though, is that they often do not come true.

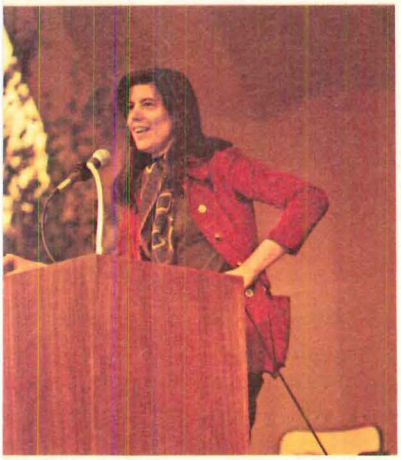
This year's theme—"Between Self and System"—was clarified in the conference program as: "Self is the sort of creature who yells 'fire!' in a crowded theater; System is the sort of thing which insists that the emperor is not naked, but has an elegant set of new clothes." Further explanation in the program, however, did not dispel the fact that a large part of the conference was devoted to arguments about what self and system mean, rather than what the real problems are that re-
[continued on page 20]

Kisho Kurokawa



Bobby Seale

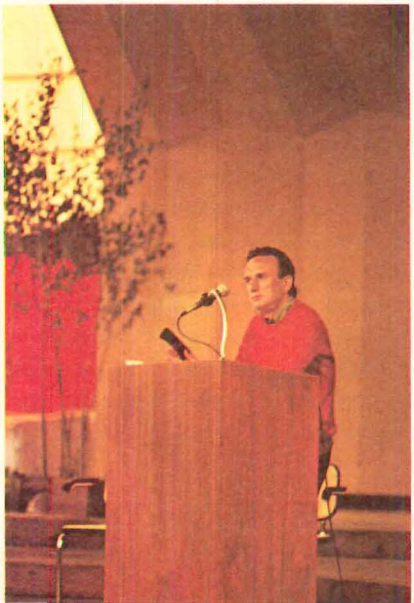
Julian Beinart



Susan Sontag

Jerome Lettvin

Betty Friedan



Giancarlo De Carlo

News report continued from page 19

late to such concepts. On the second day, writer Susan Sontag argued that the theme name should be changed to "Person and World," which includes the important concept of person-in-the-world (a concept from existential psychoanalysis, which was never identified as such). This, Ms. Sontag stated, was preferable to "Self and System," which she saw as a "collage system where each part does not necessarily have any relationship to the parts that went before or after it."

In retrospect, the conference may have been appropriately titled afterall, because throughout the five days there actually was little relationship between parts, or between what went before or after them. Morning sessions in the Main Tent were always followed in the afternoon by at least eight separate "events" in eight separate locations. Most had little to do with the morning presentations, and all of them were overcrowded. The conference quickly took on the aspect of Filene's basement, where too many people crowded each other to grab goodies off the shelf . . . goodies which they neither wanted nor needed, but felt compelled to acquire.

But, like that famous Boston basement, there were genuine bargains that were the undisputed high points of the conference. Bobby Seale's opening address about his own problems between self and system in organizing the Black Panthers (with Huey P. Newton), and in running for Mayor of Oakland Cal., elicited a sincere and deeply felt standing ovation. Jerome Lettvin, who teaches experimental epistemology in the Research Simulation Center at MIT where he is professor of Communication Psysiology, exhibited one of those rare minds one is happy to find once in a lifetime, as he discussed prey-predator relations in animals, why birds are the best art critics of moths, and how the natural forms of moths respond to editing. Italy's Giancarlo De Carlo on participatory architecture, and Japan's Kisho Kurokawa on the relationship between his architecture and Buddhism were other peak moments. But neither eagerly awaited Italian film maker Pier Paolo Pasolini, nor the presentation of his newest film, materialized.

During the closing ceremonies, program chairman Julian Beinart remarked that the days of the linear conference were over, and that conferences would more and more become a kind of supermarket place for ideas. If this is true, then the problem at Aspen must lie more with this new attitude toward conferences than it does with this particular event. Given such a structure, it seems that everyone loses, and one ends up with what an Aspen newspaper quite justly labeled simply "an intellectual hootenanny." It was not the five most exciting days of 1974, but it could be the five most frustrating. [DM]

Historians' award

Marvin Trachtenberg, professor at New York University, has received the Alice Davis Hitchcock Book Award from the Society of Architectural Historians for his book, *The Campanile of Florence Cathedral, "Giotto's Tower."* The book was cited as the most distinguished work in architecture history by a North American scholar in the last two years.

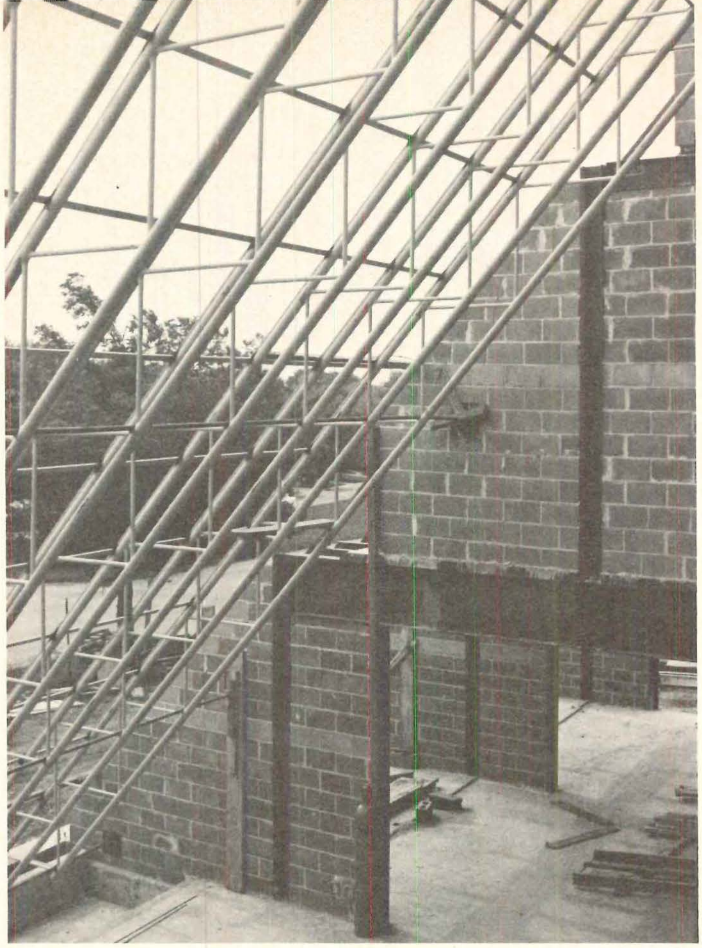
When in Rome . . .

Among the 11 winners of Rome Prize Fellowships this year are Peter Carl of Lexington, Ky., Robert Jensen of New York City, and Leonard Torre of New Orleans, La., who won in ar-

chitecture, environmental design, and landscape architecture, respectively. They will take up a year's study through the American Academy in Rome this fall with nearly $5000 income, a free residence and studio, and use of the Academy's facilities. Carl received his master's in architecture this year from Princeton University; Jensen received his master's from Cornell University in 1967; and Torre received a bachelor's from Louisiana State University. Jurors included five each in architectural, environmental, and landscape design.

Money under glass

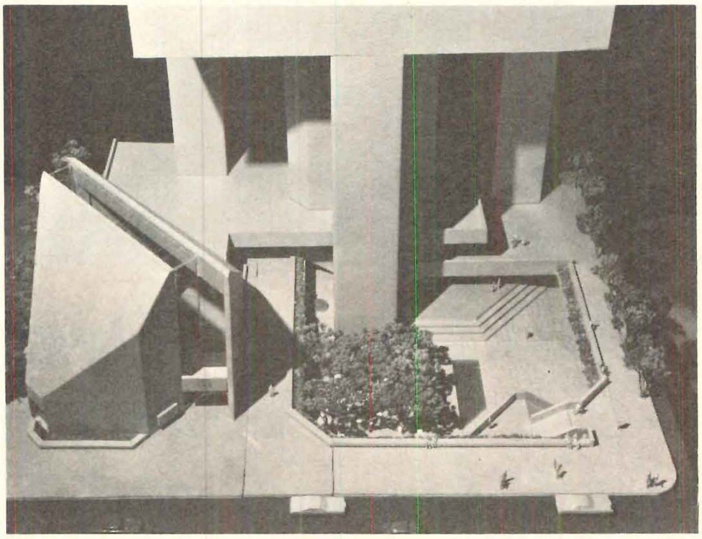
Ten tubular steel trusses span 50 feet to enclose with glass the lobby of Farm and Home Savings Association's Ward Parkway Branch, Kansas City. By angling the spine of the three-story structure at 18 degrees to the site line, architect Richard P. Stahl of Springfield, Mo., was able to accommodate the number of spaces required by zoning. The facing will be light gray Carthage marble. Offices on the second floor and employee meeting rooms and lounge on the third will overlook the glassed-in lobby. Exterior circular stairs will give public access to lower level conference and entertaining rooms. The building will be finished in late summer. A safety deposit box with lean-to tendencies.



Ward Parkway Branch

St. Peter's blooms in the city

St. Peter's Lutheran Church in midtown Manhattan sold its air-rights four years ago to Citicorp with the understanding that when the church decided to build it would be in conjunction with the Citicorp development—that is, the church would be a condominium. The congregation now has embarked on a building program with Hugh Stubbins, Jr. & Associates of Cambridge, Mass. as architects. The new edifice will be beneath the corporate high-rise—on four levels above the street and two below. The sanctuary seating 850 will be off a sunken plaza. At street level will be a 24-hour ministry chapel while below and towards the rear of the sanctuary will be other rooms and offices. The granite-clad structure will be finished in 1976. A handsome thorn in Citicorp's ungainly flanks.

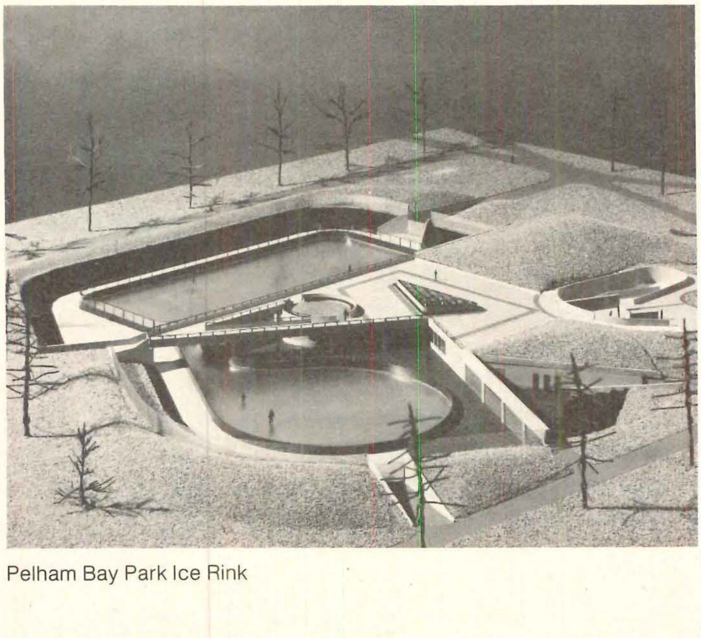


St. Peter's

Cutting a trim form

You can already hear the slice of blades in ice at the graceful Pelham Bay Park Ice Rink in the Bronx, N.Y. by Heery & Heery, New York, scheduled for construction in 1975. It will accommodate some 2000 people in a regulation size hockey rink and a figure skating rink, both lined with seating. A 15,000-sq-ft building containing staff and services separates the rinks, which may accommodate year-round activities such as roller skating, music, and drama. The entire facility is depressed 12 feet into gentle earth berms for wind protection and low park profile.

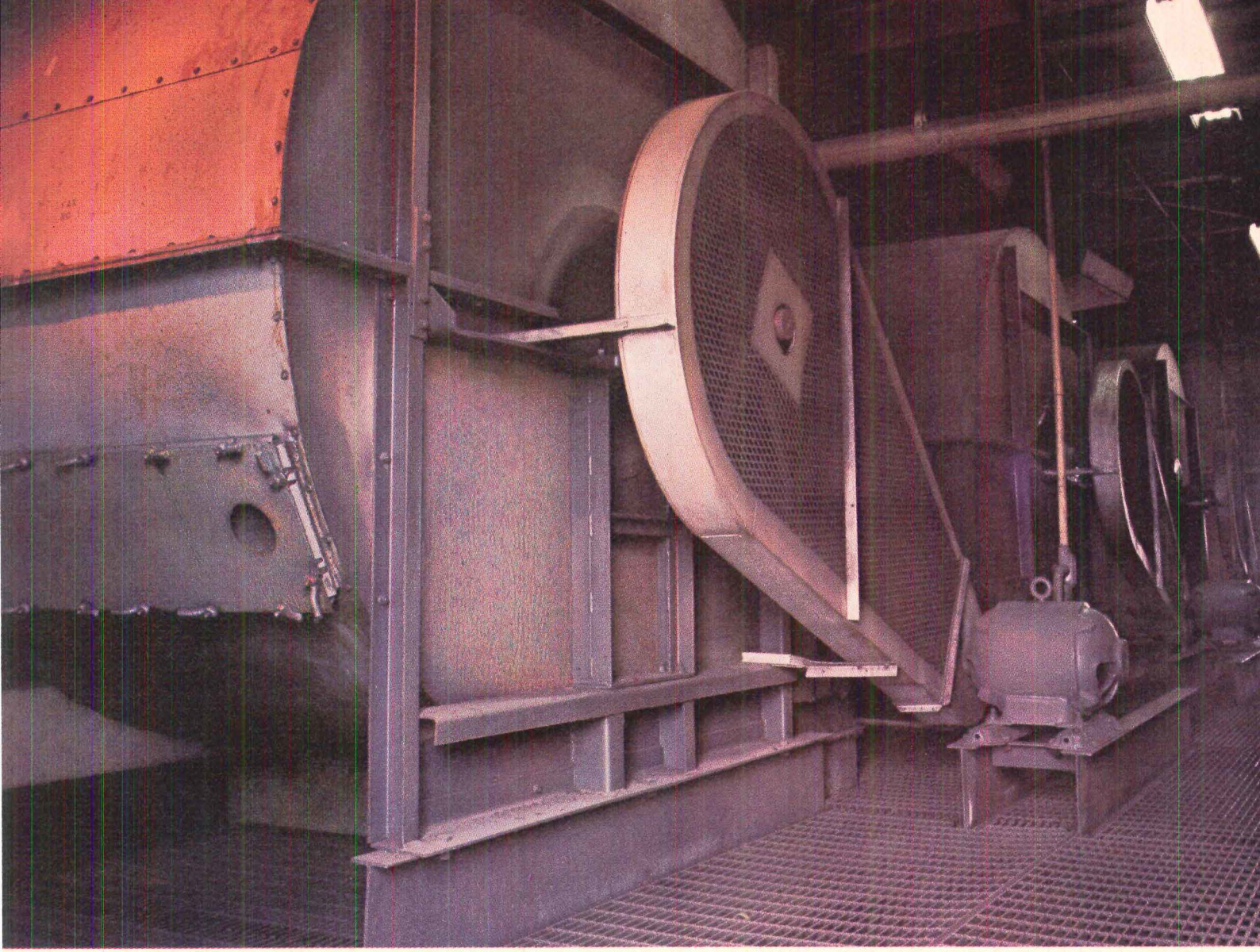
Julius Varosy was project architect for H&H/NY. Bronx citizens are reportedly delighted with the design. As well they might: It celebrates skating's velocity and poise much as the Fiat factory with rooftop car test track (Giacomo Matte-Trucco, Turin) proclaimed the triumph of the motor car.



Pelham Bay Park Ice Rink

Design methods group

Papers on applying systematic methods to various problems in the field of design are being sought by planners of the Third International Conference of the Design Methods Group. The conference will be held at Berkeley, Calif., during the
[continued on page 23]

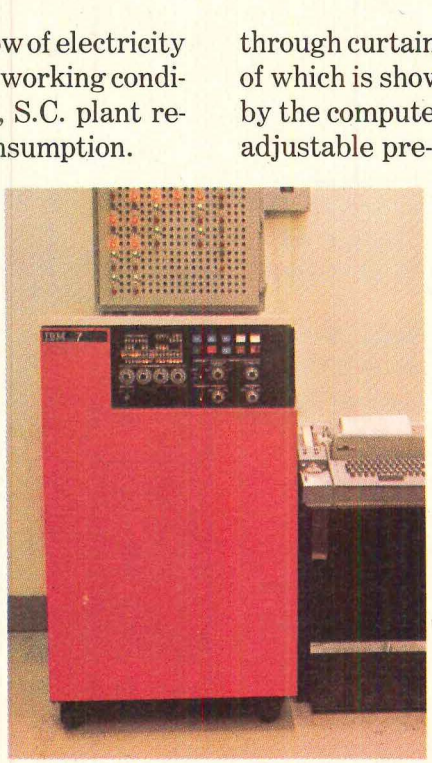


IBM System/7 installed at Saco-Lowell to conserve electricity.

A System/7 continually monitors the inflow of electricity and controls air-handling equipment so that working conditions throughout Saco-Lowell's Greenville, S.C. plant remain comfortable with minimum power consumption.

"In this era of energy shortages, the System/7 helps us conserve energy for productive use elsewhere," says T.N. Papleacos, vice president, operations. "It is also saving us money at a net savings rate even greater than the $25,000 a year we originally estimated. We were pleased to find IBM offers a small computer system and an IBM-developed program that make an application like this justifiable."

Saco-Lowell Corp., a subsidiary of Platt International Ltd. and a world leader in textile machinery, cools and cleans the air in its 11-acre building by circulating it through curtains of water. Sets of pumps and blowers, o of which is shown above, are selectively turned off and by the computer for brief periods during each hour on adjustable pre-determined schedule. Working conditio however, always remain comfortab throughout the building.



Concurrently, in a sensor-based fu tion, the System/7 constantly monito actual power usage so that power c backs can be adjusted accordingly a costly demand peaks avoided.

Full information on the System/7 available through your IBM represen tive or local office. Or write IBM Da Processing Division, Dept. 83F-PA, 1 Westchester Ave., White Plains, N.Y. 10604.

IBM

News report continued from page 21

summer of 1975. Deadline for submitting camera-ready abstracts is Sept. 10, 1974. Full papers will be due March 1, 1975. Suggested topics include teaching basic design, aesthetics, imagery and symbolism in design, and communications between designers and clients. Further information is available from Donald P. Grant, DMG organizer, P. O. Box 5, San Luis Obispo, Calif. 93406.

Liberace dream house

Liberace—or Lee as he's known to friends—bought the bank he cried all the way to. With a bit of equal rodomontade he may take up residence in a piano or at least a mansion patterned after one, all gleaming white marble and tinted glass, overlooking a body of water.

The idea is that Liberace spend his retirement living in an elegance that stands as a monument to his legacy—music and lifestyle. It originally was conceived by designer Julia Doveton as a kind of California version of the Statue of Liberty somewhere on the West Coast, overlooking the water, but the location has yet to be picked.

Externally, the pianoforte residence would be white with solar reflecting, pink or smoked-gray glass. The internal structural system is simple, however, consisting of reinforced slab floors supported by elevator-shaft legs. The sloping roof rests in turn on a main strut doubling as a flue for open fireplaces planned for the two upper floors.

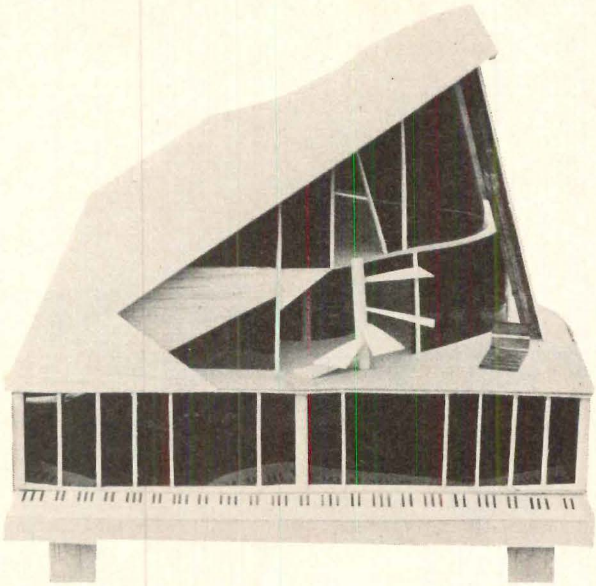
Ms. Doveton designed a wealth of sumptuous exotic interiors in character with Liberace's extrovert outlook. His own suite on the third floor has a library, balcony overlooking an orangery, master sauna suite, lily-shaped marble bath, circular dressing room with walk-in wardrobes, swivel sanitary fittings masquerading as neoclassical statues and a shell-shaped marble bed.

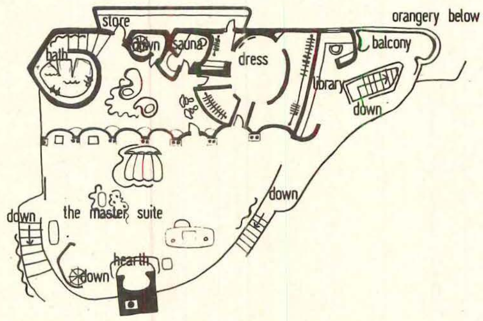
The sloping roof to the master suite and double-height sections of the orangery is draped in blue velvet with star-shaped rooflights. Liberace's own circulation route through the building links his private spaces with a series of walkways.

Garaging and service access are below ground. At ground level between the piano legs are an open landscaped deck with trees, bathing huts, and a free-form pool with a wave machine. Guests arriving would be swept up a lyre-shaped entrance stair (designed to resemble tone pedals) into a vast circular marble hall which forms the vertical circulation shaft.

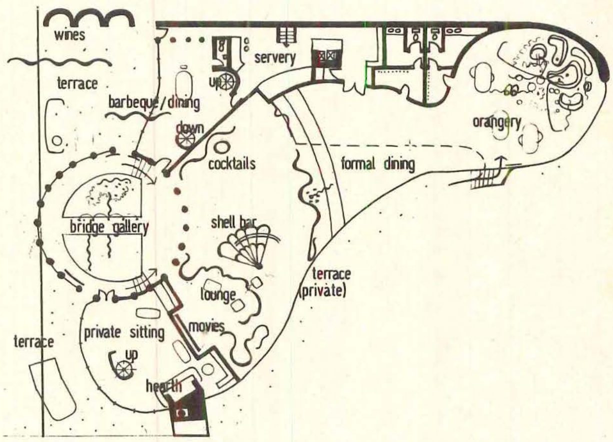
The first floor is housed within the body of the piano itself and includes, in addition to rooms for entertaining, guest suites—both heart-shaped and oval. They would lead out onto a keyboard terrace designed in black and white marble as a replica of a grand piano keyboard. In the nose end of the kitchen (complete with piano-shaped island unit and treble clef hobs) a housekeeper's apartment, sewing room, laundry, and food storage would be located. Elevators to the guest suites and the housekeeper's apartment would be concealed in the piano legs as would a service and garbage elevator. The second floor, at a level corresponding with the top surface of the piano body, would be completely open plan and would incorporate formal and informal dining areas, a leafy orangery, and terraces on the curved and keyboard sides.

Ms. Doveton, a free-lance designer and fan of Liberace's, [continued on page 26]

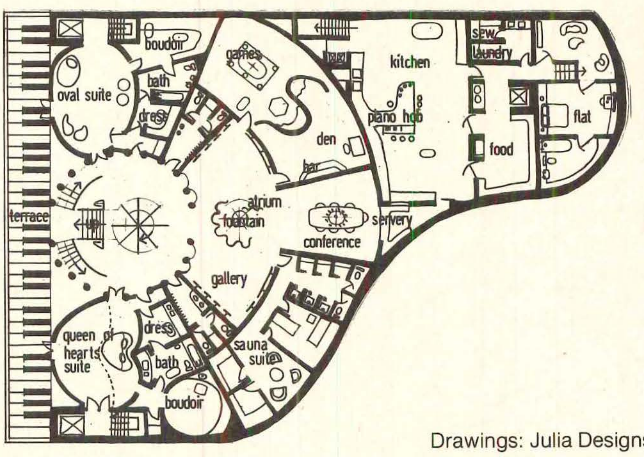




Deck three



Deck two



Deck one

Drawings: Julia Designs with The Last Museum

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Architect: Alfred N. Beadle, AIA. Project: Mountain Bell Plaza. Owner: The Third and Catalina Construction Partnership, a Joint Venture.

PPG: a Concern for the Future


PG
STRIES

News report continued from page 23

was working as an assistant in a small architectural office in Winchester, England, when she hit on the idea of a piano-house. Managing to gatecrash a press conference on the occasion of the publication of Liberace's autobiography, she presented the notion to the superstar, who, though taken aback, told Ms. Doveton to bring something for him to look at two days later. She quickly set about making a rough model glueing on finishing touches at each stop of the commuter rail on her way to the meeting. He liked what he saw; gave her an autographed copy of his book as payment and promised a fair hearing upon receipt of a full set of drawings. Liberace's decision on the future of the scheme remains to be made. [SCOOP/Idris Walters]

Save that energy

The Owens-Corning Fiberglas Corporation, Toledo, Ohio, will hold its third annual Energy Conservation Awards Program this year open to all registered architects and licensed engineers in the United States. The seven-man jury consists of H. Fred Campbell, Walter Costa, AIA, Sital Daryanani, Donald Greenberg, George Heery, AIA, Philip Meathe, FAIA, Richard Mullin, AIA, and Thomas Stokes. Entries must be submitted by Aug. 31, and the awards will be presented in New York on Nov. 8. Further information is available from the Owens-Corning Architectural Products Division, Fiberglas Tower, Toledo, Ohio 43659.

Suzanne Stephens. Photo: Dorothy Alexander

Senior editor named

Suzanne Stephens, formerly associate editor of *The Architectural Forum,* has joined *Progressive Architecture* as a senior editor responsible for feature articles on design and planning. She began her journalistic career at P/A in 1965 where she worked two years as an editorial assistant. In 1967 she joined the staff of Museum of Modern Art, Department of Architecture & Design as an editor/researcher, then returned to P/A in 1969 as associate editor in charge of news.

Ms. Stephens has been a contributing editor to *Design & Environment* and has written for *Print* magazine. Throughout the New York area she has lectured at design schools and universities. Currently she is a member of the executive and steering committees of the Architectural League of New York and the coordinating committee of the Alliance for Women in Architecture. She holds a bachelor's degree in housing and design from Cornell University and has done postgraduate work in architecture and urban design at Columbia University.

Calendar

Through Sept. 8. Exhibition on Liberty Harbor: a plan for a new community, at the New York Cultural Center.
[continued on page 30]

Bright idea

Corridor Washfountains take the horseplay out of washup.

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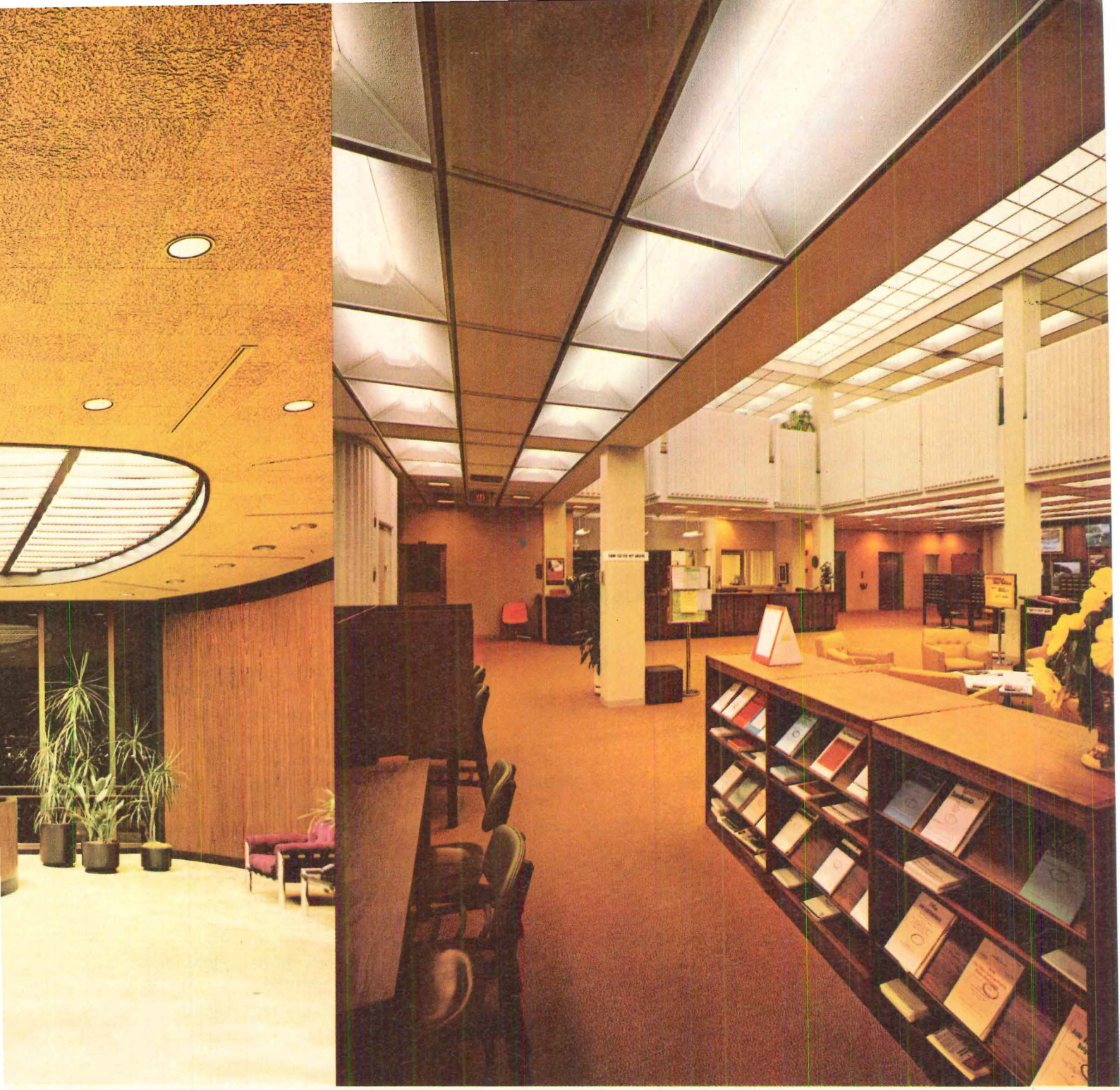

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News report continued from page 26

Through Sept. 15. Walter Gropius 1883–1969, photographic retrospective exhibition, American Institute of Architects Headquarters, Washington, D.C.
Aug. 18–24. Thirty-second World Congress of the International Federation for Housing and Planning, Vienna, Austria.
Aug. 31. Deadline for entries to P/A Awards Program.
Sept. 8–10. Sixth International Conference on Urban Transportation, Pittsburgh.
Sept. 8–14. First International Congress of Ecology, The Hague, The Netherlands.
Sept. 9–12. INFO 74, sponsored by the American Management Associations, the New York Coliseum, New York City.
Sept. 11–12. Second Federal Design Assembly, Arena Stage and Creeger Theater, S.W. Washington, D.C.
Sept. 13–16. "Back to the City," a program for revival of old communities in American cities, sponsored by the Brownstone Revival Committee of New York, Inc., at the Waldorf-Astoria, New York City.
Sept. 16. Entry fees due for AIA Honor Awards Program, Washington, D.C.
Sept. 17–18. Fifth annual meeting of the Southern section of the Air Pollution Control Association, Parliament House, Birmingham, Ala.
Sept. 17–18. Seminar on earthquake- and fire-resistant construction, sponsored by the American Concrete Institute, Washington, D.C.
Sept. 18–22. Convention of the National Association of Women in Construction, Fairmont Roosevelt Hotel, New Orleans.
Sept. 27. Conference on construction management sponsored by Washington University, St. Louis.
Sept. 30–Oct. 2. Inter-Noise 74, International Noise Control Engineering Conference, Shoreham-Americana Hotel, Washington, D.C.
Sept. 30–Oct. 3. International Conference of the Council of Educational Facility Planners, Atlanta, Ga.
Oct. 1. Deadline for abstracts for the U.S. National Conference on Earthquake Engineering, the University of Michigan, Ann Arbor, June 1975.

Personalities

Ira J. Bach of Urban Associates of Chicago, has been elected president of the Northeastern Illinois Planning Commission.
Thomas B. Moon, AIA of Danielian Moon Sampieri & Ilg, Newport Beach, has been elected secretary/treasurer of the University of Southern California Architectural Guild.
Calvin B. Dalton of Dalton, Dalton, Little, Newport has been elected president of the Cleveland Engineering Society.
Donald B. Austin, principal in charge of the Honolulu office of EDAW, Inc., has been appointed head of the Department of Landscape Architecture at Texas A&M University.
Larry Dean, FCSI has been elected president of The Construction Specifications Institute. Other elected officers of the Institute are **Walter R. Kaye, FCSI, Robert J. Morin, Philip J. Todisco, FCSI,** vice presidents; and **Wayne Brock, FCSI,** treasurer.
Cecil A. Alexander of Finch Alexander Barnes Rothschild & Paschal, Inc., Atlanta, has been named by the Georgia region of the National Conference of Christians and Jews as recipient of the 1974 Brotherhood Award.
Louis J. Pignataro, head of the Transportation Planning and Engineering Department at Polytechnic Institute of New York, has been named Engineer of the Year by the New York State Society of Professional Engineers.

Drawing: Frank Marciuliano

Star-rating Bay Area firms

Taking a Duncan Hines approach to rating San Francisco Bay area firms, the Organization of Architectural and Engineering Employees (OAE) recently published a job guide available at $1 to members and $2 to nonmembers. The brochure lists 68 firms from Anshen & Allen to Wurster Bernardi with Welton Becket, SOM and HOK in between.

Highest scores for office morale went to eight firms while nine received "poor"—the lowest rating. The survey, conducted by questionnaire sent to each firm and its employees, makes such observation as whether the office is anti-union, (Bechtel Corp., and Simpson Stratta), against hiring women (Botsai Overstreet), notorious for hiring and firing (Whisler-Patri), well organized (ROMA), and design-oreinted (Backen Arrigoni & Ross, and James Ream).

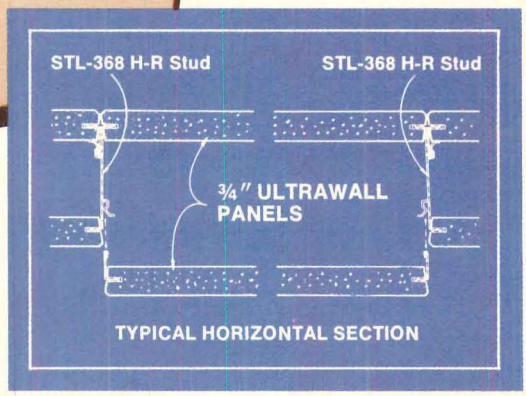
The guide goes into what percentage of work—residential, commercial, institutional—a firm handles and how much it relies on outside research and consultants. It shows that most firms operate on a 40-hour week although some work 38 hours and one, 36. The guide gives firm-by-firm details on a range of 10 fringe benefits including holidays, life insurance programs, and profit sharing.

Finally, the OAE rates each firm on a 0 to 4 basis. The four-star offices are—none. Firms with the three-star rating are McCue Boone Tomsick, and Jens Hansen. The 0-stars are Simpson Stratta & Associates, Willis & Associates, and Cometta & Cianfichi.

In rebuttal, a partner of Simpson Stratta said he was totally unaware of the survey. "I can't believe the employees here would be complaining." At Willis & Associates, the founding partner replied that to her knowledge only one employee answered the questionnaire, and he was "planted in this office to organize us." A partner at Cometta & Cianfichi said the only reason he could see why the firm got such a bad rating was that a former employee also was OAE president. "I fired him because he wouldn't follow directions."

Copies of the guide may be purchased from OAE, Local 2001, United Brotherhood of Carpenters and Joiners of America, AFL/CIO, 995 Market St., San Francisco, Calif. 94103. The brochure makes a great Christmas bonus.
[continued on page 32]

New ULTRAWALL® Partition System Stud Assembly gives access from either side without sacrificing security.



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UNITED STATES GYPSUM
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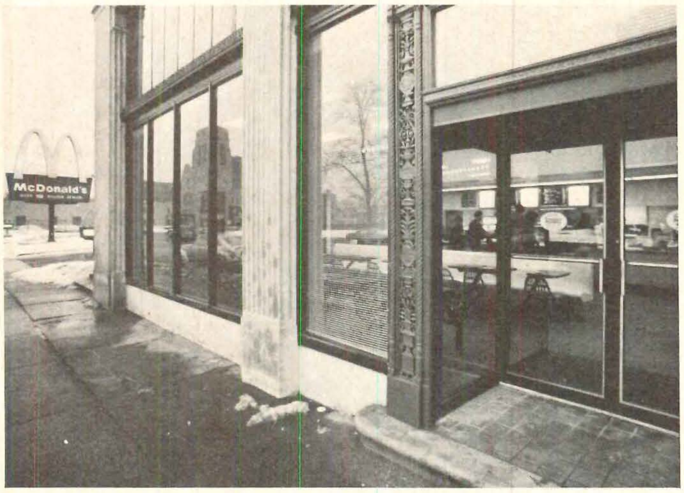
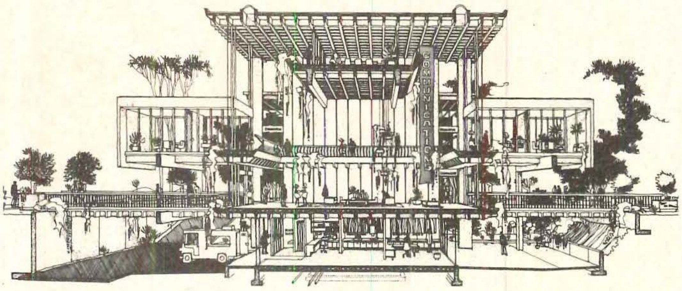
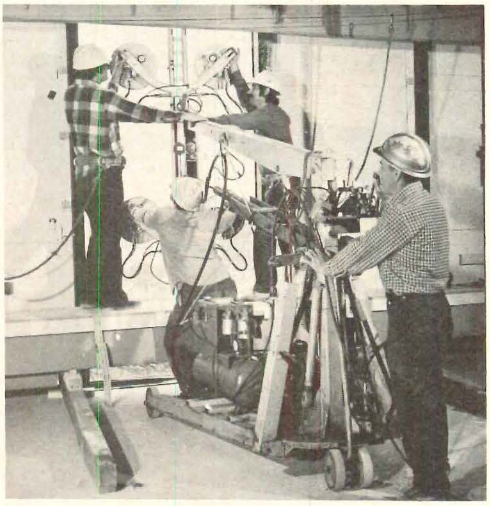
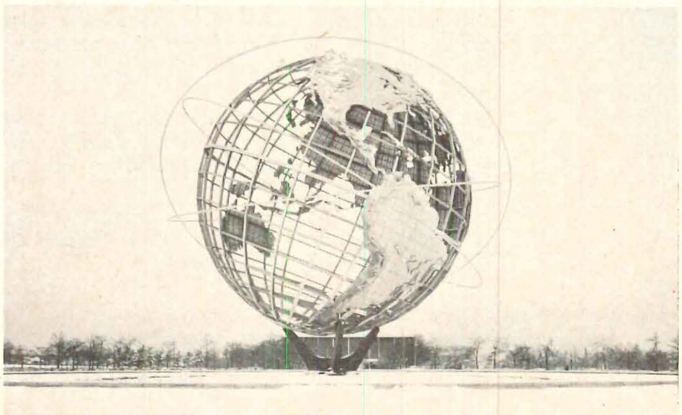
News report continued from page 30



Detroit's McDonald's. Photo: Bob Scott


Annenberg School of Communications


Reglazing the Hancock


World's largest globe

Burger royale

The late Albert Kahn's once-elegant Packard Motor Car Co. showroom in Detroit has been transformed after years of neglect into a McDonald's restaurant, the third largest, reportedly, in the world. The familiar yellow M takes its place beside the iron ornamentation of the building erected some 50 years ago. Inside, the establishment seats 260 who may park in the 99-car garage semi-enclosed in the former service area to the rear of the showroom. The restaurant also has what few other McDonald's can boast—a private dining room that seats 25 and is in great demand for the businessmen's Egg McMuffin sales breakfast or even a wedding reception. Two university professors and a businessman joined a McDonald's architect in turning this relic of the past into Americana present.

Communications in a sunken garden

Over the years, A. Quincy Jones, FAIA, & Associates of Los Angeles, has perfected a design which places entrances to buildings at the second level and creates a garden level below grade. Now in the Annenberg School of Communications for the University of Southern California, Los Angeles, the firm has used the scheme to make all parts of a complex and constantly changing school equally accessible from a tall exhibition lobby. Part of the surrounding moat will form a service dock for deliveries and for the school's mobile van, part will be an "intermission garden" for its main audiovisual lecture hall, and part just a quiet outlook for offices. A fully integrated structural-mechanical floor system will allow for free partition layouts on the upper floor and carry suspended mezzanines in 20-ft-high portions. Generous glass areas on the north and south sides, well shaded by projections, will be anchored at east and west by solid end walls. Set among varied buildings, Annenberg will have the look of an airy garden pavilion.

Progress report

All 10,344 windows in Boston's John Hancock Tower will be reglazed by late fall at a cost of about $6 million. A ½-in.-thick tempered glass for the reglazing was specified by the architects, I.M. Pei & Partners of New York, but the appearance of the building will not be changed by the new glass. The reflective glass is a high-strength monolithic type different from the original double glazed units. Each unit will weigh up to 400 lbs and will be the same dimension, 4'-6" × 11'-6", as the first windowpanes, which kept popping out. Interior work was not delayed while the problem was being studied. John Hancock initially advanced money for the manufacture and installation of the new glass, but the company has the right to seek recovery of damages.

Puerto Rican firm associated in new town plan

The San Juan firm, Basora & Rodriguez, engineers, architects, and planners, is working with William L. Pereira Associates of Los Angeles, Calif., in planning Vacia Talega, a new community east of San Juan (P/A June, 1974, p. 24).

Unisphere stands alone

Ten years ago New York's Flushing Meadows was ahum with activity as the World's Fair attracted millions. Today the fair grounds are empty, and the 120-ft diameter, 250-ton steel Unisphere is practically forgotten. Designers were engineers from United States Steel, which donated the globe.

[News continued on page 38]

Guess who just ordered sprinklers installed in all his new high rise buildings?

The GSA, the federal agency responsible for letting most government construction contracts, has just ordered that all new buildings 5 stories or more in height be equipped with automatic fire sprinklers. And Uncle Sam isn't the only one who's sold on automatic sprinklers as a way to insure life safety. To date, Connecticut, Maryland, Massachusetts, Ohio and scores of cities, towns and municipalities have passed tough new building codes banning new construction of unsprinklered high rise buildings.

The implications are clear: whether you're a building owner or developer, an architect or specifying engineer, you should be aware of this growing trend toward life safety. Facing the future *now* and learning all you can about sprinklering properly could save you money in the future when you come face to face with one of these tough new codes.

A question of ethics. Occupants of high rises have the right to expect protection from a fire which could leave them stranded hundreds of feet above the reach of fire department ladders and hoses. Many fire experts agree that a modern sprinkler system is the best way to insure that kind of safety.

Rental appeal. Many firms are insisting that their buildings be sprinkler protected for the safety of their employees. As this trend continues, non-sprinklered buildings will be at a decided rental disadvantage. In addition, sprinklers give building owners the maximum in usable rental space and provide more rental income.

Cost savings. Sprinklering your next high rise will make it safer and could save you money in many or all of the following ways: *Flame spread ratings of surface finishing materials can be increased. Fire ratings of walls, doors, roofs, floors, beams, trusses and columns can be reduced. The distance between fire exits can be increased, leading to fewer stairways. Larger non-compartmented areas are permissible, and fire barrier requirements can be eliminated. Smokeproof entrance closures to exit stairs can be eliminated if stairways are pressurized. The requirement for "areas of refuge" can be waived. Manual fire alarm systems may be eliminated. Fire hoses and cabinets can be eliminated. Riser piping is permitted to serve as combined sprinkler riser and fire department standpipe.*

Sprinklers cost, it's true. But sprinklers save money, too. The average high rise can be sprinklered for approximately $1 per square foot. Investigate the construction cost savings involved in your next high rise. The results may surprise you.

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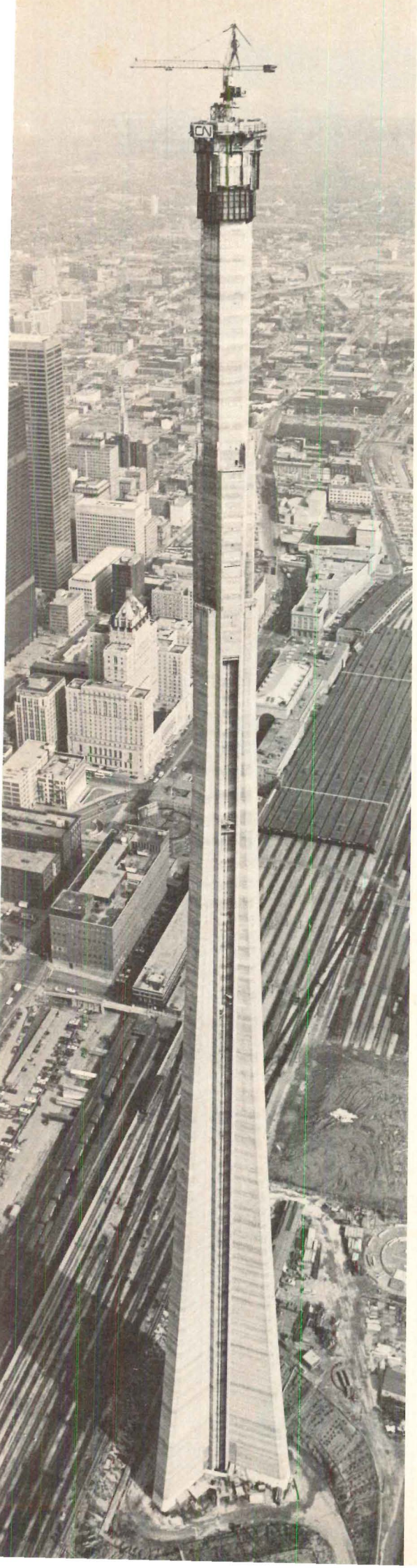
GRINNELL FIRE PROTECTION SYSTEMS COMPANY, INC.

Photo by the Bettmann Archive

Buildings on the way . . .



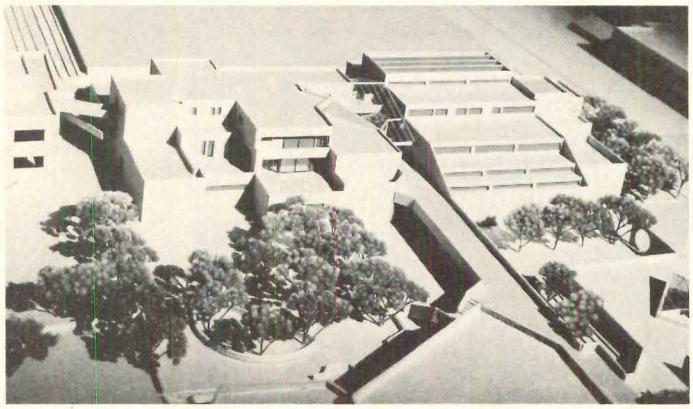
1

CN Tower (left), Royal Bank Plaza (above)

2

1 Toronto's skyline changed dramatically with the topping out of the 1800-ft Canadian National Tower, largest free-standing structure in the world (the Eiffel is 984 ft). CN Tower, opening in the spring with a 400-seat restaurant in the sky pod, is the first project in the massive Metro Centre 15-year development. Near Metro Centre, the $100 million Royal Bank Plaza is under construction and due for completion in 1976. Architects for Metro Centre, Group I, are John Andrews and Webb Zerafa Menkes Housden, both of Toronto; WZMH also designed Royal Bank Plaza.

2 Nestled between Goose Creek and the Potomac River near Leesburg, Va., 30 miles from downtown Washington, D.C., the new Xerox International Center for Training and Management Development has just completed its second month of classes. The Philadelphia firm, Vincent G. Kling & Partners, opted for the living/learning module in its design solution for the center. Each basic area, 4000 sq ft, may be divided into classrooms, laboratories, or varying combinations. Living sectors consist of suites for six individuals with a living room, three baths, and three double or six private bedrooms. Phase I has two low-profile, reinforced concrete clusters of living/learning centers connected by a pedestrian street. There is little vehicular traffic as most transportation is between the center and airport via limousine. The first stage has been partially occupied since March. Two more stages remain to be built.

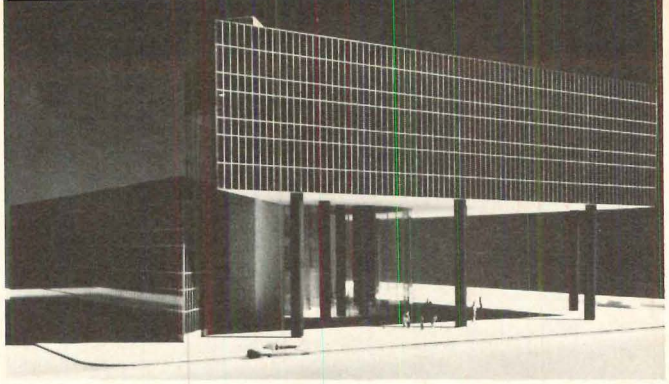


3

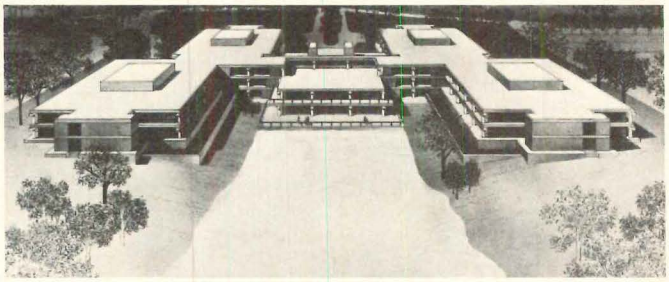
3 The new art building for the University of New Mexico, Albuquerque, is a layered design accommodating heavily service-oriented functions at the ground level and providing both indoor and outdoor class spaces on the stepped terraces. Architect Antoine Predock of Albuquerque oriented the building to allow winter sun to penetrate into the pedestrian path which connects the building at two levels with another structure. A three-story-high light well serves as the central circulation space. Construction will begin next year using precast warm tone concrete panels on a poured-in-place concrete frame.

4 General American Life Insurance Company, St. Louis, has selected architects Philip Johnson and John Burgee, New York, to design its new national headquarters in downtown St. Louis, and architect Gyo Obata of the St. Louis firm Hellmuth, Obata and Kassabaum to design its 330,000-sq-ft national service center on 100 acres in the suburbs. The Johnson/Burgee building is split-level consisting of two three-story triangular halves—one elevated on 45-ft columns—for a total height of 107 ft. A clear-glass cylinder will form the central core and contain glassed elevators. HOK's design is a two-story, sand-blasted concrete structure composed of four modules along a central spine. Additional modules may be added in the future.

5 Wilmington's 103-year-old vaudevillian-turned-motion-picture theater is being renovated into a home for opera and virtuoso concerts by the Grand Opera House of Wilmington which has engaged architects James R. Grieves Associates of Baltimore and Armstrong/Childs of New York for the work. Originally, the hall, which from the beginning also had commercial shops that will be retained at street level, was owned by the Masons, who still reserve the top floor for offices and ceremonial gatherings. The cast iron balustrade and front façade are being restored by consulting architect Steven Baird of Salt Lake City, and the parquet horseshoe plan will be reinstated with 1100 seats. Even the frescoed plaster ceiling which at first seemed permanently destroyed by additions of truss work now will be restored when funds permit. Renovation will be finished July 4, 1976 in time for Delaware's Bicentennial activities.



National headquarters (above). Photo: Howard Day
National service center (below)



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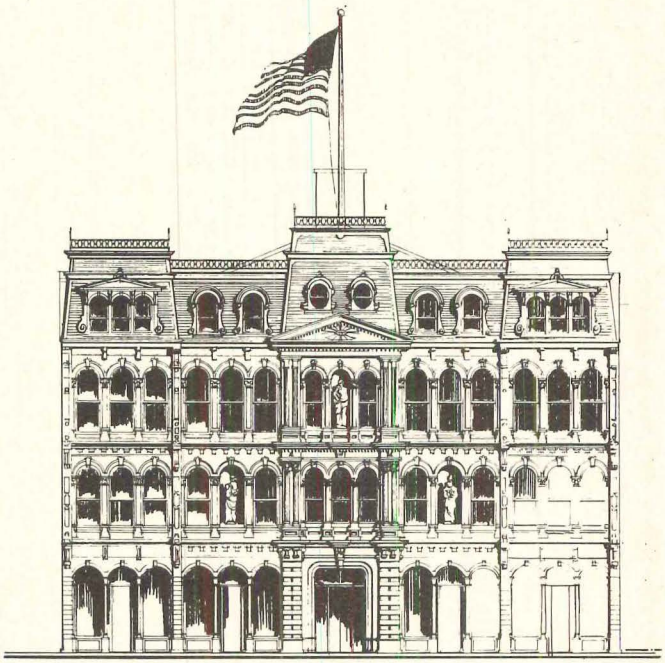

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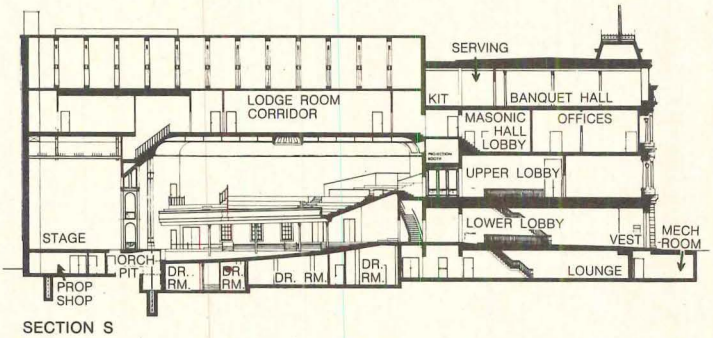

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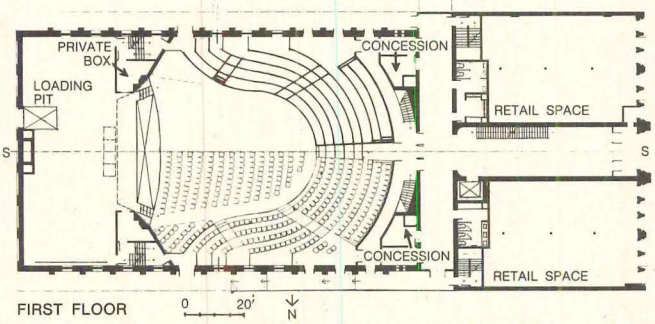

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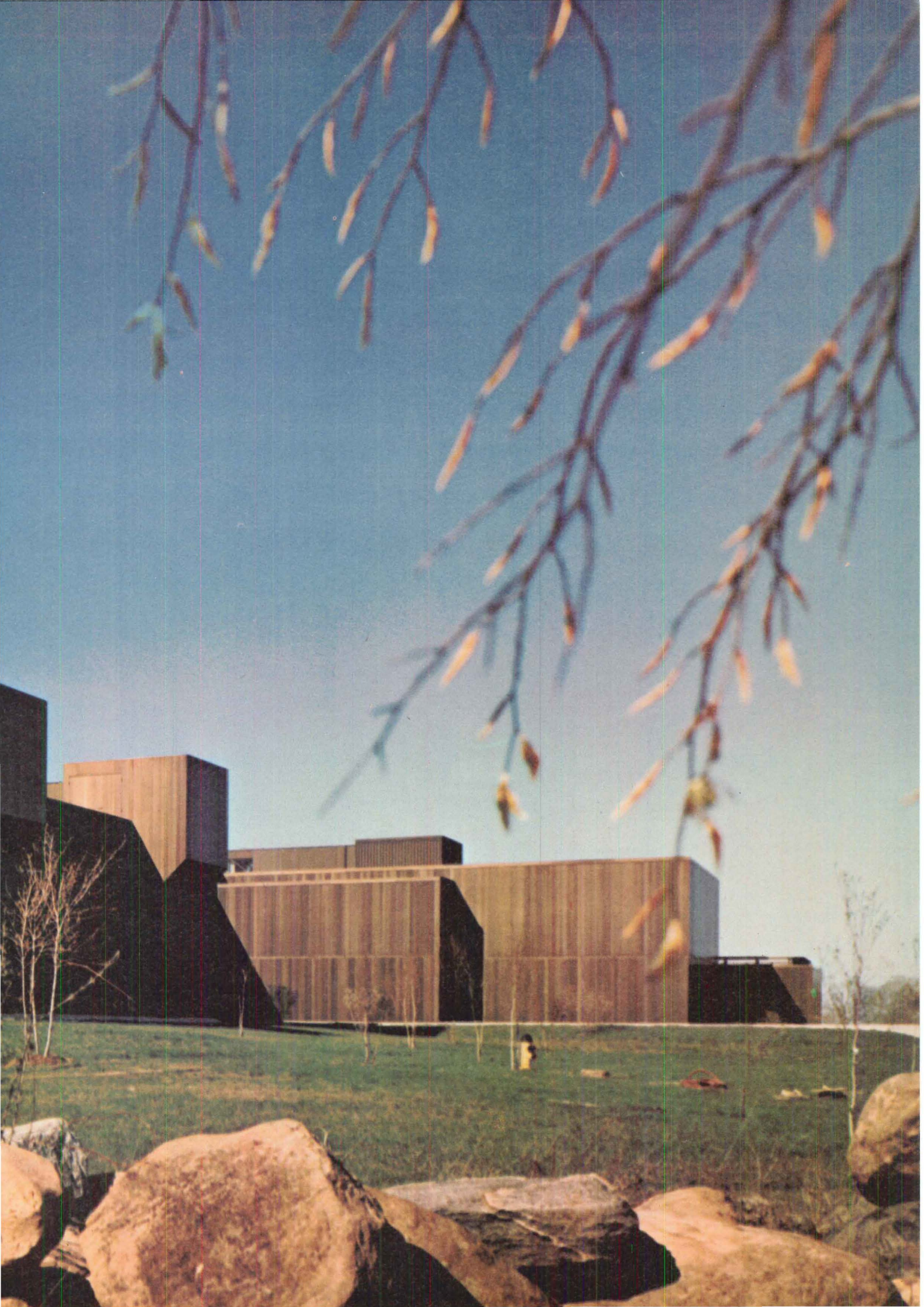
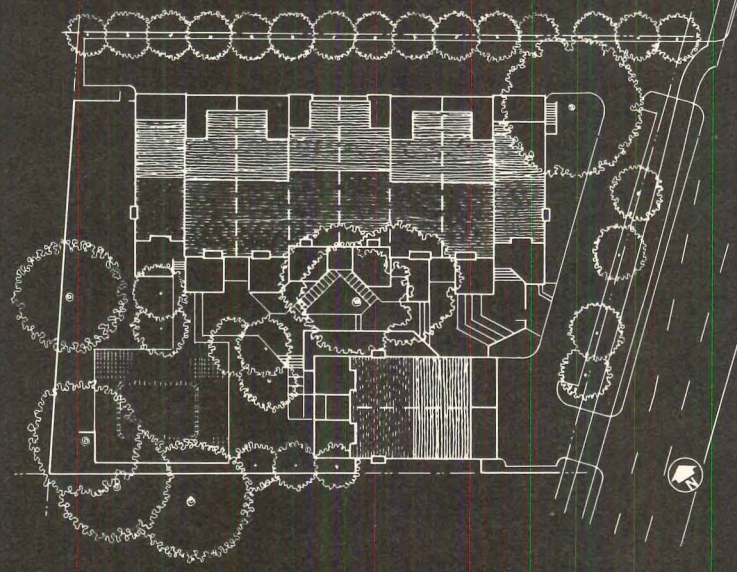
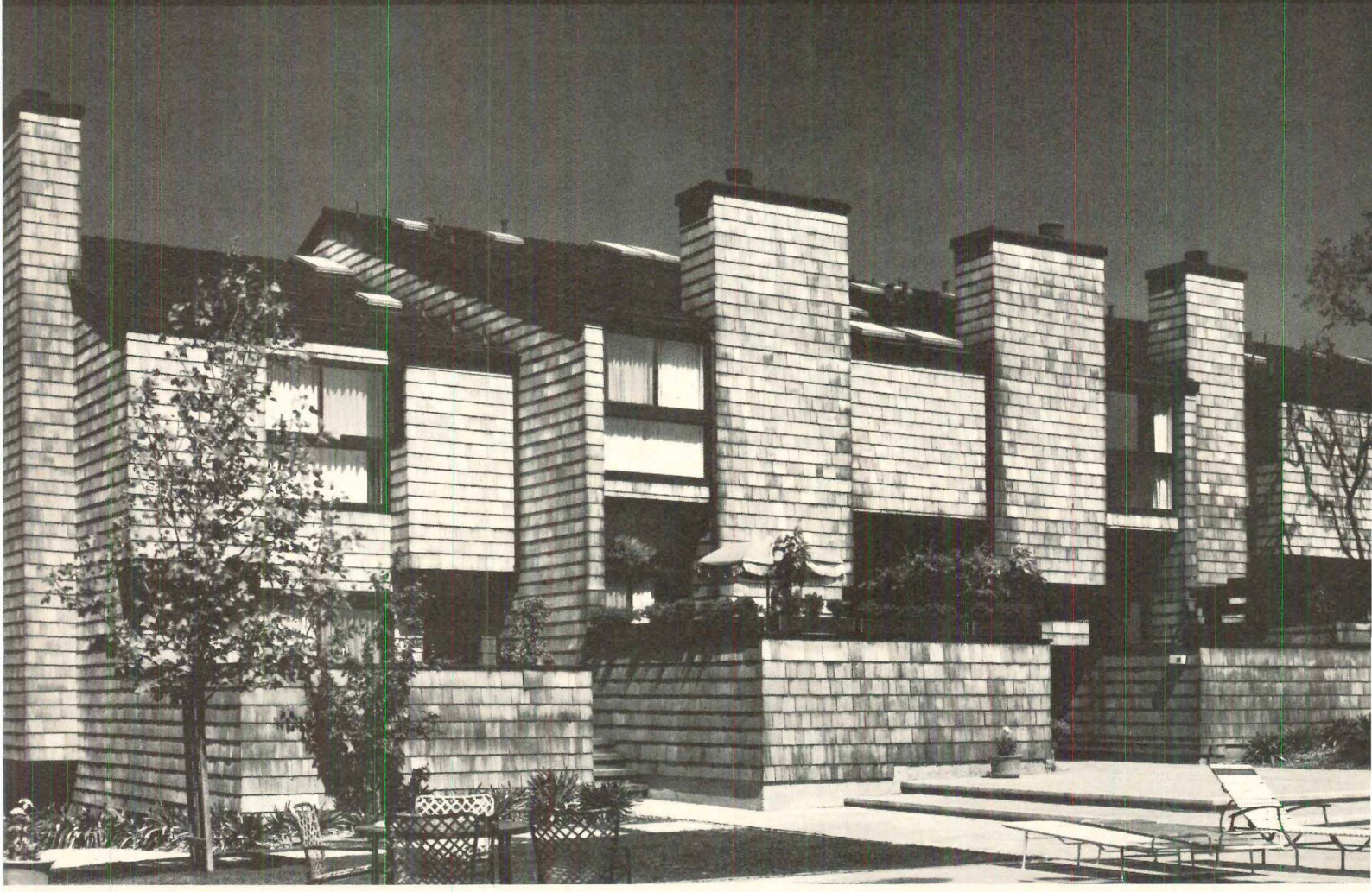




Red cedar addresses vest pocket condominiums.



White Oak Townhouses, Menlo Park, California. Frank L. Hope and Associates, Archit

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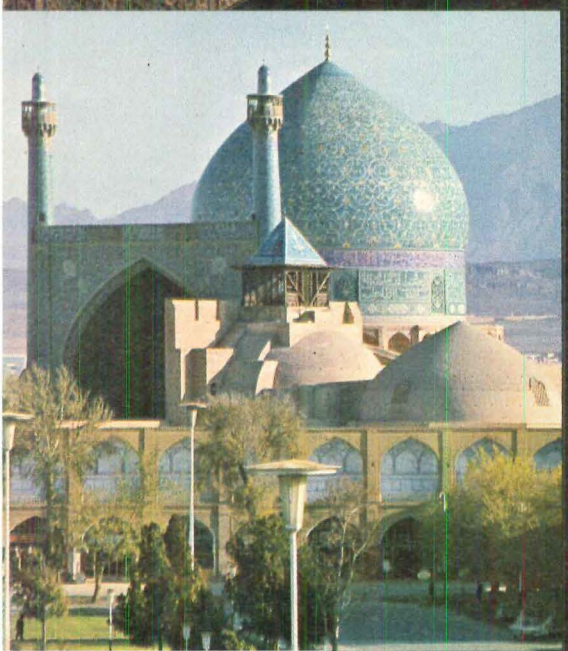

The Mosque of Sheik Luftullah, Isfahan, Iran. 1601-1618. By Muhammad Rida ibn Ustad for Shah 'Abbas I.

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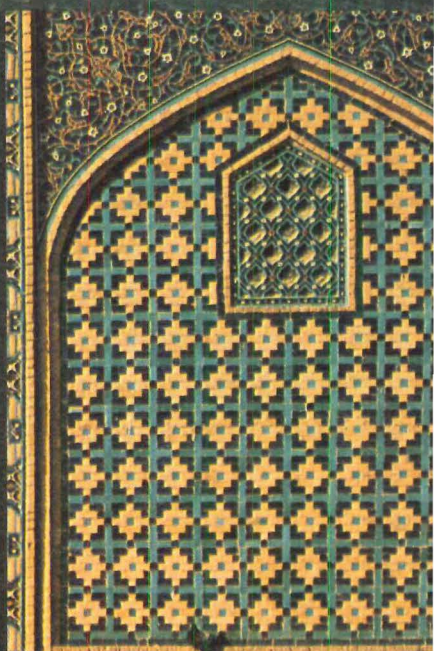


Learning to run lean

August 1974

"America will have to learn to run lean" was the message from former Interior Secretary Stewart Udall (now chairman of the environmental consulting firm, Overview) to his audience at last June's annual Conference on the Interior Environment (NEOCON) in Chicago. Back in May, at Harvard, architect Gerald McCue closed the conference on "The Professions and the Built Environment" by warning, "The most serious question we face . . . is the re-evaluation and adjustment of the expansion ethic." This summer's slim and timely book, *A Bucket of Oil,* by a team from the firm of CRS, makes the prediction, "The energy crisis—together with the conservation movement—could have much more impact on building design than the great 'form-givers' of the last three decades—Frank Lloyd Wright, Le Corbusier, Mies van der Rohe, and Louis Kahn."

What all of them are saying, along with thousands of others, is that our economy and our construction patterns are not going to return to "normal" after the current energy "crisis." To begin with, the "normal" that most of us would judge by is actually the unparalleled construction boom of the 1960s, when building for an ever-expanding private sector—encouraged by tax incentives, highway construction, and urban renewal programs—was augmented by direct government support for housing, schools, and hospitals. Now the boom-that-lasted-so-long-it-seemed-normal has been suppressed by a confluence of reversible factors—high interest rates, denial of government subsidies—with irreversible increases in the cost of energy and materials. Our economic health now depends on conserving these resources—not just the resources consumed in construction and building operation, but those to be retrieved from existing structures and those to be saved by leaving raw land undeveloped.

Some of the work published in this issue represents the kind of architectural wisdom that the situation seems to demand. Our survey of the Seattle area (pages 46-63) indicates a healthy response to austerity; the early and prolonged economic slowdown in that corner of the nation seems to have led to a local consensus on conservation and preservation. The "temporary" offices for Cummins in Indiana (pages 78-83) show how make-shift accommodations can be given long-term value.

Building activity in coming years will also be affected by a powerful set of forces involving not resources, but *demand.* What with plummeting birth rates and intensifying local opposition to development, the need for new facilities in general will level off (but at a high level, nevertheless, just as population will continue to grow substantially). In the area of housing, of course, a staggering pent-up need remains with us; in areas such as health and education, where longstanding shortages have recently been alleviated, demand for space is already dropping. Problems raised by declining school enrollments are examined in a new publication called "Fewer Pupils/Surplus Space" just issued by the Educational Facilities Laboratories (which demonstrates, incidentally, the remarkable adaptability of EFL).

And how will the no-growth or slow-growth institution behave as an architectural client? An incidental remark by Udall at NEOCON set me to wondering. He observed that school systems no longer preoccupied with expansion could now concentrate on improving quality. But will they? Innovative thinking—whether in schools, government offices, or private enterprise—seems to come with growth. New demands bring forth new organizations with fresh personnel; without them, patterns may become fixed, entrenched personnel too cautious. In a no-growth or slow-growth situation, it will be up to the architect to prove that the unorthodox solution just may be the truly conservative one.

John Morris Dixon

The great Northwest revival

Reclaiming run-down buildings, vernacular forms and 19th-Century building techniques has begun to rejuvenate Northwest regional architecture.

Regionalism is hardly new to Pacific Northwest architecture. Even when the Modern Movement came to the Northwest in the late 1930s and 1940s, the well-publicized work of John Yeon, Pietro Belluschi, Paul Hayden Kirk, and Paul Thiry, articulated a wood-frame, post-and-beam style that treated the indigenous material sympathetically. While these architects employed the glass expanses characteristic of modern architecture, their use made sense in relation to the mild climate and extraordinary natural settings. And as in the San Francisco area, modern architecture reflected an awareness of anonymous structures—barns, lumber mills, fish canneries—long before the value of preserving those buildings had entered the public consciousness.

Even today this kind of regional consciousness has expanded. Recycling old buildings, old materials, and old building techniques informs Northwest regional architecture with a special quality in most of its recent examples to date. Furthermore, preservation has become well entrenched: battles with old downtown commercial establishments have abated, while derelict buildings take a new lease on life.

Much of the current renovation of deteriorating old buildings exhibits a design approach prevalent generally in the West. It's a kind of preservation vernacular that loves weather-worn materials. It delights in using the shards of old buildings slightly out of context—such as large framing members for railings. And it combines these qualities with an acceptance of the 19th-Century commercial style as an important part of the region's true architectural heritage.

Formerly the image of the Old West's architectural heritage resided solely in the weatherbeaten wood hulks hovering over grassy plains and silhouetted against open skies. Now the image has shifted to include the urban counterpart, the decaying commercial buildings of simple masonry. These buildings, found clustered in rundown parts of cities and towns like new-style ghost towns, typically harbor the indigent and marginally employed (including architects).

Jackson Square in San Francisco was perhaps the first area like this to be renovated, in the early 60s. Interestingly enough, a Northwest architect, John Yeon, was one of its prime movers. The relatively small group of buildings, which survived the 1906 earthquake and fire, was remodeled for offices and wholesale decorating firms. And if Jackson Square was a succès d'estime, Ghirardelli Square by Wurster, Bernardi & Emmons and the Cannery by Joseph Esherick provided the real models for the "preservation that pays" movement.

Seattle's 19th-Century commercial district—much larger than San Francisco's—resulted from a devastating fire of 1889. Whereas the folly of masonry construction in San Francisco was revealed by the quake, the Seattle fire created a mandate for it. Such tremendous pride infused the rebuilding of the city that within a year new buildings had nearly replaced the old. Consequently Seattle offers a unique continuity of architectural style and scale.

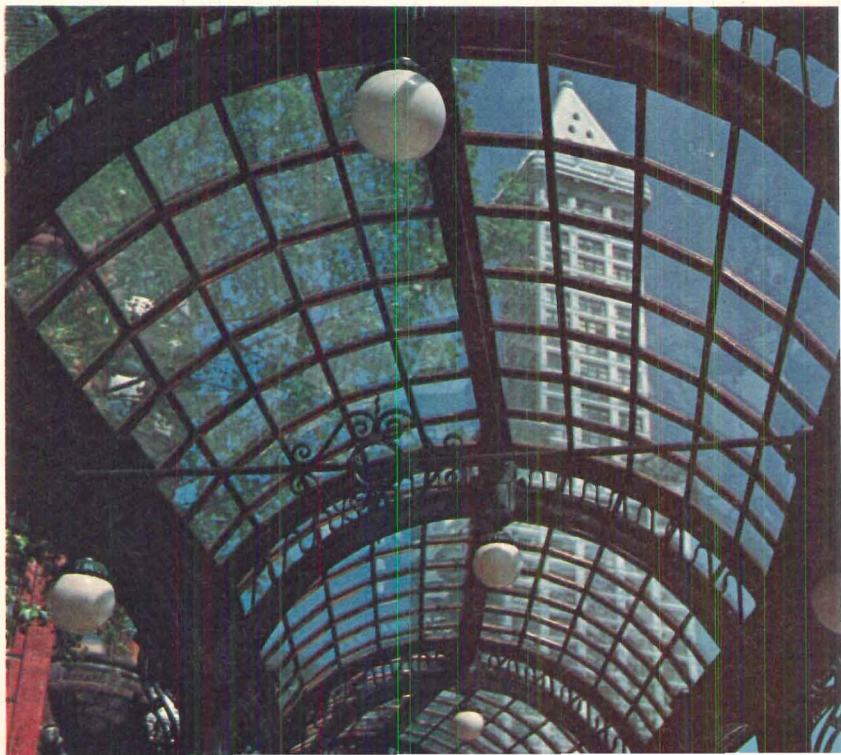
Fate subsequently dealt with the area in the same callous way it did with most American city districts when business moved uptown. Seattle's Skid Road, originally named for the logs, not people, skidding downhill, soon projected the urban image of hopeless decline. Thus the establishment of the Pioneer Square Historic District in the 60s (P/A Nov. 1972, p. 76) is a significant milestone in the long effort to reclaim and revitalize America's central city districts.

A 15-year battle also took place on another front, the Pike Place Market (P/A Nov. 1972, p. 74) located about 10 blocks north of Pioneer Square. It seems too long a campaign in view of the fact that both areas were highly regarded by local citizens and visitors alike. But not only was a series of legal and economic moves needed to have physical results, but it was also necessary to raise the public consciousness to a level of active pride in the past.

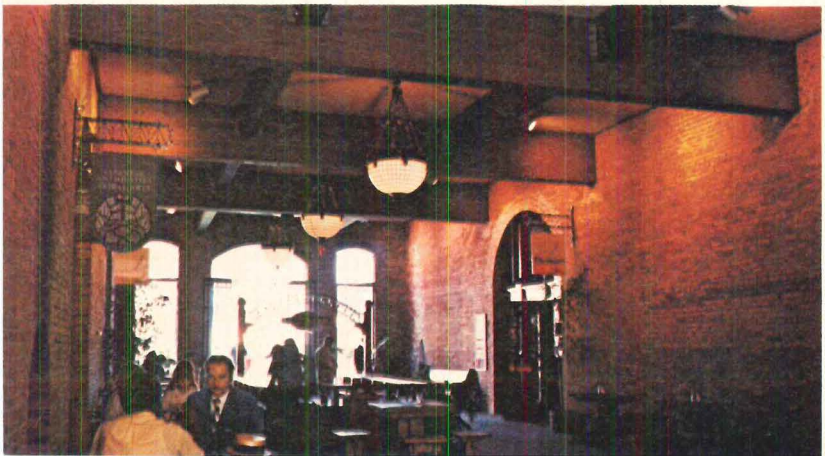
This change of attitude, which now appears to have become a regional philosophy, can be attributed greatly to the efforts of Victor Steinbrueck, the true urban saint of Seattle. Through his teaching, drawing, writing, and organizing, Steinbrueck has brought about a thoughtful approach to urban design issues that has saved Seattle from the degree of inappropriate change common to other American cities.

Many of Seattle's citizens rallied to save Pioneer Square. Prominent among the architects was Ralph Anderson who has remodeled several and owned two of the district's buildings. After redoing the Metropole Building in 1968, Anderson

Seattle's Pioneer Building in Pioneer Square (above) is representative of the burgeoning interest in preserving 19th-Century commercial structures. Architect Ralph Anderson is renovating the 1889 building for offices and shops for November occupancy. Inside the building, two six-story-high atria topped by skylights and girdled by balconies and stairs are still being restored (not shown). Steel beams had to be installed to span these open spaces tying the masonry walls into the floors in case of earthquake. Outside the building, an iron and glass pergola in the square (bottom photos), long a stomping ground for vagrants, has also been restored to previous elegance. Other buildings in the 38-acre historic district are also in the process of being renovated.
Photos: Art Hupy.



Another one of Ralph Anderson's downtown Seattle projects executed in 1972–73 is the remodeling of the Grand Central Building on Occidental Park (above). The 1890 building's various new uses will include shops, restaurants, and offices. The building's exterior has been cleaned up, signs and storefronts removed (below left) to return the building to its original eminence. New wrought iron doors mark the entrance to the arcade (below right), a pass-through that did not exist before. Arches were cut into the walls of the arcade (bottom) as well as the exterior, with reinforcing inserted where structurally necessary. Outdoor pushcarts and cafes further revive turn-of-the-century ambience. The creation of a sense of place signals the region's awareness of its architectural heritage. Photos: Art Hupy.



bought into the Union Trust Building where, this year, he completed the remodeling of the Timberlake Restaurant in the basement. A major remodeling job was the Grand Central Building in 1972–73 (photos, left). The building houses shops and restaurants on the first floor and offices on the upper three. Anderson's work shows a proper respect for the buildings themselves as well as a mastery of restoration design techniques.

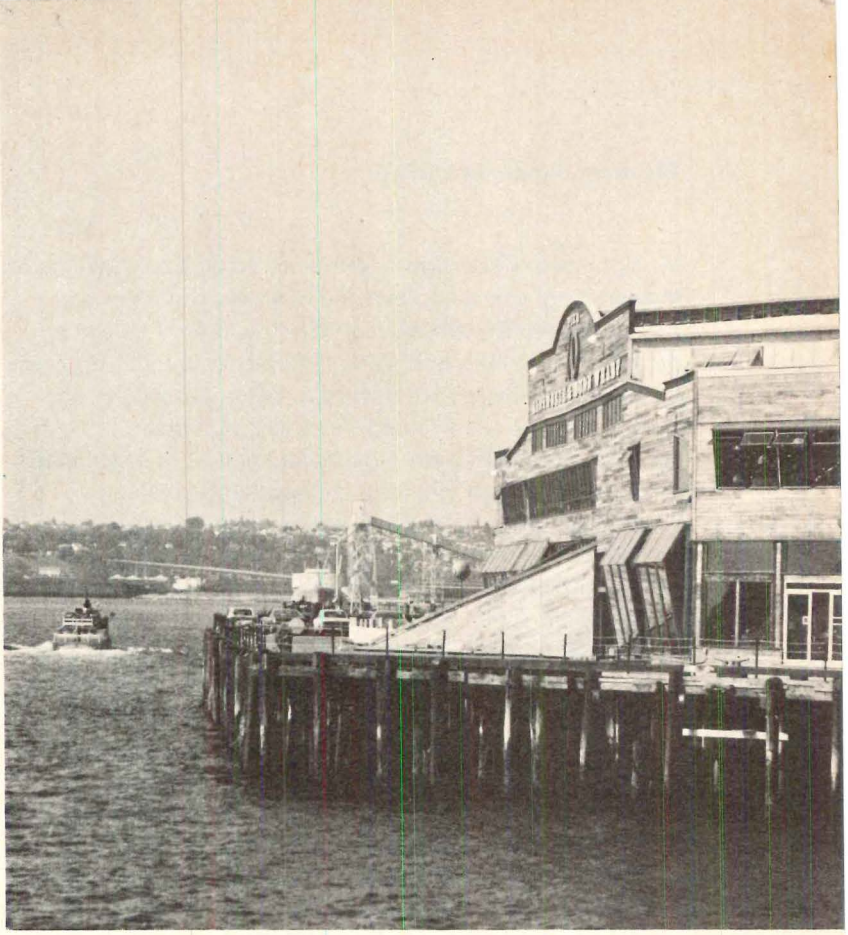
This year Anderson's office completed plans for the renovation of the Pioneer Building, the district's principal monument (photos, p. 47). For some time, one of Seattle's most famous restaurants, the Brasserie Pittsbourg, has occupied the basement where it manages to capture both the district's Skid Road ambience and a bit of Paris' Left Bank. Although the upper stories of the building have been sadly vacant, by November the entire building will be transformed into an office and a shopping center. The remodeling was confined to bracing the structure where necessary, and refacing the interior and its two dramatic skylit courts.

The Pike Place Market, more a cultural than an architectural monument, is Seattle's other great preservation achievement. As Steinbrueck explains, Pike Place poses subtle and complex problems. Few people can be easily convinced that the soul of a (literally) grassroots institution like a farmer's market is fragile. Steinbrueck and his group (which included architects Fred Bassetti and Ibsen Nelson) argued that to alter the market in any way would kill its spirit. The market would not be improved by new, well-designed facilities; it would simply become something else. Their policy finally prevailed. Now the problem of implementing it, which means renewing the battered structure that rambles in a series of rabbit warrens along a bluff above the water, becomes clear. The problem is one of urban ecology, of how an indigenous well-worn element can continue to enrich the life of the city, if not first priced out of existence.

Pier 70, to the north of the market along the waterfront has been remodeled by Barnett Schorr as a center for specialty shops and restaurants. For most of its 70-odd years, Pier 70 served as a general dockside warehouse. Owned by the second generation family members of the original builders, the building has undergone a four-year remodeling process to attract customers and defray rising maintenance costs and taxes to the owners.

Although the architects and investors studied San Francisco's Ghirardelli Square and the Cannery, Pier 70 has none of that kind of high-style international design shops. It has no such tenants. Instead the architect, Barnett Schorr, who was involved with the tenant selection considers that first-time counter-culture entrepreneurs should be provided with a place to make good. The lure of the place, he feels derives from these tenants and will compensate for any problems with inexperience.

The utilitarian form of Pier 70 has been little affected by the remodeling. The exterior was sand-blasted and the doors and windows painted with an oil stain in primary colors. Now that they are appropriately faded, the whole effect suits everyone's image of the well-weathered waterfront structure. Slanted glass bays at the western end of the building give a 270-degree view of the mountains and the sound. A tavern and res-



Down on the docks of Seattle's waterfront sits Pier 70, built about 70 years ago as a dockside warehouse. For the last four years the warehouse has been undergoing an internal transformation into a shopping and restaurant attraction (above). Remodeling by the architectural firm of Barnett Schorr Company has been limited on the exterior to sand-blasting and painting doors and wood frames (below). At the western elevation (right) slanted glass bays provided an expansive view for the restaurant and tavern within.
Photo: Pat Gordon (right), Dennis Wilson (above and below).

taurant occupy both floors, with a mezzanine overlooking the lower floor at one end. This kind of shoe-horning of one space into another is typical of Schorr's interior design approach. He left the north side of the pier as a relatively open market space. Shops are divided by glass and wood partitions. Since spaces interlock vertically, visitors on the ground floor can catch glimpses of parts and pieces of other shops on the second floor in a form of visual strip-tease.

Pier 70 gives an overall impression of sophisticated but natural design, as sensible as it is sensitive. Despite the extensive recent alterations, it satisfies the yearnings for continuity with the past.

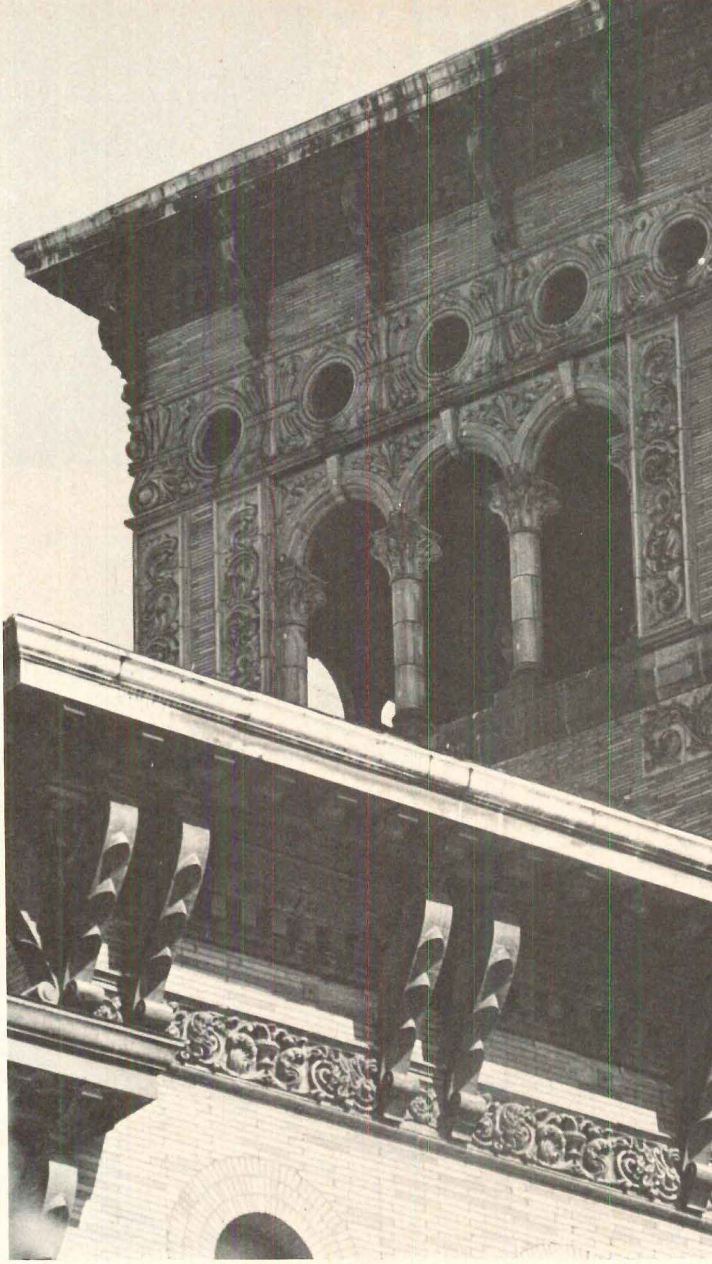
Another major remodeling and restoration project by the Barnett Schorr Company is taking place south of Seattle, in Tacoma. The Old Tacoma City Hall, a handsome, Sullivanesque building, that is now a national historic landmark, will not only be preserved, but revitalized by mixed uses. Designed by the San Francisco firm of Heatherton & Atkinson in 1893, the building appears to have come from Chicago via southern California. But its elevations in ochre-colored Roman brick with rich, neoclassic detail have a freedom from orthodoxy that keep it from being a typical example of any one school.

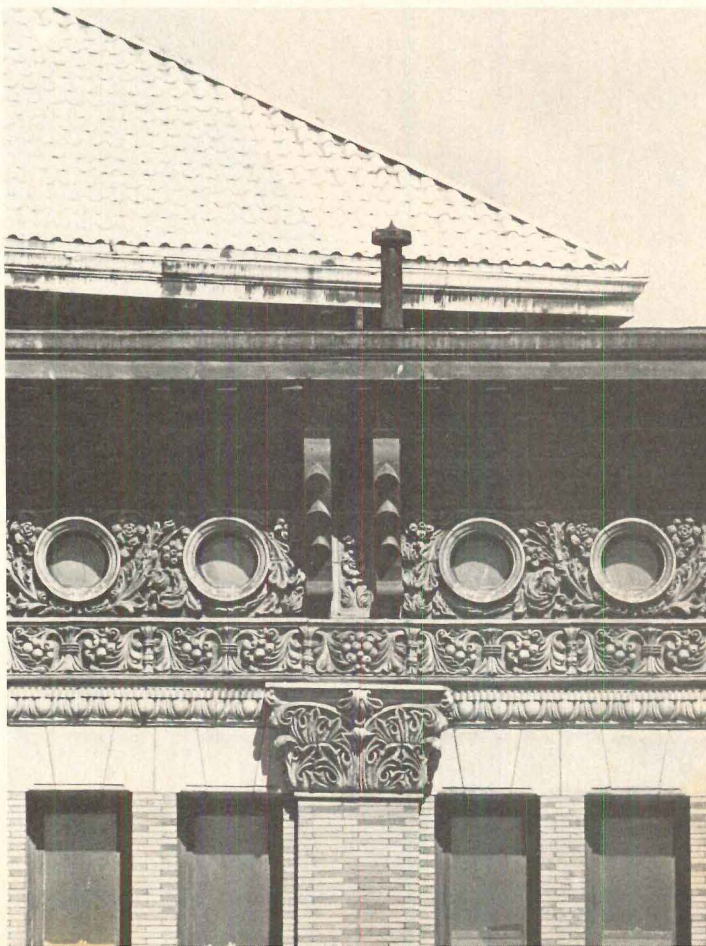
The design concept for the remodeling features a shopping mall weaving through a series of existing brick arches and open to mezzanine spaces above. The five floors of the building (64,000 sq ft) will have a tenant mix similar to that of Pier 70. In addition, a museum will occupy the clock tower. Because of its position on a hillside, the building has two ground floors: a tavern on the lower one with a special dining room where there was once a jail; and an open market on the second floor. Besides the two main floors of specialty shops and the fifth floor which contains a restaurant, the roof will feature a combination greenhouse, garden, and creperie. Since this project is a first of its kind for Tacoma, its financial success will be critical in spurring on such efforts downtown.

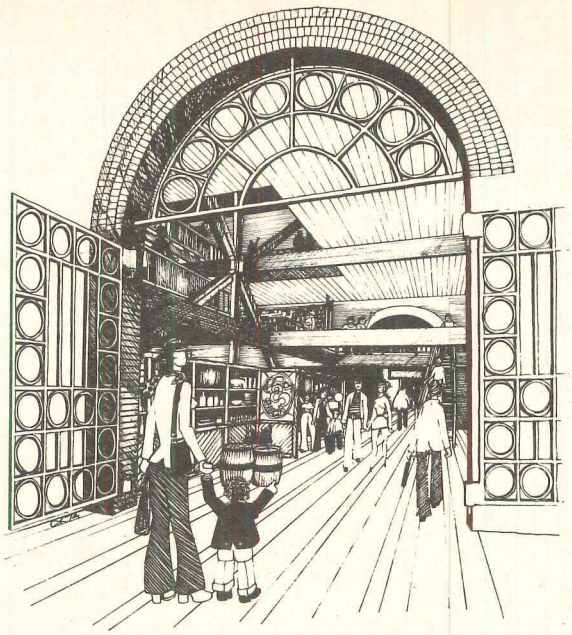
Ninety-two miles north of Seattle, the city of Bellingham sprawls along the shores of Bellingham Bay. Modern manufacturing and industrial concerns have superseded the logging, mining, and salmon industries that first caused the place to boom. A last, proud remnant of those days, the Bellingham City Hall of 1892 by A. Lee crowns the bluff—a sawmill-days acropolis—overlooking the bay. When the city vacated the building in 1940, the Bellingham Public Museum Society acquired it, but with no real collection and few members. In 1962 a fire destroyed the central tower and one cupola. The whole operation might have been canceled had it not been for the museum board, a strong grassroots support from the community, and the endeavors of architect George Bartholick.

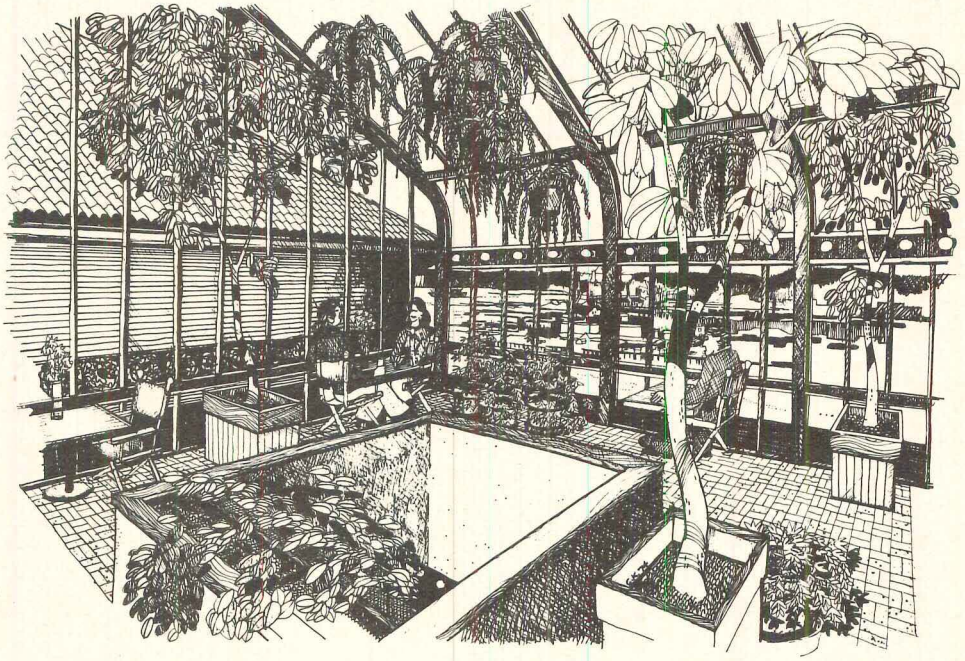
Bartholick, appointed architect for the restoration in 1963, has insisted that the restoration be faithful to the monument. As a regional museum, the building was the kind of artifact that deserved more than a stylish interpretation of the past.

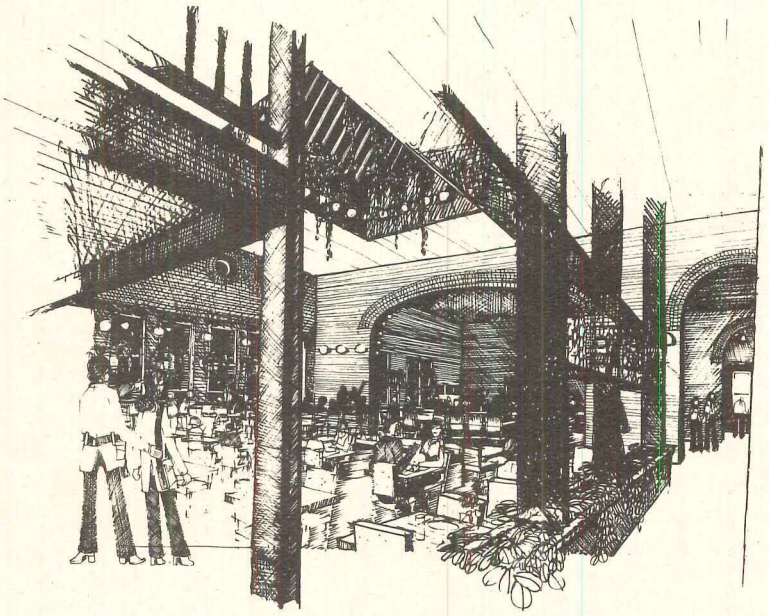
The five phases of restoration, beginning in 1965 and ending in 1974, were funded by city and county funds, state and federal matching funds, individuals, foundation grants, auctions, pennies from school children, bequests, etc. The total exceeded $500,000, with $96,000 for the bell tower. Today the







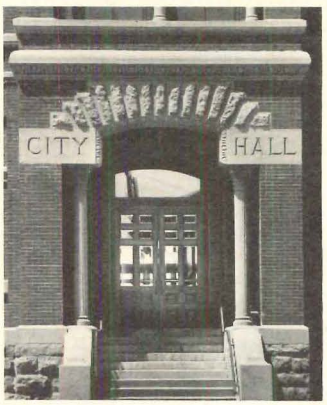


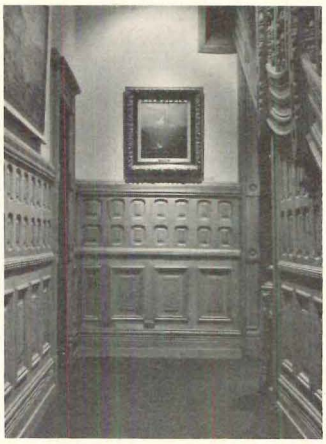


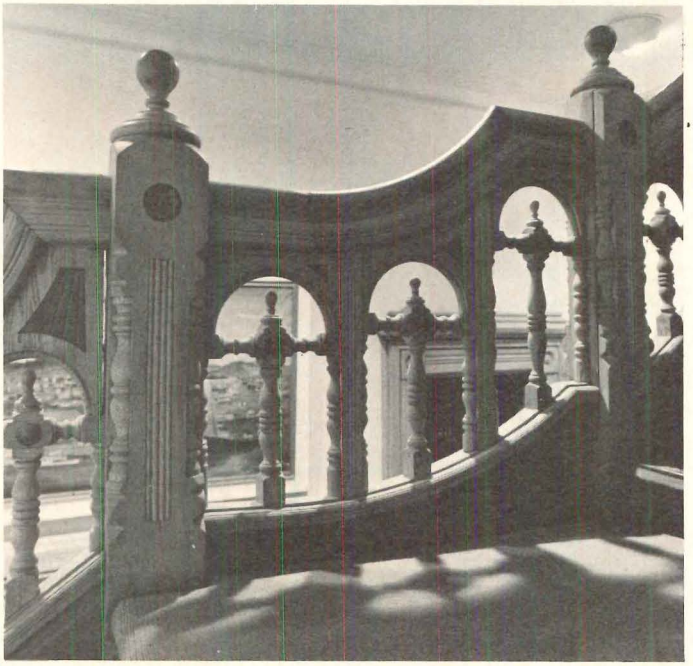
Built of Roman brick and laden with neoclassic detail (opposite) the Tacoma City Hall was designed in 1893 by the San Francisco firm of Heatherton & Atkinson. Now the five-story building is being converted by the Barnett Schorr Company of Seattle to contain shopping facilities and restaurants, with a museum in the tower. Renderings show how the architects altered it for forthcoming occupancy. While the exterior is to be cleaned, the interior will be fitted with new utilities, elevators, and partitioning for restaurants and about 40 shops. Drawings show the shopping mall on second floor (top right), a greenhouse cafe on the roof (middle), and below that a two-story-high restaurant with mezzanine and skylights. Photos: Pat Gordon; drawings: Chad Kirk.


1892


EXIT
EXIT
EXIT







The great Northwest revival

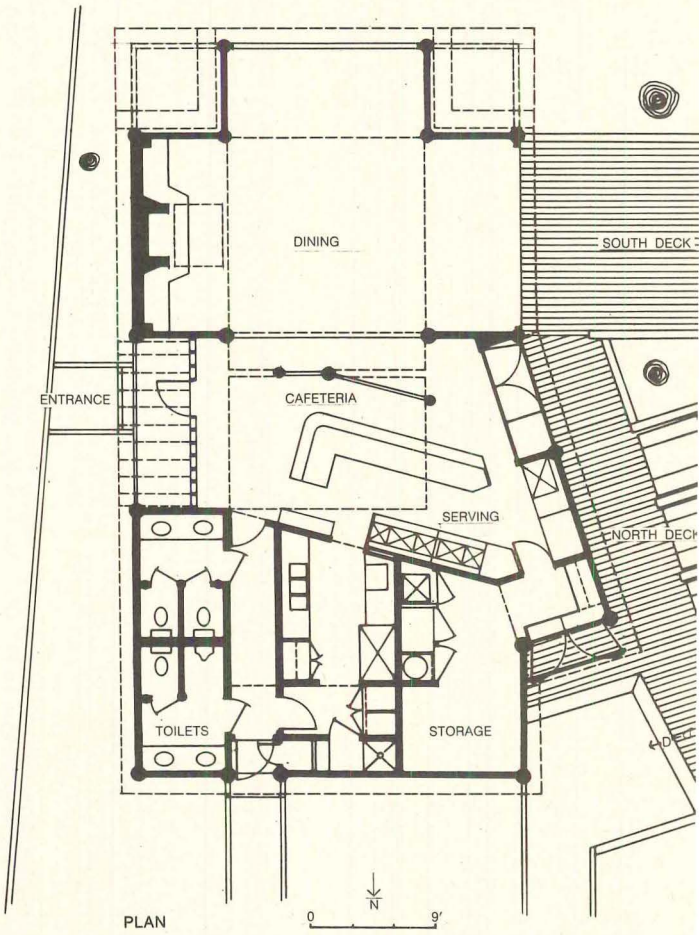
16,000-sq-ft museum offers three floors for the museum collections, a 250-seat lecture hall in the Rotunda Room, and of course the most expensive, least useful but obviously symbolic, 55-ft-high bell tower. The museum and its collection extend a significant gesture to perpetuating the "living past." But the reconstruction of the metal-sheathed, wooden tower in particular affirms the building's right to immortality.

As for contemporary architecture in the Northwest, it naturally reflects the state of art everywhere. The Modern Movement has worked its way through its original vernacular sources. The stripped world of the International Style, based as it was on plain buildings has largely run its course. It is no longer fashionable. More important, it is no longer economical. An architecture of beautiful woods generously used in broad planar elements and joined by an admirable economy of means has become expensive to the point of extinction. Urbanization, inflation, and resource shortages have coupled with new architectural tastes to radically modify the regional tradition of low-slung horizontal structures, smoothly and simply enclosed, rambling over an unlimited forest landscape.

The forms associated with the Northwest have changed to more vertical shapes—boxes with extruded interior spaces and add-on pouches. While these recent architectural examples make better use of the land, they depend more on complexity of detail for formal interest. The new mutation relies just as much on vernacular building, as the earlier modern Northwest style, but emphasizes different aspects of it. For instance, more in use complicated joinery, because it is at once visually richer and less expensive than Early Modern sleekness, derives clearly from traditional systems of truss work and piling construction. And brick is making a comeback. There is even a brick company near Seattle that will stamp and mould brick to architects' specifications in much the same manner that was routine in commercial buildings nearly 100 years ago. All in all, this fancy carpentry, patterned brick, leaded glass, decorated fixtures, and other such features, contribute to the new complexity of detail linking this latest work compellingly to its 19th-Century origins. As the new buildings on the following pages attest, an architecture responsive to current regional conditions, with design elements and techniques reclaimed from the past, can maintain its own kind of inventiveness and vitality. [Sally Woodbridge]

Designed by architect A. Lee, the city hall for the town of Bellingham (opposite) was built in 1892. Now, known as the Whatcom Museum of History and Art, the building has been undergoing a nine-year restoration by architect George Bartholick of Seattle. The tower, after a fire, had to be rebuilt to meet the code requirements for the structure and accommodate a hydraulic elevator. The new roofing for the museum was specially manufactured terne plate steel made according to techniques prevalent in the Victorian era. (Other than the tower, most of the original brick bearing wall and arch construction with wood frame and timber trussed roofing remains.) The museum's main stairwell, the principal dramatic feature, has been refurbished, along with the paneled wainscoting of the hallway (photos left middle). Conference rooms (left bottom) and gallery in the rotunda space show varying degrees of contemporary treatment (opposite, bottom).
Photos: Art Hupy.

Entrance (above), from street side; (below), interior of snack bar.



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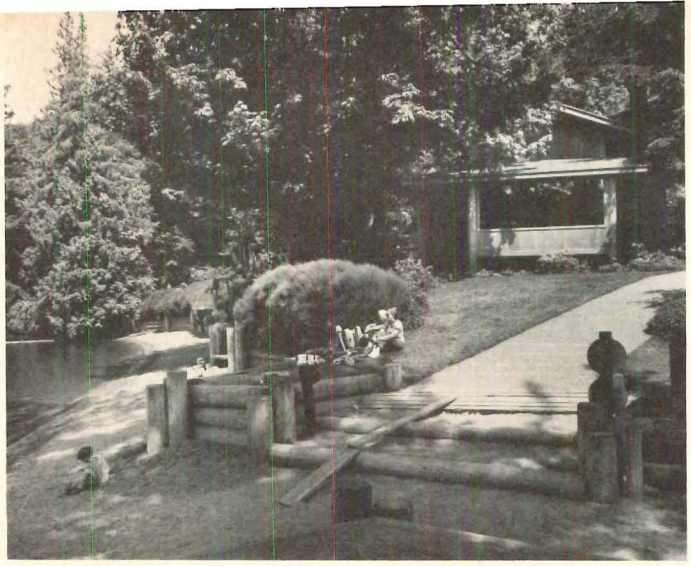
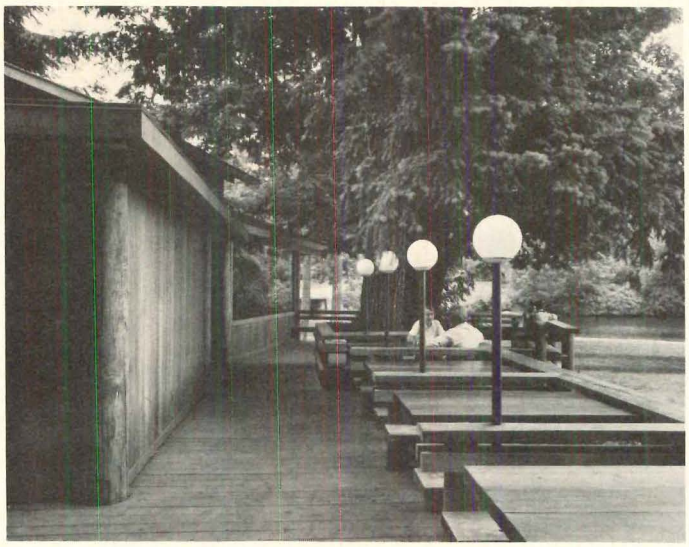
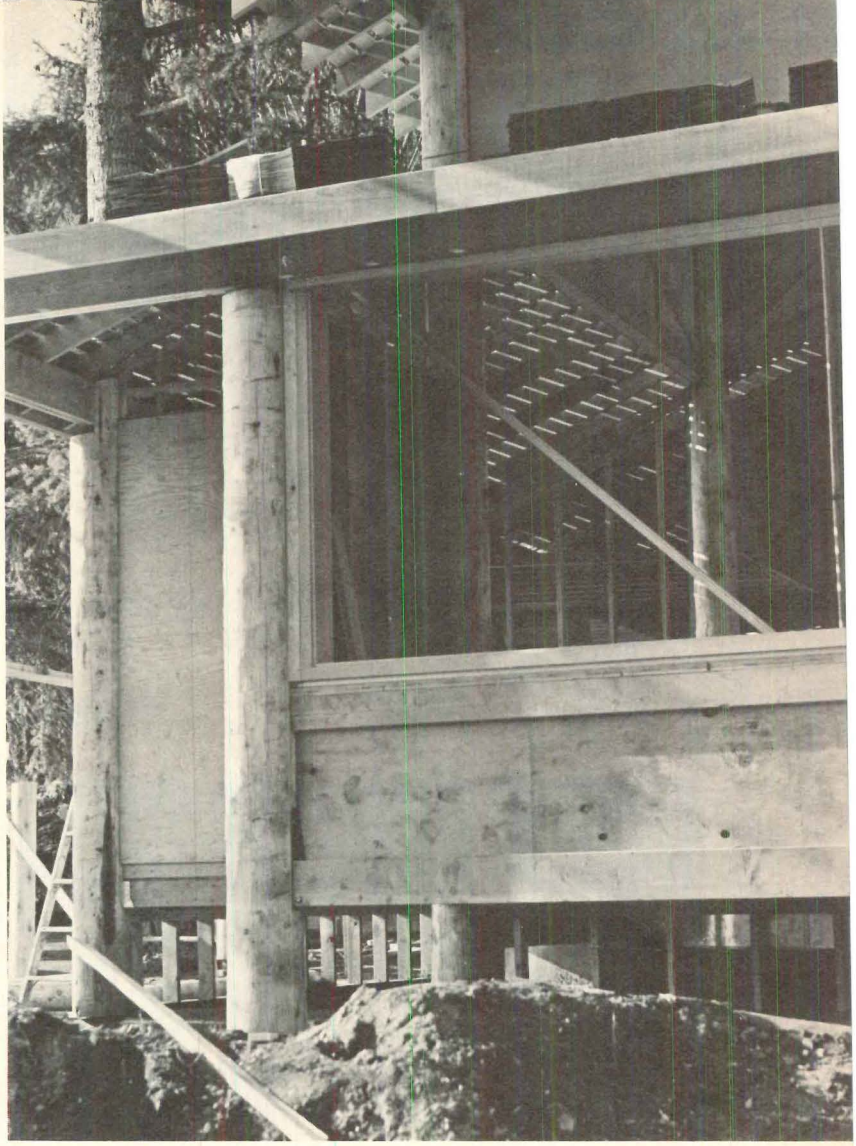
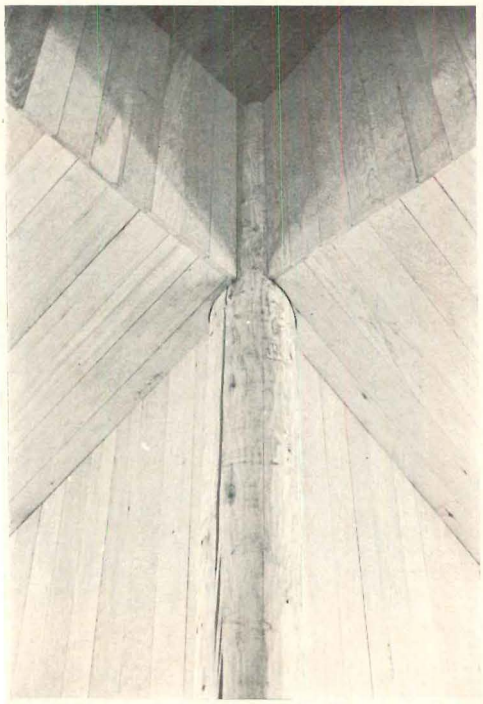


Building fits in with site; (above) deck affords expansive view, (below).





Construction photo above shows red cedar pole and board framework.

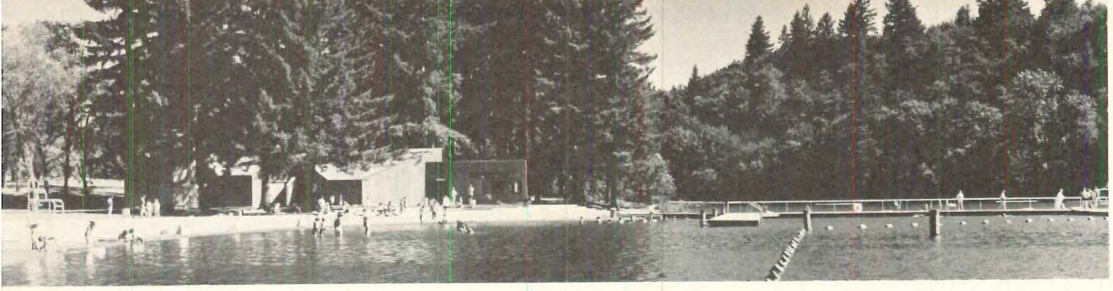


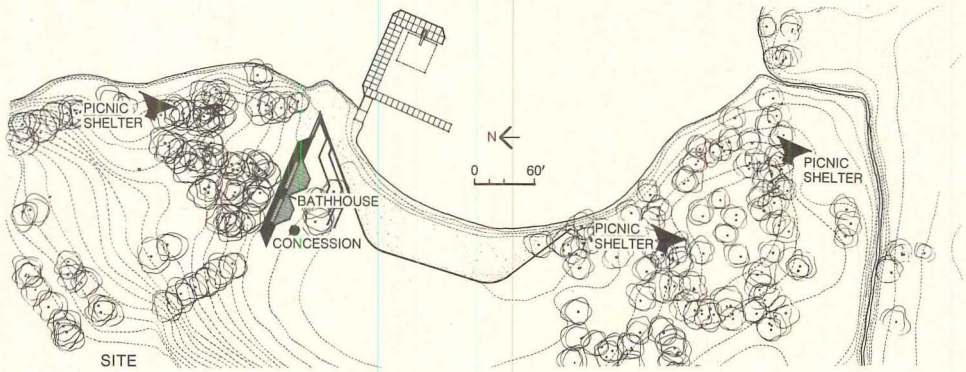
Interior view looking toward brick fireplace.

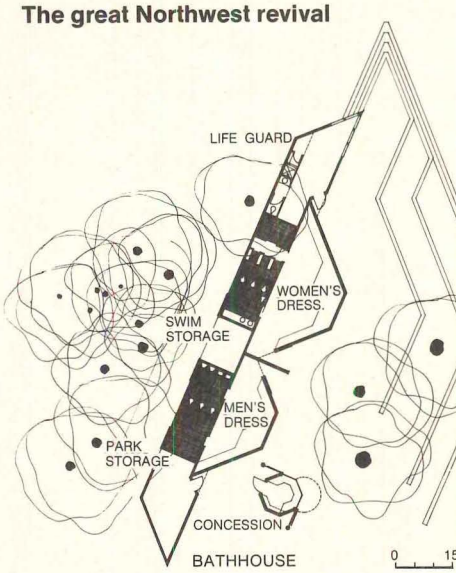
In designing the 2300-sq-ft service facility for a park in Whatcom County, Wash., architect George Bartholick of Seattle tucked the building unobtrusively into the site (opposite, top), on a knoll between parking for the area and the lake. Red cedar siding, shingles, and poles were used for the exterior, while brick and hemlock paneling were principle interior materials. Shop fabricated light frame lumber and plywood trusses in the roof speeded the construction process.

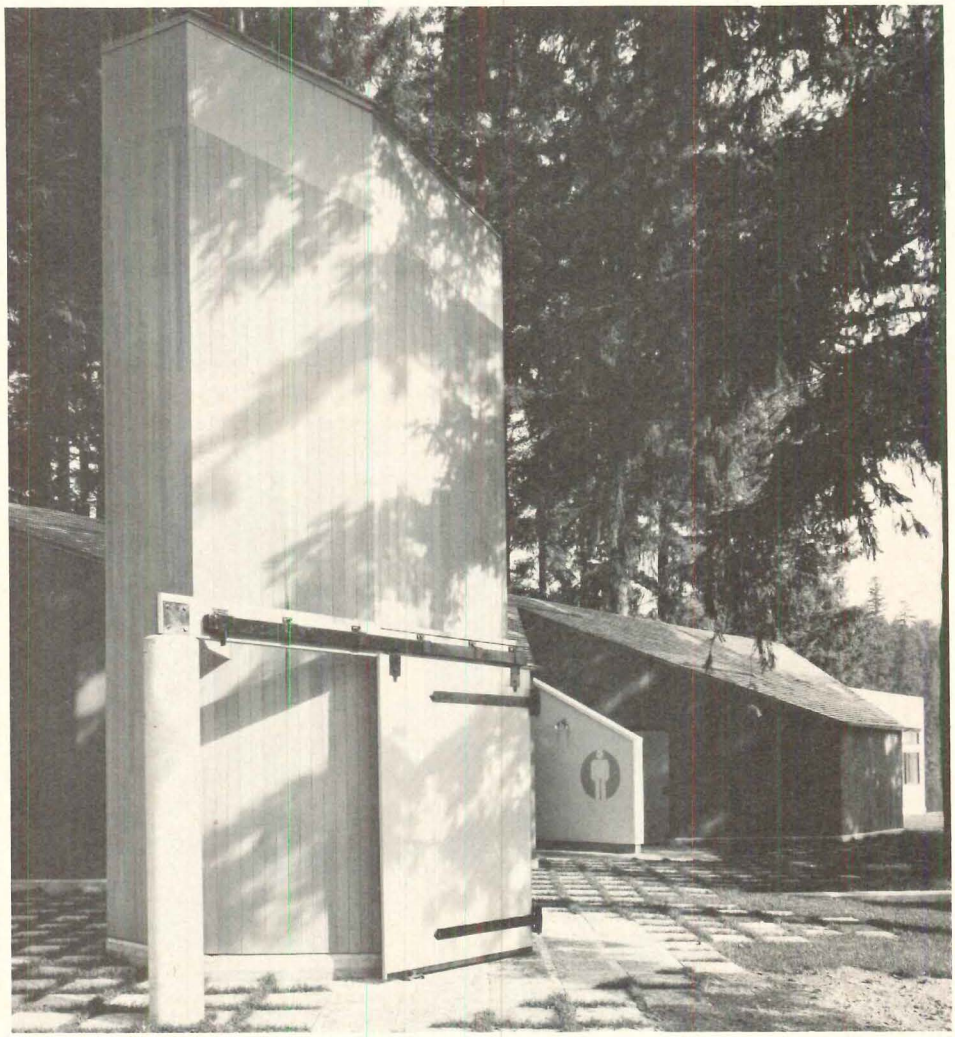
Credits

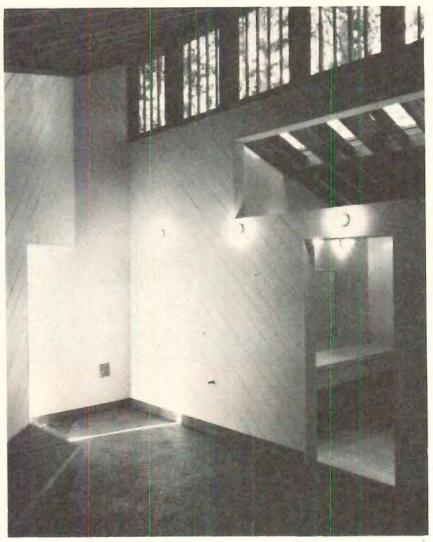
Project: West Lake Samish Service Center, Whatcom County, Wash.
Architect: George Bartholick, Seattle.
Client: Ken Hertz, Director, Whatcom County Parks.
Landscape architect: (for entire Park) Jongejan/Gerrard.
Photos: Art Hupy, except Guy Kramer (left bottom) and N.M. Knight (right, top).







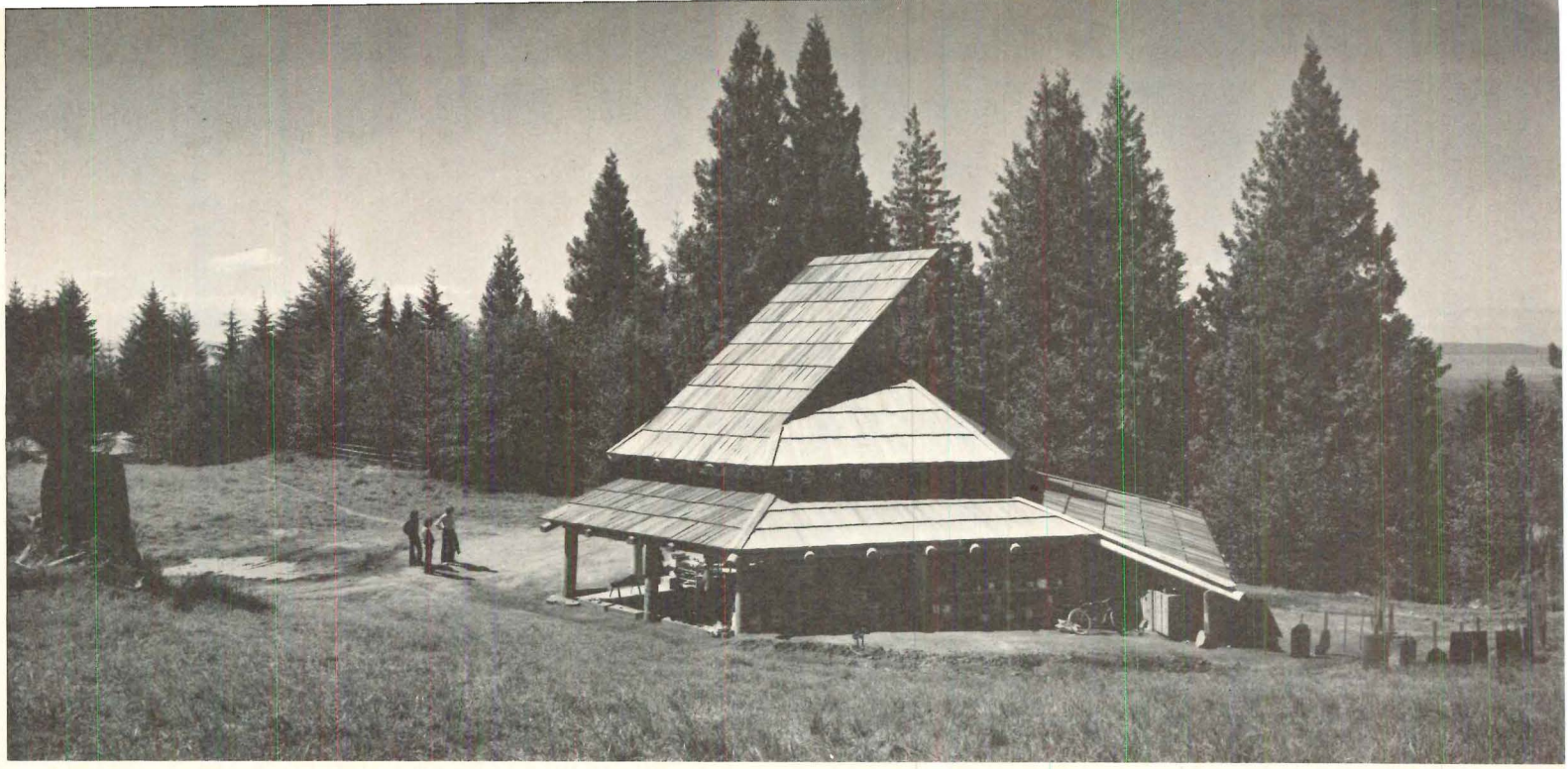


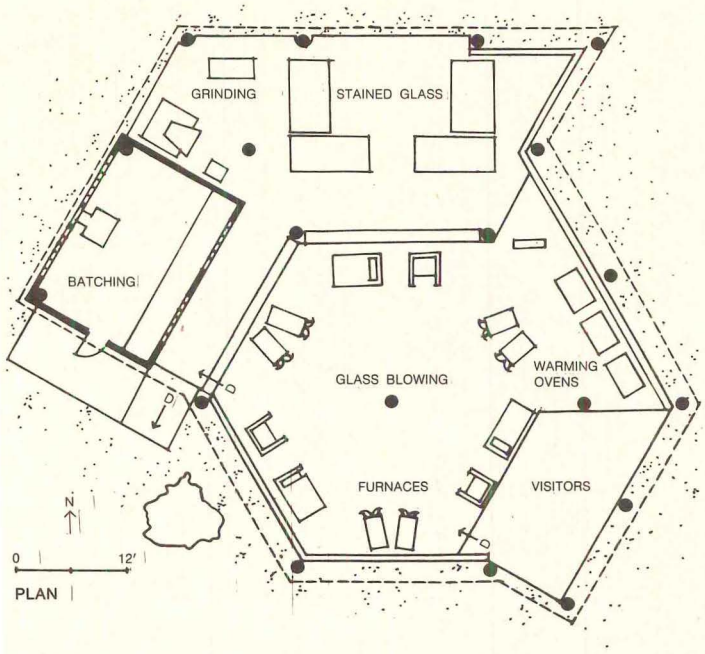


Credits

Project: Lake Wilderness Park Development.
Architect: Calvin Gorasht, Seattle; I. Mervin Gorasht, partner in charge.
Client: Steve Massey, King Co., Department of Parks & Recreation.
Landscape architects: Raymond A. Brauner & Associates.
Consultants: Benjamin S. Notkin & Assoc., mechanical, Olsen & Ratti, structural; Sparling Associates, electrical.
Photos: Marsha and Michael Burns.

Architects Calvin/Gorasht designed this new 2330-sq-ft bathhouse and concession stand, plus three picnic shelters, as the first phase in this upgrading of four acres of Lake Wilderness Park, Wash. Structures are wood frame with resawn cedar siding and wood shingles cladding the exterior, and diagonal boards, the interior (dressing room, top). Concrete posts serve either as framing members at the concession stand (left) or supports at the picnic shelter (above).





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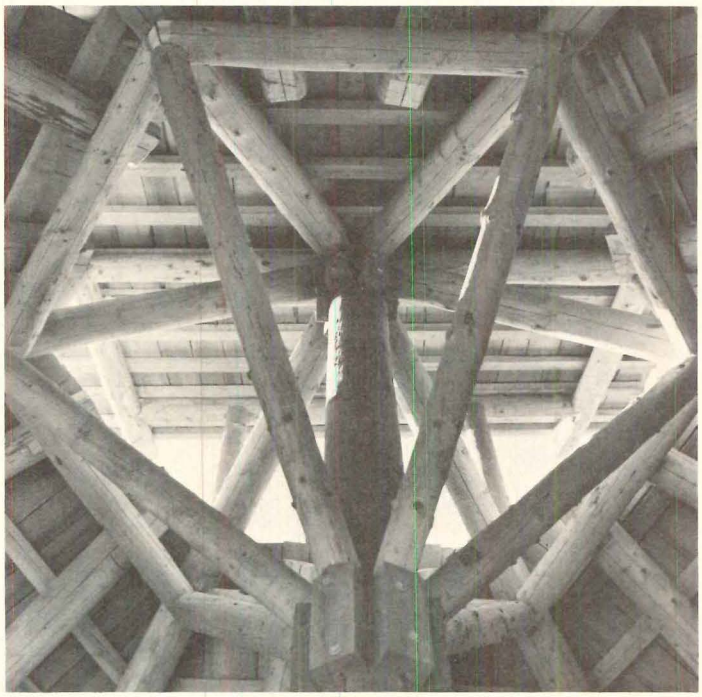
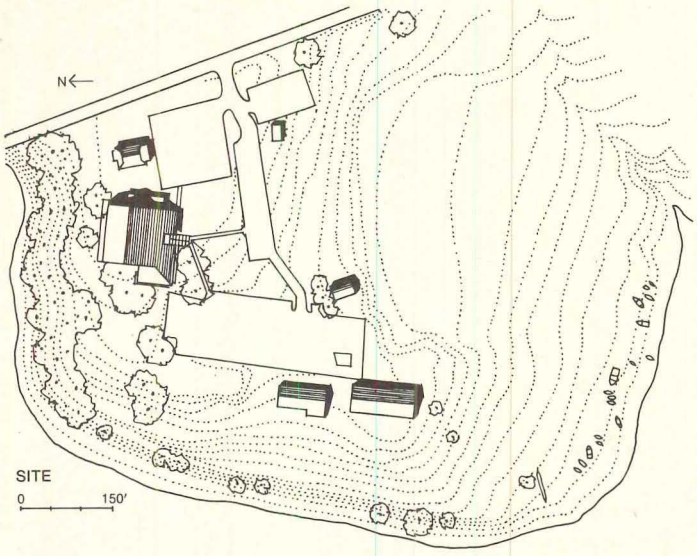
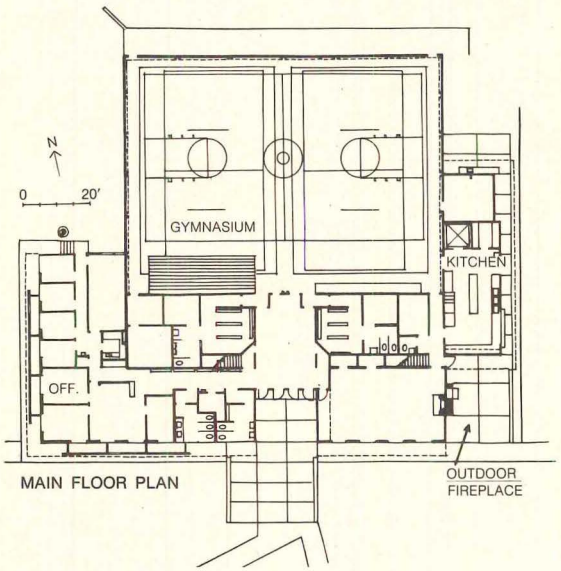


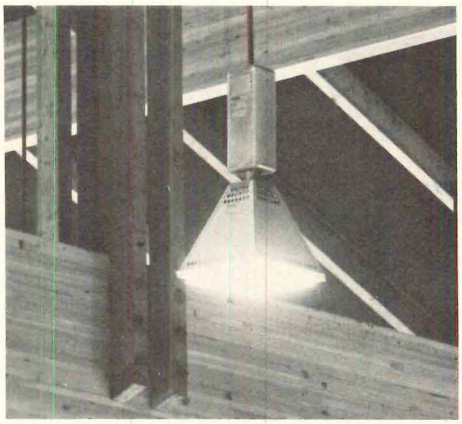
19th-Century techniques of barn construction were employed by architect Thomas Bosworth in building this summer glassblowing workshop (top). Peeled logs grown on the rural site 50 miles north of Seattle, giant handsplit cedar shakes 52 in. long, plus rough-sawn boards, compose the basic structure and materials. While resembling the rustic pole and shake barns built by Northwest settlers, the open-walled structure nevertheless capably accommodates glassblowers: It shelters them from rain and sun (right bottom) while allowing hot air from furnaces to be circulated laterally out or up through the overlap in the tiered pitches of the roof, or through the oculus in the topmost pitch (right, middle).

Credits

Project: Pacific Northwest Arts Center Glass Workshop, Stanwood, Wash.
Architect: Thomas L. Bosworth, Seattle.
Client: John H. Hauberg, Ann Hauberg, patrons; Dale Chihuly, Workshop director.
Consultants: Gerard Torrence, structural engineer.
Photos: Art Hupy.



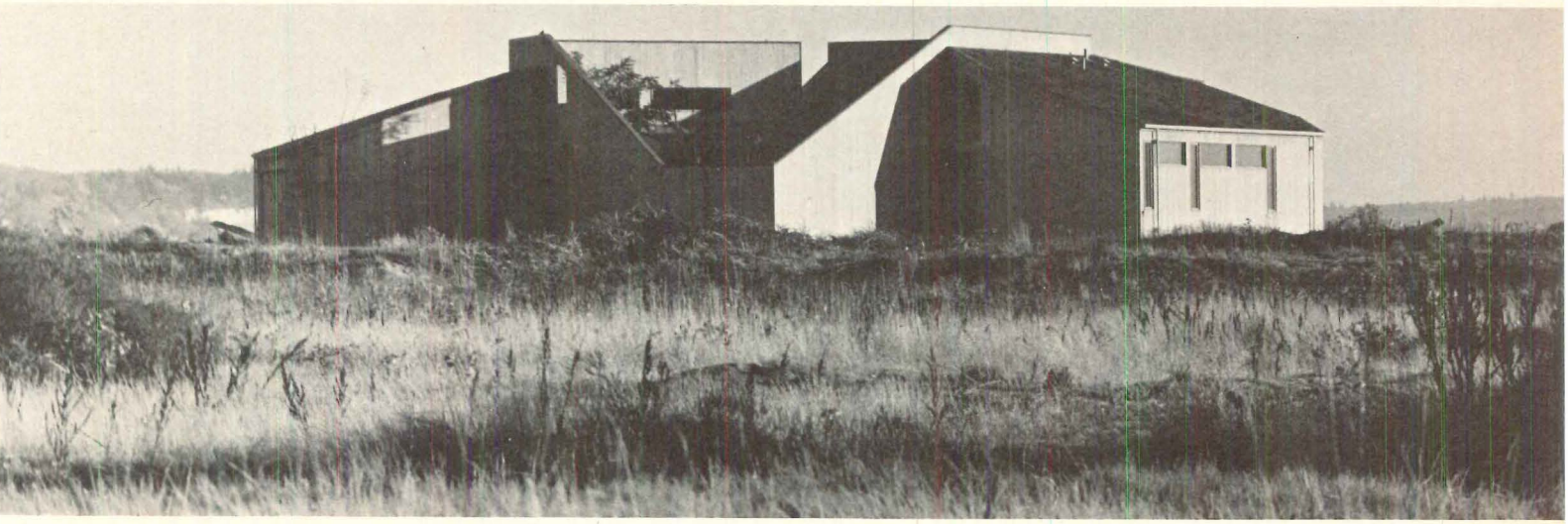


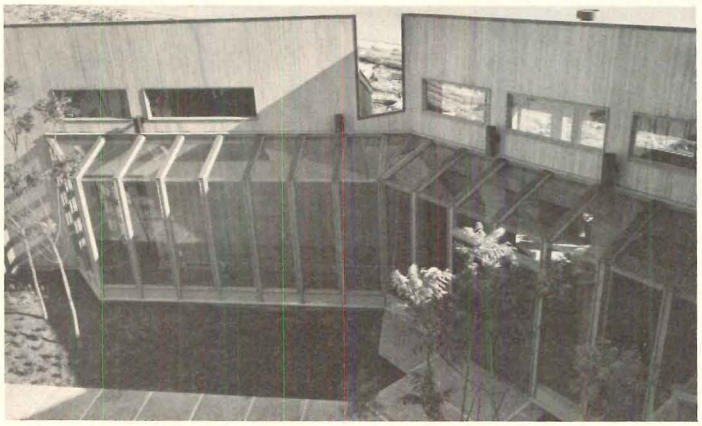


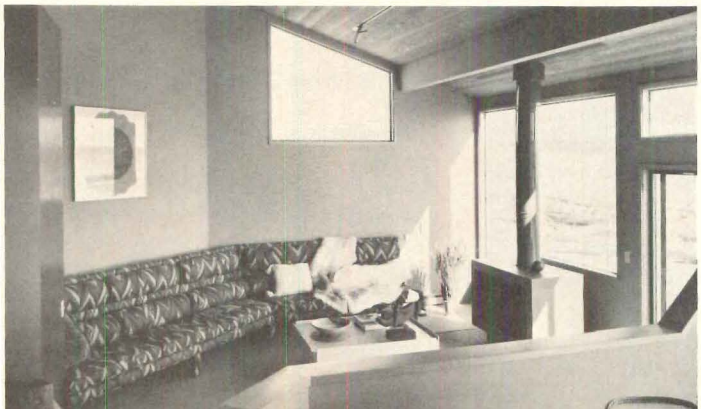
The community center for the Tulalip Indian Reservation 35 miles north of Seattle on Puget Sound was designed to relate to an existing longhouse, a potlatch hall (where gift-giving ceremonies take place) and recreational grounds on the site (site plan left). The architects, Bumgardner Partnership, geared their design to that of the longhouse, a simple anonymous wood structure consisting basically of a 50′ x 100′ space spanned by log trusses. As in the longhouse, the 15,000-sq-ft center has a large space (a 76′ x 96′ gym) and its exterior is sheathed in untreated board and batten siding with a cedar shake roof (top). Besides the center's mezzanine level (for unprogrammed purposes), there are structural differences however: Prefabricated tilt-up wood-frame panels enclose the gym (left, bottom), although the rest of the building has a conventional wood frame. Not only are structural members exposed inside, but even lighting fixtures (left) thematically echo their treatment.

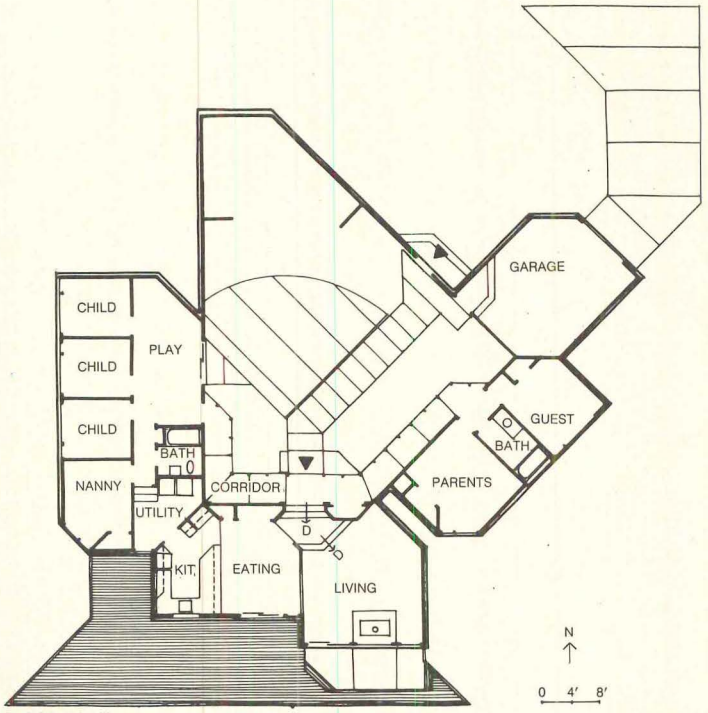
Credits

Project: Tulalip Community Center, Tulalip Indian Reservation, Marysville, Wash.
Architects: The Bumgardner Partnership (Bumgardner-Dreyer-Wright Architects), Seattle.
Clients: Francis Sheldon, Tribal Affairs Manager, The Tulalip Tribes of Washington.
Landscape architect: Thomas L. Berger.
Consultants: Richard M. Stern, consulting engineers, mechanical; Ray Chalker Engineers, structural; Beverly Travis & Associates, electrical.
Planners: The Latourell Associates.
Photos: John L. Brenneis (top); Ed and Carol Hershberger (left).







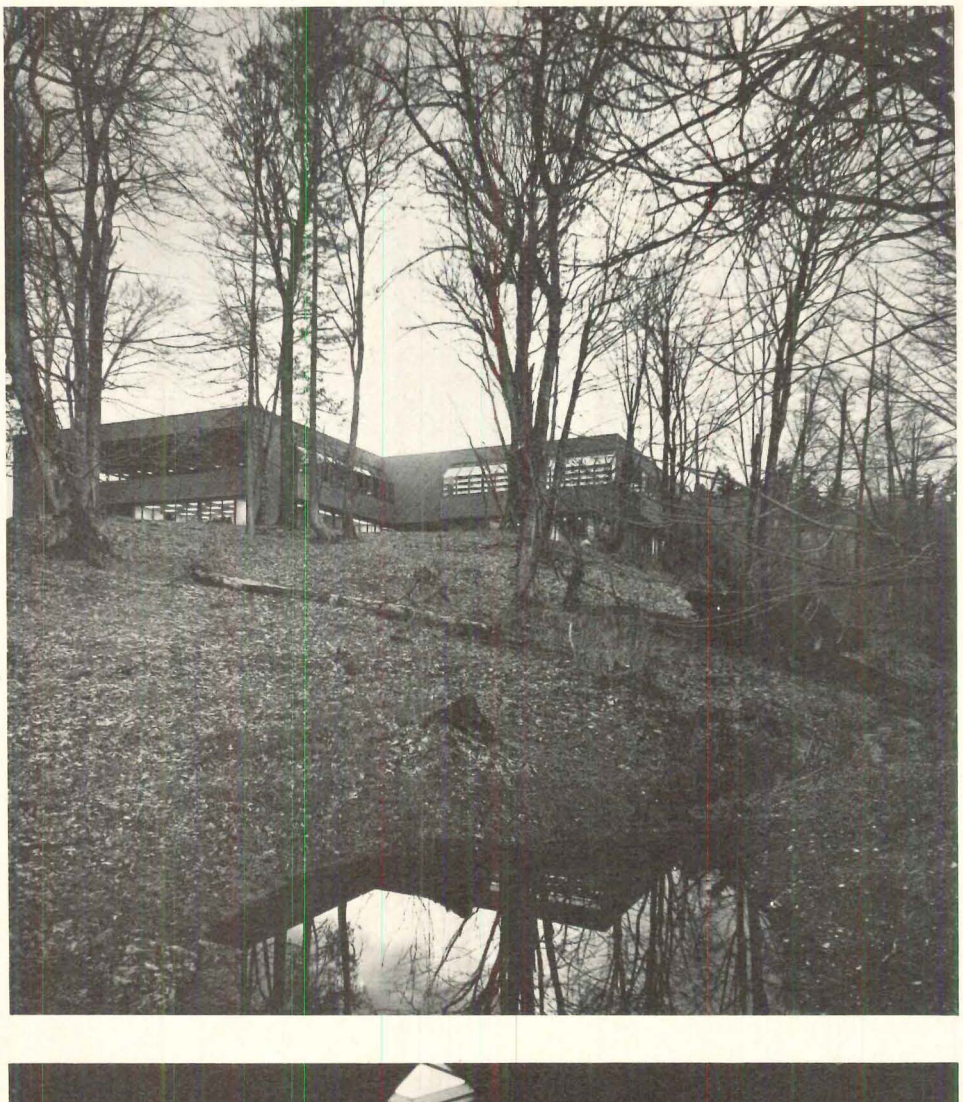


FLOOR PLAN

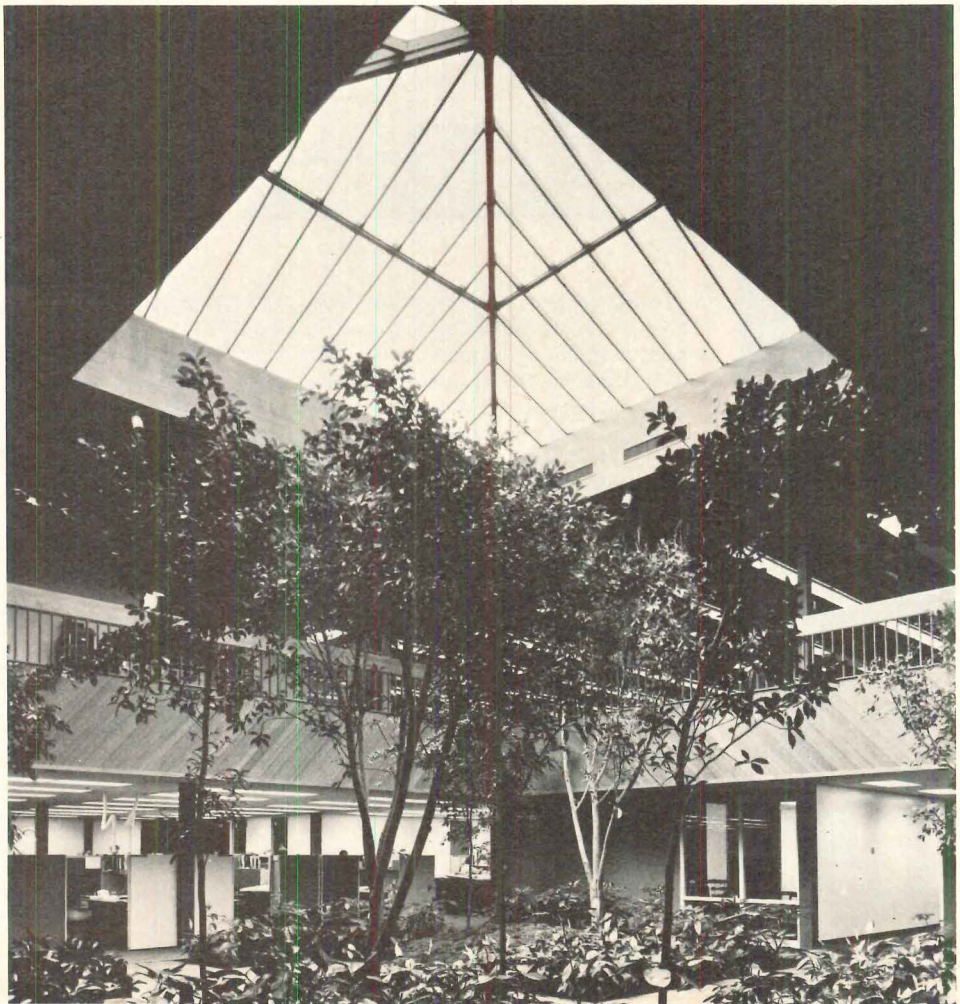
In order to conform to the height limitations of 17 ft for a home on Puget Sound, architects Hobbs Fukui dropped one level of this 1900-sq-ft residence slightly below grade. Cedar siding and shingles on a wood frame further guarantee that the house will blend closely to the landscape (left, top). Living spaces were organized in distinct units around an open court to separate adult sleeping from children's sleeping by living/dining areas, thereby ensuring privacy (plan above). Arrangement of the various quarters around a court forms an enclosed sunny space, protected from the winds. Angled walls seal off the open end of the court for further protection. A glazed corridor connects the various wings and gives a view of the court (left middle), opening onto the slightly depressed living room, (left bottom).

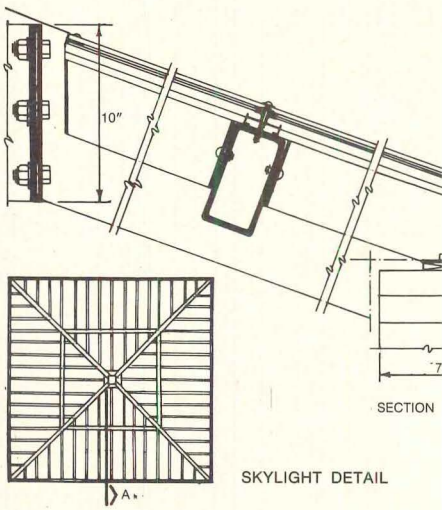
Credits

Project: Paulsell summer residence, Whidbey Island, Wash.
Architects: Hobbs Fukui Associates, Seattle.
Clients: Mr. and Mrs. Fred O. Paulsell, Jr.
Landscape architects: Sakuma/James/Peterson.
Interior designer: Roy Strom.
Photos: Art Hupy.



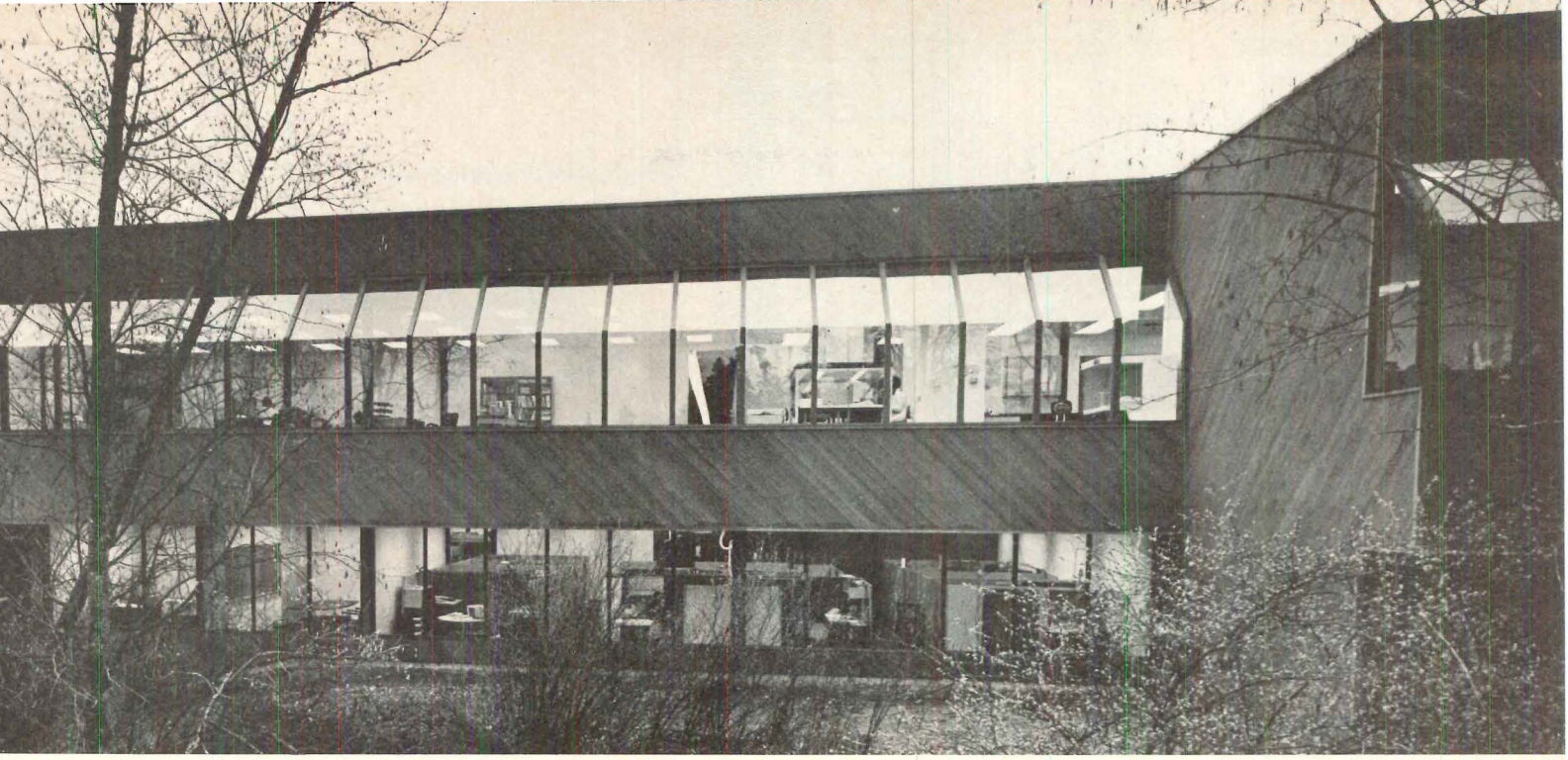
A manufacturer of medical and cardiac electro equipment in Washington decided to place its office/manufacturing facilities on a rural site in Sammamish Valley. Architects Kirk, Wallace, McKinley & Associates arranged the 95,000 sq office space in a two-level parti (left) that fits sn into the wooded slope. A bridge takes employe from the parking lot over a stream to the main entrance on the lower level (above). The upper level, with the best view, was assigned to the b of the employees, while the lower level is reser for management, marketing, and research. An interior skylit court connects the two floors visu (photos opposite bottom, left, bottom). In addit the angled glazed walls of the employees' cafe (opposite middle) permit more contact with the outdoors. Stained diagonal rough cedar siding clads the glulam beam and timber post structu

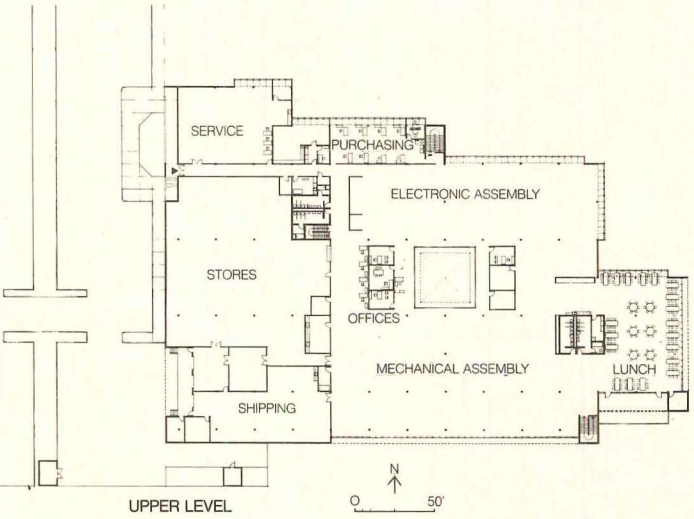




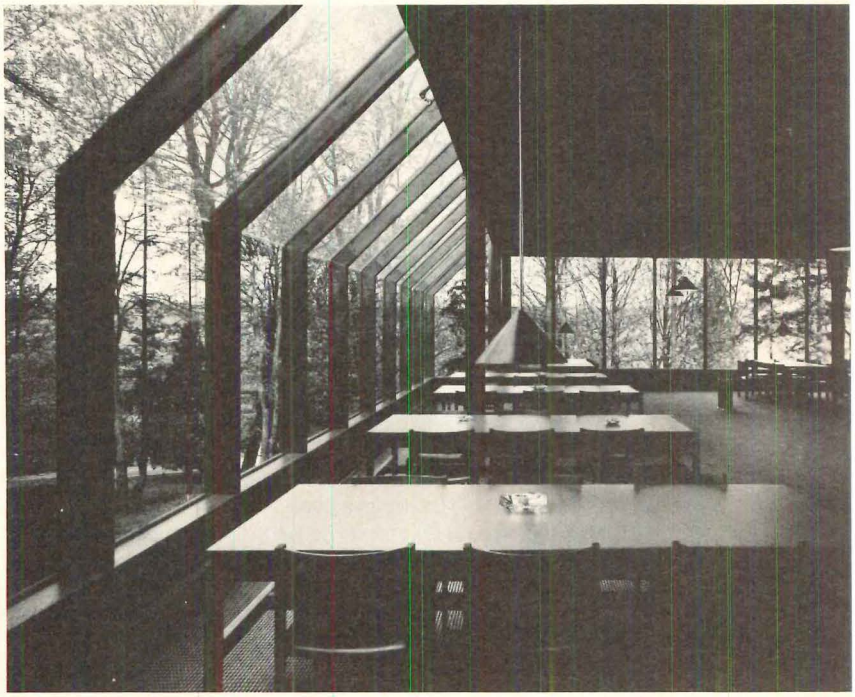
Credits

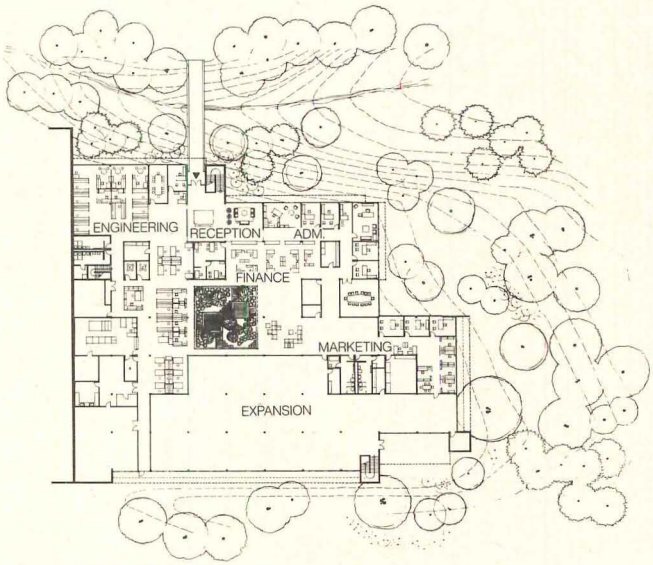
Project: Physio-Control Corporation, Redmon Wash.
Architects: Kirk, Wallace, Mc Kinley & Associa Seattle.
Client: Harold Kawaguchi, V.P. Physio-Contro
Landscape architects: Sakuma/James/Peter
Consultants: Valentine Fisher & Tomlinson, mechanical; Sparling & Associates, electrical; Skilling, Helle, Christiansen, Robertson, structu the Livingstone Associates, site drainage.
Photos: Bob Peterson.



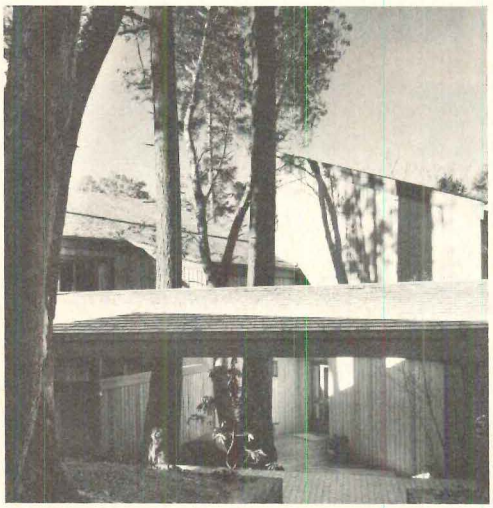


UPPER LEVEL

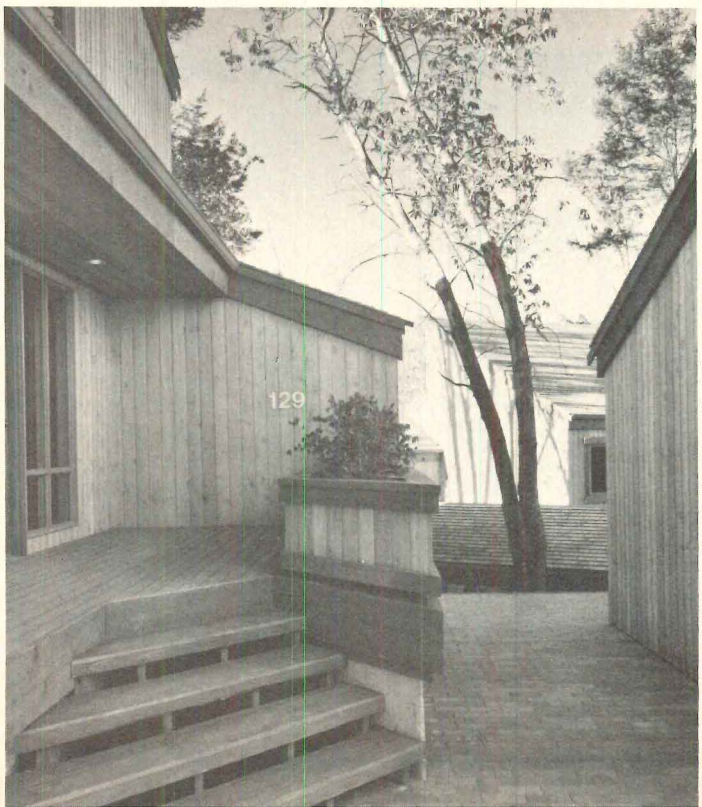




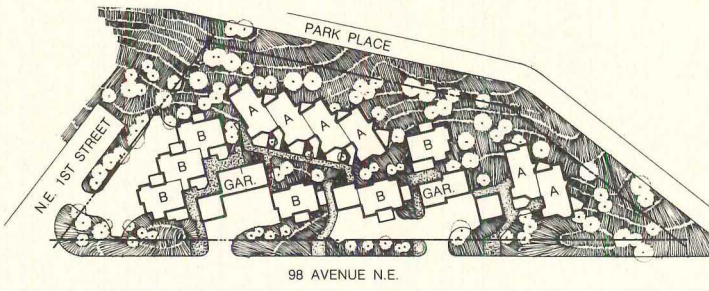
PLAN LOWER LEVEL



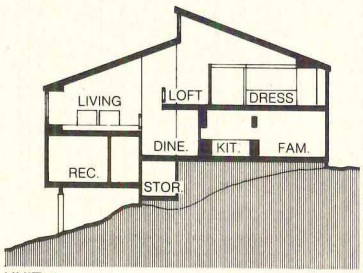
Twelve carefully clustered condominiums have been fitted on a one-acre wooded site, as part of a "planned unit development (opposite)." Architects Mithun & Associates took advantage of the stepped site to stagger the 2200-sq-ft (unit A) and 2300-sq-ft (unit B) townhouses (plan, section, right) and orient them to the adjoining park (top). Stained vertical cedar channel siding, sheaths the wood frame. Party walls are double stud acoustically treated partitions; roofs are cedar shingles.



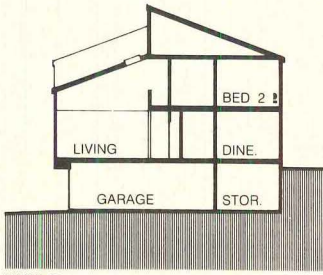
The great Northwest revival



SITE PLAN →N 0 100′

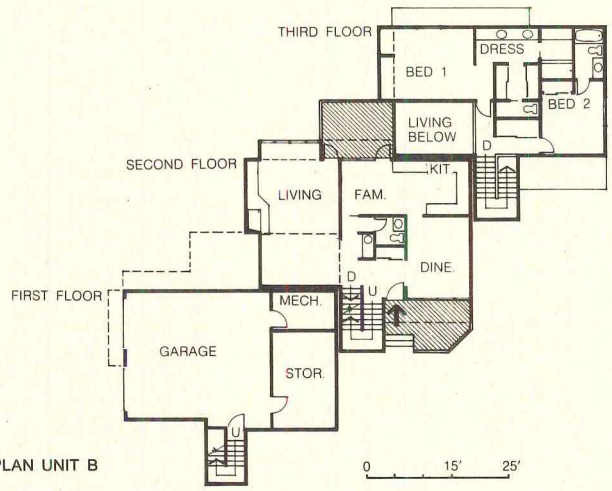


UNIT A

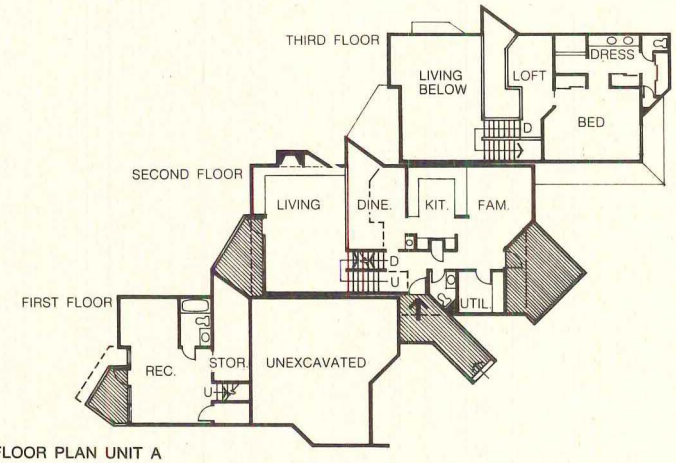


UNIT B

SECTIONS 0 10′ 25′



FLOOR PLAN UNIT B 0 15′ 25′



FLOOR PLAN UNIT A

Credits

Project: Lockwood Townhouses, Bellevue, Wash.
Architects: Mithun & Associates; J. Donald Bowman, partner in charge; Don Doman, project architect.
Client: Ed Dean, Swanson-Dean Corporation.
Landscape architect: Thomas Berger.
Consultant: Gerard Torrence, structural engineer.
Photos: Art Hupy.

The seven eras of World's Fairs

World of fairs: 1851-1976

Lawrence G. Zimmerman

Did you know the Eiffel Tower was built for the 1889 Paris World's Fair on the site of the 1878 World's Fair, that it was painted golden yellow in 1900 and covered in neon in 1937? If not, read about the Fairs' seven eras.

In 1939 I "ran away" from home to visit the New York World's Fair at Flushing Meadow. I was eight. My parents had believed I was too young to appreciate the happening, and only my disappearance convinced them that I was truly old enough. A few days later my mother escorted me to the spectacular exposition. She planned the day with great care: lunch would be on the Futurama ride, dinner would be during Billy Rose's Aquacade, and later we would join the throngs at the Lagoon of Nations to be enthralled by the water, gas, fireworks, and musical display. On the day the fair closed, I still had my Futurama "The World of Tomorrow" booklet; I also had a "I Have Seen the Future" button, a green plastic Heinz pickle pinned to my shirt, and fond memories of the day at my first International Exposition. I still have them all.

The Futurama booklet promised that "the world of tomorrow can be made an infinitely better place in which to live. . . ." and that with it will come greater opportunities for all. In the broadness of its scope, the fair followed the principles laid down years earlier when, at the First International Exposition of 1851 in London's Crystal Palace, Prince Albert proclaimed that "Nations must work together for the benefit of all." Throughout their history, the purpose of World's Fairs has been to enable everyone to view, enjoy, and apply knowledge from the products and ideas of the world's peoples. At their best, they have achieved this, and even if some critics today call "Expos" obsolete, they still leave a clear mirror of their times, reflecting, like succeeding editions of an encyclopedia, the products, exhibit techniques, and architecture of their periods. They contain much, though, and one must be patient to see them. Properly conceived, however, they are much more than amusement parks with long lines—they are environmental cosmos.

Norman Bel Geddes wrote in his book *Magic Motorways* about the 1939 exhibit: "Masses of people can never find a solution to a problem until they are shown the way. Each unit of the mass may have a knowledge of the problem, and each may have his own solution, but until mass opinion is crystallized, brought into focus and made articulate, it amounts to nothing but vague grumbling. One of the best ways to make a solution understandable to everybody is to make it visual, to dramatize it. The Futurama did just this: it was a visual dramatization of a solution. . . ."

World's Fairs are the show business of architecture. Mounted to dazzle and emotionally move large audiences, their architectural environments are both theater and performance. They may play in a Crystal Palace or in a park, in cities of plaster-of-paris neoclassic columns or in pavilions molded like confectionery, in jeweled towers or streamlined structures, in huge corporate symbols or under air-supported roofs, on islands, and soon, on the edge of an ocean. Like show business, their successes have been measured by the number of people who click through the turnstiles, and by accountants' records of box-office receipts. Their long-range social, economic, and political values, however, have not been properly analyzed.

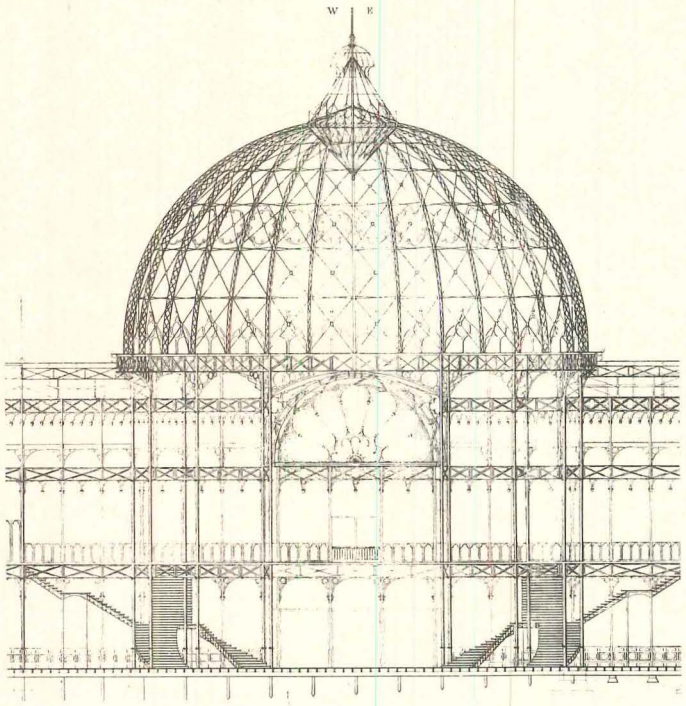
Looking back at the 1876 Philadelphia International Exposition, John D. Rockefeller, Jr., justified the rejection of a 1976 Bicentennial Exposition by stating recently that the Centennial was "fascinating and revealing of its time, but not really very significant." (The inability of the Bicentennial Commission to designate an International Exposition for 1976, I believe, is due to its political incapacity to choose a program that would not be criticized as benefiting only a select few; and we have lost, at least for 1976, an international catalog and focal point.) In his autobiography, however, Frank Lloyd Wright remembers the Centennial Exposition as very significant. He attributed his childhood development and his early awareness of design and form to his mother's study of Frederick Froebel's kindergarten educational system at the Woman's Building. George Eastman's interest in simplifying the apparatus for amateur photography is traced to the Centennial. Louis C. Tiffany exhibited several paintings of Algerian scenes, but it was his exposure to the decorative arts displayed there that led him to a career in the applied arts.

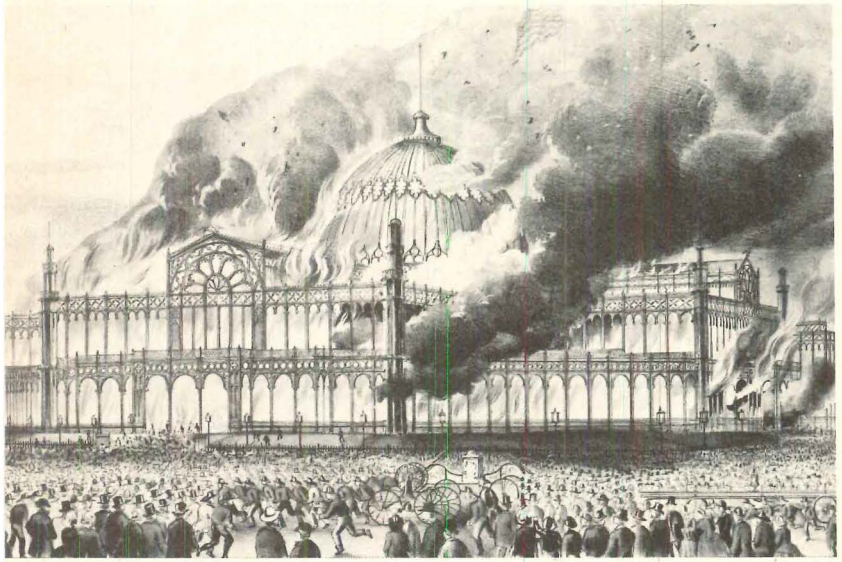
Richard M. Hunt, in the *General Report of the Judges,* published in 1880, wrote that "the amelioration of dwelling for the laboring and industrial classes, has been almost entirely ignored at the Centennial. This absence is especially to be remarked upon, so much attention having been paid to the subject, particularly since the Paris Exhibition of 1867, when the French Emperor received a special medal for his well-merited and successful efforts in this direction." In the same report, Hunt recorded that "it is no easy matter, in a new country, to enlist the sympathies of the general public beyond the attainment of the most material results, and not until art education has become more general can we hope for that sympathy and consideration which is only born of knowledge."

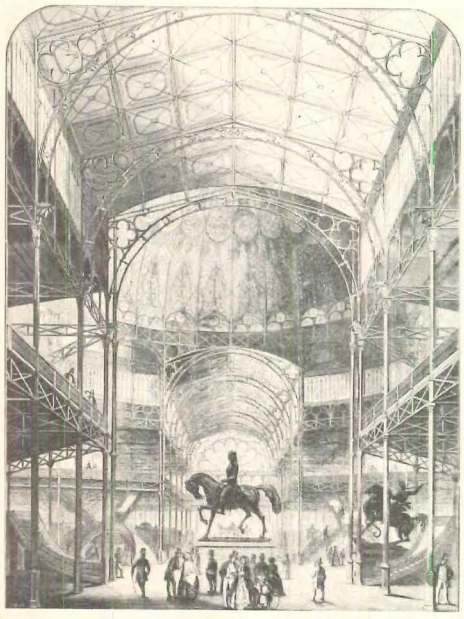
Although it is not well known today, looking back we find that the Centennial did encourage the establishment of technological and industrial art schools, and that it significantly contributed to the development of art museums and other institutions. But it was not unique. All World's Fairs have been important to our history, and on the following pages they are classified into seven eras, which I hope might aid in their systematic study so that their relevance might be better understood, and appreciated.

Paxton's original London Crystal Palace of 1851 is seen in George Crukshank's print (below), and in a commemorative coin (above) as it was rebuilt in 1904 at Sydenham, where it stood until it burned in 1936.

The Crystal Palace Era, 1851–76







Carstensen and Gildemeister's 1853 New York Crystal Palace is seen in a working drawing section of the front transept (top) and in Currier and Ives's print of it burning in 1858 (above). Equestrian statue of George Washington occupied interior space directly under the dome (left).

The first era of International Exhibitions started in 1851 with the erection of the Crystal Palace in London, and ends prior to the opening of the Philadelphia Centennial of 1876.

For the "Great Exhibition of Industry of All Nations," conceived and sponsored by Prince Albert, the Crystal Palace was built on a module of the largest glass panes yet manufactured. The entire lot of 300,000 49" x 10" panes was supplied in a few weeks. 3230 prefabricated iron tubular pillars and girders, tested by hydraulic press to carry 15 tons, were erected in six months, without scaffolding. The upper tiers of glass were shaded by unbleached calico to regulate the light and temperature. All the center lines of columns, etc., were multiples of 24. Joseph Paxton, its designer, finally terminated the length of the building to coincide with the year: it was 1851 ft long, or about one-third of a mile.

After visiting the structure, Queen Victoria wrote in her diary, "The sun shining through the transept gave a fairylike appearance. The building is so light and graceful in spite of its immense size." But critic John Ruskin wrote, "We suppose ourselves to have invented a new style of architecture, when we have magnified a conservatory."

The building and its exhibits epitomized Victorian qualities: romanticism and common sense, optimism and restraint. It was the age, as Tallis noted in his *History and Description of the Crystal Palace,* when "We would have everything in a house touched by the divining rod of a Poet. An inkstand, instead of being a literal glass bottle . . . might be fashioned to represent a fountain, with a muse inspiring its flow." Drawings of the Crystal Palace, he reported, were printed on paper, stamped on tokens, and imprinted on ceramics, peep shows, and fans, all to fulfill the prophecy that "the House of Glass will exist in the annals of history, long after the vaunted pyramids of Egypt."

Because of its success, the first World's Fair was quickly imitated throughout the world. Both Dublin and New York erected variations of the Crystal Palace two years later. In the New York version, which was designed by Gildemeister, a local artist and architect, and Carstensen, designer of the Tivoli and Casino of Copenhagen, Peter Cooper helped finance a model of an elevated railway designed and invented by John Randel, Jr., for Broadway. But lacking government sponsorship, the New York fair did not achieve the interest of the original. P. T. Barnum, who was eventually pressed to manage it, recalled in his autobiography that "Many thousands of strangers were brought to New York, and however disastrous the enterprise may have proved to the stockholders, it is evident that the general prosperity of the city has been promoted far beyond the entire cost of the whole speculation."

The first era of the fairs saw other "achievements," too. It did much to promote photography, it sponsored the first international yacht race (London, 1851), introduced the elevator (New York, 1854), classified the wines of Bordeaux (Paris, 1855), introduced the ice cream soda (Paris, 1868), and suggested the department store. The era was, in effect, a catalog of the industrial revolution displayed for the first time.

The Centennial Era 1876–89

The Centennial Era, which began in Philadelphia with the celebration of the 100th anniversary of the Declaration of Independence, was the first exposition to commemorate the anniversary of an event. Due to the lack of royalty in the Republic, to open the Fair "properly," the Emperor of Brazil was invited, to lend dignity to the occasion. With President Grant standing by, His Majesty turned the handle to the Great Corliss Engine and the opening ceremonies began. Wonders to be seen were the telephone, a working monorail system, the first commemorative postage stamp, and Japanese architecture.

The original plan of the Centennial Commission was to erect a single large exhibition building, but this proved impracticable for Philadelphia's needs. Instead, eight principal buildings and other pavilions were erected, for a total of 229 exhibit areas, establishing the concept of the multi-pavilion plan still in effect today.

When the Centennial closed, 42 freight cars carried most of the remaining exhibits to storage in the Smithsonian Institution, which now plans to exhibit some of the material during 1976.

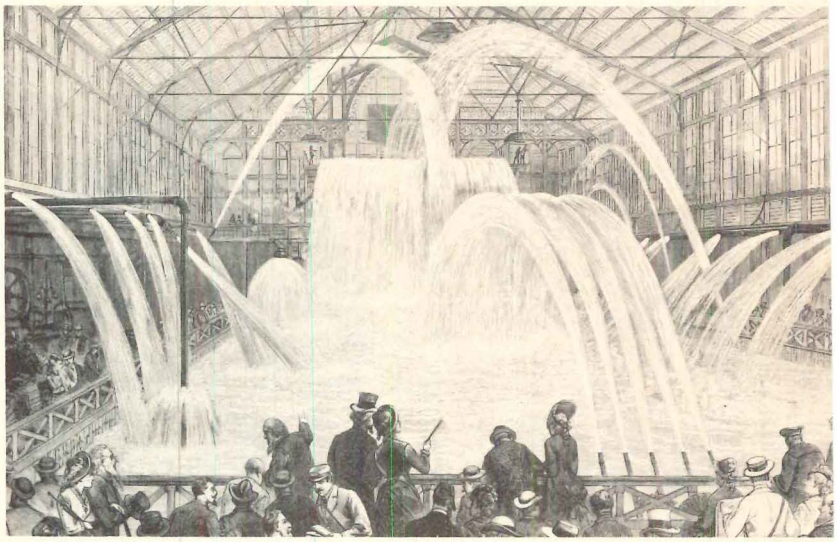
"In 1876, according to *Century Magazine,* May 1885, there was a general opinion among people familiar with World's Fairs that . . . such great and costly displays . . . had had their day and would be seen no more." The magazine remarked, however, that "barely two years later Paris followed, and in some respects surpassed, Philadelphia," concluding that "evidently the World's Fair, as a phase and means of human progress, is not growing obsolete."

Sheet-metal and glass enclosed the Industrial Palace in the *Champ de Mars* for the Paris 1878 Fair. A superb music hall was erected on the Trocadero (which remained until it was torn down for the 1937 Fair), and Sarah Bernhardt celebrated the event by eating *foie gras,* fresh bread and oranges, and brashly sailing over the whole thing with her lover and M. Giffard the balloonist.

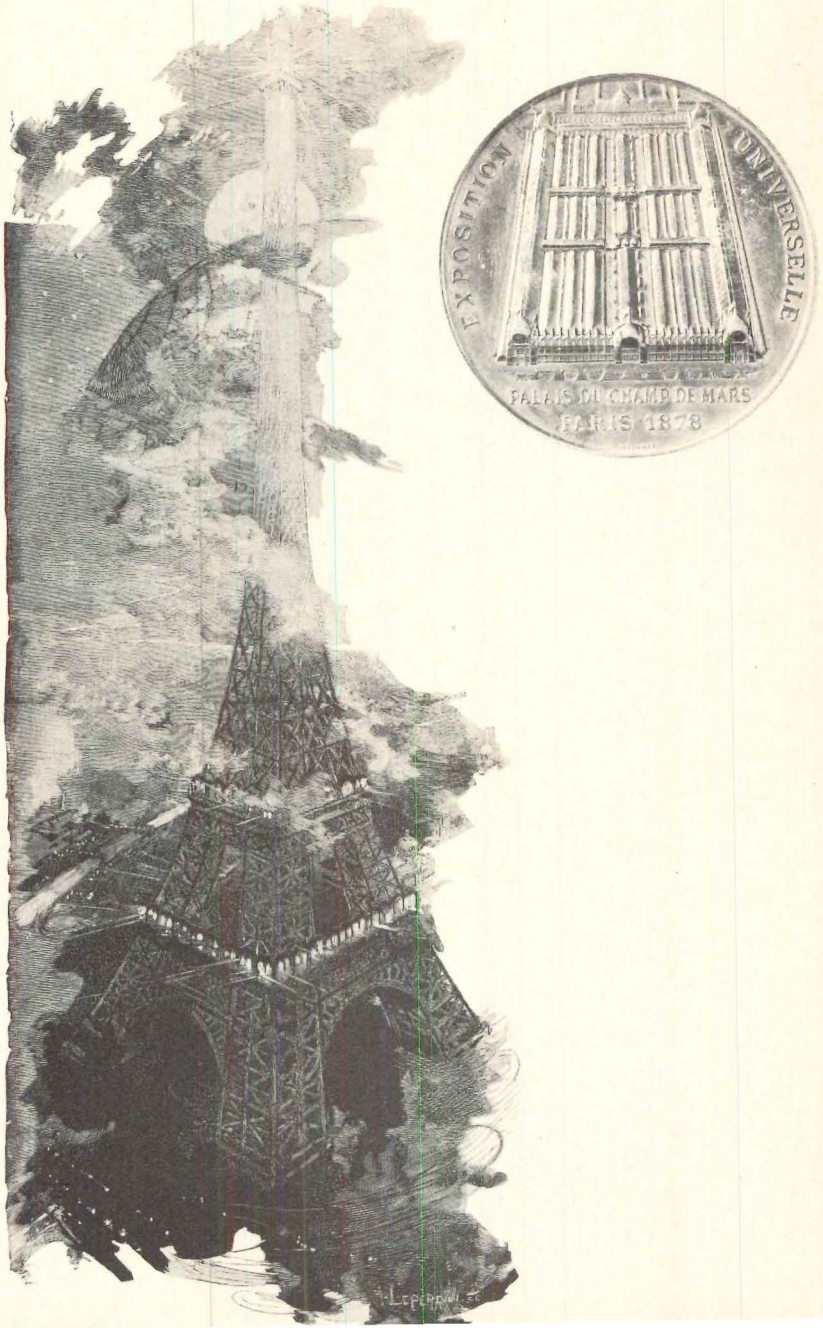
The Era culminated with the construction in 1889 of the Eiffel Tower—a magnificent improvement over Latting's wood tower at the New York Crystal Palace of 1853 and the two towers built to observe the Centennial in Philadelphia: the Sawyer Observatory and the Iron Tower at George's Hill west of the site. Otis, of the American elevator firm, began work speculatively on the elevator for the Eiffel Tower long before its plans were complete, and the finished tower represented one of the first and most successful cooperative efforts between the engineers of France and the United States.

Dutert's *Galerie des Machines,* built for the same International Exposition of 1889, was the first structure to span 115 meters. In describing the building, Sigfried Giedion wrote, "The aesthetic meaning of this hall is contained in the union and interpretation of the building and outer space, out of which there grows a completely new limitlessness and movement in keeping with the machines it contains." Its design was the summit of engineering experience and talent of the century.

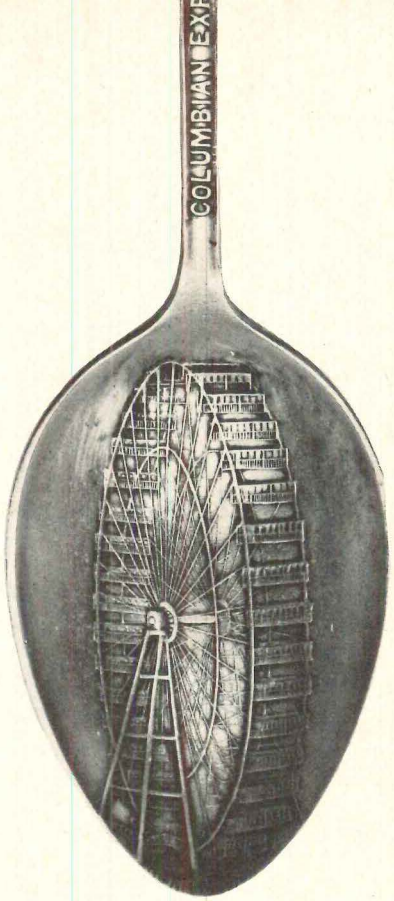
Paul Gaugin, after seeing the 1889 fair, left for the South Seas to buy a thatched hut, the kind he saw at the fair.



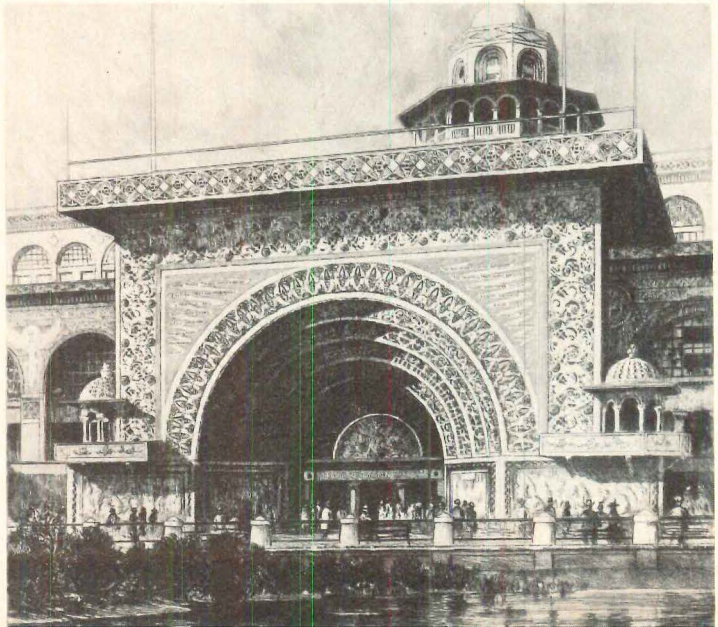
For Philadelphia's 1876 Centennial, Pettit and Wilson's $792,000 Machinery Hall (above) showed the power of water through a series of "cataracts." Eiffel's Tower for the 1889 Paris Exposition (below left) occupied the *Champ de Mars* site of the 1878 fair (below right).



The Neoclassic Era, 1889–93



Following Olmsted's plan (above) Chicago's 1893 World's Columbian Exposition—"The White City"—left Charles Atwood's Palace of Fine Arts Building (right side of photo) behind as the Museum of Science and Industry. Ferris's first wheel (top) was commemorated on spoons, and Louis Sullivan's Transportation Building entrance (below) presaged Art Deco.



Fairs of the Neoclassic Era displayed the "nobility" of the eclectic forms of the Romans. In the U.S., the period included events in Chicago, California, Atlanta, and Omaha, where the staff and wood column in Corinthian style satisfied the new industrial society's desire to embellish its surroundings with classic forms.

The concept of a Columbian Exposition to commemorate the 400th anniversary of the landing of Columbus was introduced by a citizen of Mexico, Dr. T. W. Zaremba, in November 1882, in the Great Hall of the Cooper Union in New York. After a bill was introduced in Congress for the purpose of inaugurating the exposition, New York, Chicago, Washington, and St. Louis rivaled for the honor of staging the event. With passage of the authorizing bill in 1890, the "World's Exposition of 1892" was incorporated. It was later renamed the "World's Columbian Exposition," and scheduled to open in Chicago in 1893.

Labeled "The White City," the fair was built along the Lake Michigan waterfront, where the interplay of land mass, water, and plaster architecture created impressive vistas organized by Frederick Olmsted's master plan.

St. Gaudens declared Atwood's Palace of Fine Arts to be "the greatest achievement since the Parthenon." The only building surviving the Exposition, it is now refaced in Indiana limestone as Chicago's Museum of Science and Industry. Louis Sullivan, however, was not as generous as St. Gaudens. Thirty-three years after the event he cried, "The damage wrought by the World's Fair will last for half a century from its date, if not longer." He challenged the neoclassic forms that penetrated deep into the public's taste by the Chicago Fair with his golden door of the Transportation Building—a forerunner of the Art Deco style.

The Fair produced an architecture that was as impressive and impermanent as a set for a movie spectacular, yet George W. Ferris, to compete with the Eiffel Tower, forged the largest axle ever made: 33 in. in diameter, 45 ft long, weighing 70¼ tons. With its attachments, the young engineer's giant observatory structure called the Ferris Wheel carried on its periphery 36 pendulum cars, each seating 40 persons. Fully occupied, 1440 people rose 250 ft in one revolution.

Although Margaret G. Van Rensselar reported in 1892 in *The Forum* that "we shall learn not only to appreciate American art, but to think with new faith and reverence of the institutions which have developed the American citizen of today," French critic Marquis de Chasseloup-Laubat did not see the results of the artistic collaboration as she did. In his report to the *Société des Ingenieurs Civils* he wrote, "From certain points of view, the United States now constitute a nation of peoples rather than a united people. And just so the buildings at Jackson Park constitute a nation of exhibitions rather than a single homogenous exhibition." He was correct, of course, for the real damage to American architecture was the profession's failure to realize the opportunity of the "White City" as a step toward total city and community planning.

The Art Nouveau Era 1893–1925

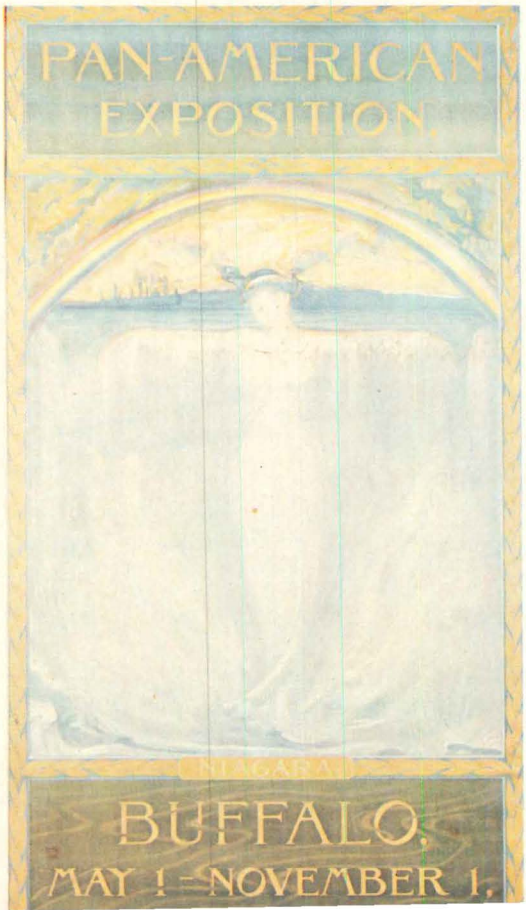
The Paris Fair of 1900 represented the pinnacle of the Art Nouveau movement. It covered the *Champ de Mars,* site of Eiffel's "Tower of 300 Meters," which he painted golden yellow for the occasion. It continued across the *Pont D'lena* to the Trocadero Palace, along the left and right banks to the newly constructed *Pont Alexandre III,* which, along with the *Grand* and *Petit Palais,* were designed as permanent additions to the city.

A moving elevated sidewalk with 12 stations encircled much of the fair, and the first line of the Paris *Métro* was completed, with Guimard's cast iron entrances using plant forms for motifs. Alphonse Mucha influenced the general spirit of the fair with his posters for Austria and the city of Paris, but his *Pavillon de l'Homme* was not executed. Oscar Wilde looked at the fair and exclaimed, "The only ugly thing at the Exposition is the public."

While the whole world seemed to be dancing to the tune of the exposition, there were others who were carefully studying the *Armes de la Terre et de la Mer* pavilion which housed the recent developments in European arms and armament. This new wave of nationalism, directly opposed to the international sentiment of the Victorian fair of 1851, was continued at the Pan American Exposition held in Buffalo the following year. "There is nothing at Buffalo in which the mass of visitors seem to be more interested than the big and little guns of the ordinance exhibits," said the *World's Work Magazine* in August 1901. When President William McKinley visited the Fair in September he was fatally shot.

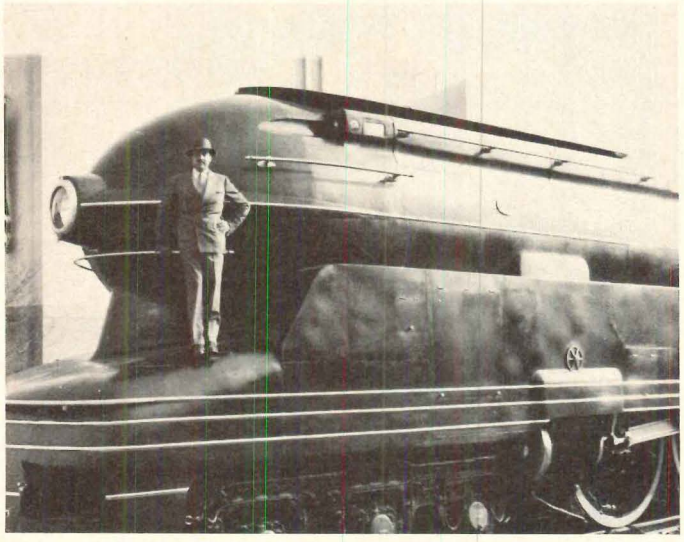
The largest fair of all, the St. Louis Exposition of 1904, covered over 1000 acres. There, a full-size reproduction of the Prince Pu Lun summer palace at Peking marked China's first official entry at a World's Fair. Washington University was built as an exhibit, olympic games were held, and anthropological exhibits displayed living people of exotic lands. The fair is best remembered, though, for introducing iced tea, ice cream, and the song "Meet me in St. Louis, Louis."

New York's Hudson Fulton Celebration in 1909 produced no pavilions. Using existing museum and city facilities for exhibits, it was the predecessor for the form of celebration now planned for the Bicentennial.



Binet's Monumental Gate for the 1900 Paris Exposition (below) no longer stands, but Alphonse Mucha's now highly prized posters (above) had more lasting effect. Evelyn Rumsey Cary's strange poster of Niagara rising from the Falls (right) symbolized Buffalo's 1901 Pan American Exposition.

Norman Bel Geddes's G.M. Auditorium (above) for the 1939 New York World's Fair was a full-scale model of part of the Futurama exhibit inside. After the show, fairgoers entered a full-sized world of elevated pedestrian walks with vehicles below. The Federal Building of the 1933 Chicago Fair was reproduced on American Can Company's can banks (below), and Raymond Lowey was photographed on his train for the 1939 "Railroads on Parade" show.



The Modern Era 1925–40

The sharply rising cost of hand labor after World War I, plus the difficulty of fabricating vast quantities of Art Nouveau forms on modern machinery, forced a new generation of designers. The famous 1925 Paris *Exposition International des Arts Decoratifs et Industriels Modernes,* which Germany and the U.S. did not attend, displayed examples of contemporary art work that was to "fulfill a practical need" and show "modern inspiration and originality." The lushness of the sensual form and rich materials of Art Nouveau was replaced by an intellectual appreciation for geometric and cubistic embellishments.

In November 1928, a convention was called in Paris to regulate International Expositions. It regulates the frequency and duration of exhibitions and requires that all general exhibitions fall into two categories; the first category requires participating invited countries to construct national pavilions; the second does not authorize the construction of national pavilions. (The United States did not enter into the protocol until 1968.) But even with the regulation there were almost as many fairs in the Modern Era as there were years. The propaganda value of them was too strong a lure.

At the 1933 Chicago World's Fair, symbolizing "A Century of Progress," the U-shaped Hall of Science theme building enclosed a court capable of accommodating 80,000 persons. Inside, it contained "the world's most beautiful drug store." The moderistic Travel and Transportation Building by E. H. Bennett and Hubert Burnham carried its roof on cables for engineering showmanship, and the Federal Building by Bennett and Brown, Jr. was reproduced on American Can Company can banks manufactured and sold at the Fair. The Radio Steel toy coaster wagon sales building—a colossal sculpture of a boy on his wagon—predated the pop art and blow-up sculpture of our day.

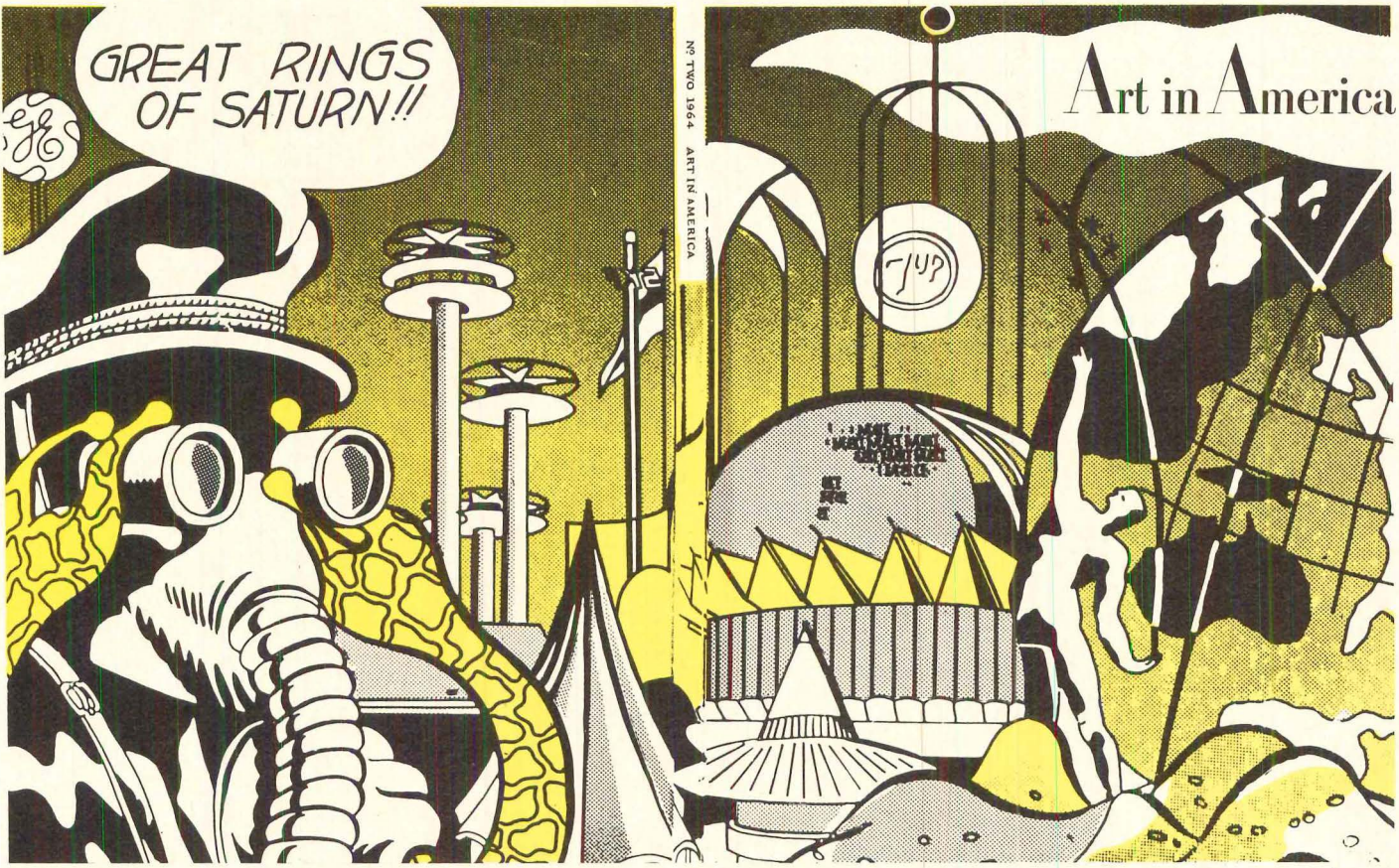
The 1937 Paris International Exposition was not as frivolous. The Eiffel Tower, covered in neon for the occasion, was flanked by Russia on the west and Germany on the east. Representative of most of the participating nations, their pavilions exhibited strong nationalist expression and control in 1937.

The 1939 New York Trylon and Perisphere successfully suggested the true spirit of a World's Fair. Designed by Harrison and Fouihoux, it expressed an optimism of a better world. The fair's commercialism, however, was openly touted as the daily attendance was counted on a mammoth Cash Register Building. Frank Lloyd Wright saw the fair as "the latest expression of the New York eclectic modernism," and remarked that "having seen the handwriting on the popular wall, the New York eclectics were crowding to be the first to be modern."

Watching the fireworks at the end of an evening at the fair, sculptor Malvina Hoffman recalled that "thousands of watchers . . . joined in singing the National Anthem—young and old rich and poor, black and white and yellow, shoulder to shoulder. The whole world seemed to be in a mass of people welded together for this dramatic moment of unity."

"Oh, that this moment might last," she wished.

The Atomic/Pop Art Era 1940–67



April 1964 magazine cover by Roy Lichtenstein reproduced by permission of *Art in America*.

The story of fairs is basically a story of peace. Rome was selected as the setting for a First Category International Exposition in 1940, but the Fair was cancelled because of a strong belief that it could not exist in an atmosphere of war. Soon after the war in 1951, London's Festival of Britain celebrated the 100th anniversary of the Crystal Palace, with the Royal Festival Hall on the South Bank as a permanent structure.

In 1958 Brussels opened the age of Atomic Energy to the public by providing the stage for Russia's successful sputnik. Edward Stone's circular United States Pavilion, with its hung roof, was reminiscent of another circular structure with a cable-supported roof that had been proposed as early as 1853 for the New York fair by Bogardus and Hoppin. The Philips Pavilion, designed by LeCorbusier, was also formed of cables, but they were stretched like cat's-cradle. Inside, the structure was filled with sound and projected light.

In 1962, President Kennedy said at the Official Groundbreaking Ceremonies of the United States Pavilion for the 1964 New York World's Fair, "This is going to be a chance for us in 1964 to show seventy million visitors—not only our countrymen here in the United States, but people from all over the world—what kind of a people we are. What kind of a country we have. What our people are like and what we have done with our people. And what has gone in the past, and what is coming in the future. . . . That is what a World's Fair should be about and the theme of this World's Fair—Peace through Understanding—is most appropriate in these years of the 60s. . . ."

And in 1964, under the guidance of Robert Moses, we did show what kind of country we have. We showed pop art, Billy Graham, Walt Disney and an "audio-Animatronic" Abe Lincoln. In New York no new rapid transportation system was provided, and the existing system was slow and left you far from the Fair grounds. The site was surrounded by two expressways and the Grand Central Parkway, with the roads seeming to lead more away from it than to it. The Monorail system, unlike that at the 1962 Seattle World's Fair, which provided a logical way to get to the fair and home again, circled only the amusement park.

On the same site as the 1939 fair, but reduced in size, the fair did, however, show the commercial character of New York in the middle 1960s—there were many products being sold, but few ideas. Demonstrations on opening day showed the discontent that existed, and would not go away. The Fair never really created a moving spirit; in fact, it seemed to show what to avoid. The general feeling was more like a Walt Disney Amusement Park, and ironically many of the exhibits were subsequently taken to Disney World. P/A called the fair "the most horrendous hodgepodge of jukebox architecture that has yet to be assembled."

The fair did produce one gem, though—a three-screen movie called "To Be Alive," produced by Francis Thompson. In all the confusion and competition of the fair, its theme was "to take a day or two out of time, to meet, to celebrate, the world which made us and which we are making."

The Expo Era, 1967–76

The Canadian Centennial was a fresh departure from more than a century of International Industrial Expositions. With its theme—Man and His World—Expo '67 concentrated on the spirit of man. Benefiting from the experiences of 1964, it made a serious effort to be less directly commercial and to give something of lasting value to Montreal. A subway system built for the city led directly to the center of the Fair.

Buckminster Fuller's geodesic United States Pavilion could have been described by: "its slender ribs of iron seem inadequate to sustain its vast size, and it presents the appearance of a balloon expanded and impatient for a flight into the far-off sky." But that was originally written in 1853 about the first U.S. Pavilion, which stood in New York City's Bryant Park.

San Antonio's HemisFair '68 was not an innovator of World's Fair architecture. It had a tower, like Seattle's 1962 fair. Its residual use of land and building improvements was not unique. What was unique, as with the New York fair of 1964, was again a Francis Thompson film. "There are other areas we would rather not think about," wrote W. H. Auden for "US." It was a revolutionary film to show at a Fair; on expanding movie screens it vividly and realistically showed many of the problems of America. And in addition, it was critical of its own sponsor.

The movie closed with the lines: "On each of us depends/What sort of judgment waits/For you, for me, our friends,/And these United States."

Movie-makers for Expo '70 in Osaka, Japan, took the idea of "US" and expanded it to show that our world depends on our behavior. There, Kenzo Tange's Festival Plaza, part of the symbol area of the fair, created a vibrant place for education and pleasure where three exhibit areas—a World of Mystery, a World of Harmony, and a World of Progress—were pierced by a sculpture of the Tree of Life to create a pavilion that seemed to be a three-dimensional poem.

We now have Expo '74 in Spokane, Wash., which I have not yet seen [but which is discussed on the following pages—ed.], and a Bicentennial Commission that has failed to designate an international exposition for the U.S. in 1976. This mistake could be rectified, however. The Bicentennial Era extends from 1976 to 1989 (the Constitution became effective in 1789), which leaves ample time for an International Bicentennial event to be planned for the U.S.

Author. Lawrence G. Zimmerman has been adding books and artifacts to his extensive collection of World's Fair memorabilia since 1939. Selections from his collection have been shown at the Metropolitan Museum of Art, in the New York Cultural Center's "1930's Expositions" show, and at the recent Radio City Music Hall Art Deco Exhibition. Mr. Zimmerman was architectural coordinator in the planning stages of the Theater for HemisFair '68 in San Antonio, where he designed a large photomural using "stock" photographs to show the confluence of cultures of the people of America.

List of International Expositions

Crystal Palace Era
1851, London, England, The Great Exhibition of the Works of Industry of all Nations; **1853,** Dublin, Ireland, Irish International Exhibition; **1853,** New York, N.Y., World's Fair for the Exhibition of the Industry of all Nations; **1854,** Munich, Germany, Allgemeine Deutsche Industrie Ausstellung; **1855,** Paris, France, Exposition Universelle; **1862,** London, England, International Exhibition; **1865,** Dublin, Ireland, International Exhibition of the Arts and Manufacturers; **1867,** Paris, France, Exposition Universelle; **1871,** Lima, Peru, Exposition Hispano-Americaine; **1871,** London, England, 1st Annual International Exposition; **1872,** London, England, 2nd Annual International Exposition; **1873,** London, England, 3rd Annual International Exhibition; **1873,** Vienna, Austria, Universal Exhibition; **1874,** London, England, 4th Annual International Exhibition.

Centennial Era
1876, Philadelphia, Pa., United States International Centennial Exhibition; **1878,** Paris, France, Exposition Universelle; **1879,** Sydney, Australia, The Sydney International Exhibition; **1880–81,** Melbourne, Australia, International Exhibiton; **1881,** Atlanta, Ga., International Cotton Exhibition; **1883,** Amsterdam, Holland, Exposition Coloniale et d'Expansion Generale; **1883,** Boston, Mass., Foreign Exhibition; **1884–85,** New Orleans, La., World's Industrial and Cotton Centennial Exhibition; **1885,** Antwerp, Belgium, Exposition Universelle; **1886,** Edinburgh, Scotland, International Exhibition of Industry, Science and Art; **1887,** Adelaide, Australia, Jubilee International Exhibition; **1887,** Manchester, England, International Exposition; **1888,** Brussels, Belgium, Grand Concours International de Science et de l'Industrie; **1888,** Glasgow, Scotland, International Exhibition; **1888,** Melbourne, Australia, Centennial International Exhibition; **1889,** Paris, France, Exposition Universelle Internationale.

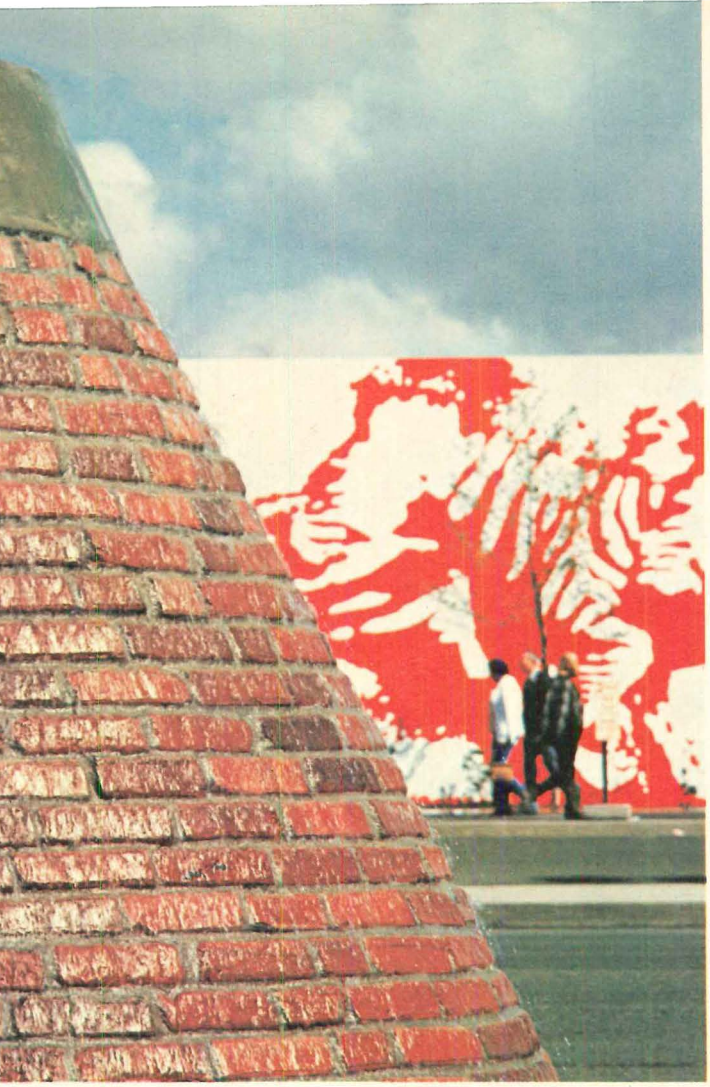
Neoclassic Era
1893, Chicago, Ill., World's Columbian Exposition; **1894,** Antwerp, Belgium, Exposition Universelle; **1894,** San Francisco, Calif., California Mid-Winter Exposition; **1894,** Lyons, France, Exposition Internationale; **1894,** Milan, Italy, International Exposition; **1895,** Atlanta, Ga., Cotton States and International Exposition; **1897,** Brussels, Belgium, International Exposition; **1898,** Omaha, Neb., Trans-Mississippi Exposition; **1898,** Dijon, France, Universal and International Exposition; **1899,** Venice, Italy, Venice International Exposition.

Art Nouveau Era
1900, Paris, France, Exposition Universelle Internationale; **1901,** Glasgow, Scotland, International Exhibition; **1901,** Buffalo, N.Y., Pan-American Exposition; **1901,** Charleston, S.C., South Carolina Interstate and West Indian Exposition; **1904,** St. Louis, Mo., Louisiana Purchase Exposition; **1905,** Portland, Ore., Lewis & Clark Centennial; **1905,** Liege, Belgium, Universal and International Exhibition; **1906,** Milan, Italy, International Exhibition; **1909,** New York, N.Y., Hudson-Fulton Celebration; **1910,** Brussels, Belgium, Exposition Internationale; **1915,** San Francisco, Calif., Panama-Pacific Exhibition; **1915,** San Diego, Calif., Panama-California Exposition.

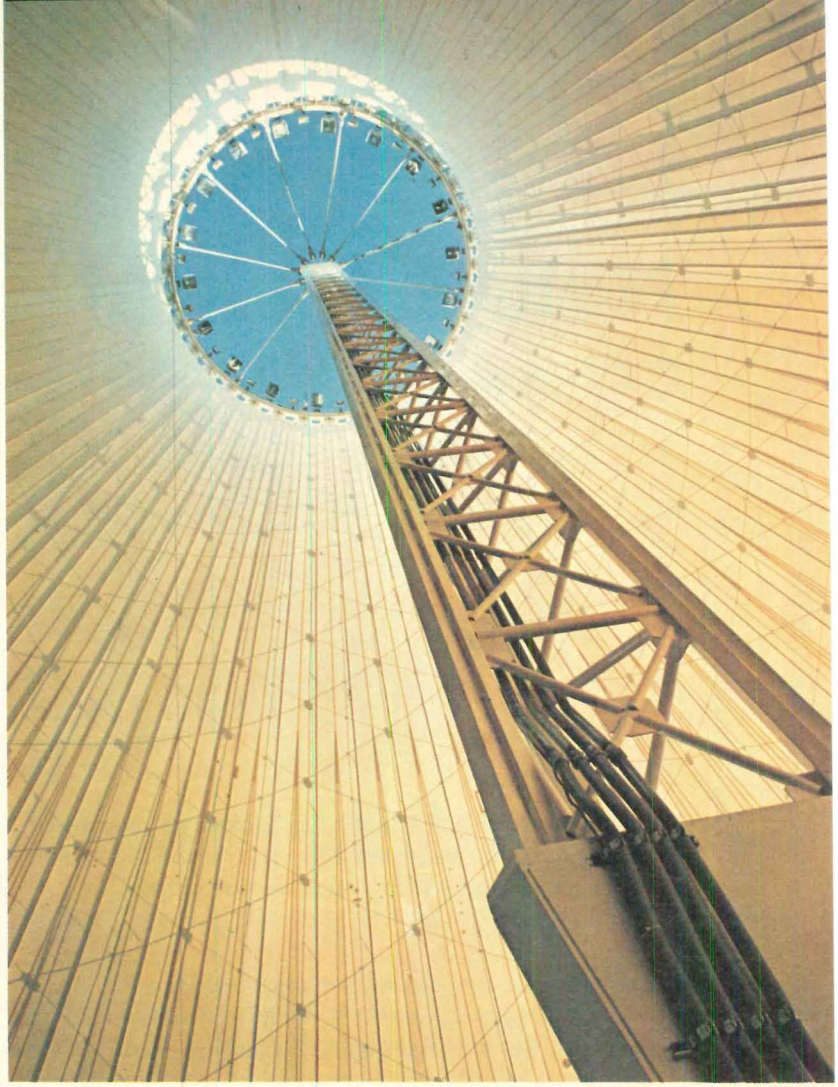
Modern Era
1925, Paris, France, Exposition Internationale des Arts Decoratifs et Industrielles Modernes; **1926,** Philadelphia, Pa., Sesqui-Centennial Exposition; **1929,** Barcelona, Spain, International Exhibition; **1930,** Liege et Antwerp, Belgium, Exposition Internationale; **1931,** Paris, France, Exposition Coloniale Internationale; **1933–34,** Chicago, Ill., Century of Progress Exhibition; **1935,** Brussels, Belgium, Exposition Internationale; **1935,** San Diego, Calif., California-Pacific International Exposition; **1936–37,** Cleveland, Ohio, Great Lakes Exposition; **1937,** Dallas, Texas, Texas Centennial; **1937,** Paris, France, Exposition Internationale; **1939–40,** San Francisco, Calif., Golden Gate Exhibition; **1939–40,** New York, N.Y., World's Fair.

Atomic/Pop Art Era
1949, Port-au-Prince, Haiti, International Exposition; **1951,** London, England, Festival of Britain; **1958,** Brussels, Belgium, Brussels International Fair; **1962,** Seattle, Wash., Century 21 Exposition; **1964–65,** New York, N.Y., New York World's Fair.

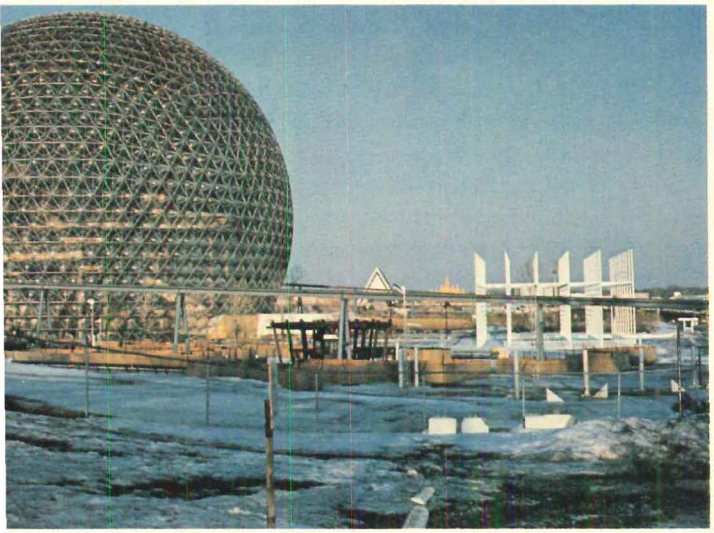
Expo Era
1967, Montreal, Quebec, Canada, Universal and International Exhibition; **1968,** San Antonio, Tex., World Exposition, HemisFair '68; **1970,** Osaka, Japan, Japan World Exposition Osaka 1970; **1974,** Spokane, Wash., Spokane International Exposition on the Environment, Expo '74 World's Fair; **1975,** Okinawa, Japan, International Ocean Exposition, Expo '75.



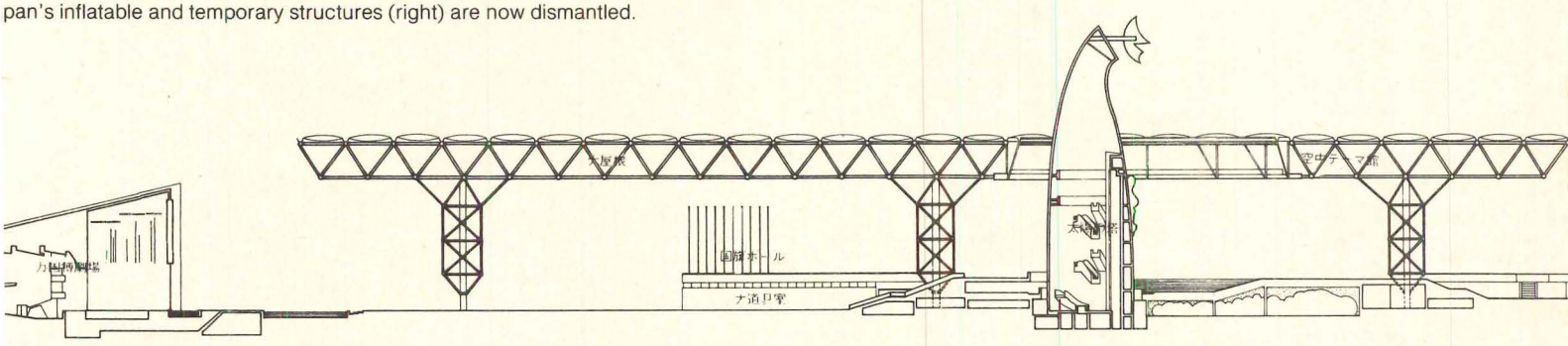
ebrating Tomorrow's Fresh, New Environment'' is the theme for
ane's Expo '74 World's Fair. Mural by Interior Design Group (Brent Blake,
or; Eric Grohe and Phil Kallsen, design team) and brick fountain by



Adkison, Leigh, Sims, Cuppage, architects and Trogdon, Smith & Grossman, associate architects (above left) contrasts with Naramore Bain Brady & Johanson's U.S. Pavilion (above right). For Expo '74 story, see next page.



ninster Fuller's U.S. Pavilion for Montreal's Expo '67 (above) is still
, as is Kenzo Tange's Theme Pavilion for Expo '70 at Osaka (below),
pan's inflatable and temporary structures (right) are now dismantled.



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Nature festival

Spokane's centennial World's Fair includes a number of commendable achievements and one triumph—the restoration of a dramatic riverfront that hugs the downtown core.

A full-fledged internationally sanctioned world's fair, Spokane's centennial represents a mighty accomplishment for so small a city. For architects it offers some creditable buildings and outdoor decorations, but it adds little to the development of exposition design. Mainly Expo, 74 celebrates the city's glorious natural endowment, an enormous waterfall that cascades right through the center of town. It signifies too a lesser but nonetheless remarkable endowment, a viable downtown retail core in this age of central area decay.

Within the first few decades after its founding, Spokane lost its splendid cataract to the railroads and their dependent terminals, warehouses, mills, and marshalling yards. Great snarls of high-level track bounding the central district made Philadelphia's once notorious "Chinese wall" look like a picket fence by comparison.

By the turn of the century, when the Olmsted Brothers presented plans for Spokane's improvement, reclaiming the falls and riverbanks stood first among their many proposals. But it was not till the late 1950s that civic groups and business leaders with investments downtown gathered advisors, planners, and economic consultants for the long, hard campaign. Many of the city's architects contributed in various, largely volunteer, efforts to crack the walls. Among them Tom Adkison played a major role, one that he would continue to play as executive site architect for Expo itself.

By the late 1960s, the effort had snowballed into a world's fair. With less than 200,000 people, isolated by hundreds of miles from other centers, Spokane faced unprecedented problems. Continuous issues over money and promotion gave the project a precarious, day-to-day existence. At the very end a blessedly mild winter and dollars enough to barely finish permitted Expo, 74 to open May 14th on schedule.

In developing the plans and tying down much needed federal aid, Spokane committed to public park use both the riverbanks and the islands uncovered by the track removal. At this point Adkison brought in Portland landscape architect Robert Perron to work out a program and a schematic design for the park the Olmsteds had first imagined. Perron's conceptual design provides the chief ordering ideas for the area, both for its interim use as an exposition ground and for its permanent role as a major city amenity. His scheme is simple enough. It starts with a hard edge where the downtown meets the first arm of the river, a slack-water pool that feeds Washington Waterpower Company's downtown hydro station. As it extends across two islands to the far bank, Perron's proposed landscape progressively approaches a reconstruction of the landform and flora that lined the river before the city was founded. It is a classic conception, perfectly fitting the theme of a fair dedicated, as this one is, to the potential harmony of man and his natural environment.

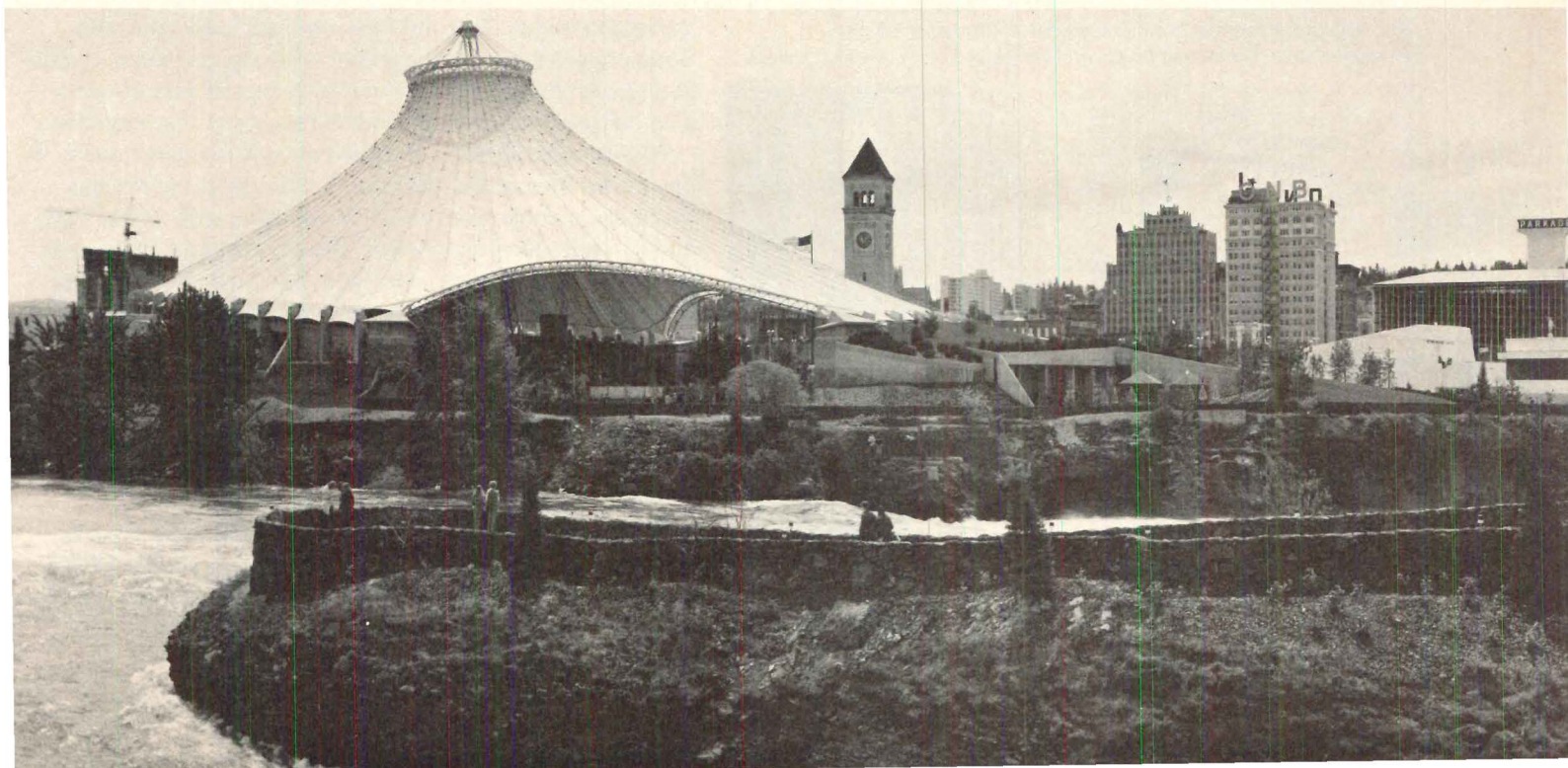
Perron has just begun work on the final park design; in a year or two its outlines should be visible. For now, Expo rules, although nothing man-made could possibly dominate the falls—and Expo wisely does not try.

Beyond this basically sensible decision, the fair design somehow breaks down. Circulation, which always *has* to serve as the armature in exposition design, is curiously confused. It seems willfully obtuse, for instance, that the delicate, well-detailed pedestrian suspension bridges (carrying beneath their floorboards powerlines that once festooned the sky over the falls) run precariously over the rapids and whirlpools—and go absolutely nowhere.

The main right-of-way across the islands, Howard Street, now closed to traffic, has been made a hopeless maze to keep people from just walking in one side and out the other. Yet in the middle of this axis, a truss bridge which once carried cars across the rapids has been painted white, with colorful canvas infill, to make the happiest pedestrian place on the fairground. A long diagonal that should connect the Red Gate downtown and the Purple Gate, where the buses park, has become an obstacle course. Some of the pavilions have been so effectively hidden that only the hardiest of fairgoers will ever find them. These problems doubtless stem from the tenuous nature of the whole enterprise from the first; only an overriding need to cheap-job things could have insulated people so well from the fair design lessons of Lausanne, Montreal, San Antonio, and Osaka—even Seattle and Disneyland.

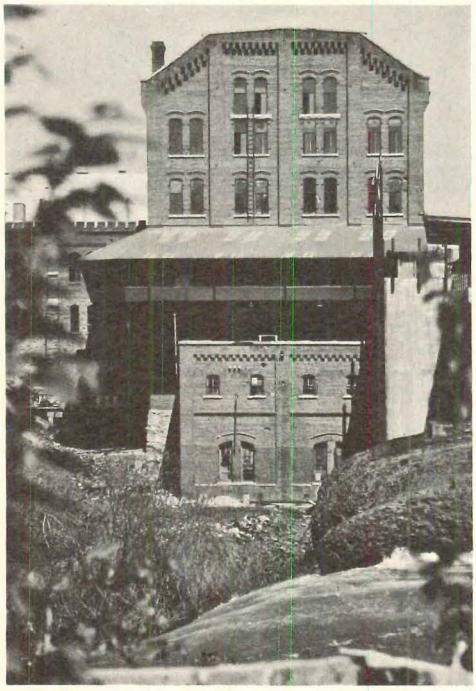
But highspots do exist. Interior Design Group of Seattle has scored neatly with white-pipe-and-colored-canvas butter-

Dominant symbols of Expo, 74 are the 130-ft-high U.S. Pavilion tent (Naramore, Bain, Brady & Johanson, architects; Skilling, Helle, Christiansen, Robertson, structural engineers) and the surviving clock tower of Great Northern Railroad Station. Photos: Chas. R. Pearson.



fly mobiles that mark the entrances. Even better are their heroic wallpaintings that embellish key surfaces: a herd of red zebras stampede past downtown, for instance, and mark the Red Gate; and a great blue owl glides silently along the four-story-high white wall of the John Deere warehouse outside the Purple Gate.

Few of the exhibitors, or the designers of the standardized pavilions that house most of them, have paid any attention to the site. It is practically impossible to sit and look at the falls, let alone do so with a beer or snack in hand. Only the power company, with its generations of dependence upon the falls, has risen to the occasion, erecting a cableway that drops through the spray into the gorge—and back. No other world's fair seems likely to duplicate *this* ride. Outside the grounds, sensitive restaurateurs have responded to the setting; one has built a neat gallery around an old brick mill building that hangs out over the rapids.



Expo spinoff includes old flour mill on river, remodeled for shopping and dining. Enclosed pedestrian bridges link Riverpark Square (foreground; John Graham & Co., architects) and other downtown stores.

Photos above: Roger Montgomery

Fortunately two happy architectural events—one big, one small—relieve this otherwise dull set of buildings. Uncle Sam and his architects came through at the last minute with a really good centerpiece, the United States Pavilion, by architects Naramore, Bain, Brady & Johanson of Seattle. No other American fair has had such an effective combination of festive pavilion and city symbol, located in so nearly the precisely right spot. The other architectural delight, another last-minute success, is a neat little exhibit shelter for the forest products industry. Seattle architect Miles Yanick did this open pole-framed structure. Far better than anything else there, it serves up a palatable morsel of the Northwest Regional Style one expects to see in the state of Washington.

The big U.S. Pavilion has all the geometric clarity a tent structure ought to have. From the inside looking up the effect is splendid, the muted light just right. From across the falls it gleams regally. Its white hyperboloid shelters a generally effective exhibit designed by Herbert Rosenthal. He did some wonderful fountain sculptures made of plumbing brass and bathroom fixtures. Only a few things never got worked out: the geometry of the theater waiting line area, for instance, looks very much a makeshift concoction.

So successful is the pavilion in terms of popular imagery that a campaign has already begun to save it as a permanent feature of the park. This holds a particular irony: one of the constraints the U.S. Department of Commerce imposed on the designers was quick demountability, and this constraint led, in part, to the tent solution. The tent is designed for removal when the fair closes, leaving only a 21,000-sq-ft permanent building, now under it, and the theater seating, built to remain as an outdoor theater. Now the tent's success poses a few puzzling technical problems. It was not designed for snow, and Spokane can get plenty. Solutions now under study include taking down the pvc-coated fiberglass fabric roof every winter, opening holes in the valleys for snow to pass through, or preventing snow accumulation with recirculating anti-freeze. The problems Spokane now faces are Space Age versions of those met in saving remnants of other West Coast fairs, Bertram Goodhue's plaster and chicken-wire delights in San Diego and Maybeck's in San Francisco.

Perhaps the big Expo story lies outside the fairgrounds. In downtown Spokane a real rebirth of the retail district has taken place concurrently with fair-building. With the recent addition of a department store, the city can boast four in an eight-block area, all linked to each other and to parking by second-level pedestrian skyways—an extraordinary retail concentration for a city of this size.

The biggest and newest element of this development is the Riverpark Square complex. It includes a 750-car multistory garage right across the street from Expo and is linked at the second level to all of the department stores, other garages, and the new Washington Mutual Bank tower.

Just across the street from all this stands Expo, soon to close. Yet the important part will remain, the Spokane Falls regained for man and nature—a rare double victory for those frequent antagonists, commerce and environment.
[Roger Montgomery]

Top photos, Chas. R. Pearson

Photos above and below, Roger Montgomery

At Expo (clockwise from top left): U.S. Pavilion reigns over bright jumble of kiosks and graphics; two-acre space under tent houses variety of exhibits; plumbing fountain is part of central theme exhibit by Herb Rosenthal & Associates; waterfront Opera House by Spokane architects Walker, McGough, Foltz & Lyerla is Washington State Pavilion; power company's cable ride through cataract spray; "butterfly" mobiles by Interior Design Group (Brent Blake, director; Eric Grohe, Phil Kallsen, design team) identify fair gates by color; American Forest Pavilion by architect Miles Yanick; Howard Street Bridge, revamped for pedestrians with colorful canvas.

Photo above, Roger Montgomery; below, Chas. R. Pearson

Photo below, Chas. R. Pearson

Photo below, Roger Montgomery

From pumpkin to coach

Temporary corporate office space designed within rigid time and economic constraints was so successful that a second phase expansion is being completed.

Like many major corporations of the post-World War II society, Cummins Engine Company of Columbus, Ind. planned to embody its corporate soul in a monument of 20th-Century architecture befitting its aspirations. With all due good taste—for which the company is already quite well known—Kevin Roche–John Dinkeloo & Associates were selected as architects. Cummins got its monument, at least on paper, but in the meantime, it had outgrown its quarters.

The Grand Scheme was laid to rest, for the moment, in search of a temporary solution. A decision was made to consolidate the offices in excess warehouse space (built in anticipation of expanded production), with Bruce Adams as the architect for the project. The first phase, which accommodates 500 people, was completed in early 1971; a second phase now being completed will have a capacity for another 250; and third and fourth phases are being discussed. What began as a temporary solution to the corporate office space problem has worked so well that Kevin Roche may very well find himself designing a warehouse.

The original warehouse building, designed by the Cummins in-house Facilities Department and erected in 1967, is a standard steel-frame structure with 40′x50′ bays, steel joists, metal decking, and exposed HVAC, all enclosed in precast concrete, tilt-up, windowless panels.

The exterior shell was left intact because an "only temporary" solution could not justify expensive façade changes. The interior surfaces were spray-painted a neutral color, with the HVAC elements somewhat more colorfully elaborated. Undaunted by the prospect of no natural light, Adams designed a free-standing, two-level structure running at a 45 degree angle to the main column grid. The first phase has two main work areas, a reception area, a cafeteria (later converted to other uses), and a mail room; the second phase adds another work area. Although glass replaced some panels at the entrance and reception area, the structure's spatial complexity, the ramping system, the volumes and color create such interest that the lack of natural light is not an issue.

All of the office space is open; there are no doors. Offices

Exterior (above) and interior (right) at the entrance.

are U-shaped, stacked two high, with secretaries' work areas adjacent to and separated from the central clerical space by circulation. Two such configurations are linked by the cafeteria, mail room, and an empty space at the foot of the ramp which, for the last three years, has had a sign that reads "watch this space for important information."

As no large sum of money could be spent on new furnishings, about 50 percent of the furniture is from the company's former offices. Low walls around the central work area enclose used file cabinets and lend a certain cohesiveness to an odd assortment of steel desks and chairs.

After the first phase was completed and in use, noise from the secretaries' typewriters, which were located directly adjacent to the offices, was found to be a problem. The second phase design was improved so that circulation space serves as a buffer separating the offices from the secretarial area.

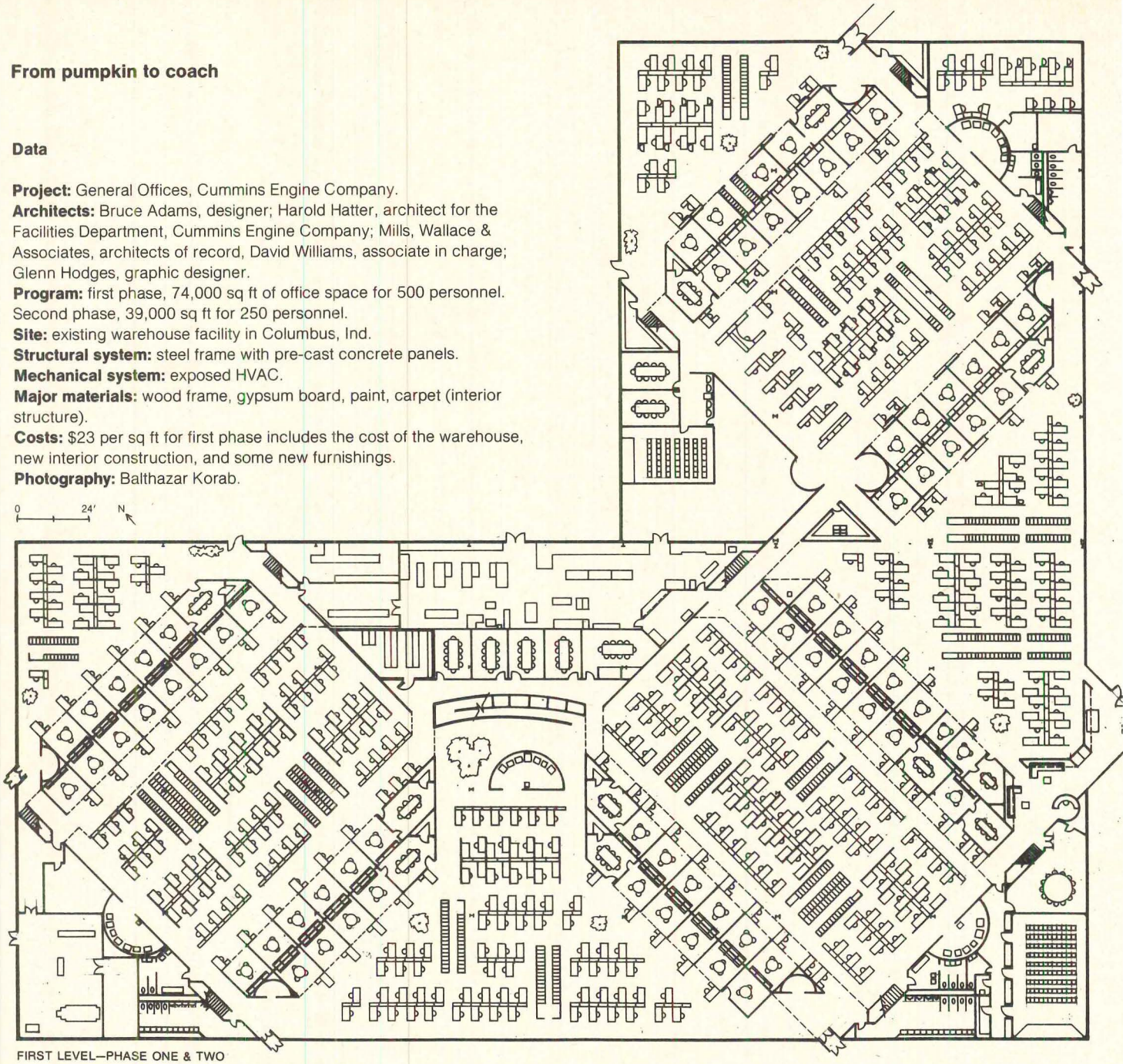
Reaction to the new facility has been very favorable. The informal, nonhierarchical plan has met with approval from everyone, and the casual, unintimidating atmosphere has proved productive. When plans were being drawn for construction, they aroused so much interest that executives who were not scheduled to move into the new facility decided they wanted to. Planned to last 3 to 5 years maximum, the building is close approaching the upper limit, but there is no thought of abandoning the space in the near future.

The success of this impromptu office space makes one feel that new corporate office buildings are like the clothes with which we adorn ourselves—somewhat ill-fitted, but just marvelous to look at. In that light, one wonders whose interests will be best served by the eventual construction of the Cummins headquarters building. [Sharon Lee Ryder]

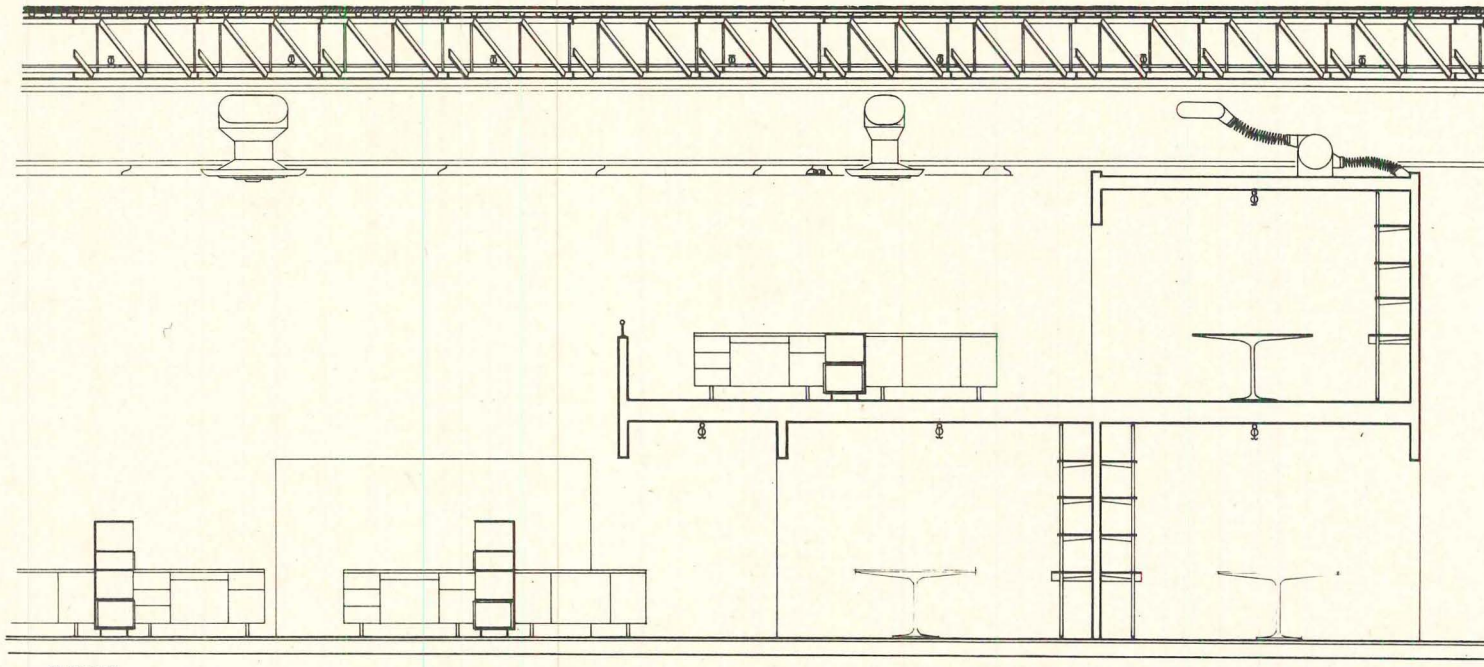
From pumpkin to coach

Data

Project: General Offices, Cummins Engine Company.
Architects: Bruce Adams, designer; Harold Hatter, architect for the Facilities Department, Cummins Engine Company; Mills, Wallace & Associates, architects of record, David Williams, associate in charge; Glenn Hodges, graphic designer.
Program: first phase, 74,000 sq ft of office space for 500 personnel. Second phase, 39,000 sq ft for 250 personnel.
Site: existing warehouse facility in Columbus, Ind.
Structural system: steel frame with pre-cast concrete panels.
Mechanical system: exposed HVAC.
Major materials: wood frame, gypsum board, paint, carpet (interior structure).
Costs: $23 per sq ft for first phase includes the cost of the warehouse, new interior construction, and some new furnishings.
Photography: Balthazar Korab.

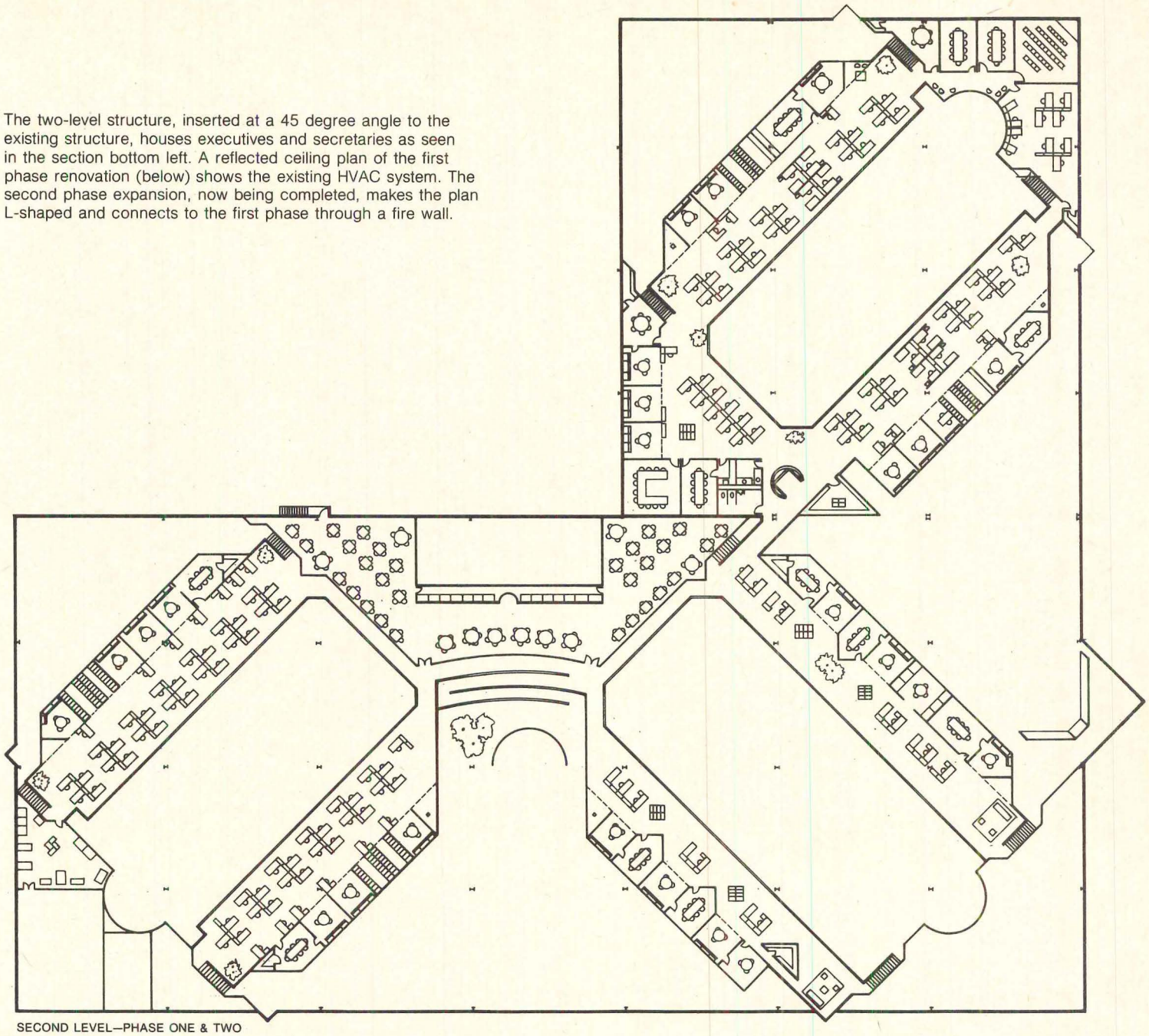


FIRST LEVEL—PHASE ONE & TWO

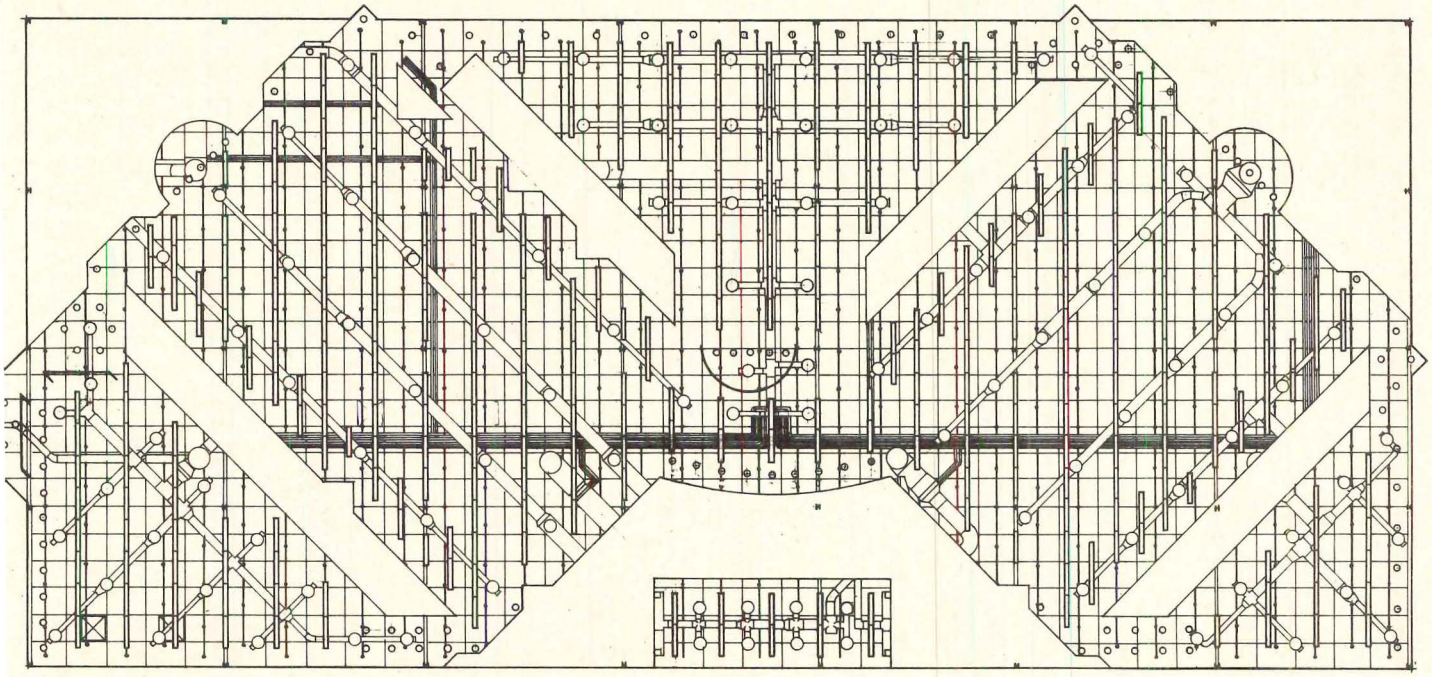


SECTION

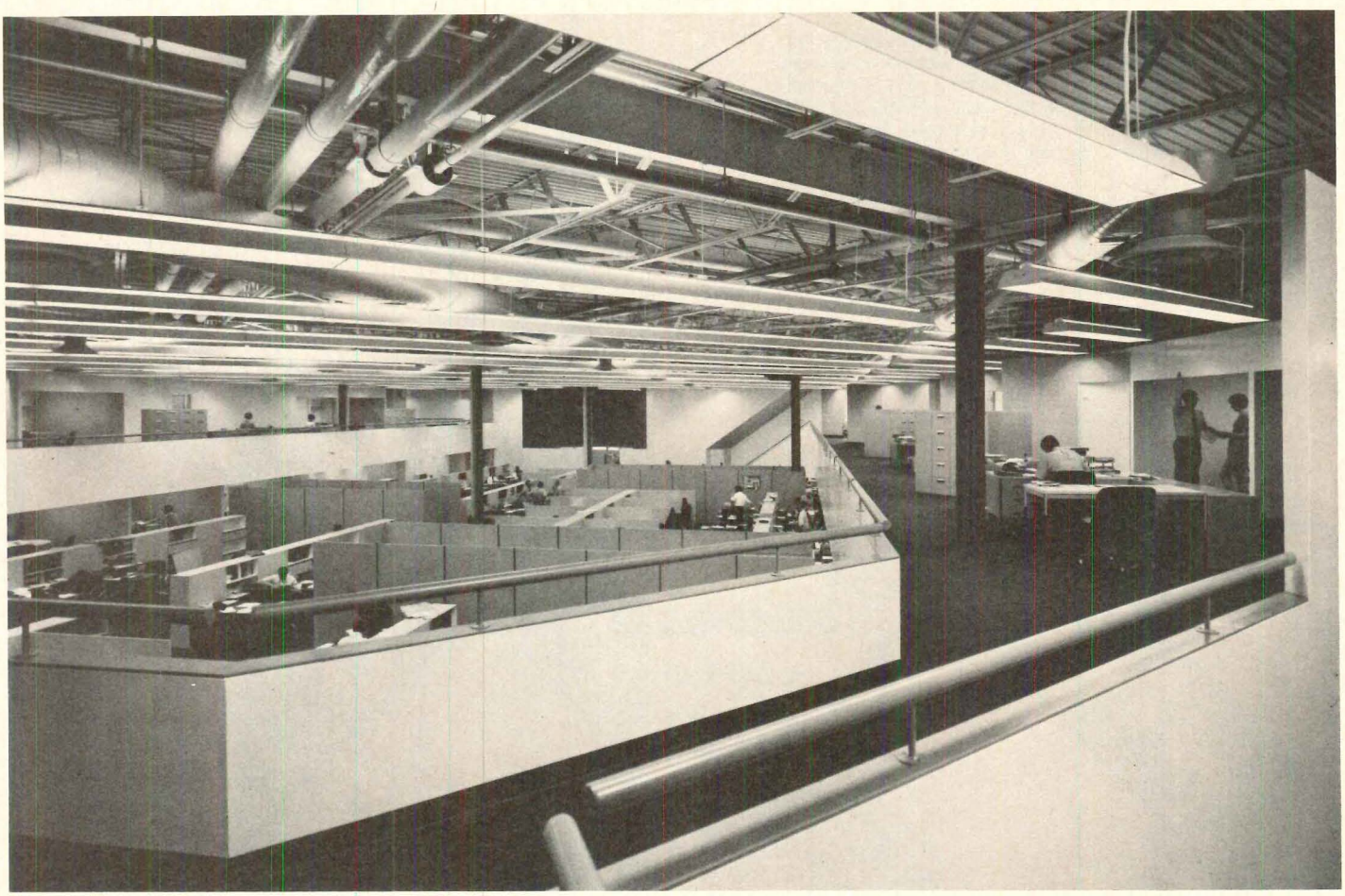
The two-level structure, inserted at a 45 degree angle to the existing structure, houses executives and secretaries as seen in the section bottom left. A reflected ceiling plan of the first phase renovation (below) shows the existing HVAC system. The second phase expansion, now being completed, makes the plan L-shaped and connects to the first phase through a fire wall.



SECOND LEVEL—PHASE ONE & TWO

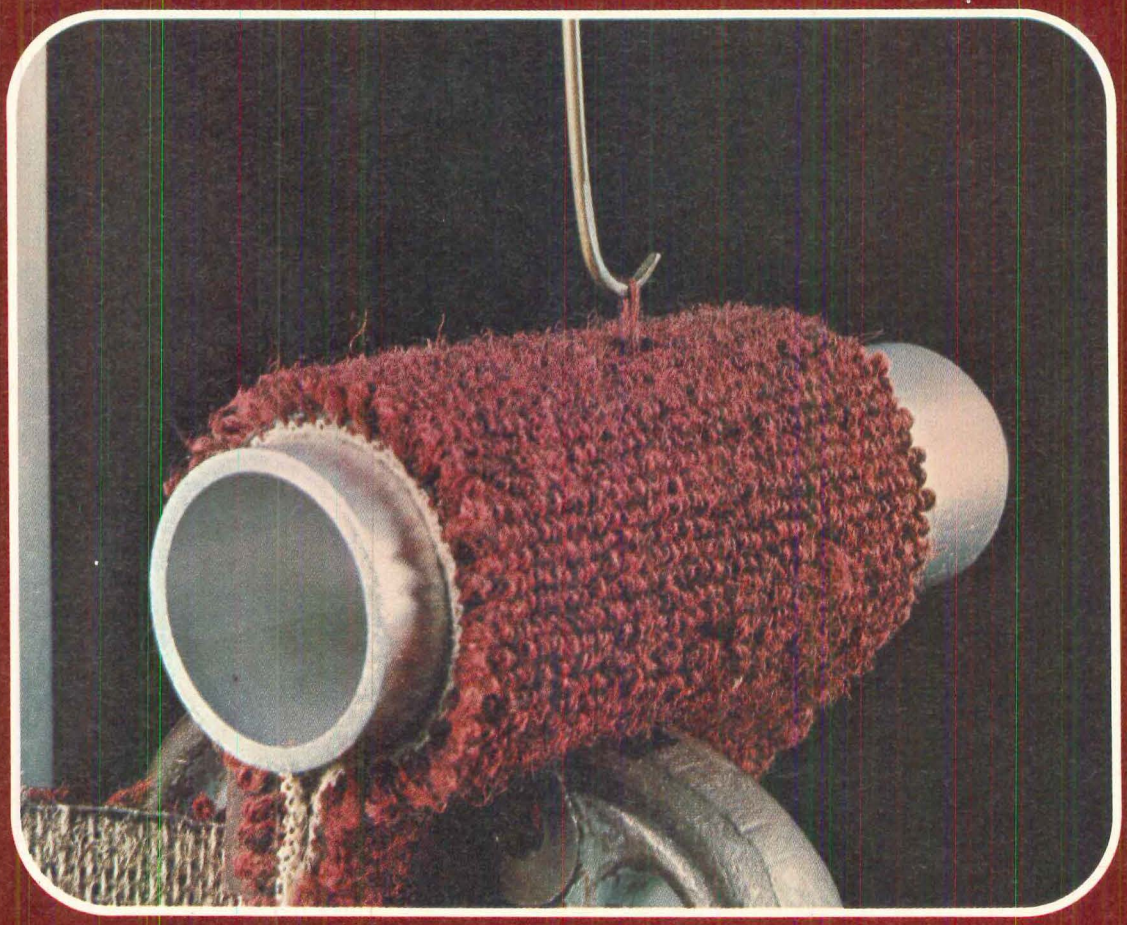


REFLECTED CEILING PLAN—FIRST PHASE



Work areas seen from above and below.

Ramp connecting the two levels with graphic wall on the employees cafeteria (above) and ramp from lower level looking through to a central work area (below, right). View toward reception area (below, left) where daylight peaks above partition.



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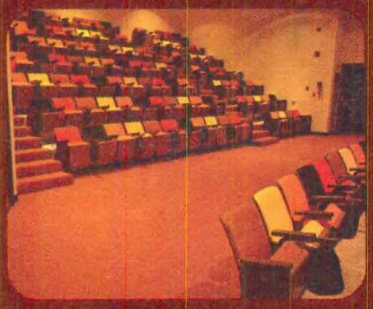

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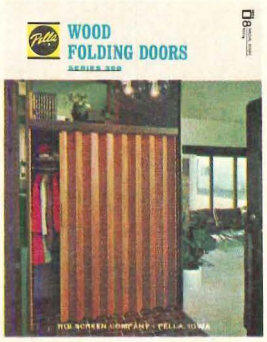

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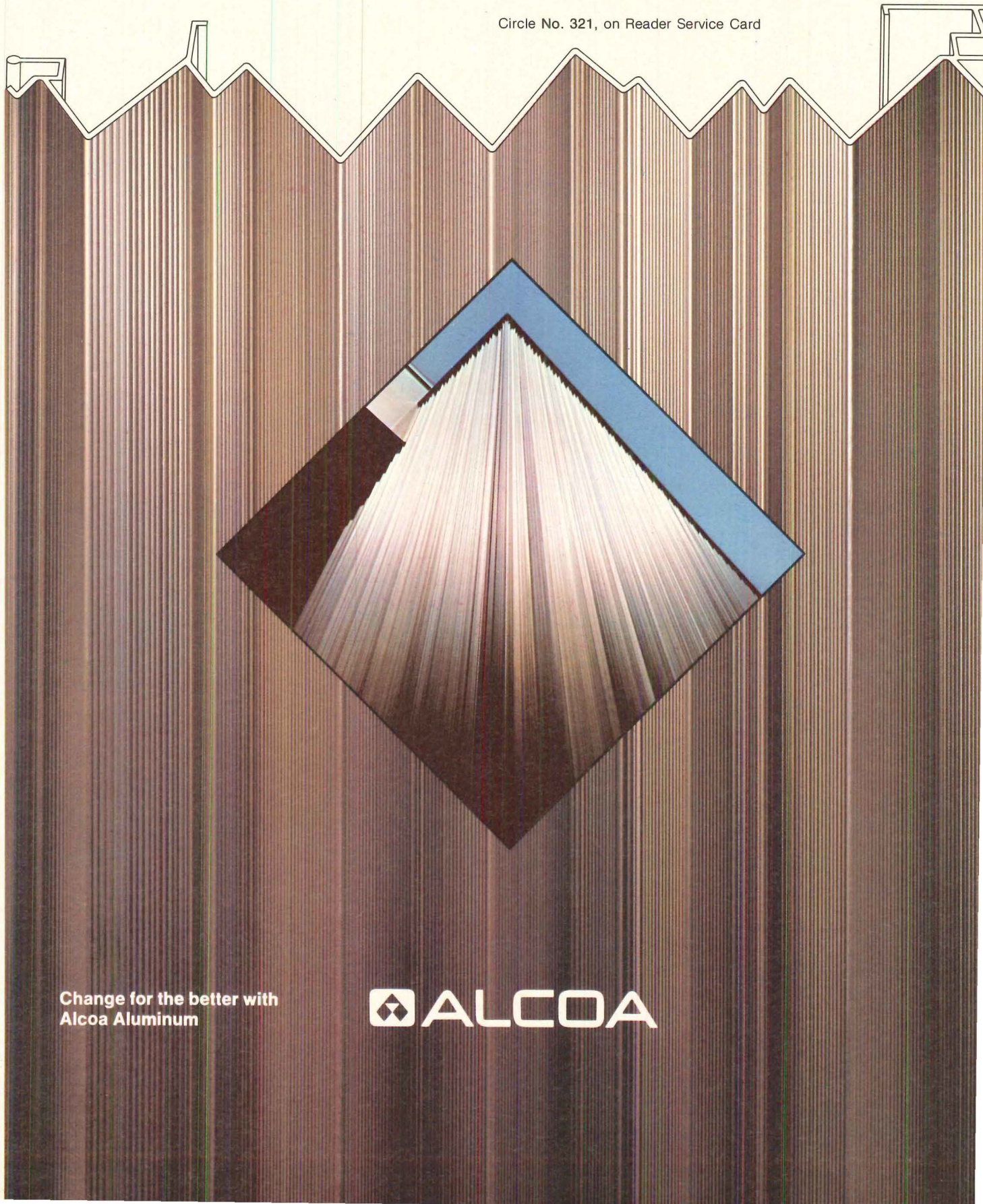

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Materials evaluation: Part II

Harold J. Rosen, PE, FCSI

In this discussion of systematic product evaluation, the author proposes an investigatory method which is both broad and comprehensive. The investigator determines scope.

The use of a systems approach in the evaluation of new products discussed in the July 1974 issue of P/A can be applied to the selection of existing products or the formulation of new products for a new project inasmuch as the quantitative and systematic evaluation provides a basic performance analysis.

Experienced designers and specifiers select existing products on the basis of past experience and do not necessarily subject the product to the scrutiny of a systematic analysis. In many cases, selections based upon past experience are adequate. However, by following a systematic appraisal the inexperienced designer and specifier as well as the more learned professional will be less likely to overlook an important ingredient that may well spell trouble.

The MOAT's (Method of Assessment and Testing) discussed in last month's article may serve as a vehicle for analyzing material selections. Another approach is to use the performance concept in systems building as discussed in the August and September 1973 issues of P/A. In that system, attributes are investigated and requirements, criteria, and test methods are established to provide performance standards for systems, subsystems, and components. The same process can be extended to basic materials and products. Another approach that deals with selecting and evaluating materials or products for a new project is contained in a new book by the author of this column entitled *Construction Specification Writing—Principles and Procedures* published by John Wiley & Sons. In essence the analysis is based on an investigation of the following broad categories: Function, Aesthetics, Serviceability and Environment, Compatibility, Construction demands, Code requirements, Economics and Maintenance.

For each of these categories one must investigate numerous subcategories to assure complete assessment of the material or product. When we deal with conventional design and construction we usually are involved with basic materials and products rather than with major systems or components. We can evaluate the requirements of a project, subject the criteria to an analytical appraisal and select existing products to meet these criteria. Or, we can formulate performance requirements and specify performance so that a manufacturer can formulate a new product to meet design requirements.

For example, we must assess the functional requirements of a structural system on the basis of structural adequacy, live loads, dead loads, wind loads, deflections, and seismic conditions. Specific materials may be required for sound reduction, thermal efficiency, fire safety, weatherproofing and other similar requirements. Parameters for each function must then be established and investigated. Sound reduction may involve sound absorption and/or reduction in sound transmission. For sound absorption the criterion is the noise reduction coefficient (NRC). The NRC should be determined for the space involved and then reviewed for this rating. If reduction in sound transmission is essential, the materials or composite construction are reviewed with respect to the Sound Transmission Class (STC) ASTM E90. Similarly, if fire protection is a necessary function of a material or a composite then the flame spread ASTM E84, or combustibility ASTM E136, or hourly rating ASTM E119 is investigated after the parameters are established.

After the functions are established the aesthetics must be checked. Paint colors and/or visible sealants are essential aesthetic considerations and an assessment must be made as to whether the color, gloss, or texture will be affected as a result of their exposure.

Serviceability and environment are the next variable to be investigated, since these determine the durability of the materials under consideration. Serviceability deals with their physical abuse, such as abrasion resistance, wear resistance, indentation, puncture, or with chemical attack such as might be expected in an industrial plant, a laboratory, or a hospital. Environmental hazards for exterior materials include weather conditions—sunlight, precipitation, temperature, gases, wind, and bacterial life. A more detailed explanation of these hazards is contained in the June 1974 P/A "Specifications Clinic."

Compatibility is considered next. This is essential if two dissimilar materials are being used in a combined situation. Their chemical interaction may be suspect.

Construction demands, including handling, site hazards, procedures, and sequences, must be appraised to determine whether materials selected will withstand this operation and whether special precautions must be introduced.

Code requirements must then be investigated to determine if additional constraints on the material must be imposed.

Then, the economics of the situation is investigated to assure that the selection is within the budget limitations and the serviceable life of the structure.

Finally, material maintenance must be considered to attempt balancing initial costs and maintenance costs.

Author: Harold J. Rosen is an independent construction specifications consultant in Merrick, New York.

Interior of contemporary refrigerated building shows 20-ft-high racks serviced by high-lift truck.

The iceman cooleth

Arthur L. Spaet

The refrigerated building has become a major station in the journey of perishable goods to the marketplace. More sophisticated than its forebears, the contemporary version must be carefully planned, detailed, and built.

The refrigerated warehouse has become increasingly important to our economy as processed, frozen, prepackaged and ready-to-eat foods and beverages proliferate and as the tendency toward longer warehouse retention and preservation times for foods, flowers, beverages, and baked goods grows.

Initially, the refrigerated warehouse was a vapor barrier and insulation envelope supported in a structural framework capable of taking heavy static floor loads. The refrigerated warehouse of today is a sophisticated and complex machine for receiving, sorting, processing, recombining and packaging, and transferring and shipping perishable merchandise. All the while it maintains a selected optimum temperature and specialized environment for each respective class of product.

Selected gaseous atmospheres can speed up or retard food or flower ripening. Odor, bacteria, spore, mold, and rot control, humidity control, precise air circulation, sanitation, ultraviolet light, fumigation, and chemical baths are among other specialized techniques incorporated into refrigerated warehouse design. In addition, automated mechanisms, stacker elevators and cranes, computer control, specialized pallets and containers, fork lift trucks and motorized transport, computerized sorting and inventory control, security control, prefabrication of structural, panel and partition elements, and foamed-in-place insulation may now be incorporated into the overall design. With fork lifts, heavy pallet trucks, and drive-through features, dynamic and impact floor loading requirements must also be considered.

By definition, perishables stored at temperatures above 32 F are stored in coolers. At 32 F and below the facility is called a freezer. While these are somewhat anachronistic considerations, the fact is that a modern refrigerated storage facility consists of spaces maintained at several different temperatures both above and below 32 F, and may also require a fast freeze section for merchandise just received, prior to storage. Construction details are more critical and require greater care in installation at the lower temperatures—whose common lower limit is about —20 F.

Refrigerated structures and cold rooms have many features commonly found in conventional structures. Whether single or multiple story, refrigerated cold rooms must satisfy requirements of: 1) fire-safety 2) building codes 3) structural adequacy.

They differ in certain major aspects.

1 The design must prevent heat flow through heavy use of thermal insulation in ceilings, walls, and floors.

2 It must incorporate superior vapor barrier throughout, both in connection with the insulation and in the exterior wall and roof construction. Easy migration of moisture through the structure is almost a guarantee of eventual faults and failures.

3 The ground must be specially prepared to prevent or eliminate initially entrapped moisture, and to prevent subsequent inflow of moisture or vapor. In slab-on-grade construction some form of heat must be provided to the ground to prevent heaving of frozen earth below the floor slab.

4 Consideration must be given to warehousing, storage, and materials-handling practices including the use of conveyors and elevators, loading and unloading docks, ramps, and vehicle parking space.

5 Mechanical refrigeration with air or water cooled condensers and local room coolers are the heart of the installation. The use of stand-by equipment, continuity of operation, and specialized maintenance procedures and training of personnel must be considered.

In general, single-story warehouses cost less to build. However, single-story buildings have greater floor slab areas to be protected against possible soil freeze-up. As space requirements increase, horizontal travel and handling distances increase; site and real estate costs expand.

Multi-story warehouses have less total exterior surfaces of walls and roofs and consequently a lesser cooling load per unit of floor area or merchandise stored. However, they require more complex construction and more sophistication of materials-handling gear. For many years during the 1920s and 1930s 3 to 12 stories was an accepted refrigerated warehouse arrangement. Consequently, one-story buildings, with ceiling heights of 16 to 25 ft, came into favor. Increasing storage space requirements and high land costs now enhance the multi-story design.

Today, the larger refrigerated warehouse combines both multi-story and single-story construction, with horizontal circulation, packaging, and sorting in the one-story section, and refrigerated storage, higher stacking, and vertical transportation in the multi-story section.

Vapor barrier

The most critical aspect of cold storage design and installation is the attention to detail and care with which the vapor barrier is assembled in place. More failures are attributed to faults in the vapor barrier than to any other cause. Just as steam pressure and water pressure exist, vapor pressure is a major phenomenon to be reckoned with in cold storage rooms. Vapor pressure differentials force invisible moisture to migrate into and through interior wall and ceiling construction and into the attached thermal insulation. This will tend to con-

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dense from vapor into moisture droplets, freeze, expand, and cause interior damage, rupture and failure, just as frost can damage the exterior of a structure.

It is strongly recommended that the vapor barrier be installed and carefully inspected ahead of and independently of the insulation. Particular attention must be given to methods of insulating and sealing necessary penetrations through the barrier such as pipes and electric conduit. A better course: plan design and layout for as few penetrations as possible.

For example, electric conduit for light may run above the insulated ceiling with a penetration at each light fixture. Alternatively, all conduit for light fixtures may be run below the insulated ceiling with only one conduit penetration drop at a central distribution point. The latter is highly preferable. As an incidental fine point, vapor seals and drains should be incorporated into electric conduit systems to prevent or minimize vapor migration and condensation in the conduit.

Where electric conduit or ceiling hanger rods or meat hooks or similar supports penetrate the cold room envelope, thermal insulation should be applied on such rods, conduit or hook supports above the ceiling and outside the vapor barrier. Light fixtures should be vapor-proof since moisture will condense on cold room interior walls and other surfaces. Surface mounted or suspended incandescent fixtures are commonly used and should be simple and easy to wipe clean. Recessed lighting fixtures are rarely used because of the problem of creating an effective vapor seal and joint at the fixture perimeter.

Vapor barriers may be provided by: structural members or metal panels or sheets; membranes of foil, treated paper or felt, or plastic sheets; or coatings of mastic or adhesive materials, applied by spray, trowel, brush, roller, or mop. Metallic foils were extensively installed for this purpose in the past. Today films such as polyethylene sheet are more commonly used. These must be carefully lapped at junctions and secured at ceilings and walls with compatible tapes and adhesive, both to prevent tearing and to assure positive continuity of the vapor barrier. Staples or nails should be avoided, although nailing strips or staples may be necessary for adequate physical support.

The vapor barrier is always installed on that side of the thermal insulation which is exposed to the higher vapor pressure, usually the warm side. Where reverse water vapor flow can occur for extended periods, special study and treatment are required. Such a condition can occur in winter where a cold room is built as a lean-to outside the building.

Insulation

Thermal insulation is available in an almost infinite variety, varying from the old accepted standbys of flexible glass or cork or organic fibers to rigid cellular foamed products such as polystyrene, polyurethane, and foamglass. More recently, foamed-in-place insulating materials have become available.

Generally desirable features of insulating materials are: 1) high insulating value 2) dimensional stability 3) non-attraction for insects and vermin 4) low flammability 5) freedom from odor or emission of solvent vapors over a long period of time 6) physical strength 7) low moisture permeability.

Probably the leading contender as an insulating material is polyurethane foam board. This has an excellent U-factor, is light in weight, relatively resistant to breakage in shipping and handling, relatively resistant to moisture migration, and until recently, was reasonably priced relative to its thermal properties. At the moment, as with many other specialty materials, availability may be a problem; in recent years much polyurethane board was from Japan. Organic materials and wood should be avoided if possible, since these are susceptible to decay, rot, and attack by fungus. Loose or granular fill or blown-in types of insulations tend to settle and leave voids.

Recommended thickness, fabrication procedures, and methods of securing of the insulation materials are found in manufacturers' literature, or may readily be determined by conventional heat transfer calculations. Four-in. thickness is common. Frequently six-in. or more thickness of insulation is used. Thickness will vary, with interior temperatures maintained versus ambient outside temperature.

When designing a cold storage room into an existing building, check temperatures in the adjacent rooms. In the case of an existing bottling plant, the adjacent room on the other side of a cold room housed a large steam-jacketed kettle, and the average room temperature was normally 100 F rather than 70 F as the designer first assumed. Also, columns in cold rooms must be insulated in the same manner and with the same features as the walls.

Finishes

Finishes in cold storage construction follow a slightly different set of rules from those commonly accepted for more conventional interiors. A permeable finish of some sort is desirable to cover and protect the insulation. Cement-plaster scored into two-, three-, or four-ft squares or rectangles is commonly used. However, thereafter a large number of caveats follow, with no simple, easy, all-useful design solution.

Paint finishes are to be avoided. If paint or other brushed or troweled-on finish is used, great care must be taken in preparation of surfaces to assure compatibility of the paint and excellence of bond with the cold room surface. However, an interior paint finish may form a vapor dam and cause unwanted moisture formation inside the insulation. If paint is used for the purpose, it must be a type permeable to vapor. Paint should be totally avoided on any interior metal finish surface.

Where sanitation resistance to abrasion or other needs make an interior finish necessary or where a liner such as aluminum or stainless steel may be desired, special study is required. Consideration should be given to an independently supported and ventilated finish surface, or to a factory-prefabricated and sealed panel. Where damage from abrasion or stacking from fork lifts or other moving gear is considered, bumper strips of treated wood or rubber composition, precast wheel stops and other devices protect the surfaces. Avoid unfinished, untreated wood on the interior of a cold room.

The protective process goes beyond the control of the designer. The owner must obtain a degree of caution, self-discipline, care, and skill on the part of the operators and users of the facility. In any event, abuse of surfaces, finishes, and doors is common and must be taken into account. Prefabricated insulating metal-clad panels offer a partial solution to the abrasion and protection problem. The advantage of strength and resistance offered by these panels must be weighed against considerations of cost, proprietary systems, ready availability, and special techniques required to install these panels properly.

Floors

As with other portions of the cold storage room, floor and sub-floor have special requirements, starting with careful preparation of the site to eliminate water below the floor slab, and providing such design features as will subsequently prevent water from seeping into the ground. Any moisture trapped below the building can lead to destructive pressures from the formation of ice lenses and frost heaving. Its lesser evils include a loss of insulation effectiveness and an undesirable source of moisture entry into the building. To this end, a soil study at the outset is highly desirable. Good drainage, permeable soil, foundation drains, a ventilated crawl space below the sub-floor and substantial structural design for minimum possible future movement of foundations are all on the plus side. A point to remember: the interior temperature and "weather" remain substantially steady; outdoor conditions both above and below ground change daily and seasonally.

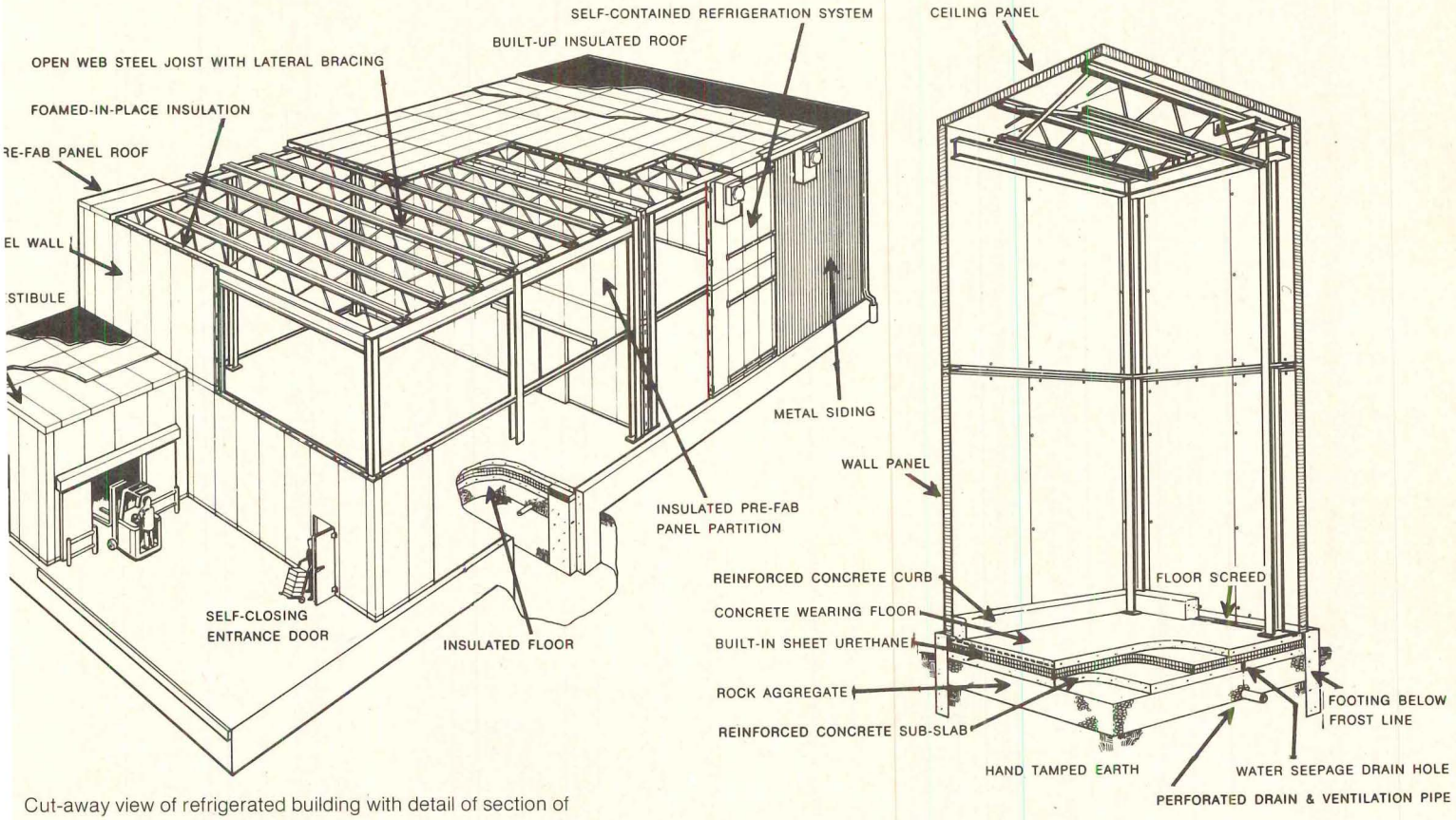
If freezer construction is slab-on-grade, it is usual practice to provide some sort of mechanical or electrical heating system to prevent ground freeze-up. Studies have been made of the benefits of artificially maintaining a uniformly cold temperature around the building by installing a "cold zone" outside the foundation. This attempts to offset the destructive effect on the foundation of ground thawing around the perimeter each summer and refreezing each winter. However, such practice of maintaining a perimeter cold zone as a sort of artificial permafrost is not common in the United States. In new slab-on-grade construction, it is usual to install metal thermocouples in the ground to monitor ground temperature.

In the case where a cold room is to be installed on slab-on-grade in an existing building, for cold room temperatures of 40 F and above, the existing floor has been used successfully as is, without floor insulation.

After the sub-floor is built, usually of reinforced concrete, insulation is applied and a wearing surface is installed. The wearing surface is often of continuously reinforced concrete. Since the floor tends to be slippery, a broomed surface or a wood floated surface should be used, or special nonskid materials incorporated. For meat or fish processing areas, or wherever else a highly "sanitary" floor is necessary, a troweled or tiled surface may be used. Floor moisture is removed by mopping and vacuuming. Floor drains are not normally provided in freezers, although indirect weep drains at the perimeters of cold rooms are commonly used.

If the floor must take fork-lift or other truck loads, a minimum recommended design requirement is for sub-slab to be able to withstand 700 psi static loading or 1000 psi dynamic loading, whichever is more critical. The wearing floor plus the insulation must be capable of supporting the weight of the wearing floor load plus the storage load plus any additional live load, without undue deflection of the wearing slab. Storage loads of 500 psi are not uncommon. The wearing slab should be of continuously reinforced construction, approximately 4-in. minimum thickness, with integral curbs around the walls and ⅛-in. per ft slope to drain points. It should not penetrate the side wall insulation; construction joints should be kept to a minimum.

While ceilings and roofs in refrigerated warehouses can be of combined construction, a better solution is to keep the two elements separate. Installing insulation above a roof deck or slab and installing the finish roofing over is too hazardous and should be avoided. The difficulty with installing thermal insulation above the roof slab or deck and then superimposing the finish roofing is that entry of moisture from the weather and of moisture entering from below are difficult, literally impossible to prevent. In general, such construction



Cut-away view of refrigerated building with detail of section of building. Note detail's safeguards to heat and moisture transfer. Illustrations: Bally Case & Cooler, Inc., Bally, Pa.

methods of the refrigerated warehouse are equivalent to looking for trouble, since almost every roof will "leak" some moisture or water or vapor over the course of time. With an independent suspended insulating ceiling system, an accessible, well-ventilated crawl space and maintenance space should be provided above, with well-supported catwalks or duckboards over main "avenues" of maintenance travel. This permits accumulated moisture to dry out and minimizes the likelihood of moisture migrating into and condensing or freezing within the insulation. Insulation and vapor barriers are applied to the ceiling system's vertical support rods and hangers. Wire supports, however, are usually not insulated. Ventilation air for the crawl space should not be taken from a moist or humid source. The ventilation air should be of moderate temperature and low humidity if possible, such that it can absorb unwanted moisture or vapor.

In one method of construction, rods are suspended from the slab or deck above. From the rods a system of galvanized steel channels is hung. Above this is laid a close fitting ¾-in. layer of marine plywood, on top of which the membrane or vapor barrier is applied. Below the plywood and around and adjacent to the channels, two staggered layers of foamboard insulation are applied. Asphalt emulsion or other sealer-cement is applied to each layer, and hardwood or plastic skewers are inserted to secure the two layers of insulating material. Channels attached to the walls provide support at the perimeter. Also at the perimeter a copper or terne metal flashing detail should be applied above the vapor barrier. The plywood roof decking is pitched to a perimeter drain. Penetrations are kept to an absolute minimum. Preventing leaks at the roof above the insulated construction is of paramount concern. A pitched roof is better than a "flat" roof. A dead flat roof is best avoided altogether.

Flashings, parapet walls, cant strips, coping joints all are prime sources of immediate and future roof leaks. Avoid parapet walls for aesthetic reasons; use them only where required as a fire stop. Where parapets must be used, carry flashing over the top of the parapet to minimize entry of moisture. Mount the coping on top of the flashing cap. Waterproof all exterior and interior exposed surfaces at and around parapets, curbs for roof fans, scuttles, and hatches.

Observe all the usual cautions in construction: check the need for expansion or control joints, fold the vapor barrier at any such expansion joints, provide an adequate number of downspouts and gutters, and do not use ponding as a possible roof coolant technique. Do not run rain leaders down through the refrigerated space, both to avoid penetrations of vapor barriers and to avoid another potential cause of heat transfer and moisture condensation.

Fire protection

Sprinklering of refrigerated storage buildings is common. Brine filled systems were once used. Dry pipe systems filled with compressed air are more likely to be used now, both to avoid brine damage to stored merchandise and for greater ease in "refilling" and reactivating the system. In a dry-pipe system, piping is filled with compressed air, which releases an automatic main water valve when any head is fused. In a deluge system, piping is dry, sprinkler heads are all open, and a dry pipe zone valve is triggered by a sensing device or detector or by manual operation in response to an alarm. Yard hydrants and hose houses are desirable. Availability of water and water pressure must be checked.

Because of the mass cold temperature in a refrigerated building, ordinary heat-sensitive devices may not be activated in a sufficiently early time. More up-to-date fire protective systems can make use of ionizing smoke detection devices and monitoring devices such as rate-of-rise detectors and closed circuit TV cameras for areas with stored valuables such as furs; connections to a central station reporting and warning service provide an added safety factor. Accepted practices in fire safety and fire protective construction such as smoke barriers, smoke vents, clearly marked aisles, exit signs, and adequate and readily accessible exits are a must.

For localized areas, Halon systems, now widely recommended for EDP rooms, can be used. CO_2 systems are presently installed and in common use. However, these have a distinct element of hazard to human life; individuals have died when blanketed with a CO_2 atmosphere; manual control rather than automatic may be considered for such a system. Consult with the owner's fire insurance carrier on these details. If the proposed facility is relatively large and in a suburban location, consult with the local fire department as well.

A new problem arises from increased merchandise stacking heights. Automatic or mechanized picking equipment now makes high stacks or multilevel stacks feasible. These require a combination of fire protective techniques, with particular need to arrange sprinklers and detectors effectively in and around the middle and lower portions of the high stacks.

A case in point is the 13-story-high Stouffer refrigerated food warehouse Solon, Ohio (1968, The Austin Co., Eng. & Bldrs). The 13 storage levels are rows of girders supporting pallets of food products. Access and handling are done via high speed picking elevators which run vertically and horizontally on tracks through a center corridor 120 ft high.

Doors

The subject of doors for refrigerated warehouses is a study in itself. (The 1971 ASHRAE Applications Guide and Data Book, in the chapter "Refrigerated Warehouse Design," devotes the better part of five columns of text to the subject of Cold Storage Doors as contrasted with 1½ columns on insulation.) In brief, while manual opening and right or left swing doors are very commonly used, the trend to lift truck and palletized storage and handling leads to heavier, more sturdy doors, metal cladding, automatic operation with electric door motors under electric eye or remote pull cord control, self timers for closing, air curtains, and similar refinements. A two-leaf, motorized, bi-parting door with safety edges is a frequent solution to the problem of minimum delay for the lift-truck operator, and minimum door open time. Protective door bumper stanchions are a must.

Equal care must be given to mounting and supporting the door. Frequently the refrigerated room wall of block construction is inherently not sturdy enough to hold the refrigerator door without undue stress, cracking, and eventual wall failure. Independent, floor-to-ceiling supplementary steel door supporting members are commonly used. Personnel safety releases by which the door can be opened from the inside, even with a lock on the outside, are almost always used. Here specialty door manufacturers can be of great help.

Trends

To indulge in a bit of blue-sky conjecture, I would guess we will see major developments in the following areas where refrigerated buildings are concerned:

1 Warehouses will be larger. Distribution will take place over longer distances from processing plants set up where the foodstuffs originate.

2 There will be higher piling and stacking heights within higher buildings.

3 There will be more automation and more complex mechanical handling and electrical distribution systems, electronic controls, and emergency generators become more significant.

4 More systems elements and prefabricated construction will appear. Assembly time is shortened and construction comes under control of a "specialist" manufacturer. (Most smaller refrigerated structures—up to approximately 75,000 sq ft—are going prefab these days.) □

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"ASHRAE Guide and Data Book." Volume on Applications—Chapter 36: Refrigerated Warehouse Design, 1971.

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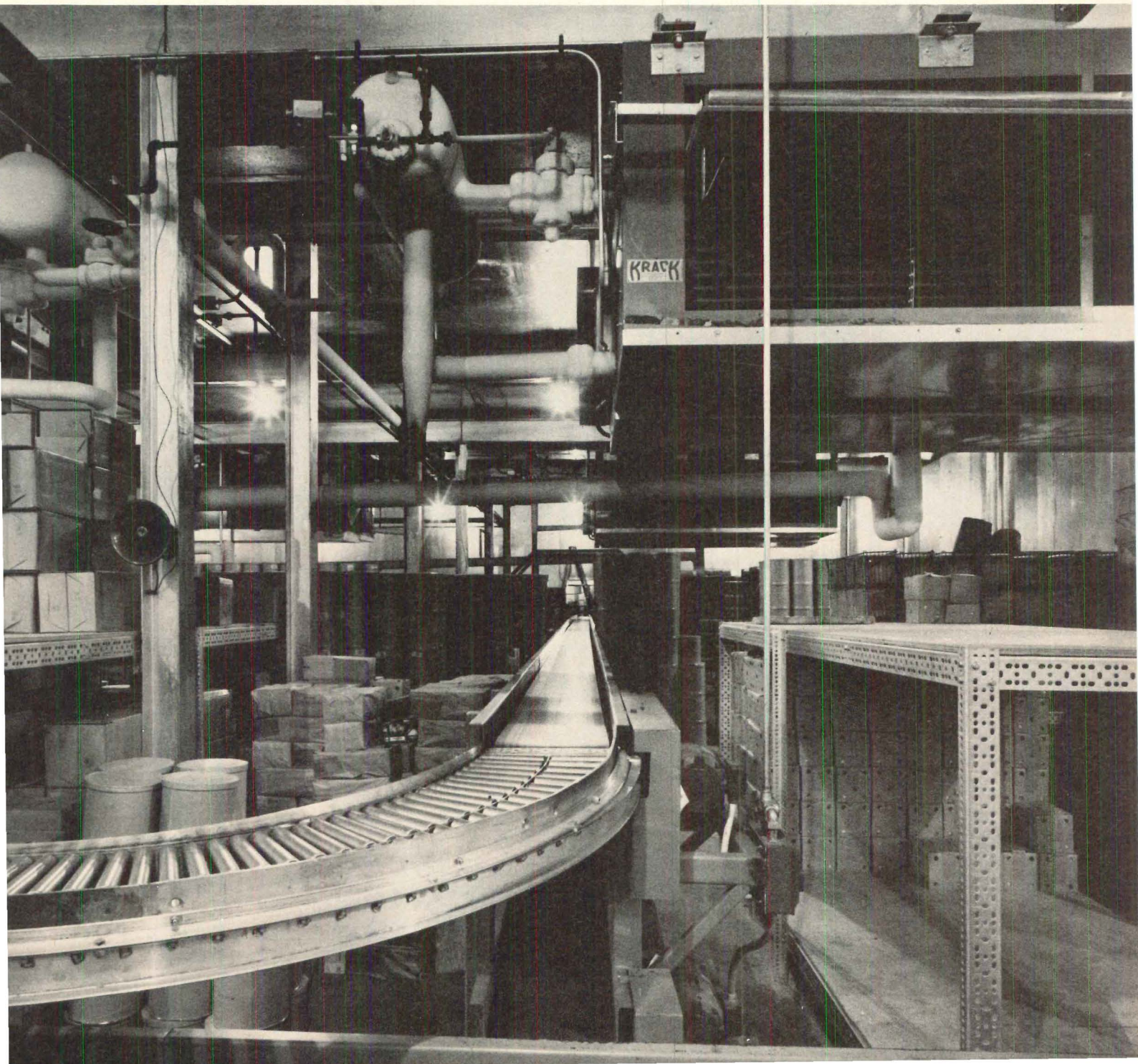
"Rack Storage of Materials." N.F.P.A. Manual No. 231C. 1969.

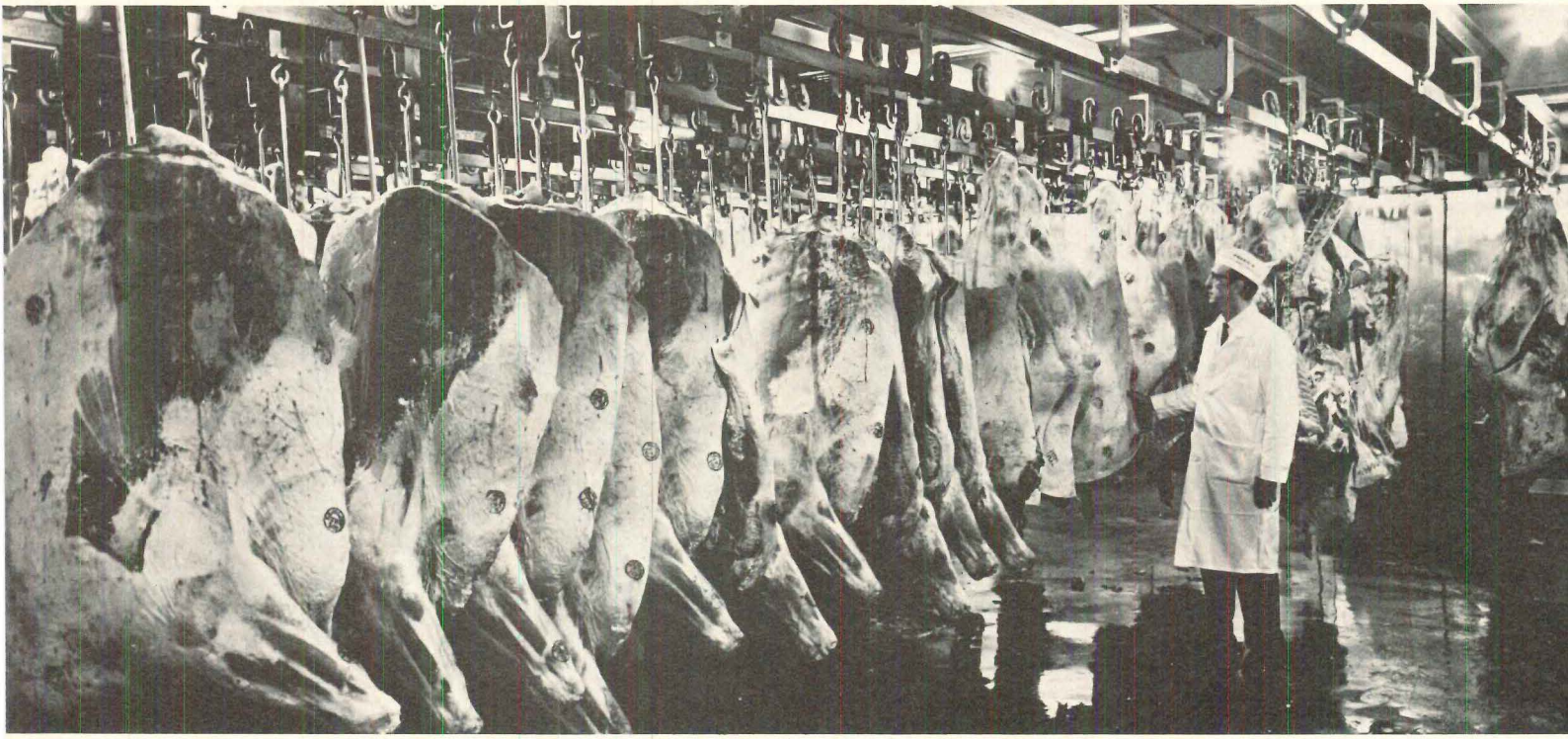
Also, numerous technical bulletins are available from the specialty manufacturers of insulations, panel systems, doors, and prefabricated coolers.

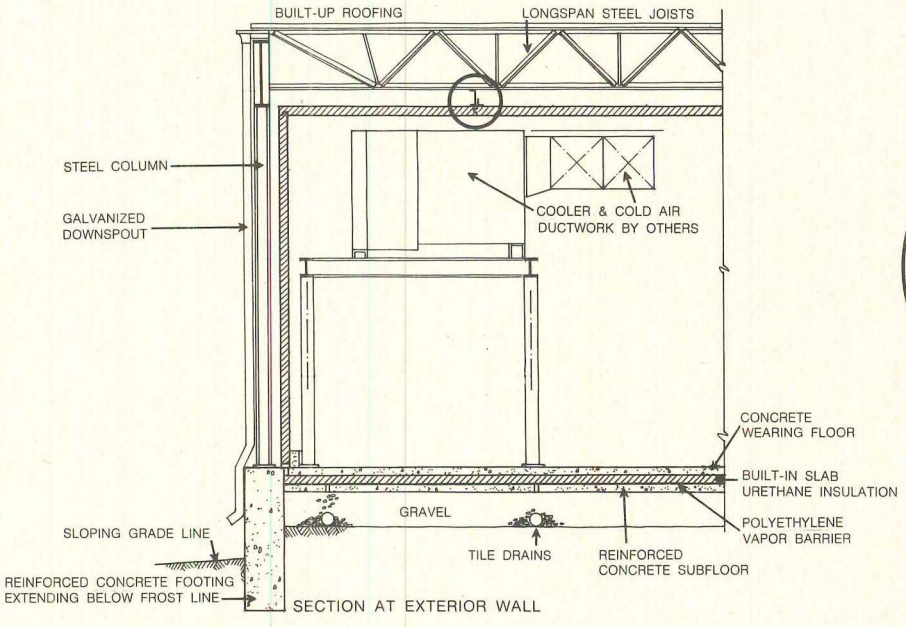
The refrigerated building as machine; conveyor routes various ice cream products to designated areas within storage space.



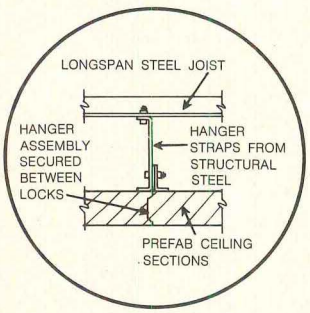
The refrigerated building

The detailing of a refrigerated building requires careful attention to the placement of barriers to migrating moisture and heat. Vapor barriers, insulation, and penetration points placed in proper configuration can control this most useful man-made environment. The following details are derived from work by the Building Research Advisory Board of the National Academy of Sciences and Bally Case & Cooler, Inc.

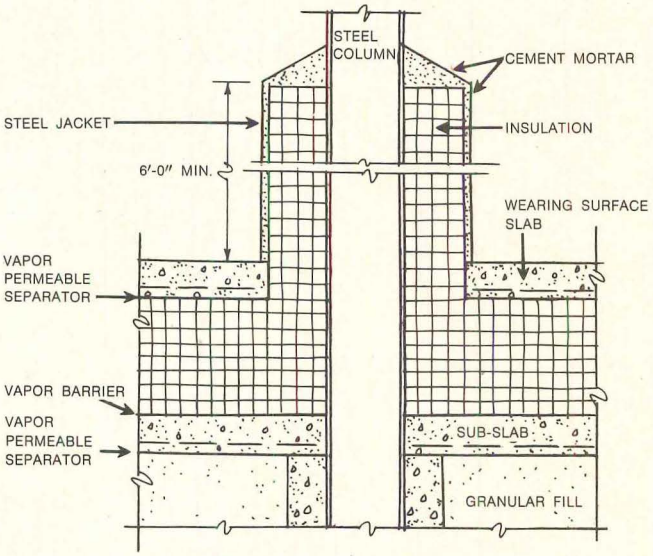




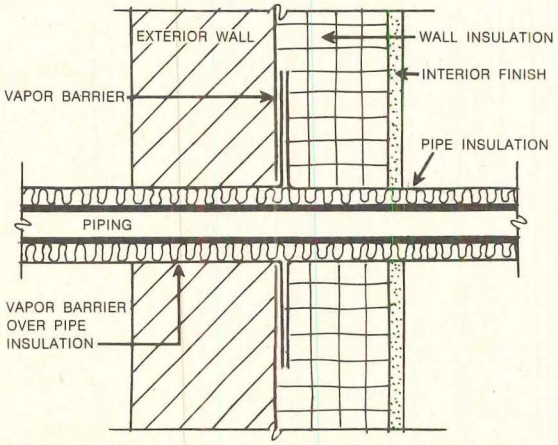
SECTION AT EXTERIOR WALL



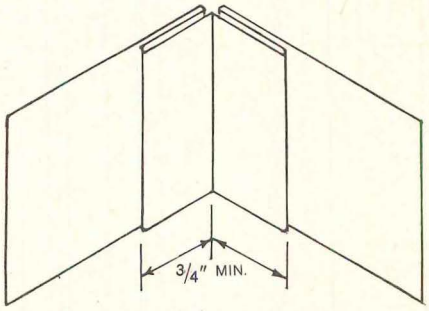
DETAIL OF SUSPENDED CEILING



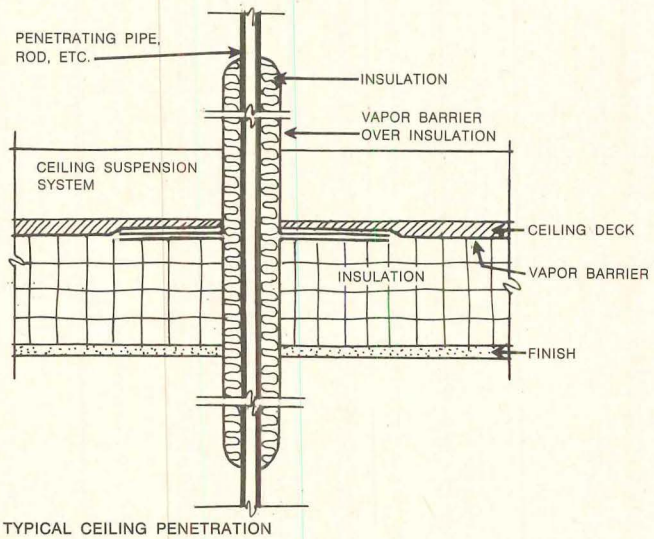
COLUMN TREATMENT WITHIN FREEZERS



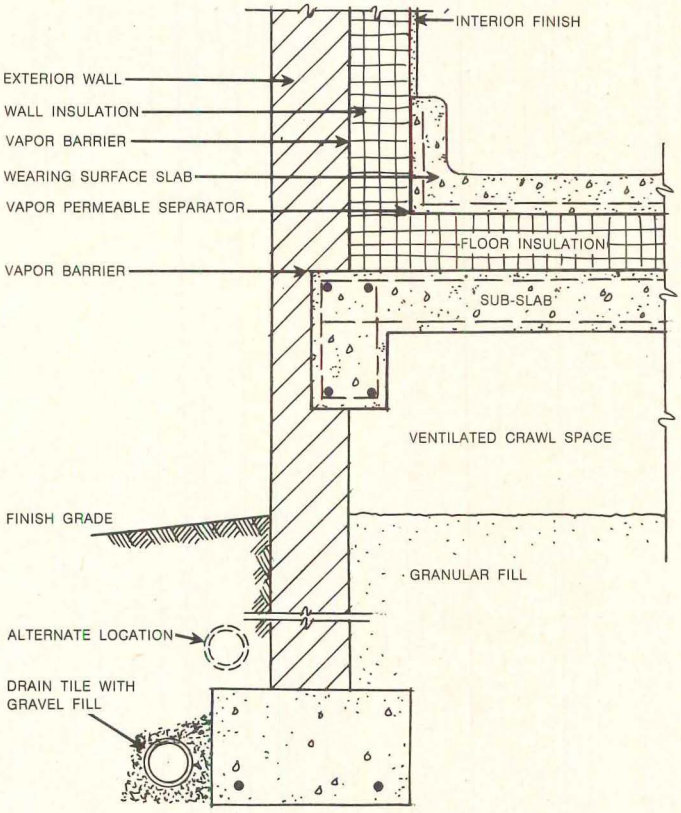
TYPICAL WALL PENETRATION



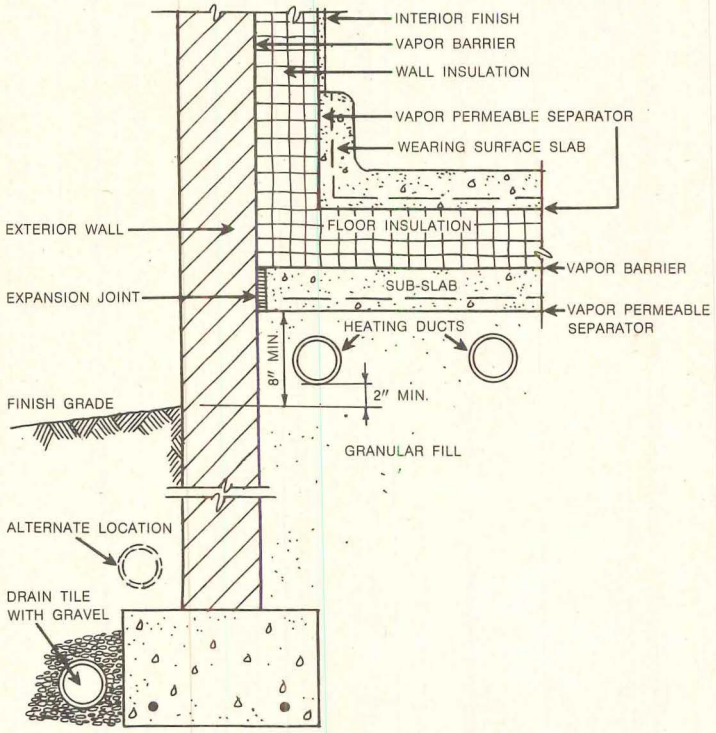
SUGGESTED VAPOR BARRIER CORNER SEAL FOR TWO INTERSECTING PLANES



TYPICAL CEILING PENETRATION

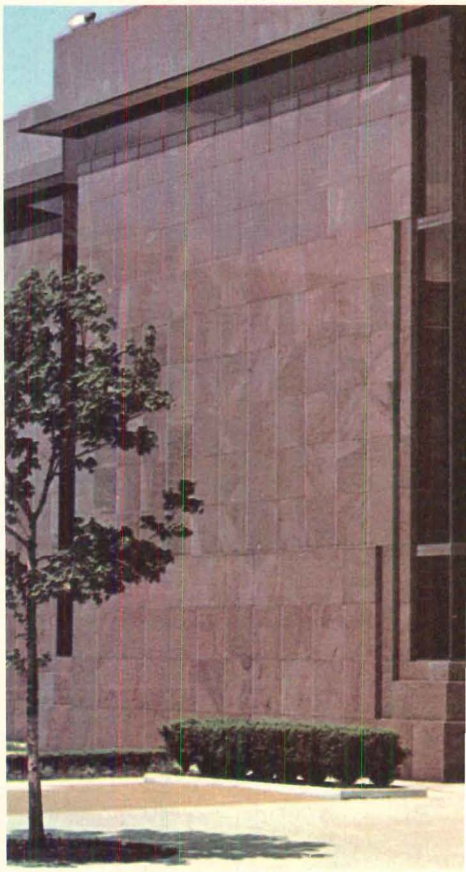


TYPICAL STRUCTURAL SLAB-ABOVE-GROUND FREEZER CONSTRUCTION



TYPICAL SLAB-ON-GROUND FREEZER CONSTRUCTION

If you think of granite as a conservative building material, you're right. Maybe.



If you are thinking about the conservation of energy, as it relates to heat loss and gain in buildings, you're right in characterizing granite as conservative. A typical, insulated granite wall has a "U" value of .15. Compare that figure with other building materials, like double-plate glass with a "U" value of .55, and you'll see how good granite is at conserving energy.

Another conservative side of granite is the way it compares to other materials when you project "life cycle costs". Granite resists weather, stains and the wear and tear of traffic as almost no other material can. It requires virtually no maintenance. And its natural beauty will not fade or deteriorate. All factors which make granite an attractive material in the long run.

On the other hand, maybe you think of granite as a conservative building material because you have the impression that it is only used by conservative architects, in conservative buildings. If that's the case, we'd like an opportunity to change your thinking. Why not talk to someone in our Customer Service Department, and tell them what you have in mind. Likely as not, you'll find that granite will fit into your plans, beautifully.

Refer to Sweet's Catalog No. 4.1/Co. Call us at (612) 685-3621. Or write.

subsidiaries:

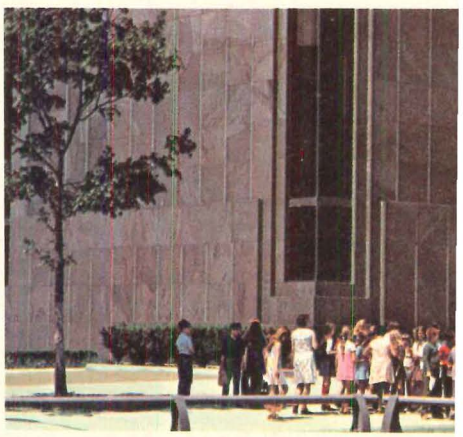
Lake Placid Granite Company
Jay, New York

Texas Granite Corporation
Marble Falls, Texas

Raymond Granite Company
Raymond, California

Cold Spring Granite (Canada) Ltd.
Lac Du Bonnet, Manitoba

over 20 producing quarries



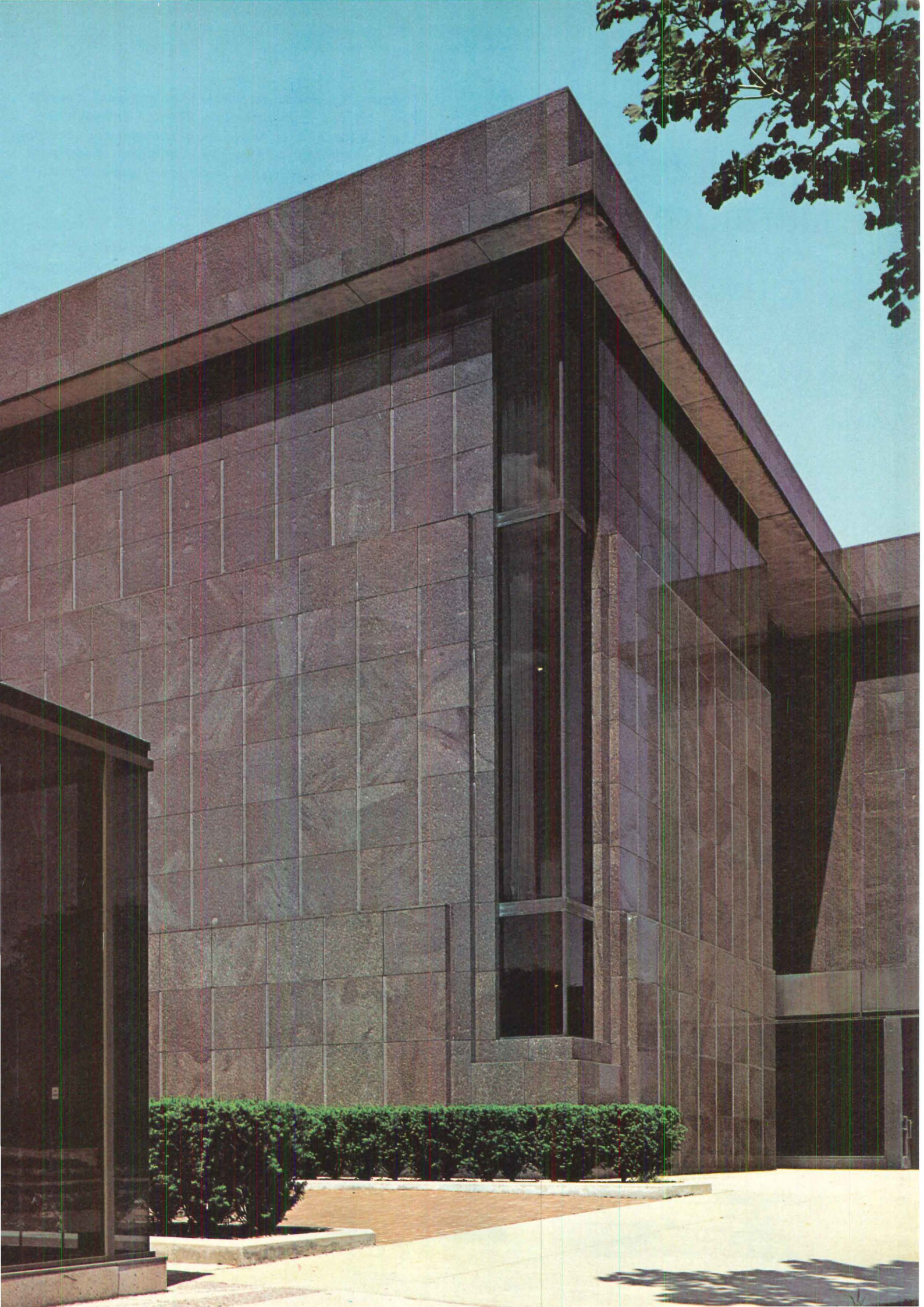
Detroit Institute of Arts

Architect:
Harley, Ellington-Pierce, Yee & Associates
formerly,
Harley, Ellington, Cowin, & Stirton

Design Consultant
Gunnar Birkerts, FAIA

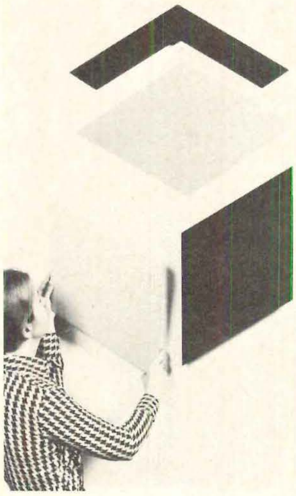
General Contractor
Barton-Malow Company

COLD SPRING GRANITE COMPANY / COLD SPRING, MINNESOTA 56320

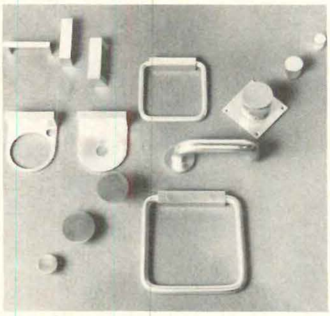


Products and literature

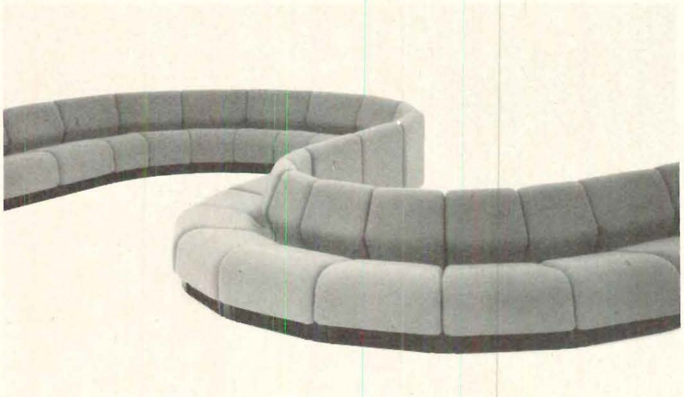
Etagere



Supergraphics



Modern hardware



Modular seating

Etagere. In stainless steel mirror finish and glass, it stands 7'-2" tall, has maximum width of 22½ in. Tier heights vary from 12½ in. to 16 in. Above and under lighting is controlled by individual switches for proper composition of each light section. Light switches are unobtrusively arranged at the unit's base. Z'Orceny.
Circle 101 on reader service card

Supergraphics. Three-dimensional acrylic modules can be used by architects and designers to create unlimited patterns of depth as well as shapes, states maker. Eight basic shapes and five depths, ranging from almost flat to 5½ in. are available in 11 colors. Basic module is 16 in. Cubes, arrows, polyhedrons, and obelisks are some of the pattern possibilities. Designed to adhere to any wall or surface, they can serve as a focal point in reception areas, conference rooms, lobbies, lounges. Dimensional Geometrics.
Circle 102 on reader service card

Modern hardware. A collection of over 400 coordinated pieces ranging from door hardware to cabinet hardware, bathroom accessories, and components for cloak rooms is available in satin anodized aluminum. The Ironmonger.
Circle 103 on reader service card

Modular seating. Any number of arrangements—S-shaped configurations, loops, ovals, elipses—can be devised from three simple shapes: a square center section; an inside wedge section with a narrow front end and wide back, and an outside wedge section with the opposite angular shape. Cold-cure polyurethane foam cushioning is molded over plywood, steel, and a molded polystyrene structure. Base is of black molded polystyrene, connected by a steel strap at bottom side of base. Each chair is 27 in. high and 27 in. wide except for the center section which is 28 in. wide. Can be covered in any one of six fabrics. Designed by Don Chadwick. Herman Miller.
Circle 104 on reader service card

Office chairs. Designed on the premise that people come in different sizes and so should chairs, there are seven basic models, three armed and four armless in three basic sizes that expand into nearly 700 different chairs. Available parts include two seat sizes, four back sizes, and two arm sizes, several adjustments and controls, two plastic shell colors, three metal finishes, and a choice of 49 fabrics and leathers to fit a large variety of office and individual seating needs. There is no exposed hardware behind backs, and there are no sharp corners. Upholstery covers can be removed for cleaning or replacement right in the office because no adhesives or mechanical fasteners are used. Designed by Don Albinson, internationally known designer. Westinghouse Electric Corp.
Circle 105 on reader service card
[continued on page 106]

Office chairs

The Earth Colors.

Introducing ten new colors as old as nature.

low you can color your world in the ame earthy, vibrant way Nature olors hers. With a whole spectrum f down-to-earth, back-to-nature olids from Textolite.

Ice White, Choco Brown, Yellow ird, Suki Orange, Burnt Orange, arvest, Goldenrod, Carmel, herwood Green, Midnight.

They're the colors of life. Of the arth. So we call them the Earth Colors. And we've rediscovered them because we know it's the kind of natural beauty you're looking for now. And leave it to Texolite to be first to anticipate special tastes, special trends.

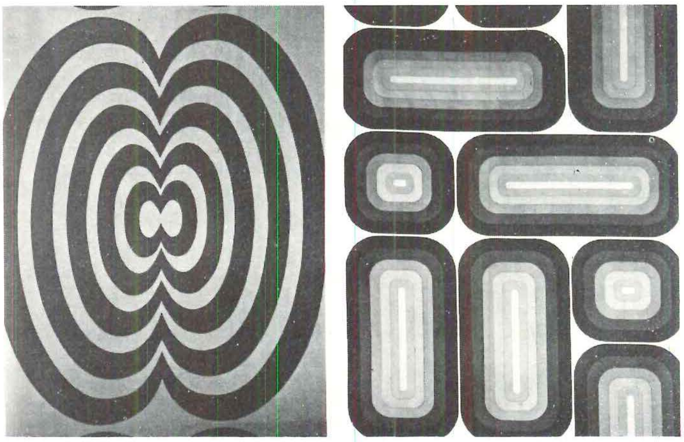
For creative designers, Earth Colors provide a new dimension in decor. Colors to enhance the most innovative interiors.

But Earth Colors are only part of our story.

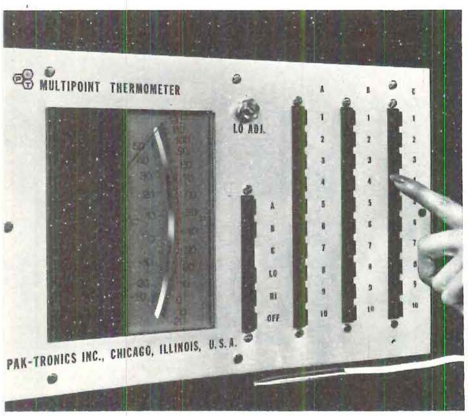
Textolite offers a whole world of plastic laminates. One hundred twenty different and exciting abstracts, woodgrains, leathergrains and solids. As you'll see when you send for our full-line catalog. Just write:
Decorative Products Section,
General Electric Company,
Coshocton, Ohio 43812.

GENERAL ELECTRIC

Products and literature continued from page 104

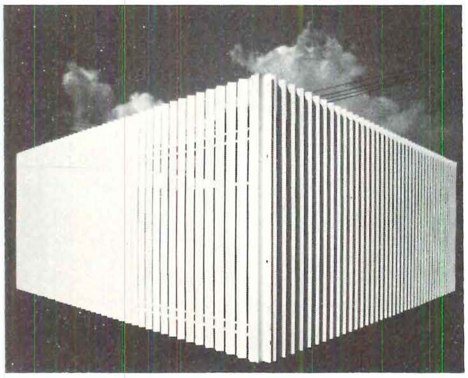


Fujie collection



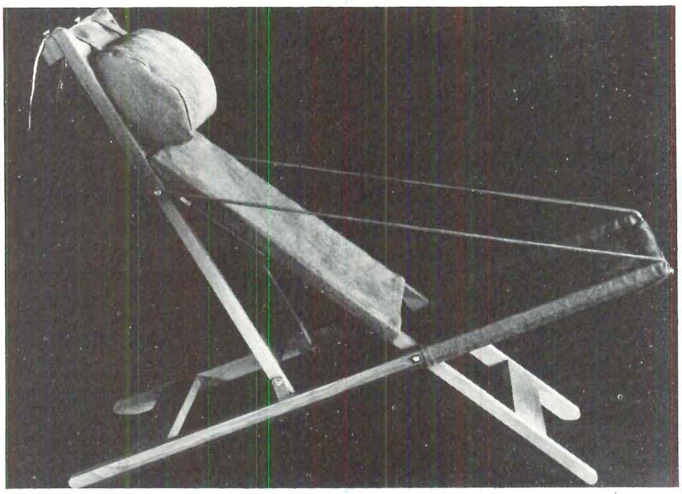
Lettering machine

Electronic thermometer



Vision barrier

Award-winning lamp



Foldable chair

Fujie collection of Japanese prints for wall, window, and upholstery comes in eight bold patterns in 21 colors, is hand printed on 100 percent cotton, approximately 47 in. width, can be washed or dry cleaned. Isabel Scott Fabrics Corp.
Circle 106 on reader service card

Multi-temperature electronic thermometer. Device is available with 10 and 30 point pushbutton configurations, each with a choice of three different temperature ranges, or six basic models. Points up to 2000 ft from the panel can be monitored without loss of accuracy, states maker. Accessories for alarm indication and communication also are offered. Ideal for factories, hospitals, laboratories, warehouses. Panel for 30 point version is approximately 9″ x 13″. Pak-Tronics, Inc.
Circle 107 on reader service card

Lettering machine has interchangeable fonts in 26 type styles and sizes ranging in letter size from 12 to 36 point. Letters are printed on a one-mil-thick, polyester based image carrier having a matte finish on one side and a pressure sensitive adhesive and peel-away liner on the other. When tape is positioned on drawings or documents, media is nearly invisible and when reproduced, drops out entirely, leaving only the lettering. Kroy Industries.
Circle 108 on reader service card

Vision barrier for cooling towers and other mechanical equipment is said to be inexpensive to install and maintenance free. Fabricated of .020-in.-thick aluminum in a 3″ x 1¼″ module, with acrylic finishes of bone white, medium bronze, or black. Custom colors are available upon request. Construction Specialties, Inc.
Circle 109 on reader service card

Award-winning lamp. Designed by Helmut Julinot and Barrie Down of Toronto it was awarded the Ontario Government's Grand Eedee for Design Excellence. Plastic cylinder entirely encases the 15 w fluorescent tube and houses a rotating reflector to direct the light by turning the end cap. Design blends ebony plastic, satin stainless steel, and polycarbonate tubing. Lighting is said to be glarefree and nearly shadowless and gives the same amount of light as a 60 w incandescent bulb, consumes four times less energy, and radiates less heat. May be reversed for left-handed people. Nessen Lamps.
Circle 110 on reader service card

Drawing and measuring instrument incorporates a steel measuring tape in a grooved channel on the outside edge of a calibrated adjustable curve, enables the user to determine lengths along the perimeter of curve and compute fastener spacing and flat pattern measurements. Calibrated curves are available in 22 in. and 32 in. lengths divided in 1/16 in. increments or in the metric system in 55 cm and 80 cm lengths divided in millimeters. Hoyle Engineering Company.
Circle 111 on reader service card

Foldable chair using canvas and light beechwood has an adjustable headrest and folds flat for easy storage or mobility. Designed by Lauge Vestergaard, it is part of the Cado Collection. Royal System, Inc.
Circle 112 on reader service card
[continued on page 112]

Many new roofs waste a lot of energy. Here's how to cut that loss by 50 percent-without spending an extra dime.

It may sound amazing, but you can do it.

The only thing you have to do is specify thicker 2¼-inch Fiberglas* roof insulation instead of the thinner 15/16th-inch size.

This dramatically reduces heat loss through your roof. And it actually brings the total cost of your building *down!*

The reason: the improved thermal performance of your roof enables you to get along with less elaborate, *less expensive* heating and cooling equipment.

In general, every dollar you spend on thicker 2¼-inch roof insulation vs. 15/16th-inch size cuts up to *two* dollars off original equipment costs. So you come out considerably *ahead.*

On a suburban office building in northern climates, for example, thicker roof insulation could save as much as $27,000 in equipment costs for every 60,000 square feet of roof.

And, of course, the thicker Fiberglas roof insulation goes on slashing the loss of fuel energy through the roof of your building by 50 percent—and the fuel *bills* by roughly 10 percent—year after year.

The exact savings vary according to climate zone, the size and type of roof deck, "U" improvement, and the added cost of the thicker insulation.

We've worked up all the figures and charts in a handy booklet called "Roof Raiser's Guide to Cost Reduction." For a free copy, write: I. Y. Meeks, Architectural Products Division, Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659.

More details: See our section in Sweets Catalog, Roof Insulation Systems 7.15/Ow, or contact your Owens-Corning representative.

M. O.-C. F.

Owens-Corning is Fiberglas

OWENS/CORNING FIBERGLAS TRADEMARK ®

HOW STEEL FABRICATORS, INC. TAUGHT EVERYONE A LESSON AT THE HARRISBURG MIDDLE SCHOOL.

The lesson was how to cut three to six months off the design an construction time for completing a school.

The teaching materials were Vulcraft's steel joists and joist girde as utilized in Steel Fabricators' "Fab-Lok" structural subsystem, whi made "fast track" construction scheduling possible for this job.

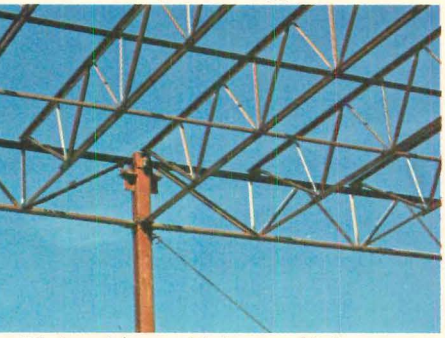
By using Vulcraft steel joists and joist girders instead of concre the structural work on the building could be started before the final design was completed. Because Vulcraft's joist girder system utilize standard five-foot panel point spacing.

Knowing this allowed designers to standardize lighting/ceiling components as well as heating, ventilating and air conditioning com ponents. And layouts for wiring, ducts and pipes. Also, because Vu craft's steel joists use an open web construction pattern, installation of all wiring, ducts and pipes goes easier and faster. They actually ca

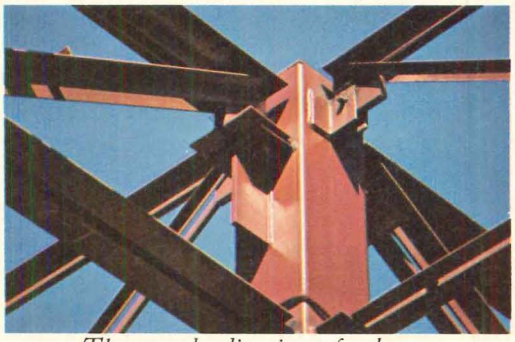
ss right through the joists and joist girders.

The light weight of Vulcraft's joists and joist girders offers other vantages, too. Erection is easier and faster. Supporting columns can spaced further apart to provide for larger bay areas. And foundation e can be decreased.

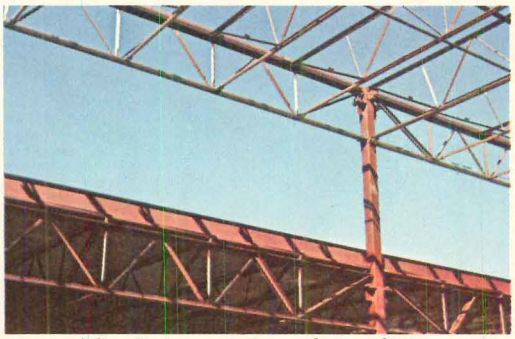
The "fast track" technique worked in Harrisburg, Pennsylvania. us ten other schools throughout the country where Vulcraft steel sts and joist girders have been used by Steel Fabricators, Inc.



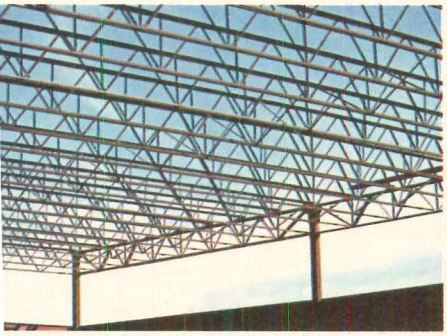
Vulcraft's steel joists and joist lers allow a standard five-foot module between connecting points.



The standardization of column connection also speeds up construction. And requires fewer connecting bolts.

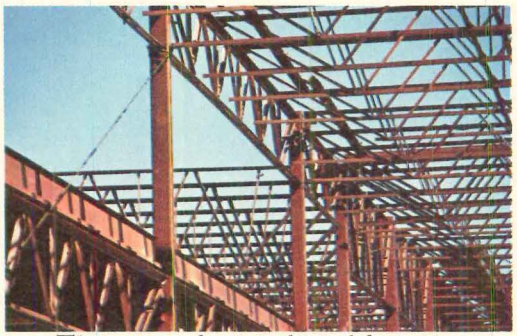


The light weight and simplicity of Vulcraft's steel joists and joist girders make erection fast and easy.



e open web feature of steel joists and irders allows ducts, pipes and wiring to s directly through the steel members.

The high strength of steel joists and joist girders provides increased clear span area, allowing larger bays.



The ease and versatility of designing with steel joists and joist girders solve otherwise complex design problems.

And it can work for you. Just contact your local Vulcraft repre- ıtative for your Joist Girder Specification Guide. Or write Vulcraft, O. Box 17656, Charlotte, North Carolina 28211 to learn how to ·ed up your work. Or call (704) 366-7000.

We have the know-how. And we have five plants located through- the country to make sure your deliveries are there on time.

After all, when school time rolls around, nobody wants to be late.

VULCRAFT

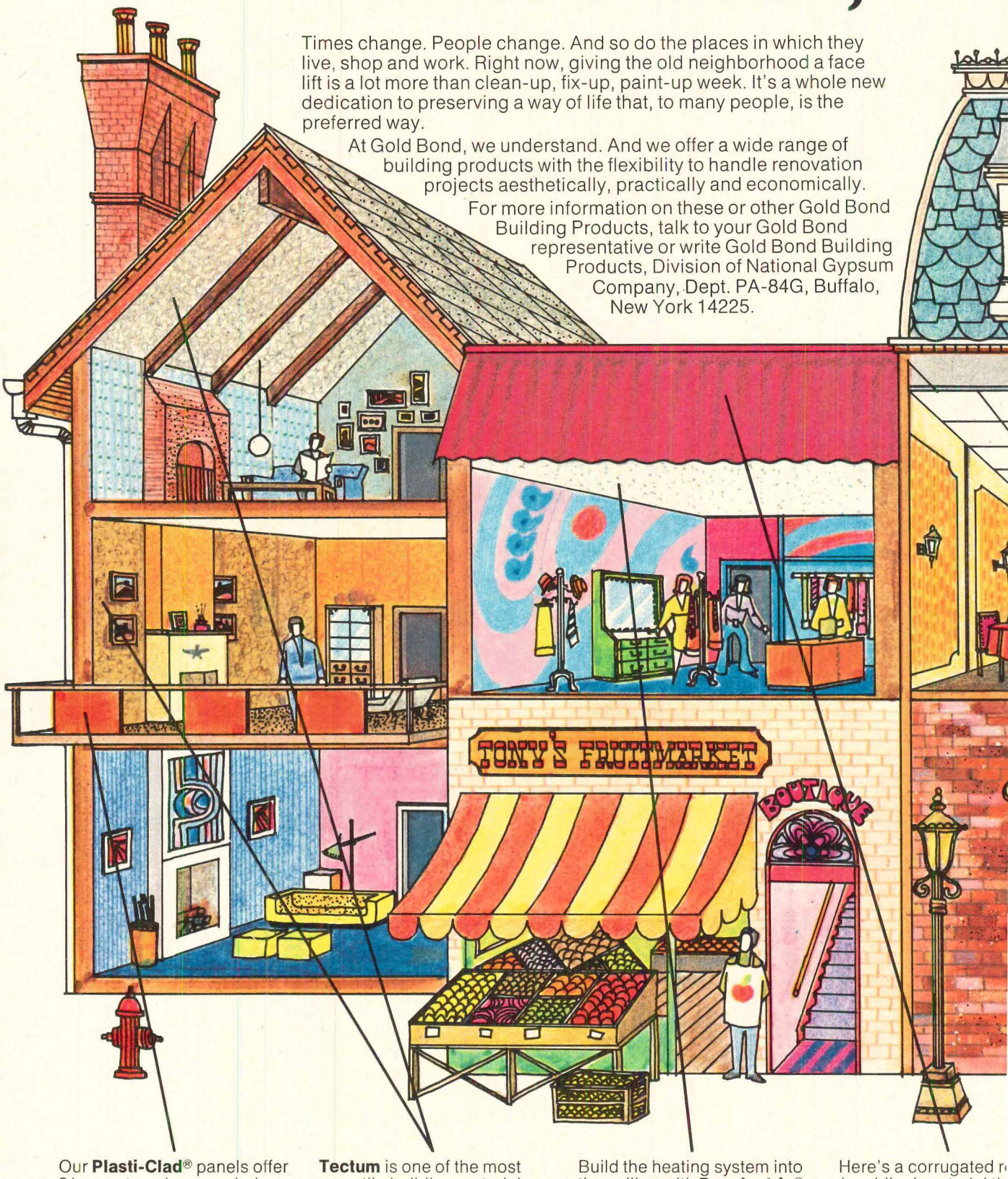
itect: William Lynch Murray & Associates, Harrisburg, Pennsylvania. Erector: Walsh Steel Services, Pittston, sylvania. General Contractor: Ritter Brothers Construction, Harrisburg, Pennsylvania. Steel Fabricator: Steel :ators, Inc., Fort Lauderdale, Florida. Consulting Engineer: Quentin Bowers, P. E., Harrisburg, Pennsylvania.

In renovation, we'

Times change. People change. And so do the places in which they live, shop and work. Right now, giving the old neighborhood a face lift is a lot more than clean-up, fix-up, paint-up week. It's a whole new dedication to preserving a way of life that, to many people, is the preferred way.

At Gold Bond, we understand. And we offer a wide range of building products with the flexibility to handle renovation projects aesthetically, practically and economically.

For more information on these or other Gold Bond Building Products, talk to your Gold Bond representative or write Gold Bond Building Products, Division of National Gypsum Company, Dept. PA-84G, Buffalo, New York 14225.



Our **Plasti-Clad**® panels offer 21 ways to color spandrels, soffits and fascias, balcony panels, curtainwalls and window walls. The tough, acrylic coating offers uniform color retention. Excellent resistance to cracking, blistering and peeling. Panels stay good-looking longer.

Tectum is one of the most versatile building materials available. It's acoustical, so it cuts down on noise. Great for roof deck or interior panels. It's thermal, so it's even great for "cold walls." And Tectum II, with ½" to 1½" of urethane foam insulation, is a structural material that can take the place of metal roof deck materials. Looks great, painted or natural.

Build the heating system into the ceiling with **Panelectric**® radiant heating panels. And for a quick and easy way to give the ceiling a great texture, use **Gold Bond Perfect Spray**® with its shredded polyester aggregate over Panelectric.

Here's a corrugated r
(or siding) material th
fireproof, weatherpro
proof and permanent.
Bond **"Economy 250**
for light commercial b
and available in a ran
colorful finishes.

ypsum and then some.

Gold Bond Classic-Shake® Siding is a great way to have the natural beauty and texture of shakes, with the advantages of a siding in a masonry material. Durable, traditional colors, and a distinctive shadow line. Get a classic shake look with Classic-Shakes.

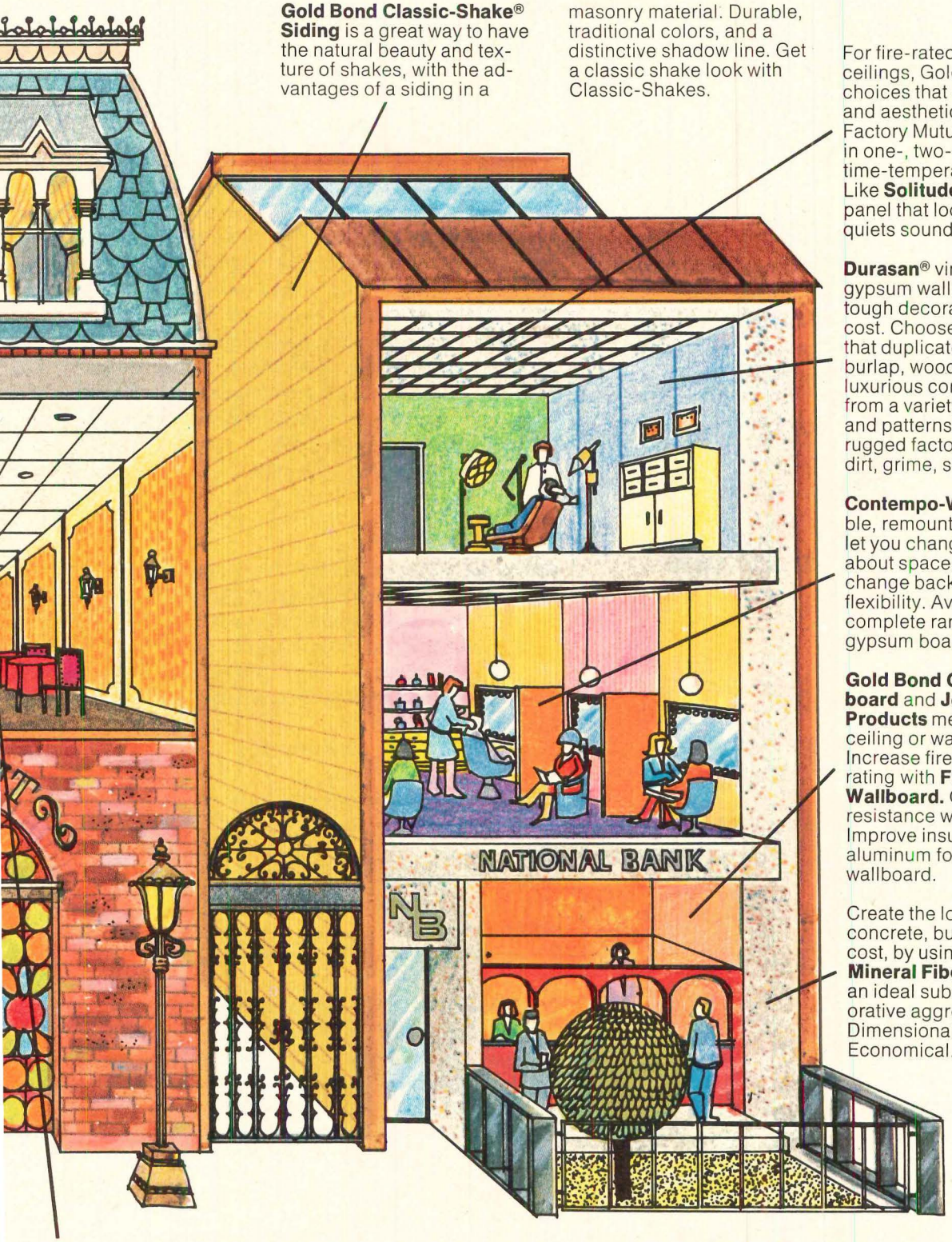
For fire-rated suspended ceilings, Gold Bond offers choices that are functional and aesthetic. All with U.L. or Factory Mutual ratings, and in one-, two- and three-hour time-temperature designs. Like **Solitude®,** a ceiling panel that looks good, and quiets sound.

Durasan® vinyl-surfaced gypsum wallboard offers a tough decorator finish at low cost. Choose from patterns that duplicate grasscloth, burlap, woodgrains, even luxurious cork parquet. Or from a variety of vinyl colors and patterns. And Durasan's rugged factory-finish resists dirt, grime, scuffs and stains.

Contempo-Wall® demountable, remountable partitions let you change your mind about space. And then change back, with complete flexibility. Available in the complete range of Durasan gypsum board panels, too.

Gold Bond Gypsum Wallboard and **Joint Treatment Products** meet just about any ceiling or wall requirements. Increase fire resistance rating with **Fire-Shield® Wallboard.** Offer moisture resistance with M·R board. Improve insulation with aluminum foil-backed wallboard.

Create the look of stone and concrete, but without the cost, by using **Gold Bond® Mineral Fiber Flat Sheet.** It's an ideal substrate for decorative aggregate finish. Dimensionally stable. Simple. Economical. Durable.



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sts moisture, choose
ard® ceiling panels.
d for commercial
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ard will stand up to
ny commercial
use.

We're gypsum, and then some.

Gold Bond®

DIVISION OF NATIONAL GYPSUM COMPANY

Products and literature continued from page 106

Bicycle racks are finished with a fusion-bonded polyurethane coating which is said to be almost impervious to weather. Rack is permanently mounted; single post design eliminates accumulation of trash underneath. Many models and sizes are available to meet specific needs. Park-Rite Company.
Circle 113 on reader service card

Automatic flagpole. Electronically operated and self-storing, the flag will automatically rise with the morning light from its storage position within the pole and return when the sun sets. Pole is designed to never permit flag to be exposed to the elements or fly in rain, snow, or inclement weather. Flag will fly seven days a week, every week of the year. Pole operates by light sensitivity or you may operate it manually. Flag can fly at half-mast by using the manual switch or it can be set to fly at half-mast automatically for prolonged periods. If more than one pole is used, they can be engineered to operate simultaneously. Automatic Flagpole Co.
Circle 114 on reader service card

Literature

Glazed concrete blocks. Available plain, scored, or with sculptured designs, units are said to have excellent insulating and soundproofing characteristics and to provide single step building and finishing. Permanent factory finish available in 48 colors cannot peel or blister. Color catalog contains specifications, test data, installation procedures, construction details. Burns & Russell Co.
Circle 201 on reader service card

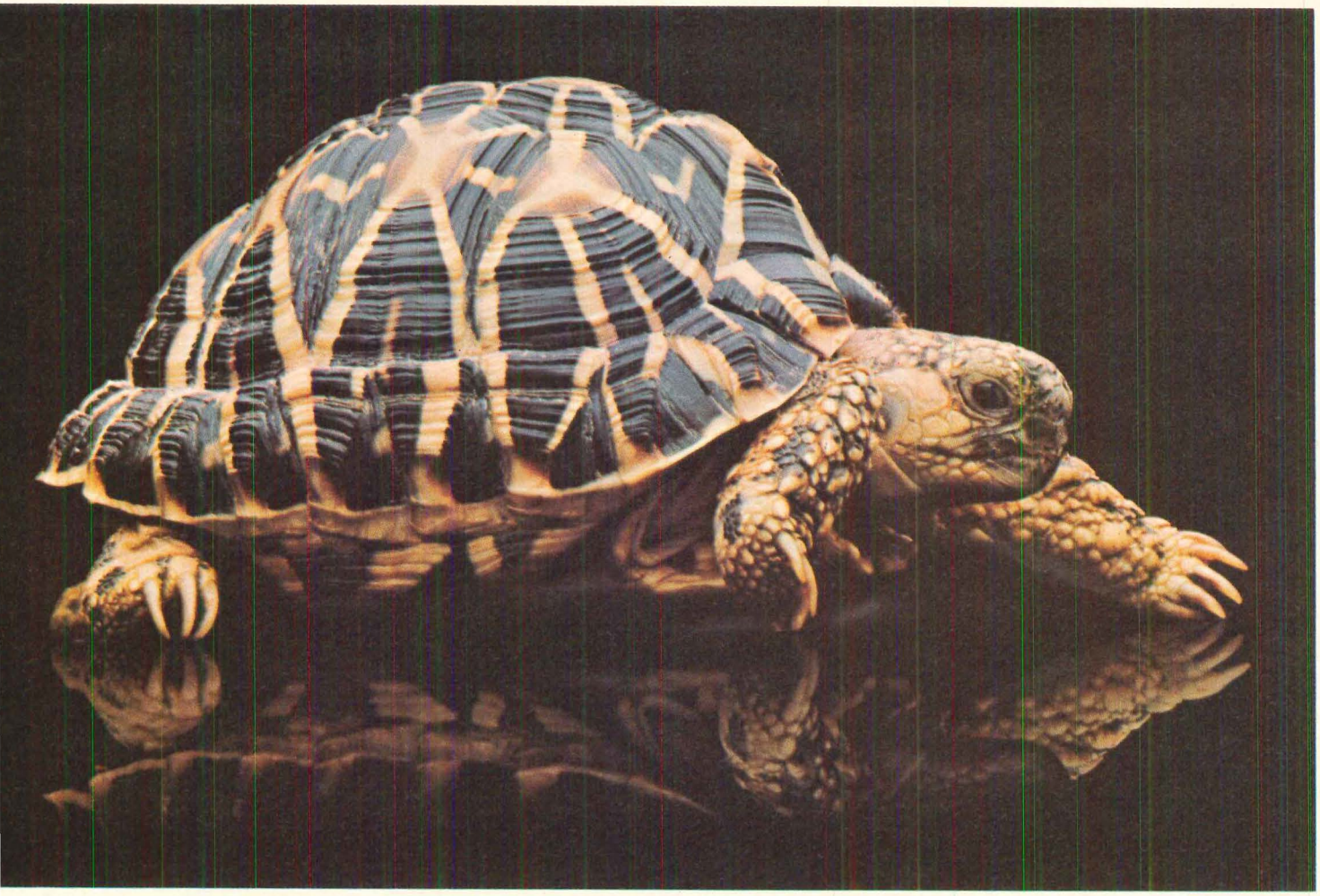
School door hardware is described in 16-page bulletin, which outlines the vandalism protection features of concealed floor closers, door holders and stops, and pivot sets, and includes a report on early warning smoke detection/automatic door control, and a technical guide on hardware for school doors. Rixson-Firemark, Inc.
Circle 202 on reader service card

Carpet cushion booklet contains information on test results conducted by various laboratories and research agencies, discusses the three types of carpet installation, comments on resiliency and resistance to pressure, acoustical and insulation properties, economical aspects, cushioning properties, pile weight savings, maintenance benefits, installation cost savings. Graphs outline test results. Carpet Cushion Council.
Circle 203 on reader service card

Plastics Encyclopedia is a 240-page reference book for plastic piping systems which should be useful to those who design, estimate, and purchase either partial or complete plastic air or fluid handling systems. Plastic Piping Systems.
Circle 204 on reader service card

ANSI. 1974 catalog of 5600 American National Standards and more than 3000 International standards and recommendations are listed. American National Standards Institute, Inc.
Circle 205 on reader service card
[continued on page 116]

The only organic roof that might outlast the Owens-Corning all-Fiberglas roofing system.



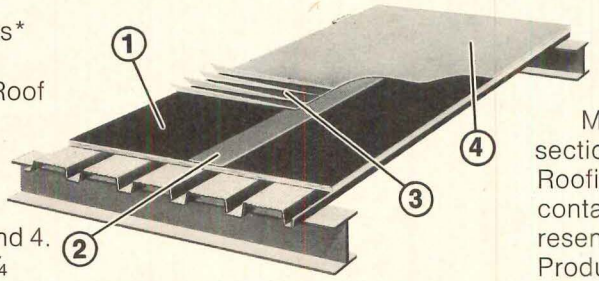
Conventional asphalt roofing systems have organic felts. So moisture and heat can cause them to curl, wrinkle, fishmouth, char and rot. And that can lead to an early failure.

Not so with our all-Fiberglas* roofing system. Here's why.

1. It begins with Fiberglas Roof Insulation. This has a bottom surface that conforms to minor roof irregularities. And a top surface that stays flat. (FM Class 1 construction. UL 1, 2, and 4. Thickness from 15/16ths to 2¼ inches. C-value certification.)

2. Fiberglas Roof Tape then provides reinforcement at the roof insulation joints and helps reduce failures caused by normal deck movement.

3. Fiberglas roofing felts come next. Unlike conventional felts, ours won't absorb or hold moisture. So they won't char or rot. They resist curling, wrinkles and fishmouths. And they're less subject to contraction and expansion due to changes in moisture.



4. Fiberglas PermaCap (where available) tops everything off. It's surfaced with inert, non-combustible ceramic granules that help beautify the roof.

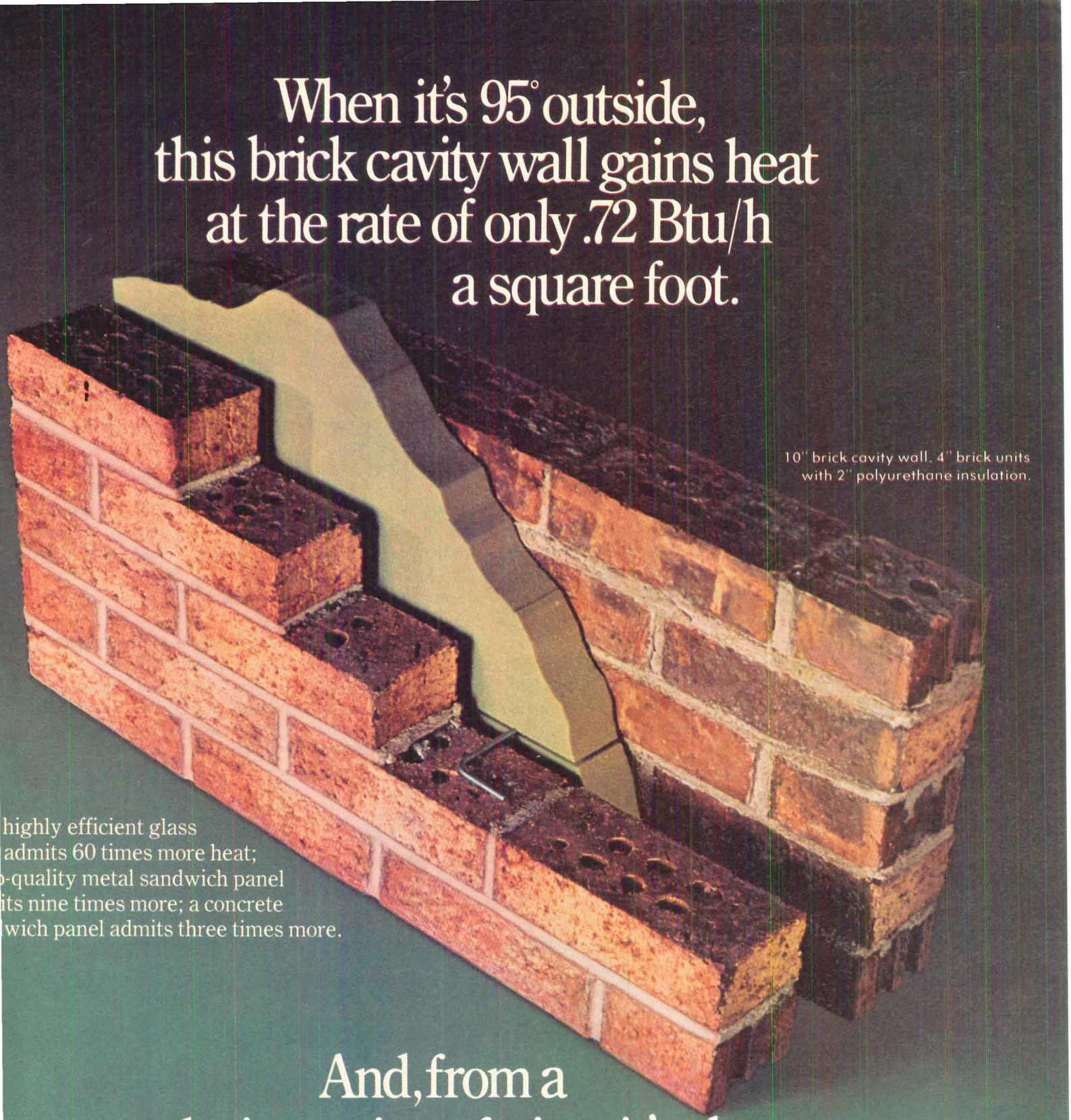
More information? Refer to our section in Sweets Catalog, Built-Up Roofing Systems 7.1/Ow, or contact your Owens-Corning representative. Or write: Architectural Products Division, Attn.: Mr. D. R. Meeks, Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659.

T.M. O.-C. F.

Owens-Corning is Fiberglas

OWENS/CORNING FIBERGLAS TRADEMARK®

When it's 95° outside, this brick cavity wall gains heat at the rate of only .72 Btu/h a square foot.



10" brick cavity wall. 4" brick units with 2" polyurethane insulation.

highly efficient glass
admits 60 times more heat;
-quality metal sandwich panel
its nine times more; a concrete
wich panel admits three times more.

And, from a design point-of-view, it's also a more interesting square foot.

h a U value of only .06, brick walls provide the most efficient r against solar heat gain in ngs. A 10,000-square-foot brick wall gains only 7,200 Btu/h summer design conditions, ared to 440,000 Btu/h for a e-glazed reflective glass wall. ck solves energy conservation problems inexpensively. In most areas, a brick cavity wall can be installed for $4.50 to $7.50 a square foot. Price includes finished interior walls.

If the cavity wall doesn't meet your design needs, other brick walls will. All offer similar energy conservation and none will shatter your project's budget.

Brick Institute of America, 1750 Old Meadow Road, McLean, Virginia 22101

BIA

For informative booklet comparing energy conservation characteristics of brick with competing systems, please fill out and mail coupon to:

Brick Institute of America, Dept. EC PA
1750 Old Meadow Road, McLean, Virginia 22101

Name_____
Title_____
Firm Name_____
Street_____
City_____
State_____ Zip_____

Products and literature continued from page 112

Textured bonded bronze can be used on walls, doors, counter facings, and furniture. Lightweight panels are made possible by casting bronze granules in polyester resins reinforced with fiberglass. Available in sizes 24"x96", 24"x120" and 36"x96", approximately ⅛-in.-thick, material can be applied directly onto walls and other flat surfaces. Also available as castings mounted on ½-in.-thick plywood, giving an overall thickness of ⅝ in. Brochure available. Forms & Surfaces.
Circle 206 on reader service card

Architectural Guide Specification on direct glue-down installation of double jute-backed carpets contains specifications and general information that is newly updated. Jute Carpet Backing Council, Inc.
Circle 207 on reader service card

Planning health facilities. Three booklets in a slip case cover long-range planning, food service and laboratory planning. Could be of particular interest to architects involved in hospital design. American Health Facilities, Inc.
Circle 208 on reader service card

Fire safety guidelines for the use of rigid urethane foam insulation recommend safety measures to be taken in the design stage and during installation and should be of interest to architects. Urethane Safety Group, Society of Plastics Industry.
Circle 209 on reader service card

Locksets, closers and panic devices. Catalog shows complete line, including electric locks and locking systems, electronic access control systems, door closers and operators and is available either looseleaf for binder use or bound for handout purposes. Eaton Corporation.
Circle 210 on reader service card

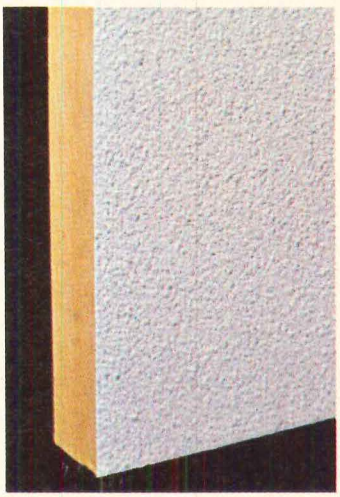
Insulated metal building panels are described in 8-page color catalog. Two-in.-thick Insul-Lap combines a urethane core, foamed in place between two metal skins with interlocking joint and factory-installed gasket. It provides a finished wall on both sides, can be coated with a variety of finishes and colors. A 1-in.-thick panel called Insul-Foil is a flat exterior panel with an interior surface of reinforced aluminum foil for use where maximum insulation is not required. Glaros Products, Inc.
Circle 211 on reader service card

Glazed ceramic floor and wall tile is available in five different sizes, glossy or semi-mat textures and can be set in many different patterns. Color catalog gives specifications and installation data. Interpace Corporation.
Circle 212 on reader service card

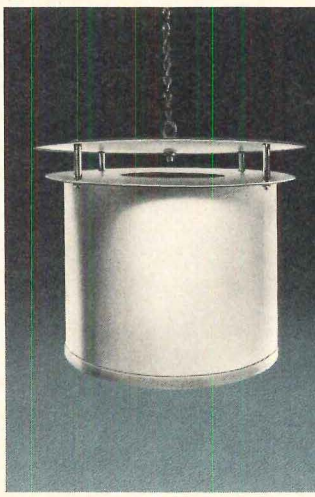
Colored and patterned concrete. Bomanite-treated concrete with the appearance of stone, cobblestone, brick, and tile has been used for malls, median strips, sidewalks, driveways, swimming pool decks and streets. A wide variety of patterns, colors, and textures is shown in bulletin. Bomanite Corp.
Circle 213 on reader service card

Unless you have a very special problem, Otis has an economical, standard elevator for your up-to-30 story building.

This beach has the 3 essentials Owens-Corning has the system



1. An acoustically non-reflective ceiling is a *must*—to keep sound from bouncing to other areas. An independent acoustical testing laboratory examined eight ceilings, including expensive coffered and baffled systems. Their verdict: Owens-Corning's Nubby II Fiberglas* Ceiling Board (left) in any standard exposed grid suspension system is *best* for achieving speech privacy at economical installed cost.



*Reg. T.M. O.-C.F.

or speech privacy in open offices. hat puts it all indoors.

2. An unobjectionable background sound helps mask distracting speech. Special electronic speakers, installed in the plenum, make it possible to hear normal conversation clearly within defined areas, without being overheard in other areas.

3. A barrier or the proper acoustical *screen* is necessary to keep unwanted speech from going *directly* between work areas.

All three essential elements should be "tuned" to work together with the help of an acoustical consultant.

For further information and our free 16-page guide, "Achieving Speech Privacy in the Open Office," write: N. M. Meeks, Architectural Products Division, Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659.

Owens-Corning is Fiberglas

OWENS/CORNING FIBERGLAS TRADEMARK®

Notices continued from page 16

Gerald Rank, Joel Van Ryzin, G. James Weith and **Ronald Welk** are new partners of Schmidt, Garden & Erikson, Chicago.

H. Robert Sparkes, PE has been named senior associate and district manager of Dubin-Mindell-Bloome Associates, PC, West Hartford, Conn., New York City, and Rome. **Lewis H. Mutch , PE, Milton E. Lawrence, PE** and **William E. Swale** are new senior associates.

Marvin D. Suer, FAIA has been appointed an associate of Ballinger, Philadelphia.

E. David Reitzel has been elected to the board of directors and appointed a vice president of Eberle M. Smith Associates, Detroit. **Lyn Eliot Graziani** is the new executive vice president. **Gary M. Baldwin, RA, Charles R. Bisel, AIA, L. Robert Hatch, AIA, Raoul R. Hubel, RA,** and **James E. Monteith** are new associates of the firm.

Charles Ogg, AIA has been named a partner of Eshbach Glass Kale & Associates, Philadelphia. **Andrew Bustard, AIA, CSI, Walter R. Livingston, AIA, AIP, Carl Demas,** and **Lester E. Rosenwinkel** have been appointed associates.

Gilbert A. Mitchell has been named director of architectural planning and design for the Irvine Pacific Development Company, Newport Beach, Calif. **Dean E. Pollinger** has joined the firm as director of construction.

Kenneth D. Mauck, AIA has joined Starnes Group, Inc., Houston, Tex., as vice president.

Lyle A. Nichols was named director of the Informational Services Division of Commonwealth Associates Inc., Jackson, Mich. **Alfred E. Kilgour** has been named director, Utility Marketing Division.

Dalton Dalton Little Newport, Cleveland, has elected the following new principals: **Lester Bolstad, Melvin Lehr, Charles Rauch, Bryan McCoy, C. Thomas Derr,** and **John Stamm.**

Expansions, reorganizations, and mergers

Jordan, Casper & Woodman, structural and civil engineers, and **Frank A. Dobson Architect** have merged to form Jordan/Casper/Woodman/Dobson, architecture and structural engineering, 3664 Grand Ave., Oakland, Calif.

Saunders-Thalden & Associates, Inc., St. Louis, has opened new offices in Livonia, Mich. and Ventura, Calif.

Merrill A. Jones & Associates, Inc., Greenwood, Ind., has announced the perm nent association of the firm with **Anderso Associates,** Lebanon, Ind.

New addresses

Dagit/Saylor Architects, 1501 Walnut Philadelphia, Pa. 19102.

The Pittsburgh Partnership, Benedum Trees Bldg., 223 Fourth Ave., Pittsburgh, 15222.

Carter, Bringle & Associates, consulti engineers, 5331 S.W. Macadam Ave., Por land, Ore. 97201.

The Ionic Group, 218 N. 13 St., Philadelphia, Pa. 19107.

Welton Becket & Associates, 200 Wes Monroe Bldg., Chicago 60606.

New firms

Charles H. Slater Architect, 313 Jaspe Waukesha, Wis. 53186.

Stan H. Fung and Neil Z. Melman have formed **Team 73 Landscape Architects,** Berkeley St., Toronto, Ontario.

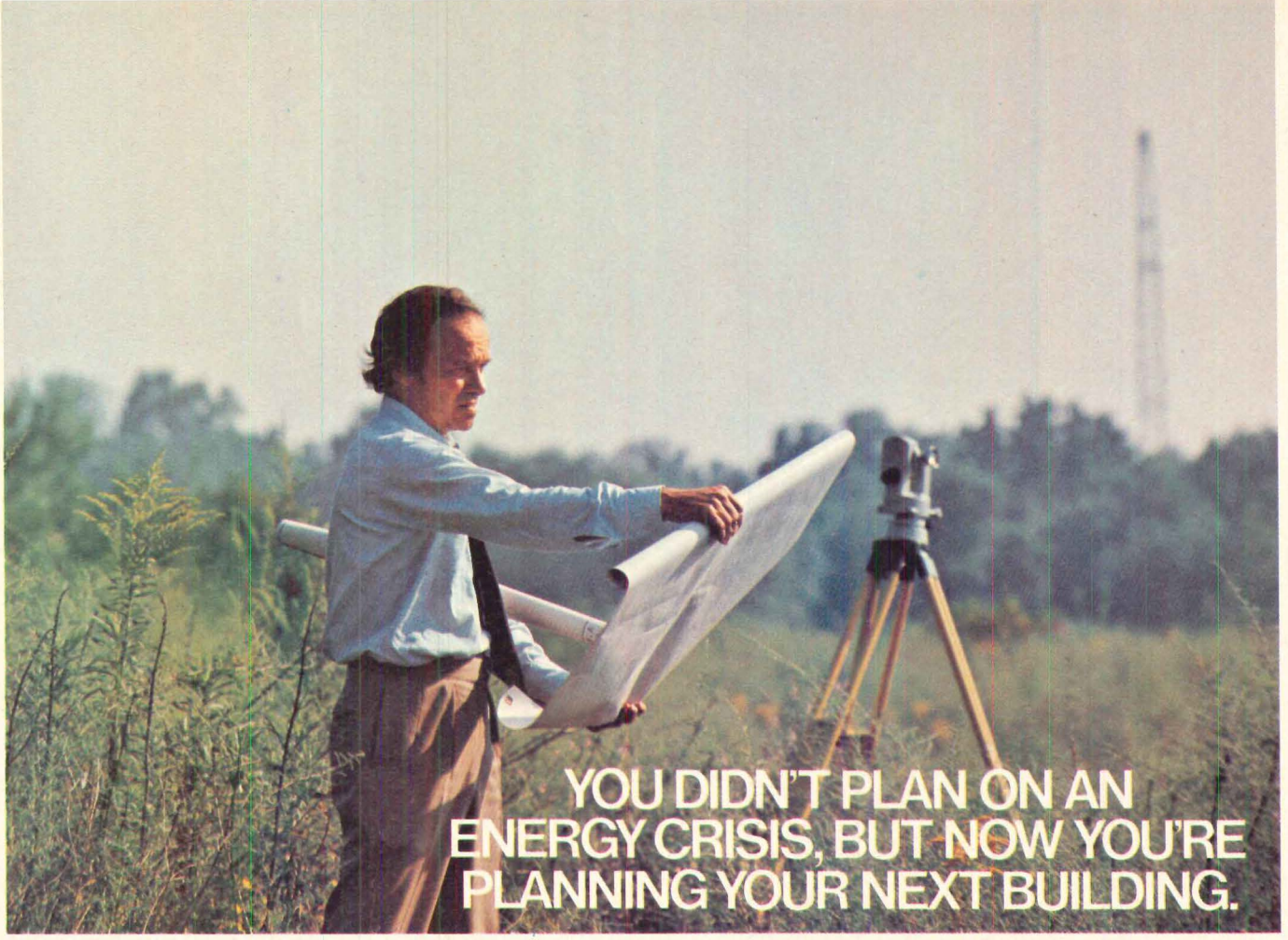
Jule B. Fisch, Assoc. AIP has formed **Geomega Planning Services, Inc.,** 1343 Ventura Blvd., Suite 228, Sherman Oaks, Calif. 91403.

ASG

Our name says the Glass Company, and that's saying a lot.

Over the years, ASG has come to stand for both pioneering and innovation. And ASG is constantly working to bring you new and better products in everything from float, plate and window glasses to insulating, reflective, tempered, wired, laminated, patterned and lighting glasses. We're always on the lookout for new developments to help you perform your job better and more easily. And ASG backs what it sells with service that makes a difference. Service that includes the willingness and expertise to work with you on special projects and problems. ASG service also means things like delivery where and when you want it, along with the most advanced package designs in the industry. Just a few of the things that make ASG, the Glass Company, the only name to look to for versatility plus quality in both product and service. Write us for complete information.

ASG Industries Inc.



Which building material will you use?

You've got energy shortages to think about. Air-conditioning costs. Heat gain through the long, hot summers. Heat loss in the winter months. Heating equipment costs. The whole set of energy-use factors suddenly has become critically important. The building material you use affects all of them.

Compare the energy conserving capability of masonry, for instance, with double-plate glass walls.

At 4:00 P.M. on a hot August day in Washington, D.C., the heat gain through a square foot of west-facing insulated brick and concrete block wall will be 2.2 Btus an hour.

The heat gain through a double-plate glass wall in the same location will be 173 Btus a square foot in an hour. A big difference.

Project this differential over 10,000 square feet of wall. You come up with a heat gain through masonry of 22,000 Btuh, while the heat gain through double-plate glass is 1,730,000 Btuh.

In the case of the masonry wall, cooling equipment with a two-ton capacity can handle the heat gain. But with the double-plate glass wall, about 143 tons of cooling capacity will be needed.

An analysis of a typical 10-story building shows that over its useful life, the air-conditioning cost for a square foot of our masonry wall will be about 23 cents. For the double-plate glass wall, it will be $7.60.

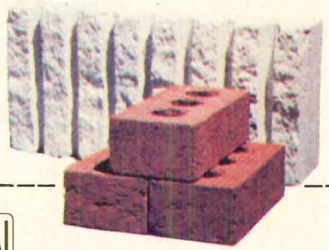
It takes a lot of money to buy, install and create space for all the extra air-conditioning equipment required by the double-plate glass wall. A lot of money and a lot of energy to run that equipment.

Compare the heat loss in winter. It has a dramatic effect on energy consumption and building operation costs.

Our masonry wall, for example, has a "U-value" of .12. The double-plate glass wall has a "U-value" of .55. (U-values are used to determine heat loss through one square foot of wall area in Btuh per degree Farenheit differential across the wall.)

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

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



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

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

Masonry walls save on air-conditioning and heating costs. And just as important, they are less expensive to build. The masonry wall we've described would have a 38% lower initial cost than the double-plate glass wall.

If you'd like to find out more, write to us and we'll send you a booklet comparing the thermal insulating qualities of masonry walls with double-plate glass walls, metal panel walls and pre-cast concrete walls.

International Masonry Institute P/A
823 15th Street, N.W., Washington, D.C. 20005 / (202) 783-3908

Please send the booklet comparing insulating qualities of masonry with other building materials.

Name Title

Address

Company

City State Zip

Nature of Business

Circle No. 339, on Reader Service Card

P/A 22nd Annual Awards Program for projects not yet completed

in architecture, planning, and research

nhold Publishing Company

gressive Architecture announces its nty-second Annual Awards Program. rds will be made to U.S. and Canadian archi- s, designers, urban planners, other profes- als and their clients for projects now in the gn stage and scheduled to be under con- ction in 1975. Any building, group of build- or urban planning project illustrating nite building proposals will be eligible. *In ition* entries in *applied research for a client* be accepted from architects or others *if they applicable to the design or realization of cific facilities or programs and are scheduled e acted upon within the calendar year 1975.* lification of entries in any category depends he fact that the work is commissioned by a cific client.

pose of the Awards Program is to recognize, ne critical early stages, outstanding examples ork being done in the fields that most directly ct the built environment. Recognition will be en to both the entrants and their clients.

t award, award, and citation designations be given by the jury in any or all of the three ad categories: research; urban design and nning; architectural design. Entries will be ewed for such factors as response to a nt's program, site use and development, ign excellence, conceptual advances, mate- s selection, and methods of implementation.

jury: for the Twenty-second Awards Pro- m, P/A has invited the following respected members: **Michael Brill,** President, Buffalo anization for Social and Technological Inno- on, Inc. (BOSTI), and Professor, School of hitecture and Environmental Design, State versity of New York at Buffalo; **Peter rmayeff,** AIA, Cambridge Seven Associates, , Cambridge, Mass.; **Lee Copeland,** AIA, , Dean of the College of Architecture and an Planning, University of Washington, ttle; Partner, Joyce, Copeland, Vaughan & dfors; **Peter Eisenman,** AIA, Director of the itute for Architecture and Urban Studies, York; **Clare Cooper Marcus,** Associate fessor, Department of Landscape Architec- , University of California, Berkeley; **Paul lolph,** FAIA, New York; **Joyce Whitley,** AIP, nning Principal of Whitley-Whitley, Inc., veland and Chicago; **Eberhard H. Zeidler,** AIC, Partner, Craig, Zeidler, Strong, Toronto. udging will take place in Stamford, Conn. ng September 1974. Winners of awards and tions will be notified immediately (confiden- y) after the judgment.

ublic announcement of the winning projects be made at a presentation in January 1975 location to be selected. Winning projects be featured in the January P/A. As in the t, P/A will arrange coverage of winning en- s in news media, particularly in those locali- of the award and citation winners. Winners st agree to provide illustrations reproducible ne press and to forward original material, uding models, to P/A if requested.

Submission requirements

1 All submissions *must be firmly bound.* Original drawings, actual models, or mounted exhibit panels won't be accepted, and no material is to exceed 11″ x 17″ in size. Each project is to be submitted under separate cover; 8″ x 10″ binders are preferred.

Entry form

Progressive Architecture 22nd Annual Awards Program

Please fill out *all* parts of this form and submit with each entry. Copies of this complete form may be used when submitting multiple entries. (Typewriter only, please)

Entrant:
Address:

Project:
Location:
Client:
Category:

Entrant:
Address:

Statement of Publication Rights: P/A has first rights to publish both the design and the finished project if it wins an award or citation (in the case of research studies, first rights to publication of the results) in the architectural press. The project is not yet completed, construction (or action on proposals) is scheduled to begin before the end of 1975.

SIGNATURE _____

Awards Editor
Progressive Architecture
600 Summer Street, Stamford, Conn. 06904

Your submission has been received and assigned number:

Entrant:
Address:

Awards Editor
Progressive Architecture
600 Summer Street, Stamford, Conn. 06904

Entrant:
Address:

(Return label)

2 Submissions must be accompanied b*entry form,* to be found on the *left side o page.* Each entry must have a separate f reproductions of the form will be accept Please fill in (typewriter only, please) *all* priate spaces on the form, and sign stat publication (part 2). Note that four parts required for each entry.

3 No identification of the entrant may ap any part of the submission, except conc an envelope attached inside back cover binder; entries will be kept anonymous judging is completed.

4 In addition to the form, please include following: a one-page synopsis of the s sion, attached to first page inside binde marizing program, your solution, descri and reasons for your selection of materi construction methods, site consideratio objectives of design (for research and p the intent and effect of the work). Set fo sons why this submission should be co for recognition. (Entrant should realize synopsis, plus visual material, may be s for retaining submission for further cons tion after first round of judging.) Any ad information necessary, or amplification one-page synopsis, is also encouraged should remain separate from the synop

5 Graphic submissions should also inc pertinent drawings such as site plans, r sentative floor plans, sections, details, p tives and/or model photos.

6 For purposes of jury procedure only, are to be classified *by the entrant* in the priate space on the entry form. Awards citations will not be given by categories submissions must be divided into comp groups for judging. For this reason, you asked to list your submission as one of lowing: *Education (Higher), Education ary), Education (Primary or Early Childh Housing (Single Family), Housing (Mult Commercial (Large Scale), Commercia Scale), Industrial, Religious, Recreatio Care, Planning and/or Urban Design, A Research.* If no category is listed for yo mission, please write in MISC., and it w placed with comparable entries. Mixed tries (part commercial and part housing instance) should be classified accordin larger function.

7 Submit fee of $10 for each entry, to c processing and handling, in an envelop marked "fee" attached inside front cov binder. Make check or money order pa *Progressive Architecture.*

8 Any entry not conforming to the abov quirements may be returned to the entr without being judged.

P/A will take every reasonable precau return submissions intact; in case of l will assume a liability no greater than $ each submission. **Deadline for mailing** August 31, 1974.
Address entries to Awards Editor,
Progressive Architecture
600 Summer Street, Stamford, Conn. 0

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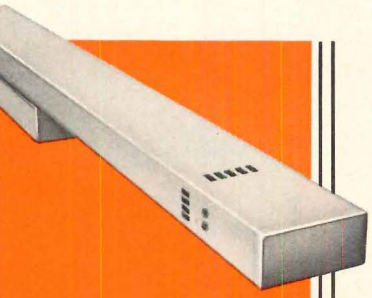

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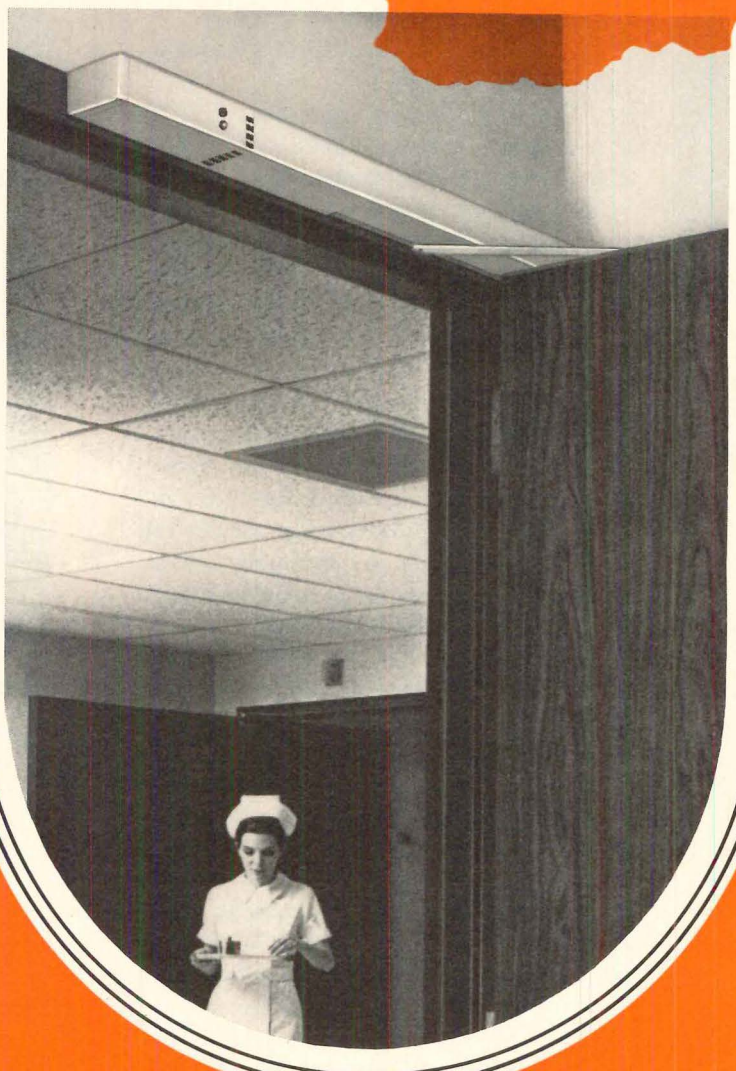


A 50s' land use policy?

The Use of Land: A Citizens' Policy Guide to Urban Growth *by the Task Force on Land Use and Urban Growth; William K. Reilly, editor. New York, Thomas Y. Crowell. 1973, 318 pp., $10, $3.95 paper.*

Reviewed by Susan Southworth, partner in a Boston design and architecture firm.

The U.S. history of public decisions on the use of land got off to a bad start in Boston in December 1634 when the usual Thursday meeting of town inhabitants dealt with those lands which were yet undivided. They arranged for the disbursement of all these lands as individual plots. Fortunately, this public decision was reversed by the dogged perseverance of an enraged individual. Instead of the 17th-Century subdivision, we got the Boston Common. Throughout most of our history we have been less fortunate.

The Task Force on Land Use and Urban Growth was created in 1972 with funding provided by the Rockefeller Brothers Fund. Their report—*The Use of Land*—was intended to provide direction on issues of urban growth. Certainly the intentions were laudable, but the results are confused and contradictory, like most environmental efforts today. The composition of the Task Force represents the forces which are most obviously responsible for our environmental crises: mayors, lawyers, bankers, federal bureaucrats, developers. Certainly, they can provide insights about why they act as they do, but is it really best to have a drunk write the prohibition laws?

What we got, aside from support for a national land use bill, was a period piece of 1950s' land-use thought rather than a document that helps us with contemporary problem-solving. Like the sad history of land use planning, this report ignores the essential consequences of a three-dimensional environment developing over time.

The assumptions of the report clearly reflect 1950s' thought which knew no energy bounds: "The vast majority of Americans will live, not predominantly in cities as we have known them, but in suburbs and exurbs . . ." (p. 18). What we have come to realize after more than 20 years of forced suburbanization is that this arrangement of

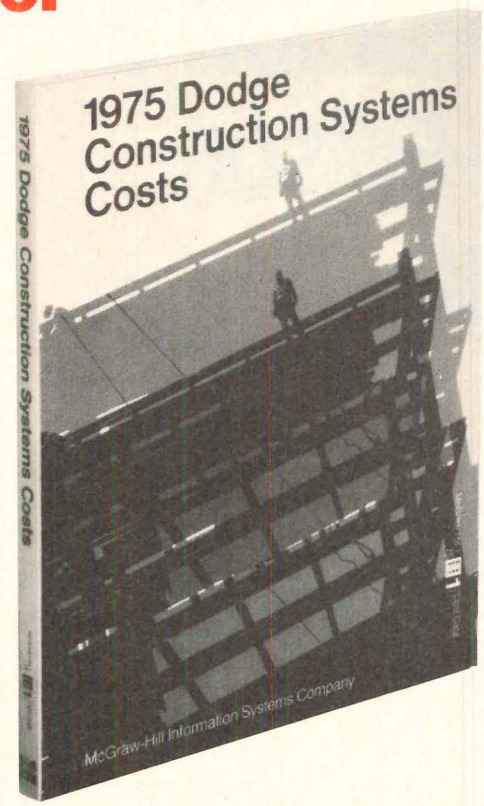
[continued on page 130]

EW...a more effective way
analyze and manage
ne cost impact of
our design
ecisions...

are the key cost elements of a building
ct really "locked in"? In the early stages
you make major design decisions, of
e. Simply put, early design decisions are
al cost decisions . . .

et, until now, there have been no aids to
ou understand and manage the cost im-
ions of your designs. Until now, you could
look at costs *(often after decisions had made)* through guesswork, through de-
unit costing of alternates, or some com-
on of the two.

architects have come to realize that such
urate and time-consuming methods ren-
em incapable of *managing* costs. That's
our entirely new method of cost impact
gement is worthy of your attention.



Announcing
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s on the data architects use and need

indoubtedly be reading quite a lot in
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-minute cost data on hundreds of alterna-
assemblies within the different systems
ould be used for each functional part of a
ng—superstructure, floors-on-grade, ex-
walls, partitions, interior wall finishes,
finishes, roofing and ceilings. Also pro-
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cost data on systems for dozens of dif-
building types . . . and shows the per-
ge each system is of the total building
e foot cost. This expands your capacity
aking rapid cost trade-offs.

If, for instance, your design solution results in your exceeding your budget but you want to stick to the exterior wall you've selected, say, you can "trade off" by going to less expensive wall finishes, partitions or ceilings. You can do this now without guesswork. All the alternative solutions are presented in one authoritative, convenient source.

You can also use this book to (1) compare average building systems costs to your design; (2) "shop" for alternative assemblies within a particular system; (3) make preliminary estimates; (4) check out change orders; (5) analyze area overages or underages.

IMPORTANT— This Is *Not* A "Unit Cost" Book— IT'S MUCH MORE

Unit cost books, which give thousands of detailed labor and material rates for everything that goes into a structure, serve a different purpose. They do not help when you're trying to quickly understand the cost implications of different structural systems.

DODGE CONSTRUCTION SYSTEMS COSTS permits you to analyze and manage the cost impact of major decisions at the crucial early stages. It should not be compared (or confused) with our own Dodge Manual, with the R. S. Means' publication, or with any other unit pricing aid.

Published and Complied by the Leading CONSTRUCTION COST AUTHORITIES

Extensive market research conducted by Dodge Building Cost Services (already a noted publisher of construction cost data and part of McGraw-Hill Information Systems Company) revealed a major informational void and prompted development of this new design analysis aid. Working with Dodge Building Cost Services and the Development Department of Sweet's Construction Services is the noted construction cost management firm of Wood & Tower, Inc., Princeton, N.J. All data is updated and processed through Wood & Tower's computer facilities. The McGraw-Hill Information Systems/Wood & Tower team is one you can *rely* on for accurate, meaningful construction systems cost data.

When you begin to use Dodge Construction Systems Costs, you may well feel like the man who has been making fires by rubbing sticks together and who discovers the match.

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In 1953, a Joy controllable pitch Axivane® fan was installed in the Burlington-Edison High School, Burlington, Washington, to quietly heat and ventilate the gymnasium building. The engineer selected a controllable pitch fan because it was the most efficient way to satisfy variable ventilation loads created by 50 to 2000 shouting spectators.

After twenty years, the Joy controllable pitch Axivane fan equipped VAV system is still in school, with no danger of becoming a dropout. Power requirements are low. Fan maintenance has been practically zero. Operating costs are minimal. Quiet operation was assured by incorporating an engineer selected sound cell.

To meet the air requirements of VAV systems, the Joy controllable pitch fan precisely adjusts the pitch of its blades. And maximum energy savings are realized at partial loads . . . a very important consideration these days. At Burlington-Edison, the fan blade angle is adjusted in response to a wall rheostat calibrated to crowd capacity.

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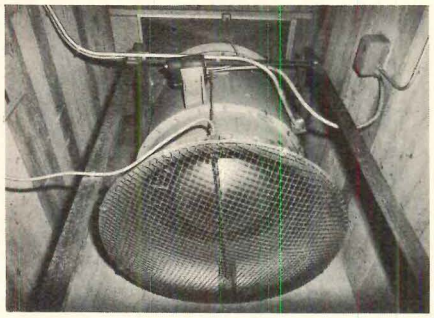

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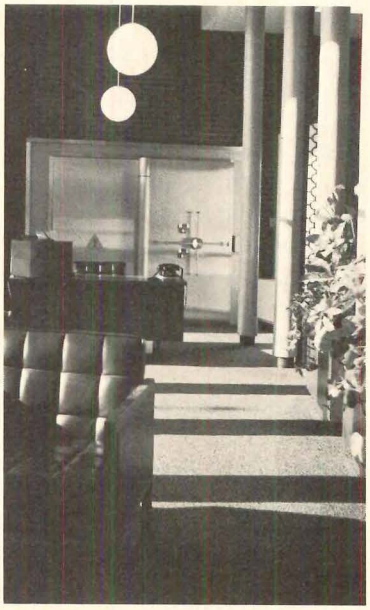

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Books continued from page 126

land and life is as unsatisfactory psychologically as it is uneconomic. Its parasitic dependence on infinite economic growth and unending energy resources, as well as the maintenance of an impoverished ghetto class within the region, make its doom all too clear. We finally have no choice but to change our policies to include the urban alternative.

At its most convincing, the book is an attempt to ameliorate some of the worst excesses of the suburbs—as perceived by suburbanites—to provide more services and open space, which are both chronic problems in the suburbs. But it ignores the larger relations of suburban communities to their regions and the nation, which represent more than a question of resource drain. The authors obviously feel safest when dealing with the need to retain open space. They approach open space in terms of quantity or monetary value, but they entirely ignore the issue of quality, which has greater importance to citizen use and perception than quantity. Certain kinds of open space may be viewed entirely negatively by adjoining residents; swamps and thickets threaten their children, basketball courts or baseball fields can be a source of noise and occasional broken windows, even a landscaped suburban park may be viewed as a menace if its trees hide drug users and purse snatchers. Thus, even the seemingly innocuous suggestion to protect and retain open space can be questioned unless the issues of quality are adequately confronted.

The basic problem with this book is that it is not concerned with the use of land, as the title suggests, but only with the narrow, old-fashioned concept of "land use," which ignores most of the environmental world for the sake of a simplistic mapping technique. Thus, we find that the primary development recommendations consist of set-back controls—one of our environmental blunders from the fifties—and cluster housing, which everyone feels safe with since Radburn.

The report disregards all the techniques for analyzing and measuring environmental quality, and it presents no clear ideas of what environmental quality is.

It is clearly time to give some highly visible public thought, on the national scale, to our environmental direction. As its next step, we hope the Rockefeller Brothers Fund will move into seventies' thought about the nation's man-made environment.

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A in September P/A in September P/A in September P/A in Septembe P/A in Septemb

The entire September P/A deals with the **Material Resources** at the architect's command. In this time of skyrocketing prices and vanishing options, architects need no reminder that materials determine what can be built. The September P/A reveals factors affecting availability and cost, discusses how architects are responding.

An **introduction** by Albert Dietz, Professor of Building Materials at MIT takes up pros and cons of new materials and old standbys, relating material use to lifecycle costing, energy conservation, and performance specification.

A **nationwide survey** of architects, contractors, and manufacturers yields insights—not all orthodox or pleasant—on current shortages and how to cope with them.

For many architects, the need to **compromise** is balanced by the opportunity to **innovate.** Among firms whose latest techniques and details are discussed and illustrated: **Kevin Roche, John Dinkeloo & Associates,** architects who helped introduce weathering steel and reflective glass to building; **I.M. Pei & Partners,** whose control over concrete is almost legendary; **Ulrich Franzen & Associates,** who handle brick with special skill; **Callister, Payne & Bischoff,** whose refined applications of wood range from custom-built to mass-production construction; the **Office of Mies van der Rohe,** masters at glass-and-steel walls.

Interior design for September explores the effect of shortages on contract furnishings.

In October

P/A will cover aspects of Housing in several articles: a critique of a new UDC-sponsored project by architects Wells/Koetter/Dennis; a follow-up study of Sert-Jackson's landmark apartments at Harvard (1963); a review of industrial lofts as living space; discussion of a house by Paul Rudolph that started as a modular prototype. Other features: Architecture in Cuba; sprayed-on fireproofing.

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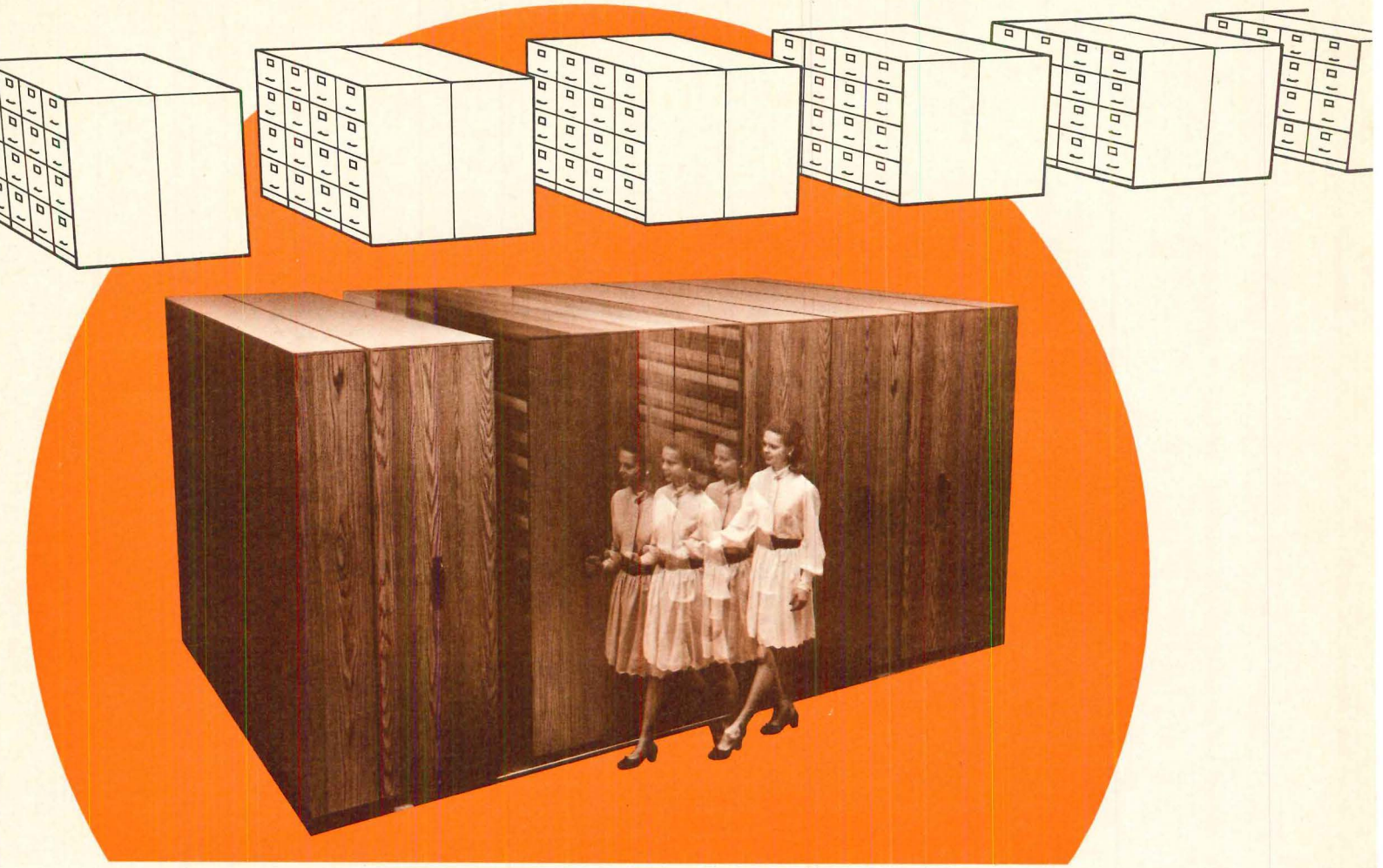

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