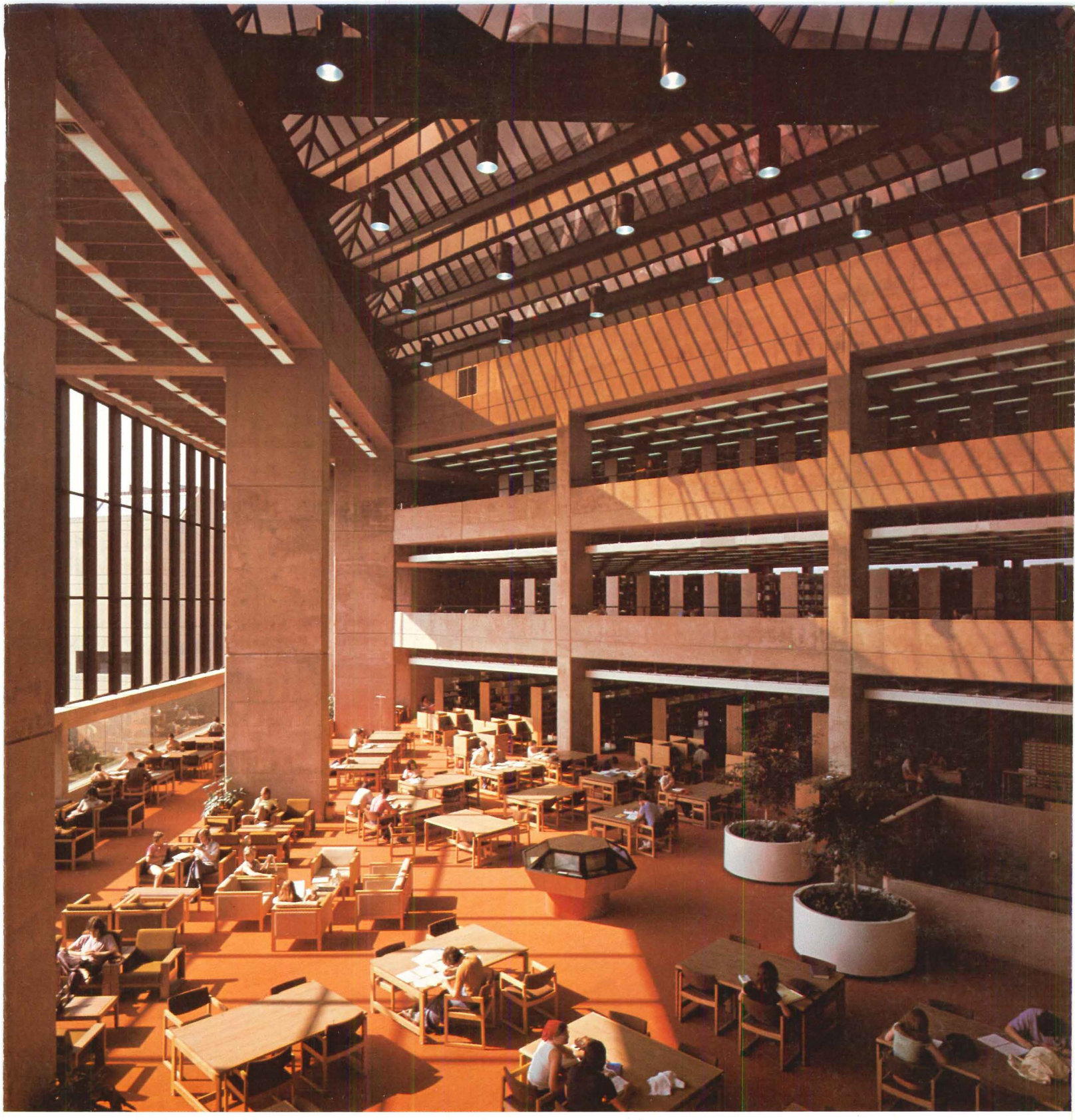


LIBRARY-RESOURCE BUILDING, DAYTON, OHIO BY DON M. HISAKA AND ASSOCIATES

FOUR BANKS: VARIED IMAGES FOR VARIED PROGRAMS

NATIONAL TECHNICAL INSTITUTE FOR THE DEAF BY HUGH STUBBINS AND ASSOCIATES

BUILDING TYPES STUDY: REHABILITATION AND RE-USE

FULL CONTENTS ON PAGES 10 AND 11

ARCHITECTURAL RECORD

AUGUST 1975 8 A McGRAW-HILL PUBLICATION FOUR DOLLARS PER COPY

A FIRST IN FIRE-PROTECTION.

Kansas City Bank Tower combines fluid-filled columns and flame-shielded spandrel girders.

The painted steel exterior of Kansas City's handsome new 20-story Mercantile Bank Tower encloses a number of unique structural concepts. Chief among them are liquid-filled columns, flame-shielded exposed spandrel girders and a unique steel space truss transfer structure.

Space truss and liquid-filled columns open up pedestrian area.

The architects plan for an open pedestrian area beneath the tower led to the design of the space truss and the liquid-filled columns.

The 18-foot deep space truss transfers the weight from 24 columns in the upper 16 floors to five base columns and the core. The five columns are 60 feet long, are cross-shaped and are fabricated from four standard W-shapes. The columns are filled with a solution of water and antifreeze. This system of column fire protection proved to be more economical than covering the columns with fire retardant material and cladding with steel covers.

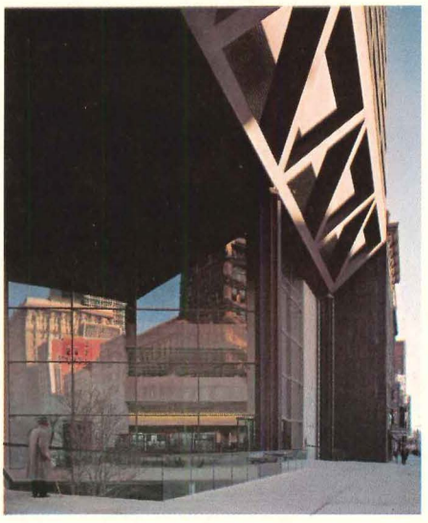
The space truss which encloses the building's mechanical floor is composed of W-shapes forming vees inclined outward at a 45° angle. Top and bottom chords are structural steel W-shapes with composite concrete slabs. The lower slab is post-tensioned with strands running diagonally which transmit tension forces to the core. This design resulted in further reduction of structural steel and a substantial saving in reinforcing steel.

Flame-shielded spandrels function as curtain wall.

The flame-shielded girders serve a dual function of structural component and wall enclosure. They form a part of the framing system replacing the more conventional concealed spandrel girders required to carry the floor loads. While acting with the exterior columns to resist all the wind forces on the tower, these exposed members provide 50% of the exterior wall. The top and bottom flanges with fire protective material on the inner surface provide the necessary protection for the girder webs in the event of fire within the structure. Full-scale mock-up and Underwriter's tests conducted in accordance with ASTM standards have shown this type of design will enable the steel girders to maintain flange and web temperatures below the limits established by ASTM E 119. In addition, the top flanges of each girder provide the form for the concrete floor above.

The Mercantile Tower contains 248,000 square feet and required 2200 tons of structural steel. It is a fine example of innovative architecture and engineering and the use of painted, exposed steel that works both aesthetically and structurally.

U.S. Steel is preparing a structural report on the Mercantile Bank Tower and we will be happy to send you a copy. For your copy, contact a Construction Representative through your nearest USS Sales Office, or write United States Steel, Room C423, P.O. Box 86, Pittsburgh, Pa. 15230.



Owner: Walnut Associates, Kansas City, Missouri.
Architect: Harry Weese and Associates, Chicago, Illinois.
Structural Engineer: Jack D. Gillum & Associates, Ltd., St. Louis, Missouri.
Mechanical and Electrical Engineers: Martin, Nagy, Tonella Associates, Inc., Chicago, Illinois.
Construction Manager: Concordia Project Management Ltd., Kansas City, Missouri.
Structural Steel Fabricator: Havens Steel Company, Kansas City, Missouri.
Spandrel Fabricator: Southwest Ornamental Iron Co., Bonner Springs, Kansas.

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For more data, circle 3 on inquiry card

Letters to the editor

The essays by Messrs. Greenberg and Weese on courthouse planning (June 1975) were very helpful and timely, but did not sufficiently emphasize the degree of planning necessary for the inclusion of present-day technology in new or renovated buildings. Such technology includes public safety, internal security, intercommunications, audio-visual and acoustical (room acoustics, noise control, privacy) factors.

In our work as acoustical/audio-visual/communications consultants to architects on three widely differing courthouse designs (one a major renovation of the old U.S. Courthouse, Foley Square, N.Y.C.), we have found that these technologies must go hand-in-hand with the space planning and circulation aspects covered by Mr. Greenberg. They are too fundamental to the building size, shape and layout to be omitted from the planning stage. We have prepared a technical sheet on acoustical, audio-visual and communications design factors that is freely available to interested readers upon request.

In addition to Mr. Greenberg's forthcoming book, readers should refer to "The American Courthouse: Planning and Design for the Judicial Process," an excellent book which is the result of a joint committee set up by the American Bar Association and the AIA, published by The Institute of Continuing Legal Education, Ann Arbor, Michigan.

Peter J. George
Acoustics/Noise Control Consultants

I have read RECORD'S articles on innovations in government procurement with considerable interest, but have not seen any mention of the "One-Step" turnkey procedures now used to build family housing for the Department of Defense. These procedures feature flexible design standards that allow architect/builder teams to offer creative solutions in a form of design competition. Design/construction contracts are awarded to firms that offer "the best house for the money" within the funds available.

Turnkey emphasizes design quality, not low bids. It solves the inflation problem by allowing designers to adjust quality to meet fixed budgets within restraints imposed by a short design time and a specific building system. An entirely new architect-client relationship is implied—architects work for builders, not directly for the government. Interest from designers and builders remains strong, the quality of our turnkey designs has been greater than recent conventional designs, and successful awards for almost 6,000 units have been made within the Air Force alone.

You were kind enough to mention my work in developing turnkey procedures in your "Young Architects" issue (December 1972) and to publish my letter recommending a clearinghouse to facilitate information transfer between architects and government (June 1973). Now that turnkey has been successful for the Air Force, I am anxious to see these procedures applied elsewhere and to convey to a wider audience how and why it works.

Michael Burrill
Captain, United States Air Force

Calendar

AUGUST

Current-September 1 "Architecture Boston," an exhibit of award-winning buildings in the Boston area, Prudential Center lobby. Sponsored by The Boston Society of Architects, in conjunction with Boston 200. Contact: Lewis A. Carter, Jr., Office of the Boston Bicentennial, One Beacon Street, Boston, Mass. 02108.

Current-September 7 Exhibition of Laszlo Moholy-Nagy photographs, San Francisco Museum of Art. Contact: Mary Miles Ryan, San Francisco Museum of Art, Van Ness Avenue at McAllister Street, San Francisco, Calif. 94102.

21-24 Prestressed Concrete Institute Convention and Exhibition, Caesar's Palace, Las Vegas, Nevada. Contact: PCI, 20 North Wacker Drive, Chicago, Ill. 60606.

24 and September 7 Guided walking tours of San Francisco's commercial area. Conducted by the Northern California Chapter of The American Institute of Architects. Contact: Barbara Clock, Northern California Chapter, AIA, 254 Sutter Street, San Francisco, Calif. 94108.

SEPTEMBER

5-7 Conference, "CM—Is It For You?", Arizona Biltmore Hotel, Phoenix. Sponsored by The American Institute of Architects and the Arizona Chapter, Producers' Council. Contact: Milan Srnka, 3122 North 3rd Avenue, Phoenix, Ariz. 85013.

24-26 Conference on Neighborhood Conservation, McGraw-Hill Conference Center, New York City. Sponsored by the National Endowment for the Arts, the Conservation Foundation, State of New York, and the New York City Landmarks Preservation Commission. Contact: Danae Voltos, 118 East 19th Street, New York, N.Y. 10003, or Benjamin Ruhe, National Endowment for the Arts, 2401 E Street N.W., Washington, D.C. 20506.

26-27 A two-day intensive course, "Solar Energy Use for Buildings, Houses and Pools," University of California, Berkeley. Sponsored jointly by Continuing Education in Engineering, and the College of Engineering. Contact: Bob Newton, Continuing Education in Engineering, University of California, 2223 Fulton Street, Berkeley, Calif. 94720.

26-29 The Second National "Back to the City," conference, St. Paul, Minnesota. Contact: Back to the City, c/o Old Town Restorations, Inc., 158 Farrington Street, St. Paul, Minn. 55102.

OCTOBER

9-10 Harvard Graduate School of Design conference, "Issues '76—Public Policy and the Built Environment," Gund Hall. Sponsored by the Boston Globe and the Harvard Graduate School of Design Association. Contact: Patricia L. McManus, Harvard Graduate School of Design, Gund Hall 404, Cambridge, Mass. 02138.

19-22 Eastern Workshops and Exhibits of the International Security Conference, New York Hilton Hotel, New York City. For registration information and exhibit hours, contact: The International Security Conference, 2639 South LaCienega Boulevard, Los Angeles, Calif. 90034.

27-30 "Resources 76," a seminar on strengthening the market for, and the marketing of, architectural services. Included on the program will be speakers from the governmental, financial and professional realms influencing the construction market. Sponsored by ARCHITECTURAL RECORD. Contact: William Marlin, ARCHITECTURAL RECORD, 1221 Avenue of the Americas, New York, New York 10020. Phone: (212) 997-4242, or Richard Muetze, conference coordinator, (312) 753-3185.

29-January 4 "The Architecture of the Ecole Des Beaux Arts" exhibition, the Museum of Modern Art, New York City. Contact: Arthur Drexler, Director, Department of Architecture and Design, the Museum of Modern Art, 11 West 53 Street, New York, N.Y. 10019.

ARCHITECTURAL RECORD (Combined with AMERICAN ARCHITECT, ARCHITECTURE and WESTERN ARCHITECT AND ENGINEER)

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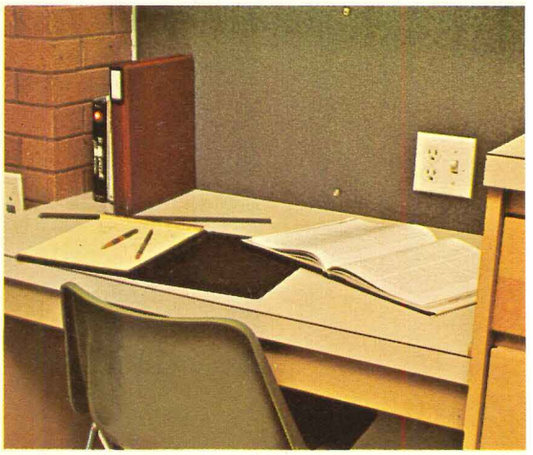

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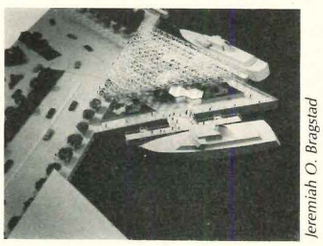

Jeremiah O. Bragstad

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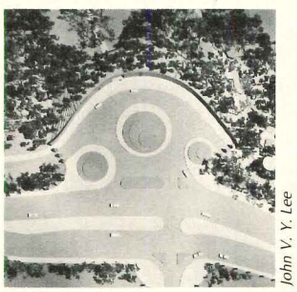

John V. Y. Lee

ARCHITECTURAL ENGINEERING

COMING IN MID-AUGUST

The second annual issue of Engineering for Architecture featuring: 1) Twenty pages of case histories demonstrating effective architect engineer collaboration; 2) a report on RECORD's Round Table: Towards a Rational Policy for Energy Usage in Buildings; 3) Portrait of a Successful Engineering Firm—KKBNA, showing how the firm manages both creative and operational aspects; 4) Quality Lighting with Fewer Watts—10 pages of examples illustrating efficient lighting geometries, flexible lighting systems, use of more efficient lamps; 5) Six pages of inventive ideas in structure and hvac; 6) Solar Energy for Space Conditioning—the Practical Aspects, discussing what is known about making it work, and the impingement of economics.

NEXT MONTH IN RECORD

Building Types Study: Medical Facilities

The conditions of design for medical facilities are affected by a number of new technical complexities. The September study will report on a computerized method under development by the Veterans Administration; the state of the art of materials handling systems; the effects of legislation and other factors on both financing and design approaches. More important is the survival of design itself at increasing levels of excellence as demonstrated in several small hospitals by Payette Associates and other outstanding designs in both plan and interior by Perkins & Will, ISD and others.

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NCARB and AIA set up an internship program that really makes sense

"Instead of standing idly by and letting our young people continue to disappear from view for three, four or more years—that is, after they've finished school and before they're registered—the profession has decided to pay them the serious attention they deserve."

So said Charles Blondheim, architect of Montgomery, Alabama and first vice-president/president designate of NCARB to the NCARB convention held last month.

And architects and students of architecture alike should cheer the news that NCARB and AIA, in an unprecedented cooperative effort, have resolved "1) to enlist the full resources of the profession to enrich the training experience, and 2) to assure that every intern-architect will be the beneficiary of a major program designed to expand the opportunities of practice while producing the best qualified candidates ever to enter architecture."

Like how? Haven't we heard about this before? Just a year ago, Mr. Blondheim suggested such a program, enthusiastically reported on this page in September 1974. And now—in what must surely be record-breaking time—a joint AIA-NCARB Internship Guide Force co-chaired by Mr. Blondheim and AIA vice president Elmer Botsai has come up with a detailed program, the support of the Five Presidents, and commitment to begin a pilot program on or before January, 1976.

Specifically, by January 1st, in each of three states (Texas, Colorado, and New Jersey) 40 intern-architects will be selected to take part in a pilot run of the new IDP—or Intern Development Program.

Briefly, under the Program, each architectural student and/or intern architect in the pipeline towards registration would be part of a structured program intended to see that he had the necessary experience during the internship period to be well qualified to take the examination, and practice thereafter.

After graduation, upon entering full-time employment, each student would be assigned a Professional Sponsor at his place of employment. This person would not necessarily have to be the head of the firm, but would be an architect with a decision-making role in the firm. This architect would be the Intern-Architect's day-to-day mentor.

Further, each intern-architect would have assigned a Professional Advisor, an architect outside his place of employment who has agreed to guide and counsel the intern-architect, and to assure that his training period is a productive one.

How would the Professional Sponsors and Professional Advisors be organized and recruited? According to a recent survey of NCARB certificate holders, a substantial majority of owners and principals have indicated not just willingness, but enthusiasm, for participating in a comprehensive program of this sort. These Advisors would be responsible to a Regional Coordinator—a full-time person employed to administer the IDP program within a region, and to coordinate with his region's NCARB member boards and AIA chapters.

They in turn would be responsible to a Director of Professional Development, a full-time member of the NCARB headquarters staff.

These various professionals, as described in their job descriptions, would be responsible for seeing to it that each intern-architect, during "a minimum of three years' internship experience;" gained "exposure to the basic areas of practice;" compiled for presentation to the NCARB an IDP Record—in effect a portfolio of his work and accomplishments during the internship period; and was well advised in his development all through the internship period. His advisors would additionally be responsible for seeing, where it seemed necessary, that the intern-architect participated in supplemental and continuing education courses.

Is such an ambitious training program necessary? Mr. Blondheim answered that question this way: "NCARB believes so. AIA believes so. And all allied groups—including the schools of architecture, the Intern-Architects themselves, and the 55 member boards of NCARB—would like to see the gap filled. We have learned from questionnaires filled out by the candidates who took the last Professional Exam that almost none of them took part in an organized or structured internship experience."

Assuming that the pilot project works well next year, NCARB intends to make the IDP program "mandatory"—meaning that "a candidate for examination must produce documented proof that, one way or another, he/she has fulfilled the IDP's criteria. If a person feels able to meet these criteria outside the formal program, well and good." But he stressed that "the criteria will be tough enough to reflect the IDP's overriding purpose: to provide a breadth and caliber of training experience that will prepare the young architect for careers of professional excellence."

And *there* is a goal worthy of support by every architect. Let NCARB and AIA know that you'll help. —*Walter F. Wagner Jr.*

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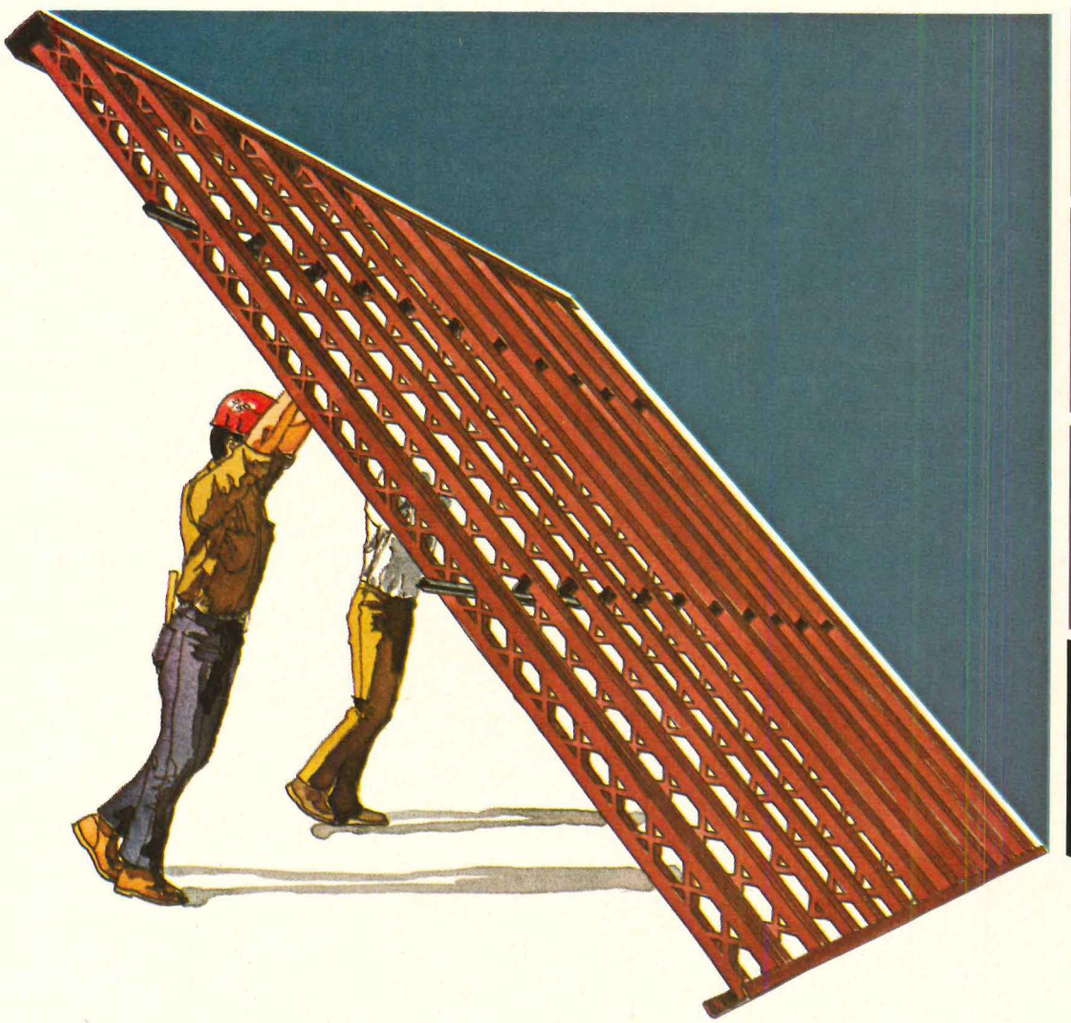
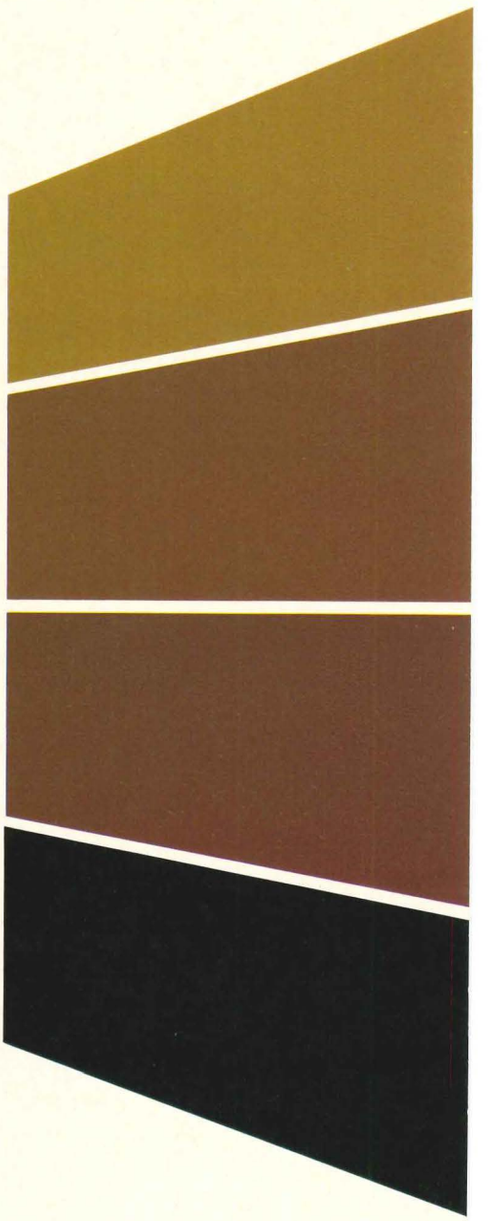
Just about any surfacing material may be used with it. Interiors may be drywall, plaster over metal lath or gypsum lath, wood paneling, etc. Exteriors may have cementitious membranes—textured stucco, exposed





aggregate, simulated brick or stone—or may be brick veneer, metal panels, textured plywood or any other sheet material.

The savings it offers may be the result of any one or a combination of factors: easier execution of intricate designs; lower in-place cost; faster erection; reduced foundation and footings requirements because of light weight; insurance savings through incombustible ratings. Some or all of these led to its selection for use in the varied buildings shown in the accompanying photos—a small representative selection of recent Inryco/Milcor projects.

Wherever your design emphasis is concentrated—high rise or low rise; commercial, institutional or residential—Inryco/Milcor Light Gage Steel Framing Systems might well provide the perfect solution to a budget problem. See our catalog in Sweet's, section 5.3/In. Or, if you'd like our representative to call and discuss how the advantages of these systems may apply to a project you are planning, please contact: Milcor Division; INRYCO, Inc.; Dept. H, 4033 West Burnham Street, Milwaukee, Wisconsin 53201.

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General Offices: Melrose Park, Illinois

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Quiet.

How to build silence into a busy office without blowing the budget

Turn down the volume with Gold Bond® Solitude® Ceiling Panels and Gold Bond Tectum® Interior Wall Panels.

Solitude acoustical ceiling panels are ordinarily installed in exposed or semi-concealed suspended grid systems.

They come in fissured, needle-perforated, textured nondirectional and embossed coral patterns. You can also order them with a scrubbable plastic-coated finish. With NRC's up to .60 and STC's up to .42, Solitude Panels work beautifully in stenographic pools, open office plans, conference rooms and congested work areas — anywhere busy people congregate.

For walls, try Tectum Panels. These good-looking panels are easy to work with, easy to install and, best of all, are inexpensive. They soak up 80% of the sound that hits them, depending on the mounting used, and can be used in new or remodeled offices. Tectum panels require no finishing. Handsome as they are in their natural state, they can be spray-painted with any alkali-stable flat latex paint with no loss of acoustical qualities.

See our intriguing new movie, "Tectum Interiors," by calling your local Gold Bond representative for a showing, or write Gold Bond Building Products, Division of National Gypsum Company, Dept. AR-85CT, Buffalo, New York 14225. You'll find Gold Bond Solitude Panels and Tectum Panels in Sweet's.

We're gypsum, and then some.

Gold Bond®
BUILDING PRODUCTS

For more data, circle 11 on inquiry card

The GF Cube.
It doubles your thinking power.

The GF Cube...
Winner of the 1975 International Contract Product Design Award
presented by the American Society of Interior Designers

The new GF Cube offers twice as many desk and console configurations as our best competitors.

That has to start you thinking. Because, this great variety of configurations allows you to make better use of very expensive floor space.

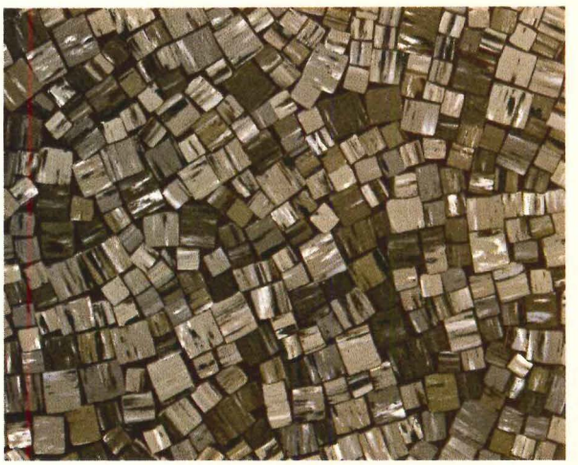
The Open Office shown here gives you just a glimpse of the possibilities.

Ask your GF representative to put the complete GF Cube story together for you. Or write us for literature. GF Business Equipment, Inc., Youngstown, Ohio 44501. In Canada: Toronto, Ontario.

Office Furniture Systems
GF Business Equipment

For more data, circle 12 on inquiry card

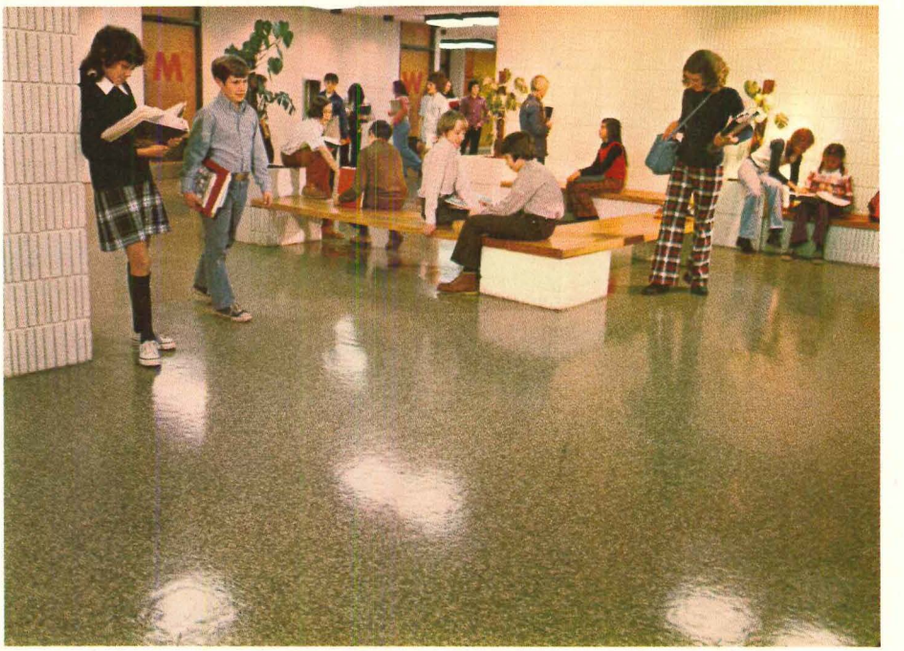
The Brigantine® floor from Armstrong. At Jonas Clarke Junior High School, it fights 777 kids a day and always comes back for more.



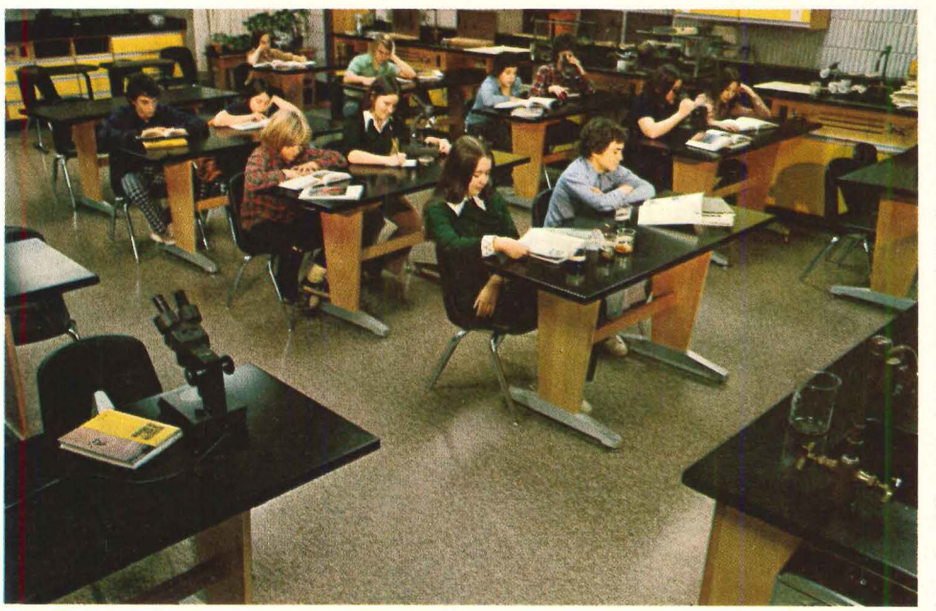
In a day's time, 777 kids can beat a floor covering senseless.

In a year's time, they can murder it.

But at Jonas Clarke Junior High in Lexington, Mass., the kids have met their match. In Brigantine Vinyl Corlon® from Armstrong. The sheet vinyl floor covering that's taken its punishment for two and a half years. And still looks almost as fresh and undaunted as the day it started out.



You'll find Brigantine throughout the school. In entrance halls, classrooms, labs, locker rooms, cafeteria. Where the kids track mud and snow on it, tramp busy feet on it, spill liquids and food all over it, do their darndest to make it roll over and play dead.



But for all its beauty, Brigantine is loaded with hardhearted practicality. Its vinyl composition is rugged enough for high-traffic areas. And since spills can't soak into Brigantine's

tough virtually nonporous surface, it's easy to keep sparkling clean. In fact, the high school's custodian will tell you that with Brigantine's dirt-hiding capability and a routine maintenance schedule, it's relatively simple to keep the floor looking its best.

Brigantine is available in a wide spectrum of colors that fit virtually any decor. And it comes in rolls 6 feet wide and up to 90 feet long, that not only make installation easy but eliminate a lot of seams. So if you need a floor that can take a beating and still look like a beauty with minimum care, you now know its name. Brigantine Vinyl Corlon. For more information, write Armstrong, 306 Rock Street, Lancaster, Pa. 17604.

Architects: Drummey Rosane Anderson, Inc., Wellesley, Mass. Flooring Contractor: M. Frank Higgins & Co., Inc., Boston, Mass.

FROM THE INDOOR WORLD® OF Armstrong

For more data, circle 1 on inquiry card

If you're designing an open plan office, all you need to know is one name. Armstrong.

Only Armstrong's pre-engineered package gives you single-source supply, single-source responsibility.

No more bulging files of scattered suppliers for your open plan office designs. Now, you merely call one name. A name you know. A name you know you can depend on. Armstrong.

From this one source you get all the basics to execute your design, meet your specifications. Floors. Ceilings. Quality lighting. Acoustical control. Sound-masking system. Fire protection. The works. Without the headaches; without the aggravations; and without the uncertainties about everything "coming together."

Soundsoak™ Wall Panels:* Available in an assortment of bright, modern colors. The surface is a soft modacrylic fabric reinforced with a woven fiberglass scrim, backed by acoustically efficient mineral fiberboard. They come 30″wide and in nine- or ten-foot lengths. Soundsoak is an important factor in controlling reflected sound with an NRC range of .55 to .65.

Soundsoak Divider Screens. These are highly mobile screens that afford you maximum flexibility. Freestanding, colorful, they are covered with tufted nylon fabric over a 1¼″-thick base of acoustical fiberboard which controls sound while sectioning off various work areas. Choose either curved or straight screens, in five- or six-foot heights, and with aluminum or wood trim.

C-60/30 Luminaire Ceiling System. Acoustical privacy is the single most important environmental factor in open planning. And one of the most important elements in achieving this privacy is the ceiling. The Armstrong C-60/30 Luminaire Integrated Ceiling System accomplishes that and two other important facets of interior design: highly efficient quality lighting; draft-free air distribution.

Sound-Masking System. The Armstrong complete package includes a specially engineered electronic sound-masking system that can be "tuned" to the intensity that best masks distractive sounds and so helps achieve an optimum level of speech privacy.

Floors. Long famous for its floor coverings, Armstrong offers you an ever-expanding scope of colors, patterns, and materials, ranging from the warmth and elegance of commercial carpeting to the practical and durable talents of Quiet Zone® Vinyl Corlon®.

Our overall expertise is one of the many reasons why architects and designers call Armstrong first. Like to know more? Please call us, or write Armstrong, 4205 Rock Street, Lancaster, Pa. 17604. In Canada, write Armstrong Cork Canada, P.O. Box 919, Montreal 101, Quebec.

For more data, circle 2 on inquiry card

*Patent pending

FROM THE INDOOR WORLD® OF Armstrong

DORMITORY FURNITURE

The 2400 "Esquire" group (pictured) displays textured English oak high pressure plastic laminate fronts and ends with complementary natural-leather-look high pressure plastic laminate tops and wardrobe doors. Additional features include recessed toe bases on chests and wardrobes to keep scratches to a minimum plus R-Way's well-known metal chassis with 3-point nylon drawer guide arrangement.

For more information, send for a complete, color catalog.

Showrooms: Chicago, New York, Minneapolis, Dallas, San Francisco, Seattle.

R-WAY FURNITURE COMPANY SHEBOYGAN, WI 53081 PHONE AREA 414-457-4833

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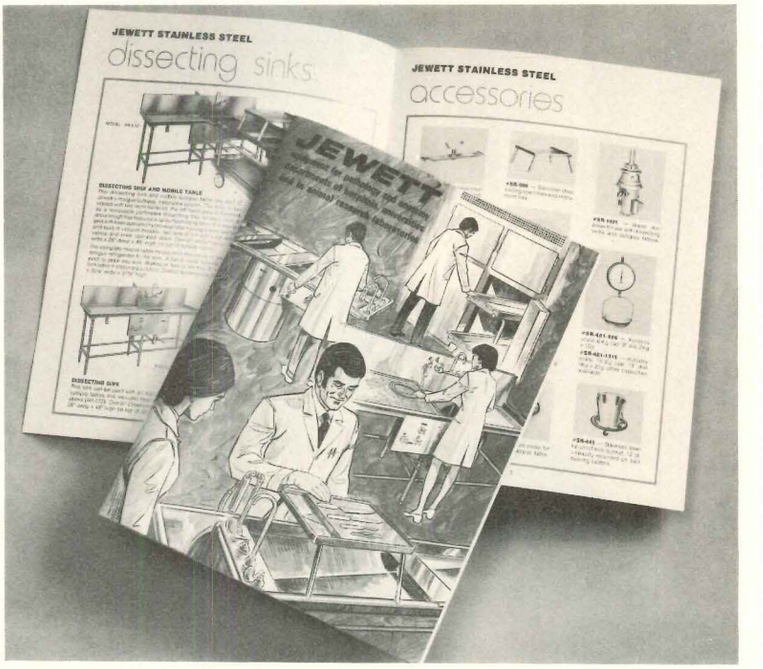
Olympic Overcoat or Olympic Stain. Guaranteed satisfaction you won't get with paint.

For more data, circle 14 on inquiry card

Olympic Stain, 1148 N.W. Leary Way, Seattle, WA 98107
A division of COMERCO, INC.



Jewett offers morgue/autopsy planning service

Whether you are planning a new morgue/autopsy facility or modernizing and equipping present facilities, Jewett specialists provide expert design counseling. Jewett will analyze your requirements with you and your architect or consultant and will send you plans of the complete layout including equipment specifications. Jewett's morgue/autopsy planning services can save you time and costly mistakes. Your new construction or renovation project will not only be right for your current needs, it will also allow for future growth. Send for 16 page equipment catalog.

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If you're on a budget, squeezed between demands for fire protection and costs, a wall system incorporating GAF® Stratalite® thatch siding may be the answer.

It's a wall system that sets a new record in its price range for fire protection. In fact, it has been tested and certified by Underwriters Laboratories, Inc. to meet all community and fire protection standards for one full hour.

And Stratalite is handsome, with a wood-like durable texture in nine colors. GAF Stratalite cannot burn, warp, crack, shrink, or rot. The colored surface remains fresh and beautiful for years.

Before you start your next project, perhaps it would be wise to write us for full details.

GAF® **GAF® STRATALITE®**
THATCH SIDING

GAF Corporation, Dept. AR85 Building Materials, 140 West 51 Street New York, New York 10020

☐ Please rush me full information on your low cost, one-hour fire-rating wall system. ☐ Have a representative call.

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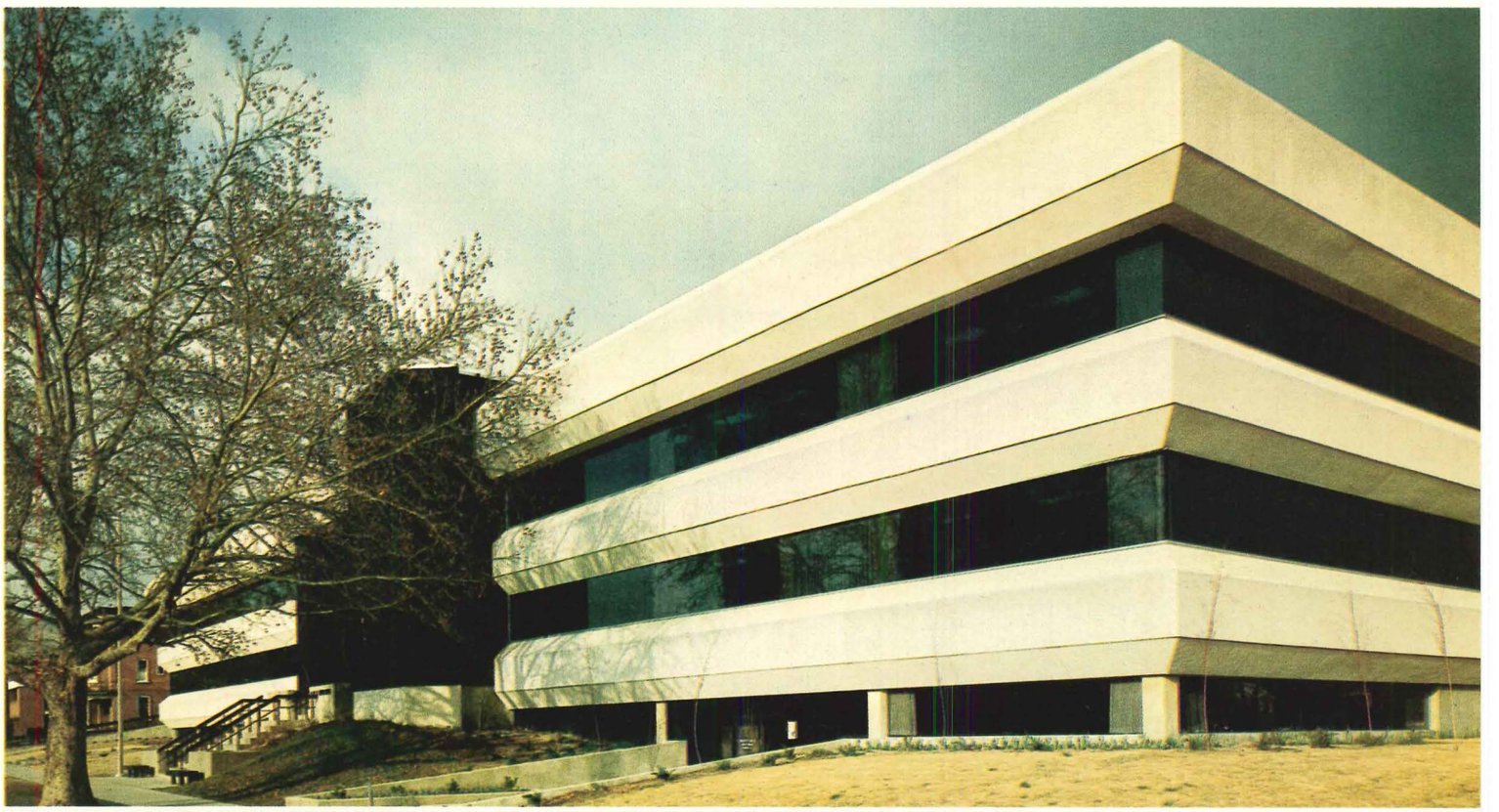
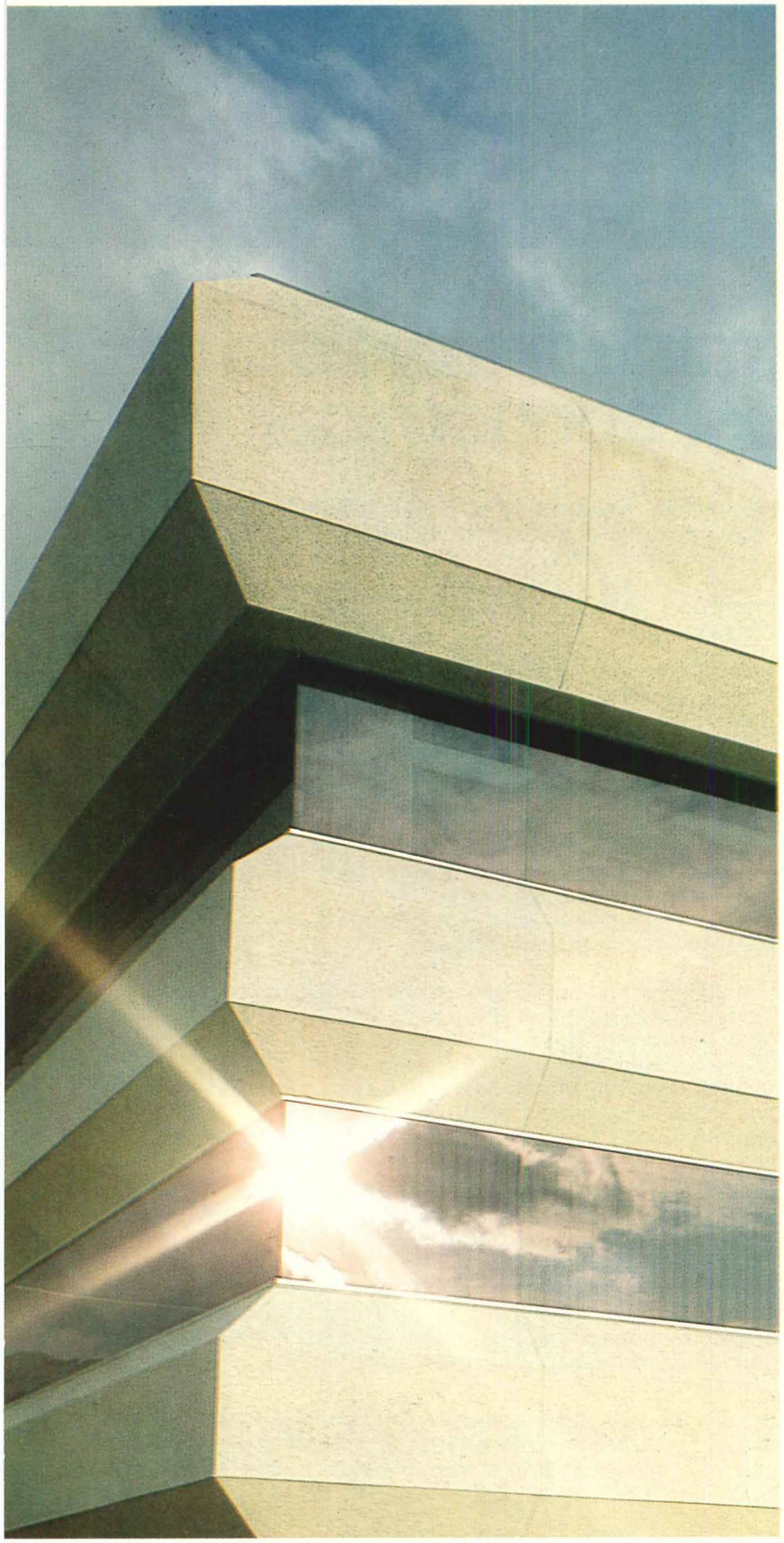
LOF TAKES THE H



Owner: F. D. Stangl Construction Co., Salt Lake City, Utah. Architect: Architectural Associates, Salt Lake City, Utah.

EAT OFF THE I.R.S.



HEAVY-DUTY TINTED GLASS OFFERS LOW SOLAR GAIN AND SUBDUED REFLECTIVITY.

When the Internal Revenue Service Building was designed for Salt Lake City, Utah, the architects wanted to create a free and open feeling. This feeling was to flow from the exterior design to achieve a cool and open atmosphere for the work areas within.

By using butt-jointed 3/8" heavy-duty grey tinted glass from LOF, they were able to obtain this feeling while freeing the design of vertical elements. The elimination of metal mullions helped reduce labor costs. This made the use of heavy-duty glass no more expensive than a 1/4" glass-and-metal installation.

But the savings didn't stop there. A shading coefficient of .56, without drapes or blinds, helped this LOF glass reduce solar heat gain. This resulted in lower air conditioning costs when compared to 1/4" tinted glass performance.

Depending on the specific project, you can choose bronze or grey tint as a regular or heavy-duty glass in either monolithic or Thermopane® insulating units.

If you want to save energy with the right glass, one of our architectural representatives will be glad to help you. Or you can write Dick Keough, Libbey-Owens-Ford Company, 811 Madison Avenue, Toledo, Ohio 43695.

LOF

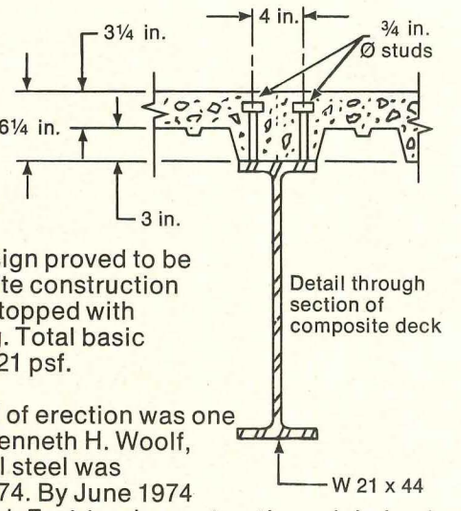
For more data, circle 17 on inquiry card

depend on Bethlehem

Preliminary frame analysis pinpoints most economical steel frame

A preliminary frame analysis, conducted by Bethlehem's Sales Engineering Buildings Group helped the owners of this Pensacola office building achieve optimum steel frame economy. The project's structural engineers, Phillip R. Jones & Associates, Inc., requested the computer analysis be based on a structure having 5 supported levels.

The analysis considered four basic framing schemes employing ASTM A36 steel in composite and non-composite construction; ASTM A572 Grade 50 high-strength steel in composite and non-composite construction.



The most economical and efficient design proved to be a high-strength steel frame in composite construction with a 3-in. composite steel floor deck topped with 3¼-in. of lightweight concrete topping. Total basic steel frame weight was estimated at 7.21 psf.

Designed and built in 9 months. Speed of erection was one of the primary reasons the architect, Kenneth H. Woolf, A.I.A., favored steel framing. The initial steel was delivered to the site in mid-January 1974. By June 1974 the office was completed and occupied. Fast-track construction minimized the effects of escalating costs. Steel framing easily accommodated changes during the design/construction phase with the erection schedule closely following the finalization of floor plans.

Steel framing also permitted generous spans ranging from 26 ft, 9 in. to 32 ft. The increased strength achieved with composite construction allowed the steel beams to be spaced 10 ft on center.

Early involvement helpful. Our preliminary frame analysis program can be most beneficial to you and your client if the study is conducted before finalization of architecture parameters. This way, our Buildings Group and your structural engineer can develop an optimum frame design with minimum restrictions.

We'll be happy to tell you more about our preliminary framing analysis program along with the many other technical and advisory services we offer. Just ask for the sales engineer at the Bethlehem Sales Office nearest you. Bethlehem Steel Corporation, Bethlehem, PA 18016.

phone:

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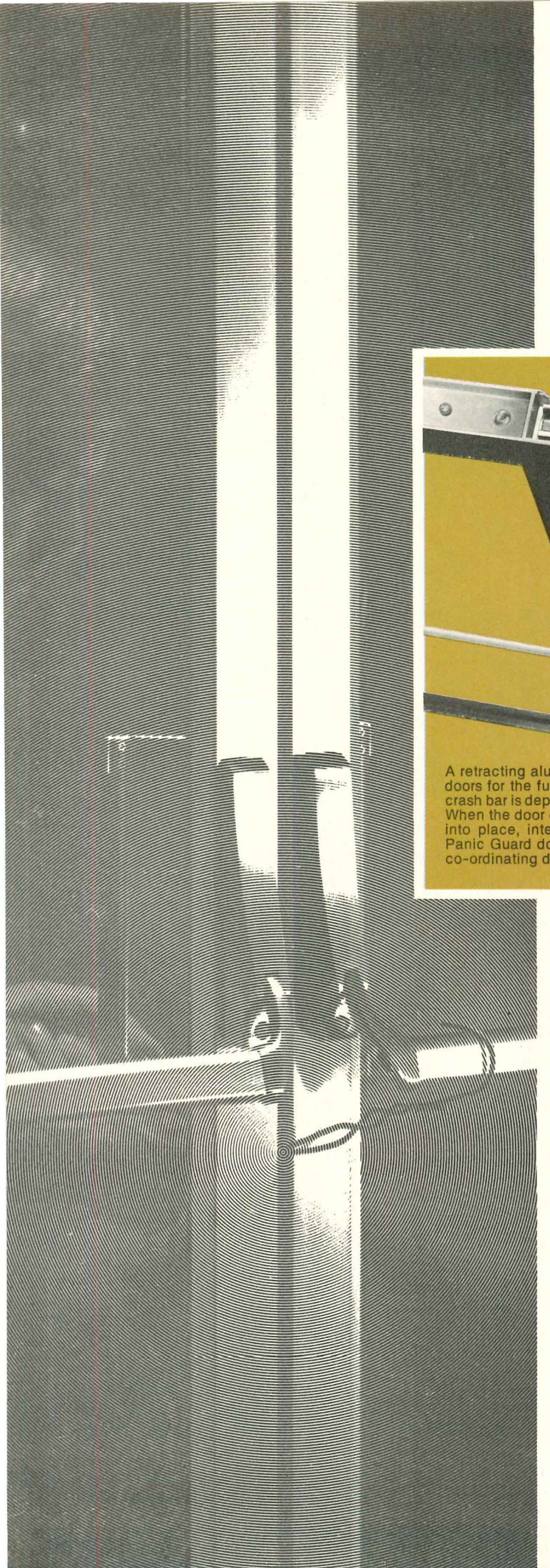
HOUSTON (713) 224-5311	Ask for Sales Engineer.

Bethlehem BETHLEHEM STEEL

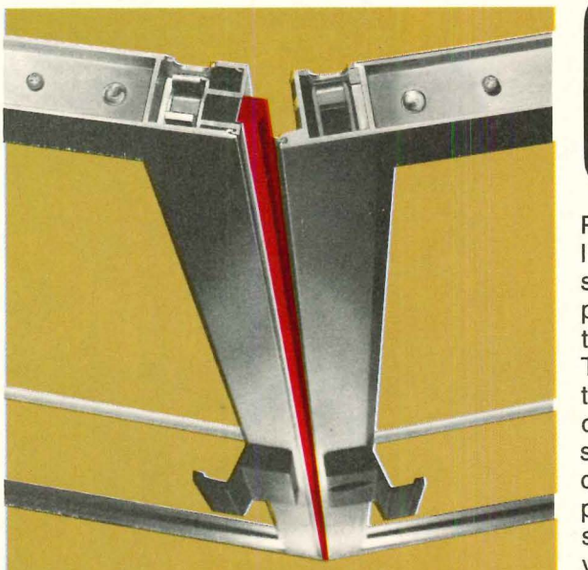
The project's architect (right) reports, "The steel framing was quickly erected, easily plumbed, and by pouring one floor each day, the building was ready for the mechanical work within a week. We were delighted with the economy and speed of erection."

Owners: Baptist Hospital, Inc.;
Architect: Kenneth H. Woolf, A.I.A.;
Structural Engineer: Phillip R. Jones & Associates, Inc.;
Fabricator: Bell Steel Company;
General Contractor/Erector: Dyson & Company.
All of the firms are located in Pensacola, Fla.



Kawneer's Exclusive Panic Guard™ Entrances

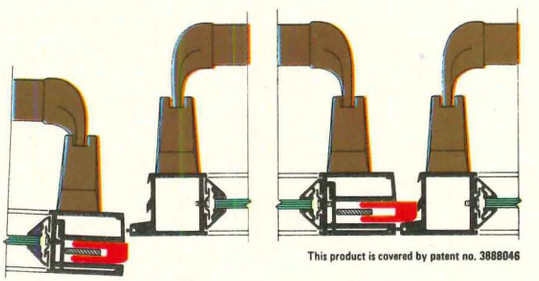
CLOSE THE GAP



A retracting aluminum bar closes the gap between doors for the full height of the entrance. When the crash bar is depressed, the bar moves into one door. When the door closes, the astragal bar moves back into place, interlocking the two panic entrances. Panic Guard doesn't require additional mullions or co-ordinating devices for proper operation.

Panic entrances mean better life safety. Paired doors mean smoother traffic flow. But, put the two together and they spell "Security Gap." Through the Gap between the doors burglars or vandals can gain entry by merely inserting a coat hanger or other device and easily tripping the panic bar. Chains solve the security leak, but they are a violation of life safety codes. Removable mullions may make the building secure, but they impair smooth traffic flow and are inconvenient when large objects must be moved through the door.

Panic Guard Entrances close the "Security Gap." Kawneer's Patented Panic Guard entrance design features a full-length, movable astragal bar that locks into place to provide security. And, when the panic bar is depressed (from the inside only), the astragal bar retracts back into the meeting stile to provide a quick, safe exit. Smoother traffic flow. Life safety. And security. They all add up to Panic Guard entrances.



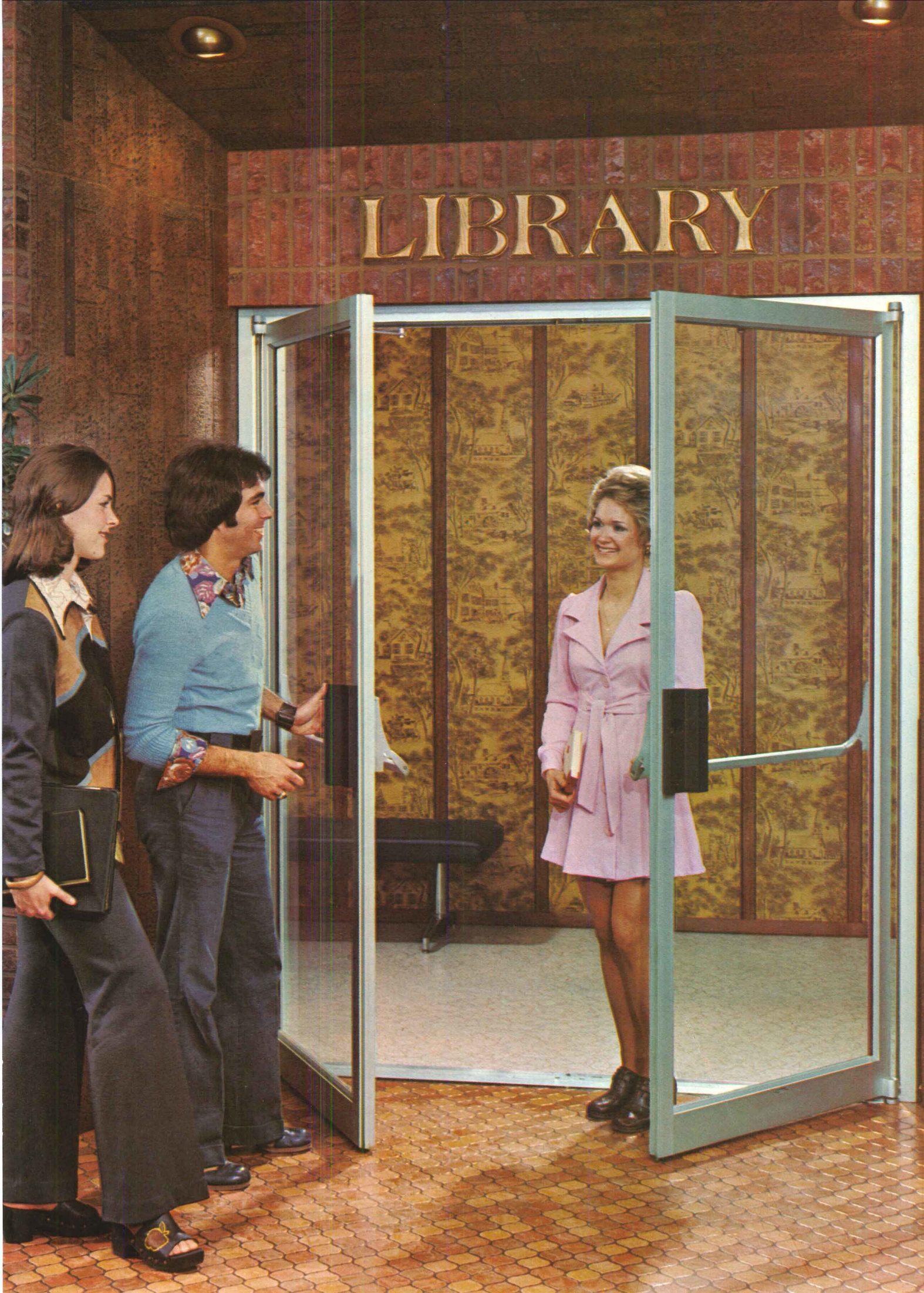
This product is covered by patent no. 3888046

Panic Guard is a Kawneer exclusive and is available on 190 narrow stile, 350 medium stile and 500 wide stile series Kawneer entrances. Choose from black and bronze hard-color or clear anodized finishes for enduring beauty, security and non-violation of life safety codes.

KAWNEER
ARCHITECTURAL PRODUCTS

And for further information, see your Kawneer representative or contact Kawneer Architectural Products Information, 1105 N. Front Street, Dept. C, Niles, MI 49120.

For more data, circle 18 on inquiry card


LIBRARY

ULTRAWALL®:
Movable Partitions
A tenant attraction worth promoting.

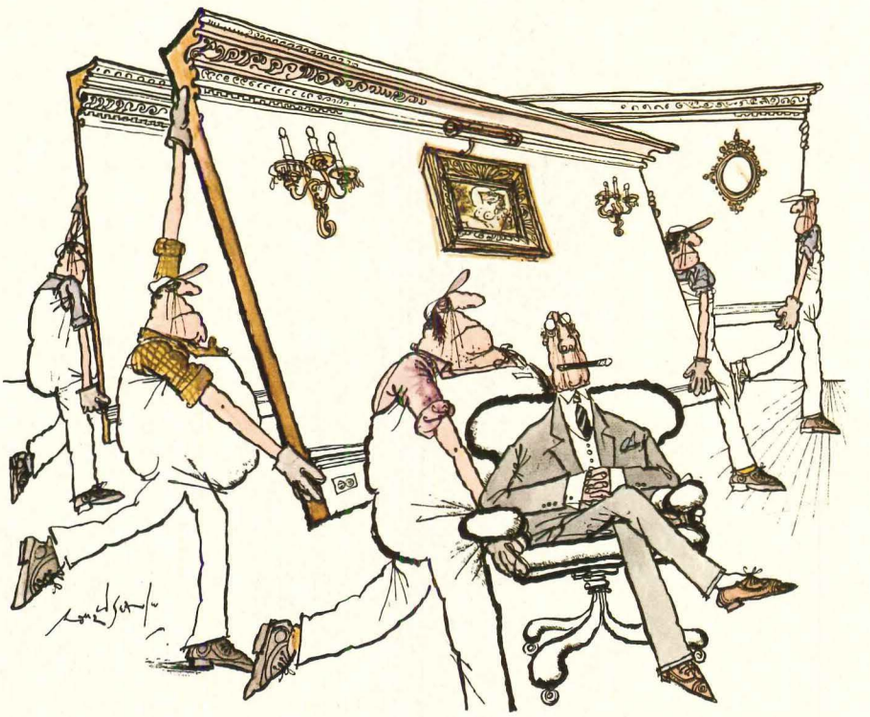
Here's a fresh, new way for you to attract tenants: Advertise *office flexibility.* That's what Wachovia Center did in effective ads like this.

The ULTRAWALL Movable Partition story appeals to tenants on the move, especially those who've suffered through the din, dirt and delays of changing permanent walls.

You'll find ULTRAWALL Partitions easy to work with. One trade can erect and dismantle.

You can also advertise tenant choice of 27 colors and five patterns in bank rail, cornice, and ceiling heights with ULTRAWALL.

At Wachovia Center you can change your office almost as fast as you can change your mind.



We're a little bit different. We don't agree with the old attitude that an office is an office is an office.

So at Wachovia Center we've come up with what we think is an ingenious way for you and your associates to "customize" your space: movable partitions.

They're actually floor-to-ceiling walls that are held securely in place by concealed locking devices. When and if you decide you'd like to make a few changes in the configuration of your space, give us a little advance notice and we'll come in and move your walls virtually over a weekend. Of course, they're prefinished in a wide variety of good looking vinyl converings, color coordinated to combine with other finish materials such as your carpeting and door and window trim.

Special texture and handsome wood-grain vinyls are also available at small additional cost.

Wachovia Center is a development of Cousins Properties Incorporated. For further information, contact your broker. Or call or write: Wachovia Center, Suite 500, 330 South Tryon Street, Charlotte, North Carolina 28202. Tel: 704/332-2126. We'll make your office the most interesting, versatile spot in town.

COUSINS

Wachovia Center. An office building out of the ordinary.

These days, a demonstrable difference can be very effective in attracting prospects. Customizing your space with ULTRAWALL Partitions can give you that difference. ULTRAWALL Partitions were selected for one of the most prestigious new buildings in the South by the Office Development Division of Cousins Properties, who recognized the appeal and promoted it. You might find advertising ULTRAWALL Partitions an effective strategy, too. Write us at 101 S. Wacker Dr., Chicago, Ill. 60606. Dept. AR-85.

UNITED STATES GYPSUM
BUILDING AMERICA

For more data, circle 19 on inquiry card

President Ford, in vetoing a much larger housing bill, last month accepted $10 billion in mortgage-buying power. But the impression that a powerful new stimulus to housing starts is about to be released is being dispelled by economists who say that most of the money will be financing starts that would have occurred anyway. Details on page 34.

Another year may pass before the NSPE legal battle over competitive bidding is decided. The Supreme Court has overturned a U.S. District Court ruling against the National Society of Professional Engineers, instructing the lower court to review the NSPE case. Therefore, new legal proceedings will begin, perhaps this fall. Details on page 34.

House and apartment construction starts rose 14.2 per cent in May over the April figure. The May figure released by the Commerce Department (1,126,000 starts) is the highest reported in the past eight months. This bit of encouragement, slightly dampened by the President's veto of the housing bill (see page 34), was taken as a sign of housing industry recovery. Currently, unemployment in the nation is at 9.2 per cent, but among construction workers, unemployment is placed at 21.8 per cent, with unofficial reports of 40 to 50 per cent unemployment of construction workers in the housing sector.

The seasonally-adjusted Dodge Index for May was 182, making it the year's best month so far. The second quarter rate of contracting is much improved over the first quarter average of 141, according to the Index (1967 = 100) prepared by the McGraw-Hill Information Systems Company. George A. Christie, vice president and chief economist for F. W. Dodge said, "the turnaround of two important categories of construction, housing and electric utilities, made most of the difference in the second quarter. Housing's recovery, though something of a disappointment, is nevertheless an improvement. And electric utilities are finally coming forth with some of the projects that they shelved during last winter's period of re-evaluation of earlier plans."

First quarter capital appropriations by investor-owned utilities were up 66 per cent over the last quarter of 1974. As reported by The Conference Board in New York City, appropriations of a record $16.9 billion (seasonally-adjusted) in the first quarter of this year are in sharp contrast with a 6 per cent drop in actual spending for the same period. The recent gains in appropriations, however, were spurred by significant boosts by the electric utilities; gas utilities appropriations leveled off in the fourth quarter of 1974 and fell 6 per cent in the first quarter of this year. The sharp increase in utility appropriations coincided with the passage of the Tax Reduction Act of 1975 in late March, which boosted investment tax credit for utilities from 4 to 10 per cent.

Construction materials and labor costs rose nationally an average of 8.2 per cent for the year ended March 31, compared with an 11.5 per cent increase a year earlier, according to the Dodge Building Cost Services Department of McGraw-Hill Information Systems Company. For the 12-month period cost gains were generally higher in the Pacific Coast states (9.3 per cent), followed by the Northeastern and North Central states (7.9 per cent). The smallest increase, 7.3 per cent, was in the Southeastern and South Central states.

The right of states to regulate the architectural profession has been upheld by the U.S. Court of Appeals. Bank Building & Equipment Corporation of America, Inc. has abandoned its charges against the National Council of Architectural Registration Boards (NCARB) and six state registration boards. The company, a package dealer specializing in banks and hospitals, had contended that NCARB and its 55 member boards have conspired to restrain Bank Building's trade by employing "specious experience requirements" in granting or denying licenses. The U.S. Court of Appeals for the District of Columbia granted the plaintiff's motion to dismiss the appeal, upholding an earlier court decision that the Sherman Antitrust Act does not apply to "regulatory agencies of their respective states exercising the police power of their respective states in licensing persons to practice the profession of architecture within their respective states."

The Defense Department is considering a test of the "project proposal" concept in selecting designers for certain large military jobs. The design fee would become a factor in the selection process. Under the plan outlined by Perry J. Fliakas, a Deputy Assistant Secretary of Defense, the military will seek fully developed proposals, including life-cycle and energy-budget determinations. The architect selected would offer the least expensive over-all proposal, with fee, construction and operational costs included.

Constantine Doxiadis, city planner, died in June at the age of 62, in Athens where he kept his home and headquarters. Mr. Doxiadis was the head of Doxiadis Associates, an international urban planning firm. He became noted for his development of "ekistics," a multi-disciplinary science of human settlement and city planning. Among his noted projects are the new Pakistani capital of Islamabad, and the Eastwick urban renewal project in Philadelphia.

Lewis Davis and Samuel Brody have been honored by The American Academy of Arts and Letters, and The National Institute of Arts and Letters, in ceremonies on May 21 in New York City. Three gold medals and 33 awards in art, literature and music were presented, including the Arnold W. Brunner Memorial Prize in Architecture, given to Messrs. Davis and Brody of New York for their "successful efforts to improve low-income housing."

Impact of housing bill uncertain

The headlines said "Ford Signs Housing Bill; $10 Billion Set for Mortgages," chronicling the fact that the President came out the winner in his battle with the Congress over housing legislation. President Ford emerged victorious after his successful veto of a much bigger Democratic-sponsored bill.

At the time of the veto, Mr. Ford released to the Government National Mortgage Association (Ginny Mae) $2 billion in mortgage-buying authority he already had—enough to enable Ginny Mae, Mr. Ford said, to "finance an estimated 65,000 units of housing."

The additional $10 billion in mortgage-buying authority subsequently given Mr. Ford by Congress gives the impression that a powerful new stimulus to housing starts is about to be turned loose on the home-building market. If $2 billion equals 65,000 single-family units or condominiums, then the new $10 billion would turn on another 325,000 units—for a total of 390,000.

But, in fact, housing experts and economists suggest that the new mortgage money will have only a marginal impact on housing starts at best. The reason, they say, is that most of the money will be financing starts that would have been started anyway even if there were no "tandem plan" subsidy program.

The $2 billion that Ford released will be used to give 7.5 per cent mortgages up to $42,000 to middle-income homebuyers, although most of the mortgages will be less than $36,000. But with points and fees charged buyers, the effective rate will be 7.92 per cent, about 1 percentage point below the market.

The question is: when the mortgage market rate is 9 per cent, how many additional potential buyers will sign on the dotted line because they can get money at about 8 per cent?

Housing and Urban Development Secretary Carla Hills, when questioned by newsmen, admitted that "It would be difficult to say" that the 65,000 estimate "is an incremental addition" to the number of starts that would be projected if the tandem plan subsidy did not exist.

Another questionner pointed out that HUD's own economists had analyzed the track record of the tandem plans and "were unable to find any statistical connection between housing starts and the tandem program." The Secretary said she was familiar with the analysis but that she had "talked to economists who find some effect, but it is difficult to say that is all an incremental effect."

As to the $10 billion in new authority, there is also uncertainty whether the Administration will use any of it. President Ford says the housing recovery is "presently underway" and that the new $10 billion "is available if required" to sustain the recovery.—*Donald Loomis, World News, Washington.*

Ohio architects issue consumer rights

The Architects Society of Ohio has begun distribution of a brochure that details consumers rights when dealing with architects, as part of an antitrust court settlement with Ohio Attorney General William J. Brown. About 5500 copies of the booklet are being mailed to Ohio municipalities, counties and state government purchasers of architectural services.

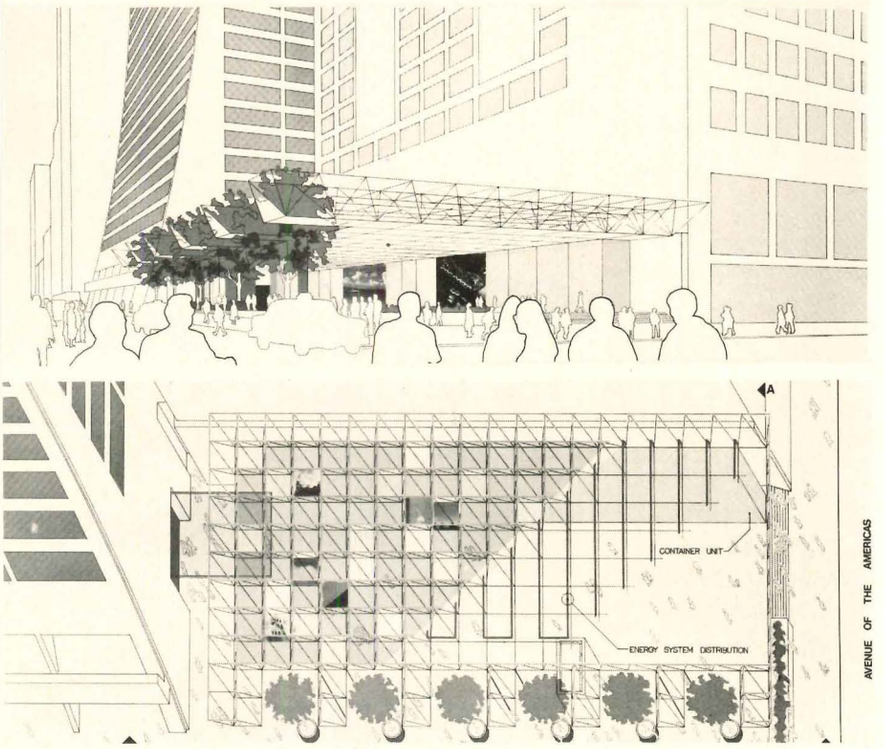
The pamphlet results from a court settlement signed April 25, 1975 and describes competitive methods that individual consumers and professional purchasers may use in selecting and paying architects. It also explains what constitutes anti-competitive practices prohibited by antitrust laws.

The Society halted distribution of its "Recommended Minimum Cost of Service Schedule" in 1973, but Attorney General Brown contended that the Society had not informed consumers of its discontinuance.

AIA seeks energy tax incentives

In a June testimony before the Senate Special Subcommittee on Science, Technology and Commerce, John P. Eberhard, AIA Research Corporation president, spoke out for the Institute against proposed legislation that would establish regulatory controls for buildings, as exemplified in Title X of S. 594, the Energy Independence Act of 1975. Such standards would discourage innovation and technological development, Mr. Eberhard said, by making current design solutions to the energy problem mandatory.

An immediate tax incentive would not only yield higher savings from reduced energy consumption, the AIA contends, but stimulate two to three million jobs in construction and building materials.



W. R. Grace selects student design for headquarters plaza in New York

More than $10,000 will be awarded to students announced as winners by W.R. Grace & Co. in its national architectural competition to design the half acre of open space that abuts Grace's World Headquarters in midtown New York City.

Elevations, sketches and perspectives came from 187 students across the country, and first place in the contest went to Janis Eric Reiters, a student at Pratt Institute, New York City.

Second place went to Lonn Beaudry, Cranbrook Academy of Art, Bloomfield Hills, Mich., and two students—Ann Dougherty, Pratt Institute, and William McGuire, Syracuse University—tied for third. Ten honorable mentions also were awarded.

The next step is to work out a full plan and determine costs, which should take about six months, according to a spokesman for Grace.

The firm of Skidmore, Owings & Merrill, contracted for the project, probably will use design elements from several of the entries, he said, although there is no commitment to do so. The winning design (shown) calls for a space frame roof powered by an energy source in the ceiling, and a series of inflatable partitions and movable structures that can be rearranged to suit different plaza activities.

NSPE competitive bidding case remanded to lower court; decision delayed

The U.S. Supreme Court has taken two actions affecting the National Society of Professional Engineer's argument that it has a right to ban competitive bidding by its private consultant members. But, alas, the issue is still unresolved and it now appears that another year will pass before it is finally decided.

In the first case, the Supreme Court ruled against the Virginia Bar Association, which was trying to enforce a minimum fee schedule for attorneys performing title searches for home buyers. The Court said the practice was a clear violation of the antitrust laws and their prohibitions on price-fixing.

Then, only a week later, the Supreme Court overturned a U.S. District Court ruling that had gone against NSPE. The Justice Department, which had brought the case, had argued that NSPE's ban on competitive bidding, written into its Standards of Ethical Practice, constituted price-fixing and was thereby illegal. NSPE had contended that it was only trying to protect the public by assuring professional quality and it was not setting fees.

The high court did not rule on the merits of this argument. It merely instructed the lower court to view the NSPE case in light of the ruling against the lawyers.

NSPE officials are reading the ruling as a good sign. They think that their case is sufficiently different from the one against the lawyers and the specific language in the decision on the Bar Association case provides them with a good reason for believing they will ultimately win.

An out-of-court compromise could be worked out between NSPE and the Justice Department. The national NSPE, which has no fee schedule functions, could instruct its state affiliates, which often publish their own schedules, to end the practice.

In any event, the NSPE case is back before the District Court and new legal proceedings will be ordered, probably this fall. Once the judge renders another ruling, the case will go back to the Supreme Court—unless, of course, the out-of-court settlement is reached.

AIA and several engineering societies have more than a passing interest in the outcome. AIA agreed two years ago to a consent judgment with the Justice Department, which called for the Institute to remove language from its ethical code that, until then, had barred competitive price bidding.

But the sweeping nature of the Government's charges against NSPE could cause major disruptions for all designers, if the ruling goes against NSPE when it is finally settled. More and more building owners could begin insisting on competitive bids and competitive pressures could force all designers to go along with the requests.—*William Hickman, World News, Washington.*

Profession and industry focus on solar energy

Solar energy was a recurrent issue in the news earlier this summer, as shown by the following events.

▪ Architects who attended a solar energy conference June 14 in Kansas City, Mo., said the event was constructive, an inspiration to greater energy-conserving design output, and to the need for solar energy demonstration projects in that city.

Although the emphasis was on the positive, the conference focused on the problems of solar energy implementation at this time, with the most likely immediate solution being design that is more sensitive to environmental conditions.

The conference was sponsored by the Midwest Research Institute, with the cooperation of the Kansas City Chapter of AIA and of the American Society of Heating, Refrigeration and Air Conditioning Engineers. The idea first came from two young architects, Richard S. Rees of Patty Berkebile Nelson Associates and Kirk A. Gastinger of Metro Architects, Inc.

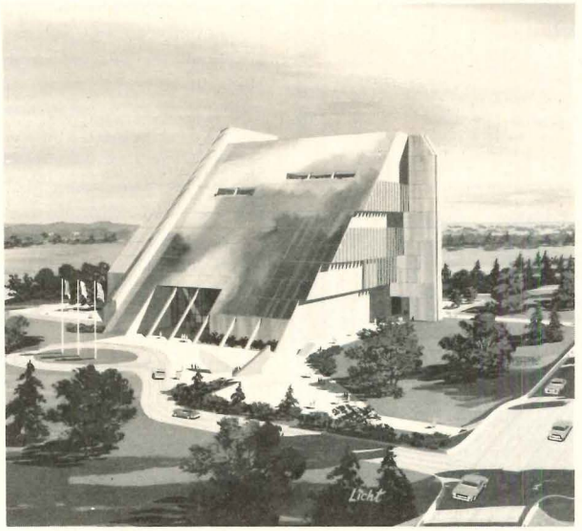
Architects attending made up 35 per cent of the total of 250. The rest were engineers (40 per cent), manufacturers (15 per cent) and interested persons and builders (10 per cent). Architects on the program were Richard Crowther, Denver, of Crowther-Kruse McWilliams, and Richard Rittelmann, Butler, Pa., a principal of Burt, Hill and Associates. Both speakers have specialized in designs to conserve energy.

Commenting on the conference, John F. Hill of Linscott-Haylett and Associates said, "Architects have always had the ability to design buildings with energy conservation built into the design but the initial cost has been the deterrent." He said it would appear logical to design buildings now with space for solar energy storage equipment, in anticipation of the introduction of a solar energy system. Retrofitting would be costly if not designed in now.

Another conference reaction was that of Robert Berkebile: "We can't deal with clients on the basis of solar energy. It's not in the real world . . . it's important for architects to design buildings more sensitive to the environment, to change the design of a building in harmony with the movement of the sun and with ambient temperatures to permit us to use energy more efficiently."

He went on in support of life-cycle costing, saying that "if we make all our decisions on initial costs, then we are doing our clients a real dis-service."

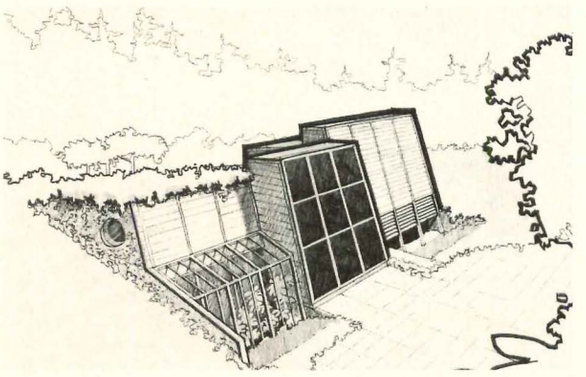
Will these architects try a solar installation soon? John Hill said, "I'd be afraid to commit myself to any solar energy system now. I would not be using the solar energy system approach next week—unless a very special client comes through the door."



▪ Energy cost savings of 40-45 per cent are estimated for a laboratory research building, a conceptual design study by Roe Associates Architects-Engineers, Hempstead, N.Y., for the U.S. Environmental Protection Agency in North Carolina.

Projected savings for the conceptual 10-story building (shown) are attributed to the following design measures: use of solar wall panels for heating and cooling; compact building enclosure; reduced window areas; waste heat recovery; and mechanical and electrical systems with better controls and procedures.

The laboratory would contain 575,000 square feet and include offices, laboratories, animal research facilities, cafeteria and auditorium.



▪ Ground was broken July 1 in Portland, Ore., for a home (shown) that will employ the gamut of modern energy-saving devices and be the focus of a three-year research study.

Known as TERA One (Total Energy Resource Application), the home is a joint venture of the Pacific Power & Light Company, Skidmore, Owings and Merrill and the Oregon Museum of Science & Industry (OMSI). It will be built on OMSI property as part of its developing "Energy Center."

Persons conducting the study hope to use sun energy for at least 50 per cent of all space and water heating. A solar collector/reflector will aid a heat pump system in home and water heating, and all appliances will be chosen on the basis of official energy efficiency ratings.

The north walls of the house will be placed about 50 per cent below ground to reduce heat loss in winter and provide natural cooling in summer, and shade-bearing trees will be planted along the south side.

Household activities of an imaginary family of four (cooking, TV watching, laundering) will be simulated daily by computer programming to make collection of data more realistic. TERA One will try to keep pace with energy technology by installing new equipment as it is developed.

Developers estimate that a similar home could be built for about $35,000, thus putting it within range for an average homeowner. Discovering economic feasibility is one of the project's main objectives. The multi-level house will contain 950 square feet when completed in October.

▪ The National Association of Realtors has heard from spokesmen of leading firms in the solar energy field that the nation verges on major breakthroughs for substantially improving the cost and efficiency of solar equipment. This could occur within the next two years "but certainly would be seen within five years," said S. H. Butt, president of the year-old Solar Energy Industries Association. The group recently sponsored an International Solar Industry Expo 75 in Washington, D.C.

Assuming the alternative energy source as electricity, these breakthroughs would result in the solar energy system's paying for itself in seven years or less, he said. "It's at that cost-efficiency point that solar energy will come into widespread use."

Equipment cost might drop to about $4500 on a 2000-square-foot home from the present $5000 to $6000 level, and improved technology will mean greater efficiency in solar heating and air conditioning.

However, Butt noted factors, primarily at the local level, that stand in the way of rapid progress for the industry:

Is there a right to the sun? Does the owner of a home heated by solar energy have any recourse against a neighbor who builds a structure that blocks his sunlight?

There is a need to alter zoning regulations in many areas to encourage maximum use of solar energy.

Building codes in many areas indirectly prohibit use of solar equipment for heating and air conditioning.

Lending institutions need to be persuaded to make long-term mortgage loans on new solar homes, and to finance installation of solar equipment on existing homes.

Butt and two other industry spokesmen, Ray Gallagher of PPG Industries and Ronald Peterson of Grumman Aerospace Corporation, pointed to several factors that could increase competition, speed cost reduction and improve equipment efficiency:

The Solar Heating and Cooling Demonstration Act of 1974 provides subsidies to solar energy teams—for example, builder, financier and solar equipment supplier—for several thousand commercial and residential solar projects.

The object of the legislation is to spur interest of builders in solar energy, demonstrate working systems throughout the nation and develop more efficient equipment.

There is increased recognition by state legislatures that solar energy is a viable alternative to current energy sources. In Indiana, for example, the legislature has exempted solar equipment from property and sales taxes. It also has reduced the assessed value of homes with solar equipment by $2000.

The pending tax credit-tax deduction measure, which was approved in the House and now awaits Senate action and President Ford's signature, would provide a tax credit or tax deduction for installation of solar equipment on new or existing homes. The maximum credit would be $2000 and the top deduction would be $4000.

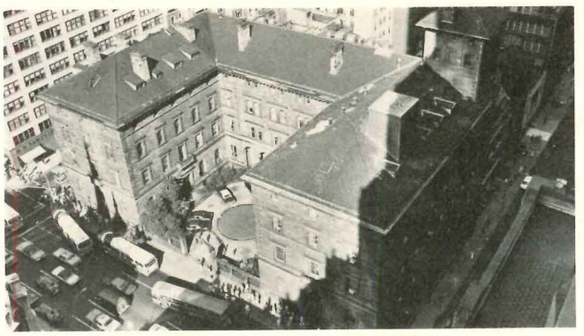
▪ Development of a solar "power tower" (shown) for large-scale production of electricity is the latest solar energy project awarded the Honeywell Company.

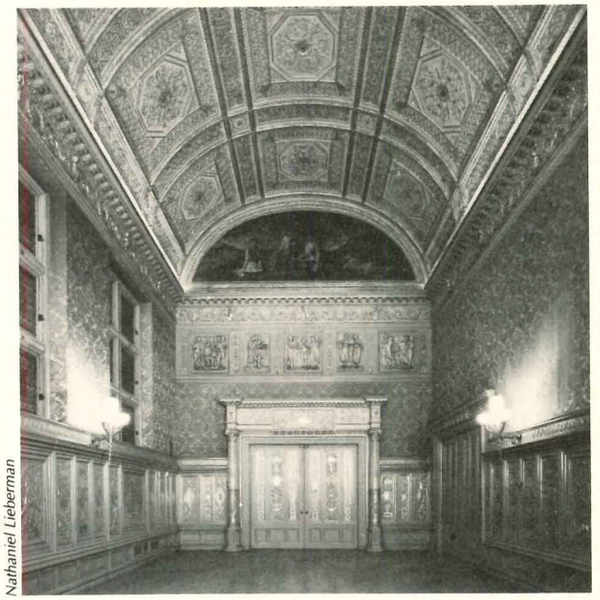
Honeywell and three other firms were chosen for the study in June by the U.S. Energy Research and Development Administration (ERDA) which is providing initial funding of $8 million through March, 1976.

The design is a tower several hundred feet high, with computer-aimed mirrors at the base to focus solar rays on a boiler at the tower peak. Water in the boiler will be converted to high-pressure steam and pumped to a conventional steam-turbine generator at the tower's base. Honeywell program manager Roger Schmidt said that by 1980, the study could lead to a test "power tower" in the Southwest U.S.

Other firms in the project are Black and Vaetch, consulting engineers, Kansas City, Mo., McDonnell-Douglas Astronautics Company, Huntington Beach, Cal.; and Martin-Marietta Aerospace Company, Denver, Colo.

News continued on next page.





Nathaniel Lieberman

A reuse opportunity endangered by the development rote

Bucking a national trend towards the constructive re-use of older buildings, developer Harry Helmsley, with architects Emery Roth and Sons, is proposing the use of an air-rights transfer from New York City's landmark Villard Houses in the construction of a deluxe 52-story hotel to the rear—without utilizing perhaps his most valuable asset: the spectacular existing reception rooms.

The Houses are five commodious (even for the 1880's) dwellings joined together to resemble one enormous "U"-shaped palace (facing the rectory of St. Patrick's Cathedral) by architects McKim, Mead and White. The reception rooms of the southern house especially have been described, by Landmark Conservancy Chairman Brendan Gill, as possibly the noblest of the nation's period ("Gold Room", photo left).

But according to *The New York Times'* architecture critic Ada Louise Huxtable, the marketing men have had their way. Under present plans, many of the more spectacular rooms (including the Gold Room) are to be ripped off with that part of the Houses beyond the rear wall of the court, and the remainder are presumably to be put up for commercial "grabs" unprotected by the Landmarks Law.

Most of the demolition is to provide easy access for the new construction (and not floor area)—despite other new buildings constantly built without such amenity. As to utilizing any of the existing rooms, the marketing men declare them "too small." (Have they ever seen a deluxe hotel—especially in Europe?) And the owner declares that the intended and existing levels are incompatible. (Which came first?)

To make matters worse, the new building is to be considerably bulkier than even that produced by the air-rights transfer, if a requested "hardship" variance is granted. This means that the 52-story height would fill the complete new building lot to the sidewalks, and be overpowering to the comparative "toy" left in front. Even a higher, thinner building, that would provide setbacks from the sidewalks (which would occur anyway without the sought variance), might be better, although elevators would occupy a high percentage of available floor area. Alternatives include more building to the north and less to the south—(taking the pressure off of the most valuable existing rooms) or cantilevering partially over the existing buildings.

Ironically, Helmsley intends to call his new hotel The Palace, and —according to Mrs. Huxtable—it will contain its share of "classic" plastic decoration shoddily emulating that which has been destroyed. Attempting to promote a better solution, "The Friends of the Villard Houses" include many prominent members of the architectural field, politics and private industry. The group needs financial support, which may be given through the Landmarks Conservancy, 17 Battery Place, New York, N.Y. 10004. The next legal decision in September is in the hands of the Board of Standards and Appeals (Chairman, Joseph B. Klein, 2970 Marion Avenue, Bronx, N.Y., 10458), and letters, with copies to the Conservancy, will be effective.

—Charles Hoyt

President's highway proposal could aid transit

President Ford's new highway proposal, if passed by Congress, will no doubt help spur the development of mass transit.

The Ford plan includes reduction of some 30 road programs into four major categories, to be administered on a block grant basis: Interstate programs, rural roads, urban systems and highway safety. This would give localities more flexibility to use funds to meet local needs, a probable plus for urban areas that would like to transfer highway funds for rail and bus transit programs. In addition, President Ford wants to make sure Interstate funds are used for Interstate purposes, and less emphasis will be placed on completing segments of the Interstate that are used mostly for local purposes.

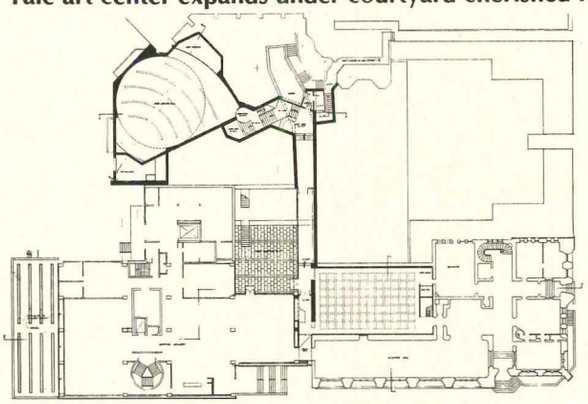
The trick will be to get the bill through Congress. With passage last year of an $11.8 billion six-year transit program, Congress will not be badgered as much by mass transit advocates wishing to dismantle the Highway Trust Fund. The bill could come down to the wire sometime in December.—*John Higgins, World News, Washington.*

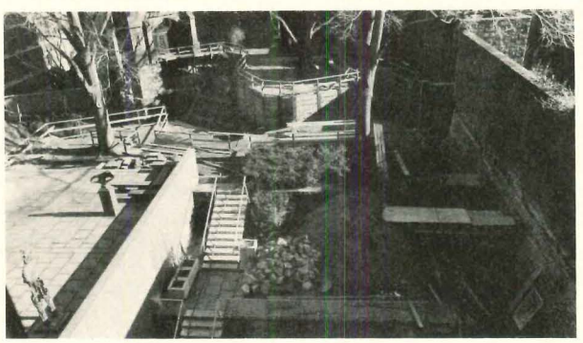
FTC extends warranty bill to building products

The Federal Trade Commission is taking the broadest possible view of the reach of the new Federal warranty bill, which took effect July 4, and applies only to consumer products. But the Commission says it believes "an appliance or other product which may be or become a fixture to real property, such as a central air conditioner or water heater, is considered a consumer product whether it is sold separately or installed in a dwelling." If that interpretation holds, it means that a lot of building supplies will have to comply with the act.

The new law does not require any manufacturer to issue warranties, but does, for the first time, lay down Federal standards for what a warranty, if it is offered, must contain. The regulators says that by the end of 1975 they will have firm rules on a few subjects issued, including the question of how prospective buyers can see warranty terms before making their decision and what sort of arrangements they should set up to resolve disputes over warranty terms. But it will be well into 1976 before most of the open questions are answered.—*Daniel Moskowitz, World News, Washington.*

Yale art center expands under courtyard cherished for three elm trees





A solution to the expansion needs of Yale's Center for the American Arts places a new auditorium underground beneath the adjacent Weir Court and divides Room 100, the old lecture hall, horizontally to create additional gallery space. The design by Herbert S. Newman, AIA, succeeds in preserving three giant elm trees in Weir Court that serves as a delightful outdoor sculpture garden with works by Henry Moore, David Smith, and others.

It was felt by the University that the major design problem was the preservation of the trees and the tranquil beauty of the Weir Court space. Rather than remove even one tree, the architect's solution preserves the court as it was before construction of the auditorium under it. There will be no indication that a building exists under the courtyard. On the contrary, the design retains the levels, materials and textures of the existing courtyard.

Room 100, the old two-story-high lecture hall in the 1928 art gallery building, adjoining the 1951 Louis Kahn structure, has been split into two one-story spaces to provide expansion space for American art. The new rooms will connect directly to the galleries in the newer building.

A third element in the plan is the conversion of the sunken sculpture court on the York Street end of the Kahn building into new gallery space by enclosing it with a skylit roof. The ancient art section will be moved to this new space and the area it presently occupies will be added to the Garvan Gallery on the second floor of the older gallery building.

Consultants on the project are Spiegel & Zemichick, structural engineers; Van Zeln, Haywood & Shatford, mechanical engineers; and Sylvan R. Shemitz & Associates, Inc., lighting consultants and electrical engineers.

The project is scheduled for completion in 1976.

Bengt Ohlson

Husband and wife design Prague department store

A Swedish-built, Czech-designed department store became the largest in eastern Europe and the first one built in Prague in 45 years when it opened in May.

The main contractor for the $25 million project, SIAB, is a Swedish firm, and all but the basic building materials, such as cement and reinforcing steel, were shipped from Sweden.

The architects are a Czech couple, V. Machonin and V. Machoninova, husband and wife members of Atelier Alfa. The store interior, from shelf design to check-out system, was designed by Sweden's Coop Union, which deals with most major department stores there.

The store frame is cast-in-place concrete, with a facade of anodized, black aluminum plate. It is 10 stories high (three underground).

National Housing Center opens in Washington

The new National Housing Center, (headquarters for the National Association of Home Builders) a five-story, trapezoidal building, was dedicated May 17 in Washington, D.C. Of the ¾-acre site, which is an elongated triangle on the corner of 15th Street and Massachusetts Avenue, half was left to landscaped open space by architects Vincent G. Kling & Partners, Philadelphia.

The south facade of the simple, glass and brick building is all glass, and is sloped outward to invite people but not direct sunlight. A public entrance plaza with pool, fountain and cascade and exhibition space stands in front.

The new building contains 100,000 square feet of office space, a basement conference center with a 400-seat auditorium that extends below the plaza, and 56-car, sub-basement garage.

"Redlining" bill clears Senate Banking Committee

Congress is gearing up legislation to require mortgage-lending thrift institutions and commercial banks to disclose whether they are "redlining" (denying loans) in poor neighborhoods, presumably contributing to inner city decay.

A bill for this purpose cleared the Senate Banking Committee in June and should come to a floor vote later this summer. The financial institutions subcommittee of the House Banking Committee has held hearings on similar legislation. The House bill would also require disclosure of where institutions obtain their deposits, to determine if deposits obtained from less affluent neighborhoods are employed to makes loans elsewhere, where the investment return is higher. *—Stanley Wilson, World News, Washington.*

Prototype school begun in Nigeria

A United States architect has teamed up with a New York-based Nigerian architectural firm to design a prototype school adaptable to the tropical climate conditions of the East Central State of Nigeria.

The first of what is expected to be a series of such elementary schools built in urban centers was started in May in Enugu after the contract was awarded to the architects by H.E. Mr. U. Asika, Administrator, East Central State of Nigeria. It was designed to utilize natural ventilation throughout the seasonal temperature fluctuations, intensive rainy season and equatorial sunshine. This will be accomplished by channeling prevailing breezes through raised clerestories positioned to catch the breezes, broad overhangs, louvers and other shading devices.

The architects—P.I. Nwamu Associates, of New York and Nigeria; and Perkins & Will, of New York—designed and documented the school in less than two months. It is expected to be completed within 18 months.

To take advantage of optimum ventilation conditions, the architects designed the two-story school with adjustable louver walls and a double roof, which is lifted above the upper floor like an umbrella to offer shelter from rain, radiation and glare while providing a maximum opening for air.

The building's interior will be of open design with a wide "activity street" through the center, also enhancing air circulation. This covered central space will be used for library functions, dining space, and other large community related functions.

Approximately 35,000 square feet of enclosed space will be divided into 24 classrooms for grades one to six, four kindergarten rooms, a library, art room, guidance, special education and administration areas. It will also contain a 2500-square-foot gymnasium.

Because of the humid conditions, local materials were chosen to withstand deterioration by moisture. The school is being built mainly of poured-in-place board form concrete with screening and louvers in place of the usual glass areas. All stairs and toilet facilities will be located at the corners.

Electrical and water services will be supplied by the city. However, an emergency water supply will be available as well as a domestic water heater. Gates will be used to secure the building.

East Central State of Nigeria plans to establish schools in a number of urban areas, and presently, several schools of the same design, each able to accommodate 1500 pupils, are planned. Total student population for the area is numbered at 1,228,638. School attendance for all Nigeria is placed at between 30 and 35 per cent of total population.

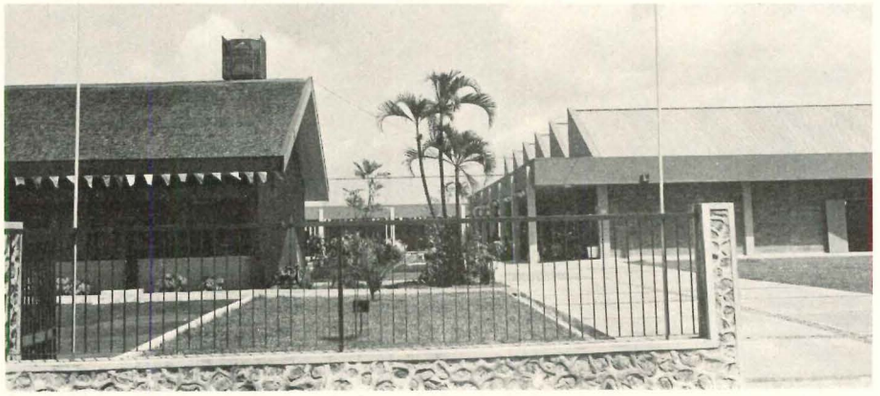
(Nigeria, a member of OPEC, is reputedly the seventh major oil producer and the number one oil supplier to the United States. The country has embarked upon a $48 billion five-year development plan, and as we reported on page 43 of the June issue.

Indonesia opens five technical training schools designed by DMJM

President Soeharto of Indonesia formally opened five new technical training schools at dedication ceremonies held in Surabaya, the provincial capital of East Java, on May 22, 1975. The schools are located in Surabaya, Jakarta, Bandung, Medan and Ujungpandang. Daniel, Mann, Johnson, & Mendenhall (DMJM) of Los Angeles, were the architects and engineers for the new educational facilities, financed by the Indonesia Ministry of Education and Culture, and by the World Bank.

The schools will teach young Indonesian men and women industrial, electronic, manufacturing and construction skills, to enable them to work with machinery, repair engines, and become technically proficient in an industrialized society. Each of the five new schools will be able to train 1000 students annually and will be staffed by 140 instructors.

President Soeharto noted in his dedication remarks the psychology of many Indonesian parents who want their children to take white collar jobs and avoid those occupations that dirty the hands. He called it an "old way of thinking," and said that the country needed technically proficient workers, which the new schools will supply.



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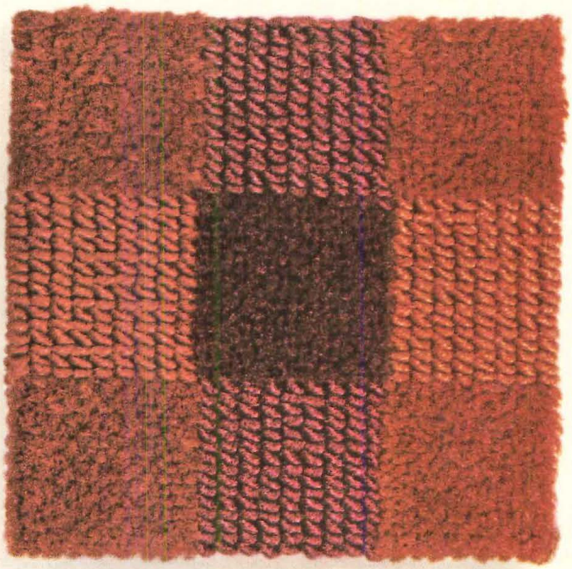
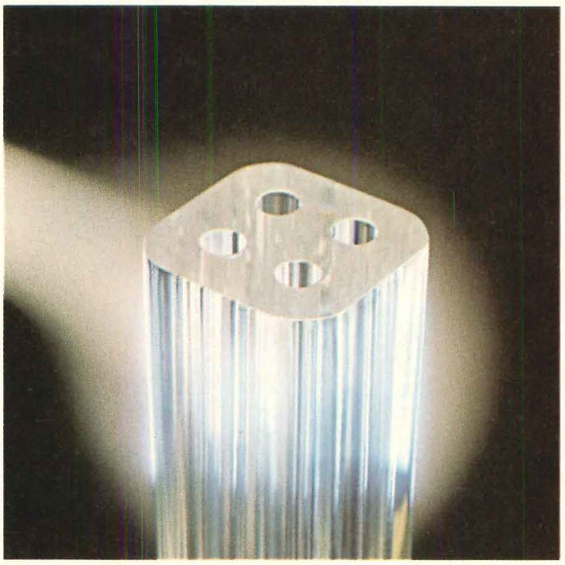


What you see is what you'll get for a long time. "Antron" is a soil-hiding carpet fiber. It is the leading commercial carpet fiber brand with more than twice the available styles in "Antron" than those made of the next brand. Its ability to diffuse light helps blend soil concentrations into the overall look of the carpet. Also, being nylon, "Antron" gives carpet exceptional durability and crush resistance.

The Buck Hill Inn, Buck Hill Falls, Pa., wanted the carpet in their newly remodeled business conference center to be distinctive and they wanted the look to last. Their choice was this woven, block pattern cut/uncut carpet with pile of continuous filament Antron* nylon. Knowing it was "Antron" was the assurance the Inn needed that their new carpet would stay new looking.



How "Antron" keeps carpet looking fresh. Its filament structure is remarkable, as simulated in this greatly enlarged model. The four microscopic holes scatter light to minimize rather than magnify the dulling effects of soil, while maintaining an attractive, subdued luster. This property of the fiber, together with its outstanding wearability, helps the look of the carpet to last.

NEW! "Antron" III nylon for static control is now available in selected styles.

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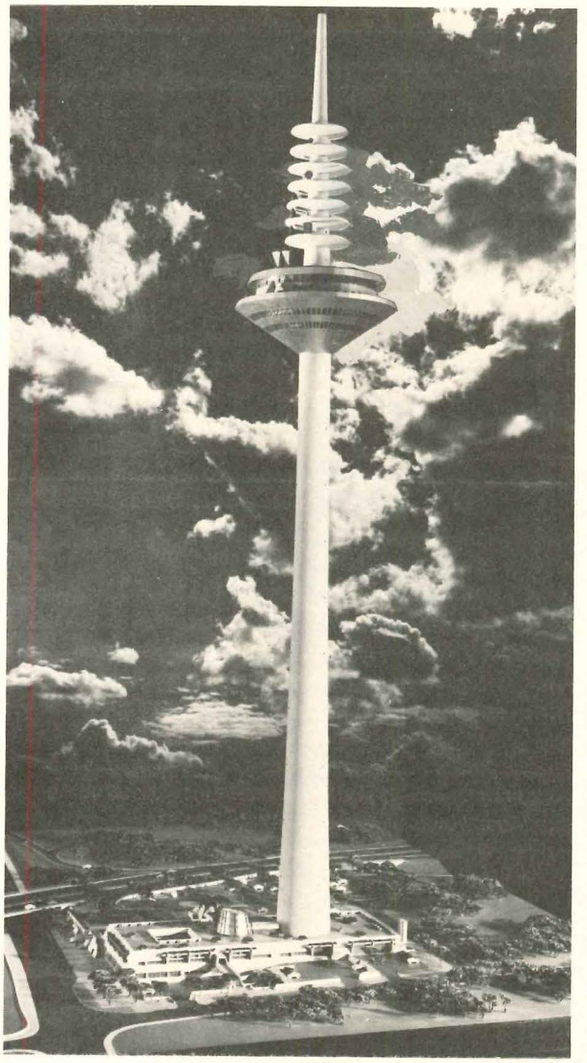
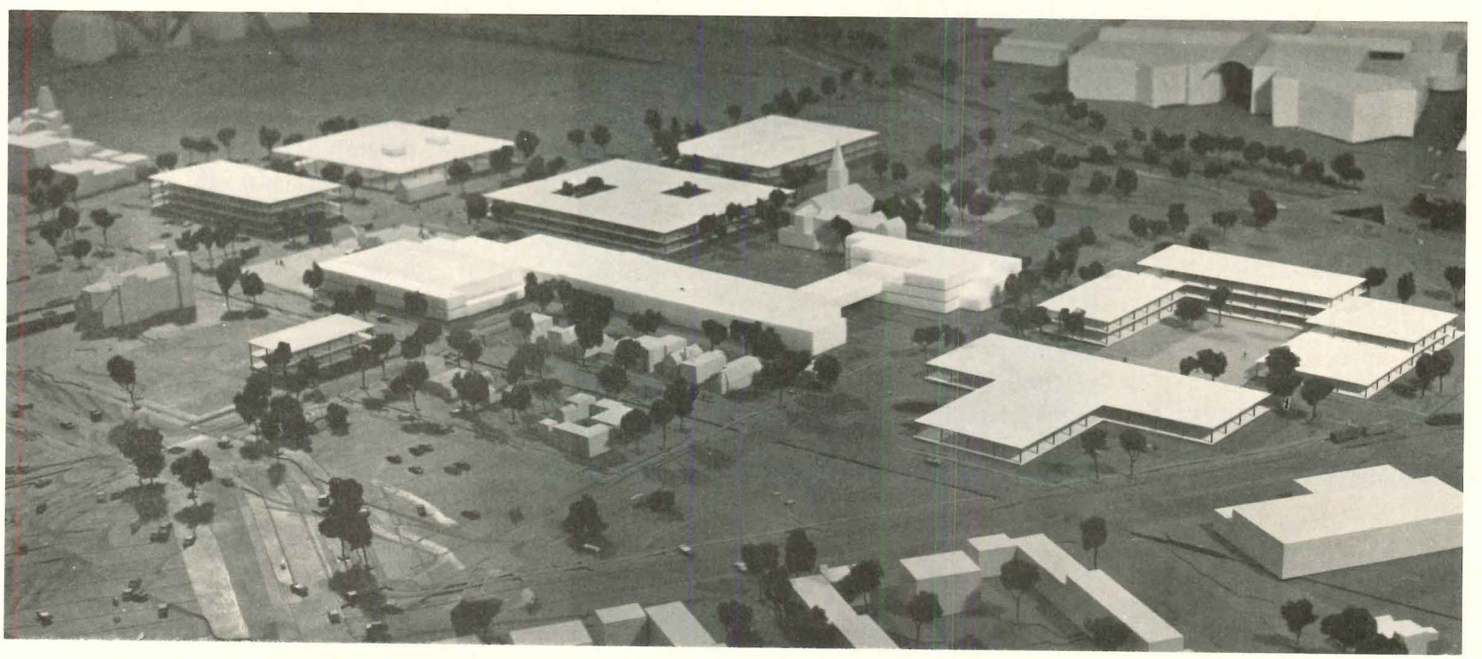


Communication tower begun in Frankfurt

Construction began in the spring on this 331-meter (1086-ft) communication tower in Frankfurt, Germany, which tapers from a diameter of 20 meters (65.6 ft) at the bottom to three meters (9.84 ft) at the top. Completion of the $35.7 million building is set for May 1978. At the 211-meter mark, the first of six floors starts to cantilever out from the tower. Architects are Professor Edwin Heinle of Stuttgart and teams from the Frankfurt Regional Post Administration construction department and Fried Krupp Bau planning department, Essen.

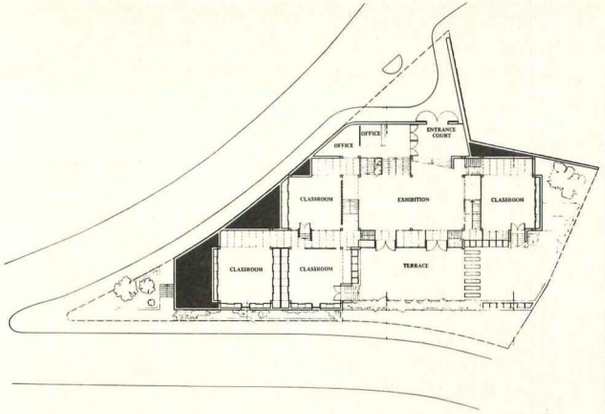
Crown Center tower: Office of Mies van der Rohe

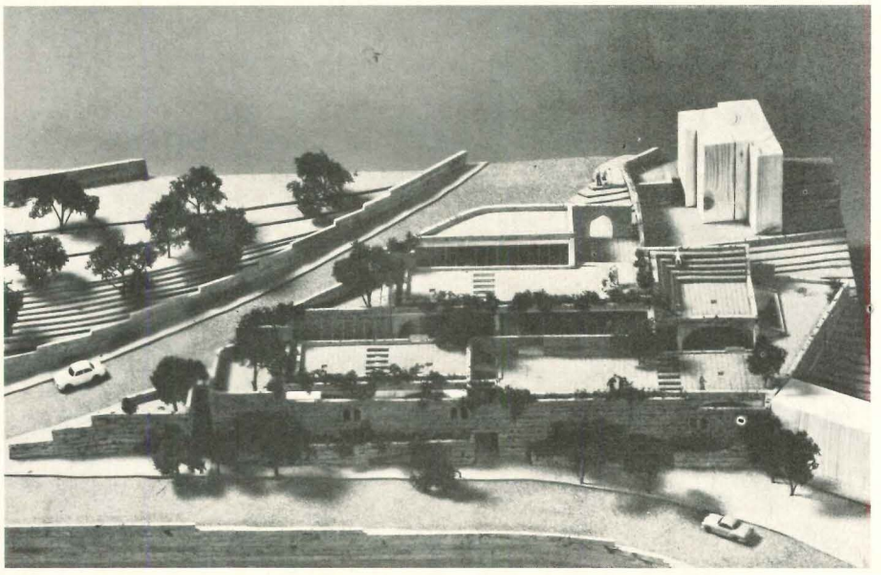
Construction of a 27-story office tower and adjoining four-story satellite building in Kansas City's Crown Center is underway as a joint development of Mutual Benefit Life Insurance Company, International Business Machines Corporation and Walter H. Shorenstein. The $35 million project, designed by the Office of Mies van der Rohe of Chicago, with Bruno Conterato as partner-in-charge, will add about 600,000 sq ft of office space plus underground parking. The buildings will be set in a landscaped plaza at the center's north end.



A downtown Denver campus will accommodate three colleges

A 164-acre campus, mixing historic and new buildings, will open in downtown Denver early in 1976 to become the permanent home for three colleges—Community College of Denver, Metropolitan State College and the University of Colorado at Denver. Architect Jacques C. Brownson coordinated the planning and work of several Denver firms for this "city within a city," which leaves more than 100 acres to landscaping and is flanked by the Rocky Mountains. The firms include Childress-Paulin; George Haller & Dayl Larson; John McMorran; Thomas Obermeier, & Eliot Goss; Muchow Associates; C. S. Murphy Associates-Denver; Charles Sink & Associates and Stearns-Roger, Architects Ltd.

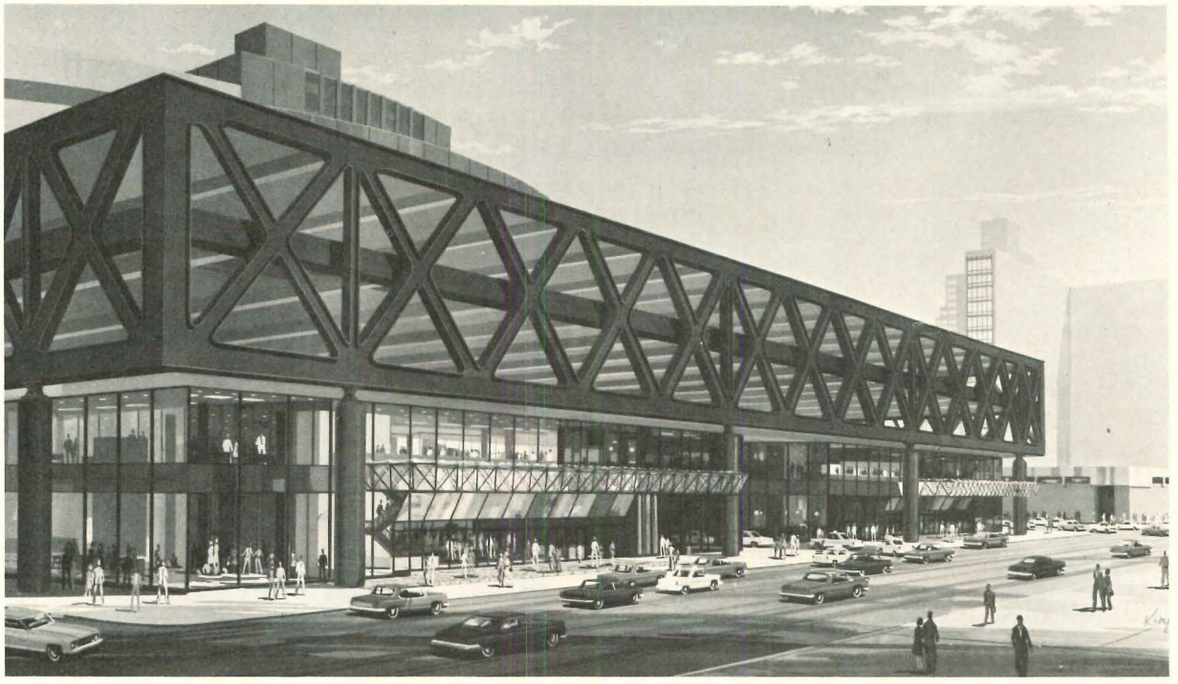




Moshe Safdie architect of Jerusalem arts center

Under construction in eastern Jerusalem is a tri-level cultural facility, the Paley Center, established by the chairman of CBS, Inc., William S. Paley, and designed by Israeli-born architect Moshe Safdie.

The new arts center will straddle a steep hillside. With the value of the lot, donated by the city, total cost will be about $1 million. Completion is scheduled for August of next year. A series of terrace steps down the hillside makes up the native basic stone building.

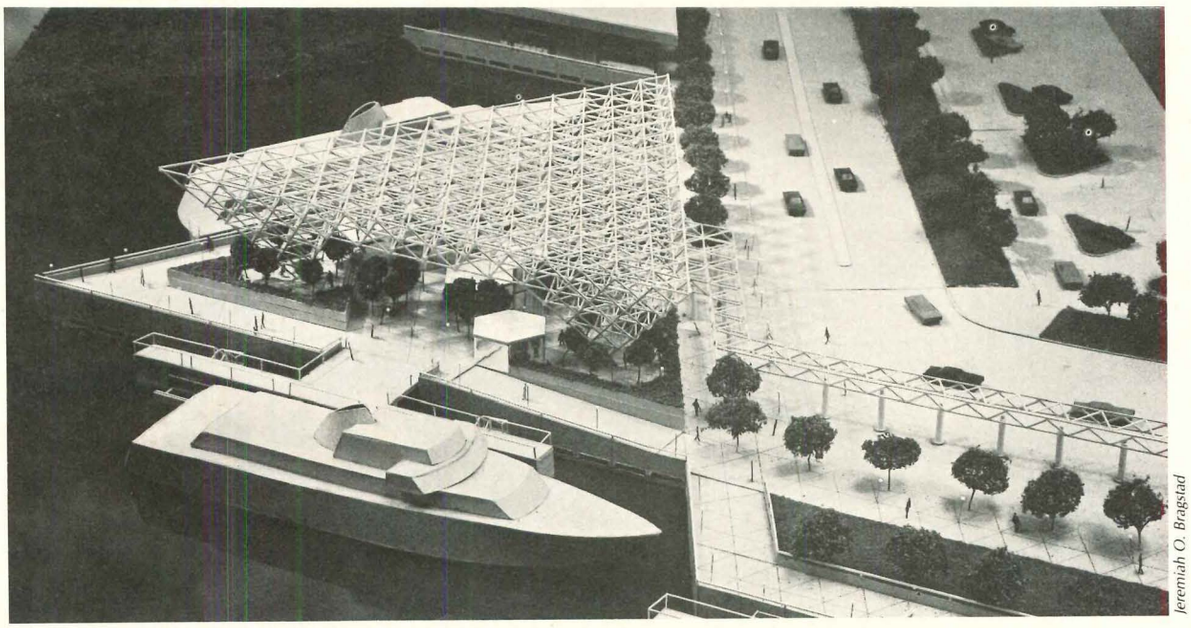


New York's bus station expands

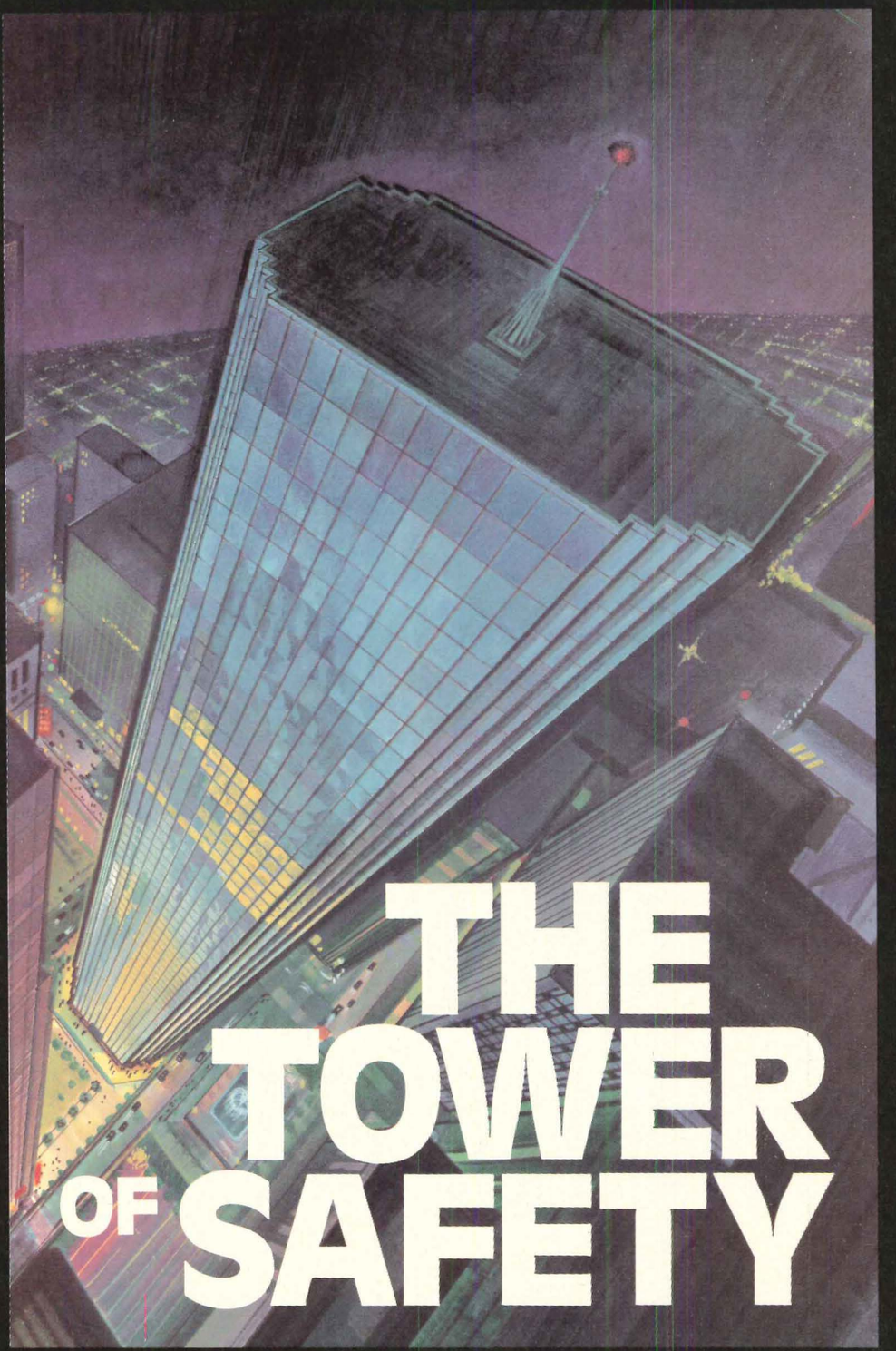
Expansion work on the Port Authority Midtown Bus Terminal in New York City, the world's busiest, will increase current capacity by about 50 per cent when completed in three years. The $137.5 million project, designed by Port Authority staff architects, calls for a new underground approach to Lincoln Tunnel, 75 new bus-loading platforms and increased pedestrian entrances and passageways. The expanded terminal will have a new glass front and recessed arcade. The sale of air rights for erection of a high-rise office building above is possible later on. Construction began in late summer.

Ferry terminal near San Francisco

The Larkspur Ferry Terminal, designed by the San Francisco firm of Braccia/De Brer/Heglund, is under construction at the mouth of Corte Madera Creek on the San Francisco Bay and due for completion in mid-April 1976. This $14 million structure, occupying a 25-acre site, uses a triangular space frame with three points of support for a 16,000 sq ft area. The entire facility is covered by translucent skylights; and trees, landscaping and diverse seating arrangements are featured throughout to give it an indoor-outdoor feeling. Perimeter beams combined with variations in floor level beneath the shelter were designed for pedestrian traffic control.



Jeremiah O. Bragstad



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The late George Howe

GEORGE HOWE: TOWARD A MODERN AMERICAN ARCHITECTURE, *by Robert A. M. Stern; Yale University Press, New Haven, 1975, 273 pages, illustrations, $25.00.*

Reviewed by Martin Filler

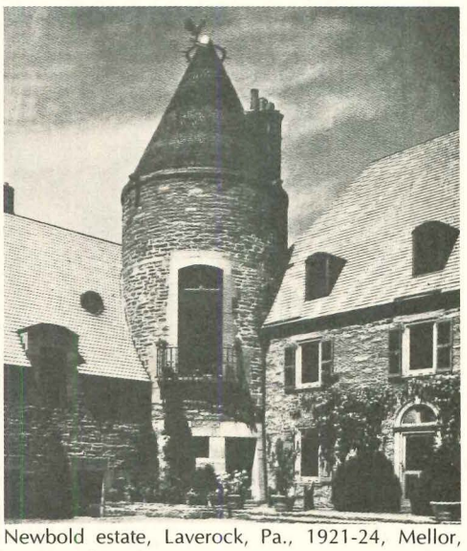
George Howe was the very image of the Gentleman Architect. His father was a "club man" who died when George was a year old. The son was raised in circumstances reminiscent of *The Magnificent Ambersons:* privilege, wealth and social status, and the influence of a dominant mother who one feels was happier without paternal interference. Jamesian expatriates, mother and child lived in Europe until he entered Groton, where his schoolmates included Franklin Roosevelt. The boy's already sophisticated attitudes were somewhat at odds with the muscular Christianity of the redoubtable Rev. Dr. Peabody, and his early interest in architecture was not taken terribly seriously.

Architecture, at that time and place, was considered "a rather futile if polite diversion." Not Art, really, so perhaps easier to accommodate than any of its more Bohemian cousins. At Harvard Howe assumed what one friend termed his "mask," the result of a social order that required a persona of gentlemanly nonchalance at the expense of the passion that seemed to be the one human frailty it could not abide. That mask remained firmly in place his whole life and accordingly makes Howe a particularly difficult subject for biography.

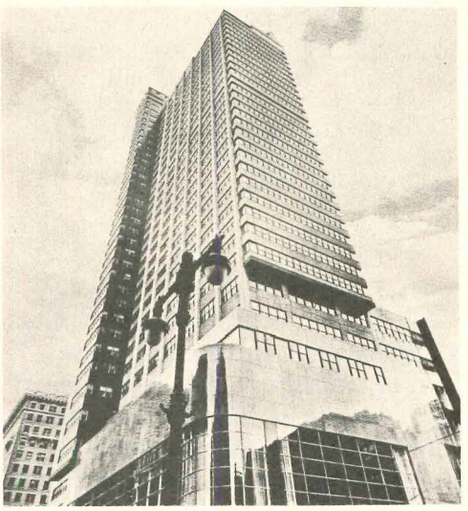
It is to Robert Stern's great credit, then, that he has penetrated that mask so well in this portrait of a major figure in a most important transitional phase in American architecture. Howe's protective coloration had the dual effect of at once stifling the artist while fostering the professional, and it took him fully 40 years to fuse these sundered sides of the whole man. His education at the Ecole des Beaux Arts could hardly be seen as the narrowing experience it has since come to epitomize, for he had never lacked a socially prescribed next step. At the very least, the Beaux Arts' formalized round of *pocher, charette* and *esquisse* must have seemed a logical extension of the *cursus honorum* for which Howe had been carefully groomed since childhood.

He returned to Philadelphia on the eve of the First World War, joined the nearly moribund firm of the recently deceased Frank Furness and built his first house, for himself, in posh Chestnut Hill. High Hollow was a grand and extremely well planned house that spoke directly of Howe's European exposure while concealing behind its derivative mask the same talent its architect hid behind his. Howe's service in the war was to further solidify the European influence, and he returned with snapshots of Norman farmhouses that left their stamp on his work of the 1920's.

George Howe, 1932



Newbold estate, Laverock, Pa., 1921-24, Mellor, Meigs and Howe.



PSFS building, Philadelphia, Pa., 1931-32, Howe and Lescaze.

His major post-war work (with Mellor and Meigs), the Newbold estate at Laverock, Pennsylvania, has lately become a touchstone among the New Haven-Philadelphia school of historians. Quintessentially the "Wall Street pastoral," it drew directly on French provincial sources down to its *potager* and ornamental geese and sheep. In these latter days it seems an eminently delightful place for living, and in its own day was duly praised by the architectural establishment. But to Lewis Mumford, to whom it must have smacked of Marie Antoinette's *hameau,* it represented "the malady of the unreal . . . deep . . . in western civilization."

Howe was to diagnose this malady soon enough himself. The spiritual crisis that was felt in all branches of American arts and letters by the late 1920's did not escape him. His practice had centered on designing smart and acceptable houses for the Main Line elite of which he himself was a member. The Philadelphia upper class to this day, despite its support of several first-rate cultural institutions, remains not so much anti-intellectual as stultifyingly incurious. One might say that he had Biddled his talents away and was becoming painfully aware of it.

The catalysts of his climacteric crisis were several. He was "impressed and confused" by LeCorbusier's Pavilion de l'Esprit Nouveau at the 1925 Paris Exposition; his mother died; he found in Spengler a sounding board for his intellectual aspirations and was in general ripe for the change that his life, until then, would never have indicated. He left Mellor and Meigs, sold High Hollow ("the badge of my servitude to romantic-classicism") and set forth on his own as "a priest of the Modern Faith." Chess-piece door pulls, wrought iron railings and dovecotes were banished forever, and soon his plans were to be alive with nothing more decorative than the sinuous lines of flow straight from the Giedion Bible.

His concelebrant was the Swiss architect William Lescaze, to whom he turned for his familiarity with the vocabulary of the International Style. Although theirs was a brief partnership, their names will be linked together to the last days of architecture on the strength of the one work that has already secured their places in history: the Philadelphia Savings Fund Society building. By any standards the most important American building of the

Continued on page 45

Mr. Filler is editor of Architectural Record Books.

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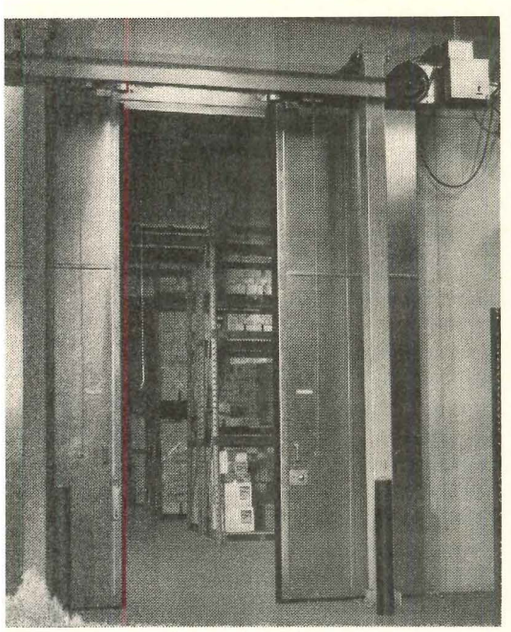

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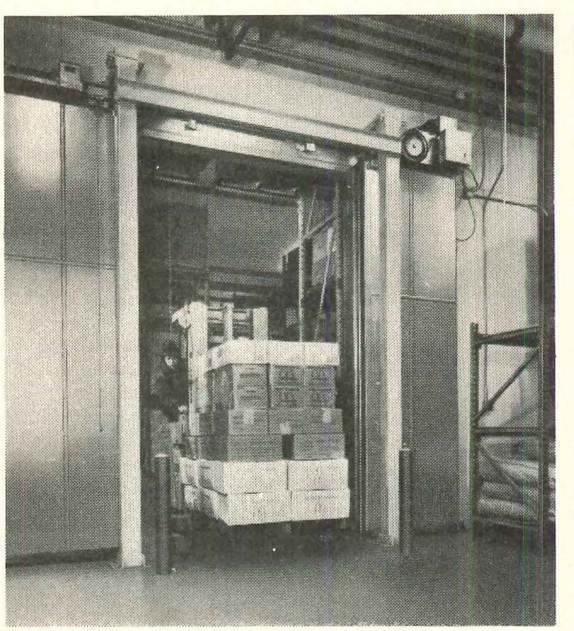

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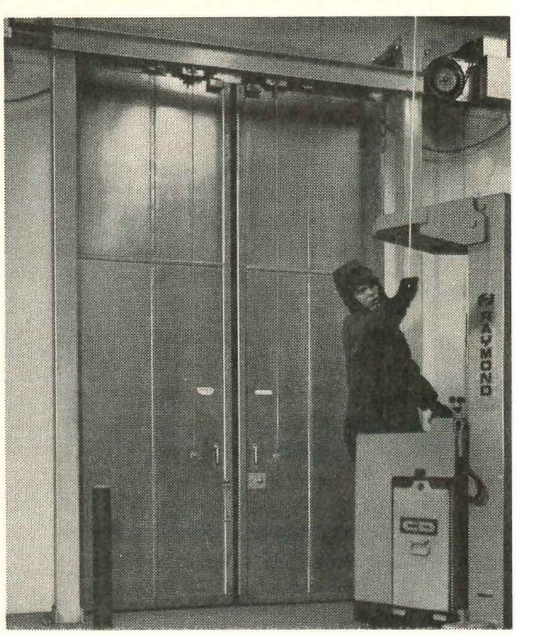

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1930's, its stunningly successful realization was a harbinger of the equally stunning success the International Style was to enjoy and which we can see more clearly now in retrospect. That such an innovative structure should be built for a conservative Philadelphia banking institution was a triumph of no little consequence and far-reaching significance.

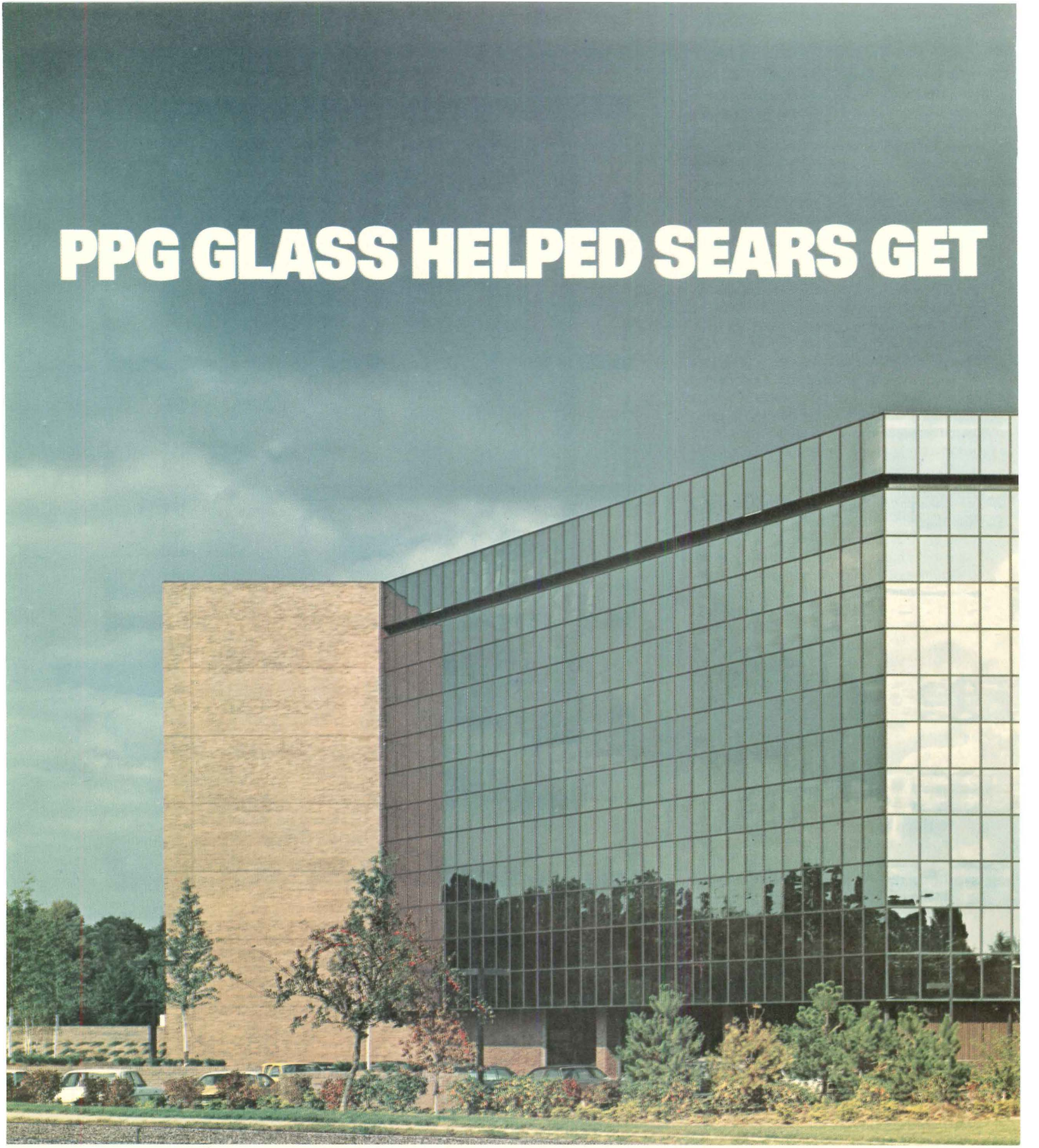
The silhouette of the PSFS still dominates the Philadelphia skyline as clearly as it marks the acceptance of the International Style as the Style of American Big Business. It has aged gracefully since 1932, with none of the dependence on nostalgia now evoked by its more Deco-rated contemporaries. Strength of form, elegance of finish, drama and utility are fused together in what can only be seen as a masterpiece of Modern architecture. That neither Howe nor Lescaze ever again produced a work nearly as important is rather beside the point, for the reputations of many great names in the history of architecture were made by a single great building; somewhat like having a mistress, you really only need one.

Their partnership ended shortly thereafter (the documented exchanges regarding the break-up make lively reading). Howe had made the architectural statement that seemed to simultaneously climax and lay to rest his creative strivings. He did not retire entirely, but a combination of Depression economics and his lack of a real need to work—he was now as secure professionally as he had always been financially—made it hard to tell that he hadn't. An occasional house commission would reignite his considerable talents now and again. Square Shadows (1932-1934) on the Main Line and Fortune Rock (1937-1939) on the Maine coast are altogether superior, but in time he even gave up designing houses ("too tough"), departing from his decision not even for his daughter.

His last years were spent as chairman of the Department of Architecture at Yale. Whatever his substantive achievements in that office, the courtly-mannered Old Party did sufficiently impress younger generations of Yalies who have esteemed him more than he was capable of himself. "Lou," he mused to Kahn near the end of his life, "You, of all people, know I was never much of an architect." The doubts followed him to the end and the mask ultimately became his shield.

Howe was wrong, of course, and now Stern's fine and fascinating study assigns him to the rightful place he never would have assumed for himself. Stern's great sympathy for his subject is as sincere as it is intriguing. Does he see parallels between his own practice based on stylishly historicizing houses for the rich and Howe's development at a similar stage of his career? Does he long for (and what architect would not?) the PSFS building that can satiate the creative drives of a lifetime? What he has done through this book, though, is considerable enough: he joins Philip Johnson and Charles Moore, among others, in that select group of architect-historians whose insights into the architecture of our times will remain as much our heritage as the buildings they leave as physical evidence of their aspirations.

PPG GLASS HELPED SEARS GET



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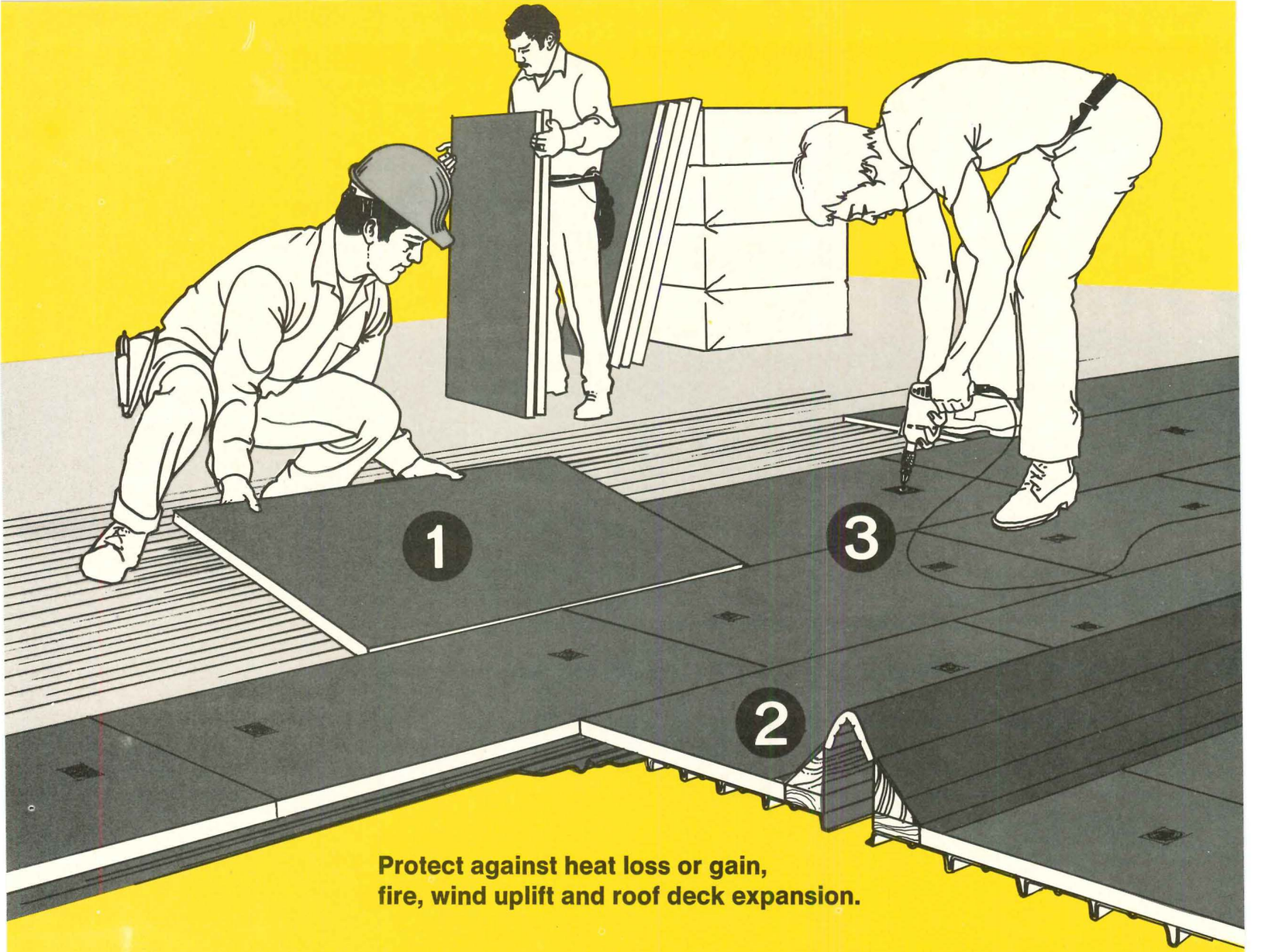

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Statutes of limitation: an overview

The following is a special report prepared by Arthur T. Kornblut for the June 30, 1975 issue of "Legal Briefs for Architects, Engineers and Contractors," a new twice-monthly newsletter published by RECORD's *Construction Industry Legal Reports Department. Mr. Kornblut, editorial consultant to the newsletter, is both a lawyer (Farquhar & Kornblut, Washington, D.C.) and a registered architect, former head of AIA national headquarters' Department of Professional Services.*

The lead news story in the inaugural issue of *Legal Briefs for Architects, Engineers and Contractors* reported a recent New York case applying a general malpractice statute of limitation to architectural services (Sosnow vs. Paul). The coincidence between the advent of this new publication and the decision of New York's Court of Appeals was most timely: Statutes of limitation for claims against architects, engineers and contractors have been the subject of substantial attention during the past 15 years. As a result of increasing liability problems confronting the construction industry, such statutes are viewed as one means of controlling exposure to liability.

Statutes of limitation enacted specifically to cut off claims against individuals or organizations responsible for the design and construction of buildings and other projects are a fairly modern legal development. In earlier times, the circumstances were quite limited in which claims could be brought against the architect, engineer or contractor once the work was completed and accepted by the owner. With the emergence of modern concepts of liability affecting all sectors of American society, those responsible for design and construction began to experience extensive and ill-defined liability, both in regard to duration of exposure and potential plaintiffs. Since construction projects normally have life expectancies measured in decades, if not centuries, modern legal precepts have resulted in a continuing possibility of suit for those connected with the project's design and construction. To ameliorate this problem, statutory controls have been enacted in many states to extinguish liability after the passage of a reasonable period of time.

Beginning in the late 1950's, the design professions and other organizations in the construction industry began to campaign for the enactment of statutes of limitation in each state to establish a period of time within which suit had to be brought against the designers and constructors of the work.

Unlike normal statutes of limitation which begin to run from the time the plaintiff is injured, it was proposed that these special statutes of limitation run for a fixed period commencing with the last involvement with the project of the parties to be protected. In the statutes which have been enacted, the starting point is variously described as the date of substantial completion of the work, the date of final completion, the date services were terminated, and the like.

It was recognized that the statutory period could begin to run even before damage occurred or a person ever was injured on the premises. Thus, conceivably, a potential claimant would be barred from bringing suit against architects, engineers, contractors and others responsible for design and construction before a cause of action actually arose. Since the time within which suit may be brought under the special statutes is unrelated to the accrual of any cause of action, some courts have stated that the effect of the statutes is to prevent a cause of action from accruing against the parties in the protected class, rather than barring a cause of action after the statutory period.

The relief from liability afforded by the statutes is based on a theory that, after the passage of the stipulated number of years, any injury or damage which results is more likely due to improper maintenance, or, in any event, due to factors over which the designers and constructors would have had no control once they left the site. In addition, it is well recognized in the law that there ought to be a time when possible defendants are no longer to be liable for old obligations and do not have to rely on faded memories and unavailable witnesses for defense.

The special statutes normally state that an injured or damaged party will not be barred from bringing a claim against the owner or party in possession of the property at the time the injury occurs. Thus, these statutes attempt to strike an equitable balance. On the one hand, they do not totally frustrate the rights of injured parties to seek redress for their injuries, but on the other they protect those responsible for design and construction from exposure to liability long after the termination of their involvement with the premises. By freeing such parties from suit, the statutes of limitation indicate, in effect, that after the passage of the stated time, claims should be directed toward only the parties who were in the most likely position to have been responsible for, or could have prevented, the injury or damage.

Now more than 40 statutes provide various limitation periods

The first of the special statutes of limitation was enacted in Wisconsin in 1961. In subsequent years, over 40 more jurisdictions enacted similar pieces of legislation, with the statutory periods running from 4 to 20 years. In most of the remaining few states without special statutes, legislation has been proposed but has not yet been enacted due to a variety of reasons.

Almost immediately, cases involving these statutes were brought to court. Plaintiffs, seeking the widest array of possible defendants against whom to pursue their claims, quickly challenged the statutes when they were imposed as a defense. Defendants, who had been involved years earlier with improvements to the property upon which the plaintiffs' causes of action arose, attempted to rely on the statutes to bar the plaintiffs' claims. In 1967, the Supreme Court of Illinois declared that state's special statute unconstitutional on grounds that it was class legislation protecting only architects and contractors, but not others who might have been similarly responsible for the improvements to the property. (Subsequently, the Illinois legislature enacted a new statute which gave recognition to the court's objection; this statute has not yet been tested.)

Despite this initial setback, three years later the Supreme Court of Arkansas upheld that state's special statute and specifically rejected the reasoning followed by the Illinois court. In both cases, the courts relied heavily on interpretations of their own state's constitution. The plaintiff in the Arkansas case attempted to appeal to the U.S. Supreme Court, but that appeal was rejected for want of a substantial Federal question. In the four and a half years since 1970, there has been a proliferation of cases involving the special statutes of limitation. In some states, the special statutes have been invalidated, but to date, more courts have upheld the statutes than have rejected them.

The statutes have been invalidated on a variety of state constitutional grounds by the state's highest court in Alabama, Hawaii, Illinois, Kentucky and Wisconsin and have been given an unfavorable interpretation by other courts in New Hampshire and Pennsylvania. On the other hand, the high courts in Arkansas, Colorado, Nevada, New Jersey, Oregon, Utah and Washington have upheld the statute, and lower or Federal courts in Alaska, Florida, Louisiana, Minnesota, Tennessee and Virginia have given favorable interpretations.

Following the Hawaii supreme court's rejection of that state's special statute, the design professionals in Hawaii were successful in persuading the legislature to re-enact the statute with certain modifications to overcome the court's objections to the earlier statute. The new Hawaii statute has not yet been tested, but the speed with which the new statute was enacted indicates a clear legislative intent that designers and constructors are entitled to be secure from suit years after they are no longer involved with their projects.

Although the results of judicial interpretation of the special statutes of limitation are mixed at present, there clearly is a sound public policy basis for their enactment. Extensive studies of professional liability claims against architects and engineers have revealed that 98 per cent of all such claims are filed within seven years after completion of the project. This would indicate that relatively few claims would be precluded by the special statutes of limitation, since the average length of such statutes is in the neighborhood of seven years. The statutes, however, will operate to eliminate spurious, shotgun suits which might be filed against the designers and constructors of buildings and other projects many years after completion of the work.

Conversely, since most suits are filed before or within a few years after completion of the work, valid statutes of limitation will not have any immediate, dramatic impact on the liability claims arising out of construction projects. Nonetheless, the statutes do provide important, long-range protection against sporadic claims which arise just because a person was connected with a project years earlier.

Returning to the Sosnow case mentioned at the beginning of this article, it should be noted that Sosnow did not involve a special statute of limitation for architects, engineers and contractors. New York is one of the few states in which such statutes have not been enacted. The statute involved in Sosnow was a general malpractice statute, and the key question presented to the court was to determine when the statutory period began to run. The parties (the plaintiff was the owner of a building and the defendants were the architects) had stipulated that the state's malpractice statute applied. The owner claimed the statutory period began to run when the defects in the building first appeared, while the architects claimed that it began to run upon completion of professional services. The trial court agreed with the owner, and the architect appealed. At the intermediate appellate level, the trial court's decision was reversed in favor of the architect, and this decision was affirmed by New York's Court of Appeals. The courts at both appellate levels agreed that the cause of action accrued no later than the performance of work by the professional (or in any event, no later than the completion of construction). By so holding, the New York courts appear to have buttressed the logic of the special statutes. The defendant's last involvement with or completion of the project determined the commencement of the limitation period.

It remains to be seen how other jurisdictions will interpret statutes of limitation for claims against persons responsible for design and construction. Nonetheless, the validity of such statutes in seeking to achieve an appropriate balance between allowing redress for injuries and not subjecting those in the construction industry to unlimited exposure to liability is clearly seen in the opinions of the numerous courts which have seen fit to uphold them.

—Arthur T. Kornblut

Third-party liability: context of the courts

Washington D.C. lawyer John Warren Giles reviews key decisions affecting architects in practice today.

If you look into the history of the subject of architects' liability, you will note widely diversified views as to the accountability of architects for negligence; all the way from the ancient code of Hammurabi invoking a death penalty for negligent construction to the other extreme under early English Common Law by which a rule of nonliability was applied. The English viewed the architect as an arbitrator between the owner and the building contractors, and consequently, since his decisions were considered to be quasi-judicial, he was not held liable for his mistakes.

The early American courts sometimes followed the nonliability approach by applying the doctrine of privity of contract (limiting liability to signing parties). Those early cases found that no cause of action existed where the injured plaintiff was not the employer of the architect, and hence was not in privity of contract with him.

Later decisions, however, rejected or seriously restricted the application of this doctrine. They followed a doctrine similar to that pertaining in the successful suit of automobile manufacturers by drivers (McPherson vs. Buick Motor Company) which held the defendant liable although there was no privity of contract between purchaser and manufacturer. Hence, this whole doctrine of privity of contract has really not had any substantial effect on the later cases involving liability to third parties.

Many of these cases have indicated that an architect cannot be held liable to an injured party where his only "supervisory" responsibility, under the express terms of his architectural contract, is to assure his employer that the structure will be completed in accordance with plans. Such decisions have never *barred* the possibility of liability, but the primary issue has generally been whether the architect owed a *duty* to the injured party under the circumstances.

In trying to determine whether a person in the course of construction can recover damages on the basis of an architect's alleged negligence, the courts have generally looked to the extent of the "supervisory" responsibilities assumed by the architect. The courts have expressly indicated that a "supervising" architect was under a duty to exercise care for the safety of persons on the job.

Under the doctrine of some cases, where architects clearly had no direct role in constructing methods, the courts have held that the architect owes no duty of care to persons injured during construction. In such cases, the courts hold that field inspection responsibilities are limited to seeing that the completed structure conforms to plans and specifications. The courts have specifically indicated that a duty for job safety can only arise where the architect has control of the actual day-to-day methods and procedures employed in doing the work.

In some cases, however, the courts have indicated that, although an architect owes no duty of care to a person upon the construction site, nevertheless, such a duty will arise should the architect engage in positive acts of misfeasance which endanger third parties. In an Arkansas case, in 1960, a worker was injured and three others were killed. Suit was brought on the grounds that the architect had been negligent in failing to stop the work upon discovery of the unsafe shoring of a certain excavation wall which collapsed, hurting the workmen. The architects were held liable; the court pointing out that the contract, among other things, gave the architects general supervision of the project and allowed them an extra fee for that. The contract also provided that the general contractor would do such shoring to protect workmen as might be specified by the architects in accordance with governing law. The court further noted that an ordinance required contractors to guard excavations against the danger to life. It further pointed out that the contractor authorized the architect to stop the work whenever necessary, to insure the proper execution of the contract. Because the architects had prior knowledge of the hazardous condition of the wall, they owed a duty of care to the workers. The court emphasized the testimony that the architects' field supervisor had questioned the adequacy of the shoring prior to the accident, but had failed to stop the work when the contractor assured him that the problem would be corrected.

The American Institute of Architects has issued a variety of standard forms containing provisions which disclaim any duty to injured persons on the part of the architect and which put the responsibility for safety upon the contractor, and which require that the contractor indemnify the architect for losses caused by the contractor's negligence. Those contracts generally provide that the architect will make periodic visits to the work-site solely to guard the owner against defects in the work, and to see that construction is proceeding according to plans and specifications. It is also generally provided that the architect will not be required to make exhaustive or continuous on-site inspections and will not be responsible for construction means, methods, techniques or procedures or for safety precautions in connection with the work.

—John Warren Giles

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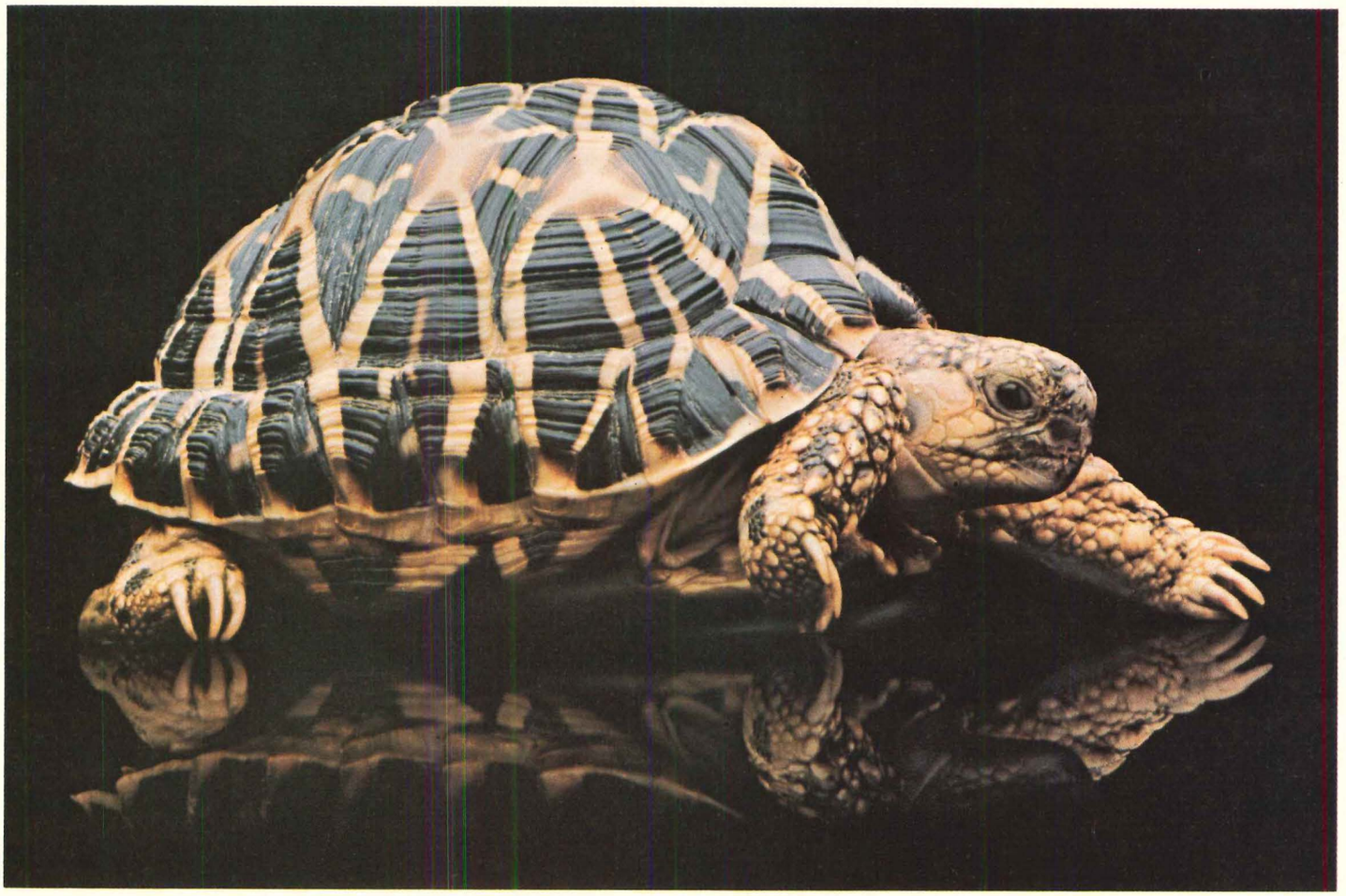

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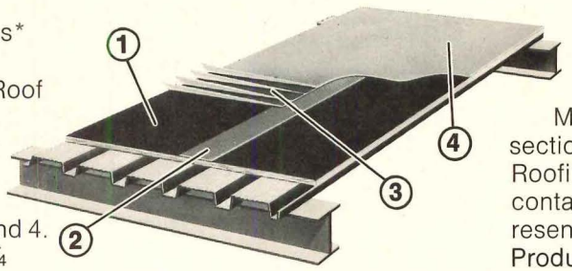

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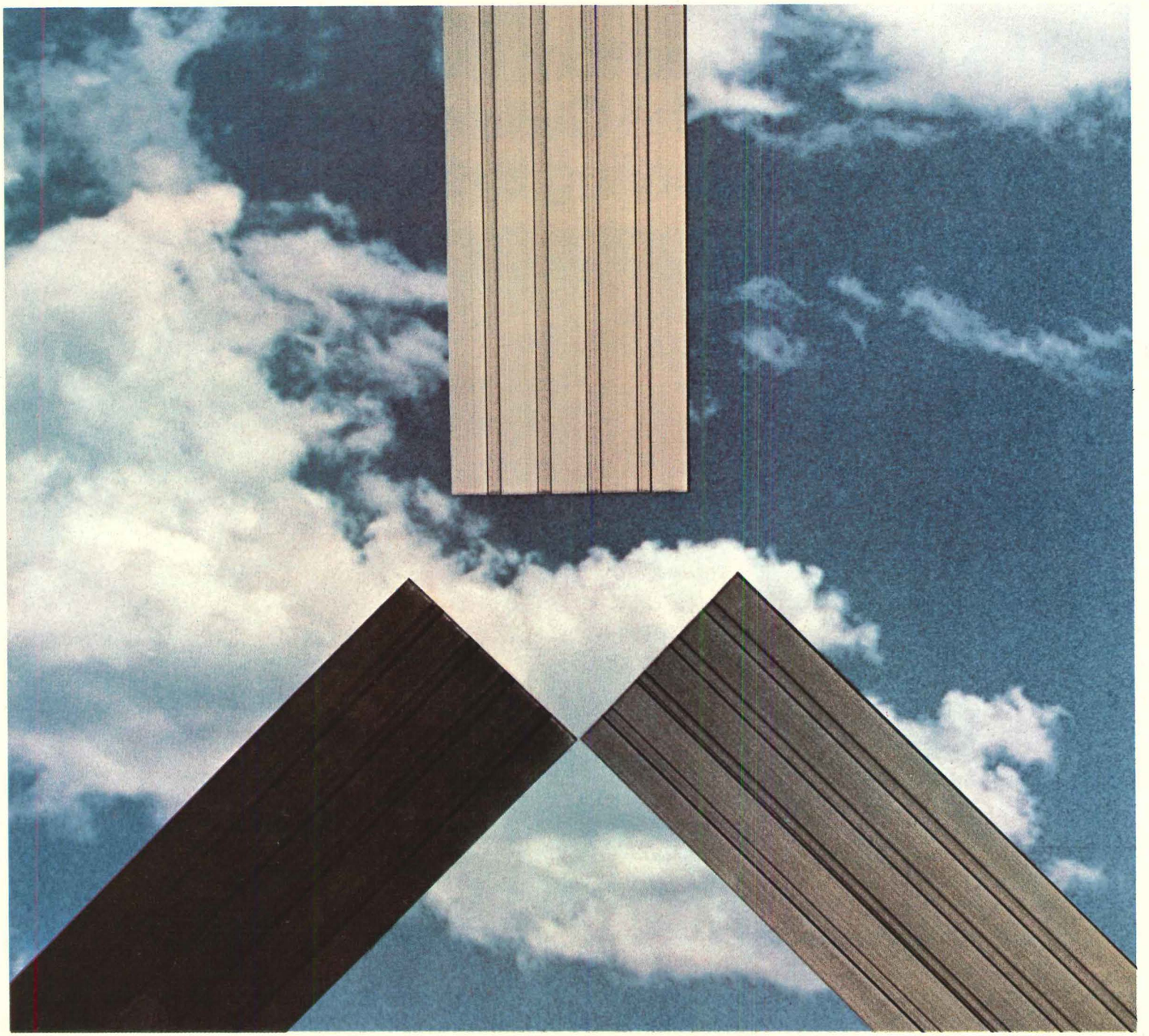

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Life-cycle costing: an approach to method

Construction management is not complete unless the owner can be told how much key design options cost now and in the years ahead. Bradford Perkins, managing partner of Llewelyn-Davies Associates, suggests general application of an approach based primarily on hospital evaluations.

The energy crisis and vaulting inflation of building costs have only emphasized something that experienced architects and engineers already knew—that a building's design has a significant impact on its operating cost and its life-cycle cost. What has been less well understood is how and where to apply this understanding in the design process. Unfortunately, the rhetoric of life-cycle cost analysis is more advanced than that state of the art. In fact, the current errors in general understanding, methodology and approach have seriously hindered the successful application of this technique.

The purpose of this article is to briefly outline a methodology for life-cycle cost analysis of design decisions. The following material is structured around the example of health facilities—one of the building types where this technique is most important—but it has general application to most project types.

Until recently, of course, there have even been some owners and design professionals who have ignored this critical design parameter in favor of an overriding concern with construction cost control. Construction cost is also a critical factor, but in case there are still any doubters, one example should clarify the relative importance of life-cycle costs. This example, which is borrowed from a representative owner/builder analysis, is a typical feasibility comparison of the impact of a $200,000 saving in construction cost versus an equal saving in annual operating costs.

1. Original case with over-all construction cost of $10,000,000

income	3,700,000
less operation costs	3,000,000
less debt service @ 8%	800,000
net income	(100,000)

2. Redesign for $200,000 savings in construction cost, resulting construction cost of $9,800,000

income	3,700,000
less operation costs	3,000,000
less debt service	784,000
net income	(84,000)

3. Redesign for $200,000 savings in operating cost, at original cost of $10,000,000

income	3,700,000
less operation costs	2,800,000
less debt service	800,000
net income	100,000

It is clear which cost area deserves the most attention. The only question is: how does one isolate areas with this savings potential?

The first step is understanding the full range of cost parameters affected by a decision to build a facility. Specifically, there are ten cost areas that should be the concern of the project design team. The nine are listed below along with examples of design decisions which can be influenced by each.

1. **Capital investment costs**—the owner's capital costs associated with developing a new facility, including fees, construction costs, land, etc., which are important in such decisions as whether:
- to select cooler but more expensive light fixtures in order to reduce the size and energy consumption of the HVAC system;
- to purchase additional land to permit horizontal rather than more-costly vertical development;
- to use fast-track and construction management techniques to reduce cost escalation.

2. **Financing costs**—the cost of any debt associated with the facility's capital costs, which are important in such decisions as whether:
- to delay receipt of bids, thus risking fewer and higher bids, in order to wait for a reduction in borrowing rates.

3. **Functional use costs**—the cost of staff, materials, etc. required to perform the function of the organization using the facility, which are important in such decisions as whether:
- to coordinate potential facility functions—such as emergency, obstetrics, special surgery with neighboring institutions;
- to spend more on modernizing existing nursing stations and patient monitoring equipment in order to reduce the required nursing staff;
- to contract for services such as laundry, dietary catering, etc. rather than to include in-house facilities;
- to build in automated patient monitoring and diagnostic equipment in order to reduce staffing costs.

4. **Operation costs**—the costs (such as energy, salaries, etc.) required to operate the building itself, which are important in such decisions as whether:
- to design for reduced energy consumption.

5. **Maintenance costs**—the cost of the regular custodial care and repair, annual maintenance contracts and salaries of maintenance staffs which are important to such decisions as whether:
- to select interior and exterior finishes that minimize painting, polishing, or routine repair;
- to specify systems with maintenance contracts or longer guarantees.

6. **Alterations costs**—the cost of changing a facility to provide a function not originally intended, which is important to such decisions as whether:
- to plan for demountable partitions, interstitial space, utilities in the exterior walls, knockout panels, and other design options which facilitate alterations;
- to build in spare electrical or mechanical capacity to permit additional demand.

7. **Replacement costs**—the costs of replacing equipment or other facility elements with an estimated life cycle shorter than that of the entire facility, which are important in such decisions as whether:
- to specify short-life (but lower capital cost) elements such as rooftop HVAC units or shorter-life roofing materials;
- to specify short-life elements in areas likely to undergo significant future alterations.

8. **Lost revenue**—the revenues lost or not earned as a result of facility decisions, which are important in such areas as whether:
- to program a larger size for a revenue earning department;
- to specify elements—such as movable partitions—which, because of their potential tax treatment as equipment, result in lower taxes.

9. **Associated costs**—the other identifiable costs associated with a facility which are not covered above. Many—including such important areas as esthetics, safety, comfort, and the all-important quality of patient care—cannot be quantified. Nevertheless, they can never be ignored in the life-cycle equation.

What this list clearly illustrates is that the designer must concern himself with far more than energy cost in life-cycle cost reduction. In fact, overemphasis in this one area can be as short sighted as a concentration on construction costs. As it should also illustrate, there are decisions throughout the design process which have significant life-cycle costs implications and which should be analyzed as a part of that process.

Some doubts have been raised by project design teams that the state of the art and the available data prohibit analysis. It has been our experience, however, that this is rarely the case. A sound methodology exists, reasonable

(continued on page 59)

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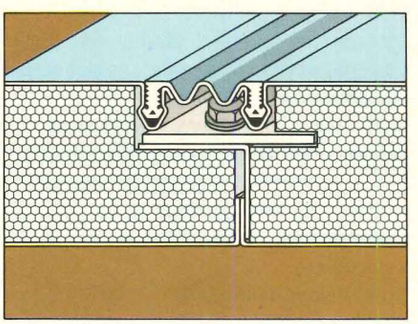

Furthermore, these panels come in lengths up to 30 feet, can be easily erected from the outside with self-tapping screws. The fasteners are concealed with extruded vinyl gaskets. These panels allow work on more than one wall at a time, which can reduce erection costs. Aluminum's well-established durability helps keep maintenance low. And in the event of some mishap, a damaged Economy Panel is easily replaced.

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Average costs of vocational schools

The following represent average construction costs for vocational schools:

Building system	Average $/SF	Average % Tot	High $/SF	High % Tot
Site improvement	$1.34	3.6	$1.60	3.9
Foundations	2.77	7.6	2.77	8.1
Floors on grade	.83	2.2	.83	2.0
Superstructure	4.62	12.7	4.62	11.5
Roofing	.90	2.4	.90	2.2
Exterior	3.70	11.1	4.44	11.0
Partitions	1.78	4.8	2.13	5.3
Wall finishes	.49	1.3	.58	1.4
Floor finishes	.69	1.8	.75	1.8
Ceiling finishes	.67	1.8	.80	1.9
Conveying systems	.59	1.6	.64	1.5
Specialties	.36	.9	.39	.9
Fixed equipment	.96	2.6	1.05	2.6
HVAC	6.69	18.4	8.02	18.8
Plumbing	1.91	5.2	2.10	5.2
Electrical	4.93	13.5	5.42	13.4
Gen. conditions	3.12	8.5	3.12	8.5
Total	$36.35	100.0	$40.16	100.0

The following is a space planning guide for use with this building type.

	Sq Ft Per Pupil	Normal Pupil Stations
Agriculture	170	20
Dental Assistant	85	20
Medical Assistant	85	20
Food Services	100	20
Carpentry	150	20
Commercial Foods	85	20
Cosmetology	105	20
Electrical Trades	120	20
Electronics (Radio & TV)	110	20

John H. Farley, senior editor
Dodge Building Cost Services

INDEXES: August 1975 1941=100.00 (except as noted)

Metropolitan area	Cost differential	Current Indexes non-res.	residential	masonry	steel	% change last 12 months
U.S. Average	8.5	494.1	463.9	485.5	473.4	+ 7.77
Atlanta	7.5	593.4	559.5	581.9	570.3	+ 5.13
Baltimore	8.5	550.4	517.5	539.6	524.4	+ 4.32
Birmingham	7.3	446.7	415.6	433.6	431.5	+ 8.12
Boston	9.0	492.9	465.8	490.3	474.9	+ 6.34
Buffalo	9.1	542.9	509.9	534.0	519.2	+ 6.97
Chicago	8.3	549.3	522.3	529.1	522.0	+ 4.84
Cincinnati	8.8	527.1	496.2	513.6	500.6	+ 6.88
Cleveland	9.0	526.3	495.4	516.6	502.9	+ 5.34
Columbus, Ohio	8.2	508.9	477.9	501.7	487.7	+ 6.63
Dallas	7.9	495.2	479.6	486.1	477.7	+ 7.59
Denver	8.4	538.8	506.9	531.4	518.1	+11.35
Detroit	9.8	563.1	536.4	572.7	549.2	+ 6.69
Houston	7.4	454.9	427.2	443.2	435.0	+ 8.73
Indianapolis	7.8	445.6	418.5	436.1	425.7	+ 8.02
Kansas City	8.7	489.8	462.9	480.9	472.5	+10.37
Los Angeles	8.5	561.3	513.2	544.3	532.4	+ 6.27
Louisville	7.6	481.1	451.8	468.6	460.3	+ 4.84
Memphis	8.4	509.2	478.2	489.5	481.0	+ 9.56
Miami	7.9	508.0	484.0	493.5	482.6	+ 6.79
Milwaukee	8.7	565.4	513.0	557.2	542.4	+10.46
Minneapolis	8.9	522.1	491.2	514.7	502.8	+ 9.37
Newark	9.0	488.9	459.2	485.0	472.2	+11.97
New Orleans	7.5	472.0	445.7	466.5	454.8	+ 5.91
New York	10.0	538.7	500.9	527.6	515.5	+ 5.32
Philadelphia	9.1	539.9	514.4	536.9	522.4	+ 7.19
Phoenix (1947 = 100)	8.2	292.3	274.6	284.1	277.8	+10.00
Pittsburgh	8.9	482.9	454.4	479.1	463.6	+ 7.06
St. Louis	8.7	506.4	478.1	502.0	490.6	+ 8.42
San Antonio (1960 = 100)	7.6	189.1	177.6	186.1	181.2	+ 7.56
San Diego (1960 = 100)	8.7	210.2	197.5	206.3	200.9	+ 8.20
San Francisco	9.6	734.5	671.5	725.8	704.6	+10.61
Seattle	8.6	487.3	436.2	481.8	463.0	+ 7.88
Washington, D.C.	8.4	488.8	459.1	480.0	467.1	+11.53

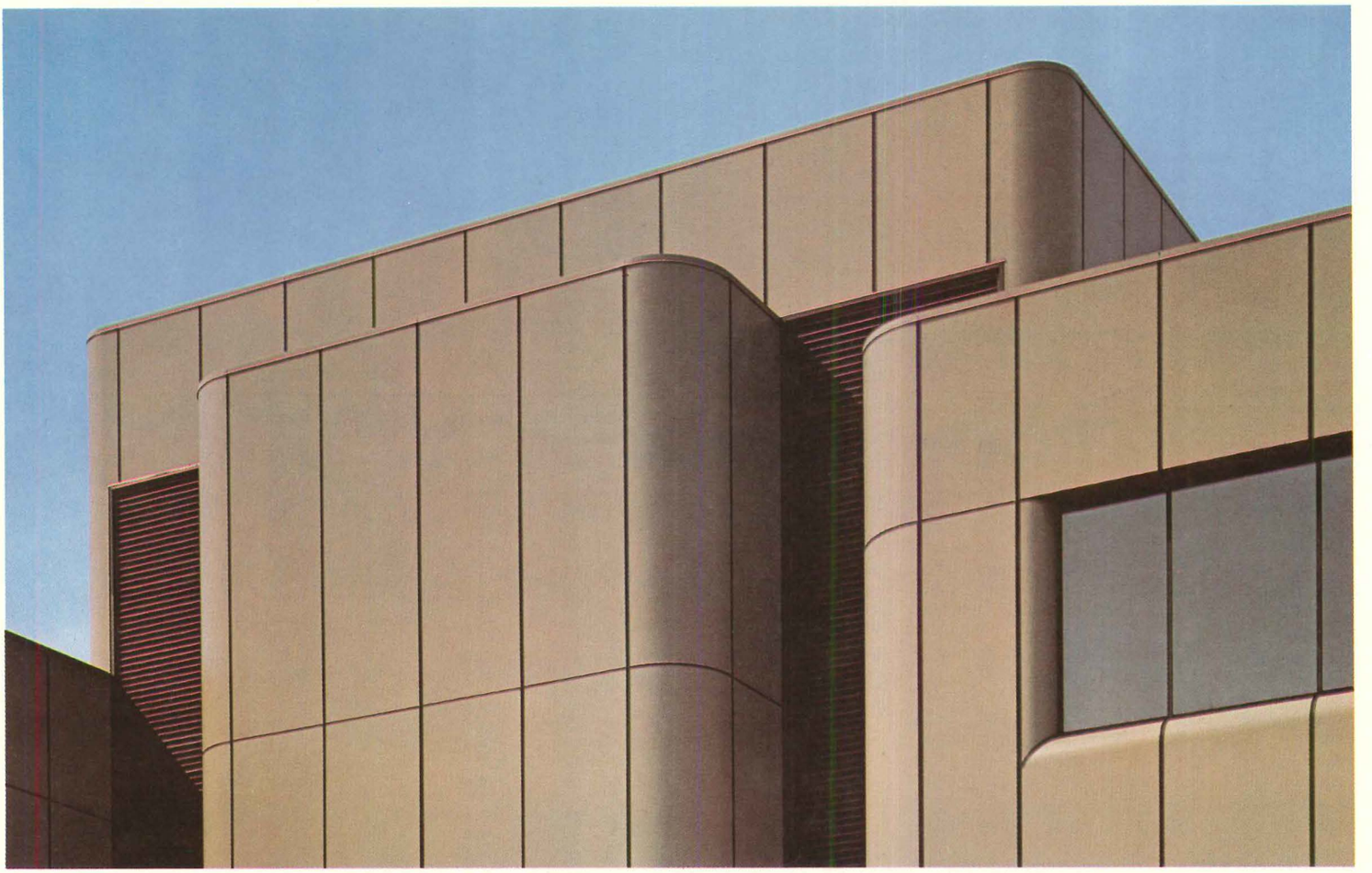
Cost differentials compare current local costs, not indexes, on a scale of 10 based on New York

Tables compiled by Dodge Building Cost Services, McGraw-Hill Information Systems Company

HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL NON-RESIDENTIAL BUILDING TYPES, 21 CITIES 1941 average for each city = 100.00

Metropolitan area	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974 (Quarterly) 1st	2nd	3rd	4th	1975 (Quarterly) 1st	2nd	3rd	4th
Atlanta	321.5	329.8	335.7	353.1	384.0	422.4	459.2	497.7	544.8	555.2	556.7	573.5	575.0	583.8	585.3		
Baltimore	285.7	280.9	295.8	308.7	322.8	348.8	381.7	420.4	475.5	516.3	517.8	532.8	534.3	538.7	540.2		
Birmingham	265.9	270.7	274.7	284.3	303.4	309.3	331.6	358.3	402.1	405.5	407.0	419.7	421.2	438.6	440.1		
Boston	257.8	262.0	265.7	277.1	295.0	328.6	362.0	394.4	437.8	455.1	456.6	461.0	462.5	484.1	485.6		
Chicago	311.7	320.4	328.4	339.5	356.1	386.1	418.8	444.3	508.6	514.2	515.7	528.1	529.6	539.2	540.7		
Cincinnati	274.0	278.3	288.2	302.6	325.8	348.5	386.1	410.7	462.4	484.5	486.0	498.6	500.1	518.0	519.5		
Cleveland	292.3	300.7	303.7	331.5	358.3	380.1	415.6	429.3	462.2	490.3	491.8	508,0	509.5	516.6	518.1		
Dallas	260.8	266.9	270.4	281.7	308.6	327.1	357.9	386.6	436.4	453.7	455.2	476.4	477.9	488.3	489.8		
Denver	294.0	297.5	305.1	312.5	339.0	368.1	392.9	415.4	461.0	476.1	477.6	508.5	510.0	530.4	531.9		
Detroit	284.7	296.9	301.2	316.4	352.9	377.4	409.7	433.1	501.0	519.5	521.0	537.2	538.7	554.4	555.9		
Kansas City	256.4	261.0	264.3	278.0	295.5	315.3	344.7	367.0	405.8	435.6	437.1	443.4	444.9	481.1	482.5		
Los Angeles	297.1	302.7	310.1	320.1	344.1	361.9	400.9	424.5	504.2	514.3	515.8	531.3	531.8	546.7	548.2		
Miami	277.5	284.0	286.1	305.3	392.3	353.2	384.7	406.4	447.2	467.6	469.1	484.6	485.5	499.5	501.0		
Minneapolis	285.0	289.4	300.2	309.4	331.2	361.1	417.1	412.9	456.1	469.7	471.2	487.1	488.6	513.9	515.4		
New Orleans	256.3	259.8	267.6	274.2	297.5	318.9	341.8	369.7	420.5	437.5	439.0	440.6	442.1	463.5	465.0		
New York	297.1	304.0	313.6	321.4	344.5	366.0	395.6	423.1	485.3	497.4	498.9	513.8	515.3	524.1	525.5		
Philadelphia	280.8	286.6	293.7	301.7	321.0	346.5	374.9	419.5	485.1	495.7	497.2	517.0	518.5	531.5	533.0		
Pittsburgh	267.0	271.1	275.0	293.8	311.0	327.2	362.1	380.3	424.4	443.7	445.2	464.1	465.6	475.2	476.7		
St. Louis	280.9	288.3	293.2	304.4	324.7	344.4	375.5	402.5	444.2	458.7	460.2	475.2	476.7	497.5	499.0		
San Francisco	368.6	386.0	390.8	402.9	441.1	465.1	512.3	561.0	632.3	647.1	648.6	671.0	672.5	716.0	717.5		
Seattle	268.9	275.0	283.5	292.2	317.8	341.8	358.4	371.5	424.4	437.8	439.3	448.7	450.2	472.5	474.0		

Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.0) divided by the index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than the costs in the other. Also, second period costs are 75% of those in the first period (150.0 ÷ 200.0 = 75%) or they are 25% lower in the second period.



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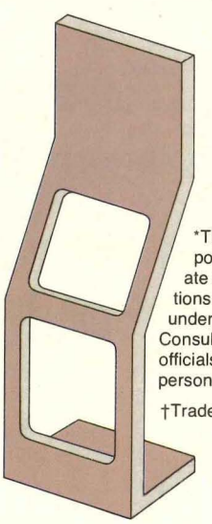

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The Dodge/Sweet's construction outlook, 1975: second update

While the rest of the economy is still probing anxiously for the bottom of the recession of 1974/75, the construction industry is now showing the way to recovery.

The six-quarter decline of the Dodge Index, which began way back in the fall of 1973 finally ground to a halt in the opening quarter of 1975. Those first three months of 1975 averaged only 141, the lowest rate of contracting in four years, and at the time it made our First Update—which called for a full year Index of 178—seem optimistic, if not unattainable. But now, with a couple of months of strong recovery behind us, a 1975 average in the 170's looks well within reach.

Construction's second quarter rebound, which sent the Dodge Index leaping ahead in April and May, still wasn't the full scale, across-the-board advance it will eventually become. For one thing, it lacked the support of a recovery in the important nonresidential building market. What this surge in the Dodge Index did reflect was improvement in two of the most unrelated parts of the construction market you'll find anywhere: electric power plants and single-family housing.

CONSTRUCTION CONTRACT VALUE
(millions of dollars)

	1974 actual	1975 forecast	per cent change
Nonresidential			
offices	$ 5,164	$ 4,300	−17
stores & other comm'l	6,953	5,200	−25
manufacturing	5,578	5,100	− 9
Total comm'l & mfg.	$17,695	$14,600	−17
educational	$ 6,452	$ 6,100	− 5
hospital & health	3,996	4,100	+ 3
other nonresid, bldgs.	5,717	5,900	+ 3
Total institutional & other	$16,165	$16,100	—
Total nonresidential	$33,860	$30,700	− 9
Residential			
1- & 2-family homes	$23,326	$26,200	+12
apartments	9,233	8,300	−10
Total housekeeping	$32,559	$34,500	+ 6
Total nonhousekeeping	$ 1,615	$ 1,400	−13
Total residential	$34,174	$35,900	+ 5
Nonbuilding			
highways & bridges	$ 9,331	$10,000	+ 7
utilities	5,222	6,100	+17
sewer & water	6,194	6,900	+11
other nonbuilding	4,295	6,500	**
Total nonbuilding	$25,042	$29,500*	+18
Total construction	$93,076	$96,100	+ 3
Dodge Index (1967=100)	169	174	

*includes an estimated $2 billion trans-Alaska pipeline work to be started during 1975.

Residential building

When was a recovery ever so eagerly anticipated or so closely watched as this year's housing upturn? And when was one ever so reluctant to show itself? Like the fabled groundhog, the housing market raised its head a bit in February, took a look around, and decided it didn't think much of the climate. Improvement in homebuilding that followed during the late winter and early spring months was so scant that it took until May before the recovery could be accepted as a reality. But with the May rate of housing starts just barely above the 1.1 million unit rate, it was clearly a disappointment—hardly the kind of recovery that would pull the rest of the economy along with it.

Part of the trouble is that so far housing's advance has been pretty much limited to single-family building. Within that segment of the residential market, things are coming along about as well as you'd want. Despite a laundry list of reasons why the housing recovery couldn't make it this time (a large inventory of unsold units, prices beyond the reach of most families' income, recession insecurity, high interest rates, S & L illiquidity, and more) the rate of one-family building advanced from its eight-year low of only 650,000 in January to 750,000 in March, and to 875,000 by May. Two events—the surge of deposits at the S& L's and the special tax credit on existing units—were enough to move the merchandise and encourage more building.

The multi-family situation is different. Lenders are less willing to lend, and developers less eager to develop in a market where vacancies continue to hang high (over 6%) even after more than a year of extremely low building. Worse than that, they are convinced that "the arithmetic doesn't work" (translation: the high cost of building, financing, and operating an apartment project can't be profitably covered at current rental rates). As a result, multi-family building has failed to take hold the way single-family building has in the first half of 1975. May's 250,000 unit rate of apartment contracting was scarcely higher than January's depressed 225,000.

To induce a higher rate of apartment construction, balance must (and eventually will) be restored to the so-called arithmetic of real estate development. Some blend of lower interest rates, control of inflated building and fuel costs, higher rentals, and rent subsidies is needed, and market forces are gradually moving in this direction. Unfortunately these are mostly long-term rather than short-term changes, and they won't bring much relief in the remainder of 1975. For the short run, credit availability will still be the housing market's only real source of support.

With half the year gone and only 550,000 dwelling units started, it will take a much better second half with rates of at least 1.4 and 1.6 million in the third and fourth quarters) to reach a total of 1.3 million units for the year as a whole. Year-to-year it's a *decline* of 50,000 units, but first half to second half it's a *gain* of 200,000.

Nonbuilding construction

The heavy end of the construction business has a lot going for it in 1975. The electric utilities are now building again, after shelving many projects last winter when rising fuel costs, lagging electricity rates, and a sharp drop in the industrial demand for power left them in a financial bind. In the spring quarter contracting surged to a record $3 billion of new power plants.

Even if utility contracting tapers off a bit in the second half (as it most likely will), other types of nonbuilding construction are slated for sizeable gains in the months ahead. The release of billions of dollars of impounded highway and sewer appropriations (an action taken early this year by the Administration to minimize unemployment by creating temporary public works jobs) has yet to pay off. The reason: recession has squeezed state budgets to the point where they've been turning down Federal program funds because they couldn't afford their matching shares. Now that Washington is allowing the states to defer payment of their shares for a year or more—in effect granting full financing—contracting should pick up sharply.

And then there's the pipeline. This is the year when the biggest part (about $2 billion) of the trans-Alaska pipeline will be going ahead. For obvious reasons, most of it will be concentrated in the summer months.

Right from the start, the *1975 Outlook* anticipated that this year's biggest potential by far would be in heavy construction. By midyear that much was already pretty well settled. And with housing's recovery finally established, this leaves as the area of greatest concern in the second half of 1975 the part of the con-

Project: Guardian Bank, Pinellas Park, Florida Architect: Robert Bernzott
Fabricator: J-C Products Corporation Applicator: Midway Glass Company

Project: Professional Building for Stebbins & Scott, Fort Pierce, Florida
Architect: Stebbins & Scott, A.I.A. Fabricator/Installer: Construction Specialties, Inc.

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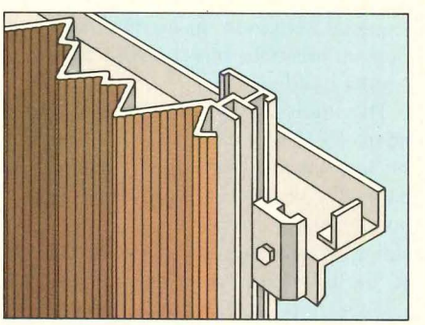

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struction market that is normally last to recover from the effects of recession: nonresidential building.

Nonresidential building

Recession usually splits the nonresidential building market in two parts. When business activity declines, the volatile commercial/industrial half of nonresidential building drops off sharply, but the more stable institutional half normally does no worse than to level off. That's what happened in the 1970 recession, and while no two recessions are exactly alike, much the same pattern has reappeared in 1974/75.

This time around, though, there's an added dimension: the energy crisis. While most of the industrial construction market has been doing what comes naturally in the depths of a serious recession (i.e., declining), one special part of that market—the part that takes in oil refineries, petrochemical plants, and other energy-related facilities—has never been hotter. The resulting contradiction: during the first half of 1975, total industrial construction contract value was up by more than one-third at a time when industrial production was plummeting and excess capacity abounded.

Setting aside the extraordinary situation in the energy industries leaves a clearer picture of the cyclical behavior of the nonresidential building market in 1975. And it is quite typical behavior. After adjustment for petroleum processing and related projects, the rate of contracting for nonresidential buildings has declined by roughly 25 per cent in value since its cyclical peak in 1974's third quarter. (If allowance is made for inflation over this period, the decline in physical volume was more than 30 per cent.) Comparison with the 1970 cycle strongly suggests that (1) the steepest part of the drop (which occurred in 1974 and 1975) is now behind us, and (2) the end of the decline is near at hand (probably in 1975).

Getting nonresidential building contracts headed upward again requires, of course, a recovery of the economy itself and the "standard forecast" of a midsummer turnaround looks on target. If it is, we might expect nonresidential building contracting to be on an upward path by the final quarter of 1975. For the year as a whole, the nonresidential building outlook remains much as we saw it in March. Commercial and industrial building value will be down nearly 20 per cent, and institutional and other nonresidential building value will hold about even with last year. This puts the decline of total nonresidential contract value at just under 10 per cent over-all for the year 1975.

The cyclical pattern of construction in 1975 also offers a kind of preview of 1976.

In 1975, the residential cycle bottomed out early in the year, after which the housing market settled into a labored recovery. But while housing was slowly gaining, the nonresidential building cycle (governed by commercial and industrial building) continued to decline. As a consequence, the two cycles pretty much cancelled one another through most of this year.

By the time 1976 comes around, these cycles will have advanced to the point where housing's recovery should have picked up momentum and nonresidential building should be in the early stage of its recovery. This means that through 1976 the two building cycles will both be in expanding phases, *reinforcing* rather than cancelling one another. As this happens, there will be the potential for a much better than average gain in total construction next year.

In our October Outlook we'll be making a first estimate of how much of that potential we can expect to realize in 1976.

—George A. Christie
vice president and chief economist
McGraw-Hill Information Systems Company

Life-cycle costing: an approach to method

(continued from page 53)

estimates can be made, and—even in the worst cases—a partial understanding is better than none at all.

Understanding the full range of costs elements is, of course, only the first step toward life-cycle cost consideration in the design process. Of equal importance is the methodology used to make meaningful comparisons. The basic structure of this methodology has now been developed and tested. In summary, there are five major steps.

The first step is to select decisions for analysis. Selection criteria emerge in response to the questions: Is the decision a significant cost contributor; is there a potentially significant cost differential between alternatives; is there a reasonable probability that the savings would actually occur (many projected savings do not pan out); and can the alternatives be analyzed?

A sample listing of the health facilities decisions which most commonly meet these criteria are the following:

- the facility mission or range of capabilities
- the source and timing of the required capital financing
- building configuration
- the total program
- the functional concept, design, and equipping of such key program elements as nursing units (size, configuration, etc.), surgery (size, combination with obstetrics, etc.), clinical laboratories (automation, combined function), dietary (convenience, ready food conventional), pharmacy (unit dose, conventional), laundry (cooperative, contract, in-house)
- the major systems—HVAC, electrical, exterior skin, and specialized combined options such as interstitial space
- the major subsystems—finishes (carpet vs. tile), material handling (automated vs. manual), lighting, security, fire protection, interior partitions, and waste disposal
- the major management options—construction management, maintenance management, and the most important—staffing requirements.

The second step would be to set up a matrix for each alternative with the ten cost elements listed on the "Y" axis and the years of the facility life cycle listed across the "X" axis. Then the team must make cost estimates for each cost element for each year (eliminating those which are the same in all alternatives).

For example:

Alternative 1			
Year	1	2	3....25
Cost elements			
Capital	10,000	3,000	3,000
Financing	800	800	800
Alteration, etc.			4,000
Total	10,800	3,800	7,800
Alternative 2			
Year	1	2	3....25
Cost elements	9,000	3,000	3,000

Enter other items as above

Care must be taken to put the cost estimates in the right years, for timing is a factor. For example, not all capital costs can be ascribed to the first year in a debt-financed facility: only the equity portion can be. The rest must be reflected in the interest charges noted in the financing cost estimates.

Step three involves adding up the annul totals for each alternative. In some cases teams have merely added these annual totals to make their overall comparisons. Most alternatives, however, cause very different flows in the timing of the costs. A $1,000 cost incurred in the first year is not comparable to the same $1,000 cost under another alternative incurred in year 10. At the very least, the facility owner can earn interest on the money not spent until the tenth year. Therefore, all future costs must be discounted. Everyone uses a different rate but discount rates of 1 to 15 per cent are common.

The discounting is significant. For example, a cost deferred for five years and discounted at 10 per cent is equivalent to only 62 per cent of the same cost in year one.

The fourth step is to add up the discounted annual totals and make a comparison. Remember here that it is the comparative difference not the absolute numbers that are important. This comparison is, however, not necessarily the final step.

The final step is to see if a change in any of the key cost estimates or timing projections would change the comparison. In some cases it will. Then it comes down to a judgment—a better informed one—as to which of the cost comparisons best reflects the cost impact of the alternative.

All of these steps have been amplified in a growing bibliography including a recent study published by DHEW's Facility Engineering and Construction Agency as well as publications of the Air Force, the National Bureau of Standards and others.

Individuals, and organizations—including ours—that have followed these steps are generally sold on it as an essential part of their design process. Moreover, with the large savings that can be achieved for our clients from applying these techniques, the question should clearly be not whether to, but how to, use life-cycle cost analysis. *—Bradford Perkins*

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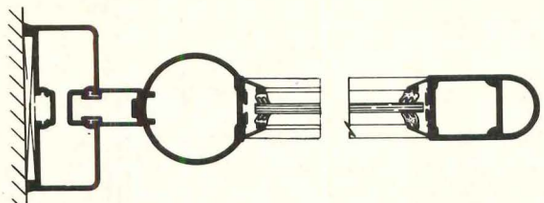

(Left hand page) First Federal Savings and Loan: Lakeland, Fla. Architect: Perry C. Langston. General Contractor: Pritchard-Wetherington, Inc. Glass Contractor: Central Glass Co., Inc., Lakeland, Fla. Curtain Wall: PBS-380.

(Left) One of several entrances as seen from lobby of Lakeland Civic Center, Lakeland, Fla. Architects: Setliff and Regnvall. General Contractor: Biltmore Construction Co. Glass Contractor: Central Glass Co., Inc. 104 Safetyline doors and SGS-580 glassholding system.

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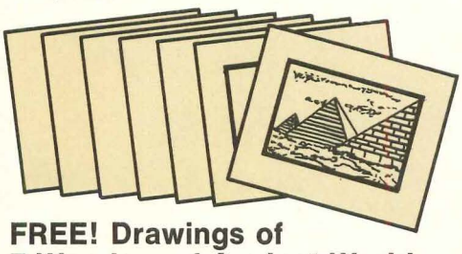

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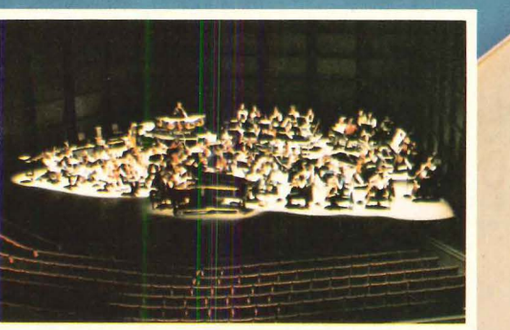

DOVER Stage Lifts

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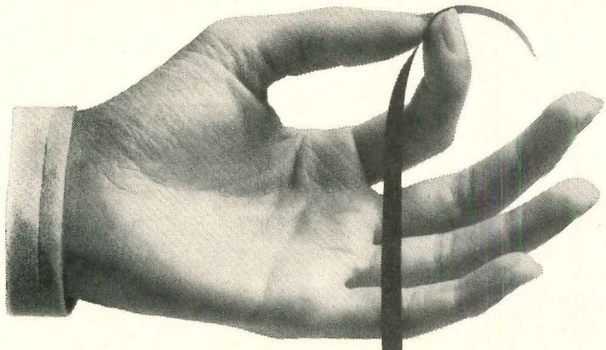
Birmingham-Jefferson Civic Center Theater and Concert Hall, Birmingham, Al.
Architects: Geddes Brecher Qualls Cunningham, Philadelphia, Pa.
Construction Management/Consultant: Turner Construction Company, Cincinnati, Oh.
General Contractor: Brice Building Company, Birmingham.
Theater Consultants: Jean Rosenthal Associates, Inc., Orange, N.J.
Dover Stage Lifts installed by Dover Elevator Company, Birmingham.



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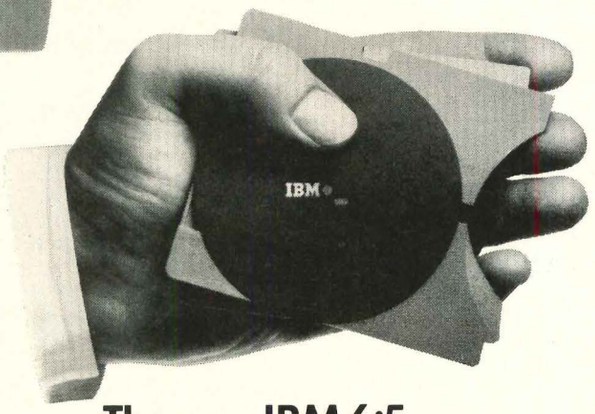

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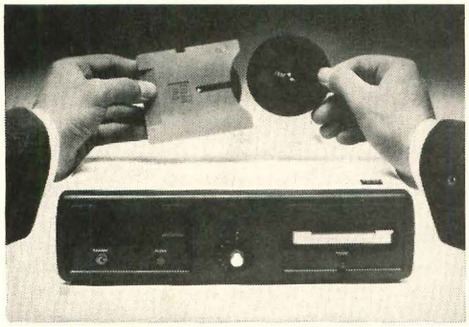

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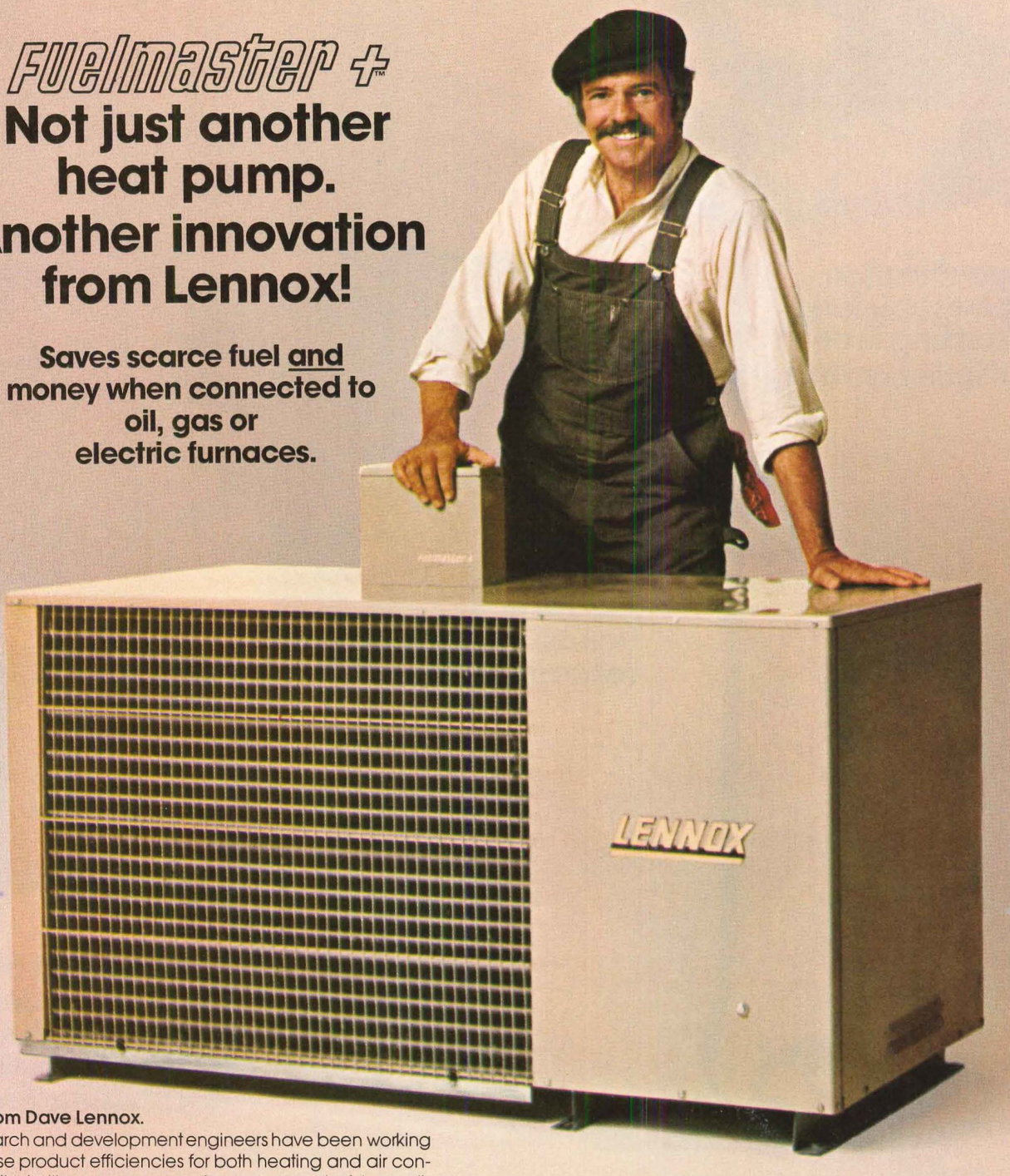

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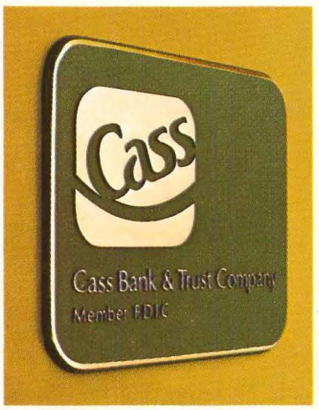

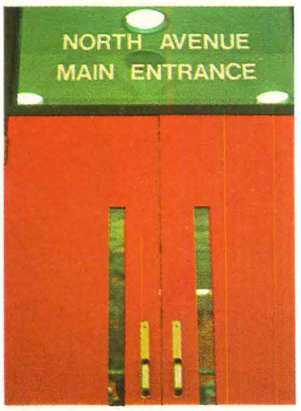

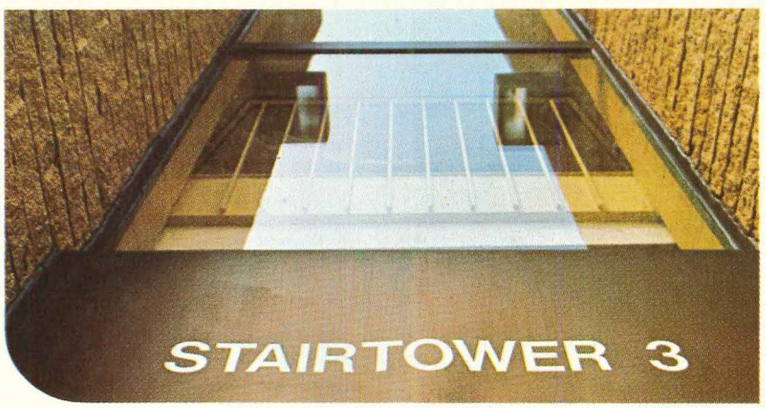

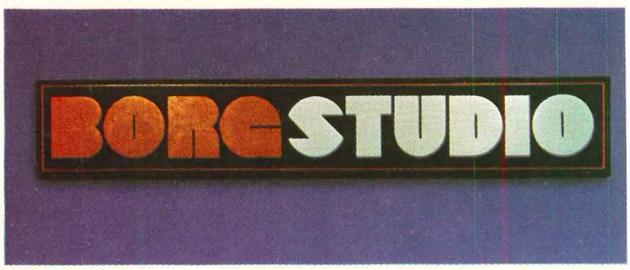

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REHABILITATION AND RE-USE

The dollars being spent for restoration and remodeling for re-use are clearly multiplying. More and more architects are doing this kind of work for an obvious reason—the downturn in new building construction. But there are other important influences as well:

The downturn in new construction was preceded by a new public and client awareness of the economic value of older buildings and their interior spaces. Often remodeling makes more sense in dollar terms than new construction. Further, there is a deepening awareness on the part of the public as well as the client of the esthetic as well as the practical value and potential of older buildings that have aged well, in older neighborhoods which carry their years with grace.

The examples included in this study prove the point. Fifteen years ago, Mount Holyoke College might have considered its 1905 library obsolete and unsightly, torn it down and built a new one, or at the very least added a large wing which would have crowded the handsome college yard. But present-day institutional clients and their architects look at Neo-Gothic structures with more respectful eyes, now that the economic value of older buildings is recognized and their eclecticism is no longer disparaged on esthetic grounds. Careful study by Hugh Stubbins and Associates, Inc. revealed that the library had a lot of under-utilized space. Skillful remodeling has extended its usefulness to the year 2,000, assuring at least a 95-year life for the fine structure.

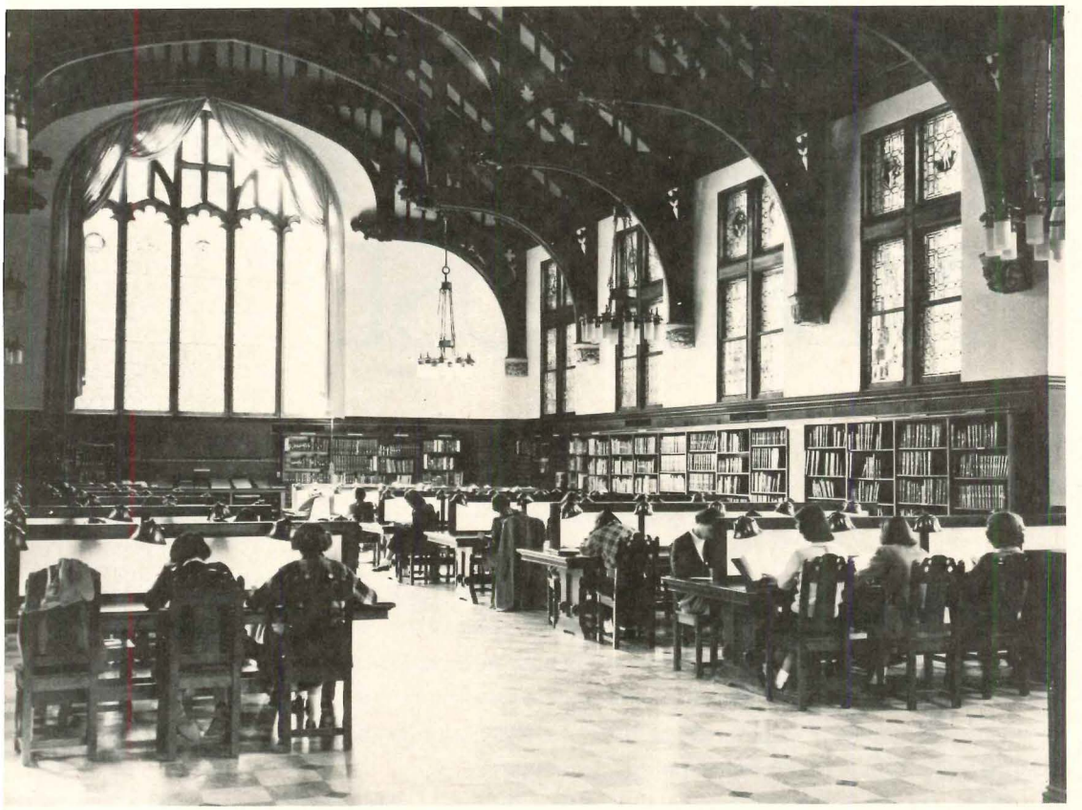
Much high-ceilinged, large-windowed, industrial loft space can be economically and esthetically reused, if the client is willing to keep the existing ceilings and settle for low partitions. The Walker/Grad Inc. design office now occupies loft space in a building once devoted to the printing trades, making the most of the amenities that were already there.

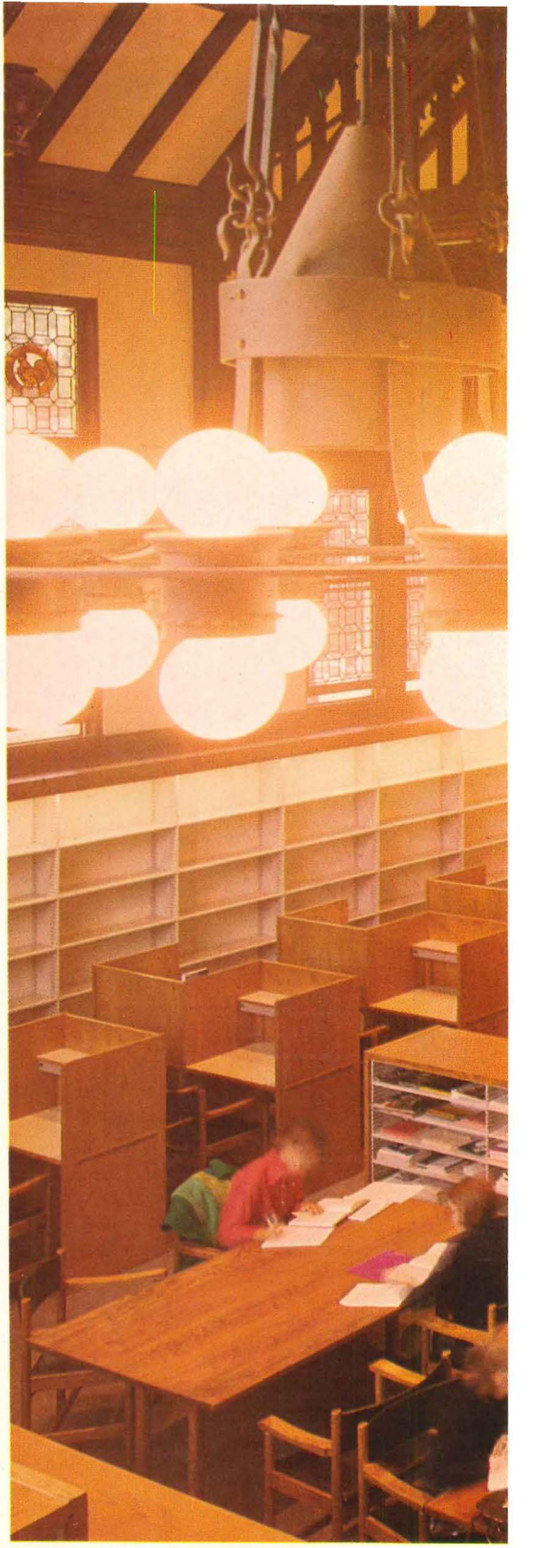
A former toy factory with one of the finest cast iron fronts in New York City has been lovingly and wittily restored by architect Hanford Yang who lives and works on two of its loft floors.

Basement apartments are not generally considered ideal, but one that has a large, high space, good windows, orientation and light, has potential. Architect Paul Rudolph has recently made the most of a New York City apartment and office for a psychotherapist and art collector by adding two carefully placed mezzanines, some well detailed shelves and cabinets and subtle lighting everywhere.

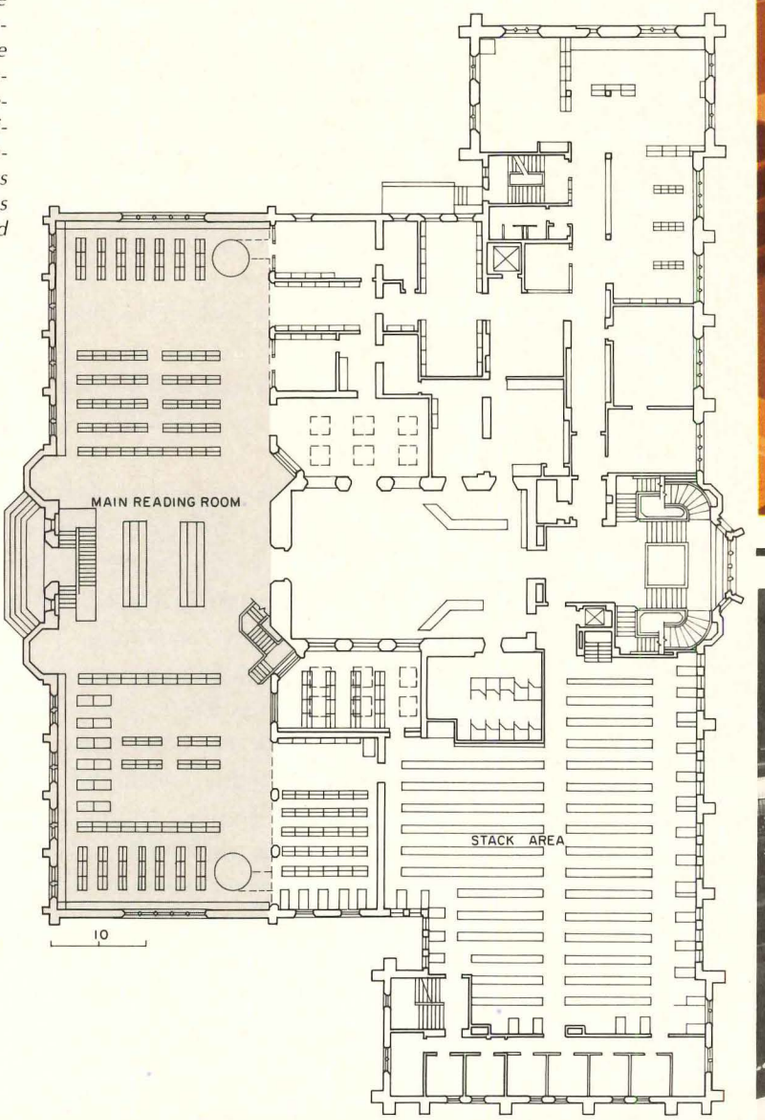
Described in detail is the master plan by Edward Larrabee Barnes for the 250-acre New York Botanical Garden which includes the restoration for re-use of its Conservatory, an official New York City landmark, the construction of a new greenhouse to be called the Plants and Man Building, and a general redesign of the vehicular and pedestrian circulation network within the grounds, as well as the grounds themselves. The survival of the 84-year-old Garden as a splendid work of architecture and landscape art is a sorry tale which includes the mutilation of the beautiful Conservatory by insensitive remodeling in 1938 and 1953, and the loss of acres of the Garden itself to Robert Moses' belt parkways. Today the Garden can no longer be encroached upon without arousing strong public opposition. At present, workmen are restoring the Conservatory to its original beauty as they adapt it for new community-oriented use. It would be hard to find a more positive indication of how far we have come.

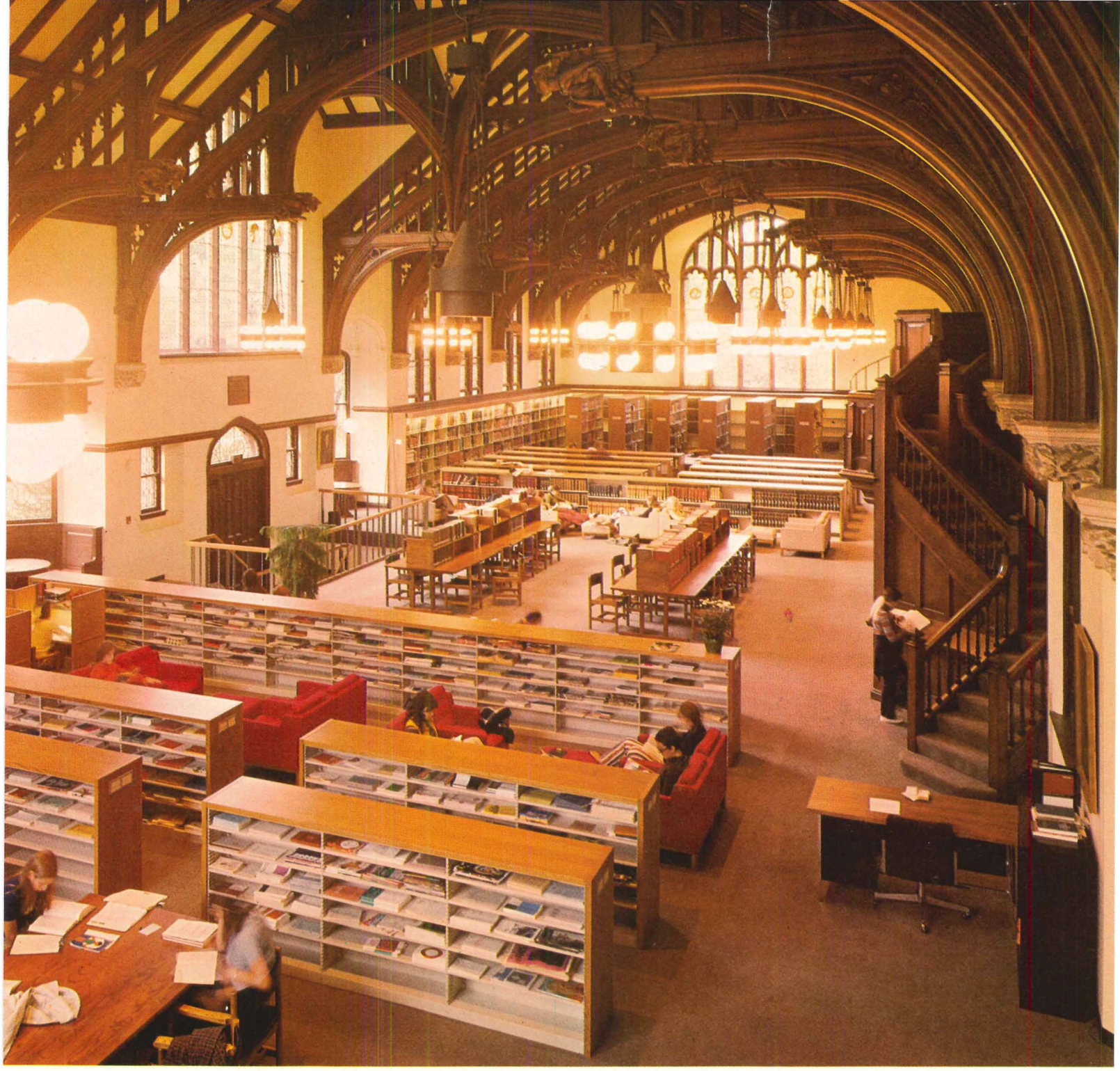
—Mildred F. Schmertz





The original chandeliers (above) have been reworked (as shown at right), and additional high-intensity concealed source lighting was added, vastly improving study conditions in the main reading room. The number of seating spaces was reduced in this room and additional shelving was installed instead. Throughout the library as a whole, however, there has been an increase in formal and informal study facilities.





EXTENDING THE LIFE OF A TURN-OF-THE-CENTURY LIBRARY

From the exterior it is difficult to discern any change to this highly visible library on Mt. Holyoke's old campus, but its interior has been significantly altered to respond to today's needs. Its usefulness has been extended to the year 2,000 and possibly beyond, all at a cost quite lower than would have been required by a new building or a major addition.

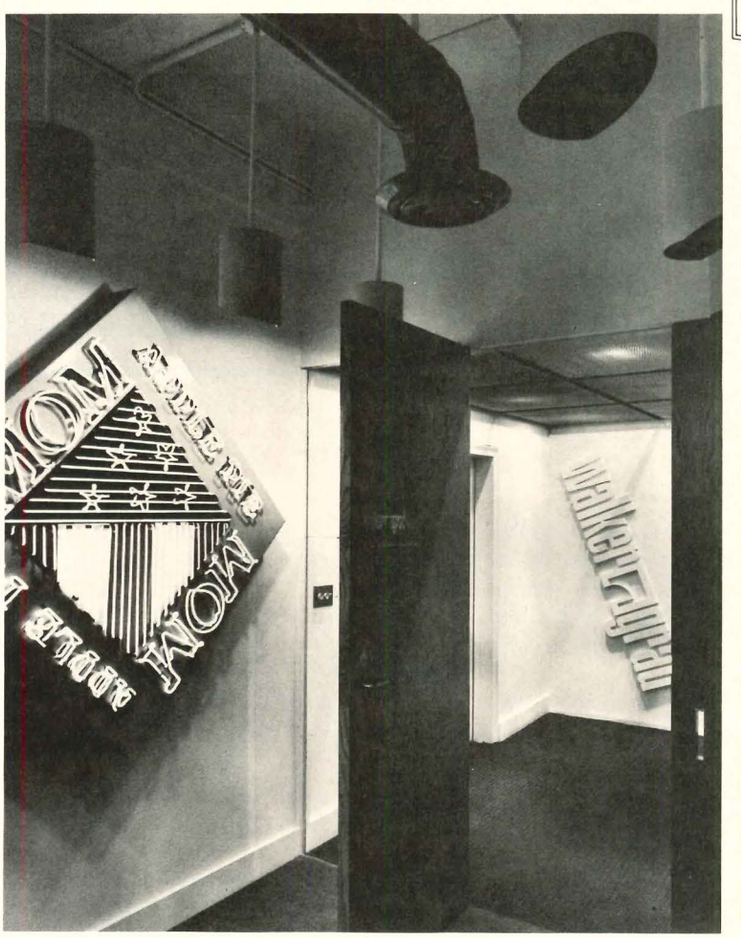
The original building was constructed in 1905, using the bricks saved from a previous library structure that had stood on the site from 1870 to 1904. The first renovation was in 1936 when a new tower, stack area and office and classroom wing were added.

The program for the most recent remodeling called for an increase in book capacity from 300,000 to 500,000 volumes and provisions for an increase in readers from 400 to 600. Extensive visual aid facilities were to be added, plus more classrooms, support facilities and study/offices.

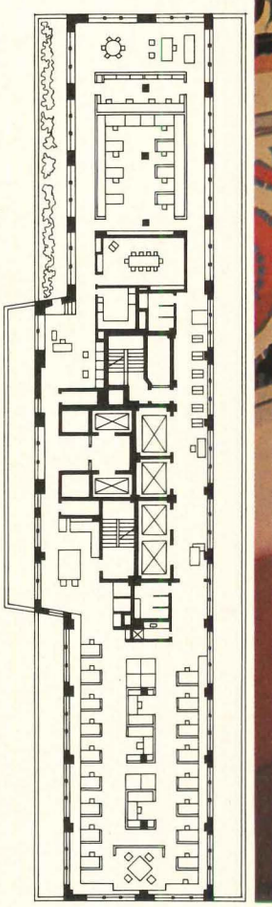
After analyzing the program and surveying the existing building, the architects decided that a major addition was not necessary and that a good workable solution could be found within the perimeter of the existing building. Two lightwells were enclosed in the remodeling and now contain dramatically skylit spaces for the card catalog and the reserve collection. The original central bookstack core was converted into the entrance foyer including the control desk and the periodical reading area.

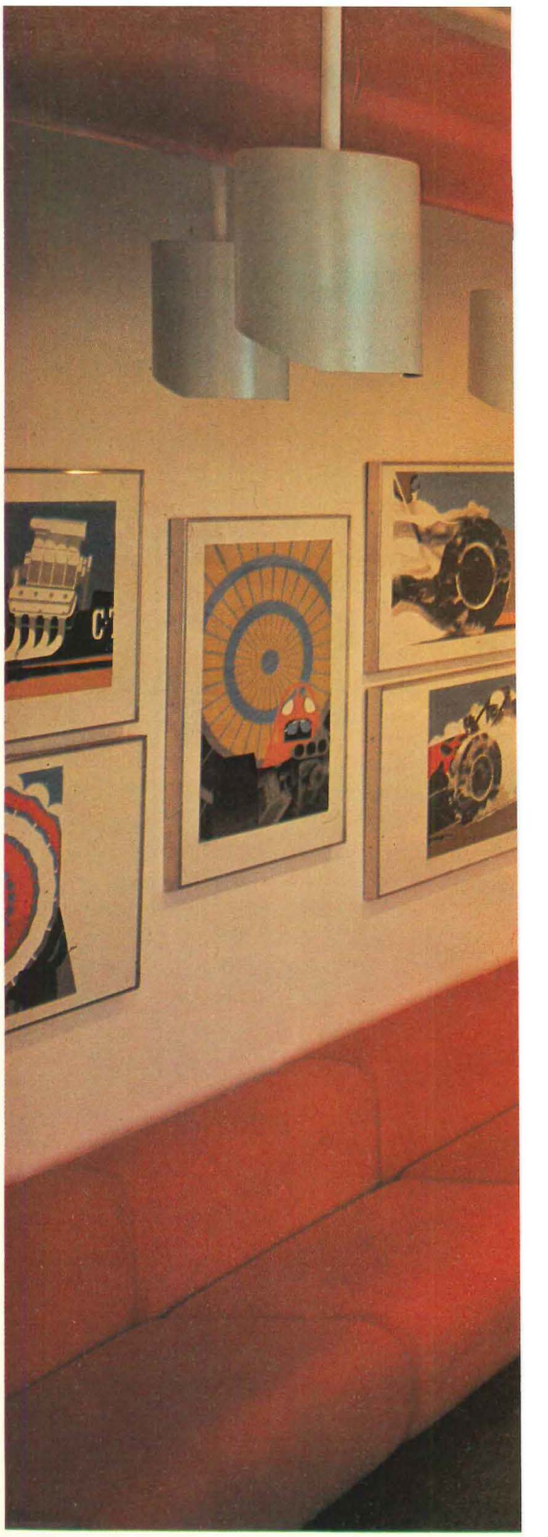
The original ornate Collegiate Gothic main reading room (above) was enhanced by the removal of the heavy old furniture and glaring desk lamps that can be seen in the old photograph (opposite page, top). The general illumination has been increased.

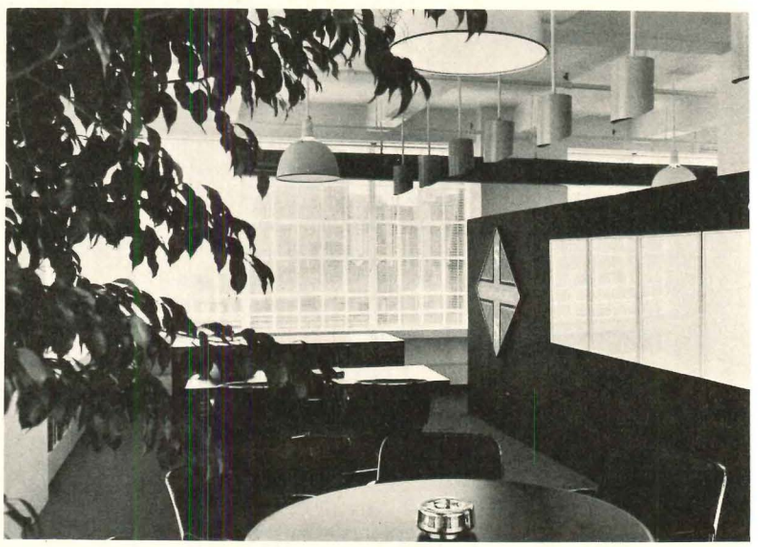
WILLISTON LIBRARY RENOVATION, Mount Holyoke College, South Hadley, Massachusetts. Architects: *Hugh Stubbins and Associates, Inc.—project director: Norman Patterson.* Engineers: *LeMessurier Associates, Inc.* (structural); *Greenleaf Associates* (mechanical/electrical). Contractor: *Fontaine Bros.*



Alexandre George photos







MAKING THE MOST OF HIGH-CEILINGED LOFT SPACE

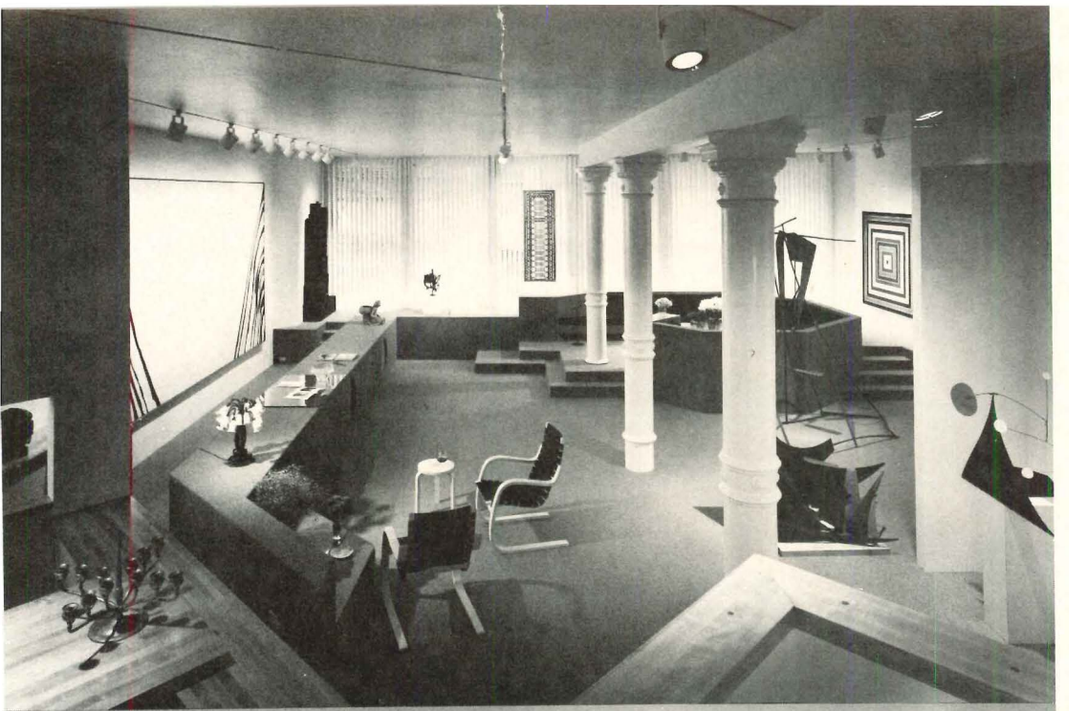
These offices occupy what is basically a loft space located in what was once called The Allied Arts Building, built in 1928 and modestly aspiring to the Art Deco style. This building, according to architect Kenneth Walker, represents a significant type of building stock in New York City that is very much under-utilized. "Part of the reason," he believes, " is that tenants look at this kind of building and think in terms of dropped ceilings and partitioned offices. To have accomplished this here would have been very expensive. But we made the most of what already existed and turned this building to our advantage."

In remodeling his loft, Walker capitalized on the inherent architectural characteristics of an industrial space—its high ceilings and large scale industrially glazed windows. These surround the perimeter on all four sides and let in an unusual amount of natural light, while providing spectacular views of New York—the river, the U.N. and the cityscape.

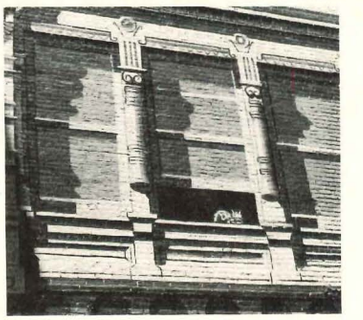
The architects kept strictly to a vocabulary of industrial materials and components, with exposed conduits and ducts, factory-type lighting fixtures and a stark color scheme of black, red, white and grey. This severity offsets an unusually rich, varied and colorful collection of art which includes architectural sculpture, ornament and other relics from fine old New York buildings leveled by the wrecking ball.

As the plan indicates, the work spaces have been organized on the principles of open planning. This allows for a free flow of work, communication, interaction and the rapid regrouping of work teams as required. There are no private offices. Areas are divided by partitions, varying in height from 2 ft-6 in. to 7 ft. Grouped in the center core adjacent to the elevators are the only enclosed spaces—the conference room, the kitchen and the bathrooms.

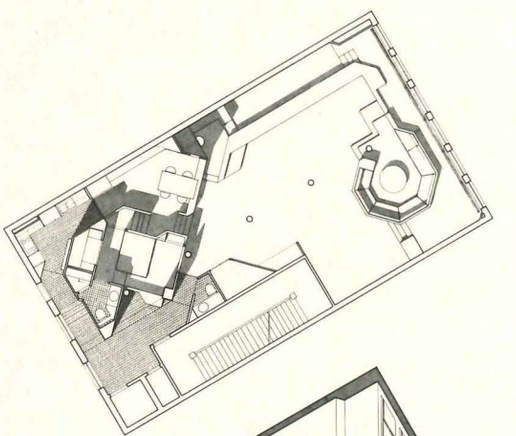
WALKER/GRAD INC. OFFICES, New York, N.Y. Architects: *Walker/Grad, Inc.—project designer: Lauder Bowden.* General contractor: *Jamco Construction Company.*

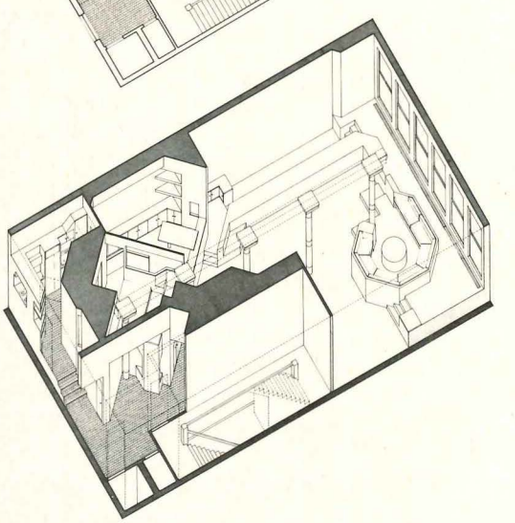


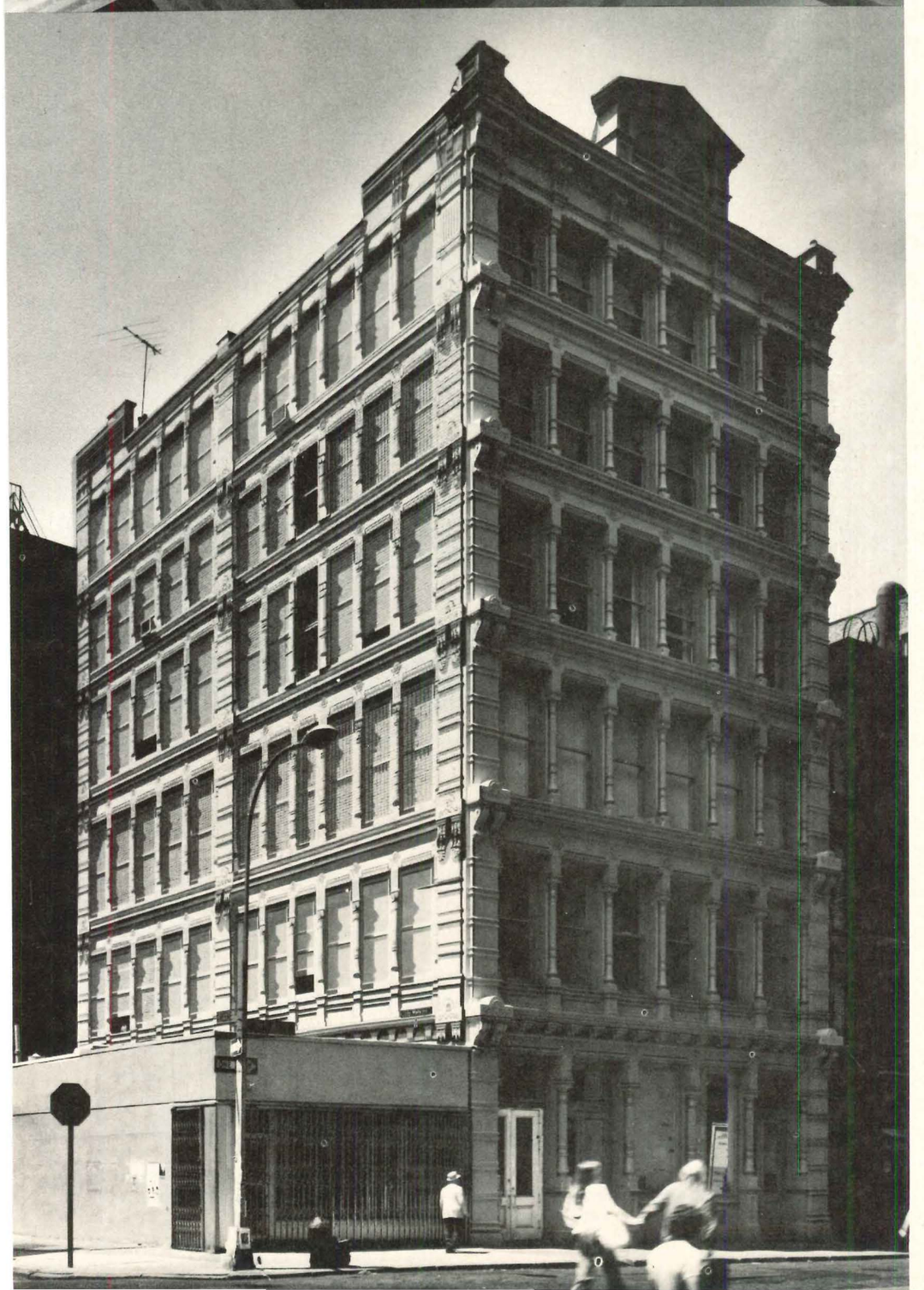
Laura Rosen

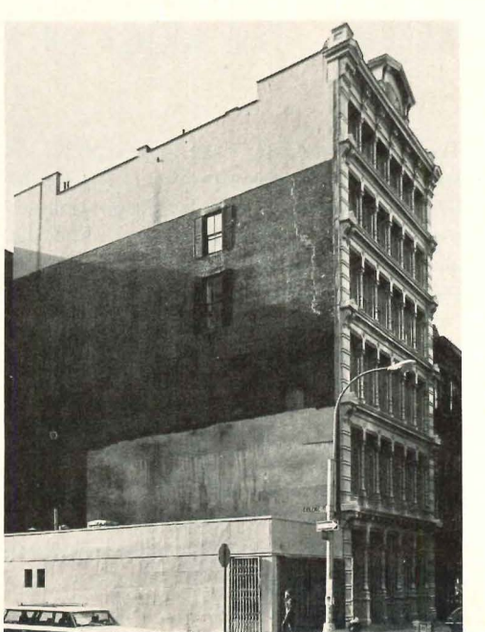


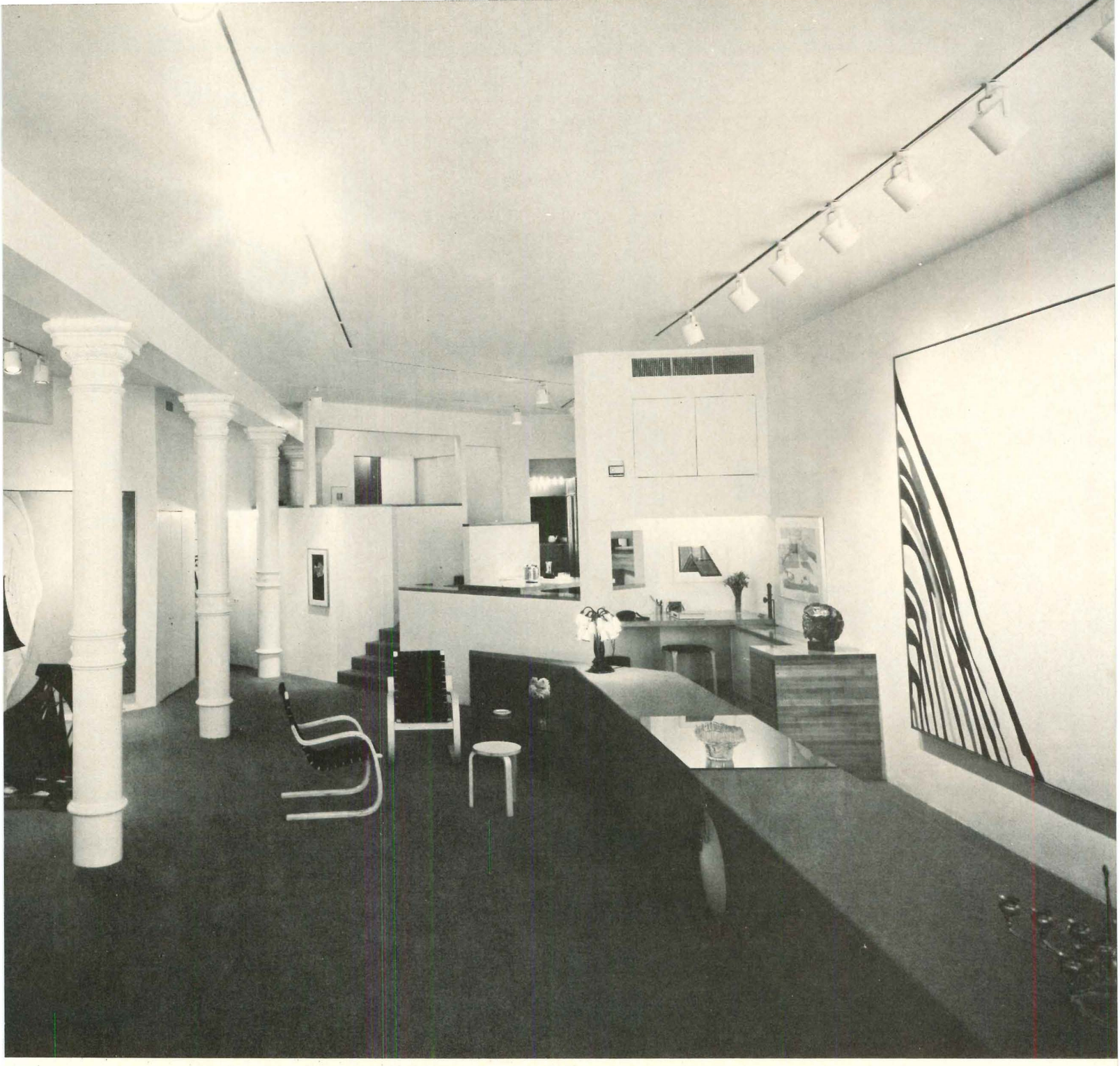
The dummy window (above) has a painted cat on its sill. Yang's apartment has been designed primarily for entertaining and the contemplation of art. Books, records and miscellany are concealed in extensive cabinet work, and surfaces are kept clear. His office (not shown) is on a lower floor.











RESTORING A LANDMARK LOFT BUILDING WITH A CAST IRON FRONT

New York City's Soho district is the place to go to admire its cast iron fronts and to look at paintings in its burgeoning art galleries. On their way down Prince Street, however, some art lovers may miss a remarkable *trompe-l'oeil*—a mural of a cast iron front at right angles to a genuine cast iron front. This witty deception was instigated by architect Hanford Yang (who owns the landmark building), the New York City Landmarks Commission, City Walls Inc. (which has promoted other murals on the exterior walls of old buildings), and the National Endowment for the Arts (which provided the money). The mural was designed by Richard Haas, a photorealist painter for whom cast iron buildings are a frequent subject. He made a carefully dimensioned drawing which was scaled up, transferred to the wall and filled in by professional sign painters.

The real cast iron front is one of the loveliest in New York. It is one of the few that is not criss-crossed by a fire escape, so the proportions can be clearly seen. As the photographs (opposite page) indicate, the floor heights decrease by 18 inches each as they go up, an optical device to make the building look taller. Architect Yang bought the building for its looks and set about transforming it into an office and home for himself.

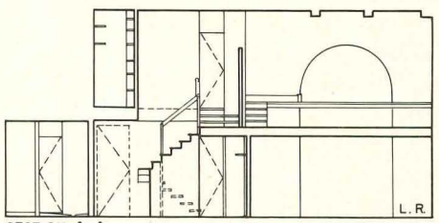
It had once been a toy factory with tin ceilings, and was in very bad repair when Yang acquired it. After making basic repairs and installing a new mechanical system, Yang began to experiment with the interior spaces. His workmen were local artists who were willing to change the heights, sizes and positions of the various design elements, as Yang tested them. Much attention was paid to the placement of his art objects. As can be seen in the photograph above, all the cast iron columns are articulated. The partitions have been cut and turned to accommodate them. Walls are white, the carpets are grey and the natural wood surfaces have a high-gloss finish. The only color is provided by the art.

REMODELING A SMALL NEW YORK CITY APARTMENT

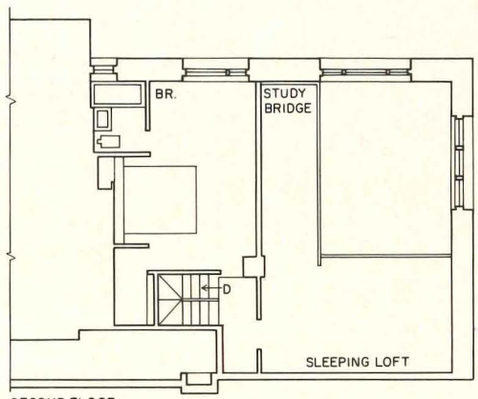
This small apartment is one of the best interiors Paul Rudolph has yet done. His client is psychotherapist Joanna T. Steichen, whose distinguished art collection includes photographs by her late husband Edward Steichen. (Rudolph was the architect for the famous "The Family of Man" photographic exhibition created by Edward Steichen for the Museum of Modern Art in 1955.) Rudolph insists that his own contribution to the design of Mrs. Steichen's apartment was modest: "She is a friend, the remodeling was down the street from where I live. I just gave her practical advice, produced a few working drawings and dropped in from time to time to see how things were coming along." In other words, he helped her create a setting for herself, her work and her collection, but did not do it for her.

They started with a basement apartment with huge windows facing south and east. It has an 18 ft-6 in. high major space and a two-story area with heights of 8 ft-6 in. per story. Two new levels were added to the high space—a mezzanine which doubles as a sleeping loft for guests or a sitting area (opposite page, middle), and, a few steps above it, a bridge which serves as Mrs. Steichen's study and work area (opposite page, bottom left). The new levels are supported by light steel members bearing on existing masonry. Below the sleeping loft is a low-ceilinged, intimate seating alcove (opposite page, top and bottom right), ideal for parties or group therapy. The dining area is located under the work study bridge and the high-ceilinged space which remains is part of the living area. Wall finishes, lighting, cabinet work and shelving have been carefully detailed to enhance the art collection. The cove lighting above the seating area consists of 7-watt bulbs 1 ft on centers.

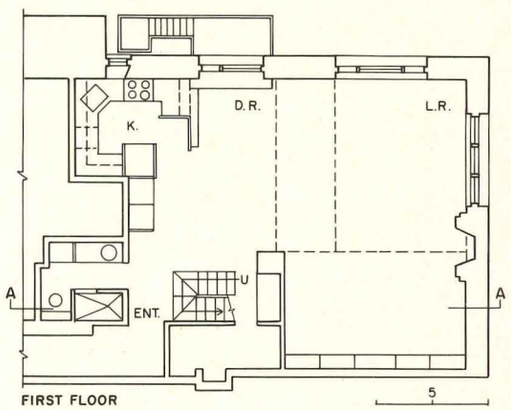
APARTMENT RENOVATION, New York, New York. Owner: *Joanna T. Steichen.* Architect: *Paul Rudolph—project architect: Peter Mullen.* General contractor: *The Ormar Building Corporation.*



SECTION A-A

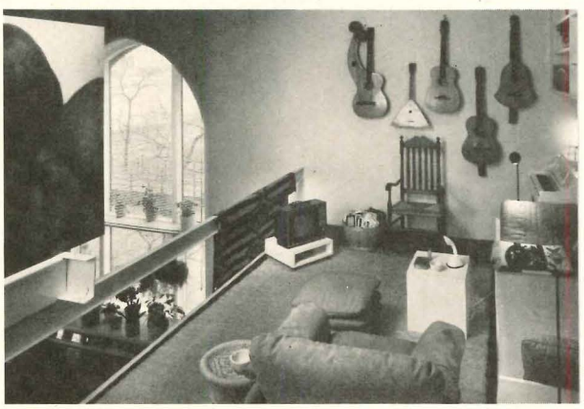


SECOND FLOOR

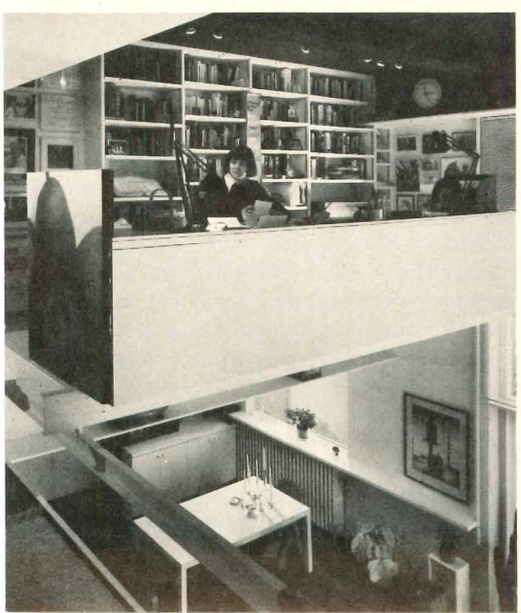


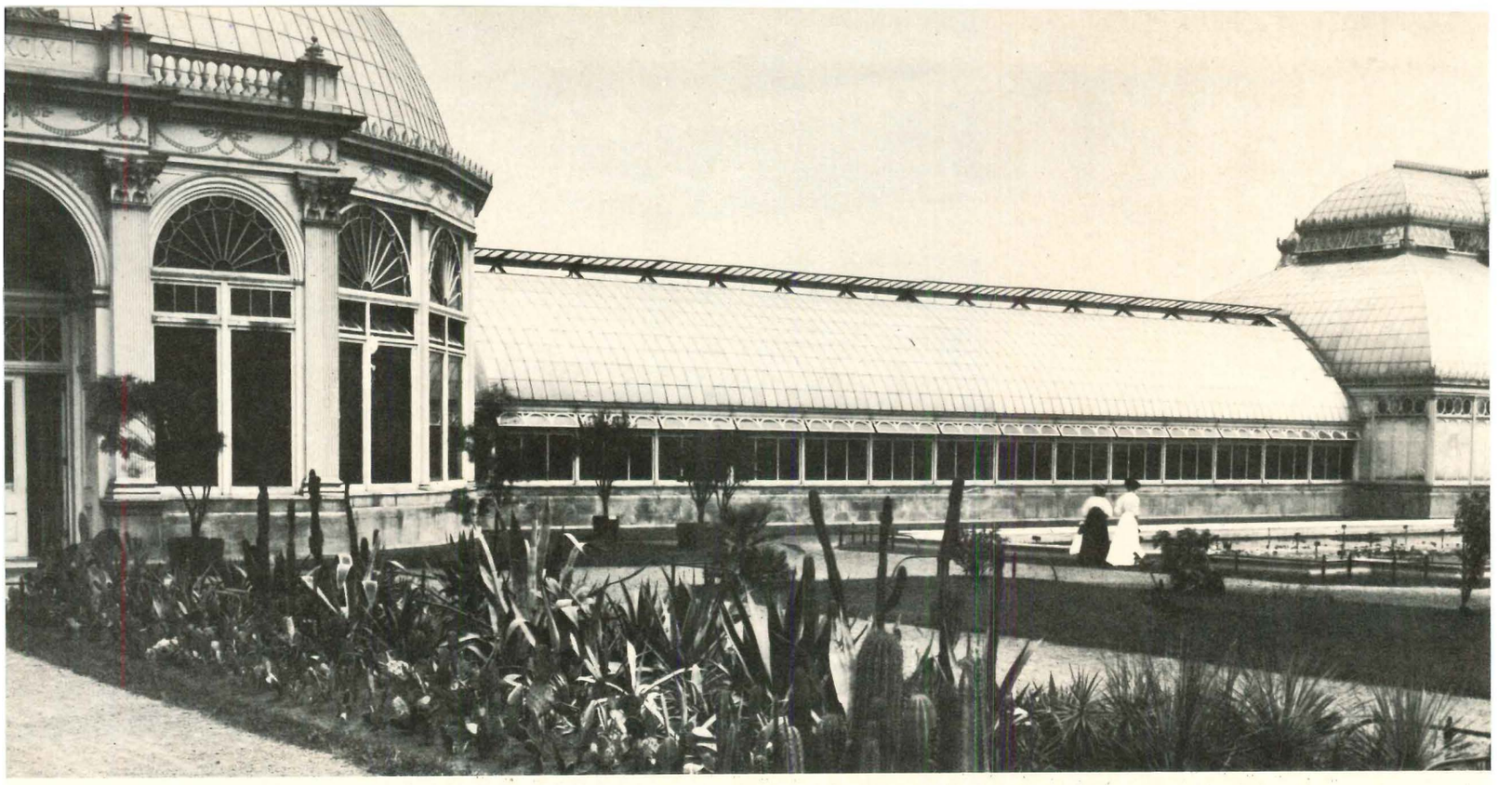
FIRST FLOOR

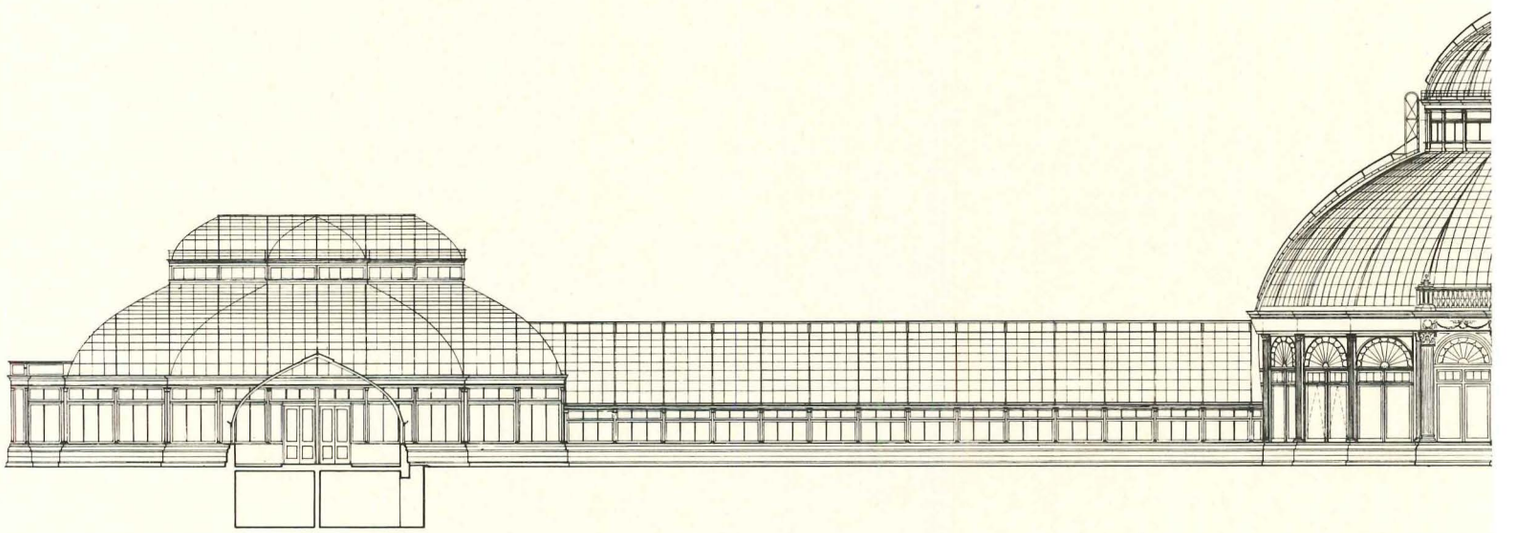
Mrs. Steichen's collection consists in part of small objects, for which Rudolph has designed appropriately scaled shelving. A few large objects occupy the high-ceilinged space. All the new walls are metal stud and drywall. To conceal the difference between the old walls and the new walls, a spray-on textured acoustic surface was applied to all the walls and painted with a flat oil base paint. The ceilings are white and so are most walls. Where Edward Steichen's photographs are assembled, however, a dark brown is quite effectively used as a background.



Cervin Robinson photos







RE-CYCLING A GREAT CONSERVATORY AND ITS BOTANICAL GARDEN

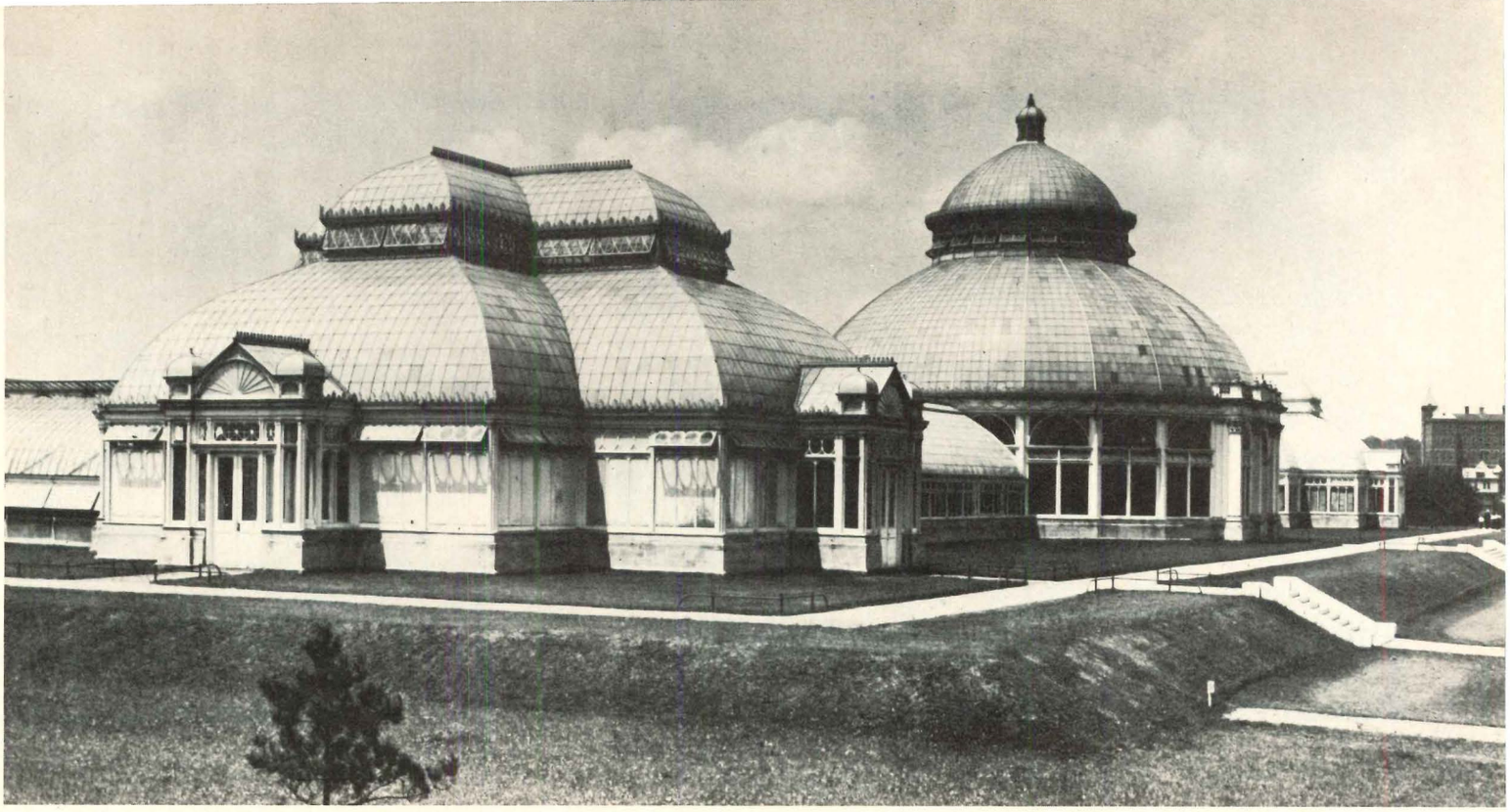
The Conservatory of the New York Botanical Garden in the Bronx is a remarkable building begun in 1899. It was inspired by the Great Palm House at the Royal Botanic Gardens at Kew, England built between 1845 and 1847 by Decimus Burton in the Italian Renaissance style. Other precedents for its design were Sir Joseph Paxton's Crystal Palace built for the 1851 Great Exhibition in London. A building designed for the New York Exhibition of 1853 with a dome at its crossing might also have been a precedent. The Bronx Conservatory is believed to have been designed by William R. Cobb, architect for Lord & Burnham, then and now prominent manufacturers of greenhouses.

The photographs on this and the opposite page show the building as it appeared shortly after 1902. Although severely mutilated by insensitive restoration in 1938 and 1953 (see photographs on the next pages), it still possesses its great double dome and cupola, its cruciform corner pavilions and handsome apses.

The structure is now being extensively restored as part of an over-all scheme for the physical improvement of the entire garden. The work is being done under the direction of architect Edward Larrabee Barnes and his associate, Alistair Bevington; and landscape architect Dan Kiley and his partner Peter Ker Walker who are restudying the garden.

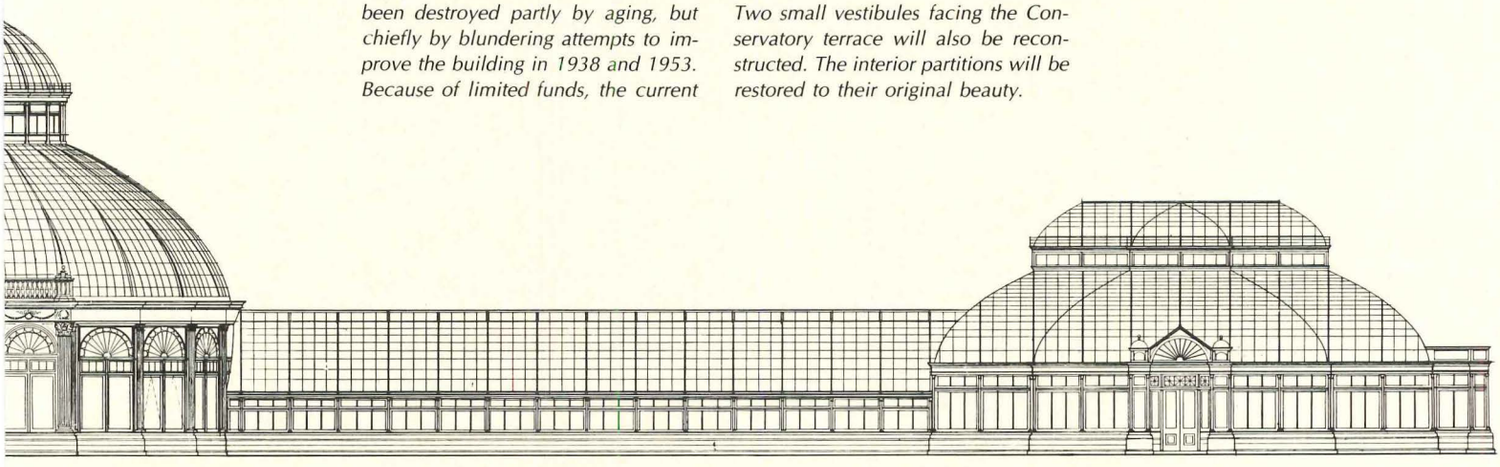
The drawing above shows the proposed restoration of the ornamentation on the central domed pavilion. The wings and cruciform pavilions will remain unadorned (they lost their original filigree in the 1938 reconstruction and repair performed by the Department of Parks, and the cost of replacement is prohibitive). Two wooden vestibules which face the garden will be restored to their 1902 appearance.

According to Siglinde Stern, project architect for the Conservatory reconstruction, the work of restoration has been exceedingly difficult because the original Lord & Burnham drawings cannot be found. They were believed



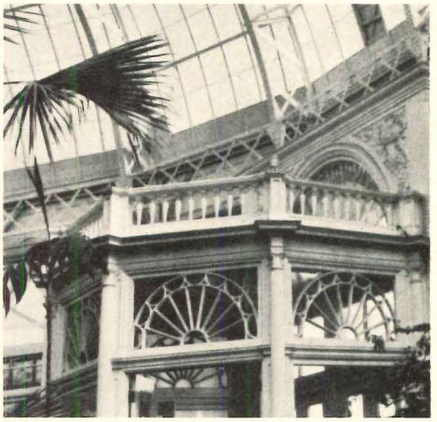
Photos courtesy of The New York Botanical Garden

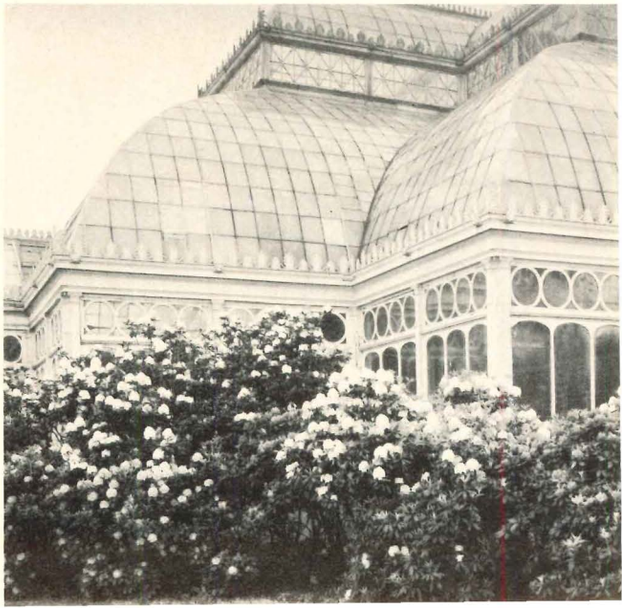
The Conservatory, begun in 1899, was once richly ornamented, as the photos above and below, taken in 1902, indicate. As will be seen in the photographs on the next two pages, virtually all of this ornamentation has been destroyed partly by aging, but chiefly by blundering attempts to improve the building in 1938 and 1953. Because of limited funds, the current restoration will include only repairs to the building's structural and mechanical system, replacement of broken glass and the reconstruction of the ornamentation of the central domed pavilion as shown in the drawing below. Two small vestibules facing the Conservatory terrace will also be reconstructed. The interior partitions will be restored to their original beauty.

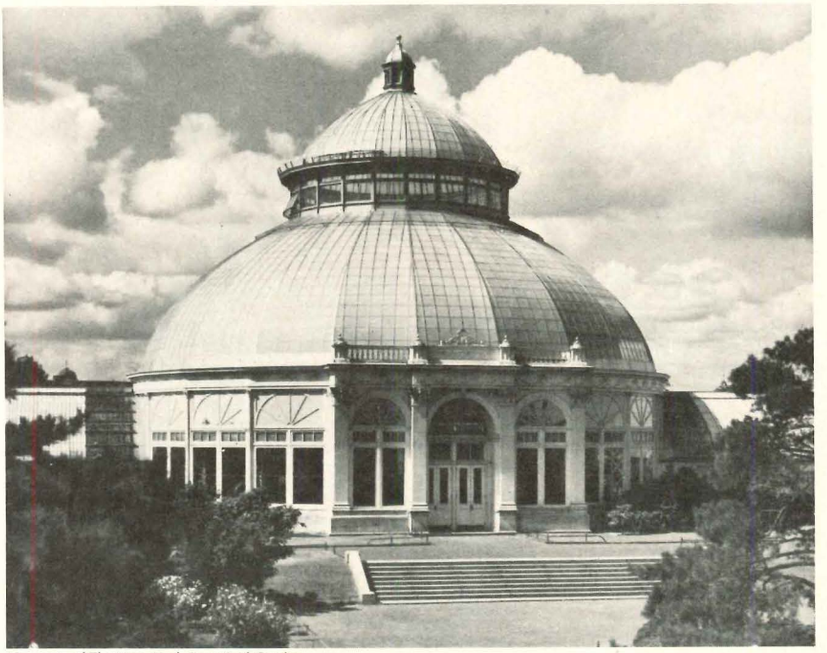


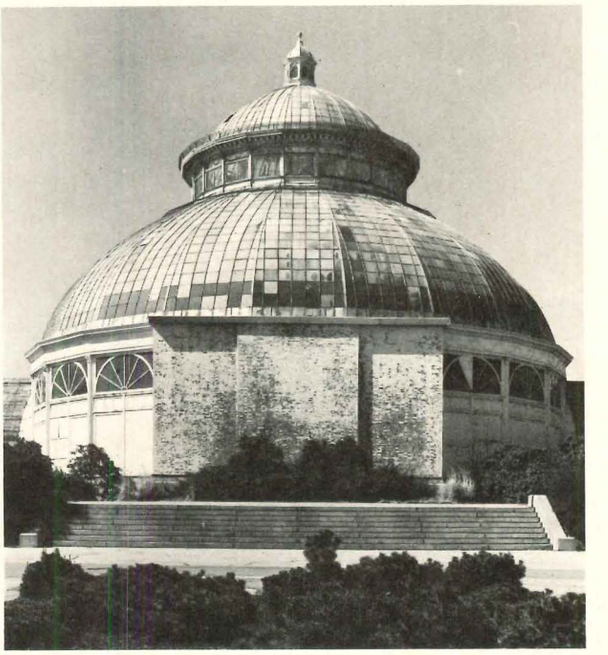
to have been lost in a Parks Department cleanup in 1933. She has resorted to measured drawings which were made in 1938 in preparation for that remodeling and has used old photographs like the ones on these pages for detail.

First priority has been given to arresting the rapidly progressing deterioration of the building. Defective and corroded members of the steel superstructure will be replaced. The glass skin and all its parts, such as the rafter bars and glazing bars, will be replaced or repaired as required. The defective roof and sidewall ventilators will be replaced or repaired. The existing steam heating system will

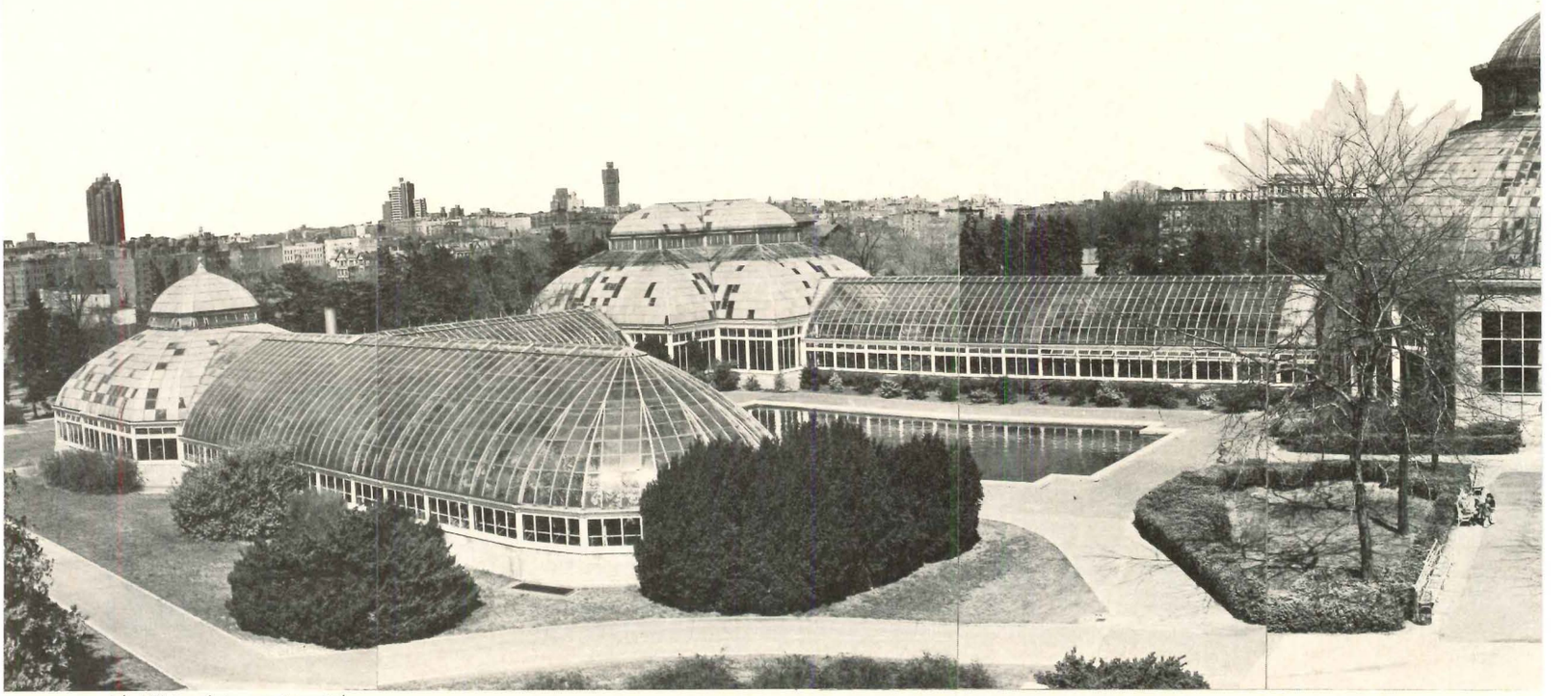








Courtesy of The New York Botanical Garden



John V.Y. Lee photos except as noted

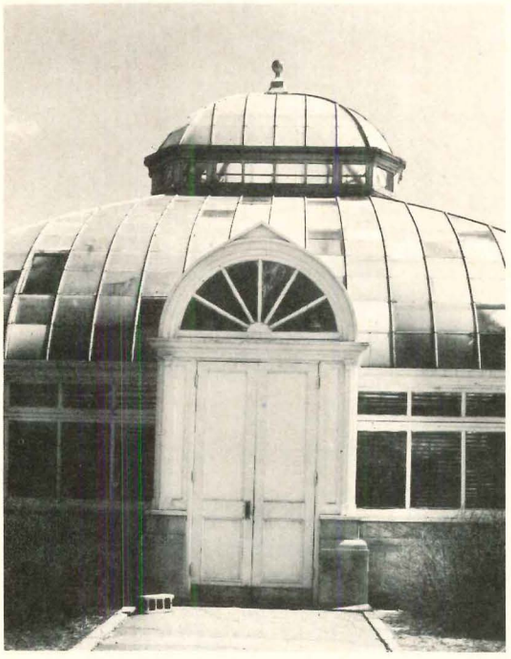
be replaced, the entire building rewired and new water supply piping and new floor drains installed.

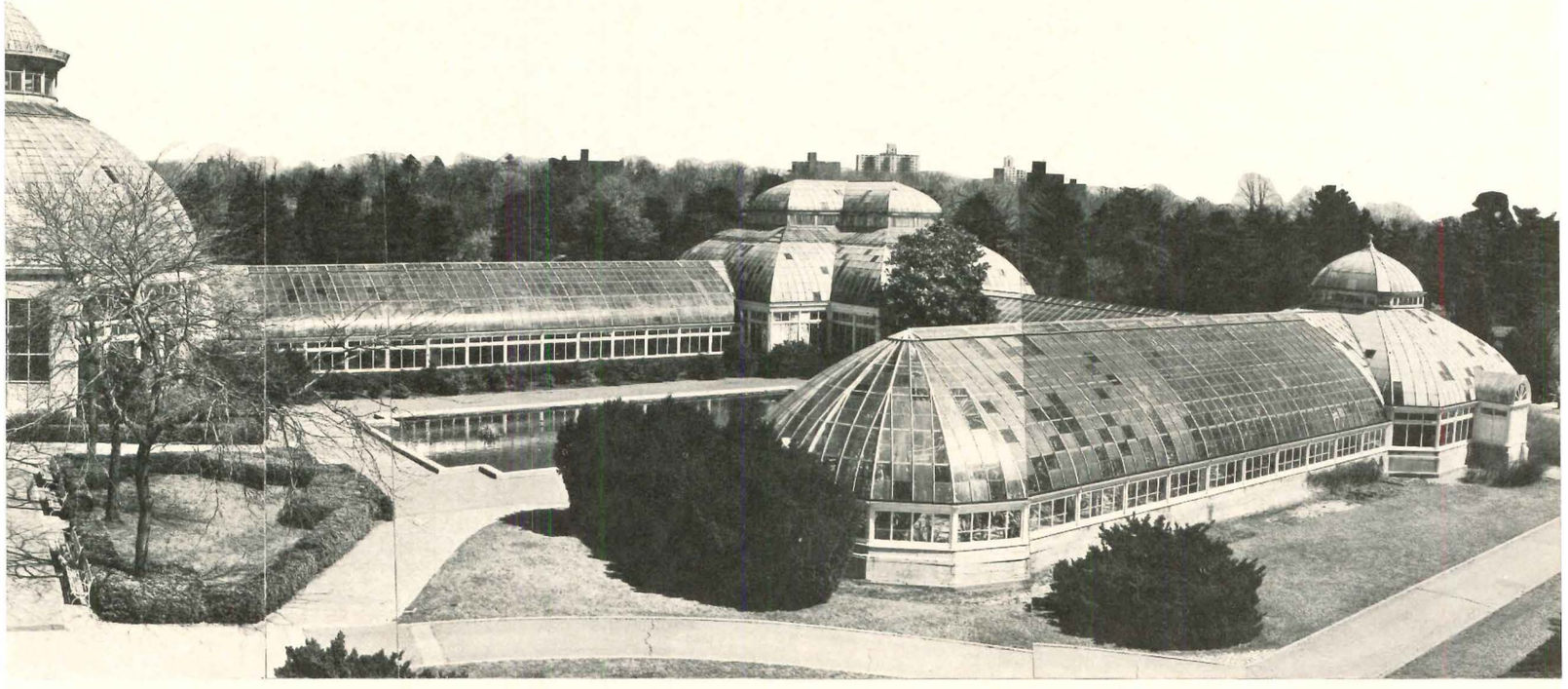
The photographs above show the extent to which the building has been damaged by inept remodeling as well as decay and neglect. The south entrance to the central domed pavilion (directly above) which was perpetrated by the Parks Department in 1953 will be removed, as will the brick wall and waterfall (also the work of the fifties) at what was once the north entrance (top right). The original cast iron facades and interior vestibules will be reconstructed at these locations. The wood vestibules were altered in 1938 (opposite page, top) and the two of these which face the Conservatory terrace will be restored to their original rather exotic appearance. (They never went very well with the Italian Renaissance facades of the central pavilion as can be seen in the photo overleaf, but their restoration will summon forth the genial spirit of eclecticism which graced so many turn-of-the-century buildings designed for pleasure.)

Badly damaged or missing are the wood and glass partitions which separate the various elements of the Conservatory. These will also be reconstructed. The arched transoms in the central domed pavilion which were crudely simplified in the 1938 restoration (top left) will be rebuilt with the delicate ornamentation of the original design.

As shocking as the mutilating additions is the present planting scheme for the Conservatory courtyard (above) and the terrace at the rear. These elements are being restudied as part of the over-all master plan for the horticultural design and development of the grounds. The Conservatory courtyard will become a site primarily devoted to the interests of city gardeners who garden in pots, tubs, boxes and other containers. Included will be a wide variety of trees, shrubs and flowering plants, topiary and other trained specimens, as well as vegetable gardens to educate, stimulate

The central domed pavilion was left relatively intact (opposite page, top left) during the 1938 restoration, except for the arched transoms which were crudely simplified, but the vestibules were remodeled badly (right). This restoration, however, saved the building, for important structural and mechanical repairs were made at the time. The 1958 remodeling (opposite page, top right and below) was a total disaster. The terrace entrance to the conservatory was walled up and the wall became a back drop for an ill-conceived fountain. A "modernistic" entrance vestibule was applied to the courtyard side and clumps of bushes were planted to conceal the building's curves.



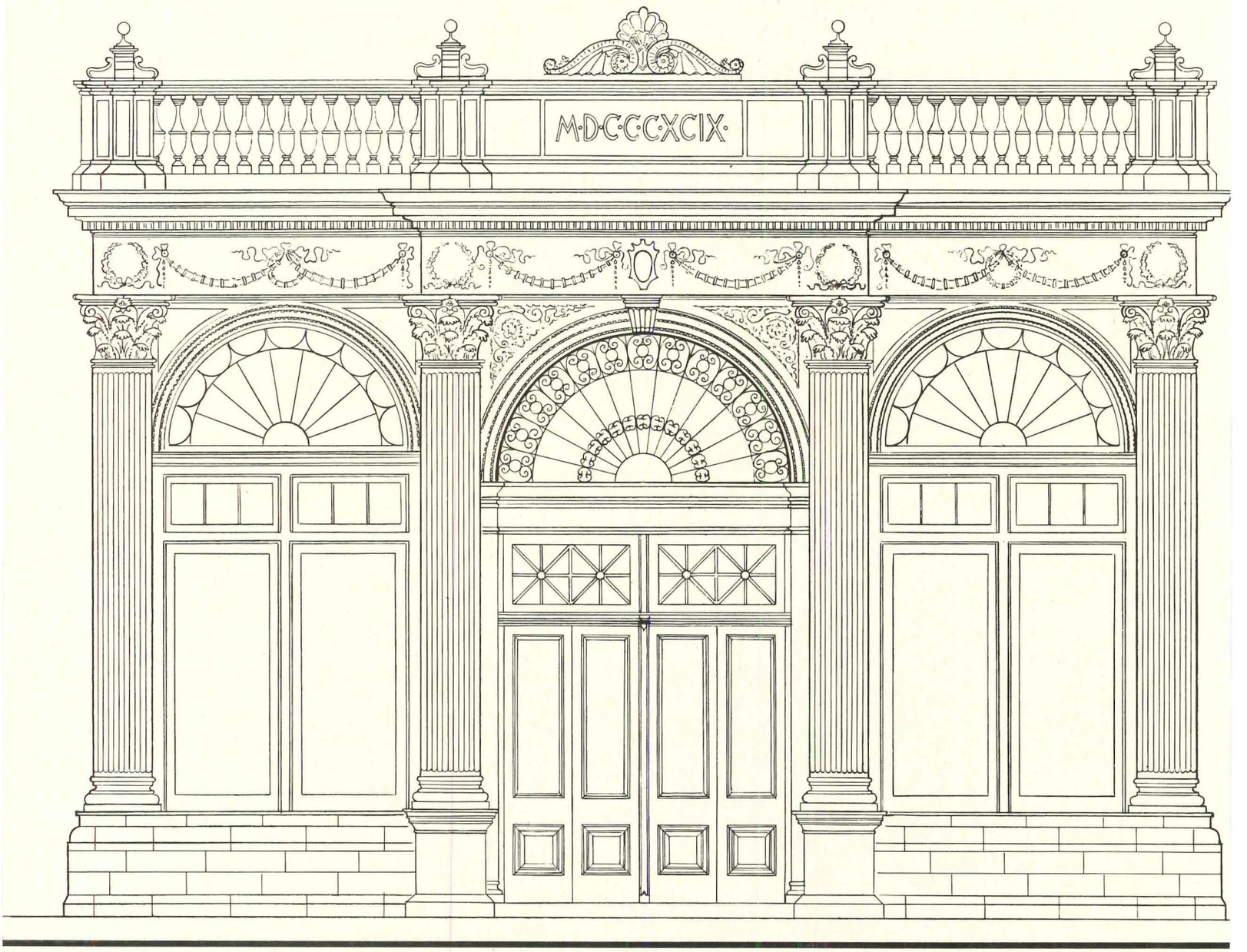


and encourage everyone interested in city garden methods and techniques.

The restoration also reflects the fact that the New York Botanical Garden is not exclusively an institution for botanical research, but, as Garden president Dr. Howard S. Irvin points out "is a great public amenity and a recreational resource for New Yorkers and visitors from all over the world." Until now the Conservatory building has been a greenhouse for the plants which Dr. Irwin calls "the tough survivors"—those which were able to stand the overheating in its not-too-sensitive environment. The new improvements in climate control will permit a far greater variety of plants and greater flexibility in topical and seasonal exhibits. In its efforts to reach out to the people of the Bronx community whose brick and concrete neighborhoods offer little by way of trees and grass and where free amenities are limited, the Botanical Garden sees the Conservatory as a stage for special community-oriented events. At the same time, the restoration will provide sufficient flexibility to serve the Garden's public audience which is extremely varied in its interests and knowledge.

While the restoration of the Conservatory has first priority, a new exhibition structure called the Plants and Man Building will eventually be constructed (page 82). Architect Barnes explains that as the Conservatory is oriented to horticulture, the Plants and Man Building will be directed to botany, ecology and other biological relationships between plants and man. According to the program developed by the Garden, it will include "special examples of plant relationships such as mimicry, plants that grow on other plants, parasitism, insectivorous plants, plant adaptations, and interrelationships between certain plants and animals including, of course, mankind."

As described by Barnes, the Plants and Man Building will be a totally new kind of glass structure. It is composed of hexagonal modules, roughly 45 ft across, that may be

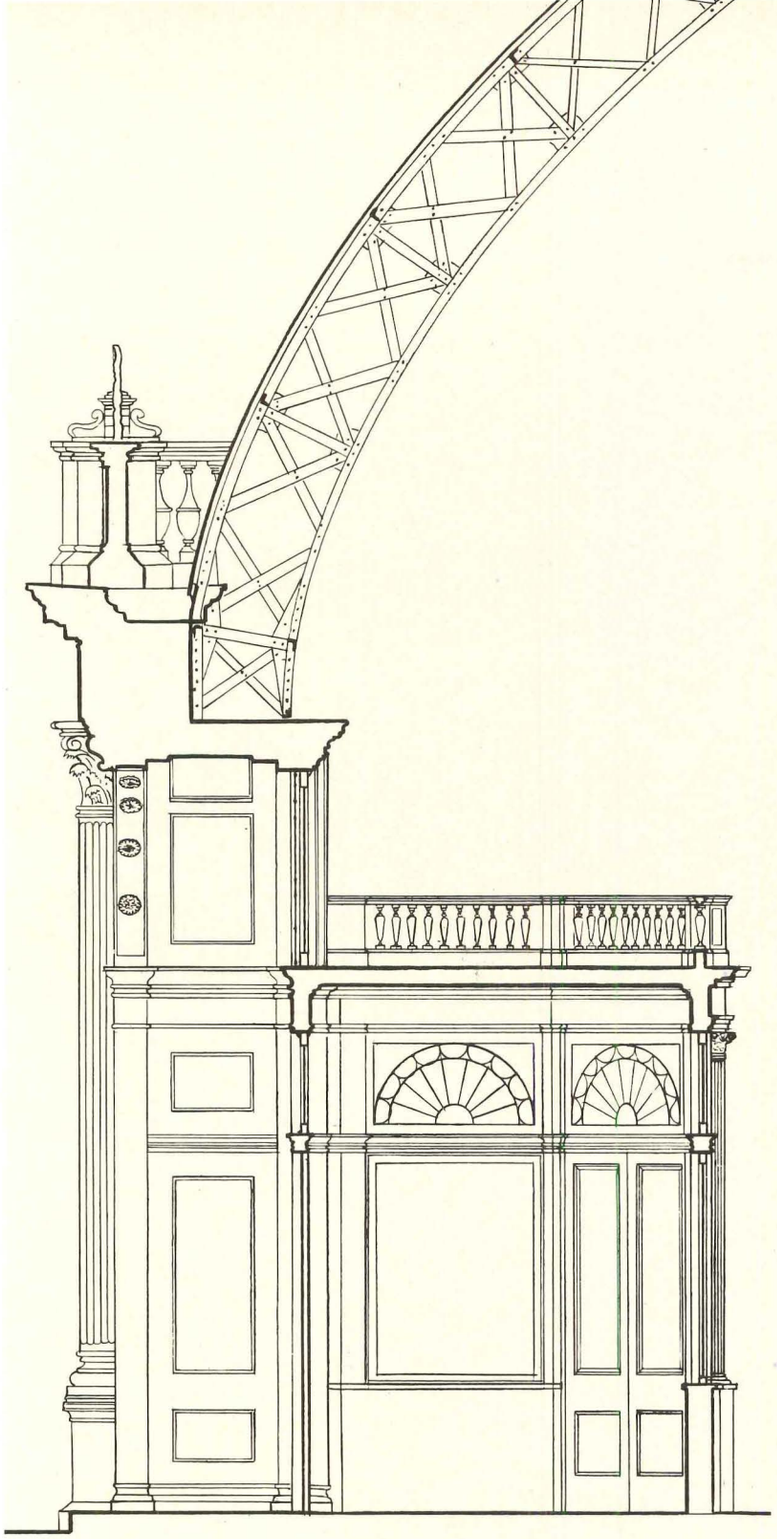


grouped together vertically or horizontally to create a plant system environment of any desired size. The walls of these chambers may expand vertically to accommodate the growth of trees. Each plant system environment would have its own indigenous climate.

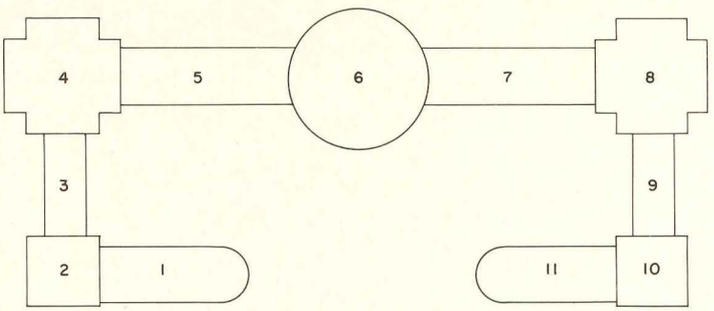
The building in plan forms a handsome forecourt which leads to the building entrance and to the garden beyond. This undulating glass structure will not be a closed prismatic form. Infinitely flexible, it will interlock the plants within it with the surrounding landscape. As Barnes points out, the clustering of hexagonal modules has many parallels in nature: the honeycomb, the quartz crystal, the microscopic plant structure itself. The hexagon, unlike the octagon and more elaborate geometric shapes, is a nesting form that can be combined simply and repetitively for growth in six directions. Like a beehive, the Plants and Man Building in the years ahead can add new modules as programs change and develop. High and low modules can nest side by side in endless variety.

The supporting structure will be a system of slender pipe columns, tubular beams and diagonal tension rods. The hexagonal roof of each module will slope to a central gutter and internal downspout.

Both the restored Conservatory and the projected Plants and Man Building are the key display areas in a land use plan which will greatly improve the Garden's usefulness as a public educational and recreational resource. In the summertime the Garden serves as one big back yard for people within walking distance in the Bronx. Picnic tables are provided. According to Dr. Irwin, the Garden has a very high standard of maintenance and this in turn encourages its users not to litter or vandalize. In recent years there has been little conflict between the need to protect the Garden and its buildings and plantings and the need to make it free to all as a green oasis in the city and the reasons for that happy truth might well be care-



These details have been drawn by scaling old photographs and incorporating existing and field measurements. Since the original working drawings no longer exist, these are the basis for the reconstruction and ornamentation of the central domed pavilion. They are the work of Siglinde Stern, project architect for the restoration of the Conservatory. It is hoped that the reconstruction can be in cast iron to duplicate the original. Because the remodeled Conservatory will have a more sensitive and flexible climatic environment, a more diverse public educational program will be feasible. The plan below indicates the proposed new community-oriented functions.



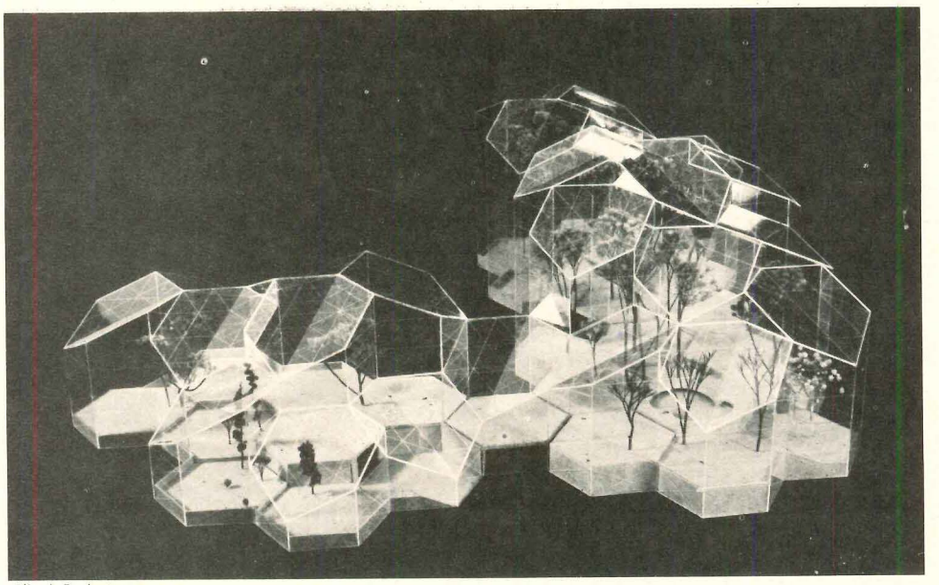
1. Horticultural training
2. Green world for children
3. Indoor house plants
4. Special exhibits and events
5. Seasonal flower gallery
6. Palm house
7. Indoor landscape gallery
8. Fern gallery
9. Green tunnel
10. American desert
11. Old World succulents

fully studied by other park planners.

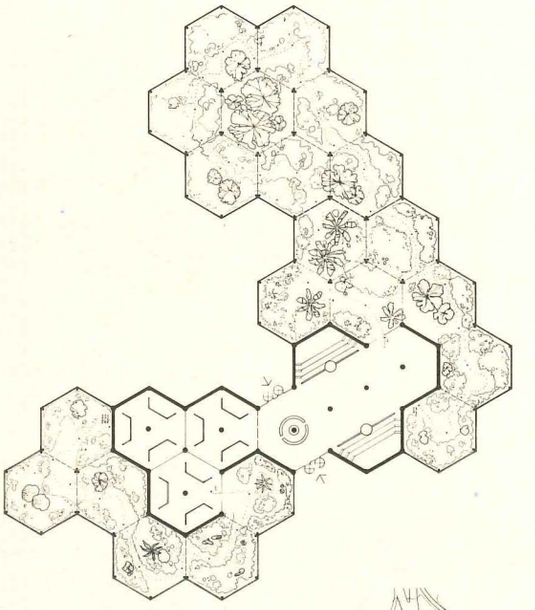
The master land use plan for the 250-acre Garden, prepared by architect Barnes with landscape architect Kiley, takes measures to preserve those undeveloped areas best suited as a nature preserve, while making the Conservatory and the projected Plants and Man Building and their surrounding courts and terraces more accessible to the public.

As the present and future land use plans (page 82) indicate, the boundaries of the Garden are redefined. Fencing, pedestrian gateways and major entrances are better related to the most frequently visited areas. A new main entrance and bus and auto drop-off has been designed (see model photograph page 82) which, according to Barnes, has been inspired by the work of Frederick Law Olmsted. As occurs in a number of locations in Central Park, pedestrians will enter a grotto-like tunnel which burrows through a mound and opens into a broad and verdant landscape. The tunnel will heighten the experience of contrast between the world of the Garden and the world of the Bronx. Opening off the tunnel will be sky-lit grotto shaped spaces which will contain a plant and book store, an orientation center, toilets and a guard office.

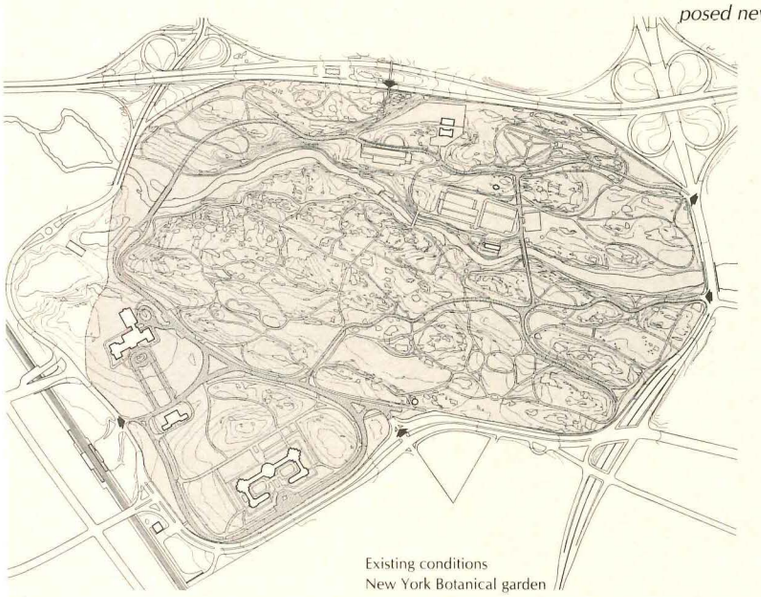
Within the Garden all unnecessary roads will be eliminated and private cars will be restricted to the peripheral road which gives access to the Conservatory and the Plants and Man Building. This will enhance the attractiveness of the Garden immeasurably, attract bicyclists, encourage people to walk, and reduce air pollution. To enable people to visit the more remote parts of the Garden, Barnes and Kiley propose the use of small electric buses which will follow a peripheral route that will circumscribe the outlying natural areas of the Garden and interconnect them with the Conservatory and the Plants and Man Building. To complete this admirable circulation plan, an aerial tramway has been proposed to link the Garden with the Bronx Zoo.



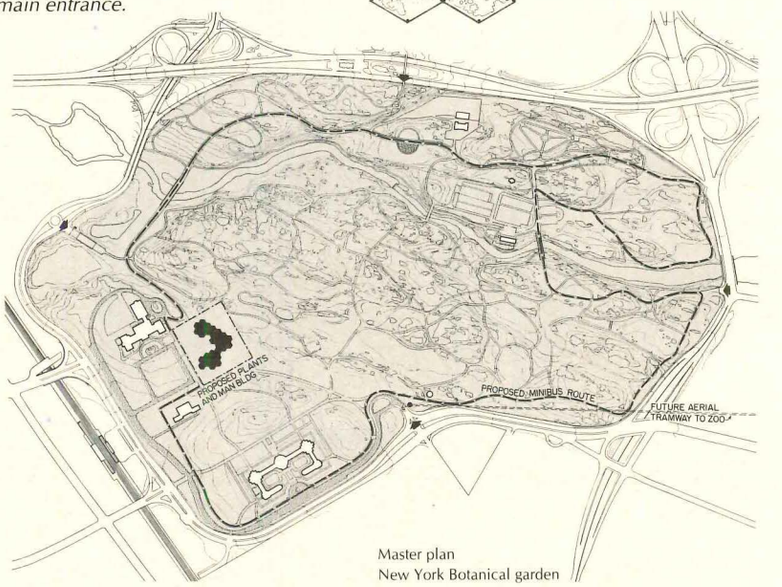
Alistair Bevington



The proposed Plants and Man Building (above and right) will be constructed of hexagonal glass modules. As the new master plan (below right) indicates, circulation by auto and electric mini-bus will be limited to the park perimeter. The interior roadways shown in the existing plan (below left) will be for pedestrian use only. The model photograph (bottom right) is of the proposed new main entrance.



Existing conditions
New York Botanical garden



Master plan
New York Botanical garden

NEW YORK BOTANICAL GARDEN RESTORATION, Bronx, N.Y. Master plan architect: *Edward Larrabee Barnes—associate-in-charge: Alistair Bevington, project architect: David Arnold.* Landscape architect: *Dan Kiley & Partners—partner-in-charge: Peter Ker Walker.* Conservatory restoration architect: *Edward Larrabee Barnes—project architect: Siglinde Stern.* Consultants: *Weidinger Associates* (structural); *Arthur A. Edwards* (mechanical and electrical); *Billie S. Fritz* (industrial archeologist). Plants and Man Building architect: *Edward Larrabee Barnes—associate-in-charge: Alistair Bevington, project architect: David Arnold.* Consultants: *Weidlinger Associates* (structural); *Lehr Associates* (mechanical and electrical).

John V. Y. Lee

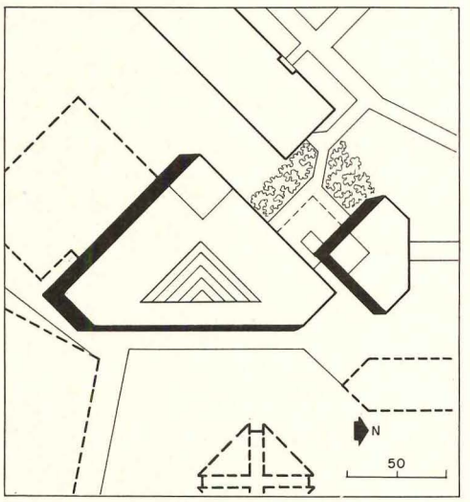
THREE BOLD AND UNDER-BUDGET BUILDINGS BY DON HISAKA

"There is no magic about it," Don Hisaka responds when he is asked how his firm brought each of the three buildings shown here in under budget. He stirs uncomfortably, wishing he had a better answer. "We feel that budgetary constraints are legitimate and welcome design determinants and get realistic about them right at the beginning. We watch costs closely." And finally, with characteristic modesty, he adds "Maybe we've just been lucky." Luck may have something to do with it, but not much. Except for a brief period last year at the height of the energy crunch when shortages became acute and market conditions chaotic, Hisaka's buildings have consistently come under budget and continue to do so.

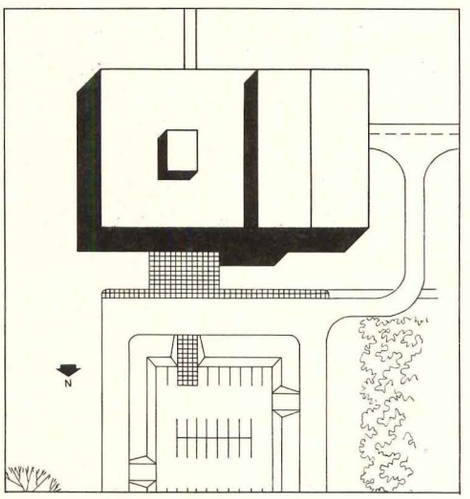
At his office in downtown Cleveland's historic Arcade, Hisaka, his five associates and staff of about a dozen work out three or four different partis for each commission. Each is studied closely for its potential cost as well as its responsiveness to its site and program. When a choice is made, Hisaka wastes no time or energy pining for abandoned schemes. Nor does he try to incorporate favorite ideas from each into the one selected. He and his staff go straight to work exploring the remaining design options, studying framing systems and levels of finish.

What his office consistently produces are buildings that mass strongly, that are surprisingly rich in detail, that have clear and appropriate site relationships. The three buildings included here are no exceptions. Though each has its own geometric personality, all three are university buildings, cast-in-place, and fitted into a master plan laid out by someone else. In addition, each building develops around a majestic interior space and around avenues of circulation made especially emphatic by a variety of design devices.

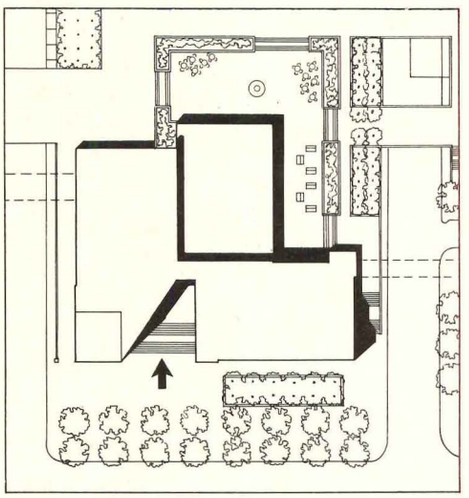
Recognition is also due State Architect Carl Bentz and to the State of Ohio, Department of Administrative Services, Division of Public Works, under whose aegis these three remarkable buildings were conceived, planned and brought to completion.—*Barclay Gordon*



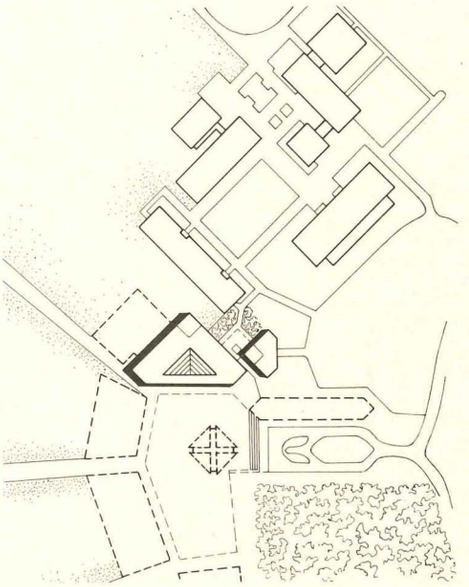
Library-Resource Building, Dayton



Library, Administration,
Student-Faculty Building, Toledo


University Center, Cleveland

Library-Resource Building at Wright State University outside Dayton



Wright State University is an emerging campus outside Dayton and Hisaka's commission was for a Library-Resource Building to serve as the first increment of a multi-building University Center. The triangular plan he developed is an architectural resolution of axes laid down in the master plan which foresees a radial growth pattern around the future University Center (see site plan).

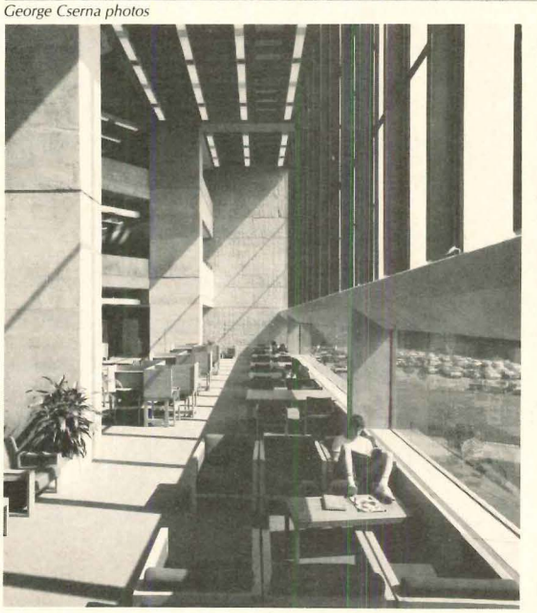
The program required housing a substantial collection of books as well as audio-visual equipment, language courses, and several radio and television studios. These media elements are housed separately in a small structure to the north and connected to the library underground—part of a below-grade circulation system that will link the whole campus.

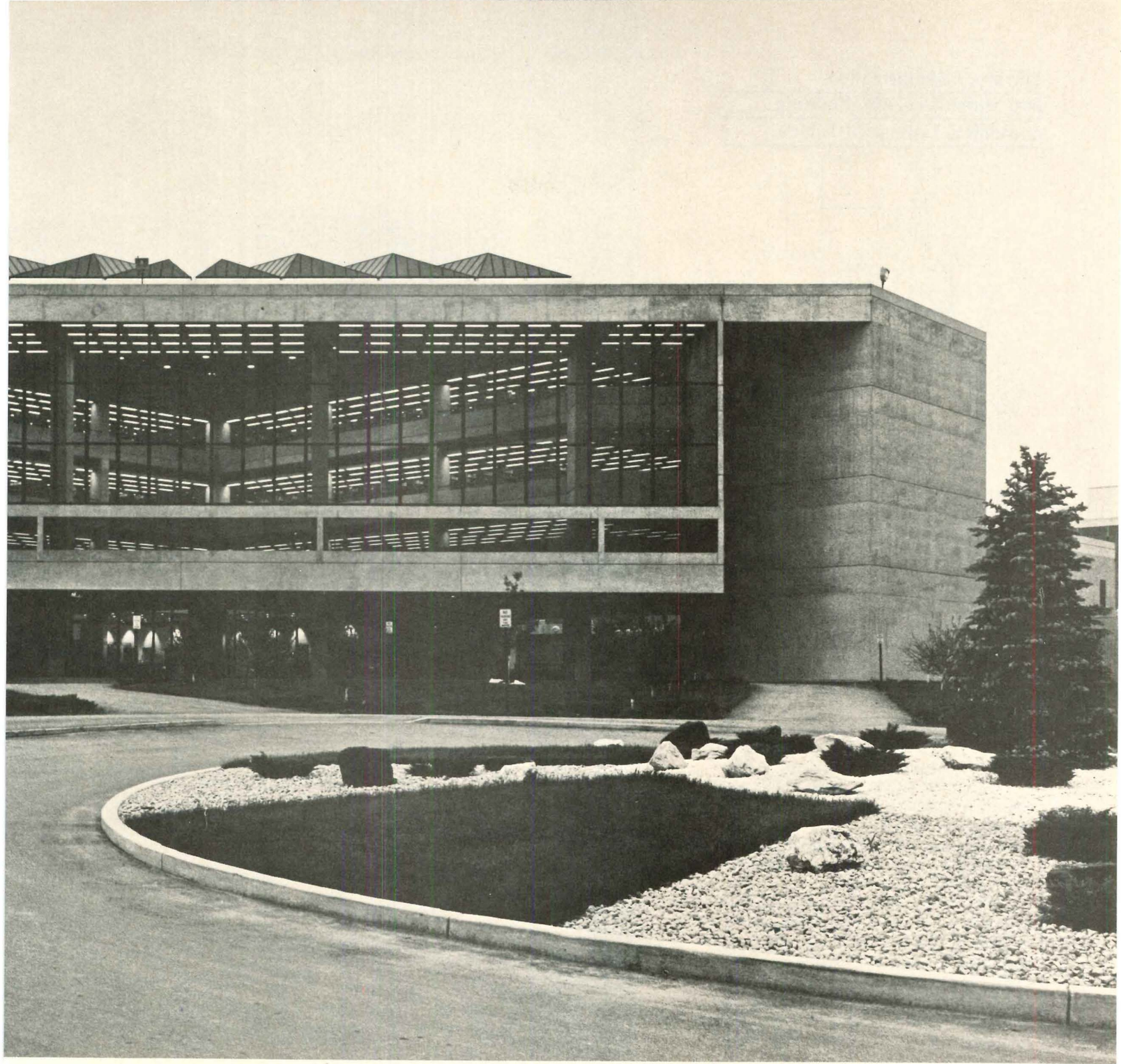
The main structure is kept relatively open at grade. Students flow through the building to other campus destinations or enter the library through two control points. The main reading room (see cover) is on the second level. Three stories high and sheathed in glass, it faces the University Center site and provides the large volume against which all the smaller volumes can effectively play. These small volumes, tucked under balconies, contain catalog and reference areas as well as stacks. These stack areas respond to the program by placing six subject divisions on three levels.

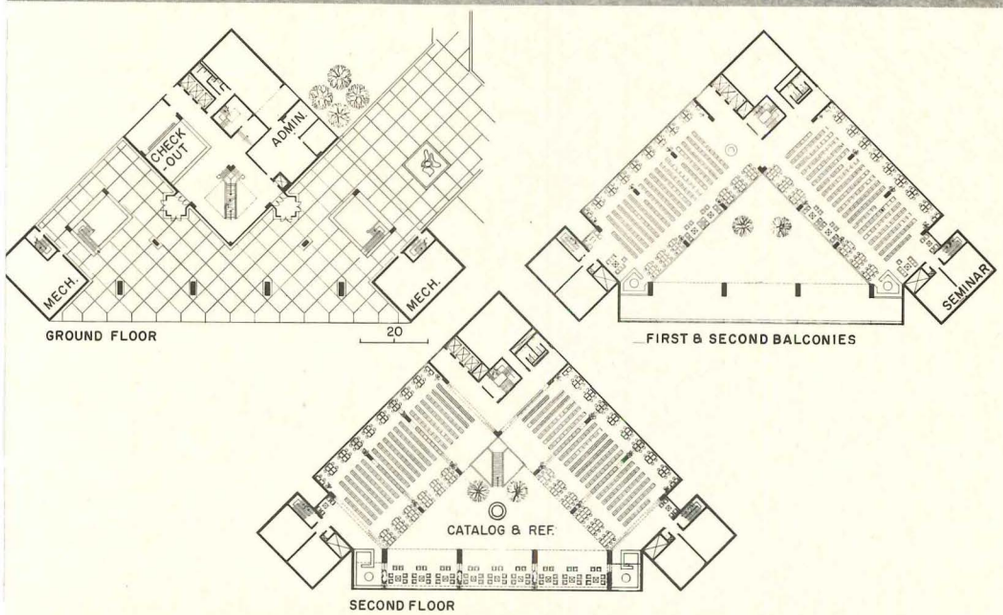
As in the case of the buildings that follow, the Library-Resource Building at Wright State is poured-in-place, reinforced concrete with a handsome level of interior finish. And like the others, its massing and siting make a clear assertion of its importance in the university community. Budgeted at $4.5 million, construction was completed for about $3.9 million—or just over $34 per square foot.

LIBRARY-RESOURCE CENTER, Wright State University, Dayton, Ohio. Architects: *Don M. Hisaka & Associates with Lorenz, Williams, Lively & Likens.* Engineers: *Lorenz, Williams, Lively & Likens* (structural); *Heapy & Associates* (mechanical and electrical). Contractor: *Frank Messer & Sons Construction Company.*

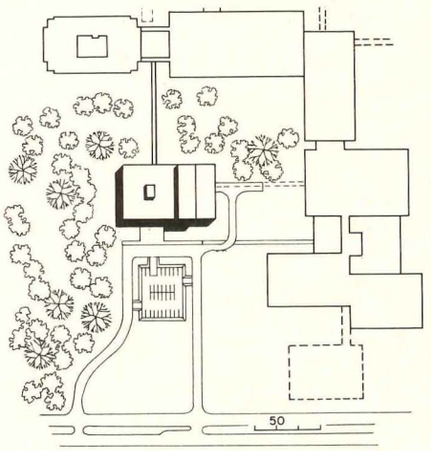
George Cserna photos






CHECK-OUT
ADMIN.
MECH.
MECH.
GROUND FLOOR
20
FIRST & SECOND BALCONIES
SEMINAR
CATALOG & REF.
SECOND FLOOR

Library, Administration and Student-Faculty Building at Medical College of Toledo



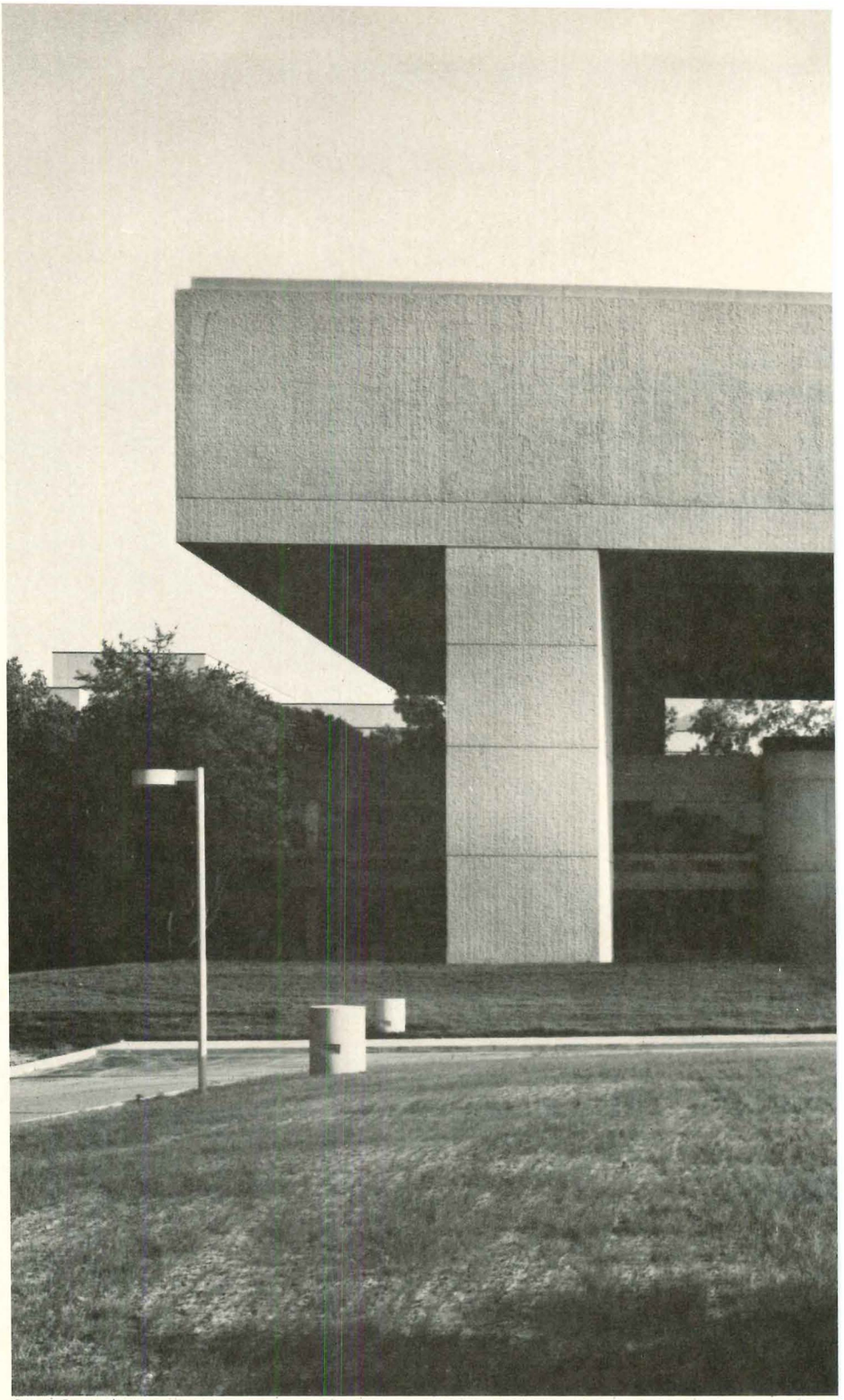
The program called for housing a medical school library, administrative offices and a student-faculty center—three diverse elements that the architects combined into a single composite structure that also serves as a gateway to this new campus. Standing aside a main circulation route, the building opens boldly in a four-story gesture of welcome to visitors approaching from the main parking area. Silhouetted in the opening, and flanking the entrance left and right, are two tall concrete columns that reinforce the gateway concept and establish a processional quality in the entry plaza itself. The small, detached structure at left houses the student-faculty center—its scale and placement fleetingly (and irreverently) suggesting an infant building in the protective custody of its mother (bottom photo). The roof of the small structure is developed as a terrace from which the views are across a wooded ravine to other canpus buildings.

The first two floors of the main structure contain administrative offices. The next two are library support spaces. The uppermost level, with its ninety-foot clear spans, is the spatial climax of the building and contains the library's main reading areas and stacks. Reached from the floor below by a sculptural stair (photo page 89), this extraordinary space is skylighted, beautifully appointed and enriched by a planting bed of flowers and ficus trees. Circular air supply registers line the walls.

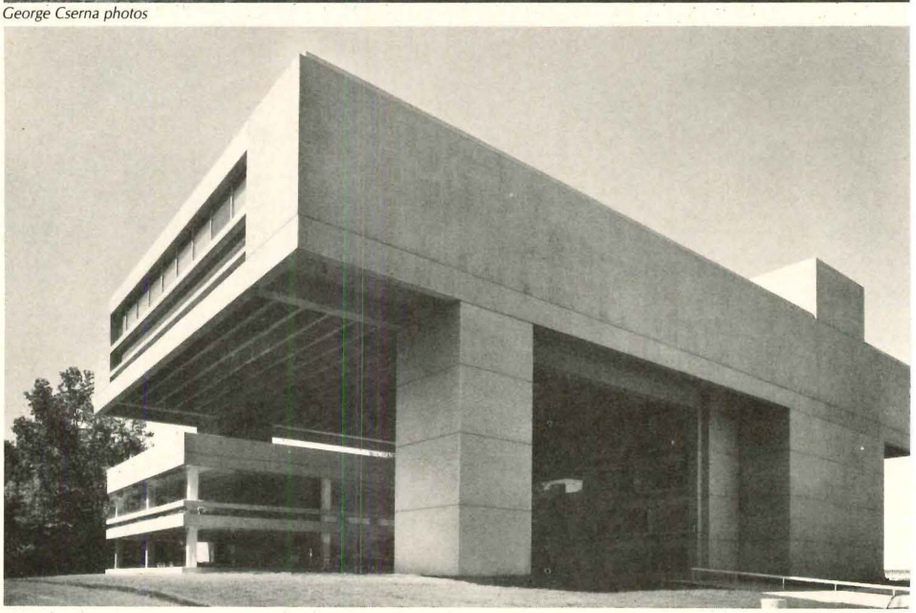
Setting aside the planning, the most impressive features of the building are its richness of furnishing and detail and the consistency with which its spaces are developed. They flow into each other in a family of lively and colorful images, each distinct, but each belonging to an easily recognizable whole.

Budget for the project was $6 million. The base bid for construction was $5,267,528.

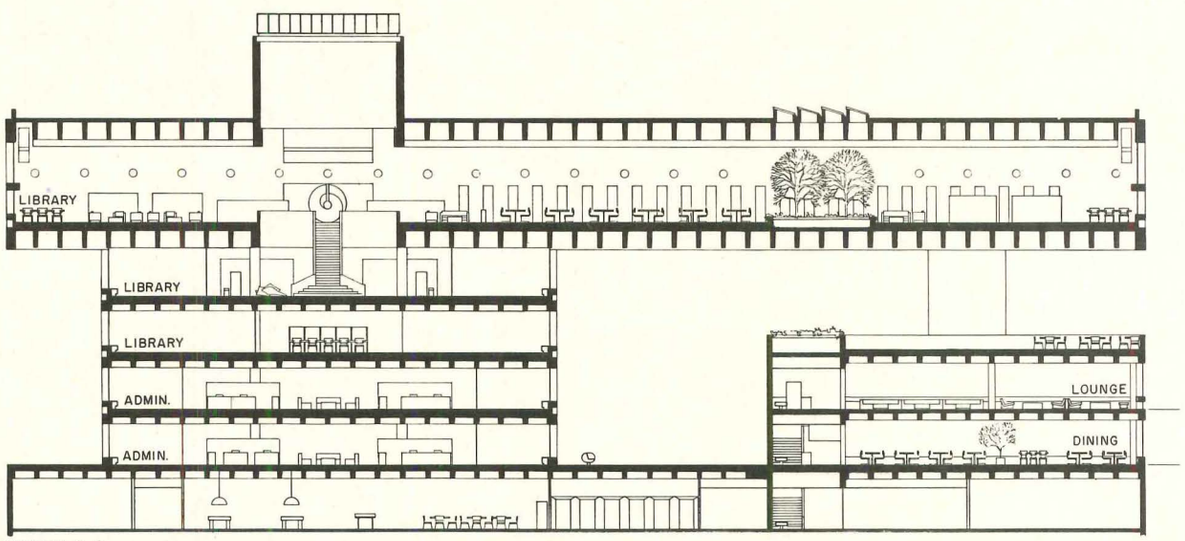
LIBRARY, ADMINISTRATION & STUDENT FACULTY BUILDING, MEDICAL COLLEGE OF OHIO AT TOLEDO, Ohio. Architects: *Don M. Hisaka & Associates, Architects, Inc.* Engineers: *Gensert Peller Associates* (structural); *Evans & Consultants: Inc.* (mechanical); *William B. Ferguson* (electrical). Consultants: *David V. Lewin Corp.* (soils); *Bernard P. Schreier & Associates* (food); *Concrete Consulting Corporation* (concrete). General contractors: *Rudolph/Libbe/Inc.*



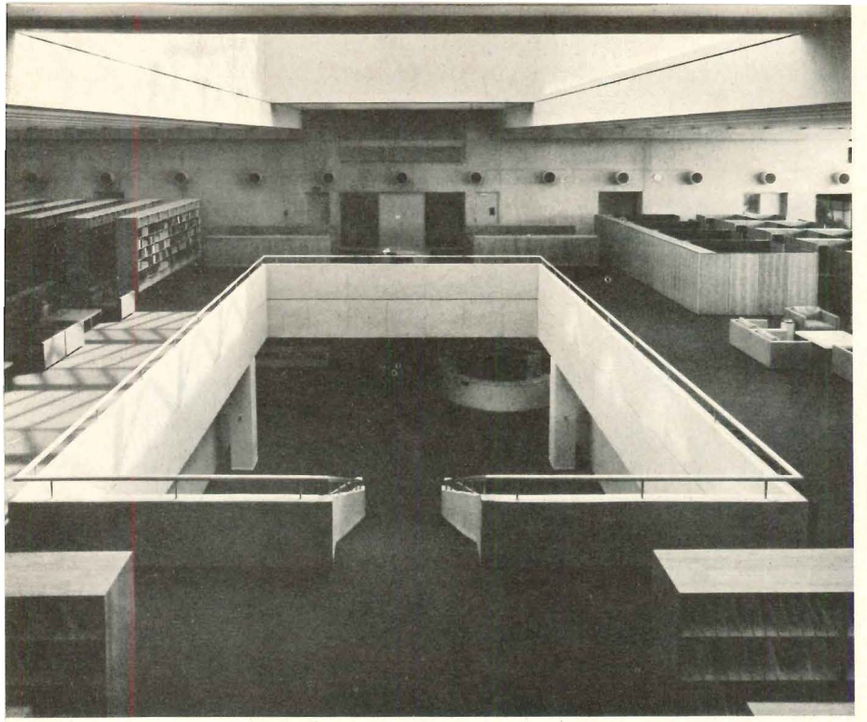
George Cserna photos

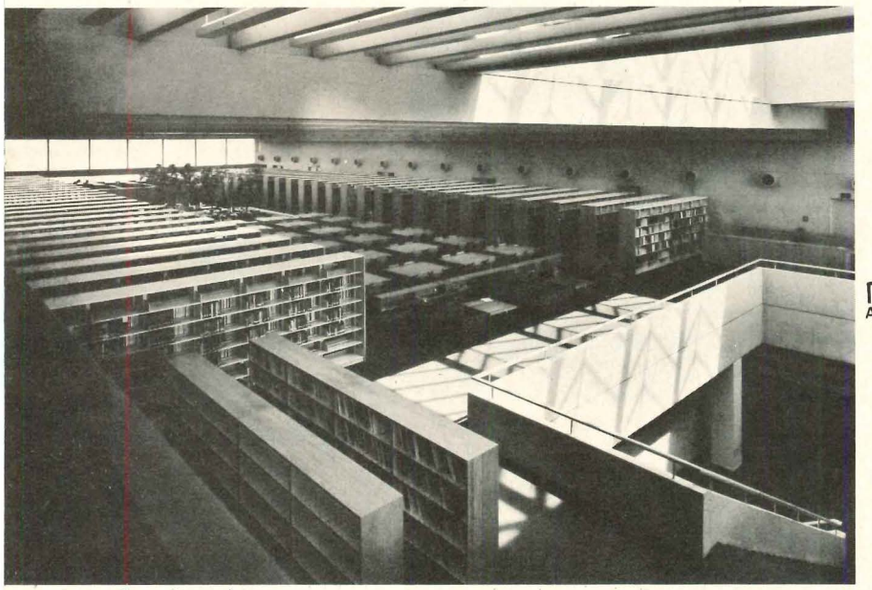


The upper level is framed in the long axis by a pair of Vierendeel trusses, cantilevered at both ends and supported at points along their centers by core walls of reinforced concrete. Spanning ninety feet between the trusses is a roof and floor system of single tees. The other sections of the building have less muscular framing: columns on 30 foot centers that carry a two-way waffle slab. (For a more detailed analysis of this interesting structure, see *Engineering for Architecture*, RECORD'S upcoming mid-August issue.

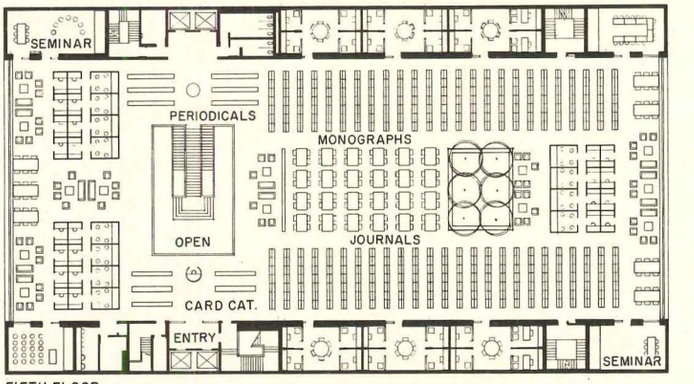


SECTION A-A

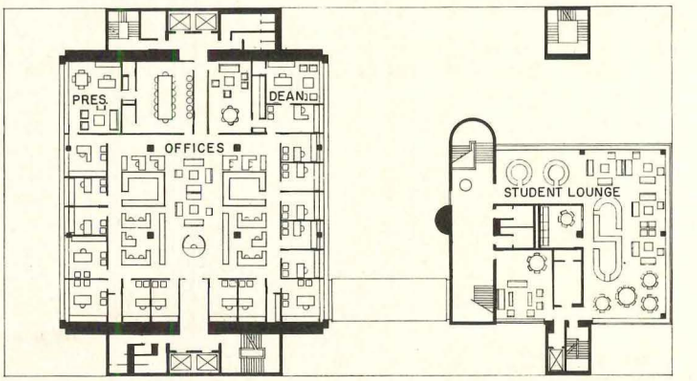




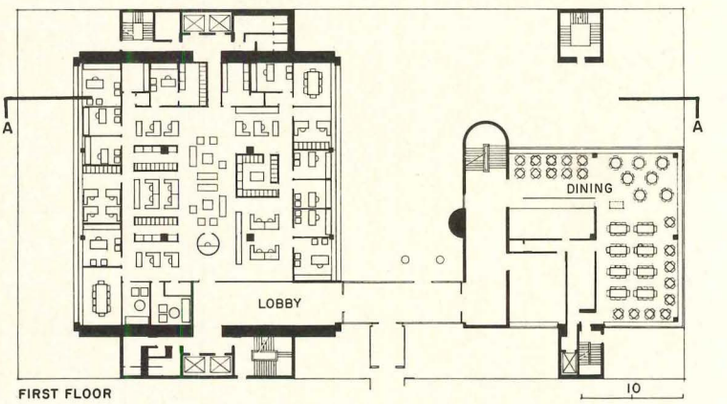
George Cserna photos



FIFTH FLOOR

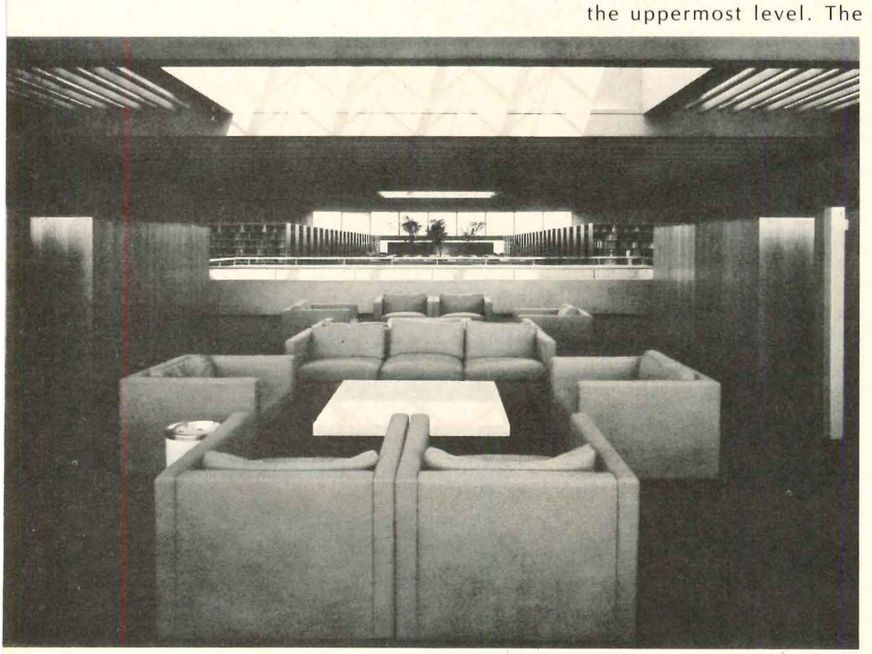


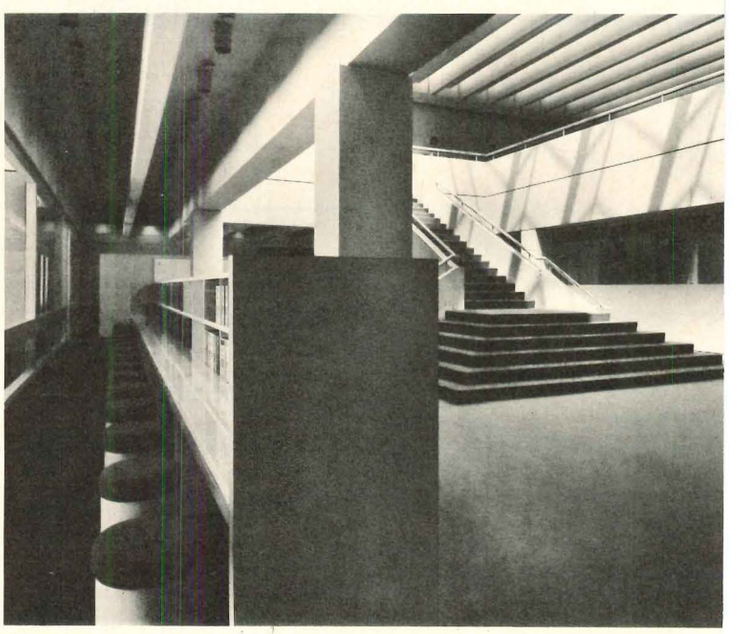
SECOND FLOOR

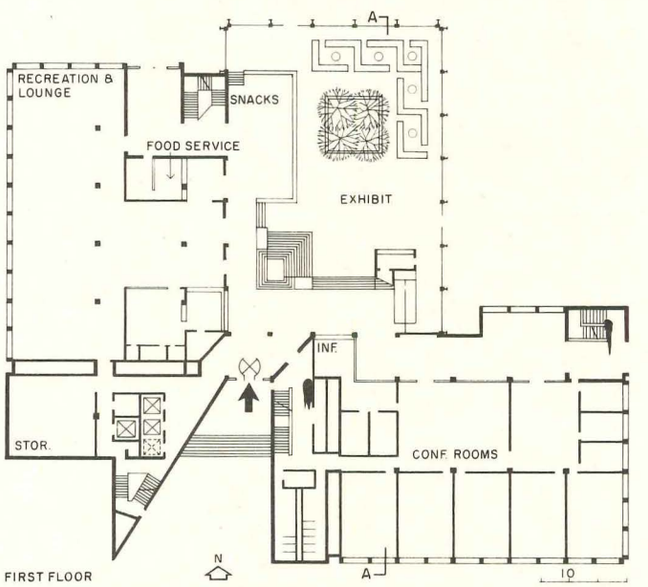


FIRST FLOOR

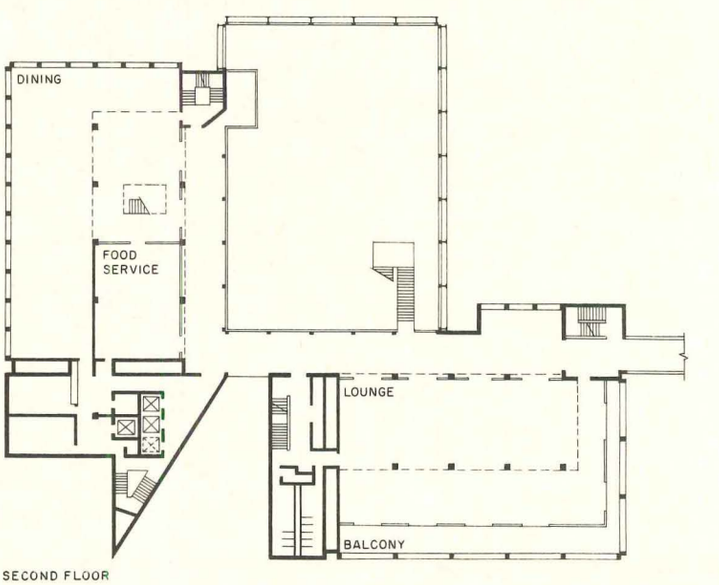
Taken on the building's upper two floors, the photos give some indication of the library's spatial variety and richness of detail. Color photo at right testifies to the importance of the ascent to the uppermost level. The change of carpet color combined with the dramatic use of daylight from above are architectural themes Hisaka has used not just here, but in other and different buildings with boldness and skill.





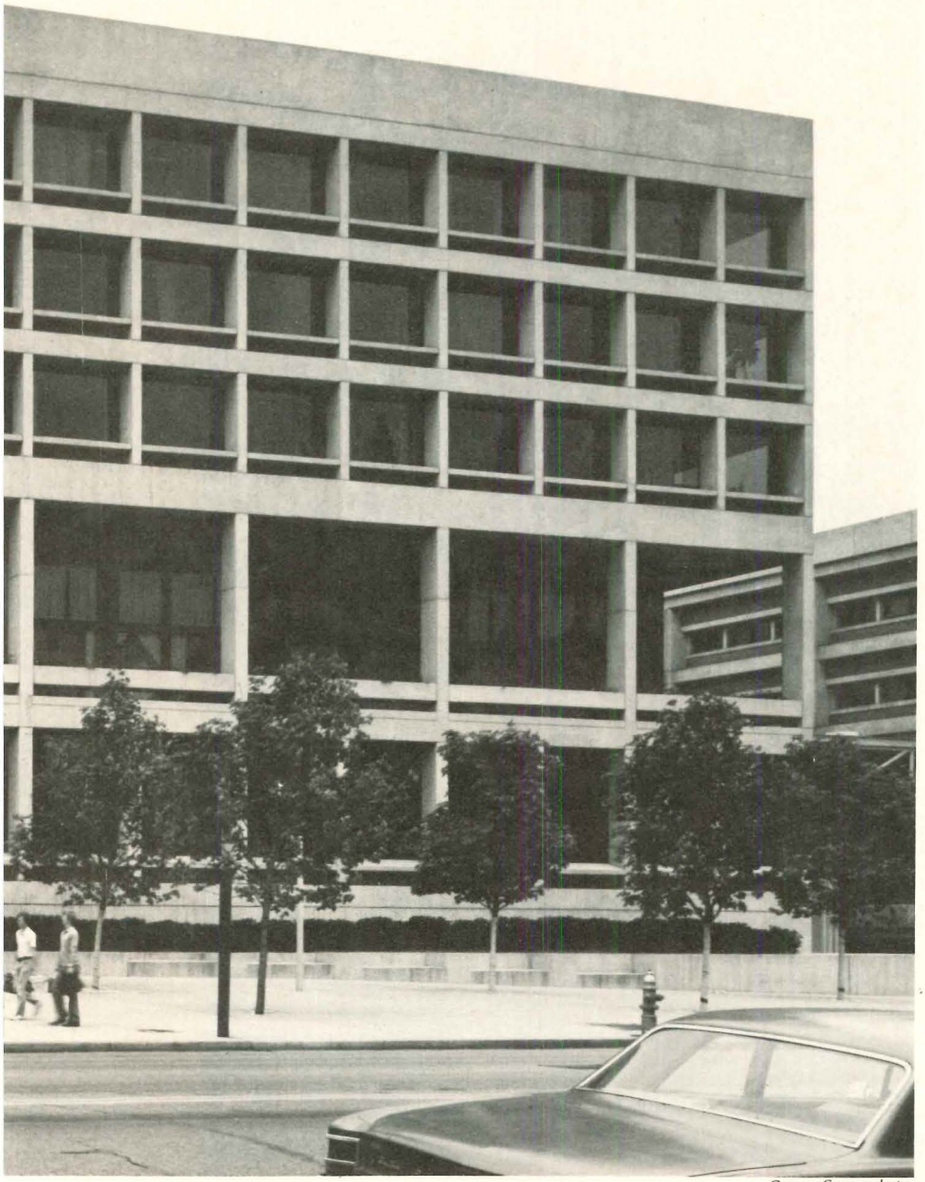


FIRST FLOOR

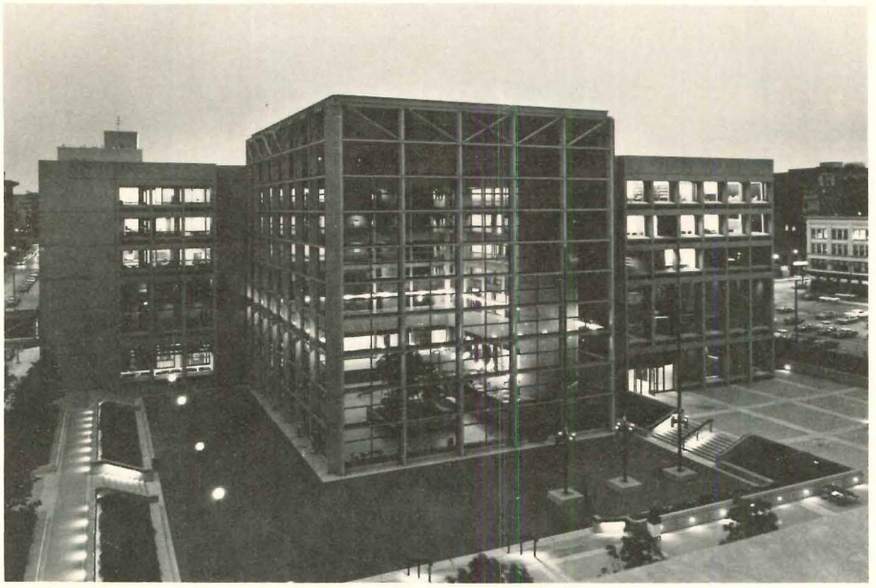


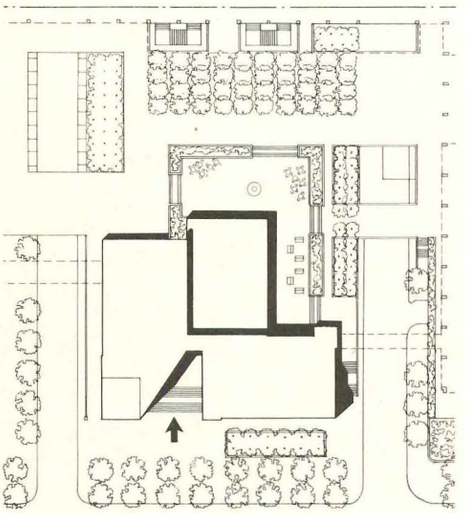
SECOND FLOOR

University Center, Cleveland State University in downtown Cleveland



George Cserna photos





For this University Center, the architects worked with significant site restrictions. The building fronts on one of the city's main thoroughfares. It is bounded on the north by the existing campus library, on the east by an existing classroom building, on the west by the site of a future classroom building. In addition, all these buildings were to be linked by a network of all-weather corridors. Within these constraints, Hisaka's task was to develop a complex multi-use structure that would center on a student space of grand scale, a living room for the whole campus.

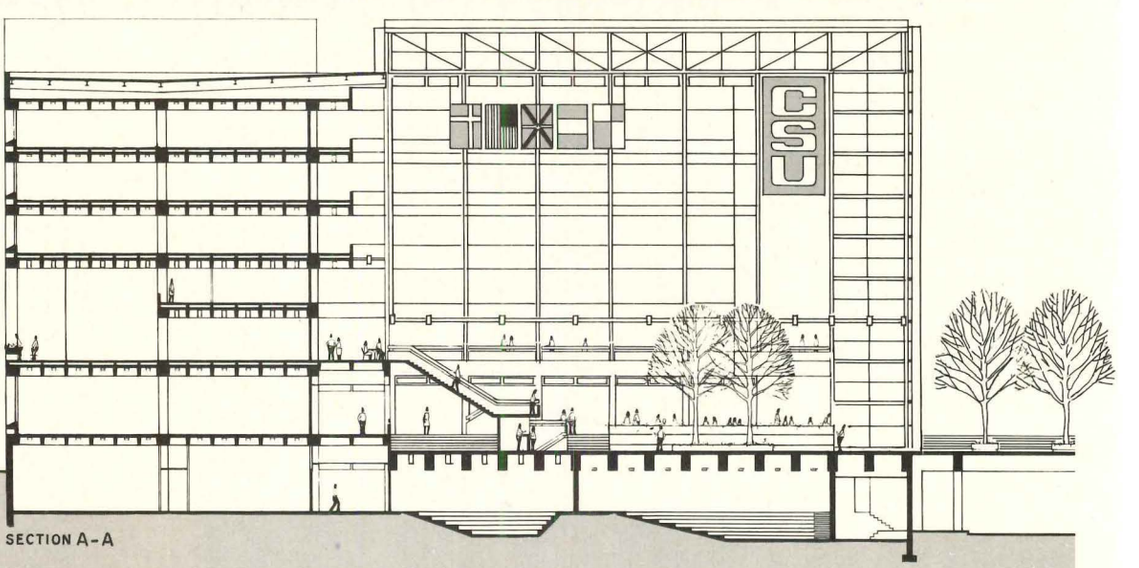
The main entrance is set deep in the street facade. The approach is along an oblique wall turned to respond to the direction of pedestrian flow from the city center a few blocks away.

The building section (overleaf) is particularly communicative. The upper three partial floors are self-contained working offices, the lower floors house a combination of small-scale public functions—any of which are readily accessible to students or members of the wider community. Relating to all—and reaching up the full six stories—is a monumental and exciting space framed in steel and glazed up to its full height on two sides. The floor plane, printed with a shifting grid of shadows, is itself an extension of the outdoor plaza and spaced out across its broad dimension are kiosks, a giant sculpture, a dining terrace and a planting bed for trees of substantial size. Each of these elements yields a little of its true scale to this heroic volume. From any vantage point the space is active and alive and its appeal to student users is obvious and gratifying.

The University Center's construction budget for this building was $10 million; the base bid was $9,117,745.

UNIVERSITY CENTER, CLEVELAND STATE UNIVERSITY, Cleveland, Ohio. Architects: *Don M. Hisaka & Associates in joint venture with The Hoag-Wismer Partnership and Sasaki Associates, Inc.* (master planners for the University, designers for the Plaza). Engineers: *The Hoag-Wismer Partnership.* Contractor: *Albert M. Higley Company.* Consultants: *David V. Lewin Corp.* (soils); *Bernard P. Schreier & Associates* (food); *Concrete Consulting Corporation* (concrete).

This monumental space, usable at all seasons, is a focal point and visual reference for the rest of the campus. If its scale is larger than necessary for the functions it houses, the quality of light it captures, its cheerfulness, its spatial excitement, the durability of its finishes make it an attractive place for students to meet, dine and engage in a variety of random social activities.



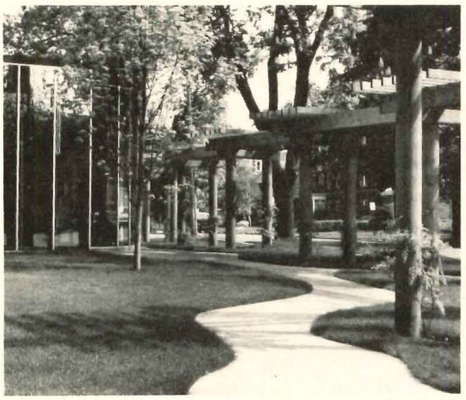
SECTION A-A

FOUR BANKS...

...represent two extremes of image: formality for international finance and...

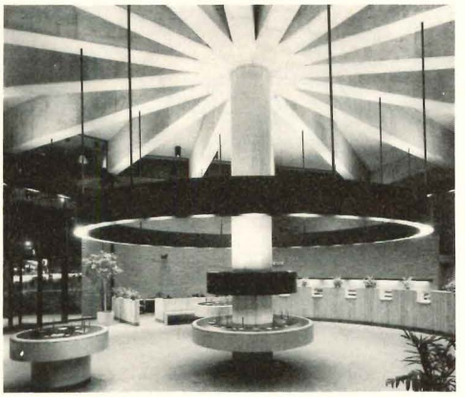
J. Henry Schroder Corporation. William Rothschild photos

...light-hearted appeal for services at the neighborhood level



Hanover National Bank

Pontchartrain State Bank



Franklin Savings Bank

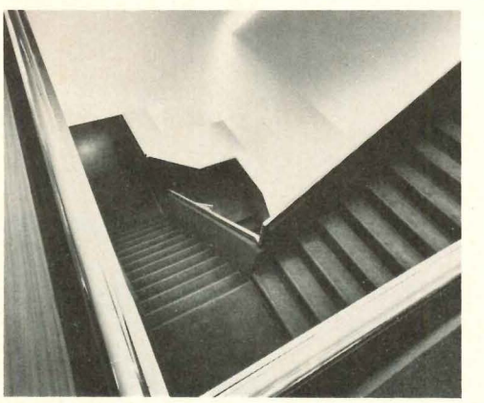
For an international bank: an appropriate new public image

Until recently, the international financing and investment operations of the J. Henry Schroder Banking Corporation were conducted on the upper floors of a 40-story building in Manhattan's financial center. With this new design, parts of those operations have been brought down to the street level and housed in a way that strongly declares to the public a "solid" image and a respect for quality—particularly appropriate for the responsibilities of diversified financial management in some 14 countries and Hong Kong.

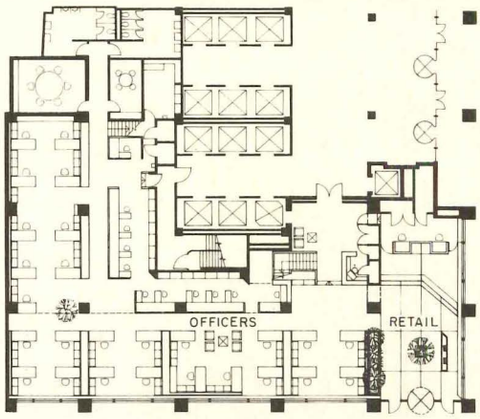
Initially, the bank's intent was simply to consolidate operations in a more efficient manner in space previously unused, and—at the same time—free areas in the upper stories for sub-rental. But Ferguson Sorrentino Design Inc.—working with several members of the client firm assigned full-time to the project—created this much bolder solution. It includes the semi-public main area for client consultation (photo, opposite page), the small retail banking area (top, right) placed on the ground floor, a new mezzanine inserted to complete the semi-public program, and the location of related executives on a remodeled part of the floor above (photo, below).

The design was accomplished within the constraints of typical, commercial-office space. Part of the main banking room's substantial character is achieved by unusually high ceilings, accomplished by "squeezing up" the typical horizontal mechanical transfers that occur above the ground floors of such high-rises. An even-more-important result of raising the "building-standard" ceiling to 18 feet was the ability to provide a mezzanine, without which the program could not have been met within the available floor area. But the most difficult innovation was tying the usually isolated (because of the transfers) ground and second floors together visually and functionally. This was accomplished by a stair snaked around the building's electrical distribution box (photo, right). Continuous recessed lighting isolates the stair's surfaces from those adjacent and leads the viewer from level to level. The resulting effect achieves a connection between floors at relatively low cost—but with high impact. It also provides the bank with a built-in sculpture.

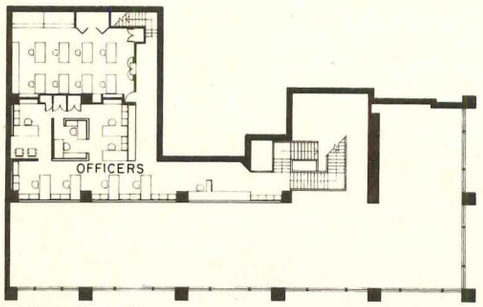
J. HENRY SCHRODER BANKING CORPORATION, New York, New York. Designers: *Ferguson Sorrentino Design, Inc.—project manager: Lee Manners; job captain: David Light; assistant: Archibald Johnson.* Engineers: *James Ruderman* (structural); *M. A. DiGiacomo Associates* (mechanical). General contractor: *Arnott-Bennis, Inc.*



William Rothschild photos



GROUND FLOOR



MEZZANINE FLOOR

The desks and seating in the ground-floor client-consultation space (photo, below) are supported by a series of parallel carpeted platforms which provide separation between officers, acoustical privacy, and contain electric and telephone lines. The resulting arrangement allows for an intimate and luxurious atmosphere (despite the partitionless plan), which is enhanced by natural materials of wood and leather. Despite the use of a "building standard" ceiling, careful attention to lighting includes different lamp types for various locations, new recessed incandescents and the spectacular panels over the main room.

For a residential area: a bank that is nearly a "non-building"

As opposed to a large banking house, local branches of public-service banks attract accounts, in no small part, by the image which they present to potential "retail" customers. Hanover National Bank and architects Bohlin and Powell gambled on an image, for this Kingston, Pa. branch, which hardly asserts itself at all. Happily, its commercial success has exceeded original expectations—perhaps out of public appreciation of the owner's consideration.

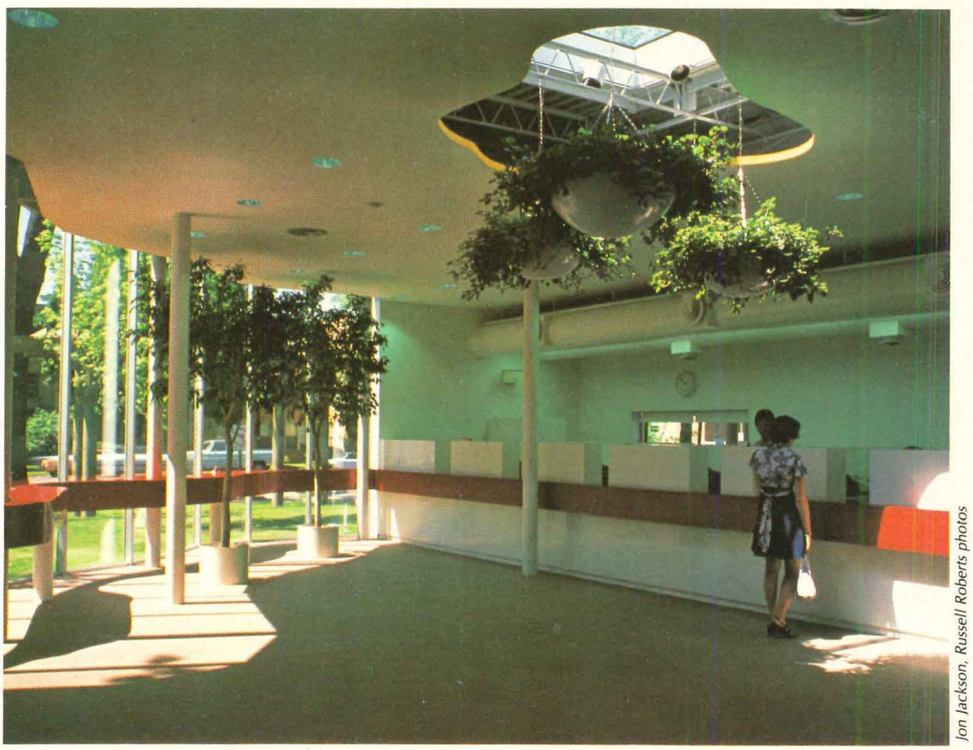
Facing a main street which is partially residential, and a side street lined with large older houses, the building is almost difficult to see—its faceted, mirrored glass facade will eventually reflect only wisteria and trumpet and grape vines, currently in early growth on a wood arbor along the streets. Besides providing a foil for the mirrored glass, the trellises shade pedestrians, provide an edge for the semi-urban site and—from within—visually expand the space of the banking room. "The last thing that corner needed was another disruptive building of the type that is destroying the scale and flavor of cohesive towns", says Peter Bohlin.

Like the offices for Westinghouse by the same architects (RECORD, July 1975), this building is "special" only where it needs to be: on the street sides. The concept is really that of an inexpensive ($362,000 for the whole project) masonry and steel-frame box cut away only where it counts, and to expand the handsome "front lawn." The construction is typical of light commercial structures. The angled windows are set in standard "store front" aluminum framing.

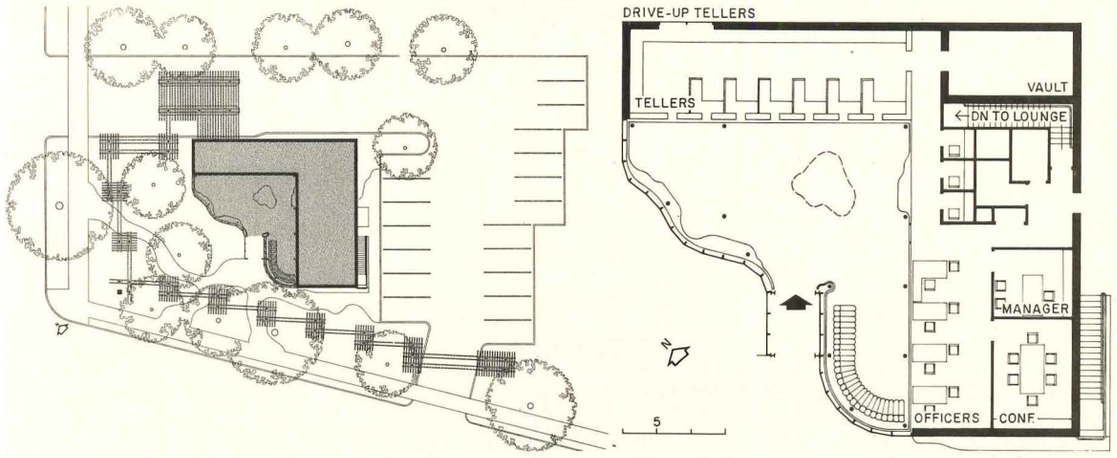
The partitioned spaces are arranged along the rectangular walls in no formal arrangement but "just where they want to be". The vault is located for easy access to the tellers, one of whom can double at an interior station and the drive-up counter. Drywall-partitioned offices for the officers are adjacent to the waiting area. A block of service spaces is between the offices and vault, and includes a stair to an employees' lounge on the floor below.

Bohlin sees even more valuable application of this "non-building" concept for large projects, which can be even more disruptive in established areas, and he intends to try it again. As for the solid rear walls: "We'll just wait for the ivy to grow."

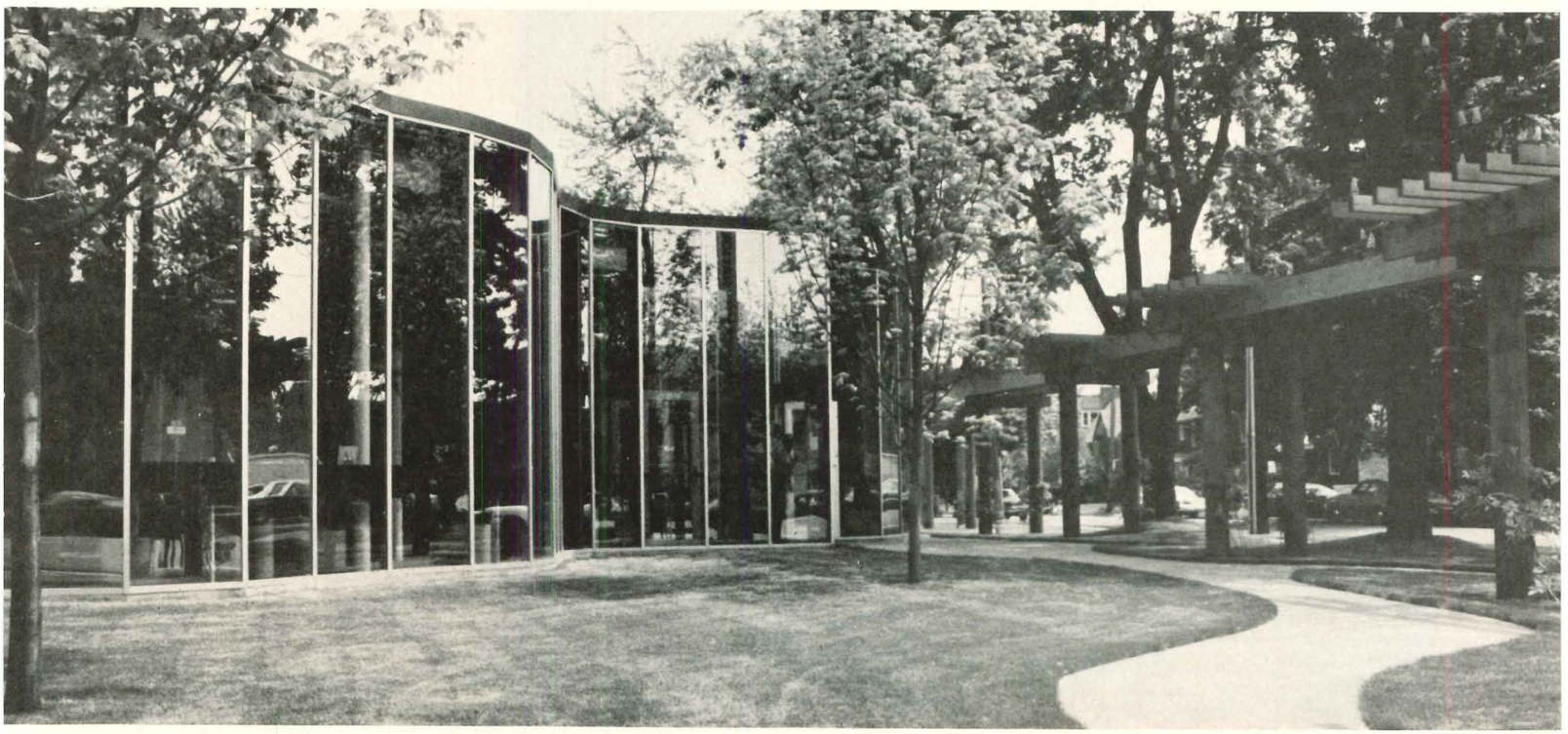
HANOVER NATIONAL BANK BRANCH, Kingston, Pa. Architects: *Bohlin and Powell—partner-in-charge: Richard E. Powell; project architect: Don Maxwell.* Engineers: *Vincent B. Szykman, Inc.* (structural); *Martin and Fladd* (mechanical/electrical). General contractor: *Sordoni Construction Co.*



Jon Jackson, Russell Roberts photos



As planted wisteria and grapes grow over the wood trellises, the building will increasingly disappear. By contrast, the interior is brightly colored and crisply detailed. The red surfaces of the tellers' counter (opposite page, bottom) continue around the room as a writing surface and a back rest for a brilliant green couch in the waiting area (see plan) designed by the architects. A "free form" opening was cut through the standard acoustical ceiling for the skylight, and reveals the exposed steel structure which has been painted a soft gray. Hanging pots of Swedish ivy become the "chandeliers" and light diffuser.



This local bank competes in a busy roadside environment

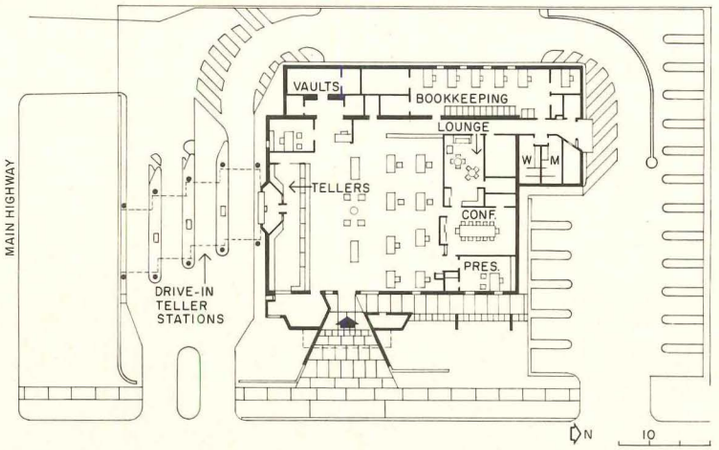
According to Pontchartrain president Edward Boldt, deposits equalled almost four times the original capitalization in the first 15 months of this bank's existence. Part of this success is due to a previously untapped market—in the midst of gas stations and drive-in theaters outside of New Orleans. Part is credited to market research—which suggested the large number of drive-in tellers. Apparently, the research indicated no prejudice against banking in a recycled night club—which the building is (photo, right).

The dominant view from the highway, of the wood trussed, steel sheathed roofs over each teller station was the result of architects Caldwell & Turchi's making an asset out of the inability to place the stations more conventionally on the restricted site (see plan). The roofs were given their distinctive shape which made a strong identification for the building, and have—in no little way—increased the success of the public appeal. The only other major additions to the inherited "box" were a larger complementary roof over the entrance (photo, right), an adjacent gallery providing covered passage from the parking area, and low walls around the site perimeter. Besides providing an ideal surface for painting the repeated name of the bank for the benefit of speeding cars, the walls contain the site in a tight way, and give it identity in its confusing environment.

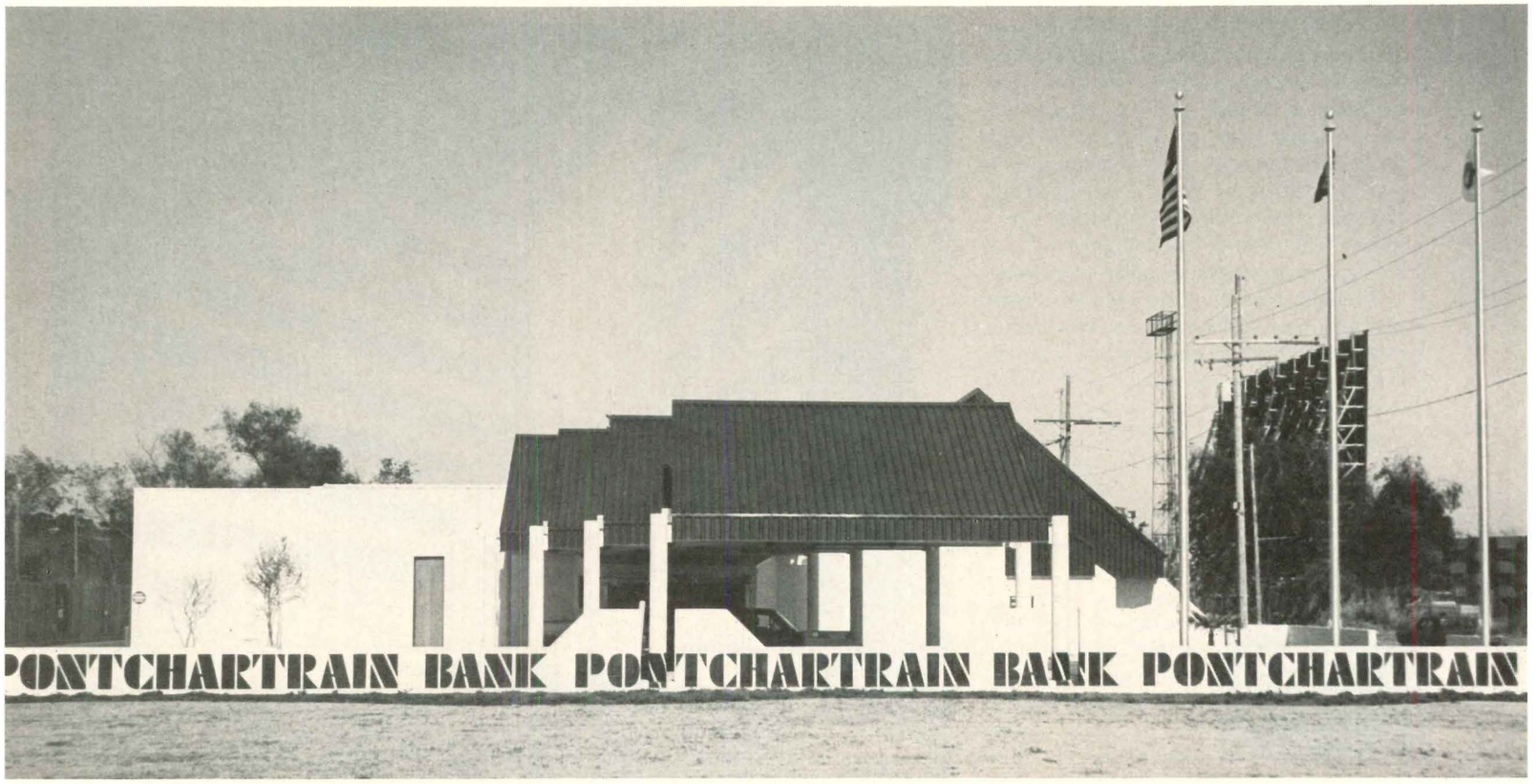
The decision to reuse an existing building was made in 1973 when New Orleans was in a construction boom and labor and materials were scarce, causing long delays on new structures. As the bank was anxious for a speedy opening, reuse made the most sense then—as it may now when the greater costs of new construction become deciding factors. Although not primarily concerned with budget, the clients obtained their new space for $24 per square foot. The cost included a new mechanical system, interior finishes, added structure and new facing consisting of painted-concrete sewer bricks on metal stud backup—the only practical and readily available material at the time. The white dry-wall partitions within are enlivened with bright color and an additional wall of brick at the vaults.

PONTCHARTRAIN STATE BANK, Metairie, Louisiana. Architects: *Caldwell & Turchi—partner-in-charge: Nano J. Turchi, Jr.* Engineers: *Arnold R. Smythe, Jr.* (structural); *Goldstein & Goldstein, Inc.* (mechanical); *Ohlsen & Mitchell, Inc.* (electrical). Consultants: *Louisiana Interiors* (interiors); *Nationwide Building Consultants, Inc.* (banking). Contractors: *Goliath Construction Co.* (general); *Bayou Fabricators and Erectors* (structural steel).

C. F. Weber photos



Because of a narrow site, the drive-in tellers' stations wound up—unconventionally—on the front of the building and were turned into an identifying asset (photos, below) by emphasis on their form and structure: wood trusses and oversized pipe columns. Most of the other modifications to the original structure (top photo, opposite) were achieved by resurfacing the exterior, and with paint. The interiors, with bright, boldly colored furniture, reflect the "up and coming" attitude that the bank promotes. Part of the roadside environment, a drive-in movie screen, can be seen in the photo below.



A form that stands out in urban honky-tonk

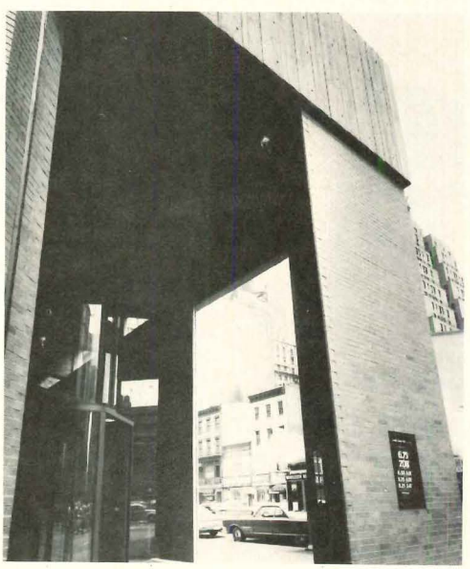
As that of the other two banks on the previous pages, the design of Franklin Savings Bank on Manhattan's visually strident West 42nd Street relies more on stimulating clients' imagination than on taking itself too seriously. As with Pontchartain, part of the eye-catching appeal is owed to paint in the form of supergraphics, which here extend the building's visible size—and hence importance—by using the walls of the otherwise overpowering adjacent building.

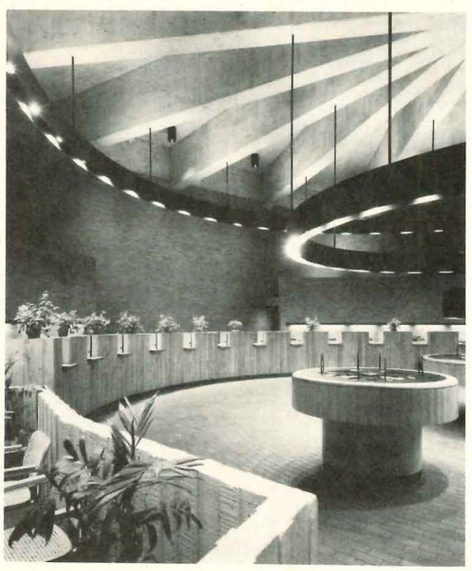
From the street, the bank itself is a simple rectangular form which contrasts the edges of the exposed concrete roof structure with the solid planes of "iron-spot" brick walls below. The only glass used for this high-mischief area articulates the concrete from the top of the brick walls, and surrounds the entrance, which can be screened at night. To counteract the possible uninviting aspect of such a solid building, the corner is open to the outside during the day (photo, below right) when it provides a seemingly unobstructed entrance. The generous height of banking room (there is another floor below grade) helps to add to its visibility, to "anchor" the urban corner and—to some extent—duplicate the scale of Franklin's previous building across the street—a landmark-quality building demolished to the dismay of preservationists and many "just plain" New Yorkers alike (photo inset).

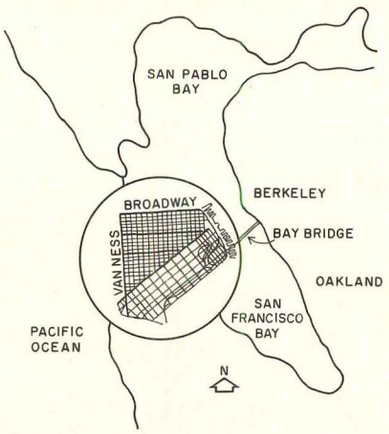
Within (bottom photo, right), Franklin's new home is an inviting surprise: a luxurious, circular space with durable surfaces of concrete, brick and wood softened by lighting and numerous plants. The shape complements the radial beams from the single, central support column. A conference room, the vault, the entrance enclosure and stairs (to lower-level support facilities) occupy the respective corners "leftover" by the circular banking room. The large volume of concrete was placed without the use of elevators or cranes, which were limited by the building's coverage of the whole site. Instead, a pump supplied the concrete from mixers on the street.

FRANKLIN SAVINGS BANK, New York, New York. Architects: *Poor and Swanke—Richard S. Hayden, partner-in-charge; James McFayden, project architect; William Maurer, designer; Susan Schaub, interiors.* Engineers: *Ignacio Romero* (structural); *Arthur Edwards* (mechanical/electrical). General contractor: *H. C. Kranichfeld, Inc.*

Otto Baitz photos







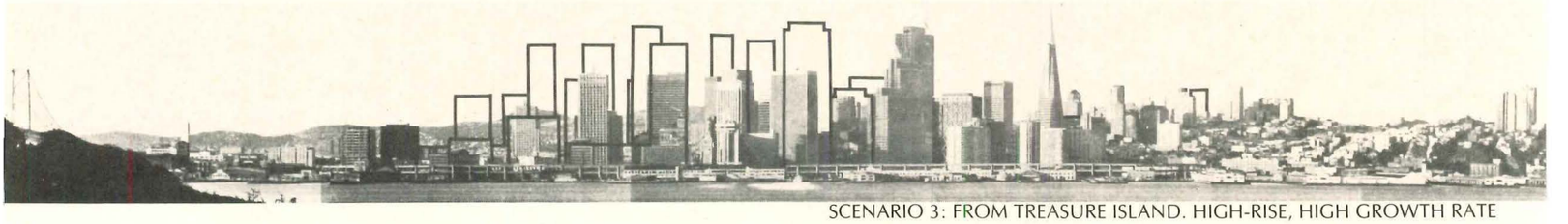
In the last five years San Francisco ("everybody's favorite city") so far has increased the gross square footage of commercial space in its central business district by 2,200,000, a rapid pace in any city, but particularly noticeable in San Francisco where the topography of the terrain makes extremely visible everything that happens on the skyline. Indeed, the new tall buildings have been so visible that even first-time visitors are constrained to remark on the Manhattanization of the downtown area.

What so much building in so short a period has done to the city is as much a warning of what more could happen as it is a mark of change in the area's quality. New buildings are not necessarily good buildings, and tallness is not a virtue in itself. In an area where major face-liftings have been taking place for the last 15 years, the impact of even one building out of character with the locality—whether because of its architectural concept or because of its scale or because in its height and bulk it generates traffic, both pedestrian and vehicular, which alters the amenity of the area—should be something to be reckoned with. In the last five years San Francisco has felt the impact of many buildings in its main business area, and they create a problem which, if less severe in its dimensions than the problems of larger and more heavily populated cities, has nevertheless become of concern to the rank and file of people as well as to environmentalists, architects and allied professionals.

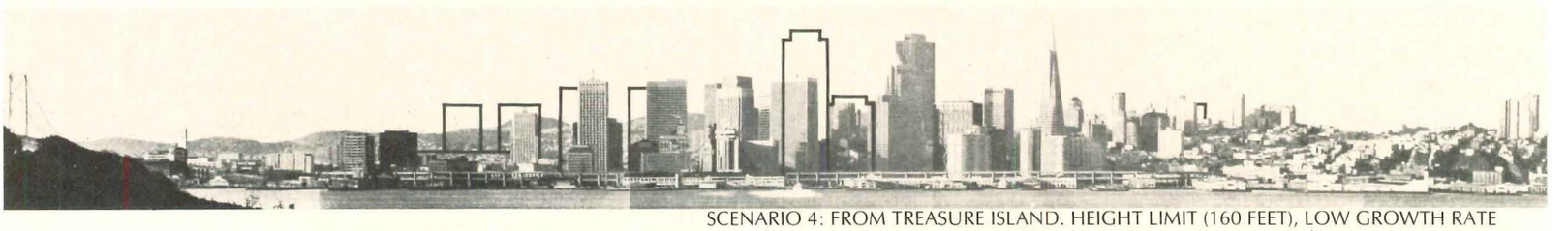
Two years ago SPUR (San Francisco Planning and Urban Renewal Association), the uniquely positioned citizens' study and advisory organization which has semi-official status in the city's government, undertook to study the problem of growth in San Francisco, using a series of scenarios of possible growth patterns under a variety of conditions, including both extreme and moderate rates of office space increase. Funded by two local foundations, the San Francisco Foundation and the Mary A. Crocker Trust, and by a $200,000 grant from the Department of Housing and Urban Development (HUD), the study set out to determine in particular the impact of high-rise buildings on the economy, on municipal financing, on transportation and on the environment over a period of 25 years, from the present to 1990. Some of the methods used were conventional, some were in-

PATTERNS OF GROWTH: OR, CAN A CITY SAVE ITSELF FROM BEING DEVELOPED TO DEATH?

SCENARIO 2: FROM TREASURE ISLAND, TO THE EAST OF SAN FRANCISCO. HIGH-RISE, LOW GROWTH RATE

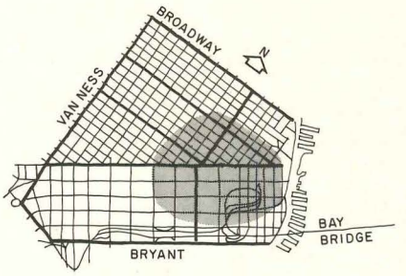


SCENARIO 3: FROM TREASURE ISLAND. HIGH-RISE, HIGH GROWTH RATE



SCENARIO 4: FROM TREASURE ISLAND. HEIGHT LIMIT (160 FEET), LOW GROWTH RATE

SCENARIO 5: FROM TREASURE ISLAND. HEIGHT LIMIT (160 FEET), HIGH GROWTH RATE



In the four scenarios shown above, the effect of various allowable heights and growth rates is projected on the existing condition shown in Scenario 1, as seen from near the middle point of San Francisco Bay. The area included in the study, with Market Street cutting through the city on the horizontal, is shown in the diagrammatic map. Scenarios 2 and 3—the high rise projections—proved to make the most impact on the city, whether the growth is at either high or low extreme. Scenarios across page show the same conditions as seen from Telegraph Hill and Coit Tower on the north.

novative. Taken altogether, the study provides a model which any city, desirous of self-determining its future, can use to examine possible choices and the effects that could be expected from each.

SPUR's board of directors appointed a committee of its own members and its executive director to work out a program for the study. The committee then appointed two subcommittees—one a technical advisory group made up of two planners, a landscape architect, an urban consultant, the city engineer, and the deputy manager of the Metropolitan Transportation Commission; and the other a group of persons representative of concerned civic and professional organizations, and of some individuals—like Alvin Duskin, whose personal rebellion at the effects of growth triggered an initiative that had narrowly missed approval in the previous election. Some members of the latter committee were assiduous in attendance and helpful with advice, others were less contributive, but all had the opportunity to propose, to discover and to oppose. In addition, professionals were engaged from the fields of urban economics, municipal finance, survey research, transportation, architecture and planning.

Although originally some thirty "generic block types" (each made up of a series of blocks representative of a number of other blocks in height, occupational mix, form and density) were to have been tested, but funds could not be stretched to cover so extensive a model and a simpler, less complex model consisting of four possible alternative development patterns comprised the final study material. Instead of the unusual "generic block types," gross aggregate square footages were used, all of them drawn from the commercial areas.

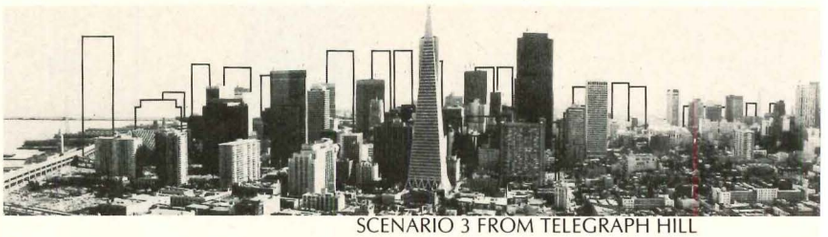
Nevertheless, despite the narrowed testing of the study, the SPUR study should provide a stimulus to other cities and towns, of varying sizes and types, in search of insights into their future, suggesting how to explore the options open to them and the effects of development, for it attempts to examine the impact not only of high-rise but of low and moderate height construction as well.

Of special interest to architects is the section of the report which deals with the environment, and in particular those portions prepared by architects Kaplan & McLaughlin, in association with architect/planner William H. Liskamm, which study the visual implications of growth. The five scenarios (four alternatives to the existing conditions shown in the first) conform in height and bulk to the requirements of San Francisco's urban design plan (adopted in 1972) but are generally smaller than the plan's allowable maximum height and bulk.

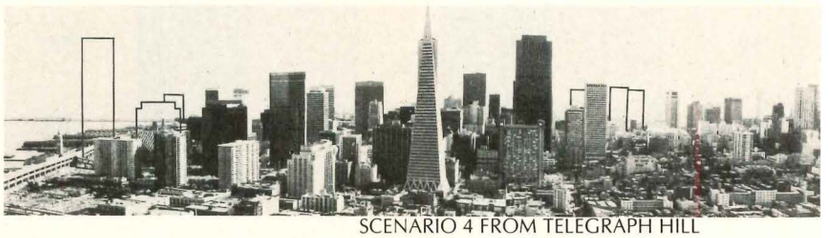
Scenario 1 is San Francisco as of January 1, 1974 (start of study), with a reservoir of 50 million square feet of office space, 22,200 hotel rooms, 186,000 office workers. Such major structures still under construction as Embarcadero Center and the Southern Pacific Towers were considered as complete for the study.

Scenario 2 posits high-rise at

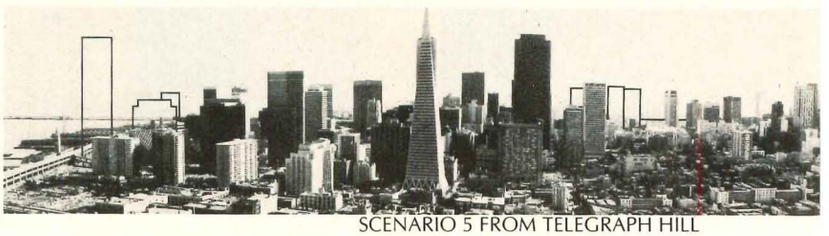
SCENARIO 2 FROM TELEGRAPH HILL



SCENARIO 3 FROM TELEGRAPH HILL

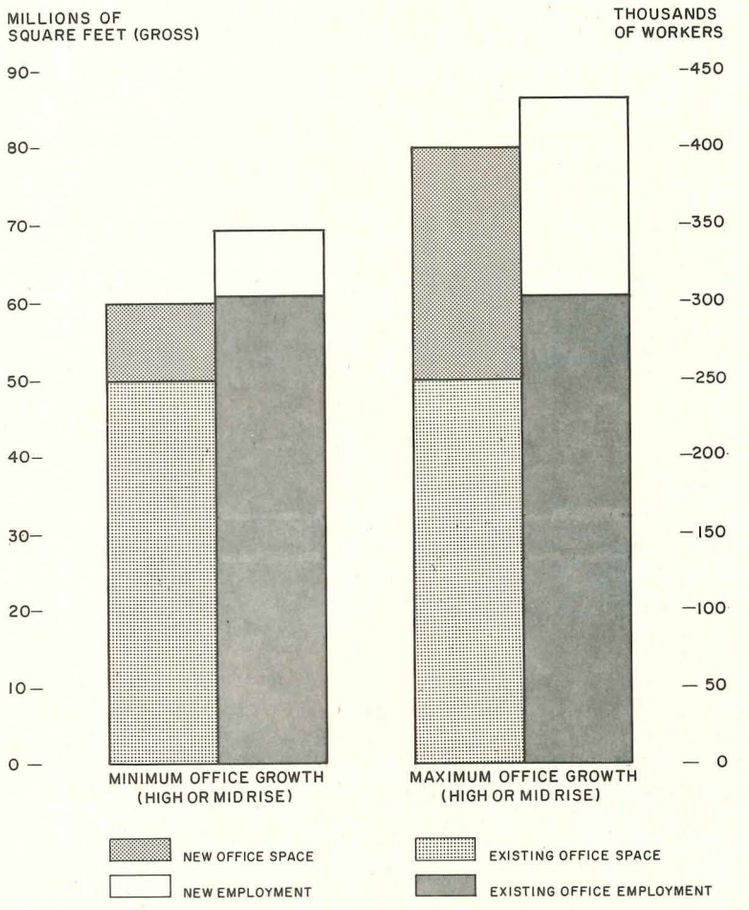


SCENARIO 4 FROM TELEGRAPH HILL

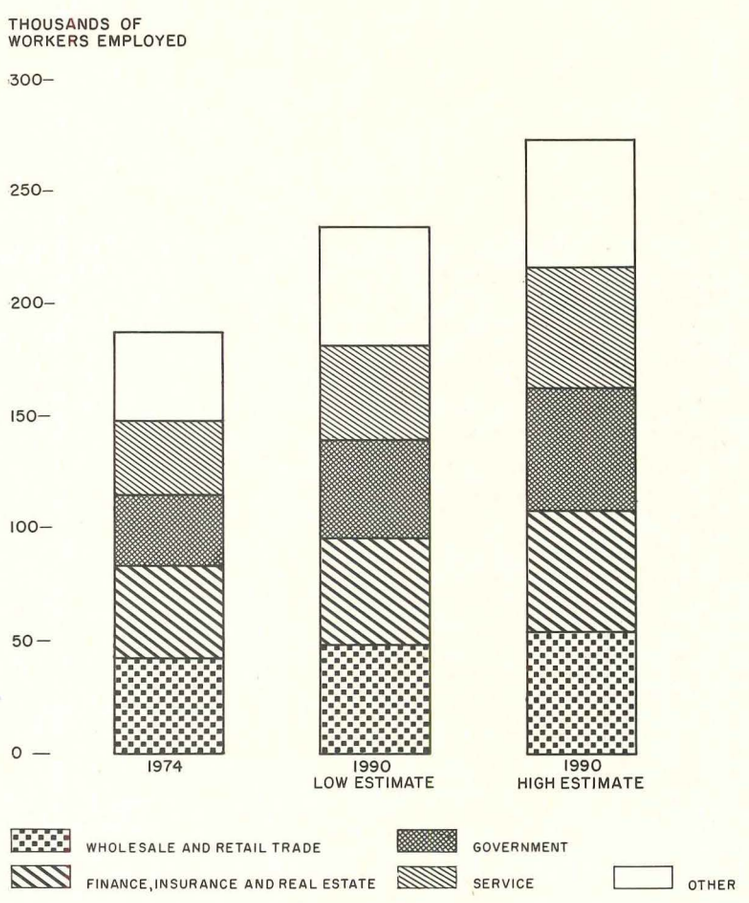


SCENARIO 5 FROM TELEGRAPH HILL

CHANGES IN OFFICE SPACE AND EMPLOYMENT IN SAN FRANCISCO, 1974 - 1990



CENTRAL BUSINESS DISTRICT OFFICE WORKERS BY TYPE OF OFFICE EMPLOYMENT



a low rate of growth with no further limits on height or density on new construction than currently exist. Development is assumed greatest near Market Street, the great arterial now being redesigned as a result of BART, but with two large redevelopment projects as centers of construction: Embarcadero Center to the north and Yerba Buena Center to the south. Gross square feet of office space would be increased by 9,800,000; 4,650 hotel rooms would be added; parking would be needed for 6,300 cars.

Scenario 3 shows high-rise development at a high growth rate, again without further height limitation, and resulting in 30,-150,000 gross square feet of new office space, 6,600 new hotel rooms, parking for 19,800 cars.

Scenario 4 projects a 160-foot height limit and a low level of growth, providing 9,750,000 gross square feet of new office space, 4,600 hotel rooms, parking for 6,300 cars. The height limit would apply only to new projects and not to those already master-planned, like Yerba Buena and Embarcadero.

Scenario 5 also projects a 160-foot height limit but with a high level of growth. Only 10 per cent of the total office space would be built north of Market Street in contrast to Scenarios 2, 3 and 4, where 39, 26 and 25 per cent would be north-of-Market construction. The height limitation is assumed to make it uneconomical to replace existing 6- to 8-story buildings with buildings at or under the height limit.

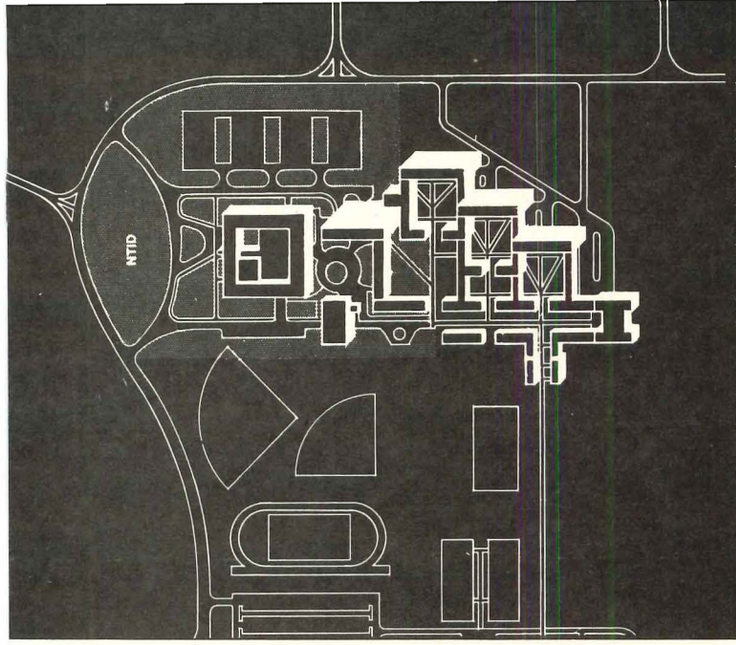
The environmental study turned up data of exceptional value in planning for the amenity of an area. It is not uncommon today to make studies of air quality, but it is rare to study the effect of buildings of various heights and bulks on wind conditions, often a major source of discomfort in urban outdoor spaces, on views and on city and neighborhood livability. Under the conditions of Scenario 3 (high-rise, high density) wind conditions would be aggravated at all of the 10 study sites, and at 7 of 10 study sites for Scenario 5.

As to livability in Scenario 1 (existing), it was found that high-rise buildings predominant on a block inhibit "outdoor relaxation activities" more than do blocks with low-rise buildings, and increase pedestrian and motor vehicle traffic to and from the block. High-rise development in projections for the future (Scenarios 2, 3, 4 and 5), the study concludes, will have negative effects on livability of residential areas as well as decrease the "outdoor relaxation opportunity" on downtown blocks while the demand for such opportunity is increased.

As for the visual impact of high-rise development, the finding, not so surprising in San Francisco, was that as a criterion for evaluating city areas esthetics proved more important to the questionnaire respondents than economics. New high-rise, high density building would, the study found, add more "view opportunities" (from hotel and office buildings) than they would block, but this finding was counterbalanced by the data which revealed that it was not the views from offices that are highly valued but rather those from residences.

Despite the data provided by the environmental sections of the study, the economic view of the future seemed, as presented in a Summary Report of the study, to say that expansion of downtown office space would bring benefits to the city which would offset the accompanying loss of amenities. Whether San Francisco would indeed accept the loss of these amenities is a very real matter for conjecture: in elections held in November 1971 and in June 1972, referendums proposing height limitations drew unprecedented response. Neither proposition won, but of 225,000 voters in the first, 38 per cent voted for the measure (72 foot height limit), and of 186,000 voters in the second, 43 per cent were in favor of the height limitations (160 feet downtown and 40 feet in outer areas).

The SPUR report has so far not been approved (or voted upon) by the Association's board of directors. The annual meeting of SPUR, which this year featured the presentation of the summary report, made it clear that this may well be the most controversial of all SPUR's reports. Adverse citizen reaction to the statement in the Summary that "although there is a reduction in the level of amenities accompanying this type of growth (i.e., expansion of downtown office activities), it would appear that this environmental degradation is not of sufficient proportion to warrant imposition of growth-discouraging restrictions" was immediate and continues. In the city which stopped freeway development, the outcome of this controversy may well become another landmark in the process of citizen self-determination.

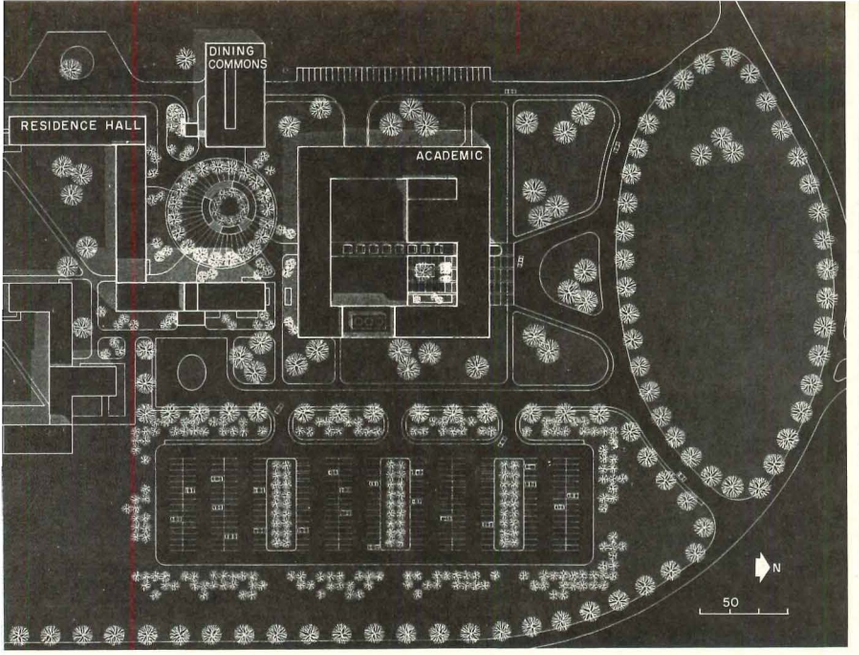


This is the kind of building that rarely gets the praise it deserves—its silhouette does not sear the eyeballs, its forms add nothing new to the formal dictionary and its details are quietly modest. In short, it is spectacularly competent (to flip the connotation of that usually pejorative word), and it may escape professional admiration because it is so *simply* good. The National Technical Institute for the Deaf is the nation's first college-level technical living and learning center for the deaf, and also the only technical school for the deaf integrated with a college for non-handicapped students—the Rochester Institute of Technology in Rochester, New York. Architects Hugh Stubbins and Associates of Boston have taken a complicated and specialized program and rendered it in strong and plain terms. In the 12-story facade of the residence hall shown below, for instance, they have taken the only two available tools—solids (walls) and voids (windows and air conditioner

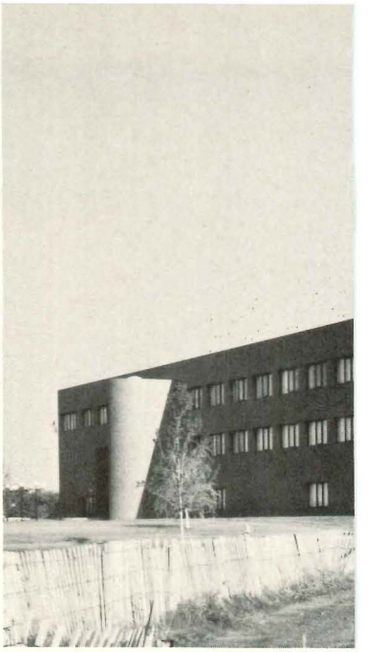
The National Technical Institute for the Deaf

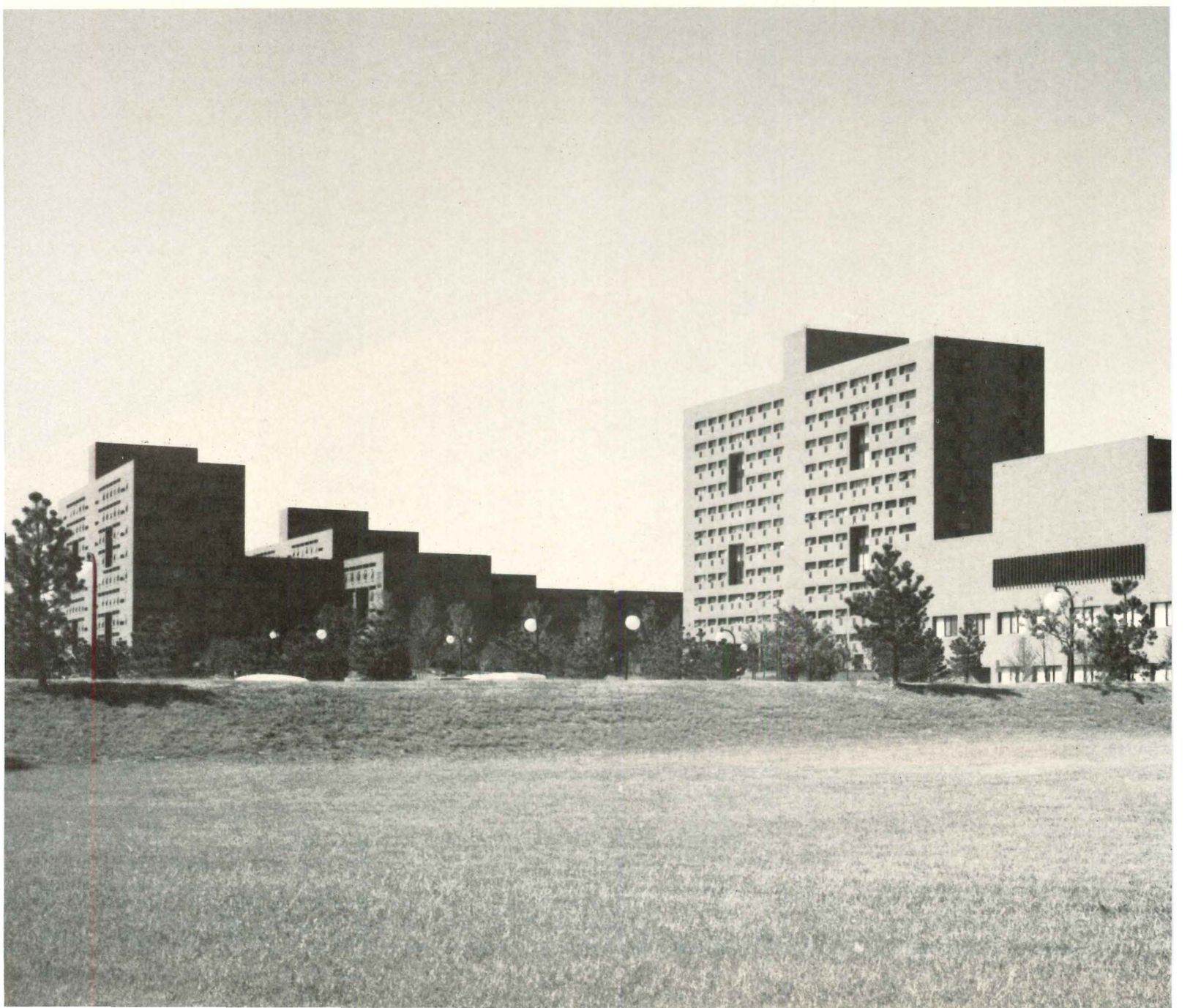
Jonathan Green

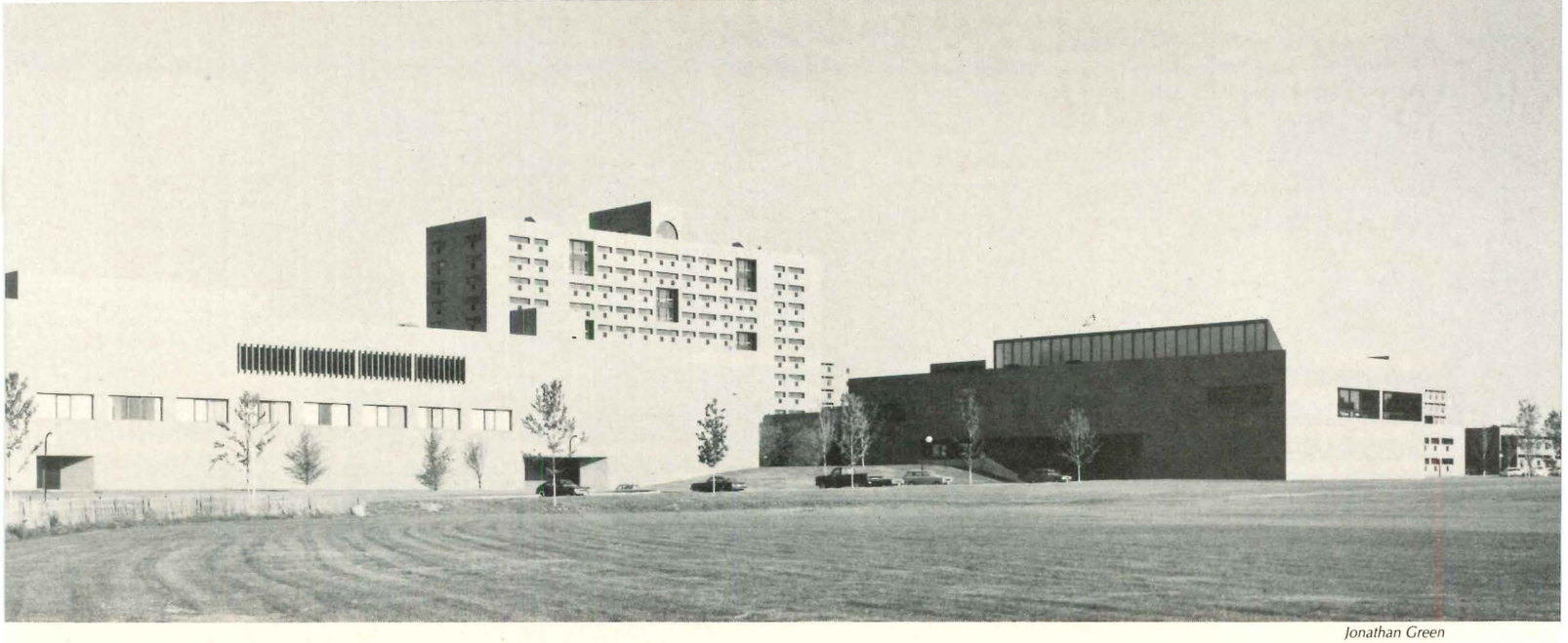
openings)—and made a composition that is if nothing else richer and more dignified than the usually uniform appearance of such slab buildings because it intrigues the eye with three separate and consistent orders of scale. Similarly the architects have paid careful attention to the plan and the other individual buildings on the campus of which the National Technical Institute for the Deaf is a part. . . .



The campus of the Rochester Institute of Technology is the result of a collaboration between five architects—Lawrence Anderson, Edward Larrabee Barnes, Kevin Roche, Hugh Stubbins and Harry Weese—working together with landscape architect Dan Kiley (RECORD, November 1968, pages 123-134). Hugh Stubbins and Associates were also responsible for the combined College of Fine and Applied Arts and College of Graphic Arts and Photography on the campus, (RECORD, April 1971, pages 93-100), and subsequently they were awarded the commission for the National Technical Institute for the Deaf shown on these pages. NTID is a three-building complex consisting of an academic building, a dining commons, and a residence hall (site plan left). The academic building contains all teaching and administrative functions, and it includes a 542-seat theater. A 475-seat dining room, a large lounge and student mail room are in the dining commons building. The residence hall is made up of a twelve-floor section, and three-floor and two-floor sections.

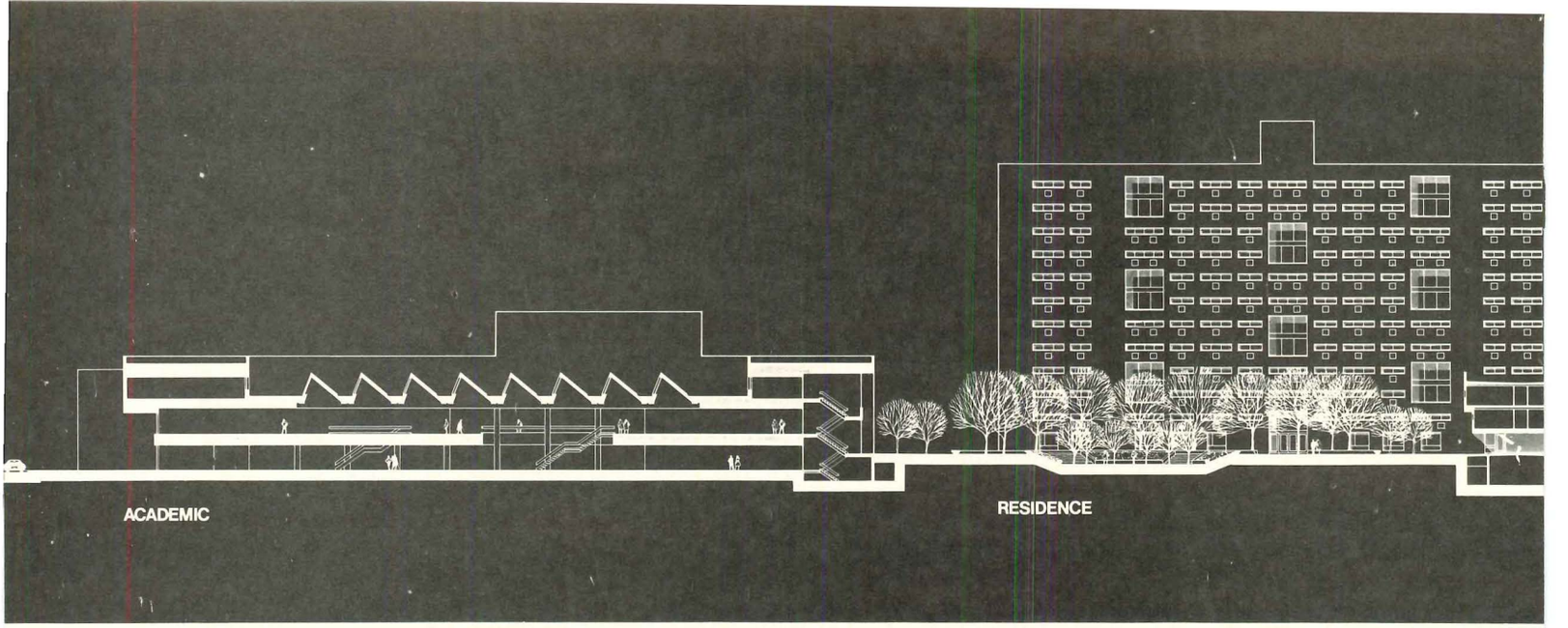




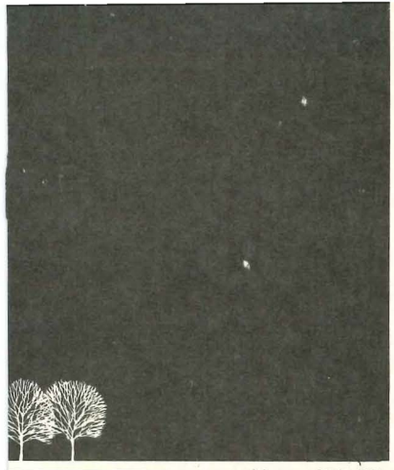


Jonathan Green

Edward Jacoby



Jonathan Green photos



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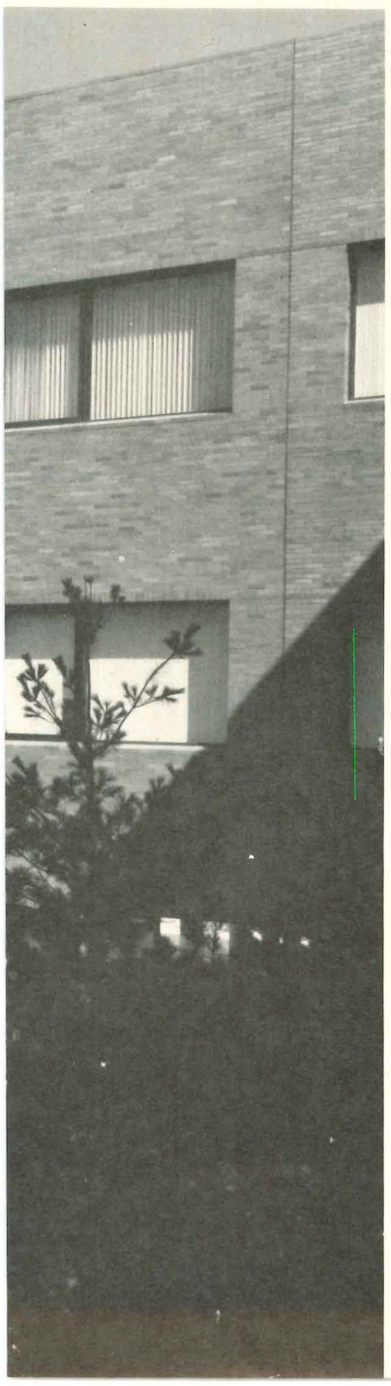
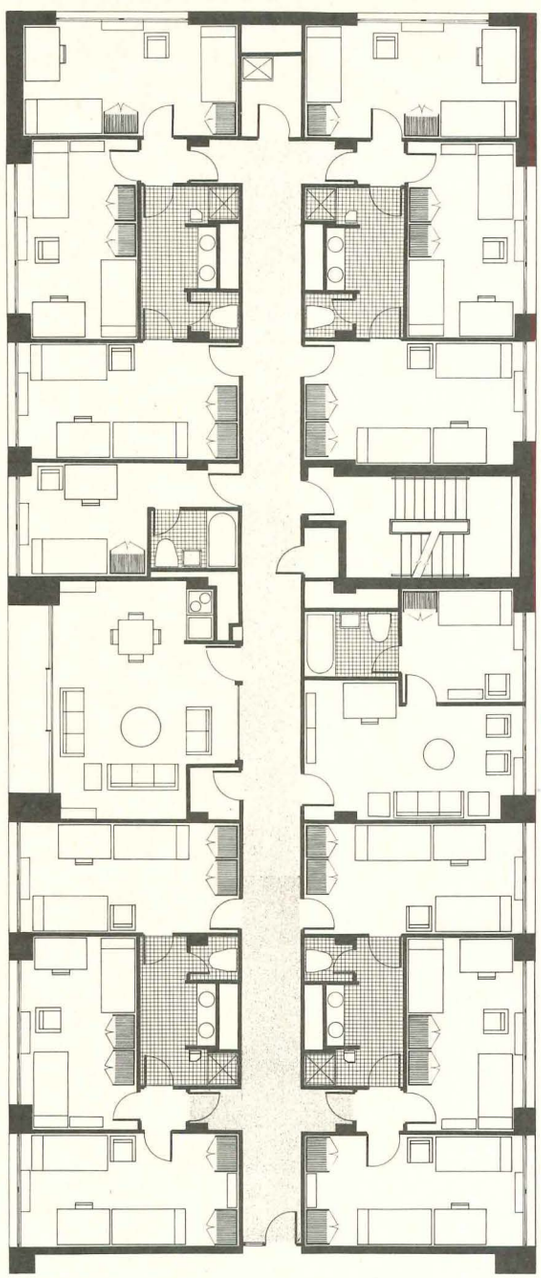


The basic mission of the National Technical Institute for the Deaf is to provide post-secondary deaf students with education in science, technology and applied arts that will lead them to significant careers in business, government and the professions. The Institute was established in 1965 by an act of Congress, and is funded through the Department of Health, Education and Welfare. The new $25.3 million complex at the Rochester Institute of Technology is designed to provide for 750 deaf students each year.

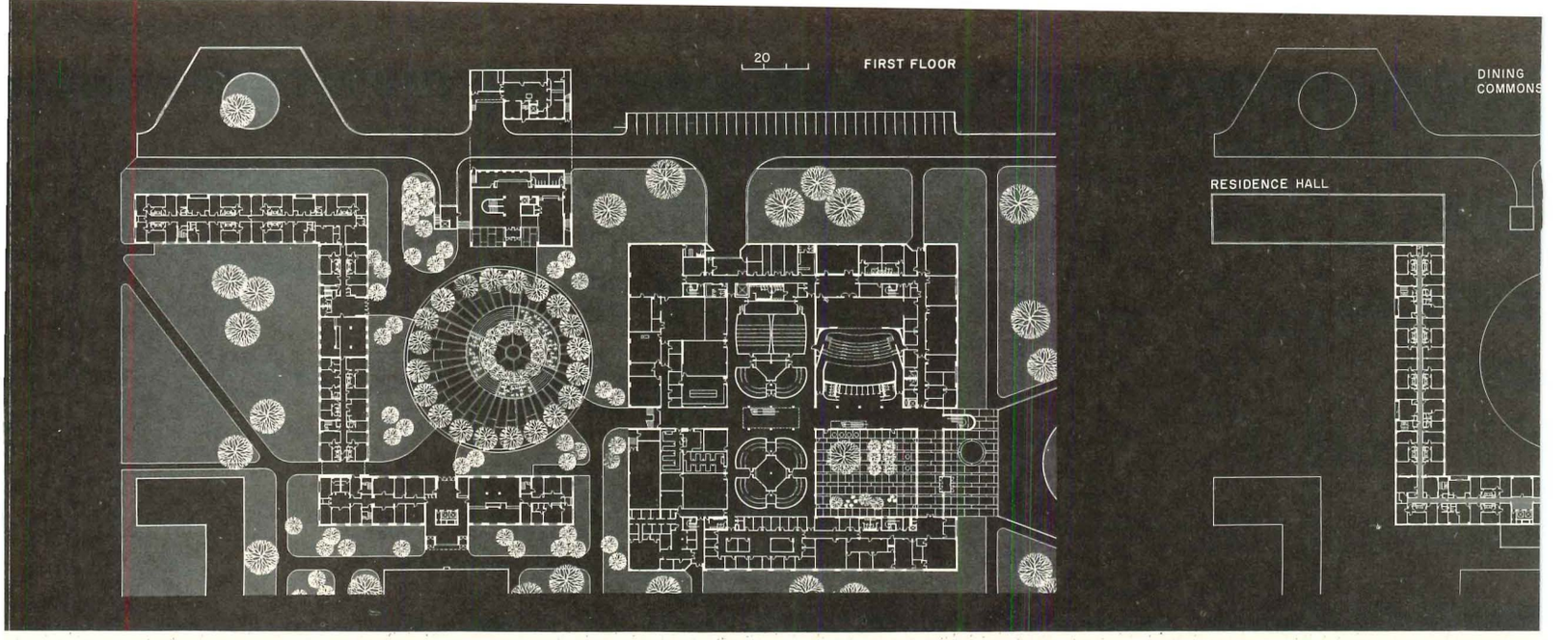
The drawing above left shows an elevation of the 12-story portion of the residence hall, and a section through the academic building. The two-story skylit circulation space shown in the drawing is the organizational spine of the academic complex, and it opens, in one place, to the landscaped courtyard shown in the photograph on the left. "Hey, diddle, diddle, the rooms are in the middle, and the hallways have the view," is the reported evaluation of NTID students. But it was reasoned that, since deaf students must learn visually, all visual distractions (including windows) should be eliminated from the classrooms.

In a similarly visual mode, each classroom, bereft of windows, is equipped with a strobe light controlled by the teacher. Should a student's attention wander during the course of a class, the teacher can easily get it back again by pressing a button that bounces a split-second flash of light around the room. The strobe is also used in the classrooms (as well as in the dormitories) in conjunction with small red lights to warn in case of emergencies.

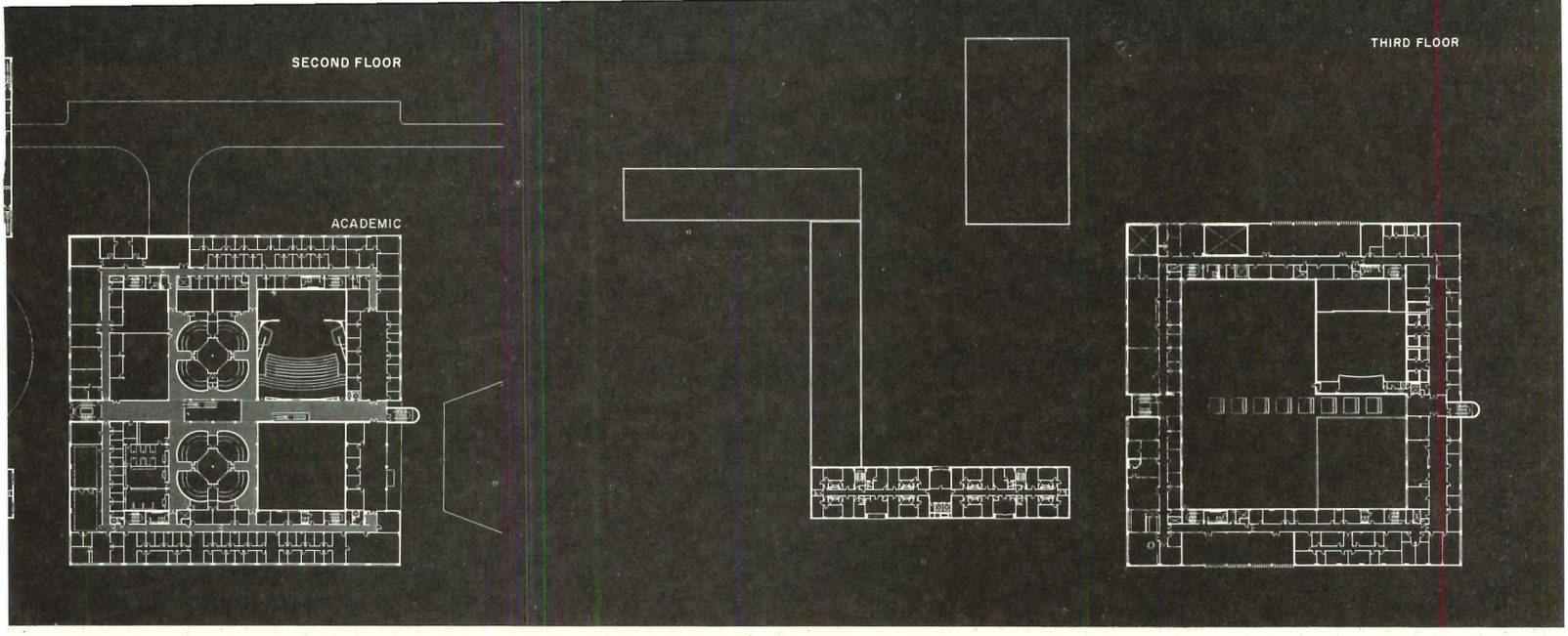
The plan on the right shows a typical living group for 25 students and a resident advisor. In all, 175 hearing students share the dormitory with 400 deaf students—so that both learn to live with each other. No suite contains only deaf or only hearing students.



TYPICAL LIVING GROUP



Edward Jacoby



The photograph below right shows the skylit central circulation spine of the academic building, and floor plans of the building are above. In addition to the usual small, cellular classrooms there are twelve larger, pie-shaped classrooms designed to focus students' attention on a lecturer, or on a screen lit from behind by a central audio-visual core. From this core an AV specialist can show films, slides, filmstrips and CCTV broadcasts, or can videotape any of the four classes in the cluster. Each desk in the larger classrooms is equipped with a panel which students can use to make fine adjustments in their headsets (since not all NTID students are totally deaf).

The 542-seat theater, shown in the photograph on the left, is a part of the Institute's performance facilities that include a rehearsal room with stage lighting and acoustical properties that parallel those on the main stage. For deaf students attending a performance (and for a hearing audience that does not understand the sign language of a deaf performance) the first 200 seats are fitted with lights in the arms of the chairs so that this part of the audience can follow a script during a production.

Behind these seats is the central access ramp and then the rest of the seating steeply tiered to afford every spectator optimum visibility. High in the back of the theater is an observation window for latecomers, which enables the deaf person to know when a performance is in progress so that he can enter at an appropriate time without disturbing others.

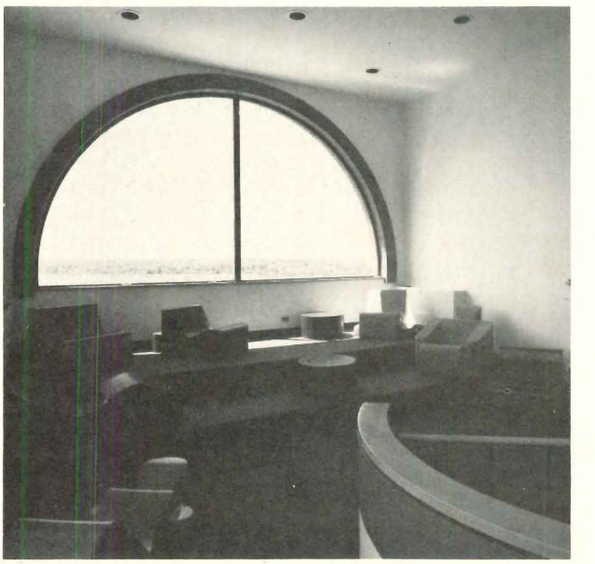
Television has also been used in this theater in an innovative way. Usually, lighting and set-control personnel communicate with stage managers by headsets, but here headsets have been replaced by closed-circuit television which allows for visual communication where no aural communication is possible.

The theater is a vital part of NTID's educational program, where students can act out literature, study mock trials, or attend everything from lectures and speeches to performances of movies and concerts and plays.

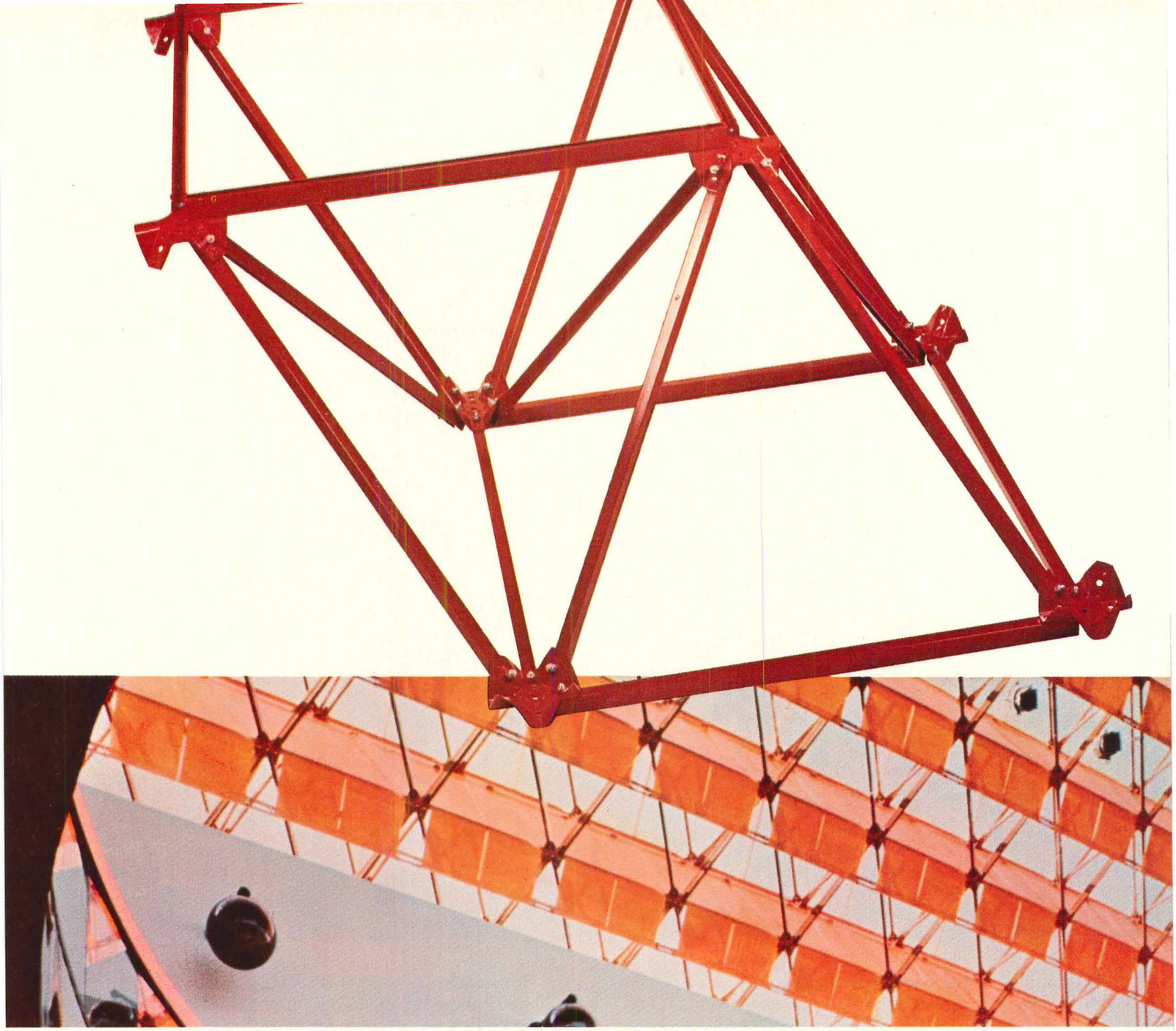
Jonathan Green

The large photograph below shows a central administration area in the academic building of the National Technical Institute for the Deaf. The photograph on the left shows one of the 12 large wedge-shape classrooms (described on the previous page). The lounge area seen in the photograph on the right is at the top of the 12-story portion of the residence hall.

NATIONAL TECHNICAL INSTITUTE FOR THE DEAF, Rochester Institute of Technology, Rochester, New York. Architects: *Hugh Stubbins and Associates, Inc.—principal designer: Hugh Stubbins; project architect: Edwin F. Jones; assistant project architect: Michael Kraus; construction administration: Roger Marshall.* Engineers: *LeMessurier Associates* (structural), *Golder Gass Associates* (soils), *Ebner Schmidt* (mechanical and electrical). Consultants: *Robert Lindsey* (food facilities), *Bolt, Beranek and Newman* (acoustical), *McKee Berger Mansueto* (cost), *David Hayes* (stage equipment). General Contractor: *Piggott Construction International, Ltd.*



Edward Jacoby photos



Owners: Julian Cohen and Daniel E. Rothenberg, Chestnut Hill, Mass. *Architects:* Sumner Schein, Brookline, Mass. *Consulting Architects:* Pietro Belluschi and Jung Brannen, Boston, Mass. *General Contractor:* Barkan Construction Co., Chestnut Hill.

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Open, airy space-frames, all from standard production components. Bolted together into a single load-sharing modular truss.

Like the Mall at Chestnut Hill, Massachusetts. Here, Moduspan space-frames form wall and roof structures. They're painted a handsome orange and fitted with bright yellow shades to control sunlight.

Mass-produced Moduspan components are available in 4′ and 5′ systems, and six durable architectural colors, to help you create beautiful structures. Because they're standard, they reduce architect and engineer man-hours. And eliminate on-the-job delays caused by awaiting custom-designed fabrications.

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Moduspan—an infinity of form from five basic parts. UNISTRUT Corporation, Wayne, Michigan 48184.

UNISTRUT CORPORATION

Inside, there's the warmth and beauty of our traditional wood window.

For years, wood windows have been appreciated for their warmth. In appearance. And in their natural ability to provide good insulating properties. So when we developed the cladding system for our wood windows, we were very careful about leaving both of those qualities intact. Viewed from inside the building, all of the surfaces that were meant to be wood are still wood. The exterior aluminum skin is not visible anywhere on the inside of the window. And because the skin does not penetrate the frame or the sash (a), the insulating qualities of the wood are not disturbed.

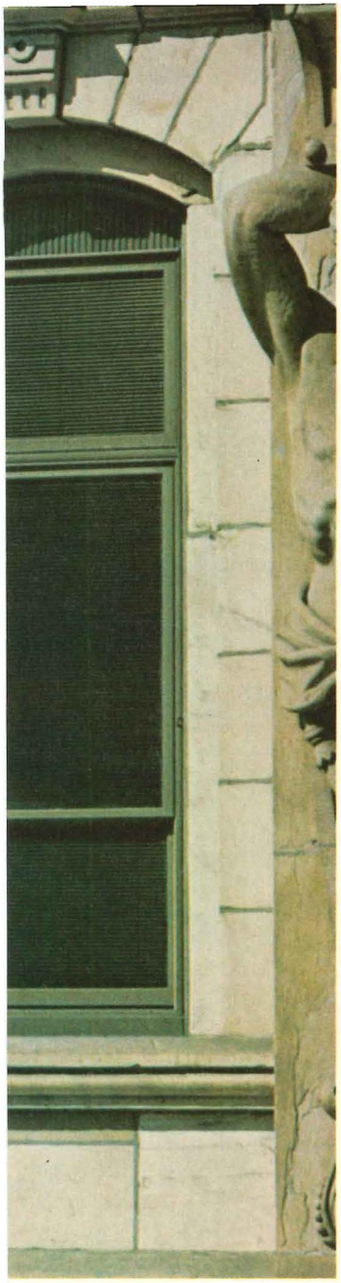
(a)

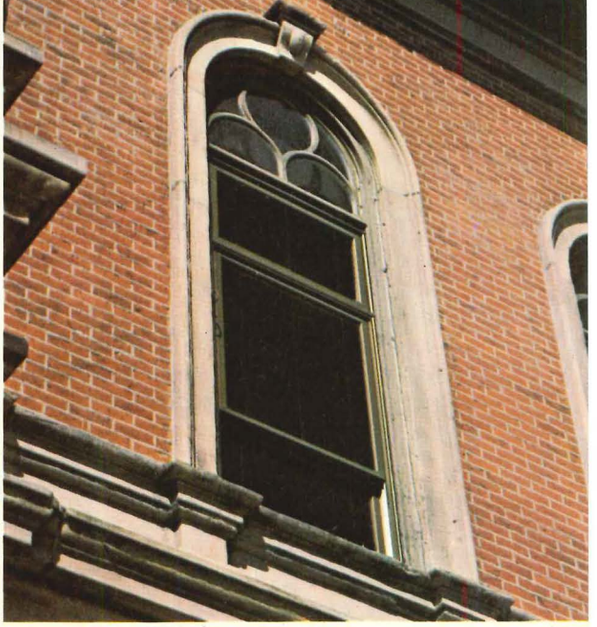
In between, a number of unique options for controlling the environment and associated costs.

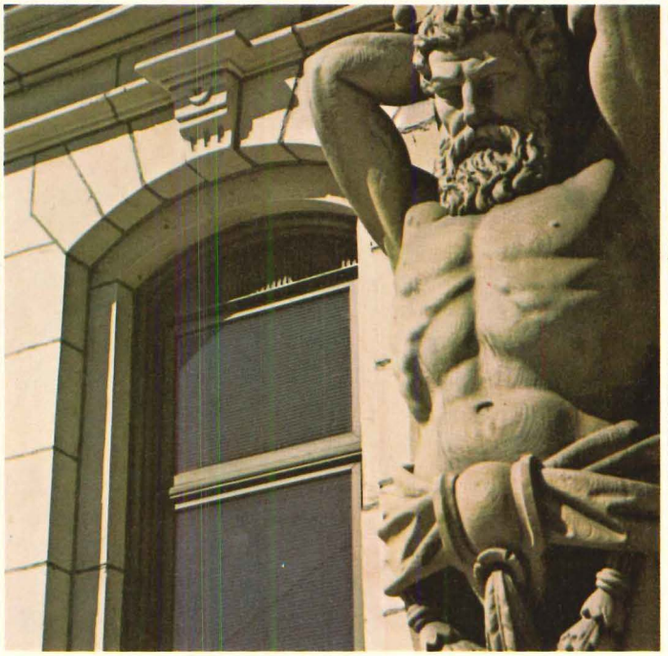
The removable inside storm panel in our optional Double Glazing System gives you a number of other valuable options. Like using our Slimshade® (b) to control sunlight, privacy and solar heat gain and loss. Housed between the panes, this fully adjustable blind remains virtually dust-free. The Double Glazing System also accommodates our snap-in muntins and privacy panels. But mere flexibility is not its only saving grace. The 13/16″ air space between the panes does a better job of insulating than ordinary welded insulating glass. And at a lower cost per window.

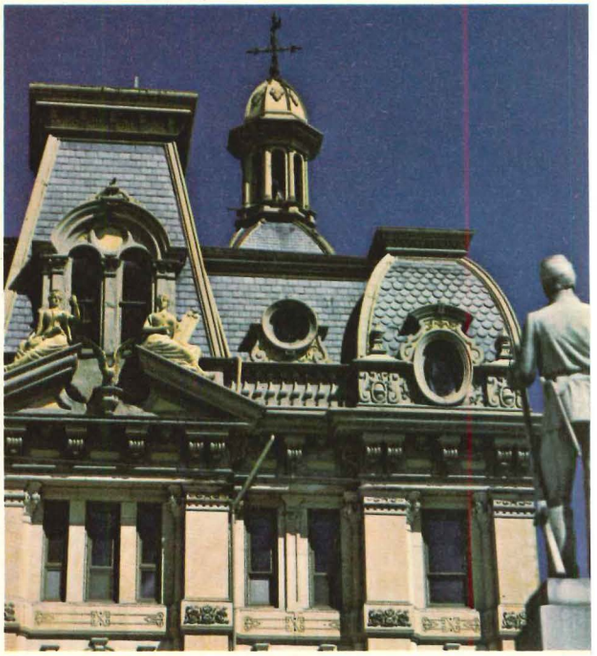
(b)

This Pella Clad window system combines modern convenience with traditional values, in the recently restored Wayne County Courthouse.









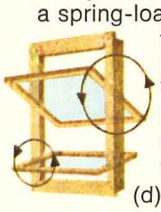
Outside, an acrylic coated aluminum finish that reduces maintenance without reducing your choice of colors.

In the Pella Clad window system, all exterior wood surfaces are sealed off from the weather and other atmospheric contaminants by an acrylic coated aluminum skin. An outside finish that has earned its reputation for durability. And one which is available on our Contemporary and Traditional Double-Hung, Casement, Awning, Fixed and Trapezoidal Windows, Pella Clad Frames, and Pella Sliding Glass Doors. In Dark Bronze, Dark Brown, White (c) and eight special colors. With sizes in each to accommodate a wide variety of design and building requirements.

(c)

Afterward, the ease and economy of washing the outside of a ventilating window from the inside.

Window cleaning is another maintenance factor which deserves consideration. And Pella Windows have something to offer in this area also. All of our ventilating units can be cleaned, easily, from the inside. The Pella Double-Hung Window has a spring-loaded, vinyl jamb liner which allows the sash to pivot fully. And because each sash pivots at its center point (d), the weight of the sash is counterbalanced. Which makes the job just that much easier. Reglazing can also be accomplished from the inside, along with sash removal. And the same thing is true of our casement and awning windows.



(d)

Pella®

OUR 50TH YEAR

For more detailed information, send for your free copy of our 6-page, full-color brochure on Pella Windows in Renovation. See us in Sweet's Architectural File. Call Sweet's BUYLINE number or look in the Yellow Pages, under "windows", for the phone number of your Pella Distributor.

Please send me your 6-page brochure on Pella Windows in Renovation. I am specifically interested in: ☐ Double-Hung Windows, ☐ Casement Windows, ☐ Awning Windows, ☐ Sliding Glass Doors, ☐ Wood Folding Doors.

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Telephone_____

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Right from the start, masonry saves you money. Engineered loadbearing masonry construction, for example, can save up to 30% in initial costs over competitive structural frame systems. The masonry serves as both structure and enclosure while providing a fire, sound and thermal barrier.

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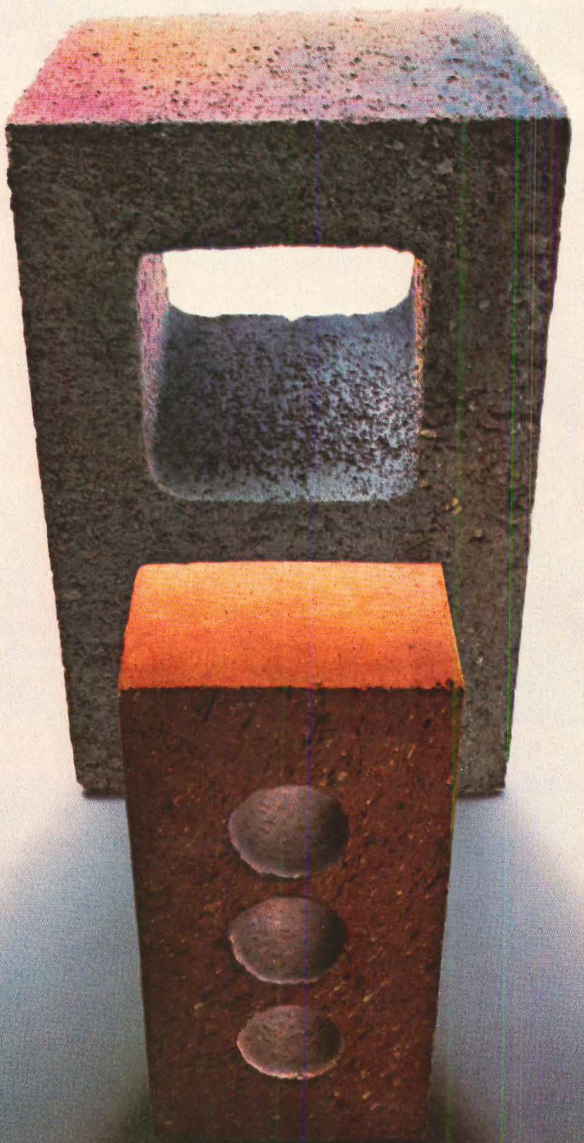
Finally, masonry walls save money throughout the life of the building because they require little maintenance for care and cleaning. You save money from beginning to end.

There are studies available which show just how much money masonry can save you. For free copies, write to us at the address below.

When you build with masonry, you build for keeps.

For more data, circle 43 on inquiry card

When masonry goes up, costs go down.



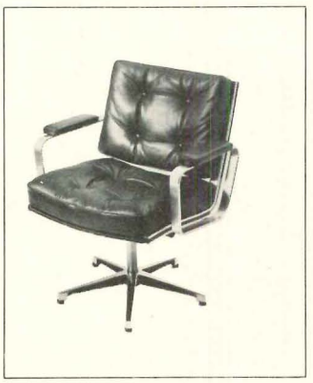
The International Masonry Institute
Suite 1001, 823 15th Street, N.W.
Washington, D.C. 20005
202-783-3908

For more information, circle item numbers on Reader Service Inquiry Card, pages 161-162.

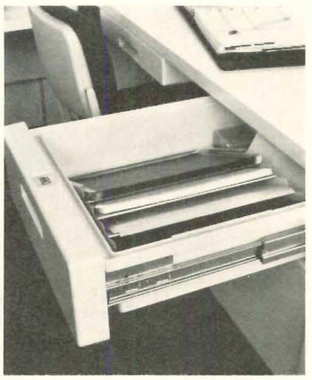
Report from NEOCON: good year for design

Hundreds of contract manufacturers or their representatives lined the eleventh floor aisles of the Chicago Merchandise Mart June 18-22 for NEOCON VII, the year's largest commercial furnishings display. Shown on this page are but a few of the designs introduced in Chicago. They are described in more detail on succeeding pages, a sampling of design trends in a design competitive industry not letting up. Modularity, open plan offices, and modern classic revivals are still being emphasized by most manufacturers. (Thonet, with numerous new designs, said its number one selling item is still an 1876 bentwood Vienna cafe chair.) Task lighting in offices is an innovation seen to be growing, as is the trend toward competitively priced, good performing imports. First-time exhibitor Sandro Longarini of Castelli Furniture reported excellent architect and designer response to his firm's new Chicago Mart showroom, and upholstered furniture lines made in the U.S. from Italian designs. Eleanor Stendig—familiar to many NEOCON attendees—said she felt Italian designers are still ahead of the rest, but she added, American manufacturers seemed to be displaying a significantly improved level of design at this NEOCON showing. Mrs. Stendig, whose own showroom in the Merchandise Mart continues to offer provocative interiors products, found NEOCON this year "exciting, with upgraded showrooms and more people than one expected to see." Among those present this year were the designers themselves: Karl Erik Ekselius and Jan Ekselius, for Stendig; Robert DeFuccio, for Stow/Davis; William Stephens, for Knoll; and Robert Bernard Associates, for Thonet, to name a few. As to the future of the contract industry, Eleanor Stendig said that, after 20 years in the business, intuition tells her we are on the brink of a new era in design.

Product descriptions for items shown here begin on page 121.



300 Stendig



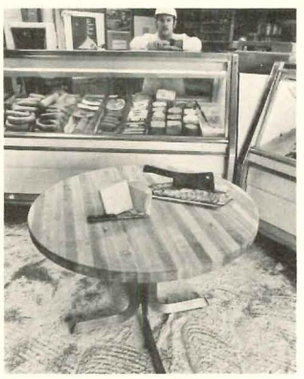
301 Westinghouse Electric Corp.

302 Castelli Furniture

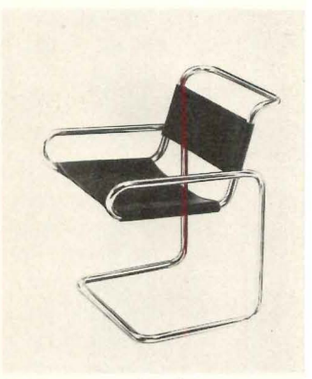
303 Haworth, Inc.

304 R-Way Furniture Co.

305 Thonet Industries Inc.

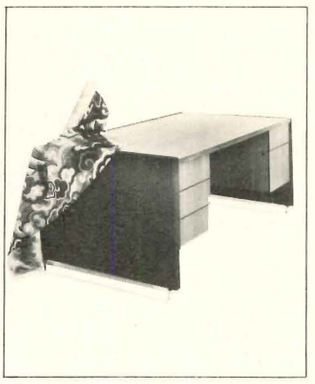


306 American Seating Co.



307 Krueger Metal Products

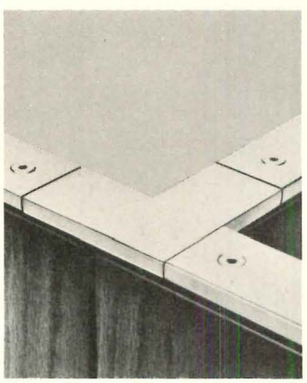
308 Castelli Furniture



309 JG Furniture Co., Inc.

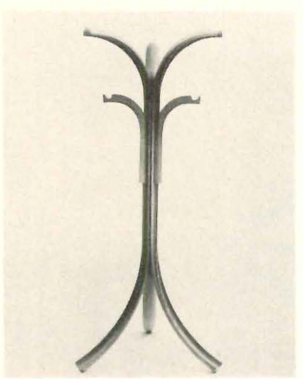
310 Thonet Industries Inc.

311 Atelier International, Ltd.



312 Knoll International

313 Stow/Davis



314 Stendig

315 Lehigh-Leopold Furniture

Now...medical wall systems can cost you less!

Sorgel Electric Corporation, long a leader in hospital electrical isolating systems, now introduces a new line of modular medical walls. These systems are designed to effect significant savings for both CCU/ICU and general patient care areas. They are built with the latest numerically controlled high production techniques to insure the highest quality at the lowest cost. Each standard wall section is completely factory wired and piped to meet all codes and standards and each must pass rigidly controlled factory testing procedures. Since piping and wiring systems are complete, installation and hook-up are both easily and quickly accomplished without removing the entire front panel of the section. This represents additional savings in job-site labor costs.

The panels are fabricated from vinyl-clad steel and are available in a variety of attractive colors. In total, they are built for durability, good looks, usability and easy maintenance. Sorgel Electric Corporation is an important part of the Square D organization. So you can get specific data on this high quality, economical modular medical wall system from your nearby Square D field office—there are 140 of them nationwide. Or write Sorgel Electric Corporation, Dept. SA, 3300 Medalist Drive, Oshkosh, Wisconsin 54901. (414) 426-1330.

For more data, circle 44 on inquiry card

SORGEL

A subsidiary of Square D Company

OFFICE LITERATURE

For more information, circle numbers on Reader Service Inquiry Card, pages 161-162.

AUTOMATED LAUNDRY SYSTEMS / A four-page brochure describes top-side loaders from 200- to 900-lb capacities, end loaders available in unit sizes from 60 to 900 lbs, and a continuous wash process system that provides maximum operation without attention from an operator. The units install conventionally in a separation wall for complete isolation control. ▪ G. A. Braun Inc., Syracuse, N.Y.

Circle 400 on inquiry card

ELECTROSTATIC PRINTER/PLOTTER / The equipment and operating characteristics of the company's electrostatic printer/plotter are described in a two-page, four-color publication covering detailed specifications. The unit produces graphs, charts, diagrams and alphanumerics approximately 800 times faster than any drum or pen plotter, according to the company. ▪ Gould, Inc., Cleveland, Ohio.

Circle 401 on inquiry card

FIR DOOR STANDARDS / The Fir and Hemlock Door Association has updated its industry standard to include carved front entrance doors, and to require safety glass in glazed doors assembled in member plants. The 12-page manual, referenced as FHDA/5-75, replaces FHDA/4-72, issued two and one half years ago. Numerous specifications are revised in the new standard, and some door designs are deleted because of obsolescence. ▪ Fir and Hemlock Door Assn., Portland, Ore.

Circle 402 on inquiry card

REDWOOD DECKS / A 12-page booklet, *"Redwood Decks Do It,"* features color photographs of a variety of deck installations using the lower cost garden grades of redwood (Construction Common, Construction Heart and Merchantable). The booklet also contains a section on choosing and working with garden redwood and includes a separate data sheet detailing finish recommendations for decks and other outdoor redwood projects. ▪ California Redwood Assn., San Francisco, Cal.

Circle 403 on inquiry card

MAKE-UP AIR SYSTEMS / Products to provide replacement air at room temperature in all seasons are described in an illustrated eight-page bulletin entitled, "Year Round Heating/Cooling Make-Up Air Systems." The bulletin features both indoor and rooftop systems and air delivery capacities for both series range from 1000 to 12,000 CFM. Equipment selection, model listings, performance charts, dimensions, electrical and wiring data and equipment diagrams are included in the bulletin. Information on optional accessories, engineering specifications and standard equipment are also included. ▪ Hastings Industries, Inc., Omaha, Neb.

Circle 404 on inquiry card

ROOF TILE / Colored concrete roof tile, as used on twenty conventional and unconventional homes, commercial and institutional buildings, is shown in this full-color brochure. The tile is said to be incombustible. Weight, coverage, comprehensive and flexure strengths are given in the brochure. ▪ Monier-Raymond Co., Corona, Cal.

Circle 405 on inquiry card

INTERNATIONAL ENGINEERING DIRECTORY / The American Consulting Engineers Council has published the 1974-75 edition of the International Engineering Directory. The hard-bound book includes listings, in three languages, of participating ACEC member firms, an explanation of services available from consulting firms, recommended selection procedures and advantages of retaining independent professionals. Each of the firms listed has a two-page spread describing professional services capabilities, personnel, areas of interest, projects undertaken in the past and other pertinent data. Prices are $5.00 for members and $10.00 for non-members. ▪ American Consulting Engineers Council, Washington, D.C.

Circle 406 on inquiry card

PLASTIC CONCRETE REINFORCING / Featuring six different types of plastic rebar accessories, the literature contains technical information, as well as an introduction to the use of plastic spacers. Included is a discussion of several potential problems which these plastic spacers can overcome. ▪ Preco, Plainview, N.Y.

Circle 407 on inquiry card

CARPET CUSHION / A new Sweet's Catalog includes comprehensive product information on 18 different types of carpet cushion listed in product application categories ranging from normal to light traffic to maximum luxury. ▪ Dayco Corp., Dayton, Ohio.

Circle 408 on inquiry card

HID LIGHTING / A four-color brochure featuring a line of lighting products for use with mercury vapor, metal halide, high-pressure sodium and low-pressure sodium lamps suggests substantial energy savings through use of the fixture and the HID light source combinations indicated. Products featured range from surface and bracket mounted architecturally styled cylinders, rectangles, spheres and squares to functionally designed recessed and semi-recessed luminaires, wall brackets and step lights. All of the units can be used indoors or outdoors. The brochure contains complete specifications and ordering information for each of the eleven product groups featured. ▪ Devine Lighting Inc., Kansas City, Mo.

Circle 409 on inquiry card

AIR DIFFUSER / The type CTPB "Paradisc" directional air diffuser is described in a bulletin that points out its function as a plaque type diffuser for constant-air-volume systems. Curve graphs show air-flow, diffusion, throw and sound-level characteristics. A dimensional drawing shows two sizes. ▪ American SF Products, Inc., Fort Lauderdale, Fla.

Circle 410 on inquiry card

WATER MONITOR RING / Turbidimeters for continuous water monitoring are the subjects of a new folder with information outlining the principles of operation and specifications. The turbidimeter is for precise laboratory analysis of drinking water. This folder also lists turbidimeter application facts and offers free technical booklets on water analysis and management. ▪ Hach Chemical Co., Ames, Iowa.

Circle 411 on inquiry card

PRE-BUILT KITCHENS, BATHS / Subsystems can contain one or more finished bathrooms, kitchen, utility room, laundry area and the plumbing, water heater, heating and air-conditioning equipment, air distribution, electrical panel and circuitry, and acoustical and fire protection treatments associated with those areas. These "Service Modules" have been designed for four specific types of applications: garden apartments and single-story homes, townhouses and two-story homes, elevator and walk-up apartments, and motels, hotels and health care facilities. Full details on the four series of service modules including advantages, services available, production facilities, design and costs are presented in a 16-page booklet. ▪ Alcoa Construction Systems, Inc., Pittsburgh, Pa.

Circle 412 on inquiry card

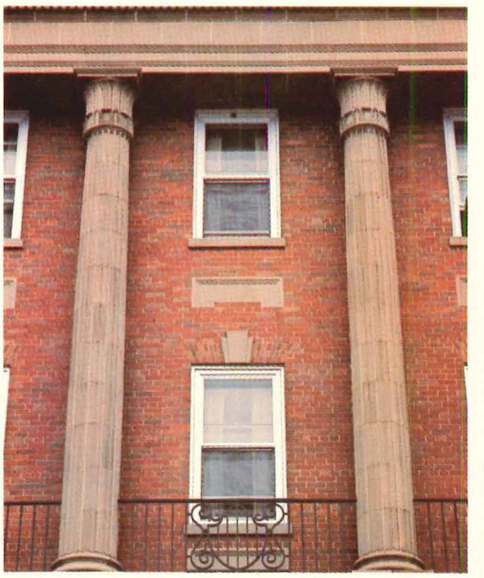
CURE THE COMMON OLD.

With replacement windows protected by DURACRON® coatings from PPG. More and more, the usefulness of old buildings is being saved from the wrecking ball. Thanks to modern technology and companies such as Season-all Industries of Indiana, Pennsylvania. Season-all manufactures custom-made replacement window units to refurbish old buildings and extend their life. For example . . .

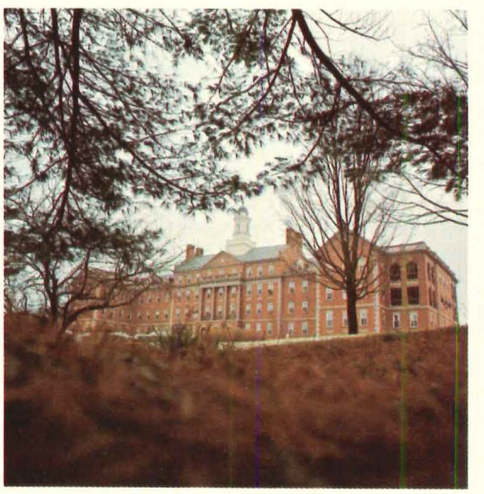
Allen County Courthouse objection overruled. Rotting wood sashes and frames made this Lima, Ohio courthouse look shabby. *NuPrime** extruded aluminum window units by Season-all, with DURACRON thermosetting acrylic coatings from PPG, improved the appearance and reduced heating and maintenance costs.

Huntington VA Hospital rehabilitates more than people. At this West Virginia VA hospital, the leaky old windows were letting weather in and comfort out. Season-all *NuPrime* units pre-coated with DURACRON enamel stopped all that.

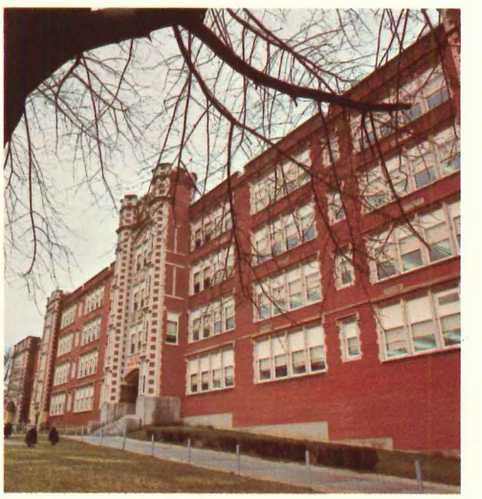
*NuPrime is a registered trademark of Season-all Industries, Inc.



Huntington VA hospital improved both its appearance and efficiency with replacement window units protected by DURACRON coatings from PPG.



Garfield Junior High learns a lesson in economics. Aging windows in this Johnstown, Pennsylvania school were costing the school system money for maintenance and heat loss. New Season-all units with DURACRON enamel now hold comfort in and keep maintenance costs down.



DURACRON coatings from PPG help cure the old. Year after year. Because the color resists fading and chalking, and the coating itself resists chipping, cracking and peeling. Get full details on how you can improve your image while you reduce maintenance and energy costs. With extruded aluminum replacement window units protected by DURACRON color coatings.

Check Sweet's Architectural or Industrial Construction Files 9.10/PPG. Or, contact the Market Manager, Extrusion Coatings, PPG INDUSTRIES, Inc., Dept. 16W, One Gateway Center, Pittsburgh, PA 15222.

PPG: a Concern for the Future

Extrusion Coatings

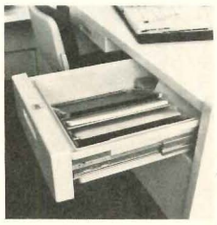
PPG INDUSTRIES

For more data, circle 46 on inquiry card

SWIVEL-TILT CHAIR / A swivel-tilt chair designed by Karl Erik Ekselius is part of the "VIP" series with solid aluminum frame and a choice selection of materials. The "VIP" series consists of reception, conference, visitors and desk seating. ▪ Stendig Inc., New York City.

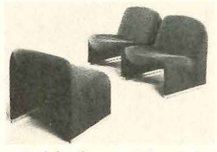
Circle 300 on inquiry card

PEDESTAL AND TUB DRAWER / For use with the company's "ASD" line, two new drawer systems—pedestal and tub—have been designed so that drawers can be used singularly or in combinations to suit individual needs. A key feature is the ability to interchange each drawer individually or in groups. All desk drawers have side-mounted hardware with full extension glides and all are individually equipped with locks for security. They are made of molded plastic. Trays, dividers and stationery holders are available as accessories. ▪ Westinghouse Electric Corp., ASD, Grand Rapids, Mich.



Circle 301 on inquiry card

CONTOUR SEATING / Injected polyurethane foam bonded to a steel frame and covered in fabric, the "Alky System" was designed by Gian Carlo Piretti. Its low back and contoured seat make it suitable for residential or contract use. "Alky" can be placed individually, in a cornered formation or anchored side-by-side with an invisible joining device without the use of tools, and it is available in a wide choice of colors and fabrics. ▪ Castelli Furniture, Inc., New York City.



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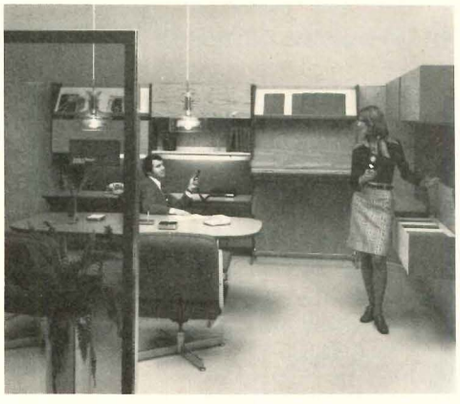


OFFICE SYSTEM / Several arrangements for individual needs are possible with "UniGroup" components. The executive work station, as shown, contains display shelves, primary and secondary work surfaces, and a stand-up height mounted roll top work surface. Lift top file bins contain individual files. Panels are 80 in. high for privacy when standing, and glazed panels provide visual contact with other individuals, yet define work station area. "UniGroup Profile H," a high-luster trim option, accents panels and accessories. Other trim options are neutral, and brown. Note: the company was formerly Modern Partitions, Inc. ▪ Haworth, Inc., Holland, Mich.

Circle 303 on inquiry card

EXECUTIVE OFFICE FURNITURE / The group includes an entire collection of desks, returns, credenzas, book shelves, lounge and office seating. Acacia veneers, hand-rubbed with a high-solids premium lacquer finish and recessed hardware, are featured. Office seating, accented with burl-top tables and hand-tufted lounge seating is available in antiqued leather. ▪ R-Way Furniture Co., Sheboygan, Wis.

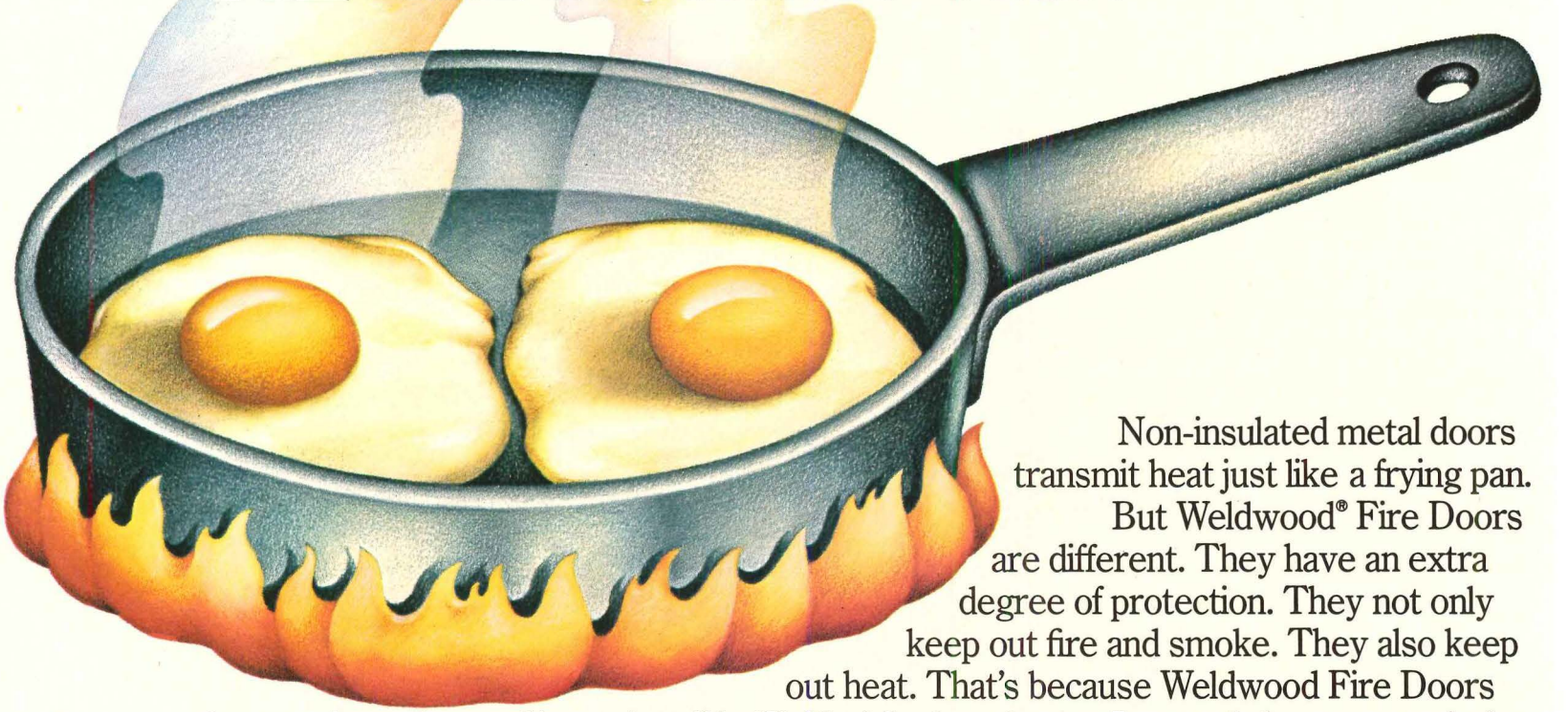
Circle 304 on inquiry card

SWIVEL CHAIR / Seating in molded plywood is the design of the Robert Bernard Associates. Two continuous curves of upholstered molded plywood connected by a polished chrome plate form the back and seat units. The attached seat cushion is urethane filled, and the polished aluminum base has a swivel tilt mechanism or returnable swivel and may be ordered with casters or glides. ▪ Thonet Industries, Inc., York, Pa.

Circle 305 on inquiry card

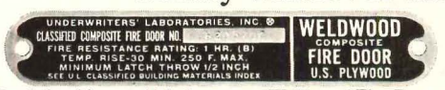
more products on page 123

YOU'RE LOOKING AT WHAT'S WRONG WITH MOST METAL FIRE DOORS.



Non-insulated metal doors transmit heat just like a frying pan. But Weldwood® Fire Doors are different. They have an extra degree of protection. They not only keep out fire and smoke. They also keep out heat. That's because Weldwood Fire Doors have an inner layer of incombustible Weldrok® mineral core. It retards heat transmission. So the unexposed side doesn't get hot enough to be dangerous.

Besides giving extra protection, Weldwood Fire Doors add an extra degree of beauty wherever they're installed. In offices, hotels and apartment buildings, Weldwood real veneer doors look elegant. And in schools, hospitals and factories, our laminated doors add a colorful touch. And Weldwood Fire Doors come in a complete range of time ratings: including ¾ hour, 1 hour and 1½ hours.



Look for this metal label on every Weldwood Fire Door. It's your assurance of that extra degree of protection.

Before you specify any fire doors, you should make sure you're up on all the fine points of fire door standards, codes and construction details.

You'll find everything you need — and should know — at your U.S. Plywood Branch Office. Or by sending for our new booklet, "All About U.S. Plywood Wood Fire Doors."

Then you'll know all about the Weldwood extra degree of protection.

And perhaps our doors will become your doors.

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Please send me your booklet, "All About U.S. Plywood Wood Fire Doors."

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COMPANY

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CITY

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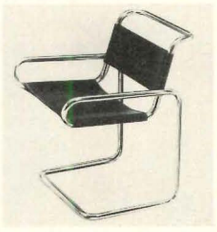
Division of Champion International

For more data, circle 48 on inquiry card

MAPLE BUTCHER BLOCK / The butcher block tops are 1¾ in. solid welded maple with maximum strip width of 2 in. and a hand-rubbed natural oil finish with no sealer or lacquer. The tops are available in size options, including five round tops from 30 to 60 in., three square tops from 30 to 42 in. and twelve rectangular variations from 30 by 42 in. up to 36 by 94 in. Designed by Robert Schier, the "Solar Tables" are supported by curved triangular steel columns of polished chrome or bronze. ▪ American Seating Co., Grand Rapids, Mich.

Circle 306 on inquiry card

SLING CHAIR / The chair features a reverse cantilevered frame and leather surfaces. The frame employs torque principles to distribute weight and is finished in bright chrome while seat and backrest are available in black or natural top-grain saddle leather. Ralph K. Rye is the designer. ▪ Krueger, Green Bay, Wis.



Circle 307 on inquiry card

GANGING SEAT / The "106 Chair," the design of Gian Carlo Piretti, stands on tubular steel legs that meet the side frame sections. Its seat and backrest are available in molded plywood or upholstery fabrics and optional accessories include: upholstered armrest, laminated plastic tablet arm, underseat book rack, ash tray and wheeled dolly for multiple transport of stacked chairs. ▪ Castelli Furniture Inc., New York City.

Circle 308 on inquiry card

UPHOLSTERED DESK / The "UPS" (Upholstered Panel System) permits a desk with the choices of covering materials heretofore available only for upholstered seating. Desk and swivel chair can now match, according to the company, which has made the product available in customers' own materials, and in company-offered nylons, wools, vinyls and leathers. The "UPS" desk was designed by Dave Woods. ▪ JG Furniture Co. Inc., Quakertown, Pa.

Circle 309 on inquiry card

more products on page 125

Congregation Beth El, New London, Conn.; Architect: Paul Rudolph, FAIA, New York, N.Y.; Roofer: H. R. Hillery Company, Groton, Conn.

THE ARCHITECT, METALS AND IMAGINATION

Many critics regard Paul Rudolph as one of the logical heirs to the late Frank Lloyd Wright's professional mantle, and his major projects have clearly influenced the whole range and dynamics of contemporary architecture. As Sibyl Moholy-Nagy once wrote, he has "great courage, comprehensiveness of talent, profound faith in the integrity of the architect's mission."

In conceptual felicity and strength of execution, Congregation Beth El is a notable example of Mr. Rudolph's recent work, and we are indeed gratified that in selecting a metal to sheathe and roof this distinguished building, he chose Follansbee Terne.

FOLLANSBEE

FOLLANSBEE STEEL CORPORATION • FOLLANSBEE, WEST VIRGINIA

For more data, circle 51 on inquiry card

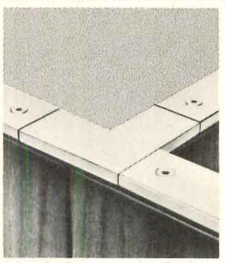
MODULAR SEATING / The molded plywood urethane covered seat unit is upholstered in a sewn sleeve of either vinyl or fabric. The polished chrome arm/leg frame may be ganged in groups of one to four or the seats may be interchanged with plastic laminate top tables. The chairs are available without arms, in a low arm version, and in a high arm with upholstered arm cap version. ▪ Thonet Industries, Inc., York, Pa.

Circle 310 on inquiry card

EXECUTIVE DESK ACCESSORIES / From Studio Castello, the company offers a small silverplate container (shown) suitable for candy or nuts, and two unpolished natural cast metal bowls (not shown) with rough foundry finishes, also suitable for fruit, nuts or for use as an ashtray. The vase shown has a removable top and integral flower arranger. Other ashtrays are ceramic and were designed by Boccato, Giganti and Zambusi. Three round ones in graduated sizes nest together, and can also be used separately; the others are a variety of circles. All are available in white, grey or black. ▪ Atelier International, Ltd., New York City.

Circle 311 on inquiry card

OPEN OFFICE COMPONENTS / The "Stephens System +" is said to provide a wider range of possibilities for the open office through a new hardware system, changeable wood veneer or fabric covered acoustic panels and integral work station lighting. The hardware, in a fused polyester finish or in polished chrome, includes eight connector kits to expand, alter and build new configurations. A new panel height of 74½ in. is added to the existing panel height of 58½ in., and panels will be offered in oak veneer or as fabric covered acoustic panels. The latter will have sound control quality and a tackable surface. ▪ Knoll International, New York City.



Circle 312 on inquiry card

TRIANGLE CHAIR / Designed by Robert DeFuccio, the chair is executed in laminated oak or walnut. Armless and arm chairs have triangular frames and shaped seat and back panels that can be reupholstered easily. The "Triangle Chairs" measure 22 in. wide, 21¾ in. deep and 31½ in. high. ▪ Stow/Davis, Grand Rapids, Mich.

Circle 313 on inquiry card

more products on page 127

Our new 22 families of color put the spectrum at your fingertips

We call this new, beautiful modern selection of paint colors the *DesignaColor*™ System. We think you'll call it the most practical approach to the selection of architectural-maintenance paint colors that has ever been devised.

In this new *DesignaColor* System *Pittsburgh* Paints gives you a full spectrum of modern colors —792 from which to select. They're — the "in vogue" hues — clean, clear paint colors — plus deep-tones and accents. All are arranged into 22 families so that the various shades in each color are grouped together and presented in an effective, pleasing, easily distinguished, practical arrangement.

The whole thing sounds so simple you would hardly think it was new and exciting. But it is. Just wait till you see how easy it is to match a Bird's Egg Blue, a Lush Orange . . . or even Grape Hyacinth!

A *Pittsburgh* Paints Sales Representative will be happy to tell you more about this new *DesignaColor* System. Give him a call or drop us a note. PPG Industries, Inc., One Gateway Center, 3W, Pittsburgh, Pa. 15222

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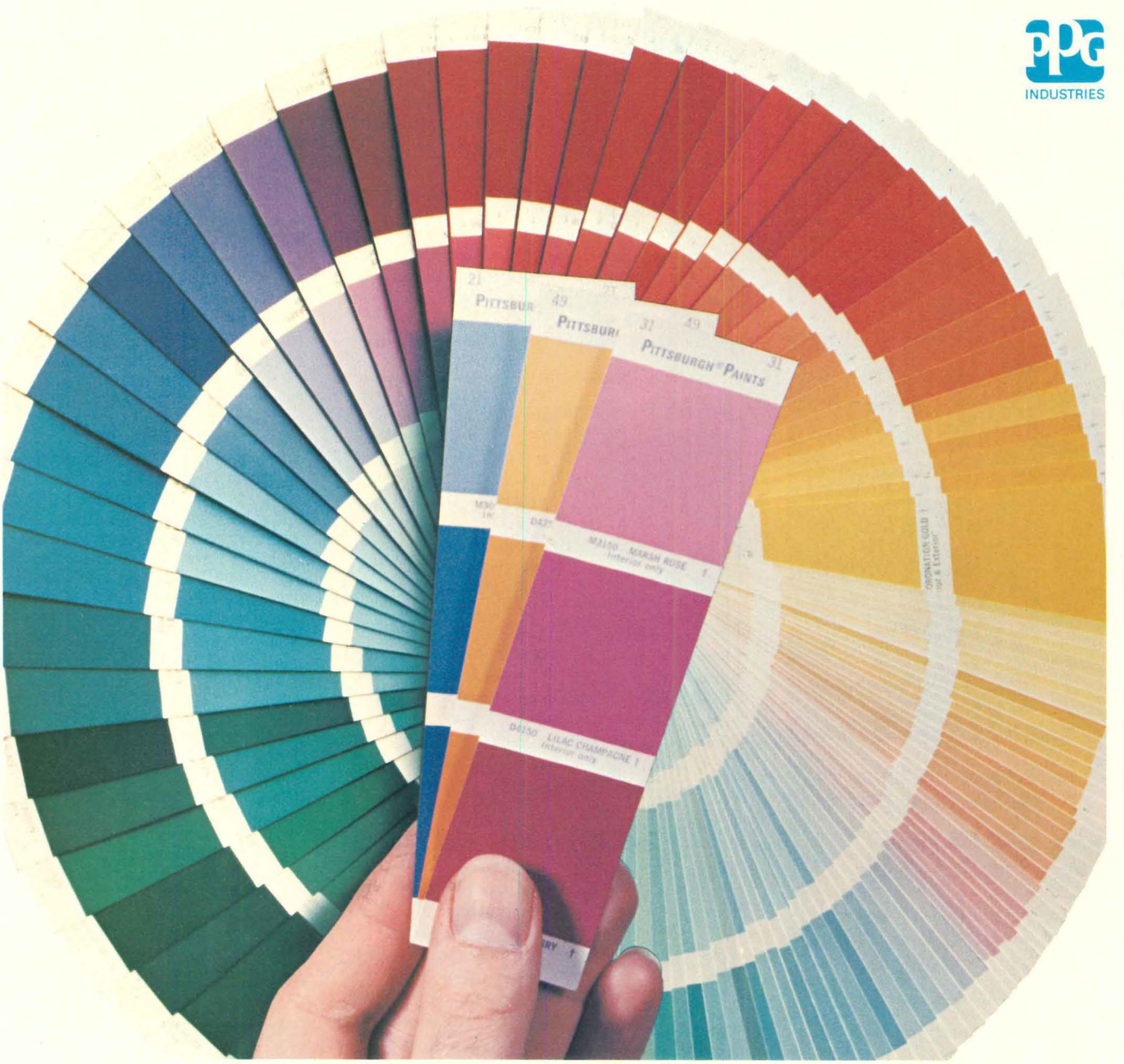
PITTSBURGH® PAINTS

PPG INDUSTRIES



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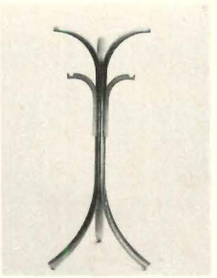

COSTUMER / "Johan" is crafted of steam bent Ash in natural finish only. It was designed by Giovanni Offredi, and introduced by the company at NEOCON in Chicago in June. ▪ Stendig Inc., New York City.

Circle 314 on inquiry card

ARM CHAIR / The "Palazzo" arm chair designed by Jerome Caruso and introduced in 1973, now has a castered or fixed base. Its molded plastic shell seat and back are upholstered with polyfoam and covered in a wide choice of mohairs and leathers. Its metal frame is available in mirror-polished stainless steel, with a fixed base or rotating non-tilt base with rubber ball casters. ▪ Lehigh-Leopold Div., Litton Industries, New York City.

Circle 315 on inquiry card

SLED-BASE CHAIR / "Capri" is an armchair from Italy designed by Pino Camerani. The sled base of mirror chromed oval steel tube permits easy movement on carpeting, and the chair is recommended as a conference, dining, or armchair as needed. It can be upholstered in a selection of fabrics, leathers, suedes, or C.O.M. ▪ Stendig Inc., New York City.

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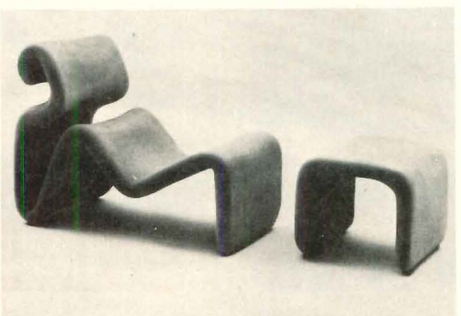


FREE-FORM SEATING / The "Jan" series by Jan Ekselius is constructed with a polished chrome steel frame and flat inner steel spring suspension covered in molded foam. Light, strong and comfortable, it can be used in heavy use areas; zippered covers are easy to remove. In addition to the chaise and ottoman pictured, a lounge chair is offered. ▪ Stendig Inc., New York City.

Circle 317 on inquiry card

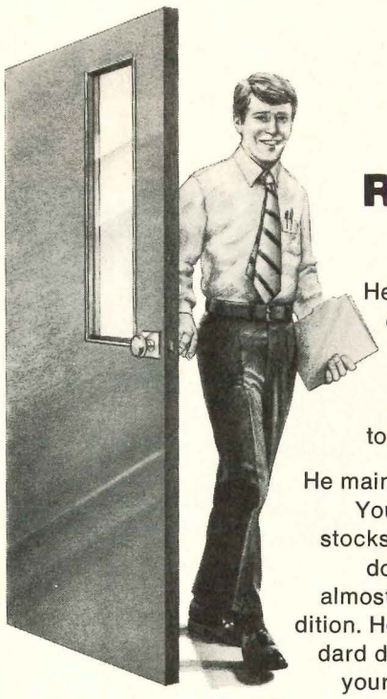
Bradglas for plant washrooms. Tough. Bradley style.

Bradglas® reinforced polyester Washfountains are tough to take the wear and tear of plant washroom use. Resistant to abrasion, acid and corrosion. Won't chip, peel or flake. Won't shrink, warp or crack. And they complement today's design treatments, with clean, contemporary lines in five decorator colors. Serve up to eight with one set of connections. See your Bradley representative and write for literature. Or Call (414) 251-6000. Telex 2-6751. Bradley Corporation, 9131 Fountain Blvd., Menomonee Falls, WI 53051.

Another bright idea from Bradley

For more data, circle 56 on inquiry card

Want more than just a door supplier?



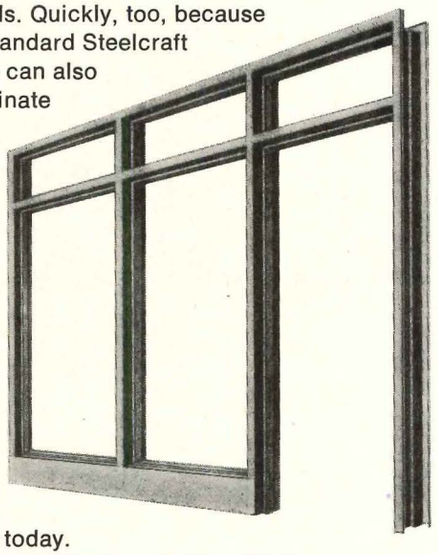
Rely on the man behind the Steelcraft door.

He's your local Steelcraft distributor — a factory-trained expert who brings steel doors and door knowhow close to your building projects.

He maintains a large inventory. Your Steelcraft distributor stocks a great variety of steel doors and frames to meet almost any wall opening condition. He can also modify standard doors and frames to suit your needs. He knows local building codes and building requirements. He can advise you where fire rated doors and frames are needed and deliver them quickly. He is the "Steel Door and Frame" expert in your area. Always glad to be of service to you.

He gives you fast delivery. Because he carries a large stock, your Steelcraft distributor can make quick deliveries timed to coincide with the progress of your building. And he can give you competent jobsite help when a problem arises.

He supplies more than just steel doors and frames. With our "Stick System", your Steelcraft distributor can fabricate made-to-order special entrances, partitions, and window walls. Quickly, too, because he works with standard Steelcraft components. He can also furnish or coordinate your hardware requirements.



For a single local source, a single responsibility — and the kind of service that matches the quality of his product — rely on the man behind the Steelcraft door.
Write for details today.
9017 Blue Ash Road, Cincinnati, Ohio 45242

Steelcraft®

An **American-Standard** Company

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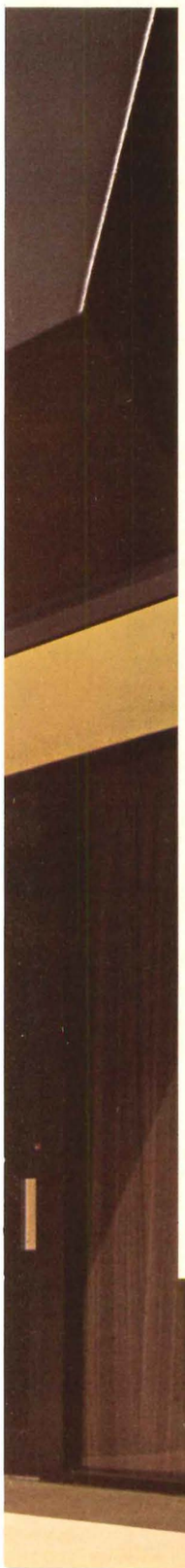
CONDITION WITH

Plexiglas acrylic plastic is a combustible thermoplastic. Observe fire precautions appropriate for comparable forms of wood. For building uses, check code approvals. Impact resistance a factor of thickness. Avoid exposure to heat or aromatic solvents. Clean with soap and water. Avoid abrasives.

**today,
more than ever...
it makes such
beautiful
sense.**

PLEXIGLAS®



Form, function and light are the basic elements of architectural design. And nothing blends them more beautifully than Plexiglas brand acrylic plastic.

Introduce dimension to function. Control solar heat by crowning a building with massive looking, light transmitting bronze Plexiglas.

Combine form and function. Enhance interior spaces with energy-saving three dimensional windows.

Add form to man-made light. Throw an incandescent glow under a nighttime sky with tough, decorative enclosures of Plexiglas acrylic sheet.

The creative dimensions of this safety glazing material are limited only by your imagination. Consult Sweet's Catalog 8.26/Roh, call (215) 592-6799, or write for our latest brochure on the application that interests you. *Plastics Dept., Rohm and Haas Company, Independence Mall West, Philadelphia, Pa. 19105.*

Building codes limit areas of Plastic glazing. Approvals for large-area Plexiglas enclosures must be applied for on a special permit basis. Fire safety design considerations must take into account the combustibility of Plexiglas.

"Eyebrow" sunscreens, Sun Oil Building, Twin Oaks, Pennsylvania. Designer/builder: Marketing Facilities & Distribution Dept., Sun Oil Co., Philadelphia.

Bronze-tinted luminaires, Broadway Pier Embarcadero, San Diego, California. Designer: William Mitchell, Mitchell-Webb & Associates, San Diego.

Free-formed "porthole" windows, Bahia Mar resort, South Padre Island, Texas. Architect: Swanson, Heister, Wilson & Claycomb, Brownsville.

the trademark	*the company*
PLEXIGLAS	ROHM AND HAAS PHILADELPHIA, PA 19105

For more data, circle 10 on inquiry card.

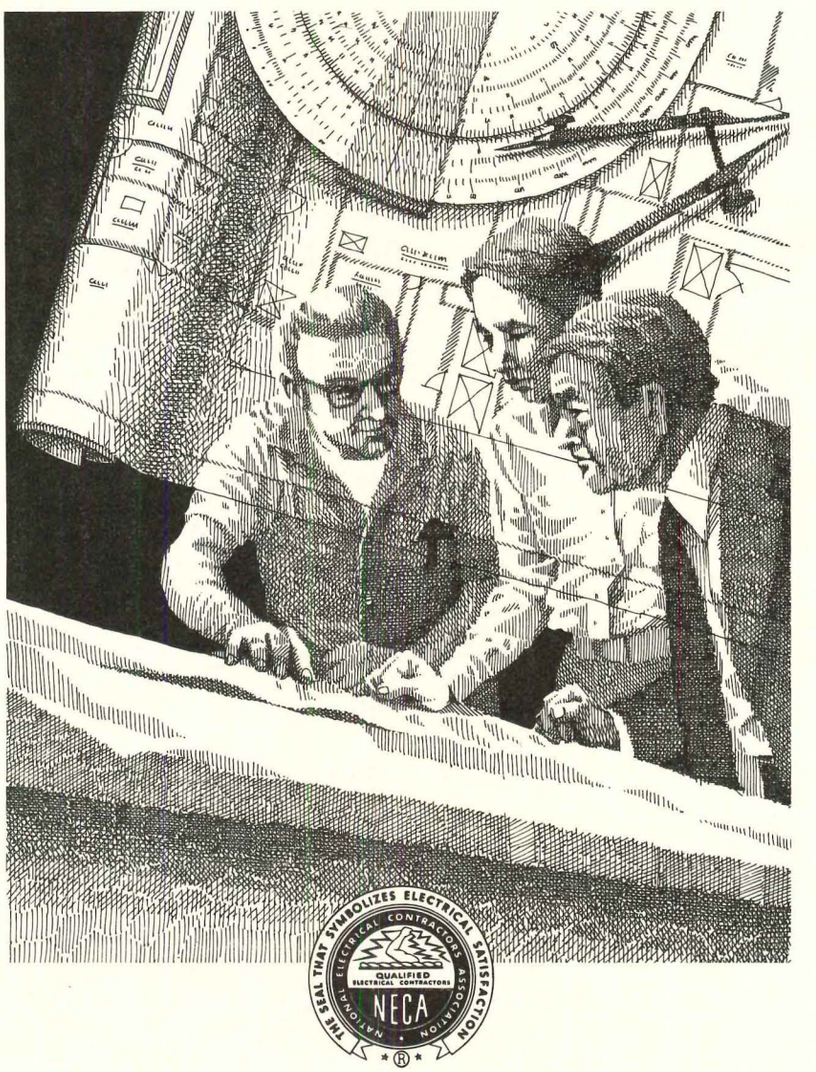
Professional electrical contractors. The electrical energy managers.

One thing you can be sure of in the current energy situation; clients are no longer taking electrical systems for granted. People who pay the bills now are concerned about the potential cost of future operations as well as the cost of installation. That goes for *all* users and specifiers: government, commercial, industrial, and residential. But you probably already know that.

You also know that electrical systems should be designed to operate as efficiently as possible, because when the time comes to install cable, conduit, and fixtures, it might be too late to save energy. That's why it could be helpful to work with a qualified electrical contractor early in the design stages of a project. Planning an efficient electrical system is a lot easier than trouble-shooting a fuel-waster after construction.

Professional electrical contractors can give you just the support you need. They're familiar with lighting, heating, communications, security, motors, standby and emergency power, automatic controls, and a lot more. You'll be obtaining the benefits of specialized manpower, the latest installation equipment, and professional job-management expertise. Can your clients afford anything less?

Professionalism doesn't cost. It pays.



National Electrical Contractors Association, Inc.
Washington, D.C. 20014

Ceco forms floor slabs for world's tallest hotel

Just one more example of Ceco's forming services designed to save time and money

Ceco is forming nearly a million square feet of concrete slabs in Atlanta's new 70-story Peachtree Center Plaza, world's tallest hotel. Work on this project includes all floor slabs and ramps for the base buildings above and below grade, as well as all slabs for the 70-story cylindrical tower.

For more than half a century, Ceco has helped contractors by developing better ways of forming concrete slabs and providing lump-sum prices that represent cost savings to them and building owners. Consequently, Ceco's forming services are used on hundreds of projects every day.

Ceco's field crews are the country's leading specialists in placing and removing formwork for rib-slab, waffle-slab and flat-slab floor construction. For more facts, refer to Sweet's or your nearest Ceco office.

Peachtree Center Plaza, Atlanta, GA
A Western International Hotel
Developer:
Portman Properties
Architect:
John Portman & Associates
General Contractor:
J. A. Jones Construction Company

CECO concrete forming services

The Ceco Corporation • General Offices
5601 West 26th Street • Chicago, Illinois 60650

For more data, circle 59 on inquiry card

specify Hillyard Treatments for all your floors

The Hillyard line of floor care products is designed to give maximum beauty and protection to every type of floor. And for your convenience these quality seals, curing agents, polishes and dressings are all described in Sweets 9.11/Hi.

What's more, there is a Hillyard architectural consultant in your area who will be happy to recommend the proper treatment for the floor you are specifying. He will bring you Spec Data Sheets and AIA numbered folders which contain "long form specifications" plus detailed instructions you can give your contractor. He will help you keep your files up-to-date with periodic mailings. And your Hillyard consultant will even supervise application procedures at job site.

When you have a floor to spec, check Hillyard Treatments in Sweets. Then call us collect. We will have your Hillyard consultant contact you immediately.

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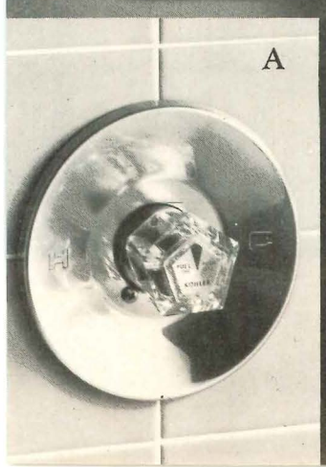
Kohler dependables

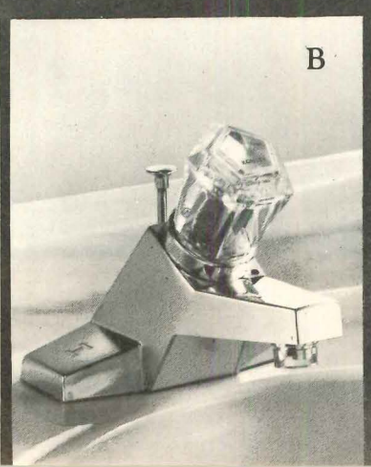
Beautifully tough One-controllable fittings. Kohler Centura. Designed for long lasting service and reliability.

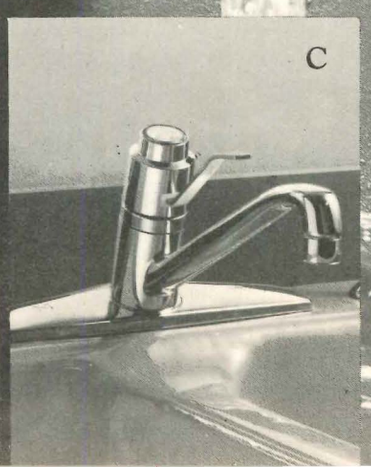
Kohler Centura One-controllables were tested under Federal Testing Regulations for single control faucets. After more than 500,000 cycles, Centura was still delivering positive water flow with no leaking, no dripping.

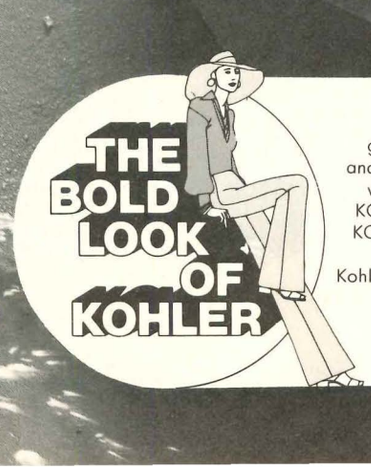
Dependable Centura cartridge has no springs, washers or O-rings. Only one moving part. Handle rotates 180 degrees for maximum temperature adjustment. Lavatory faucet shroud of high-impact ABS for long life and corrosion resistance.

Centura (A) bath/shower control available in 24-carat gold electroplate or chromium. (B) push-pull lavatory faucet available in 24-carat gold electroplate or chromium. (C) single-lever sink faucet in chromium.









For more great kitchen and bath ideas, write Box JT, KOHLER, CO., KOHLER, WIS. 53044. Kohler plumbing products available in Canada.

DON'T MAKE THE SAME WINDOW

Fuel and maintenance costs are too high to use poor windows the second time around.

That's why, when remodeling the buildings shown below, owners and managers selected Andersen® Perma-Shield® Windows.

They're designed to save on heating bills. For beneath their protective vinyl sheath lies a wood core, one of nature's best insulators.

And they're two times more weathertight than industry air-infiltration standards. To help seal out drafts and dust, help save on heating and cooling costs.

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1-2. Perma-Shield Casement/Awning Windows helped bring beauty, low maintenance costs to the Kenton, Ohio, Hardin County Courthouse.
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MISTAKE TWICE.

chip, crack or peel. Keeps its beauty, year after year.

And Andersen's quality design assures a snug-fitting window that resists sticking or binding.

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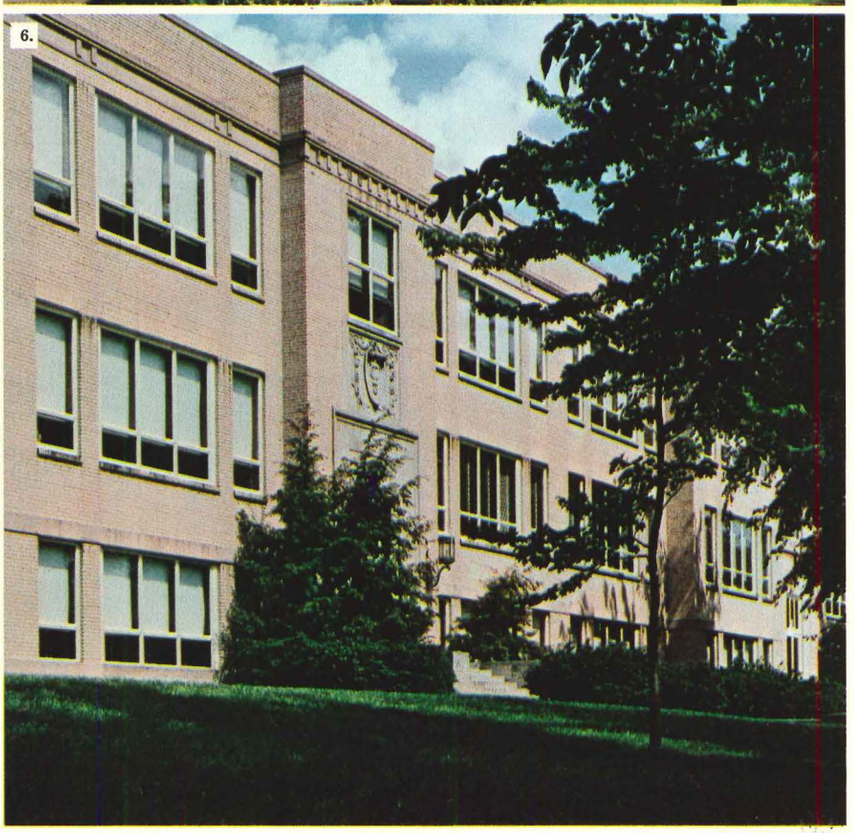
4. Liberty, Indiana, Junior High School lowered fuel and maintenance costs with Perma-Shield Casement/Awning Windows.
5. Perma-Shield Casement and Narroline Windows helped bring new life to the Pocono Manor Inn, Pocono Manor, Pennsylvania.
6. Perma-Shield Windows fit the character of New Albany, Indiana, Senior High School—without alteration to frame or masonry.



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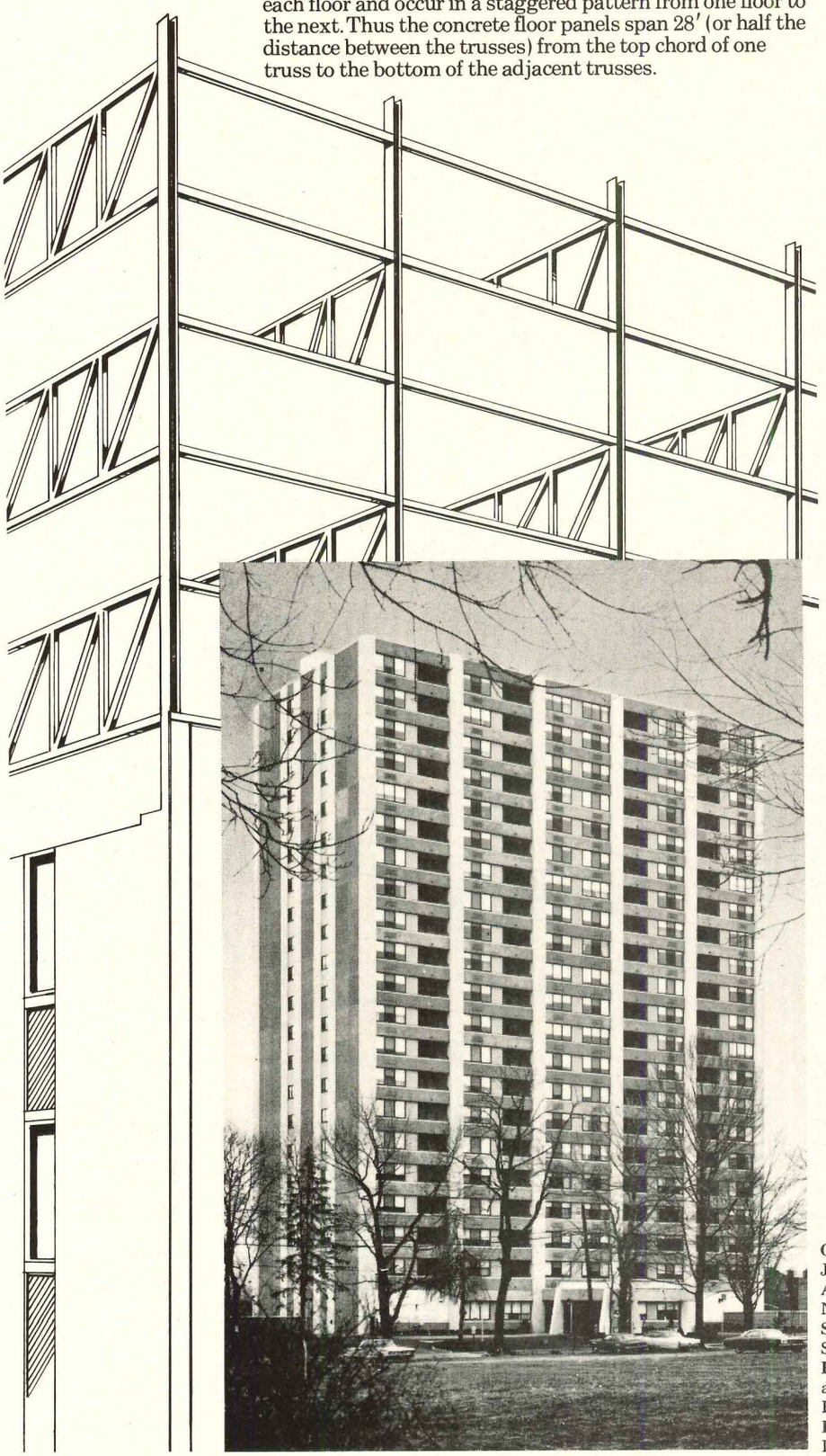
This 21-story tower proves it again: Staggered Truss Steel construction costs less than other framing systems.

STEEL TRUSSES, one story high and 68′8″ long, span the building transversely. They are spaced 56′ apart on each floor and occur in a staggered pattern from one floor to the next. Thus the concrete floor panels span 28′ (or half the distance between the trusses) from the top chord of one truss to the bottom of the adjacent trusses.



The Ivanhoe Apartments in Hackensack, N.J. were designed to provide luxury living at comparatively moderate rents.

One reason for the savings is the system of steel trusses that supports this high-rise building—an ingenious adaptation of the system developed by M.I.T. under a U.S. Steel research grant. It actually provided a more economical frame than flat plate concrete. On an overall basis, the designers calculated savings of about $1.50 per square foot compared with an equivalent concrete building in the same area of Greater New York.

Staggered truss steel construction requires fewer footings than flat plate concrete. There are fewer columns in the 3-story garage beneath the tower—which allow more flexible parking—and no interior columns in the tower itself. Another major saving came from lower on-site labor costs, due to fast erection of the shop-fabricated steel and architectural elements.

We'll be glad to send you a complete structural report (ADUSS 27-6000-01) on the Ivanhoe Apartments, as well as a booklet on staggered truss steel design. Write U.S. Steel, P.O. Box 86 (C438) Pittsburgh, Pa. 15230.

USS
TRADEMARK

United States Steel

Owner: Alsan Realty Co., Hackensack, New Jersey.
Architect: Eugene A. DeMartin, Lyndhurst, New Jersey.
Structural Engineers: Jesse Schwartz & Gabriel Senes, Upper Saddle River, New Jersey.
Erectors: Skipcon Building Systems, Inc., an affiliate of Schrenko Steel Corp., Upper Saddle River, New Jersey.
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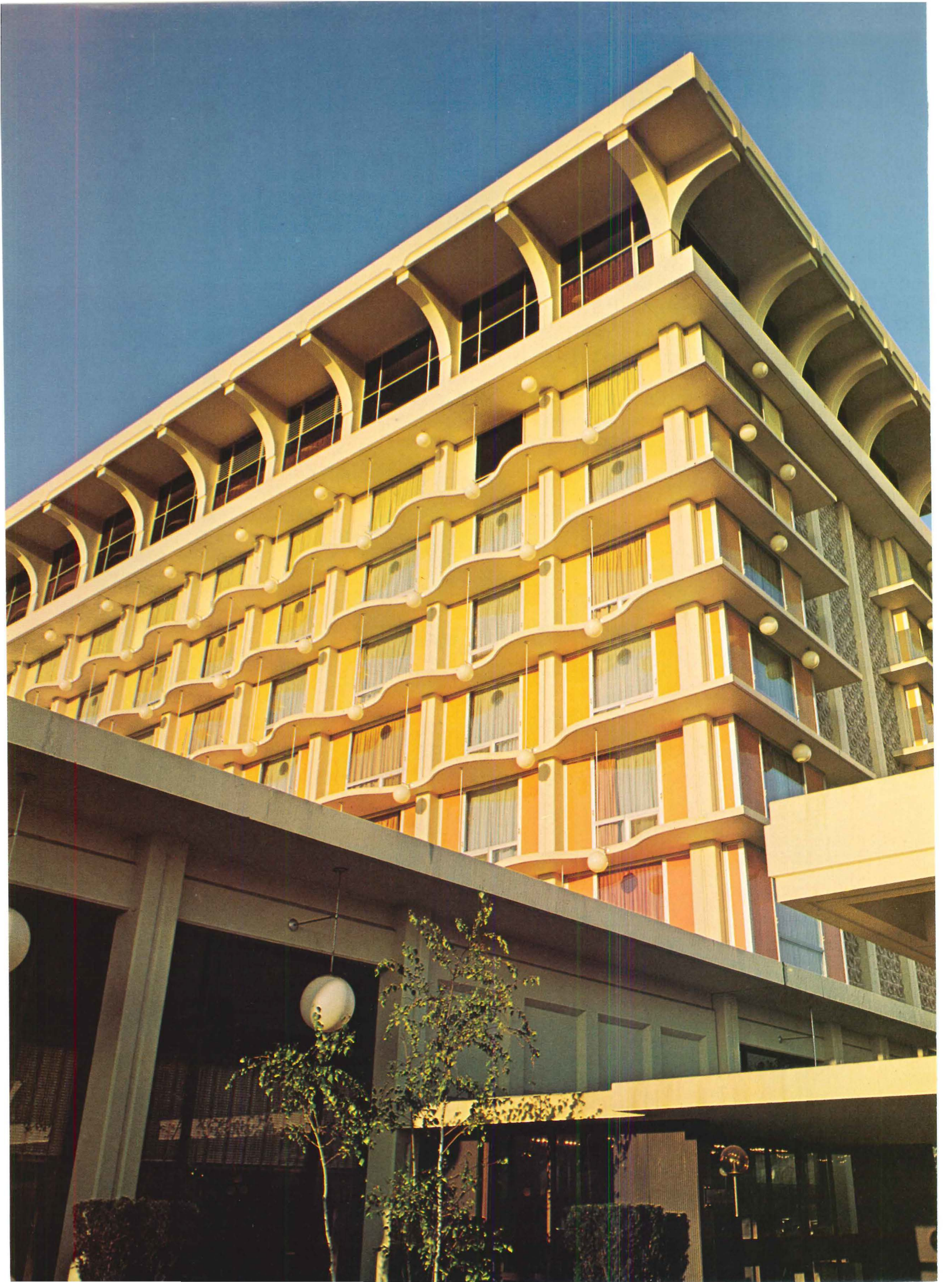

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Guests of St. Louis' new Marriott Motor Hotel can watch the jets come and go at Lambert St. Louis International Airport across the road. They don't have to listen.

Because all 435 guest rooms are protected from noise by C-E Polarpane Sound Control Units: A real sonic boon that shuts out as much sound as a 6-inch concrete block wall.

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Glazing Contractor: Starline, Inc., Carencro, La.

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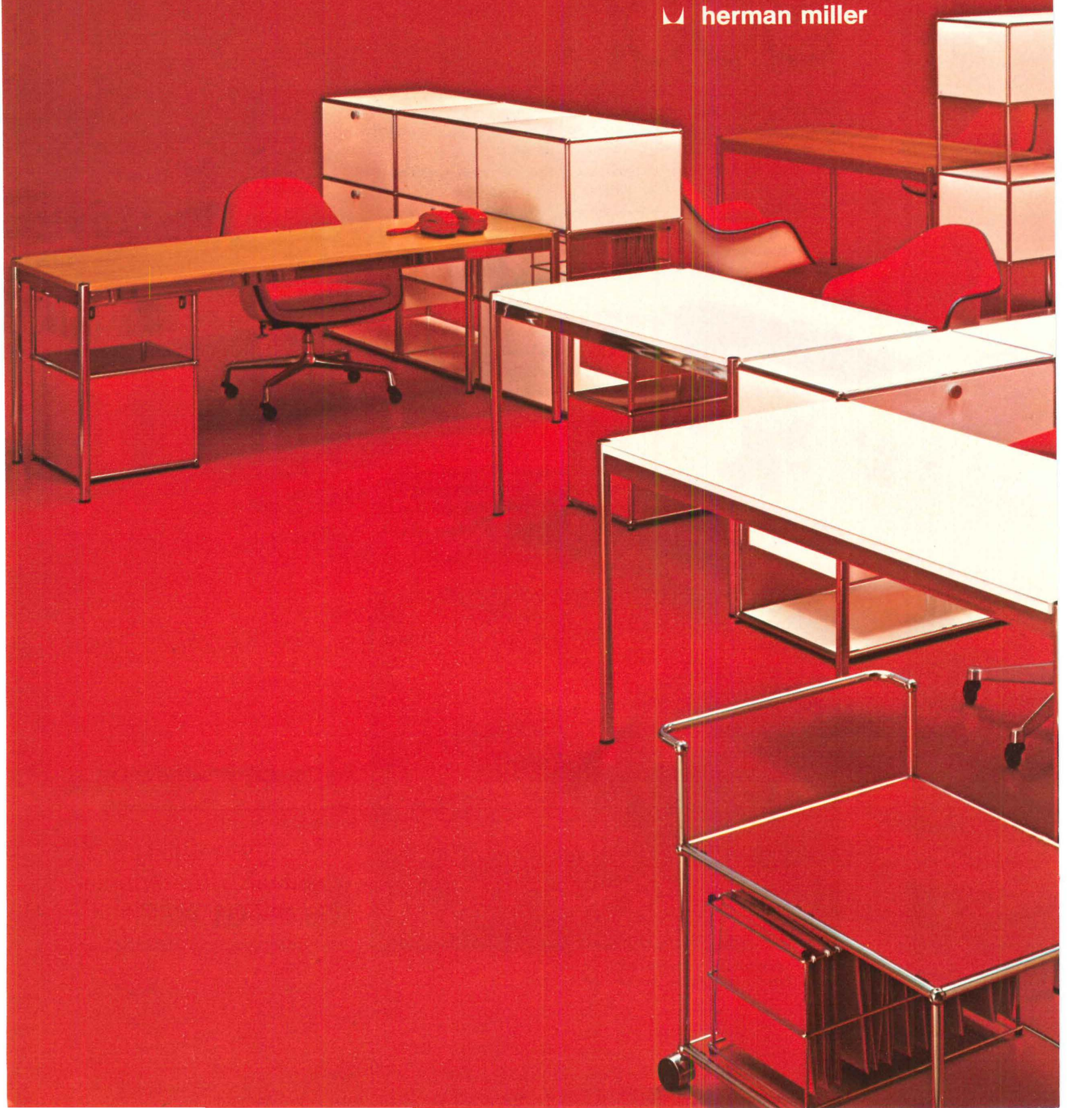

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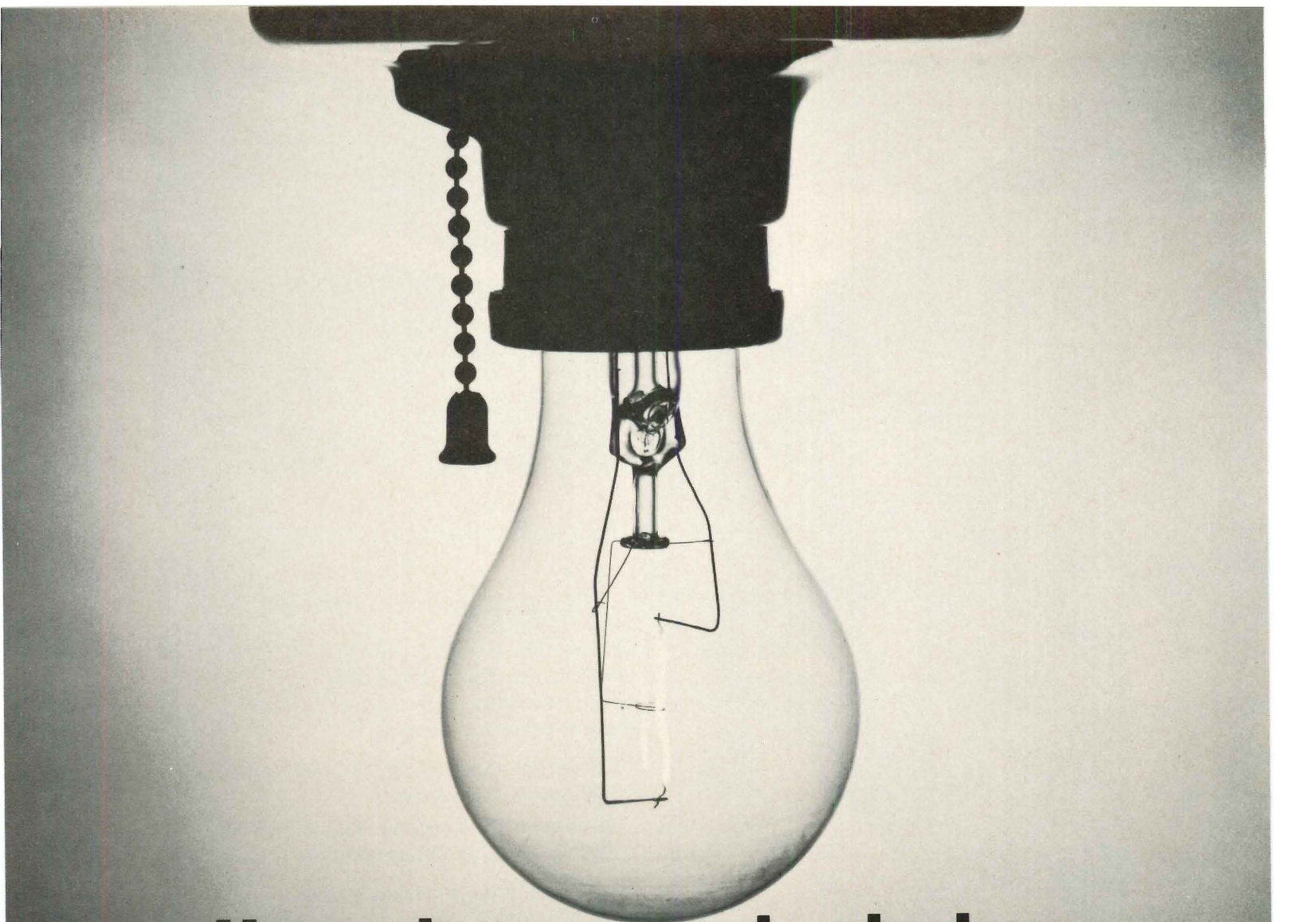

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The hallmark means that the manufacturer's facilities and equipment have passed periodic inspections. And that samples of his products carrying the hallmark have passed regular laboratory tests to guarantee conformity to all NWMA quality regulations.

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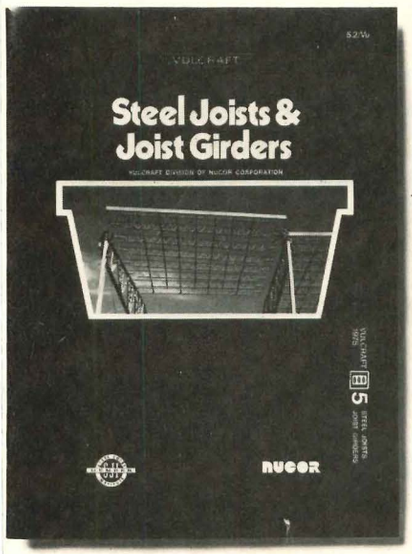

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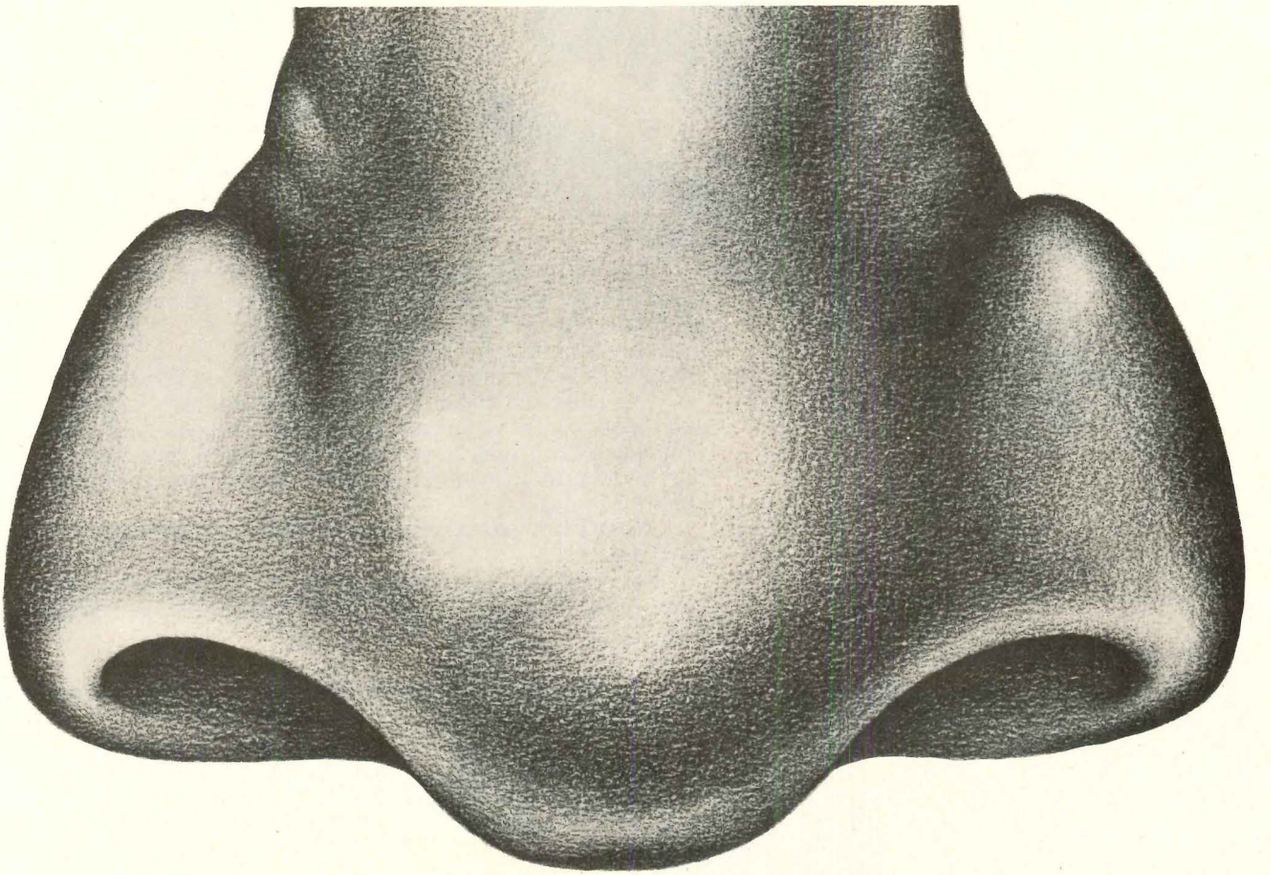

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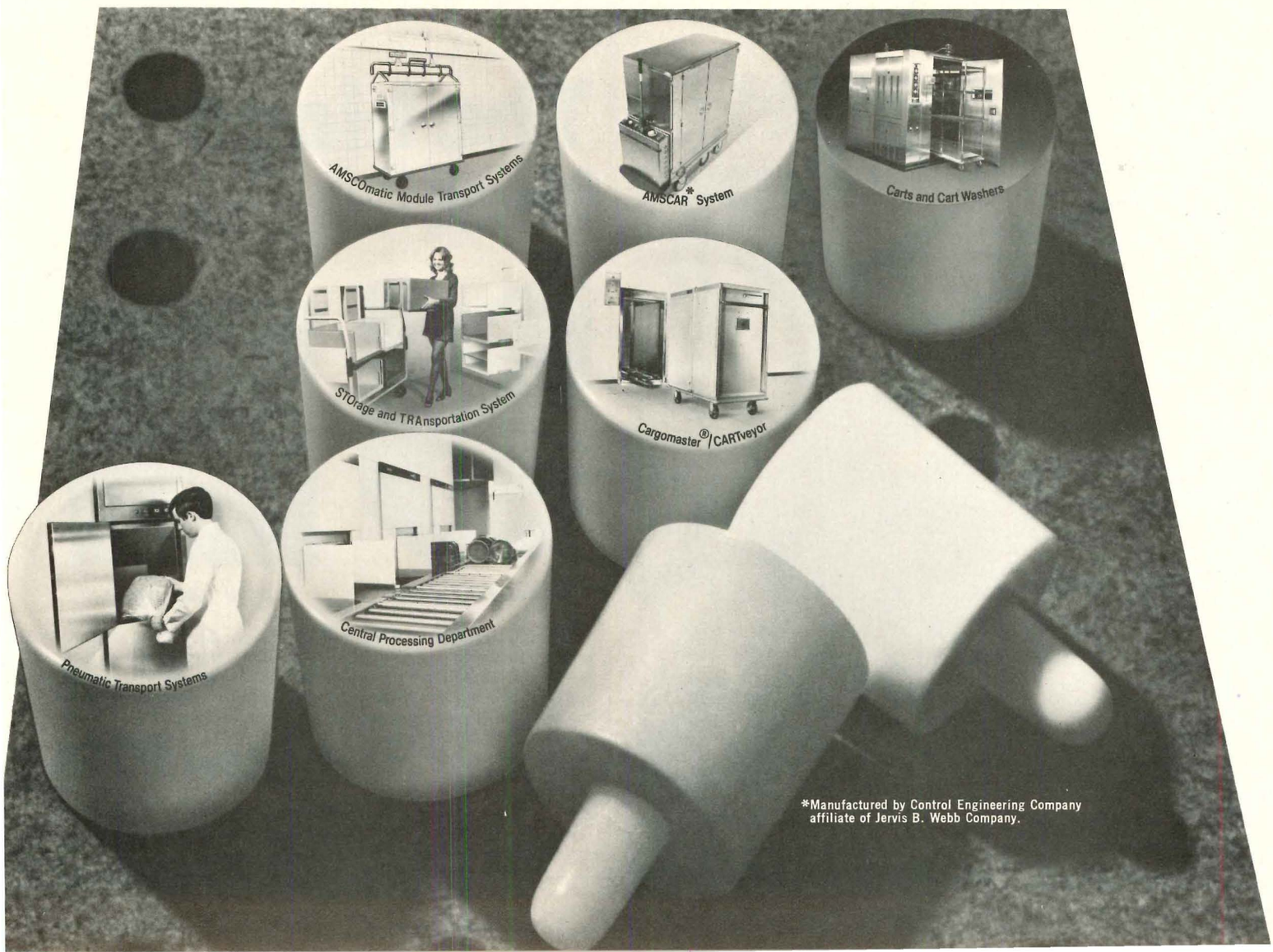

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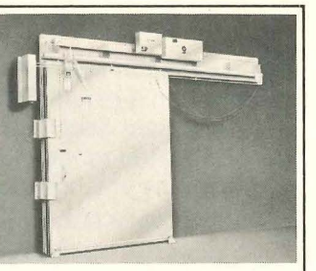

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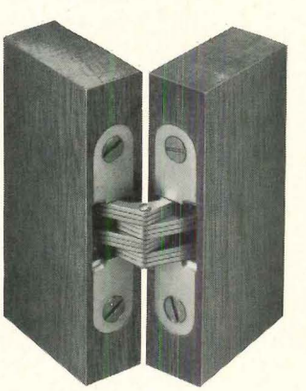
The hinge that hides



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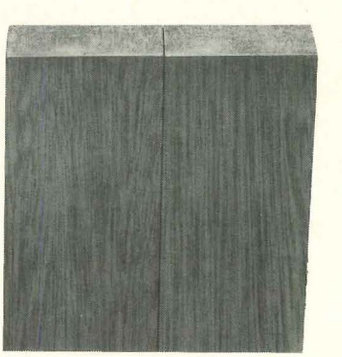

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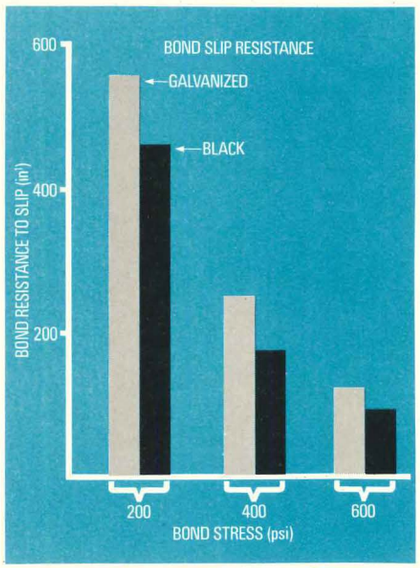

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If you would like more information, write on your letterhead for a copy of our booklet "GALVANIZED REINFORCING BAR—Undercover Protection For Concrete."

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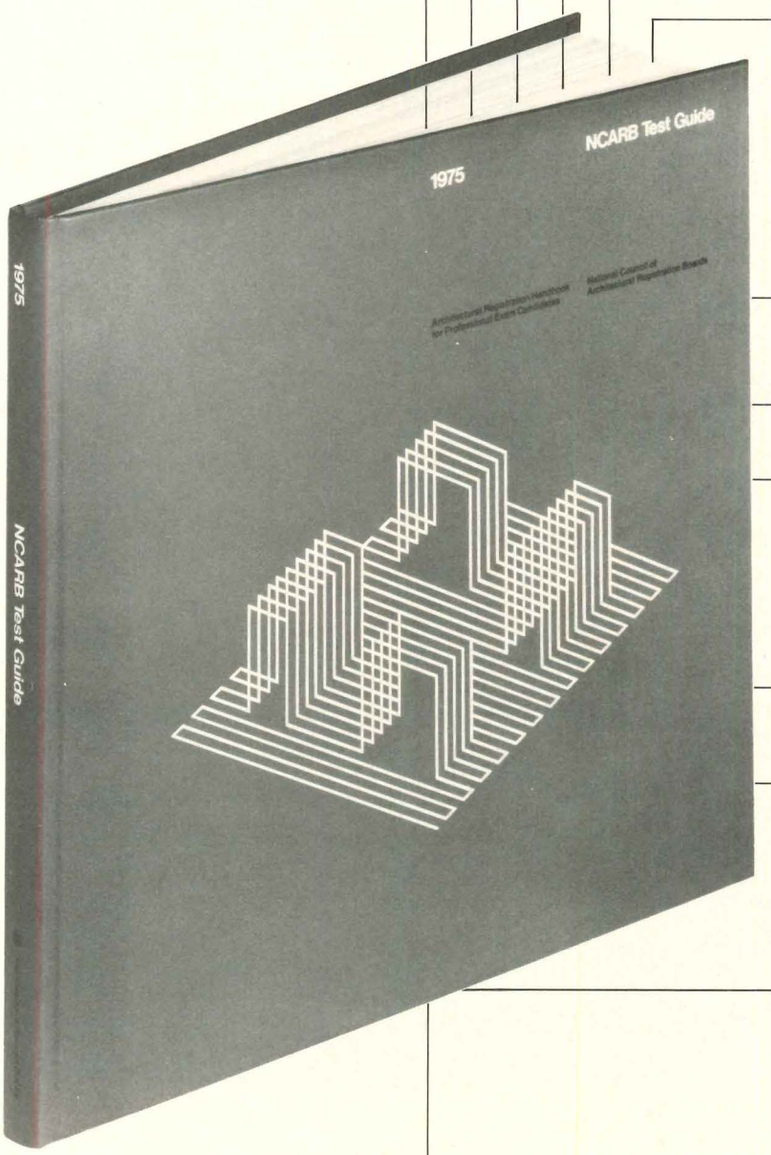

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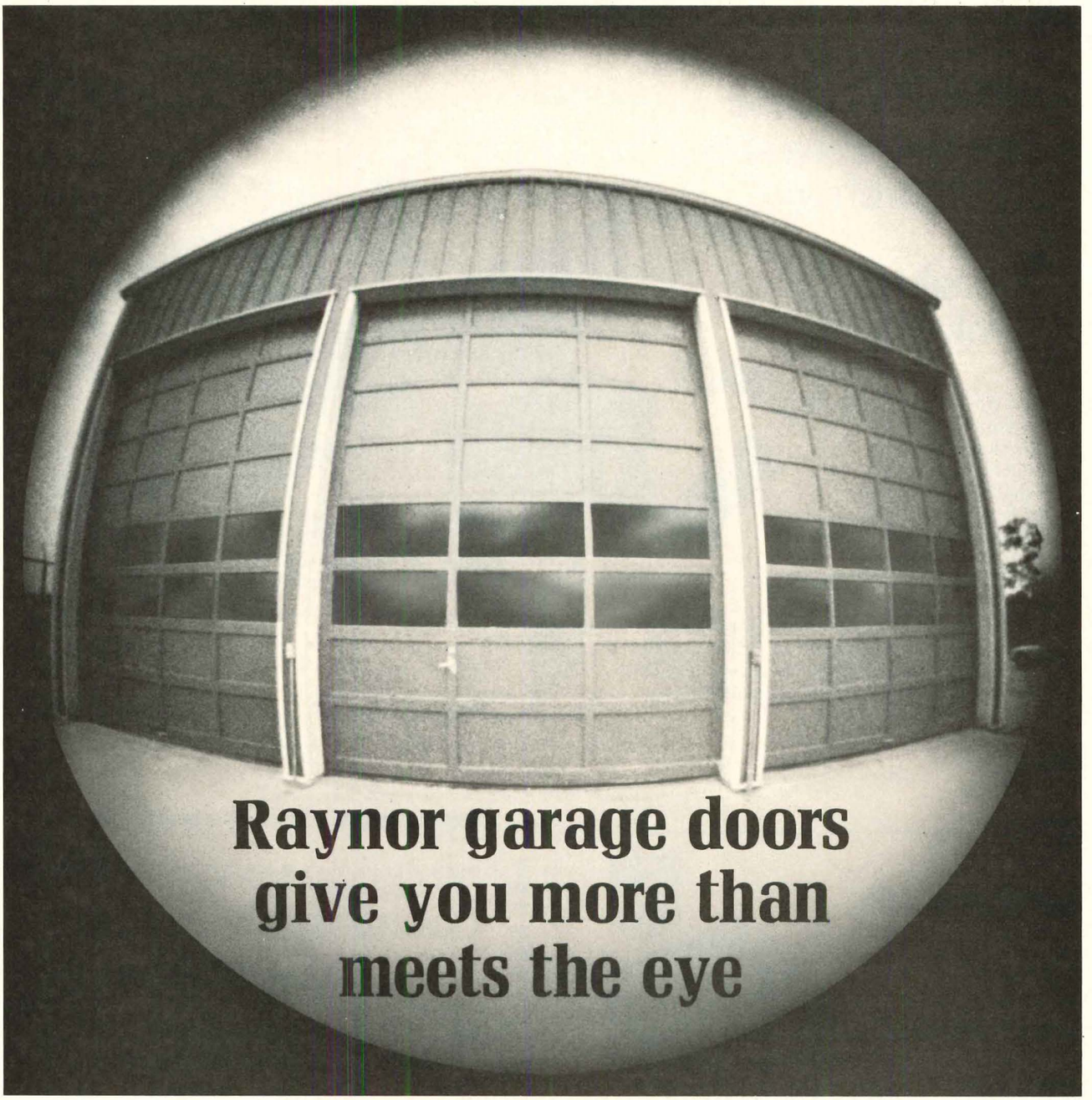

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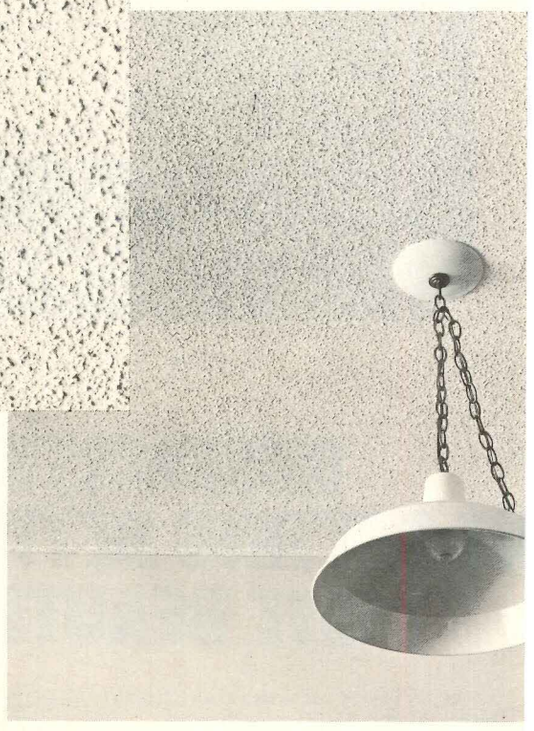

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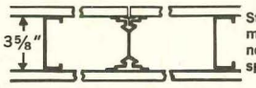

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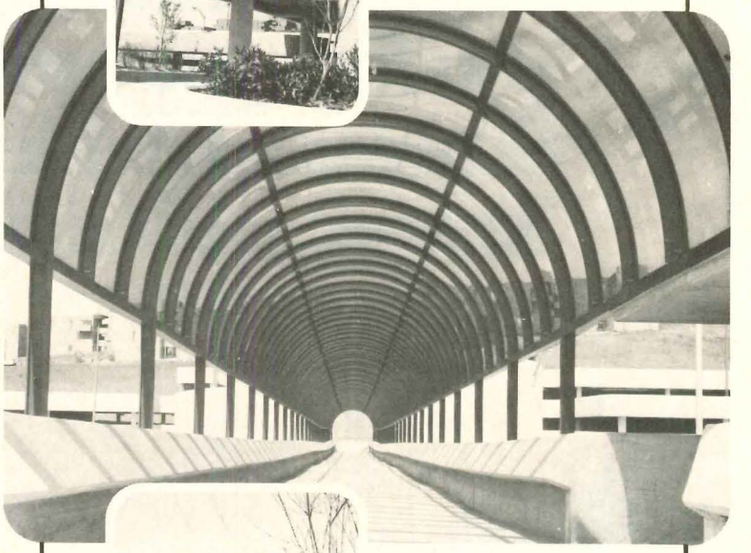

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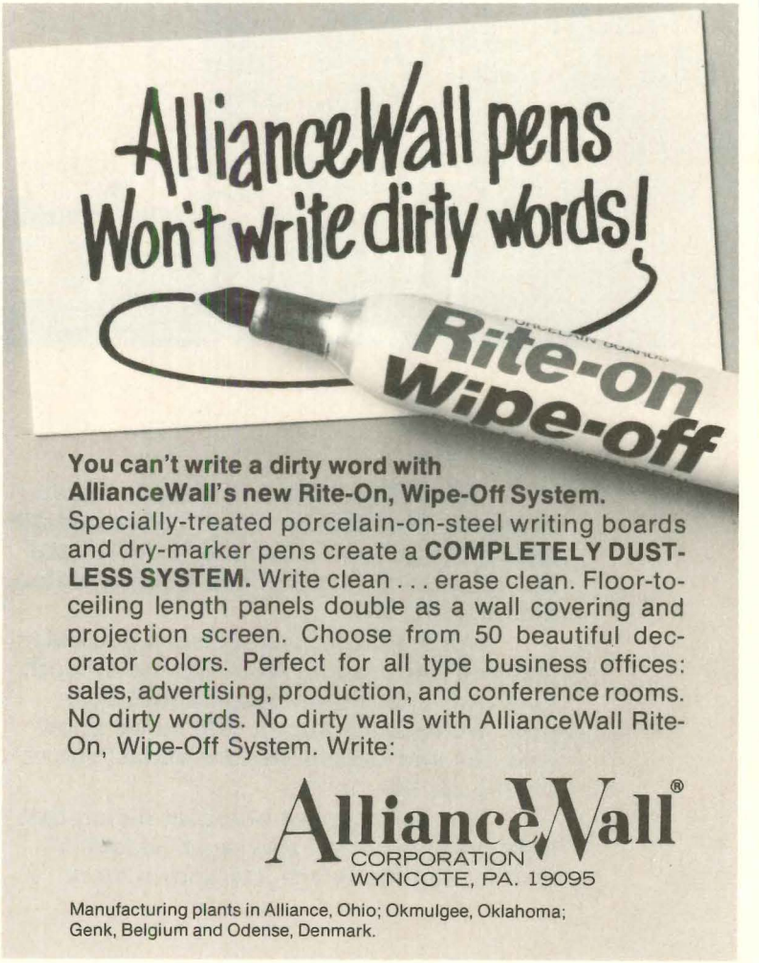

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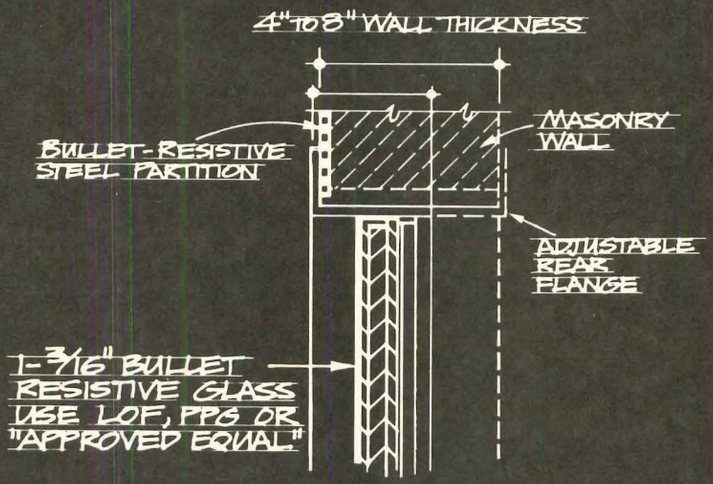

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A Architectural File (green)
I Industrial Construction File (blue)
L Light Construction File (yellow)
D Interior Design File (black)

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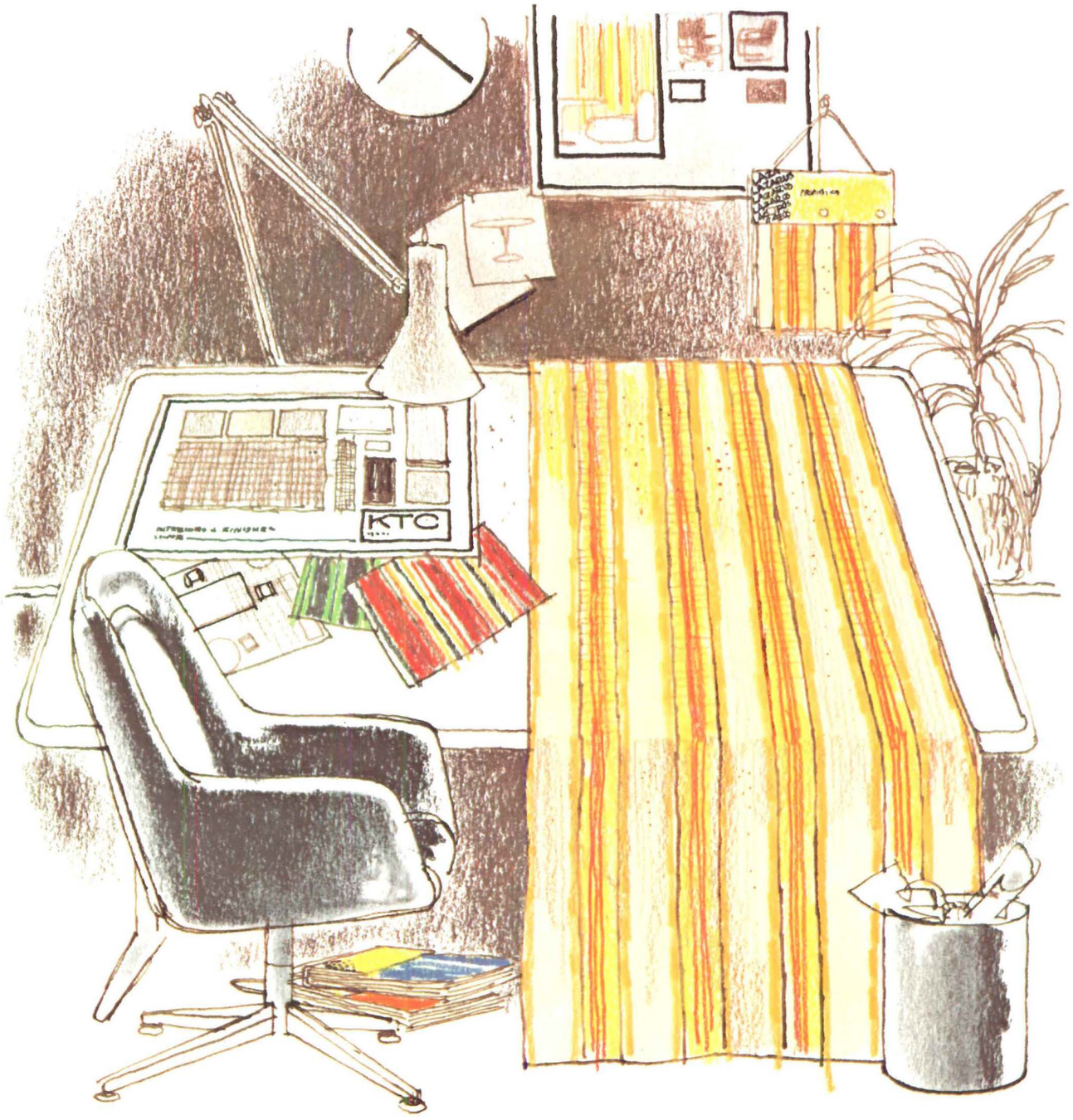

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