

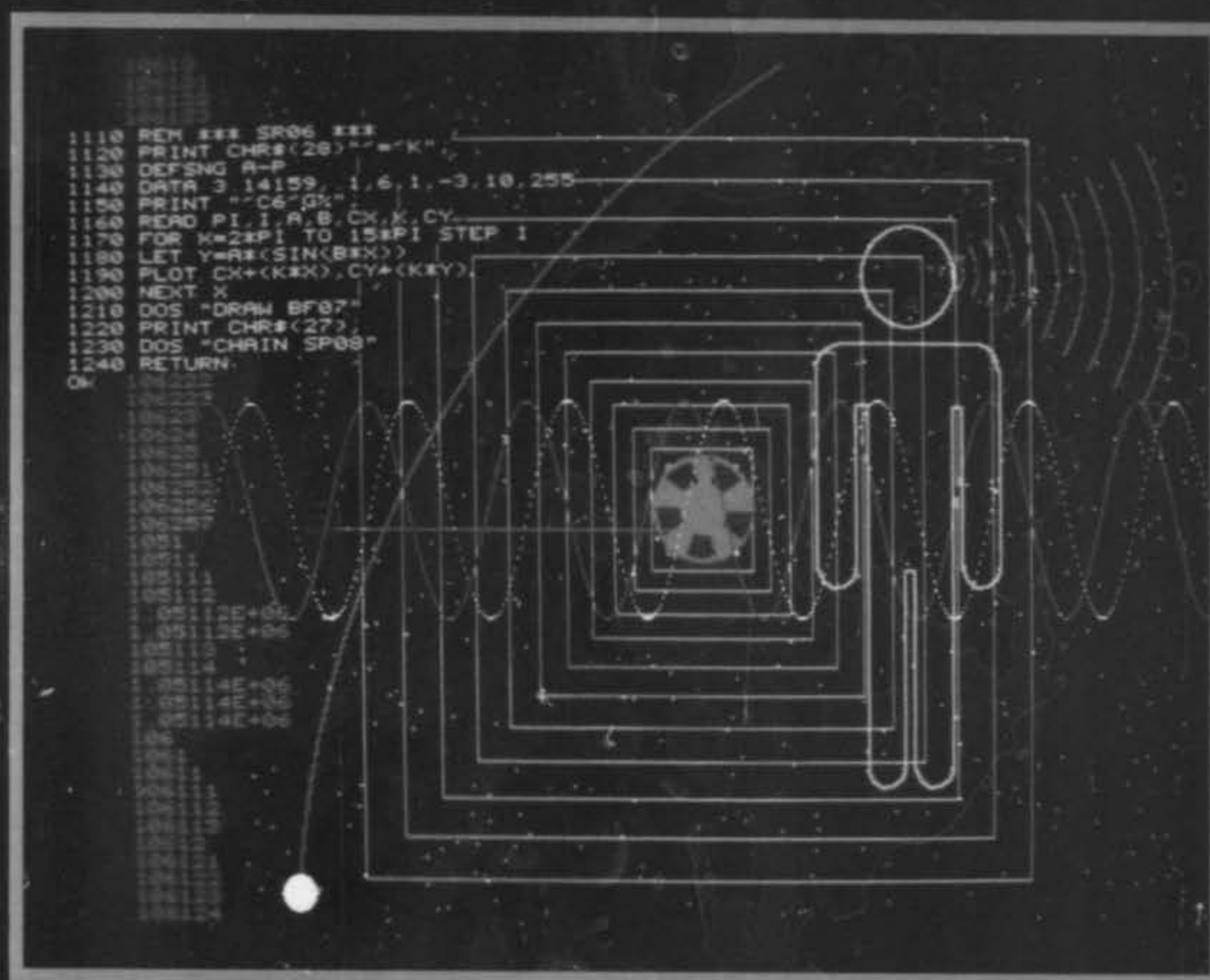
INTERIORS®

JUNE 1981

FOR THE CONTRACT DESIGN INDUSTRY

SPECIAL ISSUE:

OFFICE AUTOMATION



DESIGN+TECHNOLOGY=MAXIMUM PRODUCTIVITY

**For ceilings as elegant as your designs:
Soft Look™ fabric-covered ceilings.**

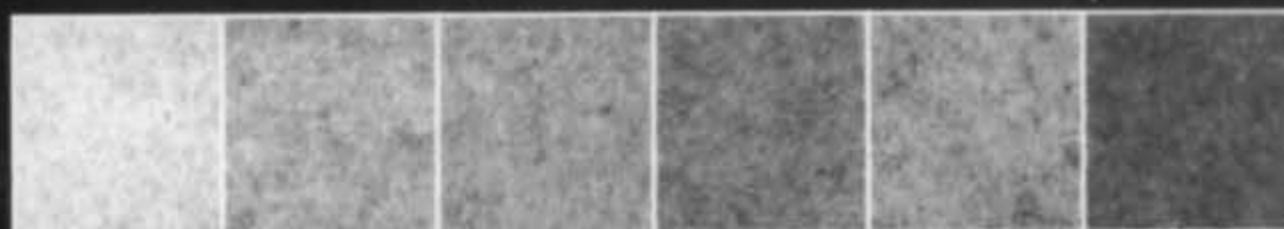
Give your ceiling the same quiet elegance as the rest of your room. With Soft Look Ceilings from Armstrong.

These richly textured fabric-covered panels add subtle tones of elegance in six neutral and six accent colors that harmonize with today's decor. And their tegular-edge detailing lowers the surfaces of the 2'x2' panels below the grid.

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Mist Flagstone Wheat Caramel Concrete Wood



Sunshine Paprika Scarlet Coffee Azure Moss

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INTERIORS

JUNE 1981

FOR THE CONTRACT DESIGN INDUSTRY

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COMING NEXT MONTH

What are the **client giants** building? Four case histories from **Equitable Life, Price Waterhouse, Arthur Anderson, Prudential**... Art for the corpo-

rate client giants by **Helena Hernmark**... **Retail design:** the small store boom... **Institutional furniture roundup**... **Designer's Saturday** graphic

design competition... **John Follis desk design** for Kasparsians... Energy conserving **window products**... Italian **ceramic tile**...

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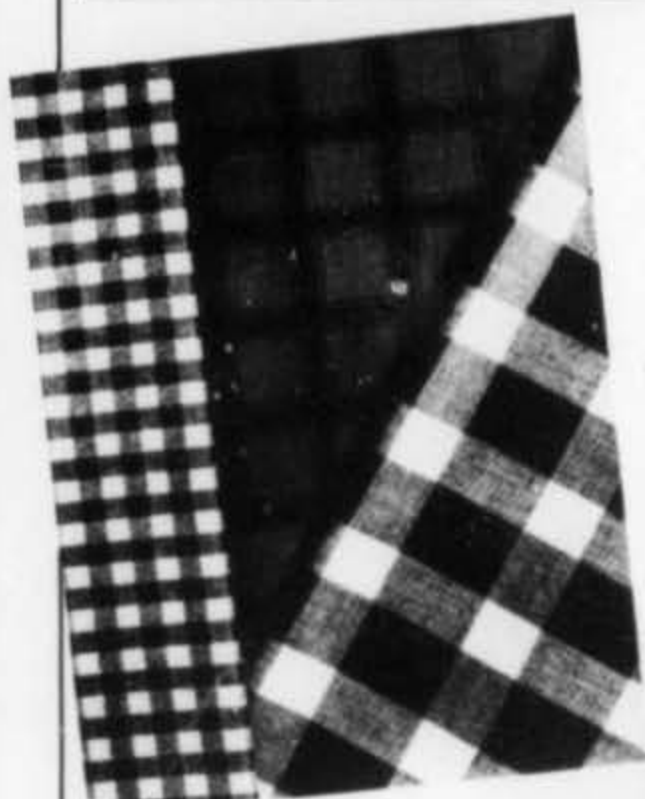


PRODUCTS

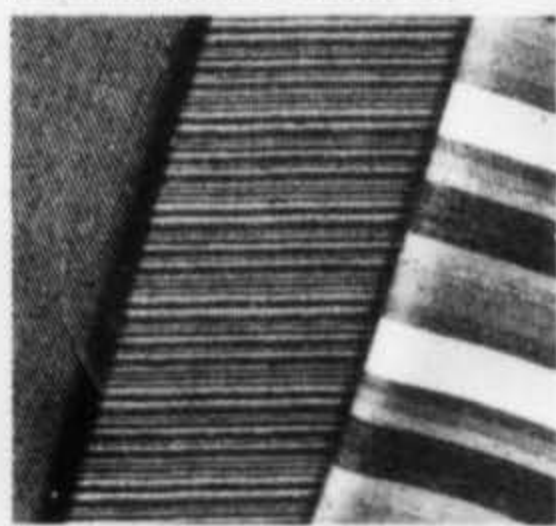
FABRIC

BACK TO THE BASICS

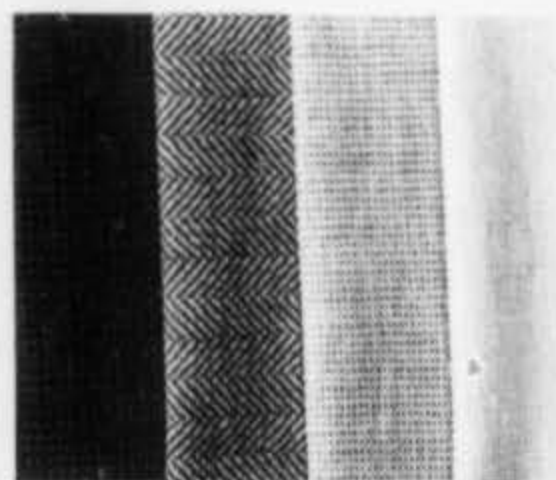
Classic patterns have always maintained high ratings among designers specifying fabric for contract installations. Clients never seem to tire of them and the subtleties in pattern, color and texture make them compatible with every type of environment—traditional or contemporary. The multi-sized checks, woven stripes, classic herringbone and solid weaves shown here are just a few of many examples on the market.



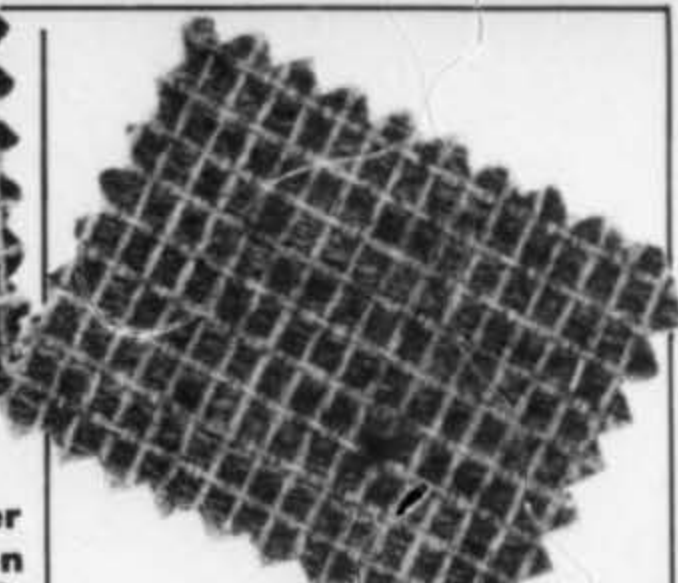
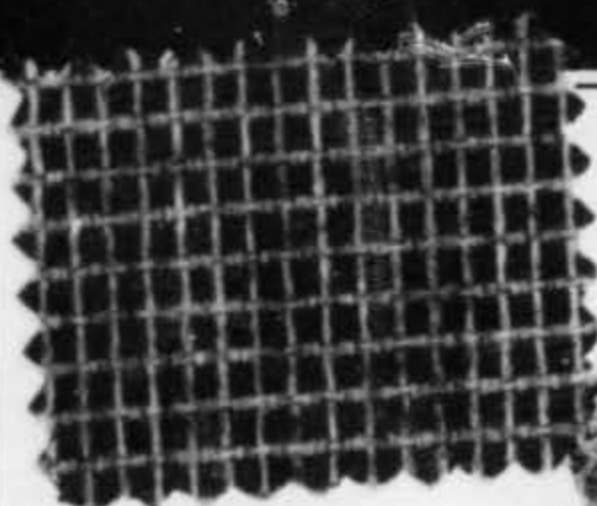
Belgian linen checks for upholstery or drapery from the Williamsburg Collection of F. Schumacher. circle 235



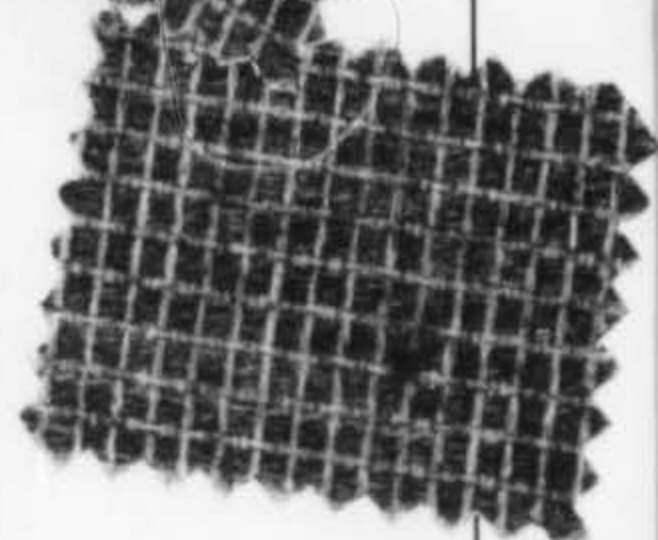
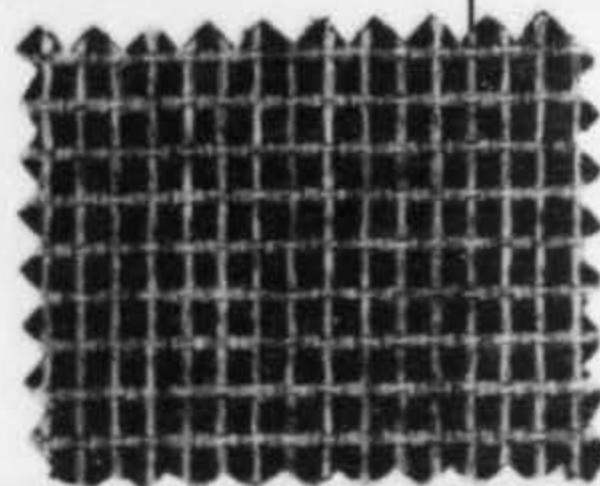
Vernehs, Bosnia, Caucasus; woven upholstery fabrics made to resist abrasion and pilling. Boris Kroll. circle 236



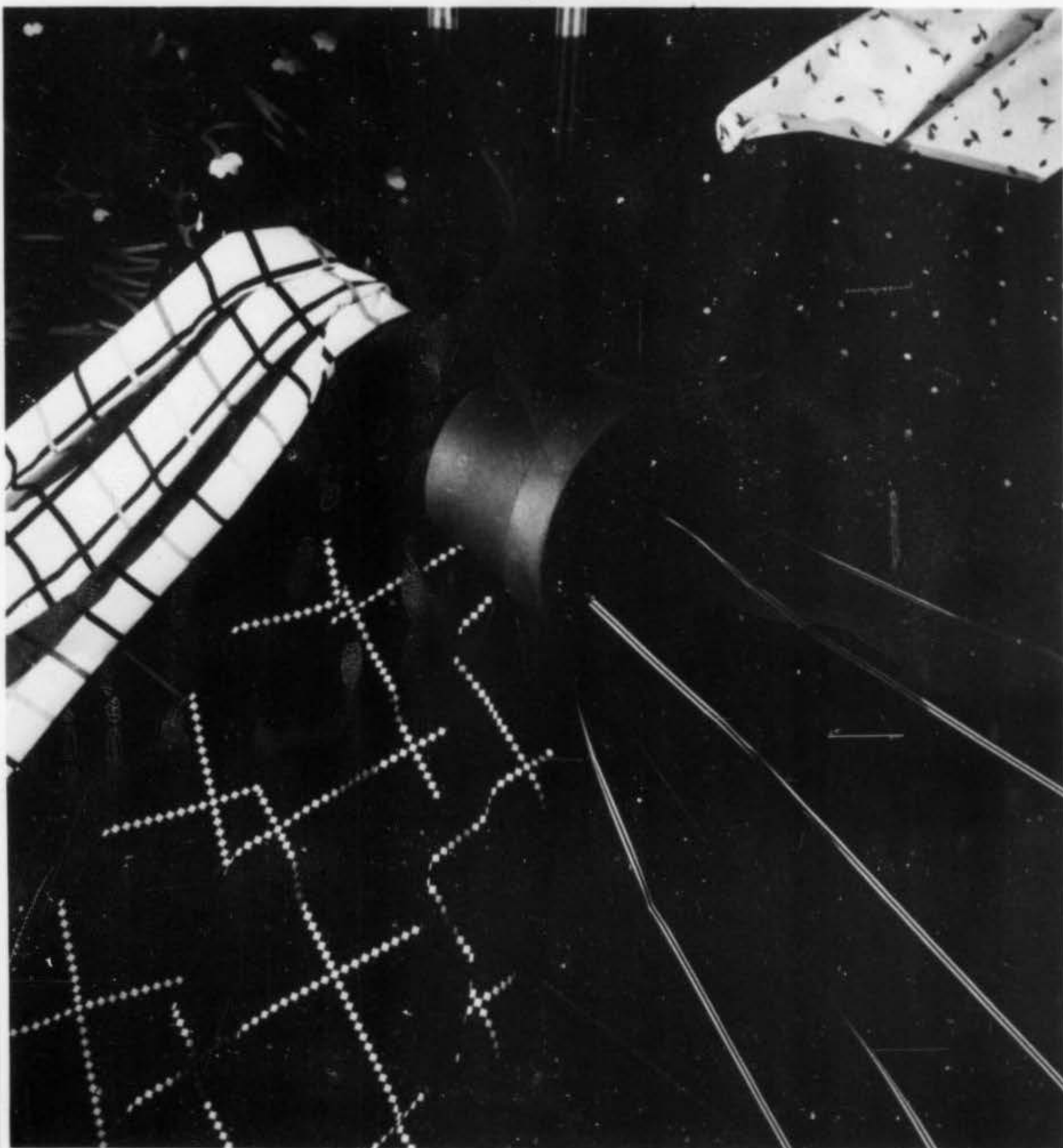
New additions to the Interweave Collection of textured weaves in 100% wool. Lee / Jofa. circle 237



Bhurba FR, a Dacron polyester specifically designed for open landscape paneling. Guilford Industries. circle 239



Six patterns of the new Metro contemporary collection available in eight colorways. Cohama Specifier. circle 238

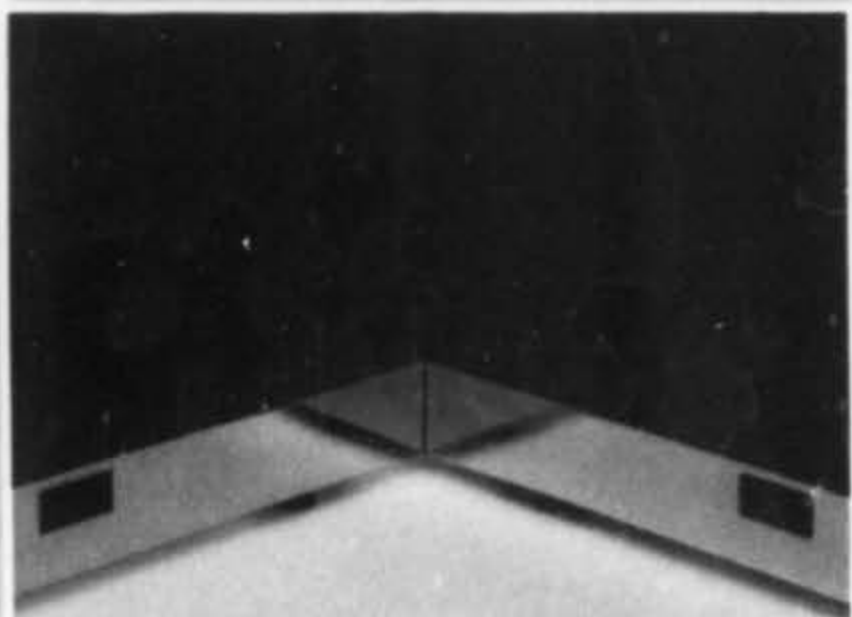
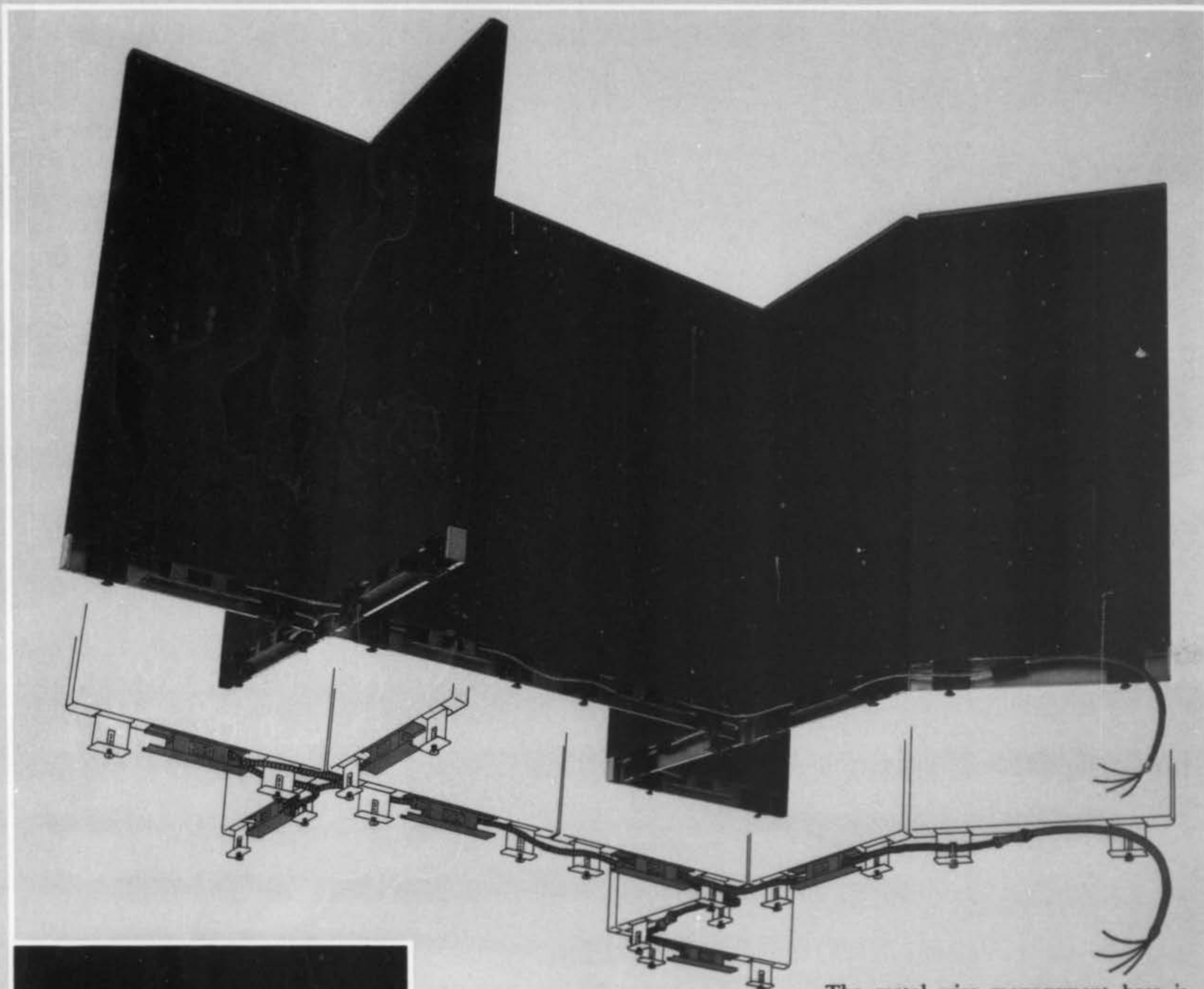


continued on page 14



R O S E

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Progressive Power

Progressive power distributes electrical energy to any panel, offering complete freedom of electrical layouts for the open plan concept. Power management can be implemented to the PROGRESSIONS panel from 3 kinds of initial power feeds; floor, wall, and ceiling.

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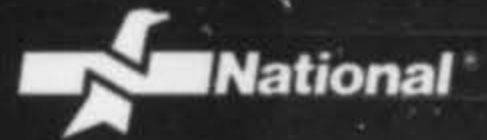
P R O G R E S S I O N S

NEOCON XIII: Visit Rose Manufacturing in Chicago at the Merchandise Mart, Space 11-117A, represented by Don Lence & Associates.

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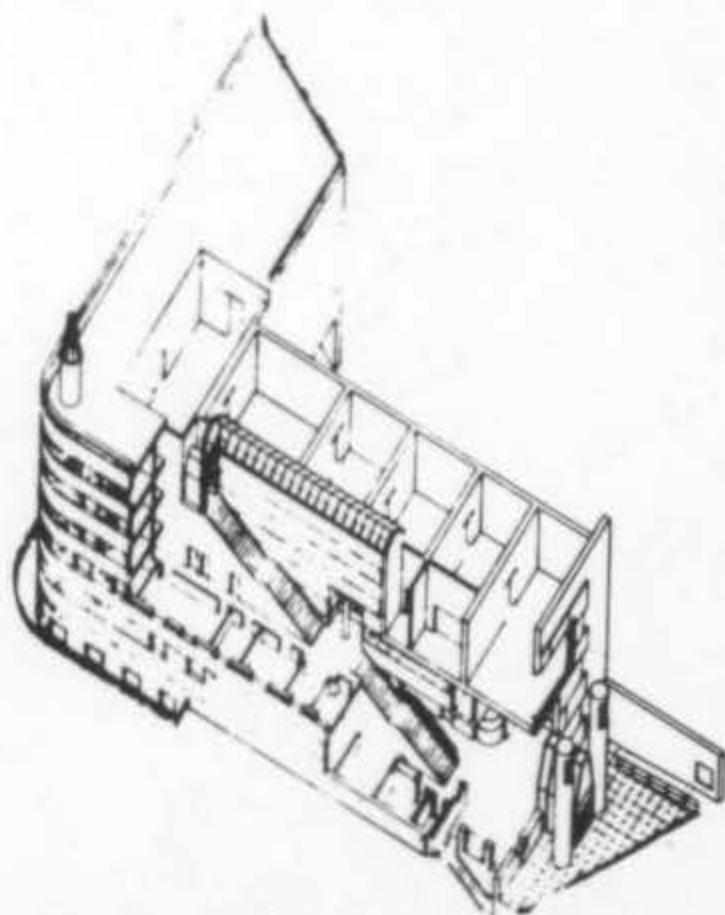
Plum jobs

NEW PROJECTS ON STREAM THAT MEAN BIG INTERIORS BUSINESS

MORE FOGG

Construction is expected to begin this summer on new facilities for the Fogg Art Museum at Harvard University. Architects for the project are James Stirling, Michael Wilford and Associates, of London, in association with Perry Dean Stahl & Rogers of Boston. The new building will be on an L-shaped site across Broadway from the present Fogg Museum building. Its principal facade will be facing the present Fogg; the main entrance is marked by a glass entrance lobby and two monumental columns set into a paved forecourt. A continuous brick facade, polychromed to echo the polychromy of nearby Memorial Hall, will run along Quincy and Cambridge Streets, curving at the corner.

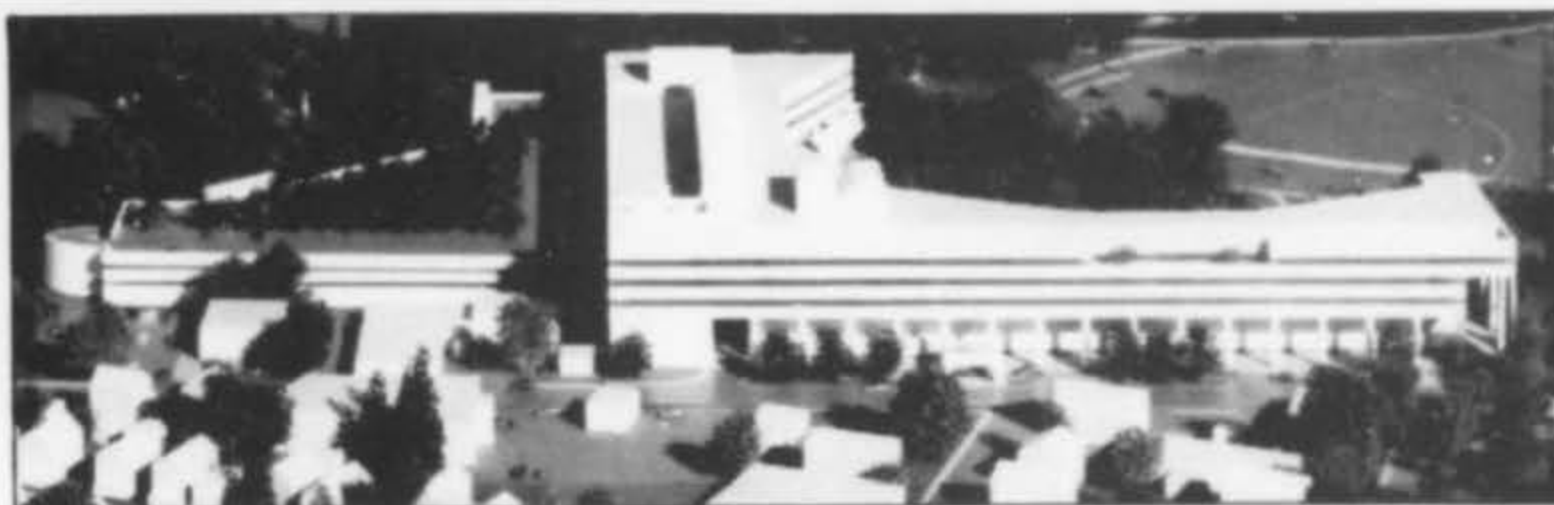
The new building will add more than 38,000 square feet to the Fogg's facilities - including exhibition galleries for both special exhibitions and the collections of Near Eastern, Islamic, Oriental, and Ancient Art, classrooms, offices, a lecture hall, curatorial and service departments, and special library collections. Completion is scheduled for 1983.



PASADENA COMPLEX

Cushman Realty of Los Angeles has made public plans for a \$140 million office building development in a two-block area of the Civic Center district in Pasadena, Calif. Designed by William L.

Pereira Associates, Los Angeles, the Pasadena Regional Center will be two 19-story office towers and a five-story terraced office complex. When completed in 1984, the Regional Center will be a principal element in the current revival of downtown Pasadena.



PEI FOR BOWES

Pitney Bowes has unveiled plans for a Corporate Center to be built in the South End of Stamford, Connecticut on a 10.35 acre site located south of the Woodland Cemetery, adjacent to Kosciuszko Park, overlooking Long Island Sound. The crescent shaped building, designed by I.M. Pei and Partners, will embrace tree covered knolls on the south side, facing

the park and Stamford Harbor. Its main elevation will be 80-feet high with a 500-foot long arcade. Wherever possible, the facility has been designed to provide a view of the park and the Sound, while fitting into the pastoral setting of the park. Ground will be broken for construction of the 442,455 sq. ft., five-story office complex this summer. The facility is expected to be completed in 1984.

ALA MOANA CENTER

Construction has begun on the Ala Moana Pacific Center, designed by Charles Kober Associates in association with Chapman, Cobein, Desai & Sakat and developed by the Dillingham Land Corporation in Honolulu, Hawaii. The 18-story, 205,000 sq. ft. building will house both commercial and office space in a prime location overlooking the ocean. Space has been provided as well for a large, landscaped public plaza with ponds, seating areas, and a sunken courtyard. Completion of the \$19 million building is scheduled for mid-1982.



People

FALCON WINS AWARD

Falcon Products, Inc., St. Louis, has won the Presidential "E" Award for Excellence in Exporting. Congressman Robert Young presented the award to Franklin A. Jacobs, President of Falcon, in a ceremony at Falcon's plant on April 24th. Falcon is a leading manufacturer for the contract furniture, health-care, food service and material handling markets.

WATSON-GUPTILL NAMES KLIMENT

Stephen A. Kliment, FAIA has been named Senior Editor of Whitney Library of Design. He will spearhead a major expansion of Whitney's line of books in all areas of design including architecture, urban design, landscape design, interiors, industrial design, graphics and transportation design. Kliment has had his own editorial and graphics consulting firm since 1972.



Feisel

Breuer

ALL-STEEL ELECTS

The Board of Directors of All-Steel Inc. elected Mason D. Feisel, President and Chief Executive Officer, replacing George W. French, who has resigned.

GFI/KNOLL AWARD

Stephen Swid and Marshall Cogan, owners of GFI/Knoll International, announced that renowned architect/designer Marcel Breuer was the recipient of the first GFI/Knoll Creative Leadership Award. The award was given as part of the Fifth GFI/Knoll executive symposium, last month at Harvard University and the John F. Kennedy Library.



Zumwalt

Maguire

NEW ZUMWALT FIRM

Thomas Layne Zumwalt announced the firm of Thomas Zumwalt Associates Incorporated, based in Middletown, Virginia. Mr. Zumwalt has been the Interior Designer for the U.S. Army Corps of Engineers, Middle East division from 1976 to the present; a record of over two billion dollars was designed and specified in 1980-81. Four offices will open this summer in New York, Los Angeles, Riyadh and Jedda. The firm offers total design services, including interior design, architectural services, fine art consulting, showroom display, museum display and graphics, as well as specifying, procurement, transportation, installation and construction supervision, in the U.S. and world-wide.

HOK APPOINTS MAGUIRE

James Peter Maguire has been named Director of Design/Interiors Group in the New York office of Hellmuth, Obata & Kassabaum, P.C., Architects. Prior to joining HOK, Maguire designed the corporate headquarters at Rockefeller Plaza of the Planning Research Corp.

HAMBRECHT TERRELL NEWS

The Hambrecht Terrell Interiors Corporation announced the following appointments: Harve M. Oeslander as Senior Vice-President; Anthony A. Cuzzell, Ronald G. Palmer and Raymond Nuytkens as Vice-Presidents.

CONWED NAMES MARKET MANAGER

Conwed announced the promotion of Thomas M. Swain to Market Manager, furniture and systems, for the Office Interiors division.

GF GETS NEW GM

GF Business Equipment, Inc. announced that Gerard J. Barry has been named General Manager, GF Business Equipment in New York. Mr. Barry was formerly Director of Sales, Herman Miller, Zeeland, Michigan.

LITTON INDUSTRIES NEWS

Ken Zick has been named Vice President and General Manager of Litton Industries' Lehigh-Leopold division in Burlington, Iowa.



Landman

Taylor

NHFL NEWS

Hedy B. Landman, museum consultant and lecturer on the decorative arts, has been named 1981-82 President, National Home Fashions League. She is the editor of the Bulletin of the American Ceramics Circle and the former director of the Danforth Museum in Massachusetts. Lisa Taylor, Director of the Cooper-Hewitt Museum, Smithsonian Institution's National Museum of Design in New York, has been named National Home Fashions League Trailblazer for 1981.

KEENE WINNERS ANNOUNCED

Winners of Keene Corp.'s first student Lighting Design Competition for Pratt industrial and interior design students were announced. First place prize went to Christopher Cavello, of Norwalk, CT, who won \$1,000. Tied for second place were Lacides Marquez of the Bronx, and Michael Underhill of Holland, NY, both winners of \$500 prizes. Honorable mentions went to Michael Hanke, Peter Stathis, and Alan Spiegel. Twenty-one students competed.

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PRODUCTS

FABRIC

PREDOMINANCE OF PATTERNS

The return to elegance can be seen with the introduction of many new luxurious fabrics on the market. These hand-printed and hand-woven silks, custom-printed cottons, and linens in an array of patterns, colors and stripes, long-standing favorites for hotels and restaurants, are finding their way into the executive office.

This new line of luxurious handwoven silk fabric is part of the Amravati Collection imported from India by Sheri Reese, Inc. circle 240



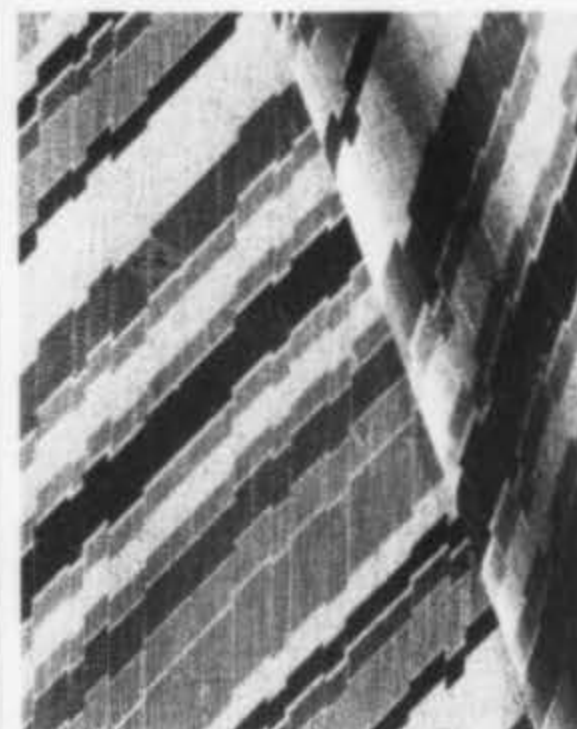
One of the designer fabrics introduced when GMT expanded their vinyl floor tile line to include fabric and wallcovering. Go-Met Tile. circle 241



A Belgian linen fabric suitable for upholstery or drapery from Rosecore. circle 242



Candy Stripe and Splash, two screen printed linen fabrics for upholstery or drapery from Karl Mann Associates. circle 243



Strata, a striated pattern in an array of colors, is a new contemporary design in the handprint collection. Custom colors and coordinated wall-covering available. Tressard Fabrics. circle 244

continued on page 22

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what's more,
they got me a
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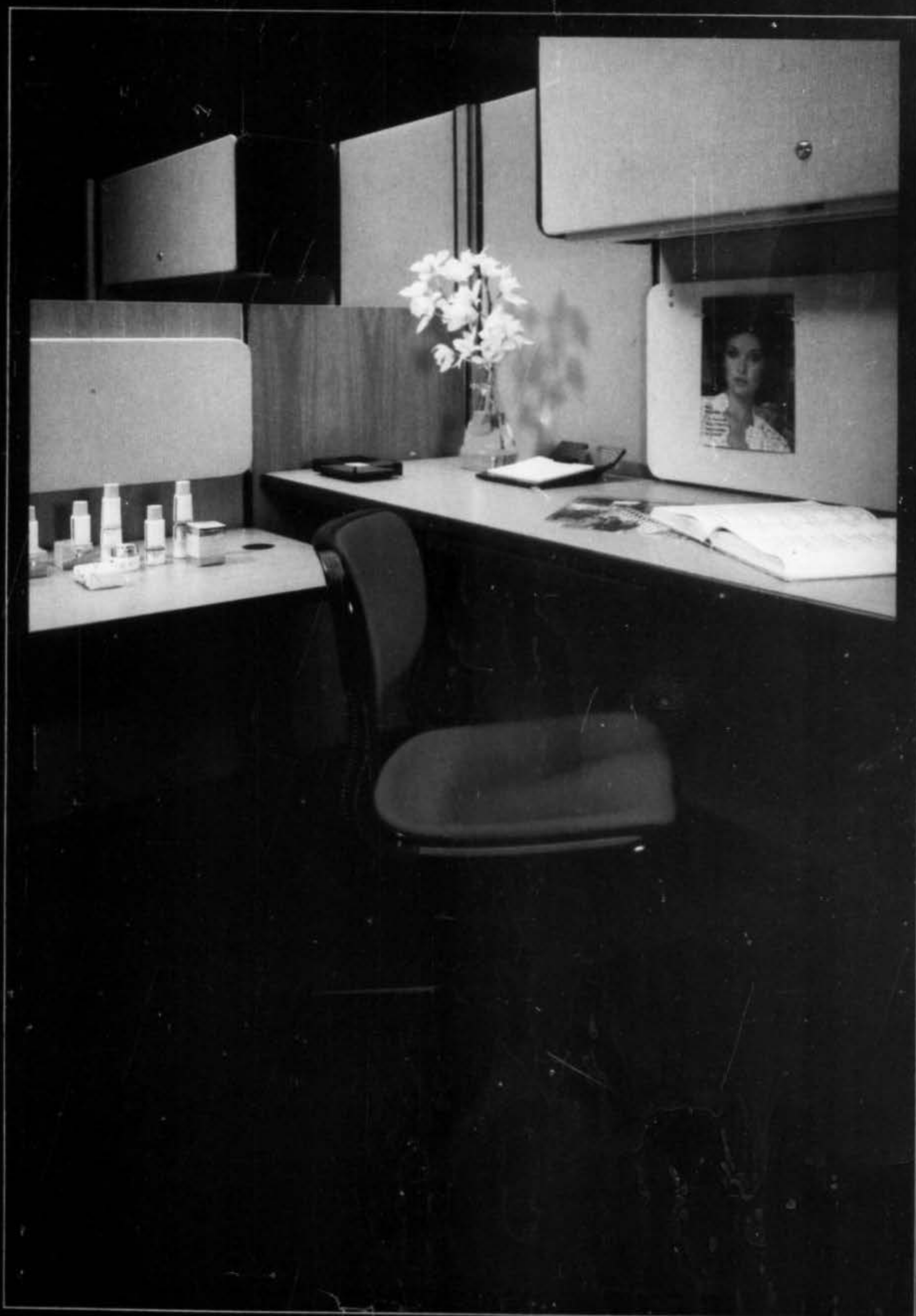
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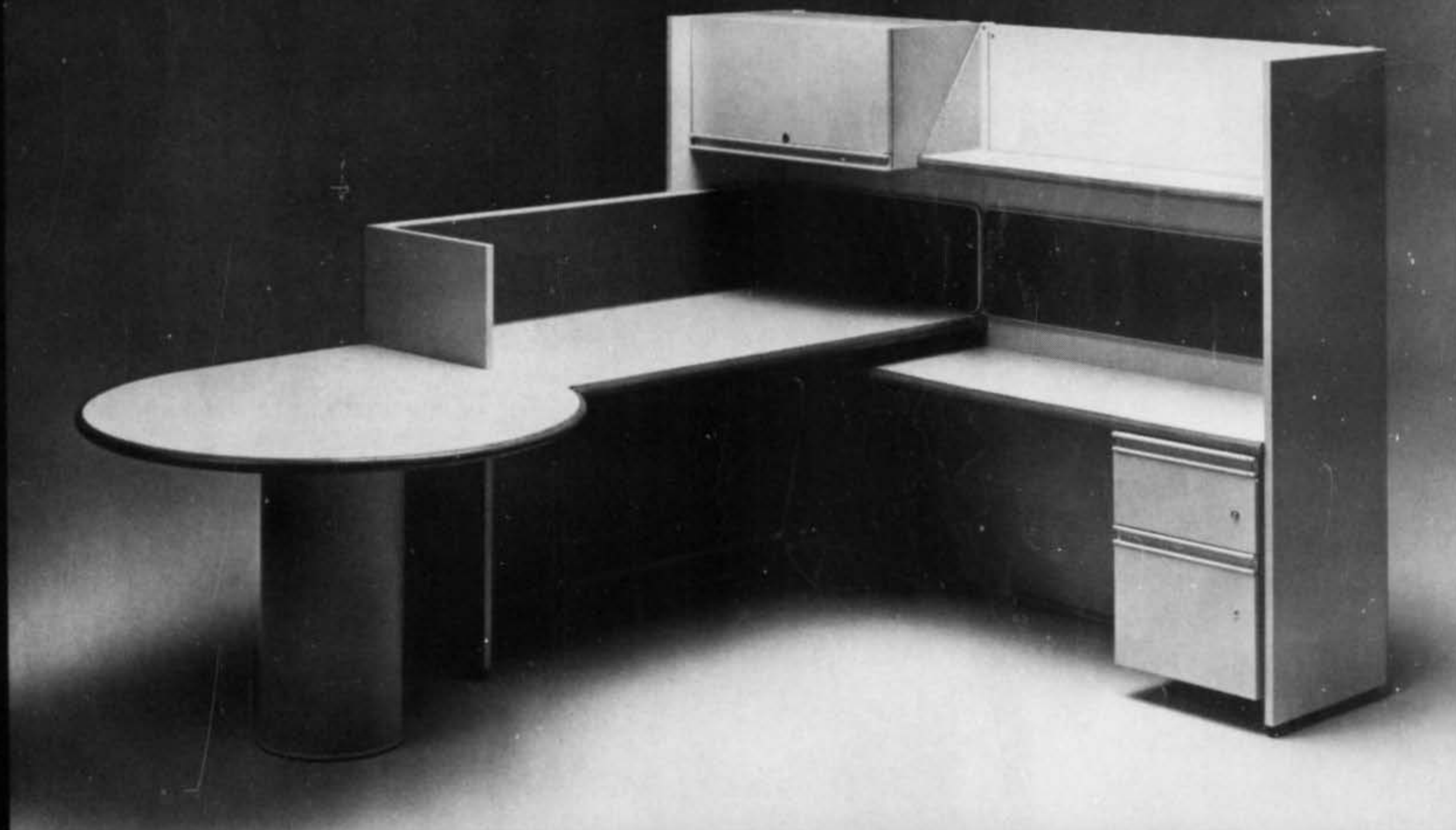


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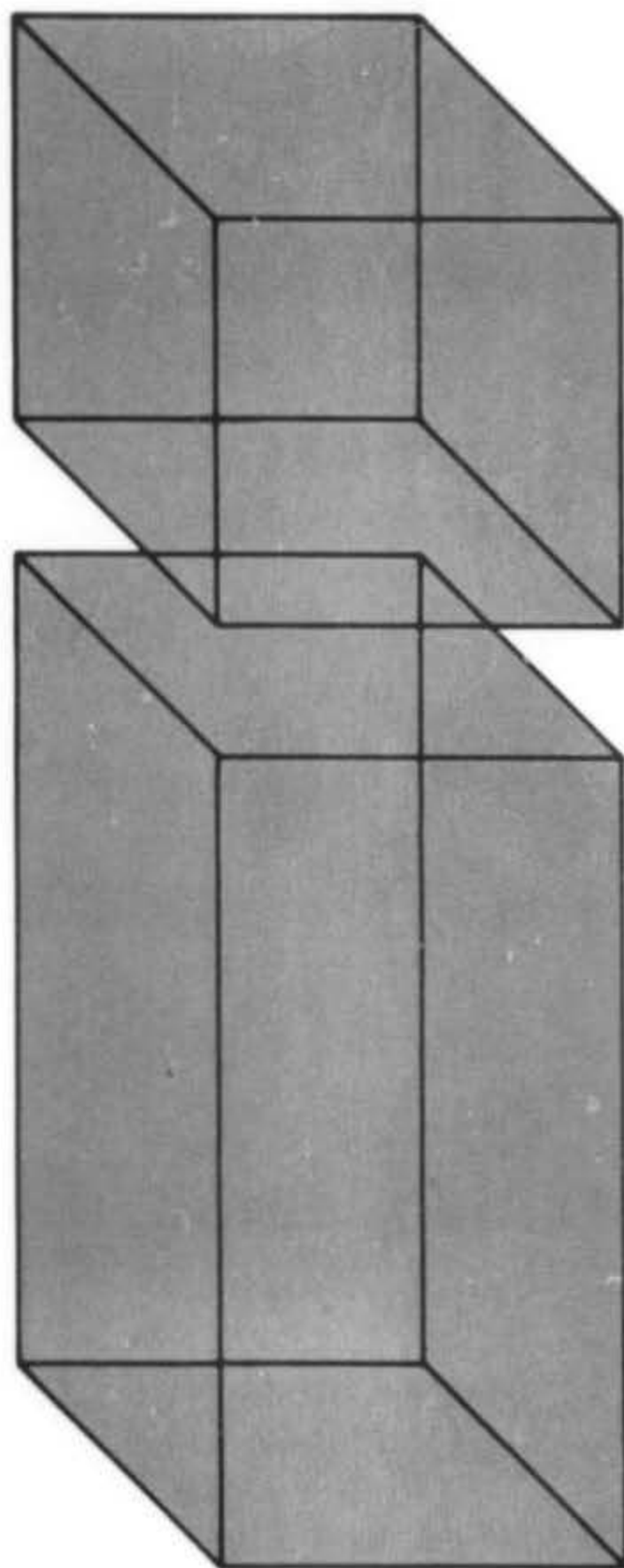
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First Notice

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Rosaria Piomelli

Dean of Architecture, City College New York

Be sure to watch for entry forms and guidelines in July and August issues of Interiors



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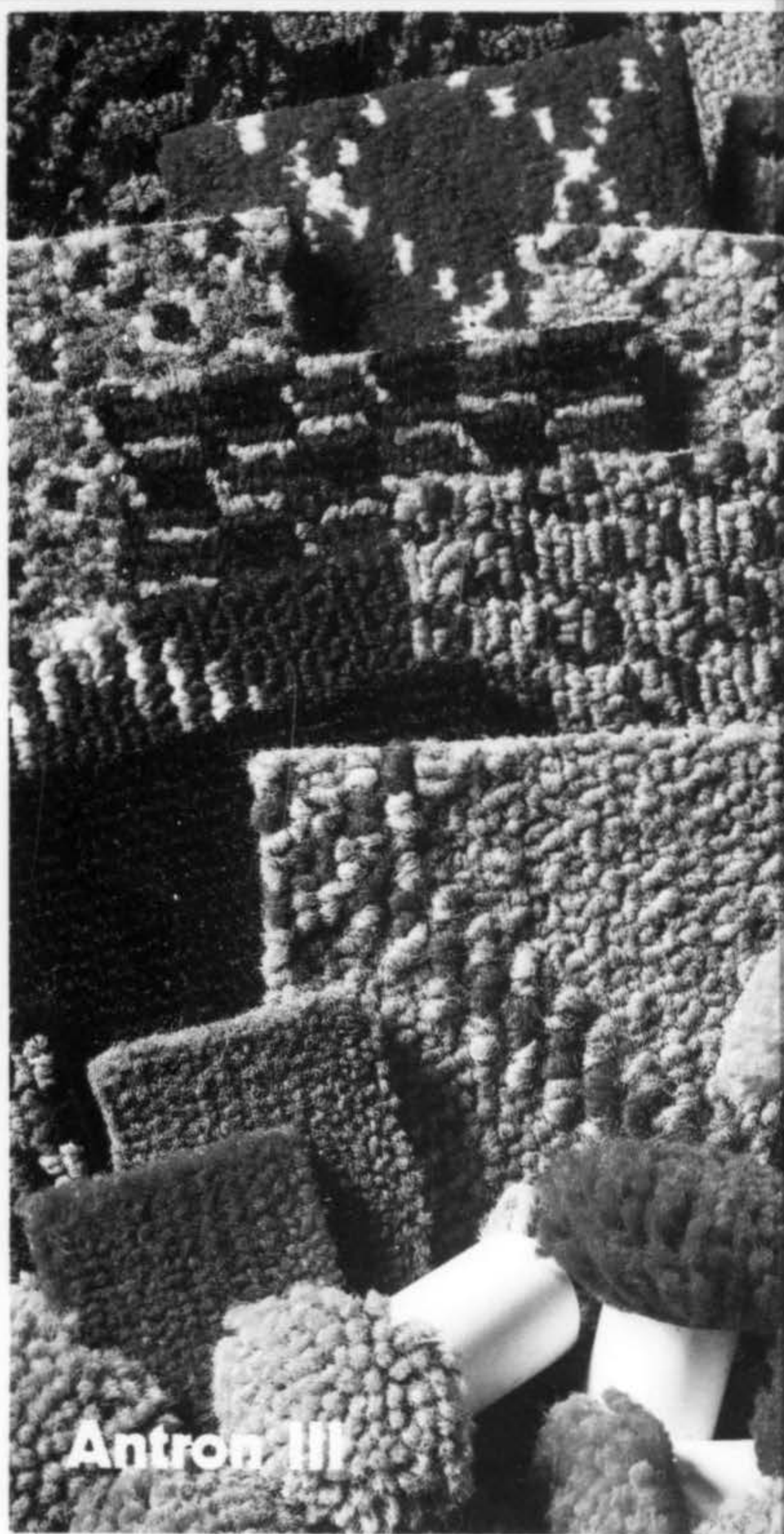
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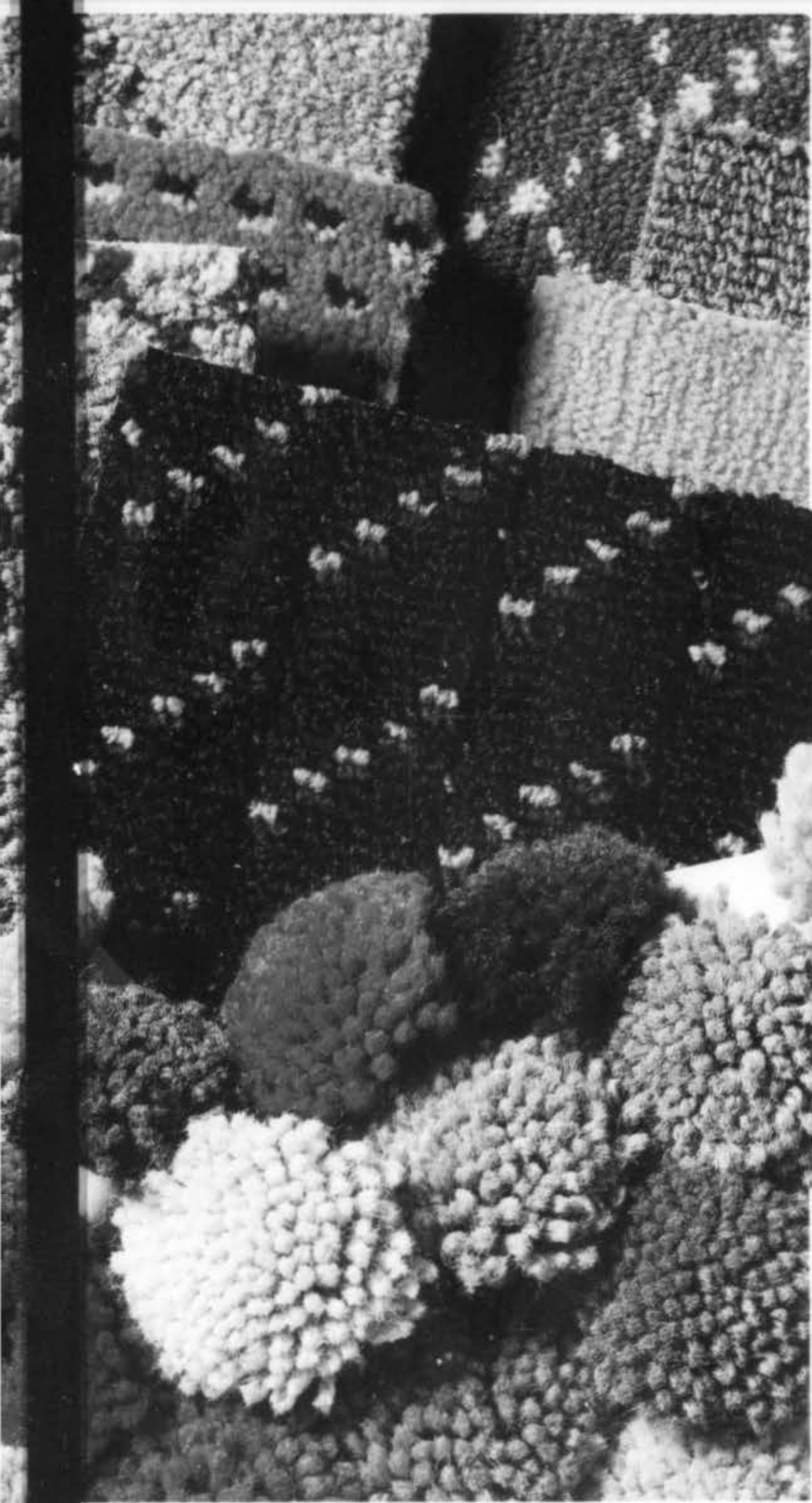
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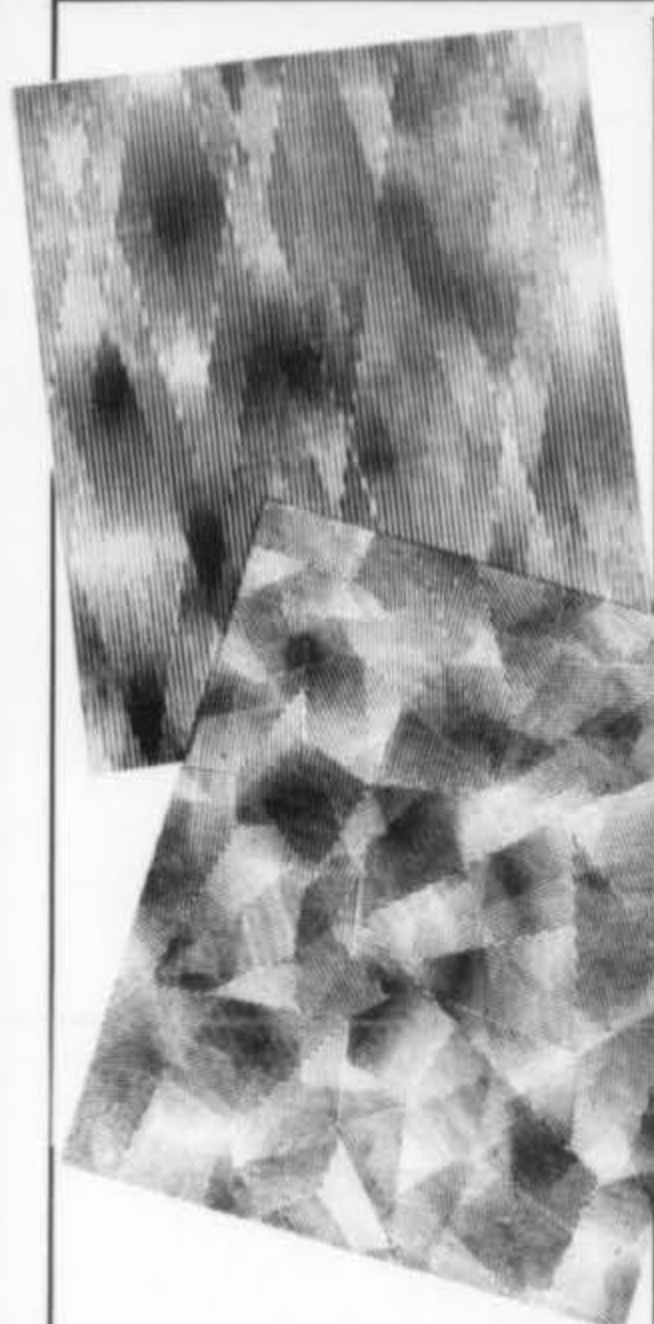
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PRODUCTS



Two designs from the Crystal Peak Collection feature geometric patterns printed on a heavy cotton sateen in three vibrant pastel colorways. Zoo-Ink. circle 245



Chinese silks that emphasize texture and pattern in natural and bleached tones in a range of lusters from full gloss to matte are part of the Orientations Collection from Jack Lenor Larsen. circle 246

Pasha, a Chinoiserie figure and flower pattern is printed on 100% glazed cotton. Available in six colorways. Brunswick & Fils. circle 247



Plum Blossom, a flower print, is flanked by Ceram, a cotton stripe (left), and Gad-roon, a flame stitch tapestry. Stroheim & Romann. circle 248

Paysage Chinois and Carina, printed silks, available in shades of green, Aubergine, Sienna. Zumsteg. circle 249



Two satin-backed jacquard velvet upholstery fabrics of 100% rayon are available in 15 patterns and 8 colorways. Collins & Aikman. circle 250

continued on page 28



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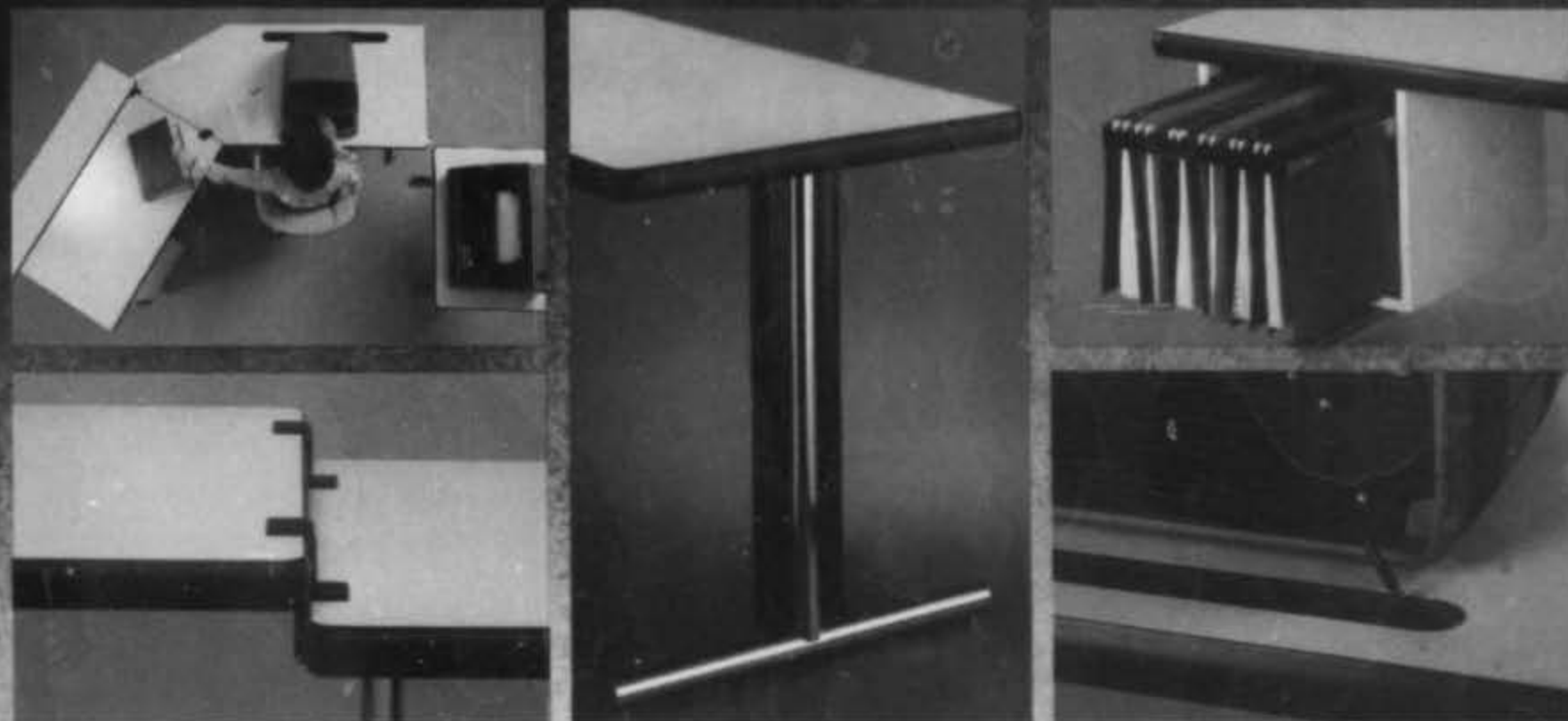
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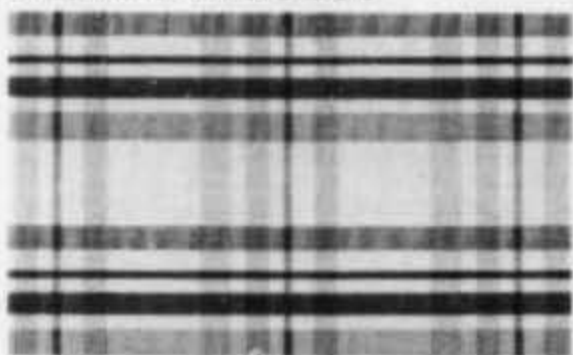
PRODUCTS

FABRIC

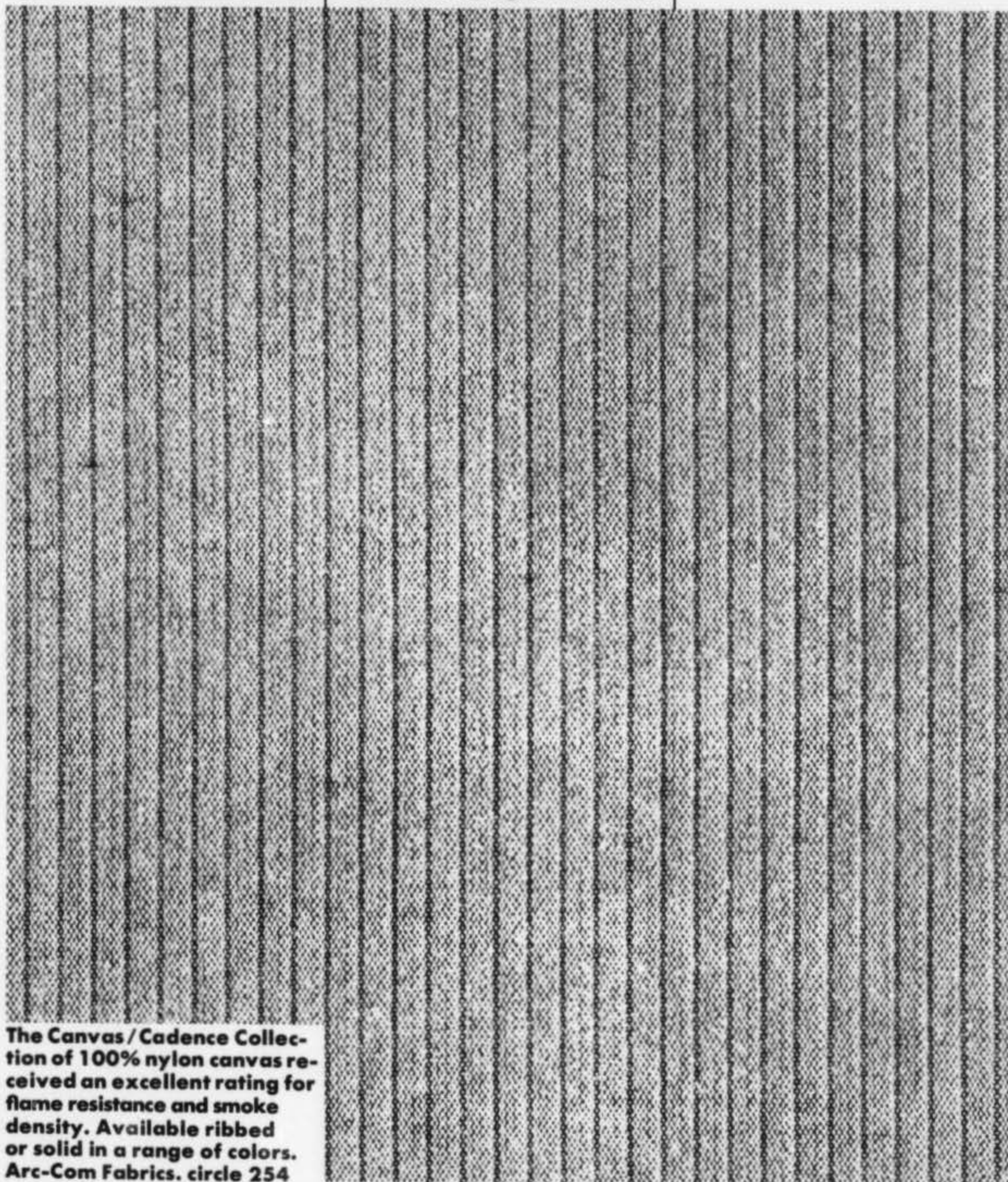
MEETING FIRE SAFETY CODES

The importance of using flame-resistant, low-smoke-density fabric in public spaces has been heightened by the recent rash of hotel fires. To help keep designers informed, manufacturers of contract fabrics are processing, testing and publishing their ratings. The new revised 1981 National Fire Protection Association's compilation of 238 firesafety codes and standards is now available. For information write: NFPA, Batterymarch Park, Quincy, Mass. 02269.

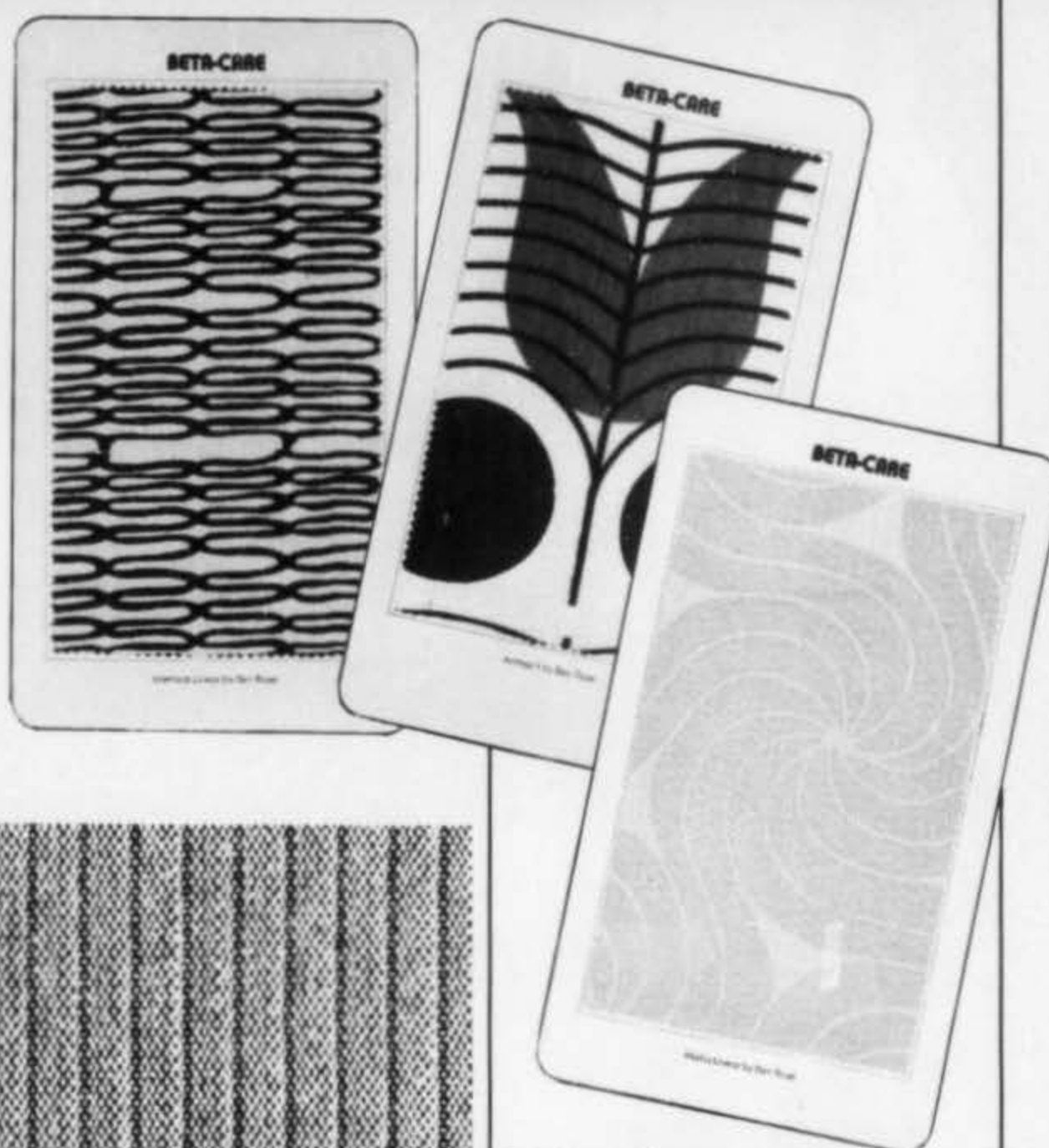
FRP-100, a flame resistant polyester drapery fabric from Dazian's. circle 251



Wunderbar meets the FAA 25.853 vertical flame code. Gretchen Bellinger. circle 252



The Canvas / Cadence Collection of 100% nylon canvas received an excellent rating for flame resistance and smoke density. Available ribbed or solid in a range of colors. Arc-Com Fabrics. circle 254



Designed to be smoke and flame resistant, Beta-Care Fiberglas fabric proved to provide the least smoke emission among fifteen of the most popular flame-retardant fabrics. Owens-Corning. circle 253

FIRE PROTECTION PROCESS

Flame-Check, a new process on the market will treat most natural and synthetic fibers, including the very difficult acrylic-backed nylon and polycotton combinations with a chemical to make them flame-resistant. After this procedure, each fabric is tested and in almost every case is able to pass the most difficult test, the National Fire Protection Association (NFPA) Code 701 (a vertical small-scale test). Special care is given to use small amounts of chemical concentrate to prevent salting, and every order is provided with a certificate of flame retardancy. Fiber-Seal of New York. **circle 255**

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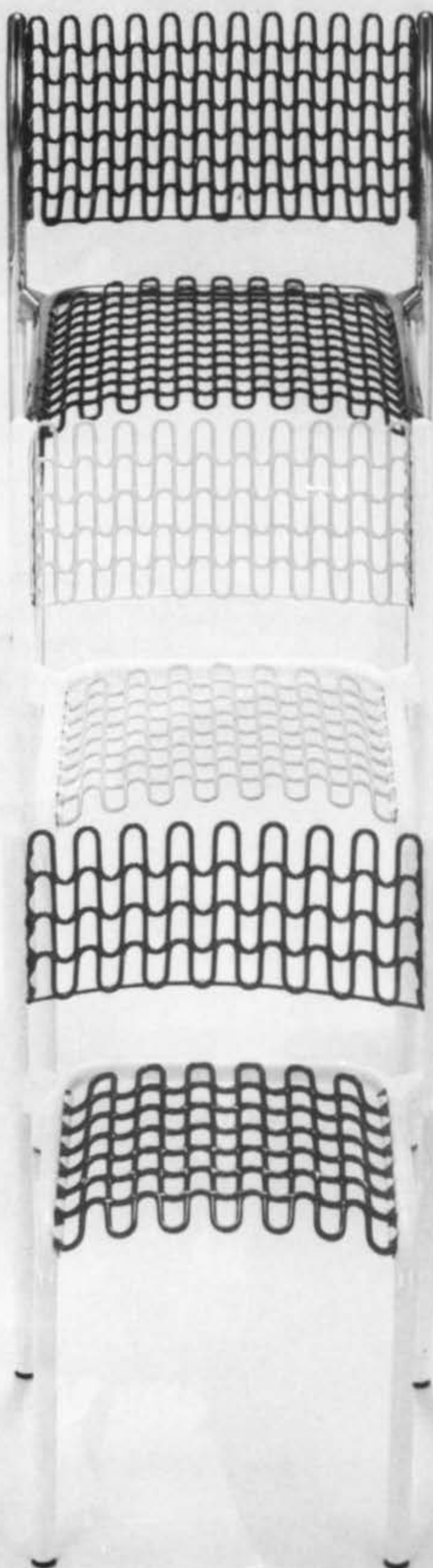
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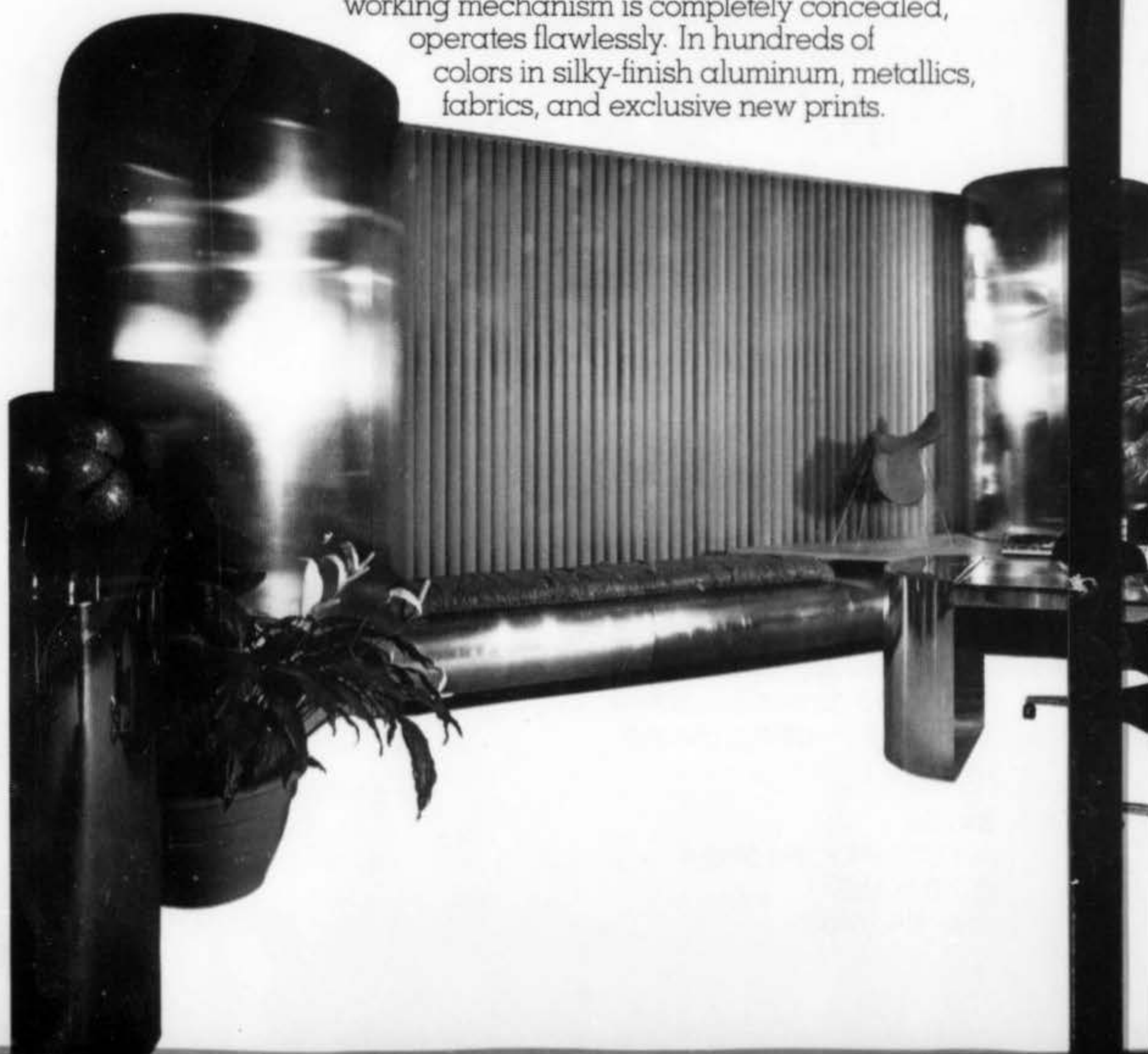
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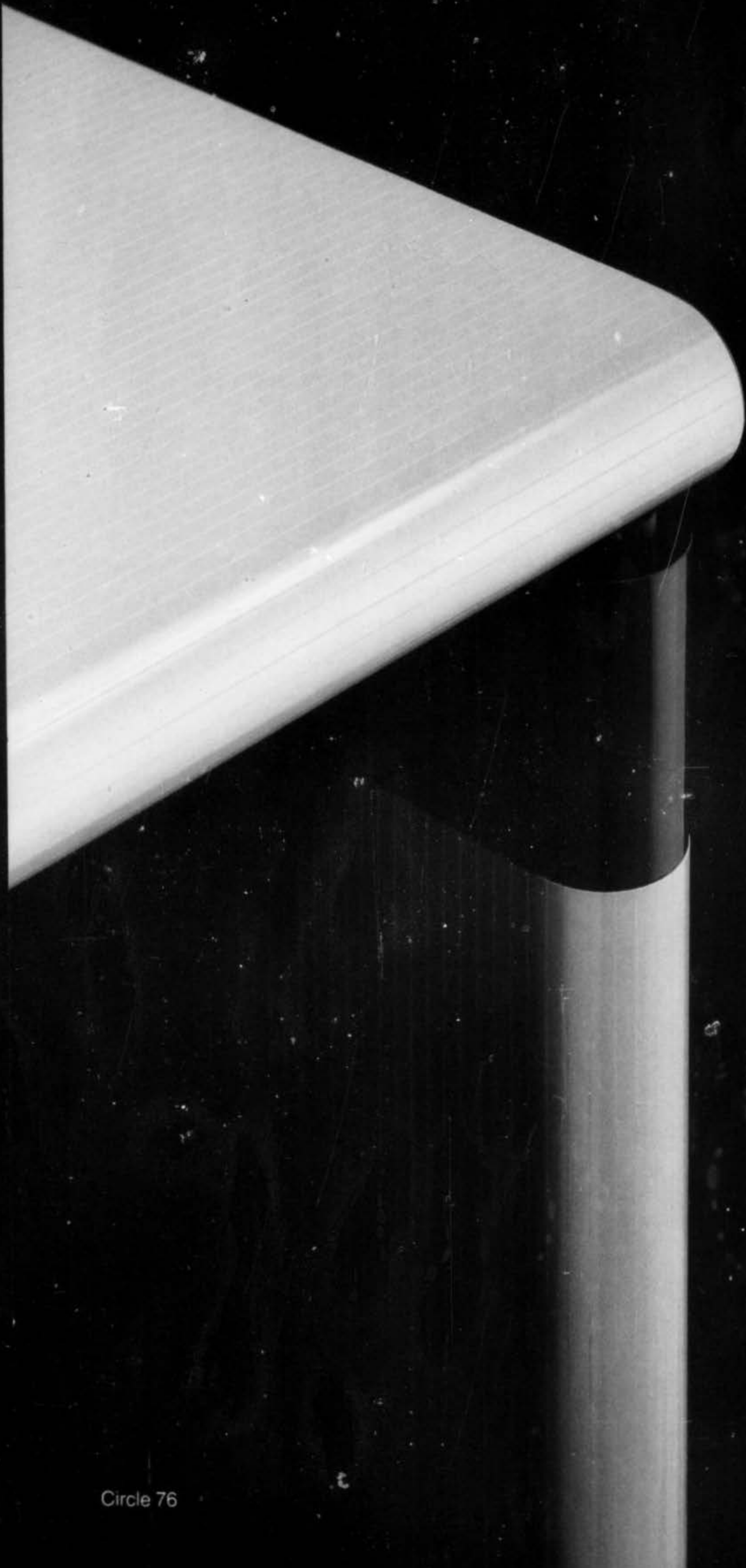
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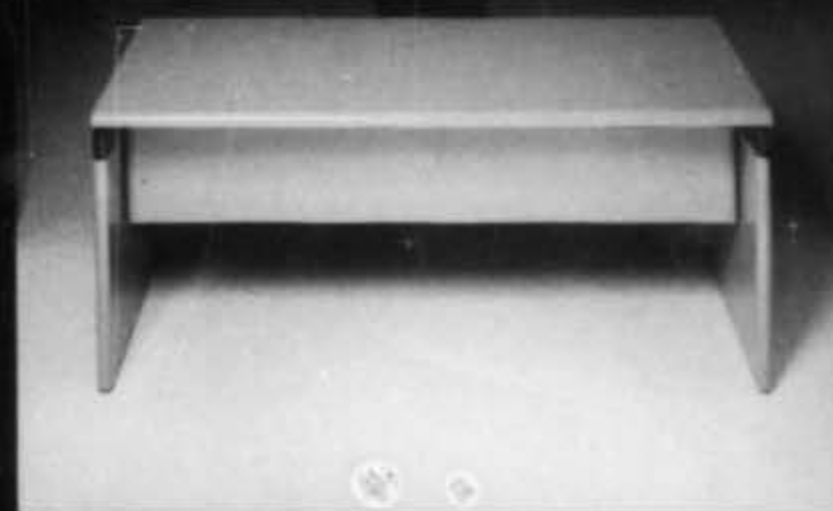
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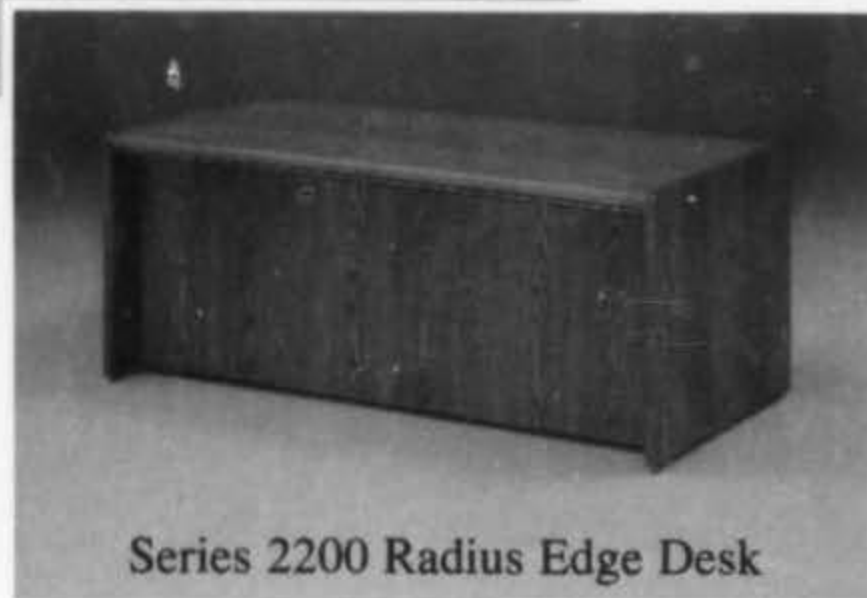
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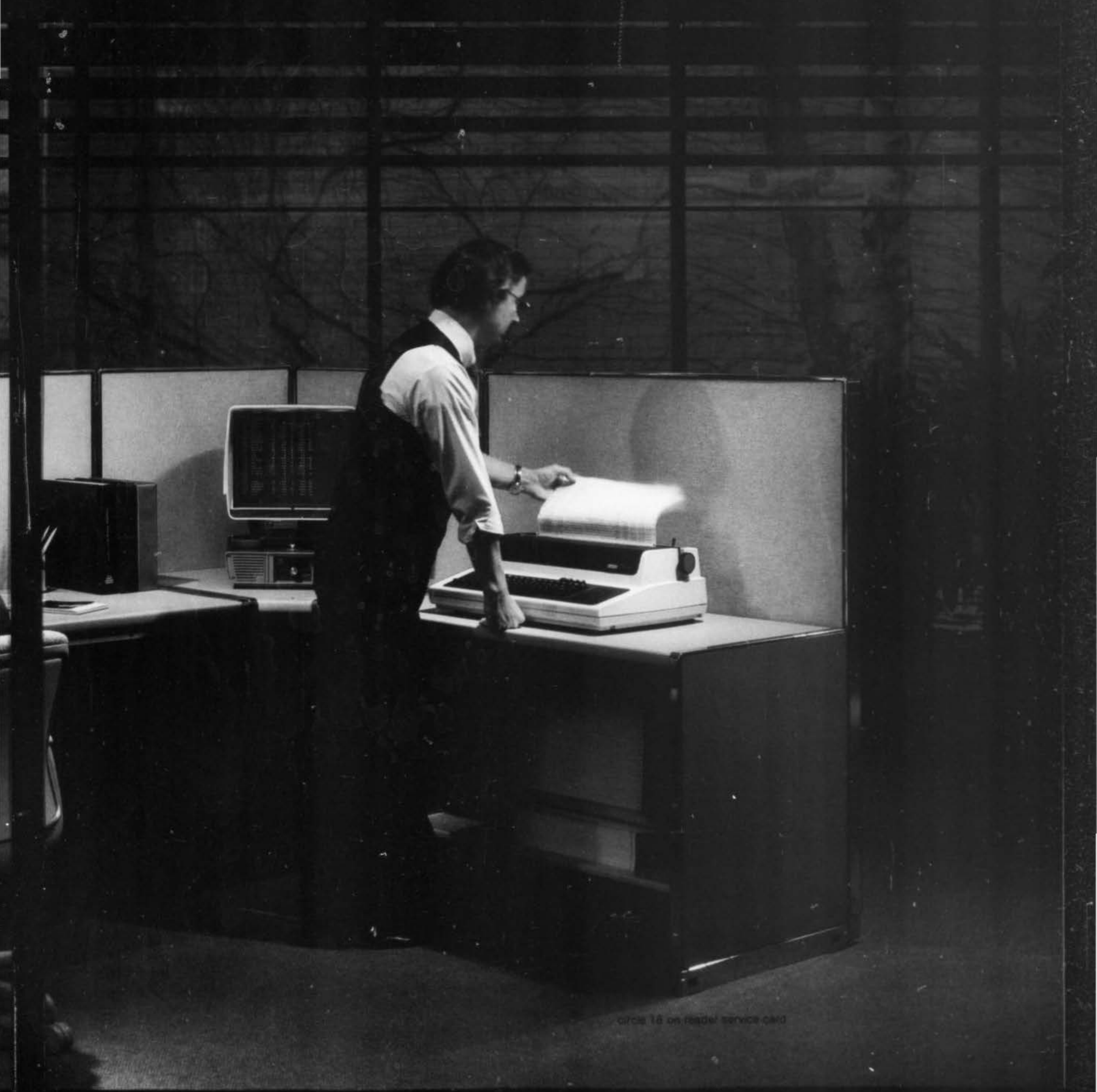
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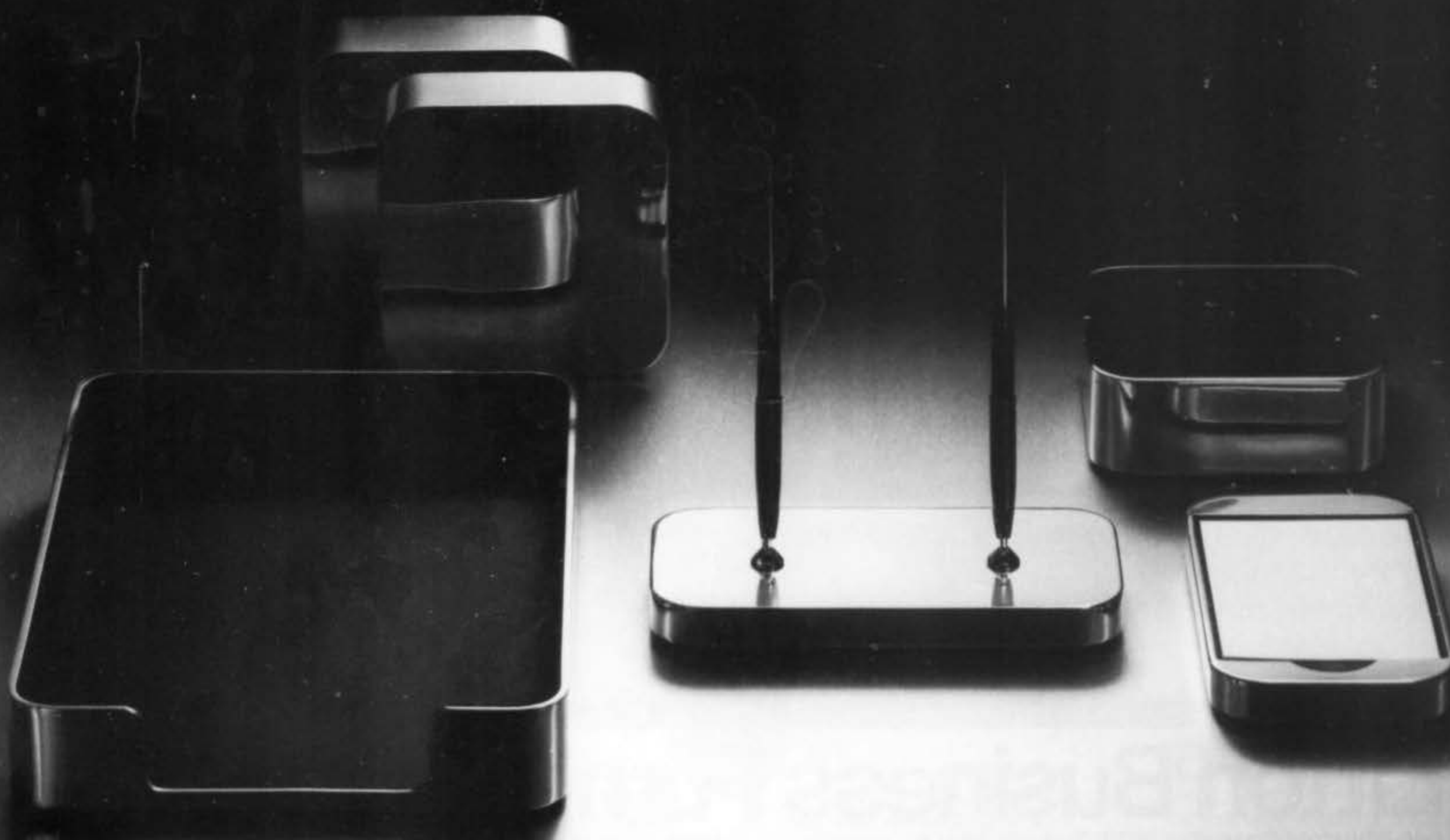
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INTERIORS EVENTS

CONFERENCE PREVIEW

ASID

Celebrations, awards, seminars, workshops and exhibits await interior designers as ASID's 1981 National Conference meets in St. Louis, Gateway to the Great Frontier. Dates: July 23-27



Laclede's Landing, on historic St. Louis riverfront.

S. Jones, ASID "Forecast for Commercial Designs: Change;" Roger Brady, "Planning and Controlling the Firm's Money;" Ernest Burden, "Visual Marketing for Design Professionals;" Remo Saraceni, "Light as an Art Form: Energy Savings Through Design."

Program highlights include: Thursday July 23: Student orientation and meeting; Press Reception, 6 p.m.; Exposition grand opening and welcome party. Friday July 24: Opening breakfast, address by President Jack Lowery, keynote speech by Paul Spriereggen, "Aesthetics in Design;" Workshops; Celebration '81 Ball Extravaganza. Saturday July 25: Industry Founda-

tion brunch and design competition ceremonies; Professional site tours of St. Louis area; Opera; Evening gala poolside party. Sunday July 26: Annual Industry Foundation Meeting; Fellows reception and dinner; Annual ASID Awards Ceremonies. Monday July 27: Closing brunch, speaker Mike Vance "Creative Environments and the Future;" Exposition Grand Finale; 1930's costume party.

ASID President Jack Lowery hailed St. Louis as "the Gateway to the West, once part of the Great Frontier." Meeting there, he said, will better prepare all who attend "for the imposing frontier that now confronts our profession."



Among the conference speakers are, left to right: Thomas Frank, FASID; Mike Vance; Larry D. Baker, DBA; and William Wilkoff, ASID

Commemorating its 50th year, the American Society of Interior Designers has scheduled its 1981 National Conference in St. Louis, July 23-27. With membership now at 20,000, a very large turnout is expected. More than 30 workshops are planned, with a display of some 200 exhibits. All this in addition to a highly attractive round of festivities.

Anticipation of prestigious ASID awards announcements will run high, with presentation, on the Sunday, of the Thomas Jefferson, Designer of Distinction, Interior Design Project, Product Design, and Human Environmental Awards in gala ceremonies, at which newly elected Fellows will be introduced.

Workshop speakers will include: Gary H. Silver, "Computer Aided Space Planning;" Lyle F. Yerges, "Sound and Noise Control for Interiors and Living Spaces;" Dr. Jose Bernardo, "Psychology of Design—The Human Response;" Hester



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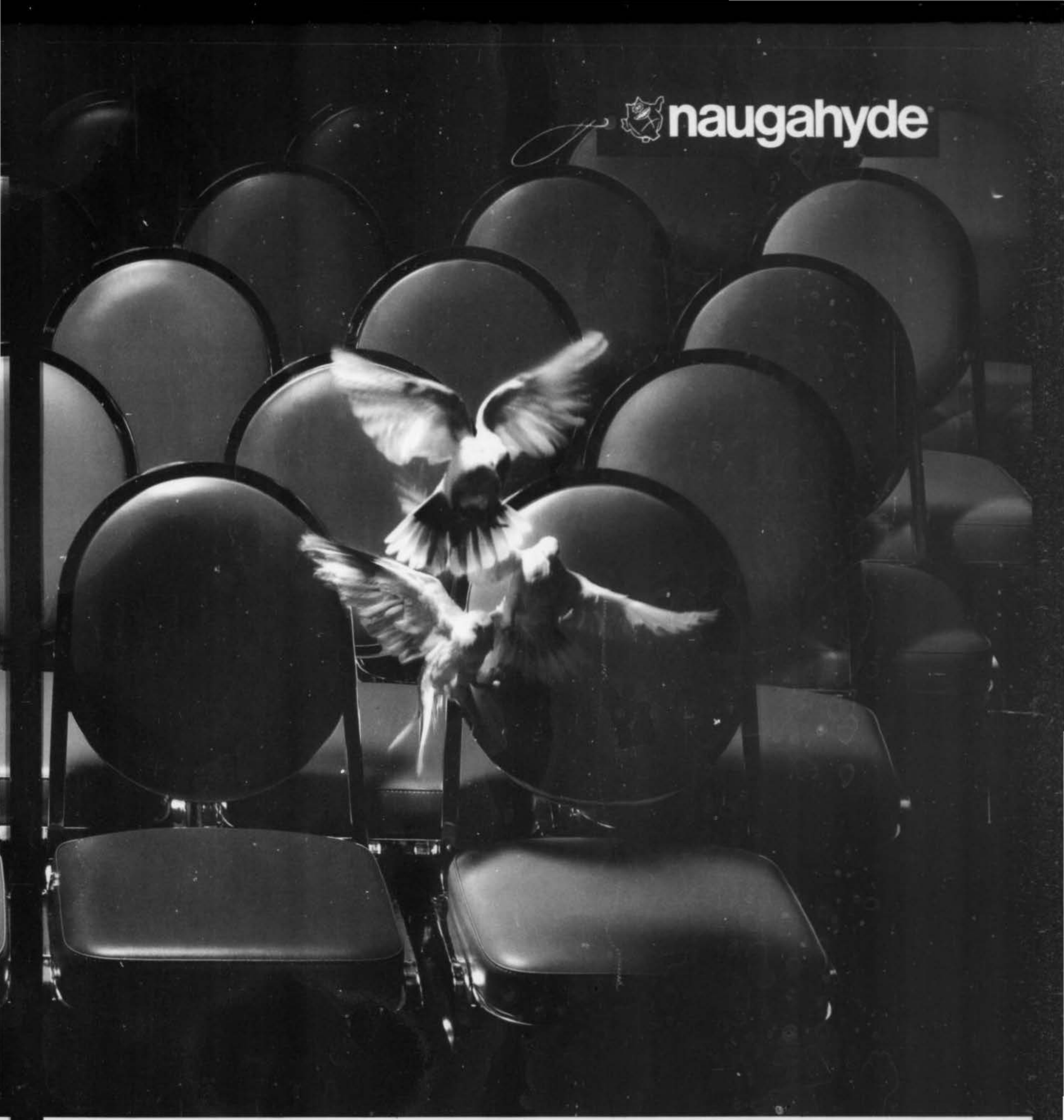
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INTERIORS BUSINESS

BY ASHLEY HARVIE

WOMEN PRINCIPALS

Independence is never easy—is it harder for a woman? Naomi Leff, Trisha Wilson and Sue Wade discuss the pleasures and perils of being a woman entrepreneur.



Ashley Harvie

Naomi Leff is a designer, an entrepreneur, and a woman, not necessarily in that order. These days, being all three makes for an interesting professional life.

President of Litchfield, Grossfeld, Leff Associates, Ms. Leff founded her firm two years ago. Shortly afterward, she heard about the American Woman's Economic Development Corporation. AWED is the first organization to provide entrepreneurial women with a management training and technical assistance program. Ms. Leff applied and was accepted into the program, and has been honing her busi-

ness skills ever since.

The 1½-year program consists of twenty evening seminars, brainstorming sessions and a review of the participant's business plan. It also includes a variety of supplementary programs and workshops. In addition to the training program, AWED also maintains an individual telephone counseling service that is available to business women throughout the U.S.

You may well ask why all this special attention should be given to women only. With statistics showing that at least one of every two small businesses fails within two years, surely everybody needs help surviving the stormy economic climate of the times. And if women are truly "liberated," shouldn't they be able to go it alone?

If all else were equal, then they should. But women frequently have no formal business training or sufficient experience in the marketplace. They often lack the assertiveness and confidence that men have been developing since childhood. Their education usually has not focused on accumulating business skills, and they have no access to the "old boy" network of personal and professional relationships that men rely on for referrals and advice. AWED helps entrepreneurial women fill in the blanks left by their upbringing.

For Naomi Leff, AWED's program has also filled in the blanks left by her design training. Self-employed designers start out with some advantages over entrepreneurs in other fields. Design requires a relatively low capital outlay for equipment and production. The business can be run with a small staff from a small office. Principals bring to their new firms proof of their worth in the form of their past experience and professional con-



Naomi Leff

tacts developed while working for someone else.

What they lack, however, are sharp business skills to put those assets to work most effectively. Their professional training probably didn't include accounting, negotiation, and management techniques. And though they got their experience in someone else's firm, they may not have developed an integrated knowledge of the workings of the whole organization. "When it's your firm," noted Ms. Leff, "you've got to take care of everything."

Taking care of everything—administration, personnel, insur-

continued on page 48



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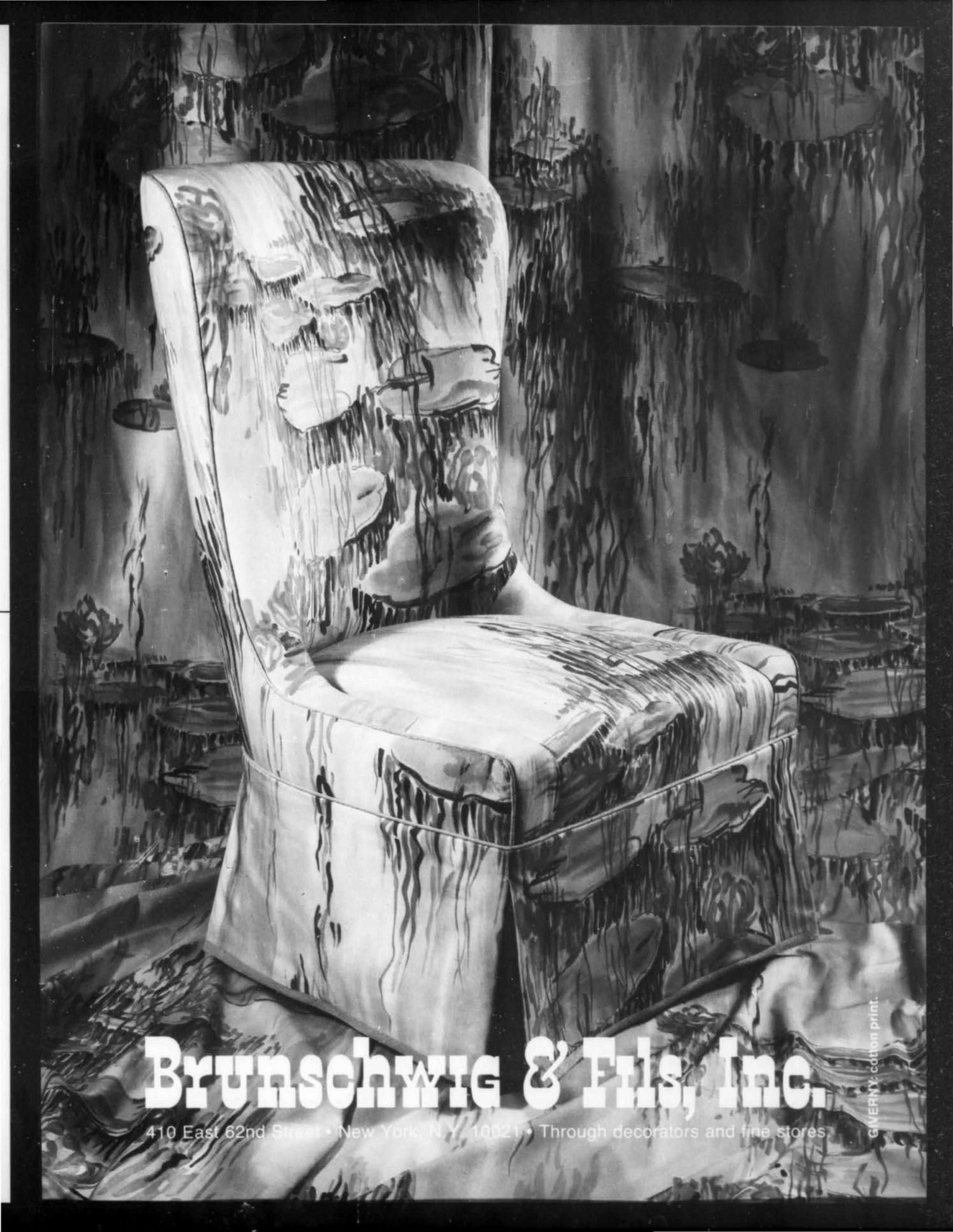


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INTERIORS BUSINESS

BUSINESS *continued*

ance, taxes, marketing, contract negotiation, financial and long range planning. When do I have time to design?" laughed Ms. Leff. "These days it's after 5:30 and on weekends."

Trisha Wilson is another woman principal who designs on weekends. President of Trisha Wilson & Associates, Inc., in Dallas, Ms. Wilson noted that women designers have two major hurdles to overcome to be taken seriously as entrepreneurs—that of being a woman and that of being a designer.

"There are a lot of talented designers, but few designers who are really good businessmen."

"Designers have to overcome the perception that they are flaky, 'creative' types who can't meet deadlines or budgets."

And then there are the misconceptions that any woman in business has to fight. Ms. Wilson can recall more than one occasion when she and her clients have been sitting around a conference table. "Something needs

to be xeroxed, or the coffee has to be poured, and they all look at me! It's almost instinctive. They usually remember who I am and look embarrassed."

Sue Wade is vice president in charge of interior design at Trisha Wilson. Most of their clients are men. "They start out pretty skeptical," she noted. "They think a woman might make a good designer, but a bad businessperson. I sometimes think I'd be respected more quickly if I wore dowdy clothes and walked with a cane."

Clients who are skeptical of a woman's abilities are often equally surprised when she uses them. "If a woman is businesslike, people think she's bitchy," said Trisha Wilson. "If a man is businesslike, people admire him."

Contractors can be one of the most difficult groups to win over, perhaps because construction is traditionally such a male-dominated field. "Some of them are great," said Trisha Wilson, "but I remember one who refused to let



Trisha Wilson

me onto the job site!" Another difficult group are the client firm's junior executives. "We usually have no problems with the chairmen and chief executives," said Sue Wade, "but a lot of junior executives are trying to assert themselves and prove their position, often at our expense."

Ironically, once they have overcome "macho" apprehensions, and started working together, according to Wilson and Leff, women often have better client relationships than men do. "Women are more straightforward and imaginative, and far better at expressing themselves than men are. If there is a problem, we talk about it. If the work

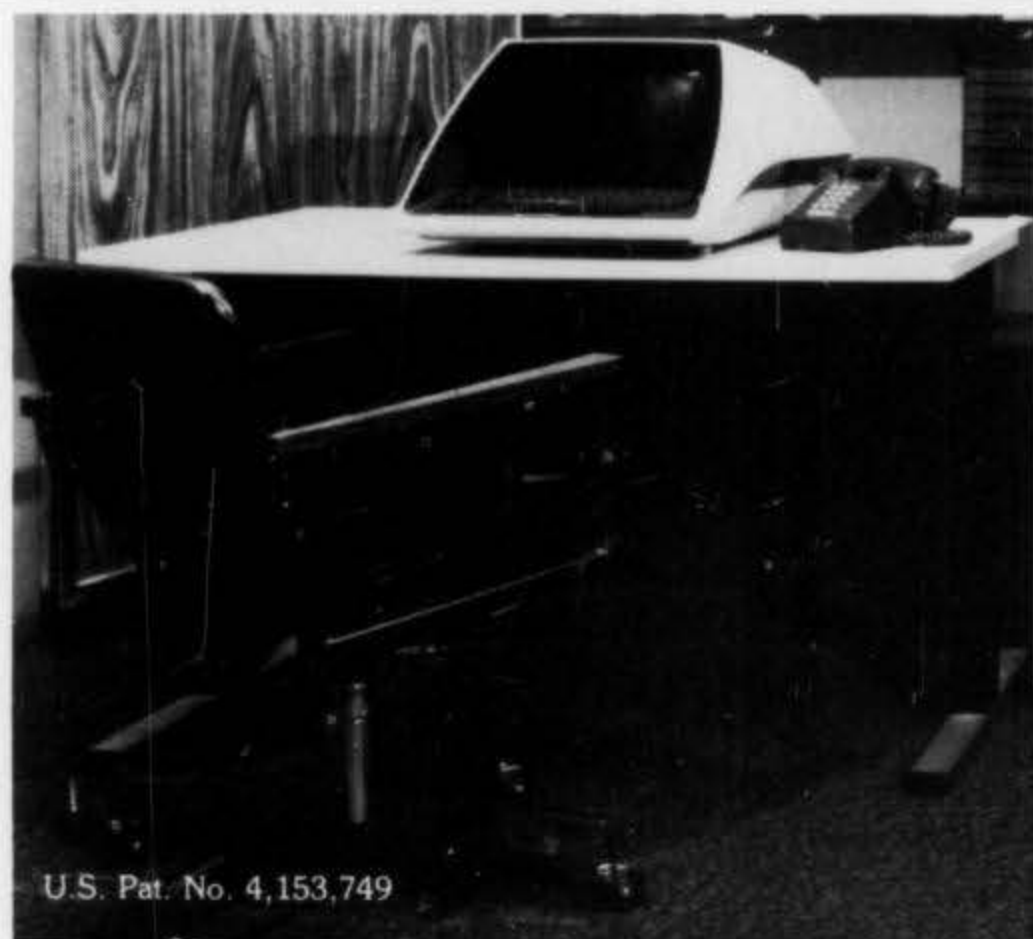


Sue Wade

is good, we express praise rather than assume that payment is thanks and reward enough," said Trisha Wilson.

Running a business isn't for everybody. Mastering the art of administration sometimes proves more difficult than mastering the art of design. But the paperwork and responsibilities can be a small price to pay for the thrill of seeing the job through from start to finish. And if, for a woman, winning that contract meant overcoming a few outdated misconceptions, then the victory is a little sweeter, and business a little better.

Ashley Harvie, a graduate of Princeton, is a writer based in New York.



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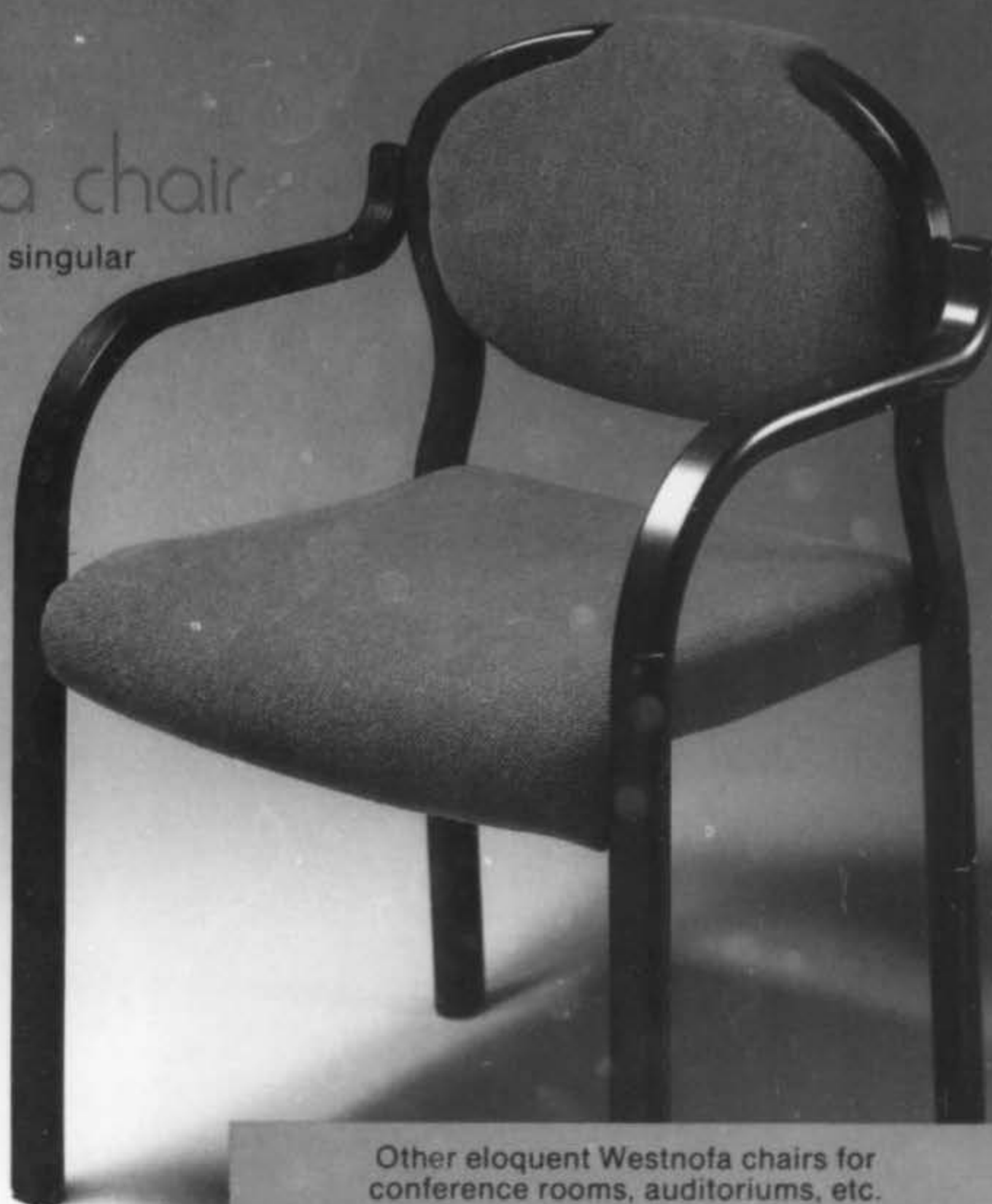
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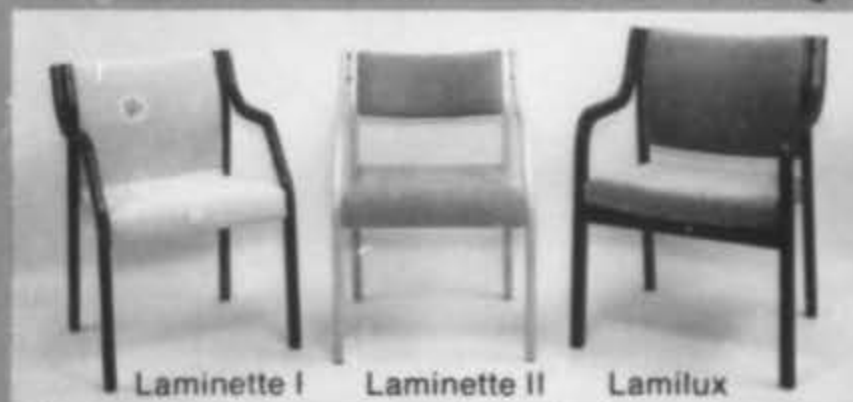
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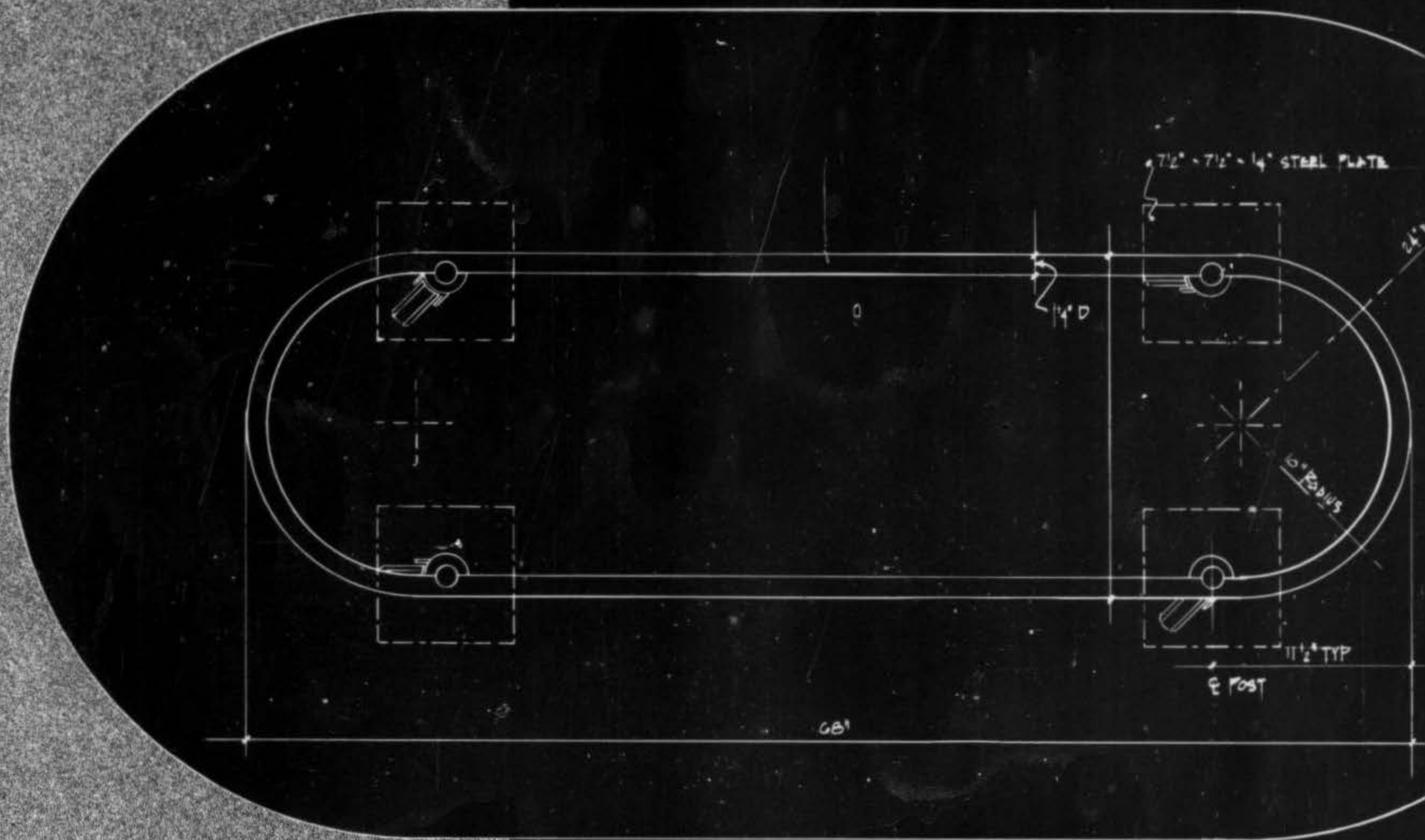


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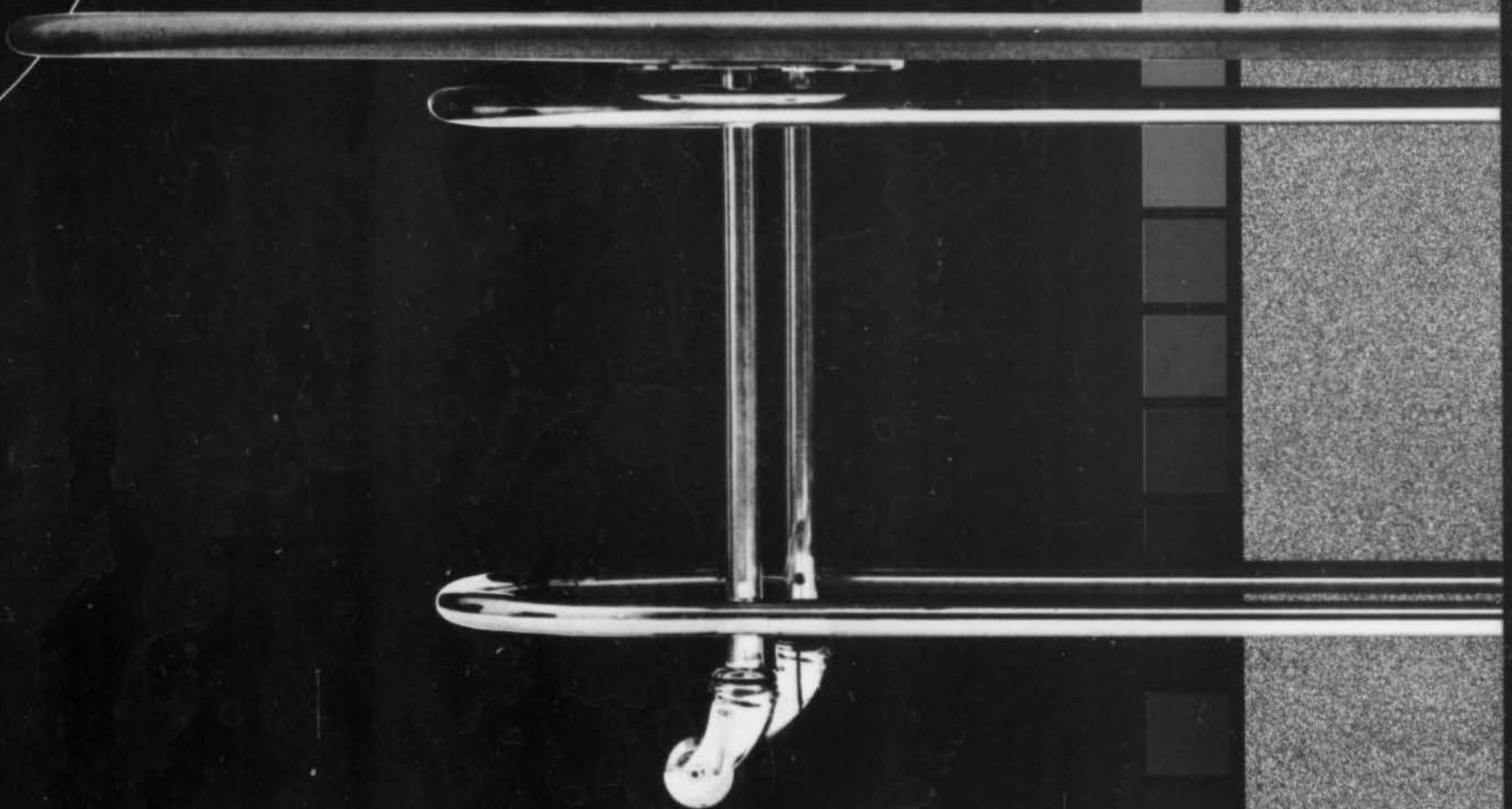
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Detail: Free-Dimensional office system. White oak desk top with upholstered panels. Designer: Warren H. Snodgrass.

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THE EDITOR'S WORD: PRODUCTIVITY

As all informed designers know, the Harvard Business School and the New York Stock Exchange organized a symposium to examine the decline in national productivity. What could be done to halt the slide? One result of the meeting was a plan to establish the National Design Council, to educate industry toward new standards of design (a) in the environment in which American goods or services are produced, to encourage greater productivity on the job, and (b) in the product itself, to stimulate demand on the home and international markets.

Efforts are now underway to achieve these objectives. As a 1981 follow-up, a California-based nucleus of supporters has formed a fundraising National Design Foundation to speed along the passage of a Congressional bill to implement the establishment of the Design Council.

Along with this determined drive, we note concerned investigation into productivity in terms of business management and corporate procedure. Gerry Maskovsky, an executive with the consultant arm of Coopers and Lybrand, public accountants, is typical of the new management expert working on automated office methodologies. As he points out: it's not so much productivity among blue-collar workers that is dragging us down as the lack of energy in the white-collar sector. And with the white-collar sector forming the majority of the work force, this is where we need to focus the fullest attention. "This is the era of the information society," Maskovsky notes. Work loads in the office are increasing, government regulations require more paperwork, computers need programmers, and technology—rather than decreasing manpower—demands more operators to increase the level of efficiency it sets out to achieve. "We haven't set up office environments for productivity," he says. And it's not just a matter of wiring



Editor-in-Chief Beverly Russell and Art Director Paul Hardy.

PHOTO: JON NAAR

up the typing pool. What office automation offers is a whole new way to rethink structural organization—the role of managers, machinery and support staff. Since the first computer was built 35 years ago, we have seen the unit of processing power increase by 10,000 times and cost decrease by 100,000 times. This is leading the way to a major revolution, with electronic hardware pundits forecasting a \$50 billion increase in sales by 1990.

Unless technology is used in tandem with intelligent environmental design, however, it tends to backfire, with workers resentful of machinery and management distressed because major capital investment has not fulfilled its projected potential. For this reason, we have looked into the whole question of design *plus* technology to achieve maximum productivity for this special issue.

To get this important message across with appropriate impact, we have geared up our graphic presentation. Paul Hardy, our new Art Director, comes to INTERIORS with impressive credentials. A graduate of Art Center College, California, he began his career in editorial design 10 years ago. His magazine redesign projects have included Money Magazine, Chief Executive, Houston City, Working Woman and Attenzione, which recently won a 1981 award for Art Direction from

the American Society of Magazine Editors. Design excellence is Paul Hardy's objective, and he admits he was particularly pleased when the INTERIORS assignment materialized. "To design for a design-oriented audience is a particular challenge," he explained. No question about Hardy's productivity on this issue! From the front cover—a computer composed illustration specially created for us by Bill Work of ERD—to the back page Who's Who, the entire magazine has been fine-tuned in its visual presentation. We hope the results stimulate you to investigate further the business potential for your clients in linking design with technology to insure maximum productivity.

Beverly Russell

DESIGN + TECHNOLOGY

OFFICE AUTOMATION

Current silicon-chip technology suggests today's \$10,000 word processor will be replaced by a \$500 unit by the year 2000. Monolithic terminals, stand-alone teams of computerized robots and free-wheeling networked automatons are on line to change the office work process dramatically.

BY RICHARD TAYLOR

Everything starts from the silicon chip; without it, today's electronic revolution would never have gotten past the plotting stage. The silicon chip is honestly one of those "breakthrough" technological advances that opens up a whole new way of life—the electronic equivalent of the internal com-

bustion engine, the steel I-beam or the moving assembly line.

What is this ubiquitous chip? Well, it's a wafer of pure metallic silicon, as small as 3/32-inch square, that's been photo or laser-etched with a network of tiny "wires" that are only one to three microns thick (human hair is in the four-micron range). Because

of the semi-conductive nature of the silicon crystal and silicon oxides with which it is coated, this tiny chip not only carries the wiring, but also serves the same functions as the transistors, diodes and resistors in old-fashioned electronic devices.

IBM has a 1/4-inch chip that can store 72,000 bits of information,

Garban office, see over.

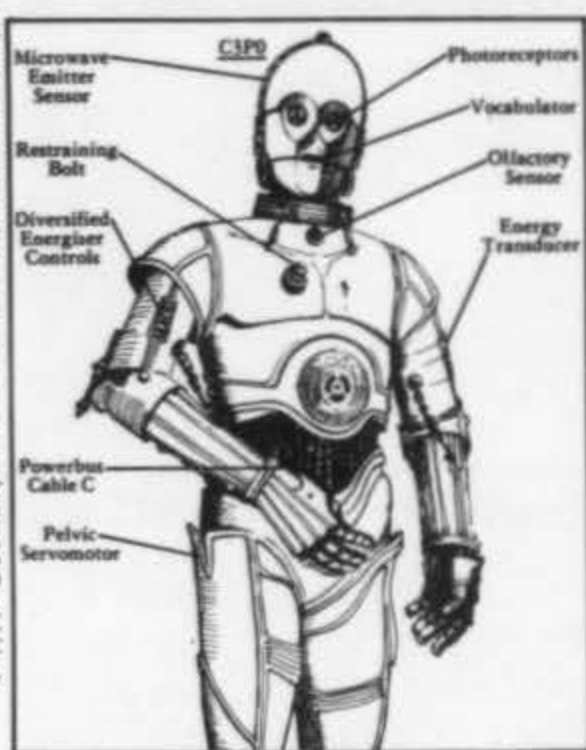


PHOTOGRAPHY BY JON NAAR

making it the densest commercially-available chip. Similar chips are in a Thermal Conduction Module in the new IBM model 3081 Computer, which packs 118 silicon chips, 12,000 computer connectors and 130 meters of wiring on 33 ceramic boards in a six-inch square. And this is just the beginning. According to Les Wilkinson, in charge of advanced systems development for Delco Electronics, chips will shrink another 30 percent by 1985.

But the silicon chip is only the means to an end. And that end is reduced size, reduced cost, increased reliability, and faster electronic processing. A five-dollar chip can replace a \$50,000 refrigerator-size box of electronics, and can complete complex computations in nanoseconds. It's the chip which makes the elec-

© 1977 Courtesy Twentieth Century Fox Film Corp.



Above: C3PO, stand-alone robot from *Star Wars*.

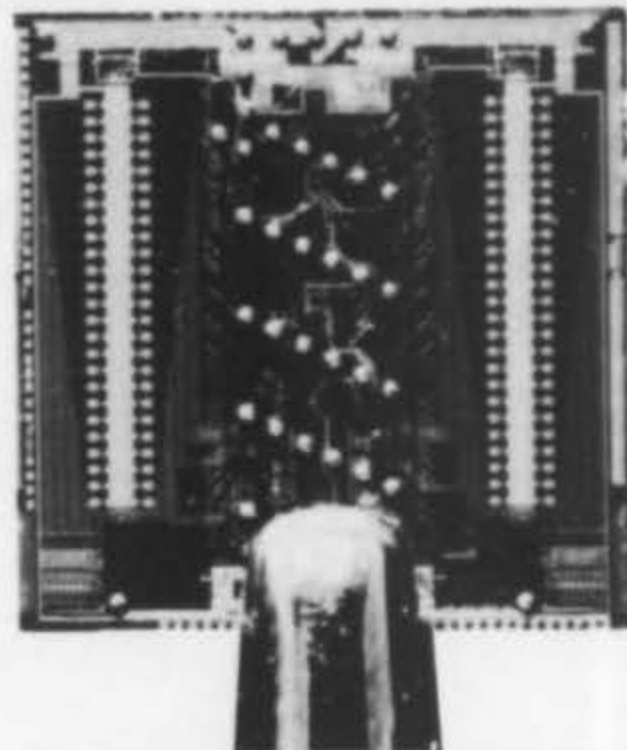
tronic revolution possible.

The cost of data processing equipment has dropped at least 25 percent each year since the late 1950s, a direct result of advances in semiconductor tech-

nology. This isn't going to stop in the foreseeable future. Today's \$10,000 word processor will be replaced by a \$500 unit before the turn of the century, and equipment we can only dream about will be not just commonplace, but as necessary as the telephone is today.

There are three distinct trends in office equipment that will determine the office environment of 2001. One is what they're calling the "HAL" type of computer. In Stanley Kubrick's *2001*, the malevolent computer HAL formed the physical walls of the space station and controlled every facet of life on board.

Today's centralized time-sharing computer, segregated in a computer room and accessed from remote terminals all over the corporation, will grow in the next twenty years into a HAL-like



Above: A silicon chip, key to the electronics revolution.

monolith that will control everything from building temperature to the president's paycheck. Portions of its data banks will be accessible to many employees, but

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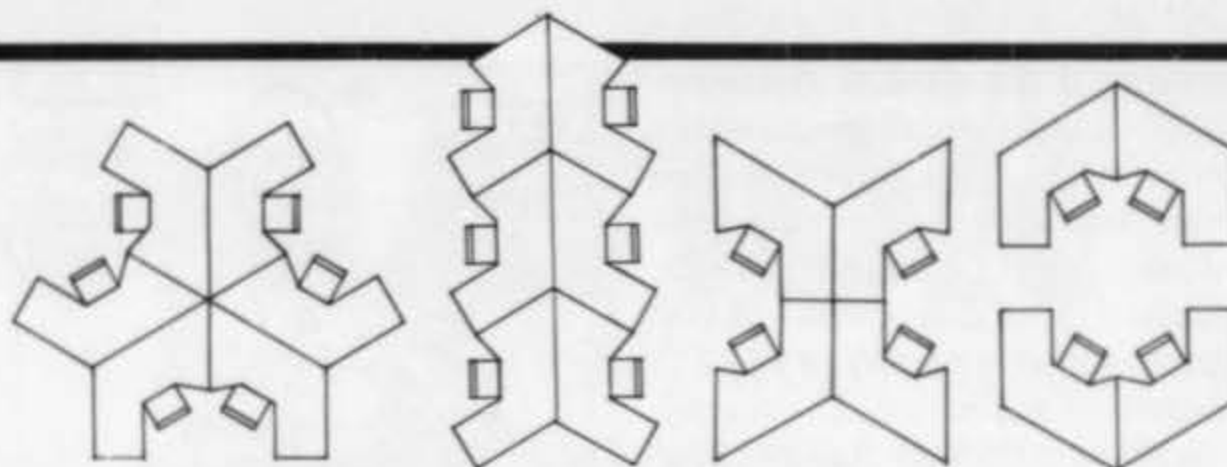


ROOM FOR THE CRT

In this trading room for a New York brokerage firm, a prototype of the automated office, lighting, ventilation, furniture design, and acoustics are appropriately developed to meet the special needs of a maximum array of CRT terminals and electronic equipment. Custom modules can be arranged in flexible configurations.

The trading room of a brokerage firm is a very special kind of office, built to serve a very special function. It can offer some insights into directions that all offices may soon be taking—at least insofar as it serves as a prototype of the “electronic office” so widely anticipated as the office of the future. This particular office of the

future has been in action since 1977, when Garban, Inc. made a decision to change over from the traditional brokerage office with a “board” at the front for display of quotations and lines of desks for brokers, all facing forward in regular rows. The key change was to turn to a computer to hold quotations and buy and sell orders electronically. Each bro-



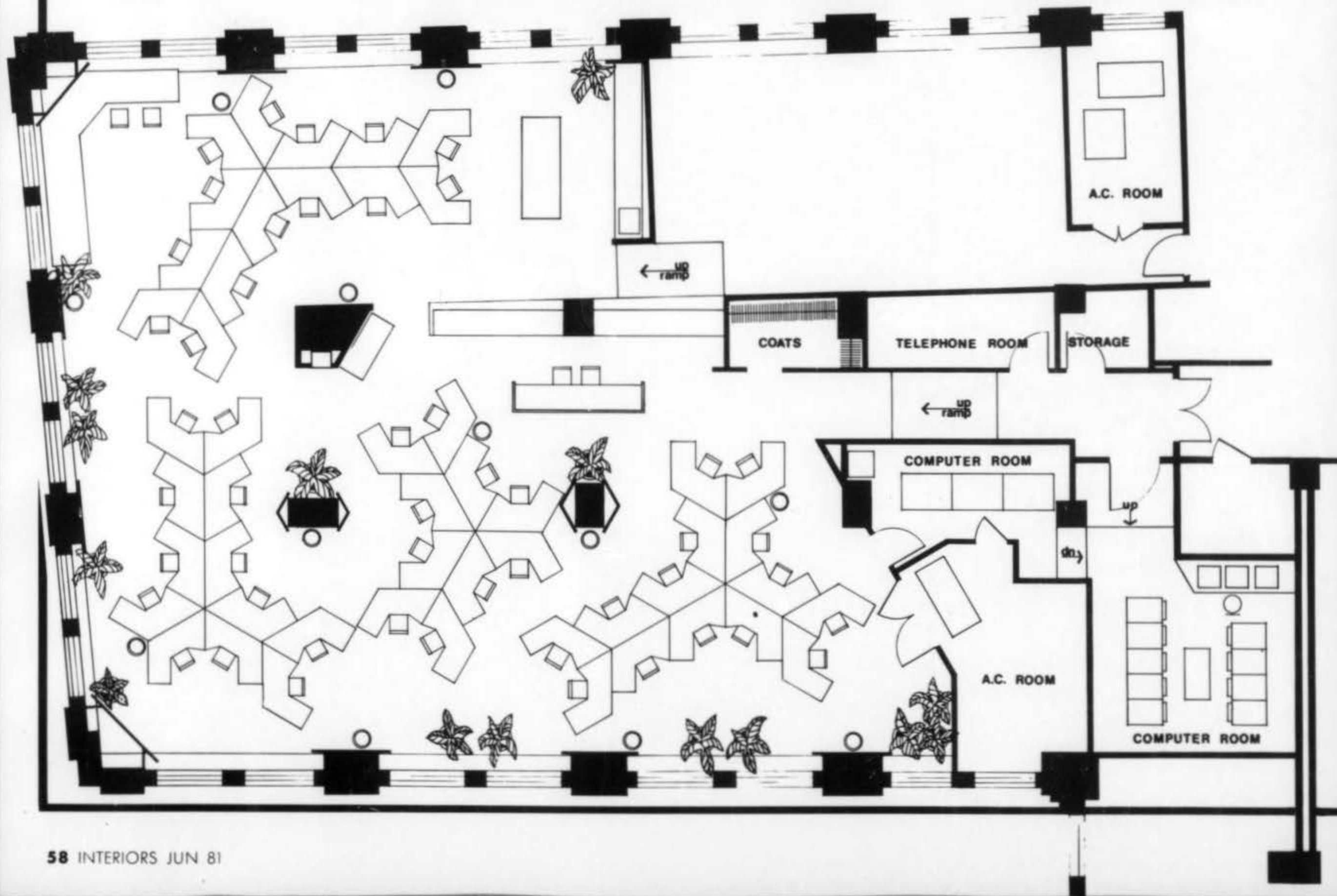
Above: Diagrams show special 120-degree workstations grouped in four possible configurations.

ker's attention was moved from the “big board” to the tiny screen of a CRT terminal with a keyboard for accepting instructions. In addition, each station uses one or more additional screen units for display of quotations and contains a telephone “turret,” a fairly large switch box that gives instant access to something like fifty direct lines to the firm's customers' offices. These customers are major banks and brokerage houses and some lesser firms, all dealers in U.S. government securities, the special field in which Garban deals.

The adoption of the new equipment was central to Garban's becoming a dominant business in its special area, and has brought about an expansion (that is still going on) that changed the trading room from

its 24-station capacity of five years ago to its present 60 stations. In a few months, walls will be coming down to permit the next phase of expansion. When the Miller Organization took on the original assignment, Wall Street was emerging from a near breakdown that had resulted from its dependence on outmoded pencil-and-paper communications techniques in “back office” operations. Electronic devices were appearing to replace the conventional “big board,” and various attempts were surfacing to deal with an electronic workstation for the broker and the related tangles of wires and cables. Most clung to a desk-like box unit lined up in rows with adjacent linear wire chases.

The Miller approach for Garban was more firmly future-



oriented from the start. The entire trading room is placed on a raised floor, so that wires and cables can run anywhere and can be reorganized with ease at any time. The typical workstation developed for the project is not box-like, but a light, open table with an unusual, non-symmetrical shape based on 60-degree and 120-degree-angle arrangements that reflect the brokers' need for easy vision of the turret, screens and terminal units. Brokers also need easy eye and voice communication with one another, and the special table can be grouped into clusters that facilitate this communication. Since computerization tends to eliminate paper work, there are no desk or file drawers, only a small flat drawer for pencils and paper. There are vertical screen panels below desk-top level, hung so as to leave open space above, below and to the sides, so that wires and cables can be easily reached, but so that the tangle they make is partially screened from view. There are also equipment boxes under the work tables that are supported and screened by these panels. To provide for miscellaneous per-



Above: General view of the trading room with electronic workstations in use.

creating a considerable muted hub-bub could hardly work in the space were it not for a maximum of acoustically-absorbent surfaces—carpet on the raised floor deck, a sprayed acoustical ceiling, and acoustical panels between windows and at columns. Together they turn what might be impossible noise into a hum that has its own excitement and

lamp with a special reflector to give maximally wide distribution with a minimum ceiling "hot spot." Most surprising is the decision to use a ceiling color in a medium value of beige-tan. Window blinds are usually kept closed, and the room gives the impression of being quite dim, although there is enough light to read and write. It is the illuminated data on the CRTs that is the brightest element in the space, however.

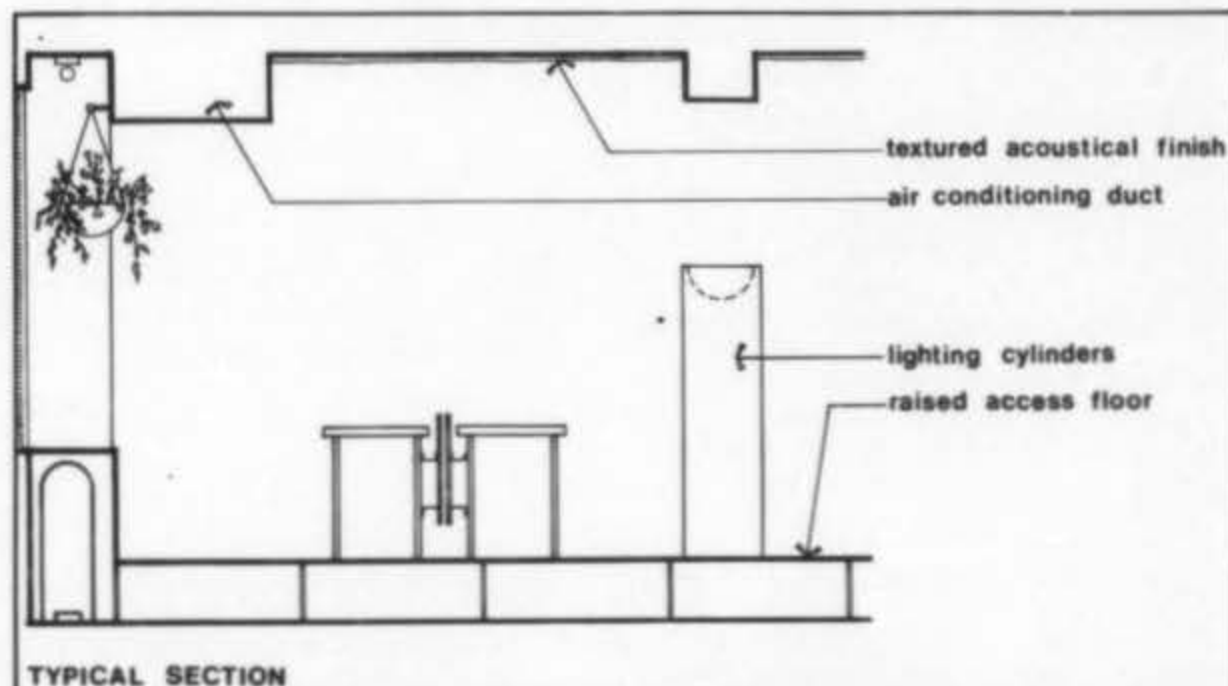
Kevin Seits, Garban's executive vice president in charge of the facility, reports that the individual broker does indeed work under great tension—long hours (from before nine to well after five thirty) with no time out for lunch. There is a kitchenette with fairly elaborate provisions for serving sent-in meals, coffee, tea.

Other support spaces include two rooms to house the actual computer hardware, a telephone equipment room, air conditioning equipment rooms, a "back office" dealing with the conventional paper work that survives, and management's private office space—all fairly conventional. Every element is subject to ongoing change to adapt to new equipment, expansion needs and changes in organization. New telephone equipment expected in the near future will replace the telephone turret on each table, now the most clumsy item in use, with smaller and neater control boxes. Sliding screen panels are planned for the windows to add an additional means of light control (there are

now only thin-slat venetian blinds) as well as some additional acoustical absorbency.

The question here, of course, is this: to what extent is such a special-purpose office a prototype for the typical office of the near, electronic future? Notice that components such as the 120-degree-angle tables and the lighting "kiosks," which were specially developed for this project, are now standard items offered by a number of manufacturers. The frantic tension of the trading room and the need for constant direct communication, are probably special circumstances, applicable only to this special function. Still, is it not probable that the raised floor, the CRT terminal as the prime focus (replacing paper), the open space with low-level lighting, the carefully-hushed acoustic environment—in short, the lively yet subdued atmosphere we meet here—will all be typical of the office as it will develop in the near future? If one is looking for a prototype, this might well be a good candidate.

—John Pile



Above: As indicated in the section, windows are on the left and typical workstations and lighting cylinders are on raised floor.

sonal belongings, each broker has a small box locker near the room's entrance point.

The four precisely placed clusters of brokers' tables (each deals with a particular aspect of the business) give the room a special character quite different from conventional or "landscape" offices as they are usually developed. The most extraordinary qualities of the space are, however, related to acoustical and lighting problems. Sixty brokers talking on telephones, calling messages back and forth and

ability to mask out potentially disturbing awareness of nearby conversations.

Awareness that the CRT screen was to be the focus of visual attention led to a decision to accept a very low level of lighting, produced entirely by indirect units. These units (developed in consultation with Edison Price) predated the "kiosks" now offered as standard products for ambient lighting. Each (there are now twelve in the space) is a cylindrical can housing a dimmer-controlled, 500-watt incandescent

PROJECT: GARBAN LTD. OFFICES
DESIGNER: THE MILLER ORGANIZATION

CARPET: Milliken
Wallcovering: Wolf-Gordon
Ceiling: Glazed Cement Co.
Blinds: Levolor
Lighting: Edison-Price
Acoustic treatment: Owens-Corning Fiberglas
Signage: Spanjer Sign Co.
Chairs: Harter
Computers: General Automation
Custom fabricators: Pilot
Woodworking: Co., Inc.

ELEGANCE AT WORK

The automated office meets architecture and art in an extraordinary corporate headquarters design that integrates functionalism and history.

In its design for the first phase of the corporate headquarters of Best Products Company, Inc., in Richmond, Virginia, the firm of Hardy Holzman Pfeiffer Associates chose a path that can hardly be called high-tech, yet the finished product represents an innovative view of the open office, as well as a fascinating work of architecture that is an object lesson in the integration of design and technology.

Best, the nation's largest catalogue-showroom merchandiser, had outgrown its original offices, an ad-hoc accretion of spaces in a warehouse building. Considering the company's reputation as an enlightened patron of architecture and art—it has commissioned controversial showrooms by architects SITE and Venturi, Rauch and Scott Brown—it is no surprise that, apart from a 68,000 square-foot program that required provisions for future expansion and the display of a major art collection, the clients, Sydney and Frances Lewis, basically wanted "a good piece of architecture," according to partner-in-charge Malcolm Holzman. In plan, the building is an arc; when completed, it will be a semicircle. Outside, a curved, glass-block facade is topped by a glazed terra-cotta cornice. Inside, the glass block admits a soft, generalized light throughout the two-story building. Private offices, located along the rear facade, overlook fields and gardens

while allowing an unobstructed flow of light through the front facade. The main circulation path follows the curve of the facade and acts as a strong organizational device, running in counterpoint to the orthogonal grid of the open-office layout. The path, whose ceramic tile pattern evokes images of 19th-century cafés, is surrounded by a waterlily patterned carpet designed by artist Jack Beal.

As for the open offices themselves, the architects examined the office-systems market thoroughly and visited the most up-to-date open-office installations before coming up with a design. They concluded that many "advanced" open offices looked as if their occupants "had given up too much" on the aesthetic side, and decided on a sort of Chinese-menu approach to workstation components—one from system A, one from system B—to meet the requirements of the program. For this reason, and because of the unusual (but welcome) 13-foot ceiling height, a thoughtful but emphatic division of the office spaces was in order. The architects wanted an office

Clockwise from upper left: Exterior, with WPA-era eagles; corridor with tiled circulation path; conference room, with lighted table designed by Edward Zucca; corridor; view into double-height atrium, with Warhol silkscreens and water-lily carpet designed by Jack Beal.









divider that was more a piece of furniture than a simple panel, so they designed one of their own—inspired by a 19th-century wardrobe, with classical moldings, and painted a rich shade of Colonial blue. Anyone who ever questioned the functional validity of historicist architecture has only to look here for an answer. The divider incorporates storage and *all* wiring for telephones, lighting, and computers (some workstations have their own CRTs), thereby meeting technological requirements, while its intimate, house-like scale exercises a strong humanizing in-

Clockwise from upper left: Clients' art collection includes vintage jukebox, Arts and Crafts furniture; acoustical panels integrated with architect-designed dividers; classical moldings top dividers; reception area demonstrates effectiveness of 13-foot ceiling height for display of art works; circulation path runs in counterpoint to orthogonal grid of office layout.

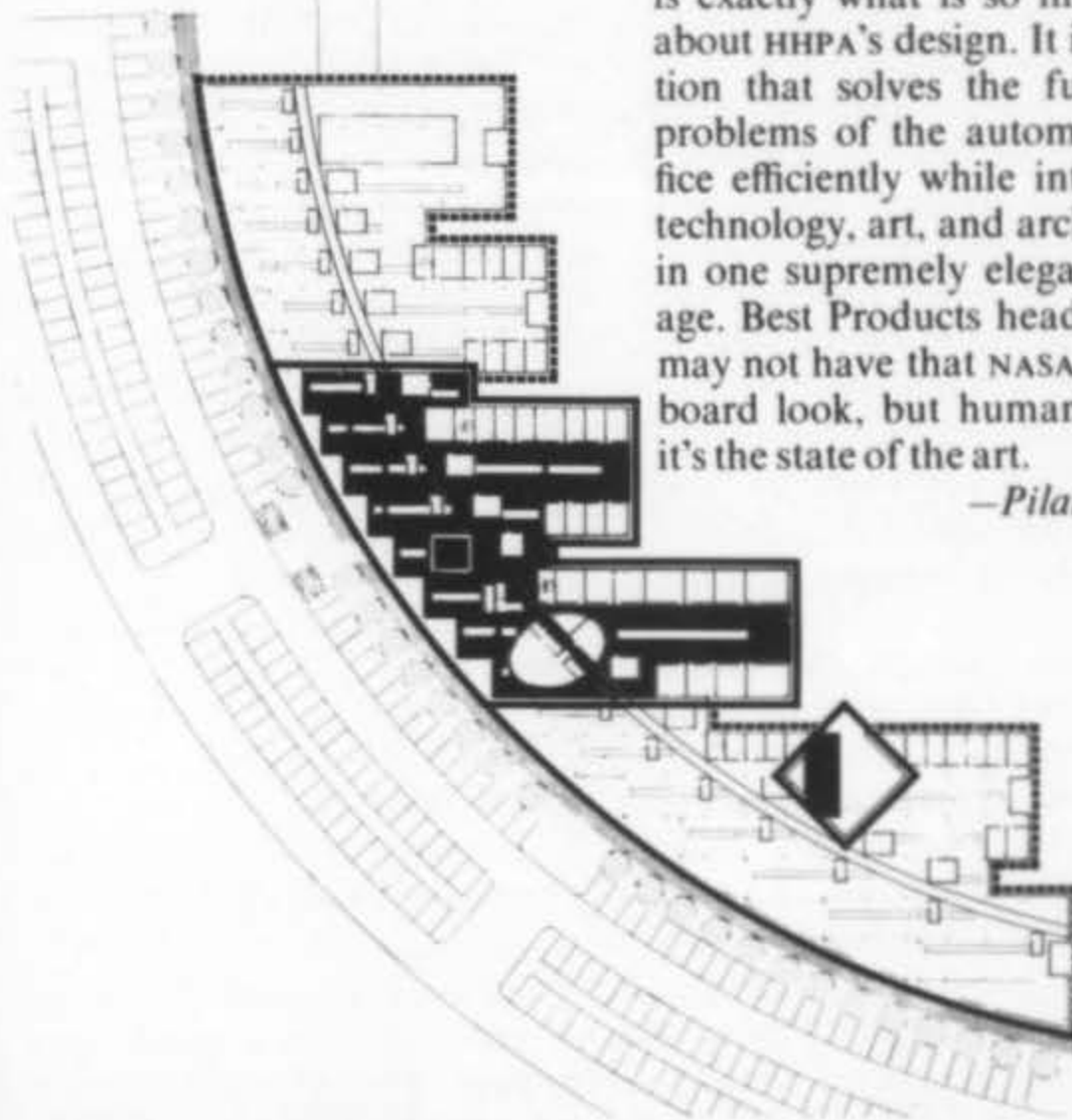
fluence throughout the offices. Acoustical panels are used in conjunction with the dividers to separate workstations and absorb sound, and furnishings are incorporated into the design. The architects made mockups of the dividers and tested them with Best employees for several months before the final product was produced.

Artificial lighting levels are generally low because of the availability of daylight; task lighting serves workstation needs.

Malcolm Holzman emphasized the importance of the architecture as an organizational device in these offices; the architects felt strongly that this was the surest way to preserve the openness and flexibility of the design for future growth.

Hardy Holzman Pfeiffer has taken what can certainly be termed a low-tech approach to a modern office design problem. Installing miles of wire and cable in a 19th-century wardrobe is a controversial step, but then that is exactly what is so innovative about HHPA's design. It is a solution that solves the functional problems of the automated office efficiently while integrating technology, art, and architecture in one supremely elegant package. Best Products headquarters may not have that NASA control-board look, but humanistically, it's the state of the art.

—Pilar Viladas



PROJECT: BEST PRODUCTS COMPANY
CORPORATE HEADQUARTERS
ARCHITECT: HARDY HOLZMAN PFEIFFER
ASSOCIATES

Partner in charge: Malcolm Holzman
Interiors: Leah Madrid
Acoustics: Robert A. Hansen
Associates, Inc.
Lighting consultant: Jules Fisher & Paul
Marantz, Inc.
Furniture consultant: Thomas C. Baer
Windows: PPG Industries
Skylights: Wasco Skylights
Ceramic tile: Winburn Tile
Signage: Architectural Graphics
Acoustical partitions: Owens-Corning
Fiberglas

Lighting: Edison Price; Kenroy; Nessen
Carpet: Jack Beal design; manufactured by
Mohawk Carpet
Conference room table: Edward Zucca
Desks: Xception; Hardwood House
Files: All-Steel
Conference tables: ICF
Seating: Knoll International; Vecta Contract;
Brayton International; B&B; David-Edward;
Hardwood House; Stow/Davis; Jasper
Seating
Fabrics: Knoll International;
Brickell Associates; Anton Maix;
Gretchen Bellinger
Window treatment: Mecha Shade;
Joel Berman Associates
Storage: Karn Millwork; Lamica
Accessories: McDonald Products;
Smokador; Peter Pepper Products

TRADING UP TO THE 80S

A New York brokerage firm brings its physical surroundings up to date with technology in an office design that incorporates the full array of computer and telephone equipment needed for its trading room.

Murphy, Durieu & Nadell is a 60-year-old financial brokerage firm in New York City. It is a private firm, which means that it trades exclusively in its own portfolio, of over-the-counter and listed securities. Consequently, when designer Robert T. Searl, of Searl Design, Inc., was asked to create a new office for the firm, public image was not an issue. What *was* an issue was that the firm had not changed its offices significantly in 50 years. A series of cubbyhole workspaces in the old offices reflected the firm's growth over time, and its antiquated trading room cried out for the modernization necessary to accommodate today's electronic trading methods and machinery. So when the firm moved to more spacious quarters in the 97-year-old building in Manhattan's financial district, Searl saw an opportunity to satisfy both functional and aesthetic requirements in an efficient yet relaxed manner.

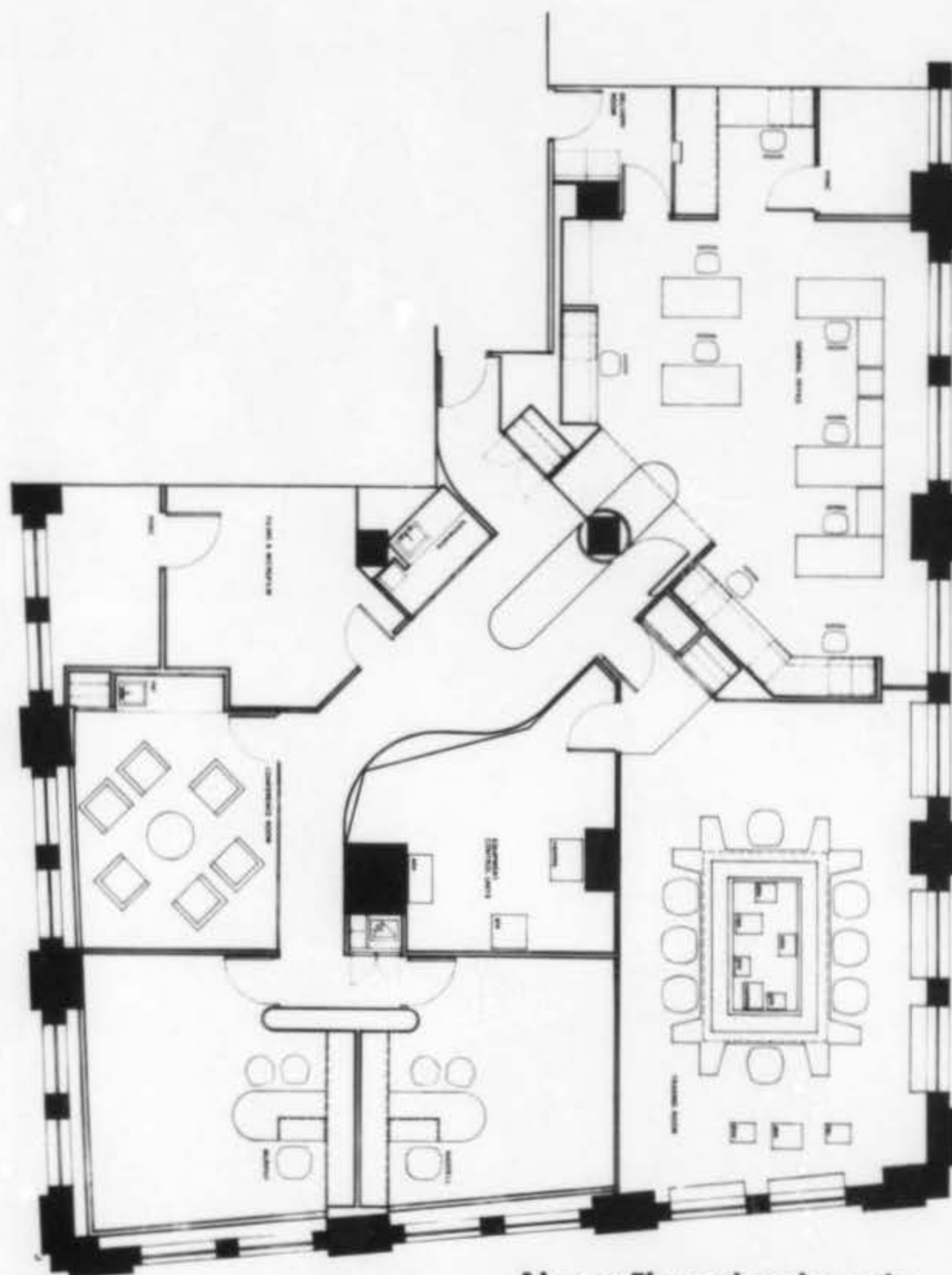
The 4140-square-foot space is divided into two zones: a "working" side, with the trading room and support staff offices; and the executive/entertainment side, with two partners' offices and an informal conference room.

The office did not need a formal reception desk, since it gets no off-the-street traffic. So Searl designed the entrance area to act as a courtyard or gathering place

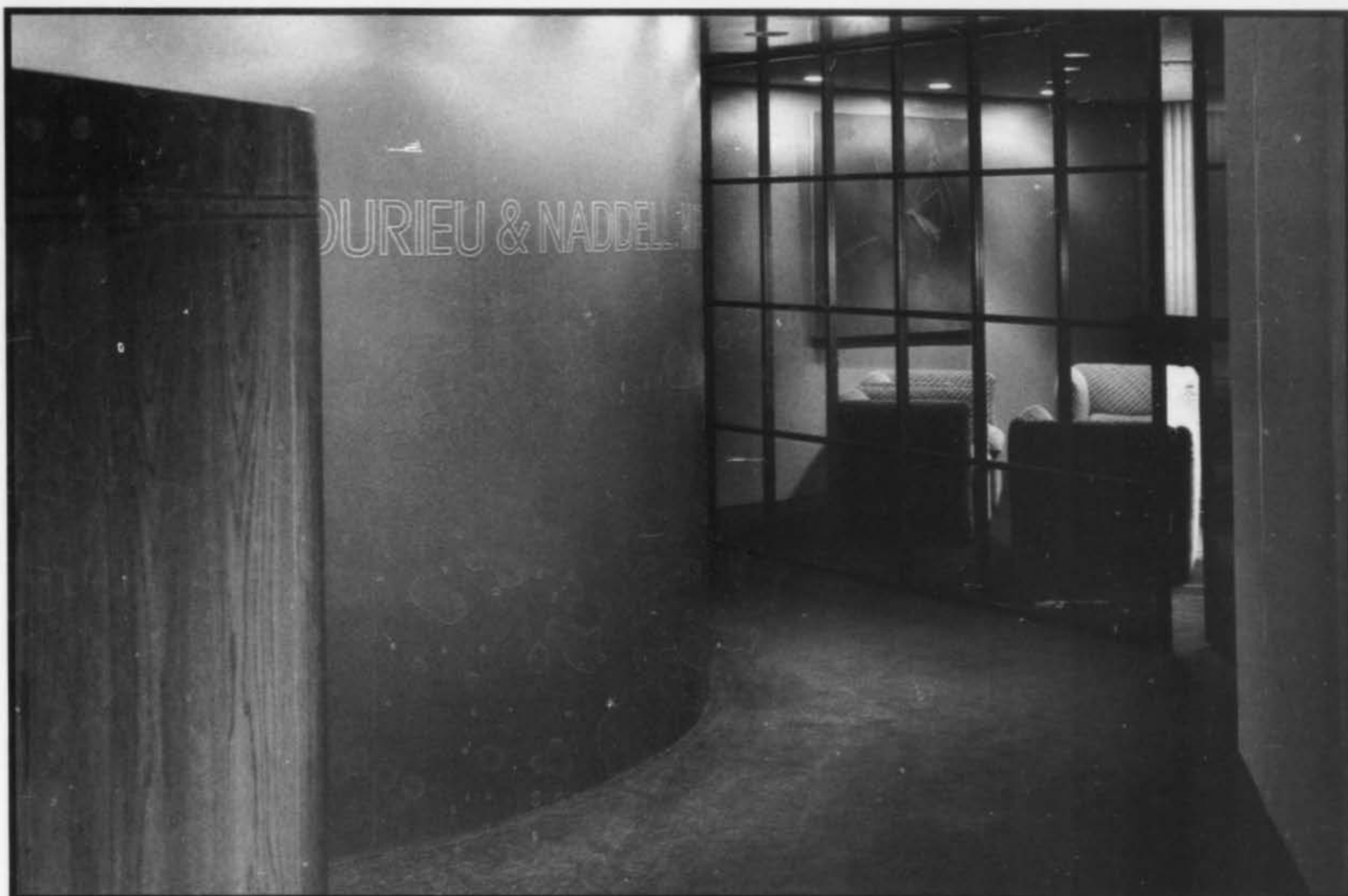
for employees. A wood-paneled "island" defines the space, directs traffic, and houses files as well as the firm's original safe. The entrance area also houses kitchen facilities for traders, who are often office-bound for hours at a stretch. The ceiling in this area is a foot lower than it is elsewhere in the offices, and it is lacquered for extra dazzle. Uplights housed in the "island" provide soft ambient light, and wall washers illuminate a curving gray wall that leads the visitor along a corridor to the conference room.

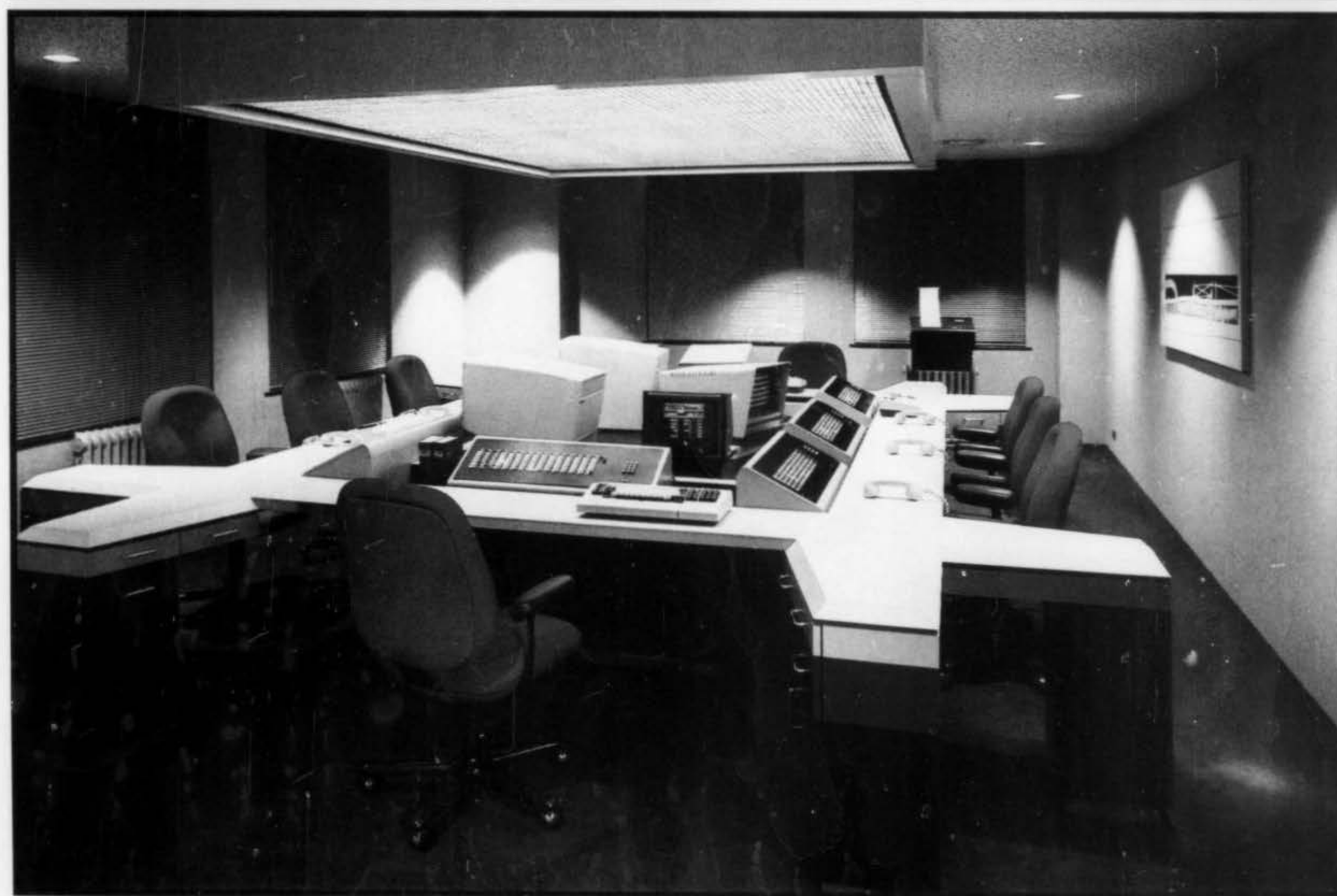
EXECUTIVE INFORMALITY

The conference room is informal in feeling to reflect the nature of the business conducted there. Since it is used exclusively by the two partners for occasional client meetings, a big-boardroom table and massive swivel chairs seemed out of place. Instead, soft seating and a coffee table are used for meetings. Along one wall, a storage cabinet with a marble countertop houses a service bar and coat closet; visitors are encouraged to shed jackets and briefcases. The color scheme is a study in soothing grays, from a pale gray for the seating to blue-gray for the carpet. Outside the conference room, a wall of reflective glass, gridded to evoke associations with neighboring glass-skinned buildings, makes



Above: Floor plan shows informal conference room and executive offices at lower left; trading room at lower right. Opposite, above: Entrance-area "island" and curved wall direct visitors to the conference room at right. Opposite, below: Seen through its gridded glass wall, conference room has informal seating arrangement.







Opposite, above: Back office has built-in counters, rubber flooring, view toward the executive conference room. Opposite, below: Trading room, with custom-designed table, whose trough system makes for easy rearranging of telephone consoles. Overhead hood contains air-conditioning, lighting systems. Above, top: Traders at work. Above: One of the two partners' offices.

the conference room "disappear" when the door is closed and the interior lights are turned off. A self-closing mechanism eliminates the need for a door-knob, thereby preserving the continuity of the grid. In both the conference room and the private offices, old, unsightly radiators and windows are concealed behind a wooden parapet wall and flush blinds, for a more streamlined appearance.

GETTING DOWN TO BUSINESS

The heart of the office is the trading room that houses the table at which brokers conduct business virtually from dawn until dusk. The table must accommodate, in the most efficient and comfortable way possible, all the CRTs, electronic equipment, and telephones that are the lifeblood of the trader's work. Searl designed a table that could accommodate additional traders in the future without substantial modification. This is Searl's second trading table (see Bierbaum & Co. offices, September 1980 *INTERIORS*); this one was built for less than a third the cost of the first, but it incorporates a unique trough design that allows telephone consoles to be moved up and down along the table's length and width to accommodate changes in the seating configuration. In this way, telephone consoles are flexible, but look as if they are built-in. CRTs for each trader are housed in the center of the table. All wiring is concealed under access flooring. A specially-designed hood houses air conditioning (ventilation is a critical issue in trading rooms, which can become extremely smoky and stuffy) and fluorescent lighting (alternating switches provide an inexpensive alternative to dimmers for varying the light levels). In keeping with its no-nonsense atmosphere, windows and radiators were refinished, but otherwise left unadorned.

The back office, which receives daylight from the trading room through a glass wall panel, is furnished in a similarly no-frills manner, with white laminate-covered desks and rubber flooring. Built-in counters are used for posting and ledger work, to process the paperwork generated by the traders. A glass door provides the employees in this room a view out to the entrance area, reducing the poten-

tial for a "back room" feeling.

Other spaces in the scheme include a storage area and microfilm room (all the firm's transactions are recorded on microfilm), and a high-security room, that houses the computers and telephone system, and which is kept locked at all times.

The private offices of the two partners are located in the southeast corner of the space; their mirror-image offices include custom-designed conference desks, credenzas, and storage units. The offices are united visually by a partition whose rounded ends form "columns" that modulate the spaces. A clerestory-level glass panel creates a sense of openness between the offices. Budget considerations precluded the construction of an executive bath, but the partners have a separate coat room and sink, enclosed in its own cabinet, for freshening up before meetings.

Throughout the offices, the palette of grays is punctuated by blue, with burgundy used as an accent on the walls and elsewhere; this color accent is one of Searl's signatures. While this was not a big-budget job—it came in at \$81 per square foot, total—Searl added a considerable amount of panache to a straightforward, efficiently-organized workplace.

—Pilar Viladas

PROJECT: MURPHY DUREU & NADDELL
DESIGNER: SEARL DESIGN, INC.

Principal in charge: Robert T. Searl
Project manager: Winston Whittaker
General contractor: NICO Construction Co., Inc.
Consulting engineers: Benjamin H. Silberstein Associates
Carpet: Wellco, through Crescent Carpet Corporation
Rubber tile: Mondo
Wallcoverings: Wolf-Gordon, General Tire, Jack Lenor Larsen
Acoustical tile: Armstrong
Trading table hood: Custom, by Neoray, through Lighting Unlimited
Glass partitions: PPG Industries
Blinds: Draperies for Business
Lighting: Omega, through Lighting Unlimited, Lightolier
Laminates: Formica, Lamin-Art, Navamar, Wilsonart
Furniture: Airborne/Arconas, Brayton International, Intrex, Harter, Meridian, Herman Miller, Krueger
Fabric: Bill Corry
Accessories: Kramer, Rubbermaid, Smokador, Tsao
Signage: West Side Neon
Custom doors: Pilot Woodworking Co., Inc.
Marble: Domestic Marble & Stone
Private office, conference room artwork: Virginia Sharkey
Trading room artwork: Richard Waller, through Roads Galleries

DESIGN + TECHNOLOGY

TUNING IN TO A WAREHOUSE

A 1907 reinforced concrete factory is remodeled for the studios and offices of KPIX television in San Francisco, where creative problem-solving is informed by the framework of the building and by the sophisticated web of communications technology, from TV control rooms to workstation CRT's, that is the life of broadcasting.

Designing new television facilities in an old building involves mastery both of a space and of a business dependent on sophisticated technology and dynamic people with closely defined requirements. In renovating a 70-year old factory for a planning office and studio space for KPIX Channel 5 on the top two floors, the San Francisco office of Gensler and Associates demonstrated such a mastery, creating spaces which accommodate the demands of people and equipment with an astonishing flexibility. The KPIX offices, a project defined by the limitations of the building and the special needs of the client, exhibit a rather high-tech, almost informal aesthetic in a plan that responds naturally to the qualities of the original building.

Located in the old industrial waterfront area that is emerging as a revitalized extension of downtown, the five-story, 220,000 square-foot building at 855 Battery was built in 1907 as a warehouse and factory for a biscuit company, and later housed



Above: New doorway and lobby inserted into entrance of the industrial building.

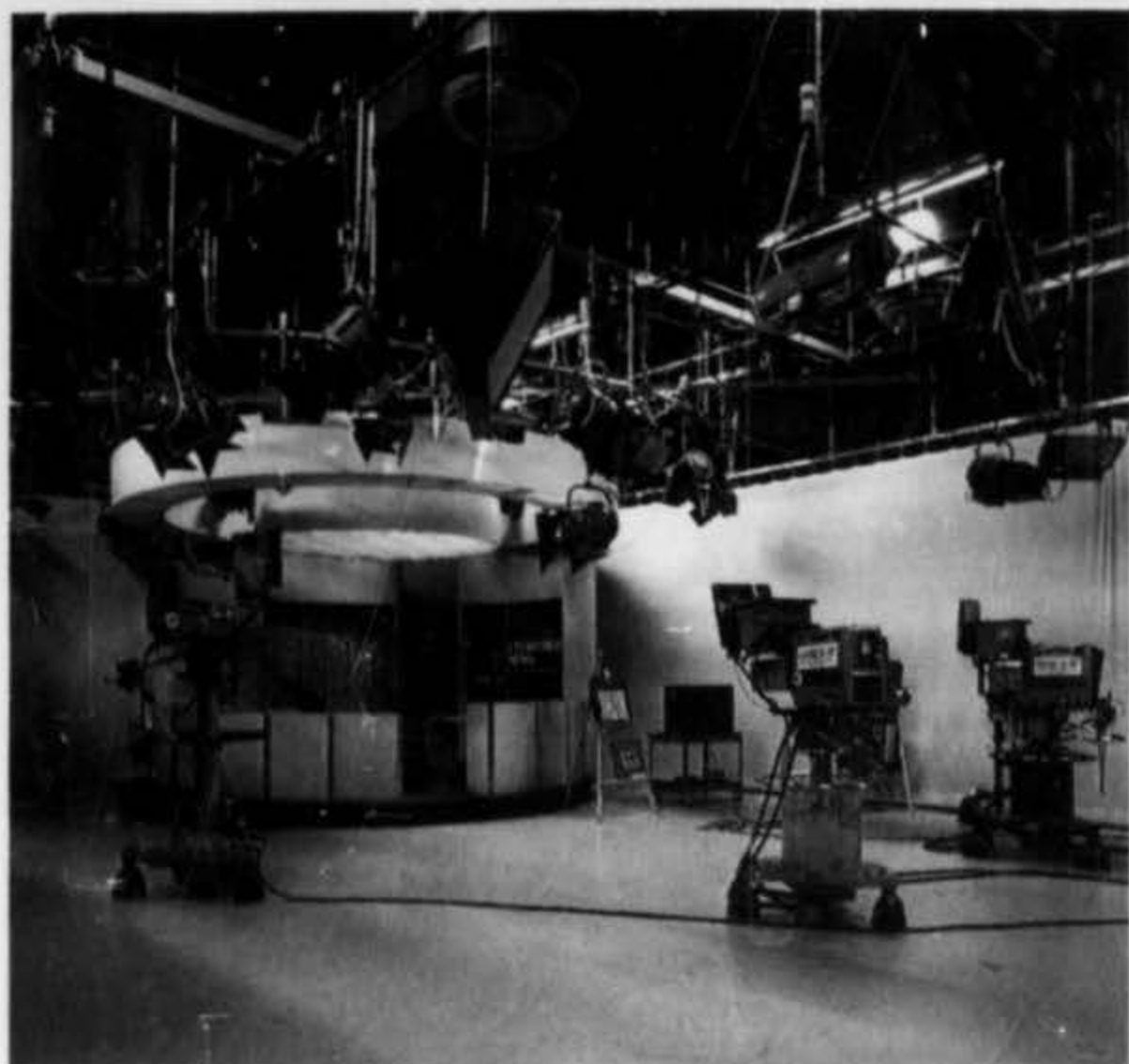
Gensler's work on the building as a whole did little to change its exterior appearance; a generally refurbished air was achieved with a new finish and the replacement of mullioned industrial sash windows by large single panes. The new window treatment becomes even more important on the interior, as there is an unobstructed, and now uncluttered, view of the Oakland Bay Bridge and its surroundings. Existing entrances at either end of the building were given new lobbies: rather stark, white spaces, intended as a contrast to the old exterior. A similar, central entrance was created for KPIX.

Basic planning and location of the KPIX facilities were strongly influenced by existing architectural conditions. Studio spaces—and attendant scenery, production, and post-production areas—were placed on the top floor since the roof had to be raised (virtually unnoticeable from the street) to achieve necessary clearance. At the mechanical level, Gensler designers discovered that the problems inherent in planning broadcasting facilities included not only complex relationships be-



Above: Open office system organizes the interiors for maximum flexibility. Opposite: A studio control room.

several printing operations. Designed to take heavy floor loads, it is well suited to the high-density electronic equipment required for television news-gathering and production, an ideal place for Westinghouse to locate its television affiliate.



tween people and equipment, but the jigsaw puzzle of locating ducts and outlets to eliminate HVAC noise while maintaining a temperate climate under the lights and in enclosed rooms. Attention also had to be given to creating as few openings as possible in walls added to bring the building up to today's earthquake bracing requirements, and leaving as much of the existing column-bay structure intact as possible.

The design of the administrative floor below also had to address the challenge of planning spaces for people who work intensely in close proximity, in an environment conditioned by communications machinery, and departments that seem always to be contracting or expanding. In a straightforward manner, planning and details focus on the character of the building and its location. Open plan areas are located on the perimeter to allow light to penetrate and to empha-

Above: Television equipment, hanging from a raised ceiling, in one of the two television studios. Right: floor plans.

size the magnificent view. The ceiling treatment, which in many ways defines the character of the offices, is a result of solving the problems of a low, warehouse-like ceiling and a lack of original electrical wiring. Gensler installed an overhead cable system for distribution; above this hang acoustical "clouds" that also provide flat surfaces off which task lighting is bounced. This concrete ceiling and wiring provide a utilitarian aesthetic.

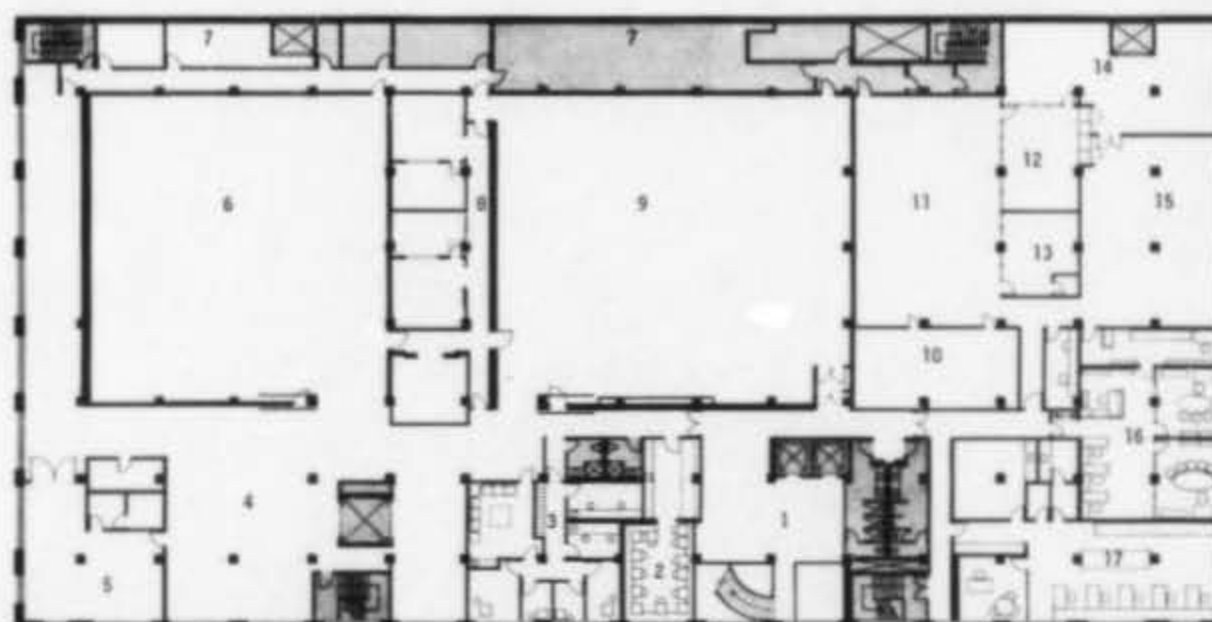
The client had originally requested more private offices, while the designers had wanted more open space; the project achieves a solution that provides as much flexibility as possible within a necessary office structure. The open office system used here adapts well to the problems involved—even allowing re-designing during installation. The designers also remarked that the users are responding well to this flexibility, shifting and reorganizing areas as their requirements change. Gensler understated much that could easily have been overfinished, allowing the users—a very creative group—to add their own character to the spaces. The result is unusual for Gensler—not its characteristically polished, mainstream modernist office design, but playful, machine-like, and extremely functional, informed to its best advantage by the nature of the television business itself. ■

—Margot Jacqz



- | | |
|-----------------------------------|-----------------------|
| 1. Main lobby/reception | 9. Mail/shipping |
| 2. Main conference room | 10. Print shop |
| 3. Executive area | 11. Mechanical |
| 4. Vice President/General Manager | 12. Sales/traffic |
| 5. Programming offices | 13. Business offices |
| 6. Newsroom | 14. Creative services |
| 7. News control room | |
| 8. Typical editing booth | |

Floor 4



- | | |
|-------------------------|-----------------------------|
| 1. Lobby | 10. Tape library |
| 2. Employee lunchroom | 11. Tele/cine, tape room |
| 3. Dressing/make-up | 12. Master control |
| 4. Scene assembly | 13. Post production control |
| 5. Scene shop | 14. Transmission |
| 6. News studio | 15. Maintenance |
| 7. Mechanical | 16. Engineering offices |
| 8. Studio control rooms | 17. Art department |
| 9. Production studio | |

FLOOR 5



Above: 855 Battery before renovation, an immense building characteristic of the industrial waterfront.

Opposite: The exterior transformed with up to date glazing and awnings, and plantings, to create a sleek facade with a pedestrian scale.

PROJECT: KPIX OFFICES AND STUDIOS, 855 BATTERY BUILDING, SAN FRANCISCO
ARCHITECTS: GENSLER AND ASSOCIATES

Project Team: Charles Kridler, Harold Edelstein, Orlando Diaz-Azcuy, Steve Wintner, Rick Emmons, Louise Elmquist, Terry Stephens, Clonia Cautis, Harry Haimovitch, Kent Turner

Office System: Westinghouse ASD

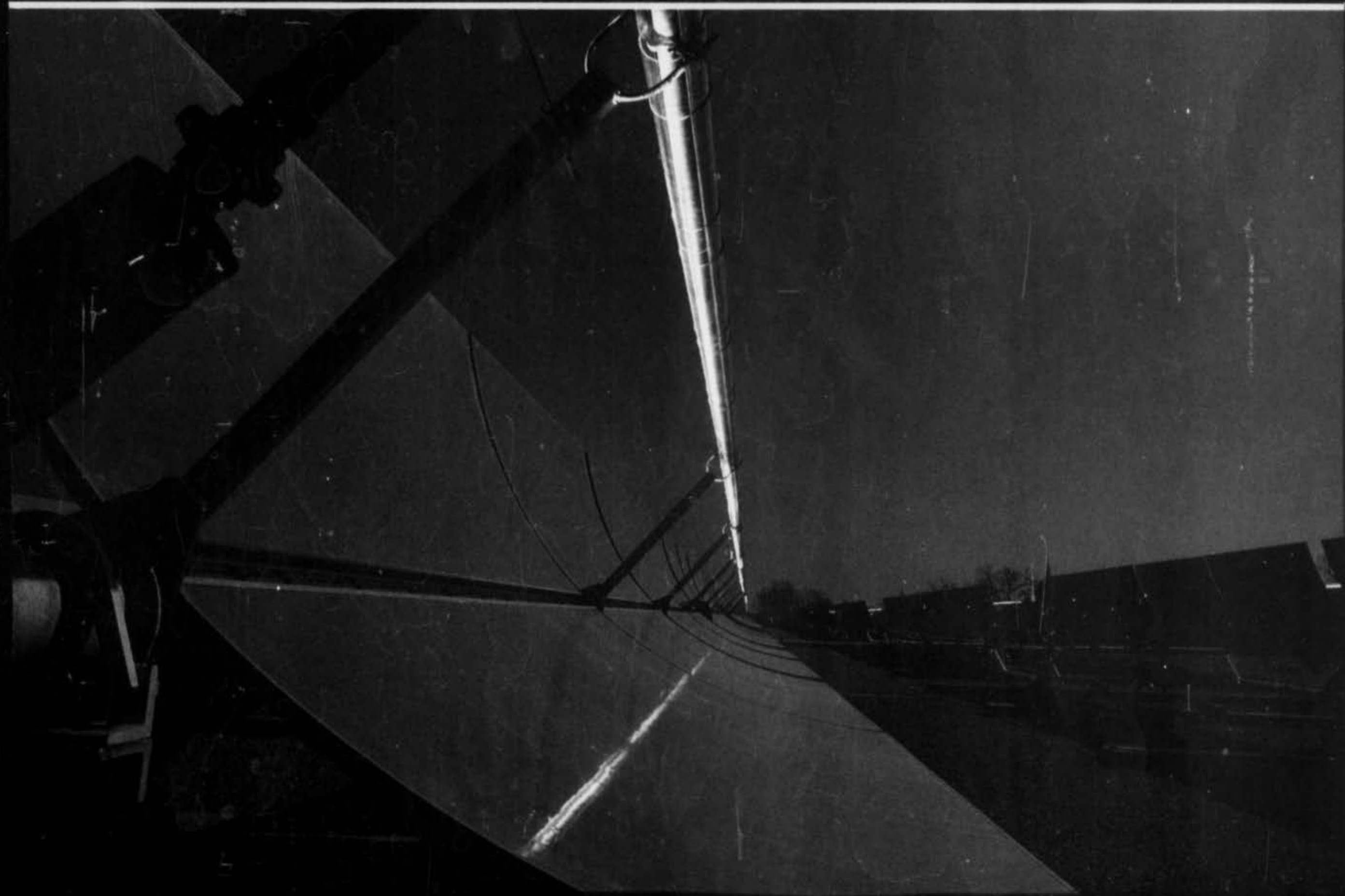
Furniture: Vecta, Wilcox, Westinghouse ASD Westcoast Industries, Kinetics, Modern Mode, Stow/Davis, Zographos, Knoll International, Marco, Ekelktix

Fabric: Knoll International, Unika-Vaev, Stow/Davis, J.M. Lynne, International Fabrics



Above: Three different panel heights in open offices adapt to privacy and functional requirements.





GOING SOLAR

The largest privately-funded industrial solar installation is now put to work in one of Control Data's two outstanding new buildings in Minnesota, where it supplies more than half the facility's heating, cooling, and hot water needs in computer controlled interiors. This living laboratory also contributes to a solar technology data base, drawn from around the world.

BY JIM MORGAN

Control Data Corporation is an organization offering computer systems and services in finance, insurance, real estate, education and technology. Its founder and chairman, William C. Norris, likes to say that CDC has become a large and profitable company at least in part because it has addressed "society's major needs" in a vigorous and businesslike way. Having decided a few years ago to explore the potential of energy conservation and solar energy collection systems, CDC has done so with characteristic thoroughness and enthusiasm.

Two of its newest facilities, the World Distribution Center in St. Paul, an equipment warehouse, and the Terratech Center, an adjacent office complex for two or three of CDC's smaller subsidiaries, have been designed to use a variety of energy conserving and collecting techniques. As part of a growing movement centered around the University of Minnesota Underground Space Center, both of them are at least partially earth-sheltered.

In addition to housing vital functions for the company economically, the two structures also play an important role in

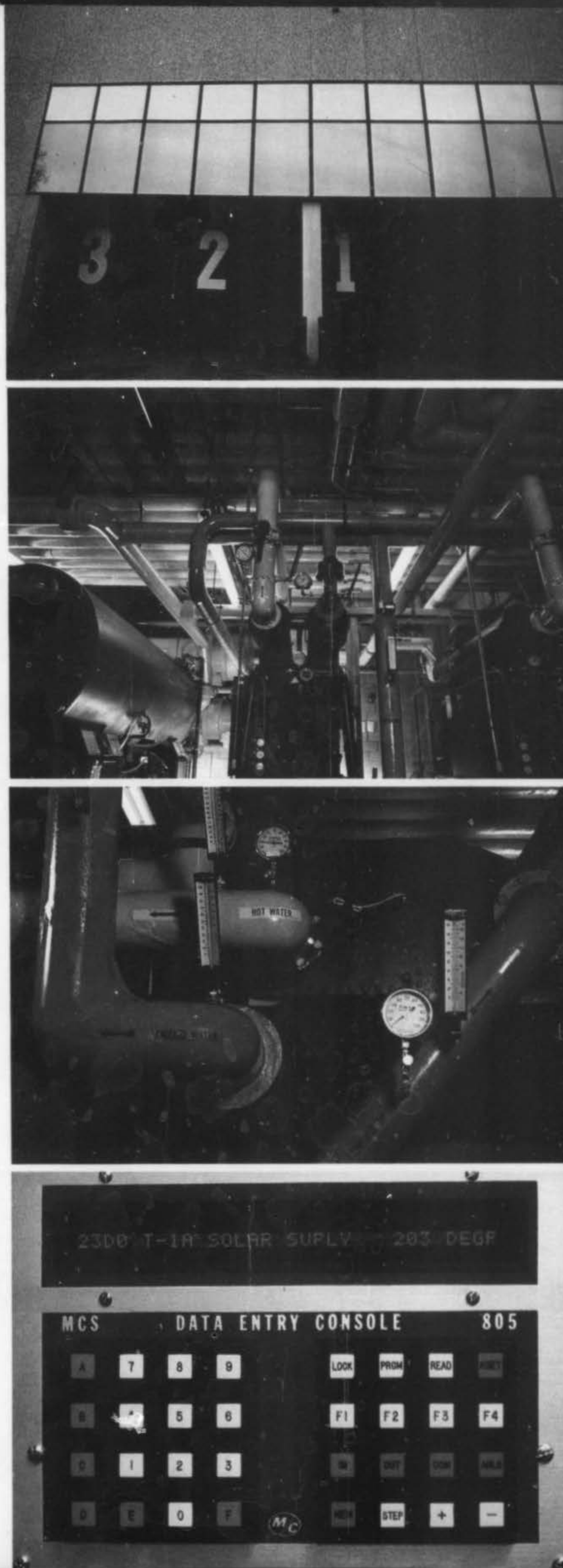
another CDC project: the development of a computer-logged data base on solar energy technology that is being gathered from all over the world. It offers free listings to colleges and others working on solar products and processes. The annual component of operational energy furnished by the sun for each of these buildings, from the collectors atop the World Distribution Center (left), for instance, is fed into CDC's global data network.

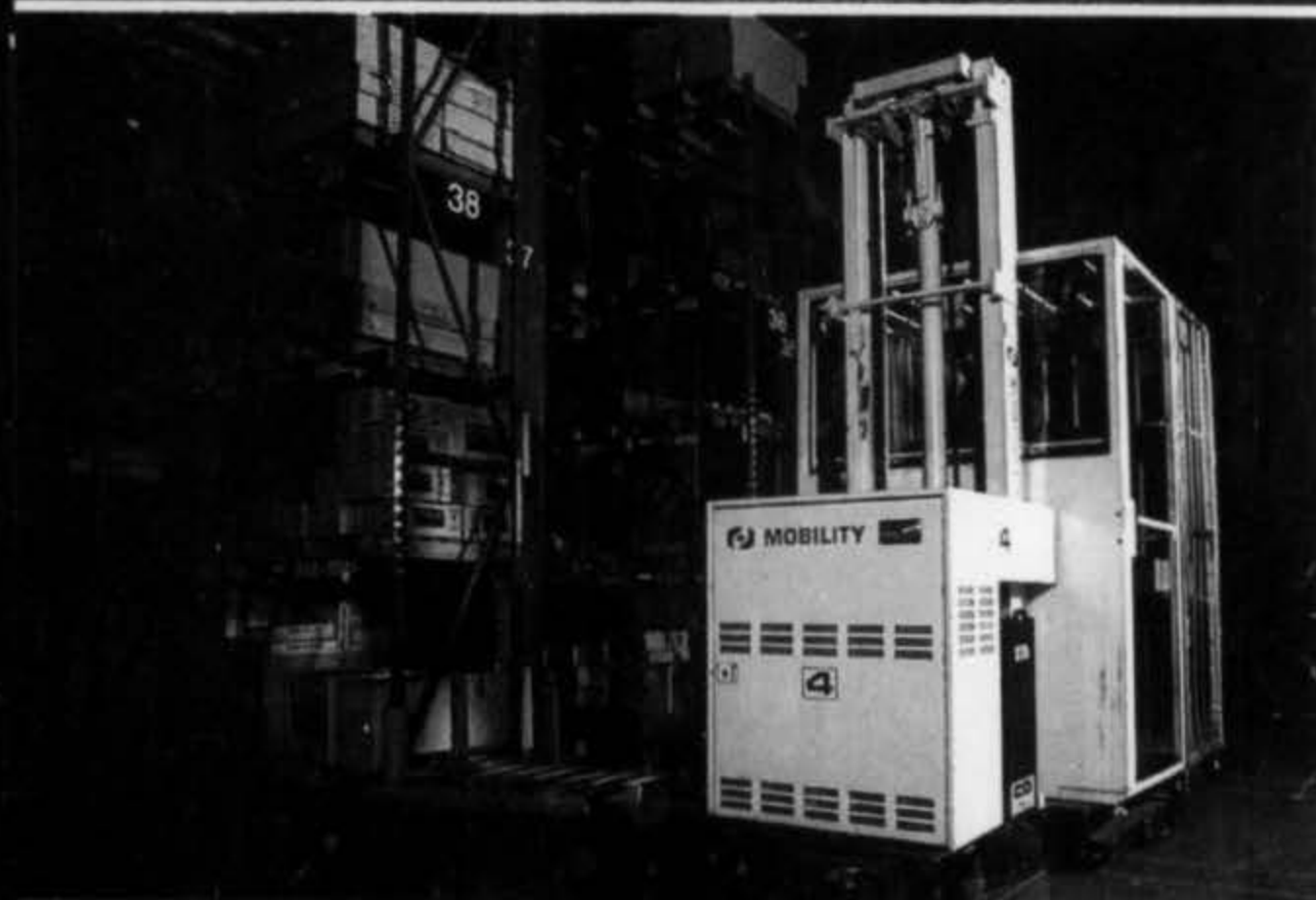
Primarily a facility for international distribution of computer parts, the World Distribution Center includes an open plan office of 80,000 square feet within its total area of 262,000 square feet. The 25,200-square-foot Suntec/Hexcel parabolic trough solar collector is said to be the largest privately-funded industrial solar concentrating installation in the United States, and provides more than 70 percent of summer cooling, over 60 percent of winter heating, and 100 percent hot water needs.

Although one side of the building has been left largely exposed for truck docks and other functional needs, more than 40 percent of the Center's wall area is buried below grade. But even those loading platforms are designed to conserve energy: outer and inner sets of doors form an airlock so that heat is not lost while trucks are in the bays. These techniques, plus insulated reflective glazing that is limited to 20 percent of exposed wall area, thorough roof insulation, and carefully regulated lighting levels inside (1.7 watts per square foot for the office and .5 watts per square foot in the warehouse) enable the \$1.2 mil-

Left: Parabolic trough-type solar collectors feed heated water through a complex set of heat exchangers (center right). Lower right: As directed by a mini-computer, that energy is then sent to localized heating coils or cooling units in Control Data's World Distribution Center. Upper right: Double doors on truck dock conserve energy.

PHOTOGRAPHY BY TOM YEE





lion solar component to supply more than half the building's annual energy needs.

An elaborate mechanical system, which includes eight oil-fired hot water boilers as a back-up system, draws the solar heat from water that first passes through the collectors and then is pumped into heat exchangers. Localized heating units and sophisticated cooling and humidifying elements allow for maximum use of outside air.

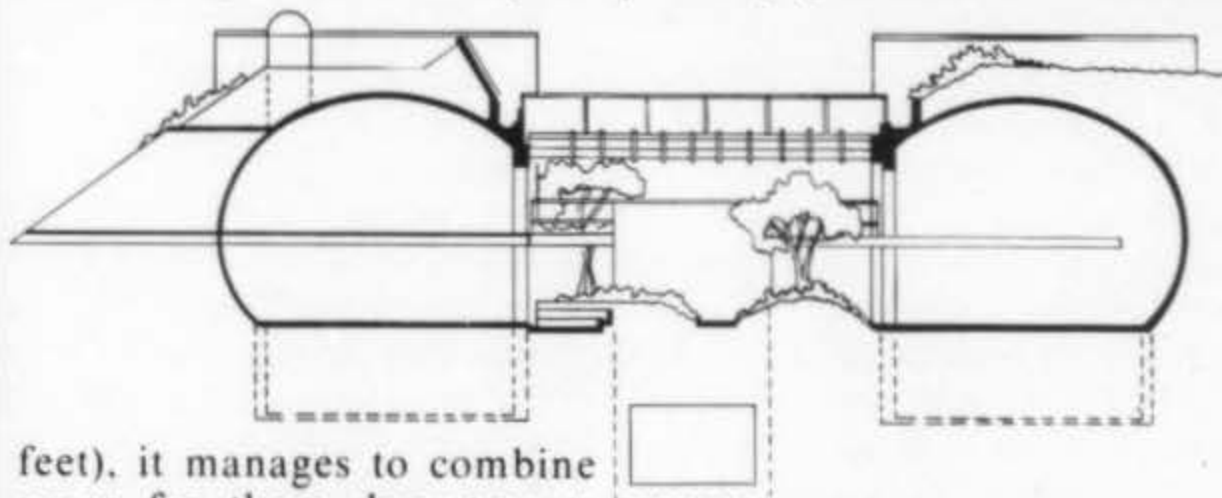
Sharing the center's roof with the collectors, a large raised-bed garden grows melons, squash, celery, and peas, while fruit trees and berry-producing bushes dot the thirteen-acre site.

But the World Distribution Center roof occupies a large proportion of its site compared to the nearby Terratech Center, which is almost totally underground: only three percent of the latter's site area is exposed building construction. Located next to a busy interstate highway, Terratech Center gains protection from vehicular noise as well as from Minnesota weather by nestling into the roadside embankment. What was formerly considered by the St. Paul Housing Redevelopment Authority to be its "worst available site" is now a flourishing garden that conceals a sun-filled office building. Although tiny compared to its CDC neighbor (12,884 square

Right: The skylit atrium of Terratech Center fills most of the offices with daylight. Top right: Bubble skylights above grade transmit light which illuminates the back corners. Center right: Corrugated steel culvert sections become walls in the atrium enclosing a small kitchen. Bottom right: The open area includes built-in benches and planters.

transparent double-skin acrylic roof. All rooms in the facing two-story wings of Terratech Center open onto the atrium. Window walls at each end of the atrium offer views and ventilation directly to the outdoors. The earth-sheltered portions are covered by large-diameter corrugated steel culvert sections, which effectively resist the weight of more than three feet of soil.

An array of solar panels seen through the skylight, in conjunction with a 22,000-gallon storage tank beneath the atrium appears to be more than adequate to heat the building. Since occupants also benefit from office lighting and machine heat gain, the eight residential-type heat pumps and electric baseboard are almost never turned on by the mini-computer that controls the Terratech Center climate. During the summer, the building is kept cool by the earth above it and ventilated by operable panels in the skylight above the atrium. ■



feet), it manages to combine space for three departments (Control Data Worldtech, Commercial Trading Imports and Control Data Arts) with a small apartment and design studio occupied until recently by the building's architect, Jerry Allan.

The key to the human success of this underground structure is a 1600-square-foot atrium with a

Top left: Four insulated pipes, carry heated water from solar panels to tank under the atrium. Below: Terratech Center is entered through an air-lock built into the side of an artificial hill that covers the building. Bottom: Within the World Distribution Center, computer-controlled lift truck assists the personnel in filling orders.

PROJECT: CONTROL DATA TERRATECH CENTER

ARCHITECT: CRITERIA

Project architect: Jerry E. Allan

Interior design: Office Interiors, Inc.; Bill Baxter

General contractor: Kraus-Anderson

Acoustical, lighting consultant:

Orfield & Associates

Acoustical treatment: K-13 Cellulose

Office systems: Haworth

Desk chairs: All-steel

Upholstered chairs: Castelli

PROJECT: CONTROL DATA WORLD DISTRIBUTION CENTER

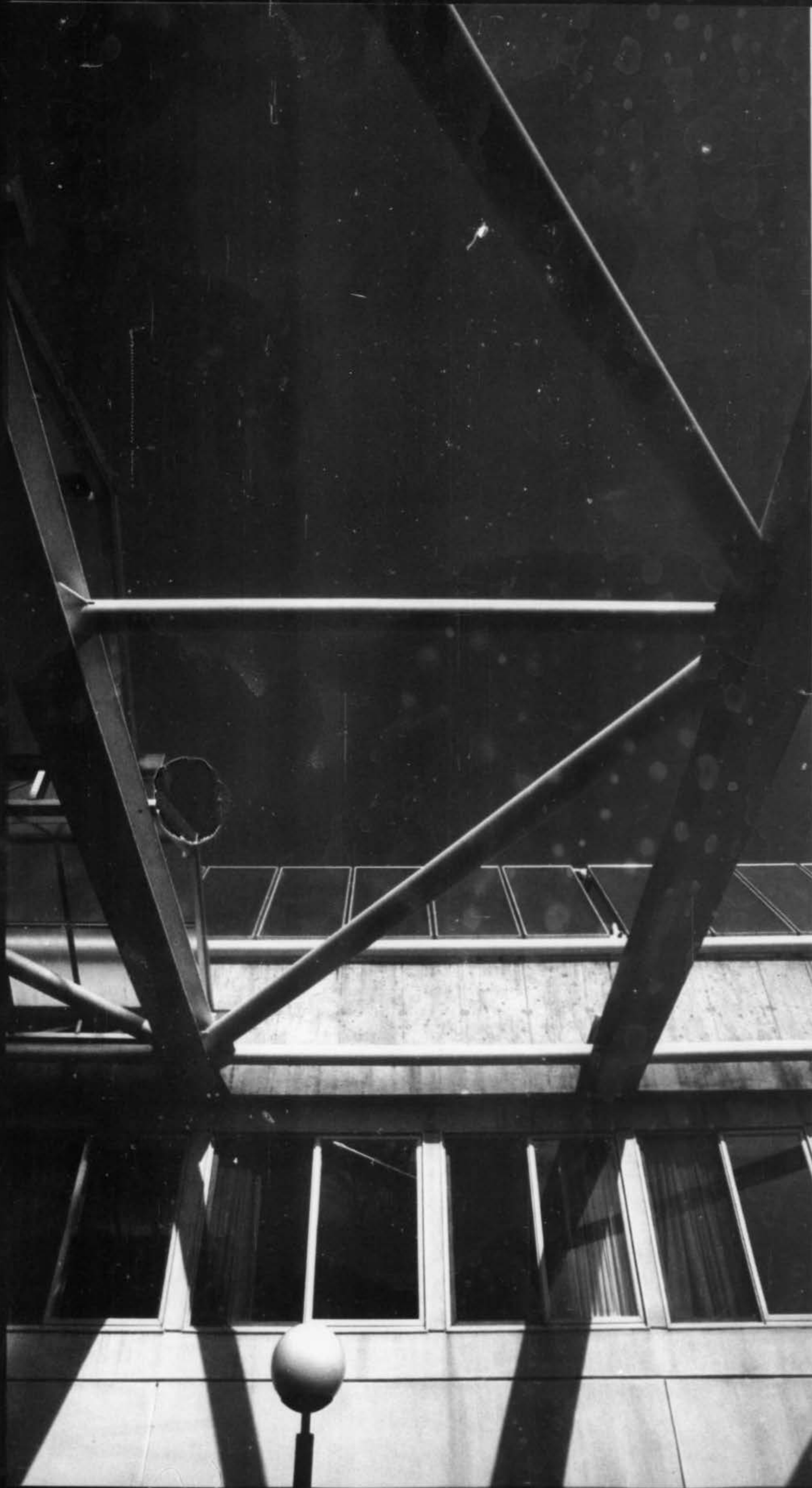
ARCHITECT: HENNINGSON, DURHAM & RICHARDSON

General contractor: Kraus-Anderson

Solar collector: Suntec Systems; installed by Metropolitan Mechanical Contractors

Roof system: Dow Corning

Reflective film: 3M



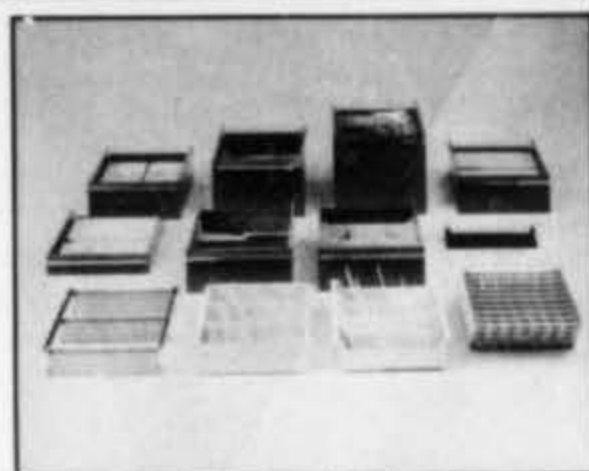
PRODUCTIVITY AT WORK

A SYSTEMATIC SUCCESS

An important contender in the race to accommodate the changing electronics of the automated office, the Haller system solves workstation design problems with an ingeniously simple modular organization of slim chrome tubes and press-in panels that can be assembled in a great variety of appropriate configurations.

BY JOHN PILE

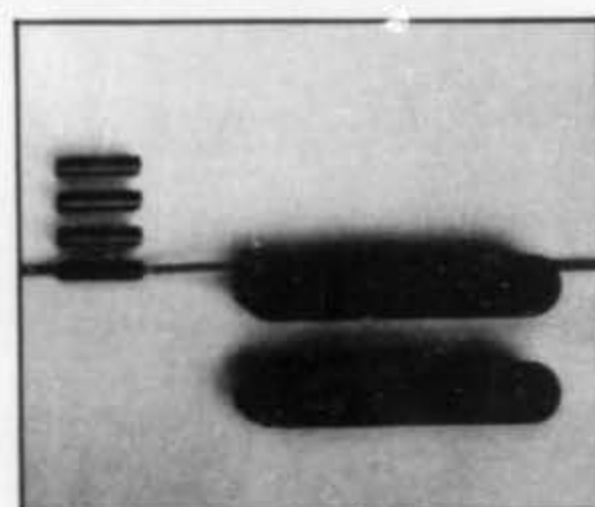
Surely one of the most elegant of all office furniture groups is the Haller System, which is widely used in Europe, and is now taking on the American market. Designers with good memories will recall that this group of furniture was available through Herman Miller for several years but, as a result of that firm's concentration on its own Action Office® group, dropped out of sight in the U.S. Now Haller System, Inc. has set up its own American affiliate with a base in Irvine, California, with Percy Hendler as its lively and able president. Fritz Haller, a Swiss architect and educator, developed the system in its earliest form almost fifteen



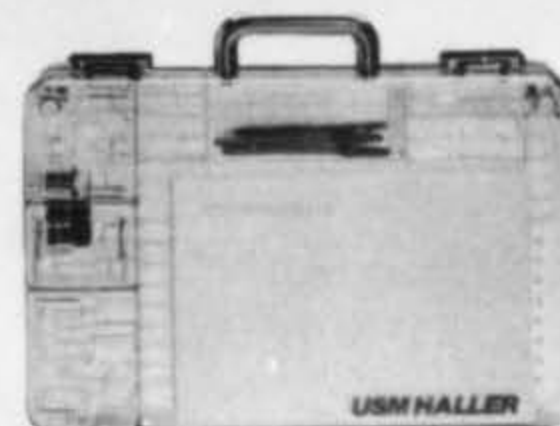
Above: Accessories for shelves include drawer boxes, card boxes, hanging files, book supports.

years ago. To the American designer, the system seems "typically Swiss," in the best sense of that phrase. It is a network of ingenious details, handsome surfaces, modular organization and, in typical realization, it comes across as trim and gleaming.

The heart of the system is a special ball-and-screw connector element that links slim chrome tubes to make up cage structures. Into a cage can go the appropriate shelves, press-in panel sections, drawers, bins and accessories to make up storage units of any imaginable size and configuration in an instant assembly process. Casters can be added to make the units mobile. Table tops in a range of sizes and shapes accept tubular legs at corners to become tables and desks. Acoustically-rated screen panels are 57 in. or 71 in. high, and can stand alone with a simple central foot or link together with ingenious, pivoting connectors. The typical storage unit depths are 14



Left: Magnetic cable holders hold wires snug along table frames, panels or tubes. Right: Winders take up slack.



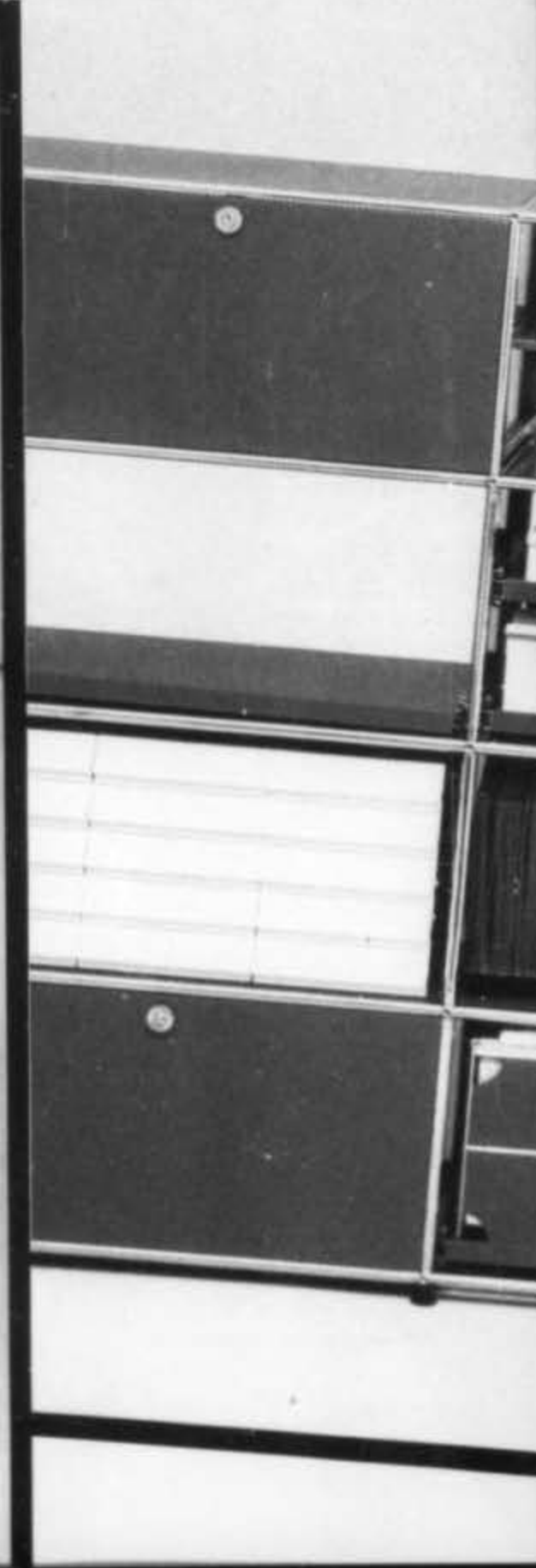
Above: Transparent case holds planning book and a supply of 1/20-scale model components, to build up groupings.

in. and 20 in.; the usual module width is 30 in.; and the normal height module is 14 in. although the vast range of elements offered, in classic Erector-set fashion, makes almost any dimensional set-up possible. Ambient upright units are available as standard components, and any suitable task-light units can be tied in with the wire-management components now available.

The available cable leads, plug boxes and cable holders, (along with the storage capabili-

Typical storage groups with a variety of open and enclosed modules indicating the range of possibilities.

An electronic workstation with CRT unit, separate keyboard on extension shelf, printer and facsimile unit, in storage unit. circle 223

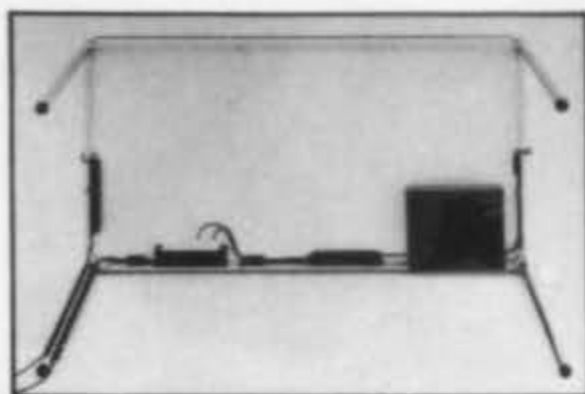


ties) are obviously intended to make this system particularly suited to the automated office. Wiring is not "buried" within components, but magnetized on in neat but accessible locations, where changes and adjustments are easy. In contrast to many systems that seem to have started with conventional wooden furniture, this system has a sense of lightness and openness that suggests an affinity for electronics, for flexibility and change, and for a kind of future-oriented quality that relates to the reali-



Above: An unusual display or training aid assembly with mirror projection onto twin 20 in. x 30 in. screens.

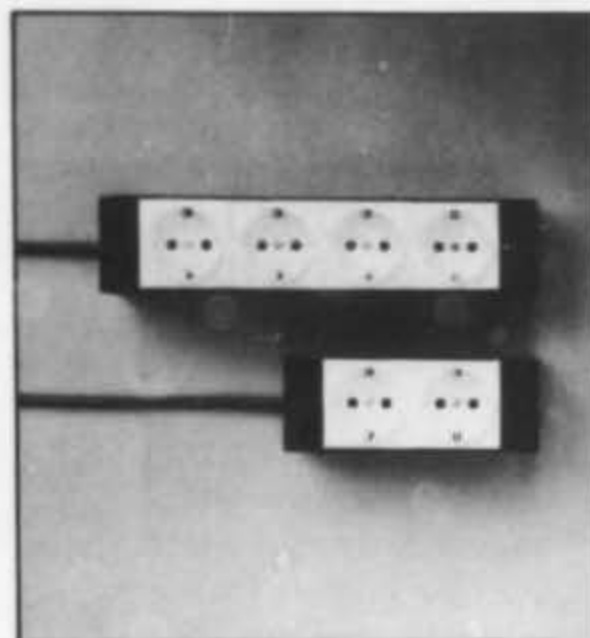
ties of modern office equipment and to the stylistic directions that we have come to call "high-tech." Haller offices will still seem appropriate in 2001.



Above: Wiring clips magnetically to components in neat but accessible locations for easy change.

The difficult problems of planning and specifying that arise with any fully flexible, complex, multi-component system have been faced by Haller through the development of a complex graphic code, a kind of short-

hand for identifying and locating components. In addition, there is a kit of 1/20-scale models that makes it possible to plan installations in miniature. The color catalogue is as neat and handsome as the system itself.



Above: Outlet plug boxes in an international type (European standards shown) are held magnetically, can be positioned anywhere.



Above: Percy Hendler, the Haller U.S. president.

THE PRESIDENT SPEAKS

"If I had it to do all over again, I'd make exactly the same choices," says Percy Hendler, president of the American division of the Swiss-based Haller Systems Incorporated. Hendler began researching the American market in 1977, and after extensive surveys throughout the United States, the Haller Company elected to begin its operation in the West and eventually move East. It opened its Los Angeles showroom in the Pacific Design Center for West

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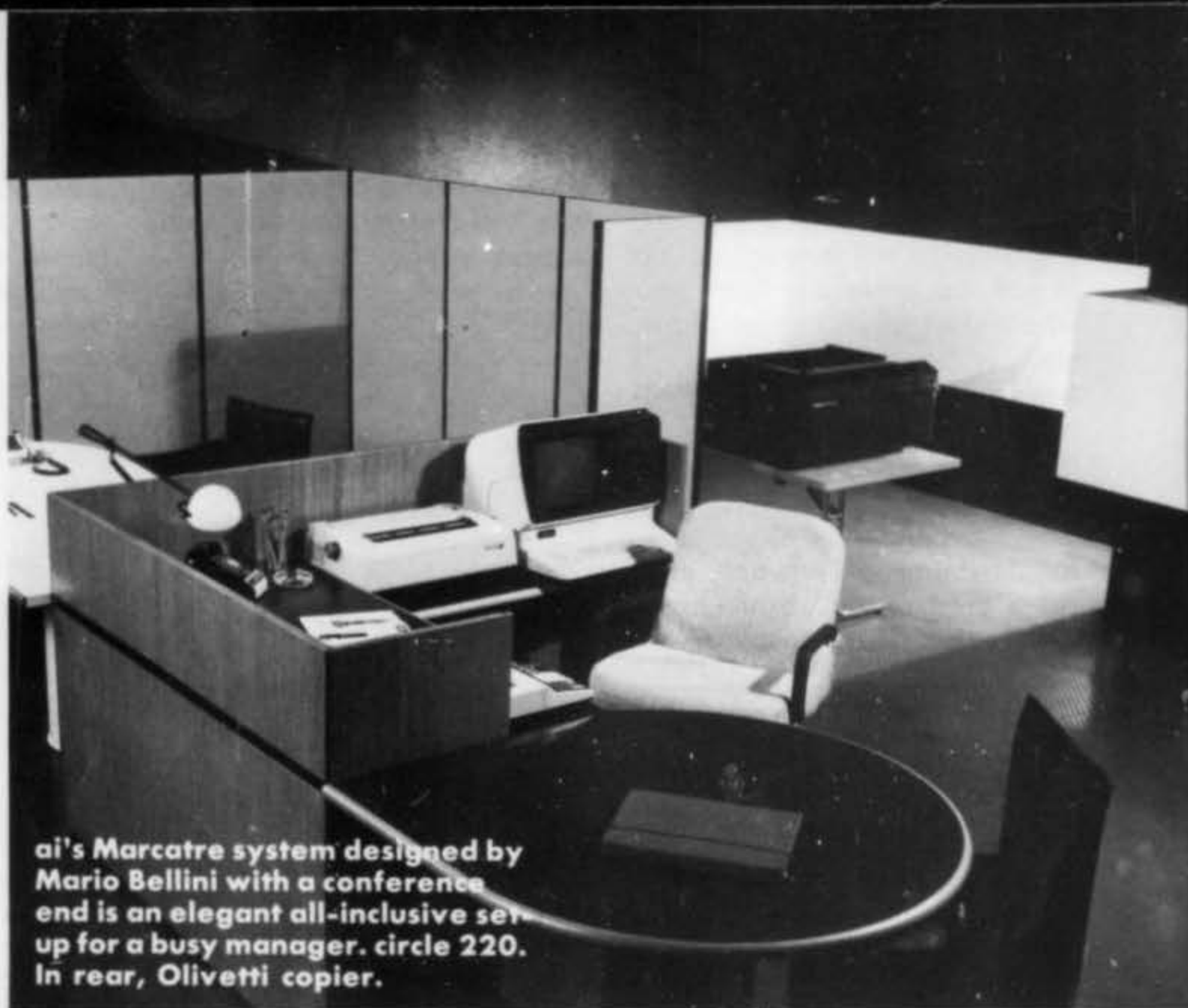
Grouping for a medical office. White finishes and gleaming chrome suggest an approximately scientific feeling.



PRODUCTIVITY AT WORK

WORKING WITH THE SYSTEM

With private offices at the executive and middle management levels ready to adapt to the automated office, here are two systems that demonstrate the ways in which senior management workstations can be organized to accommodate electronic office equipment as well as procedural changes.



ai's Marcatre system designed by Mario Bellini with a conference end is an elegant all-inclusive set up for a busy manager. circle 220. In rear, Olivetti copier.



Burdick's executive desk for Herman Miller particularizes elements to support different demands. Here, a Basic 4 CRT unit and dictating machine, aided by a reading stand, are separated from work and general surfaces. circle 221





Space was provided for a Lanier electronic typewriter with printer, a flexible, expandable system.

Priate offices at the executive and middle-management levels seem to be most ready for redefinition as technology invades the traditionally personalized enclave.

Designer Larry Laslo used the new Burdick system for an executive office; he was attracted by its sleek look and machine-like structure which allow the distinctive elements of the system to assert their individuality. It is a design that he saw in a clean setting, with the black, glass, and metal heightened by spots of color in accessories and his own Japanese-inspired screen. When set up for the executive, this desk supports a minimum of equipment, with surfaces articulated to separate different uses.

For the middle-management level office, architect Michael Schwarting used Atelier Inter-

national components to create a rather self-contained station in the Italian Trade Center, designed by Piero Sartoga and himself. The setting reflects his vision of the future office in a malleable environment where Schwarting felt that more direction should be provided for people to respond to the extremes of flexibility and radical designs of new tools. He sees the future as even more technologically oriented as design rises to the challenge of concentrated machinery and hierarchy is defined more by the objects than by the office itself.

Both of these settings exemplify a flexibility and attention to the system as the tool for organization of current tasks that reflect an emerging technological aesthetic.

—Margot Jacqz



PHOTOGRAPH BY BRUCE WOLF

PRODUCTIVITY AT WORK

SHAPE OF THE FUTURE

Automation demands furniture designs that are directed to specific needs of computerized offices. Manufacturers, addressing this problem, have begun to produce such systems. Gordon Perry is pictured here with a selection of equipment and the IMS System he designed for Howe Furniture.

Below on shelf: Telephone modem (back) supplied by MAI/Basic Four (circle 202). Super-Vision III Six Select Dictate Station (front) from Lanier. On back table: No Problem Character Printer from Lanier (circle 203).



Trapezoid, pentagon and arrow shaped work surfaces have joined the conventional rectangle to become the most important used in Howe Furniture Corporation's Information Management series. According to Gordon Randall Perry, designer of IMS, "Extensive study indicated that these shapes were the most versatile in arranging the workstations."

These tables are produced in modular sizes ranging from two and one half to five feet. From this group six basic stations, capable of handling word processing, data processing, CRTs and micrographics were selected. This, however, does not preclude the many other config-

urations possible with this system.

Since its original conception, IMS has evolved into one of the more successful systems designed specifically for the automated office. Perry was one of the first to redefine storage. He concluded that most computer information at the workstation level is "active;" material received is processed and removed rather than stored. For this reason IMS provides only small stationary or mobile storage units.

Below: Lexitron's word processor, Model number VT 1310 (circle 204).



Components of the Howe Management Station include three tables, shelf and mobile storage unit (circle 205).



Above on table, left to right:
Omni-Q desk-top and portable
dictation machine from Lanier
(circle 206). Aiwa portable dic-
tation unit (circle 207).

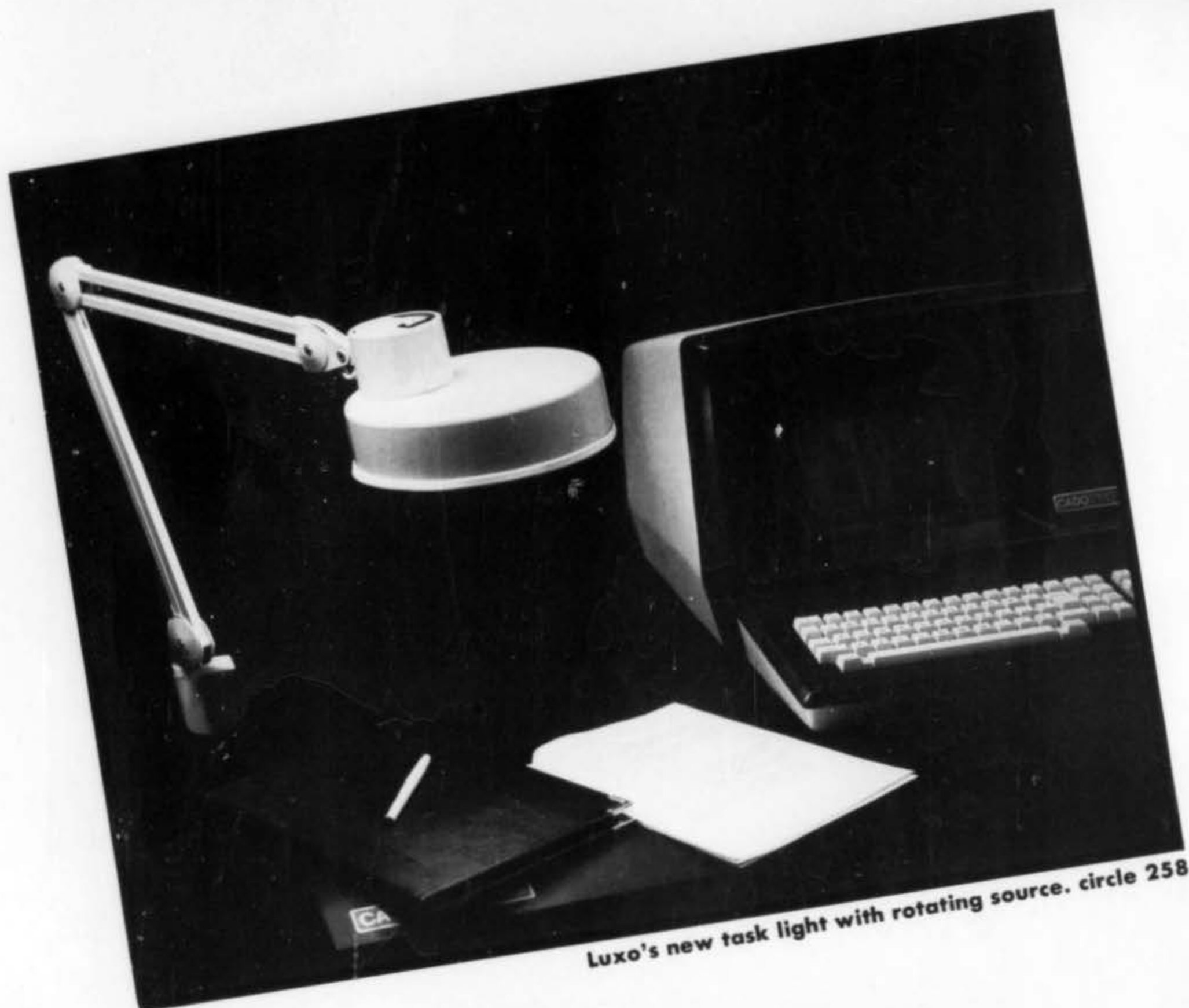
Clockwise on floor, from upper
left: No Problem Electronic Type-
writer from Lanier (circle 208).
IST-2 Plato terminal from Control
Data (circle 209). Video Display
Terminal from MAI / Basic Four
(circle 210). MV1200 Facsimile
from Panafax (circle 211).

PHOTOGRAPH BY BRUCE WOLF

PRODUCTIVITY AT WORK

ILLUMINATIONS

Inadequate lighting in the automated office can result in eyestrain, fatigue, and worker anxiety. New techniques in workstation design and ceiling, task, ambient, and furniture-integrated lighting systems, plus window treatments, offer designers some options for a variety of interior spaces.



Luxo's new task light with rotating source. circle 258

BY JAMES L. NUCKOLLS

Burning eyes, ocular tearing or itching, eye strain, blurred vision, changes in color perception, neck pain, and general fatigue are physical problems recently linked to prolonged viewing of display terminals connected to word processors and computers. These cathode ray tubes (CRTs) and other visual display terminals (VDTs) have also been accused of psychological disturbances, including higher levels of operator anx-

iety, nervousness and fatigue. There may be a connection between some of these problems and standard architectural lighting practice.

There are several problems inherent to CRT/VDT design. First of all, the viewing areas are glass or plastic, and their relatively flat surfaces possess specular (mirror-like) or spread (semi-gloss) reflective qualities. These are responsible for "veiling glare," the term that describes reflections similar to those obliterating the printed image on this shiny INTERIORS page when a reading light

is in the wrong position (the "offending zone"). To find a lighted offending zone or other extreme contrast, place a small mirror on the viewing surface; if excessive brightness is reflected back into your eyes, the source of the problem has been identified. Veiling glare conditions can run from a subliminal condition (in which the operator is slightly discomforted) to complete obliteration of the screen image and interference with adjacent seeing tasks. In the latter instance, the phenomenon is termed "disability glare." A host of unsuspected

conditions contribute to CRT/VDT veiling glare: a bright photo pinned to a nearby dark wall; a window facing a terminal; the operator's new white shirt; luminaires (lighting fixtures) with bright lenses; the next CRT/VDT; table lamps—in fact, anything exhibiting contrast in the terminal's mirror-like viewing surface.

In an attempt to control these environmental problems, we often see CRT screens viewed in severely darkened rooms. And yet, we know that our home television screen creates eye strain when viewed under similar con-

ditions. In the 1960's, some families positioned a black ceramic panther on the top of the TV. Behind its hollowed-out belly, a lamp provided indirect halos of light around the set and thereby lessened the sharp contrast between the screen's bright image and its surroundings. There are other rules-of-thumb suggesting that trans-illuminated images (screens lighted from behind) are better viewed in properly lighted spaces. In the audio-visual industry, where extensive and prolonged rear-screen projection is typical, we know that the last row of an audience can easily see an average image if seated at a distance six times the screen width in a blackened auditorium. However, if the auditorium is illuminated to a level of approximately 50 footcandles, the comfortable viewing distance increases to about eight times the maximum screen width. In response to these phenomena, a 3:1 ratio of ambient-to-VDT brightness contrast has been recommended. CRT/VDT operators are therefore faced with a paradox. Dark rooms are gloomy, and provide irritating contrasts between the terminal screen and its environment.



Window glare

Bright rooms may create veiling glare that prevents accurate reading of the screen.

POSSIBLE SOLUTIONS

Here are a few of the suggestions currently being proposed to improve seeing in the CRT/VDT viewing space.

If we set aside certain problems that are not at all related to seeing, such as some questions of workstation ergonomics, radiation hazards, and cost factors, several solutions come to mind that are indirectly involved with lighting:

1. Screen glare may be avoided if the CRT/VDT can be panned or tilted, and positioned

in different horizontal or vertical planes. IBM and Radio Shack, among other CRT manufacturers, have developed movable components for their terminals. The "Lazy Susan" CRT stand, which was developed to allow adjacent operators the use of one screen, may have an additional lighting advantage in this context.

2. Glare-free panel filters can be placed in front of the viewing surface. Simple colored or dulled surfaces are not as effective when used alone; they should be

CRT/VDT veiling glare comes from windows facing a terminal, luminaires with bright lenses, table lamps—anything producing glare on a reflective terminal surface.

combined with a polarizing panel. Polarizers also seem to attenuate the effects of flare around the outside of screen images which would, otherwise, result in image softening.

3. Other surfaces on the terminal should be considered. Chrome and other shiny appointments must be limited, and operating keys might be finished with matte covers.

4. CRT image improvements include larger spot size and improved fonts (for better visual acuity and not, necessarily, flashier "sans serif" style). Blue-white colored phosphors seem to provide sharper imagery for the eye. The CPT company has been offering a reverse display, and this white background with black letters is a striking simulation of the printed page. Although the resulting familiar image may be easier to understand, we do not know of objective evidence suggesting it is better for the eye than the standard display with its whitish letter image on a dark background.

5. Eye corrections encompass balanced tube, keyboard, and copy distances and relationships. Special glasses often help, although authorities suggest that bi- or trifocals may not be the answer. These multiple-focus spectacle lenses can require uncomfortable head positions when scanning the various operating surfaces.

6. Older operators are less tol-

erant of discomfort glare. They require better control of unbalanced brightness, in addition to increased illumination.

7. CRT/VDT screens should be positioned so that their surfaces are not parallel to each other. A screen's luminosity is a source of potential glare in any directly opposing screen.

THREE ZONES

Room surfaces are very much an illumination problem, and the optimal reflectances for tradi-

tional offices have been established for some time by the Illuminating Engineering Society, N.A. and others. The work space is usually divided into three zones: the task itself is zone 1; the surfaces immediately adjacent to the seeing task are considered to be in zone 2; and objects in peripheral vision are relegated to zone 3. Setting aside color contrast considerations, optimal brightness contrasts exist when zone 2 is equal in brightness to zone 1 but not less than 1/3 of zone 1, zone 3 can be five times greater than zone 1 in brightness but not less than 1/5 of zone 1. If we consider that a typical sheet of printed paper reflects 80 percent of the light hitting it, then the reflectance of table tops (typically in zone 2) might fall between 80 percent and 25 percent. In traditionally-walled work spaces, this means that surface reflectances are often recommended as follows: 80-90 percent for ceilings; 40-60 percent for walls; 20-40 percent for floors; and 25-45 percent for furniture and office equipment with acceptable maintenance characteristics. Suppliers of specification-grade standard materials should be able to supply this reflectance data for their products. Highly reflective and diffusely-finished ceilings and floors may be the most important surfaces in work areas because they can cause downlight to inter-reflect with greater effi-

ciency, less glare, and softer shadows on the seeing task. Far-wall reflectances in the permanent office plan are of lesser importance, providing that vertical window areas do not contribute strong sources of illumination.

In the flexible, open-plan facility where CRT/VDTs are often found, these traditional guidelines may be slightly varied. If small partitioned spaces are used, almost every surface facing the operator will be in zone 2: horizontal divider panels; pin-up surfaces; hanging cabinets; desk tops, etc. Because all vertical surfaces to the sides of and behind the operator may be in the CRT/VDT's offending zone, it is now recommended that their reflectances be kept under 50 percent; we have found 30 percent to 40 percent to be effective in subjective evaluations. Bright objects, such as pin-ups and wall graphics, should also be restricted, since the contrast between them and their recommended background surfaces may appear as veiling glare in the terminal screen. Since little floor area is available for light reflections in small open-plan workstations, other horizontal surfaces outside of observer or CRT/VDT offending zones should receive lightened diffuse finishes. These might include the tops of tall free-standing files, panel-mounted cabinets, and desks (when the CRT/VDT screen is tilted slightly upward). In this case, reflectances might be between 50 percent and 70 percent.

WINDOW COVER-UPS

Bright window areas are often right in the offending zone for CRT/VDT terminals. Placing the viewing screen so that it faces away from the window is a solution, but this may force an observer to face these brightly luminous areas directly, thereby creating untenable contrasts between work and surround. Placing the operator's right or left shoulder next to the window line, so that the light strikes the working surfaces at a right angle, may be a workable alternative. Where open plan office schemes are used, a panel can be placed between the terminal operator and the window. The best solution might be to remove all windows or cover them with opaque materials. However, if this is not

continued on page 106

PRODUCTIVITY AT WORK

TAPES

AND HOW TO STORE THEM

As tape reels increase in today's office, proper storage becomes an increasing need. The solutions shown here effectively protect and systematize computerized information.



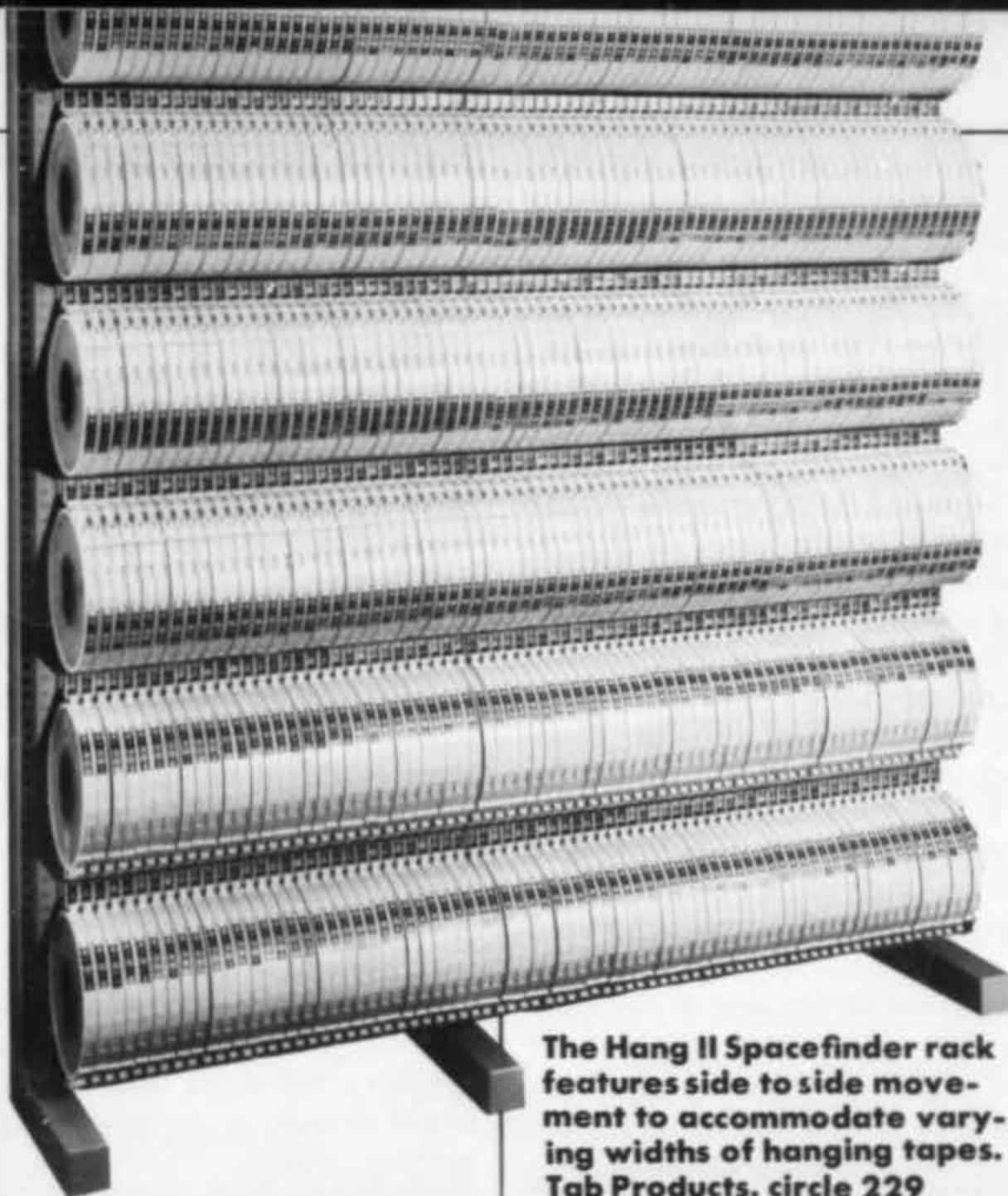
This preprinted, color coded numbering system, using ten brilliant colors plus black and white, may be inserted into the label area of the Tape-Seal or adhered to the surface of any container. Wright Line. circle 226

A heavy gauge wire desk top tape rack available from Tab Products. circle 227



A Tape-Seal belt is equipped with hook for hang filing. Available with uniform, highly visible color coded labels on white or colored belts. Wright Line. circle 225





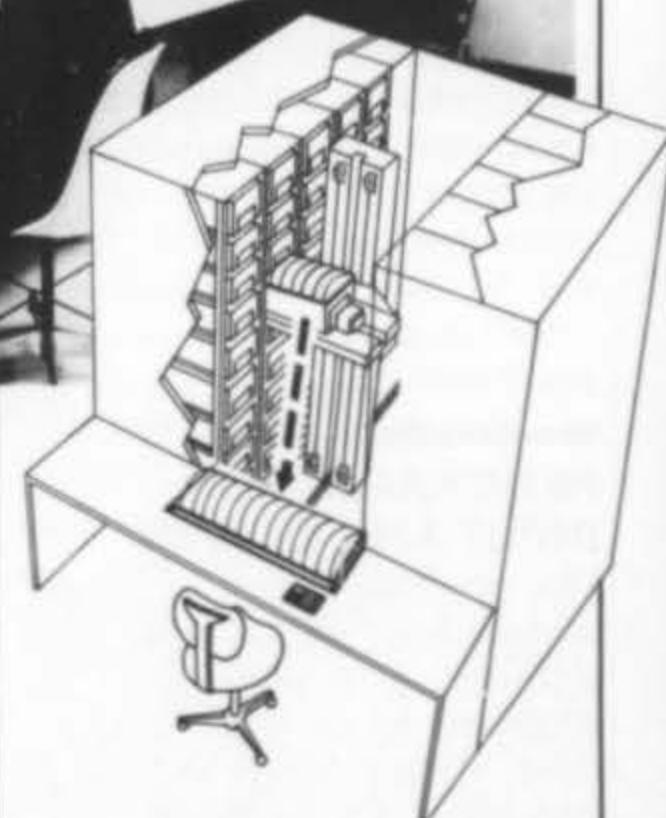
The Hang II Spacefinder rack features side to side movement to accommodate varying widths of hanging tapes. Tab Products. circle 229



Interchangeable components of the Mega Media Management cabinet allows for tape storage as well as printout and traditional paper storage. National. circle 230

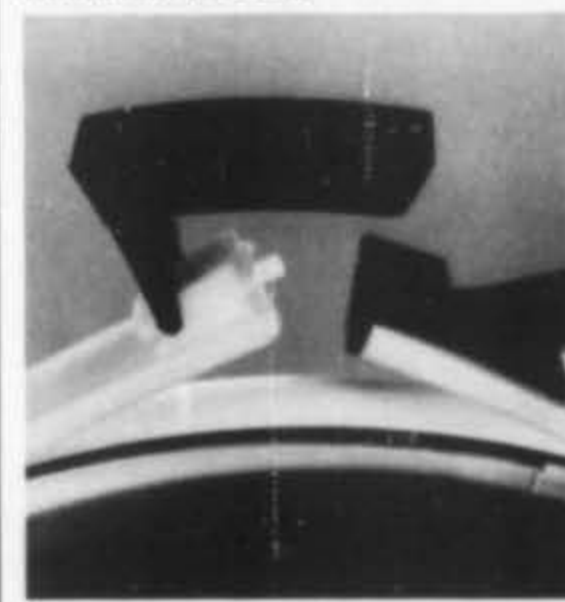


Minitrieve is a compact electronic unit that consists of two facing banks of steel shelving housing tape containers that are brought to the front workstation via push button instruction. Units can be extended to the ceiling or below the floor level for maximum use of space. Supreme Equipment & Systems. circle 231



Detail of the Tape-Seal belt's snap lock that becomes the hook for hanging. Wright Line. circle 232

Roll-Away ThinLine Bi-file units are used to replace lateral storage racks saving 70% of allotted floor space. Shown here are four tiers of stationary units set behind a three-tier unit mounted on tracks. The front row moves right or left to expose the back row. Supreme Equipment & Systems Corp. circle 228



PRODUCTIVITY AT WORK

HOW'S YOUR JARGON?

Computerization has brought the workplace a whole new vocabulary which must be learned and appreciated to master the technology and processes it describes. Some key words and phrases related to the automated office language are defined and explained below. Test your verbal skills for efficiency.

BY JOHN PILE

Data processing or EDP (for electronic data processing), the work of the big, mainframe computer or CPU (central processing unit) is the cornerstone of the electronic office. Input of data involves converting information, probably alphanumeric (made up of letters and numbers), into punched Hollerith cards by keypunch machine, or keyboard entry to magnetic tape. Either process makes it possible to accumulate data in suitable media for batch processing, in which vast amounts of data entered off-line, in peripheral equipment not connected to the computer itself, can be processed at tremendously high speeds once the actual processing begins. In this way, all the transactions of a day or month can be accumulated and then "run" in a minimum of computer time.

PROGRAMMING: INPUT AND OUTPUT

The processing itself is simply manipulation of the input data according to a program of instructions as to what is to be done. Meter readings and lists of customers, for example, processed according to a rate schedule, can generate bills for services. The bills are entered into media suitable for output, perhaps magnetic tape again which, removed from the computer itself, can drive output devices such as a line printer (also called a high-speed or impact printer), converting the output data into the familiar paper printouts or other printed forms such as checks or bills—which may also be punch cards that can be input for a next stage of processing when they return as cashed checks, stubs with bill payments, or similar records. All this is the

work of the computer room and associated input and output equipment rooms. The computer is big and sensitive, and input and output devices are noisy and deal with massive amounts of paper or other materials, so that a special place, more industrial than office in character, is necessary for these processes. After this kind of computer use became widely accepted for dealing with massive needs of big organizations, it began to be possible to consider other uses of the computer that do not work well in the sequential formats of batch processing. These are the applications that require instant response to inquiries or even the interactive patterns of a flow of question and answer. This requires the computer to be available on-line, that is, constantly connected to an input-output (I/O) device that permits the user to communicate with the computer in real-time. In this format the computer holds a mass of data and suitable instruction programs in memory and stands ready to act on instructions from a device such as a data terminal, where the user types an inquiry or instruction into a keyboard and receives output back in typed form as the computer sends its response in forms to drive the Selectric typewriter mechanism of the terminal at a speed no human typist could match. This is the format familiar at the car rental counter where forms and bills are computed by the remote computer and instantly typed out automatically. Airline reservation management was an early user of on-line communication to a central computer from many terminals, and called for random-access memory, making it possible to look up the status of a particular flight on a particular day and enter there the data on reservations

made and cancelled. The telephone reservation clerk has no need for written documentation of communication with the computer, and so can use a newer I/O device, the now familiar CRT (cathode ray tube) terminal or VDT (video display terminal), with typewriter-like (but silent) keyboard for input, and a TV-like screen for display of output responses. Since big computers can deal with data far more rapidly than input can be entered, on-line uses are wasteful of the computer's time and abilities. Time-sharing solves this problem by making the main computer serve many input and output devices with small slices of time shared out in turn—the turns are so brief and occur so frequently that each user has the illusion of full-time service. It is the CRT unit that has brought computer service into all sorts of offices.

MINIATURIZATION: THE KEY WORD

The development of the transistor began a process of miniaturization that brought the computer into the general office in the form of the mini-computer, often with the full abilities of the giant computer of a few years ago, but now reduced to a cabinet about the size of a standard office desk or less. At the low end, a mini-computer can be so inexpensive that it can be dedicated to a particular use with no need for time-sharing, and can be housed within a unit that is similar to a CRT terminal. This is the form that the home computer takes. The term micro-computer is reserved for complete computers reduced to the tiny chips that can be fitted into other devices to provide computer service in ways that can make a device "intelligent," or able to evaluate data and generate output without the aid of a separate, self-contained computer. The mini-computer makes it possible to develop distributed systems, in which data processing takes place in various devices at various locations, with interconnections between small units and, in many cases, between small units and a larger mainframe at some central, remote location. Punched cards and large reels of magnetic tape are not convenient forms for entry and storage of data for mini-computers distributed through general office space; instead,

keyboard entry via a CRT can be stored in tape cassettes or in small, flexible, phonograph-record-like floppy disks that can also receive and store data to be displayed on a CRT as needed. Hard copy—that is, printed paper output—can be had on request via a typewriter type terminal or from a device more like a copying machine that is both rapid and silent.

In addition to data in printed or typed forms, computers can handle graphic images, and can also generate them from instructions typed in by keyboard or "drawn" with a light-pen on a CRT screen or at an electronic slate. Output can appear on a screen; it can be drawn on paper by a plotter; or it can be hard-copy produced by a copying-machine-type printer. Computer graphics refers to the whole world of making, storing, transmitting graphs, drawings and other images with computer aid.

Word processing (WP) is a more modest, specialized way of applying new technology to the familiar office process of typing. Input can be hand-written or dictated, but typing is replaced by keying in the material at a CRT terminal (or specialized device) so that a screen image is created instead of a paper draft. The process is silent, and permits corrections and editing to take place electronically. The finished draft is stored in cassette or disk memory and also printed out as hard copy. Revisions and changes can be made by recalling the draft to the screen and a final hard copy called up for dispatch. Memory storage can hold material for future use, frequently used phrases or paragraphs can be stored to be called up with lightning speed when needed. This makes it possible to synthesize letters and documents that use standard wording, as in many routine business letters and such specialized forms as legal documents or briefs. Some of these things were possible for the earlier MTST (magnetic tape Selectric typewriter), but a word processing unit or center is far more flexible and efficient and can link into communication lines for electronic mail, automated filing, and deal with computer input and output.

Dictation as a significant office activity is increasingly shifting away from a manual, shorthand-entry process to a

continued on page 100

THE 2020 OFFICE

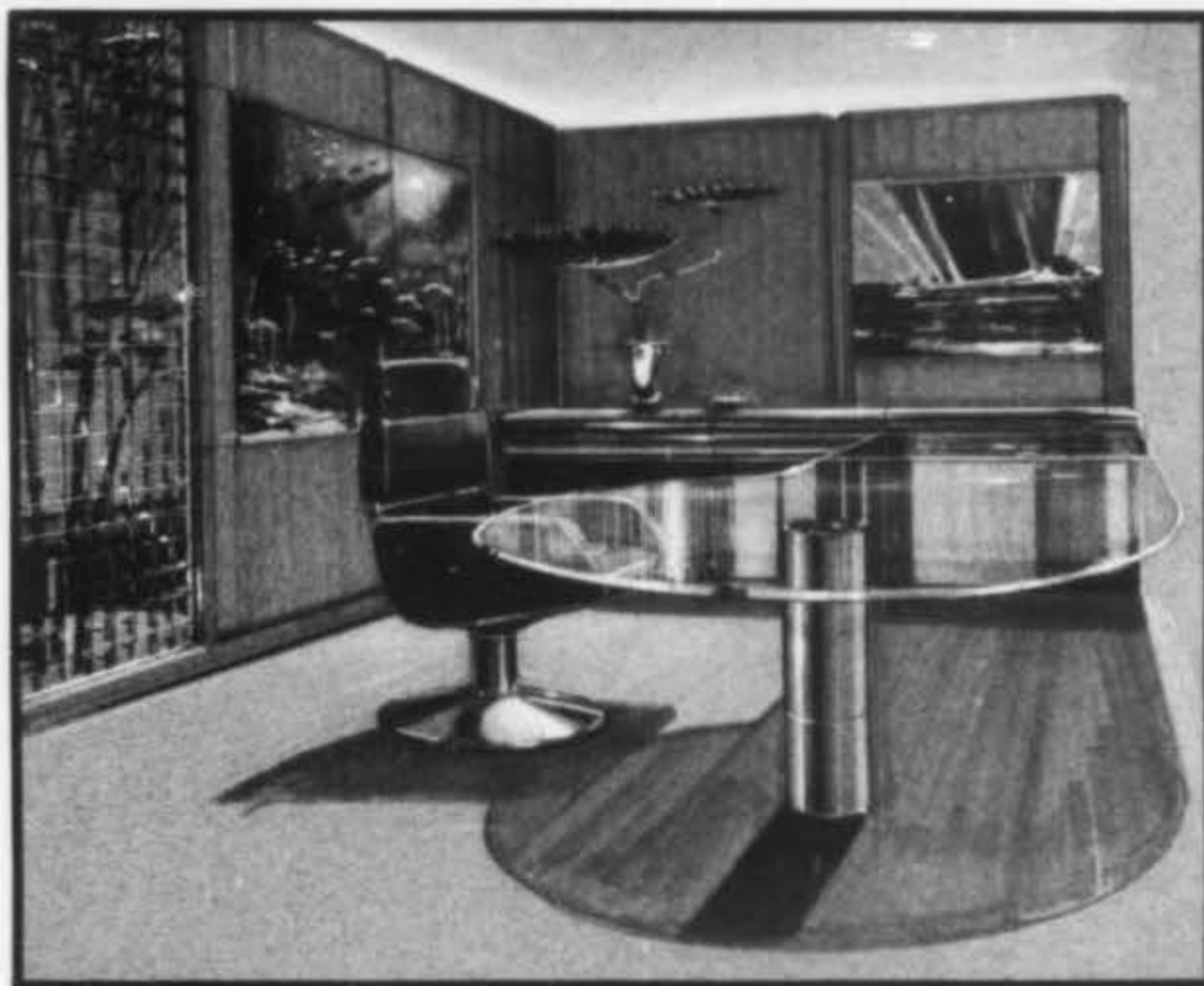
Evaluation of past and current office design on the occasion of its 40th anniversary in November 1980, led Interiors to speculate on the probable state of the art 40 years ahead. An intensive, six-month program of expert research was undertaken, which resulted in the concepts illustrated by graphic artist John Duncan on the following four pages. This is a proposed first stage in achieving a workspace appropriate for the future.

BY MAEVE SLAVIN

The year 2000 marks more than the beginning of a new century; it heralds the third millennium A.D. The integration of the fast-evolving technologies which will shape the start of that age into the workplaces where its people will function, is, of course, the enormous challenge to designers. The development of appropriate furnishing products belongs to the manufacturing industry. In projecting to 2020, INTERIORS hopes to stimulate the advance of design to meet the accomplishments of space-age technologies, so that, as the future becomes the present with increasing rapidity, the needs of people and their environment can be met humanely and compatibly. Thus will greater efficiency and productivity result, and quality of life enhanced.

To develop the 2020 Office Project, INTERIORS assembled a multi-disciplined team of noted experts, drawing on talent from across the nation. Their assignment was to deliver a logical and realistic survey of future design parameters which, while necessarily based on certain assumptions, would nevertheless grow from definitive "givens," the most significant of which is what is known today. The views of the office environment and working modes illustrated in this Interiors Initiative express a confident forecast from which, it is believed, the entire industry can benefit.

Led by 2020 project director



The 2020 Office at rest. "Smart" wall panels display laser projected video art motifs of individual choice. Clear glass table top on polished aluminum base turns black when activated.

Mario Armond Zamparelli, an INTERIORS Editorial Advisory Board member, the team was made up of architects, interior designers, behavioral scientists, communications sociologists, technologists, and technical systems designers. Participating from the earliest stages were: Dr. Roderic Gorney, Department of Psychiatry, UCLA School of Medicine; John J. Connell, Office Technology Research Group, Pasadena; Herbert Dordick, Annenberg School of Communications, USC; Elio Rotolo, Security National Bank, Los Angeles; Stephen Channer, BIFMA, Grand Rapids; Dr. Michael O'Hagan, Texas Instruments, Dallas; and

Gerry Cullen, Datapoint, San Antonio.

As reported in INTERIORS (March 1981), the initial research underscored the impact of electronic technology and changing socio-economic factors on future working conditions and the human habitat. The human element was found to be the paramount concern. While touch and sound-sensitive walls and surfaces, advanced communications capabilities (including electronic mail, voice-sensitive word processing, and picture phone conferencing) were all envisioned in Zamparelli's prototype model, there still remained the task of pinpointing

the extent to which these technologies would be available by 2020, plus consideration of the effects they could be foreseen to have on the design of space and equipment. This became the thrust of the second stage of the project: accurate and detailed visualization of the future executive office.

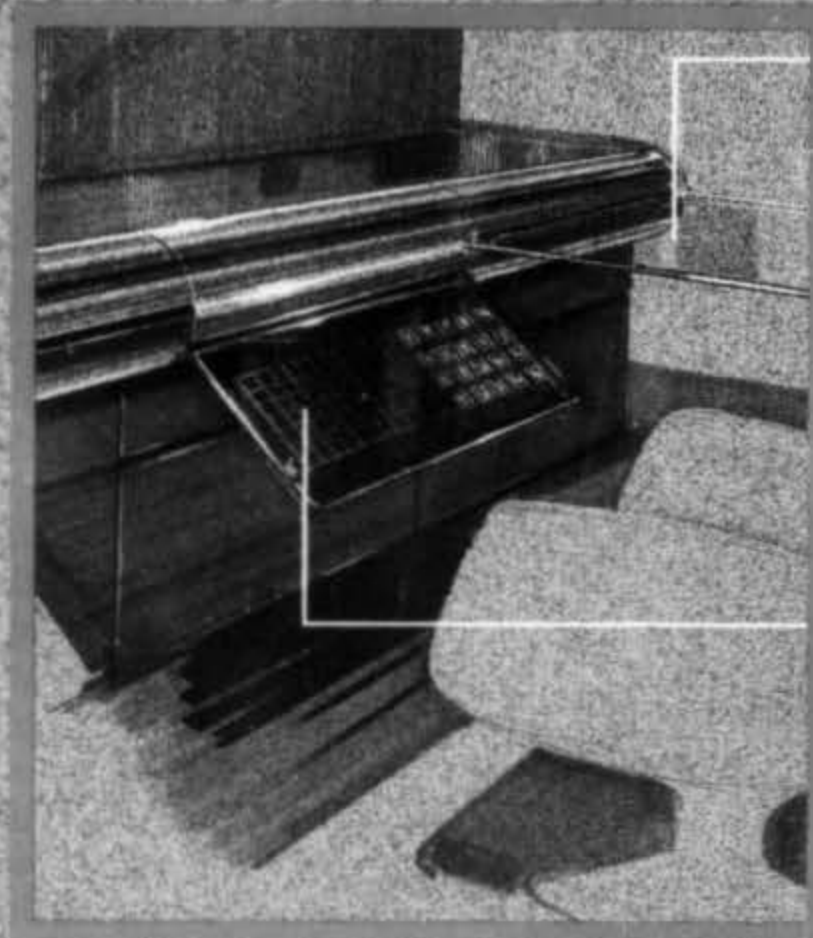
For this phase, thanks to the cooperation of the Bell System, INTERIORS was extremely fortunate in securing the advice of Daniel Picasso, Manager of Advanced Office Systems, AT&T Long Lines; Gere Picasso, member of the AT&T Building Planning and Design Group; and Dr. Robert Epstein, a communications sociologist on the technical staff of the Telecommunications Services Research Department, Bell Laboratories. They were joined by an independent architectural and industrial design renderer, John Duncan, who made the drawings that bring the 2020 Project to life.

To demonstrate the flexibility and mobility of executives in the coming decades, three office modes have been selected: the executive office in action; the portable office in the home; and the office on the road, which might be in a rented-by-the-hour airport conference room, a motel, or an off-site satellite office space.

Everything shown is conceptually feasible today. In many instances, small-scale prototypes already exist, and some are in the process of market development.

Office for the year 2020 in action with work top activated for information display and "smart" walls projecting communications

CONTROL BOARD



Pull out 8" by 16" master control keyboard is touch sensitive, miniaturized computer that makes phone calls, calculates, type-writes, controls filling system, etc. Light pen is used to increase input.

Rotating cylinder allows keyboard to descend to proper work angle.

Phone calls can be activated from voice sensitive pin on lapel.

BRIEFCASE



Electronic 12" by 18" briefcase with plasma display lid in front of storage space.

Removable telephone

Removable keyboard (touch sensitive to finger heat) plugs into three different matrices: numerical, computer, typewriter.

Work top becomes information surface when activated with light pen. Can also receive messages via control board.



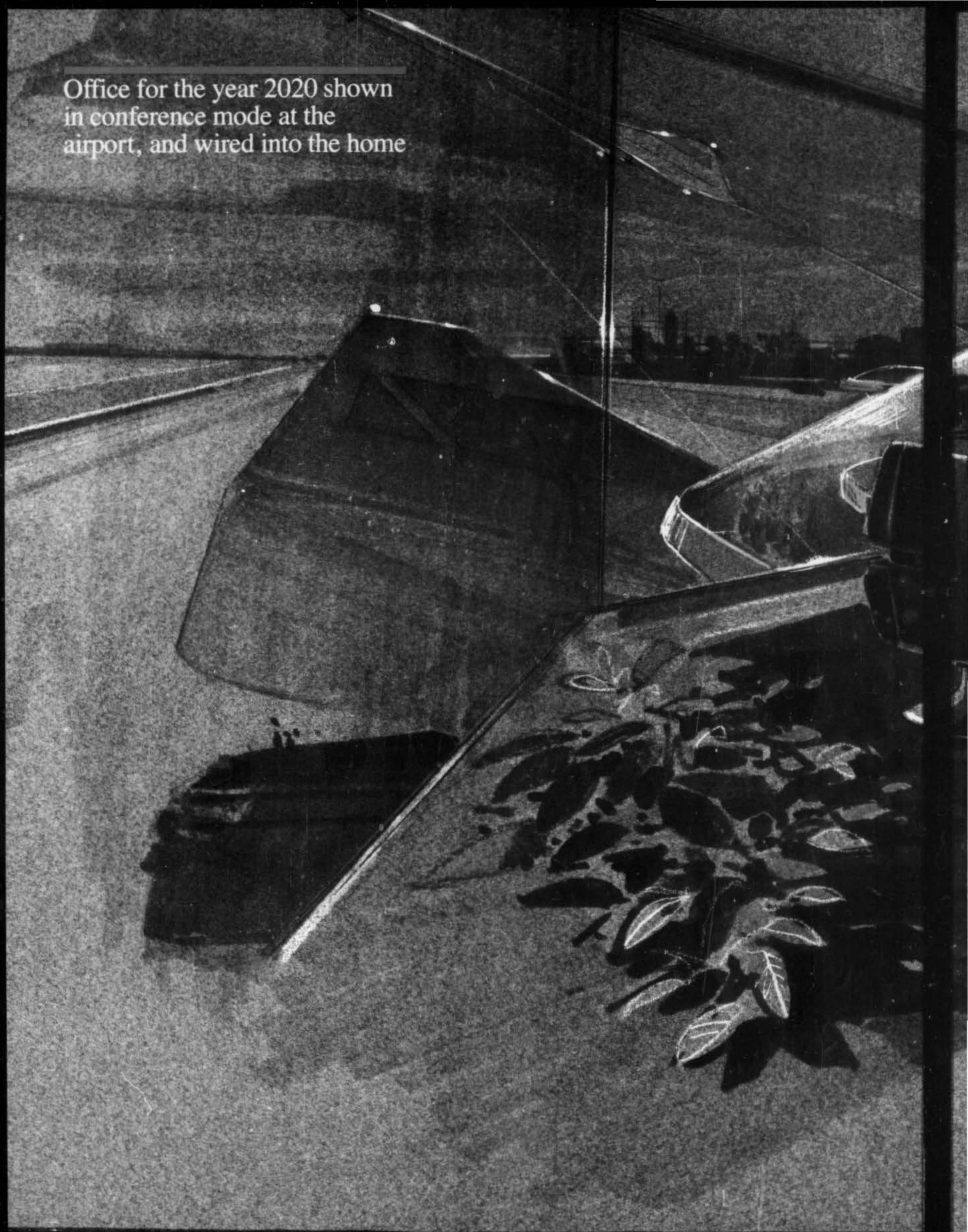
Acoustical, 4" deep, photo sensitive, movable fabric wall panels contain HVAC, power and light sources for the office space.

Laser technology brings video display to "smart" wall panels; can also be used as picture phone screen.

Control board at ready but not activated.

$\frac{1}{2}$ " clear glass work top turns matte black when plasma display is activated.

Office for the year 2020 shown
in conference mode at the
airport, and wired into the home



17:32 EST

DISTRIBUTION OF REVENUE DOLLAR

Laser technology employed on wall panels to project information.

Pedestal unit contains microchip technology to activate work top.

Electronic briefcase goes everywhere.

ELECTRONIC HOME OFFICE

Plasma display for tv, picture phone and other work-related information.

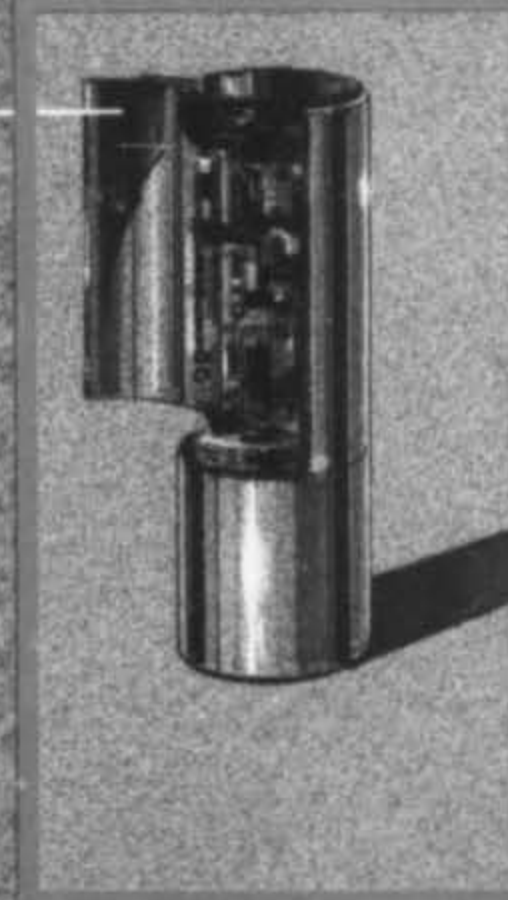
Portable keyboard from briefcase on drop down unit.

Briefcase is the link between many destinations.



PEDESTAL UNIT

Polished aluminum 8' cylinder houses memory and transmitter for work top. Plug in modules make it easy to service.







PRODUCTIVITY AT WORK

FABRIC FIREWORKS FOR THE ELECTRONIC OFFICE



LYNN KARLIN

Above: DesignTex partners, Ralph Saltzman (right) and Harry Paley in their office.

From the DesignTex collection—designed and styled by Hazel Siegel—we carry a torch for these explosive colors which illuminate the variety of patterns, textures, and fibers that will keep the 20-year old firm sparkling well into the 21st Century.

Top row, left to right: Nylo Suede, a nylon pile with a cotton back; Pinstripe Plush, 100 percent mothproofed wool pile and a wool-viscose-polyester-cotton blend; Wool Andes, a wool-ny-

lon blend; Convoy Cloth, wool pile with a wool-cotton back; Wool Repp, 100 percent worsted wool with a Teflon finish; Wool Samson, a wool-nylon mixture; Pincheck Plush, 100 percent wool pile and a wool-viscose-polyester-cotton blend; Iron Plush, 100 percent (stain-resistant) cotton; Pyrenees, polyester-nylon-chlorofibre blend; and Nylo Suede in woodrose.

Bottom, left to right: Wool Tobruk, 100 percent wool with a Teflon finish; Wool Andes in berry; Nylo Haitian, nylon-acrylic back; Pyrenees in Titian; Pyrodot, a modacrylic-nylon mixture with a flame retardant backing; Wool Worsted, worsted wool with nylon; Cubist Plush, wool pile with a wool-viscose-polyester-cotton back; Wool Bradford, 100 percent virgin wool with a Teflon finish; Wool Dimension, a wool-cotton blend; and woodrose colored Convoy Cloth. **circle 200**



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machine-based activity. Dictating machines have become small, portable and convenient, and transcription, with word processing, moves away from the desk of a secretary to a centralized WP center. Communication links make it increasingly easy to input dictation from remote locations, display drafts for checking at CRT units, and deliver hard copy when and where needed.

Typewriters will continue to exist, but are likely to become increasingly **smart**—that is, able to remember words, phrases, names and addresses—even whole pages. They will be able to accept changes and corrections, and manage page format. The smart typewriter can link up with word processing techniques, merge with computer-linked data terminals, and become tied into an electronic office system in a way that the “stand alone” typewriter could not.

Reprographics is the general term for all the techniques for copying and reproducing written and graphic materials. Carbon paper has been made largely obsolete by copying machines that began with those using special papers, but which were vastly improved by the wide application of **xerography**, making it possible to produce copies of high quality on ordinary paper, rapidly and silently. The familiar Xerox or IBM copying machine (and an increasing variety of competitors) has become key office equipment. It is increasingly suitable for a tie-in with other systems, so that it can deliver computer output, word processing hard copy, print-out versions of material held in **micro-filing** media, and can be the delivery device for electronic mail. Copying implies that there is an “original” that is simply reproduced, but the modern copying machine is often delivering a copy that has no original in the literal sense, printing from data received in some totally different form from magnetic storage media or a communication line. The **laser printer** uses the specially “intensified” or “purified” laser beam to replace normal light as its means of projecting an image and so gains possibilities of enormous speed and great versatility. A typical unit such as the Xerox 5700 can deliver a page in three seconds, and can print in a variety of type styles, formats and spacings, in-

cluding “printed form” layout, along with “typed in” contents. Other specialized printers include **matrix** printers that form up letters and numbers from many tiny dots, **ink jet** printers, and **thermal** printers that use the means that the names imply to print graphics on the paper page.

NETWORKS MAKE THE LINKS

All of these techniques and devices can **stand-alone**—work separately as traditional office machines have always done, but their usefulness and power increases as **networks** of communication place one device in contact with another. The cornerstone of office communications is, of course, **telephony**, which offers an in-place, worldwide system, developed originally for voice communication. The limited-frequency **bandwidth** required for voice transmission has made it necessary to develop special **wideband** transmission networks, such as the Bell System’s **Dataphone**, so that vast quantities of data can be transmitted from one computer to another. The touch-tone dial has, however, put in place possibilities for transmission of data in lesser quantities and at lower speeds over regular phone lines. Many devices can thus “talk” to one another by simply dialing a phone number and placing the handset in a cradle in a particular device, such as a **modem** (for modulator-demodulator), that can convert the digital data from a computer memory into form suitable to the phone line. A **dedicated line** can be reserved for a particular, constantly-used communication channel, and **leased lines** can provide a constantly available link. **Facsimile** communication can transmit a complete document over phone or other communication lines, using devices such as the Xerox 400 or Qwip terminals for input and output. Recent legal rulings have broken the total domination of Bell System companies in telecommunications, and have opened up a flurry of competitive effort to offer new devices and new systems. **PBX** (private branch exchanges) and **PABX** (private automatic branch exchanges) by Bell or its competitors are the basis for an organization’s own internal phone system, linking a great variety of phone and phone-related instruments, but compatible with the

Bell lines for external communication. Expanded telephone services coming into use include the **Picture-Phone**, which adds a TV image to speech communications. A similar idea is **teleconferencing**, where a number of people in scattered locations can have voice communication along with visual images.

It is the telephone network that makes useful the **portable data terminal**—a device not unlike a small portable typewriter with a silent keyboard and a small thermal printer to generate output. A standard phone handset drops into a recess at the back and the terminal, after the appropriate number has been dialed, is on-line with a remote computer. Interactive communication is possible, with the user keying in instructions or questions, and the printer giving back responses that may include **menus** of possible choices, to move forward a step in a dialogue that will generate answers and solve problems. Texas Instruments’ 765 is a good example of this kind of portable unit, which makes the electronics of the home office available anywhere that the traveling consultant or salesman may be. Then there is **electronic mail**, a rapidly developing alternative to the slow process of dictation, typing, mailing, arrival, opening, and, one hopes, reading—which often involves a total round-trip time of days or weeks. Electronic mail replaces physical transport of a piece of paper with electronic transmission of a written letter, memo or document to a remote terminal, printer, or memory which will hold the “letter” until it is called up for display on a CRT screen. It has the speed of a phone call, but does not require the recipient to be available at the moment of transmission.

FOR FUTURE REFERENCE

Information Storage and Retrieval includes conventional and modernized filing, but adds some new techniques, the central one being **micro-graphics**, in which materials to be filed are reduced to tiny size in various formats, such as **microfilm** (rolls of movie-like film) or **microfiche** (micro-images in flat holders). Information can also be stored in formats related to computer memory, magnetic tape or “floppy disks,” but micro-images are generally far more econom-

ical for material that is to be stored for long periods, and where frequent access will only be required for a small proportion of the materials filed. Converting paper records to microformats can be made very efficient with new automatic and semi-automatic devices and, in many cases, data can go directly from computer output to microfilm (**COM**, computer output, microfilm). Locating micro-filed material is vastly aided by new retrieval systems including **CAR** (computer-aided retrieval), and appropriate equipment can make the filed image available on a remote CRT or as hard copy from a suitable printer. Microfiling can also deal with varied graphic materials (including signatures, seals, diagrams and drawings), and is particularly suited to storage of architectural plans. Word processing output can be converted directly to microform. Huge masses of file cabinets can turn into surprisingly compact micro-filed stations with a single person able to retrieve and distribute needed records on an almost instantaneous time basis. Other forms of record storage are due to surface in the near future. The **videodisk**, for example, developed to deal with TV programs, has a vast information storage capacity.

Any number of other new techniques and devices are moving along from special-purpose roles to general usefulness, from the experimental to the currently available. **OCR** (optical character recognition) makes it possible to read written material into digital forms for computer manipulation automatically. Voice input and recognition are already available for limited uses—the dream of spoken words converted to neatly typed documentation is still far away, but voice input can give a variety of “commands” for preplanned actions. The voice recognition devices can identify a voice and so accept only authorized instructions.

The advancing technology is going to be as sweeping in its way as the Industrial Revolution of the 19th century, and with it comes a necessary change in attitudes about office work. Language can help in establishing the right mind set to cope with the automated office. The old metaphors just don’t apply to space-age computerization. It makes sense to adapt to the new terminology. ■

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OFFICE AUTOMATION *continued*
none will have access to every corporate secret—except HAL.

How to deal with this ungainly giant is already a major corporate problem. Donald Regan, President Reagan's dynamic new Treasury Secretary, is famous for being one of the first executives to operate his own desktop computer terminal, in his former job as chairman of Merrill Lynch. Theoretically, he could personally call up any bit of information in the gigantic corporate data banks; in actual fact, he was limited to what his programmers allowed him to scan through a special Executive Information System distilled from the Merrill Lynch IBM model 370.

Soon, the "intelligent" computer—it can make decisions on its own—will be programmed to summarize some reports and disregard others. That perennial bugbear of the CEO, the self-serving, middle-echelon executive who pre-edits reports before they reach the top, will be superseded by the all-powerful computer programmer, who can decide what information is off-limits even to the chairman of the board.

At the other extreme will be the "C3PO" office. Named after the humanoid robot in *Star Wars*, this office will make do with any number of "stand-alone" electronic devices, each one limited to its own job. In this version of the future, one office might have an electronic copier, a teletext machine, a word processor and a laser printer, but like a gang of robots—or humans—all will be working simultaneously on different jobs.

The third alternative will be the "R2D2" office. If you remember from *Star Wars*, R2D2 was a robot on wheels with its own internal computer. But R2D2 could also plug itself into the main computer in Darth Vader's enemy ship, the guidance system in Luke Skywalker's fighter plane, or other R2D2s. In other words, R2D2 can function independently as a stand-alone computer, or as one terminal of a larger computer complex. Xerox already has its Ethernet cable system for office machines, which is like stringing together a group of R2D2s to help each other out. By 2001, Ethernet-type systems will be ubiquitous.

The impact of this new equipment on the office environment will pretty much depend on the

type of computer. The multi-million dollar HAL will literally comprise the building itself—a square block crammed with equipment. The machine will dictate everything from interior colors to the heating system, which will flow cooling water directly from the computer's own thermal heat exchangers throughout the structure. Xerox's Ethernet system requires specialized wiring, and benefits from open-office partitions, but will allow virtually unlimited growth and modifications as new equipment arrives. The stand-alone machine, particularly in miniaturized and/or battery-powered form, will require nothing more than a convenient surface on which to put it.

INCREASED PRODUCTIVITY

All of these machines will bring about a tremendous increase in productivity. This increase will be a direct result of capital investment finally being applied to the white-collar worker. Agriculture was mechanized in the nineteenth century; today, three or four midwestern farm workers operating a million dollars' worth of equipment is the rule rather than the exception. Heavy industry was totally mechanized before World War I; the average U.S. industry has \$20,000 invested in automated equipment for each worker. By contrast, white-collar workers—who will make up over 50 percent of the work force by the end of the century—each use an average of less than \$1000 worth of capital equipment. It's this typewriter/filing cabinet level of office work which is overdue for the electronic revolution.

Office productivity in the United States is miserable. The average secretary spends nearly 60 percent of her day doing non-secretarial tasks, and averages just five words per minute. Surprisingly, automation usually *reduces* the productivity of the secretarial pool, and for a curiously ironic reason. Almost every working woman has had to learn to type, while most male executives are one-finger, hunt-and-peck typists. Virtually all information processing equipment is now accessed by keyboard. The usual result is that the best and most intelligent women in the secretarial staff are promoted to middle management to handle the computers, leaving the

slower ones to do the typing.

The solution to this problem is eliminating the old-fashioned typing pool by having executives input their information directly. This of course, presupposes a new breed of executives, to whom typing ability and a rudimentary understanding of computer operations are signs of management ability rather than symbols of office enslavement. The ultimate goal is to eliminate repeated handling of the same bit of information—dictation, rough typing, editing, retyping, copying, mailing, filing—in favor of one input step, after which everything is done electronically.

But if repetitive office routine is eliminated, why do we need an office at all? Lettie Press, a typical small-job printer, has an executive who works on a word processor terminal. He's responsible for all printing estimates, and can call up any information he needs at the touch of a button. The only thing that makes this arrangement unusual is the printer's office is in New Jersey, the executive is in Hawaii.

Why not? The office of the future could be no office at all—just a network of managers connected by phone lines and satellite transmissions. In an era of instant communications, there's really no functional reason why employees must congregate daily at an assigned meeting place except to socialize. The very idea of an office separate from living quarters is unproductive, entailing as it does millions of wasted man-hours and quads of energy daily in moving people from home to office and back again.

An office is merely an information processing system. There are no hard goods involved, and sometimes not even hard information. But an ever-increasing stream of words and pictures must be moved along on its own assembly line. This information must be *created, stored, reproduced, and transmitted*. Here's how it can be done electronically.

INFORMATION CREATION

Computer experts make a big point of differentiating between data processing and word processing. Data processing is done by computers, they say, while word processing is done by word processors. But what is a word processor but a digital computer that handles words instead of

numbers? Both machines are built by the same companies and rely on the same silicon chip technology. The only difference is in the software. For office planning, they are identical.

The typical computer/word processor of the future will be comparable to today's smallest office unit, though with greatly enhanced memory. Typical of 1981 equipment is IBM's 5120. This has a typewriter keyboard, a nine-inch cathode-ray tube television screen, a line printer for making "hard" copy (basically a typewriter without the keyboard) and a dual-disc memory with a capacity of 2.4-million characters of information. All this costs less than \$14,000, and, as IBM points out, is comparable to a computer which twenty years ago would have filled a 20-by-30-foot room and cost over \$100,000.

Twenty years from now, the equivalent unit will be half this size, and voice activated. Texas Instruments already makes silicon chips that can not only speak in synthesized language with a vocabulary of 2000 words, but that can hear and understand spoken instructions. The next step is a word processor that acts on spoken instructions, handles spoken information and talks back as well.

Electronic readers that can read typewritten, typeset or hand-written copy are now commercially available but prohibitively expensive. Machines that read special fonts are available from companies like CompuScan for less than \$20,000. In twenty years, Optical Character Recognition, or OCR, will make a machine that can read a commonplace in any office.

A word processor with this array of input devices could create information on a prodigious scale. The most productive feature of a word processor is the CRT screen, on which the operator can edit and revise text before it ever gets into hard copy (printed on paper, as opposed to "soft", information, which remains in the machine and can still be altered). Used properly, this means that text can be prepared for typesetting, xeroxing or reports in one step. Indeed, if they were plugged into an Ethernet system, most offices would never need hard copy at all.

But input isn't all words and numbers. There are dozens of

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WE LEARNED A LOT ABOUT INDIRECT LIGHTING FROM THE MOON

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OFFICE AUTOMATION *continued*
specialized "computer graphics" input devices, built by some 80 different electronics companies, such as United Technology's Calma. They virtually replace the conventional drawing board. These range from small CRT screens, on which electrical engineers can plot wiring diagrams of silicon chips for the next generation of computers, to nearly life-size screens, on which automobile designers can draw a car's chassis and subject it to stress without leaving the console.

A new micrographic computer that allows graphic designers actually to paint in 128 different colors is only the most spectacular of the latest crop of printing-oriented computers. Newspaper input terminals which can make up a complete page—text and photos in place, ready for printing—are already old hat. Some of these graphics machines also include data processing capability, so that graphs can be plotted and computed in one step.

INFORMATION STORAGE

The biggest change in the office landscape is electronic storage. Almost any word processor or computer incorporates some sort of permanent information-storing device. The most common is now the small "floppy disc," which looks like a 45 rpm record, but which can store 200,000 bits of information. The contents of an entire filing cabinet will fit on two discs, and an entire office full of hard copy files can be stored in a disc bin of only a few cubic feet.

There are other permanent storage systems; IBM is still using magnetic cards that look very much like plastic credit cards, as well as solid discs that resemble stacks of long-playing phonograph records. The once-ubiquitous reels of magnetic tape with their bulky tape drives will be with us for decades, not to mention now-outmoded paper punch cards and even punched paper tape. As of 1981, however, floppy discs are the storage system of choice—inexpensive, durable, easy to store and requiring only compact mechanical drives. Even twenty years from now, an improved floppy disc with greater storage density and lower price will probably still be the most popular storage system.

Every electronic processing machine has an internal memory

in which the data processing actually takes place. This machine memory is divided into two parts: the Read-Only Memory and the Random-Access Memory. ROM is a permanent memory in which the manufacturer has pre-programmed a set of operating instructions for the machine. RAM is the "working" memory, which the operator fills up with information to be processed and special instructions to the machine (the program or software). This internal memory is *not* the same thing as storage memory; it is wiped blank when the machine is turned off.

RAM and storage discs form a unified processing memory that can, for example, take information off one disc, edit that information and return it to the disc in altered form or send it on to be reproduced or transmitted. Of course, there's also the base level of stand-alone machines that have only internal memory without storage capability; all work on such a machine must be completed before switched off.

The cure for this accidental erasability of the RAM could be the magnetic bubble memory, originally developed by Bell Laboratories, in which information is processed by charging microscopic magnetic bubbles on a small chip. Its advantage is the bubble "remembers" its charge even after the power is off.

Video disc and/or videotape is another storage medium that's going to make a big change in the office of the future. Clarkson College in upstate New York, for example, has switched its library from books to video discs at a cost of \$4 million. Using terminals that look like a cross between a microfiche reader and word processor terminal, Clarkson students have instant access to the video library. The video discs take up a fraction of the space of books. Twenty years from now, look for combined storage systems in many offices that will be able to access computer memories, word processor floppy discs and video discs all from the same terminal.

INFORMATION REPRODUCTION

Xerox started it all three decades ago, but simple wet or dry plain-paper copiers are old hat nowadays, when even typewriters have a brain. What makes a classic copier outdated is the need to feed it hard copy.

You put a piece of paper in a copier, and it makes you another piece of paper just like it. But what if you don't have a piece of paper—just the electronic output from a word processor? And what if you'd like the copy to appear in London rather than L.A.? Enter the "intelligent" copier, which IBM is calling an "Information Distributor." The IBM 6670 has two microprocessors and a disk memory that can store information received electronically from a word processor, computer or teletext line. In addition to a normal copier, the Information Distributor has a laser printer that prints 36 pages a minute, even changing typefaces as it goes.

Wang, Xerox and Eastman Kodak all have intelligent copiers either in production or nearly so. The intelligent copier eliminates the hard-copy printer for many word processor users, since it can feed computer output directly to the copier and make multiple copies. Even better, an Ethernet system allows the computer output to be transmitted directly to multiple copiers and printed simultaneously in remote locations.

But copiers, even those with a brain, are at the bottom of the reprographics heap. Hard-copy printers have traditionally been divided into high-speed "line" printers with relatively poor print quality, "correspondence" printers that print much like a typewriter, and "typesetters" that provide justified and aesthetically pleasing type.

These printer divisions are blurring. General Electric has a new line printer that runs at 510 characters per second, yet gives print quality equal to "daisy wheel" printers that top out at 55 cps. Laser printers can provide reproducible quality straight from the processor, and typesetter companies such as Compugraphic and Mergenthaler now have plate-quality phototypesetters that can be input directly from a word processor or disc drive. With laser plate-makers, it's possible to go directly from the author's rough draft to book printing presses.

In an electronic culture, of course, there's really no reason to have books or magazines at all. There are already two national news networks that provide information for subscribers on home computer screens, transmitted over teletext lines.

Unless an individual subscriber needs a permanent copy, which he makes himself on his own line printer, there's no hard copy involved at all. Ted Turner's independent television news bureau provides much the same service for cable TV subscribers.

By 2001, all this will seem embarrassingly tame. Bell Telephone already has picture phones with video cameras and screens at each end. In twenty years, these will be ubiquitous, if not in every home, at least in every corporate conference room, with, of course, taping facilities.

Right now, video experts are seriously proposing three-dimensional "holograph" projectors for home and office. A client could see a three-dimensional "holograph" of a proposed new building instead of the traditional architect's model, for example, then see computerized alterations right there in 3-D. He could also see the effect of structural changes on stress loading, materials and every other possible factor. That the client is in Kuwait and the architect in Houston won't slow things down.

The holograph will be a 3-D xerox, the ultimate office information reproduction system we can currently envision. Of course, there is another group of engineers who are straight-faced about the possibility of breaking down matter—actual objects or people—into digital components that could be beamed by satellite and reassembled by a fantastic intelligent copier. Can electronic clones be far behind?

INFORMATION TRANSMISSION

Right now, today, the U.S. Postal Service will transmit, via satellite from New York to London, any two-dimensional copy smaller than 8½ x 14. Elapsed time: less than two seconds. Cost: five dollars a page. Satellite Business Systems, a private consortium of Aetna, COMSAT General and IBM, has its own satellite in synchronous orbit and is selling its use. SBS and Intelpost are the first steps for electronic mail, which will replace most hard-copy mail in twenty years.

Electronic communications will use a variety of media, often in combination, so that many offices will have to be wired for all of them. Within the office, Ethernet cables will connect every machine with every other, much as

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Why decorate with copies when you can use the original?



Before there were floral prints, there were flowers. And with the growing popularity of natural colors and textures, flowers are the freshest idea in decorating today. A seasonal bouquet is a perfect complement to that unusual vase or favorite antique. But more than just accessories, flowers are legitimate design elements in themselves. Their varieties and colors are nearly limitless. So are the decorating possibilities.

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ILLUMINATIONS *continued*

desirable, then controllable window coverings—horizontal rather than vertical blinds, draperies, vacuum-metalized solar mesh shades, and the like—are a good idea. The blinds should be finished with diffuse, light-valued paint (definitely not metallic coatings, specular paints or chrome). Horizontal blinds are popular because they are continuously variable and, when correctly set, redirect window light upward to the ceiling from where it then creates useful downward illumination. From the standpoint of CRT/VDT viewing, skylights may produce illumination that is too glary and variable for these closely controlled conditions.

TASK-LIGHTING FOR FLEXIBILITY

Acceptable task lights for the CRT/VDT workstation are hard to find, but they are important to the total illumination scheme.

The typical under-cabinet-mounted, linear fluorescent luminaire may not be acceptable when a display terminal is resting beneath it on a counter top. The resulting light is often located too far behind the keyboard, and may create annoying hot spots on the terminal enclosure. Static-mounted task lights can be more effectively placed at the left and/or right end of the CRT/VDT table, where they create oblique projections of light across printed materials lying to either side of the terminal. Effective units are manufactured by SPI/McGraw Edison and Elliptipar. Flexible-positioned task lighting is an ideal, since you can move the source to suit your changing needs. Little has been produced to equal the traditional architects' arm lamp, even though the arm itself may get in the way when attached to small workstations. The Luxo Corporation has recently introduced an interesting arm lamp with a rota-

table light source. It produces an asymmetric light pattern, oriented to direct glare away from the operator and terminal screen.

Some installations have successfully used track-mounted incandescent spotlights to develop specific illumination on paper holders next to the operator's keyboard. To be effective, these luminaires must contain sufficient shielding (louvers or theatrical-type "barn doors") to prevent glare in the operator's screen or in adjacent screens. However, incandescent, ceiling-mounted lighting may not be effective in operating cost, air conditioning, or maintenance.

Some success has been reported where the ambient component of the lighting system is mounted to the furnishings or becomes free-standing, as a torchiere. The resulting indirect light bounces off the ceilings, and provides very diffuse general illumination at a low level. With

low ceiling conditions (between eight and 10 feet high), fluorescent upright sources are particularly satisfactory; with higher ceilings, mercury vapor, metal halide and (very occasionally) high or very-high-pressure sodium lamps may be desirable. Advantages: Ambient illuminants move as the furnishings are regrouped, since they are attached to them. For this reason, they should end up in the correct lighting position, no matter where tasks are relocated.

Disadvantages: Although ambient illumination is spread across the ceiling surface at a low level (standard downlight luminaires concentrate their intensity within a relatively small aperture), some component of the ambient illumination may end up within the terminal's offending zone, there to be reflected in the screen as a light haze. Of course, if high partitions surround the workstation,

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HALLER *continued*

Week '80, Haller Systems, which includes twenty-two countries in its international network, has infiltrated eleven Western states in less than eighteen months.

A native of Johannesburg, South Africa, Percy Hendler has a background of twenty-five years in office systems. Hendler's manufacturing concern in South Africa was one of the early licensees of Haller Systems. Impressed by the advanced technology of the system and the foresight of its designer, Professor Fritz Haller, Hendler left his company to become international consultant for Haller Systems. When Hendler became President of Haller, he moved his family to Orange County, near the company's national headquarters. In spite of Haller's rapid expansion (it plans to have systems in Chicago and New York as well as in Canada and South America within a few years), Hendler feels that growth is as important to the company as maintaining high standards of service to the client.

Professor Haller is a Swiss architect and educator whose extensive research and innovative theories about the future resulted in the Haller System. "People can never believe that the system was designed almost fifteen years ago," notes Percy

Hendler. "We wanted a system we could project into the year 2000 and know that it would not become obsolete. No matter what changes took place in the office, we would be able to make the changes in the system. Professor Haller is constantly researching new developments in the office. He's doing a study on the effect of the computer in the 1980s, and feels that there's going to be a major push to improve our technology. We're very well poised at Haller to take advantage of the situation because we have a unique system that can work for today, tomorrow, or the next day. In computer technology, the equipment is changing very fast. It's quite possible that what you bought today will be obsolete next year. We've been able to cope with all the changes in the office in the last ten years. People who bought the system ten years ago can add the latest lighting and computer equipment to keep themselves up-to-date. This is especially important when you consider that the already high cost of equipment keeps rising. The Haller System consists of basic components and accessories that can be refinished or replaced at a minimal cost."

Hendler is an expert analyst of the office environment. He speaks several languages and has

traveled extensively throughout the world. With his inquisitive eye continually studying the habits of office personnel, he's made some fascinating observations about the sociology of the office. "I have operated in many parts of the world with Haller Systems," he recalls, "and after having seen many different environments, I've come to believe that if there's one common language between people, it's the office. We may speak different languages, look different, and eat different foods, but the world's work habits are very similar—especially the bad habits. They seem to pop up in the same form in offices all over."

From his Orange County base, Hendler plots a marketing strategy for the country. "Before Haller goes into a market," says Hendler, "the national sales manager and I talk to architects, interior designers, dealers, manufacturers' representatives, executives, and other office personnel. We view the United States as having fifty individual marketplaces. Each state is unique, and each has its own idiosyncrasies. We try to be receptive to the needs of each particular market, as well as to the needs of the individuals who'll use the System."

The miniature Haller set is a unique marketing technique that accompanies sales representa-

tives on their calls. Its tiny pieces, which fit into a transparent "briefcase," have proved a valuable tool when demonstrating the infinite possibilities inherent in the system. "Fritz Haller designed the model system," explains Hendler. "Some people can't quite visualize how the system will affect them. With this three-dimensional model, however, they can analyze their options and see how easily the system can be changed. Everyone has a bit of the designer in him and a bit of the child. The Tinker Toy aspect of the model, as well as the creative aspects, make people feel they have a part in planning their system. The project becomes a team effort."

Having Fritz Haller and his innovative ideas on the "team" provides a constant challenge for the company. His research anticipates changes in the office that can be incorporated into the system. "I learned a long time ago not to negate or disregard anything Fritz Haller says," confesses Hendler. "It gives us a tremendous edge to have a man who's continually projecting himself into the future. Although his ideas are very interesting and often very controversial, nine times out of ten, they're right. And that makes them even more interesting."

—Lucinda Smith

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ILLUMINATIONS *continued*
the CFT/VDT will never reflect this potential source of glare. Recent studies suggest that furniture-integrated ambient systems are not efficient in energy consumption, since light is lost as it travels upward from the furnishings, is partially absorbed by an ± 80 percent reflective ceiling, and then falls back to the work surface. Typical downlight, however, has only one, shorter path to follow.

CEILING MOUNTED LIGHTING

If ceiling-mounted fluorescent lighting equipment is considered for either the ambient or both the task and ambient lighting job (as it often is), then alternatives to the standard refractor (conical prismatic lens) might be considered. Standard refractors tend to present the CRT/VDT screen with a very bright surface, whose image is sure to develop veiling glare. The following improved "closures" (the elements through which light passes), together with their good and bad points, enjoy current use:

Small-cell Parabolic Louvers: When placed outside the offending zone of both human operators and their CRT/VDTs, success has been reported when fluorescent luminaires are equipped with $\pm \frac{1}{2}$ in. x $\frac{1}{2}$ in. x $\frac{1}{2}$ in. cell open louver with a specular parabolic section. These louvers go under such trade names as Reflex (Kingston Industries), Para-lite (ALP), Parahex (manufactured under a General Electric license), Parabolic Louver (Contemporary Ceilings), Paravent (Scientific Lighting Products), Paraflex (M & M Plastics), and others. A diffuser sheet, with its rough side facing downward, may be installed above the louver to avoid direct lamp reflections on specular terminal surfaces, including their glossy input keys.

Advantages: The louver brightness is so low that an observer may not be able to tell when the luminaire is operating.

Disadvantages: 1. The shiny surface of the louver ages poorly. If dust, cigarette smoke or other contaminants are present, the louver's optical surfaces quickly become diffuse and smudged in appearance; the low-brightness properties may be lost. We know of no completely satisfactory way to clean the louvers. This expensive luminaire closure may

need replacement rather often. 2. The louvers are not particularly efficient.

Large-cell Parabolic Louvers: Darklites and Uminaires (Edison Price); HVP and 90+ Parabolics (Lightolier), Parabolumes (Columbia), Paralouvers (Day-Bright), O-Parabolics (Mark Lighting), and many more, are trade names for fluorescent equipment based on an open parabolic-section louver whose cell size may be as large as 11 in. square and 8 in. deep. The resulting combination of reflector and louver is made of aluminum sheet, and may have either a specular or spread finish that is silver or "champagne gold" in color.

Advantages: 1. While the apertures are not as dark as their smaller-sized, parabolic louver counterparts, they offer efficiencies approaching 80 percent; a refractor may give 60 percent, a louver 50 percent efficiency. 2. Maintenance may be so improved that a job will only suffer a 15 percent drop in light output at mid-life, as opposed to the 25-40 percent loss predicted for refractor or louver systems.

3. Visual comfort for observers may be 30 percent higher than with standard refractor closures. **Disadvantages:** If observers look straight up, they may see lamp images. However, this is an unusual condition, encountered in elevators and certain decorative installations.

Low-brightness Lenses: Although neither as dark as the small parabolic louver nor as efficient as the large parabolic louver, the Refractive-Grid lens (by Holophane) offers a solid closure with comparatively low brightness. Here, a diffuser sheet (called an interface) may also be installed above the refractor to avoid direct lamp reflections on specular terminal surfaces.

Advantages: 1. Since the surface is mostly within a single plane, it is easier to clean than the small parabolic-section louver cell.

2. Large louvered luminaires may be eight or more inches in recessing depth. A refractive-grid luminaire can be five inches deep; this is useful where recessing depth is restricted.

Disadvantages: 1. We know of only one supplier for this special product.

2. The refractor surface looks like a plate of clear marbles, each about $\frac{1}{2}$ in. in diameter.

continued on page 112



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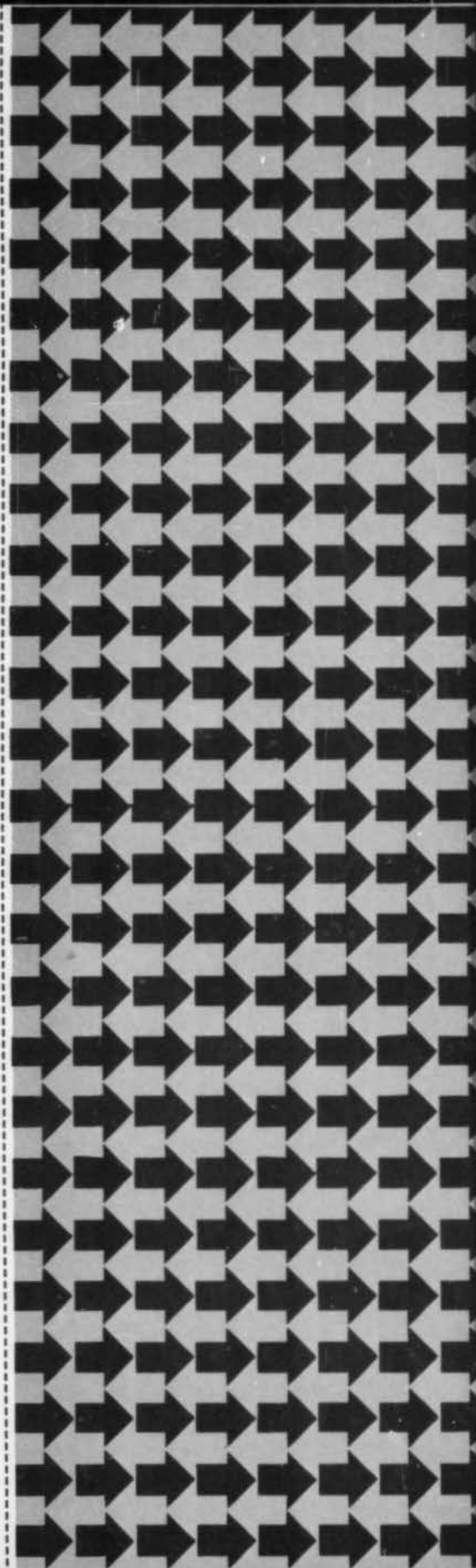
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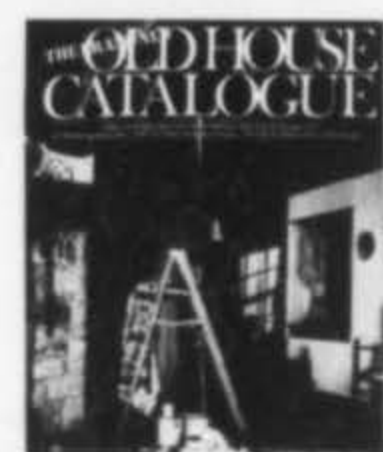
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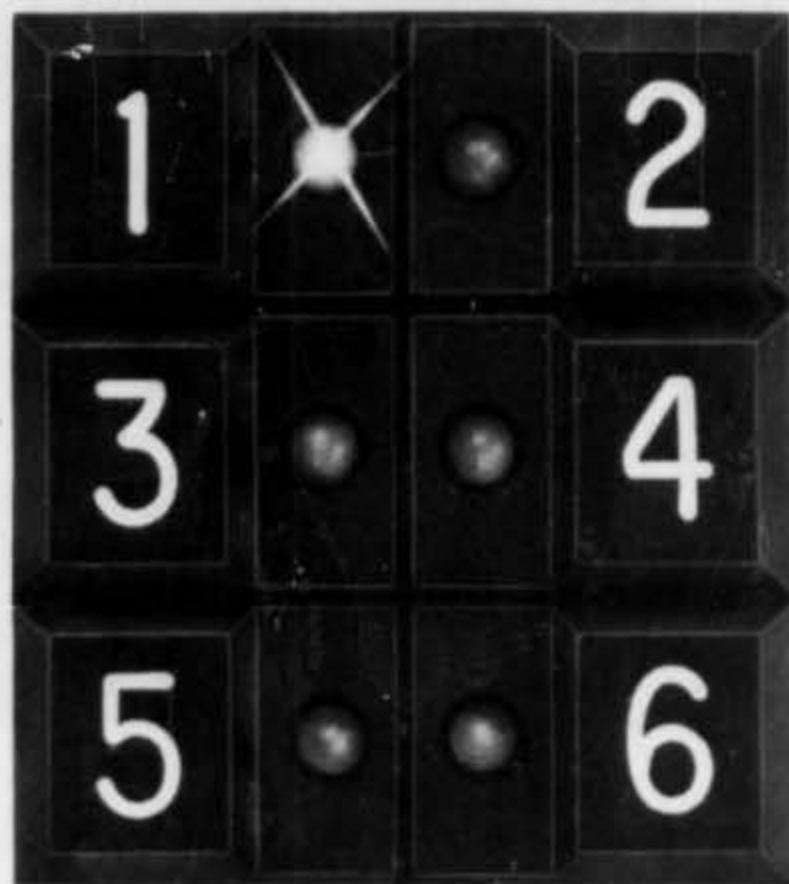


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ILLUMINATIONS *continued*

Designers may feel that this texture is disturbing.

3. Like all refractors, this one is not particularly efficient.

Polarizing Lenses: Multilayer polarizers have been used as the closure in fluorescent luminaires to reduce veiling glare. The idea is to produce results much like those seen through polarized dark glasses. This material produces vertically plane-polarized light at all points in a room from what looks, on casual observation, to be a typical, untinted diffusing panel.

Advantages: Glare is reduced on all specular surfaces.

Disadvantages: 1. Observers report that the luminous panels look "muddied" or unevenly bright.

2. The luminaire aperture is not as dark as with other treatments.

3. Only one company, the Polarized Corporation of America, offers these lenses.

4. They may be costly.

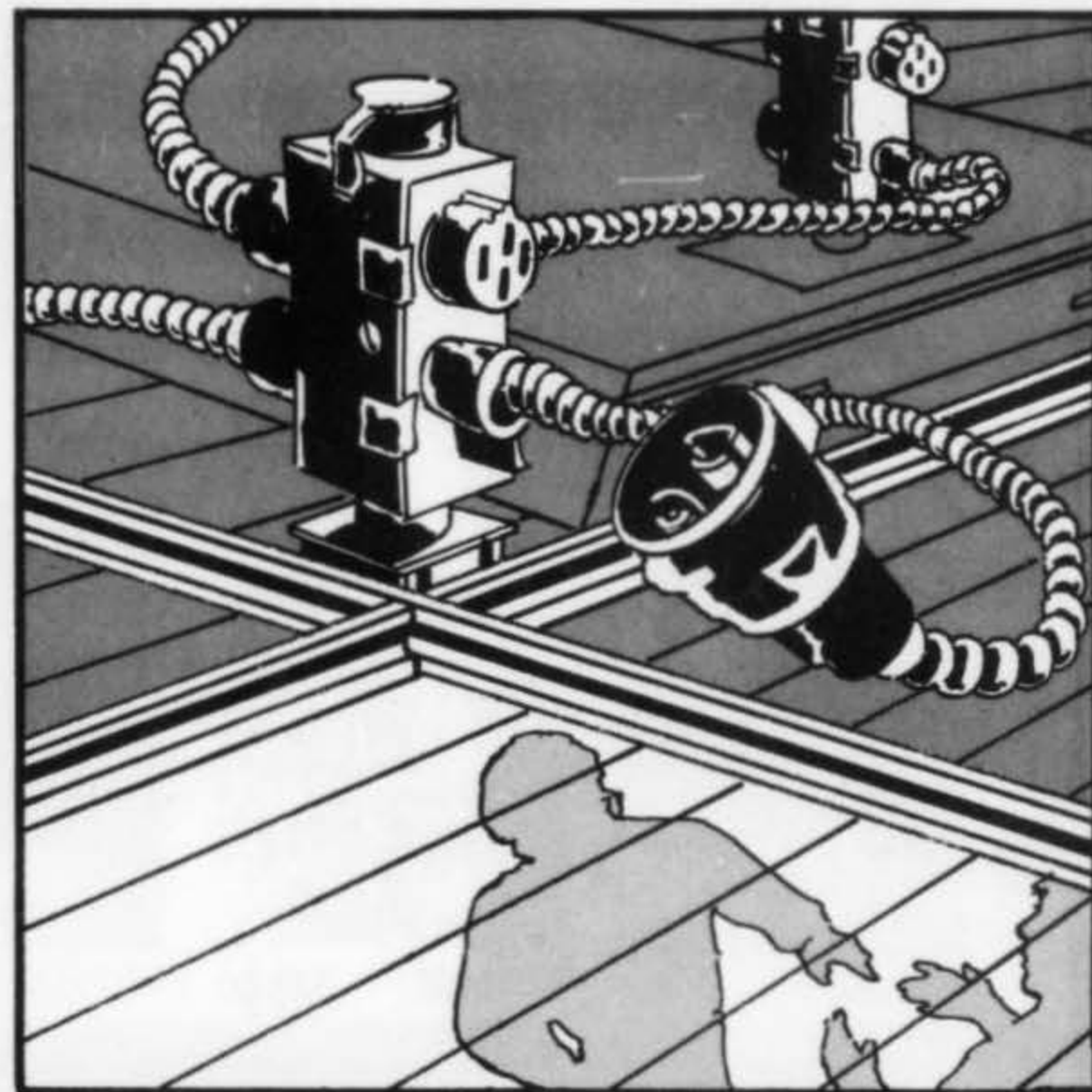
FLEXIBLE WIRING

Wiring systems, allowing ceiling-mounted luminaires to be repositioned out of the offending zones with minimum difficulty, have become particularly important in any area where CRT/VDTs may be regrouped. Surface-mounted track systems are in common use. On the other hand, recessed flexible wiring is relatively new. It operates much like a coordinated system of flexible

extension cords. Luminaires mounted in an access ceiling are not "hard wired;" they are supplied with coded connectors that key them into the correct control circuit and voltage. Interconnecting wiring that would ordinarily be placed in rigid conduit is passed through channels or flexible armored cables, which contain mating connectors. To relocate a luminaire, the connectors are parted, the luminaires moved, and the circuiting re-attached—all without special tools, soldering or changes to the permanent electrical distribution system. Manufacturers include Electro/Connect (DayBrite/Emerson Electric), Reloc (Lithonia Lighting), Architectural Power Systems (American Modular Systems Designs), and Wiremold.

FURTHER INVESTIGATION

We have just scratched the surface of problems that may very well rule future office lighting practices. For this reason, the International Association of Lighting Designers and the New York Academy of Optometry have developed a study group on the lighting and vision parameters proposed for CRT/VDT offices. For further information on this study group, contact: Ms. Joanne Lindsley, IALD Executive Director, c/o Syska & Hennessy, 11 West 42nd Street, New York, NY 10036 (212-921-2300). ■



Flexible wiring

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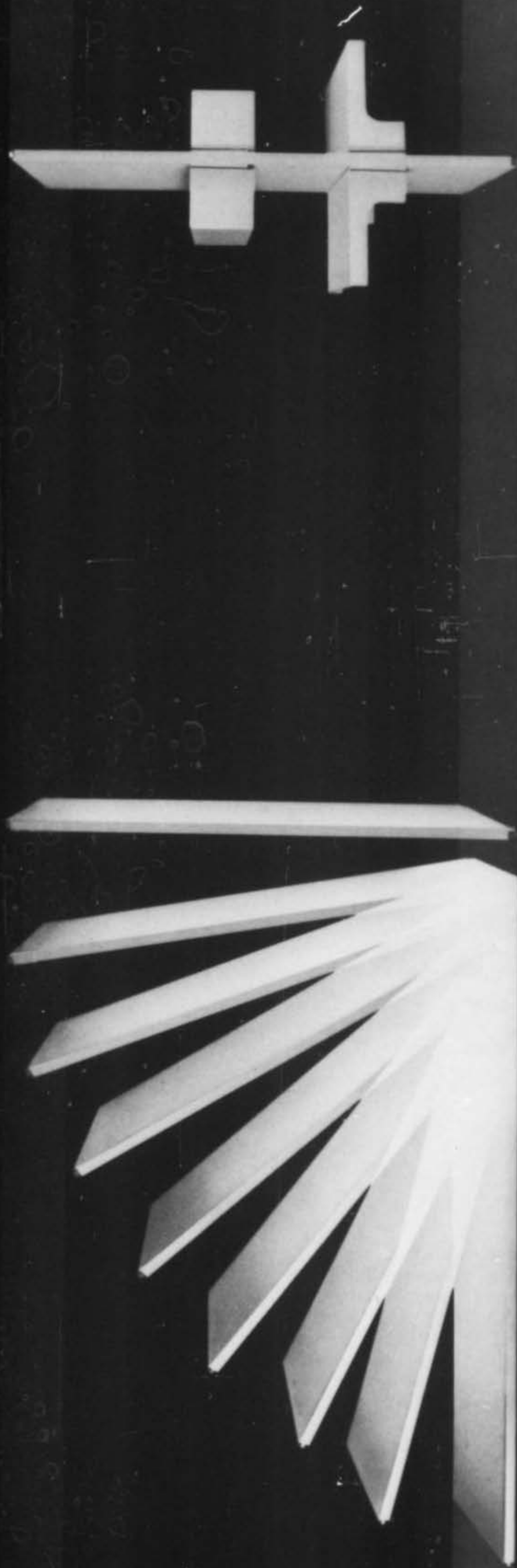
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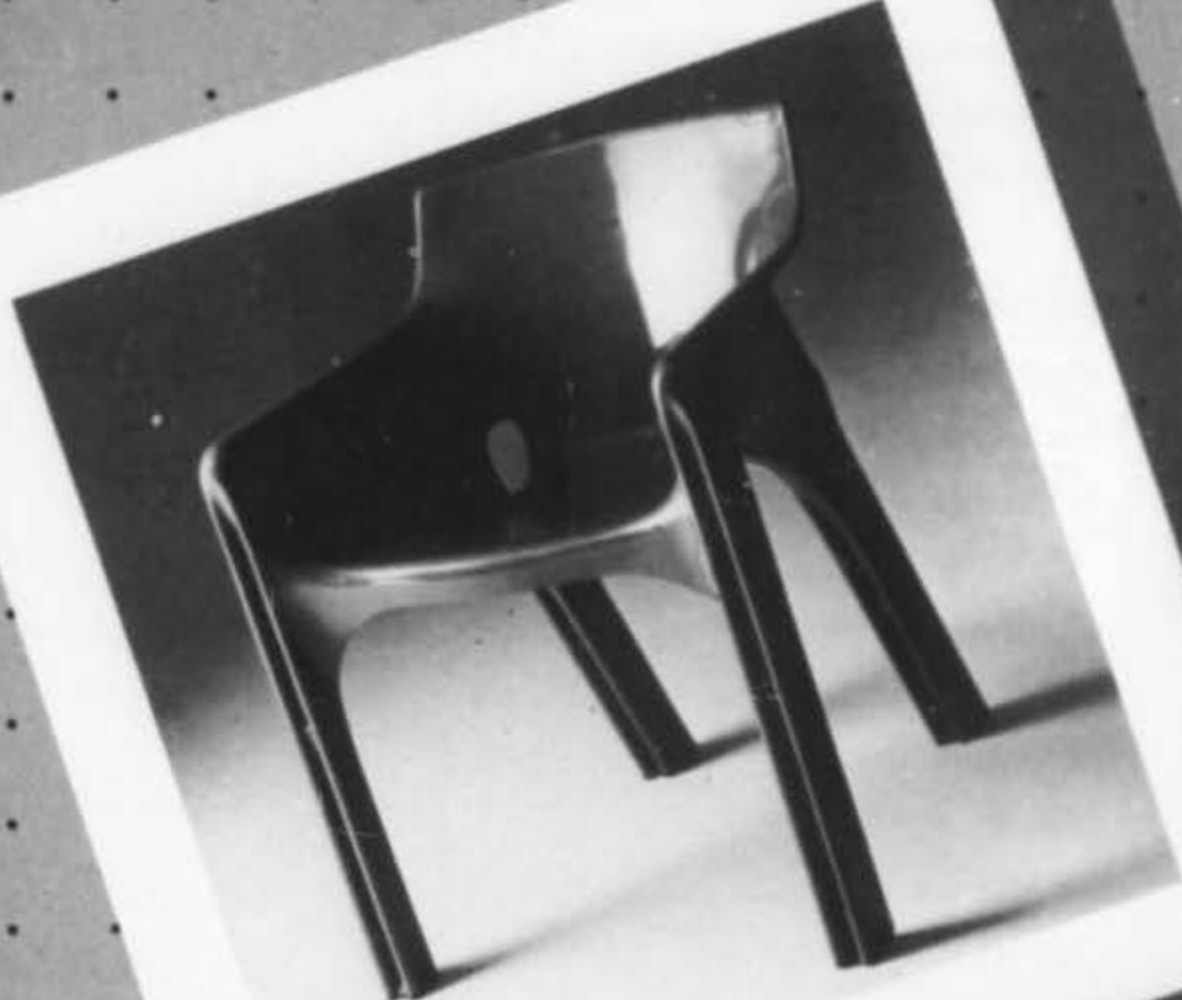
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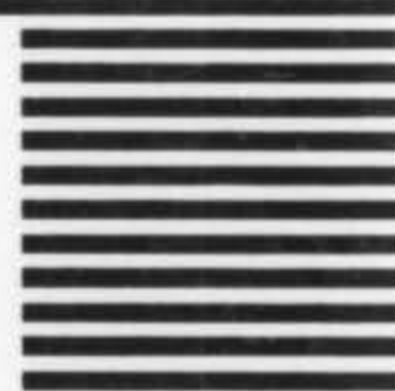
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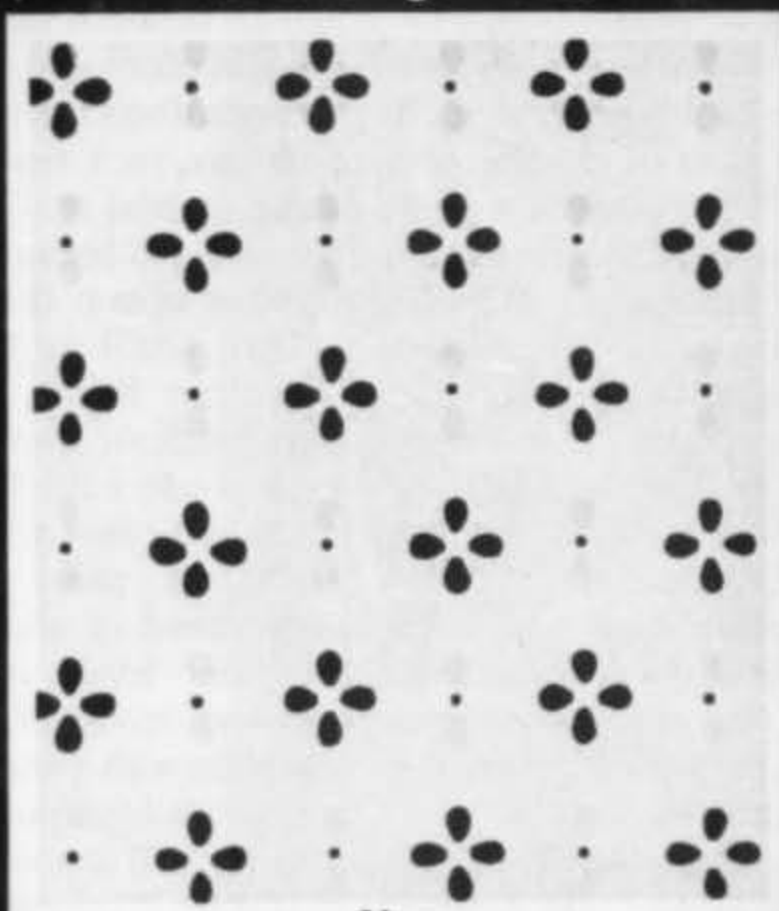
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intercom lines connect every desk today. Telephone lines will be used for everything from electronic mail to picture phones, and by 2001, a majority of the nation's phone lines will be microscopic glass fibers carrying laser beams.

Laser phone lines are practically made for electronic transmissions. Laser lines work by translating the analog electrical impulses received from the telephone handset into digital "on/off" or "0/1" signals, which are sent by blinking lasers and reconstituted at the other end. Conveniently, all electronic processing equipment uses the same digital on/off signal to manipulate, store and transmit information.

Today's telephone equipment ranges from central computers transmitting data over international distances by satellite and modulated laser to small home computers with teletext pads that accept a standard touch-tone handset. Tomorrow's telephone-based equipment will be able to handle any information—including computer breakdowns of color photographs or

printing separations—that can be translated into digital form.

Cable television is going to be a tremendous boon for information handling. Within a few years, a nationwide grid of cablevision wires will reach into every home and office in the country. Unlike the digitalized phone lines, cable television can transmit virtually any sort of printed, electronic or visual matter and control who receives it through rental charges. Electronic magazines and newspapers, electronic lending libraries—the possibilities are endless for commercial exploitation.

Radio and television transmission from point to point or via satellite will be combined with all the other methods. Satellites have been used for television transmission for decades, and individuals can now buy \$5000 private antennas that can receive these international TV transmissions. Using encoded transmissions, private corporations can already beam messages from continent to continent. Twenty years from now, these messages could include picture phones, teletext, electronic mail, and cybernetic machine-to-ma-

chine communications.

In the past year, a whole new industry has cropped up in making sophisticated mobile telephones utilizing silicon chip technology. No bigger than a CB radio, these battery-powered phones are no longer restricted to the back seats of chauffeured limousines. The potential is staggering. Hand-held mobile phone extensions similar to the old walkie-talkie are already on the market. The next step is the mobile picture phone, combining today's miniature portable televisions with the mobile phone. And the step after that is to combine the mobile phone with both a descendant of the pocket calculator and the new hand-held electronic portable typewriter just introduced by Sony.

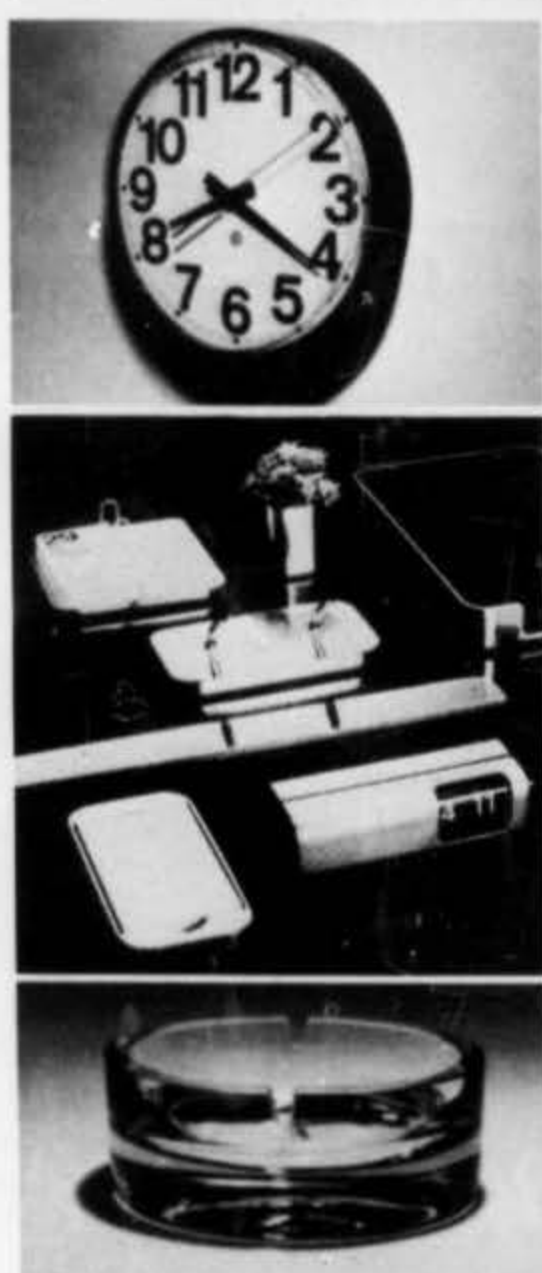
The technology already exists, in other words, to build a portable, full-service computer terminal/word processor with which you would be connected to virtually the entire civilized world, by telephone, television and data processor, and to build it inside a briefcase, at a price nearly everyone can afford.

Where does that leave the office of the future? In the palm of

your hand—literally. If even a fraction of the possibilities come true in the next twenty years, the period from 1980 to 2000 will see more change in the way we live and do business than in any previous century. Most bewildering is that it won't happen gradually. One day, in a few years, you'll wake up and realize everything has changed because of this tidal wave of silicon-chip electronics.

Then you'll lie back on your Hawaiian beach chair, open your briefcase computer terminal and start calculating the roof loadings for that new high-rise in Anchorage, using the data you have stored in your New York computer bank. In seconds, a foot-high model of the building, complete with your alterations—a laser holograph of uncanny realism—will materialize—inside your open briefcase, and in your Alaskan client's briefcase simultaneously. You'll talk to each other on your picture phones at the same time, and the computer will record every word for future reference. You don't believe it? Let me leave you with Computer Axiom Number One: *What's Happening... Has Already Happened.* Think about it. ■

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LETTERS

FACE DOWN!

Here's your crank complaint for the day: Personally, I'm getting quite weary of seeing Beverly Russell's photograph all over the pages of INTERIORS. The April issue contains six separate visages, all grinning ear-to-ear. Never having met Ms. Russell, I can only assume from her smiling countenance that she's a very pleasant person to know. But she does seem to be after some cult of personality! As a potential advertiser, this disturbs me. Do we see this in Interior Design or Contract? No—nor any other book that even pretends to professionalism. This practice smacks strongly of the "interior decorator" syndrome and, for me at least, significantly lowers the status of this otherwise well done magazine.

Constructively yours,

Glenn A. Osborn, Manager
Marketing Communications
Interior Products Operating
Division
Owens-Corning Fiberglas
Toledo, OH

Ed: When I arrived at INTERIORS in February 1979 it was felt that personal exposure was necessary to build a stronger profile for the magazine. Visibility has generated 22 lecture/seminar invitations over the past 28 months, valuable opportunities for spreading the industry message to contract design groups coast to coast. But, touché, I will try to be more faceless in future—and that's for recognizing our otherwise well done magazine! (BR)

ENERGY EXCHANGE

The March article in INTERIORS on the Radisson Plaza hotel very much interested me. We are a design/build HVAC firm and recently completed a similar project in Harvard Square, Cambridge—appropriately called The Atrium. We worked with Architects Sert/Jackson Associates and Cambridge Seven and with Turner Construction. Our system also employed Active and Passive solar assist in conjunction with a water to air heat recovery heat pump system and

employed what we considered to be the latest practicable technology at that time.

We have several good sized projects "on the boards" now, and since we try to keep up with the latest advances, we would very much like to meet with the architect of the Radisson project and visit the installation.

Nick Ferren, President
The Ferren Co., Inc.
Boston, MA

BOUQUETS

Our thanks to Editor-in-Chief Beverly Russell for participating in Condes '81 and for being very optimistic about next year.

We all wish she would come back to Dallas soon for one our markets.

Trammell Crow, Jr., President
Dallas Market Center Company
Dallas, TX

I am delighted with the INTERIORS article (April) on the Prudential Washington Street project. I found the editorial to be accurate, inspired and satisfying.

Others who have been involved in the Prudential project and who have seen the article were equally excited.

Karen Daroff
Daroff Design Inc.
Philadelphia, PA

I'm thrilled with the April issue of INTERIORS featuring Backstreet Restaurant. The write-up is marvelous and Jon Naar's photos are great.

Mark Simon, AIA
Moore Grove Harper
Essex, CT

We are proud and happy with INTERIORS' supplement (February issue) on the Hyatt Regency Dubai. We sincerely thank you for this and are now looking forward to receiving reprints.

Helmut Herfurth,
Area Director Operations,
Hyatt Regency
Dubai

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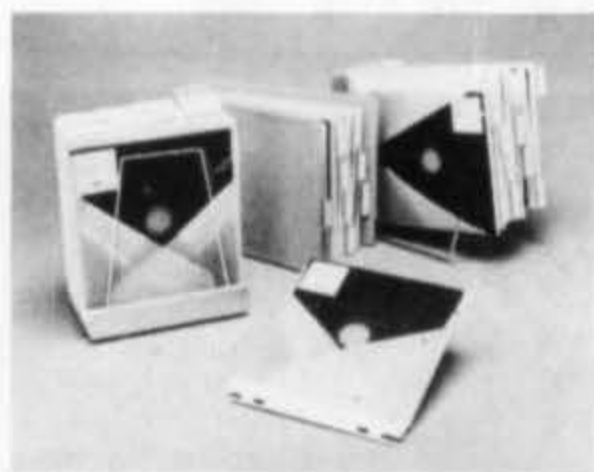
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Desk-top, shelf or drawer disk storage. National.



Pedestal module stores hanging printout. National.



Software storage unit from Sperry Univac.



ThinLine Conserv-a-file stores 34 1 in. binders per tier. Supreme Equipment.



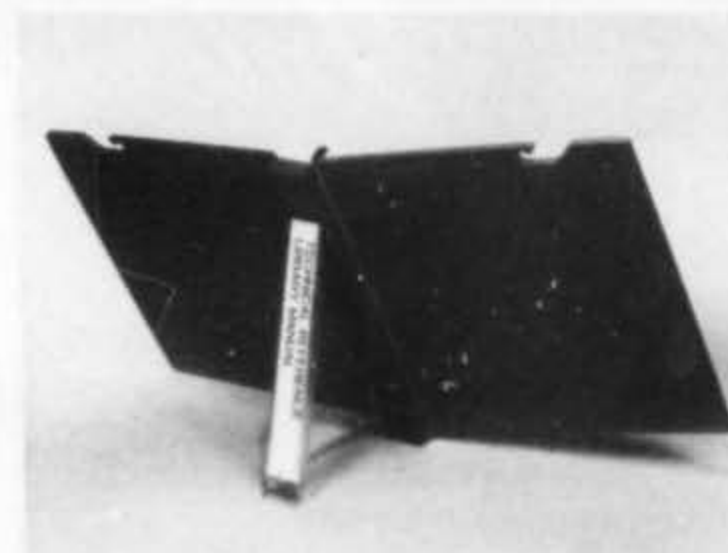
Mega's paper caddy. National.



Workstation with Docu-Mate file storing hanging printout. Along top of page is Optimedia cabinet shown with 12 different customized arrangements. Wright Line.



Filing devices include cartridges, binders, folders and document holders. Wright Line.

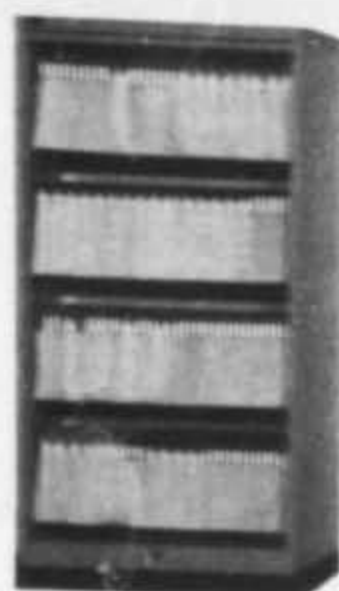


Docu-Mate 3-hole binder with built-in easel for standing and hook for hanging storage. Wright Line.



Detail of hanging binders for DP printout. Wright Line.

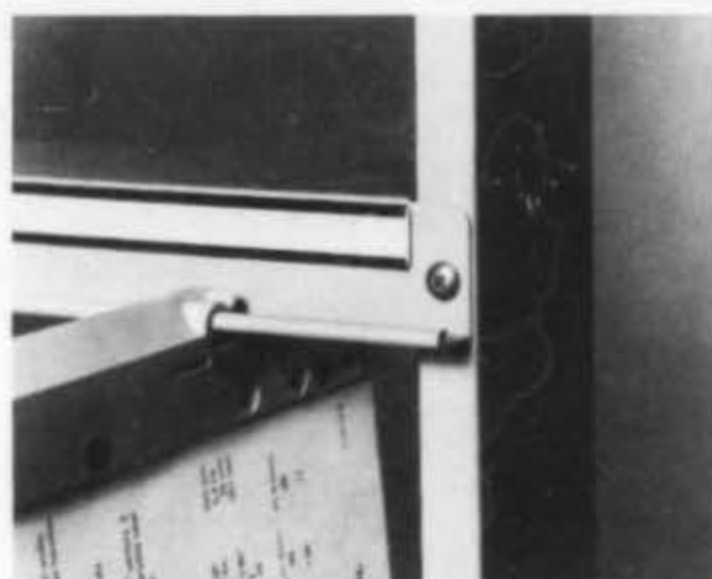
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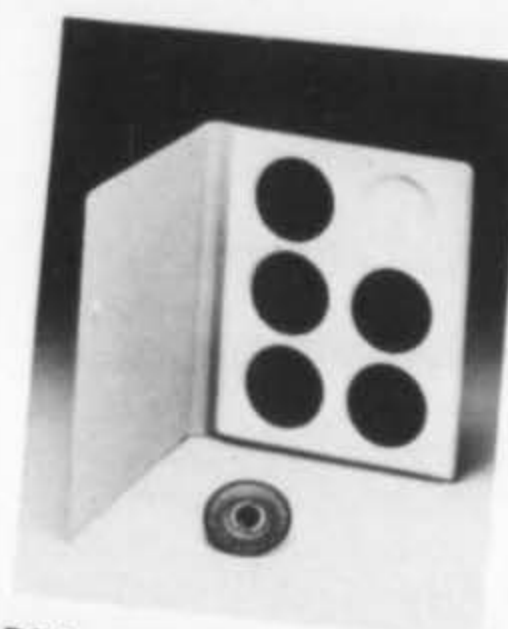
cartridges and printouts are essential software information components with customized details capable of handling all types of data information.



Data Media cabinet adapts to all DP filing. Tab Products.



End hook cartridge. Wright Line.



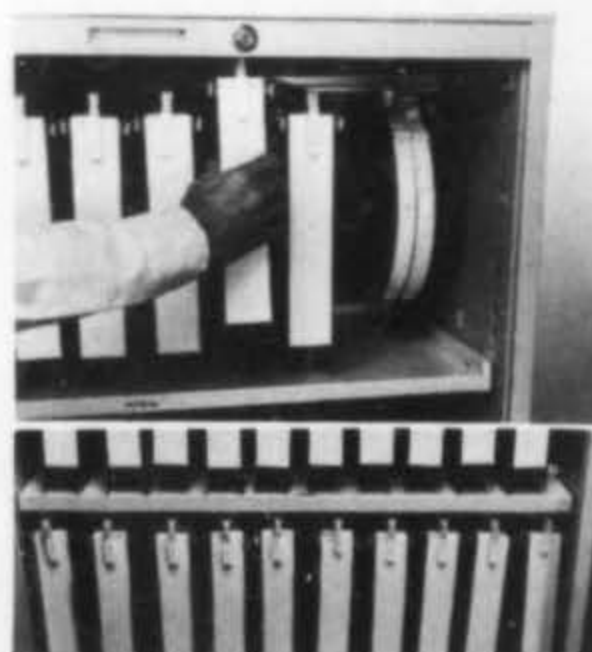
Diskette easel album. National.



Microfiche tray from National.



Several components of Mega's Media Management system from National.



Mega's Media 03 hangers allow single point, slide-in channel or drop filing of printout. National.



Documentation insert on rollout shelf. Wright Line.



Printout drop-filed in Docu-Mate's hanging frame. Wright Line.

National, circle 215. Sperry Univac, circle 216. Supreme Equipment & Systems, circle 217. Tab Products, circle 218. Wright Line, circle 219.

WHO'S WHO

PEOPLE

SPOTLIGHTING SOME DESIGNERS WHOSE WORK APPEARS IN THIS ISSUE



Left to right: Gensler's experienced design team for KPIX offices—Charles Kridler, Louise Elmquist, and Rick Emmons.

Charles Kridler (KPIX, page 68) is a vice-president of Gensler and Associates in San Francisco, where he has been architect, project manager and/or design coordinator for many of their major projects; he also has had extensive experience with many of the firm's programming and space planning projects. **Rick Emmons** (KPIX, page 68) joined Gensler in 1978 and is now an associate. He was project manager for the KPIX building and is project manager for KGO television and radio facilities, as well as for the recent relocation of the Gensler San Francisco offices. **Louise Elmquist** (KPIX, page 68) is also an associate with Gensler, where her experience includes design of several law offices, Wells Fargo Leasing, and Mobil Land Development. She is currently working on the design of facilities for KRON-TV and Club EXXA, both in San Francisco. **Fritz Haller** (Haller System, page 76) initiated research into office environments in conjunction with his modular building systems. Swiss-born, Haller is an architect with Solothurn in Switzerland and a professor at the University of Karlsruhe, West Germany, and at USC. **Robert T. Searl** (Trading Office, page 64) is president of Searl Design Inc. which he founded in 1978 after several years in a design partnership. With Searl Design he has been involved in a broad spectrum of projects, both residential and commercial. One he is now working on is the corporate offices of an oil and ship brokerage firm for which he is designing a

trading system as well as creating interiors. **Mario Armand Zamparelli** (senior advisor, 2020 Office, page 87) trained at Pratt Institute in Brooklyn. Once Howard Hughes' personal design consultant, Zamparelli is an artist/illustrator/innovator who has touched aircraft, corporate offices and images, logos, clothing, and tableware with a talent for futuristic expression. He is also a member of INTERIORS' Editorial Advisory Board. **Robert Epstein** (advisor to 2020, page 87) holds a Ph.D. in Communication Theory and Research from the Annenberg School of Communications, USC. He is at present a communication sociologist with the Bell Telephone Laboratories, studying office behavior and the influence of computer-based office technologies. **Gere Picasso** (advisor 2020, page 87) is staff manager for building design and planning at AT&T where she plans facilities as a consultant to operating companies, while devising and implementing processes for planning advanced facilities with an idea of what offices will look like in the future. **Dan Picasso** (advisor 2020, page 87) is the manager of organizational planning and development, support services for AT&T. He is involved in planning support systems for both current and future environments. In addition, he is working for a Ph.D. in Applied Psychology. **John A. Duncan** (2020 renderings, page 87) trained as an industrial designer at the Art Center College of Design. He worked on NASA and Transbus projects at Raymond Loewy/

William Snaith. Duncan also worked with Norwood Oliver Design Associates as a designer. He has had his own company for 4½ years, specializing in architectural and interior rendering. **Gordon Randall Perry**, IDSA (Howe, page 80) is the head of Gordon Randall Perry Designs, a NYC-based industrial design consulting firm that develops products and support material for a wide range of industries. Winner of many awards, Perry is on the faculty at Pratt. **Hardy Holzman Pfeiffer Associates** (Best Headquarters, page 60) was founded in 1967 after an earlier collaboration among the partners. The firm is renowned for a variety of innovative architecture—ranging from the restoration of Cass Gilbert's St. Louis Art Museum to the tradition-shattering Boettcher Concert Hall in Denver. To add to the many prestigious awards in its history, HHPA is this year's recipient of the AIA Architectural Firm Award. **Silverio Troccoli** and **Jess Berkman** (Garban, page 58) are the design team at the Miller Organization responsible for developing the electronic concept into a working unit. The Miller Organization is a full service firm based in New York which specializes in the coordinated planning and design of commercial facilities.

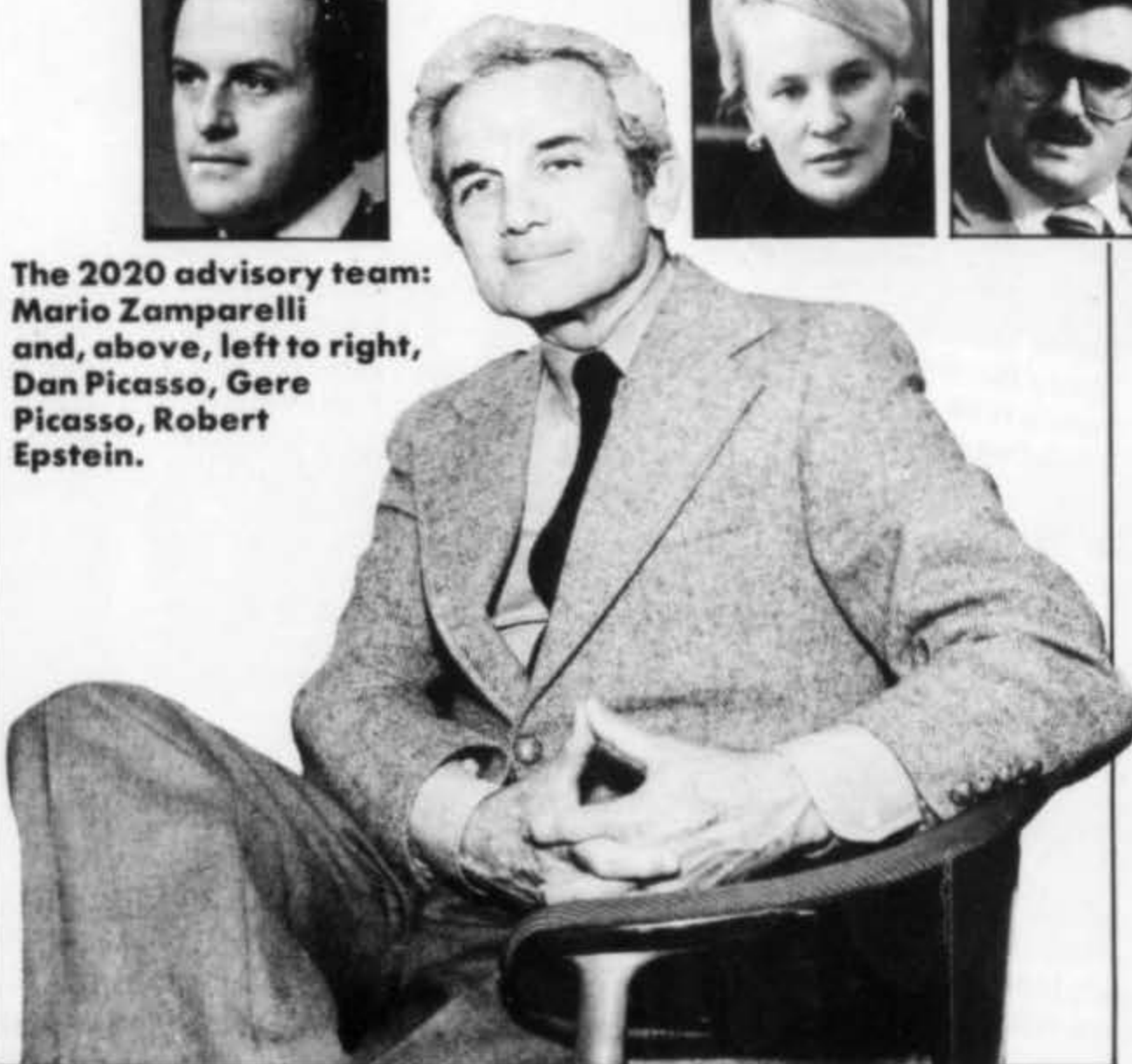


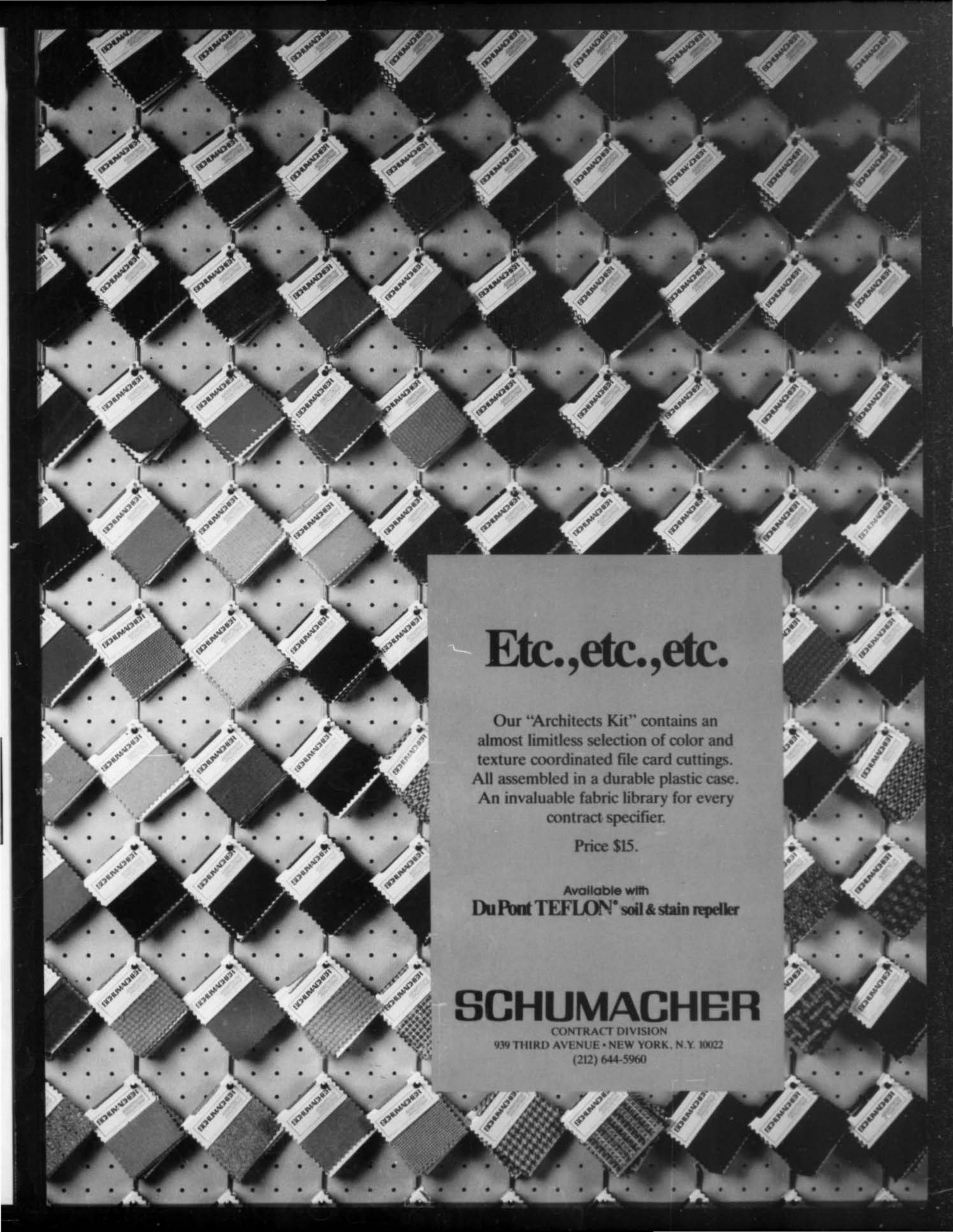
Left to right: Silverio Troccoli and Jess Berkman of the Miller Organization.

William H. Work (Cover) is an architect with Environmental Research and Development Inc. in New York. A graduate of Pratt Institute, he is currently working as a senior project manager and designer involved in the development of computer-aided facilities management system. **Michael Schwarting** (office, page 78) is a partner with Piero Sartogo in Design Collaborative, a New York office that they started two years ago. They are now working on a doctor's office and the design of a public space created by the closing off of a NYC cross street. Schwarting is on the faculty at Columbia University. **Larry Laso** (office, page 78) is head of Larry Laso, Inc. in New York. He trained at the Philadelphia Museum College of Art and is involved in designing china, linen, flatware, glass, and lacquer ware for Mikasa and directing Laso shops in the US, Europe, and Japan.



The 2020 advisory team: Mario Zamparelli and, above, left to right, Dan Picasso, Gere Picasso, Robert Epstein.





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