ARCHITECTURAL LIGHTING

April 1989

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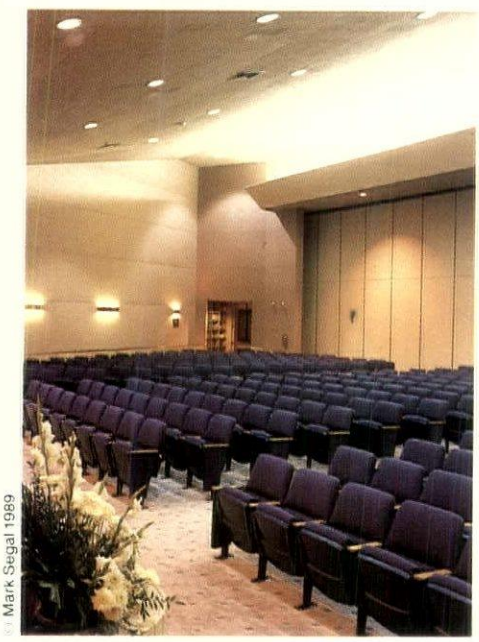

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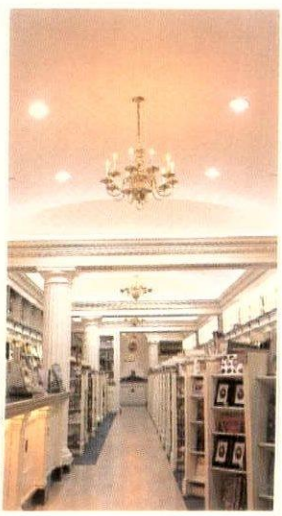

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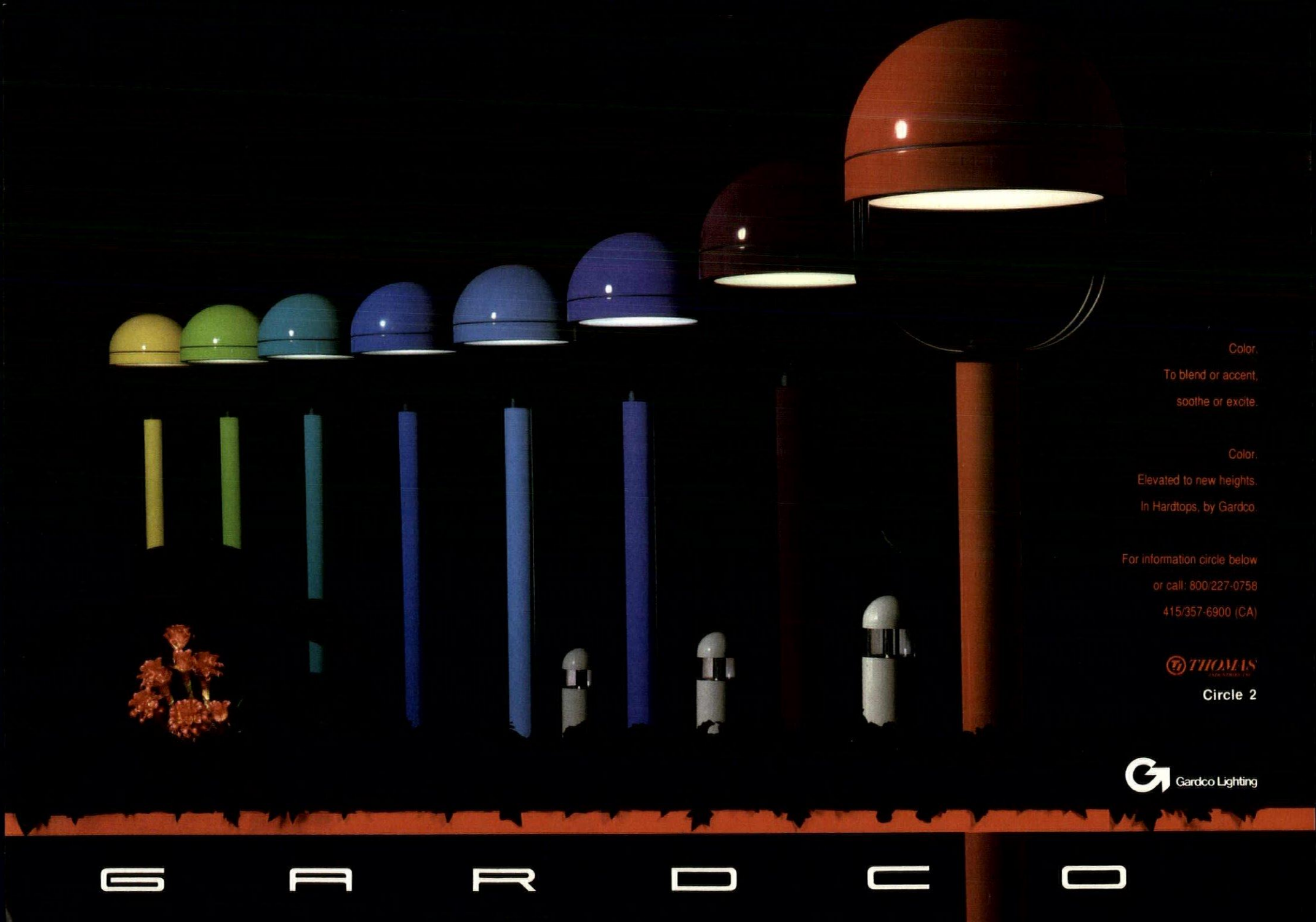
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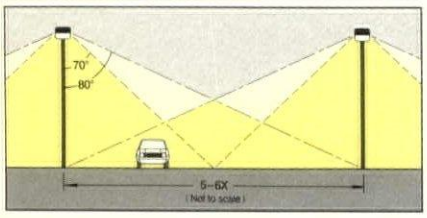

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ARCHITECTURAL LIGHTING

Editorial Advisory Board

Architectural Lighting's Editorial Advisory Board represents various facets of the lighting professions, and members were chosen for their expertise. EAB members may suggest article subjects, review manuscripts or projects, and answer questions as they arise.

PROJECTS AND MANUSCRIPTS: All submissions are handled with reasonable care, but the publishers assume no responsibility for the safety of artwork, photographs, or manuscripts. Every precaution is taken to ensure accuracy, but the publishers cannot accept responsibility for the accuracy of information supplied or for any opinion expressed herein.

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Circle 6

From the Editor

Last June, President Reagan signed the *National Appliance Energy Conservation Amendments of 1988* into law. Among other things, that law establishes fluorescent lamp ballast efficacy factors (BEFs). Ballasts for three popular lamps will be affected: 40-watt rapid starts, 8-foot slimlines, and 8-foot high-output rapid starts. The law, drafted by the Certified Ballast Manufacturers (CBM), the National Electrical Manufacturers Association (NEMA), and several energy conservation and environmental protection groups will supersede a bunch of confusing and sometimes conflicting laws adopted by various state governments over the past several years.

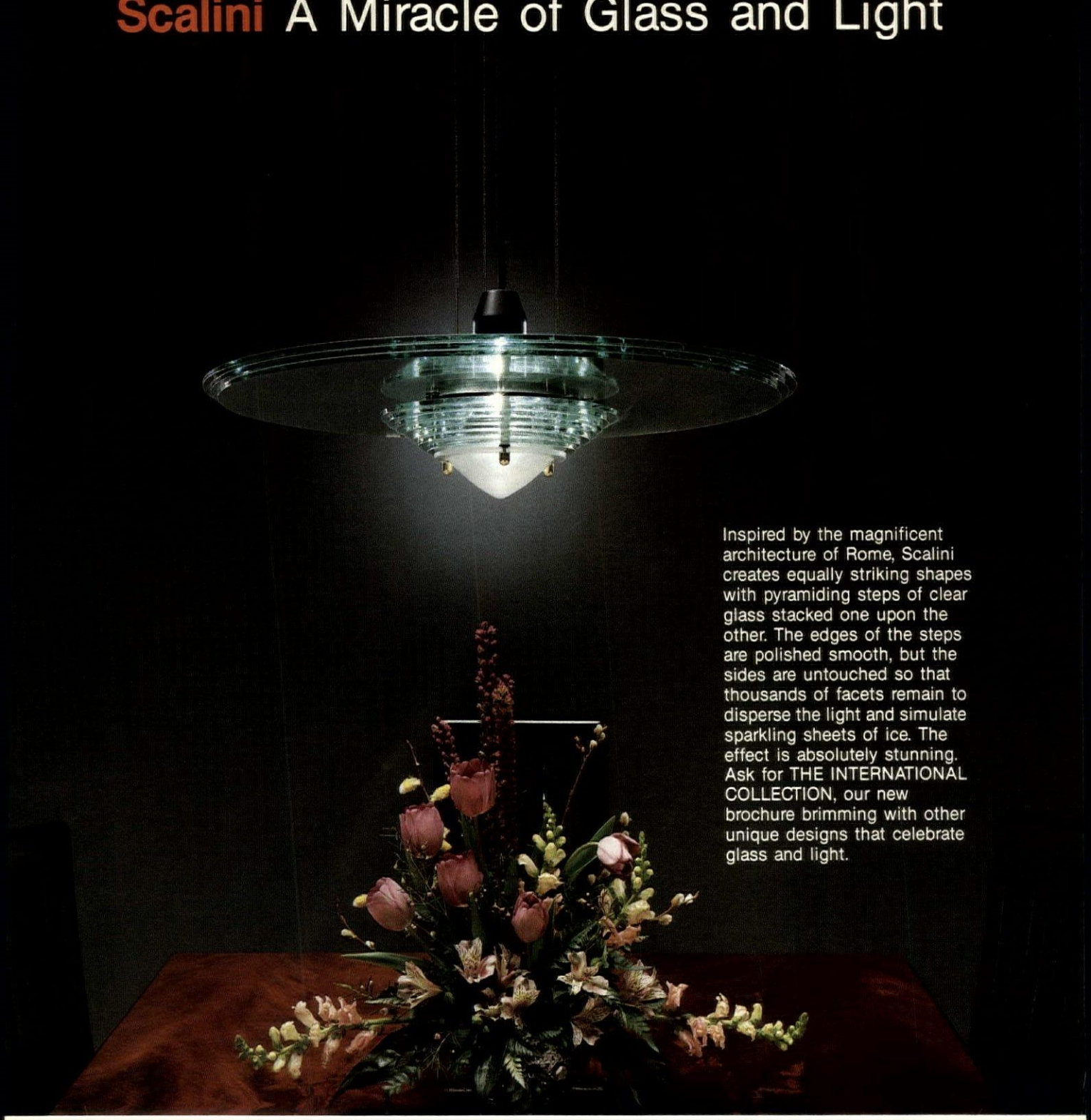
This means that beginning January 1, 1990, ballasts manufactured for the U.S. market must meet strict energy efficiency criteria. Ballasts that do not meet the criteria cannot be sold for nonresidential applications in the U.S. after April 1, 1990. Luminaire manufacturers have one year after that date to use up their stocks of noncomplying ballasts. After April 1, 1991, not only must all ballasts incorporated into their products conform to BEFs established by the law, but the luminaire packaging must be marked to show they conform. Ballasts and packaging that conform will be marked with a capital E inside a circle.

It's hard to say how much energy the ballasts can save because the amount of electricity consumed by a ballast depends upon luminaire design and the environment in which the luminaire is operated. End-user cost is also difficult to calculate, given the economies of purchasing ballasts in quantity (ask anyone who ever spent $14 to replace a ballast in an $8 fluorescent shop light). Still, the amount of energy saved by the new ballasts will pay back the additional outlay many times over the life of the fixture; and these ballasts will last years longer. Besides, in the long run, the price of the "circle E" ballasts will drop dramatically once the industry gets into full-scale production.

It is not unusual for an industry to resist changing the status quo. The automobile industry, for example, has bucked mandatory fuel economy, safety, and emissions standards for years. Our industry can be proud of the fact that two of its organizations, the CBM and NEMA, helped to draft this important new legislation.

Charles Linn, AIA

Scalini A Miracle of Glass and Light



Inspired by the magnificent architecture of Rome, Scalini creates equally striking shapes with pyramiding steps of clear glass stacked one upon the other. The edges of the steps are polished smooth, but the sides are untouched so that thousands of facets remain to disperse the light and simulate sparkling sheets of ice. The effect is absolutely stunning. Ask for THE INTERNATIONAL COLLECTION, our new brochure brimming with other unique designs that celebrate glass and light.

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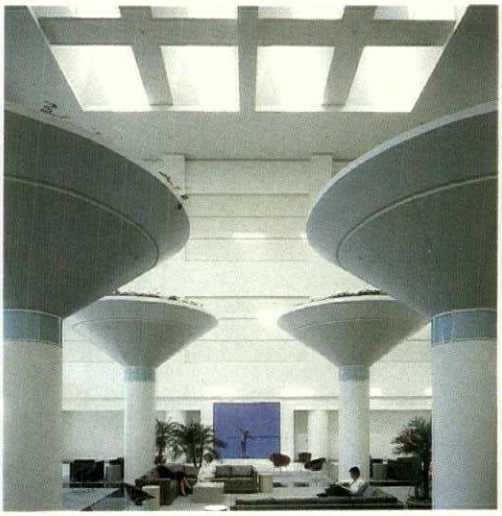
LIGHTING

April 1989
Volume 3, Number 4



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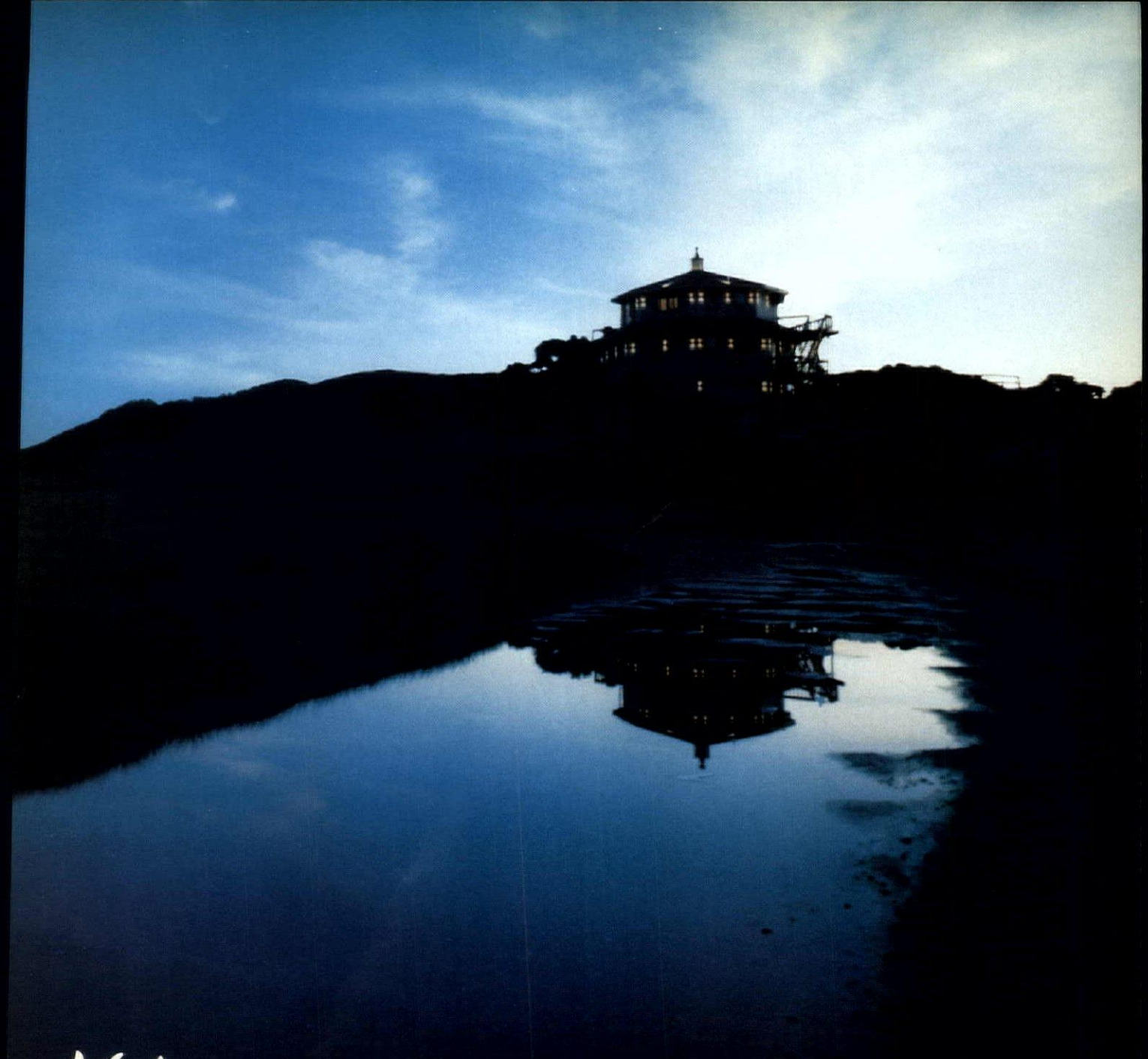

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Letters

A sconce by any other name — please

I generally enjoy your magazine; however, one thing about it annoys me. There seems to be a tendency in your magazine to ascribe the term "wall sconce" to every other wall-mounted light fixture mentioned. My dictionary describes sconce as "a bracket candlestick or group of candlesticks secured to a wall." Logically, then, an electric light fixture, to rate the term *sconce,* should look like a candlestick. To preface the word *sconce* with *wall* is obviously redundant. Further, most of the light fixtures that cavalierly embrace the term *wall sconce* are actually *bracket* fixtures, or *wall brackets,* if you must be redundant. That is the traditional term for them. It appears in the literature of organizations of national scope, such as the IES.

Please do what you can to encourage proper English and proper terminology.

Charles Ryan, Electrical Engineer
St. Albans, Vermont

An interesting quest

This letter sent me to the two latest IES Lighting Handbooks *and our unabridged* Webster's Third New International Dictionary. *An interesting quest. Much to my surprise* neither *"sconce" nor "bracket" appears in the index or the glossary of either IES book. In Webster, in addition to several definitions involving candles, a sconce is defined as "a protecting screen or cover"; one definition of a bracket is "a fixture projecting from a wall or column (as for holding a lamp)." From a purely literary point of view, perhaps neither word alone is an accurate descriptor of those wall-mounted luminaires consisting of a screened fixture that provides uplight, downlight, or a combination of up- and downlight. Still, so many designers and manufacturers are comfortably at home with their use of the word "sconce" that we will no doubt continue to use it in the magazine. We do try to excise all redundancies, but we've yet to reach perfection.*
Jane Ganter, Associate Editor

Sexism in article title

I was dismayed to see the following head ["Today's fixtures: Good-looking and can cook too"] in your December issue. It does seem as though the more we work toward a nonsexist society, the more sexism pops up in strange places. Women for so long were judged on looks plus homemakership that I guess I shouldn't be surprised, but this certainly spoiled my day and made me wonder why on earth I enjoy receiving your magazine. Try better in the future?
M. Susan Ubbelohde, Associate Professor
School of Architecture and Landscape Architecture
University of Minnesota, Minneapolis

She's right

Professor Ubbelohde is right. We should have changed the author's title, which was insensitive. Monitoring English usage is part of my responsibility, and I goofed. Architectural Lighting *has a real commitment to inclusive language.*
Jane Ganter, Associate Editor

The editors welcome your letters, which help to keep us responsive to our readers' needs and interests. Please address your letters to Charles Linn, AIA, Editor, Architectural Lighting, *859 Willamette Street, P.O. Box 10460, Eugene, OR 97440. All letters are subject to editing.*

Lighting Clinic

Light as a destructive force

Recent articles in your magazine have addressed the issue of protecting artworks from light, particularly ultraviolet light. Just what does light do to art besides let us see it?
N. Erickson

Exhibiting art under the wrong conditions can lead to its slow destruction. Visible and near-visible radiation attack certain materials and begin a process of chemical deterioration called *photodegradation.* But, because light is necessary for viewing, curators can only mitigate, not eliminate, radiation effects by controlling sources.

Art objects have different levels of sensitivity to light. Metal, glass, ceramic, and stone can safely stand in full sunlight. But organic materials — textiles, paper, and wood, for example — become faded or discolored with exposure to light. Ironically, protective coatings applied over paint may darken when exposed, obscuring the image beneath. Coloring agents may be more or less colorfast: many pigments, dyes, and inks are aptly called *fugitive.* Watercolors are notoriously susceptible to fading. Oil paintings are less fragile, although curators disagree about how much light they can tolerate.

The temperature and humidity in a gallery affect the rate of photodegradation. Heat speeds up chemical reactions, so high-wattage incandescent sources can be dangerous near art. Fortunately for lighting designers, the root cause of the photo-degradation problem — light itself — can be controlled in several ways. Three factors determine the amount of damage light will cause: intensity, exposure time, and spectral distribution. A simple, direct relationship exists between the first two. The damage potential in footcandle-hours (or the corresponding metric unit, lux-hours) equals intensity multiplied by exposure. In principle, exposure to 1000 footcandles for one hour will do as much damage as exposure to 1 footcandle for 1000 hours. Many art objects are exhibited on condition that they receive only certain "doses" of light. Maximum footcandle levels are a shorthand way of taking into consideration the expected exposure times.

The role of spectral distribution is somewhat more complex. In general, the shorter the wavelength, the greater the damage potential. Blue light is more potent than red light. Ultraviolet light, the most potent of all, is invisible and contributes nothing to the viewing experience. Therefore, it should always be filtered out when photodegradation is a concern.
Gareth Fenley, Senior Assistant Editor

Send your lighting design questions to Architectural Lighting. *When we can track down a lighting designer who will share expertise about the problem, we'll publish it in the Lighting Clinic. Address your letters to Lighting Clinic Editor,* Architectural Lighting, *859 Willamette Street, P.O. Box 10460, Eugene, OR 97440.*

A case of mistaken identity

We apologize for an editing error in the March issue that caused some embarrassment for our landscape lighting columnist, Janet Lennox Moyer, ASID. She was erroneously identified as a landscape architect. In fact, Jan Moyer specializes in designing garden lighting.

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Circle 13

Projected graphics make cafeteria entry a kinetic experience

Project: The Energizer
Client: Enron Corp
Location: Houston, Texas
Architect and Interior Designer: Gensler and Associates/Architects
Lighting Designer: Steven Bliss, Theo Kondos Associates, Inc.
Electrical Engineer: I.A. Naman + Associates, Inc.
Photos: Nick Merrick, Hedrich-Blessing

The Energizer is not just any corporate cafeteria. At least, that's the message of a splashy graphic display created with projected light at the cafeteria entrance. A companywide competition generated the unusual name for the employee eatery at Enron Corp, a Fortune 500 corporation. Designers at Gensler and Associates took the concept and created a memorable identity for the space.

Lead designer Charles Kifer drew on the talents of Gensler's graphics department to create the Energizer logo. Lighting consultant Steven Bliss of Theo Kondos Associates provided design and technical assistance with the theatrical framing projectors selected for the job.

"Our graphics department worked with the ideas of electrical impulses and vitality that are suggested by the name Energizer," Kifer explains. "We decided to write the word on the wall with small, conventional block letters, then write it in bigger, abstracted form with projected light." The projected images are the product of high-intensity theater lights with interchangeable cutout templates, called *gobos*. By switching gobos, Enron can change colors and shapes, so the versatile display can bring seasonal messages to employees.

In the food service area, the design team kept overall light levels low. Downlights focus on diamond-shaped black granite rosettes in the flooring, guiding employees into the cafeteria and toward the serving areas. Perforated wood panels partially block south-facing windows along the back wall, obscuring an unattractive view of another building's back side. Semicircular red hoops, highlighted with exposed white neon, set apart the major areas of the scatter-system servery.

In the dining area, with its typical 9-foot ceiling, lighting helps to give an illusion of greater height. Simple millwork coves, painted light blue and lit by concealed fluorescent strips, provide visual and textural interest.

"We wanted the dining area to read as a kind of outdoor space," says Kifer. "Originally, the coves were to have trellises, but that got too cluttered. Ultimately, we chose to use a light blue painted surface." A wall of north-facing windows reveals an inviting view of a landscaped park.

Columns along the window wall are each lit with simple but attractive red sconces. "That fits in with the overall color concept: splashes of primary color in the right places," Kifer explains. Red aniline-dyed wood chairs, for example, are scattered throughout the dining area.

On the way out, refueled employees again pass the framing projectors and the entry graphic. "When we installed the equipment, we worried that people walking through that area would get light in their eyes," says Kifer. "But that's not a problem. In fact, we've observed that people enjoy casting a shadow as they walk by. They become a part of the message; it creates a kinetic feeling. We consider it a very effective use of lighting."

—Gareth Fenley

For product information, turn to page 62 and see Manufacturers.

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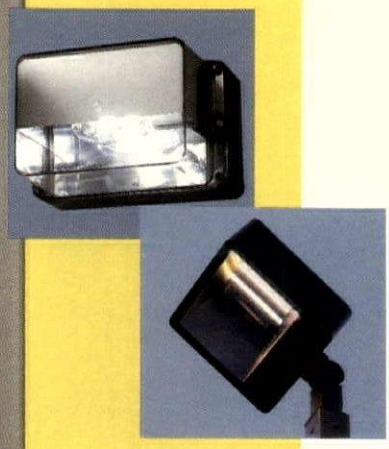

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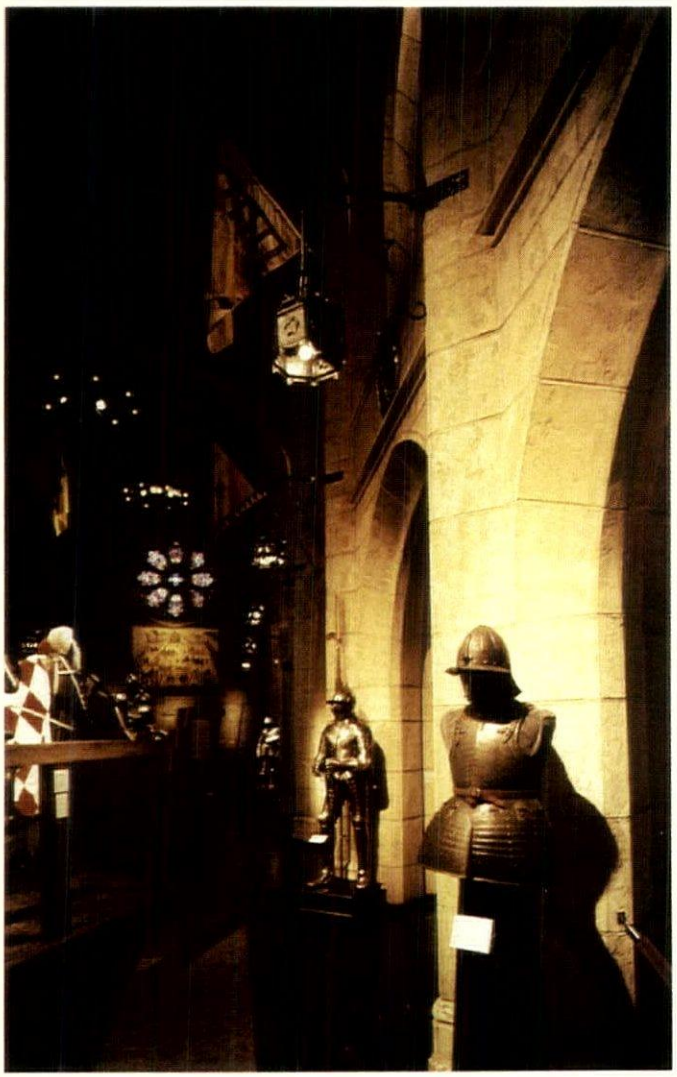
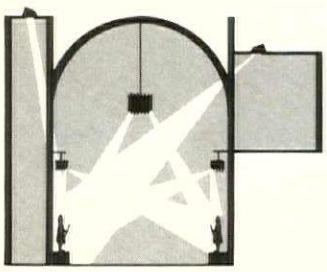
Hidden incandescents simulate sunlight in windowless museum





Project: The Great Hall of the Higgins Armory Museum
Location: Worcester, Massachusetts
Lighting Designer: Alan P. Symonds, Ripman Lighting Consultants
Architect: Moore-Heder Architects; Allen Moore, principal in charge
Electrical Contractor: Dave Rennie Electric Inc.

Lighting designer Alan Symonds called on his 20-year background in the theater to light the Higgins Armory Museum, which houses a private collection of historical armor, weaponry, and memorabilia. He chose a lighting strategy similar to one he has used for Shakespeare's plays: hidden incandescent sources to simulate sunlight streaming through the south window of a Gothic building.

"Before we called in Alan," says museum director John Stevens, "the room was just daylit, not museum-quality lighting. The objects lacked focus and had a bleached-out look in the summer. His work has really made the most of all the collection's surfaces and colors." The curators boarded up the windows to block the unenchanting view of the surrounding industrial section of Worcester. This, of course, also blocked the daylight. The curators also insisted on incandescent sources to protect the collection from photodegradation.

"The overall design concept I had," Symonds says, "was an image of a Gothic cathedral with light streaming down through the windows." Theater-style lighting ports are cut into the ceilings of side vaults. From those ports, PAR 64s simulate midafternoon sunlight.

The lamps that provide ambient light also cast shadows on the north wall of the building. Fill light was also needed, Symonds notes, "because otherwise many objects would be in shadow. So other light sources are used to replicate inside north light. I tried to keep the accent lighting as much as possible all derived from the concept of sunlighting, modified to fit the actual practice."

MR16s are in converted sconces dating from the original construction. To accent objects lost in the strong shadows, Symonds used narrow beam spots. The lamps are angled toward the objects they light and away from visitors to prevent annoying glare.

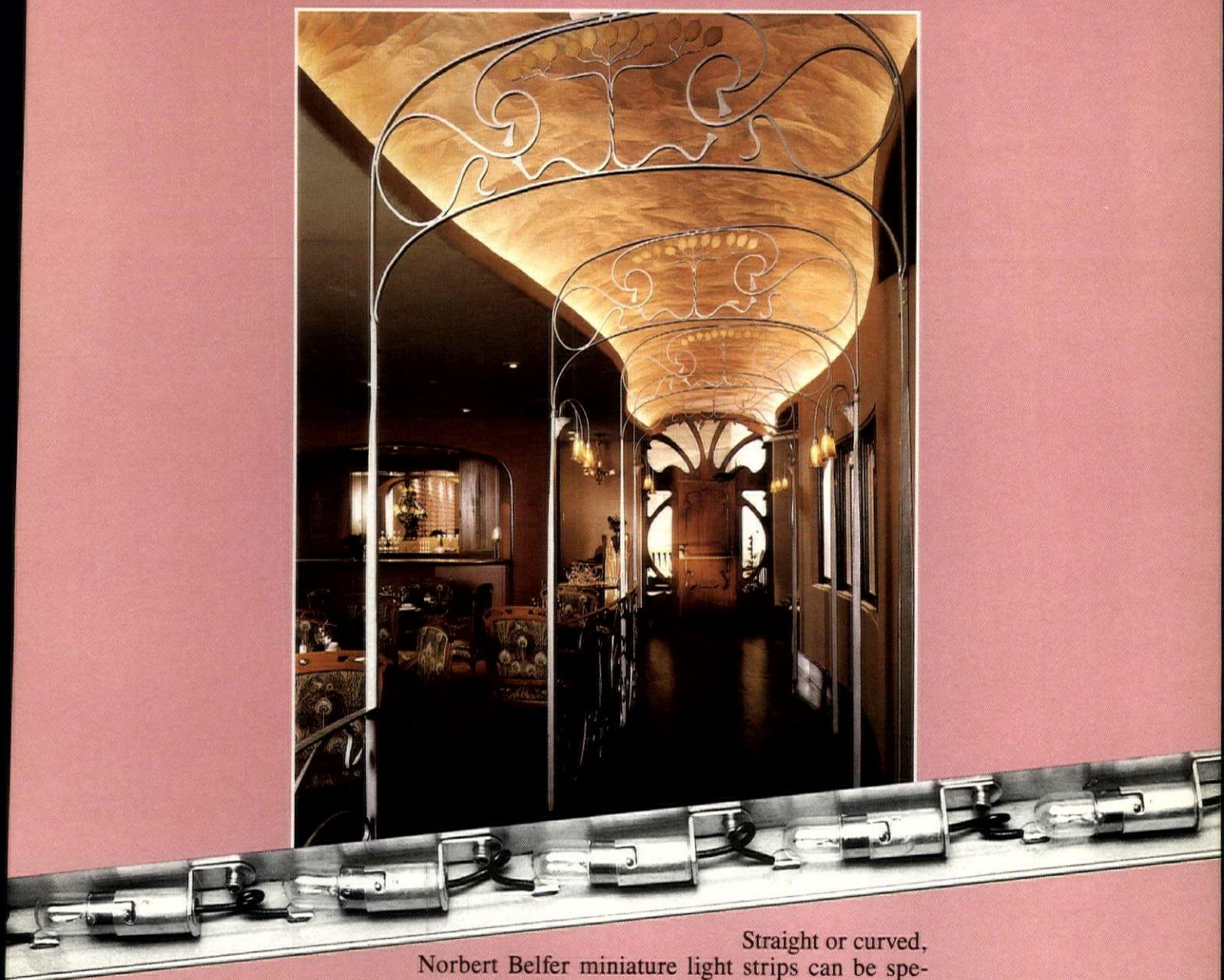
Custom chandeliers, 35 feet off the ground, serve as platforms for fixtures with dim exposed lamps. Symonds treated these lamps with magenta and amber lamp dip, a shellac that withstands their heat and causes the filaments to resemble, from a distance, a flame source. "I deliberately did an uneven coating, by hand," Symonds says, "so that with normal head movement you see the filaments through slightly different colors." The lamps are operated at reduced voltage, and Symonds made plenty of spares.

A computer control system is preset for various occasions, including special functions, cleanups, group tours, general display, and a 10-minute sound and light show produced by Eric Cornwell, a theater colleague of Symonds. "To keep lamp life and energy conservation under control, and to protect the art from too much exposure, we never run the lamps at full capacity. The computer permits exact adjustment and balancing of lighting levels," Symonds says.

—Mike Heffley

For product information, turn to page 62 and see Manufacturers.

Seldom seen, Always noticed.



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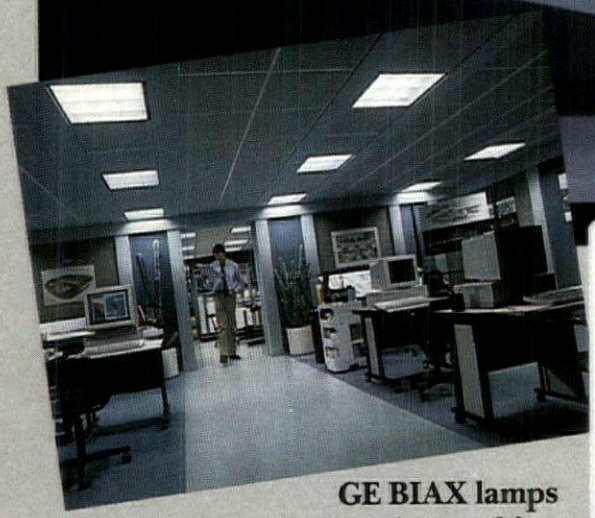

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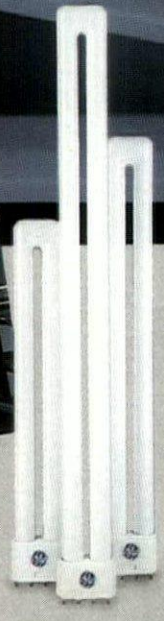

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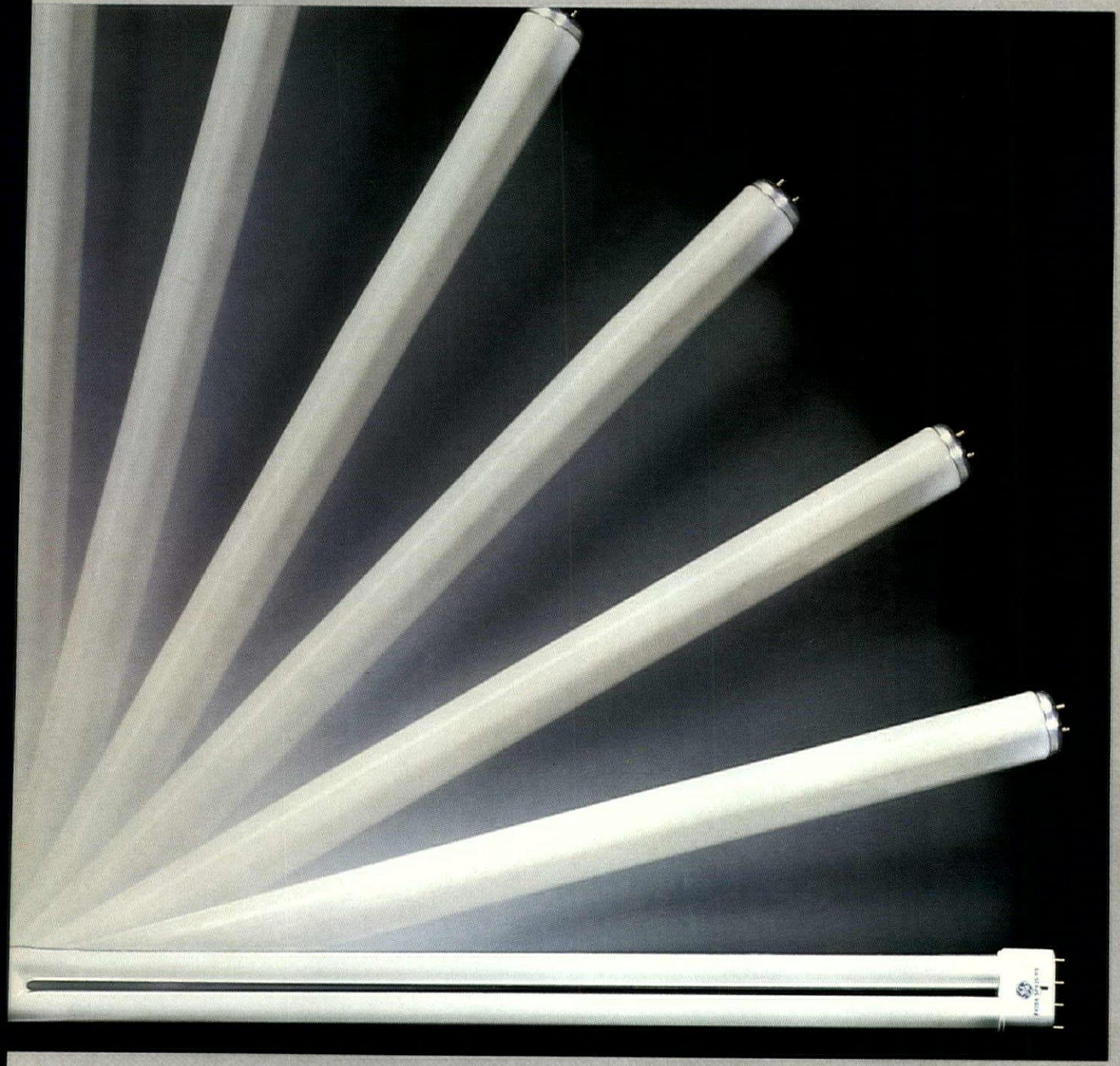

cents can, the lighting you design will make the environment and the people who work in it more attractive.

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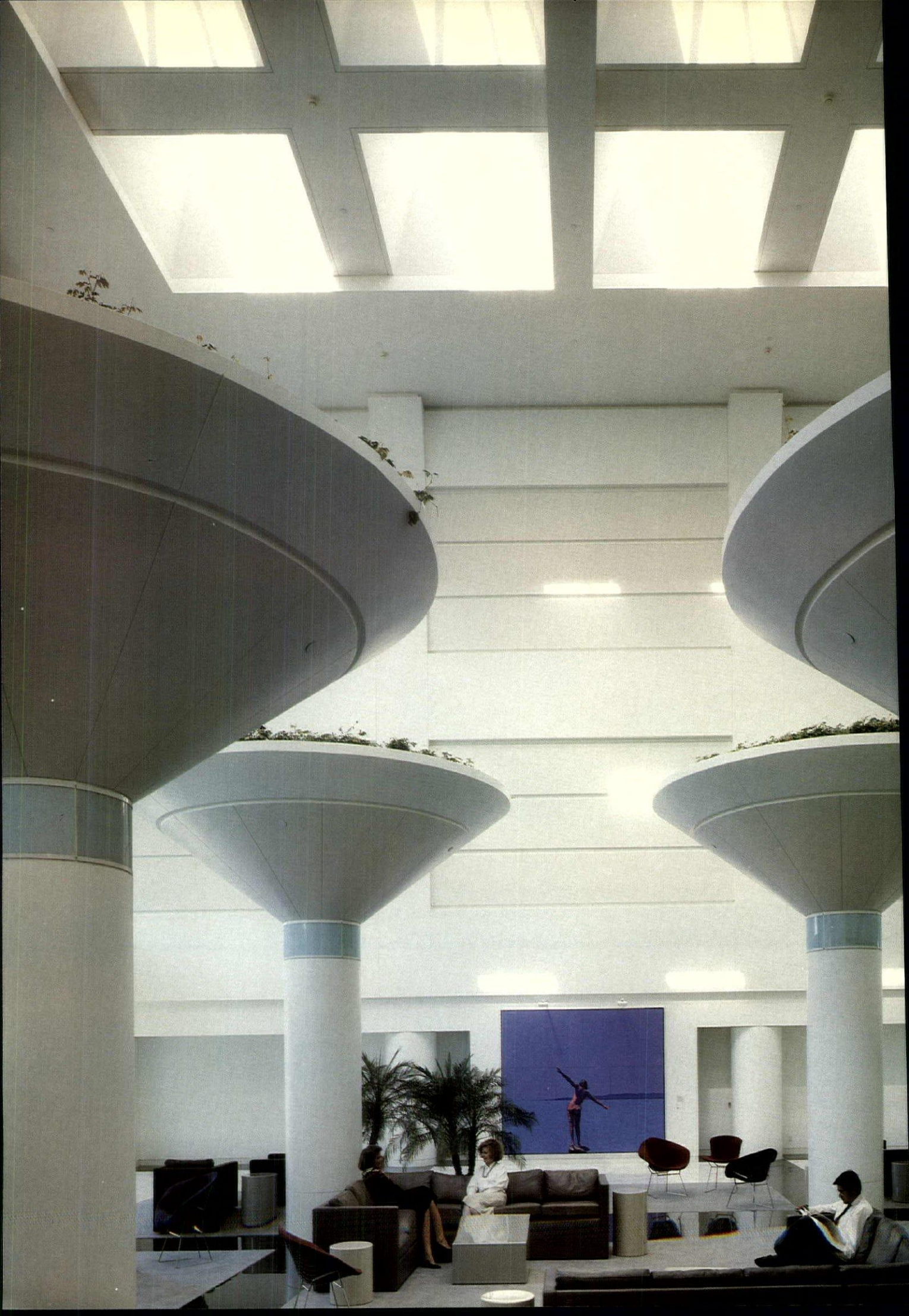

RON STARR

Circulation corridor (left) separates windows from workstations for universal access to the views. The large fixed overhangs protect against the sun when it is high in the sky. When it is lower (at sunset, in winter), computer-controlled miniblinds protect against the sun's glare and heat. The miniblinds automatically drop down to intercept this direct sun, diffusing and distributing the daylight. The large, continuous windows are visible throughout the open-plan offices. They provide a sense of space and of connection to the outside. Without the overhangs and the daylight savings, these expansive glass areas would not have been justifiable.

maximum view and openness without sacrificing the sun control. The blinds were chosen over fabric drapes for several reasons. Traditional drapes occupy 20 percent of the facade even when they are fully drawn back, effectively defeating the continuous views. Furthermore, they tend to be extremely opaque, which blocks daylight, or to be too open, which admits millions of pinpoints of sunlight. Although the miniblind slats are opaque and almost completely block direct sun penetration, they reflect and diffuse the direct sunlight up to the ceiling surface, and so contribute substantially to daylighting even while they protect the building from direct sun glare.

To minimize the hours when the blinds block the views, they are motorized and computer controlled. This also avoids the problems of individually controlled blinds in a large, open-plan office. It's an awesome experience to watch 360 feet of miniblinds descend together in perfect synchronization.

The resulting design is highly integrated. Says MacMillan, "Most people have no idea that it's doing what it does. It's a rather complicated aesthetic benefit, but it's definitely there. Everybody understood that when they started seeing the kind of windows that we were able to provide. If you use a lot of glass and don't use it for daylighting, you just create a problem from an energy point of view. Here was a way to turn what could have been a disadvantage into an advantage."

Lighting Design

The lighting system was influenced both by the daylighting systems and by the office partitioning. The modular partitions are up to 5 feet high and are closely spaced. In order to minimize shadowing, the ceiling lights are also closely spaced, each covering only 52 square feet. This led to two-lamp luminaires, in order to avoid excessive concentrations of brightness and shadow. The system was designed for a maintained ambient light level of 50 footcandles, in line with IES recommendations for general office tasks. The resulting lighting power density averages 1.2 watts per square foot, a remarkably low number even in today's era of energy codes.

The selected luminaires are 1 foot by 4 feet, recessed into the ceiling system. The two lamps are mounted one above the other. The fixtures have polished aluminum reflectors and low-brightness, deep-cell parabolic louvers. The result is a low-glare, high cutoff angle luminaire with a 60 percent overall efficiency. The lamps are energy-saving, 34-watt lamps, tandem wired between fixtures. Both supply and return air are handled through the fixtures, eliminating air grilles.

The other reason for the over-under lamp configuration was the daylighting control system. The controls first reduce electric lighting by turning off the upper lamp. Even though light output from the luminaire is reduced by 50 percent, the luminaire still appears bright. "One of the things about larger fixtures is that one of the cells goes blank when you start switching down, and it looks like something's wrong with it," observed MacMillan. The over-under configuration helps to head off occupant complaints.

Daylighting Controls

The daylighting control system operates by step switching the lamps. There are four intermediate steps between full-on and full-off. Two photocell control zones run parallel to the windows. The first zone is 15 feet deep from the windows, and the second zone extends to 30 feet. At 25 footcandles of daylighting, the upper lamps in the two rows of luminaires closest to the windows switch off. At 50 footcandles, the second lamp in each of these luminaires goes off. As more daylight enters the space and light levels increase farther back in the space, first the upper and then the lower lamps of the third and fourth rows of luminaires switch off. Each photocell is flush mounted in the ceiling and measures the light levels over a broad area below. The signals from the photocells are transmitted to the lighting control computer, which then switches the lamps off.

The daylighting controls work as a natural extension of the computer-controlled lighting controls for the building. The system operates and schedules the lighting under central

computer control; it eliminates hundreds of individual wall switches for the acres of open-plan offices and avoids the problems of having dozens of individuals manage the lighting. Most normal lighting control decisions are programmed into the central computer. Individual area override is possible when, for example, workers stay late. By placing a telephone call to the control computer and punching in a control code with the telephone buttons, authorized users can turn lights in their areas on or off.

This same computer system controls the motorized mini-blinds for sun control. The blinds stay up until two conditions are met. First, a photocell on the roof has to decide that the sun is shining. Second, the sun position schedule in the control computer has to determine that, for a given orientation, the sun is low enough in the sky to penetrate below the window overhang. This prevents the blinds from dropping down on cloudy days, or when the sun is high in the sky. As with the lighting controls, authorized personnel can instruct the computer to lower the blinds by phoning in a control code.

Some problems with photosensor calibration have reduced the effectiveness of lighting controls and have lowered the blinds more often than necessary. These problems are being addressed by the building operators. One of the nice things about the centralized computer control system is that recalibration and fine-tuning of the daylighting controls can be done centrally, without having to modify hardware throughout the offices.

Atrium Design

Two atrium spaces in the building received special daylighting design attention. Located at the two elbows of intersecting wings near the center of the complex, each space is three stories high. Circulation space surrounds the atrium at each balcony level. Tall windows look out under the huge arch that connects the buildings. Supplementing the daylight from the windows are skylights. Daylighting provides the primary illumination to each atrium. At night, the electric lighting is subdued and low-key, focused primarily on the seating areas at floor level.

In designing the windows and skylights for the atrium spaces, the architects balanced two conflicting needs. The glazing had to be large enough to lend a feeling of cheerful openness and to keep the indoor plants healthy. At the same time, the glazing area had to minimize unnecessary solar heat gain to prevent a huge energy penalty. Model studies and computer analysis by the daylighting consultants resulted in a compromise in glazing area. The resulting space is bright and pleasant even on dreary days, yet is not overflooded with light on sunny days.

In many ways, Pacific Bell's daylighting system is a textbook example for daylit offices. How likely is it to be adapted to other office buildings? Most of the people involved in the project expect it to be used less often than one might think. For one thing, many office building owners will balk at the extra costs of the overhangs, despite their demonstrated energy payback. Although they work well in this architectural context, they are undoubtedly more expensive than a flat curtain wall system. Owners also hesitate to use the computer-controlled motorized blinds, which are a necessary adjunct to the overhangs. Although they have proven to be remarkably trouble-free in operation, they do require a relatively sophisticated building management staff to keep them functioning properly. The lighting control system is similar. Its complexity extends well beyond that of a typical office lighting system, although the building operators at Pacific Bell have mastered its operation and appreciate the flexibility and control it gives them to intelligently operate the thousands of lights in their charge.

Good daylighting design requires commitment by an informed owner, skill and study by talented designers and consultants, and thorough execution of an integrated design. The result in this case is a spectacular and beautifully functioning building. ■

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RON STARR

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1989 Lighting World International features seminars, exhibits

Lighting World International is sponsored by the International Association of Lighting Designers, the Illuminating Engineering Society of North America, and the New York Section of the Illuminating Engineering Society.

In keeping with its "Spotlight on Innovation" theme, 1989's Lighting World International will highlight the trends and applications that shape today's lighting design. Educational sessions feature leading architects, interior designers, lighting designers, contractors, and engineers. Nearly 500 domestic and foreign exhibitors will display and demonstrate the latest in architectural lighting fixtures and accessories.

The 1989 exposition and conference takes place May 10, 11, and 12 at the Jacob Javits Convention Center in New York City. Show managers report that 35 percent more European and Asian manufacturers are exhibiting than took part in the 1988 show in Los Angeles, and they expect buyers and specifiers from more than 50 countries.

A special product preview session will showcase the most innovative products from this year's exhibitors. A social evening at the South Street Seaport rounds out the first day. A schedule of events and speakers follows.

Wednesday, May 10

Opening breakfast and keynote address (9:00–10:30 a.m. Speaker: Charles Gwathmey, FAIA, Gwathmey Siegel & Associates). Internationally known architect Charles Gwathmey, FAIA, will speak on the relationship of light and lighting to architecture at the opening breakfast. "Light and space have been eternally inseparable in architecture," Gwathmey says. "Lighting, with light and space, is the necessary enrichment that allows for controlled variation and complementary articulation. The more sophisticated and the more integrated the mutually supportive disciplines become, the closer essential harmony is realized."

Gwathmey received his Master of Architecture degree from Yale; he also studied in Paris as a Fulbright scholar. Among his numerous awards and honors are the Arnold W. Brunner Prize from the American Academy Institute of Arts and Letters, the Medal of Honor from the New York chapter of the American Institute of Architects, and, most recently, the Yale University Alumni Arts Award from the School of Architecture. Over the years, he has been a visiting professor at numerous schools of architecture, including those at Yale and Harvard.

Gwathmey has been a principal of the architectural firm Gwathmey Siegel & Associates since its founding in 1968. Among the firm's best-known projects are the renovations and additions to the Guggenheim Museum in New York, the Whig Hall Student Center at Princeton University, and the Busch Reisinger/Fine Arts Library addition to Harvard University's Fogg Museum.

Using color as light (11:00 a.m.–12:00 noon. Speaker: Peter Barna, president, Light & Space Associates, Ltd.). At this session designers can learn to see colors and finishes as light and learn how to use that knowledge in selecting light source color, lighting quality, and fixtures for such applications as fine arts, architecture, and interior design projects.

Preview of products — The latest in lighting (1:00–2:30 p.m. Presenters: Mitchell Kohn, architectural lighting consultant; Andre Tammes, Lighting Design Partnership). A 90-minute survey features the latest fixtures, sources, and controls chosen by a panel of IALD and IES experts from the newest lighting products on the show floor.

Lighting the contemporary workplace (3:00–4:00 p.m. Speaker: Kenneth G. Loach, lighting consultant-specialist, H.H. Angus & Associates, Ltd.). This session on office lighting emphasizes areas that have video display terminals (VDTs). Topics include task-ambient, total indirect, and direct-localized general lighting; furniture placement for areas with VDTs; current and proposed VDT legislation; energy conservation; and controls.

An evening at the South Street Seaport (7:30–10:30 p.m.). A popular New York City attraction, the South Street Seaport is a historic district of restored 19th-century buildings. Show participants can wander among more than 100 shops, a maritime museum, and other entertainment opportunities. Then, at the Ocean Reef Grille, Lighting World International hosts a buffet dinner, dancing, and an open bar.

Thursday, May 11

Cost-effective lighting: A guide for owners and designers (9:00–10:00 a.m. Speaker: Helen Diemer, director of lighting services, Flack + Kurtz Consulting Engineers). Designers can plan lighting systems that maximize a building's marketability and minimize its operating costs. This session will address flexibility, light quantity, sources, fixtures, ballasts, controls, lamp life, and maintenance schedules.

Assessing luminaire quality (10:15–11:15 a.m. Speaker: Denison W. Schweppe, Jr., Schweppe Lighting Design, Inc.). With thousands of luminaires on the market, architects and interior designers need to know how to evaluate quality and performance. This session will give designers some basic tools for assessing luminaires. Topics include some ways that cost and quality are related, how to evaluate materials used to make luminaires, and how to compare photometrics. Other subjects include details and craftsmanship, what UL means, and how to determine whether a substitution is equal.

From specification to construction: A panel discussion on the players and the process (11:30 a.m.–1:00 p.m. Panelists: James Beyer, The Stubbins Associates; Gersil Newmark Kay, Morris Newmark & Bro., Inc.; Stephen Lees, Horton Lees Lighting Design, Inc.; Mary Tatum, Lightolier; Larry Vail, Summers Electric Co. Moderator: Charles Linn, *Architectural Lighting*). Panelists will offer a variety of opinions on the factors and priorities that guide architects, interior designers, lighting designers, distributors, manufacturers' representatives, and contractors as a lighting design progresses from concept to installation.

Putting together a lighting design: A workshop by the Designers Lighting Forum of New York, Inc. (2:00–5:00 p.m. Panelists: Raymond Grenald, FAIA, senior partner, Grenald Associates, Ltd.; Christopher H. Ripman, president, Ripman Lighting Consultants; Lesley Wheel, Wheel Gersztoff Friedman Shankar Associates, Inc.; Charles E. Pavarini, III, design partner, Pavarini-Cole Interiors, Inc. Moderator: Connie Jensen, principal, Lighting Professionals, Inc.). During this three-hour workshop on contract and residential lighting projects, participants will work with three leading lighting consultants to create preliminary lighting designs for a multi-use conference room, a skylit marble bath, and a soaring residential interior. Panelists will discuss their own solutions.

Lighting: A business opportunity for electrical contractors (2:30–3:30 p.m. Speaker: William T. Hirons, lighting specialist, Guild Electric, Ltd.). The speaker will discuss what makes lighting more than just an item in the electrical bid package and what contractors should know about lighting in order to develop it into a profitable area of new business.

Computer lighting analysis and simulation: A survey for lighting designers and engineers (3:45–4:45 p.m. Speaker: David Lord, PhD, professor of architecture, California Polytechnic State University, San Luis Obispo). The session will cover various software applications, including point-by-point and lumen-method microcomputer programs (see sidebar).

Friday, May 12

Project management: A workshop by the American Society of Interior Designers (9:00 a.m.–12:00 noon, continues 1:30–3:30 p.m. Speaker: David A. Rinderer, vice president, Practice Management Associates, Ltd.). This five-hour workshop will examine the responsibilities of project management and the project manager's role in marketing and profit making. Participants will learn how to plan for multiple priorities, how to bring a project in on time and on budget, how to prepare a project plan, and what technical responsibilities a project manager should assume. Completion of the workshop entitles participants to 0.6 CEU from the ASID.

Basic lighting controls: A guide for architects and interior designers (9:00–10:00 a.m. Speaker: Stephen Margules, lighting design director, Cosentini Associates). This session will provide an overview of basic control system concepts and components, including daylight balancing, occupancy sensors, automated time controls, and local dimming and switching. This information will help architects and interior designers communicate design concepts more clearly to lighting consultants and engineers on their project design teams.

Lighting for historic preservation projects (10:15–11:15 a.m. Speakers: Paul Marantz, principal, Jules Fisher & Paul Marantz, Inc.; Malcolm Holzman, partner, Hardy Holzman Pfeiffer Associates). A lighting designer and an architect will present various philosophies of lighting historic buildings, focusing on this issue: Should the lighting be historically accurate or adapted for modern eyes? Speakers will present examples from their own work, discussing how they arrived at solutions and what they considered along the way.

Using theatrical techniques in architectural lighting (1:00–2:00 p.m. Speaker: Mark Kruger, principal, Kruger Associates, Inc.). Theatrical lighting techniques are being applied to such spaces as restaurants, nightclubs, and even to corporate image areas. The speaker will discuss how theatrical techniques of angle, color, texture in light, and controls can be transferred to the architectural arena.

Retail lighting as an aid to sales (2:15–3:15 p.m. Speaker: Stefan Graf, Illuminart). At this session, participants can learn how to use lighting to attract attention, generate excitement, motivate customers, and stimulate sales. Lighting systems and accessories to be discussed include louvers, lenses, filters, pattern projectors, and specialty control devices applicable to retail projects. ■

The program is subject to change; be sure to pick up a copy of the final version when you arrive at Lighting World. For further information, contact National Expositions Company, Inc., 15 West 39 Street, New York, NY 10018, (212) 391-9111.

Columnist to present Lighting World seminar

Computer imaging may one day replace hand renderings and cardboard models for lighting design. Already lighting designers and architects can calculate, create, and compare designs using lighting design software.

"Computer imaging provides a preview of a finished design. With a desk-top computer and a drafting package, a designer can visualize a space and eliminate surprises," says Software Reviews columnist David Lord.

Lord, an architecture professor at California Polytechnic (San Luis Obispo), will present "Computer Lighting Analysis and Simulation: A Survey for Lighting Designers and Engineers" during Lighting World International. "Designers have access to more and more computer-aided design and drafting packages," he says, "including third-party lighting design software that works with architectural design programs like VersaCAD, CADAM, CADKey, and AutoCAD."

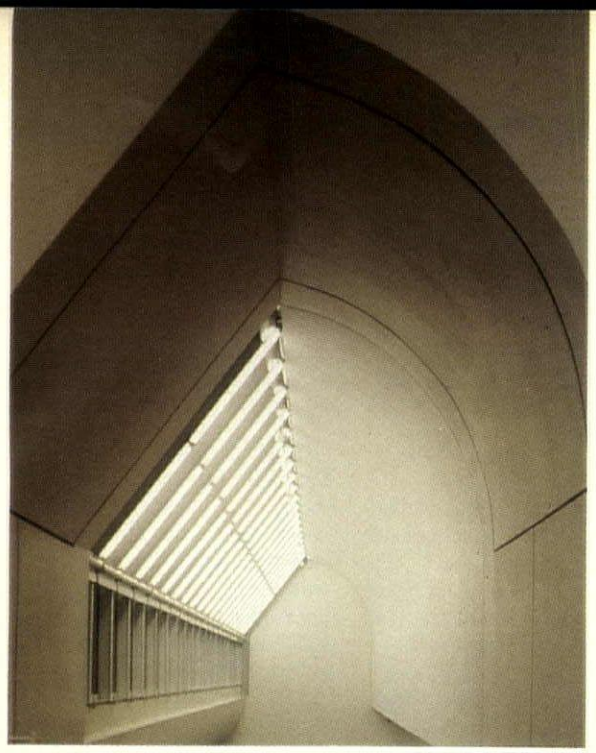
Depending upon a project's size and complexity, it can take up to several hours to enter all the data required about surfaces and specifications. Then designers can process extensive calculations that would be extremely tedious with hand rendering. "The real time savings of computer imaging are realized when redesigning or revisions become necessary. Then a designer can move a source or change the reflectivity of a surface quite easily on the computer," Lord says. To achieve the same level of accuracy could require weeks with hand rendering.

"Computer imaging opens the door to more excitement," Lord says. "It allows designers to try more combinations and solutions to improve lighting quantity and quality — all with minimal effort. The process is especially valuable if a specified fixture or source is unavailable in time for construction. A revised design that features alternative light sources can be planned within a day."

When energy resources or operating budgets are limited, computer imaging facilitates achieving a design that regulates electricity consumption and reduces costs by maximizing the use of daylight. This is a particularly practical feature in California, where Title 24 restricts energy use in new buildings. Computer imaging simplifies the process because designers can avoid making daylighting calculations by hand.

Computer imaging also facilitates interaction between clients and designers, so clients can more easily approve steps in the design process. "Final products can then more closely match what clients want," Lord says, "because they have an opportunity to see well ahead of time what the results will be. And their questions can be addressed immediately."

Lord estimates that less than 10 percent of architects and lighting designers currently work with lighting design software. "As with any form of progress," he says, "it takes time for people to become aware and to train themselves to use the new technology. But the time and money savings that result far outweigh the investment in time." Visitors to Lighting World can learn more about the advantages of this technology at Lord's seminar.



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Circle 17

Seattle market shows super market lighting to shoppers

"We wanted to capture the romance of the 1940s and 1950s," says interior designer Suzi McKinney when she talks about an award-winning Larry's Market in Seattle, Washington.

Project: Larry's Markets Oak Tree Store
Location: Seattle, Washington
Architect: Carlson/Ferrin Architects, Donald Carlson, Kevin Kane
Interior Designer: Suzi McKinney
Photos: J.F. Housel

Barbara-Jo Novitski

Barbara-Jo Novitski is an architectural technology writer in Eugene, Oregon.

"We wanted to create a happy attitude about food, so we designed the lighting to remind our customers of old-fashioned, wholesome freshness. We wanted to create an atmosphere of a big, open-air market, so we provided live trees and lots of daylight."

McKinney and architect Don Carlson crafted a variety of spaces within the large Oak Tree market, paying careful attention to the lighting, as well as to the spatial composition, in developing the specialty areas. "For the central part of the market we wanted an image of a 'food factory,'" says Carlson.

"We selected the materials and a roof form to match the way the grocery store works." The central part of the store has a raised roof with exposed steel trusses and metal decking. The decking is painted white and uplit with 400-watt metal halide lamps in high-bay warehouse-type fixtures. The architect developed special connection details to transform these conventional downlights into custom uplights. They are on an energy-saving control system; whenever daylight provides enough ambient light, some of them are automatically switched off. This guarantees enough

light at night while keeping overall energy consumption down.

"To maximize daylight," says Carlson, "we put in 5-foot-high clerestories all around the perimeter of the raised roof. The effect is a pleasant light that penetrates to the interior of the large space." At first the store managers had some problems with the direct sunlight. A few times a year, sunlight would hit the bulk foods area and melt some candy. To solve this problem, the managers moved products less sensitive to heat into the problem area.

In contrast to the high-ceilinged, daylit and uplit central area, the specialty areas around the perimeter of the store have lower, dark green ceilings and are illuminated with silver-bowl incandescent lamps fitted into standard industrial reflectors. The bakery, smokehouse, produce, seafood, and wine departments are designed to show off preparation processes. McKinney explains that customers frequently spend more time in specialty service areas than in other parts of the store, and they often stop to watch the food preparation. "We light the product directly," she says, "to focus the customer's eye, to create a visual magnet. We use incandescent downlighting in combination with the fluorescent lighting that is built into the refrigerator cases. I like to use warm incandescent light to emphasize the color and three-dimensional characteristics of food. I think of this perimeter lighting as stage lighting."

A produce grocer who wants to warm the *colors* of the fruit and vegetables must be careful that the lights do not also warm the food. The trick is to mount the lights at the right height. Placed too high, they cause glare; too low, they spoil the produce. And even a theoretically optimum height doesn't always work in practice. McKinney explains, "We can specify a proper height for the lights, but it works well only until a produce clerk inadvertently stacks the apples up too high. They've

Specialty areas are lit with incandescent downlights and decorative neon. Clerestories provide daylight for the central part of the store. Metal halide warehouse lamps light a white metal ceiling and the exposed roof structure to help create an open-air market atmosphere.

Light in the cafe (top left) results from ever-changing balance of daylight, metal halide uplights, and neon. Downlights, at a height calculated to minimize glare and heat, emphasize the colors and shapes of fresh produce (bottom left). Billboard graphics evoke nostalgia for the 1940s and 1950s. Like other specialty areas, the fish market is lit by neon and downlights (top right). Nighttime shows off the neon apple, mounted in an 8-foot steel framework (bottom right). The brightly lit cafe below draws local moviegoers.

had to learn how to limit the height of the displays. We also use low-wattage lamps because we don't need a strong light source; we only need to get the customers' attention and to create rich colors, shadows, and contrast."

For the large murals around the store's perimeter, McKinney designed "caricature graphics" and drew upon images of the 1940s and 1950s. The dancing vegetables billboard, for example, shows Dick, Jane, and Spot riding in a car through farm country. It is illuminated with 150-watt incandescent uplights that bring out the vibrant colors. The industrial reflectors themselves are a decorative element.

"We see children looking up at the picture and learning vegetables pictorially," says McKinney. "For me, it's a frolicking, positive fascination with childhood memories. I remember the first time I learned that corn didn't necessarily come in a can. It's an important awakening for a young person to understand where their food comes from and how many people are involved."

In contrast with the central market and specialty areas, the check-out area near the front of the store is illuminated with

175-watt metal halide downlights. The architect's goal was to create a bright, even light level 24 hours a day, to demonstrate that the store is continuously busy. "There's a lot of glass across the front," explains Carlson. "At night when you see the store from the outside, it's all lit up and looks like magic."

Near the entrance to the store is a small cafe with a variety of lighting devices: skylights, metal halide uplights, floor-to-ceiling windows, and neon. The blend of lighting changes throughout the day. Early in the morning, before the sun hits the skylights, the neon and the metal halide dominate. Around midday, the cafe is flooded with daylight. Then in the evening it's entirely lit by neon and metal halide. This dramatic lighting draws customers coming out of a nearby movie theater.

Carlson and McKinney both contributed to the neon design. Carlson designed the exterior sign. The huge apple, in red and green neon, is attached to woven wire mesh on an 8-foot steel framework. McKinney designed all of the decorative neon inside. "To design with neon," she says, "you need to understand the limitations and possibilities of the medium. You need to know which gases and tube coatings combine to produce particular colors. I'm excited by the new colors available — like the coral we used in the deli and cafe. Neon can have a dramatic coloring effect on everything around it, so as you design, you need to see it in the context of the other materials. With neon samples in a lighting box, you can make good comparisons with paint and material samples. New small-diameter neon has opened up exciting possibilities because small-radius curves are possible in the neon bends. We can put rows of neon closer together and get more intricate designs. The colored plastic wrap for neon tubes allows for more color choices, but I think they look artificial. I like neon for what it is, and I like to limit its use."

From decorative neon to large-scale billboard graphics, from an "open air" central market to intimate specialty food shops, Carlson and McKinney have succeeded in creating a wide range of environments, each influenced by their choices in lighting systems. The resulting vibrancy encourages shoppers to enjoy the experience of shopping. Says McKinney, "With the packing shed imagery, we're emphasizing the fact that we're a warehouse of many things, from low-cost bulk foods to expensive caviar. We've tried to link all these images together, to be all things to all people." ■

Distinctive library luminaires reiterate circular design motifs

Lighting for the Benjamin S. Rosenthal Library does more than aid reading and writing. It's also an integral part of the building's architectural design. In the main reference reading room and other key areas, specially designed luminaires reiterate a circular motif and contribute to the feeling of openness and spaciousness in the building's grand spaces.

Susan Degen

Susan Degen is assistant editor of Architectural Lighting.

PETER GOODMAN

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Project: Benjamin S. Rosenthal Library
Location: Flushing, New York
Client: Queens College, City University of New York, and Dormitory Authority of the State of New York
Architect, Interior Designer: Gruzen Samton Steinglass; Peter Samton, partner-in-charge; Robert Genchek, project designer; George Yourke, George Luaces, project managers; Nicholas Lombardo, interior designer
Lighting Designer: Theo Kondos Associates, Steven Bliss
Electrical Engineer: Syska & Hennessy
Landscape Architect: Saratoga Associates

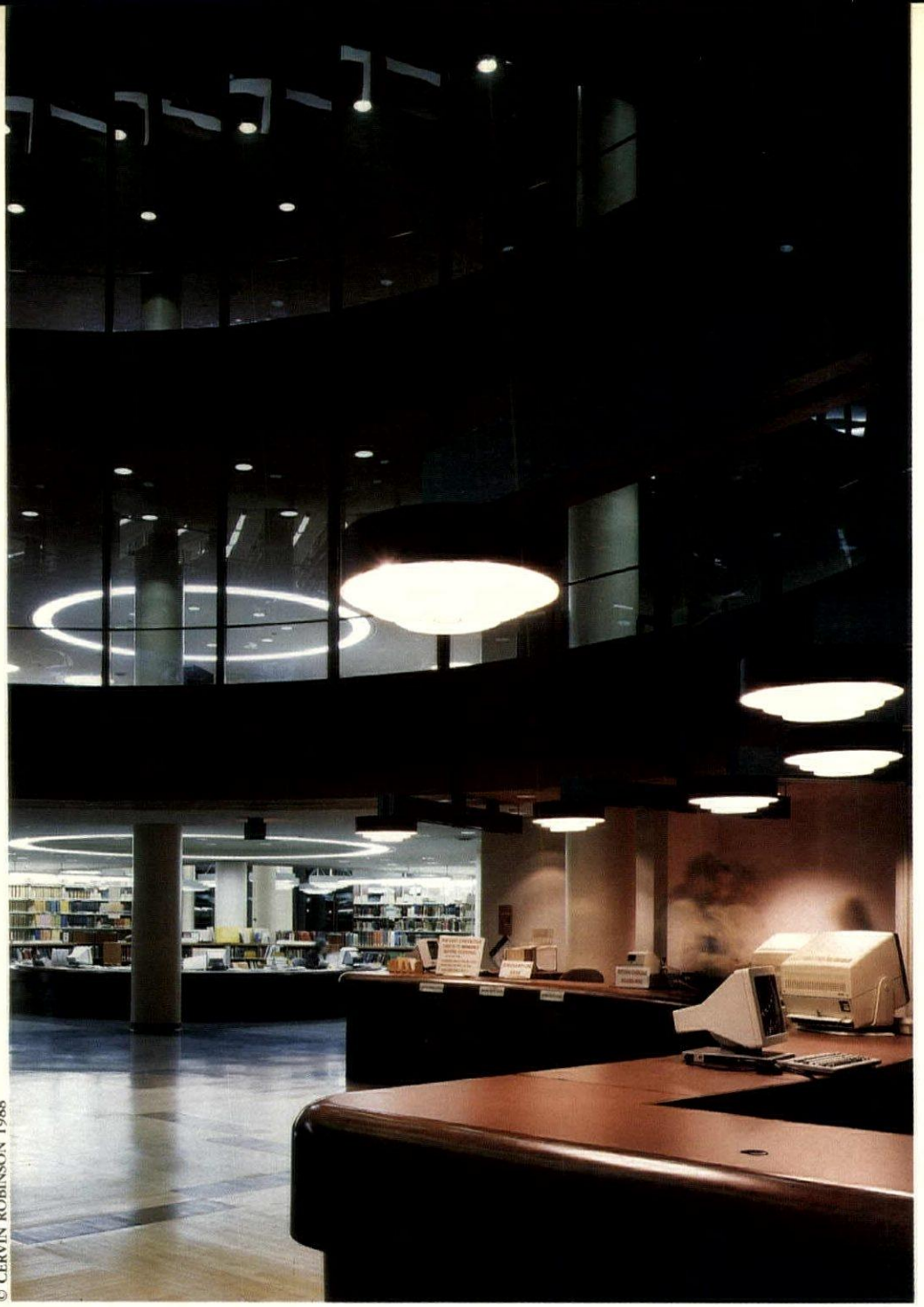
The library's main entry lobby, circulation desk, and main reference reading room are on the third floor of the six-story structure. The two-story lobby, at one end of the building, is enclosed by a curved glass wall. At the other end, the main reference reading room fans out in a quarter circle, bordered on two sides by book stacks and on the third by its own curved glass wall. The main circulation area is between these two spaces in a bright, skylight-crowned rotunda.

The rotunda, reading room, and lobby establish a circular design motif that is repeated in the building's major lighting elements. "It's part of a vocabulary," says lighting designer Steven Bliss. "We created a series of decorative fixtures that mimic the rotunda area." Circular luminaires light the reading rooms on each floor. Circular fixtures cantilever over the main circulation desk. Circular soffits light key information, lounge, and stair platform areas.

Light for Reading

The library's main reference reading room is a focal point of the building with its high ceilings, curved glass wall, and huge circular luminaires. The 5-foot-diameter luminaires add balance to the large, open space. "We wanted personal touches and a human scale to make people feel comfortable," says Bliss. "You feel very, very small sitting at a table in a large space with a 20-foot ceiling. Having elements that break the space down was part of the approach."

The distinctive custom-manufactured luminaires hang on long stems from the 20-foot-high ceiling of the main reference reading room. "The design intent was to have a special type of fixture and a special character for that one area," says Bliss. The luminaire's design consists of three concentric step louvers with a white acrylic overlay that conceals eight standard warm white fluorescent tubes laid side by



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side. Four aircraft cables, stretched from the middle of the stem to the outside louver, stabilize each unit.

To fit straight fluorescent lamps into round luminaires, Bliss used 3-foot tubes at the edges and 4-foot tubes in the center. "Their colors are compatible in those lengths," he says. "The warm white is more complimentary to skin tones and has a higher output than the cool white. We didn't use 2-footers anywhere in the building because of the color shift."

Reading rooms are on each of the floors, but only the high-ceilinged main reference reading room can accommodate the visually massive stem-mounted luminaires. To create a similar visual impact in reading rooms with ordinary ceilings, the designers created a recessed version of the fixture. A smaller version of the reading room luminaire is used at the main circulation desk to continue the fixture vocabulary into the rotunda. Here, the circular, triple-louvered units are mounted on large beams cantilevered over the main desk. Eight incandescent lamps in this version are arranged around a PAR 38 spotlight like spokes around a wagon wheel hub.

Stacks and Information

Book stacks fill much of the library's 252,000 square feet of gross area. On upper floors, windows in the walls surrounding the cylindrical, skylit rotunda bring daylight deep into the building. People looking up from the main circulation desk in the third-floor rotunda can see shelves of books on the two floors above. Stack areas are illuminated by lengths of stem-mounted, shielded linear fluorescent luminaires mounted between rows of bookshelves.

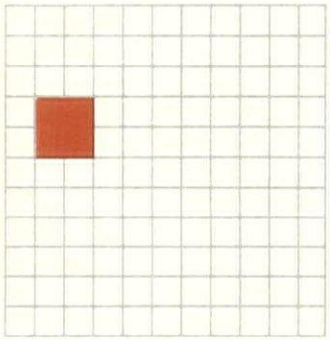
Bold concentric rings of recessed cold cathode tubes signal the location of large, circular information and reception desks throughout the library. "Cold cathode is a linear light source, an unbroken line of light," says Bliss. "We used it in a number of places to accentuate these desks. No matter what floor you're on, when you see cold cathode you know you've got an information desk." Drywall pop-ups above the desks support rows of cold cathode tubes.

Used over information desks and in stairwells, the cold cathode system produces more than a decorative effect. It provides about 300 lumens per foot of functional light, Bliss says. "We gang four rows of cathode, and it's more than enough light for operations at the desk. We've used cathode in many projects as a functional tool as well as a graphic tool. In fact, it's in the drafting area in our office; we work under it." The lamp manufacturer is near the college, which makes it easier for the client to maintain the system, Bliss explains. Because the manufacturer keeps lamp templates on file, lamps can be replaced quickly.

Many luminaires in the building serve a dual function as light sources and as architectural elements. As light sources, they provide sufficient illumination for the reading and writing tasks that are common to every library. As architectural elements, they echo themes established in the architectural structure. The distinctive luminaires in the reading rooms and the cold cathode rings over information desks also work graphically as identifiable reference points for particular activity areas throughout the building. ■

For product information, turn to page 62 and see Manufacturers.

Software Reviews



CD-ROM: Off the sidelines and into designers' hands

David Lord, PhD

David Lord is a professor of architecture at California State Polytechnic University, San Luis Obispo.

Potentially a useful tool for architects and engineers, CD-ROM (compact disk read-only memory) has been ready and waiting on the sidelines for two or three years. A close relative of CD-ROM, the audio compact disk, has gained wide acceptance as the recording industry standard; sales of each CD can number in the millions. Until recently, CD-ROM was slow to penetrate the end user computing market, partly because its producers were reluctant to invest in expensive disk mastering and duplication for limited distribution. During the past few months, however, many stumbling blocks have been removed, particularly in the areas of cost-effectiveness and the availability of players and titles. Mastering a CD-ROM disk now costs about $1500, and duplicating one costs about $2 per disk.

Sweet's Goes Electronic

Sweet's Catalog, first introduced in 1906, is going electronic; product databases on CD-ROM disks will aid architects and engineers in selecting products and writing specifications. With SweetSearch, a proprietary system that searches product databases, designers can find products with criteria of their own choosing. SweetSearch assures users that every relevant product in Sweet's Catalog Files will be found. This could be important if you are looking for a lighting system that might be listed under any one of several categories — as a ceiling system or as a lighting fixture.

Sweet's system also allows better product comparisons with a uniform product profile. For instance, it allows a tabular comparison of such properties as the solar transmittance or the U value of all skylights listed in Sweet's. Another product, SweetSpec, will provide fully customized specifications tailored to the requirements of an individual project and "tutorials" for help with decision making.

Electronic Sweet's will also make available CodeControl and CodeAnalyst — two information services from Codeworks Corporation that give project-specific code information applicable to each phase of design. CodeControl will generate a topically organized listing of all applicable code regulations specific to each project and location. Several categories are being developed, including mechanical, energy, life safety, and fire prevention. The companion program, CodeAnalyst, allows the designer to immediately determine the construction type classification and the critical code issues affecting the building design during the early planning and schematic design phases. Electronic Sweet's offers a demonstration disk that shows off most of the program's capabilities.

In addition, for a limited time, NEC is offering a promotional price on a CD-ROM reader. The reader works with the IBM family and compatibles and with the Apple Macintosh series.

Words and Pictures

Many other applications for the CD-ROM reader are just now gathering steam. Already available on compact disk are a 21-volume encyclopedia and the original *Oxford English Dictionary.*

Graphics, which can often take up most of a floppy disk, are now available in a variety of CD-ROM graphics libraries. NEC offers Clip Art 3-D, a collection of graphic images that can be rotated in three dimensions and included in your own documents. The list of available disks is increasing rapidly. And most CD-ROM readers also allow you to play the ubiquitous audio compact disks with a hook-up to your stereo.

Specification writing is becoming a less formidable task, thanks to the computerization of both specifications text and coordination functions. If specification writing is your forte — or your nemesis — then MasterSpec is worth considering; it reduces the drudgery of spec writing. MasterSpec has been a standard for 20 years and is used today by about 20,000 designers. It comes in three editions, each covering a portion of the Construction Specifications Institute (CSI) divisions: architectural/structural/civil (divisions 1–14), mechanical/electrical (divisions 15–16), and interiors (divisions 1–14).

MasterSpec comes in a loose-leaf notebook reference library. For about double the price, you can get both the loose-leaf notebook and a diskette library, formatted for more than 50 computer and word processing combinations — the IBM PC and WordPerfect, for example. The MasterSpec system is organized in modules, from which you can generate a cover sheet, specification text, evaluation sheets, and drawing-spec coordination sheets. Specification text sheets are taken from broad text on disk and edited for each project.

One nice feature is the reference material provided at the end of the specification. For instance, if you are writing a specification for exterior lighting fixtures, MasterSpec suggests you have several specific references at hand from the NFPA, NEMSA, IES, ANSI and Underwriters Laboratories. A suggested exterior lighting fixture schedule is also included in this section.

The obvious payoff of all this is that the less time you spend searching for products that meet your design requirements, the more time you'll have to design. The less time you spend on writing specifications, the more production time you'll have. ■

The software review columnist welcomes reader comments and software review suggestions. Write to David Lord, Architecture Department, Cal Poly, San Luis Obispo, CA 93407.

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Look ma! 120 volts. No transformer.

Plus you get bright white light and excellent color rendering.

Lighting that brings out the best in suits, dresses, mannequins, even hard-to-light jewelry and glassware.

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Esprit found that Designer 16 lamps offered better savings than standard MR 16 lamps. They also found out something else that's very interesting.

Esprit added just the right spirit to their stores with Designer 16 lamps.

Store managers tend to be intimidated by transformers and baffles. So these people were reluctant to replace burnt out bulbs by themselves. But Designer 16 lamps were so easy to change that maintenance was simplified.

And you thought a light bulb was just a light bulb.

We offer more energy saving lighting and best of all it's made right here.

Designer 16 lamps are just one example of our obsession with lighting. At GTE Sylvania, we can help you upgrade practically any lighting system. So if your lighting is more dark ages than state-of-the-art, call us at 1-800-LIGHTBULB or contact your nearest Independent Electrical Distributor.

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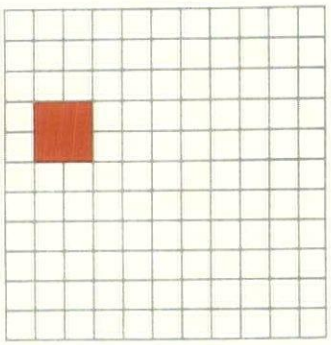
Lighting Graphics



More about under-cabinet task lighting

Sam Mills, AIA, IES

Sam Mills is an architect and lighting consultant with his own firm in Oklahoma City.

My previous column reviewed the fundamental problem associated with under-cabinet task lighting: the presence of reflected images of the light source on the task, which reduces contrast and visibility. Small-cell plastic louvers were suggested as one way of shielding the light source to minimize veiling reflections.

Designers of lighting equipment and furniture systems have recognized this problem for many years. Their efforts to resolve it have produced a number of innovative solutions that offer significant reduction of veiling reflections.

With the knowledge that light directed sideways — away from the viewer's eyes — effectively reduces veiling reflections, they designed light fixtures that concentrate light in a direction 90 degrees to the task. They've accomplished the reductions by shielding light sources with special louvers or lenses that direct the light sideways and by placing sources on either side of the task area. Some of the luminaires designed for this application are shown in the accompanying illustrations.

Fixture type A is for individual workstations and uses 13-watt compact fluorescent lamps positioned on each side. The light is controlled with reflectors and adjustable lenses that direct the light sideways, substantially reducing veiling reflections.

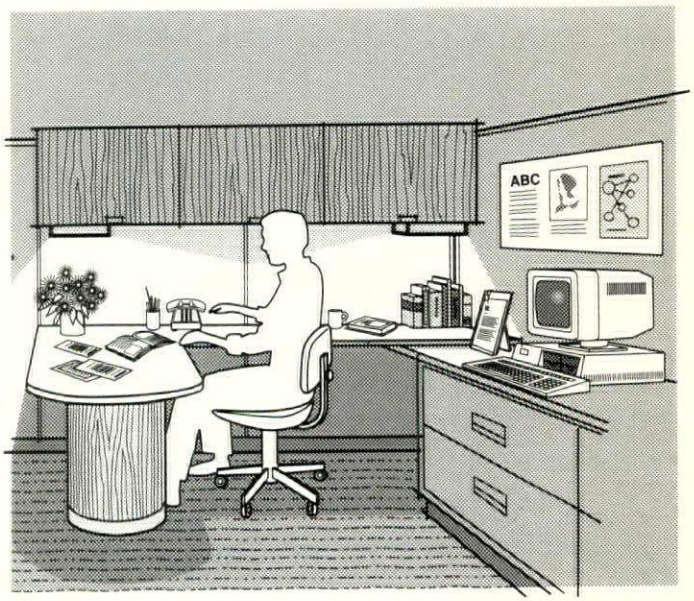
Type B uses rapid start fluorescent lamps in 2-, 3-, and 4-foot lengths and a special lens that directs three to four times more light sideward than forward, also resulting in significantly reduced veiling reflections.

Fixture type C, shown here mounted on simple extruded aluminum housings, is another way to use 13-watt compact fluorescent lamps. These lamps fit easily under wall cabinets, requiring only some added horizontal shielding of direct glare. When positioned 3 to 5 feet apart, they also furnish excellent task lighting with reduced veiling reflections — but only between lamps, to the side of any forward directed light.

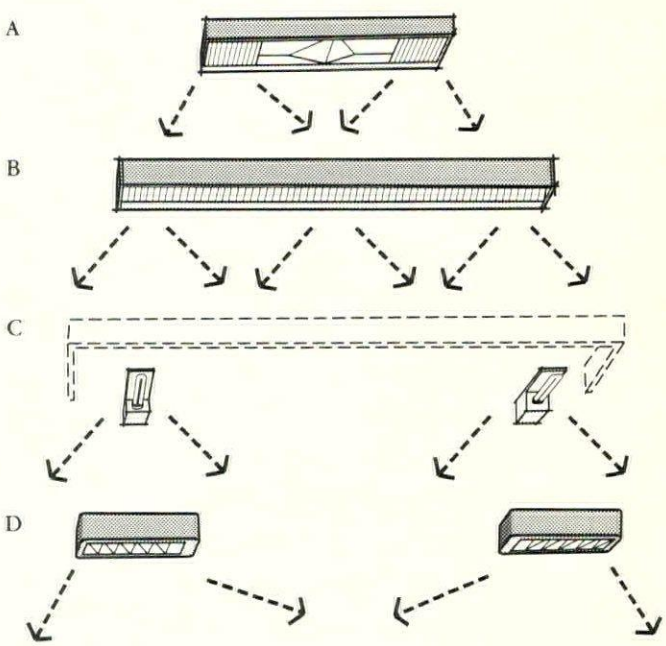
Type D fixtures are twin units that also use compact fluorescent lamps and are connected by a flexible cord. Users can choose a fixture with one or two lamps in each unit. A system of reflectors and louvers efficiently directs the light sideways.

Any of these fixtures can be used effectively to minimize veiling reflections associated with under-cabinet lighting. Determine the ones best suited for your specific applications based on product testing and individual preference. ■

For product information, turn to page 62 and see Manufacturers.

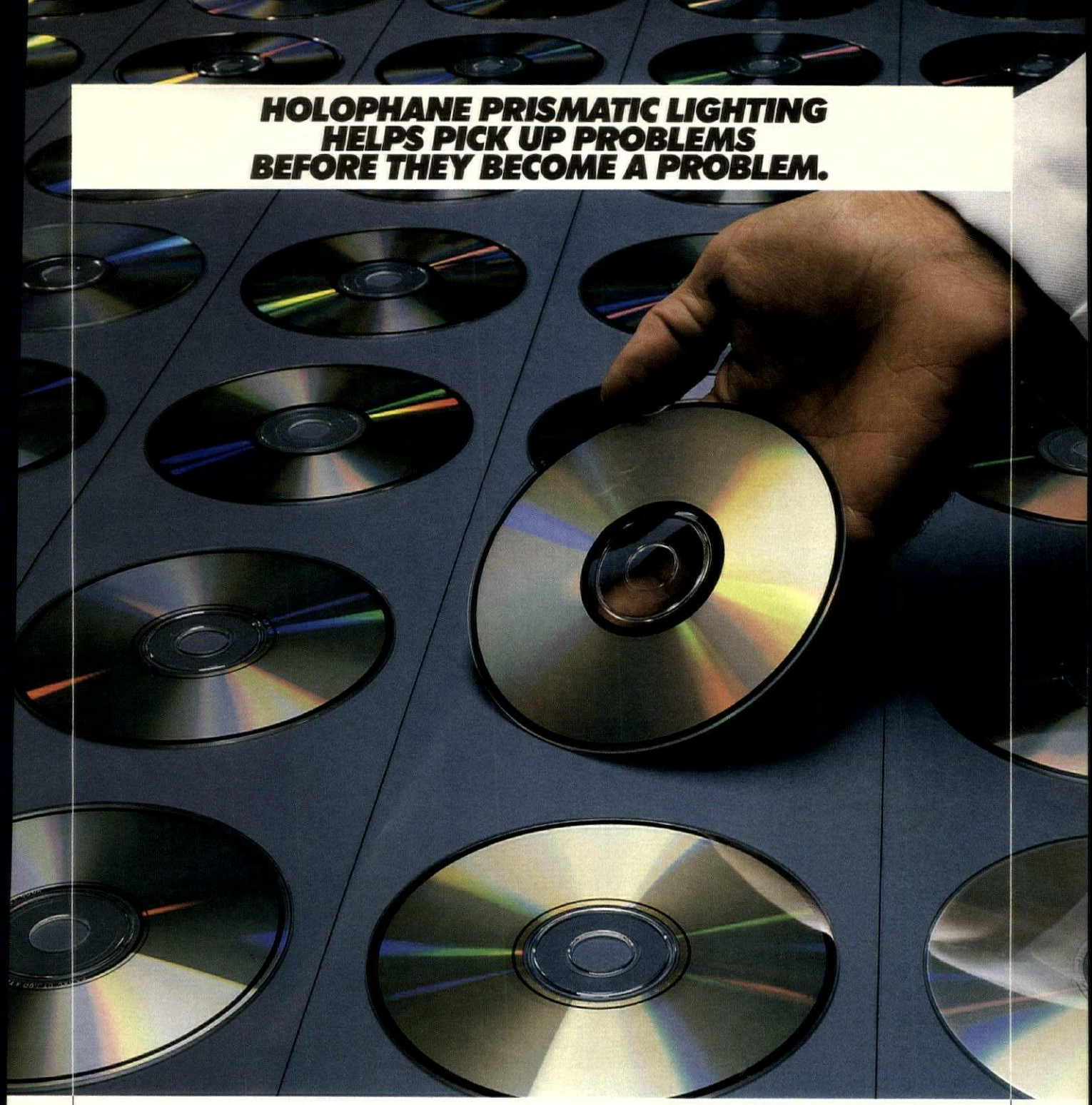


A variety of under-cabinet task lighting fixtures are available that direct the light sideways to minimize veiling reflections.

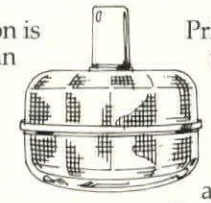


A: Individual workstation unit that has compact fluorescent lamps at each end and special reflectors and adjustable lenses to direct light sideways. B: Linear fluorescent unit with special prismatic lens to direct three to four times more light sideways than forward. C: Compact fluorescent lamp modules spaced 3–5 feet apart. D: Tandem-wired twin units with one or two lamps in each unit and louvers to direct light sideways between units.

HOLOPHANE PRISMATIC LIGHTING HELPS PICK UP PROBLEMS BEFORE THEY BECOME A PROBLEM.



Industrial illumination is more demanding than almost any other application. Contrasts are lower, action takes place over a far greater vertical range, and glare is inescapable when task location or angle can't be adjusted.



Worst of all, the resulting shortcomings can be far more costly here than in any other environment.

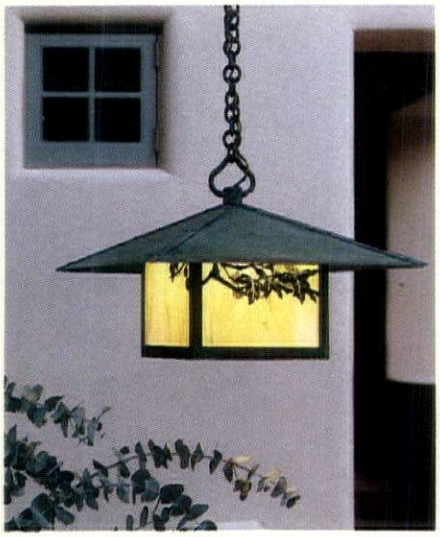
Industry needs better lighting, and Holophane responds with PrismGlo,™ a prismatic fixture that uses hundreds of tiny prisms to fine tune light direction and distribution. It improves contrast, defines form and texture, and reduces glare. Lighting distribution is balanced between upward (reflecting off the ceiling) and downward (directly on the work surfaces). So both the task and its environment are lit, eliminating the undesirable "cavern" effect.

For more information on the best improvement you can make to your most critical environments, see your Holophane representative or write Dave Meredith, Holophane, 214 Oakwood Avenue, Newark, Ohio 43055. (614) 349-4118.

HOLOPHANE
LEADER IN LIGHT CONTROL

Circle 20

Product Showcase



Brass lantern

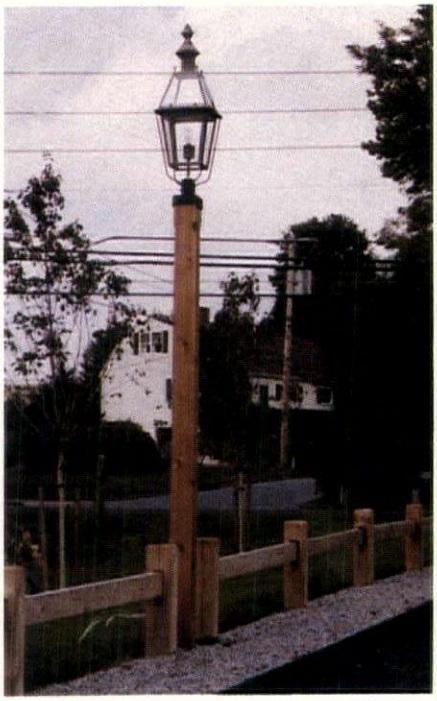
Solid brass Monterey indoor-outdoor lanterns from Arroyo Craftsman come in a free-hanging version and wall- and column-mounted versions. Each lantern is individually assembled and has a verdigris patina finish. Four sizes and four glass colors are available. Arroyo Craftsman Lighting Inc., Duarte, CA.

Circle 60

Table lamp

The Piedra table lamp from Aamsco has a base and stem of solid, stonelike Corian and a perforated metal shade. A half-silvered incandescent lamp casts light downward on work surfaces. The 14½-inch-high table lamp comes in light and dark gray. Aamsco Manufacturing, Inc., Jersey City, NJ.

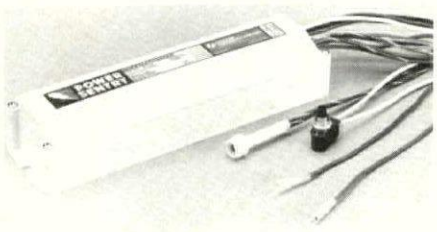
Circle 61



Cedar lamp pole

The Woodlands lamp pole from Ryther-Purdy is made of solid or laminated western red cedar in heights to 40 feet and widths from 4 to 12 inches. The straight, square shaft has chamfered corners that give it a tapered look. The pole can accommodate top- or side-mounted fixtures or arm mounts from other manufacturers; it can be combined with the company's custom-made guide rail fences, as shown. Ryther-Purdy Lumber Company, Inc., Old Saybrook, CT.

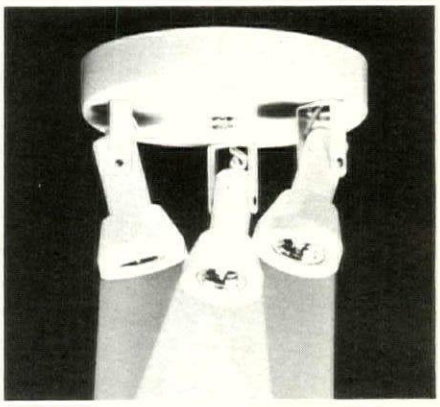
Circle 62



Fluorescent emergency pack

The Power Sentry PS300 from Lithonia Emergency Systems is a compact, economical emergency battery pack that converts an ordinary 2-by-4 fluorescent fixture into an emergency lighting unit. It operates one lamp in the fixture for 90 minutes when normal AC power fails, thereby eliminating the need for separate emergency lighting units, and can be installed in the wireway of existing fixtures in less than 30 minutes. It is compatible with rapid start and slimline systems in standard and energy-saving configurations. Lithonia Lighting, Conyers, GA.

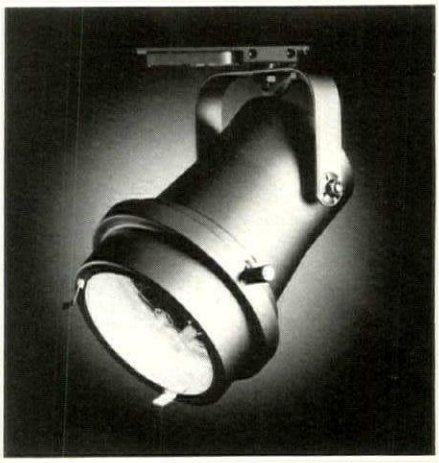
Circle 63



Halogen ceiling fixture

Roxter's model 9183 Triple Mini halogen ceiling fixture is designed to accent sculptures and paintings. Each of its three lamp holders has a universal swivel that allows individual adjustment for precise highlighting of an object. The unit accommodates three 20-watt MR11 lamps and has a built-in solid-state transformer. Roxter Mfg. Corp., Long Island City, NY.

Circle 64



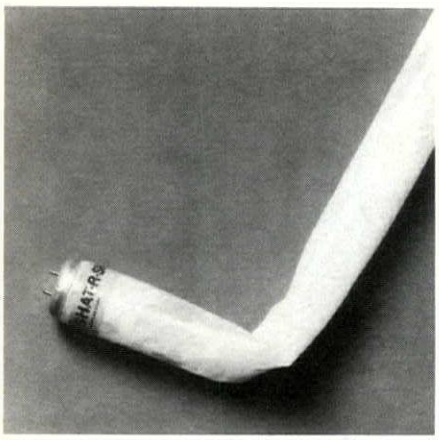
Low-voltage pinspot

The 30 Series high-intensity pinspot track lighting fixture from Lighting Services is designed to accommodate all sealed-beam

■ Floor lamp

Boyd Lighting's steel and brass Saturn floor lamp provides ambient uplight and diffused downlight from an opal white glass reflector. The luminaire's stem and base come in two finishes with polished chrome or brass accents; a 24-inch-diameter fabric shade is available in two colors. The luminaire accommodates a 200-watt incandescent lamp and has a full-range line dimmer. Boyd Lighting Company, San Francisco, CA.

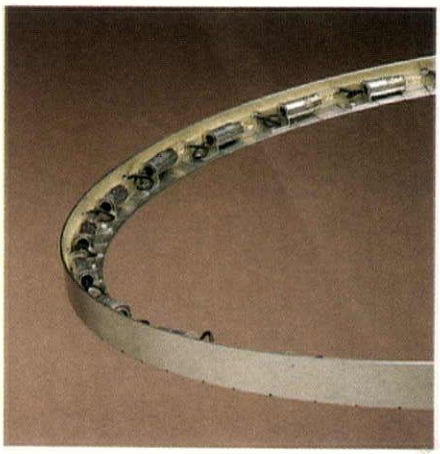
Circle 67



■ Coated fluorescent lamps

Shat-R-Shield's fluorescent lamps have a clear, tough, flexible Surlyn coating that contains virtually all glass shards, phosphors, and mercury if a lamp is broken, eliminating the need for protective sleeves and end caps. The coating prevents buildup of contaminants, which can reduce light output, and does not insulate the lamp, which can cause heat buildup and premature burnout. The lamps offer a light output of more than 97 percent and a coating that will not yellow over the life of the lamp, according to the manufacturer. Shat-R-Shield, Inc., Salisbury, NC.

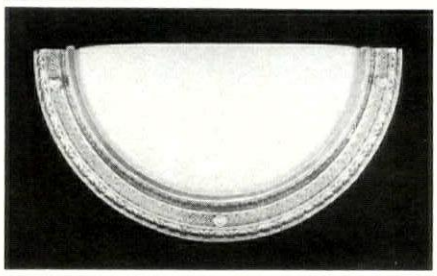
Circle 68



■ Low-voltage light strip

Norbert Belfer's 2711 low-voltage miniature light strips can be flexed and curved into custom lengths and configurations with a radius of as little as 6 inches. Lamp sockets are swivel-mounted for easy positioning and relamping. The miniature light strips are made of heavy-duty aluminum and accommodate incandescent and halogen lamps in a variety of wattages. The 6-, 12-, and 24-volt systems come in a choice of socket spacings. Norbert Belfer Lighting, Ocean, NJ.

Circle 69



■ Brass sconce

The Camelot sconce is part of The Original Cast line of decorative sconces and chandeliers from Art Directions. It is made of solid cast yellow brass and accommodates two 60-watt incandescent lamps. It measures 17 inches wide, 8 1/2 inches high, and 7 inches deep. Art Directions Inc., St. Louis, MO.

Circle 70

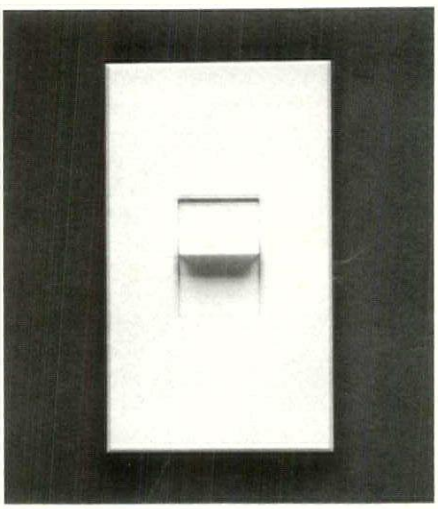
■ Brass lantern

Kichler Lighting offers the K-9765 lantern from its City Lights collection, which is based on designs from a 1913 Alco Berline touring car. The 34-inch-high lantern is handmade of polished solid brass and has beveled glass panels. It accommodates four 40-watt candelabra lamps. Kichler Lighting, Cleveland, OH.

Circle 71

PAR 46 lamps. It produces a brilliant shaft of light using less power and producing less heat buildup than standard-voltage units; it is suitable for highlighting small objects and accenting details of large objects. Features include an integral stepdown transformer, a full-yoke mounting device, a rotating lamp holder, an integral on-off switch for track and portable units, accessory retaining clips, and an adjustable, self-locking lamp housing. An integral dimmer is optional. Lighting Services Inc., Stony Point, NY.

Circle 65



■ Lighting controls, accessories

Lutron's expanded family of Nova T* thin-profile, specification-grade lighting controls and accessories control incandescent, fluorescent, and electronic and magnetic low-voltage incandescent light sources. Combined dimming and switching systems, two-location dimming systems, linear slide dimming controls, and three-way dimming controls are available. Shown is the basic Nova T* linear slide switch. Lutron Electronics, Co., Inc., Coopersburg, PA.

Circle 66

STEP ASIDE COMPETITION

Day-Brite's VDT sets the standard for computer environment low brightness fixtures.

Personal visual comfort and fixture efficiency highlight an impressive list of benefits of the new Day-Brite Designer VDT fixtures, especially designed for video display terminal environments. But, unlike competitive single-shot efforts at low glare fixtures, Day-Brite's VDT series is a family of fixtures, offering all these benefits:

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- Shallow fixture body solves plenum depth problems
- Concealed frame aluminum louvers are permanent, requiring little maintenance
- Choice of fixture body sizes, cell sizes, number of lamps
- AVAILABLE FOR IMMEDIATE SHIPMENT

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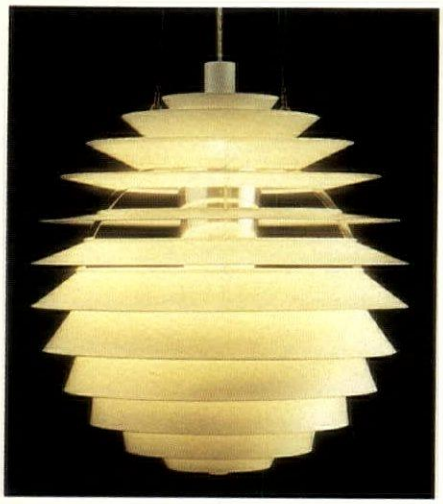
Circle 22



■ Decorative pendant

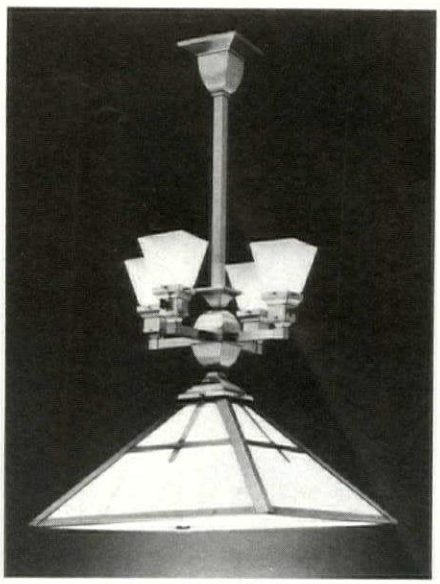
The PH Louvre pendant luminaire from Poulsen Lighting has a series of formed, graduated reflector shades and concealing cones surrounding its light source. Stainless steel aircraft cables suspended from a ceiling canopy support the luminaire. Poulsen Lighting Inc., Miami, FL.

Circle 72

■ HID area lighting

Hanover Lantern's Grande Jefferson one-piece HID luminaire has a crooklike arm of heavy-duty aluminum tubing welded to its roof. The cast aluminum unit has a hinged cage with removable panels of clear, UV-stabilized, prismatic polycarbonate. Models for HID and incandescent lamps are available; refractors and reflector systems are optional. Hanover Lantern, Hanover, PA.

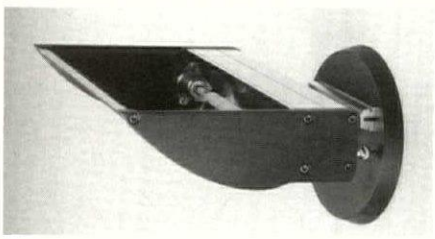
Circle 73



■ Brass chandelier

The Prescott solid brass chandelier from Rejuvenation is designed to downlight a dining room table while providing general illumination. The Mission style fixture comes in antique brass, polished unlacquered or lacquered brass, brushed brass, polished copper, japanned copper, and polished nickel finishes. Its art glass lantern shade is available in a choice of colors. Rejuvenation Lamp & Fixture Company, Portland, OR.

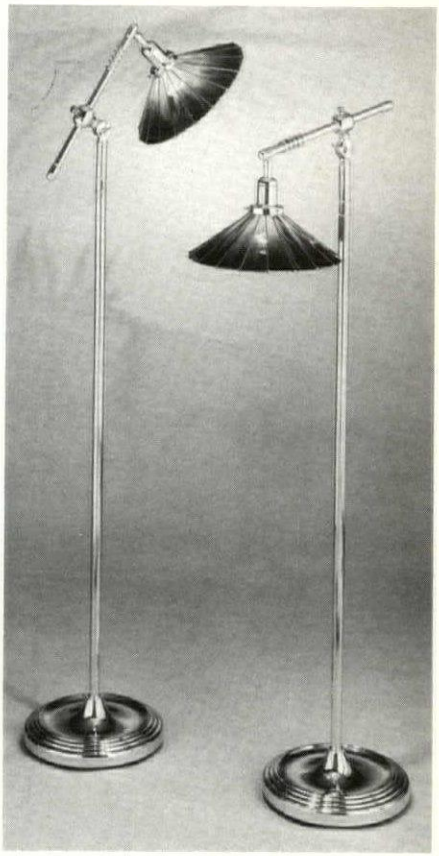
Circle 74



■ Indirect reflector

The PAL-118-300/500 reflector assembly from Rambusch Lighting is designed for uplighting architectural elements such as coves and niches and for indirect lighting when used in its own housing (not shown). Its extruded ellipsoidal reflector directs a controlled, wide, asymmetric wash of uplight above the 90-degree glare zone, with its main thrust at 135 degrees. A model for damp locations is available. Rambusch Lighting, New York, NY.

Circle 75



■ Reading lamp

The Reading Lamp from the Gemma Collection of handcrafted luminaires is a 50-inch-tall floor lamp with a slender brass and copper stem. It has an 11-inch spun brass base with ring detailing, an 11-inch-diameter Tiffany-style opalescent glass shade, and a brass on-off knob. A durable brass T arm adjusts easily to individual reader comfort levels. Gemma Studios, Northampton, MA.

Circle 76

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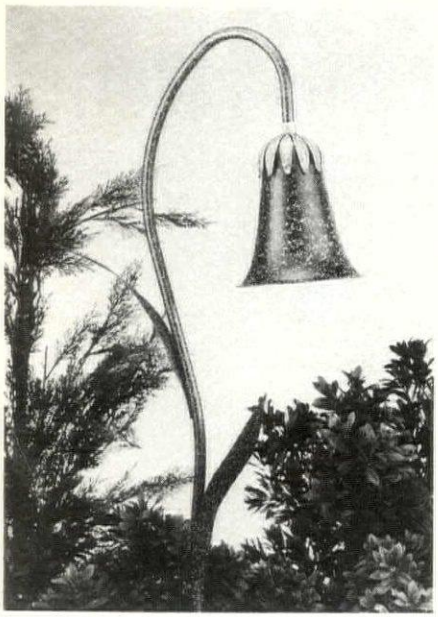
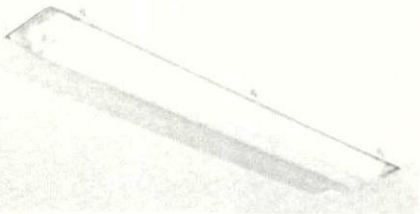


■ Landscape lighting

A garden walkway light from Hinkley Lighting comes with a mottled verde finish and a spun aluminum shade. It is 32 inches high, 6 inches wide, and uses a 60-watt source. Hinkley Lighting, Cleveland, OH.

Circle 77



■ Industrial fluorescent

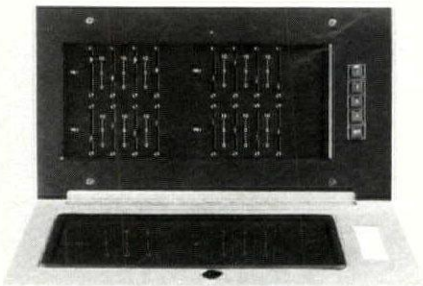
The Series 86 industrial fluorescent luminaire from H.E. Williams features a fully enclosed fiber glass housing and tension clamp latches that hold its acrylic lens in place. Models are available for one or two rapid start, slimline, or high-output fluorescent lamps. Options include a National Sanitation Foundation–listed enclosure and a model UL listed for wet locations. H.E. Williams, Inc., Carthage, MO.

Circle 78

■ Brass ceiling luminaire

The Sherman Park ceiling-mounted brass luminaire from Brass Light Gallery is part of the Goldenrod Collection of luminaires inspired by early 20th-century design movements. It is designed for use in small, tight areas with low ceilings, such as over a kitchen sink. Brass Light Gallery, Milwaukee, WI.

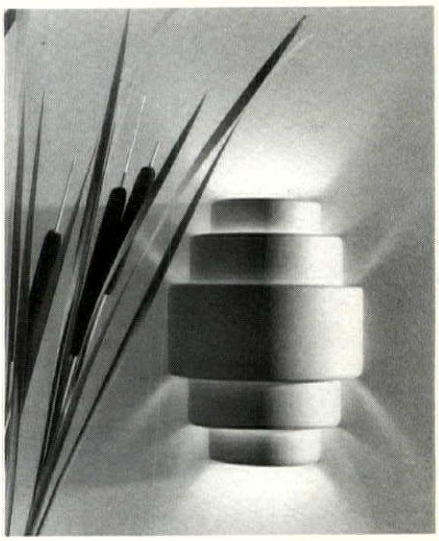
Circle 79



■ Preset dimming

The Designer Preset System from Macro Electronics is simple to operate. A hinged cover with an opaque window conceals the master panel, which controls four preset lighting levels with up to 15 control channels each. Dimming controls are available for a variety of light sources, including HID, neon and cold cathode, fluorescent with standard or dimming ballasts, and standard and low-voltage incandescent. Macro Electronics Corporation, Austin, TX.

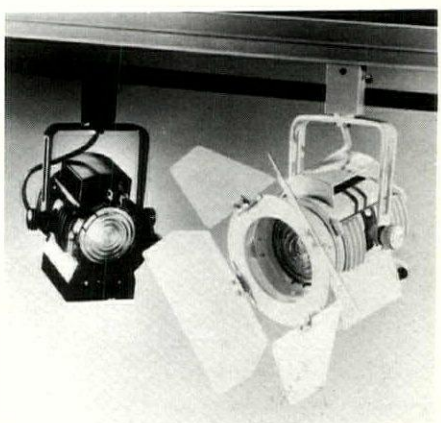
Circle 80



■ Ceramic sconce

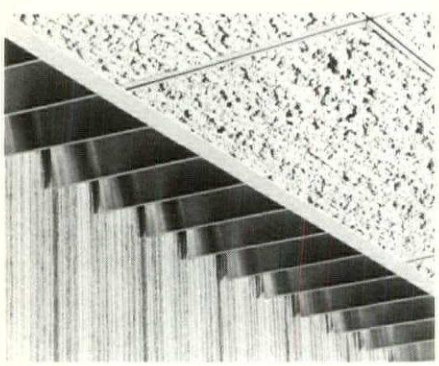
Saxe-Patterson's Ziggurat sconces are made of high fire–reinforced porcelain and have a louvered construction that provides soft indoor or outdoor lighting. The Double Ziggurat pictured here is one of about 20 variations in size and shape. It comes in two sizes and 10 standard matte colors; custom finishes are available. Saxe-Patterson, Taos, NM.

Circle 82



■ Miniature track Fresnels

The LTM Designer Fresnel is a miniature theatrical track fixture with a prismatic lens. Together, the fixture's Fresnel lens, point light source, and focusable, spherical reflector produce a concentrated light output with a smooth, even field and sharp, crisp edges. The fixture uses a 150-watt incandescent lamp and can be mounted in a variety of ways. Accessories include barn



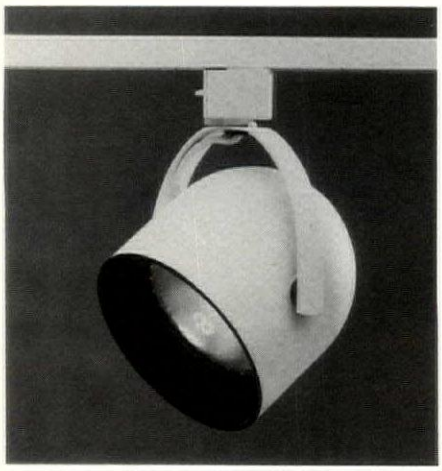
■ Recessed fluorescent systems

Lithonia Lighting offers the RP recessed perimeter fluorescent lighting system, which provides a continuous line of shadowless illumination around a room. An RL system (not shown) provides continuous linear lighting in a room's interior. Both are available with louvers. Other features include plug-in wiring, overlapping lamps, and field-adjustable telescoping components. Lithonia Lighting, Conyers, GA.

Circle 81

doors, snoots, color frames, and focal lenses. LTM Corporation of America, Sun Valley, CA.

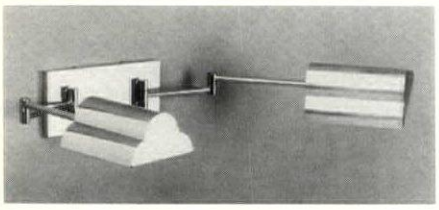
Circle 83



■ PAR 30 track fixture

Lightolier's soft-shaped Ovation 30 track fixture is scaled to accommodate a PAR 30 halogen lamp to produce a crisp, white light. The compact 5-inch-long, 5-inch-wide fixture has a tapered matte black aluminum baffle that reduces aperture glare and hides the inside of the fixture. The PAR 30 lamp comes in two wattages and two beam patterns. Lightolier, Secaucus, NJ.

Circle 84



■ Adjustable brass lamps

A solid brass wall-mount fixture from Execulamp is one of a line of floor, desk, wall, and table lamps suitable for traditional, contemporary, and Art Deco settings. Each handmade shade includes a specular reflective liner to reduce heat and enhance lumen output. The fixture has a 0–100 percent dimming switch. Execulamp, Inc., San Rafael, CA.

Circle 85

■ Custom luminaire

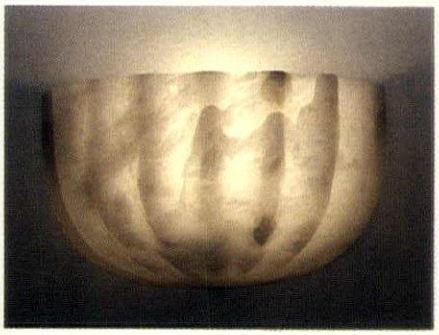
Appleton Lamplighter manufactures custom luminaires to individual specifications. The pendant luminaire shown was designed for the city hall in Tamarac, Florida, by Jim Stahnke of Miller Meier Kenyon and Cooper. The luminaire's gloss white stem and cage assembly support three sandblasted opal acrylic discs bonded to an inner cylinder of sandblasted opal acrylic. The luminaire accommodates a 200-watt incandescent lamp. Appleton Lamplighter, Appleton, WI.

Circle 86

■ Low-voltage display fixture

Microlamp offers a low-voltage MR16 halogen fixture by Thorn EMI that can be used in place of a conventional R40 or PAR 38 lamp. The unit comes complete with a torodial transformer, a standard screw base, and a replaceable MR16 lamp. It is available in 20-, 35-, and 50-watt versions and comes in various beam spreads. U.S. distributor: Microlamp, Inc., Boca Raton, FL.

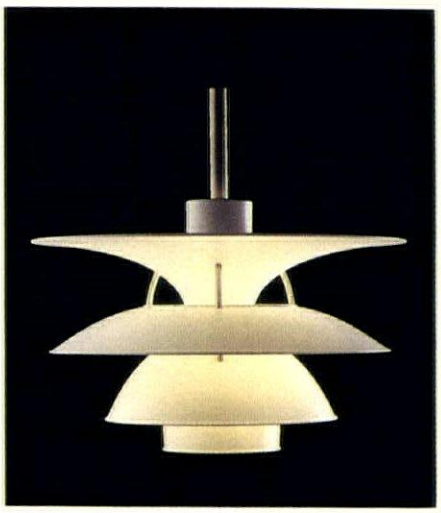
Circle 87



■ Wall bracket

The Regina wall bracket from Boyd Lighting is made of white Spanish alabaster with a subtly fluted design. The luminaire emits a soft, semi-indirect light from a 75-watt incandescent or 13-watt compact fluorescent lamp. Boyd Lighting Company, San Francisco, CA.

Circle 88



■ Pendant luminaire

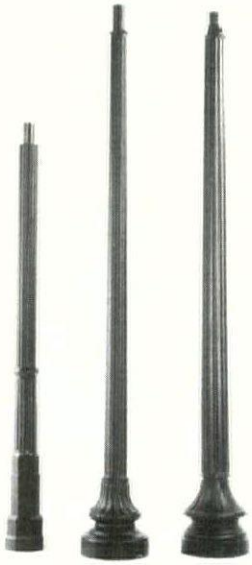
Poul Henningsen designed Poulsen Lighting's PH $6^1/_2$–6 pendant luminaire, which has four formed, graduated reflector shades and concealing cones that help produce a uniform, symmetrical light distribution pattern. A series of rounded struts support the reflector shades, and a stainless steel aircraft cable suspended from a ceiling canopy supports the glare-free luminaire. Poulsen Lighting Inc., Miami, FL.

Circle 89

■ Brass chandelier

The Golden Gate eight-lamp chandelier comes from Brass Light Gallery's Goldenrod Collection of luminaires inspired by early 20th-century design movements. The chandelier has sandblasted glass shades and comes in various finishes. Brass Light Gallery, Milwaukee, WI.

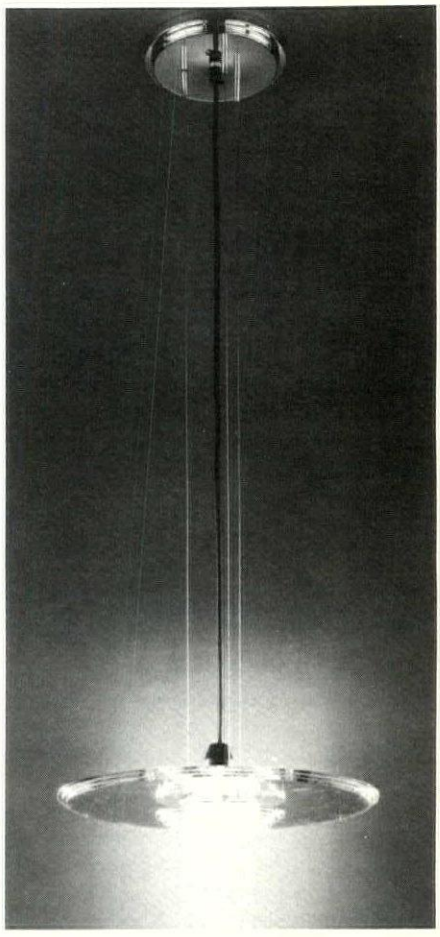
Circle 90



■ Light poles

Emco offers a wide variety of poles ranging in height from 8 to 60 feet. Models come in round, square, tapered, straight, and decorative styles that can be outfitted with mounting arms, brackets, and anchor bolts. The poles are made from a variety of materials, including aluminum, steel, wood, and fiber glass. Emco Environmental Lighting, Milan, IL.

Circle 91



■ Decorative glass pendant

The design of Lightolier's Scalini art glass pendant, inspired by the Scalini steps in Rome, features stepped layers of clear glass with smooth, polished edges. The 20-inch-diameter pendant accepts a 150-watt halogen lamp. Lightolier, Secaucus, NJ.

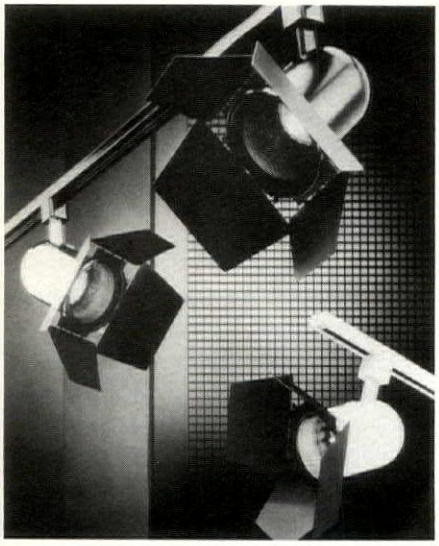
Circle 92

■ Exit sign

The BetaLux-E self-luminous exit sign

from SRB Technologies requires no electrical energy source. Inside its housing are borosilicate glass tubes internally coated with a phosphor and filled with tritium gas. The face comes in three colors, the case in two. A universal mounting bracket allows for flush ceiling, surface, or side mounting. SRB Technologies, Winston-Salem, NC.

Circle 93

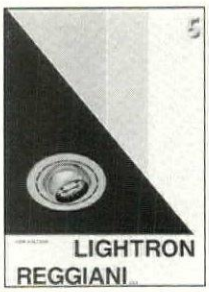


■ Compact track fixture

Halo Lighting's compact Power-Track lamp holder for a PAR 20 halogen lamp delivers high output and superior optical control to residential and commercial applications. The PAR 20 lamp comes in two narrow beam patterns. The compact lamp holder can be used with single- and double-circuit systems; its matte black baffle provides visual comfort and enhances the fixture's appearance. It is available in three finishes and accepts a variety of R lamps. Halo Lighting, Elk Grove Village, IL.

Circle 94 ■

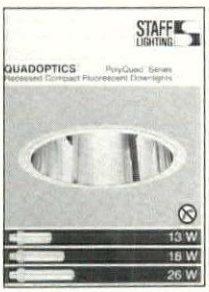
Product Literature



■ Low-voltage lighting

A color brochure features low-voltage halogen downlights and track- and canopy-mounted accent fixtures from Reggiani s.p.a. Illuminazioni. Lamp requirements, dimensions, finishes, and accessories are included. U.S. distributor: Lightron of Cornwall, Inc., New Windsor, NY.

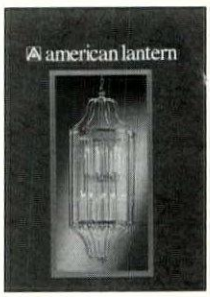
Circle 120



■ Recessed downlights

Polyquad series recessed downlights from Staff Lighting have a special optical system designed to eliminate the rainbow effect of compact fluorescent downlights. A brochure describes advantages and illustrates available models. Staff Lighting Corp., Highland, NY.

Circle 121



■ Indoor, outdoor collection

A 52-page color catalog from American Lantern illustrates a wide variety of decorative indoor and outdoor luminaires. Dimensions, finishes, and lamp requirements for all models are noted. American Lantern Company, Newport, AR.

Circle 122

■ Emergency lighting

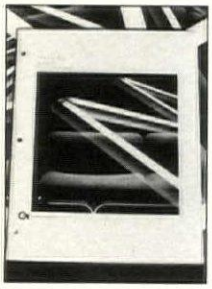
York-Lite's A1 series self-contained emergency lighting unit mounts on ceilings or walls and pivots 90 degrees. A data sheet describes features, including a fully automatic battery charger. York-Lite Electronics, Inc., Austin, TX.

Circle 123

■ Outdoor lighting series

Wall- and post-mounted outdoor luminaires in Dinico's contemporary Tech 1 series accommodate incandescent and compact fluorescent sources. A color brochure illustrates two styles, two finishes, and various post heights. Dinico Products, Inc., Hackensack, NJ.

Circle 124



■ Fluorescent luminaires

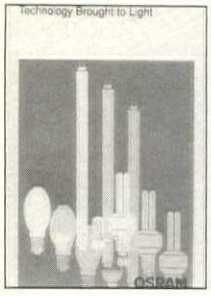
Focus One fluorescent luminaires have glare-free lenses designed to eliminate hot spots. A brochure features direct, indirect, bidirectional, and rotatable models in a variety of shapes, sizes, colors, and mountings. Gardco Lighting, San Leandro, CA.

Circle 125

■ Landscape fixtures

A 24-page catalog from B-K Lighting shows low-voltage outdoor fixtures of machined aluminum alloy, brass, steel, iron, and cast aluminum, with anodized and powder coat finishes. B-K Lighting, Inc., Fresno, CA.

Circle 126



■ Lamps

A catalog contains descriptions and photos of a variety of Osram's lamps and accessories, including standard and electronic compact fluorescent, T8 fluorescent, low- and line-voltage halogen, HPS, and low- and high-wattage metal halide sources. Osram Corporation, Newburgh, NY.

Circle 127

■ Compact fluorescent lamps

A brochure describes features and benefits of GE's Biax high-lumen compact fluorescent lamps, which have a color rendering index of 82 and come in four sizes, three wattages, and three color temperatures. GE Lighting, Cleveland, OH.

Circle 128

■ Color and light

Three bulletins from GTE's U.S. Lighting Division explain the relationship between color and light. Subjects include the fundamentals of light and the color temperature and rendering from different sources. GTE/Sylvania, Danvers, MA. ■

Circle 129

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The Classified Directory is a monthly feature of ***Architectural Lighting***, offering readers easy access to lighting products and services for commercial, industrial, and institutional applications. Listings in this reference section are sold on an annual basis. For full information and closing dates, contact Gordon Exe, (800) 822-6678 or (503) 343-1200.

Calendar

April 1–May 14, 1989 — **DC² exhibit,** Saint Louis Design Center, St. Louis. Winners of invitational lighting fixture design competition. Contact: Saint Louis Design Center, 917 Locust, St. Louis, MO 63101, (314) 621-6446.

April 17–19, 1989 — **Lighting conference for architectural consultants,** Philips Lighting Center, Somerset, NJ. Contact: Sherry Bachman, Lighting Center Coordinator, Philips Lighting Company, 200 Franklin Square Dr., Somerset, NJ 08875-6800, (201) 563-3600.

April 28, 1989 — **Entry deadline,** William J. Locklin Scholarship for students of landscape architecture and lighting design. Sponsor: Loran, Inc. Contact: Landscape Architecture Foundation, 4401 Connecticut Ave., NW, 5th Floor, Washington, DC 20008.

May 10–12, 1989 — **Design ADAC '89** interior design conference and exhibition, Atlanta Decorative Arts Center. Contact: Kate Nerone, Atlanta Market Center, 240 Peachtree St., NW, Suite 2200, Atlanta, GA 30303, (404) 658-5674.

May 13–16, 1989 — **94th NADI visual merchandising, store planning, and design market,** Javits Convention Center, New York City. Contact: Patricia Vitsky Simone, National Association of Display Industries, 470-S Park Ave. So., New York, NY 10016, (212) 213-2662.

May 15–17, 1989 — **Lighting basics,** course, ITL, Boulder, CO. Contact: Sandra Carpenter, Independent Testing Laboratories, Inc., 3386 Longhorn Rd., Boulder, CO 80302, (303) 442-1255.

May 15–18, 1989 — **Comprehensive lighting design,** course, University of Wisconsin, Madison. Contact: E.K. Greenwald, Engineering Professional Development, University of Wisconsin–Madison, 432 N. Lake St., Madison, WI 53706, (608) 262-0573.

May 15–19, 1989 — **Industrial-commercial lighting design workshop,** Philips Lighting Center, Somerset, NJ. Contact: Sherry Bachman, Lighting Center Coordinator, Philips Lighting Company, 200 Franklin Square Dr., Somerset, NJ 08875-6800, (201) 563-3600. ■

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SPI Lighting: Tandem-wired twin units.

Manufacturer credits reflect the products specified for the projects; it is possible that other products were installed during construction or maintenance.

Photographers

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