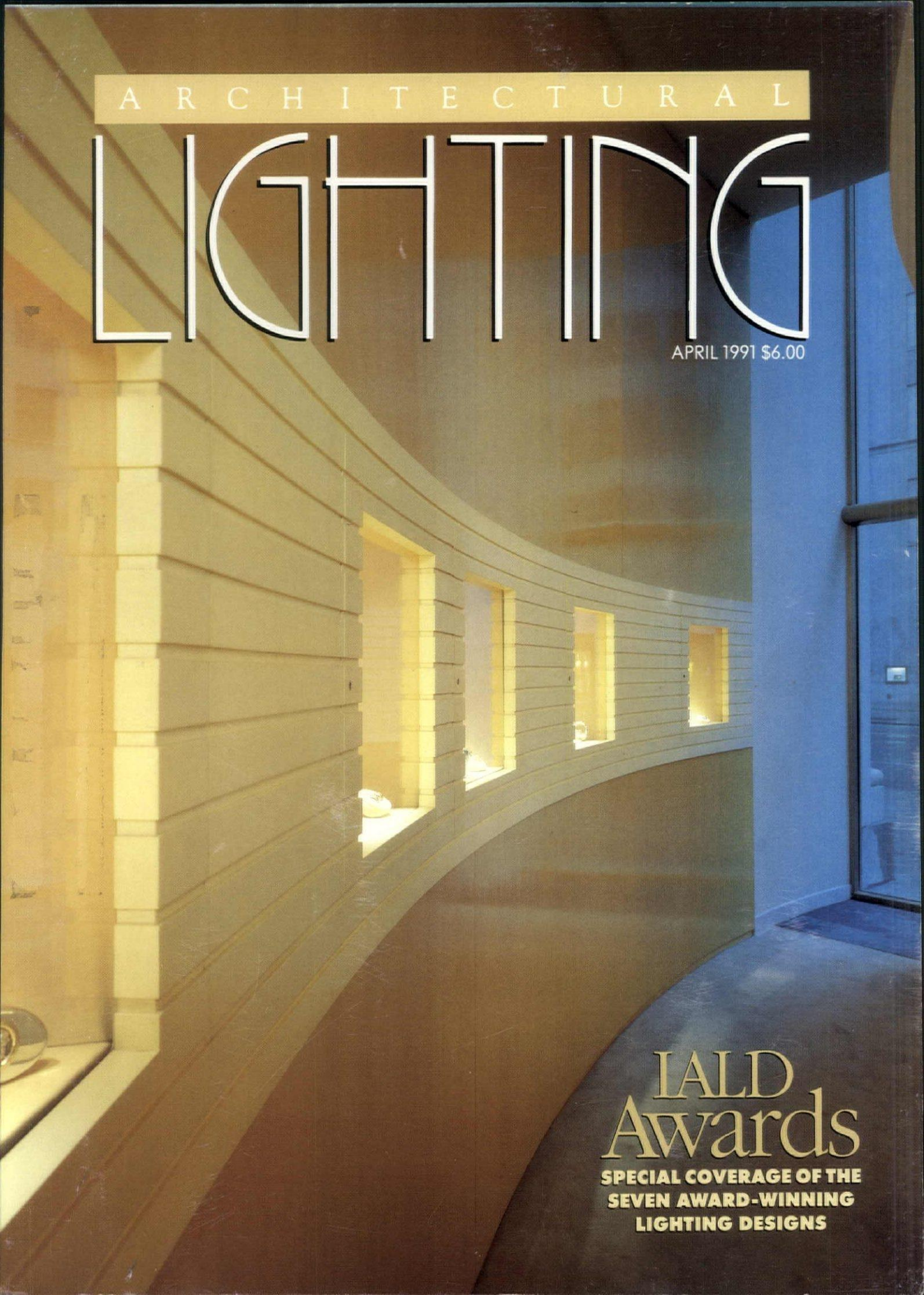
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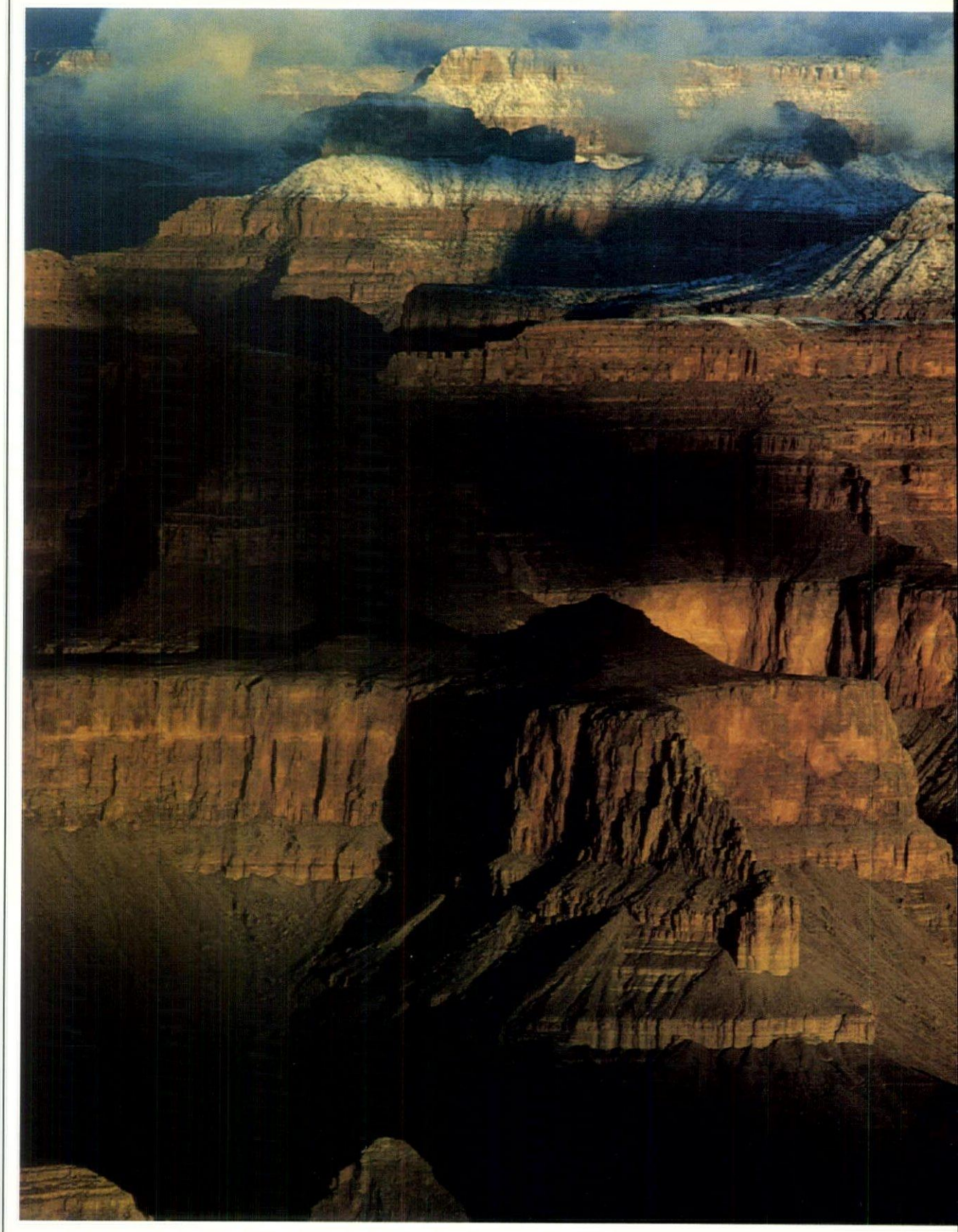

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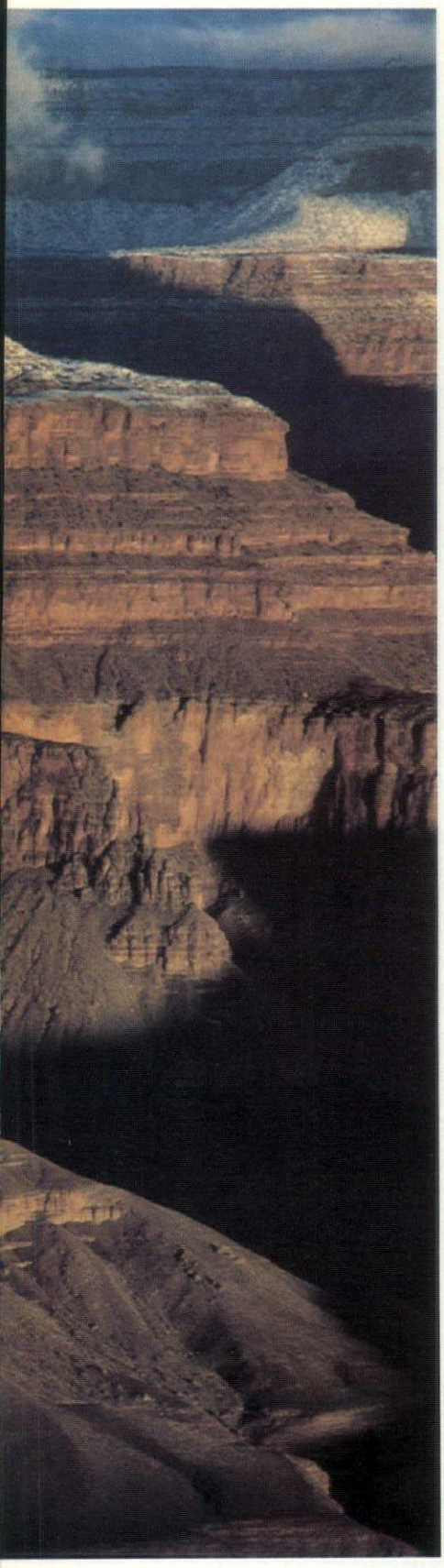
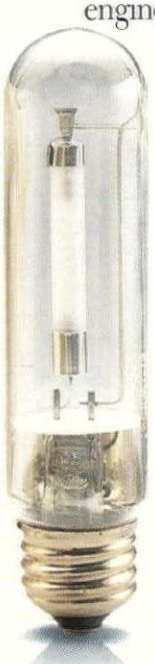


C-930

Whether or not something looks good depends on whether or not the light is. And when it isn't, the effects are far from special.

That's why at GE Lighting, our lamps are designed to put both you and your products in the best light possible.

Our new White Lucalox® lamp, for instance, is engineered to provide a sparkling, color-accurate light that's compatible with Halogen lamps. A light that starts white and stays white throughout its life. While making anything it shines on worth a second look.



Yet even more remarkable than the light is its source: an efficient, high-intensity discharge lamp. Which makes for energy savings that are worth a second look, too.

And the White Lucalox lamp is just one of the many GE lighting options available. To learn about more, call 1-800-523-5520. Once you discover all the things you can do with light, you're bound to come up with some grand ideas of your own.

GE Is Light. And The Light Matters.

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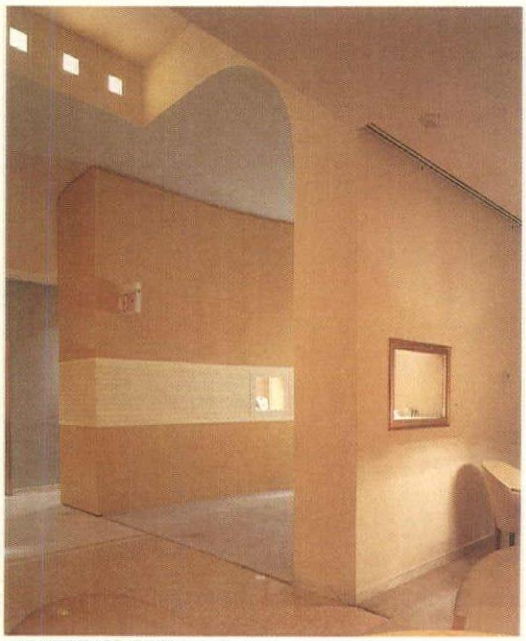

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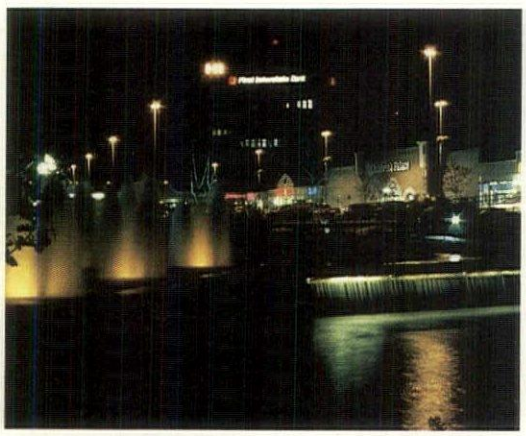

42 **LITTLE CREEK'S BIG SUCCESS**

SPECIAL SECTION: IALD AWARDS

DESIGN FOCUS REPORT: OUTDOOR & LANDSCAPE

DEPARTMENTS

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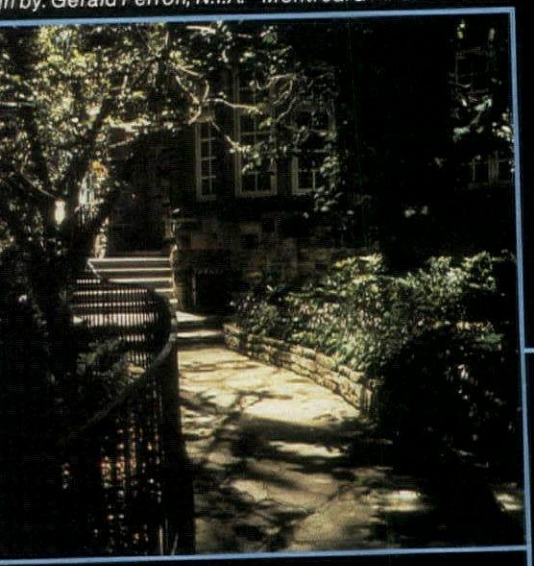
n by: Gerald Perron, N.I.A. – Montreal & Ft. Lauderdale



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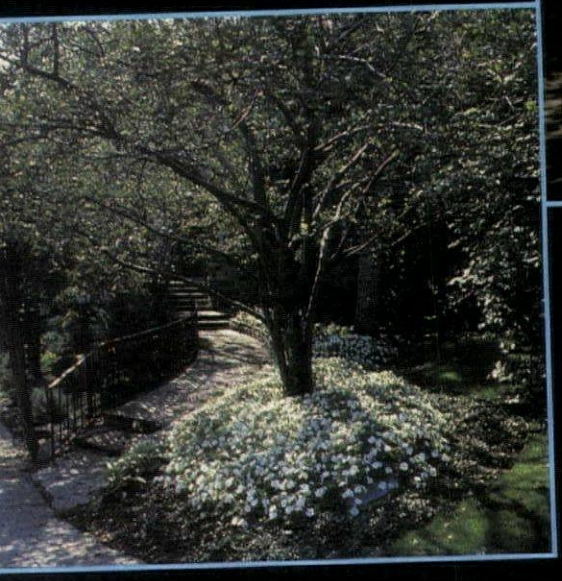

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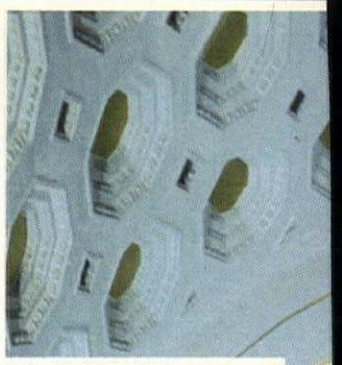
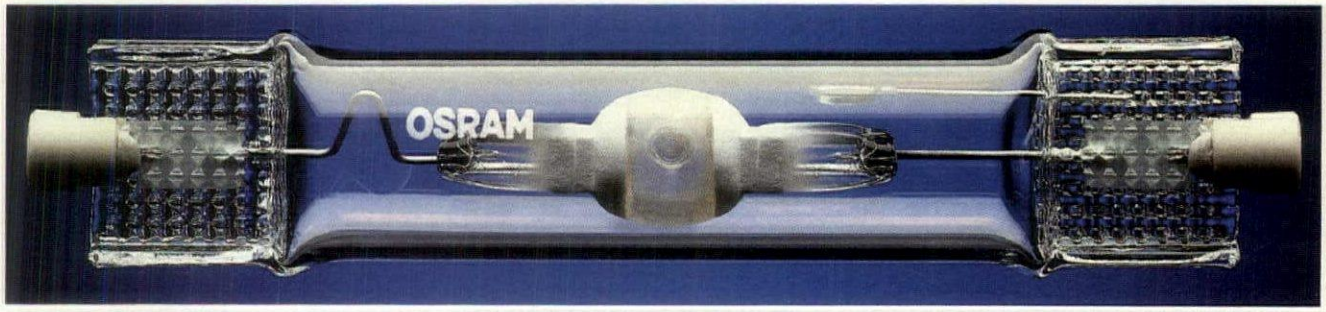
THE OSRAM HQI®-DE LAMP PUTS UNION STATION ON THE FAST TRACK TO BIG SAVINGS.





With the OSRAM HQI®-DE lamp, Washington D.C.'s Union Station now has energy cost savings that would make any President proud.

After its non-Congressionally funded, $160 million restoration and renovation, Union Station has a lot more going for it than a facelift. It has a future.

And to ensure the brightest future possible, the designers of the new Union Station specified the OSRAM HQI-DE lamp.

Better performance. With bigger savings.

The OSRAM HQI-DE metal halide lamp far outshines all other PAR incandescents and metal halides. It provides extraordinary color rendition and luminous efficacy for accent and display lighting. And when used together with the new OSRAM POWERTRONIC electronic ballast, the already energy efficient HQI-DE lamp delivers even greater performance, a 20% longer life and increased savings.

Producing more light than PAR lamps while using less wattage and emitting less heat, the new OSRAM HQI-DE lamp offers a service life that is five times that of PAR incandescents. This means big reductions on energy and maintenance—and a fast return on your investment—usually within the first year of use.

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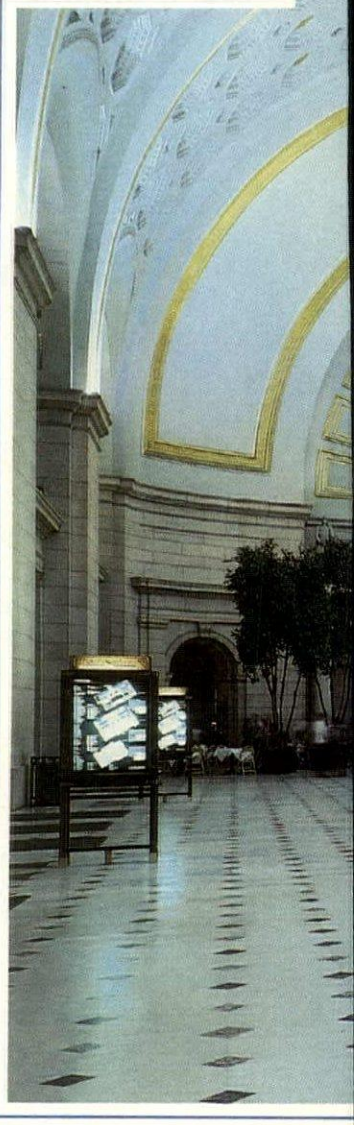
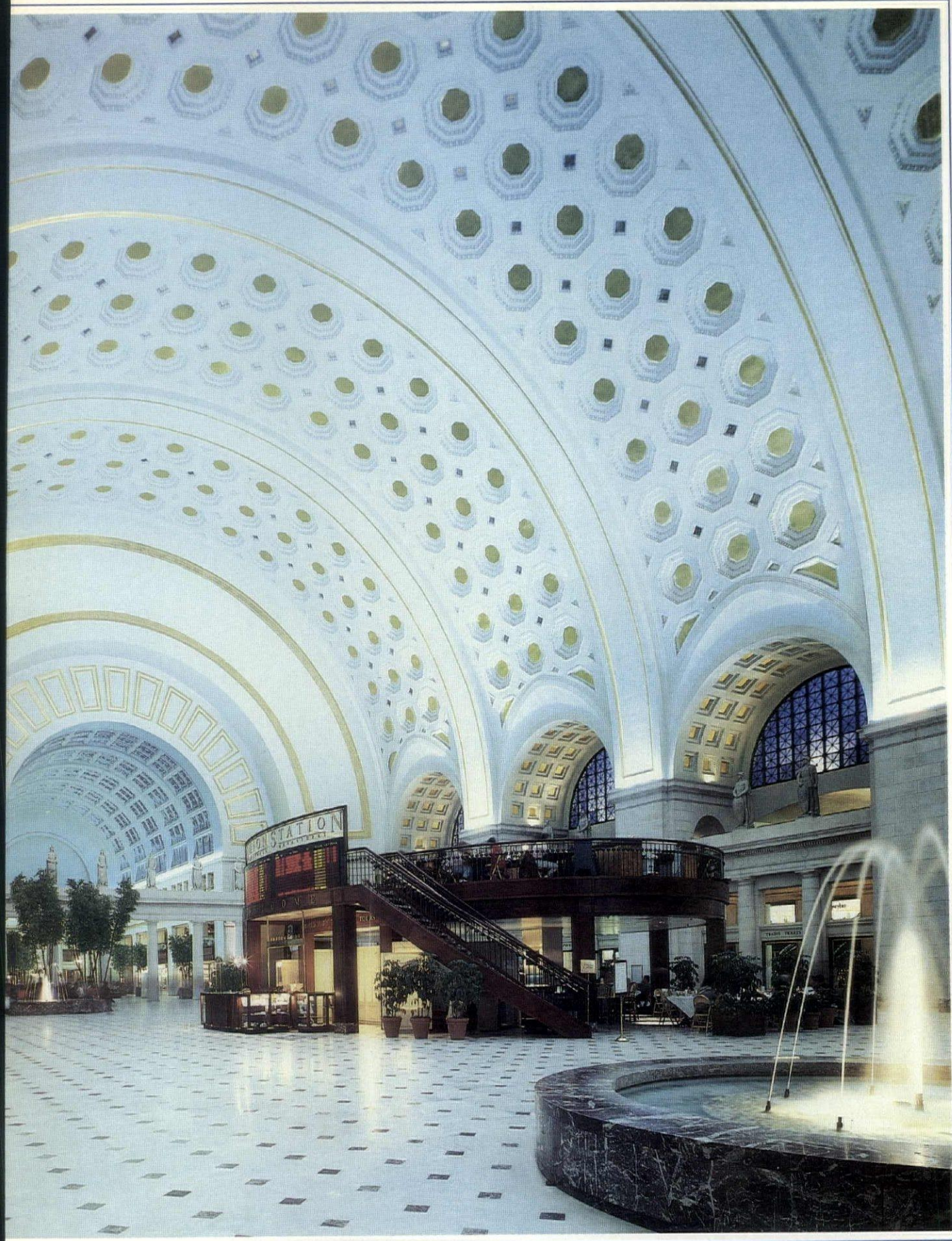
Compact and versatile, the OSRAM HQI-DE lamp is available in 70 and 150 watt sizes and in two color temperatures. So no matter who or what you're spotlighting, the OSRAM HQI-DE is the bright choice.

How long can you afford to stay in the dark about the OSRAM HQI-DE lamp and the new POWERTRONIC electronic ballast?

For more information call **1-800-338-2542.**





TECHNOLOGY BROUGHT TO LIGHT

OSRAM

Acquisitions In The Industry

Cooper Industries, Inc., has acquired Flexillume Canada Limited. Terms of the transaction were not disclosed.

Flexillume, which was privately owned, manufactures specialty fluorescent lighting fixtures that are unique to the Canadian market. Its manufacturing facility is located in the Toronto area.

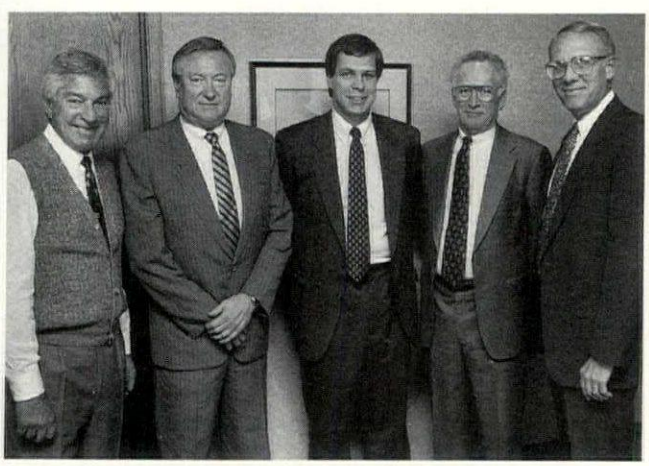
Flexillume will be integrated into Halo of Canada Lighting, Inc. Halo of Canada manufactures incandescent and high-intensity-discharge lighting fixtures, and is part of the Cooper Lighting Division.

Headquartered in Elk Grove Village, IL, Cooper has manufacturing facilities in seven U.S., two Canadian, and two other foreign locations, and employs about 3,600 people worldwide. Houston-based Cooper Industries, with 1990 revenues of $6.2 billion, is a diversified, worldwide manufacturer of electrical products, electrical power equipment, tools and hardware, automotive products, and petroleum and industrial equipment.

Juno Lighting, Inc., recently completed the acquisition of Indy Lighting, Inc.

Juno, headquartered in Des Plaines, IL, purchased Indy Lighting of Indianapolis, IN, in November 1988. The original purchase agreement contained certain provisions that were tied to Indy's 1989 and 1990 sales and earnings. Indy experienced record growth during these past two years.

Indy specializes in the manufacturing of lighting products for commercial, retail, and educational facilities. Juno is a specialist in the design, manufacturing, and marketing of recessed and track lighting fixtures for commercial and residential use.



The management of Juno Lighting, Inc. and Indy Lighting, Inc.: Shown, from left to right, are: Robert S. Fremont, president, Juno; Ronel W. Giedt, president, Indy; Jacques LeFevre, VP/general manager, Indy; Ronald McCarthy, VP sales, Juno; and Barry L. Hindman, VP, marketing, Indy.

COOPER INTRODUCES "SOURCE" EDUCATION CENTER

BASICS & BEYOND: (Above) The residential application area is one of six realistic settings at the "Source." (Right) Lighting principles are expanded using displays and audiovisuals in the Fundamentals Room. Seven, two-day educational programs will be offered at the Source, including: "Lighting Fundamentals for Design Application," "Interior Applications," and "Exterior Applications." Three one-day product seminars are also available.

The Source, Cooper Lighting's new training center located in Elk Grove Village, IL, includes displays of over 3,500 luminaires in a blend of stylized classrooms, realistic application areas, showrooms, and auditorium-seating seminar rooms. The Source has been created specifically to serve interior designers, architects, facilities managers, lighting designers, store and restaurant planners, electrical contractors, distributors, builders, and remodelers.

The Source experience begins in the Fundamentals Room. Five displays focus on the principals of illumination: sight, source, color, control, and electrical components. The origins of light are analyzed in a comparative collection of HID, incandescent, and fluorescent lamp sources. Lamp color rendition is demonstrated using three light boxes.

Whatever is learned in the Fundamentals Room is reinforced through the demonstration of lighting techniques in 1,200-square-feet of realistically outfitted application areas. The spaces depict a residential dining and living room, an upscale men's boutique, a gourmet food store, a sporting goods store, a private office area, and an open plan office space complete with video display terminals.

Three product showrooms feature high-intensity discharge indoor and outdoor, incandescent, fluorescent, and emergency lighting luminaires. Special features include a ceiling compatibility display that presents views of fluorescent fixtures from below and above varied ceiling types with the use of mirrors. In the incandescent area, a photometric comparison display charts candela curves of recessed lighting fixtures on demand and provides hard copy printouts. Drawer-like displays that feature downlighting products pull out and turn 360 degrees, offer cut-away views and hands-on inspection of reflectors, socket plates, bar hangers, thermal protection, and junction boxes.

The facility's auditorium accommodates 300 and has state of the art audiovisual capabilities for seminars and large-scale presentations.

The staff of the Source includes manager John E. Hollander, and market specialists Ted Brickenden and David Doubek.

The showroom brings together products from all the Cooper Lighting companies: Halo (recessed and track fixtures), Metalux Lighting (fluorescent fixtures), Crouse-Hinds (sports, flood, roadway, industrial, and outdoor fixtures), McGraw-Edison (HID specification-grade outdoor fixtures), Lumark Lighting (over-the-counter HID lighting), Sure-Lites (surface and recessed emergency and exit lighting), MWS (modular wiring systems), and P&K Poles (lighting standards) for outdoor lighting.

For more information, write to "Source," 400 Busse Road, Elk Grove Village, IL 60007.

PROFESSIONAL CERTIFICATION PROGRAM INTRODUCED

A certification program for manufacturers' representatives has been introduced by the Manufacturers' Representatives Educational Research Foundation.

Foundation president Gene Foster, Mel Foster Technical Sales, Edina, MN, says the professional designation of CPMR—Certified Professional Manufacturers Representative—will be available to member representatives of MRERF's sponsoring organizations upon completion of the required educational and career experience.

The program is offered through the Institute for Professional Advancement of Arlington, TX, with the academic component supplied at Indiana University, utilizing IU faculty.

The initial certification program is designed for owners and managers of manufacturers' representative companies, but plans are in motion to create programs for both inside and outside sales personnel.

The CPMR designation will be awarded on the basis of work experience, educational experience, service to the industry, and completion of a curriculum on the campus of Indiana University. The course work will be taken over a three year period, and involves both passing examinations and completion of a case study. The program is designed for principals of well-established firms and for key personnel being groomed for future decision-making responsibilities.

The three-year sequence of CPMR coursework will present the base body of knowledge necessary to be a manufacturers' representative. The three-year sequence includes:

- First year—*Building the Foundation for Continued Success as a Rep Firm*
- Second Year—*Further Developing the Company's Resources*
- Third Year—*Assuring the Firm's Success through Future Planning*

For information: William R. Bess, managing director, the Institute for Professional Advancement (817) 465-5511 or Dr. Stephens at the foundation (708) 208-1466.

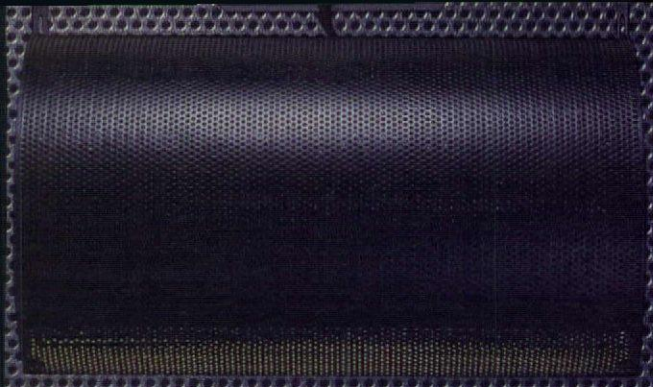
GE Invention Entered In Smithsonian

Frank LaGiusa, a GE senior lighting specialist, has been recognized for his invention of an energy-saving light bulb that has been accepted into the Smithsonian National Museum of American History in Washington.

LaGiusa developed the ellipsoidal reflector (ER) lamp, an energy-saving replacement for reflector floods and standard incandescents, in 1967. Specified mostly in stores, cafeterias, lobbies, restaurants, and conference rooms, the ER lamp helps reduce energy costs 20 to 60 percent compared to standard reflector floods, and minimizes trapped light in overhead ceiling fixtures. Almost 20 million have been shipped by GE Lighting in the last.

LaGiusa's lamp invention will be preserved in the Smithsonian collection and is available for study by scientists, historians, and other interested parties.

"LaGiusa's ER lamp represents an imaginative application of old technology to the solution of new problems," says Dr. Bernard Finn, curator.



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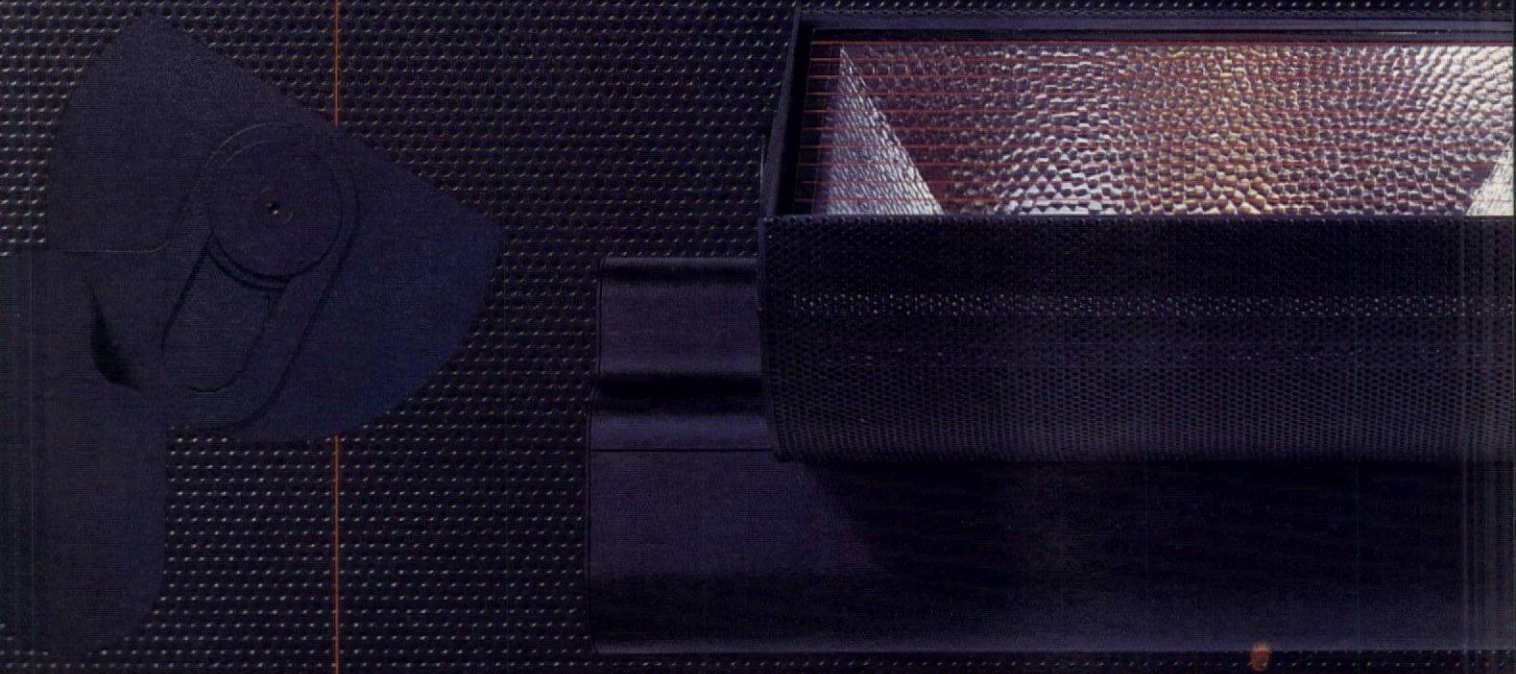

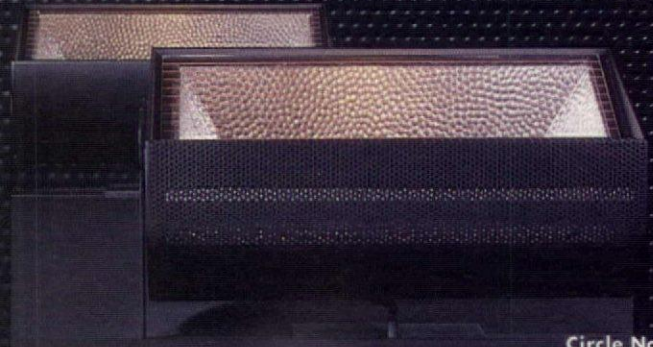

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10400 North Enterprise Drive
Mequon, WI 53092
414-242-1420
414-242-6414 FAX

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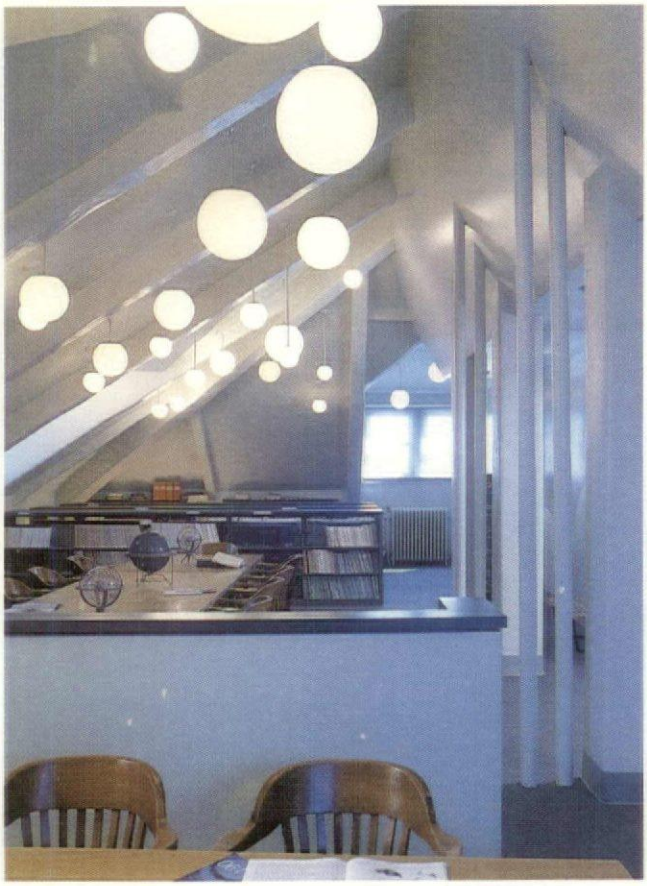
COLUMBIA UNIVERSITY'S HEAVENLY LIGHT



ASTRONOMICAL DELIGHT: Glass globes, both small and large (below), decorate this science department's library and are fashioned to resemble a night sky (above).

BY CHRISTINA LAMB
ASSISTANT EDITOR

CHALLENGE The top two floors of a 12-story facility is home to Columbia University's Astronomy Department. There's a lot of structured classroom and office space, which, according to lighting designer Ross Anderson, left very few opportunities to make any type of vertical connection with the sky. "It was a very pragmatic floor plan," says Anderson, "yet there was no sense of being on the top of the building. We wanted to emphasize that, indeed, they are." So, the design team took advantage of the department's location, and played off the fact that they were designing for scholars devoted to observing the universe and studying celestial bodies. "That's what we really wanted to focus on," Anderson says, "and that's where many of the lighting ideas originated."

DESIGN/TECHNICAL CONSIDERATIONS "The library was really a found space," Anderson says. It was an existing storage room, and if the roof structure was exposed there, you could see the framing elements and its slope, says Anderson. "You begin to feel as if you are tucked up under the eves of the rooftop." While original architecture had to remain intact, an elevated and uplifting design was needed.

METHOD By adding 52 celestially-inspired opal glass globes to the library, the space is transformed to a nighttime sky. The pendant-mounted heavenly spheres vary in size—18-inch, 12-inch, and 8-inch diameters—and use 60-100-watt incandescent lamps. The fixtures are on dimmers to add more depth and drama to the scene. Outside the library, a turret with a skylight penetrates the roof. The freestanding structure, which Anderson says is like an observatory, is painted red to separate it from the rest of the building. Installed in the structure is a heliostat, a device that tracks the sun and projects its image onto the floor below. "You can see solar flares and sun spots swirling around on the surface," Anderson says. On each of the four sides of the structure, there is a 100-watt high pressure sodium flood in an uplight fixture. Fluorescent lighting, housed in the walls of the turret, provides downlight, and two 69-watt incandescent tower and obstruction lights are located in the observatory space—which also has natural daylight going through it. "It's a real mix of lighting types, and all of this was meant to underscore that this architectural element is what connects the inside of the building to the sky," Anderson says. "If you stand in the sun circle, you can look up about 25 feet into the transparent skylight." It allows daylight to enter and provides access to the night sky.

CONTINUED ON PAGE 14

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For more information contact Noral Lighting, Inc., P.O. Box 360532, Cleveland, Ohio 44136. Telephone: (216) 273-7155; Telefax: (216) 273-5007.

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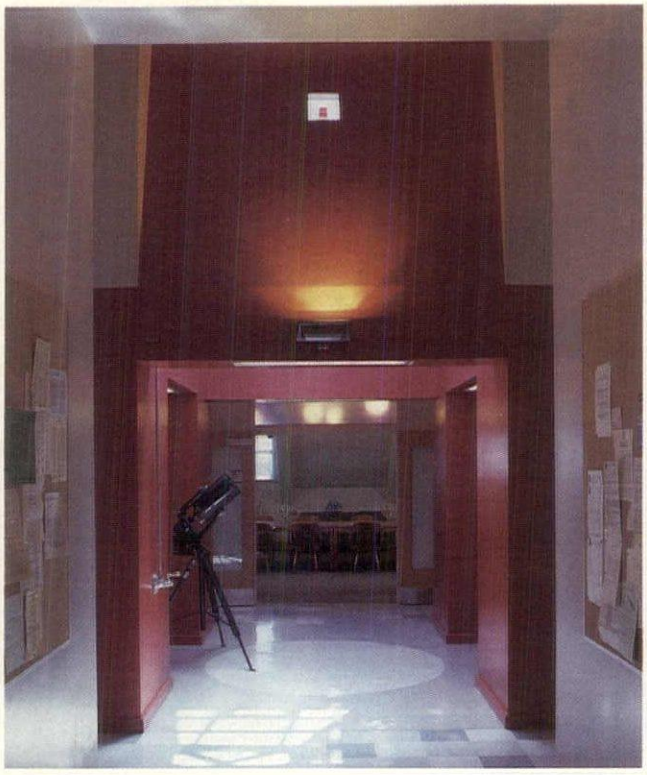

ILLUMINATED WELL: The skylit turret (above) acts as both an observatory and gathering place.

CONTINUED FROM PAGE 12

CONCLUSION "The skylit area is a large vertical space that's like an updated version of the village well where people would gather—though in this case the space provides height rather than depth," says Anderson. "It's adjacent to the kitchenette where department members go to get coffee, so it's *the* place in the hallway to get an idea of what the weather is doing outside, where the sun is, or to just hang out." The astronomy department, although they were using the same space, did not realize its potential for something more than a storage area, says Anderson. "They always felt like they were being shoved off to the side somehow, so we tried to recapture their spaces and give them back, complete with an intriguing design that would appeal to their interests."

DETAILS

PROJECT: *ASTRONOMY DEPARTMENT AT COLUMBIA UNIVERSITY*
LOCATION: *NEW YORK*
CLIENT: *COLUMBIA UNIVERSITY (PAM PADDOCK, FACILITIES MANAGEMENT); ASTRONOMY DEPARTMENT (PROFESSOR DAVID HELFAND)*
LIGHTING DESIGNER: *ANDERSON/SCHWARTZ*
INTERIOR DESIGNER: *ANDERSON/SCHWARTZ*
ARCHITECT: *ANDERSON/SCHWARTZ; ROSS ANDERSON, PARTNER-IN-CHARGE; DAVID SMILEY, PROJECT ARCHITECT*
ELECTRICIAN: *HELLENIC WIRING*
GENERAL CONTRACTORS: *KOREN DIRESNA CONSTRUCTION CO., INC.*
PHOTOGRAPHER: *ELLIOTT KAUFMAN*
LIGHTING MANUFACTURERS: *PRIMELITE: pendant globe fixtures; CROUSE-HINDS LIGHTING: HPS floods and tower and obstruction lights; LEGION LIGHTING: fluorescents; G&R GLASS CORP.: skylights; heliostat provided by astronomy department of Columbia University*

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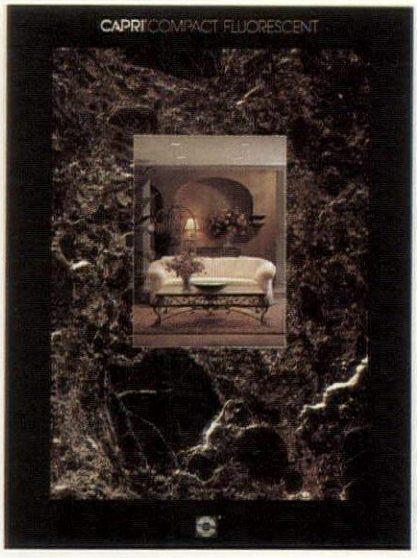

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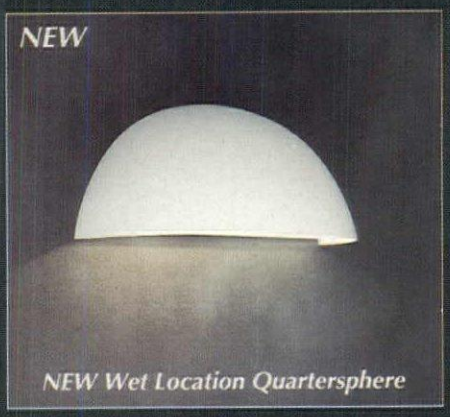

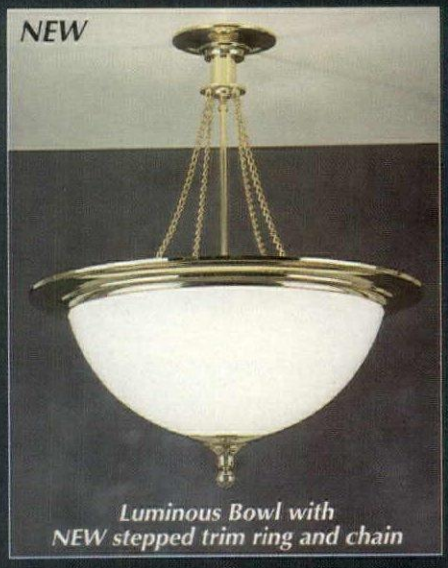

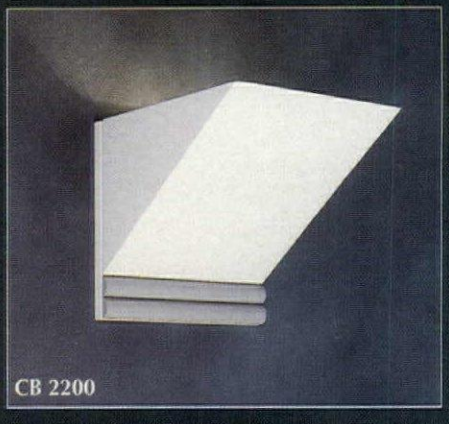

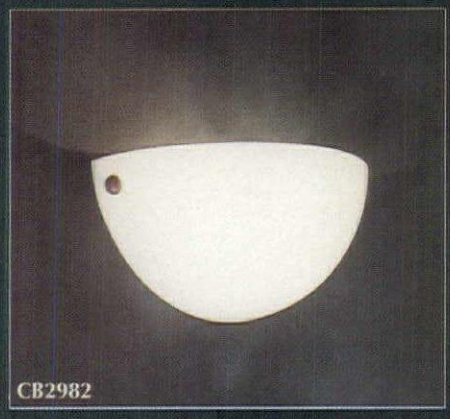

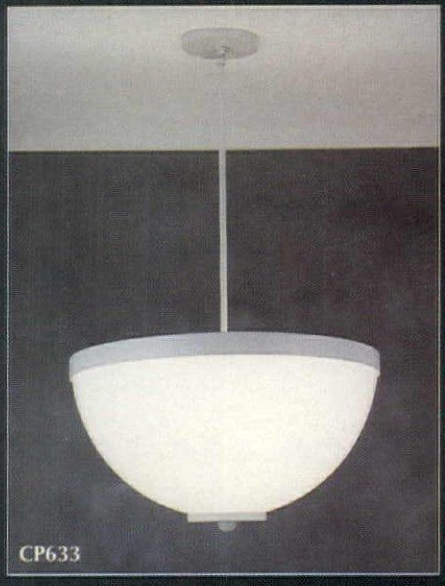

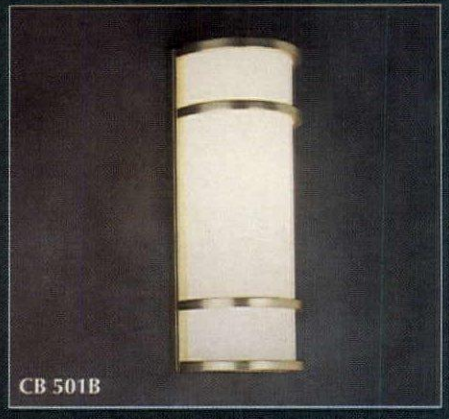

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1991 WINNERS

IALD

LIGHTING DESIGN AWARDS

"Fascinating" is an understatement to describe what it was like to observe and listen to the comments of the judges for the 1991 IALD Lighting Awards. The panel of architecture, interior design, and lighting design experts met in New York on January 18 for the judging of the nearly 100 submissions.

Is the lighting truly integrated with the architecture, or merely added on? Would there have been a better way to light the space? Is the interior design superior to the lighting, and the factor that's attracting our attention? It's these kinds of considerations that were brought up and discussed as projects submitted by the top international architects and designers were dissected.

Besides learning more about what makes good lighting design, I was impressed by the sincerity and fairness of the judges. They really tried hard to render a balanced evaluation of the projects they saw without prejudice. All the committee members attending felt the satisfaction and sense of accomplishment that the panelists shared with each other when the judging was completed.

Robert Newell has been the chairman of the IALD Lighting Awards Committee for three years. When I asked Newell what makes the IALD's program different from other programs and competitions, he stated that design is the critical issue.

"The IALD Lighting Awards evaluate aesthetic achievement backed by technical expertise. The focus is on lighting integrated within architecture, and not merely applied to it," Newell says. In other programs, it's the other way around—the emphasis is on technical expertise, which happens to have aesthetic merit.

Newell has seen the IALD's awards program improve over the last few years. He attributes this to the proliferation of lighting design as a discipline and the evolution of higher design standards, advancements in and application of technology, and better collaboration between architects and lighting designers.

"Technologies are only tools," Newell says, "design revolves around their inspired application."

Architectural Lighting is privileged to have cosponsored the IALD Awards Dinner, held on March 6 at the Chicago Institute of Art, in conjunction with LightFair. The special section that follows presents the winning projects of the 1991 IALD Lighting Awards.

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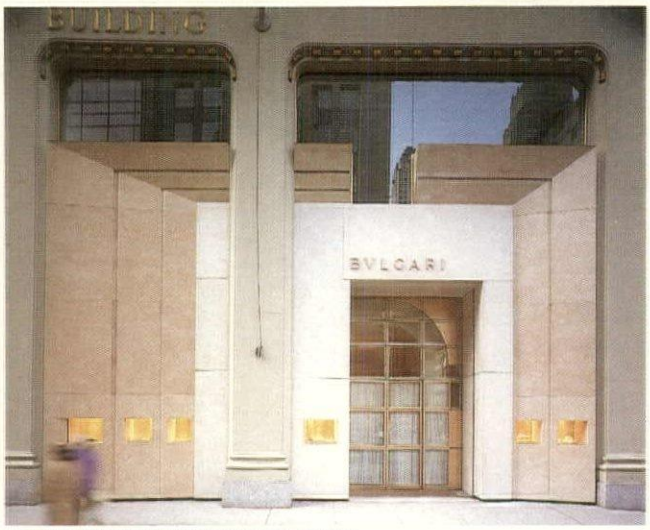


PHOTOGRAPHS BY NORMAN McGRATH

IALD
LIGHTING DESIGN AWARDS

AWARD OF EXCELLENCE

JURY COMMENT: The store is a very special space, particularly due to the clarity of the lighting in the display cases and the use of light to model form.

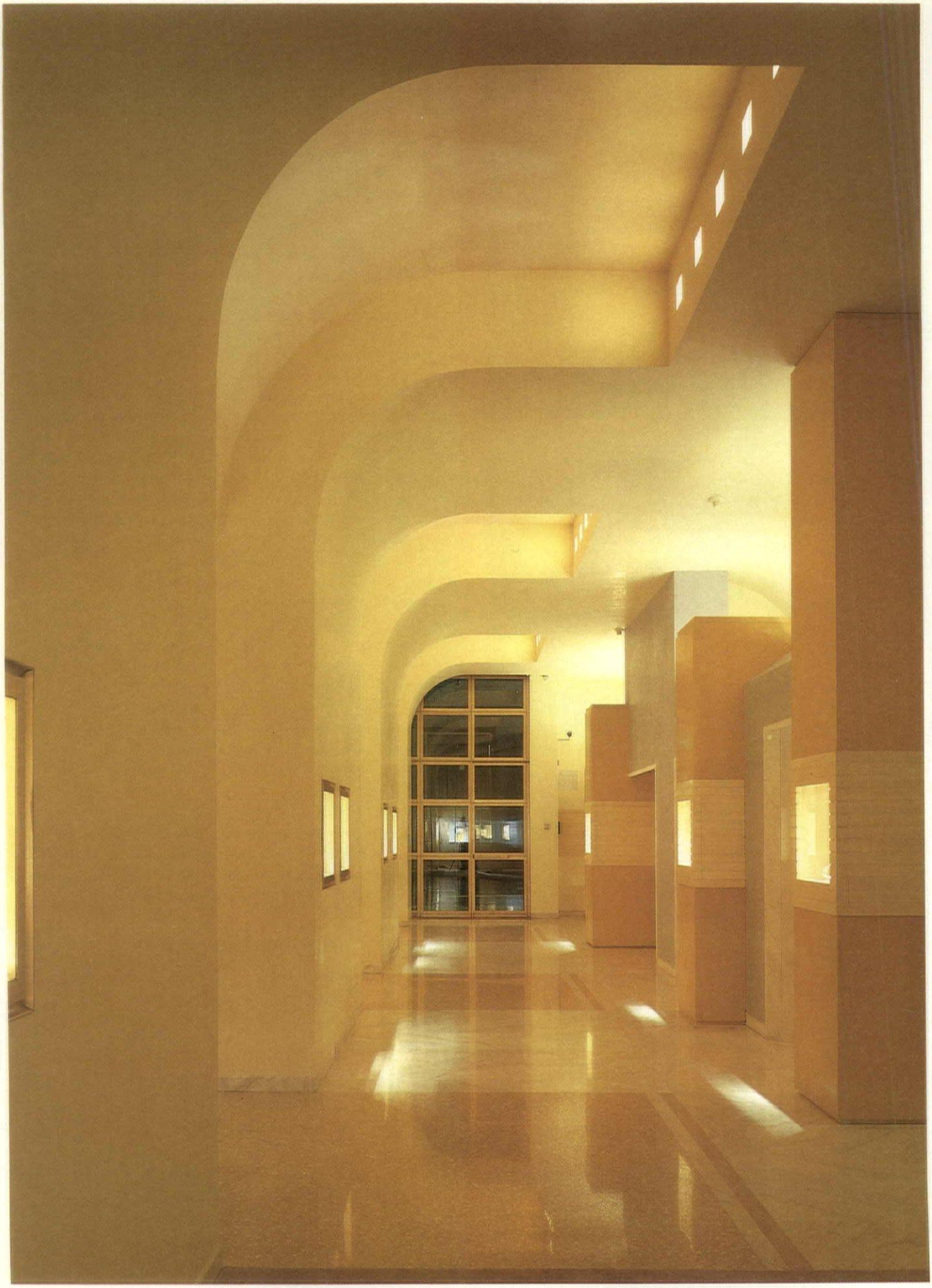
LIGHTING DESIGNERS: Robert Prouse, partner in charge, and Randy Sabedra, project manager, H.M. Brandston & Partners

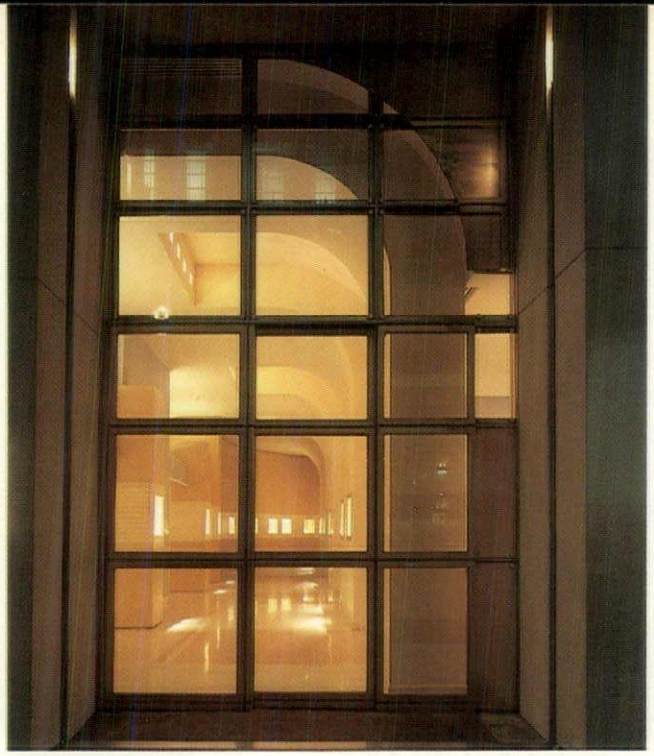
ARCHITECT: Pierio Sartogo, Architetti Assochati

INTERIOR DESIGNER: Bruce Schrimmer, Soo Kim Associates

BULGARI, NEW YORK

The exterior and interior presence of the jewelry store is classic and restrained. Lighting is integrated with clean-lined architecture.





The clientele of the Bulgari store in New York City appreciate the avant garde design of the jewelry and have achieved lifestyles to match. The intent of the lighting design was to sell the jewelry, and, at the same time, have a minimal presence consistent with the use of classical materials in a modern context.

The design of the interior is intentionally very subdued and elegant to promote a direct relationship between the customer and the jewelry. The smoothly curved, hand-rubbed plaster surfaces of the store's spine are softly washed with incandescent uplight imbedded in the beams. Simple square niches cut into the vertical fascias are illuminated with A-lamps. The penetration of lighted niches into the arches sets the interior vitrines into the context of "light windows."

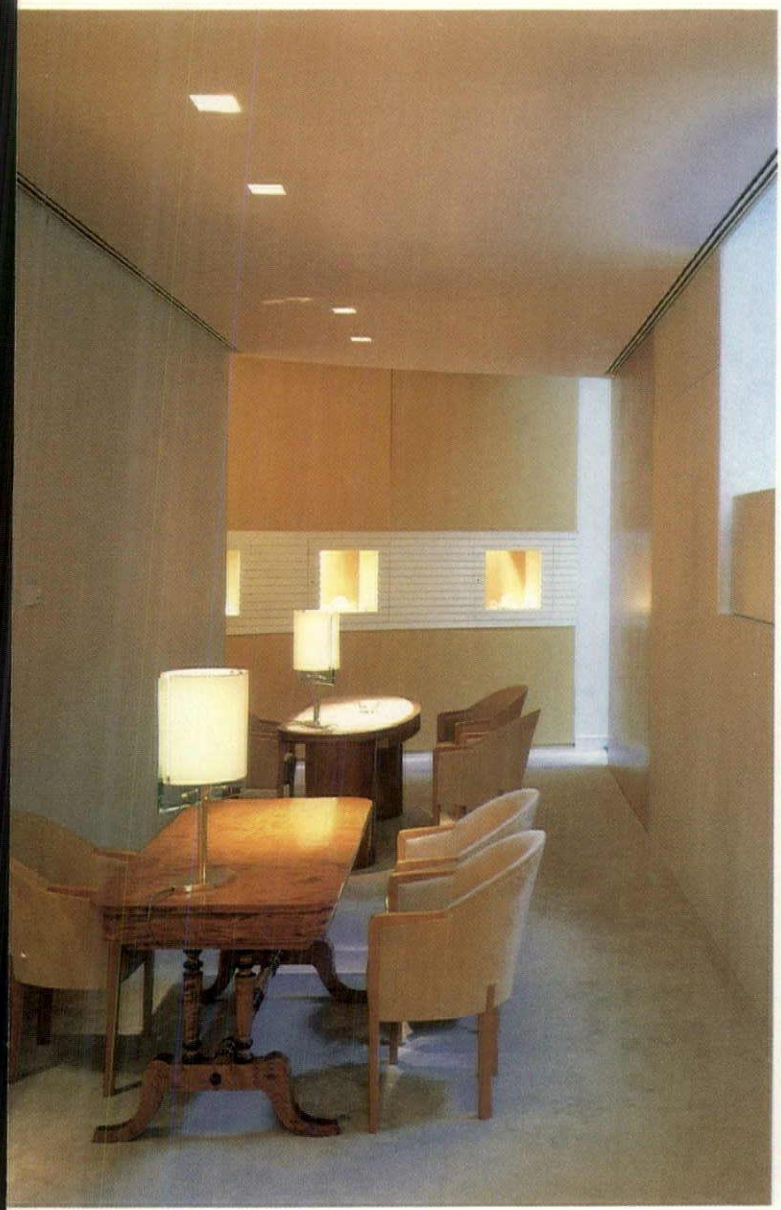
Off the central spine are sales rooms where the lighting objective was not only to display the jewelry in the best manner, but also to illuminate customers in a flattering way as they view various pieces.

This is accomplished with a special adjustable downlight that has a combination of clear and diffusing material to provide both punch for the tabletop display of jewelry, and softer light to be cast on the faces of customers seated at the table. The table lamps were also custom designed to provide soft, flattering facial light from a lower angle.

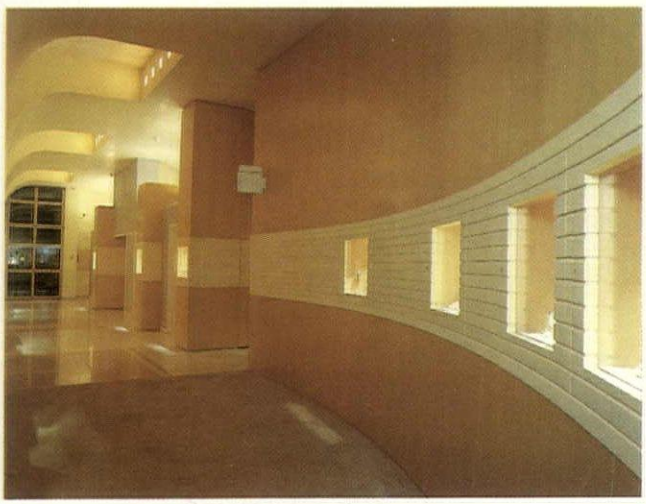
Most of the illumination within the space is provided by the glowing vitrines, which are lighted with MR 16 luminaires optimally located above the jewelry.

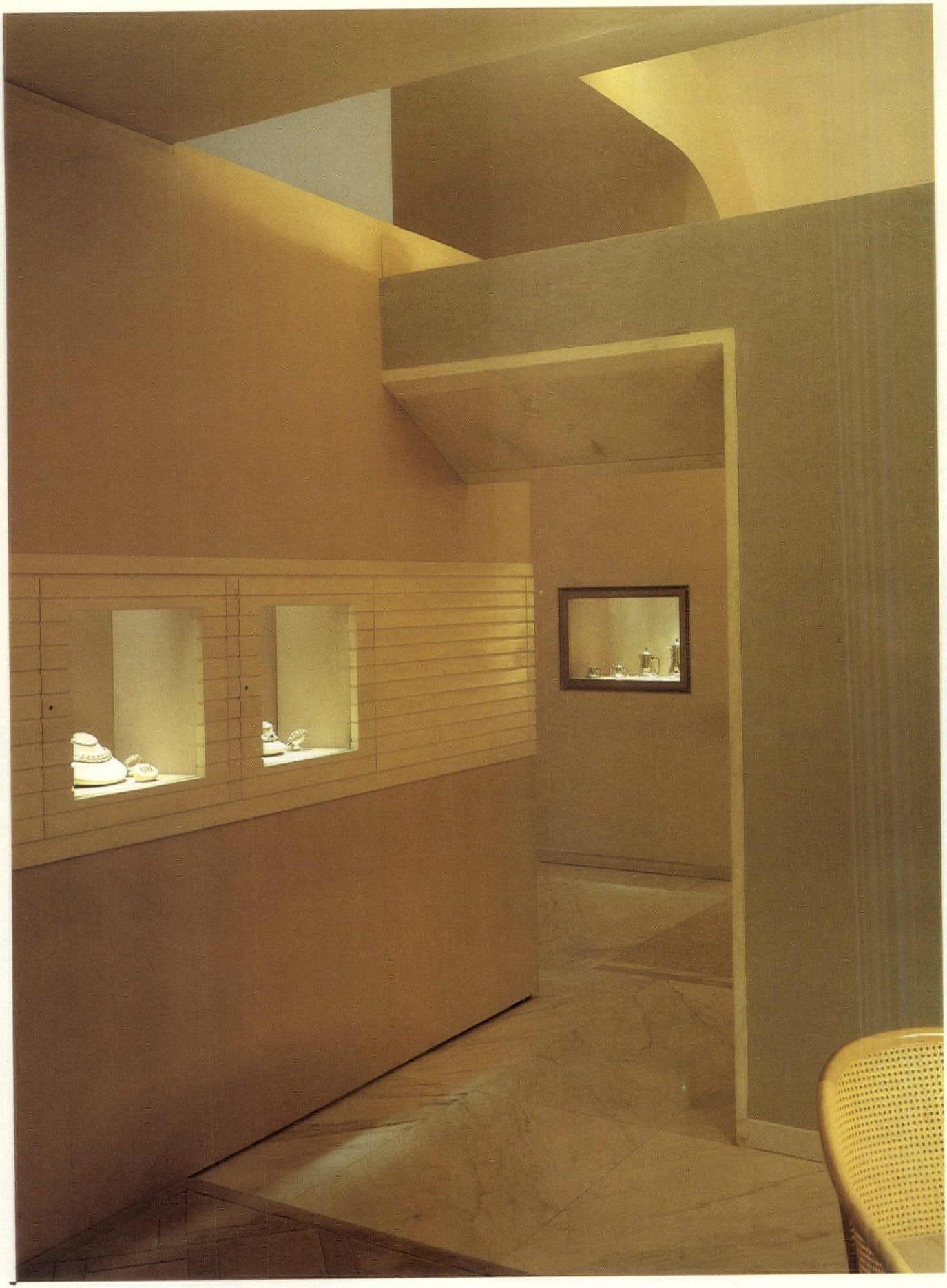
Adjustable MR 16 track fixtures are concealed in the vitrines and located high above the window openings. The track fixtures in the center row are fitted with 50-watt floodlamps and tempered glass spread lenses, aimed straight down to provide a general wash of light, and locked into position. The track fixtures on the rows directly above the jewelry contain 50-watt spots that are focused on each item.

The intensity of light within the vitrines eliminates veiling reflections on the glass windows, thus providing an unobscured view for the client. Direct light is kept off the fabric panels. ■



Lighting fixtures are unobtrusive to encourage a direct relationship between highlighted jewelry and the customer. The custom-designed table lamps in the sales rooms (lower left) provide flattering facial light.





IALD
LIGHTING DESIGN AWARDS

AWARD OF EXCELLENCE

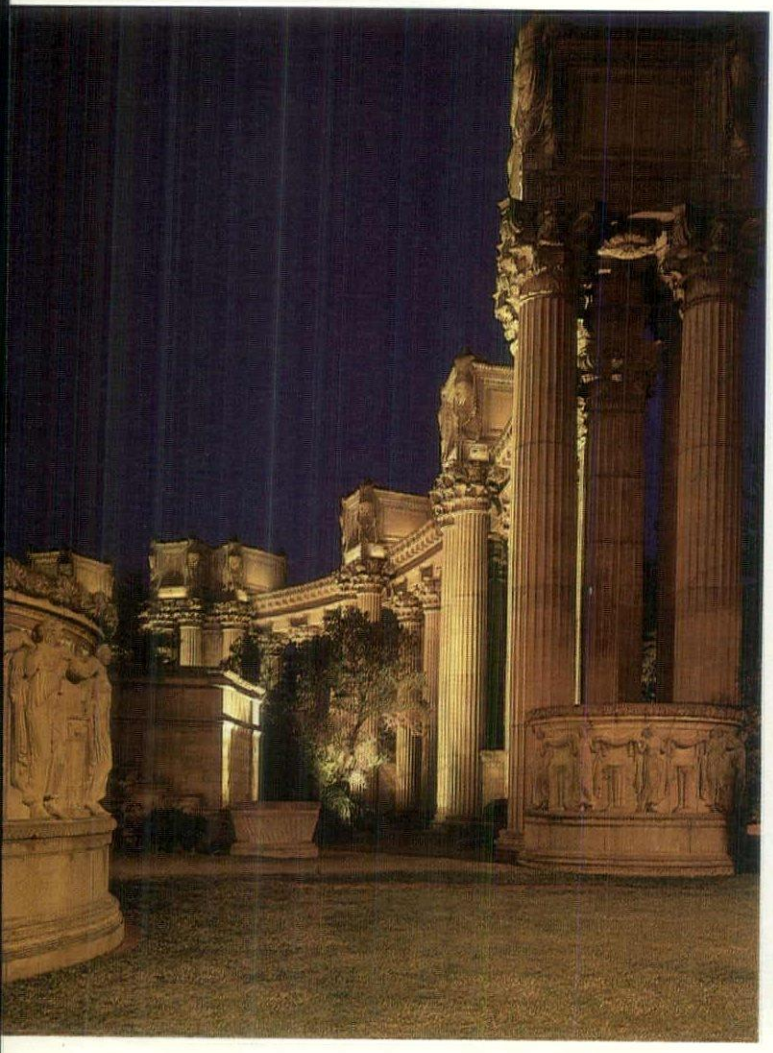
THE PALACE OF FINE ARTS

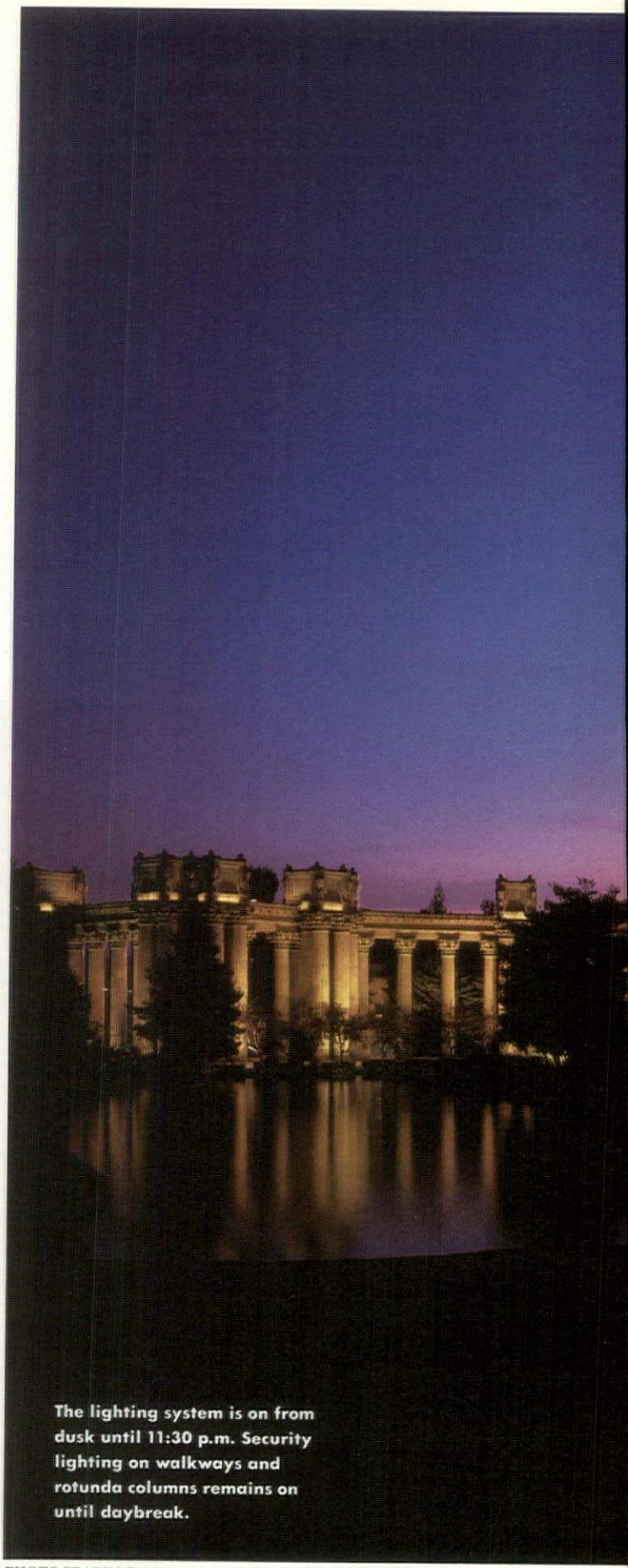
JURY COMMENT: The lighting respects the architecture and is sensitive to architectural details. Noteworthy is the effectiveness of the rotunda's deliberately brighter lighting; it is a difficult effect to accomplish.

LIGHTING DESIGNER: Ross DeAlessi, Luminae Souter Lighting Design

ARCHITECT: Bernard Maybeck (1861-1957)

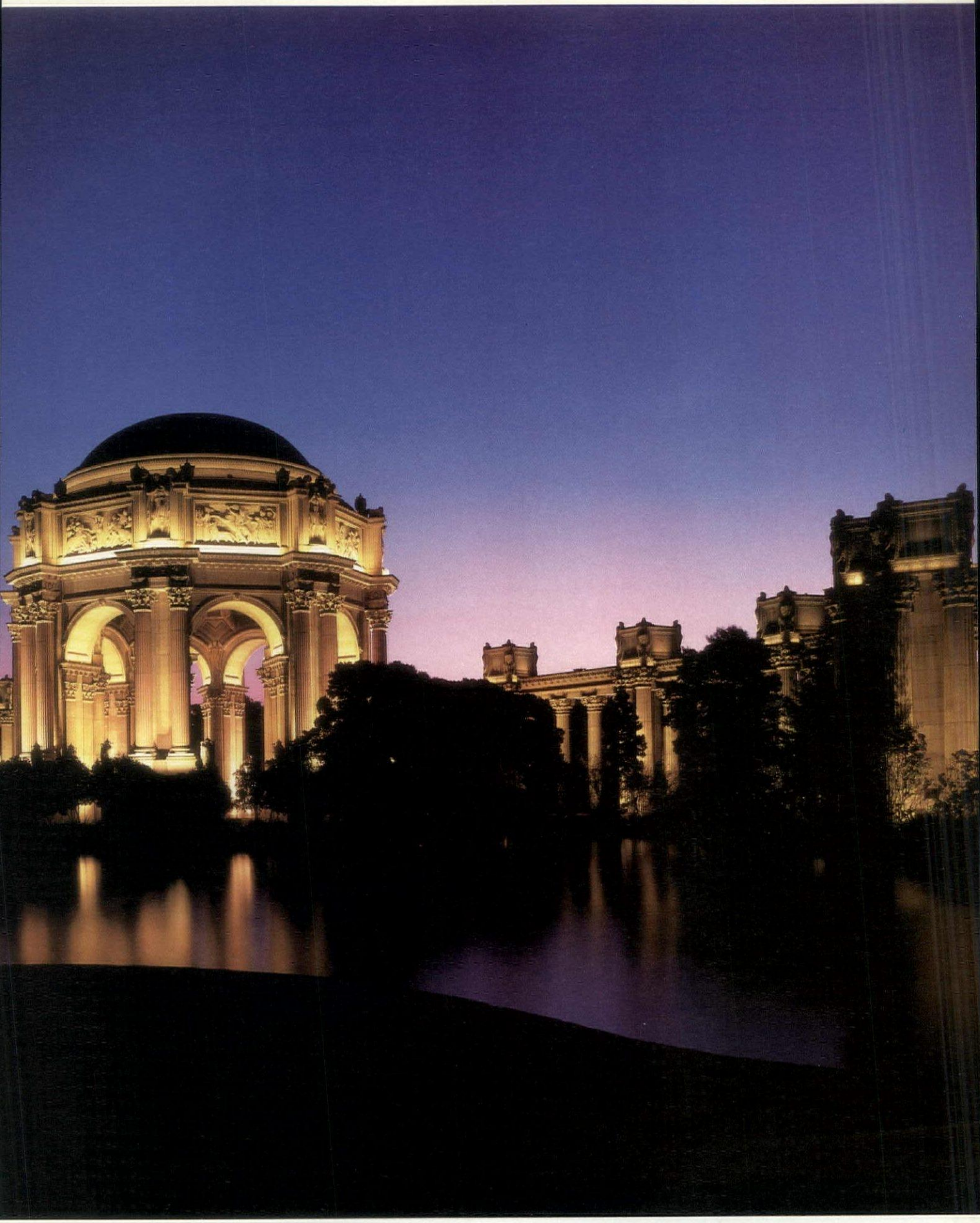
ENGINEER & CONTRACTOR: Sasco/Valley Electric





The lighting system is on from dusk until 11:30 p.m. Security lighting on walkways and rotunda columns remains on until daybreak.

PHOTOGRAPHS BY DOUGLAS SALIN



The low-profile fixtures in the rotunda (above and top right) and at the base of the ornate columns are virtually invisible by night.

The Palace Of Fine Arts was designed by Bernard Maybeck and built for the Pan-Pacific International Exposition of 1915 to honor the completion of the Panama Canal and to celebrate the resurrection of San Francisco after the great earthquake. In 1967, a concrete reconstruction of the then-deteriorating structure was completed.

The Palace, now a historic landmark, is located on the western edge of San Francisco's Marina District. The 130-foot tall central rotunda has terra-cotta colored columns, eight sculpture panels, eight statues, and is set against the background of the 70-foot-tall colonnade.

The relighting of the Palace required both extensive historical research and civic approvals. Aesthetics, ease of maintenance, and vandal resistance were design requirements. Strict adherence to tight energy and construction budgets was mandatory. However, the paramount requirement was to achieve zero daytime architectural impact.

All fixtures are low-profile and glare-free so as not to affect the architecture or create light trespass on the Pacific Heights neighborhood immediately south of the Palace.

In the late 1960s, only the columns were backlighted, using 60 1,000-watt incandescent fixtures. The current owners insisted that the draw of the new design not exceed 60 kilowatts. The new lighting system illuminates the structures and entire site with a draw of 44 kilowatts.

Asymmetric floodlights employing 150-watt and 250-watt deluxe HPS lamps footlight the colonnade and rotunda. They are enclosed in locking concrete vaults of matching color with black metal grates. Several grates have blackout panels welded in place, and certain crossbars are removed to provide a smooth wash. Rotunda footlights have remote-ballasts to insure low-profile enclosure vaults.

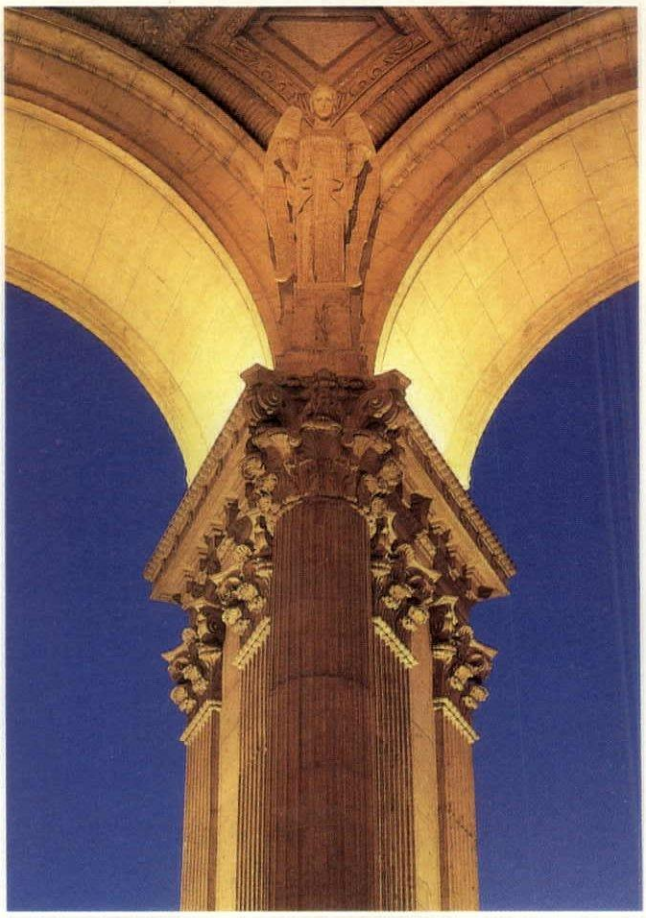
Low-profile, remote-ballast asymmetric fluorescent sign lighters, with high-output tri-phosphor lamps, illuminate sculpture panels, statuary, and rotunda arches. Customized, very low-profile fluorescent sign lighters with T 8 tri-phosphor lamps are placed atop the colonnade on extremely narrow ledges to illuminate the "Weeping Maidens." All fluorescent fixtures are outfitted with louvers, and custom-colored lenses to match the color of deluxe high-pressure sodium.

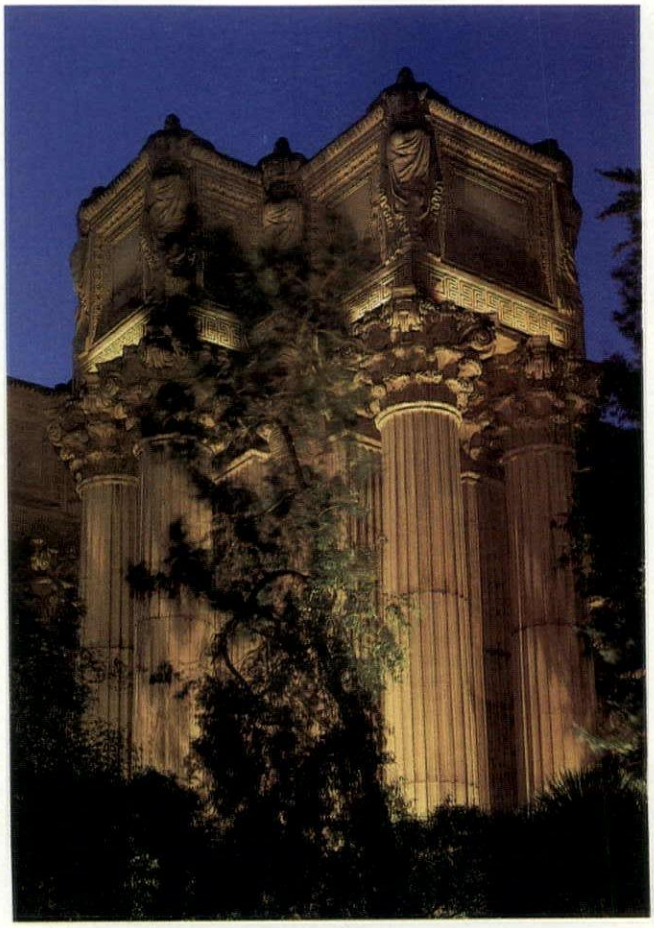
Enclosed PAR 38 lampholders, with 250-watt quartz spot lamps in metal plate boxes with locking grates, backlight rotunda columns in crisp white light. Enclosed PAR 56 holders with 12-volt PAR 56 lamps focal light "The Priestesses of Culture" inside the rotunda. These fixtures are outfitted with custom hoods for glare control. All quartz and incandescent lamps are dimmed 15 percent to extend lamp life.

Three low-profile, custom-colored concrete enclosures house pier uplights at the 16-foot level.

All fixtures and enclosures are outfitted with stainless steel tamper-proof hardware, and the fixtures are custom-painted to protect against corrosion from the marine environment. A cleaning and maintenance schedule, and a generous private endowment, insure upkeep of the system and group relamping before end of lamp and color life.

A rendering was prepared, and an on-site mock-up of lighting effects was performed by the designers to obtain the required approvals from the Recreation and Park Commission (the owner), the Arts Commission, two neighborhood associations, and the Landmarks Preservation Advisory Board. ■





PHOTOS BY GARY QUESADA

IALD
LIGHTING DESIGN AWARDS

CITATION

JURY COMMENT: The design "takes a chance." Praiseworthy is the interaction of the lighting with the frenetic architecture to create a kinetic space.

LIGHTING DESIGNER: Stefan Graf, Illuminart

ARCHITECT: Ken Neumann, Neumann Smith & Assoc.

ENGINEER: Ferguson Electric

REGENT COURT

A combination of light, color, and animation accents the character of the exterior architecture and landscape at the Regent Court office building in Dearborn, MI.

The building surrounds a center court with a rolling landscape sculpture of grass, granite, and brick pavers. Prominent vertical and horizontal architectural elements provide a grid-work backdrop to contrast the organic centerpiece. The lighting design goal was to use the dynamic qualities of light to accent its character and theme.

To obtain the desired effect, three sources were introduced: warm and cool metal halide, and low-voltage incandescent.

Low-wattage metal halide sources of 3,000 degrees Kelvin articulate the perimeter of the court, while a cooler (4,100 degrees Kelvin) metal halide uplights the trees.

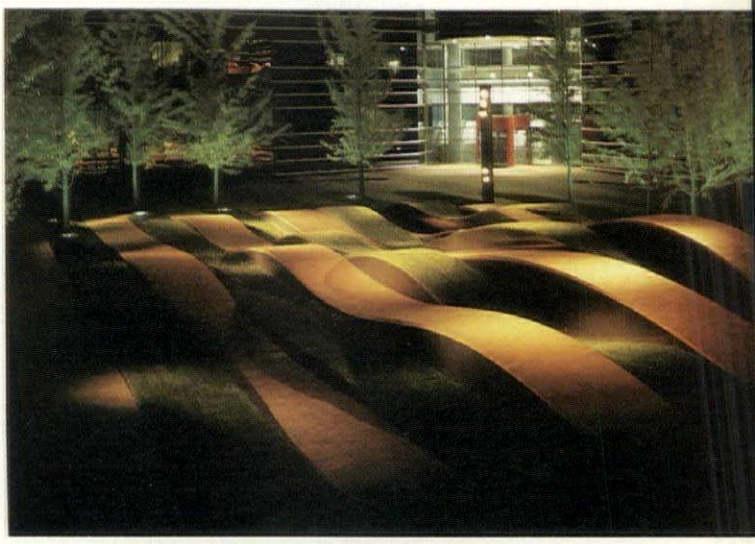
The pylons conceal the 240-watt PAR 56 and 75-watt PAR 36, 12-volt luminaires with remote ballasts at the base. The custom louver covers are manufactured for a specific aiming angle, with louver blades varying from 32 to 48 degrees to control glare.

Each of the five columns has four dimmed circuits controlled by an electronically timed crossfader. Fade times are set at 7 seconds to slowly change the illumination patterns on the sculpture, bringing it to life.

Dimming extends the lamp life of all incandescent sources, while an astronomical time clock controls the court lighting system throughout the year for ease of operation.

The visual harmony of lighting, architecture, and art is a memorable experience for the viewer upon entering and exiting the building. ■

SCULPTURED RIBBONS ARE given the illusion of rolling movement by multi-source lighting that is programmed to crossfade. The landscape sculpture is the centerpiece of the Regent Court office complex.



IALD
LIGHTING DESIGN AWARDS

CITATION

UNION BANK OF SWITZERLAND

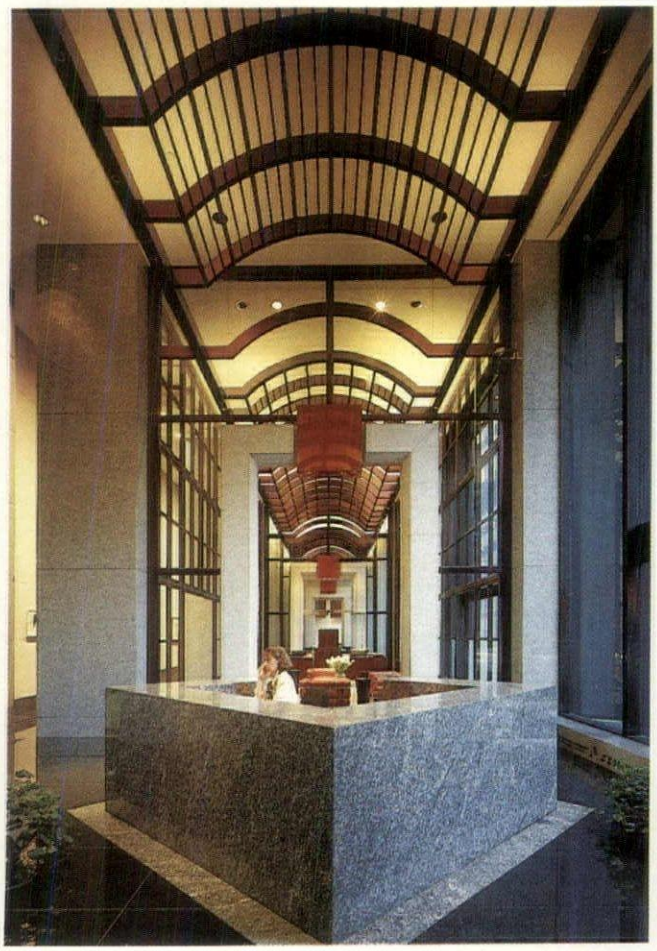
JURY COMMENT: The design successfully marries the architecture and lighting without creating an awareness of the light sources.

LIGHTING DESIGNER: Francesca Bettridge, Carroll Cline, Cline Bettridge Bernstein Lighting Design, Inc.

ARCHITECT & INTERIOR DESIGNER: Gensler and Associates Architects

ENGINEER: Edwards and Zuck

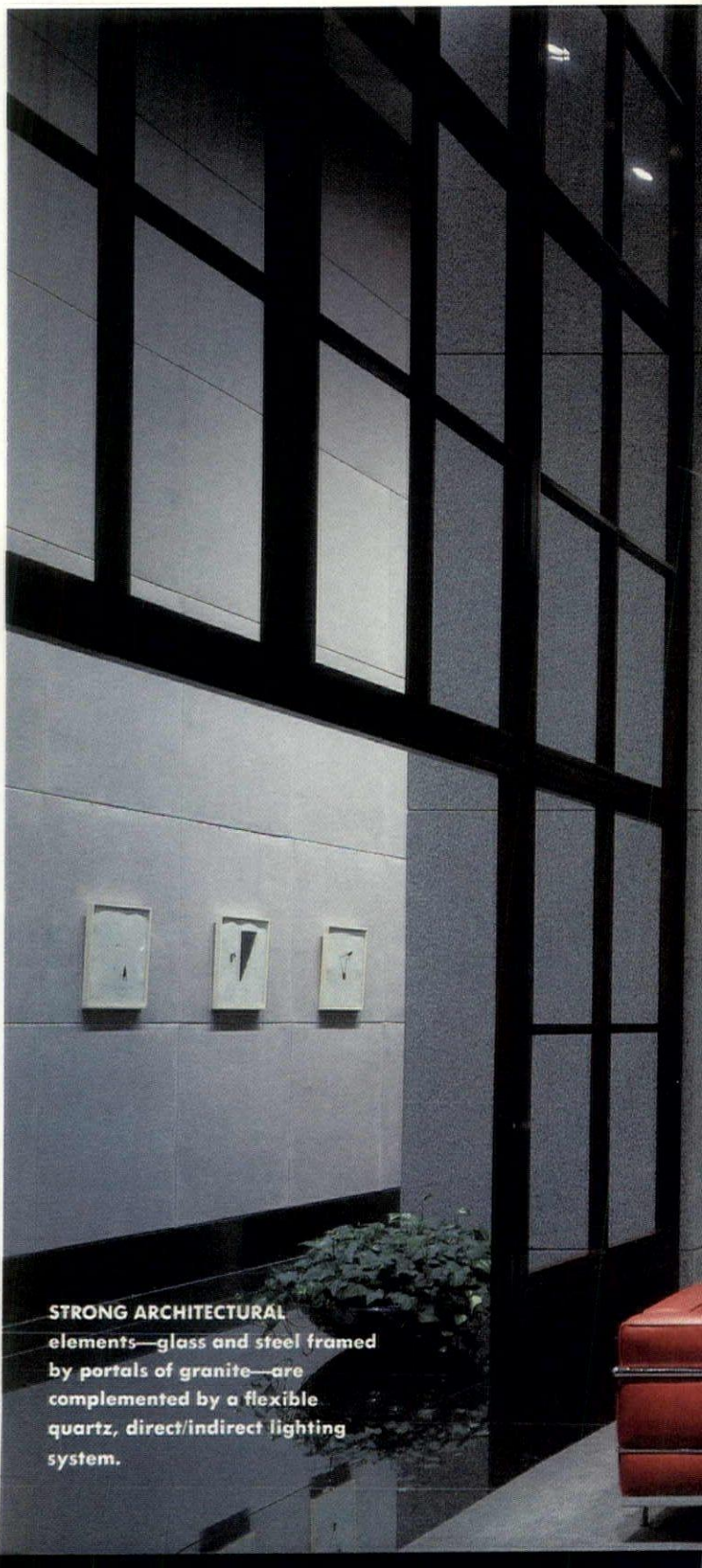
PHOTOS BY JAIME ARDILES-ARCE



The Union Bank of Switzerland wanted to establish a strong presence at their newly acquired, prominent Park Avenue banking hall and lobby.

The awkward volume of space—125 feet × 25 feet × 24 feet—was broken down to create a series of "buildings within a building." These elements reduce the overall dimensions of the space to a more human scale while preserving the impressive qualities of the main volume.

The "buildings" are formed by facades of transparent glass and steel and framed by monumental portals of granite. The



STRONG ARCHITECTURAL elements—glass and steel framed by portals of granite—are complemented by a flexible quartz, direct/indirect lighting system.

structures are topped with a suspended steel roof formed by a series of arches supported by two main beams.

The lighting concept sought to enhance the formal progression of these spaces, express the strong architectural elements of the "buildings," and provide appropriate levels of illumination for visitors and workers. To achieve this, most of the lighting was incorporated into the two main structural beams that run the length of the space.

Uplighting the ceiling are 50-watt quartz lamps, 3 feet, 6 inches on center. Line voltage 50-watt PAR 20 lamps, at fixed angles within the beam, light the space below. This solution avoids the need for low-voltage transformers in the limited space of the beam. In addition, since all the sources are quartz, the color is consistent throughout.

The portals are lighted using 500-watt PAR recessed accent fixtures that are concealed from normal viewing angles.

A six-scene preset automatic dimming system allows the amount of artificial light in the space to be varied for daytime, evening, and special function uses.

The lighting, discreetly located within a very small architectural space, highlights the richness of materials, and helps to define and balance the composition of the spaces. ■

IALD
LIGHTING DESIGN AWARDS

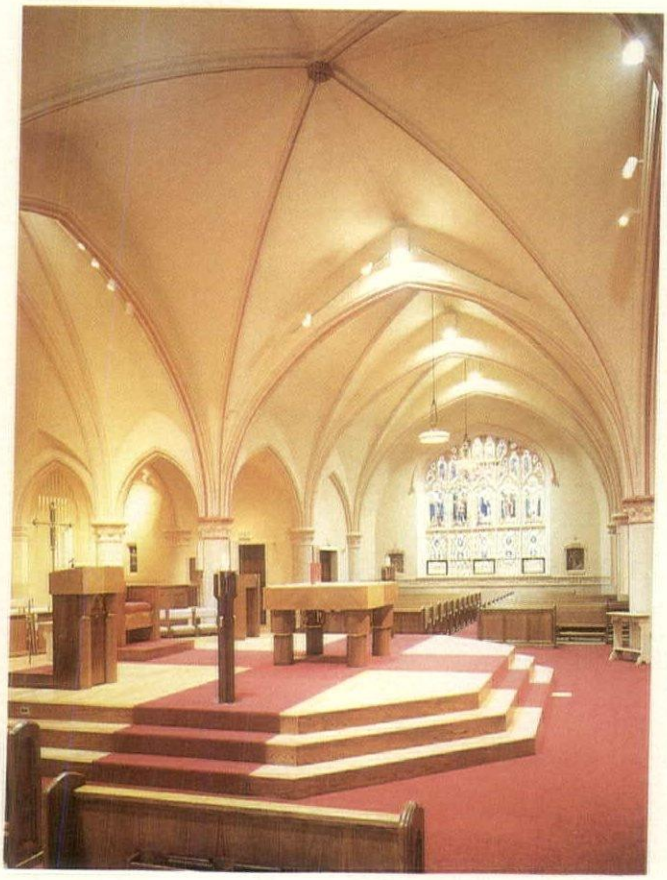
CITATION

JURY COMMENT: Budgetary constraints often limit options in this type of project. The designer was able to develop a solution that respects the architecture and avoids breaching the ceiling.

LIGHTING DESIGNER: Jeffrey T. Berg, Berg/Howland Associates

ARCHITECT: Stephen J. Wessling, Eisenberg Haven Associates, Inc.

ST. AGATHA'S SANCTUARY



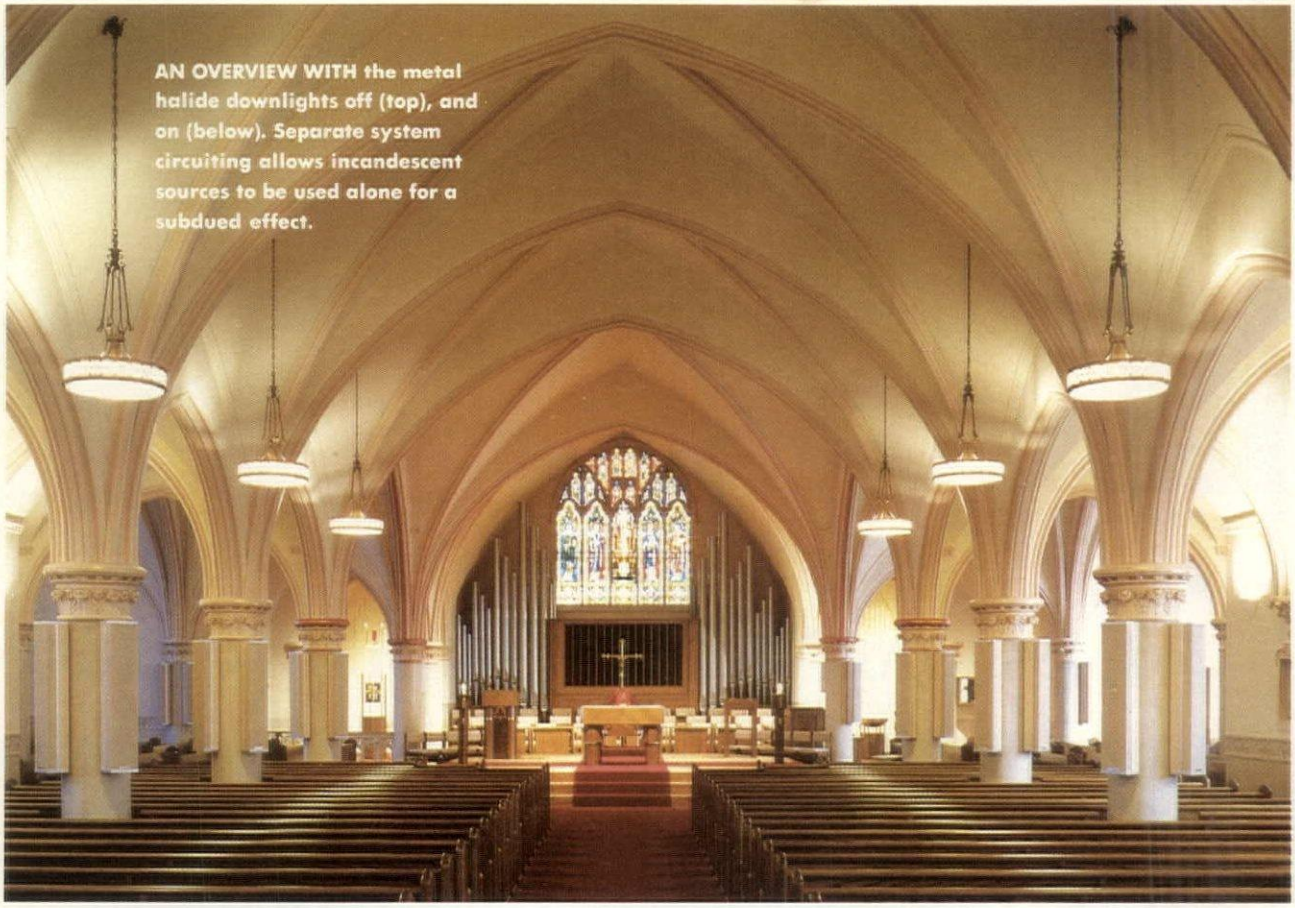
The renovation of St. Agatha's Church in Milton, MA, was initiated to accommodate changes in the liturgy and improve the appearance of the interior. The objectives of the lighting design were to increase illumination for reading, make visible the architecture of the sanctuary, and dramatize the ceremonies. Any changes were to be kept consistent with the period interior.

In a previous refurbishing, existing pendant fixtures had been retrofitted with mercury reflector lamps to replace incandescent silver bowl lamps. The result was high illumination accompanied by direct glare at the pews, without luminance at the other interior surfaces.

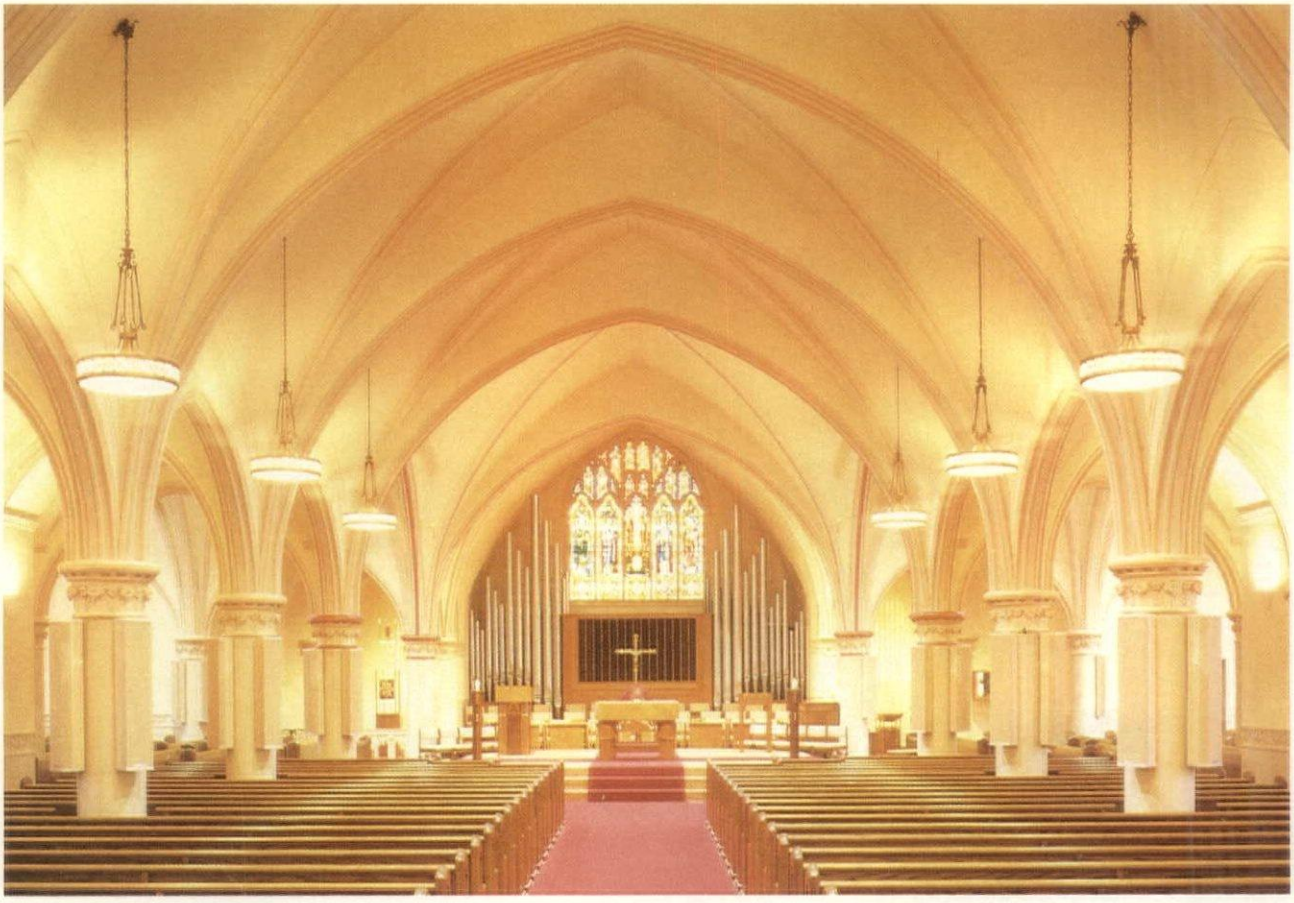
The latest pew lighting strategy provided independent systems that restored the original light distribution and supplied illumination for new uses and expectations. All sources were chosen for good color rendering and to minimize differences in color among them. Metal halide downlights efficiently add light for reading at the pews, but are located behind the arches, concealing them from most viewing positions. New incandescent sconces highlight the vaults of the side aisles, and a track system using halogen reflector lamps was added to dramatically light a variety of ceremonies.

The original pendant fixtures were restored for their decorative quality as well as for highlighting vaulted surfaces over the main seating areas.

New silver bowl lamps combined with the existing diffusers and louvers produce a wash of light on the vaults and columns. ■



AN OVERVIEW WITH the metal halide downlights off (top), and on (below). Separate system circuiting allows incandescent sources to be used alone for a subdued effect.



PHOTOS BY DOUGLAS GILBERT

PHOTOS BY NICHOLAS GENTILLI

IALD
LIGHTING DESIGN AWARDS

CITATION

JURY COMMENT: This is a difficult, well-done project. Particularly praiseworthy are the night and showcase lighting.

LIGHTING DESIGNER: Andre Tammes, Lighting Design Partnership

ARCHITECT: Alastair Gourley, Arup Associates

IMPERIAL WAR MUSEUM EXTENSION

The building in London that now houses the Imperial War Museum was built in 1815 and designed as a hospital. It has since been extended to provide three times the original space.

The illumination project concerned the main upper volume of the space, which has great height and plentiful daylight, and a lower ground floor area, which is of restricted height and has no daylight.

The major space is intrinsically dramatic. The client requested that the drama be enhanced to include a presentation of the large-scale war machinery as objects of sculpture. On the lower ground floor, smaller-scale exhibits are generally displayed within high-security showcases. Suitably low levels of illuminance were specified for the various types of machinery.

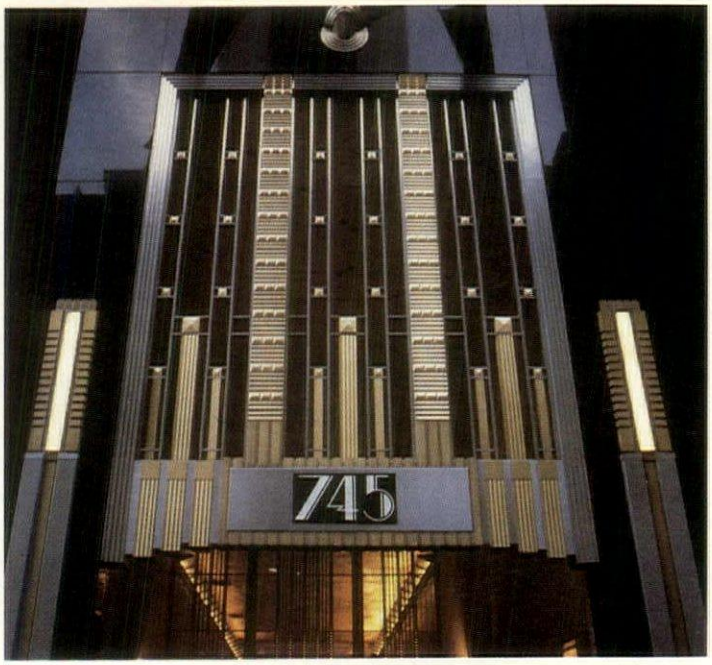
The design also had to provide for the problems associated with adapting the visitors' eyes from the very high levels of daylight within the main space to the considerably reduced levels beneath the mezzanine, and on the ground floor.

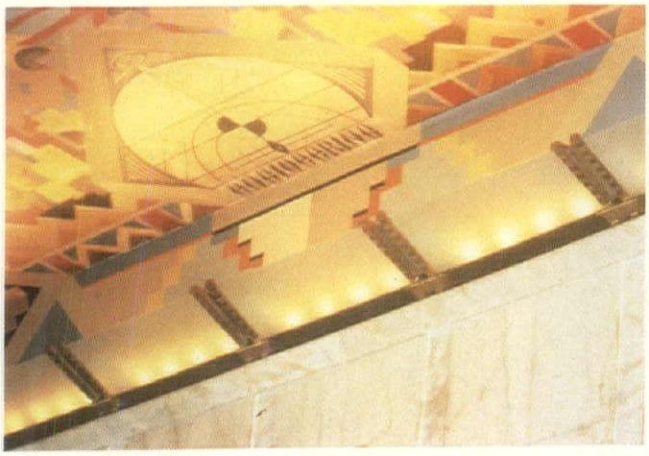
The main space is revealed at night by a combination of metal halide uplighting and PAR sources. The 150-watt metal halides are fitted with dark blue filters to provide a "night sky" within the large barrel-vaulted, semi-opaque roof light. Low-voltage, 240-watt PAR 56 lamps provide strong modeling to the large exhibits.

Original anti-aircraft searchlights are retrofitted with metal halide luminaires to provide uplighting to the bellies of the machines. The illumination from 150-watt HQI lamps relieves the silhouette of the planes against the roof light during the day. For dusk and night events, 500-watt lamps are used. All lighting is controlled through a daylight-linked micro-processor dimmer/contactor system.

The showcases are equipped with fiber optic light sources terminated around all four sides of the case. The use of miniature lenses and neutral density filters complements the essentially heat- and UV-free highlighting system. General lighting within the showcases is provided by dimmable, high-color-rendering fluorescent sources. The fluorescent tubes, which vary in size and wattage (2-foot, 18-watt; 4-foot, 36-watt; and 5-foot, 58-watt), are mounted above a micro-louver to prevent direct views of the sources. Additional general lighting is provided by 50- and 75-watt spot luminaires, which are concealed within the depth of the concrete coffered ceiling. ■

FIBER OPTICS AND FLUORESCENT illuminate showcases. Dramatic pools of light draw attention to displayed objects in corridors, and in the main space (below).





IALD
LIGHTING DESIGN AWARDS

CITATION

JURY COMMENT: The lobby has a lovely quality. The lighting is successful in recalling the original era in which the space was designed.

LIGHTING DESIGNER: Cosentini Lighting Design: Stephen Margulies, Herbert Schlossberg, David Facenda

ARCHITECT: Hammond Beebe & Babka: Charles Young, project designer; Russo & Sonder, job architects

745 Fifth Avenue

The early Art Deco building, 745 Fifth Avenue, was recently restored with careful attention given to the revival of building design details and lighting elements. The lighting was specifically intended to enhance the building's and lobby's period architecture in a manner that would recall the time of its opening.

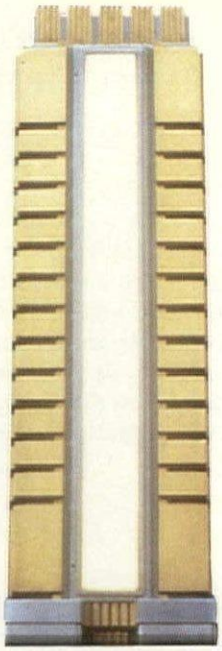
Stainless steel and bronze applied piers flank the Fifth Ave. entrance. Each houses a recessed incandescent vertical light trough concealed by frosted acrylic diffusers.

The entry loggia is lighted from its side walls by a series of rectangular recessed incandescent light troughs with frosted acrylic diffusers. Ornamental stainless steel grilles echo the design of the lobby's heating grilles. The vestibule is topped by an original ornamental metal grating, through which an incandescent trough with frosted acrylic diffusers glows. Additionally, this lighting element illustrates the ornamental metal and glass divider that separates the loggia and main lobby.

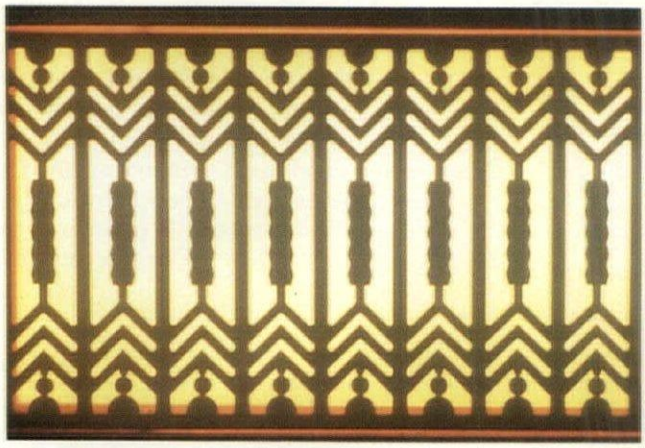
The main lobby's principal design feature is a restored ceiling mural. Located on either side of the lobby, two frosted glass coves with ornamental brackets conceal multi-lamp incandescent strips. These illuminate the mural and provide ambient illumination and sparkle. The coves are an enhanced derivation of the original recessed lobby coves.

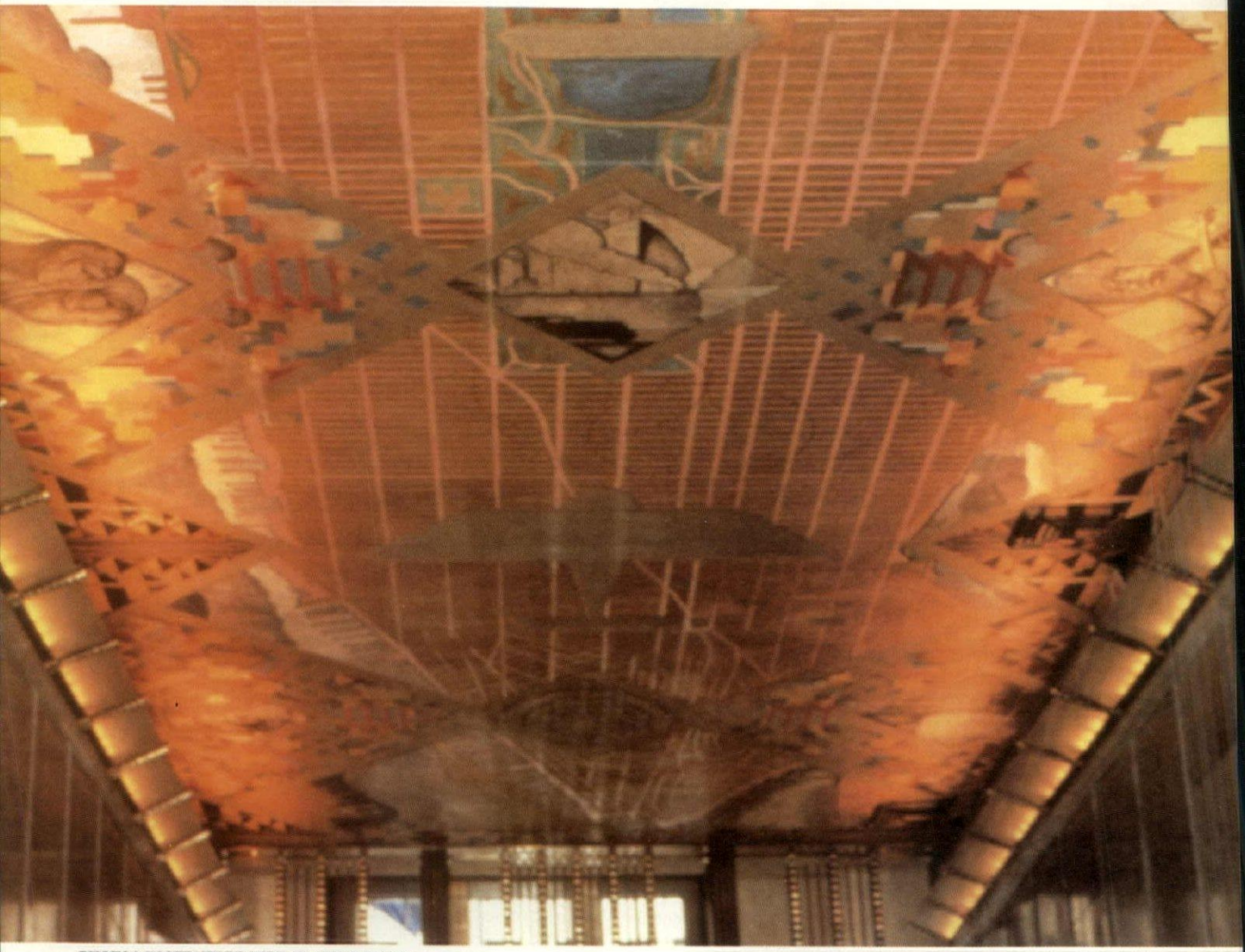
The elevator lobby is lighted by suspended bronze-framed incandescent chandeliers with frosted glass diffusers and decorative bronze air diffusers. The design of the chandeliers was suggested by an original fixture on the balcony level.

All lighting elements are balanced with a four-scene preset dimming system that sequences throughout the day. ■



DECO EXTERIOR (opposite page, top), and outdoor fixture closeup (this page, left). Interior ceiling (below) and closeup detail of diffused incandescents (opposite page). Backlit original metal grating (below).





PHOTOS SHOWN WERE USED IN THE JUDGING.

EFFECTIVE LIGHT CONTROL FOR THE MODERN OFFICE

Though the following article presents interesting information on considerations in designing lighting systems for the electronic office, it also addresses the validity of the controversial results reported in the October 1990 issue of *Architectural Lighting* (pages 8 and 9) from a Xerox Corporation study conducted by Cornell University under a grant from Peerless Lighting Corporation. The Cornell study found that "employees strongly preferred the lensed indirect lighting: 71 percent of those working with the indirect system preferred it, and 74 percent of those working under the parabolic system preferred uplighting."—*WJ*

DAVID RANIERI
The author is manager, market development, Lithonia Lighting, Conyers, GA.

Illumination of the modern office has become almost a cult science within the lighting community. Over the last decade, the concept of the "electronic office" has evolved into a mainstream application that continues to present complex challenges in creating a comfortable environment that enhances performance of office functions. Experts representing a wide variety of disciplines often address the need for improved office lighting and warn of the potential negative effects that could hinder a growing population of office workers. All of the theories, discussions, and debates lead to a predictable question: *What is actually being done* to advance the state of lighting technology and keep pace with requirements of modern office functions?

Advancements in office equipment continue to create more complex combinations of visual tasks. Office workers typically read both VDT (visual display terminal) screens that require little light, and paper-based printouts and facsimiles which require more light. Lighting systems must provide for this diversity of visual tasks while minimizing glare and eliminating the potential for reflected images in VDT screens. As a result, the electronic office has become a very specialized application that necessitates more specialized designs of lighting systems. An important influence on the design and application of these systems is the increasing need for energy conservation. To achieve all of these objectives, one should consider the available options of light control.

In a general sense, light control is placing the appropriate amount of light where and when it is needed (and removing light where and when it is not needed or wanted). Light control is accomplished *optically* by luminaire design, to shield the light source and reduce glare; and *electrically,* by electronic control devices to allow light level adjustment, enhance aesthetics, and maximize energy savings. Advancements in optical and electronic control technologies offer new capabilities for surmounting the challenges of lighting the modern office.

New developments in fluorescent luminaire design have proven successful in improving the quality of general office lighting. Improved optics have been incorporated into the

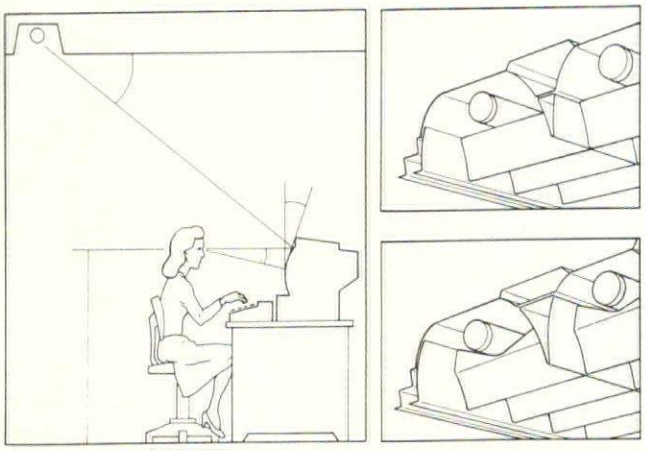


Figure 1: (Left) VDT workstation elevation, (top right) standard parabolic, (bottom right) compound parabolic.

Figure 2: Open office plan with 2-foot × 2-foot luminaires.

Comparisons are often made between direct and indirect systems. They differ in their methods of light distribution, light control, and overall appearance. There is potential for good and bad applications of both.

designs of direct (downward distribution from the ceiling) and indirect lighting systems (upward distribution reflecting off the ceiling).

For direct lighting systems, compound parabolic louver designs constructed of high grade specular aluminum allow for precise light control and lamp shielding while maintaining high luminaire efficiencies. This optical design is based on ergonomic studies of the physical relationships between VDT operators, office workstations, and general lighting systems (see figure 1). The distribution of light defined by these optics provides excellent task clarity of VDT screens by eliminating reflected images of luminaires regardless of workstation location in the space. Compound parabolic louver designs comply with new Illuminating Engineering Society (IES) recommendations (RP24-1989) for fixture luminance at critical angles reflected by VDT screens. In addition, the high efficiency of these systems allows for a wide range of ambient illumination levels. This provides flexibility for lighting a variety of office tasks often without requiring supplemental task lighting.

When using compound parabolic systems, care must be taken to coordinate the appropriate lamp configurations with target illuminance levels for optimum uniformity and balance (see figure 2). These are important considerations that are often influenced by application factors such as room size, partitions, and ceiling height.

Fluorescent indirect lighting systems now have improved optical control thanks to the development of reflector and lens designs that distribute light more uniformly across the ceiling plane. The use of lenses also creates a degree of visible fixture luminance that helps to alleviate the "hazy" perception often associated with the diffuse luminous patterns of indirect lighting. In comparison to direct systems, the diffuse distribution of indirect light sources tends to reduce veiling reflections on glossy paper, but increase veiling reflections on VDT screens (see figure 3).

Indirect lighting systems are most effectively used in applications requiring 50 footcandles or less and are often supplemented with task lighting. Indirect lighting equipment suspended from the ceiling is usually recommended for ceiling heights of 9.5 feet or higher. This allows adequate suspension distance of the luminaire optics to distribute lighting more uniformly across the ceiling and meet IES recommendations for ceiling luminance ratios.

DIRECT AND INDIRECT LIGHTING

Comparisons are often made between direct and indirect lighting systems for the office. Clearly, these systems differ in their methods of light distribution, light control, and overall appearance. There is certainly the potential for good and bad

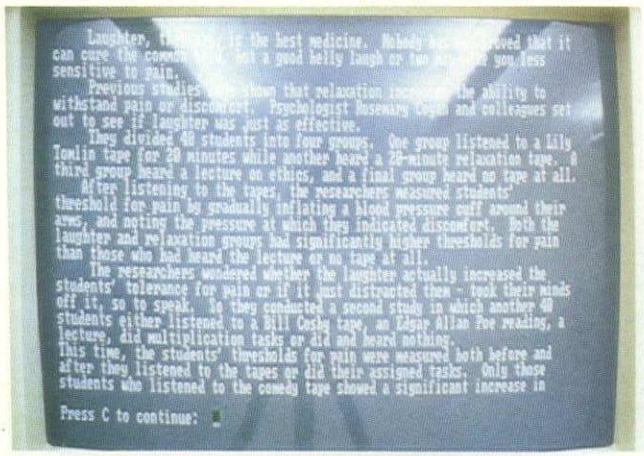


Figure 3A: VDT screen with indirect lighting system

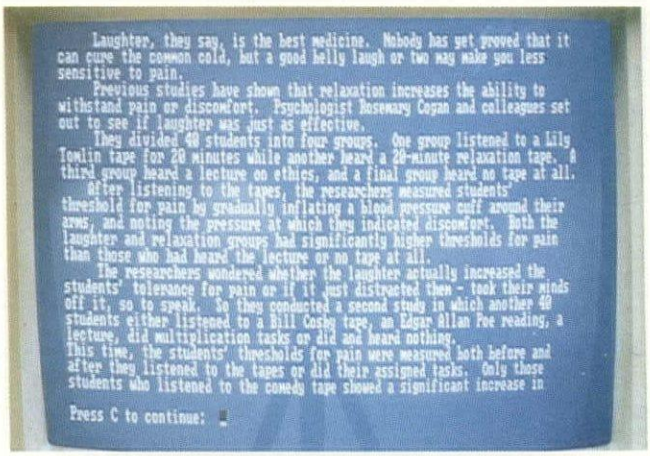


Figure 3B: VDT screen with compound parabolic system

Figure 4A: Office with daylight compensation using dimming photo-sensor

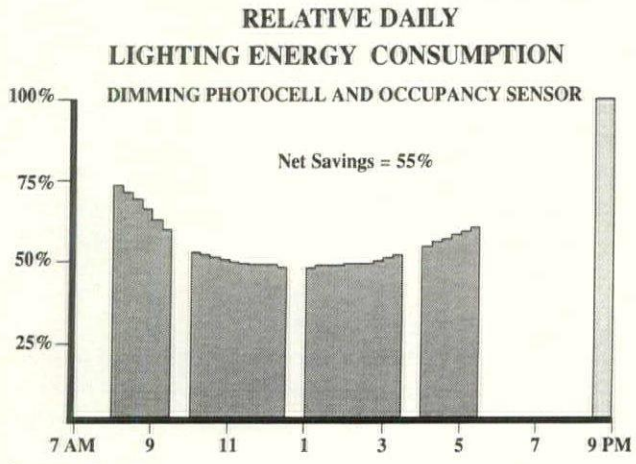


Figure 4B

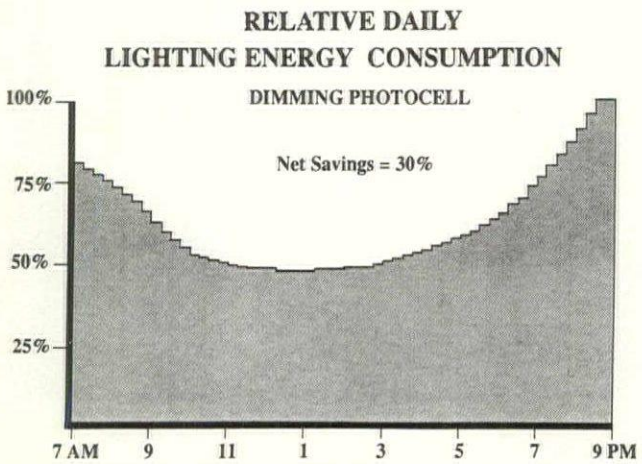


Figure 4C

applications of both. Also, there are unique applications that may be conducive to one, and perhaps exclusive to the other. Advancements in optical control of both types of systems have improved performance for office applications. But is the quality of light provided by one type of system inherently better?

In recent years, researchers have worked to determine the lighting preferences of office workers. Several university studies have surveyed responses of office workers regarding various aspects of office lighting. Because these types of studies are based on subjective evaluations, the results may be easily influenced by other variables. Unfortunately, some research tends to be comparative rather than comprehensive. Comparative studies are often used to promote product comparisons. Caution is therefore recommended when interpreting results and drawing conclusions from any single study.

For example, a 1988 study by Cornell University compared lensed indirect lighting systems with a 2-foot × 4-foot recessed standard parabolic system. The indirect system layouts were optimized for each room size while the direct parabolic system layouts were not. Predictably, results indicated a preference for the indirect systems.

In contrast, a 1988 study directed by the Georgia Institute of Technology examined eight direct and two indirect lighting systems. Over 200 office workers were surveyed for a wide variety of lighting applications. The results of this study indicated strong preference for a compound parabolic direct system. Acceptance of the indirect systems varied greatly with their application but generally improved as the suspension distance from the ceiling was increased.

The results of these studies demonstrate that the *application* of office lighting systems is critical to the perception of lighting quality. Certainly, a valid comparison of direct

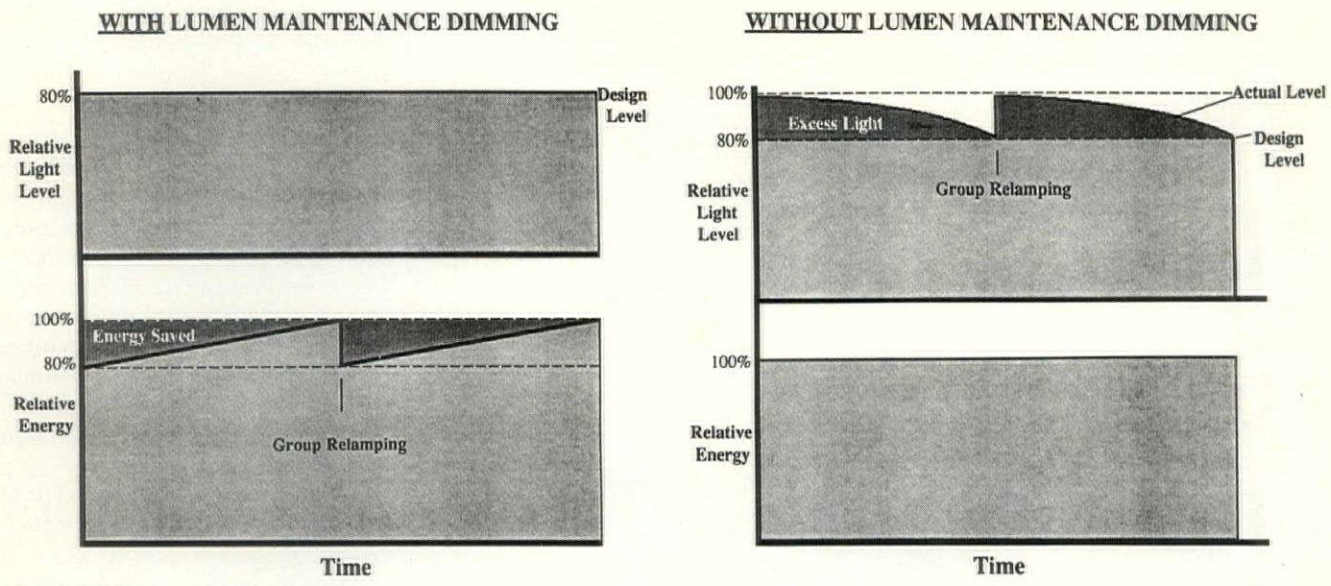


Figure 4D

and indirect systems should be relative to specific application criteria and also should be within the scope of IES guidelines. Current design practice indicates that, when performance and economic factors are high priority, proper applications of standard parabolic and compound parabolic direct systems are preferred for most installations.

ELECTRONIC LIGHT CONTROL

Electronic lighting offers advanced capabilities for creating visual effects, varying light levels, and improving life safety. For office applications, its implicit function is energy management.

The usage charge for lighting energy is a simple formula: how many kilowatts are used, and for how long? In addition, a demand charge for electricity is based on a time interval of peak demand. Therefore, energy costs may be reduced by (a) reducing the number of kilowatts connected, (b) shortening the time of operation, (c) planning a load schedule that reduces peak demand, or (d) all of the above. To accomplish these, lighting control components offer three primary control functions: switching, dimming, and sensing. Relating this concept to an office application, the most energy efficient lighting design must provide appropriate quantity and quality of illumination for the range of visual tasks performed. However, illumination levels above design targets represent wasted energy. Similarly, design illumination levels in unoccupied office areas waste energy. Energy that is wasted during peak demand periods inflates the demand charge as well as the charge for energy usage. To minimize energy waste, switching, dimming, and sensing components may be used individually, for local control functions, or they may be combined for zone load control.

Advancements in fluorescent dimming and solid-state ballast technology have fostered the development of zone load control systems that are capable of integrating the three primary control functions. The marriage of these technologies simplifies design and application of integrated controls, and maximizes the energy-saving potential of individual components. These systems allow for manual dimming to adjust illumination to desired levels, and automatic control functions that include lumen maintenance, photo (daylight), and occupancy sensing (see figure 4). Zone load controllers operate individually, or they may be networked to a central energy management system (EMS) that performs intelligent functions such as load scheduling and time-of-day adjustment. The central EMS may also interface with HVAC and life safety systems. These types of control systems provide effective and economical means for energy management in modern office buildings.

ECONOMICS OF LIGHT CONTROL

New developments of optical and electronic light control systems offer many interesting possibilities for improving the interior office environment and conserving lighting energy. Although the economic value of energy management may be determined by cost analysis, the value of optical light control systems is more difficult to measure. Unfortunately, there is little empirical evidence available to quantify the incremental benefits of better quality lighting. The added lighting investment therefore may be difficult to justify.

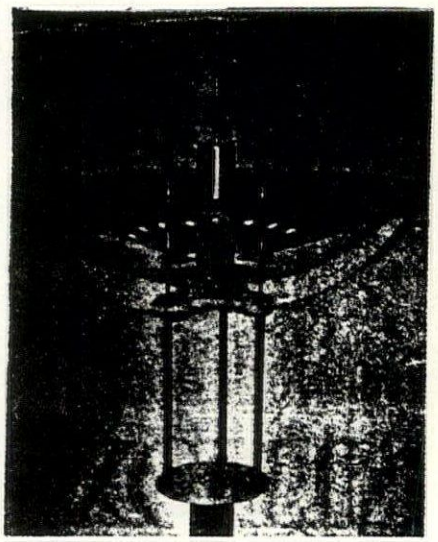
In appraising the economic merit of advanced optical light control, one needs only to compare the operating and energy costs of office workers. According to statistics from the United States Department of Labor and the International Facility Management Association (IFMA), the national average annual cost of data entry operators is $146/square foot; of

secretaries is $213/square foot; and of computer programmers is $257/square foot (excluding benefits, and the cost of workstations, furniture, equipment, etc.). In comparison, the cost to install a standard parabolic lighting system is approximately $1.50/square foot; a compound parabolic is approximately $2.00/square foot (operating and energy costs are the same for both systems). The magnitude of these differences, combined with the potential impact of lighting on worker productivity adds tremendous leverage to the lighting investment. Consequently, a fractional increase in worker productivity caused by a lighting upgrade pays for the initial investment many times over.

Economic comparisons of office lighting systems often emphasize initial costs as a key consideration. The increasing emphasis of energy conservation has prompted more comprehensive comparisons of "life-cycle" costs. Life-cycle cost analyses reveal the true value of energy-efficient lighting systems over the life of the installation. The impact of electronic lighting controls may also be evaluated by life-cycle cost analysis. In addition, rebates and other incentives offered by many utilities reduce initial costs and substantially improve the return on investment.

Quality office lighting always has been considered a prudent investment. For the modern electronic office, proper lighting conditions are more important than ever. The concept of light control has inspired designs of luminaire optics and electronic controls that are intended specifically for office applications. These new technologies offer potential for significant improvement of the work environment.

Significant advancements in lighting technology have kept pace with the demands of electronic office tasks. Developments in optical and electronic light control systems have created new options that increase the flexibility of planning, operating, and maintaining office lighting systems. The proper application of these new systems will ensure that advanced office systems designed to optimize worker productivity will be enhanced, not limited, by the luminous environment.



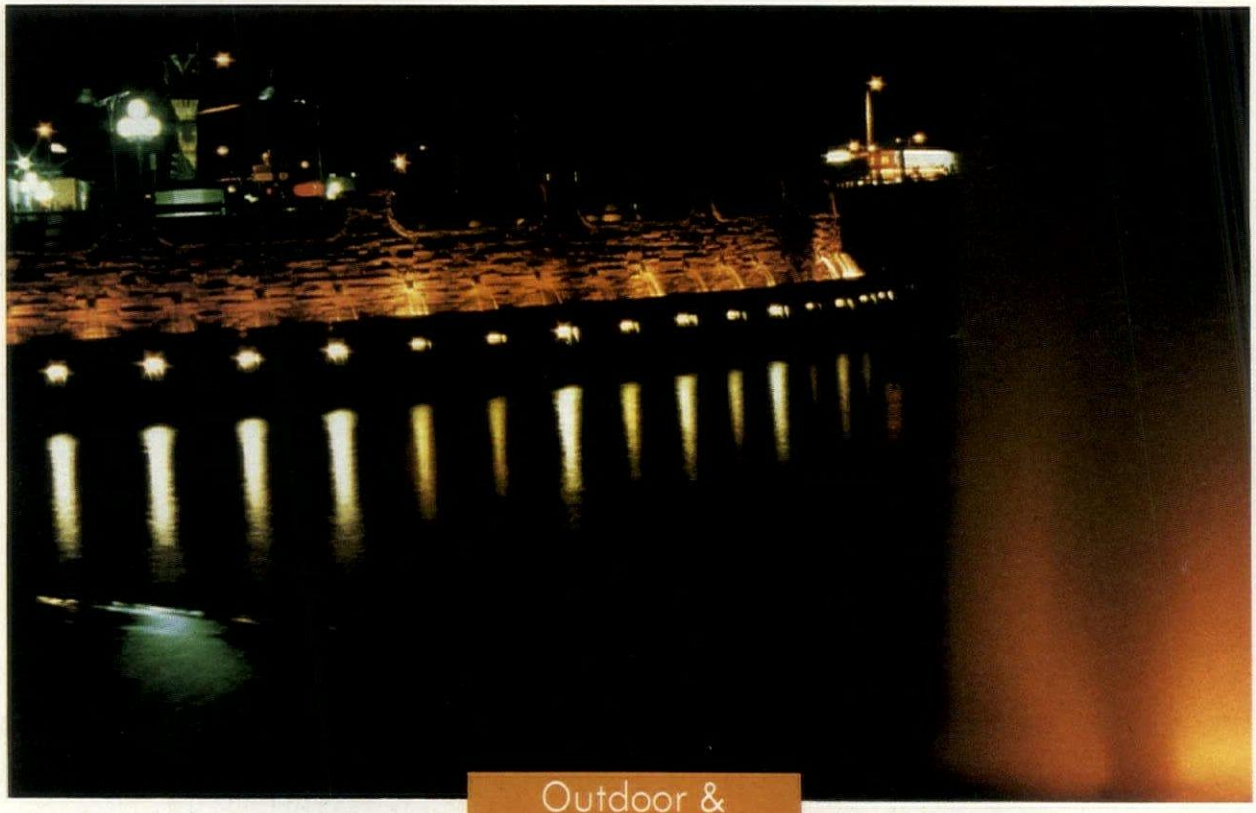
CORRECTION

The photo of the Winona Lighting H.I.D. lamp reflector on page 64 of the March issue was upside down. It is shown here correctly. *Architectural Lighting* regrets the error.

ARCHITECTURAL

LIGHTING

DESIGN FOCUS REPORT

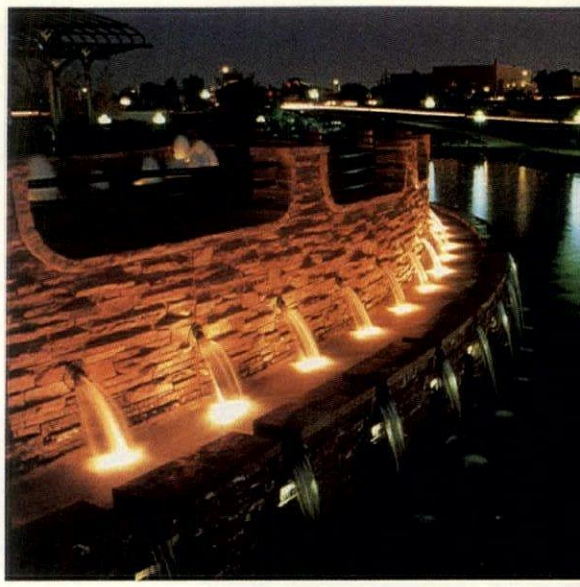


Outdoor & Landscape

BEAUTY, COMFORT & SECURITY

HOW COMFORTABLE AN OUTDOOR area is depends not only upon how attractive the surroundings look, but how safe and secure people feel in them. The projects featured here—the John A. Sibley Horticultural Center, and Little Dry Creek park—have lighting systems that blend aesthetic and practical considerations to promote the public's enjoyment and welfare. These are complemented by an article that outlines step-by-step methods for planning and upgrading security lighting for building exteriors, walkways, parking lots, and other outdoor areas.—*WJ*

DESIGN FOCUS REPORT



ENGLEWOOD CHANNEL

LITTLE CREEK'S BIG SUCCESS

SPRINGTIME FALLS: Waterfalls and fountains are illuminated after a long, Colorado winter making Little Dry Creek's reservoir a center of activity for local residents and tourists.

In Englewood, CO, April showers bring not only May flowers, but also an increased water level for Little Dry Creek. The combination of a springtime thaw and precipitation creates a situation that betrays the stream's name. As a result, plans were made to create a reservoir for Little Dry Creek by constructing a holding dam to restrain the flow of excess water.

The resulting "lake," with surrounding pedestrian and bike paths, has become the connection between downtown Englewood and adjacent residential areas. This urban park-like setting, which makes the area more visible to local residents and visitors, attracts people for shopping, and community activities and celebrations.

To encourage further use of this landscaped spot, and to add to its attractiveness, the park's various fountains and walkways are illuminated. The central plaza features a waterfall that is backlit with custom 8-foot high-output T 12 fluorescent lamps in wet location fixtures. Four fountains and a small stage for civic functions are illuminated from below.

"The water is only about six inches deep here," says Jeff Nielsen, lighting designer. "There's a 2-foot deep recess where each one of the fountains sit and where the lights are located."

There are 20-foot poles on both sides of the stage, with five 250-watt incandescent PAR lamps in spotlight fixtures. These light the platform when necessary.

Across the lake is a terrace fountain which has illuminated springs on the upper level, and two levels of cascading waterfalls that return the water to Little Dry Creek. The spouts of water empty into the mid-level, and the falls and masonry are highlighted from below by 250-watt incandescent PAR lamps. The lower waterfalls are lit from behind by 13-watt PL fluorescent lamps.

Decorative globe fixtures, alongside the paths, light the way for cyclists and walkers. Three of the globes are positioned at 120 degrees and one in the middle tops a decorative cast pole. These fixtures use 75-watt mercury vapor lamps—requested by the owner to remain consistent with the downtown Englewood area.

At the east end of the project is a boulder cascade—a manmade waterfall.

"The creek level is below a major intersection and the owners wanted a fountain in this spot," Nielsen says. "Water is pumped up, and, as the fountain overflows, it cascades down the artificial waterfall."

The falls are illuminated by ground-mounted PAR lamps in accent spots. The fixtures are located between, behind, or underneath the rocks so that they're inconspicuous.

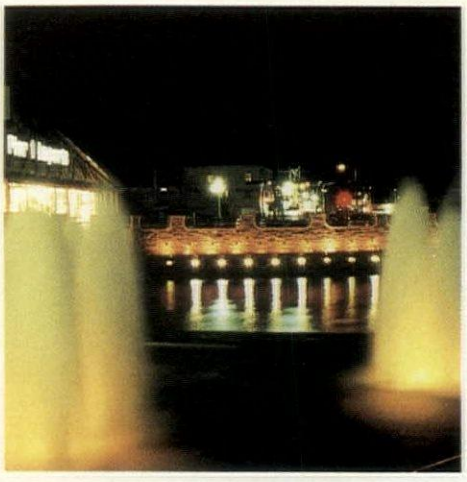
All of the fountain fixtures have a cast bronze construction and an estimated life of three-and-a-half summers. During the winter months, the fixtures are disconnected at the junction box and removed without disassembling the luminaires.

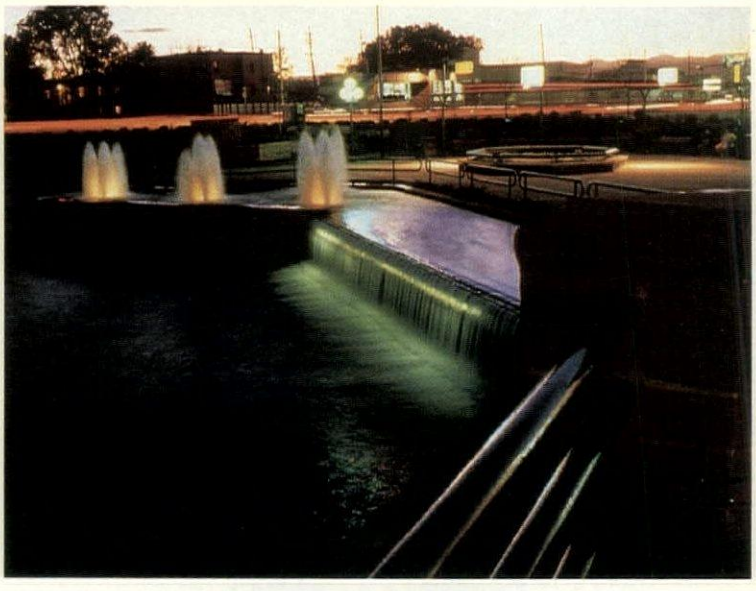
Astronomical time clocks and mechanically held lighting contactors provide automatic control of the lighting systems.

—Christina Lamb

DETAILS

PROJECT: *LITTLE DRY CREEK CHANNEL*
LOCATION: *ENGLEWOOD, CO*
OWNER: *CITY OF ENGLEWOOD*
LIGHTING DESIGNER & ELECTRICAL ENGINEER: *JEFF NIELSEN, ENGINEERING INDUSTRIES, LTD.*
LANDSCAPE ARCHITECT: *EDAW INC.*
PHOTOGRAPHER: *BILL ERVIN, PRO.VISIONS*
MANUFACTURERS: *KIM: all fountain fixtures; DEVINE: PL fluorescent steplites; LIGHTOLIER: round spotlights to light stage; WESTERN: decorative fixtures on pathways; GUTH: custom fluorescent fixtures*





DESIGN FOCUS REPORT

JOHN A. SIBLEY HORTICULTURAL CENTER

NOCTURNAL NATURE

PURE FLEURS: The extensive flowers and foliage of the Sibley Horticultural Center are illuminated both indoors and out with a combination of adjustable track, ground-mounted, and direct burial fixtures (right and opposite page). Daylight streams through the glass walls and doors that surround the building.

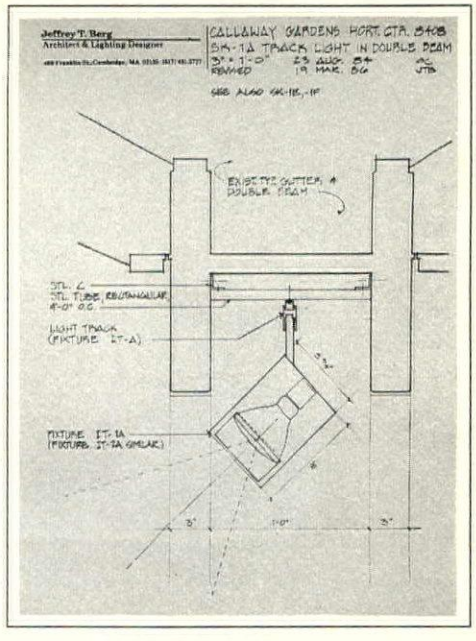
In Pine Mountain, GA, where the air is clean, the folks are friendly, and the scenery breathtaking, there's a place that brings all three together.

The Callaway Gardens' John A. Sibley Horticultural Center features flowers, ground covers, trees, and shrubbery. But all are the more exotic of their species—and they're treated as such.

With display lighting befitting a tremendous art gallery, the horticultural displays indoors and out are singularly illuminated. Jeffrey T. Berg, principal of Berg/Howland Associates in Massachusetts, worked closely with the architect, Kirk R. Craig, of Craig Gaulden & Davis Architects, Inc., and landscape architect Robert E. Marvin in designing a lighting plan that would reinforce the continuity of the displays that amble in and out of the conservatory.

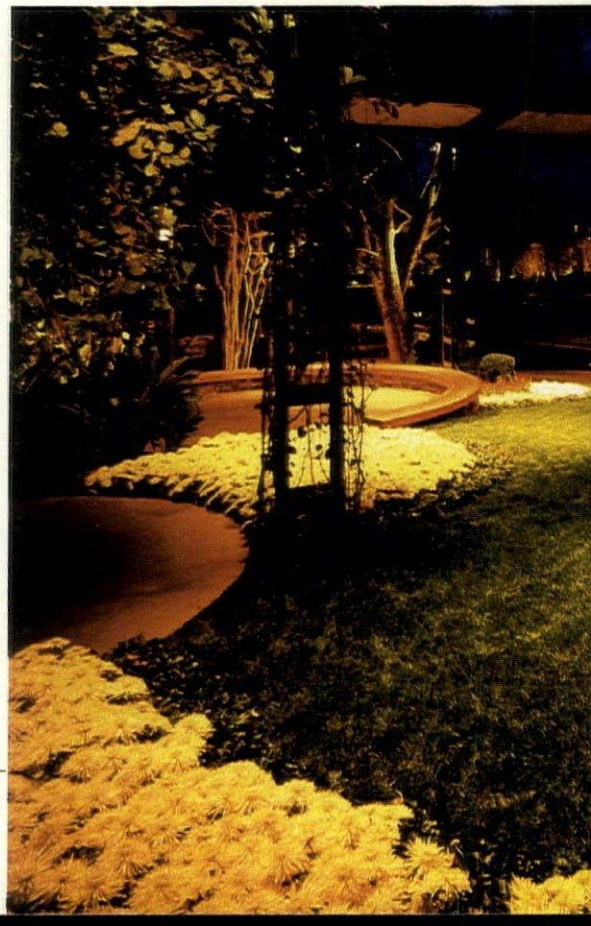
"When I came on the job, the building was pretty much completed and the plants were in place," Berg says. "It wasn't until the project was almost done that the client decided it would be nice to illuminate the displays. In some ways that made it easier to determine where fixtures would be situated. But we also had to work within the confines set before us."

The center, which was completed in late 1988, consists of a large greenhouse and gardens covering about three acres. All of the walls are glass in some form—either glass block or glass doors. The ceiling is composed of fabric that stretches between the beams of the roof modules.



The team decided that the illumination would focus on the displays, leaving the minimum amount necessary to walk the grounds safely.

Berg says the team installed 75- or 150-watt PAR lamps in direct burial and ground-mounted uplights inside and out, and tree-mounted downlights outside. The interior space is also illuminated with ground-mounted direct burial lights and accent lights.

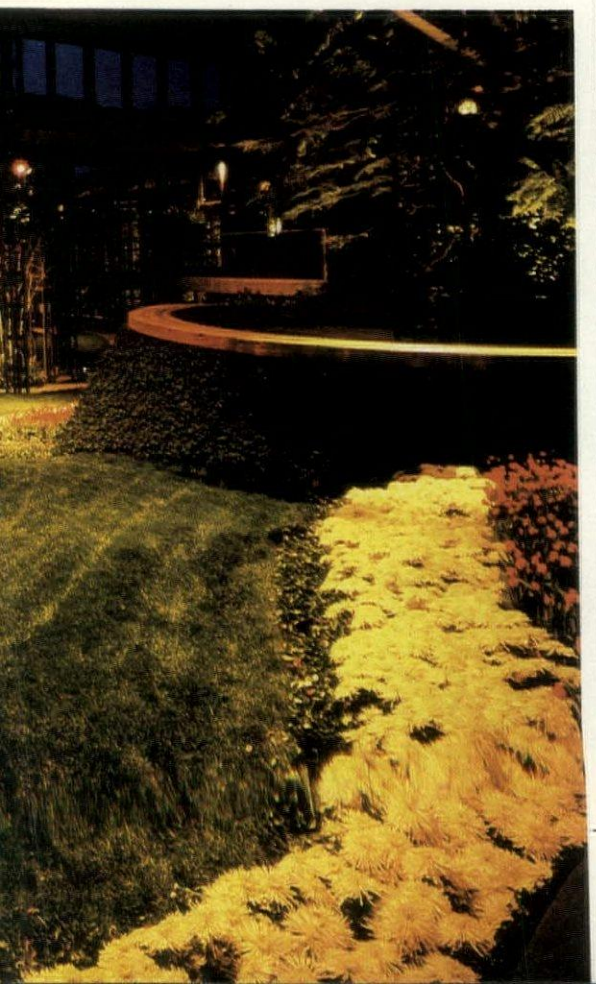


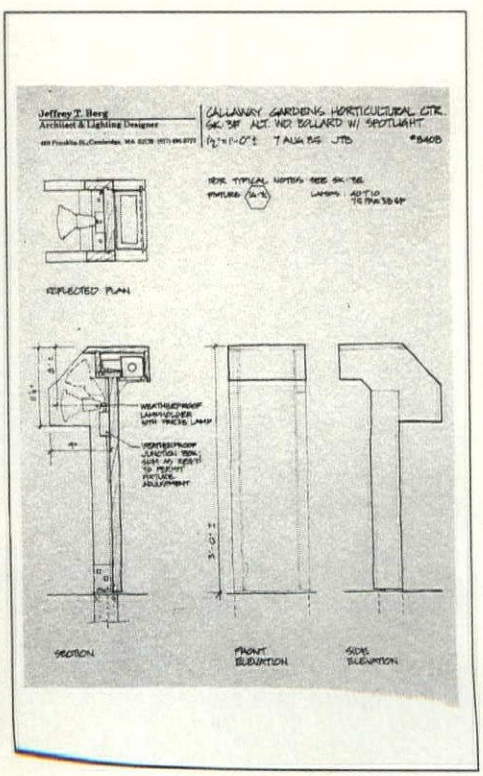
The conservatory display lighting is mostly adjustable track. The track lighting equipment was custom painted and made suitable for damp locations—all of the hardware is corrosion resistant.

Berg says most of the interior downlighting is installed in the roof beams. In the larger area of the conservatory, the columns are open, being formed by four pieces of tubing. Some lighting is mounted within those tubes, he says.

In and out of the conservatory, the team utilized PAR 38s, while PAR 36s are used only indoors. The PAR 36s include very narrow spot (VNSP), narrow spot, and wide flood.

The narrow spots are used to illuminate a good portion of a planting bed, while the VNSPs accent something of particular interest within the bed, like a special flower or exotic plant. The wide floods are used to wash the trees.





FURTHERMORE

- **All fixtures are adjustable and use incandescent line voltage or low-voltage reflector lamps.**
- **Energy is conserved by carefully controlling light distribution and quantity.**
- **The flexible system is able to accommodate ever-changing displays and special events.**

POWER TRACK: The custom-painted track fixtures are mounted on the roof beams of the conservatory (right). The luminaires' PAR lamps are housed in corrosion-resistant hardware.

The height of the building varies, from one story to two, so the beamspreads had to accommodate the changes in the ceiling elevation.

"A lot of time was spent figuring out how to conceal the hardware, how to put the fixtures into the structure, and how to put them into the garden without them being obtrusive," Berg says. "Light levels were kept low and focused carefully on the displays."

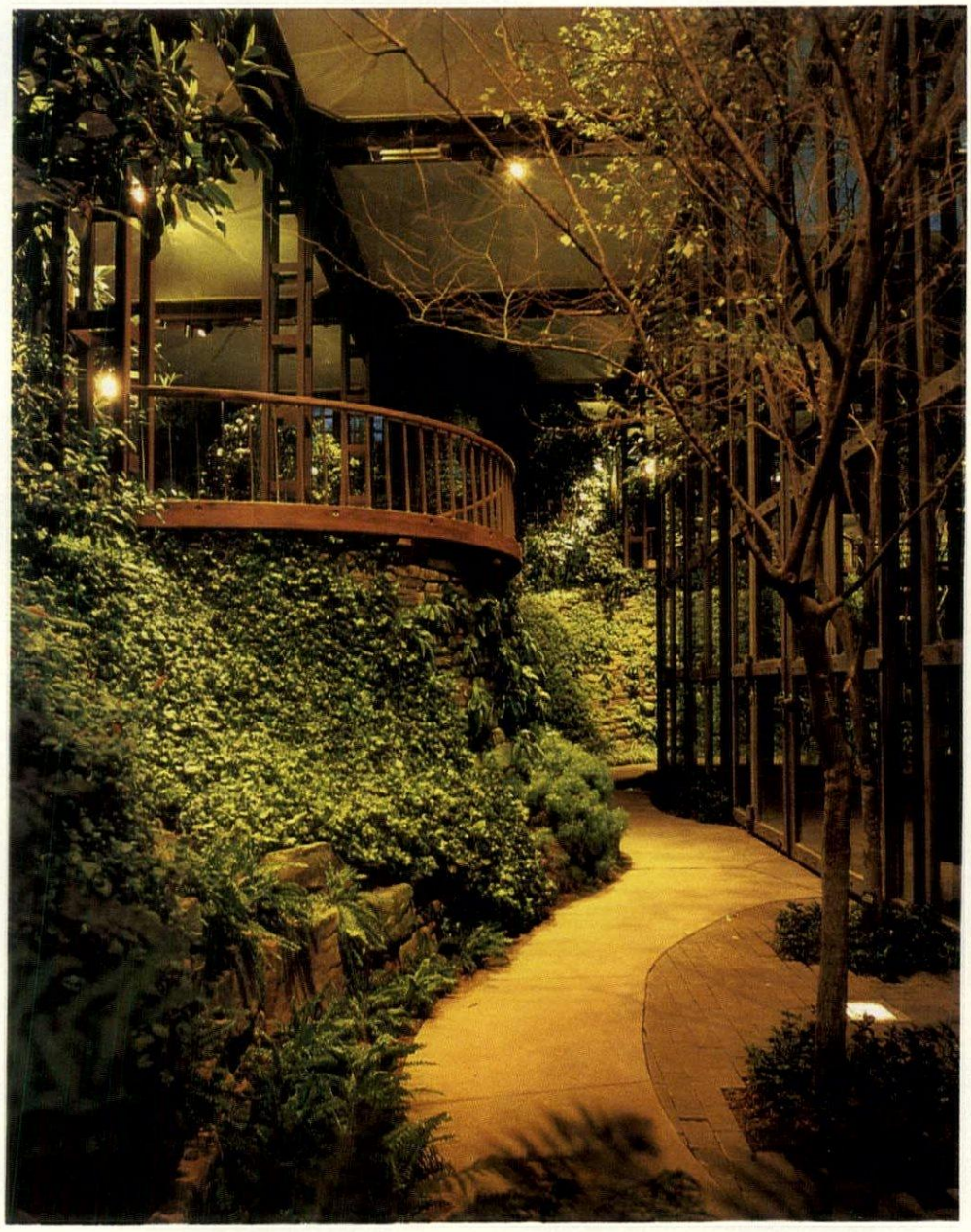
Along one area of the garden are benches that hide a row of fixtures. The path continues in front of a planting bed, and there custom bollards light the walk. Adjustable spots are on the back of the bollards and they flood the border of trees.

The downlights in the trees outdoors, and the direct burial uplights that accent their foliage are 150-watt PAR 38 spots. Inside, the same lamps are used in the track fixtures to wash the grass areas.

The indoor fixtures in the ground are almost entirely concealed by the plants, Berg explains.

"Landscape lighting isn't task oriented, so we were concerned with form and texture, but not necessarily color," Berg says. "We weren't trying to make it as bright as daylight—we wanted to create a different emphasis at night."

—Catherine Schetting Salfino



DETAILS

PROJECT: *JOHN A. SIBLEY HORTICULTURAL CENTER*
LOCATION: *PINE MOUNTAIN, GA*
CLIENT: *CALLAWAY GARDENS*
LIGHTING DESIGNER: *BERG/HOWLAND ASSOCIATES: JEFFREY T. BERG*
ARCHITECT: *CRAIG, GAULDEN & DAVIS ARCHITECTS, INC.: KIRK R. CRAIG*
LANDSCAPE ARCHITECT: *ROBERT E. MARVIN & ASSOCIATES: ROBERT E. MARVIN*
ENGINEER: *O'NEAL ENGINEERING: MICHAEL D. BOLING*
ELECTRICAL CONTRACTOR: *LODESTAR ELECTRIC: CLIFF STRICKLAND*
PHOTOGRAPHER: *PAUL G. BESWICK*
LIGHTING MANUFACTURERS: *EDISON PRICE: Darklite, Autotrack, Unicep single fixture track outlet, Parhoop 36 object light, Parhoop 38 object light, PAR 38 lampholder; TIVOLI: light tubing; KIM: accent fixtures, well light; STERNER LIGHTING SYSTEMS INC.: PAR 36 fountain light; STONCO: Vaportight fixtures*

DESIGN FOCUS REPORT

UPGRADING SECURITY LIGHTING

BY PHIL HENRY

The author is product manager for Stonco Lighting, Union, NJ.

Crime is up across the country, making protection of people and property more important than ever before. As a result, some alert developers are using extensive outdoor lighting as a selling tool to attract tenants. After all, potential tenants want to know that their employees and offices will be safe and secure, especially after hours.

High crime rates aside, the economy is turning soft, and building owners/managers are coming under pressure to cut energy and maintenance costs wherever possible. A retrofit can go a long way to reducing security operating costs.

Furthermore, you can expect to recover your initial investment in as little as 18 to 24 months by reducing energy and maintenance costs. And if lower insurance premiums and the increasingly common utility rebates are included, the payback could come in as little as 12 months.

First, remember that security lighting is different from safety lighting. The purpose of security lighting is to protect property and personnel during slack time, usually between dusk and dawn. For this application, where the lamps will be operating for at least 12 hours straight, economy is more important than instant-on start-up.

The purpose of safety lighting, on the other hand, is to provide on-demand, short-term lighting for your tenants, visitors, or employees. For this application, fixtures installed above an outdoor staircase, triggered by a time-delay on/off switch, are typical. Here, instant-on start-up is more important than economy, because the fixtures will turn on when someone enters or exits a building.

Security lighting can double as safety lighting, but not vice versa. This is because the long-term capability of security lighting also covers the short-term needs of safety lighting.

IDENTIFY THE BUILDING'S NEEDS

Once an upgrade is decided upon, first conduct an audit of the building's security lighting needs.

Parking lots are the most commonly lighted areas, then walkways and building perimeters.

For parking lots and walkways, the key is to achieve uniform lighting at ground level with maximum energy efficiency. This will protect shoppers as they walk back to their cars after hours—as well as the cars themselves.

All too often, the areas surrounding walkways are forgotten. However, these areas should be illuminated to eliminate dark nooks where burglars can hide.

Building perimeters are usually illuminated for appearance. In most cases, accent or facade lighting can double as security lighting.

DETERMINE ILLUMINATION LEVELS

After the audit is completed, the proper illumination levels for each area to be lighted needs to be determined. The Illuminating Engineering Society of North America (IESNA) offers some general guidelines, such as the mini-

LAMP TYPE	COMMON WATTAGES	AVERAGE MEAN LUMENS PER WATT	AVERAGE RATED LIFE	COLOR RENDITION	TYPICAL APPLICATION
Metal halide	175-400	80	10-20,000	Good	Car dealerships
High-pressure sodium (HPS)	35-1,000	110	24,000+	Fair: highlights yellows, subdues, blues, greens & reds	Parking lots and walkways
Low-pressure sodium (LPS)	18, 35, 55	150	10-18,000	Poor: monochromatic yellow light	"Mom and pop" shop, to detect movement and protect against vandalism after hours.
Compact fluorescent	7, 9, 13	70	10,000	Good	Over doorways, corridors, entranceways

The local crime rate, aesthetics, traffic patterns, and related factors can make it wise to exceed local codes and IES guidelines.

mum footcandle levels for specific areas. These guidelines may vary, however, if security cameras will be in the vicinity.

As a rule, regard local codes as the bare minimum, especially if you're dealing with a spec building. The security lighting installed originally will probably meet code, but it won't do much to deter vandals and burglars—or keep energy costs down.

Also, look at the local crime rate. If it's high, you will definitely want to exceed local codes, as well as IES guidelines. One to two footcandles may be sufficient for a suburban facility, but five footcandles may be better for an inner city office building. Other factors, such as traffic patterns and aesthetics, may prompt you to exceed local codes and IES guidelines as well.

CHOOSING THE RIGHT LAMP

The table on the previous page includes the four basic lamp types available in security lighting fixtures. It compares them in terms of wattages, lumens per watt, lamp life, color rendition, and application. Keep in mind:

- No lamp type works best for all applications
- Do not mix lamp types
- For security lighting, there's always something better than incandescent or quartz. Incandescent/quartz is best for safety lighting, where instant-on and relatively brief burn-times outweigh its low efficacy (lumens per watt) and short lamp life.

In areas where color rendition is as important as security—at car dealerships, for example—metal halide is the best choice. Fixtures with metal halide sources can be installed close to cars to highlight their colors, and around the parking lot for security reasons.

If color rendition isn't that critical, consider HPS lamps. They are more energy-efficient, and have a longer life than most other lamp types.

Low-pressure sodium, by far the most efficient lamp, is not commonly used for outdoor commercial security lighting. It emits light in a narrow, yellow spectrum, and is sometimes used inside when only one fixture is installed for security lighting. This source is often seen in "mom and pop" shops to detect movement and protect the store against vandalism after hours.

Historically, fluorescents have not been a viable option for security lighting because of their high operating costs. However, the newer, 18-watt compact fluorescents are more energy-efficient than their predecessors, and offer better color rendition.

SELECTING THE FIXTURES

Many manufacturers offer security lighting fixtures that accommodate the whole gamut of lamps, and complement the architectural style of the facility. Here are some considerations in selecting the appropriate fixture:

- Families of fixtures will allow you to achieve one look around the entire building. Some manufacturers also offer interchangeable optics for an area light or a floodlight. This facilitates ceiling, wall, pole, or ground mounting.
- Fixtures with high wattages, and high spacing-to-mounting ratios will allow you to mount the fixtures higher on the building or pole, out of vandals' reach, and to install fewer fixtures per square foot, for better light distribution. You'll also get a more energy-efficient system (longer lasting lamps and less relamping), since higher wattages have a higher efficacy (lumens per watt).
- Fixtures with cut-off optics direct the light down and out, so the maximum amount of light hits the ground where it's needed. They make the entire area more secure, since there's no wasted light going skyward. (Many municipalities around the country have passed laws requiring fixtures with cut-off optics.)
- Fixtures can be selected that serve as both landscape lighting and security lighting, since landscape lighting can often increase the value of the property fourfold.
- Fixtures should be easy to mount and secure. Fixtures with cast-in-templates, for example, make mounting easy, especially over recessed boxes. This is particularly important on retrofit jobs. Fixtures with half-inch arms and serrated locking teeth lock the fixtures securely into place after aiming and mounting on standard hardware. This eliminates calling the contractor back to tighten loose fixtures.
- Fixtures that accept conduit are especially important for older buildings with PAR holders in the corners. The reason is that the contractor will probably need to install the new fixture in the center of a wall, and run conduit to it from the old PAR holder.
- Fixtures with tamper-resistant hardware and vandal-resistant polycarbonate refractors can protect them from damage.
- Fixtures with electrical components mounted to die-cast aluminum housings are important for heat transfer.

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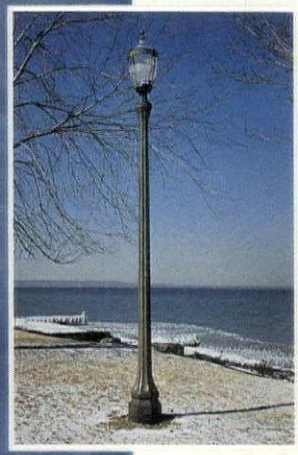

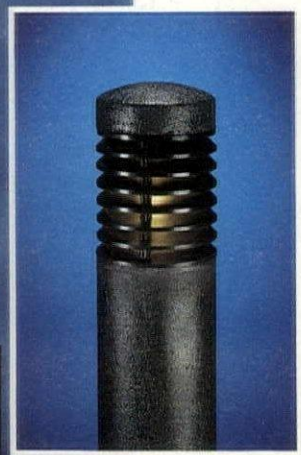

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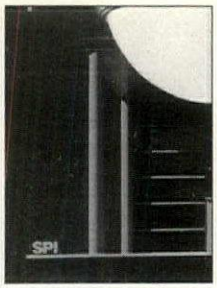
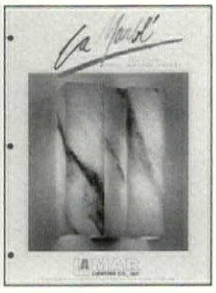


INTERIOR FIXTURES

A full-color capabilities brochure, including 50 photographs, features fixtures at work in various indoor applications. Also included in this 24-page booklet is a section addressing the impact of lighting on renovation and restoration projects, and an examination of the benefits of indirect lighting versus direct lighting. SPI Lighting, Mequon, WI. ***Circle 59***

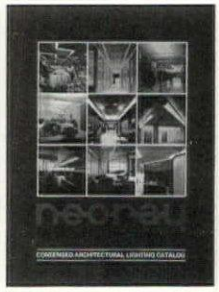
ELECTROLUMINESCENT SIGNS

The signature series electroluminescent exit signs are featured in a four-page brochure. These signs use an electroluminescent lamp—a .025-inch thick panel—that fits behind the faceplate of the sign and provides uniform illumination. A mounting canopy is provided for top and end mounting, but not for back mounting. Finishes are available in black, white, bronze, chrome, brass, and brushed aluminum. Lithonia Emergency Systems, a division of Lithonia Lighting, Conyers, GA. ***Circle 60***



FLUORESCENT SCONCES

The LaMarbl' line of PL fluorescent wall sconces and valances are made from a high-strength, translucent polymer that resembles marble and alabaster. The durable units are available in a range of natural marble-type colors and textures, and the finishes will not yellow or oxidize. The 13-watt lamps have a high color rendering index and are available in several color variations to meet specific needs. LaMar Lighting Co., Inc., Freeport, NY. ***Circle 61***



NEW PRODUCTS

This condensed 48-page architectural lighting catalog features a wide line of new products. There are more than 100 different luminaires shown in full color installation photographs and graphics. Mounting details and fixture dimensions as well as photometric data are also included. Neo-Ray Lighting, Brooklyn, NY. ***Circle 62***

Rensselaer Offers Graduate Program

Taking an educational lead in a growing field, Rensselaer Polytechnic Institute now offers a master of science in lighting. In September 1990, the Lighting Research Center in Rensselaer's School of Architecture accepted the first students into the two-year program.

The broad-based, multi-disciplinary program was developed under the guidance of an international panel of lighting designers, architects, engineers, manufacturers, and researchers to produce graduates capable of leadership roles in the diverse community.

Students complete 48 credit hours over four semesters, including a thesis. Substantial opportunities for financial assistance are available. The extensive range of funded research within the Lighting Research Center creates opportunities for assistantships that provide practical experience in the lighting field as well as financial support.

The Lighting Research Center, established in 1988, has grown to more than twenty-five full-time faculty and staff conducting projects budgeted at over $2.5 million per year. Students receive instruction in fundamentals of light, vision, and lighting technology, and work alongside researchers on sponsored projects. Course topics include human factors, architecture, and studio-based instruction in lighting design. Students are encouraged to pursue their individual interests in lighting, and development of the master's thesis under the guidance of a faculty mentor is the principal activity of the fourth semester.

Students of architecture, interior design, engineering, psychology, science, and related fields are encouraged to apply. For more information contact Christopher Cuttle, head of graduate education in lighting program, Lighting Research Center, Rensselaer Polytechnic Institute, Troy, NY 12180-3590. Phone (518) 276-8716, fax (518) 276-2999.

Advanced Lighting Handbook Offered

About 25 percent of all electricity generated in the United States is used for lighting, according to the California Energy Commission. Now, in an effort to provide guidelines to combine energy savings with state-of-the-art lighting, the commission is offering the "Advanced Lighting Guidelines" handbook.

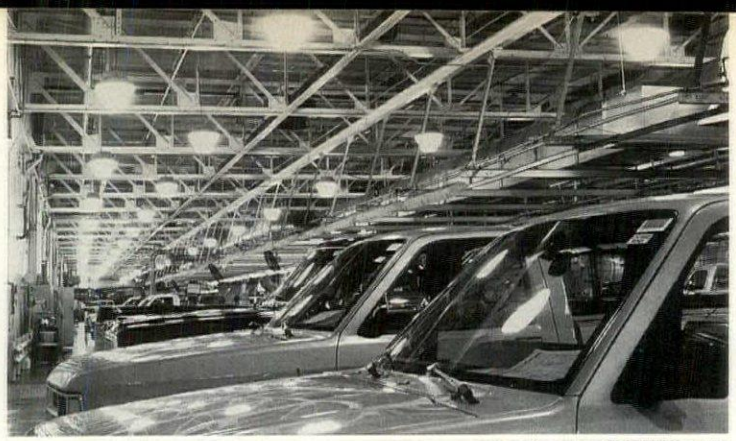
The handbook includes guidelines on lighting design practice, computer-aided lighting design, luminaires and lighting systems, energy-efficient and electronic ballasts, full-size fluorescent lamps, and compact fluorescent lamps.

The use of more advanced lighting technologies offers the potential for up to 50 percent additional energy savings in new buildings, and up to 40 percent additional savings in existing buildings, the commission reports.

The commission's guidebook follows hearings that prompted comments and questions from specifiers in the lighting field. Among their comments was a call for a new clarity of data presentation not attainable from individual manufacturers. The commission claims that their new guideline presents to the consumer consistent data with unbiased, comparative information.

A team of advisers from the National Electrical Manufacturers Association (NEMA), along with representatives of various industrial manufacturers, worked together to publish a series of application guidelines on advanced lighting technologies developed by the commission. The technical input was presented at public workshops where attendees used a hands-on approach to resolve lighting issues.

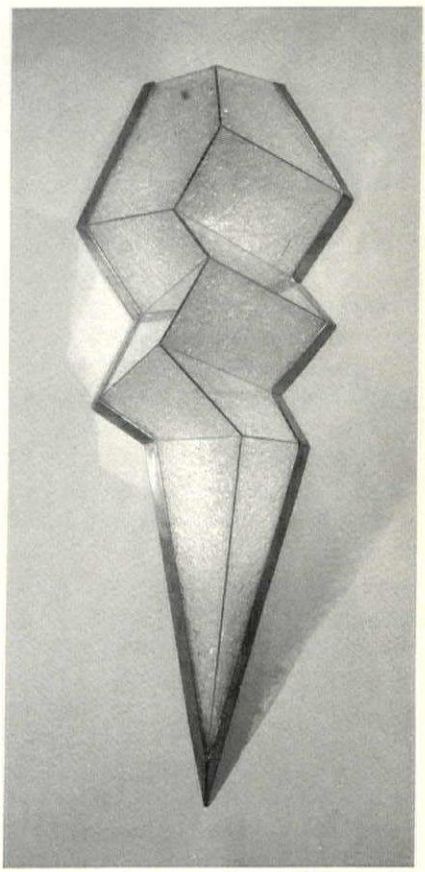
To order copies of "Advanced Lighting Guidelines" (4.90, publication number 400-90-014), call 916-324-3015; or send orders to: California Energy Commission, Publications Office, 1516 Ninth Street, MS-13, Sacramento, CA 95814-5512.



HUBBELL ELECTRO REG

WHITE LIGHT/LOW ENERGY
The Electro Reg Lighting System provides white light with low energy usage and low maintenance. Designed for industrial applications, the system combines a ballast and a special metal halide lamp designed specifically for that ballast. The system provides an initial output of 42,000 lumens, and a rated lamp life of 30,000 hours in a three-shift application or 24,000 hours in a two-shift application. Hubbell Lighting, Christiansburg, VA. ***Circle 50***

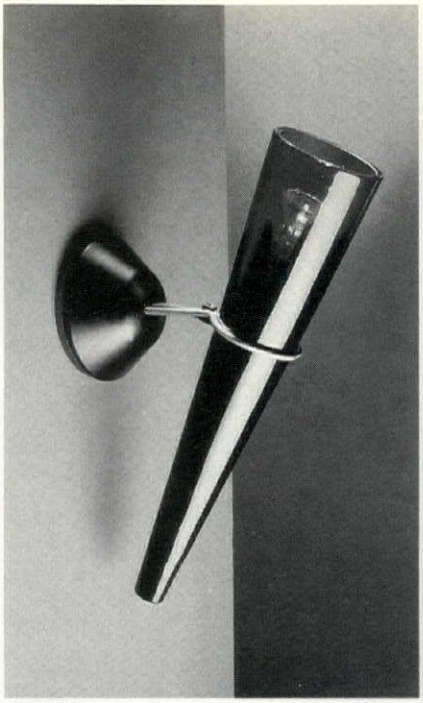
LIGHT SCULPTURES
Galactica (shown) and Spangle, designed by Joy Wulke, are the beginning of a series of light sculptures framed in brushed stainless steel holding panels of contained cracked glass. The fixtures reflect and glint daylight and emit a soft glow at night. Galactica measures 36 inches × 14 inches × 9 inches, and takes one standard incandescent lamp (maximum 40 watts) and one T 14 lamp. Joy Wulke Studio of Art and Design, Stony Creek, CT. ***Circle 51***



WULKE GALACTICA

WALL SCONCES & BRACKETS

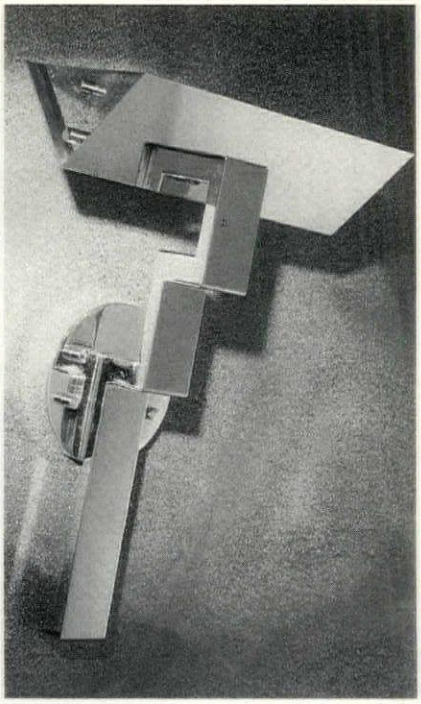
Ziggarat, an addition to the Metropolis series, features a stepped front face and is made of a combination of brass, bronze, and stainless steel. The sconce measures 10 inches wide × 14.25 inches high, has a 5.5-inch projection, and uses a 120-volt quartz halogen lamp. Winona Lighting, Winona, MN. ***Circle 52***



WINONA ZIGGARAT

WALL FIXTURE

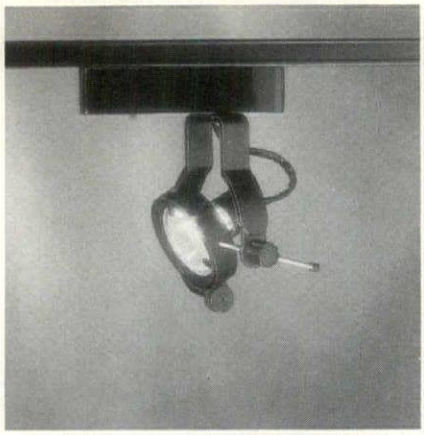
Zen is a low-voltage sconce with a white or black blown glass diffusor with decoration in blue, green, orange, or crystal. The fixture measures 4 inches in diameter, 16.5 inches in height, and is 11 inches deep. The Zen wall fixture uses a maximum of 50 watts dichroic, and has an embossed anthracite gray lacquered metal finish. DiBianco Lighting, Brooklyn, NY. ***Circle 53***



DIBIANCO ZEN

GIMBAL RING LAMPHOLDERS

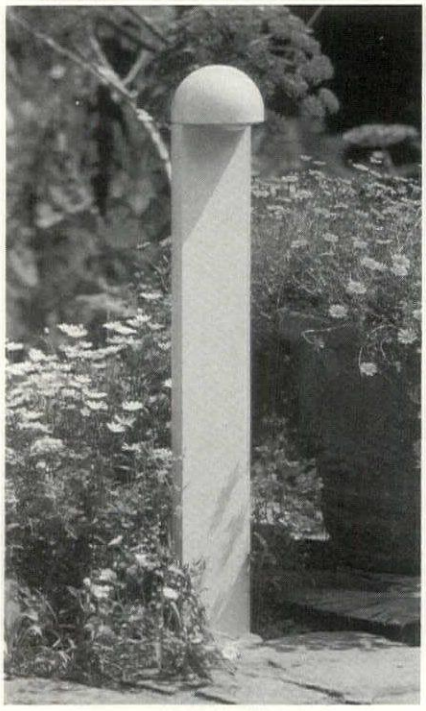
These lampholders accept halogen PAR 30, PAR 36, PAR 38, and MR 16 lamps. They are available in white, matte black, and textured silver. Accessories also include UV filters, barn doors, baffles, and cube cell louvers. Halo Lighting, Elk Grove Village, IL. ***Circle 54***



HALO LAMPHOLDERS

LOW-VOLTAGE BOLLARDS

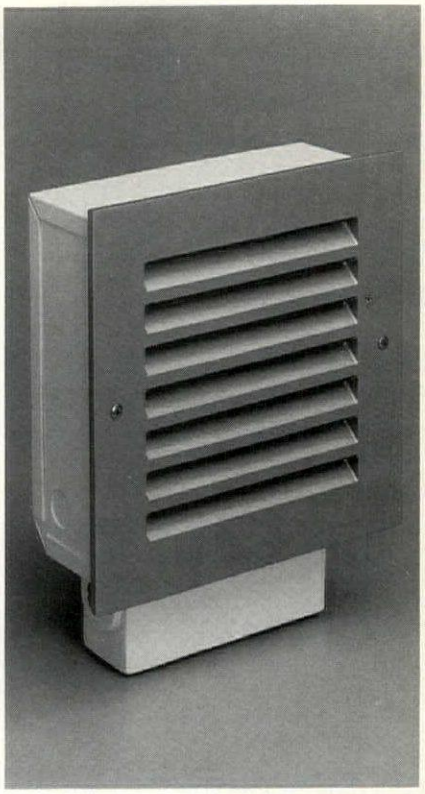
Small-scale bollards utilize a 12-volt power supply, and are constructed of die-cast aluminum with a compact resistant pressed glass lens and asymmetrical distribution. They are available in black or a variety of colors on special order. BEGA/FS, Santa Barbara, CA. ***Circle 55***



BEGA BOLLARDS

VERSATILE STEPLITES

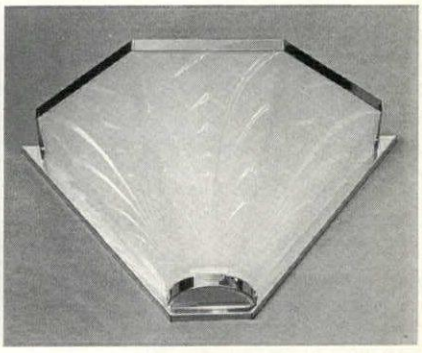
Available for compact fluorescent and HID sources, these steplites feature cast aluminum faceplates, tempered glass diffusers, 16-gauge steel housings, and two-way cast aluminum junction boxes suitable for mounting on the back or bottom of the housing. Selected models offer round faceplates, faceplates without louvers, and cast aluminum housings. C.W. Cole & Co., Inc., South El Monte, CA. ***Circle 56***



C.W. COLE STEPLITES

ENERGY-EFFICIENT SCONCE

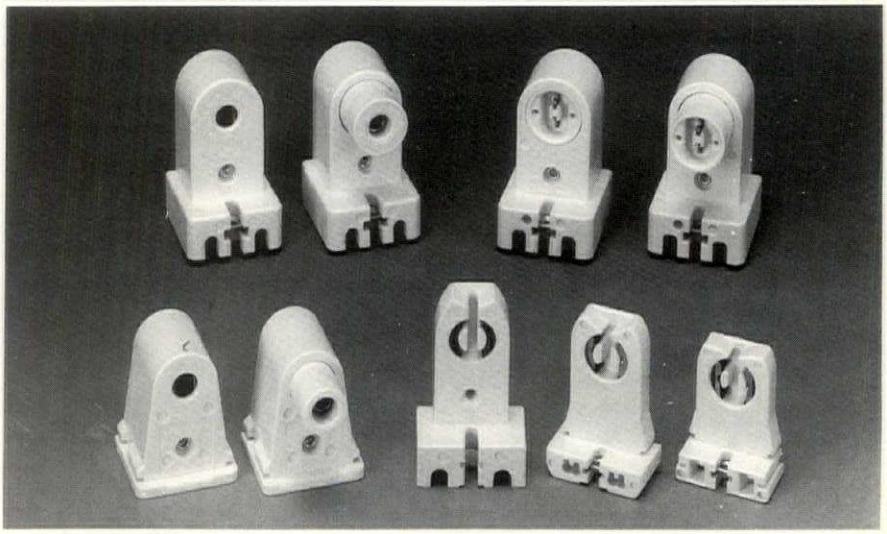
The Madison-109 features a frosted glass diffuser surrounded by brass plated, heavy gauge steel housing. The luminaire utilizes either one or two 13-watt compact fluorescent lamps. The fixture measures 34 inches × 15.75 inches × 8.5 inches. Brownlee Lighting, Orlando, FL. ***Circle 57***



BROWNLEE MADISON-109

FLUORESCENT LAMPHOLDERS

These lampholders are compatible with standard 20-gauge metal fluorescent fixtures and can be used in residential, commercial, and industrial applications. They are molded of white thermoset plastic for a neat appearance and durability, and come in three types: slimline, recessed double contact, and medium bi-pin. Eagle Electric Manufacturing Co., Inc., Long Island City, NY. ***Circle 58***



EAGLE LAMPHOLDERS

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MARCH 19-23 NGA 43rd Annual Convention and National Glass & Machinery Show. Orange County Convention Center, Orlando, FL; (703) 442-4890.

APRIL 5-7 RHIDEC International Exposition and Conference for the Hospitality Industry. Los Angeles Convention Center; (213) 306-8212.

APRIL 27-30 NADI 98th Market. Jacob Javits Convention Center, New York; (212) 213-2662.

MAY 6-10 A/E/C Systems. Washington Convention Center, Washington, D.C.; (203) 666-6097.

MAY 17-20 AIA National Convention & Design Exposition. Washington, D.C.; (202) 626-7467.

JUNE 7-14 World Congress. The Merchandise Mart, Chicago; (312) 467-5080.

JUNE 11-14 NEOCON 23. Merchandise Mart, Chicago; (312) 527-7752.

JUNE 28-30 Eco Expo. Colorado Convention Center; (619) 295-3461.

SEPTEMBER 25-29 Isabelle C. Greene's Mid-Atlantic Tour: Longwood Silver Garden and Others. (805) 963-4364.

OCTOBER 20-22 Electrical Industry Exposition and Fiber Optic Expo. Moscone Center, San Francisco; (301) 657-3110.

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