ARCHITECTURAL LIGHTING

June 1989
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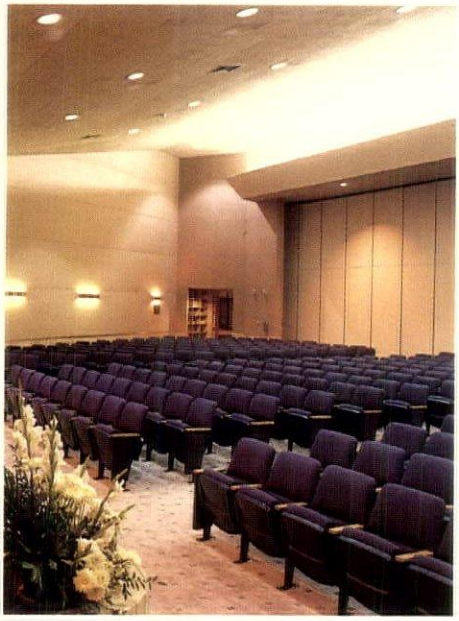

Mark Segal 1989

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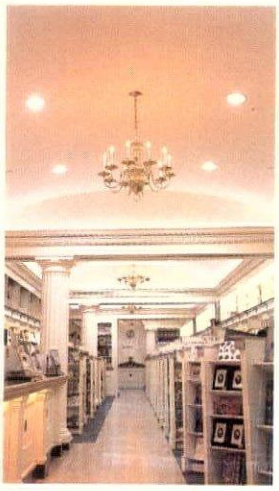

Mark Segal 1989

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Circle 1

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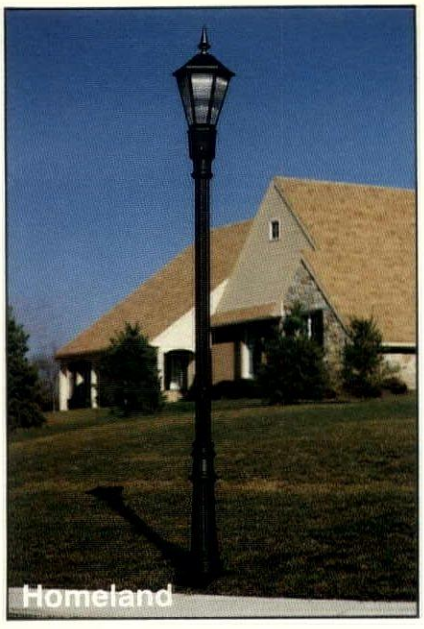

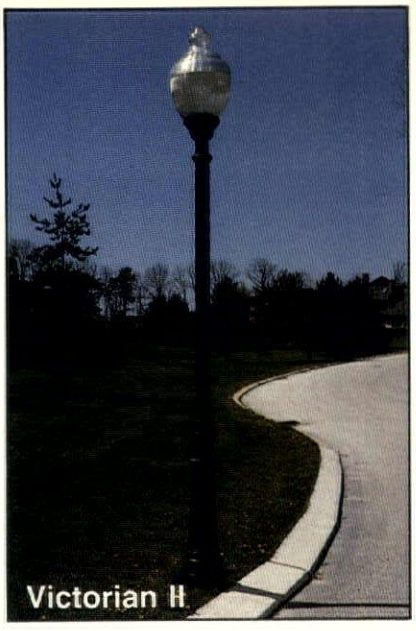

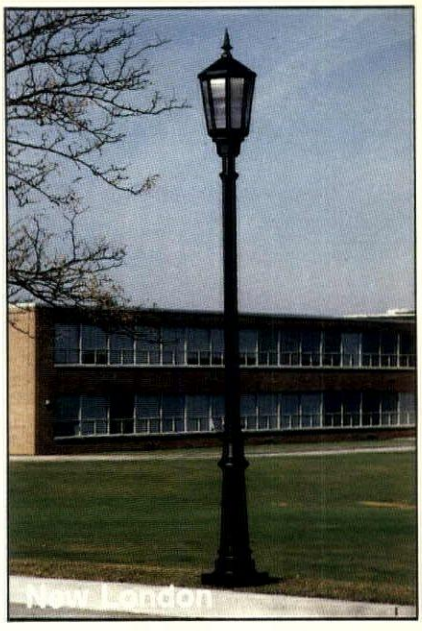

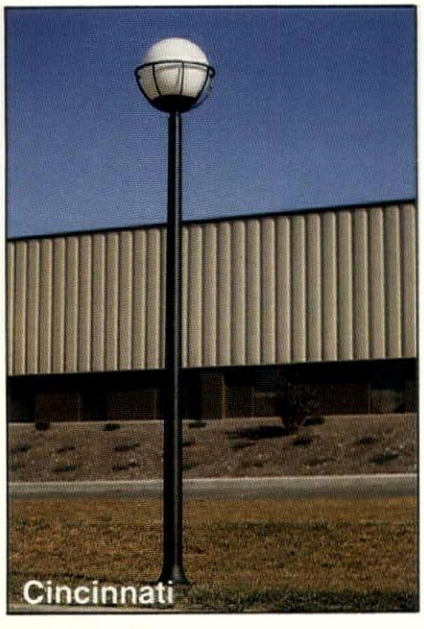

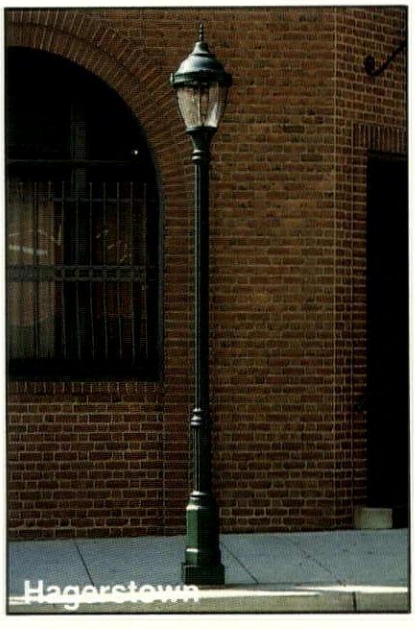

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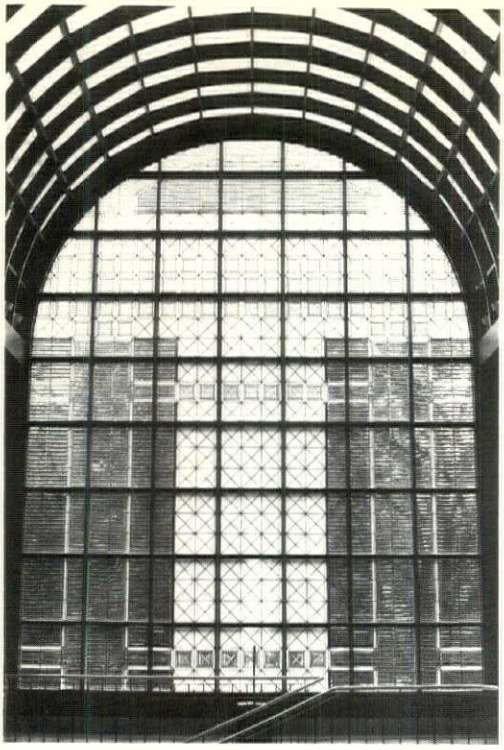

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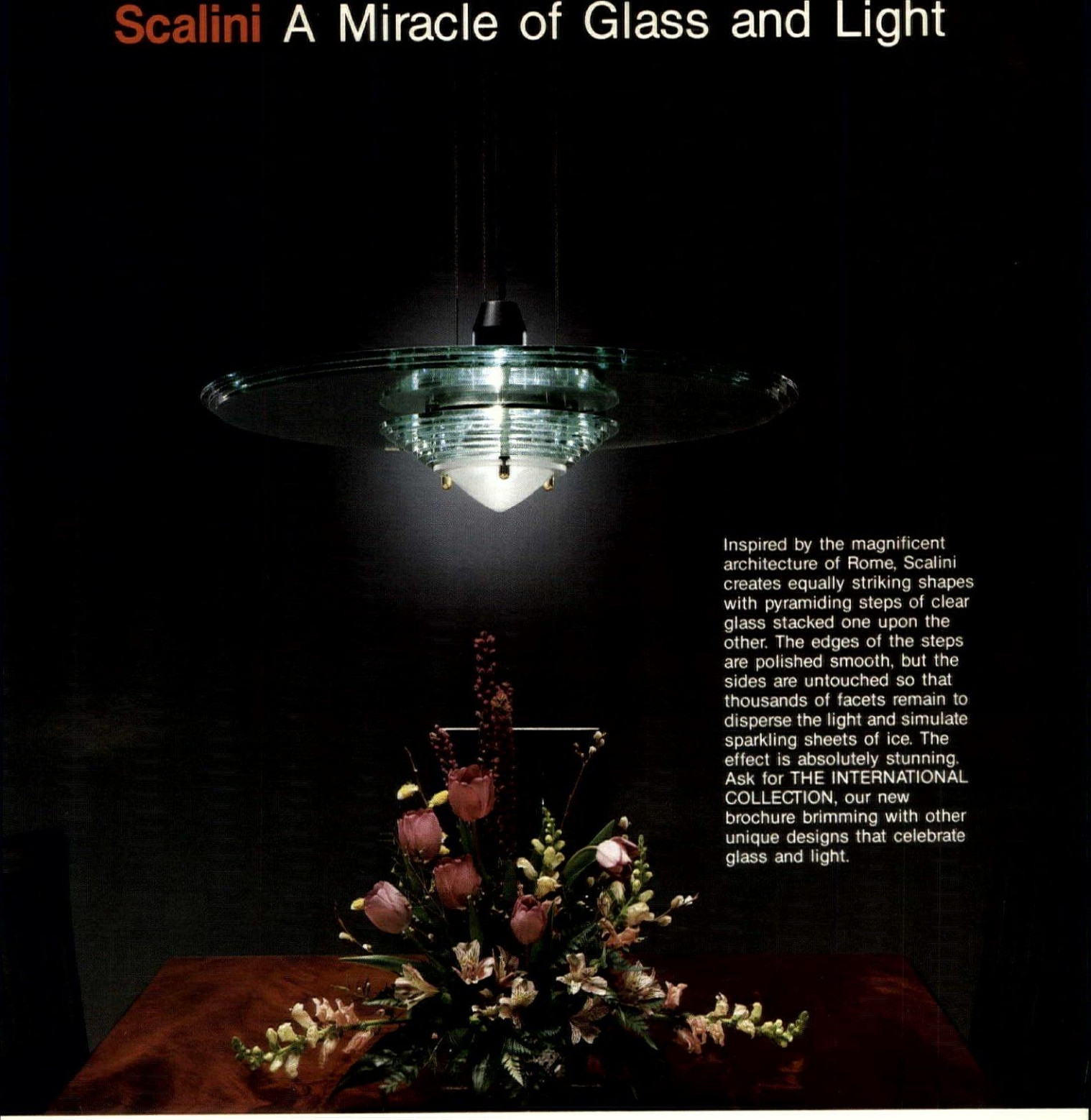
Scalini A Miracle of Glass and Light



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

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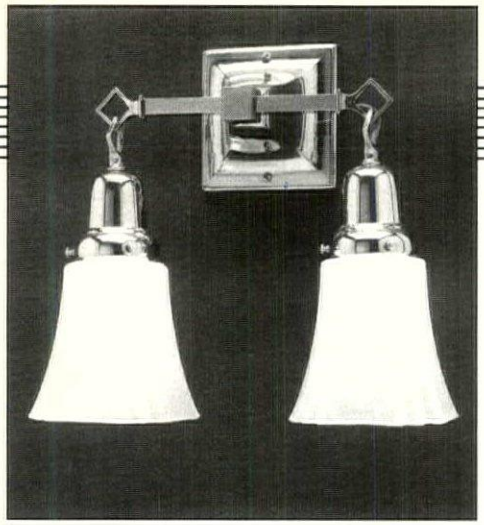

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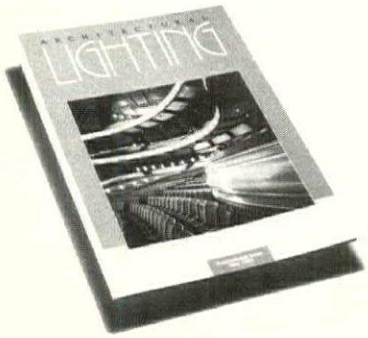

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From the Editor

This month's feature story about the Postal Service's Kit of Parts, a new CAD-based system for designing postal facilities, may strike the fear of CAD into readers concerned about the future of architects and architecture in general. The system uses a set of standard building modules that can be arranged almost like building blocks. Architects who get contracts to design small post offices get the modules on floppy disks, boot up their CAD machines, arrange the modules appropriately for the location's site and program, and presto: a post office is designed.

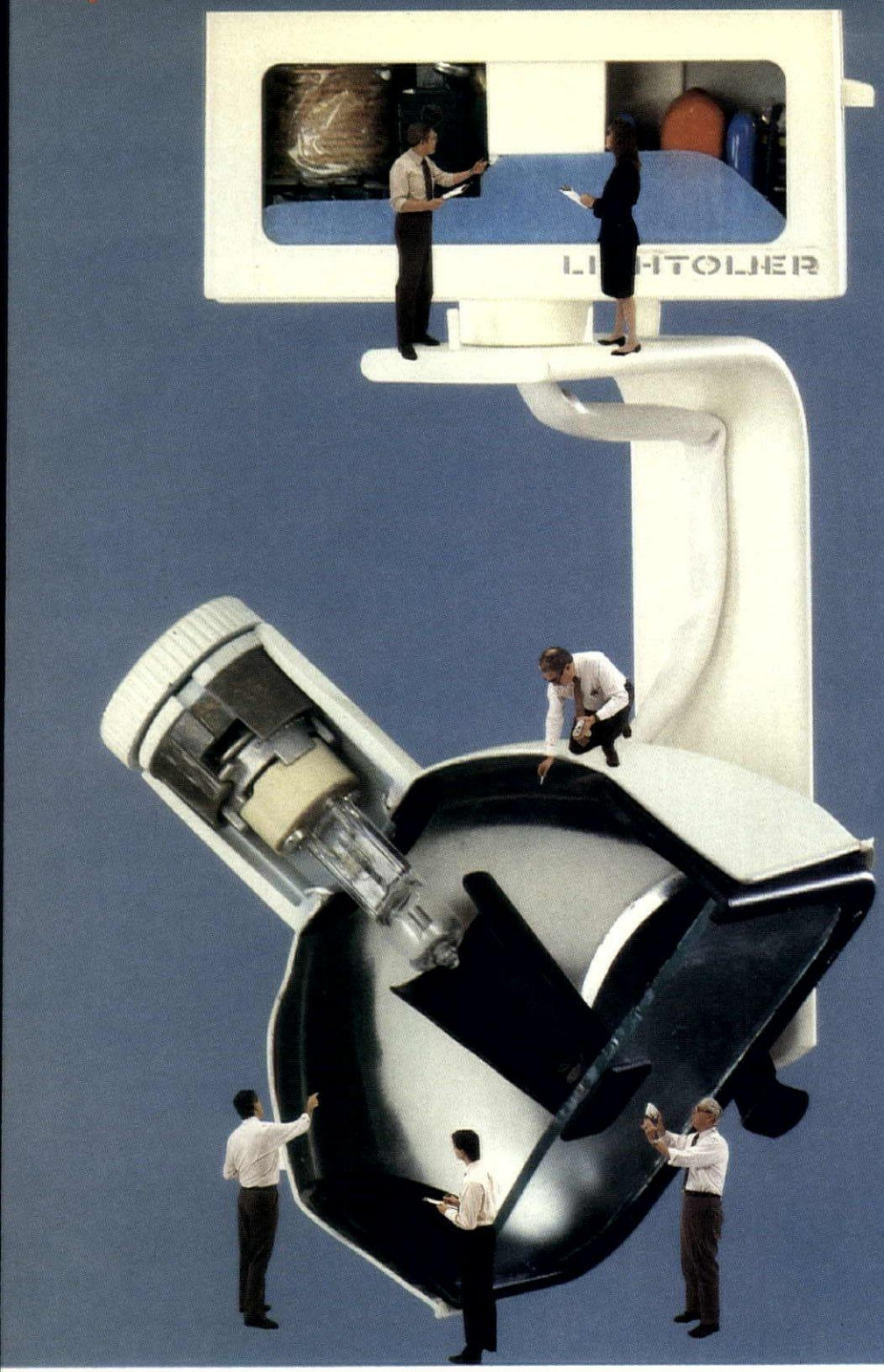
Does this mean that all the creativity has gone out of design? Absolutely not. Sure, a lot of the creativity is demanded where it always has been in the design of buildings that are to be repeated: up front, in the design of the prototype. When building modules will be built thousands of times all over the country, it is more critical than ever that lighting and daylighting be expertly designed while the building is still a prototype. And in this case, the modules had to be designed to work in virtually any location in the United States, unusual because most daylit buildings are tailored for specific locations. I don't think the challenges met by this team of designers would be anybody's idea of design drudgery.

Architects who later design with Jones Mah Gaskill Rhodes's Kit of Parts use a lighting and daylighting system developed by William Lam Associates with energy consultants Burt Hill Kosar Rittelmann Associates. Few firms designing post offices in the range of 5000 to 35,000 square feet would have a consulting budget sufficient to hire these firms. Now it isn't necessary, because the energy-efficient lighting systems they developed are woven into the building modules. Built repeatedly, the Kit of Parts buildings will represent a huge energy savings for the Postal Service, and ultimately for anybody who pays taxes or buys postage.

I think we need not fear that CAD-operating drones armed with Kit of Parts–type software will ever replace designers. Creativity is still demanded of the architects who assemble those parts into a building that works. And, once the building is designed, I'm sure that those of us who still do working drawings by hand will gladly welcome the machines to help us with what they do best: boring, repetitive tasks.

Charles Linn, AIA

Super Beamer The New Way to Light with Low Voltage



Well controlled low voltage lighting can produce dramatic effects. Too often, however, the wrong lamps, glary fixtures, sloppy beams, or unreliable and costly lamps defeat the design.

Why is Super Beamer different? Because its adjustable reflector is built around the simple, low-cost T4 tungsten halogen lamp. This powerful lamp/fixture combination controls the problems associated with the commonly used MR16. Here's how:

- The reliable T4 lamp operates without dichroic glass reflectors and cuts lamp cost in half. Using Super Beamer's adjustable optics, this *single lamp* replaces a confusing array of MR16's.
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- Especially designed, compact transformers maintain a miniaturized scale. Choice of electronic or easily dimmed magnetic models.
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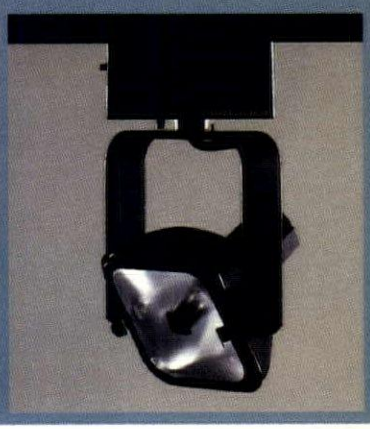

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To a Sylvania engineer, a light socket isn't just a socket. It's also an energy-saving device. So it's no accident that Sylvania engineers have helped create more energy-saving lighting than anyone else in the world.

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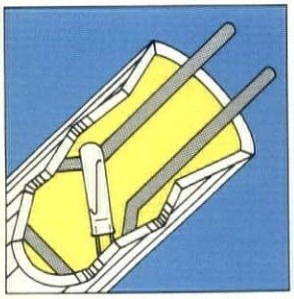
Figured at the national average electric rate of 8 cents per kilowatt hour, a Supersaver Plus lamp saves more than $15 over its life. (That's compared to an ordinary 40-watt fluorescent.)

The bottom line contribution is also impressive. For every 1,000 Supersaver Plus lamps you install, you'll save $15,200! That's a 174% return on your investment (at the suggested user price).

ing what a Sylvania do with a little Krypton.



Although Supersaver Plus lamps cost more, they save more than they cost. How's that for a switch?

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We even invented a way to double coat a fluorescent tube to optimally balance rare earth and conventional phosphors.

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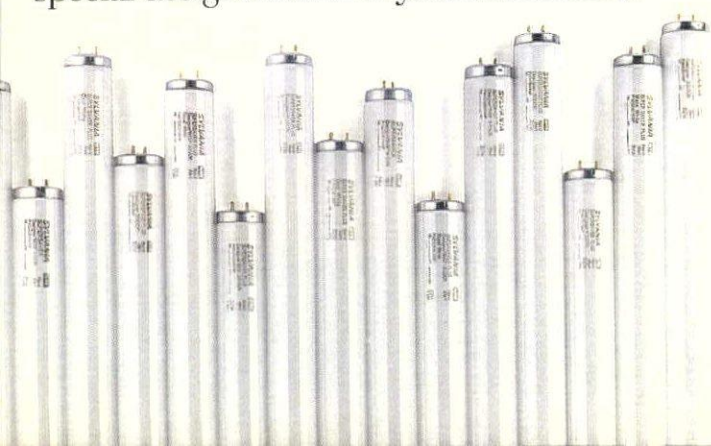
Supersaver Plus lamps do more than save energy. They deliver light output equal to higher wattage fluorescents. They also produce less heat so you can reduce air-conditioning costs. And you can choose warm white, cool white and a variety of special design colors. So you can create a range of lighting effects. And they require no special ballasts. So they can be easily installed in existing fixtures.



When Polaroid installed Supersaver Plus fluorescents, they saw instant energy savings.

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* Based on electric rate of 6.5 cents per KWH.

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June 1989
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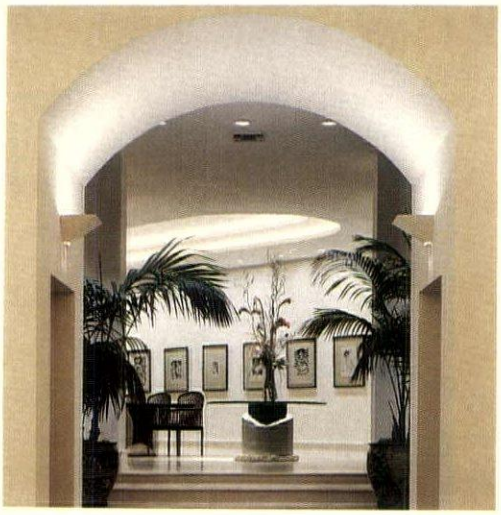

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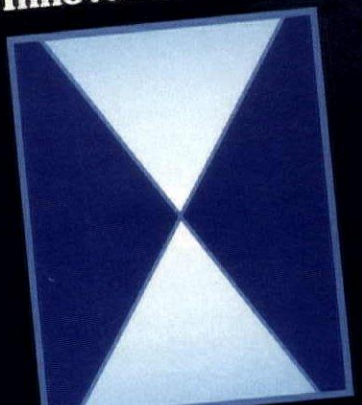

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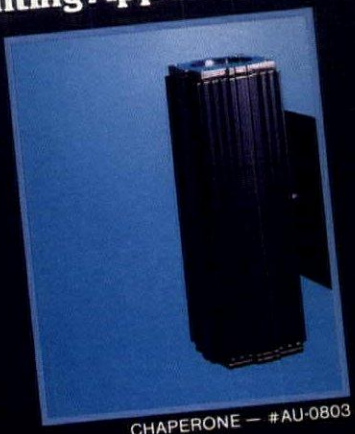

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Submission Guidelines

Any reader of *Architectural Lighting* can become a contributor by submitting a project for publication. The editors want to see your creative solutions to indoor and outdoor lighting problems. We recognize, though, that submitting material to magazines is rarely a specialty for our contributors, and we hope you will find the following guidelines helpful.

Professional photographs of your completed project are essential. The number, quality, and variety of photos submitted can make the difference between a cover story, a one-page article, and an unpublishable submission.

Original transparency film yields sharper, cleaner, more vivid color images that we can enlarge to bigger sizes in the magazine. Large-format originals (4x5s, for example) are best; original 35mm slide transparencies are ideal for detail shots. If you cannot send original transparencies with your submission, send the best duplicates you have, and indicate in a cover letter whether originals will be available if we accept the project for publication.

The photos in this magazine should represent as closely as possible what a human visitor to the space would see. Strobe or fill light provided by the photographer to change the visual appearance of the space is unacceptable.

With your photos, include a brief written description of the lighting design problem and how it was solved. Factual details are much more important here than writing style. Explain the objectives and scope of the lighting design. Tell us why you chose particular lamps and fixtures or how you designed the daylighting features of the project. Captions keyed to the photos can highlight special areas of interest.

Upon reaching our offices, your project submission enters our editorial review process. Usually, you can expect to hear from us within four weeks. Our staff takes every precaution to ensure safe handling and accurate tracking of all materials submitted. We return all photos promptly after review or publication.

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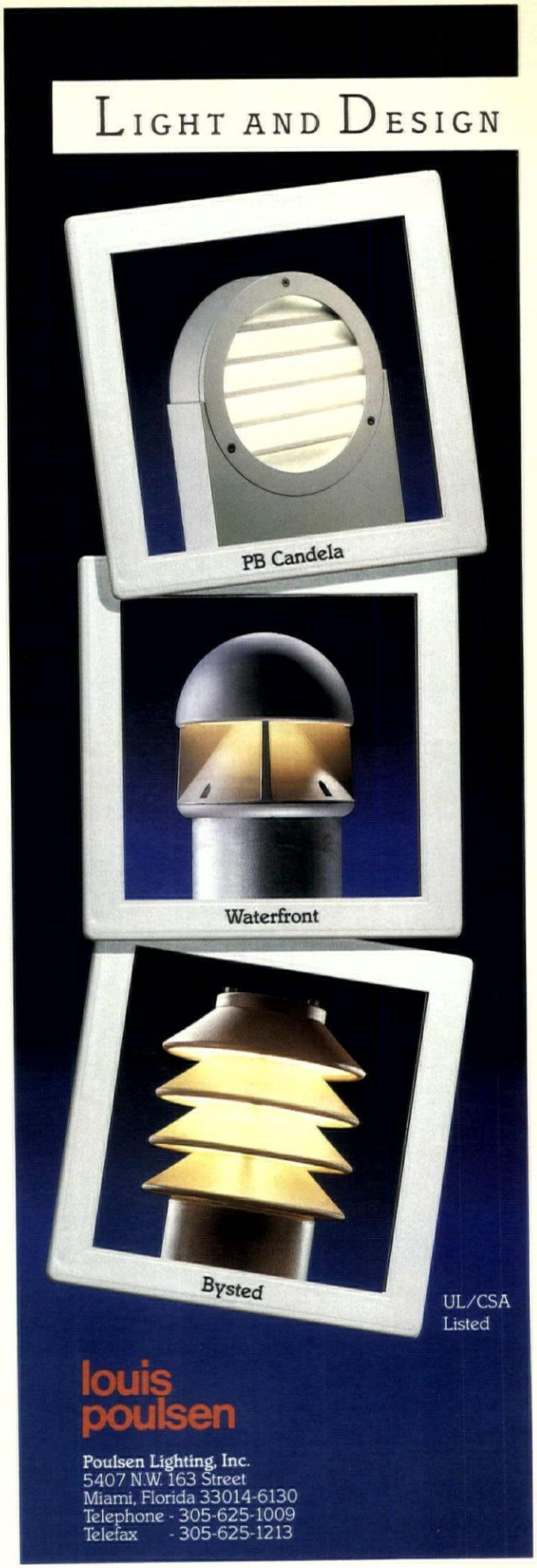
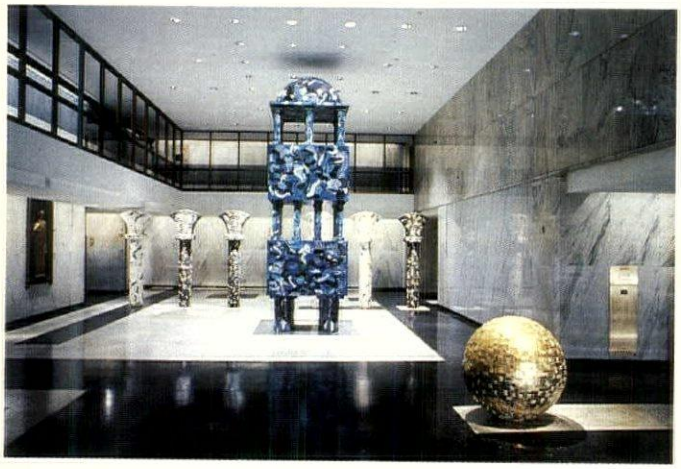


Circle 12

Lobby lighting emphasizes sculpture, functional circulation space



Project: Washington Street Building lobby renovation
Client: Prudential Insurance Company of America
Location: Newark, New Jersey
Lighting Designer: Gary Gordon Architectural Lighting; Gary Gordon, IALD, designer; Kurt Wagner, project manager
Architect: The Grad Partnership; Howard N. Horii, FAIA, partner-in-charge; Robert A. Gilbert, AIA, project manager
Engineer: Jansen & Rogan
Art Consultant: Helene Seeman
Photos: Peter L. Goodman, Edison Price

The lobby of Prudential's Washington Street Building was a large, dark, two-story interior space that lacked atmosphere. Sculptor Ned Smyth and the Grad Partnership were selected to revitalize it. Smyth designed a new terrazzo floor that was integrated with several of his freestanding sculptures. The lighting design was intended to accentuate the sculpture, as well as to provide a functional environment for circulation.

The sculpture is given center stage, highlighted by focused directional fixtures recessed in the plaster ceiling. Each piece of sculpture is lighted on all four sides; but, at the sculptor's suggestion, one side receives a noticeably greater quantity of light than the others, as if the pieces were being lighted by the sun. The pieces are actually lighted by incandescent PAR 46 and PAR 56 lamps, with a 2800K color temperature, in matching recessed 7-inch-aperture, open reflector fixtures.

Continuous uniform illumination from a concealed trough grazes the surrounding marble walls, giving the lobby ambient light and providing spatial orientation for observers. Several factors led to the design of a new lighting trough from scratch: severely limited depth for the trough, a need for the light to project the entire height of the wall, the need to supply conditioned air through the trough, and a desire for a 3000K color temperature.

The new design was based on an R40 system originally designed for the lobby of Mies van der Rohe's Seagram Building. The new 50-watt tungsten halogen PAR 20 lamp was chosen because its optical performance is virtually identical to the larger 75-watt tungsten halogen PAR 38; it produces similar candlepower and has the added benefit of a 3000K color temperature. The PAR 20 lamps were placed 12 inches on center above a linear spread lens, which evenly spreads the narrow spot beam across the wall horizontally. A continuous tilt-lock mechanism allows an entire row of lamps to be adjusted for vertical beam throw at the same time.

Glare from the trough is controlled by a snap-in specular black baffle. The usual flicker of the lamps' halogen diodes was eliminated by using alternate three-phase wiring.

The finishing touch on this lobby renovation was the installation of a sophisticated dimming system that controls the brightness of the perimeter lighting as well as providing individual control of each of the four sides of every piece of sculpture. Settings for daytime, nighttime, cleaning, and special events are permanently stored.

—Gary Gordon, IALD

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

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Circle 13

Three-in-one luminaires incorporate vents, fire sprinklers

The lighting system at Lloyd's of London headquarters is as unusual as the building itself — a high-tech structure enveloped in exposed ducts and six satellite service towers. The basic lighting system, which is most visible on the four floors occupied by Lloyd's famous underwriting syndicates, consists of more than 8500 computer-controlled custom luminaires that are also components of the ventilation and sprinkler systems.

Design requirements for the luminaire were complicated and unusual, based on an idea that lighting, HVAC, and fire control equipment could be integrated in a single pattern. Every luminaire incorporates a sprinkler head and an exhaust vent. To control glare and reflections on the many VDTs in the building and to coordinate with the interior design, the luminaire uses a lamp unheard of for general office lighting — a 40-watt 4100K circular fluorescent. The lamp manufacturer had to guarantee continued production for 20 years before the final luminaire design could be approved.

Each 6½-foot-square coffer in the exposed-concrete ceiling grid supports one luminaire. The circular assembly has a 2-foot-diameter, post-anodized specular aluminum reflector and a parabolic louver whose blades fan around a concealed sprinkler head like spokes around a hub. A narrow, clip-mounted aluminum ring above the outer rim tilts in toward the center to control spill light and prevent glare. A deep, matte black shield of spun aluminum surrounds the luminaire; a black perforated metal panel fills in the rest of the coffer. Though lighting consultant Friedrich Wagner had wanted the shield and panel painted white, the architects required black to relate to the interior design.

Another source of illumination is daylight from a 240-foot-high, barrel-vaulted atrium in the building's core and from translucent, triple-glazed exterior walls. The glazing has two layers — a sealed, double-glazed exterior layer and a single interior layer of rolled glass with dimples that refract light at night. A 3-inch gap between layers acts as a vertical duct for channeling exhaust air drawn through vents in the luminaires.

Computers control lighting and other building services. In underwriting areas, luminaires are switched in blocks or controlled with timers to match preset light levels. Occupants of tenanted offices can override the settings with desk-mounted control switches. The control system even keeps records of energy consumption and repair time for every luminaire — information useful for predicting maintenance needs and for generating tenants' utility bills.

—Susan Degen

Project: Lloyd's of London headquarters
Location: London, England
Architect: Richard Rogers Partnership Ltd.
Structural and Services Engineers: Ove Arup & Partners
Lighting Consultant: Friedrich Wagner, Lichttechnische Planung
Interior Design: Jiricna Kerr Associates
Photos: John Rose Associates

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

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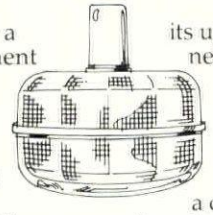
The best way to create a comfortable environment that brings out all the color, texture and form of quality merchandise is with prismatic lighting specifically designed to do just that.



Holophane's PrismGlo™ combines direct, indirect, multi-point, and single-point illuminating characteristics in a single fixture that is literally without parallel in today's lighting environment.

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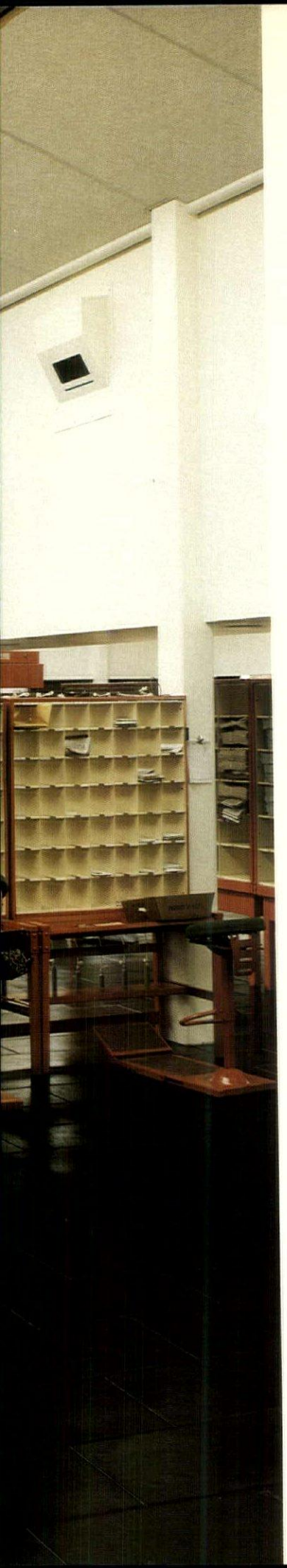


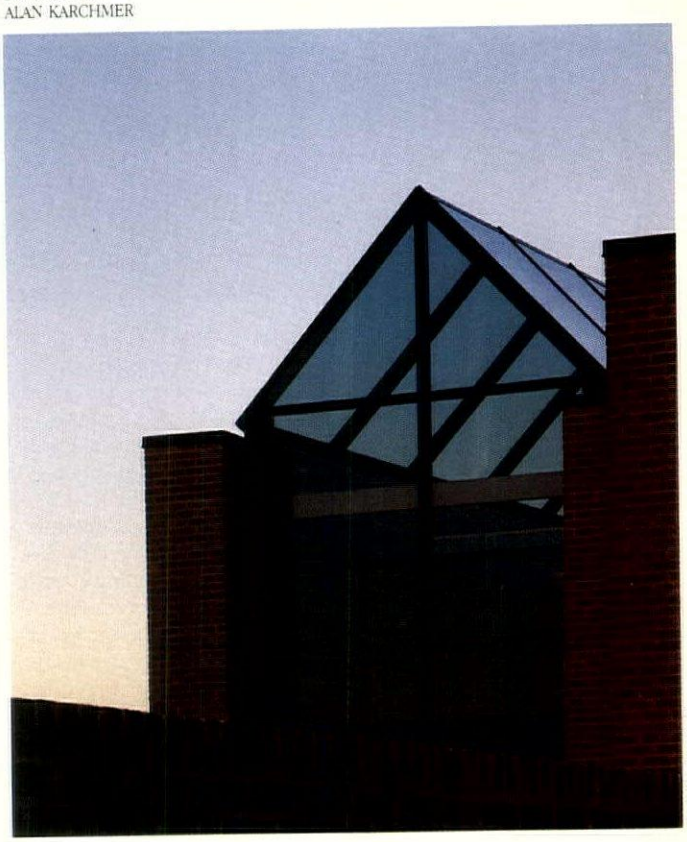
U.S. Postal Service plans future buildings from a Kit of Parts

ARTICLE BY
BARBARA-JO NOVITSKI

PHOTOS BY
ALAN KARCHMER

Almost everyone has walked into a public building for the first time and felt something familiar about it. This experience will be even more commonplace if the U.S. Postal Service (USPS) completes its new building plan: to build about 100 new post offices each year using a standard set of modules called a "Kit of Parts." With the kit on a computer-aided design (CAD) system, an architect can design a new postal facility in as little as three weeks, without compromising design quality or energy efficiency.

A desire to shorten the time needed for design and a high demand for new post office buildings in the 8400- to 35,000-square-foot size range led to the USPS plans to standardize building designs. The Memphis architectural firm of Jones Mah Gaskill Rhodes worked with a team of energy consultants, lighting consultants, and USPS architects and engineers to develop an energy-efficient, daylit post office that could be reproduced anywhere in the continental United States. The architects designed dozens of modules that can be arranged in a variety of configurations and sizes to form the six basic building parts: administrative offices, public service lobby, postal box lobby, workroom, loading platform, and covered loading area. They took care to satisfy the



BARRY RUSTIN

Project: USPS Kit of Parts Facility
Location: Cordova, Tennessee
Client: United States Postal Service Facilities Department
Architect: Jones Mah Gaskill Rhodes; Martin E. Gorman, Jr., project manager; R. Allan Goeltz, project architect; Francis Mah, project designer; Gary Kessel, CADD manager
Lighting Designer: William Lam Associates
Energy Consultant: Burt Hill Kosar Rittelmann Associates
Landscape Architect: ETI Associates
Electrical Engineer: Smith Seckman Reid, Inc.
Interior Designer: Vignelli Associates

most rigid building codes and to take into account both the day-to-day functioning of post offices and their historic role as public buildings in American communities.

Fifty-nine buildings have been designated for Kit of Parts design, and a few have been completed and occupied. (The building shown here is in Cordova, Tennessee.) Based on post-occupancy evaluations, the standard design will continually be revised and improved. While developing the Kit of Parts, the architects demonstrated that "generic" buildings are feasible on a national scale. Their ambitious project combines sophisticated daylighting and energy analyses with CAD technology and is expected to save millions of dollars in future design, energy, and lighting costs.

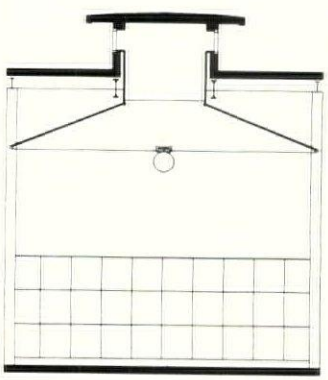
Daylighting the Workroom

Although the architects considered the lighting and viewing needs throughout the building, they singled out the workroom for special attention. There, carriers gather early in the morning to sort the day's mail, an intense activity that requires high visual acuity. For this activity, USPS standards specify a lighting level of 50 footcandles. Around midmorning, when the carriers leave to make deliveries, the ambient lighting requirement drops to 25 footcandles. The few remaining workers rely on task lighting. Late in the afternoon when the carriers return to the workroom for more sorting chores, the illumination requirement again jumps to 50 footcandles until closing time.

This unusual occupancy pattern called for an unconventional daylighting solution. The problem was to find a top-lighting scheme that would work well in any latitude and perform best in early morning and late afternoon. The daylighting consultants evaluated three options: south-facing roof monitors, horizontal skylights, and east- and west-facing monitors.

Each configuration has advantages and disadvantages. South-facing monitors provide welcome solar heat in the winter, but their lighting performance peaks at noon and is out of sync with the postal employees' work schedule. Horizontal skylights are the least expensive option, but they introduce unwanted solar heat gain in the summer. East- and west-facing roof monitors provide properly scheduled daylight, but their construction is the most expensive and, without careful solar control, they invite summer overheating.

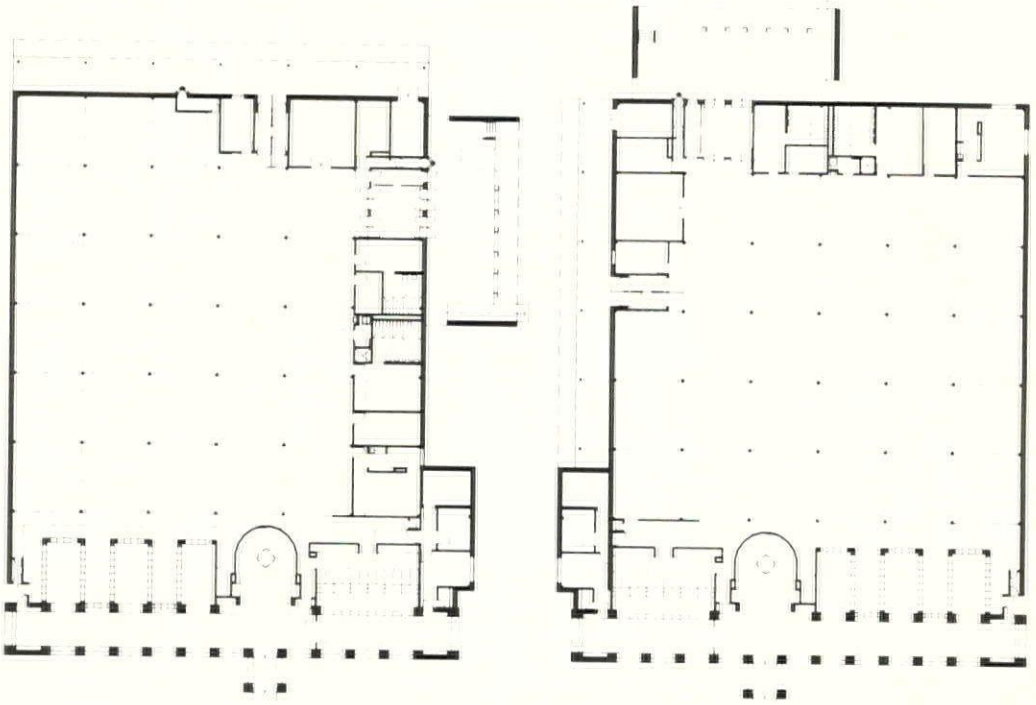
While the energy consultants evaluated these three configurations, the architects and lighting consultants began work on a roof and ceiling section design for the workroom. Their dual goal was to provide enough daylight and to exploit the quality of indirect sunlight to create a vibrant work atmosphere. "We design for clear days rather than worst-case-scenario cloudy days," says Keith Yancey of William Lam Associates. "So we



The workroom section shows the shallow east- and west-facing clerestories with deep overhangs. Direct sunlight bounces off the light-colored roof and is reflected onto the monitor ceiling and down into the work space. The sloping acoustical panels further reflect the light onto the work plane. Backup fluorescent lights, mounted on yellow ducts, uplight the sloping panels when daylight is insufficient.

BURT HILL KOSAR RITTELMANN

Energy consultants built realistic models to measure the daylight levels in the workroom under a variety of sky conditions. Two post office floor plans demonstrate some of the variations possible with the Kit of Parts. Traffic patterns inside the buildings and outside in the city streets are important determinants of how parts are arranged.



ment," Yancey explains. "If they see a darkened fixture, they can't tell if it's burned out or if it's off because the daylight is adequate. But if all the lighting is indirect, then it's harder to see whether one row of lamps is on or off, and if one is off, it doesn't look like a mistake. Sometimes a good luminous environment is one where you don't notice the lighting. If it's visually noisy, then you have failed, but if it's visual music for your eyes, then you've succeeded."

Predicting Energy Performance

After the lighting designers had developed three workroom toplighting configurations, the energy consultants calculated the lighting, heating, and cooling consequences of each. With the light measurements from physical models and their in-house energy simulation software, they tested the three configurations for five major U.S. climate regions. Their goals were to select the most efficient design and to recommend, if necessary, which design would work best for each region. They were looking for the single most efficient design. Only if they found clear evidence of significant differences in construction or operating costs would the USPS consider alternate designs for different regions.

After extensive physical modeling under real sky conditions, the lighting consultants concluded that, strictly on a lighting performance basis, all three options would work. The energy consultants discovered very little difference in energy consumption between the two monitor orientations. Although conventional wisdom suggests that there should be a difference, and that the difference should vary with climate, they explain that the extra heating benefit provided by the south-facing monitors was offset by the additional electric lighting required during the hours of heaviest occupancy.

"We couldn't recommend climate-specific modifications to the standard design," says energy consultant Don Anderson, of Burt Hill Kosar Rittelmann Associates. "Otherwise you would see more south-facing glass in the design. But the occupancy pattern argued in favor of the east-west configuration, and we could save energy by switching down midday."

To accommodate the occupancy schedule and daylight availability, electric lights are controlled by both a time clock and a photocell. Their dual-step switching system shuts half or all of the lights off when daylight is sufficient and when the footcandle requirement is lowered.

"Based on photometric testing of the design models," says Anderson, "I concluded that daylight will usually provide what is needed except on the cloudiest day. That's why we think switching is as good as the more expensive dimming."

The lighting benefits offset the extra heat gain from the east-west monitors. Anderson explains, "The heat tends to stratify at the peak of the high-ceilinged space. This is not nearly as harmful as direct gain hitting a floor and radiating up past occupants. With south-facing glass, you wouldn't have such a heat gain problem, but neither would you get the lighting benefit. In effect, the daylighting benefit takes heat out of the space because you need less electric lighting." The energy consultants were able to specify monitors that face east and west — whatever the local site conditions and building orientation — because the workroom bays are square, and the monitors can run either parallel or perpendicular to the front of the building.

As a final step in their evaluation, the energy consultants performed a life-cycle cost analysis. They concluded that the

bounce a lot of sunlight into the space. We like to take advantage of the dynamic characteristics of the sun. That is often left out of a space designed purely by numbers. If you're concerned only with getting *X* number of footcandles in a space, the qualitative aspects are left by the wayside."

The lighting consultants also wanted the sunlight to reflect off exterior surfaces before entering the space so it would not cause overheating problems. "We used a white, single-membrane roof as a primary reflector to bounce the direct sunlight up to the ceiling of the monitor and then back down into the work space. If we used a black roof, any sunlight hitting it would be absorbed, and it wouldn't contribute to the daylighting."

To prevent direct sunlight from hitting the workers, they designed a deep overhang for the shallow clerestories. Below the glazing is a light shelf, or ledge, with a highly reflective white horizontal surface. The sloping white acoustical ceiling panels further direct the reflected light onto the work surfaces. To avoid a direct beam of light from a specular reflector, they used an 85 percent reflective matte white. Any direct light that does reach the space hits architectural surfaces but not the work areas.

Yancey says, "Our philosophy is that if it's not contributing to the user's delight, then 50 percent of the design is lost. Seeing the changing color and patterns of the light helps tie you to the outside. If we used a diffusing skylight, you would never be sure if it was daylight or fluorescent lamps. We try to build all the dynamics of the changing sunlight into the design to satisfy both qualitative and quantitative requirements."

The design also integrates fluorescent fixtures, on a multiple switching system, to supplement the daylight. Indirect fluorescents are mounted on top of the duct that runs down the center of the coffers, so the workers can't tell whether the lights are on or off. "Workers may be bothered if they don't feel in control of their environ-

JONES MAH GASKILL RHODES

The U.S. Post Office in Cordova, Tennessee, is one of the first buildings to be completed from a Kit of Parts. About 100 similar postal facilities will be built around the country every year. The post office workroom, where mail is sorted early in the morning and late in the afternoon, is daylit by east- and west-facing roof monitors. Incoming sunlight is reflected off architectural surfaces to prevent glare on the workers and is supplemented, when necessary, by fluorescent lamps mounted over the ducts.

BARRY RUSTIN

One of the module options in the Kit of Parts is the roof over the main post office lobby. Architects may choose a continuous glass atrium, a flat roof with skylights, or an opaque flat roof. At the Cordova facility, the lobby has the atrium option; its high light levels create a lively atmosphere for the entire length of the public area.

roof monitors would pay for themselves in less than 20 years, satisfying the USPS requirements for payback periods for new buildings. To optimize costs and light transmission, they specified clear glazing for the workroom monitors. They also developed methods that architects can use on future projects to calculate the cost-effectiveness of more efficient low-emissivity glazing.

Kit of Parts

For the construction documents phase of this unusual design process, the architects designed the Kit of Parts framework of modules. A module, or basic building block, consists of several function-related rooms and associated interior layouts, details, schedules, and specifications. Each module type was developed in several sizes to accommodate a broad range of building sizes. To ensure maximum usability by the majority of CAD users, the architects produced the plans on each of three major CAD systems: AutoCAD, McDonnell Douglas, and Intergraph.

To design a "new" post office of a specified size, an architect selects the appropriate modules from a CAD system and fits them together. Although most module characteristics are standard, the project architect will design the site work and select exterior finishes that conform to local traditions. By performing the relatively simple CAD procedures of rotating and mirroring, designers can produce thousands of unique combinations of the standard parts.

One example of a module option is in the roof of the main lobby. Basing their decisions on cost, desired image, and local climate conditions, architects may choose a continuous glass atrium, a flat roof with skylights, or an opaque flat roof. The lobby shown has the atrium option; its high light levels create a lively atmosphere for the entire length of the public area.

Does this "mix and match" approach to design mean the demise of the architectural profession? Not at all, according to project designer Francis Mah. "The computer is simply a tool that replaces a pencil and frees your time to help you think creatively. In fact, standardization guarantees us a level of quality that we've never had before."

That design decisions are multiplied by frequent repetition certainly elevates the responsibility of the architect. A single design choice will affect not one building but many, not the work environment of a handful of employees, but that of thousands. As the responsibility shouldered by the original architect grows, however, that of the future architect who uses the Kit of Parts does not necessarily diminish. It still requires professional skill and training to turn the kit into a safe and functional building.

As problems are discovered, Mah's firm will make modifications to the standard plans that will apply to all future buildings. As a result, postal buildings will gradually and inevitably improve over time. More than fast-food restaurants and other familiar buildings of standard design, post office buildings that result from the Kit of Parts will demonstrate variations for different needs, sizes, and local site conditions. Regardless of the infinite potential for variation, one thing that will remain constant will be the concern for design quality — and for the quality of light for the workers — that befits an important public building. ■

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

High-technology testing calls for unusual lighting solutions in plastic building

An architect charged with designing a building of entirely nonmetallic materials confronts a variety of unusual problems with structural geometry, materials, and lighting. The new building where Underwriters Laboratories tests electromagnetic interference (EMI) is, in effect, made of glazing materials. The architects had to ensure that, above the main floor level, the laboratory facility contained no metal — none in the structure, none in the envelope, and none in the lighting fixtures. Although few designers ever face such stringent material limitations, this building merits attention because it reminds us to be alert to ingenious lighting solutions.

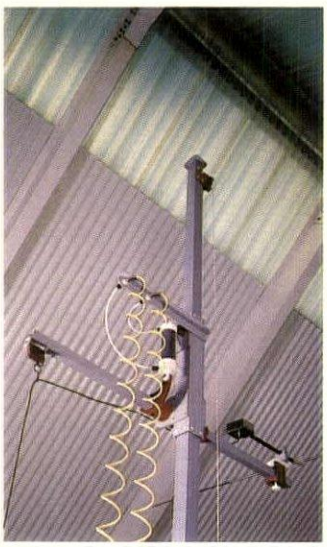
Barbara-Jo Novitski

Barbara-Jo Novitski is contributing editor of Architectural Lighting.

Underwriters Laboratories needed a nonmetallic building because of the special demands of EMI testing. The Federal Communications Commission (FCC) requires that communications devices, including most computers, emit electromagnetic waves only within an acceptable band of the radio frequency spectrum. As project architect William Lampkin explains, "An ideal environment for testing would be an open field, where there are no objects nearby to reflect the radio frequency waves. But in the Illinois climate, we also need shelter. So we use fiber glass–reinforced plastic building materials, which are nonconductive. That is, they allow the radio waves to pass right through them and don't reflect any of them back."

Ordinary buildings have metal not only in the structure but also in the heating, cooling, and lighting systems. The EMI laboratory designers have minimized the loads on these systems by insulating the lower, opaque portion of the roof and making the upper portion translucent. The green tint filters out some of the solar radiation that would otherwise cause overheating in the summer. Any unwanted heat that builds up at the top of this high space is vented through operable louvers, thereby reducing the need for air conditioning. Daylight coming through the translucent panels at the ridge and gables is distributed evenly throughout the interior. "Even on a cloudy day," says Lampkin, "there's plenty of light in there. The electric lights are used only in the winter months when it gets dark early or when they're testing late at night."

The seldom-needed electric lights are 500-watt quartz spotlights like those used in swimming pools. They are recessed in the floor slab along the edges where the roof meets the floor. Their metal housings do not interfere with the testing because they are completely below the lab floor level. Set at a carefully calculated angle, the spotlights point at the opposite "wall," which reflects diffuse light down to the testing area.



Project: Electromagnetic Interference Laboratory
Location: Northbrook, Illinois
Client: Underwriters Laboratories Inc.
Architect: Jack Train Associates; William Lampkin, project architect
Lighting Designers: Cosentini Associates, Jack Train Associates
Structural Engineer: Don Belford Associates
General Contractor: Gerhardt F. Meyne Co.
Photos: Barry Rustin Photography

The whole building above the testing floor is made of nonmetallic materials, including the glazing panels, structural members, and bolts. In the foreground (far left) is the antenna that receives the radio waves during testing. Inside (near left), the roof slopes to the floor, and the translucent panels at the ridge and gables provide ample daylight for the workers.

The angle is steep enough so the testers, who work in the middle of the room, are not bothered by glare. "We determined the proper angle by looking at it in section," says Lampkin, "and, using the principle that the angle of incidence equals the angle of reflection, we worked it out so that the light would reflect back to the center of the room. Then we fine-tuned it after the fixture was installed."

Quartz spotlights (top photo) are recessed into the floor slab at a carefully calculated angle in order to illuminate the opposite "wall." Diffuse light reflects down to the testing area. The exterior night photo (above) shows light emanating from the translucent fiber glass roof panels of the Electromagnetic Interference Laboratory, giving it an almost chapellike quality.

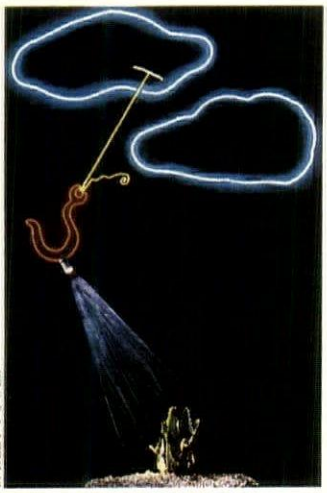
The building materials for this project are more commonly found in industrial environments where caustic chemicals can be harmful to steel. Unlike the fiber glass used in consumer applications, fiber glass–reinforced plastic is engineered as a structural material. The fiber glass is not cut into random strands. Instead, its strands are continuous, unbroken tension members that are embedded in the resins of the plastic material. To minimize the structural forces in the plastic roof, the architects chose a stable, triangular shape that prevents an accumulation of water, snow, or ice. Even these nonmetallic substances can reflect some of the radio waves and interfere with the testing. Below the floor level of the testing facility, where metal is permitted, a basement of conventional construction houses the support spaces for workers.

At night, when light emanates from the translucent panels, the view from the outside is dramatic. The lab has an almost chapellike appearance. Lampkin says that during the day, the interior has a similar look, reinforced by the way the lab workers enter it from below. "To reach the upper level, you come up a stair from an ordinary basement, and you don't expect it to look this way."

Most designers will never have to go to such lengths to produce a nonmetallic building; nevertheless, the EMI Lab is instructive in a number of ways. It teaches us about materials that may be used in a variety of daylighting applications and illustrates a unique method of indirect lighting. And, perhaps most interesting, it demonstrates that materials and systems conventionally thought of as solutions to lighting problems — like translucent fiber glass panels and swimming pool light fixtures — can be drafted into service for high-technology needs. ■

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

Landscape Lighting



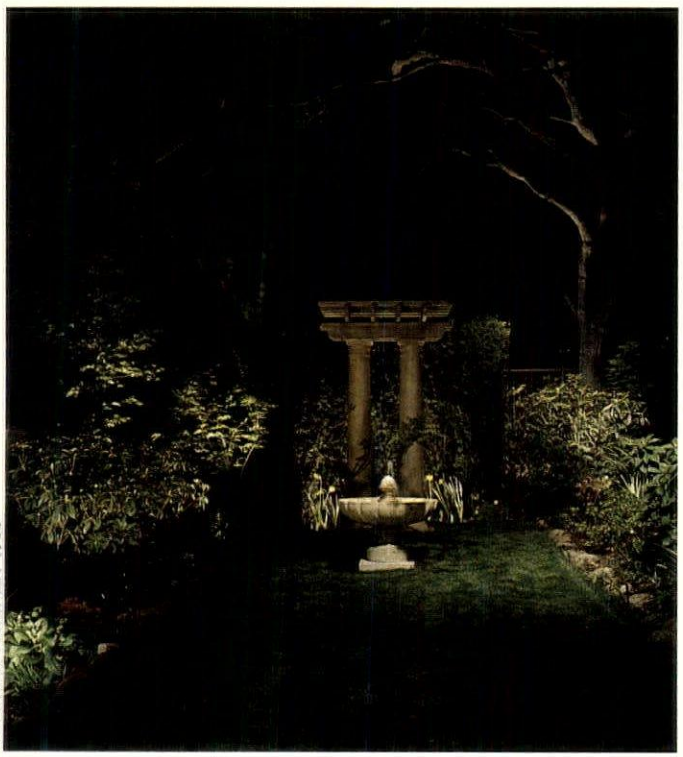
SMILEY POOLE

There are no skyhooks in real-life gardens, so lighting designers must locate usable mounting locations for fixtures. Ben Livingston and Jan Moyer designed this landscape lighter's fantasy, "Just Another Skyhook."

Downlighting for garden night scenes

Janet Lennox Moyer, ASID

Janet Lennox Moyer is principal of Jan Moyer Design, Oakland, California.



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This small area of an estate in Piedmont, California, illustrates the distinct difference between uplighting (plants at left) and downlighting (plants at right).

Creating a natural appearance for plantings, fountains, sculpture — the entire garden night scene — depends on downlighting. During the daylight hours, objects are lit from above by our phenomenal point source, the sun. We are conditioned to think that light coming from that direction is "normal." Highlighting on the top of leaves and shadows beneath or around the base of the plant look natural to us. To recreate this expected appearance at night, try using the same design approaches we use to light objects in an interior. But first, because we have no ceiling, we must find mounting locations for the fixtures. In real gardens, there are no skyhooks.

In formal gardens, landscape architects often locate the primary focal object in the middle of a lawn with no buildings or large, mature trees nearby. In this situation, with no mounting location, it may be best to leave the primary or secondary focal objects unlit. The aiming angle of the fixture used for downlighting an object, as is true of uplighting, must not be too wide. It is important to avoid glare in the low ambient light level of night, and an aiming angle above 35 degrees becomes risky.

Garden lighting need not replicate the day scene. In fact, night lighting is inevitably more comfortable when we resist the impulse to light a special object when only a skyhook could provide the right mounting location. Although uplighting or internally lighting a primary focal object may sometimes work, use caution. Uplighting a sculpture or fountain (more so than plantings) frequently detracts from the visual composition and may even distort the object's appearance.

Sometimes, a large tree at the edge of a lawn affords a mounting location. Its usefulness depends on the viewing direction of people in the garden and the aiming angle necessary to create the sought-after effect. In an accompanying photo, the trees on the right overhang the lawn, supplying perfect mounting locations. The viewing direction is down the alley as shown. No traffic occurs in this alley, and there is no access from behind the wall of yew trees. One light on a tree branch almost directly over the fountain, but slightly toward the viewer, accents the water bubbler. A second fixture is mounted 10 to 15 feet closer to the viewer; it provides the front light on the fountain basin and base. A third fixture subtly washes the columns behind the fountain to define their shape and to provide separation between the fountain and the background.

The alley photo illustrates the striking differences between the lighting effects created by uplighting and downlighting. The rhododendrons in the right foreground are downlit from the trees. The rhododendron and Japanese maple on the left are uplit because no mounting location for downlighting existed. The downlighting softly washes the plants, showing them in their natural form and using them as a frame for the columns and fountain. The uplit plants on the left look more dramatic because of strong highlights on the underside of the leaves and shadows occurring up in the plants. With uplighting, plants are not easily identified, and their shape becomes obscure. The uplit plants do not carry through the subtle framework effect created by the downlit plants on the right.

Even though the oaks at the lawn perimeter in the pool photo are very high, they don't work as a mounting location for fixtures to light the urns at the pool edges. The plantings in the urns must fade into the darkness of night. The lights mounted in the trees softly wash the grass between the columns and the pool and serve

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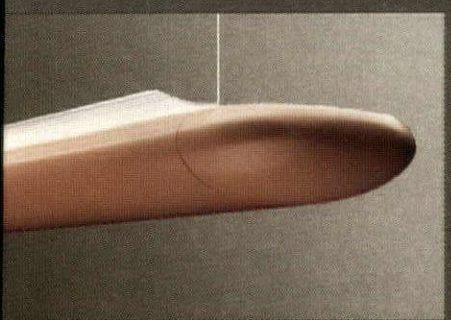

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Circle 15

as fill light. Even with a very steep aiming angle, however, the 1 3/4-inch fixture aperture — which is covered with a 45-degree shielding honeycomb louver — is quite apparent.

As an approach, downlighting presents flexibility limited only by the fixtures and lamps selected to produce the desired distribution and brightness. Downlighting can introduce walkway lighting for safety and security without the need for pathway lights. It can provide the fill light that is often essential to avoid excessive contrast between focal areas in the garden. Downlighting, using the same art lighting techniques employed in interior lighting, works for both primary and secondary focal points.

Selecting locations for the fixtures is the most important step when using downlighting. Buildings offer roofs, roof overhangs, columns, and walls to which we can mount adjustable accent lights or sconces. Fences, trellises, arbors, and trees also can serve as mounting locations. When deciding where to mount a light, first determine the aiming angle that would be necessary to light the intended area or object from that mounting location. Try to use an angle below 35 degrees to avoid glare under normal viewing conditions. Infrequently, an aiming angle greater than 35 degrees may work if, for example, another object will block the glare from potential viewers' eyes.

Mounting fixtures directly on a wall, a column, or a fence often introduces a halo or wash of light on the vertical surface of that mounting structure. This can be an effective pattern desirable to the luminous composition. Lights mounted on fence posts, for example, can introduce a rhythmic pattern on the fence that can serve to denote the boundary of the garden in the scene. Such a pattern may, however, be disruptive if it is unplanned or carelessly placed. The brightness it creates must be carefully balanced with other brightnesses in the scene, or it may attract undue attention.

Many mounting location options occur at the intersection of building walls and roof overhangs — when an overhang occurs. Mounting fixtures on the wall restricts the distribution more than mounting them on the overhang, and it makes the fixtures more visible. Choosing mounting locations as high on a wall or in a tree as physically possible offers more aiming flexibility, and a wider area can be lit.

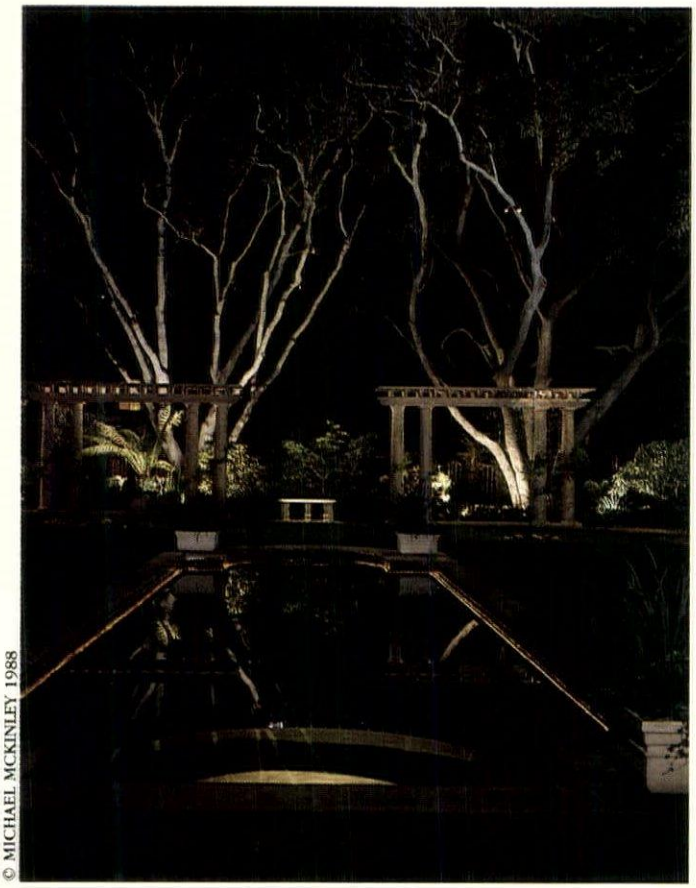
Placing fixtures on the underside of the overhang increases both aiming flexibility and distribution coverage. You must decide whether to mount on a joist or between joists. Mounting on a joist may limit aiming options. Typically, fixtures are attached to a side of the joist in order to conceal them, which restricts aiming at objects on the other side of the joist.

Mounting fixtures between the joists offers more aiming flexibility, but it may be difficult to provide power without visible wiring. In some renovation situations, space above the "ceiling" between joists may provide a wireway to reach the fixtures. In new construction a wireway can often be planned. When separate structures exist in a garden, there may be room to create "plenum" space that can serve as a raceway and as a mounting space for junction boxes and transformers. This makes a particularly clean detail and minimizes the size of the equipment to help in concealing the equipment. The contractor provided a raceway at the edge of the pavilion in the photo; transformers and junction boxes are recessed, thus minimizing fixture extension and presenting a clean appearance.

Another factor to consider when determining where to locate a downlight is the aiming direction from the fixture's potential mounting location to the object. Will the light fall onto the object from directly above, slightly from the front, from one or both sides, or from behind? From different aiming directions the appearance of the object will change. This design decision determines the way a given object appears in the luminous composition; that, in turn, affects all the other elements of the composition.

Experience has taught me that the fixture location can be critical. Sometimes, moving a fixture just a few inches can make the difference between success and failure; at other times, moving a fixture several feet causes no difference in appearance. While you are getting experience in landscape lighting, experiment with fixture locations at night to see the various effects before physically attaching fixtures. What you learn while spending time to experiment will help tremendously in creating a beautiful lighting scene.

Pay particular attention to objects that might prevent the light from reaching the object of its destination. A branch of a tree may be between the perfect mounting location for a



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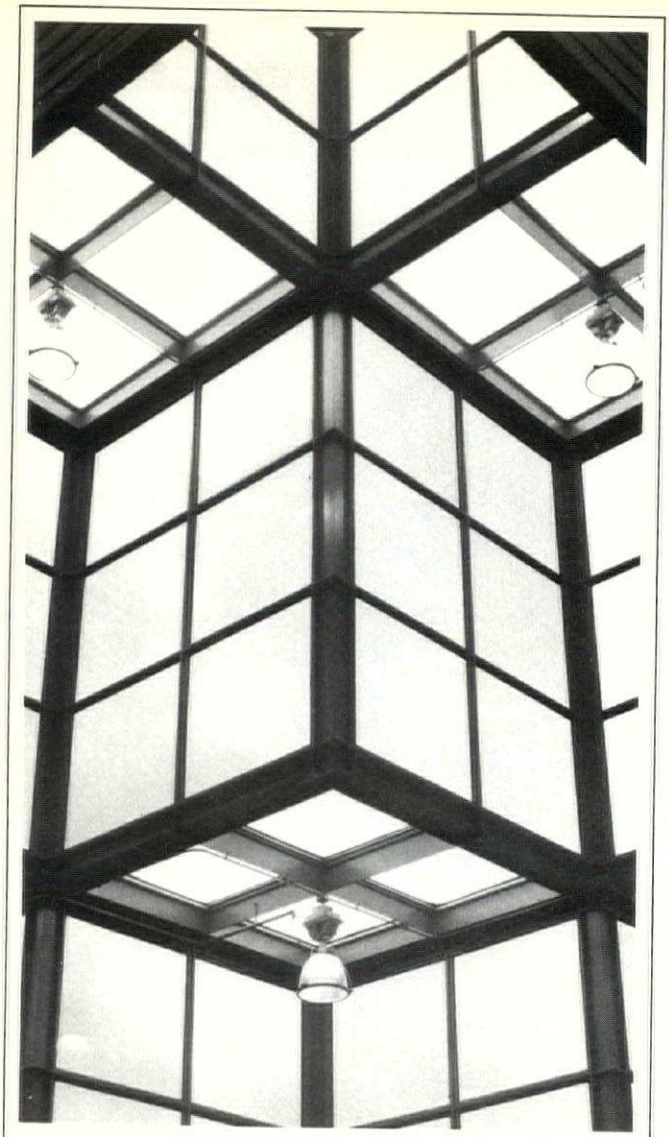
Dramatic lighting — using low light levels in the midground and brighter levels at the border — emphasizes the depth of the garden. Note than even with tall trees, objects located in the middle of a lawn, like the urns at the pool's edge, often cannot be lit.



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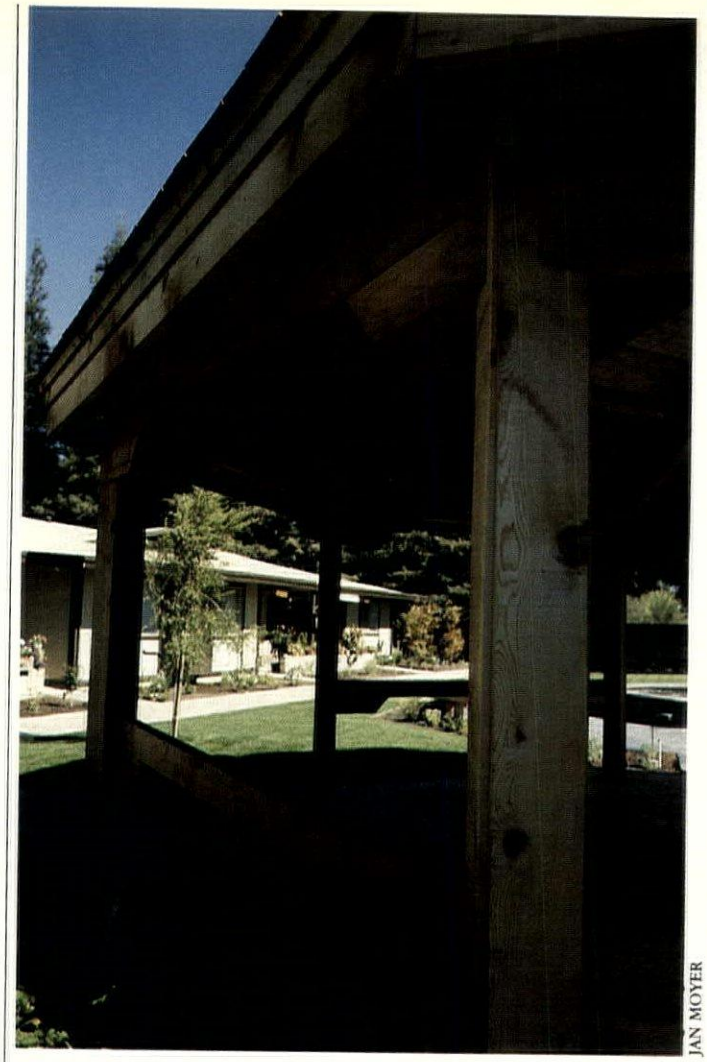
ARCHITECTURAL LIGHTING



JAN MOYER

The contractor provided a raceway at the edge of this pavilion that allows the transformers and junction boxes to be recessed, thus minimizing fixture extension and presenting a clean appearance.

fixture and the object it is to light. Although light may filter through a tree with an open form, the shadows thrown by its leaves may entirely obscure the object. An interfering object may not only completely block the light from its target object, but that object also may become an awkwardly bright distraction in the visual scene. When such interference does occur, select a compromise mounting location.

Often, none of the plant material initially blocks the light, but one of the wonders and frustrations of garden lighting is that the garden changes continuously as the plantings grow. When a certain plant does not initially interfere with the light distribution from above, be sure to consider its mature size. Don't be satisfied with only its predicted size from a reference book; discuss it with the landscape architect and perhaps a local nursery. Ask about the effect of particular climate and soil conditions. Ask about the maintenance plans for the plants in the garden — will certain plants be fertilized to promote growth or will they be pruned to keep them under control?

Maintenance plans can offer clues about whether a plant is likely to become an obstacle. Sometimes, within only a few years, an initially unobtrusive plant can completely block light to other plants. Such naturally occurring changes must be considered at the beginning of the design and watched throughout the life of the garden to ensure that the lighting continues to function properly. ■

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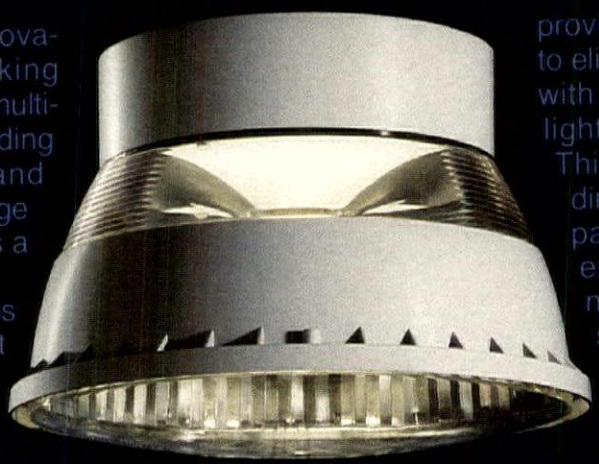
The Kim PGL is an innovative solution to parking garage lighting. It is a multi-function luminaire providing both performance and design-conscious garage lighting. First, the PGL is a vertical-lamp cutoff luminaire which means low brightness, excellent visibility and outstanding uniformity of illumination. Second, the PGL is an indirect luminaire



providing ceiling illumination to eliminate the "cave effect", with the additional bounce-light softening shadows. Third, the PGL is a semi-direct luminaire toward the parking stalls, providing extra fill-light where it is needed for safety and security. The PGL is a design statement that says parking garages are more than just utilitarian structures.

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Circle 16

Lighting Graphics

Bookshelf with built-in lighting

Sam Mills, AIA, IES

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

The term *architectural lighting* generally refers to the field of lighting associated with illuminating architectural surfaces and spaces. More specifically, it suggests lighting designed to enhance the architectural environment through the creative integration of light and lighting with architectural forms and surfaces. This integration can be extended to include interior furnishings and cabinetry, especially those that are built in or are permanently attached to architectural surfaces.

The accompanying drawing shows details of a wall-mounted bookshelf with a simple form of built-in lighting — continuous rows of fluorescent lamps built into the unit, one at the top and two at the bottom. It is designed to perform three different lighting functions: to cast light on the ceiling for indirect ambient lighting, to create two forms of decorative shelf lighting, and to provide task light to the work surface below.

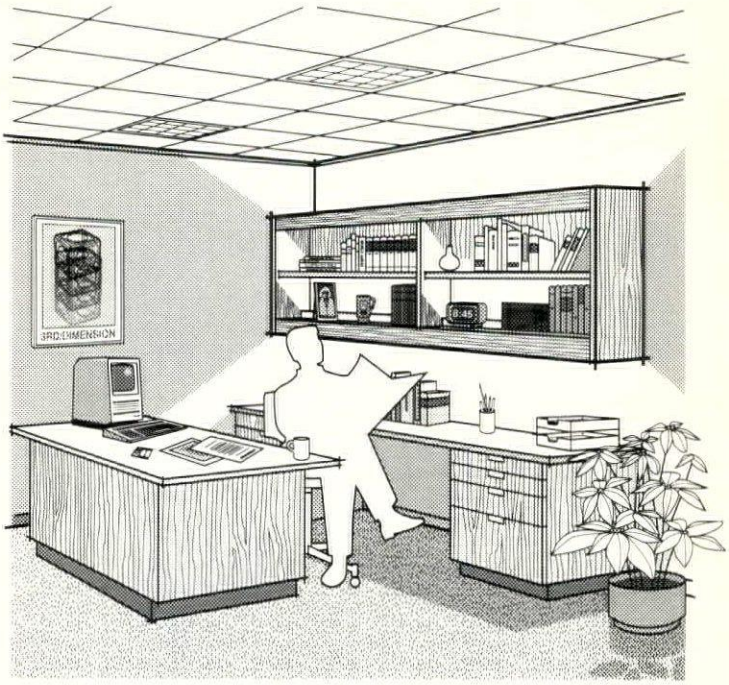
Built-in lighting can be used to enhance the architectural environment.

Each lamp location serves two purposes. The top row — in addition to primarily distributing uplighting — furnishes a small secondary downward component of light through a series of holes in the top of the bookshelf, lighting the books or other objects on the top shelf. The lamp closest to the wall at the bottom furnishes light upward along the wall for backlighting of objects on the lower shelf.

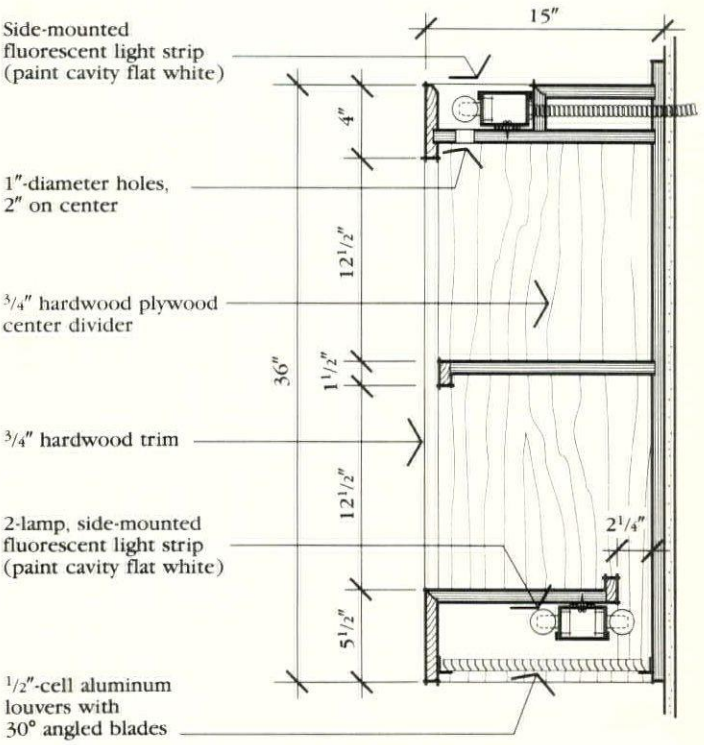
The downward distribution of light from both lamps at the bottom provides task lighting. These lamps are shielded with small-cell louvers to help distribute the light evenly and minimize the effect of veiling reflections (reflected lamp images on the task). To read more about veiling reflections and their effect on under-cabinet task lighting, see the Lighting Graphics columns for January and February 1989.

The overall length of the bookshelf is determined by the length of the fluorescent lamps used — for example, a multiple of the 2-, 3-, or 4-foot rapid start lamp length. To conform with typical building codes, the fluorescent strips should be installed over a fire-resistant material — such as cement board or standard gypsum wallboard — or spaced away from the wood shelves with metal washers for air circulation.

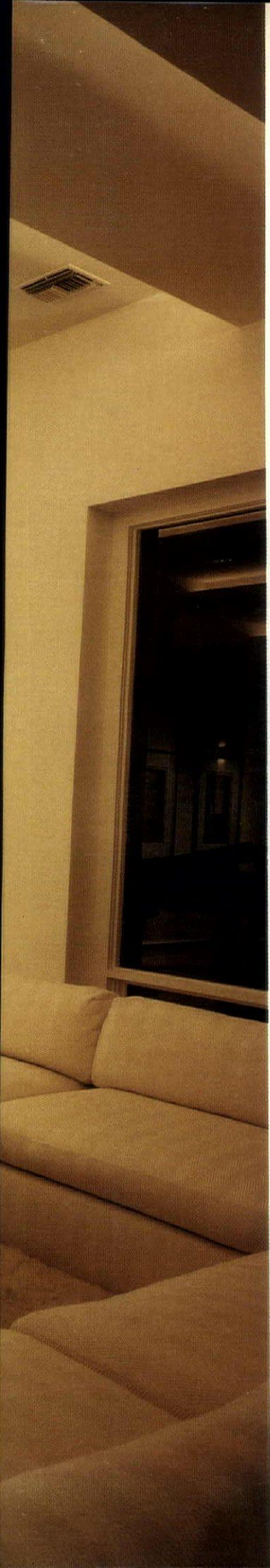
The combined effect of these three built-in lighting systems is especially apparent when they are used to supplement typical overhead lighting in small- to medium-sized rooms. It is particularly effective in windowless spaces, where it can add a sense of focus and visual interest to an otherwise bland lighting environment. ■



Fluorescent lighting built into this wall-mounted bookshelf furnishes ambient room lighting, decorative shelf lighting, and shielded task lighting for the work surface below.



Lighted bookshelf cross section



RESIDENTIAL LIGHTING FORUM

A sculpted house is home to changing art collection

ARTICLE BY
BARBARA-JO NOVITSKI

PHOTOGRAPHS BY
R. GREG HURSLEY

If Philip Romano had asked his architect for an art gallery instead of a house, the result might have been just the same. An artist and art collector, Romano presented design criteria that emphasized the demands of his collections. He had specific needs for special pieces, but he also wanted to be able to rotate art frequently. Challenged to design and illuminate a flexible environment for this collection, architect William Hablinski and lighting designer Joe Kaplan provided large expanses of wall with even distributions of light that could adapt to art pieces of different sizes.

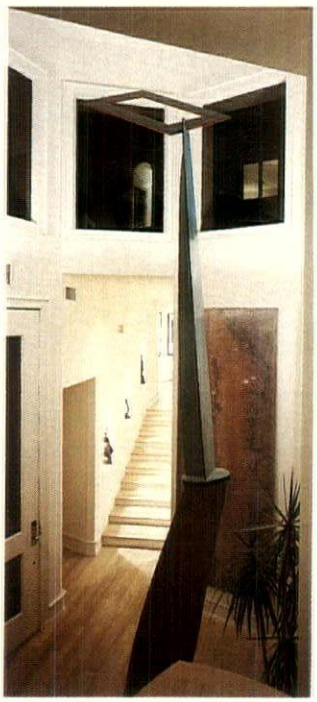
Just as they would in designing a public gallery, the designers based many decisions on requirements of the artwork. Even the color scheme — white on white — was selected in deference to the art. The subdued colors form a neutral backdrop for the art, the inhabitants, their furniture, and their tropical plants.

To minimize reflections on the glass-covered artwork, the designers used indirect lighting extensively. All the art accent lighting is from adjustable fixtures and combination wall washer–downlights with lamps deeply recessed into the ceiling.

Kaplan says, "I love to use fixtures with a polished mirror finish. They give an even wash across the wall when they're properly positioned, and I think they look more elegant than those with black baffling or concentric rings." Unlike simple downlights, the combination wall washer–downlights are made specifically to take the light all the way up to the ceiling line. Kaplan adds, "Few people understand that a wall washer's job is to create an

Project: Romano House
Location: The Dominion, San Antonio
Clients: Philip and Libby Romano
Architect: William Hablinski & Associates
Lighting Designer: Joe Kaplan Architectural Lighting
Interior Designer: Avon Davis
Landscape Architect: Dennis Hickok

Deep niches carved into the wall of the entrance stairway form showcases that are lit from above by recessed incandescent fixtures. The niches are proportioned and illuminated specifically for a collection of bronze sculptures. In the entrance lobby, a tall sculpture is illuminated by a series of high windows. The two-story space echoes the architectural theme of stepping spaces.



even distribution of light and avoid scallops."

In some places the designers deliberately created scallops to highlight important pieces of furniture or art. For example, the scallops near the piano, made with adjustable accent lights, illuminate a section of wall designated for a three-part series of prints.

The house itself is designed as a series of spaces along a hillside. Hablinski says, "The house steps in plan and it steps in elevation and section. You're led from one space to another, and the lighting helps to amplify this progression of movement through the spaces."

To further accentuate the stepping nature of the house and its art collection, the designers also stepped the ceilings in some major rooms by creating sculpted coves. These ceilings reinforce the architectural theme and serve as reflectors to distribute ambient light throughout the space. The living room, for example, is square in plan, with one cut-off corner that relates to the line of sight up into the dining room. The sculpted ceiling further accentuates the flow between the spaces.

Both the architect and the lighting designer emphasize the importance of collaborating throughout the design process. Says Kaplan, "It's a pleasure to work with an architect who understands good lighting and is willing to make the architectural gestures it requires. There were a number of occasions when one of us would get an idea, and the other would respond. We'd end up with a good lighting solution that was also a good architectural solution.

The designers stepped the ceilings in some major rooms by sculpting coves that reflect and distribute ambient light throughout the space. Fixed downlights are feasible in rooms with unchanging furniture arrangements. A tall uplit arch forms a symbolic passageway between the living room and dining room. Two sconces accentuate the arch and call it out as a major architectural element.

"An example of this is the stepped ceiling in the living room. We knew we wanted a comfortable source of ambient light. We also knew that the ceiling could be manipulated to accommodate cove lighting. By the time we finished brainstorming, we ended up with that stepped ceiling, which is effective in lighting the room, and it's an interesting architectural element."

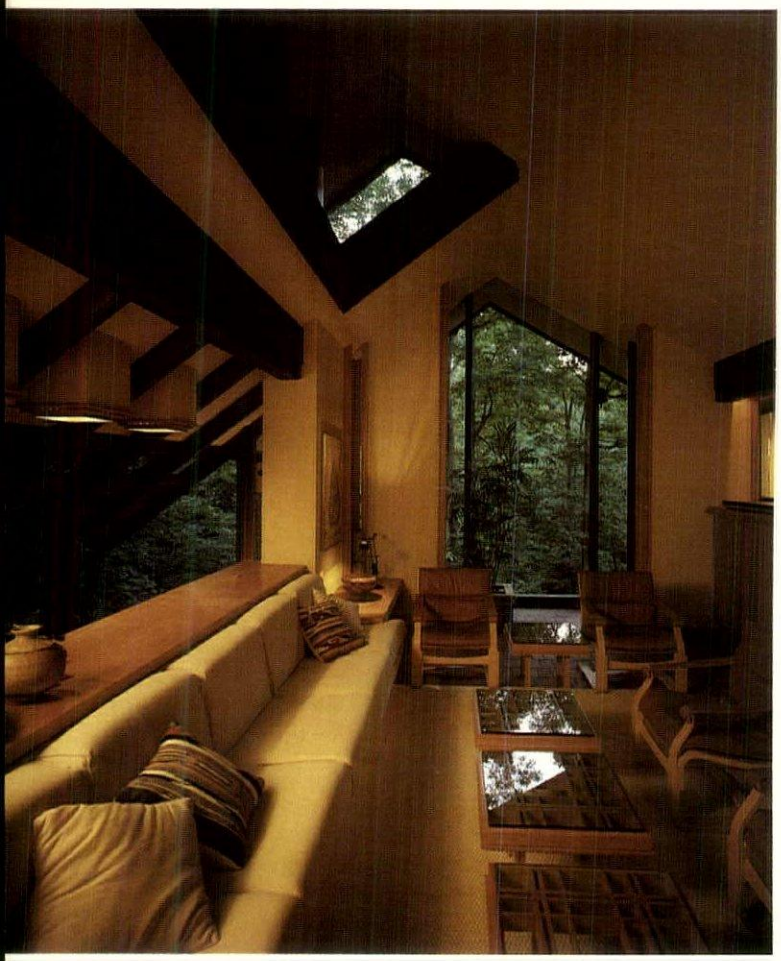
Hablinski and Kaplan also worked together to design the tall uplit arch between the living room and dining room. They chose a simple catalog fixture and painted it to match its surroundings. Kaplan says, "We wanted to uplight the arch with something simple that would accentuate the architecture and wouldn't draw attention to itself. Lighting the arch that way calls it out as a major architectural element. It creates a boundary between the more public living room and the more private dining area without cutting them off from each other."

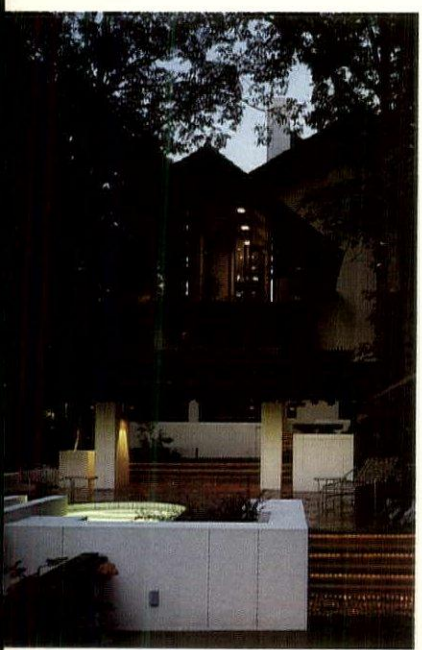
Though the major lighting systems are intended for night use, the designers also considered the effects of daylight. In the entrance lobby, a tall sculpture is illuminated by a series of high windows, and, above them, stacked clerestories. Hablinski explains that the extensive glass throughout the house was carefully sized and located to reduce glare problems. "We always try to have daylight coming into each major space from two directions, so the primary window does not become a source of glare. Even if the secondary opening is small, it helps reduce the glare from the primary opening."

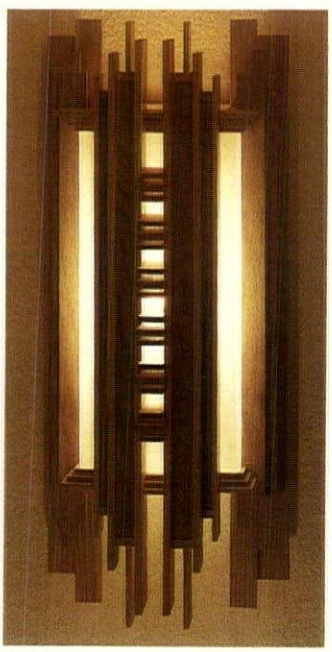
But it's at night when the Romano House's lighting system really shows off. The house sits high on a hill, and the carefully placed fixtures are concealed from the view of guests who approach the house from the street. However, the *effects* of those fixtures are highly visible. Most of the exterior terrace lighting comes from inside and shows off the interior spaces. So, the house that is lighted like an art gallery becomes, by its own illumination, a work of art. ■

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

Little house in the big woods







The spirit of Frank Lloyd Wright lives on in the Arkansas woods thanks to the enduring loyalty to traditional design and craftsmanship of architects Fay Jones and Maurice Jennings. In a small guest house, they have demonstrated that carefully designed windows can maximize daylight, minimize overheating, and foster a closeness to the natural environment in a design scheme that integrates simple but elegant lighting fixtures.

"Daylighting is very important to us," says Jennings, "and we try to use it as much as possible." Daylight enters the main living space from all directions through skylights and clerestories that provide ample light without jeopardizing privacy. The prominent bay window does double duty by offering both light and a view of the lake below. But, Jennings explains, "Daylight only helps you until the sun goes down. Then the challenge is to see what you can do with electric light."

The Edmondson guest house blends with the woods, and its light fixtures blend with the architecture. A handcrafted lantern (near left) demonstrates the tradition of Frank Lloyd Wright. Tiny lamps glued to the underside of the brick nosing (far left) light the pathway to the main house.

Project: Edmondson Guest House
Location: Forrest City, Arkansas
Clients: Don and Ellen Edmondson
Architect: Fay Jones and Maurice Jennings, Architects; Fay Jones, Maurice Jennings, Dave McKee, and Leroy Scharfenberg, project team
Landscape Architects: Al Drap, AIA; Larry Lomax
Contractor: Jim Finch
Photos: R. Greg Hursley

What they did with electric light was weave it into the very fabric of the house. For example, the downlights over the built-in seat are simple protrusions framed into the soffit; they contain standard porcelain lamp holders.

A lantern that hangs in the stairwell echoes the surrounding materials and geometries. Like the other job-built fixtures, this was designed by the architects and crafted by the contractor. "The lantern reflects the tradition of Frank Lloyd Wright," says Jennings. "His influence is very important in our work. You can see it in the palette of materials that we use — the glass and stucco walls, tile roofs, redwood trim, and oak cabinetry. We also designed the built-in seat, the little tables, the fireplace pokers, the dishes and napkins. That's in the tradition of Wright too."

Another Wright tradition is attention to climate and energy. Behind the built-in seat and a half floor below is a greenhouse that serves as both potting room and solar heat source. On winter days, the greenhouse collects the solar heat; the masonry floor holds the heat and dissipates it slowly during the evening. In the summer, the thick forest canopy shades the greenhouse to prevent overheating.

So nestling the house in the trees had many benefits — view, shade, filtered daylight, a peaceful environment — and only one drawback. Jennings explains, "It was difficult to build in the woods like this. The builder, Jim Finch, even had to build a temporary dam across the lake to get the materials in. But, when you think of all the trees we saved, and the natural beauty we protected, it was worth it."

—Barbara-Jo Novitski

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Circle 17

Silent light for a private gallery

George Saxe brought in expert design assistance for a temporary gallery space adjacent to his California residence. A portion of his contemporary art glass collection would be rotated through the gallery and displayed on movable platforms. Lighting designers Ross De Alessi and Brian Fogerty saw that a gridlike track layout with low-voltage halogen fixtures would provide maximum flexibility. The relatively small space and low ceiling, however, made a plethora of buzzing integral-transformer fixtures visually and acoustically unacceptable.

The solution was a 12-volt track system with remote transformers and deeply shielded, low-profile lamp holders for 12- and 20-watt MR11 lamps. "We stayed with the low-wattage MR11s because they cause fewer problems with the noise of filament sing," says De Alessi. "These lamps are so tiny, their filaments are minuscule."

The designers found a way to double the system's electrical capacity without using bulky, visually obtrusive on-board transformers or electronic power supplies. They used two-circuit track and a wiring technique typically seen in high-load industrial settings: they used a common neutral and fed the circuits 180 degrees out of phase with respect to one another.

As long as the paired loads are perfectly or nearly equal, this technique minimizes the common neutral current in the track bus and increases total capacity from 20 to 40 amps (480 watts). "The electrical design takes a little bit of thought, but it's not a new technology," De Alessi says. "Any electrician who's worked with a remote setup should have no problem with this kind of system."

Lengths of track between isolated feed points were kept short to increase system capacity and lessen track bus voltage drop. To keep the system silent, high-quality toroidally wound transformers and premium quality dimmers were remotely mounted in closets. "With transformers on board the fixtures, you can get a cacophony of sound," De Alessi explains. "We avoided that, and kept the equipment snug up to the ceiling."

Dimmers are set at about 90 percent to increase lamp life. The system can expand as the gallery grows or as more fixtures are needed in the existing space; De Alessi estimates that as initially installed, it used just 25 percent of its electrical capacity. Saxe has, in fact, already begun to add to the system.

The art glass pieces present a wonderful variety of colors, textures, and light reflecting and refracting qualities. Many different lens and louver combinations bring out the qualities of each glass creation. Many pieces looked better in reflected light than direct light, for example. The owner proudly shows his collection now under a flexible and completely inaudible lighting system.

—Gareth Fenley

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

Project: Saxe Private Gallery
Clients: George and Dorothy Saxe
Exhibit Designer: Ted Cohen
Lighting Designer: Ross De Alessi and Brian Fogerty, Luminae Souter Lighting Design
Photos: Ross De Alessi and Loretta Lowe

Product Showcase

HID downlighting

Lithonia offers Gotham Series specification-grade downlights for HID lamps in a variety of aperture sizes, wattages, and beam spreads. Reflector systems include open, ellipsoidal, cone, and baffled models as well as wall washers and lensed squares. Accessories include sloped ceiling adapters and other mounting devices. Lithonia Downlighting, division of Lithonia Lighting, Conyers, GA.

Circle 60

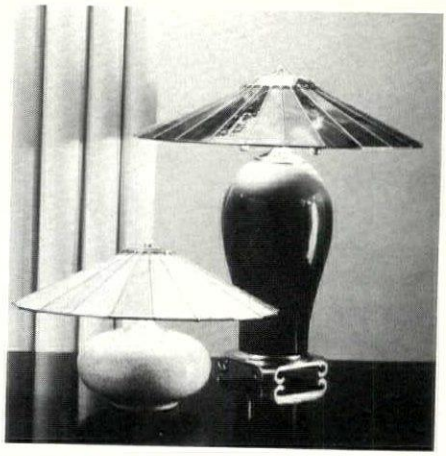
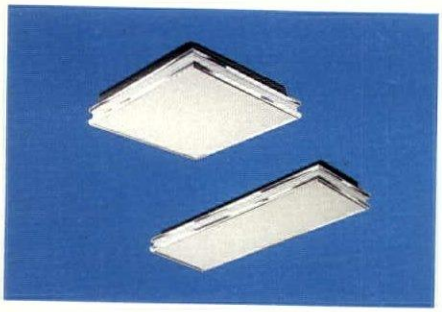


Table lamps

The Nara Gem and Large Gem table lamps from Gemma Studios have multifaceted parasol-shaped glass shades that are hand assembled with copper foil. Bases are made of hand poured, high-fired porcelain and have solid brass fittings. The 21-inch-high Large Gem has two brass-ball pull chains; the shorter Nara Gem has a high-low line switch control. They accommodate two incandescent lamps and have shades and bases in a wide range of colors. Gemma Studios, Northampton, MA.

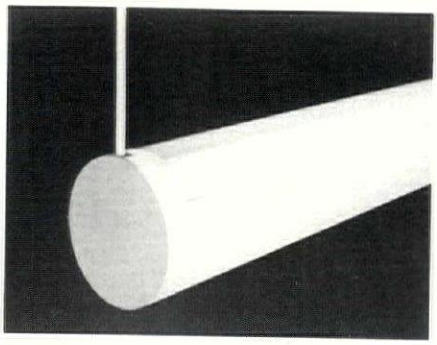
Circle 63



Decorative fluorescents

Space Monitor fluorescent luminaires from LaMar Lighting have flat, opal acrylic lenses and open-sided metallic frames for decorative side lighting. The luminaires come in three standard sizes, and the frames are available in brass and chrome. LaMar Lighting Co., Freeport, NY.

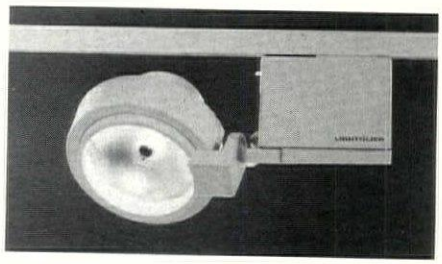
Circle 61



Fluorescent fixtures

Neo-Ray's Series 9 fluorescent fixtures offer direct and indirect lighting in wall- and pendant-mounted versions that use two or three T12 lamps. The round extruded aluminum tubes can be ordered in any length, in any configuration, and in a standard or custom finish. Neo-Ray Lighting, Brooklyn, NY.

Circle 62



Low-voltage track fixture

The Tron 36 low-voltage track fixture from Lightolier accepts PAR 36 lamps up to 75 watts. The fixture is available with a solid-state electronic transformer or a dimmable magnetic transformer. A snap-in socket eliminates the need for attaching leads to lamp terminals. Lightolier, Secaucus, NJ.

Circle 64

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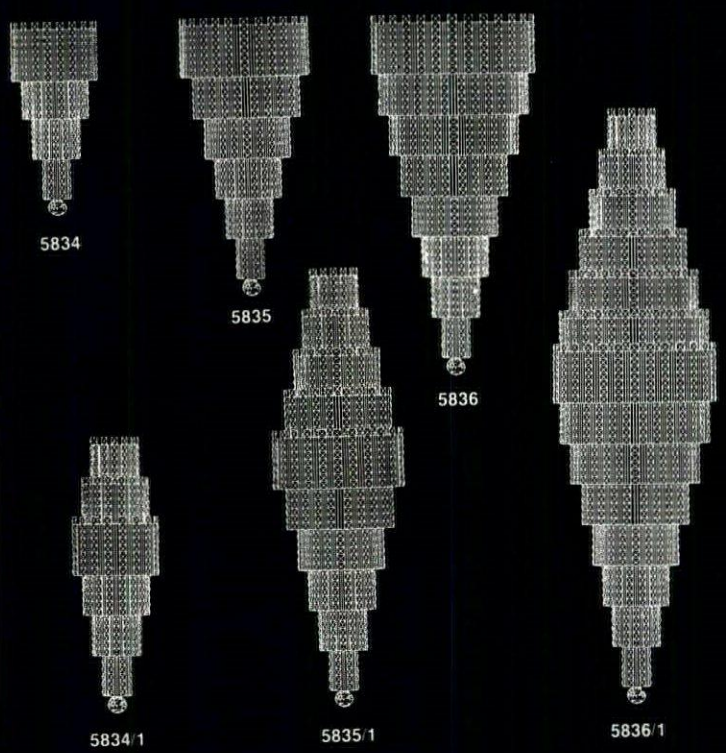

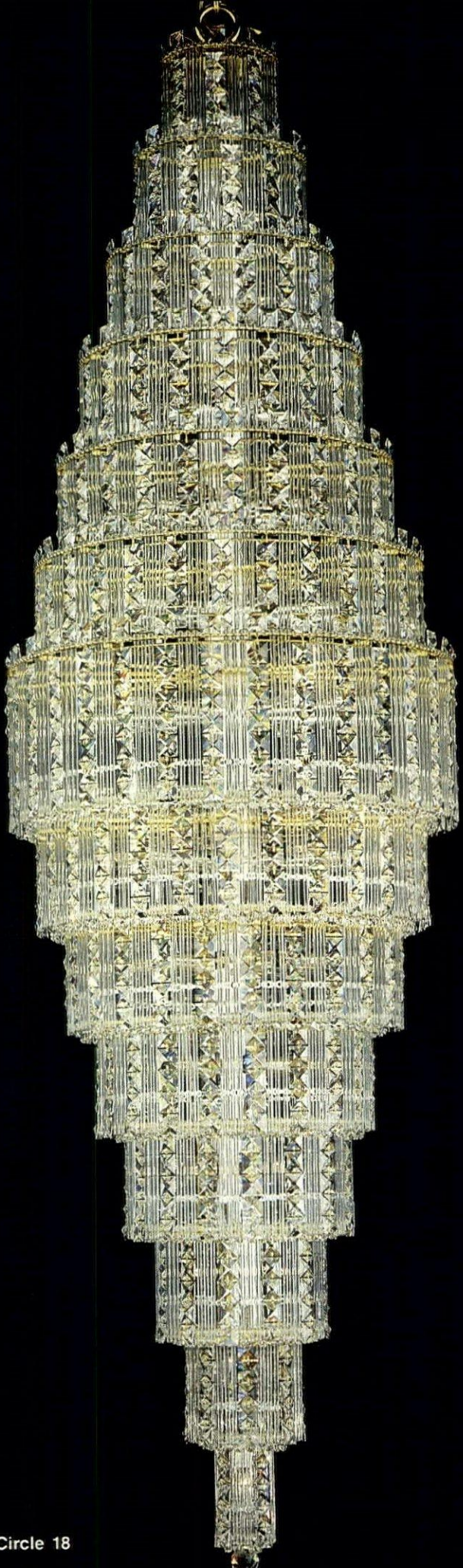

5834	– 13 Lights.	Diam: 13".	Body Length: 28"
5835	– 28 Lights.	Diam: 19".	Body Length: 40"
5836	– 49 Lights.	Diam: 25".	Body Length: 51"
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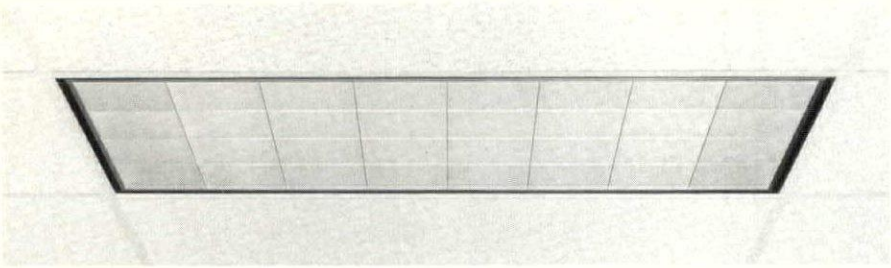

■ Retrofit parabolic

Columbia Lighting's Retrolume converter allows users to retrofit a deep-cell parabolic louver into a standard recessed lensed troffer without disturbing existing wiring. The installer removes the existing lens, inserts a converter frame into the ceiling opening, and attaches the louver to the frame by hinges. The existing troffer sits in rails atop the converter. Recessed and surface-mounted versions are available in three sizes for most standard ceiling grids. Columbia Lighting, Spokane, WA.

Circle 65

■ Low-voltage accent fixture

Microlamp's low-voltage MR16 halogen fixture can be used in place of a conventional R40 or PAR 38 lamp, according to the manufacturer. It comes with a torodial transformer, a standard screw base, and a replaceable MR16 lamp that is available in three wattages and various beam spreads. Microlamp, Inc., Boca Raton, FL.

Circle 66

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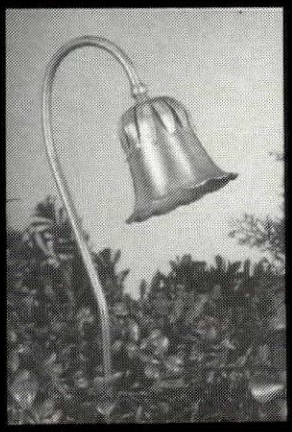
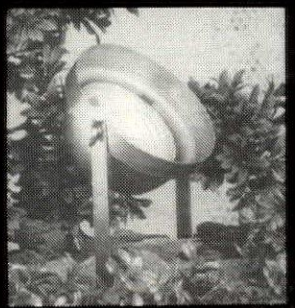


12-Volt Lighting No. 1571



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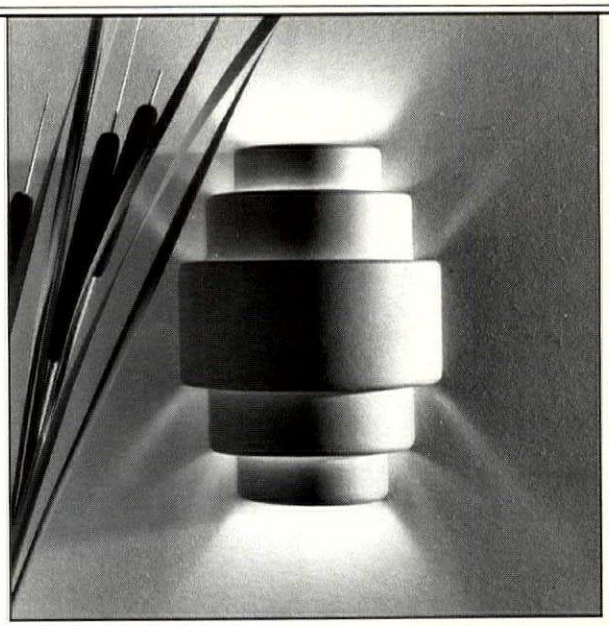

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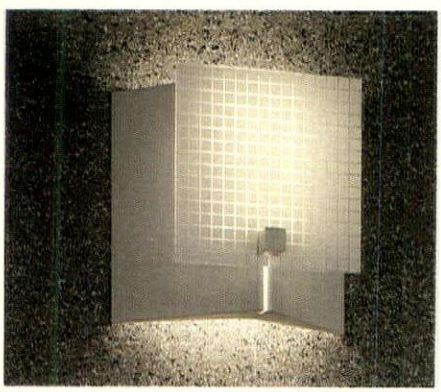
Circle 20

■ Concrete bollard

Architectural Area Lighting offers a 12-inch-square precast reinforced concrete bollard with an HID lamp. The bollard has a cast aluminum grill that protects an acrylic diffuser and is available in several sizes. Architectural Area Lighting, Inc., La Mirada, CA.

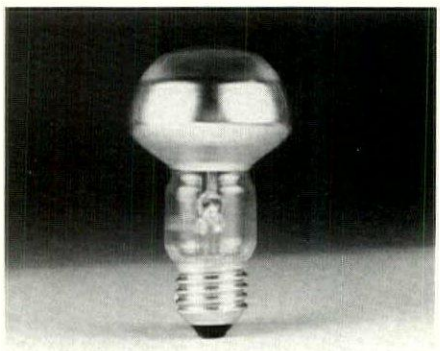
Circle 67



■ Decorative ambient lighting

Boyd Lighting's Pegasus wall bracket produces ambient up- and downlight and a soft glow of patterned light from its translucent diffuser. The diffuser is available in natural white alabaster or sand-blasted acrylic with a silk-screened grid pattern. The steel bracket comes in two colors. Versions are available for incandescent and compact fluorescent lamps. Boyd Lighting Company, San Francisco, CA.

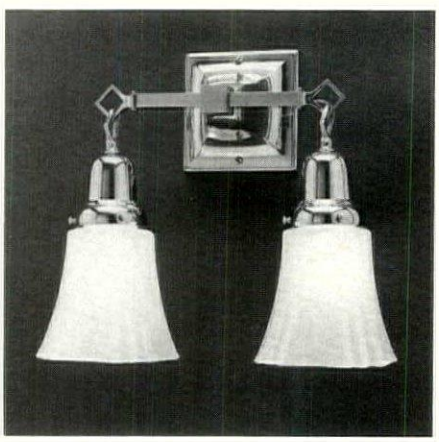
Circle 68



■ Mirrored reflector lamp

The Spotline mirrored reflector lamp from Philips produces a concentrated, uniform beam that puts 25 percent more light in the center of the beam than an R20 lamp does, according to the manufacturer. The lamp has an average life of 2000 hours, comes in three wattages, and is suitable for use in accent and display lighting fixtures. Philips Lighting Company, Somerset, NJ.

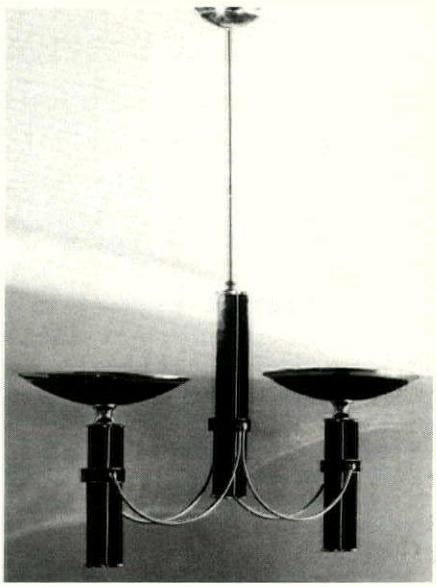
Circle 69



■ Brass wall bracket

The solid brass Siletz wall bracket from Rejuvenation Lamp & Fixture is 12 inches high and 13 inches wide. It comes in six metal finishes and is available with a choice of shades. Rejuvenation Lamp & Fixture Company, Portland, OR.

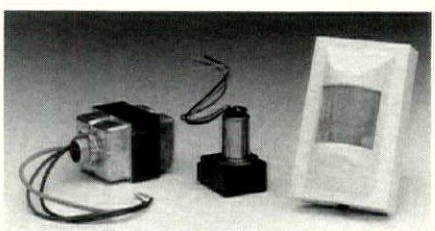
Circle 70



■ Leather, halogen chandelier

Black Narcissus luminaires from The Thomas Collection are made of solid brass, plated in 24-carat gold, and trimmed with black suede leather. Shown is a dimmable two-lamp chandelier that accepts two 150-watt halogen lamps. A matching wall bracket, floor lamp, and large chandelier are available. Thomas Industries Inc., Louisville, KY.

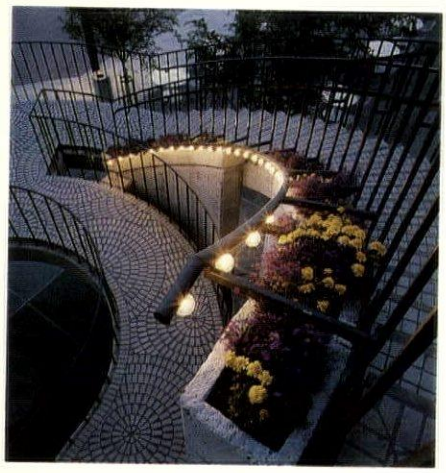
Circle 71



■ Sensor, daylight control

Sensor Switch offers a passive infrared occupancy sensor for spaces up to 1600 square feet. The sensor turns lights on in response to human movement within its field of view and automatically turns lights off at a preset interval after the area is vacated. Its built-in daylight control turns on primary lights when it detects motion; secondary lights come on only when needed on cloudy days or after dark. Settings for ambient daylight, field of view, and time delay are adjustable. Sensor Switch, Inc., Branford, CT.

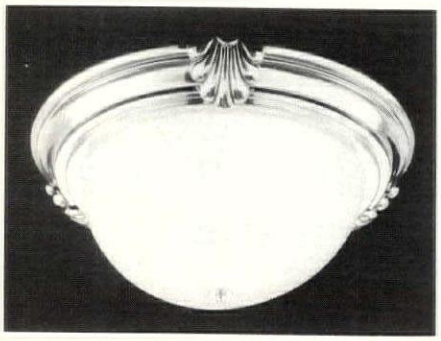
Circle 72



■ Custom curved fixture

Sentinel's weatherproof decorative lighting fixtures are made of anodized extruded aluminum and can be curved and bent to follow the shape of most architectural forms. The 2-inch-diameter round style shown illuminates a spiraling staircase at the Embarcadero Center in San Francisco. The fixtures are available in a variety of sizes, shapes, and finishes. Sentinel Lighting, Los Angeles, CA.

Circle 73



■ Flush-mounted ceiling luminaire

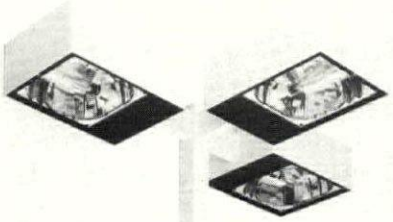
The Calypso Flush ceiling luminaire is part of the Original Cast collection from Art Directions. The solid brass luminaire has an acrylic diffuser, comes in three sizes and a variety of finishes, and accommodates two incandescent lamps. An optional glass diffuser is available for the smallest version. Art Directions Inc., St. Louis, MO.

Circle 74

■ Reflector

Foremost manufactures reflectors and baffles for light fixtures, including the specification-grade, gold-colored downlight reflector shown here. The company's full-service metal-forming capability includes hydroforming, deep drawing, and hand-operated and automatic metal spinning. A wide range of anodized finishes are available, including a permanent black finish that is temperature and UV resistant. Foremost Manufacturing Co., Inc., Union, NJ.

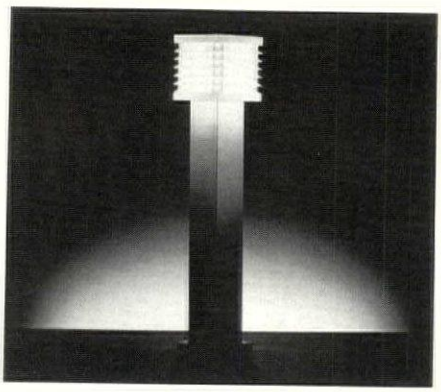
Circle 75



■ Area, roadway luminaire

Emco's Infinity II luminaire comes with a choice of five optical assemblies, each with a segmented, faceted semispecular aluminum reflector that delivers light in one of five beam patterns. Versions are available for a variety of HID lamps, wattages, and mounting configurations. Emco Environmental Lighting, Milan, IL.

Circle 76



■ Louvered bollard

Staff Lighting offers a louvered bollard from its DZ collection of outdoor luminaires. The 47 1/4-inch-high bollard is made of cast and extruded aluminum and has a white opal diffuser. It comes in versions for HID and compact fluorescent lamps. Staff Sales, Inc., Highland, NY.

Circle 77

■ Fresnel downlight

Forum has added a circular Fresnel lens to the bottom of the fixture shroud of its HID indirect lighting system, making the fixture into a combination up- and downlight for most wattages of metal halide and HPS lamps. Users can direct 5–22 percent of the light from the fixture into downlighting. An optional opal overlay is also available. The Fresnel-lensed system provides ambient, accent, and task lighting, as well as point-of-reference illumination. Forum, Inc., Pittsburgh, PA.

Circle 78

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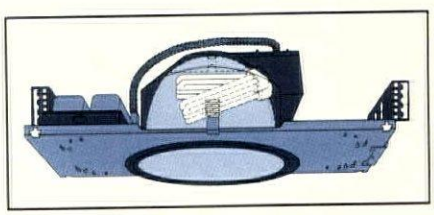

An illustrated view of the new PolyQuad compact fluorescent downlight

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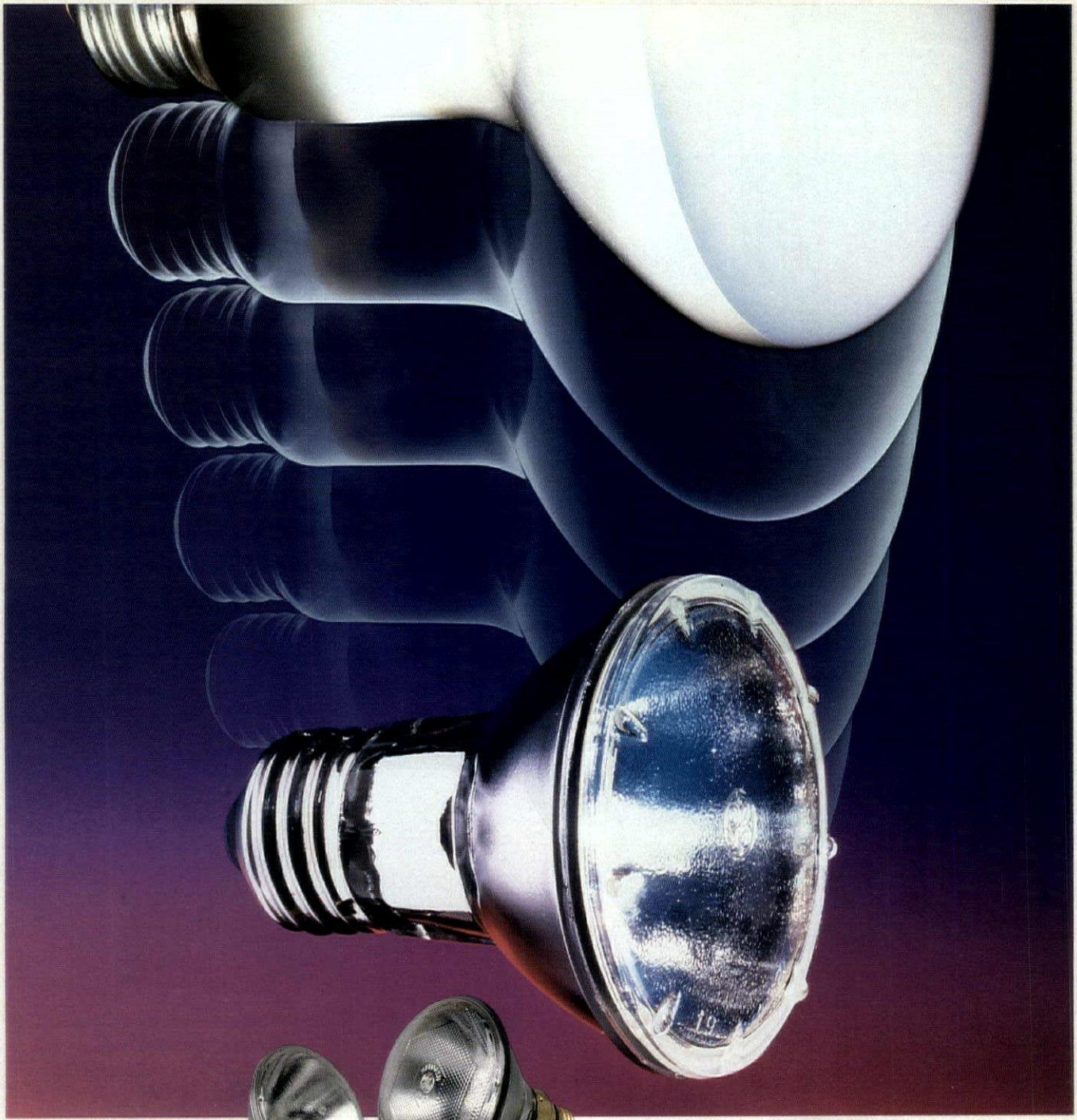

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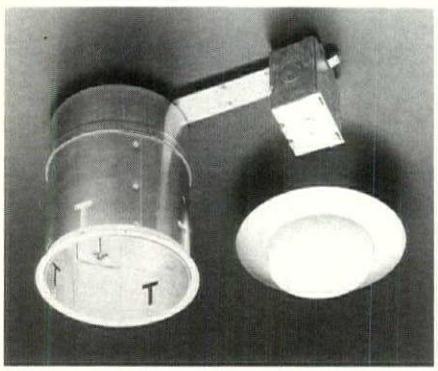
Circle 22

■ Pendant

Jens Moller Jensen designed Poulsen Lighting's Orbiter Pendant, which has a cast aluminum housing and a flat steel reflector ring joined to a steel antiglare ring by vertical struts. A clear, gasketed glass enclosure protects the lamp compartment. The pendant comes in three finishes and accepts an incandescent A lamp or a compact fluorescent lamp. Poulsen Lighting Inc., Miami, FL.

Circle 79



■ Recessed retrofit housing

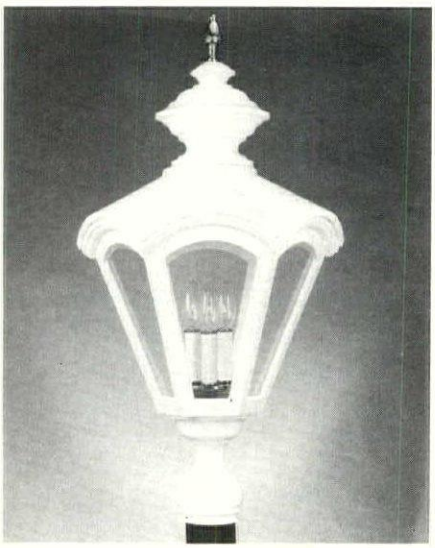
A recessed universal housing from Capri accommodates light fixtures introduced into ceilings where the housing must be in direct contact with insulation. Its aluminum material, baffles, and open reflectors help dissipate heat, and a dead-air compartment acts as a barrier against rising heat. A welded circular flange fits against the ceiling to keep the housing from cutting into insulation. Capri Lighting, Los Angeles, CA.

Circle 80

■ Bollards

Lithonia's KB Series bollards have a one-piece extruded aluminum housing and come with a standard flared-cone reflector or an optional cylindrical reflector. The bollards accommodate HID and incandescent lamps in a variety of wattages. They are available in 6- and 8-inch-wide round and square styles. Lithonia Architectural Outdoor Lighting, division of Lithonia Lighting, Conyers, GA.

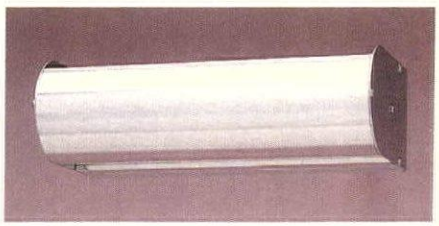
Circle 81



■ Outdoor luminaire

A fixture from Hinkley Lighting is made of solid cast aluminum with clear acrylic panels. The post-mounted luminaire houses three 60-watt incandescent candle style lamps. Available finishes include black, white, gold, Swedish, verde, and architectural bronze. The fixture stands 30 inches high and is 16 inches wide. Hinkley Lighting, Cleveland, OH.

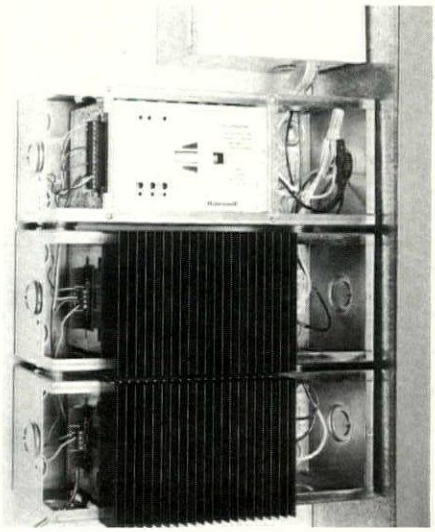
Circle 82



■ Wall-mounted uplight

Norbert Belfer's extruded aluminum Aurora uplight comes in versions for a 50-watt HPS, a 150-watt halogen, or a 13-watt compact fluorescent lamp. Standard length is 10 inches; custom lengths for multilamp configurations can be ordered. Norbert Belfer Lighting, Ocean, NJ.

Circle 83



■ Fluorescent control system

Honeywell's lighting control system uses existing wiring, ballasts, lamps, and fixtures to provide flicker-free dimming and on-off control of fluorescent lighting. It adjusts light levels in response to signals from light sensors, manual controls, and/or building management systems. Control strategies include fixed power reduction, time-of-day scheduling, and daylight compensation control. Honeywell Inc., Minneapolis, MN.

Circle 84

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Circle 24

■ Lead crystal pendant

Crystorama's solid brass pendant with 24-karat gold plating features 24 percent lead crystal bobeches, hand blown Murano glass leaves, and wood-polished Czechoslovakian crystals. The pendant comes in two sizes; a matching flush-mounted version is available. Crystorama Inc., Carle Place, NY.

Circle 87

■ Halogen PAR 36 lamp

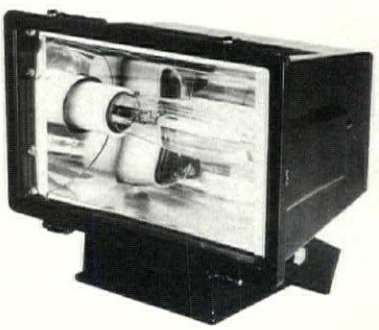
Osram's PAR 36 halogen reflector lamp has a silver aluminum reflector and a central antiglare shield. The fully dimmable lamp has a color temperature of 3000K and excellent color rendition. Four wattages and five beam spreads are available. Osram Corporation, Montgomery, NY.

Circle 85

■ Accent light

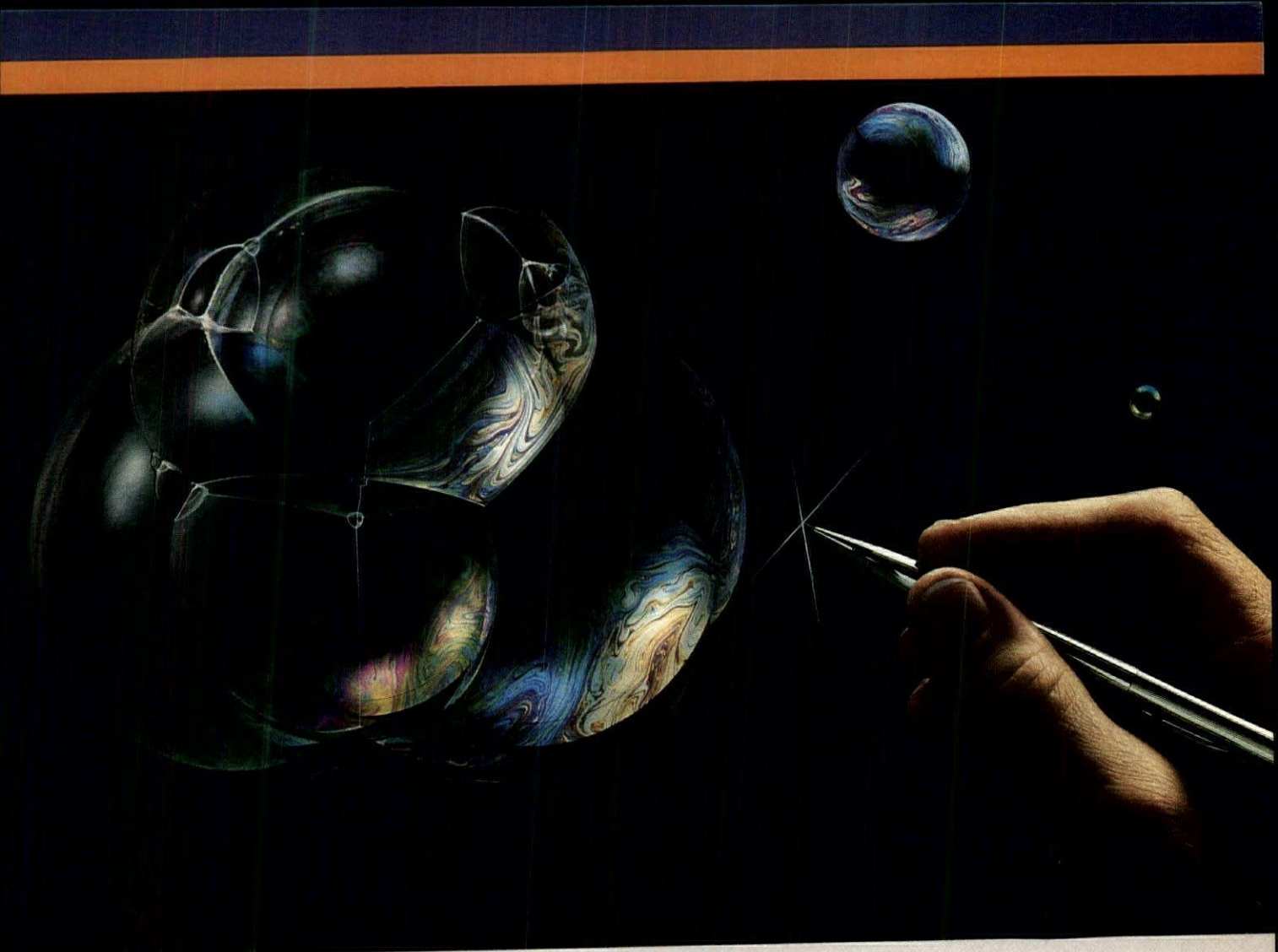
Times Square Lighting offers the C3M accent lighting fixture, which is designed for display and architectural applications that require a theatrical look. It accommodates R20 and GTE's Designer 16 lamps and can be modified to accommodate a 12-volt MR16 lamp. Accessories include barn doors and color media; track adaptors and pipe clamps are among available mounting options. Times Square Lighting, Stony Point, NY.

Circle 86



■ Compact floodlight

The compact, lightweight, energy-efficient Miniliter II floodlight from Hubbell produces a wide, even beam of light from a low-wattage HID lamp. Its die-cast aluminum housing contains a specular parabolic reflector, an integral ballast, and a hinged lens frame with an impact-resistant tempered glass lens. The luminaire is designed



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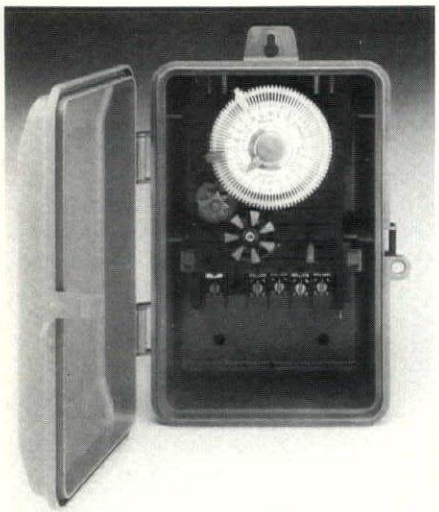
for trunnion mounting on new and existing poles and can replace 500- and 1500-watt quartz floodlights, according to the manufacturer. Models accommodate HPS and metal halide lamps from 70 to 400 watts. Hubbell Incorporated, Lighting Division, Christiansburg, VA.

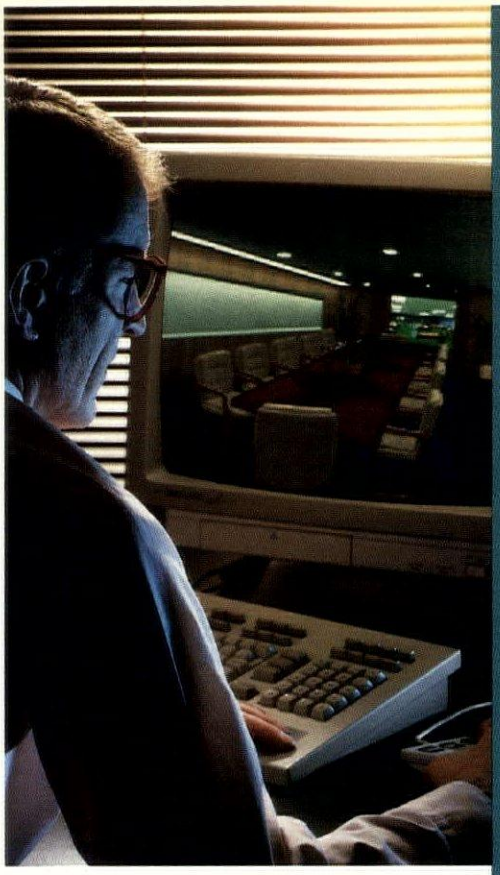
Circle 88



■ All-weather timer

Paragon Electric's P100 Series electromechanical time controls are made of durable, industrial-grade polymer resins like those used in car bumpers. This economical alternative to metal controls is suitable for conventional lighting, water heating, and HVAC applications as well as for corrosive environments where moisture and other substances damage metal parts. Features include 40-ampere switching, indoor and outdoor enclosures, and a variety of switching arrangements and voltages. On-off events can be set in intervals as short as one-half hour. Paragon Electric Co., Inc., Two Rivers, WI.

Circle 89



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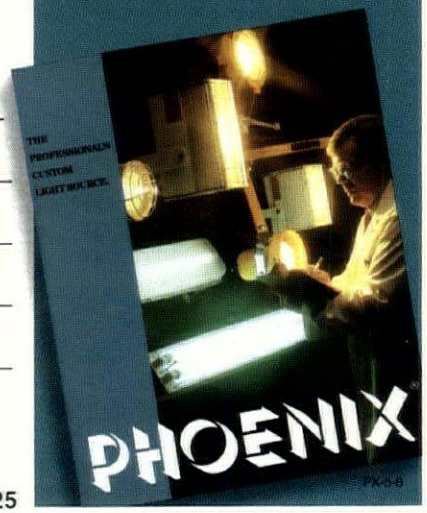
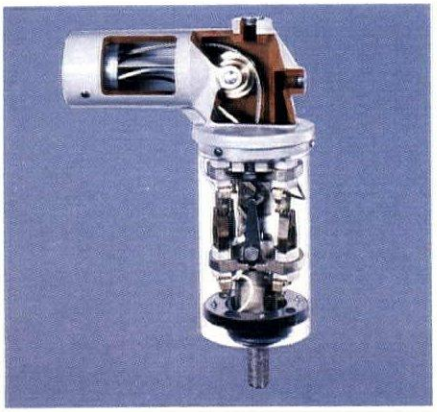




■ Suspension contact unit

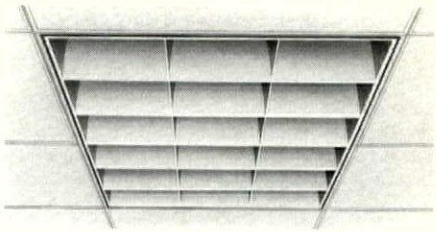
The SCU-1 pole-mounted suspension contact unit from Lowering Systems raises and lowers luminaires for servicing and eliminates the need for high-rise lifts and skilled maintenance staff. The unit is suitable for low, medium, and high mounting heights and can lift up to 150 pounds. Components include an air-filtering system, stainless steel twin locking cams, top and bottom enclosures, and housing cover. Lowering Systems Inc., Northbrook, IL.

Circle 90

■ Walkway luminaire

The 12-volt Litey Bug walkway luminaire is part of the Sylvan Lites collection of low-voltage landscape luminaires. The 12-inch-high, stake-mounted unit has a $5\frac{1}{4}$-inch-diameter hood that directs light downward. The glare-free unit is made of aluminum, has an acrylic diffuser, and accepts a 12-volt, 18-watt lamp. It is safe for use in damp areas or around pools, according to the manufacturer. Sylvan Designs, Northridge, CA.

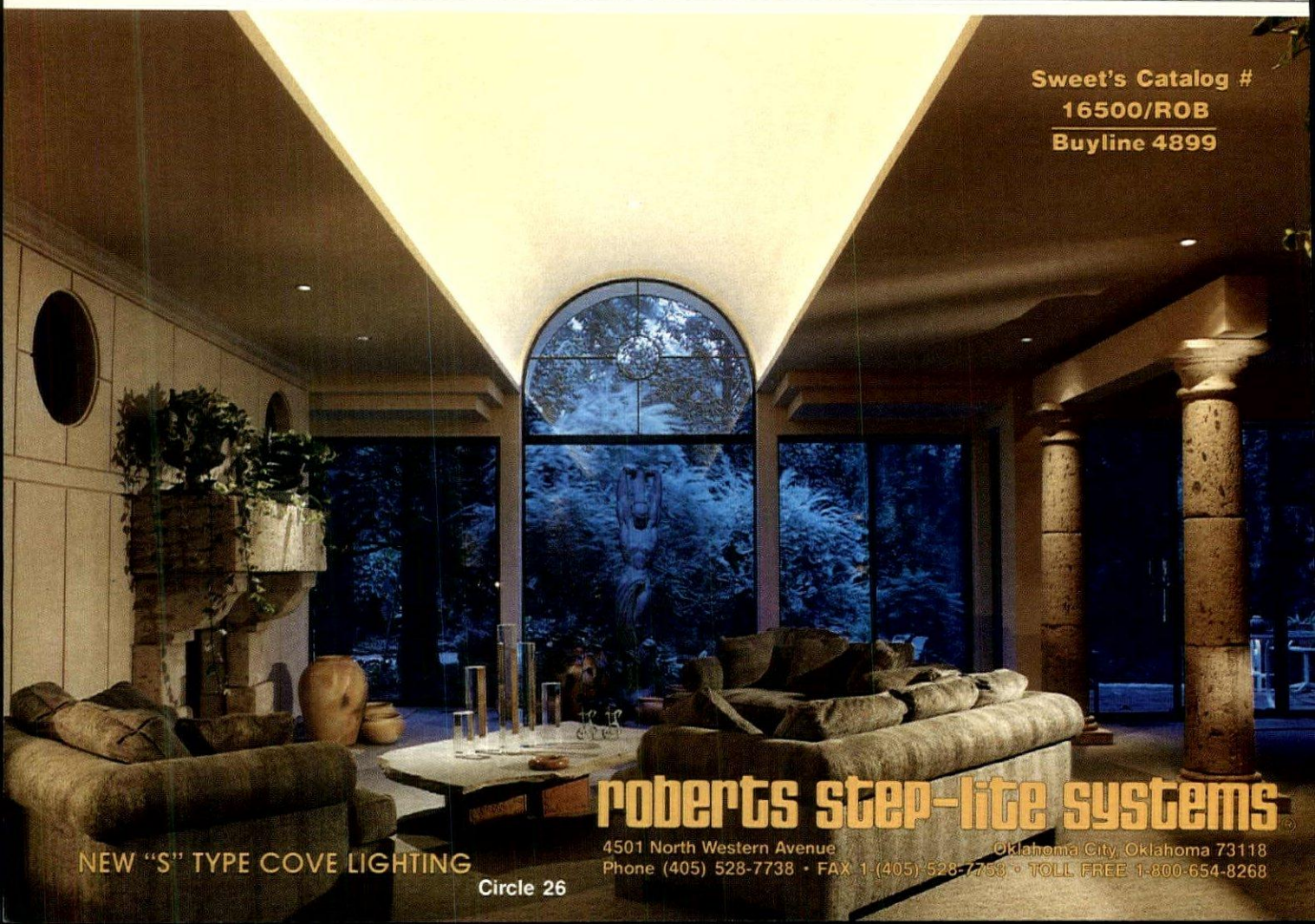
Circle 91



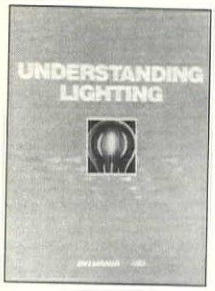
■ Parabolic troffer

KLP's 2-by-4-foot, three-lamp Ultracel parabolic troffer is designed to fit most standard lay-in ceiling systems. It produces 73 to 84 maintained footcandles, depending on ballast and lamp types, and is rated at 74.9 percent efficiency, according to the manufacturer. Its design includes spring latches, a 3-inch-square access plate, and an adjustable hold-down clip for quick installation and easy maintenance. Keene Lighting Products, Wilmington, MA. ■

Circle 92



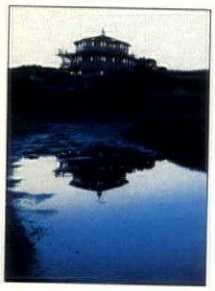
Product Literature



■ Lighting information

A 20-page brochure from GTE/Sylvania defines basic terminology used in the lighting industry, gives an overview of physical properties of light and color, and discusses various light sources. GTE/Sylvania, Danvers, MA.

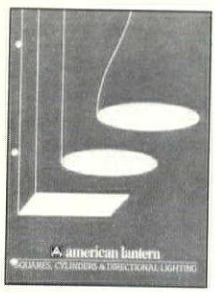
Circle 120



■ Low-voltage lighting

A 10-page catalog describes and illustrates Pro-Liter commercial-grade, 12-volt extruded aluminum fixtures and accessories. It includes specifications, distribution graphs, photos, and line drawings. Nightscaping, division of Loran Inc., Redlands, CA.

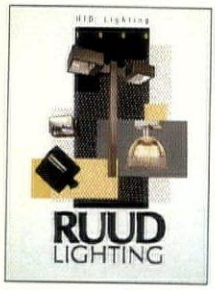
Circle 121



■ Directional, area lighting

American Lantern offers specification-grade square and cylindrical up- and downlights and ceiling- and wall-mounted directional lights. A color brochure lists ordering information and illustrates models and finishes. American Lantern, Newport, AR.

Circle 122



■ HID lighting

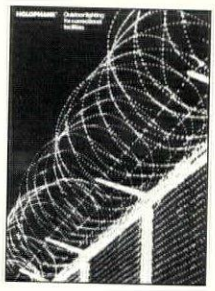
Ruud's 1989 color catalog contains complete product specifications, pricing, and technical information for security, outdoor, commercial, and industrial HID luminaires and accessories. Ruud Lighting, Inc., Racine, WI.

Circle 123

■ Low-voltage track lights

The Micro-Lyte 911 series track fixture is a compact, low-voltage unit that takes an MR11 lamp. It has a built-in airflow cooling system that dissipates lamp heat, according to the manufacturer. Con-Tech Lighting, Deerfield, IL.

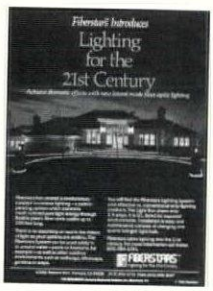
Circle 124



■ Prison lighting

A brochure shows fixtures and discusses design standards for exterior lighting of correctional facilities. Tables and illustrations provide technical and design details. Holophane, Newark, OH.

Circle 125



■ Fiber-optic lighting

Fiberstars is a flexible lighting system that looks like neon but uses a halogen light source to illuminate cables of fiber-optic strands. A color brochure describes features and contains a chart comparing fiber-optic and neon systems. Fiberstars, Fremont, CA.

Circle 126

■ Outdoor lighting

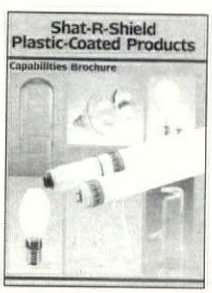
Hydrel's Sunpak low-voltage halogen outdoor lighting system includes a spread light and an accent light that can be converted to a floodlight, a spotlight, or a well light with various accessories. A brochure illustrates components and shows applications. Hydrel, Sylmar, CA.

Circle 127

■ Electronic ballasts

Ballastar high-frequency electronic ballasts help reduce power consumption and increase efficiency in fluorescent systems, according to the manufacturer. A brochure describes features of standard, two-level switching, and emergency pack models. MagneTek Triad, Huntington, IN.

Circle 128



■ Plastic coatings

A brochure from Shat-R-Shield describes features of plastic-coated heat lamps, incandescent lamps, and standard and high output fluorescent lamps. The coatings resist punctures and abrasions and, should the lamp break, contain glass shards and gases. Shat-R-Shield, Salisbury, NC.

Circle 129

THANKS TO THESE SHINING STARS IT'S NIGHT BEAUTIFUL THROUGHOUT FLORIDA

These award-winning examples of innovative, efficient and creative exterior lighting design help make our cities come alive.

We salute the efforts of the developers, architects, engineers, lighting designers, building owners and governmental agencies responsible for making Florida shine long after the sun goes down.

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Pensacola

The Clearwater Collection
Clearwater

Florida Coastal Shell
Boca Raton

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Civic Center
Orlando

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Venice

Museum of Science
and Industry
Tampa

University of Tampa
Tampa

The Village at Beacon Centre
Miami

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Tampa

The Datran Center
Miami

Olympia Place
Orlando

SunBank Center
Orlando

Tampa Bay Performing
Arts Center
Tampa

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Tampa

Joe Robbie Stadium
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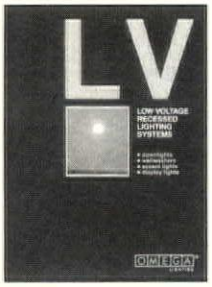
Circle 27



■ Recessed lighting

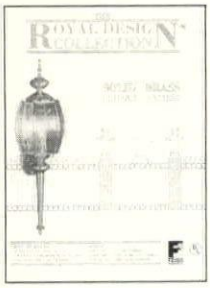
A brochure discusses various lighting effects that can be created with Omega's low-voltage recessed lighting system, which includes downlights, wall washers, accent lights, and display lights. Omega Lighting, Melville, NY.

Circle 130

■ Linear incandescents

Lightning Bug offers 12-, 20-, and 40-inch linear incandescent fixtures in high-impact plastic and aluminum. A data sheet lists applications, features, and ordering information. Lightning Bug, Ltd., Hazel Crest, IL.

Circle 131



■ Brass lantern luminaires

The Royal Design collection of solid brass outdoor lanterns carries the maximum UL rating for wet conditions. A custom lacquer finish protects the brass finish from the elements. Murray Feiss Import Corp., Bronx, NY.

Circle 132

■ Decorative outdoor lighting

A 58-page illustrated catalog contains product information on Dinico's decorative outdoor lighting fixtures, including wall brackets, post-top fixtures, deck-lighting fixtures, and accessories. Dinico Products Inc., Hackensack, NJ.

Circle 133

■ Lighting controls

A 22-page catalog describes features and applications for Scenist architectural lighting controls, remote controls, and accessories. It contains wiring notes, application notes, and photos of products and suggested applications. Lightolier, Secaucus, NJ.

Circle 134

■ Custom lighting standards

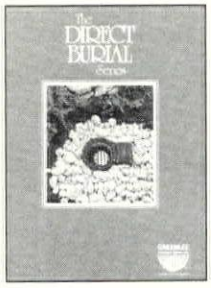
A color brochure features western red cedar lighting standards that are custom made to individual specifications. They come in contemporary and traditional designs and a variety of surface treatments. Ryther-Purdy Lumber Company, Old Saybrook, CT.

Circle 135

■ High-low HID switching

A 16-page color brochure from Wide-Lite describes the Bi-Level high-low switching system for HID lighting applications. It includes information on system operation, components, design procedures, specifications, and ordering. Wide-Lite, San Marcos, TX.

Circle 136



■ Direct-burial fixtures

A color brochure contains photos, cutaway drawings, descriptions, and specifications for Greenlee's direct-burial fixtures. Various models accommodate incandescent, quartz, and HID lamps. Greenlee Landscape Lighting Mfg., Carrollton, TX.

Circle 137

■ Ornamental posts

Spring City offers a selection of ornamental lighting posts and bollards. A brochure contains descriptions and color photos of 30 styles. Spring City Electrical Mfg. Co., Spring City, PA.

Circle 138

■ Emergency Lighting

Siltron's emergency lighting equipment includes decorative sconces and wall and ceiling fixtures, exit signs, floodlights, and power systems, which are illustrated and described in a 48-page catalog. Siltron Illumination, Inc., Cucamonga, CA. ■

Circle 139

Classified Directory

ACCENT AND DISPLAY LIGHTING (INTERIOR)

AMERLUX, 23 Daniel Rd., Fairfield, NJ 07006 ... 201/882-5010

CUSTOM NEON Mfg., install interior neon portable & wall-mount art & signs. ... 213/937-6366

DANALITE, 16392 Gothard St. #A, Huntington Beach, CA 92647 ... FAX 714/848-1669 714/841-4325
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FIBERSTARS, 47456 Fremont Blvd., Fremont, CA 94538 ... 800/327-7877

MIROFLECTOR CO., 40 Bayview Ave., Inwood, Long Island, NY 11696 ... 516/371-1111
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Custom and Proprietary Injection Molded Lighting Products. (For information call Cheryl Barron.)

MAXIMUM TECHNOLOGY, 60 Industrial Way, Brisbane, CA 94005 ... 415/468-2560

AMBIENT LIGHTING SYSTEMS (INTERIOR)

DAY-BRITE/McPHILBEN/OMEGA—Complete fixture needs. ... Fax 601/841-5501 or Call 601/842-7212

H.E. WILLIAMS INC., P.O. Box 837, Carthage, MO 64836 ... 417/358-4034

LITHONIA LIGHTING. We cover the lighting spectrum ... 404/922-9000

NORBERT BELFER LIGHTING MFG., Cove & Linear Lighting Products ... 201/493-2666

PEERLESS LIGHTING CORP., P.O. Box 2556, Berkeley, CA 94702 ... 415/845-2760

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ADJUSTA-POST MFG. CO., P.O. Box 71, Norton, Ohio 44203 ... FAX 216/745-9746 800/321-2132
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AMERICAN ELECTRIC, 1555 Lynnfield Rd., Memphis, TN 38119 ... 901/682-7766
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FAX 213/776-0235 PH. 213/776-4744

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EMCO ENVIRONMENTAL LIGHTING, 7300 50th St., P.O. Box 1640, Milan, IL 61264 ... 309/799-3111

HOLOPHANE, 214 Oakwood Ave., Newark, OH 43055 ... 614/345-9631

RUUD LIGHTING, 9201 Washington Ave., Racine, WI 53406 ... 800/558-7883

RWL CORP., 240 Sargent Dr., New Haven, CT 06511 ... 203/789-1710

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VARA-LIGHT / DIMATRONICS / HUB ELECTRIC, Crystal Lake, IL. ... FAX 815/455-1499 or 815/455-4400

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CONSTRUCTION SPECIALTIES INC., 55 Winans Ave., Cranford, NJ (Sight & Sunscreens) ... 201/272-5200

MULTIPOINT CONTROL SYSTEMS, 3101 111th St. SW #A, Everett, WA 98204 ... 206/347-3499
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BRASS REPRODUCTIONS, 9711 Canoga Ave., Chatsworth, CA 91311. Decorative Fixtures. ... 800/828-5858

LIGHTSPACE DESIGN, 2111 Vine, Suite B, Berkeley, CA 94709. Consultant & MFG. ... 415/540-6023

DESIGN SOFTWARE & TESTING/MEASURING INSTRUMENTS

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GENERAL ELECTRIC, Ad Response Dept., Nela Park #4151, Cleveland, OH 44112 ... 216/266-3200

GTE/SYLVANIA LIGHTING, Sylvania Lighting Center, Danvers, MA 01923 ... 617/777-1900

OSRAM CORP., 110 Bracken Rd., Montgomery, NY 12549 ... 914/451-4040

PHILIPS LIGHTING CO., 200 Franklin Square Dr., Somerset, NJ 08875 ... 800/631-1259 800/752-2852

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

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Calendar

July 17–20, 1989 — **Lighting, sunlighting, and perception,** seminar, Harvard Graduate School of Design, Harvard University, Cambridge, MA. Speaker: William M.C. Lam. Contact: HGSD Office of Special Programs, 48 Quincy Street, Cambridge, MA 02138, (617) 495-9340.

July 19–22, 1989 — **Design harmony: Advancing humanity through knowledge,** ASID national conference and exposition, Moscone Center, San Francisco. Contact: Mary Frazell, American Society of Interior Designers, 1430 Broadway, New York, NY 10018, (212) 944-9220.

July 24, 1989 — **Submission deadline** for September calendar announcements in *Architectural Lighting*. Contact: Assistant Editor, *Architectural Lighting*, P.O. Box 10460, Eugene, OR 97440, (503) 343-1200, FAX (503) 344-3514.

July 24–26, 1989 — **Conference for architects,** GE Lighting Institute, Cleveland. Contact: Richard Janis, GE Lighting Institute, Nela Park, Cleveland, OH 44112, (800) 255-1200.

August 6–10, 1989 — **Bask in the bright ideas,** IES annual conference, Buena Vista Palace, Orlando, FL. Contact: Diane Darrow, Conference Manager, Illuminating Engineering Society of North America, 345 East 47th St., New York, NY 10017, (212) 705-7269.

August 16–18, 1989 — **Workshop for college and university professors,** GE Lighting Institute, Cleveland. Contact: Richard Janis, GE Lighting Institute, Nela Park, Cleveland, OH 44112, (800) 255-1200.

September 7–9, 1989 — **Conpac 89,** show and conference, Concourse Exhibition Center and Contract Design Center, San Francisco. Speakers include Robert Blaich of N.V. Philips. Contact: Lydia Crichton, Executive Director, (800) 542-1415 or (415) 864-1500.

September 7–10, 1989 — **WorldStore,** store planning and retail design show and conference, Georgia World Congress Center, Atlanta. Contact: Lora Ballato, show manager, National Expositions Company, Inc., 15 West 39th St., New York, NY 10018, (212) 391-9111. ■

In This Issue

Manufacturers

Page 16. *Lobby lighting emphasizes sculpture, functional circulation space* (Prudential Insurance Washington Street Building Lobby, New York City).
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General Electric: Incandescent lamps.
Strand: Control system.

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Siemens: Luminaires.

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Lutron: Dimmers.
Thorn: MR11 lamps.

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

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R. Greg Hursley, Inc., 4003 Cloudy Ridge Road, Austin, TX 78734, (512) 266-1391

Alan Karchmer, 632 Pirate Alley, New Orleans, LA 70116, (504) 525-7065

John Rose Associates, 35 Pinner Road, Harrow, Middlesex HA1 4ES, England, 01-427-6711

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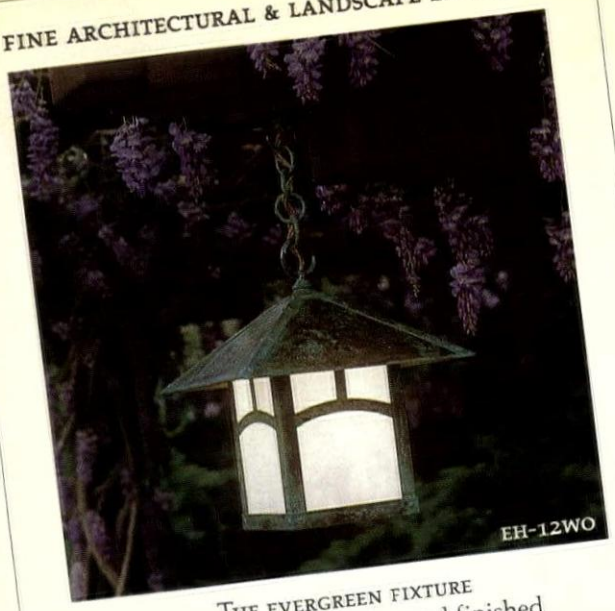

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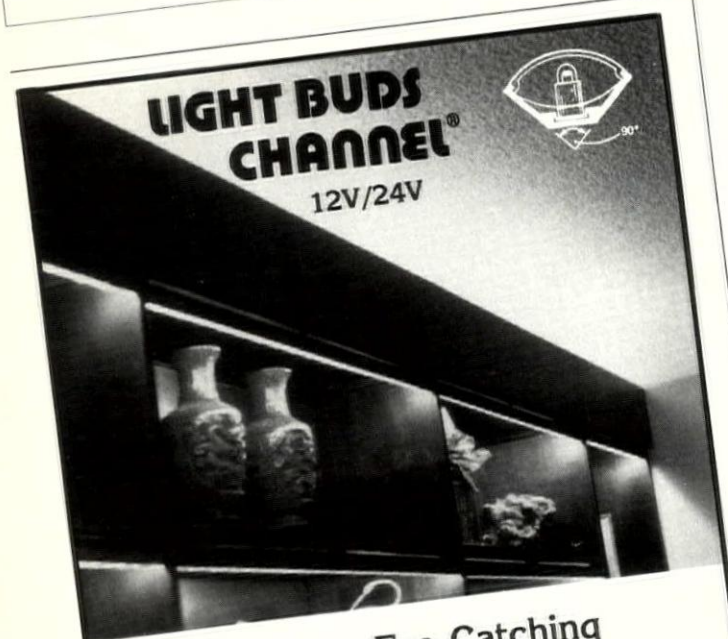

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Circle 4

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Associate Production Director Stephen Roberts
Advertising Coordinator Helen Hornick

Editorial Offices: 859 Willamette Street, P.O. Box 10460
Eugene, OR 97440-2460
(503) 343-1200 Fax: (503) 344-3514 Telex: 510-597-0365

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Director of Advertising Robert Joudanin
National Sales Representative Arthur S. Rosenberg

Advertising Offices: 195 Main Street
Metuchen, NJ 08840-2737
(201) 549-3000 Fax: (201) 549-8927

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SUBSCRIPTIONS: U.S. and possessions — 1 year (12 issues), $54; 2 years (24 issues), $99; 3 years (36 issues), $142. Outside the U.S. — 1 year (12 issues), $97; 2 years (24 issues), $187; 3 years (36 issues), $273. Delivery of *Architectural Lighting* outside the U.S. is 3–14 days after printing. Single copy price — U.S., $8 plus postage; outside the U.S., $10 plus postage. Phone (503) 343-1200 or write to *Architectural Lighting*, P.O. Box 10955, Eugene, OR 97440-2955.

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Circle 2

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