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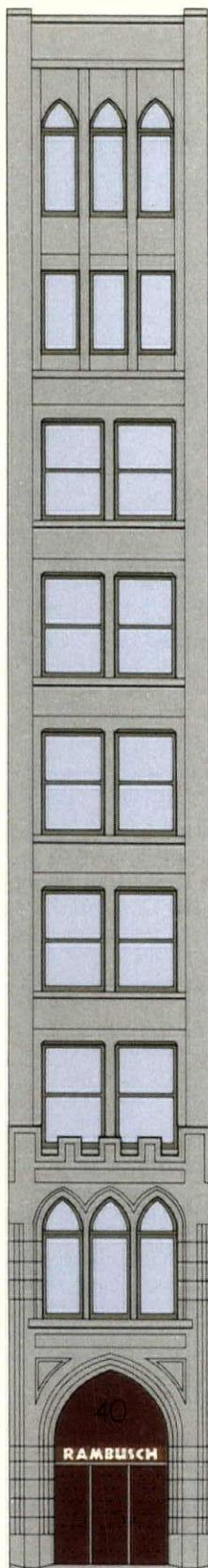
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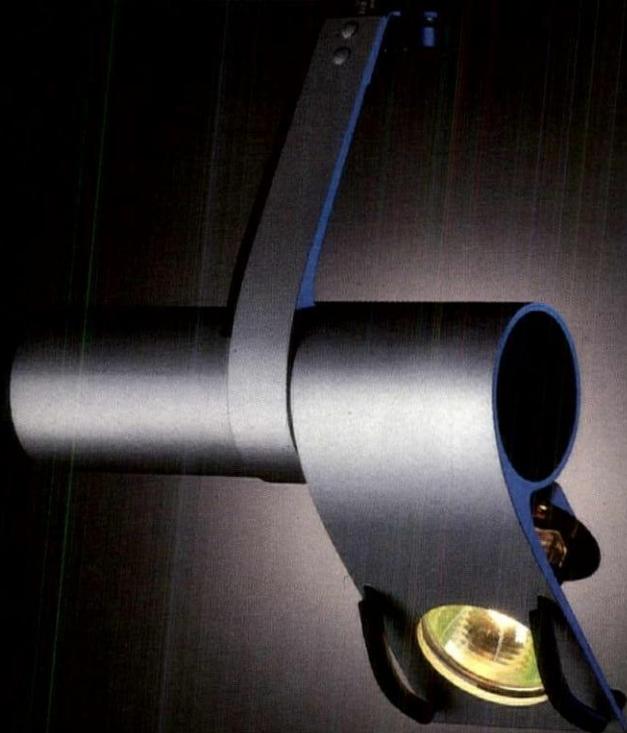
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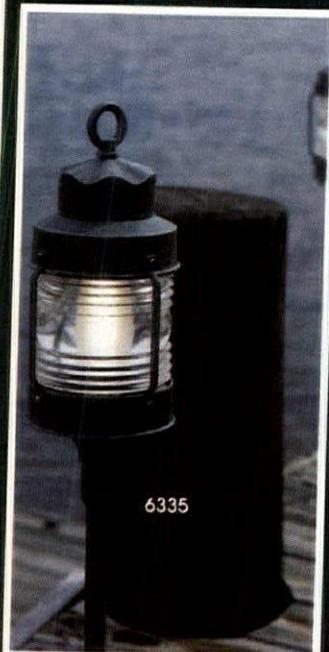
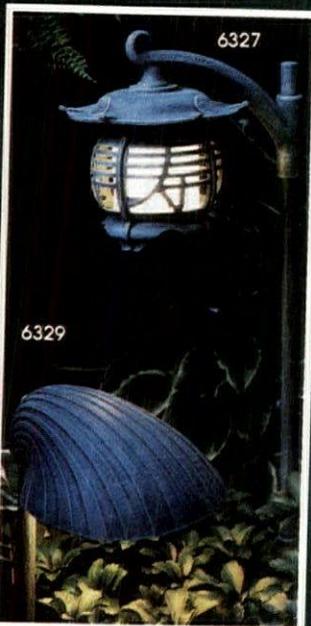
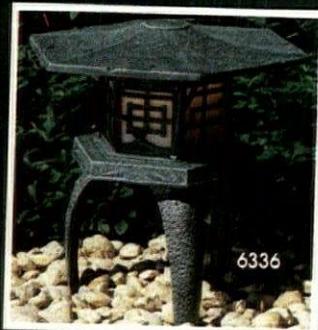
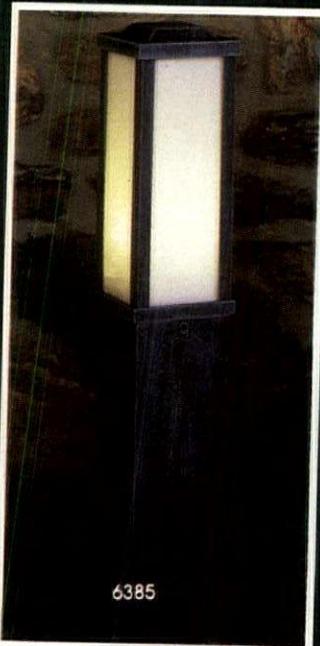
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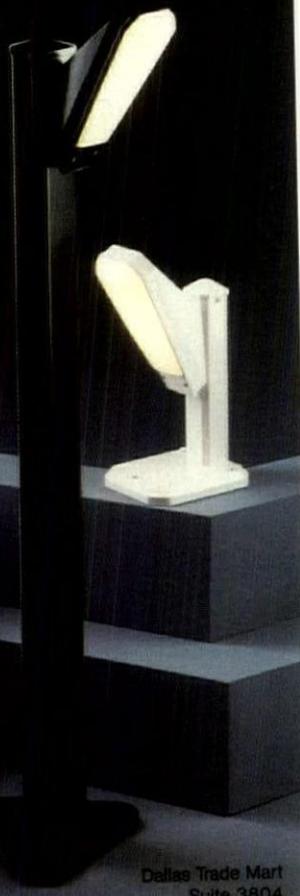
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■ From the Editor

There's nothing better than a big, fat issue of *Architectural Lighting*. This is our annual Lighting World International show issue, which accounts for the special metallic ink on our cover and the hefty size. We will be giving away this special issue at that very special lighting trade show at the Jacob Javits Convention Center in New York City, May 10-12.

As I've commented in the past, I dislike "theme issues" because they truly do not serve a diverse audience. The audience for this issue is particularly diverse because relatively few of our readers attend the show. It has been a daunting task putting together an issue that will be a keeper for the readers who won't go to the show, while at the same time fulfilling the expectations of the many readers and advertisers who will be there with us.

The staff and I think we have a solution that will be satisfying to *everybody*. In the following pages you'll find a wonderful selection of New York restaurant and nightclub reviews. It will come as no surprise that the reviews are not of the food they serve, but of their lighting. Even if you're not going to Lighting World International, we hope you'll enjoy a look at the completely different approaches designers have taken in lighting this single building type. We've even included the addresses of these popular spots, so if you're not in New York for the show this month, you can still drop by them next time you're in the City.

After those, the next feature takes you inside BBDO Worldwide for a look at the custom lighting in this famous New York advertising agency. And, of course, that feature is followed by more articles and a greater number of our regular columns than we've been able to run in a single issue for a long time. And, as always, we've included dozens of new products that'll be featured at the show.

Putting together an issue with this many feature articles depends entirely on the kindness and cooperation of many people. We especially appreciate the designers and photographers who made this special May issue possible.

Charles Linn, AIA

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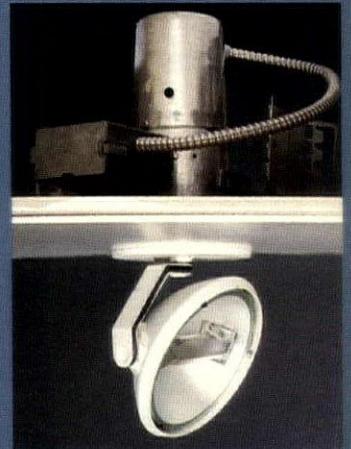
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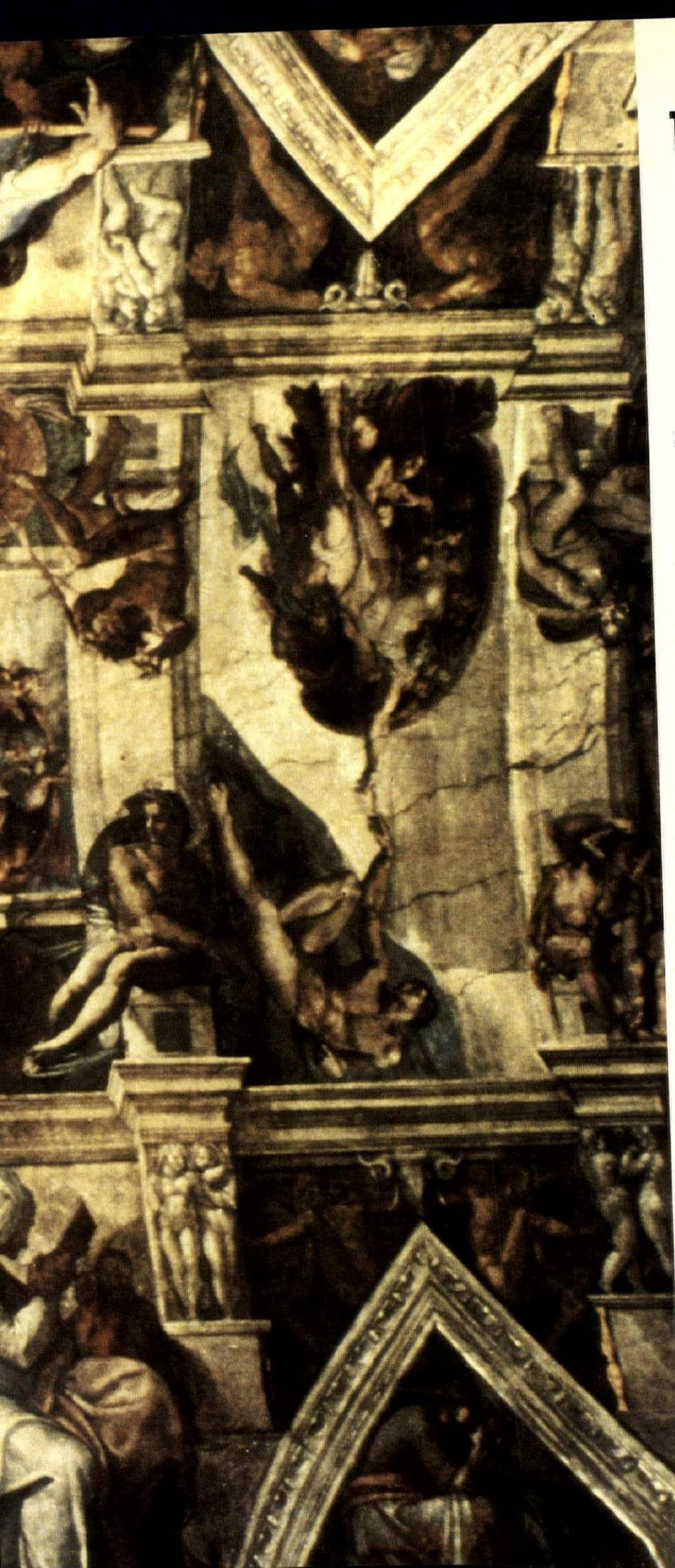
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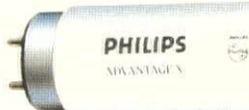
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Circle 9

May 1989
Volume 3, Number 5



NORMAN McGRATH

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■ Letters

Lighting designer on landscape architect's turf

Concerning your February column on Landscape Lighting by Janet Moyer, ASID: What a delightful, yet typical, irony to publish a column on landscape lighting written by an interior decorator. How clearly, despite its obvious omission, the column points out that the key member of any landscape lighting project should be the landscape architect. The landscape architect, having designed the landscape, understands firsthand the design concept and intent and, thusly, where and how, through the lighting, to accent, emphasize, and subordinate. The landscape architect has years of training and experience in plant material. It would be a gross waste of time and a client's money for other professionals to attempt a grasp of the necessary knowledge of hundreds of diverse plants, as the writer suggests. The errors within this brief column point out how misguided such attempts can be. The column describes the Italian cypress as pyramidal, though it is decidedly columnar in form. In listing almost 50 trees with "interesting trunk characteristics," the writer omits the one tree most widely chosen by designers for its interesting trunk characteristics: the tree form crape myrtle (*Lagerstroemia indica*).

I enjoy your publication and am eager to see more articles on landscape lighting. I hope future articles on the subject will be written by experts in the field who can provide useful and accurate information to your readers.

Terry L. Barham, ASLA
Land Design Associates
Birmingham, Alabama

The columnist responds

How unfortunate that Mr. Barham, as the team leader on landscape architectural projects, does not understand the benefit of other potential team members. Professional lighting designers have training and experience that most landscape architects find helpful in creating successful lighting on their projects.

*In his letter, Mr. Barham attacks my use of the Italian cypress as an example of how plant forms vary from one individual to another. As he knows, resources on plant descriptions regularly disagree. I reviewed seven of my sources and, although the descriptions differ, most mention the variable habit of this plant, which was my reason for illustrating it. Also, the descriptions include both columnar and pyramidal habits — one states and illustrates its "well-known pyramidal habit." Each one that refers to a columnar habit refers the reader to a cultivar *Cupressus sempervirens Stricta*.*

*I thank Mr. Barham for mentioning *Lagerstroemia indica* for its trunk. I did not intend the printed list to be all-inclusive, but rather to encourage designers to think about the dormant appearance of specimen trees.*

I hope Mr. Barham has now had a chance to read the February column; his comments refer to January's. Perhaps he will find some information that he can use in his work.

Janet Lennox Moyer, ASID
Oakland, California

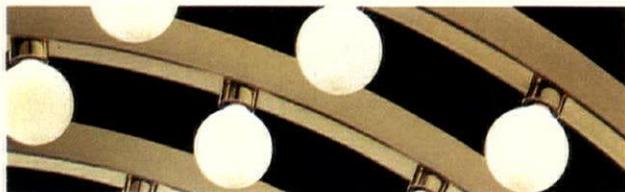
The editors welcome your letters, which help keep us responsive to our readers' needs and interests. Address your letters to Charles Linn, AIA, Editor, Architectural Lighting, 859 Willamette Street, P.O. Box 10460, Eugene, OR 97440. All letters are subject to editing.



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Circle 13



Lighting Clinic

Lighting dental treatment rooms

As an architect who specializes in dental architecture, I am always trying to make sure that design professionals have an updated idea of current philosophies and the state of the art when they design dental offices. One of the greatest sources of stress for both dentist and staff is physical and mental fatigue. This stress manifests itself in many ways, including eyestrain. A designer can minimize eyestrain for both dentist and staff by controlling the difference between the ambient light level and the light intensity in the work area (the patient's mouth). If the difference is too great, the staff's eyes must go through a constant series of adjustments throughout the day, which can lead to eyestrain and headaches.

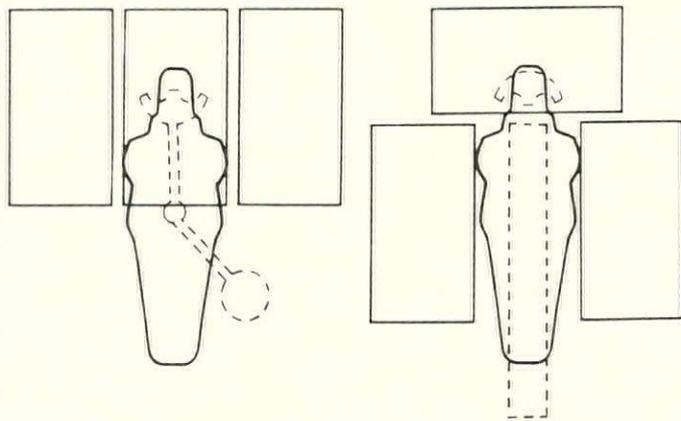
I have enclosed some excerpts from a report by John M. Young, DDS, MSc, at the University of Texas Health Science Center at San Antonio. I hope this information is interesting to you. There is a lot going on in some specialized areas of design, which is often overlooked or unavailable to the general profession.

*Jeff Kauffmann, Architect
Metzler Kauffmann, Austin, Texas*

The editors do, indeed, find the information interesting. So we contacted Dr. Young, who writes:

Optimum illumination is absolutely essential to the performance of quality dental treatment. Following these lighting guidelines can help to provide maximum visual acuity with the greatest operator safety.

Ambient light in the treatment room. The ambient lighting objective is shadow-free illumination, with good color rendering, concentrated at the patient's head. To avoid hot spots, light distribution should be as even as possible across the entire width and length of the room. The accompanying diagrams indicate two ways to accomplish that. Both arrangements use three ceiling-mounted 2-by-4 fluorescent luminaires — each with four 40-watt lamps and an untinted prismatic lens — and provide about 150 to 200 footcandles at the task level. The parallel grouping



Three 2-by-4 fluorescent luminaires each hold four 40-watt lamps; together they put 150 to 200 footcandles at the task level. The parallel arrangement at left best concentrates light at the patient's head. The horseshoe arrangement at right is acceptable, and it may be the only practical solution where the dental operating light is track mounted.

LIGHT AND DESIGN

concentrates more light at the patient's head; the horseshoe arrangement is an acceptable alternative in spaces where the dental operating task light is mounted on a track rather than on a pedestal. Lamps should have a color rendering index (CRI) of 90 or more, a spectral energy distribution approximating natural daylight, and a color temperature around 5500K. Ideally, to prevent eyestrain for the dentist and staff, the intensity difference between task and ambient light should be no greater than 3 to 1. With today's extremely intense task lighting systems, however, a ratio as great as 10 to 1 is considered marginally acceptable.

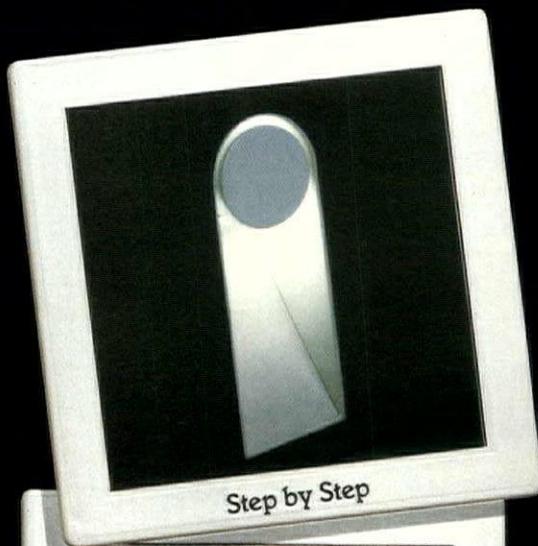
Dental operating task light. The task lighting objective is to provide essentially shadow-free illumination to all areas of the oral cavity, with good color rendering and without distracting glare for either patient or operator. With parallel fluorescents, the fixture can be mounted on a pedestal or on the dental equipment; with the horseshoe arrangement, the fixture can be track mounted. In either case, the mounting location should allow placing the light source about 28 inches from the oral cavity in all operating positions. The reflector and source combination should allow multiple aiming angles for optimum shadow reduction and deliver at least 900 to 1000 footcandles to the oral cavity. Ideally, to stay within the 10-to-1 task-ambient lighting ratio, task light intensity will not exceed 2000 footcandles. Color temperature and color rendering index should be as close as possible to that of the ambient light to assist in color matching restorative materials and recognizing soft tissue tone.

Handpiece fiber-optic task light. Handpiece lighting is used in conjunction with — *not* as a substitute for — the dental operating light to reduce shadows and improve illumination in remote areas of the oral cavity. The intensity of the fiber-optic light should be slightly greater than that of the operating light (up to about 2500 footcandles), but should not overpower it. Color temperature and color rendering should match the ambient and task lighting in the room as closely as possible. To reduce the operator eyestrain that can be associated with varying light intensities, it's important that the light come on when the handpiece is picked up and remain on until it is replaced in the holder or the system is shut off. The light should *not* cycle on and off with the foot controller.

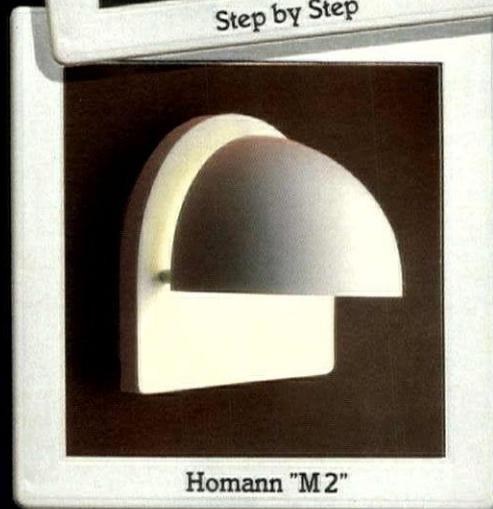
Safety notes. To prevent patient or operator injury in case of lamp or reflector failure, provide safety fastenings and secure light diffusers and fluorescent tubes in fixtures above the patient area; be sure that safety shields are in place on dental operating lights.

*John M. Young, DDS, MSc, Director of Research
Department of General Practice, Dental School
The University of Texas Health Science Center
San Antonio, Texas*

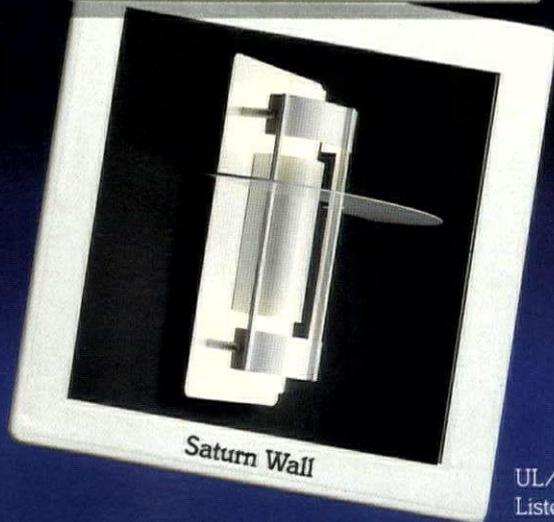
Send your lighting design questions to Architectural Lighting. When we track down an expert willing to share expertise about the problem, we'll publish it in the Lighting Clinic. Address your letters to Lighting Clinic Editor, Architectural Lighting, 859 Willamette Street, P.O. Box 10460, Eugene, OR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



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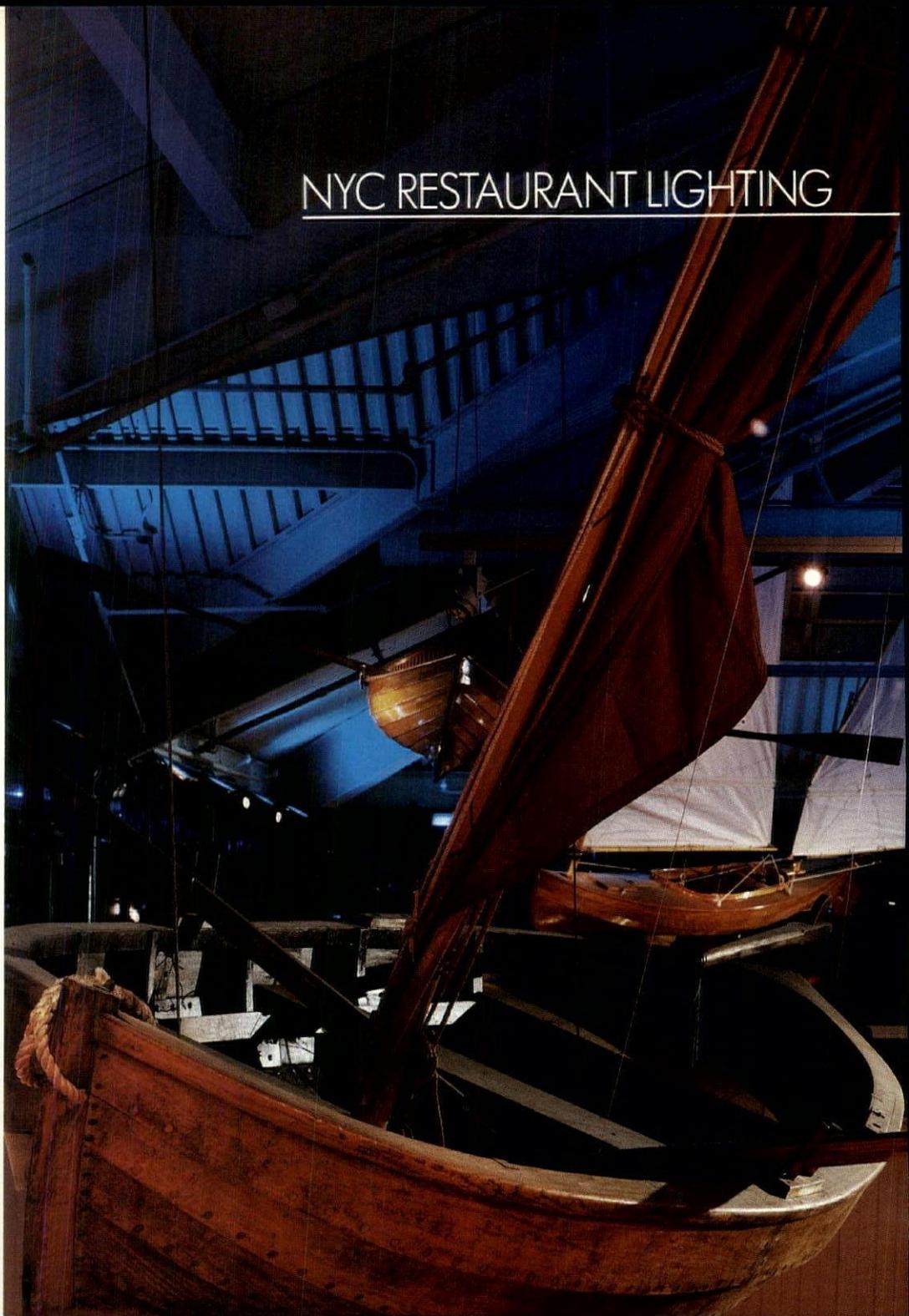
Good lighting complements any meal

Few cities in the world rely more heavily on restaurants to feed their busy inhabitants than New York. And few building types rely more heavily on lighting to create atmosphere than restaurants. In the following pages, we present some of New York's finest examples of excellence and imagination in restaurant lighting.

Because restaurants are visited primarily at night, and because their light levels are usually low, what light there is plays a crucial role in defining space and mood. Both the quality and quantity of light are carefully designed for their psychological effects — whether soothing or stimulating — on the diners. Other lighting effects may be practical or decorative or both. Custom sconces may become the trademark of an eatery. Ambient light may produce a colorful glow on architectural surfaces or influence our attitudes toward food. And lights can define traffic paths, play tricks of scale, or spotlight works of art. With skill and imagination, designers can create an atmosphere that draws the curiosity of new customers and that builds the loyalty of established ones.

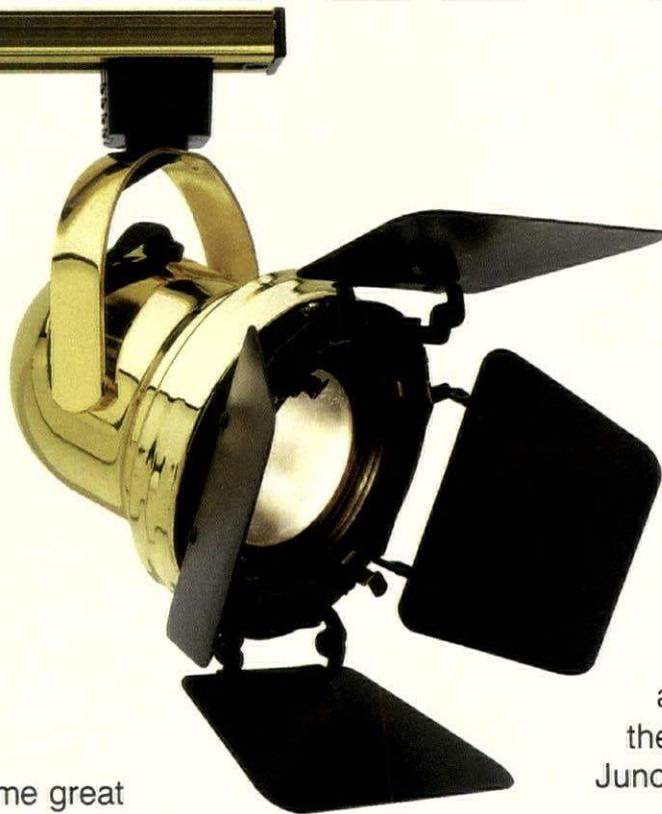
In this highly competitive business we find great variety in spatial character, from the elegant, artful, and romantic to the trendy, fast-paced, and sparkling. But all the restaurants we present to you here have one thing in common: it is their lighting that defines the character of the space.

—Barbara-Jo Novitski
and Gareth Fenley



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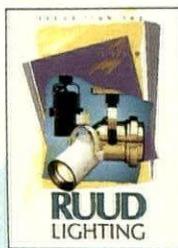
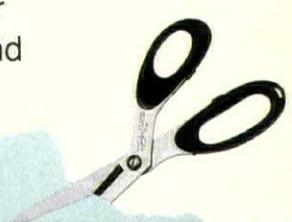
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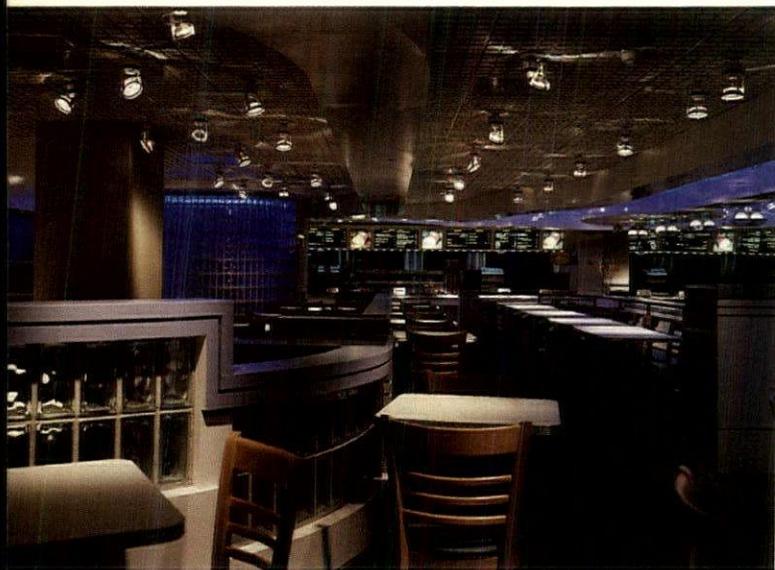
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Circle 15

Fast food in elegant, relaxing environment



Project: McDonald's Restaurant, Rockefeller Center
Location: 1271 Avenue of the Americas (Concourse Level), New York City
Client: Irwin Kruger
Designer: Charles Morris Mount
Photos: Norman McGrath

"When you design a restaurant that is surrounded by the greatest art deco architecture in the United States," says Charles Morris Mount, "it would be an insult to try to copy those historic forms." But before he could get Rockefeller Center design approval for a McDonald's franchise in New York's Time-Life Building, the restaurant designer had to devise a strategy for relating a small fast-food operation to the neighboring monumental architecture.

Instead of mimicking the art deco style, Mount decided to "refer to its spirit" with streamlined forms, polished steel, pipe railings, mirrors, neon, and glass block. And instead of the standard McDonald's colors of red, yellow, and orange, he chose blues and grays to create a relaxing, soothing, almost clublike atmosphere. "It's not unusual to see business people having meetings at this McDonald's," he says.

For this design, Mount challenged the conventional wisdom that fast-food restaurant managers prefer bright lights to encourage a high customer turnover. "In today's marketplace, fast-food restaurants are competing with places that have more atmosphere. The price of fast food is close to what you might spend in a diner, and customers want more value for their dollar."

To offer comparable atmosphere, the designer chose streamlined, curved paths of neon and a row of elegant sconces that guide people from the two entrances to the sales counter. In the raised, carpeted dining areas, movable chairs and tables are illuminated by surface-mounted low-voltage spotlights. "The initial idea was

to focus one of these beautiful light sources on each table. But tables move around, so the effect is more one of general lighting; but it is still very theatrical." A highly reflective ceiling and recessed pinhole downlights also contribute to the general lighting. The mirrored walls serve the dual purpose of increasing the perceived size of the restaurant and amplifying the theatrical effects of the lights.

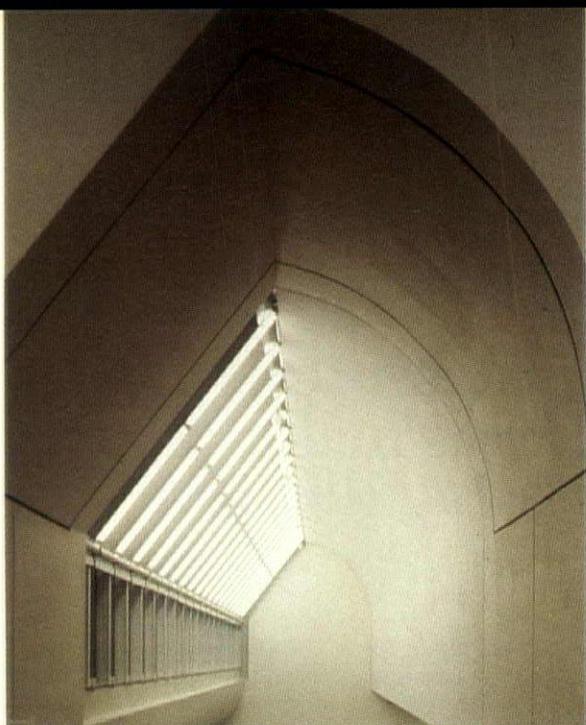
Tucked away in a corner of the small space is a curved wall of glass block. It is backlit with two bands of blue neon, and it conceals a secret, as Mount explains with a laugh. "That is a janitor's closet made beautiful. You'd never know it, but inside there are mops and a slop sink!"

Although the overall effect produced by the combination of lights, colors, and materials is elegant and relaxed, Mount says that the restaurant is still very practical. "It's now in its third year, and the materials have been highly resilient to wear and tear. They were selected both for beauty and for maintenance."

Still, ruggedness does not diminish elegance. "Last January, we had a black-tie dinner here as a fund-raiser for a museum. They had music and dancing, and it was a lot of fun. But it was unusual because whoever goes to McDonald's for a fund-raiser?"

—B. J.N.

For product information, turn to page 118 and see Manufacturers.



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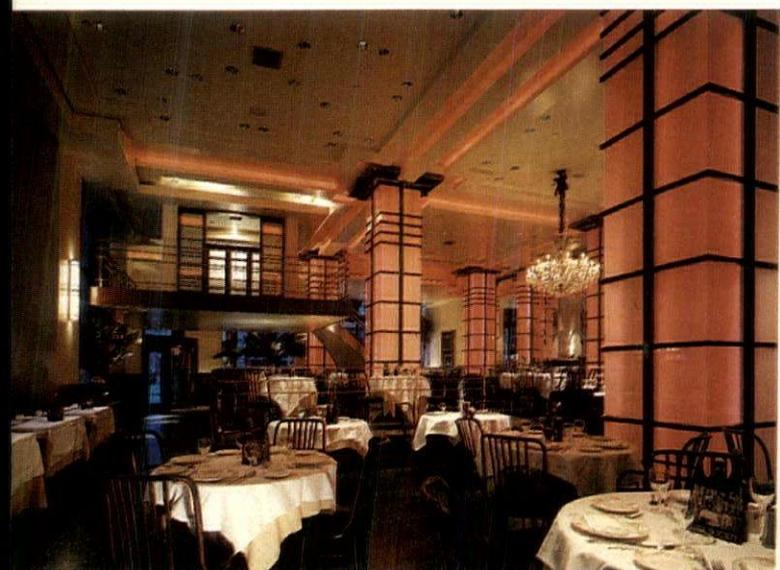
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Circle 16

ZUMTOBEL

LIGHTING
THE WAY

Glowing peach-pink columns make a lighting illusion



A designer confronts stiff competition when a project faces one of the most famous structures on the planet. Cafe Society is directly opposite the Empire State Building, and its interior lighting is a powerful element in establishing a memorable visual identity. Designer Tony Chi used peach-pink neon as an offbeat source of general illumination for the restaurant. "The lighting creates a total illusion," he says.

The most striking illusion is a trick played with eight 22-foot concrete columns planted right in the middle of the main dining area. Chi had them boxed in with drywall, then painted gloss white. Neon strips run vertically along the sides. A steel-framed, mahogany-trimmed enclosure of frosted glass forms an outer layer. Hidden steel reflectors, welded to the framing, bounce the pink light off the glossy white drywall and suffuse the glass with a mysterious glow. The effect makes the columns seem soft-edged and diminishes their apparent scale, says Chi. "They become delicate, not massive. And the color of the light makes people look sensational."

Chi's arrangement of adjustable downlights also departs from usual design practice. "The average ceiling framing kit is based on a 12-inch module," notes Chi. "Normally, downlights are placed on a grid system. I find that boring or distracting. So we offset the light fixtures, placing them randomly. We definitely wanted to get away from that grid."

Special fixtures highlight a mural in the cafe interior. "The artist painted the mural with oil paint and a palette knife. The surface has some depth to it, so it has to be lit from a distance for an even wash of light. We experimented with different fixtures at the studio. The fixtures we chose are very modern looking, which is a drawback, but all the other fixtures stood out too much," says Chi. "These are black oval tubes with halogen lamps. We lined the fixtures up with the mezzanine elevation, so you almost register them as a floor line, though you do see the electrical cords."

The lighting at Cafe Society underscores Chi's philosophy that fundamental design elements should be freely interpreted as decorative features. "General illumination doesn't mean only cove lighting, and accent lighting doesn't just mean concealed spotlights," says Chi. "These basic types of lighting can be decorative as well."

—G.F.

Project: Cafe Society
Location: 915 Broadway, New York City
Client: Shelly Abramowitz
Interior Designer: Tony Chi and Albert Chen, Tony Chi & Associates
Electrical Engineer: Arno Fisher
Photos: W.H. Rogers III

For product information, turn to page 118 and see Manufacturers.



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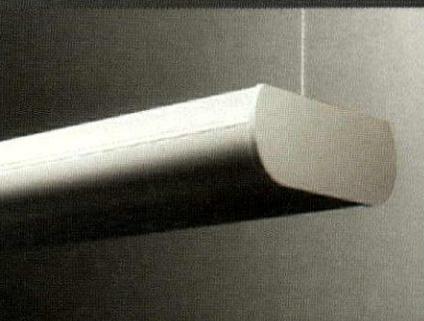
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NYC RESTAURANT LIGHTING

Light and materials blend for elegant dining



In case we ever forget that lighting is not an end in itself, the Ennio and Michael Ristorante can remind us that it is the *interaction* between lights, materials, and architectural forms that creates visual excitement and spatial drama. Designer Scott Kurland, of The Kurland Group, collaborated with William Schwinghammer, of Johnson/Schwinghammer Lighting Consultants, to blend materials and illumination into an elegant space for quiet, refined dining.

Kurland explains one example of the interplay between light and materials: "We didn't want an ordinary mirror above the bar, so we used sculptural glass instead. We placed four glass panels on an angle, put a marbled material behind them to match the base of the bar, and put the light source down in a corner. The result is very dramatic."



Project: Ennio & Michael Ristorante

Location: 539 LaGuardia Place, New York City

Clients: Ennio Sammerone and Michael Saverese

Lighting Designer: Johnson/Schwinghammer Lighting Consultants, Inc.

Interior Designer: The Kurland Group, Inc.; Scott C. Kurland, design director; Hector Muñoz-Baras, senior designer; Mary Ellen Sarka, designer

Photos: Jennifer Levy

Another illustration of this interaction is the way the designers softened the effect of a footlocker-shaped space by applying an innovative ceiling treatment. They suspended tracks from a high ceiling, each successive length of track stepping down 6 inches. Then they draped fabric between the tracks. This soft billowy surface provides a contrast to the hard marble and the sculptured glass.

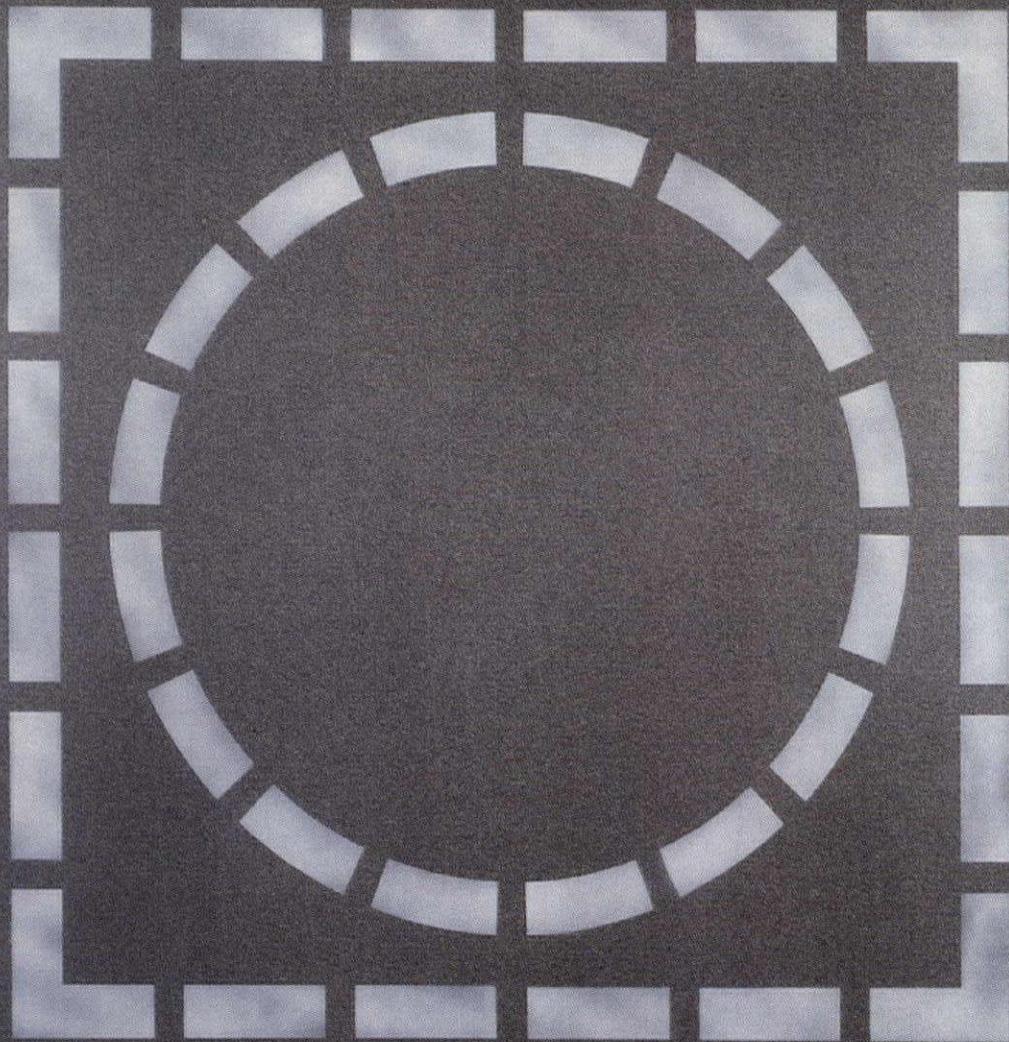
The angled ceiling influenced their treatment of the lights, both above and below the fabric. Below, wide-angle drop-lights hang from the tracks. The lamps have open backs and shine a soft light up onto the fabric. The pendant lengths vary, so that all the lamps reach down to the same height above the floor. Their prislime lenses provide thin "halos" of light.

Above the fabric at the ceiling's low end are 250-watt halogen lights that the owners can brighten or dim to alter the restaurant's atmosphere. Turned up bright, they create a vibrant, sunny environment for the lunch crowd. Dimmed at night, the lighting suggests a rich formality. In both cases, the light is strongest at the end where the lights are and diminishes as the ceiling angles up. The gradation of light from this luminous ceiling interacts beautifully with the gradation of light produced by the pendants below. Designer Muñoz-Baras concludes, "There's flexibility in the lighting choices the owners can make and a lot of variety in the quality of light."

—B. J.N.

For product information, turn to page 118 and see Manufacturers.

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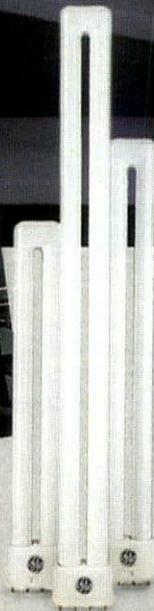


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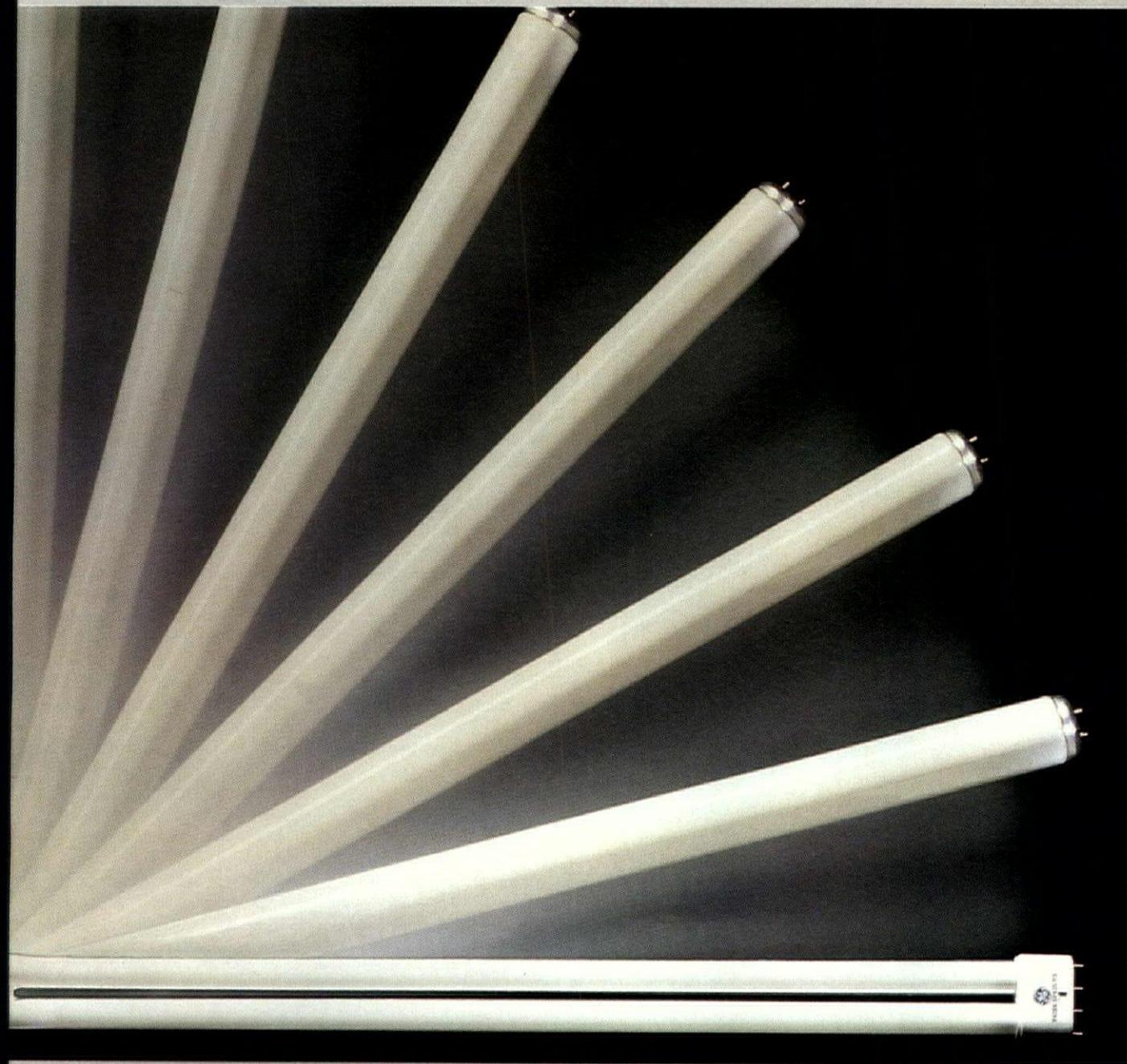


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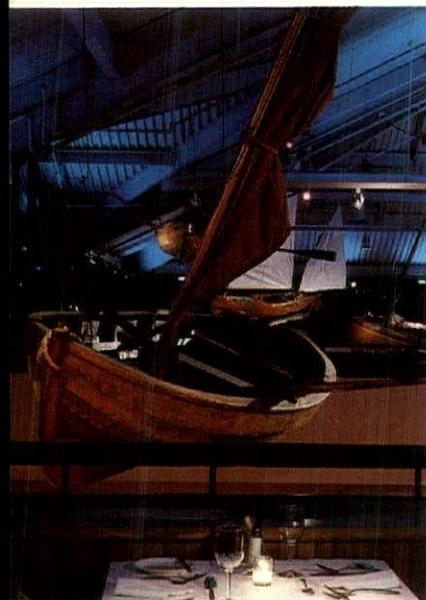
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Boats sail overhead in ocean of blue light



Project: Ocean Reef Grille
Location: South Street Seaport, New York City
Client: Delta Dallas Alpha Restaurant Corp.
Architect: Haverson/Rockwell Architects
Lighting Engineer: Paul Gregory, Focus Lighting
Photos: Paul Warchol

Boats. That's what people see when they enter the Ocean Reef Grille, a popular seafood restaurant in the penthouse of a bustling commercial development. But as architects Jay Haverson and David Rockwell wandered through a yawning, vacant cavern whose only previous tenant had failed a few years before, they saw — or imagined — blue light.

"Lighting was one of our initial ideas, a way to deal with the enormous volume of space," says Haverson. "The place was cold, disconnected, and broken up by atrium wells. We had to create a unified environment. Our concept was to hang big objects from the ceiling and backlight them a deep blue, so they looked like they were floating. We didn't know they'd be boats."

"We did several tests to figure out the best way to get the right amount of blue on the ceiling," says Rockwell. "We even tried mercury vapor and metal halide sources." The final design uses 500-watt quartz uplights with aqua and blue Pyrex color filters imported from Italy.

"Once we decided on boats, we realized we'd have to crosslight them," Rockwell continues. "The boats needed a white light to offset the blue, and uplighting would light only the bottoms; we needed the tops and sides lit, too. That's how we came up with the idea of putting a continuous rail around the space." The pipe rail makes a perfect mounting base for both crosslights and uplights, because fixtures can be unobtrusively attached anywhere along it. An array of white seagulls on one wall originates from ellipsoidal pattern projectors also

mounted on the rail.

For downlighting on tables, the architects used low-voltage PAR 36 narrow spots — on the same kind of track fixtures that crosslight the boats. The downlights, in contrast to all the blue, have a peach-pink gel to make sure the food looks warm. A "spun silk" filter elongates the beam pattern, making the arrangement forgiving of minor readjustments below. "We aligned the beam spreads along the direction that tables would probably be moved," notes Rockwell, "so if the furniture gets moved a little, you don't really notice."

All fixtures plug into double duplex receptacles that are color coded to 24-channel dimming controls for maximum flexibility. "A big control system was already installed, left by the restaurant that failed," says Haverson. "We just augmented it with a four-scene preset control."

The total lighting budget for the project was \$300,000 — high for a 12,000-square-foot space. Haverson explains, "I think the owners agreed to spend that much because they realized lighting was one of the key elements that could connect a discontinuous space and make it feel comfortable. They acknowledged that it was more than just another element; it was a key."

Even if everyone else thinks it's the boats.

—G.F.

For product information, turn to page 118 and see Manufacturers.



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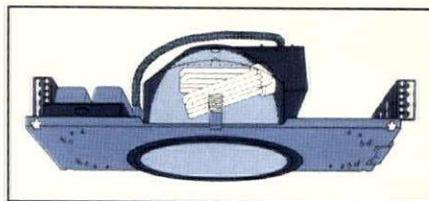
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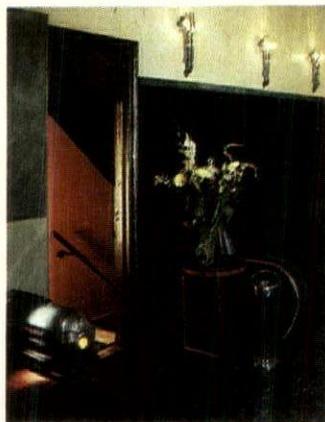
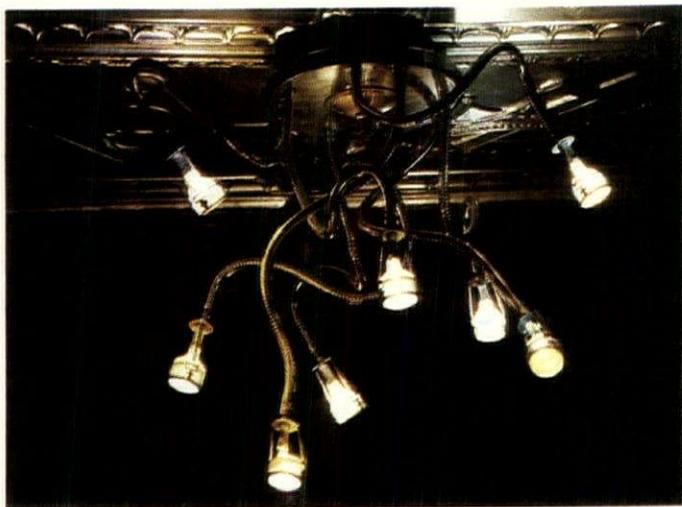
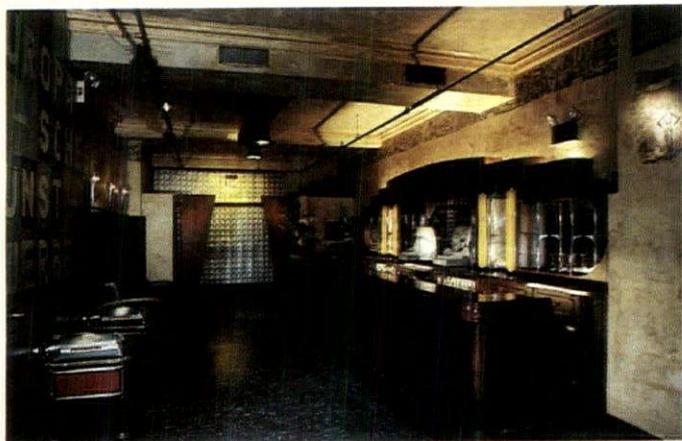
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Nightclub lighting more than Haus dressing



Project: Big Haus nightclub
Location: 179 West Broadway, New York City
Clients: Marc Cosnard des Closets and Kurt von Schlossberg
Lighting Designer: Robert Singer & Associates
Interior Designer: Jane Millet
Photos: Thomas Leighton

When interior designer Jane Millet renovated the Big Haus nightclub, she decided to preserve the old 1920s bar and rebuild the rest of the space to match the bar's industrial Bauhaus style. "The customers here are from the New York artist crowd," she says, "so I chose a historic style that's now very popular with artists. Designers in the Bauhaus days were fascinated by industrial design, so all the art and furniture here is either authentic Bauhaus or made from industrial objects." To match the mechanical image of the new decor, Millet collaborated with lighting consultant Robert Singer to design several offbeat fixtures made of materials from unexpected sources.

For instance, the main fixture that lights the Big Haus is an old air duct, with light instead of air pouring out through the registers. Singer says, "When the bar is crowded and thick with cigarette smoke, these lights create an eerie effect." Inside the two registers are PAR 38 spots that aim light down through the grilles. Inside one end grille are MR16 heads that create pools of amber light on the entry partitions and an even wash of light on a textured metal wall.

Millet is particularly proud of the three sconces on the wall near the entrance, constructed from things she found in a junkyard. "They're made from steel antenna parts and steel-mesh gas cable lines, combined to make an upright. The upright source is in the cable and aimed at the ceiling. In the vertical antenna part are two headlights that create a crucifix of light on the wall. They almost look like they could be from the movie

Blade Runner. I like working with found objects; they're more interesting than catalog fixtures." Another fixture you'd never find in a catalog is the Electrolux bench, with arm rests made of 1930s vacuum cleaners. From inside, quartz lights with diffusion filters pour light through the holes in front where hoses used to be.

The designers wanted the lighting to be amber in color and comfortably residential in feeling. The color comes from linear incandescents that uplight the space from behind the bar. "When you put them on dimmers," Singer explains, "you can turn them up or down without losing the warm red glow. It was important to have all the lights on individually controlled dimmers. This allows us to balance all the lighting and create the unusual texture of light that characterizes the Big Haus."

Perhaps most striking of all the bizarre fixtures in this space is the Medusa-like fixture suspended over the dance floor. It's made of twisted chrome gooseneck material in lengths ranging from 6 inches to 2 feet. At the end of each "snake" is an MR16 lamp. Singer says, "It creates visual stimulation with light shimmering off the goosenecks and reflecting off the tin ceiling. That fixture was a lot of fun to make."

And the result is fun, too, for the New Yorkers who enjoy the unusual ambience. In the smoky, amber light of the Big Haus they find a blurred distinction between serviceable lighting fixtures and eerie decoration.

—B.J.N.

For product information, turn to page 118 and see Manufacturers.

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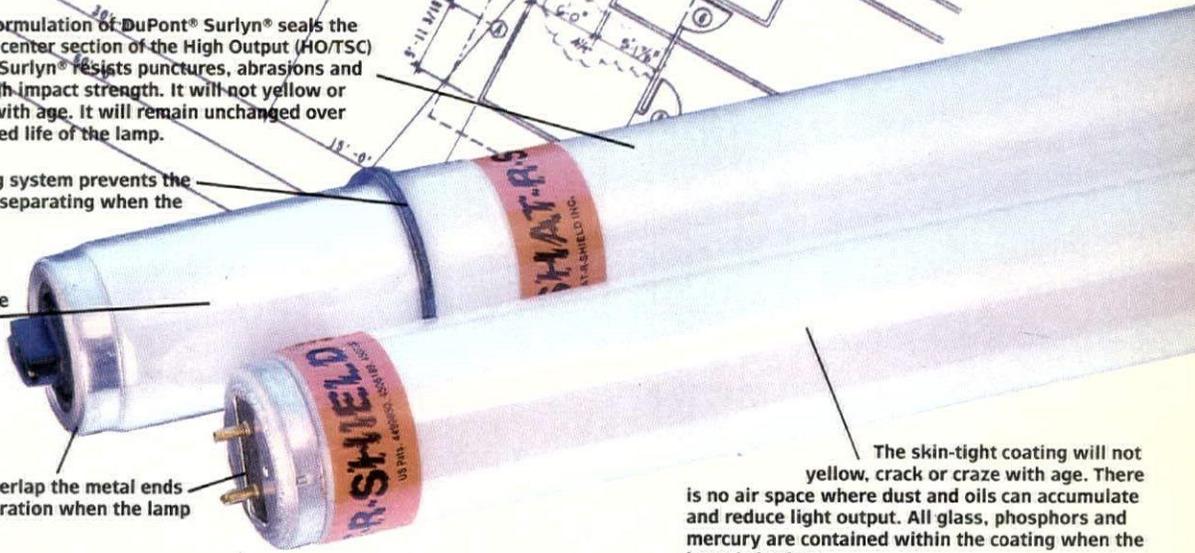
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Circle 21

Gwathmey experiments with luminous ceiling



Project: Due
Location: 1396 Third Avenue, New York City
Client: Maro and Luigi Lusardi
Architects: Gwathmey Siegel & Associates; Charles Gwathmey, partner-in-charge; Jose Coriano, associate; Edward Linenschmidt, associated architect
Electrical Engineer: Thomas Polise Consulting Engineers
Photos: Norman McGrath

Charles Gwathmey's lighting design for Due, a restaurant tucked into a space 80 feet long and only 14 feet wide, is based on the idea of a skylight. "When you're in the space, you have no sense that an apartment building is above you," he says. "The skylight idea produced the notion that a luminous ceiling would be the primary source of light."

A continuous, dimmable fluorescent strip runs along each wall, mounted above frosted glass panels. The light bounces off a white-painted ceiling and down through the glass into the main dining area. After some experimentation, Gwathmey chose to cover each lamp with two gel sleeves that balance the unwelcome color effect of the glass. "We had no choice on the glass," says Gwathmey; "it had to be tempered, and when it's frosted, it has a green tint. So, we had to knock out the green and to knock out the cool of the fluorescents."

"We tried various lamp colors, and in the end we found we could control the color rendering better by just using daylight bulbs and adjusting them with gels. It seemed that amber and pink together, interestingly enough, knocked out the green and made the light very soft."

The luminous ceiling, accent pinspots, bar lighting, and lighting for the back-room dining area are separately controlled by slider switches. "We didn't use presets because we wanted to have options depending on the day, the weather outside, and the mood. We marked the switch to indicate where we think the best settings are."

Of the restaurant as a whole, Gwathmey says, "I look at it

as an experiment that worked out very well. Some people don't take risks; they design what's known. I think the opportunity in a project like this is to clearly risk in the design and to create an environment that, however small, is unique.

"I learned all about the idea of architectural graphics and how intensive they can become, yet still reconcile themselves in an overall sense of calm and unity. Graphically, the patterns of the wall paneling pull up into the skylight; the gridding of the skylight is a direct descendant of the wall. The striping of the floor pulls the skylight back down to the floor. That whole rhythm is simultaneous; you experience it together and you sense it together.

"To me, the final test is whether people enjoy being in the space and whether it makes one feel calm rather than frenetic. I think it works. I think it actually straddles that line. It's very provocative visually, but in the end it's very calm.

"The skylight is the primary idea of the space, and everything else is supporting it. In the end, when you come to the ceiling, all of the regulating lines, all of the graphics of the floor, all the graphics of the wall are finally summarized and made the most abstract and simplest in the skylight. It helps to resolve the whole idea."

—G.F.

For product information, turn to page 118 and see Manufacturers.

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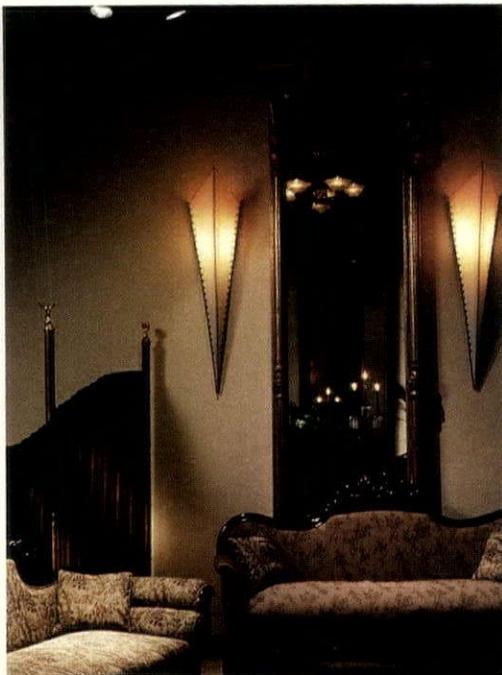
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Comfortable dining in a homey French bistro



When New York restaurateurs compete for originality in theme, regionalism, or lighting design, it is the customer who ultimately wins because of the growing variety of restaurants. In Espace, the unusual atmosphere of a Parisian bistro was the result of collaboration between the Walker Group/CNI design firm and Johnson/Schwinghammer Lighting Consultants. They created a residential approach to dining by making small, intimate subareas within the restaurant and illuminating them with soft, warm lights.

Customers first encounter this homey ambience in the lounge while they wait for their tables. Antique furnishings and a prominent, refurbished chandelier give the room a homey, inviting feeling. Once inside the main dining room, visitors are surrounded by an exhibit of artwork. To illuminate the frequently changing display, R lamps are mounted on a flexible black track that is suspended from a black ceiling. Also on tracks, small, standard-voltage 75-watt PAR 16 halogen lamps shine pools of light on the tables.



A string of small incandescent lights encircles each column in the main dining area. The designers provided a little trough around the column for the lights and covered it with a corrugated copper screen. The effect is an uplight on the column and a backlight for the copper mesh.

Perhaps the most attention-grabbing lighting fixtures in Espace are the decorative fiber glass sconces. Their long narrow form was inspired, in part, by the need to accommodate existing sconce locations that were too high for the restaurant's cozy image. But instead of moving the existing junction boxes, the designers fabricated long sconces that start high but pull the light down the wall and bring the fixtures down to a more human scale. A thin white fiber glass shade, fitted with black grommets, is laced to a metal V-shaped frame. This assembly covers a standard porcelain two-lamp socket with a red incandescent lamp in the top and a clear one in the bottom, giving the space a warm and intimate character.

William Schwinghammer says of these sconces, "They were inspired by the image of a 1950s lamp shade in a family living room. You feel a glow of warmth from the red lamp. I wanted the sconces to give the space a draw, and it works. People who come here notice those fixtures and never forget them."

—B. J.N.

Project: Espace

Location: 9 East 16th Street, New York City

Client: Andrew Silverman

Lighting Designer: Johnson/Schwinghammer Lighting Consultants, Inc.

Interior Designer: The Walker Group/CNI; Martin Jerry, Director of Design

Photos: Robert Miller

For product information, turn to page 118 and see Manufacturers.

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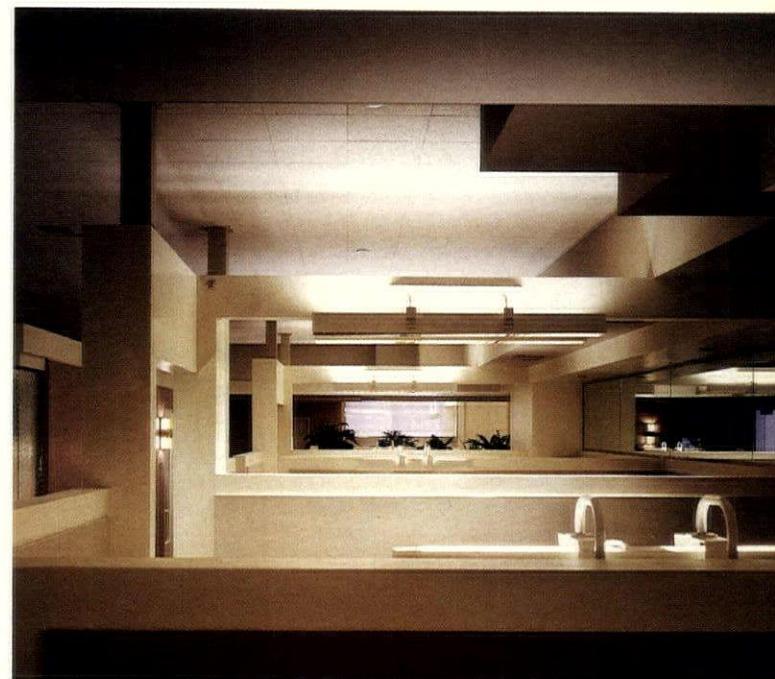
Corporate offices designed as city of lights

ARTICLE BY
BARBARA-JO NOVITSKI

PHOTOGRAPHS BY
MARK ROSS

When daylight is a scarce commodity and visual excitement an important design criterion, it takes special collaboration between designers and lighting consultants to create a comfortable yet dynamic space. For the corporate offices of BBDO, the designers wanted to maximize daylight distribution. This was difficult because of the deep building plan; only one of every three or four offices could be on the perimeter. And they wanted to develop an upscale, stimulating space equal in imagination to the creative work of the employees of this large advertising agency. The Space Design Group and Wheel Gersztoff Friedman Shankar combined forces and developed a solution that maximizes shared light, sculpts a dynamic space, and introduces new applications for recent innovations in lighting technology.

To enhance daylight penetration from the perimeter offices to the internal spaces, the designers developed a complex hierarchy of office wall types. Marvin Affrime of The Space Design Group explains that each type was crafted from a different configuration of glass and drywall. "We designed the perimeter office walls and the interior office walls from the same vocabulary. Above eye level the glass is clear, and below that level it's translucent.



By borrowing light throughout, we get interesting effects from the light that comes in through the transom or through the translucent glass." Thus daylight comes through the wall that separates the perimeter offices from the interior without sacrificing visual privacy. The abundance of shared light makes the interior and perimeter offices look the same. "There's a glow from both of them, and during the daytime, you can't tell which is inside and which is outside."

Project: BBDO Worldwide offices

Location: New York City

Designers: The Space Design Group

Lighting Designer: Wheel Gersztoff Friedman Shankar Inc.; Robert Friedman, IALD, partner-in-charge

Electrical Engineer: Cosentini Associates





Another important design feature that makes the 332,000-square-foot space interesting is the variation in ceiling heights. Affrime explains, "We started by engineering the space in collaboration with the mechanical engineers. We routed the air conditioning duct work in such a way that we could create some surprisingly tall spaces on the interior. We then played up to those higher ceilings by suspending the light sources so they seem to float in the space." The fixtures throw light up onto these higher ceilings as well as down onto the work surfaces. This direct-indirect lighting system adds the right balance of brightness and animation. "I love ceilings that are lighted," says Affrime. "With that glow of light on the ceiling, you get variety and you notice the fixtures. The look from the street at night is lovely. Usually, when you look up to a space at night, you see hard, bright lights and, in contrast, a black ceiling. But when you drop the fixtures and light the ceiling, the whole effect is softer. You see the play of ceilings and the sparkle of light."

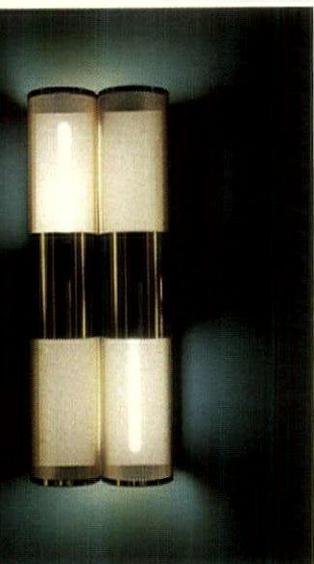
A cityscape image pervades the BBDO corporate offices. Decorative sconces at office doors give the appearance of informal residential entries. Lighting designer Robert Friedman explains, "This streetscape

Borrowed light creates interesting effects through clear and translucent glass (left). Perimeter office walls and interior office walls share a common vocabulary of glass and drywall. The conference room is one of the few places where incandescents were chosen over fluorescents. Inexpensive, residential downlights in the ceiling have rings attached for needed shielding. This economical shielding solution adds design interest to the ceiling. Suspended fixtures seem to float in the space as they uplift the high ceilings (right). The direct-indirect lighting system adds the right balance of brightness and animation.

metaphor dispels the claustrophobic feeling that might have resulted from the high percentage of private offices." The metaphor continues in lobby areas, where torcheres mark the public walkways.

Exploring New Technology
Friedman and Affrime used the BBDO project as an opportunity to explore the design possibilities of biaxial compact fluorescent lamps. They knew that, in such a large space, the

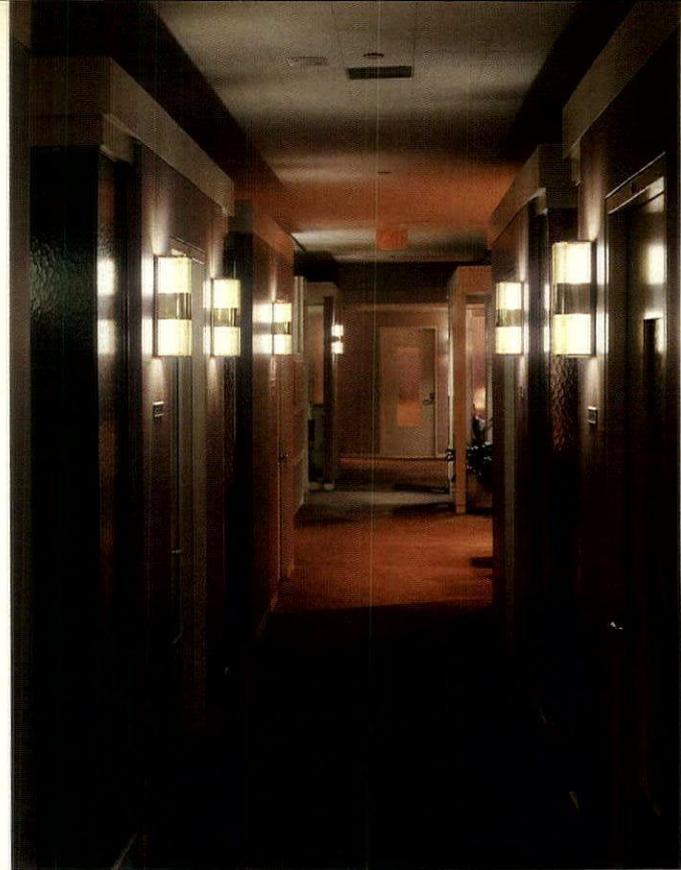




Fixtures (above left) are mounted on low walls with a shepherd's crook." Each office type is distinguished by its architecture and by its arrangement of fixtures. Decorative sconces at office doors (above right) give the hallways the appearance of an informal streetscape. The sconces were designed specifically for the biaxial compact fluorescents. They're formed of perforated metal with a brass binding at the top and bottom. In the middle, the brass is used as an opaque material to conceal the socket and the wiring chamber.

energy cost-savings over incandescents could be enormous. They were also interested in the design flexibility afforded by the lamps' size. Affrime explains, "We saw this as an intelligent, refined, compact light source and decided to take advantage of the small package by giving it a new wrapping. We tried out various shapes and created a new light fixture." The lamps are so compact that the cross section of the fixture is only about 4 inches wide by 3 inches high. Just as the entire space is unified by a vocabulary of walls and glass, it is also characterized by a family of these light fixtures, which demonstrate variations in form, length, and mounting systems.

Friedman explains, "The basic lamp is less than 18 inches long, and we use them in several lengths. A two-lamp fixture is about 3 feet long, a four-lamp fixture is 6 feet long, and so on. We also use several mounting systems. We have pendants suspended from ceilings and overhead valances. We have other fixtures mounted on 5-foot walls with a short 'shepherd's crook.' In a lower wall, in a corresponding architectural position, the fixture has a longer shepherd's crook so that it ends up at the same 5-foot height. Each office type is distinguished by its architecture and



PHOTOS ON THIS PAGE: TOBI SEFTEL

its arrangement of these fixtures." To increase flexibility in furniture placement, the fixtures were located in sometimes unconventional places. For example, a fixture might be on the far end of a desk instead of over its center.

Friedman took special care in the technical design of the innovative fixtures. "You need good angle shielding on these fixtures to avoid glare on computer screens and other work surfaces," he says. "These high-lumen sources require better shielding than standard fluorescents because they're much brighter. You've got to treat them more like incandescent lamps. We're not trying to imitate incandescent light, but we've discovered that the most attractive qualities of incandescents — intensity, color, flexibility in placement — are also found in these compact fluorescents."

Affrime explains that by applying the vocabulary of ceiling, fixtures, and glass walls to the entire space, he was able to create a cohesive design. "It's all one look. The lighting design permeates the entire space, from the reception area to every executive office. Everyone up and down the ladder is treated to the same concept. One of the advantages of this is greater flexibility. We can double or halve offices without changing the

lighting, air conditioning, sprinklers, ceiling heights, or flooring."

Perhaps the most striking aspect of this unusual corporate office design is that, even though the design image is unified, the lighting is not uniform. Affrime explains that this humanizes and vitalizes the space. "We prefer patterns of light and shadow to the regimented, by-the-numbers kind of treatment. We didn't have a budget for fine cabinet work or wall materials that can add texture. Instead, the excitement in this space comes from the animation and variety of the solids and the voids and from the unique texture of the lighting." ■

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

For product information, turn to page 118 and see Manufacturers.



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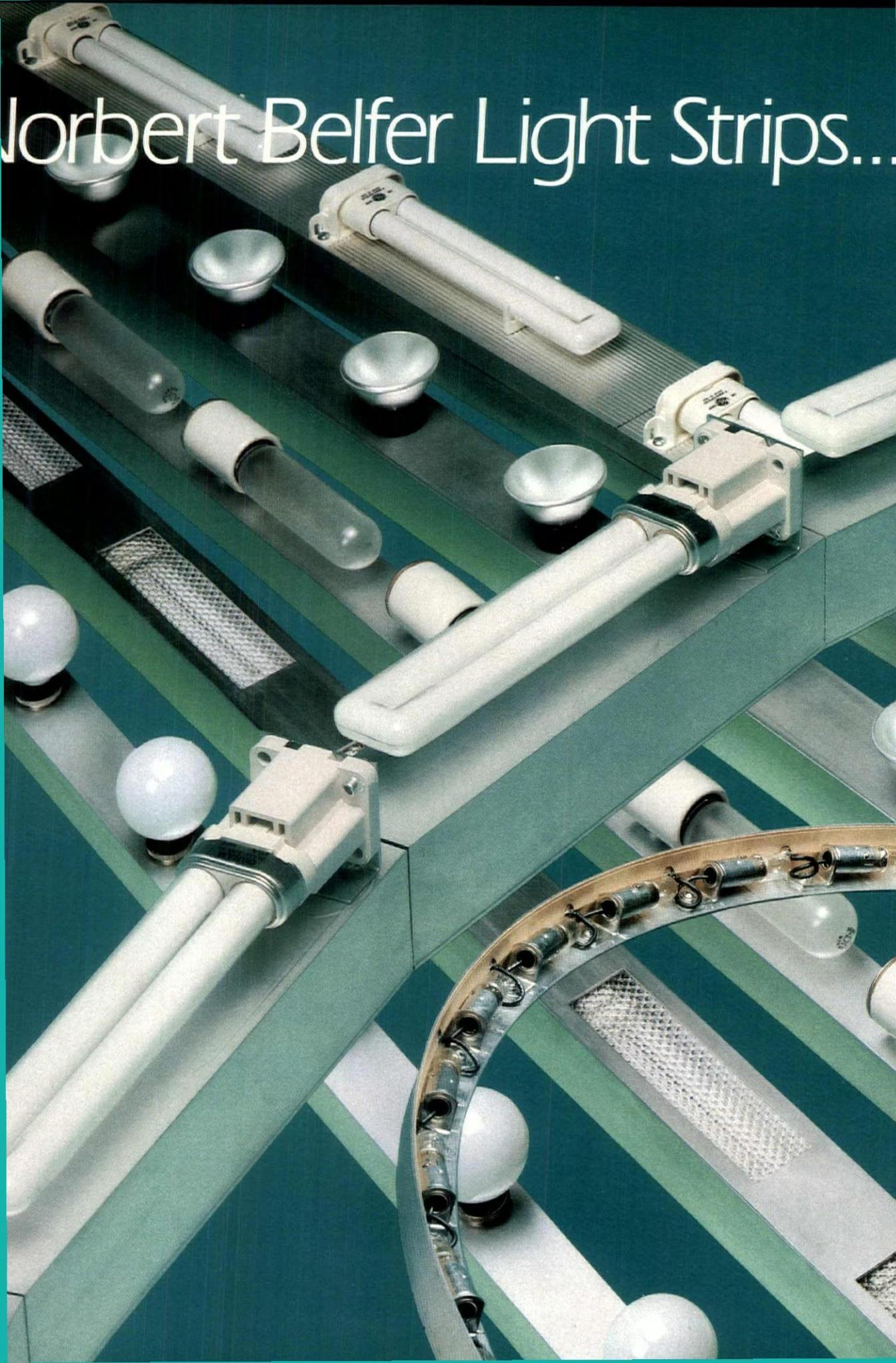
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An old technology makes new promises for saving energy

A new adaptation of a 35-year-old technology may revolutionize fluorescent lighting in future buildings. This high-frequency lighting system with centralized, direct current, power distribution equipment promises large energy savings over conven-

Barbara-Jo Novitski

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

Project: Crabtree Technology Building

Location: Provo, Utah

Client: Brigham Young University

Electrical Engineers: John Clegg, Ariel Davis

tional systems. A project demonstrating the system designed and implemented by John Clegg and Ariel Davis, electrical engineering professors at Brigham Young University, recently won a U.S. Department of Energy "Special Award for Energy Innovation."

In addition to saving energy, the system provides several other benefits. It greatly reduces equipment replacement costs. It virtually eliminates the stroboscopic flashing in conventional fluorescent lamps that bothers some people. Because

much of the equipment is isolated from inhabited spaces, the lights are quiet, and less of the generated heat is a burden on the air conditioning system.

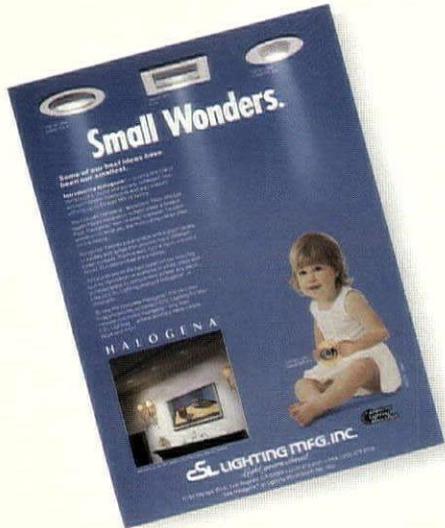
Because the central power distribution equipment provides surge protection to the entire

In the Crabtree Technology Building at Brigham Young University, a high-frequency fluorescent system demonstrates a new energy-saving approach to lighting and power distribution.



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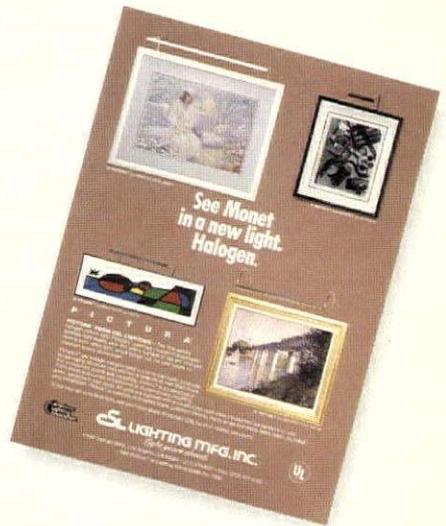
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building, computers and other delicate equipment are also protected. The power distribution system works well with a battery system, so it can adapt to emergency systems, solar collectors, and off-peak power use. In spite of many novel characteristics, the system uses ordinary fluorescent lamps. "Our system doesn't show," Professor Clegg explains, "and many people wouldn't even know it's there, unless they notice the unusual silence."

The chief disadvantage of this system is that it is best suited

for new buildings. Clegg says, "In a retrofit situation you would have to replace apparatus you've already bought and perhaps change some existing wiring. It's better to install this system in the beginning if you can."

The demonstration high-frequency fluorescent lighting system was installed in the Crabtree Technology Building at Brigham Young. The system engineers designed a centralized power distribution system that converts the ordinary alternating current that enters a

building into the direct current needed by the ballasts. This equipment has longer life, fewer components, and substantially lower energy consumption than conventional systems. The Crabtree Building has been occupied and operating successfully since the fall of 1985.

To appreciate how this system reduces equipment replacement costs, it is necessary to understand the value of system organization. Clegg classifies lighting equipment in two categories. Type 1 equipment is hardware required in great abundance, such as lamps, sockets, ballasts, and fixtures. When Type 1 equipment deteriorates, it is usually replaced, not repaired. Type 2 equipment, in contrast, is installed permanently and expected to last indefinitely. It is repaired, if necessary, not replaced. This category includes transformers, electrical panels, and circuit breakers. When both types are together in an assembly, however, Type 2 equipment may be unnecessarily scrapped when the more expendable Type 1 equipment fails. By separating the two types, and by putting as many components as possible in the Type 2 category, system designers can minimize waste and even improve the reliability of Type 1 assemblies by simplifying their construction.

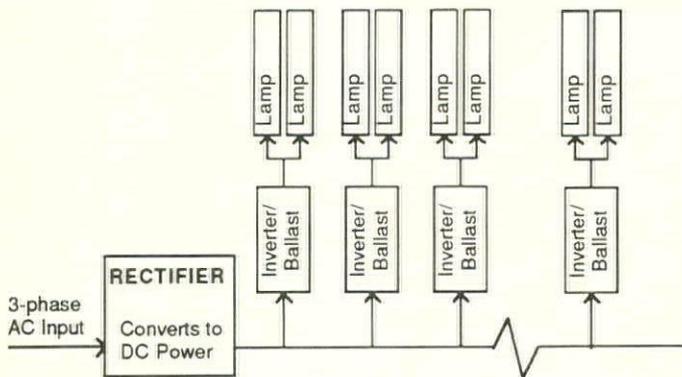
Clegg explains how this principle applies to his project. "It's been known for nearly 40 years that fluorescents run more efficiently on higher frequencies. But there are many problems with running a high-frequency lighting system on conventional alternating current. When one large high-frequency generator is used to power an entire building, the whole building has to be shut down for several days if the generator fails. During the past 10 years, the semiconductor industry has developed inexpensive components that make small high-frequency generators practical. With transistors in

small units running one or two lamps, it's not disastrous if one of them fails. But these units can be unreliable. And, like most electronic equipment, they often cause a low power factor; that is, they cause a decrease in the proportion of incoming power that is usable."

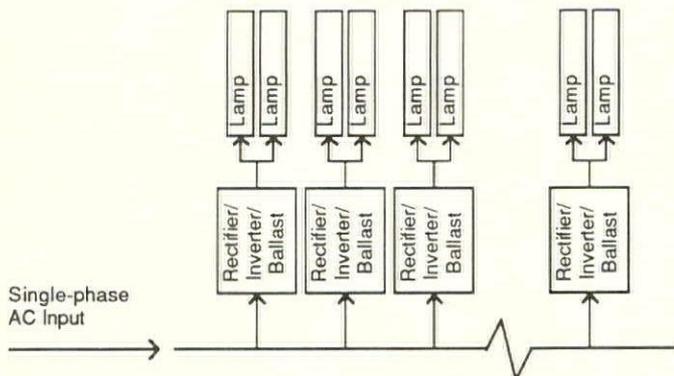
Clegg continues, "Our system uses several three-phase rectifiers in a large building. The rectifiers convert alternating current to direct current, which is then distributed to the light fixtures where the high frequency is generated. Three-phase rectifiers inherently operate with high power factors. They are designed as Type 2 equipment and are as reliable as any electrical equipment ever is. The system is more reliable because the rugged hardware is kept separate from the more delicate electronic parts and the high-frequency generators."

With all these obvious advantages, why hasn't the technology caught on? Clegg explains, "It simply hasn't been widely available yet. Where it has been offered, it has been well accepted. It is up to the industry now to catch up with consumer demand." Nevertheless, the promised cost savings and other benefits could outweigh the costs of encouraging the industry to adopt a new way of doing things. It may take some time before this new approach becomes commonplace. The more that successful demonstration projects are built and granted national awards, the sooner that time will come. ■

For product information, turn to page 118 and see Manufacturers.



In the Crabtree Building, incoming three-phase alternating current is converted to direct current in a durable, centralized rectifier and distributed to inverter-ballasts, which convert the direct current to high-frequency alternating current at the fixtures. In upcoming installations, each inverter-ballast will serve up to 10 lamps.



In conventional buildings, the conversion from incoming alternating current to high-frequency power happens at each fixture, which requires a greater investment in expendable hardware than the system used at Brigham Young University.



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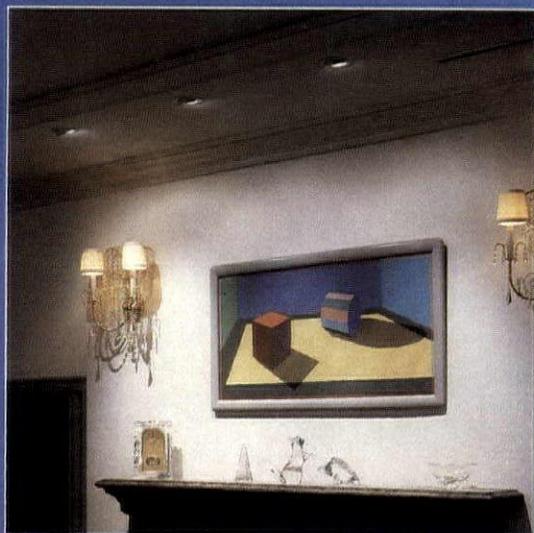
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Circle 27

Software Reviews

Photometric data on floppy disks are widely available from lighting manufacturers. Most dedicated lighting calculation programs include a utility for manipulating photometric data. It is possible, using DOS commands and a word processor or line editor, to view, copy, type, move, and print the columns of numeric values that make up the photometric data files. But the result is still a table of numbers.

In publication LM-63-1986, the Illuminating Engineering Society (IES) recommends file formats for transferring photometric data. Reading this IES document is the first step for designers who are interested in making greater use of available photometric data files.

Photo Tools

Designers who want to be able to visualize photometric data may want to try Photo Tools, a series of modular, stand-alone utility programs. With these utilities, photometric data can be more closely linked to the performance of an actual luminaire.

The program can be used to calculate both indoor and roadway lighting.

The Photo Tools program prepares printed reports, graphic displays, and plots of photometric performance on an IBM PC or compatible. It can be used for indoor lighting and roadway lighting. Some of its program modules are briefly described below.

Photo Tools

Charles H. Loch, PE
2726 Winding Trail Place
Boulder, CO 80302
(303) 443-0449

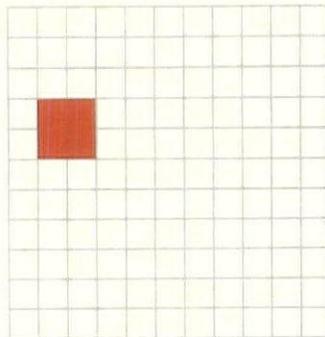


Photo Tools for working with photometric data

David Lord, PhD

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

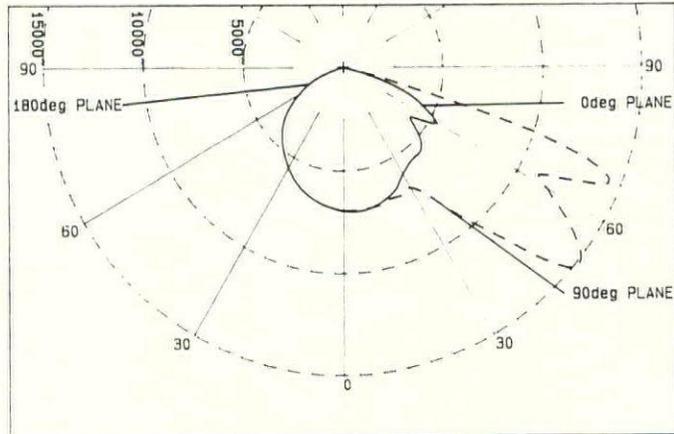
CdPolar. Plots polar candela curves on a color graphics display or on a plotter. The curves are graduated in 1-degree vertical increments around the luminaire. A simple polar grid in a contrasting color serves as a background scale for the curves.

IndorCd. Prepares a formatted candela table for the printer.

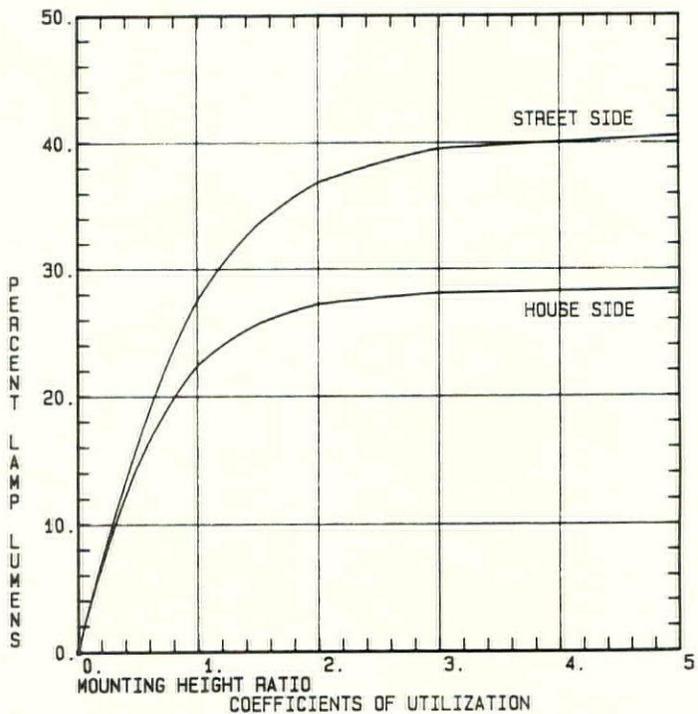
IndorCU. Prepares a coefficient of utilization table for typical room reflectances over a full range of room cavity ratios.

IndorEff. Prepares a report on luminaire efficiency, a zonal lumen summary, and spacing criteria for key planes. If the luminaire dimensions are in the file and the opening is a flat plane, the program also calculates average luminance.

RoadCd. Prepares a formatted candela table, arranged in row and column coordinates for the printer.



These candela curves, plotted by the CdPolar utility, are printed out in three colors when a color plotter is used.



Coefficients of utilization and lumen distributions are plotted in color when data is processed using the RoadCU utility.

RoadCU. Prepares a roadway coefficient of utilization and lumen distribution table for several widths of roadway, with data shown for both street side and house side.

RoadCUp. Plots the coefficient of utilization curves for both the street side and the

house side of the luminaire on a color graphics monitor or on a plotter. The program will handle input files with axially symmetrical and bilaterally symmetrical data.

RoadIso. Plots an isoline illumination curve for a single luminaire in the center of an area.



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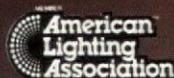
6.37" x 1.56" SQ.
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10" x 1.56" SQ.
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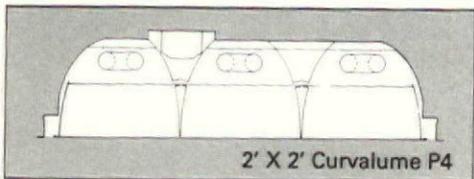
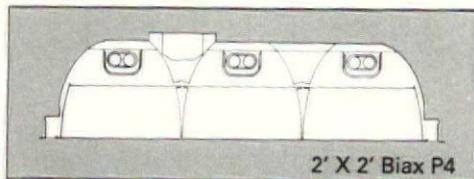
Circle 28



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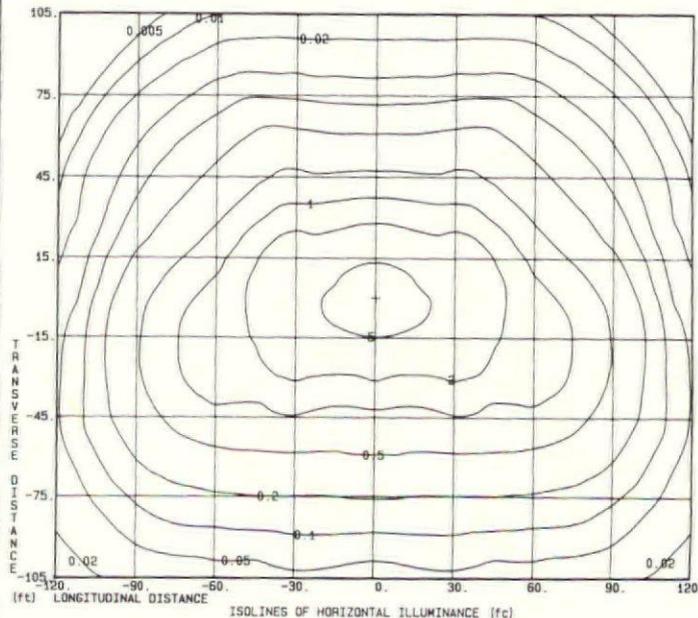
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Circle 29



Isoline illumination curve plotted in color using the RoadIso utility.

RoadType. Prepares a tabulation of longitudinal, transverse, and cutoff classifications, as well as total lumens, maximum candelas, and angles.

Before you use any of the Photo Tools, the CONFIG.SYS file on your computer must be modified to accommodate the device drivers. Unfortunately, the instructions for this operation come at the end of the user documentation, which prevented me from starting up the software in less than 10 minutes. The setup sequence is a minor inconvenience that has offsetting rewards, notably easy access to color graphic display of information. Within 20 minutes of transferring Photo Tools to my hard disk, I felt comfortable with each of the modules and performed all of the tasks just described in short order.

A useful Photo Tools feature is the check that it performs on photometric data. It examines the data for negative values where there should be positive numbers. It checks for out-of-range values for indices such as

photometric type and unit-of-measure key. It checks angle and candela arrays.

If the program finds an error during the data check, it displays a message showing the error and the nature of the problem. The user may then examine the photometric data file and make any necessary corrections.

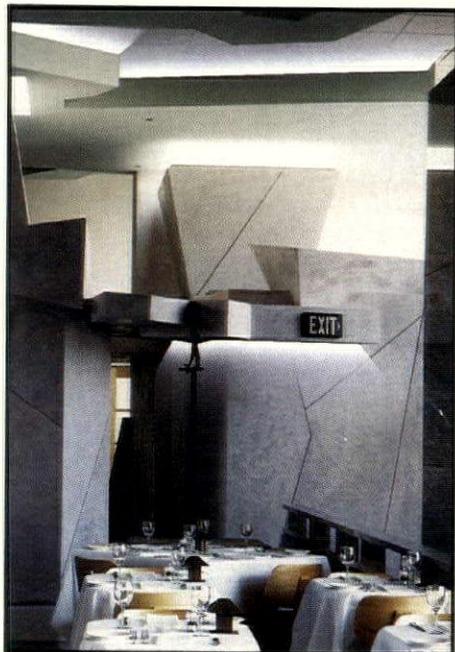
Although Photo Tools is not essential to good lighting design, it is the sort of software that experienced professionals will want to own to round out their analytical skills. ■

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

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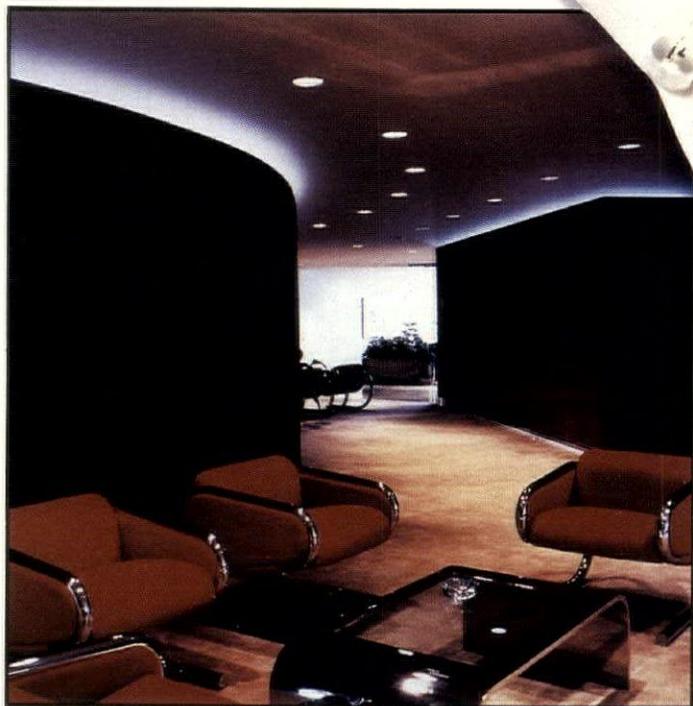


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The Lighting Design Professional

It's no wonder office lighting is the most widely taught and frequently written-about topic in the field of lighting. As industry changes from manufacturing to service, more Americans work in offices and officelike environments. Each worker's productivity is affected by, among other things, the quantity and quality of illumination. A major development in office lighting is reported as quickly in the *Wall Street Journal* as in the architecture and lighting press.

Energy consumption also keeps owners and managers interested in lighting. Electric lights consume 40 percent of the energy used by a typical office building; they can easily cost \$1 per square foot per year to operate. The potential escalation in costs due to inflation and world energy prices is frightening.

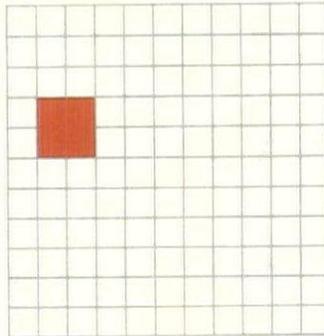
The most interesting thing about office lighting, though, is how much the equipment has changed since the energy crisis of 1973. New fluorescent equipment with improved lamps, ballasts, and fixtures can operate using half the energy of popular equivalents used 15 years ago.

This column, the first of three devoted to office lighting, discusses useful equipment and technologies. The second will present lighting design techniques for open and closed offices; the third will discuss conference rooms, executive suites, and other related facilities.

Three Source Types

Everyone knows that incandescent lighting offers the best color and the greatest ease of control, making it the aesthetically preferred light source. But incandescent or halogen lighting is too inefficient for general office lighting, and it should be used only in special spaces.

Many traditional incandescent applications, such as downlighting and accent lighting, still have uses. Incandescent lighting



Lighting equipment for offices

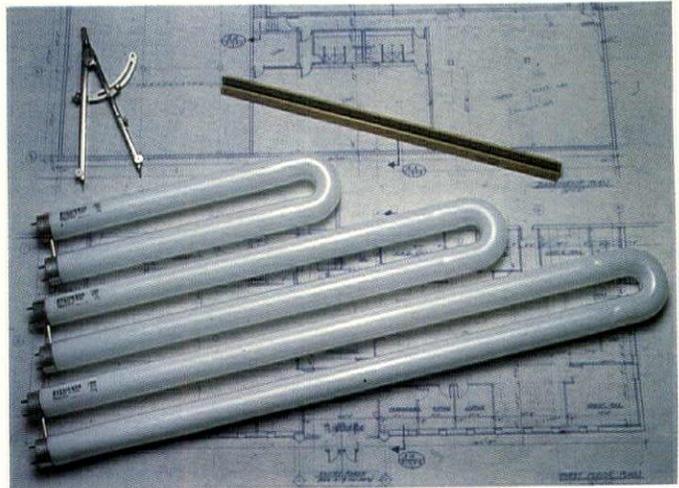
James R. Benya, PE, IALD

James R. Benya is senior principal and CEO of Luminae Souter, San Francisco. He is on the faculty of California College of Arts and Crafts, is active in IES and Designers Lighting Forum of Northern California, and teaches lighting design classes for the ASID, IBD, and the American Lighting Association.

is called for where dimming is required, such as in audiovisual or board rooms, or in situations requiring precise control and tight beam focus, such as art accent lighting. For general lighting of any space, incandescent and halogen can often be replaced with no sacrifice of quality.

High intensity discharge (HID) lighting is energy-efficient and often cost-effective, but it has many drawbacks. Warm-up time restricts the range of control devices that can be used, precluding occupancy sensors and other state-of-the-art techniques. Also, emergency backup of HID sources is extremely expensive.

Fluorescent lighting is both



Many new fluorescent lamps, like these T8 U lamps, use energy more efficiently and have better color rendering than their predecessors.



Compact fluorescent lamps outperform incandescents in many office applications.

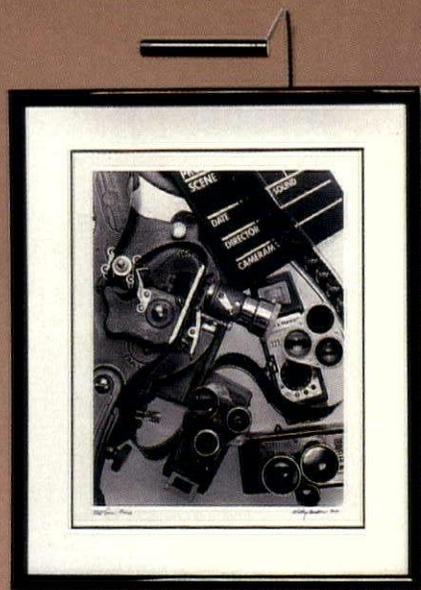
efficient and easy to control. In addition, inexpensive battery packs turn any fluorescent fixture into an emergency fixture without unsightly wall-mounted emergency lights or expensive central battery systems. The only real drawbacks are the cost of good dimming equipment and the fact that fluorescent is not a true point source for accent lighting.

Fluorescent Lamps
Fluorescent lamps have provided the bulk of the lighting in offices for one simple reason: in spaces with ceilings less than 12 feet high, fluorescent lighting produces the most foot-candles per dollar.

Among fluorescent lamps, the 4-foot, rapid start F40 has emerged as the most popular. Its dimensions work perfectly

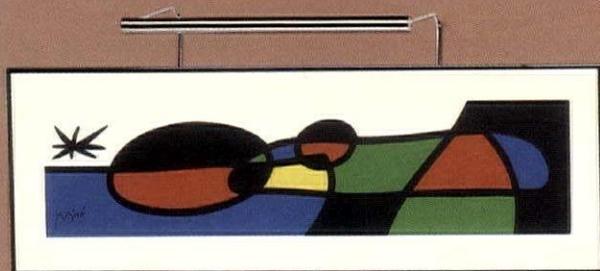


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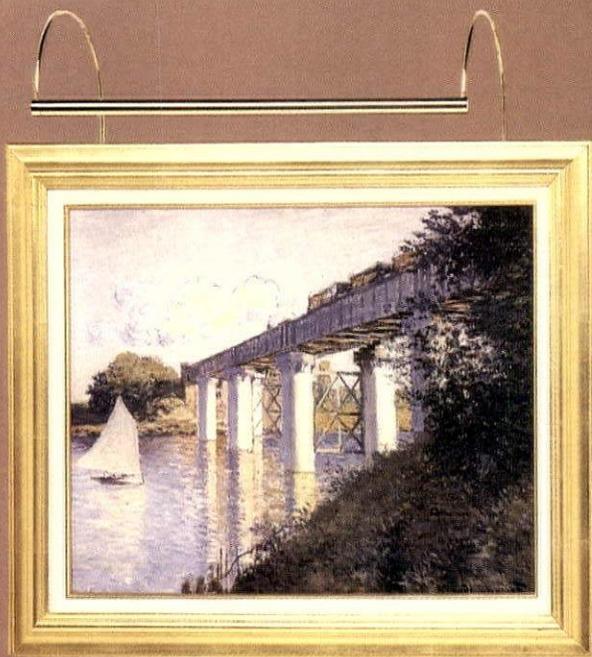


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with an architectural favorite, the widely used 2-foot by 4-foot ceiling grid system. Rapid start F40 lamps also typically have the quietest ballasts, the longest lamp life, and the highest lamp efficacy compared with preheat, instant start, and other types.

Unfortunately, the extremely high illumination levels recommended for offices in the 1960s encouraged manufacturers to make cheap, poor-color lamps, especially cool white. (By generating a disproportionate amount of green-yellow light, cool white lamps yield more lumens than better balanced lamp colors.) These horrid lamps, used throughout the world, have given fluorescent light an undeserved reputation for poor color. Today, building owners expect higher quality in office spaces. The designer can choose from several very important lamp options.

Better color rendering. All modern fluorescent lamp types offer choices of color temperature and color rendering. For economy, the cheaper cool white and warm white lamps are still available. A modest expenditure increase, however, buys a tremendous improvement in color (see *The Lighting Design Professional*, April 1988).

Smaller diameter lamps. The T8 fluorescent tube was

introduced in the United States about 1982. It requires a special 265-milliamper ballast, but the lamp fits most luminaires; it increases both lamp efficacy (by up to 15 percent) and luminaire efficiency (by 5 to 7 percent in some cases). T10 lamps, which operate on standard T12 ballasts, offer higher efficacy and higher lamp lumen output than standard lamps.

Short, full light output lamps. The T8 lamp is also available in the familiar U shape with narrow leg spacings, giving designers several options in 2-foot lamps for the increasingly popular 2-by-2 grid ceiling and fixture. New high-powered, rapid start compact lamps, such as GE's Biax, offer high lumen packages in lamps as short as 18 inches. These plug-based lamps operate at 18 to 40 watts.

Compact fluorescent lamps. Since 1981, a wide variety of low-lumen compact fluorescent lamps have been introduced. Many can be used in applications that were limited to incandescent lamps 10 years ago, such as downlights and sconces. Twin-tube lamps from 5 to 13 watts and quad (double twin-tube) lamps from 10 to 26 watts are included in this group.

It is interesting to note that many of the new lamps, such as T8, T10, and compact fluores-

cents, are not offered in poor color rendering versions. This is not only fortunate, but also necessary, because phosphors burn hotter in a smaller diameter tube. Only the improved color rendering triphosphors can take the heat and give normal lamp lumen depreciation (LLD) performance.

Ballasts

All fluorescent lamps need ballasts for operation. Ballasts regulate the flow of electrical power into the lamp. In the process, ballasts consume some power of their own, primarily due to internal resistive losses. The standard two-lamp specification-grade ballast of 1975 consumes 12 to 16 watts of power in addition to the 80 watts that actually generate light. Today there are several other options.

Standard energy-saving ballasts. In 1975, these were known as *low heat* or *super premium* ballasts. Made of slightly more expensive materials, energy savers consume 6 to 8 watts while operating two 40-watt lamps. Compared with standard ballasts, they save enough energy to pay for their additional cost in less than a year.

The savings are so inexpensively obtained that seven states (California, Connecticut, Florida, Massachusetts, New York,

Parabolic fluorescent troffers are easily the most popular fixture type for general illumination in today's offices.

Rhode Island, and Wisconsin) require that all new or replacement ballasts for most commercial troffers be energy savers. Less efficient ballasts are on the way out; in 1990, federal law will impose similar requirements on the entire United States.

Heater cutout ballasts.

After a rapid start lamp has begun operating, heater cutout ballasts turn off the power to the lamp's small filament cathode heaters. They save about 2½ watts per lamp.

Electronic ballasts. Electronic ballasts started to become available in the late 1970s, but their high cost and poor reliability turned away many specifiers. Through modern electronics and offshore manufacturing, reliable, high-quality electronic ballasts are now available at moderate cost premiums. The advantage of electronic ballasts is high-frequency operation, which produces more lamp lumens per watt.

For fluorescent dimming, electronic ballasts are the only choice. Adjustable output and stepped light-level models allow designers to reduce lighting levels and save energy.

Luminaires

The computer age made using video display terminals (VDTs) and other types of cathode ray tube displays the second most common office visual task. (Paper tasks, such as ordinary reading and writing, still prevail.) VDT screens are especially sensitive to the glare of plastic-lensed fixtures, so modern offices need new lighting options that eliminate this type of disability glare.

Parabolic troffers. Parabolics, easily the most popular



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luminaires for general lighting today, are sharp cutoff, recessed downlight troffers. Instead of a lens, a parabolic fixture has a large-cell louver of interlocking polished aluminum blades, shaped like intersecting parabolas in cross section.

Parabolics offer reasonable control of disability glare, and they are extremely efficient. Deep-cell parabolics, with louvers $3\frac{1}{2}$ to 4 inches deep, tend to have the best glare control and most attractive appearance, but they sacrifice efficiency somewhat. Medium-depth parabolics, with louvers about 3 inches deep, generally strike the most effective compromise between appearance and efficiency. Shallow-cell louvers (2 inches or less) are too open and don't hide the lamps well.

Parabolic louvers are offered in several finishes. A standard semispecular finish, the most common one, minimizes hot spots on the louver and has enough brightness to make the fixture appear to be turned on. But this finish also causes some reflected fixture images on VDT screens.

Specular standard louvers make the ceiling appear much darker, minimizing VDT screen images. But the fixtures appear turned off from a distance, and they have hot spots that glare in the eyes of viewers looking up from below.

Specular premium louvers usually have a different, more complex shape and a specular finish. They work very much like specular standard louvers, except that they generally eliminate hot spots.

Parabolic louvers are also offered in tinted anodized finishes, such as gold. A gold louver may appear to warm up a cool white lamp, but it is much better to use a clear (silver-colored) louver with a lamp of a good color.

High-efficiency low-ceiling uplights. Until recently, indirect lighting could work effi-



With the right luminaires, indirect lighting is now possible even in offices with typically low ceilings.

ciently only with uncommonly high ceilings (at least 10 feet). But some new luminaires provide broad distribution and high efficiency with low ceilings; on the basis of energy usage, uplighting now can compete with high-quality direct lighting systems. The new luminaires use T8 or high-power compact fluorescent technologies.

Good low-ceiling indirect luminaires generally have inverted batwing distributions, with peak candlepower about 15 degrees above horizontal. This minimizes ceiling hot spots above the fixture, allows wider luminaire spacing, and provides greater uniformity. The fixtures are usually at least partly open to keep efficiency high; lenses absorb light. Most notably, the good fixtures are designed to show some obvious brightness, which counters the "cloudy day" effect of totally concealed indirect lighting.

Two major designs provide the best performance. A *totally open luminaire* uses a specular, wide-throw, polished aluminum reflector. Chamfered fixture corners cleverly reveal source brightness by reflecting ceiling luminance. A *partially lensed luminaire* uses a lens to create a strip of brightness by redirecting light from the lamps.

Unfortunately, many popular luminaire shapes, such as squares and tubes, do not work well with the necessary optical elements of the low-ceiling fixture. Short, wide profiles are needed for the luminaire to work properly without getting too bulky.

Compact fluorescent fixtures. Newly designed fixtures for compact fluorescent lamps can replace traditional incandescent luminaires, yielding substantial energy and maintenance savings. Several different downlights for twin-tube and quad lamps are on the market. The better fixtures look almost like incandescent downlights after installation. Avoid black baffles (they're inefficient) and gold cones (they turn light brown). Instead, choose clear cones.

Miniparabolics, usually about 1 foot square, are available with true parabolic louvers. These little fixtures can be used as downlights in corridors and circulation areas. They use the energy-efficient, long-lived 16-watt T8 U lamp or the 18-watt rapid start lamp.

Compact fluorescent fixtures don't have to be limited to the ceiling. Task lights include both desk-top and built-in under-shelf types. Many wall washers are available; spread-lensed

ones seem to work the best. Hundreds of sconces offer a wonderful range of choices for corridors, lobbies, and executive spaces.

The HID Option

High intensity discharge (HID) lighting began to appear in offices more than two decades ago. Lobby downlighting was the most common application, although some extremely good applications were made for open-office indirect lighting. Because of their color, metal halide lamps are the best in the HID family for interior lighting. Unfortunately, until recently only high-wattage metal halide lamps were available, so most applications required high ceilings.

In the early 1980s, introductions of good color, compact metal halide lamps made HID more useful in spaces with low ceilings. Medium-base 32-, 70-, and 100-watt metal halide lamps make excellent downlights. Single- and double-ended lamps, such as those in the Osram HQI family, are useful in a wide variety of applications, especially compact sconces and panel uplights.

Meanwhile, in the higher wattages, warm-colored metal halide lamps have become available in addition to the standard cool-colored ones. For rooms with high ceilings, high-wattage uplights (175-400 watts) are still an excellent choice when they are designed with efficient reflectors.

Nevertheless, designers should remember that interior HID lighting has many drawbacks (see *The Lighting Design Professional*, June 1988). Fluorescent lighting will continue to prevail in the typical offices of today and tomorrow. Parabolic troffers will be the standard lay-in fixture of 1990, while improved fluorescent lamps and luminaires keep generating new options for designers. ■

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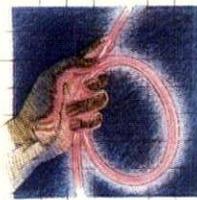
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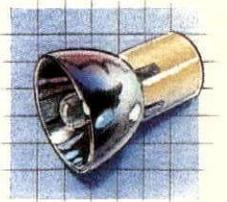
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Daylighting Techniques

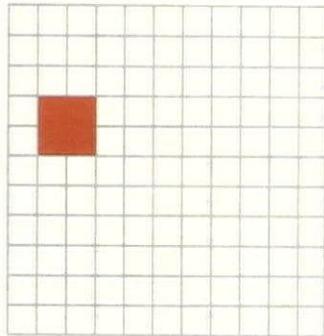
Any designer who is eager to add the drama of daylight to an otherwise visually static space and hopes to conserve energy by reducing the requirement for electric lights has navigated a maze of information — and misinformation — about daylighting prediction techniques. Effective planning and design for daylighting requires care in learning new methods, analyzing the design problem, and selecting the proper design and evaluation techniques. This column presents the first in a series of explanations about a variety of daylighting design tools and how to match them to the phases of design.

Some tools let you generate multiple design options; those are appropriate early in the design process. Evaluative tools are more appropriate later. As the building design develops, both the quality and quantity of needed information change, and so do the tools that can provide it.

No single daylighting design tool available today will give you both a complete predesign analysis and a postdesign evaluation. So you need to learn to select the right combination of tools. For predesign analysis, a good combination lets you predict the availability of light outdoors, the amount of usable light that will enter a building, the illuminance distribution, and the energy consumption consequences of daylighting. Techniques for making these predictions generally fall into four categories: hand calculations, computer programs, scale model photometry, and video simulation.

Hand Calculations

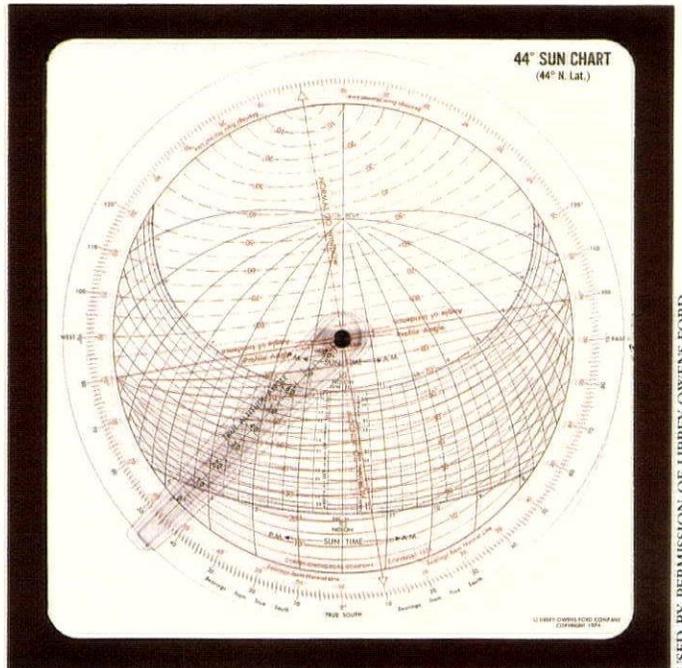
A relatively inexpensive and easy way to predict the distribution of light in a space combines the use of protractors, nomographs, charts, and data tables. But it's important to take into consideration the limitations of different data sources.



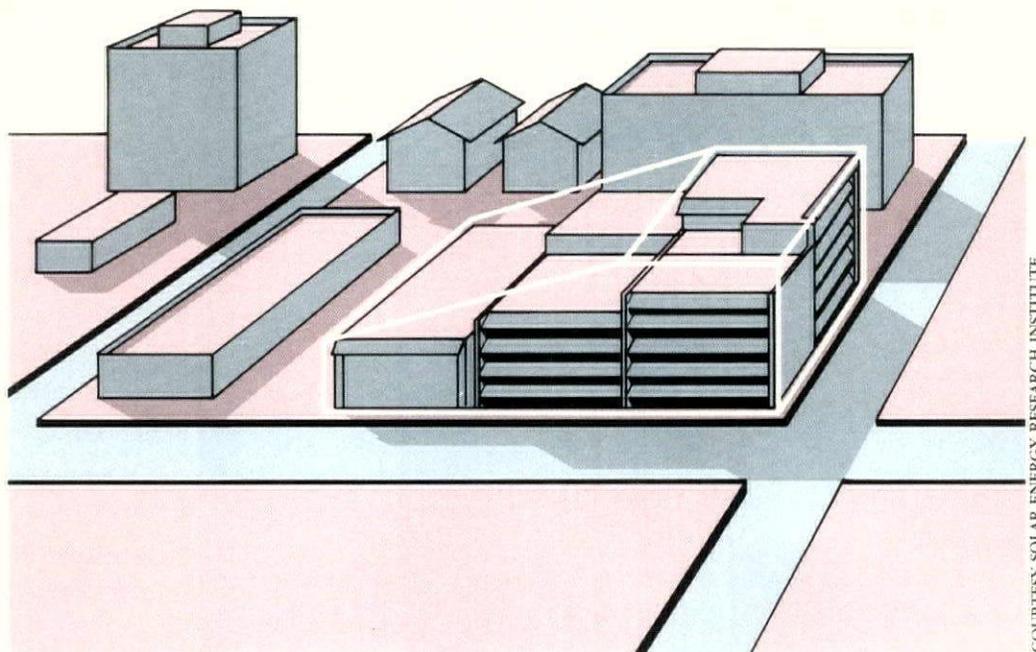
Daylight prediction techniques and design tools

Mojtaba Navvab

Mojtaba Navvab is an assistant professor of architecture in the College of Architecture and Urban Planning at the University of Michigan, Ann Arbor.



The Sun Angle Calculator lets designers quickly determine the altitude, azimuth, and angle of incidence of the sun for any time of the day and year. The device includes sun path charts for a variety of latitudes.



The solar, or daylight, envelope is an imaginary, three-dimensional form that planners calculate for establishing height limits for proposed buildings. If a building fits within the envelope, then it will not shade its neighbors during specified times of the day and year.

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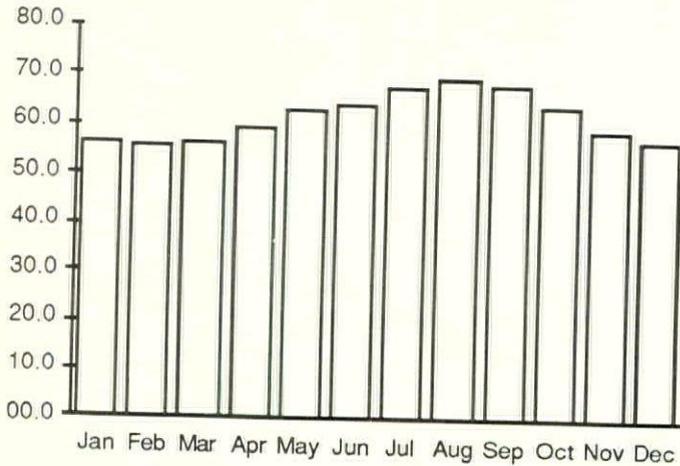


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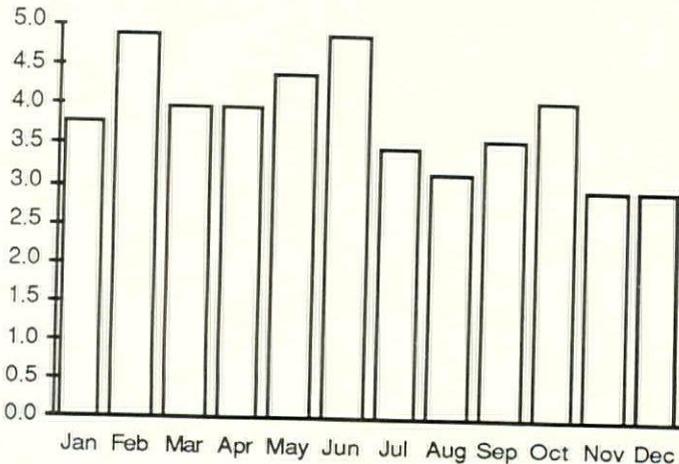
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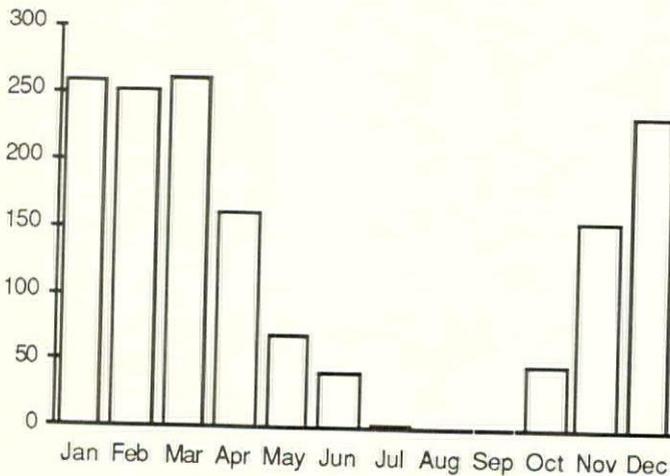




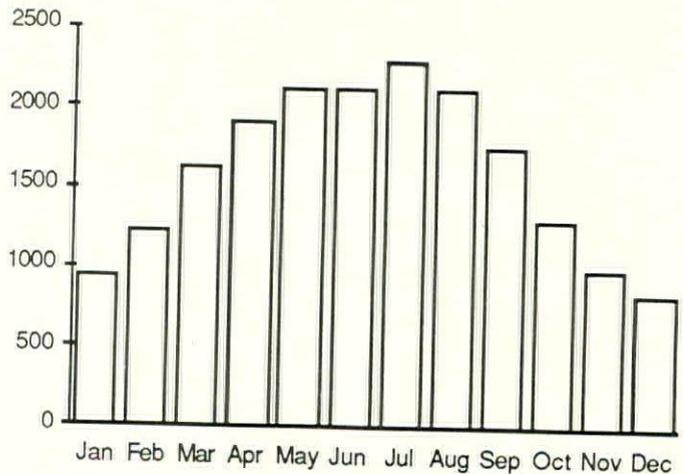
Temperature (degrees Fahrenheit)



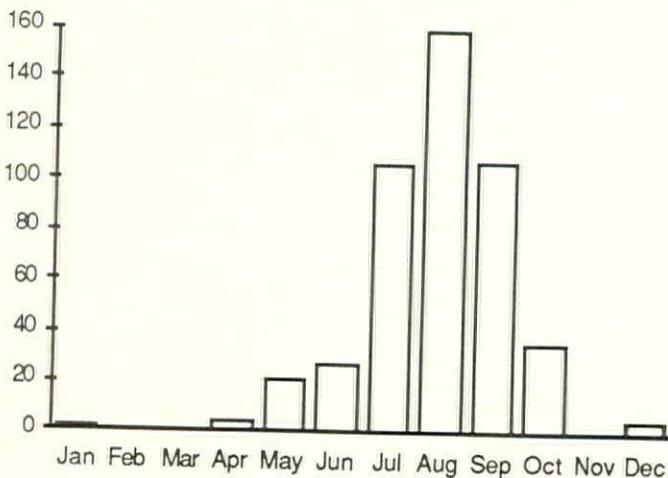
Sky cover (in tenths)



Heating degree days (base, 65 degrees Fahrenheit)



Solar radiation (Btu per square foot per day)



Cooling degree days (base, 65 degrees Fahrenheit)

Local weather data are measured and published for thousands of weather stations worldwide. These data for Los Angeles show temperature, heating degree days, cooling degree days, sky cover, and solar radiation.

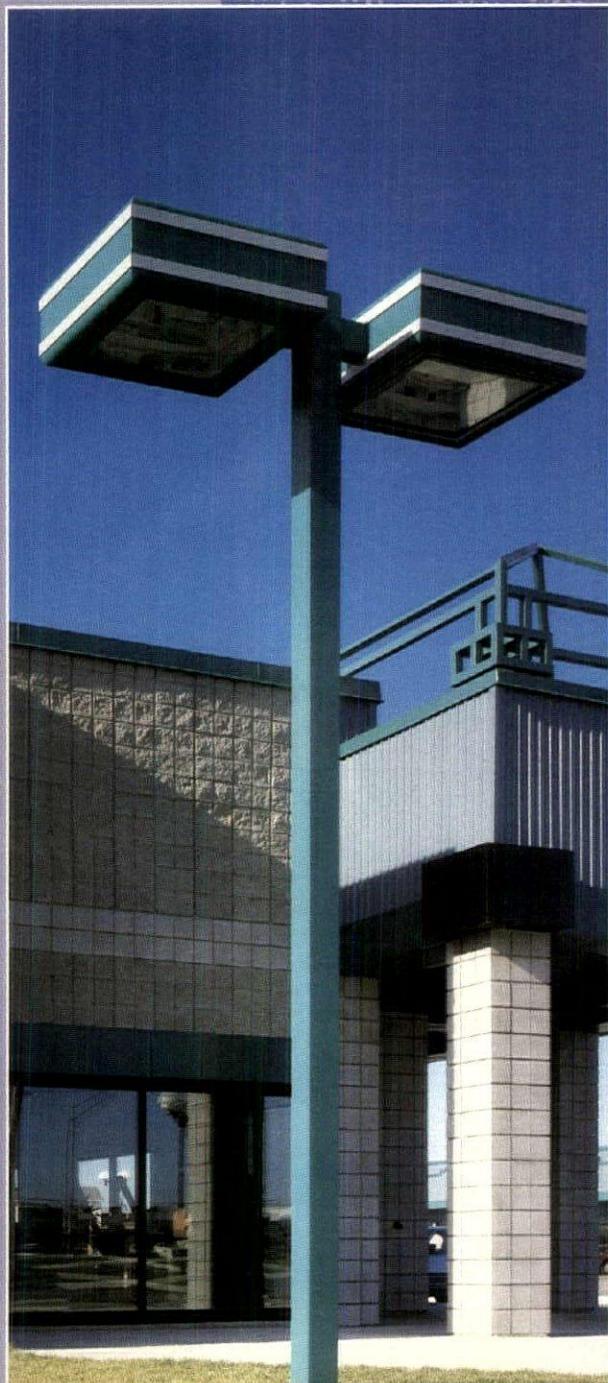
Predictions based on mathematical calculations will differ from predictions for the same building based on "real-world" measurements.

Early in the design process it is common to use the combined information from the Sun Angle Calculator, a sun chart, and local weather data.

Effective daylighting designers know the sun's position in the sky at selected times of the day and year at a variety of locations on the site. With that information, it is possible to calculate illumination and solar heating potential, both inside and outside the building. Sun position can be described by three angles: altitude, azimuth, and angle of incidence. Altitude is the angle above the horizon, azimuth is the bearing from south, and angle of incidence is the true angle between the sun and the surface under consideration. The trigonometric formulas for these angles are:

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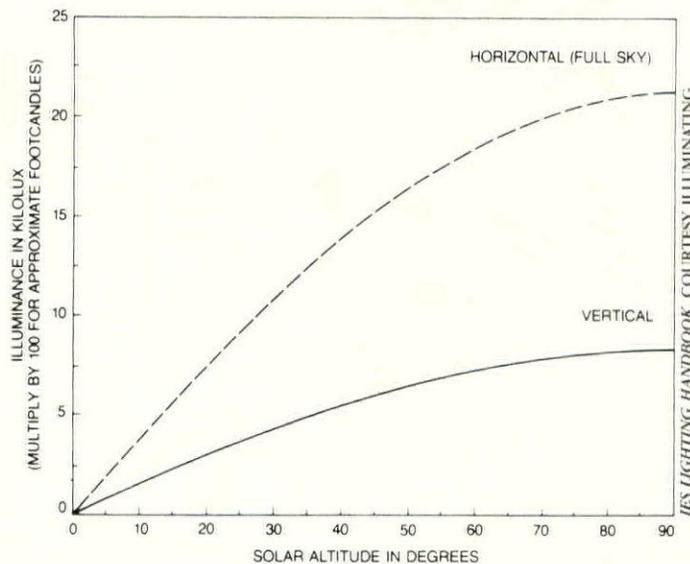
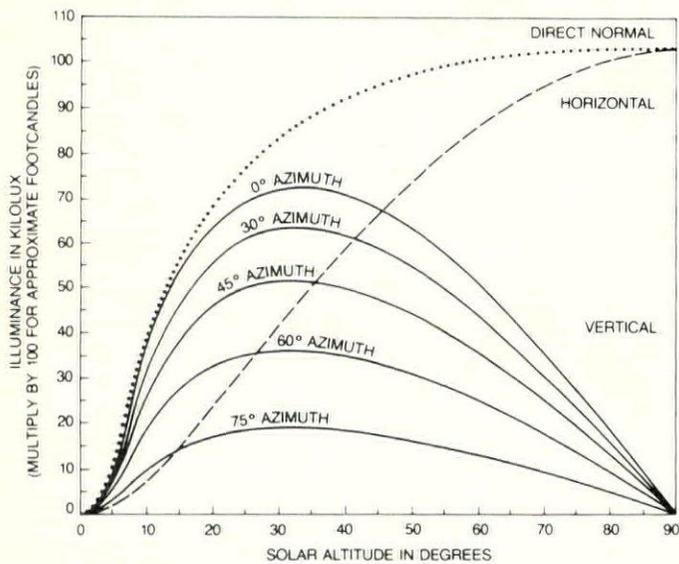
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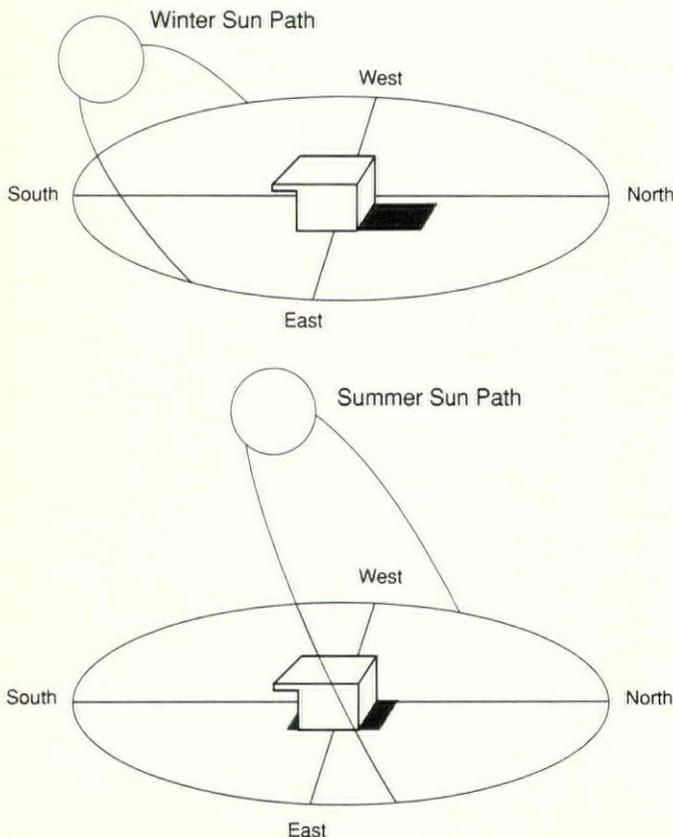
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Daylight availability is charted in nomographs for a variety of sun positions and sky conditions (above). The path of the sun varies dramatically throughout the year and has an important influence on the availability of daylight. Sensitive designers can orient a building on its site and design its overhangs to block the sun's rays in the summer and admit them during the winter.



plex, so most designers use the quick and accurate Sun Angle Calculator, shown in an accompanying illustration.

Daylight Availability

The angle of the sun changes throughout the day and year because of the rotation of the earth and the tilt of its axis, as shown by the illustration. It also varies with latitude. As a result, the availability of solar heat and daylight vary with geographic location, time of day, season, regional climate, local weather, cloud conditions, and physical surroundings. It is important to take all of these factors into account when predicting interior daylight illumination.

Direct light from the sun and light reflected from the sky are always calculated separately. Both, however, are commonly measured at weather stations throughout the world, and the measurements are available in many forms, including charts and tables like those illustrated here and on magnetic computer tapes.

City planners use the Sun Angle Calculator when drawing solar or daylight envelope zones like the one illustrated. The envelope defines the three-dimensional space that a build-

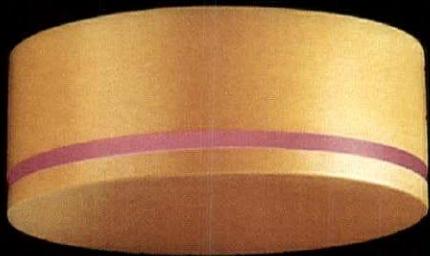
ing can occupy without shading neighboring property. New York and San Francisco zoning codes mandate setbacks to allow light onto streets that might otherwise be shaded by high-rise developments. These setbacks do not guarantee direct sunlight, but they do provide daylight at the street and into neighboring buildings.

Computer Programs

Mathematical models of daylight were once the domain of a few experts who understood the principles of solar geometry. Now these models are widely accessible to designers through a growing number of sophisticated computer programs. To select the right program for each phase of the design process, it's important to understand their capabilities and limitations. Forthcoming columns will describe the variety of programs available and explain their modeling capabilities in the context of applied case studies. ■

The daylighting columnist would like to hear from readers about unique daylighting applications. Write to Mojtaba Navvab, MIES, College of Architecture, University of Michigan, Ann Arbor, MI 48109.

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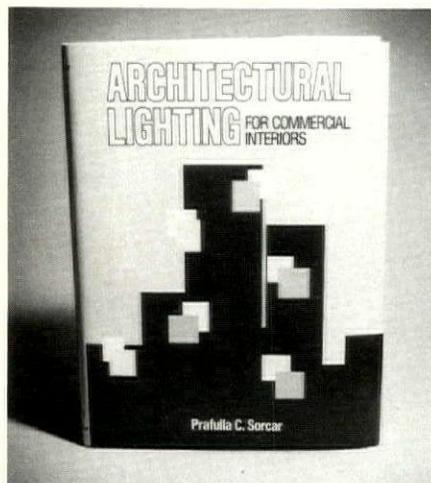
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Book Reviews



Architectural Lighting for Commercial Interiors, by Prafulla C. Sorcar. New York: John Wiley & Sons, 1987. 249 pages.

"God said, 'Let there be light,' and there was light, but not enough to meet the need." So opens this practical — if sometimes whimsical — book for lighting designers. The son of a magician, Prafulla Sorcar has succeeded in combining useful information about the engineering aspects of lighting with an inspired appreciation for the art and magic of designing visual environments.

The book is well written and clearly illustrated. Text and graphics combine to clarify even the most difficult technical information. Most of the illustrations are hand-drawn by the author, who is a master of the explanatory diagram. He has successfully tackled the difficult job of merging the technical minutiae of electrical lighting with somewhat loftier ideas about good design. In his detailed explanation about lamps, for example, he includes more details about filaments, gases, and color characteristics than most designers would ever want to know, but constantly reminds us of the reasons for wanting to know — because the resulting visual environment will affect human moods, comfort, and perception.

Unfortunately, a few flaws mar this otherwise excellent book. It has no glossary; this would be particularly useful for non-technical readers. The data tables occur in the text near the explanations of their use instead of in an appendix. This placement will work well for readers learning the calculation methods but may seem awkward to experienced lighting designers who want to use the book as a reference. The

author virtually ignores daylight; this will disappoint the growing number of designers who enjoy the visual vibrancy and energy savings that result from integrating daylight with electrical light. The illustrations that Sorcar reproduces from other sources, such as manufacturers' catalogs, are of inferior quality and some are illegible. Perhaps the biggest problem in the book is the lack of color illustrations. The author's graphic skill is impressive, and he tries valiantly to explain color theory with black-and-white diagrams, but readers would benefit greatly from a more accurate demonstration of principles in this fundamentally visual field of design.

The book is logically divided into five major sections that move the reader through an education in lighting design. It starts with the fundamentals, describes the available engineering and architectural design tools, and concludes with the practical application of principles in two commercial environments, the office and the store.

In "Foundation," Sorcar discusses the fundamentals of lighting history, vision, and color theory.

In "Engineering Tools," he explains a variety of technical design methods that you would expect to see in this section and a few nontechnical methods that you would not. For designers who are uncomfortable with the confusing array of graphs and statistics from manufacturers' photometric reports, he gives detailed explanations of how to read, interpret, and use this information. His explanations of calculation methods are accessible to anyone with a modest understanding of basic algebra. Veteran designers may want to skip the basics and learn how to calculate lighting levels in odd-shaped rooms. But don't let the section name fool you: in addition to showing how to draft a lighting layout and a panel schedule, he includes a chapter on how to draw lighting effects in realistic perspective sketches.

The perhaps misnamed section on "Architectural Tools" begins with an extensive explanation of incandescent, fluorescent, and high-intensity discharge luminaires. For dozens of common fixture types, Sorcar provides a sketch of the fixture in section, notes about associated lamps and mounting systems, and recommendations for luminaire spacing and the finishes on adjacent architectural surfaces. To fulfill his promise of combining the technical and the aesthetic, he also

describes the expected visual effects, color consequences, advantages, disadvantages, and appropriate applications for each fixture. In the second half of this section, Sorcar gets to the heart of lighting design and reminds us that our primary concern should always be the human beings who inhabit the spaces we are illuminating. In three informative chapters, he describes how to make special effects like luminous ceilings and artificial skylights and how to create a range of impressionistic environments for drama, relaxation, excitement, spookiness, and the "Black Hole."

In the first application section, "Office Environment," Sorcar shows how to avoid veiling reflections on work surfaces and glare on computer screens, how to calculate and combine task and ambient lighting, and how to choose between uniform and nonuniform environments. Finally, he does a room-by-room analysis of an office building, recommending lighting solutions for offices, conference rooms, drafting rooms, lobbies, and even stairways and mechanical equipment rooms.

His concluding section, "Merchandising Environment," explains how to make signs and store fronts that are inviting, comfortable, and memorable. He describes a variety of showroom techniques such as display illumination and decorative color lighting.

Here the book ends abruptly, making this reader wish that the application chapters continued indefinitely. Prafulla Sorcar has succeeded in what he set out to do, to blend the scientific and the artistic aspects of lighting into a coherent and practical guide for designers. Whether you are a novice needing a clear explanation of how to calculate lighting levels or a seasoned designer in search of a combination reference-inspiration, *Architectural Lighting for Commercial Interiors* is an invaluable addition to your design library.

—Barbara-Jo Novitski

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

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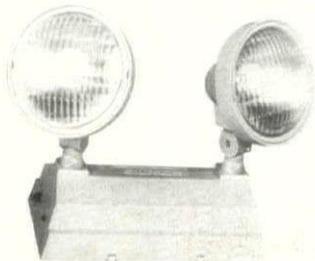
Product Showcase



■ Table lamp

Aamsco's Periscopio II table lamp has a rotating head and a flexible neck. It accommodates a half-silvered incandescent lamp and comes in two colors. Aamsco Manufacturing, Inc., Jersey City, NJ.

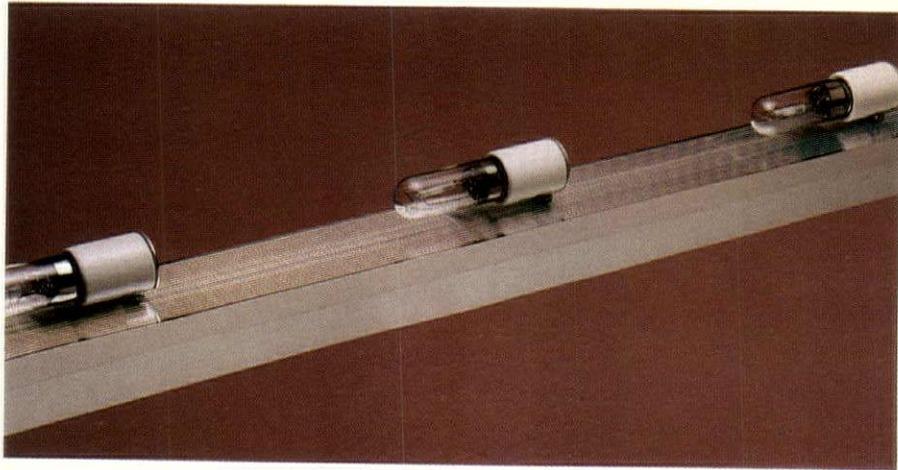
Circle 100



■ Compact emergency light

Siltron Illumination's L'il Sidewinder is a compact, two-headed emergency light made of plastic and designed to be mounted on a wide variety of surfaces. The 6-volt, 12-watt fixture has a lead calcium recombination battery, a low-voltage disconnect, an automatic charger, two 4-watt lamps, a dual input transformer for use on a 120- or a 277-volt current, a test switch, and an AC voltage indicator. Siltron Illumination, Inc., Cucamonga, CA.

Circle 101

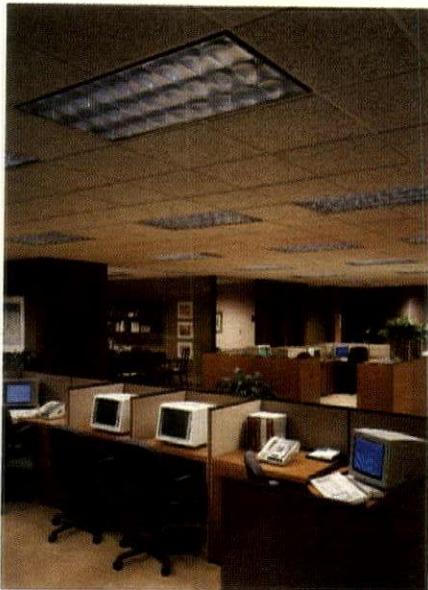


■ HPS light strip

Norbert Belfer offers a linear light strip with 50-watt high pressure sodium lamps for lighting large, open areas that require high levels of illumination. The energy-efficient strips require little maintenance and can be used behind valances and in coves. They come in custom lengths with

the lamps spaced 12 or 18 inches on center. Normal and high power factor ballasts are available. Norbert Belfer Lighting, Ocean, NJ.

Circle 102



■ Recessed parabolic luminaire

Lithonia Lighting's Optimax light control system features a specular aluminum louver designed to prevent objectionable glare on VDT screens. The energy-efficient recessed luminaire delivers 70 footcandles of uniform light to work surfaces while consuming only 1½ watts of energy per square foot. It comes in two sizes. Lithonia Lighting, Conyers, GA.

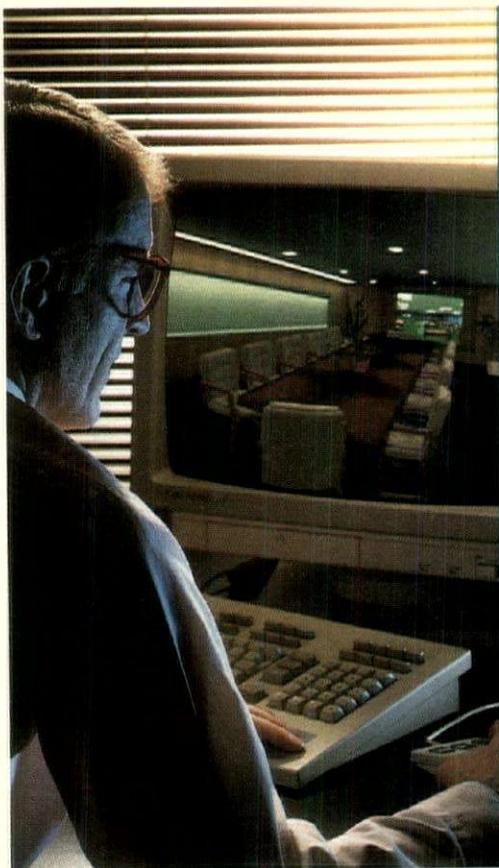
Circle 103



■ Bell-shaped downlight

The solid copper Libertylitter low-voltage landscape luminaire from Nightscaping casts a soft wash of downlight from its 9-inch-diameter bell-shaped lamp head. It stands 48 inches high and accommodates a 12.3-watt lamp; lamps in higher wattages are optional. Nightscaping, division of Lorán, Inc., Redlands, CA.

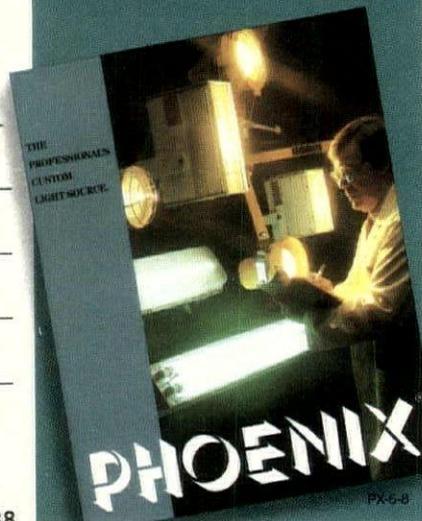
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Circle 38



Yoke-mounted accent lights

SB/SP series accent lighting fixtures from Times Square Lighting come in models for a variety of PAR lamps from 75 to 200 watts. They have a rotatable lamp holder with clips to support accessories such as color media, glass filters, hoods, and louvers. Mounting options include track adaptors and pipe clamps. The fixtures are suitable for applications needing spot or flood beams from 5 to 20 feet. Times Square Lighting, Stony Point, NY.

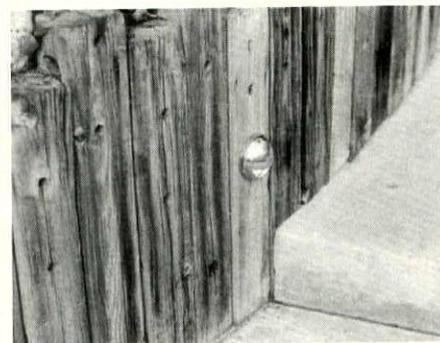
Circle 105



Art glass pendant

The Avanti pendant luminaire from Lightolier has a shade of white opal triplex glass with spiraling threads of solid opal glass. The shade's retaining knobs and bottom cap have a polished brass finish. Steel cables suspended from a ceiling canopy support the luminaire, which accepts an incandescent lamp. Matching versions include a flush ceiling model and a wall bracket. Lightolier, Secaucus, NJ.

Circle 106



Miniature step light

The Alesco line from Sylvan Designs includes a miniature low-voltage step light with a rotatable hooded cover that can be fastened in place to provide concentrated light where needed. The semirecessed fixture is 3⁵/₁₆ inches in diameter and protrudes 1⁵/₈ inches from its mounting surface. It is available with a cover and backplate of painted aluminum or solid brass; it accommodates a 12-volt, 6- to 18-watt incandescent lamp. Sylvan Designs, Inc., Northridge, CA.

Circle 107

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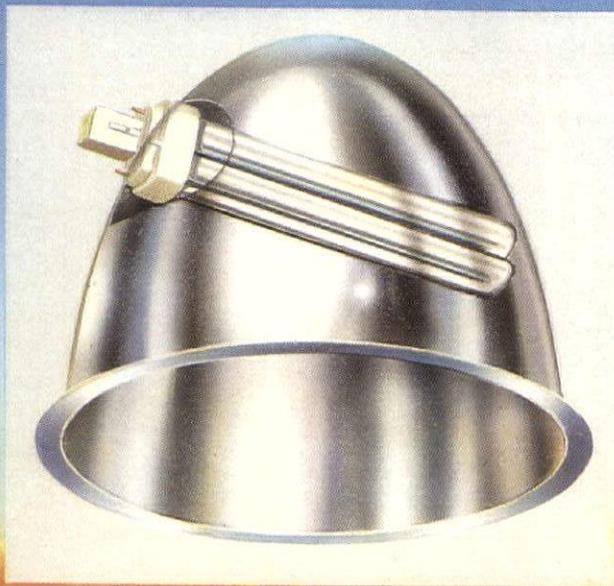
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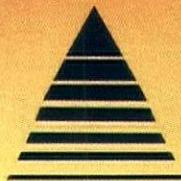
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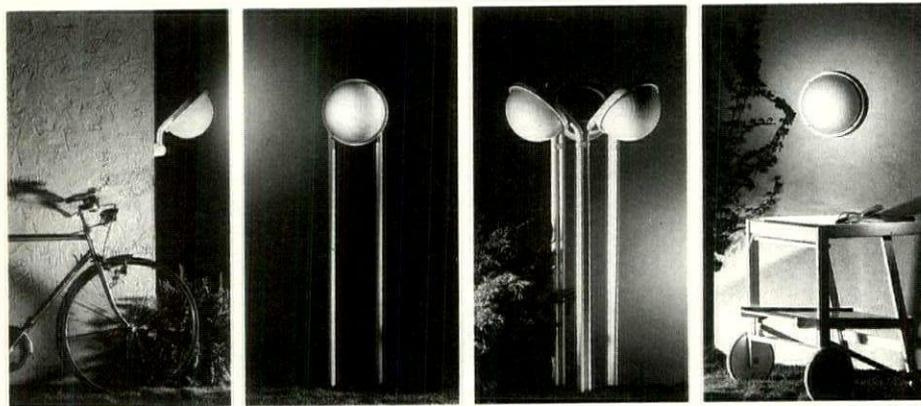
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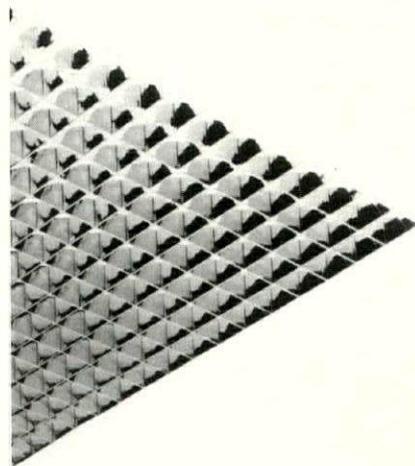
Circle 42



■ **Beam-shaping lens system**

Lighting Services offers the Q-Lens Beam-shaper accessory lens for its Q250 indoor halogen floodlight. The unit produces soft and hard-edged beams that frame objects without spill light, according to the manufacturer. The ground and polished tempered glass lenses come in narrow, wide, and extra-wide angles. Accessories include glass color filters, individually adjustable stainless steel framing shutters, and slide-in circular metal templates. Lighting Services Inc., Stony Point, NY.

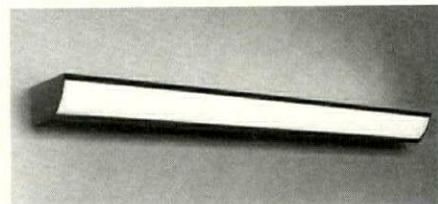
Circle 111



■ **Parabolic louver**

A.L.P.'s Para-Lite 3 medium-cell plastic parabolic louver for fluorescent fixtures has a highly efficient double-wedge cell design. It helps control brightness and provide visual comfort, particularly in spaces with VDTs. The louver fits most fixtures with little or no modification, according to the manufacturer. A ceiling version comes in sizes for most standard grid systems; a flange version fits most 2-by-4-foot fixtures. It comes in polystyrene and acrylic; two specular and four satin finishes are available. A.L.P. Lighting & Ceiling Products Inc., Niles, IL.

Circle 112



■ **Direct, indirect wall washer**

The Series 13W/2 wall-mounted luminaire from Neo-Ray produces wall-washing uplight and soft ambient illumination. Its heavy-gauge extruded aluminum housing has a front opening with a white acrylic diffuser. The unit comes in 4- and 8-foot sections and accommodates 4-foot T8 fluorescent lamps. Neo-Ray Lighting, Brooklyn, NY.

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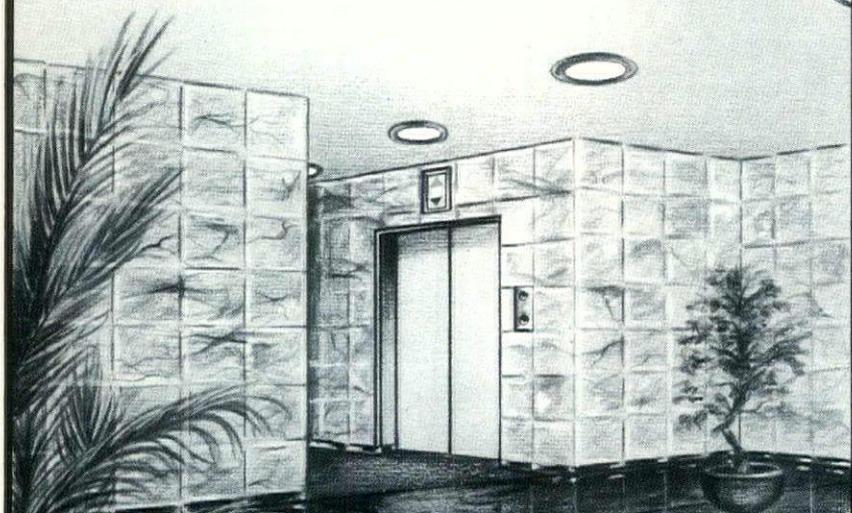
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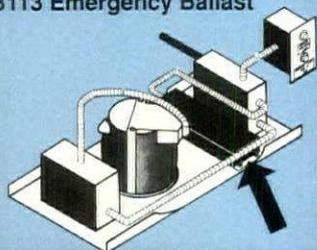
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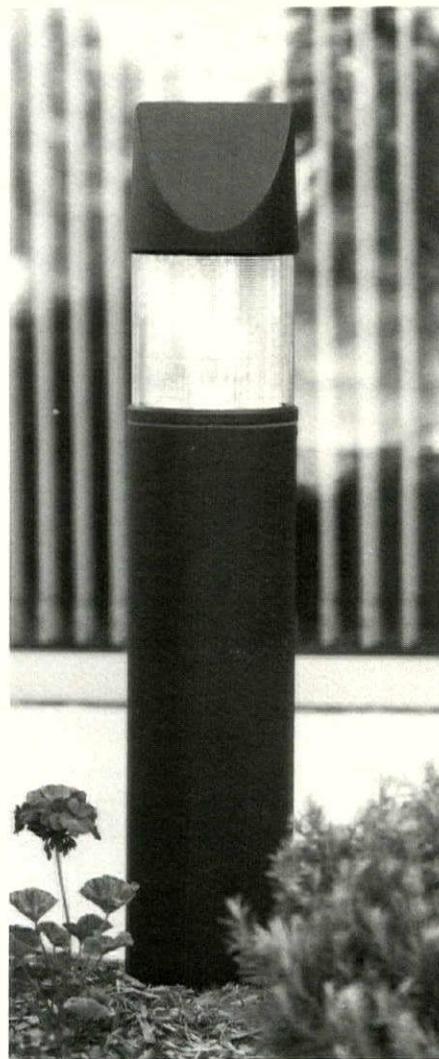
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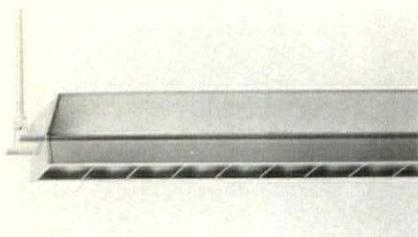
Circle 44



■ Bollard

Holophane's Terralux BT1A bollard provides low-level, uniform area lighting in three distribution patterns. It has a rugged extruded aluminum housing, a die-cast mitered top cap, and a vandal-resistant polycarbonate refractor shield. Versions with glass refractors are available in asymmetric and square distribution patterns; a version with internal louvers produces a round, symmetrical distribution pattern. The bollard accommodates 70- and 100-watt HPS and metal halide lamps and is UL listed for wet locations. Holophane, Newark, OH.

Circle 115



■ Direct-indirect luminaire

Zumtobel's ID-VM fluorescent luminaire provides pleasant, glare-free direct and indirect lighting for offices with video display terminals. It distributes 70 percent of the total light output toward the ceiling; a matte silver parabolic louver distributes the remaining light down onto the work plane. The UL-approved luminaire has an efficiency of 88 percent, according to the manufacturer. It accommodates T8 triphosphor fluorescent lamps and comes with a 120- or 277-volt energy-saving remote ballast. Zumtobel Lighting Inc., Fairfield, NJ.

Circle 114

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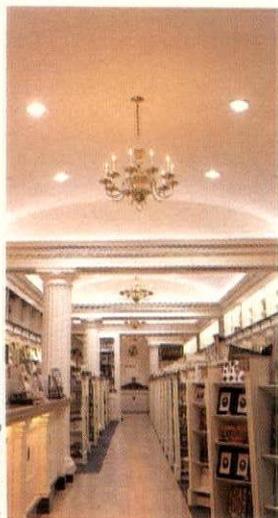
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■ Parking, roadway luminaire

Ruud Lighting's parking area and roadway luminaire has an optical system that produces uniform, glare-free light for a broad area without spill. Components include a soft-shaped, seamless housing of die-cast aluminum, a preinstalled multitap ballast, and silicone gasketing. The luminaire accommodates HID lamps up to 400 watts and comes in four mounting styles. Ruud Lighting, Racine, WI.

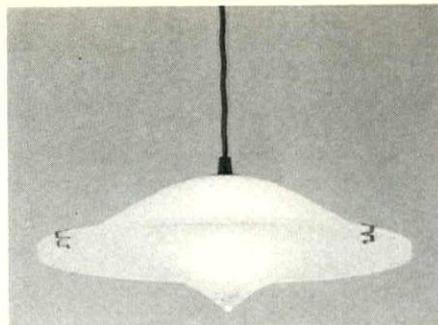
Circle 116



■ Electromechanical timer

Paragon Electric's P100 series electromechanical timer is housed in a rainproof Noryl enclosure and has internal components made of industrial-grade plastics. Control parts are molded from thermoplastic and polyester resins that resist wear and temperature extremes. The motor, made of polymers, is completely encased to reduce contamination; it operates on 2 watts of power and is double-insulated, so it does not require grounding. The timer dial allows on-off events to be set in intervals as short as one-half hour. Paragon Electric Company, Inc., Two Rivers, WI.

Circle 117



■ Decorative pendant

Lightning Bug offers Tre Ci Luce's Alien pendant. Its design features two translucent glass pieces joined in a saucerlike shape around a low-voltage halogen lamp. A steel cable supports the luminaire. Metal accents come in five finishes; the glass is available in neutral and pale yellow. Lightning Bug, Ltd., Hazel Crest, IL.

Circle 118

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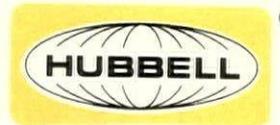
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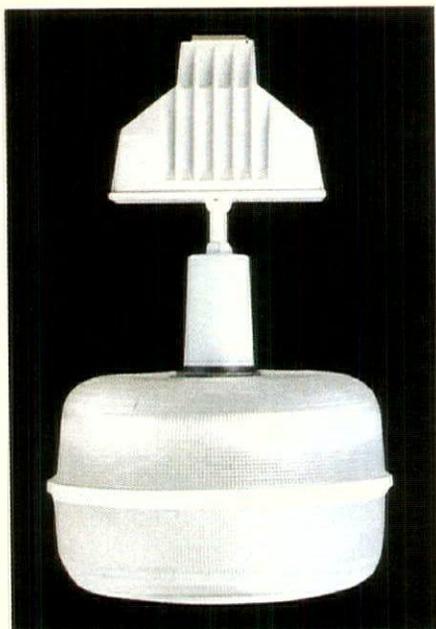
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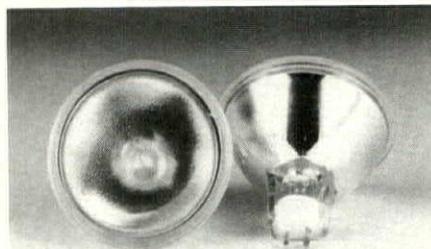


■ HID area lighting

The PrismGlo luminaire from Holophane is designed for areas where high-output fluorescent sources are commonly used. It has a heavy-duty die-cast aluminum ballast assembly and a prismatic optical assembly molded of borosilicate glass. A door at the bottom of the optical assembly allows relamping without tools. The luminaire accommodates HPS and metal halide

lamps up to 400 watts and comes in two up- and downlighting beam patterns. It is UL listed for damp locations and can be ceiling, surface, or pendant mounted. Holophane, Newark, OH.

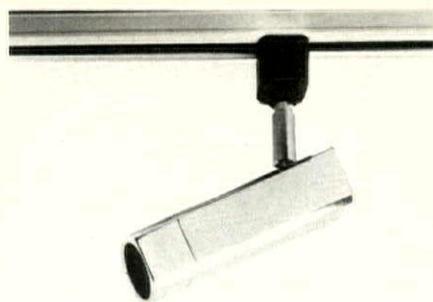
Circle 119



■ Closed-cover halogen lamps

Philips Lighting's MR11 and MR16 dichroic halogen lamps with integrated glass covers produce a cool beam with low ultraviolet emissions, making them safe for lighting UV-sensitive objects, according to the manufacturer. The 20-, 50-, and 65-watt lamps are available in beam spreads from 7 to 38 degrees. Philips Lighting, Somerset, NJ.

Circle 120



■ Low-voltage accent light

The Quadra low-voltage accent light from CSL Lighting has a built-in solid-state transformer and a patented cooling system. It is designed for use with new and existing tracks; stem- and surface-mounted models are also available. The fixture comes in three finishes and accommodates an MR11 halogen lamp. Accessories include an iris beam control system and a framing projector. CSL Lighting, Inc., Los Angeles, CA.

Circle 121



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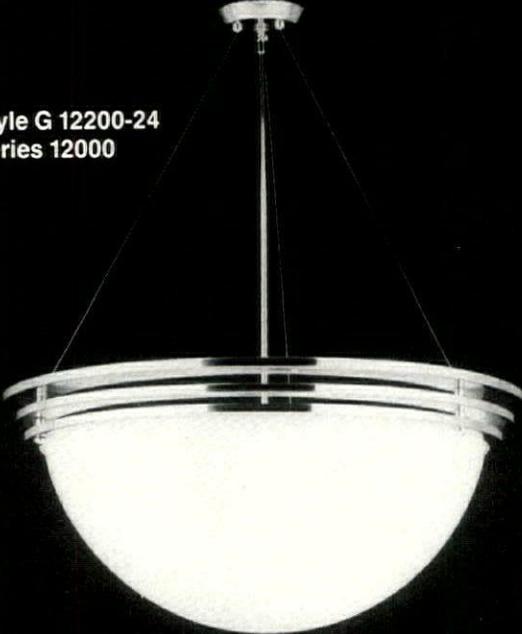


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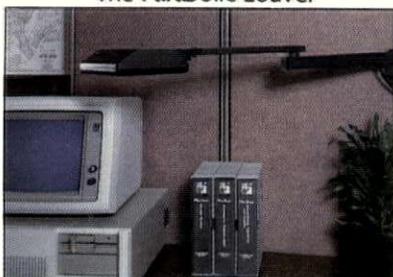
Announcing the 209 Designer Series of open-office task lighting. These specialized task lights feature Waldmann's exclusive built-in parabolic louver*, a light guidance system that affords strict light control, focusing light on the work area and virtually eliminating glare and reflections from VDT screens and glossy surfaces. This results in less eye fatigue and improved productivity.

The latest in European design and high-tech styling, the 209 Designer Series features traditional vertical arms or horizontal arms for mounting under binder bins.

The right angle for open-office furniture systems. A versatile



*The Parabolic Louver



Horizontal Arm

complement to contemporary office interiors, these task lights can be mounted to over 40 different panel systems.

Available from stock in the following colors: matte black, pure white, chocolate brown, slate grey, creamy beige, and rich burgundy. Custom colors are also available.

Glare-free task lighting that gives the user control of his or her lighting environment.

For more information contact:

Waldmann Lighting Company

9 W. Century Drive

Wheeling, IL 60090

Telephone: (312) 520-1060

Circle 52



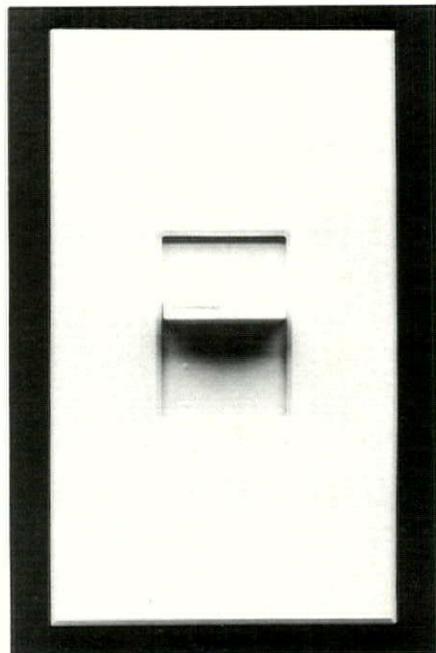
Prudential Presents

The new Wall Sconce Series S-22. Three bold shapes available in many standard or custom finishes and a wide spectrum of colors. Semi-indirect or totally indirect light extends the architectural lines of the sconces into the space itself. Free color brochure available.

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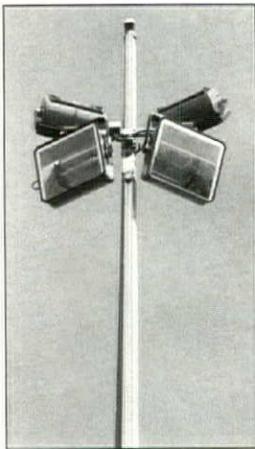


Circle 53



LIGHT FIXTURES ARE NOT THE ONLY THING WE LOWER!

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NEW! JOSLYN TLS Track Lowering Systems... With Unique Safety Brake Feature

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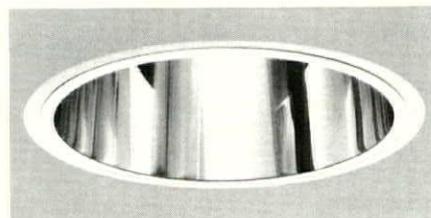
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JOSLYN
HI-VOLTAGE
CORPORATION

Low-voltage dimmers

Sol-Lo electronic low-voltage dimmers from Lutron provide quiet, full-range dimming of low-voltage lighting systems with electronic transformers, according to the manufacturer. They can control low-voltage lamps alone or in combination with standard incandescent lamps. The dimmers are UL listed for electronic low-voltage lighting and can handle load capacities up to 450 watts. Models match three current dimmer families; versions for systems with magnetic transformers are available. Lutron Electronics Co., Inc., Coopersburg, PA.

Circle 122

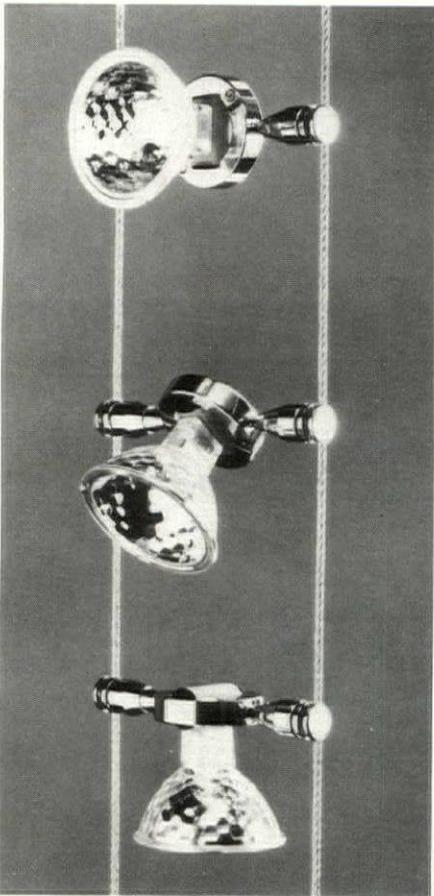


Compact fluorescent downlight

The Polyquad series compact fluorescent downlight from Staff Lighting has a special optical system that virtually eliminates rainbow effects, according to the manufacturer. The vacuum-metallized polycarbonate reflector has a polished mirrorlike

surface sealed with a strong, transparent film that preserves the specular finish and is easy to clean. The unit's spun aluminum housing provides convection cooling so that the lamp can operate at its optimum temperature. An adjustable socket assembly facilitates relamping. Staff Lighting, Highland, NY.

Circle 123



■ **Bare-wire MR16 system**

The High Wire from Tech Lighting consists of MR16 lamp fittings mounted on two bare low-voltage wires extended tightly between two surfaces. A special on-off connection attaches the fittings to the wires. Lamp fittings come in brass and chrome; straight, center, and corner cable connectors are available. A 20-foot run can accommodate a load up to 300 watts. Tech Lighting, Inc., Chicago, IL.

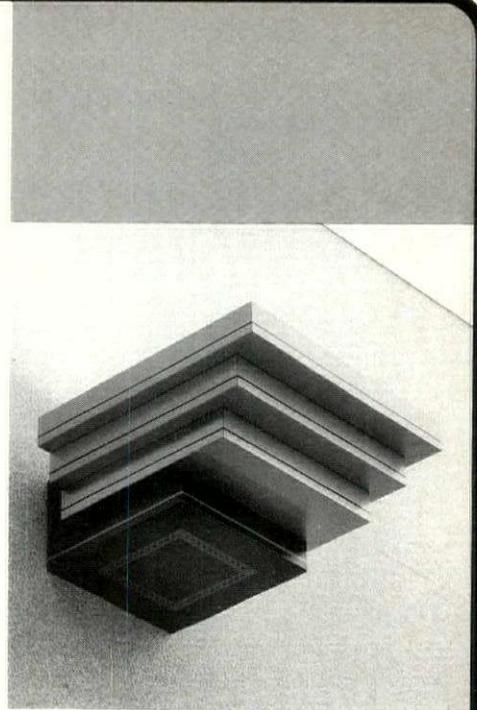
Circle 124

Appleton Lamplighter.

The first choice of the design community for custom lighting, architectural metal fabrication.

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- Professional staff
- Engineering
- Delivery
- North American wide representation
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30" W x 16" H x 36" Projection
Brushed brass finish with green accents
Two 400W Metal halide lamps



A Division of Aries Fabrication Corporation

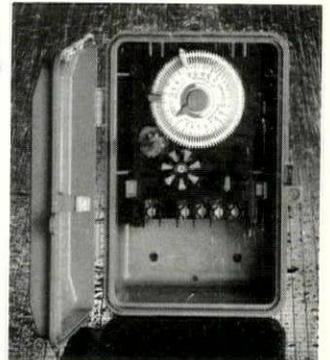
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Circle 55

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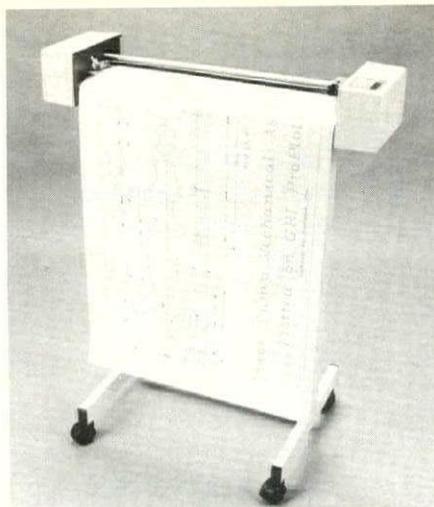
Circle 56



■ Architectural coatings

Valmont uses a terpolymer chemical process to create multicolored coatings that give poles, pipe, and tubing the look of granite, marble, sandstone, or other stones. The coatings are available in a variety of colors and particle sizes, ranging from sand and fine-grained stone to granite and coarse-grained aggregate stone. Valmont Industries, Valley, NE.

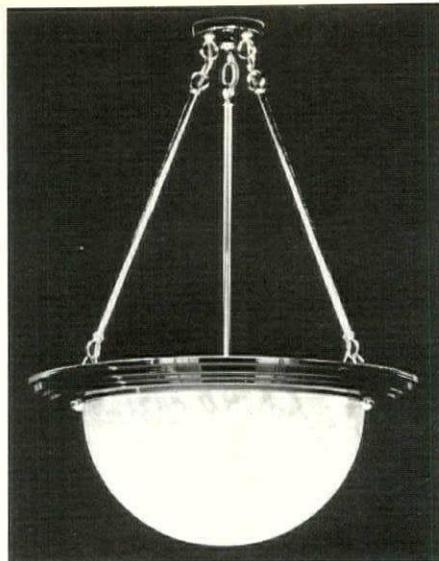
Circle 125



■ Pen plotter

The GRI ProPlotter large-format pen plotter is designed for use with desktop CAD systems on Macintosh and IBM PC-XT, AT, and compatible computers. The plotter produces drawings up to 22 by 34 inches on ordinary bond, vellum, mylar film, and other plotting media. It can use ball-point, fiber-tipped, and disposable liquid ink pens and has a pen speed of 7 inches per second. The plotter is software-compatible with DMP series plotters and runs the DM/PL command set. Gerard Research Inc., Fremont, CA.

Circle 126



■ Decorative pendant

The Saturn pendant luminaire from Art Directions comes in a variety of finishes. The version shown has a black ring and a satin dome finished in crystal frit. The 27-inch-diameter luminaire accommodates three incandescent lamps. Art Directions Inc., St. Louis, MO.

Circle 127

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Joyfully Announces the Birth of Our Track Lighting, Outdoor HQI and Low Voltage Lines to Our Fine Family of Architectural and Commercial Lighting Fixtures!

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BETTER EFFICIENCY

With a 72% efficiency, Paraplus is today's most efficient 2' x 2' parabolic, providing the same footcandle levels as a 2' x 4' parabolic without additional fixtures.

BETTER APPEARANCE

Paraplus is non-directional in appearance and has a 23" square parabolic louver for a precise fit with all ceilings.

BETTER VERSATILITY

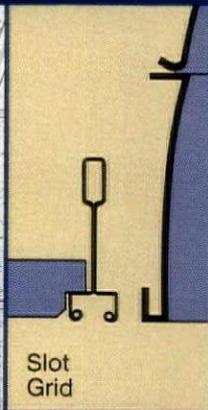
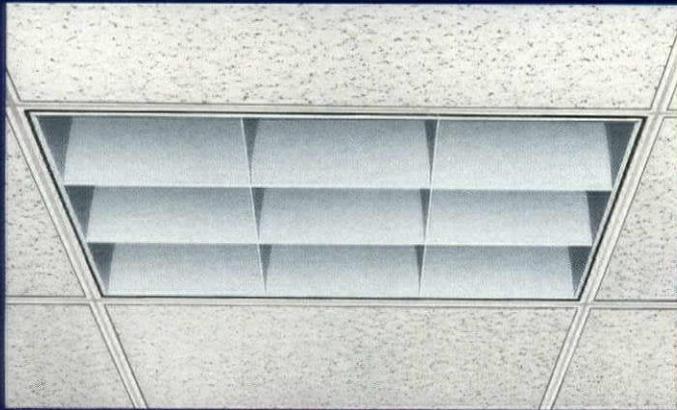
A single Paraplus housing will fit 50 different lay-in grid ceiling systems, without any fixture modification.

BETTER INSTALLATION

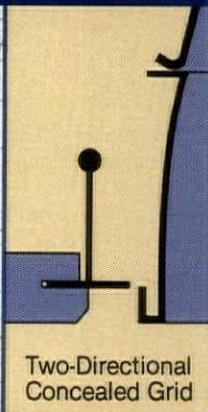
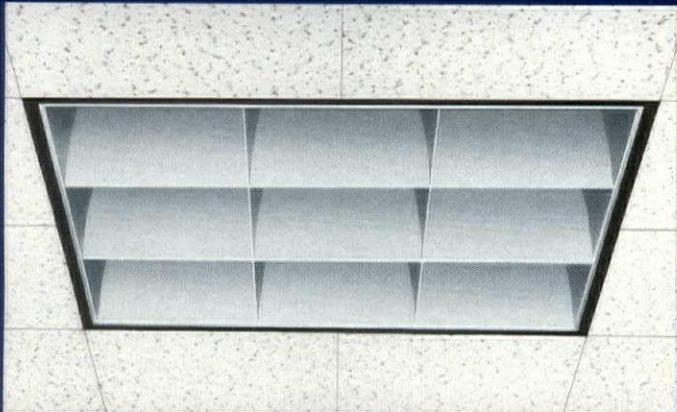
Its 2' x 2' size, built-in adjustable automatic locking seismic hold-down clip, and centering device make it easier to install than any 2' x 4' fixture.

NEW LIGHT SOURCES

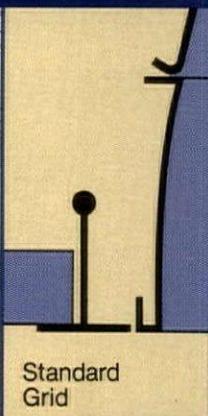
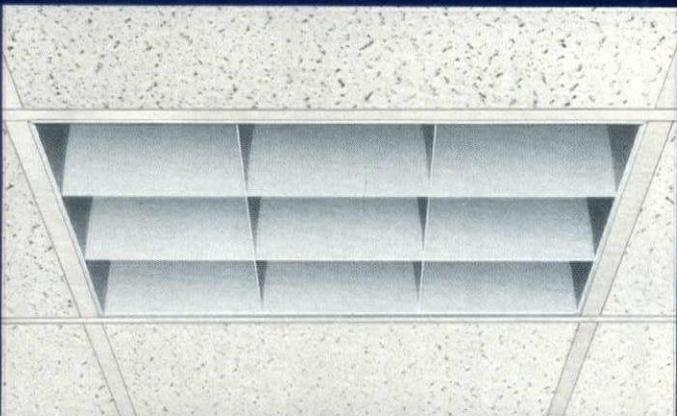
Paraplus may be fitted with Octron Curvalume, Biax, Dulux or standard F40U/6 lamps.



Slot Grid



Two-Directional Concealed Grid



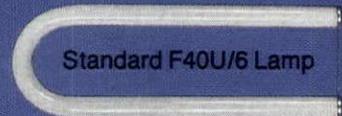
Standard Grid



Biax, Dulux Lamp



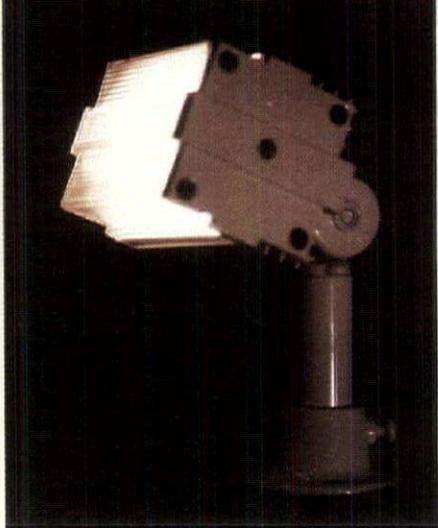
Octron Curvalume Lamp



Standard F40U/6 Lamp

KLP

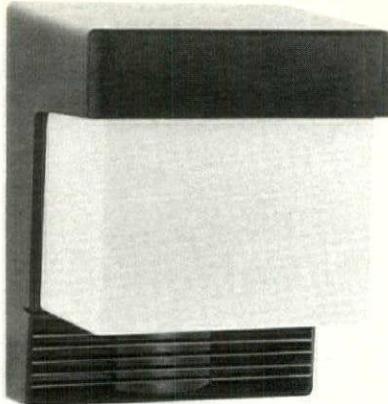
A **GENLYTE** COMPANY
The Leader in Lighting



■ Landscape lighting

Nightscaping's low-voltage Silhouetteliter produces a soft wash of backlight or uplight. The 6-inch-high unit has a compact 2¹/₂- by 3¹/₂-inch lamp housing, a high-impact polycarbonate diffuser, and an adjustable, spike-mounted stem. It uses a 12.3-watt lamp and comes in several finishes. Nightscaping, division of Loran, Inc., Redlands, CA.

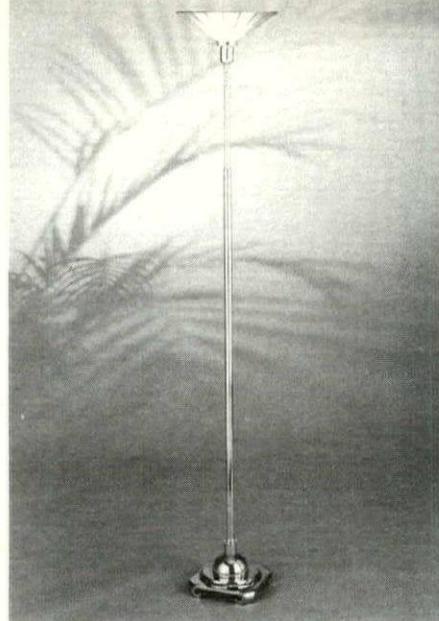
Circle 128



■ Motion-sensing fixture

The Smartpack from RAB Electric is an outdoor lighting fixture with a built-in motion sensor switch that detects the motion of people or cars as far away as 50 feet. The fixture can be adjusted to keep the light on from 3 seconds to 20 minutes after the motion has ceased. The unit is designed for security and energy savings in commercial and industrial applications. Optional lenses can extend its coverage area. RAB Electric Manufacturing, Inc., Northvale, NJ.

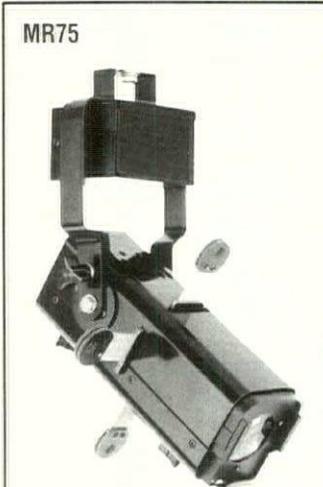
Circle 129



■ Floor lamp

The Jewell Torch from the Gemma Collection Torch/Library series is a 62-inch-high luminaire with a 7¹/₂-inch cast brass base. It has a stem of solid copper and brass, an inverted 11-inch-diameter Tiffany-style glass shade, and a foot-controlled on-off switch. The shade is available in 28 colors. Gemma Studios, Northampton, MA.

Circle 130



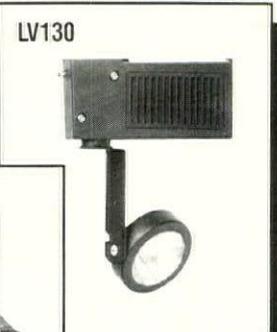
MR75

DESIGNER LIGHTING BY TIMES SQUARE

Keeping you on the cutting edge of lighting technology, Times Square searches for the latest in light sources and packages them into designer fixtures.



C3M



LV130

- Four of the newest additions include the Adjust-A-Shape, Designer Gimbal Ring, Mini Par and the Designer Parlight.
- Most fixtures can be accessorized with track mounts, pipe clamps, coil cords, barndoors, glass filters, and louvers.

● Please call or write for complete specifications on these new additions so we can shed some of our light on you.

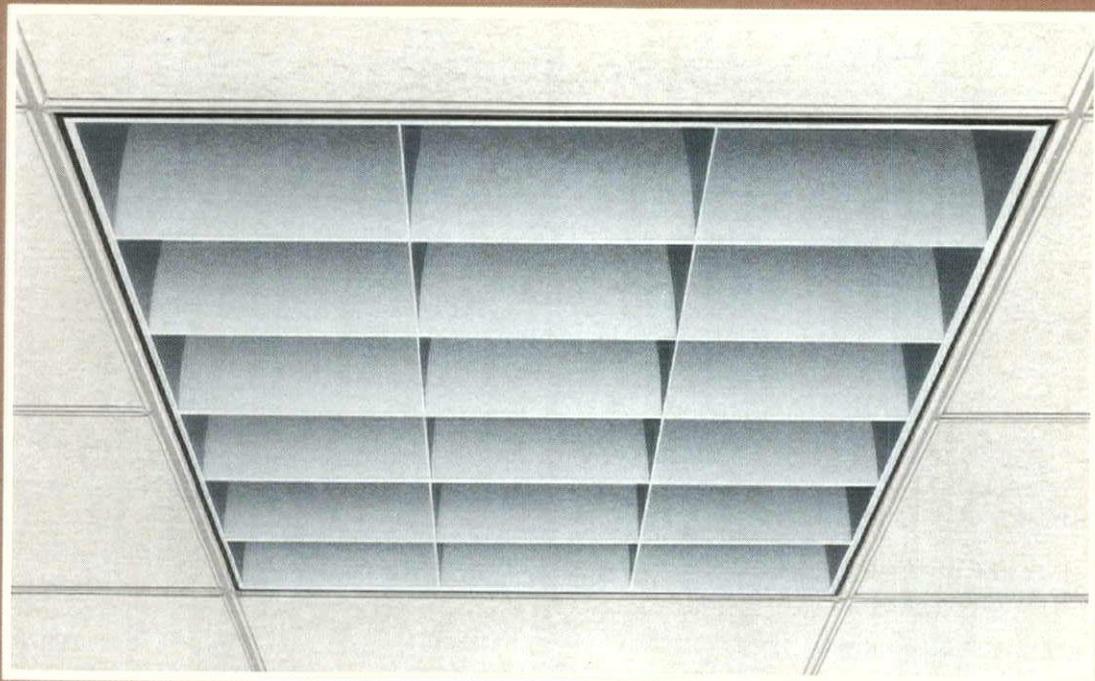


LV135

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Paralyte 2448 A New Dimension in Parabolic Lighting

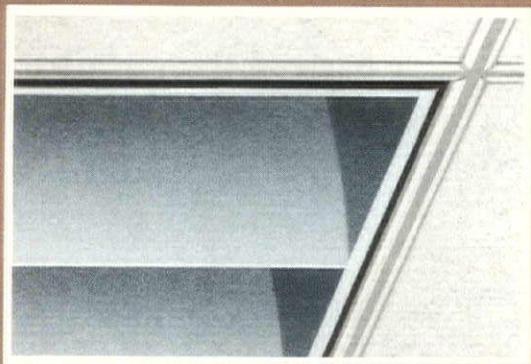


■ New louver size provides a precise fit to all types of ceiling systems, creating a "fine line" detail around the perimeter of the louver that is at least 50% narrower than conventional parabolics.

■ One fixture fits slot grid, narrow grid, standard grid and two directional concealed spline ceiling systems, over 50 variations in all, without any modifications.

■ The 18 cell, 3 lamp semi-specular is 74.9% efficient; the 32 cell, 4 lamp semi-specular is 68.6% efficient and the 12 cell, 2 lamp is 81.9% efficient.

■ Paralyte 2448 has full air return capabilities.



Paralyte 2448



Conventional Parabolic

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■ Commercial area luminaire

Hanover Lantern's Bridgeport octagonal post-top luminaire is made of cast aluminum and has vandal-resistant prismatic panels of clear UV-stabilized polycarbonate that can be removed easily for cleaning. Reflectors, refractors, and a photoelectric

controller are available. Various models accommodate an HID or incandescent source. Hanover Lantern, Hanover, PA.

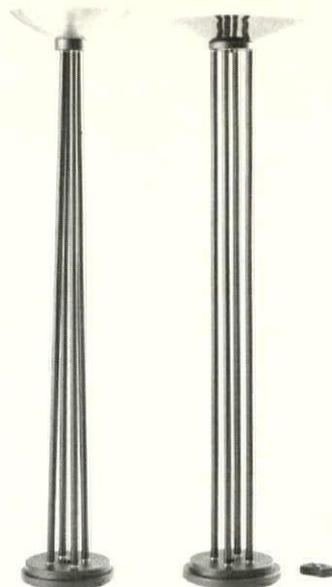
Circle 131



■ Parking garage lighting

The PGL parking garage luminaire from Kim Lighting combines uplighting and cutoff downlighting in one unit. It directs downlight through a clear bottom lens and uplight and fill light through a clear upper window. The ceiling-mounted luminaire accommodates a vertically mounted high pressure sodium or metal halide lamp, which is fully shielded from high-angle view. The downlight lens is available in standard acrylic or optional Lexan. Kim Lighting, City of Industry, CA.

Circle 132



■ Torcheres

Rainbow's Bel Aire and Olympus torcheres stand 72 inches tall and come in a variety of painted and metallic finishes. They have full-range floor dimmers and are available in versions for incandescent or halogen sources. Rainbow Lamp Corporation, Glendale, CA.

Circle 133

MINOLTA METERS THE MEASURE OF EXCELLENCE

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MEET A SENSITIVE TYPE THAT READS EVERYTHING.

Minolta would like to introduce to you a type of meter that reads every visible light source or surface brightness. You've never encountered more versatile, more reliable portable luminance meters than the LS-100 and LS-110.

Both feature a bright field of viewing and a center spot to indicate exactly what you're measuring. The difference is in their acceptance angles: 1° for the LS-100 and 1/3° to measure smaller areas with the LS-110.

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MINOLTA

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LS-100



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Why being thin to a Sylvania



We invented the Optron® system—the next generation of fluorescent lamps.

Several years ago a challenge went out to lamp manufacturers. Designers asked, "Can you push lighting even further and give us something that saves still more energy without losing light output?"

First to heed their call were Sylvania engineers who invented the Optron lamp—which is not only one-third thinner than standard fluorescents, but is also more versatile, delivers full light output and saves energy. It opens up a whole new world of options for lighting designers and users.

You can never be too thin or too rich.

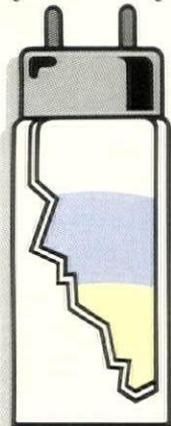
Even though the Optron lamp is one-third thinner than a standard fluorescent, it produces light more efficiently and with better color quality. The secret isn't a secret. An Optron fluorescent uses enriched rare-earth phosphors to pump out more lumens per watt and achieve good color balance.

Lots of companies have seen the wisdom of specifying Optron lighting. From a prestigious financial company located in downtown Manhattan to a prestigious package goods company located in downtown Cincinnati to dynamic retailers located all across America. Why did all these people go with Sylvania Optron lamps?

Reason #1: Since lighting can constitute up to 40% of a company's electric bill,

is so important engineer.

using one of the world's most efficient fluorescent lamps makes sense. And that's just what Octron is. Its output efficiency is among the highest of any general lighting fluorescent system. So you can significantly reduce



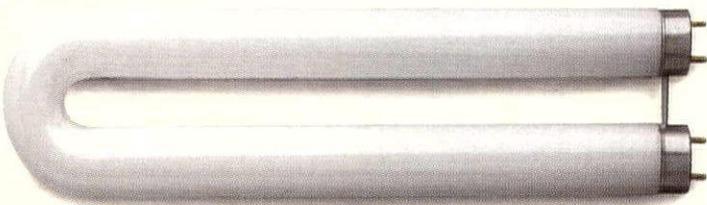
energy consumption with no loss of light.

Rare-earth phosphor technology produces great color rendering and important energy savings.

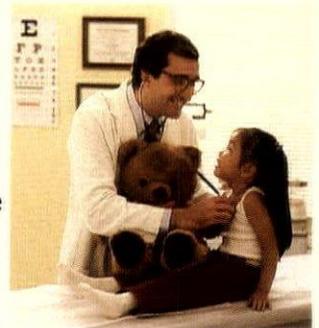
Let's put this in real terms. In Philadelphia, where electricity costs between 8-10¢ per kilowatt hour, Octron lamps replaced standard 40 watt fluorescents in a high-rise office building and produced energy savings of \$6.00 per hour over the life of the lamps.

Reason #2: People simply like the quality of Octron lighting better. A major university switched to Octron lamps and found their faculty and students used the facility more often and felt more relaxed than before. This says a lot about the comfort quality of Octron lighting and the way it accents subtle differences in colors and textures so important to successful interior designs of all kinds.

Only Sylvania offers you Octron Curvalume—big lighting in small spaces.



New Curvalume lamps give you all the benefits of Octron performance plus they fit perfectly into today's smaller, more efficient 12" and 24" square lighting modules.



How Blue Cross and Blue Shield of Missouri improved their financial health with Sylvania.

Blue Cross and Blue Shield of Missouri needed to improve their air-conditioning without increasing their electrical capacity. The answer was Octron lighting, which cut their lighting bill by \$45,000 annually, decreased

their air-conditioning load and gives them a 33% return on their Octron investment each year over the life of the lamps.

We offer more energy-saving lamps and best of all they're made right here.

Sylvania makes more energy-saving lighting than any other company any place in the world. Octron is just one example.

So if you want to help make your business run leaner, give us a call at 1-800-LIGHTBULB. Or contact your nearest Independent Electrical Distributor. Our obsession with lighting may be the right diet for you.



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Look for us in booth no. 1203 at Lighting World VI



■ **Alabaster sconce**

Appleton Lamplighter's AL444WS alabaster wall sconce has a 12-inch-square alabaster diffuser. Three mirror-polished metal bars — one each of copper, stainless steel, and brass — hold the alabaster square in place. The fixture has a polished brass backplate, accommodates a 60-watt T10 incandescent lamp, and is available in several sizes and finishes. Appleton Lamplighter, Appleton, WI.

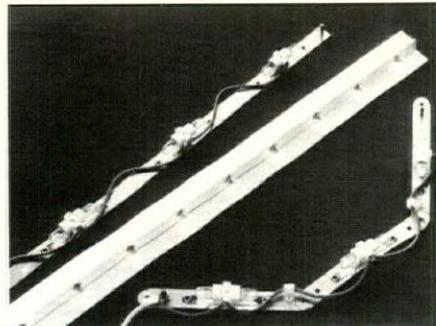
Circle 134



■ **Cool fixture**

The Cool Lite from Capri Lighting is designed with a louvered vent to keep it cool enough for manual adjustment. The fixture comes in sizes for MR16 low-voltage lamps up to 75 watts, MR11 low-voltage lamps up to 35 watts, and 50-watt PAR 20 line-voltage lamps. The low-voltage models have a hinged access door for easy relamping. Capri Lighting, Los Angeles, CA.

Circle 135



■ **Low-voltage light strips**

Progress Lighting's Hide-A-Lite 3/4-inch-deep low-voltage light strips are designed to fit small spaces. Three versions are available: 48-inch straight open-face strips (top); straight covered strips in six lengths (middle); and 18-inch flexible open-face and covered strips (bottom). Open-face and flexible models can be field-cut. The strips come with 3- or 5-watt miniature incandescent lamps and are parallel wired to allow easy relamping. Transformers and mounting accessories are available. Progress Lighting, Philadelphia, PA.

Circle 136

PARAMOUNT INTRODUCES ANOTHER FIRST!

To continue our tradition of quality, value and to maintain the position as pioneers in the lighting industry; beginning May 1st, 1989, PARAMOUNT INDUSTRIES, INC. announces, for our loyal customers, "Energy Saving Full Light Output Ballast" as "standard equipment"! They will be installed in all our fluorescent product lines for the circuit and lamp lengths as made available to the marketplace. This means PARAMOUNT customers will no longer need to specify an Energy Saving F.L.O. Ballast, they simply receive maximum energy savings at no additional cost!

Saving electricity is not the only advantage in using an Energy Saving F.L.O. Ballast. They also run cooler (saving on air conditioning costs) and have twice the average life of a standard ballast. Fewer replacements mean reduced maintenance costs!

An Energy Saving F.L.O. Ballast, together with PARAMOUNT'S proven high quality fixture, adds up to more value for your dollar, today and into the future.

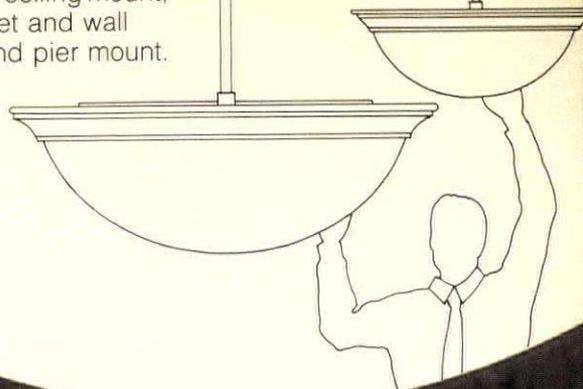


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THE EVOLUTION CONTINUES

SPI

The proud and popular Renaissance family announces a new addition – 42" Grand Renaissance – for large spaces and high ceilings. Other family members now available in clusters, ceiling mount, wall bracket and wall sconce, and pier mount. Naturally, from SPI Lighting.



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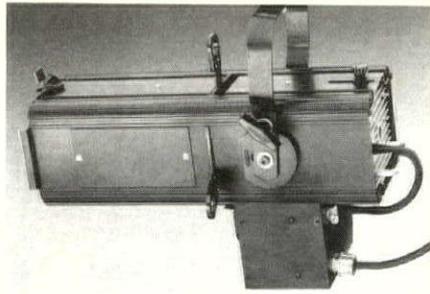
Circle 65



■ Well light

The 11G-H line-voltage miniature well light from Hadco's Mini Ingrounds series comes with or without the 3/4-inch-high cast aluminum directional rock guard shown. It has a cast aluminum housing and a gasketed convex lens of clear, tempered glass. The 6-inch-high, 6 3/4-inch-diameter fixture accepts a PAR 20 or R20 lamp up to 50 watts. Hadco, Littlestown, PA.

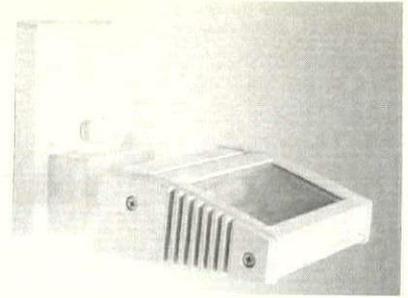
Circle 137



■ HID accent lighting

Arc Lighting's Mini-Casino Light has an optical system that produces 15,000 to 60,000 candelas of light and can be adjusted from 24 to 46 degrees. The fixture comes with four integral framing shutters and a pattern holder for custom templates. It accommodates a 150-watt Arcstream 3000 metal halide lamp, which produces a warm, incandescentlike light. Arc Lighting, division of Arc Sales, Inc., Salem, MA.

Circle 138



■ Uplight

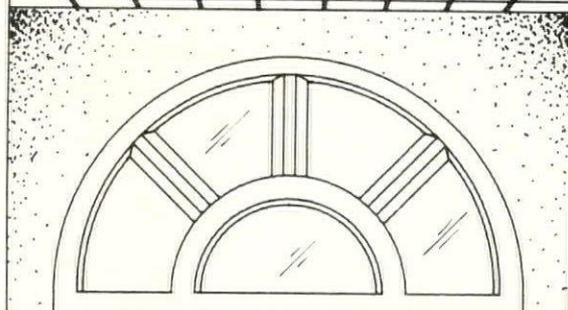
The Lite-Pak indirect uplight is the smallest of Rambusch's Pan-A-Lux series fixtures. It has an extruded aluminum body, an anodized specular aluminum reflector, and a heat-resistant glass lens. The unit accommodates a 150-watt quartz lamp. Options include an ultraviolet-absorbing glass enclosure and barn doors; a wall-washing version is available. Rambusch Lighting, New York, NY.

Circle 139

RECESSED ENERGY SAVING DOWNLIGHTS



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AVAILABLE FOR USE
WITH 9 WATT OR 13
WATT PARALLEL TUBE
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REGRESSED PRISMATIC
LENS

THE BLADE[®]

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Any office environment can have a special touch of class with THE BLADE[®] from H.E. Williams. This unique combination of metal louver and diffusing overlays results in high-cut-off lighting that is eye-pleasing and versatile. THE BLADE[®] gives you the opportunity to be creative as well as efficient with fluorescent lighting because it offers a choice of louver colors—black, bronze, white, off-white and aluminum. Each color takes on a different character when used with warm or cool white fluorescents. Design smart. Design with class. Design with THE BLADE[®].



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Circle 67

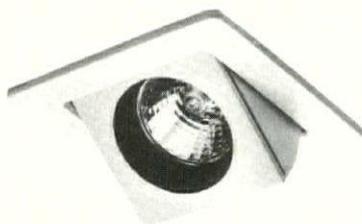


■ **Electronic compact fluorescent**

Osram's Dulux EL electronic compact fluorescent lamp is designed to replace a standard incandescent lamp in most applications, according to the manufacturer. It comes with a screw base and a built-in electronic ballast that ensures flicker-free instant starting. The lamp has a color temperature similar to incandescent (2700K),

lasts an average of 10,000 hours, and is available in 7-, 11-, 15-, and 20-watt sizes to replace 25-, 40-, 60-, and 75-watt A lamps. Osram Corporation, Montgomery, NY.

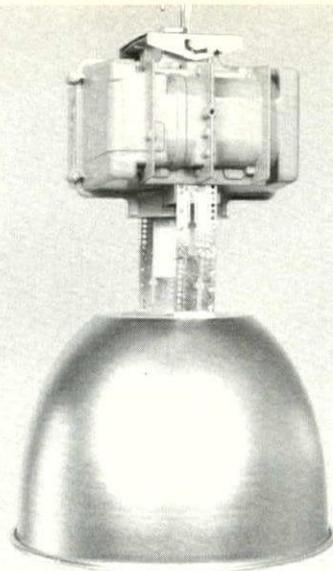
Circle 140



■ **MR16 downlights, wall washers**

CSL's Halogena miniature recessed low-voltage downlights and wall washers accept MR16 lamps up to 50 watts. Most models are less than 2 inches deep, which makes them suitable for applications with tight spaces. The fixtures come in round and square styles, in three finishes, and with a variety of baffles. CSL Lighting, Inc., Los Angeles, CA.

Circle 141



■ **Industrial lighting**

Hubbell's Superbay I specification-grade industrial luminaire offers a choice of two optical systems: a field-adjustable reflector that can be open or enclosed and a low-brightness combination reflector-refractor. The luminaire has a die-cast aluminum housing; several different mounting hangers are available. Hubbell Incorporated, Lighting Division, Christiansburg, VA.

Circle 142

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Circle 69

Shakespeare Fiberglass Poles...



NO RUST!

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NO CONCRETE!

Direct bury a Shakespeare fiberglass lightpole in just three easy steps: dig a hole, insert the pole, backfill and tamp. The exclusive flared bottom prevents twist and pull/out while the lightweight characteristics of fiberglass construction eliminates expensive concrete foundations.

NO BRUTE STRENGTH!

Pick it up. It's lightweight. Shakespeare's 18' pole, for example, weights as little as 39 lbs. Shoulder carry it to the hole and place it in the ground. Only lightweight Shakespeare fiberglass lets one person do the work of many.



NO CORROSION!

Shakespeare fiberglass lightpoles will not corrode above or below ground. Unlike aluminum, fiberglass is oblivious to salt air and adverse soil conditions that cause deterioration. You get the option of cost efficient direct burial installation plus the assurance of a like-new appearance for generations.

But, if your need is above ground installation, select from Shakespeare's standard line of Anchor Base lightpoles.



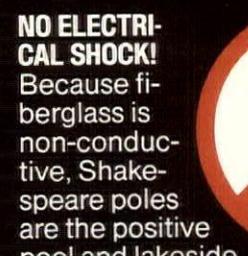
NO ON-SITE PAINTING!

All poles arrive ready to install. The exclusive Shakespeare fiberglass construction process impregnates color throughout the pole wall and finishes each with a highly weather resistant, matching polyurethane coating to assure years of lustrous, maintenance free service.



NO HEAVY EQUIPMENT!

Lightweight means easy handling. Most installations can be handled by one or two people, significantly reducing installation costs. For extremely long poles, leverage, not weight, is the only factor that requires heavy equipment.



NO ELECTRICAL SHOCK!

Because fiberglass is non-conductive, Shakespeare poles are the positive lighting alternative that guard against accidental electrical shock from grounded out fixtures or faulty wiring. Why risk the liability?



NO ROT!

Even as you read this, there is wood... treated, painted, or unprotected... rotting above and below ground. NEVER Shakespeare fiberglass lightpoles!



NO BREAKAWAY BOLTS!

High strength construction resists chipping, scrapes, bumps, bangs, and will not dent. For breakaway installations, Shakespeare fiberglass lightpoles can be supplied to satisfy FHWA requirements without expensive breakaway bolts.

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Send for your Free, full line 1989 Shakespeare Fiberglass Lightpole catalog today...It'll do you good!



Circle 70



■ Pendant luminaire

The PH 5 pendant luminaire from Poulsen Lighting has formed, graduated reflector shades and concealing cones supported by a series of rounded struts. The optical system provides glare-free, uniform, symmetrical light distribution. Interior shade surfaces have a white enamel finish; exterior surfaces come in four colors. The luminaire accommodates a 200-watt incandescent lamp. Poulsen Lighting Inc., Miami, FL.

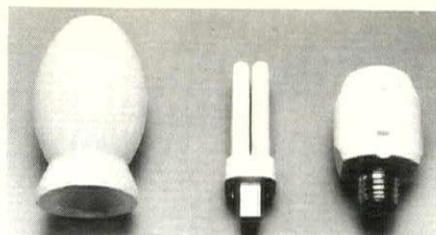
Circle 143



■ Electronic dimming ballast

The Etta sinusoidal electronic dimming ballast eliminates power line harmonics and associated electromagnetic interference; it operates silently, helps extend lamp life, and produces high-quality, flicker-free light, according to the manufacturer. The energy-efficient, solid-state unit provides continuous dimming capability down to 5 percent of full light output, so light levels can be adjusted to specific needs. Etta Industries, Inc., Boulder, CO.

Circle 144

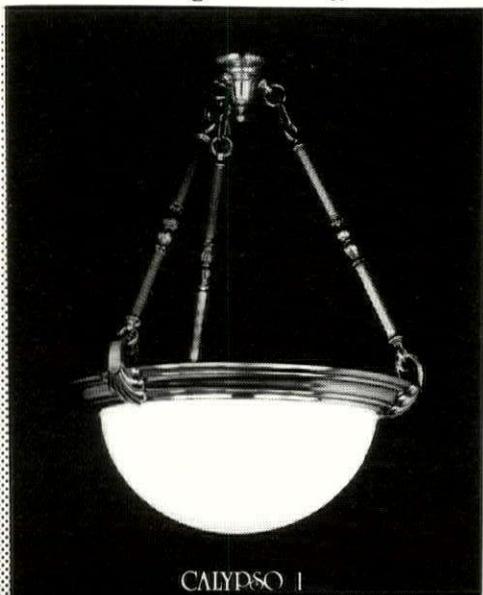


■ Compact fluorescent lamp system

GTE's compact fluorescent lamp system combines a replaceable 13-watt quad lamp, a screw-base ballast, and a bulb-shaped, twist-off plastic diffuser in one unit. Users can replace the compact fluorescent source without discarding the ballast or diffuser. The 7-inch-long, 3-inch-diameter unit can be used in place of a 40- or 60-watt incandescent lamp and is shaped to fit most table lamps, according to the manufacturer. With its notched base and beveled shoulders, it fits inside a lamp harp and clears spring fingers in most downlights. GTE/Sylvania, Danvers, MA.

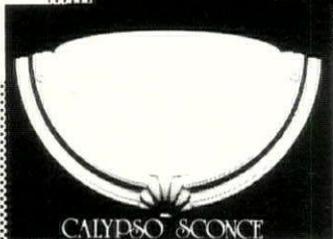
Circle 145

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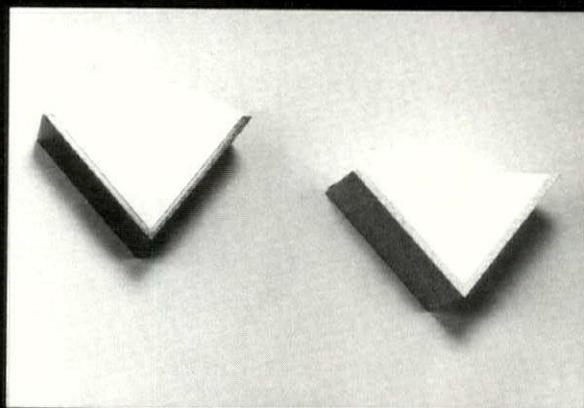
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Circle 71

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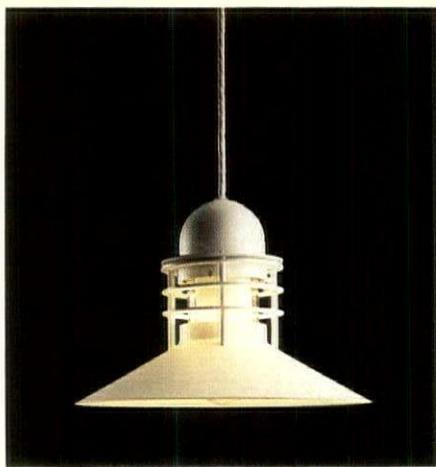


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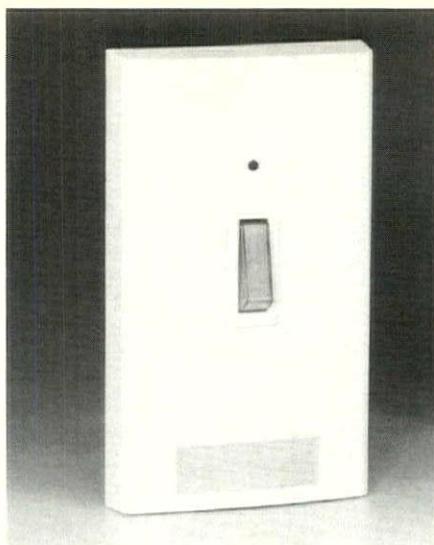
Circle 72



■ Decorative pendant

Alfred Homann and Ole Kjar designed Poulsen Lighting's Nyhavn pendant luminaire. Its lamp housing and reflector shade are fabricated of heavy-gauge aluminum. A clear glass enclosure sealed with a neoprene gasket surrounds the lamp compartment. It comes in two colors and accommodates a 100-watt incandescent lamp. Poulsen Lighting Inc., Miami, FL.

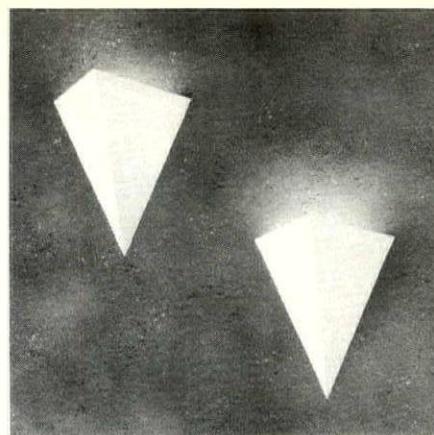
Circle 146



■ Infrared wall switch

The self-contained Switch-O-Matic two-wire wall switch controls up to 1800 watts of incandescent and fluorescent lighting in a space up to 800 feet square. It turns lights on when it detects someone entering a space and turns lights off 10 minutes after the space is vacated; a 6-minute timer is available. UEC, Inc., Wylie, TX.

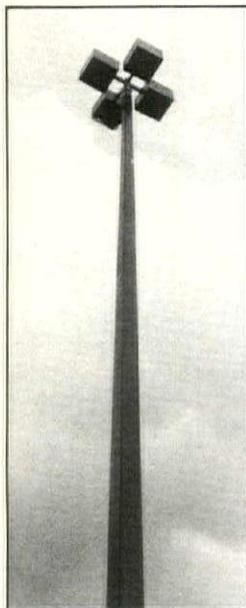
Circle 147



■ Decorative sconces

Visa Lighting offers triangular sconces in two styles: the CB2440, with round perforations, and the CB2460, with triangular perforations. Both styles accommodate incandescent sources and come in two sizes and a variety of painted finishes. Visa Lighting Corporation, Milwaukee, WI.

Circle 148



There's a storm brewing over CPI's Colored Concrete Poles...

And the competition is running for cover. The reasons are simple; No Rust, Paint or Peel, No Rot, No Vibration, No Maintenance. There's nothing plastic about CPI poles.

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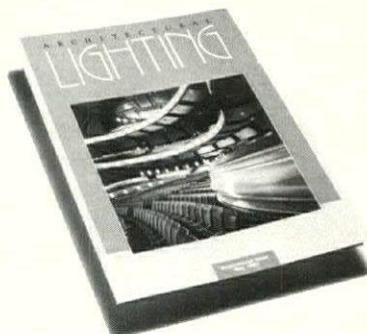
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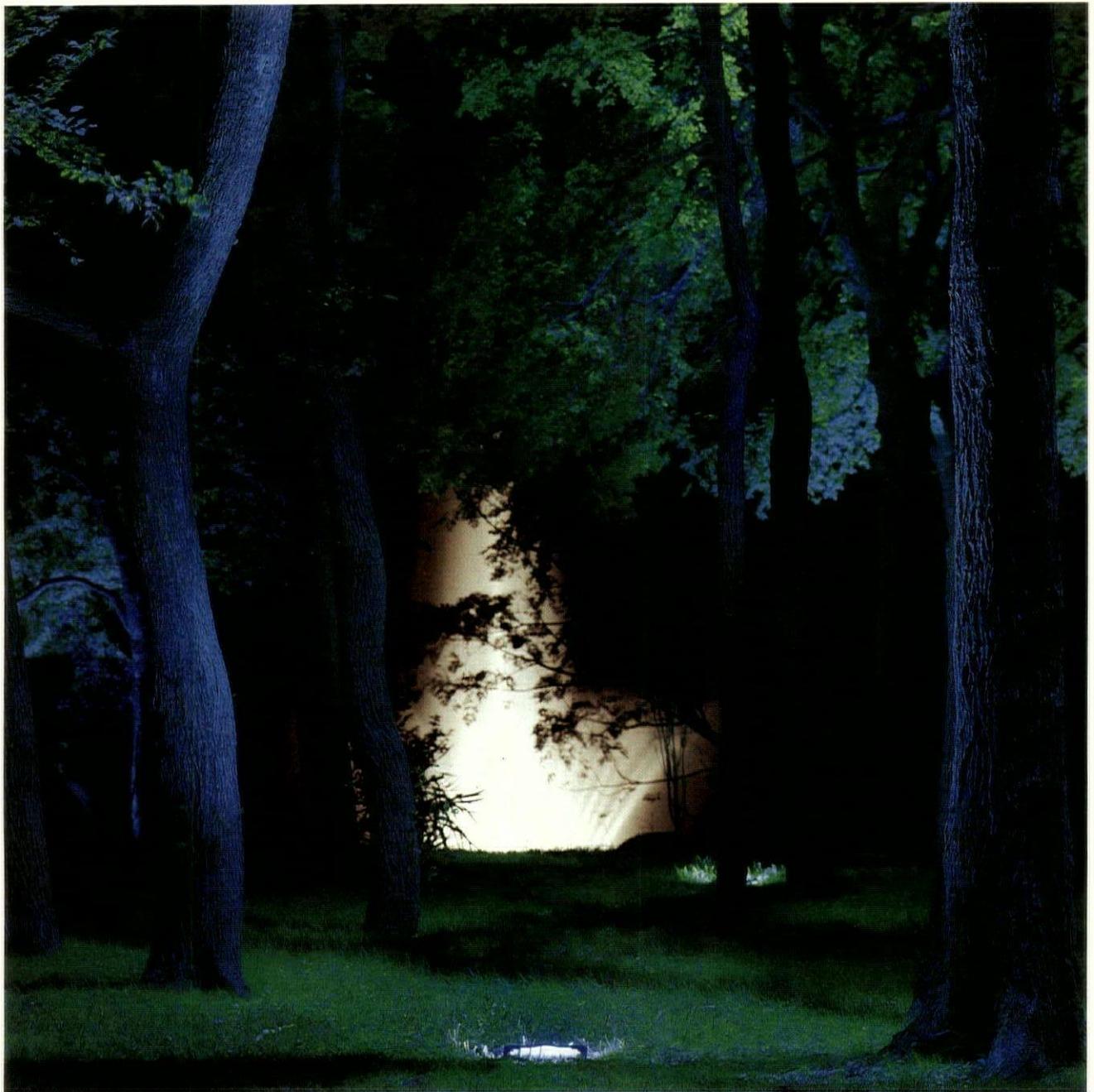
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GROUND EFFECTS

The beautiful grounds of this Southwest home are illuminated by Hydrel Series 6000 Well Lights using mercury vapor lamps to help create a "moonlight" effect. In the background, Hydrel 4000 Series Underwater Incandescent Lights illuminate a Hydrel Aquahue fountain.

Hydrel offers a wide line of lighting and water effect products designed for the rigors of the outdoor environment. Our forty years of experience has proven the value of providing the finest materials, testing, and on-going innovation to provide products with an extra margin of reliability.



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Greenlee Landscape Lighting Mfg. produces the finest landscape lighting fixtures available. Each fixture is designed to meet the requirements of demanding professionals. Landscape architects, engineers, architects, lighting consultants and designers nationwide specify Greenlee.

Superb light control, easy installation and dependability are all a part of the growing Greenlee reputation. Fixture quality is matched by excellent customer service.

The Bullet Series fixtures are just some of the many fixtures available. This series is the perfect tool for creating the "Moonlight" effect. The dramatic proof of this claim is furnished by the photograph above. The light control capabilities and adjustability of the 201 Bullet are unequalled. Greenlee has been granted a patent on this fixture.

For detailed information, please consult the factory or your local representative.

Greenlee Landscape Lighting

Dallas, Texas 214/484-1133



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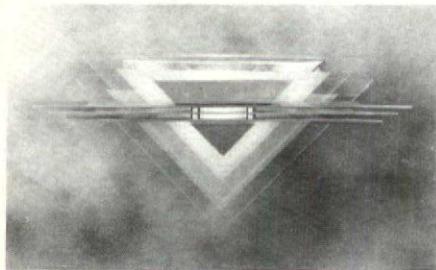
Circle 76



■ Miniature spotlight

The 280 Series spotlight from Lighting Services was designed specifically for the new generation of miniaturized 50- and 75-watt PAR 30 screw-base halogen lamps. It features a self-locking steel yoke. Most mounting types have an on-off switch. Available accessories include mounting devices, glass color filters, a spread lens, a louver, a hood, barn doors, screens, coiled cords, and integral dimming. Lighting Services Inc., Stony Point, NY.

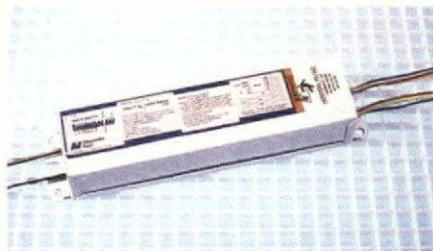
Circle 149



■ Decorative sconce

Check-O-Lite's Equinox sconce uses dual triangles of clear glass with a sandblasted design. The 18 $\frac{1}{4}$ -inch-wide, 9-inch-high sconce accepts a 150-watt halogen lamp. It comes in three finishes. Check-O-Lite, Inc., Jersey City, NJ.

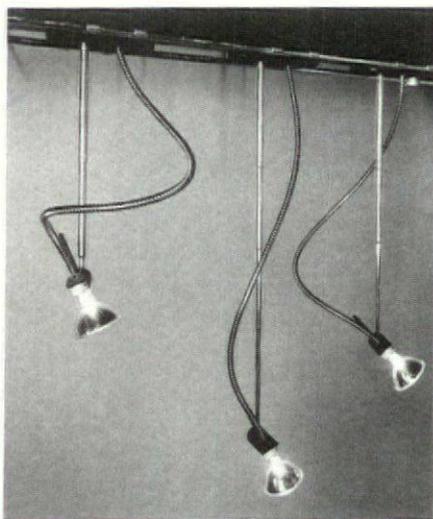
Circle 150



■ Switching system ballast

MagneTek Triad's Ballastar LLSS ballast has an integral high-low light level switching system that allows users to lower lighting levels by 50 percent to reduce glare on VDT screens or for nighttime lighting. The switching system can be activated manually from a wall switch or remotely with a standard low-voltage system. The LLSS ballast is compatible with standard 30- or 40-watt fluorescent lamps, does not reduce lamp life, and can be retrofitted in place of standard ballasts. MagneTek Triad, Huntington, IN.

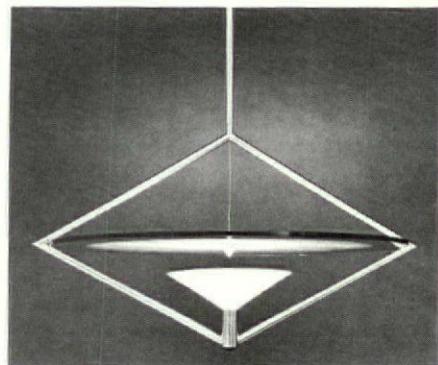
Circle 151



■ Low-voltage halogens

Geo International's Light Rayl is a low-voltage system of track fixtures on telescoping arms and flexible tubing; it is designed for adjustable lighting of retail, residential, corporate, and work spaces. It has two rails that conduct a 12-volt current from a transformer through the arms to MR16 lamps. Geo International, New York, NY.

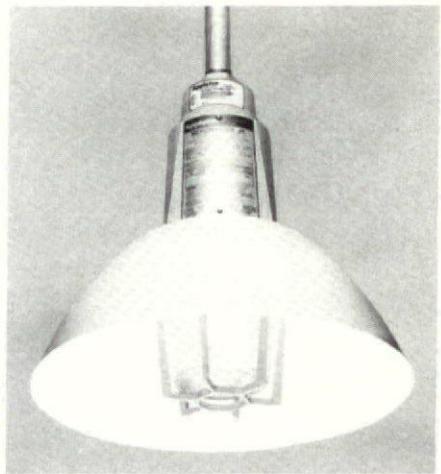
Circle 152



■ Pendant luminaire

Mel Brown International's Diamond pendant luminaire has a 31-inch-diameter horizontal glass disk at its center. Below the disk, a 150-watt halogen lamp is concealed in a translucent, cone-shaped shade. Brass and chrome versions are available. Mel Brown International, Los Angeles, CA.

Circle 153

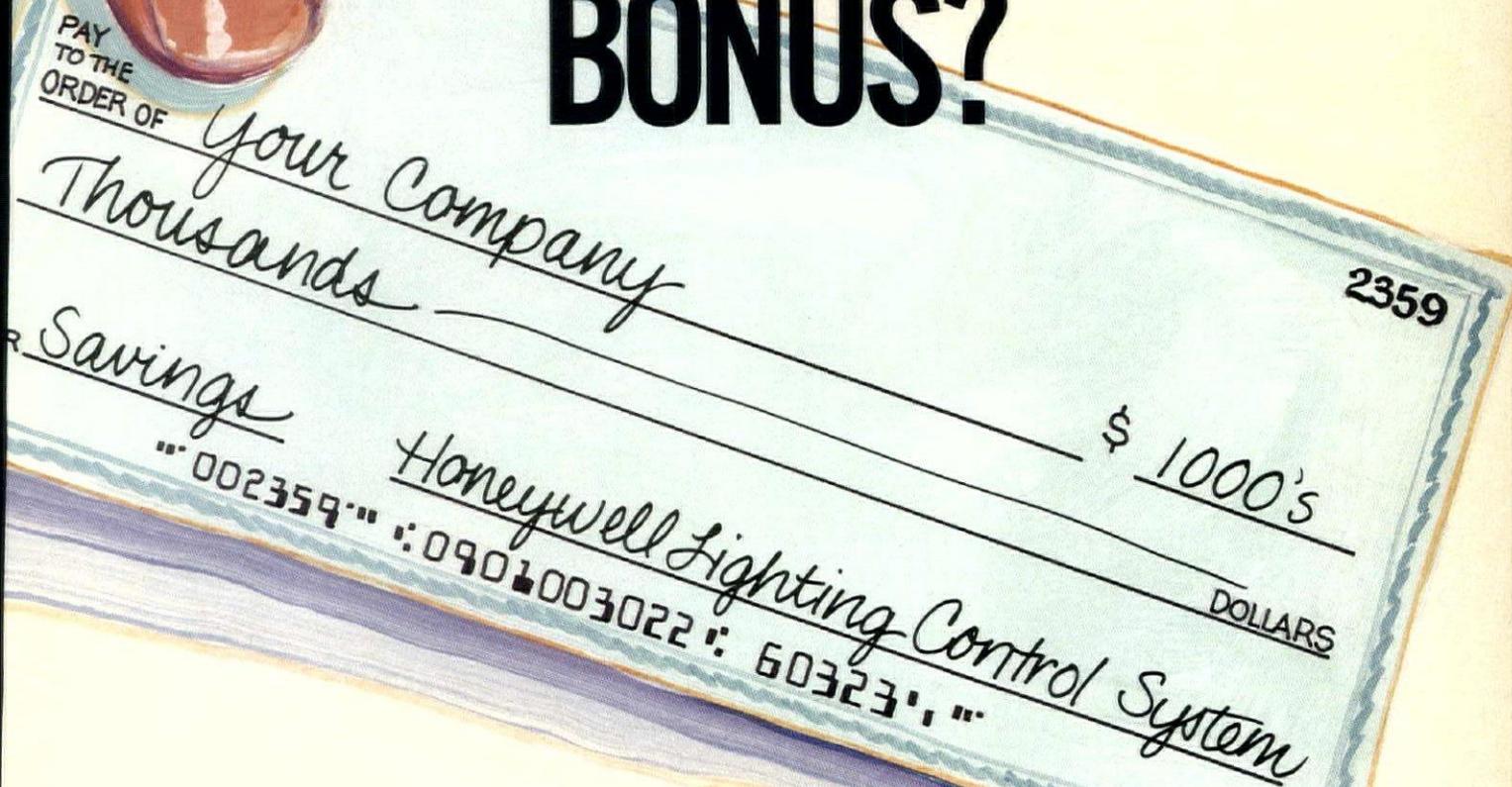


■ HPS luminaire

The Mercmaster Jr. enclosed and gasketed luminaire uses HPS lamps from 35 to 150 watts to light hazardous, nonhazardous, marine, and wet locations. It is UL listed for many such applications and complies with UL standards for others. A closed prismatic glass refractor and a choice of globes, guards, reflectors, and mounting options are available for the aluminum fixture. Appleton Electric Company, Chicago, IL.

Circle 154

COULD YOU USE A BONUS?



Look above your head. Are there fluorescent lights in your building? If so, you could start putting thousands of dollars back in your pocket.



Honeywell Building Controls Division has created an energy-saving lighting control system that can cut your fluorescent lighting costs by as much as 40%. This is a proven

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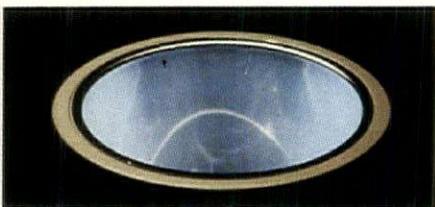
HELPING YOU CONTROL YOUR WORLD



■ Portable indirect HID fixture

The SPS series portable indirect fixture from SPI Lighting has a streamlined, low-profile housing and a specular reflector that distributes light evenly over a large area. The fixture has rubber feet so that it can rest directly on horizontal surfaces; accessories are available for mounting it on walls or office panels. It accommodates a medium-base metal halide lamp up to 175 watts. Models with single and double optical housings are available. SPI Lighting, Mequon, WI.

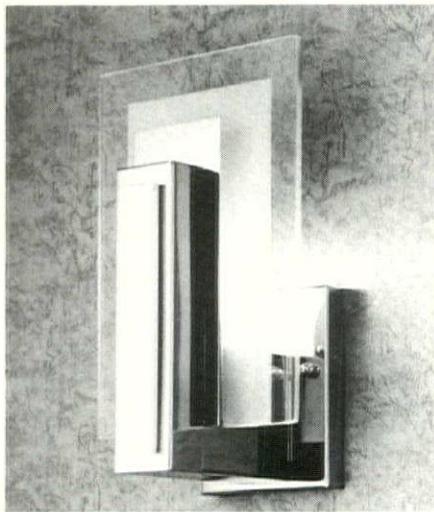
Circle 155



■ Compact fluorescent reflectors

Foremost Manufacturing's anti-iridescent reflectors are made with the company's Aluma-Lux process, which eliminates the iridescence commonly produced by conventional reflectors when they are used with compact fluorescent lamps. The reflectors have none of the "milky" appearance seen with some compact fluorescent reflectors. Foremost Manufacturing Company, Inc., Union, NJ.

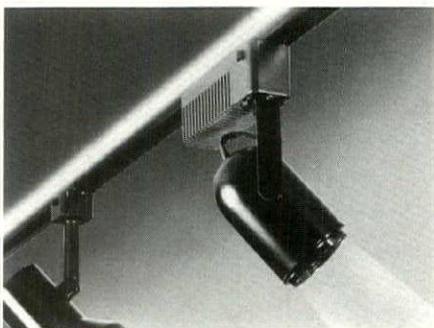
Circle 156



■ Wall brackets

Staggered rectangles are the theme of Murray Feiss's contemporary wall brackets, which come in polished brass, chrome, and black chrome finishes, are 12 inches high and 6 inches wide, and have one Edison-base socket. Murray Feiss Import Corp., Bronx, NY.

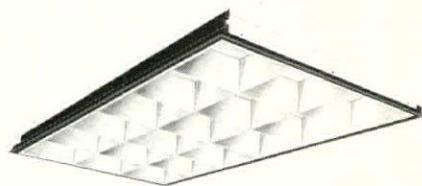
Circle 157



■ Two-circuit track

Con-Tech Lighting's two-circuit track lighting system doubles the capacity of a single run of track, according to the manufacturer. Each section of track contains two 120-volt circuits and a common conductor. Users can change lighting effects simply by switching circuits, and they need fewer accessories and less track to support lighting loads. Con-Tech Lighting, Deerfield, IL.

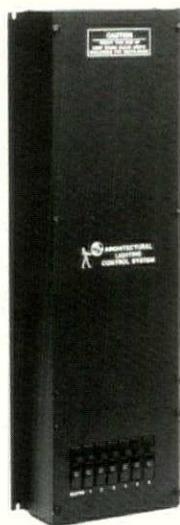
Circle 158



■ Parabolic troffer

The Parazak troffer from Thomas's Benjamin division has an interlocking door frame and louver, completely enclosed vanes, spring-loaded latches, and a self-centering louver and frame assembly. Benjamin Division, Thomas Industries Inc., Sparta, TN.

Circle 159



■ Architectural dimming system

Strand Electro Controls offers the System Six compact architectural dimming system for small lighting control applications. It has the same features that larger systems have, but operates at a cost comparable to that of a wall box unit, according to the manufacturer. The system comes in three configurations: incandescent, low-voltage, and low-voltage with nondimming relays. Units are compatible with the company's slide switch stations and preset controllers. Strand Electro Controls, Salt Lake City, UT. ■

Circle 160

Discriminating decision makers always select Spring City ornamental lighting posts to enhance the beauty of their landscapes. They have been making this decision for over sixty years because these posts are superbly crafted, historically accurate and made of cast iron for heavy duty use. They provide endurance and elegance in thousands of cities and towns around the country.

SPRING CITY CAST IRON LIGHTING POSTS ADD GRACE AND BEAUTY TO ANY LANDSCAPE

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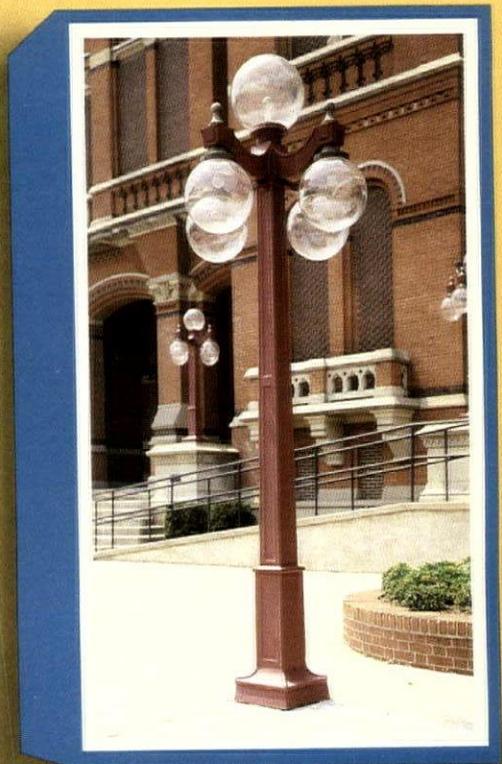
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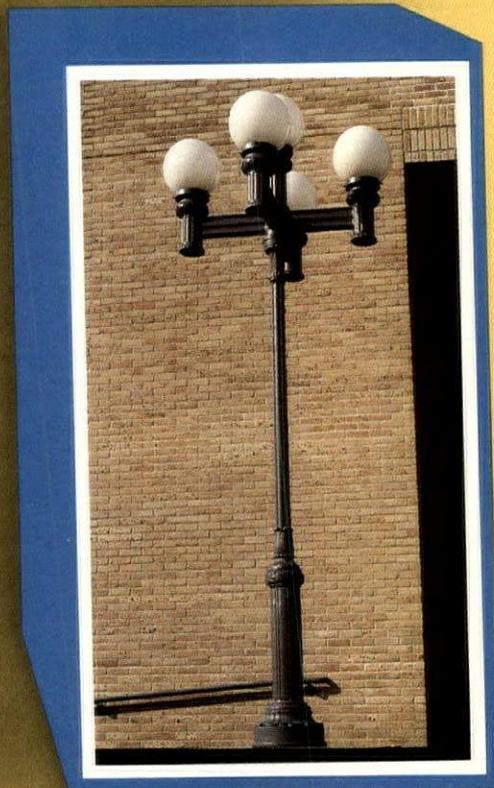
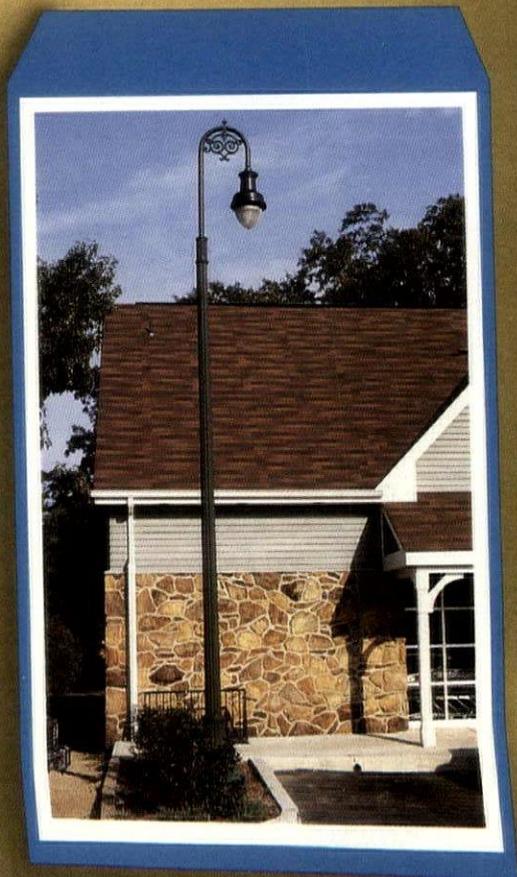
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base. Available with
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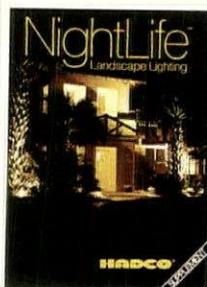
Product Literature



Industrial meters

An illustrated 12-page brochure profiles illuminance meters, color meters, and other industrial meters from Minolta. It includes photos of each model, technical details, and descriptions of features. Minolta, Ramsey, NJ.

Circle 161



Landscape lighting

A color catalog supplement contains photos, descriptions, and specifications for miniature low-voltage accent lights, spread lights, path lights, bollards, and well lights from Hadco's NightLife collection. Hadco, Littlestown, PA.

Circle 162



Low-level area lighting

Gardco's Lightcolumns provide glare-free, low-level area lighting. A data sheet features 10 lensed and/or louvered models for uplighting, downlighting, and combination up- and downlighting applications. Gardco, San Leandro, CA.

Circle 163



Halogen luminaires

The Enterprise collection of decorative pendant and ceiling luminaires includes the model 3800, which has a gold-plated brass stem and a black finish. An illustrated color brochure lists finishes, dimensions, and lamp requirements. Crystorama, Carle Place, NY.

Circle 164



Brass luminaires

Luminaires in the Designer P22 series have cast, lathe-turned rings of solid brass that support a variety of lamps, lenses, and insert materials. A brochure shows several of more than 50 luminaires, furniture pieces, and ornamental objects. Architectural Artifacts, Inc., Pittsburgh, PA.

Circle 165

NEW!

Triple Mini Halogen Ceiling Fixture
Model No. 9183

NEVER IN THE SHADOWS!

Your favorite sculpture, painting or any item you want to focus your attention on will never be in the shadows again with Roxter's Triple Mini Halogen Ceiling Fixture. The universal swivel allows you to adjust each fixture for precision highlighting. Three MR-11 20 watt low voltage halogen bulbs (included) are powered by a built-in solid state transformer.

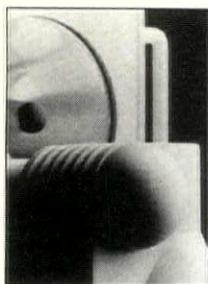
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Circle 80



Track lighting poster

A full-color wall poster for specifiers features a selector chart of Capri's track lighting fixtures and accessories. A companion to the company's 1989 catalog, it lists shapes, sizes, wattages, dimensions, and finishes. Capri Lighting, Los Angeles, CA.

Circle 166



Polycarbonate globes

A TrimbleHouse catalog contains descriptions and color photos of six molded, one-piece polycarbonate globes and mounting brackets for incandescent and HID sources. TrimbleHouse, Norcross, GA.

Circle 167



Pole bases

Spring City's threaded, ductile-iron pole bases for lighting standards and other electrical equipment have a deep, tapped hub and a gasketed door. A data sheet lists sizes, heights, dimensions, and receptacle cover options. Spring City Electrical Mfg. Co., Spring City, PA.

Circle 168



Exterior lighting

A color brochure illustrates and describes Moon-Lighting's cast aluminum bollards and wall- and ceiling-mounted outdoor lighting fixtures. It includes dimensions, lamp requirements, and photos. Moon-Lighting Mfg., Anaheim, CA.

Circle 169



Recessed downlight

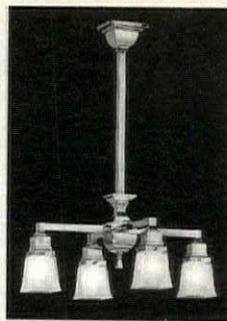
The Miro-T downlight series for Osram HQI lamps includes a recessed model with a choice of four baffle styles and interchangeable lenses in three beam patterns. A data sheet contains a detailed cutaway sketch and photometric data. Miroreflector, Inwood, NY.

Circle 170

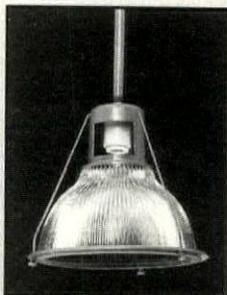
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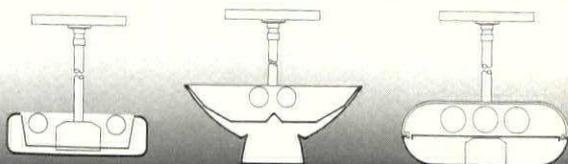
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Circle 81

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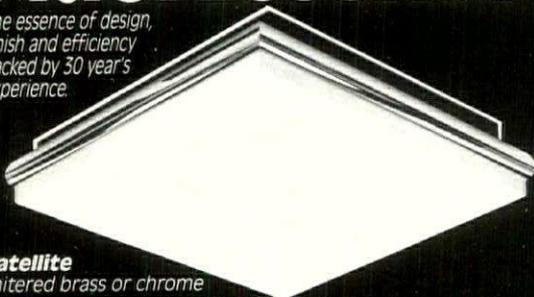
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Circle 83

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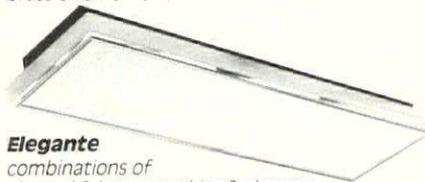
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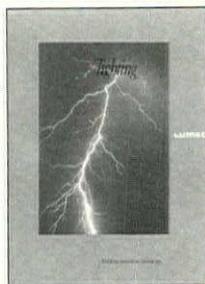
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■ Fluorescent lighting system

The Clegg high-frequency DC-AC distribution system for fluorescent lamps reduces energy consumption by up to 60 percent, reduces acoustic noise, extends lamp life, and does not decrease light output, according to the manufacturer. A brochure describes features. ITEC, Irvine, CA.

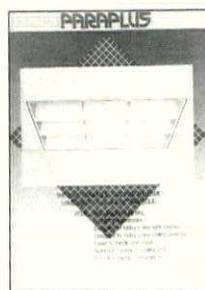
Circle 171



■ Outdoor luminaires

A 30-page catalog features Lumec's standard and custom decorative outdoor luminaires and poles. It includes photos and descriptions of all globes and post-top fixtures. Lumec, Ste. Therese, Quebec, Canada.

Circle 172



■ Parabolic louvers

A brochure profiles KLP's Paraplug 2-foot-square parabolic louvers for fixtures with U-shaped lamps. They fit new, two-directional, and standard ceiling grid systems. Keene Lighting Products, Wilmington, MA.

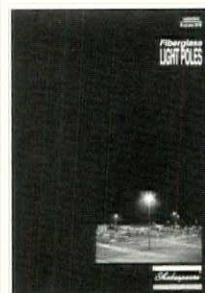
Circle 173



■ Dimmable transformer

Soft Start dimmable electronic low-voltage transformers are designed to eliminate the noise often produced by core and coil transformers, according to the manufacturer. Innovative Industries Incorporated, Tampa, FL.

Circle 174



■ Fiber glass poles

A brochure discusses advantages of fiber glass poles over poles made of other materials. It includes photos and descriptions of square and tapered round and square poles and accessories. Shakespeare, Newberry, SC.

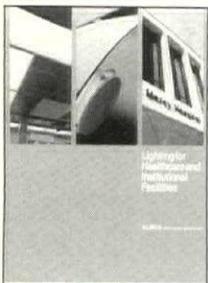
Circle 175



■ Brass fixtures

Brass Reproductions offers hand-assembled sconces, chandeliers, and table and floor lamps in solid brass with optional lacquering. A brochure includes information about a custom design service. Brass Reproductions, Chatsworth, CA.

Circle 176



■ Medical, institutional lighting

A 16-page color brochure on lighting for health care and institutional facilities includes supplemental surgery fixtures, dark-room safelights, X-ray illuminators, examination lights, and luminaires for patient rooms. Alkco, Franklin Park, IL.

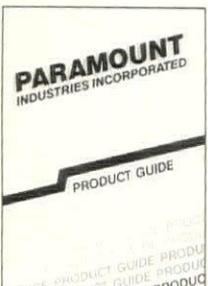
Circle 177



■ Troffers, reflectors

A brochure explains features of two Meter Miser Plus fluorescent troffers with reflectors of Silver Plus specular silver laminate, which has a 95 percent minimum reflectance. Graybar Electric Company, St. Louis, MO.

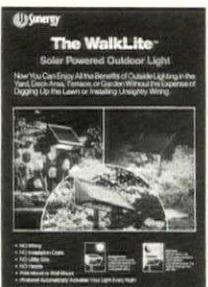
Circle 178



■ Product guide

A product guide describes Paramount's line of standard fluorescent and HID luminaires and replacement parts. It includes models approved by the National Sanitation Foundation and others for use in marine and hazardous locations. Paramount Industries, Crosswell, MI.

Circle 179



■ Solar-powered luminaire

The WalkLite outdoor garden luminaire has a built-in sensor that automatically turns on the light at night and a solar panel that recharges a built-in battery. A data sheet explains how the unit works and lists specifications and models. Sunergy, Princeton, NJ.

Circle 180

Bright Idea

The LIGHTHOUSE

New fixture for low level lighting. Handsome bollard design. Laminated of custom selected, kiln dried *Western Red Cedar*. Easy access to lamp and ballast compartment. Incandescent, mercury vapor or high pressure sodium.

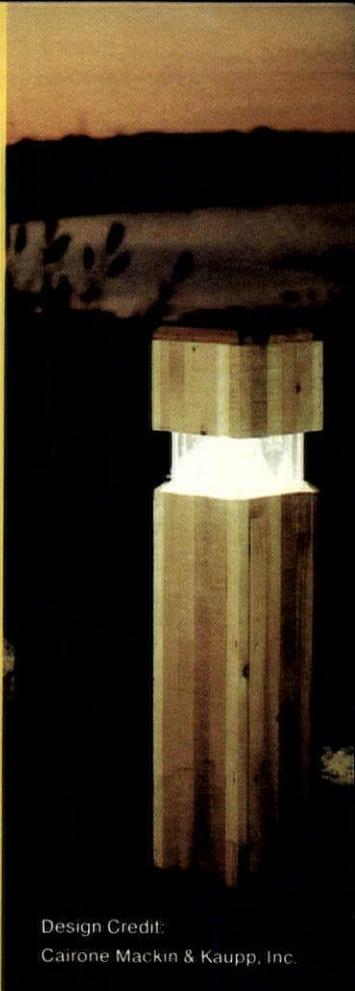
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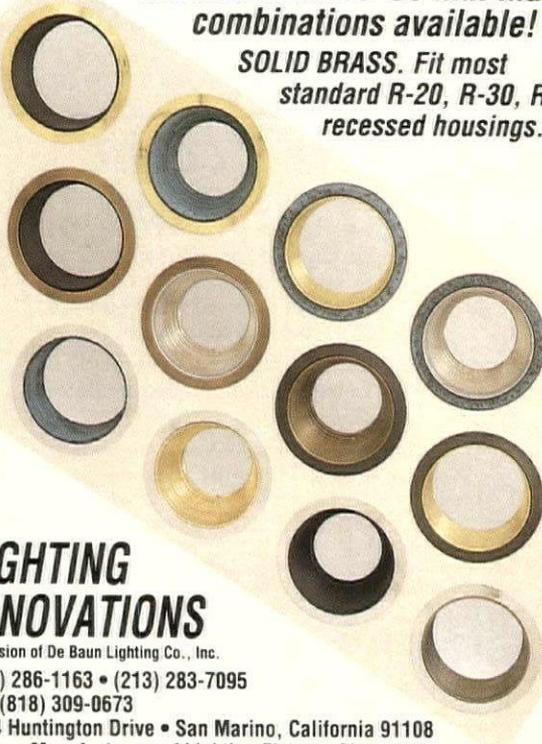
Circle 85

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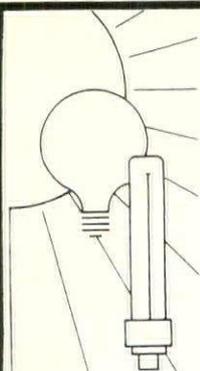
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Circle 87

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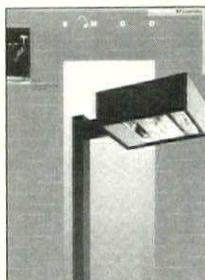
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Circle 88



■ Sharp-cutoff luminaire

Emco's pole-mounted SC sharp cutoff luminaire is designed to throw light forward and minimize backward spill light. A color brochure describes features, lists specifications, and contains a cutaway photo. Emco Environmental Lighting, Milan, IL.

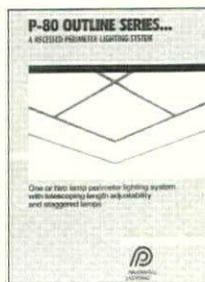
Circle 181



■ Custom low-voltage

A brochure describes low-voltage accent lighting strips in four basic extrusion shapes and a variety of anodized aluminum finishes. Photos show suggested applications. Sentinel Lighting, Los Angeles, CA.

Circle 182



■ Recessed perimeter system

The P-80 Outline recessed perimeter lighting system features telescoping adjustable lengths and a staggered arrangement for single or double rows of fluorescent lamps. Prudential Lighting, Los Angeles, CA.

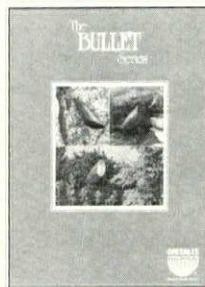
Circle 183



■ Crystal chandeliers

An illustrated color brochure details Schonbek's crystal chandeliers for large interior spaces. The chandeliers come in diameters up to 102 inches and are available in European crystal and Strauss full-lead crystal versions. A. Schonbek & Co. Inc., Plattsburgh, NY.

Circle 184



■ Landscape lighting

Landscape luminaires in the Bullet series can be adjusted three ways to produce dramatic up- and downlighting effects. An illustrated brochure profiles three models and their accessories. Greenlee Landscape Lighting Mfg., Carrollton, TX. ■

Circle 185

Calendar

May 25-29, 1989

Intel '89 lighting show, Milan, Italy. Lighting fixture exposition held in conjunction with the 11th International Electrotechnics and Electronics show (Intel '89). Contact: Secretariat Intel, Via Algardi 2, 20148 Milano, Italy, 0039-2-3264282.

June 5-7, 1989

Retail lighting seminar, Philips Lighting Center, Somerset, NJ. Light and color, accent and display lighting, new lamp and system technology. Contact: Sherry Bachman, Lighting Center Coordinator, Philips Lighting Company, 200 Franklin Square Dr., Somerset, NJ 08875-6800, (201) 563-3600.

June 5-8, 1989

A/E/C Systems '89, conference and trade show, Anaheim Convention Center, Anaheim, CA. International computer and management systems show for the design and construction industries. Contact: Sharon Price, A/E/C Systems '89, P.O. Box 11318, Newington, CT 06111, (800) 451-1196.

June 6, 1989

Party spectaculars, DLF event. Contact: Sy Bollinger, president, the Designers Lighting Forum of New York, Inc., 58 Stratford Ave., Greenlawn, NY 11740, (212) 255-8555.

June 9-10, 1989

1989 IES biregional conference, Inter-Continental Cancún Caribe, Cancún, Mexico. Technical sessions in English; Spanish translations of papers available. Speakers: Dave DiLaura, Jim Benya, IESNA President-elect Steve Spier, others. Sponsors: IES Southwestern and South Central regions. Contact: Jane Burgess, Global Enterprises, Inc., P.O. Box 1907, Austin, TX 78767, (512) 327-7720.

June 12-14, 1989

Lighting conference for utility representatives, Philips Lighting Center, Somerset, NJ. Includes discussion on lighting, sources, ballasts, luminaires, and lighting maintenance. Contact: Sherry Bachman, Lighting Center Coordinator, Philips Lighting Company, 200 Franklin Square Dr., Somerset, NJ 08875-6800, (201) 563-3600.

June 13-16, 1989

Neocon 21, international office and contract design exposition and conference, Merchandise Mart, Chicago. Contact: Neocon 21, 470 The Merchandise Mart, Chicago, IL 60654, (800) 324-6278 or (312) 527-7618.

Continued on page 117



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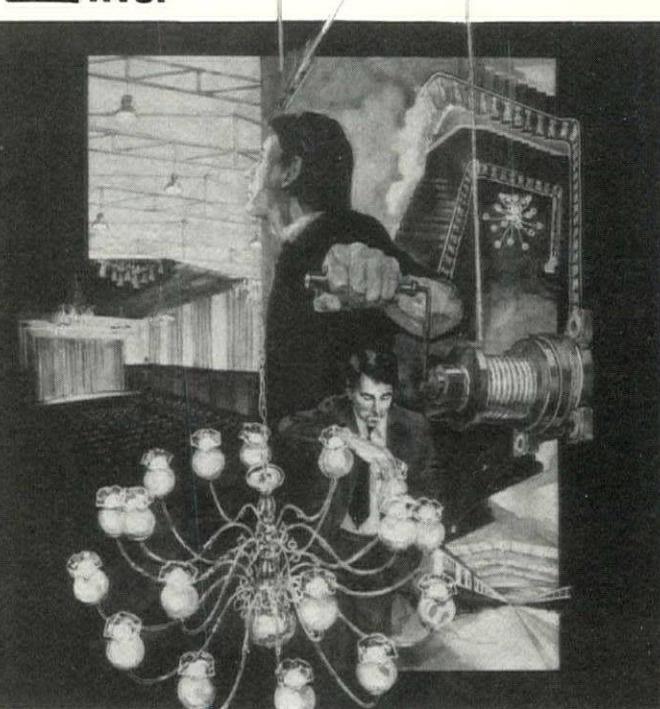
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Circle 89



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Circle 90

Architectural Lighting, May 1989

115

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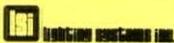
OSRAM

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

Calendar continued

June 14, 1989

Past presidents on parade, DLF event. Contact: Designers Lighting Forum of Northern California, P.O. Box 1429, San Francisco, CA 94101-1429, (415) 824-8310.

June 15-16, 1989

Facilities planning and design for data processing and telecommunications, seminar, Atlanta. Covers techniques for preparing new or remodeled space to accommodate changing technology. Speaker: Roger Crosby. Repeats November 7-8. Contact: International Facility Management Association, Summit Tower, Suite 1410, 11 Greenway Plaza, Houston, TX 77046.

June 18-21, 1989

1989 Montreal Furniture Market, Place Bonaventure and Palais des Congrès, Montreal, Canada. Exhibit includes home furnishings, accessories, and lighting fixtures from 330 Canadian and 70 foreign manufacturers. Contact: Renée Dufresne, Director of Exhibitions, Quebec Furniture Manufacturers Association, Inc., 1 Eiffel, P.O. Box 1002, Place Bonaventure, Montreal, Quebec, Canada H5A 1E9, (514) 866-3631.

June 19-21, 1989

Renewables: A clean energy solution, SESCO conference, Peach Bowl Convention Centre, Penticton, British Columbia, Canada. Fifteenth annual conference includes sessions on passive solar systems, energy conservation, and daylighting. Contact: Solar Energy Society of Canada Inc., 3-15 York, Ottawa, Ontario, Canada K1N 5S7, (613) 236-4594.

June 19-23, 1989

Solar '89, conference, Denver, CO. ASES annual conference and 14th national passive solar conference and exhibition. Sponsor: American Solar Energy Society. Contact: American Solar Energy Society Inc., 2400 Central, B-1, Boulder, CO 80301, (303) 443-3130.

June 26, 1989

Submission deadline for August calendar announcements in *Architectural Lighting*. Contact: Susan Degen, Assistant Editor, *Architectural Lighting*, P.O. Box 10460, Eugene, OR 97440, (503) 343-1200, FAX (503) 344-3514. ■

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Litelab: Low-voltage spots.

Page 22. *Glowing peach-pink columns make a lighting illusion* (Cafe Society, New York).

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Lightolier: Recessed downlights.

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General Electric: Flood lights.

Juno: Track lighting.

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Lutron: Dimmers and controls.

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Lightolier: Downlights.

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ITEC: Ballasts and rectifiers.

Osram: Fluorescent lamps.

Sylvania: Fluorescent lamps.

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

Photographers

Thomas Leighton, 321 East 43rd Street, New York, NY 10017, (212) 370-1835

Jennifer Levy Photography, 245 West 29th Street, 12th Floor, New York, NY 10001, (212) 465-8684

Norman McGrath, 164 West 79th Street, New York, NY 10024, (212) 799-6422

Robert Miller, 162 Bayberrie Drive, Stamford, CT 06902, (203) 359-1225

W.H. Rogers III, P.O. Box 340, New York, NY 10012, (212) 982-4570

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Tobi Seftel, 166 West 22nd Street, New York, NY 10011, (212) 243-6815

Paul Warchol, 133 Mulberry Street, New York, NY 10013, (212) 431-3461

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