

LIGHTING



**ELECTRICAL
CONSTRUCTION
AND MAINTENANCE**

at the FAIR

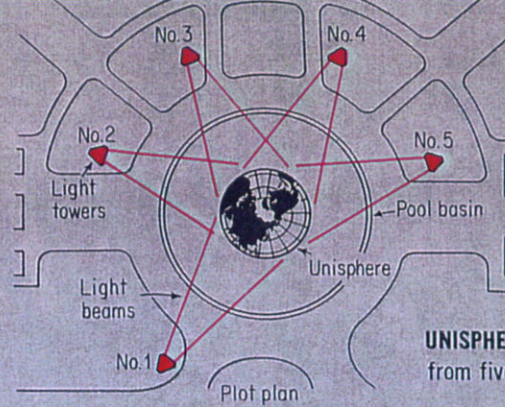
New light sources, new color filters, automated control of light and color effects, and unusual lighting application techniques combine to produce an ever-changing pattern of spectacular and dramatic lighting beauty at the New York World's Fair — 1964-65.

By Berlon C. Cooper

The New York World's Fair — 1964-65 opened on schedule, and is now in full operation. It is the world's largest, and the first to cost in excess of one billion dollars. It covers 646 acres (one square mile). It has exhibits from 58 countries, 25 states, and 240 industrial or commercial firms.

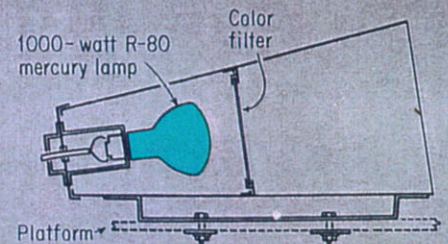
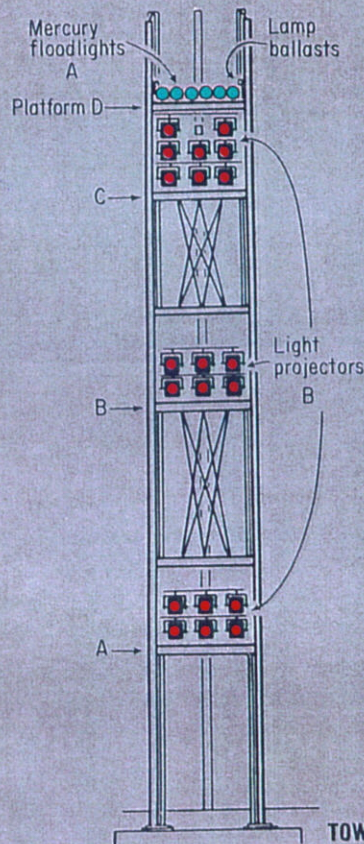
As with most other Fairs over the past century, lighting is a major element of design at the New York Fair. By day, the Fair is an exciting combination of unusual and intriguing architecture in buildings of varied shapes, contours, materials and colors, interspersed by sparkling fountains, pools, streets and promenades. But by night, the Fair becomes a veritable fairyland, glistening with light, color, sparkle, and unbelievable beauty and fascination. It becomes a place of excitement, fantasy, fun, intrigue and mystery. The lighting is ever-changing in color, in intensity, in sparkle, and in its shape, form and appearance. It is kept mobile in most cases through fully automated control.

Presented here are some highlights of the lighting, and details showing how it was accomplished. Shown above are the details for the lighting of the Unisphere, official symbol of the New York World's Fair 1964-65.

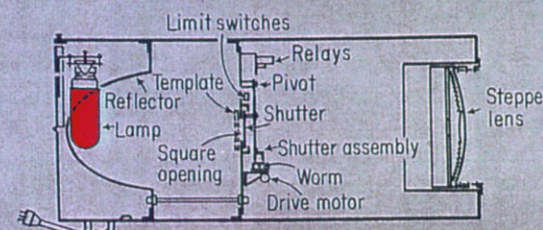


UNISPHERE LIGHTING

UNISPHERE lighting is by projectors from five 100-ft towers.



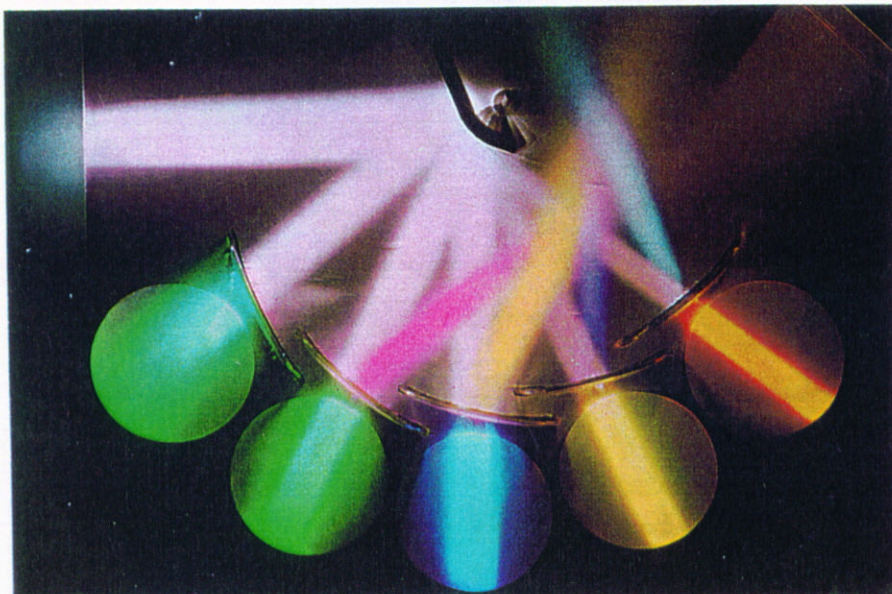
FLOODLIGHTS contain a 1000-watt R-80 mercury lamp, and blue filter.



PROJECTORS contain a 3-kw mogul bipost base lamp, provide narrow beam.

TOWERS support mercury floodlights incandescent projectors.

DICHROIC COLOR FILTERS



Large Lamp Dept., G.E. Co.

New and more efficient methods for producing colored light are being used extensively at the New York World's Fair. In one method, dichroic interference films are used on the inner surface of sealed-beam type spot lamps. These films transmit desired colors, and reflect all other visible wavelengths. In another method, separate lenses are coated with dichroic interference films and used in standard floodlight units using standard lamps, or used over standard floodlight units using standard lamps, or used over standard or special lamps as shown in the illustration at far right. Colors available and in use at the Fair include amber, blue, green, red and yellow.

LIGHTING OF FOUNTAINS AND POOLS

Pools and fountains abound throughout the New York World's Fair. There are eleven major pools and fountains which have been provided by the Fair Corporation, and about half of the private pavilions feature either a pool, or a fountain, or both. All fountains, and most pools are lighted, and the majority are lighted in color, and dimmer-controlled for changing color effects.

The most spectacular fountain, and a highlight of the entire Fair, is the Fountain of the Planets, impressive in size and design. Located in the 600-ft. diameter Pool of Industry, it has more than 400 tons of water ejected through 2000 nozzles. Some water jets reach heights of more than 150 ft. About 10,000 tons of water are recirculated during the half-hour show, which is held nightly at 9:00 p.m.

Approximately 150,000,000 candlepower illuminates the waters with brilliant and changing color lighting. Fireworks in the display are set off by 464 mortars. Over 1,000 different patterns of water and lighting effects can be produced. Reportedly the largest fountain ever built, it is the first to have a completely-automated system of operation.

The Unisphere sets on a three-pronged base in the Fountain of

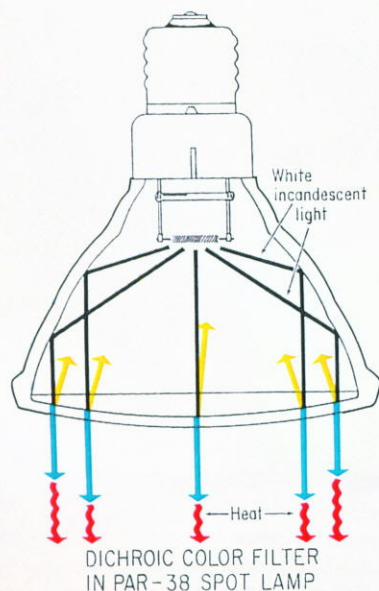


MAJOR SPECTACULAR of the Fair is the Fountain of the Planets, featuring an exciting and dramatic display of surging waters, changing colors, and exploding fireworks, in a programmed sequence accompanied by a synchronized musical background.

Continents pool basin, which is 300-ft. in diameter, and is lighted by white light only. This fountain features a double ring of water jets, projecting vertical streams of water from 8 to 40 ft, simulating an advancing wave action.

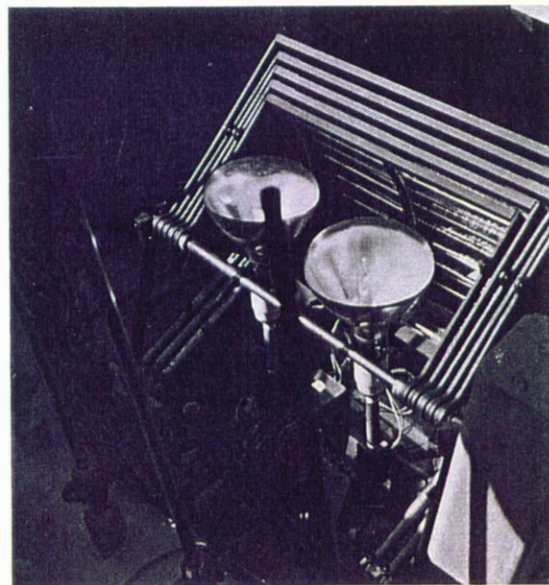
The Fountains of the Fairs and

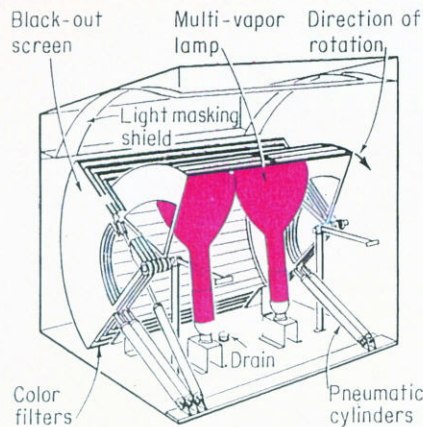
Central Pools are located between the Unisphere and the Fountain of the Planets. Each fountain has a row of arching water jets on each side, directed inward toward the center of the pool. Underwater lights in splash shields illuminate the jets of water.



PAR-38 spot lamps equipped with dichroic interference films on the inside surface of the lamp lens transmit a clear, pure color and infrared heat, reflect all other wavelengths. Lamps thus operate cooler than with conventional filters.

CLEAR GLASS can be coated with dichroic interference films, and used as a separate filter over conventional lamps, as shown here. Such filters were used on 1500-watt quartz-iodine floodlights for color lighting at Tower of Light and General Motors Corp. Pavilions.





2-LAMP LUMINAIRE used in fountain has 5-frame filter holder, containing red, blue, green and yellow dichroic filters, and a dowser for blackout.

Other public fountains include two Fountains of Progress, located in the transportation area, and the Lunar, Solar, and Astral Fountains, illustrated and described herein. The Fountains of Progress each have a different water display design, each



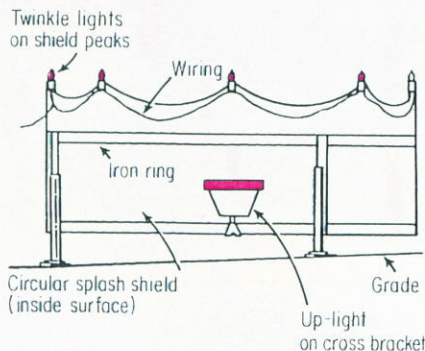
WATER PATTERNS and color lighting effects change constantly throughout the half-hour feature show of the Fountain of the Planets. Over 1200 multi-vapor lamps in 400- and 700-watt sizes are used in pairs. The 700-watt lamps produce up to 400,000 candlepower. Dichroic filters are pneumatically operated.

of compelling interest and delightful action, and each lighted by underwater floodlights in white light.

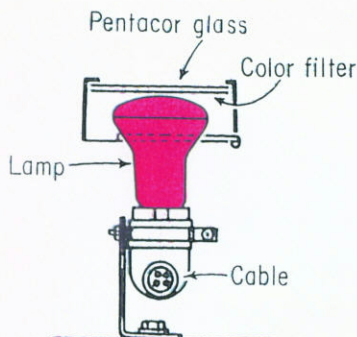
Special luminaires were designed to give added expanse to certain fountains, and distinctive treatment to the areas. These are shown under

“Promenade Lighting.”

Lighting consultants for the World's Fair Corporation were Hamel and Langer. They were responsible for the design of the lighting for the Unisphere and its Fountain of the Continents, for the



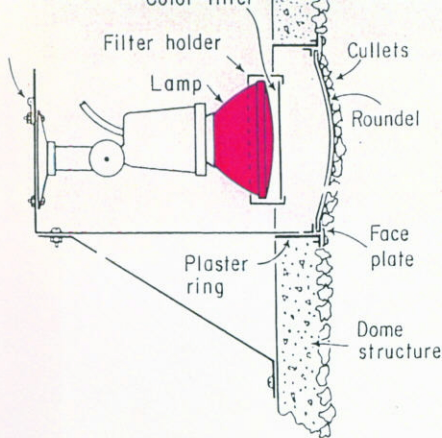
Jet Stream Splash Lights



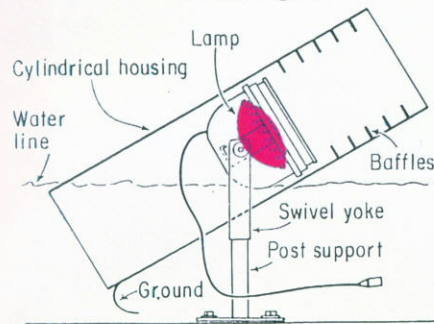
Strip Lights Pool of Reflections



FOUNTAINS of the Fairs are classically designed, consist of two ponds, each having a row of arching water jets on each side, directed toward the center, forming parabolic arcs which fall into splash shields at water level. Underwater lights are 300-watt PAR-56 lamps in metal housings. 30-watt R-20 lamps light wiers in the five ponds known as Pool of Reflections.



Solar Dome Lights



Solar Spotlight



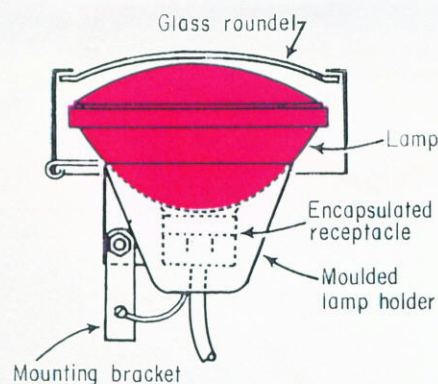
SOLAR FOUNTAIN has a 116-ft diameter pool basin, a central dome 20 ft in diameter, colored light ports illuminated from the interior, and supports a column of water 30 ft high with 30 nozzles on a 4-ft diameter circle. Wobbling jets of water on a 28-ft diameter circle simulate the sun's flaming gases.

Fountain of the Planets, including the synchronization of water displays, color lighting, fireworks, and music, for all the other fountains and pools, and for the street lighting luminaires, tree and landscape lighting, flag lighting, entrance gate

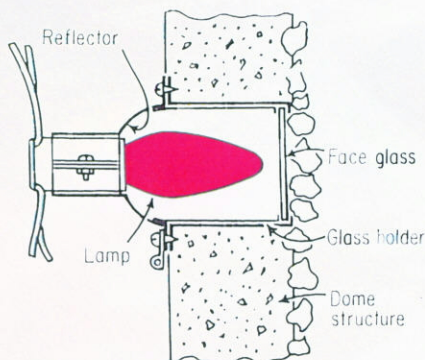
lighting, and parking area lighting.

Electrical contractors for the public lighting were: Broadway Maintenance Corp.—promenade luminaires, street lighting; Hatzel & Buehler—landscape lighting, flag lighting, Fountains of the Fairs and central

pools, Astral Fountain, Fountain of the Continents and the Unisphere; Metropolitan Electrical Construction Co.—Fountains of Progress, Lunar and Solar Fountains; and Eastern States Electrical Contractors, Inc.—Fountain of the Planets.



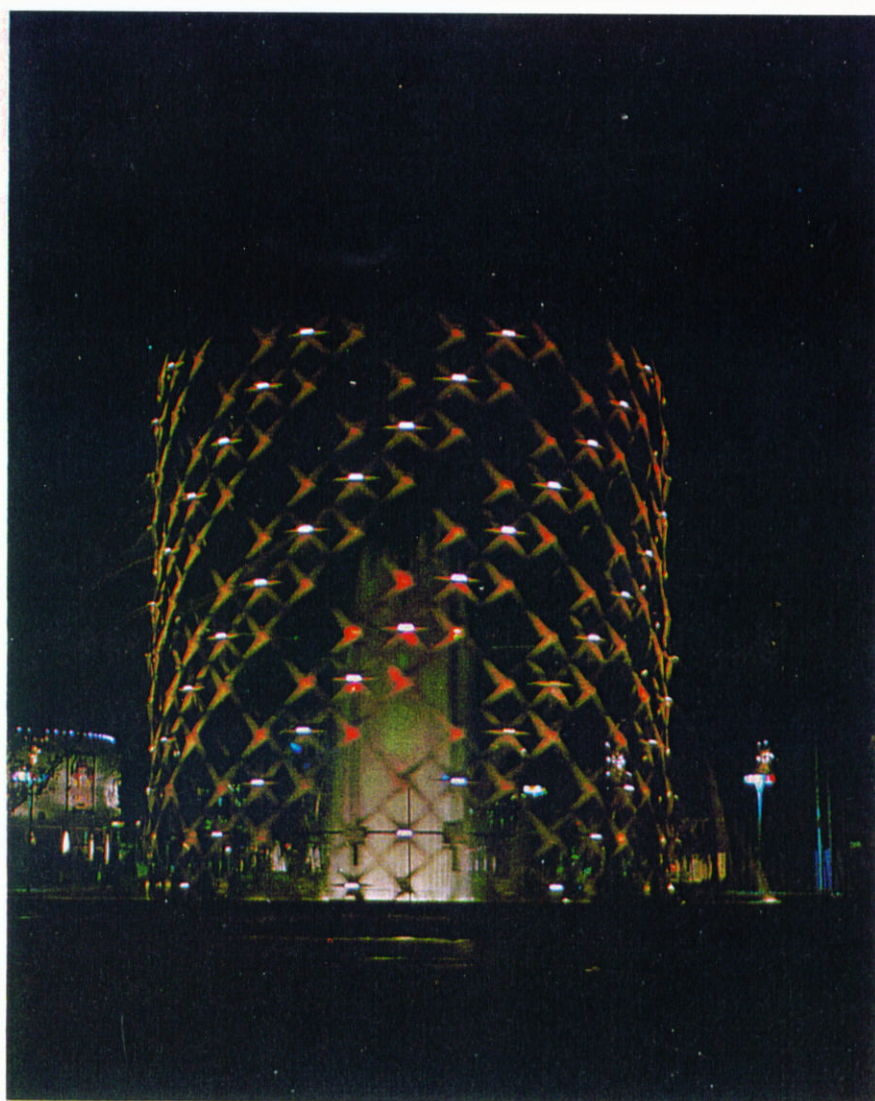
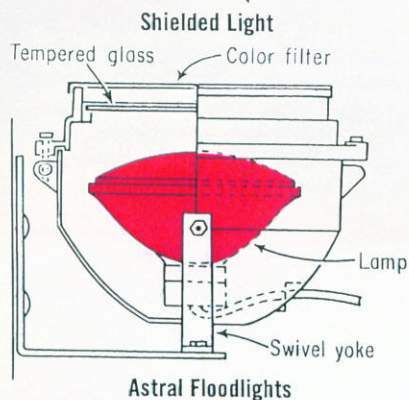
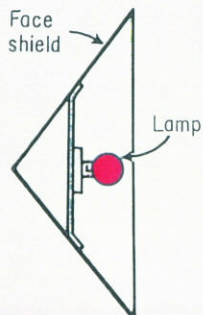
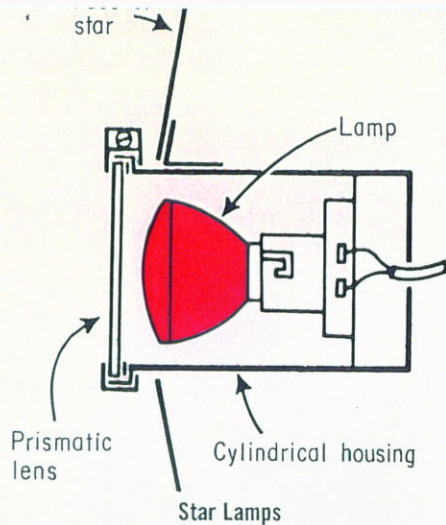
Underwater Lights



Low-Voltage Twinkle Lights

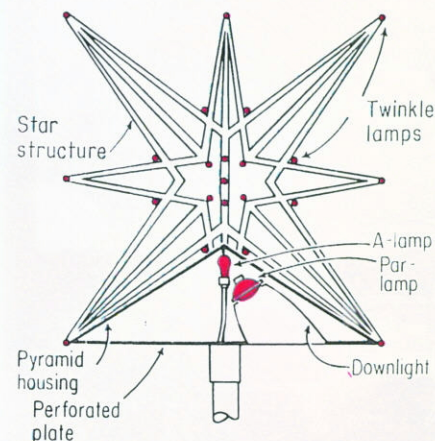
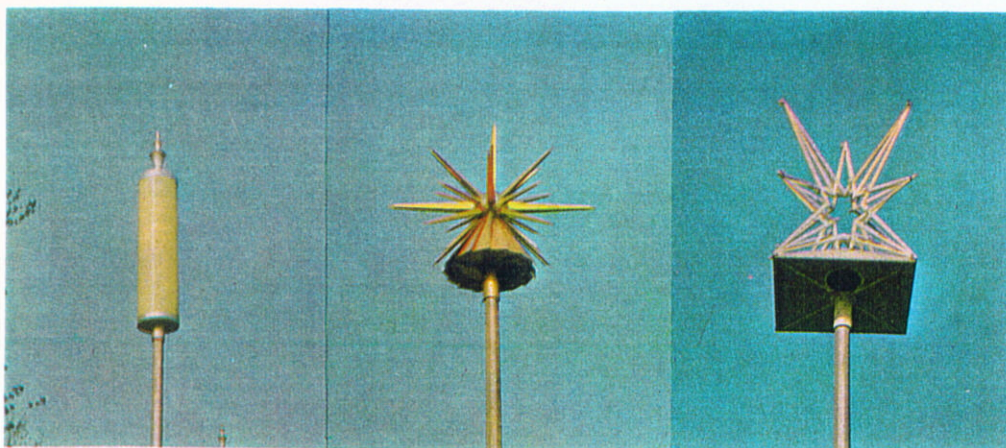


LUNAR FOUNTAIN has parabolic jet streams, reaching heights of 30 ft, which radiate from 16 nozzles at top of an elliptical dome 24 ft in diameter at its base. Flickering lights from within dome give a lively appearance to sheet of water flowing over dome. Tranquil design is suggestive of moon.



ASTRAL FOUNTAIN is the Fair's second largest. It combines a 60-ft high by 60-ft diameter rotating structure, rotating around a 70-ft high central water column, set in a 140-ft diameter pool, and colorfully illuminated at night. Lighting details are shown at left.

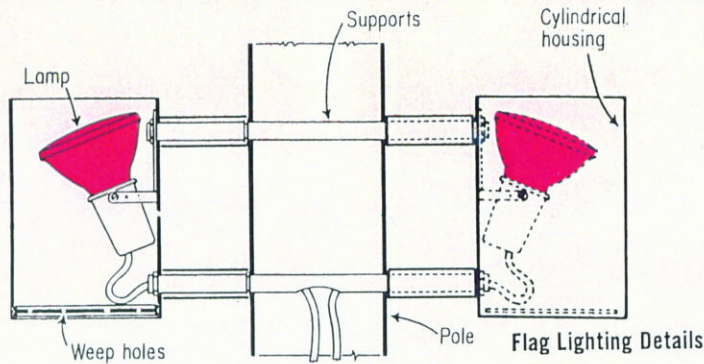
PROMENADE LIGHTING



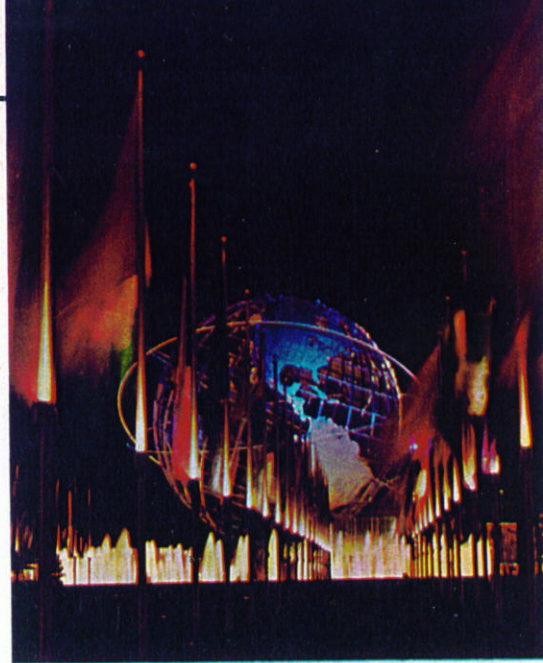
Astral Fountain Luminaire Details

SPECIAL LUMINAIRES provide illumination around fountains and encircling promenades. At left is the luminaire which surrounds the Fountain of Planets. Its fiberglass cylinder is 6 ft long, 18 in. in diameter, contains four 75-watt fluorescent lamps. Luminaire in center is used at the Solar and Lunar Fountains. And at right is the Court of Stars luminaire, used around the Astral Fountain. It is an open star-shaped design, shown in detail at right.

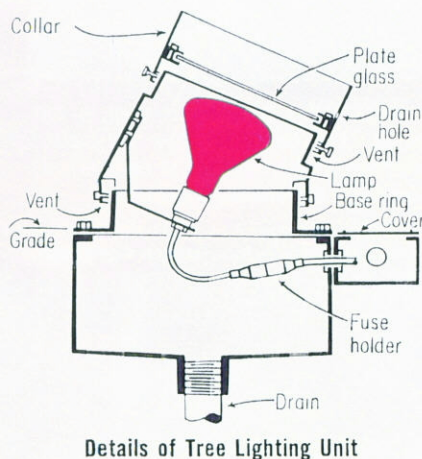
FLAG LIGHTING



FLAGS representing American states, foreign nations and other governmental organizations, flying in colorful array in various areas of the Fair grounds, are brilliantly lighted at night, provide a meaningful and interesting display feature. The wind-blown flags are individually illuminated by special twin-light luminaires, as shown in detail sketch above. Luminaires are mounted 8 ft-7 in. above ground, and flag poles are 30 ft high.



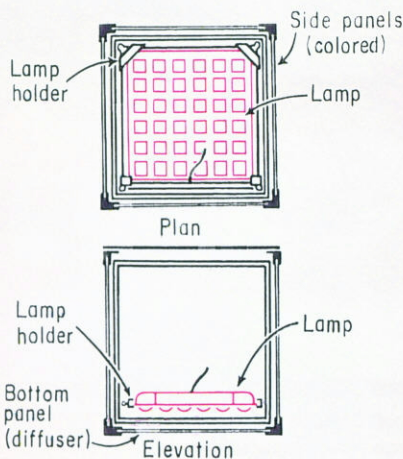
TREE AND LANDSCAPE LIGHTING



TREES and shrubbery along the central mall are dramatically lighted at night from ground-based units, semi-buried in the ground and concealed from view of casual observers by low plantings. The weather-proof units use a new 275-watt self-ballasted R-40 type multi-vapor lamp which produces a special greenish-white light. The green in the light enhances the appearance of the tree leaves in a manner not previously possible, while a red component brings out the warm tones of the tree trunks and branches. A total of 282 units are used.



STREET LIGHTING



STREET LIGHTING of streets, walks and roadways throughout the fair grounds is by means of a special design modular type luminaire, embodying standardized cubical units assembled in a variety of forms, and utilizing a new square-panel type fluorescent lamp. Unique and colorful in design, the 76 different combinations of cubes and colors used in the 1842 luminaires total, present a fresh and exciting appearance. The panel lamps are 12-in. square, 1½-in. thick, consume 80 watts each, and produce 4200 lumens of light. Some luminaires also contain a high fidelity loud speaker for the Fair's sound system.





TOWER OF LIGHT presents the most brilliant concentration of exposition lighting on record, consisting of twelve 5-kw Xenon searchlights, each producing 1,080,000,000 maximum beam candlepower, located in the open central core of the building. Thus a 12-billion candlepower beam stabs miles into the sky. The pavilion's exterior is a kaleidoscopic pattern of color.

TOWER OF LIGHT PAVILION

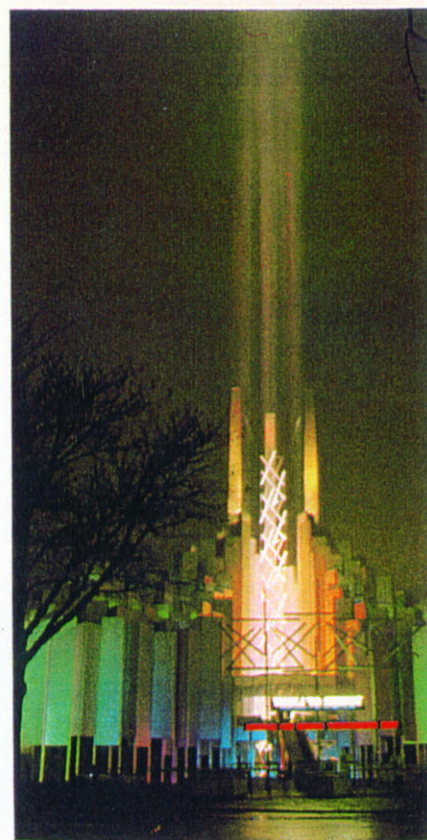
Tower of Light is the logically apt name given to the World's Fair pavilion sponsored by 140 investor-owned electric utility companies throughout America. This pavilion, consisting of hundreds of aluminum prisms rising in a staggered fashion from a reflecting pool to a height of 80 ft at the center, houses twelve 5-kw Xenon lamp searchlights in the open central core of the structure. These searchlights project a 12-billion candlepower beam of intensely white light straight up into the sky. This beam of light is considered the most brilliant, and the most spec-

tacular light ever produced.

In addition, the pavilion's modular aluminum panels are lighted in color by a variety of lighting units. There are 912 PAR-38 lamps, 12 floodlights equipped with PS-52 1500-watt standard lamps, and 161 1500-watt quartz-iodine floodlights. All of these units are equipped with special dichroic color filters in four colors — red, blue, green and amber. The quartz-iodine floodlights, located at ground level around the perimeter of the building, are also equipped with parallel louver shields, to prevent spill light from one unit overlapping the color effect from other units, and also to prevent glare in the eyes of exhibit visitors at ground level.

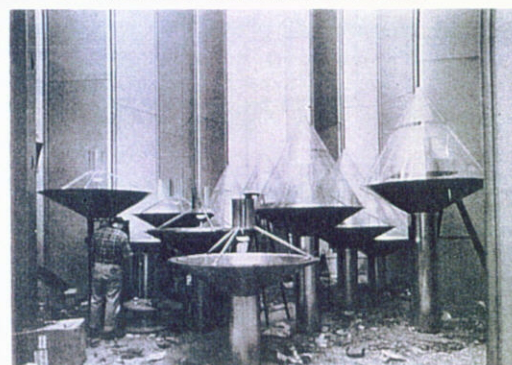
All of the exterior lighting is dimmer-controlled, and is programmed for a sequential pattern of color combinations embracing hundreds of different colors during a complete cycle. The central white beam of light burns full brightness at all times.

Architects and engineers for this project were Synergetics, Inc., Raleigh, N. C., and electrical work was by T. Frederick Jackson, Inc., New York City.

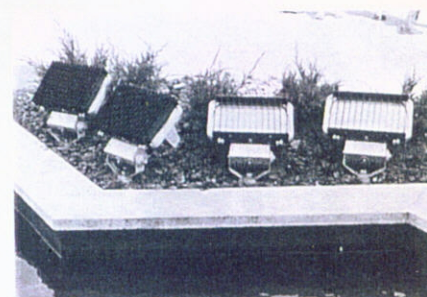


THE BRILLIANT light beam is seen in this view of "The Brightest Show on Earth," against one of the hundreds of color effects produced on the building's exterior.

James King and Son, Inc., General Contractor.



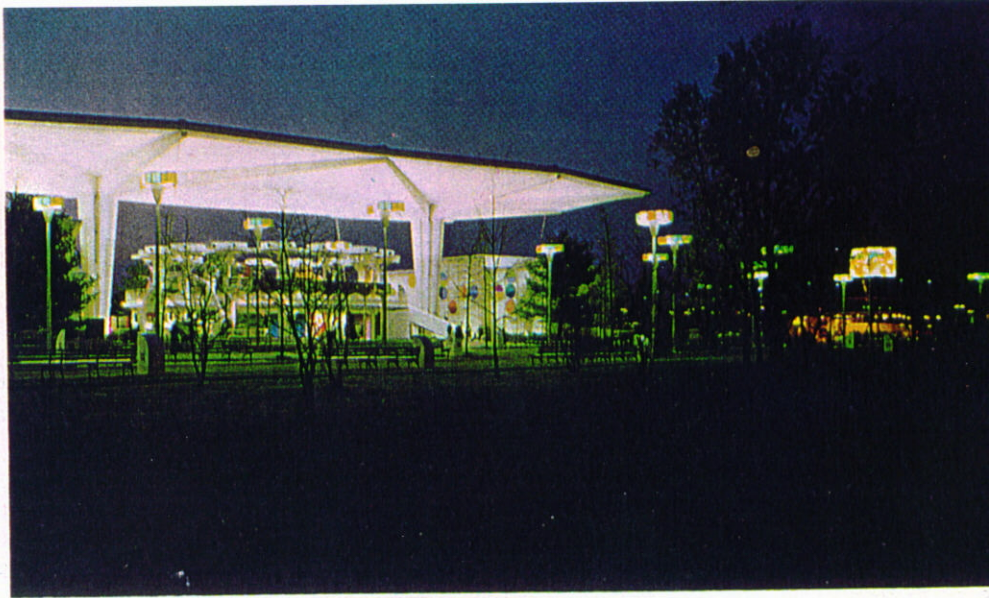
SEARCHLIGHTS each contain a 5-kw Xenon lamp, and can be viewed by visitors to the exhibit as they leave the building.



COLOR LIGHTING on building's exterior is provided by floodlight units equipped with dichroic filters in red, blue, green and amber, and with louver shields.



FESTIVAL OF GAS Pavilion is uniquely lighted by 170 1000-watt R-80 color-corrected mercury vapor lamps, mounted on top of the restaurant, fun house, and cupolas in the Carousel area, directing their light to the soaring roof five stories above the ground.



FESTIVAL OF GAS PAVILION

Power for the Festival of Gas exhibit is provided by a gas turbine "total energy package" which provides heat, cooling and electricity. The turbine drives a 250-kw generator (another one is on stand-by) to provide 420-cycle 480-volt secondary

power for floodlighting, and for standard fluorescent lighting of interior areas. The indirectly lighted roof has a distinctive greenish-white appearance at night. Electrical work was by Hatzel & Buehler, electrical contractor, New York City.



INCANDESCENT LAMPS in post-mounted 16-in. white ball globes, and PAR reflector lamps are used to light the Chrysler Pavilion, which is composed of five bridge-connected islands. New design cars, supported about three feet above water, are lighted by under-water fountain lights in color, cycled for featuring cars one at a time.

CHRYSLER PAVILION

Chrysler's primary exhibit is a theatre, a pentagon-shaped auditorium. The roof of this water-surrounded building is brightly lighted by 160 500-watt PAR-64 wide angle floodlights, pole-mounted on four 60-ft poles. Bridges are used to connect the five separate exhibit areas of

this pavilion, and 16-in. diameter round white ball globes, post-mounted about six feet above the bridge level, light these areas brightly.

Huge replicas of cars house specific exhibits, such as the moving parts of an engine, which are lighted by conventional display lighting techniques. Electrical work was by Hatzel & Buehler, Inc., electrical contractor.



KODAK'S PAVILION features a five-sided structure at one end of a 360-ft long building which supports five vertically mounted 30- by 36-ft photographic prints. A total of 1400 kw of power are used to light these prints.



KODAK PAVILION

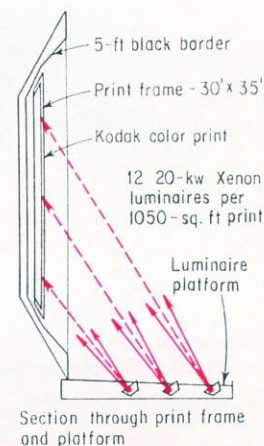
Lighting of Kodak's 5-sided Picture Tower, key attraction of the Kodak Pavilion, and a major highlight of all lighting at the Fair, is a milestone in outdoor lighting progress. Facing in all directions from the 80-ft-high tower are the world's largest outdoor color prints, each measuring 30 ft by 36 ft. These prints are front-lighted day and night. The amount of light delivered to each print is over 3000 footcandles initially, and an average of 2500 footcandles throughout the life of the lamps. This level of illumination is so brilliant that the color prints resemble glowing photographic transparencies.

This high level lighting is made possible by a new type of linear Xenon lamp, produced by a West German lamp firm. The lamps are 6½-ft-long quartz tubes. They are housed in large metal luminaires equipped with special semispecular reflectors. Twelve units, each consuming 20 kw of power, are used to light each color print. These 12 units are installed in an outrigger located at the base of each print. Many persons were involved in development of this lighting. Jaros Baum and Bolles were electrical consultants. The electrical installation was made by J. Livingston Co., electrical contractor.

DATA FOR 20-KW XENON LAMP

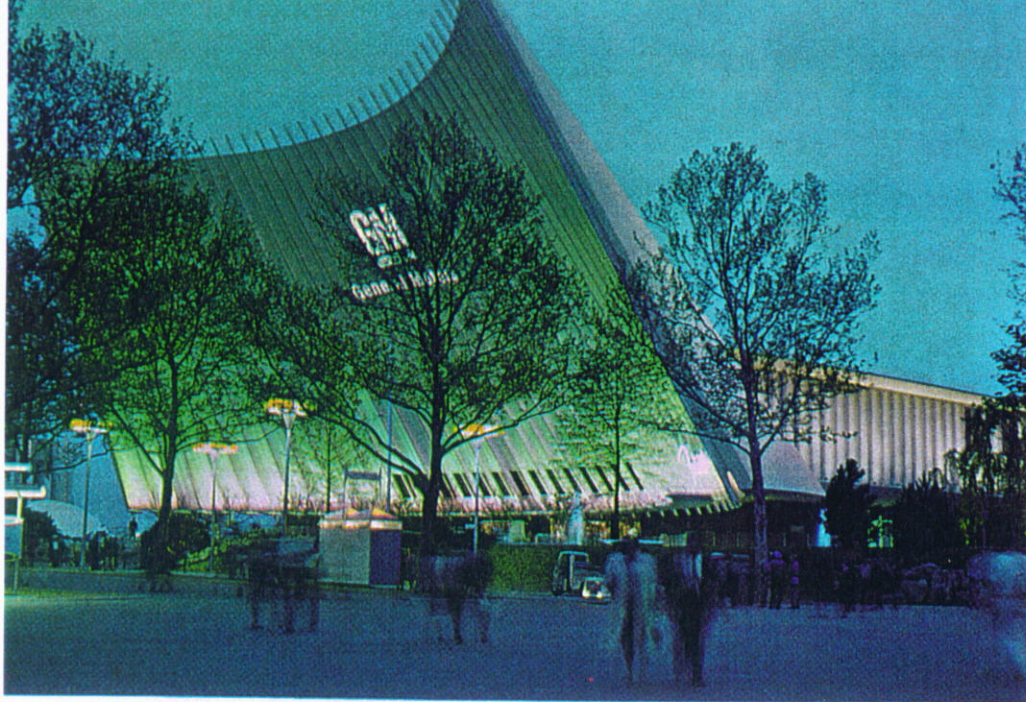
Supply voltage	V	380*
Rated current	A	73
Rated power	W	20,000
Luminous flux	lm	500,000
Luminous efficacy	lm/W	25
Luminance	cd/cm ²	140
Correlated color temperature	°K	5,900
Type of emission spectrum		(Continuous with some lines)
Distance between electrodes	mm	1,500
Average life	hours	2,000

*Units designed for operation with 460 supply were used in this installation.



LINEAR XENON LAMPS which are 6½ ft long and consume 20-kw each, were used to light the five 1,080-sq-ft color prints on Kodak's Picture Tower. Sixty units were used, or 12 units per print, and provide an average of 2500 footcandles on each print. The lighting level is reduced at night, as this total brightness is not needed then.



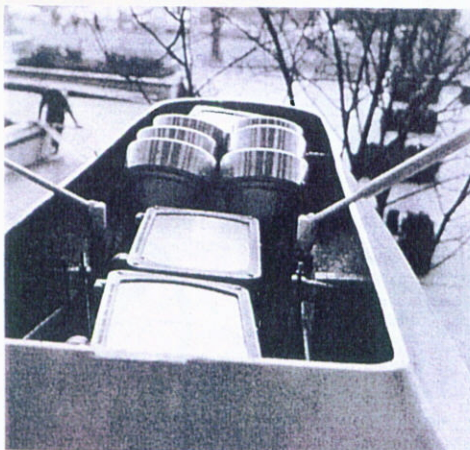


GENERAL MOTORS PAVILION

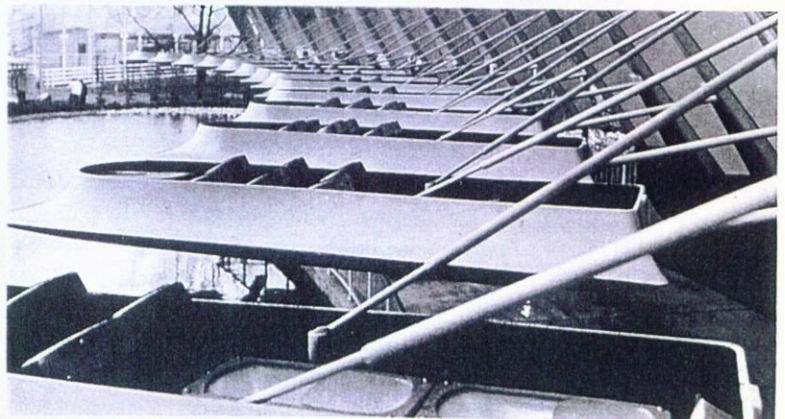
Lighting is used most effectively as an element of design on the General Motors Futurama pavilion. The major display is the mobile color lighting of a huge 110-ft high curving screen, inclined at an angle of 50 degrees from horizontal, which forms an entrance canopy. Quartz-iodine floodlights, locomotive headlamp units, and dichroic color filters in red, green and blue are combined to create color mixtures and blended color sequence effects. Total lighting load on the screen only is 216,000 watts, all of which is controlled by silicon-controlled-rectifier units. Lighting design was by GM's Styling Staff, and Fischbach & Moore, Inc., electrical contractors, did the electrical construction work.

MOBILE COLOR lighting on the 10-story entrance canopy of General Motor's Futurama exhibit at the World's Fair helps to accent the building's architectural image of mobility. The striking color patterns also contrast with the white lighting which floods the rest of the building.

FLUORESCENT luminaires of the pole-mounted streamlined outdoor type light the heavy GM vehicle exhibits displayed outside the pavilion, such as trucks, buses, and railroad locomotives.



LIGHTING PODS each contain three 1500-watt quartz-iodine units, and six 200-watt railroad locomotive headlamp units. Colors are red, green and blue.



COLOR LIGHTING floodlights used for lighting the Pavilion's entrance canopy are contained in 38 lighting pods, mounted 10 ft above the ground level. The color lighting intensity pattern is programmed through a silicon-controlled-rectifier control panel.

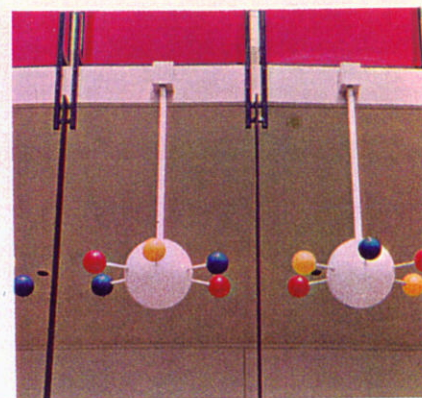


DUPONT'S PAVILION at the World's Fair is an impressive circular building, surrounded by an open portico. It houses two theatres and a chemistry demonstration arena, plus supporting projection and dressing rooms. Exterior lighting is by means of a custom-design luminaire.

DUPONT PAVILION

Lighting of the DuPont Pavilion is symbolic of "The Wonderful World of Chemistry," theme for the show used to present the story of chemistry through the ages and into the future. The exterior lighting in-

cludes a brilliantly lit huge three-face plastic sign, in the shape of an oval, and perimeter lighting around the entire building by means of recessed downlights in the ceiling of the open portico, and by means of suspended custom luminaires. The suspended luminaires are in the form of a simple atomic structure, a luminous nucleus surrounded by six



LUMINAIRE used on exterior of Pavilion is symbolic of the world of chemistry. It consists of a plastic sphere 24 in. in diameter, housing a 300-watt white coated lamp, and six 8-in.-diameter opaque colored plastic balls equidistant from the sphere.

opaque electrons. The nucleus is 24 in. in diameter, and uses a 300-watt lamp. The electrons are 8 in. in diameter. Two red, two blue, and two yellow are used. Interior lighting in the two theatres and chemistry demonstration arena is utilitarian. Electrical contractor for this project was Eastern States Electrical Contractors, Inc., New York City.



FLOODLIGHTING of entrance to center court is accomplished by using incandescent floodlights mounted on columns just above water.

COCA-COLA PAVILION

Theme for the Coca-Cola Pavilion is "World of Refreshment." The pavilion rests in a quiet cool pool, and at night is brightly floodlighted.




COCA-COLA'S PAVILION is circular, has a central open court, from which a 120-ft tower rises. The Pavilion "floats" in a pool of water, and is floodlighted at night from quartz-line floodlight units recessed in the wall of the pool, above the water line.

Fluorescent lamps recessed in wall of pool light the entrance to the center court, supplemented by incandescent floodlighting of the side walls of the Pavilion. The 120-ft high tower is floodlighted, and also houses the world's largest carillon. A large sign over the main entrance, and

three signs on the tower are translucently lit. Enclosure screens for the Pavilion, and also for the tower, are colorless transparent acrylic plastic, custom molded specifically for this project. Electrical work was installed by T. Frederick Jackson, Inc., Long Island City, N. Y.



Unisphere presented by  United States Steel © 1965 New York World's Fair 1964-1965 Corporation

Our man on unusual lighting came up with some pretty Fair ideas

Meet Monte Cutler of General Electric's Large Lamp Department. Monte heads up the Product Planning and Application group that's helped fill the World's Fair with new and unusual lighting ideas. Such as the use of more than 1200 Multi-Vapor lamps for the spectacular lighting display at the Fountain of the Planets in the Pool of Industry. These lamps, developed especially for the World's Fair, direct light on as much as 100 tons of water projected in the air at one time. • And then there's the show-stopping 200-foot diameter dome on General Electric's Progressland where over 2,000 new 150-watt dichroic filter spotlamps



produce changing color patterns—to make the dome appear to be rotating. • These are but two of the eleven new General Electric lamp types at the Flushing Meadow spectacular this year. But that's the kind of ingenuity you get from G-E people—in lamps, packaging and application ideas. Call your Large Lamp Agent for lighting service, whatever your business. General Electric Company, Large Lamp Dept. C-445, Nela Park, Cleveland 12, Ohio.

Progress Is Our Most Important Product

GENERAL  ELECTRIC

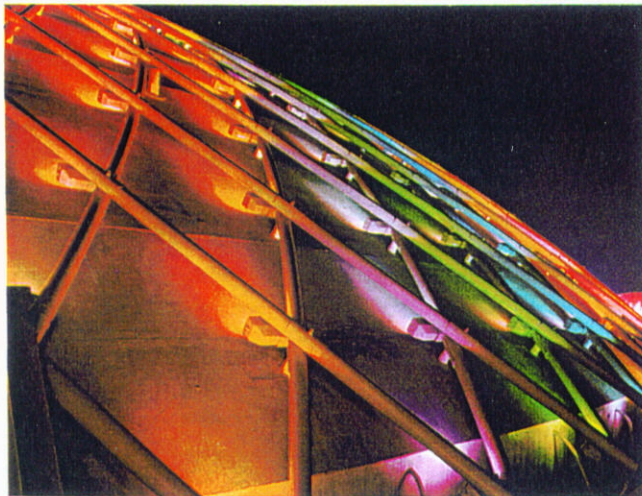
VISIT GENERAL ELECTRIC PROGRESSLAND • A WALT DISNEY PRESENTATION • AT THE NEW YORK WORLD'S FAIR



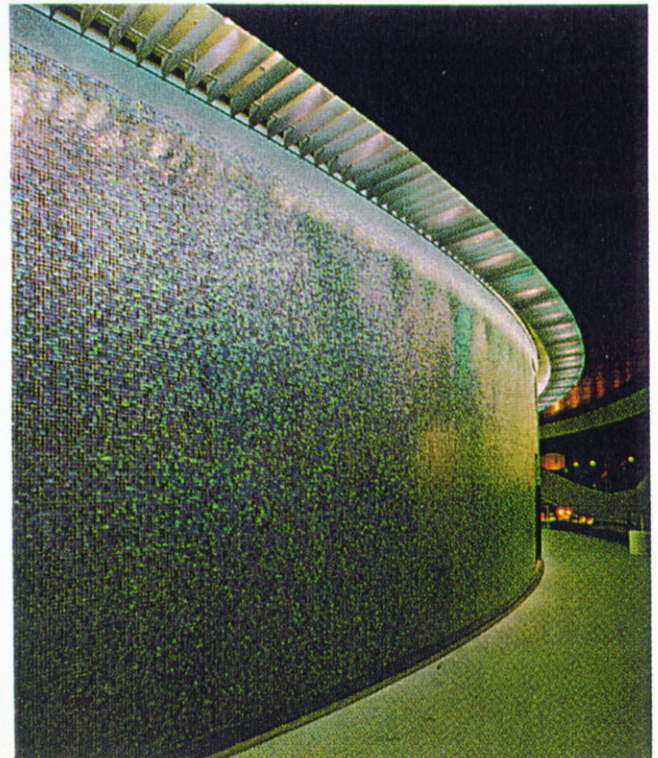
GENERAL ELECTRIC PAVILION

General Electric has developed, and is using, many new light sources and lighting innovations, both for its own *Progressland* exhibit, and for other lighting applications throughout the Fair. The most spectacular of its own lighting displays is that on the 200-ft-diameter dome of its \$15-million pavilion. Here a new light source and a new lighting control technique are combined to create a fascinating but sophisticated kaleidoscope of mobile color lighting. The lighting is coordinated and integrated with the unique "curvilinear lamella" architecture of the dome, and a numerical control system provides a means for an almost endless lighting program of changing color, pattern, and motion, in response to data recorded on punched tape. The light source is GE's new dichroic sealed-beam color spotlamps, which produce colored light of greater saturation and higher intensity than has previously been possible. The dome lighting uses 2,112 of these dichroic-filter spotlamps. Electrical contractor for the pavilion was Fischbach & Moore, Inc., New York City.

COLOR AND MOTION combine to make the lighting of General Electric's *Progressland* a featured highlight of the Fair's nighttime Festival of Light. The Pavilion's dome is lighted in three colors — amber, green and blue — and is program-controlled, which gives an impression that the dome is rotating.



LUMINAIRES located beneath the meridian pipes, which form a diamond pattern on the roof, each contain two 150-watt dichroic filter PAR-38 spotlamps. Each unit contains one amber lamp, and in alternate rows a blue or a green lamp is used. The Carousel wall below the dome, finished in varying hues of blue glass mosaic, is lighted by Power Groove fluorescent lamps and PAR-38 blue-white floodlamps (right). The GE monogram atop the pylon is internally lighted by two lamps, one of which pulsates slowly between two intensities, giving an impression of motion.





OBSERVATION PLATFORM atop the 226-ft-high tower at New York State Pavilion is the highest point in the Fair, provides an unobstructed view of the entire Fair. On this tower's roof is the highest-mounted lighting unit, a 300-MM code beacon, enclosed in a red transparent acrylic plastic sphere 54-in. in diameter.

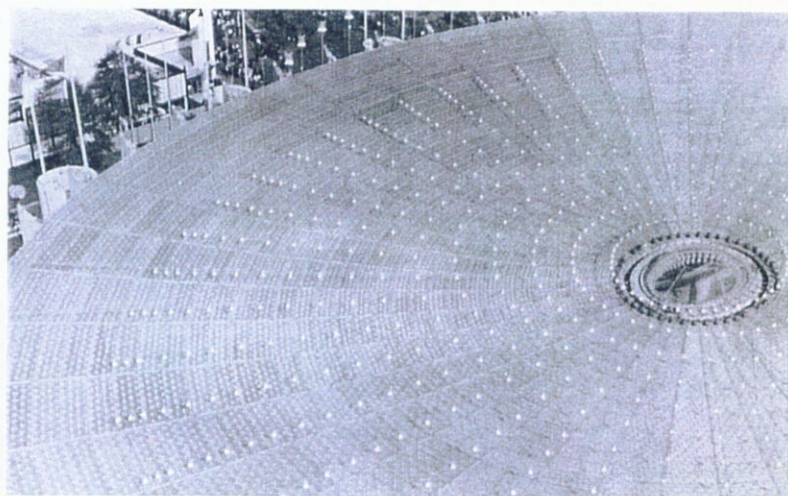
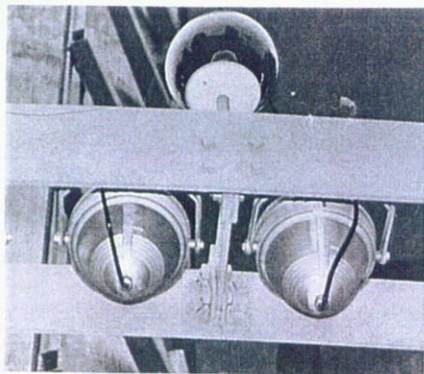
NEW YORK STATE PAVILION

New York State's exhibit consists of a "Tent of Tomorrow" pavilion, a theatre, and three observation towers. The tallest tower rises 226

ft and is capped with an observation platform. It is reached by a plastic-enclosed elevator, which operates outside the tower column. The pavilion is an elliptical structure, larger than a football field and measuring 320 ft by 240 ft, with 100-ft-high columns supporting the brightly colored plastic roof. On the floor of this area is a huge terrazzo map of

New York State, lighted at night by 500-watt downlights recessed in the central area of the plastic roof. Theme lighting, consisting of 60-watt clear lamps in 10-in. diameter clear blue glass globes, outline all architectural features of the towers and the pavilion.

John Doris, Inc., New York City, was the electrical contractor.



NEW YORK'S State Pavilion is floodlighted at night, contains outline theme lighting, and the mosaic-like roof, formed with panels of colored plastic, is lighted from above by over 800 100-watt dome reflectors attached to suspension cables (photo above). The 700-seat Theaterama is floodlighted by 1500-watt quartz-iodine floodlights concealed in 30-in. diameter balls atop steel poles (photo left). Floodlights using 500-watt lamps, installed in an 8-ft-high peristyle wall 100 ft in diameter surrounding the towers, floodlight the concrete towers and bottom of the observation platforms (photo top left). Theme lighting is done with clear blue glass globes 10 in. in diameter, using 60-watt clear lamps, which outline the complete architectural structure.

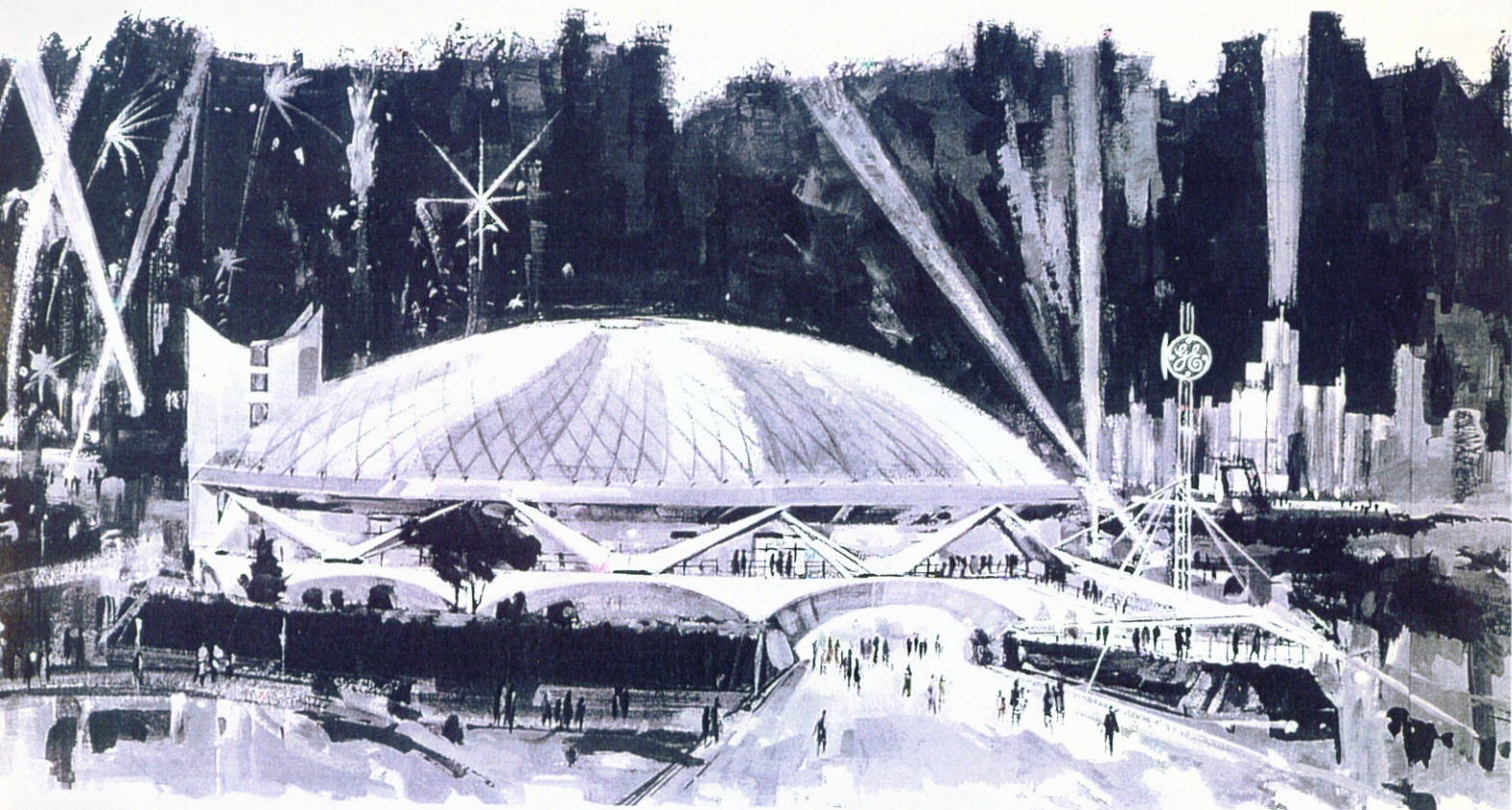
General Electric outdoor lighting can pay off for you

A year ago, golf course lighting was only a bright idea. Now, courses are scrambling to light for night play. And alert contractors and consultants are finding a fresh, new source of profit.

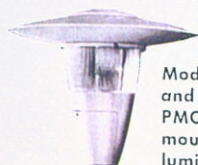
That's one outdoor lighting idea. You'll see many more at the World's Fair: the E.E.I. Tower of Light, the G.M. Futurama, the Travelers' Insurance and Coca Cola pavilions . . . and, of course, G-E Progressland. All use General Electric outdoor lighting systems for beauty, drama, and illumination.

Before you light a fairway, a fair, or anything else, check your General Electric outdoor lighting wholesaler. We continually work with him on fresh ideas he'll be glad to pass on to you. He also has a complete line of the very latest outdoor lighting products. One of them is perfect for your most original idea. Put him to work for you today. 460-47

Outdoor Lighting Dept., Hendersonville, N. C.



New 2000-watt Custom Mercury unit



Modern PMA-115 and colonial PMC-116 post-mounted luminaires



New Power-flood® mercury floodlight



New Quartz-Flood® floodlight

*Progress Is Our
Most Important Product*



**GENERAL
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VISIT GENERAL ELECTRIC PROGRESSLAND
A Walt Disney PRESENTATION
AT THE NEW YORK WORLD'S FAIR



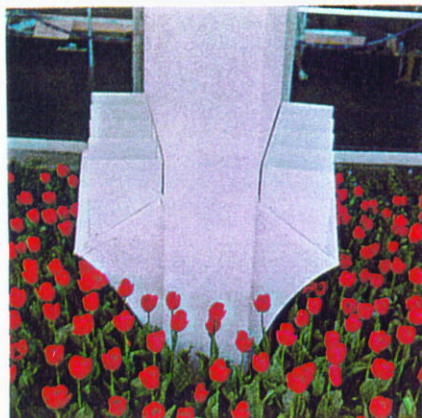


FLOODLIGHTING extends around the entire huge Ford Motor Company Pavilion, which has a floor area in excess of seven acres. Special architectural lighting is used on the Ford Rotunda section, simple incandescent floodlighting on the remainder of the building. The "Ford Motor Company" electric sign is the largest at the Fair.

FORD PAVILION

Ford's Pavilion at the Fair is a huge ultra-modern structure designed specifically to accommodate the Ford exhibit theme—a "Magic Skyway" ride—including a product parade of existing cars, and dream cars of the future. Entrance to this building is a glass-enclosed, rotunda-like structure 235 feet in diameter and 56 feet high, surrounded by 64 glittering pylons, 100 feet tall. Adjoining the rotunda is a rectangular show and exhibit building more than 500 feet long, and as high as a seven-story building. At night, 500-watt PAR-56 lamps located on each side of each pylon at the base (four on each side), floodlight the surface of the adjoining pylon, which is eight feet deep at the bottom. Additional floodlights, mounted on the roof of the rotunda floodlight the finger tops of these pylons.

The rectangular section of the building is also floodlighted. The floodlights used here are 1000-watt



LIGHT BOXES at the base of vertical pylons eight feet deep and 100 feet high contain four 500-watt PAR-56 lamps which light the adjoining pylon. Two light boxes are used on each pylon, one on each side.

incandescent units, and are mounted four to a pole. A special four-finger mounting arrangement was developed for this purpose, following the design of the rotunda pylons (photo, above). The Ford sign on the long facade of the building is 188 feet long, and the letters are 28 feet high. The electrical work was performed by J. Livingston & Company, electrical contractors. New York City.





LIGHTING combines with fountains and colored exterior wall panels to give shape and design to the U. S. Pavilion. Basic lighting is with recessed PAR reflector lamps.

UNITED STATES PAVILION

A 330-ft hollow-square building, standing 20 ft above ground and cantilevered 70 ft beyond four supporting towers, is the U. S. Pavilion at the World's Fair. Entrance to the first floor is by means of a pyramid of steps. An interior court balcony

completely surrounds the open inner court of the building, at each floor level. Recessed PAR- and R-lamps in the roofs over each balcony floor are angled outwards to light the pyramid steps. The base floor of the building is lighted by PAR-lamps recessed in the underside of the building's first floor. Reflected light from the floor illuminates the ceiling of this area. Upper interior walls are also "washed" with light from

PAR lamps on 6-in. centers extending around the complete court interior. Exterior walls, consisting of colored panels of plastic, are also lighted by PAR lamps recessed in a ledge and directing their light upwards. Two fountains at each corner of the building are also brightly lighted in two colors — white and amber. Electrical work was by Rao Electrical Equipment Co., Inc., New York City.

7-UP PAVILION

Multi-colored shells which serve as covers for tables, and a central tower, supporting a 7-Up sign in the

form of a huge ball, and a smaller ball containing four clocks, constitute the 7-Up Pavilion which is called 7-Up's Sandwich Gardens. Low-voltage reflector lamps in flood-light housings were selected to light the 7-Up sign and the clock faces,

since these lamps provide a highly concentrated narrow light beam which would confine the light to the small areas being lighted. Electrical work was done by Eastern States Electrical Contracting, Inc., New York City.



FLOODLIGHTS equipped with 120-watt reflector lamps and operating at 6-volts are used to light the two 7-Up signs in the 7-Up Pavilion tower. Floodlights are mounted on simple steel-pipe frameworks.

JULY, 1964

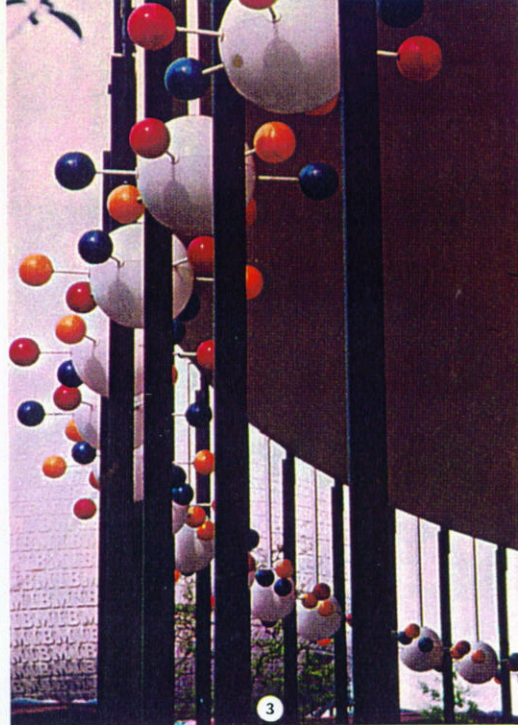




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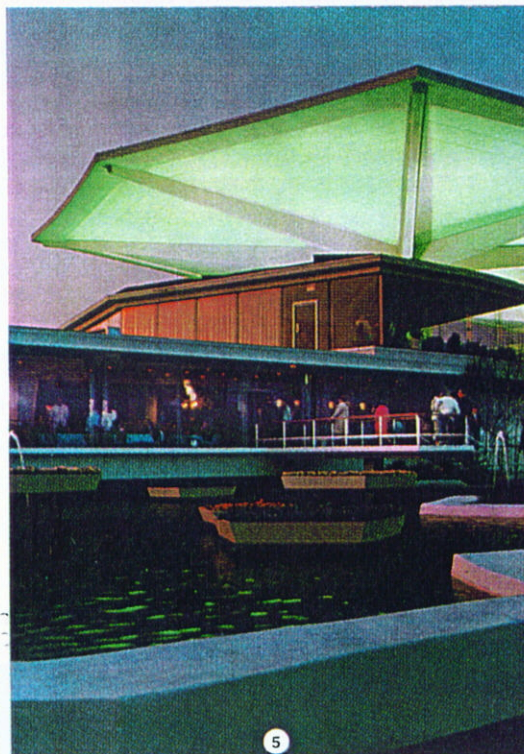
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6

Light by Westinghouse

1. Street lights. Foreign and governmental dignitaries receive a bright welcome at the V.I.P. entrance. Lighting is from Westinghouse OV-25 luminaires using the new additive mercury lamp. This new lamp produces nearly 40% more lumens per watt than previous mercury lamps. Standard OV-25 luminaires light many of the expressways leading to the Fair, plus bus parking lots.

2. Special effects lighting. The DuPont Exhibit utilizes Westinghouse-Frink downlighting for

overall brightness, with custom-made fixtures to accent hanging atom groupings.

3. Special highlighting. Close-up of DuPont Exhibit, with large atom background lights predominant.

4. Pylon lights. This is special decorative, supplementary lighting used here to create the proper atmosphere and mood in the area leading to, and surrounding, the Fountain of the Planets. Spectacularly beautiful shows are held here each night.

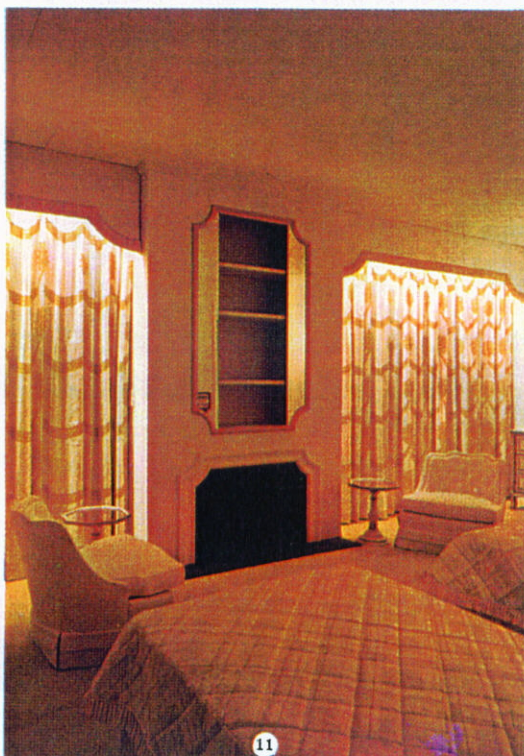
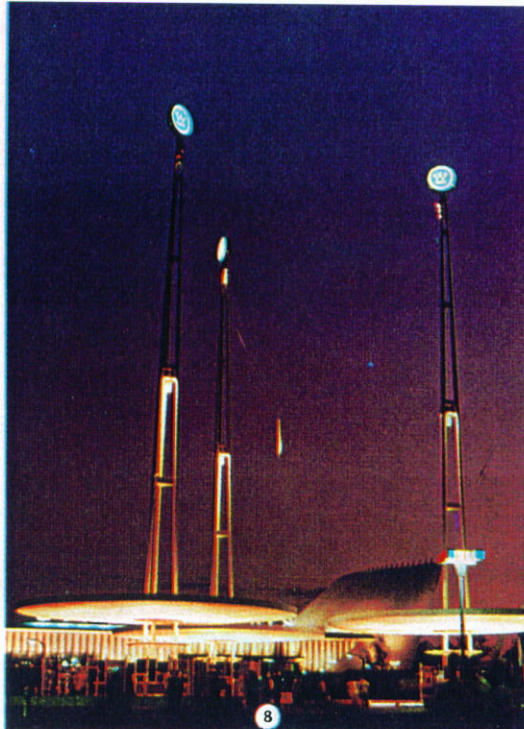
5. 400-cycle Mercury floodlighting. On-site generation of 400-cycle current in the Festival of Gas Exhibit required a completely new ballast design to operate the 1,000-watt mercury floodlights used to illuminate this unusual building. Over 160 floodlights illuminate the underside of this dual-umbrella structure and make it one of the brightest attractions at the Fair.

6. Promenade luminaires. These Westinghouse post-top luminaires are ideally used along

special walks and Marina ramps at the Fair. They'll beautify any drive, park, campus or mall.

7. Mercury Master floodlights. More light than any other mercury floodlight made. Our 1,000-watt units were chosen to light the vast Meadow Lake parking area for safety, protection and rapid movement of traffic.

8. Custom-built floodlights. We gave our Westinghouse Time Capsule pavilion special floodlights to enhance the unique design. We'll work with you on your special design, too.



at the World's Fair

9. Modular walk-way lights. Designed by Hamel & Langer, lighting design consultants, especially for the Fair. These Westinghouse-Frink walk-way lights feature a built-in hi-fi music system. The units are used throughout and are color-coded for the various Fair areas. They provide perhaps the greatest concentration of street lighting anywhere in the world.

10. Ceiling lights. Westinghouse Stripliners above the luminous ceiling, and fluorescent lights recessed over the sink, brighten

the Dorothy Draper's Westinghouse Dream Home Kitchen.

11. Valance lights. The Dream Home makes further use of Westinghouse-Frink lights by backlighting bedroom valance to give soft, warm appearance to room.

12. Wall-Washer spotlights. The most practical feature of the Dream Home is that all products used are available for homes right now. Many soon-to-be-built homes will feature Westinghouse Wall-Washer spotlights in living rooms and dens.

Westinghouse lighting creates a mood, captures beauty, brightens the way in a dazzling demonstration of total lighting capability. We're not confined only to the Wonderland at Flushing Meadows. We can do your job, too—wherever you need light, whatever kind of light you need. For complete information and specifications, call or write, Westinghouse Electric Corporation, Lighting Division, Edgewater Park, Cleveland, Ohio.

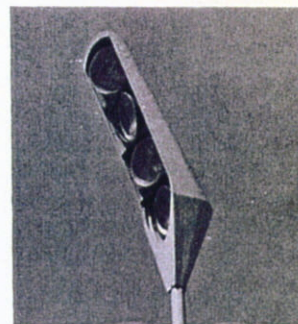
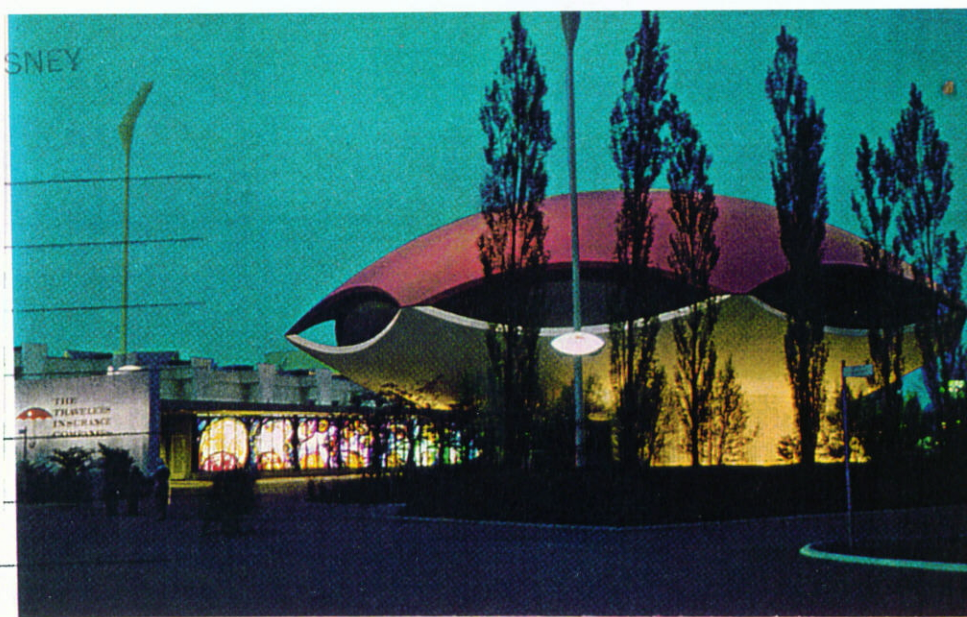
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You can be
sure if it's
Westinghouse

The Pavilion of the Travelers Insurance Companies is a 65-ft-high, 160-ft-diameter dome, identifiable as the firm's corporate symbol—an opened red umbrella. Sixteen floodlights, pole-mounted four to a pole, light this red dome at night. Each floodlight contains a 5-kw G-64 150-hour lamp, operating at 3.78 kw to provide 1,470-hour life. Standard 125-volt lamps are operated at 105 volts to provide the longer life. A surrounding fountain-pool, with red, blue and amber lighting, lights underside of the dome. Liebfried, Inc. was the electrical contractor.

FOUR 15-FT-LONG luminaires, each containing four 5-kw floodlights and pole-mounted at 80 ft, light the 160-ft-diameter dome of the Travelers Insurance Companies Pavilion to an intensity of 25 foot candles. Photo at right shows one luminaire.



LIGHTING is an important element of design in the Florida Pavilion, complementing and highlighting the colorful features of the exhibit at night. Floodlighting accents a tower, capped by a huge orange, and ornamented by oranges on its vertical surface. An adjoining "tent" structure, housing a display of porpoises, has its roof indirectly lighted by quartz-iodine floodlights mounted on structural members.

FLORIDA PAVILION

Florida's Pavilion uses native flora as a setting for exhibits displaying the state's featured products—sunshine and fun for tourists, retirement homes, citrus products, etc. The Pavilion is colorfully floodlighted at night, as are its transplanted palm trees, shrubbery, flowers, etc. Also, the Pavilion has a dock, which is lighted by post-top lanterns to provide both utilitarian light and an interesting scenic effect at night. The electrical work was done by Arc Electrical Construction Co., Inc., New York City.

