

LIGHTING EQUIPMENT NEWS

OCTOBER 1988

Building Industry Council formed

The five professional institutions representing building industry professionals have come together to form the Building Industry Council.

The RIBA, CIBSE, CIOB, ISE and RICS have set up the Council to coordinate and promote action in areas of the construction industry including recruitment, education, training, research, the raising of industry standards and the impact of the single European market.

With the Construction Industry Group replacing the Group of Eight, it is hoped that BIC may eventually come to be accepted as the professional arm of CIG.

Three types of membership will be open to firms and organisations in the building industry. Full membership is appropriate to participants with a major interest in the objects of the Council. Institutes and other bodies with a more specialised interest in a sector of the industry will be accepted as associate members. Finally, those who wish to maintain contact on a more sporadic basis can become supporting members.

Initial studies in the fields of education and training are already under way, and conferences will be organised on a regular basis. The first of these 'Building now for 1992: the single European market' is to be held at the Queen Elizabeth II Conference Centre, London on 17 November 1988. For full details see page 20.

Speaking at the launch of BIC Rod Hackney, the RIBA President commented, "For many years, a number of us have strongly believed both that the professions in the building industry should come together to discuss matters of common concern and, when appropriate, to act together; and that in turn, those professions should have much closer links without other bodies and groups within the Building Industry. The BIC is now the best hope that this will come about."

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Thorn EMI acquires Holophane

Thorn EMI plc has announced the successful outcome of its bid for the French group Holophane.

Holophane shareholders representing a holding of 92.6% have tendered their shares. In addition,

Thorn EMI purchases of Holophane shares on the Bourse at or below its final offer price of FF1725 per share, amounting to 5.97% of the issued share capital, have brought Thorn EMI's total entitlement to 98.57%.

In accordance with the undertaking which it gave at the time of its offer for Holophane, Thorn EMI is standing by to purchase on the Paris Stock Exchange the 13% publicly held minority in Europhane, Holophane's subsidiary, at FF690 per share, as soon as its quotation is restored.

Thorn Lighting managing director Hamish Bryce commented, "This acquisition underlines our determination to build an international position. It adds significantly to Thorn Lighting's trading market position in the UK and the Nordic region and will be the springboard for the further development of Europe, our home market."

On 10 April 1988, Thorn EMI announced its intention to bid for Holophane and the publicly held 13% minority in its subsidiary, Europhane. The terms were announced on 16 May 1988 following approvals from the French treasury and stock exchange as FF1222 and FF510 per share respectively, a total value of FF649 million.

On 2 June 1988, Emess plc announced its intention to bid FF1500 and FF600 per share, respectively, a total value of FF793 million. This led Thorn EMI to announce an increase in its bid to FF1725 and FF690, respectively on 9 June. Finally on 18 July 1988, following the failure of litigation instituted in the Court

of Appeal in Paris by Emess plc, the Bourse re-affirmed its acceptance of the validity of Thorn EMI's bid which was to remain open until 5 August.

On 21 July 1988, the Holophane board of directors unanimously recommended the Thorn EMI bid, and promised 52.9% of the share capital in acceptance on their own behalf and on behalf of institutions represented on the board.

Both parties claim they stand to benefit from the new partnership. Holophane, the pressed glass company, and its lighting subsidiary Europhane have a record of achievement, complementary products and a strong market position. Thorn Lighting provides global distribution, financial and lighting engineering skills, and high technology light sources.

The combination of Europhane and Thorn Lighting's current operations in the region, will create a major company in the French market. A task group has been formed to manage the integration and development of the two businesses.

The ability of both companies to provide lighting solutions was demonstrated recently by their successes in the European Lighting Awards. First prize for the lighting of shopping and pedestrian areas was awarded to the town of La Rochelle in France lit by Thorn Eclairage, while Europhane supplied most of the lighting for the French town of Angers, winner of the lighting of roads and tunnels category as well as the overall trophy.

Mr Aimery de Saint Mars will continue as MD of Holophane, with J C Baillou heading Holophane's glass operation. Europhane will be directly responsible for all French lighting activities under T Vayssette.

In brief...

To maintain its expansion and improved coverage of lighting products, Lumitron Lighting has appointed OLC (Guildford) as a distributor.

The Building Services Research and Information Association is to do a survey of the UK market for cable management in buildings. Subscription rates have been kept low to attract support from small firms. More details from BSRIA on (0344) 426511. It supersedes BS G91:1965.

● **L & M Lighting Ltd**, traditional decorative lighting specialist, has moved to Unit 2, Aylesbury Business Centre, Chamberlain Road, Aylesbury, Bucks HP19 3DY. Telephone (0296) 392348.

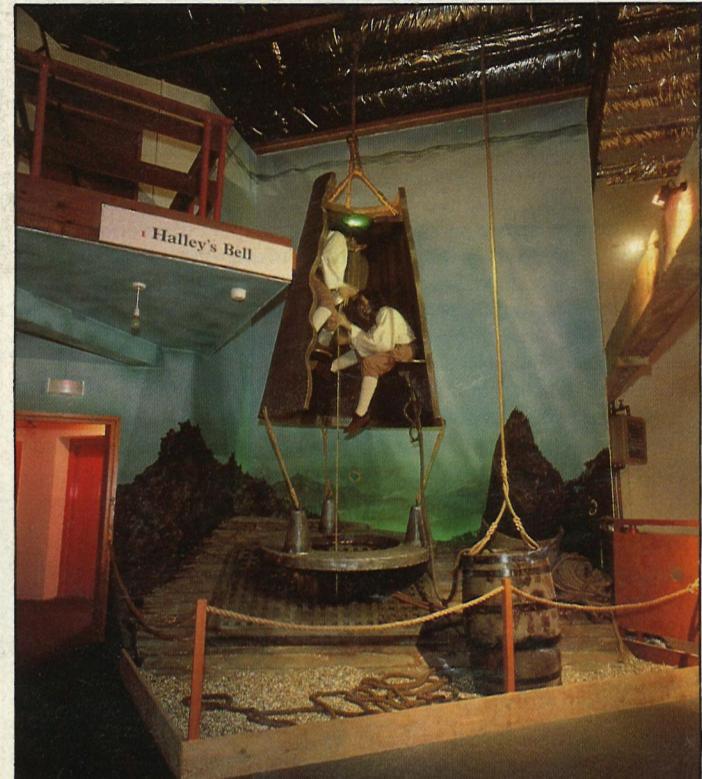
● **Wholesale Fittings** has three more branches, located in Bristol (tel 0272 724111), Peterborough (tel 0733 555511) and Wellingborough (tel 0933 679009).

● A revised **British Standard** on lighting for aircraft indicators using integral filament lamps, BS 2G 191, is now available from BSI. It supersedes BS G91:1965.

Underwater museum gets the green light

The UK's first museum devoted entirely to the history and technology of diving opened recently in Weymouth. The Diving and Shipwreck Museum explores three centuries of underwater adventure, bringing the challenges and perils of underwater exploration vividly to life.

A new type of museum required a new look at lighting and, following discussions, the decision was



taken to use low voltage dichroic display lamps by GTE Sylvania to create what owner Brian Cooper describes as an 'authentic underwater environment'.

Lighting of the museum created severe problems not normally associated with the use of low voltage lighting for displays. Pockets of high intensity light were required for the display of exhibits but other areas had to reflect the murky feeling of being underwater.

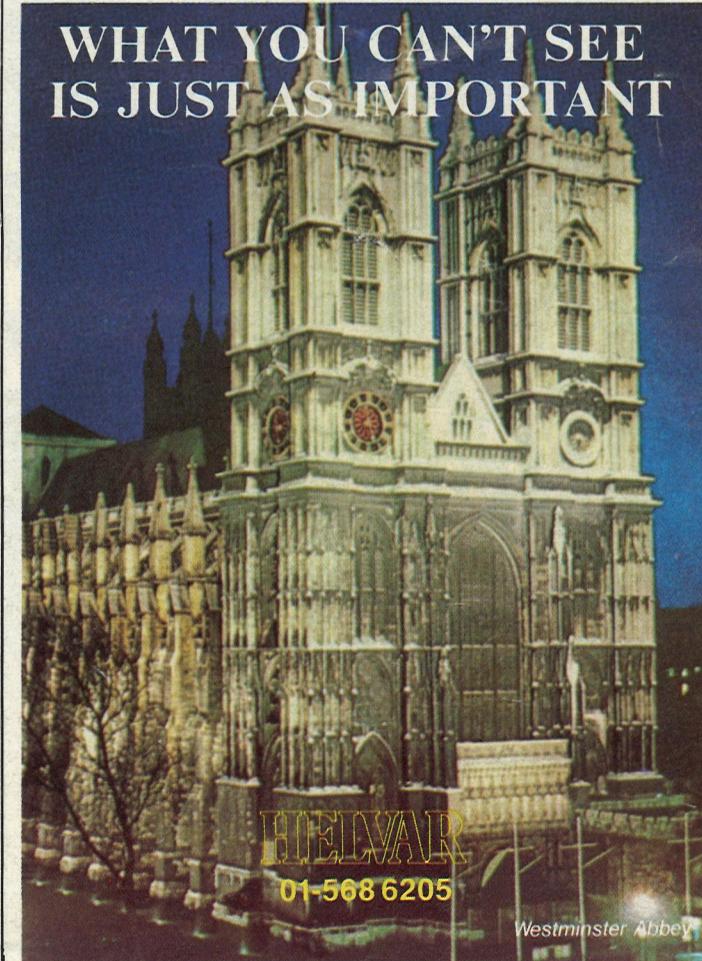
The use of conventional coloured filters over the dichroic lamps seems an obvious approach but produced an unacceptable harsh effect. However, the True Aim Professional lamp used is also available in red, blue, green and yellow light versions, where colours are directly achieved by light subtraction rather than fil-

Menvier-Swain goes Dutch

Menvier-Swain is to acquire the Dutch company Blessing at a cost of £2.7 million, subject to shareholders' approval.

In the year ended 30 April 1988 Blessing made profits before taxation of £381,000. Its principal business is the manufacture and sale of emergency lighting systems in the Netherlands, and it also manufactures and sells ancillary equipment such as inverters, battery charges and mains voltage stabilisers. Some 95% of its products are sold on the Dutch domestic market.

Menvier-Swain intends to keep the existing management team. Group policy is to acquire companies in Europe which enable the company to extend the sales of its principal products. The proposed purchase provides Menvier-Swain with a manufacturing and marketing base in the Netherlands from which to increase Dutch sales and subsequently expand into other European countries.



NEWS

Lighting the globe for television

When the Independent Broadcasting Authority (IBA) dismantled its exhibition on the history of broadcasting and replanned the area as a multi-functional reception gallery, it realised the importance of imaginative lighting to the success of the project.

In order to use the split-level gallery for seminars, meetings, receptions and lectures, the IBA reorganised the space into three main areas: reception, a walkway to house mobile exhibition stands and seating areas, and the rotunda, a large circular area to be edged with display boards showing archive material and literature.

Light Years was asked to design a dramatic and exciting lighting scheme which would provide general lighting with accent lighting for the display. In addition, a revolving globe in the reception area, which showed the location of TV receivers worldwide, was to be featured.

With the exception of a window in the reception area, there was no natural light.

Light Years, specified a low voltage lighting scheme using a mixture of fixed and adjustable fittings to provide a high light output and focus attention on exhibition materials. It also had sufficient flexibility to cater for continually changing seating arrangements and displays.



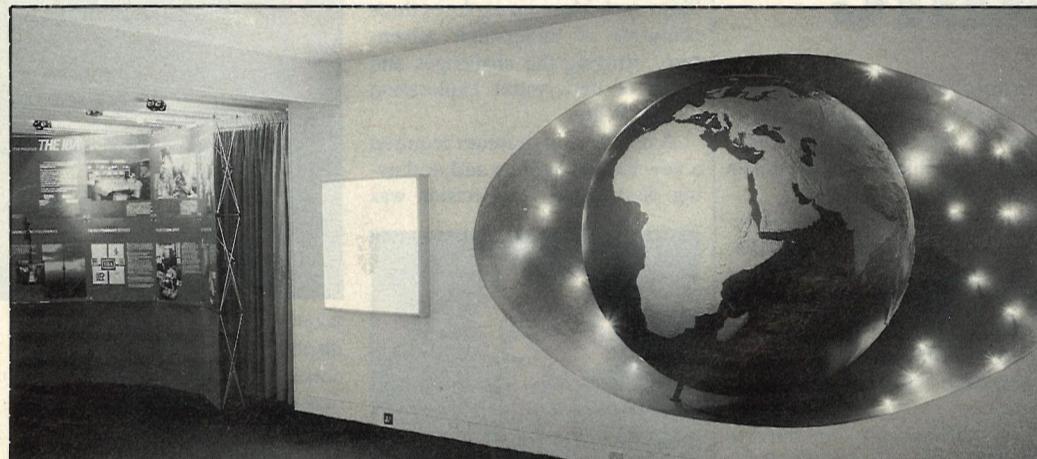
Fixed, fully recessed low voltage downlights using tungsten halogen dichroic reflector lamps and remote transformers were installed in the rotunda, throwing visible pools of light from the black ceiling onto the floor.

Small, adjustable, recessed fittings were positioned in the walkway ceiling to light the information boards. Adjustable dual spotlights, with integral transformers and each taking two 50W tungsten halogen lamps, were mounted on walls and ceilings to illuminate displays and throw light onto low level tables.

The globe, which is in an alcove painted to represent outer space, provided something of a lighting challenge.

Light Years wanted to create the impression of twinkling constellations in the alcove, as well as lighting the globe itself. They have used tiny capsule lamps of varying voltages mounted on small chromium plates inside the alcove

which give a starburst effect as the globe rotates. A single powerful spotlight mounted at the top of the reception entrance projects a beam of white light onto the globe which demonstrates the globe's progression from sunlight into the night.



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IMI

Reader Service No. 2

Page 2

Lighting cuts glare

RADA Quasar luminaires worth £200000 have been installed throughout the offices of Citibank in London SE1, mainly to cut the risk of glare in VDU screens.

The deep, parabolic louvre has profiled cross blades of satin-finish aluminium. The frames are manufactured from a single piece of steel for a smooth appearance

without mitres or welds, and are finished to match the satin-finish metal ceiling tiles.

Luminaires are either 1500 x 300mm, incorporating two 58W fluorescent lamps, or 600 x 600mm, with four 18W fluorescent lamps.

Some fit into linear slot air diffusers and there is also a series of triple and tandem units designed to integrate with a drop-bulkhead.

Luminaires are provided with Helvar electronic high-frequency energy saving control gear for rapid starting and economy of operation.



New light on air crew behaviour

The need for high uniform illuminance in human factor research led British Aerospace to install Holophane Prismalume luminaires at their new purpose-built terrain model in the Sowerby Research Centre at Filton.

Unique in Britain, the accurate terrain model, built to a scale of 300:1, represents an actual West German land area, 6.5km x 1.5km. It enables ground scenes to be realistically simulated, for a range of tests, under varying light conditions, without the need to fly aircraft over real targets.

BA lighting engineers specified 60 Prismalume open-glass reflectors in conjunction with 400W multi-vapor lamps. The reflector prismatically controls and re-directs 60-70% of the bare lamp

output downwards. The 20-30% of uplight output, is reflected from the ceiling and vertical surfaces reducing the apparent brightness of the lighting fixture.

A high uniform illuminance of 4500 lux eliminates confusing shadows on the terrain model and allows scientists more flexibility when using video cameras to simulate different sensor systems.

Unlike most luminaires, Prismalume maintains its output because of the durable prismatic optics. A periodic wiping with a damp cloth is all that is needed to maintain the original performance. A heat-induced chimney action removes particles of dust and grime by suction so the overall maintenance requirement is low. Further details from Holophane, (0908) 649292.



Culzean Castle, built by Robert Adam in 1777, has been floodlit by luminaires from Crompton Lighting. Crompton Galaxy floodlights, fitted with 70W SON lamps, provide effective and economic uplighting of the castle walls. On the seaward side, luminaires are used to highlight focal points on the battlements. The pale gold light from the high pressure sodium lamps gives excellent colour rendering and accentuates the texture of the natural sandstone. The luminaires are easily removed when not in use.

The castle and its surrounding 560 acres of grounds is managed by the National Trust for Scotland. Public and private functions, including conferences and exhibitions are regularly held here, and the castle also houses a number of luxury apartments, one of which was formerly used by General Eisenhower.

Lighting up beats crime

Evidence that links crime to bad lighting was among topics discussed recently by public lighting engineers.

In sufficient investment in street lighting in Britain in the past means that lighting levels are too low, equipment is beginning to fall apart, and maintenance costs are rising, said Peter Wright at the annual conference of the Institution of Lighting Engineers.

As the ILE's new president, Mr Wright, lighting engineer for the City of Coventry, called on fellow lighting engineers to press government for special finance to improve road lighting.

The theme of this year's conference, held in September at the University of Warwick, was *Lighting for the community*.

In a paper called *Lighting design — a major impact on crime and fear*, Roy Fleming, Middlesex Polytechnic, spoke about USA research into the relationship between person-to-person crime and darkness/lighting.

One major study in Washington DC showed a 30% reduction in crime following the installation of high intensity lighting. After one year, the lighting scheme was extended to other areas and this resulted in a 54% reduction of night-time crime over two years.

In Kansas City, a study showed very significant reductions in robberies and assaults when mercury lamps were replaced by high intensity, high pressure sodium lamps. A major feature of this survey however was that just under a quarter of the prevented crime was calculated to have been displaced to other areas. Mr Fleming felt that criminals in Britain were not as mobile as in Kansas; indications were that in Britain displaced crimes were in the nature of 8%.

A small study in Larchmont Gardens, Dade County, highlighted the reduction of fear and anxiety brought about by improvements to lighting in the areas tested. Mr Fleming felt this was a very important aspect of the problem.

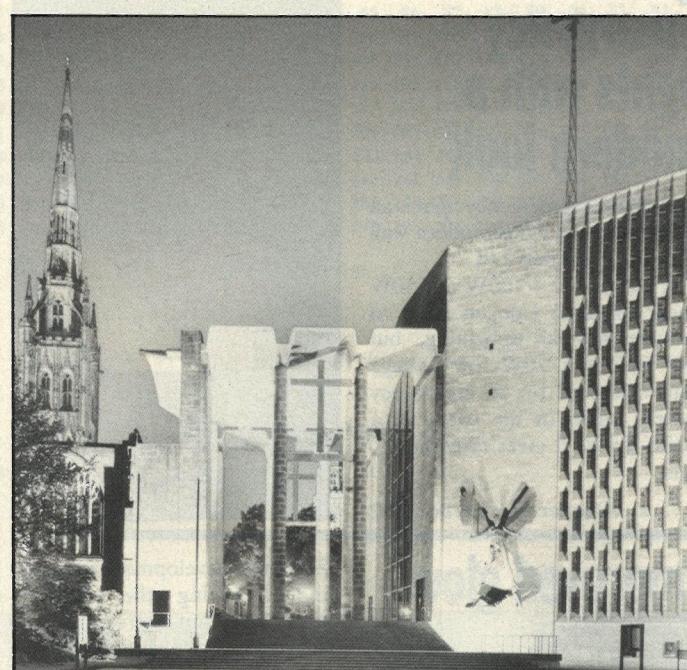
Europe

In Europe, he said, it was known that in major towns and cities 42% of all night-time street crime took place when lighting levels were 5 lux or below. A further 32% was committed between 5 and 10 lux, whereas only 3% of such crimes took place where the illuminance was about 20 lux.

This statistical relationship was too strong to be ignored and should, he said, be justification for spending more on lighting.

The speaker said he was building a database, because evidence was needed in the UK to convince the Home Office of the need for action.

Two surveys were being conducted in London with help from Thorn Lighting and Philips; a big project in north London — the first of its kind in the world — and a smaller one in Tower Hamlets.



Coventry cathedral, symbol of the ILE conference city.

Good lighting in the context of crime prevention required the lighting engineer to adopt a different approach to that for road lighting, said Mr Fleming. It meant people should have first consideration rather than cars. He gave the following recommendations.

First, that lighting levels should be not less than 5 lux for most side streets and not less than 15 lux for housing estates and that there should be good uniformity of illumination.

Secondly, that low pressure sodium lamps should be phased out in favour of high pressure sodium to aid recognition and create a more attractive, reassuring environment.

Furthermore, photo-electric controls made sense because they failed "on" if they failed at all, whereas time switches (which are more expensive) if not maintained sufficiently frequently left lamps out of service.

Urban centres

The revision to part nine of BS5489, *Code of Practice on Road Lighting*, was discussed by Paul Kemp (Urbis Lighting), Nigel Pollard (City of Westminster) and Raymond Sharpe (London Borough of Haringey).

It had been agreed that the scope of part nine be enlarged. Its new title will be *The lighting of urban centres and other public amenity areas*, the intention being that it will cover town and village centres as well as city centres and will also extend to arcades, subways, service roads and car parks.

The revision panel is currently discussing the introduction of semi-cylindrical illuminance as a parameter in lighting subways and shopping arcades. They are also interested in hearing views on whether two lighting values should be required for subways — one for day and one for night-time.

It was emphasised that lighting should allow the general public to appreciate their surroundings at night and make them want to use public areas. Lighting engineers should therefore consider the

nature of an entire area before determining the lighting needs.

During the discussion on this paper, Basil Austin (Corporation of London) called for the abolition of both low pressure sodium lamps in city centres and street columns close to curb edges. He also urged that the standard be completed as soon as possible.

Another speaker in the discussion recommended the use of several different coloured light sources to enhance architecture and the night-time scene, rather than theatre lighting is used. He said he found low pressure sodium lighting helped to "soften" 1960s architecture.

The conference heard talks on luminance and illuminance.

Mike Simpson (Philips) tackled the question of luminance design in road lighting as required by part two of BS5489.

Using slides he demonstrated the silhouette principle and various luminance levels and uniformities.

A lecture on different methods of measuring illuminance was given by Harold Pfitzman (Phosco) and Ole Nielson (Brue and Kjaer).

Hemispherical, semi-cylindrical and planar illuminances were demonstrated on a small model road with a pedestrian crossing.

Running costs

The talk by Brian Ruston (Staffordshire County Council) arose from the fact that electricity consumption for public lighting is, for the most part, estimated not metered and that there had been a revision in the estimation of circuit wattage loadings and annual burning hours.

A joint committee of the electricity supply industry and public lighting authorities had for the first time made standardised recommendations for England and Wales. As a result of this, public lighting engineers needed to re-examine practices in their own electricity board area.

Mr Ruston said there was a need for local authority users to identify their priority requirements for lamp circuits and discuss these with lamp manufacturers to guard against possible increases in circuit wattages as a result of technical developments in manufacturing processes.

He suggested including a limiting maximum circuit wattage in purchasing specifications.

Offices

Eric Maddock, of YRM Engineers, presented a paper on his approach to modern office lighting and its interface with building and space planning constraints.

The use of passive infra-red occupancy detectors to switch office and factory lighting was the subject of Tony Kay (Ripul).

He said this system automatically turned lights off and let people switch them on when needed. A variety of equipment was shown, including a range of modules that simply plugged into special sockets adjacent to luminaires. No special wiring was needed and a module was chosen according to the operating performance required.

Outdoors

Basil Austin (Corporation of London) described the new bank-to-bank floodlighting scheme for Tower Bridge, designed to feature it as the gateway to London, a landmark from the air and a tourist attraction.

Bob Hargroves (Thorn) and Peter Lamb (Mott, Hay & Anderson) took conference delegates through the three methods for lighting road tunnels, all of which were under revision.

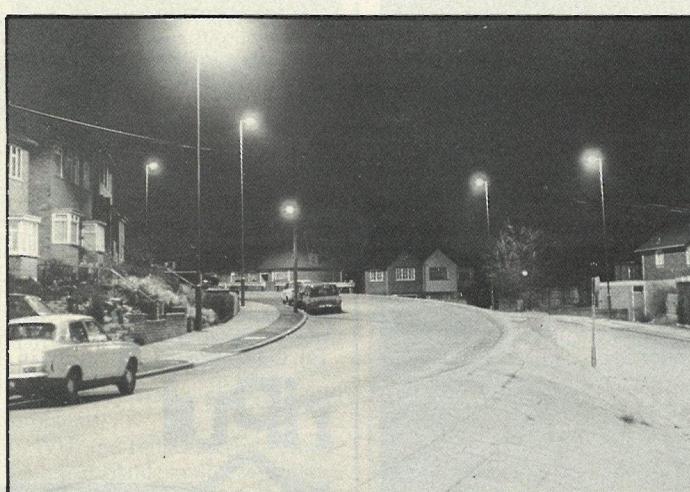
They distinguished the main differences between the British Standard, *Commission Internationale de l'Eclairage* and PIARC systems to assist those who had to design tunnel lighting schemes.

Bill Baillie, of IBM, said a computer database for street lighting would make the information accessible, interrogable and cost effective.

It could also be correlated more easily and could be put on a map on the computer if desired.

These, and other lectures gave delegates plenty of ideas to take back to their local authorities.

Copies of papers, price £10, are available from the Institution of Lighting Engineers, 9 Lawford Road, Rugby CV21 2DZ.



A uniformly lit road, an example drawn from Mike Simpson's paper on luminance.

COMMENT

Street lighting and false economy

The ILE is once again flying a kite for improved public lighting. Substandard street lighting is currently costing this country £100 million a year as equipment well past a reasonable lifetime and still in use leads to inefficient operation, increased maintenance costs and high energy bills, according to the Institution's incoming president, Peter Wright. Mr Wright then goes on to urge the government to realise that lighting is as important as any other highway service and that all urban areas, not just the much publicised inner city, need more and improved lighting. Indeed, if road lighting is all upgraded to current national standards, he calculates the current night-time road accident prevention rate could be boosted by up to 50%.

Unfortunately the ILE is up against one fact of life. Lighting is one of those amenities, which, like the more personal attributes of money and health, is only noticed when its lack is felt to act as a constraint on personal choice. A similar example in the public sector is provided by the so-called National Health Service which by largely eschewing preventive medicine has, in effect, become a state sickness service. And we all know of the problems that particular public service has recently experienced.

Public lighting, equally, has traditionally been seen as providing solely for safety and security. In the UK the definition has often been further narrowed down to one of road lighting — a viewpoint encouraged by the transfer of lighting powers under the Local Government Act 1966. So what we are talking about is actually broadening the concept of public lighting.

However, there is evidence of public support for this wider interpretation of the brief. An increasing emphasis on leisure has led to a growth in activities such as sport, shopping, travel and tourism, and the rising cost of providing and running such leisure facilities is generating an increasing demand that they should be as accessible in the hours of darkness as during the daytime. So both the entrepreneur and his potential customer are jointly demanding improved amenity lighting in all public areas.

Undoubtedly money could be made available given the political will. The government's recently declared intent to reduce road accidents by one third by the end of the century would lead to a saving of £1 billion at current prices and, indeed, the ILE makes a strong case that this money should be channelled into the improvement of public lighting.

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NEW PRODUCTS

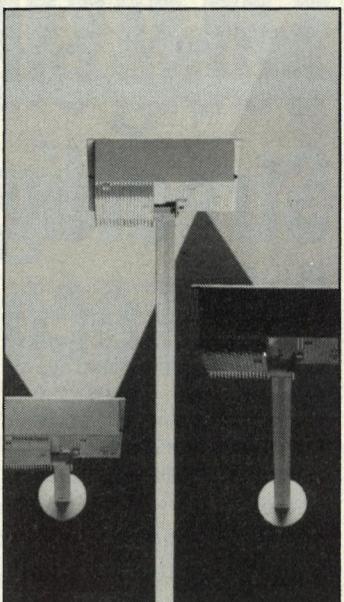
Versatile uplights

Diplomat is a group of versatile luminaires by Crompton Parkinson Ltd. They are primarily uplights but can be adjusted to give direct, medium beam flood-lighting.

There is a floor standing light and two wall lights which use either 70W/150W metal halide, or 70W tubular high pressure sodium lamps. An ultra-violet B filter is available for the 150W model.

The two wall mounted versions offer a choice of a short or long arm to give flexibility in shop window lighting. An Allen key is used to adjust the head for downward lighting.

Reader Service No. 151



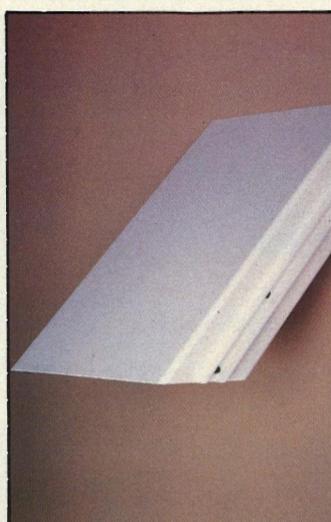
For more information on any of the products listed above, circle the enquiry number on the free reader reply service card.

Emergency lights with a modern look

Pylos Halo C emergency light is an addition to the Pylos modern wall lights from Futimis Ltd.

It uses either a 100W or 150W linear tungsten halogen lamp to provide normal uplighting, but also houses a 20W low voltage lamp powered by an emergency battery pack. In the event of a mains failure it gives three hours' light.

Reader Service No. 152



Improved glow for signs

Jalite has introduced a new range of photoluminescent self-adhesive vinyl and rigid boards. After over

12 months' development work and product testing the company claims significant improvements in quality and performance of these materials, which can be useful in conjunction with emergency lighting luminaires.

Reader Service No. 153

Colour changer for theatre lighting is silent

M & M Lighting has launched the Rainbow colour changer. It has been specifically designed to suit the high standards of speed, precision and silent performance required by theatre and opera lighting designers, and touring companies.

The Rainbow colour changer has a self-contained power/control link and is stated to be compatible with standard control desks.

Capable of scrolling through 11 different colours in less than 1/8th of a second, it allows quick colour changes for dramatic effect and gives wide creative scope to lighting directors.



The gel roll construction is stated to reduce filter replacement to a matter of minutes and spare rolls can be mounted and stored for immediate use, without the need for additional equipment. A built-in auto tensioner maintains the tautness of the gel.

An additional filter holder is fitted at the front of the Rainbow so that two units can be used in tandem, giving access to 121 colours in all.

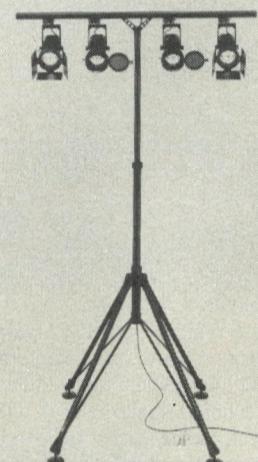
Reader Service No. 154

Portable lighting for exhibitions

Erco Lighting Ltd's Eclipse range of light fittings has been enlarged to include a portable lighting stand capable of taking very heavy spotlights without toppling.

It is equipped with a 1300mm length of tubular lighting track and has a minimum height of 1080mm and maximum of 2800mm. The whole structure can be folded up to fit into a canvas bag for easy transportation.

The feet are adjustable to cope with uneven surfaces. This stand is expected to be most useful for mobile exhibitions, small stages, lectures — in fact anywhere where instant lighting is needed with the



minimum of effort.

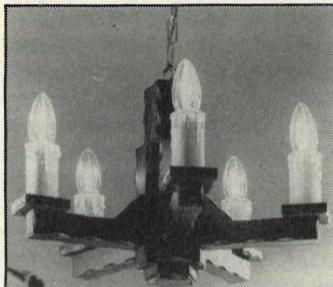
Reader Service No. 155

Rustic pendant range

Latest addition to Micromark's range is a collection of pendants in rustic styling.

There are five- and three-light pendants, with two matching wall brackets. Each fitting is made from carved wood with a dark antique finish.

The fittings are packed in dis-



tinctive grey and red cartons which also act as a point-of-sales aid.

Reader Service No. 156

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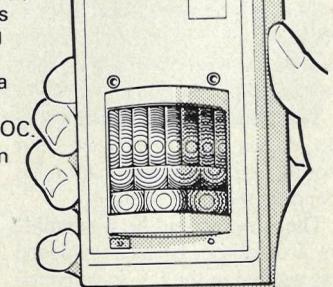
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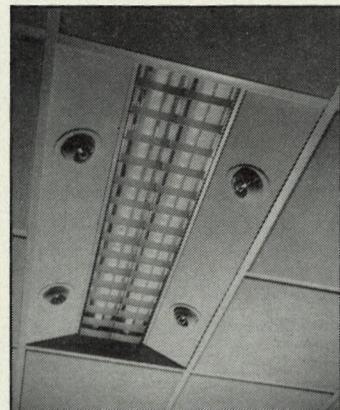
Fluorescent and spotlights together

Topper Starlight is a development of the Topper luminaire by Lumitron Ltd. This model, however, combines fluorescent lighting with low voltage tungsten halogen spotlights.

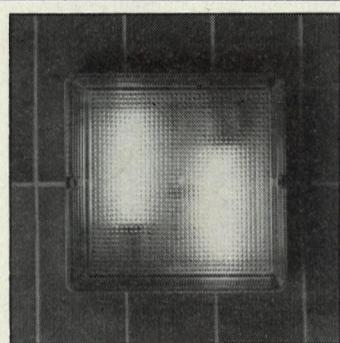
It is designed to drop into a 600mm suspended ceiling grid. Twin fluorescent lamps are used with a choice of low glare louvres or prismatic controllers.

Panels on each side of these lamps house recessed, low voltage spotlights in the form of either an eyeball (two sizes available), or a fully recessed adjustable downlight.

The luminaires are particularly suitable for areas, such as shops, where high efficiency, low glare



general lighting is required, together with unobtrusive, high intensity spot lighting to enhance displays. **Reader Service No. 157**



The luminaires measure only 246mm square by 82mm deep and are easy to install. They are classified IP54 dust and spray protected and are fitted with clear prismatic controllers which are resistant to casual vandalism.

All models in the Bijou range can be fitted with a photo-cell switching device to give automatic operation. **Reader Service No. 158**

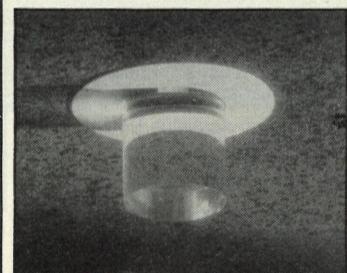
Slimline bulkheads

Crompton Lighting has introduced a range of slimline bulkhead luminaires for interior and exterior lighting.

Called the Crompton Bijou, these surface mounting bulkheads are suitable for many security and amenity applications in commercial, industrial and domestic environments.

For maximum economy, the luminaires are supplied complete with a choice of energy efficient light source: either a 16W or 28W 2D compact fluorescent lamp, or two type CL/PL compact lamps each rated at 9W. The CL/PL version is provided with parallel wiring circuits to allow one lamp to remain lit when the other fails.

Variety of downlights



Leading Edge Lighting Ltd has broadened its range with the introduction of two low voltage downlight ranges.

They are available in either brass, chromium, black or white and offer a wide variety of styles, including fittings for twin compact fluorescent lamps.

Both ranges are designed for up-market and high fashion retail environments. One range accepts dichroic lamps, while the other has built-in reflectors and uses an M32 lamp. **Reader Service No. 159**

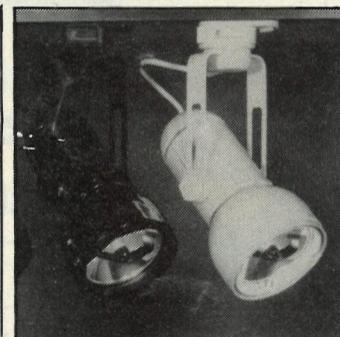
Runway lights for airports

Philips' elevated runway and taxiway edge lights for airports are suitable for all categories of runway.

They have an optical housing that can be detached in seconds for inspection, and, if necessary, can be replaced with a unit that has been serviced in the airport workshops. Lamps can be changed on site.

The lights consist of a lens mounting assembly, a levelling component and a lower casting.

An asymmetric outer lens on the optical system contains either one 360° lens or two 180° lenses. There are low, medium and high intensity versions, according to the wattage of the quartz halogen lamp used. **Reader Service No. 165**



Low voltage spotlights

Hoffmeister Lighting Ltd has introduced a range of low voltage spotlights using metal reflector lamps.

This range of spotlights, called Super, is available in three standard finishes and is constructed using the Hoffmeister three compartment system to eliminate heat problems.

Wall and ceiling mounted models are available in nine alternative lamp versions with 10°, 30° and 60° distribution. **Reader Service No. 160**

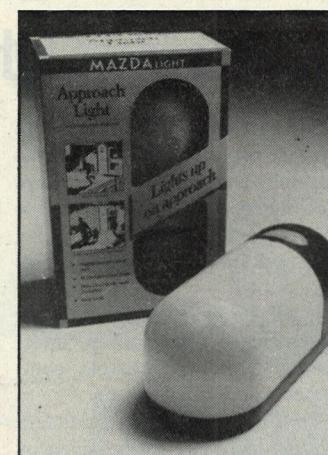
For more information on any of the products listed above, circle the enquiry number on the free reader reply service card.

Switched on security

Approach Light, designed for the exterior of the home to deter intruders, has been added to the Mazda security lighting range from Omega Lighting Ltd.

Operated by an infra-red beam, the weatherproof light is activated by someone approaching, so serving a dual purpose of welcoming friends and discouraging unwanted visitors.

It features a wide activity detection range of 100° to a distance of 4m. A five minute switch-off delay and a photocell are incorporated

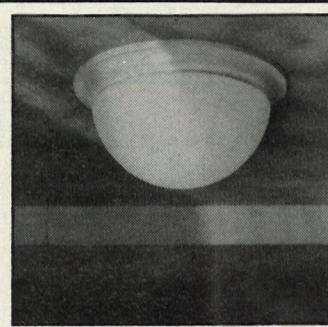


ensuring night-time operation only. Net trade price is £39.45. **Reader Service No. 161**

Hand-blown glass luminaires

The Limburg range of lighting now available from Marlin includes a comprehensive range of high-quality glass and metal, hemispherical ceiling fittings. Either chrome, polished brass, antique brass, or matt white metalwork is available with hand-blown, satin, white opal glass diffusers in a variety of styles and sizes.

Designed for ceiling mounting, Limburg fitting 3111 is a classically simple product which illustrates the elegance and versatility of the range. The softly-contoured, satin, white opal glass hemisphere is mounted to a matching matt white or polished



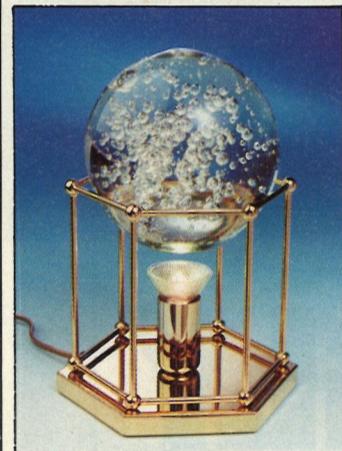
brass finished metal plinth. The fitting is produced in five diameters from 300mm to 560mm.

There are single and twin lamp versions and the fitting has been designed to accept either incandescent lamps or the 2D compact fluorescent light source. It has a splashproof construction and can be used in bathrooms. **Reader Service No. 162**

Illuminating the spheres

A new idea in decorative lighting, developed by German manufacturer Simon & Schelle, is being distributed in the UK by Project Line.

Latest addition to Simon &



Schelle's selection is Spherelite. It has as its principal feature a solid glass sphere hand-made by craftsmen in Austria, who specialise in this type of crystal glass. Each sphere is filled with bubbles of trapped air produced by a technique which ensures that each sphere is unique.

A major advantage of Spherelite is that even when unlit, its combination of polished metal and sparkling crystal make it ornamental.

The sphere rests in a framework supported by pillars rising from a round or hexagonal base on which is mounted a low voltage cool-beam tungsten halogen lamp that illuminates the glass sphere. Light shining through the bubbles makes them sparkle and glow; the largest models in the range are fitted with dimmers to vary this effect.

Spherelites are available in three sizes with spheres of 80mm, 100mm and 140mm diameter. **Reader Service No. 163**

heat from the lamp.

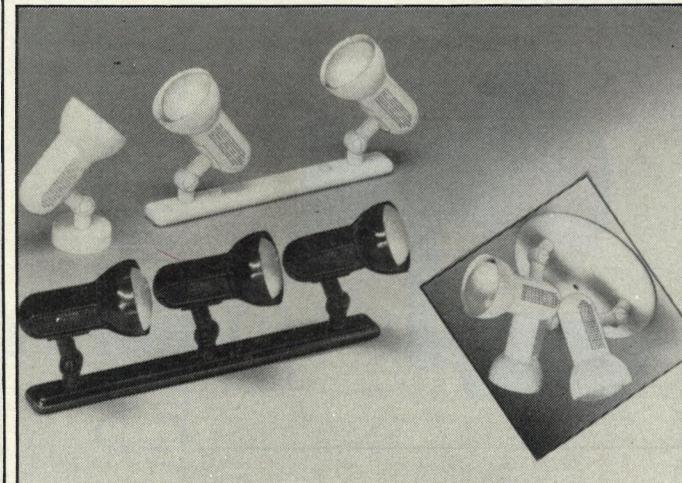
The Perfo range is available as a single wall spot, twin bar spot, triple bar spot and a triple cluster. Each of these is finished in either gloss white or a black baked enamel.

Clear plastic packs provide a combination of maximum product protection and effective product display. **Reader Service No. 164**

Perforated spotlight range

Micromark has introduced a distinctive range of spotlights designed for high performance and easy installation.

A perforated housing dissipates



LIF LINE

Focus on CENELEC

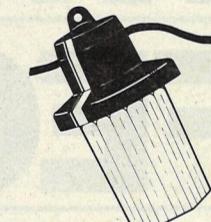
Firstly, let's unravel the acronym. CENELEC, as anyone well versed in the matter of lighting standards will tell you, is the European Committee for Electrotechnical Standardisation.

Until now, CENELEC standardisation in the lighting field has concentrated on products (luminaires, lampholders etc). Recently however, DIN, the German Standards Body, proposed that there should be harmonisation on lighting applications technology, ie codes. This proposal was put to CEN, the European body for non-electrical standardisation and subsequently discussed within BSI, where the following decisions were reached:

1. Because current opinion within the EEC Commission with regard to health and safety at work tends to support the German initiative, standardisation work on lighting applications technology will be put in hand.
2. This work should be the responsibility of an entirely new European Committee.
3. The UK lighting industry would prefer this work to take place in CENELEC rather than CEN.
4. If CENELEC became the responsible body, the UK could offer to provide the secretariat, provided adequate backup resources were available from industry — this matter to be discussed in the CIBSE Lighting Division.
5. The BSI Secretariat would need to decide the most effective forum for this work within the BSI Committee structure, having regard to the following points:
 - the need to ensure that the lighting industry's interests are properly protected;
 - the close interrelationship between standards for lighting equipment and lighting applications technology;
 - the need to ensure that the correct user interests are properly represented;
 - it is inappropriate for committees concerned with ergonomics to be responsible for lighting applications technology.
6. The programme of work should include, *inter-alia*, proposals for European codes/standards for interior lighting and for emergency lighting.

The Federation will continue to monitor developments over the coming months and, as a service to the British lighting industry, will ensure that manufacturers are kept fully informed.

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Reader Service No. 5
Page 5

Popular Art



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Reader Service No. 8

Light years ahead

David Taylor takes a look at theatre lighting design in the twenty-first century.

In late 1987 in Los Angeles, the artist David Hockney and lighting designer Wally Russell created a lighting design that, for the very first time, relied solely upon fully automated lighting instruments. *Tristan and Isolde* was lit using Showco's Vari*lite, a high intensity performance lantern that incorporates an on-board microprocessor allowing full intensity, colour and beam selection as well as 360 degree pan and 270 degree tilt of the luminaire. *Tristan* realised the potential for subtle use of the equipment with its intense dichroic colours and in-performance selectable pattern and beam width for the first time outside the music industry. Not least, the economic saving

achievable in a repertory change-over suggested that the Vari*lite and its clones were the building blocks for designs of the future.

Potential

Yet, this new-found potential for being able to manipulate in performance all five of the lighting variables — intensity, contrast, texture, colour and movement — presents a whole new complexity of problem for the lighting designer and the manufacturers who support him or her. In fact, the breakthrough in Los Angeles will be the catalyst for a radical re-thinking of the approach to theatre lighting, and perhaps even changes in the people who offer support in this most important of

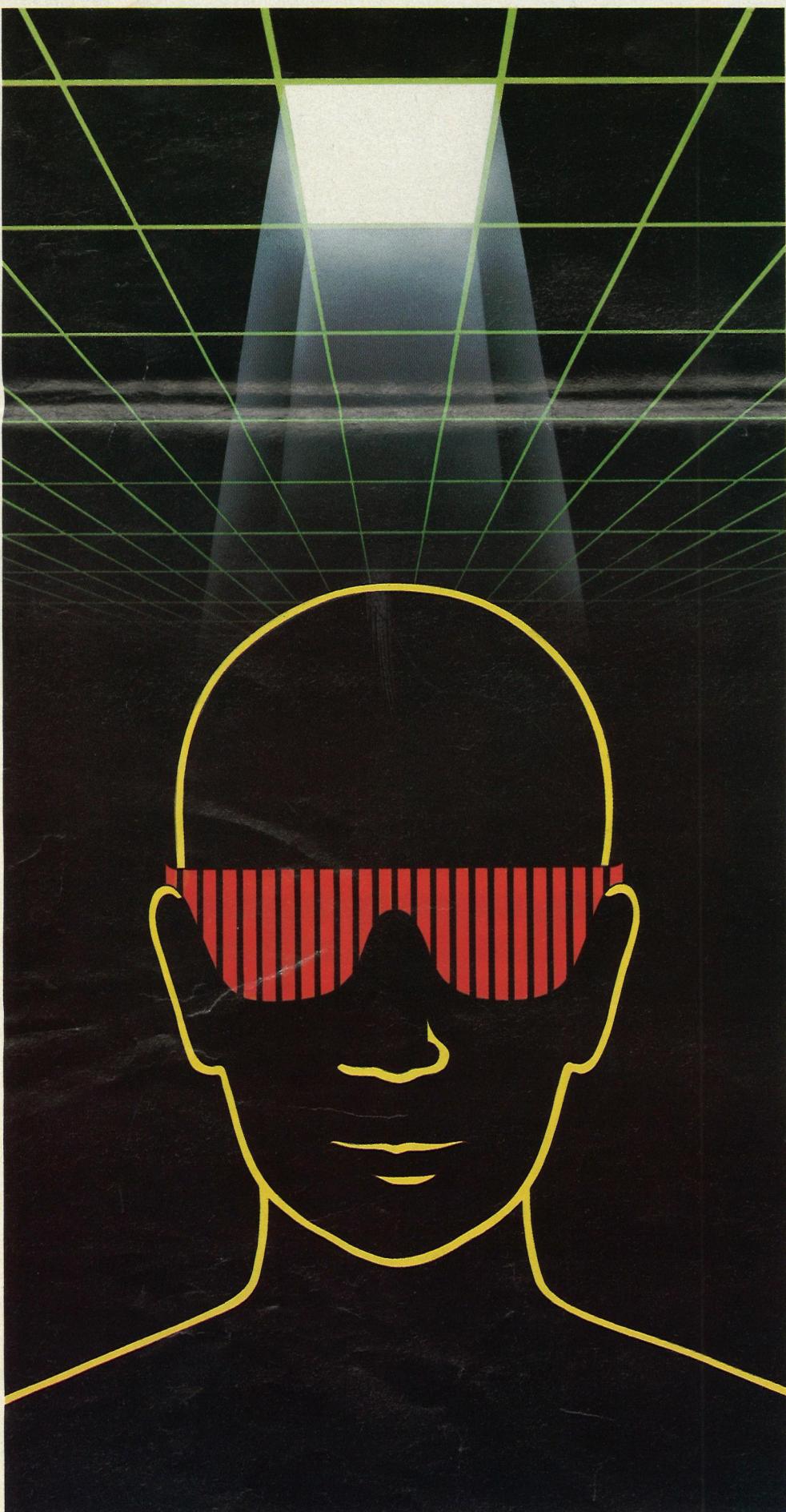
performance fields.

Control of the variables is the key to lighting's development as an art. Memory lighting consoles, with electronic stores replacing analogue fader settings, removed a very significant block in the path of lighting art from emotional idea to emotive performance. The keypad removed the order of lighting instruments at the designer's control, and released the regimentation of "fader-dimmer-instrument" to allow a more global and 'designed' approach to the control of lighting.

Further computational advances allowed multiple grouping of instruments under increasingly sophisticated fade control, where a complicated scene of lighting



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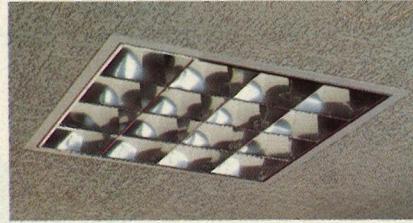
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Reader Service No. 11

levels, set up with groups of channels — such as 'Day, warm' and 'Window, cool' — could be slowly developed in a series of additive and subtractive fades to give intensely emotive effects on the stage. The group approach to lighting is the most important development in recent years, since it releases the design process from the restrictions of a cross-sectional lighting plot, where lighting tracks from one set of levels to another.

Now that design is less restricted by equipment, a more direct route from imagination to emotional manipulation is possible for the lighting designer. For instance, he can annotate and analyse the changes in the lighting variables just before a thunderstorm, or at dawn and use manifestations of these as emotional building blocks on the stage.

A new breed

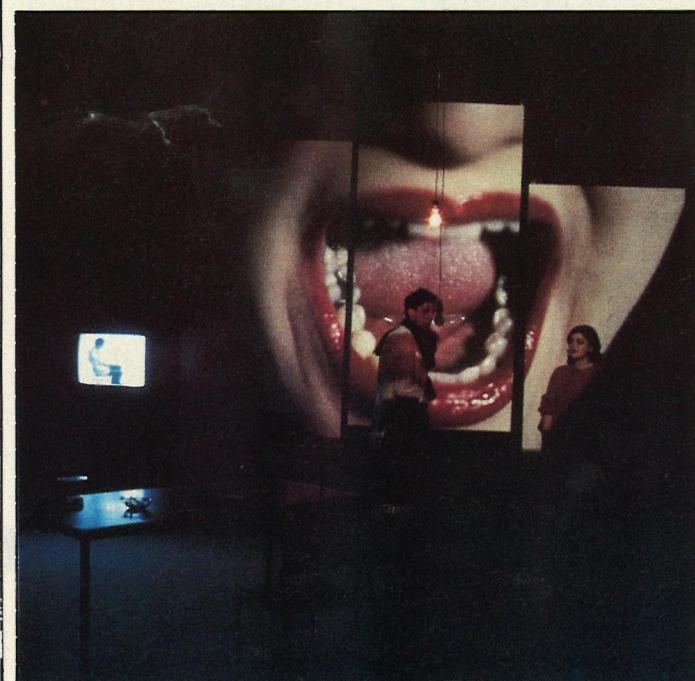
Obviously, such analysis requires a career preparation that differs from the more technical apprenticeships undergone by many of the lighting designers of the past and present. This new breed of lighting designer, with perhaps a fine arts or psychology background, will require a different sort of interface between his ideas and the equipment.

Most important, indeed, will be the representation of system information to the designer. Precise representation of lighting designs requires the designer to be able to receive accurate reports on the status of his lighting tools — their colour, focus, intensity and interaction. Recent lighting control consoles have utilised bar graphs and colour fields to show the levels

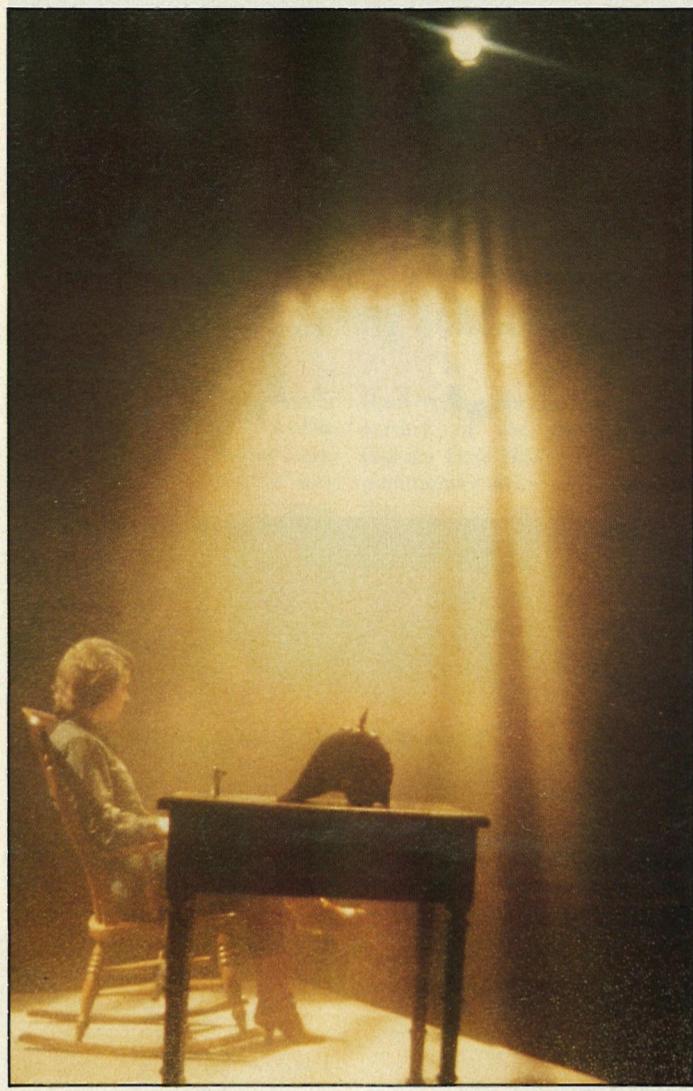
of each lighting variable, but the designer of the future will want a display that is more than a screen filled with alphanumerics. He will want an accurate mimic of the lighting plan with each instrument shown along with its operating parameters. Or, in an ideal world, a display showing a representation of the stage scene, with each area of effect graphically indicated, and supplementary screens showing the incoming scene or scenes.

Such displays represent the monitoring modules of the lighting control system. They allow the designer to check what the machine is doing, is about to do, or is capable of doing. But the designer should easily be able to manipulate any or all of the lighting variables and to monitor their effect or potential effect on the stage picture. Manipulation has historically been effected by pushing a fader or punching in a number sequence. Already in their infancy are control systems that utilise touch screens or light pens or, more interestingly, a stylus that is pointed at a particular area on an electronic tablet to effect the lighting variation. The latter system has been demonstrated with the tablet faced with the lighting plan — an instrument icon is touched with the stylus and its level varied by a further movement of the pen on a 'fader' strip. A more supportive development of this technology would allow for a nominal area of the tablet to represent a lighting effect or group, perhaps laid out in a geographical mimic of the stage area, liberating the designer from the restrictions of the technical lighting plan.

Actually controlling the lighting



Integration of all theatre elements will lead to a total theatre.



Communicative lighting can manipulate the emotions.

plot is only part of the lighting development. This part takes place in the theatre, where the ideas created in the concept development stage are loaded into the control console during the period known as plotting. This activity uses a good deal of stage time, and so any means of reducing it would be advantageous. Rather than the 'trial-and-error' approach that is the technique of nearly all lighting designers, much more productive use of theatre time could be made if plotting was in fact, implementation.

The concept of a take-away lighting console for the designer was proposed recently in the United States. The lighting designer would have his own control with local memory on which he could develop his design before transporting it, or its storage media, to the theatre console for loading into the stage memory. With a common language, the actual designer console would be immaterial and plotting would be only a period of fine adaptation and balance.

Standard theatre

However, in order for the designer to be able to plot 'blind', an approach that uses effects groups — ie a 'look' on the stage — must be developed. The peculiarities of a host theatre make 'types' of effect the necessary building blocks, elemental enough for translation into the final theatre set-up. With the advent of fully-controllable lighting instruments, a theatre of the future is possible where a standard arrangement of instruments on a universal layout would be installed. Thus, a designer could accurately develop his design on his own computer away from the theatre and then download the resulting design into the standard theatre anywhere in the world. With a few special luminaires (no saturation rig will allow for full realization of a designer's ideas) the design will adapt and reset itself between scenes or even productions.

Back in the theatre, the lighting designer should be free of the keypad or fader bank. He should easily be able to adapt and customise his design to the dynamic nature of the final production. Perhaps he may use an electronic

the stage technology. The total theatre 'group' is a complete emotional effect which supports and complements the action on the stage, or even becomes that action.

The route from imagination to realization has become a great deal easier for the lighting designer as the technology has developed. But, as preparation for the technology has brought about changes in the lighting designer, manufacturing and research must be sensitive to the ultimate destination of lighting design, as part of the total theatre environment. The phenomenal leaps in control and presentation technology that have taken place in recent years merely highlight the need for a more artistic education for the design professional so that he or she may better use the freedom and integration that the theatre of the twenty-first century will offer.

David I. Taylor has designed lighting and sets for theatre, television, film and dance in the UK and abroad. He is Secretary of the Association of Lighting Designers and works as a lighting designer with Theatre Projects Consultants International in London.



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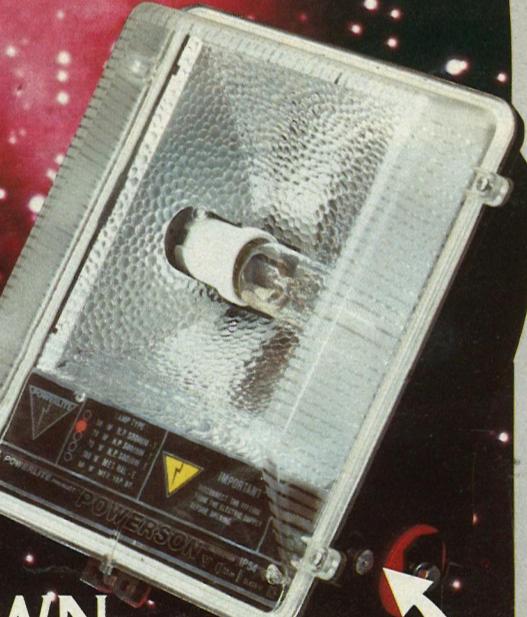
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Lighting plays a part on the stage

A report on stage lighting installations for three theatres, where facilities include a proscenium that floats and a full working light installation.

Two new towns in the south of England, Crawley and Basildon, have recently had new theatres, both noteworthy for their versatility.

The Hawth theatre at Crawley is built on a wooded common on the outskirts of the town. The main theatre seats 850 people and has a horseshoe balcony.

Theatre in the round can be accommodated by re-arranging the auditorium. It can also be used as a cinema by removing a few seats at the back of the circle, in front of the projection room. Another variation is that stalls seats can be removed to leave a flat, open floor. As the theatre is near Gatwick airport, it is also possible that it will be used for conferences.

Strand Lighting supplied the stage lighting which consists primarily of 96 Cantata 1.2kW lanterns. These are supplemented by Cadenza lanterns, solo follow spots and Punchlites.

The lighting control console for the main theatre is a 180-channel Gemini type, with an effects panel, disc storage, printer and lighting designer's remote control.

The particular advantages of the Cantata range are the 360° rotating shutter assembly and the new locking clamps which grip by extending a flanged steel disc inside another flanged disc to give a sure grip.

Conventionally placed stage lighting is supplemented by lum-

naires concealed behind manually operated ceiling traps in front of the proscenium arch.

Basildon Towngate theatre is right in the town centre. It seats 550 in the main auditorium on three levels. This seating can be moved on air castors to the basement to leave the stalls area clear.

The width of the proscenium can be varied by "moving towers", also on air cushions.

This theatre was the first to use Strand's Cantata range and has 120 of these lanterns supplemented by Punchlites and other specialised spotlights. Ten internally wired bars provide support.

The Playhouse, in London's West End, has been reconstructed and re-opened a year ago. The stage lighting installation is based on Strand's 180-channel Gemini control console located in a minuscule control room at the back of the dress circle. Luminaires are hired in by the production company.

The permanent dimmer installation consists of 120 Permus modules. There is an extensive production lighting wiring and socket installation.

A full-specification working light installation is included with three operating modes: day, night and show. Main working light control panels are provided for the stage manager and lighting operator with extra local push-button out-stations controlling individual

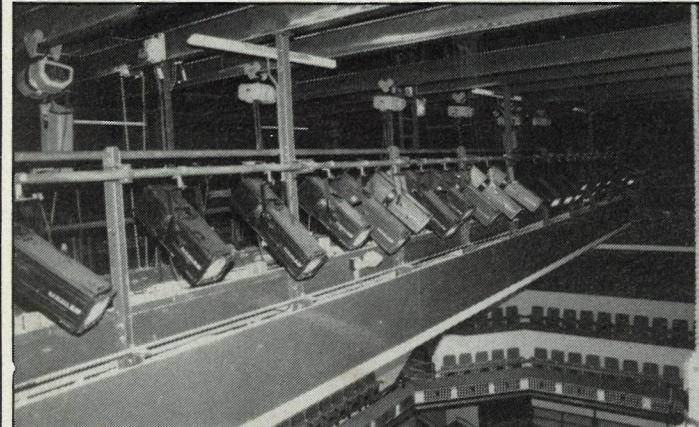
circuits at gallery and grid levels.

The control rack, which is positioned in the dimmer room, incorporates electronic logic circuitry as well as power contactors and fuses for working lights, lighting for cleaning, independent and rehearsal circuits.

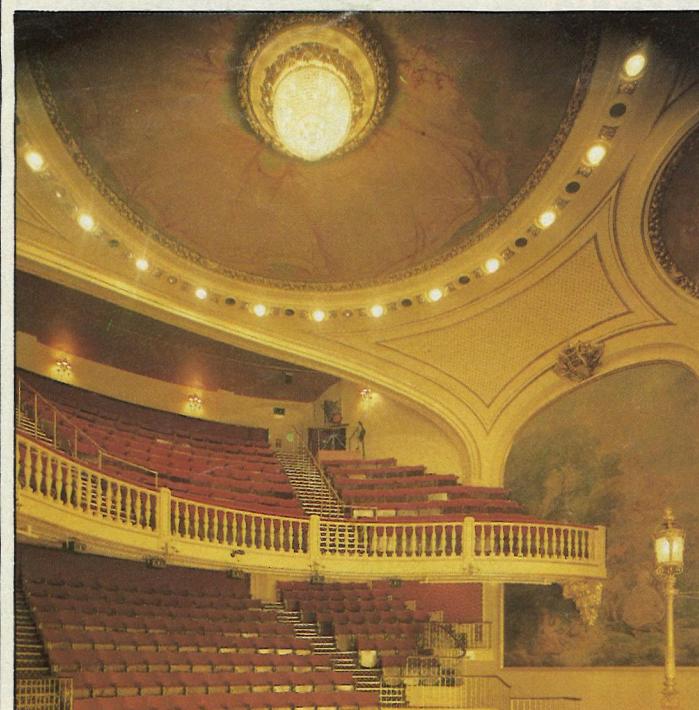
The working light control system was designed and built by Glantre Engineering Ltd, who gained the contract for the refurbishment of the Playhouse theatre.



View of the stage at the Hawth Theatre, Crawley.



Cantata lanterns on the bridge at the Hawth Theatre.



A view of the Playhouse Theatre, London.



Light suspense

The world's only double suspension bridge has been lit using an energy saving scheme.

The world's only double suspension bridge, the San Francisco - Oakland Bay Bridge, has been lit with compact fluorescent lamps. The installation, comprising nearly 1700 PL 9W lamps, is designed to accentuate the structure at night. Not only will it cost some £5,000 less a year to run than the incandescent scheme it replaces, but the longer life of the lamp will also cut maintenance costs considerably.

In 1986, as the fiftieth anniversary of the Bay Bridge approached local residents formed a Commemoration Committee to organise celebrations to coincide with the US Navy's local celebration of

Fleet Week. But the fiftieth anniversary of the more famous Golden Gate Bridge fell only six months later and it was anticipated that financial support, from both businesses and the general public would be limited.

So, a plan was evolved to give the bridge temporary lighting and on the evening of 15 October 1986 a string of lights nearly 6.5 kilometres long comprising 600, 69W incandescent lamps was turned on.

The result was so effective that the local media ran a series of articles which elicited a ground swell of local opinion and, in effect, spearheaded a campaign to keep the lights on permanently. A Light

up the Bridge Committee was formed to handle donations, and this succeeded in collecting just over £200,000 in five months.

Meanwhile, the California Department of Transportation (Caltrans) which manages the bridge began looking into the feasibility of the scheme. It soon became apparent, however, that using incandescent lamps the electricity bill would be too high. But Philips Lighting USA launched the idea of using PL compact fluorescent lamps and began talking about a lighting plan with Caltrans. Negotiations led to Philips donating 1684 PL9 lamps to replace the existing installation.

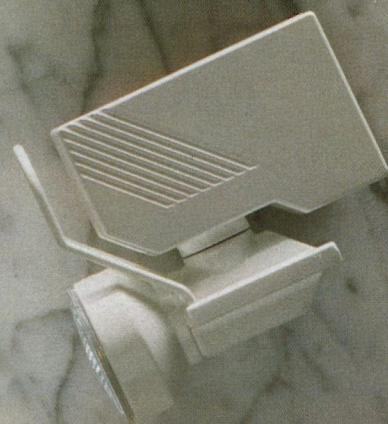


The San Francisco-Oakland Bay Bridge — compact fluorescent lamps accentuate the structure at night.

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As a safeguard against adverse weather conditions the PL lamps were housed in weatherproof luminaires and attached to the cables of the bridge by means of custom-made brackets.

The system was designed so that each housing contained two PL 9 lamps to ensure that light points would not become dark between scheduled replacement. Thus, the illuminance of the bridge was also increased, as the double lamps produced almost twice the light output of the single incandescent lamp they replaced.

The lamp produces the same amount of light as a 60W incandescent lamp although lamp and ballast consume only 12W. Based on the local average kilowatt-hour price of just under 4p, these lamps were calculated to reduce electricity costs by over £5,000 pa.

Energy consumption of old incandescent lamp	= 69W
Energy consumption two PL lamps and ballasts	= 24W
Energy saving per luminaire	= 45W
Energy saving of installation (45W x 850 luminaires)	= 38 250W
Annual savings, assuming 3650 hours' annual use at 3.9p/kWh	£5445

In addition to the energy savings produced, maintenance costs for the installation are considerably reduced because the PL lamps last five times longer than incandescent lamps and the labour costs involved in replacing incandescent lamps on a suspension bridge exceed the cost of the lamp itself.

Masts save on M-way maintenance costs



When the Northern Ireland Department of the Environment decided to replace 88, 30 metre lighting columns on a section of Ulster's M2 motorway, ease of maintenance was a crucial factor.

The 23-mile motorway runs north west from Belfast and where it leaves the city it has ten lanes, five in each direction, making it probably the widest motorway in Europe.

Existing masts supporting the lighting system had been in position for 10-15 years and were of conventional design with the head frame lowered by means of a winch and wire ropes whenever cleaning or relamping was necessary.

Maintenance was not as regular as it might have been and masts and equipment had deteriorated, with the result that lighting levels were below the required level.

Options considered included a refurbishment of existing columns or replacement with Abacus' raising and lowering system. At £4,500 a mast, the capital outlay of the latter was greater than refurbishment at £2,800 a mast. But the choice of Abacus raising and lowering columns finally was made on the significantly lower annual maintenance costs — £180 against £410 a mast for the lowering head-frame type.

Reader Service No. 11

Heavy metal

Superb colour rendering has given metal halide lamps a key market in top quality sports and display lighting. Barry Booth of Wotan Lamps traces the development of this lamp and its control gear.

The history of metal halide lamps and their development has been much publicised since their introduction over 20 years ago. Since then medium and high wattage lamps have set the standards where high lumen efficacy and exceptional colour rendering are required, particularly in the colour television transmission of floodlit events.

Ever since the 1972 Munich Olympic games, metal halide lamps have been the first choice for illuminating international sporting events, not only for the benefit of sportsmen and spectators but more particularly for the quality of the colour TV transmission. As important as the colour rendering index is the matching of these lamps' spectral distribution with the sensitivity of the camera. Such is the success of metal halides in meeting these criteria that the venues for the 1988 Olympics in Seoul, South Korea are equipped with eight hundred 2000W metal halide lamps. But the application of this lamp type has not been confined to sports lighting. It has also been a major success story in the display and general lighting areas.

Development

Metal halide is a development of mercury discharge lamps. As the name suggests, rare earth metals and halides are added to the mercury rather than simply coating the outer bulb with phosphor to achieve the desired increase in colour rendering and lumen efficacy.

The metals and halides play different roles. Mercury produces radiation predominantly in the blue region of the visible spectrum.

Spotlight	Interior	Exterior
	shop windows display booths exhibition halls museums	facades monuments security lighting gardens
General lighting	offices conference rooms foyers show rooms manufacturing halls sports grounds	pedestrian zones decorative street lighting

Rare earth metals which radiate at different wavelengths are added to fill in the spectral gaps. Initially dysprosium (Dy), holmium (Ho), thulium (Tm) and titanium (Ti) were added to increase the efficacy to around 90 lm/W and Ra to 90 with a colour temperature of 5600K.

By adding sodium, a second colour temperature category is developed at around 4000K; and the requirement for an even warmer colour appearance of 3000K is achieved by adding tin, lithium and more sodium. However, each step is at the cost of slightly reduced efficacy and colour rendering. The halides have a similar role here to the one they play in tungsten halogen lamps. They are needed because the metals look for the coolest place within the arc tube and become inactive. At this point the halogens (iodides and bromides) come into play by forming a gaseous metal halide which, because of convection, circulates within the arc tube where it again finds the optimum temperature in order to free the metals for radiation.

In recent years the introduction of compact, small wattage, metal halide lamps (70W-250W) has



Cost benefit analysis

A show window of 2m x 6m = 12m² is to be illuminated with about 1500 lux. To arrive at this illuminance approximately 35 000 lm are required.

This can be achieved by:

- 30 incandescent reflector PAR 120W; or
- 9, 70W metal halide lamps; or
- 4, 150W metal halide lamps.

For this analysis the following values were used:

	PAR 38	METAL HALIDE		
		120W	70W	150W
Luminous flux per lamp (1m)	1200	5000	11250	
Approx. luminous flux per luminaire (1m)	1200	4000	9000	
Number of lamps Z (pieces)	30	9	4	
Circuit power N(W)	120	88	170	
Assumed lamp price £	4.41	37.80	39.90	
Rated life B(h)	2000	6000	6000	
Annual burning hours T(h) (14h per day)	5000	5000	5000	
Electricity cost K(£/kWh)	0.06	0.06	0.06	

To find the annual running costs, annual electricity costs and lamp replacement costs are added. They result from the following formulae:

$$\text{Annual electricity costs} = Z \times (N/1000) \times T \times K$$

$$\text{Lamp replacement costs} = Z \times (T/B) \times L$$

	PAR 38	METAL HALIDE		
		120W	70W	150W
Annual electricity costs	1080	238	204	
Plus lamp replacement costs	331	284	133	
Less annual running costs	1411	522	337	
	100%	37%	24%	

It takes a long time to become a legend. It's not something that happens overnight.

Not only do you have to come on with the impact of a shooting star, but then you've got to stay on top without burning yourself out.

Lucalox made its debut two years before Sergeant Pepper.

And like all good legends it came on with a bang.

Light Years Away From Mercury

Suddenly here was a range of high pressure sodium lamps, light years away from mercury, that at once optimised light output, extended lamp life and – if that wasn't enough – also saved energy.

Uniquely designed, uniquely constructed

What made Lucalox so different was its unique construction. Unlike other high pressure lamps, the amalgam for Lucalox was kept in a reservoir outside the arc tube, and released into the arc stream only as it was needed.

As a result the voltage rises considerably slower, which is a critical point when you consider that

controlling voltage rise is the key to long life.

The American Lamp With The Great British Virtue

It also meant that the lamp was less likely to crack under pressure.

Many high pressure sodium lamps, particularly those used in street lighting, are prone to vibration by factors such as high winds.

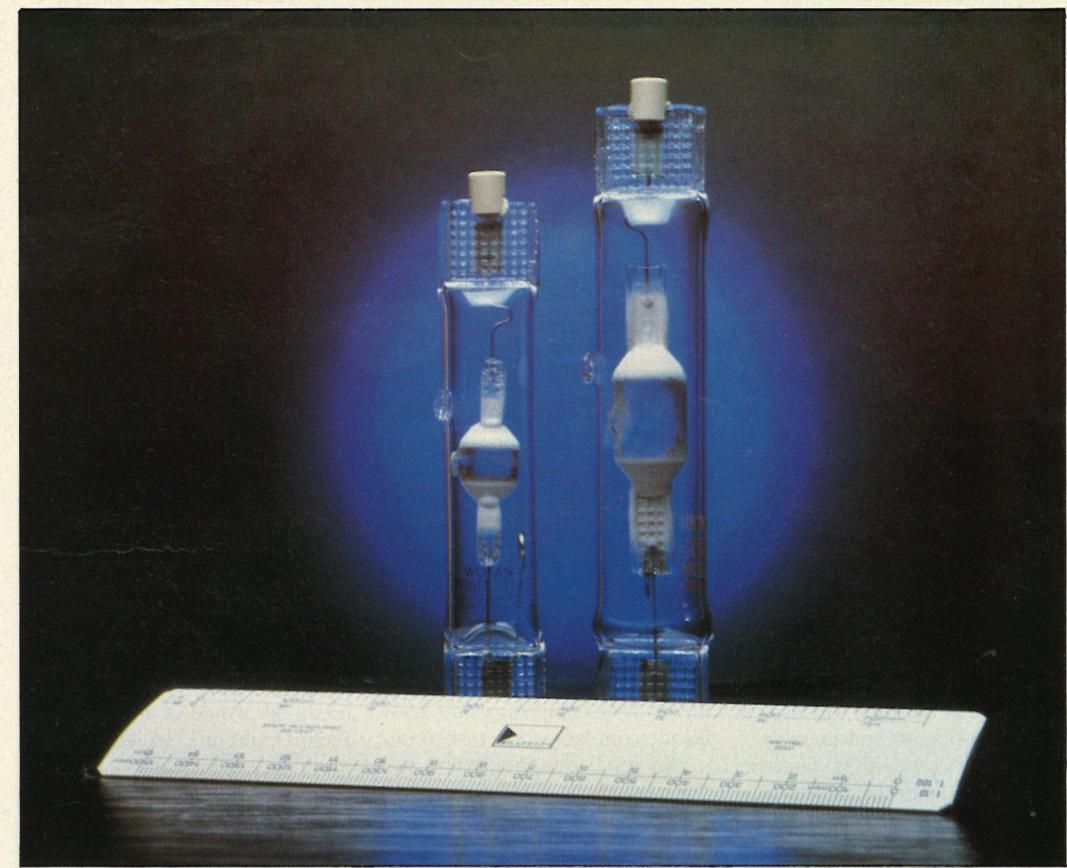
With ordinary lamps there's always a danger of the amalgam splashing onto the electrodes which can cause 'blink-out'.

But this is far less likely to happen with Lucalox because since the amalgam is outside the arc, there's little chance of it coming into contact with the electrodes.

The Lamp That Can Cope With The Ups and Downs Of Factory Life

But being stable in high winds is one thing. Coping with factory life is another.

This is important because variations in mains voltage will affect many high pressure lamps. And some lamps don't cope with it very well.



The HQI-TS metal halide lamp, shown here in the 70W/WDL and 150W/NDL versions.

been one of the most exciting developments in lamp technology, and these will continue to be the main area of innovation, with increased lumen efficacies, reduced physical size and better colour rendering as the objectives.

The market for this technology in commerce and retail has led to the development of a complete family of double ended and single ended lamps that range from 35W to 250W. These lamps are now conquering the sector of interior floodlighting, providing direct lighting for display and circulation areas and indirect lighting for general, task and background illuminance.

Single ended lamps ranging from 35W-150W are the world's smallest metal halide lamps with lumen outputs of 2400, 5200 and 12000 representing luminous efficacies of 62, 69 and 80 lm/W respectively.

The requirement for lower wattages springs from the needs of the commercial market for a warmer, more incandescent-looking light source which maintains good colour rendering properties. Thus, the warmer 3000K lamps were

developed to blend with tungsten halogen lighting.

These smaller wattages are also popular because they approximate to a point source. Light can be directed and controlled, and so is suitable for direct display and up-lighters. Many different luminaires are designed to take these lamps.

An example of the savings that can be achieved with this type of technology in display lighting is shown in the box, and it will be seen that the savings are quite substantial. Luminaire and installation costs are not included in this analysis.

Economical

A new installation with metal halide in general is more economical than a new installation with incandescent reflector lamps. The costs for new luminaires and installation when relamping an existing installation with metal halides are generally paid back during the first year.

The main advantages are:

- five-fold increase in efficacy;
- service life increased by three times -- with a corresponding reduction in maintenance costs;

- choice of colour temperatures (3000K and 4300K);
- low thermal load.

The main applications for low wattage metal halide are twofold. These are indicated in the table.

As is often the case in modern technology, problems arise through miniaturisation. The smaller the lamp volume and electrical characteristics, the more critical are the tolerances for the mixing production and running of all the ingredients. The correct ignition, ballasting and luminaire design is essential to create the optimum electrical and thermal conditions.

The electrical characteristics of the single ended type are similar to the same wattage double ended lamps and, therefore, can be operated on the currently available control gear.

Metal halide lamps are the thoroughbred of commercial light sources and like an expensive racehorse they need to be correctly handled and fed to realise their full potential.

Because of the wide tolerances of electrical supplies standard ballasting cannot always provide optimum conditions.

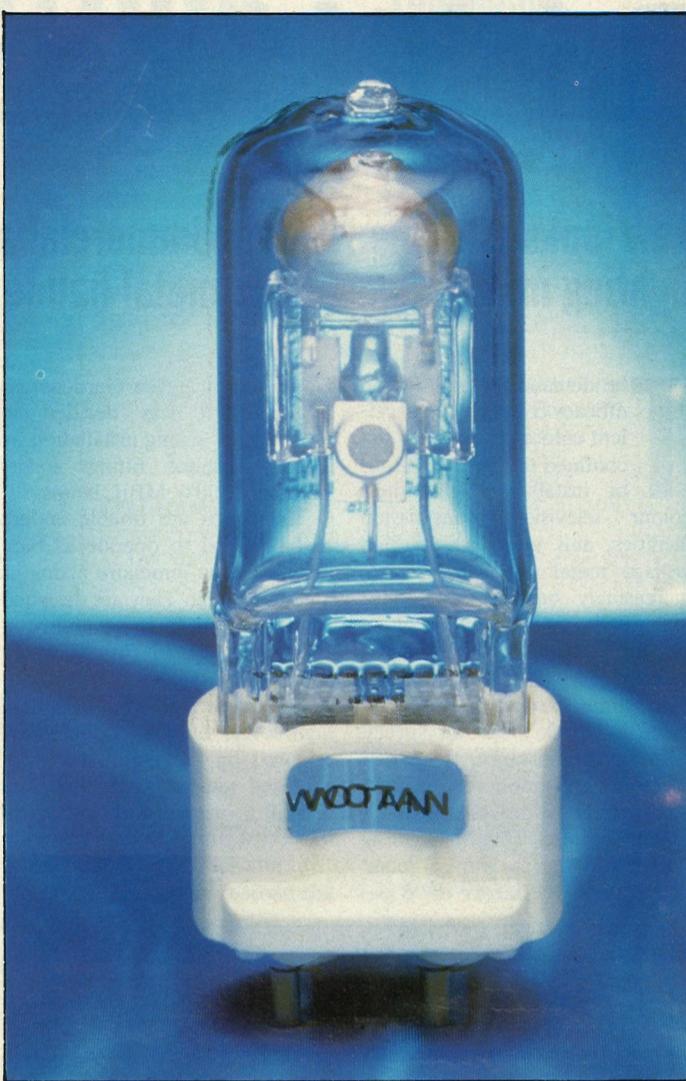
Of the many factors affecting the operation of these lamps, voltage is probably the most important. Providing the luminaire is well designed and does not overheat the lamp -- overheating gives rise to over voltage -- a constant voltage supply to the lamps will ensure long life and stable operation. Over and under-voltage gives rise to a number of problems, including colour shift, short life, flicker and cycling, ie lamps coming on and going off repeatedly.

Conventional ballasts can contain these problems, providing they are multi-tapped -- the installer connects the tapping to suit the supply voltage -- and the supply voltage does not fluctuate too much.

The problems associated with voltage fluctuations may be overcome by the introduction of electronic control gear for metal halide lamps.

Their advantages are numerous:

- Controlled output, ensuring full life expectancy and uniform colour appearance;
- 10% lower circuit wattage than conventional ballasts with the same luminous flux;
- flicker free operation due to



Wotan's HQI-T single-ended metal halide lamp.

high frequency operation;

small volume, single unit;

light weight;

filtered harmonics;

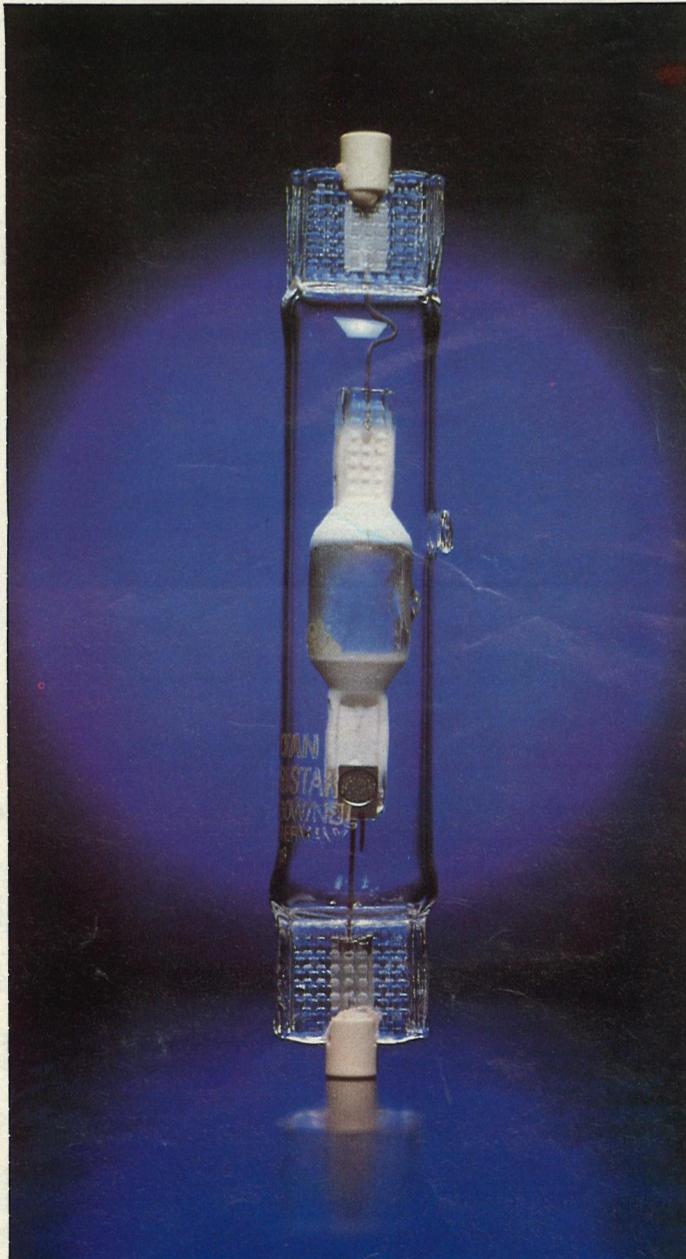
radio interference suppression.

As the contacts of the double ended lamps are so far apart, they are suitable for hot restrike circuits which operate at voltages in excess of 20kV. At present such control gear is very expensive, however, electronic control gear will soon have this facility as standard and while its cost will be higher than standard control gear it will be considerably cheaper than that required for instant restrike and will overcome the need for special

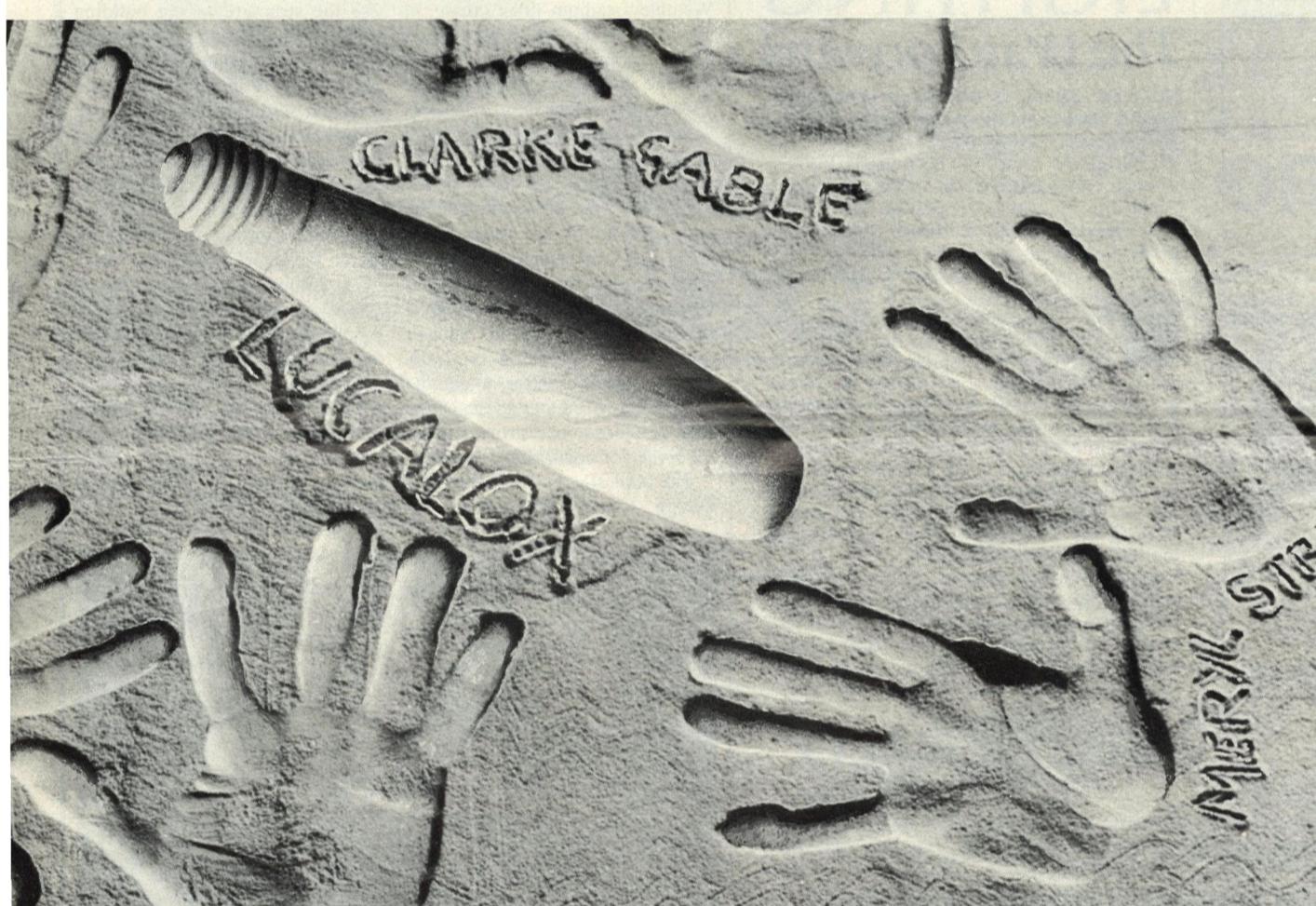
luminaires with auxiliary lamp and relay facilities.

In conclusion, metal halide technology will continue to develop. While different lamp manufacturers are taking slightly different routes in wattages and colour ranges the technology is basically the same and will provide luminaire manufacturers with the confidence to produce more sophisticated and aesthetically pleasing designs.

This article is based on a paper presented at the conference 'Lighting, the state of the art' organised by Industrial Media Ltd.



The HQI-TS 150W/NDL metal halide lamp.



A LEGEND IN ITS OWN LONG LIFETIME

But Lucalox can take variations of plus or minus 5% in its stride.

From The Avenue of the Americas to London Bridge

Lucalox's street lighting debut was a dramatic one.

One of the first streets chosen was one of the most glamorous streets in the world -- The Avenue of the Americas. The question was would anyone notice.

But when they saw the dramatic improvement in the lighting level (from 35 lux to 70/90), even New Yorkers were impressed.

Add our 8000 hour guarantee and you can see why it was also chosen to light London Bridge.

And Equally At Home On The Meanest Streets

But just as important as glamorous avenues are the streets people are afraid to walk at night.

If anything, this is where good lighting is even more vital.

And here the new Lucalox LUH 110 lamp is playing a leading role. Compared to a 125 watt mercury lamp, it provides considerably more brightness while at the same time conserving energy.

Twenty Two Years On. And Still on Top

If the test of a legend is the test of time, then Lucalox has passed with flying colours.

Because it's just as popular now as when it first came out.

And it still has a substantially longer life than other high pressure sodium lamps.

It has also been estimated that Lucalox has so far saved American businessmen over \$1 billion. And we're working on the second.

We're continually improving the lamp. Extending lamp life is one example. Developing the range is another. Lucalox's present lamp life is up to 24,000 hours. But we're hoping to improve on that.

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Bright ideas

LEN looks at some recent commercial and specialist lighting installations using metal halide lamps.

The demand for high lumen efficacy coupled with excellent colour rendering is not confined to display lighting or installations providing colour television transmission facilities, and medium and high voltage metal halide lamps are increasingly being specified for high quality interiors, either alone or for use in mixed source schemes.

In some cases the choice of metal halide is made for special reasons. For instance, the broad spectral distribution produced by the metallic additives stimulates plant growth so, when the lighting installation in the tropical plant house of the Princess of Wales

Conservatory at Kew Gardens was upgraded, it was decided to replace the existing installation by Thorn Metaline fittings incorporating 1500W MBIL lamps.

The lamps are double ended, and designed to operate as bare arc tubes, the luminaire acting as an outer jacket. They are designed for maximum focusing ability in specially designed fittings which provide an asymmetric beam with sharp cut-off, so the necessary high levels of even illumination required by the planting can be achieved without producing glare or spill light to disturb visitors to the Royal Botanic Gardens.

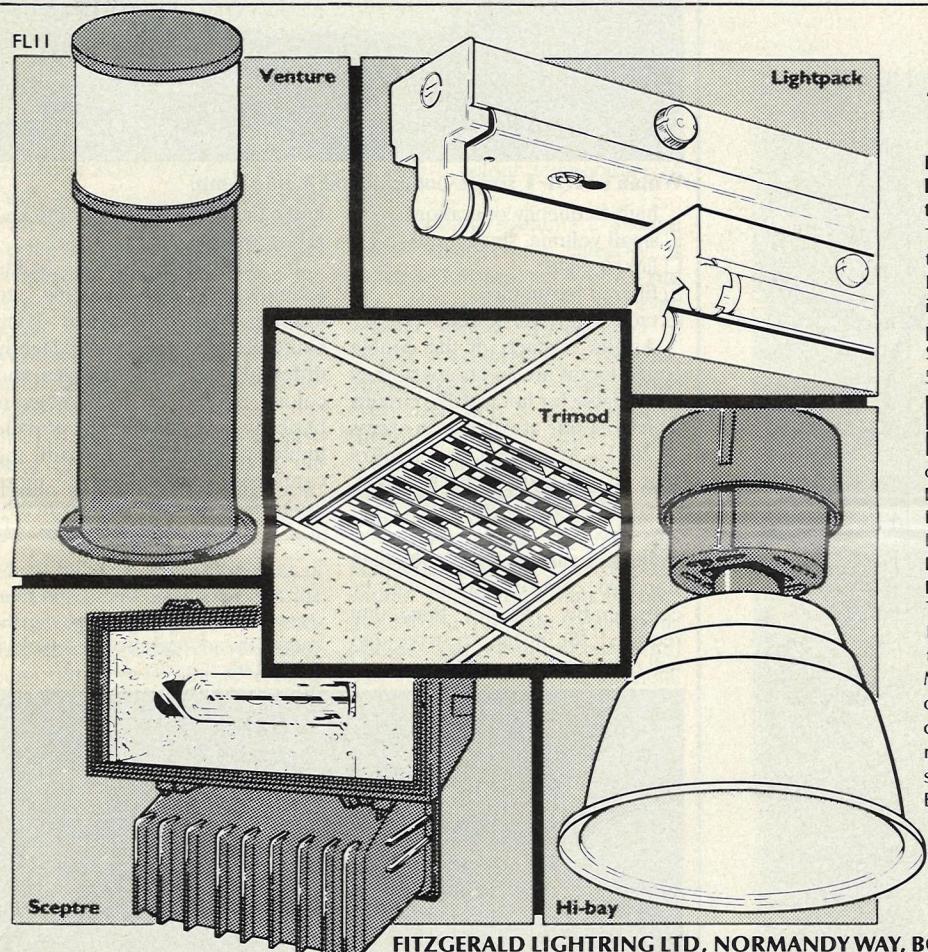
In interiors, metal halide lamps are particularly suitable for use in

indirect lighting schemes as this minimises the danger of glare from their high light output and brightness. Uplighters provided the lighting for the Refuge Assurance offices at Wilmslow, Cheshire. Some 660, 250W MBIF lamps in custom designed luminaires were specified by architects, the Building Design Partnership, as the shape and colour of the luminaires had to harmonise with the interior design. Metal halide lamps were chosen for the effect of their high quality white light on the interior decor.

Mixed light source installations have a wide range of applications and can be particularly successful in historic buildings or in high



The tropical house at Kew Gardens — metal halide lamps encourage plant growth.



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quality commercial buildings.

Lighting in the Long Bar at Wembley stadium must create an ambience in the split level gallery, while enabling the punters to follow the greyhound racing on the TV monitors from their bar stools without irritating reflections on the screens. Ambient lighting is provided by Philips Lita metal halide MCG 101 wall-mounted uplighters; 70W lamps are used in the areas with low ceilings and 150W lamps under the high ceilinged vault to provide an acceptable level of uniformity. Tungsten halogen spotlights are mounted on track running behind monitors to eliminate reflections, creates a visual contrast and boost background lighting levels for comfortable viewing.

The roof space at the Business Design Centre at Islington in

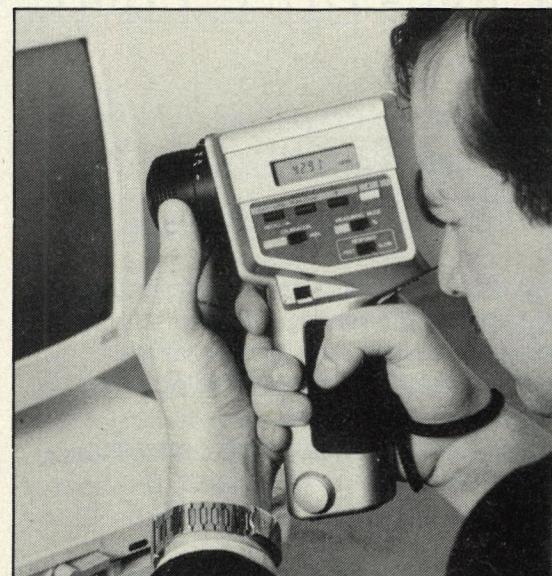
London, a converted Victorian agricultural hall, is uplit to emphasise the structure of the building using a mixed scheme of fourteen 1000W high sodium (SON) and twelve 1500W linear metal halide lamps in stadium floodlights. The Thorn luminaires run the length of both sides of the main hall, each type positioned alternatively in the bays formed by the roof arches. The light emitted by the metal halide lamps with their near daylight colour appearance blends effectively with the warm, golden light of the SON lamps, accentuating the original cast iron girders dating from 1861. Additional lighting is provided in the individual bays of the mezzanine and ground floors by 70W SON lamps, housed in opal globes mounted on the soffits.



The Long Bar, Wembley, features low brightness lighting.



The Refuge Assurance building uses purpose made uplighters.



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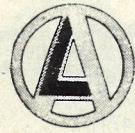


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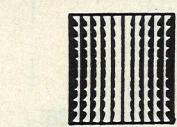
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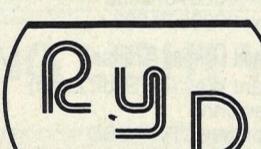
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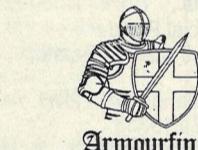
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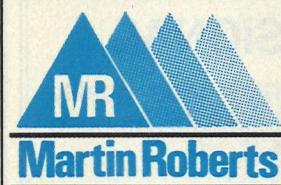
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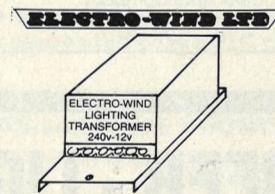
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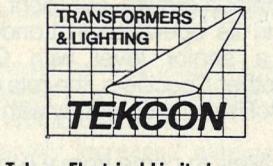
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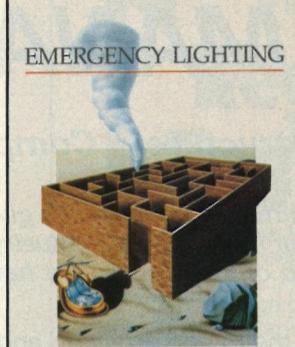
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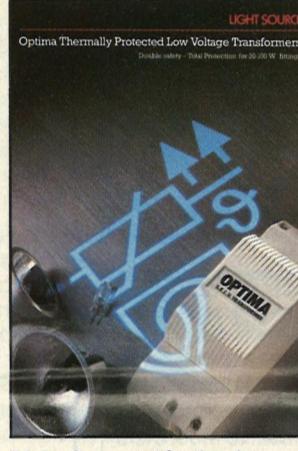
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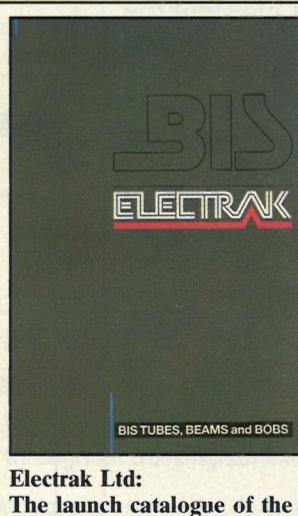
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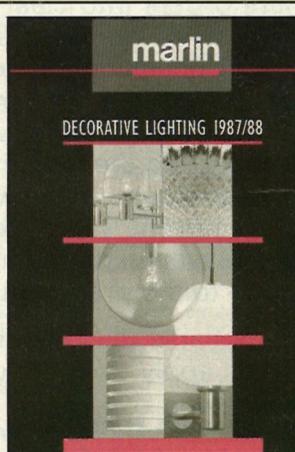
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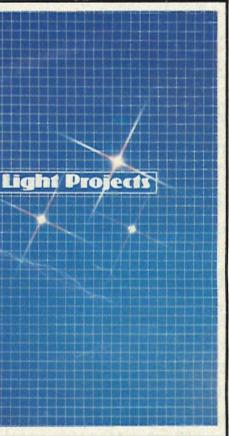
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The successful candidate is likely to come from a lighting related background and will certainly be able to provide evidence of strong negotiating skills and a track record of achievement in this environment. The continued success of the company will present increased opportunities for career advancement.

In addition to the salary, there is a generous bonus scheme together with a comprehensive benefits package.

For further information and interview details, telephone, **KEVIN KEATING** on 01 242 4440 (24 hours), quoting **Ref No 1045** or write to him at:



MORGAN ♦ KEATING ♦ ASSOCIATES

Specialist Sales Recruitment Consultants
25 Bedford Row Holborn London WC1R 4HE Tel: 01 242 4440

Walk in and join a company that is every bit as good as the competition say they are.

At THORN lighting, we pride ourselves on our international standing as a world leader in lighting design and the manufacture of high quality products for every sector of the industrial, domestic and specialist markets.

The expertise of our engineering department is a vital factor in our continued growth and success. Recent expansion in this area has led to a new quality working environment into which we need to recruit the following people who, backed by considerable company investment and excellent training programmes, can look forward to reaching the very highest levels of working standards – with career prospects to match.

SALES ENGINEERS

£neg + bonus + car

Central London, Home Counties

Ideally, we are looking for a number of industry-trained engineers, with solid lighting experience, who can provide strong support to our engineering unit.

You will be required to deal at a high level with consultants, architects and customers, preparing and submitting lighting design and fitting proposals and ultimately ensuring their conversion into firm orders.

Important to this role will be the way you organise and prioritise the workload, and your skill in establishing and maintaining good customer relationships.

PROJECT ENGINEERS

£neg + bonus + car

Central London, Home Counties

You should be a highly competent engineer with a technical knowledge and background, or with relevant



THORN LIGHTING

TOP SALESMEN

Well established progressive Lighting Company require Top Salesmen to further expand its wholesaler business. You will enjoy the benefits of a substantial five figure salary further enhanced by performance related bonus, excellent fringe benefits associated with a PLC company. Executive car.

AREAS REQUIRED: MIDLANDS, SOUTH-WEST, NORTH-WEST, LONDON and HOME COUNTIES.

If you have a proven sales record and are ambitious to do well in a Sales environment.

Please write in confidence to: David Hemming, Sales Director
CROSSLAND LIGHTING PLC
Willenhall Lane, Bloxwich, Walsall WS3 2XR

AGENTS REQUIRED

The company markets exclusive designs of light fittings and shades.

The selected applicant should have a good knowledge of retail lighting and be prepared to join a company that gives regular and dedicated service to customers.

You will receive progressively increased earnings from a well established and growing organisation.

Write to: Ref. J.B.

Tally Ho Lighting Company Ltd
Unit 31, Cam Centre
Wilbury Way, Hitchin,
Herts SG4 0TW

AGENTS REQUIRED

Due to continued growth and expansion we require professional, self motivated sales agents to promote our range of quality polycarbonate light fittings in the electrical wholesale and retail markets in the following areas:

Gloucestershire, Oxfordshire, Berkshire, Buckinghamshire, Bedfordshire, Hertfordshire, Surrey, West Sussex, East Sussex, Kent, Greater London.

Liverpool based stock and despatch depot.

For further details contact: Gerry McAndrew, European Marketing Manager, Ensto Teoranta, Spiddal, Co. Galway, Ireland.

Phone: +353-91-83300 Fax: +353-91-83373 Tlx: 50996 Enst El.

architectural/consultancy experience and eager to move into a Sales environment.

You will mainly be responsible for picking up major assignments through direct liaison with architects and consultants, arranging for all necessary design work, checking on the progress of work at each stage from inception to completion.

Industry trained with several years broad-based experience in lighting engineering, you should be articulate and numerate and able to foster excellent business relationships with customers with whom you will be a key contact.

SALES REPRESENTATIVES

£neg + bonus + car

Central London, Home Counties

You will be operating in a challenging and stimulating environment, selling our leading products to electrical wholesalers, contractors and specifiers. Ideally, you should have a background in lighting with sales experience. However, if you have at least Maths and Physics GCSE or equivalent and can demonstrate that you are a strong and willing team member, a self-starter, articulate and have a mature approach, we offer a high level of induction training where necessary on sales techniques, product awareness, lighting design and the company in general.

To find out more about the rewarding career and the comprehensive range of benefits we can offer you, we invite you to come along to an open session at The Business Design Centre, Upper Street, Islington Green, London N1. on 12th October 1988 between 9am-6pm. If you can't attend, then telephone THORN Lighting Appointments on 01-631 4411, or write to them at 178-202 Great Portland Street, London W1N 6JJ.

Chloride Bardic is the leading UK manufacturer of Emergency Lighting and Fire Alarm systems and is a member of the expanding Chloride Group.

Regional Sales Engineers

We require two Regional Sales Engineers to assume responsibilities for selling Bardic Emergency Lighting and Fire Alarm products to a wide range of customers in the West Midlands and East Midlands/Yorkshire areas.

Applicants (male or female) should preferably be qualified to ONC level in Electrical Engineering and ideally be located within the above sales areas. We would also be pleased to hear from applicants living in other areas who possess particularly relevant experience.

The successful candidates will be sales orientated, enthusiastic self-motivators of smart appearance with a proven ability to obtain profitable sales and provide effective support to Wholesalers, Specifiers, Consultants, Contractors and Local Authorities. A clean current driving licence is essential. Age range preferred 25-40. These positions carry an attractive salary, together with performance related bonus, commission, company car and other large company benefits.

Apply, sending full curriculum vitae and details of your current salary level to the Personnel Department, Chloride Bardic, Bond Street, Southampton, SO9 1XN or Tel: (0703) 630611.

CHLORIDE BARDIC

**London Borough of Southwark
Engineering and Public Works Department
WORKS DIVISION
Maintenance Group**

Responsible for all aspects of maintenance of highways, street lighting and drainage with a current budget of over £6m per annum and the supervision of construction of major highway improvement schemes.

Assistant Engineer/ Senior Assistant Engineer

SO2 £13,432 – £14,673

PO1 £14,304 – £15,312

(Ref LEN/3/9038)

You will be responsible for the design of street lighting and control of street lighting maintenance activities including the supervision of staff.

For this post you will need to have an Engineering degree and a minimum of three years post graduate relevant experience or have an equivalent combination of degree and relevant post graduate experience.

THIS POST IS OPEN TO JOB SHARING

We are an equal opportunity employer. Applications are welcome from candidates regardless of race, nationality, sex, marital status, sexual orientation, disability, age, religious beliefs or domestic circumstances.

Telephone: 01-701 2870 or 01-708 1954 (24 hour answering service) for an application form, or write on a postcard to: The Personnel Officer, London Borough of Southwark, 25 Commercial Way, London SE14 6DG.

Please quote reference LEN/3/9038 and job title.
Last date for receipt of completed Applications Forms 28.10.88.

WANTED

Purchase of established lighting manufacturing company by Major UK Group, to acquire total business. Ideally require manufacturing base in commercial lighting products, including HID/Fluorescent ranges.

Architect and Consultant Contract profile.

Apply to:
Box 1450
Lighting Equipment News
Maclean Hunter Ltd
Maclean Hunter House
Chalk Lane, Cockfosters Road
Barnet, Herts EN4 0BU

ESTIMATOR

Required for busy sales office. Experience of reading specifications an advantage. Technical back-up available with full training given to suitable applicant. Do you have the ability to work on your own initiative whilst still being part of the sales team? Salary negotiable plus health care and pension benefits.

Apply to Philip Wilson, Director
Alpa Lighting Limited
133 Nathan Way, Woolwich, SE28 0AZ
Tel: (01) 855 0055 Fax: (01) 854 5047

New light shed on Australian Parliament

A total of 26,000 Philips lamps have been used to light Australia's new Parliament House in Canberra. These include TL-SD lamps for the main Members' Chambers and PL lamps in the restaurant areas. The inauguration of this new building represents one of the major events in Australia's bicentenary year.

The building accommodates 34 major and some 100 minor rooms including a ministerial wing, two Chambers of Parliament, cabinet rooms, senators' and chambers' offices, public and recreational

areas, restaurants, storage chambers and underground parking facilities.

Designed by Romaldo Giurgola and built mainly out of white marble, its architecture comprises an interlocking complex of buildings and courtyards, set into a hill and overlooking the old parliament building and the lake that forms the ornamental centrepiece of Canberra.

The complex measures 300 x 300 metres and features on its roof a steel flag mast, positioned on four 81 metre high legs.



Building now for 1992

British building professionals are the best in the world according to Professor Ted Happold, BIC conference chairman. He is joined in his sentiments by HRH The Duke of Gloucester who has agreed to deliver the keynote speech at the Building Industry Council's one-day conference on 17 November 1988.

As an architect, HRH The Duke of Gloucester has devoted a great deal of time to promoting British building professionals overseas. This topic together with deregulation and the single European market, constitutes the conference

agenda.

Presidents of all five constituent BIC institutions will chair sessions, and case studies will concentrate on practicalities and differences experienced in EEC countries.

The conference, to be held at the Queen Elizabeth II Conference Centre, London, will be the first event to be organised by the Council after its formal launch on 19 September 1988.

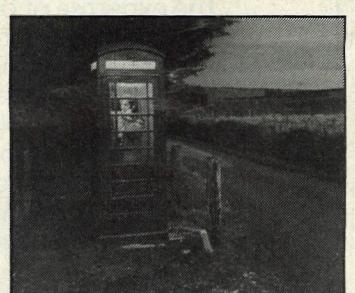
For further conference details contact Mrs Joyce Ramsey, Conference Officer, The Chartered Institute of Building on 0900-23355.

Battery lights in phone kiosks

British Telecom is to fit all its remote telephone kiosks in the Scottish Highlands with battery powered lighting.

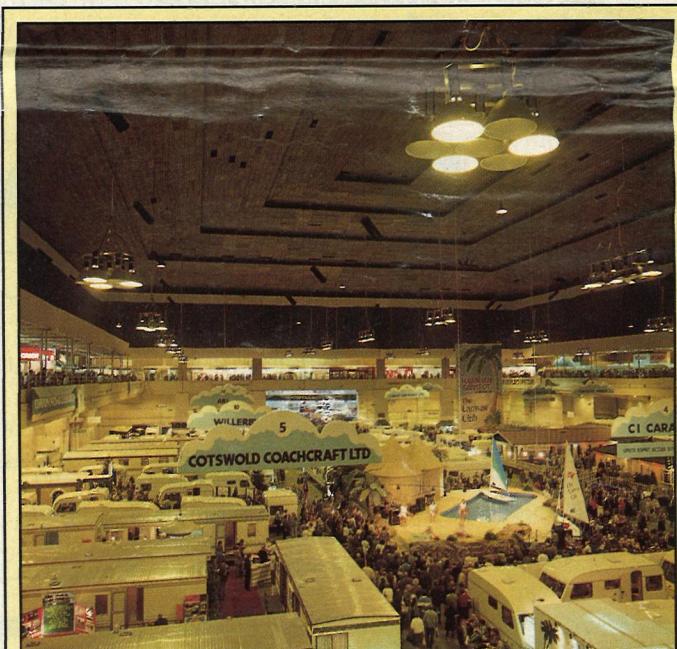
"Some of our kiosks are literally miles from anywhere and no mains electricity is available", explained James Martin of British Telecoms North of Scotland District, who is in charge of the project.

The requirement was for a power pack to provide between 250 and 300 three-minute periods of illumination at temperatures down to -20°C. Eventually it was decided to use two Duracell PC915 alkaline batteries to power an 8W fluorescent tube via a light sensor, timer and inverter.



By using these small alkaline batteries it has been possible to incorporate them and associated circuitry in a standard lighting fitting, which has resulted in a self-contained, easily maintained unit.

The packs were jointly developed by British Telecom and Plasmold Safety Systems Ltd, who anticipate they will be useful in locations such as boats and garages where mains power is not available.



Public spaces in Earls Court, London's exhibition centre have been relit using energy efficient lamps.

The existing complex, opened in 1937, comprises over 50 000 square metres of exhibition space and there are plans to construct an additional hall providing a further 17 000 square metres by 1990.

The original tungsten installation has been replaced with over 1500 Thorn SON DL lamps and combinations of Lopak, Radpak and Hipak luminaires. The SON DL lamp was selected as it combines good colour rendering high efficiency and low maintenance costs.

Lamps are controlled by a micro-processor based switching system, and an ECS energy management system gives individual control of each lamp in the complex, providing flexibility for varying exhibition needs.

Within the main hall, tungsten halogen floodlights have also been provided to boost the lighting for events which demand instant light.

■ IN YOUR NEXT ISSUE ■

The range of specialised light source has increased in the past few years and now covers applications from insect electrocutors to assistance in crime detection. *Lighting Equipment News* will review the present equipment on the market.

Lighting Tower Bridge, one of

the most prestigious structures in Britain, posed major political and aesthetic problems. Basil Austin of the Corporation of London describes how the design team met this challenge, while, at the same time, producing a visually stunning scheme.

Lumiance

Marketing Dept (AB32), Lumiance Malmesbury, Wiltshire, SN16 9JX.

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